

# City of Salem



## Invitation for Bids

S-26

## Derby Street Park

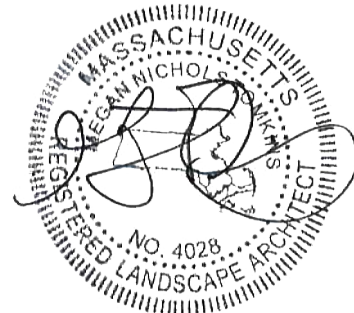
September 19, 2017

### **BIDS DUE:**

**Tuesday, October 10th, 2017, 2:00 PM**

\*Late bids will be rejected

Yeimi Colon  
Acting Finance Director  
93 Washington Street, 2<sup>nd</sup> Floor  
Salem, MA 01970  
[ycolon@salem.com](mailto:ycolon@salem.com)  
(978) 619-5695





**INVITATION FOR BIDS  
S-26  
DERBY STREET PARK  
COVER SHEET**

**PLEASE PRINT OR TYPE:**

Name of Bidder:	Contact Individual:		
Address:			
#	Street	City/Town	Zip Code
Phone:	Alternate Phone:		
Email Address:	Social Security/Federal Tax Identification Number:		
Authorized Signature: _____			



<p style="text-align: center;"><b>INVITATION FOR BIDS</b>  <b>S-26</b>  <b>DERBY STREET PARK</b>  <b>CHECKLIST</b></p>
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## Submissions:

- ☒ Completed Cover Sheet
- ☐ Bidder's Checklist (this sheet)
- ☐ Bid Form
- ☐ Signed Certificate of Non-Collusion
- ☐ Signed Tax Compliance Certification
- ☐ Certificate as to Corporate Bidder
- ☐ Section 3 Certification
- ☐ Reference Form
- ☐ Bidder Qualifications
- ☐ 5% Bid Deposit
- ☐ Prevailing Wage Certification
- ☐ Debarment Certification
- ☐ Labor Harmony and OSHA Certification
- ☐ Acknowledgement of Addenda: \_\_\_\_\_ (if applicable)



**INVITATION FOR BIDS**  
**S-26**  
**DERBY STREET PARK**  
**BID FORM**

A. The undersigned proposes to build a public park located at 289 Derby Street (“Derby Street Park”) in Salem, Massachusetts, in accordance with the accompanying plans and specifications prepared by CBA Landscape Architects, LLC for the contract price specified below.

B. This bid includes addenda numbered \_\_\_\_\_.

C. The proposed base contract price is: \_\_\_\_\_ dollars and  
\_\_\_\_\_ cents. (\$\_\_\_\_\_).

Alternate	Description	Add
1	Perform all work necessary to furnish and install Three Bay Pergola with Swings.	\$
2	Perform all work necessary to furnish and install Custom Curved Benches #1 & #5 – Wood Slat Benches with Integrated Lighting Mounted on Granite Seat Wall.	\$
3	Perform all work necessary to furnish and install 5 Spray Splash Pad with Electronically Controlled Flush Mounted Activator.	\$

\_\_\_\_\_  
Signature of Authorized Representative

\_\_\_\_\_  
Bidder

\_\_\_\_\_  
Date





**INVITATION FOR BIDS**  
**S-26**  
**DERBY STREET PARK**  
**CERTIFICATIONS**

**FORM A**  
**NON-COLLUSION**

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

\_\_\_\_\_  
(Signature of authorized individual submitting proposal)

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

\_\_\_\_\_  
(Name of Proposer)

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



**FORM B**  
**TAX COMPLIANCE**

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

\_\_\_\_\_  
(Signature of authorized individual submitting proposal)

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

\_\_\_\_\_  
(Name of Proposer)

\_\_\_\_\_  
(Federal Tax Identification or Social Security Number)

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



**FORM C**  
**CERTIFICATE OF CORPORATE AUTHORITY** *(if applicable):*

I, \_\_\_\_\_ certify that I am the \_\_\_\_\_ of the corporation named as Bidder in the Bid included herein, that \_\_\_\_\_, who signed said Bid on behalf of the Bidder was then \_\_\_\_\_ of said corporation, that I know his signature, that his signature thereon is genuine and that said Bid was duly signed, sealed and executed for and in behalf of said corporation by authority of its governing body.

(Corporate Seal)

\_\_\_\_\_  
(Secretary-Clerk)

\_\_\_\_\_  
(Signature of authorized individual submitting proposal)

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

\_\_\_\_\_  
(Name of Proposer)

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



**FORM D**  
**PREVAILING WAGES:**

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

\_\_\_\_\_  
(Signature of authorized individual submitting proposal)

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

\_\_\_\_\_  
(Name of Proposer)

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





**FORM E**  
**DEBARRMENT:**

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

\_\_\_\_\_  
(Signature of authorized individual submitting proposal)

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

\_\_\_\_\_  
(Name of Proposer)

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



**FORM F**  
**LABOR HARMONY AND OSHA TRAINING:**

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards made subject to section 44A.

\_\_\_\_\_  
(Signature of authorized individual submitting proposal)

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

\_\_\_\_\_  
(Name of Proposer)

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



**FORM G**  
**SECTION 3 CERTIFICATIONS FOR RFPS AND SEALED BIDS**

This project is subject to the requirements of Section 3 of the Housing & Urban Development Act of 1968, as amended, 12 USC 170U and the regulations set forth in 24 CFR 135, which is to ensure that employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State and local laws and regulations, be directed to low- and very low-income persons, particularly those who are recipients of government assistance for housing, and to business concerns which provide economic opportunities to low-and very low-income persons.

Section 3 Business Concerns are businesses that can provide evidence that they meet one of the following:

- Business is 51% or more owned by Section 3 residents. A Section 3 Resident is 1) a Salem Housing Authority resident; or 2) a Salem resident whose total family income does not exceed 80% of the median income for the area as per the HUD local income limits; or 3) a resident of the Boston Metropolitan Statistical Area whose total family income does not exceed 80% of the median income for the area as per the HUD local income limits.;
- At least 30% of the business's permanent, full-time employees are currently Section 3 residents, or within three years of the date of first employment with the firm were Section 3 residents; or
- Business provides evidence of a commitment to award more than 25% of the dollar amount of all subcontracts to businesses that fall within (1) or (2) above.

Any Business Concern seeking to qualify as a Section 3 Business shall demonstrate eligibility by completing the Section 3 Business Affidavit. A Section 3 business shall show that it has the ability to successfully carry out the terms and conditions of the proposed contract -- which shall include, among other factors, a demonstrated history of compliance with public policy requirements, including Section 3.

Whenever two or more equal sealed bids are received by qualified businesses, and one is from a Certified Section 3 Business, the Certified Section 3 Business will receive preference in awarding. If two or more qualified businesses are deemed Highly Advantageous in the Request for Proposals Process, and one is a Section 3 business concern, but their bid price is slightly higher than a non-Section 3 firm, the City of Salem can give preference to the Section 3 business in an effort to meet its numerical goals annually.

For more information, or to obtain a Section 3 Business Affidavit, please contact:

Jane A. Guy, Assistant Community Development Director  
City of Salem Department of Planning and Community Development  
120 Washington St.  
Salem, MA 01970  
978-619-5685; (F) 978-740-0404

**For Awarded Contracts of \$100,000 or more**

A Section 3 covered project involves the construction or rehabilitation of housing (including reduction of lead-based paint hazards), or other public construction including street repair, sewage line repair or installation, updates to building facades, etc. that are completed with federal assistance (i.e. CDBG, HOME funds, etc.) With respect to recipients of CDBG and HOME funding, all contractors or subcontractors receiving contracts in excess of \$100,000 to complete projects involving housing construction, rehabilitation, or other public construction are required to comply with the requirements of Section 3. Section 3 contracts include professional service contracts provided that the work to be performed is in connection with projects involving housing rehabilitation, housing construction, or other public construction.

## Goals

The minimum numerical goal for employment is that 30 percent of the aggregate number of new hires shall be Section 3 residents — i.e., 1 out of 3 new employees needed to complete the project/activity shall be a Section 3 resident.

The minimum goals for contracting are:

- Ten percent of the total dollar amount of all contracts for building trades work for maintenance, repair, modernization or development of public or Indian housing or building trades work arising in connection with housing rehabilitation, housing construction and other public construction, shall be awarded to Section 3 businesses; and
- Three percent of the total dollar amount of all non-construction contracts, shall be awarded to Section 3 businesses.

The undersigned certifies under penalties of perjury, notwithstanding any other provision of Law to the contrary, that they will comply with all requirements of Section 3. Prior to the final payment, the Contractor shall provide a written report documenting how they have complied with this requirement.

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(Signature of authorized individual submitting proposal)

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(Printed Name)

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(Name of Bidder (if different than name))

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(Date)

**INVITATION FOR BIDS**  
**S-26**  
**DERBY STREET PARK**  
**REFERENCE FORM**

(1) Reference Name (Contact Person):	City/Town/Company:
Address:	
Phone:	Fax:
Dates of Services Provided: ____ / ____ / ____ to ____ / ____ / ____	
Description of Services Provided:	

(2) Reference Name (Contact Person):	City/Town/Company:
Address:	
Phone:	Fax:
Dates of Services Provided: ____ / ____ / ____ to ____ / ____ / ____	
Description of Services Provided:	

(3) Reference Name (Contact Person):	City/Town/Company:
Address:	
Phone:	Fax:
Dates of Services Provided: ____ / ____ / ____ to ____ / ____ / ____	
Description of Services Provided:	



**INVITATION FOR BIDS**  
**S-26**  
**DERBY STREET PARK**  
**BIDDER QUALIFICATIONS**

**Please furnish the following information with the 'Bid Form.' Failure to furnish any of the requested information may disqualify your firm as a potential Contractor.**

**A. BACKGROUND**

1. Company Name:

2. Address:

3. Telephone

4. Fax

5. Company Type:

( ) Corp.

( ) Partnership

6. Name and Location of  
Parent Company, if  
applicable:

Name:

Address:

Telephone:

7. State and Year of  
Incorporation

8. State Contractor License  
No(s).

9. Individual to Contact:

Name:

Title:

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

10. Employees: \_\_\_\_\_

Number of Permanent  
Staff: \_\_\_\_\_

Average number of  
years with Co.: \_\_\_\_\_

Percent Massachusetts  
residents: \_\_\_\_\_

11. Average annual  
contract volume: \_\_\_\_\_

12. Type of Contractor \_\_\_\_\_ ( ) Union ( ) Non-Union

## B. EXPERIENCE

1. Location and year founded: \_\_\_\_\_
2. Years of Experience in Mass.: \_\_\_\_\_
3. List completed and ongoing and completed projects for the last three years (attached sheet).
4. Percent of Work Subcontracted last 3 years: \_\_\_\_\_
5. List subcontractors and type of work subcontracted for last three years (attached sheet).

## C. FINANCIAL

1. Current Backlog: \$ \_\_\_\_\_
2. Bonding Company  
Name \_\_\_\_\_  
Address: \_\_\_\_\_  
  
Telephone: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Bonding Limit: \_\_\_\_\_
3. Any lawsuits, alternate dispute resolutions such as arbitration, mediation or conciliation, or liens outstanding? If so, please describe (attach additional sheets if necessary)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Outside Accountant:  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
  
Telephone: \_\_\_\_\_  
Contact: \_\_\_\_\_
5. Banking Reference  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
  
Telephone: \_\_\_\_\_  
Contact: \_\_\_\_\_

6. Attach copy of latest audited financial statements (Balance Sheet and P&P) or unaudited if audited is not available.

## D. EQUIPMENT

1. Describe equipment owned and located in Massachusetts (attached sheet).

## E. MISCELLANEOUS

1. Have you ever failed to complete a project for any reason?

☐ No

☐ Yes

If yes, give detail:

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## **F. CERTIFICATION**

1. I certify under penalty of law, that the above information furnished pursuant to this Form is true and accurate to the best of my knowledge.

## **PART 1. GENERAL INFORMATION**

### **1.1 PROCUREMENT DESCRIPTION**

The creation of Derby Street Park will include removing all existing bituminous concrete and pulverized bituminous pavement, temporary fencing, and miscellaneous site elements as indicated on the drawings. Construction of the new park includes the furnishing and installation of new curved granite walls, custom wood slat curved benches with integrated lighting mounted on granite walls, concrete and colored concrete paving, large granite interpretive graphic pavers, recycling and trash receptacles, pedestrian scale light column fixtures, a drinking fountain, and outdoor musical instruments; a 5 spray water play splash pad with an electronically controlled flush mounted activator; lawn, perennial, and tree plantings; an irrigation system; site drainage structures and lines; electrical service to the site; water service to the site; and a new section of the South River Harbor Walk along the Canal with Harbor Walk lights, and 4' high PVC coated metal guard rail with double gate.

It is expected that work will commence on or about November 6, 2017 and must be substantially complete by June 30, 2018.

### **1.2 APPLICABLE LAW**

This procurement will be conducted pursuant to Massachusetts General Laws Chapter 30, Section 39 M.

### **1.3 APPROVAL**

Any contract(s) that may result from the procurement shall be subject to the approval of the Mayor of the City of Salem.

### **1.4 INCORPORATION BY REFERENCE**

All requirements, specifications, terms and conditions described in this Invitation for Bids shall be incorporated by reference into any contract that may result.

### **1.5 TIME FOR AWARD**

Any contract that may result from the procurement shall be awarded within thirty (30) days after the bid opening. The Contractor must agree to hold its bid prices firm for that period.

### **1.6 RIGHT TO CANCEL/REJECT**

The City reserves the right to cancel this Invitation for Bids or reject in whole or in part any and all bids if the City determines that cancellation or rejection serves the best interests of the City or Town.

### **1.7 TAXATION**

Purchases made by the City are exempt from the payment of Federal excise tax and the payment of Commonwealth of Massachusetts sales tax and any such taxes must not be included in the bid pricing.

Copies of the City and Town's tax exempt paperwork shall be available upon request of the selected contractor.

## **1.8 OBTAINING THE INVITATION FOR BIDS**

The Invitation for Bids shall be available beginning, Wednesday, September 20, 2017.

The Invitation for Bids and related documents shall be available for free download from the City's Purchasing Department website at <http://saalem.com/purchasing> under "Open Procurements."

Hardcopies of the Invitation for Bids and related documents may be obtained at the Office of the Purchasing Agent, 93 Washington Street, 2<sup>nd</sup> Floor, Salem, MA 01970, between the hours of 8:00 AM-4:00 PM on Monday-Wednesday, 8:00-7:00 PM on Thursday, and 8:00 AM-12:00 PM on Friday.

## **1.9 PRE-BID SITE VISIT**

A pre-bid site visit will take place on September 26, 2017 at 10:00 AM.

## **PART 2. INSTRUCTIONS TO BIDDERS**

### **2.1 REQUIREMENTS AND SUBMISSIONS**

Below please find a description of the requirements and submissions that must be included as part of a bid. Bids must be sealed and marked as noted.

#### **2.1.1 BID PRICING FORM**

Every bid must include a completed 'Bid Pricing Form'. See attached. All material, equipment and labor is F.O.B. City of Salem.

#### **2.1.2 NON-COLLUSION**

Every bid must include a certification of good faith, certifying that the bid was made in good faith and without collusion or fraud. See 'Non-Collusion Form' attached.

#### **2.1.3 TAX COMPLIANCE**

Every bid must include a written certification that the bidder has complied with all state laws relating to taxes, reporting of employees and contractors, and child support. See 'Tax Compliance Form' attached.

#### **2.1.4 CORPORATE BIDDER**

If the bid is being submitted by a corporation, the bid must include a certification that the individual submitting the bid has been authorized to bind the corporation. See 'Certificate of Corporate Authority' attached.

#### **2.1.5 REFERENCE FORM**

Every bid must be accompanied by at least three (3) professional references.

#### **2.1.6 BID DEPOSIT**

Each bid must be accompanied by a deposit equal to five percent (5%) of the amount of the bid. The bid deposit may be in the form of a certified treasurer's or cashier's check payable to the City of Salem from a responsible bank or trust company; cash; or a bid bond.

#### **2.1.7 PAYMENT BOND**

The selected contractor shall be required to furnish a Payment Bond in the amount of fifty percent (50%) of the contract price, within ten days of the date of notification of the contract award.

#### **2.1.8 PREVAILING WAGE**

Wages for this project are subject to the prevailing wage rates as set by the Department of Labor Standards. A copy of the prevailing wage rates for this project is included in the Invitation for Bids, along with a Payroll Record Form and Statement of Compliance.

In the event that the option to renew is exercised, an updated prevailing wage rate sheet will be sent to the Contractor along with the contract amendment letter.

Certified Weekly Payroll documents shall be sent to the Office of the Purchasing Agent, 93 Washington Street, 3<sup>rd</sup> Floor, Salem, MA 01970. Payroll records must be sent three (3) business days after the close of the previous work week. See 'Certification Regarding Payment of Prevailing Wage Rates' attached.

#### 2.1.9 DEBARMENT

Every bid must include a certification regarding the contractor's debarment status. A debarred contractor is not eligible for the award of public contracts during the period of its debarment. See 'Certification Regarding Debarment' attached.

#### 2.1.10 LABOR HARMONY AND OSHA CERTIFICATION

Every bid must include a certification regarding labor harmony training approved by the U.S. Occupation Safety and Health Administration completed by all employees to be employed at the worksite. See 'Labor Harmony and OSHA Certification' attached.

### 2.2 BID DELIVERY

Below please find a description of the manner in which sealed bids must be submitted.

#### 2.2.1 DUE DATE AND TIME

Bids shall be received by the Office of the Purchasing Agent on or before **2:00 PM on Wednesday October 11, 2017.**

Any bid received after that time shall be rejected as non-responsive.

#### 2.2.2 ADDRESS

Sealed bids shall be delivered to the Office of the Purchasing Agent, 93 Washington Street, 2nd Floor, Salem MA 01970.

#### 2.2.3 HOURS OF OPERATION

Bids must be delivered during the normal hours of operation of the City of Salem:

Monday-Wednesday:	8:00 AM-4:00 PM
Thursday:	8:00 AM-7:00 PM
Friday:	8:00 AM-12:00 PM

#### 2.2.4 COPIES

Bidders must submit one (1) original and one (1) copy of the bid.

#### 2.2.5 LABELING

The outside of the envelope containing the sealed bid must be labeled with 1) the bid number 2) the bid opening date and time and 3) the name of the bidder.

### 2.3 SIGNATURES

A bid must be signed as follows: 1) if the bidder is an individual, by her/him personally; 2) if the bidder is a partnership, by the name of the partnership, followed by the signature of each general



partner; and 3) if the bidder is a corporation, by the authorized officer, whose signature must be attested to by the clerk/secretary of the corporation, and with the corporate seal affixed.

## **2.4 QUESTIONS, CHANGES, MODIFICATIONS AND WITHDRAWALS**

### **2.4.1 QUESTIONS/REQUESTS FOR CLARIFICATION**

Questions concerning this Invitation for Bids must be submitted in writing to: Yeimi Colon at ycolon@salem.com at least five (5) days prior to the bid opening date. Written responses will be mailed to all bidders on record as having picked up the Invitation for Bids.

### **2.4.2 CHANGES**

If any changes are made to this Invitation for Bids, addenda will be issued. Addenda will be posted in the Office of the Purchasing Agent, on the website and e-mailed to all bidders on record as having picked up the Invitation for Bids.

### **2.4.3 MODIFICATIONS AND WITHDRAWALS**

A bidder may correct, modify, or withdraw a bid by written notice received by the City of Salem prior to the time and date set for bid opening.

Modifications must be submitted in a sealed envelope clearly labeled "Modification No. \_\_" to the address listed in part one of this section. Each modification must be numbered in sequence, and must reference the Invitation for Bids.

After the bid opening a bidder may not change any provision of the bid in a manner prejudicial to the interests of the City or fair competition. Minor informalities will be waived or the bidder will be allowed to correct them. If a mistake and the intended bid are clearly evident on the face of the bid document, the mistake will be corrected to reflect the intended correct bid, and the bidder will be notified in writing; the bidder may not withdraw the bid. A bidder may withdraw a bid if a mistake is clearly evident on the face of the bid document, but the intended correct bid is not similarly evident.

## **2.5 UNFORESEEN OFFICE CLOSURES**

If, at the time of the scheduled bid opening, 93 Washington Street, 3rd Floor, Salem, MA 01970, is closed due to uncontrolled events such as fire, snow, ice, wind, or building evacuation, the bid opening will be postponed until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

## **2.6 BID OPENING PROCEDURE**

At the time and place fixed for opening of bids, the City will cause to be opened and publicly read aloud every bid received within the time set for receiving bids, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.



<b>PART 3. TECHNICAL SPECIFICATIONS</b>
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<b>01-23 00</b>	<b>Alternates</b>
<b>01 33 00</b>	<b>Submittals</b>
<b>01 41 00</b>	<b>Permits</b>
<b>01 71 20</b>	<b>Construction Layout</b>
<b>02 41 00</b>	<b>Site Preparation &amp; Demolition</b>
<b>03 30 00</b>	<b>Cast in Place Concrete</b>
<b>05 50 00</b>	<b>Metal Fabrication</b>
<b>10 14 00</b>	<b>Project Sign</b>
<b>11 60 00</b>	<b>Recreation Equipment</b>
<b>26 56 00</b>	<b>Site Lighting</b>
<b>31 00 00</b>	<b>Earthwork</b>
<b>32 10 00</b>	<b>Bases, Ballasts, Paving, and Edging</b>
<b>32 30- 00</b>	<b>Site Improvements</b>
<b>32 31 00</b>	<b>Fencing</b>
<b>32 33 00</b>	<b>Site Furnishings</b>
<b>32 80 00</b>	<b>Irrigation</b>
<b>32 90 00</b>	<b>Planting and Lawns</b>
<b>33 10 00</b>	<b>Water Utilities</b>



## **SECTION 01 23 00 ALTERNATES**

### **PART 1 - GENERAL**

#### **1.1 INSTRUCTIONS AND PROVISIONS**

- A. Each Bidder shall be held fully responsible for examining the scope of the alternates generally defined herein and for recognizing any modifications to the Work caused by any alternate whether or not the particular trade Section is mentioned therein.
- B. All sections of the Work that are affected by the alternates will be considered Work to be performed by the General Contractor.
- C. General Bidders shall enter a single amount in the appropriate space provided in the Form for Bid, which total amount shall consist of the amount for all work to be performed by the General Contractor.
- D. The Work of the various Subcontractors and trades to be performed under alternates shall be in strict accordance with the requirements of the particular trade Section of the Specifications.

#### **1.2 ALTERNATE NO. 1: ADDITION OF 3 (THREE) BAY PERGOLA WITH SWINGS**

- A. Work:
  - 1. ADD - perform all work necessary to furnish and install Three Bay Pergola with Swings. Refer to Sheets L-2.0, L-3.2, as well as Detail 1/L-6.8. Price to include all changes in associated labor, warranties, hardware, and materials, as necessary for the addition.
  - 2. Refer to the following Specification sections for the work of Alternate No. 1:
    - a. Section 05 50 00 Metal Fabrications

#### **1.3 ALTERNATE NO. 2: ADDITION OF CUSTOM CURVED BENCHES #1 & #5 - WOOD SLAT BENCHES WITH INTEGRATED LIGHTING MOUNTED ON GRANITE SEAT WALL**

- A. Work:
  - 1. ADD - perform all work necessary to furnish and install Custom Curved Benches #1 & #5 – Wood Slat Benches with Integrated Lighting Mounted on Granite Seat Wall. Refer to Sheet L-2.0, L3.2 as well as Detail 1/L6.2 and 2/L6.2 .
  - 2. Refer to the following Specification sections for the work of Alternate No. 2:
    - a. Section 26 56 00 Site Lighting
    - b. Section 32 33 00 Site Furniture

#### **1.4 ALTERNATE NO. 3: ADDITION OF 5 SPRAY SPLASH PAD WITH ELECTRONICALLY CONTROLLED FLUSH MOUNTED ACTIVATOR**

- A. Work:
  - 1. ADD - perform all work necessary to furnish and install 5 Spray Splash Pad with Electronically Controlled Activator Bollard as indicated on Sheet L-2.0, L3.2 and Detail 1/L6.4 and 3/L6.4.

2. Refer to the following Specification sections for the work of Alternate No. 3:
  - a. Section 03 30 00 Cast in Place Concrete
  - b. Section 11 60 00 Recreational Equipment
  - c. Section 33 00 00 Water Utilities

- END OF SECTION 01 23 00 -

ALTERNATES

## **SECTION 01 33 00 SUBMITTALS**

### PART 1 - GENERAL

#### 1.1 SCOPE OF WORK

- A. The work to be performed under this Section shall include the compilation and submittal of all required shop drawings, manufacturer's cuts, specifications, and certifications of all materials and equipment for the Landscape Architect's approval. Actual product samples may also be required as stipulated in the technical specifications sections.
- B. All submittals shall be submitted within four (4) weeks after the award of the contract, and may be made and distributed digitally with the approval of the Owner via email or File Transfer Protocol (FTP) site. Alternatively, submittals may be made in hard copy form; four (4) copies (Contractor, Owner's Rep, Landscape Architect, and Other City Department) shall be in four (4) separate submittal packages so that manuals can be prepared for office and field reference.

### PART 2 - SUBMITTALS

#### 2.1 REQUIREMENTS

- A. References are made throughout the Specifications and Drawings where submittals are required. All finishes, colors, and patterns are to be reviewed and approved by submittal or field sample.
- B. Where the Contractor's intention is to furnish the materials or equipment as specified, a list of all such elements, by Specification section, shall accompany the submittals so that the entire submittal is complete for the project.

### PART 3 - EXECUTION

#### 3.1 SUBMISSIONS

- A. Submit all documents and data either in a collated, manual format, with four (4) manuals to be submitted; OR distributed digitally with the approval of the Owner. Include a Table of Contents of the material for reference. The submittal is to be entire and complete, addressing all furnishings and installation.
- B. Submit all required product or material samples concurrent with the materials/equipment information manuals described above. Each submittal shall reference its appropriate specification section, part and paragraph.

END OF SECTION

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## **SECTION 01 41 00 PERMITS**

### PART 1 - GENERAL

#### 1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. The Contractor shall perform the work in accordance with the Contract Documents and any applicable municipal requirements.

#### 1.2 SCOPE OF WORK

- A. The Contractor shall be responsible for obtaining all permits required to complete the work of this contract, to provide all coordination and furnish all bonds, assurances and required warranties. As applicable, the Contractor shall be responsible for any/all fees associated with the securing of permits necessary for the execution of the work of this contract. Should any street work be required, an approved City contractor shall perform it.

#### 1.3 PERMITS BY CONTRACTOR

- A. The Contractor shall prepare permit applications and obtain applicable permits after the contract is awarded, **bearing all expenses**. All required permits shall be obtained, INCLUDING BUT NOT LIMITED TO the following:
  - 1. Trench Permit for trenching in the Public Way (520 CMR 14.00) if necessary
  - 2. Plumbing Permits
  - 3. Electrical Permits
  - 4. All other Permits related to Street and Sidewalk work and closures
  - 5. Parking Permits as necessary
  - 6. Sidewalk Permits

#### 1.4 DIGSAFE

- A. Contact Digsafe seventy-two (72) hours prior to initiating work at telephone (888) 344-7233.
- B. Contractor shall submit Digsafe Record Number to Landscape Architect for the project record.

### PART 2 - MATERIALS

#### 2.1 GENERAL

- A. All materials and equipment shall conform to permit requirements and the City's standards for utilities, excavation, backfill, patching, and surveying or other work unless otherwise stated in these specifications. Coordinate as necessary with the appropriate City official and/or private utility.

### PART 3 - EXECUTION

#### 3.1 APPROVALS AND GUARANTEES

- A. Execute all work per permit requirements. All plumbing and electric work to be approved by City Inspectors.
- B. Guarantee all work per permit requirements.

END OF SECTION

## **SECTION 01 71 20 CONSTRUCTION LAYOUT**

### **PART 1 - GENERAL**

#### **1.1 SCOPE OF WORK**

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. The work under this section shall consist of field staking the horizontal and vertical alignment of all essential features and proposed work, including site furnishings and play equipment, walks, walls, drainage, utility structures, plantings, and other related features as shown on the plans, by a registered Engineer or Land Surveyor. The Contractor shall familiarize himself with the existing conditions and shall be responsible for locating or re-establishing survey field ties, property lines, and benchmarks indicated on the plans.
- C. Existing survey tie information if available shall be provided by the City, or the Owner's Representative upon request.

#### **1.2 QUALIFICATIONS & SUBMITTALS**

- A. The Contractor shall engage the services of a Professional Engineer or Land Surveyor Registered in the Commonwealth of Massachusetts and shall submit the name, address, and registration number of such person or persons to the owner's representative in writing.
- B. Whenever reference is made on the plans or in these specifications to a Land Surveyor registered in the Commonwealth of Massachusetts, the Contractor may substitute a Registered Professional Engineer, except that only a Registered Land Surveyor will be permitted to conduct property line or boundary surveys.

### **PART 2 - MATERIALS**

#### **2.1 LAYOUT AND STAKING**

- A. The Contractor shall be responsible for furnishing all stakes, pins, and grade markings as required to implement the work of layout and staking and shall make all field adjustments ordered by the Landscape Architect or Owner's Representative at no extra cost to the Owner.
- B. Upon request by the Landscape Architect or Owner's Representative, the Contractor shall make available to the Owner survey instruments and operator necessary to check the proposed vertical and horizontal alignments at no extra cost.

### **PART 3 - EXECUTION**

#### **3.1 SURVEY LAYOUT**

- A. The Surveyor shall use the alignments shown on the plans to establish the layout of all proposed features and the Contractor shall perform field adjustments as ordered by the Landscape Architect or Owner's Representative.

- B. All layout shall be by the dimensions noted on the Drawings; **do not scale directly from the plans**. If clarification regarding a dimension or intended layout procedure is required, contact the Landscape Architect.
- C. All dimensions marked on the Drawings with "+/-" or "(Confirm)" are intended for confirmation of conformance to the expected conditions and (where applicable) that acceptable slopes and clearances are provided. Once layout has been established using other dimensions, the Contractor shall verify these dimensions (to within a tolerance of  $\frac{1}{2}$ " ) and report any discrepancy to the Landscape Architect for acceptance or instruction regarding adjustment. These confirmation dimensions should not be used to lay out elements.
- D. The Surveyor shall lay out the essential or necessary grades and locations of site furnishings, footings, pavements, utilities, structures and other proposed elements. The surveyor shall verify the location of any existing spikes, stakes, pipes, drill holes, etc. and shall be responsible for their accuracy. Proposed features shall be located in relation to dimensions shown on the drawings and as adjusted by the Landscape Architect.
- E. The Contractor shall inform the Landscape Architect and Owner's Representative when the general layout is completed and shall not begin excavation until the Landscape Architect approves the various alignments. Any discrepancies encountered in field conditions shall be reported to the Landscape Architect and Owner's Representative immediately and shall be adjusted as directed.
- F. The Contractor shall be responsible for maintaining the correct vertical and horizontal alignment of all elements, which responsibility shall not be waived by the Landscape Architect's approval of basic layout and stakeout.

END OF SECTION

## **SECTION 02 41 00 SITE PREPARATION AND DEMOLITION**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions and general requirements of the Contract apply to the Work under this Section.
- B. The Contractor shall, prior to any removal of rubbish or debris from the site, furnish written evidence satisfactory to the Owner's Representative that he has an approved dumping location for debris and/or spoil from his removals and excavation activities.
- C. On-site cleaning of materials for the purpose of salvage on the site shall not be permitted.
- D. The Contractor shall secure all necessary permits from the City of Salem before starting this project.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all Site Preparation work complete, as shown on the Drawings and as specified herein.
- B. Work includes, but is not limited to the following:
  - 1. Temporarily shut off of utilities on site as necessary to complete construction work.
  - 2. All site elements and / or amenities, including temporary fencing, signage, etc., noted below and on the drawings for removal without re-use, shall be set aside for the City of Salem maintenance department. The City shall have the right of first refusal on all objects that will not be re-used for the proposed Park. All material not wanted by the City shall be disposed of by the General Contractor.
  - 3. Removal of existing temporary fencing, signage, granite blocks, and any and all associated footings, etc., as designated on Drawings;
  - 4. Removal of subgrade material and all organic material, including mulch, as required by the Construction Documents;
  - 5. Removal of tree(s), stump(s), shrub vegetation, topsoil, and areas to be grubbed, where indicated on the Drawings. Remove roots structures over 1/4-inch diameter within 5-feet of the stump or stump grind to 2-feet below proposed finish grade;
  - 6. Removal of indicated sections of existing bituminous concrete pavement, pulverized bituminous concrete pavement, concrete curbs as indicated on the Drawings.
  - 7. Materials not indicated to be reused or protected, and not desired by the City of Salem Parks maintenance department, shall be removed legally off-site.

Provide for proper disposal of all removals off-site, including documentation of approved dumping location as described in 1.1.B;

8. Protect existing walls, curbing, concrete edges, catch basins, paving, utility poles, fences, railings, and utilities not indicated to be removed on the Drawings;
9. Locate & protect any drain or utility lines;
10. Protect the existing sidewalk within the public right-of-way;
11. Protect the public right-of-way and the South River from the entry of erosion and construction debris;
12. Any other necessary preparations for installation of improvements.

### 1.3 REFERENCES

- a. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of the other trades. Cooperate with all trades and all departments of City of Salem and coordinate all work under this Section.

B. The following related items are included under the Sections listed below

1. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading

### 1.4 LAWS, ORDINANCES, PERMITS AND FEES

A. The Contractor shall:

1. Give necessary notices, obtain all permits and pay all governmental fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.
2. Obtain all required certificates of inspection for this work and deliver it to the Landscape Architect before request for acceptance and final payment for the work.
3. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations, whether or not shown on the drawing and/or specified. The disturbed areas shall be secured with chain link construction fence and fence shall be maintained at all times while site is under construction as per General Conditions Section 00 70 00 of the Specifications.
4. Provide all safety controls during construction including temporary walkways, fencing, barricades, etc. at no additional cost to the Owner.
5. Completely remove from the project area all demolished materials, except as designated for stockpiling for re-use, and dispose of all materials off the site. Disposal of the materials shall be done in such a manner that there shall be no accumulation of any demolished material which may, in the opinion of the

Owner's Representative, the Fire Department or any other public agency having jurisdiction, constitute a hazard.

6. Comply with all Federal, State, and Local Codes for all utility work.

## 1.5 DEFINITIONS

The following related items are included herein and shall mean:

1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
2. A.S.T.M. - American Society for Testing and Materials.
3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.

## 1.6 SITE CONDITIONS

- A. The Contractor shall visit and accept the site as he finds it and shall inform himself of the character and the type of structures to be removed. The Owner assumes no responsibility for the condition of the site. Damage to the site (whether by reason of fire, theft, or other happenings) shall be at the risk of the Contractor from and after the date of Contract execution and no such damage or loss shall relieve the Contractor from any obligation under the Contract.
- B. Environmental Requirements: Contractor shall not work on or with soils when they are overly dry, wet, or frozen. Field Test: Form soil in palm of hand; if soil retains shape and crumbles upon touching, then it may be worked (if it will not retain its shape, it is too dry; if it does not crumble, it is too wet). Landscape Architect shall be final authority on condition of soil.

## 1.7 PROTECTION

- A. NO ACCESS to the Job Site shall be allowed on or through the abutting private properties. Access shall be along the public right-of-ways.
- B. All rules and regulations governing the respective utilities shall be observed in executing all work under this Section. All work shall be executed in such a manner as to prevent any damage to existing streets, curbs, paving, service utility lines and structures, drainage lines and structures, and adjoining property. Monuments and benchmarks shall be carefully maintained and, if disturbed or destroyed, replaced as directed.
- C. The Contractor shall assume full responsibility for damages caused by his Subcontractor's equipment and personnel to the existing grounds as well as adjoining private property. The Contractor shall obtain approval for subsurface construction from DIGSAFE (1-888-344-7233 / 1-888-DIG-SAFE) and all necessary parties and the City of Salem before proceeding within the Contract limits.
- D. The work of this Section shall be performed in such a manner as to cause no interference with access by the Subcontractors or other Contractors to all portions of the site as is necessary for the normal conduct of their work.

- E. The Contractor shall take adequate precautions to protect all walks, roads, streets, curbs, pavements, trees and planting, on or off the premises, and shall repair and replace or otherwise make good, as directed by the Owner's Representative, any damage so caused.
- F. Trees that are damaged during construction shall be removed by the Contractor at their expense if instructed to do so by the Landscape Architect, and the Contractor shall pay the Salem Parks and Recreation Department for each damaged and removed tree based on the following schedule:
  - 1. \$1,500. per tree for 2" through 6" caliper
  - 2. \$3,000. per tree for over 6", through 12" caliper
  - 3. \$6,000. per tree for over 12", through 18" caliper
  - 4. \$12,000. per tree for over 18" caliper.

#### 1.8 SPECIAL PROTECTION FOR MAINTAINING STREETS AND PUBLIC WAYS

- A. Do not close or obstruct streets, or sidewalks within the public right-of-way, without a permit. Do not place or store material in streets, alleyways or sidewalks.
- B. Conduct operations with minimum interference to street.
- C. Furnish, erect and maintain fences, planking, bracing, shoring, sheathing, lights, barricades, warning signs, and guards as necessary for the protection of streets, sidewalks, and adjoining property.
- D. Completely remove all protection when the work is completed or when ordered in writing to do so by the Owner.

#### 1.9 UTILITIES

- A. All work shall be performed in accordance with Federal, State and Local Codes.
- B. Discontinuance or Interruption - Before starting demolition, the Contractor shall be solely responsible for making all necessary arrangements and for performing any necessary work involved in connection with the discontinuance or interruption of all public and private utilities or services under the jurisdiction of the utility companies or corporations, and the Owner. These include gas, electricity, steam, refrigeration, low tension system, telephone, internet access, television, police signal, fire alarm, water, sanitary sewer, storm drainage, and without limiting the generality of the foregoing, including any system or systems which will be affected by the work to be performed under this Contract.
- C. Protection - Preserve in operating condition all active utilities including overhead any wires, traversing the project site, which are to remain. Should any damage occur to a utility which is to remain as a result, in the judgment of the Owner's Representative, of this operation, the Contractor shall at his own expense, repair all damage to any such utility to the satisfaction of the affected utility operator and the Owner.

#### PART 2 - PART 2 - NOT USED



## PART 3 - EXECUTION

### 3.1 REMOVALS

- A. All holes and trenches resulting from removals shall be backfilled as appropriate with gravel borrow and compacted as specified in Section 31 00 00 - Earthwork - Excavation, Filling and Grading and on the Drawings.
- B. Tree, stump, and shrub removal: In areas where the finish condition shall be lawn or planting bed, the existing stump shall be ground and roots over 1/4 inch in diameter within 5 feet of the stump shall be removed, all to a minimum of 24 inches below new finish grade. In areas where the finish condition shall be pavement, the stump and roots shall be completely removed.
- C. Tree Protection: All removals and earthwork within protected areas under existing trees shall be handwork only. See Sheet L1.1 and L1.2, Demolition & Removals Plan, for protection zones of existing trees to remain.

### 3.2 DUST CONTROL

- A. Wet down thoroughly all work during excavation to prevent spread of dust. Make all arrangements and pay for all water and necessary connections therefore.

### 3.3 CLEAN-UP

- A. Remove from the project site all materials and debris resulting from the work of excavation. Storage of such materials on the project site will not be permitted. The project site shall be safe, clean and holes filled and compacted with clean fill upon completion of the excavation and site clearance work.

END OF SECTION

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## **SECTION 03 30 00 CAST-IN-PLACE CONCRETE**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions of the Contract apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform Cast-In-Place Concrete Work as shown on the Drawings and as specified herein:
  - 1. Concrete for paving, curbs, and for all footings for site furniture, light poles, splash pad equipment, fence & gate posts, outdoor musical instruments, etc.
  - 2. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Salem and coordinate all work under this Section therewith.
  - 3. The following related items are included under the Sections listed below.
    - a. Section 02 41 00 - Site Preparation and Demolition
    - b. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading
    - c. Section 32 10 00 - Bases, Ballasts, Paving, and Edging
    - d. Section 32 30 00 - Site Improvements
    - e. Section 32 33 00 - Site Furniture
- B. SUBMITTALS
  - 1. All manufacturers' product literature.
  - 2. Test reports for concrete. Compression tests at 7 days, 14 days, and 28 days and slump test. One test set is to be done for every 10 cubic yards of concrete.

#### **C. LAWS, ORDINANCES, PERMITS AND FEES**

The Contractor shall:

- D. Give necessary notices, obtain all permits and pay all governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.
- E. Obtain all required certificates of inspection for this work and deliver same to the Landscape Architect before request for acceptance and final payment for the work.
- F. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations of the City of Salem and the Commonwealth of Massachusetts, whether or not shown on the Drawings and/or specified.

### 1.3 DEFINITIONS

- A. The following related items are included herein and shall mean:
  - 1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition
  - 2. A.S.T.M. - American Society for Testing and Materials
  - 3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials

### 1.4 SUBSURFACE INFORMATION

- A. The Owner and Landscape Architect assume no responsibility for the Contractor's failure to make his own site investigation and makes no representation regarding the character of the soil or subsurface conditions which may be encountered during the performance of the work.

### 1.5 FINISHED GRADES

- A. The words "finished grades" as used herein mean the required final grade elevations indicated on the Drawings. Where not otherwise indicated, site areas shall be given uniform slopes between points, for which finished grades are shown, or between such points and existing grade except that vertical curves or roundings shall be provided at abrupt changes in slope.

### 1.6 GRADES AND ELEVATIONS

- A. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interference and to adapt the grading to other special conditions encountered.

### 1.7 WORK IN THE PUBLIC WAYS

- A. Notify the appropriate municipal officials at least seven calendar days in advance of commencing any work in the public ways to obtain all required permission to perform this work. Perform all work in the public ways in a manner required by the municipal authorities.
- B. Should there be any conflict between requirements specified in the Contract Documents and those of the City of Salem, the municipal requirements shall govern.
- C. Do not close or obstruct any streets or sidewalks unless and until they have been discontinued by the appropriate municipal authority or unless and until he shall have first secured all necessary and required permits. No materials whatsoever shall be placed or stored in the streets. Conduct all operations to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. Cast-in-place concrete shall be Class D, air-entrained concrete conforming to the requirements and applicable provisions of Section 701 of the S.S.H.B. Minimum 28-day compressive strength shall be 4,000 psi. Concrete shall be air-entrained 5%

minimum with a two (2") inch minimum to four (4") inch maximum slump except as otherwise noted; see 2.8 for Slump limits for particular applications.

## 2.2 FORM MATERIALS

- A. Forms of Exposed Finished Concrete: Unless otherwise indicated, construct form work for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practical sizes to minimize number of joints and to conform to the joint system shown on Drawings. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.
  - 1. For plywood, use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
- B. Form for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in finish structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain or adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

## 2.3 REINFORCING MATERIALS

- A. Welded Wire Fabric (WWF): ASTM A185, welded steel wire fabric.
- B. Supports for Reinforcement: Provide supports for reinforcement including bolsters, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise acceptable.

## 2.4 CEMENT

- A. Cement shall be Portland Cement Type 1, free from water-soluble salts or alkalis which will cause efflorescence on exposed surfaces. Portland Cement shall comply with Standard Specifications of the ASTM-C150 Type I or II. Use only one brand of cement throughout the project.
- B. Cement shall be stored in a weather-tight structure and in such a manner as to prevent deterioration or intrusion of foreign matter. It shall be easily accessible for proper inspection and identification of each shipment. Cement that has hardened or partially set shall not be used. Limit the temperature of the cement to 140 degrees Fahrenheit when delivered to the batching plant.

## 2.5 AGGREGATE

- A. Lightweight fine aggregate for all concrete shall consist of washed inert natural sand conforming to ASTM-C330.
- B. All other aggregates shall conform to ASTM C-33. Provide aggregates with a long history of successful use in similar work and conditions. Grade fine aggregates from 1/4" to fines. Grade coarse aggregates from 1/4" to size specified.

## 2.6 WATER

- A. Water for concrete shall be clean, potable, and free from deleterious substances.
- B. When subjected to the mortar strength test described in ASTM-C87 the strength at 28 days of mortar specimens made with the water under examination and normal Portland Cement shall be at least 100% of the strength of similar specimens made with distilled water.

## 2.7 RELATED MATERIALS

- A. Grout: Non-shrink, non-metallic grout meeting COE CRDC 621 (558). Provide one of the following (or approved equal): "Por-rok", "Five Star Grout" by U.S. Grout Company or "Masterflow 713" by Master Builders.
- B. Chemical Hardener (chHD-Fn): Colorless aqueous solution containing a blend of magnesium fluosilicate and zinc fluosilicate combined with a wetting agent, containing not less than 2 lbs. of fluosilicates per gal.
- C. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.
- D. Moisture-Retaining Cover: One of the following, complying with ASTM C171.
  - 1. Waterproof paper
  - 2. Polyethylene film.
  - 3. Polyethylene-coated burlap
- E. Filler strips for expansion joints where used with caulking or sealants shall be cork type, non-extruding, self-expanding filler strips, AASHTO M-153-111, ASTM D1752, III, as manufactured by Celotex Corporation, W.R. Meadows, Inc., W.R. Grace and Company, or Approved Equal. Where no sealant is required strips may be non-extruding bituminous type in accordance with ASTM D1751.
  - 1. Premolded filler shall be one piece for the full depth and width of the joint, leaving a sealant recess as indicated. Use of multiple pieces of lesser dimensions to make up required depth and width of joint will not be permitted.
- F. Admixtures
  - 1. Admixtures causing accelerated setting of the cement in concrete shall not be used.
  - 2. In general, all concrete shall not contain additives, but an admixture may be employed therein (to improve workability, durability, etc.) subject to prior test and/or approved by the Landscape Architect in writing.
  - 3. Water-reducing and air-entraining agents shall be used in concrete, as required by the Landscape Architect, in strict accordance with the manufacturer's printed instructions. Agents shall be stored safe from adverse temperature in accordance with manufacturer's printed instructions. Total air entrained in freshly mixed concrete shall be 5.0% plus or minus 1.0% of volume of concrete with required strengths maintained.
  - 4. Water-reducing agent: "Sonotard WR" by Sonneborn Building Products, "WRDA" by W.R. Grace Company, "Pozzolith 100" by Master Builders Company, or Approved Equal conforming to ASTM C-494. Water reducing agent must be by same manufacturer as air-entraining agent.

5. Air-entraining Agent: "Darex" by W.R. Grace Company, "Aerolith" by Sonneborn Building Products, "MB-VR" by Master Builders Company, "Sealtight Air Entraining Agent" by W.R. Meadows, or Approved Equal conforming to ASTM C-260.
6. No other admixtures may be used without Landscape Architect's approval.

## 2.8 SLUMP LIMITS:

- A. Proportion and design mixes to result in concrete slump at point of placement as follows:
  1. Ramps and sloping surfaces: Not more than 3".
  2. Reinforcing wall systems: Not less than 1" and not more than 3".
  3. Other concrete: Not less than 2" and not more than 4" except as otherwise noted.

## 2.9 CURING COMPOUNDS

- A. All curing compounds shall conform to requirements of ASTM Designation C-309, Type I, clear and C-156. No materials containing wax or saponifiable materials will be permitted.
- B. Curing compound in areas that will be exposed to view in the finished work, or to receive a painted finish, and areas to receive a concrete topping, synthetic athletic surfacing, mortar beds, or other similar finishes, shall contain a fugitive dye, and shall be of a type that will become brittle and easily removable after approximately 21 days to allow dust-proofing treatment.
- C. Curing compound shall be Master Builders "Master Seal", Symons "Cure and Seal", Sonneborn "Kure-N-Seal", "CS-309" by W.R. Meadows or Approved Equal, conforming to ASTM 309, Type 1 and 2.

## 2.10 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used, use an independent testing facility acceptable to Landscape Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Landscape Architect.
- B. Submit written reports to Landscape Architect of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and approved by the Landscape Architect.
- C. Adjustments to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Landscape Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Landscape Architect before using in work.

## 2.11 CONCRETE MIX

- A. Job-Site Mixing: Mix materials for concrete in appropriate drum type batch machine mixer. For mixers of one cu. yd., or smaller capacity, continue mixing at least 1-1/2

minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than one cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. yd. or fraction thereof.

- B. Provide batch ticket for each batch discharged and use in work indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.
- C. Ready-Mix Concrete: Comply with requirements of ASTM C94, and as herein specified.
- D. Addition of water to the batch will not be permitted.
- E. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.
- F. When air temperature is between 85 Deg. F (30 deg. C) and 90 Deg. F (32 deg. C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 Deg. F. (32 deg. C), reduce mixing and delivery time to 60 minutes.
- G. Refer to Section 32 10 00, Part 2, 2.3 A for color admixture for paving and pads.

## 2.12 INTEGRAL COLOR SYSTEM FOR DECORATIVE COLORED CONCRETE PAVING

- A. See Section 32 10 00 Bases, Ballast, Paving and Edges

## PART 3 - EXECUTION

### 3.1 FORMWORK

- A. Forms shall conform to the lines, dimensions and shapes of concrete shown providing for openings, recesses, keys, slots, beam pockets and projections as required.
- B. Make forms clean and free of foreign material before placing concrete.
- C. Do not use earth cuts as forms for vertical surfaces, unless approved by the Landscape Architect.
- D. Design of Formwork
  - 1. Comply with ACI 301, Chapter 4, Paragraph 4.2. Formwork drawings shall bear the seal of licensed professional engineer.
  - 2. Form rods and tie wires of exterior surfaces shall slope down from the inside to outside of forms.
  - 3. Provide forms so that no discernible imperfection is in evidence in finished concrete surfaces due to deformation, bulging, jointing, or leakage of forms.

### 3.2 MIXING CONCRETE

- A. Ready Mix Concrete
  - 1. Comply with ASTM C94.
  - 2. Add mixing water only at the site.
  - 3. Discharge the concrete completely at the site within 1-1/2 hours after the introduction of the cement to the aggregates. In hot weather reduce this time



limit so that no stiffening of the concrete shall occur until after it has been placed.

4. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.

B. Batch Mixing at Site

1. Comply with ACI 301, Chapter 7, Paragraph 7.2.
2. Excessive mixing requiring the addition of water to preserve the required consistency will not be permitted. Mix concrete to a consistency which can be readily placed without segregation.
3. Where admixtures are specified, equip mixers with a device for measuring and dispensing the admixture.

- C. Hand-Mixed Concrete: When hand-mixed concrete is allowed and approved for certain parts of the work, mix on watertight platforms. Proportion cement, sand and aggregate loose by volume, carefully measured. Thoroughly mix sand and cement together dry until the mixture is a uniform color. Add the aggregate and turn the mass over until the mixture is uniform and homogeneous. Add water by sprinkling and turn the mass over until it is uniformly mixed and of the required consistency.

### 3.3 PLACING CONCRETE

- A. Preparation Before Placing: Conform to ACI 310, Chapter 8, Paragraph 8.1.

B. Conveying

1. Comply with ACI 301, Chapter 8, Paragraph 8.2.
2. Provide a spout or downpipe and elephant trunk or other appropriate method to prevent concrete from falling freely through a height greater than 3 feet.

- C. Depositing: Comply with ACI 301, Chapter 8, Paragraph 8.3.

### 3.4 CURING

- A. Comply with ACI 301, Chapter 12. Moist cure (continuous free water and cover with burlap) for first five (5) days after casting. Protect against temperatures under 40 deg. F. in first five days.

### 3.5 FORM REMOVAL

- A. Do not remove forms until the concrete has thoroughly hardened and has attained sufficient strength to support its own weight and construction live loads to be placed thereon, without damage to the structure. In general, do not disturb forms for framing until the concrete has attained at least 40% of design strength for side forms and 80% of design strength for bottom forms. Remove no forms for 24 hours after placing concrete. Protect concrete from pedestrian traffic for a period of 3 days after placing. Damp cure as per standards above. Be responsible for proper form removal and replace any work damage due to inadequate maintenance or improper or premature form removal.
- B. Where use of metal form ties extending to within less than 1-1/2 in. of the face of permanently exposed concrete has been unavoidable, cut off such ties at least 1-1/2 in. deep in the concrete but not less than 72 hours after concrete has been cast. Remove forms by methods which will not spall the concrete or cause any injury whatsoever. Hammering or prying against concrete will not be permitted.

### 3.6 FINISHING

#### A. General Requirements for Flatwork:

1. Strike off top surfaces of finished fill and monolithic slabs true and level within a tolerance of 1/8 in. in 10 ft. and measured with a 10 ft. straightedge placed in any direction at any location.
2. Set edge forms and intermediate screed strips accurately and sufficiently rigid to support screeds and so that proper surface elevations and concrete thickness are achieved allowing for dead load deflection and camber of formwork. Take measurements and control tolerances by the use of transit instrument.
3. Upon completion of leveling, remove screed and fill spaces with concrete.
4. Concrete shall have a medium broom finish of parallel marks. Brooming shall be at right angles to the axis of walk or as shown on the Drawings.
5. Joints and edges shall be tooled or otherwise finished as shown on the Drawings.

### 3.7 FIELD QUALITY CONTROL

- A. Sampling and testing for quality control during placement of concrete may include the following, as directed by the Landscape Architect.
- B. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
- C. Slump: ASTM C143, one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.
- D. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; one for each set of compressive strength test specimens.
- E. Concrete Temperature: Test hourly when air temperature is 40 deg. F (4 deg. C) and below, and when 80 deg. F (27 deg. C) and above; and each time a set of compression test specimens made.
- F. Compression Test Specimen: ASTM C31; one set of 6 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
- G. Compressive Strength Tests: ASTM C39; one set for each 100 cu. yds. or fraction thereof, of each concrete class placed in any one day or for each 5,000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
- H. When total quantity of a given class of concrete is less than 50 cu. yds., strength test may be waived by Landscape Architect if, in his/her judgment, adequate evidence of satisfactory strength is provided.
- I. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
- J. Strength level of concrete will be considered satisfactory if average of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive by more than 500 psi.

- K. Test results will be reported in writing to Landscape Architect and Contractor on same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day test.
- L. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Landscape Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

### 3.8 PROTECTION OF CONCRETE

- A. Under no circumstances shall the Contractor pour and leave the fresh concrete open to vandalism, while it is setting up. Damaged concrete shall be subject to rejection by the Owner or Landscape Architect and shall be replaced by the Contractor at no additional charge to the Owner. If concrete is rejected, new concrete will be poured at no additional expense to the Owner.

### 3.9 INTEGRAL COLOR SYSTEM FOR DECORATIVE COLORED CONCRETE PAVING

- A. See Section 32 10 00 Bases, Ballast, Paving and Edges

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## **SECTION 05 50 00**

### **METAL FABRICATIONS**

#### PART 1 - GENERAL

##### **1.1 GENERAL REQUIREMENTS**

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.

##### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
  - 1. Water Cabinet;
  - 2. 3 Bay Pergola – ADD. ALT. #1;
  - 3. PVC Coated Tubular Steel Rail & Gate at Harborwalk;
  - 4. Custom Restroom Sign.

##### **1.3 REFERENCES**

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
  - 1. Section 03 30 00 – Cast-In-Place Concrete
  - 2. Section 32 10 00 – Bases, Ballasts, and Paving
  - 3. Section 32 30 00 – Site Improvements
  - 4. Section 32 31 00 - Fencing

##### **1.4 SUBMITTALS**

- A. Shop Drawings and Samples
  - 1. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 1.

##### **1.5 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
- B. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.

- D. The Contractor shall be solely responsible for all materials stored on the site once delivered. Any materials left unsecured at the job site shall be solely at the contractor's own risk.

## 1.6 DEFINITIONS

- A. The following items are included herein and shall mean:
  - 1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
  - 2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
    - a. A36...Steel
    - b. A153...Zinc Coating (hot-dip) on hardware
    - c. A307...Carbon Steel bolts 66000 psi tensile
  - 3. CPSC - Consumer Product Safety Council.
  - 4. ADA - Americans with Disabilities Act and its current regulations.
  - 5. AWS: American Welding Society
  - 6. SSPS: Steel Structures Painting Council

## 1.7 MAINTENANCE KIT

- A. At the completion of construction, the Contractor shall provide to the City Department of Public Works, Parks Maintenance Division, a Maintenance Kit containing all touch-up paint, maintenance instructions, spare parts, and other maintenance materials provided by the manufacturers of all improvements.
- B. The Maintenance Kit shall be delivered in a single container clearly labeled with the Park Name, and each item shall be identified as to the source.

## PART 2 - PRODUCT

### 2.1 METAL FABRICATIONS: GENERAL REQUIREMENTS

- A. Steel Members:
  - 1. Metal surfaces: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, beam marks, roller marks, rolled trade names and roughness.
  - 2. Provide all materials of the best commercial quality for the purpose intended free from all defects that would impair the strength or durability of the work.
  - 3. Provide ferrous metals conforming to the following:
    - a. Steel pipe conforming to ASTM A53, type and grade as selected by fabricator and as required for design loading, standard weight (schedule 40) unless otherwise indicated or required.
- B. Finishing for trellis, water cabinet, and restroom sign shall be finished using a Hot-Dip Galvanizing and factory-applied Powdercoat Architectural Finish process, ColorGalv Thermoset by Duncan Galvanizing or Approved Equal.
  - 1. Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragalv® by Duncan Galvanizing or Approved

Equal. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain special high grade zinc, nickel, and other earthly materials.

- a. Galvanizing shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
  - b. Surface blasting prior to application of factory-applied post galvanizing wet coatings will produce a high rugosity and not be acceptable.
2. Powdercoat Architectural Finish: Provide factory-applied high-performance thermosetting-based durable coating over hot-dip galvanized steel, Thermoset® by Duncan Galvanizing or Approved Equal. Colors shall be selected from the Galvanizer's standard color range.
- a. Primer coat shall be factory-applied prime coating. Apply primer within 12 hours after galvanizing and within 3 hours of surface preparation at the same facility where the galvanizing is done in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer.
  - b. Finish coat shall be factory-applied high performance architectural finish. Apply finish coating at the galvanizer's plant, in a controlled environment meeting applicable environmental regulations and as recommended by the finish coating manufacturer.
  - c. Coatings shall be certified VOC compliant and conform to applicable regulations and EPA standards.
  - d. Apply the galvanizing, primer and coating within the same facility and provide single-source responsibility for galvanizing, priming and finish coating.
  - e. Blast cleaning of the galvanized surface is not acceptable.
- C. Painting of Existing Furnishings: Where so indicated on the Drawings, and where any rust has been removed from existing features, the furnishings shall be painted with a three-part system as described herein:
1. Priming - Primer shall be an inorganic zinc-rich coating, Zinc-Clad I by Sherwin Williams or equivalent.
  2. Intermediate coat - Intermediate coat shall be Hi-bild and Finish Epoxy by Sherwin Williams or equivalent.
  3. Finish coat - Finish coat shall be Hi-bild Aliphatic Polyurethane Enamel by Sherwin Williams or equivalent.
  4. Colors to be selected by the Landscape Architect from the manufacturer's full standard color range (provide color charts for selection). Finishes to be semi-gloss or as otherwise directed by the Landscape Architect.

## 2.2 CAST-IN-PLACE CONCRETE (FOOTINGS AND PADS)

- A. Cast-in-place concrete for footings and pads shall conform to all applicable specifications in 03 30 00: Cast-in-Place Concrete.

## 2.3 TRELLIS POSTS (ADD ALT. #1), CUSTOM RESTROOM SIGN, AND UTILITY CABINETS

- A. Fabrication and materials shall be in accordance with 2.1 above. All new metal items shall be powdercoated, colors to be selected.
- B. Shop Drawings:
  - 1. Submit detailed shop drawings INCLUDING FIELD MEASUREMENTS for all new railings, fences, and other fabrications.

## 2.4 PVC COATED TUBULAR STEEL RAIL & GATE AT HARBORWALK

- A. See Section 32 31 00 Fencing.

# PART 3 - EXECUTION

## 3.1 METAL FABRICATIONS (GENERAL REQUIREMENTS)

- A. Fabrication
  - 1. Form exposed work true to shape and size, and line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise indicated. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work. Cutting, shearing, and punching shall leave clean, true lines and surfaces.
    - a. All exposed edges and ends of plates, bars, shapes, or tubing shall be square and smooth, free of cutting marks, shear distortion, burrs and nicks.
    - b. Provide uniform and consistent joints with all exposed copes, miters and butt cuts.
  - 2. Weld corners and seams continuously on all exposed surfaces and where required for strength on concealed surfaces in accordance with AWS recommendations. Tack welding will not be permitted unless specifically noted. Where flush butt joints are required, slightly oversize welds, fill with plastic filler and grind flat. Grind exposed connections smooth and flush to match and blend with adjacent surfaces.
  - 3. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated use Phillips flathead, countersunk, screws and bolts.
  - 4. Bolted connections: Provide holes in bolted parts with 1/16 inch diameter greater than the nominal diameter of the bolt except where otherwise shown. Cut, drill or punch holes as required perpendicular to metal surfaces and so as not to deform or mar adjacent surfaces. No unfair holes will be accepted. Do not flame cut or enlarge holes by burning. Holes shall be clean cut without torn or ragged edges. Remove outside burrs resulting from drilling or punching operations.
  - 5. Provide for anchorage of type indicated, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use. Provide cardboard sleeves around all iron work to be set in masonry.
  - 6. Cut, reinforce, drill and tap miscellaneous metal work as indicated.



7. Fabricate joints which will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.
- B. Sandblasting
1. All metal components shall be sandblasted prior to finishing. Sandblasting shall conform to SSPC-SP7, brush off blast cleaning.
- C. Finishing (for New Fabrication)
1. All finishes to be applied in the shop except what is required to touch up after installation in the field.
  2. Galvanizing shall be performed by a company with a minimum of ten years experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
  3. Factory-applied metal coatings shall be performed in a facility acceptable to the coating manufacturer.
  4. Submit two 3 inch by 6 inch samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
  5. Handle and install materials with factory-applied coatings as recommended by galvanizer and coating manufacturer to prevent damage to coatings prior to and after installation.
  6. Touch-up factory-applied metal coatings as recommended by galvanizer and coating manufacturer.
  7. Provide 20 year warranty against 10% or more visible rust. Warranties for fading or discoloration of the finish shall be that which is supplied by the coating manufacturer .
  8. Fabricator shall provide a notarized statement from the galvanizer, along with a description of the material processed, indicating that all work has been done in conformance with this specification prior to receiving payment.
  9. Certificate of Compliance for Shop Drawing Review by Galvanizer: Submit galvanizer's certification that shop drawings for metal fabrications to receive metal coatings have been reviewed and that fabrications are acceptable to galvanizer for proper application of galvanizing and metal coatings. All drawings should be stamped by the galvanizer to indicate approval of design for galvanizing.
  10. Galvanizer/coater shall supply a certificate of compliance that all coatings have been performed in accordance with QP-3 standards and procedures.
- D. Installation
1. Fastening to in place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in place construction, including threaded fasteners for concrete and other connectors as required.
    - a. In existing or previously-installed concrete footings, set posts as indicated on the Drawings, plumb and in alignment. Drill or core concrete in a neat fashion such that the diameter of the hole is 1 inch greater than the width of the post or anchor to be placed in it (3" dia. for 2" posts). Provide sinkages for supports as shown and as necessary to secure work in place. Cut and backcheck as required for proper fit and clearance. Clear

post holes of loose material. Provide cardboard sleeves around all iron work to be set in masonry. Fill the space between the masonry and post solidly with grout, finished to divert water running down the post away from the post base. Grout shall have a waterproof sealant. Ensure that posts, concrete, and adjacent surfaces are free and clean of grout and debris before final inspection.

2. Cutting, fitting and placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment, elevation, level, true and free of rack, measured from established lines and levels.
  - a. Provide all temporary bracing, guy wires, turnbuckles, horizontal struts, etc., as may be required to plumb and hold the metal fabrications in place and aligned at all times during assembly and to take care of all lateral and vertical loads to which the work may be subjected. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.
3. Fit exposed connections accurately together for form tight hairline joints that cannot be shop welded because of shipping size limitations. Grind exposed joints smooth.
4. Field welding: Comply with AWS JCode for procedures of manual shielded metal arc welding, appearance and quality of welds made, and methods used in correcting welding work.
5. Bolted connections: Do not drive bolts into holes so as to injure threads. Make the hole fair by further drifting or removing burrs. Tighten bolts in a sequence toward free edges and in a manner to distribute loads evenly. Do not mix bolt heads and nuts. Keep each on one side of the connection. For exposed connections, keep heads on the visible side where practical.

E. Non-shrink Grout

1. Grout, if used, shall be a non-shrink, exterior, epoxy cement grout, with top trowelled to drain from post.

### 3.2 UTILITY CABINETS

- A. Fabrication shall be in accordance with 3.1 above. New metal components shall be powdercoated, colors to be determined. See relevant material in other Sections.
- B. All elements shall be installed plumb and sound, as shown on the Drawings (cored into masonry, or into concrete footings, as applicable), and in compliance with the Americans with Disabilities Act Accessibility Guidelines and the Mass. Architectural Access Board Rules and Regulations (521 CMR).
- C. Finishing of cabinets shall be in accordance with 3.1, Metal Fabrications, and with all applicable codes and approved shop drawings.
- D. See also Sections 33 10 00, Water Utilities.
- E. Installation to comply with all applicable codes and standards, and with City of Salem Department of Public Works requirements.
- F. The Contractor performing the work on these items shall be a licensed MA Plumber and/or Electrician, as appropriate.

- G. All plumbing work shall be inspected by the City Plumbing Inspector, and all electrical work inspected by the City Electrical Inspector, before backfilling occurs.
- H. Contractor to touch up any scratches and all mars to surfaces and finishes.

3.3 TRELLIS POSTS (ADD ALT. #1), CUSTOM RESTROOM SIGN

- A. Fabrication shall be in accordance with 3.1 above. New metal components shall be powdercoated, colors to be determined. See relevant material in other Sections.
- B. All elements shall be installed plumb and sound, as shown on the Drawings (cored into masonry, or into concrete footings, as applicable), and in compliance with the Americans with Disabilities Act Accessibility Guidelines and the Mass. Architectural Access Board Rules and Regulations (521 CMR).

3.4 PVC COATED TUBULAR STEEL RAIL & GATE AT HARBORWALK

- A. See Section 32 31 00 Fencing.
- B. Install as shown on drawings.

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## **SECTION 10 14 00 PROJECT TEMPORARY SIGNAGE**

### PART 1 - GENERAL

#### **1.1 SIGN REQUIREMENTS;**

- A. Provide all materials, labor, mountings and incidentals for:
  - 1. One (1) temporary construction project information sign, four feet by eight feet (4' x 8'), installed in a location directed by the Owners Representative;
- B. Install the sign on site in the location shown on the Drawings, OR as directed by the Landscape Architect. See the following sheets for sign layout information.

### PART 2 - MATERIALS

#### **2.1 TEMPORARY CONSTRUCTION SIGN**

- A. Temporary Sign shall be a 3'x5' project banner and will include color renderings of the final park layout as well as the City and Funding Source seals or information, and other pertinent information to be provided by the Owner's Representative. Electronic file with sign layout to be provided to Contractor by the Landscape Architect for fabrication purposes.
- B. Sign shall be printed in full color on durable, exterior-grade vinyl with finished edges, and shall be a banner style with metal grommets at each corner for attachment.
- C. Sign shall be securely mounted to wood posts or attached to construction fencing, as directed by the Owner's Representative, in a location visible from the public right-of-way. Signs shall be securely mounted with galvanized tamperproof metal attachments and all openings shall be framed with grommets so as to be durable. All attachments and mountings shall be child safe and vandal resistant.

### PART 3 - EXECUTION

#### **3.1 DESCRIPTION OF WORK;**

- A. Temporary Signs shall be installed facing the street or access point to the construction area. Signs shall be maintained in satisfactory condition during construction and then removed and disposed of legally by the Contractor, just prior to the final acceptance of the Work.
- B. SEE FOLLOWING SHEETS FOR SAMPLE SIGN, ACTUAL SIGN GRAPHICS TO BE PROVIDED AT AWARD OF CONTRACT;

# DERBY STREET PARK COMING SOON

**CITY OF SALEM DEPARTMENT OF CITY PLANNING & COMMUNITY DEVELOPMENT**

TOM DANIEL, DIRECTOR  
KATHLEEN WINN, DEPUTY DIRECTOR

**LANDSCAPE ARCHITECT:**  
**CBA LANDSCAPE ARCHITECTS LLC**  
CAMBRIDGE, MA

**GENERAL CONTRACTOR:**  
XXXXXXXXXXXXXX  
XXXXXXXXXXXXXX

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**WHO TO CONTACT:**

XXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXX

**FOR PROJECT UPDATES, VISIT:**  
<http://xx>

**ESTIMATED COMPLETION: SUMMER 2018**

END OF SECTION

## **SECTION 11 68 16 RECREATIONAL EQUIPMENT**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions of the Contract and Division 1 General Requirements apply to the Work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
  - 1. The City and the Landscape Architect, after a reasonable investigation, have not identified three manufacturers that can meet the following specifications for Recreational Equipment items, because of the nature of the field of manufacturers. Therefore, for sound reasons in the public interest (which, per MGL c. 30 s. 39M, part b, will be provided to prospective bidders in writing upon formal request) the following Basis of Design specifications are being used for ALL ITEMS in this Section.
  - 2. Alternate manufacturers for items noted in 1.1.B.1 will be considered, per MGL c.30 s.39M part b criteria 1, provided that they substantially conform (even with deviations), in the sole judgment of the Owner and the Landscape Architect, to the specifications.
  - 3. Proposed alternate manufacturers of items noted in 1.1.B.1 should be submitted for consideration regarding conformance to the specifications at least one week prior to bid submission. Alternative manufacturers, if submitted later than one week prior to bid submission and found, in the judgment of the Landscape Architect and the City, not to be in substantial compliance with the specifications, shall not be considered as grounds for an amendment to the Contract Price due to price differences.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
  - 1. Outdoor Musical Instruments
  - 2. Water Play Feature: Bollard Mounted Stand-Alone Activator, & (5) Spray Jets – ADD. ALT #3.

#### **1.3 REFERENCES**

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Salem and coordinate all Work under this Section therewith
- B. The following related items are included under the Sections listed below:
  - 1. Section 02 41 00 - Site Preparation and Demolition
  - 2. Section 03 30 00 - Cast In Place Concrete

3. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading
4. Section 32 10 00 - Bases Ballasts Paving Edging
5. Section 33 10 00 - Water Utilities

#### 1.4 SUBMITTALS

- A. Shop Drawings and Samples
  1. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.
  2. Provide a copy of the inspection certificate from a Certified Playground Safety Inspector confirming that the play equipment is in compliance with ASTM 1487 and all other applicable standards and regulations.

#### 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
- B. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.

#### 1.6 DEFINITIONS

- A. The following items are included herein and shall mean:
  1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
  2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
    - a. A36...Steel
    - b. A153...Zinc Coating (hot-dip) on hardware
    - c. A307...Carbon Steel bolts 66000 psi tensile
  3. CPSC - Consumer Product Safety Council.
  4. ADA - Americans with Disabilities Act and its current regulations.
  5. AWS: American Welding Society
  6. SSPS: Steel Structures Painting Council

#### 1.7 MAINTENANCE KIT

- A. At the completion of construction, the Contractor shall provide to the City Department of Public Works, Parks Maintenance Division, a Maintenance Kit containing all touch-up paint, maintenance instructions, spare parts, and other maintenance materials provided by the manufacturers of all improvements.
- B. The Maintenance Kit shall be delivered in a single container clearly labeled with the Park Name, and each item shall be identified as to the source.



## PART 2 - PRODUCT

### 2.1 CAST-IN-PLACE CONCRETE (FOOTINGS)

- A. Cast-in-place concrete for footings shall conform to all specifications in 03 30 00: cast-in-place concrete. The bury on all footings shall be 36" minimum below finished grade (fg) on all in-ground play events/posts, or the manufacturer's required depth, whichever is greater. Other types of anchoring shall be available upon request from the manufacturer (if so specified on the drawings).

### 2.2 OUTDOOR MUSICAL INSTRUMENTS

- A. All Outdoor Musical Instruments shall be from a single manufacturer, to be by Percussion Play Outdoor Musical Instruments ([www.percussionplay.com](http://www.percussionplay.com), ph. 1-866-882-9170).
- B. Cajon Drum to be a 1' wide by 14" long by 16" high stainless steel box. It shall have a built in snare at the top and a low bass sound around the middle.
- C. Pentatonic Tembo shall be a plosive aerophone made of stainless steel pipes oriented vertically and tuned to the C Major pentatonic scale.

### 2.3 WATER PLAY FEATURE WITH: BOLLARD-MOUNTED STANDALONE ACTIVATOR, & (5) SPRAY JETS – ADD. ALT #3 – MATERIALS SPECIFICATIONS

- A. Materials Specifications:
  - 1. Stainless Steel Structural Tubing: Shall be type 304/304L, structurally strong, durable, and resistant to corrosive environments. Rigid centricast fiber reinforced (FRP) and/or moulded fiberglass, PVC, filament wound tubing, Galvanized Steel, or Aluminium shall not be utilized for any above or below grade spray product structures.
  - 2. Acetal Components: Spray nozzles, caps and heads shall be manufactured from a high-tensile strength, high-performance acetal homopolymer resin (Delrin by DuPont or Approved Equal), and shall use tamper resistant tools for installation and removal. They shall be structurally strong and resistant to corrosive environments offering years of consistent spray effects. In addition, as a softer material than stainless steel they shall guard the nozzle housing thread integrity. PVC and Nylon shall not be utilized.
  - 3. Powdercoated Finish: Shall be a polyester smooth glossy heat-cured powder coat that is UV and chemical resistant and suitable for public spaces.
  - 4. Mounting and Assembly Hardware: All hardware and anchoring systems shall be 304/304L stainless steel. Exposed and accessible hardware shall be tamper resistant, requiring a special tool for removal to deter vandalism and theft.
  - 5. Safety & Craftsmanship: All edges shall be machined to a rounded edge. All welds shall be watertight, buffed smooth, or polished to a non-visible finish and factory pressure tested. Accessible nozzles and spray heads shall be recessed to ensure a completely safe play environment with no pinch points, head entrapments or protrusion hazards. All products shall be designed in accordance with ASTM F1487 and CSA Z614-98 regulations for public playgrounds.
- B. All products shall be manufactured by a single supplier, WaterPlay Inc. of Kelowna, British Columbia or Approved Equal.

2.4 WATER PLAY FEATURE: BOLLARD-MOUNTED STANDALONE ACTIVATOR – ADD. ALT #3

- A. Standalone activator shall be an “Eco Activator” by WaterPlay Inc. or Approved Equal.
  - 1. The activator shall contain its own 4-valve, individually adjustable manifold; battery-operated control module with adjustable run time; battery-operated solenoid valve to control water flow; and drain system; and shall be directly connected to a bollard-mounted, piezoelectric sensor for activation.
- B. This shall be constructed of a stainless steel utility box with dimensions of 12.1” x 12.1” x 12.5” high installed flush to grade.
- C. The Utility Box shall house a 4 valve schedule 80 manifold with 1 inch ball valves to allow for flow regulation.
- D. The activation sensor shall be placed atop a 5.563 inch diameter powdercoated steel bollard set into 1 corner of the utility box with a piezoelectric sensor. When touched the piezo sensor shall send a direct signal to the controller to start a pre-programmed sequence of water play activities within the aquatic play pad.
- E. The battery operated electronic controller shall have time adjustment allowing operating times of 60-600 seconds.
- F. Located in the bottom of the utility box shall be a 3 inch (76mm) hole to allow for connection to drain (by other).
- G. A .5 inch (13mm) hose bib shall allow for winterization and drainage.
- H. There shall be an anti slip decal adhered to the flush grade lid to provide slip resistance.
- I. The finish of all exposed metal components shall be powdercoated metal (color to be selected by Landscape Architect and Owner from the Manufacturer's full color range, including specialty colors) or brushed stainless steel, at the discretion of the Landscape Architect and Owner.

2.5 WATER PLAY FEATURE: CONE-SHAPED MIST LOW-VOLUME PEDESTAL MOUNTED JETS – ADD. ALT #3

- A. The cone-shaped mist jets shall be a low-flow mist-forming jet, “Misty Mountain Model C02-313” by WaterPlay or Approved Equal.
- B. Jet body canister shall be constructed of schedule 40 stainless steel structural tubing with an outside diameter of 2.875 inches with a wall thickness of 0.203”. The canister shall be a total height of 11.38 inches tall with a .25 inch thick X 5.5 inch diameter base plate. There shall be an integral grounding lug for electrical grounding.
- C. The Acetal spray nozzle and winter cap shall be seated into the canister with an o-ring and secured using a tamper resistant security bolt. The spray nozzle shall have two (2) slant jet holes that create a mist under pressure. The hydraulic requirements shall not exceed 1 gpm @ 15 psi. Tamper resistant winter caps shall be included.
- D. The water inlet shall be 1 inch National Pipe Thread located 1.41 inches below the base plate.

- E. The canister shall be secured into place by securing three (3) 3/8 inch x 11 inches L bolts (Stainless Steel) through three (3) anchor holes on the side of the canister.

## 2.6 WATER PLAY FEATURE: TIMER SYSTEM FOR SPRAY FEATURE – ADD. ALT #3

- A. Water Cabinet to be furnished with a brass solenoid valve controlled by a dedicated programmable STANDALONE timer, NOT a zone of the park irrigation system, to enable use of the spray feature to be limited to park operating hours. See 32 80 00 for specifications of the timer characteristics required and appropriate solenoid valve

## PART 3 - EXECUTION

### 3.1 CAST-IN-PLACE CONCRETE FOOTINGS

- A. Concrete footings shall conform to the specifications contained in 03 30 00, Cast-In-Place Concrete.
- B. Install all footings plumb and true.
- C. Embedments into footings shall be cast-in-place, cored and embedded, or sleeved and embedded, following all instructions in 03 30 00.3.01.D.3, Cast-In-Place Concrete: Embedded Items. Cored or sleeved items shall be securely anchored in place with a non-shrink, non-metallic waterproof grout suitable for buried use.
  - 1. All corings shall be done in such manner as to avoid damage to the cast footing. Where feasible, sleeved embedments or cast-in-place embedments are preferred. All proposed corings shall be discussed with the Landscape Architect prior to casting the footings.
- D. The Contractor shall do all necessary excavation required for the installation of the play equipment. Excavation shall be defined as the digging of all required footings and the removal of all materials encountered (footings, pavements, earth, boulders, broken concrete pieces, etc.) while digging those footings.
- E. The depth of the top of the footing depends on the safety surfacing specified. See drawings.

### 3.2 OUTDOOR MUSICAL INSTRUMENTS

- A. Install as shown in the Drawings and per Manufacturer's instructions.
- B. Placement of Instruments shall be confirmed in the field with the Landscape Architect and Owner prior to installation.
- C. Contractor to touch up any scratches and all mars to surfaces and finishes.
- D. Warranties:
  - 1. Instruments shall carry a 2-year warranty for materials, workmanship, and manufacturer's faults, provided that the mounting/assembly and ground/foundation works are carried out as described in the manufacturer's Installation Instructions.
  - 2. All posts shall carry a 5-year warranty.

### 3.3 WATER PLAY FEATURE: WATER SPRAY NOZZLES AND CONTROLLER – ADD. ALT #3

- A. Install all fountain equipment per Manufacturer's Instructions.

- B. The finished work shall be in compliance with local, state and federal codes.
- C. Anchoring and Leveling Systems: The anchoring system shall have an integrated leveling system facilitating installation plumb to the activity deck surface.
- D. Earth Bonding/Grounding: All water spray products are to be equipped with a Grounding Lug and are to be grounded against a lightning strike as per article 680 of the N.E.C.
- E. Adjustment: The four manifold valves shall be adjusted in the field with the Landscape Architect and Owner to their satisfaction after installation to provide the intended effect and spray area.
- F. Drawings and Instructions: Product drawings and installation manuals shall be supplied by the manufacturer for ease of installation.

#### 3.4 TIMER SYSTEM FOR SPRAY FEATURE

- A. Water Cabinet shall include an irrigation clock timer and shutoff valve on water spray feature line; see 32 80 00. Install per manufacturer's instructions, and provide initial program limiting water spray feature operation to park operating hours.

END OF SECTION

## **SECTION 26 56 00 SITE LIGHTING**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
  - 1. The City and the Landscape Architect, after a reasonable investigation, have not identified three manufacturers that can meet the following specifications for lighting poles and fixtures, because of the nature of the field of manufacturers. Therefore, for sound reasons in the public interest (which, per MGL c. 30 s. 39M, part b, will be provided to prospective bidders in writing upon formal request) the following Basis of Design specifications are being used for ALL ITEMS in this Section.
  - 2. Alternate manufacturers for items noted in 1.01.B.1 will be considered, per MGL c.30 s.39M part b criteria 1, provided that they substantially conform (even with deviations), in the sole judgment of the Owner and the Landscape Architect, to the specifications.
  - 3. Proposed alternate manufacturers of items noted in 1.01.B.1 should be submitted for consideration regarding conformance to the specifications at least one week prior to bid submission. Alternative manufacturers, if submitted later than one week prior to bid submission and found, in the judgment of the Landscape Architect and the City, not to be in substantial compliance with the specifications, shall not be considered as grounds for an amendment to the Contract Price due to price differences.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
  - 1. Concrete Footings;
  - 2. South River Harbor Walk LED Light Fixtures and Poles;
  - 3. LED Pedestrian Light Columns;
  - 4. Low-Voltage LED Rope Lighting installed in Custom Benches - Base Bid (Benches 2,3,4) & ADD ALTERNATE #2 (Benches 1 & 5)

#### **1.3 REFERENCES**

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:

1. Section 03 30 00 – Cast-In-Place Concrete
2. Section 31 00 00 – Earthwork
3. Section 32 10 00 – Bases, Ballasts, and Paving
4. Section 32 33 00 – Site Furnishings

#### 1.4 SUBMITTALS

- A. Shop Drawings and Samples
  1. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 1.

#### 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
- B. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.
- D. The Contractor shall be solely responsible for all materials stored on the site once delivered. Any materials left unsecured at the job site shall be solely at the contractor's own risk.

#### 1.6 DEFINITIONS

- A. The following items are included herein and shall mean:
  1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
  2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
    - a. A36...Steel
    - b. A153...Zinc Coating (hot-dip) on hardware
    - c. A307...Carbon Steel bolts 66000 psi tensile
  3. CPSC - Consumer Product Safety Council.
  4. ADA - Americans with Disabilities Act and its current regulations.
  5. AWS: American Welding Society
  6. SSPS: Steel Structures Painting Council

#### 1.7 MAINTENANCE KIT

- A. At the completion of construction, the Contractor shall provide to the City Department of Public Works, Parks Maintenance Division, a Maintenance Kit containing all touch-up paint, maintenance instructions, spare parts, and other maintenance materials provided by the manufacturers of all improvements.
- B. The Maintenance Kit shall be delivered in a single container clearly labeled with the Park Name, and each item shall be identified as to the source.

## PART 2 - PRODUCT

### 2.1 CONCRETE FOOTINGS

- A. Cast-in-place concrete for footings shall conform to all specifications in 03 30 00: Cast-in-Place Concrete.
  - 1. Precast footings meeting the minimum specifications listed in 03 30 00 and on the Drawings may be allowed in lieu of poured-in-place with the Landscape Architect's permission; provide manufacturer's cut sheets on precast footings for approval.
- B. Foundations for light poles shall be as shown on Contract Drawings, including reinforcement as recommended by a Structural Engineer and including the number, type and location of anchor bolts as required by lighting Manufacturer. Foundations shall be made of minimum 5,000 psi concrete (at 28 days). Foundations shall have 2-1" PVC conduits for lighting circuits, 180 degrees apart. Foundations to be installed with the top of the concrete 2" above the final grade. Foundation shall extend at least to frost depth, with size as noted on the drawings.
- C. Conduits to be flush with top of concrete to not interfere with anchor bolts or bases.

### 2.2 SOUTH RIVER HARBOR WALK LIGHT LED LIGHT FIXTURES AND POLES;

- A. The Harborwalk Pole to be as follows: The light pole assembly shall be the "Salem" style as manufactured by King Luminaire or approved equal. The light pole shall be as specified below shall match existing light poles on the Salem South River Harbor Walk and shall be manufactured as detailed on contract drawings. Manufacturer of the light pole and luminaire shall have been in the business of manufacturing outdoor lighting products for a minimum of (10) years.
  - 1. Ornamental Base Section - The base shall be cast aluminum alloy ANSI 356 per ASTM B26-95 and shall be of heavy wall construction with a minimum wall thickness of .375 inches. The base shall be a two piece "clam shell" design and shall measure 33 inches in height with a diameter of 17 inches where it rests onto the concrete foundation. A cast aluminum medallion measuring 6 inches in diameter, detailed with the City of Salem seal shall be mechanically fastened to the ornamental base access door. The top collar section of the base casting shall include THE integrally cast lettering CITY OF SALEM MA.
  - 2. Pole Shaft – The aluminum pole shaft shall be fabricated from aluminum alloy 6063 per ASTM B221, B2411 or B429. After fabrication, the pole shaft shall measure 6.44" diameter at the base plate and taper a uniform .14" per ft. The pole shall have a minimum wall thickness of 0.188 inches to support designed wind loads including banners with the use of breakaway banner arm couplings. The pole shaft assembly shall be fluted using the mandrel forming process resulting in 12 equally spaced "flat" flutes. The pole assembly shall then be fully heat treated to achieve a T6 temper after the assembly has been welded. A 3 inch x 5 inch handhole provision with reinforcing frame shall be installed approximately 15 inches about the pole base plate to maintain the structural integrity of the pole.
    - a. An electrical grounding lug shall be provide with each pole shaft and located within the pole shaft adjacent to the hand hole.
  - 3. Pole Base Flange – The pole base shall be of cast aluminum alloy 356 per ASTM B26 or B108 and be of one piece construction. The base/shaft

connection shall have a tight tolerance fit before welding. The shaft shall be joined to the base with two circumferential welds at the top and bottom of the base. The assembly shall be heat treated after welding to achieve maximum material properties.

4. Anchor Bolts – A set of four (4) 3/4" inch diameter by 27 inch long anchor bolts, manufactured to AASHTO specification M314-90, Grade 55 (55,000 psi minimum yield strength), meeting the requirements of ASTM A576 shall be furnished with each light pole. Anchor bolts shall be fully hot dipped galvanized per ASTM A153. The manufacturer shall note the anchor bolts yield strength on the shop drawings and structural calculations.
  5. Pole Accessories -
    - a. Item 821.111 shall include a set of banner arms. The banner arms shall be field installed by the contractor. The banner arms shall be "breakaway" style, constructed of 1"-8NC TOE rods with a removable 2" diameter cast aluminum ball finial.
    - b. Breakaway couplings to reduce wind loads on the structural pole shaft assembly in high wind conditions.
    - c. All poles shall be furnished with a 15 amp GFCI receptacle and weatherproof while in use cover for field installation by contractor. The cover shall be metallic, low profile type and be painted to match pole shaft assembly.
  6. Finish - The light pole components shall receive a factory applied TGIC polyester powder coating finish system to protect the aluminum alloy from salt and chemical corrosion. The finish shall be non-textured, with a medium gloss percentage. The color shall match RAL 9005 Black.
  7. Submittals - Pole manufacturer's submittal data shall be submitted for the following:
    - a. Detailed and dimensioned factory shop drawings
    - b. Manufacturer's warranty statement
    - c. Finish (Coating) Process
- B. The Harborwalk Luminaire to be as follows: The luminaire shall be a decorative "post top" style as detailed on the contract documents and be designed for secure mounting and wiring to the specified light pole. The luminaire shall be King Luminaire model K134-P4AR-III-100(SSL)-7030-120:277V-K13-BK or approved equal.
1. The luminaire shall be capable of operating voltages ranging from 120-277V. In addition, the luminaire shall meet the following requirements:
    - a. Fully assembled and individually electrically tested prior to shipment
    - b. Designed to operate in continuous 50 degree C ambient with degradation of components.
    - c. Designed to meet standard UL1598 requirements for operation in wet locations
    - d. Include passive cooling discipline for thermal management without fans or moving parts
    - e. Designed to provide a minimum average of 60,000 hours of operation
    - f. without maintenance or replacement of any internal components



- g. Tested per IESNA LM63 and LM79
  - h. LM-79-08 tested by an independent, UL and NVLAP accredited and certified facilities
  - i. Manufactured in an ISO9001 certified facility
- 2. Housing – Each luminaire shall consist of a A319 cast aluminum slipfitter assembly designed for driver storage, accessible without the use of tools by removing a “roto-lock” globe ring assembly. The globe shall be a molded rippled acrylic and covered by a heavy wall spun aluminum dome and finial assembly, designed to support the LED light engine. Each luminaire shall include four vertical bars mounted 90 degrees apart of the style detailed on the contract documents.
  - 3. Electrical System - The solid-state driver for the LED light source shall be a Class 2 type, operating at a maximum current of 500 mA. The driver shall have a minimum life expectancy of 100,000 hours at or below 25 degrees C, with an operating temperature range from a minimum of -30 degrees C to a maximum of 70 degrees C. The driver casing shall have a minimum ingress protection of IP67.
  - 4. Optical System – The luminaire shall use high output, high brightness LED's. The LED's shall be mounted on printed aluminum circuit boards with a thermal interface material to maximize heat transfer to the heat sink surface. The LED's shall work with and micro-lens system, capable of producing an IESNA Type III roadway distribution. The LED life rating data shall be determined in accordance with Illuminating Engineering Society of North America (IESNA) Lumen maintenance (LM)-80-08. The LED light engine shall produce a 4000K (+/- 300 degrees) color temperature with a minimum CRI of 70. The tested luminaire shall deliver a minimum of 6,291 lumens (nominal) with a minimum efficacy of 63.5 lumens/watt. The IES classification shall be Type III-Medium with a Backlight – Uplight – Glare rating not to exceed B2-U3-G2.
  - 5. Finish - The luminaire housing shall receive a factory applied TGIC polyester powder coating system to protect the aluminum alloy from salt and chemical corrosion. The finish shall be non-textured, with a medium gloss percentage to match the light poles.. The color shall match RAL 9005 Black.
  - 6. Warranty – The manufacturer shall repair or replace at no cost any failed LED light engines, drivers, surge modules or any mechanical component defects for a minimum of seven years from date of installation.
  - 7. Submittals - Luminaire manufacturer's submittal data shall be submitted for the following:
    - a. Detailed and dimensioned factory shop drawings
    - b. Certified LM-79-08 Test Report from a NVLAP certified independent testing laboratory
    - c. Manufacturer's warranty statement
    - d. Driver data sheet
    - e. UL 1598 testing certification
    - f. Finish (Coatings Process)

## 2.3 LED PEDESTRIAN LIGHT COLUMNS

- A. Pedestrian Light Columns to be "Series 600 Light Column Pedestrian Lighting" by Forms+Surfaces of Pittsburgh, PA 15223 (phone: 800-451-0410, website: [www.forms-surfaces.com](http://www.forms-surfaces.com)) or Approved Equal.
- B. Materials
  - 1. Column: tubular stainless steel.
  - 2. Head: .125" thick white-frosted acrylic tube with stainless steel cap.
  - 3. Lamps to be (4) L28T8:
    - a. 28W T8 linear LED.
    - b. Base: Medium bi-pin.
    - c. Initial lumens: 4 x 2,400.
    - d. Color temperature: 4,000 – 4,500.
- C. Each Light column to have a GFI in location shown on the lighting detail in Drawing.
- D. Finish: to be selected from Manufacturer's standard options.
- E. Dimensions: 6" diameter x 132.5" high.
- F. Mounting: .50" thick base plate, slotted for rotational capability. Provide stainless steel cover, anchor bolts and template.
- G. Provide Manufacturer's cut sheets and color samples for approval.
- H. Provide all required conduits, ground rod, and footings as shown on the Drawings. Provide handholes as indicated on the Drawings; confirm any proposed changes to handhole locations or sizes in the field with the Landscape Architect and the Owner's Representative.

## 2.4 LOW-VOLTAGE LED ROPE LIGHTING INSTALLED IN CUSTOM BENCHES - (LIGHTS AND THEIR ACCESSORIES FOR BENCHES 2, 3, & 4 ARE BASE BID & LIGHTS AND THEIR ACCESSORIES FOR BENCHES 1 & 5 ARE ADD ALTERNATE #2)

- A. The Low-Voltage LED Rope Lighting system shall be "Q-CAP-D3" by Q-Tran of Milford, CT or Approved Equal providing similar design details and performance to the following specifications. For the Base Bid: 90 linear feet in 3 locations (7 runs using Basis-of-Design system) are required. For the Basis-of-Design system, 4 self-enclosed transformers are also required. For Add. Alternate # 2: 56 linear feet in 2 locations (5 runs using Basis-of-Design system) are required. For the Basis-of-Design system, 4 self-enclosed transformers are also required.
- B. Rigid Sch.40/80 PVC conduit, fittings, additional wire, transparent waterproof epoxy, mounting strips, and other accessories and parts as needed for the full installation and operation of the system shall also be included under this work item.
- C. The individual LED rope lights shall be a versatile, flexible LED power strip that is bendable in a variety of different directions with a rating of IP68 which is water resistant to protect against the elements.
  - 1. Color Temperature 4000K, 4.4 watts/150 lumens per foot and a CRI over 90.
  - 2. Basis-of-design tape length: 16 feet. Minimum bending radius: 6"
  - 3. LED Life Time ≥ 30,000 hours or greater.

4. Manufacturer to provide mounting hardware.
- D. Transformer modules shall be installed in as described on the Drawings. The Transformers shall be self-enclosed Low Voltage Lighting Transformers, installed in an at grade vault located behind the bench in the lawn or planting bed. Basis of design system dictates which of the following transformer to use for which bench.
    1. Vault to be Q-Vault-5-BZ-FR by Q-Tran of Milford, CT or Approved Equal. Unit to have housing & door, housing gasket, stabilizing bars, slotted hex steel 1/4-20, removable brass nuts & perforated drainage pipe. Vault to come with installation kit.
    2. Transformer for Benches 1 (Add. Alt #2) , 2 (Base Bid), and Bench 5 (Add. Alt #2) to be by Q-SET-300-120/24 by Q-Tran or Approved Equal. Benches 1 & 2 to share a transformer, per basis of design.
    3. Transformer for Benches 3 & 4 (Base Bid) to be Q-SET-360-120/24 by Q-Tran or Approved Equal. Benches 3 & 4 to share a transformer, per basis of design.
  - E. Connect wiring with "UR2" by 3M Corporation or Approved Equal waterproof gel-filled splice connectors (telecomm-style) small enough to fit within conduit. Cut manufacturer-provided pigtails to length needed.
  - F. Warranties: The manufacturer shall offer a 5-Year warranty on all components.
  - G. Provide Manufacturer's cut sheets for approval.
  - H. Provide all required conduits, recesses, and mounting straps as shown on the Drawings. Provide vaults as indicated on the Drawings; confirm any proposed changes to vault locations or sizes in the field with the Landscape Architect and the Owner's Representative.

### PART 3 - EXECUTION

#### 3.1 CAST-IN-PLACE CONCRETE FOOTINGS

- A. Concrete footings shall conform to the specifications contained in 03 30 00, Cast-In-Place Concrete.
- B. Install all footings plumb and true.
- C. Embedments into footings shall be cast-in-place, cored and embedded, or sleeved and embedded, following all instructions in 03 30 00 3.01.D.3, Cast-In-Place Concrete: Embedded Items. Cored or sleeved items shall be securely anchored in place with a non-shrink, non-metallic waterproof grout suitable for buried use.
  1. All corings shall be done in such manner as to avoid damage to the cast footing. Where feasible, sleeved embedments or cast-in-place embedments are preferred. All proposed corings shall be discussed with the Landscape Architect prior to casting the footings.

#### 3.2 SOUTH RIVER HARBOR WALK LED LIGHT FIXTURES AND POLES AND LED PEDESTRIAN LIGHT COLUMNS AND BASES

- A. All electrical work shall comply with all applicable codes and regulations, and shall be reviewed by the City of Salem Department of Public Works.

- B. Install all lighting, poles, bases, footings, and conduits per Manufacturer's directions and in accordance with all applicable state, local, and environmental regulations and codes.
- C. Light Columns shall be installed true and plumb, with lighting and all other connections secured using tamperproof hardware. Provide shop drawings and wiring diagrams for approval. Provide Manufacturer's cut sheets for approval.
- D. Installation to be by a licensed Electrician, in compliance with applicable Codes.
- E. Contractor to touch up any scratches and all mars to surfaces and finishes.
- F. NOTE: Factory supplied template must be used when setting anchor bolts for Harbor Walk lights. The City and the manufacturer shall not be required to honor any claim for incorrect anchorage placement from failure to use factory supplied templates.

3.3 LOW-VOLTAGE LED ROPE LIGHTING AND ACCESSORIES (LIGHTS AND THEIR ACCESSORIES FOR BENCHES 2, 3, & 4 ARE BASE BID & LIGHTS AND THEIR ACCESSORIES FOR BENCHES 1 & 5 ARE ADD ALTERNATE #2)

- A. Install per manufacturer's instructions for permanent installation in recessed areas (which may differ from typical installations) and in accordance with all applicable codes and all requirements of the City of Salem.
- B. Transformer Location: The transformers shall be located in the new electrical cabinet. Install transformers in a location that is accessible in the event of future servicing. Depending on the conditions within the electrical cabinet and the applicable codes, the transformer may either be plugged into a switched/breakered GFI outlet receptacle or hard wired directly to a switched/breakered circuit as long as access to the transformer is provided per electrical code.
- C. Wire Requirements and Connections: 16 or 14 gauge stranded outdoor wire (as required by codes/standards) shall be used. For making the connections within the existing conduits, UR2 or equivalent splice connectors.
- D. Location of Lights: See Drawings for light locations. The Contractor shall provide complete shop drawings showing proposed wiring, layout of conduits, and all connections for approval before beginning installation.
- E. Attach and Test Luminaires: Cut manufacturer-provided pigtails to length. Attach luminaires using splice connectors, testing each luminaire as work progresses to ensure all connections and wiring are sound and all luminaires are functioning properly. Never pull on the wires from the opposite side.
- F. Install: Once all luminaires have been connected and tested, mount light elements to upper surface of recesses as specified by manufacturer.

3.4 OTHER INFORMATION

- A. See also 33 70 00, Electric Utilities, for related information including wiring, panel, conduit, and other requirements and codes.

END OF SECTION

## **SECTION 31 00 00 EARTHWORK**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions of the Contract, Division 0, and applicable parts of Division 1 apply to the Work under this Section.
- B. The Contractor shall prior to any removal of surplus fill, excavated material, or debris from the site, furnish written evidence satisfactory to the Owner or Owner's representative that he has an approved dumping location for debris and/or spoil from his/her excavation activities.
- C. For all earthwork, excavation, and removals within the driplines of protected trees (not limited to areas within designated tree protection fencing), the Owner's Representative or Landscape Architect must be present on the site or have specifically waived that obligation in writing to the Contractor to ensure tree protection measures are being observed. Provide 48 hours' notice prior to commencement of all such work. (SEE 01 57 00 3.7)

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform Earthwork as shown on the Drawings and as specified herein.
- B. To be included:
  - 1. Excavating, filling, trenching and backfilling of all descriptions required for the construction of pavements, safety surfaces, equipment, site improvements, utilities, filling voids left by hardscape and plant removals, and all specialties. Provide all additional fill materials as required and specified herein.
    - a. All work within the protected areas under existing trees including demolition and removal (see Sheet L1.0 of the Drawings), shall be HAND WORK or AIR SPADE ONLY to protect the root structures of existing trees. See also Specifications section 01 57 00 3.7.
  - 2. Pumping and/or bailing necessary to maintain excavated spaces free from water from any source whatsoever.
  - 3. Provide graded materials, as specified, for fills, base courses and backfills as required.
  - 4. Perform all compaction of fill materials as hereinafter specified.
  - 5. Obtain all required permits, licenses and approvals of appropriate municipal and utility authorities prior to commencing work, and pay all costs incurred there from.
  - 6. If subgrade is deemed unsuitable for placement of subbase material, backfill with processed gravel. Work under this Section shall include the excavation of TEN (10) cubic yards of unsuitable material beyond the line and grades as shown on drawings, and as determined by the Landscape Architect. Such removals shall be measured by a Civil Engineer or Land Surveyor employed by the Contractor and verified by the Landscape Architect. If this work is not performed, credit to the extent of unsuitable material removal less than TEN (10) cubic yards in total quantity shall be applied to the contract price at a

value of \$45.00 per cubic yard. The contract price shall be reduced by the extent of the work not undertaken as called for in this Section. The contract price shall be increased, if additional work is authorized by the Landscape Architect, at a value of \$50.00 per cubic yard.

- a. Unsuitable material shall be measured in place by a Civil Engineer employed by the Contractor with quantities verified by the Landscape Architect. No unsuitable material removals shall be credited to the Contractor without prior measurements and verifications.
- b. For unsuitable material amounts greater five (5) cubic yards, the unsuitable material shall be measured in place by a Civil Engineer employed by the Contractor with quantities verified by the Landscape Architect. No unsuitable material removals shall be credited to the Contractor without prior measurements and verifications.
7. Work under this Section shall include the removal and backfill of TEN (10) cubic yards of ledge in mass or trench and open rock excavations, or boulder over one (1) cubic yard in size in trench excavations or removal of solid masonry or concrete foundations. Such removals shall be measured by a Civil Engineer or Land Surveyor employed by the Contractor and verified by the Landscape Architect. If this work is not performed, credit to the extent of ledge or boulder or concrete footing removal less than ten (10) cubic yards in total quantity shall be applied to the contract price at a value of \$75.00 per cubic yard. The contract price shall be reduced by the extent of the work not undertaken as called for in this Section. The contract price shall be increased, if additional work is authorized by the Landscape Architect, at a value of \$90.00 per cubic yard.
  - a. Rock excavation shall be measured in place by a Civil Engineer employed by the Contractor with quantities verified by the Landscape Architect. No rock removals shall be credited to the Contractor without prior measurements and verifications or without the express approval to continue with removals of the Landscape Architect and Owner.
- C. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Salem and coordinate all work under this Section therewith.
- D. The following related items are included under the Sections listed below.
  1. Section 02 41 00 - Site Preparation and Demolition
  2. Section 03 30 00 - Cast In Place Concrete
  3. Section 12 93 00 - Site Furnishings
  4. Section 32 10 00 - Bases, Ballasts, and Paving
  5. Section 32 92 00 – Planting
  6. Section 33 10 00 – Water Utilities
  7. Section 33 40 10 – Drainage Utilities
  8. Section 33 70 00 – Electric Utilities

### 1.3 SUBMITTALS

- A. Submit certified gradation test data for all earth/stone materials a minimum of one week prior to delivery to the site.
  - 1. Provide 50-pound samples of each borrow material to a qualified laboratory for moisture density testing a minimum of one week prior to delivery to site.
- B. Compaction test of subbase materials after installation and compaction.

### 1.4 LAWS, ORDINANCES, PERMITS AND FEES

The Contractor shall:

- A. Give necessary notices, obtain all permits and pay all governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.
- B. Obtain all required certificates of inspection for this work and deliver same to the Landscape Architect before request for acceptance and final payment for the work.
- C. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations of the City of Salem and the Commonwealth of Massachusetts, whether or not shown on the Drawings and/or specified.
- D. The Contractor shall provide a temporary sidewalk or suitable detour route whenever a sidewalk is closed because of the construction. A temporary sidewalk must be at the same level as the existing closed sidewalk and must be visually partitioned off from the street and work area. The Contractor shall so conduct his operations as to interfere as little as possible with roads, driveways, alleys, sidewalks, or other nearby facility.

### 1.5 DEFINITIONS

- A. The following related items are included herein and shall mean:
  - 1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition
  - 2. A.S.T.M. - American Society for Testing and Materials
  - 3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials
- B. Rock excavation shall be defined as:
  - 1. Open rock excavation shall be classified as rock 3 cubic yards in size or larger.
  - 2. Trench rock excavation shall be classified as rock 1 cubic yard or larger.
  - 3. Ledge shall be classified as solid, continuous rock mass, unable to be removed without mechanical measures, and larger than the size/location conditions stated in paragraphs 1 and 2 above.

## 1.6 BENCH MARKS AND ENGINEERING

- A. Lines and grade work in accordance with Drawings and Specifications shall be laid out by a registered Civil Engineer or registered Surveyor employed by the Contractor. The Contractor shall establish permanent bench marks, to which access can easily be had during the progress of the work. The Contractor shall maintain all established bounds and bench marks and replace, as directed, any which may be disturbed or destroyed. The selection of the registered Civil Engineer or Surveyor shall be approved by the Landscape Architect.
- B. The Contractor shall submit written confirmation of dimensions and elevations on the ground and report any discrepancies immediately to the Landscape Architect. Such confirmation shall bear the Engineer's registration stamp. Any discrepancies not reported prior to construction shall not be the basis of claims for extra compensation.
- C. The General Contractor shall not commence any excavation or construction work, until the Landscape Architect's verification has been received and approved by the City.

## 1.7 SUBSURFACE INFORMATION

- A. The Owner assumes no responsibility for the Contractor's failure to make his own site investigation and makes no representation regarding the character of the soil or subsurface conditions which may be encountered during the performance of the work.
- B. Attention is specifically directed to the preliminary information contained in Appendix A, Soil Boring Logs and Summary Plan

## 1.8 FINISHED GRADES

- A. The words "finished grades" as used herein mean the required final grade elevations indicated on the Drawings. Where not otherwise indicated, site areas shall be given uniform slopes between points, for which finished grades are shown, or between such points and existing grade except that vertical curves or roundings shall be provided at abrupt changes in slope.

## 1.9 GRADES AND ELEVATIONS

- A. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interference and to adapt the grading to other special conditions encountered.

## 1.10 WORK IN THE PUBLIC WAYS

- A. Notify the appropriate municipal officials at least seven calendar days in advance of commencing any work in the public ways to obtain all required permission to perform this work. Perform all work in the public ways in a manner required by the municipal authorities.
- B. Should there be any conflict between requirements specified in the Contract Documents and those of the City of Salem, the municipal requirements shall govern.
- C. Do not close or obstruct any streets or sidewalks unless and until they have been discontinued by the appropriate municipal authority or unless and until he shall have



first secured all necessary or other permits therefor. No materials whatsoever shall be placed or stored in the streets. Conduct all operations to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

#### 1.11 DISPOSITION OF EXISTING UTILITIES

- A. Active utilities existing on the site shall be carefully protected from damage and relocated or removed as required by the work. When an active utility line is exposed during construction, its location and elevation shall be plotted on the Record Drawings and both the Landscape Architect and the Utility Owner notified in writing.
- B. Inactive or abandoned utilities encountered during construction operations shall be removed, plugged or capped in accordance with procedures of relative utility company or agency. The location of such utilities shall be noted on the Record Drawings and reported in writing to the Landscape Architect.
- C. Active utility lines damaged in the course of construction operations shall be repaired or replaced as determined by the Landscape Architect without additional cost to the Owner.
- D. Notify the Owner at least three (3) days in advance of the proposed time for shutting down or interrupting utilities or services which may affect operation of adjoining properties. Unless otherwise authorized by the Owner, schedule such interruptions on weekends, holidays, or before or after Owner's normal working day. In no case shall any services or utilities be interrupted prior to notification and authorization by the Owner.

#### 1.12 PROTECTION

- A. All rules and regulations governing the respective utilities shall be observed in executing all work under this Section. All work shall be executed in such a manner as to prevent any damage to existing streets, curbs, paving, service utility lines, walls, fences, structures and adjoining property. Monuments and bench marks shall be carefully maintained and, if disturbed or destroyed, replaced as directed.
- B. The Contractor shall perform the installation, maintenance and removal of all sheet piling, shoring and bracing required for the protection of all items of this Contract affected by the work of this Section.
- C. The Contractor shall furnish all facilities and materials necessary to prevent the earth at the bottom of excavation from becoming frozen or unsuitable to receive footing or other load bearing units.
- D. The work of this Section shall be performed in such a manner as to cause no interference with access by the Subcontractors or other Contractors to all portions of the site as is necessary for the normal conduct of their work.
- E. Protect all areas to remain undeveloped outside the Contract limit lines. Should these areas be damaged, the Contractor shall restore them to the satisfaction of the Landscape Architect and Owner. This includes the repairing and replacement of all damaged conditions such as plant materials and similar items

## PART 2 - PRODUCTS

### 2.1 GENERAL NOTES

- A. All fill to bring site to subgrade to be as defined below, used as called out on the Drawings and elsewhere in these Specifications.

### 2.2 SAMPLES AND TESTING:

- A. All fill material and its placement shall be subject to quality control testing. Contractor will submit the name of a qualified laboratory to perform test on materials, for Approval by Landscape Architect. The Contractor will pay for all costs of testing. Test results and laboratory recommendations shall be available to the Landscape Architect. Submit one test for each material source proposed for use.
- B. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate source if required.
- C. The Landscape Architect will be sole and final judge of suitability of all material.
- D. The laboratory will determine maximum dry density and optimum water content in accordance with ASTM D1557, Method D and the in-place density in accordance with ASTM D1556.
- E. Test of material as delivered may be requested by Owner. Materials in question may not be used, pending test results. Tests of compacted material will be made per 3.6. Remove rejected materials and replace with new, whether in stockpiles or in place.
- F. Cooperate with laboratory in obtaining field samples of in-place materials after compaction. Furnish incidental field labor in connection with these tests.

### 2.3 ORDINARY BORROW

- A. Ordinary Borrow shall have the physical characteristics of soils designated as group A-1, A-2-4, or A-3 under AASHTO-M145.
- B. It shall be free of organic and compressible materials and stones larger than six inches maximum dimension.
- C. It shall have a maximum dry density of one hundred pounds per cubic foot.

### 2.4 STRUCTURAL FILL (PROCESSED GRAVEL/DENSE-GRADED GRAVEL):

- A. All paving shall be installed over compacted structural fill (either dense graded crushed stone or dense graded gravel); all voids left from removal of existing equipment, furnishings, or footings shall be filled with compacted structural fill.
- B. All Processed Gravel shall meet the specifications of M1.03.1 "Processed Gravel for Subbase" in S.S.H.B. Submit sample and test results to Contracting Officer for approval.

### 2.5 STRUCTURAL FILL (DENSE GRADED CRUSHED STONE):

- A. All Dense Graded Crushed Stone shall meet the specifications of M2.01.7 "Dense-graded Crushed Stone for Sub-base" in S.S.H.B. Submit sample and test results to Contracting Officer for approval.

## 2.6 DRAINAGE STONE (CRUSHED STONE):

- A. Drainage stone, or crushed stone, shall be 3/4" (except where other size indicated on the Drawings) clean, angular stone of a hardness suitable for use in structural applications. 3/4" stone shall comply with M2.01.4 and 1 1/2" shall comply with M2.01.1&2 in S.S.H.B. Crushed stone shall comply with M2.01.0 and M2.02.4 of the S.S.H.B.

## PART 3 - EXECUTION

### 3.1 GRADES AND ELEVATIONS

- A. Establish the lines and grades in conformity with the Drawings. Establish and maintain suitable stakes or batters at points where spot elevations are given on the Drawings and at any other points to be graded as directed by the Landscape Architect. Maintain sufficient reference points at all times during construction to properly perform the Contract installation.

### 3.2 EXCAVATION

- A. General
  - 1. Excavate all material to the elevations, dimensions and form as shown on the Drawings and as specified for the construction of site improvements and other structures necessary for the completion of the utilities and site work. All unsuitable materials within the indicated and specified limits shall be excavated and removed at no additional cost to the contract as specified in 1.02 (B-6) of this section. Any quantities involving an extra or other adjustment of the Contract Price shall be subject to measurement verification and approval by the Landscape Architect prior to the excavation and removal of such materials. Unsuitable materials shall include the following:
    - a. Utility structures, building foundations and other man-made structures.
    - b. Peat, organic silt and other organic materials subject to decomposition, consolidation or decay.
    - c. Miscellaneous fill including cinders, ash, glass, wood, and metal.
    - d. Ledge or boulders except as specified for fills herein.
  - 2. In general, the General Contractor shall be permitted to use machine excavation except for the final six (6) inches under footings, foundations, utility lines and structure, which shall be hand work. Also, all excavation in the planting areas and areas specified for tree protection shall be hand work.
  - 3. If any part of the excavation is carried through error beyond the depth and dimensions indicated on the Drawings or specified herein, or if the foundation soils are disturbed by dewatering or other construction operation, the General Contractor shall, at his own expense, refill with structural fill compacted to ninety-five (95) percent of the maximum dry density at optimum moisture content or with concrete as determined by the Engineer.
  - 4. When excavation has reached the prescribed depth, the Landscape Architect shall be notified and will make an inspection of the condition and approve the placing of fill material.
  - 5. The Contractor shall obtain from the proper authorities locations of all utilities within the scope of this work so that there will be no damage done to such

utilities. Neither the Owner nor the Landscape Architect will be responsible for any such damage, and the Contractor shall restore any structure or utility so damaged without additional compensation. Attention is called to that fact that there are electric lines, and other utilities in certain locations within and adjacent to the sites. Written notifications to the appropriate utility agencies shall be made at least ten (10) days prior to the commencement of any work.

6. Wherever culverts, sewers, drains, manholes, catch basins, catch basin connections, water mains, valve chambers, utility tunnels, gas pipes, electric and telephone conduits, house service connections of any other underground constructions are encountered in excavating for utilities or any other site work, they shall be protected and firmly supported by the Contractor, at his own expense, until the trench is backfilled and the existing structures are made secure. Injury to any such structures caused by or resulting from the Contractor's operations shall be repaired at the Contractor's expense. The authority having charge of any particular underground structure shall be notified promptly of injury to its structure. All utility lines shall be noted on the required "As-Built" Plan.
7. Excess material - Suitable excavation material which is allowable for fill and backfill shall be separately stockpiled as directed by the Landscape Architect. All surplus fill other than that required to complete the intent of the Contract shall become the property of the Contractor and shall be legally disposed of off the property by the General Contractor. All excavated materials which, in the opinion of the Landscape Architect are not suitable for fill and backfill shall be removed and legally disposed of off the property.
8. Any unsanitary conditions encountered, such as broken sewer mains or uncovered garbage, shall be corrected or completely removed as directed by the Landscape Architect.

B. Excavation for Site Improvements.

1. Excavate to the lines and grades shown on the Drawings and as specified to obtain the subgrades for the site improvements.
2. Trenching for all water, utility, and drain lines shall comply with the standards in S.S.H.B., especially Section 150.64.
3. Existing service and utilities encountered shall be immediately repaired, protected and maintained in use until relocation of same has been completed or to be cut and capped where directed or be prepared for connection when so required.

### 3.3 SUBGRADE PREPARATION AND PROTECTION

A. General Requirements

1. All subgrade areas shall be made ready for fill by removal of all organic material, unsuitable soils and deleterious materials to firm natural ground as directed by the Landscape Architect.
2. Scarify, spot-fill, or otherwise treat the surface of areas to receive fill as necessary to remove holes, depressions, ruts, hummocks, or other uneven features.

B. Proof Rolling Subgrades

1. Prior to placement of fill, or bottom filter fabric where shown on drawings, proof roll natural ground by making a minimum of two passes with approved

compaction equipment. Proof rolling may be waived by the Landscape Architect where excessively wet or saturated subgrade conditions are encountered.

### 3.4 PROTECTION

- A. Protect open excavations with fencing, warning lights and other suitable safeguards. No open excavation shall be left without proper barriers and other devices necessary for public safety.
- B. Comply with local safety regulations or, in the absence thereof, with the provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc. and O.S.H.A.
- C. Frost Protection - Make no excavation to the full depth indicated when freezing temperature may be expected unless the footing or slabs can be poured immediately after the excavation has been completed. Protect the bottoms as excavated from frost, if placing of concrete is delayed, with straw, tarpaulins or temporary heat until footings or slabs poured and backfill is placed.
- D. Any ditching required to keep the site free from water during construction is the responsibility of the Contractor.

### 3.5 PULVERIZING OF EXISTING ASPHALTIC PAVEMENT FOR REUSE

- A. Pulverizing equipment used for reclamation and reuse of existing asphaltic concrete pavement for use as pavement base material shall be capable of processing and pulverizing existing asphaltic concrete to a uniformly graded aggregate free from large pieces of unpulverized pavement.
- B. The Company performing the pulverization work shall have a minimum two year documented experience in equivalent work.
- C. Execute removal and pulverization for the full depth of the existing asphaltic concrete.
- D. Exercise care to limit pulverization to the existing asphaltic concrete and stone base course without contaminating pulverized mix with extraneous subbase material.

### 3.6 FILL AND COMPACTION

- A. Samples and Testing – See Part 2.2 above (Samples and Testing).
- B. Compaction Equipment and Tests
  - 1. Compaction equipment, unless otherwise specified, shall consist of heavy vibratory rollers, such as a Raygo 400 or other compaction equipment approved by the Landscape Architect. Equipment shall make a minimum of four (4) passes to achieve compaction as specified; to provide an evenly dense and compacted thickness throughout. All ruts shall be filled, the surface even and compacted to the density called for. The Landscape Architect retains the right to disapprove the use of any equipment that does not meet the above Specifications or perform the work as intended. Any modifications of equipment or method must be approved by the Landscape Architect.
  - 2. All fill material shall be compacted to at least ninety-five (95) percent of maximum density(s) determined by A.S.T.M. Test Designation D-1557, Method D or A.S.T.M. D-1556.

3. Compaction tests shall be performed at fifteen (15) locations, to be selected in the field after material is in place and before installation of finishes, as directed by the Landscape Architect.
- C. Placing Fills and Compacting
1. Fill material shall be placed in horizontal layers not exceeding six (6) inches. Each layer shall be compacted to the percentage of maximum dry density specified for the particular type of fill and at a water content equal to optimum dry density and optimum water content shall be as specified herein.
  2. Where water content of the fill must be adjusted to meet this Specification, the fill shall be thoroughly disked to insure uniform distribution of any water added.
  3. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water. Do not place fill when materials or layers below it are frozen.
  4. Notify the Landscape Architect when excavation is ready for inspection. Filling and backfilling shall not be started until conditions have been approved by the Landscape Architect.
  5. In confined areas adjacent to footings and foundation walls and in utility trenches, the fill shall be compacted with hand-operated vibration tampers. The maximum lift thickness shall be four (4) inches. The degree of compaction attained shall be equivalent to that attained in the adjacent open areas where heavy rolling equipment is used. Any areas which subsequently settle shall be refilled to true subgrade and properly compacted.
- D. Placing Subbase Fills (Compacted Graded Gravel, Pulverized Asphalt, and/or Drainage Stone)
1. Subbase fills, as specified herein above, shall be provided as follows:
    - a. As subbase under all pavement unless otherwise called for (note: pulverized asphalt shall be used only under vehicular pavements).
    - b. As subbase under and/or around footings and as shown on the Drawings or specified.
  2. Place subbase in six (6) inch maximum layers; fill and compact each layer to ninety-five (95) percent maximum dry density.

### 3.7 GRADING

- A. Do all grading required for the work including shaping, trimming, rolling and finishing of the surface of the subgrades for all surfaces. All ruts shall be eliminated. Grading for subgrades for paved areas shall be finished at the required depth below and parallel to the proposed surface within 1/4" in 10'-0" tolerance.
- B. If, during the progress of rough grading work, any water pipe, sewer, conduit, drain, or other construction is damaged as a result of operations under this Contract, the Contractor shall repair all such damage at no additional cost to the Owner and restore work to its original condition.
- C. Do all other cutting, filling and rough grading to the lines and grades indicated on the Drawings. Grade evenly to the finished grades shown on the Drawings. No stone larger than 3" in largest dimension shall be placed in upper 6" of fill.
- D. Grading shall be brought to bottom of base course under areas to be paved.

- E. Complete grading operations after site improvements are constructed, and all materials, rubbish and debris removed from the site. Leave subgrade for planting clean at required grades. Provide sufficient grade staking to witness correct lines and grades, as determined by the Landscape Architect.
- F. Where streets or sidewalks within or outside the limit of Contract lines have been excavated in fulfilling the work required under this Contract, the Contractor shall furnish and install all material necessary to bring finish surfaces level with the existing adjacent surfaces. All work shall be installed to match the existing conditions in accordance with the governing authority. Notify the proper authorities prior to restoring surfaces outside the limit of Contract line.

G. Tolerances

	<u>Area</u>	<u>Max Grading Tolerance +/-</u>
1.	Subgrade in landscaped areas prior to placement of loam	1/2" prior to placement of loam
2.	Pavement areas	1/4" in 10'

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## **SECTION 32 10 00 BASES, BALLASTS, PAVING, AND EDGING**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all paving operations complete as shown on drawings and specified herein.
- B. Work includes, but is not limited to the following:
  - 1. Cast-In-Place Concrete Paving and Harborwalk Paving with Thickened Edge;
  - 2. Integral Color System For Decorative Concrete Paving;
  - 3. Granite Pavers with Historic Maps;
  - 4. Precast Concrete Curbing.

#### **1.3 REFERENCES**

- A. Examine all other sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Salem and coordinate all work under this Section.
- B. The following related items are included under the Sections list below:
  - 1. Section 02 41 00 – Site Preparation and Demolition
  - 2. Section 03 30 00 – Cast In Place Concrete
  - 3. Section 31 00 00 - Earthwork – Clearing, Excavation, Filling and Grading

#### **1.4 DEFINITIONS**

- A. The following related items are included herein and shall mean:
  - 1. S.S.H.B. – Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
  - 2. A.S.T.M. – American Society for Testing and Materials.
    - a. D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
    - b. E303 Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
    - c. D3389 Abrasion Testing.

- d. DIN 1835 Part 6-Permeability to Water.
- e. U. S. Environmental Protection Agency Method 3052:1996.
- 3. A.A.S.H.T.O. – American Association of State Highway and Transportation Officials.
- 4. MassDOT. Standard Specifications - Latest edition of the Standard Specifications for Highways, Bridges and Waterways, The Commonwealth of Massachusetts Department of Transportation, 1988 edition.

#### 1.5 Job Conditions

- A. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no extra cost to the Owner.
- B. Maintain sub-base in satisfactory condition and properly drained until surface improvement is placed.

#### 1.6 SUBMITTALS

- A. Do not order materials or begin installation of work of this Section until Owner approval of submittals of all products has been obtained.
- B. Separate Shop Drawings shall be submitted for each detail of all cast-in-place concrete edging, curbing, as shown on the Drawings.
- C. Shop drawings required for Granite Pavers with Maps.

### PART 2 - PRODUCTS

#### 2.1 FILL MATERIALS

All fill used to bring site to subgrade shall be subbase fill as defined below.

- A. Reuse of Existing Material In Place:
  - 1. The existing base course material may be reused provided that it is tested and complies with the specifications for processed gravel.
  - 2. The Contractor shall be responsible for protecting the quality and integrity of the base material after the pavements have been removed, and shall be responsible for its removal and replacement at no additional cost to the Owner if, after exposure and acceptance for reuse, it becomes contaminated with other soils which would render it unsuitable for reuse. The Contractor shall re-compact all disturbed areas due to removals.
- B. Samples and Testing:
  - 1. All new fill material and its placement shall be subject to quality control testing. A qualified laboratory will be selected by the Owner to perform test on materials. All costs of testing will be paid for by the Contractor. Test results and laboratory recommendations shall be available to the Landscape Architect. Submit one test for each material source proposed for use.
  - 2. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate source if required.
  - 3. The Landscape Architect will be sole and final judge of suitability of all material.

4. The laboratory will determine maximum dry density and optimum water content in accordance with ASTM D1557, Method D and the in-place density in accordance with ASTM D1556.
  5. Test of material as delivered may be made from time to time. Materials in question may not be used, pending test results. Tests of compacted materials will be made regularly. Remove rejected materials and replace with new, whether in stockpiles or in place.
  6. Cooperate with laboratory in obtaining field samples of in-place materials after compaction. Furnish incidental field labor in connection with these tests.
- C. Compacted Graded Gravel / Process Gravel / Structural Fill
1. See EARTHWORK 31 00 00.
- D. Drainage Stone (3/4" Crushed Stone):
1. See EARTHWORK 31 00 00.
- 2.2 CAST-IN-PLACE CONCRETE PAVING & HARBORWALK PAVING WITH THICKENED EDGE
- A. Cast-in-place concrete shall be Class D, air-entrained concrete conforming to the requirements and applicable provisions of Section 701 of the S.S.H.B. Minimum 28-day compressive strength shall be 4,000 psi. Concrete shall be air-entrained 6% with a three (3") to four (4") inch maximum slump.
  - B. For all specifications other than above (4000 PSI), Concrete Paving shall conform to the materials, procedures, performance standards, formwork requirements, and all other specifications in Section 03 30 00, Cast-In-Place Concrete.
- 2.3 INTEGRAL COLOR SYSTEM FOR DECORATIVE CONCRETE PAVING
- A. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are limeproof and ultra-violet resistant, such as CHROMIX Admixtures by L.M. Scofield & Company; Davis Colors Powdered Pigments by Davis Colors of Los Angeles, CA; or Dry Integral Color from Solomon Colors of Springfield, IL.
  - B. Colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494 and ASSHTO M194.
  - C. Color additives containing Carbon Black shall not be used.
  - D. Color to be selected from manufacturer's full range of colors. Provide product information and color samples for approval and selection
- 2.4 GRANITE PAVERS WITH HISTORIC MAPS
- A. Granite pavers to be 24" high by 36" wide. Granite pavers to be installed per dimensions & finishes on detail and drawings.
  - B. Granite to be Woodbury Grey Granite from Swenson Granite Works, Concord NH (603-225-4322 )or approved equal. Graphics for pavers (6 designs) shall be supplied to the granite paver fabricator by the Landscape Architect for production. Graphics to be laser cut into flat edge of bollard.
  - C. A sample Historic Map shall be approved by the Landscape Architect before fabrication begins.

## 2.5 PRECAST CONCRETE CURB

- A. Precast concrete curb unit shall consist of casting conforming to the size and dimensions shown on the plans. Straight curb shall be cast in standard lengths of eight (8) feet. Curb may be cast in lengths of not less than (3) three feet where needed and as directed.
- B. Curb shall be made by Portland Cement Type I or III, conforming to Federal Specifications SS-C192a, or to Section M4 of the "Standard Specifications of Highways and Bridges" of Commonwealth of Massachusetts Department of Public Works. Forms shall be made of metal or concrete (wood not allowed), to tight, rigid construction with true surfaces.
- C. Concrete mix shall be made of maximum 3/4" aggregate, with a design strength of 4,000 psi (Min.) at 28 days. An air entraining agent shall be added to the mixer in accurately proportioned amounts to give air content to the concrete of not less than 3 percent and not more than 6 percent by volume. A high range water reducing agent (superplasticizer) shall be added to the mixer in accurately proportioned amounts to meet design strength requirements and maintain a smooth, dense surface on the curb units.
- D. Upon removal from the forms, the top and 8" of the face shall be rubbed with a carborundum stone to fully remove any cement enamel finish. No cement may be used in this process. Next a mixture of fine sand, cement and water shall be thoroughly ground into the surface of the curb with a carborundum stone until the resulting paste fills any imperfections left by the form. A cork float shall then be used to pick up excess paste. The final finish should resemble limestone in appearance.

## PART 3 - Execution

### 3.1 CAST-IN-PLACE CONCRETE PAVING & HARBORWALK PAVING WITH THICKENED EDGE

- A. Concrete paving shall be installed according to the specifications contained in section 03 30 00, Cast In Place Concrete.
- B. Edges of Concrete Pavement shall be even and smooth.
- C. Concrete shall have a medium broom finish of parallel marks. Brooming shall be at right angles to the axis of walk or as shown on the Drawings.
- D. See 3.3 below for Execution of Integral Color, installed where indicated on the Drawings.

### 3.2 INTEGRAL COLOR SYSTEM FOR DECORATIVE CONCRETE PAVING

- A. Install per manufacturers specifications. All colored concrete to have sealant applied after concrete has cured.

### 3.3 PRECAST CONCRETE CURBING

- A. Curb shall be set in a trench, which shall have been excavated to a width of 18". The subgrade of the trench shall be at a depth below proposed finish grade of the curb equal to 6" plus the depth of the curbstone.
- B. Subgrade shall then be filled to proper level to support curb at final grade. Fill for this purpose shall consist of structural fill thoroughly tamped.

- C. Curb units shall then be placed in accurate line, each piece butting the next with maximum joint spacing no larger than 1/4". Final points may be joined by closure pieces made to order.
- D. After alignment, curb shall be carefully backfilled with suitable material. Extreme care shall be taken not to destroy alignment.

### 3.4 CLEANING

- A. Waste disposal: Comply with all regulations regarding handling, storage, and disposal of all hazardous materials and waste. Consult local agencies or disposal companies for individual instructions and requirements. Improper disposal of paint and their related materials is illegal and may result in large fines. Please comply with all regulations and minimize waste whenever possible.
- B. Perform cleaning during installation and upon completion of paving work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from playground paving painting.

### 3.5 GRADE STAKES

- A. Install and maintain grade stakes, as directed. All subgrades must be approved before base course construction.
- B. The words "finish grades" as used herein mean the required final grade elevations.

END OF SECTION

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## **SECTION 32 30 00 SITE IMPROVEMENTS**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
  - 1. Granite Seat Wall with Skateboard Deterrents;

#### **1.3 REFERENCES**

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
  - 1. Section 02 41 00 - Site Preparation and Demolition
  - 2. Section 03 30 00 - Cast In Place Concrete
  - 3. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading
  - 4. Section 32 10 00 - Bases, Ballasts, and Paving

#### **1.4 SUBMITTALS AND SHOP DRAWINGS**

- A. Submit shop drawings, product literature, catalog cuts and / or samples for all items indicating material characteristics, fabrications, details of construction, connections and relationship with adjacent construction, called for on the Drawings and as specified and in accordance with applicable requirements under Division 1. If not submitting above materials electronically, submit (5) complete copies.
  - 1. Granite Wall shop drawings & material sample;
  - 2. Skateboard deterrent
- B. Take field measurements prior to preparation or shop drawings and fabrication. Allow sufficient time for shop drawing review and approval, before fabricating or ordering.
- C. Do not order materials or begin installation of Work of this Section until Owners / Landscape Architects approval of submittals has been obtained. Delivered materials shall closely match approved samples.

## 1.5 SAMPLES

- A. Initial Selection Samples: Submit samples showing complete range of colors, textures and finishes available for each material used.
- B. Verification Samples: Submit representative samples of each material that is to be exposed in the finished work, showing the full range of color and finish variation expected.

## 1.6 PRODUCT LITERATURE

- A. For each product or material used, submit manufacturer's product data, including installation instructions, use, limitations and recommendations.

## 1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages and containers with labels legible and intact.
- B. Store and handle materials in accordance with manufacturer's instructions. Prevent damage and deterioration of products from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.

## 1.8 JOB CONDITIONS

- A. Examine all surfaces to receive site improvements to see that they are in proper condition to receive the Work specified. Report to the Engineer in writing all unacceptable areas. All defects resulting from use of accepted surfaces shall be corrected by the appropriate Contractor at no additional expense to the Owner.
- B. Start of Work under this Section shall constitute acceptance of the site conditions to which this Work is to be applied. Site preparation shall be of proper approved quality. Any defects in Work resulting from such conditions shall be corrected under this Section, at no extra cost to the Owner.
- C. Environmental Requirements: Contractor shall not Work on or with soils when they are dry, wet, or frozen. Field Test: Form soil in palm of hand; if soil retains shape and crumbles upon touching, then it may be worked (if it will not retain its shape, it is too dry; if it does not crumble, it is too wet). Landscape Architect shall be final authority on condition of soil.

## 1.9 DEFINITIONS

- A. The following items are included herein and shall mean:
  - 1. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.
  - 2. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
  - 3. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
    - a. A36...Steel
    - b. A153...Zinc Coating (hot-dip) on hardware



- c. A307...Carbon Steel bolts 66000 psi tensile
  - d. C 55...Concrete Building Brick
  - e. C 62...Building Brick (Solid Masonry Units made from Clay or Shale)
  - f. C 139...Concrete Masonry Units for Construction of Catch Basins
  - g. C 140...Sampling and Testing Concrete Masonry Units
  - h. C 270...Mortar for Unit Masonry
  - i. D 3034...Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings
  - j. D 3212...Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- 4. CPSC - Consumer Product Safety Council.
  - 5. ADA - Americans with Disabilities Act and its current regulations.
  - 6. AWS: American Welding Society
  - 7. SSPS: Steel Structures Painting Council

#### 1.10 WARRANTIES

- A. Attention is directed to provisions of the CONDITIONS OF THE CONTRACT and applicable parts of Division 1 regarding guaranties and warranties.
- B. Manufacturers shall provide their standard guaranties for Work specified in the Section. However, such guaranties shall be in addition to and not in lieu of all other liabilities which manufacturers and Contractor may have by law or by other provisions of the Contract Documents.

#### 1.11 QUALITY ASSURANCE

- A. Comply with applicable codes, ordinances and regulations. Provide products of acceptable manufacturer's which have been in satisfactory in similar service for three years. Use experienced installers.

### PART 2 - PRODUCTS

#### 2.1 GRANITE SEATWALL

- A. Granite seatwall to be installed per dimensions & finishes on detail and drawings.
- B. Granite to be Callisto Silver Grey Granite or Chelmsford Grey Granite from Swenson Granite Works, Concord NH (603-225-4322) or approved equal.

#### 2.2 SKATEBOARD DETERRENTS

- A. Skateboard deterrents to be the Diamond Inserts Series Model D 90-8 by Skate Stoppers, 1547 N Cuyamaca St El Cajon, CA, 92020, Tel 619-447-6374, Fax 619-447-6396, [www.skatestoppers.com](http://www.skatestoppers.com)).

### PART 3 - EXECUTION

#### 3.1 GRANITE SEAT WALL

- A. Granite walls to be installed as shown on plan and detail.

### 3.2 SKATEBOARD DETERRENTS

- A. Skateboard deterrents to be installed as shown on Drawings and per manufacturer's directions.

END OF SECTION

## **SECTION 32 31 00 FENCING**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
  - 1. The City and the Landscape Architect, after a reasonable investigation, have not identified three manufacturers that can meet the following specifications for Harborwalk fence and gates, because of the nature of the field of manufacturers. Therefore, for sound reasons in the public interest (which, per MGL c. 30 s. 39M, part b, will be provided to prospective bidders in writing upon formal request) the following Basis of Design specifications are being used for ALL ITEMS in this Section.
  - 2. Alternate manufacturers for items noted in 1.01.B.1 will be considered, per MGL c.30 s.39M part b criteria 1, provided that they substantially conform (even with deviations), in the sole judgment of the Owner and the Landscape Architect, to the specifications.
  - 3. Proposed alternate manufacturers of items noted in 1.01.B.1 should be submitted for consideration regarding conformance to the specifications at least one week prior to bid submission. Alternative manufacturers, if submitted later than one week prior to bid submission and found, in the judgment of the Landscape Architect and the City, not to be in substantial compliance with the specifications, shall not be considered as grounds for an amendment to the Contract Price due to price differences.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
  - 1. Thermoplastic Railing & 8' Wide Double Gate at Harborwalk;

#### **1.3 REFERENCES**

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Salem and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
  - 1. Section 02 41 00 – Site Preparation and Demolition
  - 2. Section 03 30 00 - Cast in Place Concrete
  - 3. Section 32 10 00 - Bases, Ballasts, Paving, and Edging

#### 1.4 SUBMITTALS

##### A. Shop Drawings and Samples

1. Submit shop drawings, product literature, catalog cuts and / or samples for all items indicating material characteristics, fabrications, details of construction, connections and relationship with adjacent construction, called for on the Drawings and as specified and in accordance with applicable requirements under Division 1. If not submitting above materials electronically, submit (5) complete copies.
2. Submit shop drawings or catalog cuts including details illustrating fence height, sizes of posts, rails, braces and footings, and all accessories.

#### 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
- B. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.

#### 1.6 DEFINITIONS

##### A. The following items are included herein and shall mean:

1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
  - a. A36...Steel
  - b. A153...Zinc Coating (hot-dip) on hardware
  - c. A307...Carbon Steel bolts 66000 psi tensile
  - d. F-1292...Poured-In-Place Safety Surface.
3. AAB: Architectural Access Board.
4. ADA: Americans with Disabilities Act and its current regulations.
5. AWS: American Welding Society.
6. CPSC: Consumer Product Safety Council.
7. SSPS: Steel Structures Painting Council.

#### 1.7 WARRANTIES

- A. Attention is directed to provisions of the CONDITIONS OF THE CONTRACT and applicable parts of Division 1 regarding guaranties and warranties.
- B. Manufacturers shall provide their standard guaranties for Work specified in the Section. However, such guaranties shall be in addition to and not in lieu of all other liabilities which manufacturers and Contractor may have by law or by other provisions of the Contract Documents.

## 1.8 QUALITY ASSURANCE

- A. Comply with applicable codes, ordinances and regulations. Provide products of acceptable manufacturer's which have been in satisfactory in similar service for three years. Use experienced installers.

## 1.9 PRODUCT DELIVERY STORAGE & HANDLING

- A. Deliver material in manufacturer's original packaging with all tags and labels intact and legible. Handle and store materials in such a manner as to avoid damage.

## PART 2 - PRODUCTS

### 2.1 THERMOPLASTIC RAILING & 8' WIDE DOUBLE GATE AT HARBORWALK

- A. Thermoplastic railing and gate to be by: Advanced Products, LLC (AVCON), 1915 Swarthmore Avenue; Lakewood, NJ 08701; (Tel: 800-724-5464); Email: [info@avcon.com](mailto:info@avcon.com), or approved equal.
- B. Rail and Gate to be 48" High Classic Malibu. Thermoplastic finish color to be black.
- C. Thermoplastic railing and gate components to be as follows:
  - 1. Tubing Components: Tubing consists of high-impact, outdoor weather-resistant tubing components fabricated from acrylonitrile styrene acrylate (ASA), specially formulated with specific stabilizers and modifiers for strength, durability, ultraviolet light protection, and with inhibitors for expansion and contraction.
    - a. Use compounds that have undergone testing demonstrating that resins are dimensionally stable, fade resistant, and retentive of key physical engineering properties, and that support color retention and stability, mechanical property retention including impact, and tensile strength.
  - 2. Top, Intermediate, and Bottom Rails: 2 inch outside diameter tubing with nominal wall of 5/16 inch (8 mm).
  - 3. Posts: 2 inch outside diameter tubing with nominal wall of 5/16 inch (8 mm).
  - 4. Guardrail Infill System: Consists of intermediate rail balusters with 1-1/16 inch (27 mm) OD tubing and nominal wall thickness of 5/32 inch (4 mm).
  - 5. Steel Reinforcement: Reinforce vertical balusters in excess of 36 inches (914 mm) in height with internal metal stiffener.
  - 6. Steel Pipe Reinforcement: Provide standard weight schedule 40 Galvanized or Stainless Steel pipe, ASTM A53, Type F, at the following locations:
    - a. Railing posts and top horizontal rail of styles that do not contain balusters.
  - 7. Rail Reinforcement: Reinforce horizontal rails (exclusive of radius railing) where balusters are inserted, reinforce with heavy gauge extruded aluminum designed to allow insertion of the balusters.
- D. Post Mounting Flange Plate: Minimum of 5/16 inch (8 mm) thick Stainless Steel, pre drilled for fasteners.
- E. Brackets, Flanges, and Fittings: Same material as primary railing components.
- F. Anchors and Inserts: Galvanized or stainless steel, expansion type; capable of withstanding structural design loads specified.
- G. Screws: Galvanized or stainless steel, 18-8 alloy, non-magnetic.

- H. Grout: Non-shrink Portland cement-based hydraulic grout, mixed and applied per manufacturer's instructions; no gypsum grout allowed.

### PART 3 - EXECUTION

#### 3.1 THERMOPLASTIC RAILING & GATE AT HARBORWALK

##### A. GENERAL INSTALLATION

1. Fit sections accurately together.
2. Set handrails and railings accurately in location, alignment, and elevation, measured from established lines and levels and free from rack. Do not cut or abrade surfaces of handrails and railing components.
3. Install handrails and railings systems to comply with railing manufacturer's instructions.
4. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing handrails and railings to existing construction

##### B. POST INSTALLATION

1. Adjust handrails and railing systems prior to anchoring to ensure matching alignment. Space posts at intervals indicated but not greater than that required by design loading.
2. Anchor posts in concrete by core drilling holes not less than 4 inches (102 mm) deep and 1 inch (25 mm) greater than outside diameter of post. Clean holes of loose material and insert posts. Fill annular space between post and concrete with non-shrink, non-metallic grout as specified in Part 2 above, mixed and poured to comply with anchoring material manufacturer's directions.
3. Anchor posts onto mounting surface by means of railing manufacturer's recommended method, including specified mounting or other means of anchorage as determined by railing manufacturer.

#### 3.2 CLEANING

- A. Waste disposal: Comply with all regulations regarding handling, storage, and disposal of all hazardous materials and waste. Consult local agencies or disposal companies for individual instructions and requirements. Improper disposal of paint and their related materials is illegal and may result in large fines. Please comply with all regulations and minimize waste whenever possible.
- B. Remove manufacturer's protective covering from exposed surfaces not more than 24 hours after installation in hot and humid climates and before final inspection.
- C. Clean surfaces as required, following procedures and employing cleaning materials as recommended by accessories manufacturer.

#### 3.3 STANDARDS AND COMPLETION

- A. Field repair of damaged product finishes is limited to surface scratch repairs only. Use manufactures suggested field repair procedure only. Replace products that have been structurally damaged by subsequent construction activities.
- B. Protect installed products from damage by subsequent construction activities, until completion of Project. Upon completion, the contractor(s) shall remove and properly dispose of all construction debris, surplus materials, and empty containers, and leave the site in a condition acceptable to the Owner.

END OF SECTION

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## **SECTION 32 33 00 SITE FURNISHINGS**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
  - 1. Custom Curved Wood Slat Benches with Integrated Lighting on Granite Walls - Base Bid (Benches 2, 3 & 4) & Add. Alternate #2 (Benches 1 & 5);
  - 2. Trash Receptacle and Recycling Receptacle;
  - 3. Drinking Fountain/Bottle Filler.

#### **1.3 REFERENCES**

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
  - 1. Section 02 41 00 - Site Preparation and Demolition
  - 2. Section 03 30 00 - Cast In Place Concrete
  - 3. Section 31 00 00 - Earthwork
  - 4. Section 32 10 00 - Bases, Ballasts, Paving, and Edging
  - 5. Section 33 10 00 – Water Utilities

#### **1.4 SUBMITTALS AND SHOP DRAWINGS**

- A. Electronically submit shop drawings, product literature, catalog cuts and / or samples for all items indicating material characteristics, fabrications, details of construction, connections and relationship with adjacent construction, called for on the Drawings and as specified and in accordance with applicable requirements under Division 1. If not submitting above materials electronically, submit (5) complete copies.
  - 1. Custom Curved Wood Slat Benches with Integrated Lighting on Granite Walls - Base Bid (Benches 2, 3 & 4) & Add. Alternate #2 (Benches 1 & 5);
  - 2. Trash and Recycling Receptacles;

3. Drinking Fountain / Bottle Filler.
- B. Take field measurements prior to preparation or shop drawings and fabrication. Allow sufficient time for shop drawing review and approval, before fabricating or ordering.
- C. Do not order materials or begin installation of Work of this Section until Owners / Landscape Architects approval of submittals has been obtained. Delivered materials shall closely match approved samples.

#### 1.5 SAMPLES

- A. Initial Selection Samples: Submit samples showing complete range of colors, textures and finishes available for each material used.
- B. Verification Samples: Submit representative samples of each material that is to be exposed in the finished work, showing the full range of color and finish variation expected.

#### 1.6 PRODUCT LITERATURE

- A. For each product or material used, submit manufacturer's product data, including installation instructions, use, limitations and recommendations.

#### 1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages and containers with labels legible and intact.
- B. Store and handle materials in accordance with manufacturer's instructions. Prevent damage and deterioration of products from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.

#### 1.8 JOB CONDITIONS

- A. Examine all surfaces to receive site improvements to see that they are in proper condition to receive the Work specified. Report to the Engineer in writing all unacceptable areas. All defects resulting from use of accepted surfaces shall be corrected by the appropriate Contractor at no additional expense to the Owner.
- B. Start of Work under this Section 12 93 00 shall constitute acceptance of the site conditions to which this Work is to be applied. Site preparation shall be of proper approved quality. Any defects in Work resulting from such conditions shall be corrected under this Section, at no extra cost to the Owner.
- C. Environmental Requirements: Contractor shall not Work on or with soils when they are dry, wet, or frozen. Field Test: Form soil in palm of hand; if soil retains shape and crumbles upon touching, then it may be worked (if it will not retain its shape, it is too dry; if it does not crumble, it is too wet). Landscape Architect shall be final authority on condition of soil.

#### 1.9 DEFINITIONS

- A. The following items are included herein and shall mean:
  1. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.

2. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
3. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
  - a. A 36: Specifications for Structural Steel.
  - b. A 48-83: Specifications for Gray Iron Castings.
  - c. A 153...Zinc Coating (hot-dip) on hardware
  - d. A 307: Specifications for Unfinished Bolts and Nuts.
  - e. A 446, GRADE A: Specifications for Steel Sheet.
  - f. A 500-501: Specifications for Structural Tubing.
4. CPSC - Consumer Product Safety Council.
5. ADA - Americans with Disabilities Act and its current regulations.
6. AWS: American Welding Society
7. SSPS: Steel Structures Painting Council

#### 1.10 WARRANTIES

- A. Attention is directed to provisions of the CONDITIONS OF THE CONTRACT and applicable parts of Division 1 regarding guaranties and warranties.
- B. Manufacturers shall provide their standard guaranties for Work specified in the Section. However, such guaranties shall be in addition to and not in lieu of all other liabilities which manufacturers and Contractor may have by law or by other provisions of the Contract Documents.

#### 1.11 QUALITY ASSURANCE

- A. Comply with applicable codes, ordinances and regulations. Provide products of acceptable manufacturer's which have been in satisfactory in similar service for three years. Use experienced installers.
- B. For bench manufacturer qualifications:
  1. Minimum 15 years experience in the manufacture of site seating.
  2. Forest Stewardship Council (FSC) Certified Supplier. Provide manufacturer's FSC certification number.
  3. Provide reference list of at least ten major transportation authorities, municipalities, universities, or other high-use public environments currently using site seating fabricated by the manufacturer.

### PART 2 - PRODUCT

#### 2.1 CUSTOM CURVED WOOD SLAT BENCHES WITH INTEGRATED LIGHTING ON GRANITE WALLS - (BENCHES 2, 3 & 4 ARE BASE BID & BENCHES 1 & 5 ARE ADD. ALTERNATE #2);

- A. Custom benches to be modified "Duo Bench" by Forms+Surfaces (30 Pine Street Pittsburgh, PA 15223, phone: 800-451-0410, fax: 412-781-7840, direct: 617-780-

4134), Local Representative: Dan Delongchamp, RLA, LEED AP (email: daniel.delongchamp@forms-surfaces.com) website: www.forms-surfaces.com; by Tournesol Siteworks, 2930 Faber Street, Union City CA 94587 Local Representative: Phil Sheldon (email: psheldon@tournesolsiteworks.com); or by Landscape Forms, Inc., Local Representative Nadene Worth (email: nadenew@landscapeforms.com) website: www.landscapeforms.com.

- B. Benches to be wall top mounted, backless benches with powdercoated stainless steel frames and FSC 100% Jatoba hardwood slats.
- C. Materials: Bench frames to be stainless steel tube and plate; bench apron: stainless steel sheet. Seat to be FSC 100% Jatoba hardwood. Fasteners to be stainless steel.
- D. Finishes: Bench frames to be polyester powdercoat: custom textured or gloss RAL powdercoat color, Landscape Architect to choose from manufacturers standard colors. Seat to be FSC 100% Jatoba hardwood with a natural oiled finish.
- E. Mounting to be surface mount: manufacturer to provide anchors and stainless steel mounting screws and epoxy where required.

## 2.2 TRASH AND RECYCLING RECEPTACLE

- A. Trash receptacle to be Universal Receptacle by Forms+Surfaces (30 Pine Street, Pittsburgh, PA 15223, phone: 800-451-0410, fax: 412-781-7840, email: sales@forms-surfaces.com , website: www.forms-surfaces.com) or approved equal. Receptacle to be 36 Gallon, side opening. with standard openings.
- B. Receptacle body material to be stainless steel. Lid to be Polyethylene with UL94HB fire rating, slate color finish. Liner to be black polyethylene with UL94HV fire rating. All hardware shall be tamper-resistant and stainless steel.
- C. Stainless steel finish to be chosen by Landscape Architect from manufacturers standard options. Receptacle bodies to have eco-etch pattern from manufacturers standard patterns.
- D. Trash Receptacle to have side opening "Litter" graphic, recycling receptacle to have "Recycling" graphic.

## 2.3 DRINKING FOUNTAIN AND BOTTLE FILLER

- A. Drinking Fountain / Bottle Filling Station shall be a dual-station steel fountain with bottle filler on main pedestal and drinking fountain on secondary arm, "Endura II Outdoor Bottle Filler 4420BF" from Halsey-Taylor of Oak Brook, IL or Approved Equal (Halsey-Taylor Model Number 7407720BF1U).
- B. Bottle filler shall provide a minimum 1 gallon/minute laminar flow.
- C. Bubbler shall be a vandal-resistant, one-piece, chrome plated bubbler with integral hood guard design to prevent contamination from other users, airborne deposits, and tampering.
- D. Basin shall be a contour-formed stainless steel design with rounded edges to reduce splatter, ensure proper drainage, and prevent standing water.
- E. Pushbutton actuator shall be a self-closing, vandal-resistant mechanism that does not require grasping or twisting.
- F. Inlet strainer shall be easily cleaned and in-line, and shall trap particles of 140 microns or larger before they enter the waterway.

- G. Water inlet and drain outlet shall be as specified by the manufacturer.
- H. Access panels shall be heavy-gauge steel with vandal resistant screws, and shall provide easy access for hook-up of all plumbing connections.
- I. Finish shall be a durable, textured powdercoat finish. Interior surfaces shall be galvanized for durability. Color shall be selected by Landscape Architect from manufacturers standard range of colors.
- J. Unit shall comply with ADA standards and be certified to lead-free compliance including NSF/ANSI 61 – Annex G, AB1953.
- K. Submit manufacturer's shop drawings for approval.

### PART 3 - EXECUTION

- 3.1 CUSTOM CURVED WOOD SLAT BENCHES WITH INTEGRATED LIGHTING ON GRANITE WALLS - (BENCHES 2, 3 & 4 ARE BASE BID & BENCHES 1 & 5 ARE ADD. ALTERNATE #2);
  - A. Benches to be installed as shown on drawings; install according to the manufacturers installation instructions.
  - B. Verify that substrates have been adequately prepared to securely anchor those items that will be surface mounted.
  - C. Contractor to touch up any scratches and all mars to surfaces or finishes.
- 3.2 TRASH AND RECYCLING RECEPTACLES
  - A. Install according to the manufacturer's installation instructions. Receptacles to be surface mounted with levelers as needed.
  - B. Contractor to touch up any scratches and all mars to surfaces or finishes.
- 3.3 DRINKING FOUNTAIN AND BOTTLE FILLER
  - A. Install drinking fountain in accordance with the Manufacturer's instructions and recommendations, and in conformance with all applicable codes.
  - B. Contractor to touch up all damage to finishes after installation, to the satisfaction of the Landscape Architect and the Owner.

END OF SECTION

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## **SECTION 32 80 00 IRRIGATION**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The Work of this Section is integral with the whole of the Contract Documents and is not intended to be interpreted outside that context.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
- C. Coordinate work of this Section with other underground utilities and with trades responsible for their installation. Refer to respective Drawings and Specification sections pertaining to other work.
- D. It is the Contractor's obligation for blowout, maintenance and start-up of system; walkthrough review with the Department of Public Works before maintenance is handed over to the City.

#### **1.2 SCOPE OF WORK**

- A. Perform all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawing Notes and specified herein.
- B. All necessary changes to the Drawings to avoid any obstacles shall be made by the Contractor with the approval of the Owner's Representative.
- C. Trench excavation, back filling and bedding materials, together with the testing of the completed installation shall be included in this work.
- D. The work shall be constructed and finished in every respect in a good, workmanlike and substantial manner, to the full intent and meaning of the Drawings and Specifications. All parts necessary for the proper and complete execution of the work, whether the same may have been specifically mentioned or not, or indicated on the Drawings, shall be done or furnished in a manner corresponding with the rest of the work as if the same were specifically herein described.
- E. The irrigation system to be installed shall be a single controller with multiple zones (label zones on irrigation controller), turf and landscape irrigation system supplied from municipal water. The system shall be designed for a flow rate (GPM) and dynamic pressure (PSI) as are available from the street connection; inform Owner's Representative and Landscape Architect promptly if flow or pressure is insufficient.
- F. The principal work of this Section includes, but may not be limited to the following:
  - 1. Automatic Irrigation System (Scope shown or described on Drawings, if applicable, or 100% coverage of all lawn areas, tree pits, and plant beds if not described);
  - 2. Use of one of the zones to provide a time-controlled supply to the water spray play features;
  - 3. One (1) Year Warranty;
  - 4. 90 calendar days' maintenance of irrigation system;

5. As-Built Record Drawings as well as Operating & Maintenance Manual generation, in accordance to these specifications.

### 1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the Work under this Section and the Work of other trades. Cooperate with all trades and all departments of the City of Salem and coordinate all Work under this Section.
- B. The following related items include, but are not limited to Work under the Sections listed below:
  1. Section 32 10 00 – Bases, Ballasts, and Paving
  2. Section 32 90 00 – Planting
  3. Section 33 10 00 – Water Utilities

### 1.4 ORDINANCES, PERMITS AND FEES

- A. The Work under this Section shall comply with all ordinances and regulations of authorities having jurisdiction.
- B. The Contractor shall obtain and pay for any and all permits, tests and certifications required for the execution of Work under this Section.
- C. Furnish copies of Permits, Certifications and Approval Notices to the Owner's Representative prior to requesting payment.
- D. The Contractor shall include in their bid any charges by the Department of Public Works, Utility Company, or other authorities for work done by them and charged to the Contractor.

### 1.5 SUBMITTALS & PRODUCT LITERATURE

- A. Allow 2 weeks from original submittal to Landscape Architect and Owner's Representative for municipal review of all submittals and plans.
- B. The Contractor shall provide four (4) copies of proposed irrigation layout, product specification sheets on all proposed equipment to be installed to the Owner's Representative for approval.
  1. Work on the irrigation system may not commence until proposed plan has been approved by the Landscape Architect and product sheets are submitted and approved.
  2. Submittals shall be marked up to show proper nozzles, sizes, flows, etc.
  3. Submittal package shall also include a full, detailed irrigation plan. The irrigation plan shall be measured, and shall show all coverage arcs of spray and sprinkler heads.
- C. Manufacturer's printed information describing irrigation materials:
  1. Sprinkler Heads
  2. Valves: Manual and Automatic
  3. Controllers
  4. Valve Boxes
  5. Pipes and Fittings



6. Wire and Connectors
  7. Quick Coupling Valves
  8. Rain Sensor
  9. Backflow Preventer
  10. Miscellaneous Materials
- D. Record Drawing
1. Provide complete irrigation system Record Drawing/As-Built Plan on reproducible base supplied by the Owner's Representative. The Plan shall clearly show and label each zone for controls and maintenance. (See 1.12.B)
  2. Drawing shall call out materials, have a legend, numbered valves, and show details of valve assemblies, swing joints, risers, valve boxes, and typical trench section.
  3. All valve boxes shall be referenced by distance from a minimum of two permanent points in a triangular fashion.
- E. Project Record Documents:
1. The Contractor shall provide and keep up-to-date a complete Record Set of Drawings of the system as the project proceeds. Drawings shall be on a reproducible base, supplied by the Owner's Representative. Drawings shall be corrected daily, showing every change from the original Drawings and Specifications. Prints for this purpose may be obtained from Owner's Representative at cost.
  2. Record Drawings shall specify and exactly locate sprinkler type; pop up height and nozzle for each sprinkler installed. Each valve box location to be referenced by distance from a minimum of two permanent locations. Controller(s), rain sensor(s), air vacuum relief valves, flushing valves, quick coupling valves, water meters, back flow prevention device and all other equipment shall be indicated on the drawings. All wire routing, wire size and splices shall be indicated. Main line pipe and wire route shall have two (2) distinctly different graphic symbols (line types). Drawing Set shall have a legend and valves shall be numbered.
  3. This redlined record set of drawings shall be kept at job site and shall be used only as a record set. This redlined set of documents shall also serve as work progress sheets and shall be the basis for measurement and payment for work completed.
  4. On or before the date of final field observation, deliver corrected and completed AutoCAD computer plots of "record drawings" on vellum and AutoCAD electronic files on disk to Owner's Representative as part of contract closeout. Delivery of plots will not relieve Contractor of the responsibility of furnishing required information omitted from the prints.
- F. At the end of each segment of the project the contractor shall submit the following to the Owner's Representative.
1. Plumbing permits: If none required, so state.
  2. Material approvals.
  3. Pressure line tests: By whom approved and date.
  4. Materials furnished: Recipient and date.

## 1.6 PRODUCT, DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
- B. Acceptance at Site: Verify that delivered materials conform to specifications and approved submittals.
- C. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- D. Handle in accordance with manufacturer's instructions.

## 1.7 EXAMINATION OF CONDITIONS

- A. The Contractor shall fully inform himself of existing conditions on the site before submitting his bid, and shall be fully responsible for carrying out all work required to fully and properly execute the work of the Contract, regardless of the conditions encountered in the actual Work. No claim for extra compensation or time extension will be allowed on account of actual conditions inconsistent with those assumed.
- B. Environmental Requirements: Contractor shall not work on or with soils when they are dry, wet, or frozen. Field Test: Form soil in palm of hand; if soil retains shape and crumbles upon touching, then it may be worked (if it will not retain its shape, it is too dry; if it does not crumble, it is too wet). Landscape Architect shall be final authority on condition of soil.
- C. Water Pressure: Verify water pressure and available flow rate at point of connection.

## 1.8 QUALITY ASSURANCE

- A. Installer: A firm which has at least five (5) years experience in work of the type and size required by this Section and which is acceptable to the Owner's Representative.
- B. References: The Contractor must supply three references for work of this type and size with their bid including names and phone numbers of contact person(s).
- C. Applicable requirements of accepted Standards and Codes shall apply to the Work of this Section and shall be so labeled or listed:
  - 1. American Society for Testing & Materials (ASTM)
    - a. ASTM: A536 Ductile Iron Castings
    - b. ASTM: D1784 Rigid Poly Vinyl Chloride (PVC) Compounds and Chlorinated Poly Vinyl Chloride (CPVC) Compounds.
    - c. ASTM: D1785 PVC Plastic Pipe, Schedules 40, 80, and CI200.
    - d. ASTM: D2464 Threaded PVC Plastic Pipe Fittings, Schedule 80.
    - e. ASTM: D2466 PVC Plastic Pipe Fittings, Schedule 40.
    - f. ASTM: D2564 Solvent Cements for PVC Plastic Piping Systems.
    - g. ASTM: B43-98 Brass pipe.
    - h. ASTM: B88-99 Seamless Copper Water Tube
    - i. ASTM: B828-00 Soldered Copper Joints.
    - j. ASTM: F477 Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
    - k. ASTM: D2737-99 Polyethylene (PE) Pressure rated tube.

2. National Plumbing Code (NPC)
3. National Electric Code (NEC)
4. National Sanitary Foundation (NSF)
5. American Society of Agricultural Engineers (ASAE)
6. Underwriters Laboratories, Inc. (UL)
7. Occupational Safety and Health Regulations (OSHA)

#### 1.9 TESTS

- A. Observation: The Owner's Representative will be on site at various times to insure the system is being installed according to the Specifications and Drawings.
- B. Coverage Test: After completion of the system, test the operation of entire system and adjust sprinklers as directed by the Owner's Representative. Demonstrate to the Owner's Representative that all irrigated areas are being adequately covered, and that there is no significant overspray onto pavements, walks, or structures. Furnish and install materials required to correct inadequacies of coverage due to deviations from the Drawings or where the system has been willfully installed when it is obviously inadequate or inappropriate without bringing it to the attention of the Owner. (See Part 3 - Execution).
- C. The Owner's Representative shall be notified 48 hours in advance for observations.
- D. During final observation, the contractor shall be responsible for having two-way communication and sufficient personnel to provide instantaneous communication between the observation area and the controller for the system.

#### 1.10 GUARANTEE

- A. The Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law.
- B. In addition to the manufacturers guarantees the Contractor shall warrant the entire irrigation system, both parts and labor for a period of one (1) year from the date of acceptance by the Owner.
- C. As part of the one-year warranty the Contractor shall perform the first year-end winterization and spring start-up for the irrigation system.
- D. Should any problems develop within the warranty period because of inferior or faulty materials or workmanship, they shall be corrected to the satisfaction of the Owner's Representative at no additional expense to the Owner.
- E. A written warranty showing date of completion and period of warranty shall be supplied upon completion of each segment of the project.

#### 1.11 COORDINATION

- A. The Contractor shall at all times coordinate his work closely with the Owner's Representative to avoid misunderstandings and to efficiently bring the project to completion. The Owner's Representative shall be notified as to the start of work, progression and completion, as well as any changes to the drawings before the change is made. The Contractor shall also coordinate his work with that of his sub-contractors.

- B. The Contractor shall be held responsible for and shall pay for all damage to other work caused by his work, workmen or sub-contractors. Repairing of such damage shall be done by the Contractor who installed the work, as directed by the Owner's Representative.

#### 1.12 MAINTENANCE AND OPERATING INSTRUCTIONS

- A. Contractor shall include in their Bid an allowance for four (4) hours of instruction of Owner and/or Owner's personnel upon completion of check/test/start-up/adjust operations by a competent operator (The Owner's Representative office shall be notified at least one (1) week in advance of check/test/start-up/adjust operations).
- B. Upon completion of work and prior to application for acceptance and final payment, a minimum of three (3) three ring, hard cover binders titled MAINTENANCE AND OPERATING INSTRUCTIONS FOR THE DERBY STREET PARK IRRIGATION SYSTEM, shall be submitted to the Owner's Representative office. After review and approval, the copies will be forwarded to the Owner. Included in the Maintenance and Operating binders shall be:
  - 1. Table of Contents
  - 2. Written description of Irrigation System.
  - 3. System drawings:
    - a. One (1) copy of the original irrigation plan;
    - b. One (1) copy of the Record Drawing;
    - c. One (1) reproducible of the Record Drawing;
    - d. One (1) copy of the controller valve system wiring diagram
  - 4. Listing of Manufacturers.
  - 5. Manufacturers' data where multiple model, type and size listings are included; clearly and conspicuously indicating those that are pertinent to this installation.
    - a. "APPROVED" submittals of all irrigation equipment;
    - b. Operation:
    - c. Maintenance: including complete troubleshooting charts.
    - d. Parts list.
    - e. Names, addresses and telephone numbers of recommended repair and service companies. A copy of the suggested "System Operating Schedule" which shall call out the controller program required (zone run time in minutes per day and days per week) in order to provide the desired amount of water to each area under "no-rain" conditions.
  - 6. Winterization and spring start-up procedures.
  - 7. Guarantee data.

#### 1.13 PROCEDURE

- A. Notify all city departments and/or public utility owners concerned, of the time and location of any work that may affect them. Cooperate and coordinate with them in the protection and/or repairs of any utilities.

- B. Provide and install temporary support, adequate protection and maintenance of all structures, drains, sewers, and other obstructions encountered. Where grade or alignment is obstructed, the obstruction shall be permanently supported, relocated, removed or reconstructed as directed by the Architect.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. All materials to be incorporated in this system shall be new and without flaws or defects and of quality and performance as specified and meeting the requirements of the system. All material overages at the completion of the installation are the property of the Contractor and shall be removed from the site.
- B. No material substitutions from the irrigation products described in these specifications and shown on the drawings shall be made without prior approval and acceptance from the Owner's Representative.
- C. System shall be design/build, and shall provide 100% coverage of all lawn and planting beds indicated on the Planting Plan, without overspray onto paths, pavements, walls, or structures. Pop-up spray heads shall be used for lawn areas; drip irrigation shall be used in planting beds.
- D. Provide initial irrigation design plan for approval before commencing construction or installing any pavements; irrigation plan shall include all proposed sleeves, valves, lines, heads, and spray areas, as well as control box location.

### 2.2 POINT OF CONNECTION

- A. The mechanical point of connection for the irrigation system shall be a new 1-inch tap of the domestic water supply with a backflow preventer, located within the new water cabinet, provided or arranged by the Contractor in compliance with all applicable Codes.
- B. The electrical point of connection for the irrigation system shall be to a 120-volt, 20-amp electrical circuit at the location of the irrigation control box, provided or arranged by the Contractor in compliance with all applicable Codes.

### 2.3 PVC IRRIGATION PIPE

- A. All pipe shall bear the following markings: Manufacturer's name, nominal pipe size, schedule or class, pressure rating in psi, and date of extrusion.
- B. All pipe in sizes 2-1/2 inches and smaller shall be PVC, Class 200, Type 1120, SDR 21, Solvent-Weld PVC, conforming to ASTM No. D2241 as manufactured by Certainteed, Cresline, JM or equal.
- C. The pipe insertion mark shall be visible to show the proper depth into spigot.
- D. Copper Lines shall be used from street connection, through water cabinet, to irrigation controller; PVC pipe may be used for irrigation components downstream of irrigation control box.

### 2.4 BRASS PIPE AND FITTINGS

- A. Brass pipe shall be 125lb. cast bronze, ground joint pattern, threaded, ASTM B43-98.
- B. Brass fittings shall be cast bronze, screwed, 125lb. Class.

## 2.5 PVC PIPE SLEEVES

- A. All pipe sleeves beneath non-soil areas shall be PVC, Class 160 water pipe as manufactured by Certainteed, Cresline, JM or equal. Minimum sleeve size to be 3".

## 2.6 WIRE CONDUIT

- A. Conduit for wiring beneath non-soil areas shall be PVC, SCH-40 conduit with solvent-weld joints, as manufactured by Certainteed, Cresline, JM or equal.
- B. Sweep ells shall be standard electrical type PVC schedule 40 long sweep elbows. Cap sweep ell with tri-plug with the ring for securing nylon pull rope.
- C. Conduit for above ground wiring to rain sensors or controllers shall be galvanized, rigid metallic conduit.

## 2.7 PVC IRRIGATION FITTINGS

- A. Fittings for solvent weld PVC pipe, 2-1/2 inch and smaller in size, shall be Schedule 40 solvent weld PVC fittings as manufactured by Dura, Lasco, Spears or equal.
- B. Fittings shall bear manufacturer's name or trademark, material designation, size, and applicable I.P.S. schedule.
- C. All PVC threaded connections in and out of valves shall be made using Schedule 80 toe nipples and Schedule 40 couplers or socket fittings. Schedule 40 threads will not be approved for installation.
- D. PVC solvent shall be NSF approved, for Type I and Type II PVC pipe, and Schedule 40 and 80 fittings. Cement is to meet ASTM D2564 and FF493 for potable water pipes. PVC solvent cement shall be Rectorseal Gold, IPS Weld-ON 711, Oatey Heavy Duty Cement or equal, and shall be used in conjunction with the appropriate primer. Primer shall be NSF approved, and formulated for PVC and CPVC pipe applications. Primer is to meet ASTM F 656. Primer shall be Rectorseal Jim PR-2, IPS Weld-ON P-68 Clear, Oatey Clear Primer for PVC and CPVC, or equal.
- E. All nipples to be schedule 80 PVC.

## 2.8 POLYETHYLENE IRRIGATION PIPE

- A. Lateral piping 1-1/4 inch and smaller in size as indicated on the drawings may also be installed with polyethylene (PE3408) pipe, SDR 15, Class 100, Type III, Grade 3, Class C conforming to ASTM D2239, with a minimum pressure rating of 100 psi as manufactured by Oil Creek or equal. Polyethylene pipe shall only be used in landscape areas.

## 2.9 POLYETHYLENE IRRIGATION FITTINGS

- A. Fittings for polyethylene pipe shall be insert PVC or Nylon type fittings. Fittings shall conform to NSF standards and be attached with two (2) dog-eared stainless steel clamps. Clamps shall be as manufactured by Oetiker or Approved Equal.
- B. Supply only pipes and fittings that are marked by the manufacturer with the appropriate ASTM designations and pressure ratings and are free from cracks, wrinkles, blisters, dents or other damage. Fittings shall be per ASTM D2609 as manufactured by Dura, Lasco or Approved Equal.

## 2.10 SPRAY SPRINKLERS

- A. Full and part circle pop up spray sprinklers shall be pressure regulating (30-psi), plastic construction with ratcheting riser, removable nozzle and check valve. Nozzle size shall be as indicated on the drawing and in the legend. Pop-up height shall be 6 inches for turf and 12 inches for ground cover, shrubs and annual beds.
- B. Sprinkler shall carry a minimum 3-year exchange warranty against defects. Sprinklers shall be manufactured by Hunter Industries, model INST-06-CV for turf and INST-12 CV for shrubs or Approved Equal.

## 2.11 SMALL/MEDIUM ROTARY SPRINKLERS

- A. Small/medium rotary sprinklers shall be gear-driven, rotary type heads, designed for in-ground installation with integral check valves and in-riser flow shut-off capability. Sprinkler shall be capable of covering a 25-44 foot radius and flow range of 0.9-7.0 gpm at 50-55 pounds per square inch of pressure. Sprinklers shall have a one hundred percent warranty for two years minimum against defects in workmanship.
- B. The nozzle assembly shall elevate minimum four inches when in operation and retraction shall be achieved by a stainless steel spring. Riser assembly shall be plastic. A nozzle wiper seal shall be included in the sprinkler for continuous operation under the presence of sand and other foreign material.
- C. All sprinkler parts shall be removable through the top of the unit through the removal of a heavy-duty threaded cap. The sprinkler shall have a three quarter-inch (3/4") IPS water connection on the bottom of the sprinkler.
- D. Sprinklers shall be manufactured by Hunter Industries model I20-ADV or Approved Equal.

Approved Performance Chart (25' Spacing):

Model	Pressure	Arc	Nozzle	Flow	Radius
Hunter I20-ADV	50psi	90 Deg.	.75SR	0.75	25'
Hunter I20-ADV	50psi	180 Deg.	1.5SR	1.5	25'
Hunter I20-ADV	50psi	360 Deg.	3.0SR	3.0	25'

Approved Performance Chart (35' Spacing):

Model	Pressure	Arc	Nozzle	Flow	Radius
Hunter I20-ADV	50psi	90 Deg.	2.0	2.0	38'
Hunter I20-ADV	50psi	180 Deg.	4.0	4.2	41'
Hunter I20-36V	50psi	360 Deg.	8.0	6.8	44'

## 2.12 ELECTRIC CONTROL VALVES

- A. Electric control valves shall be one-inch remote control, diaphragm type, fiber-glass or reinforced nylon body plastic valves with manual flow control, manual bleed screw and 200 psi pressure rating.
- B. Valves shall be manufactured by Rain Bird model PEB, Hunter Industries model ICV or Approved Equal.

## 2.13 VALVE BOXES

- A. All valve boxes shall be manufactured from unformed resin with a tensile strength of 3,100-5,500 psi conforming to ASTM D638. All boxes shall be green in color. Covers shall be green in color unless otherwise specified.
- B. Valve boxes for single 1 inch electric valves, isolation valves and quick coupling valves shall be 10-inch round valve boxes with metal detection and bolt down covers
- C. Valve boxes for dual electric valves shall be 12-inch standard valve boxes with metal detection and bolt down covers. When multiple electric valves are installed in the same area, they are to be installed two (2) valves per box in a 12-inch standard box.
- D. Covers shall be bolted down.
- E. Valve boxes for wire splices shall be 10 inch round valve boxes with detectable disks. All splices shall be in separate valve boxes and not included with isolation valves. 220 volt splices shall have black lids, 24 volt splices shall have gray lids.
- F. Valve box extensions shall be provided and installed as required for proper box depth. Valve box extensions shall be made by the same manufacturer.
- G. Valve boxes shall be manufactured by Pentek, Carson Specification Grade, NDS Pro Series or Approved Equal.

## 2.14 AUTOMATIC CONTROLLER

- A. Controller shall be electronic in construction with capability of up to 10 hour run times per zone in increments of 1 or 10 minutes. Controllers to have minimum four independent programs, auto/off switch and be capable of manual, semi-automatic and automatic operation. Controller shall have water budgeting feature, cycle and soak feature, sensor input terminal, locking, weather resistant cabinet and internal transformer. Terminal strip connection shall be easily accessible. The controller shall be U.L. listed, 120 volt, 60 Hertz, A.C. type.
- B. Controller shall be as manufactured by Rain Bird model ESP-12LXM, Hunter Industries model ICC-1200PL or Approved Equal.
- C. Station quantity shall be minimum of 10.

## 2.15 QUICK COUPLING VALVES

- A. The valve body shall be of cast brass construction with a working pressure of 125 psi. The valve seat disc plunger body shall be spring loaded so that the valve is normally closed under all conditions when the key is not inserted.
- B. The top of the valve body receiving the key shall be equipped with ACME threads and smooth face to allow the key to open and close the valve slowly. The quick coupling valve shall be equipped with a vinyl cover.



- C. The valve body construction shall be such that the coupler seal washer may be removed from the top for cleaning or replacement without disassembling any other parts of the valve.
- D. Keys shall be ACME with 1-inch male thread and 3/4-inch female thread at the top.
- E. Contractor shall provide two (2) keys for quick couplers and two (2) 1-inch x 3/4-inch swivel hose ells.
- F. Quick coupling valves, keys and swivels shall be manufactured by Hunter Industries, model HQ-44RC-AW, HK-44 and HS-1 or Approved Equal.

#### 2.16 WIRE

- A. All valve control wire shall be minimum #14-awg, common #12-awg, single strand, solid copper, UL- approved direct burial AWG-U.F. 600V and shall meet all state and local codes for this service. Individual wires must be used for each zone valve. Common wire shall be white in color, control wire for spray and rotor zones shall be red in color, and spare wires, installed where applicable, shall be blue. White color shall be used for common wire only.
- B. In ground wire connections shall be UL listed, manufactured by 3M, model DBY-6 splice kits. All wire splices shall be made in valve boxes, at controller, or at valves.
- C. Wire type and method of installation shall be in accordance with local codes for NEC Class II circuits of 30-volt A.C. or less.

#### 2.17 SWING JOINTS

- A. Spray sprinklers, small rotary sprinklers and medium rotary sprinklers shall be installed on swing pipe assemblies, minimum length 6 inches, maximum 18 inches.
- B. Quick coupling valves to be installed on 1-inch prefabricated PVC unitized swing joint assemblies with double o-ring seals, minimum 315 psi rating and minimum length of 12 inches with brass insert and stabilizer (unless stabilizer is an integral part of the quick coupling valve).

#### 2.18 AUTOMATIC RAIN SENSOR

- A. Rain sensor shall be plastic in construction with adjustable interruption point, 1/2-inch IPS threads with wireless transmitter. Rain sensor shall be manufactured by Hunter Industries, model WRC, or Approved Equal.
- B. Location to be approved in the field with Owner's Representative and Landscape Architect.
- C. Contractor shall provide batteries for the wireless system. Spare parts to be submitted to the Department of Public Works per 2.21.

#### 2.19 CONTROLLER ENCLOSURE

- A. The controller shall be enclosed within the Water Cabinet unless otherwise directed by the Owner and the Landscape Architect.

#### 2.20 CONTROLLER GROUNDING

- A. The irrigation controller shall include factory-installed and factory-recommended lightning protection and shall be connected to a 5/8-inch diameter x 10-foot long copper clad grounding rod with minimum #6 AWG, solid, bare copper wire and 4-inch x 96-inch x 0.0625-inch copper grounding plate as outlined below. Minimum 20-foot

- separation between rod and plate. Minimum 12-foot separation between controller and ground rod. All connections to rod shall be with Cadweld connector as specified. All connections to plates shall be performed by the plate manufacturer (Paige or Approved Equal #182199L) with 25-feet of bare copper wire already attached. Grounding rod is to be covered by a 4-inch round, grated top, plastic valve cover with metal detection and six inches of 4-inch ADS drainage pipe. Plate shall be installed in ground enhancement material. Plate shall be covered with 4-inch plastic grated cover with detection and minimum 36 inches of 4 inch ADS drainage pipe. Ground rod and plate shall be UL listed.
- B. Controller shall be grounded to one rod and one plate. The 10-foot rod shall be installed penetrating into the soil to its full length. Plate shall be installed at a 36-inch depth with 50 lbs of Power Set ground enhancement material spread evenly below the plate and 50 lbs spread evenly above the plate in accordance with manufacturer's requirements. The grounding electrodes shall be installed at least 10 feet from wires connected to the field controllers.

## 2.21 SPARE PARTS

- A. Contractor shall supply the following tools and equipment to the Owner's Representative before final observation:
1. Two (2) wrenches for disassembling/adjusting each type of sprinkler head.
  2. One (1) quick coupler key assembly for every five or fraction thereof of each type of quick coupling valve provided.
  3. One (1) of each type of gate valve used in the project.
  4. Two (2) of each type sprinkler head and pattern (PC & FC) used.
  5. Two (2) of each type nozzle used in the project.
- B. Before final observation can occur, all spare parts, tools, and equipment shall be submitted to the Department of Public Works (through the Owner's Representative) in a single container, clearly marked with the Project Name and "Irrigation Supplies."

## 2.22 CONTROL OF WATER SPRAY SYSTEM TIMING USING SEPARATE TIMER

- A. Water Cabinet to be furnished with a standalone battery-operated programmable timer and industrial-grade DC-solenoid-equipped brass irrigation valve to enable use of the spray feature to be limited to park operating hours, Hunter Industries Model NODE100 Controller and IBV-series valve or Approved Equal.
- B. Controller to be a waterproof, standalone fixed controller operated by a 9-volt battery. Controller shall have 1 station capable of a minimum 4-hour station program run time with sufficient start times per program to enable continuous-on operation over an 18-hour total run time, with programmable off, non-volatile memory and preferred program saving capability, and a minimum 2-year warranty period, Model NODE-100 by Hunter Industries or Approved Equal. Submit product literature for approval.
- C. Valve to be a commercial-grade irrigation valve with brass body and bonnet rated to 220 PSI, stainless steel flow control stem, external and internal manual bleed, double-beaded fabric-reinforced EPDM diaphragm valve and seat, and factory-installed DC latching solenoid compatible with the Controller, and adjustable pressure regulator capable of regulating pressure to 20-100 PSI, with a minimum 5-year warranty period, sized appropriately for the water feature supply line, Hunter Industries Model IBV-151G-DC-AS-ADJ or Approved Equal. Submit manufacturer's product literature for approval.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The irrigation system shall be Design/Build – the Irrigation Contractor shall provide a proposed Irrigation Plan to the Landscape Architect and the Owner's Representative for Approval prior to starting construction.
- B. Before work is commenced, hold a conference with the Owner's Representative to discuss general details of the work.
- C. Examine all contract documents applying to this Section noting any discrepancies and bringing the same to the attention of the Owner's Representative for timely resolution.
- D. All work indicated on Drawings shall be provided whether or not specifically mentioned in the Specifications.
- E. If there are ambiguities between Drawings and Specifications, and specific interpretation or clarification is not issued prior to bidding, the interpretation or clarification will be made only by Owner's Representative, and Contractor shall comply with the decisions. In the event the installation contradicts the directions given, the installation shall be corrected by Contractor at no additional cost to Owner.
- F. Verify dimensions and grades at job site before work is commenced. All obstructions, conflicts, or discrepancies shall be brought to the attention of the Owner's Representative.
- G. Make all field measurements necessary for the work noting the relationship of the irrigation work to the other trades. Coordinate with other trades (landscaping and other site work trades). Project shall be laid out essentially as indicated on the approved Irrigation Plans, making minor adjustments for variations in the planting arrangement. Major changes shall be reviewed with the Owner's Representative prior to proceeding.
- H. Coordinate installation of all sprinkler materials, including pipe, to avoid conflict with the trees, shrubs, or other plantings.
- I. At all times, protect existing irrigation, landscaping, paving, structures, walls, footings, etc. from damage. Any inadvertent damage to the work of another trade shall be reported at once.
- J. Replace, or repair to the satisfaction of the Owner, all existing paving disturbed during course of work. New paving shall be the same type, strength, texture, finish, and be equal in every way to removed paving.

### 3.2 PIPE AND FITTINGS INSTALLATION

- A. Using proper width trencher chain, excavate a straight (vertical) and true trench to a depth as required for pipe invert elevation. Trenching within the protected areas of existing trees shall be hand work only; avoid damage to significant existing roots.
- B. In installing irrigation pipe the Contractor shall route the pipe as necessary to prevent damage to tree roots. Where trenching must occur near trees, the Contractor shall provide proper root pruning and sealing methods to all roots 1-inch and larger.
- C. Loam or topsoil encountered within the limits of trench excavation for irrigation mains and branch lines shall be carefully removed to the appropriate lines and depths and stockpiled for subsequent replacement in the upper 6 inches of the trench from which it is excavated. Such removal and replacement of the quantities of loam shall

be considered incidental to the irrigation system and no additional compensation will be allowed therefore.

- D. Pipe shall be laid on undisturbed trench bottom provided suitable base is available - no rock larger than 1 inch or sharp edges; if not, excavate 2 inches below pipe invert and provide and install sand base or crushed stone upon which to lay pipe.
- E. Back filling shall be accomplished as follows: the first 10 inches of backfill material shall contain no foreign matter and no rock larger than 1 inch in diameter. Carefully place material around pipe and wire and tamp in place. Remainder of backfill shall be laid-up in 6-inch (maximum) lifts and tamped to compaction with appropriate mechanical equipment. Compact backfill in trenches to dry density equal to the adjacent undisturbed soil, and conform to adjacent grades without dips, sunken area, humps, or other irregularities. Frozen material shall not be used for backfill.
- F. Do backfilling when pipe is cool. During hot weather cool pipe by operating the system for a short period, or by backfilling in the early part of the morning before the heat of the day.
- G. Throughout the guarantee period it will be the responsibility of the Contractor to refill any trenches that have settled due to incomplete compaction.
- H. Mainline pipe shall have minimum 22 inches of COVER (excavate to invert as required by pipe size). Lateral pipe shall have minimum 16 inches of COVER for PVC and 12 inches of cover for Polyethylene (excavate to invert as required by pipe size).
- I. Cut plastic pipe with handsaw or pipe-cutting tool, removing all burrs at cut ends. All pipe cuts are to be square and true. Bevel cut end as required to conform to Manufacturer's Specifications.
- J. Clean bell and spigot ends and make all gasketed joints in strict accordance with manufacturer's recommendations, making certain not to apply an excess of lubricant, and wiping off any excess lubricant from each connection. Maximum deflection per joint shall not exceed manufacturer's recommendations.
- K. Make all solvent-weld joints in strict accordance with manufacturer's recommendations, making certain not to apply an excess of primer or solvent, and wiping off excess solvent from each connection. Allow welded joints at least 15 minutes set-up/curing time before moving or handling. When the temperature is above 80° F, allow connections to set minimum 24 hours before pulling or pressure is applied to the system. When temperature is below 80° F, follow manufacturer's recommendations. Provide and install for expansion and contraction as recommended.
- L. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the trench.
  - 1. At times when installation of the piping is not in progress, the open end(s) of the pipe shall be closed by a watertight plug or other means. All piping which cannot temporarily be joined shall be sealed to make as watertight as possible. This provision shall apply during the lunch hour as well as overnight. Pipe not to be installed that day shall not be laid out.
  - 2. Should water enter the trench during or after installation of the piping, no additional piping may be installed or back filled until all water is removed from the trench.
  - 3. Pipe shall not be installed when water is in the trench, when precipitation is occurring, or when the ambient temperature is at 40° F or below. Pipe

installed at temperatures below 40° F shall be removed and replaced at no cost to the Owner.

4. PVC pipe shall be snaked in the trench to accommodate for expansion and contraction due to changes in temperature.
- M. Maintain 6-inch minimum clearance between sprinkler lines and lines of other trades. Do not install sprinkler lines directly above another line of any kind.
- N. Maintain 1-inch minimum between lines which cross at angles of 45 to 90 degrees.
- O. Exercise care when excavating, trenching and working near existing utilities.
- P. Pulling of pipe will be allowed provided soil is suitable and specified depth of bury can be maintained.

### 3.3 ELECTRICAL WIRE CONDUIT INSTALLATION

- A. Electrical conduit shall be installed in all non-soil areas, as well as for all above ground wiring where wire passes under or through walls, walks and paving to controllers and rain sensor.
- B. Wire shall be laid in same trench as mainline and at pipe invert.
- C. Conduit shall extend 18 inches beyond edges of walls and pavement.

### 3.4 PIPE SLEEVING INSTALLATION

- A. Sleeving shall be installed wherever piping is going under a non-soil area. Minimum cover over all sleeving pipe shall be 24 inches.
- B. Sleeving shall extend 18 inches beyond edges of walls and pavement.

### 3.5 VALVE BOX INSTALLATION

- A. Furnish and install a valve access box for each electric valve, quick coupling valve, isolation valve, flushing valve, air relief valve and wire splice.
- B. All valve access boxes shall be installed on a minimum 4-inch crushed stone base. Finish elevation of all boxes shall be at grade. All crushed stone to be supplied by the Contractor and installed before valve box. Crushed stone shall not be poured into previously installed valve boxes.

### 3.6 24 VOLT CONTROL VALVE INSTALLATION

- A. Control valves shall be installed on a level crushed stone base. Grade of bases shall be consistent throughout the project so that finish grades fall within the limits of work. Valves shall be set plumb with adjusting handle and all bolts, screws and wiring accessible through the valve box opening. Valves shall be set in a plumb position with 24-inch minimum maintenance clearance from other equipment.
- B. Install at sufficient depth to provide more than 6-inch, nor less than 4-inch cover from top of valve to finish grade.
- C. Adjust zone valve operation after installation using flow control device on valve.

### 3.7 WIRING INSTALLATION

- A. Wiring shall be installed along with the main line. Multiple wire bundles shall be cinched together at maximum 12-foot centers using plastic cable cinches and shall be laid beside, and at the same invert as, the irrigation lines. Sufficient slack for

- expansion and contraction shall be maintained and wiring shall at no point be installed tightly. Provide and install an additional 8 inches to 12 inches slack at all changes of direction. Wiring in valve boxes shall be a sufficient length to allow the valve solenoid, splice, and all connections to be brought above grade for servicing. This additional slack shall be coiled for neatness in the valve box. Each valve shall have a separate wire back to the controller.
- B. All wire shall be laid in trenches and shall be carefully back-filled to avoid any damage to the wire insulation or wire conductors themselves. In areas of unsuitable material, the trench shall have a 2 inches layer of sand or stone dust on the bottom before the wires are laid into the trench and back-filled. The wires shall have a minimum of 12 inches of cover. Wire not to be installed that day shall not be laid out.
  - C. An expansion curl shall be provided and installed within 6 inches of each wire connection to a solenoid and at least every 100 feet of wire length on runs more than 100 feet in length. Expansion curls can be formed by wrapping five (5) turns of wire around a 1-inch diameter or larger pipe and then withdrawing the pipe.
  - D. Provide and install a common ground wire of white color. No white color shall be used for power wire. Control wire shall be red and spare wiring shall be blue in color.
  - E. Service wiring in connection with Drawings, manufacturer's instructions, and local codes for 24-volt service. All in-ground wire connections shall be waterproofed with 3M DBY-6 splice kits or Approved Equal. All splices shall be made in valve boxes (wire runs requiring splices between valve locations shall be provided and installed in splice box-valve box shall be used). Splice locations shall be shown on the Record Drawings.
  - F. Contractor shall provide a complete wiring diagram showing wire routing for the connections between the controller and valves. See section one for the inclusion of wiring diagram in operation and maintenance manuals.

### 3.8 CONTROLLER INSTALLATION

- A. Contractor to install controller in water cabinet unless otherwise directed by the Landscape Architect and Owner. Contractor to wire valves and rain sensor into controller and set proper program.
- B. Wire controller to 120-volt electrical supply provided and installed to the controller locations by licensed electrician.
- C. Keys shall be turned over to Owner's Representative.

### 3.9 CONTROLLER GROUNDING INSTALLATION

- A. Grounding rod shall be driven into the ground its full length within 8 feet of the controller and connected via a Cadweld or Approved Equal connection to #6 solid, bare copper wire. The copper wire is to be installed in as straight a line as possible, and if it is necessary to make a turn or bend, it shall be done in a sweeping curve with a minimum radius of 8 inches and a minimum included angle of 90 degrees. There shall be no splices in the bare copper wire. The top of the ground rod shall be driven below the ground surface. A 4-inch grated cover as specified, set a minimum of 1-inch below grade, shall be placed over the ground rod and Cadweld or Approved Equal connection for periodic maintenance. Cover shall be installed on a minimum of 6 inches of 4-inch ADS or Approved Equal corrugated polyethylene, perforated drainage pipe. Plate shall be installed 36 inches below grade with 50 lbs of Power Set ground enhancement material spread evenly below the plate and 50 lbs of Power Set ground enhancement material spread evenly above the plate in

accordance with the manufacturer's requirements. Plate shall also be covered with a 4 inch grated cover as specified, set a minimum of 1-inch below grade, to facilitate drainage onto the plate. Cover shall be installed on a minimum of 36 inches of 4-inch ADS corrugated polyethylene, perforated drainage pipe.

- B. Grid shall be installed in an irrigated area.

### 3.10 RAIN SENSOR INSTALLATION

- A. Install rain sensor on light pole, wall, fence post, or other vertical feature, at a location approved in the field by the Landscape Architect and the Owner's Representative. Rain sensor shall be in direct contact with the weather and not in contact with the irrigation spray.

### 3.11 SPRINKLER INSTALLATION

- A. Spray sprinklers, small rotary sprinklers and medium rotary sprinklers shall be installed flush (perpendicular) to grade on swing pipe assemblies, minimum length 6 inches, maximum 18 inches.
- B. Sprinklers shall not exceed maximum spacing indicated.
- C. Adjust sprinkler zone after installation using flow control device on valve.

### 3.12 QUICK COUPLING VALVE INSTALLATION

- A. Provide and install quick coupling valves at appropriate locations so that no hose used for hand-watering needs to be more than 50 feet in length.
- B. Quick coupling valves to be mounted on 1-inch prefabricated PVC unitized swing joint assemblies with integral o-rings, minimum length 12 inches with brass insert and stabilizer as per details.

### 3.13 CHECK/TEST/START-UP/ADJUST

- A. Flushing:
  - 1. After all piping, valves, sprinkler bodies, pipe lines and risers are in place and connected, but prior to installation of sprinkler internals, open the control valves and flush out the system under a full head of water.
  - 2. Sprinkler internals, flush caps and riser nozzles shall be installed only after flushing of the system has been accomplished to the full satisfaction of the Owner's Representative.
  - 3. Contractor shall be responsible for flushing the entire system after installation is complete and will be responsible for any clogged nozzles for ninety (90) days after substantial completion of this portion of the irrigation system.
- B. Testing:
  - 1. Leakage test: test all lines for leaks under operating pressure. Repair all leaks and re-test.
  - 2. Coverage test: perform a coverage test in the presence of the Owner's Representative (notify Architect at least seven (7) days in advance of scheduled coverage test). Representative will determine if the water coverage is complete and adequate. Readjust heads and/or head locations as necessary or directed to achieve proper coverage.
  - 3. All testing shall be at the expense of the Contractor.

### 3.14 CLEANING AND ADJUSTING

- A. At the completion of the work, all parts of the installation shall be thoroughly cleaned. All equipment, pipe, valves and fittings shall be cleaned of grease, metal cuttings and sludge which may have accumulated by the operation of the system for testing.
- B. Adjust sprinkler heads, valve boxes, and quick coupling valves to grade as required, so that they will not be damaged by mowing operations.
- C. Continue sprinkler coverage adjustment as required by settlement, etc., throughout the guarantee period.
- D. Each control zone shall be operated for a minimum of 5 minutes and all heads checked for consistency of delivering water. Adjustments shall be made to sprinklers that are not consistent to the point that they match the manufacturer's standards. All sprinklers, valves, timing devices or other mechanical or electrical components, which fail to meet these standards, shall be rejected, replaced and tested until they meet the manufacturer's standards.

### 3.15 ACCEPTANCE AND OPERATION BY OWNER

- A. Upon completion of the work and acceptance by the Owner, the Contractor shall be responsible for the training of the Owner's Representative(s) in the operation of the system (provide minimum 48 hours written notice in advance of test), including a complete walk-through on the site with the Owner's Representative and a representative from the Department of Public Works.
- B. In addition to the Record Drawings and operational manuals, the Contractor shall furnish copies of all available specification sheets and catalog sheets to the Owner's personnel responsible for the operation of the irrigation system.
- C. The Contractor shall be responsible for the first winterization of the system, and the first start-up the following spring. Both winterization and start-up shall be performed in the presence of and with instruction provided to the Owner's Representative and the Department of Public Works; provide minimum 48 hours written notice in advance of the test.
- D. The Contractor shall guarantee all parts and labor for a minimum period of one (1) year from date of acceptance.

### 3.16 CONTROL OF WATER SPRAY SYSTEM TIMING USING IRRIGATION SYSTEM

- A. Installation to comply with manufacturer's requirements, with all applicable codes and standards, and with City of Salem Department of Public Works requirements.
- B. The initial program of the controller shall be set by the Contractor to limit hours of spray feature operation to park operating hours as directed by the Owner's Representative, and the program shall be saved into the controller's long-term memory for future use.
- C. The Adjustable Pressure Regulator on the valve solenoid shall be set to a pressure appropriate to ensure proper functioning of the spray features.
- D. The Contractor shall provide all manuals, warranties, and other documentation, including a record of the installed program and the setting for the Pressure Regulator, as part of the as-built submission.

END OF SECTION



## **SECTION 32 90 00 PLANTING AND LAWNS**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions of the Contract and Division 1 General Requirements apply to the work under this Section.
- B. The Work of this section is integral with the whole of the Contract Documents and is not intended to be interpreted outside the context. This Section consists of the provision of all materials, labor, equipment and the like for the complete execution of all planting and lawn establishment and related items as indicated on the Drawings and/or as specified herein.
- C. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
- D. Contractor shall comply with all laws, regulations, and quarantines for agricultural and horticultural products.

#### **1.2 WORK INCLUDED**

- A. The principal Work of this Section consists of all planting work, including the provision of all materials, labor, equipment, services and incidentals necessary to complete all of the Work in accordance with the Contract Documents, and the like for the complete execution of all planting and related items, as indicated on the Drawings and/or as specified herein and includes, but is not limited to the following:
  - 1. Topsoil (loam borrow), Fine Grading and Loaming;
  - 2. Soil Additives;
  - 3. Sod Lawn;
  - 4. Plant Materials;
  - 5. Bark Mulch;
  - 6. Watering Bags for tree plantings;
  - 7. Maintenance and protection of new plantings and lawns, until final acceptance.

#### **1.3 SPECIAL CONDITIONS**

- A. No burning will be permitted on the project site.
- B. Prior to commencement of Work, the Contractor shall submit a plan for legal disposal of removed materials, acceptable to the Owner.

#### **1.4 REFERENCES**

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all other trades and all departments of the City of Boston and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:

1. Section 02 41 00 - Site Preparation and Demolition
2. Section 31 00 00 - Earthwork

#### 1.5 SUBMITTALS AND PRODUCT LITERATURE

- A. Prior to ordering the below listed materials, submit representative samples to Landscape Architect for selection and approval, in accordance with requirements of General Condition and special provisions as follows. Do not order material until Landscape Architect's approval has been obtained. Delivered materials shall closely match the approved samples.
- B. For each product or material used, submit manufacturer's product data, including installation instructions, use, limitations and recommendations.
- C. Submit the following samples:
  1. Topsoil: The Contractor shall provide a one (1) cubic foot representative sample from each proposed source for testing and approval as directed by the Landscape Architect. The Contractor shall deliver samples to testing laboratory prior to any loaming and shall have the testing report sent directly to the Landscape Architect, and pay all costs.
    - a. Mechanical and chemical (pH soluble salts) analysis shall be by public extension service agency or a certified private testing laboratory in accordance with the current standards of the Association of Official Agricultural Chemists and approved by Landscape Architect.
    - b. Report shall be submitted at least one (1) month before any loaming is to be done. Soil tests shall be for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts and Lead, and show acidity and USDA classification of the soil.
    - c. Report shall include recommendations based on the analysis and the proposed planting plan.
  2. Pine Bark Mulch: Submit a sample
  3. Submit material specifications and installation instructions where applicable attesting that soil additives, fertilizer, and lime, meet the requirements specified.
  4. Seed specifications.
  5. Submit information on hydroseeding machinery.

#### 1.6 PRODUCT DELIVERY AND HANDLING

- A. All topsoil, whether from stockpiles on site or loam borrow, shall be stored in piles not to exceed six feet in height, and shall not be handled when frozen or not in a friable condition.
- B. Preparation of Plants
  1. All precautions customary in good trade practice shall be taken in preparing plants for moving, and workmanship that fails to meet the highest standards will be rejected. All plants shall be dug immediately before moving unless otherwise specified. All plants shall be dug to retain as many fibrous roots as possible. Balled and burlapped plants shall have a solid ball of earth. Loose, broken or manufactured balls will be rejected. Balled and burlapped plants

shall be securely tied with stout rope to sturdy platforms equal in size to diameter of the upper half of the ball of earth.

C. Delivery

1. Plants shall be packed, transported and handled with utmost care to insure adequate protection against injury.
2. Each shipment shall be certified by State and Federal Authorities to be free from disease and infestation. Any inspection certificates required by law to this effect shall accompany each shipment invoice or order of stock and on arrival, the certificate shall be filed with the Landscape Architect in charge.
3. All plants shall be adequately protected from drying out and immediately after inspection shall be held in moist soil. Balled and burlapped plants shall be set on the ground and the balls covered with soil. Until planted, all material shall be properly maintained to the satisfaction of the Landscape Architect.
4. All grass seed shall be delivered in standard size bags of the vendor, showing weight, analysis, and name of vendor, and shall be delivered and stored in such manner that its effectiveness will not be impaired. All seed shall be delivered and handled so as to meet all product requirements at the time it is put in place.

D. Inspection

1. Inspection may be made before digging if the Landscape Architect directs, but no Plant Material shall be planted by the Contractor until inspected by the Landscape Architect at the site of the work. Cost of inspection shall be included in the price bid. All rejected material shall be immediately removed from the site and replaced with acceptable material at no additional cost. Final inspection shall be made upon completion of the contracts.

1.7 DEFINITIONS

A. The following related items are included herein and shall mean:

1. SSHB: The Commonwealth of Massachusetts, Department of Public Works, Standard Specifications for Highways and Bridges, latest edition
2. AOAC: Association of Official Agricultural Chemists
3. AAN: American Association of Nurserymen

1.8 CERTIFICATE OF ACCEPTANCE AND GUARANTEE FOR PLANTINGS

- A. Upon completion of all plantings, and following written verification by the Landscape Architect, the Contractor shall maintain all plantings and lawns for ninety (90) days or through the end of the growing season, whichever comes later. After the maintenance period, the Contractor shall request of the Landscape Architect, in writing, an inspection to determine whether the plant material is acceptable. If the plant material and workmanship are acceptable, written notice will be given by the Landscape Architect to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.
- B. If a substantial number of plants are sickly or dead at the time of inspection, as specified in paragraph 'D' below, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly

removed from the project. Replacements shall conform in all respects to the Specifications for new plants and shall be planted in the same manner.

- C. Plants shall be guaranteed for a period of one (1) year after inspection and acceptance and shall be alive and in satisfactory growth at the end of the guarantee period. The sum of 10% of the total cost of the planting shall be retained and paid to the Contractor after replacements have been made, one (1) year from acceptance of original planting.
- D. All lawns to be guaranteed for one (1) year from date of substantial completion. Any lawn replacement shall come with a new one (1) year guarantee
- E. At the end of the guarantee period, inspection will be made again. Any plant or lawn required under this contract that is dead or unsatisfactory shall be removed from the site. Each plant shall show at least 75% healthy growth and shall have the natural character of the plant of its species in accordance with American Nurserymen's Association Standards. These plants shall be replaced during the normal planting season, until the plants live through one year. A final inspection for acceptance will be made after the replacement plantings have lived through one (1) year.
- F. All replacements shall be plants of the same kind and size specified in the Plant List. The cost shall be borne by the Contractor.

#### 1.9 EXAMINATION OF SITE CONDITIONS

- A. All areas to be planted shall be inspected by the Contractor before starting work and any defects shall be reported to the Landscape Architect prior to beginning this work. The commencement of work by the Contractor shall indicate his acceptance of the areas to be planted and he shall assume full responsibility.

#### 1.10 ENVIRONMENTAL REQUIREMENTS

- A. Contractor shall not work on or with soils when they are dry, wet, or frozen. Field Test: Form soil in palm of hand; if soil retains shape and crumbles upon touching, then it may be worked (if it will not retain its shape, it is too dry; if it does not crumble, it is too wet). Landscape Architect shall be final authority on condition of soil.

#### 1.11 PROTECTION

- A. The Contractor shall be liable for any damage to property caused by the work, and all areas disturbed shall be returned to their original condition to the satisfaction of the Landscape Architect. During all work of this section, the Contractor shall protect all site improvements from contact with agricultural chemicals, soil amendments, and fertilizers.
- B. The Contractor shall provide all erosion, sedimentation, and environmental controls necessitated by site and governing codes.
- C. Damage no plant to remain by burning, by pumping of water, by cutting of live roots or branches, or by any other means. No plant to be saved shall be used for crane stays, guys, or their fastenings. Vehicles shall not be parked within the dripline of trees to remain, or wherever damage may result to trees to be saved. Construction material shall not be stored beneath trees to be saved.

#### 1.12 QUALITY ASSURANCE

- A. Qualifications: Planting shall be performed only by a certified landscape contractor with experienced workmen familiar with planting procedures and under the

supervision of a qualified supervisor. Contractor shall have a minimum of five (5) years experience with Work similar in nature and scope to this Section.

### 1.13 WARRANTIES

- A. All trees to be guaranteed for one (1) year from date of substantial completion. Any replacement material shall come with a new one (1) year guarantee.
- B. Manufacturers shall provide their standard guaranties for work specified in the Section. However, such guaranties shall be in addition to and not in lieu of all other liabilities which manufacturers and Contractor may have by law or by other provisions of the Contract Documents.

## PART 2 - PRODUCTS

### 2.1 TOPSOIL (LOAM BORROW)

- A. Loam shall be a "fine sandy loam" or a "sandy loam" determined by mechanical analysis and based on the USDA classification system. It shall be of uniform composition, without admixture of subsoil. It shall be free of stones greater than one inch, lumps, plants and their roots, debris and other extraneous matter over one inch in diameter or excess of smaller pieces of the same materials as determined by the Landscape Architect. It shall not contain toxic substances harmful to plant growth. It shall be obtained from naturally well drained areas which have never been stripped before and have a history of satisfactory vegetative growth. Loam shall contain not less than 4% nor more than 10% organic matter as determined by the loss on ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 230 F, plus or minus 9.
- B. Loam shall provide a rich, organic layer of planting soil that is also well-drained. Loam shall be a mixture of topsoil, compost and sand.
- C. Loam shall have an acidity range of pH 5.6 to pH 6.5.
  - 1. The amount of either sulfur or limestone required to adjust the planting loam to the proper pH range (above) shall be determined by the Landscape Architect on the basis of soil tests as specified herein.

### 2.2 SOIL ADDITIVES

- A. Commercial fertilizer, peat, humus or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the Landscape Architect.
  - 1. Commercial fertilizer shall be a product complying with the State and United States Fertilizer Laws. Deliver to the site in the original unopened containers which shall bear the manufacturer's Certificate of Compliance covering analysis which shall be furnished to the Landscape Architect. At least 50% by weight of the Nitrogen content shall be derived from organic materials. Fertilizer shall contain the percentages of weight of ingredients as follows, or as recommended by the soil analysis when that is significantly different:

	<u>Nitrogen</u>	<u>Phosphorus</u>	<u>Potash</u>
For all plants	10%	10%	10%
- B. Ground dolomite limestone shall be an approved agricultural limestone containing not less than 85% of total calcium or magnesium carbonates. Limestone shall be

ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20 mesh sieve.

- C. Humus shall be natural humus, reed peat or sedge peat. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C., latest edition, the acidity range shall be approximately 5.5 pH to 7.6 pH and the organic matter shall be not less than 85% as determined by loss on ignition. The minimum water absorbing ability shall be 200% by weight on an oven-dry basis.
- D. Peat moss shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue and other foreign matter. It shall have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the methods of testing of A.O.A.C., latest edition. Its water absorbing ability shall be a minimum of 1,100% by weight on an oven-dry basis.
- E. Superphosphate: Superphosphate shall be composed of finely ground phosphate rock as commonly used for agricultural purposes containing not less than 18% available phosphoric acid.
- F. Water retention gel shall be used. Mix with soil per manufacturer's directions.

## 2.3 GRASS SEED

- A. Grass seed for lawn areas shall be fresh, clean, dry, new crop seed, which meets the standard of the Federal Seed Act. Seed shall be mixed in proportion by weight and testing the minimum percentages of purity and germination. Seed shall be nursery grown seed composed of grasses grown from the following seed mixtures.

Lawn areas:

% by Weight	Common Name of Grass	% Purity	% Germination
35	Creeping Red Fescue	97	85
15	Pennifine Perennial Rye	98	90
50	Kentucky Bluegrass	96	85

- B. Weed seed shall not exceed 0.5% by weight. Bluegrass cultivar shall be Midnight, Ram I, Merit, Baron, or approved equal. Fescue cultivar for lawn area shall be Jamestown II, Chewings fescue, Reliant hard fescue, Warwick or SR5000 Chewings fescue or approved equal
- C. Seed mix shall be by: Lesco, Inc., Waltham, MA (ph. 1.781.893.6660), Northeast Nursery, Inc., Peabody, MA (ph. 1.978.535.6550), or Pacific Northwest Seeds, Waltham, MA., (ph. 1.781.694.9011).

## 2.4 PLANT MATERIALS

- A. The Contractor shall furnish and plant all plants shown on the Drawings, as specified, and in quantities as indicated in the Drawings. No substitutions will be permitted. All plants shall be nursery grown, unless specifically authorized to be collected.
- B. Plants shall be in accordance with the USA Standard for Nursery Stock of the American Association of Nurserymen, latest edition.
- C. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. Only plant stock grown within

the hardiness Zones 3 through 6, as established by the United States Department of Agriculture, will be accepted. The Contractor's suppliers must certify in writing that the stock has actually been grown under Zone 6 or hardier conditions. Plants not so certified will not be accepted.

- D. Plants delivered by truck and plants requiring storage on site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves or buds; plant balls shall be firmly bound, unbroken, reasonably moist to indicate watering prior to delivery and during storage and shall be free from fresh scars and damage in handling. The Contractor shall reject such plants at time of delivery by the nursery/supplier unless such plants were selected by the Landscape Architect as indicated by tags and seals. No plant material from cold storage will be accepted.
- E. The root system of each shall be well provided with fibrous roots. All parts shall be moist and show active green cambium when cut. They shall be sound, healthy, and vigorous, well-branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae.
- F. All plants must be moved with the root systems as solid units with balls of earth firmly wrapped with untreated eight (8) ounce burlap, firmly held in place by a stout cord or wire. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous and root feeding system necessary for the healthy development of the plant. No plant shall be accepted when the ball of earth surrounding its roots has been badly cracked or broken preparatory to or during the process of planting or after the burlap, staves, ropes or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants that cannot be planted at once must be heeled in by setting in the ground and covering the balls with soil and then watering them.
  - 1. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.
- G. The caliper of the trees shall be not less than the minimum size designated. Take caliper measurement six inches (6") above ground level up to and including four (4") caliper size and twelve inches (12") above ground for larger sizes. The trunk of each tree shall be a single trunk growing from a single unmutilated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sunscald, frost cracks, or wounds resulting from abrasions, fire or other causes. No pruning wounds shall be present having a diameter exceeding two inches (2") and such wounds must show vigorous bark on all edges. Plants shall not be pruned prior to delivery.
- H. Groundcover plants, bulbs and perennials shall be of size, age and / or condition listed in the Plant List. Plants shall be healthy, free of insects and diseases. Groundcover plants shall be potted or in sod. Perennials shall be potted.
  - 1. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.
- I. Plants delivered by truck and plants requiring storage on site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves or buds; plant balls should be firmly bound, unbroken, reasonably moist to indicate watering prior to delivery and during storage and tree trunks should be free from fresh scars and damage in handling. No trees with double-leaders or twin-heads shall be acceptable without the written approval of the Landscape Architect. The

Contractor shall reject such plants at time of delivery by the nursery/supplier unless such plants were selected by the Landscape Architect as indicated by tags and seals. No plant material from cold storage will be accepted.

## 2.5 BARK MULCH

- A. Mulch shall be undyed pine bark aged a minimum of six (6) months. The mulch shall be naturally dark brown in color, free of chunks and pieces of wood thicker than one-quarter inch (1/4"). Mulch must be free of stringy material over three inches (3") in length and shall not contain, in the judgment of the Landscape Architect, an excess of fine particles.
- B. Mulch shall be 98% organic matter with the pH range of 3.5 to 4.5. Moisture content of packaged material shall not exceed 35%.
- C. Submit sample for the Landscape Architect's approval.

## 2.6 WATER

- A. The Contractor shall be responsible to furnish his/her own supply of water to the site at no extra cost. If possible, the Owner shall furnish the Contractor upon request with an adequate source and supply of water at no charge. However, if the Owner's water supply is not available or not functioning, the Contractor shall be held responsible to furnish adequate supplies at his own cost. All work injured or damaged due to the lack of water, or the use of too much water, shall be the Contractor's responsibility to correct. Water shall be free from impurities injurious to vegetation.

## 2.7 WATERING BAGS

- A. The Contractor shall furnish, maintain, and keep filled Portable Drip Irrigation System (PDIS) water bags (Treegator Bags or Approved Equal) for all new tree plantings, to ensure a consistent and even supply of water throughout the maintenance period.
- B. PDIS water bags shall be UV-treated, reinforced polyethylene bags with a nylon toothed zipper extending from top to bottom of bag, capable of holding a minimum of 20 gallons of water, constructed so that they can be attached to the trees, which provide water from a minimum of three drip points.

## 2.8 PROTECTIVE FENCING

- A. Protect existing trees with a barrier constructed of wooden (2x4)'s as shown in the Drawings.

# PART 3 - EXECUTION

## 3.1 FINE GRADING AND LOAMING

- A. After existing pavement has been removed, existing vegetation has been either removed and stockpiled for transplant or removed, scarify subgrade, remove compacted areas and then spread loam mix.
- B. After the areas to be loamed have been brought to subgrade, and immediately prior to dumping and spreading the loam, the subgrade shall be loosened by disking or rototilling to a depth of at least three inches (3") to permit bonding of the loam to the subsoil. Remove all stones greater than two inches (2") and all debris or rubbish. Such material shall be removed from the site.



- C. Loam shall be placed and spread over approved areas to a depth sufficiently greater than six inches (6") so that after natural settlement and light rolling, the completed work will conform to the lines, grading and elevations indicated. Supply additional loam, after testing and approval, as may be needed to give the specified depths and finished grades under the contract without additional cost to the Owner.
- D. No subsoil or loam shall be handled in any way if it is in a wet, dry, or frozen condition.
- E. Sufficient grade stakes shall be set for checking the finished grades. Grades shall be established which are accurate to one-tenth (1/10th) of a foot either way. Connect contours and spot elevations with an even slope.
- F. After lime, fertilizer, and humus if required have been spread and incorporated into the bed, it shall be carefully prepared by scarifying or harrowing and hand raking. All large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter, and stones over one inch (1") in diameter shall be removed from the loam. Loam shall also be free of smaller stones in excessive quantities as determined by the Landscape Architect. If lawn is to be hydroseeded, lime and fertilizer may be applied with seed.
- G. The whole surface shall then be rolled with a hand roller weighing not more than 100 lbs. per foot of width. During the rolling, all depressions caused by settlement or rolling shall be filled with additional loam and the surface shall be regraded and rolled until presenting a smooth and even finish to the required grade.

### 3.2 SOIL ADDITIVES

- A. Follow all recommendations for soil additives as determined by an approved Soil Testing Laboratory, and all manufacturers' instructions pertaining to additives.

### 3.3 HYDROSEEDING

- A. Limit of seeding shall be shown on the Drawings, in addition to all existing lawn areas on the site disturbed in the process of the Work and not replaced with another material, whether noted on the Drawings or not. All areas on the plan shall be loamed and seeded only after written approval of the finished grading or as directed by the Landscape Architect. All seeded areas are to be hydroseeded.
- B. The actual planting of seed shall be done only during periods within this season which are normal for such work as determined by weather conditions and be accepted practice in this locality. At his/her option and on his/her responsibility the Contractor may plant seed under unseasonable conditions without additional compensation, but subject to the Architect's approval as to time and methods.
- C. Planting may be done between August 15 and October 15, or between April 15 and June 15.
- D. Soil additives shall be spread and thoroughly incorporated into the layer of loam and the upper 1 inch of the underlying subsoil by harrowing or other methods approved by the Architect. The following soil additives shall be incorporated:
  - 1. Ground limestone as required by soil analysis to achieve a pH of 6.0 to 6.5.
  - 2. Fertilizer as required by soil analysis.
  - 3. Superphosphate at the rate of 20 lbs. Per 1,000 square feet.
  - 4. Humus as required by soil analysis.

- ### 3.4 PLANTING

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Landscape Architect's representative during the period of time required to select and tag the plant material, at no extra cost to the Owner.

3. Plants shall be selected by the Landscape Architect at the place of growth for conformity to specification requirements as to quality, size, and variety. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work. Cost of replacement shall be borne by the Contractor.
  4. Plant pits shall be circular pits with sloping sides, except for plants specifically indicated to be planted in beds. Holes for trees and shrubs shall be at least two feet (2') greater in diameter than the ball, and shall be at least three (3) times the diameter of the ball for trees where space allows, and shall be of a depth that maintains the plant's prior relation to finish grade. Bottom of pit shall be flat or deepest at the perimeter. If pit is dug deeper than required to maintain plant's relation to finish grade, then soil replaced under rootball shall be compacted to prevent subsequent settling of tree. If soil at bottom of pit is impermeable or poorly drained, pit shall be dug one extra foot, backfilled with planting soil mix, and compacted before installing plant.
  5. After excavation, fill pit twice successively with water. If water does not drain out of pit at a minimum of two inches per hour, provisions for drainage must be made. Contractor shall document drainage test results for review by Landscape Architect.
  6. Topsoil, organic material and fertilizer mix for planting soil mix shall be thoroughly premixed in the proportions of one (1) part of organic material with four (4) parts of topsoil together with fertilizer at the rate determined by soil test. The organic material to be added shall be as directed by the Landscape Architect. One part of existing soil shall be mixed with two parts of planting soil mix for use in backfilling around rootball. Maintain at all times during the planting operations one or more stockpiles of approved quality planting soil mix.
  7. Install slow release fertilizer packets per manufacturers' directions with each newly planted tree.
  8. All plant roots and earth balls must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation and on the ground until the final planting. The plants shall be planted in the center of the holes and at the same depth as they previously grew. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structures. Remove burlap, rope, wires, etc., from the sides and tops of root balls. Do not pull burlap out from under root balls. Any girdling roots or badly damaged roots must be cleanly pruned off. Planting soil mix shall be backfilled in layers of not more than six inches (6") and each layer watered sufficiently to settle before the next layer is put in place. Enough planting soil mix shall be used to bring the surface to finish grade when settled. A saucer shall be formed around each plant at a depth of six inches (6") for trees.
- D. All plants shall be flooded with water twice within the first 24 hours of the time of planting and all plants during the maintenance period shall be watered at least twice each week. At each watering the soil around each plant shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Landscape Architect, the required watering may be reduced. Trees will require a minimum of ten (10) gallons of water each.

- E. Mulch material shall be placed in a 3 foot saucer around each tree to a depth of three inches (3") after settlement, not later than one (1) week after planting. No mulch shall be applied prior to the first watering of plant materials. Mulch shall be pulled back two inches (2") from base of shrubs and four inches (4") from trees.
- F. In the event that rock or underground construction work or obstructions are encountered in any plant pit or bed excavation work to be done under this Contract, alternate locations may be selected by the Landscape Architect.
- G. Absolutely no debris may be left on the site. Excavated material shall be removed as directed by the Landscape Architect. Repair any damage to site or structures to restore them to their original condition as directed by the Landscape Architect, at no cost to the Owner.

### 3.5 BARK MULCH

- A. Contractor shall install approved bark mulch material to the limits and depths shown on the Drawings and specified herein.

### 3.6 MAINTENANCE AND PROTECTION OF LAWNS

- A. During construction, Contractor is responsible for mowing all of the existing lawn within the Limit of Work shown on the drawings. This includes the portion of lawn within the no cut / no fill zone.
- B. Maintenance shall begin immediately after an area is planted and shall continue until final acceptance. The minimum maintenance period shall be ninety (90) calendar days after completion of all plant installations. Watering and mowing shall be done by the Contractor for the full 90 days. If 90 day period has not elapsed before watering, mowing, and maintenance must stop due to cold weather, the remaining days of the maintenance period will be fulfilled when the growing season begins the following spring.
- C. Maintenance shall consist of keeping the grass in a healthy growing condition and shall include replacements, watering, weeding, cultivating, fertilizing, re-seeding, and mowing,
- D. Contractor shall warrantee lawn for one (1) year after acceptance.
- E. Protection: Seeded areas shall be protected against trespassing and damage of any kind. This shall include the provision and installation of approved temporary fencing if necessary. If any lawn becomes damaged or injured by vandalism or neglect prior to provisional acceptance, the Contractor shall treat or replace them at his own expense.
- F. Watering of Lawn Areas:
  - 1. First week: The Contractor shall provide all labor and arrange for all watering necessary for rooting of the seed. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantity to maintain moist soil to a depth of at least 4 inches. Watering shall not be done during the heat of the day to help prevent wilting.
  - 2. Second and Subsequent weeks: The Contractor shall water the lawn as required to maintain adequate moisture, until final acceptance, in the upper 4 inches of soil.
  - 3. Watering shall be done in a manner that will provide uniform coverage, prevent erosion due to application of excessive quantities over small areas,

and prevent damage to the finished surface by the watering equipment. The Contractor shall furnish sufficient watering equipment to apply one (1) complete coverage to the lawn areas in an eight (8) hour period.

- G. Mowing: The first mowing of lawn areas shall not be attempted until the seed is firmly rooted and secure in place. Not more than 40% of the grass leaf shall be removed by initial or subsequent mowings. Grass height shall be maintained between 2 inches and 2-1/2 inches unless otherwise specified. Thereafter grass shall be maintained at 2 inches until acceptance.
- H. Fertilizing: A second application of fertilizer, as specified herein, shall be applied approximately 6 weeks after the seed has been installed as directed by the Landscape Architect. Fertilizer shall be applied at the rate of 10 pounds per 1,000 square feet.
- I. Erosion Control: Contractor is responsible for soil stabilization while lawns are being established. Erosion control methods include mulching and installation of biodegradable mesh.

### 3.7 MAINTENANCE AND PROTECTION OF NEW PLANTINGS

- A. Maintenance shall begin immediately after each plant is planted and shall continue for a minimum of ninety (90) days or until the final acceptance of planting. The minimum maintenance period shall be ninety (90) calendar days after completion of all plant installations. Watering shall be done by the Contractor for the full ninety (90) days.
- B. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include watering, weeding, cultivating, re-mulching, reseeding, tightening and repairing of guys, removal of dead material, resetting plants to proper grades or upright position and maintaining the planting saucer.
  - 1. All plants during the maintenance period shall be watered at least twice each week. At each watering the soil around each plant shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Landscape Architect, the required watering may be reduced. Trees shall be watered using watering bags, kept filled and used according to the manufacturer's instructions.
  - 2. Individual tree pits shall be kept free of weeds, and mulch shall be replaced as required to maintain a three inch (3") layer of mulch. Beds and individual pits shall be neat in appearance and maintained to the lines originally laid out.
  - 3. Plants that die during the maintenance period shall be replaced as directed by the Landscape Architect.
  - 4. Spraying for both insect pests and diseases shall be included during the maintenance period as required and as directed by the Landscape Architect.
  - 5. A second application of fertilizer, as specified herein, shall be applied approximately 6 weeks after the seed has been installed as directed by the Landscape Architect. Fertilizer shall be applied at the rate of 10 pounds per 1,000 square feet.
- C. Contractor shall guarantee plant materials for one (1) year. Contractor shall also guarantee any replacement plant materials for one (1) year.
- D. Protection: Planting areas and plants shall be protected against trespassing and damage of any kind. This shall include the provision and installation of approved

temporary fencing if necessary. If any plants become damaged or injured by vandalism or neglect prior to provisional acceptance, the Contractor shall treat or replace them at his own expense.

### 3.8 FINAL ACCEPTANCE OF LAWN AREAS AND OTHER PLANTINGS

- A. Contractor is to maintain all lawn upon installation. Ninety day maintenance period begins after all lawn has been planted. After the 90 day maintenance period, lawn areas will be reviewed for final acceptance.
- B. Conditions of Final Acceptance
  - 1. Lawn acceptance shall be given for entire completed lawn area. No partial acceptance shall be given.
  - 2. Lawns shall exhibit uniform, thick, well-developed stand of grass. Lawn areas shall have no bare spots.
  - 3. Any plant required under this contract that is dead or unsatisfactory shall be removed from the site. Each plant shall show at least 75% healthy growth and shall have the natural character of the plant of its species in accordance with American Nurserymen's Association Standards.
    - a. These plants shall be replaced during the normal planting season, until the plants live through one year. A final inspection for acceptance will be made after the replacement plantings have lived through one (1) year.
    - b. All replacements shall be plants of the same kind and size specified in the Plant List. The cost shall be borne by the Contractor.
  - 4. No lawn areas or plant beds shall exhibit signs of damage from erosion, washouts, gullies, or other causes.
  - 5. Pavement surfaces and site improvements adjacent to lawn areas and plantings shall be clean and free of spills from placing or handling of loam borrow and seeding/planting operations.
- C. Inspection and Final Acceptance
  - 1. Upon completion of 90 day maintenance period, the Contractor shall request the Landscape Architect's review to determine if work is acceptable.
    - a. If work is not accepted, Landscape Architect will issue a written list of outstanding work. Maintenance period to be extended until completion of work.
    - b. Contractor shall notify Landscape Architect when outstanding work is completed and ready for review. When work is complete, as determined by Landscape Architect, a letter of Final Acceptance will be issued.

END OF SECTION

## **SECTION 33 10 00 WATER UTILITIES**

### **PART 1 - GENERAL**

#### **1.1 GENERAL REQUIREMENTS**

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.

#### **1.2 WORK INCLUDED**

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. The Contractor shall pay for all costs and fees related to connecting the utilities and drainage systems to existing services and shall file all applications, details, and drawings required by the local authority having jurisdiction.
- C. To be included, but not limited to the following:
  - 1. New above-grade Water Cabinet, to house hose bib, irrigation system, backflow prevention devices, meter, and any other components required by code or by the Salem Water Department to be above grade.
  - 2. New water service lines as needed to new splash pad features, new drinking fountain with bottle filler, and new irrigation system.

#### **1.3 REFERENCES**

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
  - 1. Section 02 41 00 – Demolition and Site Preparation
  - 2. Section 05 50 00 – Metal Fabrications
  - 3. Section 31 00 00 – Earthwork
  - 4. Section 32 10 00 – Bases, Ballasts, Paving, and Edging

#### **1.4 SUBMITTALS**

- A. Shop Drawings and Samples
  - 1. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 1.

#### **1.5 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
- B. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.
- D. The Contractor shall be solely responsible for all materials stored on the site once delivered. Any materials left unsecured at the job site shall be solely at the contractor's own risk.

#### 1.6 REFERENCE STANDARDS AND SPECIFICATIONS

- A. Perform work strictly as required by rules, regulations, standards, codes, ordinances, and laws of local, state, and federal government, and other authorities that have lawful jurisdiction.
- B. Special Attention shall be paid to the latest edition of the following standards:
  - 1. City of Salem Department of Public Works Regulations and Standards
  - 2. American Association of State Highway and Transportation Officials: AASHTO
  - 3. Standard Specifications for Highway Bridges SSHB
  - 4. American National Standards Institute ANSI
  - 5. American Society for Testing & Materials ASTM
  - 6. American Water Works Association AWWA
  - 7. Commonwealth of Massachusetts Highway Department MHD
- C. The above listed codes and standards are referenced to establish minimum requirements; wherever this Section requires higher grades of materials and workmanship than required by the listed codes and standards, this Section shall apply. In the event a conflict occurs between the above listed codes and standards and this Section, the more stringent requirement shall govern.

#### 1.7 MAINTENANCE KIT

- A. At the completion of construction, the Contractor shall provide to the City Department of Public Works, Parks Maintenance Division, a Maintenance Kit containing all touch-up paint, maintenance instructions, spare parts, and other maintenance materials provided by the manufacturers of all improvements.
- B. The Maintenance Kit shall be delivered in a single container clearly labeled with the Park Name, and each item shall be identified as to the source.

#### 1.8 PERMITS AND FEES

- A. Obtain all necessary permits and licenses, file necessary plans and pay all fees for permits and inspections. Permit fees are the responsibility of the Contractor as part of his bid, as is all coordination with the local utilities. Contractor is also responsible for obtaining any site specific utility requirements for this project prior to the start of construction and notifying local utilities for all inspections prior to backfilling, etc.



## PART 2 - PRODUCTS

### 2.1 EMBEDMENT MATERIALS

- A. Crushed stone fill shall consist of clean, crushed stone conforming to that specified in Section 02200, EARTHWORK.

### 2.2 EMBEDMENT MATERIALS

- A. Ductile iron water pipe shall use materials defined in AWWA C 600, Sec. 3.5, Backfilling.
- B. Crushed stone fill shall consist of clean, crushed stone conforming to that specified in Section 31 00 00, EARTHWORK.
- C. Fill for water service lines shall be clean washed sand.

### 2.3 NEW UTILITY CABINET AND METER

- A. Cabinet Fabrication shall be as described in Section 05 50 00 – Metal Fabrications.
- B. Water Meters shall be as directed by the Salem Public Works Department. The Contractor shall provide all coordination and pay all fees associated with the meter installations. The meters shall be mounted to the respective Cabinets and readable from the exterior.
- C. Shop Drawings and Diagrams
  - 1. Provide Manufacturer's Cut Sheets or Shop Drawings for all components and cabinet, and plumbing and wiring diagrams, including detailing of proposed hangings and supports, with all features clearly labeled, for review and Approval by the Landscape Architect, the Owner's Representative, and the City of Salem Department of Public Works.
  - 2. Water Cabinet and Water Vault Required Component Submittals:
    - a. Plumbing Diagrams and Cabinet Shop Drawings showing all clearances, connections, and components for review by Department of Public Works;
    - b. Pipes and tubing (Copper, CLDI, PVC, and polybraid);
    - c. Backflow Preventers;
    - d. Pressure Regulators as needed;
    - e. Meter and mounting;
    - f. Hose Bib;
    - g. Irrigation Controller and fittings, including electrical connection, control box, and mounting;
    - h. Irrigation Controller and fittings, including electrical connection, control box, and mounting for the Splash Pad;
    - i. GFI Electrical Receptacle (2-outlet) In water cabinet;
    - j. Straps and clamps for mounting.

### 2.4 WATER SERVICE PIPING

- A. Service lines two 2 inches or smaller shall be copper water tubing, Type K, for underground water service and shall be in accordance with ANSI/AWWA C800, latest issue.

- B. Type K copper tubing material shall be in conformance with ASTM B88.
- C. Water service fittings including couplings and adapters, check valves and service saddles shall be in conformance with ANSI/AWWA C800, "Underground Service Line Valves and Fittings."
- D. Joints in copper tubing shall be made with three part compression couplings, flared tube fittings, or an approved equal.
- E. Service lines greater than two [2] inches shall be ductile iron pipe.

## 2.5 CORPORATION STOPS/CURB STOPS

- A. Corporation stops shall be bronze or brass with ground keys, threaded to receive compression-type fittings. The stop shall be of the size shown on the Contract Drawings or as required by the Public Works Department if not shown, and shall be as manufactured by Mueller, Red Head, Ford or equal.
- B. Curb stops shall be Mueller Oriseal II curb stop or Approved Equal, threaded to receive compression-type fittings.
- C. Curb boxes shall be cast iron improved extension type with arch pattern base. Covers shall be held in place with bronze bolts and the word "Water" shall be cast into the cover. Curb box shafts shall have a minimum inside diameter of 2-1/2 inches. Curb boxes shall be as manufactured by Mueller Corp. or Approved Equal.

## PART 3 - EXECUTION

### 3.1 MATERIALS AND WORKMANSHIP

- A. Work shall be executed in a workmanlike manner and shall present a neat, rectilinear and mechanical appearance when completed. Do not run raceway, pipe, or service exposed unless shown exposed on Drawings.
- B. Material and equipment shall be new and installed according to manufacturer's recommended best practice so that complete installation shall operate safely and efficiently.

### 3.2 CONTINUITY OF SERVICES

- A. Do not interrupt existing services without Owner's, Utilities', and Landscape Architect's approvals.

### 3.3 WATER SERVICES

- A. Copper Service Pipe: Care shall be exercised in placing and laying of service line to be sure that the pipe does not have kinks or sharp bends and to assure against its being in contact with sharp stones or ledge which would cause damage to the pipe. At least 6 inches of sand shall be placed adjacent to, under, and above the pipe, and no stone larger than 2 inches shall be placed over the pipe until the depth of backfill above the pipe is in excess of 1 foot.
- B. Corporation Cock: Corporation cock (if required) shall be of a size equal to the size of the service pipe. Taps to the main shall be threaded and shall be made at the horizontal diameter of the main. The tap made in the main by means of a tapping machine manufactured for this purpose and supplied by the Contractor. Corporation cock shall be screwed firmly into the water main with the key upward and the inlet

end projecting at least 1/8-inch beyond the inside face of the main. Corporation cock shall be left in the on [open] position.

- C. Curb Stop and Curb Boxes (if required) shall be of a size equal to the size of the service pipe and shall be installed in the locations shown on the Drawings or as ordered by the Landscape Architect. The boxes shall be set in a true vertical position and flush with the adjoining ground.
- D. Ductile Iron Service Pipe: Each ductile iron service pipe (if required) shall be valved with gate valve where and as directed, and a valve box shall be installed over the valve, all as specified elsewhere in these Specifications. Connections of service lines at the main shall be made with appropriate size tees.

### 3.4 WATER SERVICES TESTING

- A. All portions of the water system shall be tested for leakage. System may be tested by the use of either water or low-pressure air.
- B. General test requirements.
  - 1. Piping shall be adequately restrained against movement before testing. Pressure line shall have thrust blocks installed and the concrete shall have attained full design strength before test pressure is applied to the line.
  - 2. Piping system shall be flushed clean, and sediment, scale, dirt, and debris removed before piping is tested.
  - 3. Adequate provision shall be made for carrying off flushing water without causing erosion or other damage.
  - 4. Piping shall be tested before joints are concealed or made inaccessible.
  - 5. Tests shall be made in the presence of an Inspector of the authority having jurisdiction.
- C. Notice of tests shall be made in writing to the Landscape Architect and the Salem DPW, and received by them not less than five days before the date of test.
- D. Pressure and Leakage Tests.
  - 1. Pressure pipe shall be given combined pressure and leakage tests in sections of acceptable length.
  - 2. The Contractor shall furnish and install suitable temporary testing plugs or caps; all necessary pressure pumps, pipe connections, meters, gages, and other necessary equipment; and all labor required.
  - 3. Unless it has already been done, the section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations and do the necessary backfilling and shall make the necessary taps at such points, and shall plug said holes after completion of the test.
  - 4. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
  - 5. The meter and gage shall be installed by the Contractor and shall be kept in use during the test in such a manner that all water entering the water main under test will be measured and the pressure in the water main indicated.
  - 6. The pressure test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the

gage location) to a pressure of 125 lbs. per sq. in. If the Contractor cannot achieve the specified pressure and maintain it for a period of one hour with no additional pumping, the section shall be considered as having failed to pass the test.

7. Following a successful pressure test, or concurrently therewith, the Contractor shall make a leakage test by metering the flow of water into the pipe while maintaining in the watermain a pressure equal to the specified test pressure. If the average leakage during the 4-hour period exceeds a rate of 20 gallons per 24 hours per inch of inside diameter per mile of pipeline, the section shall be considered as having failed the leakage test.
  8. If the section shall fail to pass the pressure test, the leakage test, or both, the Contractor shall do everything necessary to locate, uncover, and repair or replace defective pipes, fittings, or joints, all at his own expense, and without extension of the time for completion of the work. Additional tests and repairs shall be made until the section passes the specified tests.
  9. All joints within vaults shall have no visible leakage. Joints from which water continues to run or squirt in an active manner will not be accepted.
  10. Upon successful completion of the tests, plugs or caps installed for the testing shall be removed.
  11. If, in the judgment of the Landscape Architect, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure shall be made as required and accepted, but in any event the Contractor shall be responsible for the ultimate tightness of the line within the above leakage and pressure requirements.
- E. Before submitting system for final approval of the authorities having jurisdiction, the Contractor shall submit to the Architect a written statement stating that the work has been completed in accordance with the Specifications and Drawings.
- F. Promptly following satisfactory completion of leakage testing, a report fully describing test procedures and listing test results shall be submitted to the Architect and to governmental agencies having jurisdiction. The Contractor's Superintendent shall sign the report.

### 3.5 WATER SERVICES DISINFECTION

- A. The Contractor shall disinfect the lines carrying potable water. The work shall be supervised or performed by an approved chemical testing laboratory at the Contractor's cost. Test results shall be sent to the Architect.
- B. The Contractor shall furnish all equipment and materials necessary to do the work of disinfection, and shall perform the work in accordance with the procedure outlined in AWWA C601, except as otherwise specified herein.
- C. The dosage shall be such so as to produce a chlorine concentration of not less than 10 ppm after a contact period of not less than 24 hours.
- D. After treatment, the pipeline shall be flushed with clean water until the residual chlorine content does not exceed 0.2 ppm.
- E. During the disinfection period, care shall be exercised to prevent contamination of water in existing mains.

END OF SECTION

## **PART 4. EVALUATION AND SELECTION**

### **4.1 RULE FOR AWARD**

Any contract that results from this procurement, shall be awarded to the responsive and responsible bidder, offering the lowest price for the scope of work described herein.

## **PART 5. TERMS AND CONDITIONS**

### **5.1 TERM OF CONTRACT**

It is expected that work will commence on or around November 6, 2017 and must be substantially complete by June 30, 2018.

### **5.2 ASSIGNMENTS AND SUBCONTRACTING**

The selected vendor shall not assign, sell, subcontract or otherwise transfer any interest in this contract without the prior written consent of the City. The successful bidder shall be fully responsible to the City for the acts and omissions of his subcontractor, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

### **5.3 PAYMENT**

The City shall make every effort to furnish payment within thirty (30) days of receipt of a reasonably detailed invoice. Any invoice received must reference the contract number. Nothing contained in the contract shall create any contractual relation between any subcontractor and the City of Salem. The Successful Bidder shall cause appropriate provision to be inserted in all subcontracts relative to the work to require compliance by each subcontractor with the application provisions of the Contract for the improvements embraced in the site preparation.

Invoicing for all work must be done weekly and must be accompanied by copies of original bills for material used. Billing must separate labor and itemize materials

**Weekly payroll record reporting forms (prevailing wage) and signed statement of compliance (form attached) must be submitted with all billing.**

### **5.4 INSURANCE REQUIREMENTS**

General- The Vendor shall before commencing performance of the Contract be responsible for providing and maintaining insurance coverage in force for the life of the Contract of the kind and in adequate amounts to secure all of the obligations under the Contract and with insurance companies licensed to write insurance in the Commonwealth of Massachusetts. All such insurance carried shall not be less than the kinds and amounts designated herein, and the Vendor agrees that the stipulation herein of the kinds and limits of coverage shall in no way limit the liability of the Vendor to any such kinds and amounts of insurance coverage. All policies issued shall indemnify and save harmless the City of Salem, its agents and employees from any and all claims for damages to persons or property as may rise out of the performance of this Contract.

Vendor's Comprehensive General Public Liability and Property Damage Liability Insurance - The Vendor shall carry Comprehensive General Liability Insurance providing for a limit of not less than Five Hundred Thousand Dollars (\$500,000.00) for all damages arising out of bodily injury to or death of one person, and subject to that limit for each person, a total limit of not less than One Million Dollars (\$1,000,000.00) for all damages arising out of bodily injuries or death of two or more persons in any one accident; and Vendor's Comprehensive Property Damage Liability Insurance providing for a limit of not less than Five Hundred Thousand Dollars (\$500,000.00) for all damages arising out of injury to or destruction of property in any one accident, and subject to that limit per accident, a total (or aggregate) limit of not less than One Million Dollars (\$1,000,000.00) for all damages arising out of injury to or destruction of property during the policy period.

Comprehensive Automotive and Property Damage Insurance - The Vendor shall carry Automobile Insurance covering all owned vehicles, hired vehicles or non-owned vehicles under the control of the Vendor while performing work under the Contract in the amount of not less than Five Hundred Thousand Dollars (\$500,000.00) for all damages arising out of bodily injuries to or death of one person and subject to that limit for each person, a total of not less than One Million Dollars (\$1,000,000.00) for all damages arising out of bodily injuries to or death of two or more persons in any one accident; and Property Damage coverage in the amount of not less than Five Hundred Thousand Dollars (\$500,000.00) for all damages to or destruction of property.

The Vendor must carry Workman's Compensation Insurance in the amounts prescribed under Massachusetts State Law and meet all other City and State Laws and Regulations.

No cancellation(s) of such insurance, whether by the insurer or by the insured party shall be valid unless written notice thereof is given by the parties proposing cancellation to the other party and to the City of Salem at least fifteen (15) days prior to the intended effective date thereof, which date shall be expressed in said notice, which shall be sent by registered mail, return receipt requested. These provisions shall apply to the legal representative(s), trustee in bankruptcy, receiver, assignee, trustee, and successor(s) in interest of the Vendor.

All insurance coverage shall be at the sole expense of the Vendor and shall be placed with such company as may be acceptable to the City of Salem and shall constitute a material part of the contract documents.

Failure to provide written proof to City and continue in force such insurance as aforesaid shall be deemed a material breach of the contract, and may constitute sufficient grounds for immediate termination of the same.

## **5.5 CHANGE ORDERS AND ADJUSTMENTS**

Any request for a change order or adjustment must be submitted in writing and contain, an explanation of the need for the change order, a statement of work including a cost breakdown of each addition, and a statement that the change order is in the best interest of the awarding authority. The City is not obligated to pay for change orders that are not approved in writing, by the original contract signatories. Three (3) copies of the change order shall be required.

## **5.6 INDEMNIFICATION**

Unless otherwise provided by law, the Vendor will indemnify and hold harmless the City against any and all liability, loss, damages, costs or expenses for personal injury or damage to real or tangible personal property which the City may sustain, incur or be required to pay, arising out of or in connection with the performance of the Contract by reason of any negligent action/inaction or willful misconduct by the Contractor, its agents, servants or employees.

## **5.7 FEDERAL AND STATE LAW**

The selected contractor shall comply with all applicable Federal, State and Local laws and ordinances.

## **5.8 STATEMENT OF WORK**

Except as otherwise specifically stated in the bid and contract documents the selected contractor shall secure, at its own expense, all necessary permits and licenses and comply with all city and state codes and regulations. The selected contractor shall provide and pay for all materials,

equipment, labor, tools, temporary construction of every nature, charges, levies, fees, or other expenses incurred and all other services and facilities of every nature whatsoever for his performance of the Contract within the specified time, and required for this project. The selected contractor must provide all materials and equipment free of any lien, claim or encumbrance.

## **5.9 SAMPLE CONTRACT**

See 'Sample Contract' attached.



# **SAMPLE CONTRACT**

**XXXXXXX**

**CITY OF SALEM**

**CONTRACT FOR SERVICES**

**Over \$10,000**

This agreement is made and entered into by and between the City of Salem (hereinafter the CITY), a municipal corporation organized and existing under the laws of the Commonwealth of Massachusetts, and XXXXXXXXXXXXXXXXXXXXXXXX (hereinafter the CONTRACTOR).

## **ARTICLE I. DEFINITION.**

This CONTRACT as used herein shall mean these articles, and the "contract documents" which include but are not limited to the following identified items and all documents, and forms submitted therewith, or attached hereby.

- ☐ Attachment A: Scope of Services, and/or other bid package materials
- ☐ Attachment B: Additional Contract Terms and Conditions
- ☐ Attachment C: Statement of Corporate Authority
- ☐ Addenda: N/A

## **ARTICLE II. AMOUNT AND DURATION.**

This CONTRACT in an amount not to exceed XXXXXXXXXXXX (\$XXXXXXXX) shall commence upon issuance of the Notice to Proceed and shall be complete within XXXX (XX) calendar days, unless a written amendment to renew or extend this CONTRACT is executed in accordance with the provisions of this CONTRACT.

## **ARTICLE III. PERFORMANCE.**

The Contractor agrees to provide all goods and/or services set forth in Invitation for Bids, Documents, Scope of Services, and the CONTRACTOR's bid R-60 and/or as outlined in ATTACHMENT A - SCOPE OF SERVICES.

## **ARTICLE IV. TERMINATION.**

Without Cause. The CITY may terminate this CONTRACT on sixty (60) calendar days notice, or may suspend this CONTRACT for up to sixty (60) calendar days upon receipt of notice, when in the best interests of the City by providing notice to the CONTRACTOR, which shall be in writing and shall be deemed delivered and received when given in person to the CONTRACTOR, or when received by fax, express mail, certified mail return receipt requested, regular mail postage prepaid or delivered by any other appropriate method evidencing actual receipt by the CONTRACTOR.

For Cause. If the CONTRACTOR is determined by the CITY to be in default of any term or condition of CONTRACT, the CITY may terminate this contract on thirty (30) days notice by providing notice to the CONTRACTOR, which shall be in writing and shall be deemed delivered and received when given in person to the CONTRACTOR, or when received by fax, express mail, certified mail return receipt requested, regular mail postage prepaid or delivered by any other appropriate method evidencing actual receipt by the CONTRACTOR. If the CITY is determined by the CONTRACTOR to be in default of any term or condition of this CONTRACT the CONTRACTOR may terminate this contract on thirty (30) days notice by providing notice to the CITY, which shall be in writing and shall be deemed delivered and received when given in person to the CITY, or when received by fax, express mail, certified mail return

receipt requested, regular mail postage prepaid or delivered by any other appropriate method evidencing actual receipt by the CITY.

Default. The following shall constitute events of default under this CONTRACT: a) any material misrepresentation made by the CONTRACTOR to the CITY, b) any failure to perform any of its obligations under this CONTRACT including, but not limited to the following: (i) failure to commence performance of this CONTRACT at the time specified in this CONTRACT due to a reason or circumstance within the CONTRACTOR'S reasonable control, (ii) failure to perform this CONTRACT with sufficient personnel and equipment or with sufficient material to ensure the completion of this CONTRACT within the specified time due to a reason or circumstance within the CONTRACTOR'S reasonable control, (iii) failure to performance this CONTRACT in a manner reasonably satisfactory to the CITY, (iv) failure to promptly re-perform with reasonable time the services that were rejected by the CITY as unsatisfactory, or erroneous, (v) discontinuance of the services for reasons not beyond the CONTRACTOR'S reasonable control, (vi) failure to comply with a material term of this CONTRACT, including, but not limited to, the provision of insurance and nondiscrimination, and (vii) any other acts specifically and expressly stated in this CONTRACT as constituting a basis for termination of this CONTRACT, and (viii) failure to comply with any and all requirements of state law, and/or regulations, and City ordinances, and/or regulations.

#### **ARTICLE V. REMEDIES OF THE CITY.**

The CITY may deduct the cost of any substitute contract or performance for expenses, losses, and all damages, including incidental and consequential damages as a result of any event of non-conformance or non-performance of the CONTRACTOR in complying with the terms of this CONTRACT, and shall withhold such expenses, losses, and damages from sums due, or to become due.

#### **ARTICLE VI. REMEDIES OF THE CONTRACTOR.**

If the damages, other than loss, non-conformance, or non-performance, are actually sustained by the CONTRACTOR due to any act or omission for which the CITY is legally responsible the CITY shall allow a sum equal to the amount of such damages sustained by the Contractor as determined by the CITY in writing, provided the Contractor shall have provided to all signatories of the contract a detailed written statement of such damages and cause thereof within 30 days of the act of omission by the CITY.

#### **ARTICLE VII. ASSIGNABILITY.**

The CONTRACTOR shall not assign, subcontract or in any way transfer any interest in this contract without the prior written consent of the Procurement Officer of said City. In the event of such occurrence the City reserves the right to deal with any assignee subcontractor or transferee directly and the contractor agrees to remain bound by all terms and conditions of this contract in accordance with its original tenor. The provisions of this CONTRACT shall be binding upon, and shall inure to the benefit of, the successors and assigns of the CONTRACTOR and any public body or bodies succeeding the interests of the CITY.

#### **ARTICLE VIII. INDEMNIFICATION.**

The CONTRACTOR shall assume the defense, indemnify and hold harmless the CITY, the CITY'S agents and employees, from and against all losses and all claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against them by reason of acts, in actions, omissions, negligence, reckless or intentional misconduct of the said CONTRACTOR, its agent(s), officers, employees, or subcontractors; in the execution of the work or in guarding the same. Unless otherwise provided by law, the CITY may elect to indemnify the CONTRACTOR for claims arising in tort if it is determined that the CONTRACTOR performed its obligations under this CONTRACT pursuant to the direct supervision and control of the CITY or its designated agent(s).

## **ARTICLE IX. WORKER'S COMPENSATION AND OTHER INSURANCE.**

The CONTRACTOR shall provide by insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 of the General Laws of Massachusetts (The Worker's Compensation Act) to all employees of the CONTRACTOR who are subject to the provisions of Chapter 152 of the General Laws of Massachusetts.

Failure to provide and continue in force such insurance during the period of this contract shall be deemed a material breach of this contract, shall operate as an immediate termination thereof, and CONTRACTOR shall indemnify the CITY for all losses, claims, and actions resulting from the failure to provide the insurance required by this Article.

Prior to commencement of any work and until completion of its work under this CONTRACT shall maintain the following insurance coverage, at its cost, from insurance acceptable to the CITY, giving evidence of such coverage to the CITY prior to execution of this CONTRACT, a copy of such insurance coverage to be attached herewith:

General - The Vendor shall before commencing performance of the Contract be responsible for providing and maintaining insurance coverage in force for the life of the Contract of the kind and in adequate amounts to secure all of the obligations under the Contract and with insurance companies licensed to write insurance in the Commonwealth of Massachusetts. All such insurance carried shall not be less than the kinds and amounts designated herein, and the Vendor agrees that the stipulation herein of the kinds and limits of coverage shall in no way limit the liability of the Vendor to any such kinds and amounts of insurance coverage. All policies issued shall indemnify and save harmless the City of Salem, its agents and employees from any and all claims for damages to persons or property as may rise out of the performance of this Contract.

Vendor's Comprehensive General Public Liability and Property Damage Liability Insurance - The Vendor shall carry Comprehensive General Liability Insurance providing for a limit of not less than Five Hundred Thousand Dollars (\$500,000.00) for all damages arising out of bodily injury to or death of one person, and subject to that limit for each person, a total limit of not less than One Million Dollars (\$1,000,000.00) for all damages arising out of bodily injuries or death of two or more persons in any one accident; and Vendor's Comprehensive Property Damage Liability Insurance providing for a limit of not less than Five Hundred Thousand Dollars (\$500,000.00) for all damages arising out of injury to or destruction of property in any one accident, and subject to that limit per accident, a total (or aggregate) limit or not less than One Million Dollars (\$1,000,000.00) for all damages arising out of injury to or destruction of property during the policy period.

Comprehensive Automotive and Property Damage Insurance - The Vendor shall carry Automobile Insurance covering all owned vehicles, hired vehicles or non-owned vehicles under the control of the Vendor while performing work under the Contract in the amount of not less than Five Hundred Thousand Dollars (\$500,000.00) for all damages arising out of bodily injuries to or death of one person and subject to that limit for each person, a total of not less than One Million Dollars (\$1,000,000.00) for all damages arising out of bodily injuries to or death of two or more persons in any one accident; and Property Damage coverage in the amount of not less than Five Hundred Thousand Dollars (\$500,000.00) for all damages to or destruction of property.

The Vendor must carry Workman's Compensation Insurance in the amounts prescribed under Massachusetts State Law and meet all other City and State Laws and Regulations.

No cancellation(s) of such insurance, whether by the insurer or by the insured party shall be valid unless written notice thereof is given by the parties proposing cancellation to the other party and to the City of

Salem at least fifteen (15) days prior to the intended effective date thereof, which date shall be expressed in said notice, which shall be sent by registered mail, return receipt requested. These provisions shall apply to the legal representative(s), trustee in bankruptcy, receiver, assignee, trustee, and successor(s) in interest of the Vendor.

All insurance coverage shall be at the sole expense of the Vendor and shall be placed with such company as may be acceptable to the City of Salem and shall constitute a material part of the contract documents.

Failure to provide written proof to City and continue in force such insurance as aforesaid shall be deemed a material breach of the contract, and may constitute sufficient grounds for immediate termination of the same.

All required insurance must be endorsed to name the CITY as Additional Insured. All required insurance shall be endorsed to waive the insurer's rights of subrogation against the City. All policies and certificate for insurance must contain language that the insurance shall not be canceled, materially changed or non-renewed without at least thirty (30) days advance written notice to the CITY. The CONTRACTOR under this CONTRACT shall not allow its subcontractors to begin work until similar insurance has been so obtained and certificates of insurance approved by the CONTRACTOR.

#### **ARTICLE X. CORPORATE CONTRACTOR.**

If CONTRACTOR is a corporation, CONTRACTOR shall endorse the Certificate of Corporate Authority for the CONTRACTORS' signatory (Attachment C), or shall otherwise provide a form similar in nature and substance acceptable to the CITY.

If CONTRACTOR is a non-profit corporation, CONTRACTOR shall provide satisfactory proof of present status as a non-profit corporation. Such proof shall be in the form of a certification from the Massachusetts Secretary of State's office and/or from the Internal Revenue Service and shall provide the Federal Tax Identification Number of the non-profit corporation. This agreement shall not be enforceable against the CITY unless and until the CONTRACTOR complies with this section. Failure to inform the CITY in writing of revocation, or other loss of non-profit status shall be deemed a material breach of this contract and operate as an immediate termination thereof.

#### **ARTICLE XI. SUBJECT TO APPROPRIATION.**

The obligations of the CITY under this CONTRACT shall be subject to appropriation. In the absence of appropriation this CONTRACT shall be immediately terminated without liability for damages, penalties, or other charges.

In the requisite circumstances, the obligations of the CITY under this CONTRACT shall be subject to the formal award of the state, federal grant.

#### **ARTICLE XII. DOCUMENTS, MATERIALS, ETC.**

Any materials, reports, information, data, etc. given to or prepared or assembled by the CONTRACTOR under this CONTRACT are to be kept confidential and shall not be made available to any individual or organization by the CONTRACTOR (except agents, servants, or employees of the CONTRACTOR) without the prior written approval of the CITY, except as otherwise required by law. The CONTRACTOR understands that he/she/it may acquire or have access to "personal data" otherwise kept by the CITY. The CONTRACTOR shall comply with the provisions Chapter 66A of the General Laws of Massachusetts as it relates to public documents, and all other state and federal laws and regulations relating to confidentiality, security privacy and use of confidential data.

Any materials produced in whole or in part under this CONTRACT shall not be subject to copyright, except by the CITY, in the United States or any other country. The CITY shall have unrestricted authority to, without payment of any royalty, commission, or additional fee of any type or nature, publicly disclose, reproduce, distribute and otherwise use, and authorize other to use, in whole or in part, any reports, data or other materials prepared under this CONTRACT.

All data, reports, programs, software, equipment, furnishings, and any other documentation or product paid for by the CITY shall vest in the CITY at the termination of this CONTRACT. The CONTRACTOR shall at all times, during or after termination of this CONTRACT, obtain the prior written approval of the CITY before making any statement bearing on the work performed or data collected under this CONTRACT to the press or issues any material for publication through any medium.

### **ARTICLE XIII. AUDIT, INSPECTION, RECORD KEEPING.**

At any time during normal business hours, and as often as the CITY may deem it reasonably necessary, there shall be made available in the office of the CONTRACTOR for the purpose of audit, examination, and/or to make excerpts or transcripts, all records, contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this agreement.

Further the CONTRACTOR agrees to make its work papers, records and other evidence of audit available to the CITY for a period of three years after final payment under his CONTRACT. The CIT shall be entitled to reproduce any or all such documents at its own expense, for which provision shall be made at such time.

### **ARTICLE XIV. WEEKLY PAYROLL RECORDS REPORT.**

In accordance with Massachusetts General Law c. 149, s. 27B, a true and accurate record must be kept of all individuals employed on a public works construction project for which prevailing wage rates are applicable.

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

### **ARTICLE XV. CONFLICT OF INTEREST.**

CITY. No officer, member or employee of the CITY and no members of its governing body who exercise any function or responsibility in review or approval of the undertaking or carrying out of this CONTRACT shall participate in any decision relating to the CONTRACT which affects his/her personal interests or the interest of any corporation, partnership, or association in which he/she has a direct or indirect pecuniary interest. None of the services to be provided by the CONTRACTOR shall be used for any partisan political activity or further the election or defeat of any candidate for political office in the CITY. Compliance with this section shall be material to the CONTRACT.

CONTRACTOR. CONTRACTOR agrees that his/her/its agents, servants, and employees have neither presently nor during the period of this CONTRACT any interest direct or indirect which would impair, detract, or conflict in any manner or degree with the performance of services required under this CONTRACT. The CONTRACTOR, his/her/its agents, servants or employees further stipulates that in the performance of this CONTRACT, no person having any such interest shall be employed. Conflicts of Interest include but are not limited to (a) immediate family relationships with officials of the CITY, (b) instances where the CONTRACTOR, his/her/it agents, servants or employees during the period of this CONTRACT was connected as an officer, employee or member of the governing body of the CITY, and (c) instances where the CONTRACTOR has an interest in any CITY department, its agents, servants or employees or parcels of land within the CITY. Compliance with this section shall be material to the CONTRACT.

#### **ARTICLE XVI. PAYMENT.**

The CITY agrees to make all reasonable efforts to pay to the CONTRACTOR the sum set forth in the CONTRACTOR'S bid or proposal within thirty (30) days of receipt of an invoice at the Office of the City Auditor detailing the work completed.

Subject to pending statutory appeal rights, CONTRACTOR agrees that all sums otherwise due and payable to the CITY for outstanding taxes, fines, fees and or other municipal charges may be deducted from the sum(s) otherwise payable under this CONTRACT prior to disbursement to the CONTRACTOR.

#### **ARTICLE XVII. CONFLICT.**

In the event there is a conflict between these Articles and Attachment A. Attachment A shall supersede these Articles.

#### **ARTICLE XVIII. WAIVER AND AMENDMENT.**

The provisions contained in this CONTRACT may be modified only as specifically provided by ATTACHMENT B - ADDITIONAL TERMS AND CONDITIONS. Amendments, or waivers of any additional term, condition, covenant, duty or obligation contained in this CONTRACT may be made only by written amendment executed by all signatories to the original agreement, prior to the effective date of the amendment.

To the extent allowed by law, all conditions, duties, and obligations contained in this CONTRACT may be waived only by written agreement by both parties.

Forbearance or indulgence in any form or manner by a party shall not be construed as a waiver, nor in any manner limit the legal or equitable remedies available to that party. No waiver by either party of any default or breach shall constitute a waiver of any subsequent default or breach of a similar or different matter.

#### **ARTICLE XIX. CERTIFICATION.**

IN WITNESS WHEREOF, THE CONTRACTOR CERTIFIES, UNDER THE PAINS AND PENALTIES OF PERJURY, THAT THE CONTRACTOR IS IN COMPLIANCE WITH EACH OF THE FOLLOWING:

TAXES. PURSUANT to M.G.L. c. 62C, s. 49A, the CONTRACTOR has filed all state tax returns and complied with all laws of the Commonwealth relating to taxes.

DEBARMENT. The CONTRACTOR is not currently debarred or suspended by the Commonwealth of Massachusetts, or any of its entities or subdivisions.

AMERICANS WITH DISABILITIES ACT. The CONTRACTOR is aware of the recently enacted Americans with Disabilities Act which prohibits discrimination based upon disability and shall meet any relevant standards, and/or conditions set out in the bid/proposal documents, bid/proposal specifications, and/or ATTACHMENT A - SCOPE OF SERVICES.

#### **ARTICLE XX. FORUM AND CHOICE OF LAW**

This CONTRACT and any performance herein shall be governed by and be construed in accordance with the laws of Commonwealth. Any and all proceedings or actions relating to subject matter herein shall be brought and maintained in the courts of the Commonwealth or the federal district court sitting in the Commonwealth, which shall have exclusive jurisdiction thereof. This paragraph shall not be construed to limit any other legal rights of the parties.

IN WITNESS WHEREOF the parties have hereto and to three other identical instruments set forth their hands the day and year first above written.

THE CITY:

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Kimberley Driscoll,  
Mayor

---

Yeimi Colon  
Acting Finance Director

Approved as to form:

---

Elizabeth Rennard, Esq.,  
City Solicitor

Approved as Contract Manager:

---

XXXXX,  
XXXXXXXXX

I certify that funds have been  
encumbered in the amount of :  
\$XXXX

---

Sarah Stanton,  
Finance Director

THE CONTRACTOR:

---

Authorized Signature

---

Print Name

---

Print Title

---

Company

---

Status (Corporate/Non- Corporate)

---

Taxpayer Identification Number

---

Date





## ATTACHMENT A

### SCOPE OF SERVICES

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***INSTRUCTIONS FOR DEPARTMENT AND CONTRACTOR:*** Please attach for reference purposes a copy of all bid/proposal documents, including but not limited to (i) invitations/instructions for bidders (ii) invitation/instructions for proposers, (iii) general and specific conditions, and please provide a detailed description of all types of goods and/or services that will be provided pursuant to this CONTRACT, not otherwise provided in any bid/proposal instructions, specifications, conditions or other documents.

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Please refer to the scope of services found in Invitation for Bids S-26 “Derby Street Park” incorporated here by reference.

## **ATTACHMENT B**

### **ADDITIONAL CONTRACT TERMS AND CONDITIONS**

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***INSTRUCTIONS FOR DEPARTMENTS:*** Please specify any additions or modifications to the terms and conditions (not to conflict with the public procurement laws or City ordinances or regulations):

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## ATTACHMENT C

### CERTIFICATE OF CORPORATE AUTHORITY

If the Contractor is a corporation, complete the following certification:

At a duly authorized meeting of the Board of Directors of the \_\_\_\_\_ (Name of the Corporation) held on \_\_\_\_\_ (Date), at which all the Directors were present or waived notice, it was voted that, \_\_\_\_\_ (Name), \_\_\_\_\_ (Officer) of this company, is authorized to execute Contracts and bonds in the name and behalf of said company, and affix its corporate seal thereto, and such execution of any Contract or obligation in this company's name on its behalf by such \_\_\_\_\_ (Officer) of the company, shall be valid and binding upon this company.

I hereby certify that I am the Clerk of the \_\_\_\_\_ (Name of the Corporation), that \_\_\_\_\_ (Name) is the duly elected \_\_\_\_\_ (Officer) of said company, and that the above vote has not been amended or rescinded and remains in full force and effect as of the date of the Contract.

A true copy,

Attest: \_\_\_\_\_  
(Clerk)

Place of Business: \_\_\_\_\_

Corporate Seal:

<b>PREVAILING WAGE RATES</b>
------------------------------



CHARLES D. BAKER  
Governor

KARYN E. POLITO  
Lt. Governor

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

**Prevailing Wage Rates**

**As determined by the Director under the provisions of the  
Massachusetts General Laws, Chapter 149, Sections 26 to 27H**

ROSALIN ACOSTA  
Secretary  
WILLIAM D MCKINNEY  
Director

**Awarding Authority:** City of Salem  
**Contract Number:** T-12 **City/Town:** SALEM  
**Description of Work:** Derby Street Waterfront Park Construction - This is the construction of a new waterfront park  
**Job Location:** 289 Derby Street Salem, MA 01970

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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.
- An Awarding Authority 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. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency 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. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. 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 and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. 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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.15	\$10.91	\$10.89	\$0.00	\$53.95
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.22	\$10.91	\$10.89	\$0.00	\$54.02
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.34	\$10.91	\$10.89	\$0.00	\$54.14
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$88.29	\$9.80	\$19.23	\$0.00	\$117.32
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2017	\$33.15	\$7.60	\$13.50	\$0.00	\$54.25
	12/01/2017	\$33.78	\$7.60	\$13.50	\$0.00	\$54.88
	06/01/2018	\$34.62	\$7.60	\$13.50	\$0.00	\$55.72
	12/01/2018	\$35.46	\$7.60	\$13.50	\$0.00	\$56.56
	06/01/2019	\$36.33	\$7.60	\$13.50	\$0.00	\$57.43
	12/01/2019	\$37.19	\$7.60	\$13.50	\$0.00	\$58.29
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	06/01/2017	\$34.90	\$11.50	\$7.10	\$0.00	\$53.50
	12/01/2017	\$35.90	\$11.50	\$7.10	\$0.00	\$54.50
	06/01/2018	\$36.90	\$11.50	\$7.10	\$0.00	\$55.50
	12/01/2018	\$37.90	\$11.50	\$7.10	\$0.00	\$56.50
	06/01/2019	\$38.90	\$11.50	\$7.10	\$0.00	\$57.50
	12/01/2019	\$39.90	\$11.50	\$7.10	\$0.00	\$58.50
	06/01/2020	\$40.90	\$11.50	\$7.10	\$0.00	\$59.50
	12/01/2020	\$41.90	\$11.50	\$7.10	\$0.00	\$60.50
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$46.38	\$10.00	\$15.25	\$0.00	\$71.63
	12/01/2017	\$47.38	\$10.00	\$15.25	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$46.38	\$10.00	\$15.25	\$0.00	\$71.63
	12/01/2017	\$47.38	\$10.00	\$15.25	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	06/01/2017	\$33.15	\$7.60	\$13.50	\$0.00	\$54.25
	12/01/2017	\$33.78	\$7.60	\$13.50	\$0.00	\$54.88
	06/01/2018	\$34.62	\$7.60	\$13.50	\$0.00	\$55.72
	12/01/2018	\$35.46	\$7.60	\$13.50	\$0.00	\$56.56
	06/01/2019	\$36.33	\$7.60	\$13.50	\$0.00	\$57.43
	12/01/2019	\$37.19	\$7.60	\$13.50	\$0.00	\$58.29

For apprentice rates see "Apprentice- LABORER"

BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2017	\$42.92	\$6.97	\$16.21	\$0.00	\$66.10
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**Apprentice - BOILERMAKER - Local 29**

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$27.90	\$6.97	\$10.54	\$0.00	\$45.41
2	65	\$27.90	\$6.97	\$10.54	\$0.00	\$45.41
3	70	\$30.04	\$6.97	\$11.35	\$0.00	\$48.36
4	75	\$32.19	\$6.97	\$12.16	\$0.00	\$51.32
5	80	\$34.34	\$6.97	\$12.97	\$0.00	\$54.28
6	85	\$36.48	\$6.97	\$13.78	\$0.00	\$57.23
7	90	\$38.63	\$6.97	\$14.59	\$0.00	\$60.19
8	95	\$40.77	\$6.97	\$15.40	\$0.00	\$63.14

Notes:

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

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (LYNN)</i>	08/01/2017	\$52.06	\$10.75	\$19.35	\$0.00	\$82.16
	02/01/2018	\$52.74	\$10.75	\$19.35	\$0.00	\$82.84
	08/01/2018	\$54.09	\$10.75	\$19.48	\$0.00	\$84.32
	02/01/2019	\$54.73	\$10.75	\$19.48	\$0.00	\$84.96
	08/01/2019	\$56.08	\$10.75	\$19.62	\$0.00	\$86.45
	02/01/2020	\$56.72	\$10.75	\$19.62	\$0.00	\$87.09
	08/01/2020	\$58.07	\$10.75	\$19.77	\$0.00	\$88.59
	02/01/2021	\$58.71	\$10.75	\$19.77	\$0.00	\$89.23
	08/01/2021	\$60.11	\$10.75	\$19.93	\$0.00	\$90.79
	02/01/2022	\$60.70	\$10.75	\$19.93	\$0.00	\$91.38

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Lynn**

**Effective Date - 08/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$10.75	\$19.35	\$0.00	\$56.13
2	60	\$31.24	\$10.75	\$19.35	\$0.00	\$61.34
3	70	\$36.44	\$10.75	\$19.35	\$0.00	\$66.54
4	80	\$41.65	\$10.75	\$19.35	\$0.00	\$71.75
5	90	\$46.85	\$10.75	\$19.35	\$0.00	\$76.95

**Effective Date - 02/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.37	\$10.75	\$19.35	\$0.00	\$56.47
2	60	\$31.64	\$10.75	\$19.35	\$0.00	\$61.74
3	70	\$36.92	\$10.75	\$19.35	\$0.00	\$67.02
4	80	\$42.19	\$10.75	\$19.35	\$0.00	\$72.29
5	90	\$47.47	\$10.75	\$19.35	\$0.00	\$77.57

**Notes:**

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

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2016	\$37.45	\$7.60	\$14.35	\$0.00	\$59.40
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2016	\$36.30	\$7.60	\$14.35	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2016	\$36.30	\$7.60	\$14.35	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	09/01/2017	\$39.28	\$9.90	\$17.50	\$0.00	\$66.68
	03/01/2018	\$40.28	\$9.90	\$17.50	\$0.00	\$67.68
	09/01/2018	\$41.32	\$9.90	\$17.50	\$0.00	\$68.72
	03/01/2019	\$42.35	\$9.90	\$17.50	\$0.00	\$69.75



**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - CARPENTER - Zone 2 Eastern MA**
**Effective Date - 09/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.64	\$9.90	\$1.73	\$0.00	\$31.27
2	60	\$23.57	\$9.90	\$1.73	\$0.00	\$35.20
3	70	\$27.50	\$9.90	\$12.31	\$0.00	\$49.71
4	75	\$29.46	\$9.90	\$12.31	\$0.00	\$51.67
5	80	\$31.42	\$9.90	\$14.04	\$0.00	\$55.36
6	80	\$31.42	\$9.90	\$14.04	\$0.00	\$55.36
7	90	\$35.35	\$9.90	\$15.77	\$0.00	\$61.02
8	90	\$35.35	\$9.90	\$15.77	\$0.00	\$61.02

**Effective Date - 03/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.14	\$9.90	\$1.73	\$0.00	\$31.77
2	60	\$24.17	\$9.90	\$1.73	\$0.00	\$35.80
3	70	\$28.20	\$9.90	\$12.31	\$0.00	\$50.41
4	75	\$30.21	\$9.90	\$12.31	\$0.00	\$52.42
5	80	\$32.22	\$9.90	\$14.04	\$0.00	\$56.16
6	80	\$32.22	\$9.90	\$14.04	\$0.00	\$56.16
7	90	\$36.25	\$9.90	\$15.77	\$0.00	\$61.92
8	90	\$36.25	\$9.90	\$15.77	\$0.00	\$61.92

**Notes:**
**Apprentice to Journeyworker Ratio:1:5**
**CEMENT MASONRY/PLASTERING**
**BRICKLAYERS LOCAL 3 (LYNN)**

07/01/2017	\$47.40	\$12.20	\$19.41	\$1.30	\$80.31
01/01/2018	\$48.17	\$12.20	\$19.41	\$1.30	\$81.08
07/01/2018	\$49.56	\$12.20	\$19.41	\$1.30	\$82.47
01/01/2019	\$50.30	\$12.20	\$19.41	\$1.30	\$83.21
07/01/2019	\$51.69	\$12.20	\$19.41	\$1.30	\$84.60
01/01/2020	\$52.44	\$12.20	\$19.41	\$1.30	\$85.35

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Lynn)**
**Effective Date - 07/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.70	\$12.20	\$12.41	\$0.00	\$48.31
2	60	\$28.44	\$12.20	\$14.41	\$1.30	\$56.35
3	65	\$30.81	\$12.20	\$15.41	\$1.30	\$59.72
4	70	\$33.18	\$12.20	\$16.41	\$1.30	\$63.09
5	75	\$35.55	\$12.20	\$17.41	\$1.30	\$66.46
6	80	\$37.92	\$12.20	\$18.41	\$1.30	\$69.83
7	90	\$42.66	\$12.20	\$19.41	\$1.30	\$75.57

**Effective Date - 01/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.09	\$12.20	\$12.41	\$0.00	\$48.70
2	60	\$28.90	\$12.20	\$14.41	\$1.30	\$56.81
3	65	\$31.31	\$12.20	\$15.41	\$1.30	\$60.22
4	70	\$33.72	\$12.20	\$16.41	\$1.30	\$63.63
5	75	\$36.13	\$12.20	\$17.41	\$1.30	\$67.04
6	80	\$38.54	\$12.20	\$18.41	\$1.30	\$70.45
7	90	\$43.35	\$12.20	\$19.41	\$1.30	\$76.26

**Notes:**

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

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

CHAIN SAW OPERATOR	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
LABORERS - ZONE 2	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	06/01/2017	\$47.38	\$10.00	\$15.25	\$0.00	\$72.63
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$48.38	\$10.00	\$15.25	\$0.00	\$73.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR	06/01/2017	\$31.86	\$10.00	\$15.25	\$0.00	\$57.11
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$32.55	\$10.00	\$15.25	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE)	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36
PAINTERS LOCAL 35 - ZONE 2						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date -** 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.71	\$7.85	\$0.00	\$0.00	\$33.56
2	55	\$28.28	\$7.85	\$3.66	\$0.00	\$39.79
3	60	\$30.85	\$7.85	\$3.99	\$0.00	\$42.69
4	65	\$33.42	\$7.85	\$4.32	\$0.00	\$45.59
5	70	\$35.99	\$7.85	\$14.11	\$0.00	\$57.95
6	75	\$38.56	\$7.85	\$14.44	\$0.00	\$60.85
7	80	\$41.13	\$7.85	\$14.77	\$0.00	\$63.75
8	90	\$46.27	\$7.85	\$15.44	\$0.00	\$69.56

**Notes:**

Steps are 750 hrs.

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

DEMO: ADZEMAN LABORERS - ZONE 2	06/01/2017	\$37.00	\$7.60	\$14.65	\$0.00	\$59.25
	12/01/2017	\$37.85	\$7.60	\$14.65	\$0.00	\$60.10
	06/01/2018	\$38.80	\$7.60	\$14.65	\$0.00	\$61.05
	12/01/2018	\$39.75	\$7.60	\$14.65	\$0.00	\$62.00
	06/01/2019	\$40.75	\$7.60	\$14.65	\$0.00	\$63.00
	12/01/2019	\$41.75	\$7.60	\$14.65	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	06/01/2017	\$38.00	\$7.60	\$14.65	\$0.00	\$60.25
	12/01/2017	\$38.85	\$7.60	\$14.65	\$0.00	\$61.10
	06/01/2018	\$39.80	\$7.60	\$14.65	\$0.00	\$62.05
	12/01/2018	\$40.75	\$7.60	\$14.65	\$0.00	\$63.00
	06/01/2019	\$41.75	\$7.60	\$14.65	\$0.00	\$64.00
	12/01/2019	\$42.75	\$7.60	\$14.65	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS LABORERS - ZONE 2	06/01/2017	\$37.75	\$7.60	\$14.65	\$0.00	\$60.00
	12/01/2017	\$38.60	\$7.60	\$14.65	\$0.00	\$60.85
	06/01/2018	\$39.55	\$7.60	\$14.65	\$0.00	\$61.80
	12/01/2018	\$40.50	\$7.60	\$14.65	\$0.00	\$62.75
	06/01/2019	\$41.50	\$7.60	\$14.65	\$0.00	\$63.75
	12/01/2019	\$42.50	\$7.60	\$14.65	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 2	06/01/2017	\$38.00	\$7.60	\$14.65	\$0.00	\$60.25
	12/01/2017	\$38.85	\$7.60	\$14.65	\$0.00	\$61.10
	06/01/2018	\$39.80	\$7.60	\$14.65	\$0.00	\$62.05
	12/01/2018	\$40.75	\$7.60	\$14.65	\$0.00	\$63.00
	06/01/2019	\$41.75	\$7.60	\$14.65	\$0.00	\$64.00
	12/01/2019	\$42.75	\$7.60	\$14.65	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2017	\$37.75	\$7.60	\$14.65	\$0.00	\$60.00
	12/01/2017	\$38.60	\$7.60	\$14.65	\$0.00	\$60.85
	06/01/2018	\$39.55	\$7.60	\$14.65	\$0.00	\$61.80
	12/01/2018	\$40.50	\$7.60	\$14.65	\$0.00	\$62.75
	06/01/2019	\$41.50	\$7.60	\$14.65	\$0.00	\$63.75
	12/01/2019	\$42.50	\$7.60	\$14.65	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	06/01/2017	\$37.00	\$7.60	\$14.65	\$0.00	\$59.25
	12/01/2017	\$37.85	\$7.60	\$14.65	\$0.00	\$60.10
	06/01/2018	\$38.80	\$7.60	\$14.65	\$0.00	\$61.05
	12/01/2018	\$39.75	\$7.60	\$14.65	\$0.00	\$62.00
	06/01/2019	\$40.75	\$7.60	\$14.65	\$0.00	\$63.00
	12/01/2019	\$41.75	\$7.60	\$14.65	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$58.86	\$9.80	\$19.23	\$0.00	\$87.89
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$63.06	\$9.80	\$19.23	\$0.00	\$92.09
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$88.23	\$9.80	\$19.23	\$0.00	\$117.26
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	09/01/2017	\$49.28	\$13.00	\$17.48	\$0.00	\$79.76
	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	09/01/2017	\$49.28	\$13.00	\$17.48	\$0.00	\$79.76
	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - ELECTRICIAN - Local 103**
**Effective Date - 09/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.71	\$13.00	\$0.59	\$0.00	\$33.30
2	40	\$19.71	\$13.00	\$0.59	\$0.00	\$33.30
3	45	\$22.18	\$13.00	\$13.39	\$0.00	\$48.57
4	45	\$22.18	\$13.00	\$13.39	\$0.00	\$48.57
5	50	\$24.64	\$13.00	\$13.76	\$0.00	\$51.40
6	55	\$27.10	\$13.00	\$14.12	\$0.00	\$54.22
7	60	\$29.57	\$13.00	\$14.50	\$0.00	\$57.07
8	65	\$32.03	\$13.00	\$14.87	\$0.00	\$59.90
9	70	\$34.50	\$13.00	\$15.25	\$0.00	\$62.75
10	75	\$36.96	\$13.00	\$15.62	\$0.00	\$65.58

**Effective Date - 03/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.06	\$13.00	\$0.60	\$0.00	\$33.66
2	40	\$20.06	\$13.00	\$0.60	\$0.00	\$33.66
3	45	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
4	45	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
5	50	\$25.08	\$13.00	\$13.99	\$0.00	\$52.07
6	55	\$27.58	\$13.00	\$14.38	\$0.00	\$54.96
7	60	\$30.09	\$13.00	\$14.76	\$0.00	\$57.85
8	65	\$32.60	\$13.00	\$15.15	\$0.00	\$60.75
9	70	\$35.11	\$13.00	\$15.53	\$0.00	\$63.64
10	75	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54

**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

01/01/2017

\$55.86

\$15.28

\$15.71

\$0.00

\$86.85

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - ELEVATOR CONSTRUCTOR - Local 4**

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.93	\$15.28	\$0.00	\$0.00	\$43.21
2	55	\$30.72	\$15.28	\$15.71	\$0.00	\$61.71
3	65	\$36.31	\$15.28	\$15.71	\$0.00	\$67.30
4	70	\$39.10	\$15.28	\$15.71	\$0.00	\$70.09
5	80	\$44.69	\$15.28	\$15.71	\$0.00	\$75.68

**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>	01/01/2017	\$39.10	\$15.28	\$15.71	\$0.00	\$70.09
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 2</i>	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2017	\$42.15	\$10.00	\$15.25	\$0.00	\$67.40
	11/01/2017	\$42.88	\$10.00	\$15.25	\$0.00	\$68.13
	05/01/2018	\$43.59	\$10.00	\$15.25	\$0.00	\$68.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2017	\$43.61	\$10.00	\$15.25	\$0.00	\$68.86
	11/01/2017	\$44.34	\$10.00	\$15.25	\$0.00	\$69.59
	05/01/2018	\$45.06	\$10.00	\$15.25	\$0.00	\$70.31
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2017	\$22.41	\$10.00	\$15.25	\$0.00	\$47.66
	11/01/2017	\$22.83	\$10.00	\$15.25	\$0.00	\$48.08
	05/01/2018	\$23.26	\$10.00	\$15.25	\$0.00	\$48.51
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	09/01/2017	\$49.28	\$13.00	\$17.48	\$0.00	\$79.76
	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>LOCAL 103</i> / COMMISSIONING <i>ELECTRICIANS</i>	09/01/2017	\$36.96	\$13.00	\$15.62	\$0.00	\$65.58
	03/01/2018	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54
	09/01/2018	\$38.51	\$13.00	\$15.96	\$0.00	\$67.47
	03/01/2019	\$39.40	\$13.00	\$15.98	\$0.00	\$68.38
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$38.49	\$10.00	\$15.25	\$0.00	\$63.74
	12/01/2017	\$39.32	\$10.00	\$15.25	\$0.00	\$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 2</i>	06/01/2017	\$20.50	\$7.60	\$13.50	\$0.00	\$41.60
	12/01/2017	\$21.50	\$7.60	\$13.50	\$0.00	\$42.60
	06/01/2018	\$21.50	\$7.60	\$13.50	\$0.00	\$42.60
	12/01/2018	\$22.50	\$7.60	\$13.50	\$0.00	\$43.60
	06/01/2019	\$22.50	\$7.60	\$13.50	\$0.00	\$43.60
	12/01/2019	\$23.50	\$7.60	\$13.50	\$0.00	\$44.60
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE I</i>	03/01/2016	\$42.13	\$9.80	\$17.62	\$0.00	\$69.55

**Apprentice - FLOORCOVERER - Local 2168 Zone I**

**Effective Date - 03/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.07	\$9.80	\$1.79	\$0.00	\$32.66
2	55	\$23.17	\$9.80	\$1.79	\$0.00	\$34.76
3	60	\$25.28	\$9.80	\$12.25	\$0.00	\$47.33
4	65	\$27.38	\$9.80	\$12.25	\$0.00	\$49.43
5	70	\$29.49	\$9.80	\$14.04	\$0.00	\$53.33
6	75	\$31.60	\$9.80	\$14.04	\$0.00	\$55.44
7	80	\$33.70	\$9.80	\$15.83	\$0.00	\$59.33
8	85	\$35.81	\$9.80	\$15.83	\$0.00	\$61.44

**Notes:**

Steps are 750 hrs.

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

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$46.38	\$10.00	\$15.25	\$0.00	\$71.63
	12/01/2017	\$47.38	\$10.00	\$15.25	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$31.86	\$10.00	\$15.25	\$0.00	\$57.11
	12/01/2017	\$32.55	\$10.00	\$15.25	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86

**Apprentice -**    *GLAZIER - Local 35 Zone 2*  
**Effective Date -**    01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.46	\$7.85	\$0.00	\$0.00	\$28.31
2	55	\$22.50	\$7.85	\$3.66	\$0.00	\$34.01
3	60	\$24.55	\$7.85	\$3.99	\$0.00	\$36.39
4	65	\$26.59	\$7.85	\$4.32	\$0.00	\$38.76
5	70	\$28.64	\$7.85	\$14.11	\$0.00	\$50.60
6	75	\$30.68	\$7.85	\$14.44	\$0.00	\$52.97
7	80	\$32.73	\$7.85	\$14.77	\$0.00	\$55.35
8	90	\$36.82	\$7.85	\$15.44	\$0.00	\$60.11

**Notes:**  
 Steps are 750 hrs.

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

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2017	\$46.38	\$10.00	\$15.25	\$0.00	\$71.63
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$47.38	\$10.00	\$15.25	\$0.00	\$72.63



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date -** 06/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$25.51	\$10.00	\$0.00	\$0.00	\$35.51
2	60	\$27.83	\$10.00	\$15.25	\$0.00	\$53.08
3	65	\$30.15	\$10.00	\$15.25	\$0.00	\$55.40
4	70	\$32.47	\$10.00	\$15.25	\$0.00	\$57.72
5	75	\$34.79	\$10.00	\$15.25	\$0.00	\$60.04
6	80	\$37.10	\$10.00	\$15.25	\$0.00	\$62.35
7	85	\$39.42	\$10.00	\$15.25	\$0.00	\$64.67
8	90	\$41.74	\$10.00	\$15.25	\$0.00	\$66.99

**Effective Date -** 12/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$26.06	\$10.00	\$0.00	\$0.00	\$36.06
2	60	\$28.43	\$10.00	\$15.25	\$0.00	\$53.68
3	65	\$30.80	\$10.00	\$15.25	\$0.00	\$56.05
4	70	\$33.17	\$10.00	\$15.25	\$0.00	\$58.42
5	75	\$35.54	\$10.00	\$15.25	\$0.00	\$60.79
6	80	\$37.90	\$10.00	\$15.25	\$0.00	\$63.15
7	85	\$40.27	\$10.00	\$15.25	\$0.00	\$65.52
8	90	\$42.64	\$10.00	\$15.25	\$0.00	\$67.89

**Notes:**

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

HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	08/01/2017	\$43.83	\$11.45	\$24.03	\$2.38	\$81.69
	02/01/2018	\$44.98	\$11.45	\$24.03	\$2.38	\$82.84
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 103</i>	09/01/2017	\$49.28	\$13.00	\$17.48	\$0.00	\$79.76
	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	08/01/2017	\$43.83	\$11.45	\$24.03	\$2.38	\$81.69
	02/01/2018	\$44.98	\$11.45	\$24.03	\$2.38	\$82.84
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING - WATER) <i>PIPEFITTERS LOCAL 537 (Local 138)</i>	03/01/2017	\$48.86	\$9.70	\$16.14	\$0.00	\$74.70
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537 (Local 138)</i>	03/01/2017	\$48.86	\$9.70	\$16.14	\$0.00	\$74.70
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	06/01/2017	\$33.15	\$7.60	\$13.50	\$0.00	\$54.25
	12/01/2017	\$33.78	\$7.60	\$13.50	\$0.00	\$54.88
	06/01/2018	\$34.62	\$7.60	\$13.50	\$0.00	\$55.72
	12/01/2018	\$35.46	\$7.60	\$13.50	\$0.00	\$56.56
	06/01/2019	\$36.33	\$7.60	\$13.50	\$0.00	\$57.43
	12/01/2019	\$37.19	\$7.60	\$13.50	\$0.00	\$58.29
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2017	\$47.09	\$11.75	\$14.20	\$0.00	\$73.04
	09/01/2018	\$49.34	\$11.75	\$14.20	\$0.00	\$75.29
	09/01/2019	\$51.84	\$11.75	\$14.20	\$0.00	\$77.79

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

**Effective Date - 09/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.55	\$11.75	\$10.45	\$0.00	\$45.75
2	60	\$28.25	\$11.75	\$11.20	\$0.00	\$51.20
3	70	\$32.96	\$11.75	\$11.95	\$0.00	\$56.66
4	80	\$37.67	\$11.75	\$12.70	\$0.00	\$62.12

**Effective Date - 09/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.67	\$11.75	\$10.45	\$0.00	\$46.87
2	60	\$29.60	\$11.75	\$11.20	\$0.00	\$52.55
3	70	\$34.54	\$11.75	\$11.95	\$0.00	\$58.24
4	80	\$39.47	\$11.75	\$12.70	\$0.00	\$63.92

**Notes:**

Steps are 1 year

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

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (BOSTON AREA)</i>	03/16/2017	\$44.65	\$7.80	\$20.85	\$0.00	\$73.30
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**Apprentice - IRONWORKER - Local 7 Boston**

**Effective Date - 03/16/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.79	\$7.80	\$20.85	\$0.00	\$55.44
2	70	\$31.26	\$7.80	\$20.85	\$0.00	\$59.91
3	75	\$33.49	\$7.80	\$20.85	\$0.00	\$62.14
4	80	\$35.72	\$7.80	\$20.85	\$0.00	\$64.37
5	85	\$37.95	\$7.80	\$20.85	\$0.00	\$66.60
6	90	\$40.19	\$7.80	\$20.85	\$0.00	\$68.84

**Notes:**

\*\* Structural 1:6; Ornamental 1:4

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

JACKHAMMER & PAVING BREAKER OPERATOR	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
LABORERS - ZONE 2	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79

For apprentice rates see "Apprentice- LABORER"

LABORER	06/01/2017	\$32.40	\$7.60	\$13.50	\$0.00	\$53.50
LABORERS - ZONE 2	12/01/2017	\$33.03	\$7.60	\$13.50	\$0.00	\$54.13
	06/01/2018	\$33.87	\$7.60	\$13.50	\$0.00	\$54.97
	12/01/2018	\$34.71	\$7.60	\$13.50	\$0.00	\$55.81
	06/01/2019	\$35.58	\$7.60	\$13.50	\$0.00	\$56.68
	12/01/2019	\$36.44	\$7.60	\$13.50	\$0.00	\$57.54

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - LABORER - Zone 2**

**Effective Date - 06/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.44	\$7.60	\$13.50	\$0.00	\$40.54
2	70	\$22.68	\$7.60	\$13.50	\$0.00	\$43.78
3	80	\$25.92	\$7.60	\$13.50	\$0.00	\$47.02
4	90	\$29.16	\$7.60	\$13.50	\$0.00	\$50.26

**Effective Date - 12/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.82	\$7.60	\$13.50	\$0.00	\$40.92
2	70	\$23.12	\$7.60	\$13.50	\$0.00	\$44.22
3	80	\$26.42	\$7.60	\$13.50	\$0.00	\$47.52
4	90	\$29.73	\$7.60	\$13.50	\$0.00	\$50.83

**Notes:**

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

LABORER: CARPENTER TENDER	06/01/2017	\$32.40	\$7.60	\$13.50	\$0.00	\$53.50
LABORERS - ZONE 2	12/01/2017	\$33.03	\$7.60	\$13.50	\$0.00	\$54.13
	06/01/2018	\$33.87	\$7.60	\$13.50	\$0.00	\$54.97
	12/01/2018	\$34.71	\$7.60	\$13.50	\$0.00	\$55.81
	06/01/2019	\$35.58	\$7.60	\$13.50	\$0.00	\$56.68
	12/01/2019	\$36.44	\$7.60	\$13.50	\$0.00	\$57.54

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER	06/01/2017	\$32.40	\$7.60	\$13.50	\$0.00	\$53.50
LABORERS - ZONE 2	12/01/2017	\$33.03	\$7.60	\$13.50	\$0.00	\$54.13
	06/01/2018	\$33.87	\$7.60	\$13.50	\$0.00	\$54.97
	12/01/2018	\$34.71	\$7.60	\$13.50	\$0.00	\$55.81
	06/01/2019	\$35.58	\$7.60	\$13.50	\$0.00	\$56.68
	12/01/2019	\$36.44	\$7.60	\$13.50	\$0.00	\$57.54

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER	06/01/2017	\$32.60	\$7.60	\$13.45	\$0.00	\$53.65
LABORERS - ZONE 2	12/01/2017	\$33.23	\$7.60	\$13.45	\$0.00	\$54.28
	06/01/2018	\$34.07	\$7.60	\$13.45	\$0.00	\$55.12
	12/01/2018	\$34.91	\$7.60	\$13.45	\$0.00	\$55.96
	06/01/2019	\$35.78	\$7.60	\$13.45	\$0.00	\$56.83
	12/01/2019	\$36.64	\$7.60	\$13.45	\$0.00	\$57.69

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>	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
	For apprentice rates see "Apprentice- LABORER"					
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	06/01/2017	\$32.40	\$7.60	\$13.50	\$0.00	\$53.50
	12/01/2017	\$33.03	\$7.60	\$13.50	\$0.00	\$54.13
	06/01/2018	\$33.87	\$7.60	\$13.50	\$0.00	\$54.97
	12/01/2018	\$34.71	\$7.60	\$13.50	\$0.00	\$55.81
	06/01/2019	\$35.58	\$7.60	\$13.50	\$0.00	\$56.68
	12/01/2019	\$36.44	\$7.60	\$13.50	\$0.00	\$57.54
	For apprentice rates see "Apprentice- LABORER"					
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	06/01/2017	\$32.40	\$7.60	\$13.50	\$0.00	\$53.50
	12/01/2017	\$33.03	\$7.60	\$13.50	\$0.00	\$54.13
	06/01/2018	\$33.87	\$7.60	\$13.50	\$0.00	\$54.97
	12/01/2018	\$34.71	\$7.60	\$13.50	\$0.00	\$55.81
	06/01/2019	\$35.58	\$7.60	\$13.50	\$0.00	\$56.68
	12/01/2019	\$36.44	\$7.60	\$13.50	\$0.00	\$57.54
	This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"					
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
	For apprentice rates see "Apprentice- LABORER"					
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2017	\$39.82	\$10.75	\$17.80	\$0.00	\$68.37
	02/01/2018	\$40.36	\$10.75	\$17.80	\$0.00	\$68.91
	08/01/2018	\$41.44	\$10.75	\$17.93	\$0.00	\$70.12
	02/01/2019	\$41.95	\$10.75	\$17.93	\$0.00	\$70.63
	08/01/2019	\$43.03	\$10.75	\$18.07	\$0.00	\$71.85
	02/01/2020	\$43.54	\$10.75	\$18.07	\$0.00	\$72.36
	08/01/2020	\$44.62	\$10.75	\$18.22	\$0.00	\$73.59
	02/01/2021	\$45.13	\$10.75	\$18.22	\$0.00	\$74.10
	08/01/2021	\$46.25	\$10.75	\$18.38	\$0.00	\$75.38
	02/01/2022	\$46.72	\$10.75	\$18.38	\$0.00	\$75.85

**Classification**

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

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

**Effective Date - 08/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.91	\$10.75	\$17.80	\$0.00	\$48.46
2	60	\$23.89	\$10.75	\$17.80	\$0.00	\$52.44
3	70	\$27.87	\$10.75	\$17.80	\$0.00	\$56.42
4	80	\$31.86	\$10.75	\$17.80	\$0.00	\$60.41
5	90	\$35.84	\$10.75	\$17.80	\$0.00	\$64.39

**Effective Date - 02/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.18	\$10.75	\$17.80	\$0.00	\$48.73
2	60	\$24.22	\$10.75	\$17.80	\$0.00	\$52.77
3	70	\$28.25	\$10.75	\$17.80	\$0.00	\$56.80
4	80	\$32.29	\$10.75	\$17.80	\$0.00	\$60.84
5	90	\$36.32	\$10.75	\$17.80	\$0.00	\$64.87

**Notes:**

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

MARBLE MASONS,TILELAYERS & TERRAZZO MECH	08/01/2017	\$52.10	\$10.75	\$19.35	\$0.00	\$82.20
BRICKLAYERS LOCAL 3 - MARBLE & TILE	02/01/2018	\$52.78	\$10.75	\$19.35	\$0.00	\$82.88
	08/01/2018	\$54.13	\$10.75	\$19.48	\$0.00	\$84.36
	02/01/2019	\$54.75	\$10.75	\$19.48	\$0.00	\$84.98
	08/01/2019	\$56.10	\$10.75	\$19.62	\$0.00	\$86.47
	02/01/2020	\$56.73	\$10.75	\$19.62	\$0.00	\$87.10
	08/01/2020	\$58.08	\$10.75	\$19.77	\$0.00	\$88.60
	02/01/2021	\$58.72	\$10.75	\$19.77	\$0.00	\$89.24
	08/01/2021	\$60.12	\$10.75	\$19.93	\$0.00	\$90.80
	02/01/2022	\$60.69	\$10.75	\$19.93	\$0.00	\$91.37

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile**
**Effective Date - 08/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.05	\$10.75	\$19.35	\$0.00	\$56.15
2	60	\$31.26	\$10.75	\$19.35	\$0.00	\$61.36
3	70	\$36.47	\$10.75	\$19.35	\$0.00	\$66.57
4	80	\$41.68	\$10.75	\$19.35	\$0.00	\$71.78
5	90	\$46.89	\$10.75	\$19.35	\$0.00	\$76.99

**Effective Date - 02/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.39	\$10.75	\$19.35	\$0.00	\$56.49
2	60	\$31.67	\$10.75	\$19.35	\$0.00	\$61.77
3	70	\$36.95	\$10.75	\$19.35	\$0.00	\$67.05
4	80	\$42.22	\$10.75	\$19.35	\$0.00	\$72.32
5	90	\$47.50	\$10.75	\$19.35	\$0.00	\$77.60

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

MECH. SWEEPER OPERATOR (ON CONST. SITES)	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1)	04/01/2017	\$38.62	\$9.90	\$18.50	\$0.00	\$67.02
MILLWRIGHTS LOCAL 1121 - Zone 1	10/01/2017	\$39.52	\$9.90	\$18.50	\$0.00	\$67.92
	04/01/2018	\$40.42	\$9.90	\$18.50	\$0.00	\$68.82
	10/01/2018	\$41.32	\$9.90	\$18.50	\$0.00	\$69.72
	04/01/2019	\$42.22	\$9.90	\$18.50	\$0.00	\$70.62

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - MILLWRIGHT - Local 1121 Zone 1**

**Effective Date -** 04/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$21.24	\$9.90	\$5.31	\$0.00	\$36.45
2	65	\$25.10	\$9.90	\$15.13	\$0.00	\$50.13
3	75	\$28.97	\$9.90	\$16.10	\$0.00	\$54.97
4	85	\$32.83	\$9.90	\$17.06	\$0.00	\$59.79

**Effective Date -** 10/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$21.74	\$9.90	\$5.31	\$0.00	\$36.95
2	65	\$25.69	\$9.90	\$15.13	\$0.00	\$50.72
3	75	\$29.64	\$9.90	\$16.10	\$0.00	\$55.64
4	85	\$33.59	\$9.90	\$17.06	\$0.00	\$60.55

**Notes:**

Steps are 2,000 hours

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

MORTAR MIXER LABORERS - ZONE 2	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2017	\$23.47	\$10.00	\$15.25	\$0.00	\$48.72
	12/01/2017	\$23.99	\$10.00	\$15.25	\$0.00	\$49.24
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2017	\$27.54	\$10.00	\$15.25	\$0.00	\$52.79
	12/01/2017	\$28.15	\$10.00	\$15.25	\$0.00	\$53.40
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36



**Apprentice - PAINTER Local 35 - BRIDGES/TANKS****Effective Date -** 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.71	\$7.85	\$0.00	\$0.00	\$33.56
2	55	\$28.28	\$7.85	\$3.66	\$0.00	\$39.79
3	60	\$30.85	\$7.85	\$3.99	\$0.00	\$42.69
4	65	\$33.42	\$7.85	\$4.32	\$0.00	\$45.59
5	70	\$35.99	\$7.85	\$14.11	\$0.00	\$57.95
6	75	\$38.56	\$7.85	\$14.44	\$0.00	\$60.85
7	80	\$41.13	\$7.85	\$14.77	\$0.00	\$63.75
8	90	\$46.27	\$7.85	\$15.44	\$0.00	\$69.56

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, NEW) \*

01/01/2017

\$42.31

\$7.85

\$16.10

\$0.00

\$66.26

\* If 30% or more of surfaces to be painted are new construction,

NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New****Effective Date -** 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.16	\$7.85	\$0.00	\$0.00	\$29.01
2	55	\$23.27	\$7.85	\$3.66	\$0.00	\$34.78
3	60	\$25.39	\$7.85	\$3.99	\$0.00	\$37.23
4	65	\$27.50	\$7.85	\$4.32	\$0.00	\$39.67
5	70	\$29.62	\$7.85	\$14.11	\$0.00	\$51.58
6	75	\$31.73	\$7.85	\$14.44	\$0.00	\$54.02
7	80	\$33.85	\$7.85	\$14.77	\$0.00	\$56.47
8	90	\$38.08	\$7.85	\$15.44	\$0.00	\$61.37

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, REPAINT)

01/01/2017

\$40.37

\$7.85

\$16.10

\$0.00

\$64.32

PAINTERS LOCAL 35 - ZONE 2

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**
**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.19	\$7.85	\$0.00	\$0.00	\$28.04
2	55	\$22.20	\$7.85	\$3.66	\$0.00	\$33.71
3	60	\$24.22	\$7.85	\$3.99	\$0.00	\$36.06
4	65	\$26.24	\$7.85	\$4.32	\$0.00	\$38.41
5	70	\$28.26	\$7.85	\$14.11	\$0.00	\$50.22
6	75	\$30.28	\$7.85	\$14.44	\$0.00	\$52.57
7	80	\$32.30	\$7.85	\$14.77	\$0.00	\$54.92
8	90	\$36.33	\$7.85	\$15.44	\$0.00	\$59.62

**Notes:**

Steps are 750 hrs.

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

PAINTER (TRAFFIC MARKINGS)

LABORERS - ZONE 2

06/01/2017	\$32.40	\$7.60	\$13.50	\$0.00	\$53.50
12/01/2017	\$33.03	\$7.60	\$13.50	\$0.00	\$54.13
06/01/2018	\$33.87	\$7.60	\$13.50	\$0.00	\$54.97
12/01/2018	\$34.71	\$7.60	\$13.50	\$0.00	\$55.81
06/01/2019	\$35.58	\$7.60	\$13.50	\$0.00	\$56.68
12/01/2019	\$36.44	\$7.60	\$13.50	\$0.00	\$57.54

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) \*

01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86
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\* If 30% or more of surfaces to be painted are new construction,  
NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

**Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW**
**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.46	\$7.85	\$0.00	\$0.00	\$28.31
2	55	\$22.50	\$7.85	\$3.66	\$0.00	\$34.01
3	60	\$24.55	\$7.85	\$3.99	\$0.00	\$36.39
4	65	\$26.59	\$7.85	\$4.32	\$0.00	\$38.76
5	70	\$28.64	\$7.85	\$14.11	\$0.00	\$50.60
6	75	\$30.68	\$7.85	\$14.44	\$0.00	\$52.97
7	80	\$32.73	\$7.85	\$14.77	\$0.00	\$55.35
8	90	\$36.82	\$7.85	\$15.44	\$0.00	\$60.11

**Notes:**

Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, REPAINT)

PAINTERS LOCAL 35 - ZONE 2

01/01/2017	\$38.97	\$7.85	\$16.10	\$0.00	\$62.92
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT**

**Effective Date -** 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.49	\$7.85	\$0.00	\$0.00	\$27.34
2	55	\$21.43	\$7.85	\$3.66	\$0.00	\$32.94
3	60	\$23.38	\$7.85	\$3.99	\$0.00	\$35.22
4	65	\$25.33	\$7.85	\$4.32	\$0.00	\$37.50
5	70	\$27.28	\$7.85	\$14.11	\$0.00	\$49.24
6	75	\$29.23	\$7.85	\$14.44	\$0.00	\$51.52
7	80	\$31.18	\$7.85	\$14.77	\$0.00	\$53.80
8	90	\$35.07	\$7.85	\$15.44	\$0.00	\$58.36

**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> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07

**Apprentice - PILE DRIVER - Local 56 Zone 1**

**Effective Date -** 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.02	\$9.80	\$19.23	\$0.00	\$50.05
2	60	\$25.22	\$9.80	\$19.23	\$0.00	\$54.25
3	70	\$29.43	\$9.80	\$19.23	\$0.00	\$58.46
4	75	\$31.53	\$9.80	\$19.23	\$0.00	\$60.56
5	80	\$33.63	\$9.80	\$19.23	\$0.00	\$62.66
6	80	\$33.63	\$9.80	\$19.23	\$0.00	\$62.66
7	90	\$37.84	\$9.80	\$19.23	\$0.00	\$66.87
8	90	\$37.84	\$9.80	\$19.23	\$0.00	\$66.87

**Notes:**

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

PIPEFITTER & STEAMFITTER <i>PIPEFITTERS LOCAL 537 (Local 138)</i>	03/01/2017	\$48.86	\$9.70	\$16.14	\$0.00	\$74.70
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - PIPEFITTER Local 537 (Local 138)**

**Effective Date -** 03/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.54	\$9.70	\$5.50	\$0.00	\$34.74
2	45	\$21.99	\$9.70	\$16.14	\$0.00	\$47.83
3	60	\$29.32	\$9.70	\$16.14	\$0.00	\$55.16
4	70	\$34.20	\$9.70	\$16.14	\$0.00	\$60.04
5	80	\$39.09	\$9.70	\$16.14	\$0.00	\$64.93

**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:\*\***

PIPELAYER	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
LABORERS - ZONE 2	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79

For apprentice rates see "Apprentice- LABORER"

PLUMBER	03/01/2017	\$48.61	\$11.32	\$15.46	\$0.00	\$75.39
PLUMBERS & GASFITTERS LOCAL 12 (Local 138)						

**Apprentice - PLUMBER/GASFITTER - Local 12 (Local 138)**

**Effective Date -** 03/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.01	\$11.32	\$5.74	\$0.00	\$34.07
2	40	\$19.44	\$11.32	\$6.49	\$0.00	\$37.25
3	55	\$26.74	\$11.32	\$8.73	\$0.00	\$46.79
4	65	\$31.60	\$11.32	\$10.23	\$0.00	\$53.15
5	75	\$36.46	\$11.32	\$11.72	\$0.00	\$59.50

**Notes:**

Steps are 1 yr

Step 4 with lic\$55.65 Step5 with lic\$61.89

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

PNEUMATIC CONTROLS (TEMP.)	03/01/2017	\$48.86	\$9.70	\$16.14	\$0.00	\$74.70
PIPEFITTERS LOCAL 537 (Local 138)						

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

PNEUMATIC DRILL/TOOL OPERATOR	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
LABORERS - ZONE 2	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER	06/01/2017	\$33.40	\$7.60	\$13.50	\$0.00	\$54.50
LABORERS - ZONE 2	12/01/2017	\$34.03	\$7.60	\$13.50	\$0.00	\$55.13
	06/01/2018	\$34.87	\$7.60	\$13.50	\$0.00	\$55.97
	12/01/2018	\$35.71	\$7.60	\$13.50	\$0.00	\$56.81
	06/01/2019	\$36.58	\$7.60	\$13.50	\$0.00	\$57.68
	12/01/2019	\$37.44	\$7.60	\$13.50	\$0.00	\$58.54
For apprentice rates see "Apprentice- LABORER"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE	06/01/2017	\$46.38	\$10.00	\$15.25	\$0.00	\$71.63
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$47.38	\$10.00	\$15.25	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE)	06/01/2017	\$46.38	\$10.00	\$15.25	\$0.00	\$71.63
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$47.38	\$10.00	\$15.25	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER)	06/01/2017	\$31.86	\$10.00	\$15.25	\$0.00	\$57.11
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$32.55	\$10.00	\$15.25	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER	05/01/2017	\$24.21	\$8.49	\$11.54	\$0.00	\$44.24
TEAMSTERS LOCAL 42	04/30/2018	\$24.21	\$8.49	\$11.96	\$0.00	\$44.66
	05/01/2018	\$24.24	\$8.49	\$12.46	\$0.00	\$45.19
	04/30/2019	\$24.24	\$8.49	\$12.92	\$0.00	\$45.65
RECLAIMERS	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
OPERATING ENGINEERS LOCAL 4	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work)	06/01/2016	\$25.32	\$9.80	\$16.82	\$0.00	\$51.94
CARPENTERS -ZONE 2 (Residential Wood)						
RESIDENTIAL WOOD FRAME CARPENTER **	04/01/2017	\$26.31	\$7.07	\$7.18	\$0.00	\$40.56
** The Residential Wood Frame Carpenter classification applies	10/01/2017	\$26.93	\$7.07	\$7.18	\$0.00	\$41.18
only to the construction of new, wood frame residences that do	04/01/2018	\$27.35	\$7.07	\$7.18	\$0.00	\$41.60
not exceed four stories including the basement. CARPENTERS -ZONE	10/01/2018	\$27.77	\$7.07	\$7.18	\$0.00	\$42.02
2 (Residential Wood)	04/01/2019	\$28.20	\$7.07	\$7.18	\$0.00	\$42.45
	10/01/2019	\$28.63	\$7.07	\$7.18	\$0.00	\$42.88

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 - 04/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.79	\$7.07	\$0.00	\$0.00	\$22.86
2	60	\$15.79	\$7.07	\$0.00	\$0.00	\$22.86
3	65	\$17.10	\$7.07	\$7.18	\$0.00	\$31.35
4	70	\$18.42	\$7.07	\$7.18	\$0.00	\$32.67
5	75	\$19.73	\$7.07	\$7.18	\$0.00	\$33.98
6	80	\$21.05	\$7.07	\$7.18	\$0.00	\$35.30
7	85	\$22.36	\$7.07	\$7.18	\$0.00	\$36.61
8	90	\$23.68	\$7.07	\$7.18	\$0.00	\$37.93

**Effective Date - 10/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.16	\$7.07	\$0.00	\$0.00	\$23.23
2	60	\$16.16	\$7.07	\$0.00	\$0.00	\$23.23
3	65	\$17.50	\$7.07	\$7.18	\$0.00	\$31.75
4	70	\$18.85	\$7.07	\$7.18	\$0.00	\$33.10
5	75	\$20.20	\$7.07	\$7.18	\$0.00	\$34.45
6	80	\$21.54	\$7.07	\$7.18	\$0.00	\$35.79
7	85	\$22.89	\$7.07	\$7.18	\$0.00	\$37.14
8	90	\$24.24	\$7.07	\$7.18	\$0.00	\$38.49

**Notes:**
**Apprentice to Journeyworker Ratio:1:5**
**RIDE-ON MOTORIZED BUGGY OPERATOR**
*LABORERS - ZONE 2*

06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79

For apprentice rates see "Apprentice- LABORER"

**ROLLER/SPREADER/MULCHING MACHINE**
*OPERATING ENGINEERS LOCAL 4*

06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

**ROOFER (Inc.Roofers Waterproofing &Roofers Damproofg)**
*ROOFERS LOCAL 33*

08/01/2017	\$41.36	\$11.20	\$14.80	\$0.00	\$67.36
02/01/2018	\$42.51	\$11.20	\$14.80	\$0.00	\$68.51
08/01/2018	\$43.61	\$11.20	\$14.80	\$0.00	\$69.61
02/01/2019	\$44.76	\$11.20	\$14.80	\$0.00	\$70.76

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - ROOFER - Local 33**
**Effective Date - 08/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.68	\$11.20	\$3.44	\$0.00	\$35.32
2	60	\$24.82	\$11.20	\$14.80	\$0.00	\$50.82
3	65	\$26.88	\$11.20	\$14.80	\$0.00	\$52.88
4	75	\$31.02	\$11.20	\$14.80	\$0.00	\$57.02
5	85	\$35.16	\$11.20	\$14.80	\$0.00	\$61.16

**Effective Date - 02/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.26	\$11.20	\$3.44	\$0.00	\$35.90
2	60	\$25.51	\$11.20	\$14.80	\$0.00	\$51.51
3	65	\$27.63	\$11.20	\$14.80	\$0.00	\$53.63
4	75	\$31.88	\$11.20	\$14.80	\$0.00	\$57.88
5	85	\$36.13	\$11.20	\$14.80	\$0.00	\$62.13

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

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

ROOFER SLATE / TILE / PRECAST CONCRETE

ROOFERS LOCAL 33

08/01/2017	\$41.61	\$11.20	\$14.80	\$0.00	\$67.61
02/01/2018	\$42.76	\$11.20	\$14.80	\$0.00	\$68.76
08/01/2018	\$43.86	\$11.20	\$14.80	\$0.00	\$69.86
02/01/2019	\$45.01	\$11.20	\$14.80	\$0.00	\$71.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER

SHEETMETAL WORKERS LOCAL 17 - A

08/01/2017	\$43.83	\$11.45	\$24.03	\$2.38	\$81.69
02/01/2018	\$44.98	\$11.45	\$24.03	\$2.38	\$82.84

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - SHEET METAL WORKER - Local 17-A**
**Effective Date - 08/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.53	\$11.45	\$5.61	\$0.00	\$34.59
2	40	\$17.53	\$11.45	\$5.61	\$0.00	\$34.59
3	45	\$19.72	\$11.45	\$10.76	\$1.26	\$43.19
4	45	\$19.72	\$11.45	\$10.76	\$1.26	\$43.19
5	50	\$21.92	\$11.45	\$11.71	\$1.35	\$46.43
6	50	\$21.92	\$11.45	\$11.96	\$1.36	\$46.69
7	60	\$26.30	\$11.45	\$13.61	\$1.54	\$52.90
8	65	\$28.49	\$11.45	\$14.56	\$1.64	\$56.14
9	75	\$32.87	\$11.45	\$16.47	\$1.82	\$62.61
10	85	\$37.26	\$11.45	\$17.87	\$2.00	\$68.58

**Effective Date - 02/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.99	\$11.45	\$5.24	\$0.00	\$34.68
2	40	\$17.99	\$11.45	\$5.24	\$0.00	\$34.68
3	45	\$20.24	\$11.45	\$10.31	\$1.27	\$43.27
4	45	\$20.24	\$11.45	\$10.31	\$1.27	\$43.27
5	50	\$22.49	\$11.45	\$11.21	\$1.37	\$46.52
6	50	\$22.49	\$11.45	\$11.46	\$1.38	\$46.78
7	60	\$26.99	\$11.45	\$13.02	\$1.56	\$53.02
8	65	\$29.24	\$11.45	\$13.93	\$1.67	\$56.29
9	75	\$33.74	\$11.45	\$15.74	\$1.85	\$62.78
10	85	\$38.23	\$11.45	\$17.05	\$2.03	\$68.76

**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



**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 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24
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SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2016	\$32.73	\$10.91	\$10.89	\$0.00	\$54.53
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SPRINKLER FITTER SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2	03/01/2017	\$50.47	\$8.77	\$17.20	\$0.00	\$76.44
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**Apprentice - SPRINKLER FITTER - Local 550 (Section B) Zone 2**
**Effective Date - 03/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.66	\$8.77	\$8.70	\$0.00	\$35.13
2	40	\$20.19	\$8.77	\$8.70	\$0.00	\$37.66
3	45	\$22.71	\$8.77	\$8.70	\$0.00	\$40.18
4	50	\$25.24	\$8.77	\$8.70	\$0.00	\$42.71
5	55	\$27.76	\$8.77	\$8.70	\$0.00	\$45.23
6	60	\$30.28	\$8.77	\$10.20	\$0.00	\$49.25
7	65	\$32.81	\$8.77	\$10.20	\$0.00	\$51.78
8	70	\$35.33	\$8.77	\$10.20	\$0.00	\$54.30
9	75	\$37.85	\$8.77	\$10.20	\$0.00	\$56.82
10	80	\$40.38	\$8.77	\$10.20	\$0.00	\$59.35

**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 OPERATING ENGINEERS LOCAL 4	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
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	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
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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 <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	09/01/2017	\$36.96	\$13.00	\$15.62	\$0.00	\$65.58
	03/01/2018	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54
	09/01/2018	\$38.51	\$13.00	\$15.96	\$0.00	\$67.47
	03/01/2019	\$39.40	\$13.00	\$15.98	\$0.00	\$68.38

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103**

**Effective Date - 09/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$14.78	\$13.00	\$0.44	\$0.00	\$28.22
2	40	\$14.78	\$13.00	\$0.44	\$0.00	\$28.22
3	45	\$16.63	\$13.00	\$12.55	\$0.00	\$42.18
4	45	\$16.63	\$13.00	\$12.55	\$0.00	\$42.18
5	50	\$18.48	\$13.00	\$12.82	\$0.00	\$44.30
6	55	\$20.33	\$13.00	\$13.10	\$0.00	\$46.43
7	60	\$22.18	\$13.00	\$13.39	\$0.00	\$48.57
8	65	\$24.02	\$13.00	\$13.66	\$0.00	\$50.68
9	70	\$25.87	\$13.00	\$13.95	\$0.00	\$52.82
10	75	\$27.72	\$13.00	\$14.22	\$0.00	\$54.94

**Effective Date - 03/01/2018**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.04	\$13.00	\$0.45	\$0.00	\$28.49
2	40	\$15.04	\$13.00	\$0.45	\$0.00	\$28.49
3	45	\$16.92	\$13.00	\$12.74	\$0.00	\$42.66
4	45	\$16.92	\$13.00	\$12.74	\$0.00	\$42.66
5	50	\$18.81	\$13.00	\$13.03	\$0.00	\$44.84
6	55	\$20.69	\$13.00	\$13.32	\$0.00	\$47.01
7	60	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
8	65	\$24.45	\$13.00	\$13.90	\$0.00	\$51.35
9	70	\$26.33	\$13.00	\$14.19	\$0.00	\$53.52
10	75	\$28.21	\$13.00	\$14.48	\$0.00	\$55.69

**Notes:**

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2017	\$51.00	\$10.75	\$19.35	\$0.00	\$81.10
	02/01/2018	\$51.68	\$10.75	\$19.35	\$0.00	\$81.78
	08/01/2018	\$53.03	\$10.75	\$19.48	\$0.00	\$83.26
	02/01/2019	\$53.67	\$10.75	\$19.48	\$0.00	\$83.90
	08/01/2019	\$55.02	\$10.75	\$19.62	\$0.00	\$85.39
	02/01/2020	\$55.66	\$10.75	\$19.62	\$0.00	\$86.03
	08/01/2020	\$57.01	\$10.75	\$19.77	\$0.00	\$87.53
	02/01/2021	\$57.65	\$10.75	\$19.77	\$0.00	\$88.17
	08/01/2021	\$59.05	\$10.75	\$19.93	\$0.00	\$89.73
	02/01/2022	\$59.64	\$10.75	\$19.93	\$0.00	\$90.32

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

**Effective Date -** 08/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.50	\$10.75	\$19.35	\$0.00	\$55.60
2	60	\$30.60	\$10.75	\$19.35	\$0.00	\$60.70
3	70	\$35.70	\$10.75	\$19.35	\$0.00	\$65.80
4	80	\$40.80	\$10.75	\$19.35	\$0.00	\$70.90
5	90	\$45.90	\$10.75	\$19.35	\$0.00	\$76.00

**Effective Date -** 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.84	\$10.75	\$19.35	\$0.00	\$55.94
2	60	\$31.01	\$10.75	\$19.35	\$0.00	\$61.11
3	70	\$36.18	\$10.75	\$19.35	\$0.00	\$66.28
4	80	\$41.34	\$10.75	\$19.35	\$0.00	\$71.44
5	90	\$46.51	\$10.75	\$19.35	\$0.00	\$76.61

**Notes:**

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

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2016	\$37.70	\$7.60	\$14.35	\$0.00	\$59.65
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2016	\$36.42	\$7.60	\$14.35	\$0.00	\$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2016	\$36.30	\$7.60	\$14.35	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2017	\$45.93	\$10.00	\$15.25	\$0.00	\$71.18
	12/01/2017	\$46.92	\$10.00	\$15.25	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$33.02	\$10.91	\$10.89	\$0.00	\$54.82

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i> For apprentice rates see "Apprentice- LABORER"	12/01/2016	\$48.58	\$7.60	\$14.75	\$0.00	\$70.93
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i> For apprentice rates see "Apprentice- LABORER"	12/01/2016	\$50.58	\$7.60	\$14.75	\$0.00	\$72.93
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i> For apprentice rates see "Apprentice- LABORER"	12/01/2016	\$40.65	\$7.60	\$14.75	\$0.00	\$63.00
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i> For apprentice rates see "Apprentice- LABORER"	12/01/2016	\$42.65	\$7.60	\$14.75	\$0.00	\$65.00
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>  For apprentice rates see "Apprentice- LABORER"	06/01/2017	\$32.65	\$7.60	\$13.50	\$0.00	\$53.75
	12/01/2017	\$33.28	\$7.60	\$13.50	\$0.00	\$54.38
	06/01/2018	\$34.12	\$7.60	\$13.50	\$0.00	\$55.22
	12/01/2018	\$34.96	\$7.60	\$13.50	\$0.00	\$56.06
	06/01/2019	\$35.83	\$7.60	\$13.50	\$0.00	\$56.93
	12/01/2019	\$36.69	\$7.60	\$13.50	\$0.00	\$57.79
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>  For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2017	\$46.38	\$10.00	\$15.25	\$0.00	\$71.63
	12/01/2017	\$47.38	\$10.00	\$15.25	\$0.00	\$72.63
WATER METER INSTALLER <i>PLUMBERS &amp; GASFITTERS LOCAL 12 (Local 138)</i>  For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"	03/01/2017	\$48.61	\$11.32	\$15.46	\$0.00	\$75.39
<b>Outside Electrical - East</b>						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	\$27.14	\$7.75	\$1.81	\$0.00	\$36.70
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	\$38.45	\$7.75	\$9.53	\$0.00	\$55.73
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	\$31.66	\$7.75	\$9.44	\$0.00	\$48.85
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	\$38.45	\$7.75	\$13.61	\$0.00	\$59.81
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	\$33.92	\$7.75	\$10.21	\$0.00	\$51.88
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>  For apprentice rates see "Apprentice- LINEMAN"	09/03/2017	\$20.35	\$7.75	\$1.61	\$0.00	\$29.71

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$45.23	\$7.75	\$16.61	\$0.00	\$69.59

**Apprentice - LINEMAN (Outside Electrical) - East Local 104**

**Effective Date -** 09/03/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.14	\$7.75	\$3.31	\$0.00	\$38.20
2	65	\$29.40	\$7.75	\$3.38	\$0.00	\$40.53
3	70	\$31.66	\$7.75	\$3.45	\$0.00	\$42.86
4	75	\$33.92	\$7.75	\$5.02	\$0.00	\$46.69
5	80	\$36.18	\$7.75	\$5.09	\$0.00	\$49.02
6	85	\$38.45	\$7.75	\$5.15	\$0.00	\$51.35
7	90	\$40.71	\$7.75	\$7.22	\$0.00	\$55.68

**Notes:**

**Apprentice to Journeyworker Ratio:1:2**

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2016	\$28.98	\$4.25	\$3.12	\$0.00	\$36.35
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/31/2016	\$18.51	\$3.55	\$0.00	\$0.00	\$22.06
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is not on the ground. This classification does not apply to wholesale tree removal.						
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/31/2016	\$16.32	\$3.55	\$0.00	\$0.00	\$19.87
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is on the ground. This classification does not apply to wholesale tree removal.						

**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.)

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

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

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

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