
Bid Documents – Bid Number IFB14-39

Downtown Two-Way Conversion Transportation Improvement Project

Lowell, Massachusetts

Prepared for **City of Lowell**
Department of Planning and Development
50 Arcand Drive
Lowell, MA 01852



Prepared by **TEC, Inc.**
65 Glenn Street
Lawrence, MA 01843

169 Ocean Boulevard
Hampton, NH 03842



February 18, 2014

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INVITATION TO BID
Bid Number: IFB14-39

**Downtown Two-Way Conversion
Transportation Improvement Project
Lowell, Massachusetts**

Sealed bids will be publicly opened on March 10, 2014 at City Hall in the Purchasing Department, Room 60, 375 Merrimack Street, Lowell, MA 01852, at 11:00AM, EST/EDST, for the work described herein. BIDDERS ARE REQUIRED TO SUBMIT A BID INCLUDING ALL BID FORMS CONTAINED IN THIS PACKAGE. DO NOT REMOVE PAGES.

A pre-bid meeting is scheduled for 10:00 A.M. on February 26, 2014 in the Purchasing Department Conference Room, 375 Merrimack Street, Lowell, MA 01852.

The bids will be for all labor, materials, equipment, tools, appliances etc. necessary for construction of the **DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT**.

Bid Documents, including Plans and Specifications may be obtained after February 19, 2014 at the City of Lowell Purchasing Department Room 60, 375 Merrimack Street, Lowell, MA 01852 and on the City's Website at the following address:

<http://www.lowellma.gov/Purchasing/Pages/General/OpenSolicitations.aspx>

Bid Number: IFB14-39

For mailing of plans and specifications, the prospective bidder shall provide the recipients address and FedEx account number.

Each bid proposal must be secured by an accompanying deposit of five percent (5%) of the total bid amount and submitted in a sealed envelope clearly marked, "Proposal for DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT". The deposit shall be in the form of a Bid Bond, Certified Check, Cashier's or Treasurer's Check, made payable to the City of Lowell, or cash.

The successful bidder must furnish a Payment Bond and a Performance Bond of an amount equal to One Hundred (100%) percent of the total Contract Price, issued by a Surety Company, satisfactory to the Commissioner of Public Works.

Attention of the Bidders is particularly called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

Attention of the Bidders is particularly called to the requirements of the conditions of employment to be observed and the prevailing wage rates to be paid on this project, as determined by the State Department of Labor Division of Occupational Safety and the U.S. Department of Labor under the Davis Bacon and related Acts.

Bidders shall be prequalified by MassDOT in Highway-Construction.

Note: Bidders must also comply with Certification of Compliance G.L.C. 30 & 39S Public Construction More Than \$10,000.00. See page BP-11.

The City of Lowell, acting through its Chief Procurement Officer, reserves the right to waive any informality in, to reject any or all bids or to accept the one which appears in the best interest of the City of Lowell.

MBE's are encouraged to submit proposals. EOE/AA.

Project Value: \$700,000

P. M. Vaughn - CHIEF PROCUREMENT OFFICER

ADVERTISED: Central Register, February 19, 2014
 Wednesday Lowell Sun, February 19, 2014

INFORMATION FOR BIDDERS

SUBSECTION

1. Receipt and Opening of Bids
2. Preparation of Bid
3. Blank
4. Blank
5. Qualifications of Bidder
6. Bid Security
7. Damages for Failure to Enter into Contract
8. Duration of Contract
9. Conditions of Work
10. Addenda and Interpretations
11. Security for Faithful Performance
12. Power of Attorney
13. Notice of Special Conditions
14. Laws and Regulations
15. Method of Award - Lowest Qualified Bidder
16. Obligation of Bidder
17. List of Utilities in the Area
18. Blank
19. Nondiscrimination in Employment
20. Affirmative Action
21. Sales Tax
22. Blank
23. Compliance with Air and Water Acts
24. Interest of Members, Officers, as Employees of the Owner,
Members of Local Governing Body, or other Public Officials

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The City of Lowell herein called the "Owner" invites sealed bids on the separate copies of Bid Forms furnished for that purpose, all blanks of which must be appropriately filled in. The bound-in Bid Forms in the Contract Documents are for continuity and the convenience of Bidders and are not to be detached from the Contract Documents, filled out or executed.

Bids will be received by the OWNER at the Office of the Chief Procurement Officer, P. Michael Vaughn, City Hall, Purchasing Department, 375 Merrimack Street, Room 60, Lowell, MA 01852 until 11:00 A.M. local time, March 10, 2014 and then at said Office publicly opened and read aloud. The envelope containing the bids for the **DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT** shall be sealed, addressed to the City of Lowell, Purchasing Department and designated as "Bid for **DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT**"

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. 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 shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof.

2. PREPARATION OF BID

Each bid for the **DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT** shall be submitted on the prescribed bid forms.

All blank spaces for bid prices must be filled in, with ink or typewriter, in both words and figures, and both of the foregoing Certifications must be fully completed and executed when submitted.

Each bid for the **DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT** must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified above.

3. BLANK

4. BLANK

5. QUALIFICATIONS OF BIDDER

The OWNER may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject

any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the OWNER that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional bids will not be accepted.

- A. Subject to the requirements of Chapter 29, Section 8B of the General Laws, each prospective Bidder proposing to bid on this project must be prequalified and certified by the Massachusetts Department of Transportation, Highway Division to perform this work in accordance with the "Regulations Governing Classification and Rating of Prospective Bidders."

Each bid **must include** evidence of the Bidder's ability to complete the Work in accordance with the Contract Documents. Each bid **must include** the name of the Superintendent who is to be used on this project, and his/her experience.

Each bid must include:

1. A comprehensive list of any and all citations and /or violations issued by regulatory agencies and/or judgments against bidder from a court of law.
2. All assessed penalties or liquidated damages, and the project in which they occurred.
3. Any and all contract terminations.
4. A list of at least five references.

6. BID SECURITY

Each bid shall be accompanied by cash, a certified check, treasurer's check, or cashier's check issued by a responsible bank or trust company, made payable to the City of Lowell in the amount of 5% of the bid or a bid bond prepared in the form of bid bond; duly executed by the bidder as principal and having as surety thereon a surety company listed on the Department of the Treasury's approved listing (Department Circular 570), licensed to do business in the Commonwealth of Massachusetts, approved by the OWNER, in the amount of 5% of the bid, but in no event less than one hundred dollars not more than fifty thousand dollars.

Subbids shall be submitted for the following items for work: NONE

All bid deposits of general bidders, except those of the three lowest responsible and eligible bidders, will be returned within five (5) days, Saturdays, Sundays and legal holidays excluded, after the opening of the general bids.

The bid deposits of the three lowest responsible and eligible bidders shall be returned upon the execution and delivery of the Contract, or if no award is made, upon the expiration of 60 days, Saturdays, Sundays, and legal holidays excluded, except that, if any bidder fails to perform his agreement to execute a Contract and furnish a Performance Bond and also a Labor and Materials Payment Bond as stated in his bid, his bid deposit shall become and be the property of the City of Lowell as liquidated damages; provided that the amount of the bid deposit which

becomes the property of the City of Lowell shall not, in any event, exceed the difference between his bid price and the bid price of the next lowest responsible and eligible bidder; and provided further that, in case of death, disability or other unforeseen circumstances affecting the bidder, his bid deposit may be returned. The sixty day time limit shall not be applicable to the next lowest eligible bidder, with his and his subbidder's consent, if the original award made within the time limit is invalidated.

All bid deposits of subbidders, except (a) of the subbidders named in the general bids of the three lowest responsible and eligible general bidders, and (b) those of the three lowest responsible and eligible subbidders for each subtrade, will be returned within five days (Saturdays, Sundays, and legal holidays excluded), after the execution of the general contract; except that, if a selected subbidder fails to perform his agreement to execute a subcontract with the general bidder selected as the general contractor contingent upon the execution of the general contract and if requested to do so in the general bid by such a general bidder, to furnish a Performance and Payment Bond as stated in his subbid, the bid deposit which becomes the property of the City of Lowell shall not, in any event, exceed the difference between his subbid price and the subbid price of the next lowest responsible and eligible subbidder; and provided further that, in case of death, disability or other unforeseen circumstances affection any such subbidder, his bid deposit may be returned to him.

7. DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within 10 days after he has received notice of the acceptance of his bid, shall forfeit to the OWNER, as liquidated damages for such failure or refusal, the security deposited with his bid.

8. DURATION OF CONTRACT

The contract shall be for the period beginning on or about **April 1, 2014** or as stated in the **NOTICE TO PROCEED, WHICHEVER IS LATER** and end on or before **September 1, 2014**.

Schedule for this project requires that the work be completed no later than **August 15, 2014** regardless of the date of notice to proceed. Location of this project in relation to nearby schools requires that approximately 90% of the work be completed no later than **July 31, 2014** regardless of the date of the notice to proceed.

Failure to complete the work by the dates herein specified, or any proper extensions thereof granted by the OWNER will be subject to liquidated damages.

9. CONDITIONS OF WORK

Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of 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.

10. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

Prospective bidders are required to submit all questions in writing to the City Transportation Engineer by 1:00 P.M. on the Thursday before the scheduled bid opening date. Any questions received after this time will not be considered for review by the City.

Contractors should email questions and addendum acknowledgements to the following email address: pmvaughn@lowellma.gov. Please put DOWNTOWN LOWELL 2-WAY CONTRACTOR QUESTION in the subject line.

Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be e-mailed with return receipt requested to all prospective bidders (at the respective email addresses furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligations under his bid as submitted. All addenda so issued shall become part of the contract documents.

11. SECURITY AND INTERPRETATIONS

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 on the project under this Contract and furnishing materials in connection with this Contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company listed on the Department of the Treasury's approved listing (Department Circular 570), licensed to do business in the Commonwealth of Massachusetts and satisfactory to the OWNER.

12. POWER OF ATTORNEY

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

13. NOTICE OF SPECIAL CONDITIONS

The Bidder's attention is particularly called to those parts of the contract documents and specifications which deal with the following:

- A. Inspection and testing of materials
- B. Insurance requirements
- C. Wage rates
- D. Non-discrimination in employment

14. LAWS AND REGULATIONS

The bidder's attention is directed to the fact that all applicable State Laws, municipal ordinances, 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 through herein written out in full.

15. METHOD OF AWARD – LOWEST QUALIFIED BIDDER

If at the time this contract is to be awarded, the lowest base bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the OWNER as available to finance the Project, the Contract will be awarded on the base bid. If such bid exceeds such amount, the OWNER may reject all bids.

16. OBLIGATION OF BIDDER

At the time of the opening of bids it is presumed that each bidder has inspected the site and has read and is thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to his bid.

17. LIST OF UTILITIES IN THE AREA

Attention is called to the fact that the following Utility Companies have facilities in the area:

Lowell Water Utility	978-678-4240
Lowell Regional Wastewater Utility	978-674-4248
Lowell Engineering Department	978-674-4070
National Grid Gas-David Gendall	978-725-1353
National Grid Electric- David Gendall	978-725-1353
Verizon Telephone	877 -686-7007
Comcast	877-633-4266
Lowell Fire Alarm/Electrician	978-674-4114

The Contractor shall notify the controlling utility agency at least 72 hours in advance of its intent to excavate in any way or manner, within six feet of any existing utility agency owned pole, anchor guy, underground duct, conduit, pipe, valve or manhole. No excavation shall take place within six feet of any existing utility agency owned pole, anchor guy, underground duct, conduit, pipe, valve or manhole owned by a utility agency without this notification. In addition, Dig Safe must be notified 72 hours prior to commencing excavation.

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

18. TESTING OF MATERIALS

The bidder shall note that inspection of work and testing of materials is a requirement of this contract. The Bidder shall provide a list, including resume and qualifications of all anticipated

third party inspectors, testing labs, etc. required to perform the work in accordance with the Contract Specifications.

19. NON-DISCRIMINATION IN EMPLOYMENT

Contracts for work under this proposal will obligate the Contractors and subcontractors not to discriminate in employment practices. Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the Contract. The successful bidder must be prepared to comply in all respects with the Contract Provisions regarding Equal Employment Opportunity which are located in the Special Conditions Section of these Specifications.

20. AFFIRMATIVE ACTION

The Bidder's attention is called to the Notice for Affirmative Action to ensure equal employment opportunity (Executive Order 11246 and 41CFR Part 60-4) and the notice of Minimum Minority Percentages to be applied to State and State Assisted Contracts within the Commonwealth. To meet the State and Federal requirements Construction Participation for this project are as follows: **MBE's (7.4%) and (WBE's (6.9%))**

21. SALES TAX

Materials and equipment purchased for permanent installation in this project will be exempt from the Massachusetts Sales and Use Tax. The exemption certificate number will be furnished to the Contractor. Each bidder shall take this exemption into account in calculating his bid for the work.

22. BLANK

23. COMPLIANCE WITH AIR AND WATER ACTS

This contract is subject to the requirements of the Clean Air Act, as amended, 42 U.S.C. 1857 et. seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et. seq. and the regulations of the Environmental Protection Agency with respect thereto, 40 CFR Part 15, as amended from time to time.

24. INTEREST OF MEMBERS, OFFICERS, or EMPLOYEES of the OWNER, MEMBERS of LOCAL GOVERNING BODY, or OTHER PUBLIC OFFICIALS.

No member, officer, or employee of the OWNER, or its designees or agents, no member of the governing body of the locality in which the program is situated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the program during his tenure of for one year thereafter, shall have any interest, direct or indirect, in any contract or subcontract, or the proceeds thereof, for work to be performed in connection with this Contract.

BID PROPOSAL

CITY OF LOWELL, MASSACHUSETTS

Project: **DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT**

Location: Lowell, Massachusetts

To the City of Lowell, Massachusetts (hereinafter called OWNER)

Gentlemen:

The Bidder, in compliance with your invitation for bids for the construction of the proposed project having examined the plans and specifications with related documents as prepared by TEC, Inc., and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the prices stated below. This price is to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in a written "notice to proceed" of the OWNER, meet interim specified milestones and to fully complete the Contract by August 15, 2014, as stipulated in the specifications.

Bidder understands that the OWNER reserves the right to reject any or all bids and to waive any informality in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of **30 calendar days** after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract within 10 days and deliver a Surety Bond or Bonds as required.

The Bid Security attached in the sum of _____

(\$ _____

is to become the property of the OWNER in the event the contract and bonds are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the OWNER caused thereby.

Bidder acknowledges receipt of the following addendum(s):

Bidder agrees to perform all the work described in the specifications and shown on the plans for the following unit prices:

NOTE: All prices should be written in ink, in words as well as figures, for the entire proposal. In case of discrepancy the amount shown in words will govern.

The CONTRACTOR agrees that its attention has been called to the provisions of the "Reserve System" Ordinance of the City of Lowell, which is now incorporated in "The Code of the City of Lowell, Massachusetts", passed by the City Council on April 26, 1988 and amendments thereto and that each purchase order, so-called, issued in accordance with Section 7-76 of Said Code to cover the services to be rendered under this contract shall be made a part hereof by reference. It is further agreed that no obligation shall be considered to have been incurred under this Contract unless and until a purchase order shall have been issued and approved. And further, that the obligation incurred shall be limited to the amount set forth in each purchase order, or purchase orders, duly issued and approved.

The CONTRACTOR further agrees that his attention has been called to the duration of contract on Pages IB-4 and SC-2 of this Contract.

ITEM NO.	QTY	BASE BID ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
100.9	1	AT PRE-CONSTRUCTION SURVEY AND VIBRATION MONITORING _____ PER LUMP SUM				
127.01	325	AT CONCRETE SIDEWALK EXCAVATION _____ PER SQUARE YARD				
129.	575	AT PAVEMENT MILLING _____ PER SQUARE YARD				
129.2	225	AT OLD PAVEMENT EXCAVATION _____ PER SQUARE YARD				
141.1	15	AT TEST PIT FOR EXPLORATION _____ PER CUBIC YARD				
142.	10	AT CLASS B TRENCH EXCAVATION _____ PER CUBIC YARD				
144.	10	AT CLASS B ROCK EXCAVATION _____ PER CUBIC YARD				
151.	200	AT GRAVEL BORROW _____ PER CUBIC YARD				
153.	10	AT CONTROLLED DENSITY FILL - EXCAVATABLE _____ PER CUBIC YARD				
170.	650	AT FINE GRADING AND COMPACTING _____ PER SQUARE YARD				
220.	2	AT DRAINAGE STRUCTURE ADJUSTED _____ EACH				

CARRIED FORWARD

ITEM NO.	QTY	BASE BID ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
220.3	1	DRAINAGE STRUCTURE CHANGE IN TYPE AT _____ EACH				
220.5	1	DRAINAGE STRUCTURE REMODELED AT _____ EACH				
222.3	1	FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD AT _____ EACH				
303.06	5	6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT) AT _____ PER FOOT				
309.	250	DUCTILE IRON FITTINGS FOR WATER PIPE AT _____ PER POUND				
357.06	1	6 INCH GATE BOX AT _____ EACH				
358.	2	GATE BOX ADJUSTED AT _____ EACH				
376.2	1	HYDRANT - REMOVED AND RESET AT _____ EACH				
376.5	1	HYDRANT - ADJUSTED AT _____ EACH				
460.	55	HOT MIX ASPHALT AT _____ PER TON				
464.	60	BITUMEN FOR TACK COAT AT _____ PER GALLON				

CARRIED FORWARD _____

ITEM NO.	QTY	BASE BID ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
464.5	2000	AT HOT POURED RUBBERIZED ASPHALT SEALER _____ PER FOOT				
472.	12	AT HOT MIX ASPHALT FOR MISCELLANEOUS WORK _____ PER TON				
482.3	500	AT SAWING ASPHALT PAVEMENT _____ PER FOOT				
485.1	4	AT GRANITE RUBBLE BLOCK PAVEMENT REMOVED AND RESET _____ PER SQUARE YARD				
506.1	190	AT GRANITE CURB TYPE VB - CURVED _____ PER FOOT				
509.	110	AT GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - STRAIGHT _____ PER FOOT				
509.1	60	AT GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - CURVED _____ PER FOOT				
580.	80	AT CURB REMOVED AND RESET _____ PER FOOT				
590.	420	AT CURB REMOVED AND STACKED _____ PER FOOT				
701.	275	AT CEMENT CONCRETE SIDEWALK _____ PER SQUARE YARD				
701.2	150	AT CEMENT CONCRETE WHEELCHAIR RAMP _____ PER SQUARE YARD				

CARRIED FORWARD _____

ITEM NO.	QTY	BASE BID ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
703.	55	HOT MIX ASPHALT DRIVEWAY AT _____ PER TON				
706.1	260	BRICK WALK REMOVED AND RELAID AT _____ PER SQUARE YARD				
706.11	30	BRICK WALK REMOVED AND STACKED AT _____ PER SQUARE YARD				
707.21	1	TRASH RECEPACLE REMOVED AND RESET AT _____ EACH				
707.8	8	STEEL BOLLARD AT _____ EACH				
715.1	2	MAIL BOX REMOVED AND RESET AT _____ EACH				
748.	1	MOBILIZATION AT _____ PER LUMP SUM				
751.	5	LOAM BORROW AT _____ PER CUBIC YARD				
765.	30	SEEDING AT _____ PER SQUARE YARD				
767.31	30	STRAW MULCH AT _____ PER SQUARE YARD				
804.3	200	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC - (UL) AT _____ PER FOOT				

CARRIED FORWARD _____

ITEM NO.	QTY	BASE BID ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
804.31	50	DAMAGED CONDUIT REMOVED AND REPLACED AT _____ PER FOOT				
811.31	4	PULL BOX 12 X 12 INCHES - SD2.031 AT _____ EACH				
815.98	6	FOOTING COST ADJUSTMENT AT _____ PER FOOT				
816.01	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 1 AT _____ PER LUMP SUM				
816.02	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 2 AT _____ PER LUMP SUM				
816.03	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 3 AT _____ PER LUMP SUM				
816.04	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 4 AT _____ PER LUMP SUM				
816.05	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 5 AT _____ PER LUMP SUM				
816.06	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 6 AT _____ PER LUMP SUM				
816.07	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 7 AT _____ PER LUMP SUM				
832.	440	WARNING-REGULATORY AND ROUTE MARKER - ALUM. PANEL AT _____ PER SQUARE FOOT				

CARRIED FORWARD _____

ITEM NO.	QTY	BASE BID ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
832.21	95	CROSSING WARNING SIGN & ASSOCIATED SUP. WARN. SIGN AT _____ PER SQUARE FOOT				
847.1	70	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY AT _____ EACH				
852.	220	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT				
853.1	4	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH				
854.1	700	PAVEMENT MARKING REMOVAL AT _____ PER SQUARE FOOT				
856.12	240	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY				
859.	4200	REFLECTORIZED DRUM AT _____ PER DAY				
864.04	1750	ARROWS AND LEGENDS REFL. WHITE (THERMOPLASTIC) AT _____ PER SQUARE FOOT				
865.1	3750	CROSSWALKS AND STOP LINES REFL. WHITE (THERMOPLASTIC) AT _____ PER SQUARE FOOT				
866.04	3900	4 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT				
867.04	6400	4 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC) AT _____ PER FOOT				

CARRIED FORWARD _____

ITEM NO.	QTY	BASE BID ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
874.01	14	AT PARKING METER SIGN _____				
		EACH				
874.02	4	AT PARKING METER SIGN REMOVED AND RESET _____				
		EACH				
874.03	12	AT PARKING METER SIGN REMOVED AND STACKED _____				
		EACH				
874.2	15	AT TRAFFIC SIGN REMOVED AND RESET _____				
		EACH				
874.4	70	AT TRAFFIC SIGN REMOVED AND STACKED _____				
		EACH				
999.	1	AT POLICE DETAIL _____	\$ 50,000	.00	\$ 50,000	.00
		FIFTY THOUSAND _____				
		ALLOWANCE				

BASE BID TOTAL

BASIS OF AWARD

DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT

In accordance with the Specifications, and under the terms and conditions mentioned above, I (We) hereby offer to furnish and deliver to departments described above the following services which shall in all respects meet the attached specifications, as required during the terms mentioned above for the following prices:

TOTAL COST (except police services): _____

IN WORDS: _____

POLICE SERVICES ALLOWANCE: \$50,000

IN WORDS: Fifty Thousand Dollars

TOTAL COST (Add Total Cost and Police Services) _____

IN WORDS: _____

The BASIS OF AWARD is the lowest responsive and responsible bidder offering the lowest TOTAL COST.

Note 1: The contract unit bid prices shall include all Labor, Materials, Equipment and Incidental costs required to complete this work, except for Police Services, which will be paid for on a reimbursable basis.

Note 2: Bidders are to include a Fifty Thousand Dollar (\$50,000) allowance for the furnishing of police services in their bid (include in the Total Cost section).

Signature of Bidder: _____

Print Name and Title: _____

Company Name and Address:

Telephone Number: _____

CERTIFICATION OF COMPLIANCE
G.L.c.30, §39S
PUBLIC CONSTRUCTION MORE THAN \$10,000.00

I certify under the pains and penalties of perjury that:

1. the 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 ("OSHA") that is at least 10 hours in duration and the time the employee begins works 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 OSHA that is at least 10 hours in duration.

Signature of Individual or Corporate
Name (Mandatory)

By: Corporate Officer
(Mandatory, if applicable)

Approval of a contact or other agreement will not be granted unless this certification clause is signed by the applicant.

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

1. Have been in business under present business name of _____

for _____ years.

2. Ever failed to complete any work? _____

3. List one or more recent projects with names of Community and Engineer on which you served as general contractor similar to work required for this project.

- a) _____
- b) _____
- c) _____

4. Bank Reference _____

The undersigned agrees that, if he is selected as general contractor, he will within ten (10) days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of the general bid and furnish a performance bond and also a labor and materials or payment bond, each of a Surety company qualified to do business under the laws of the Commonwealth and satisfactory to the awarding authority and each in the sum of one hundred percent (100%) of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price.

The undersigned hereby certifies that he is able to furnish labor and can work in harmony with all other elements of labor employed or to be employed on the work.

Date: _____

(Name of General Bidder)

BY

(Signature)

(Title of Signer)

(Business Address)

(City and State)

(Phone Number)

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of _____)

ss

County of _____)

_____ being duly sworn,
deposes and says that:

(1) He is (owner, partner, office representative or agent) of _____

_____ the Bidder that has submitted the
attached bid;

(2) He is fully informed respecting the preparation and contents of the attached bid and of all pertinent circumstances respecting such bid;

(3) Such bid is genuine and is not a collusive or sham bid;

(4) Neither the said bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham bid in connection with the Contract for which the attached bid has been submitted, or to refrain from bidding in connection with such contract, or has in any manner directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached bid, or of any other Bidder; or to fix any overhead, profit or cost element of the bid price, or the bid price of any other Bidder; or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the **CITY OF LOWELL** or any person interested in the proposed Contract;

DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT PROJECT

(5) The price or prices quoted in the attached bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents representatives, owners, employees, or parties in interest, including this affiant.

(Signed)

(Title)

Subscribed and sworn to before me on
this _____ day of _____, 20____

Title

My commission expires _____

A. Contractors' Certification

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

CONTRACTOR'S CERTIFICATION

_____ certifies that:
Contractor

1. It intends to use the following listed construction trades in the work under the contract

_____;

2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and

3. Will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these bid conditions.

(Signature of authorized representative of contractor)

B. Subcontractors' Certification

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

SUBCONTRACTORS' CERTIFICATION

_____ certifies that:
Subcontractor

1. It tends to use the following listed construction trades in the work under the subcontract

_____;

2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and

3. Will obtain from each of the subcontractors prior to the award of any subcontract under this subcontract the subcontractor certification required by these bid conditions.

(Signature of authorized representative of subcontractor)

In order to ensure that the said subcontractors' certification becomes a part of all subcontractors under the prime contract, no subcontract shall be executed until an authorized representative of the state agency (or agencies) administering this project has determined, in writing, that the said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

**MINIMUM MINORITY PERCENTAGES TO BE APPLIED TO
STATE AND STATE ASSISTED CONTRACTS
WITHIN THE COMMONWEALTH OF MASSACHUSETTS**

The Construction Reform Law, Chapter 193 of the Acts of 2004, and the revisions it made to M.G.L. c. 23A, §44 and M.G.L. c. 7, §40N, include a new municipal affirmative marketing program. Municipalities (hereinafter Awarding Authorities) must now incorporate Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) goals into both their design and construction procurement for municipal contracts for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public work by any city or town that includes funding provided by the Commonwealth, in whole or in part (such as funding under the School Building Assistance Program, funding in any legislative appropriation, grant awards, reimbursements, municipal commitments to use state funds and the like). To count towards participation the business must be a State Office of Minority and Women Business Assistance (SOMWBA) certified WBE or MBE. Certification as a disadvantaged business enterprise (DBE), certification as an MBE/WBE by any agency other than SOMWBA, or submission of an application to SOMWBA for certification as an MBE/WBE shall not confer MBE or WBE status on a firm for purposes of participation credit. You can access the new law on The General Court of Massachusetts website:

<http://www.mass.gov/legis/laws/mgl/7-40n.htm> and

<http://www.mass.gov/legis/laws/mgl/23a-44.htm>

Affirmative Marketing Participation Goals Each Municipality must enforce the Affirmative Marketing Goals developed by the Division of Capital Asset Management (DCAM) in consultation with SOMWBA as follows:

Design Participation: MBEs (8%) and WBEs (4%)

Construction Participation: MBEs (7.4%) and WBEs (4%)

A list of currently certified MBEs and WBEs in the design and construction fields is available on SOMWBA's website at:

<http://www.somwba.state.ma.us>.

Construction Participation for this Project : MBEs (7.4%) and WBEs (6.9%)

EXHIBIT A

**SCHEDULE FOR PARTICIPATION
BY MINORITY/WOMEN BUSINESS ENTERPRISES**

Project Number _____
Project Location _____
Project Name _____

- A. Filed Sub-bidders utilizing MBE/WBE firms, and MBE/WBE Sub-bidders - attach to Filed Sub-bid.
- B. General Contractor must submit to the Awarding Authority within five (5) working days of the opening of General Bids.

BIDDER CERTIFICATION:

The Bidder agrees that if awarded the contract it will expend at least the amount of the contract set forth below for MBE/WBE participation. For purposes of this commitment, the MBE and WBE designation means that a business has been certified by SOMWBA as a MBE, WBE or MBE/WBE. The Bidder must indicate the MBE/WBE firms it intends to utilize on the project as follows (attach additional sheets if necessary):

Company Name & Address	MBE or WBE	Describe MBE/WBE Scopes of Work (clarify "Labor Only", "Material Only" or "Labor and Material")	If Supplier, Indicate Total Value of Supplies*	Total Dollar Value of Participation
1.				
2.				
3.				
4.				
5.				

*60% of Total Counts toward Participation

MBE Goal: \$ _____ Total Dollar Value of MBE Commitment: \$ _____

WBE Goal: \$ _____ Total Dollar Value of WBE Commitment: \$ _____

The undersigned hereby certifies that he/she has read the terms and conditions of the contract with regard to MBE/WBE participation and is authorized to bind the Bidder to the commitment set forth above.

Name of Firm _____

Business Address _____

Print Name _____ Authorized Signature _____

Title _____

Telephone No. _____ Fax No. _____

Date _____

EXHIBIT B

**LETTER OF INTENT
MINORITY/WOMEN BUSINESS ENTERPRISES PARTICIPATION**

(To be completed by MBE/WBE, and submitted by the General Bidder to the Municipal Affirmative Marketing Construction Officer (AMCO) within five (5) working days of the opening of General Bids or by Filed Sub-bidder with its bid.)

Project Number _____

Project Name _____

Project Location _____

To _____

Name of General Bidder/Sub-bidder _____

Indicate SOMWBA Certification: _____ MBE _____ WBE _____ M/WBE

This firm intends to perform work in connection with the above project.

This firm is currently certified by SOMWBA to perform the work identified below, and has not changed its minority/women ownership, control, or management without notifying SOMWBA within thirty (30) days of such a change.

This firm understands that if the General Bidder/Sub-bidder referenced above is awarded the contract, the Bidder intends to enter into an agreement with this firm to perform the activity described below for the prices indicated.

This firm also understands that the above-referenced firm, as General Bidder/Sub-Bidder, will make substitutions only as allowed by the terms of the Contract.

This firm understands that under the terms of the contract, only work actually performed by an MBE/WBE will be credited toward MBE/WBE participation goals, and this firm cannot assign or subcontract out any of its work without prior written approval of the Awarding Authority, and that any such assignment or subcontracting will not be credited toward MBE/WBE participation goals.

MBE/WBE PARTICIPATION

Section/Item Number (if Applicable)	Describe MBE/WBE Scopes of Work (clarify "Labor Only", "Material Only" or "Labor and Material")	If Supplier, Indicate Total Value of Supplies*	Total Dollar Value of Participation
1.			

*60% of Total Counts toward Participation

Total Dollar Value: \$ _____

Name of MBE/WBE Firm _____

Business Address _____

Print Name _____ Authorized Signature _____

Title _____

Telephone No. _____ Fax No. _____

Date _____

EXHIBIT C

**CONTRACTOR PROGRESS PAYMENT REPORT
MINORITY/WOMEN BUSINESS ENTERPRISES PARTICIPATION**

Project Number: _____

Project Name: _____

Project Location: _____

Date: _____

Periodical Payment No.: _____

General Contractor: _____

MBE and/or WBE: _____

One copy of this report is to be submitted for each Minority Business Enterprise (MBE) and/or Women Business Enterprise (WBE) at the time of submitting a request for payment. Copies of the report must be sent to the Minority Business Enterprise (MBE) and/or Women Business Enterprise (WBE) named above and to the municipalities Affirmative Marketing Construction Officer (AMCO). The AMCO will forward a copy of each Contractor Progress Payment Report to SOMWBA on a quarterly basis.

1. The total price to be paid to the above-named Minority Business Enterprise _____ and/or Women Business Enterprise _____: \$_____
2. The amount remitted to the Minority Business Enterprise and/or Women Business Enterprise as of the above date for work performed under this project: \$_____
3. Balance due the Minority Business Enterprise and/or Women Business Enterprise as of the above date for work performed under the above-named project: \$_____
4. Comments or explanation of amounts indicated under items 1 and 2 above:

5. We hereby certify that the information supplied herein (including pages attached) is correct and complete.

General Contractor:

Minority and/or Women Business Enterprise

(Signed)

(Signed)

(Title)

(Title)

(Date)

(Date)

CITY OF LOWELL
AFFIRMATIVE ACTION CONTRACT REQUIREMENTS
CONTRACTORS' CERTIFICATION

**NAME OF PROJECT: DOWNTOWN TWO-WAY CONVERSION
 TRANSPORTATION IMPROVEMENT PROJECT**

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

CONTRACTOR'S CERTIFICATION

_____ certifies that

1. It intends to use the following listed construction trades in the work under the contract _____

_____ ; and,
2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. Will obtain from each of its subcontractors and submit the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these bid conditions.

(Signature of Authorized Representative of Contractor)

CITY OF LOWELL
AFFIRMATIVE ACTION CONTRACT REQUIREMENTS
SUBCONTRACTORS' CERTIFICATION

**NAME OF PROJECT: DOWNTOWN TWO-WAY CONVERSION
TRANSPORTATION IMPROVEMENT PROJECT**

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

SUBCONTRACTOR'S CERTIFICATION

_____ certifies that

1. It intends to use the following listed construction trades in the work under the subcontract _____

_____ ; and,
2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. Will obtain from each of its subcontractors prior to the award subcontract under this subcontract, the subcontractor certification required by these bid conditions.

(Signature of Authorized Representative of Contractor)

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

CITY OF LOWELL
AFFIRMATIVE ACTION CONTRACT REQUIREMENTS
BIDDERS' CERTIFICATION

The bidder hereby certifies he shall comply with the minority manpower ratio and specific action steps contained in the Appendix EEO attached hereto, including compliance with the minority contractor compliance specified in Section V of said Appendix. The contractor receiving the award of the contract shall be required to obtain from each of its subcontractors and submit to the contracting or administering agency prior to the performance of any work under said contract a certification by said subcontractor, regardless of tier, that it will comply with the minority manpower ratio and specific affirmative action steps contained in the Appendix EEO.

Signature of Bidder

Name of Firm

Title

Date

CONTRACT

THIS AGREEMENT, made this the _____ day of _____, 20____,
by and between the City of Lowell, Massachusetts acting herein through its Commissioner of
the Public Works Department, hereinafter called "OWNER" and

*(1)_____

an individual doing business as, a partnership, a corporation of the _____

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 construction of Contract described as
follows: **DOWNTOWN TWO-WAY CONVERSION TRANSPORTATION IMPROVEMENT
PROJECT** hereinafter called the Project for the sum of:

_____ Dollars (\$)_____

and all extra work in connection therewith, under the terms as stated in the General and Special
Conditions of the Contract; and at his/her (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 the Proposal, the General and Special Conditions of the Contract,
the Plans, which include all maps, plates, blue prints, and other drawings and printed or written
explanatory matter thereof, the Specifications and contract documents therefore as prepared by
TEC, Inc. on behalf of the City of Lowell, City Engineer herein entitled "Engineer", and as herein
enumerated all of which are made a part hereof and collectively evidence and constitute the
contract.

The Contractor hereby agrees to commence work under this Contract on or before a date to be
specified in a written "Notice to Proceed" of the OWNER, to meet interim specified milestones
and to fully complete the project 1 calendar year thereafter. The OWNER agrees to pay the
CONTRACTOR in current funds for the performance of the Contract, subject to additions and
deductions, as provided in the General Conditions of the Contract, and to make payments on
account thereof as provided in Paragraph 25, "Progress Payments", of the General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in five (5) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

ATTEST:

Secretary

CITY OF LOWELL, MASSACHUSETTS

Witness

BY _____
City Manager, Bernard F. Lynch

Secretary

BY _____
Contractor

Witness

Address

APPROVED AS TO FORM

City Solicitor, Christine P. O'Connor

BY _____
Chief Procurement Officer, P.M. Vaughn

APPROVED AS TO AVAILABILITY OF FUNDS

City Auditor, Sheryl Wright

*(1) Strike out inapplicable terms. Secretary of the OWNER should attest. If Contractor is corporation, Secretary should attest. Give proper title of each person executing Contract.

DUAL OBLIGEE RIDER

TO BE ATTACHED TO AND MADE A PART OF PERFORMANCE AND PAYMENT BONDS
NO. _____

ISSUED BY _____ (SURETY) ON BEHALF

OF _____ (PRINCIPAL) IN

THE AMOUNT OF _____

_____ (\$ _____) AND DATED _____

IN FAVOR OF _____ (OBLIGEE).

In consideration of \$1.00 and other valuable consideration the receipt whereof is acknowledged, the name (s) of _____ shall be added to said Bonds as a named Dual Obligee.

The Dual Obligee shall have the same rights and be subject to the same conditions and obligations as the original Obligee under the Bonds. Nothing in this Dual Obligee Rider shall be interpreted to extend or increase the liability of the Surety beyond that provided by the Bonds. At Surety's election, any payment due either Obligee may be made by its check issued jointly to both.

(Principal)

(Obligee)

By: _____

By: _____

(Surety)

(Dual Obligee)

By: _____

By: _____

PERFORMANCE BOND

Bond Number: _____

Contract Number: _____

CONTRACTOR PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, That We,
_____ ("Principal"), and

_____, a _____ corporation, as Surety ("Surety"), are held firmly bound unto _____ ("Owner") and such other obligees as listed in the attached Obligee Rider (Owner and such other obligees are together referred to as the "Obligees"), in the sum of _____ Dollars (\$_____) for payment of which well and truly to be made we bind ourselves, our heirs, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a contract with Owner dated _____ ("Contract"), requiring Principal to furnish, install and perform the work on the _____ ("Project"), all as more fully described And detailed in the Contract; the provisions, terms and conditions of the Contract, being fully incorporated herein and made part of this Bond with the same force and effect as if fully set forth herein;

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall faithfully perform and fulfill the Contract in the manner and at the times required by the Contract, and shall fully indemnify and save the Obligees harmless from all liability, cost, damage, expense, delay and/or schedule related damages, liquidated damages, and attorneys' fees and expenses related to the Principal's default (such attorneys' fees and expenses include, without limitation, the costs and fees associated with any mediation, arbitration, and litigation proceeding, and any effort to realize or execute on any award), which the Obligees may suffer by reason of Principal's default under the Contract, and if the Principal shall fully reimburse and repay the Obligees for making good any such default, including but not limited to guaranty and warranty obligations and claims, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety, for value received, agrees that no change, extension of time, alteration, addition, omission and/or any other modification to the Contract, to the Plans or Specifications referenced therein, or to any of the work to be performed thereunder, nor any forbearance on the part of either the Principal or the Obligees shall in any way impair or affect its obligations under this Bond and hereby waives notice of any and all such changes, extensions of time, alterations, additions, omissions and/or any other modifications or any forbearance on the part of either the Principal or Obligees.

In addition, the Surety, for value received, agrees that in the event that the Principal is declared by Owner to be in default of the Contract, the Surety shall, within twenty calendar days of written notice of Owner's election:

commence and then continue to promptly complete the Contract in accordance with its terms and conditions; or

obtain a bid or bids for submission to Owner for completion of the Contract in accordance with its terms and conditions, and upon determination by Owner of the lowest responsible and acceptable bidder for such work, arrange for a contract between such bidder and Owner in a form and under terms and conditions which are acceptable to Owner, and make available as the work progresses (even should there be a default or a succession of defaults under the contract or contracts of completion arranged under this subparagraph) sufficient funds to pay for the costs of completion of the Contract work and the other costs and damages for which the Surety may be liable hereunder, less the Balance of the Contract Price. As used in this Subparagraph "Balance of the Contract Price" shall mean the total amount payable by Owner to the Principal under the Contract and any amendments thereto as shown on the most recent application for payment or requisition submitted by Principal and approved by Owner in the immediate month preceding the default declared by Owner, less the amount previously paid by Owner and less other offsets or credits due Owner from the Principal under the Contract or otherwise.

Should the Surety fail to so promptly perform Owner's election, Owner shall have the right, in its sole discretion and without further notice to the Surety, to arrange for full completion of the Contract Work and the Surety shall, in addition to its other obligations and liabilities, be liable for all costs and expenses related to such completion of the Contract Work.

The Surety's obligations under this Bond shall not be satisfied by, and the amount of this Bond shall not be reduced or limited by, any payments made by Surety to or on behalf of subcontractors, suppliers, claimants or other creditors of Principal or to any claimant under any payment or lien bond issued for or on behalf of Principal related to the Project.

No right of action shall accrue under this Bond to or for the use of any person or corporation other than the Obligees or their successors or assigns. Surety shall be liable to the Obligees for all liabilities, costs, damages, expenses, delay and/or schedule related damages, liquidated damages, and attorneys' fees and expenses related to the Principal's default. Such attorneys' fees and expenses include, without limitation, the costs and fees associated with any mediation, arbitration, and litigation proceeding (and any effort to realize or execute on any award), which the Obligees may suffer by reason of Principal's default under the Subcontract and/or in the Obligee's enforcement of their rights under this Performance Bond.

Judgment and/or arbitration award in favor of any Obligee against the Principal shall be fully binding on the Surety, including, without limitation, an assessment of punitive or statutory damages of any kind arising from the actions of the Principal.

IN WITNESS WHEREOF, the Principal and Surety have hereunto executed this Bond as an instrument under Seal executed by a duly authorized representative below as of the _____ day of _____, 20____.

PRINCIPAL

SURETY

By: _____

By: _____

Printed Name:

Printed Name:

Its Duly Authorized:

Its Duly Authorized Attorney In Fact

ATTEST: _____

ATTEST: _____

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

PAYMENT BOND

Bond Number: _____

Contract Number: _____

CONTRACTOR PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, That We,
_____ ("Principal"), and

_____, a corporation, as Surety
("Surety"), are held firmly bound unto _____
("Owner") and such other Obligees as listed in the attached Dual Obligee Rider
(Owner and such Obligees are together referred to as the "Obligees), in the sum of
_____ Dollars (\$_____))
for payment of which well and truly to be made we bind ourselves, our heirs,
executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Owner and Principal have entered into a Contract dated _____,
20____, requiring Principal to furnish, install and perform the work on the Project
("Contract"), all as more fully described and detailed in the Contract; the provisions,
terms and conditions of the Contract being fully incorporated herein and made part
of this Bond with the same force and effect as if fully set forth herein;

NOW, THEREFORE, the condition of this obligation is such that if the Principal
shall promptly pay persons having just claims for (a) labor, materials, services,
insurance, supplies, machinery, equipment, rentals, fuel, oils, implements, tools,
and/or appliances and any other items of whatever nature, furnished for, used or
consumed in prosecution of the Subcontract work and all any all modifications
thereto, whether lienable, non-lienable and whether or not permanently incorporated
in said work; (b) pensions, welfare, vacation and/or any supplemental employee
benefit contributions payable under collective bargaining agreements with respect to
persons employed upon said work; (c) federal, state, and local taxes and
contributions required by law to be withheld and or paid with respect to the
employment of persons upon said work; and (d) otherwise fully indemnify and save
the Obligees harmless from and against any claims or liens asserted by any party as a
result of payment claimed due or concerning the Contract, including attorneys' fees
and expenses; then this obligation shall be null and void; otherwise it shall remain in
full force and effect.

The Surety, for value received, agrees that no change, extension of time, alteration, addition, omission and/or any other modification to the Contract or to any of the work to be performed thereunder or any forbearance on the part of either the Principal or the Obligees shall in any way impair or affect its obligations under this Bond and hereby waives notice of any and all such changes, extensions of time, alternations, additions, omissions and/or any other modifications or any forbearance on the part of either the Principal or the Obligees.

The Principal and the Surety, for value received, agree that this Bond shall inure to the benefit of all persons with just claims as aforesaid whether or not they have any direct contractual relationship with the Principal, as well as to the benefit of the Obligees, and that such persons may maintain independent actions based upon this Bond in their names.

IN WITNESS WHEREOF, the Principal and Surety have hereunto executed this Bond as an instrument under Seal executed by a duly authorized representative below as of the _____ day of _____, 20__.

PRINCIPAL

SURETY

By: _____

By: _____

Printed Name:

Printed Name:

Its Duly Authorized:

Its Duly Authorized Attorney In Fact

ATTEST: _____

ATTEST: _____

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

CONTRACT

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned
the duly authorized and acting legal representative, of the City of Lowell, Massachusetts,
do hereby certify as follows:

I have examined the foregoing Contract and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations and provisions thereof.

Date: _____

GENERAL CONDITIONS

SUBSECTION

1. Definitions
2. Notice
3. Intent
4. Codes, Regulations and Issue Date of Standard Specifications
5. Drawings and Specifications
6. Conflicting Conditions
7. Samples
8. Quality of Equipment and Materials
9. Shop Drawings
10. Equipment and Material Approval
11. Rejected Work and Materials
12. Separate Contracts
13. Rights of Various Interests
14. Notice to Proceed
15. Time for Completion and Liquidated Damages and Incentives
16. The Contractor's Duties and Rights
17. The Engineer's Authority
18. The Owner's Duties and Rights
19. Assignment
20. Oral Agreements
21. Insurance
22. Contract Security
23. Extra Work
24. Extension of Contract Time
25. Progress Payments
26. Acceptance and Final Payment
27. Correction of Faulty Work after Final Payment
28. Substitutions and Deletions
29. Provisions Required by Law Deemed Inserted
30. Protection of Lives and Health
31. Obstructions Encountered
32. Standard Specifications

GENERAL CONDITIONS

1. DEFINITIONS

1. CONTRACT AND CONTRACT DOCUMENTS.

The Contract comprises the following documents, including all additions, deletions and modifications incorporated therein before the execution of the Contract:

- a. Legal and Procedural Documents
 1. Invitation to Bid
 2. Information for Bidders
 3. Bid Proposal
 4. Certifications of Bidders
 5. Contract Agreement
 6. Performance Bond
 7. Payment Bond
 8. Certificate of OWNER'S Attorney
 9. Form for Sub-bid (when required)
 - b. General Conditions
 - c. Special Conditions
 - d. Technical Specifications, Drawings, and Addenda as enumerated in the Special Conditions.
2. ENGINEER: City of Lowell, City Engineer or TEC, Inc.
 3. STATE: The Commonwealth of Massachusetts
 4. OWNER, AWARDDING AUTHORITY OR MUNICIPALITY: The party of the first part designated in the Contract or any board, officer or agent duly authorized to act for the said party of the first part in the matter covered by the Contract. The OWNER is the City of Lowell, acting through its Commissioner of the Department of Public Works.
 5. CONTRACTOR: The General Contractor, and is the CONTRACTOR, and is the CONTRACTOR named in the Contract Documents.
 6. SUBCONTRACTOR: Any person, firm or corporation with a direct contract with the CONTRACTOR who acts for or in behalf of the CONTRACTOR in executing any part of the Contract, but does not include one who merely furnishes material.
 7. WORK ON (AT) THE PROJECT: Work to be performed at the location of the project, including the transportation of materials and supplies to or from the location of the project by employees of the CONTRACTOR and any Subcontractor.

8. DIRECTED, REQUIRED APPROVED, ACCEPTABLE: Whenever they refer to the work or its performance, "Directed", "Required", "Permitted", "Ordered", "Designated", "Prescribed" and words of like import shall imply the direction, requirement, permission, order, designation or prescription of the ENGINEER, and "Approved", "Acceptable", "Satisfactory", "In the Judgement of" and words of like import shall mean approval by, or acceptable to, or satisfactory to or in the judgement of the ENGINEER.
9. PROPOSAL: The offer of a bidder to perform the work described by the Contract Documents when made out and submitted on the prescribed form properly signed and guaranteed.
10. PROPOSAL GUARANTEE: The bid deposit accompanying the proposal submitted by the bidder, as a guaranty that the bidder will enter into a Contract with the OWNER for the construction of the work if the Contract is awarded to him.
11. CONTRACT: The agreement covering the performance of the work described in the Contract Documents and Plans including all supplemental agreements thereto and all general and special provisions pertaining to the work or materials therefor.
12. PERFORMANCE AND PAYMENT BONDS: the approved forms of security furnished by the CONTRACTOR and his Surety as a guaranty of good faith on the part of the CONTRACTOR to execute the work in accordance with the terms of the Contract.
13. SURETY: The person, firm or corporation who executes the CONTRACTOR'S Performance and Payment Bonds.
14. SPECIFICATIONS: The Legal and Procedural Documents, General Conditions, Special Conditions and Technical Specifications with all addenda thereto.
15. DRAWINGS: Those listed herein in the Special Conditions.
16. PROVIDE: Furnish and install.
17. SHOP DRAWINGS: Fabrication and erection drawings and instructions.
18. ACT OF GOD: An earthquake, flood, cyclone, or other cataclysmic phenomenon of nature. Rain, wind, flood, or other natural phenomenon of normal intensity for the locality shall not be construed as an Act of God and no reparation shall be made to the CONTRACTOR for damages to the work resulting therefrom.
19. EXTRA WORK: Work other than that required either expressed or implied by the Contract in its present form.

20. SITE: The area upon or in which the CONTRACTOR'S operations are carried on and such other areas adjacent thereto as may be designated as such by the ENGINEER.
21. CHANGE ORDER: A written order issued by the ENGINEER to the CONTRACTOR directing certain changes, additions, or reductions in the work or in the materials or methods to be used.

2. NOTICE

Written notice shall be considered as served when delivered in person or sent by certified mail to the individual, firm or corporation or to the last business address known to him who serves the Notice. It shall be the duty of each party to advise the other parties to the Contract as to any change in his business address until completion of the Contract.

3. INTENT

1. The intent of the Contract Documents is that the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.
2. Any work performed after regular working hours, on Sundays or Legal Holidays, shall be performed without additional expense to the OWNER.

4. CODES, REGULATIONS, AND ISSUE DATE OF STANDARD SPECIFICATIONS.

1. Where standard specifications, codes, regulations and similar publications of governmental agencies, technical societies, manufacturer's associations and regulatory groups or bureaus are referred to in these specifications, the applicable portion thereof shall be of the same effect as if fully printed herein, and the work done in full accordance therewith. The edition current as of the date of issue of this specification shall be used except where publication date is specifically stated.

5. DRAWINGS AND SPECIFICATIONS

1. Except as provided for otherwise, all required copies of Drawings and Specifications necessary for the execution of the work shall be furnished to the CONTRACTOR without charge. One complete set of all Drawings and Specifications shall be maintained at the job site and shall be available to the ENGINEER at all times.
2. All Drawings and Specifications and other data prepared by the ENGINEER shall remain the property of the ENGINEER, and they shall not be reused on other work.

3. Figured dimensions on the Plans will be used in preference to scaling the Drawings. Where the work of the CONTRACTOR is affected by finish dimensions, these shall be determined by the CONTRACTOR at the site, and he shall assume the responsibility therefore.
4. Any discrepancies found between the Drawings and Specifications and site conditions of any errors or omissions in the Drawings and Specifications shall be immediately reported to the ENGINEER, who shall promptly correct such error or omission in writing. Any work done by the CONTRACTOR after his discovery of such discrepancies, errors or omissions without notifying the ENGINEER shall be done at the CONTRACTOR'S risk.

6. CONFLICTING CONDITIONS

1. In the event of a discrepancy between the contract, the specifications and/or the drawings, the contract shall take precedence over the specifications and the specifications shall take precedence over the drawings where the discrepancy is not an omission.
2. On the Plans, the dimensions shown shall govern in case of any discrepancy between a scaled distance and the figures shown. Neither party shall take advantage of any obvious error or omission in the contract documents. Any apparent discrepancies shall be submitted to the ENGINEER for determination. The decision of the ENGINEER thereupon shall be conclusive.
3. The fact that specific mention of a fixture, or any part of the work is omitted in the Specifications, whether intentionally or otherwise, when the same is clearly shown or indicated on the Plans, or is usually and customarily required to complete fully such work as is specified herein, will not entitle the CONTRACTOR to consider action in the manner of any claim for extra compensation, but the same fixtures or work, or both, must be installed or done the same as if called for by both the Plans and Specifications.

7. SAMPLES

All samples called for in the Specifications or required by the ENGINEER shall be furnished by the CONTRACTOR at his expense and shall be submitted to the ENGINEER for his approval. Samples shall be furnished so as not to delay fabrication, allowing the ENGINEER reasonable time for the consideration of the samples submitted. CONTRACTOR shall furnish such samples of materials, and workmanship shall be in accordance with approved samples.

8. QUALITY OF EQUIPMENT AND MATERIALS

1. Everything furnished and provided shall be new and all materials and equipment shall be of the quality specified. All unspecified materials and equipment shall be equal in grade and quality to specified materials.

2. In order to establish standards of quality, ENGINEER has, in the detailed Specifications, referred to certain products by name and catalog number. This procedure is not to be construed as eliminating from competition other products of equal or better quality by other manufacturers where fully suitable in design.
3. The CONTRACTOR shall furnish one complete list of proposed desired substitutions prior to signing of the Contract, together with such engineering catalog data and sketches the ENGINEER may require.
4. The CONTRACTOR shall abide by the ENGINEER'S judgment when proposed substitute materials or items or equipment are judged to be unacceptable and shall furnish the specified materials or item of equipment in such cases. All proposals for substitutions shall be submitted in writing by the General CONTRACTOR and not by individual trades or material suppliers. The ENGINEER will approve or disapprove proposed substitutions in writing within a reasonable time. No substitute materials shall be used unless approved in writing.

9. SHOP DRAWINGS

1. The Contractor shall submit shop drawings and working drawings for all items fabricated or manufactured to be incorporated into the work, including but not limited to concrete reinforcement, structural details, piping layouts (including hangers and supports), manholes and appurtenances, wiring, materials fabricated especially for the Contract, all mechanical equipment without exception, and materials and equipment for which such drawings are specifically requested. All submittal of shop drawings will consist of six (6) BLACK LINE prints and one transparent ozalid.
2. Such Drawings shall show the principal dimensions, weight structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the Drawings. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the Drawings shall be certified by the manufacturer or fabricator as correct for the Contract.
3. When so specified or if considered by the ENGINEER to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted for approval in place of shop and working drawings. In such case the requirements shall be as specified for shop and working drawings, insofar as applicable.
4. The CONTRACTOR shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.

5. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and approved as conforming to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the work shall then be as shown on and represented by said drawings.
6. Until the necessary approval has been given, the CONTRACTOR shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which approval is required.
7. All shop and working drawings shall be submitted to the ENGINEER by and /or through the CONTRACTOR, who shall be responsible for obtaining shop and working drawings from drawings from his subcontractors and returning approved drawings to them. All drawings shall be clearly marked with the names of the OWNER, CONTRACTOR, and building, equipment, or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by a letter of transmittal giving a list of the drawing numbers and the names mentioned above.
8. Only drawings which have been checked and corrected by the fabricator should be submitted to the CONTRACTOR by his subcontractors and vendors. Prior to submitting drawings to the ENGINEER, the CONTRACTOR shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. ALL DRAWINGS WHICH ARE CORRECT SHALL BE MARKED WITH THE DATE, CHECKER'S NAME AND SUBMITTED TO THE ENGINEER: OTHER DRAWINGS SHALL BE RETURNED FOR CORRECTION.
9. The approval of shop and working drawings, etc., will be general only and shall not relieve or in any respect diminish the responsibility of the CONTRACTOR for details of design, dimensions etc., necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.
10. Should the CONTRACTOR submit for approval equipment that requires modifications to the structures, piping, layout, etc., detailed on the Drawings, he shall also submit for approval details of the proposed modifications. Any modifications to structures or substitute designs submitted for approval must carry the stamp of a Registered Professional ENGINEER with the State. If such equipment and modifications are approved, the CONTRACTOR, at no additional cost to the OWNER, shall do all work necessary to make such modifications.
11. One marked-up transparent ozalid copy of the shop and working drawings or two marked-up copies of catalog cuts will be returned to the CONTRACTOR. The CONTRACTOR shall furnish additional copies of such drawings or catalog cuts when so requested.

10. EQUIPMENT AND MATERIAL APPROVAL

1. As soon as practical and within fifteen (15) days after date of award of Contract and before any materials, fixtures or equipment are purchased, the CONTRACTOR shall furnish three copies of complete catalog data for every manufactured item of equipment and all components to be used in the work, including specific performance data, material description, rating, capacity, working pressure and general type. This submittal shall be compiled by the CONTRACTOR and approved by the ENGINEER before any of the equipment is ordered. Each data sheet or catalog in the submittal shall be indexed according to specifications section and paragraph for easy reference.
2. If prior to the expiration of the above specified period or of any authorized extension thereof, the CONTRACTOR fails to submit a list of materials, fixtures and equipment as specified above, the selection made by the ENGINEER shall be final and binding and all items shall be furnished and installed by the CONTRACTOR without change in contract price or time of completion.
3. Where conformance to any standard is specified, the catalog data for that item shall state that the item conforms to that standard; or after the ENGINEER'S approval of the item subject to conformance to the standard, the CONTRACTOR shall furnish a notarized affidavit on the manufacturer's letterhead signed by an officer certifying compliance to the standard. The CONTRACTOR shall stamp all such affidavits by which it is understood that the item certified is the item provided.
4. The name and address of and organization authorized by the manufacturer to service each item of equipment shall be included with the submittal. Proof of authorization shall be furnished on request. If the ENGINEER decides that the service organization is too far distant for practical servicing, such equipment shall be rejected.
5. After written approval, this submission shall become a part of the Contract, and may not be deviated from except upon written approval of the ENGINEER.
6. Catalog data for equipment approved by the ENGINEER does not in any case supersede the ENGINEER'S Contract Documents. The approval of the ENGINEER shall not relieve the CONTRACTOR from responsibility for deviations from Drawings or Specifications unless he has in writing called to the ENGINEER'S attention such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any in the items submitted. The CONTRACTOR shall check the work described by the catalog data with the ENGINEER'S Contract Documents for deviations and errors.
7. It shall be the responsibility of the Contractor to ensure that items to be furnished fit the space available. He shall make necessary field measurements to ascertain space requirements, including those for connections, and shall order

such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the Drawings and Specifications.

8. Where equipment requiring different arrangement of connections from those shown is approved, it shall be the responsibility of the CONTRACTOR to install the equipment to operate properly and in harmony with the intent of the Drawings and Specifications, and to make all changes in the work required by the different arrangement of connections.
9. Manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer unless herein specified to the contrary.
10. After the execution of the Contract, substitution of equipment of makes other than those named in the Contract will be considered only if the equipment proposed for substitution is equal in construction and/or efficiency to that named in the Contract. It will be assumed that the cost to the CONTRACTOR of the equipment proposed to be substituted is less than the equipment named in the Contract and if the substitution is approved, the Contract Price shall be reduced a corresponding amount.

To receive consideration, requests for substitution must be accompanied by documentary proof of the actual difference in cost to the CONTRACTOR in the form of certified copies of Equipment Company's quotation to the CONTRACTOR covering the original equipment and also equipment proposed for substitution or other proof satisfactory to the OWNER. It is the intention that the OWNER shall receive the full benefit of the savings in cost involved in any substitution. In all cases the burden of proof that the equipment offered for substitution is equal or superior in construction and/or efficiency to that named in the Contract shall rest on the CONTRACTOR, and unless the proof is satisfactory to the OWNER, the substitution will not be approved. Requests for substitution on the grounds that better delivery can be obtained on the equipment proposed for substitution will not be approved for it will be assured that the CONTRACTOR in his proposal has named equipment on which he has received proposals from equipment manufacturers giving a delivery time which will permit completion of the project within the contract time. Requests for substitution of equipment which the CONTRACTOR cannot prove to the satisfaction of the OWNER to be equal or superior in construction and/or efficiency to that so named in the Contract will not be approved.

In the event that the CONTRACTOR obtains the ENGINEER'S approval on equipment other than that which is shown on the Plans and specified herein, the CONTRACTOR shall, at his own expense, make any changes in the structures, buildings or piping necessary to accommodate the equipment.

11. REJECTED WORK AND MATERIALS

1. All materials which do not conform to the requirements of the Contract Documents, are not equal to samples approved by the ENGINEER, or are in any way unsatisfactory or unsuitable for the purpose for which they are intended,

shall be rejected. Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, shall be removed within ten (10) days after written notice is given by the ENGINEER, and the work shall be re-executed by the CONTRACTOR. The fact that such defective work may not have been reported on previous inspections shall not constitute an acceptance of any part of it.

2. Should the CONTRACTOR fail to remove rejected work or materials within ten (10) days after written notice to do so, the OWNER may remove the rejected work and then may store the materials.
3. The removal of rejected work or materials and storage of materials by the OWNER shall be paid for by the CONTRACTOR within thirty (30) days after the written notice to pay is given by the OWNER. If the CONTRACTOR does not pay the expense of such removal and after ten (10) days written notice being given by the OWNER of his intent to sell the materials, the OWNER may sell the materials at auction or at a private sale and shall pay to the CONTRACTOR the net proceeds therefrom after deducting all the costs and expenses that should have been borne by the CONTRACTOR.

12. SEPARATE CONTRACTS

The OWNER may let other contracts in connection with the work of the CONTRACTOR. The Contractor shall cooperate with other CONTRACTORS with regard to storage of materials and execution of their work. It shall be the CONTRACTOR'S responsibility to inspect all work by other CONTRACTORS affecting his work and to report to the ENGINEER any irregularities which will not permit him to complete his work in a satisfactory manner. His failure to notify the ENGINEER of such irregularities shall indicate the work of other CONTRACTORS has been satisfactorily completed to receive his work. The CONTRACTOR shall not be responsible for defects of which he could not have known which develop in the work of others after the work is completed. It shall be the responsibility of the CONTRACTOR to measure the completed work in place and report to the ENGINEER immediately any difference between completed work by others and the Drawings.

13. RIGHTS OF VARIOUS INTERESTS

Whenever work being done by the OWNER'S forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the ENGINEER, to secure the completion of the various portions of the work in general harmony.

14. NOTICE TO PROCEED

Following the execution of the Contract by the OWNER, Written Notice to Proceed with the work shall be given to the CONTRACTOR. Computation of

Contract Time shall commence on a date to be specified in the Notice to Proceed and every calendar day following, except as herein provided, shall be counted in the time for completion.

15. TIME FOR COMPLETION, LIQUIDATED DAMAGES AND INCENTIVES

1. It is hereby understood and mutually agreed by and between the CONTRACTOR and the OWNER, that the date of beginning and the time for completion as specified in the Information to Bidders of the Work to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall commence on a date to be specified in the "NOTICE TO PROCEED".
2. The CONTRACTOR agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.
3. If the said CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extensions thereof granted by the OWNER, then the CONTRACTOR does hereby agree, as a part consideration for the awarding of this Contract, to pay to the OWNER the \$1,000 per day, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the CONTRACTOR shall be in default after the time stipulated in the Contract for completing the work.
4. The said amount (\$1,000 per day) is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would in such event sustain, and said amount is agreed to be the amount of damages which the OWNER would sustain and said amount shall be retained from time to time by the OWNER from current periodic estimates.
5. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract and additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided, that the CONTRACTOR shall not be charged with liquidated damages or any excess cost when the OWNER determines that the CONTRACTOR is without fault and the CONTRACTOR'S reasons for the time extension are acceptable to the OWNER: provided, further, that the CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due;

- a. To any preference, priority or allocation order duly issued by the Government;
 - b. To unforeseeable cause beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to Acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and severe weather.
6. The CONTRACTOR shall begin within ten (10) days from the beginning of any such delay, unless the OWNER shall grant a further period of time prior to the date of final settlement of the Contract, notify the OWNER, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the CONTRACTOR within a reasonable time of its decision in the matter.

16. THE CONTRACTOR'S DUTIES AND RIGHTS

1. The CONTRACTOR shall begin and shall prosecute the work regularly and uninterruptedly after Notice to Proceed has been given (unless otherwise directed in writing by the OWNER) with such force as to secure the completion of the work, in and acceptable manner, within the time stated in the Proposal.
2. The CONTRACTOR shall submit at such times as may reasonably be requested by the ENGINEER, schedules which shall show the order in which the CONTRACTOR proposes to carry on the work, with dates at which the CONTRACTOR will start the several parts of the work, and estimated dates of completion of the several parts.
3. For Lump Sum items the CONTRACTOR shall within ten (10) days of receipt of Notice to Proceed, submit a complete breakdown of the Contract Amount showing the value assigned to each part of the work, including an allowance for profit and overhead. Upon approval of the breakdown of the Contract Amount by the Engineer, it shall be used as the basis for all Requests for Payments.
4. The CONTRACTOR shall utilize the services of specialty subcontractors on those parts of the work which under normal contracting practices are performed by specialty subcontractors; provided that if the ENGINEER shall determine that the specialty work in question has been customarily performed by the CONTRACTOR'S own organization and that such organization is presently competent to perform such work, the CONTRACTOR shall be permitted to do so; provided further that, if the ENGINEER shall determine that the performance of any specialty work by specialty subcontractors will result in materially increased costs or inordinate delays, the requirements of this paragraph shall not apply. At the time specified by the Contract Documents or when requested by the ENGINEER, the CONTRACTOR shall submit in writing to the OWNER for the ENGINEER, the names of the subcontractors proposed for the work. Subcontractors may not be changed except at the request of the CONTRACTOR

with the approval of the ENGINEER. The CONTRACTOR is responsible to the OWNER for the acts and omissions of his subcontractors, and of their direct and indirect employees to the same extent as he is responsible for the acts and omissions of his employees. The Contract Documents shall not be construed as creating any contractual relation between any subcontractor and the OWNER. The CONTRACTOR shall bind every subcontractor by the terms of the Contract Documents. For convenience of reference the Specifications are separated into titled sections. Such separations shall not, however, operate to make the ENGINEER an arbiter to establish limits to the contracts between CONTRACTOR and Subcontractors.

The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the CONTRACTOR by the terms of the Contract Documents insofar as applicable to the work of subcontractors and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the Contract Documents.

5. The CONTRACTOR shall develop and make all detail surveys necessary for construction, including setting the construction baselines, slope stakes, batter boards, stakes for pile locations and other working points, lines and elevations. The ENGINEER will provide base lines ties and bench marks for the use of the CONTRACTOR in laying out the work. The CONTRACTOR shall be responsible for the accuracy of all lines and levels and of the work as built in accordance therewith. The CONTRACTOR shall have the responsibility to carefully preserve bench marks, reference points and stakes established by the ENGINEER and in the case of destruction thereof by the CONTRACTOR or resulting from his negligence, resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.
6. The CONTRACTOR, if required, shall employ at his own expense a competent surveyor or engineer registered in the STATE as a Professional Engineer or Land Surveyor, and necessary assistants who shall stake out all structures and other parts of the work, using as reference the base lines and bench marks established by the ENGINEER. The CONTRACTOR shall be responsible for the accuracy of all levels of the work as built in accordance therewith.
7. The CONTRACTOR shall secure and pay for all permits and licenses necessary for the prosecution of the work.
8. The CONTRACTOR shall give all notices and comply with all Federal, State and Local laws, or ordinances and regulations in any manner affecting the conduct of the work, and all such orders and decrees as exist, or may be enacted by bodies or tribunals having any jurisdiction or authority over the work, and shall indemnify and save harmless the OWNER against any claim or liability arising from or based on, the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employee.

9. The CONTRACTOR shall pay all royalties and license fees for any design, device, material or process covered by letters, patent or copyright by legal agreement with the owner of the patent or a duly authorized licensee of such owner, and shall save harmless the OWNER from any and all loss or expense on account thereof, including its use by the OWNER.
10. The CONTRACTOR shall confine his apparatus and storage of materials and operation of his workmen to those areas described in the Drawings and Specifications and such additional areas which he may provide as approved by the ENGINEER.
11. The CONTRACTOR shall not enter upon private property for any purpose without obtaining permission, and he shall be responsible for the preservation of all public property, trees, monuments, etc., along and adjacent to the street and/or right -of-way, and shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precautions to prevent damage to pipes, conduits, and other underground structures, and shall protect carefully from disturbance or damage all monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.
12. The CONTRACTOR shall provide adequate signs, barricades, red lights and watchman and take all necessary precautions for the protection of the work and the safety of the public. All barricades and obstructions shall be protected at night by red signal lights which shall be of substantial construction and shall be painted white or whitewashed to increase their visibility at night. Suitable warning signs shall be so placed and illuminated at night as to show in advance where construction, barricades, or detours exist.
13. The CONTRACTOR shall conduct his work at all times to ensure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the work, and to ensure the protection of persons and property in a manner satisfactory to the ENGINEER. No road or street shall be closed to the public except with the permission of the ENGINEER and proper governmental authority. Fire hydrants on or adjacent to the work shall be kept accessible to fire fighting equipment at all times. Temporary provisions shall be made by the CONTRACTOR to ensure the use of sidewalks and the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the ENGINEER.
14. The CONTRACTOR shall secure written permission from the proper authority before executing new construction when such new construction crosses highways, railroad, streets or utilities under jurisdiction of State, County, or other public agency, public utility or private entity. A copy of this written permission must be filed with the ENGINEER or OWNER before any work is done.

The CONTRACTOR will be required to furnish a release from the proper authority before final acceptance of the work.

15. The CONTRACTOR shall provide and maintain such sanitary accommodations for the use of his employees and those of his subcontractors as may be necessary to comply with the requirements and regulations of the Local and State Departments of Health and as directed by the ENGINEER.
16. The CONTRACTOR shall maintain on the work a qualified superintendent who is acceptable to the ENGINEER, and who shall give efficient supervision to the work until its completion. The Superintendent shall have full authority to act in behalf of the CONTRACTOR, and all directions given to the Superintendent shall be considered given to the CONTRACTOR. In general, the ENGINEER'S instructions shall be confirmed in writing and always upon written request from the CONTRACTOR.
17. The CONTRACTOR shall be responsible for the conduct and discipline of his employees and/or any subcontractor or persons employed by subcontractors. All workmen must have sufficient knowledge, skill, and experience to perform properly the work assigned to them. Any foreman or workman employed by the CONTRACTOR or subcontractor who, in the opinion of the ENGINEER, does not perform his work, in a skillful manner or appears to be incompetent or to act in a disorderly or intemperate manner shall, at the written request of the ENGINEER, be discharged immediately and shall not be employed again in any portion of the work without approval of the ENGINEER.
18. The CONTRACTOR shall provide suitable on-site storage for all equipment and materials necessary for use in construction of the project. All materials improperly stored shall be subject to rejection by the ENGINEER. Private property shall not be used for storage purposes without the written permission of the owner or lessee.
19. The CONTRACTOR shall perform any work and shall furnish and install any materials and equipment necessary during an emergency endangering life or property. In all cases he shall notify the ENGINEER of the emergency as soon as practical but he shall not wait for instructions before proceeding to properly protect both life and property.
20. The CONTRACTOR shall do all necessary cutting and patching of the work that may be required to properly receive the work of the various trades or as required by the Drawings and Specifications to complete the structure. He shall restore all such cuts or patch work as directed by the ENGINEER. Cutting of existing structures that shall endanger the work, adjacent property, workmen or the public shall not be done unless approved by the ENGINEER and under his direction.
21. The CONTRACTOR shall keep the OWNER'S property free at all times from accumulations of waste materials or rubbish and shall remove from the OWNER'S

- property, and from all public and private property, all temporary structures, rubbish, and waste materials resulting from his operation or caused by his employees, and remove all surplus materials resulting from his operation or caused by his employees, leaving the site smooth, clean and true to line and grade.
22. The CONTRACTOR shall pay for all transportation and utility services not later than the twentieth day of the calendar month following that in which such services are rendered; pay for all materials, tools and other expendable equipment to the extent of 90 percent of the cost thereof, not later than the twentieth day of the calendar month following that in which such materials, tools and equipment are delivered at the site of the project, and the balance of the cost thereof not later than the thirtieth day following the completion of that part of the work in or on which such materials, tools and equipment are incorporated or used; and pay to each of his subcontractors not later than the fifth day following each payment to the CONTRACTOR, the respective amounts allowed to CONTRACTOR on account of the work performed by his subcontractors, to the extent of each subcontractor's interest therein.
23. The CONTRACTOR shall at the termination of this Contract before acceptance of the work by the ENGINEER, remove all his equipment, tools and supplies from the property of the OWNER. Should the CONTRACTOR fail to remove such equipment, tools and supplies, the OWNER shall have the right to remove them, and the CONTRACTOR shall pay all costs incurred by the OWNER in removing them.
24. The CONTRACTOR shall deliver to the OWNER a complete release of all liens arising out of this Contract before the retained percentage or before the final Request for Payment is paid. If any lien remains unsatisfied after all payments are made, the CONTRACTOR shall refund to the OWNER such amounts as the OWNER may have been compelled to pay in discharging such liens including all costs and a reasonable attorney's fee.
25. The CONTRACTOR shall warrant all material and equipment furnished and work performed by him for a period of one year from the date of written acceptance of the work, and furnish all guarantees applicable to definite parts of the work as stipulated in the sections of the Technical Provisions.
26. The CONTRACTOR shall have the right to suspend work or terminate the Contract upon ten (10) days written notice to the OWNER and the ENGINEER, for any of the following reasons:
- a. If an order of any court, or other public authority caused the work to be stopped or suspended for a period of ninety (90) days through no act of the CONTRACTOR or his employees.
 - b. If the ENGINEER should fail to act upon any Request for Payment within fifteen (15) days after it is presented in accordance with the General Conditions of the Contract.

- c. If the OWNER should fail to act upon any Request for Payment within thirty (30) days after its approval by the ENGINEER.
27. Blank
28. When a set of drawings has been produced for a job the CONTRACTOR shall maintain at the site a set of the drawings. On this set shall be accurately shown the actual installation of all work under each section, indicating thereon any variations from the Contract Drawings, including changes in sites, locations and dimensions. For this purpose the ENGINEER will furnish two sets of black or blue line on white drawings. At the conclusion of the work, both sets of prints showing the entire work as actually installed shall be delivered to the ENGINEER for approval and shall become property of the OWNER.

17. THE ENGINEER'S AUTHORITY

1. The ENGINEER shall have general supervision and direction of the work. The ENGINEER shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, rate of progress of work, interpretation of Drawings and Specifications and all questions as to the acceptable fulfillment of the Contract on the part of CONTRACTOR. All claims of the OWNER or the CONTRACTOR shall be presented to the ENGINEER for decision which shall be made in writing within a reasonable time. All decisions of the ENGINEER shall be final.
2. The ENGINEER shall have the authority to suspend the work, wholly or in part, for such period or periods, as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for prosecution of the work, or failure on the part of the CONTRACTOR to carry out the provisions of the Contract or to supply materials meeting the requirements of the Specifications. The CONTRACTOR shall not suspend operations due to unsuitable weather without the ENGINEER'S permission.
3. In the event of temporary suspension of work or during inclement weather or whenever the ENGINEER shall direct, the CONTRACTOR will and will cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the ENGINEER, any work or materials shall have been damaged or injured from the weather, by reason of failure on the part of the CONTRACTOR or any of his subcontractors so to protect his work, such materials shall be removed and replaced at the expense of the CONTRACTOR.
4. The ENGINEER shall have the authority at all times to inspect all materials and each part or detail of the work and the CONTRACTOR will be held strictly to the true intent of the Specifications in regard to quality of materials, workmanship and the diligent execution of the Contract. Such inspection may include mill, plant or shop inspection, and any material furnished under these Specifications is subject to such inspections. The ENGINEER shall be allowed access to all parts of

the work and shall be furnished with such information and assistance by the CONTRACTOR as is required to make a complete detailed inspection.

5. The ENGINEER shall have the authority at any time before acceptance of the work to direct the CONTRACTOR to remove or uncover any portions of the finished work. After examination, the CONTRACTOR shall restore said portions of the work to the standard required by the Specifications. Should the work thus exposed or examined prove acceptable, the uncovering or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work, but should the work so exposed or examined prove unacceptable, the uncovering, removing and replacing shall be at the CONTRACTOR'S expense.
6. The ENGINEER shall have the authority to direct the CONTRACTOR to correct work that has been damaged or that was not performed in accordance with the Contract Documents. An equitable deduction from the Contract Amount shall be made to compensate the OWNER from the uncorrected work.

18. THE OWNER'S DUTIES AND RIGHTS

1. The OWNER will provide the land shown on the Drawings upon which the work under the Contract is to be performed and to be used for rights-of-way for access. Any delay in furnishing these lands by the OWNER shall be deemed proper cause for adjustment in the Contract Amount and in time of completion.
2. The OWNER shall have the right to suspend the work or any portion thereof at any time provided that he gives the CONTRACTOR five (5) days written notice of suspension which shall set forth the date on which work is to be resumed. The CONTRACTOR shall resume the work upon written notice from the OWNER and within ten (10) days after the date set forth in the notice of suspension, the CONTRACTOR may abandon that portion of the work so suspended and shall be entitled to payment for all work done on the portions so abandoned, plus 15 percent of the value of the abandoned work to compensate for overhead, plant expense, and anticipated profit.
3. The OWNER, acting upon the recommendation of its ENGINEER, shall have the authority to suspend the work wholly or in part, for such period or periods, as may be deemed necessary, due to unsuitable weather, or such other conditions as are considered unfavorably for prosecution of the work, or failure on the part of the CONTRACTOR to carry out the provisions of the Contract or to supply materials meeting the requirements of the Specifications. The CONTRACTOR shall not suspend operations due to unsuitable weather without the OWNER'S permission.
4. In the event of temporary suspension of work or during inclement weather or whenever the OWNER, acting upon the recommendation of the ENGINEER, shall direct, the CONTRACTOR and his subcontractors will protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the OWNER, acting upon the recommendation of the ENGINEER, any

work or materials shall have been damaged or injured from the weather, by reason of failure on the part of the CONTRACTOR or any of his subcontractors to protect his work, such materials shall be removed and replaced at the expense of the CONTRACTOR.

5. The OWNER shall have the right to correct any deficiencies, without prejudice to any other remedy he may have, upon failure of the CONTRACTOR to perform the work in accordance with the CONTRACT documents, including any requirements with respect to the Schedule of Completion, after five (5) days written notice to the CONTRACTOR and receipt of written approval from the ENGINEER. The cost of the work so performed by the owner shall be paid for by the CONTRACTOR.
6. The OWNER, acting upon the recommendation of the ENGINEER, shall have the authority to direct the CONTRACTOR not to correct work that has been damaged, or that was not performed in accordance with the Contract Documents. An equitable deduction from the Contract Amount shall be made to compensate the OWNER for the uncorrected work.
7. The OWNER shall have the right to terminate the employment of the CONTRACTOR giving ten (10) days written notice of termination to the CONTRACTOR in the event of any default by the CONTRACTOR and upon receiving written notice from the ENGINEER certifying cause for such action in the event of such termination, the OWNER may take possession of the work and of all materials, tools and equipment thereon and may finish the work by whatever method and means he may select. It shall be considered a default by the CONTRACTOR whenever he shall:
 - a. Declare bankruptcy, become insolvent, or assign his assets for the benefit of his creditors.
 - b. Disregard or violate important provisions of the Contract Documents of the ENGINEER'S instructions, or fail to prosecute the work according to the agreed Schedule of Completion including extensions thereof.
 - c. Fail to provide a qualified superintendent, competent workmen or subcontractors, or proper materials, or fail to make prompt payment therefore.

If the right of the CONTRACTOR to proceed is so terminated, the OWNER may take possession of and utilize in completing the work such materials, appliances, supplies, plant and equipment as may be on the site of the work, and necessary therefor. Upon termination of the Contract by the OWNER, no further payments shall be due the CONTRACTOR until the work is completed. If the unpaid balance of the Contract Amount shall exceed the cost of completing the work including all overhead costs, the excess shall be paid to the CONTRACTOR.

If the cost of completing the work shall exceed the unpaid balance, the Contractor and his sureties shall pay the difference to the OWNER. The cost incurred by the OWNER, as herein provided, and the damage incurred through

the CONTRACTOR'S default, shall be certified by the OWNER, and approved by the ENGINEER.

8. The OWNER shall have the right to order changes in the work through additions, deletions or modifications without invalidating the Contract. Compensation and time completion affected by the change shall be adjusted at the time of ordering such change.
9. The OWNER shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding that the time for completing the entire work or such portions may not have expired; but such taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the completion of uncompleted work or causes refinishing of completed work, the CONTRACTOR shall be to such extra compensation, or extension of time or both, as the ENGINEER may determine.

19. ASSIGNMENT

Neither the CONTRACTOR nor the OWNER shall sublet, sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

20. ORAL AGREEMENTS

No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceeding of any other waiver or modification.

21. INSURANCE

The CONTRACTOR shall not commence work under this Contract until he has obtained all the insurance required hereunder and such insurance has been approved by the OWNER, nor shall the CONTRACTOR allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been so obtained and approved. Approval of the insurance by the OWNER shall not relieve or decrease the liability of the CONTRACTOR hereunder. The amounts of such Insurance shall not be less than those enumerated hereinafter. The Contractors attention is also directed to the additional insurance requirements for working in or near canals owned by Boott Hydro Company located in the appendix of this contract. Certificates from the CONTRACTOR'S insurance, carriers stating the coverage provided, the limits of liability, and expiration dates shall be filed in triplicate with the ENGINEER before operations are begun.

- 21.1** The CONTRACTOR shall carry public liability insurance with an insurance company satisfactory to the City so as to save the City harmless from any and all

claims for damages arising out of bodily injury to, or death of, any person or persons and for all claims for damages arising out of injury to, or destruction of, property caused by accidents resulting from the use of implements, equipment or labor used in the performance of the Contract or from any neglect, default omission or want of proper care or misconduct on the part of the CONTRACTOR or of any one in his employ during the execution of the work. Such insurance shall include coverage for blasting and explosion, if explosives are to be used.

21.2 The CONTRACTOR shall carry any other types of insurance as may be required elsewhere in the Contract Documents. Including but not limited to the requirements specified by BOOTT HYDO Company (see Appendix).

21.3 General Requirements

21.3.1 All insurance policies required in the Contract Documents shall be provided by companies satisfactory to the City. Any insurance carrier utilized to fulfill the insurance requirements of this Contract shall be licensed by the Massachusetts Division of Insurance to do business in the Commonwealth of Massachusetts shall have a minimum A.M. rating. The CONTRACTOR must provide the required insurance at its own expense.

21.3.2 CONTRACTOR shall either (1) require each subcontractor to procure and to maintain during the life of its subcontract, Subcontractor's General Liability and Property Damage Insurance of the same type and in the same manner as specified herein, or (2) insure activities of his subcontractors in his own policy.

21.3.3 Each policy must list the City as an additional insured and shall be primary to and non-contributory to any coverage maintained by the City.

21.3.4 All insurance shall be written on an occurrence basis, unless the City approves in writing coverage on a claims-made basis. Insurance coverage whether written on an occurrence or a claims-made basis shall be maintained without interruption from the date of commencement of the work until the date of final payment and termination of any coverage required to be maintained after final payment.

21.3.5 Certificates of Insurance acceptable to the City and confirming the insurance coverage required herein are attached to the Contract. Certificates of Insurance evidencing (1) either the claims-made or occurrence form coverage, (2) work description/location, (3) CONTRACTOR's corporate name, and (4) naming the City as an additional insured must be furnished to the City within five (5) business days after presentation of the Contract to the CONTRACTOR for execution. The City shall have no obligation to execute the Contract and may award the Contract to the next lowest responsible and responsive bidder, if such insurance certificates have not been provided to the City. The Certificate must provide that the insured will give Notice of Accident and Notice of Claim to the insurance company as soon as practicable after receiving such notice. The CONTRACTOR shall promptly provide the City with Certificates of Insurance evidencing policies' annual renewal.

21.3.6 In the event of paid claims, the CONTRACTOR shall bear costs of any amount deductible.

21.3.7 All insurance policies must contain a minimum thirty (30) day written notice of cancellation clause, and provide that the insurance company will notify the City via registered mail, of any cancellation, change or expiration of the policy. The CONTRACTOR shall furnish to the City copies of any said cancellation, change or expiration. Prior to the effective date of any such cancellation the CONTRACTOR shall take out new insurance to cover the policies so cancelled. The Insurance Companies shall remain liable, however, until new and satisfactory insurance policies have been delivered to, and accepted by, the City.

21.3.8 In the event of the cancellation of any policy during the term of this Contract, or the failure to keep in effect the insurance required by this section, the City may, on twenty-four (24) hours' notice and at its option, procure or renew such insurance on the account of the CONTRACTOR. The CONTRACTOR agrees to repay the City's expense with interest thereon at the rate of eighteen percent (18%) annually from the date of the expenditure by the City.

21.3.9 The insurance required under 21.4 through shall include all major divisions of coverage and shall be on a comprehensive general basis including Premise and Operations (including X-C-U), Owner's Protective (as a separate policy), Products and Completed Operations, and Owned, Non-owned, Leased, and Hired Vehicles. Such insurance shall be written for not less than any limits of liability required by law or the limits set forth in said insurance amounts under 21.4 through , whichever are greater.

21.3.10 The City reserves the right, at its sole discretion, to amend the insurance requirements contained herein.

21.3.11 The CONTRACTOR and all Subcontractors waive subrogation rights against the City for all losses.

21.3.12 Unless greater amounts of insurance coverage are required elsewhere in the Contract Documents, the amounts of insurance shall not be less than the minimum amounts set forth below.

21.4 **Commercial General Liability Insurance** – for personal injury, bodily injury and property damage in an amount not less than \$1,000,000 for any one person, \$2,000,000 per occurrence and \$3,000,000 in the aggregate covering all work performed on or adjacent to City property including:
All premises and operations;
Contractual liability;
Coverage for the so-called "X, C, U" hazards, i.e, collapse of building, blasting, and damage to underground property;
Products and Completed Operations (for a period of at least two (2) years following acceptance by the City or the completed Contract);
Asbestos abatement, when applicable.

21.4.1 This policy (ies) shall include coverage relating to explosion, collapse, and underground property damage and contractual liability coverage.

21.4.2 Additionally, CONTRACTOR shall provide the following coverage against loss or damage by fire and against loss or damage covered by the special perils insurance endorsement on all Work: Special Perils 80% of Contract Price minimum. Upon completion of Work at City buildings, CONTRACTOR shall provide an installation floater, in the full amount of the Contract Price, for the requirements set forth above. The policy or policies shall specifically state that they are for the benefit and payable to the City, the CONTRACTOR, and all persons furnishing labor or labor and materials for the Work, as their interests may appear.

21.4.3 Personal & Advertising Injury, on an occurrence basis, \$1,000,000 each occurrence.

21.5 **Automobile Liability Insurance** – including the use of all vehicles owned, non-owned, leased and/or hired in an amount not less than \$2,000,000 combined single limit or Bodily Injury, each person in an amount no less than \$ 500,000 and each accident in amount no less than \$ 2,000,000 and Property Damage, each occurrence \$2,000,000.

21.6 **Workers Compensation Insurance** - CONTRACTOR shall provide during the life of this Contract Worker's Compensation Insurance in accordance with the Worker's Compensation Act of the Commonwealth of Massachusetts (G.L. c. 149 § 34A and G.L. c. 152) including Employees Liability Insurance, covering all work as follows:

21.6.1 Coverage A is statutory;

21.6.2 Coverage B in amounts no less than the following: each accident - \$500,000; Disease Policy limit - \$500,000; and Disease- each employee - \$500,000.

Further, in addition to the General Requirements, CONTRACTOR shall provide by insurance for the payment of compensation and the furnishing of other benefits under M.G.L. c. 152 to all persons to be employed under the Contract, and the CONTRACTOR shall continue such insurance in full force and effect during the term of the Contract. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the Contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the City at least fifteen (15) days prior to the intended effective date thereof, which date shall be expressed in said notice.

21.7 **Umbrella Liability Coverage** – in an amount not less than \$5,000,000 combined single limit and \$5,000,000 in the aggregate.

21.8 **Pollution Liability Insurance** - CONTRACTOR shall provide during the life of this Contract Worker's Compensation Insurance in accordance with the Worker's Compensation Act of the Commonwealth of Massachusetts (G.L. c. 149 § 34A and G.L. c. 152) including Employees Liability Insurance, covering all work as follows:

21.8.1 Pollution Liability Insurance – for sudden and/or gradual occurrences in an amount not less than \$1,000,000 per occurrence and \$5,000,000 in the aggregate arising out of the work, including but not limited to all hazardous materials identified in the contract;

21.8.2 When applicable, CONTRACTOR will designate the disposal site and furnish a Certificate of Insurance from the Disposal Facility for Environmental Impairment Liability Insurance for (a) sudden and accidental occurrences in an amount no less than \$3,000,000 per occurrence and \$6,000,000 in the aggregate and (b) non-sudden occurrences in the amount no less than \$5,000,000 per occurrence and \$10,000,000 in the aggregate.

21.8.3 Certificates of Insurance will clearly state the hazardous materials exposure work being performed.

21.8.4 Further, the CONTRACTOR shall be responsible for the confirmation, verification, remediation, and disposal of all environmental impact and hazardous materials consistent with accomplishing the work of the contract documents. The CONTRACTOR shall adhere to the Massachusetts Contingency Plan, U.S. Environmental Protection Agency, Massachusetts Department of Environmental Protection, regulatory groups and bureaus, as well as all state, federal, local, health, and environmental codes, rules, publications, ordinances, regulations, recommendations, and laws consistent with the removal and disposal of Environmental Impact and Hazardous Materials, to include, but not limited to: lead paint, asbestos, presumed asbestos, oils, refrigerants, fluids, chemical waste, general waste, tanks, polychlorinated biphenyls, Mercury, antifreeze, fluorescent light ballasts, capacitors, drums and containers, pigeon guano, dead animals, unknown or unidentified materials, contaminated soils, etc. The edition of the publication and/or governing agency current as of the date of the identification of the environmental impact and hazardous material item shall be used for accomplishing the work of the contract documents.

21.9 Builder's Risk Insurance - covering loss by fire and extended coverage in the amount of the total insurable value of all structures, materials, and equipment to be built and installed. The policy shall indicate the City, the CONTRACTOR, and all subcontractors as the named insured with loss payable to the City as Trustee. The policy shall provide for a thirty (30) day notice to the City of cancellation or restrictive amendment.

21.9.1 A copy of this insurance policy shall be furnished to the City.

21.9.2 The Builder's Risk Insurance shall be obtained before the work is started and shall be maintained until the date of completion of the work, or until the City occupies or otherwise takes possession of the project, whichever occurs first.

21.10 Owner's Protective Liability (requires a separate policy) - in an amount not less than \$2,000,000 per occurrence and \$5,000,000 in the aggregate.

21.11 Optional Insurance

21.11.1 Excess Liability Insurance - The CONTRACTOR may purchase and maintain excess liability insurance in the umbrella form in order to satisfy the limits of liability required for the insurance to be purchased and maintained in accordance with the requirements set forth above. Any such amounts must be in addition to the umbrella limits required, must list all underlying policies, and must list the City as an additional insured. Evidence of such excess liability shall be delivered to the City in the same form and manner as the required insurance policies.

21.11.2 Property Insurance - The City does not intend to purchase property Insurance covering the Project or the Work. The City shall not be required to provide such insurance, but the CONTRACTOR may, if it so desires, procure property insurance which will protect the interests of the CONTRACTOR, Subcontractor and Sub-subcontractors in the Work. The CONTRACTOR understands that such property insurance is solely the CONTRACTOR's responsibility, and the CONTRACTOR, its Subcontractors and Subsubcontractors shall have no claim against the City on account of the City's failure to provide such property insurance

21.12 Limitation Of Liability - Notwithstanding anything herein to the contrary, the Contractor's maximum aggregate liability for any loss or damages (other than death or personal injury) incurred by the City as a result of or in consequence of the acts or omissions of the Contractor, its employees, subcontractors or agents in the performance of services covered by this Agreement shall not exceed one hundred percent (100%) of the Contract value plus any adjusted value per executed change order; provided, however, that if the Contractor's applicable insurance coverage is greater than this amount, the limit of liability for the Contract shall be the total insurance coverage.

IT IS AGREED AND UNDERSTOOD THAT THE CITY SHALL BE ENTITLED TO RECOVER DIRECT DAMAGES INCLUDING "BENEFIT-OF-THE-BARGAIN" EXPECTATION DAMAGES AND DAMAGES FOR BREACH OF WARRANTY SUBJECT TO THE LIMITATION OF LIABILITY, AND THAT IN NO EVENT SHALL CONTRACTOR BE LIABLE FOR ANY LOSS OF PROFITS, LOSS OF REVENUES OR LOSS OR FAILURE TO REALIZE ANTICIPATED SAVINGS OR EFFICIENCIES ARISING IN CONNECTION WITH THIS AGREEMENT.

21.13 Indemnification of the City - The Contractor agrees to indemnify, save harmless, and defend the City and all of its officers, agents, and employees from and against any and all third party suits, claims, or proceedings ("Claims"), and any losses, damages, charges or expenses, whether direct or indirect, and liability of every name and nature related to such Claims ("Liabilities") for or due to any loss or injury to persons or damages to real or tangible property to the extent caused by the Contractor or its employees, subcontractors or agents.

22. CONTRACT SECURITY

1. The CONTRACTOR shall furnish a performance bond in an amount at least equal to one hundred percent (100%) of the Contract price as security for the faithful

performance of this Contract and also a labor and materials payment bond in an amount not less than One Hundred Percent (100%) of the Contract price as security for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract; each such bonds naming the OWNER as obliges under an oblige rider (attached in appendix)

2. The Sureties of all bonds shall be such surety company or companies as are approved by the OWNER, and are authorized to transact business in the State.
3. If at any time the OWNER, for justifiable cause, shall be or become dissatisfied with any surety or sureties then upon the Performance or Payment Bonds, the CONTRACTOR shall within five (5) days after notice from the OWNER to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such bond shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such and acceptable bond to the OWNER.

23. EXTRA WORK

Payment for extra work shall be governed by Sec. 9.03 of the "Standard Specifications for Highways and Bridges", published by the Commonwealth of Massachusetts, Massachusetts Highway Department, dated 1988 including the Supplemental Specifications dated June 15, 2012.

24. EXTENSION OF CONTRACT TIME

When extra work is ordered at any time during the progress of the work which, in the sole judgment of the ENGINEER, unavoidably increases the time for the completion of the work, an extension of time shall be granted.

A delay beyond the CONTRACTOR'S control occasioned by an Act of God, an act of omission on the part of the OWNER or by strikes, lockouts, fires, etc., may entitle the CONTRACTOR to an extension of time in which to complete the work as determined by the ENGINEER, provided however, that the CONTRACTOR shall immediately give written notice to the ENGINEER of the cause of such delay, together with a statement of the portions of work so delayed. Delays in work for which necessary material has not been received by the CONTRACTOR will not be recognized or allowed until after receipt of such necessary material.

25. PROGRESS PAYMENTS

1. The CONTRACTOR may submit once each month, a Request for Payment for work done. The CONTRACTOR shall furnish the ENGINEER all reasonable facilities required for obtaining the necessary information relative to the progress and execution of the work. Each Request for Payment shall be computed from

the work completed on all items listed in the detailed breakdown of Contract Amount, less Five percent (5%) to be retained until final completion and acceptance of the work, and less previous payments.

If the ENGINEER determines that the progress of the Work will be benefitted by the delivery to the site of certain materials and equipment, when available, in advance of actual requirement therefore and if such materials and equipment are delivered and properly stored and protected, the cost to the CONTRACTOR or subcontractor as established, by invoices or other suitable vouchers satisfactory to the ENGINEER, less the retained percentages as above provided, may be included in the progress estimates; provided always that there be duly executed and delivered by the CONTRACTOR to the ENGINEER at the same time a Bill of Sale in form satisfactory to the OWNER, transferring and assigning to the OWNER, full ownership and title to such materials or equipment.

2. Within fifteen (15) days of submission of any Request for Payment by the CONTRACTOR, the ENGINEER shall:
 - a. Approve the Request for Payment as submitted, or
 - b. Approve such other amount as he shall decide is due to the CONTRACTOR, informing the CONTRACTOR in writing of his reasons for approving the amended amount, or
 - c. Withhold the Request for Payment, informing the CONTRACTOR in writing of his reasons for withholding it.

3. Within thirty (30) days from the date of approval of a Request for Payment by the ENGINEER, the OWNER shall:
 - a. Pay the Request for Payment as approved, or
 - b. Withhold payment in whole or in part on an approved Request for Payment to the extent necessary to protect itself from loss on account of any of the following causes discovered subsequent to approval of Request for Payment by the ENGINEER provided he informs the CONTRACTOR and the ENGINEER in writing of his reasons for withholding payment in whole or in part:
 1. Defective Work
 2. Evidence indicating the probable filing of claims by other parties against the CONTRACTOR.
 3. Failure of the CONTRACTOR to make payments to Subcontractors, material suppliers or labor.
 4. Damage to another CONTRACTOR.

26. ACCEPTANCE AND FINAL PAYMENT

When the CONTRACTOR shall have completed the work in accordance with the terms of the Contract Documents, the ENGINEER shall certify his acceptance to the OWNER and his approval of the CONTRACTOR'S final Request for Payment, less any money to be retained for repairs if so specified in the Special Conditions Section of these Specifications, which shall be the Contract Amount plus all approved additions less all approved deductions and less previous payments made. The CONTRACTOR shall furnish evidence that he has fully paid all debts for labor, materials and equipment incurred in connection with the work, following which the OWNER shall accept the work and release the CONTRACTOR except as to the conditions of the Performance Bond, any legal rights of the OWNER, required guarantees, and Corrections of Faulty Work after final payment and shall pay the CONTRACTOR'S final Request for Payment. The CONTRACTOR must allow sufficient time between the time of completion of the work and approval of the final Request for Payment for the ENGINEER to assemble and check the necessary data.

27. CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT

The approval of the Final Request for Payment by the ENGINEER and the making of the final payment by the OWNER to the CONTRACTOR shall not relieve the CONTRACTOR of the responsibility for faulty materials or workmanship. The OWNER shall promptly give notice of faulty materials or workmanship and the CONTRACTOR shall promptly replace any such defects discovered within one year from the date of written acceptance of the work. The ENGINEER shall decide all questions arising under this paragraph.

28. SUBSTITUTIONS AND DELETIONS

Substitutions and deletions in the work shall be accomplished by the CONTRACTOR upon written order from the OWNER as approved by the ENGINEER or upon written order from the ENGINEER: which order shall state the reasons for original inclusion and subsequent elimination or substitution for materials, fixtures or equipment; and that the deviation does not materially injure the project as a whole, is in the best interest of the OWNER and is of the same cost and quality as originally specified or giving the amount in dollars of any equitable adjustment to which the parties have agreed.

29. PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and 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 forth will be physically amended to make such insertion or correction.

30. PROTECTION OF LIVES AND HEALTH

In order to protect the lives and health of his employees under this Contract, the CONTRACTOR and his Subcontractors shall comply with all pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in course of employment on work under the Contract. He alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation.

31. OBSTRUCTIONS ENCOUNTERED

The Drawings may show certain information which has been obtained by the OWNER regarding the existing structure and various pipe lines and other utilities which exist at the location of the project. The OWNER expressly disclaims any responsibility for the accuracy or completeness of the information given on the Drawings with regard to existing structures and utilities, and the CONTRACTOR will not be entitled to any extra compensation on account of inaccuracy or incompleteness of such information, said structures and utilities being shown only for the convenience of the CONTRACTOR, who must verify the information to his own satisfaction. The giving of this information upon the Contract Drawings will not relieve the CONTRACTOR of his obligations to support and protect all utilities and other structures which may be encountered during the construction of the work, and to make good all damages done to such utilities and structures, as provided in these specifications.

32. STANDARD SPECIFICATIONS

For the purpose of governing the work to be done under this contract, the OWNER has adopted as its Standard Specifications format the "1988 Massachusetts Highway Department Standard Specifications for Highways and Bridges; the English Supplemental Specifications, dated June 15, 2012; the Standard Special Provisions contained in this book; the 2012 Construction Standard details; the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways(MUTCD)" with revisions; the 1990 Standard Drawings for Signs and Supports; the 1968 Standard Drawings for Traffic Signals and Highway Lighting; the latest edition of American Standards for Nursery Stock, City of Lowell Standards, the Plans, and these Special Provisions.

These Standard Specifications shall apply as if reprinted herein except as modified by the General Conditions, Special Conditions and Technical Specifications.

In case of conflict between these documents, the Supplement to Standards and the Special Provisions of these Specifications shall govern.

SPECIAL CONDITIONS

SUBSECTION

1. Location and Description
2. Duration of Contract
3. Safety Signs, Barricades, etc.
4. Architectural Access Board Tolerances
5. Qualified Superintendent
6. Delivery and Storage of Materials
7. Material Slips
8. Construction Schedule
9. Work Schedule
10. Protection of utilities and properties
11. Traffic Control
12. Communication
13. Owner's Rights
14. Daily Cleanup
15. Prevailing Wage Rates
16. Record Retention
17. Qualified Electricians
18. Materials Removed and Stacked
19. Disposal of Surplus Materials
20. Drainage
21. Limits for Insurance
22. Water Supply for Construction
23. Notifications
24. Permits

SPECIAL CONDITIONS

1. LOCATION AND DESCRIPTION

The work under this Contract consists of roadway reconstruction and modification of existing traffic signal systems along portions of Merrimack & Market Streets in Downtown Lowell to accommodate bi-directional traffic flow. In addition, the work will include sidewalk construction, ADA compliant wheelchair ramps, associated warning and regulatory signs, crosswalks, roadway striping and minor drainage modifications.

The work includes pavement & cement concrete excavation, HMA full depth pavement construction, pavement milling & HMA overlay, cement concrete wheelchair ramps, granite curb, traffic signal reconstruction, pavement markings, signs, and other incidental work.

All work shall take place between the hours of 7:00 AM and 3:30 PM unless otherwise approved by the Engineer.

This work shall be bid on a unit cost basis. The Contract unit price shall include all labor, materials, equipment and incidental costs required to complete the work.

2. DURATION OF CONTRACT

The contract shall be for the period beginning on or about **April 1, 2014** or as stated in the **NOTICE TO PROCEED, WHICHEVER IS LATER** and end on or before **September 1, 2014**.

Schedule for this project requires that the work be completed no later than **August 15, 2014** regardless of the date of notice to proceed. Location of this project in relation to nearby schools requires that approximately 90% of the work be completed no later than **July 31, 2014** regardless of the date of the notice to proceed.

Failure to complete the work by the dates herein specified, or any proper extensions thereof granted by the OWNER will be subject to liquidated damages.

3. SAFETY SIGNS, BARRICADES, ETC.

The CONTRACTOR shall conduct his operations in a safe manner at all times. The public shall be protected at all times with adequate warning signs, lighted barrels or barricades, warning tapes, etc. around the work area. Safety controls for construction operations shall be done in accordance with the relevant provisions of Section 850 of the Standard Specifications, the Manual on Uniform Traffic Control Devices and the Temporary Traffic Control Plan. The cost of providing and maintaining the signs, barrels, barricades, etc. shall be included in the unit price bid for the applicable item.

The CONTRACTOR shall provide temporary safe access for pedestrian and vehicle traffic to adjacent properties at all times. The cost of temporary access shall be incidental to the CONTRACTOR'S Total price bid.

When it is determined by the Lowell Police Department that a uniformed Police Officer should be present during working hours for safety of the public in the CONTRACTOR'S area of work, a uniformed Police Officer shall be provided by the Contractor.

Protection of the CONTRACTOR'S work shall be the responsibility of the CONTRACTOR and the cost for any protection of the work shall be included in the CONTRACTOR'S total price bid.

4. ARCHITECTURAL ACCESS BOARD TOLERANCES

The Contractor is hereby notified that they are ultimately responsible for constructing all Project elements in strict compliance with the current AAB/ADA rules, regulations and standards.

All construction elements in this project associated with sidewalks, walkways, wheelchair ramps and curb cuts are controlled by 521CMR – Rules and Regulations of the Architectural Access Board.

The AAB Rules and Regulations specify maximum slopes and minimum dimensions required for construction acceptance. There is no tolerance allowed for slopes greater than the maximum slope or for dimensions less than the minimum dimensions.

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).

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.

5. QUALIFIED SUPERINTENDENT

The CONTRACTOR shall maintain at the work site a qualified superintendent who is acceptable to the ENGINEER, and who shall give efficient supervision to the work until its completion. The Superintendent shall have full authority to act in behalf of the CONTRACTOR, and all directions given to the Superintendent shall be considered given to the CONTRACTOR.

6. DELIVERY AND STORAGE OF MATERIALS

Materials and equipment shall be progressively delivered at the site so that there will be neither delay in the progress of the work nor an accumulation of materials that is not to be used within reasonable time. Approved portions of the right-of-way may temporarily be used for storage purposes but must be removed and cleaned up at the end of the working day. Any additional space required for storage must be provided by the Contractor at his expense.

7. MATERIAL SLIPS

At the conclusion of each working day, the CONTRACTOR shall deliver to the ENGINEER the material slips, in triplicate, for all materials delivered to the job site that day. The ENGINEER shall sign the material slips and retain one copy for the City.

8. CONSTRUCTION SCHEDULE

Within 10 days of Notice to Proceed the CONTRACTOR shall deliver to the OWNER/ENGINEER an estimated construction progress schedule in a format satisfactory to the OWNER/ENGINEER, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents, including clear identification of the early action items and contract milestones. The schedule shall also identify the anticipated amount of each monthly payment that will become due to the contractor in accordance with the progress schedule. The CONTRACTOR shall provide an updated three week work schedule in writing every Friday thereafter, this shall continue until the project is completed.

Before work is begun on each phase of work, the CONTRACTOR shall discuss fully with the ENGINEER the order and manner of doing the work, and the operating procedures shall comply with the requirements of the ENGINEER.

9. WORK SCHEDULE

The CONTRACTOR shall note that Lowell High School is located at the corner of Kirk Street and French Street. No work that will disrupt travel on Merrimack Street and the feeder roadways (lane closures, lane shifts, trenching, equipment placement, etc.) shall be done from 7:00AM to 9:00AM and from 2:00PM to 4:00PM during school days. The normal hours of operation shall be dictated by the City of Lowell. Extended work hours may be permitted on this project, however, all activities to be performed outside the normal hours of operation shall adhere to the City's noise ordinance which limits construction hours to 7:00AM to 6:00PM. A written request shall be issued by the Contractor for any requested deviation to the work day or times indicated in the contract.

10. PROTECTION OF UTILITIES AND PROPERTY

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

Before commencing work on service connections, the Contractor shall be responsible for contacting National Grid Electric Company 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 Poles herein included in these Special Provisions.

The Contractor, in constructing or installing facilities alongside or near sewers, drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls, vaults or other structures shall sustain them securely in place. The Contractor shall coordinate with the officers and agents of the various utility companies and municipal departments to assure that the services of these structures are maintained. The Contractor shall also be responsible for the repair or replacement, at no additional cost to the Owner (Department), of any damage to such structures caused by construction operations. The Contractor is responsible to 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. 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 therefor.

If during construction there is an existing utility and/ or structure found to be in conflict with the proposed work under this Contract, the Contractor shall protect and maintain the services to the utilities and structures. The Engineer will, as soon as possible identify the utilities to be relocated or other such activities deemed suitable for resolution.

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.

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 included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefore.

For overhead connections, National Grid Electric Company 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 National Grid Electric Company procedures, from the controller to and including the riser with enough wire coiled above the riser to permit National Grid Electric Company servicing the area to make the final connection.

For underground connections, National Grid Electric Company will perform the actual wiring of the service connections from its power source to the sweep at the local controllers, 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 National Grid Electric Company 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.

11. TRAFFIC CONTROL

The intent of this project is to maintain access to all residences and businesses at all times during construction. The CONTRACTOR must furnish all required traffic control, including detour signs and drums. The CONTRACTOR may not close traffic lanes, roadways, driveways or sidewalks without prior written approval from the OWNER. The CONTRACTOR shall submit a Traffic Control Plan for each job location indicating proposed staging of traffic to complete the required work. No work shall begin on a street until the Traffic Control Plan has been reviewed and approved by the OWNER. The Traffic Control Plan shall show proposed signage and placement of drums for roadway work and accessible pedestrian routes, detours and signage required to provide continuous access to and from all businesses and residences within the project limits. When directed by the ENGINEER, the CONTRACTOR shall call for police details which will be paid for by the CONTRACTOR.

During the progress of the work, the CONTRACTOR shall make every effort to maintain access to abutting properties. When it becomes necessary to temporarily block access to a property, the CONTRACTOR shall notify the owner of the property in writing at least 72 hours in advance of blocking access so that the property owner can move vehicles and make alternate arrangements.

The cost for preparation of the Traffic Control Plan shall be incidental to the total contract price bid.

12. COMMUNICATION

The Contractor shall furnish one (1) Apple iPhone, (model 5s) phone to communicate with the Engineer's field engineer. The Contractor's foreman/supervisor must have phone to the engineer upon Notice to Proceed. The Contractor shall pay all phone and maintenance charges within the length of the contract. The Contractor shall receive no additional compensation for communications for the duration of the contract.

13. OWNER'S RIGHTS

OWNER'S Rights to be exercised by the Department of Public Works wherever in this Contract the OWNER is to give or receive a notice or provisions are included for the exercise of rights and privileges and without limiting the generality thereof, the acts dealing with the OWNER'S prerogatives in the Contract shall be exercised by the Commissioner of Public Works or his authorized representative for and in behalf of the OWNER.

14. DAILY CLEAN UP

Before completion of each day's work, the CONTRACTOR shall be responsible for cleaning up and removing and relocating all removed material, debris, equipment and the like to ensure the continuous flow of traffic in roadways where work is progressing including access to private property during non-working hours. Sweeping and cleaning of surfaces beyond the limits of the project required 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 and there will be no additional compensation.

15. PREVAILING WAGE RATES – (SEE APPENDIX)

Attention of the Bidders is particularly called to the requirements of the conditions of employment to be observed and the prevailing wage rates to be paid on this project, as determined by the State Department of Labor Division of Occupational Safety and the U.S. Department of Labor under the Davis Bacon and related Acts. In the case of differences between the two wage requirements the greater wage shall prevail.

16. RECORD RETENTION

All records pertinent to this contract shall be kept retained for a period of three years from the date of submission of the final project closeout.

17. QUALIFIED ELECTRICIANS

Within 10 days after opening of bids, the low 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.

18. MATERIAL REMOVED AND STACKED

The Contractor shall carefully remove, transport and stack all material that, in the opinion of the Engineer, is salvageable. The material shall be stacked at a location approved by the City of Lowell. The Contractor shall coordinate with the City of Lowell to schedule drop-off time and location.

19. DISPOSAL OF SURPLUS 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 removed from the site during the construction period and legally disposed of. The removal and disposal of surplus material shall adhere to the regulations and requirements of local authorities governing the disposal of such materials, at no additional compensation.

20. DRAINAGE

All structures modified as part of this Contract shall be left in a clean and operable condition at the completion of the work. The Contractor shall maintain the drainage system in the project areas to provide continual drainage of the travel ways and construction area.

All drainage castings shall be installed at finish surface grade, and as directed by the Engineer.

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 included in the unit prices bid for the various Contract items.

21. LIMITS FOR INSURANCE

The limits for the various types of insurance required under the Insurance Subsection of the General Conditions shall be as follows:

a. For Workman's Compensation, as required by State Statute;

b. Minimum amounts of Public Liability, Bodily Injury Liability and Property Damage Liability Insurance are as follows:

Injury or death of one person:	\$500,000.00
Injury to more than one person in a single accident:	\$1,000,000.00
Property damage in one accident:	\$250,000.00
Property damage in all accidents:	\$500,000.00

c. Minimum amounts of Automobile and Truck (Vehicular) Public Liability, Bodily Injury Liability, and Property Damage Liability are as follows:

Injury or death of one person:	\$500,000.00
Injury to more than one person in a single accident:	\$500,000.00
Property damage in one accident:	\$250,000.00
Property damage in all accidents:	\$500,000.00

d. Builder's Risk Insurance shall be procured and maintained by the Contractor covering loss by fire and extended coverage in the completed value form in the amount of the total insurance value of all structures, materials, and equipment to be built and installed. The policy shall indicate the Owner, the Contractor, and all subcontractors as the named insured with loss payable to the Owner as Trustee, the policy shall provide for a thirty (30) day notice to the Owner of cancellation or restrictive amendment. A copy of the policy shall be furnished to the Owner and a Certificate of Insurance shall be furnished to the Engineer.

The Builder's Risk Insurance shall be obtained before the work is started and shall be maintained until the date of completion of the work as stated in the final estimate, or until the Owner occupies or otherwise takes possession of the project, whichever occurs first.

e. Contractual Liability Insurance covering the liability assumed by the Contractor as outlined under section (d) of the Insurance Section of the General Conditions to the amounts required under Section (b) above.

f. The CONTRACTOR shall have a \$2,000,000 insurance umbrella for this contract.

22. WATER SUPPLY FOR CONSTRUCTION

Water may be obtained from a newer hydrant in area of construction after approval from the Water Utility's General Foreman and ENGINEER in charge.

NOTE: There will be a fee for the water usage and it shall be set by the City of Lowell Water Department.

23. NOTIFICATIONS

The CONTRACTOR shall notify in writing any residence or business abutting each work area three days before work is to begin. The notices shall include the nature of the work to take place and expected time of completion. They shall be distributed to all units of all buildings as well as all vehicles parked along street.

24. PERMITS

The CONTRACTOR shall apply for street opening permits in the City Engineers Office for street being constructed.

SPECIAL PROVISIONS

Lowell

Intersection Improvements and Related Work (Including Traffic Signals) Along Sections of Merrimack Street & Market Street

SCOPE OF WORK

The work under this Contract consists of roadway reconstruction and modification of existing traffic signal systems along portions of Merrimack & Market Streets in Downtown Lowell to accommodate bi-directional traffic flow. In addition, the work will include sidewalk construction, ADA compliant wheelchair ramps, associated warning and regulatory signs, crosswalks, roadway striping and minor drainage modifications.

The work includes pavement & cement concrete excavation, HMA full depth pavement construction, pavement milling & HMA overlay, cement concrete wheelchair ramps, granite curb, traffic signal reconstruction, pavement markings, signs, and other incidental work.

All work shall take place between the hours of 7:00 AM and 3:30 PM unless otherwise approved by the Engineer.

All work under this contract shall be done in conformance with the Massachusetts Highway Department *Standard Specifications for Highways and Bridges* dated 1988, the *Supplemental Specifications* dated June 15, 2012, and the *Interim Supplemental Specifications* contained in this book; the *2012 Construction Standard Details*, the *1996 Construction and Traffic Standard Details* (as relates to traffic standard details only); the *2009 Manual on Uniform Traffic Control Devices (MUTCD)* with *Massachusetts Amendments* and the *Standard Municipal Traffic Code*; the *1968 Standard Drawings for Traffic Signals and Highway Lighting*; the latest edition of *American Standard for Nursery Stock*; the Plans and these Special Provisions.

DESIGNER / PROJECT MANAGER

DESIGNER
TEC, Inc.
Mikel C. Myers, P.E.
978-794-1792

PROJECT MANAGER
City of Lowell Dept. of Planning & Development
Eric Eby, P.E.
978-674-1417

ENGINEERING DIRECTIVES

Contractors can access MassDOT, Highway Division Engineering Directives at:
<http://www.massdot.state.ma.us/highway/publications.aspx>

SUBSECTION 4.04 CHANGED CONDITIONS.

This Subsection is revised by deleting the two sequential paragraphs near the end that begin "The Contractor shall be stopped..." and "Any unit item price determined ..." (1/6/2006).

MASSHIGHWAY TO MASSDOT NAME CHANGE

The following definitions in Section 100 of the Standard Specifications for Highways and Bridges are revised as follows:

(Amend definition of Department)

1.17 –Department.... Effective November 1, 2009, St. 2009, c. 25 abolishes the Massachusetts Department of Highways and all assets, liabilities, and obligations become those of the Massachusetts Department of Transportation (“MassDOT”). Anywhere in this contract the terms Commission, Commonwealth, Department of Public Works, Department, Massachusetts Highway Department, MassHighway, Party of the First Part, or any other term intending to mean the former Massachusetts Department of Highways is used, it shall be interpreted to mean MassDOT or applicable employee of MassDOT unless the context clearly requires otherwise. Furthermore, MassDOT by operation of law inherited all rights and obligations pursuant to any contract, and therefore parties to this contract hereby acknowledge and agree that its terms shall be liberally construed and interpreted to maintain the rights and obligations of MassDOT. Furthermore, the parties hereby acknowledge and agree that the transfer of all rights and obligations from the Massachusetts Department of Highways to MassDOT shall not have the effect of altering or eliminating any provision of this contract in a manner that inures to the detriment of MassDOT.

(Add a definition for MassDOT)

1.46 – MassDOT The Massachusetts Department of Transportation, a body politic and corporate, under St. 2009, c. 25 “An Act Modernizing the Transportation Systems of the Commonwealth”, as amended.

PROTECTION OF UNDERGROUND FACILITIES

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

The Contractor shall notify Massachusetts DIG SAFE and procure a Dig Safe Number for each location prior to disturbing existing ground in any way. The telephone number of the Dig Safe Call Center is 1-888-344-7233.

SHOP DRAWING SUBMITTALS.

(Replace Subsection 5.02, 8th paragraph)

The Contractor shall submit two sets of full-scale shop drawing prints to the Engineer for approval. If corrections are required, one set of the marked-up drawings will be returned to the Contractor for revision and subsequent re-submittal. The Engineer shall make all copies of the approved shop drawings and will distribute the drawings. No changes shall be made to the approved drawings without the written consent of the Engineer.

BIDDERS LIST

Pursuant to the provisions of 49 CFR 26.11 all official bidders will be required to report the names, addresses and telephone numbers of all firms that submitted bids or quotes in connection with this project.

SUBSECTION 4.03 EXTRA WORK

Replace this Subsection with the following:

The Contractor shall do any work not herein otherwise provided for when and as ordered in writing by the Engineer, such written order to contain particular reference to this Subsection and to designate the work to be done as Extra Work.

Unless specifically noted in the Extra Work Order, Extra Work will not extend the time of completion of the Contract as stipulated in Subsection 8.10.

The determination of the Engineer shall be final upon all questions concerning the amount and value of Extra Work (except as provided in Subsection 7.16).

Payment for Extra Work will be provided in Subsection 9.03.

TEMPORARY ACCESS TO AREA MERCHANTS AND BUSINESSES

The work is in retail and commercial business section of the City 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.

The Contractor shall minimize the duration of impacts to private property. The Contractor shall provide property owners with a minimum of two weeks' notice prior to performing work that will impact access to private property.

ITEM 100.9 **PRE-CONSTRUCTION SURVEY AND VIBRATION** **LUMP SUM**
MONITORING

GENERAL

The work under this item shall include performing a pre-construction survey of four existing building vaults located under City sidewalks and one existing building foundation adjacent to proposed traffic signal mast arm foundation construction. Also included under this item is vibration monitoring of the existing vaults and building foundation walls both prior to and during traffic signal mast arm foundation construction and performing pre-construction video inspections of the vaults and building foundations.

Work under this item is to be performed for structures at the following two locations: the four sidewalk vaults at 33-55 Merrimack Street and the building foundation at 11 Kearney Square.

CONSTRUCTION METHODS

1. Vault/Building Survey

The Contractor shall retain and pay an experienced Professional Engineer registered in the Commonwealth of Massachusetts to perform a pre-construction survey of the subject vaults and building. The Contractor shall contact the City of Lowell Engineering Department for contact information for the property owners. The purpose of the survey shall be to document the pre-construction condition of the structures. This survey, as a minimum, shall locate, measure, photograph and otherwise document any visible cracks, defects, distortion, settlement, and other signs of distress in each structure prior to construction. The product shall be separate reports, one for each vault and building structure surveyed. Each report shall be an original written report stamped and signed by the Engineer performing the survey and six copies, including photographs, DVD's, plans, sketches and attachments, which shall be submitted to the Engineer a minimum of five days prior to commencement of any mast arm foundation construction activity. Copies of the report shall be distributed to the Engineer, the Contractor, the City of Lowell Engineering Department, and building or vault owner. A cover letter shall be included with the reports, containing contact information for the Engineer.

Vault Inspection Reports prepared in 2007 for the City's Downtown Revitalization Project, Phase I are included in the bid documents the Contractor's reference. No part of the reports shall be reproduced for use in the Contractor's reports.

2. Vault/Building Vibration Monitoring

The Contractor shall install at least one seismograph in each of the structures prior to the start of construction. The seismograph shall be located on the lowest working level of the 11 Kearney Square building structure and within the vaults at the 33-55 Merrimack Street structure. The exact location of the seismograph shall be coordinated with the Owner(s). The Contractor shall submit a vibration monitoring plan listing all required equipment and showing its proposed location within the structures. The plan shall also describe the monitoring procedures to be followed. Copies of the plan shall be distributed to the Engineer and the City of Lowell Engineering Department. This plan

shall be submitted not less than fifteen days prior to the commencement of the baseline monitoring period. The seismograph shall have the following minimum features:

- Seismic range: 0.01 to 4 inches per second with an accuracy of +/- 5 percent of the measured peak particle velocity or better at frequencies between 10 Hertz and 100 Hertz, and with a resolution of 0.01 inches per second or less.
- Three channels for vibration monitoring.
- Two power sources: internal rechargeable battery and charger and 115 volts AC.
- Battery must be capable of supplying power to monitor vibrations continuously for up to 24 hours.
- Instruments must be capable of producing strip chart recordings and readings on site within one hour of obtaining readings. Provide computer software to perform analysis, produce reports of continuous monitoring.
- Continuous monitoring mode must be capable of recording single-component peak particle velocities, and frequency of peaks with an interval of one minute or less.

Certification shall be provided to indicate that the test equipment used for this purpose is calibrated and maintained in accordance with the test equipment manufacturer's calibration requirements and that, where applicable, calibrations are traceable to the National Institute of Standards and Technology.

The Contractor shall operate the seismograph for a minimum of five consecutive 24-hour periods prior to the start of mast arm foundation construction to establish baseline levels. Copies of the report summarizing the recorded baseline levels shall be distributed as outlined previously a minimum of five days prior to commencement of any construction activity.

Following the start of construction the Contractor shall monitor the vibration levels on an ongoing basis during all mast arm foundation installation activities or other activities as required by the Engineer. The Contractor shall maintain records of the vibration levels and shall submit a report of these levels as requested by the Engineer. The threshold value for peak particle velocity vibration criteria shall be 12.7 millimeters per second (1/2-inch per second). If measurements exceed the threshold value, the following actions shall be taken:

1. Verify measurement reading.
2. Double the frequency of readings.
3. Notify the Engineer. Hold a meeting with representatives of the City of Lowell Engineering Department and Engineer. Ensure work is being performed in accordance with the Contract Documents. Meeting to be held within 48 hours of exceeding the threshold value.

The limiting value for peak particle velocity vibration criteria shall be 25.4 millimeters per second (1-inch per second).

If measurements exceed the limiting value, the following actions shall be taken:

1. Stop construction operations immediately

2. Verify measurement reading
3. Notify the Engineer and City of Lowell Engineering Department. Hold a meeting with representatives of the City of Lowell Engineering Department and Engineer immediately.
4. Inspect vaults and buildings in the vicinity of where the limiting value has been measured.

Based on the level of damage identified, follow the directions outlined below:

- a. No Damage to Slight damage (as defined by Boscardin and Cording); Proceed with construction operations while monitoring the condition of the structures. Monitoring shall be continuous during the hours that construction operations are being performed. If structure damage is noted to reach the Moderate level as defined by Boscardin and Cording during the monitoring, stop construction activity. Proceed to b.
- b. Moderate to severe damage (as defined by Boscardin and Cording); Install preventative measures to prevent further damage to the structures before proceeding with construction activity. Preventative measures may include underpinning the structures, and/or structures frame supplementary support/stabilization. The Contractor, the Engineer, the City of Lowell Engineering Department, and the affected property owner must all approve the proposed additional measure before the measure is implemented. Once the measure is implemented, proceed with construction operations while monitoring of the condition of the structures. Monitoring shall be continuous during the hours that construction activity is being performed. If additional damage is noted, stop construction activity and repeat the above procedure relative to additional preventative measures.

During all monitoring of vibration-producing construction activities the Contractor shall document all events that are responsible for the measured vibration levels, and submit the documentation to the Engineer with the data.

4. Coordination

The Contractor shall coordinate with the Engineer and the property owners to schedule the facility survey and to establish the location of the seismograph(s).

The Contractor shall coordinate with the Engineer and the structure owners to schedule the facility survey and to establish the location of the seismograph.

Crack width is only one aspect of damage and should not be used on alone as a direct measure of it.

CLASSIFICATION OF VISIBLE DAMAGE

Class of Damage	Description of Damage (a)	Approximate Width of Cracks, mm
Negligible	Hairline cracks	<0.1
Very Slight	Fine cracks easily treated during normal redecoration. Perhaps isolated slight fracture in the structure. Cracks in interior finishes visible upon close inspection.	<1
Slight	Cracks easily filled. Re-decoration probably required. Several slight fractures inside vault. Exterior cracks visible, some repointing may be required for weathertightness. Doors and windows may stick slightly.	<5
Moderate	Cracks may require cutting out and patching. Recurrent cracks can be masked by suitable linings. Tuck pointing and possibly replacement of a small amount of masonry may be required. Doors and windows sticking. Utility service may be interrupted. Weathertightness often impaired.	5 to 15 or several cracks > 3
Severe	Extensive repair involving removal and replacement of sections of walls, especially over doors and windows required. Windows and door frames distorted, floor slopes noticeably. Walls lean or bulge noticeably, some loss of bearing in beams. Utility service disrupted.	15 to 25 also depends on number of cracks
Very Severe	Major repair required involving partial or complete reconstruction. Beams lose bearing, walls lean badly and require shoring. Windows broken by distortion. Danger of instability	Usually >25 Depends on number of cracks

(a) Location of damage in the structure must be considered when classifying degree of damage.

COMPENSATION

Method of Measurement

The Item 100.9 PRE-CONSTRUCTION SURVEY AND VIBRATION MONITORING consists of one report for each vault and building, monitoring of the vibration of vaults and buildings and reporting the damage as the work progresses.

Basis of Payment

Work under the item will be paid at Contract Bid Unit Price per LUMP SUM in full compensation for all labor, transportation, materials, equipment and expertise required to complete the work, to be paid with the following breakdown:

- A sub-total of fifteen percent (15%) of the Lump Sum price will be paid at a pro-rated basis as the individual reports are submitted upon verification, approval and acceptance by the Engineer.
- The remaining (85%) will be paid at a pro-rated basis on monitoring of the vibration of the vaults and building and reporting the damage as the work progresses.

All payments are subject to retainage.

REFERENCE

Boscardin, M.D. and Cording, E.G. (1989), Building Response to Excavation-Induced Settlement. Journal of Geotechnical Engineering, ASCE, 1151-21.

ITEM 127.01
ITEM 129.2

CONCRETE SIDEWALK EXCAVATION
OLD PAVEMENT EXCAVATION

SQUARE YARD
SQUARE YARD

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

The work shall include the removal and legal disposal of cement concrete sidewalks, concrete wheelchair ramps, cobblestones, and bituminous pavement as shown on the plans. Work under this item shall also include removal and disposal of existing base material to a depth of 8 inches below the bottom of concrete or bituminous pavement to be removed, regardless of the type of material encountered. Where cobblestones are encountered within the limits of excavation, they shall become the property of the contractor and shall be removed and legally disposed of.

COMPENSATION

Method of Measurement

Concrete Sidewalk Excavation and Old Pavement Excavation will be measured per square yard of concrete sidewalk, concrete wheelchair ramp, or old pavement excavated and shall include removal of base materials to a depth of 8 inches below the bottom of the concrete or bituminous pavement to be removed.

Basis of Payment

Payment will be made at the contract unit price per square yard of excavation, measured in the original position along the top surface or by such other method as the Engineer may determine. This unit price shall include all labor and material required to perform the work.

No separate payment will be made for the off-site disposal of all existing material, but all costs in connection therewith shall be included in the price bid for concrete sidewalk excavation.

ITEM 153.

CONTROLLED DENSITY FILL - EXCAVATABLE

CUBIC YARD

GENERAL

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

Controlled density fill (CDF) shall be used as directed by the Engineer to backfill all excavations and trenches that are difficult to achieve adequate compaction.

Controlled density fill shall conform to the requirements of Section M4.08.0.

Steel plates required for temporary conditions during trench excavation shall be considered incidental to this item.

COMPENSATION

Method of Measurement

Controlled Density Fill shall be measured by the cubic yard and the quantity shall be determined in accordance with dimensions shown on the plans.

Basis of Payment

Work under this item shall be paid for at the contract price per cubic yard of controlled density fill as described above.

ITEM 222.3

**FRAME AND GRATE (OR COVER)
MUNICIPAL STANDARD**

EACH

GENERAL

The work under these items shall conform to the relevant provisions of Section 200 of the Standard Specifications and the following:

All shop drawings for Frame and Grates (or Covers) shall be submitted to the City for their review and approval prior to ordering the items.

COMPENSATION

Method of Measurement

Frame and Grate (or Cover) Municipal Standard will be measured by each unit installed in place.

Basis of Payment

Frame and Grate (or cover) Municipal Standard will be paid for at the unit price per each, which prices shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 482.3

SAWING ASPHALT PAVEMENT

FOOT

GENERAL

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 sawcutting of existing asphalt and cement concrete pavements where shown on the plans, and as directed by the Engineer. Sawcut equipment shall be approved by the Engineer prior to commencing work.

CONSTRUCTION METHODS

The existing pavement shall be sawcut through its full depth, or to the elevation of the abutting proposed pavement subgrade, whichever is lesser, at all joints between existing and proposed pavements, and at all utility trenches through existing pavement to remain, to provide a uniform, vertical surface for the proposed pavement joint with the existing pavement.

Sawcut edges which become broken, ragged or undermined as a result of the Contractor's operations shall be re-sawcut prior to the placement of abutting proposed pavement at no additional cost to the Owner.

Sawcut surfaces in hot mix asphalt shall be sprayed or painted with a uniform, thin coat of bitumen for tack coat (Item 464.) immediately before placement of hot mix asphalt material against the surfaces. Sawcut surfaces abutting the proposed pavement top course shall be coated with hot poured rubberized asphalt sealer (Item 464.5).

COMPENSATION

Method of Measurement

Sawing asphalt pavement will be measured by the linear foot.

Basis of Payment

Sawing hot mix asphalt will be paid for at the unit price per linear foot, which prices shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 485.1

**GRANITE RUBBLE BLOCK PAVEMENT
REMOVED AND RESET**

SQUARE YARD

GENERAL

The work under this item shall conform to the relevant provisions of Section 485 of the Standard Specifications and the following:

The work shall include the careful removal and resetting of existing granite rubble blocks in order to facilitate installation of granite curbing and/or trenching for conduit.

COMPENSATION

Method of Measurement

Granite Rubble Block Pavement Removed and Reset will be measured by the square yard.

Basis of Payment

Work for this item shall be paid for at the contract unit price per square yard of granite rubble block pavement removed and reset and shall include all labor, equipment, and materials required to complete the work as described above.

ITEM 590.

CURB REMOVED AND STACKED

FOOT

GENERAL

Work under this item shall conform to the relevant provisions under Section 580 of the standard specifications and the following:

Work shall include the removal and stacking of existing curb as shown on the plans. The curb shall be stacked on boards at a location to be determined by the Engineer. Shall the curb not be wanted by the city, it shall become the property of the Contractor and it shall be legally disposed of off-site as directed by the Engineer.

COMPENSATION

Method of Measurement

Curb removed and stacked will be measured for payment by linear foot.

Basis of Payment

Curb Removed and Stacked will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment, transport, and incidental costs required to complete the work.

ITEM 701.2

CEMENT CONCRETE WHEELCHAIR RAMP

SQUARE YARD

GENERAL

The work under this item shall conform to the relevant provisions of Section 700 of the Standard Specifications and the following:

The work shall include acquiring and installing detectable warning panels in conformance with ADA and AAB requirements. Detectable warning panels shall be required at each wheelchair ramp location. Detectable warning panels shall be black in color to match existing detectable warning panels, and shall be cast-in-place style; surface applied panels shall not be allowed.

COMPENSATION

Method of Measurement

Cement Concrete Wheelchair Ramps will be measured by the square yard.

Basis of Payment

Work for this item shall be paid for at the contract unit price per square yard of ramp installed and shall include all labor, equipment, and materials required to complete the work as described above.

ITEM 706.1

BRICK WALK REMOVED AND RELAID

SQUARE YARD

GENERAL

The work under this item shall conform to the relevant provisions of Section 700 of the Standard Specifications and the following:

The work shall include removal of existing brick sidewalk and relaying as shown on the plans. Work under this item shall also include removal and disposal of existing base material to a depth of 9 inches below the bottom of the brick layer.

MATERIALS

Base and subbase

Brick Walk base materials shall consist of compacted gravel borrow (M1.03.0, Type b) as shown on the Drawings.

Expansion Joints

Expansion Dowel:

Expansion dowel system shall consist of a 3/8 inch by 4 1/2 inch square smooth steel plate cut from hot-rolled plate steel conforming to the requirements of ASTM A36 and compatible pocket former sleeve.

1. Dowels and sleeves shall be Diamond Dowel System as furnished by PNA Construction Technologies, Atlanta, GA. or approved equal.
2. Unless otherwise indicated on the Contract Documents, expansion joints shall be located 20 feet on-center, or closer.

Expansion Joint Filler:

1. Closed cell polymer foam meeting requirements of ASTM D 1752, Sections 3.1 to 3.4, based on compression requirement of 10 pounds per square inch minimum and 25 pounds per square inch maximum. Recovery rate following 50 percent compression shall exceed 99 percent recovery, per ASTM D 545. Foam shall be equal to Ceramar Foam Filler, manufactured by W.R. Meadows, Inc., or an approved equal.
2. Expansion joint filler shall have a removable cap cover for the joint filler with integral permanent plastic bond breaker such as Snap-Cap from Seal Tight manufactured by W.R. Meadows, Inc., or approved equal. Cover width shall be sized to match width of joint filler.

Backer Rod:

1. The backer rod shall be expanded, closed cell polyethylene foam. The backer rod shall be approximately 25 percent larger in diameter than the width of the joint or crack to be sealed. Other back-up materials (paper, rope and open cell foam) are unacceptable.

ITEM 706.1 (Continued)

The backer rod shall be compatible with the sealant, and no bond or reaction shall occur between the backer rod and sealant.

Sealant:

Joint sealant and primer shall be polyurethane-based, one component, elastomeric sealants, complying with Fed. Spec. TT-S-00230C, Class A Type 1. Color shall be as selected by the Engineer. Sealants shall be self-leveling pour grade type.

1. Vulkem 45, as manufactured by Mameko International, 4475 East 175th Street, Cleveland Ohio.
2. Urexpan NR-210, as manufactured by Pecora Corporation, 165 Wambold Road, Harleysville, PA.
3. PSI 951, as manufactured by Polymeric Systems Inc., Phoenixville, PA.

Provide only materials which are known to be fully compatible with the actual installation condition, as shown by the manufacturer's published data or certification. Use manufacturer's recommended joint primer.

Asphalt Setting Bed

Asphalt cement to be used in the asphalt setting bed shall conform to ASTM D 3381. Viscosity grade shall be A.C. 10 or A.C. 20. Fine aggregate to be used in the asphalt setting bed shall be clean, hard sand with durable particles and free from adherent coating, lumps of clay, alkali salts, and organic matter. Aggregate shall be uniformly graded from "coarse" to "fine" with 100 percent by weight passing the No. 4 sieve and shall meet the gradation requirements when tested in accordance with ASTM C 136. Fine aggregate shall be dried and shall be combined with hot asphalt cement, and the mix shall be heated to approximately 300 degrees Fahrenheit at an asphalt plant. The approximate proportion of materials shall be 7 percent cement asphalt and 93 percent fine aggregate. Each ton of material shall be apportioned by weight in the approximate ratio of 145 pounds asphalt to 1,855 pounds sand. The Contractor shall determine the exact proportions to produce the best possible mixture for construction of the asphalt setting bed to meet specified requirements.

Neoprene modified asphalt adhesive shall meet the following requirements:

Mastic (asphalt adhesive):

- a. Solids (base) content by volume = 75+ 1 percent.
- b. Weight = 8.0 to 8.5 pounds/gallon.
- c. Solvent vehicle = Varsol [over 100 degrees Fahrenheit flash].

Base (2 percent neoprene, 10 percent fibers, 88 percent asphalt):

- a. Melting point (ASTM D 36) = 200 degrees Fahrenheit minimum.
- b. Penetration at 77 degrees Fahrenheit 100 gram load 5 second = 23 to 27.

ITEM 706.1 (Continued)

- c. Ductility (ASTM D 113 at 77 degrees Fahrenheit (25 degrees Centigrade), 5 cm/minute) = 125 cm, minimum.

Asphaltic Primer

Primer for base beneath asphalt setting bed and brick pavers shall be an emulsified asphalt rapid setting type conforming to AASHTO M 140, Grade RS-1, or AASHTO M 208.

Sand for Joint Filler

Joint filler between paver joints shall be filled with sand meeting ASTM C 33 with cement meeting the requirements of ASTM C150. Sand and cement shall be mixed in a 4:1 proportion. Sand/cement mixture shall contain coloring additive to match joint filler mixture with color of concrete pavers, as applicable by pavement area. Sand shall be clean, washed sand, free from silt and clay.

- a. Color of joint filler shall match the dark color range of the concrete pavers and shall be approved by the Engineer.
- b. Sand shall be from a single source. Source of supply shall not be changed during course of job without written permission of the Engineer.

Filter Fabric

Non-woven needle-punched geotextile with a minimum weight of 8 ounces per square yard, manufactured of polypropylene, in minimum width of 6 feet. (1.8 m).

Filter fabric shall be a polypropylene geotextile which is chemically and biologically inert and equal to one of the following: "Mirafi 140N" manufactured by Celanese Fibers Marketing Co., New York, NY; "Poly Filter-X", manufactured by Carthage Mills, Cincinnati, OH; or "Supac-5P", manufactured by Phillips Fibers Corporation, Greenville, SC, or equal.

CONSTRUCTION METHODS

Base and subbase shall be furnished and installed per the requirements of the Standard Specifications.

Expansion Joints

Expansion joints shall be 3/8 inches wide and shall be as located on the Contract Documents. Expansion joint shall be formed in the concrete to required width with preformed joint filler in place. Joint filler shall extend the full depth of the slab. Joint filler shall extend the full length of the expansion joint.

For concrete pavements and pads, depth of joint filler shall be as required to form a 3/4-inch deep sealant recess below finished concrete surface.

ITEM 706.1 (Continued)

Place expansion joints spaced on 20-foot centers. When provided, clarification documents that show specific locations of expansion joints shall direct the Contractor where to place expansion joints. Such clarification documents may place joints closer than 20-foot centers. In the absence of clarification documents the language of this Section shall govern.

1. Expansion joints shall be placed where pavement meets flush foundations and footings, concrete or bituminous concrete curbing or other vertical structures, including light bases, hydrants, walls, piers and walls, and at other conditions as shown on the Contract Documents.
2. Contractor shall request the presence of the Engineer to review the layout of expansion joints prior to pouring the concrete.
3. Follow the manufacturer's application recommendations for joint filler and sealer.
4. Joint alignment shall be straight and true.

Where the expansion dowel system is used in the expansion joints, steel plates and pocket former sleeves shall be set parallel with the top and bottom surfaces of the concrete slab and installed according to the manufacturer's installation instructions.

Asphalt Prime Coat

The surface of the base shall receive an asphalt prime coat before laying asphalt setting bed. Prime coat shall be applied at rate that will leave asphalt residue of 5 to 7 gallons per 100 square yards after evaporation of vehicle. Base surface shall be dry and clean when prime coat is applied. Asphalt setting bed shall not be placed until vehicle has completely evaporated from prime coat.

Asphalt Setting Bed for Brick Walk

Asphalt setting bed shall be installed over the fully dry asphalt prime coat. Control bars 3/4 inch deep shall be placed directly over the base. If grades must be adjusted, wood chocks under depth control bars shall be set to proper grade. Set two bars parallel to each other to serve as guides for the striking board. The depth control bars must be set carefully to bring the pavers, when laid, to proper grade.

While still hot 250 degrees Fahrenheit some of the asphalt bed material shall be placed between the parallel depth control bars. This bed shall be pulled with the striking board over the control bars several times. After each passage, low porous spots shall be showered with fresh asphalt material to produce a smooth, firm, and even setting bed. As soon as this initial panel is completed, advance the first bar to the next position in readiness for striking the next panel. After the depth control bars and wood chocks have been removed, carefully fill any depressions that remain.

The setting bed shall be rolled with a power roller to a nominal depth of 3/4 inch while still hot. The setting bed thickness shall be adjusted so that when the bricks are placed and rolled, the top surface of the pavers will be at the required finished grade.

ITEM 706.1 (Continued)

A coating of neoprene-modified asphalt adhesive shall be applied by mopping, squeegeeing, or toweling over the top surface of the asphalt setting bed so as to provide a bond under the pavers. If is trowel-applied, trowel shall be serrated type with serrations not to exceed 1/16 inch.

Setting Brick Pavers

No pavers shall be laid in inclement weather or when the temperature is 36 degrees Fahrenheit, and dropping, nor shall any work be done on rising temperatures until the temperature reaches 32 degrees Fahrenheit. Frozen mortar materials shall not be used. Brick pavers shall be on an asphalt setting bed over a prepared base. All setting shall be done by competent masons under adequate supervision. Brick pavers with chips, cracks, stains, or other defects that might be visible in the finished work shall not be used.

After the modified asphalt adhesive is applied, carefully place the pavers by hand in straight courses with hand tight joints and uniform top surface. Brick pavers shall be set true to the required lines and grades in the pattern detailed on the Contract Documents. Brick pavers shall be neatly cut and fitted at all perimeters and closures to fit neatly and closely, with joints uniform in thickness. Pavers shall be cut with a water-cooled, cut-off wheel masonry saw using a diamond blade. Under work of brick paving, set boxes for valves and gates to final grade that is flush with adjacent brick pavement. Tolerances: Check surface with a 10-foot straightedge. Correct deviances greater than 1/8 inch.

Joint Treatment for Brick Walk

Joints between pavers shall be hand tight and shall be uniform in thickness. Joint thickness shall not exceed 1/8 inch.

Joint filler shall be swept dry into the joints between pavers until the joints are completely filled. Surface shall be swept clean. Swept surface shall than be thoroughly dampened with a low-volume fine spray of water.

1. Sweep sand/cement mixture into paver joints until joints are filled solid. Fog lightly with water and repeat a minimum of three times or until joints are compacted and full.
2. Prior to acceptance, the paved area shall be flooded with water to assure that there are no depressions. Pavers with top surfaces greater than 1/16 inch above or below adjacent pavers shall be removed and reset. Remove and reset pavers as required until surface is true to line and grade. Refill sand joints as necessary until all joints are filled to finish grade.

Unit paving shall be kept damp by intermittent spraying for three days, minimum, to effectively cure the joints.

Clean dirt and mortar stains from brick with fiber brushes and water or other approved method. Wire brushes and solutions that might cause discoloration will not be permitted.

ITEM 706.1 (Continued)

COMPENSATION

Method of Measurement

Brick Walk Removed and Relaid will be measured per square yard and shall include removal of base materials to a depth of 8 inches below the bottom of the brick layer.

Basis of Payment

Brick Walk Removed and Stacked will be paid for at the Contract unit price per square yard, which price shall include all labor, materials, equipment, transport, and incidental costs required to complete the work.

No separate payment will be made for the off-site disposal of all existing material, but all costs in connection therewith shall be included in the contract bid price.

ITEM 706.11

BRICK WALK REMOVED AND STACKED

SQUARE YARD

GENERAL

The work under this item shall conform to the relevant provisions of Section 120 and 700 of the Standard Specifications and the following:

The work shall include the careful removal and stacking of existing brick sidewalk to facilitate construction of cement concrete sidewalk and cement concrete wheelchair ramps.

The bricks shall be stacked on boards at a location to be determined by the Engineer. Shall the bricks not be wanted by the city, they shall become the property of the Contractor and they shall be legally disposed of off-site as directed by the Engineer.

Work under this item shall also include removal and disposal of existing base material to a depth of 8 inches below the bottom of the brick layer.

COMPENSATION

Method of Measurement

Brick Walk Removed And Stacked will be measured per square yard and shall include removal of base materials to a depth of 8 inches below the bottom of the brick layer.

Basis of Payment

Brick Walk Removed and Stacked will be paid for at the Contract unit price per square yard, which price shall include all labor, materials, equipment, transport, and incidental costs required to complete the work.

No separate payment will be made for the off-site disposal of all existing material, but all costs in connection therewith shall be included in the contract bid price.

ITEM 707.21

TRASH RECEPTACLE REMOVED AND RESET

EACH

GENERAL

The work under this item shall conform to the relevant provisions of Section 700 of the Standard Specifications and the following:

The work shall include the careful removal and resetting of existing trash receptacles as required to complete the work.

The trash receptacle shall be completely removed from the existing location and shall be reset at a location to be determined by the Engineer.

The trash receptacle shall be anchored into the existing cement concrete sidewalk using Stainless Steel threaded rods, nuts & washers and quick setting Grout. Grout shall be a pourable, quick setting, non-metallic and non-shrinking hydraulic cement grout equal to the following:

1. Five Star Grout
U.S. Grout Corporation
425 Stillson Road
Fairfield, CT 06430
(800) 243-2206

2. Sika Grout 212
Sika Corporation
Lyndhurst, NJ 07071
(201) 933-8800

3. Harris Construction Grout
AH Harris & Sons
10 West Mill St.
Medfield, MA 02052
(508) 359-7321

COMPENSATION

Method of Measurement

Trash Receptacle Removed and Reset will be measured per each.

Basis of Payment

Trash Receptacle Removed and Reset will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment, transport, and incidental costs required to complete the work.

ITEM 707.8

STEEL BOLLARD

EACH

GENERAL

The work under this item shall conform to the relevant provisions of Section 700 of the Standard Specifications and the following:

The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install steel bollards and caps, complete, as indicated on the Contract Documents, as specified, and as follows.

Quality Assurance

Qualification of Workers. Use only skilled iron workers, founders and welders who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for the ironwork. Welders shall be AWS certified and such certification shall be furnished to the Engineer for each welder used.

Reference Standards

The following standards, specifications and codes are incorporated in their latest edition.

American Welding Society (AWS) standards:

AWS D1.0, "Code for Welding in Building Construction"

AWS D1.1, "Structural Welding Code - Steel"

American Iron and Steel Institute (AISI) listed standards.

Steel Structures Painting Council (SSPC) listed standards:

- SP1 Solvent Cleaning
- SP6 Commercial Blast Cleaning
- SP7 Brush-off Blast Cleaning
- SP 11 Power Tool Cleaning to Bare Metal
- PA 2 Measurement of Dry Coating Thickness with Magnetic Gages

Federal Standards:

Standard No. 595B, Colors Volume 1

ASTM American Society for Testing and Materials

D523-89 Standard Test Method for Specular Gloss

D4541-95e1 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

D4285-83 Standard Test Method for Indicating Oil or Water in Compressed Air

D3359 Standard Test Method for Measuring Adhesion by Tape Test

D3363 Standard Test Method for Film Hardness by Pencil Test

ITEM 707.8 (Continued)

In case of conflict between a Reference Standard and the Specifications, the Specifications shall govern. In the case of conflict between Reference Standards, the more stringent shall govern. When compliance with any Reference Standard is specified herein for materials (or a product, manufactured or fabricated), the CONTRACTOR, if requested, shall submit an affidavit from the manufacturer (or fabricator) certifying that the materials (or product) delivered to the job meets the requirements specified. Such certification, however, shall not relieve the CONTRACTOR from the responsibility of complying with other requirements specified in this Section.

Submittals:

The CONTRACTOR shall submit the following:

Shop Drawings for all work verifying all field conditions and dimensions. Details shall show proposed methods of anchorage, connection, attachment, splicing or interface between the work of this Section and adjacent new work of other sections or existing work. Indicate proposed form and type of welds using standard AWS symbols.

Layout Drawings consisting of dimensioned plans for steel bollards.

Samples:

Prepare at the job site 12-inch by 12-inch color samples of paint applied on same surface material as will be used in the work.

Product Handling

Deliver materials and cast/fabricated components to the job site in good condition and properly protected against damage to finished surfaces. All off-site fabricated steel and iron components shall be prepared and primed or galvanized as specified before delivery to the site.

Store all on- or off-site materials in clean, dry location, away from uncured concrete and masonry. Cover with waterproof paper, tarpaulin or polyethylene sheeting. Maintain protective covering on materials until installation is complete.

Keep on-site handling to a minimum.

Project Conditions

The complete coating system shall be applied in an enclosed shop except for field touch-up painting which shall be applied after railing items have been installed in accordance with the requirements of the various Sections of this Specification. The enclosed shop shall be a permanent facility with outside walls to grade and a roof where surface preparation and coating activities are normally conducted in an environment not subject to outdoor weather conditions and/or blowing dust.

ITEM 707.8 (Continued)

1. Indoor temperature: Maintain indoor temperature at 65 degrees Fahrenheit during application and drying of paints.
2. Lighting: Since lighting conditions can alter appearances of finish painting work, perform work of this Section under lighting conditions simulating permanent lighting system to the greatest extent possible.

Field Touch Up:

1. Outdoor Temperature and Conditions: Air and surface temperature shall be between 50 degrees Fahrenheit and 90 degrees Fahrenheit. Surfaces shall be dry within limits of finish system manufacturer.
2. Do not paint exterior surfaces while surfaces are exposed to the hot sun.

Quality Assurance

The same coating material manufacturer shall furnish all materials for the complete coating system. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written instructions.

Where manufacturer makes more than one grade of any material specified, use the highest grade of each type, whether or not the material is mentioned by trade name in this Section.

Include on labels of all containers the manufacturer's name, the product name and number, the color and batch number.

Materials:

Carbon Steel Pipe. Comply with the requirements of ASTM A36, Standard Specifications for Structural Steel, and FS OO-S741A, Steel Plates, Shapes and Bars, Carbon, Structural.

Mild Steel Bar Stock. Low Carbon, general purpose, merchant quality, suitable for forming and welding, complying with AISI M-1020 and ASTM A663, Grade 65 for hot rolled flats, bars, rounds, and bar-sized shapes, and ASTM A283, Grade C, for carbon steel plates; maximum carbon content approximately 0.24%, or Engineer approved equal.

Steel Pipe. Black (ungalvanized) pipe conforming to ASTM A53 "Standard Specification for Pipe, Black and Hot-Dipped Zinc Coated, Welded and Seamless," and ASTM A120 "Standard Specification for Pipe, Steel, Black and Hot-Dipped Zinc Coated (Galvanized), Welded and Seamless, for Ordinary Uses." Pipe shall be of Standard Weight, Schedule 40 dimensions, weight and test pressure.

Structural Steel Tube. Conform to ASTM A501, "Hot-Formed Welded and Seamless Carbon Steel Structural Tubing."

Malleable Iron Castings. Galvanized and plain, conform to ASTM A47, Grade 32510 and FS WW-P521, Malleable Iron Castings.

ITEM 707.8 (Continued)

Wedges, Shims and Shim Washers. Stainless steel conforming to ASTM F436 or as approved by the Engineer.

Welding Rods and Electrodes. Welding electrodes for arc welding shall conform to AWS A5.1 for the type of materials being welded. Welding rods shall be of the type that optimizes the weld joint for the type of materials being welded

Epoxy Filler Material. Epoxy for poured light pole joints shall be a neat high-strength structural bonding epoxy with a viscosity of 2000 to 2500 cps and a compressive strength of at least 10,000 psi.

Galvanizing

Galvanizing of all materials and fabrications called out on the Drawings to be galvanized shall be the hot-dip method, only. Galvanizing of fabricated steel or iron materials as indicated on Drawings to be galvanized shall be as follows:

1. Carbon Steel Fabrications and Iron Castings. ASTM A123.
2. Iron and Steel Hardware. ASTM A153.

Galvanizing Assembled Steel Fabrications. Galvanize only after all welding, cutting, and grinding fabrication and finishing work is complete. Only where items are too large for industry-standard galvanizing tanks shall galvanizing before full assembly be acceptable. Each galvanized piece shall bear the stamp of the galvanizer indicating the ASTM specification number and the weight of the zinc coating per square foot.

Paint and Finish Products

Touch-up paint for field touch-up of galvanized surfaces shall be a two-component, moisturecured, zinc-rich inorganic or organic primer. Recommended Dry Film Thickness shall be as recommended by manufacturer and approved by Engineer. Acceptable products and their manufacturers shall include the following:

1. Ply-Tile Epoxy Organic Zinc Rich Primer
Manufactured by M.A.B Industrial Coatings
Broomall, PA 19008

2. Dimetcote 9
Ameron International
Alpharetta, GA 30004

3. Metalhide 97-673 Series, 1001 Inorganic Zinc Rich Coating
PPG Architectural Finishes, Inc.
One PPG Place
Pittsburgh, PA 15272

ITEM 707.8 (Continued)

4. Zinc Clad III HS, Organic Zinc-Rich Epoxy Primer
Sherwin-Williams Company
www.sherwin-williams.com

5. MC Zinc
Wasser High-Tech Coatings
Kent, WA 98032

Primer coating for shop painting of galvanized surfaces shall be an epoxy or urethane coating. Recommended Dry Film Thickness shall be as recommended by manufacturer and approved by the Engineer. Acceptable products and their manufacturers shall include the following:

1. Ply-Tile 520-W-45 Epoxy Primer
Manufactured by M.A.B Industrial Coatings
Broomall, PA 19008

2. Amercoat 385
Ameron International
Alpharetta, GA 30004

3. Pitt-Guard 97-946 Series All Weather Direct-to-Rust Epoxy Coatings
PPG Architectural Finishes, Inc.
One PPG Place
Pittsburgh, PA 15272

4. Macropoxy 646 Fast Cure Epoxy
Sherwin-Williams Company
www.sherwin-williams.com

5. MC-Ferrox B
Wasser High-Tech Coatings
Kent, WA 98032

Finish over epoxy or urethane coating shall be an aliphatic urethane coating. Recommended Dry Film Thickness shall be as recommended by manufacturer and approved by Engineer. Acceptable products and their manufacturers shall include the following:

1. Ply-Thane 890 HS Coating
Manufactured by M.A.B Industrial Coatings
Broomall, PA 19008

2. Amercoat 450HS
Ameron International
Alpharetta, GA 30004

3. Pitthane II
Polyurethane PPG Architectural Finishes, Inc.
One PPG Place
Pittsburgh, PA 15272

4. Acrolon 218 HS Acrylic
Sherwin-Williams Company
www.sherwin-williams.com

5. MC-Ferrox A
Wasser High-Tech Coatings
Kent, WA 98032

Surface Preparation: Coat over preceding epoxy or urethane coat within 24 hours

Color shall be a color "black" selected by the Engineer.

ITEM 707.8 (Continued)

Miscellaneous Materials

Use only high quality, non-shrink materials for filling compounds which have been approved. Grout as required for anchoring shall be a pourable, quick setting, non-metallic and non-shrinking hydraulic cement grout equal to the following:

- | | |
|--|--|
| 1. Five Star Grout
U.S. Grout Corporation
425 Stillson Road
Fairfield, CT 06430
(800) 243-2206 | 2. Sika Grout 212
Sika Corporation
Lyndhurst, NJ 07071
(201) 933-8800 |
| 3. Harris Construction Grout
AH Harris & Sons
10 West Mill St.
Medfield, MA 02052
(508) 359-7321 | |

Construction Methods

General

Inspect all work areas at the Project Site to assure that proper conditions exist to receive delivery of bollard items fabricated under this Section. Notify the Engineer in writing before delivery should any condition exists that requires correction. Failure to make such a report shall be construed as acceptance of the existing conditions at the Project Site and the responsibility for delays of Work and damage to bollard items.

Fabrication

Newly fabricated work shall be shop assembled in sections or entirely so far as practicable, except as indicated the Drawings, and accurately finished with any separate sections match-marked for coordinated field erection. Where necessary, measurements shall be made of prior installed construction before fabrication of the items so that work included shall properly fit the construction.

All work shall conform to details indicated on the Drawings, be clean and straight with sharply defined profiles. Unless otherwise noted, finish surfaces shall be smooth.

Shearing, cutting, drilling, and punching shall be done cleanly so as not to deform or mar adjacent surfaces. Remove burrs from all exposed cut edges. Dimensions of new materials and details of assembly and support shall be provided as indicated on Drawings or as otherwise required to provide ample strength and stiffness. Provide holes and connections as required on the Drawings to accommodate the work of other trades for site assembly of railing work. Holes shall be drilled or punched only and, as required, tapped or reamed in the shop. Show sizes and locations of all such machining on the Shop Drawings.

ITEM 707.8 (Continued)

Joints and connections exposed to weather shall be formed or otherwise made to exclude water.

Welding, Cutting and Grinding

Welding shall be performed according to procedures, processes, details, and joint forms prescribed in AWS D1.0, "Code for Welding in Building Construction."

Welders shall be prequalified as prescribed in AWS D1.0, "Code for Welding in Building Construction." Evidence of such prequalification shall be furnished to the Engineer upon request.

No testing of welds by the Contractor is required if those used are prequalified under AWS D1.1, "Structural Welding Code." If other than prequalified joint forms are used, testing of same shall be provided by the Contractor at no increase in the contract price by a certified welding inspector chosen and paid by the Contractor as approved by the Engineer.

Thoroughly fuse all welds without undercutting or overlap. Discoloration of surfaces is not acceptable. Welds shall be continuous along line of joint unless indicated otherwise on the Drawings.

Remove welding spatter and slag from work and grind exposed welds smooth and flush to blend and contour surfaces to match or transition into those adjacent.

Perform cutting with acetylene torch, saw or pipe cutter to avoid damage to adjacent finished material. Grind smooth all cut surfaces.

Surface Preparation of Galvanized Items

Galvanized surfaces of miscellaneous metal items shall be inspected by the painting Contractor prior to the start of the work of this Section. Any defects in the galvanized surfaces such as lumps, sags, or spikes that would make the item not smooth to human touch, exposed bare steel not prime painted by the galvanizer with an approved paint from the same manufacturer of paint coatings approved under this Section, or prime paint not compatible with approved paint coatings shall be reported to the Engineer immediately by telephone followed by a hard copy letter addressed to the Engineer describing the defects. Do not start work of this Section, if any defects are detected. The commencement of work by the painting Contractor shall indicate his acceptance of the galvanized surfaces of the miscellaneous metals items, and he shall assume full responsibility for the work of this Section.

Prior to abrasive blast cleaning, all rough surfaces shall be ground smooth. All galvanized surfaces shall then be solvent cleaned in accordance with SSPC-SP1 - "Solvent Cleaning" before being blast cleaned.

ITEM 707.8 (Continued)

Abrasive blast cleaning shall be performed in accordance with SSPC-SP7, "Brush-off Blast Cleaning" using a production line shot and grit blast machine or by air blast. The abrasive working mix shall be maintained such that the final surface profile is within the range specified in this Section.

All compressed air sources shall have properly sized and designed oil and moisture separators, attached and functional, to allow air at the nozzle, either for blast cleaning, blow-off, painting or breathing, to be oil-free, and moisture-free. They shall have sufficient pressure to accomplish the associated work efficiently and effectively.

No surface preparation or coating shall be done when the relative humidity is at or above 80 percent or when the surface temperature of the steel is less than 5 degrees Fahrenheit above the dewpoint temperature as determined by a surface thermometer and an electric or sling psychrometer.

Surface Profile: The galvanized surface profile shall be 1 to 3 mils.

Application of Paint and Finishes to Metal Surfaces

All coatings shall be applied in the shop except for field touch-up after installation. See requirements for field touch-up as described in this Section. All surface preparation and coating work, including field touch up work, shall be as specified and performed under the work of this Section.

All galvanized steel surfaces shall receive the 2-coat shop applied paint system as specified in this Section, except the following particular locations that shall be masked off and treated as follows:

1. Faying surfaces of slip-critical bolted connections shall receive only a single application of primer. The dry film thickness shall be no greater than the thickness tested on the coating manufacturer's Certified Test Report for slip coefficient.
2. Miscellaneous metal surfaces within 4 inches of field welds shall receive only a single coating of primer at 0.5 - 1.5 mils dry film thickness.
3. Galvanized steel surfaces to be in contact with grout shall not be coated. For galvanized posts to be set in cored holes, ensure that 2 coat paint coatings extend below the horizontal surface of the concrete by no less than one inch.
4. Edges and shop welds of galvanized steel items shall be locally hand-striped with a brush in the longitudinal direction with an additional coat of the epoxy or urethane coating prior to application of the finish aliphatic urethane coating. The coating manufacturer shall be consulted to determine the appropriate epoxy or urethane coating to use for striping. The application of the striping materials shall be in accordance with the coatings manufacturer's written instructions. The striping material shall be tinted to distinguish it from the intermediate coats.

Application Methods: The coating system shall be applied by spray equipment of a type and size capable of applying each coat within the required thickness range. The applicator shall strictly

ITEM 707.8 (Continued)

adhere to the manufacturer's recommendations about application methods, cure times, temperature and humidity restrictions and recoat times for each individual coat of the specified system. Brushes shall be used in areas where spray application will not achieve acceptable results. Brushing technique shall be performed in a manner that will provide a uniform, blended finish. No coating material shall be thinned in any way except as directed by manufacturer.

1. Conventional spray equipment with mechanical agitators shall be used for prime coat application on bare steel and for epoxy or urethane intermediate coat on galvanized surfaces.
2. All storage, mixing, thinning, application and curing efforts, techniques and methods shall be accomplished in strict accordance with the printed material data sheets and application instructions published by the respective coating material manufacturer.
3. Surfaces shall be painted with the specified prime coat material before the end of the same work shift that they were blast cleaned and before any visible rust back occurs.
4. Applied coatings shall not have runs, sags, holidays, pinholes or discontinuities.
5. The dry film thickness shall be within the range specified in the manufacturer's printed literature for the specified coating system. Dry film thickness shall be measured in accordance with SSPC-PA 2.
6. The intermediate coat shall be of a contrasting color to the prime and top coat colors.
7. There shall be no color variation in the topcoat as determined by comparison with Federal Standard 595B.

All storage, mixing, thinning, application and curing efforts, techniques and methods shall be accomplished in strict accordance with the written requirements and procedures published by the respective coating material manufacturer.

Additional coats: Provide additional coats necessary to eliminate show through and bleed through conditions.

Drying Time: Allow manufacturer's recommended drying time between successive coats. However, allow each coat to thoroughly dry prior to application of subsequent coat.

All compressed air sources shall be properly sized and designed with oil and moisture separators, attached and functional, to allow air at the nozzle, either for blast cleaning, blow-off, painting or breathing, to be oil-free and moisture-free. It shall be of sufficient pressure to accomplish the associated work efficiently and effectively.

Surfaces not in contact with other steel surfaces but inaccessible after assembly shall be coated prior to assembly.

Critical attention shall be given to edges and bolted connections. All bolts, nuts and washers shall be fully coated and no gaps left unfilled and un-coated.

Adhesion strength of the fully coated assemblies shall be within 80 percent of the values for Adhesion as described in the approved manufacturer's literature measured per ASTM D4541 using apparatus under Annex A4.

ITEM 707.8 (Continued)

Strict attention must be directed to the re-coat times of all applied materials. Shop bolted connections shall also have all bolt heads and nuts striped in a circular brush motion with the same material.

All applied coating shall have no runs, sags, holidays or discontinuities; the dry film thickness shall be within the range specified. There shall be no color variation in the topcoat as determined by Federal Standard 595B. Also, there shall be no gloss variation in the topcoat where tested in accordance with ASTM D523.

Protection of Coated Miscellaneous Metal: All fully coated and cured assemblies shall be protected from handling and shipping damage with the prudent use of padded slings, dunnage, separators and tie downs. Loading procedures and sequences shall be designed to protect all coated surfaces.

Field Touch Up

Touch-up and repair finishes that, for any reason, have been damaged during construction work.

Field application of coatings shall be in accordance with the manufacturer's written application guidelines and these specifications. All areas cleaned to bare metal must be coated with a zinc-rich primer before any visible rust back occurs. The topcoat material for field touch-up painting and additional field topcoat application shall be from the same lot and batch used in the shop provided its shelf life has not expired. If the shelf life has expired, the same material of the same color from a different lot and batch shall be used. The materials used for the field primer and intermediate coat must be compatible with the shop primer and intermediate coats.

All rust, scale, dirt, grease, concrete splatter and other foreign material on connections, bolts, nuts and around field welds shall be completely removed by power tool cleaning per SSPC-SP 11. Areas cleaned to SSPC-SP 11 shall have a 1-3 mil profile and must be primed prior to rusting. All debris generated from cleaning operations must be contained and properly disposed of.

Bolts, nuts and washers shall receive brush applications of intermediate and topcoat after final tensioning. Careful attention shall be given to bolted connections to insure that all bolts, nuts and washers are fully coated and that no gaps are left unfilled and uncoated. Field welded areas shall be treated in the same manner as shop welded areas, including special treatment requirements.

At damaged areas that extend back to the steel surface (such as scratches, gouges or nicks), the entire three-coat system shall be locally reapplied after power tool cleaning to bare metal in accordance with SSPC-SP 11. The coating system adjacent to the damage shall be feathered back to increase the surface area for touch up painting. The area cleaned to SSPC-SP 11 shall be primed with a zinc-rich primer before rustback occurs. The coating manufacturer shall be consulted to determine the appropriate zinc-rich primer to use. Application of the zinc-rich

ITEM 707.8 (Continued)

primer shall be in accordance with the coating manufacturers written instructions. The specified intermediate and topcoats shall be reapplied in accordance with the manufacturer's written instructions.

At damaged areas that extend back only to the prime or intermediate coat, the area shall have the topcoat applied. Application of the touch-up materials in these damaged areas shall be performed by brush only.

Tarps shall be used to collect all surface preparation debris. The Contractor shall be responsible for disposing of all removed materials, including tarps.

Acceptance Standards

Finished work shall be free from runs, sags, hairs, defective brushing, and clogging of lines and angles. Flaws visible in the completed work shall be removed and the area satisfactorily repaired.

Completed Work: Provide finishes that match approved samples and mock-ups for color, texture, and coverage, remove, refinish, or repaint work not in compliance with the requirements of this section.

Completion of Painting of Bollard and Cap

Final Inspection: Protect painted surfaces against damage until date of Substantial Completion. Engineer will conduct final inspection of painting work. Areas that do not comply with requirements of these Specifications shall be repainted or retouched to satisfaction of Engineer at no additional cost to the City.

Installation of Steel Bollard

Install steel bollard as shown in the drawings. Bollard shall be plumb. Following the curing of the concrete foundation and concrete filled bollard, tap steel bollard as shown on the detail to accept security set screws for the installation of the malleable iron cap.

Touch-up painting of bollards components required prior to acceptance and as directed by the Engineer.

COMPENSATION

Method of Measurement

Steel Bollard will be measured per each bollard installed, complete in place.

Basis of Payment

Steel Bollard will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment, transport, and incidental costs required to complete the work.

ITEM 715.1

MAIL BOX REMOVED AND RESET

EACH

GENERAL

The work under this item shall conform to the relevant provisions of Section 120 and 700 of the Standard Specifications and the following:

The work shall include the careful removal and resetting of existing US POSTAL SERVICE Mail Boxes as required to complete the work.

The US POSTAL SERVICE mail boxes shall be completely removed from the existing location and shall be reset at a location to be determined by the Engineer.

COMPENSATION

Method of Measurement

Mail Box Removed and Reset measured per each.

Basis of Payment

Mail Box Removed and Reset will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment, transport, and incidental costs required to complete the work.

ITEM 804.31

DAMAGED CONDUIT REMOVED AND REPLACED

FOOT

GENERAL

Work under this item shall conform to the relevant provisions under Section 800 of the standard specifications and the following:

Work shall include the removal and replacement of existing conduit found to be damaged or crushed. New conduit shall be of the same diameter as the damaged conduit and shall be schedule 80, non-metallic.

Work under this item shall also include withdrawal of and re-introduction of existing or new wires at no additional compensation.

New conduit shall be constructed in accordance with the details shown on the plans.

Work shall also include in-kind surface restoration including, but not limited to: Full depth pavement, cement concrete sidewalk, brick sidewalk, etc.

Work under this item shall only be performed at the direction of the Engineer.

COMPENSATION

Method of Measurement

Damaged Conduit Removed and Replaced will be measured for payment by linear foot.

Basis of Payment

Damaged Conduit Removed and Replaced will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

<u>ITEM 816.01</u>	<u>TRAFFIC SIGNAL RECONSTRUCTION</u> <u>LOCATION NO. 1</u>	<u>LUMP SUM</u>
<u>ITEM 816.02</u>	<u>TRAFFIC SIGNAL RECONSTRUCTION</u> <u>LOCATION NO. 2</u>	<u>LUMP SUM</u>
<u>ITEM 816.03</u>	<u>TRAFFIC SIGNAL RECONSTRUCTION</u> <u>LOCATION NO. 3</u>	<u>LUMP SUM</u>
<u>ITEM 816.04</u>	<u>TRAFFIC SIGNAL RECONSTRUCTION</u> <u>LOCATION NO. 4</u>	<u>LUMP SUM</u>
<u>ITEM 816.05</u>	<u>TRAFFIC SIGNAL RECONSTRUCTION</u> <u>LOCATION NO. 5</u>	<u>LUMP SUM</u>
<u>ITEM 816.06</u>	<u>TRAFFIC SIGNAL RECONSTRUCTION</u> <u>LOCATION NO. 6</u>	<u>LUMP SUM</u>
<u>ITEM 816.07</u>	<u>TRAFFIC SIGNAL RECONSTRUCTION</u> <u>LOCATION NO. 7</u>	<u>LUMP SUM</u>

Work under this item shall conform to the relevant provisions of Section 800 of the Standard Specifications, the 2009 Manual on Uniform Traffic Control Devices (MUTCD), and the following:

The work shall include the furnishing and installation of part or all of the following items: modify existing controller/cabinet; local traffic signal controller; cabinet and foundation with concrete pad; signal posts and foundations; mast arm assemblies with anchor bolts and foundations; signal heads; louvered backplates; vehicle detectors; pedestrian signals with countdown timers; pedestrian buttons; GPS units; emergency vehicle preemption; all cable and wiring; ground rods, equipment grounding and bonding; loop detector amplifiers; service connection; and all other equipment, materials and incidental costs necessary to provide complete, fully operational traffic control signal system as specified herein and as shown on the plans. The locations are:

1. Merrimack Street at Worthen Street & Dutton Street (Item 816.01)
2. Merrimack Street at Palmer Street (Item 816.02)
3. Merrimack Street at Central Street (Item 816.03)
4. Merrimack Street at Bridge Street & Prescott Street (Item 816.04)
5. Market Street at Dutton Street (Item 816.05)
6. Market Street at Palmer Street (Item 816.06)
7. Market Street at Central Street & Prescott Street (Item 816.07)

A list of major traffic signal items required at these locations is included on the traffic signal plans.

Shop Drawings and Certificate of Compliance

Along with the shop drawings the Contractor shall deliver to the Engineer a certificate of compliance with the manufacturer for all materials purchased from the manufacturer.

Existing Installation

Under ITEM 816.01 THRU 816.07, all of the existing signal equipment and conduit shall be retained unless otherwise noted on the traffic signal plans.

ITEM 816.01 THRU 816.07 (Continued)

Existing signal installation to be modified under 816.01 through 816.07 shall be maintained in operation throughout the construction period and until the new signals are ready for operation.

Under Item 816.01 through 816.07 the traffic signal contractor shall examine the existing signals for deficiencies prior to working on the signals so as to determine if any of the equipment must be repaired by the city.

If the existing signal is to be turned off temporarily to allow controller modifications or rewiring, police detail shall be used to control traffic at the intersection.

Service Connection

Under Item 816.01 through 816.07 the existing service connection shall be retained.

Flashing Operation

Changes from automatic flashing to stop-and-go operation and from stop-and-go to automatic flashing operation shall occur as set forth in Section 4D.28 through Section 4D.31 of the MUTCD.

Modifying Existing Controller and Cabinet

Under Item 816.03, 816.04, 816.06, and 816.07 the Contractor shall remove and stack the existing traffic signal controller (to a location as directed by the Engineer) and install a new traffic signal controller. The Contractor shall perform cabinet work to implement the proposed coordination timings shown on the plans. The Contractor shall also furnish and install GPS units (where specified), video detection equipment, and emergency vehicle pre-emption equipment in the controller cabinet. Refer to section *Coordination, Emergency Vehicle Pre-emption, and Video Detection* under these Special Provisions for additional details on these units.

Newly installed controller cabinets shall be mounted on modified foundations at the location of the existing controller cabinets.

If necessary, the contractor shall perform work to provide new anchor bolts in the existing concrete or re-form the foundation with new cement concrete.

Traffic Signal Equipment

The traffic signal controller unit (CU), malfunction management units (MMU), detector amplifiers, cabinet power supply, bus interface units (BIUs) and all other ancillary traffic signal control components included in the traffic control cabinet shall comply with the National Electrical Manufacturers Association (NEMA) Standard No. TS 2-1998, Traffic Controller Assemblies with National Transportation Communications for ITS Protocol (NTCIP) Requirements.

ITEM 816.01 THRU 816.07 (Continued)

Traffic Signal Controller

The traffic controller supplied shall conform to Section 3 "Controller Units" of the NEMA TS 2 Standard. The traffic controller shall be supplied in a TS 2 Type 1 Configuration as required in the list of major traffic signal items included on the plans for this intersection. Specifically, the controller unit (CU) shall be supplied as actuated controller with NTCIP capabilities; defined as Type A1N in Subsection 3.2 of the NEMA TS 2 Standard. The TS 2 Type 1 cabinet shall, at a minimum, meet the requirements of configuration 3 as defined in Table 5-2, "Type 1 Configurations" of the NEMA TS 2 Standard.

The controller unit shall utilize an interface conforming to Subsection 3.3 of the NEMA TS 2 Standard. The controller unit shall utilize an input/output interface conforming to the requirements of Paragraph 3.3.1 for all input/output functions with the Terminals and Facilities (TF), Malfunction Management Unit (MMU), detector rack assemblies and auxiliary devices. The controller unit shall also meet the requirements of Paragraph 3.3.6 "NTCIP Requirements" of the NEMA TS 2 Standard.

The controller unit shall be supplied with Port 1, Port 2, and Port 3 as defined by the requirements of Subsections 3.3.1, 3.3.2, and 3.3.3, respectively.

The controller unit shall be keyboard-entry menu-driven unit with internal time base coordination, emergency preemption, and programmatic capability. The controller shall also be complete with a module for closed loop system functions.

Malfunction Management Unit

The malfunction management unit (MMU) shall comply with Section 4 of the NEMA TS 2 standard. The MMU shall be capable of operating as either a Type 16 with 16 channels (8 vehicle, 4 pedestrian, 4 overlap) or a Type 12 with 12 channels (8 vehicle, 4 overlap). The MMU's supplied shall be configured to operate as Type 16 units.

The MMU's in either the Type 16 or Type 12 configuration shall be capable of operating in a NEMA TS 2 Type 1 cabinet, a NEMA TS 2 Type 2 cabinet, or a NEMA TS 1 cabinet without loss of functionality.

Cabinet Power Supply

The power service at each intersection shall be retained. The power supply unit shall contain four LED indicators on the front panel to indicate the four outputs;

1. + 12 VDC +/- 1 VDC @ 2.0 amps,
2. + 24 VDC +/- 2 VDC @ 2.0 amps,
3. 12 VAC @ 250 milliamps, and
4. 60 Hz line frequency reference.

A test point terminal shall also be located on the unit's front panel for + 24VDC and logic ground testing.

ITEM 816.01 THRU 816.07 (Continued)

Load Switches

Load switches shall comply with Subsection 6.2 of the NEMA TS 2 standard. All load switches shall utilize optically isolated encapsulated modular solid state relays. Discrete components on circuit boards are not acceptable.

Load switch indicator lights shall be LED-type and wired on the input side of the device.

Flasher

Flashers shall comply with Subsection 6.3 of the NEMA TS 2 standard and be equipped with two output indicator lights which will show flashing power out to the cabinet assembly.

Flash Transfer Relays

Flash transfer relays shall comply with Subsection 6.4 of the NEMA TS 2 standard.

The field electrical loading for flash operation shall be wired through the transfer relays such that the load on the 2 circuit flasher is as balanced as possible within the limitations of the signal phasing.

Traffic Controller Cabinet

Controller Cabinet shall conform to the NEMA TS 2 Standards, Section 7. Cabinet size shall be as indicated on the plans and as shown below:

TS 2 Type 1 Configuration Table

Item #	NEMA TS 2 Cabinet Size	Nominal Cabinet Size (HxWxD) *	Configuration Type Table 5-2	Load Switch Positions	Flash Transfer Relays	BIUs Required w/ spare	Detector Rack Type Table 5-9	MMU (Channels)
816.03	6	52x44x26	3	12	6	3	2	16
816.04	6	52x44x26	4	16	6	3	2	16
816.06	6	52x44x26	3	12	6	3	2	16
816.07	6	52x44x26	3	12	6	3	2	16

*Approximate cabinet dimensions are provided in inches.

The cabinets shall be equipped with filter vents and two (2) thermostatic fans for forced air cooling.

The cabinet shall also be wired with a normally closed switch connected to a user defined input to the controller for remote monitoring of the control cabinets' door open status (future use).

ITEM 816.01 THRU 816.07 (Continued)

The cabinet shall be installed with the door opening positioned in order to allow general observation of the flow of traffic and the inside of the cabinet at the same time.

Bus Interface Units

The Bus Interface Units (BIU) shall comply with Section 8 of the NEMA TS 2 Standard. The BIU shall be fully interchangeable with any other manufacturer's unit and interchangeable in a NEMA TS 2 Type 2 cabinet assembly.

At a minimum the BIU shall perform the interface function between port 1 at the controller unit, the malfunction management unit (MMU), the loop detector rack assembly, and the terminal facilities. The cabinets shall be supplied with the appropriate number of BIUs required to provide an operating traffic control signal according to the plans and these specifications.

As a minimum, two LED indicators shall be provided on the BIU front panel. One indicator shall serve a dual use; as a power on indication and as a diagnostic indicator for proper operation of the device. The second indicator shall serve as a transmit indicator illuminating each time data is transmitted.

Spare Equipment

The Contractor shall provide the following spare signal equipment in the traffic signal controller cabinet listed below:

- A full complement of load switches to accommodate each available position of the back panel.
- A full complement of flash transfer relays to accommodate each available position of the back panel.
- Four (4) Bus Interface Units.
- A 25 foot RS-232 cable for communication function with a laptop computer.

Surge Suppression

Each cabinet shall have each input and output surge protected except signal outputs from cabinet load switches. (The load switches act as surge suppressors.)

The surge protector must be electrically connected to the nearest grounded metal structure or nearest ground rod.

Surge protection for power service shall conform to the NEMA TS-2 standard. The product complies when a lab report summary from an independent test laboratory stating the product passes the current NEMA TS-2(5.4.2.4) specification is submitted with the shop drawings.

Surge protection for all loop, pedestrian button, and pre-emption connections shall have peak surge current protection of at least 10kA with a response time of less than 5 nanoseconds. The product complies when a lab report summary from an independent test laboratory stating the product passes this specification is submitted with the shop drawings.

ITEM 816.01 THRU 816.07 (Continued)

Units shall be plug mounted in the controller cabinet. Units shall be unconditionally warranted for at least 5 years.

Testing of Grounding System

The Contractor shall perform testing of the equipment grounding system in the presence of the Engineer in accordance with MassDOT Standard Specifications.

Coordination

Communication for proposed signal system is planned to be via the use of GPS units.

The signal communication system work shall require the Contractor to furnish and install a fully operational communications network for the closed-loop traffic signal control systems, as shown on the plans and in accordance with this Special Provision, or as ordered. The work shall include, but not be limited to, performing a radio site evaluation and frequency path analysis; installation and testing of radio antennas, coaxial cable, and radio modems in existing and proposed cabinets; furnishing and installing terminal facilities in existing and new controller cabinets, and connecting the cables to the terminal in each controller cabinet; and installing lightning protection.

Video Detection

Video detection shall be installed for vehicle detection at the following intersections:

- Merrimack Street at Palmer Street (Item 816.02)
- Merrimack Street at Central Street (Item 816.03)
- Merrimack Street at Bridge Street & Prescott Street (Item 816.04)
- Market Street at Dutton Street (Item 816.05)
- Market Street at Palmer Street (Item 816.06)
- Market Street at Central Street & Prescott Street (Item 816.07)

Specific video detection to be installed at these locations is specified on the plans. This section covers the minimum requirements for a system that detects vehicles on a roadway using only video images of vehicle traffic.

System Hardware

Processor shall be a 2-channel processor. The video detection system shall consist of one or more video cameras, a video detection processor (VDP) which mounts in a standard detector rack; a detector rack mounted extension module (EM), and a pointing device.

System Software

The system shall include software that detects vehicles in multiple lanes using only the video image. Detection zones shall be defined using only an onboard video menu and a pointing device to place the zones on a video image. Up to 24 detection zones per camera shall be

ITEM 816.01 THRU 816.07 (Continued)

available. A separate computer shall not be required to program the detection zones. A video software transfer cable shall be supplied to the City.

Limited Warranty

The supplier shall provide a limited two-year warranty on the video detection system.

During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

During the warranty period, updates to VDP software shall be available from the supplier without charge.

Maintenance 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.

Functional Capabilities

The VDP shall process video from one or two sources, as specified. The source can be a video camera or video tape player. The video shall be input to the VDP in RS170 format and shall be digitized and analyzed in real time. Dual video VDP's shall process images from both inputs simultaneously.

The VDP shall detect the presence of vehicles in up to 24 detection zones per camera. A detection zone shall be approximately the width and length of one car.

Detection zones shall be programmed via an on board menu displayed on a video monitor and a pointing device connected to the VDP. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters. A separate computer shall not be required for programming detection zones or to view system operation.

ITEM 816.01 THRU 816.07 (Continued)

The VDP shall store up to three different detection zone patterns. The VDP can switch to any one of the three different detection patterns within 1 second of user request via menu selection with the pointing device.

The VDP shall detect vehicles in real time as they travel across each detector zone.

The VDP shall have an RS-232 port for communications with an external computer. The VDP RS-232 port shall be multi-drop compatible.

The VDP shall accept new detector patterns from an external computer through the RS-232 port when the external computer uses the correct communications protocol for downloading detector patterns. A Windows™-based software designed for local or remote connection and providing video capture, real-time detection indication and detection zone modification capability shall be provided with the system.

The VDP shall send its detection patterns to an external computer through the RS-232 port when requested when the external computer uses the appropriate communications protocol for uploading detector patterns.

The extension module (EM) shall be installed to avoid the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack.

The extension module shall be connected to the VDP by an 8-wire cable with modular connectors. VDP and EM communications shall be accommodated by methods using differential signals to reject electrically coupled noise. The extension module shall be available in both 2 and 4 channel configurations. EM configurations shall be programmable from the VDP.

The camera system shall be able to transmit an NTSC video signal, with minimal signal degradation, up to 1000 feet under ideal conditions.

The associated VDP shall default to a safe condition, such as a constant call on each active detection channel, in the event of loss of video signal.

The system shall be capable of automatically detecting a low-visibility condition such as fog and respond by placing all defined detection zones in a constant call mode. A user-selected output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s). The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.

Vehicle Detection

A minimum of 24 detection zones shall be supported and each detection zone shall be user definable in size and shape to suit the site and the desired vehicle detection region.

ITEM 816.01 THRU 816.07 (Continued)

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.

Placement of detection zones shall be done by using only a pointing device, and a graphical interface built into the VDP and displayed on a video monitor, to draw the detection zones on the video image from the video camera. No separate computer shall be required to program the detection zones.

A minimum of 3 detection zone patterns shall be saved within the VDP memory. The VDP's memory shall be non-volatile to prevent data loss during power outages. The VDP shall continue to operate (e.g. detect vehicles) using the existing zone configurations even when the operator is defining/modifying a zone pattern. The new zone configuration shall not go into effect until the configuration is saved by the operator.

The selection of the detection zone pattern for current use shall be done through a menu or remote computer via RS-232 port. It shall be possible to activate a detection zone pattern for a camera from VDP memory and have that detection zone pattern displayed within 1 second of activation.

When a vehicle is detected crossing a detection zone, the corners of the detection zone will flash on the video overlay display screen to confirm the detection of the vehicle.

Detection shall be at least 98% accurate in good weather conditions and at least 96% accurate under adverse weather conditions (rain, snow, or fog). Detection accuracy is dependent upon site geometry; camera placement, camera quality and detection zone location, and these accuracy levels do not include allowances for occlusion or poor video due to camera location or quality.

Detector placement shall not be more distant from the camera than a distance of ten times the mounting height of the camera.

The VDP shall provide up to 24 channels of vehicle presence detection per camera through a standard detector rack edge connector and one or more extension modules.

The VDP shall provide dynamic zone reconfiguration (DZR) to enable normal detector operation of existing channels except the one where a zone is being added or modified during the setup process. The VDP shall output a constant call on any detection channel corresponding to a zone being modified.

Detection zone setup shall not require site specific information such as latitude, longitude, date and time to be entered into the system.

The VDP shall output a constant call for each enabled detector output channel if a loss of video signal occurs. The VDP shall output a constant call during the background learning period.

ITEM 816.01 THRU 816.07 (Continued)

Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse, extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds.

Up to six detection zones shall be capable to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the RS-232 port. The data collection interval shall be user definable in periods of 5, 15, 30 or 60 minutes.

VDP and EM Hardware

The VDP and EM shall be specifically designed to mount in a standard TS-1, TS-2, 170 type detector rack, using the edge connector to obtain power and provide contact closure outputs.

No adapters shall be required to mount the VDP or EM in a standard detector rack. Detector rack rewiring shall not be required or shall be minimized.

The VDP and EM shall operate in a temperature range from -34°C to +74°C and a humidity range from 0%RH to 95%RH, non-condensing.

The VDP and EM shall be powered by 12 or 24 volts DC. These modules shall automatically compensate for the different input voltages.

VDP power consumption shall not exceed 300 milliamps at 24 VDC. The EM power consumption shall not exceed 120 milliamps at 24 VDC.

The VDP shall include an RS-232 port for serial communications with a remote computer. The VDP RS-232 port shall be multi-drop compatible. This port shall be a 9-pin "D" subminiature connector on the front of the VDP.

The VDP shall utilize flash memory technology to enable the loading of modified or enhanced software through the RS-232 port without modifying the VDP hardware.

The VDP and EM shall include detector output pin out compatibility with industry standard detector racks.

The front of the VDP shall include detection indications, such as LED's, for each channel of detection that display detector outputs in real time when the system is operational.

The front of the VDP shall include one or two BNC video input connection suitable for RS-170 video inputs as required. The video input shall include a switch selectable 75-ohm or high impedance termination to allow camera video to be routed to other devices, as well as input to the VDP for vehicle detection. Video must be inputted via a BNC connector on the front face of the processor. RCA type connectors/jacks for video input are not allowed. Video shall not be routed via the edge connectors of the processor.

ITEM 816.01 THRU 816.07 (Continued)

The front of the VDP shall include one BNC video output providing real time video output that can be routed to other devices. A RCA type connector/jack for video output is not allowed.

The front panel of the VDP and EM shall have a detector test switch to allow the user to place calls on each channel. The test switch shall be able to place either a constant call or a momentary call depending on the position of the switch.

Video Detection Camera

The video cameras used for traffic detection shall be furnished by the VDP supplier and shall be qualified by the supplier to ensure proper system operation.

The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.1 lux to 10,000 lux.

The camera shall use a charge coupled device (CCD) sensing element and shall output monochrome video with resolution of not less than 380 lines vertical and 380 lines horizontal.

The camera shall include an electronic shutter control based upon average scene luminance and shall be equipped with a factory adjusted manual iris. Auto-iris lenses are not allowed.

The camera shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier.

The horizontal field of view shall be adjustable from 8.1 to 45.9 degrees. A single camera configuration shall be used for all approaches in order to minimize the setup time and spares required by the user. The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night.

The camera shall be housed in a weather-tight sealed enclosure. The housing shall be field rotatable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view. The camera enclosure with sunshield shall be less than 6" diameter, less than 15" long, and shall weigh less than 6 pounds when the camera and lens are mounted inside the enclosure.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens shutter at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.

When mounted outdoors in the enclosure, the camera shall operate satisfactorily in a temperature range from -34 °C to +60 °C and a humidity range from 0% RH to 100% RH.

ITEM 816.01 THRU 816.07 (Continued)

The camera shall be powered by 120-240 VAC 50/60 Hz. Power consumption shall be 15 watts or less under all conditions.

Recommended camera placement height shall be 20 feet (or 6 meters) above the roadway, and over the traveled way on which vehicles are to be detected. For optimum detection the camera should be centered above the traveled roadway. The camera shall view approaching vehicles at a distance not to exceed 200 feet for reliable detection (height to distance ratio of 10:100).

Camera placement and field of view (FOV) shall be unobstructed and as noted in the installation documentation provided by the supplier.

The camera enclosure shall be equipped with separate, weather-tight connections for power and setup video cables at the rear of the enclosure. These connections may also allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using a lens adjustment module (LAM) supplied by the VDP supplier. Video and power shall not be connected within the same connector.

The video signal output by the camera shall be black and white in RS170 or CCIR format.

The video signal shall be fully isolated from the camera enclosure and power cabling.

Co-Axial Cable

The coaxial cable to be used between the camera and the VDP in the traffic cabinet shall be Belden 8281 or a 75 ohm, precision video cable with 20 gauge solid bare copper conductor (9.9 ohms/M), solid polyethylene insulating dielectric, 98% (min) tinned copper double-braided shield and black polyethylene outer covering. The signal attenuation shall not exceed 0.78 dB per 100 feet at 10 MHz. Nominal outside diameter is 0.304 inches. The coax cable shall be a continuous unbroken run from the camera to the VDP. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. 75-ohm BNC plug connectors should be used at both the camera and cabinet ends. The coaxial cable, BNC connector, and crimping tool shall be approved by the supplier of the video detection system, and the manufacturer's instructions must be followed to ensure proper connection.

Power Cabling

The power cabling shall be 16 AWG three-conductor cable. The cabling shall comply with the National Electric Code, as well as local electrical codes. Cameras may acquire power from the luminaire if necessary.

Execution

The video detection system shall be installed by supplier factory certified installers and as recommended by the supplier and documented in installation materials provided by the supplier. Proof of factory certification shall be provided.

ITEM 816.01 THRU 816.07 (Continued)

Testing of Cameras

The following test procedure shall be performed in the presence of the Engineer before and after the camera detection is used. The cost of equipment, labor, and materials to perform such testing and similar re-testing following repairs, replacement, or adjustment of any camera within the project area shall be included in the contract unit price for this Item.

After installation of cameras above the roadway each camera shall be tested (at the controller cabinet) for proper installation.

Camera Monitor

The Contractor shall install a Legacy L7HM 7-inch TFT L.C.D. video monitor that is to be permanently mounted in the controller cabinet on a swivel mount of Item 816.02.

Vehicle Loop Detectors

Wire loop detectors shall be installed in the roadway for vehicle detection. In advance of the loop detector installation, the Contractor shall mark, on site, the loop detectors with any changes required by field conditions such as manholes. The loop detector layout shall be inspected and approved by the Engineer before the loop detectors are installed.

All wire loop detectors shall be installed prior to top course pavement application.

Loop wire shall be encased in a protected plastic tubing of PVC or polyethylene plastic, IMSA 51-5, 0.25 inches outside diameter, and the wire may have cross-linked polyethylene insulation or it may have THHN/THWN insulation.

Splicing insulator shall be an approved re-enterable rigid body splice kit with a non-hardening sealing compound compatible with the wire insulation.

Splice and Connection: Splicing and connection shall be made in the pull box nearest the roadway loop sensor but not exceeding four loops per pull box. All loops included in a detector group as shown on the plans shall be spliced in a single pull box. Each lead and lead-in connector shall be stripped back and spliced using a pressure type wire connector applied with a crimping tool. Multiple loop sensors shall be identified as detailed on the plans.

Lead-in splicing shall be staggered to prevent contact with each other. Each crimped splice shall be soldered and insulated. The insulation material shall be heat-shrunked polyolefin. The shielded lead-in cable outer jacket and shield shall be stripped back sufficiently to ensure that the shield cannot come into contact with the spliced conductors. Follow the instructions of the kit manufacturer for this procedure when installing the re-enterable splice kit.

NOTE WELL: The above splice shall be done on the day of the loop wire installation to prevent the entrance of any moisture into the plastic tubing.

ITEM 816.01 THRU 816.07 (Continued)

The lead-in conductors shall be connected to the appropriate terminals in the controller cabinet, by using crimped or soldered terminal ends. The heat source for soldering shall be electrical not exceeding 30W capacity.

Testing of Loops

The following test procedure shall be performed in the presence of the Engineer before and after the loop sensor is sealed in the pavement as detailed below. The cost of equipment, labor, and materials to perform such testing and similar re-testing following repairs, replacement, or adjustment of any detector within the project area shall be included in the contract unit price for this Item.

After installation of wire loop sensors in the roadway and installation of shielded lead-in connecting the loop sensors to the controller cabinet each loop sensor and lead-in combination shall be tested (at the controller cabinet) for proper installation. The resistance from lead to lead of the same loop shall not exceed three (3) ohms per one thousand (1,000) feet as measured by a high quality meter suitable for measurements of low resistance in the range of 1 to 6 ohms.

A megohm meter test at 500 volts DC shall be made between the two leads of a loop/lead-in combination temporarily spliced together, but otherwise disconnected from all terminals, and the shield drain wire and the earth ground connection. These resistances shall be at least one hundred (100) megohms.

A megohm meter test at 500 volts DC shall be made between lead-in shield and the earth ground rod. This resistance shall be at least one hundred (100) megohms.

The meter used for these tests shall be checked for calibration each day of use by using a resistor block of $\pm 5\%$ resistors simulating loads of 1 megohm, 20 megohm and 100 megohms. The observed meter reading shall be $\pm 10\%$ of the nominal resistor load.

If any loop sensor and lead-in combination fails to pass any one of the four (4) tests, it shall be repaired and then re-tested on two occasions at least two (2) weeks apart, and then shall pass on each re-test occasion. If the loop sensor lead-in combination does not pass all these re-tests, a new loop sensor and/or lead-in shall be installed, and shall pass these tests, at no additional cost.

After the above tests have been satisfactorily completed, all loop sensor/shielded lead-in inductances shall be measured and a written report of the results shall be filed with the Engineer and a copy stored with the "box prints" at the intersection.

Emergency Vehicle Pre-emption

The emergency vehicle preemption system shall be compatible with City of Lowell emergency apparatus and shall be installed in the same cabinet as the controller.

ITEM 816.01 THRU 816.07 (Continued)

The emergency vehicle preemption control system shall consist of a data-encoded phase selector to be installed within the traffic control cabinet. This unit will serve to validate, identify, classify, and record the signal from the optical detectors located on support structures at the intersection.

Upon receiving a valid signal from the detector, the phase selector shall generate a preempt call to the controller initiating a preemption operation as shown on the plans.

The optical detectors shall be single input, single output units used to control one approach. All traffic signal installations shall be supplied with a minimum of two optical detectors unless otherwise noted in the major items list.

The phase selector shall be a rack-mounted plug-in, dual priority device. The phase selector shall plug into a shelf-mounted single card slot chassis. Programming the phase selector shall be via a PC-based computer utilizing unit specific software. One copy of software, on a CD shall be supplied and licensed to the City of Lowell. A hard copy of final programming data shall be left in the control cabinet. The Contractor shall supply a complete set of interface cables for phase selector to laptop connection.

The Contractor shall install a confirmation strobe at the traffic signal location as shown on the plans. The confirmation strobe shall serve to validate to the driver of the emergency vehicle that the traffic signal has recognized the preemption call and will initiate the proper preemption sequence. The confirmation strobe shall be a white lens Whelen model 1500 or equivalent.

The Contractor shall be responsible for the proper programming of the phase selector, orientation of the optical detectors, and all other work necessary to provide a complete and operating emergency vehicle preemption system. The Contractor may be required to field adjust the location of the optical detectors in the presence of the Engineer to properly detect preemption calls from approaching vehicles.

Mast Arms (35-Foot and smaller), Poles and Foundations

Mast arm poles shall be fabricated and constructed in conformance with the MassDOT Standard Drawings included in the plans and as stated below.

All mast arm poles shall be Type 2 steel monolevers with shoe bases painted BLACK.

Acceptance of Type 2 mast arm poles will be contingent upon review and approval of shop drawings submitted by the Contractor. Longhand design calculations shall be submitted by the Contractor with the shop drawings for all Type 2 mast arm poles.

Mast arm foundations shall be constructed according to the relevant provisions of Section 945. The Contractor shall submit a Drilled Shaft Installation Plan according to sub section 945.51. Mast arm foundations shall be constructed in conformance with the MassDOT Standard Drawings, dated February 2011 (as revised). For the purpose of this contract, mast arm foundations shall be pier foundations designed for 110 MPH SPEED ZONE, HEAVY LOADING

CONDITIONS and ALLUVIAL SOIL. The Contractor shall retain a Professional Engineer Registered in the Commonwealth of Massachusetts specializing in geotechnical engineering to confirm the characteristics of the soil.

NOTE: Construction of the mast arm foundations requires extreme care by the Contractor due to proximity of adjacent foundation and vault walls (see sub section 945.54). Soil removal shall be conducted using a vacuum method to get below the depth of known or reasonably encountered utilities. Blasting shall not be permitted to excavate for the construction of any mast arm foundations.

If it is determined by the Engineer that pier foundations are required to be constructed to a depth greater than what is shown in the MassDOT Standard Drawings due to proximity of adjacent foundation and/or vault walls, the mast arm foundation shall be constructed in accordance with the MassDOT Standard Drawings and payment will be made for the difference in depth under item 815.98.

Relocation of utilities for the convenience of placement of the foundation has not been anticipated and shall be at the expense of the Contractor if requested. The Contractor shall provide a bid price which accounts for the potential use of other low profile excavation techniques as necessary.

In the event that soil conditions or ledge prevent the use of MassDOT standard foundation type, the Contractor is responsible to select and design alternative foundation types. Alternative foundation types could include spread footings, coring and socketing into rock or other foundations previously used to support similar loads, within reason.

The Contractor shall provide a set of calculations, stamped by a Structural Engineer registered in the Commonwealth of Massachusetts, along with plans and specifications for review by the Project Engineer.

No separate payment will be made for work considered incidental to the excavation, including but not limited to, mast arm foundations, dewatering, etc. but all costs in connection therewith shall be included in the lump sum bid price.

Signal Heads

Signal heads mounted on mast arms shall be rigidly attached to the mast arms unless otherwise noted. All signal heads mounted overhead on mast arms shall be installed, with the bottom of the signals at the same height. All proposed signal heads shall be installed with louvered backplates under Item 816.01 through 816.07. All traffic signal lenses shall be 12 inches in diameter unless otherwise noted on the plans. Louvered backplates shall be 5 inches provided on all signal heads with tunnel visors as noted on the plans. All signal heads shall be equipped with ball and/or arrow light emitting diode (LED) modules.

ITEM 816.01 THRU 816.07 (Continued)

LED Signal Modules

All signal and pedestrian displays shall be equipped with LED signal modules. All red, amber, green, and pedestrian signal housings with the exception of optically programmed and fiber optic housings shall conform to the following where applicable:

- ITE's Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Arrow Traffic Signal Supplement, Dated April 3, 2006.
- ITE's Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement, Dated June 27, 2005.
- ITE's Pedestrian and Countdown Signal Modules Compliant to PTC SI - Part 2 Light Emitting Diode (LED), Dated, August, 2007.
- Energy Star / EPACT Program Requirements for Traffic Signals
- On the MassDOT Traffic Signal Approved Equipment List.

An independent lab shall certify that the LED signal module complies with the applicable ITE specification. The independent report should be submitted to MassDOT for review unless the module is already on the approved list.

To prevent the LED module warranty from being voided, the connecting leads on the module shall not be cut. The original LED module leads shall be connected to the signal head terminal block as continuous wire without splices.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits one of the following:

- A failure due to workmanship or material defects within the first 60 months of field operation
- A greater than 40 percent light output degradation or a fall below the minimum intensity levels (as defined by the latest ITE performance specifications) within the first 36 months of field operation

Pedestrian Heads with Countdown Timers

All pedestrian heads shall be 16 inch, single units, with countdown timers. All pedestrian heads shall include audible devices in conformance with the MassDOT Accessible Pedestrian Signal (APS) Installation Policy, dated June 1, 2012 and as revised. Pedestrian head indications shall be illuminated L.E.D. type displaying graphical symbols of a walking person and/or upraised hand. The countdown module shall display the number of seconds remaining throughout the pedestrian "DON'T WALK" interval, and blank out during the steady "DON'T WALK" interval. The countdown module shall be automatically set by the intersection controller based upon the "DON'T WALK" signal interval only. The countdown module shall continuously monitor the intersection controller for any changes to the pedestrian phase timing, and reprogram itself automatically.

ITEM 816.01 THRU 816.07 (Continued)

All LED indications on the pedestrian signal shall have an automatic dimming circuit for night illumination to reduce long-term degradation to the LEDs.

Pedestrian Push Buttons

Pedestrian push buttons shall be vibratory in conformance with the MassDOT Accessible Pedestrian Signal (APS) Installation Policy, dated June 1, 2012 and as revised. Pedestrian push button controls shall be raised from or flush with their housings and shall be a minimum of 2 inches in the smallest dimension. The force required to activate the controls shall be no greater than 5 pounds.

Pedestrian push buttons shall be located as close as practicable to the sidewalk curb ramp serving the controlled crossing and shall permit operation from a clear ground space. If two crosswalks, oriented in different directions, end at or near the same location, the positioning of pedestrian pushbuttons and/or legends on the pedestrian push button signs should clearly indicate which crosswalk signal is actuated by each pedestrian push button. A maximum mounting height of 42 inches above the finish sidewalk grade shall be used for pedestrian push buttons.

Posts and Bases

Signal posts and bases shall be aluminum shafts with cast aluminum transformer bases.

Signal base foundations shall not obstruct a sidewalk or crosswalk so that passage by physically-challenged persons is impaired.

Equipment Finish and Color

Traffic signal equipment including, but not limited to, signal pole/posts, bases, signal heads, visors (outside), doors, mast arms, pushbutton saddles, service meter socket box, optical preemption detectors, hardware, and rigid mounting brackets for signals and signs shall be colored **BLACK**, subject to the approval of the City. The controller cabinet shall be painted **BLACK** with **WHITE** interior. The Contractor shall submit to the Engineer, and the City for approval, paint chips and sample finishes on steel and aluminum of the intended color prior to any work being done under this heading.

Signal heads, doors, visors, mounting brackets, and hardware supplied direct from the manufacturer in the color stipulated above may be acceptable provided it meets or exceeds the finish process for the material indicated below.

Aluminum Equipment

All aluminum equipment called for shall be painted or powder coated **BLACK** in color. If powder coating method is used, the coating shall be a polyester-TGIC (triglycidyl isocyanurat) resin system conforming to the following:

ITEM 816.01 THRU 816.07 (Continued)

Quality	Test	Limits
Abrasion	Taber abraser CS-10, 1000 gram load, 1000 cycle, ASTM D4060	100 mg. Maximum weight loss
Adhesion	ASTM D .59 Initial 1000 hours	5A 5A
Gloss	ASTM D 523 60° - 600 hours 60° - 1000 hours	82% retention 90% retention (washed)
Hardness	ASTM D 3363	2H – No Gouge
Impact	ASTM D 2794 Direct	Pass 80 inch-lb.
Salt Spray Resistance	ASTM B 177 ASTM D 1654 1000 hours unscribed, 400 hours scribed	Table 2-10 Table 1-10
Weather Resistant	ASTM G 23, 1000 hours, 18 min. waterspray, 102 min. light	No film failure
Color	Black	
Identify	Infrared fingerprint	Match
Flexibility	180° bend; ½" dia, mandrel within 10 seconds	No breaks, flaking or cracks. Tested with a Q-panel with 2 mils or less of coating
Humidity	ASTM D 2247, 1000 hours	No blister or film failure
Thickness		4 mils +/- 1 mils
Mar Resistance		Good

A Certificate of Compliance of the powder coating system is required for the Engineer's approval.

Software

All local controller, malfunction management unit, and amplifier software shall be supplied with the latest available revision. Any software upgrades released by the manufacturer shall be supplied at no charge to the Owner for a period of five years after acceptance of the traffic signal installation.

Data Base Programming

Each programmable local hardware component (i.e., controller, malfunction management unit, preemption unit, and detector amplifier) shall be initially programmed by the Contractor based on information contained on the plans. Three sets of hard copy programming per device shall be supplied by the Contractor.

The Contractor shall supply an 8½"x17" laminated copy of the traffic signal design plans and sequence and timing chart to be left in the cabinet's documentation envelope mounted on the inside of the cabinet door.

ITEM 816.01 THRU 816.07 (Continued)

Technical Manuals and "Box Prints"

Per MassDOT Specifications the Contractor shall provide prior to final acceptance as furnished by the manufacturer.

1. Controller Unit, Flasher, Load Switches, Conflict Monitor and all external logic units.
 - a. Electronic schematic of circuit boards.
 - b. Pictorial layout of components on circuit boards.
 - c. Service manual for troubleshooting.
 - d. Manual describing the theory of operations.
 - e. Parts list showing manufacturer's part number and location.
2. Controller cabinet.
 - a. Cabinet wiring diagram (3 sets).
 - b. Field wiring diagram (3 sets).

Method of Measurement and Basis of Payment

The work under ITEM 816.01 THRU 816.07 will be measured and paid for at the respective Contract lump sum prices, which price shall include all labor, material, equipment and incidental costs required to complete the work.

No separate payment will be made for maintenance of existing installation, but all costs in connection therewith shall be included in the lump sum price bid for various Items. Conduit will be paid separately under Item 804.3, 3 Inch Electrical Conduit, Type NM Plastic (UL). Pull boxes will be paid separately under Item 811.31, Pull Box 12 x 12 Inches - SD2.030.

ITEM 832.21 **CROSSING WARNING SIGN & ASSOCIATED** **SQUARE FOOT**
SUP. WARN. SIGN

Work under this Item shall conform to the relevant provisions of Section 828. Of the Standard Specifications and the following:

Work under this Item shall consist of fabricating and installing new W11-2, W16-7P and W16-9P signs (as shown on the Traffic Sign Summary in the Contract Drawings) on new P5 support posts at the locations indicated on the detail sheets contained herein and/or as directed by the Engineer.

All Signs furnished under the Item shall consist of black opaque legends, symbols, and borders on fluorescent yellow/green high intensity prismatic (HIP) backgrounds conforming to ASTM 04596 Type IX or better.

Sign panels shall be fabricated from 0.080 inch thick sheet (Type A) aluminum.

Method of Measurement and Basis of Payment

Pedestrian Crossing and Associated Supplemental Sign shall be paid for per SQUARE FOOT of each sign panel fabricated and installed. Said price shall include all materials, labor, hardware, and incidentals required for a complete installation.

New P-5 support posts for signs shall be paid for under Item 847.1 Sign Sup (N/Guide) + Rte Mkr W/1 Brkway Post Assembly – Steel.

ITEM 856. **PORTABLE CHANGEABLE MESSAGE SIGN** **DAY**

Work under this Item shall conform to the relevant provisions of Section 850. Of the Standard Specifications and the following:

The contractor shall furnish and install portable changeable message signs (PCMS) at locations shown on the TEMPORARY TRAFFIC CONTROL PLAN for a duration of not less than 2-weeks prior to opening roadways to two-way traffic. The PCMS shall remain on-site for at least 2-weeks after opening the roadways to two-way traffic or as directed by the Engineer.

The PCMS shall display a minimum of 4 lines of text and shall allow for multi-lingual messages. The exact message shall be determined by the Engineer.

Method of Measurement and Basis of Payment

Portable Changeable Message Sign shall be paid for per DAY of each sign furnished and installed. Said price shall include all materials, labor, hardware, and incidentals required for complete mobilization and de-mobilization of the PCMS.

ITEM 864.04 **ARROWS AND LEGENDS REFL. WHITE** **SQUARE FOOT**
(THERMOPLASTIC)

Work under this Item shall conform to the relevant provisions of Section 850. Of the Standard Specifications and the following:

The contractor shall furnish a stencil of the proposed yield line markings to the City for future maintenance capabilities.

Method of Measurement and Basis of Payment

Arrows and Legends Refl. White (Thermoplastic) shall be measured and paid for per square foot of thermoplastic arrows and legends, complete in place. Said price shall include all materials, labor, equipment, and incidentals required to complete the work.

ITEM 874.01 **PARKING METER SIGN** **EACH**

GENERAL

Work under this item shall conform to the relevant provisions under section 800 of the standard specifications and the following:

The contractor shall furnish and install Komacel parking meter signs and posts at the locations indicated on the plans. The materials shall strictly comply with the following specifications:

Komacel Space Signs (12" x 12" x 1")

Includes 2 ea black aluminum spacer (2'x6") with every Komacel Meter Sign
Space Signs and Black Aluminum Spacers have two holes drilled in them that are sized to fit a M12x75mm Cup Square Hexagon Bolt

Material – white pvc

Gauge – 1" thick pvc

Color – white, black and City Seal (city will provide proof to make sticker)

Schedule 40 black vinyl coated steel poles (21' lengths)

Material – 2" steel

Gauge – Industry standard to hold municipal signs

Color – black vinyl

Schedule 40 black vinyl coated steel caps for poles

Material – 2" steel cap

Gauge – Industry standard to hold municipal signs

Color – black vinyl

M12x75mm Cup Square Hexagon Bolt & Lock Nut Fully Threaded Zinc & Clear

NOTE: See photograph on following page for sample sign

ITEM 874.01 (Continued)

COMPENSATION

All labor, materials, equipment and incidentals shall be included in the contract per each unit bid price.



ITEM 874.02 **PARKING METER SIGN REMOVED AND RESET** **EACH**

GENERAL

Work under this item shall conform to the relevant provisions under section 800 of the standard specifications and the following:

The contractor carefully remove each parking meter sign and all hardware and reset said sign on new or existing post as shown on the plans.

If existing sign is damaged by the contractor during the removal and resetting process, no separate payment will be made by the City for a new sign.

COMPENSATION

All labor, materials, equipment and incidentals shall be included in the contract per each unit bid price.

ITEM 874.03 **PARKING METER SIGN REMOVED AND STACKED** **EACH**

GENERAL

Work under this item shall conform to the relevant provisions under section 800 of the standard specifications and the following:

The contractor shall carefully remove each parking meter sign and hardware called out as R&S and stack at location to be determined by the Engineer.

If existing sign is damaged by the contractor during the removal and stacking process, no separate payment will be made by the City for a new sign.

COMPENSATION

All labor, materials, equipment and incidentals shall be included in the contract per each unit bid price.

ITEM 874.2

TRAFFIC SIGN REMOVED AND RESET

EACH

GENERAL

Work under these items shall conform to the relevant provisions under section 800 of the standard specifications and the following:

Work shall include the removal and resetting of existing traffic signs at the locations shown on the plans. The Contractor shall completely remove the sign and post and reset said sign and post at the new location. If existing sign and/or post are not suitable for reuse as determined by the Engineer, the contractor shall provide new sign and/or post under items 832. or 832.21 and 847.1, respectively.

If existing sign and/or post are damaged by the contractor during the removal and resetting process, no separate payment will be made by the City for new sign and/or post.

COMPENSATION

All labor, materials, equipment and incidentals shall be included in the contract per each unit bid price.

ITEM 874.4

TRAFFIC SIGN REMOVED AND STACKED

EACH

GENERAL

Work under these items shall conform to the relevant provisions under Section 800 of the standard specifications and the following:

Work shall include the removal and stacking of existing traffic and street signs as shown on the plans. The signs, posts and hardware shall be stacked on boards at a location to be determined by the Engineer. Shall the City not want the signs, posts and hardware, they shall become the property of the Contractor.

The Contractor shall completely remove the sign and post. If existing sign and/or post are damaged by the Contractor during the removal and stacking process, a new sign and post of the same size and material shall be provided to the City at the Contractor's expense.

COMPENSATION

Method of Measurement

Traffic sign removed and stacked will be measured for payment by each.

Basis of Payment

All labor, materials, equipment and incidentals shall be included in the contract unit price per each.

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APPENDIX A – HOT MIX ASPHALT PRICE ADJUSTMENTS

New and Old Asphalt Period Price Methods

The paragraphs below apply to both the New and the Old Asphalt Period Price Methods.

The Contract Price of the hot mix asphalt mixture will be paid under the respective item in the Contract. The price adjustment, as herein provided, 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.

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.

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of tons of hot mix asphalt mixtures placed during each monthly period times the liquid asphalt content percentage times the variance in price between Base Price and Period Price of liquid asphalt.

This Price Adjustment 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.

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

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

DOCUMENT 00811
SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES
ENGLISH UNITS
Revised: 02/02/2009

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

The Price Adjustment will be based on the variance in price for the liquid asphalt component only from the Base Price to the Period Price. It shall not include transportation or other charges. This Price Adjustment 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 at the time of bid by the Department by using the same method as for the determination of the Period Price detailed below.

Period Price

Please note that, starting December 15, 2008, two sets of period prices will be posted each month on the MassDOT website at <http://www.mhd.state.ma.us/default.asp?pgid=content/fuelPrices&sid=about>. They will be labeled "New Asphalt Period Price Method" and "Old Asphalt Period Price Method".

New Asphalt Period Price Method

The "New Asphalt Period Price Method" is for contracts bid after December 15, 2008 and will show the Period Price of liquid asphalt for each monthly period as determined by MassDOT using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. MassDOT will post this Period Price on this website within two (2) business days following their receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted MassDOT the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor.

Old Asphalt Period Price Method

The "Old Asphalt Period Price Method" Period Price will be for contracts bid on or before December 15, 2008 and will contain liquid asphalt prices as determined by the old or previous method. These prices will continue to be posted on MassDOT's website until all contracts using the "Old Asphalt Period Price Method" Period Price have been closed.

APPENDIX B – PROJECT PLANS

**** UNDER SEPARATE COVER ****

**PREPARED BY: TEC, INC.
SIGNED & STAMPED BY: MIKEL C. MYERS, P.E.
DATED: 2/18/2014**

APPENDIX C – BUILDING VAULT INSPECTION REPORTS

**PREPARED BY: VHB, INC.
DATED: DECEMBER, 2007**

**** FOR REFERENCE ONLY ****

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault A)

Inspection Date: 12/19/07 Inspectors: B. Richard, A. Collins

Owner Information	
Name	Hildreth Ventures, LLC
Address	1461 VFW Parkway W. Roxbury, MA 02132
Phone/Email	Karen Coffin, 617-327-8100

Vault Dimensions	
Length	50.0'
Width	9.0'
Height	8.1'
Access Door	Not present

Equipment	
Mechanical	N/A
Electrical	Yes
Plumbing	N/A
Fire	Yes
Gas	N/A
Other	N/A

Current Use	Utilities
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Future Use	Same as current
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City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault A)

Condition Assessment:

Item:	Rating: (0 – 9)	Notes:
Top of Sidewalk	4	Concrete, granite
Underside of Sidewalk (Concrete, granite, etc.)	3	Concrete, granite
Sidewalk Support Elements (i.e. beams, corrugated decking, etc.)	3	Steel Beams
Interface at Foundation (along curbline)	5	
Interface at Foundation at Left Side of Building (facing building with street behind)	5	
Interface at Foundation at Right side of Building (facing building with street behind)	5	
Interface at Building	3	Cracked concrete, rusted steel beam
Access Door (if present)	N/A	
Other:	N/A	

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault A)

Recommendations for Further Action:

Based on the current conditions, repairs are required at this location. The vault could be filled in if a masonry wall was constructed at the building face and if the existing utilities (electrical and fire suppression) were relocated. If relocation is not an option, the following repairs are required:

Item:	Recommendation:
Sidewalk	Complete replacement of existing granite and concrete sidewalk with cast-in-place reinforced concrete slab supported on stay-in-place metal decking. If the granite is required to remain for historic reasons, it would be incorporated into the design. Slab to be designed to support a wheel load in accordance with AASHTO.
Sidewalk Supports	Existing support beams are in serious condition and require complete replacement.
Building Interface	Waterproofing to be installed to minimize water penetrating into vault.
Curb Interface	Waterproofing to be installed to minimize water penetrating into vault.

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault A)



Photo 1 Overall Vault A Section 1, Fire Suppression



City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault A)

Photo 2 Underside of Sidewalk and Support Beam



Photo 3 Overall Vault A Section 2



Photo 4 Underside of Sidewalk, Granite Slab

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault A)



Photo 5 Overall Vault A Showing Different Sections



Photo 6 Overall Vault A Section 3, Electrical

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault A)



Photo 7 Sidewalk Overall



**City of Lowell Downtown Revitalization Project
Vault Inspection Report**

**33-55
Merrimack Street
(Vault A)
Photo 8 Crack In Sidewalk**

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault B)

Inspection Date: 12/19/07 Inspectors: B. Richard, A. Collins

Owner Information	
Name	Hildreth Ventures, LLC
Address	1461 VFW Parkway W. Roxbury, MA 02132
Phone/Email	Karen Coffin, 617-327-8100

Vault Dimensions	
Length	33.3'
Width	9.0'
Height	7.9'
Access Door	Not present

Equipment	
Mechanical	N/A
Electrical	N/A
Plumbing	Yes, water
Fire	Yes
Gas	N/A
Other	N/A

Current Use	Utilities
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Future Use	Same as current
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City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault B)

Condition Assessment:

Item:	Rating: (0 – 9)	Notes:
Top of Sidewalk	4	Concrete, granite
Underside of Sidewalk (Concrete, granite, etc.)	3	Concrete, granite
Sidewalk Support Elements (i.e. beams, corrugated decking, etc.)	5	Steel Beams
Interface at Foundation (along curbline)	5	
Interface at Foundation at Left Side of Building (facing building with street behind)	5	
Interface at Foundation at Right side of Building (facing building with street behind)	5	
Interface at Building	3	Cracked concrete, rusted steel beam
Access Door (if present)	N/A	
Other:	N/A	

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault B)

Recommendations for Further Action:

Based on the current conditions, repairs are required at this location. The vault could be filled in if a masonry wall was constructed at the building face and if the existing utilities (plumbing) were relocated. If relocation is not an option, the following repairs are required:	
Item:	Recommendation:
Sidewalk	Complete replacement of existing granite and concrete sidewalk with cast-in-place reinforced concrete slab supported on stay-in-place metal decking. If the granite is required to remain for historic reasons, it would be incorporated into the design. Slab to be designed to support a wheel load in accordance with AASHTO.
Sidewalk Supports	Repair/replace supports as required.
Building Interface	Waterproofing to be installed to minimize water penetrating into vault.
Curb Interface	Waterproofing to be installed to minimize water penetrating into vault.

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault B)

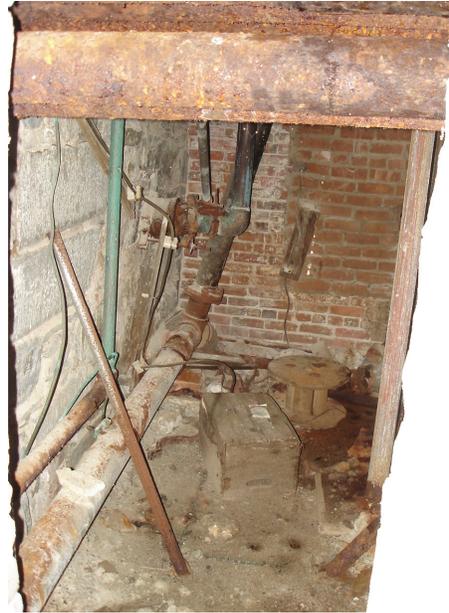


Photo 1 Overall Vault B Section 1 Looking Left



City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault B)

Photo 2 Overall Vault B Section 2 Looking Right



Photo 3 Joint and Underside of Sidewalk



City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault B)

Photo 4 Trap in Floor



Photo 5 Sidewalk Overall



**City of Lowell Downtown Revitalization Project
Vault Inspection Report**

**33-55
Merrimack Street
(Vault B)
Photo 6 Crack In Sidewalk**

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault C)

Inspection Date: 12/19/07 Inspectors: B. Richard, A. Collins

Owner Information	
Name	Hildreth Ventures, LLC
Address	1461 VFW Parkway W. Roxbury, MA 02132
Phone/Email	Karen Coffin, 617-327-8100

Vault Dimensions	
Length	27.6'
Width	9.0'
Height	8.8'
Access Door	Not present

Equipment	
Mechanical	N/A
Electrical	N/A
Plumbing	N/A
Fire	Yes
Gas	N/A
Other	N/A

Current Use	None
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Future Use	Same as current
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City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault C)

Condition Assessment:

Item:	Rating: (0 – 9)	Notes:
Top of Sidewalk	4	Concrete, granite
Underside of Sidewalk (Concrete, granite, etc.)	4 3	Granite Concrete, spalling with exposed rebar
Sidewalk Support Elements (i.e. beams, corrugated decking, etc.)	6	Steel Beams
Interface at Foundation (along curbline)	6	
Interface at Foundation at Left Side of Building (facing building with street behind)	6	
Interface at Foundation at Right side of Building (facing building with street behind)	6	
Interface at Building	6	
Access Door (if present)	N/A	
Other:	N/A	

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault C)

Recommendations for Further Action:

Based on the current conditions, repairs are required at this location. The vault could be filled in if a masonry wall was constructed at the building face and if the existing utilities (fire suppression) were relocated. If relocation is not an option, the following repairs are required:	
Item:	Recommendation:
Sidewalk	Complete replacement of existing granite and concrete sidewalk with cast-in-place reinforced concrete slab supported on stay-in-place metal decking. If the granite is required to remain for historic reasons, it would be incorporated into the design. Slab to be designed to support a wheel load in accordance with AASHTO.
Sidewalk Supports	No changes required.
Building Interface	Waterproofing to be installed to minimize water penetrating into vault.
Curb Interface	Waterproofing to be installed to minimize water penetrating into vault.

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault C)



Photo 1 Overall Vault C Looking Left

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault C)



Photo 2 Joint, Underside of Concrete with Exposed Rebar



Photo 3 Joint, Underside of Concrete

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault C)



Photo 4 Building Interface at Support, Exposed Rebar



Photo 5 Sidewalk Overall

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault C)



Photo 6 Crack In Sidewalk

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault D)

Inspection Date: 12/19/07 Inspectors: B. Richard, A. Collins

Owner Information	
Name	Hildreth Ventures, LLC
Address	1461 VFW Parkway W. Roxbury, MA 02132
Phone/Email	Karen Coffin, 617-327-8100

Vault Dimensions	
Length	18.4' (139.0' Overall outside building)
Width	10.0'
Height	8.9'
Access Door	Not present

Equipment	
Mechanical	N/A
Electrical	N/A
Plumbing	N/A
Fire	Yes
Gas	N/A
Other	N/A

Current Use	None
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Future Use	Same as current
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City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault D)

Condition Assessment:

Item:	Rating: (0 – 9)	Notes:
Top of Sidewalk	4	Concrete, granite
Underside of Sidewalk (Concrete, granite, etc.)	6 6	Granite Concrete, spalling with exposed rebar
Sidewalk Support Elements (i.e. beams, corrugated decking, etc.)	5	Steel Beams
Interface at Foundation (along curbline)	6	
Interface at Foundation at Left Side of Building (facing building with street behind)	6	
Interface at Foundation at Right side of Building (facing building with street behind)	6	
Interface at Building	5	
Access Door (if present)	N/A	
Other:	N/A	

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault D)

Recommendations for Further Action:

Based on the current conditions, repairs are required at this location. The vault could be filled in if a masonry wall was constructed at the building face and if the existing utilities (fire suppression) were relocated. If relocation is not an option, the following repairs are required:	
Item:	Recommendation:
Sidewalk	Complete replacement of existing granite and concrete sidewalk with cast-in-place reinforced concrete slab supported on stay-in-place metal decking. If the granite is required to remain for historic reasons, it would be incorporated into the design. Slab to be designed to support a wheel load in accordance with AASHTO.
Sidewalk Supports	Existing concrete supports beams are in fair condition but should be replaced. Currently, a temporary bracing system is supporting the sidewalk slab; this system was installed by the building owner.
Building Interface	Waterproofing to be installed to minimize water penetrating into vault.
Curb Interface	Waterproofing to be installed to minimize water penetrating into vault.

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault D)



Photo 1 Temporary Supports

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault D)



Photo 2 Support interface at Underside of Sidewalk



Photo 3 Overall, Granite Underside of Sidewalk

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault D)



Photo 4 Joint Supporting Sidewalk



Photo 5 Right Side Wall

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault D)



Photo 6 Support at Building Interface



Photo 7 Sidewalk Overall

City of Lowell Downtown Revitalization Project Vault Inspection Report

33-55 Merrimack Street (Vault D)



Photo 8 Crack In Sidewalk

APPENDIX D – PREVAILING WAGE RATES



DEVAL L. PATRICK
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

JOANNE F. GOLDSTEIN
Secretary
HEATHER E. ROWE
Director

Awarding Authority: City of Lowell
Contract Number: IFB 14-39 **City/Town:** LOWELL
Description of Work: Reconfigure downtown traffic to 2-way
Job Location: Lowell

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- 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.
- Awarding authorities must request an updated wage schedule from the Department of Labor Standards (“DLS”) if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule.
- 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. Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project. The wage schedule must be posted in a conspicuous place at the work site during 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 regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Training (DAT). Apprentices must keep his/her apprentice identification card on his/her person during all work hours on the project. If an apprentice rate is listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **If an apprentice rate is not listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice must be paid the journeyworker’s rate for the trade.**
- 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. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F “rental of equipment” contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports directly to the awarding authority 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. A sample of a payroll reporting form may be obtained at <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.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- 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.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2013	\$30.95	\$9.41	\$8.80	\$0.00	\$49.16
	06/01/2014	\$31.30	\$9.41	\$8.80	\$0.00	\$49.51
	08/01/2014	\$31.30	\$9.91	\$8.80	\$0.00	\$50.01
	12/01/2014	\$31.30	\$9.91	\$9.33	\$0.00	\$50.54
	06/01/2015	\$31.65	\$9.91	\$9.33	\$0.00	\$50.89
	08/01/2015	\$31.65	\$10.41	\$9.33	\$0.00	\$51.39
	12/01/2015	\$31.65	\$10.41	\$10.08	\$0.00	\$52.14
	06/01/2016	\$32.15	\$10.41	\$10.08	\$0.00	\$52.64
	08/01/2016	\$32.15	\$10.91	\$10.08	\$0.00	\$53.14
	12/01/2016	\$32.15	\$10.91	\$10.89	\$0.00	\$53.95
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2013	\$31.02	\$9.41	\$8.80	\$0.00	\$49.23
	06/01/2014	\$31.37	\$9.41	\$8.80	\$0.00	\$49.58
	08/01/2014	\$31.37	\$9.91	\$8.80	\$0.00	\$50.08
	12/01/2014	\$31.37	\$9.91	\$9.33	\$0.00	\$50.61
	06/01/2015	\$31.72	\$9.91	\$9.33	\$0.00	\$50.96
	08/01/2015	\$31.72	\$10.41	\$9.33	\$0.00	\$51.46
	12/01/2015	\$31.72	\$10.41	\$10.08	\$0.00	\$52.21
	06/01/2016	\$32.22	\$10.41	\$10.08	\$0.00	\$52.71
	08/01/2016	\$32.22	\$10.91	\$10.08	\$0.00	\$53.21
	12/01/2016	\$32.22	\$10.91	\$10.89	\$0.00	\$54.02
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2013	\$31.14	\$9.41	\$8.80	\$0.00	\$49.35
	06/01/2014	\$31.49	\$9.41	\$8.80	\$0.00	\$49.70
	08/01/2014	\$31.49	\$9.91	\$8.80	\$0.00	\$50.20
	12/01/2014	\$31.49	\$9.91	\$9.33	\$0.00	\$50.73
	06/01/2015	\$31.84	\$9.91	\$9.33	\$0.00	\$51.08
	08/01/2015	\$31.84	\$10.41	\$9.33	\$0.00	\$51.58
	12/01/2015	\$31.84	\$10.41	\$10.08	\$0.00	\$52.33
	06/01/2016	\$32.34	\$10.41	\$10.08	\$0.00	\$52.83
	08/01/2016	\$32.34	\$10.91	\$10.08	\$0.00	\$53.33
	12/01/2016	\$32.34	\$10.91	\$10.89	\$0.00	\$54.14
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$84.21	\$9.80	\$18.17	\$0.00	\$112.18
	08/01/2014	\$87.36	\$9.80	\$18.17	\$0.00	\$115.33
	08/01/2015	\$90.51	\$9.80	\$18.17	\$0.00	\$118.48
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	06/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	12/01/2014	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	06/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	12/01/2015	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	06/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50
	12/01/2016	\$33.85	\$7.30	\$12.10	\$0.00	\$53.25

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2013	\$30.68	\$10.40	\$5.95	\$0.00	\$47.03
	06/01/2014	\$31.58	\$10.40	\$5.95	\$0.00	\$47.93
	12/01/2014	\$32.48	\$10.40	\$5.95	\$0.00	\$48.83
	06/01/2015	\$33.43	\$10.40	\$5.95	\$0.00	\$49.78
	12/01/2015	\$34.38	\$10.40	\$5.95	\$0.00	\$50.73
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	06/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	12/01/2014	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	06/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	12/01/2015	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	06/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50
	12/01/2016	\$33.85	\$7.30	\$12.10	\$0.00	\$53.25
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2010	\$37.70	\$6.97	\$11.18	\$0.00	\$55.85

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2010

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$24.51	\$6.97	\$11.18	\$0.00	\$42.66
2	65	\$24.51	\$6.97	\$11.18	\$0.00	\$42.66
3	70	\$26.39	\$6.97	\$11.18	\$0.00	\$44.54
4	75	\$28.28	\$6.97	\$11.18	\$0.00	\$46.43
5	80	\$30.16	\$6.97	\$11.18	\$0.00	\$48.31
6	85	\$32.05	\$6.97	\$11.18	\$0.00	\$50.20
7	90	\$33.93	\$6.97	\$11.18	\$0.00	\$52.08
8	95	\$35.82	\$6.97	\$11.18	\$0.00	\$53.97

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	09/01/2013	\$45.96	\$10.18	\$17.55	\$0.00	\$73.69
BRICKLAYERS LOCAL 3 (LOWELL)	03/01/2014	\$45.96	\$10.18	\$17.55	\$0.00	\$73.69
	09/01/2014	\$46.86	\$10.18	\$17.62	\$0.00	\$74.66
	03/01/2015	\$47.42	\$10.18	\$17.62	\$0.00	\$75.22
	09/01/2015	\$48.32	\$10.18	\$17.69	\$0.00	\$76.19
	03/01/2016	\$48.89	\$10.18	\$17.69	\$0.00	\$76.76
	09/01/2016	\$49.79	\$10.18	\$17.77	\$0.00	\$77.74
	03/01/2017	\$50.36	\$10.18	\$17.77	\$0.00	\$78.31

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Lowell

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.98	\$10.18	\$17.55	\$0.00	\$50.71
2	60	\$27.58	\$10.18	\$17.55	\$0.00	\$55.31
3	70	\$32.17	\$10.18	\$17.55	\$0.00	\$59.90
4	80	\$36.77	\$10.18	\$17.55	\$0.00	\$64.50
5	90	\$41.36	\$10.18	\$17.55	\$0.00	\$69.09

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.98	\$10.18	\$17.55	\$0.00	\$50.71
2	60	\$27.58	\$10.18	\$17.55	\$0.00	\$55.31
3	70	\$32.17	\$10.18	\$17.55	\$0.00	\$59.90
4	80	\$36.77	\$10.18	\$17.55	\$0.00	\$64.50
5	90	\$41.36	\$10.18	\$17.55	\$0.00	\$69.09

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2013	\$34.45	\$7.30	\$12.90	\$0.00	\$54.65
	06/01/2014	\$35.20	\$7.30	\$12.90	\$0.00	\$55.40
	12/01/2014	\$35.95	\$7.30	\$12.90	\$0.00	\$56.15
	06/01/2015	\$36.70	\$7.30	\$12.90	\$0.00	\$56.90
	12/01/2015	\$37.45	\$7.30	\$12.90	\$0.00	\$57.65
	06/01/2016	\$38.20	\$7.30	\$12.90	\$0.00	\$58.40
	12/01/2016	\$39.20	\$7.30	\$12.90	\$0.00	\$59.40

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2013	\$33.30	\$7.30	\$12.90	\$0.00	\$53.50
	06/01/2014	\$34.05	\$7.30	\$12.90	\$0.00	\$54.25
	12/01/2014	\$34.80	\$7.30	\$12.90	\$0.00	\$55.00
	06/01/2015	\$35.55	\$7.30	\$12.90	\$0.00	\$55.75
	12/01/2015	\$36.30	\$7.30	\$12.90	\$0.00	\$56.50
	06/01/2016	\$37.05	\$7.30	\$12.90	\$0.00	\$57.25
	12/01/2016	\$38.05	\$7.30	\$12.90	\$0.00	\$58.25

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2013	\$33.30	\$7.30	\$12.90	\$0.00	\$53.50
	06/01/2014	\$34.05	\$7.30	\$12.90	\$0.00	\$54.25
	12/01/2014	\$34.80	\$7.30	\$12.90	\$0.00	\$55.00
	06/01/2015	\$35.55	\$7.30	\$12.90	\$0.00	\$55.75
	12/01/2015	\$36.30	\$7.30	\$12.90	\$0.00	\$56.50
	06/01/2016	\$37.05	\$7.30	\$12.90	\$0.00	\$57.25
	12/01/2016	\$38.05	\$7.30	\$12.90	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	09/01/2013	\$34.53	\$9.80	\$15.61	\$0.00	\$59.94
	03/01/2014	\$35.13	\$9.80	\$15.61	\$0.00	\$60.54
	09/01/2014	\$35.90	\$9.80	\$15.61	\$0.00	\$61.31
	03/01/2015	\$36.67	\$9.80	\$15.61	\$0.00	\$62.08

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.27	\$9.80	\$1.57	\$0.00	\$28.64
2	60	\$20.72	\$9.80	\$1.57	\$0.00	\$32.09
3	70	\$24.17	\$9.80	\$10.90	\$0.00	\$44.87
4	75	\$25.90	\$9.80	\$10.90	\$0.00	\$46.60
5	80	\$27.62	\$9.80	\$12.47	\$0.00	\$49.89
6	80	\$27.62	\$9.80	\$12.47	\$0.00	\$49.89
7	90	\$31.08	\$9.80	\$14.04	\$0.00	\$54.92
8	90	\$31.08	\$9.80	\$14.04	\$0.00	\$54.92

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.57	\$9.80	\$1.57	\$0.00	\$28.94
2	60	\$21.08	\$9.80	\$1.57	\$0.00	\$32.45
3	70	\$24.59	\$9.80	\$10.90	\$0.00	\$45.29
4	75	\$26.35	\$9.80	\$10.90	\$0.00	\$47.05
5	80	\$28.10	\$9.80	\$12.47	\$0.00	\$50.37
6	80	\$28.10	\$9.80	\$12.47	\$0.00	\$50.37
7	90	\$31.62	\$9.80	\$14.04	\$0.00	\$55.46
8	90	\$31.62	\$9.80	\$14.04	\$0.00	\$55.46

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING	01/01/2014	\$39.29	\$10.90	\$18.71	\$1.30	\$70.20
BRICKLAYERS LOCAL 3 (LOWELL)	07/01/2014	\$40.12	\$10.90	\$18.71	\$1.30	\$71.03
	01/01/2015	\$40.80	\$10.90	\$18.71	\$1.30	\$71.71
	07/01/2015	\$41.63	\$10.90	\$18.71	\$1.30	\$72.54
	01/01/2016	\$42.32	\$10.90	\$18.71	\$1.30	\$73.23

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CEMENT MASONRY/PLASTERING - Lowell

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.65	\$10.90	\$12.21	\$1.30	\$44.06
2	60	\$23.57	\$10.90	\$13.71	\$1.30	\$49.48
3	65	\$25.54	\$10.90	\$14.71	\$1.30	\$52.45
4	70	\$27.50	\$10.90	\$15.71	\$1.30	\$55.41
5	75	\$29.47	\$10.90	\$16.71	\$1.30	\$58.38
6	80	\$31.43	\$10.90	\$17.71	\$1.30	\$61.34
7	90	\$35.36	\$10.90	\$18.71	\$1.30	\$66.27

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.06	\$10.90	\$12.21	\$1.30	\$44.47
2	60	\$24.07	\$10.90	\$13.71	\$1.30	\$49.98
3	65	\$26.08	\$10.90	\$14.71	\$1.30	\$52.99
4	70	\$28.08	\$10.90	\$15.71	\$1.30	\$55.99
5	75	\$30.09	\$10.90	\$16.71	\$1.30	\$59.00
6	80	\$32.10	\$10.90	\$17.71	\$1.30	\$62.01
7	90	\$36.11	\$10.90	\$18.71	\$1.30	\$67.02

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR LABORERS - ZONE 2	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4	12/01/2013	\$41.49	\$10.00	\$14.18	\$0.00	\$65.67
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 4	12/01/2013	\$28.11	\$10.00	\$14.18	\$0.00	\$52.29
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2	01/01/2014	\$45.91	\$7.85	\$16.10	\$0.00	\$69.86
	07/01/2014	\$46.76	\$7.85	\$16.10	\$0.00	\$70.71
	01/01/2015	\$47.66	\$7.85	\$16.10	\$0.00	\$71.61
	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.96	\$7.85	\$0.00	\$0.00	\$30.81
2	55	\$25.25	\$7.85	\$3.66	\$0.00	\$36.76
3	60	\$27.55	\$7.85	\$3.99	\$0.00	\$39.39
4	65	\$29.84	\$7.85	\$4.32	\$0.00	\$42.01
5	70	\$32.14	\$7.85	\$14.11	\$0.00	\$54.10
6	75	\$34.43	\$7.85	\$14.44	\$0.00	\$56.72
7	80	\$36.73	\$7.85	\$14.77	\$0.00	\$59.35
8	90	\$41.32	\$7.85	\$15.44	\$0.00	\$64.61

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$7.85	\$0.00	\$0.00	\$31.23
2	55	\$25.72	\$7.85	\$3.66	\$0.00	\$37.23
3	60	\$28.06	\$7.85	\$3.99	\$0.00	\$39.90
4	65	\$30.39	\$7.85	\$4.32	\$0.00	\$42.56
5	70	\$32.73	\$7.85	\$14.11	\$0.00	\$54.69
6	75	\$35.07	\$7.85	\$14.44	\$0.00	\$57.36
7	80	\$37.41	\$7.85	\$14.77	\$0.00	\$60.03
8	90	\$42.08	\$7.85	\$15.44	\$0.00	\$65.37

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 2	12/01/2013	\$33.50	\$7.30	\$12.70	\$0.00	\$53.50
	06/01/2014	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
	12/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
	06/01/2015	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
	12/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	12/01/2013	\$34.50	\$7.30	\$12.70	\$0.00	\$54.50
	06/01/2014	\$35.25	\$7.30	\$12.70	\$0.00	\$55.25
	12/01/2014	\$36.00	\$7.30	\$12.70	\$0.00	\$56.00
	06/01/2015	\$36.75	\$7.30	\$12.70	\$0.00	\$56.75
	12/01/2015	\$37.50	\$7.30	\$12.70	\$0.00	\$57.50

For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS LABORERS - ZONE 2	12/01/2013	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
	06/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
	12/01/2014	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
	06/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50
	12/01/2015	\$37.25	\$7.30	\$12.70	\$0.00	\$57.25

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	12/01/2013	\$34.50	\$7.30	\$12.70	\$0.00	\$54.50
	06/01/2014	\$35.25	\$7.30	\$12.70	\$0.00	\$55.25
	12/01/2014	\$36.00	\$7.30	\$12.70	\$0.00	\$56.00
	06/01/2015	\$36.75	\$7.30	\$12.70	\$0.00	\$56.75
	12/01/2015	\$37.50	\$7.30	\$12.70	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2013	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
	06/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
	12/01/2014	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
	06/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50
	12/01/2015	\$37.25	\$7.30	\$12.70	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	12/01/2013	\$33.50	\$7.30	\$12.70	\$0.00	\$53.50
	06/01/2014	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
	12/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
	06/01/2015	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
	12/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$56.14	\$9.80	\$18.17	\$0.00	\$84.11
	08/01/2014	\$58.24	\$9.80	\$18.17	\$0.00	\$86.21
	08/01/2015	\$60.34	\$9.80	\$18.17	\$0.00	\$88.31
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$40.10	\$9.80	\$18.17	\$0.00	\$68.07
	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$60.15	\$9.80	\$18.17	\$0.00	\$88.12
	08/01/2014	\$62.40	\$9.80	\$18.17	\$0.00	\$90.37
	08/01/2015	\$64.65	\$9.80	\$18.17	\$0.00	\$92.62
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$84.21	\$9.80	\$18.17	\$0.00	\$112.18
	08/01/2014	\$87.36	\$9.80	\$18.17	\$0.00	\$115.33
	08/01/2015	\$90.51	\$9.80	\$18.17	\$0.00	\$118.48
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	03/01/2014	\$44.45	\$13.00	\$14.68	\$0.00	\$72.13
	09/01/2014	\$45.12	\$13.00	\$14.70	\$0.00	\$72.82
	03/01/2015	\$45.84	\$13.00	\$14.72	\$0.00	\$73.56
	09/01/2015	\$46.80	\$13.00	\$14.75	\$0.00	\$74.55
	03/01/2016	\$47.75	\$13.00	\$14.78	\$0.00	\$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	03/01/2014	\$44.45	\$13.00	\$14.68	\$0.00	\$72.13
	09/01/2014	\$45.12	\$13.00	\$14.70	\$0.00	\$72.82
	03/01/2015	\$45.84	\$13.00	\$14.72	\$0.00	\$73.56
	09/01/2015	\$46.80	\$13.00	\$14.75	\$0.00	\$74.55
	03/01/2016	\$47.75	\$13.00	\$14.78	\$0.00	\$75.53

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 103

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.58	\$13.00	\$0.53	\$0.00	\$31.11
2	40	\$17.58	\$13.00	\$0.53	\$0.00	\$31.11
3	45	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
4	45	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
5	50	\$21.98	\$13.00	\$11.11	\$0.00	\$46.09
6	55	\$24.18	\$13.00	\$11.45	\$0.00	\$48.63
7	60	\$26.38	\$13.00	\$11.77	\$0.00	\$51.15
8	65	\$28.57	\$13.00	\$12.11	\$0.00	\$53.68
9	70	\$30.77	\$13.00	\$12.43	\$0.00	\$56.20
10	75	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.78	\$13.00	\$0.53	\$0.00	\$31.31
2	40	\$17.78	\$13.00	\$0.53	\$0.00	\$31.31
3	45	\$20.00	\$13.00	\$11.04	\$0.00	\$44.04
4	45	\$20.00	\$13.00	\$11.04	\$0.00	\$44.04
5	50	\$22.23	\$13.00	\$11.37	\$0.00	\$46.60
6	55	\$24.45	\$13.00	\$11.70	\$0.00	\$49.15
7	60	\$26.67	\$13.00	\$12.03	\$0.00	\$51.70
8	65	\$28.89	\$13.00	\$12.37	\$0.00	\$54.26
9	70	\$31.12	\$13.00	\$12.69	\$0.00	\$56.81
10	75	\$33.34	\$13.00	\$13.03	\$0.00	\$59.37

Notes :
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2012	\$52.45	\$8.78	\$6.96	\$0.00	\$68.19
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Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.23	\$8.78	\$0.00	\$0.00	\$35.01
2	55	\$28.85	\$8.78	\$6.96	\$0.00	\$44.59
3	65	\$34.09	\$8.78	\$6.96	\$0.00	\$49.83
4	70	\$36.72	\$8.78	\$6.96	\$0.00	\$52.46
5	80	\$41.96	\$8.78	\$6.96	\$0.00	\$57.70

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>	01/01/2012	\$38.59	\$8.78	\$6.96	\$0.00	\$54.33
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For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2013	\$38.73	\$10.00	\$13.55	\$0.00	\$62.28
	05/01/2014	\$39.50	\$10.00	\$13.55	\$0.00	\$63.05

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2013	\$40.15	\$10.00	\$13.55	\$0.00	\$63.70
	05/01/2014	\$40.92	\$10.00	\$13.55	\$0.00	\$64.47

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2013	\$21.10	\$10.00	\$13.55	\$0.00	\$44.65
	05/01/2014	\$21.55	\$10.00	\$13.55	\$0.00	\$45.10

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	03/01/2014	\$44.45	\$13.00	\$14.68	\$0.00	\$72.13
	09/01/2014	\$45.12	\$13.00	\$14.70	\$0.00	\$72.82
	03/01/2015	\$45.84	\$13.00	\$14.72	\$0.00	\$73.56
	09/01/2015	\$46.80	\$13.00	\$14.75	\$0.00	\$74.55
	03/01/2016	\$47.75	\$13.00	\$14.78	\$0.00	\$75.53

For apprentice rates see "Apprentice- ELECTRICIAN"

FIRE ALARM REPAIR / MAINTENANCE <i>LOCAL 103</i> / COMMISSIONING <i>ELECTRICIANS</i>	09/01/2013	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74
	03/01/2014	\$33.44	\$13.00	\$13.03	\$0.00	\$59.47
	09/01/2014	\$33.84	\$13.00	\$13.05	\$0.00	\$59.89
	03/01/2015	\$34.38	\$13.00	\$13.06	\$0.00	\$60.44
	09/01/2015	\$35.10	\$13.00	\$13.08	\$0.00	\$61.18
	03/01/2016	\$35.81	\$13.00	\$13.10	\$0.00	\$61.91

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) OPERATING ENGINEERS LOCAL 4	12/01/2013	\$33.76	\$10.00	\$14.18	\$0.00	\$57.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER LABORERS - ZONE 2	12/01/2013	\$20.50	\$7.30	\$12.10	\$0.00	\$39.90
	06/01/2014	\$20.50	\$7.30	\$12.10	\$0.00	\$39.90
	12/01/2014	\$20.50	\$7.30	\$12.10	\$0.00	\$39.90
	06/01/2015	\$20.50	\$7.30	\$12.10	\$0.00	\$39.90
	12/01/2015	\$20.50	\$7.30	\$12.10	\$0.00	\$39.90
	06/01/2016	\$20.50	\$7.30	\$12.10	\$0.00	\$39.90
	12/01/2016	\$20.50	\$7.30	\$12.10	\$0.00	\$39.90
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER FLOORCOVERERS LOCAL 2168 ZONE 1	09/01/2013	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12
	03/01/2014	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12

Apprentice - FLOORCOVERER - Local 2168 Zone 1

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER OPERATING ENGINEERS LOCAL 4	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS OPERATING ENGINEERS LOCAL 4	12/01/2013	\$28.11	\$10.00	\$14.18	\$0.00	\$52.29

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2014	\$35.41	\$7.85	\$16.10	\$0.00	\$59.36
	07/01/2014	\$36.56	\$7.85	\$16.10	\$0.00	\$60.51
	01/01/2015	\$37.16	\$7.85	\$16.10	\$0.00	\$61.11
	07/01/2015	\$38.06	\$7.85	\$16.10	\$0.00	\$62.01
	01/01/2016	\$39.01	\$7.85	\$16.10	\$0.00	\$62.96
	07/01/2016	\$39.96	\$7.85	\$16.10	\$0.00	\$63.91
	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.71	\$7.85	\$0.00	\$0.00	\$25.56
2	55	\$19.48	\$7.85	\$3.66	\$0.00	\$30.99
3	60	\$21.25	\$7.85	\$3.99	\$0.00	\$33.09
4	65	\$23.02	\$7.85	\$4.32	\$0.00	\$35.19
5	70	\$24.79	\$7.85	\$14.11	\$0.00	\$46.75
6	75	\$26.56	\$7.85	\$14.44	\$0.00	\$48.85
7	80	\$28.33	\$7.85	\$14.77	\$0.00	\$50.95
8	90	\$31.87	\$7.85	\$15.44	\$0.00	\$55.16

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.28	\$7.85	\$0.00	\$0.00	\$26.13
2	55	\$20.11	\$7.85	\$3.66	\$0.00	\$31.62
3	60	\$21.94	\$7.85	\$3.99	\$0.00	\$33.78
4	65	\$23.76	\$7.85	\$4.32	\$0.00	\$35.93
5	70	\$25.59	\$7.85	\$14.11	\$0.00	\$47.55
6	75	\$27.42	\$7.85	\$14.44	\$0.00	\$49.71
7	80	\$29.25	\$7.85	\$14.77	\$0.00	\$51.87
8	90	\$32.90	\$7.85	\$15.44	\$0.00	\$56.19

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.27	\$10.00	\$0.00	\$0.00	\$32.27
2	60	\$24.29	\$10.00	\$14.18	\$0.00	\$48.47
3	65	\$26.32	\$10.00	\$14.18	\$0.00	\$50.50
4	70	\$28.34	\$10.00	\$14.18	\$0.00	\$52.52
5	75	\$30.37	\$10.00	\$14.18	\$0.00	\$54.55
6	80	\$32.39	\$10.00	\$14.18	\$0.00	\$56.57
7	85	\$34.42	\$10.00	\$14.18	\$0.00	\$58.60
8	90	\$36.44	\$10.00	\$14.18	\$0.00	\$60.62

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	12/09/2013	\$42.35	\$9.82	\$19.33	\$2.14	\$73.64
	02/01/2014	\$42.76	\$9.82	\$19.74	\$2.17	\$74.49
	08/01/2014	\$43.61	\$9.82	\$19.74	\$2.17	\$75.34
	02/01/2015	\$44.51	\$9.82	\$19.74	\$2.17	\$76.24
	08/01/2015	\$45.51	\$9.82	\$19.74	\$2.17	\$77.24
	02/01/2016	\$46.51	\$9.82	\$19.74	\$2.17	\$78.24
	08/01/2016	\$47.66	\$9.82	\$19.74	\$2.17	\$79.39
	02/01/2017	\$48.76	\$9.82	\$19.74	\$2.17	\$80.49
	08/01/2017	\$49.86	\$9.82	\$19.74	\$2.17	\$81.59
	02/01/2018	\$51.01	\$9.82	\$19.74	\$2.17	\$82.74

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	03/01/2014	\$44.45	\$13.00	\$14.68	\$0.00	\$72.13
	09/01/2014	\$45.12	\$13.00	\$14.70	\$0.00	\$72.82
	03/01/2015	\$45.84	\$13.00	\$14.72	\$0.00	\$73.56
	09/01/2015	\$46.80	\$13.00	\$14.75	\$0.00	\$74.55
	03/01/2016	\$47.75	\$13.00	\$14.78	\$0.00	\$75.53

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	12/09/2013	\$42.35	\$9.82	\$19.33	\$2.14	\$73.64
	02/01/2014	\$42.76	\$9.82	\$19.74	\$2.17	\$74.49
	08/01/2014	\$43.61	\$9.82	\$19.74	\$2.17	\$75.34
	02/01/2015	\$44.51	\$9.82	\$19.74	\$2.17	\$76.24
	08/01/2015	\$45.51	\$9.82	\$19.74	\$2.17	\$77.24
	02/01/2016	\$46.51	\$9.82	\$19.74	\$2.17	\$78.24
	08/01/2016	\$47.66	\$9.82	\$19.74	\$2.17	\$79.39
	02/01/2017	\$48.76	\$9.82	\$19.74	\$2.17	\$80.49
	08/01/2017	\$49.86	\$9.82	\$19.74	\$2.17	\$81.59
	02/01/2018	\$51.01	\$9.82	\$19.74	\$2.17	\$82.74

For apprentice rates see "Apprentice- SHEET METAL WORKER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	06/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	12/01/2014	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	06/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	12/01/2015	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	06/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50
	12/01/2016	\$33.85	\$7.30	\$12.10	\$0.00	\$53.25
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2013	\$42.11	\$10.95	\$12.10	\$0.00	\$65.16
	09/01/2014	\$44.11	\$10.95	\$12.10	\$0.00	\$67.16

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.06	\$10.95	\$9.00	\$0.00	\$41.01
2	60	\$25.27	\$10.95	\$9.62	\$0.00	\$45.84
3	70	\$29.48	\$10.95	\$10.24	\$0.00	\$50.67
4	80	\$33.69	\$10.95	\$10.86	\$0.00	\$55.50

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.06	\$10.95	\$9.00	\$0.00	\$42.01
2	60	\$26.47	\$10.95	\$9.62	\$0.00	\$47.04
3	70	\$30.88	\$10.95	\$10.24	\$0.00	\$52.07
4	80	\$35.29	\$10.95	\$10.86	\$0.00	\$57.10

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (LAWRENCE AREA)</i>	09/16/2013	\$36.44	\$7.70	\$18.60	\$0.00	\$62.74
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 7 Lawrence

Effective Date - 09/16/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.86	\$7.70	\$18.60	\$0.00	\$48.16
2	70	\$25.51	\$7.70	\$18.60	\$0.00	\$51.81
3	75	\$27.33	\$7.70	\$18.60	\$0.00	\$53.63
4	80	\$29.15	\$7.70	\$18.60	\$0.00	\$55.45
5	85	\$30.97	\$7.70	\$18.60	\$0.00	\$57.27
6	90	\$32.80	\$7.70	\$18.60	\$0.00	\$59.10

Notes:

Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:

JACKHAMMER & PAVING BREAKER OPERATOR	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
<i>LABORERS - ZONE 2</i>	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

LABORER	12/01/2013	\$29.85	\$7.30	\$12.10	\$0.00	\$49.25
<i>LABORERS - ZONE 2</i>	06/01/2014	\$30.35	\$7.30	\$12.10	\$0.00	\$49.75
	12/01/2014	\$30.85	\$7.30	\$12.10	\$0.00	\$50.25
	06/01/2015	\$31.35	\$7.30	\$12.10	\$0.00	\$50.75
	12/01/2015	\$31.85	\$7.30	\$12.10	\$0.00	\$51.25
	06/01/2016	\$32.35	\$7.30	\$12.10	\$0.00	\$51.75
	12/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 2

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$17.91	\$7.30	\$12.10	\$0.00	\$37.31
2	70	\$20.90	\$7.30	\$12.10	\$0.00	\$40.30
3	80	\$23.88	\$7.30	\$12.10	\$0.00	\$43.28
4	90	\$26.87	\$7.30	\$12.10	\$0.00	\$46.27

Effective Date - 06/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$18.21	\$7.30	\$12.10	\$0.00	\$37.61
2	70	\$21.25	\$7.30	\$12.10	\$0.00	\$40.65
3	80	\$24.28	\$7.30	\$12.10	\$0.00	\$43.68
4	90	\$27.32	\$7.30	\$12.10	\$0.00	\$46.72

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER LABORERS - ZONE 2	12/01/2013	\$29.85	\$7.30	\$12.10	\$0.00	\$49.25
	06/01/2014	\$30.35	\$7.30	\$12.10	\$0.00	\$49.75
	12/01/2014	\$30.85	\$7.30	\$12.10	\$0.00	\$50.25
	06/01/2015	\$31.35	\$7.30	\$12.10	\$0.00	\$50.75
	12/01/2015	\$31.85	\$7.30	\$12.10	\$0.00	\$51.25
	06/01/2016	\$32.35	\$7.30	\$12.10	\$0.00	\$51.75
	12/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 2	12/01/2013	\$29.85	\$7.30	\$12.10	\$0.00	\$49.25
	06/01/2014	\$30.35	\$7.30	\$12.10	\$0.00	\$49.75
	12/01/2014	\$30.85	\$7.30	\$12.10	\$0.00	\$50.25
	06/01/2015	\$31.35	\$7.30	\$12.10	\$0.00	\$50.75
	12/01/2015	\$31.85	\$7.30	\$12.10	\$0.00	\$51.25
	06/01/2016	\$32.35	\$7.30	\$12.10	\$0.00	\$51.75
	12/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 2	12/01/2013	\$30.05	\$7.30	\$12.05	\$0.00	\$49.40
	06/01/2014	\$30.55	\$7.30	\$12.05	\$0.00	\$49.90
	12/01/2014	\$31.05	\$7.30	\$12.05	\$0.00	\$50.40
	06/01/2015	\$31.55	\$7.30	\$12.05	\$0.00	\$50.90
	12/01/2015	\$32.05	\$7.30	\$12.05	\$0.00	\$51.40

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	12/01/2013	\$29.85	\$7.30	\$12.10	\$0.00	\$49.25
	06/01/2014	\$30.35	\$7.30	\$12.10	\$0.00	\$49.75
	12/01/2014	\$30.85	\$7.30	\$12.10	\$0.00	\$50.25
	06/01/2015	\$31.35	\$7.30	\$12.10	\$0.00	\$50.75
	12/01/2015	\$31.85	\$7.30	\$12.10	\$0.00	\$51.25
	06/01/2016	\$32.35	\$7.30	\$12.10	\$0.00	\$51.75
	12/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	12/01/2013	\$29.85	\$7.30	\$12.10	\$0.00	\$49.25
	06/01/2014	\$30.35	\$7.30	\$12.10	\$0.00	\$49.75
	12/01/2014	\$30.85	\$7.30	\$12.10	\$0.00	\$50.25
	06/01/2015	\$31.35	\$7.30	\$12.10	\$0.00	\$50.75
	12/01/2015	\$31.85	\$7.30	\$12.10	\$0.00	\$51.25
	06/01/2016	\$32.35	\$7.30	\$12.10	\$0.00	\$51.75
	12/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50
This classification applies to the wholesale removal of standing trees including all associated trimming of branches and limbs, and applies to the removal of branches at locations not on or around utility lines. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	08/01/2013	\$36.66	\$10.18	\$16.83	\$0.00	\$63.67
	02/01/2014	\$36.66	\$10.18	\$16.83	\$0.00	\$63.67
	08/01/2014	\$37.37	\$10.18	\$16.90	\$0.00	\$64.45
	02/01/2015	\$37.82	\$10.18	\$16.90	\$0.00	\$64.90
	08/01/2015	\$38.53	\$10.18	\$16.97	\$0.00	\$65.68
	02/01/2016	\$38.98	\$10.18	\$16.97	\$0.00	\$66.13
	08/01/2016	\$39.68	\$10.18	\$17.05	\$0.00	\$66.91
	02/01/2017	\$40.14	\$10.18	\$17.05	\$0.00	\$67.37

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.33	\$10.18	\$16.83	\$0.00	\$45.34
2	60	\$22.00	\$10.18	\$16.83	\$0.00	\$49.01
3	70	\$25.66	\$10.18	\$16.83	\$0.00	\$52.67
4	80	\$29.33	\$10.18	\$16.83	\$0.00	\$56.34
5	90	\$32.99	\$10.18	\$16.83	\$0.00	\$60.00

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.33	\$10.18	\$16.83	\$0.00	\$45.34
2	60	\$22.00	\$10.18	\$16.83	\$0.00	\$49.01
3	70	\$25.66	\$10.18	\$16.83	\$0.00	\$52.67
4	80	\$29.33	\$10.18	\$16.83	\$0.00	\$56.34
5	90	\$32.99	\$10.18	\$16.83	\$0.00	\$60.00

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2013	\$48.10	\$10.18	\$18.15	\$0.00	\$76.43
	02/01/2014	\$48.10	\$10.18	\$18.15	\$0.00	\$76.43
	08/01/2014	\$49.00	\$10.18	\$18.22	\$0.00	\$77.40
	02/01/2015	\$49.56	\$10.18	\$18.22	\$0.00	\$77.96
	08/01/2015	\$50.46	\$10.18	\$18.29	\$0.00	\$78.93
	02/01/2016	\$51.03	\$10.18	\$18.29	\$0.00	\$79.50
	08/01/2016	\$51.93	\$10.18	\$18.37	\$0.00	\$80.48
	02/01/2017	\$52.50	\$10.18	\$18.37	\$0.00	\$81.05

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.05	\$10.18	\$18.15	\$0.00	\$52.38
2	60	\$28.86	\$10.18	\$18.15	\$0.00	\$57.19
3	70	\$33.67	\$10.18	\$18.15	\$0.00	\$62.00
4	80	\$38.48	\$10.18	\$18.15	\$0.00	\$66.81
5	90	\$43.29	\$10.18	\$18.15	\$0.00	\$71.62

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.05	\$10.18	\$18.15	\$0.00	\$52.38
2	60	\$28.86	\$10.18	\$18.15	\$0.00	\$57.19
3	70	\$33.67	\$10.18	\$18.15	\$0.00	\$62.00
4	80	\$38.48	\$10.18	\$18.15	\$0.00	\$66.81
5	90	\$43.29	\$10.18	\$18.15	\$0.00	\$71.62

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	10/01/2013	\$32.81	\$9.80	\$16.01	\$0.00	\$58.62
	04/01/2014	\$33.41	\$9.80	\$16.01	\$0.00	\$59.22
	10/01/2014	\$34.17	\$9.80	\$16.01	\$0.00	\$59.98
	04/01/2015	\$34.94	\$9.80	\$16.01	\$0.00	\$60.75

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - MILLWRIGHT - Local 1121 Zone 2

Effective Date - 10/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$18.05	\$9.80	\$4.40	\$0.00	\$32.25
2	65	\$21.33	\$9.80	\$13.21	\$0.00	\$44.34
3	75	\$24.61	\$9.80	\$14.01	\$0.00	\$48.42
4	85	\$27.89	\$9.80	\$14.81	\$0.00	\$52.50

Effective Date - 04/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$18.38	\$9.80	\$4.40	\$0.00	\$32.58
2	65	\$21.72	\$9.80	\$13.21	\$0.00	\$44.73
3	75	\$25.06	\$9.80	\$14.01	\$0.00	\$48.87
4	85	\$28.40	\$9.80	\$14.81	\$0.00	\$53.01

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER LABORERS - ZONE 2	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2013	\$20.96	\$10.00	\$14.18	\$0.00	\$45.14
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2013	\$24.43	\$10.00	\$14.18	\$0.00	\$48.61
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2014	\$45.91	\$7.85	\$16.10	\$0.00	\$69.86
	07/01/2014	\$46.76	\$7.85	\$16.10	\$0.00	\$70.71
	01/01/2015	\$47.66	\$7.85	\$16.10	\$0.00	\$71.61
	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.96	\$7.85	\$0.00	\$0.00	\$30.81
2	55	\$25.25	\$7.85	\$3.66	\$0.00	\$36.76
3	60	\$27.55	\$7.85	\$3.99	\$0.00	\$39.39
4	65	\$29.84	\$7.85	\$4.32	\$0.00	\$42.01
5	70	\$32.14	\$7.85	\$14.11	\$0.00	\$54.10
6	75	\$34.43	\$7.85	\$14.44	\$0.00	\$56.72
7	80	\$36.73	\$7.85	\$14.77	\$0.00	\$59.35
8	90	\$41.32	\$7.85	\$15.44	\$0.00	\$64.61

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$7.85	\$0.00	\$0.00	\$31.23
2	55	\$25.72	\$7.85	\$3.66	\$0.00	\$37.23
3	60	\$28.06	\$7.85	\$3.99	\$0.00	\$39.90
4	65	\$30.39	\$7.85	\$4.32	\$0.00	\$42.56
5	70	\$32.73	\$7.85	\$14.11	\$0.00	\$54.69
6	75	\$35.07	\$7.85	\$14.44	\$0.00	\$57.36
7	80	\$37.41	\$7.85	\$14.77	\$0.00	\$60.03
8	90	\$42.08	\$7.85	\$15.44	\$0.00	\$65.37

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2014	\$36.81	\$7.85	\$16.10	\$0.00	\$60.76
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	07/01/2014	\$37.66	\$7.85	\$16.10	\$0.00	\$61.61
	01/01/2015	\$38.56	\$7.85	\$16.10	\$0.00	\$62.51
	07/01/2015	\$39.46	\$7.85	\$16.10	\$0.00	\$63.41
	01/01/2016	\$40.41	\$7.85	\$16.10	\$0.00	\$64.36
	07/01/2016	\$41.36	\$7.85	\$16.10	\$0.00	\$65.31
	01/01/2017	\$42.31	\$7.85	\$16.10	\$0.00	\$66.26

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

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.41	\$7.85	\$0.00	\$0.00	\$26.26
2	55	\$20.25	\$7.85	\$3.66	\$0.00	\$31.76
3	60	\$22.09	\$7.85	\$3.99	\$0.00	\$33.93
4	65	\$23.93	\$7.85	\$4.32	\$0.00	\$36.10
5	70	\$25.77	\$7.85	\$14.11	\$0.00	\$47.73
6	75	\$27.61	\$7.85	\$14.44	\$0.00	\$49.90
7	80	\$29.45	\$7.85	\$14.77	\$0.00	\$52.07
8	90	\$33.13	\$7.85	\$15.44	\$0.00	\$56.42

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.83	\$7.85	\$0.00	\$0.00	\$26.68
2	55	\$20.71	\$7.85	\$3.66	\$0.00	\$32.22
3	60	\$22.60	\$7.85	\$3.99	\$0.00	\$34.44
4	65	\$24.48	\$7.85	\$4.32	\$0.00	\$36.65
5	70	\$26.36	\$7.85	\$14.11	\$0.00	\$48.32
6	75	\$28.25	\$7.85	\$14.44	\$0.00	\$50.54
7	80	\$30.13	\$7.85	\$14.77	\$0.00	\$52.75
8	90	\$33.89	\$7.85	\$15.44	\$0.00	\$57.18

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2014	\$34.87	\$7.85	\$16.10	\$0.00	\$58.82
PAINTERS LOCAL 35 - ZONE 2	07/01/2014	\$35.72	\$7.85	\$16.10	\$0.00	\$59.67
	01/01/2015	\$36.62	\$7.85	\$16.10	\$0.00	\$60.57
	07/01/2015	\$37.52	\$7.85	\$16.10	\$0.00	\$61.47
	01/01/2016	\$38.47	\$7.85	\$16.10	\$0.00	\$62.42
	07/01/2016	\$39.42	\$7.85	\$16.10	\$0.00	\$63.37
	01/01/2017	\$40.37	\$7.85	\$16.10	\$0.00	\$64.32

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.44	\$7.85	\$0.00	\$0.00	\$25.29
2	55	\$19.18	\$7.85	\$3.66	\$0.00	\$30.69
3	60	\$20.92	\$7.85	\$3.99	\$0.00	\$32.76
4	65	\$22.67	\$7.85	\$4.32	\$0.00	\$34.84
5	70	\$24.41	\$7.85	\$14.11	\$0.00	\$46.37
6	75	\$26.15	\$7.85	\$14.44	\$0.00	\$48.44
7	80	\$27.90	\$7.85	\$14.77	\$0.00	\$50.52
8	90	\$31.38	\$7.85	\$15.44	\$0.00	\$54.67

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.86	\$7.85	\$0.00	\$0.00	\$25.71
2	55	\$19.65	\$7.85	\$3.66	\$0.00	\$31.16
3	60	\$21.43	\$7.85	\$3.99	\$0.00	\$33.27
4	65	\$23.22	\$7.85	\$4.32	\$0.00	\$35.39
5	70	\$25.00	\$7.85	\$14.11	\$0.00	\$46.96
6	75	\$26.79	\$7.85	\$14.44	\$0.00	\$49.08
7	80	\$28.58	\$7.85	\$14.77	\$0.00	\$51.20
8	90	\$32.15	\$7.85	\$15.44	\$0.00	\$55.44

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) LABORERS - ZONE 2	12/01/2013	\$29.85	\$7.30	\$12.10	\$0.00	\$49.25
	06/01/2014	\$30.35	\$7.30	\$12.10	\$0.00	\$49.75
	12/01/2014	\$30.85	\$7.30	\$12.10	\$0.00	\$50.25
	06/01/2015	\$31.35	\$7.30	\$12.10	\$0.00	\$50.75
	12/01/2015	\$31.85	\$7.30	\$12.10	\$0.00	\$51.25
	06/01/2016	\$32.35	\$7.30	\$12.10	\$0.00	\$51.75
	12/01/2016	\$33.10	\$7.30	\$12.10	\$0.00	\$52.50

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	01/01/2014	\$35.41	\$7.85	\$16.10	\$0.00	\$59.36
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	07/01/2014	\$36.26	\$7.85	\$16.10	\$0.00	\$60.21
	01/01/2015	\$37.16	\$7.85	\$16.10	\$0.00	\$61.11
	07/01/2015	\$38.06	\$7.85	\$16.10	\$0.00	\$62.01
	01/01/2016	\$39.01	\$7.85	\$16.10	\$0.00	\$62.96
	07/01/2016	\$39.96	\$7.85	\$16.10	\$0.00	\$63.91
	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.71	\$7.85	\$0.00	\$0.00	\$25.56
2	55	\$19.48	\$7.85	\$3.66	\$0.00	\$30.99
3	60	\$21.25	\$7.85	\$3.99	\$0.00	\$33.09
4	65	\$23.02	\$7.85	\$4.32	\$0.00	\$35.19
5	70	\$24.79	\$7.85	\$14.11	\$0.00	\$46.75
6	75	\$26.56	\$7.85	\$14.44	\$0.00	\$48.85
7	80	\$28.33	\$7.85	\$14.77	\$0.00	\$50.95
8	90	\$31.87	\$7.85	\$15.44	\$0.00	\$55.16

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.13	\$7.85	\$0.00	\$0.00	\$25.98
2	55	\$19.94	\$7.85	\$3.66	\$0.00	\$31.45
3	60	\$21.76	\$7.85	\$3.99	\$0.00	\$33.60
4	65	\$23.57	\$7.85	\$4.32	\$0.00	\$35.74
5	70	\$25.38	\$7.85	\$14.11	\$0.00	\$47.34
6	75	\$27.20	\$7.85	\$14.44	\$0.00	\$49.49
7	80	\$29.01	\$7.85	\$14.77	\$0.00	\$51.63
8	90	\$32.63	\$7.85	\$15.44	\$0.00	\$55.92

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2014	\$33.47	\$7.85	\$16.10	\$0.00	\$57.42
PAINTERS LOCAL 35 - ZONE 2	07/01/2014	\$34.32	\$7.85	\$16.10	\$0.00	\$58.27
	01/01/2015	\$35.22	\$7.85	\$16.10	\$0.00	\$59.17
	07/01/2015	\$36.12	\$7.85	\$16.10	\$0.00	\$60.07
	01/01/2016	\$37.07	\$7.85	\$16.10	\$0.00	\$61.02
	07/01/2016	\$38.02	\$7.85	\$16.10	\$0.00	\$61.97
	01/01/2017	\$38.97	\$7.85	\$16.10	\$0.00	\$62.92

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.74	\$7.85	\$0.00	\$0.00	\$24.59
2	55	\$18.41	\$7.85	\$3.66	\$0.00	\$29.92
3	60	\$20.08	\$7.85	\$3.99	\$0.00	\$31.92
4	65	\$21.76	\$7.85	\$4.32	\$0.00	\$33.93
5	70	\$23.43	\$7.85	\$14.11	\$0.00	\$45.39
6	75	\$25.10	\$7.85	\$14.44	\$0.00	\$47.39
7	80	\$26.78	\$7.85	\$14.77	\$0.00	\$49.40
8	90	\$30.12	\$7.85	\$15.44	\$0.00	\$53.41

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.16	\$7.85	\$0.00	\$0.00	\$25.01
2	55	\$18.88	\$7.85	\$3.66	\$0.00	\$30.39
3	60	\$20.59	\$7.85	\$3.99	\$0.00	\$32.43
4	65	\$22.31	\$7.85	\$4.32	\$0.00	\$34.48
5	70	\$24.02	\$7.85	\$14.11	\$0.00	\$45.98
6	75	\$25.74	\$7.85	\$14.44	\$0.00	\$48.03
7	80	\$27.46	\$7.85	\$14.77	\$0.00	\$50.08
8	90	\$30.89	\$7.85	\$15.44	\$0.00	\$54.18

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$30.28	\$9.07	\$8.00	\$0.00	\$47.35
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$40.10	\$9.80	\$18.17	\$0.00	\$68.07
	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$40.10	\$9.80	\$18.17	\$0.00	\$68.07
	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.05	\$9.80	\$18.17	\$0.00	\$48.02
2	60	\$24.06	\$9.80	\$18.17	\$0.00	\$52.03
3	70	\$28.07	\$9.80	\$18.17	\$0.00	\$56.04
4	75	\$30.08	\$9.80	\$18.17	\$0.00	\$58.05
5	80	\$32.08	\$9.80	\$18.17	\$0.00	\$60.05
6	80	\$32.08	\$9.80	\$18.17	\$0.00	\$60.05
7	90	\$36.09	\$9.80	\$18.17	\$0.00	\$64.06
8	90	\$36.09	\$9.80	\$18.17	\$0.00	\$64.06

Effective Date - 08/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.80	\$9.80	\$18.17	\$0.00	\$48.77
2	60	\$24.96	\$9.80	\$18.17	\$0.00	\$52.93
3	70	\$29.12	\$9.80	\$18.17	\$0.00	\$57.09
4	75	\$31.20	\$9.80	\$18.17	\$0.00	\$59.17
5	80	\$33.28	\$9.80	\$18.17	\$0.00	\$61.25
6	80	\$33.28	\$9.80	\$18.17	\$0.00	\$61.25
7	90	\$37.44	\$9.80	\$18.17	\$0.00	\$65.41
8	90	\$37.44	\$9.80	\$18.17	\$0.00	\$65.41

Notes:

Apprentice to Journeyworker Ratio:1:3

PIPEFITTER & STEAMFITTER PIPEFITTERS LOCAL 537	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
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Apprentice - PIPEFITTER - Local 537

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.74	\$8.75	\$6.50	\$0.00	\$34.99
2	45	\$22.20	\$8.75	\$14.39	\$0.00	\$45.34
3	60	\$29.60	\$8.75	\$14.39	\$0.00	\$52.74
4	70	\$34.54	\$8.75	\$14.39	\$0.00	\$57.68
5	80	\$39.47	\$8.75	\$14.39	\$0.00	\$62.61

Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS <i>PLUMBERS & GASFITTERS LOCAL 12</i>	09/01/2013	\$49.06	\$9.82	\$14.04	\$0.00	\$72.92
	03/01/2014	\$50.06	\$9.82	\$14.04	\$0.00	\$73.92
	09/01/2014	\$51.06	\$9.82	\$14.04	\$0.00	\$74.92
	03/01/2015	\$52.06	\$9.82	\$14.04	\$0.00	\$75.92
	09/01/2015	\$53.06	\$9.82	\$14.04	\$0.00	\$76.92
	03/01/2016	\$54.21	\$9.82	\$14.04	\$0.00	\$78.07
	09/01/2016	\$55.26	\$9.82	\$14.04	\$0.00	\$79.12
	03/01/2017	\$56.26	\$9.82	\$14.04	\$0.00	\$80.12

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.17	\$9.82	\$5.26	\$0.00	\$32.25
2	40	\$19.62	\$9.82	\$5.92	\$0.00	\$35.36
3	55	\$26.98	\$9.82	\$7.95	\$0.00	\$44.75
4	65	\$31.89	\$9.82	\$9.30	\$0.00	\$51.01
5	75	\$36.80	\$9.82	\$10.65	\$0.00	\$57.27

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.52	\$9.82	\$5.26	\$0.00	\$32.60
2	40	\$20.02	\$9.82	\$5.92	\$0.00	\$35.76
3	55	\$27.53	\$9.82	\$7.95	\$0.00	\$45.30
4	65	\$32.54	\$9.82	\$9.30	\$0.00	\$51.66
5	75	\$37.55	\$9.82	\$10.65	\$0.00	\$58.02

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$54.16 Step5 with lic\$60.40

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
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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>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.85	\$7.30	\$12.10	\$0.00	\$50.25
	06/01/2014	\$31.35	\$7.30	\$12.10	\$0.00	\$50.75
	12/01/2014	\$31.85	\$7.30	\$12.10	\$0.00	\$51.25
	06/01/2015	\$32.35	\$7.30	\$12.10	\$0.00	\$51.75
	12/01/2015	\$32.85	\$7.30	\$12.10	\$0.00	\$52.25
	06/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75
	12/01/2016	\$34.10	\$7.30	\$12.10	\$0.00	\$53.50
For apprentice rates see "Apprentice- LABORER"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$28.11	\$10.00	\$14.18	\$0.00	\$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 49</i>	05/01/2010	\$22.88	\$6.97	\$3.94	\$0.00	\$33.79
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	04/01/2011	\$24.24	\$8.67	\$15.51	\$0.00	\$48.42
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	05/01/2011	\$24.24	\$6.34	\$6.23	\$0.00	\$36.81
As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.						

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Residential Wood Frame) - Zone 2

Effective Date - 05/01/2011

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.54	\$6.34	\$0.00	\$0.00	\$20.88
2	60	\$14.54	\$6.34	\$6.23	\$0.00	\$27.11
3	65	\$15.76	\$6.34	\$6.23	\$0.00	\$28.33
4	70	\$16.97	\$6.34	\$6.23	\$0.00	\$29.54
5	75	\$18.18	\$6.34	\$6.23	\$0.00	\$30.75
6	80	\$19.39	\$6.34	\$6.23	\$0.00	\$31.96
7	85	\$20.60	\$6.34	\$6.23	\$0.00	\$33.17
8	90	\$21.82	\$6.34	\$6.23	\$0.00	\$34.39

Notes:

Apprentice to Journeyworker Ratio:1:5

RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	08/01/2013	\$38.31	\$10.50	\$10.70	\$0.00	\$59.51
	02/01/2014	\$39.21	\$10.50	\$10.70	\$0.00	\$60.41
	08/01/2014	\$40.11	\$10.50	\$10.70	\$0.00	\$61.31
	02/01/2015	\$41.01	\$10.50	\$10.70	\$0.00	\$62.21
	08/01/2015	\$41.91	\$10.50	\$10.70	\$0.00	\$63.11
	02/01/2016	\$42.81	\$10.50	\$10.70	\$0.00	\$64.01

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.16	\$10.50	\$3.38	\$0.00	\$33.04
2	60	\$22.99	\$10.50	\$10.70	\$0.00	\$44.19
3	65	\$24.90	\$10.50	\$10.70	\$0.00	\$46.10
4	75	\$28.73	\$10.50	\$10.70	\$0.00	\$49.93
5	85	\$32.56	\$10.50	\$10.70	\$0.00	\$53.76

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.61	\$10.50	\$3.38	\$0.00	\$33.49
2	60	\$23.53	\$10.50	\$10.70	\$0.00	\$44.73
3	65	\$25.49	\$10.50	\$10.70	\$0.00	\$46.69
4	75	\$29.41	\$10.50	\$10.70	\$0.00	\$50.61
5	85	\$33.33	\$10.50	\$10.70	\$0.00	\$54.53

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.

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE	08/01/2013	\$38.56	\$10.50	\$10.70	\$0.00	\$59.76
ROOFERS LOCAL 33	02/01/2014	\$39.46	\$10.50	\$10.70	\$0.00	\$60.66
	08/01/2014	\$40.36	\$10.50	\$10.70	\$0.00	\$61.56
	02/01/2015	\$41.26	\$10.50	\$10.70	\$0.00	\$62.46
	08/01/2015	\$42.16	\$10.50	\$10.70	\$0.00	\$63.36
	02/01/2016	\$43.06	\$10.50	\$10.70	\$0.00	\$64.26
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER	12/09/2013	\$42.35	\$9.82	\$19.33	\$2.14	\$73.64
SHEETMETAL WORKERS LOCAL 17 - A	02/01/2014	\$42.76	\$9.82	\$19.74	\$2.17	\$74.49
	08/01/2014	\$43.61	\$9.82	\$19.74	\$2.17	\$75.34
	02/01/2015	\$44.51	\$9.82	\$19.74	\$2.17	\$76.24
	08/01/2015	\$45.51	\$9.82	\$19.74	\$2.17	\$77.24
	02/01/2016	\$46.51	\$9.82	\$19.74	\$2.17	\$78.24
	08/01/2016	\$47.66	\$9.82	\$19.74	\$2.17	\$79.39
	02/01/2017	\$48.76	\$9.82	\$19.74	\$2.17	\$80.49
	08/01/2017	\$49.86	\$9.82	\$19.74	\$2.17	\$81.59
	02/01/2018	\$51.01	\$9.82	\$19.74	\$2.17	\$82.74

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 12/09/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.94	\$9.82	\$4.28	\$0.00	\$31.04
2	40	\$16.94	\$9.82	\$4.28	\$0.00	\$31.04
3	45	\$19.06	\$9.82	\$8.70	\$1.13	\$38.71
4	45	\$19.06	\$9.82	\$8.70	\$1.13	\$38.71
5	50	\$21.18	\$9.82	\$9.49	\$1.21	\$41.70
6	50	\$21.18	\$9.82	\$9.74	\$1.22	\$41.96
7	60	\$25.41	\$9.82	\$11.05	\$1.39	\$47.67
8	65	\$27.53	\$9.82	\$11.84	\$1.48	\$50.67
9	75	\$31.76	\$9.82	\$13.41	\$1.65	\$56.64
10	85	\$36.00	\$9.82	\$14.48	\$1.81	\$62.11

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.10	\$9.82	\$4.28	\$0.00	\$31.20
2	40	\$17.10	\$9.82	\$4.28	\$0.00	\$31.20
3	45	\$19.24	\$9.82	\$8.70	\$1.13	\$38.89
4	45	\$19.24	\$9.82	\$8.70	\$1.13	\$38.89
5	50	\$21.38	\$9.82	\$9.49	\$1.22	\$41.91
6	50	\$21.38	\$9.82	\$9.74	\$1.23	\$42.17
7	60	\$25.66	\$9.82	\$11.05	\$1.40	\$47.93
8	65	\$27.79	\$9.82	\$11.84	\$1.48	\$50.93
9	75	\$32.07	\$9.82	\$13.41	\$1.66	\$56.96
10	85	\$36.35	\$9.82	\$14.48	\$1.82	\$62.47

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SIGN ERECTOR PAINTERS LOCAL 35 - ZONE 2	06/01/2013	\$25.81	\$7.07	\$7.05	\$0.00	\$39.93
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SIGN ERECTOR - Local 35 Zone 2

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$12.91	\$7.07	\$0.00	\$0.00	\$19.98
2	55	\$14.20	\$7.07	\$2.45	\$0.00	\$23.72
3	60	\$15.49	\$7.07	\$2.45	\$0.00	\$25.01
4	65	\$16.78	\$7.07	\$2.45	\$0.00	\$26.30
5	70	\$18.07	\$7.07	\$7.05	\$0.00	\$32.19
6	75	\$19.36	\$7.07	\$7.05	\$0.00	\$33.48
7	80	\$20.65	\$7.07	\$7.05	\$0.00	\$34.77
8	85	\$21.94	\$7.07	\$7.05	\$0.00	\$36.06
9	90	\$23.23	\$7.07	\$7.05	\$0.00	\$37.35

Notes:
Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2013	\$31.24	\$9.41	\$8.80	\$0.00	\$49.45
	06/01/2014	\$31.59	\$9.41	\$8.80	\$0.00	\$49.80
	08/01/2014	\$31.59	\$9.91	\$8.80	\$0.00	\$50.30
	12/01/2014	\$31.59	\$9.91	\$9.33	\$0.00	\$50.83
	06/01/2015	\$31.94	\$9.91	\$9.33	\$0.00	\$51.18
	08/01/2015	\$31.94	\$10.41	\$9.33	\$0.00	\$51.68
	12/01/2015	\$31.94	\$10.41	\$10.08	\$0.00	\$52.43
	06/01/2016	\$32.44	\$10.41	\$10.08	\$0.00	\$52.93
	08/01/2016	\$32.44	\$10.91	\$10.08	\$0.00	\$53.43
	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2013	\$31.53	\$9.41	\$8.80	\$0.00	\$49.74
	06/01/2014	\$31.88	\$9.41	\$8.80	\$0.00	\$50.09
	08/01/2014	\$31.88	\$9.91	\$8.80	\$0.00	\$50.59
	12/01/2014	\$31.88	\$9.91	\$9.33	\$0.00	\$51.12
	06/01/2015	\$32.23	\$9.91	\$9.33	\$0.00	\$51.47
	08/01/2015	\$32.23	\$10.41	\$9.33	\$0.00	\$51.97
	12/01/2015	\$32.23	\$10.41	\$10.08	\$0.00	\$52.72
	06/01/2016	\$32.73	\$10.41	\$10.08	\$0.00	\$53.22
	08/01/2016	\$32.73	\$10.91	\$10.08	\$0.00	\$53.72
	12/01/2016	\$32.73	\$10.91	\$10.89	\$0.00	\$54.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	01/01/2014	\$53.33	\$8.42	\$12.85	\$0.00	\$74.60
	03/01/2014	\$54.58	\$8.42	\$12.85	\$0.00	\$75.85
	10/01/2014	\$55.73	\$8.42	\$12.85	\$0.00	\$77.00
	01/01/2015	\$55.73	\$8.42	\$13.00	\$0.00	\$77.15
	03/01/2015	\$56.73	\$8.42	\$13.00	\$0.00	\$78.15
	10/01/2015	\$57.88	\$8.42	\$13.00	\$0.00	\$79.30
	01/01/2016	\$57.88	\$8.67	\$13.15	\$0.00	\$79.70
	03/01/2016	\$58.88	\$8.67	\$13.15	\$0.00	\$80.70
	10/01/2016	\$60.03	\$8.67	\$13.15	\$0.00	\$81.85
	03/01/2017	\$61.03	\$8.67	\$13.15	\$0.00	\$82.85

Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$18.67	\$8.42	\$8.25	\$0.00	\$35.34
2	40	\$21.33	\$8.42	\$8.25	\$0.00	\$38.00
3	45	\$24.00	\$8.42	\$8.25	\$0.00	\$40.67
4	50	\$26.67	\$8.42	\$8.25	\$0.00	\$43.34
5	55	\$29.33	\$8.42	\$8.25	\$0.00	\$46.00
6	60	\$32.00	\$8.42	\$8.25	\$0.00	\$48.67
7	65	\$34.66	\$8.42	\$8.25	\$0.00	\$51.33
8	70	\$37.33	\$8.42	\$8.25	\$0.00	\$54.00
9	75	\$40.00	\$8.42	\$8.25	\$0.00	\$56.67
10	80	\$42.66	\$8.42	\$8.25	\$0.00	\$59.33

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.10	\$8.42	\$8.25	\$0.00	\$35.77
2	40	\$21.83	\$8.42	\$8.25	\$0.00	\$38.50
3	45	\$24.56	\$8.42	\$8.25	\$0.00	\$41.23
4	50	\$27.29	\$8.42	\$8.25	\$0.00	\$43.96
5	55	\$30.02	\$8.42	\$8.25	\$0.00	\$46.69
6	60	\$32.75	\$8.42	\$8.25	\$0.00	\$49.42
7	65	\$35.48	\$8.42	\$8.25	\$0.00	\$52.15
8	70	\$38.21	\$8.42	\$8.25	\$0.00	\$54.88
9	75	\$40.94	\$8.42	\$8.25	\$0.00	\$57.61
10	80	\$43.66	\$8.42	\$8.25	\$0.00	\$60.33

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 <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN OPERATING ENGINEERS LOCAL 4	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN ELECTRICIANS LOCAL 103	09/01/2013	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74
	03/01/2014	\$33.44	\$13.00	\$13.03	\$0.00	\$59.47
	09/01/2014	\$33.84	\$13.00	\$13.05	\$0.00	\$59.89
	03/01/2015	\$34.38	\$13.00	\$13.06	\$0.00	\$60.44
	09/01/2015	\$35.10	\$13.00	\$13.08	\$0.00	\$61.18
	03/01/2016	\$35.81	\$13.00	\$13.10	\$0.00	\$61.91

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.19	\$13.00	\$0.40	\$0.00	\$26.59
2	40	\$13.19	\$13.00	\$0.40	\$0.00	\$26.59
3	45	\$14.84	\$13.00	\$10.04	\$0.00	\$37.88
4	45	\$14.84	\$13.00	\$10.04	\$0.00	\$37.88
5	50	\$16.49	\$13.00	\$10.29	\$0.00	\$39.78
6	55	\$18.13	\$13.00	\$10.53	\$0.00	\$41.66
7	60	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
8	65	\$21.43	\$13.00	\$11.03	\$0.00	\$45.46
9	70	\$23.08	\$13.00	\$11.28	\$0.00	\$47.36
10	75	\$24.73	\$13.00	\$11.53	\$0.00	\$49.26

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.38	\$13.00	\$0.40	\$0.00	\$26.78
2	40	\$13.38	\$13.00	\$0.40	\$0.00	\$26.78
3	45	\$15.05	\$13.00	\$10.29	\$0.00	\$38.34
4	45	\$15.05	\$13.00	\$10.29	\$0.00	\$38.34
5	50	\$16.72	\$13.00	\$10.54	\$0.00	\$40.26
6	55	\$18.39	\$13.00	\$10.79	\$0.00	\$42.18
7	60	\$20.06	\$13.00	\$11.04	\$0.00	\$44.10
8	65	\$21.74	\$13.00	\$11.29	\$0.00	\$46.03
9	70	\$23.41	\$13.00	\$11.54	\$0.00	\$47.95
10	75	\$25.08	\$13.00	\$11.79	\$0.00	\$49.87

Notes:

Apprentice to Journeyworker Ratio:1:1

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2013	\$47.00	\$10.18	\$18.15	\$0.00	\$75.33
	02/01/2014	\$47.00	\$10.18	\$18.15	\$0.00	\$75.33
	08/01/2014	\$47.90	\$10.18	\$18.22	\$0.00	\$76.30
	02/01/2015	\$48.46	\$10.18	\$18.22	\$0.00	\$76.86
	08/01/2015	\$49.36	\$10.18	\$18.29	\$0.00	\$77.83
	02/01/2016	\$49.93	\$10.18	\$18.29	\$0.00	\$78.40
	08/01/2016	\$50.83	\$10.18	\$18.37	\$0.00	\$79.38
	02/01/2017	\$51.40	\$10.18	\$18.37	\$0.00	\$79.95

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.50	\$10.18	\$18.15	\$0.00	\$51.83
2	60	\$28.20	\$10.18	\$18.15	\$0.00	\$56.53
3	70	\$32.90	\$10.18	\$18.15	\$0.00	\$61.23
4	80	\$37.60	\$10.18	\$18.15	\$0.00	\$65.93
5	90	\$42.30	\$10.18	\$18.15	\$0.00	\$70.63

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.50	\$10.18	\$18.15	\$0.00	\$51.83
2	60	\$28.20	\$10.18	\$18.15	\$0.00	\$56.53
3	70	\$32.90	\$10.18	\$18.15	\$0.00	\$61.23
4	80	\$37.60	\$10.18	\$18.15	\$0.00	\$65.93
5	90	\$42.30	\$10.18	\$18.15	\$0.00	\$70.63

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER LABORERS - FOUNDATION AND MARINE	12/01/2013	\$34.70	\$7.30	\$12.90	\$0.00	\$54.90
	06/01/2014	\$35.45	\$7.30	\$12.90	\$0.00	\$55.65
	12/01/2014	\$36.20	\$7.30	\$12.90	\$0.00	\$56.40
	06/01/2015	\$36.95	\$7.30	\$12.90	\$0.00	\$57.15
	12/01/2015	\$37.70	\$7.30	\$12.90	\$0.00	\$57.90
	06/01/2016	\$38.45	\$7.30	\$12.90	\$0.00	\$58.65
	12/01/2016	\$39.45	\$7.30	\$12.90	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER LABORERS - FOUNDATION AND MARINE	12/01/2013	\$33.42	\$7.30	\$12.90	\$0.00	\$53.62
	06/01/2014	\$34.17	\$7.30	\$12.90	\$0.00	\$54.37
	12/01/2014	\$34.92	\$7.30	\$12.90	\$0.00	\$55.12
	06/01/2015	\$35.67	\$7.30	\$12.90	\$0.00	\$55.87
	12/01/2015	\$36.42	\$7.30	\$12.90	\$0.00	\$56.62
	06/01/2016	\$37.17	\$7.30	\$12.90	\$0.00	\$57.37
	12/01/2016	\$38.17	\$7.30	\$12.90	\$0.00	\$58.37

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2013	\$33.30	\$7.30	\$12.90	\$0.00	\$53.50
	06/01/2014	\$34.05	\$7.30	\$12.90	\$0.00	\$54.25
	12/01/2014	\$34.80	\$7.30	\$12.90	\$0.00	\$55.00
	06/01/2015	\$35.55	\$7.30	\$12.90	\$0.00	\$55.75
	12/01/2015	\$36.30	\$7.30	\$12.90	\$0.00	\$56.50
	06/01/2016	\$37.05	\$7.30	\$12.90	\$0.00	\$57.25
	12/01/2016	\$38.05	\$7.30	\$12.90	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2013	\$31.82	\$9.41	\$8.80	\$0.00	\$50.03
	06/01/2014	\$32.17	\$9.41	\$8.80	\$0.00	\$50.38
	08/01/2014	\$32.17	\$9.91	\$8.80	\$0.00	\$50.88
	12/01/2014	\$32.17	\$9.91	\$9.33	\$0.00	\$51.41
	06/01/2015	\$32.52	\$9.91	\$9.33	\$0.00	\$51.76
	08/01/2015	\$32.52	\$10.41	\$9.33	\$0.00	\$52.26
	12/01/2015	\$32.52	\$10.41	\$10.08	\$0.00	\$53.01
	06/01/2016	\$33.02	\$10.41	\$10.08	\$0.00	\$53.51
	08/01/2016	\$33.02	\$10.91	\$10.08	\$0.00	\$54.01
12/01/2016	\$33.02	\$10.91	\$10.89	\$0.00	\$54.82	
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2013	\$45.58	\$7.30	\$13.30	\$0.00	\$66.18
	06/01/2014	\$46.33	\$7.30	\$13.30	\$0.00	\$66.93
	12/01/2014	\$47.08	\$7.30	\$13.30	\$0.00	\$67.68
	06/01/2015	\$47.83	\$7.30	\$13.30	\$0.00	\$68.43
	12/01/2015	\$48.58	\$7.30	\$13.30	\$0.00	\$69.18
	06/01/2016	\$49.33	\$7.30	\$13.30	\$0.00	\$69.93
	12/01/2016	\$50.33	\$7.30	\$13.30	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2013	\$47.58	\$7.30	\$13.30	\$0.00	\$68.18
	06/01/2014	\$48.33	\$7.30	\$13.30	\$0.00	\$68.93
	12/01/2014	\$49.08	\$7.30	\$13.30	\$0.00	\$69.68
	06/01/2015	\$49.83	\$7.30	\$13.30	\$0.00	\$70.43
	12/01/2015	\$50.58	\$7.30	\$13.30	\$0.00	\$71.18
	06/01/2016	\$51.33	\$7.30	\$13.30	\$0.00	\$71.93
	12/01/2016	\$52.33	\$7.30	\$13.30	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2013	\$37.65	\$7.30	\$13.30	\$0.00	\$58.25
	06/01/2014	\$38.40	\$7.30	\$13.30	\$0.00	\$59.00
	12/01/2014	\$39.15	\$7.30	\$13.30	\$0.00	\$59.75
	06/01/2015	\$39.90	\$7.30	\$13.30	\$0.00	\$60.50
	12/01/2015	\$40.65	\$7.30	\$13.30	\$0.00	\$61.25
	06/01/2016	\$41.40	\$7.30	\$13.30	\$0.00	\$62.00
	12/01/2016	\$42.40	\$7.30	\$13.30	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2013	\$39.65	\$7.30	\$13.30	\$0.00	\$60.25
	06/01/2014	\$40.40	\$7.30	\$13.30	\$0.00	\$61.00
	12/01/2014	\$41.15	\$7.30	\$13.30	\$0.00	\$61.75
	06/01/2015	\$41.90	\$7.30	\$13.30	\$0.00	\$62.50
	12/01/2015	\$42.65	\$7.30	\$13.30	\$0.00	\$63.25
	06/01/2016	\$43.40	\$7.30	\$13.30	\$0.00	\$64.00
	12/01/2016	\$44.40	\$7.30	\$13.30	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2013	\$31.24	\$9.41	\$8.80	\$0.00	\$49.45
	06/01/2014	\$31.59	\$9.41	\$8.80	\$0.00	\$49.80
	08/01/2014	\$31.59	\$9.91	\$8.80	\$0.00	\$50.30
	12/01/2014	\$31.59	\$9.91	\$9.33	\$0.00	\$50.83
	06/01/2015	\$31.94	\$9.91	\$9.33	\$0.00	\$51.18
	08/01/2015	\$31.94	\$10.41	\$9.33	\$0.00	\$51.68
	12/01/2015	\$31.94	\$10.41	\$10.08	\$0.00	\$52.43
	06/01/2016	\$32.44	\$10.41	\$10.08	\$0.00	\$52.93
	08/01/2016	\$32.44	\$10.91	\$10.08	\$0.00	\$53.43
	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2013	\$30.10	\$7.30	\$12.10	\$0.00	\$49.50
	06/01/2014	\$30.60	\$7.30	\$12.10	\$0.00	\$50.00
	12/01/2014	\$31.10	\$7.30	\$12.10	\$0.00	\$50.50
	06/01/2015	\$31.60	\$7.30	\$12.10	\$0.00	\$51.00
	12/01/2015	\$32.10	\$7.30	\$12.10	\$0.00	\$51.50
	06/01/2016	\$32.60	\$7.30	\$12.10	\$0.00	\$52.00
	12/01/2016	\$33.35	\$7.30	\$12.10	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	09/01/2013	\$49.06	\$9.82	\$14.04	\$0.00	\$72.92
	03/01/2014	\$50.06	\$9.82	\$14.04	\$0.00	\$73.92
	09/01/2014	\$51.06	\$9.82	\$14.04	\$0.00	\$74.92
	03/01/2015	\$52.06	\$9.82	\$14.04	\$0.00	\$75.92
	09/01/2015	\$53.06	\$9.82	\$14.04	\$0.00	\$76.92
	03/01/2016	\$54.21	\$9.82	\$14.04	\$0.00	\$78.07
	09/01/2016	\$55.26	\$9.82	\$14.04	\$0.00	\$79.12
	03/01/2017	\$56.26	\$9.82	\$14.04	\$0.00	\$80.12
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$25.66	\$8.70	\$4.48	\$0.00	\$38.84
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.55	\$8.70	\$6.58	\$0.00	\$51.83
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$29.94	\$8.70	\$6.05	\$0.00	\$44.69
For apprentice rates see "Apprentice- LINEMAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$5.24	\$0.00	\$37.46
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.35	\$8.70	\$9.43	\$0.00	\$54.48
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$32.08	\$8.70	\$6.59	\$0.00	\$47.37
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$3.72	\$0.00	\$35.94
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$19.25	\$8.70	\$2.85	\$0.00	\$30.80
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$42.77	\$8.70	\$11.78	\$0.00	\$63.25

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.66	\$8.70	\$4.24	\$0.00	\$38.60
2	65	\$27.80	\$8.70	\$4.71	\$0.00	\$41.21
3	70	\$29.94	\$8.70	\$5.43	\$0.00	\$44.07
4	75	\$32.08	\$8.70	\$6.16	\$0.00	\$46.94
5	80	\$34.22	\$8.70	\$6.88	\$0.00	\$49.80
6	85	\$36.35	\$8.70	\$7.62	\$0.00	\$52.67
7	90	\$38.49	\$8.70	\$8.83	\$0.00	\$56.02

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$26.33	\$4.18	\$2.79	\$0.00	\$33.30
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/29/2012	\$17.18	\$3.37	\$0.00	\$0.00	\$20.55
This classification applies only to the trimming of branches on and around utility lines.						
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/29/2012	\$15.15	\$3.37	\$0.00	\$0.00	\$18.52
This classification applies only to the trimming of branches on and around utility lines.						

Additional Apprentices 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) unless otherwise specified.

- * Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.
- ** 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.