

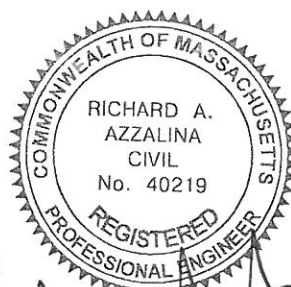
File R-107

**CONTRACT DOCUMENTS  
AND  
SPECIFICATIONS**

**Grand Junction Path & Pedestrian Improvements  
Along Galileo Galilei Way  
Contract No. 16**

**CITY OF CAMBRIDGE  
CAMBRIDGE REDEVELOPMENT AUTHORITY**

**JUNE 2015**



*Richard A. Azzalina*

**This Page Intentionally Left Blank**

## TABLE OF CONTENTS

<b><u>SUBJECT</u></b>	<b><u>PAGES</u></b>
<b>DIVISION OF BIDDING AND CONTRACT REQUIREMENTS</b>	
00020 Invitation to Bid	00020-01 to 00020-02
00100 Information and Instructions to Bidders	00100-01 to 00100-06
00150 Abbreviations, References, Permits and Fees	00150-01 to 00150-03
00210 Minority/Women Hiring Requirements For Grand Junction Path & Pedestrian Improvements, Contract No. 16	00210-01 to 00210-02
00211 Responsible Employer Requirements For Grand Junction Path & Pedestrian Improvements, Contract No. 16	00211-01
00212 MBE Requirements For Grand Junction Path & Pedestrian Improvements, Contract No. 16	00212-01 to 00212-02
<b>00300* Form for General Bid</b>	<b>00300-01 to 00300-15</b>
<b>00310* Bid Bond</b>	<b>00310-01</b>
<b>00311* MBE Forms</b>	<b>00311-01 to 00311-05</b>
<b>00312* Notarized Statement of Bidder's Qualifications</b>	<b>00312-01 to 00312-08</b>
<b>00313* General Contractor's Certification</b>	<b>00313-01</b>
<b>00315* Projected Workforce Certification</b>	<b>00315-01</b>
<b>00318* General Contractor's Responsible Employer Certification Form</b>	<b>00318-01</b>
<b>00319* Subcontractor's Responsible Employer Certification Form</b>	<b>00319-01</b>
<b>00323* Americans With Disabilities Act Statement</b>	<b>00323-01</b>
00500 Agreement	00500-01 to 00500-02
00610 Performance Bond	00610-01 to 00610-02
00620 Payment Bond	00620-01 to 00620-02
00660 Certificate of Authority	00660-01
00670 Division of Labor and Industries Wage Rates	00670-01 to 00670-39
00680 Div. of Labor and Statement of Compliance	00680-01
00800 General Conditions	00800-01 to 00800-58
00811 Monthly Price Adjustment for HMA	00811-01
00812 Monthly Price Adjustment for Diesel Fuel And Gasoline	00812-01
00814 Monthly Price Adjustment for Portland Cement	00814-01
00825 Supplemental Conditions	00825-01 to 00825-10
00900 Technical Specifications	00900-01 to 00900-110
Appendix A	Standard Details

**\*These forms must be submitted with the bid. Separate packet is provided.**

**FILE NO. R-107**

**INVITATION TO BID**

THE CAMBRIDGE REDEVELOPMENT AUTHORITY (CRA), the Awarding Authority, invites sealed bids for the project:

**GRAND JUNCTION PATH AND PEDESTRIAN IMPROVEMENTS – CONTRACT NO. 16**

Nature and scope of work: **SIDEWALK AND PATH CONSTRUCTION, WATER, ELECTRICAL, TRAFFIC SIGNAL MODIFICATIONS, AND LANDSCAPE IMPROVEMENTS. THIS CONTRACT WILL BE FOR 10 MONTHS.**

Bidding procedures shall be in accordance with M.G.L. c. 30, §39M, as most recently amended, and all other applicable laws.

The estimated project value is **\$ 450,000.00**

The Contract Documents may be examined and obtained **ONLY** at the office of Fay, Spofford & Thorndike, LLC, 5 Burlington Woods, Burlington, MA (781-221-1000) on or after **Wednesday, June 17, 2015**, every weekday between the hours of 9:00 A.M. and 4:00 P.M. Copies of the above documents may be obtained at the offices of Fay, Spofford & Thorndike, LLC upon payment of \$50.00 for each set, for which a refund will be made if returned in good condition within two weeks after the opening of bids. If a bidder requests Contract Documents to be mailed out to him, a separate check in the amount of \$20.00 made payable to "Fay, Spofford & Thorndike, LLC" shall be required. This is to cover the cost of mailing and handling and will not be refunded. **NO PARTIAL SETS WILL BE DISTRIBUTED.**

Sealed general bids for the "Grand Junction Path and Pedestrian Improvements – Contract No. 16" will be received at the office of Fay, Spofford & Thorndike, LLC, 5 Burlington Woods, Second Floor, Burlington, MA 01803 until **Wednesday, July 8, 2015 @ 12:00PM**. All general bids will be publicly opened and read aloud at the Cambridge Public Works Department Conference Room, 147 Hampshire Street, Cambridge, MA 02139 on Wednesday, July 8, 2015 @ 2:00PM.

**An original and one copy of the bid forms must be submitted.**

All general bids shall be accompanied by a bid deposit in the form of a certified, cashier's or treasurer's check (**NO CASH**) issued by a responsible bank or trust company made payable to the *Cambridge Redevelopment Authority* or a bid bond, in an amount not less than five percent (5%) of the value of the bid.

The successful bidder will be required to furnish a Performance Bond and a Labor and Material (Payment) bond each in the amount of one hundred percent (100%) of the contract sum. Bonds shall be obtained from a surety licensed to do business in the Commonwealth of Massachusetts and the form shall be satisfactory to the Cambridge Redevelopment Authority.

The successful bidder will also be required to comply with the provisions of Chapter 306 of the Acts of 2004 in regard to required OSHA approved safety & health training.

The Cambridge Redevelopment Authority reserves the right to reject any or all general bids if it is in the public interest to do so.

No less than the wage rates as set forth in the schedule contained in the Contract Documents must be paid on this project.

A pre-bid conference for all bidders will be held as follows:

Date: **June 24, 2015**

Time: **2:00PM**

Place: **Public Works Department Conference Room  
147 Hampshire Street  
Cambridge, MA 02139**

All contractor questions must be submitted in writing by **Wednesday, July 1, 2015 by 2:00 P.M.** to Fay, Spofford & Thorndike, Attn: Rick Azzalina, Phone (781) 221-1221, Fax (781) 229-1115, e-mail: [RAzzalina@fstinc.com](mailto:RAzzalina@fstinc.com). **No responses will be issued for questions received after this deadline.**

CAMBRIDGE REDEVLEOPMENT AUTHORITY

Tom Evans  
Executive Director

Date: June 17, 2015

# INFORMATION FOR AND INSTRUCTIONS TO BIDDERS

## 1. DEFINITIONS AND TERMINOLOGY

Article 1, Definitions, of the General Terms and Conditions of the Contract (“General Terms and Conditions”) included in the Project Manual are incorporated by reference as if fully rewritten herein. In the event of a conflict between the within definitions and those found in the General Terms and Conditions, the former govern for the purposes of these Instructions only. All other terms which are not herein defined have their ordinary dictionary meaning.

**ADDENDUM (ADDENDA, PLURAL)** - An Addendum is a document issued by the CRA prior to the opening of the General Bids which clarifies, amends, or modifies the Bidding Documents.

**ALTERNATE BID** - An Alternate Bid (or An Alternate) is an amount that is either added to or deducted from the Base Bid depending on the designation on the Bid form.

**BASE BID** - A Base Bid is the sum proposed by a Bidder to perform the Work and does not include any Alternate Bids.

**BID** - A Bid is a proposal to do the Work for a specified sum and includes accompanying forms which are required to be submitted.

**BIDDER** - A Bidder is a person who or an entity that submits a Bid pursuant to M.G.L. c. 30, §39M or c. 30B, as the case may be. The pronouns “it” and “they” are used herein when referring to a Bidder or Bidders, respectively.

**BIDDING DOCUMENTS** - The Bidding Documents are comprised of the entire Project Manual, which includes, but is not limited to, the Invitation to Bid (advertisement), the Instructions to Bidders, all of the forms (e.g., Bid forms, sample Agreement form, bond forms), the wage rates, the General Terms and Conditions of the Contract, any supplementary terms and conditions thereto, the Plans, the Specifications, and all addenda.

**BUSINESS DAYS** - Business days are defined as all days of the week excluding Saturdays, Sundays, and those holidays for which the CRA offices are closed for observance.

## 2. COPIES OF BIDDING DOCUMENTS

A Bidder may obtain complete sets of Bidding Documents upon payment of a nonrefundable fee, the amount of which is set forth in the Invitation to Bid.

No partial sets of Bidding Documents will be issued.

It is the responsibility of the Bidder to insure that it has obtained a complete set of Bidding Documents. Complete sets of Bidding Documents shall be used in preparing Bids. Neither the CRA nor the Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents in preparing the Bids.

Distribution of the Bidding Documents is for the sole purpose of obtaining Bids and does not confer a license or grant permission for any other use of the Bidding Documents.

## 3. STATE WAGE RATE REQUIREMENTS

The prevailing wage rates are included with the Bidding Documents and apply to this Project.

#### 4. QUESTIONS AND INTERPRETATIONS

All questions about the meaning or intent of the Bidding Documents shall be received in writing no later than 5:00pm on Wednesday, July 1<sup>st</sup>. Any questions received after such time will be answered at the discretion of the CRA.

Written clarifications or interpretations will be issued by the CRA in the form of an Addendum. Only questions answered by an Addendum will be binding. Oral clarifications or interpretations will be without legal effect. Addenda will either be faxed or mailed to all persons having received Bidding Documents from the CRA.

Each Bidder shall be responsible for determining that it has received all Addenda issued.

#### 5. THE BID

##### **BIDDER'S REPRESENTATIONS.**

In submitting a Bid, the Bidder represents that:

- It understands the Bidding Documents;
- It has read and examined the Bidding Documents thoroughly;
- The Bid is made in accordance with the Bidding Documents;
- It has visited the site, has become familiar with the conditions of the site and the surrounding area, and has familiarized itself with local conditions that may in any manner affect cost, progress, or performance of the Work;
- It has correlated its own observations with the Bidding Documents;
- It has found no errors, conflicts, ambiguities, or omissions in the Bidding Documents, except for those that it has brought to the CRA's attention in writing at least seven (7) business days prior to submitting its Bid;
- It is familiar with all of the applicable Federal, State, and City laws, rules, regulations, and procedures affecting its Bid and its Bid is in conformity with those laws, rules, regulations, and procedures;
- the Bidder has complied with every requirement of these Instructions and that the Bidding Documents are sufficient in scope and detail to indicate and convey an understanding of all terms and conditions for the performance of the Work.

##### **CONTENTS OF A BID.**

A Bid must include:

- **00300\* Form for General Bid**
- **00310\* Bid Bond**
- **00311\* MBE Forms**
- **00312\* Notarized Statement of Bidder's Qualifications**
- **00313\* General Contractor's Certification**

- **00315\* Projected Workforce Certification**
- **00318\* General Contractor's Responsible Employer Certification Form**
- **00319\* Subcontractor's Responsible Employer Certification Form**
- **00323\* Americans with Disabilities Act Statement**

**Right to Waive Informalities and Permit Curative Measures:** The CRA reserves the right to waive any Bid informalities. The CRA may permit bidders who fail to include all non-statutory, CRA and/or City of Cambridge forms to cure such omission(s) within five (5) days of bid opening, subject to the CRA and/or the City's discretion.

**Bid Deposits:** Unless otherwise stated, every Bid must be accompanied by a Bid deposit in the form of a Bid bond, certified check, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the Cambridge Redevelopment Authority. The Bid bond shall be (a) in a form satisfactory to the CRA, (b) with a surety company qualified to do business in the Commonwealth and satisfactory to the CRA, and (c) conditioned upon the faithful performance by the principal of the agreements contained in the Bid. The Bid deposit shall be no less than five percent (5%) of the value of the Bid.

**Bid Forms.** Each Bid shall be submitted on the Bid form included in the Project Manual. Total bid price must be stated in both dollar figures and words. In the case of a conflict, written amounts shall control over numbers. All blank spaces must be filled. Do not leave any blanks. Print "N/A" in any space not needed or used. The Bid form shall be completed in ink or by typewriter.

**Acknowledgment of Addenda.** Each Bidder is required to acknowledge the receipt of all Addenda (the numbers of which are to be filled in on the Bid form by the Bidder). The CRA, in its sole discretion, may deem a Bidder's failure to acknowledge any Addendum a minor informality.

**SUBMISSION OF A BID.**

Prior to the deadline for receipt of Bids, each Bid must be submitted to the CRA in a sealed envelope which is plainly marked on the outside with the name and address of the Bidder, the title of the Project, the file number, the portion of the Work which the Bid represents, and the date and time of the Bid opening. Any hand delivered Bid received after the deadline will not be accepted. Any other Bid received after the deadline will be returned to the addressee. Any Bid submitted to any other office or department of the CRA and received by the CRA after the deadline for receipt of Bids will not be accepted. It is the responsibility of the Bidder to ensure that its Bid is received by the CRA in a timely fashion. The deadline for receipt of Bids can be extended by Addendum only.



Bids may not be submitted orally, by facsimile, by telephone, or by any other method except for the methods described above.

**MODIFICATION OF A BID.**

A Bid may be modified only by submitting any such modification in the form of a document executed in the same manner as a Bid, delivered in a sealed envelope in the same manner as a Bid, designated as a modification to the original Bid and submitted to the CRA prior to the time designated for the opening of Bids.

**WITHDRAWAL OF A BID.**

**Prior to Bid opening.** A Bid may be withdrawn before the time designated for opening Bids. The Bidder requesting such withdrawal must make the request in writing and in a specific manner designated by the CRA if the CRA so requires. Withdrawal of a Bid prior to the Bid opening time will not prejudice the right of a Bidder to resubmit a Bid. A Bid cannot be withdrawn after the Bid opening time except as provided by law.

**After Bid opening.** In the case of death, disability, bona fide clerical error or mechanical error of a substantial nature or other unforeseen circumstances affecting a Bidder, a Bidder may withdraw its Bid after the time designated for Bid opening, if within five (5) days of the date designated for opening its Bid, such Bidder submits a statement under the penalties of perjury to the CRA detailing the basis for withdrawal. The CRA will then make a determination as to whether such Bidder has satisfied both the statutory and CRA requirements for such withdrawal. If the CRA is satisfied, the Bid Deposit will be returned to such Bidder.

**BID OPENING.**

All Bids received prior to the date and time designated for the Bid opening will be opened publicly and read aloud at a location designated by the CRA.

**Unforeseen Office Closure**

If, at the time of the scheduled bid opening, CRA Offices are closed due to uncontrolled events such as fire, snow, ice, wind, or building evacuation, the bid opening will be postponed to the same time on the next normal business day. Bids will be accepted until that date and time.

**PUBLIC BID REVIEW AND INSPECTION.**

Upon opening, all Bids become public records except for portions thereof that are not subject to public disclosure as a matter of law.

Bids may be reviewed by the public in a manner set forth by the CRA.

Any Bidder who objects to a Bid may protest the Bid. In order to be considered, the protest must be received by the CRA within two (2) business days after the Bid opening date. The protest must be in writing, must state in detail the basis for the protest, and must be signed by the protester.

## **6. RESERVATION OF RIGHTS TO REJECT BIDS**

The CRA reserves the right to reject any or all Bids, if it is in the public interest to do so.

The CRA reserves the right to reject any or all Bids, if it determines that the Bidder does not possess the qualifications to perform the Work specified in the Bidding Documents.

The CRA reserves the right to reject the Bid of any Bidder who the CRA has determined has not completed a prior project, whether with the CRA or elsewhere, because of the fault of the Bidder, its Subcontractors or employees; has been declared in default on a prior contract whether with the CRA or elsewhere; has failed to complete a prior project in a timely fashion whether with the CRA or elsewhere; based on its work record, is not capable of performing the Contract whether due to lack of sufficient prior experience, as determined by the CRA, or any other reason; has a work record of its Subcontractors demanding direct payment from the CRA; has a work record of its Subcontractors, employees or material suppliers complaining to the CRA or other awarding authority regarding the Bidder's failure to pay them; has a record of complaints made to the CRA or other awarding authority by persons offended by the behavior of the Bidder, its Subcontractors or employees; or has a record of its failure to comply with the Commonwealth and/or CRA laws or requirements. "Work record" or "record" constitutes a minimum of one event in the work history of the Bidder.

The CRA shall reject every Bid which is not accompanied by a Bid deposit.

## **7. AWARD OF CONTRACT**

The CRA shall award the contract to the lowest responsible (demonstrably possessing the skill, ability, and integrity necessary to faithfully perform the work called for by the Contract, based upon a determination of competent workmanship and financial soundness) and eligible (able to meet all requirements for Bidders set forth in the Bidding Documents) Bidder within ninety (90) days after the date of the opening of the Bids. If the Bidder selected as the contractor fails to perform its agreement to execute a contract in accordance with the terms of its Bid and furnish a performance bond and a labor and materials or payment bond, if required by the Bidding Documents, an award shall be made to the next lowest responsible and eligible Bidder. The forty-five day time limit shall not be applicable to a second or subsequent award made after the expiration of the time limit with the consent of the next lowest responsible and eligible bidder, and made because the original award made within the time limit was invalid, or because the bidder failed to execute the Agreement or to provide a performance and labor and materials or payment bond.

Any Bidder who fails to perform its agreement to execute a contract and furnish a performance bond and a labor and materials or payment bond shall forfeit its Bid deposit which shall become the property of the CRA, but shall not exceed the difference between its Bid price and the Bid price of the next lowest responsible and eligible bidder.

The CRA will notify the selected Bidder and all other Bidders of the award.

The CRA will submit to the selected Bidder at least four (4) unsigned copies of the Agreement between the CRA and the Contractor. The selected Bidder will be required to return to the CRA within ten (10) business days of the date notice of award all of the copies of the Agreement between the CRA and the Contractor signed, its performance bond, its labor and materials or payment bond and all required certificates of insurance. Failure of the selected Bidder to submit all of the required documents in a timely fashion may result in the withdrawal of the award. The CRA will return one fully signed copy of the Agreement to the Contractor. Time is of the essence in the performance of the Agreement.

## **8. COMPLETION/EXTENSION TIME**

Bidder must agree to commence work on or before 7 days following the date set forth in the written "Notice to Proceed" from the CRA and to fully complete the project within **10 months (304 calendar days)** from the date of Notice to Proceed thereafter. Bidder must agree also to pay as liquidated damages the sum of fifteen hundred (\$1,500.00) dollars for each consecutive calendar day thereafter that the work remains unfinished.

TOM EVANS  
EXECUTIVE DIRECTOR

## **ABBREVIATIONS AND REFERENCES**

AASHTO - American Association of State Highways and Transportation Officials

ASTM - American Society of Testing Materials

MassDOT - Massachusetts Department of Transportation (formerly MassHighway/MHD, Massachusetts Highway Department)

Where reference is made to a specification by one of the above-mentioned or other relevant agencies, it is understood that the latest revision thereof shall apply.

In case of conflict, the specification issued by the Cambridge Redevelopment Authority shall take precedence over the above-noted specifications.

## **PERMITS AND FEES**

Public Works Department permits to obstruct or excavate the public way must be obtained prior to beginning work. Permit fees shall be waived. The Cambridge Traffic and Parking Department must be contacted directly for permit requirements and fees.

Permits to excavate the public way cannot be issued until the applicant has notified the appropriate utility companies, as required by Massachusetts General Laws, Chapter 370 of the Acts of 1963. The applicant must either: 1) obtain written receipts from the affected utilities, and provide copies of same to the CRA; or 2) utilize the Dig-Safe System for the required notifications, and also submit written notifications for those utilities not participating in the Dig-Safe System. Written notifications must state that utility companies have been notified and the contractor cleared to begin work.

The following utility companies must be notified in writing:

M.B.T.A. 10 Park Plaza, Suite 3910 Boston, MA 02116	617-222-3200
M.W.R.A. Sewer Division 2 Griffin Way Chelsea, MA 02150	617-371-1600
M.W.R.A. Water Division 2 Griffin Way Chelsea, MA 02150	617-371-1600

The following utility companies must be notified in writing or through Dig-Safe.

Spectra Gas  
Algonquin Gas Transmission Corp.  
Attention: Mr. Peter Kerrigan  
890 Winter St  
Suite 300  
Waltham, MA. 02451  
Evening No. 508-938-7710  
1-800-726-8383

Verizon  
Attention: Mr. Matthew King  
480 Arsenault St.  
Watertown, MA 01801  
781-376-8172

Eversource Electric  
William Zamparelli  
617-369-5532

KeySpan Gas  
Attention: Mr. Dennis Peri  
201 Rivermoor Street  
West Roxbury, MA 02132  
617-323-9210

Trigen Steam  
Attn: John Moloney, PE  
15 Elkins St  
Boston, MA. 02127  
617-914-7932

Eversource Gas  
Attention: Mr. Michael Needham  
101 Linwood St.  
Somerville, MA 02143  
617-369-5591

Comcast  
Attention: Mr. Anthony Vatalaro  
426 East 1<sup>st</sup> Street  
South Boston, MA 02134  
617-562-4241

Cambridge Public Works Department  
Attn. Permits Department  
147 Hampshire Street  
Cambridge, MA 02139  
Main Number 617-349-4800  
617-349-4833

Cambridge Water Department  
250 Fresh Pond Parkway  
Cambridge, MA 02138  
617-349-4770

Cambridge Fire Alarm Department  
489 Broadway  
Cambridge, MA 02138  
617-349-4900

Level 3  
Ben Whitaker  
Bay State Network Services  
61 North Street  
Jefferson, MA 01522

617-429-3847

Veolia Steam  
John Moloney, Project Engineer  
15 Elkins Street  
Boston, MA 02127  
john.moloney@veolia.com

cell: 617.293.1931  
desk: 857.401.9812

Dig-Safe

811

The contractor shall have all utilities marked out along the course of this work by such means as the Engineer shall approve and shall preserve such marked locations until the work has progressed to the point where the encountered utility is fully exposed and protected as required. It shall be the contractor's responsibility to notify utilities at least 72 hours prior to the start of any excavation.

The contractor is responsible for contacting any other utilities that are not listed herewith.

# **MINORITY/WOMEN HIRING REQUIREMENTS FOR THE GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS -- CONTRACT NO. 16**

## **MINORITY/WOMEN HIRING**

### **HIRING REQUIREMENTS**

Worker hours for this project shall be performed as follows:

1. No less than **TWENTY-FIVE PERCENT (25%)** of the total employee worker hours shall be performed by **MINORITY PERSONS**. Minority Persons means and includes those persons who are Black, Hispanic, Asian, Native American or Cape Verdean.
2. No less than **TEN PERCENT (10%)** of the total employee worker hours shall be performed by **WOMEN**.

### **COMPLIANCE & ENFORCEMENT**

1. The Contractor shall:
  - a. Certify that it has read the provisions of these hiring requirements and that it shall comply with them;
  - b. List all job openings with Employment Resources, Inc. ("ERI") and keep accurate records as to action taken on referrals from that agency;
  - c. Maintain personnel records listing names, addresses, sex and race of their employees; and require its subcontractors to do likewise. All records required to be maintained by this section shall be made available on request to representatives of the Cambridge Redevelopment Authority(the "CRA") and/or the Cambridge Community Development Department. All such records shall be maintained for the duration of the construction project and for one year thereafter.
2. The following standards will be used to determine whether the Contractor has acted in good faith in attempting to meet the requirements of these hiring requirements :
  - a. The Contractor must demonstrate that it has done all of the following except where such requirement would conflict with a collective bargaining agreement:
    - i. Prior to construction and during construction, when necessary, it posted jobs with ERI and all appropriate trade unions and requested that referrals be made in the proportions necessary to meet these hiring requirements;
    - ii. Interviewed all qualified applicants and returned completed interview forms to ERI within one week of each respective interview;
    - iii. It provided the CRA with the name and telephone number of the person designated as Compliance Officer to work directly with the CRA; and
    - iv. It submitted to the City a projection of workforce needs over the course of construction of the project. Such submission shall reflect the needs, by trade, for each month of the construction

process.

- b. In addition, at the discretion of the Cambridge Redevelopment Authority, the Contractor may be required to comply with the following:
  - i. Placed its own ads in local and local minority newspapers or tabloids;
  - ii. Placed a State Department Employment and Training ad.
3. Failure of the Contractor or any subcontractor under it to comply these requirements may result in the CRA taking any or all of the following steps as provided in the General Conditions: (a) suspending work on the project until compliance is obtained; (b) withholding payment due under any contract or subcontract until compliance is obtained; (c) permanently removing the Contractor or noncomplying subcontractor from any further work on the project; (d) barring the Contractor and/or subcontractor from performing any work on any future CRA projects; (e) notifying the City of Cambridge, the Massachusetts Department of Transportation and/or the Division of Capital Asset Management of the Contractor's or subcontractor's noncompliance; and (f) assessing liquidated damages in an amount up to five percent of the contract price.



# **RESPONSIBLE EMPLOYER REQUIREMENTS FOR THE GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS -- CONTRACT NO. 16**

1. On this project for the Cambridge Redevelopment Authority (“CRA”):
  - a. The Contractor and all subcontractors under it must comply with the obligations established under G.L. c. 149 and G.L. c 30 §39M to pay the appropriate lawful prevailing wage rates to their employees.
  - b. The Contractor and all subcontractors under it must furnish, at their expense, hospitalization and medical benefits for all their employees employed on the project and/or coverage at least comparable in value to the hospitalization and medical benefits provided by the health and welfare plans in the applicable craft recognized by G.L. c. 149, §26 and G.L. c 30 §39M in establishing minimum wage rates.
  - c. The Contractor and all subcontractors under it must maintain appropriate industrial accident insurance coverage for all the employees employed on the project in accordance with G.L. c. 152.
  - d. The Contractor and all subcontractors under it must properly classify employees as employees rather than independent contractors and treat them accordingly for purposes of workers' compensation insurance coverage, unemployment taxes, social security taxes and income tax withholding in accordance with G.L. c. 149, §148B and G.L. c 30 §39M.
2. The Contractor and all subcontractors under it shall comply with the obligations set forth in herein for the entire duration of their work on the project, and an officer of each shall certify under oath and in writing on a weekly basis that each is in compliance with such obligations.
3. Failure of the Contractor or any subcontractor under it to comply these requirements may result in the CRA taking any or all of the following steps as provided in the General Conditions: (a) suspending work on the project until compliance is obtained; (b) withholding payment due under any contract or subcontract until compliance is obtained; (c) permanently removing the Contractor or noncomplying subcontractor from any further work on the project; (d) barring the Contractor and/or subcontractor from performing any work on any future CRA projects; (e) notifying the City of Cambridge, the Massachusetts Department of Transportation and/or the Division of Capital Asset Management of the Contractor’s or subcontractor’s noncompliance; and (f) assessing liquidated damages in an amount up to five percent of the contract price.

# MINORITY BUSINESS ENTERPRISE REQUIREMENTS FOR THE GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS -- CONTRACT NO. 16

## GENERAL

The General Contract bidder must submit the appropriate Minority Business Enterprise (“MBE”) Forms found in this bid package with its bid for this project. The process is explained below. Failure to meet the requirements may result in automatic disqualification of the bidder. Upon request or upon its own initiative, the Cambridge Redevelopment Authority (“CRA”) may grant an extension of time for submission of the appropriate MBE Forms. Extensions shall be granted only upon a finding by the CRA that the bidder's failure to submit the appropriate MBE forms was excusable.

## PROCEDURE

Steps you should take to comply with the CRA’s MBE requirements for this project are as follows:

1. Secure a copy of the State Office for Minority and Women Owned Business Assistance (SOMWBA) Certified Minority/Women Business Directory. Only MBE firms approved by SOMWBA will be accepted by the CRA. Copies of the directory are available at the City of Cambridge's Purchasing Department.
2. Attempt to develop a bid that includes at least ten percent (10%) of your total bid price in the form of work subcontracted to (or materials purchased from) one or more Minority Businesses.
3. To make the attempt to secure at least 10% Minority business participation, you (the General Contract Bidder) must contact as many of the subcontractors or suppliers in the SOMWBA directory as necessary. Please note that MBE FORM #3 - CONTRACT REQUEST-FOR-EXTENSION and MBE FOR #4 - INFORMATION ON UNSUCCESSFUL MBE CONTACT require you to provide a list of each firm contacted and other related information.
4. If you are successful in securing 10% or more Minority Business participation, you must:
  - A: Complete and submit MBE FORM #1 CONTRACTOR CERTIFICATION OF COMPLIANCE.
  - B: Have your participating Minority Business Enterprises each fill out MBE FORM #2 - LETTER OF INTENT TO PARTICIPATE, to be submitted with your bid.
5. If, after contacting all SOMWBA-approved firms in the trades or materials categories you should include in your bid, you have not been able to secure 10% Minority business participation, then complete and submit with your bid MBE FORM #3 - CONTRACTOR REQUEST FOR EXTENSION and MBE FORM #4 - INFORMATION ON UNSUCCESSFUL MBE CONTACT.

## COMPLIANCE DETAILS

PERCENTAGE OF MBE PARTICIPATION - Percentage of MBE participation shall be that percentage of the total bid price represented by the amount to be paid to MBE(s). The Contractor's compliance with the percentage requirement shall continue to be determined by reference to the above-described method throughout the term of the contract, even though the actual may be greater or less than the bid price. The Contractor shall submit to the CRA signed copies of its subcontracts with all MBE's involved in meeting the percentage of MBE Requirement.

CHANGES OF MBE STATUS - Any change or substitution of the officers or stockholders in a participating MBE company that reduces the minority ownership or control to less than the requisite percentage will immediately rescind the MBE designation previously given by SOMWBA. The Contractor shall immediately notify the CRA upon learning of such a change in MBE status. In this event, the Contractor shall submit to the CRA a revised Contractor Certification of Compliance with MBE Requirements, showing how the lost MBE participation will be replaced.

NONCOMPLIANCE - Failure of the Contractor or any subcontractor under it to comply these requirements may result in the CRA taking any or all of the following steps as provided in the General Conditions: (a) suspending work on the project until compliance is obtained; (b) withholding payment due under any contract or subcontract until compliance is obtained; (c) permanently removing the Contractor or noncomplying subcontractor from any further work on the project; (d) barring the Contractor and/or subcontractor from performing any work on any future CRA projects; (e) notifying the City of Cambridge, the Massachusetts Department of Transportation and/or the Division of Capital Asset Management of the Contractor's or subcontractor's noncompliance; and (f) assessing liquidated damages in an amount up to five percent of the contract price.

**FORM FOR GENERAL BID**

To the Awarding Authority:

A. The undersigned proposes to furnish all labor and materials required for

**GRAND JUNCTION PATH & PEDESTRIAN  
ALONG GALILEO GALILEI WAY**

**CAMBRIDGE, MA**

in accordance with the accompanying plans and specifications including all Labor and Materials, for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

B. **BID SUBMISSION REQUIREMENTS**

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

D. There is 1 Bid Alternates. The basis of the award will be on price bid for the Base Bid.

The proposed contract price for the BASE BID

is \_\_\_\_\_ DOLLARS  
(Amount in Words)

(\$ \_\_\_\_\_)  
(Amount in Figures)

The proposed contract price for the Alternate #1

is \_\_\_\_\_ DOLLARS  
(Amount in Words)

(\$ \_\_\_\_\_)  
(Amount in Figures)

E. The subdivision of the proposed contract price is as follows: (All quantities are approximate)

**Items 125.1 through 126.3 contain the minimum unit prices. The Contractor shall add to this value an adjustment to provide the final unit price bid for the respective item. The final unit price bid shall be the sum of the minimum unit price and the bidders inputted value. Insertion of 0 is allowable. In that case, the final unit cost will be the minimum unit cost.**

- F. The undersigned agrees if selected as General Contractor, within seven working days after presentation thereof by the Cambridge Redevelopment Authority (“CRA”), the Contractor will:
1. execute a contract in accordance with the terms of this general bid;
  2. furnish a performance bond and a labor and materials or payment bond;
    - a. of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the CRA;
    - b. in the sum of one hundred percent of the contract price;
    - c. premiums for each are to be paid by the General Contractor.
  3. provide an Insurance certificate specifying the Cambridge Redevelopment Authority and the City of Cambridge as **Additional Insureds**, complying with the Insurance requirements set forth herein in the General Terms and Conditions of the contract, Article 8.

The CRA further requires that the General Contractor furnish the CRA with a copy of all insurance policies prior to or with the delivery of its signed Contract to the CRA.

- G. Bidder understands that the CRA reserves the right to reject any or all bids and to waive any minor informalities in the bidding prices.
- H. Total bid amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.
- I. The bidder hereby certifies it shall comply with the CRA’s Minority/Women Hiring Requirements, Responsible Employer Requirements and MBE Requirements for this project and with the Americans with Disabilities Act. The contractor receiving the award of the contract shall be required to obtain from each of its subcontractors and submit to the contracting or administering agency prior to the performance of any work under said contract a certification by said subcontractor, regardless of tier, that it will comply with same.
- J. The bidder agrees that this bid shall be good and may not be withdrawn for a period of 90 days after the scheduled closing time for receiving bids.
- K. The bid security attached in the sum of \_\_\_\_\_  
\_\_\_\_\_ (\$ \_\_\_\_\_) is to become the property of the CRA in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the CRA caused thereby.
- L. The undersigned certifies that it possesses the skill, ability and integrity necessary for the faithful performance of the work; that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; 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 who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder; and who obtains within 10 days of the notification of contract award the security by bond required under section 29 of chapter 149; provided that for the purposes of this section the term “security by

bond” shall mean the bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority.

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 "person" shall mean any natural person, joint venture, business, partnership, corporation, or other business or legal entity.

“I certify under the penalties of perjury that I have complied with all of the laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support”.

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

Date \_\_\_\_\_

\_\_\_\_\_  
(Name of General Bidder)

By \_\_\_\_\_  
(Name of Person Signing Bid and Title)

\_\_\_\_\_  
(Print Name of Person Signing Bid and Title)

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

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

\_\_\_\_\_  
(Contact Phone Number)

\_\_\_\_\_  
(Contact Email)

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
102.5	30	Tree Protection and Maintenance, at _____ _____ Per Each				
103.	41	Tree Removed - Diameter Under 24 Inches, at _____ _____ Per Each				
105.	9	Stump Removed, at _____ _____ Per Each				
120.	830	Earth Excavation, at _____ _____ Per Cubic Yard				
125.1	1	Soil and Waste Management, at Five Thousand and 00/100+ _____ = _____ Dollars (\$5,000+ _____ ) = \$ _____ . Lump Sum				
126.1	1,250	Disposal of Soil - Background Soils (Class A-1), at Five and 00/100+ _____ = _____ Dollars (\$5+ _____ ) = \$ _____ . Per Ton				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-04

Bidder's Name \_\_\_\_\_

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
126.3	120	Disposal of Soil - Daily Cover Unlined Landfill (Class B-1), at  Ten and 00/100+ = _____ _____ Dollars  (\$10+ _____) = \$ _____ _____ Per Ton				
128.	1	Excavation and Removal of Gazebo, at  _____ _____ _____ Lump Sum				
151.	260	Gravel Borrow - Type C, at  _____ _____ _____ Per Cubic Yard				
180.1	1	Health and Safety Plan, at  _____ _____ _____ Lump Sum				
220.1	1	Drainage Structure Adjusted, at  _____ _____ _____ Per Each				
358.	3	Gate Box Adjusted, at  _____ _____ _____ Per Each				
380.	1	Water Works System, at  _____ _____ _____ Lump Sum				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-05

Bidder's Name \_\_\_\_\_



ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
380.1	1	Backflow Preventer, at _____ _____ Lump Sum				
389.	1	Drinking Fountain with ¾" Hose Bib, at _____ _____ Per Each				
390.	1	Irrigation System Removed and Reset & New Irrigation Controller, at _____ _____ Lump Sum				
420.	10	Hot Mix Asphalt Base Course, at _____ _____ Per Ton				
460.	240	Hot Mix Asphalt, at _____ _____ Per Ton				
472.	20	Hot Mix Asphalt for Miscellaneous Work, at _____ _____ Per Ton				
482.41	50	Sawing Cement Concrete Sidewalk, at _____ _____ Per Foot				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-06

Bidder's Name \_\_\_\_\_

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
504.	50	Granite Curb Type VA4 - Straight, at _____ _____ Per Foot				
509.	35	Granite Transition Curb for Pedestrian Ramps - Straight, at _____ _____ Per Foot				
509.1	75	Granite Transition Curb for Pedestrian Ramps - Curved, at _____ _____ Per Each				
509.7	2	Interpretive Granite Seating Elements, at _____ _____ Per Each				
509.8	7	Granite Seating Elements, at _____ _____ Per Each				
580.	12	Curb Removed and Reset, at _____ _____ Per Foot				
580.2	130	Landscape Granite Curb Installed - Curb Provided by CRA, at _____ _____ Per Foot				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-07

Bidder's Name \_\_\_\_\_

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
580.21	90	Flush Granite Curb Installed - Curb Provided by CRA, at  _____ _____ Per Foot				
580.22	490	Flush Granite Curb Median - Curb Provided by CRA, at  _____ _____ Per Foot				
580.23	4	Engraved Granite Curb Installed - Curb Provided by CRA, at  _____ _____ Per Each				
594.	160	Curb Removed and Discarded, at  _____ _____ Per Foot				
645.148	700	48 Inch Chain Link Fence (PTR) Black Vinyl Coated (LPO), at  _____ _____ Per Foot				
665.1	700	Chain Link Fence Removed and Discarded, at  _____ _____ Per Foot				
669.1	110	Wood Guardrail Removed and Discarded, at  _____ _____ Per Foot				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-08

Bidder's Name \_\_\_\_\_

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
698.5	600	Tree Root Barrier, at _____ _____ Per Foot				
701.10	20	6 Inch Cement Concrete Sidewalk, at _____ _____ Per Square Yard				
701.11	340	Scored Cement Concrete Decorative Sidewalk, at _____ _____ Per Square Yard				
701.2	100	Cement Concrete Pedestrian Ramp, at _____ _____ Per Square Yard				
701.28	100	Detectable Tile - Cast Iron, at _____ _____ Per Square Foot				
702.1	200	Porous Pavement Walk Surface, at _____ _____ Per Square Yard				
706.1	25	Brick Sidewalk Removed and Re-laid, at _____ _____ Per Square Yard				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-09

Bidder's Name \_\_\_\_\_

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
707.11	11	Adirondack Chairs, at  _____ _____ Per Each				
707.12	4	Adirondack Benches, at  _____ _____ Per Each				
707.8	3	Steel Bollard, at  _____ _____ Per Each				
707.9	6	Bicycle Ring and Post, at  _____ _____ Per Each				
707.91	1	Bicycle Rack Removed and Reset, at  _____ _____ Per Each				
748.	1	Mobilization, at  _____ _____ Lump Sum				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-010

Bidder's Name \_\_\_\_\_

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
751.11	20	Planting Bed Medium, at  _____ _____ Per Cubic Yard				
751.12	180	Lawn Root Zone Medium, at  _____ _____ Per Cubic Yard				
751.13	10	Lawn Root Zone Medium - Fortified, at  _____ _____ Per Cubic Yard				
751.14	40	Lawn Root Zone Medium on Slope, at  _____ _____ Per Cubic Yard				
765.	2,300	Seeded Lawn, at  _____ _____ Per Square Yard				
775.434	15	Locust - Honey - "Shademaster" 3-3.5 Inch Caliper, at  _____ _____ Per Each				
778.163	12	Birch - River "Heritage" 10-12 Foot Clump, at  _____ _____ Per Each				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-011

Bidder's Name \_\_\_\_\_

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
780.181	13	Ivory Halo Dogwood 24-30 Inch Height, at  _____ _____ Per Each				
783.051	3	Serviceberry 10-12 Foot Height, at  _____ _____ Per Each				
789.333	22	Bayberry Shrub - Northern 2-3 Feet, at  _____ _____ Per Each				
794.325	48	Sumac Shrub - Fragrant #3 Cont., at  _____ _____ Per Each				
796.071	203	Virginia Creeper 1 Gallon, at  _____ _____ Per Each				
796.296	42	Knock Out Rose #3 Cont., at  _____ _____ Per Each				
796.427	114	Feather Reed Grass #2 Cont., at  _____ _____ Per Each				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-012

Bidder's Name \_\_\_\_\_

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
796.447	194	Creeping Lilyturf #2 Cont., at _____ _____ Per Each				
811.37	8	Electric (Traffic) Handhole Adjusted, at _____ _____ Per Each				
816.01	1	Traffic Signal Reconstruction, at _____ _____ Lump Sum				
826.55	1	Fire Alarm Cabinet Foundation, at _____ _____ Lump Sum				
852.1	1	Traffic Management and Coordination, at _____ _____ Lump Sum				
865.1	1,200	Crosswalks and Stop Lines Reflectorized White (Thermoplastic), at _____ _____ Per Square Foot				
867.04	600	4 Inch Reflectorized Yellow Line (Thermoplastic), at _____ _____ Per Foot				

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-013

Bidder's Name \_\_\_\_\_



ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
904.	10	4000 PSI, 3/4 Inch, 610 Cement Concrete, at  _____ _____ Per Cubic Yard				
996.	1	Erosion and Sediment Control, at  _____ _____ Lump Sum				
997.	1	Construction Staking, at  _____ _____ Lump Sum				
998.	1	Record Drawings, at  _____ _____ Lump Sum				
999.	1	Railroad Allowance, at  _____ _____ Lump Sum				

Grand Total Amount of Bid:

\_\_\_\_\_ (Amount In Words)

\$ \_\_\_\_\_ (Amount In Figures)

**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY**

00300-014

Bidder's Name \_\_\_\_\_

**Add Alternate # 1**

ITEM NO.	APPROX. QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT		
			Dollars	Cents	Dollars	Cents
ADD ALT#1	1	Poured-In-Place Playground Surfacing System with Play Spinners, at <hr/> <hr/> <p style="text-align: right;">Lump Sum</p>				

Total Amount of Add Alternate #1 Bid:

\_\_\_\_\_ (Amount In Words)

\$ \_\_\_\_\_ (Amount In Figures)

CAMBRIDGE REDEVELOPMENT AUTHORITY

BID BOND

We, the undersigned \_\_\_\_\_ as Principal, and \_\_\_\_\_, as Surety, are hereby held and firmly bound unto the CAMBRIDGE REDEVELOPMENT AUTHORITY, in the penal sum of \_\_\_\_\_ Dollars (\$ ), for the payment of which, well and truly to be made. We hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that the Principal has submitted to the Cambridge Redevelopment Authority a certain Bid attached hereto and hereby made a part hereof for the Project described as **Grand Junction Path & Pedestrian Improvements Along Galileo Galilei Way.**

If the Principal fails to perform their agreement to execute a contract and furnish a performance bond and a labor and materials or payment bond as stated in their bid in accordance with the applicable state statute or fails in all other respects to perform the agreement created by the acceptance of said bid, their bid deposit shall become and be the property of the Cambridge Redevelopment Authority as liquidated damages.

If said Bid shall be rejected because of death, disability, bona fide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the Principal, their bid bond shall be returned to them.

The Surety, for value received, hereby agrees that its obligations and its bond shall in no way be impaired or affected by an extension of the time in which the Cambridge Redevelopment Authority may accept such bid and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and have caused this bond to be signed by their proper officers on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

CONTRACTOR AS PRINCIPAL

SURETY

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

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

\_\_\_\_\_  
Name and Title:

\_\_\_\_\_  
Name and Title:

SEAL

SEAL

# MINORITY BUSINESS ENTERPRISE FORMS FOR THE GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS -- CONTRACT NO. 16

As provided in the Minority Business Enterprise Requirements for the Grand Junction Path & Pedestrian Improvements -- Contract No. 6, bidders must submit either of the following:

- One MBE Form # 1 (Contractor Certification of Compliance) and one MBE Form # 2 (Letter of Intent to Participate) from each of its participating MBE subcontractors; or
- One MBE Form #3 (Contractor Request for Extension) and MBE #4 (Information on Unsuccessful MBE Contact)

FORM

CONTRACTOR CERTIFICATION OF COMPLIANCE

Minority Business Enterprise Requirements

1  
M.B.E.

Name & Address of Participating  
Minority Bus. Enterprises

Name of Participant

Dollar Value  
Participation

The below-signed bidder certifies that it will honor the above Minority Business Enterprise Commitment and that it understands that a breach of this commitment constitutes a breach of the contract.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. GRAND TOTAL FOR MINORITY BUSINESS COMMITMENT

\$ \_\_\_\_\_

8. PERCENTAGE MBE PARTICIPATION (Line 7 divided by total bid price)

% \_\_\_\_\_

\_\_\_\_\_  
Date

\_\_\_\_\_  
General Contractor

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_

\_\_\_\_\_  
Business Address

LETTER OF INTENT TO PARTICIPATE  
 Minority Business Enterprise Requirements

FORM  
2  
 M.B.E.

TO: \_\_\_\_\_  
 (Name of General Bidder)

1. My company intends to perform work under the above-identified contract as:

- \_\_\_\_\_ an individual
- \_\_\_\_\_ a partnership
- \_\_\_\_\_ a corporation
- \_\_\_\_\_ a joint venture with \_\_\_\_\_
- \_\_\_\_\_ other (explain) \_\_\_\_\_

2. My company has been certified by the State Office of Minority and Women-Owned Business Assistance (SOMWBA) as a Minority Business Enterprise and is listed as such in the most recently issued SOMWBA Minority/Women Business Directory. I hereby certify that my company's qualification as a Minority Business Enterprise have not changed since its application was submitted to SOMWBA. I further certify that my company will give immediate notification in writing to both SOMWBA and your Company in the event that its minority ownership, control, or management should change.

3. My company understands that if your company is awarded the contract, your company intends to enter into an agreement with my company to perform the activity described below for the prices indicated. My firm also understands that your firm, as General Bidder, will make substitutions and quantity changes only as allowed or required by the provisions of the contract with the Cambridge Redevelopment Authority.

Item No.	Description of My Company's Activity	Quantity	Unit Price	Amount

TOTAL AMOUNT \_\_\_\_\_

\*Description of Activity should include notations such as "Labor Only", "Material Only", etc.

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 MBE Name

\_\_\_\_\_  
 MBE Authorized Signature

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

Business Address

**FORM**  
**3**  
**M.B.E.**

**CONTRACTOR REQUEST FOR EXTENSION**

Minority Business Enterprise Requirements

CONTRACTOR REQUEST-FOR-EXTENSION OF MINORITY BUSINESS ENTERPRISE REQUIREMENTS

The below-signed General Bidder certifies that it made a good faith effort to develop the required \_\_\_\_\_ % Minority Business Enterprise participation in this contract, but was able to develop only \_\_\_\_\_ %.

The below-signed General Bidder further certifies that it contacted the below-listed firms from the SOMWBA MINORITY/WOMEN BUSINESS DIRECTORY available for viewing at the City of Cambridge Purchasing Department with the Bidding Documents; that said contracts were bona fide efforts to develop the required Minority Business Enterprise participation in the above-identified contract but were unsuccessful due to circumstances beyond the control of the General Bidder; and that the information given on the following pages about each contract has made is accurate and complete.

MBE Companies Contacted

- |           |           |
|-----------|-----------|
| 1. _____  | 11. _____ |
| 2. _____  | 12. _____ |
| 3. _____  | 13. _____ |
| 4. _____  | 14. _____ |
| 5. _____  | 15. _____ |
| 6. _____  | 16. _____ |
| 7. _____  | 17. _____ |
| 8. _____  | 18. _____ |
| 9. _____  | 19. _____ |
| 10. _____ | 20. _____ |

The below-signed General Bidder therefore requests that the Cambridge Redevelopment Authority grant an extension of ten working days in order to provide the General Bidder and opportunity to secure the required percentage of Minority Business participation.

\_\_\_\_\_  
Date

\_\_\_\_\_  
General Contractor

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Business Address

**FORM**

**4**

**M.B.E.**

**INFORMATION ON UNSUCCESSFUL MBE CONTACT**

Minority Business Enterprise Requirements

Additional copies of this information form shall be prepared by the General Bidder in the quantity necessary to comply with bidding requirements.

ITEM NO. ON REQUEST-FOR-EXTENSION \_\_\_\_\_

NAME OF MBE COMPANY CONTACTED \_\_\_\_\_

ADDRESS OF " " " " \_\_\_\_\_

TELEPHONE NO. " " " " \_\_\_\_\_

DATE OF INITIAL CONTACT \_\_\_\_\_

HOW WAS CONTACT MADE? (Check appropriate answer) TELEPHONE \_\_\_\_\_ IN PERSON

SUB-CONTRACT WORK OFFERED TO THIS MBE COMPANY

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

RESULT OF CONTACT (Check appropriate answer) MBE FIRM DECLINED JOB \_\_\_\_\_;  
MBE FIRM OFFERED TO DO JOB AT PRICE OF \$ \_\_\_\_\_, WHICH WAS DETERMINED  
BY OUR COMPANY TO BE TO HIGH \_\_\_\_\_; MBE COMPANY OFFERED TO DO THE JOB AT A  
PRICE OF \$ \_\_\_\_\_, WHICH WAS SATISFACTORY, BUT THE MBE  
COMPANY WAS JUDGED BY OUR COMPANY TO BE UNQUALIFIED FOR THE JOB

\_\_\_\_\_.

NAME AND TITLE OF THE MBE COMPANY OFFICER WHO CAN VERIFY ABOVE  
INFORMATION AS TO MBE COMPANY'S RESPONSE

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

certified herewith by the below-signed officer of the General Bidder that the above information is  
accurate and complete.

It is

\_\_\_\_\_  
Date

\_\_\_\_\_  
General Contractor

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Business Address



**NOTARIZED STATEMENT OF BIDDER'S QUALIFICATIONS**

All questions must be answered and the data given must be clear and comprehensive. **This statement must be notarized.** If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information it desires. **For Item No. 8 of this section “Qualification Requirements”, the Bidder must provide all information requested on the sheets provided.**

1. The names, titles, and residences of all persons and parties interested in this Proposal as principals are as follows:

Note: Give the first and last names in full. In the case of corporation, give names of officers and directors; in the case of a partnership, give names of all partners.

IMPORTANT: Be sure residences are listed below.

Name	Title	Home Address

2. When organized.

---

3. If a corporation, where incorporated.

---

1. How many years have you been engaged in the **Sidewalk Reconstruction and Landscaping business** under your present firm or trade name?

---

---

5. What is the general nature of work normally performed by your company?

---

---

---

6. Has your present organization ever failed to complete any work awarded to it? If so, state when, where, and why.

---

---

---

7. Has your present organization ever defaulted on a contract? If so, state when, where, and why.

---

---

---

8. Qualification Requirements – As a minimum, the Bidder must demonstrate that it is qualified to bid on this Contract by adequately providing responses to the following qualification requirements:

8A Qualification Requirement for Reconstruction of Roadways and Sidewalks:

Within the last 10 years, the Bidder must have successfully completed at least 3 projects involving, as a minimum, the reconstruction of public parks or municipal roadways with Architectural Access Board compliant sidewalks, surface improvements and landscaping within a crowded urban setting with heavy volumes of motor vehicle, bicycle, and pedestrian traffic that required coordination of traffic and transportation with state and city police, fire, and traffic departments. The dollar value of each project must have been at least \$500,000. Provide the following details:

Project #8A-1:

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

Start Date: \_\_\_\_\_ Completion date: \_\_\_\_\_

Name and address of Owner for whom the work was done:

---

---

Name of Owner's Representative (for Reference): \_\_\_\_\_

Owner's Representative's Current Telephone #: \_\_\_\_\_

Dollar Value of Contract: \_\_\_\_\_

State/City highway and name of location of compliant sidewalk work:

---

---

Description of work performed that demonstrates that the above requirements have been fulfilled:

---

---

---

---

---

---

Project #8A-2:

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

Start Date: \_\_\_\_\_ Completion date: \_\_\_\_\_

Name and address of Owner for whom the work was done:

---

---

Name of Owner's Representative (for Reference): \_\_\_\_\_

Owner's Representative's Current Telephone #: \_\_\_\_\_

Dollar Value of Contract: \_\_\_\_\_

State/City highway and name of location of compliant sidewalk work:

---

---

Description of work performed that demonstrates that the above requirements have been fulfilled:

---

---

---

---

---

---

Project #8A-3:

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

Start Date: \_\_\_\_\_ Completion date: \_\_\_\_\_

Name and address of Owner for whom the work was done:

---

---

Name of Owner's Representative (for Reference): \_\_\_\_\_

Owner's Representative's Current Telephone #: \_\_\_\_\_

Dollar Value of Contract: \_\_\_\_\_

State/City highway and name of location of compliant sidewalk work:

---

---

Description of work performed that demonstrates that the above requirements have been fulfilled:

---

---

---

---

---

---

8B Qualification Requirement for Reconstruction of Roadways and Sidewalks:

Within the last 10 years, the Bidder must have successfully completed at least 3 projects that demonstrated sensitivity to community issues, which could include but is not limited to designation of a community liaison, attendance at community meetings, and compliance with OSHA construction standards. The dollar value of each project must have been at least \$500,000. Provide the following details:

Project #8B-1:

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

Start Date: \_\_\_\_\_ Completion date: \_\_\_\_\_

Name and address of Owner for whom the work was done:

---

---

---

Name of Owner's Representative (for Reference): \_\_\_\_\_

Owner's Representative's Current Telephone #: \_\_\_\_\_

Dollar Value of Contract: \_\_\_\_\_

State/City highway and name of location of compliant sidewalk work:

---

---

Description of work performed that demonstrates that the above requirements have been fulfilled:

---

---

---

---

---

---

Project #8B-2:

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

Start Date: \_\_\_\_\_ Completion date: \_\_\_\_\_

Name and address of Owner for whom the work was done:

---

---

Name of Owner's Representative (for Reference): \_\_\_\_\_

Owner's Representative's Current Telephone #: \_\_\_\_\_

Dollar Value of Contract: \_\_\_\_\_

State/City highway and name of location of compliant sidewalk work:

---

---

Description of work performed that demonstrates that the above requirements have been fulfilled:

---

---

---

---

---

Project #8B-3:

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

Start Date: \_\_\_\_\_ Completion date: \_\_\_\_\_

Name and address of Owner for whom the work was done:

---

---

Name of Owner's Representative (for Reference): \_\_\_\_\_

Owner's Representative's Current Telephone #: \_\_\_\_\_

Dollar Value of Contract: \_\_\_\_\_

State/City highway and name of location of compliant sidewalk work:

---

---

Description of work performed that demonstrates that the above requirements have been fulfilled:

---

---

---

---

---

9. What project, most similar to the proposed Contract, has your present organization successfully completed? Please provide the following information:

Project #9-1:

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

Start Date: \_\_\_\_\_ Completion date: \_\_\_\_\_

Name and address of Owner for whom the work was done:

---

---

Name of Owner's Representative (for Reference): \_\_\_\_\_

Owner's Representative's Current Telephone #: \_\_\_\_\_

Dollar Value of Contract: \_\_\_\_\_

Was work being performed as contractor or sub-contractor?: \_\_\_\_\_

Description of work performed that demonstrates the similarity of the project to the proposed Contract:

---

---

---

---

---

---

10. List all projects for which your organization has received a Notice of Intent to Award or a Notice to Proceed and that your organization expects to perform during Years 2015-2016. Rank the list according to decreasing dollar value of work to be done in Years 2015-2016. On the following "TABLE OF PROJECTED WORK LOAD", indicate the first 10 projects from that list and provide information on the name of the project, the type of project, owner of project, dollar value of work, and the estimated completion date. Under Project No. 11 in the following TABLE, indicate the number of projects and the sum of the dollar value of work that you expect to perform in Years 2015-2016 for all the remaining projects in the list.

BIDDER PROJECTED WORK LOAD

Project #	Name and Type of Project	Project Owner	Dollar Value of Work to be completed in 2015-2016	Estimated Project Completion Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11	Total Remaining Projects:		Total Value of Remaining Projects:	



11. Background and experience of the principal member of your organization, including the officers.

---

---

---

---

12. Who will be the contractor's on site project manager ? State such person's qualifications. Also list names of employees who will be participating in this contract and their qualifications (years of experience, etc.).

---

---

---

13. Give below the name and address of one or more banks which have information that would enable them to advise regarding the financial ability of your company.

Name of Bank

Address

---

---

14. Federal Identification Number and Dun and Bradstreet Number

---

15. Name, Signature, and Title of officer preparing this proposal.

Name \_\_\_\_\_

Signature \_\_\_\_\_

Title \_\_\_\_\_

16. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Cambridge Redevelopment Authority in verification of the recitals comprising this Statement of Bidder's Qualifications.

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

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

Tel. No. \_\_\_\_\_

BY \_\_\_\_\_

Title \_\_\_\_\_

State of \_\_\_\_\_)

County of \_\_\_\_\_)

as:

\_\_\_\_\_, being duly sworn,

deposes and says that he is \_\_\_\_\_ of

\_\_\_\_\_  
(Name of Organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct.

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

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

My commission expires \_\_\_\_\_, 20\_\_\_\_

General Contractor's Certification

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

**GENERAL CONTRACTOR'S**  
**CERTIFICATION**

\_\_\_\_\_ certifies that:  
(General Contractor)

1. it shall obtain from each of its subcontractors and submit to the contracting or administering agency prior to the performance of any work under said subcontract a certification by each subcontractor, regardless of tier, that it will comply with the minority/women workforce ratio;
2. it has read, understands and shall comply with the Minority/Women hiring requirements for this project;
3. it is aware that failure to comply with the foregoing requirements may result in the Cambridge Redevelopment Authority ("CRA") taking one or more of the following steps: (a) cessation of work on the project until compliance is obtained; (b) withholding of payment due under any contract or subcontract until compliance is obtained; (c) permanent removal from any further work on the project; (d) liquidated damages payable to the CRA; (e) barring the Contractor or the noncomplying subcontractor from performing any work on any future CRA projects; (f) advising the City of Cambridge and/or DCAM of the Contractor's and subcontractor's noncompliance; and
4. it has read, understands and shall comply with all the pertinent provisions of the Americans with Disabilities Act and will be subject to sanctions for failure to do so.

Signed under the penalties of perjury:

\_\_\_\_\_  
Signature of authorized representative of contractor

\_\_\_\_\_  
Print name of authorized representative of contractor

Dated: \_\_\_\_\_

THIS FORM MUST BE SUBMITTED WITH YOUR BID

## PROJECTED WORKFORCE CERTIFICATION

I, \_\_\_\_\_,  
(General Contractor)

certify that the following is my projected workforce for this contract:

### GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY

GENERAL CONTRACTOR

ESTIMATED # OF NEW HIRES

---

---

---

---

SUBTRADE

ESTIMATED # OF NEW HIRES

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

Signed under penalties of perjury. \_\_\_\_\_

Bidder's Name \_\_\_\_\_

**GENERAL CONTRACTOR'S RESPONSIBLE EMPLOYER CERTIFICATION - BID FORM**

\_\_\_\_\_ hereby certifies that it, **(Name of General Bidder)**  
and all its subcontractors who are not filed subbidders shall:

- (1) comply with the Cambridge Redevelopment Authority's Minority/Women Hiring Requirements for this project;
- (2) comply with the obligations established under M.G.L. c.149 and G.L. c30§39M to pay the appropriate lawful prevailing wage rates to its employees;
- (3) furnish, at its expense, hospitalization and medical benefits for all its employees employed on the project and/or coverage at least comparable in value to the hospitalization and medical benefits provided by the health and welfare plans in the applicable craft recognized by M.G.L. c.149, §26 and G.L. c30§39M in establishing minimum wage rates;
- (4) maintain appropriate industrial accident insurance coverage for all its employees employed on the project in accordance with M.G.L. c.152;
- (5) properly classify employees as employees rather than independent contractors and treat them accordingly for purposes of workers' compensation insurance, unemployment taxes, social security taxes and income tax withholding; and
- (6) certify under oath and in writing on a weekly basis for the entire duration of its work on the project, that it is in compliance with the above obligations.

Signed under the penalties of perjury. \_\_\_\_\_(date)

\_\_\_\_\_  
Signature of authorized representative of contractor

\_\_\_\_\_  
Print name of authorized representative of contractor

**RETURN THIS FORM WITH YOUR BID**

**RESPONSIBLE EMPLOYER REQUIREMENTS**  
NON-FILED SUB-CONTRACTOR'S CERTIFICATION - BID FORM

\_\_\_\_\_ hereby certifies that it shall:  
**(Name of Sub-Contractor)**

- (1) comply with the Cambridge Redevelopment Authority Employment Plan;
- (2) comply with the obligations established under M.G.L. c.149 and G.L. c30§39M to pay the appropriate lawful prevailing wage rates to its employees;
- (3) furnish, at its expense, hospitalization and medical benefits for all its employees employed on the project and/or coverage at least comparable in value to the hospitalization and medical benefits provided by the health and welfare plans in the applicable craft recognized by M.G.L. c.149, §26 and G.L. c30§39M in establishing minimum wage rates;
- (4) maintain appropriate industrial accident insurance coverage for all its employees employed on the project in accordance with M.G.L. c.152;
- (5) properly classify employees as employees rather than independent contractors and treat them accordingly for purposes of workers' compensation insurance, unemployment taxes, social security taxes and income tax withholding; and
- (6) certify under oath and in writing on a weekly basis for the entire duration of its work on the project, that it is in compliance with the above obligations.

Signed under the penalties of perjury. \_\_\_\_\_(date)

\_\_\_\_\_  
Signature of authorized representative of contractor

\_\_\_\_\_  
Print name of authorized representative of contractor

THIS CERTIFICATE APPLIES ONLY TO SUB-BIDS OVER \$25,000 INCLUDING ALL ALTERNATES, IF ANY.

**RETURN THIS FORM WITH YOUR BID**

**Americans With Disabilities Act (42 U.S.C. 12131)**  
**Tax Compliance/Anti-Collusion Statement**  
**Debarment Statement for**  
**The Grand Junction Path & Pedestrian Improvements**  
**Along Galileo Galilei Way Project**

The Americans with Disabilities Act (the "Act") applies to all employers of fifteen or more employees. All vendors that are subject to the Act must comply with its provisions. In further compliance with the Act, the Contractor entering into a contract with the Cambridge Redevelopment Authority ("CRA") for the Grand Junction Path & Pedestrian Improvements Along Galileo Galilei Way Project (the "Project") shall be prohibited from discrimination against the Contractor's employees as provided below, regardless of the size of the Contractor.

The Act protects against discrimination on the basis of "disability", which is defined as a physical or mental impairment that substantially limits at least one "major life activity"; discrimination against a person having a history or record of such impairment; and discrimination against an individual regarded - even if inaccurately - as having such an impairment. The Act also expressly prohibits discrimination that is based on an individual's relationship or association with a disabled person.

The Contractor shall not discriminate against any qualified employee or job applicant with a disability and will make the activities, programs and services covered by any contract awarded through this procurement readily accessible to and usable by individuals with disabilities. To be qualified for a job, or to avail oneself of the Contractor's services, the individual with the disability must meet the essential eligibility requirements for receipt of the Contractor's services or participation in the Contractor's programs or activities with or without: 1) reasonable modifications to the Contractor's rules, policies and practices; 2) removal of architectural, communication, or transportation barriers; or, 3) provisions of auxiliary aids and services.

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

As required by M.G.L. c. 62C, §49A, the undersigned certifies under the penalties of perjury that the Contractor has complied with all laws of the commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

The undersigned certifies that it is not currently subject to any State or Federal debarment order.

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

\_\_\_\_\_  
(Print Name of person signing bid)

\_\_\_\_\_  
(Signature & Title)

**This form must be submitted with your bid**

**File No.** \_\_\_\_\_

**AGREEMENT BETWEEN THE CAMBRIDGE REDEVELOPMENT  
AUTHORITY  
AND  
CONTRACTOR**

The Cambridge Redevelopment Authority (“the CRA”), and

\_\_\_\_\_ (“the Contractor”),

\_\_\_\_\_ (address)

agree as follows:

**THE CONTRACT DOCUMENTS**

The Contract Documents form the Contract between the CRA and the Contractor and consist only of those documents listed under the definition of “Contract Documents” in the General Terms and Conditions of the Contract. The Contract represents the entire and integrated agreement between the parties and supersedes any prior negotiations, representations, or agreements, whether oral or written.

**THE WORK**

The Contractor shall perform the Work as specified in the Contract Documents entitled:

**Grand Junction Path & Pedestrian Improvements  
Along Galileo Galilei Way**

**CONTRACT TIME**

The Contract Time shall be twelve (10) months on or before seven (7) days following the date set forth in the Notice to Proceed.

The Contractor agrees that the Work shall be prosecuted regularly, diligently, uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract Time. It is expressly understood and agreed that the Contract Time is reasonable for the completion of the Work, taking all factors into consideration.

**CONTRACT SUM**

The City will pay the Contractor for performance of the Work in accordance with the Contract Documents the sum of \$ \_\_\_\_\_ as set forth on the Contractor’s bid form.

The CRA shall not be liable for any claims or requests for payment by the Contractor



which would cause the total claims or payments under this Contract to exceed the amount certified by an auditor designated by the CRA, as being appropriated for this Contract.

**LIQUIDATED DAMAGES**

The CRA and the Contractor recognize that time is of the essence of this Contract and that the CRA will suffer financial loss if the Work is not completed within the Contract Time plus any authorized extensions. They also recognize the delay, expense, and difficulty involved in proving the actual loss suffered by the CRA if the Work is not completed within the Contract Time. Accordingly, instead of requiring any such proof, the CRA and the Contractor agree that the Contractor shall pay to the CRA as liquidated damages, not as a penalty, the sum of fifteen hundred dollars and 00/00 (\$1,500.00) per day for each calendar day of delay until the Work is completed. The Contractor agrees to allow the CRA to deduct any such amounts from progress payments and retainage.

This Contract is effective as of \_\_\_\_\_, the date the Agreement is signed by the CRA.

CAMBRIDGE REDEVELOPMENT  
AUTHORITY

THE CONTRACTOR

\_\_\_\_\_  
Kathleen Born, Chair

\_\_\_\_\_  
Signature

APPROVED AS TO FORM:

BY: \_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Tom Evans, Executive Director

## PERFORMANCE BOND

We, the undersigned,

---

(Name of Contractor)

---

(Address of Contractor)

hereinafter called Principal, and

---

(Name of Surety)

---

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the CAMBRIDGE REDEVELOPMENT AUTHORITY, 255 Main Street, 4<sup>th</sup> Floor, Cambridge, MA 02142, hereinafter called Owner, in the penal sum of \_\_\_\_\_ Dollars \$(\_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made. We hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of this obligation is such that the Principal entered into a certain contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is attached hereto and made a part hereof, for the project known **GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY** and the Principal and Surety bind themselves to the Owner for the performance of the contract.

Now, therefore, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety and during the guaranty period set forth in the contract, and if it shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by a reason of failure to do so, and shall reimburse and repay the Owner all outlay and expenses which the Owner may incur in making good any default, then this obligation shall be void; otherwise, this bond shall remain in full force and effect; provided, further, that the said Surety for value received hereby agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed there under of the specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby

waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications. Provided, further, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed on this

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

CONTRACTOR  
AS PRINCIPAL

SURETY

\_\_\_\_\_  
(signature)

Name and Title:

\_\_\_\_\_  
(signature)

Name and Title:

SEAL

SEAL

# Payment Bond

We, the undersigned,

---

(Name of Contractor)

---

(Address of Contractor)

---

\_\_\_\_\_, hereinafter called Principal, and  
(Corporation, Partnership, or Individual)

---

(Name of Surety)

---

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the CAMBRIDGE REDEVELOPMENT AUTHORITY, 255 Main Street, 4<sup>th</sup> Floor, Cambridge, MA 02142, hereinafter called Owner, in the penal sum of Dollars \$(\_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made. We hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of this obligation is such that the Principal entered into a certain contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is attached hereto and made a part hereof, for the project known as **GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY.**

Now, therefore, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials used in connection with the work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise this bond is remain in full force and effect. Provided, further, that the said Surety for value received hereby agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder of the Specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

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

IN WITNESS WHEREOF, this instrument is executed on this \_\_\_\_\_ day of \_\_\_\_\_ 20

CONTRACTOR AS PRINCIPAL

SURETY

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

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

Name and Title:

Name and Title:

SEAL

SEAL

**MEETING OF THE BOARD OF DIRECTORS**  
**CERTIFICATE OF AUTHORITY**

\_\_\_\_\_20\_\_\_\_\_

At a meeting of the Directors of the \_\_\_\_\_ duly called and held at \_\_\_\_\_ on the \_\_\_\_\_ day of \_\_\_\_\_20\_\_\_\_, at which a quorum was present and acting, it was

VOICED THAT \_\_\_\_\_

the \_\_\_\_\_ of this corporation is hereby authorized and empowered to make, enter into, sign, seal and deliver, in behalf of this corporation, a Contract for the **GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS ALONG GALILEO GALILEI WAY** project with the Cambridge Redevelopment Authority, and performance and payment bonds (each in the full amount of the Contract) in connection with such Contract.

I DO HEREBY CERTIFY that the above is a true and correct copy of the record, that said vote has not been amended or repealed and is in full force and effect on this date, and that

\_\_\_\_\_ is duly elected \_\_\_\_\_ of this Corporation.

ATTEST:

\_\_\_\_\_  
Clerk or Secretary of the Corporation



**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**

RONALD L. WALKER, II  
Secretary  
JEAN ZEILER  
Acting Director

CHARLES D. BAKER  
Governor

KARYN E. POLITO  
Lt. Governor

**Awarding Authority:** Cambridge Redevelopment Authority  
**Contract Number:** **City/Town:** CAMBRIDGE  
**Description of Work:** Construction of new multi-use path along Galileo Galilei Way in Cambridge. Work includes excavation, removal of gazebo, construction of new paved path, sidewalk, curb, ramps and landscaping.  
**Job Location:** Galileo Galilei Way between Main St and Broadway

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 Division of Apprentice Standards (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. **If an apprentice rate is not listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAS, the apprentice must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. 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 criminal penalties.

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 A</i>	06/01/2015	\$32.75	\$9.91	\$9.33	\$0.00	\$51.99
	08/01/2015	\$32.75	\$10.41	\$9.33	\$0.00	\$52.49
	12/01/2015	\$32.75	\$10.41	\$10.08	\$0.00	\$53.24
	06/01/2016	\$33.25	\$10.41	\$10.08	\$0.00	\$53.74
	08/01/2016	\$33.25	\$10.91	\$10.08	\$0.00	\$54.24
	12/01/2016	\$33.25	\$10.91	\$10.89	\$0.00	\$55.05
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$32.82	\$9.91	\$9.33	\$0.00	\$52.06
	08/01/2015	\$32.82	\$10.41	\$9.33	\$0.00	\$52.56
	12/01/2015	\$32.82	\$10.41	\$10.08	\$0.00	\$53.31
	06/01/2016	\$33.32	\$10.41	\$10.08	\$0.00	\$53.81
	08/01/2016	\$33.32	\$10.91	\$10.08	\$0.00	\$54.31
	12/01/2016	\$33.32	\$10.91	\$10.89	\$0.00	\$55.12
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$32.94	\$9.91	\$9.33	\$0.00	\$52.18
	08/01/2015	\$32.94	\$10.41	\$9.33	\$0.00	\$52.68
	12/01/2015	\$32.94	\$10.41	\$10.08	\$0.00	\$53.43
	06/01/2016	\$33.44	\$10.41	\$10.08	\$0.00	\$53.93
	08/01/2016	\$33.44	\$10.91	\$10.08	\$0.00	\$54.43
	12/01/2016	\$33.44	\$10.91	\$10.89	\$0.00	\$55.24
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$87.36	\$9.80	\$18.17	\$0.00	\$115.33
	08/01/2015	\$90.51	\$9.80	\$18.17	\$0.00	\$118.48
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	12/01/2015	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	06/01/2016	\$37.60	\$7.30	\$12.95	\$0.00	\$57.85
	12/01/2016	\$38.60	\$7.30	\$12.95	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	06/01/2015	\$33.43	\$10.40	\$5.95	\$0.00	\$49.78
	12/01/2015	\$34.38	\$10.40	\$5.95	\$0.00	\$50.73
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	06/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	12/01/2015	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	06/01/2016	\$37.60	\$7.30	\$12.95	\$0.00	\$57.85
	12/01/2016	\$38.60	\$7.30	\$12.95	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2010	\$37.70	\$6.97	\$11.18	\$0.00	\$55.85

**Apprentice - BOILERMAKER - Local 29**

**Effective Date - 01/01/2010**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$24.51	\$6.97	\$11.18	\$0.00	\$42.66
2	65	\$24.51	\$6.97	\$11.18	\$0.00	\$42.66
3	70	\$26.39	\$6.97	\$11.18	\$0.00	\$44.54
4	75	\$28.28	\$6.97	\$11.18	\$0.00	\$46.43
5	80	\$30.16	\$6.97	\$11.18	\$0.00	\$48.31
6	85	\$32.05	\$6.97	\$11.18	\$0.00	\$50.20
7	90	\$33.93	\$6.97	\$11.18	\$0.00	\$52.08
8	95	\$35.82	\$6.97	\$11.18	\$0.00	\$53.97

**Notes:**

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

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (BOSTON)</i>	02/01/2015	\$48.96	\$10.18	\$18.50	\$0.00	\$77.64
	08/01/2015	\$49.86	\$10.18	\$18.57	\$0.00	\$78.61
	02/01/2016	\$50.43	\$10.18	\$18.57	\$0.00	\$79.18
	08/01/2016	\$51.33	\$10.18	\$18.65	\$0.00	\$80.16
	02/01/2017	\$51.90	\$10.18	\$18.65	\$0.00	\$80.73

**Classification**

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

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

**Effective Date - 02/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.48	\$10.18	\$18.50	\$0.00	\$53.16
2	60	\$29.38	\$10.18	\$18.50	\$0.00	\$58.06
3	70	\$34.27	\$10.18	\$18.50	\$0.00	\$62.95
4	80	\$39.17	\$10.18	\$18.50	\$0.00	\$67.85
5	90	\$44.06	\$10.18	\$18.50	\$0.00	\$72.74

**Effective Date - 08/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.93	\$10.18	\$18.57	\$0.00	\$53.68
2	60	\$29.92	\$10.18	\$18.57	\$0.00	\$58.67
3	70	\$34.90	\$10.18	\$18.57	\$0.00	\$63.65
4	80	\$39.89	\$10.18	\$18.57	\$0.00	\$68.64
5	90	\$44.87	\$10.18	\$18.57	\$0.00	\$73.62

**Notes:**

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

<b>BULLDOZER/GRADER/SCRAPER</b>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
<i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>CAISSON &amp; UNDERPINNING BOTTOM MAN</b>	06/01/2015	\$36.45	\$7.30	\$13.15	\$0.00	\$56.90
<i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2015	\$37.20	\$7.30	\$13.15	\$0.00	\$57.65
	06/01/2016	\$37.95	\$7.30	\$13.15	\$0.00	\$58.40
	12/01/2016	\$38.95	\$7.30	\$13.15	\$0.00	\$59.40
For apprentice rates see "Apprentice- LABORER"						
<b>CAISSON &amp; UNDERPINNING LABORER</b>	06/01/2015	\$35.30	\$7.30	\$13.15	\$0.00	\$55.75
<i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2015	\$36.05	\$7.30	\$13.15	\$0.00	\$56.50
	06/01/2016	\$36.80	\$7.30	\$13.15	\$0.00	\$57.25
	12/01/2016	\$37.80	\$7.30	\$13.15	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
<b>CAISSON &amp; UNDERPINNING TOP MAN</b>	06/01/2015	\$35.30	\$7.30	\$13.15	\$0.00	\$55.75
<i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2015	\$36.05	\$7.30	\$13.15	\$0.00	\$56.50
	06/01/2016	\$36.80	\$7.30	\$13.15	\$0.00	\$57.25
	12/01/2016	\$37.80	\$7.30	\$13.15	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 1 (Metro Boston)</i>	03/01/2015	\$42.30	\$9.80	\$16.48	\$0.00	\$68.58

**Apprentice - CARPENTER - Zone 1 Metro Boston**

**Effective Date - 03/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.15	\$9.80	\$1.63	\$0.00	\$32.58
2	60	\$25.38	\$9.80	\$1.63	\$0.00	\$36.81
3	70	\$29.61	\$9.80	\$11.59	\$0.00	\$51.00
4	75	\$31.73	\$9.80	\$11.59	\$0.00	\$53.12
5	80	\$33.84	\$9.80	\$13.22	\$0.00	\$56.86
6	80	\$33.84	\$9.80	\$13.22	\$0.00	\$56.86
7	90	\$38.07	\$9.80	\$14.85	\$0.00	\$62.72
8	90	\$38.07	\$9.80	\$14.85	\$0.00	\$62.72

**Notes:**

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

CEMENT MASONRY/PLASTERING <i>BRICKLAYERS LOCAL 3 (BOSTON)</i>	01/01/2015	\$44.90	\$10.90	\$18.71	\$1.30	\$75.81
	07/01/2015	\$45.82	\$10.90	\$18.71	\$1.30	\$76.73
	01/01/2016	\$46.44	\$10.90	\$18.71	\$1.30	\$77.35

**Classification**

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

**Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Boston)**

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.45	\$10.90	\$12.21	\$0.00	\$45.56
2	60	\$26.94	\$10.90	\$13.71	\$1.30	\$52.85
3	65	\$29.19	\$10.90	\$14.71	\$1.30	\$56.10
4	70	\$31.43	\$10.90	\$15.71	\$1.30	\$59.34
5	75	\$33.68	\$10.90	\$16.71	\$1.30	\$62.59
6	80	\$35.92	\$10.90	\$17.71	\$1.30	\$65.83
7	90	\$40.41	\$10.90	\$18.71	\$1.30	\$71.32

**Effective Date - 07/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.91	\$10.90	\$12.21	\$0.00	\$46.02
2	60	\$27.49	\$10.90	\$13.71	\$1.30	\$53.40
3	65	\$29.78	\$10.90	\$14.71	\$1.30	\$56.69
4	70	\$32.07	\$10.90	\$15.71	\$1.30	\$59.98
5	75	\$34.37	\$10.90	\$16.71	\$1.30	\$63.28
6	80	\$36.66	\$10.90	\$17.71	\$1.30	\$66.57
7	90	\$41.24	\$10.90	\$18.71	\$1.30	\$72.15

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

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

CHAIN SAW OPERATOR	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
LABORERS - ZONE 1	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	06/01/2015	\$43.83	\$10.00	\$14.55	\$0.00	\$68.38
OPERATING ENGINEERS LOCAL 4	12/01/2015	\$45.08	\$10.00	\$14.55	\$0.00	\$69.63
	06/01/2016	\$45.83	\$10.00	\$14.55	\$0.00	\$70.38
	12/01/2016	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	06/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63
	12/01/2017	\$49.08	\$10.00	\$14.55	\$0.00	\$73.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

COMPRESSOR OPERATOR	06/01/2015	\$29.61	\$10.00	\$14.55	\$0.00	\$54.16
OPERATING ENGINEERS LOCAL 4	12/01/2015	\$30.48	\$10.00	\$14.55	\$0.00	\$55.03
	06/01/2016	\$31.00	\$10.00	\$14.55	\$0.00	\$55.55
	12/01/2016	\$31.87	\$10.00	\$14.55	\$0.00	\$56.42
	06/01/2017	\$32.56	\$10.00	\$14.55	\$0.00	\$57.11
	12/01/2017	\$33.25	\$10.00	\$14.55	\$0.00	\$57.80

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 1	01/01/2015	\$47.66	\$7.85	\$16.10	\$0.00	\$71.61
	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

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

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.83	\$7.85	\$0.00	\$0.00	\$31.68
2	55	\$26.21	\$7.85	\$3.66	\$0.00	\$37.72
3	60	\$28.60	\$7.85	\$3.99	\$0.00	\$40.44
4	65	\$30.98	\$7.85	\$4.32	\$0.00	\$43.15
5	70	\$33.36	\$7.85	\$14.11	\$0.00	\$55.32
6	75	\$35.75	\$7.85	\$14.44	\$0.00	\$58.04
7	80	\$38.13	\$7.85	\$14.77	\$0.00	\$60.75
8	90	\$42.89	\$7.85	\$15.44	\$0.00	\$66.18

**Effective Date - 07/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.28	\$7.85	\$0.00	\$0.00	\$32.13
2	55	\$26.71	\$7.85	\$3.66	\$0.00	\$38.22
3	60	\$29.14	\$7.85	\$3.99	\$0.00	\$40.98
4	65	\$31.56	\$7.85	\$4.32	\$0.00	\$43.73
5	70	\$33.99	\$7.85	\$14.11	\$0.00	\$55.95
6	75	\$36.42	\$7.85	\$14.44	\$0.00	\$58.71
7	80	\$38.85	\$7.85	\$14.77	\$0.00	\$61.47
8	90	\$43.70	\$7.85	\$15.44	\$0.00	\$66.99

**Notes:**

Steps are 750 hrs.

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

DEMO: ADZEMAN LABORERS - ZONE 1	06/01/2015	\$35.50	\$7.30	\$12.95	\$0.00	\$55.75
	12/01/2015	\$36.25	\$7.30	\$12.95	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 1	06/01/2015	\$36.50	\$7.30	\$12.95	\$0.00	\$56.75
	12/01/2015	\$37.25	\$7.30	\$12.95	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS LABORERS - ZONE 1	06/01/2015	\$36.25	\$7.30	\$12.95	\$0.00	\$56.50
	12/01/2015	\$37.00	\$7.30	\$12.95	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 1	06/01/2015	\$36.50	\$7.30	\$12.95	\$0.00	\$56.75
	12/01/2015	\$37.25	\$7.30	\$12.95	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$36.25	\$7.30	\$12.95	\$0.00	\$56.50
	12/01/2015	\$37.00	\$7.30	\$12.95	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.50	\$7.30	\$12.95	\$0.00	\$55.75
	12/01/2015	\$36.25	\$7.30	\$12.95	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$58.24	\$9.80	\$18.17	\$0.00	\$86.21
	08/01/2015	\$60.34	\$9.80	\$18.17	\$0.00	\$88.31
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$62.40	\$9.80	\$18.17	\$0.00	\$90.37
	08/01/2015	\$64.65	\$9.80	\$18.17	\$0.00	\$92.62
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$87.36	\$9.80	\$18.17	\$0.00	\$115.33
	08/01/2015	\$90.51	\$9.80	\$18.17	\$0.00	\$118.48
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$45.17	\$13.00	\$15.40	\$0.00	\$73.57
	09/01/2015	\$46.13	\$13.00	\$15.43	\$0.00	\$74.56
	03/01/2016	\$47.08	\$13.00	\$15.46	\$0.00	\$75.54
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$45.17	\$13.00	\$15.40	\$0.00	\$73.57
	09/01/2015	\$46.13	\$13.00	\$15.43	\$0.00	\$74.56
	03/01/2016	\$47.08	\$13.00	\$15.46	\$0.00	\$75.54

**Apprentice - ELECTRICIAN - Local 103**

**Effective Date - 03/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.07	\$13.00	\$0.54	\$0.00	\$31.61
2	40	\$18.07	\$13.00	\$0.54	\$0.00	\$31.61
3	45	\$20.33	\$13.00	\$11.64	\$0.00	\$44.97
4	45	\$20.33	\$13.00	\$11.64	\$0.00	\$44.97
5	50	\$22.59	\$13.00	\$11.98	\$0.00	\$47.57
6	55	\$24.84	\$13.00	\$12.33	\$0.00	\$50.17
7	60	\$27.10	\$13.00	\$12.66	\$0.00	\$52.76
8	65	\$29.36	\$13.00	\$13.01	\$0.00	\$55.37
9	70	\$31.62	\$13.00	\$13.35	\$0.00	\$57.97
10	75	\$33.88	\$13.00	\$13.70	\$0.00	\$60.58

**Effective Date - 09/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.45	\$13.00	\$0.55	\$0.00	\$32.00
2	40	\$18.45	\$13.00	\$0.55	\$0.00	\$32.00
3	45	\$20.76	\$13.00	\$11.65	\$0.00	\$45.41
4	45	\$20.76	\$13.00	\$11.65	\$0.00	\$45.41
5	50	\$23.07	\$13.00	\$11.99	\$0.00	\$48.06
6	55	\$25.37	\$13.00	\$12.34	\$0.00	\$50.71
7	60	\$27.68	\$13.00	\$12.68	\$0.00	\$53.36
8	65	\$29.98	\$13.00	\$13.03	\$0.00	\$56.01
9	70	\$32.29	\$13.00	\$13.37	\$0.00	\$58.66
10	75	\$34.60	\$13.00	\$13.72	\$0.00	\$61.32

**Notes:** :  
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

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

ELEVATOR CONSTRUCTOR	01/01/2015	\$53.30	\$13.58	\$14.21	\$0.00	\$81.09
ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2016	\$54.53	\$14.43	\$14.96	\$0.00	\$83.92
	01/01/2017	\$55.86	\$15.28	\$15.71	\$0.00	\$86.85

**Classification**

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

**Apprentice - ELEVATOR CONSTRUCTOR - Local 4**

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.65	\$13.58	\$0.00	\$0.00	\$40.23
2	55	\$29.32	\$13.58	\$14.21	\$0.00	\$57.11
3	65	\$34.65	\$13.58	\$14.21	\$0.00	\$62.44
4	70	\$37.31	\$13.58	\$14.21	\$0.00	\$65.10
5	80	\$42.64	\$13.58	\$14.21	\$0.00	\$70.43

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.27	\$14.43	\$0.00	\$0.00	\$41.70
2	55	\$29.99	\$14.43	\$14.96	\$0.00	\$59.38
3	65	\$35.44	\$14.43	\$14.96	\$0.00	\$64.83
4	70	\$38.17	\$14.43	\$14.96	\$0.00	\$67.56
5	80	\$43.62	\$14.43	\$14.96	\$0.00	\$73.01

**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>	01/01/2015	\$37.31	\$13.58	\$14.21	\$0.00	\$65.10
	01/01/2016	\$38.17	\$14.43	\$14.96	\$0.00	\$67.56
	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 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2015	\$40.22	\$10.00	\$14.30	\$0.00	\$64.52
	11/01/2015	\$40.80	\$10.00	\$14.30	\$0.00	\$65.10
	05/01/2016	\$41.69	\$10.00	\$14.30	\$0.00	\$65.99
	11/01/2016	\$42.28	\$10.00	\$14.30	\$0.00	\$66.58
	05/01/2017	\$43.16	\$10.00	\$14.30	\$0.00	\$67.46
	11/01/2017	\$43.89	\$10.00	\$14.30	\$0.00	\$68.19
	05/01/2018	\$44.60	\$10.00	\$14.30	\$0.00	\$68.90

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2015	\$41.65	\$10.00	\$14.30	\$0.00	\$65.95
	11/01/2015	\$42.24	\$10.00	\$14.30	\$0.00	\$66.54
	05/01/2016	\$43.13	\$10.00	\$14.30	\$0.00	\$67.43
	11/01/2016	\$43.73	\$10.00	\$14.30	\$0.00	\$68.03
	05/01/2017	\$44.62	\$10.00	\$14.30	\$0.00	\$68.92
	11/01/2017	\$45.35	\$10.00	\$14.30	\$0.00	\$69.65
	05/01/2018	\$46.07	\$10.00	\$14.30	\$0.00	\$70.37

For apprentice rates see "Apprentice- OPERATING ENGINEERS"



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2015	\$21.68	\$10.00	\$14.30	\$0.00	\$45.98
	11/01/2015	\$22.02	\$10.00	\$14.30	\$0.00	\$46.32
	05/01/2016	\$22.54	\$10.00	\$14.30	\$0.00	\$46.84
	11/01/2016	\$22.89	\$10.00	\$14.30	\$0.00	\$47.19
	05/01/2017	\$23.42	\$10.00	\$14.30	\$0.00	\$47.72
	11/01/2017	\$23.84	\$10.00	\$14.30	\$0.00	\$48.14
	05/01/2018	\$24.27	\$10.00	\$14.30	\$0.00	\$48.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$45.17	\$13.00	\$15.40	\$0.00	\$73.57
	09/01/2015	\$46.13	\$13.00	\$15.43	\$0.00	\$74.56
	03/01/2016	\$47.08	\$13.00	\$15.46	\$0.00	\$75.54
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$33.88	\$13.00	\$13.70	\$0.00	\$60.58
	09/01/2015	\$34.60	\$13.00	\$13.72	\$0.00	\$61.32
	03/01/2016	\$35.31	\$13.00	\$13.74	\$0.00	\$62.05
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$35.64	\$10.00	\$14.55	\$0.00	\$60.19
	12/01/2015	\$36.69	\$10.00	\$14.55	\$0.00	\$61.24
	06/01/2016	\$37.31	\$10.00	\$14.55	\$0.00	\$61.86
	12/01/2016	\$38.35	\$10.00	\$14.55	\$0.00	\$62.90
	06/01/2017	\$39.19	\$10.00	\$14.55	\$0.00	\$63.74
	12/01/2017	\$40.02	\$10.00	\$14.55	\$0.00	\$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 1</i>	06/01/2015	\$20.50	\$7.30	\$12.95	\$0.00	\$40.75
	12/01/2015	\$20.50	\$7.30	\$12.95	\$0.00	\$40.75
	06/01/2016	\$20.50	\$7.30	\$12.95	\$0.00	\$40.75
	12/01/2016	\$20.50	\$7.30	\$12.95	\$0.00	\$40.75
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	09/01/2014	\$40.40	\$9.80	\$17.21	\$0.00	\$67.41

**Classification**

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

**Apprentice - FLOORCOVERER - Local 2168 Zone 1**

**Effective Date - 09/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.20	\$9.80	\$1.79	\$0.00	\$31.79
2	55	\$22.22	\$9.80	\$1.79	\$0.00	\$33.81
3	60	\$24.24	\$9.80	\$11.84	\$0.00	\$45.88
4	65	\$26.26	\$9.80	\$11.84	\$0.00	\$47.90
5	70	\$28.28	\$9.80	\$13.63	\$0.00	\$51.71
6	75	\$30.30	\$9.80	\$13.63	\$0.00	\$53.73
7	80	\$32.32	\$9.80	\$15.42	\$0.00	\$57.54
8	85	\$34.34	\$9.80	\$15.42	\$0.00	\$59.56

**Notes:**  
Steps are 750 hrs.

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

<b>FORK LIFT/CHERRY PICKER</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>GENERATOR/LIGHTING PLANT/HEATERS</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$29.61	\$10.00	\$14.55	\$0.00	\$54.16
	12/01/2015	\$30.48	\$10.00	\$14.55	\$0.00	\$55.03
	06/01/2016	\$31.00	\$10.00	\$14.55	\$0.00	\$55.55
	12/01/2016	\$31.87	\$10.00	\$14.55	\$0.00	\$56.42
	06/01/2017	\$32.56	\$10.00	\$14.55	\$0.00	\$57.11
	12/01/2017	\$33.25	\$10.00	\$14.55	\$0.00	\$57.80

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)</b> <i>GLAZIERS LOCAL 35 (ZONE 1)</i>	01/01/2015	\$42.95	\$7.85	\$16.10	\$0.00	\$66.90
	07/01/2015	\$43.85	\$7.85	\$16.10	\$0.00	\$67.80
	01/01/2016	\$44.80	\$7.85	\$16.10	\$0.00	\$68.75
	07/01/2016	\$45.75	\$7.85	\$16.10	\$0.00	\$69.70
	01/01/2017	\$46.70	\$7.85	\$16.10	\$0.00	\$70.65

**Apprentice - GLAZIER - Local 35 Zone 1**

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.48	\$7.85	\$0.00	\$0.00	\$29.33
2	55	\$23.62	\$7.85	\$3.66	\$0.00	\$35.13
3	60	\$25.77	\$7.85	\$3.99	\$0.00	\$37.61
4	65	\$27.92	\$7.85	\$4.32	\$0.00	\$40.09
5	70	\$30.07	\$7.85	\$14.11	\$0.00	\$52.03
6	75	\$32.21	\$7.85	\$14.44	\$0.00	\$54.50
7	80	\$34.36	\$7.85	\$14.77	\$0.00	\$56.98
8	90	\$38.66	\$7.85	\$15.44	\$0.00	\$61.95

**Effective Date - 07/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.93	\$7.85	\$0.00	\$0.00	\$29.78
2	55	\$24.12	\$7.85	\$3.66	\$0.00	\$35.63
3	60	\$26.31	\$7.85	\$3.99	\$0.00	\$38.15
4	65	\$28.50	\$7.85	\$4.32	\$0.00	\$40.67
5	70	\$30.70	\$7.85	\$14.11	\$0.00	\$52.66
6	75	\$32.89	\$7.85	\$14.44	\$0.00	\$55.18
7	80	\$35.08	\$7.85	\$14.77	\$0.00	\$57.70
8	90	\$39.47	\$7.85	\$15.44	\$0.00	\$62.76

**Notes:**  
Steps are 750 hrs.

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

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
OPERATING ENGINEERS LOCAL 4	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63

**Classification**

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

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 06/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.56	\$10.00	\$0.00	\$0.00	\$33.56
2	60	\$25.70	\$10.00	\$14.55	\$0.00	\$50.25
3	65	\$27.84	\$10.00	\$14.55	\$0.00	\$52.39
4	70	\$29.98	\$10.00	\$14.55	\$0.00	\$54.53
5	75	\$32.12	\$10.00	\$14.55	\$0.00	\$56.67
6	80	\$34.26	\$10.00	\$14.55	\$0.00	\$58.81
7	85	\$36.41	\$10.00	\$14.55	\$0.00	\$60.96
8	90	\$38.55	\$10.00	\$14.55	\$0.00	\$63.10

**Effective Date - 12/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$24.24	\$10.00	\$0.00	\$0.00	\$34.24
2	60	\$26.45	\$10.00	\$14.55	\$0.00	\$51.00
3	65	\$28.65	\$10.00	\$14.55	\$0.00	\$53.20
4	70	\$30.86	\$10.00	\$14.55	\$0.00	\$55.41
5	75	\$33.06	\$10.00	\$14.55	\$0.00	\$57.61
6	80	\$35.26	\$10.00	\$14.55	\$0.00	\$59.81
7	85	\$37.47	\$10.00	\$14.55	\$0.00	\$62.02
8	90	\$39.67	\$10.00	\$14.55	\$0.00	\$64.22

**Notes:**

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

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2015	\$43.28	\$10.20	\$20.54	\$2.22	\$76.24
	08/01/2015	\$44.28	\$10.20	\$20.54	\$2.22	\$77.24
	02/01/2016	\$45.28	\$10.20	\$20.54	\$2.22	\$78.24
	08/01/2016	\$46.43	\$10.20	\$20.54	\$2.22	\$79.39
	02/01/2017	\$47.53	\$10.20	\$20.54	\$2.22	\$80.49
	08/01/2017	\$48.63	\$10.20	\$20.54	\$2.22	\$81.59
	02/01/2018	\$49.78	\$10.20	\$20.54	\$2.22	\$82.74

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2015	\$45.17	\$13.00	\$15.40	\$0.00	\$73.57
	09/01/2015	\$46.13	\$13.00	\$15.43	\$0.00	\$74.56
	03/01/2016	\$47.08	\$13.00	\$15.46	\$0.00	\$75.54

For apprentice rates see "Apprentice- ELECTRICIAN"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2015	\$43.28	\$10.20	\$20.54	\$2.22	\$76.24
	08/01/2015	\$44.28	\$10.20	\$20.54	\$2.22	\$77.24
	02/01/2016	\$45.28	\$10.20	\$20.54	\$2.22	\$78.24
	08/01/2016	\$46.43	\$10.20	\$20.54	\$2.22	\$79.39
	02/01/2017	\$47.53	\$10.20	\$20.54	\$2.22	\$80.49
	08/01/2017	\$48.63	\$10.20	\$20.54	\$2.22	\$81.59
	02/01/2018	\$49.78	\$10.20	\$20.54	\$2.22	\$82.74
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2015	\$48.69	\$9.70	\$16.89	\$0.00	\$75.28
	09/01/2015	\$49.69	\$9.70	\$16.89	\$0.00	\$76.28
	03/01/2016	\$50.69	\$9.70	\$16.89	\$0.00	\$77.28
	09/01/2016	\$51.69	\$9.70	\$16.89	\$0.00	\$78.28
	03/01/2017	\$52.69	\$9.70	\$16.89	\$0.00	\$79.28
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2015	\$48.69	\$9.70	\$16.89	\$0.00	\$75.28
	09/01/2015	\$49.69	\$9.70	\$16.89	\$0.00	\$76.28
	03/01/2016	\$50.69	\$9.70	\$16.89	\$0.00	\$77.28
	09/01/2016	\$51.69	\$9.70	\$16.89	\$0.00	\$78.28
	03/01/2017	\$52.69	\$9.70	\$16.89	\$0.00	\$79.28
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 1</i>	06/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	12/01/2015	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	06/01/2016	\$37.60	\$7.30	\$12.95	\$0.00	\$57.85
	12/01/2016	\$38.60	\$7.30	\$12.95	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2014	\$43.31	\$11.25	\$12.60	\$0.00	\$67.16

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

**Effective Date - 09/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.66	\$11.25	\$9.35	\$0.00	\$42.26
2	60	\$25.99	\$11.25	\$10.00	\$0.00	\$47.24
3	70	\$30.32	\$11.25	\$10.65	\$0.00	\$52.22
4	80	\$34.65	\$11.25	\$11.30	\$0.00	\$57.20

**Notes:**

Steps are 1 year

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

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (BOSTON AREA)</i>	03/16/2015	\$42.11	\$7.70	\$20.25	\$0.00	\$70.06
---	------------	---------	--------	---------	--------	---------

**Apprentice - IRONWORKER - Local 7 Boston**

**Effective Date - 03/16/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.27	\$7.70	\$20.25	\$0.00	\$53.22
2	70	\$29.48	\$7.70	\$20.25	\$0.00	\$57.43
3	75	\$31.58	\$7.70	\$20.25	\$0.00	\$59.53
4	80	\$33.69	\$7.70	\$20.25	\$0.00	\$61.64
5	85	\$35.79	\$7.70	\$20.25	\$0.00	\$63.74
6	90	\$37.90	\$7.70	\$20.25	\$0.00	\$65.85

**Notes:**

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

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

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 1	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 1	06/01/2015	\$35.35	\$7.30	\$12.95	\$0.00	\$55.60
	12/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	06/01/2016	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	12/01/2016	\$37.85	\$7.30	\$12.95	\$0.00	\$58.10

**Apprentice - LABORER - Zone 1**

**Effective Date - 06/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.21	\$7.30	\$12.95	\$0.00	\$41.46
2	70	\$24.75	\$7.30	\$12.95	\$0.00	\$45.00
3	80	\$28.28	\$7.30	\$12.95	\$0.00	\$48.53
4	90	\$31.82	\$7.30	\$12.95	\$0.00	\$52.07

**Effective Date - 12/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.66	\$7.30	\$12.95	\$0.00	\$41.91
2	70	\$25.27	\$7.30	\$12.95	\$0.00	\$45.52
3	80	\$28.88	\$7.30	\$12.95	\$0.00	\$49.13
4	90	\$32.49	\$7.30	\$12.95	\$0.00	\$52.74

**Notes:**

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$12.95	\$0.00	\$55.60
	12/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	06/01/2016	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	12/01/2016	\$37.85	\$7.30	\$12.95	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$12.95	\$0.00	\$55.60
	12/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	06/01/2016	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	12/01/2016	\$37.85	\$7.30	\$12.95	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.50	\$7.30	\$12.95	\$0.00	\$55.75
	12/01/2015	\$36.25	\$7.30	\$12.95	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$12.95	\$0.00	\$55.60
	12/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	06/01/2016	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	12/01/2016	\$37.85	\$7.30	\$12.95	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$12.95	\$0.00	\$55.60
	12/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	06/01/2016	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	12/01/2016	\$37.85	\$7.30	\$12.95	\$0.00	\$58.10
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 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2015	\$37.37	\$10.18	\$17.18	\$0.00	\$64.73
	08/01/2015	\$38.08	\$10.18	\$17.25	\$0.00	\$65.51
	02/01/2016	\$38.53	\$10.18	\$17.25	\$0.00	\$65.96
	08/01/2016	\$39.23	\$10.18	\$17.33	\$0.00	\$66.74
	02/01/2017	\$39.69	\$10.18	\$17.33	\$0.00	\$67.20

**Classification**

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

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

**Effective Date - 02/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.69	\$10.18	\$17.18	\$0.00	\$46.05
2	60	\$22.42	\$10.18	\$17.18	\$0.00	\$49.78
3	70	\$26.16	\$10.18	\$17.18	\$0.00	\$53.52
4	80	\$29.90	\$10.18	\$17.18	\$0.00	\$57.26
5	90	\$33.63	\$10.18	\$17.18	\$0.00	\$60.99

**Effective Date - 08/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.04	\$10.18	\$17.25	\$0.00	\$46.47
2	60	\$22.85	\$10.18	\$17.25	\$0.00	\$50.28
3	70	\$26.66	\$10.18	\$17.25	\$0.00	\$54.09
4	80	\$30.46	\$10.18	\$17.25	\$0.00	\$57.89
5	90	\$34.27	\$10.18	\$17.25	\$0.00	\$61.70

**Notes:**

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

MARBLE MASONS, TILELAYERS & TERRAZZO MECH	02/01/2015	\$49.00	\$10.18	\$18.50	\$0.00	\$77.68
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2015	\$49.90	\$10.18	\$18.57	\$0.00	\$78.65
	02/01/2016	\$50.47	\$10.18	\$18.57	\$0.00	\$79.22
	08/01/2016	\$51.37	\$10.18	\$18.65	\$0.00	\$80.20
	02/01/2017	\$51.94	\$10.18	\$18.65	\$0.00	\$80.77



**Classification**

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

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

**Effective Date - 02/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.50	\$10.18	\$18.50	\$0.00	\$53.18
2	60	\$29.40	\$10.18	\$18.50	\$0.00	\$58.08
3	70	\$34.30	\$10.18	\$18.50	\$0.00	\$62.98
4	80	\$39.20	\$10.18	\$18.50	\$0.00	\$67.88
5	90	\$44.10	\$10.18	\$18.50	\$0.00	\$72.78

**Effective Date - 08/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.95	\$10.18	\$18.57	\$0.00	\$53.70
2	60	\$29.94	\$10.18	\$18.57	\$0.00	\$58.69
3	70	\$34.93	\$10.18	\$18.57	\$0.00	\$63.68
4	80	\$39.92	\$10.18	\$18.57	\$0.00	\$68.67
5	90	\$44.91	\$10.18	\$18.57	\$0.00	\$73.66

**Notes:**

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

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	04/01/2015	\$37.64	\$9.80	\$16.21	\$0.00	\$63.65

**Apprentice - MILLWRIGHT - Local 1121 Zone 1**

**Effective Date - 04/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$20.70	\$9.80	\$4.48	\$0.00	\$34.98
2	65	\$24.47	\$9.80	\$13.36	\$0.00	\$47.63
3	75	\$28.23	\$9.80	\$14.18	\$0.00	\$52.21
4	85	\$31.99	\$9.80	\$14.99	\$0.00	\$56.78

**Notes:**

Steps are 2,000 hours

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

<b>MORTAR MIXER</b> <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

<b>OILER (OTHER THAN TRUCK CRANES,GRADALLS)</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$21.97	\$10.00	\$14.55	\$0.00	\$46.52
	12/01/2015	\$22.62	\$10.00	\$14.55	\$0.00	\$47.17
	06/01/2016	\$23.01	\$10.00	\$14.55	\$0.00	\$47.56
	12/01/2016	\$23.66	\$10.00	\$14.55	\$0.00	\$48.21
	06/01/2017	\$24.17	\$10.00	\$14.55	\$0.00	\$48.72
	12/01/2017	\$24.69	\$10.00	\$14.55	\$0.00	\$49.24

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>OILER (TRUCK CRANES, GRADALLS)</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$25.68	\$10.00	\$14.55	\$0.00	\$50.23
	12/01/2015	\$26.43	\$10.00	\$14.55	\$0.00	\$50.98
	06/01/2016	\$26.89	\$10.00	\$14.55	\$0.00	\$51.44
	12/01/2016	\$27.64	\$10.00	\$14.55	\$0.00	\$52.19
	06/01/2017	\$28.24	\$10.00	\$14.55	\$0.00	\$52.79
	12/01/2017	\$28.85	\$10.00	\$14.55	\$0.00	\$53.40

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>OTHER POWER DRIVEN EQUIPMENT - CLASS II</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>PAINTER (BRIDGES/TANKS)</b> <i>PAINTERS LOCAL 35 - ZONE 1</i>	01/01/2015	\$47.66	\$7.85	\$16.10	\$0.00	\$71.61
	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

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

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.83	\$7.85	\$0.00	\$0.00	\$31.68
2	55	\$26.21	\$7.85	\$3.66	\$0.00	\$37.72
3	60	\$28.60	\$7.85	\$3.99	\$0.00	\$40.44
4	65	\$30.98	\$7.85	\$4.32	\$0.00	\$43.15
5	70	\$33.36	\$7.85	\$14.11	\$0.00	\$55.32
6	75	\$35.75	\$7.85	\$14.44	\$0.00	\$58.04
7	80	\$38.13	\$7.85	\$14.77	\$0.00	\$60.75
8	90	\$42.89	\$7.85	\$15.44	\$0.00	\$66.18

**Effective Date - 07/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.28	\$7.85	\$0.00	\$0.00	\$32.13
2	55	\$26.71	\$7.85	\$3.66	\$0.00	\$38.22
3	60	\$29.14	\$7.85	\$3.99	\$0.00	\$40.98
4	65	\$31.56	\$7.85	\$4.32	\$0.00	\$43.73
5	70	\$33.99	\$7.85	\$14.11	\$0.00	\$55.95
6	75	\$36.42	\$7.85	\$14.44	\$0.00	\$58.71
7	80	\$38.85	\$7.85	\$14.77	\$0.00	\$61.47
8	90	\$43.70	\$7.85	\$15.44	\$0.00	\$66.99

**Notes:**  
Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2015	\$44.35	\$7.85	\$16.10	\$0.00	\$68.30
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 1	07/01/2015	\$45.25	\$7.85	\$16.10	\$0.00	\$69.20
	01/01/2016	\$46.20	\$7.85	\$16.10	\$0.00	\$70.15
	07/01/2016	\$47.15	\$7.85	\$16.10	\$0.00	\$71.10
	01/01/2017	\$48.10	\$7.85	\$16.10	\$0.00	\$72.05

**Apprentice - PAINTER Local 35 Zone 1 - Spray/Sandblast - New**

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$7.85	\$0.00	\$0.00	\$30.03
2	55	\$24.39	\$7.85	\$3.66	\$0.00	\$35.90
3	60	\$26.61	\$7.85	\$3.99	\$0.00	\$38.45
4	65	\$28.83	\$7.85	\$4.32	\$0.00	\$41.00
5	70	\$31.05	\$7.85	\$14.11	\$0.00	\$53.01
6	75	\$33.26	\$7.85	\$14.44	\$0.00	\$55.55
7	80	\$35.48	\$7.85	\$14.77	\$0.00	\$58.10
8	90	\$39.92	\$7.85	\$15.44	\$0.00	\$63.21

**Effective Date - 07/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.63	\$7.85	\$0.00	\$0.00	\$30.48
2	55	\$24.89	\$7.85	\$3.66	\$0.00	\$36.40
3	60	\$27.15	\$7.85	\$3.99	\$0.00	\$38.99
4	65	\$29.41	\$7.85	\$4.32	\$0.00	\$41.58
5	70	\$31.68	\$7.85	\$14.11	\$0.00	\$53.64
6	75	\$33.94	\$7.85	\$14.44	\$0.00	\$56.23
7	80	\$36.20	\$7.85	\$14.77	\$0.00	\$58.82
8	90	\$40.73	\$7.85	\$15.44	\$0.00	\$64.02

**Notes:**  
Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2015	\$42.41	\$7.85	\$16.10	\$0.00	\$66.36
PAINTERS LOCAL 35 - ZONE 1	07/01/2015	\$43.31	\$7.85	\$16.10	\$0.00	\$67.26
	01/01/2016	\$44.26	\$7.85	\$16.10	\$0.00	\$68.21
	07/01/2016	\$45.21	\$7.85	\$16.10	\$0.00	\$69.16
	01/01/2017	\$46.16	\$7.85	\$16.10	\$0.00	\$70.11

**Classification**

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

**Apprentice - PAINTER Local 35 Zone 1 - Spray/Sandblast - Repaint**

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.21	\$7.85	\$0.00	\$0.00	\$29.06
2	55	\$23.33	\$7.85	\$3.66	\$0.00	\$34.84
3	60	\$25.45	\$7.85	\$3.99	\$0.00	\$37.29
4	65	\$27.57	\$7.85	\$4.32	\$0.00	\$39.74
5	70	\$29.69	\$7.85	\$14.11	\$0.00	\$51.65
6	75	\$31.81	\$7.85	\$14.44	\$0.00	\$54.10
7	80	\$33.93	\$7.85	\$14.77	\$0.00	\$56.55
8	90	\$38.17	\$7.85	\$15.44	\$0.00	\$61.46

**Effective Date - 07/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.66	\$7.85	\$0.00	\$0.00	\$29.51
2	55	\$23.82	\$7.85	\$3.66	\$0.00	\$35.33
3	60	\$25.99	\$7.85	\$3.99	\$0.00	\$37.83
4	65	\$28.15	\$7.85	\$4.32	\$0.00	\$40.32
5	70	\$30.32	\$7.85	\$14.11	\$0.00	\$52.28
6	75	\$32.48	\$7.85	\$14.44	\$0.00	\$54.77
7	80	\$34.65	\$7.85	\$14.77	\$0.00	\$57.27
8	90	\$38.98	\$7.85	\$15.44	\$0.00	\$62.27

**Notes:**

Steps are 750 hrs.

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

PAINTER (TRAFFIC MARKINGS) LABORERS - ZONE 1	06/01/2015	\$35.35	\$7.30	\$12.95	\$0.00	\$55.60
	12/01/2015	\$36.10	\$7.30	\$12.95	\$0.00	\$56.35
	06/01/2016	\$36.85	\$7.30	\$12.95	\$0.00	\$57.10
	12/01/2016	\$37.85	\$7.30	\$12.95	\$0.00	\$58.10

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	01/01/2015	\$42.95	\$7.85	\$16.10	\$0.00	\$66.90
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 1	07/01/2015	\$43.85	\$7.85	\$16.10	\$0.00	\$67.80
	01/01/2016	\$44.80	\$7.85	\$16.10	\$0.00	\$68.75
	07/01/2016	\$45.75	\$7.85	\$16.10	\$0.00	\$69.70
	01/01/2017	\$46.70	\$7.85	\$16.10	\$0.00	\$70.65

**Apprentice - PAINTER - Local 35 Zone 1 - BRUSH NEW**

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.48	\$7.85	\$0.00	\$0.00	\$29.33
2	55	\$23.62	\$7.85	\$3.66	\$0.00	\$35.13
3	60	\$25.77	\$7.85	\$3.99	\$0.00	\$37.61
4	65	\$27.92	\$7.85	\$4.32	\$0.00	\$40.09
5	70	\$30.07	\$7.85	\$14.11	\$0.00	\$52.03
6	75	\$32.21	\$7.85	\$14.44	\$0.00	\$54.50
7	80	\$34.36	\$7.85	\$14.77	\$0.00	\$56.98
8	90	\$38.66	\$7.85	\$15.44	\$0.00	\$61.95

**Effective Date - 07/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.93	\$7.85	\$0.00	\$0.00	\$29.78
2	55	\$24.12	\$7.85	\$3.66	\$0.00	\$35.63
3	60	\$26.31	\$7.85	\$3.99	\$0.00	\$38.15
4	65	\$28.50	\$7.85	\$4.32	\$0.00	\$40.67
5	70	\$30.70	\$7.85	\$14.11	\$0.00	\$52.66
6	75	\$32.89	\$7.85	\$14.44	\$0.00	\$55.18
7	80	\$35.08	\$7.85	\$14.77	\$0.00	\$57.70
8	90	\$39.47	\$7.85	\$15.44	\$0.00	\$62.76

**Notes:**  
Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2015	\$41.01	\$7.85	\$16.10	\$0.00	\$64.96
PAINTERS LOCAL 35 - ZONE 1	07/01/2015	\$41.91	\$7.85	\$16.10	\$0.00	\$65.86
	01/01/2016	\$42.86	\$7.85	\$16.10	\$0.00	\$66.81
	07/01/2016	\$43.81	\$7.85	\$16.10	\$0.00	\$67.76
	01/01/2017	\$44.76	\$7.85	\$16.10	\$0.00	\$68.71

**Apprentice - PAINTER Local 35 Zone 1 - BRUSH REPAINT**

**Effective Date - 01/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.51	\$7.85	\$0.00	\$0.00	\$28.36
2	55	\$22.56	\$7.85	\$3.66	\$0.00	\$34.07
3	60	\$24.61	\$7.85	\$3.99	\$0.00	\$36.45
4	65	\$26.66	\$7.85	\$4.32	\$0.00	\$38.83
5	70	\$28.71	\$7.85	\$14.11	\$0.00	\$50.67
6	75	\$30.76	\$7.85	\$14.44	\$0.00	\$53.05
7	80	\$32.81	\$7.85	\$14.77	\$0.00	\$55.43
8	90	\$36.91	\$7.85	\$15.44	\$0.00	\$60.20

**Effective Date - 07/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.96	\$7.85	\$0.00	\$0.00	\$28.81
2	55	\$23.05	\$7.85	\$3.66	\$0.00	\$34.56
3	60	\$25.15	\$7.85	\$3.99	\$0.00	\$36.99
4	65	\$27.24	\$7.85	\$4.32	\$0.00	\$39.41
5	70	\$29.34	\$7.85	\$14.11	\$0.00	\$51.30
6	75	\$31.43	\$7.85	\$14.44	\$0.00	\$53.72
7	80	\$33.53	\$7.85	\$14.77	\$0.00	\$56.15
8	90	\$37.72	\$7.85	\$15.44	\$0.00	\$61.01

**Notes:**  
Steps are 750 hrs.

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

PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	06/01/2015	\$32.58	\$9.91	\$9.33	\$0.00	\$51.82
	08/01/2015	\$32.58	\$10.41	\$9.33	\$0.00	\$52.32
	12/01/2015	\$32.58	\$10.41	\$10.08	\$0.00	\$53.07
	06/01/2016	\$33.08	\$10.41	\$10.08	\$0.00	\$53.57
	08/01/2016	\$33.08	\$10.91	\$10.08	\$0.00	\$54.07
	12/01/2016	\$33.08	\$10.91	\$10.89	\$0.00	\$54.88
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07
PILE DRIVER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07

**Apprentice - PILE DRIVER - Local 56 Zone 1**

**Effective Date - 08/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.80	\$9.80	\$18.17	\$0.00	\$48.77
2	60	\$24.96	\$9.80	\$18.17	\$0.00	\$52.93
3	70	\$29.12	\$9.80	\$18.17	\$0.00	\$57.09
4	75	\$31.20	\$9.80	\$18.17	\$0.00	\$59.17
5	80	\$33.28	\$9.80	\$18.17	\$0.00	\$61.25
6	80	\$33.28	\$9.80	\$18.17	\$0.00	\$61.25
7	90	\$37.44	\$9.80	\$18.17	\$0.00	\$65.41
8	90	\$37.44	\$9.80	\$18.17	\$0.00	\$65.41

**Effective Date - 08/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.55	\$9.80	\$18.17	\$0.00	\$49.52
2	60	\$25.86	\$9.80	\$18.17	\$0.00	\$53.83
3	70	\$30.17	\$9.80	\$18.17	\$0.00	\$58.14
4	75	\$32.33	\$9.80	\$18.17	\$0.00	\$60.30
5	80	\$34.48	\$9.80	\$18.17	\$0.00	\$62.45
6	80	\$34.48	\$9.80	\$18.17	\$0.00	\$62.45
7	90	\$38.79	\$9.80	\$18.17	\$0.00	\$66.76
8	90	\$38.79	\$9.80	\$18.17	\$0.00	\$66.76

Notes:

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

PIPEFITTER & STEAMFITTER	03/01/2015	\$48.69	\$9.70	\$16.89	\$0.00	\$75.28
PIPEFITTERS LOCAL 537	09/01/2015	\$49.69	\$9.70	\$16.89	\$0.00	\$76.28
	03/01/2016	\$50.69	\$9.70	\$16.89	\$0.00	\$77.28
	09/01/2016	\$51.69	\$9.70	\$16.89	\$0.00	\$78.28
	03/01/2017	\$52.69	\$9.70	\$16.89	\$0.00	\$79.28



**Classification**

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

**Apprentice - PIPEFITTER - Local 537**

**Effective Date - 03/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.48	\$9.70	\$7.50	\$0.00	\$36.68
2	45	\$21.91	\$9.70	\$16.89	\$0.00	\$48.50
3	60	\$29.21	\$9.70	\$16.89	\$0.00	\$55.80
4	70	\$34.08	\$9.70	\$16.89	\$0.00	\$60.67
5	80	\$38.95	\$9.70	\$16.89	\$0.00	\$65.54

**Effective Date - 09/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.88	\$9.70	\$7.50	\$0.00	\$37.08
2	45	\$22.36	\$9.70	\$16.89	\$0.00	\$48.95
3	60	\$29.81	\$9.70	\$16.89	\$0.00	\$56.40
4	70	\$34.78	\$9.70	\$16.89	\$0.00	\$61.37
5	80	\$39.75	\$9.70	\$16.89	\$0.00	\$66.34

**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	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
LABORERS - ZONE 1	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS	03/01/2015	\$50.21	\$10.32	\$14.89	\$0.00	\$75.42
PLUMBERS & GASFITTERS LOCAL 12	09/01/2015	\$51.21	\$10.32	\$14.89	\$0.00	\$76.42
	03/01/2016	\$52.36	\$10.32	\$14.89	\$0.00	\$77.57
	09/01/2016	\$53.41	\$10.32	\$14.89	\$0.00	\$78.62
	03/01/2017	\$54.41	\$10.32	\$14.89	\$0.00	\$79.62

**Classification**

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

**Apprentice - PLUMBER/GASFITTER - Local 12**

**Effective Date - 03/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.57	\$10.32	\$5.54	\$0.00	\$33.43
2	40	\$20.08	\$10.32	\$6.27	\$0.00	\$36.67
3	55	\$27.62	\$10.32	\$8.42	\$0.00	\$46.36
4	65	\$32.64	\$10.32	\$9.87	\$0.00	\$52.83
5	75	\$37.66	\$10.32	\$11.30	\$0.00	\$59.28

**Effective Date - 09/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.92	\$10.32	\$5.54	\$0.00	\$33.78
2	40	\$20.48	\$10.32	\$6.27	\$0.00	\$37.07
3	55	\$28.17	\$10.32	\$8.42	\$0.00	\$46.91
4	65	\$33.29	\$10.32	\$9.87	\$0.00	\$53.48
5	75	\$38.41	\$10.32	\$11.30	\$0.00	\$60.03

**Notes:**

\*\* 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr  
Step4 with lic\$56.05 Step5 with lic\$62.48

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

PNEUMATIC CONTROLS (TEMP.) <i>PIPEFITTERS LOCAL 537</i>	03/01/2015	\$48.69	\$9.70	\$16.89	\$0.00	\$75.28
	09/01/2015	\$49.69	\$9.70	\$16.89	\$0.00	\$76.28
	03/01/2016	\$50.69	\$9.70	\$16.89	\$0.00	\$77.28
	09/01/2016	\$51.69	\$9.70	\$16.89	\$0.00	\$78.28
	03/01/2017	\$52.69	\$9.70	\$16.89	\$0.00	\$79.28

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

PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER <i>LABORERS - ZONE 1</i>	06/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	12/01/2015	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	06/01/2016	\$37.85	\$7.30	\$12.95	\$0.00	\$58.10
	12/01/2016	\$38.85	\$7.30	\$12.95	\$0.00	\$59.10

For apprentice rates see "Apprentice- LABORER"

POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$29.61	\$10.00	\$14.55	\$0.00	\$54.16
	12/01/2015	\$30.48	\$10.00	\$14.55	\$0.00	\$55.03
	06/01/2016	\$31.00	\$10.00	\$14.55	\$0.00	\$55.55
	12/01/2016	\$31.87	\$10.00	\$14.55	\$0.00	\$56.42
	06/01/2017	\$32.56	\$10.00	\$14.55	\$0.00	\$57.11
	12/01/2017	\$33.25	\$10.00	\$14.55	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY MIX CONCRETE DRIVERS after 4/30/10 (Drivers Hired After 4/30/2010) <i>TEAMSTERS LOCAL 25a</i>	05/01/2015	\$27.88	\$7.73	\$8.92	\$0.00	\$44.53
	07/01/2015	\$27.88	\$7.98	\$8.92	\$0.00	\$44.78
	05/01/2016	\$28.03	\$7.98	\$9.31	\$0.00	\$45.32
	07/01/2016	\$28.03	\$8.23	\$9.31	\$0.00	\$45.57
	05/01/2017	\$28.18	\$8.23	\$9.72	\$0.00	\$46.13
	07/01/2017	\$28.18	\$8.48	\$9.72	\$0.00	\$46.38
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 25a</i>	05/01/2015	\$31.14	\$7.73	\$8.92	\$0.00	\$47.79
	07/01/2015	\$31.14	\$7.98	\$8.92	\$0.00	\$48.04
	05/01/2016	\$31.29	\$7.98	\$9.31	\$0.00	\$48.58
	07/01/2016	\$31.29	\$8.23	\$9.31	\$0.00	\$48.83
	05/01/2017	\$31.44	\$8.23	\$9.72	\$0.00	\$49.39
	07/01/2017	\$31.44	\$8.48	\$9.72	\$0.00	\$49.64
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 1 (Residential Wood)</i>	04/01/2011	\$37.25	\$8.67	\$15.51	\$0.00	\$61.43
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 1 (Residential Wood)</i> As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.	05/01/2011	\$27.49	\$6.34	\$6.23	\$0.00	\$40.06

**Classification**

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

**Apprentice - CARPENTER (Residential Wood Frame) - Zone 1**

**Effective Date - 05/01/2011**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.49	\$6.34	\$0.00	\$0.00	\$22.83
2	60	\$16.49	\$6.34	\$6.23	\$0.00	\$29.06
3	65	\$17.87	\$6.34	\$6.23	\$0.00	\$30.44
4	70	\$19.24	\$6.34	\$6.23	\$0.00	\$31.81
5	75	\$20.62	\$6.34	\$6.23	\$0.00	\$33.19
6	80	\$21.99	\$6.34	\$6.23	\$0.00	\$34.56
7	85	\$23.37	\$6.34	\$6.23	\$0.00	\$35.94
8	90	\$24.74	\$6.34	\$6.23	\$0.00	\$37.31

**Notes:**

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

RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2015	\$40.11	\$10.50	\$11.60	\$0.00	\$62.21
	08/01/2015	\$41.01	\$10.50	\$11.60	\$0.00	\$63.11
	02/01/2016	\$41.91	\$10.50	\$11.60	\$0.00	\$64.01

**Classification**

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

**Apprentice - ROOFER - Local 33**

**Effective Date - 02/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.06	\$10.50	\$3.38	\$0.00	\$33.94
2	60	\$24.07	\$10.50	\$11.60	\$0.00	\$46.17
3	65	\$26.07	\$10.50	\$11.60	\$0.00	\$48.17
4	75	\$30.08	\$10.50	\$11.60	\$0.00	\$52.18
5	85	\$34.09	\$10.50	\$11.60	\$0.00	\$56.19

**Effective Date - 08/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.51	\$10.50	\$3.38	\$0.00	\$34.39
2	60	\$24.61	\$10.50	\$11.60	\$0.00	\$46.71
3	65	\$26.66	\$10.50	\$11.60	\$0.00	\$48.76
4	75	\$30.76	\$10.50	\$11.60	\$0.00	\$52.86
5	85	\$34.86	\$10.50	\$11.60	\$0.00	\$56.96

**Notes:** \*\* 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1  
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.

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

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	02/01/2015	\$40.36	\$10.50	\$11.60	\$0.00	\$62.46
	08/01/2015	\$41.26	\$10.50	\$11.60	\$0.00	\$63.36
	02/01/2016	\$42.16	\$10.50	\$11.60	\$0.00	\$64.26
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2015	\$43.28	\$10.20	\$20.54	\$2.22	\$76.24
	08/01/2015	\$44.28	\$10.20	\$20.54	\$2.22	\$77.24
	02/01/2016	\$45.28	\$10.20	\$20.54	\$2.22	\$78.24
	08/01/2016	\$46.43	\$10.20	\$20.54	\$2.22	\$79.39
	02/01/2017	\$47.53	\$10.20	\$20.54	\$2.22	\$80.49
	08/01/2017	\$48.63	\$10.20	\$20.54	\$2.22	\$81.59
	02/01/2018	\$49.78	\$10.20	\$20.54	\$2.22	\$82.74

**Classification**

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

**Apprentice - SHEET METAL WORKER - Local 17-A**

**Effective Date - 02/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.31	\$10.20	\$4.58	\$0.00	\$32.09
2	40	\$17.31	\$10.20	\$4.58	\$0.00	\$32.09
3	45	\$19.48	\$10.20	\$9.09	\$1.16	\$39.93
4	45	\$19.48	\$10.20	\$9.09	\$1.16	\$39.93
5	50	\$21.64	\$10.20	\$9.91	\$1.25	\$43.00
6	50	\$21.64	\$10.20	\$10.16	\$1.26	\$43.26
7	60	\$25.97	\$10.20	\$11.55	\$1.43	\$49.15
8	65	\$28.13	\$10.20	\$12.38	\$1.52	\$52.23
9	75	\$32.46	\$10.20	\$14.02	\$1.70	\$58.38
10	85	\$36.79	\$10.20	\$15.16	\$1.86	\$64.01

**Effective Date - 08/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.71	\$10.20	\$4.58	\$0.00	\$32.49
2	40	\$17.71	\$10.20	\$4.58	\$0.00	\$32.49
3	45	\$19.93	\$10.20	\$9.09	\$1.18	\$40.40
4	45	\$19.93	\$10.20	\$9.09	\$1.18	\$40.40
5	50	\$22.14	\$10.20	\$9.91	\$1.27	\$43.52
6	50	\$22.14	\$10.20	\$10.16	\$1.28	\$43.78
7	60	\$26.57	\$10.20	\$11.55	\$1.45	\$49.77
8	65	\$28.78	\$10.20	\$12.38	\$1.54	\$52.90
9	75	\$33.21	\$10.20	\$14.02	\$1.72	\$59.15
10	85	\$37.64	\$10.20	\$15.16	\$1.89	\$64.89

**Notes:**  
Steps are 6 mos.

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

SIGN ERECTOR PAINTERS LOCAL 35 - ZONE 1	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 1**

**Effective Date - 06/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$12.91	\$7.07	\$0.00	\$0.00	\$19.98
2	55	\$14.20	\$7.07	\$2.45	\$0.00	\$23.72
3	60	\$15.49	\$7.07	\$2.45	\$0.00	\$25.01
4	65	\$16.78	\$7.07	\$2.45	\$0.00	\$26.30
5	70	\$18.07	\$7.07	\$7.05	\$0.00	\$32.19
6	75	\$19.36	\$7.07	\$7.05	\$0.00	\$33.48
7	80	\$20.65	\$7.07	\$7.05	\$0.00	\$34.77
8	85	\$21.94	\$7.07	\$7.05	\$0.00	\$36.06
9	90	\$23.23	\$7.07	\$7.05	\$0.00	\$37.35

**Notes:**  
Steps are 4 mos.

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

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$33.04	\$9.91	\$9.33	\$0.00	\$52.28
	08/01/2015	\$33.04	\$10.41	\$9.33	\$0.00	\$52.78
	12/01/2015	\$33.04	\$10.41	\$10.08	\$0.00	\$53.53
	06/01/2016	\$33.54	\$10.41	\$10.08	\$0.00	\$54.03
	08/01/2016	\$33.54	\$10.91	\$10.08	\$0.00	\$54.53
	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$33.33	\$9.91	\$9.33	\$0.00	\$52.57
	08/01/2015	\$33.33	\$10.41	\$9.33	\$0.00	\$53.07
	12/01/2015	\$33.33	\$10.41	\$10.08	\$0.00	\$53.82
	06/01/2016	\$33.83	\$10.41	\$10.08	\$0.00	\$54.32
	08/01/2016	\$33.83	\$10.91	\$10.08	\$0.00	\$54.82
	12/01/2016	\$33.83	\$10.91	\$10.89	\$0.00	\$55.63
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2015	\$54.43	\$8.42	\$14.90	\$0.00	\$77.75
	10/01/2015	\$55.58	\$8.42	\$14.90	\$0.00	\$78.90
	01/01/2016	\$55.58	\$8.67	\$15.05	\$0.00	\$79.30
	03/01/2016	\$56.58	\$8.67	\$15.05	\$0.00	\$80.30
	10/01/2016	\$57.73	\$8.67	\$15.05	\$0.00	\$81.45
	03/01/2017	\$58.73	\$8.67	\$15.05	\$0.00	\$82.45

**Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1**

**Effective Date - 03/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.05	\$8.42	\$8.40	\$0.00	\$35.87
2	40	\$21.77	\$8.42	\$8.40	\$0.00	\$38.59
3	45	\$24.49	\$8.42	\$8.40	\$0.00	\$41.31
4	50	\$27.22	\$8.42	\$8.40	\$0.00	\$44.04
5	55	\$29.94	\$8.42	\$8.40	\$0.00	\$46.76
6	60	\$32.66	\$8.42	\$8.40	\$0.00	\$49.48
7	65	\$35.38	\$8.42	\$8.40	\$0.00	\$52.20
8	70	\$38.10	\$8.42	\$8.40	\$0.00	\$54.92
9	75	\$40.82	\$8.42	\$8.40	\$0.00	\$57.64
10	80	\$43.54	\$8.42	\$8.40	\$0.00	\$60.36

**Effective Date - 10/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.45	\$8.42	\$8.40	\$0.00	\$36.27
2	40	\$22.23	\$8.42	\$8.40	\$0.00	\$39.05
3	45	\$25.01	\$8.42	\$8.40	\$0.00	\$41.83
4	50	\$27.79	\$8.42	\$8.40	\$0.00	\$44.61
5	55	\$30.57	\$8.42	\$8.40	\$0.00	\$47.39
6	60	\$33.35	\$8.42	\$8.40	\$0.00	\$50.17
7	65	\$36.13	\$8.42	\$8.40	\$0.00	\$52.95
8	70	\$38.91	\$8.42	\$8.40	\$0.00	\$55.73
9	75	\$41.69	\$8.42	\$8.40	\$0.00	\$58.51
10	80	\$44.46	\$8.42	\$8.40	\$0.00	\$61.28

**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	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
OPERATING ENGINEERS LOCAL 4	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
OPERATING ENGINEERS LOCAL 4	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$33.88	\$13.00	\$13.70	\$0.00	\$60.58
	09/01/2015	\$34.60	\$13.00	\$13.72	\$0.00	\$61.32
	03/01/2016	\$35.31	\$13.00	\$13.74	\$0.00	\$62.05

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103**

**Effective Date - 03/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.55	\$13.00	\$0.41	\$0.00	\$26.96
2	40	\$13.55	\$13.00	\$0.41	\$0.00	\$26.96
3	45	\$15.25	\$13.00	\$10.87	\$0.00	\$39.12
4	45	\$15.25	\$13.00	\$10.87	\$0.00	\$39.12
5	50	\$16.94	\$13.00	\$11.11	\$0.00	\$41.05
6	55	\$18.63	\$13.00	\$11.38	\$0.00	\$43.01
7	60	\$20.33	\$13.00	\$11.64	\$0.00	\$44.97
8	65	\$22.02	\$13.00	\$11.89	\$0.00	\$46.91
9	70	\$23.72	\$13.00	\$12.15	\$0.00	\$48.87
10	75	\$25.41	\$13.00	\$12.41	\$0.00	\$50.82

**Effective Date - 09/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.84	\$13.00	\$0.42	\$0.00	\$27.26
2	40	\$13.84	\$13.00	\$0.42	\$0.00	\$27.26
3	45	\$15.57	\$13.00	\$10.88	\$0.00	\$39.45
4	45	\$15.57	\$13.00	\$10.88	\$0.00	\$39.45
5	50	\$17.30	\$13.00	\$11.14	\$0.00	\$41.44
6	55	\$19.03	\$13.00	\$11.39	\$0.00	\$43.42
7	60	\$20.76	\$13.00	\$11.65	\$0.00	\$45.41
8	65	\$22.49	\$13.00	\$11.90	\$0.00	\$47.39
9	70	\$24.22	\$13.00	\$12.17	\$0.00	\$49.39
10	75	\$25.95	\$13.00	\$12.43	\$0.00	\$51.38

**Notes:**

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

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2015	\$47.90	\$10.18	\$18.50	\$0.00	\$76.58
	08/01/2015	\$48.80	\$10.18	\$18.57	\$0.00	\$77.55
	02/01/2016	\$49.37	\$10.18	\$18.57	\$0.00	\$78.12
	08/01/2016	\$50.27	\$10.18	\$18.65	\$0.00	\$79.10
	02/01/2017	\$50.84	\$10.18	\$18.65	\$0.00	\$79.67

**Classification**

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

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

**Effective Date - 02/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.95	\$10.18	\$18.50	\$0.00	\$52.63
2	60	\$28.74	\$10.18	\$18.50	\$0.00	\$57.42
3	70	\$33.53	\$10.18	\$18.50	\$0.00	\$62.21
4	80	\$38.32	\$10.18	\$18.50	\$0.00	\$67.00
5	90	\$43.11	\$10.18	\$18.50	\$0.00	\$71.79

**Effective Date - 08/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.40	\$10.18	\$18.57	\$0.00	\$53.15
2	60	\$29.28	\$10.18	\$18.57	\$0.00	\$58.03
3	70	\$34.16	\$10.18	\$18.57	\$0.00	\$62.91
4	80	\$39.04	\$10.18	\$18.57	\$0.00	\$67.79
5	90	\$43.92	\$10.18	\$18.57	\$0.00	\$72.67

**Notes:**

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

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$36.70	\$7.30	\$13.15	\$0.00	\$57.15
	12/01/2015	\$37.45	\$7.30	\$13.15	\$0.00	\$57.90
	06/01/2016	\$38.20	\$7.30	\$13.15	\$0.00	\$58.65
	12/01/2016	\$39.20	\$7.30	\$13.15	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$35.42	\$7.30	\$13.15	\$0.00	\$55.87
	12/01/2015	\$36.17	\$7.30	\$13.15	\$0.00	\$56.62
	06/01/2016	\$36.92	\$7.30	\$13.15	\$0.00	\$57.37
	12/01/2016	\$37.92	\$7.30	\$13.15	\$0.00	\$58.37

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$35.30	\$7.30	\$13.15	\$0.00	\$55.75
	12/01/2015	\$36.05	\$7.30	\$13.15	\$0.00	\$56.50
	06/01/2016	\$36.80	\$7.30	\$13.15	\$0.00	\$57.25
	12/01/2016	\$37.80	\$7.30	\$13.15	\$0.00	\$58.25

For apprentice rates see "Apprentice- LABORER"

TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$33.62	\$9.91	\$9.33	\$0.00	\$52.86
	08/01/2015	\$33.62	\$10.41	\$9.33	\$0.00	\$53.36
	12/01/2015	\$33.62	\$10.41	\$10.08	\$0.00	\$54.11
	06/01/2016	\$34.12	\$10.41	\$10.08	\$0.00	\$54.61
	08/01/2016	\$34.12	\$10.91	\$10.08	\$0.00	\$55.11
	12/01/2016	\$34.12	\$10.91	\$10.89	\$0.00	\$55.92
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2015	\$47.58	\$7.30	\$13.55	\$0.00	\$68.43
	12/01/2015	\$48.33	\$7.30	\$13.55	\$0.00	\$69.18
	06/01/2016	\$49.08	\$7.30	\$13.55	\$0.00	\$69.93
	12/01/2016	\$50.08	\$7.30	\$13.55	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2015	\$49.58	\$7.30	\$13.55	\$0.00	\$70.43
	12/01/2015	\$50.33	\$7.30	\$13.55	\$0.00	\$71.18
	06/01/2016	\$51.08	\$7.30	\$13.55	\$0.00	\$71.93
	12/01/2016	\$52.08	\$7.30	\$13.55	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2015	\$39.65	\$7.30	\$13.55	\$0.00	\$60.50
	12/01/2015	\$40.40	\$7.30	\$13.55	\$0.00	\$61.25
	06/01/2016	\$41.15	\$7.30	\$13.55	\$0.00	\$62.00
	12/01/2016	\$42.15	\$7.30	\$13.55	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2015	\$41.65	\$7.30	\$13.55	\$0.00	\$62.50
	12/01/2015	\$42.40	\$7.30	\$13.55	\$0.00	\$63.25
	06/01/2016	\$43.15	\$7.30	\$13.55	\$0.00	\$64.00
	12/01/2016	\$44.15	\$7.30	\$13.55	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$33.04	\$9.91	\$9.33	\$0.00	\$52.28
	08/01/2015	\$33.04	\$10.41	\$9.33	\$0.00	\$52.78
	12/01/2015	\$33.04	\$10.41	\$10.08	\$0.00	\$53.53
	06/01/2016	\$33.54	\$10.41	\$10.08	\$0.00	\$54.03
	08/01/2016	\$33.54	\$10.91	\$10.08	\$0.00	\$54.53
	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.60	\$7.30	\$12.95	\$0.00	\$55.85
	12/01/2015	\$36.35	\$7.30	\$12.95	\$0.00	\$56.60
	06/01/2016	\$37.10	\$7.30	\$12.95	\$0.00	\$57.35
	12/01/2016	\$38.10	\$7.30	\$12.95	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63	
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WATER METER INSTALLER <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	03/01/2015	\$50.21	\$10.32	\$14.89	\$0.00	\$75.42
	09/01/2015	\$51.21	\$10.32	\$14.89	\$0.00	\$76.42
	03/01/2016	\$52.36	\$10.32	\$14.89	\$0.00	\$77.57
	09/01/2016	\$53.41	\$10.32	\$14.89	\$0.00	\$78.62
	03/01/2017	\$54.41	\$10.32	\$14.89	\$0.00	\$79.62
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
<b>Outside Electrical - East</b>						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$25.66	\$8.70	\$4.48	\$0.00	\$38.84
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.55	\$8.70	\$6.58	\$0.00	\$51.83
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$29.94	\$8.70	\$6.05	\$0.00	\$44.69
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$5.24	\$0.00	\$37.46
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.35	\$8.70	\$9.43	\$0.00	\$54.48
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$32.08	\$8.70	\$6.59	\$0.00	\$47.37
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$3.72	\$0.00	\$35.94
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$19.25	\$8.70	\$2.85	\$0.00	\$30.80
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$42.77	\$8.70	\$11.78	\$0.00	\$63.25

**Apprentice - LINEMAN (Outside Electrical) - East Local 104**

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.66	\$8.70	\$4.24	\$0.00	\$38.60
2	65	\$27.80	\$8.70	\$4.71	\$0.00	\$41.21
3	70	\$29.94	\$8.70	\$5.43	\$0.00	\$44.07
4	75	\$32.08	\$8.70	\$6.16	\$0.00	\$46.94
5	80	\$34.22	\$8.70	\$6.88	\$0.00	\$49.80
6	85	\$36.35	\$8.70	\$7.62	\$0.00	\$52.67
7	90	\$38.49	\$8.70	\$8.83	\$0.00	\$56.02

**Notes:**

**Apprentice to Journeyworker Ratio:1:2**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2015	\$28.12	\$4.25	\$3.09	\$0.00	\$35.46
	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>	01/01/2015	\$26.49	\$4.25	\$3.04	\$0.00	\$33.78
	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>	01/01/2015	\$26.49	\$4.25	\$3.04	\$0.00	\$33.78
	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/01/2015	\$18.05	\$3.55	\$0.00	\$0.00	\$21.60
	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>	02/01/2015	\$15.92	\$3.55	\$0.00	\$0.00	\$19.47
	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. Apprentices 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.

**MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM**



Company's Name:		Address:			Phone No.:			Payroll No.:									
Employer's Signature:		Title:			Contract No.:		Tax Payer ID No.:		Work Week Ending:								
Awarding Authority's Name:		Public Works Project Name:			Public Works Project Location:			Min. Wage Rate Sheet No.:									
General / Prime Contractor's Name:		Subcontractor's Name:			"Employer" Hourly Fringe Benefit Contributions												
									(B+C+D+E) (A x F)								
Employee Name & Complete Address	Work Classification:	Appr. Rate (%)	Hours Worked							Project Hours (A) All Other Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C)	ERISA Pension Plan (D)	Supp. Unemp. (E)	Total Hourly Prev. Wage (F)	Project Gross Wages (G) Total Gross Wages	Check No. (H)
			Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.								

**NOTE:** Pursuant to MGL Ch. 149 s.27B, every contractor and subcontractor is required to submit a "true and accurate" copy of their weekly payroll records directly to the awarding authority. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

Date received by awarding authority / /
--

# GENERAL TERMS AND CONDITIONS OF THE CONTRACT

FOR CONSTRUCTION, RECONSTRUCTION, ALTERATION,  
REMODELING, OR REPAIR OF ANY  
CAMBRIDGE REDEVELOPMENT AUTHORITY OR  
CITY OF CAMBRIDGE PUBLIC WORK

## TABLE OF CONTENTS

<i>Page</i>	
	<i>ARTICLE 1 DEFINITIONS</i> _____ 2
	<i>ARTICLE 2 ABOUT THE CONTRACT DOCUMENTS</i> _____ 5
	<i>ARTICLE 3 THE CITY</i> _____ 9
	<i>ARTICLE 4 THE ENGINEER</i> _____ 10
	<i>ARTICLE 5 THE CONTRACTOR</i> _____ 13
	<i>ARTICLE 6 SUBCONTRACTORS</i> _____ 29
	<i>ARTICLE 7 PERFORMANCE AND PAYMENT BONDS</i> _____ 30
	<i>ARTICLE 8 INSURANCE REQUIREMENTS</i> _____ 30
	<i>ARTICLE 9 TESTS AND INSPECTIONS</i> _____ 33
	<i>ARTICLE 10 UNCOVERING AND CORRECTING WORK</i> _____ 34
	<i>ARTICLE 11 CHANGES IN THE WORK</i> _____ 36
	<i>ARTICLE 12 CHANGE IN THE CONTRACT TIME</i> _____ 39
	<i>ARTICLE 13 PAYMENTS</i> _____ 41
	<i>ARTICLE 14 SUBSTANTIAL COMPLETION</i> _____ 47
	<i>ARTICLE 15 GUARANTEES AND WARRANTIES</i> _____ 49
	<i>ARTICLE 16 CLAIMS</i> _____ 50
	<i>ARTICLE 17 EMERGENCIES</i> _____ 54
	<i>ARTICLE 18 TERMINATION OR SUSPENSION OF THE CONTRACT</i> _____ 54
	<i>ARTICLE 19 AMERICANS WITH DISABILITIES ACT (42 U.S. 12131)</i> _____ 56
	<i>ARTICLE 20 WRITTEN NOTICE TO THE PARTIES</i> _____ 56
	<i>ARTICLE 21 MISCELLANEOUS PROVISIONS</i> _____ 57

**GENERAL TERMS AND CONDITIONS OF THE CONTRACT  
FOR CONSTRUCTION, RECONSTRUCTION, INSTALLATION,  
DEMOLITION, MAINTENANCE, OR REPAIR OF ANY  
CAMBRIDGE REDEVELOPMENT AUTHORITY OR  
CITY OF CAMBRIDGE PUBLIC WORK**

**ARTICLE 1 DEFINITIONS**

**1.1. In General.**

**1.1.1. Well-known meanings.** When words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents, such words or phrases shall be interpreted in accordance with that meaning, unless otherwise stated.

**1.1.2. Capitalization.** The words and terms defined in this Article are capitalized in these General Terms and Conditions of the Contract. Other capitalized words may refer to a specific document found in the Contract Documents.

**1.1.3. Persons.** Whenever the word person or persons is used, it includes, unless otherwise stated, entity or entities, respectively, including, but not limited to, corporations, partnerships, and joint venturers.

**1.1.4. Singular and Plural.** The following terms have the meanings indicated which are applicable to both the singular and the plural thereof.

**1.2. Definitions.**

**1.2.1. Agreement-**The Agreement is the written document between **CRA** and the **Contractor** which is titled: Agreement between the Cambridge Redevelopment Authority and the Contractor, which is the executed portion of the Contract, and which forms a part of the Contract. The Agreement also includes all documents required to be attached thereto, including, but not limited to, the performance bond, the labor and materials or payment bonds, certificates of insurance, and all Modifications of the Agreement.

**1.2.2. Change Order-**A Change Order is a document which is signed by the **Contractor**, the **Engineer**, and **CRA**; which is directed to the **Contractor**; which authorizes the **Contractor** to make an addition to, a deletion from or a revision in the Work, or an adjustment in the Contract Sum or in the Contract Time; and which is issued on or after the date of the Agreement between the **Contractor** and **CRA**.

**1.2.3. The City-**The City refers to the City of Cambridge and the public right-of-way.

**1.2.4 Claim-**A Claim is a dispute, demand, or assertion by one of the parties arising out of or relating to the Contract for which such party is seeking relief.

**1.2.4. Contract-**The Contract consists of all the Contract Documents. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification to the Contract signed by both parties.

**1.2.5. Contract Documents-**The Contract Documents consist of the Agreement; the notice of award of the Contract; the Notice to Proceed; the entire Project Manual; Change Orders; Work Change



Directives; the **Contractor's** Bid and all accompanying documents accepted by the **CRA**; and the **Engineer's** written interpretations and clarifications issued on or after the issuance of the Notice to Proceed. Shop Drawing submittals and reports or drawings utilized by the **Engineer** in preparing the Contract Documents are not Contract Documents.

**1.2.6. Contractor**-The **Contractor** is the person who is awarded the Contract for the Project herein pursuant to M.G.L. c. 39, §39M; and is identified in the Agreement as such. The term "**Contractor**" is intended to include the **Contractor** as well as its authorized representative(s).

**1.2.7. Contract Sum**-The Contract Sum is the total amount stated in the Agreement payable by the **CRA** to the **Contractor** for the completion of the Work in accordance with the Contract Documents.

**1.2.8. Contract Time**-Unless otherwise provided, the Contract Time is the number of days allotted in the Contract Documents or the dates stated in the Agreement, including authorized adjustments, for Substantial Completion.

**1.2.9. Coordination Drawings**-Coordination Drawings are those drawings which are prepared by the **Contractor** or a Subcontractor which show the exact alignment, physical locations, and configuration of the mechanical, electrical, and fire protection installations.

**1.2.10 CRA**-The **CRA** refers to the Cambridge Redevelopment Authority, which is the owner of the Project and is the awarding authority with whom the **Contractor** has entered into the Contract and for whom the Work is to be provided.

**1.2.11. Day**-The term "day" shall mean calendar day unless otherwise stated.

**1.2.12. Engineer**-The **Engineer** is the person lawfully licensed to practice engineering and has been selected by **CRA** to administer the Contract. The term "**Engineer**," while referred to in the singular, means the **Engineer** and/or the **Engineer's** representative.

**1.2.13. Field Order**-A Field Order is a written order issued by the **Engineer** which orders minor changes in the Work, but which does not involve a change in the Contract Sum or the Contract Time.

**1.2.14. Final Completion**-Final Completion is the point in time when the Engineer certifies that the Work has been fully completed in accordance with the Contract Documents. Final Completion shall be no later than thirty (30) days after Substantial Completion.

**1.2.15. General Requirements**-General Requirements refer to Sections of Division 1 of the Specifications.

**1.2.16. Modification**-A Modification is a written instrument which amends the Contract after execution of the Agreement.

**1.2.17. Notice to Proceed**-A Notice to Proceed is a written notice given by **CRA**, or the **Engineer**, to the **Contractor** fixing the date on which the Contract Time will begin to run and on which the **Contractor** shall start to perform its obligations under the Contract Documents.

**1.2.18. Drawings**-The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location, dimensions, scope, extent, and character of the Work to be furnished and performed by the **Contractor** and which have been approved by the **Engineer**.

**1.2.19. Product Data**-Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the General **Contractor** to illustrate materials or equipment for some portion of the Work. Product Data are not considered part of the Contract Documents.

**1.2.20. Project**-The Project is the total Work to be provided under the Contract Documents and may be the whole or a part as indicated elsewhere in the Contract Documents and may include construction by **CRA** or by separate contractors. The Project is the Work described in the invitation to bid (advertisement) and Specifications and illustrated by the Drawings, including any Modifications.

**1.2.21. Project Manual**-The Project Manual is the entire set of bidding documents which includes, but is not limited to, the invitation to bid (advertisement), the instructions to bidders, all of the forms, the wage rates, all state requirements, the General Terms and Conditions of the Contract, any supplementary conditions thereto, the Drawings, the Specifications, and all addenda.

**1.2.22. Proposed Change Order**-A Proposed Change Order is a Change Order that has been submitted by the **Contractor** to the **Engineer**, is under review, and has not been approved by **CRA**.

**1.2.23. Samples**-Samples are physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged. Samples are not considered part of the Contract Documents.

**1.2.24. Shop Drawings**-Shop Drawings are all drawings, diagrams, illustrations, schedules, and other information which are specifically prepared or assembled by or for the **Contractor** and submitted by the **Contractor** to illustrate some portion of the Work. Shop Drawings are not considered part of the Contract Documents.

**1.2.25. Site**-The Site is the location of the Project and of the Work.

**1.2.26. Specifications**-Specifications are those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

**1.2.27. Subcontractor**-A Subcontractor is a person, firm or corporation who contracts directly with the **Contractor**, unless otherwise stated.

**1.2.28. Submittals**-Submittals are those Shop Drawings, Product Data, Samples, or any other required document which are provided to the Engineer for review and approval.

**1.2.29. Substantial Completion**-Substantial Completion means that the Work has been completed and the Site or the facility is opened to public use, except for minor incomplete or unsatisfactory items that do not materially impair the usefulness of the Work. The **Engineer** shall decide what constitutes "minor," "incomplete," "unsatisfactory," and "materially" and the **Engineer's** decision shall be final.

**1.2.30. Sub-subcontractor**-A Sub-subcontractor is a person who has contracted directly with a Subcontractor.

**1.2.31. Supplier**-A Supplier is a manufacturer, fabricator, distributor, material person, or vendor having a direct contract with the Contractor or with any Subcontractor to furnish materials or equipment to be incorporated into the Work by the Contractor or any Subcontractor.

**1.2.32. Work**-Work refers to the services and the entire completed construction or the various separately identifiable parts thereof required by the Contract Documents, including all labor, materials, and equipment furnished, furnished and incorporated into the Project, or to be provided by the **Contractor** to fulfill the **Contractor's** obligations. The Work may constitute the whole or a part of the Project.

**1.2.33. Work Change Directive-**A Work Change Directive is a written directive to the **Contractor** ordering an addition to, a deletion from, or a revision to the Work issued on or after the date of the Agreement, signed by **CRA**, and recommended by the **Engineer**.

## **ARTICLE 2 ABOUT THE CONTRACT DOCUMENTS**

### **2.1. Priority/Conflict.**

**2.1.1. Priority Among Contract Documents.** In the event of conflict among the Contract Documents, the Contract Documents shall be construed according to the following priorities:

Highest Priority: Modifications  
Second Priority: Agreement  
Third Priority: Addenda-later date to take precedence  
Fourth Priority: Supplementary General Conditions  
Fifth Priority: General Conditions  
Sixth Priority: Drawings and Specifications

**2.1.1.1.** If there is a conflict between the Drawings and Specifications, the figured dimensions shall govern over the scaled dimensions. Detailed Drawings shall govern over the general Drawings. Larger scale Drawings shall take precedence over smaller scale Drawings. Drawings shall govern over Shop Drawings. Whenever there is a conflict concerning quality or quantity between or among notes, specifications, dimensions, details, or schedules in the Specifications or in the Drawings, or between the Specifications and the Drawings, or in all other instances not specifically noted above, the **Contractor** shall provide, unless otherwise directed by a Modification of the Contract, the better quality or greater quantity of Work at no increase in the Contract Sum or in the Contract Time.

**2.1.1.2.** Compliance with these priority conditions shall not justify any changes in the Work or any increase in the Contract Sum or Contract Time, unless any such compliance results in Work that may not be reasonably inferred from the Contract Documents as being required to produce the intended result as determined by the **Engineer**.

**2.1.2. Review of the Contract Documents and Field Conditions and Discovery of Conflict, Error, Ambiguity, or Discrepancy.** Before starting the Work, and during the progress thereof, the **Contractor** shall carefully study and compare the Contract Documents with each other and with the information furnished by the **CRA** pursuant to Article 3 and shall at once report to the **Engineer** any error, inconsistency, or omission the **Contractor** may discover. Any necessary change shall be ordered as provided in Article 11, subject to the requirements of any other provisions of the Contract Documents. The **Contractor** shall not proceed with the Work affected thereby (except in an emergency) until a Modification has been issued. If the **Contractor** proceeds with the Work having discovered such errors, inconsistencies, or omissions contrary to the provisions contained herein, or if by reasonable study of the Contract Documents the **Contractor** could have discovered such, the **Contractor** shall bear all costs arising therefrom. The **Contractor** shall be liable to the **CRA** for failure to report any conflict, error, ambiguity, or discrepancy of which it knew or should have known.

**2.1.2.1.** Execution of the Contract by the **Contractor** is a representation that the **Contractor** has visited the site, and become familiar with the site specific conditions and constraints as well as federal, local and state regulatory requirements affecting the performance of the Work and correlated personal observations with requirements of the Contract Documents. The **Contractor** has evaluated and satisfied itself as to the conditions and limitations under which the Work is to be performed, including, without limitation (1) the location, condition, layout and physical conditions of the Project site and surrounding areas, (2) generally prevailing climatic conditions, (3) anticipated labor supply and costs, (4) availability and cost of materials, tools and equipment, (5) parking, traffic and logistics, (6) geotechnical data, soil and subsurface conditions

of the Project site (provided that the **Contractor** shall be entitled to reasonably rely on any reports provided by the **CRA** regarding the items in this clause (6)), and (7) other similar issues. The **CRA** shall not be required to make any adjustment in the Contract Time in connection with any failure by the **Contractor** or any Subcontractor to comply with the requirements, or on account of the conditions, of this Section 2.1.2.

**2.1.3. Field Measurements.** The **Contractor** shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the **Contractor** with the Contract Documents before commencing activities. Errors, inconsistencies, or omissions discovered shall be reported to the **Engineer** at once.

**2.1.4. Statutory Provisions.** The **CRA** and the **Contractor** recognize that other rights duties and obligations with respect to public construction contracts are provided for by statute, notwithstanding the fact that they may not be provided for in the Contract Documents. In case of conflict between the statutory provisions and other provisions of the Contract Documents and the provisions of any applicable statute, the statutory provisions shall govern.

**2.1.5. Voided or Unlawful Provisions.** In the event any provision in the Contract is voided or deemed unlawful, such provision shall be deleted without affecting the remainder of the Contract.

## **2.2. Execution.**

**2.2.1.** Execution of the Agreement by the **Contractor** is a representation that the **Contractor** has visited the Site, become familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

## **2.3. Intent.**

**2.3.1. Entire Agreement.** The Contract Documents comprise the entire agreement between the **CRA** and the **Contractor** concerning the Work. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the **Contractor**. The Contract Documents are complementary; what is required by one shall be as binding as if required by all. Performance by the **Contractor** shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. All Work mentioned or indicated in the Contract Documents shall be performed by the **Contractor** as part of this Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others.

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

**2.3.3. Functionally Complete Project.** It is the intent of the Contract Documents to describe a functionally complete Project. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the **Contractor**. Any Work, materials, or equipment that may be reasonably inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed by the **Contractor** whether or not specifically called for in the Contract Documents.

**2.3.4. Indications or Notations.** All indications or notations which apply to one of a number of similar situations, materials, or processes shall be deemed to apply to all such situations, materials, or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

**2.3.5. Standards or Quality of Materials or Workmanship.** Where no explicit quality or standards for materials or workmanship are established for Work, such Work is to be of good quality for the intended use and consistent with the quality of the surrounding Work and of the construction of the Project generally.

**2.3.6. Manufactured Products.** All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's written or printed directions and instructions unless otherwise indicated in the Contract Documents.

**2.3.7. Mechanical, Electrical, and Fire Protection Plans.** The mechanical, electrical, and fire protection Plans are diagrammatic only and are not intended to show the alignment, physical locations, or configurations of such Work. Such Work shall be installed without additional cost to the **CRA** to clear all obstructions, permit proper clearances for the Work of other trades, and present an orderly appearance where exposed. Prior to beginning such Work, the **Contractor** shall prepare Coordination Drawings and demonstrate to the **Engineer's** satisfaction that the installations will comply with the preceding sentence. The **Contractor** shall be solely liable and responsible for any costs and/or delays resulting from the **Contractor's** failure to prepare such Coordination Drawings.

**2.3.8. Locations of Fixtures and Outlets.** Exact locations of fixtures and outlets shall be obtained from the **Engineer** as provided in Article 5 before the Work is roughed in. Work installed without such information from the **Engineer** shall be relocated at the **Contractor's** expense.

**2.3.9. Tests.** When test boring or soil test information are included with the Contract Documents or otherwise made available to the **Contractor** and such test boring or soil test information was obtained by the **CRA** for use by the **Engineer** in the design of the Project or Work, the **CRA** does not hold out such information to the **Contractor** as an accurate or approximate indication of subsurface conditions, and no claim for extra cost of extension of time resulting from a reliance by the **Contractor** on such information shall be allowed except as otherwise provided herein. Any such reports are not part of the Contract Documents.

**2.3.10. Joining Work.** Where the Work is to fit with existing conditions or work to be performed by others, the **Contractor** shall fully and completely join the Work with such conditions or work, unless otherwise specified.

## **2.4. Organization.**

**2.4.1.** Except as provided in M.G.L. c. 149, §44F, the organization of the Specifications into divisions, sections, and articles, and the arrangement of Drawings shall not control the **Contractor** in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

## **2.5. References.**

**2.5.1.** Where codes, manuals, specifications, standards, requirements and publications of public and private bodies are referred to in the Contract Documents whether specifically or by implication, references shall be understood to be to the latest revision prior to the date of receiving bids, except where otherwise indicated. Where statutes are referred to in the Contract Documents whether specifically or by implication, references shall be understood to be to the latest revision.

**2.5.2.** References herein to particular paragraphs or Articles are solely to facilitate finding additional information with regard to the specific matters and are not to be construed in any way as limiting the possible paragraphs and Articles in which such matters may be found elsewhere in this document.

## **2.6. Reuse of Engineer's Written Instruments.**

**2.6.1.** Neither the **Contractor** nor any Subcontractor or Supplier shall have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents prepared by the **Engineer** and shall not reuse any of such Drawings, Specifications, or other documents without prior written consent of the **CRA** and the **Engineer**.

**2.7. Written Material of the Contractor.**

**2.7.1.** All written material prepared or collected by the **Contractor** in the course of completing the Work shall be the exclusive property of the **CRA** and shall not be used by the **Contractor** for any purpose other than the purpose of this Contract.

**2.8. Modifying Words.**

**2.8.1.** In the interest of simplicity, modifying words such as “all” and “any” may be omitted, but the fact that such words may be absent from one sentence and appear in another is not intended to affect the interpretation of either statement.

**2.9. Use of Certain Words and Terms.**

**2.9.1.** Whenever in the Contract Documents the terms “as ordered,” “as directed,” “as required,” “as allowed,” “as approved,” or terms of like effect or import are used, or the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the **CRA** or of the **Engineer** as to the Work, it is intended that such requirement, direction, review, or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise).

**2.9.2.** The use of any such term or adjective shall not be effective to change the duties and responsibilities of the **CRA** or the **Engineer** from those assigned in the Contract Documents or to assign any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of the Contract Documents.

**2.9.3.** When the words “Contractor,” “Subcontractor,” “Sub-subcontractor,” and “Supplier” are used, they are intended to include their employees and agents, unless otherwise specified.

**2.10. Modification of the Contract Documents.**

**2.10.1. Major Modifications.** Major Modifications may affect the Contract Sum or the Contract Time. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways, all of which must contain a written endorsement by the **CRA**:

- 2.10.1.1.** a formal written amendment;
- 2.10.1.2.** a Change Order;
- 2.10.1.3.** a Work Change Directive; or
- 2.10.1.4.** the **Engineer's** written interpretation, clarification, or decision.

**2.10.2. Minor Modifications.** Minor modifications do not affect the Contract Sum or the Contract Time. The requirements of the Contract Documents may be supplemented and minor variations and deviations of the Work may be authorized in one or more of the following ways:

- 2.10.2.1. a Field Order; or
- 2.10.2.2. the **Engineer's** approval of a Shop Drawing or Sample.

## **ARTICLE 3 The CRA**

### **3.1. Signatory.**

3.1.1. All documents which require a signature or an endorsement by the **CRA** must be signed by the Executive Director of the **CRA** in order to be deemed ratified by the **CRA**.

### **3.2. Requirements to Provide Documents.**

3.2.1. To the extent they are available, the **CRA** shall furnish surveys describing physical characteristics, legal limitations, and utility locations for the site of the Project, and a legal description of the Site.

3.2.2. The **CRA** shall obtain and pay for necessary approvals, easements, assessments, and charges which are customarily secured prior to the execution of the Contract.

3.2.3. The **CRA** shall furnish information or services required of the **CRA** hereunder with reasonable promptness after receipt from the **Contractor** of a written request for such information or services.

3.2.4. The **CRA** shall provide the **Contractor**, at no charge, such copies of the Project Manual as are reasonably necessary for the execution of the Work.

### **3.3. Clerk of the Works.**

3.3.1. The **CRA** may engage a Clerk of the Works for this Project, in which case the **CRA** shall, upon request of the **Contractor**, provide the **Contractor** with a written statement of the duties, responsibilities, and limitations of authority of such Clerk of the Works. Except as expressly set forth in such written statement, the Clerk of the Works shall have no authority to approve Work, to approve Change Orders, or to exercise any of the power and authority of the **CRA** or the **Engineer**. The Clerk of the Works shall observe the **Contractor's** operations and construction activities for compliance with the Drawings and Specifications. The Clerk of the Works shall have access to all areas of the Project at all times. The **Contractor** shall fully cooperate with the Clerk of the Works in the performance of the Clerk's duties.

### **3.4. CRA's Right to Perform Construction and to Award Separate Contracts.**

3.4.1. The **CRA** reserves the right to perform construction or operations at the Site with its own forces or others. If the **Contractor** claims that a delay or additional cost is involved because of such action by the **CRA**, the **Contractor** shall make such Claim as provided elsewhere in the Contract Documents.

3.4.2. When the separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "**Contractor**" in the Contract Documents in each case shall mean the **Contractor** who executes each separate CRA-Contractor Agreement.

3.4.3. The **CRA** shall provide for coordination of the activities of the **CRA's** own forces and of each separate contractor with the Work of the **Contractor**, who shall cooperate with them. The **Contractor** shall afford each other person access to the Site and shall properly coordinate its Work with

that of the persons performing other work. The **Contractor** shall participate with other separate contractors and the **CRA** in reviewing their construction schedules when directed to do so. The **Contractor** shall make any revisions to the construction schedules deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the **Contractor**, separate contractors, and the **CRA** until subsequently revised.

### **3.5. Limitations on the CRA's Responsibilities.**

**3.5.1.** The **CRA** shall not supervise, direct, or have control or authority over, nor be responsible for the **Contractor's** means, methods, techniques, sequences, or procedures of construction or the safety precautions and programs incident thereto, or for any failure of the **Contractor** to comply with laws, codes and regulations applicable to the furnishing or performance of the Work. The **CRA** will not be responsible for the **Contractor's** failure to perform or furnish the Work in accordance with the Contract Documents. The **CRA** is not responsible for the acts or omissions of the **Contractor**, any Subcontractor, Supplier, or anyone for whose acts the **Contractor**, any Subcontractor or Suppliers may be liable.

**3.5.2.** The **CRA's** authority to review any of the **Contractor's** progress schedules, or its decision to raise or not to raise any objections about such schedules shall not impose on the **CRA** any responsibility for the timing, planning, scheduling, or execution of the Work, nor in any way give rise to any duty or responsibility on the part of the **CRA** to exercise this authority for the benefit of the **Contractor**, any Subcontractor or Supplier or any other party.

**3.5.3.** The **CRA's** decision to raise or not to raise objections with regard to any aspects of the **Contractor's** insurance shall in no way give rise to any duty or responsibility on the part of the **CRA** to or for the benefit of the **Contractor**, any Subcontractor, any Supplier, or any other party.

### **3.6. Reservation of Rights.**

**3.6.1.** The **CRA** reserves the right to correct at any time any error in any progress payment that may have been made.

**3.6.2.** Should defective Work be discovered subsequent to final payment, the **CRA** reserves the right to make a claim and recover all costs and professional fees associated therewith, including the cost of removing and/or replacing the defective Work.

### **3.7. Waivers.**

**3.7.1.** All waivers by the **CRA** are valid only to the extent that they are signed by the **CRA**. Any such waivers pertain only to the specific matter contained in the waiver and not to any similar, subsequent matters.

## **ARTICLE 4 THE ENGINEER**

### **4.1. CRA's Representative.**

**4.1.1.** The **Engineer** is the **CRA's** representative (1) during construction, (2) until final payment is due, and (3) with the **CRA's** concurrence, from time to time during the correction period described in Article 10. The **Engineer** will advise and consult with the **CRA**. The **Engineer** will have authority to act on behalf of the **CRA** only to the extent provided in the Contract Documents, unless otherwise modified by a written instrument in accordance with other provisions of the Contract.

**4.1.2.** The duties, responsibilities, and the limitations of authority of the **Engineer** as the **CRA's** representative during construction are set forth in the Contract Documents and shall not be extended without the written consent of the **CRA** and the **Engineer**.



#### **4.2. Administration of the Contract.**

4.2.1. The **Engineer** will provide administration of the Contract as described in the Contract Documents, unless the **CRA** has engaged a construction manager.

#### **4.3. Visits to the Site.**

4.3.1. The **Engineer** will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. However, the **Engineer** will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of on-site observations as an engineer, the **Engineer** will keep the **CRA** informed of progress of the Work in writing and will endeavor to guard the **CRA** against defects and deficiencies in the Work.

#### **4.4. Communications Facilitating Contract Administration.**

4.4.1. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the **CRA** and the **Contractor** shall endeavor to communicate through the **Engineer**. Communications by and with the **Engineer's** consultants shall be through the **Engineer**. Communications by and with Subcontractors and Suppliers shall be through the **Contractor**. Communications by and with **CRA** employees and separate contractors shall be through the **CRA**.

4.4.2. When it deems it necessary or expedient, the **CRA** may communicate directly with the **Contractor**, any Subcontractors, Suppliers, or consultants.

#### **4.5. Certification of Applications for Payment.**

4.5.1. Based on the **Engineer's** observations and evaluations of the **Contractor's** applications for payment, the **Engineer** will review and certify the amounts due the **Contractor** and will issue certificates for payment in such amounts.

#### **4.6. Rejection of Work.**

4.6.1. The **Engineer** will have authority to reject or disapprove Work which (1) does not conform to the Contract Documents; (2) which the **Engineer** believes to be defective; and (3) the **Engineer** believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Whenever the **Engineer** considers it necessary or advisable for implementation of the intent of the Contract Documents, the **Engineer** will have authority to require additional inspection or testing of the Work in accordance with Article 9, whether or not such Work is fabricated, installed, or completed. However, neither this authority of the **Engineer** nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the **Engineer** to the **Contractor**, Subcontractors, Suppliers, or other persons performing portions of the Work.

#### **4.7. Review of Submittals.**

4.7.1. The **Engineer** will review or take other appropriate action upon the **Contractor's** submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents and only to the extent which the **Engineer** believes desirable to protect the **CRA's** interest. The **Engineer's** action will be taken with reasonable promptness, while allowing sufficient time in the **Engineer's** professional judgment to permit adequate review, taking into account the time periods set forth in the latest schedule prepared by the **Contractor** and approved by the **Engineer**. Review of such

submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the **Contractor** as required by the Contract Documents. The **Engineer's** review of the **Contractor's** submittals shall not relieve the **Contractor** of the obligations under Article 5. The **Engineer's** review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The **Engineer's** approval of a specific item shall not indicate approval of an assembly of which the item is a component. After the rejection of the second resubmittal of any one Submittal, the **Contractor** shall bear the cost of the review of each subsequent resubmittal.

#### **4.8. Preparation of Change Orders and Work Change Directives.**

**4.8.1.** The **Engineer** will prepare Change Orders and Work Change Directives and may authorize minor Modifications in the Work as provided in Article 11.

#### **4.9. Inspections.**

**4.9.1.** The **Engineer** will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; will receive and forward to the **CRA** for the **CRA's** review and records written warranties and related documents required by the Contract and assembled by the **Contractor**; and will issue a final certificate for payment upon the **Contractor's** compliance with all of the requirements of the Contract Documents.

#### **4.10. Interpretations, Clarifications, and Decisions.**

**4.10.1.** The **Engineer** will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the **CRA** or the **Contractor**. The **Engineer's** response to such requests will be made with reasonable promptness and within the time set forth in the Agreement between the **CRA** and the **Engineer**. Any such written interpretations, clarifications, and decisions shall be binding on the **Contractor**.

**4.10.2.** Interpretations, clarifications, and decisions of the **Engineer** will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. The **Engineer** will not be liable to the **Contractor**, any Subcontractor, or Supplier for results of interpretations, clarifications, or decisions so rendered in good faith.

**4.10.3.** The **Engineer** may, as the **Engineer** judges desirable, issue additional drawings or instructions indicating in greater detail the construction or design of the various parts of the Work; such drawings or instructions may be effected by a Field Order or other notice to the **Contractor**, and provided such drawings or instructions are reasonably consistent with the previously existing Contract Documents, the Work shall be executed in accordance with such additional drawings or instructions without any additional cost or an extension of the Contract Time.

**4.10.4.** The **Engineer's** decisions on matters relating to aesthetic effect must be consistent with the **CRA's** and will be final.

#### **4.11. Limitation on the Engineer's Responsibilities.**

**4.11.1.** Neither the **Engineer's** authority to act under the provisions of the Contract Documents nor any decision made by the **Engineer** in good faith to exercise or not to exercise such authority shall give rise to any duty or responsibility of the **Engineer** to the **Contractor**, any Subcontractor, any Supplier, any surety for any of them or any other person.

**4.11.2.** The **Engineer** will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the **Contractor's** responsibility as provided

in Article 5. The **Engineer** will not be responsible for the **Contractor's** failure to carry out the Work in accordance with the Contract Documents. The **Engineer** will not have control over or charge of and will not be responsible for acts or omissions of the **Contractor**, Subcontractors, Suppliers, or of any other persons performing portions of the Work.

## **ARTICLE 5 THE CONTRACTOR**

### **5.1. Relationship with the CRA.**

**5.1.1.** The **Contractor** is an independent contractor and not an employee of the **CRA**. The **Contractor** is engaged by virtue of the Contract to perform only those services contained therein. The **Contractor** is not authorized to contract on behalf of the **CRA** or to incur any liability on the part of the **CRA**.

**5.1.2.** The **CRA** (1) shall not enter into a contract with, and shall not approve as a subcontractor furnishing labor and materials for a part of any such work, a foreign corporation which has not filed with such awarding authority a certificate of the state secretary stating that such corporation has complied with sections three and five of chapter one hundred and eighty-one and the date of such compliance, and (2) shall report to the state secretary and to the department of corporations and taxation any foreign corporation performing work under such contract or subcontract, and any person, other than a corporation, performing work under such contract or subcontract, and residing or having a principal place of business outside the commonwealth. (*Reference: M.G.L. c. 30, §39L*)

### **5.2. Code of Conduct.**

**5.2.1.** Chapter 2.117 of the Cambridge Municipal Code, Code of Conduct for **City** Officials and Employees, establishes standards of conduct for officials and employees of the **City**. The **Contractor** is subject to certain provisions contained therein. The **Contractor** shall familiarize itself with the ordinance and act accordingly.

### **5.3. Quality Assurance.**

**5.3.1.** The **Contractor** shall be responsible for ensuring that it, all Subcontractors, Suppliers, and all persons employed to do the Work under the Contract Documents perform in a professional manner, provide a high quality of service and Work, and perform in accordance with the Contract Documents.

### **5.4. Supervision.**

**5.4.1. Competence and Efficiency.** The **Contractor** shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills, attention and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

**5.4.2. Construction Means, Methods, Techniques, Etc.** The **Contractor** shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract. Where the Contract Documents refer to particular construction means, methods, techniques, sequences, or procedures or indicate or imply that such are to be used in the Work, such mention is intended only to indicate that the operations of the **Contractor** shall be such as to produce at least the quality of Work implied by the operations described. The actual determination of whether or not the described operations may be safely and suitably employed on the Work shall be the responsibility of the **Contractor**, who shall notify the **Engineer** in writing, prior to implementation, of the actual means, methods, techniques, sequences, or procedures which will be employed on the Work, if these differ from those mentioned in the Contract Documents. All loss, damage, liability or cost of correcting defective work arising from the employment of

any construction means, methods, techniques, sequences, or procedures shall be borne by the **Contractor**, notwithstanding that such construction means, methods, techniques, sequences, or procedures are referred to, indicated or implied by the Contract Documents, unless the **Contractor** has given timely notice to the **CRA** and the **Engineer** in writing that such means, methods, techniques, sequences, or procedures are not safe or suitable, and the **CRA** has then instructed the **Contractor** in writing to proceed at the **CRA's** risk.

**5.4.3. Variance between the Contract Documents and Statutes, Ordinances, Codes, Rules, and Regulations.** The **Contractor** shall promptly notify the **Engineer** and the **CRA** in writing of any variances between the Contract Documents and statutes, ordinances, codes, rules, and regulations. If the **Contractor**, without written notice to the **Engineer** and the **CRA**, performs Work knowing that it is contrary to statutes, ordinances, codes, rules, and regulations, the **Contractor** shall assume full responsibility for such Work and shall bear the costs associated therewith, i.e., replacement, repairs, removal, and fines.

**5.4.4. Acts and Omissions.** The **Contractor** shall be responsible to the **CRA** for the acts and omissions of all persons performing or supplying the Work.

**5.4.5. Inspections.** The **Contractor** shall be responsible for inspection of portions of Work already performed under this Contract to determine whether such portions are in proper condition to receive subsequent Work.

## **5.5. Personnel.**

**5.5.1. Suitability.** The **Contractor** shall provide competent, properly licensed and/or certified, suitably qualified, and reliable personnel to perform the Work required by the Contract Documents. The **Contractor** shall enforce strict discipline and maintain good order at the site at all times. The **Contractor** shall not employ any Subcontractor, Supplier, or other person, whether initially or as a substitute, against whom the **CRA** may have reasonable objection. Acceptance of any Subcontractor or other person by the **CRA** shall not constitute a waiver of any right of the **CRA** to reject defective Work.

**5.5.2. Sexual Harassment.** The **CRA** has a policy against sexual harassment. The **Contractor**, Subcontractors, and all other persons responsible for any portion of the Work are subject to the **CRA's** policy. The **Contractor** shall be responsible for any acts of sexual harassment committed by any persons responsible for any portion of the Work. The **Contractor** shall take appropriate action against any such individuals. Notwithstanding any remedial action taken by the **Contractor**, the **CRA** reserves the right to enforce its policy.

**5.5.3. Weapons and Illegal Drugs.** No weapons or illegal drugs are permitted on the Site. It is the responsibility of the **Contractor** to ensure that no weapons or illegal drugs are brought to the Site.

**5.5.4. Maximum Work Day and Work Week.** (*Reference: M.G.L. c. 149, §§30 and 34*). No laborer, worker, mechanic, foreperson or inspector working within this Commonwealth in the employ of the **Contractor**, Subcontractor or other person doing or contracting to do the whole or part of the work contemplated by the Contract, shall be required or permitted to work more than eight (8) hours in any one day or more than forty-eight (48) hours in any one week, or more than six (6) days in any one week, except in cases of emergency.

**5.5.5. Lodging.** (*Reference: M.G.L. c. 149, §25*). Every employee under this Contract shall lodge, board and trade where and with whom he or she elects, and neither the **Contractor** nor its agents or employees shall, either directly or indirectly, require as a condition of the employment of any person that the employee shall lodge, board or trade at a particular place or with a particular person.

**5.5.6. Wage Rates.** (*Reference: M.G.L. c. 149, §27*). Mechanics and apprentices, teamsters, chauffeurs and laborers performing Work shall be paid no less than the minimum rate of wages included in the Project Manual and which are made part of the Contract. They shall continue to be the minimum

rate of wages for said employees during the life of the Contract. The **Contractor** shall keep a legible copy of the wage rates posted in a conspicuous place at the site during the life of the Contract. These rates of wages shall include payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans as provided in M.G.L. c. 149, §26; and such payments shall be considered as payments to persons under M.G.L. c. 149, §27 performing work as therein provided. If the **Contractor** does not make payments to a health and welfare plan, a pension plan and a supplementary unemployment benefit plan, where such payments are included in the rates of wages, the **Contractor** shall pay the amount of said payments directly to each employee engaged in the Work. If the **Contractor** pays less than the rate of wages, including payments to health and welfare funds and pension funds, or the equivalent payments in wages to any person performing Work within the classifications as determined by the Commissioner of Labor and Industries, and if the **Contractor** takes or receives for its own use or the use of any other person, as a rebate, refund or gratuity, or in any other guise, any part or portion of the wages, including payments to health and welfare funds and pension funds, or the equivalent payment in wages, paid to such person for Work done or service rendered on the Project, the **Contractor** will be subject to the penalties set forth in M.G.L. c. 149, §27.

**5.5.7. Payroll Records of Employees.** (*Reference:* M.G.L. c. 149, §27B). The **Contractor** and all Subcontractors who are subject to M.G.L. c. 149, §§27 and 27A shall keep a true and accurate record of all mechanics and apprentices, teamsters, chauffeurs, and laborers performing Work showing the name, address and occupational classification of each such employee, the hours worked by and the wages paid to all such employees. The **Contractor** and the Subcontractors shall submit a copy of said record to the **CRA** on a weekly basis.

**5.5.7.1.** (*Reference:* M.G.L. c. 149, §27B). The **Contractor** and all Subcontractors who are subject to M.G.L. c. 149, §§27 and 27A shall preserve their payroll records for a period of three (3) years from the date of completion of the Contract.

**5.5.7.2.** (*Reference:* M.G.L. c. 149, §27B). The **Contractor** and all Subcontractors who are subject to M.G.L. c. 149, §§27 and 27A shall furnish to the Commissioner of Labor and Industries and the **CRA** within fifteen (15) days after completion of their portion of the Work a statement executed by the **Contractor** or Subcontractor or by any authorized officer or employee of the **Contractor** or Subcontractor who supervises the payment of wages in the form found in M.G.L. c.149, §27B.

## **5.6. Superintendence.**

**5.6.1. Employment of a Superintendent.** The **Contractor** shall employ a competent, properly licensed superintendent, reasonably acceptable to the **CRA**, and necessary assistants who shall be in attendance at the Site full time during the progress of the Work until the date of Substantial Completion and for such additional time thereafter as the **Engineer** or the **CRA** may determine to be necessary for the expeditious completion of the Work.

**5.6.2. Removal/Replacement of a Superintendent.** The **Contractor** shall remove the superintendent if requested to do so in writing by the **CRA** and shall promptly replace such superintendent with a competent person reasonably acceptable to the **CRA**. The superintendent shall represent the **Contractor**, and communications given to the superintendent shall be as binding as if given to the **Contractor**. The **Contractor** shall not replace the superintendent without written notice to the **CRA** and the **Engineer**.

**5.6.3. Registered Professional Engineer or Registered Land Surveyor.** The **Contractor** shall retain a competent Registered Professional Engineer or Registered Land Surveyor, acceptable to the **Engineer**, who shall establish the exterior lines and required elevations of all structures to be erected on the site and shall establish sufficient lines and grades for the construction of associated Work such as, but not limited to, roads, utilities, and site grading. The Engineer or Land Surveyor shall certify as to the actual location of the constructed facilities in relation to property lines, building lines, easements, and other restrictive boundaries.

**5.6.4. Building Grades, Lines, Etc.** The **Contractor** shall establish the building grades; lines; levels; and column, wall and partition lines required by the various Subcontractors in laying out their Work.

**5.6.5. Coordination and Supervision.** The **Contractor** shall coordinate and supervise the Work performed by Subcontractors to the end that the Work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. The **Contractor** and all Subcontractors shall at all times afford each trade, any separate contractor, or the **CRA**, every reasonable opportunity for the installation of Work and the storage of materials.

**5.6.6. Job Meetings.** There shall be job meetings held on a weekly basis, or more often if required by the **CRA**. The **Contractor** shall arrange for and attend weekly job meetings with the **Engineer** and such other persons as the **Engineer** may from time to time wish to have present. The **Contractor** shall be represented by a principal, project manager, general superintendent or other authorized main office representative, as well as by the **Contractor's** own superintendent. An authorized representative of any Subcontractor or Sub-subcontractor shall attend such meetings if the representative's presence is requested by the **Engineer**. Such representatives shall be empowered to make binding commitments on all matters to be discussed at such meetings, including costs, payments, Change Orders, time schedules and workforce power. Any notices required under the Contract may be served on such representatives.

## **5.7. Materials, Labor, Equipment, Etc.**

**5.7.1. Provision of.** Unless otherwise provided in the Contract Documents, the **Contractor** shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up, and completion of the Work.

**5.7.2. Quality and Use of.** All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by the **Engineer**, the **Contractor** shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

**5.7.3. Discrepancies or Defects.** If the **Contractor** is unable to perform its Work because of discrepancies or defects in the work of the **CRA's** own forces or of a separate contractor, the **Contractor** shall immediately notify the **Engineer** and the **CRA** in writing of the conditions that render unable to so perform. Failure to notify the **Engineer** constitutes an acknowledgment and acceptance of the other work as being fit and proper for integration with the **Contractor's** Work except for latent or non-apparent defects and deficiencies in the other work.

## **5.8. Contractor's Management and Financial Statement Requirements. (Reference: M.G.L. c. 30, §39R)**

**5.8.1.** The words defined herein shall have the meaning stated below whenever they appear in this Paragraph:

**5.8.1.1. "Contractor"** means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to M.G.L. c.30. §39M, inclusive.

**5.8.1.2. "Contract"** means any contract awarded or executed pursuant to M.G.L. c. 30, §39M, which is for an amount or estimate amount that exceed the dollar amount set forth in M.G.L. c. 30, §39R.

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

**5.8.1.4. "Independent Certified Public Account"** means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the **CRA**.

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

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

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

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

**5.8.2.** The contractor shall make, and keep for at least six (6) years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and

**5.8.3.** until the expiration of six (6) years after final payment, the office of inspector general, and the deputy commissioner of capital planning and operations shall have the right to examine any books, documents, papers or records of the contractor or of his/her subcontractors that directly pertain to, and involve transactions relating to, the contractor or his/her subcontractors, and

**5.8.4.** the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the **CRA**, including in his/her description the date of the change and reasons therefor, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

**5.8.5.** the contractor has filed a statement of management on internal accounting controls as set forth below prior to the execution of the contract, and

**5.8.6.** the contractor has filed prior to the execution of the contract and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth below.

**5.8.7.** The contractor shall file with the **CRA** a statement of management as to whether the system of internal accounting controls of the contractor and its subsidiaries reasonably assures that:

**5.8.7.1.** transactions are executed in accordance with management's general and specific authorization;

**5.8.7.2.** transactions are recorded as necessary

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

**5.8.7.2.2.** to maintain accountability for assets;

**5.8.7.3.** access to assets is permitted only in accordance with management's general or specific authorization; and

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

**5.8.7.5.** The contractor shall also file with the **CRA** a statement prepared and signed by an independent certified public accountant stating that s/he has examined the statement of management on internal accounting controls, and expressing an opinion as to:

**5.8.7.5.1.** whether the representation of management in response to this paragraph and paragraphs 5.8.2. through 5.8.6 above are consistent with the result of management's evaluation of the system of internal accounting controls; and

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

**5.8.8.** The contractor shall annually file with the Commissioner of Capital Planning and Operations during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the **CRA** upon request.

## **5.9. Taxes.**

**5.9.1.** The **Contractor** shall pay all sales, consumer, use, and other similar taxes for the Work or portions thereof which are provided by the **Contractor** which are legally enacted when bids are received, whether or not yet effective or merely scheduled to go into effect. However, the **Contractor** shall not pay, and the **CRA** shall not reimburse or pay the **Contractor** for, any sales taxes for building supplies or materials for which an exemption is provided in M.G.L. c. 64H, §6(f). The **CRA's** tax exemption number to be used by the **Contractor** in this regard is 046006362.

## **5.10. Permits, Licenses, and Fees.**

**5.10.1.** Unless otherwise provided, the **Contractor** shall obtain and pay the fees for all permits, licenses, and inspections which are necessary for the proper execution and completion of the Work and which are customarily secured after execution of the Contract and which are legally required. All fees for permits, licenses, and inspections required by any **City** department shall be waived except for deposits required by the City of Cambridge Water Department.

## **5.11. Notices Required By Statutes, Ordinances, Codes, Rules, Regulations, and Orders of the City.**



**5.11.1.** The **Contractor** shall give notices required by statutes, ordinances, codes, rules, regulations, and orders of the **City** bearing on performance of the Work.

**5.12. Additional Information from Engineer.**

**5.12.1.** The **Contractor** shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Article 4.

**5.12.2.** The **Contractor** shall give the **Engineer** timely notice of any additional Drawings, Specifications, or instructions required to define the Work in greater detail, or to permit the proper progress of the Work.

**5.12.3.** The **Contractor** shall not proceed with any Work not clearly and consistently defined in detail in the Contract Documents, but shall request additional drawings or instructions from the **Engineer** as provided in the previous Paragraph. If the **Contractor** proceeds with such Work without obtaining further drawings, Specifications, or instructions, the **Contractor** shall correct Work incorrectly done at the **Contractor's** own expense.

**5.13. “Or equal.”**

**5.13.1. Requirements.** (*Reference: M.G.L. c. 30, §39M(b)*). Where products or materials are specified or described by manufacturer name, trade name, or catalog reference, the words “or approved equal” shall be understood to follow. An item shall be considered equal to the item so named or described if, in the opinion of the **Engineer**:

**5.13.1.1.** it is at least equal in quality, durability, appearance, strength, and design;

**5.13.1.2.** it performs at least equally the function imposed by the general design for the Work;

**5.13.1.3.** it conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the Specifications.

**5.13.2. Net Savings.** No proposed substitution will be permitted unless the **Contractor** certifies that the proposed substitution will yield a net savings to the **CRA** and will not extend the Contract Time.

**5.13.3. Contractor’s Expense.** Any structural or mechanical changes made necessary to accommodate substituted equipment under this paragraph shall be at the expense of the **Contractor** or Subcontractor responsible for the Work item.

**5.13.3.1.** Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the **Contractor**, notwithstanding approval or acceptance of such substitution by the **CRA** or the **Engineer**, unless such substitution was made at the written request or direction of the **CRA** or the **Engineer**.

**5.13.3.2.** All data to be provided by the **Contractor** in support of any proposed “or equal” or substitute item will be at the **Contractor's** expense.

**5.13.4. Meeting Requirements.** The **Contractor** shall be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The **Engineer** may require the **Contractor** to produce reasonable evidence that a material meets such requirements, such as certified reports of past tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which, in the opinion of the **Engineer**, would lead to a reasonable certainty that any material used, or proposed to be used, in the Work meets the requirements of the Contract

Documents. All such data shall be furnished at the **Contractor's** expense. This provision shall not require the **Contractor** to pay for periodic testing of different batches of the same material, unless such testing is specifically required by the Contract Documents to be performed at the **Contractor's** expense.

**5.13.5. Named Manufacturer's Product.** In all cases in which a manufacturer's name, trade name, or other proprietary designation is used in connection with materials or articles to be furnished under this Contract, whether or not the phrase "or equal" is used after such name, the **Contractor** shall furnish the product of the name manufacturer(s) without substitution, unless a written request for a substitute has been submitted by the **Contractor** and approved in writing by the **Engineer** as provided in the following paragraph.

**5.13.6. Deviations.** If the **Contractor** proposes to use a material which while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, the **Contractor** shall inform the **Engineer** in writing of the nature of such deviations at the time the material is submitted for approval and shall request written approval of the deviation from the requirements of the Contract Documents.

**5.13.7. Rejection of Deviations.** In requesting approval of deviations or substitutions, the **Contractor** shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation will provide a quality of result at least equal to that otherwise attainable. If, in the opinion of the **Engineer**, the evidence presented by the **Contractor** does not provide a sufficient basis for such reasonable certainty, the **Engineer** may reject such substitution or deviation without further investigation.

**5.13.8. Consistent Character and Quality of Design.** The Contract Documents are intended to produce a building of consistent character and quality of design. All components of the building including visible items of mechanical and electrical equipment have been selected to have a coordinated design in relation to the overall appearance of the building. The **Engineer** shall judge the design and appearance of proposed substitutes on the basis of their suitability in relation to the overall design of the Project, as well as for their intrinsic merits. The **Engineer** will not approve as equal to materials specified proposed substitutes which, in the **Engineer's** opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the Project. In order to permit coordinated design of color and finishes the **Contractor** shall, if required by the **Engineer**, furnish the substituted material in any color, finish, texture, or pattern which would have been available from the manufacturer originally specified, at no additional cost to the **CRA**.

**5.13.9. Warranty.** The warranties provided herein shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law.

**5.13.10. Engineer's Approval.** The **Engineer** will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed, or utilized without the **Engineer's** prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. The **CRA** may require the **Contractor** to furnish at the **Contractor's** expense a special performance guarantee or other surety with respect to any "or equal" or substitute. The **Engineer** will record the time required by the **Engineer** and its consultants in evaluating substitutes proposed or submitted by the **Contractor** and in making changes in the Contract Documents (or in the provisions of any other direct contract with the **CRA** for work on the Project) occasioned thereby. Whether or not the **Engineer** accepts a substitute item so proposed or submitted by the **Contractor**, the **Contractor** shall reimburse the **CRA** for the charges of the **Engineer** and its consultants for evaluating each such proposed substitute item.

#### **5.14. Substitute Construction Methods or Procedures.**

**5.14.1.** If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, the **Contractor** may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to the **Engineer**. The **Contractor** shall submit sufficient information to allow the **Engineer**, in the **Engineer's** sole

discretion, to determine whether the substitute proposed is equivalent to that expressly called for by the Contract Documents.

## **5.15. Contractor's Progress Schedule.**

**5.15.1. Before Starting Construction.** Within ten (10) days after the date of the Notice to Proceed, the **Contractor** shall submit to the **Engineer** for review:

**5.15.1.1.** a preliminary progress schedule indicating the times (number of days or dates) for starting and completing the various stages of the Work;

**5.15.1.2.** a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

**5.15.1.3.** a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Sum and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include and appropriate amount of overhead and profit applicable to each item of Work.

**5.15.2. Review of Progress Schedule.** At least ten (10) days prior to the commencement of construction, the **Engineer**, the **Contractor**, and any other appropriate persons will meet to review and discuss the acceptability to the **Engineer** of the progress schedule. The **Contractor** will have an additional ten (10) days to make corrections and adjustments and to complete and resubmit the schedule. No progress payment shall be made to the **Contractor** until the schedule is submitted to and acceptable to the **Engineer** as provided below.

**5.15.3. Acceptability of Progress Schedule.** The progress schedule will be acceptable to the **Engineer** if, according to the **Engineer**, it provides an orderly progression of the Work to completion within any specified time frame, but such acceptance will neither impose on the **Engineer** responsibility for the sequencing, scheduling, or progress of the Work nor interfere with or relieve the **Contractor** from the **Contractor's** full responsibility therefor. The **Contractor's** schedule of Submittals must be acceptable to the **Engineer** if it provides a workable arrangement for reviewing and processing the required Submittals. The **Contractor's** schedule of values must be acceptable to the **Engineer** as to form and substance.

**5.15.4. Sepia and Copies.** After the **Engineer** has approved the schedule, the **Contractor** shall submit to the **Engineer** one (1) sepia and four (4) copies bearing the **Contractor's** stamp of approval as a representation to the **CRA** that the **Contractor** has determined or verified all data on that progress schedule and that the **Contractor**, the Subcontractors and Suppliers have reviewed and coordinated the sequences in that progress schedule with the requirements of the Work.

**5.15.5. Adjustment of Schedule.** The **Contractor** shall adhere to the established progress schedule which may be adjusted from time to time as follows: the **Contractor** shall submit to the **Engineer** for acceptance proposed adjustments in the progress schedule that will not change the Contract Time. Such adjustments will conform generally to the progress schedule then in effect and will comply with any provisions of the requirements applicable thereto.

**5.15.6. During Construction.** The **Contractor** shall submit monthly progress schedules to the **Engineer**. The schedules shall stay current with the **Contractor's** approach to the Work remaining.

**5.15.7. Schedule of Submittals.** The **Contractor** shall prepare and keep current, for the **Engineer's** approval, a schedule of Submittals which is coordinated with the **Contractor's** construction schedule and allows the **Engineer** reasonable time to review Submittals.

## **5.16. Project Coordination.**

**5.16.1. In General.** The **Contractor** shall be responsible for the proper coordination of the Work of all of the trades.

**5.16.2. Coordination with Subcontractors.** The **Contractor** shall coordinate the work of each Subcontractor with the Work of every other Subcontractor whose Work affects the other.

**5.16.3. Coordination with the CRA's Own Forces or Separate Contractors.** The **Contractor** shall coordinate its operations with those of the **CRA's** own forces or separate contractors. The **Contractor** shall provide the **CRA's** own forces and separate contractors a reasonable opportunity for the handling, unloading and storage of their materials and equipment and execution of their work. The **Contractor** shall connect and coordinate its Work with theirs.

**5.16.4. Coordination with Utility Companies.** The **Contractor** shall coordinate its operations with all the appropriate utility companies to assure that the utilities required on the Project are available and functioning properly pursuant to the requirements of the Contract Documents.

## **5.17. Project Photographs.**

**5.17.1. In General.** The **Contractor** shall take, at its own expense, interior and exterior photographs at the site, from different vantages as directed by the **Engineer** or the **CRA**, before beginning any Work and thereafter on the first work day of each month until final completion of the Work, including final Site photos. The photographs shall be taken by a skilled commercial photographer. The number of photographs required shall be at the discretion of the **CRA** or the **Engineer**.

**5.17.2. Digital Photos.** Within fourteen (14) days after the photographs have been taken, the **Contractor** shall cause digital copies to be made and delivered to the **CRA** and the **Engineer**. All photographs shall be digital on a CD, thumb drive, or equivalent. Each photo shall state the date of the photograph, the name of the Project, the description of the view and the name and address of the photographer. The **CRA** shall receive all the negatives and one digital copy. The **Engineer** shall receive one digital copy.

**5.17.3. Failure to Comply.** Should the **Contractor** fail to adhere to any requirement set forth in the previous two paragraphs, the **CRA** may have the photographs taken at the **Contractor's** expense or receive a set-off against the **Contractor's** next application for payment.

## **5.18. Record Documents and Samples at the Site.**

**5.18.1.** The **Contractor** shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Modifications, Change Orders, Work Change Directives, Field Orders and written interpretations and clarifications in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to the **Engineer** for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered by the **Contractor** to the **Engineer** for the **CRA**.

## **5.19. Submittals.**

**5.19.1. Purpose.** The purpose of Submittals is to demonstrate for those portions of the Work for which Submittals are required the way the **Contractor** proposes to conform to the information given and the design concept expressed in the Contract Documents.

**5.19.2. Submittal Procedure.** Within \_\_\_ days from the Notice to Proceed, the **Contractor** shall submit to the **Engineer** a completed Submittals schedule. The **Contractor** shall review, approve, and submit to the **Engineer** Submittals required by the Contract Documents with reasonable promptness and

in such sequence as to cause no delay in the Work or in the activities of the **CRA** or of separate contractors. Submittals made by the **Contractor** which are not required by the Contract Documents may be returned without action. The schedules shall be updated and resubmitted each month. All Submittals will be identified as the **Engineer** may require and in the number specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show the **Engineer** the materials and equipment that the **Contractor** proposes to provide and to enable the **Engineer** to review the information for the limited purposes stated below.

**5.19.3. Samples.** The **Contractor** shall also submit Samples to the **Engineer** for review and approval in accordance with said accepted schedule of Submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which it is intended and otherwise as the **Engineer** may require to enable the **Engineer** to review the Submittal for the limited purposes stated below. The numbers of each Sample to be submitted will be as specified in the Specifications. Unless otherwise specified in the Specifications, three (3) specimens of each Sample shall be submitted.

**5.19.3.1.** The Samples shall be of sufficient size to permit proper evaluation of material. Where variations in color or other characteristics are to be expected, samples showing the minimum range of variation shall be submitted. Materials exceeding the range of variation of the approved Samples will not be approved on the Work.

**5.19.3.2.** All costs associated with delivery of Samples will be paid by the **Contractor**.

**5.19.4. Contractor's Verifications.** Before submitting each Submittal, the **Contractor** shall have determined and verified:

**5.19.4.1.** all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

**5.19.4.2.** all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

**5.19.4.3.** all information relative to the **Contractor's** sole responsibilities in respect of means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto.

**5.19.5. Contractor's Representations.** By approving and providing Submittals, the **Contractor** thereby represents that the **Contractor** has determined and verified all dimensions, quantities, field dimensions, relations to existing Work, coordination with Work to be installed later, coordination with information on previously accepted Submittals and verification of compliance with all the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the **Contractor**. In reviewing Submittals, the **Engineer** shall be entitled to rely upon the **Contractor's** representation that such information is correct and accurate.

**5.19.6. Coordination.** The **Contractor** shall also have reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and the Contract Documents.

**5.19.7. Stamp or Specific Written Indication.** Each Submittal will bear a stamp or specific written indication that the **Contractor** has satisfied the **Contractor's** obligations under the Contract Documents with respect to the **Contractor's** review and approval of that Submittal.

**5.19.8. Written Notice of Variations.** At the time of each Submittal, the **Contractor** shall give the **Engineer** specific written notice of such variations, if any, that the Submittal may have from the requirements of the Contract Documents. Such notice is to be in a written communication separate from

the Submittal. Moreover, the **Contractor** shall make a specific notation on each Submittal to the **Engineer** for review and approval of each such variation.

**5.19.9. Review and Approval by the Engineer.** The **Contractor** shall perform no portion of the Work requiring a Submittal until the respective Submittal has been approved by the **Engineer**. Such Work shall be in accordance with approved Submittals.

**5.19.9.1.** The **Engineer** will review and approve Submittals in accordance with the schedule of Submittals accepted by the **Engineer** as required above. The **Engineer's** review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated in the Contract Documents. The **Engineer's** review and approval will not extend to means, method, technique, sequences, or procedures of construction (except where a particular means, method, technique, sequences or procedures of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

**5.19.10. Deviations.** The **Contractor** shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the **Engineer's** approval of Submittals unless the **Contractor** has specifically informed the **Engineer** in writing of such deviation at the time of Submittal and the **Engineer** has given written approval to the specific deviation. The **Contractor** shall not be relieved of responsibility for errors or omissions in Submittals by the **Engineer's** approval thereof.

**5.19.11. Revisions.** The **Contractor** shall make corrections required by the **Engineer** and shall return the required number of corrected copies of Submittals and submit as required new Submittals for review and approval. The **Contractor** shall direct specific attention, in writing or on resubmitted Submittals, to revisions other than those requested by the **Engineer** on previous Submittals. Unless such written notice has been given, the **Engineer's** approval of a resubmitted Submittal shall not constitute approval of any changes not requested on the prior Submittal.

**5.19.12. Related Work.** Where a Submittal is required by the Contract Documents or the schedule of Submittals accepted by the **Engineer**, any related Work performed prior to the **Engineer's** review and approval of the pertinent Submittal will be at the sole expense and responsibility of the **Contractor**.

**5.19.13. Informational Submittals.** Informational Submittals upon which the **Engineer** is not expected to take responsive action may be so identified in the Contract Documents.

**5.19.14. Certification.** When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the **CRA** shall be entitled to rely upon such certifications, and neither the **CRA** nor the **Engineer** shall be expected to make any independent examination with respect thereto.

## **5.20. Continuing the Work.**

**5.20.1.** The **Contractor** shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the **CRA**. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as otherwise provided herein or as the **CRA** and the **Contractor** may agree in writing.

## **5.21. Use of Site; Access to Work.**

**5.21.1.** The right of possession of the premises and the improvements made thereon by the **Contractor** shall remain at all times in the **CRA**. The **Contractor's** right of entry and use thereof arises

solely from the permission granted by the **CRA** under the Contract Documents. The **Contractor** shall confine the **Contractor's** apparatus, the storage of materials, and the operations of the **Contractor's** workers to limits indicated by law, ordinance, the Contract Documents and permits and/or directions of the **Engineer** and shall not unreasonably encumber the premises with the **Contractor's** materials. The **CRA or City** shall not be liable to the **Contractor**, the Subcontractors, Suppliers, or anyone else with respect to the conditions of the premises, except for a condition caused directly and solely by the negligence of the **CRA or the City**.

5.21.2. At all times, the **CRA**, the **City** and the **Engineer** shall have access to the Work.

## **5.22. Protection of Persons and Property.**

5.22.1. **In General.** The **Contractor** shall be responsible for initiating, maintaining, and supervising all health and safety precautions and programs in connection with the performance of the Contract. The **Contractor** is responsible for the implementation of all Federal, State, and local health and safety requirements.

5.22.2. The **Contractor** shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

5.22.2.1. employees on the site and other persons who may be affected thereby;

5.22.2.2. the Work, materials, and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the **Contractor**, Subcontractors, or Sub-subcontractors;

5.22.2.3. other property at the site or adjacent or in close proximity thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and

5.22.2.4. any other property of the **CRA**, whether or not forming part of the Work, located at the site or adjacent thereto in areas to which the **Contractor** has access.

5.22.3. **Notices and Compliance.** The **Contractor** shall give notices and comply in all other respects with applicable laws, ordinances, rules, regulations, codes, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss. The **Contractor** shall notify owners of adjacent and nearby properties of underground facilities and utility owners when prosecution of the Work may affect them and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

5.22.4. **Erection and Maintenance of Safeguards.** The **Contractor** shall erect and maintain, as required by existing conditions and the terms of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent and nearby sites and utilities.

5.22.5. **Hazardous Materials and Equipment.** When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the **Contractor** shall exercise utmost care and carry on such activities under the supervision of properly qualified personnel. The **Contractor** shall provide the **CRA** with advance notice of its intent to perform such operations, which shall be carried out in accordance with all Federal, State or local regulations.

5.22.6. **Damage to Property.** The **Contractor** shall promptly remedy damage and loss to property referred to above. If the damage or loss is due in whole or in part to the **Contractor's** failure to take the precautions required herein, the **Contractor** shall bear the cost, subject to any reimbursement to which the **Contractor** is entitled under property insurance required by the Contract Documents. The **Contractor** shall be fully and solely responsible for all Work and other operations carried out on adjacent

properties. The insurance required under Article 8 shall cover such Work or operations, and the **Contractor** shall indemnify and defend the **CRA**, the **Engineer**, the **City**, and the owners of such adjacent or nearby properties from and against all claims, suits, losses, or costs arising out of such Work or operations.

**5.22.7. Fire Protection Equipment and Services.** The **Contractor** shall provide and maintain in good operating condition suitable and adequate fire protection equipment and services and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the Work or by the local fire chief or fire marshal. The area within the site limits shall be kept orderly and clean and all combustible rubbish shall be promptly removed from the site.

**5.22.8. Protection of Excavations, Trenches, Etc.** The **Contractor** shall at all times protect excavations, trenches, buildings and materials from rain water, ground water, backup or leakage of sewers, drains and other piping, and from water of any other origin and shall remove promptly any accumulation of water. The **Contractor** shall provide and operate all pumps, piping, and other equipment necessary to this end.

**5.22.9. Snow and Ice Removal.** The **Contractor** shall remove snow and ice which might result in damage or delay. The **Contractor** shall remove snow and ice along all temporary pedestrian access provided as part of the work.

**5.22.10. Safety Representative.** The **Contractor** shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

**5.22.11. Weather Protection.** (*Reference: M.G.L. c. 149, §44F(1)*). The **Contractor** shall install weather protection and furnish adequate heat in the protected area from November 1 through March 31.

**5.22.12. Security.** The **Contractor** shall provide, within the Contract Sum, a sufficient number of security personnel at the Site at all times when the **Contractor's** personnel are not present, from commencement of the Work until Substantial Completion to assure that the Site, the facility, and the Work, and all materials and equipment stored at the Site are fully and completely protected against loss or damage due to vandalism, theft, or malicious mischief. If the **Contractor** elects, in addition, to use guard dogs for this purpose, each dog shall at all times be accompanied by an adult handler. If the **Contractor** fails to comply with the requirements of this paragraph, then the **CRA** may provide appropriate security and charge the cost thereof to the **Contractor**. The **CRA's** provision of such security, or failure to do so, shall not relieve the **Contractor** of its responsibility to pay for loss or damage due to vandalism, theft, or malicious mischief at the Site.

**5.22.13. Hazard Communication Programs.** The **Contractor** shall be responsible for coordinating any exchange of material safety data sheets or other hazard communications information required to be made available to or exchanged between or among employers at the site in accordance with laws, codes and regulations.

**5.22.14. Noise Pollution Control.** The **Contractor** shall comply with all applicable provisions of Cambridge Municipal Code Chapter 8.16.

## **5.23. Cutting and Patching.**

**5.23.1. In General.** Unless otherwise provided in the Contract Documents, the **Contractor** shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly, including the work of the **CRA**, the **City** or of separate contractors.



**5.23.2. Damage to Work of the CRA and/or the City or of Separate Contractor.** The **Contractor** shall not damage or endanger a portion of the Work or fully or partially completed construction of the **CRA** and/or the **City** or separate contractors by cutting, patching, or otherwise altering such construction, or by excavation. The **Contractor** shall not cut or otherwise alter such construction by the **CRA** and/or the **City** or a separate contractor except with prior written consent of the **CRA** and/or the **City** and of such separate contractor; such consent shall not be unreasonably withheld. The **Contractor** shall not unreasonably withhold from the **CRA** and/or the **City** or a separate contractor the **Contractor's** consent to cutting or otherwise altering the Work.

**5.23.3. Damage Caused by Contractor.** Should the **Contractor** cause damage to the work or property of any separate contractor at the Site, or should any claim arising out of the **Contractor's** performance of Work at the Site be made by any separate contractor against the **Contractor**, the **CRA**, the **Engineer**, or any of the **Engineer's** consultants, the **Contractor** shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. The **Contractor** shall, to the fullest extent permitted by laws and regulations, indemnify and hold harmless the **CRA**, the **City**, the **Engineer**, and the **Engineer's** consultants from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, Engineers, attorneys and other professionals, and court and arbitration or mediation costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against the **CRA**, the **City**, the **Engineer**, or any of the **CRA's** consultants, to the extent based on a claim arising out of the **Contractor's** performance of the Work. Should a separate contractor cause damage to the Work or property of the **Contractor** or should the performance of work by any separate contractor at the site give rise to any other claim, the **Contractor** shall not institute any action, legal or equitable, against the **CRA**, the **City**, the **Engineer**, or any of the **CRA's** consultants, or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from the **CRA**, the **City**, the **Engineer**, or any of the **CRA's** consultants, on account of any such damage or claim. If the **Contractor** is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and the **CRA** and the **Contractor** are unable to agree as to the extent of any adjustment in the Contract Time attributable thereto, the **Contractor** may make a claim for an extension of time in accordance with Article 16. An extension of the Contract Time shall be the **Contractor's** exclusive remedy with respect to the **CRA**, the **Engineer**, and the **CRA's** consultants, for any delay, disruption, interference, or hindrance caused by any separate contractor.

#### **5.24. Cleaning Up.**

**5.24.1.** During the progress of the Work, the **Contractor** shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract or other debris. At the completion of the Work, the **Contractor** shall remove from and about the Project all waste materials, rubbish, debris, the **Contractor's** tools, construction equipment, machinery and surplus materials. The **Contractor** shall leave the site clean and ready for use by the **CRA** and the **City** at Substantial Completion of the Work. Immediately prior to the **Engineer's** inspection for Substantial Completion, the **Contractor** shall completely clean the premises. Concrete and ceramic surfaces shall be cleaned and washed. Resilient coverings shall be cleaned, waxed and buffed. Woodwork shall be dusted and cleaned. Sash, fixtures and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and all metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the **Contractor** at the **Contractor's** expense. The **Contractor** shall restore to original condition all property not designated for alteration by the Contract Documents.

**5.24.2.** If the **Contractor** fails to clean up as provided herein, the **CRA** may do so and charge the cost thereof to the **Contractor**.

#### **5.25. Royalties and Patents.**

**5.25.1.** The **Contractor** shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. To the fullest extent permitted by law, the **Contractor** shall indemnify and hold harmless the **CRA**, the **City** and the **Engineer** from and against all claims, costs, losses, and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the work or resulting from the incorporation in the work of any invention, design, process, product, or device not specified in the Contract Documents.

**5.26. Contractor's Obligation to Perform.**

**5.26.1.** The **Contractor's** obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of the **Contractor's** obligation to perform the Work in accordance with the Contract Documents:

- 5.26.1.1.** observations by the **Engineer**;
- 5.26.1.2.** recommendation of any progress or final payment by the **Engineer**;
- 5.26.1.3.** the issuance of a certificate of Substantial Completion or any payment by the **CRA** to the **Contractor** under the Contract Documents;
- 5.26.1.4.** use or occupancy of the Work, Project, or Site, or any part thereof, by the **CRA**;
- 5.26.1.5.** any acceptance by the **CRA** and/or the **City** or any failure to do so;
- 5.26.1.6.** any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptance by the **Engineer**;
- 5.26.1.7.** any inspection, test, or approval by others; or
- 5.26.1.8.** any correction of defective Work by the **CRA** and/or the **City**.

**5.27. Indemnification and Covenant Not To Sue.**

**5.27.1.** To the fullest extent permitted by law, the **Contractor** shall assume the defense of, indemnify and hold harmless the **CRA**, the **City**, the **Engineer**, the **CRA's** and the **Engineer's** consultants and agents and employees of any of them from and against claims, damages, losses, and expenses, including, but not limited, to attorneys' fee, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom caused in whole or in part by alleged negligent acts or omissions of the **Contractor**, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this paragraph.

**5.27.2.** In claims against any person or entity indemnified under the foregoing paragraph by an employee of the **Contractor**, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under the foregoing paragraph shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for the **Contractor** or a Subcontractor under Workers' Compensation laws, disability benefit acts or other employee benefit acts.

**5.27.3.** The obligations of the **Contractor** in this Article shall not extend to the liability of the **Engineer**, the **Engineer's** consultants, and agents or employees of any of them arising out of (1) the preparation of maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications, or (2) directions or instructions given by the **Engineer**, the **Engineer's** consultants and agents or employees of any of them, provided such instructions or directions are the primary cause of the injury or damage.

**5.27.4.** The **Contractor**, or any successor, assign, or subrogee of the **Contractor** agrees not to bring any civil suit, action, or other proceeding in law, equity or arbitration against the **Engineer**, or the officers, employees, agents, or consultants of the **Engineer**, for the enforcement of any action which the **Contractor** may have arising out of or in any manner connected with the Work. The **Contractor** shall assure that this covenant not to sue is contained in all subcontracts and sub-subcontracts of every tier and shall assure its enforcement. The **Engineer**, its officers, employees, agents, and consultants are intended third-party beneficiaries of this covenant not to sue, and are entitled to enforce this covenant in law or equity.

**§ 5.27.5** To the fullest extent permitted by the law, the **Contractor** shall also indemnify and hold harmless the **CRA**, the **City**, the **Engineer**, the **CRA's** and the **Engineer's** consultants and agents and employees of any of them and against any costs and expenses they incurred, including, without limitation, attorney's fees and expenses in enforcing any of the Contractor's defense, indemnity, and hold-harmless obligations hereunder unless it is determined that the Construction Manager was not obligated to defend, indemnify or hold-harmless in the specific matter.

#### **5.28. Survival of Obligations.**

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

## **ARTICLE 6 SUBCONTRACTORS**

### **6.1. Use of Subcontractors.**

**6.1.1.** The **Contractor** shall use the Subcontractors named in the **Contractor's** Bid.

### **6.2. Substitution of Subcontractors.**

**6.2.1.** The **Contractor** shall not substitute another Subcontractor therefor without notice to the **CRA** and the **CRA's** prior written consent of such substitution.

### **6.3. Names of Subcontractors.**

**6.3.1.** Upon execution of the Contract with the **CRA**, the **Contractor** shall provide in writing to the **CRA**, through the **Engineer**, the names, addresses, telephone numbers, and fax numbers of all persons proposed for each principal portion of the Work.

### **6.4. Objections to Subcontractors.**

**6.4.1.** The **Contractor** shall not use any Subcontractor against whom the **CRA** has a reasonable objection. The **Contractor** shall not be required to contract with any person or entity against whom it has a reasonable objection.

## **ARTICLE 7 PERFORMANCE AND PAYMENT BONDS**

### **7.1. Form of Bonds.**

7.1.1. The performance and labor and material or payment bonds shall be in the form required by the **CRA**, copies of which are included in the Project Manual. The **CRA** reserves the right to reject any bond which does not conform to the **CRA's** requirements.

### **7.2. Furnished by the Contractor.**

7.2.1. (*Reference: M.G.L. c. 30, §39M(c), M.G.L. c. 149, §29*). The **Contractor** shall furnish a performance bond and a labor and materials or payment bond, each with a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the **CRA** and each in the sum of the Contract Sum, the premiums for which are to be paid by the **Contractor** and are included in the Contract Sum. The bonds shall remain in effect until final payment is made. The sum of the performance bond shall increase each time the Contract Sum is increased as a result of a Change Order.

### **7.3. Submission to the CRA.**

7.3.1. The **Contractor** must submit the performance bond and labor and materials or payment bond to the **CRA** upon the **Contractor's** execution of the Agreement.

## **ARTICLE 8 INSURANCE REQUIREMENTS**

### **8.1. Worker's Compensation.**

8.1.1. (*Reference: M.G.L. c.149 §34A*). Before commencing performance of the Contract, the **Contractor** shall provide by insurance for the payment of compensation and the furnishing of other benefits under M.G.L. c. 152 to all persons to be employed under the Contract, and the **Contractor** shall continue such insurance in full force and effect during the term of the Contract. Sufficient proof of compliance with this paragraph must be furnished at the time of execution of this Contract.

### **8.2 Additional Insured.**

8.2.1. Each policy excluding only the Worker's Compensation and Owners Protective Liability must list the **CRA** and the **City** as an additional insured.

### **8.3. Insurance Rating.**

8.3.1. Any insurance carrier utilized to fulfill the insurance requirements of this Contract shall have a minimum A.M. Best rating of A-X.

### **8.4. Premiums.**

8.4.1. The **Contractor** must provide the required insurance at its own expense. Failure to provide and continue in force shall be deemed a material breach of the Contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the **CRA** at least fifteen (15) days prior to the intended effective date thereof, which date shall be expressed in said notice.

### **8.5. Notice of Occurrence.**

**8.5.1.** Notice of occurrence shall be given to the Executive Director, **Cambridge Redevelopment Authority**, 255 Main Street, 4<sup>th</sup> Floor, Cambridge, MA 02142 and the **City** Manager, **City** of Cambridge, **City** Hall, 795 Massachusetts Avenue, Cambridge, MA 02139 and, at the option of the **Contractor**, any other **City** official permitted by law to receive notice.

**8.6. Waiver of Subrogation.**

**8.6.1.** The **Contractor** and all Subcontractors waive subrogation rights against the **CRA** for all losses.

**8.7. Coverage Period.**

**8.7.1.** Each insurance policy must cover the entire contract period and beyond as specified in the following sections.

**8.8. Policies and Limits.**

**8.8.1.** The insurance required shall include all major division of coverage and shall be on a [comprehensive] commercial general form basis including Premise and Operations (including X-C-U), bodily injury(including death);broad form property damage (including completed operations) including injury to, or destruction of tangible property, including loss of use therefrom; personal injury; Owner’s Protective (as a separate policy), Products and Completed Operations, and Owned, Non-owned, Leased, and Hired Motor Vehicles. Such insurance shall not include any limitation or exclusion for claims or suits by one insured against another insured. Such insurance shall be written for not less than any limits of liability required by law or the following limits, whichever are greater:

Owner’s Protective Liability ( <b>as a separate policy</b> )	
Each Occurrence	\$1 Million
Aggregate	\$2 Million
Commercial Liability	
General Aggregate - per project	\$2 Million
Products Completed Operations	
Aggregate – per project	\$1 Million
Personal Injury and Advertising Limit	\$1 Million
Each Occurrence	\$1 Million

This policy shall include contractual liability coverage insuring the contractor’s indemnity obligations under this Contract. The contractual and completed operations coverage shall be maintained on the CRA’s and Indemnitees’ behalf for a period of two (2) years after final completion and acceptance by the CRA. Any exclusion for liability assumed under contract for work within 50 feet of a railroad shall be deleted. This policy shall include the CRA, the City and any other party at interest requested by the CRA as additional insureds with endorsements equivalent to ISO CG 20 10 for ongoing operations and to ISO CG 20 37 for completed operations. This policy shall be primary and non-contributory with respect to any other insurance available to an additional insured. The policy shall include endorsement equivalent to ISO CG 24 04, a Waiver of Subrogation in favor of the CRA and the City. The policy shall include endorsement CG 24 10, Coverage for injury to leased workers.

Railroad Protective Liability (Through separate policy or rider.)

Each Occurrence	\$2 Million
Aggregate	\$6 Million

The policy shall name the **CRA** and **City** as additional insureds. The policy shall contain a Waiver of Subrogation in favor of the **CRA** and **City**.

Automotive-for all owned, non-owned, hired and leased vehicles

Combined single limit		\$1 Million
or		
Bodily injury- each person		\$100,000
each accident		\$1 Million
Property damage-each occurrence		\$1 Million

If hauling contaminants and/or pollutants, the policy shall include a CA 99 48 Broadened Pollution Endorsement. must adhere to Sections 29 and 30 of the Motor Carrier Act of 1980, which shall contain coverage Form MCS-90. The policy shall name the **CRA** and **City** as additional insureds. The policy shall contain a Waiver of Subrogation in favor of the **CRA** and **City**.

Builder's Risk/Installation Floater (Value of the Contract)

The **Contractor** shall be required to purchase, maintain and furnish evidence satisfactory to the **CRA** property insurance generally described as Builders' Risk Insurance with an "all risk" type installation floater covering loss by fire and standard extended coverage in the completed value form in the amount of the total value of structures, materials, and equipment to be built and installed under the Contract on a replacement cost basis.

This provision, with respect to Builders' Risk Insurance, shall in no way relieve the **Contractor** of his obligation of completing the Work covered by the Contract.

Contractor Pollution Liability

Combined single limit- per occurrence	\$1 Million
Annual aggregate	\$3 Million

The **Contractor** shall purchase and maintain coverage for bodily injury and property damage resulting from liability arising out of pollution related exposures such as mold, fungi, or bacteria abatement, asbestos abatement, lead paint abatement, tank removal, removal of contaminated soil, etc. The insurance policy shall cover the liability of the Contractor during the processes of identification, removal, storage, transport and disposal of hazardous waste, lead, contaminated soil and/or asbestos abatement. The policy shall include coverage for on-Site and off-Site bodily injury and loss of, damage to, or loss of use of property, directly or indirectly arising out of the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gas, waste materials or other irritants, contaminants or pollutants into or upon the land, the atmosphere or any water course or body of water, whether it be gradual or sudden and accidental. The policy shall also include defense and clean-up costs. The CRA and the City shall be named as additional insureds and coverage must be on an occurrence basis.

Excess Umbrella Liability

Combined single limit	\$15 Million
General aggregate	\$15 Million

Worker's Compensation

Coverage A	Statutory	
Coverage B	Each Accident	\$100,000
	Disease-Policy limit	\$500,000
	Disease-Each Employee	\$100,000

### **8.9. Excess Umbrella Liability Insurance.**

**8.9.1.** The **Contractor** may purchase and maintain excess liability insurance in the umbrella form in order to satisfy the limits of liability required for the insurance to be purchased and maintained in accordance

with the requirements set forth above. Any such amounts must be in addition to the umbrella limits required, must list all underlying policies, and must list the **CRA** and **City** as additional insureds. Evidence of such excess liability shall be delivered to the **CRA** in the same form and manner as the required insurance policies.

#### **8.10. Amendment of Requirements.**

**8.10.1.** The **CRA** reserves the right, at its sole discretion, to amend the insurance requirements contained herein.

#### **8.11. Occurrence Basis.**

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

#### **8.12. Certificates of Insurance.**

**8.12.1.** Certificates of Insurance acceptable to the **CRA** and confirming the insurance coverage required herein are attached to the Contract. The **CRA** shall have no obligation to execute the Contract and may award the Contract to the next lowest responsible and responsive bidder, if such insurance certificates have not been provided to the **CRA** within five (5) business days after presentation of the Contract to the **Contractor** for execution. If requested by the **CRA** the **Contractor** will provide complete certified copies of every insurance policy before commencing and during performance of the Contract.

#### **8.13. Endorsements.**

**8.13.1.** The **Contractor** shall furnish to the **CRA** copies of any endorsements that are subsequently issued amending limits of coverage.

#### **8.14. Property Insurance.**

**8.14.1.** The **CRA** does intend to purchase property insurance covering the Project or the Work. The **Contractor** shall not be required to provide such insurance, and the **Contractor** may, if it so desires procure property insurance which will protect the interests of the **Contractor**, Subcontractor and Sub-subcontractors in the Work. The **Contractor** understands that such property insurance is solely the **CRA's** responsibility, and the **Contractor**, its Subcontractors and Sub-subcontractors shall have no claim against the **CRA** on account of the **CRA's** failure to provide such property insurance. The **Contractor** shall promptly replace all damaged Work in which it or its Subcontractors and Sub-subcontractors have an insurable interest, and all Work which is stolen, vandalized, or damaged due to the **Contractor's** failure to protect the site as required by Article 5, at no additional cost to the **CRA**, whether or not the **Contractor** procures property insurance with respect to such Work as hereinabove provided.

## **ARTICLE 9 TESTS AND INSPECTIONS**

### **9.1. Access.**

**9.1.1.** The **CRA**, the **Engineer**, and all other persons designated by the **CRA** shall have access to the Work at reasonable times for observing, inspecting, and testing. The **Contractor** shall provide them with proper and safe conditions for such access and advise them of the **Contractor's** site safety procedures and programs so that they may comply therewith as applicable.

## **9.2. Tests and Inspections.**

**9.2.1.** The **Contractor** shall give the **Engineer** timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

**9.2.2.** Unless otherwise provided, the **Contractor** shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the **CRA**, or with the appropriate public authority and shall bear all related costs of tests, inspections, and approvals. If the laws or regulations of any public body having jurisdiction require any Work or part thereof specifically to be inspected, tested, or approved by an employee or other representative of such public body, the **Contractor** shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith and furnish the **Engineer** with the required certificates of inspection, testing, or approval.

**9.2.3.** The **Contractor** shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for the **Engineer's** acceptance of materials or equipment to be incorporated into the Work, or of materials, mix designs, or equipment submitted for approval prior to the **Contractor's** purchase thereof for incorporation into the Work.

**9.2.4.** If any Work that is to be inspected, tested, or approved is covered by the **Contractor**, Subcontractor, or Sub-subcontractor without the prior written consent of the **Engineer**, it must be uncovered for observation, inspection, testing, or approval, if requested by the **Engineer**. The **Contractor** must uncover and recover the Work at its own expense and without a change in the Contract Time.

**9.2.5.** The **Contractor** shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the **Engineer** in the **Engineer's** administration of the Contract or by tests, inspections, or approvals required or performed by persons other than the **Contractor**.

## **ARTICLE 10 UNCOVERING AND CORRECTING WORK**

### **10.1. Uncovering Work.**

**10.1.1.** If a portion of the Work is covered contrary to the **Engineer's** request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the **Engineer**, be uncovered for the **Engineer's** observation and be replaced, both at the **Contractor's** expense and without change in the Contract Time.

**10.1.2.** If a portion of the Work has been covered which the **Engineer** has not specifically requested to observe prior to its being covered, the **Engineer** may request to see such Work, and it shall be uncovered by the **Contractor**. If it is found that such Work is in accordance with the Contract Documents, costs of uncovering and replacing shall, by appropriate Change Order, be charged to the **CRA**. If it is found that such Work is defective or not in accordance with the Contract Documents, the **Contractor** shall pay all claims, costs, losses, and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection, and testing and of satisfactory replacement or reconstruction (including, but not limited to, all costs of repair or replacement of work of others); and the **CRA** shall be entitled to an appropriate decrease in the Contract Sum. The **CRA** may take such decrease by reducing the then current application for payment accordingly or subsequent applications, if necessary, until the decrease is paid in full.

### **10.2. Correcting Work.**



**10.2.1.** The **Contractor** shall promptly correct Work rejected by the **Engineer** or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed. The **Contractor** shall bear all costs of correcting such rejected Work including additional testing and inspections and compensation for the **Engineer's** services and expenses made necessary thereby and any cost, loss, or damages to the **CRA** resulting from such failure or defect.

**10.2.2.** If, within one (1) year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established in Article 15, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the **CRA** to do so, unless the **CRA** has previously given the **Contractor** a written acceptance of such condition. This period of one (1) year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation to correct under this paragraph shall survive acceptance of the Work under the Contract and termination of the Contract. The **CRA** shall give such notice promptly after discovery of the condition.

**10.2.3.** The **Contractor** shall correct, remove, or replace portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the **Contractor** nor accepted by the **CRA**.

**10.2.4.** If the **Contractor** fails within a reasonable time to correct nonconforming Work, or to remove and replace rejected Work, or fails to perform the Work in accordance with the Contract Documents, the **CRA** may correct it in accordance with the provisions herein. If the **Contractor** does not proceed with correction, removal, or replacement of such nonconforming Work within seven (7) days from the date of written notice from the **Engineer**, the **CRA** may correct it and store any salvable materials or equipment at the **Contractor's** expense. If the **Contractor** does not pay costs of any such removal and storage within ten (10) days after written notice, the **CRA** may upon ten (10) additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the **Contractor**, including compensation for the **Engineer's** services and expenses made necessary thereby. If such proceeds of sale do not cover all the costs which the **Contractor** should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the **Contractor** are not sufficient to cover such amount, the **Contractor** shall pay the difference to the **CRA**.

**10.2.5.** The **Contractor** shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the **CRA** or separate contractors caused by the **Contractor's** correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

**10.2.6.** Nothing contained in this paragraph shall be construed to establish a period of limitation with respect to other obligations which the **Contractor** might have under the Contract Documents. Establishment of the time period of one (1) year as described in the above paragraph related only to the specific obligation of the **Contractor** to correct the Work and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced nor to the time within which proceedings may be commenced to establish the **Contractor's** liability with respect to the **Contractor's** obligations other than specifically to correct the Work.

### **10.3. Acceptance of Nonconforming Work.**

**10.3.1.** If, instead of requiring correction or removal and replacement of defective or nonconforming Work, the **CRA** prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the **CRA** may do so instead of requiring its removal and correction, in which case the **Contractor** shall pay all claims, costs, losses, and damages attributable to the **CRA's** evaluation

of and determination to accept such defective or nonconforming Work. The Contract Sum will be reduced as appropriate. Such adjustment shall be effected whether or not final payment has been made.

## **ARTICLE 11 CHANGES IN THE WORK**

### **11.1. In General.**

**11.1.1.** The Contract Sum constitutes the total compensation (subject to authorized adjustments) payable to the **Contractor** for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the **Contractor** shall be at the **Contractor's** expense without any change in the Contract Sum.

**11.1.2.** Without invalidating the Contract and without notice to any surety, the **CRA** may, at any time or from time to time, order additions to, deletions from, or revisions in the Work. Such additions, deletions, or revisions will be authorized by a Change Order, a Modification or a Work Change Directive. Upon receipt of any such document, the **Contractor** shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

**11.1.3.** The **Contractor** shall not be entitled to an increase in the Contract Sum or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified, or supplemented, except as otherwise provided herein.

### **11.2. Change Orders.**

**11.2.1.** (*Reference: M.G.L. c. 30, §39I*). The **Contractor** shall perform all the Work required by this Contract in conformity with the Drawings and Specifications contained herein. No willful and substantial deviation from said Drawings and Specifications shall be made unless authorized in writing by the **Engineer** and the **CRA** in charge of the Work who is duly authorized by the **CRA** to approve such deviations. In order to avoid delays in the prosecution of the Work required by such Contract, such deviation from the Drawings or Specifications may be authorized by a written order of the **CRA** or the **Engineer** so authorized to approve such deviation. Within thirty (30) days thereafter, such written order shall be confirmed by a certificate of the **CRA** stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures, or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the Project as a whole; (3) that either the work substituted for the Work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the **CRA** and the **Contractor** and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the **CRA**.

**11.2.2.** The **CRA's** and **Contractor's** agreement on a Change Order shall constitute a final settlement of all matters relating to the changes in the Work that are the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Time.

### **11.3. Work Change Directive.**

**11.3.1.** A Work Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

**11.3.2.** Upon request of the **CRA** or the **Engineer**, the **Contractor** shall without cost to the **CRA** submit to the **Engineer** in such form as the **Engineer** may require, an accurate written estimate of the cost of any proposed extra work or change. The estimate shall indicate the quantity and unit cost of each item of materials, and the number of hours of work and hourly rate for each class of labor, as well as the

description and amounts of all other costs chargeable under the terms of this Article. Unit labor costs for the installation of each item of materials shall be shown if required by the **Engineer**. If required by the **Engineer**, in order to establish the exact cost of new Work added or of previously required Work omitted, the **Contractor** shall obtain and furnish to the **Engineer** bona fide proposals from recognized Suppliers for furnishing any material included in such Work. Such estimates shall be furnished promptly so as to occasion no delay in the Work, and shall be furnished at the **Contractor's** expense.

**11.3.3.** The **Contractor** shall state in the estimate any extension of time required for the completion of the Work if the change or extra Work is ordered. The **Contractor** shall document, through a critical path analysis, or some other clearly delineated explanation, how the proposed change affects other aspects of the Work, and why it would require an extension of time. The **Contractor** shall promptly revise and resubmit such estimate if the **Engineer** determines that it is not in compliance with the requirements of this Article, or that it contains errors of fact or mathematical errors.

**11.3.4.** If the Work Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods, as selected by the **CRA**, selection of which does not require the consent of the **Contractor**:

**11.3.4.1.** By unit prices stated in the Contract Documents or otherwise mutually agreed upon.

**11.3.4.2.** By Cost and Percentages estimated by the **Contractor** as provided herein and accepted by the **CRA**; the **Contractor's** estimate shall become a fixed price which shall not be changed by any variation in the actual cost of executing the Work covered by the change.

**11.3.4.3.** By actual Cost determined after the Work covered by the change is completed, plus Percentage.

**11.3.4.4.** By submission to arbitration or a court, which shall determine the fair value of the Work covered by the change.

**11.3.5.** As used in this paragraph, "Cost" shall mean the estimated or actual net increase or decrease in cost to the **Contractor**, Subcontractor, or Sub-subcontractor for performing the Work covered by the change, including actual payments for materials, equipment rentals, expendable items, wages, and associated benefits to the workers and to supervisors employed full time at the Site, insurance, bonds, and other provable direct costs, but not including any administrative, accounting or expediting costs, or other indirect or overhead costs, or any wages or benefits of supervisory personnel not assigned full time to the Site, or any amount for profit or fee to the **Contractor**, Subcontractor, or Sub-subcontractor.

**11.3.6.** "Percentage" shall mean an allowance to be added to or subtracted from the Cost in lieu of overhead and profit and of any other expense which is not included in the Cost of the Work covered by the change, as defined above. Percentage for a Sub-subcontractor shall be 8% of any net increase or decrease of Cost of any Work performed by the Sub-subcontractor's own forces plus 4% of any net increase or decrease in Cost of any Work performed for the Sub-subcontractor by lower tier Sub-subcontractors. Percentage for a Subcontractor shall be 12% of any net increase or decrease of Cost of any Work performed by the Subcontractor's own forces plus 4% of the Cost of Work performed by Sub-subcontractors. Percentage for the **Contractor** shall be 15% of any net increase or decrease of Cost of any Work performed by the **Contractor's** own forces plus 5% of any net increase or decrease in the Cost for all other Work covered by the change. When the **Contractor** is also performing Work as a Subcontractor or Sub-subcontractor, the **Contractor** shall only be entitled to a total of no more than 15% of any net increase or decrease of Cost of any Work.

**11.3.7.** When in the reasonable judgment of the **Engineer** a series of Work Change Directives or Change Orders effect a single change, Percentage shall be calculated on the cumulative net increase or decrease in Cost, if any.

**11.3.8.** If unit prices are stated in the Contract Documents or are subsequently agreed upon, and if quantities originally contemplated are so changed in a Proposed Change Order or Work Change Directive that the application of such unit prices to quantities of Work proposed will cause substantial inequity to the **CRA** or the **Contractor**, the applicable unit prices shall be equitably adjusted.

**11.3.9.** If the **CRA** elects to determine the Cost of the Work as provided in paragraph 11.3.4.1 using unit prices stated in the Contract Documents or subsequently agreed upon, the unit prices shall be subject to the prior paragraph. Notwithstanding the inclusion of unit prices in the Contract Documents, it shall be the **CRA's** option to require the Cost of any given change to be determined by one of the other methods stated in 11.3.4. If the **CRA** elected to determine the Cost of the change by unit prices and the nature of the work is such that its extent cannot readily be measured after the completion of such work or any subsequent Work, the **Contractor** shall keep daily records, available at all times to the **Engineer** for inspection, of the actual quantities of such Work put in place, and delivery receipts or other adequate evidence, acceptable to the **Engineer**, indicating the quantities of materials delivered to the Site for use in such unit price Work, and distinguishing such from other similar material delivered for use in Work included in the base Contract Sum. If so required by the **Engineer**, materials for use in unit price Work shall be stored apart from all other materials on the Project.

**11.3.10.** If the **CRA** elects to determine the Cost of the Work as provided in methods 11.3.4.3. or 11.3.4.4. or if the method of determining the Cost has not been established before the Work is begun, the **Contractor** shall keep detailed daily records of labor and material costs applicable to the Work.

**11.3.11.** Upon receipt of a Work Change Directive, the **Contractor** shall promptly proceed with the change in the Work involved and advise the **Engineer** in writing of the **Contractor's** agreement or disagreement with the method, if any, provided in the Work Change Directive for determining the proposed adjustment in the Contract Time.

**11.3.12.** A Work Change Directive signed by the **Contractor** indicates the agreement of the **Contractor** therewith, including adjustment in the Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

**11.3.13.** If the **Engineer** and the **Contractor** do not agree with the adjustment in the Contract Time or the method for determining it, the adjustment or the method shall be referred to the **Engineer** for determination.

#### **11.4. Minor Changes in the Work.**

**11.4.1.** The **Engineer** has the authority to order minor changes in the Work. "Minor changes" as used in this paragraph mean changes which are so insignificant as to not affect the Contract Sum or the Contract Time and which are not inconsistent with the intent of the Contract Documents. Any minor change shall be committed to a written order which shall be binding on both the **CRA** and the **Contractor** and which shall be promptly carried out by the **Contractor**.

#### **11.5. Certificate of Appropriations.**

**11.5.1.** (*Reference:* M.G.L. c. 44, §31C). This Contract shall not be deemed to have been made until the **CRA's** Executive Director has certified thereon that an appropriation in the amount of this Contract is available therefor and that an officer or agent of the **CRA** has been authorized to execute said Contract and approve all requisitions and change orders. No order to the **Contractor** for a change in or addition to the Work, whether in the form of a drawing, plan, detail or any other written instruction, unless it is an order which the **Contractor** is willing to perform without any increase to the Contract price, shall be deemed to be given until the Executive Director has certified thereon that an appropriation in the amount of such order is available therefore; but such certificate shall not be construed as an admission by the **CRA** of its liability to pay for such work. The certificate of the Executive Director that an appropriation

in the amount of this Contract or in the amount of such order is available shall bar any defense by the **CRA** on the grounds of insufficient appropriation.

## **ARTICLE 12 CHANGE IN THE CONTRACT TIME**

### **12.1. Date of Commencement.**

**12.1.1.** The date of commencement of the Work is the date established in the Notice to Proceed. The date shall not be postponed by the failure to act of the **Contractor** or persons or entities for whom the **Contractor** is responsible.

### **12.2. Progress and Completion.**

**12.2.1.** Time is of the essence; all time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the **Contractor** confirms that the Contract Time is a reasonable period for performing the Work.

**12.2.2.** The **Contractor** shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

**12.2.3.** At least ten (10) working days before the first application for payment, the **Contractor** shall submit to the **Engineer** a progress schedule showing for each class of Work included in the schedule of values, the percentage of completion to be obtained and the total dollar value of Work to be completed as of the first of each month until Substantial Completion. All calculations shall be on the basis of Work in place, but may include, at the **Engineer's** discretion, the value of materials delivered but not in place.

**12.2.4.** The progress schedule shall be based on an orderly progression of the Work, allowing adequate time for each operation (including adequate time for submission and review of submittals), and leading to a reasonable certainty of Substantial Completion by the date established in the Agreement. The progress schedule will be reviewed by the **Engineer** for compliance with the requirements of this Article and will be accepted by the **Engineer** or returned to the **Contractor** for revision and resubmittal. Unless specifically required by law, no payment under this Contract shall be due until the progress schedule has been approved by the **Engineer**. The **Engineer's** review of the progress schedule shall not impose any duty on the **Engineer** or the **CRA** with respect to the timing, planning, scheduling, or execution of the Work. In particular, if the **Contractor** proposes a progress schedule indicating a date of Substantial Completion which is earlier than the Contract Time, the **Contractor** shall not be entitled to additional payment or compensation of any kind if, for any reason, the full Contract Time is required to achieve Substantial Completion of the Work.

**12.2.5.** If in any Application for Payment, the total value of the completed Work in place, as certified by the **Engineer**, is less than 90% of the total value of the Work in place estimated in the progress schedule, the **CRA** may, at the **CRA's** option, require the **Contractor** to accelerate the progress of the Work without cost to the **CRA** by increasing the workforce or hours of Work or by other reasonable means approved by the **Engineer**.

**12.2.6.** If each of three successive applications, as certified by the **Engineer**, indicate that the actual Work completed is less than 90% of the values estimated in the progress schedule to be completed by the respective dates, the **CRA** may at the **CRA's** option, treat the **Contractor's** delinquency as a default justifying the action permitted under Article 18.

**12.2.7.** If the **Engineer** has determined that the **Contractor** should be permitted to extend the time for completion as provided below, the calendar dates in the progress schedule shall be adjusted accordingly to retain their same relationship to the adjusted date of Substantial Completion, and the dollar value of the Work to be completed as of the first of each month shall be adjusted pro rata.

**12.2.8.** If the **Contractor** fails to submit any application for payment in any month, the **Engineer** shall, for the purpose of this evaluation of progress, certify separately to the actual value of the Work in place completed as of the first of the month to the best of the **Engineer's** knowledge.

**12.2.9.** Nothing herein shall limit the **CRA's** right to liquidated or other damages for delays by the **Contractor** or to any other remedy which the **CRA** may be entitled or may possess under other provisions of the Contract Documents or by law.

### **12.3. Delays and Extensions of Time.**

**12.3.1.** If the **Contractor** is delayed at any time in the progress of the Work by an act or neglect of the **CRA** or the **Engineer**, or of an employee of either, or of a separate contractor employed by the **CRA**, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes (except weather) beyond the **Contractor's** control, or by delay authorized by the **CRA**, or by other causes which the **Engineer** determines may justify delay, then the Contract Time shall be extended by Change Order or Work Change Directive for such reasonable time as the **Engineer** may determine.

**12.3.2.** Claims relating to time shall be made in accordance with applicable provisions of Article 16.

**12.3.3.** No claim for extension of time shall be allowed on account of failure of the **Engineer** to furnish Drawings, Specifications or instructions or to return Shop Drawings or Samples until fifteen (15) days after receipt by the **Engineer** by registered or certified mail of written demand for such instructions, Drawings, Specifications, or Samples, and then not unless such claim is reasonable.

**12.3.4.** No extensions of time shall be granted because of seasonal or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the **Contractor**, whether occurring within the time originally scheduled for completion or within the period of any extension granted. There shall be no increase in the Contract Sum on account of any additional costs of operations or conditions resulting therefrom.

**12.3.5.** The **Contractor** hereby agrees that the **Contractor** shall have no claim for damages of any kind against the **CRA**, the **City** or the **Engineer** on account of any delay in the commencement of the Work and/or any hindrance, delay, or suspension of any portion of the Work, whether such delay is caused by the **CRA**, the **City** or the **Engineer**, or otherwise, except as and to the extent expressly provided under M.G.L. c. 30, §39O, in the case of written orders by the **CRA**. The **Contractor** acknowledges that the **Contractor's** sole remedy for any such delay and/or suspension will be an extension of time as provided in this Article.

**12.3.6.** (*Reference: M.G.L. c. 30, §39O*). (a) The **CRA** may order the **Contractor** in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as it may determine to be appropriate for the convenience of the **CRA**, provided however that if there is a suspension, delay, or interruption for fifteen (15) days or more due to a failure of the **CRA** to act within the time specified in this Contract, the **CRA** shall make an adjustment in the Contract prices for any increase in the cost of performance of this Contract but shall not include any profit to the Contractor on such increase; and provided further, that the **CRA** shall not make adjustment in the Contract Price under this provision for any suspension, delay, interruption, or failure to act to the extent that such is due to any cause for which this Contract provides for an equitable adjustment of the Contract price under any other Contract provisions.

(b) The **Contractor** must submit the amount of a claim under provision (a) to the **CRA** in writing as soon as practicable after the end of the suspension, delay, interruption, or failure to act and, in any event, not later than the date of final payment under this Contract and, except for costs due to a

suspension order, the **CRA** shall not approve any costs in the claim incurred more than twenty (20) days before the **Contractor** notified the **CRA** in writing of the act or a failure to act involved in the Claim.

In the event a suspension, delay, interruption, or failure to act of the **CRA** increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the **Contractor** for payment for an increase in the cost of its performance as provisions (a) and (b) give the **Contractor** against the **CRA**, but nothing in provisions (a) and (b) shall in any way change, modify, or alter any other rights which the **Contractor** or the Subcontractor may have against each other.

#### **12.4. Liquidated Damages.**

**12.4.1.** If the **Contractor** shall fail to achieve Substantial Completion or Final Completion within the Contract Times, it shall be liable to pay the **CRA** the daily amount specified in the Agreement, not as a penalty, but as a fixed and agreed upon damages for breach of contract. The said amount is fixed and agreed upon because of the difficulty of ascertaining the **CRA's** actual damages. It is mutually understood that the said amount is a reasonable approximation or estimate thereof as of the date of the Agreement. The **CRA** may elect to withhold said amount from periodic or final payments due to the **Contractor**, in addition to retainage and other backcharges.

**12.4.2.** Liquidated damages also may be assessed in accordance with the provisions of Section 19 herein.

#### **12.5. Changes in the Contract Time.**

**12.5.1. How.** The Contract Time may only be changed by a Change Order or a Modification. Any claim for an adjustment of the Contract Time shall be based on a written notice delivered to the party making the claim to the other party and to the **Engineer** promptly (but in no event later than seven (7) days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within thirty (30) days after such occurrence and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by the **Engineer** in accordance with Article 16. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph.

**12.5.2. Early Completion.** The Contract Time shall not be changed due to a delay in the **Contractor's** early completion date.

### **ARTICLE 13 PAYMENTS**

#### **13.1. Schedule of Values.**

**13.1.1.** The **Contractor** shall submit to the **Engineer** a schedule of values as specified in paragraph 5.16 which shall subdivide the Work into its component parts and shall include quantities, direct craft labor worker hours, labor cost and material/equipment cost. Labor cost shall include an appropriate amount of construction equipment costs, supplemental costs, administrative expenses, contingencies, and profit. The **Contractor** shall prepare the schedule of values in such form and supported by such data to substantiate its accuracy as the **Engineer** may require and shall be revised if later found by the **Engineer** to be inaccurate. This schedule, unless objected to by the **Engineer**, shall be used as a basis for reviewing the **Contractor's** applications for payment.

#### **13.2. Content and Submission of Applications for Payment.**

**13.2.1.** At least ten (10) days before the date established for each progress payment, the **Contractor** shall submit to the **Engineer** six (6) copies of an itemized application for payment for Work

completed in accordance with the schedule of values. Such application shall be in a form or format established or approved by the **Engineer** and shall be supported by documentation substantiating the **Contractor's** right to payment.

**13.2.2.** When Work Change Directives have set forth an adjustment to the Contract Sum but have not yet been included in Change Orders, the value established by the **CRA** may be included in the application.

**13.2.3.** Applications covering Work of Subcontractors or Suppliers shall not include requests for payments of amounts the **Contractor** does not intend to pay to a Subcontractor or Supplier because of a dispute or other reason. The **Contractor** shall not be paid for any Work performed by a Subcontractor unless and until the **CRA** receives for that Subcontractor a certificate of insurance which conforms to the requirements of the Contract Documents.

**13.2.4.** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the Site for subsequent incorporation in the Work. If approved in advance by the **CRA**, payment may similarly be made for materials and equipment suitably stored off the Site at a location agreed upon in writing. Payment for materials and equipment stored on or off the Site shall be conditioned upon the application for payment being accompanied by a bill of sale, an invoice, or other documentation warranting that the **CRA** has received the materials and equipment free and clear of all liens, claims, security interests, or encumbrances, hereinafter collectively referred to as "liens," and evidence that the materials and equipment are covered by appropriate insurance and other arrangements to protect the **CRA's** interest therein.

**13.2.5.** Each application for payment or periodic estimate requesting payment shall be accompanied by, at the **CRA's** option, a certificate from each Subcontractor stating that the Subcontractor has been paid all amounts due the Subcontractor on the basis of the previous periodic payment to the **Contractor**, or else stating the amount not so paid and the reason for the discrepancy. In the event of any such discrepancy, the **Contractor** shall furnish the **Contractor's** own written explanation to the **CRA** through the **Engineer**. Such waiver or certificate shall be in a form acceptable to the **CRA**.

**13.2.6.** Within fifteen days after receipt from the **Contractor**, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the **Contractor** for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the **Contractor** has title or to which a subcontractor has title and has authorized the **Contractor** to transfer title to the awarding authority, less (1) a retention based on its estimate of the fair value of its claims against the **Contractor** and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the **Contractor** fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the Contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the Contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the **Contractor** to the subcontractors under this contract if such record of payment indicates that the **Contractor** has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the **Contractor**; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment



until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the **Contractor**, at the place designated by the awarding authority if such a place is so designated. The **Contractor** agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the **Contractor** and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the **Contractor** for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies. All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the Contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the Contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section. (*Reference: M.G.L. c. 30, §39K.*)

### **13.3. False Applications for Payment.**

**13.3.1.** (*Reference: M.G.L. c. 93, §9B.*) Any person who shall make or cause to be made, or present or cause to be presented, for payment or approval, to or by any employee, department, or agency, any claim upon or against any department or agency, knowing such claim to be false, fictitious or fraudulent, or who, for the purpose of obtaining or aiding to obtain the payment or approval of such claim, makes, uses, or causes to be made or used, any false bill, receipt, voucher, toll, account, claim, certificate, affidavit, or deposition knowing the same to contain any fraudulent or fictitious statement or entry, shall forfeit and pay to the **CRA** the sum of two thousand dollars (\$2,000.00) and, in addition, double the amount of damages which the **CRA** may have sustained by reason of the doing or committing of such act, together with the costs of the action.

### **13.4. Review of Applications for Payment.**

**13.4.1.** The **Engineer** shall review each application for payment and will reject any application that (1) is not accompanied by the required documentation or (2) contains errors, mathematical or otherwise.

**13.4.2.** Within five (5) business days after receipt of an application for payment, the **Engineer** will either (1) return the application to the **Contractor** with a written explanation as to why it was rejected or (2) issue to the **CRA** a certificate for payment, with a copy to the **Contractor**, for such amount as the **Engineer** determines is properly due. In the event an application is returned to the **Contractor**, the date of receipt of the application shall be the date of receipt of the corrected application.

**13.4.3.** The **Engineer** or the **CRA** may make changes to any application submitted by the **Contractor**.

**13.4.4.** By recommending any payment, the **Engineer** will not thereby be deemed to have represented that: (1) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to the **Engineer** in the Contract Documents or (2) that there may not be other matters or issues between the parties that might entitle the **Contractor** to be paid additionally by the **CRA** or entitle the **CRA** to withhold payment to the **Contractor**. The **Engineer's** approval of the application for payment and the accompanying documentation shall indicate that to the best of the **Engineer's** knowledge, information, and belief, the Work has progressed to the point indicated by the **Contractor**, and that the quality of the Work is in accordance with the Contract Documents, subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests specified in the Contract Documents, final determination of quantities and classifications for unit price work and any other qualifications so stated.

**13.4.5.** The **Engineer's** recommendation of any payment shall not mean that the **Engineer** is responsible for the **Contractor's** means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of the **Contractor** to comply with laws and regulations applicable to the furnishing or performance of Work, or for any failure of the **Contractor** to perform or furnish Work in accordance with the Contract Documents.

**13.4.6.** No certificate given or payment made shall be evidence of the performance of this Contract, either wholly or in part and no payment, whether made upon the final certificate or otherwise, shall be construed as an acceptance of defective work or materials.

### **13.5. Decisions to Withhold Certification.**

**13.5.1.** The **Engineer** may refuse to recommend the whole or any part of any payment if, in the **Engineer's** opinion, it would be incorrect to make the representations to the **CRA** referred to above.

**13.5.2.** If the **Contractor** and the **Engineer** cannot agree on a revised amount, the **Engineer** will promptly approve a certificate for payment for the amount for which the **Engineer** is able to make such representations to the **CRA**. The **Engineer** may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a certificate for payment previously issued, to such extent as may be necessary in the **Engineer's** opinion to protect the **CRA** from loss because of:

- 13.5.2.1.** defective Work not remedied;
- 13.5.2.2.** third party claims filed or reasonable evidence indicating probable filing of such claims;
- 13.5.2.3.** failure of the **Contractor** to make payments properly to Subcontractors or for labor, materials or equipment;
- 13.5.2.4.** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- 13.5.2.5.** damage to the **CRA** or another contractor;
- 13.5.2.6.** reasonable evidence that the Work will not be completed within the Contract Time, and that retainage currently held by the **CRA** would not be adequate to cover actual or liquidated damage for the anticipated delay;
- 13.5.2.7.** persistent failure to carry out the Work in accordance with the Contract Documents or the requirements of any governmental authority having jurisdiction over the project;
- 13.5.2.8.** failure of the **Contractor** to comply with mandatory requirements for maintaining record drawings. The **Contractor** shall check record drawings each month. Written confirmation that the record drawings are current will be required by the **Engineer** before approval of the **Contractor's** monthly payment requisition; or
- 13.5.2.9.** amounts previously paid to the **Contractor** in excess of amounts properly due the **Contractor**.

**13.5.3.** When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

### **13.6. Progress Payments.**

**13.6.1.** After the **Engineer** has issued a certificate for payment, the **CRA** shall make payment in the manner and within the time provided in the Contract Documents.

**13.6.2.** (*Reference:* M.G.L. c. 30, §39G). The **CRA** shall pay the amount due pursuant to any periodic, Substantial Completion or final estimate within thirty-five (35) days after receipt of written acceptance for such estimate from the **Contractor**. In the case of periodic payments, the **CRA** may deduct from its payment a retention based on its estimate of the fair value of its claims against the **Contractor**, a retention for direct payments to Subcontractors based on demands for same in accordance with M.G.L. c. 30, §39F and a retention to secure satisfactory performance of the contractual work, not exceeding five percent (5%) of the approved amount of any periodic payment, and the same right to retention shall apply to bonded Subcontractors entitled to direct payment under M.G.L. c. 30, §39F provided, that a five percent (5%) value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.

**13.6.3.** No periodic, Substantial Completion or final estimate or acceptance or payment thereof shall bar the **Contractor** from reserving all rights to dispute the quantity and amount of, or the failure of the **CRA** to approve a quantity and amount of, all or part of any Work item or extra Work item.

### **13.7. Final Payment.**

**13.7.1.** After final inspection and after the **Contractor** has completed all the required corrections to the satisfaction of the **Engineer** and the **CRA** and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, bonds, certificates, or other evidence of insurance, certificates of inspection, marked-up record documents, and all other documents called for in the Contract Documents, as well as any surplus materials requested by the **CRA**, the **Contractor** may make an application for final payment as provided below.

**13.7.2.** (*Reference:* M.G.L. c. 30, §39G). Within thirty (30) days after receipt by the **CRA** of a notice from the **Contractor** stating that all of the Work required by the Contract has been completed, the **CRA** shall prepare and forthwith send to the **Contractor** for acceptance a final estimate for the quantity and price of the Work done and all retainage on the Work less all payments made to date, unless the **CRA's** inspection shows that Work required by the Contract remains incomplete or unsatisfactory, or that documentation required by the Contract has not been completed.

**13.7.3.** The making and acceptance of final payment will constitute a waiver of all claims by the **Contractor** against the **CRA** other than those previously made in writing and still unsettled.

### **13.8. Payments to Subcontractors.**

**13.8.1.** Neither the **CRA** nor the **Engineer** shall have an obligation to pay or see to the payment of money to a Subcontractor, Sub-subcontractor, or Supplier except as may otherwise be required by law.

**13.8.2.** (*Reference:* M.G.L. c. 30, §39F)

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

(b) Not later than the sixty-fifth day after each Subcontractor substantially completes its Work in accordance with the Drawings and Specifications, the entire balance due under the subcontract, less amounts retained by the **CRA** as the estimated cost of completing the

incomplete and unsatisfactory items of Work, shall be due the Subcontractor; and the **CRA** shall pay that amount to the **Contractor**. The **Contractor** shall forthwith pay to the Subcontractor the full amount received from the **CRA** less any amount specified in any court proceeding barring such payment and also less any amount claimed due from the Subcontractor by the **Contractor**.

(c) Each payment made by the **CRA** to the **Contractor** pursuant to paragraphs (a) and (b) of M.G.L. c. 30, §39F(1), for the labor performed and the materials furnished by a Subcontractor shall be made to the **Contractor** for the account of that Subcontractor; and the **CRA** shall take reasonable steps to compel the **Contractor** to make each such payment to each such Subcontractor. If the **CRA** has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the **Contractor** or which is to be included in a payment to the **Contractor** for payment to the Subcontractor as provided in paragraphs (a) and (b) of M.G.L. c. 30, §39F(1), the **CRA** shall act upon the demand as provided in M.G.L. c. 30, §39F.

(d) If, within seventy (70) days after the Subcontractor has substantially completed the subcontract Work, the Subcontractor has not received from the **Contractor** the balance due under the subcontract including any amount due for extra labor and materials furnished to the **Contractor**, less any amount retained by the **CRA** as the estimated cost of completing the incomplete and unsatisfactory items of Work, the Subcontractor may demand direct payment of that balance from the **CRA**. The demand shall be by a sworn statement delivered to or sent by certified mail to the **CRA**, and a copy shall be delivered to or sent by certified mail to the **Contractor** at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract Work. [The demand letter shall indicate the certified mail number assigned by the postal service or the date of delivery to the **Contractor**.] Any demand made after substantial completion of the subcontract Work shall be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the subcontract Work. Within ten (10) days after the Subcontractor has delivered or so mailed the demand to the **CRA** and delivered or so mailed a copy to the **Contractor**, the **Contractor** may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the **CRA**, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the **Contractor** and of the amount due for each claim made by the **Contractor** against the Subcontractor.

(e) Within fifteen (15) days after receipt of the demand by the **CRA**, but in no event prior to the seventieth day after substantial completion of the subcontract Work, the **CRA** shall make direct payment to the Subcontractor of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the **Contractor**, less any amount (i) retained by the **CRA** as the estimated cost of completing the incomplete or unsatisfactory items of Work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the **Contractor** in the sworn reply; provided that the **CRA** shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to or for which the sworn reply does not contain the detailed breakdown required by the previous paragraph. The **CRA** shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this paragraph.

(f) The **CRA** shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of the previous paragraph in an interest-bearing joint account in the names of the **Contractor** and the Subcontractor in a bank in Massachusetts selected by the **CRA** or agreed upon by the **Contractor** and the Subcontractor and shall notify the **Contractor** and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the **Contractor** and the Subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to the previous paragraph shall be made out of amounts payable to the **Contractor** at the time of receipt of a demand for direct payment from a Subcontractor and out of amounts which later become payable to the **Contractor** and in the order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the **CRA** to the **Contractor** to the extent of such payment.

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

(2) Any assignment by a Subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of M.G.L. c. 149, §29 shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the **CRA** or which are on deposit pursuant to paragraph (g) shall be subordinate to the rights of all Subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) A **Contractor** or a Subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in herein by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A Subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in paragraph (f) by a petition in equity in the superior court against the **CRA** and the **Contractor** shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. M.G.L. c. 231, §§59 and 59B shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to §§59 and 59B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any Subcontractor with the petition of one or more Subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a Subcontractor filing a demand for direct payment for which no funds due the **Contractor** are available for direct payment shall have a right to file a petition in court of equity against the **CRA** claiming a demand for direct payment is premature, and such Subcontractor must file the petition before the **CRA** has made a direct payment to the Subcontractor and has made a deposit of the disputed portion as provided in part (iii) of paragraph (e) and in paragraph (f).

(4) In any petition to collect any claim for which a Subcontractor has filed a demand for direct payment the court shall, upon motion of the **Contractor**, reduce by the amount of any deposit of a disputed amount by the **CRA** as provided in part (iii) of paragraph (e) and in paragraph (f) any amount held under a trustee writ or pursuant to a restraining order or injunction.

## **ARTICLE 14 SUBSTANTIAL COMPLETION**

### **14.1. Substantial Completion.**

**14.1.1.** Upon Substantial Completion of the Work, the **Contractor** shall present in writing to the **CRA** its certification that the Work has been substantially completed and include in its certification (1) a

list of items to be completed or corrected, (2) all special warranties required by the Contract Documents, endorsed by the **Contractor** and in a form reasonably acceptable to the **Engineer** and (3) the permits and certificates referred to in 13.7.1., or elsewhere. The failure to include any item on the list mentioned in the preceding sentence does not alter the responsibility of the **Contractor** to complete all Work in accordance with the Contract Documents. When the **Engineer** on the basis of an inspection determines that the Work or designated portion thereof is substantially complete and the other conditions have been met, the **Engineer** will then prepare a certificate of Substantial Completion which shall establish the date of Substantial Completion, shall state the responsibilities of the **CRA** and the **Contractor** for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the **Contractor** shall complete the items listed therein. The certificate of Substantial Completion shall be submitted to the **CRA** and the **Contractor** for their written acceptance of the responsibilities assigned to them in such certificate.

**14.1.2.** Within twenty-one (21) days after receipt of the certification from the **Contractor**, the **CRA** shall present to the **Contractor** either a written declaration that the Work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the Contract sufficient to demonstrate that the Work has not been substantially completed. The **CRA** may include with such list a notice setting forth a reasonable time within which the **Contractor** must achieve Substantial Completion of the Work. If the **CRA** fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the **Contractor's** certification within the twenty-one (21) day period, the **Contractor's** certification shall take effect as the **CRA's** declaration that the Work has been substantially completed.

#### **14.2. Partial Use or Occupancy of the Premises.**

**14.2.1.** The **CRA** may occupy or use any completed or partially completed portion of the Work at any stage. Such partial occupancy or use may begin whether or not the portion is substantially complete, provided that the respective responsibilities of the **CRA** and the **Contractor** with respect to payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work, insurance, correction of the Work, and warranties shall be established by agreement of the **CRA** and the **Contractor** or, absent such agreement, shall be determined by the **Engineer** subject to the right of either party to contest such determination as provided in Article 16.

**14.2.2.** Immediately prior to such partial occupancy or use, the **CRA**, the **Contractor** and the **Engineer** shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

**14.2.3.** Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

**14.2.4.** (*Reference:* M.G.L. c. 30, §39G). Within sixty-five (65) days after the effective date of a declaration of Substantial Completion, the **CRA** shall prepare and send to the **Contractor** for acceptance a Substantial Completion estimate for the quantity and price of the Work done and all but one percent (1%) retainage on that Work, including the quantity, price and all but one percent (1%) retainage for the undisputed part of each item and extra work item in dispute, but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory items and less the total periodic payments made to date for the Work. The **CRA** shall also deduct from the Substantial Completion estimate an amount equal to the sum of all demands for direct payment filed by Subcontractors and not yet paid to Subcontractors or deposited in joint accounts pursuant to M.G.L. c. 30, §39F.

**14.2.5.** (*Reference:* M.G.L. c. 30, §39G). If the **CRA** fails to prepare and send to the **Contractor** any Substantial Completion estimate required by the provisions herein on or before the date specified, the **CRA** shall pay to the **Contractor** interest on the amount which would have been due to the **Contractor** pursuant to such Substantial Completion estimate at the rate of three (3) percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the **CRA** sends that Substantial Completion estimate to the **Contractor** for acceptance or to the date of

payment therefor, whichever occurs first. The **CRA** shall include the amount of such interest in the Substantial Completion estimate.

**14.2.6.** (*Reference: M.G.L. c. 30, §39G*). Within fifteen (15) days after the effective date of the declaration of Substantial Completion, the **CRA** shall send to the **Contractor** by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory items, and unless delayed by causes beyond its control, the **Contractor** shall complete all such items within forty-five (45) days after the receipt of such list or before the date for final payment and acceptance, whichever is later. If the **Contractor** fails to complete such Work within such time, the **CRA** may, subsequent to seven (7) days' written notice to the **Contractor** by certified mail, return receipt requested, terminate the Contract and complete the incomplete or unsatisfactory items and charge the cost of same to the **Contractor**.

### **14.3. Final Inspection.**

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

## **ARTICLE 15 GUARANTEES AND WARRANTIES**

### **15.1. In General.**

**15.1.1.** All guarantees and warranties specifically called for by the Specifications shall expressly run to the benefit of the **CRA**.

### **15.2. Warranties.**

**15.2.1.** Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof, unless otherwise provided in the certificate of Substantial Completion.

**15.2.2.** The **Contractor** warrants that the materials and equipment furnished under the Contract will be new and of recent manufacture unless otherwise specified, and that all Work will be of good quality, free from faults and defects, and in conformance with the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The **Contractor's** warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the **Contractor**, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the **Engineer**, the **Contractor** shall furnish satisfactory evidence as to the kind and quality of material and equipment.

**15.2.3.** The **Contractor** warrants that title to all Work covered by an application for payment will pass to the **CRA** either by incorporation in the construction or upon the receipt of payment by the **Contractor**, whichever occurs first, free and clear of all liens. The **Contractor** further agrees that the submission of any application for payment shall conclusively be deemed to waive all liens with respect to said Work to which the **Contractor** may then be entitled, provided that such waiver of the lien rights shall not waive the **Contractor's** right to payment for such Work.

**15.2.4.** The **Contractor** warrants and guarantees that title to all Work, materials, and equipment covered by any application for payment, whether incorporated in the Project or not, will pass to the **CRA** no later than the time of payment free and clear of all liens.

**15.2.5.** No materials or supplies for the Work shall be purchased by the **Contractor** or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by

which an interest is retained by the seller. The **Contractor** warrants that it has good title to all materials and supplies used by it in the Work, free from all liens, claims and incumbrances.

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

### **15.3. Extended Warranties and Guarantees.**

**15.3.1.** Any defective Work that is either corrected or replaced will be warranted and guaranteed for a period of one (1) year from the date of such correction or replacement.

## **ARTICLE 16 CLAIMS**

### **16.1. In General.**

**16.1.1. Written Notice.** A Claim must be made by written notice to the other party.

**16.1.2. Content of Notice.** The notice must include all written supporting data.

**16.1.3. Burden of Proof.** The party making the Claim must substantiate the Claim.

### **16.2. Time Limits on Claims.**

**16.2.1.** Unless otherwise provided, all Claims must be made within twenty-one (21) days after the occurrence of the event giving rise to such Claim or within twenty-one (21) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Any change or addition to a previously made Claim shall be made by a written notice within the twenty-one-day period in order to be valid.

### **16.3. Continuing Contract Performance.**

**16.3.1.** Pending final resolution of a Claim including arbitration, unless otherwise agreed in writing, the **Contractor** shall proceed diligently with performance of the Contract and the **CRA** shall continue to make payments in accordance with the Contract Documents.

### **16.4. Types of Claims.**

**16.4.1. Claims for Differing Subsurface or Latent Physical Conditions.** (*Reference: M.G.L. c. 30, §39N*). If, during the progress of the Work, the **Contractor** or the **CRA** discovers that the actual subsurface or latent physical conditions encountered at the Site differ substantially or materially from those shown on the Drawings or indicated in the Contract Documents, either the **Contractor** or the **CRA** may request an equitable adjustment in the Contract Sum of the Contract applying to Work affected by the differing Site conditions. A request for such an adjustment shall be in writing and shall be delivered



by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a **Contractor**, or upon its own initiative, the **CRA** shall make an investigation of such physical conditions, and if they differ substantially or materially from those shown on the Drawings or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Drawings and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the **CRA** shall make an equitable adjustment in the Contract Sum and the Contract shall be modified in writing accordingly.

**16.4.2. Claims for Additional Cost.** If the **Contractor** claims that any acts or omissions of the **CRA** or the **Engineer**, including any instructions or orders, whether oral, written, by drawings, or otherwise, involve extra cost or time, and the **Contractor** has not received a written acknowledgment by the **CRA** or the **Engineer** that extra payment will be made or time extended on account thereof, the **Contractor** shall promptly so notify the **Engineer** in writing of such Claim and shall proceed with the Work relating to such Claim and all rights of both parties with respect to such Claim shall be deemed to have been reserved. No Claim by the **Contractor** on account of such acts, omissions, instructions, or orders shall be valid unless the **Contractor** has so notified the **Engineer** before proceeding.

**16.4.2.1.** Under no circumstances shall a Claim be made for additional cost where adverse weather conditions are the basis for the Claim.

**16.4.3. Claims for Additional Time.** If the **Contractor** wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The **Contractor** shall have the burden of demonstrating the effect of the claimed delay on the Contract Time and shall furnish the **Engineer** with such documentation relating thereto as the **Engineer** may reasonably require. Under no circumstances shall the **Contractor** make a Claim for an increase in the Contract Time due to a change in the **Contractor's** early completion date. If the increase in the Contract Time extends beyond the Contract Time established by the **CRA**, only the time that so extends beyond the Contract Time shall be reviewed and considered. In the case of a continuing delay, only one Claim is necessary.

**16.4.3.1.** Under no circumstances shall a Claim be made for additional time where adverse weather conditions are the basis for the Claim.

**16.4.4. Claims for Injury to Person or Damage to Property.** Should either party to the Contract suffer injury to person or damage to property because of any error, omission, or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, a Claim will be made in writing to the other party within twenty-one (21) days of the occurrence of the act giving rise to the injury or damage.

## **16.5. Review of Claims.**

**16.5.1. Initial Referral.** All Claims, the bases of which arise prior to final payment or the earlier termination of the Contract, shall be referred initially to the **Engineer** for action as provided herein.

**16.5.2. Time Period and Action.** The **Engineer** shall review Claims and shall do one of the following within fourteen (14) days of receipt of the Claim:

**16.5.2.1.** defer any action with respect to all or any part of a Claim for the purpose of requesting and receiving additional information from either party;

**16.5.2.2.** decline in writing to render a decision for any reason which it deems appropriate (including, but not limited to, the fact that the Claim involves allegations of fault on the part of the **Engineer**); or

**16.5.2.3.** render a decision on all or a part of the Claim.

**16.5.3.** If the **Engineer** requests additional information, the **Engineer** shall take action with respect to the Claim no later than fourteen (14) days after receipt of the additional information. The **Engineer** shall notify the parties in writing of its disposition of such Claim. If the **Engineer** renders a decision or declines to render a decision, either party may proceed in accordance with paragraph 16.7.

## **16.6. Decisions.**

**16.6.1. Decisions by the CRA or the Engineer.** (*Reference: M.G.L. c. 30, §39P*). In every case in which this Contract requires the **CRA**, any official, or its **Engineer** to make a decision on interpretation of the Specifications, approval of equipment, material or any other approval, or progress of the Work, the decision shall be made promptly and, in any event, no later than fourteen (14) days after the written submission for decision; but if such decision requires extended investigation and study, the **CRA**, the official, or the **Engineer** shall, within fourteen (14) days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty-day period and the date by which the decision will be made.

**16.6.2. When Decision of the Engineer is Final and Binding.** The decision of the **Engineer** shall be final and binding on the parties, unless a party files suit or a demand for arbitration within thirty (30) days after the date of the decision.

**16.6.3. When Decision of the Engineer is Not Final and Binding.** (*Reference: M.G.L. c. 30, §39J*). Notwithstanding any contrary provision of this Contract, no decision by the **CRA** or by the **Engineer** on a dispute, whether of fact or of law, arising under said Contract shall be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, arbitrarily, is unsupported by substantial evidence, or is based upon error of law.

**16.6.4. Resolved Claims.** If a Claim is resolved, the **Engineer** shall obtain or prepare the appropriate documentation and provide the **CRA** and the **Contractor** with a copy of same.

## **16.7. Arbitration.**

**16.7.1. Controversies and Claims Subject to Arbitration.** Any controversy of Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies of Claims relating to aesthetic effect, subject to the provisions of paragraph 16.7.7. In any such arbitration in which the amount stated in the demand is \$100,000 or less, the American Arbitration Association shall appoint a single arbitrator in accordance with such Rules, who shall be a lawyer. In any such arbitration in which the amount stated in the demand is in excess of \$100,000, the demand shall include the name of an arbitrator appointed by the claimant. The respondent shall appoint a second arbitrator and shall notify the claimant in writing of such appointment within thirty (30) days of receipt of the demand, failing which the matter shall be decided by the arbitrator named in the claimant's demand. Within thirty (30) days after the claimant's receipt of notice of the appointment of the second arbitrator, the two arbitrators shall appoint a neutral arbitrator and shall notify the parties in writing of such appointment, failing which either party may apply to the American Arbitration Association to appoint such neutral arbitrator. If such neutral arbitrator is appointed by the American Arbitration Association, he or she shall be a lawyer.

**16.7.2. Rules for Arbitration.** If the neutral arbitrator is appointed by the American Arbitration Association, the said Association shall administer the arbitration and its Construction Industry Arbitration Rules shall govern all aspects of the proceeding including the enforcement of any award. If the neutral arbitrator is not appointed by the American Arbitration Association, then the panel of arbitrators shall act as the administrator of the arbitration but the Construction Industry Arbitration Rules of the Association shall nonetheless govern all aspects of the proceeding, including the enforcement of any award, provided however that the arbitration panel shall have all of the powers and duties conferred on the Association

pursuant to said rules. In addition, the following rules shall govern the selection of arbitrators and the proceedings:

**16.7.2.1.** Neither party may appoint as arbitrator an employee or an owner of that party, nor the parent, spouse, or child of an employee or owner of that party.

**16.7.2.2.** After the neutral arbitrator has been appointed, neither party may engage in *ex parte* communication with any arbitrator.

**16.7.3. When Arbitration May Be Demanded.** Demand for arbitration of any Claim, the basis of which arises prior to final payment or the earlier termination of the Contract may not be made before the earlier of (1) the date on which the **Engineer** has rendered a written decision on the Claim or has notified the parties in writing that such decision will not be rendered or (2) forty-five (45) days following receipt by the **Engineer** of a written request for a decision sent by registered or certified mail to both the **Engineer** and the other party to this Contract.

**16.7.3.1.** In no event shall a demand for arbitration be made after the date when the institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations.

**16.7.4. Limitation on Consolidation or Joinder.** No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the **Engineer**, the **Engineer's** employees or consultants, except by written consent containing specific reference to the Contract and signed by the **Engineer**, the **CRA**, the **Contractor**, and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the **CRA**, the **Contractor**, a separate contractor, and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the **CRA**, the **Contractor**, or a separate contractor shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity so named or described herein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Contract shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

**16.7.5. Claims and Timely Assertion of Claims.** A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a Claim through oversight, inadvertence, or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

**16.7.6. Award Final.** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

**16.7.7. The CRA's Reservation of Rights.** Notwithstanding any provision contained in this Article 16 or elsewhere in the Contract Documents, the **CRA** reserves the following rights in connection with Claims between the **CRA** and the **Contractor**, which rights may be exercised by the **CRA** unilaterally, in the **CRA's** sole discretion, and without the consent of the **Contractor**:

**16.7.7.1.** the right to institute legal action against the **Contractor** in any court of competent jurisdiction in lieu of demanding arbitration, in which case the dispute or disputes which are the subject of such action shall be decided by such court, and not by arbitration;

**16.7.7.2.** the right to obtain from any court of competent jurisdiction a stay of any arbitration instituted by the **Contractor**, provided that the application for such stay is made before

the appointment of the neutral arbitrator in such arbitration, in which case the dispute or disputes which are the subject of such arbitration shall be decided by such court and not by arbitration;

**16.7.7.3.** the right to require the **Contractor** to join as a party in any arbitration between the **CRA** and the **Engineer** relating to the Project, in which case the **Contractor** agrees to be bound by the decision of the arbitrator or arbitrators in such arbitration.

**16.7.8.** In case the **CRA** elects to proceed in accordance with 16.7.7.1. or 16.7.7.2. above, the word "litigation" shall be deemed to replace the word "arbitration" wherever the latter word appears in the Contract Documents.

## **ARTICLE 17 EMERGENCIES**

**17.1.** In an emergency affecting the health and safety of persons or property, the **Contractor** shall act to prevent threatened damage, injury, or loss.

**17.2.** In emergencies affecting the health, safety, or protection of persons, the Work or property at the Site or adjacent thereto, the **Contractor**, without special instruction or authorization from the **CRA** or the **Engineer**, is obligated to act to prevent threatened damage, injury, or loss. The **Contractor** shall give the **Engineer** prompt written notice if the **Contractor** believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the **Engineer** determines that a change in the Contract Documents is required because of the action taken by the **Contractor** in response to such an emergency, a Work Change Directive or Change Order will be issued to document the consequences of such action.

## **ARTICLE 18 TERMINATION OR SUSPENSION OF THE CONTRACT**

### **18.1. Suspension by the CRA.**

**18.1.1.** At any time and without cause, the **CRA** may suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to the **Contractor** and the **Engineer** which will fix the date on which Work will be resumed. The **Contractor** shall resume Work on the date so fixed. The **Contractor** shall be allowed an adjustment in the Contract Sum or an extension of the Contract Time, or both, directly attributable to any such suspension if the **Contractor** makes an approved Claim therefor.

**18.1.2.** If the Work is defective, if the **Contractor** fails to provide a sufficient number of skilled workers or suitable materials or equipment, or if the **Contractor** defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the **CRA** to begin and prosecute correction of such default or neglect with diligence and promptness, the **CRA** may correct such deficiencies, without prejudice to other remedies the **CRA** may have. In such case, an appropriate Work Change Directive shall be issued deducting from payments then or thereafter due to the **Contractor** the cost of correcting such deficiencies including compensation for the **Engineer's** additional services and expenses made necessary by such default, neglect, or failure and any and all direct, indirect, or consequential costs associated with the order to stop the Work. If such payments then or thereafter due the **Contractor** are not sufficient to cover such amounts, the **Contractor** shall immediately pay the difference to the **CRA**. The **Contractor** shall remain responsible for maintaining progress and shall not be entitled to any increase in the Contract Time or the Contract Sum.

### **18.2. Termination by the Contractor.**

**18.2.1.** If, through no act or fault of the **Contractor**, a Subcontractor, or a Sub-subcontractor, the Work is suspended for a period of more than ninety (90) days by the **CRA**, or under an order of court or other public authority, or the **Engineer** fails to act on any application for payment within thirty (30) days

after it is submitted in proper form and content or the **CRA** fails for thirty (30) days to pay the **Contractor** any sum finally determined to be due, then the **Contractor** may terminate the Contract upon seven (7) days' written notice to the **CRA**, provided that the **CRA** does not remedy such suspension or failure within that time.

### **18.3. Termination by the CRA.**

**18.3.1.** If the **Contractor** is adjudged a bankrupt, or if the **Contractor** makes a general assignment for the benefit of the **Contractor's** creditors, or if a receiver is appointed on account of the **Contractor's** insolvency, or if the **Contractor** persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if the **Contractor** fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction or disregards an instruction, order, or decision of the **Engineer**, or otherwise is guilty of substantial violation of any provision of the Contract, then the **Contractor** shall be in default, and the **CRA** may, without prejudice to any other right or remedy and upon written notice to the **Contractor**, take possession of all materials, tools, appliances, equipment, construction equipment and machinery and vehicles, offices and other facilities on the Project Site, and all materials intended for the Work, wherever stored, and, seven (7) days after such notice, may terminate the employment of the **Contractor**, accept assignment of any or all subcontracts pursuant to Paragraph 6.6.1.1 and finish the Work by whatever method the **CRA** may deem expedient. The **CRA** shall be entitled to collect from the **Contractor** all direct, indirect, and consequential damages suffered by the **CRA** on account of the **Contractor's** default, including without limitation additional services and expenses of the **Engineer** made necessary thereby. The **CRA** shall be entitled to hold all amounts due to the **Contractor** at the date of termination until all of the **CRA's** damages have been established, and to apply such amounts to such damages.

**18.3.2.** (*Reference: Cambridge Municipal Code Chapter 2.117, Section 2.117.110C*). In the event the **Contractor** or any of its agents or employees violates any provision of Cambridge Municipal Code Chapter 2.117, the **CRA** may terminate the Contract.

### **18.3.3. Termination by the CRA for Convenience.**

**18.3.3.1** The **CRA** may, at any time, terminate any portion of the Work or all of the Work, the Contract or any Subcontract for the **CRA's** convenience and without cause by giving five (5) days prior written notice to the **Contractor** specifying the portion of the Work or the Contract, Subcontract or Design-Build Contract to be terminated and the effective date of termination. The **Contractor** shall continue to prosecute the portion of the Work not terminated.

**18.3.3.2** Upon receipt of written notice from the **CRA** of such termination for the **CRA's** convenience, the **Contractor** shall:

- .1 cease operations as directed by the **CRA** in the notice;
- .2 take actions necessary, or that the **CRA** may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontracts and purchase orders except for the subcontracts and purchase orders, if any, that the **CRA** elects to assume, terminate all purchase orders and enter into no further contracts and purchase orders.

**[18.3.3.3** In case of such termination for the **CRA's** convenience, the **Contractor** shall be entitled to receive payment for Work properly executed in accordance with the Contract and for costs incurred by the **Contractor** directly related to the termination of the Work, including reasonable demobilization and cancellation charges provided such costs for performing the Work are authorized in advance by the **CRA** (e.g., approval by the **CRA** of a subcontract for a portion of the terminated Work). No payment shall be made by the **CRA**, however, to the extent that such Work or subcontract is, was, or could have been, terminated without payment to the **Contractor** under the Contract Documents or if an equitable

adjustment is made or denied under another provision of the Contract Documents. In the event of termination for the **CRA's** convenience, the **CRA** will issue a Construction Change Directive or authorize a Change Order making any required adjustment to Contract Time and/or the Contract Sum. For the remainder of the Work, the Contract Documents shall remain in full force and effect.

**18.3.3.4** The **Contractor** shall not be entitled to consequential or incidental damages, including, but not limited to, damages for loss of anticipated profits on Work not performed, on account of any termination described in Section 18.3.3. Upon a determination by a court of competent jurisdiction that termination of the **Contractor** pursuant to Section 18.3.1 or 18.3.2 was wrongful, such termination will be deemed converted to a termination for convenience pursuant to Section 18.3.3 and the **Contractor's** remedy for wrongful termination shall be limited to the recovery of the payments for termination for convenience as set forth in Section 18.3.3.3.]

## **ARTICLE 19 EMPLOYMENT AND HIRING REQUIREMENTS**

**19.1.** The **Contractor** must comply with the following as set forth in the bidding package for this project: (a) Minority/Women Hiring Requirements For Grand Junction Path & Pedestrian Improvements, Contract No. 16, (b) Responsible Employer Requirements For Grand Junction Path & Pedestrian Improvements, Contract No. 16; (c) MBE Requirements For Grand Junction Path & Pedestrian Improvements, Contract No. 16; and (d) the Americans with Disabilities Act (42 U.S.C. 1231)..

**19.2.** If the **Contractor** does not comply with any of the foregoing requirements and has not made every reasonable effort to so comply, the **CRA** may, but shall be not be required to take any or all of the following steps: (a) suspend work on the project until compliance is obtained; (b) withhold payment due under any contract or subcontract until compliance is obtained; (c) permanently remove the **Contractor** or the noncomplying subcontractor from any further work on the project; (d) bar the **Contractor** or the noncomplying subcontractor from performing any work on any future CRA projects; (e) notify the **City**, the Massachusetts Department of Transportation and/or the Division of Capital Asset Management of the Contractor's or subcontractor's noncompliance; and (f) assess liquidated damages in an amount up to a total of five percent of the contract price for all such violations.

**19.3.** The foregoing rights and remedies in this Article 19 are in addition to and do not limit any other rights and remedies that the **CRA** may have under this contract.

## **ARTICLE 20 WRITTEN NOTICE TO THE PARTIES**

### **20.1. In General.**

20.1.1. All written communications from the **Engineer** to the **Contractor** shall be copied to the **CRA**. All written communications from the **Contractor** to the **Engineer** shall be copied to the **CRA**. All written communications from the **Contractor** to the **CRA** shall be copied to the **Engineer**.

### **20.2. Addresses.**

**20.2.1. To the CRA.** Written notice to the **CRA** shall be sent or hand-delivered to:

Executive Director  
Cambridge Redevelopment Authority  
255 Main Street, 4<sup>th</sup> Floor  
Cambridge, MA 02142

**20.2.2. To the Contractor.** Both the address given on the bid form upon which the Agreement is founded and the **Contractor's** office at or near the Site of the Work are hereby designated as places to either of which notices, letters, and other communications to the **Contractor** shall be certified, mailed, or delivered. Delivery of any notice, letter, or other communication to the **Contractor** at or depositing same in a postpaid wrapper directed to either place shall be deemed sufficient service thereof upon the **Contractor**. Written notice shall be deemed to have been duly served on the **Contractor** if it is sent or hand-delivered to any member or officer of the **Contractor**. The date of said service shall be the date of such delivery or mailing. The address may be changed at any time by an instrument in writing, executed and acknowledged by the **Contractor** and delivered to the **CRA** and to the **Engineer**. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon the **Contractor** personally. Moreover, any notice, letter, or other communication required under the Contract may be served on the **Contractor's** representative at job meetings. The **Contractor** shall provide the **CRA** with its change of address seven (7) days prior to its effective date.

**20.2.3. To the Engineer.** Written notice to the **Engineer** shall be sent or hand-delivered to the address appearing on the Project Manual. Written notice shall be deemed to have been duly served on the **Engineer** if it is sent or hand-delivered to any member or officer of the **Engineer**.

## **ARTICLE 21 MISCELLANEOUS PROVISIONS**

### **21.1. Governing Law.**

**21.1.1.** This Contract shall be governed by the laws of the Commonwealth of Massachusetts.

### **21.2. Venue.**

**21.2.1.** Venue for any court action or proceeding shall be Middlesex County in the Commonwealth of Massachusetts only. The **Contractor**, all Subcontractors, and Suppliers waive any and all jurisdictional and venue defenses.

### **21.3. Successors and Assigns.**

**21.3.1.** The **Contractor** shall not assign, in whole or in part, its rights and obligations under the Contract Documents without prior written consent of the **CRA**. An assignment without the prior written consent of the **CRA** shall not relieve the **Contractor** of its obligations thereunder.

**21.3.2.** The **CRA** and the **Contractor** respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents.

### **21.4. Statutory Limitation Period.**

**21.4.1.** It is expressly agreed that the obligations of the **Contractor** hereunder arise out of contractual duties, and that the failure of the **Contractor** to comply with the requirements of the Contract Documents shall constitute a breach of contract, not a tort, for the purpose of applicable statutes of limitations and repose. Any cause of action which the **CRA** may have on account of such failure shall be deemed to accrue only when the **CRA** has obtained actual knowledge of such failure, not before.

### **21.5. Rights and Remedies.**

**21.5.1.** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

**21.5.2.** No action or failure to act by the **CRA**, the **Engineer**, or the **Contractor** shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

**THIS IS THE END OF THE GENERAL TERMS AND CONDITIONS**



DOCUMENT 00811  
SPECIAL PROVISIONS  
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES  
ENGLISH UNITS  
Revised: 02/02/2009

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

The Price Adjustment will be based on the variance in price for the liquid asphalt component only from the Base Price to the Period Price. It shall not include transportation or other charges. This Price Adjustment will occur on a monthly basis.

**Base Price**

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

**Period Price**

Please note that, starting December 15, 2008, two sets of period prices will be posted each month on the MassHighway website at <http://www.mhd.state.ma.us/>. They will be labeled "New Asphalt Period Price Method" and "Old Asphalt Period Price Method".

**New Asphalt Period Price Method**

The "New Asphalt Period Price Method" is for contracts bid after December 15, 2008 and will show the Period Price of liquid asphalt for each monthly period as determined by MassHighway using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. MassHighway will post this Period Price on this website within two (2) business days following their receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted MassHighway the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor.

**Old Asphalt Period Price Method**

The "Old Asphalt Period Price Method" Period Price will be for contracts bid on or before December 15, 2008 and will contain liquid asphalt prices as determined by the old or previous method. These prices will continue to be posted on MassHighway's website until all contracts using the "Old Asphalt Period Price Method" Period Price have been closed.

**New and Old Asphalt Period Price Methods**

The paragraphs below apply to both the New and the Old Asphalt Period Price Methods.

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

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

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of tons of hot mix asphalt mixtures placed during each monthly period times the liquid asphalt content percentage times the variance in price between Base Price and Period Price of liquid asphalt.

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

**DOCUMENT 00812  
SPECIAL PROVISIONS  
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE –  
ENGLISH UNITS**

Revised: 09/26/2009

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

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

The Base Price of Diesel Fuel and Gasoline will be the price as indicated in the Department's web site ([www.mhd.state.ma.us](http://www.mhd.state.ma.us)) for the month in which the contract was bid, which includes State Tax. The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month.

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

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

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

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

**ITEMS COVERED FUEL FACTORS**

**Excavation and Borrow Work:**

	<b>Diesel</b>	<b>Gasoline</b>
Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 141.1 142, 143, 144., 150, 150.1, 151 and 151.1	0.29 Gallons / CY.	0.15 Gallons / CY

**Surfacing Work:**

All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply
--------------------------------------	--------------------	----------------

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

DOCUMENT 00814

SPECIAL PROVISIONS  
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES

January 12, 2009

This provision applies to all projects using greater than 100 Cubic Yards (76 Cubic Meters) of Portland cement concrete containing Portland cement as stipulated in the Notice to Contractors section of the Bid Documents. This Price Adjustment will occur on a monthly basis.

The Price Adjustment will be based on the variance in price for the Portland cement component only from the Base Price to the Period Price. It shall not include transportation or other charges.

The Base Price of Portland cement on a project is a fixed price determined at the time of bid by the Department by using the same method as for the determination of the Period Price (see below) and found in the Notice to Contractors.

The Period Price of Portland cement will be determined by using the latest published price, in dollars per ton (U.S.), for Portland cement (Type I) quoted for Boston, U.S.A. in the Construction Economics section of *ENR Engineering News-Record* magazine or at the ENR website <http://www.enr.com> under Construction Economics. The Period Price will be posted on the MassHighway website the Wednesday immediately following the publishing of the monthly price in ENR, which is normally the first week of the month.

The Contract Price of the Portland cement concrete mix will be paid under the respective item in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the work has been performed, using the monthly period price for the month during which the work was performed.

The price adjustment applies only to the actual Portland cement content in the mix placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M4.02.01. No adjustments will be made for any cement replacement materials such as fly ash or ground granulated blast furnace slag.

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of cubic yards of Portland cement concrete placed during each monthly period times the Portland cement content percentage times the variance in price between the Base Price and Period Price of Portland cement.

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

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

\*\*\*\*\*  
\*

END OF DOCUMENT

# SUPPLEMENTAL CONDITIONS

## 1. PROPOSED PROJECT LOCATION (Approximate limits)

### ■ Northwest side of Galileo Galilei Way from Main Street to Broadway Street

The work at this location includes granite curbing, concrete sidewalk, HMA shared use path, and curb ramp construction, tree removal, tree planting, pavement markings, signage, coordination and installation of water infrastructure and drainage improvements. See Contract drawings for a more detailed scope of work.

## 2. SPECIFICATIONS AND DETAILS

**It is of utmost importance that the Contractor thoroughly understands the contract documents and specifications in their entirety and that this knowledge is shared with all staff and Subcontractors. The Contractor shall be responsible for Subcontractor compliance with all plans and specifications.**

**Any work that does not meet the specifications established in the contract documents shall be removed and properly replaced at no charge to the CRA.**

## 3. COORDINATION

The Contractor shall designate a contact person and furnish relevant telephone numbers for use by the Cambridge Redevelopment Authority (CRA) during work hours and during job related emergencies throughout the duration of the contract. In case of an emergency contact after work hours, the Contractor shall respond within one hour to (617) 349-4860/4862 and 617-947-0256, and shall be present, if necessary, at the job-site within three hours of initial contact.

The Contractor shall have a working foreperson on the job site at all times during construction.

Names of the Contractor's contact people shall be given to the CRA prior to start of construction.

## 4. WORK HOURS

Work hours shall be 7:00 a.m. through 4:00 p.m. Monday through Friday only (except as noted below). No weekend or holiday work shall be allowed except during emergencies and as noted herein.

A list of the City holidays will be supplied by the CRA upon the awarding of the contract.

No work shall be permitted during MIT Commencement.

## 5. TRAFFIC CONTROL

This section specifies maintenance and protection of vehicular, bicycle and pedestrian traffic during construction and other safety control devices and requirements for the protection of the traveling public and working personnel during construction and related operations, as approved by the City.

**Traffic Management Plan:** Before starting any work under this Contract, the Contractor shall prepare a plan that indicates the traffic routing proposed by the Contractor during the various stages and time periods of the work, and the temporary pedestrian and construction facilities, temporary barricades, gender neutral signs, drums, and other traffic control devices to be employed during each stage and time period of the work, to maintain traffic and cyclist and pedestrian access to abutting properties. Particular care shall be taken to establish and maintain methods and procedures that will not create unnecessary or unusual hazards to public safety. Traffic control devices required only during working hour operations shall be removed at the end of each working day. The Contractor shall submit the aforementioned Traffic Management Plan for approval by the CRA and/or the City. Implementation shall begin only after the plan has been reviewed and approved by the City and/or the CRA.

The Contractor must provide barrels, (detour) signs, flashers, channeling devices, lights, and arrow boards. The design, application, and installation of all devices required by this section shall conform to the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) and Part VI of the Manual on Uniform Traffic Control Devices, published by U.S. DOT, latest edition, Americans with Disabilities Act (ADA), Massachusetts Architectural Access Board (MAAB), and the Commonwealth of Massachusetts, Department of Transportation Standard Specifications for Highways and Bridges, latest edition except as modified herein. **All traffic signs provided by the Contractor must be gender-neutral.**

**Separate measurement or payment will be made for Traffic Control work as stated Technical Specifications.** All preparation of traffic management plans, construction signs, cones, drums, barricades, flashers, lights, pavement markings and other temporary traffic control devices necessary for compliance with the requirements of this Section, shall be furnished and installed by the Contractor.

## **6. POLICE DETAILS**

Scheduling Police Details shall be the responsibility of the Contractor. A Police Detail is to be present during all construction activity. To schedule a detail officer, call (617) 349-3350. The Cambridge Police Department requires 24-hour advance notice to obtain a Police Detail, except in emergencies and 4-hour advance notice to cancel a detail.

The Contractor shall coordinate all work with the police officers including but not limited to: locations of work, delivery of materials, equipment movement, required traffic management and schedules.

The Contractor must submit all signed detail forms to the project managers or engineer, so that Public Works can pay all submitted and approved Police detail invoices. Any invoices that are not approved will be the responsibility of the contractor to pay.

The City of Cambridge Police Department shall bill the Cambridge Redevelopment Authority or whatever department has oversight of the contract for the services of uniformed police officers provided by the Police department

The Contractor will be required to reimburse Cambridge Redevelopment Authority or whatever department has oversight of the contract for Police Details, if the Contractor fails to show for the job or if the Contractor fails to cancel the detail with adequate advance notice.

## **7. CONSTRUCTION SCHEDULE & PROJECT SEQUENCE**

At the time the Contractor receives contract documents for execution, the Contractor must contact the Cambridge Redevelopment Authority and the Engineer relative to scheduling of the work. The Contractor shall submit to the Engineer an estimated construction progress schedule showing the proposed dates of commencement, critical path and completion of each major phase of work. A detail schedule of work to be undertaken within the first three-week period shall also be provided.

The Contractor shall update and submit the “three-week” schedule on a weekly basis, and shall update the overall “Master Schedule” every eight weeks.

### **SPECIAL REQUIREMENTS**

- 1. The Contractor shall substantially complete the project during the 2015 construction season.**
- 2. Landscaping, plantings and punchlist may be completed in the spring.**

## **8. SUBMITTALS**

Before work commences the Contractor shall prepare and submit to the CRA certifications of materials and equipment called for in the specifications. Such submittals are subject to review and acceptance by the Engineer. Such acceptance does not relieve the Contractor of performance of work in compliance with plans and specifications.

Unless otherwise specifically directed by the Engineer all samples shall be of the precise article proposed to be furnished. The Engineer will consider proposals for substitutions of materials, equipment and methods only when such proposals are accompanied by full and complete technical data and all other information required by the Engineer to evaluate the proposed substitution.

Do not substitute materials, equipment or methods unless such substitution has been specifically accepted for this work by the Engineer.

## **9. VIDEOTAPING PRIOR TO CONSTRUCTION**

It shall be the Contractor's responsibility to videotape the entire area of construction in advance of the start of work. It is of utmost importance to show the street line as well as all private and public property defects to minimize any claims of private property damage. It shall be the Contractor's responsibility to prove that such a defect existed prior to the start of the work. If the Contractor cannot prove damage to be a pre-existing condition, the necessary repairs shall be made at the expense of the Contractor.

A copy of the videotape must be conveyed to the CRA and/or Engineer in advance of the start of work. This work will be considered incidental to the work of this Contract.

## **10. PERMITS**

It shall be the responsibility of the Contractor to apply for and receive all necessary permits before the start of work. Copies of all permits **must be on the job site at all times** for inspection (except for emergency repair work). Failure to have the permit available may result in suspension of the rights granted by the permit.

#### **11. POSTING OF TEMPORARY SIGNS: "EMERGENCY, NO PARKING"**

Only authorized City of Cambridge "Emergency, No Parking" signs shall be allowed. Signs are available at the Public Works Department.

The Contractor shall pick up the authorized City signs from the Public Works Department after receipt of the appropriate permits. The Contractor shall fill in the date, time and reason where indicated on the sign with a permanent waterproof black marker.

It shall be the responsibility of the Contractor to post an adequate number of signs at the appropriate construction locations at least twenty-four (24) hours prior to needing access to metered parking areas; and at least forty-eight (48) hours prior to needing access to residential parking areas.

When the signs have been posted, the Contractor shall notify the Traffic & Parking Office by e-mail [jparenti@cambridgema.gov](mailto:jparenti@cambridgema.gov) and specify the streets that have been posted. The Traffic & Parking Office will log the information.

Towing will only be allowed at verified locations after all of the above procedures have been followed. If any vehicle is found to be tagged and/or towed without adequate advance warning, the Contractor shall reimburse the City of Cambridge, Traffic Parking and Transportation Department the cost of the towing charges incurred by the vehicle owner.

Signs shall only be posted for the date and time that actual construction will take place. No signs shall be posted for more than five working days. Signs shall be removed immediately following completion of construction. **Signs must be removed and parking made available if the contractor will not be on site on a particular day.**

Posting of temporary signs shall be considered incidental to the work of this Contract.

#### **12. CATCH BASIN AND MANHOLE PROTECTION**

The Contractor shall identify all sewer manholes, storm drain manholes and storm drain catch basins within the proposed construction limits. The Contractor must then take all reasonable precautions to protect these structures during construction.

The Contractor shall line all catch basins with Silt Sacs and other materials necessary for erosion and sedimentation control. Silt Sacs used to line catch basins must be removed prior to any inclement weather and reinstalled at the direction of the **CRA** and/or the **City**. This work will be considered incidental to the work of the Contract. Filter fabric should not be used to protect catch basins.

Should infiltration of unsuitable material into drainage structures take place, the Contractor shall be responsible for the cleaning of the structure, disposal of material, and a final TV inspection at no cost to the City or the CRA.

**13. USE OF CITY HYDRANT**

In accordance with rules and regulations of the Massachusetts Department of Environmental Protection and the City of Cambridge Water Department, the Contractor is required to provide a backflow preventer and to obtain a permit from the Water Department at (617) 349.4770 before using any hydrant within the City.

**The City will shut down any jobs violating this provision.**

**14. WEATHER CONDITIONS**

The mixture of cement concrete sidewalk or bituminous concrete shall not be placed when weather conditions of fog or rain prevail or when the pavement surface shows signs of free moisture. In the event of temporary suspension of work or during stormy weather, or whenever the Engineer shall direct, the Contractor shall take all steps necessary to protect their work and materials against damage or injury from the weather and shall direct all subcontractors to do the same.

**15. INSPECTION AND TESTING OF MATERIALS**

The inspection and sampling of materials will be carried out at the source in accordance with established policies and procedures of the Massachusetts Department of Transportation, Highway Division (MassDOT). The Cambridge Redevelopment Authority and City of Cambridge shall not be responsible or assume any obligation for the inspection and sampling of the materials at the source. The Contractor shall be required, if requested, to provide certification of material compliance with the specification.

All materials and workmanship shall be subject to inspection, examination and testing at all times during or as a result of construction.

The CRA shall contract with an inspection agency and shall pay for all initial testing and laboratory inspection. The Contractor shall assume all costs for re-testing materials which fail to meet contract requirements City standards as presented in the specifications.

**16. SITE CLEAN-UP**

The Contractor shall perform work in a manner to minimize dust and collection of debris. The actual work area shall be minimized and maintained daily. The Contractor shall sweep the work area and remove and legally dispose of surplus excavated material and debris during the progress of the work and at the close of each day. **Particular attention shall be paid to daily clean-up on residential properties which abut the work zone.**

Upon completion of the work, the Contractor shall remove debris and unused materials and perform procedures necessary to leave the project area and adjacent affected areas in a neat and clean condition.

**17. STORAGE OF EQUIPMENT/MATERIALS**



The Contractor shall procure and maintain, at its own expense, a staging area for general construction materials within fifteen (15) miles of Cambridge City limits. Work may not begin on this Contract until after the staging area is identified and approved by the Engineer.

No equipment shall be stored within the limit of the roadway or sidewalk without the permission of the Engineer.

The Contractor will not store more material on site than will be used in one week. Any equipment or material stored on site shall be properly secured and located outside pedestrian or vehicular travel lanes.

**The Contractor shall pay particular attention to ensuring that no equipment or materials is stored on private property abutting the City's right-of-way.**

## **18. ESTIMATES AND PAYMENTS**

On a monthly basis or as directed by the Engineer, the Engineer and the Contractor shall agree upon a time to meet on site, verify quantities, and prepare an estimate for payment request.

The Contractor shall submit all certified copies of paid invoices to the Engineer. A 5% retainage will be held from each payment request.

Upon satisfactory completion of the work, the retainage shall be released to the Contractor. Partial release of retainage may take place at the discretion of the Engineer.

## **19. TREE PROTECTION DURING CONSTRUCTION**

NOTE: Requirements for Tree Protection may be found in the Section 900 Technical Specifications.

## **20. GRADING**

During the course of construction, adjacent travel lanes with greater than 1" difference in grade shall be appropriately separated with barrels and signage in conformance with Part VI of the MUTCD. At the end of each work day, all grade transitions and utility structures shall be feathered with asphalt or, with the Engineer's approval, protected with reflectorized drums with flashers and appropriate signage.

Prior to the start of construction, the Contractor shall review grading requirements and provide a detailed excavation and pavement reconstruction schedule with specific work procedures to maintain safety at all times for vehicles, bicycles and pedestrians and also maintain drainage.

## **21. DRAINAGE**

During construction, drainage shall be maintained at all times by the Contractor. Catch basin relocations and installations shall be accomplished in coordination with the installation of curb.

## **22. WATER LINES**

Any damage done to City water lines, hydrants, structures or private services will be repaired in accordance

with the Cambridge Water Department specifications. If a City Representative determines the damages occurred due to Contractor negligence, such as tapping a service or a water main with a backhoe or operating a hydrant incorrectly, the contractor shall repair the damage at no additional expense to the City or the CRA.

### **23. JOB-SITE SAFETY**

All construction activity shall conform to the latest OSHA standards and other applicable safety standards.

At all times during the course of the work and especially after hours and on weekends, the Contractor shall adequately secure the site to the satisfaction of the CRA, the City and/or Engineer.

No debris, materials, vehicles, equipment, etc. shall be left or stored on the job site overnight unless approved by the owner and/or Engineer. Any equipment or material permitted to be stored on-site shall be properly secured and located outside pedestrian or vehicular travel lanes.

### **24. RODENT CONTROL**

The Contractor shall be required to provide the services of a Massachusetts state licensed experienced rodent control person whose duties shall be to identify rodent activity or infestation resulting from the construction activity under this contract and to take approved and professionally acceptable remedial action, including baiting, elimination of sources of harborage and making recommendations that may be necessary in controlling and/or eliminating rodent activity. Rodent control is incidental to the contract work. The licensed person shall maintain a close liaison with the CRA and/or Engineer for the duration of construction. The rodent control person employed by the Contractor shall visit the site at least every 30 days and keep careful records of his/her activity; these shall be transmitted through the Contractor to the CRA and/or Engineer.

### **25. PROGRESS MEETINGS**

The Contractor shall be available for all meetings required by the CRA and/or Engineer to coordinate the successful completion of the Contract.

The Contractor must attend the Department of Public Works (DPW) weekly construction meetings every Monday at 9:15 A.M. at the Cambridge Public Library or as rescheduled by the City Engineer. The Contractor's representative at this meeting must be intimately familiar with the contract work and be capable of answering detailed questions regarding the contract work.

### **26. UTILITY COORDINATION**

The Contractor shall contact Dig Safe to mark out all utilities in the area of the proposed work. It shall be the Contractor's responsibility to contact utility companies that may have conflicts with the proposed work and arrange for assistance prior to excavation in a timely manner. **Utility conflicts will likely be encountered during construction, and the CRA will not process Contractor delay claims which result from Contractor delays in coordinating with utility companies.**

It shall be the Contractor's responsibility to obtain locations for all types of utility structures within the area to be affected by the work and to protect them from being covered by the placement of roadway or sidewalk surfacing materials.

**Utility structures not correctly adjusted to the proper grade prior to paving or sidewalk installation or buried during the construction shall be uncovered, repaired if necessary, and re-set at the Contractor's expense.**

**27. QUANTITIES AND LOCATIONS**

All quantities are approximate, and the CRA reserves the right to increase or decrease quantities and change limits or locations.

**28. WARRANTY OF WORK**

All finished work shall be covered by a one-year warranty from any defects in quality, with the exception of permanent street restoration, which shall be warranted for two (2) years. If, at any time within one year after the completion of the contract, any defective work should appear, which in the opinion of the CRA or the City is due to inferior materials or workmanship, the CRA will notify the Contractor in writing of the defects and repairs to be made. The Contractor shall begin the repairs within a mutually agreed time frame and shall do whatever is necessary to remedy the defects without cost to the CRA or the City.

Warranty dates shall begin upon the presentation of written acceptance of a given location by the CRA, the City and/or Engineer to the Contractor

**29. LAWS AND REGULATIONS**

The bidder's attention is directed to the following list which enumerates the jurisdictions applicable to this job:

- AASHTO American Association of State Highway and Transportation Officials
- ADA Americans with Disabilities Act
- ASTM American Society of Testing Materials
- DOT Department of Transportation (Federal)
- EOTC Executive Office of Transportation and Construction (Comm. of Massachusetts)
- MUTCD Manual of Uniform Traffic Control Devices
- MAAB Massachusetts Architectural Access Board
- MHD Massachusetts Highway Department

**30. MASSACHUSETTS GENERAL LAWS**

The following specific sections of the Massachusetts General Laws (MGL) are hereby incorporated into this Contract:

- |                        |             |             |             |
|------------------------|-------------|-------------|-------------|
| Ch. 30 §39F (§§ a - h) | Ch. 30 §39L | Ch. 30 §39P | Ch. 149 §34 |
| Ch. 30 §39I            | Ch. 30 §39M | Ch. 30 §39Q |             |
| Ch. 30 §39J            | Ch. 30 §39N | Ch. 30 §39R |             |
| Ch. 30 §39K            | Ch. 30 §39O | Ch. 82 §40  |             |

521 CMR Rules and Regulations of the Architectural Access Board

### **31. MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RAILROAD**

The railroad track within the project limits is owned by MassDOT but Keolis Commuter Services is the only operator and maintainer of this area. Keolis Commuter Services will be responsible for any track work and flagging/inspection services, but the MBTA shall be copied on any correspondence.

The Contractor will be required to coordinate all work within twenty-five (25) feet of the tracks with Keolis Commuter Services. If any work is to occur on the railroad property side of the existing chain link fence, the Contractor shall be required to notify Keolis Commuter Services two weeks prior to work in the area so that they can schedule a flagger. The Contractor shall contact Keolis Commuter Services (Phone: 617-222-8001) for scheduling a flagger.

### **32. INSURANCE REQUIREMENTS**

The insurance requirements set forth in this section are in addition to the requirements of the Standard Specifications and Cambridge Redevelopment Authority requirements and supersede all other requirements.

The Contractor shall obtain a Standard Railroad Service Contract and provide an acceptable Railroad-protective insurance policy to Keolis Commuter Services Real Estate Department prior to scheduling work. The Contractor shall provide Railroad Protective Liability Insurance for the MBTA and Keolis Commuter Services. (See Appendix A for Insurance requirements.) Keolis Commuter Services shall be listed as additionally insured. The Contractor is responsible for all fees associated with this effort at no additional cost to the Cambridge Redevelopment Authority.

# **TECHNICAL SPECIFICATIONS**

**TECHNICAL SPECIFICATIONS**  
**GRAND JUNCTION PATH & PEDESTRIAN IMPROVEMENTS**  
**ALONG GALILEO GALILEI WAY**

**NOTE:** WHERE REFERENCE IS MADE BELOW TO THE “STANDARD SPECIFICATIONS”, THIS SHALL BE CONSTRUED TO MEAN THE LATEST EDITION, INCLUDING STANDARD SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS, OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES (English Units Version).

CONSTRUCTION DETAILS REFERRED TO HEREIN SHALL BE CONSTRUED TO MEAN THE CAMBRIDGE DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR STREET EXCAVATIONS AND CONSTRUCTION, PORTIONS OF WHICH HAVE BEEN INCLUDED HEREIN. THE REMAINDER IS AVAILABLE AT [www.cambridgema.gov/TheWorks](http://www.cambridgema.gov/TheWorks). IF CITY DETAIL IS NOT AVAILABLE, THE USE OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION DETAILS SHALL BE ACCEPTABLE WITH ENGINEER CONSENT.

ALL ITEMS SHALL CONFORM TO THE BUY AMERICAN GUIDANCE IN 2 CFR PART 176 SECTIONS 140 AND 160.

**PROJECT SPECIFIC EXCAVATION, SOIL BACKFILLS AND OFF SITE BORROW/FILL TESTING REQUIREMENTS**

**(GENERAL REQUIREMENTS – NO SEPARATE PAYMENT)**

Contractor shall make the following submittals and perform the following testing program on all onsite soils to be reused as backfill and on all off site borrow soils and material placed on the project. The cost of all submittals and testing stated below shall be incidental to the work and paid for by the Contractor.

A. Submittals:

1. Independent Laboratory and Testing Company. Submit 4 weeks prior to start of excavation, evidence that the Laboratory/testing company is:
  - a. accredited by the American Associates of the State Highway and Transportation Officials (AASHTO)
  - b. Has minimum 3 years experience in sampling, testing and analysis of soil and aggregates, and monitoring field compaction operations.
  - c. Able to provide 3 references from previous work.
2. Submit to the CRA and the Engineer grain size analysis curve (ASTM D422) and compaction test results (ASTM D1557) for each proposed source of backfill including suitable on-site soil to be reused as backfill, for review two weeks prior to use of the material. Grain size analysis shall indicate that the backfill material conforms to the gradation requirements specified.
3. Contractor shall submit to the CRA, a 10 lb representative sample of from each source of borrow material intended to be used, a minimum 7 days prior to

delivery. Any material delivered to the site that is not consistent with the sample provided may be rejected, at no cost to the CRA.

4. Contaminant analysis for off site borrow materials used. Each material imported shall be accompanied by a certification statement and analytical results. At a minimum, the certification shall state that the point of origin and that the material is free of contaminants. The certification shall include representative sample analysis from each point of origin of backfill to be used on the site. The samples shall be analyzed by a certified laboratory for total metals (EPA priority pollutant metals), volatile organic compounds (EPA Method 8270), petroleum hydrocarbons (EPA method 418.1), and Total PCB's and pesticides (EPA Method 8081 and 8082). On site soils designated as suitable for reuse can be reused as backfill without providing certification required above.
5. Contractor shall, in coordination with Soil Management Plan, submit to the Engineer and the CRA an Excavation, Backfilling, and Filling Plan at least 2 weeks prior to earth moving activities. The review will be only for the information of the CRA for an overall understanding of the project sequence and site utilization. The contractor shall remain responsible for the adequacy and safety of the means, methods, and sequencing of construction. The plan shall include but not be limited to the following items:
  - a. Detailed sequence of work.
  - b. General description of construction methods
  - c. Number and location of crews and equipment and manpower to be deployed
  - d. Traffic, bicycle and pedestrian management
  - e. Proposed location of stockpiles
  - f. Proposed locations and sequence of test pitting for soil testing and utility installations prior to the start of water pipe, drain, sewer and utility installations.
  - g. Maintenance and continued operation of existing infrastructure.

#### B. On-site Reuse/Borrow/Fill Testing Requirements

1. Contractor to perform at his cost, particle size and gradation analyses and compactibility testing in accordance with ASTM D422 and D1557, respectively, minimum one per source and one for **every additional 400 cubic yards of soil/borrow material to be reused/placed**. All results to be forwarded to the CRA and Engineer for review prior to commencing use.
2. Contractor to perform at his cost, in-place field testing for density and moisture content in accordance with ASTM D1156, D2167 or D2922 and ASTM D3017, D4944 or D4949, respectively. CRA or Engineer shall have access to results during measurements. All results to be submitted to the CRA and/or Engineer. Minimum test frequency shall be as follows, and no less than one test per lift or as requested by the Engineer and/or CRA:
  - a. Trenches under structures, utilities, roadways, driveways, sidewalks, and bike lanes: Every 100 lin. Ft per lift.
  - b. Trenches not under structures, roads, etc, such as landscape areas: Every 150 lin. Ft per lift.
  - c. Paved roadways or general areas backfilled: Every 1000 sq. ft. per lift
  - d. Under and around structures: Every 500 sq. ft. per lift.



C. Fill/Backfill Placement and Compaction

1. All materials shall be placed in layers not to exceed 8 inches, as placed, and compacted with suitable vibratory compaction equipment to at least 95 percent of the maximum dry density as determined by ASTM D1557. Lift thickness shall be reduced to 4 inches in confined areas only accessible by hand guided compaction equipment.

**ITEM 102.5**

**TREE PROTECTION AND MAINTENANCE**

**EACH**

DESCRIPTION

The work to be done under this Item consists of instituting and maintaining positive measures to protect and maintain public and private shade trees within and adjacent to the limits of work.

Public trees are protected by Massachusetts state law, Chapter 87. Section 12 states that a fine of up to five hundred dollars, (\$500.00) per incident of damage to public shade trees can be levied. Each branch broken or improperly pruned, each improper wounding of the trunks of the trees, and each root improperly pruned shall constitute an infraction. Section 12 further provides that anyone who negligently or willfully damages a tree will be liable to the City for all damages.

The Contractor shall take the utmost care to avoid unauthorized, unnecessary or improper wounding of public or private shade trees. Prior to construction, the Contractor shall provide a tree protection and maintenance plan and work schedule. A Massachusetts or International Certified Arborist shall be sub-contracted by the Contractor to provide a protection and maintenance plan and perform specified work. ***All plans and schedules shall be subject to review and approval by the City Tree Warden. Infraction of Massachusetts state law Chapter 87 or failure to provide a protection plan and work schedule will result in fines or the immediate cancellation of the contract.***

CONSTRUCTION METHODS

Tree protection and maintenance measures shall include the following:

1. Erect and maintain temporary rigid fence around drip line of individual trees or around perimeter drip line of groups of trees to remain, as shown on the plans and as required by the Landscape Architect. At sidewalk tree pits, the entire perimeter of the tree pit shall be fenced. At a minimum, and only if the Engineer determines that the preceding measures are not feasible, wrap the trunks of all trees with a durable material such as two by four lumber sufficient to protect tree trunks from mechanical damage. Remove fence and wrapping when construction is complete.
2. Trucks and heavy equipment shall not pass over or park on roots of public shade trees; nor shall construction materials, debris, or excavated material be stored within drip line of trees or within tree pits. For occasional or one time access over roots, ½-inch plywood overlapped may be used. Permeable materials such as gravel or wood chips shall be placed over root systems of trees which are not covered by hardscape and over which trucks and heavy equipment must travel during construction operations, when such travel is unavoidable, to prevent soil compaction and root damage. Material shall be replaced as needed.

3. During sidewalk construction adjacent to trees, suitable soil shall be maintained within tree wells. Moist soil or mulch shall also be maintained around surface roots outside of tree wells which may become exposed during construction. Such covering shall be placed as soon as possible after roots are exposed. If roots are going to be exposed for more than one hour, cover roots with damp burlap. Burlap shall be kept moist until most soil and mulch can be used for permanent cover.
4. Existing trees to remain shall be pruned by the Contractor as required by the Landscape Architect. Tree pruning is considered incidental to Tree Protection and Maintenance.
5. Traffic control plans shall be designed in such a way as to direct traffic away from tree trunks and branches.
6. Tunneling shall be the preferred method of excavation adjacent to tree roots to avoid root pruning. If root pruning is unavoidable, a certified arborist shall be onsite to execute or oversee the operation with sufficiently sharpened hand tools and in such a fashion as to have minimum negative impact on tree health and safety.
7. Following construction, existing trees within the project area shall be mulched in accordance with the requirements for new trees, as specified in Section 910.
8. All tree protection and maintenance measures and operations shall be subject to review, approval or change by the City Tree Warden.

**COMPENSATION**

Tree protection will be measured by the unit each, for each tree provided with protective measures as specified herein.

Payment for work under this items will be at the contract unit price per each and shall include full compensation for all labor, materials, disposal, equipment, tools, and any other incidentals necessary for the satisfactory completion of this work as specified, including furnishing, installing, maintaining, and removing drip line or tree pit fencing, 4' orange construction fencing to protect street trees along Galileo Galilei Way, tree wrap, and covering exposed roots with moist burlap, mulch, or soil.

<b>ITEM 103.</b>	<b>TREE REMOVED – DIAMETER UNDER 24 INCHES</b>	<b>EACH</b>
<b>ITEM 105.</b>	<b>STUMP REMOVED</b>	<b>EACH</b>

Work to be done under this item shall conform to the relevant provisions of Section 101 of the MassDOT Standard Specifications and to the following:

**CONSTRUCTION METHODS**

Removals shall be as indicated on the Drawings and as directed by the Engineer. Trees to be removed shall be verified with the Engineer prior to undertaking any work under this Item. Trees

shall be completely removed, including stumps, and legally disposed of offsite. Existing tree pits shall be restored under the appropriate item.

### COMPENSATION

Tree and stump removal will be measured for payment as specified in Section 101 of the Standard Specifications and the following:

Payment for work under this item will be at the contract unit price per each and shall include full compensation for all labor, materials, equipment, tools, and any other incidentals necessary for the satisfactory completion of this work as specified.

### NOTES ON EXCLUSIONS:

Disposal of excavated soil is not included for payment under this item and shall be paid for separately.

### **ITEM 120.**

### **EARTH EXCAVATION**

### **CUBIC YARD**

Work to be done under this item shall conform to the relevant provisions of Section 120 of the Standard Specifications and to the following:

The work shall consist of the excavation of all materials encountered within the limits of the contract beyond those materials specifically classified and paid for under other items of this contract. Excavation for sidewalk and pedestrian ramp installation, including areas where any of these installations are to be located in present roadway areas, shall be considered incidental to the appropriate sidewalk or ramp items.

Excavation of existing hot mix asphalt, brick and concrete pavements as required for full-depth roadway construction or patching; and for removing existing materials in areas of proposed lawn areas shall also be paid for under this item. (Note: Excavation required for isolated tree planting in pits will not be measured as part of this Item - see Item 775).

### CONSTRUCTION METHODS

Any streetcar track encountered shall be removed where directed. Track, as called for in this item, shall consist of the pair of parallel streetcar rails, ties, track and fastenings, frogs, switches and any other appurtenances that could be considered part of the track system.

The Contractor shall exercise special care when excavating near trees. When major roots are in the way, the Contractor shall go under or between them. In no case shall the Contractor disturb the root structure of the trees without direction from the City Arborist. Exposed roots shall be covered promptly.

The Contractor shall perform work in such a manner to minimize dust and utilize dust control techniques when necessary or as directed by the Engineer.

At the discretion of the Engineer, de-watering (pumping) may be required during trench excavation and the prosecution of the work. If such is the case, the Contractor shall obtain a

dewatering permit from the City, United States EPA, or Massachusetts Water Resources Authority, as required, and water shall be discharged to a location accepted in advance by the Engineer.

All trench excavations shall strictly adhere to the latest OSHA requirements. Temporary trench support, in compliance with OSHA, required to excavate to a depth to prosecute the work shall along with the proper support of all existing utilities be the responsibility of the Contractor.

### COMPENSATION

Earth Excavation will be measured for payment as specified in Section 120 of the Standard Specifications and the following:

Payment for work under this item will be at the contract unit price per cubic yard and shall include full compensation for saw-cutting, labor, materials, equipment, tools, disposal of construction debris (concrete, brick, asphalt, etc.) dust control and any other incidentals necessary for the satisfactory completion of this work as specified.

Payment for removal and disposal of streetcar track shall be made as follows:

1. If rails and ties exist, payment for removal and disposal shall be made at two and one-half (2-1/2) times the contract unit price bid per cubic yard for Item 120.1. Measurement for depth shall be from the top of rail to bottom of tie, and width shall be to the outside limits of the tie. Length shall be along the centerline of the track.
2. If only ties exist, payment for removal and disposal shall be made at one and one-half (1-1/2) times the contract unit price bid per cubic yard for Item 120.1. Measurement for depth shall be from top of tie to bottom of tie, and width shall be to the outside limits of the tie. Length shall be along the centerline of the track.

NOTES ON EXCLUSIONS: Disposal of excavated soil is not included for payment under this item and shall be paid for separately. Excavation which is specified as incidental to other items, including sidewalks other than porous asphalt sidewalks, ramps, and utility systems, will not be paid for under Item 120. **Excavation of existing pavements of all types (brick, asphalt, concrete)** will not be paid for separately.

**125.1**

**SOIL AND WASTE MANAGEMENT**

**LUMP SUM**

### DESCRIPTION

The work under this Item shall include the transportation and disposal of contaminated material excavated, or excavated and stockpiled. It shall also include the cost of any additional laboratory analyses required by a particular disposal facility beyond the standard disposal test set.

Excavation of existing subsurface materials may include the excavation of contaminated soils. The Contractor shall be responsible for the proper coordination of characterization, transport and disposal, recycling or reuse of contaminated soils. Disposal, recycling or reuse will be referred to as "disposal" for the remainder of this specification unless otherwise stated. However,

regardless of the use of the term herein, there will be no compensation under these items for reuse within the project limits. The Contractor will be responsible for coordinating the activities necessary for characterization, transport and disposal of contaminated soils. Such coordination will include the City and his/her designee overseeing management of contaminated materials. Contaminated soils must be disposed of in a manner appropriate for the soil classification in accordance with the applicable laws of local, state and federal authorities. The Contractor shall be responsible for identifying a disposal facility(s) licensed to accept the class of contaminated soils to be managed and assure that the facility can accept the anticipated volume of soil contemplated by the project.

- A. It is the objective of soil/fill management practices specified here to handle all soil/fill excavated from the site during the course of this contract in a cost-effective manner and in accordance with applicable state and federal regulations. The Contractor shall reuse excavated materials, as approved by the Engineer, prior to using imported fill in order to reduce the volume of material to be disposed off-site provided the material is geotechnically suitable as backfill and does not result in spreading contamination to other areas or other soil/fill strata.

Excavated soil/fill, which is displaced by design features, (e.g. pipe and manholes), may be used as backfill elsewhere on the project provided the soil/fill is geotechnically suitable and does not result in spreading contamination or degrading the environmental quality at the location of reuse. Imported backfill shall be used only as accepted by the Engineer.

- B. The Contractor shall be responsible for coordinating waste disposal, and as such, shall be responsible for identifying an appropriate facility which can receive the material and, if necessary, collect additional characterization samples to satisfy local, state, and federal regulations as well as the Contractor's selected disposal facility's acceptance criteria.
- C. Unless specifically stated otherwise, terms used in this specification are as defined in the MCP, 310 CMR 40.0006.
- D. Any soils which contain exhibit petroleum or chemical odor or visual indications of oil or hazardous materials shall be handled as potentially contaminated soils. Soil which does not have any evidence of contamination can be reused within the *area of excavation*. Soil/fill which is staged and characterized can be reused within the *area of excavation* or elsewhere on site provided the material has equal or less contamination than the point where it is to be reused.
- E. Contaminated soil/fill (including petroleum-contaminated soil/fill) which can not be reused on site shall be reused off-site, recycled, or disposed as a solid waste at an appropriately permitted facility unless it also meets the regulatory definition of hazardous waste as defined in 40 CFR part 261 or contains PCBs or asbestos.DS

- F. Notification Procedures:

In the event of an emergency, the Contractor shall contact the following entities at the earliest possible opportunity:

- a. CRA's designated representatives.
- b. City of Cambridge DPW
- c. City of Cambridge Fire Department
- d. Engineer
- e. MassDEP

The Contractor shall prepare in advance of work activities a notification list, complete with phone numbers, addresses, and contact names for all parties to be notified (including, but not limited to, the parties listed above) in the event of an emergency.

G. The Contractor shall provide the following at least two weeks prior to mobilizing onto the site:

1. Soil and Waste Management Plan (SWMP):

The SWMP shall outline measures for sampling, analysis, disposal, and shall identify a waste staging area in the event that soil is stockpiled for subsequent reuse and/or disposal or unknown materials are encountered. The SWMP shall outline procedures for securing the staging area, controlling dust and soil / fill migration, appropriate covering of stockpiles to ensure adequate wind protection and keeping the soil dry.

The Contractor is advised that no City-owned or controlled areas are available to serve as waste staging areas for this Project. The Contractor's procedures shall be described in the Soil and Waste Management Plan.

2. Health and Safety Plan (HASP):

The Health and Safety Plan shall outline measures for encountering oil and hazardous material (OHM), including exposure monitoring, prevention methods, and emergency response procedures.

3. Contingency Management Plan (CMP):

The CMP shall provide details on construction methods, and site location and availability of the staging area(s) for approval by the City or Engineer and/or their representative.

4. Spill and Discharge Plan (SDCP):

This SDCP shall provide contingency measures and reporting responsibilities for potential uncontrolled spills and discharges of contaminated and/or hazardous materials, including, but not limited to, leachate, decontamination water, sewage, and other on-site waste materials.

5. Dust, Vapor and Odor Control Plan (DVOCP):

The DVOCP shall include measures to control objectionable dust, vapors, and odors originating from the site. The DVOCP shall describe procedures to minimize the creation of dust, and the control of objectionable vapors and odors originating from

the site.

## PROJECT/SITE CONDITIONS

### Existing Conditions:

1. An area has been identified where the soil contains Trichloroethene (TCE) at up to 24 mg/Kg. The area is identified on the project design plans. Soil in this area is to be stockpiled separately for evaluation and determination of disposal options by the Engineer.
2. All of the soil within the limits of the project is urban fill. In addition to the TCE, low concentrations of metals, petroleum hydrocarbons and PAHs were detected in soil samples. The results for metals and PAHs are generally consistent with this type of urban fill.
- 3.

## SYSTEM DESCRIPTION

### Environmental Consultant

1. The Engineer shall provide an LSP, who shall be responsible for observing that all construction activities involving contaminated soil and groundwater are performed in accordance with the requirements of the MCP and the RAM. He shall prepare and submit all documentation required for the disposal, reuse, or recycling of soil including all RAM documents and submittals, Material Shipping Records, Bills of Lading, and Hazardous Waste Manifests. The Engineer's LSP shall also be required to prepare, sign, and stamp all MCP

### Performance Requirements:

1. The Contractor shall manage, store, transport, and dispose of all surplus soil generated by the Work. Surplus soil excavated from beyond the limits indicated in the Drawings conducted for the convenience of the Contractor shall be disposed, reused, or recycled at no additional cost to the City.
2. The Contractor shall coordinate transport, storage, and off-site disposal of all excess soils, including contaminated soils.
3. Any excavation from within the designated area of contamination is to be performed per the requirements of a Remedial Action Measure (RAM) in the MCP as prepared by the Engineer's LSP. Soils from within this designated area shall be stockpiled separately from other excavated soils. These soils shall be stockpiled on polyethylene sheeting and covered by polyethylene sheeting at the end of the day's construction activities.
4. For the soils from within the designated area of contamination, the Engineer shall be responsible for all analytical testing required by receiving facilities for the disposal, reuse, or recycling of surplus soil or water as required to meet the requirements of the Massachusetts Contingency Plan. All documents, plans, notifications and submittals will be prepared by the Engineer's LSP who will be the LSP of Record for this project.
5. The Contractor must comply with the requirements for the Management of Remediation Waste at 310 CMR 40.0030 in the Massachusetts Contingency Plan.
6. The Contractor shall perform the required laboratory testing of all other surplus soil from stockpiles following excavation, at a stockpile area to be supplied by the Contractor.

7. All excavated soil that is removed in order to complete the Work shall be managed in accordance with applicable Federal, state, and local requirements pertaining to the handling, treatment, and/or disposal of waste materials.
8. Prepare and submit to the Engineer for review all documentation for the storage, handling, sampling, testing, transport, and disposal of soil required in accordance with applicable DEP Policies and regulations.
9. If an Imminent Hazard, or any other situation which would require an Immediate Response Action as defined in the Massachusetts Contingency Plan, 310 CMR 40.0000, is discovered, activities shall be suspended and the City notified immediately.

COMPENSATION

**Item 125.1 - Soil and Waste Management**

Method of Measurement

The costs associated with excavating, handling, testing and characterizing soil and waste other than allowed for in subsequent payment items shall be incorporated into the Contractor's lump sum bid price for Item 125.1. Payment for Soil and Waste Management will be based on the lump sum price bid for this item in the proposal. Measurement for payment will be based on the percentage of project completion based on elapsed time compared to the contractual construction time limit.

Basis of Payment / Inclusions

Payment for Soil and Waste Management shall be based on the lump sum price complete for this item in the proposal. Under the lump sum price for this item, the Contractor shall furnish all labor, materials, tools, equipment and incidentals required for Soil and Waste Management. This work includes, but is not limited to; soil / fill sampling, analytical services, transport to staging area, testing, establishment and maintenance of appropriate staging area, development and implementation of all submittals and plans specified herein.

Exclusions

The following items are not included for payment under this item; transportation and disposal of soil and fill material; reuse of soil and fill material on site as backfill; handling asbestos contaminated material; sedimentation and erosion control for other uses besides soil management (at the staging area); all work associated with a staging area for other uses beyond soil and waste management.

**ITEM 126.1      DISPOSAL OF SOIL – BACKGROUND SOILS (CLASS A-1)      TON**

DESCRIPTION

Background Conditions (Class A-1): Background is defined in 310 CMR 40.0006 as those levels of oil and hazardous material that would exist in the absence of the disposal site of concern which are either:

- a. ubiquitous and consistently present in the environment at and in the vicinity of the disposal



- site of concern; and attributable to geologic or ecologic conditions, or atmospheric deposition of industrial process or engine emissions;
- b. attributable to coal ash or wood ash associated with fill material;
- c. releases to groundwater from a public water supply system;
- d. petroleum residues that are incidental to the normal operation of motor vehicles.

Any soil or fill material which meets the regulatory definition of "background" as defined in 310 CMR 40.0006 may be reused as common fill/ordinary borrow.

For record keeping purposes soil/fill that meet the definition of background, shall be transported under a Material Shipping Record.

**COMPENSATION**

**Method of Measurement**

Measurement for Payment for Disposal of Soil – Background Soils (Class A-1) shall be on the basis of tons of waste actually disposed, as measured at the disposal facility by certified scale, and documented on the return manifest or certified weight slip and accompanied by the appropriate Material Shipping Record. Measurement shall be verified as described above and the lesser tonnage, as further described above, paid for. Material excavated outside of the pay limits indicated elsewhere in the Contract Documents and not specifically directed by the Engineer, shall be done at the Contractor’s expense, at no additional cost to the City.

**Basis of Payment / Inclusions**

Under the per ton price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required for Disposal of Soil – Background Soils (Class A-1). The work includes, but is not limited to; handle, load, transport, and dispose all excess soil/fill which is suitable for general reuse as fill.

**Exclusions**

The following items are not included for payment under this item; transportation and disposal of soil and fill material which does not meet the definition of soil of this classification; reuse of soil and fill material on site as backfill; furnishing and installing replacement imported backfill; staging; disposal of bituminous concrete; and disposal of construction debris.

<b>ITEM 126.3</b>	<b>DISPOSAL OF SOIL – DAILY COVER UNLINED LANDFILL (CLASS B-1)</b>	<b>TON</b>
-------------------	--	------------

**DESCRIPTION**

**Contaminated Soil/Fill (Class B):** Any soil or fill material which contains oil or hazardous materials at concentrations equal to or greater than a release notification threshold established by 310 CMR 40.0300 and 40.1600, except where the presence of the material is consistent with the regulatory definition of "background" as defined in 310 CMR 40.0006.

Class B-1: Soil and Fill that meet all applicable criteria (i.e., COMM 97-001 and/or facility-specific permit requirements) for reuse as daily cover, intermediate cover, or pre-cap contouring material at in-state unlined landfills.

## COMPENSATION

### Method of Measurement

Measurement for Payment for Disposal of Soil – Daily Cover Unlined Landfill (Class B-1) shall be on the basis of tons of waste actually disposed, as measured at the disposal facility by certified scale, and documented on the return manifest or certified weight slip and accompanied by the appropriate DEP BWSC Bill of Lading form. Measurement shall be verified as described above and the lesser tonnage, as further described above, paid for. Material excavated outside of the pay limits indicated elsewhere in the Contract Documents and not specifically directed by the Engineer shall be done at the Contractor's expense, at no additional cost to the City.

### Basis of Payment / Inclusions

Under the per ton price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required for Disposal of Soil – Daily Cover Unlined Landfill (Class B-1). The work includes, but is not limited to; handle, load, transport, and dispose at an appropriately permitted, solid waste facility, all soil/fill which is unsuitable for on-site reuse and is defined as a non-hazardous solid waste suitable for reuse as daily cover at an unlined Massachusetts Landfill; placing, grading and compacting the material at the disposal site as specified; and all fees, permits, and taxes.

### Exclusions

The following items are not included for payment under this item; transportation and disposal of soil and fill material which does not meet the definition of soil of this classification; reuse of soil and fill material on site as backfill; furnishing and installing replacement imported backfill; staging; disposal of bituminous concrete; and disposal of construction debris.

## **ITEM 128.                    EXCAVATION AND REMOVAL OF GAZEBO                    LUMP SUM**

Excavation and Removal of Gazebo shall consist of the removal of the existing gazebo and concrete foundation and disposal off site.

## CONSTRUCTION METHODS

Excavation and Removal of Gazebo shall include, but not be limited to the removal and disposal of existing gazebo timber, concrete steps and foundation, railings and all other item associated with the exiting gazebo designated for removal.

## COMPENSATION

Payment for work under this item will be at the contract unit price per lump sum and shall include full compensation for saw-cutting, labor, materials, equipment, tools, disposal of construction debris (concrete, brick, asphalt, wood, and any other material used to construct the

gazebo.) dust control and any other incidentals necessary for the satisfactory completion of this work as specified.

**ITEM 151.    GRAVEL BORROW – TYPE C    CUBIC YARD**

Work to be done under this item shall conform to the relevant provisions of Section 401 of the Standard Specifications and to the following:

This work shall consist of furnishing, placing, fine grading, and compacting Gravel Borrow for utility trench backfill; roadway subbase; for sidewalk base and subbase; for subsoil in proposed planting areas where pavement or other unsuitable materials have been removed; and as shown on the Drawings and details and as directed by the Engineer.

**MATERIALS**

The Gravel Borrow shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials, and shall conform to Standard Specifications M1.03.0., Type c.

**CONSTRUCTION METHODS**

The gravel shall be compacted to 95% of the maximum dry density at optimum moisture content as determined by the AASHTO Standard Method of Test T99 Method C; except where used as subsoil for lawn areas, where compaction shall be to 88%-90%.

The Contractor shall perform work in such a manner to minimize dust and utilize dust control techniques when necessary or as directed by the Engineer.

**COMPENSATION**

Gravel Borrow will be measured for payment as specified in Section 150 of the Standard Specifications.

Payment for work under this item will be at the contract unit price per cubic yard and shall include full compensation for material in-place graded and compacted, dust control, and any incidentals necessary for the satisfactory completion of this work as specified.

**ITEM 180.1    HEALTH AND SAFETY PLAN    LUMP SUM**

It is the Contractor's ultimate responsibility to ensure the health and safety of all the Contractor's employees and subcontracting personnel, the City and their representatives, and the public from any on-site chemical contamination.

The work under this Item applies to all Work that may involve potential exposure(s) to contaminated soil and other contaminated materials or media.

The work involves the development and implementation of a Health and Safety Plan (HASP) and Program for all work in which there is a potential for employees, the general public or the environment to be exposed to soil and groundwater containing petroleum residues and /or contaminants typically found in urban fill. The HASP shall address all activities performed including, but not limited to, dewatering, soil excavation and stockpile management.

The Contractor shall develop a detailed HASP using this Section and the site conditions as a basis for delineating additional details and requirements. The HASP shall establish in detail the protocols necessary for protecting workers, on-site personnel, visitors and potential off-site receptors from potential hazards related to contamination encountered during dewatering activities, and stockpiling, removing, handling and sampling and analysis of soils.

## CONSTRUCTION METHODS

### DESCRIPTION OF REQUIREMENTS

The Contractor shall develop and implement a HASP that will protect workers who may come in contact with contaminated residues in soil and groundwater.

The Contractor shall retain a Certified Industrial Hygienist (CIH) who shall develop, implement, administer and supervise a site-specific Health and Safety Plan and Program in accordance with these specifications.

The Contractor shall designate an individual as the Site Safety and Health Officer (SSHO) who shall assist and represent the CIH in the continuous daily implementation and enforcement of the HASP.

### REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

The site-specific Health and Safety Plan and all work conducted on-site shall be consistent with the requirements of the following references:

1. Occupational Safety and Health Administration Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 and 1926 (29 CFR 1910 and 1926), including amendments as stated in Federal Register March 6, 1989: 9294-9336 (Final Rule, 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response").
2. United States Environmental Protection Agency (EPA) Standard Operating Guidelines, Revised November 1984.
3. National Institute of Occupational Safety and Health (NIOSH)/OSHA/United States Coast Guard (USCG)/EPA Occupational Safety and Health Guidance Manual for Hazardous Site Activities, October 1985, Department of Health and Human Services (DHHS) NIOSH Publication Number 85-115.
4. 310 Code of Massachusetts Regulations (CMR) 40.0018 Health and Safety Procedures.

### RESPONSIBILITY OF THE CONTRACTOR

Minimum precautions noted in this Section shall in no way relieve the Contractor of implementing stricter health and safety precautions as warranted by the Work.

All Work performed under this Contract shall be in compliance with OSHA 29 CFR 1926 and 1910 regulations and any other applicable federal, state or local health and safety regulations.

The Contractor's CIH shall conduct an initial survey to determine the appropriate safety procedures and level of worker safety equipment. The Contractor's SSHO shall maintain a continuous hazardous materials health and safety monitoring program throughout the performance of the Work. The SSHO's shall notify the City of any deviations in the hazardous materials health and safety-monitoring program.

The Contractor shall immediately notify the City verbally and in writing should any unforeseen safety hazard or condition become evident during the performance of the Work. The Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard workers, on-site personnel, visitors, potential off-site receptors, and the environment in accordance with the established emergency response procedures detailed in the Contractor's HASP.

#### EMPLOYEE TRAINING

The Contractor shall train all employees in accordance with applicable OSHA regulations.

#### HAZARD COMMUNICATION

The Contractor shall have a project-specific written Hazard Communication Program. This program must be available on-site for review by the Contractor's employees, the City, its representatives or other affected parties.

Material Safety Data Sheets (MSDS's) for hazardous materials brought on-site by the Contractor shall be maintained at the site and must be made available to its employees, the City, its representatives and other affected parties.

#### AIR MONITORING - GENERAL REQUIREMENTS

The Contractor's CIH shall develop and implement an Air Monitoring Program to detect and quantify airborne contaminants that may be present during excavation and dewatering activities.

#### EMERGENCY PLANNING

The HASP shall include emergency procedures for occurrences such as personal injury, fire, and exposure to toxic substances. All personnel on-site shall be instructed at the time of their hire, prior to commencing work and weekly via safety meetings concerning these safety procedures.

Emergency response procedures shall include employee training, alarm systems, escape routes and procedures, critical operations or equipment, rescue and medical duty assignments, designation of responsible parties, emergency reporting procedures and methods to account for all employees after evacuation.

Emergency contact information shall be included in all Contractor HASPs.

In the event that on-site work results in the accidental spill or release of oil or hazardous materials, containment to the extent possible will be required by on-site personnel (in proper PPE as designated by the SSHO). Containment shall include the use of absorbent pads or materials, diking with soils, covering and/or diverting spills from sewers, drains, and surface water bodies. For spills that cannot be controlled by on-site personnel or are above the Massachusetts Contingency Plan (MCP) reportable quantities, the SSHO or designee shall secure the area and notify the Cambridge Fire Department, the City and the Contractor's Emergency Response Contractor immediately.

## DECONTAMINATION

The HASP shall specify personnel decontamination procedures to minimize off-site contamination due to construction activities. Equipment decontamination procedures shall comply with Item 181.1, Disposal of Contaminated Soil.

Workers shall be instructed in strict hygiene practices including hand washing before eating or smoking, on-site decontamination of clothes and segregation of work clothes from other home laundry.

## SITE ACCESS AND CONTROL

The Contractor's HASP shall include site access provisions which limit access to active hazardous materials and contaminated soil and groundwater areas to only those persons in full compliance with the requirements of the OSHA 29 CFR 1910.120.

## SUBMITTALS

Excavation shall not begin until the City reviews the Contractors submittals listed below:

1. Name, qualifications and work experience of the CIH as specified in this Section paragraph 3.02, A. This submittal is required prior to the development and submittal of the HASP.
2. Project-specific HASP.
3. Contractor shall submit HASP within thirty (30) day of Notice to Proceed.

Copies of any Incident Reporting Logs completed.

## PRODUCTS

### PERSONAL PROTECTIVE EQUIPMENT

The Contractor shall provide on-site personnel, when required by the HASP, with the appropriate personal protective equipment (PPE) and clothing and shall ensure that all PPE and clothing is kept clean and well maintained.

Minimum worker protection measures include hard hats, steel-toed work boots, safety glasses, hearing protection and standard work clothes (Level D PPE). Additional PPE may be required as determined by the CIH.

## EXECUTION

## IMPLEMENTATION AND GENERAL REQUIREMENTS

The Health and Safety Plan shall be implemented by the Contractor under the direction of its CIH. The Contractor shall comply with the HASP at all times.

The City may conduct quality assurance inspections and request access to Contractor's project-specific health and safety records, and other HASP-related documents at any time.

## HEALTH AND SAFETY MANAGEMENT

A CIH certified by the American Board of Industrial Hygiene shall develop and implement the HASP, including air monitoring program, conducting initial site-specific training, providing continued support for all health and safety activities as needed, including upgrading and downgrading of the level of personnel protection as necessary for the duration of the Work.

The qualifications of the CIH shall include:

A minimum of three (3) years working experience in the chemical or hazardous waste disposal industry of projects of similar size within the last three years.

## COMPENSATION

Measurement for this Item shall be measured as a lump sum.

The work to be done under this Item shall be paid at the Contract Lump Sum Price under Item 180.1 for the development and preparation of the HASP by a qualified individual.

<b>ITEM 220.1</b>	<b>DRAINAGE STRUCTURE ADJUSTED</b>	<b>EACH</b>
-------------------	------------------------------------	-------------

Work to be done under this item shall conform to the relevant provisions of Sections 201 and 220 of the Standard Specifications and to the following:

### CONSTRUCTION METHODS

Castings shall be set, as directed by the Engineer, so that final grade of the manhole cover or catch basin grate is flush with the final course of asphalt pavement. Material around the structure shall be compacted and high early strength concrete collars shall be placed around the castings to an elevation which allows for placement of final asphalt pavement as shown on the drawings. High early strength concrete shall be 3,500 PSI at 28 day test, 3/4 aggregate, 5% air entrained, and have a maximum 4" slump.

Existing frames and grates/covers that are deemed unfit by the Engineer for continued use shall be replaced by the Contractor and paid for separately.

For catch basins and sump manholes, the Contractor shall verify whether the structure has a trap in good working order, and if not, shall furnish and install a new trap.

The Contractor shall be held responsible for the protection of the castings. Any frames, grates, or covers damaged or lost in any manner during the progress of the construction shall be replaced with new castings at the Contractor's expense.

**See Section 825 “Supplemental Conditions” for requirements related to marking raised utility castings.**

### COMPENSATION

Adjustment and remodeling of drainage structures will be measured for payment as specified in Section 220 of the Standard Specifications.

Payment for these items will be at the contract unit price for each and shall include full compensation for excavation, compaction, disposal of construction debris (concrete, asphalt, bricks, etc.), high early strength concrete, rodent control and any other incidentals necessary for the satisfactory completion of this work as specified.

<b>ITEM 358.</b>	<b>GATE BOX ADJUSTED</b>	<b>EACH</b>
------------------	--------------------------	-------------

Work to be done under these items shall consist of adjusting gate boxes as necessitated by roadway work. All work under these Items shall conform to the applicable requirements of the Cambridge Water Department (CWD), portions of which are included herein.

The Contractor shall not operate any hydrants, valves, curb stops, or corporations, nor shall they draw any water from the system, without specific approval of CWD. Only CWD personnel will operate hydrants, valves, corporations and curb stops unless otherwise directed by the CWD.

The Contractor shall furnish all labor, materials, equipment and incidentals required to reset existing gate boxes to grade, and/or furnish and install new water gate boxes, as directed by the Engineer, prior to roadway or sidewalk paving.

Swing-ties are to be taken and promptly forwarded to the CWD Engineering Department to any temporarily covered gate box. Prior to temporarily covering any gate box, they are to be blown free of debris so that the gate operating nut can be readily accessed by the CWD. Notify the CWD at least 24 hours in advance of any gate box work scheduled

### CONSTRUCTION METHODS

#### General Requirements

All construction shall conform to the relevant provisions of Section 300 of the Standard Specifications, the American Water Works Association standards, the detail drawings included in the Specifications, and the requirements of the CWD.

#### Adjustment/Replacement of Gate Boxes

The gate box shall be set, as directed by the Engineer, so that final grade of the cover is flush with the final course of asphalt pavement or sidewalk as applicable. Material around the structure shall be compacted and high early strength concrete collars shall be placed around the castings to an elevation which allows for the proper depth of final asphalt paving as shown on



the drawings. High early strength concrete shall be 3,500 PSI at 28 day test, 3/4 aggregate, 5% air entrained, and have a maximum 4" slump.

Should the Engineer determine that the gate box cannot be set to final grade upon installation; it shall then be set to the required temporary grade, without the concrete collar. Final adjustment to grade, including installation of concrete collar, shall then be performed and paid for separately.

Where existing gate boxes are not suitable to be re-set or adjusted, the Contractor shall furnish and install a water gate box adapter prior to roadway paving.

The excavation shall be backfilled with gravel borrow up to a depth which allows for placement of final roadway or sidewalk paving.

Excavation of existing hot mix asphalt, brick and concrete pavements as required for installation of gate boxes is included under this item.

**See Section 825 "Supplemental Conditions" for requirements related to marking raised utility castings.**

### COMPENSATION

#### Adjustment/Replacement of Gate Boxes

Water gate boxes replaced in roadway or sidewalk; and adjustment of water gate boxes with or without adapters; will be measured by the unit each, complete in place.

Payment for work under Items 358 shall be at the contract unit price each and shall include full compensation for the gate box adapter and installation, resetting gate boxes to final grade and any other incidentals necessary for the satisfactory completion of this work as specified.

<b>ITEM 380.</b>	<b>WATER WORKS SYSTEM</b>	<b>LUMP SUM</b>
<b>ITEM 380.1</b>	<b>BACK FLOW PREVENTER</b>	<b>LUMP SUM</b>
<b>ITEM 389.</b>	<b>DRINKING FOUNTAIN WITH 3/4" HOSE BIB</b>	<b>EACH</b>

The work to be done under these Items consists of furnishing all labor, tools, equipment and materials and performing all operations necessary for the installation of water service piping, curb stops, fittings; meter and backflow preventer with cabinet enclosure; drinking fountain and appurtenances as indicated by the Contract Drawings and as specified herein. The work under these Items shall be in accordance with the relevant provisions of Section 300 of the Standard Specifications for Highways and Bridges, Regulations of the City of Cambridge Water Department, and the following:

(1) Description

- A. Include GENERAL CONDITIONS and applicable parts of Division 1 as part of this Section.
- B. Examine all other Sections of the specifications for requirements, which affect Work of this Section whether or not such work is specifically mentioned in this Section.

- C. Coordinate work with that of all other trades affecting, or affected by Work of this Section. Cooperate with such trades to assure the steady progress of all Work under the Contract. All Water Work shall be performed in strict conformance with the City of Cambridge Department requirements.

(2) Materials

## REFERENCES

- A. Where references are made in these Specifications to standard specifications, codes, etc., of the U.S. Government, State or local authorities, or professional and industrial societies and associations, the applicable portions thereof shall govern as fully as if they were recited at length herein, and shall include all revisions thereto issued as of the date of the Notice to Contractors pertaining hereto.
- B. The following Standards of the American Water Works Association (AWWA) /American National Standards Institute (ANSI) form a part of these Specifications:
  - 1. ANSI/ NSF 61 - Drinking Water System Components
  - 2. AWWA C500 - Gate Valves for Water and Sewage Systems.
  - 3. AWWA C651: Disinfecting Water Mains.
  - 4. AWWA C800: Underground Service Line Valves and Fittings.
  - 5. AWWA C901: Polyethylene (PE) Pressure Pipe and Tubing, ½-inch through 3-inch for Water Service.
- C. American Society for Testing and Materials (ASTM) Standards
  - 1. ASTM B62: Composition Bronze or Ounce Metal Castings.
  - 2. ASTM B88: Seamless Copper Water Tube
  - 3. ASTM C150: Portland Cement
- D. MassDOT: "Standard Specifications for Highways and Bridges", Massachusetts Department of Transportation (formerly Massachusetts Highway Dept. and Massachusetts Department of Public Works), Commonwealth of Massachusetts, latest edition and all Supplements.

## SUBMITTALS

- A. Conform to Section – SUBMITTALS for all procedures and requirements.
  - 1. Water Piping: Copper Tubing and Fittings
  - 2. Curb Stop w/ Drain and Curb Boxes
  - 3. Backflow Preventer (BFP)
  - 4. Water Meter (Water Meter to be provided by City of Cambridge Water Department)
  - 5. BFP / Meter Enclosure
  - 6. Drinking Fountain
  - 7. Leakage Tests and Disinfection

## MATERIALS

- A. Piping:
  - 1. Copper Tubing: New pipe used for water services for underground installation to the backflow preventer, splash pad command center, connection to ductile iron pipe and connection to curb stop assemblies shall be copper Type K water tube seamless, drawn temper, almost pure copper material manufactured to the requirements of

- ASTM B 88 Standards, and AWWA C800 Standards. Tube shall be manufactured from copper alloy C12200 having a chemical composition of a minimum of 99.9% Copper (Cu) and Silver (Ag) combined and a maximum allowable range of Phosphorous (P) of 0.015 % - 0.040 %. The Seamless copper water tube of drawn temper is required to be identified with a green color stripe and the manufacturer's name or trademark.
2. High Density Polyethylene Tubing: New pipe used for water services for underground installation shall be blue, virgin natural HDPE tubing conforming to the latest AWWA C901 Standards. HDPE shall be ultra high molecular weight polyethylene tubing 2" CTS (Copper Tubing Size) rated for 200-psi pressure. Stainless steel inserts shall be required for joining HDPE tubing and brass fittings.
- B. Curb Stops: Curb stops shall be of brass composition with drain and shall be Red Hed, Mueller ball valve, Cambridge Brass, or Ford. They shall be "T" head type. All brass material shall be ANSI/ NSF 61 (NO LEAD) compliant. The inlet and outlet shall have compression connections. Curb stops shall OPEN RIGHT.
1. Each curb stop shall be provided with a cast iron plug cover equipped with a brass pentagon operating nut. The valve box shall be Erie style top and slide type or approved equal. The cast iron box shall be the extension type with arch pattern. Inside diameter of upper section shall be at least 3" for 1-1/2" and 2" curb stops. The top section shall be slide type, a minimum of 24" long. Bottom section shall be slide type, a minimum of 39" long. Curb boxes shall contain an extension rod with centering ring adapter with 1/2-inch solid shank head, shaft to be 5/8-inch stainless steel, 30" long, yoke to be ductile iron 5/16-inch stock, yoke pin brass or stainless steel. Centering ring shall fit a standard Erie style curb box.
- C. Service Boxes and Covers:
1. Boxes for valves shall be 5 1/2-inch inside diameter, shaft, sliding type. The bell end of the lower section shall have a minimum inside diameter of 8".
  2. The bottom section shall be 36" long, unless otherwise specified on the plans, and provided with belled (buffalo) base. The base shall be integral to the bottom section.
  3. The top section shall be 26" long and designed to slide over the base.
  4. The cover shall be a heavy 2" drop type, non-tilting cast/ductile iron unit that is recessed in the box top to prevent plow breakage. The cover shall be provided with two pick holes for easy removal and have the word "WATER" clearly cast into the cover.
  5. All valve box components shall be coated with a bituminous coating in accordance with AWWA C110.
- D. Couplings: All required couplings shall be Red Hed, Mueller, Ford Quick Pak Cambridge Brass, and McDonald or approved equal by the Water Cambridge Water Department.
- E. Pipe Saddles: All pipe saddles shall be double strap design.
- F. Underground Warning Tape: All water main and service pipe installations shall also include the installation of metallic underground warning tape.
1. Tape shall be blue, 4"-6" in width.
  2. Tape marking shall read "CAUTION BURIED WATER MAIN BELOW" labeled in

accordance with the American Public Works Association.

#### BACKFLOW PREVENTER

- A. Backflow preventer shall be reduced pressure, consist of two in-line independent check valves, with an intermediate relief valve. All brass material shall be ANSI/ NSF 61 (NO LEAD) compliant. Ball valve shut-off shall have a full port, quarter-turn operating capability. The assembly shall be lead-free, and be designed to protect potable water supplies. Backflow preventers shall be similar in design to “Watts” Series 009. Lead free requirements shall only apply to backflow preventers that are 3” or smaller. Backflow preventer shall be installed in an above grade box, see Paragraph 2.03.

#### BACKFLOW PREVENTER/METER ENCLOSURE

- A. Enclosure shall be Aluminum, foam insulated, and locking-box for setting on concrete pad. Enclosure shall be made of a non-corrosive gel coat surface. Enclosure shall have drainage outlets and reinforced mounting flanges.
- B. Enclosure shall be adequately sized to fit the proposed backflow preventer, meter, piping and valves arrangement with proper clearances as shown on the Detail Drawing.
- C. Meter: Meter shall be provided by the City of Cambridge Water Department and installed by th Contractor. The Contractor shall contact Brian McCoy at the Cambridge Water Department to order the water meter.
- D. Ball Valve: Ball valve shall be full port, 2-piece bronze body, bottom loaded stem, stainless steel handle and nut, NPT x NPT end connection suitable for potable water (Lead Free).

#### DRINKING FOUNTAIN

- A. Drinking fountain shall be Barrier-Free round pedestal, stainless steel with bottle filler type GYM5 or as approved by the Landscape Architect.
- B. Manufactured by Markstaar; PO Box 6807, Scarborough, ME 04070; phone: 603-671-3341; email: sales@markstaar.com; website: www.markstaar.com
- C. Color: Satin Stainless Steel
- D. Include Following Option: Pet Fountain Receptor (PF).
- E. Contractor shall be responsible for installing backflow preventer and connecting underground system to make fully operational, as well as testing the working order of the drinking fountain parts and water pressure.
- F. Contractor shall be responsible for providing the City with the necessary information to winterize the drinking fountain system.
- G. Drinking fountain shall be equipped with ¾” hose bib connection.

#### (3) Construction Methods

#### WATER SERVICE PIPE

- A. All work on the water services (copper and polyethylene tubing) shall be properly coordinated with the City of Cambridge Water Division personnel. Copper tubing shall be used for connection of water service to ductile pipe, curb stops and connection to polyethylene tubing, also to transition below ground to above ground backflow preventer and meter fixtures. Connections will be made with compression and threaded brass fittings and as shown in the Contract Drawings.
- B. Curb stops and boxes shall be set plumb and centered with the box located directly over the stop. The box shall be set on a 6” stone base. Earth fill shall be carefully tamped around the boxes to a distance of 4 feet on all sides of the box or to the undisturbed face of the trench, if less than 4 feet.
- C. All services shall be installed with a minimum cover of 5 feet in accordance with

the Standard Construction details in these Contract Documents and the Cambridge Water Department. The service pipe trench shall be backfilled in sand bedding and in accordance with the pipe manufacturer.

D. Underground Warning Tape

1. Metallic underground warning tape shall be installed 1-foot to 2-feet from the crown of the pipe.
2. Tape shall be installed in accordance with the manufacturer's recommendations.
3. Any tape damaged during shipment or installation shall be immediately replaced prior to backfilling the trench.

BACKFLOW PREVENTER/METER ENCLOSURE

- A. The below listed items shall be installed per manufacturer's written instructions, and as shown on the Contract Drawings.
- B. The enclosure to be installed on concrete slabs set on a 12" thick crushed stone foundation.
- C. The aluminum enclosure to be bolted from the mounting flanges onto the concrete slab in accordance with the manufacturer's written instructions, and as shown on the Contract Drawings.
- D. Backflow preventer shall be installed inside the aluminum enclosure fitted with brass unions for removal during winter in accordance with the Cambridge Water Department, and as shown on the Contract Drawings.
- E. Water meter shall be installed inside the aluminum enclosure fitted with brass unions for removal during winter in accordance with the Cambridge Water Department, and as shown on the Contract Drawings.
- F. Ball Valve: Ball valve shall be fitted with brass fittings into the 2" copper tubing upstream of the water meter inside the aluminum enclosure in accordance with the Cambridge Water Department, and as shown on the Contract Drawings.

DRINKING FOUNTAIN

- A. Drinking fountain shall be installed per manufacturer's written instructions

TESTING

- A. The water service pipe shall be given pressure and leakage tests in sections of appropriate length in accordance with AWWA C600 Standards and in the presence of the City of Cambridge Water Division personnel.
- B. Notification: The Engineer and the Owner shall be notified, in writing, at least forty-eight (48) hours prior to the hydrostatic testing of the pipe line.
- C. The Contractor shall furnish a water meter and a pressure gage. The Contractor shall furnish and install suitable temporary testing plugs or caps for the pipe line; all necessary pressure pumps, pipe connections and other similar equipment; and all labor required; all without additional compensation for testing. The meter and gage shall be installed by the Contractor in such a manner that all water entering the section under test will be measured and the pressure in the section indicated, and they shall be kept in use during both tests.
  1. The section of the pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. For the pressure test, the Contractor shall, by pumping, raise the water pressure (based on the elevation

at the lowest point of the section under test and corrected to the gage location) to a pressure of 150% of the water service piping working pressure.

#### DISINFECTION AND FLUSHING

- A. After successful completion of pressure and leakage testing, the Contractor shall thoroughly flush the installed service line. Flushing of the completed line is to be followed by sterilization in accordance with AWWA C651 Standard Methods for disinfecting water mains.
- B. The test results for chlorine residuals for times as specified in the method of disinfecting must be submitted to the Cambridge Water Department.
- C. The applied dosage shall be such as to produce a chlorine concentration of not less than 10 mg/l after a contact time of not less than 24 hours. The initial chlorine concentration shall be 50 ppm.
- D. If the initial treatment fails to produce the desired result, the chlorinating procedure must be repeated. Discharge of chlorinated water shall comply with all Federal, State and Local Standards. Cambridge DPW must be contacted prior to flushing. De-chlorinating facilities shall be used as required.
- E. During the disinfection period, care shall be exercised to prevent contamination of water in existing mains.

#### (3) Measurement

ITEM 380., WATER WORKS SYSTEM, will be measured as a Lump Sum, complete, in-place and as indicated on the Contract Drawings including copper tubing and fittings; trenching and backfilling, all work incidental to installation of a complete operating system as required.

ITEM 380.1, BACK FLOW PREVENTER, will be measured as a Lump Sum, complete in-place and as indicated on the Contract Drawings including backflow preventer, installation of water meter, piping and ball valves arrangement inside aluminum enclosure set on concrete pad including stone bedding.

ITEM 389., DRINKING FOUNTAIN WITH ¾" HOSE BIB, will be measured per each, complete, in-place.

#### (4) Payment

ITEM 380., WATER WORKS SYSTEM, shall be paid at the contract unit price bid per Lump Sum which payment shall include furnishing all required submittals, shop drawings, materials, tools, equipment and labor required to install the system as shown on the plans and as required by the Engineer.

ITEM 380.1, BACK FLOW PREVENTER, shall be paid at the contract unit price bid per Lump Sum which payment shall include furnishing all required submittals, shop drawings, materials, tools, equipment and labor required to install the backflow preventer as shown on the plans and as required by the Engineer.

ITEM 389., DRINKING FOUNTAIN WITH ¾" HOSE BIB, shall be paid at the contract unit price bid per Each which payment shall include furnishing all required submittals, shop

drawings, materials, tools, equipment and labor required to install the drinking fountain as shown on the plans and as required by the Engineer.

**ITEM 390.                    IRRIGATION SYSTEM REMOVED AND RESET                    LUMP SUM  
   AND NEW IRRIGATION CONTROLLER**

The work under this Item shall be in accordance with the relevant provisions of Section 300 of the Standard Specifications for Highways and Bridges, Regulations of the City of Cambridge Water Department, and the following:

(1)     Description

Contractor shall obtain the services of an irrigation installer to remove the existing system from along the east side of the existing sidewalk, which runs along the west side of Galileo Galilei Way. The existing irrigation system consists of 31 individual spray heads. The Contractor will be responsible for adjusting the system as required and installing the system back along the sidewalk once excavation and grading of the new path is complete.

Contractor shall obtain the services of an irrigation installer to remove the existing irrigation system control box and install a new control box for the existing irrigation system. The Contractor will be responsible for re-connecting all existing irrigation zones and providing a new controller, valve box, solenoids, and any other hardware and fittings required to complete the installation. The new valve box cover shall be installed on a new concrete pad at the location shown on the plans, or as required by the Engineer.

(2)     Materials and Construction Methods

The reset system shall have industry standard coverage of the existing landscaped area and shall have system components that are compatible with the existing system. The proposed system shall be reinstalled in approximately the same location and connected to the existing system as shown on the plans or as required by the Engineer.

The new irrigation controller shall have system components that are compatible with the existing system.

Controllers shall automatically operate the irrigation system and be able to accommodate all aspects of design, including rain shutoff, multiple schedules and repeat cycles. Irrigation controlling units shall be enclosed in secure weather and vandal-resistant, locking housing manufactured expressly for that purpose. Controller shall not be installed within an irrigation spray pattern.

All piping, connectors, fittings, spray heads and other appurtenances required to make the proposed system whole and functional shall be included for payment under this Item.

The Contractor shall make his own investigation of the existing system and provide shop drawings to the Engineer for approval, prior to ordering any system materials. The shop drawings shall show layout of the spray heads, including spray pattern coverage and layout of any required piping. New materials shall be shown to be compatible with the existing system.

The Contractor shall coordinate the electrical service connection with Eversource Energy and shall install conduit and wiring as necessary to connect and power the new irrigation system.

The electrical service conduit and cable from the electric manhole, to the irrigation control cabinet will be provided by the Contractor. The local electric utility company will connect the terminals of the control cabinet to the source of supply.

The installation of conduit and wiring on or in local electric utility company facilities shall be in strict accordance with the regulations of the utility company. All work performed by the Contractor at local electric utility company structures shall be performed under the direct observation of a utility company inspector or representative.

The Contractor will be responsible for coordinating the electrical work in the vicinity of the irrigation control cabinet and for notifying the local electric utility company that construction has started and arranging the necessary time schedule with them for installation of electrical service to the control cabinets. Under no conditions shall the Contractor make permanent patch to the roadway or apply the final roadway surface if the roadway is to be resurfaced, or until services to the control cabinet has been completed.

The contractor will be responsible for all costs and fees related to the service connection provided by the utility (Eversource Energy). Their payment shall be the sole responsibility of the Contractor and considered incidental to the item.

**NOTE: Irrigation Zone 2C shall be turned off until the City of Cambridge Water Department has fixed an existing water leak in the Galileo Galilei Way median island.**

(3) Measurement

ITEM 390., IRRIGATION SYSTEM REMOVED AND RESET AND NEW IRRIGATION CONTROLLER, will be measured as a Lump Sum, complete, in-place and functional for the irrigation system.

(4) Payment

ITEM 390., IRRIGATION SYSTEM REMOVED AND RESET AND NEW IRRIGATION CONTROLLER, shall be paid at the contract unit price bid per Lump Sum which payment shall include furnishing all required submittals, shop drawings, materials, tools, equipment and labor required to remove the existing system, reset the system, re-connect all existing irrigation zones, coordinate with Eversource Electric, install conduit and wiring to connect and power the system, equipment and labor required to remove and dispose of the existing control box and cabinet and install the new controller, cabinet, and concrete pad, as shown on the plans and as required by the Engineer.



ITEM 420.	HOT MIX ASPHALT BASE COURSE	TON
ITEM 443.	ROADWAY DUST CONTROL	(INCIDENTAL)
ITEM 460.	HOT MIX ASPHALT	TON
ITEM 472.	HOT MIX ASPHALT FOR MISCELLANEOUS WORK	TON

Work to be done under these items shall conform to the relevant provisions of Sections 420, 430, 440 and 460 of the Standard Specifications and to the following:

#### MATERIALS

The Hot Mix Asphalt Base Course, Intermediate -Binder Course, and Top Course Pavement mixes shall be per Table "A" of the Standard Specifications as currently amended and supplemented by MassDOT.

#### CONSTRUCTION METHODS

All paving (except possible cases of miscellaneous patching) shall be when the air temperature is 40 degrees Fahrenheit or above. Day time paving shall be between April 15<sup>th</sup> and November 1<sup>st</sup> and night time paving shall be between May 1<sup>st</sup> and October 1<sup>st</sup>.

The pavement thickness shall be as shown on the drawings and details and as directed by the Engineer.

The work of this Section also includes (as part of Item 472.) temporary patching of utility excavations.

**At work locations where proposed finished grades are not indicated on the Drawings, the proposed grades shall be discussed with the Engineer prior to work, in order to address existing and proposed drainage concerns. The Contractor shall be responsible for ensuring that all paved areas are graded to drain, either to existing structures, or new structures.**

Liquid Asphalt Emulsion shall be applied prior to installation of asphalt as incidental to this item. Emulsion shall be AC-20 conforming to AASHTO M226 and shall be applied at a temperature over 100 degrees F by an emulsion truck.

The emulsion truck shall have pneumatic tires of such width and number that the load produced on the surface shall not exceed 650 pounds per inch of tire width, and it shall be designed, equipped, and operated so that at an even heat the emulsion may be applied uniformly on variable widths of surface at readily controlled rates from 0.05 to .20 gallons per square yard as required by the Engineer.

The emulsion shall be applied within a pressure range of 25 to 75 pounds per square inch. Distributor equipment shall include a tachometer, pressure gauges, volume-measuring devices, and a thermometer for reading the temperature of tank contents. The distributor shall be self-powered and shall be equipped with a power unit for the pump and full circulation spray bars adjustable laterally and vertically.

At all locations where new asphalt pavement will abut existing pavement, the Contractor shall saw-cut the existing pavement neat and straight as shown on the detail drawings. All joints shall

be tacked with Emulsified Asphalt, Type RS-1 before paving. The joint shall be tacked again after paving and sanded.

No diesel shall be used on castings or for cleaning of equipment. Only soap and water shall be allowed.

The Contractor shall take all reasonable measures to assure proper drainage on the final surface of the roadway. Pavement which does not drain properly due to poor workmanship shall not be accepted by the City.

At locations which are not complete at the end of the day, the Contractor shall use paper joints. In no case shall a longitudinal joint be left open to traffic at day's end.

The Contractor shall be required to provide a minimum of two vibratory mechanical rollers. One shall be a steel drum with front and rear rollers and a minimum weight of 10 tons. The other roller shall be a combination roller with four rubber front tires and a rear steel drum. The roller shall be a minimum weight of eight tons. An all rubber tire roller with a minimum weight of eight tons can be substituted for the combination roller.

The Contractor shall supply an approved Dial Type Asphalt Thermometer (Range 50 degrees F to 500 degrees F) for each paving machine in operation on the project. The thermometer shall remain the property of the Contractor upon completion of the project.

The Contractor shall be responsible for coordinating structure adjustment by other utilities prior to paving.

Dust Control: The Contractor shall perform dust control as directed by the Engineer and in accordance with Section 440 of the Standard Specifications. The Contractor shall prevent operations from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity of the Project. The Contractor shall be responsible for any damage resulting from dust originating from its operations. Dust abatement measures shall be continued until the Contractor has completed its work. Dust abatement measures shall include but not be limited to spraying water, applying calcium chloride, and placing temporary pavement on and around trenches and on work sites.

#### COMPENSATION

Hot Mix Asphalt pavement will be measured for payment as specified in Sections 420 and 460 of the Standard Specifications.

Dust control will not be measured for payment, and will be considered incidental to the hot mix asphalt items, and sidewalk items, as appropriate.

Payment for work under Items 420, 460 and 472 shall be at the contract unit price per ton and shall include full compensation for labor, materials including emulsified asphalt, equipment, and any other incidentals necessary for the satisfactory completion of this work as specified.

**Please note that emulsion truck and rubber tire roller are a requirement for paving. Failure to comply with this requirement will result in the City prohibiting the Contractor from paving. There shall be no additional cost to the City in this event.**

<b>ITEM 504.</b>	<b>GRANITE CURB TYPE VA4 – STRAIGHT</b>	<b>FOOT</b>
<b>ITEM 509.</b>	<b>GRANITE TRANSITION CURB FOR PEDESTRIAN RAMPS – STRAIGHT</b>	<b>FOOT</b>
<b>ITEM 509.1</b>	<b>GRANITE TRANSITION CURB FOR PEDESTRIAN RAMPS – CURVED</b>	<b>FOOT</b>

Work to be done under these items shall conform to the relevant provisions of Sections 501 and 580 of the Standard Specifications and to the following:

#### CONSTRUCTION METHODS

The Contractor shall neatly sawcut existing adjacent pavement and excavate a trench for the curb or edging that is eighteen (18) inches wide and as deep as required to allow the sub-grade to be twenty four (24) inches below the top of the finished curb/edging. The curb/edging reveal shall be as indicated on the Drawings or as directed by the Engineer.

Cement concrete shall be installed on the subgrade for curb/edging foundation and shall be six (6) inches thick and eighteen (18) inches wide. Cement concrete shall be 4000 PSI at 28 day Test, 3/4" aggregate, 5% air entrainment, and maximum 4" slump.

After the curb stone is in place, cement concrete shall be placed on both sides of the curb stone. On the sidewalk/landscape side of the curb, the cement concrete shall be brought up to the elevation of the sub-base of the sidewalk or other proposed surface material as shown on the Drawings. On the street side of the curb, the cement concrete shall be brought up to the same elevation as the bottom of the adjacent hot mix asphalt binder course (in full depth construction areas), or as directed by the Engineer (in overlay areas).

At flush transverse curbs, cement concrete shall be placed both sides of the curb as shown on the Drawings and Details.

The joints shall be pointed with mortar conforming to Section M4.02.15 of the Standard Specifications. Joints greater than 3/4" shall have a non-shrink caulking applied as directed by the Engineer.

Any work requiring chamfering, cutting or caulking of curb shall be incidental to these items. This shall include cutting the bottom of curb stone in order to clear shallow utility structures.

It is the intent of this project that maximum re-use be made of existing curbing. Where "Proposed Granite Curbing" is indicated on the Drawings, the Contractor shall construe this to mean either new material, or existing curbing within the project area which meets the requirements (including proper radius) of Section 580 of the Standard Specifications.

All curbing unsuitable for continued use shall be disposed of by the Contractor as directed by the Engineer.

## COMPENSATION

Curb items will be measured for payment as specified in Section 501 of the Standard Specifications.

Payment for work under these items shall be at the contract unit price per foot or each (as appropriate) and shall include full compensation for sawcutting, excavation, disposal, furnishing tools, equipment, labor, cement concrete foundation and backfill, hot mix asphalt, and any other incidentals necessary for the satisfactory completion of this work as specified.

Excavation of existing hot mix asphalt, brick and concrete pavements as required for the work of this section is included under these items.

**ITEM 509.7            INTERPRETIVE GRANITE SEATING ELEMENTS            EACH**

**ITEM 509.8                            GRANITE SEATING ELEMENTS                            EACH**

This work shall consist of furnishing and setting engraved granite elements and granite seating blocks on a gravel foundation in accordance with the details shown on the Drawings, as specified in these Specifications and as required by the Engineer. The work under these items also includes the sand-blasted lettering on the granite elements.

### Submittals

Interpretive Granite Seating Elements

1. The Contractor shall submit product sample with engraving and specified finish and supplier's information for engraved granite paver.

Provide full size drawings showing all text for inscribed pavers and indicating font style and size. Final text is attached in the Contract Drawings.

## CONSTRUCTION METHODS

Interpretive Granite Seating Elements (Salvaged Granite Elements with Sand Blasted Lettering)

- A. Granite gateway element: salvaged granite blocks selected for dimensions and quality.  
Quantity: 2.  
Source:
  1. Stone Farm; 45 South Main Street, Newtown, CT 06470; phone: 203-270-2900; website: [www.stonefarmliving.com](http://www.stonefarmliving.com)
  2. Ole New England Granite / The Reed Corporation; One New Salem Street, Wakefield, MA 01880; phone: 781-334-4805; email: [oldnewenglandgranite@comcast.net](mailto:oldnewenglandgranite@comcast.net); website: [www.oldnewenglandgranite.com](http://www.oldnewenglandgranite.com)
  3. Or approved equal.
- B. Stone sizes approx. 5'-6" min. length by 18" min. width/depth.

- C. Split or rock face finish.
- D. Hand selected by Landscape Architect.
- E. Include footing.
- F. Sand-blasted lettering: GRAND JUNCTION
  - 1. Graphic Design, and Lettering size, etc. to be determined but of a scale to be viewed from a distance.
  - 2. Scope of contactor work to include graphic design, full size shop drawings of lettering and spacing of lettering. And full size template mockup in field prior to commencement of sandblasting.
- G. Contractor to coordinate with the Landscape Architect in the placement and attachment of the granite elements.

### Granite Seating Elements

- A. Salvaged granite blocks selected for dimensions and quality. Quantity: 7.  
Source:
  - 1. Stone Farm; 45 South Main Street, Newtown, CT 06470; phone: 203-270-2900; website: [www.stonefarmliving.com](http://www.stonefarmliving.com)
  - 2. Ole New England Granite / The Reed Corporation; One New Salem Street, Wakefield, MA 01880; phone: 781-334-4805; email: [oldnewenglandgranite@comcast.net](mailto:oldnewenglandgranite@comcast.net); website: [www.oldnewenglandgranite.com](http://www.oldnewenglandgranite.com)
  - 3. Or approved equal.
- B. Stone sizes approx. 5'-6" min. length by 18" min. width/depth.
- C. Split or rock face finish.
- D. Hand selected by Landscape Architect.
- E. Include footing.
- F. Contractor to coordinate with the Landscape Architect in the placement and installation of the granite blocks.

See Plans for seating stone location and orientation. Seating stones shall be selected by the Engineer and the CRA.

### Crushed Stone for sub-base:

As detailed on Drawings and as specified elsewhere in the Contract Documents.

## CONSTRUCTION METHODS

### Field Measurements

Verify dimensions and field measurements to ensure items are located and secured and function properly when installed. Submit details of proposed departures due to field conditions or other causes to the Engineer for approval.

### General Installation

Time delivery of site improvement items to minimize on-site storage time prior to installation. Protect stored materials from weather, careless handling, and vandalism. If crane is required for installation of boulders or seating elements, etc., cost shall be contractor's expense.

### Granite Seating Blocks Installation

Deliver, off-load and place granite seating blocks in locations and orientations approved by the Engineer being careful not to scratch seating blocks.

Excavate locations as directed such that granite seating blocks are set partially buried and appear "naturalistic." Granite seating elements shall be placed under the direction of the Engineer. Provide necessary equipment, chains and labor for picking blocks, conveying them to their locations, shimming the blocks to be at the intended heights and orientations. Blocks shall be carefully picked up with chains. Blocks shall be secured with wood blocking to keep chains and adjacent blocks from scratching weathered surface of blocks.

Purchase, load, secure, and deliver stones from the site of selection to the project site. Contractor shall notify the Engineer one month in advance of anticipated selection date and delivery date.

Install and secure rocks in place in an approved manner and as shown on drawings. Contractor shall anticipate the necessity for use of a crane and/or heavy machinery to lift and place block.

No dumping of granite seating elements is permitted. Blocks shall be carefully offloaded by picking them up with chains and carefully placing stones to minimize scraping. Provide proper positive drainage around granite seating blocks.

#### COMPENSATION

Interpretive Granite Seating Elements and Granite Seating Elements will be measured, complete-in-place, per each granite element and granite seating block installed, in accordance with the Contract Drawings, Standard Specifications, directions from the Engineer, and as specified herein.

The unit prices stated shall be full compensation for furnishing, engraving and setting new interpretive granite seating elements and new granite seating elements, and for furnishing all labor, tools and any other equipment necessary to complete the work.

<b>ITEM 580.</b>	<b>CURB REMOVED AND RESET</b>	<b>FOOT</b>
<b>ITEM 580.2</b>	<b>LANDSCAPING GRANITE CURB INSTALLED – CURB PROVIDED BY CRA</b>	<b>FOOT</b>
<b>ITEM 580.21</b>	<b>FLUSH GRANITE CURB INSTALLED – CURB PROVIDED BY CRA</b>	<b>FOOT</b>
<b>ITEM 580.22</b>	<b>FLUSH GRANITE CURB MEDIAN – CURB PROVIDED BY CRA</b>	<b>FOOT</b>
<b>ITEM 580.23</b>	<b>ENGRAVED GRANITE CURB INSTALLED – CURB PROVIDED BY CRA</b>	<b>FOOT</b>
<b>ITEM 594.</b>	<b>CURB REMOVED AND DISCARDED</b>	<b>FOOT</b>

Work to be done under these items shall conform to the relevant provisions of Sections 501 and 580 of the Standard Specifications and to the following:

### CONSTRUCTION METHODS

The Contractor shall neatly sawcut existing adjacent pavement and excavate a trench for the curb or edging that is eighteen (18) inches wide and as deep as required to allow the sub-grade to be twenty four (24) inches below the top of the finished curb/edging. The curb/edging reveal shall be as indicated on the Drawings or as directed by the Engineer.

Cement concrete shall be installed on the subgrade for curb/edging foundation and shall be six (6) inches thick and eighteen (18) inches wide. Cement concrete shall be 4000 PSI at 28 day Test, 3/4" aggregate, 5% air entrainment, and maximum 4" slump.

After the curb stone is in place, cement concrete shall be placed on both sides of the curb stone. On the sidewalk/landscape side of the curb, the cement concrete shall be brought up to the elevation of the sub-base of the sidewalk or other proposed surface material as shown on the Drawings. On the street side of the curb, the cement concrete shall be brought up to the same elevation as the bottom of the adjacent hot mix asphalt binder course (in full depth construction areas), or as directed by the Engineer (in overlay areas).

At flush transverse curbs, cement concrete shall be placed both sides of the curb as shown on the Drawings and Details.

The joints shall be pointed with mortar conforming to Section M4.02.15 of the Standard Specifications. Joints greater than 3/4" shall have a non-shrink caulking applied as directed by the Engineer.

Any work requiring chamfering, cutting or caulking of curb shall be incidental to these items. This shall include cutting the bottom of curb stone in order to clear shallow utility structures.

It is the intent of this project that maximum re-use be made of existing curbing. Where "Proposed Granite Curbing" is indicated on the Drawings, the Contractor shall construe this to mean either new material, or existing curbing within the project area which meets the requirements (including proper radius) of Section 580 of the Standard Specifications. All curbing unsuitable for continued use shall be disposed of by the Contractor as directed by the Engineer.

### Reused Vertical Pink Granite Curbing for Landscape Curbing

- A. Pink granite stones salvaged by Cambridge Redevelopment Authority for reuse as landscape curbing. Stones to be sorted and selected based on appearance and regularity of size. Stones to be cleaned of existing mortar.
- B. Provide 4" reveal.
- C. Contractor to coordinate with the Landscape Architect in the placement and installation of the granite.
- D. Stones to be cleanly cut for reuse in configurations as shown on drawings and/or as approved in shop drawings by Engineer. Stones shall be cut to uniform lengths for use as radius curb along the back of sidewalk as required by the Engineer.

- E. Maximize width of straight curbing to be used for radius condition (cut in maximum 4'-0" lengths).

#### Reused Pink Granite Accent Curbs for Flush Granite Curb

- A. Pink granite salvaged by Cambridge Redevelopment Authority for reuse as flush pavement bands, to be sorted and selected based on appearance and regularity of size. Stones to be cleaned of existing mortar.
- B. Size of material is assumed to be 6" by 18" by variable lengths.
- C. Stones to be cleanly cut for reuse in configurations as shown on drawings and/or as approved in shop drawings by Engineer. Straight curbing to be used for radius condition.
- D. Stones to be laid flush on subbase with 18" width exposed.

#### Reused Pink Granite Interpretive Engraved Element at Multi-use Path – Harvard Street

- A. Pink granite stones salvaged by Cambridge Redevelopment Authority for reuse as interpretive element.
- B. Include Footing.
- C. Sand-blasted lettering: HARVARD STREET
- D. Graphic Design, and Lettering size, etc. to be determined but of a scale to be viewed from a distance.
- E. Scope of contactor work to include graphic design, full size shop drawings of lettering and spacing of lettering. And full size template mockup in field prior to commencement of sandblasting.
- F. Contractor to coordinate with the Landscape Architect in the placement and installation of the stone interpretive element.

#### COMPENSATION

Curb items will be measured for payment as specified in Section 501 of the Standard Specifications.

Payment for work under these items shall be at the contract unit price per foot or each (as appropriate) and shall include full compensation for removal and resetting, installing curb provided by Cambridge Redevelopment Authority, engraving sand blasted lettering on curb provided by Cambridge Redevelopment Authority, sawcutting, excavation, transportation, disposal, furnishing tools, equipment, labor, cement concrete foundation and backfill, hot mix asphalt, and any other incidentals necessary for the satisfactory completion of this work as specified.

Curb provided by the CRA is stockpiled at the corner of Binney Street and Third Street. Coordination with CRA and Main Street contractor shall be included. Also incidental to this item is the transportation by the Contractor of curb to be used from the stockpiled location to the project site and delivery to any shop for engraving as required.

Excavation of existing hot mix asphalt, brick and concrete pavements as required for the work of this section is included under these items.



**ITEM 645.148**

**48 INCH CHAIN LINK FENCE (PTR)  
BLACK VINYL COATED (LINE POST OPTION)**

**FOOT**

(1) Description

The work under this item shall consist of furnishing and installing a black vinyl coated 48 inch chain link fence (Pipe Top Rail) (Line Post Option) as shown on the plans and as required by the Engineer.

(2) Materials and Construction Methods

The materials and construction methods used to install a 48 inch chain link fence (Pipe Top Rail) black vinyl coated (Line Post Option) shall be in conformance with the requirements of Section 644, Chain Link Fence and Gates, of the MassDOT "Standard Specifications", the City of Cambridge Standard Specifications and Details, and as approved by the Engineer.

Submittals:

The contractor shall submit shop drawings for approval prior to ordering fencing materials. Shop drawings shall include all materials, dimensions, sizes, and methods of installation.

(3) Measurement

48 Inch Chain Link Fence (Pipe Top Rail) Black Vinyl Coated (Line Post Option) will be measured per foot, complete in place for the locations shown on the contract drawings or as required by the Engineer.

(4) Payment

The work for 48 Inch Chain Link Fence (Pipe Top Rail) Black Vinyl Coated (Line Post Option) shall be paid on a per foot basis. The price per foot shall include full compensation for all labor, equipment, tools, shop drawings and other incidentals required for the satisfactory completion of the work, including excavation, gravel back fill, and fence post foundations as outlined in these Specifications.

**ITEM 665.1**

**CHAIN LINK FENCE REMOVED AND DISCARDED**

**FOOT**

**ITEM 669.1**

**WOOD GUARDRAIL REMOVED AND DISCARDED**

**FOOT**

Work to be done under these items includes the removal and disposal of existing chain link fence along the railroad right-of-way and wood guardrail and as shown on the plans and as required by the Engineer, and shall be done in accordance with the following:

CONSTRUCTION METHODS

All wood guard rail and chain link fence indicated to be removed shall be removed and properly disposed of off the project site. Holes or depressions resulting from removal of posts shall be filled

with ordinary borrow, and all work and materials necessary to fill the holes will be considered incidental to this item.

All materials removed and discarded under this Item shall become the property of the Contractor who shall be responsible for its proper disposal away from the project site at no extra compensation or cost to the owner.

The Contractor shall remove the existing railroad chain link fence and 1 foot of vegetation on both sides along the fence line. Any existing plantings in question of removal shall be coordinated with the DPW Property Manager.

During removal of the existing railroad fence, the Contractor shall maintain a continuous barrier between the Contractor's Work Zone and the railroad property by installing short sections of the new fence in front of the existing fence and removing sections of existing fence without entering the railroad right of way.

All openings in the existing fence or between old and new fence shall be blocked with temporary chain link fence when the contractor is not on site.

In the event that the Contractor is required to access the railroad side of the fence or any action performed may involve entering upon railroad property, the Contractor shall request a railroad flagger from Keolis Commuter Services at his own expense.

#### COMPENSATION

Wood Guard Rail Removed and Discarded and Chain Link Fence Removed and Discarded, shall be measured in its original position from center of post to center of post and the quantity to be paid for will be the length per foot that is actually removed as conforming to the Standard Specifications, and as required by the Engineer.

Wood Guard Rail Removed and Discarded and Chain Link Fence Removed and Discarded shall be paid for at the contract unit price per foot, which price shall be full compensation for all required labor, tools, equipment, and materials for removing guard rail, backfilling holes, vegetation one foot on either side, and disposal costs for discarded wood guard rail and chain link fence as required.

<b>ITEM 698.5</b>	<b>TREE ROOT BARRIER</b>	<b>FOOT</b>
-------------------	--------------------------	-------------

(1) Description

Work under this item shall consist of furnishing and installing a root barrier system at locations shown on the plans or as required by the engineer for purposes of preventing tree roots from penetrating the pavement structure of proposed paths and sidewalks.

(2) Materials and Construction Methods

The root barrier shall be constructed of high density polyethylene (HDPE) material. HDPE root barrier shall conform to the following applicable standards: ASTM D 638, ASTM D 790-B, ASTM D 256-73, ASTM D 751, Procedure A, ASTM D 1004 or ASTM D 4833.

The material shall measure a depth of 24 inches with the thickness to conform to manufacturers published information. Additionally the material shall have a feel of being sturdy and suitable to the intended use. The material shall come in manufacturers standard lengths either in roll or panel form. The Contractor shall install the root barrier at locations as shown on the drawings. The details of installation shall be as recommended by the manufacturer. The top of the proposed root barrier shall be placed a maximum of 1 inch (or as directed by the manufacturer) beneath the finished grade and covered with gravel borrow and/or loam borrow and seeded.

(3) Measurement

The quantity of Item 698.5, Tree Root Barrier, will be the number of feet actually installed. Measurement will not be made for material used for repairs, seams or overlaps.

(4) Payment

As work incidental to this item the Contractor shall have the manufacturer's representative on site to instruct personnel in proper installation methods until all parties are satisfied that the product is being properly installed. The contract unit price per foot for Item 698.5 shall include the cost of furnishing all labor, equipment, and materials necessary to complete the work including excavation and backfill.

<b>ITEM 701.10</b>	<b>6 INCH CEMENT CONCRETE SIDEWALKS</b>	<b>SQUARE YARD</b>
<b>ITEM 701.11</b>	<b>SCORED CEMENT CONCRETE DECORATIVE SIDEWALK</b>	<b>SQUARE YARD</b>
<b>ITEM 701.2</b>	<b>CEMENT CONCRETE PEDESTRIAN RAMP</b>	<b>SQUARE YARD</b>
<b>ITEM 701.28</b>	<b>DETECTABLE TILE – CAST IRON</b>	<b>SQUARE YARD</b>

Work to be done under these items shall conform to the relevant provisions of Section 701 of the Standard Specifications and to the following:

MATERIALS

Concrete:

Concrete for sidewalks shall conform to the Standard Specifications, M4.02.00 through M4.02.12 and be 4000 PSI at 28 day test, 3/4 inch coarse aggregate, 610 pounds cement per cubic yard, 6% air entrained (AASHTO - M154), Type A water reducing admixture (AASHTO - M194), 3 to 4 inch slump, and Type II dark-colored by adding 1-1/2 to 2 lbs. of lamp black per cubic yard at the plant.

The concrete shall contain 1 pound of 100% polypropylene microfiber per cubic yard. Fiber shall be added during batching at the plant to insure uniform distribution. The micro-fiber shall be W.R. Grace micro-fiber or equal and shall be used in accordance with the supplier's specifications.

Cast Iron Detectable Tile:

The detectable warning strip at concrete pedestrian ramps, raised side street treatments abutting concrete sidewalks, and raised crosswalks abutting concrete sidewalks shall be the Cast Iron Detectable Warning Plates by East Jordan Iron Works (800-626-4653) or approved equivalent product. The Cast Iron Detectable Plate shall meet all ADA Accessibility Guidelines for Detectable Warnings. Plates should have truncated domes and a slip resistant texture with a coefficient of friction rating greater than 0.80. Warning panels shall be at least 24" deep and 60" wide at the point of crossing.

Size: 24 in. (+/- 1") deep, cut as wide as the pedestrian ramp opening, and as wide of the crosswalk at raised side street treatments and raised crosswalks.

Submittals:

The contractor shall submit shop drawings for approval prior to ordering Cast Iron Detectable Tiles. Shop drawings shall include all materials, dimensions, sizes, and methods of installation.

CONSTRUCTION METHODS

These items shall include excavation and disposal of the existing material and the fine grading and compaction of the sub-base prior to placement of concrete or asphalt. A jack hammer or saw cut shall be used at the beginning of each excavation and at all "back-of-sidewalk" limits in order to avoid damage to abutting properties and features which are to remain.

If the existing material is unsuitable or more material is needed for sub-base, additional material shall be installed and paid for under Item 151 Gravel Borrow as directed by the Engineer. If the existing material is brick, the City reserves the right to direct the Contractor to deliver the bricks to a specified site within the City at no additional cost.

In areas where sidewalks are to be constructed in present roadway areas, the full depth of existing asphalt pavement shall be completely removed. Excavation of existing hot mix asphalt, brick and concrete pavements as required for the work of this section is included under these items.

Where new sidewalk abuts existing-to-remain sidewalk, the limit of work shall be established at the existing nearest existing contraction or expansion joint, where a neat sawcut shall be provided.

The Contractor shall exercise special care when excavating near trees. When major roots are in the way, the Contractor shall go under or between them. In no case shall the Contractor disturb the root structure of the trees without direction from the City Arborist. Exposed roots shall be covered promptly. Excavation of all tree wells shall be done entirely by hand.

All existing traffic signs within the limit of work shall be removed and delivered to the Cambridge Traffic Department, and all existing sign posts shall be removed and properly disposed of by the Contractor. This work shall be incidental to the various sidewalk items.

New traffic and street name sign posts, including new bases, shall be installed and paid for under Items 847.1 and 874. The work shall be sequenced such that regulatory sign messages shall be continuously maintained throughout construction.

The sub-base shall be prepared at the appropriate elevation for the depth of concrete or asphalt to be installed. The sub-base shall be graded to follow the proposed sidewalk elevations shown on the Drawings. At locations where no proposed grades are indicated, the sub-base shall be graded to allow for sidewalks to be sloped from the City right of way towards the street at 1/8 inch to the foot, or as directed by the Engineer.

The Contractor shall raise all water curb stop boxes to final grade and coordinate raising of other public and private utility boxes prior to pouring of concrete or placing of asphalt. The Contractor shall remove material from curb stop boxes with compressed air, after raising is complete and prior to pouring of concrete or placement of asphalt. Prior to pouring the concrete or placing the asphalt, the Contractor shall go over locations where curb boxes have been raised with the Engineer.

Proper compaction shall be obtained by means of plate-type mechanical compactors. The material shall be compacted to ninety-five percent (95%) of the maximum dry density at optimum moisture content as determined by the AASHTO Standard Method of Test T99 Method C.

Installation of Concrete: Concrete shall be installed to a depth of 6" at pedestrian ramps, across driveways, at street intersection corners (5' beyond the point of tangency on either side of the corner curve), and at other locations as directed by the Engineer. At all other locations, concrete shall be installed to a depth of 4".

Concrete sidewalks shall be placed between April 1<sup>st</sup> (pending no upcoming snow storms) and November 1<sup>st</sup> only. Ambient temperature shall be 40 degree or more.

Finishing shall be as specified in Subsection 701.61B of the Standard Specifications. Curing shall be as specified in Section 476.71 of the Standard Specifications. Contractor shall propose curing method for review prior to starting. Any curing compound shall not discolor the concrete, shall be compatible with linseed oil application after 28 days, and shall be applied according to the manufacturer's specifications. The mixture shall be applied immediately after the finishing is complete and free water has left the concrete's surface. The Contractor shall provide the Engineer with the curing compound specification prior to its use.

Expansion joints shall be placed every 30 feet. Expansion joints shall also be placed around all appurtenances such as utility poles, hydrants, manholes, and other obstructions extending into and through the sidewalk. Expansion joints installed around utilities shall be 3/8" foam expansion joint polyethylene at a depth to match the adjacent sidewalk (4" or 6"). It is also required that an expansion joint of 1/4" thick foam at 4" or 6" deep is placed longitudinally along the granite curb between curb and the concrete; and also between buildings or retaining walls

and the concrete sidewalk as directed by the Engineer. Six-inch expansion joints shall be placed at all locations where six-inch concrete corner slabs or driveways meet four inch concrete walks.

Expansion material protruding above the finished sidewalk shall be trimmed flush with a sharp instrument as soon as the concrete has set.

Between the expansion joints at 30 foot spacing, the sidewalk shall be divided as shown in the Drawing with score joints, made with creasing tools having a penetration depth of minimum 1/2" and at 10 foot intervals with construction joints. Joints shall be placed 90 degrees transverse with the direction of traffic and shall be straight within a tolerance of 1/4" of a straight edge laid along the joint. Longitudinal joints shall be installed, at the direction of the Engineer, when the sidewalk is greater than 6' wide.

After 28 days, using pressure-spray equipment, the Contractor shall apply a mixture of boiled linseed oil to the new concrete pavement as an anti-spalling seal. The mixture shall consist of 50% double boiled linseed oil and 50% petroleum spirits, AASHTO M-233-79. Upon approval by the Engineer, the Contractor may use other products available on the market in accordance with manufacturer's recommendations (2 applications at right angles to each other are required for complete coverage). The sidewalk shall be swept and cleaned of any debris, gum, etc, and pressure washed, just prior to application of curing linseed oil compound.

"Don't Dump" Placards: The work of this Section shall also include the installation of Cast Iron or Steel "Don't Dump" placards, where new sidewalks abut existing or proposed catch basins and inlets. The placards will be furnished by the City at no cost to the Contractor, for installation by the Contractor.

**Finish Grades: At locations where the Drawings do not indicate proposed sidewalk grades, the grades shall be discussed with the Engineer prior to work, in order to address existing and proposed drainage concerns. The Contractor shall be responsible for ensuring that all new sidewalk areas are graded to drain, either to existing structures, or new structures.**

Pedestrian ramps and sidewalks shall be installed in strict conformance with the layout and grades shown on the Drawings, current Americans with Disabilities Act (ADA) and Massachusetts Architectural Access Board (AAB) regulations; and the applicable details of the Massachusetts Highway Department (MHD) Wheelchair Ramp Standards (latest edition).

The Contractor shall establish grade elevations at all pedestrian ramp and sidewalk locations, and shall set transition lengths according to the tables which are included on the Drawings. The Contractor shall use a digital "Smart Level" to check all sub-base grades for compliance prior to installation of concrete. The Contractor shall not proceed with concrete installation on a sidewalk or ramp that is out of compliance without first contacting the Engineer.

At all pedestrian ramps and driveways, joints and transition sections which define grade changes shall be formed, staked and checked prior to placing cement concrete. All grade changes are to be made at joints. At driveways, a joint shall be located between the sloping portion of the driveway (15% maximum slope), and the level area where pedestrians will cross the driveway (1.5% maximum cross slope).

The broomed finish on pedestrian ramps shall be perpendicular to the direction of the slope.

### Detectable Tile

Cast iron detectable tiles shall be installed at time of sidewalk construction per manufacturer's directions and as shown on the plans and specified herein. Retrofit, bolted, or surface applied installations shall not be accepted.

### COMPENSATION

Sidewalk, driveways, and pedestrian ramps will be measured for payment as specified in Section 701 of the Standard Specifications, and the following:

Payment for work under these items shall be at the applicable contract unit prices and shall include full compensation for sawcutting, excavation (including removal of existing pavement in present roadway areas), disposal of construction debris (existing sidewalk, concrete, brick, asphalt, etc.), removal and disposal of traffic signs, preparation of sub-base, raising of water curb stop boxes, installation of "Don't Dump" placards, furnishing and placing cement concrete and hot mix asphalt as indicated, furnishing and installing detectable warning tiles, expansion joints, concrete sealant, and any other incidentals necessary for the satisfactory completion of this work as specified.

The Engineer reserves the right to extend any sidewalk limit of work shown on the plans up to an additional fifteen (15) feet, in order to connect to an existing ADA-compliant sidewalk. The Contractor will be compensated at the appropriate contract unit price for such increased quantities.

Notes on Exclusions: Disposal of any excavated soil is not included for payment under this item and shall be paid for separately. Changes necessitated to private property due to changes in grade of the sidewalk are not included for payment under this item and shall be paid for separately under the appropriate items; for example: asphalt driveways, granite curb, fencing.

### **ITEM 702.1                      POROUS PAVEMENT WALK SURFACE                      SQUARE YARD**

The work under this Item shall consist of constructing porous pavement walk surface on suitably prepared base course in accordance with the details shown on the Contract Drawings, in accordance with the City of Cambridge Standard Details and Specifications, as specified in these Specifications and as required by the Engineer.

Examine all other Items of the Standard Specifications, Standard Special Provisions and Special Provisions for requirements that may affect the Work of these Items whether or not such work is specifically mentioned.

The work under this Item shall conform to the relevant provisions of the Standard Specifications, except as amended and supplemented as indicated on the Contract Drawings, specified herein and as required by the Engineer.

The Flexible porous paving shall be "KBI FLEXI®-PAVE" HD2000 which is made from recycled passenger & truck tires, aggregate and a flexible binding agent as manufactured by K.B.

Industries or equivalent. (All components, materials and compounds are 100% sourced and manufactured in the USA)

The Contractor shall furnish all labor, materials, tools, equipment, and incidentals including crushed stone sub-base required to install KBI FLEXI®-PAVE to the depth and width indicated, as shown in the Drawings or at the direction of the Owner's Representative.

## MATERIALS

### Referenced Standards

Contractor shall comply with applicable requirements of the following codes and industry standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. The following references are used herein and shall mean:

- A. ASTM - American Society for Testing and Materials,
- B. AASHTO - American Association of State Highway and Transportation Officials,
- C. ACI – American Concrete Institute,
- D. Standard Specifications – “Standard Specifications for Highway and Bridges”, MassDOT/Highway (formerly Massachusetts Highway Department, and Department of Public Works), Commonwealth of Massachusetts, latest edition and all Supplements.

### Related Work

Examine all other Items of the Special Provisions and all Drawings for the relationship of the Work under this Item and the Work of other trades. Cooperate with all trades and coordinate all Work under this Item herewith.

### Quality Assurance

Contractor shall comply with all regulations, laws, and ordinances required by all authorities having jurisdiction. All labor, materials, equipment, and services necessary to make the work comply with such requirements and the work shown on the Contract Drawings, as specified herein and as directed by the Engineer shall be provided without additional cost to the Owner.

### Qualifications

Contractor for all landscape improvement work shall be well versed in procedures used in these items, and shall demonstrate that work of the same type, scale and complexity has been performed within the New England area. The paving work shall be performed by a firm having a minimum of five (5) years acceptable experience in the installation of the materials specified on this project. Refer to Submittals, herein.

### Submittals

For each type of item, submit to the Engineer a list of five projects in which this type of item has been constructed. Indicate Sub-contractor responsible, personnel overseeing work, Owner of Project, location, and scale (in dollars) of work.

At least 30 days prior to intended use, Contractor shall provide the following samples and submittals for approval. Do not order materials until Engineer's approval of samples, certifications and/or test results has been obtained. Delivered materials shall closely match the approved samples. Samples and approvals that are not obtained prior to the ordering of materials



or the completion of work shall result in possible disapproval of obtained materials or completed work.

Shop Drawings: Submit 5 black line copies of detailed Shop Drawings for each item required to be fabricated or installed under these items. Include plans, sections and details as required to show all materials, layout, dimensions, jointing, method of connection and assembly, fabrication and tolerances for types of materials, types and details of connections and openings, cuts, holes, bolts and painting for all items required. Take all necessary field dimensions and verify dimensions as required. Shop Drawings required are as follows:

Submit certificates, signed by the materials producer and the paving subcontractor, stating that materials meet or exceed the specified requirements, including materials description, proportions, and mechanical sieve sizes of aggregates.

A material sample shall be provide that reflex the characteristics of the material to be installed, this sample, upon approval, shall be maintained as the standard of minimal quality for approval of all the proposed surfacing and paving work required for the project.

Color shall be Cypress, as approved by the Cambridge Redevelopment Authority.

Manufacturers' Literature or test results: Submit six (6) copies of each of manufacturer's material descriptions and/or installation instructions for the following:

Five 1 lb. bags of aggregate for Cold-Placed Flexible Porous Pavement in a range of aggregate types and colors as specified. Each shall be accompanied by sieve analysis report from supplier.

Submit to the Owner at end of one-year maintenance/warranty period for Cold-Placed Flexible Porous Pavement as a condition of final acceptance. All materials shall be labeled with project name, pathway type use:

Forty 50-pound bags of aggregate from same batch as installed material in heavy, woven polyethelene mesh bags with waterproof labels indicating contents.

Five copies of manufacturer's maintenance instructions.

Five copies of contractor's maintenance notes indicating dates of inspections, repairs made, quantity of aggregate and binder utilized for repairs and repair field notes indicating weather conditions, problems encountered, contacts with manufacturer's representative related to these problems or for any other reason and means by which problems were resolved.

Product Literature, Certifications and Documents:

Submit manufacturer's product literature for Cold-Place Flexible Porous Pavement.

Submit certification of installer of Cold-Place Flexible Porous Pavement.

Submit NOAA website ([www.noaa.gov](http://www.noaa.gov)) printout for Cambridge indicating forecast is compliant with manufacturer's criteria for temperature ranges and weather the day prior to proposed installation date for Cold-Place Flexible Porous Pavement.

### Mock-ups and Samples:

#### General:

Schedule mock-up construction so that mock-up can be accepted a minimum of 30 days prior to the application of pavement surfaces represented by the mock-up.

Locate mock-up panels in areas as directed by Engineer. Construct a 5' x 5' mockup of selected Cold-Placed Flexible Porous Pavement path surfacing, aggregate color shall be **Cypress**, as approved by the Cambridge Redevelopment Authority for the finished path.

Continue to construct mock-ups until acceptable mock-ups are produced (at no cost to Owner). Acceptable mock-ups shall become the standard for texture, color and workmanship of all subsequent work.

Use same setting bed and joint mixes used in accepted mock-ups in final work unless otherwise directed by Engineer.

Protect accepted mock-ups from damage until completion and acceptance of the work represented by the mock-ups. Final mock-up shall remain undisturbed and shall be maintained for the duration of construction, becoming the standard for acceptance of all proposed elements. Mock-ups shall simulate actual design and execution conditions for paving materials, mixing of paving materials, installation sequence, curing, use of temporary and/or permanent protective coating system, and methods for correction of defective work. Mock-ups shall show all aspects of finish paving appearance including workmanship, color, jointing, edge treatment, sealing and cleanliness.

### Delivery

Materials shall be delivered in original packages with Manufacturers' labels. Engineer will have the right to reject materials delivered in damaged packages without labels.

### Storage

Materials shall be stored in a dry condition above ground on raised platforms, covered by opaque, waterproof tarpaulins or roofs, and shall be protected from damage and theft. Products delivered and stored for use shall match products submitted and approved by Engineer, or shall be rejected.

### Cold-Placed Flexible Porous Pavement

Sub-contractor installing the pavement surface shall certify he/she will supply and install a warranted material that is composed of recycled automobile tires (3/8" granules), aggregate rock (1/2") and a urethane-based bonding agent. Surface material shall be porous, flexible, non-cracking in freeze-thaw conditions, and weight-bearing. It shall be slip resistant, and shall withstand the impact of 30 tons. It shall be. Surface shall have a pervious water infiltration rate of a minimum of 250 gallons/square foot/hour and an 18%-22% dynamic flexible void capacity. Pavement shall be resistant to the following materials: transmission, hydraulic and brake fluids,

gasoline, diesel fuel, oil, salt water, chloride, ozone, bromine, and muriatic acid. Material shall be tested in accordance with the Federal Hazardous Substance Act (16 CFR 1500.44) and be determined to be non-flammable. The color shall be black, and the sealant color shall be transparent or clear.

- A. Manufacturer: Capitol Flexi-Pave, LLC, 27 Pidgeon Hill Drive, Suite 278, Sterling, VA 20165; phone: 202-760-1099; email: info@capitolflexipave.com; website: www.capitolflexipave.com
- B. Color: Cypress
- C. Vertical formed edges as shown on drawing.
- D. Licensed/approved subcontractor.
- E. Subbase materials per standard details.

The Engineer shall approve the materials, color mix and sealant.

#### Base Courses

For the porous pavement base material, utilize dry Item 156. - Crushed Stone for Sub-base (M2.01.1) at the depths indicated on the Contract Drawings.

#### QUALITY ASSURANCE

1. "KBI FLEXI®-PAVE" must be installed by a K.B. Industries, Inc. CERTIFIED INSTALLERS having the KBI CERTIFICATION NUMBER. (This number can be requested at any time from K.B. Industries, Inc. for verification)
2. The "KBI FLEXI®-PAVE" CERTIFIED INSTALLER shall have adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.
3. All materials, methods of construction and workmanship shall conform to applicable requirements unless otherwise specified.
4. All "KBI FLEXI®-PAVE" HD products are designed for light, slow speed (less than 35mph) vehicular traffic. The following are not permitted: Track Vehicles (metal or rubber), Forklifts (warehouse-variable Reach), Main Lifts (booms or scissors), and/or dumpsters or roll-off containers. Any explicit or implied warranty is voided by improper use.

#### CONSTRUCTION METHODS

##### General

All items located on the Contract Drawings shall be fabricated and installed by Contractor as detailed on the Contract Drawings, as per manufacturers' written installation procedures and as directed by the Engineer. All fabrication and installation work shall be accomplished using the highest standards of workmanship and shall include all excavation, compaction and fine grading of sub-base and gravel base materials, labor, transportation and incidentals to make the work complete.

Contractor shall schedule delivery of items and all necessary equipment and hardware so as to arrive at the site in a timely manner to comply with construction schedule and minimize on-site storage time. Contractor shall be ready to discuss the purchasing of site improvements with long lead times at the beginning of the Contract so suitable arrangements can be made to meet the date of completion. Items delivered to the site prior to scheduled installation time shall be stored in a secured staging area with all small components retained separately by Contractor. Protect all items from weather, careless handling, construction in the vicinity, and vandals or pilferers. Stake locations of all items in the field for approval by Engineer before commencing any excavation.

## PROJECT CONDITIONS

Existing Conditions- Installer/Contractor shall provide appropriate and adequate protection including but not limited to:

2. Protection of adjacent work space from splashing of paving materials. Remove all stains from exposed surfaces of paving, structures, and grounds. Remove all waste and spillage.
3. Provide suitable protection to assure no damage or disturbance to existing improvements or vegetation. Before starting work and maintain protection throughout the course of the work.
4. Restore damaged improvements, at no additional costs, that has been damaged as a result of construction work, including existing paving on or adjacent to the site, to their original condition or repair as directed to the satisfaction of the Owner's Representative, and/or the authority's having jurisdiction at no additional cost.

### Safety and Traffic Control:

1. When construction work will interfere with existing roads and traffic the Installer/Contractor shall notify and cooperate with local authorities and other jurisdictional organizations and provide temporary barriers, signs, warning lights, flaggers, and other protections as required by the authorities and other jurisdictional organizations to assure the safety of persons and vehicles around the construction area and to organize the smooth flow of traffic.

### Weather Limitations:

1. "KBI FLEXI®-PAVE" shall not be installed when the ambient air temperature in the shade away from artificial heat, at the paving site is above 95° F.
2. The KBI Certified Installer shall not pave on days when rain is forecast, unless a change in the weather results in favorable paving conditions as determined by the Owner's Representative.

### Excavation

After approval of all shop drawings, execute all excavations according to Section 120 - EXCAVATION, proceeding within work area so as to avoid disruption of existing materials to remain or newly installed items. Any items to remain or items that are newly installed that are damaged shall be replaced or repaired to existing conditions by Contractor at no cost to the Owner. Backfilling of footings shall be as specified for those items.

### Base Courses

Base courses shall be installed to conform to the plans, sections and elevations shown on the Contract Drawings and as follows:

Crushed Stone base for porous pavement shall be furnished and placed according to the relevant requirements of Section 401 – GRAVEL SUB-BASE, except that the crushed stone shall be spread and compacted in layers not to exceed 4 inches in depth.

#### Protection during Construction

Protect adjacent plantings and site improvements from construction of pavement.

#### Cold-Placed Flexible Porous Pavement Preparation and Base

Contractor shall engage an authorized product installer of material utilized during installation of the path pavement. Product representative shall be experienced in work similar to that required for this Project and shall be approved by the Engineer.

Contractor shall coordinate complete installation of site utilities and all site improvements in the vicinity of pavement prior to installing porous pavement. Protect all adjacent plantings and site improvements from construction of Cold-Placed Flexible Porous Pavement.

Make any corrections necessary to fine-graded and compacted base. Filter fabric shall be placed on compacted sub-grade immediately prior to placing crushed stone base. Roll out fabric so that seams are located perpendicular to the length of the path. Remove any folds, sags, or uneven areas in fabric by pulling taut. Overlap adjacent pieces of fabric a minimum of 12 inches. Filter fabric must not be exposed to natural light for more than 5 days. Contractor shall store fabric away from natural light until time of installation and shall not install more fabric than can be covered by gravel borrow and aggregate binder mixture in 2 days. Fabric exposed to natural light for more than 5 days shall not be accepted. Bring gravel base to the sections and elevations shown on the Contract Drawings.

The crushed stone shall be spread and compacted in three layers not exceeding 4" in depth compacted measurement and all layers shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by the standard AASHO test designation T99 compaction test Method C at optimum moisture content as determined by the Engineer. The specific density of base shall be maintained by determining the number of passes of a roller required to produce a constant and uniform density, after conducting a series of tests either using the sand/volume method or the nuclear device.

Compaction of the crushed stone course shall continue until the surface is even and true to the proposed lines and grades within a tolerance of 3/8 inch above or below the required cross sectional elevations and to a maximum irregularity not exceeding 3/8 inch under a 10 foot line longitudinally. Any specific areas of stone base which, after being rolled, does not form a satisfactory, solid, stable foundation shall be removed, replaced and re-compacted by the Contractor without extra compensation.

#### Installing Cold-Placed Flexible Porous Pavement Surface

Certified sub-contractor for manufacturer's porous pavement shall assure adequate materials to install the entire porous surfacing are on-site prior to beginning installation. Components shall be mixed on-site at a location approved by the Engineer. Install paving as per the manufacturer's written instructions and specifications. Pavement surface can only be installed and cured for first 24-hours when temperatures are between 45 degrees F and 95 degrees F, when crushed stone base is dry and when there is no forecast for precipitation. One day prior to installing any porous

pavement, Contractor shall submit to the Engineer a printout from the NOAA website ([www.noaa.gov](http://www.noaa.gov)) with either Cambridge or Boston, MA entered for weather forecast to verify temperatures and lack of precipitation will comply. The Engineer may otherwise reject the proposed date of work if the site area ground is frozen or if other reasons preclude installation. The material shall be installed in such a manner that it is completely free of joints or seams. Properly protect new and existing paving, steps, curbs, walls, lights and planting against splashing and spattering from materials during preparation and installation of pavement. Remove and replace or satisfactorily clean any materials damaged at no additional cost. Cleaning method shall be approved by the Engineer.

Permeable pavement shall be installed to smooth line and grade with minimum cross pitches and dimensions shown on the Contract Drawings. Low spots and ponding on pavement will require replacement of that section.

Radii shall be smooth and edges clean and even, as contained by temporary wood restraints until paving has set and cured. Restraints shall be removed carefully after pavement has cured (10 days minimum). Cleanly backfill edges after restrain removal with approved compacted loam and seed with specified seed mix.

Install all sleeves and utility routings that conflict with pavement before pavement installation. Cutting and repair of installed walkway as a result of sleeve or utility crossings or damage by construction for any reason will not be acceptable and will require repair replacement of the entire length of the pavement and damaged section of base shown on the Contract Drawings at no additional cost to the Department.

Pavement shall be clean and finished grade seeded lawn even with walkway edges for acceptance.

The Contractor shall mix the pavement on site and shall hand trowel areas that need special attention. The Installer shall show the DCR Landscape Architect the color choices of sealers before the final sealer is installed. The sealant shall be chosen to make the paving look as natural as possible.

#### Maintenance of Cold-Placed Flexible Porous Pavement

Contractor shall furnish and install construction safety fence around new pavement as specified. Construction fence shall be installed after installation of pavement in such a way as to prevent public access to the new pavement after each period of construction. Fencing shall be kept in place for a minimum of 72 hours after completion of the pavement installation, or as directed by the Engineer.

Maintenance shall be as recommended by the manufacturer's written instructions. Provide two copies of written instruction to the Engineer.

#### Repairs of Cold-Placed Flexible Porous Pavement

Contractor shall make any repairs to porous pavement according to manufacturer's written instructions.

Refer to Submittals for materials to be submitted to the Owner at end of one-year maintenance/warranty period for Cold-Placed Flexible Porous Pavement.

As a condition of Final Acceptance, Contractor shall maintain and submit a typed/word processed log of all maintenance activities including, but not limited to:

- a. all dates of pathway inspections,
- b. dates and types of repairs made and equipment utilized, and numbers/types of personnel required,
- c. quantity of porous pavement utilized for repairs,
- d. weather conditions 8-hours before, during and 8-hours after repairs,
- e. problems encountered, if any,
- f. contacts with manufacturer's representative related to these problems or for any other reason,
- g. means by which problems were resolved.

#### Warranty of Cold-Placed Flexible Porous Pavement

Contractor shall provide a warranty as outlined by manufacturer for performance of product. Contractor shall warranty installation of product for the time of one year commencing at time of substantial completion of the project.

Contractor shall provide for a period of the one-year warranty period, unconditional maintenance to include complete repairs to any areas that fail. Repairs shall be as specified by the pavement manufacturer.

#### EXECUTION

##### **KBI FLEXI®-PAVE (UNITARY FLEXIBLE SEEMLESS POROUS PAVEMENT)**

- a. The material shall have a warranty of 10 years for pedestrian or non-traffic applications. Any explicit or implied warranty is voided by improper use.
- b. All "KBI FLEXI®-PAVE" HD products are designed for light speed (less than 35mph) vehicular traffic. Any implied warranty is voided by improper use. No Track Vehicles (metal or rubber), Forklifts (warehouse-variable Reach), Main Lifts (booms or scissors), and/or dumpsters or roll-off containers.
- c. The material must be mixed directly at the installation site. Available for use after 24-hours.
- d. The placement of material must be able to accommodate up to a 30% slope.
- e. The material must withstand continual daily foot, bicycle, wheelchair, and rollerblading use and light, slow speed vehicular traffic (speed less than 35-mph).
- f. Application of the material will occur over various substrate materials including installation over natural earth. The product must retain durability over the various substrates.
- g. The material is available in a selection of color choices.
- h. The material shall be resistant to the following elements: transmission, hydraulic, and brake fluids, gasoline, diesel, saltwater, oil, chlorine, ozone, bromine, and muriatic acid.
- i. Application of the material will occur in locations identified by the Engineers or Clients over various substrate materials and the product must retain durability over the various substrates to include:
  1. Crushed aggregate
  2. Concrete surfaces
  3. Asphalt surface
  4. Wood surfaces

## 5. Metal surfaces

### MEASUREMENT

Item 702.1, POROUS PAVEMENT WALK SURFACE, will be measured per SQUARE YARD, compacted and in place, including excavation, fine grading and compaction, and one-year maintenance and repair. Measurement of Crushed Stone for Sub-base (Item 156.8) will be measured by the CY under that Item.

No separate measurement shall be made for shop drawings, submittals, staking, or for approvals with the Engineer.

### COMPENSATION

Payment for Item 702.1, POROUS PAVEMENT WALK SURFACE, will be made at the Contract unit price per SQUARE YARD, which price shall include excavation, crushed stone for subbase, filter fabric, fine grading and compaction, one-year maintenance and repair, all labor, materials, construction safety fence, equipment and transportation required to complete the installation to conform to the Contract Drawings and Special Provisions to the satisfaction of the Engineer.

No separate payments for these items shall be made for shop drawings, submittals, staking, or for approvals with the Engineer.

### **ITEM 706.1            BRICK SIDEWALK REMOVED AND RELAID            SQUARE YARD**

The work under this item shall conform to the relevant provisions of Section 701 of the Standard Specifications and the following:

### CONSTRUCTION METHODS

Work under this item shall consist of resetting portions of existing brick sidewalks adjacent to reconstructed pedestrian ramps, where indicated on the plans, or as required by the Engineer.

The Contractor is to examine the existing walk and reset it in the same manner. Walks reset will follow the same horizontal alignment as existing and the slope of the proposed ground and shall tie into the remaining walk without the need for a step.

The Contractor shall be responsible for familiarizing himself with the existing walks and shall document the construction and condition prior to removing the existing walk. The walk surface materials shall be stored and protected by the Contractor until reset. The Contractor is put on notice that it is anticipated that extensive handwork shall be required in order to complete this item. Following the construction of the side slopes in the area of the existing walks, they shall be reset. The Contractor shall coordinate the removal, storage and resetting of the existing walks with the Engineer. The Engineer shall be the sole judge on the successful completion of each walk.





1. Color: Charcoal
2. Anchor: "L" bracket security mount
3. Quantity: See drawing.
- 4.

The Contractor shall guarantee all work against defective materials and workmanship for a period of one year after final acceptance for new benches provided by the contractor under these items.

Adirondack chairs and benches shall be installed as shown on the plans and in accordance with the manufacturer's directions. All Adirondack chairs and benches shall be anchored to the concrete base in accordance with manufacturer's recommendations.

**PAYMENT**

Adirondack Chairs and Benches shall be paid for at the contract unit price bid per each, which price shall constitute full and complete compensation for all labor, materials, anchoring hardware and bolts, and equipment and all other incidentals required to finish the work, complete and accepted by the Engineer.

Concrete Foundations will be paid for under Item 904, 4000 PSI, ¾ Inch, 610 Cement Concrete.

<b>ITEM 707.9</b>	<b>BICYCLE RING AND POST</b>	<b>EACH</b>
<b>ITEM 707.91</b>	<b>BICYCLE RACK REMOVED AND RESET</b>	<b>EACH</b>

**DESCRIPTION**

This section specifies requirements for miscellaneous site furniture as shown on the Contract Drawings and as listed below.

**Submittals**

The Contractor shall provide the following submittals:

**Manufacturer's product literature:**

Submit manufacturer's material and installation instructions. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, field-assembly requirements, and installation details and maintenance data. Supply Certificate of Compliance for all materials required for fabrication and installation.

**MATERIALS**

**Concrete Bases, Slabs and Foundations**

Concrete for foundations shall be 4000 psi, 28 day compressive strength with ¾" aggregate in compliance with requirements of Section 900 of the Standard Specifications. The Contractor shall submit shop drawings detailing the concrete foundation as per this specification.

Reinforcing steel shall have a recycled content of 30% or greater and shall conform to the following standards;

1. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

2. Low-Alloy Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.
3. Plain-Steel Wire: ASTM A 82, as drawn.
4. Plain Steel Welded Wire Fabric: ASTM A185, fabricated from as-drawn steel wire into flat sheets.
5. Reinforcing shall be uncoated unless indicated otherwise on the Contract Drawings.

#### Gravel Sub-Base

Gravel subbase for site furnishings shall comply with the requirements of M1.03.0 Type B gravel borrow of the Standard Specifications.

#### Bicycle Ring and Post

- A. Model Type: Bike Hitch. Quantity: 6  
Bicycle Ring and Post shall be "Bike Hitch" model as manufactured by DERO Bike Racks, Cycle-Safe, Inc. or DuMor or approved equal. Centerbeam shall be 2" schedule 40 pipe (2.375" OD) and the ring shall be 1.5" OD, 11 gauge tube with an outside diameter of 16.5".
- B. Galvanized finish.
- C. Direct embedment detail.

#### Non-Shrink Grout

Non-shrink epoxy grout shall be Five Star Epoxy Grout as manufactured by Five Star Products, Fairfield, CT; Sika Corp. Lyndhurst, NJ or Fosroc-Preco Industries Ltd, Plainview, NJ.

#### Sealants

Sealant shall be a polyurethane-based, one component, elastomeric sealant complying with Federal Spec. TT-S-00230C, Class A Type 1 for horizontal use and Type 2 for vertical use. Color shall match the color of the adjacent materials as approved by the Engineer. Sealants shall be self leveling pour grade type for horizontal use and non-sag grade type for vertical use. Application of sealant for site improvements shall be in accordance with approved manufacturer's recommendations.

For horizontal use:

1. Vulkem 45, as manufactured by Mameko International, Cleveland, Ohio.
2. Urexpan NR-201, as manufactured by Pecora Corporation and supplied by Waldo Bros., Boston, MA
3. PRC-6006, as manufactured by Products Research and Chemical Corporation Gloucester City, NJ.

For vertical use:

1. Vulkem 45, as manufactured by Mameko International, Cleveland, Ohio.
2. Sikaflex 1-A, as manufactured by Sika Corp., East Hartford, CT.
3. Dynatrol 1, as manufactured by Pecora Corporation, Philadelphia, PA.

#### CONSTRUCTION METHODS

All site furniture shall be fastened in accordance with the Drawings and per the manufacturer's recommendations. All Site Furniture shall be installed in a level, plumb condition, true to the lines and grades show on plans. The bike ring and post shall be vertical with a tolerance of +/-1 degree.

Two magnetic levels affixed to the rack post shall be used in the field to ensure this tolerance is met.

The Contractor shall be responsible for timing the delivery of all items so as to minimize on-site storage time prior to installation. All stored materials and items must be protected from weather, careless handling and vandalism.

Cast-in-place concrete base and footings shall be installed in conformance with the requirements of Section 900 of the Standard Specifications.

Bicycle Ring and Post shall be embedded in a concrete foundation 20" in diameter and 12" deep. Embedment into concrete shall be a minimum 6". Set the bottom of the post such that the top of the post sits 35" above finished grade. Note that the concrete foundation shall be used in lieu of hot mix asphalt in brick sidewalk locations and that the top of the foundation is to be set at the bottom of the standard ¾" sand/asphalt setting bed.

Non-shrink grout for anchor bolts shall be installed as shown on Drawings and in conformance with manufacturer's instructions.

Sealant for anchor bolts shall be installed as shown on the Drawings and in conformance with manufacturer's instructions.

All bike rings and posts shall be fabricated and fastened in accordance with these specifications and per the manufacturer's recommendations. All bike rings and shall be installed in a level, plumb condition, true to the lines and grades shown on the detail drawings. Welding shall conform to the current standards of the AWS. Metal shall not be primed, painted, or galvanized before welding.

#### Special Requirements

The following special construction method requirements are in addition to the general requirements listed above.

The Engineer shall provide the Contractor with the proposed locations of bike rings and posts. The Contractor shall then stake locations of proposed bike ring posts for approval by the Engineer. Following acceptance of staked locations, the Contractor shall install posts and bike rings per manufacturer's recommendations, and apply sealant around posts to seal the opening in the surrounding pavement.

#### MEASUREMENT AND PAYMENT

Items 707.9 and 707.91 will be measured PER EACH installed complete-in-place including excavation, surface mounting appurtenances, pipe, hardware, concrete, reinforcement, concrete slab and footings, blocking, solid surfacing and all which price and payment shall constitute full compensation for complete compliance with requirements of this item, including all labor, equipment, materials, tools, incidental work, and construction methods.

**ITEM 748.****MOBILIZATION****LUMP SUM**

This section includes mobilization consisting of obtaining all permits; moving all plant and equipment onto the site required for the first month's operations; furnishing and erecting plants, temporary buildings, and project and other construction facilities; erecting project signs and traffic management signs; implementing security features and requirements; all as required for the proper performance and completion of the Work. Mobilization shall further include the following principal items:

Installing temporary construction power, wiring, and lighting facilities.

Developing construction water supply.

Providing on-site sanitary facilities and potable water facilities.

Arranging for and erection of Contractor's work and storage yard(s).

Having all OSHA required notices and establishment of safety programs.

Having the Contractor's superintendent at the job site full time.

Submitting initial submittals.

**COMPENSATION**

Payment for Mobilization will be at lump sum price bid for this item in the proposal and shall be payable when the Contractor is operational on the site. Operational is defined as the substantial commencement of work on site as described in the following paragraph. The Lump Sum price bid for mobilization shall not exceed 5 percent of the Total Amount of Bid.

Under the Lump Sum price bid for Mobilization, the Contractor shall move his equipment to the site and prepare to begin construction. Mobilization shall include all costs of initiating the Contract, exclusive of the cost of materials. Mobilization includes securing and constructing a staging area(s) for materials, furnishing office trailers fully equipped and supplied; furnishing and installing pre-construction traffic management signage; fabrication and installation of project sign; furnishing water, sewer, power and communication services for the office trailers; distributing contact numbers for Contractor's staff to City and Engineer; submission and approval of initial shop drawings; submission and approval of CPM schedule; submission and approval of Traffic Management Plans; submission and approval of initial work plans and sequencing plans; obtaining all necessary permits; installing temporary power, lighting and water for construction purposes; implementing security features; furnishing and installing temporary sanitary facilities; transporting all necessary trucks and construction equipment to the site necessary to begin construction; and all other work necessary to start Construction.

<b>ITEM 751.11</b>	<b>PLANTING BED MEDIUM</b>	<b>CUBIC YARD</b>
<b>ITEM 751.12</b>	<b>LAWN ROOT ZONE MEDIUM</b>	<b>CUBIC YARD</b>
<b>ITEM 751.13</b>	<b>LAWN ROOT ZONE MEDIUM –FORTIFIED</b>	<b>CUBIC YARD</b>
<b>ITEM 751.14</b>	<b>LAWN ROOT ZONE MEDIUM ON SLOPE</b>	<b>CUBIC YARD</b>

## **GENERAL**

This work under these items shall consist of furnishing and installing planting bed medium in planting beds and lawn planting medium in seeded lawn areas in accordance with the Contract Drawings, as specified herein and as directed by the Engineer

### **Definitions**

Subgrade: Soil material and levels resulting from the approved rough grading work.

1. Cultivation of subgrade areas prior to amending is included in this Section.
2. Subgrade soil(s): Subgrade soil shall be existing soil or other materials which are either undisturbed or have been placed resulting from the approved rough grading work and are located in the planting areas.

Planting Mediums: Planting Mediums are composed of a blend of three base components: base loam, organic material and sand. The quality of the blend depends on the quality of the original components. Contractor responsible for locating and obtaining approval of sources for base loam, organic material and sand that meet the Specification requirements. Contractor is then responsible for mixing the components referred to as mediums. Approximate mixing ratios are provided, but may require adjustment, depending on the final materials and with the approval of the Engineer or their representative, in order to meet Specification requirements for each blend.

1. Base Components
  - a. Base Loam: a natural growing medium.
  - b. Organic Material or Compost: a fully decomposed organic material.
  - c. Sand: uniformly graded medium to coarse sand.

### **Testing, Submittals, Mock-ups and Inspections**

Submittals: in accordance with Section 5.0, Control of the Work.

Experience: submit written documentation confirming Contractor has a minimum of five years of landscape construction experience completing projects of similar scope, complexity and value and consisted of manufactured soils.

References: submit a minimum of three reference including project address, dollar value, owner's name and contact information.

**Critical Path Processing** - Soils Testing Report Submittals:

1. Contractor responsible for recognizing that these critical project materials warrant timely and serious attention, that the testing process to achieve approved materials shall be considered a lead time item, and that under no circumstance shall failure to comply with all specification requirements be an excuse for “staying on project construction schedule” or for expedient substitution of unacceptable material(s).

Product Data: submit most recent printed information from manufacturer.

1. Organic Material: identify the material(s) from of which is it composed and identify the location where material was composted.
2. Fertilizers
3. Ground Limestone
4. Superphosphate

Certificates: Submit certification that soil blend components and soil mediums meet environmental standards of the State of Massachusetts for use in residential zones.

Testing: Testing is required at the following intervals:

Submit 1 gallon planting soil samples in two phases. Submit samples concurrent with horticultural soil test reports in both phases. Submit as phase one, planting soil base components for approval. Only after approval of phase one components, submit as phase two, soil blend mixes / mediums for approval. All reports must be from recent analyses, less than 90 days old, and represent materials that are available for delivery to the site.

Phase One Submittals of Planting Soil Base Components:

1. Base Loam
2. Organic Amendment Materials (Compost)
3. Sand

Phase Two Submittals of Planting Soil Mediums: mixing and batching of soils to be submitted in the same manner as bulk soils and will be prepared prior to delivery to site.

1. Planting Bed Medium
2. Lawn Root Zone Medium
3. Granular Subbase Material
4. Coarse Sand

Submit reports for each of the above samples: Submit sample from each proposed source for testing and approval. Deliver samples to both the testing laboratory and the project soil scientist and pay costs. Send report directly to Owner’s Representative.

Soil Sample Submittals: Sampling shall be done by the Contractor. The size of the samples and method of sampling shall be as follows: Samples shall be representative of the material to be brought to the site. Each sample shall be a Composite Sample, which consists of 5 separate sub samples taken from a minimum of (5) different locations at each source and mixed together to make the test sample.

Contractor shall schedule this testing in order to permit reasonable time for testing, evaluation, and approvals prior to scheduled installation.

Test Reports: Submit certified reports for tests as described in this Section.

Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System. Percent clay (0.002 mm) shall be reported separately in addition to silt (ASTM D-422-63, hydrometer method).

The silt and clay content shall be determined by a Hydrometer Test of soil passing the #270 sieve.

Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium Magnesium, Aluminum, Iron, Manganese, Lead, Cation Exchange Capacity, Soluble Salts, acidity (pH) and buffer pH.

Tests shall be conducted in accordance with Recommended Soil Testing Procedures for the Northeastern United States, 2nd Edition, Northeastern Regional Publication No. 493; Agricultural Experiment Stations of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont and West Virginia; Revised - December 15, 1995. Referenced Document may be obtained on the web at [http://ag.udel.edu/extension/Information/Soil\\_Testing/title-95.htm](http://ag.udel.edu/extension/Information/Soil_Testing/title-95.htm). Tests include the following:

1. Test for soil Organic Matter by loss of weight on ignition, as described in Northeastern Regional Publication No. 493, p. 59.
2. Test for soil CEC by exchangeable acidity method as described in Northeastern Regional Publication No. 493, p. 64.
3. Test for soil Soluble Salts shall be by the 1:2 (v:v) soil: water Extract Method as described in Northeastern Regional Publication No. 493, p. 74.
4. Test for Buffer pH by the SMP method as described in Northeastern Regional Publication No. 493, p.
5. Certified reports on analyses from producers of composted organic materials are required, particularly when sources are changed. Analyses will include all tests for criteria specified in "Organic Amendment (Compost).
6. Density Tests: ASTM D6938 - 10 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth). ASTM D698 Test Method for Laboratory Compaction Characteristics Of Soil Using Standard Effort.
  - a. In-place density tests shall be carried out at a rate of one test per 2,000 square feet for each type of material placed.
  - b. Testing Agencies: The following firms are acceptable testing agencies for laboratory testing of the various components.



c. Leaf Yard Waste Compost Stability Test and Pathogens/ Metals/ Vector Attraction: Woods End Research Laboratory, P.O. Box 297, Mt. Vernon, ME, 04352, tel: 201.293.2457, fax: 201.293.2488.

d. Leaf Yard Waste Compost/ All other tests except those listed above: University of Massachusetts, West Experiment Station, Amherst, MA 01003, tel: 413.545.2311, fax: 413.545.1931.

e. Mechanical Gradation and Chemical Analysis, All Components and Soil Mixes: University of Massachusetts, West Experiment Station, Amherst, MA 01003, tel: 413.545.2311, fax: 413.545.1931 or Hummel & Co. Inc., 35 King Street, P.O. Box 606, Trumansburg, NY 14886, tel: 607.387.5694.

7. Test results: test data and recommendations for soil amendments including but not limited to: nitrogen, phosphorus, potassium and limestone.

8. Samples: Prior to ordering the below listed materials, submit representative samples to the Engineer for selection and approval. Do not order materials until Engineer's approval has been obtained. Delivered materials shall closely match the approved samples.

- a. Organic amendment (Compost): duplicate samples of 1 gallon.
- b. Base Loam: duplicate samples of 1 gallon.
- c. Coarse Sand: duplicate samples of 1 gallon.
- d. Granular subbase material.
- e. Planting Bed Medium, after approval of individual components: duplicate samples of 1 gallon.
- f. Lawn Root Zone Medium, after approval of individual components: duplicate samples of 1 gallon
- g. Jute mesh to be used in slope areas.

Sources for Soil Components and Soil mediums: Submit information identifying the source for soil components and the firm responsible for mixing of soil mixes.

Soil components and soil mediums shall be supplied by the same single supplier.

Soil components and soil mediums shall be supplied by one of the following:

1. Read Custom Soils, 125 Turnpike Street, Canton, MA 02021, [www.readcustomsoils.com](http://www.readcustomsoils.com), phone #800-924-5335, contact: Terry Driscoll
2. Dexter & Harpell, 2352 Main Street, Concord, MA 01742, phone # 978-897-4901, contact: Tom Dexter.
3. New England Specialty Soil, 435 Lancaster St., Leominster, MA 01454 [www.nesoils.com](http://www.nesoils.com), phone # 978-466-1844, fax # 978-466-1882, contact: Ed Downing.

Engineer shall have the right to reject soil supplier.

Soil medium supplier shall have a minimum of five years experience at supplying custom planting soil medium mixes.

Submit supplier name, address, telephone and fax numbers and contact name.

Submit certification that accepted supplier is able to provide sufficient quantities of materials and mixes for the entire project.

### Inspection

Do not place planting soil on subgrade prior to inspection and approval of Engineer of subgrades for compliance with scarification, de-compaction and re-compaction specifications. Contractor shall request inspection before proceeding.

Do not place planting soil on sand or sand and gravel drainage blanket prior to inspection and approval of Engineer of drainage blankets for compliance with depth and connection with associated drainage line specifications. Contractor shall request inspection before proceeding.

Do not install plant material prior to inspection and approval of Engineer of planting soils for compliance with depth and compaction specifications. Request inspection before proceeding

### Delivery, Storage and Handling

In addition, the following provision is established: Material shall not be handled or hauled, placed or compacted when it is wet as after a heavy rainfall or is frozen. Soil shall be handled only when the moisture content is less than at field capacity. The Engineer and the Soil Scientist shall be consulted to determine if the soil is too wet to handle.

Store and handle packaged materials in strict compliance with manufacturer's instructions and recommendations. Protect all materials from weather, damage, injury and theft.

Sequence deliveries to avoid delay. On-site storage space is permissible only with written notice from Construction Manager. Deliver materials only after preparations for placement of planting soil have been completed.

Prohibit vehicular and pedestrian traffic on or around stockpiled planting soil.

Soil that is to be stockpiled longer than two weeks, whether on or off site, shall not be placed in mounds greater than six feet high. If soil stockpiles greater than six feet high are present longer than two weeks then the contractor shall break down and disperse soil so that mounds do not exceed the six-foot height restriction for longer than two weeks.

Vehicular access to the site is restricted. Before construction, the Contractor shall submit for approval a plan showing proposed routing for deliveries and site access.

Soil Moisture Content- Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air or that clods will not break readily, nor when it is frozen. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and planting.

## 1. Field Tests

- a. Form soil in palm of hand, if soil retains shape and crumbles upon touching, the soil may be worked.
- b. If the soil will not retain shape it is too dry and should not be worked.
- c. If the soil retains shape and will not crumble, it is too wet and should not be worked.
- d. If the soil glistens or free water is present after lightly patting the sample, the soil is too wet and should not be worked

**MATERIALS**

Soil Materials

General

1. Soil medium materials shall fulfill the requirements as specified and be tested to confirm the specified characteristics.
2. Samples of individual components of soil mixes in addition to blended soil mixes including mulch materials shall be submitted by the Contractor for testing and analysis to the approved testing laboratory. Comply with specific materials requirements specified.
  - a. No base component material or soil components for soil mediums shall be used until certified test reports by an approved agricultural chemist have been received and approved by the Engineer and Soil Scientist.
  - b. Make soil medium amendments and resubmit test reports indicating amendments until approved.
3. Engineer may request additional testing by Contractor for confirmation of medium quality and/or soil medium amendments at any time until completion.

Base Loam

Base Loam shall be imported and be free of subsoil, large stones, earth clods, sticks, stumps, clay lumps, roots or other objectionable, extraneous matter or debris. Base Loam shall also be free of quack-grass rhizomes, Agropyron Repens, and the nut-like tubers of nutgrass, Cyperus Esculentus, and all other primary noxious weeds. Base Loam shall not be delivered or used for planting while in a frozen or muddy condition. Base Loam for mixing shall conform to the following grain size distribution for material passing the #10 sieve:

Percent Passing		
U.S. Sieve Size Number	Minimum	Maximum
10	---	100
18	85	100
35	70	95
60	50	85
140	36	53
	270	32 42
	0.002mm	3 6

The ratio of the particle size for 80% passing (D80) to the particle size for 30% passing (D30) shall be 8 or less ( $D80/D30 < 8$ ). Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 20% by weight of the total sample. Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition. The organic content shall be between 4.0 and 8.0 percent by weight.

Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium Magnesium, Aluminum, Iron, Manganese, Lead, Cation Exchange Capacity, Soluble Salts, acidity (pH) and buffer pH.

Coarse Sand

Sand for Sand-Based Structural Soil and Drainage Medium below planting soils shall be uniformly graded medium to coarse sand consisting of clean, inert, rounded to sub-angular grains of quartz or other durable rock free from loam or clay, mica, surface coatings and deleterious materials with the following gradation.

U.S. Sieve Size Number	Minimum	Maximum
10	100	--
18	60	80
35	25	45
60	8	20
140	0	8
270	0	3
0.002mm	0	0.5

Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 20% by weight of the total sample. The ratio of the particle size for 70% passing (D70) to the particle size for 20% passing (D20) shall be 3.5 or less ( $D70/D20 < 3.5$ ). Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition. pH shall be less than 7.5.

Organic Amendment (Compost)

Organic Matter for amending planting soils shall be a stable, humus-like material produced from the aerobic decomposition and curing of Leaf Yard Waste Compost, composted for a minimum of one year (12 months). The leaf yard waste compost shall be free of debris such as plastics, metal, concrete or other debris. The leaf yard waste compost shall be free of stones larger than 1/2", larger branches and roots. Wood chips over 1" in length or diameter shall be removed by screening. The compost shall be a dark brown to black color and be capable of supporting plant growth with appropriate management practices in conjunction with addition of fertilizer and other amendments as applicable, with no visible free water or dust, with no unpleasant odor, and meeting the following criteria as reported by laboratory tests.

1. The ratio of carbon to nitrogen shall be in the range of 12:1 to 25:1.

2. Stability shall be assessed by the Solvita procedure. Protocols are specified by the Solvita manual (version 4.0). The compost must achieve a maturity index of 6 or more as measured by the Solvita scale. Stability tests shall be conducted by Woods End Research Laboratory, Mt. Vernon, Maine.

2. Pathogens/Metals/Vector Attraction reduction shall meet 40 CFR Part 503 rule, Table 3, page 9392, Vol. 58 No. 32, and Commonwealth of Massachusetts 310 CMR 32.00 (for applications to soils with human activity).

3. Organic Content shall be at least 20 percent (dry weight). One hundred percent of the material shall pass a 3/8-inch (or smaller) screen. Debris such as metal, glass, plastic, wood (other than residual chips), asphalt or masonry shall not be visible and shall not exceed one percent dry weight. Organic content shall be determined by weight loss on ignition for particles passing a number 10 sieve according to procedures performed by the West Experiment Station at the University of Massachusetts, Amherst or equal as follows. A 50-cc sub-sample of the screened and mixed compost is ground to pass the number 60 sieve. Two to three grams (+ 0.001g) of ground sample, dried to a constant weight at 105 degrees C is placed into a muffle furnace. The temperature is slowly raised (5C/minute) to 450C and maintained for three hours. The sample is removed to an oven to equilibrate at 105C and the weight is taken. Organic matter is calculated as loss on ignition.

4. pH: The pH shall be between 6.5 to 7.2 as determined from a 1:1 soil-distilled water suspension using a glass electrode pH meter American Society of Agronomy Methods of Soil Analysis, Part 2, 1986.

5. Salinity: Electrical conductivity of a one to five soil to water ratio extract shall not exceed 2.0 mmhos/cm (dS/m).

6. The compost shall be screened to 3/8 inch maximum particle size and shall contain not more than 3 percent material finer than 0.002mm as determined by hydrometer test on ashed material.

7. Nutrient content shall be determined by the University of Massachusetts Soil Testing Laboratory or equivalent laboratory and utilized to evaluate soil required amendments for the mixed soils. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Magnesium, Iron, Manganese, Lead, Soluble Salts, Cation Exchange Capacity, soil reaction (pH), and buffer pH.

#### Granular Free Draining Granular Subbase Material

Granular Stone shall be used below the Lawn and Sand-layers in the Fortified Lawn Soil Detail as shown on the Drawings.

#### Planting Bed Medium

Planting Bed Medium shall consist of a blend of approximately one part by volume of Coarse Sand, one part by volume of Base Loam and one part by volume of Organic Amendment. Blending of the components shall be carried out with earth moving equipment prior to placement. The components shall be blended to create a uniform mixture as determined by the Engineer

The final blended Planting Bed Soil shall conform to the following grain size distribution for material passing the #10 sieve:

Percent Passing by Weight U.S. Sieve Size Number	Minimum	Maximum
10	100	-
18	73	90
35	54	74
60	33	53
140	22	34
270	18	24
0.002mm	2.5	6

Maximum size shall be one inch largest dimension. The maximum retained on the #10 sieve shall be 20% by weight of the total sample.

Ratio of the particle size for 80% passing (D80) to the particle size for 30% passing (D30) shall be 7 or less. (D80/D30 <7)

Saturated hydraulic conductivity of the mix: not less than 2 inches per hour according to ASTM D5856-95 (2000) when compacted to a minimum of 86% Standard Proctor, ASTM 698.

Organic content: between 5.0 and 7.0 percent by weight.

Lawn Root Zone Medium (Lawn Soil)

Lawn Root Zone Medium shall consist of a blend of approximately two parts by volume of Coarse Sand to one part by volume Base Loam to one half part by volume Organic Amendment (2S:1L:1C) to create a uniform blend which meets the following requirements.

Gradation for Material Passing the Number 10 Sieve:

% Passing by Weight U.S. Sieve Size Number	Minimum	Maximum
10	100	-
18	70	90
35	45	72
60	26	40
140	14	20
270	11	14
0.002mm	2	4

Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 15% by weight of the total sample.

Ratio of the particle size for 70% passing (D70) to the particle size for 20% passing (D20) shall be 5.0 or less. (D70/D20 <5.0)

Saturated hydraulic conductivity of the mix: not less than 4 inches per hour according to ASTM D5856-95 (2000) when compacted to a minimum of 88% Standard Proctor, ASTM 698.

Organic content: between 4.0 and 5.0 percent by weight.

The pH shall be between 6.2 and 6.8.

### Sand-Based Structural Planting Medium

The Sand-Based Structural Planting Medium shall consist of a blend of approximately four parts by volume of Coarse Sand, one part by volume of Base Loam and one and one half parts by volume of Organic Amendment (4S:1L:1.5C). Blending of the components shall be carried out with earth moving equipment prior to placement. The components shall be blended to create a uniform mixture as determined by the Engineer.

The final blended Sand-Based Structural Soil Planting Soil shall conform to the following grain size distribution for material passing the #10 sieve:

Percent Passing	Minimum	Maximum
U.S. Sieve Size No.		
10	100	-
18	68	90
35	3	63
60	18	39
140	10	18
270	7	10
0.002mm	1	2

Maximum size shall be one inch largest dimension. The maximum retained on the #10 sieve shall be 15% by weight of the total sample.

The ratio of the particle size for 70% passing (D70) to the particle size for 20% passing (D20) shall be 3.5 or less ( $D70/D20 < 3.5$ ). Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.

Organic content shall be between 2.5 and 3.0 percent.

## CONSTRUCTION METHODS

### Pre-Installation Examination and Preparation

Coordinate activities with other project contractors so that there is no soil disturbance from traffic or other construction activities subsequent to placement.

Pre-Installation Examination Required: The Contractor shall examine previous work, related work, and conditions under which this work is to be performed and shall notify Engineer in writing of all deficiencies and conditions detrimental to the proper completion of this work.

Beginning work means Contractor accepts substrates, previous work, and conditions. The Contractor shall not place any planting soil until all work in adjacent areas is complete and approved by the Engineer and Soil Scientist.

Examination of Subgrade: The subgrade shall be examined by the Contractor prior to the start of soil placement and planting. Any deficiencies shall be noted and related to the Engineer in writing prior to acceptance of the subgrade by the Landscape Contractor. Deficiencies include, but shall not be limited to the following:

1. Construction debris present within the planting areas.
2. The subgrade is at incorrect depths for installing the designed soil profiles.
3. Incomplete irrigation and/or subsurface drainage installation.
4. Subgrade not compacted to levels specified.
5. Subgrade must infiltrate water at the rate of at least one inch per hour.
6. Standing water or muddy subgrade conditions.

#### Subgrade Compaction Mitigation

Coordinate the following scarification work to eliminate subgrade compaction with the site Earthwork Specifications done as a result of Construction Operations when located in lawn and planting areas. After the subgrade has been loosened and re-compacted, request approval from Engineer prior to placing Planting Soils. The Contractor shall not place any planting soil until all subgrade preparation work is complete and approved in writing by the Engineer and Soil Scientist.

#### Heavy Site Subgrade Compaction Mitigation:

1. Heavily compacted areas such as but not limited to temporary parking areas, material stockpile areas, construction areas and other similar areas.
2. Prior to establishing the final subgrade of Earthwork material, these areas shall be dug up or ripped to a depth of (18) inches to break up the compacted subgrade, then re-compacted with two passes of the tracks of a wide track bulldozer size D-6 or smaller, or other approved equipment.
3. General Site Subgrade Compaction Mitigation for all lawn and planting areas that are not heavily compacted and would be mitigated as specified in Item 1 above:
4. Immediately prior to placing planting soils, the entire subgrade shall be loosened by raking or using the teeth of a backhoe or other suitable equipment. After the soils have been loosened and inspected, planting soils may be spread by using a wide track bulldozer size D-5 or smaller or may be dumped and spread with the bucket of a backhoe from the edge of the loosened area. No rubber-tired equipment or heavy equipment except for a small bulldozer shall pass over the subsoils (subgrade) after they have been loosened. If the Contractor plans to utilize such areas for any use of heavy equipment, this work should be carried out prior to beginning the process of



loosening soils or filling in that area. Subgrade areas shall be re-compacted to 84 to 88% Standard Proctor.

#### Preparation and Mixing of Planting Soil Medium Mixes

Examine soil and remove foreign materials, stones and organic debris over 1/2" in size.

Correct deficiencies in soil as directed by horticultural soil test results. If lime is to be added, it shall be mixed with dry soil before fertilizer is added and mixed.

Planting soil mixtures shall be produced with equipment that blends together each component in a thorough and uniform manner.

Preparation and mixing shall be accomplished when the soil moisture content is less than field capacity and at a moisture content approved by the Engineer.

Incorporate pre planting fertilizer into top two inches of lawn root zone Soil at a rate of 20 pounds per 1000 square feet following placement and grading.

Incorporate pre plant fertilizer at a rate of 30 pounds per cubic yard of planting bed Soil. Amendment rate will be 6 times square foot application rate per cubic yard of planting mixture.

#### Backfilling of Planting Soil Layers

Soil Placement Preparation:

1. Verify plumbing for the irrigation system has been installed and accepted.
2. Notify Engineer of soil placement operations at least seven calendar days prior to the beginning of work.
3. Place plant stock simultaneously with the planting soil. The Engineer will stake trees and shrubs during placement of the planting soil.
4. Verify that the subgrade passes the minimum water infiltration requirement.

Placement of Planting Bed Medium and Lawn Root Zone Medium (Lawn Soil).

1. Immediately prior to placing Planting Bed Soil thoroughly compact subgrade area.
2. Spread Planting Bed Soil in lifts not greater than twelve inches and compact to a density between 84 and 86 percent Standard Proctor Maximum Dry Density. The surface area of each lift, including the subgrade after it has been compacted, shall be scarified by raking prior to placing the next lift.
3. Place and spread Planting Soil to a depth greater than required such that after settlement, finished grade conforming to the lines, grades and elevations shown on the Drawings. Ensure proper drainage in an uninterrupted pattern free of hollows and pockets.

4. Remove stiff clods, lumps, brush, roots, stumps, litter and other foreign material and stones over one inch in diameter and dispose of legally off site.
3. Place barricades as required to prevent compaction of planting soil from vehicles, equipment, or pedestrian traffic.

#### Testing, Submittals, Mockups and Protection

Protect newly graded areas from traffic, freezing and erosion. Keep free of trash, debris or construction materials from other work.

Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or compaction due to subsequent construction operations or weather conditions. Scarify or remove and replace material to a depth as directed by the Engineer; reshape and re-compact at optimum moisture content to the required density.

Where settling occurs, before final acceptance or during the warranty period, remove finish surfacing, backfill with additional approved material, compact to specified rates, and restore any disturbed areas to a condition acceptable to the Owner.

#### Coordination and Excess Materials

Coordinate activities with other project contractors so that there is no soil disturbance from traffic or other construction activities subsequent to placement.

Excess Planting Soil Mixtures and Materials: Remove excess planting Soils and materials from the site at no additional cost to Owner unless other wise requested.

#### Post-Installation Testing

In-place density testing is required in all areas. The standard test for surface and subsurface density shall be ASTM D-1556.

### **METHOD OF MEASUREMENT**

Item 751.11, Planting Bed Medium will be measured per cubic yard as determined by the Engineer.

Item 751.12, Lawn Root Zone Medium will be measured per cubic yard as determined by the Engineer.

Item 751.13, Lawn Root Zone Medium – Fortified will be measured per cubic yard as determined by the Engineer.

Item 751.14, Lawn Root Zone Medium on Slope will be measured per cubic yard as determined by the Engineer.

## **BASIS OF PAYMENT**

Item 751.11, Planting Bed Medium will be paid for at the contract unit price, per cubic yard, which includes full compensation for labor, equipment, materials and incidental costs to complete the work.

Item 751.12 Lawn Root Zone Medium, Item 751.13, Lawn Root Zone Medium –Fortified and Item 751.14, Lawn Root Zone Medium on Slope will be paid for at the contract unit price, per cubic yard, which includes full compensation for labor, equipment, materials and incidental costs to complete the work.

### **ITEM 751.9**

### **METAL EDGE AT PLANTING BED**

### **FOOT**

## **GENERAL DESCRIPTION**

This work under these items shall consist of furnishing and installing metal edge at planting beds in accordance with the Contract Drawings, as specified herein and as directed by the Engineer.

## **WARRANTY**

15-year limited material warranty for landscape edging from manufacturing defects in workmanship or material.

## **MATERIALS**

### **Metal Edge (Planting Accessory)**

Shall be provided where required as directed by the Engineer.

Heavy Duty Straight Profile Edging: Permaloc CleanLine, 3/16" (4.8mm) x 4" (102mm) high, extruded aluminum, 6063 alloy, T-6 hardness, landscape edging for straight-line and curvilinear applications in corrugated straight profile, as manufactured by Permaloc Corporation, Holland MI 49424, telephone (800) 356-9660 or approved equal. Section shall have loops on side of section to receive stakes spaced approximately 2 to 3 feet (610 mm to 915 mm) apart along its length.

Thickness: 1/8 inch (3.2 mm) gage section at 0.072 inch (1.83 mm) minimum thick with 0.135 inch (3.4 mm) exposed top lip and 3/16 inch (4.8 mm) gage section at 0.116 inch (2.95 mm) minimum thick with 0.187 inch (4.75 mm) exposed top lip.

Length: 8' (2.44m) sections.

Connection Method: Section ends shall splice together with an interlocking stakeless snap-down design.

Stake: 18" (457mm) Permaloc extruded aluminum stake. Stakes to interlock into section loops.

Finish: Black DuraFlex Painted. Paint finish shall comply with AAMA 2603 for electrostatically baked on paint.

## **CONSTRUCTION METHODS**

### **Pre-Installation Examination and Preparation**

Coordinate activities with other project contractors so that there is no soil disturbance from construction activities subsequent to placement. Metal edging to be installed prior to installation of planting.

Preparation: Ensure that all underground utility lines and irrigation are located and will not interfere with the proposed edging installation before beginning work. Locate border line of edging with string or other means to assure border straightness and curves as designed. Dig trench 1 inch (25 mm) deeper than set of edging bottom.

Set edging into trench with top at 1/2 inch (12.7 mm) above compacted finish grade on turf side with side having loops for stakes placed on opposite side of turf. Drive stakes through edging loops until locked in place. Requires 5 stakes evenly spaced for each 16 feet (4.88 meters) section, or 3 stakes evenly spaced for each 8 feet (2.44 meters) section with a total of 8 stake loops available in each 16 feet (4.88 meters) section if necessary. Provide additional stakes at approximately 24 inches apart, longer stakes, heavier gage stakes, or any combination of previously mentioned as necessary to firmly secure edging for permanent intended use.

Where edging sections turn at corners and at angled runs, cut edging partially up through its height from bottom and turn back to desired angle to form rounded exposed radius.

Backfilling and Cleanup: Backfill both sides of edging, confirm and adjust if necessary that sections are securely held together, and compact backfill material along edging to provide top of edging at 1/2 inch (12.7 mm) above turf finish grade. Cleanup and remove excess material from site.

## **METHOD OF MEASUREMENT**

Item 751.9 Metal Edge at Planting Bed will be measured per lineal foot as determined by the Engineer.

## **BASIS OF PAYMENT**

Item 751.9, Metal edge at planting bed will be paid for at the contract unit price, per lineal foot, which includes full compensation for labor, equipment, materials and incidental costs to complete the work.

**GENERAL**

This work under this item shall include the furnishing, installing and maintaining of Seeded Lawn over Lawn Root Zone Medium over de-compacted subgrade and shall conform to the relevant provisions of Section 765, Seeded Lawn, except as amended and supplemented as indicated on Contract Drawings, as specified herein and as directed by the Engineer.

**MATERIALS**

Grass Seed:

Seed mixture: fresh, clean, new crop seed. Seed can be mixed by an approved method on site or can be mixed by dealer. If seed is mixed on site, each variety shall be delivered in original containers bearing dealer's guaranteed analysis. If seed is mixed by dealer, Seeding Contractor shall furnish to the Owner's Representative the dealer's guaranteed statement of composition of mixture and percentage of purity and germination of each variety.

Seed Mixtures as provided by one of the following:

1. Tuckahoe Turf, Wood River Junction, Rhode Island
2. Pennington Seed, Post Office Box 290, Madison, Georgia
3. LebanonTurf, 1600 E Cumberland St., Lebanon, PA 17042

To be applied at a rate of 6 pounds per 1000 square feet :

1. High Fescue:

	Proportion of mix after purity	Minimum germination
Jasper Creeping Red Fescue	25%	85%
Victory Chewings Fescue	25%	85%
Warwick Hard Fescue	25%	85%
Limousine Kentucky Bluegrass	15%	80%
Jefferson Kentucky Bluegrass	10%	80%

2. If cultivars as listed are not available, others can be substituted with Owner's Representative's approval.

Lawn Root Zone Medium:

Lawn Root Zone Soil: as specified in Item 751.12 Lawn Root Zone Medium.

**CONSTRUCTION METHODS**

Soil Preparation

As specified in Item 751.12, Lawn Root Zone Medium.

Thoroughly irrigate areas to receive seed.

Scarification: cross rake areas to receive seed so surface of soil will be receptive to holding seed.

Grade lawn areas smooth, free draining and even surface with a loose, uniformly fine texture. Roll and rake; remove ridges and fill depressions as required to drain.

Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to seeding.

#### Application of Pre Seeding Fertilizer

As specified in Item 751.12 - Lawn Root Zone Medium.

#### Sowing of Seed

Seeding: Seeding shall consist of soil preparation, seeding, raking, rolling, weeding, watering and otherwise providing labor and materials necessary to secure establishment of acceptable turf.

Sowing of Seed: Immediately before seed is sown, ground shall be scarified, or raked lightly until surface is smooth, friable, and of uniformly fine texture. No seeding shall be done during windy weather. Sow seed in two directions right angles to each other, applying 3 lbs. of seed per 1,000 sq. feet in each direction. Sow seed evenly using a culti-packer or approved seeding device (if culti-packer is not used, cover seed with thin layer of landscape soil by dragging, light raking or other approved method). Roll in both directions with hand roller weighing approximately one hundred pounds per foot of width, and water with fine spray. Provide protective fencing where required to keep area undisturbed until grass is established.

On slopes of 3:1 or greater, Contractor can, at his option, use erosion control blanket pre-seeded with specified mixtures. Erosion control blanket shall be installed with two staples minimum per square yard.

#### Watering

First Week: Water to establish acceptable lawn. In absence of adequate rainfall, water daily during first week to maintain moist soil to two inch minimum depth.

Second and Subsequent Weeks: Water lawn to maintain moisture in upper 5 inches of soil.

Water with uniform coverage while preventing erosion due to application of excessive quantities over small areas, and prevent damage to finished surface by watering equipment. Provide sufficient watering equipment to apply one complete coverage to seeded areas in eight-hour period.

#### Maintenance

Maintenance begins immediately after seed is installed and continues until Final Acceptance as follows:

1. a uniform, thick, well-developed stand of grass is established.
2. Mow seed at seven-day intervals.
  - a. First mowing: when grass has grown to 2" to 2 1/4" height. Cut grass to 1 3/4" height.
  - b. Subsequent mowings shall cut grass to 1 3/4" height.
  - c. Mow in Autumn until growth of grass ceases, and resume in Spring when grass grows to 2 1/4" height.
3. Mow sloped areas a minimum of once during maintenance period. 90 day maintenance period shall be extended to include required cutting. Cut grass to 3" height.
4. Apply uniform application of maintenance fertilizer (5-3-4) at rate of 20 per 1000 square feet 30 days after new lawn has been installed.
5. Continue watering as described above.
6. After grass has started, areas failing to show uniform, thick, well-developed stand of grass shall be immediately re-seeded until areas are covered with satisfactory growth of grass as determined by Engineer.
7. Repair damage from erosion, gullies, washouts, or other causes immediately by filling with loam borrow, tamping, re-fertilizing and re-seeding.

### Cleaning

Wash and sweep clean paving, site improvements and building surfaces. Clean spills and oversprays immediately. Remove and dispose off-site excess planting mixture, soil and debris.

Following Final Acceptance of lawn areas, remove materials and equipment not required for other planting or maintenance work. Materials and equipment remaining on site shall be stored in locations that do not interfere with Owner's maintenance of accepted lawns or other construction operations.

### Protection

Protect lawn areas until Final Acceptance.

### **METHOD OF MEASUREMENT**

Item 765., Seeded Lawn will be measured per square yard as determined by the Engineer.

**BASIS OF PAYMENT**

Item 765., Seeded Lawn will be paid for at the contract unit price, per square yard, which includes full compensation for labor, equipment, materials and incidental costs to complete the work.

Lawn Root Zone Media will be paid for under Item 751.12, Lawn Root Zone Medium, Item 751.13, Lawn Root Zone Medium Fortified and Item 751.14, Lawn Root Zone Medium on Slope.

<b>ITEM 775.434</b>	<b>LOCUST-HONEY-‘SHADEMASTER’ 3-3.5 INCH CALIPER</b>	<b>EACH</b>
<b>ITEM 778.163</b>	<b>BIRCH-RIVER ‘HERITAGE 10-12 FOOT CLUMP</b>	<b>EACH</b>
<b>ITEM 780.181</b>	<b>IVORY HALO DOGWOOD 24-30” HEIGHT</b>	<b>EACH</b>
<b>ITEM 783.051</b>	<b>SERVICEBERRY 10-12’ HEIGHT</b>	<b>EACH</b>
<b>ITEM 789.333</b>	<b>BAYBERRY SHRUB – NORTHERN 2-3 FEET</b>	<b>EACH</b>
<b>ITEM 794.325</b>	<b>SUMAC SHRUB – FRAGRANT #3 CONT.</b>	<b>EACH</b>
<b>ITEM 796.071</b>	<b>VIRGINIA CREEPER 1 GALLON</b>	<b>EACH</b>
<b>ITEM 796.296</b>	<b>KNOCK OUT ROSE #3 CONT.</b>	<b>EACH</b>
<b>ITEM 796.427</b>	<b>FEATHER REED GRASS #2 CONT.</b>	<b>EACH</b>
<b>ITEM 796.447</b>	<b>CREEPING LILYTURF #2 CONT.</b>	<b>EACH</b>

**GENERAL**

The work under these items shall conform to the relevant provisions of the American Nursery Standards and Section 771, Planting Trees, Shrubs and Groundcover, of the Standard Specifications, except as amended and supplemented as indicated on the drawings and as specified below and as directed by the Engineer.

Plant List:

1. Within 30 days of award of Contract, submit plant list for review by Engineer which includes:
  - a. plant materials proposed for project and corresponding nursery source where plants are to be selected.
  - b. written documentation indicating nursery(s) have available the plants in the species, quantity and size(s) shown on Drawings.
  - c. for plants indicating names of plants in accordance with American Joint Committee on Horticultural Nomenclature.



2. Schedule for review at nursery source by Engineer with Contractor present.
3. Substitutions: plant list shall indicate unavailable materials and document a thorough search for materials. For unavailable materials list sources contacted with telephone number, date and person's name at source.

#### Schedules

1. Submit planting schedule for approval.

#### Quality Assurance

Planting shall be performed by a certified landscape contractor with a minimum of five years planting work experience on projects of a similar size and complexity and under full time supervision of a qualified supervisor.

Pruning shall be performed by a Massachusetts certified and/or an International Society of Arboriculture certified arborist. Pruning shall comply with ANSI A300 pruning standards.

#### Pre-Construction Meeting

At the project pre-construction meeting, the following items relating to the work of this Item shall be specifically discussed:

1. Nursery sources for plant materials.
2. Schedule of plant tagging, delivery and installation.
3. Review benchmark dates at which time Engineer's designated Landscape Architect should make site visits.

#### Selection and Inspection of Plants

Plants shall be selected by Engineer at place of growth for conformity to specification requirements as to quality, size and variety prior to purchase and planting. Such approval shall not impair right of inspection and rejection upon delivery at site or during progress of work. Cost of replacement shall be borne by Contractor.

#### Source Limitations:

1. Plants shall come from the same nursery.
2. Plants shall have been grown under climatic conditions similar to those in the locality of the project for at least the previous two years. Unless approved by the Engineer, plants shall have been grown at a latitude not more than 325 km (200 miles) north or south of the latitude of the project unless the provenance of the plant can be documented to be compatible with the latitude and cold hardiness zone of the planting location.

3. Color photographs of representative plant material shall be submitted for initial review of alternate nursery sources. Photographs are to include a scale rod or other measuring device and be taken from an angle that depicts the size and condition of the typical plant to be furnished. Photographs must show actual plant material available for selection at that time.

#### Plant Selection / Coordination

1. For trees, within 90 days of the Notice to Proceed, submit tree sources and schedule selection and tagging of trees so Engineer can tag trees for project at place of growth. Engineer will perform on trip to the nursery(s) to select and tag trees and a second trip to the nursery(s) review and confirm the acceptability of the trees immediately prior to digging for delivery to the site. Source information shall state the place of growth and the approximate quantity of trees available for inspection. The Engineer may refuse inspection at this time if, in his or her judgment, sufficient quantities of plants are not available for inspection.

2. For shrubs and other plants, submit plant sources by January 1 of the planting year for Spring plantings, and July 1 for Fall plantings, schedule selection and tagging of shrubs so Engineer can tag representative shrubs for project at place of growth. Source information shall state the place of growth and the approximate quantity of trees available for inspection. The Engineer may refuse inspection at this time if, in his or her judgment, sufficient quantities of plants are not available for inspection.

3. Inform Engineer of selection schedule a minimum of one month (30 day minimum) in advance of selection/tagging dates so Engineer can make proper travel arrangements. If Contractor fails to provide one month (30 day minimum) notice, any additional travel expenses shall be back-charged to Contractor. If Engineer has to make additional trips to select/tag plants in the event that inadequate, insufficient or unacceptable plant material was available at the inspection location, then additional travel expenses to be backcharged to Contractor.

4. If nurseries and/or stock submitted for review are not acceptable to Engineer, submit alternate sources within seven (7) business days.

5. If Contractor cannot locate the plant material specified in the Drawings, Contractor shall enlist a plant broker to locate the material. Submit a report from the plant broker describing alternate sources of availability or lack thereof for the specified plant material and sizes.

6. Trips to nurseries shall be efficiently arranged to allow Engineer to maximize his/her viewing time. Only undug trees (trees that are in the ground) shall be considered for approval. Engineer may choose to attach their seal to each plant, or representative samples. Each tree may have a specific location and orientation on the proposed plan that the Contractor shall follow closely during installation.

7. Plant material that has been sealed shall be secured by Contractor within ten (10) business days of Engineer having reviewed or sealed the material.

8. Engineer's seals shall not be removed until plantings have been approved by Engineer. Removal of seals prior to Engineer's review of plantings shall be considered grounds for rejection of plant material.

#### Expenses

1. Contractor to pay for Engineer travel expenses: air fare, car rental, automobile mileage and tolls; meals and overnight accommodations if necessary, for Engineer during time period required to select and tag plant material. Planting subcontractor shall provide representative to travel with Engineer while tagging plant material.

#### Plant Shipment to Site/ On Site Review

1. Notify Engineer a minimum of five business days prior to each shipment of proposed arrival of plant material on site.
2. Layout tree locations, bed outlines and individual planting on site for inspection by Engineer prior to planting. Arrange for adequate manpower and equipment on site at time of plant material inspection and installation to provide complete staked layout and to unload, open and handle plant material during inspection.

#### Project/ Site Conditions

Environmental Requirements: do not deliver or handle soils when dry, wet, or frozen.

#### 1. Field Test

- a. Form soil in palm of hand, if soil retains shape and crumbles upon touching, the soil may be worked.
- b. If the soil will not retain shape it is too dry and should not be worked.

If the soil retains shape and will not crumble, it is too wet and should not be worked.

Planting Season: planting seasons shall be those indicated below. Plants planted out-of-season shall receive special attention as directed. Out-of-season planting and or transplanting shall be at Contractor's risk and expense. No planting shall be done in frozen or muddy ground or when snow covers ground, or soil is otherwise in an unsatisfactory condition for planting.

#### 1. Seasons for Planting:

##### Spring:

Deciduous materials – April 1 to June 15/

Evergreen Materials – April 1 to June 15

##### Fall:

Deciduous materials – September 1 - October 15/

Evergreen Materials – September 1 - October 15

2. Variance: If special conditions exist that warrant a variance in the above planting dates, a written request shall be submitted to the Engineer a minimum of 4 weeks prior to the scheduled planting date stating the special conditions and the proposed variance. Permission for the variance will be given if warranted in the opinion of the Engineer and upon condition that the Guarantee Period be extended for an additional period of up to 24 months at no additional cost to the Owner.

## **MATERIALS**

Sand Based Structural Planting Medium: as specified in Item 761 – Sand Based Structural Planting Medium.

Planting Bed Medium: as specified in Item 751.115 – Planting Bed Medium.

Sand Borrow: as specified in Item 154 – Sand Borrow.

## **CONSTRUCTION METHODS**

### **Drainage Test**

Perform drainage test on trees and in representative shrub beds.

1. After excavation, fill pit twice successively with water.
2. Water shall drain out of plant pit minimum 2 inches per hour.
3. Plant pits draining slower than 2 inches per hour will require provision for drainage.

Documentation: note on the planting plan, pits that pass drainage test and plants that fail drainage test.

### **Field Quality Control**

Observation:

1. Engineer to review plant pits without positive drainage.
2. Engineer to review plant pit excavation and planting.

## **MEASUREMENT AND PAYMENT**

Plantings will be paid for at the Contract unit price per each, which price shall include materials, equipment, labor, and incidentals to provide plant pit excavation, soil wetting agents, mycorrhizal fungi planting, plant protection, aged pine bark mulch (including placement), sand borrow, watering, maintenance, disposal of unsuitable soils, and all other incidentals required for furnishing and installing the plantings in accordance with the drawings, and as directed by the



Note that the Contractor is responsible for providing and installing the traffic control cabinet assembly and foundation and the City of Cambridge is responsible for wiring the traffic signals to the proposed traffic control cabinet assembly. After the wiring is complete, the Contractor shall be responsible for programming the traffic signal control cabinet assembly components to provide a fully functioning traffic signal system at the intersection. The Contractor shall be responsible for coordinating the sequencing of the work to wire the traffic signals to the proposed traffic control cabinet assembly (by the City) and the removal of the existing traffic signal control cabinet and foundation. Additionally, the Contractor shall coordinate with the City to determine the size and number of conduits required to wire the existing traffic signals to the proposed traffic signal control cabinet assembly.

The Contractor shall coordinate its work under this item to facilitate the re-wiring of the traffic signals to the proposed traffic control cabinet assembly (by the City) and to minimize the time duration between the transfer of control from the existing traffic signal control cabinet assembly to the proposed traffic signal control cabinet assembly, during which time the intersection will temporarily not be under traffic signal control.

Within 30 days following execution of the Contract, the Contractor shall submit shop drawings for any materials and equipment necessary for the work and a schedule for disconnecting and reconnecting the traffic signal controller to be submitted to the Cambridge Traffic Department and the Engineer for approval.

No work shall be commenced by the Contractor until approval of the shop drawings, manufacturer's data, and work schedule has been received in writing from the Engineer. Approval of these items will be general in character and shall not relieve the Contractor from the responsibility of, or the necessity of, furnishing materials and workmanship conforming to the plans and specifications.

The Contractor shall deliver to the Engineer a certificate of compliance by the manufacturer for all materials purchased from the manufacturer.

## REGULATIONS AND CODE

All electrical equipment shall conform to the standards of the NEMA and U.L. wherever applicable. In addition to the requirements of the Contract Drawings, Standard Specifications, and Special Provisions, all materials and workmanship shall conform to the requirements of the NEC, ASTM, OSHA and/or ANSI, all applicable State and Local codes and Department of Public Safety regulations.

## FINE TUNING, ADJUSTMENT AND TESTING PERIOD

After the Contractor has finished installing the traffic signal control cabinet assembly and installing all other associated signal equipment to operate as specified in the contract documents, the fine tuning, adjusting and testing period shall begin. During this period, the Contractor, under the direction of the Engineer, will make necessary adjustments and conduct tests to insure safe and efficient operation of the equipment. This period shall not last for more than 30 days. No request for final acceptance will be considered until successful completion of the testing period.

## MAINTENANCE OF TRAFFIC SIGNALS

It shall be the responsibility of the Contractor to provide all labor, equipment and material required for the maintenance of the proposed traffic signal control equipment within the project limits, including damage by automobile accident from the date of written notice given to the Engineer that the Contractor will begin work on the proposed traffic signal control system until the date when the City of Cambridge shall recommend acceptance of the completed project. This written notice must be given before the Contractor may proceed with any traffic signal system work.

It shall also be the Contractor's responsibility to maintain in operation the existing traffic signal system throughout the construction period and until the reconstructed/new traffic signal equipment is installed, tested and ready for operation. During a period in which both existing and proposed traffic signal hardware is present, the Contractor shall maintain both.

## GUARANTEES OF THE TRAFFIC SIGNAL SYSTEM

The Contractor shall diagnose (troubleshoot) the system and at his own expense replace any part of the traffic signal control equipment installed by the Contractor that is found to be defective in workmanship, material, or manner of functioning within six months from date of final acceptance of the installation under this Contract.

The one-year warranty period on equipment stipulated in Subsection 815.20 of the Standard Specifications still applies.

## ENTERING PRIVATE UTILITY COMPANY FACILITIES

The City of Cambridge will be responsible for coordinating with Eversource to confirm that electrical service for the proposed traffic signal control cabinet assembly can be provided from the location identified on the Drawing. The City of Cambridge will also be responsible for coordinating the installation of the electrical service to the traffic signal control cabinet assembly, which shall be completed by Eversource. The City of Cambridge will be responsible for coordinating with Eversource to disconnect the existing service connection to the existing traffic signal control cabinet assembly.

The electrical service conduit and cable from the underground manhole, to the traffic signal control cabinet assembly will be provided and installed by the Contractor. Eversource will connect the terminals of the control cabinet assembly to the source of supply.

The installation of conduit and wiring on or in Eversource facilities shall be in strict accordance with the regulations of the utility company. All work performed by the Contractor at Eversource structures shall be performed under the direct observation of a utility company inspector or representative.

The Contractor will be responsible for coordinating the electrical work in the vicinity of the traffic signal control cabinets and for notifying Eversource that construction has started. Under no conditions shall the Contractor make permanent patch to the roadway or apply the final roadway surface if the roadway is to be resurfaced, or until services to the traffic signal control cabinet have been completed.

For the purpose of these paragraphs, the phrase "Traffic Signal Control Equipment" is intended to include, but is not limited to: controllers, detectors, signal housings, supporting structures, cabinets, wires, conduit and all other ancillary electrical equipment used for traffic control.

It is the contractor's responsibility to coordinate with the utilities if any underground or overhead utilities are impacted during the traffic signal work.

## CONSTRUCTION METHODS

### Traffic Signal Control Cabinet Assembly

#### *Traffic Signal Controller*

The controller unit provided shall be the **Model m52 series, NEMA TS2, Type 2 Controller**, manufactured by Siemens.

#### *Traffic Signal Control Cabinet*

The traffic signal control cabinet shall be a **Type "M" NEMA TS-2 Type 1** cabinet constructed of aluminum and shall be compatible with the traffic control equipment.

A Eversource approved meter socket shall be mounted on the side of the cabinet. The Contractor shall furnish and install the meter socket and Eversource shall furnish and install the meter. A separately fused, ground fault duplex fifteen (15) amps outlet, a double duplex 15 amp outlet and a light receptacle shall be installed for the power supply of additional equipment. Adequate 120V AC power terminals shall be provided. Lightning arresters of the rare gas type with auxiliary air gap shall be installed. All signal outputs shall be separately fused.

It is intended that all equipment be mounted, and all necessary provisions for mounting and wiring of all equipment shall be made at the factory of the controller equipment manufacturer prior to shipping the cabinet and control components. All necessary terminal strips, brackets, etc., shall be installed at the factory. The traffic signal controller cabinet shall be equipped with connections for an Opticom pre-emption unit, including harness for dual channels (for future use). Terminals for auxiliary equipment to be installed shall be clearly and permanently labeled as to functions. The amount of field wiring shall be kept to a minimum.

No equipment components shall be stacked. Brackets, shelves, hangers, or other supports designed to assure convenient accessibility for inspection and maintenance shall be installed at the factory. Adjustable aluminum shelving is required. No plywood shelving, side panels or rear panels shall be used in any cabinet. A suitable weatherproof container for plans and diagrams shall be mounted on the cabinet door with eyehooks fastened from the "police panel" cover.

Each main door shall be designed to open easily and close securely while retaining weatherproof quality. Handle and latch mechanisms shall be designed for trouble free operations. An adjustable latching mechanism shall be supplied to hold the main door in the open position for use when servicing equipment. Each main door shall have a momentary push-button switch installed to provide an alarm to the system of any entries to the cabinet and provide automatic lighting within the cabinet.



A thermostatically controlled exhaust fan, rated at 100 cubic feet per minute, shall be mounted in a screened opening in the top of each cabinet. Screened intake vent louvers near the bottom and/or sides shall have an effective area at least twice that of the opening provided for the exhaust fan. Standard size, replaceable, fiberglass air filters shall be provided.

The traffic signal control cabinet shall also contain an instructional operational manual for the controller and an as built drawing of the traffic signal plan and signal timing.

Controller cabinet wiring diagrams shall be submitted on reproducible sheets no larger than 24 inches by 36 inches. All actual and potential terminal strip connections shall be shown. Accessory equipment includes, but is not limited to, flashers, switches, relays, logic modules, preempt phase selector, detectors, etc. All identification on the diagram shall be installed and all field labeling shall be consistent with the diagrams. The format symbols, identifications, operating sequence, etc., common to all intersection wiring diagrams shall be standardized and consistent with appropriate City of Cambridge Standards. One (1) of these three (3) copies, lacking only the field color code, shall be furnished to the City prior to the start of any electrical work. The traffic signal control cabinet wiring diagrams shall include a sketch of the intersection controlled and the approximate location and identification of each signal face and detector as shown on the plans. The traffic signal control cabinet wiring diagrams shall also include all information shown on the phasing and timing charts as shown on the plans, including all special reference notes and all field labeling. This may be a reduced copy of the original phasing and timing charts. All actual and potential terminal strip connections shall be shown on the wiring diagrams.

All holes and interior surfaces likely to carry a cable shall be deburred and made free of all sharp edges.

All holes shall be sealed with a plastic or rubberized washer to prevent damage to cable. All wiring shall be concealed internally.

#### *Malfunction Management Unit*

The Malfunction Management Unit (MMU) shall be the **SmartMonitor Conflict Monitor – Model MMU2-16LEip**, manufactured by Eberle Design Inc. (EDI). The MMU shall be configured to operate as a Type 16 unit.

The MMU shall be connected to the controller unit by the SDLC and the active status of the MMU will be read through the controller unit.

A SDLC Serial Bus shall conform to section TS2 Section 3.31 a SDLC (Synchronous Data Link Control) to allow communications between the controller unit, MMU, and BIU's. Two (2) additional spare BIU's shall be equipped with in the traffic signal control cabinet.

All unused bays shall be covered to prevent dust from entering.

Special purpose grounding and bonding wire shall be No. 8 AWG or larger conforming to the requirements of ASTM-B-3.

#### *Loop Detector Amplifiers*

Loop detector amplifiers units shall be the **Deflectometer Loop Detector Amplifiers – Model LMD622**, (two channel) manufactured by Eberle Design Inc. (EDI). A total of 8 dual channel loop detector amplifiers units shall be provided.

#### *Other Traffic Control Cabinet Components*

All other traffic signal control cabinet assembly components, including but not limited to power supplies, BIU's, flashers, flash transfer relays shall be NEMA TS2 compliant, compatible with the other traffic signal control cabinet assembly components listed in this specification and shall also be listed on MassDOT's Qualified Traffic Control Equipment List (<http://www.massdot.state.ma.us/highway/DoingBusinessWithUs/ApprovedMaterialsandFabricators/QualifiedTrafficControlEquipment.aspx>)

#### Traffic Signal Control Cabinet Foundation

The traffic signal control cabinet foundation shall be constructed using 4,000 psi, 3/4 inch, 610 Cement Concrete conforming to the relevant provisions of Section M4 of the Standard Specifications. No forms for foundations shall be set nor shall concrete be placed until the excavation has been inspected and approved by the City. The top of the concrete base for the controller cabinet shall be 14 inches above finish grade. The long side of the foundation shall extend a minimum of 3 inches beyond the cabinet edge on either side of the cabinet. The short side of the foundation shall extend a minimum of 3 inches beyond the cabinet edge on either side of the cabinet. The foundation shall provide a spare sweep.

All sweeps to be installed in cabinet foundation shall be 3-inch (PVC) sweeps with sufficient 3 inch PVC riser to project above the finish grade of the base. A cement concrete pad shall abut the front of the cabinet and shall be built in accordance with the City's sidewalk specifications. The width of the concrete pad shall be equal to the width of the long side of the cabinet foundation. The depth of the concrete pad shall be 3 feet.

#### Traffic Signal Conduit

Conduit, as shown on the Drawings, used to carry traffic signal cable shall be 3-inch diameter PVC rigid non-metallic (Type NM) traffic signal conduit, provided and installed conforming to Section 801 of the Standard Specifications.

For conduit installed in existing grass areas that are otherwise not disturbed by other construction activities, the work shall include the placement of a minimum of 4 inches of loam and seed to restore the disturbed area to their original condition.

For conduit installed in existing sidewalks, roadways, driveways and median islands, the work shall include restoration and maintenance of the disturbed area to their original condition until such time that the final condition of the work is in place.

#### Traffic Handholes

Traffic handholes, as shown on the Drawings, shall be 8"x23" (MassDOT SD2-030), provided and installed conforming to Section 801 of the Standard Specifications.

Traffic handhole frame and covers shall be provided and installed conforming to Section 801 of the Standard Specifications. The handholes shall have the letters "CAMBRIDGE TRAFFIC" stamped on the covers.

#### Removal of Existing Traffic Signal Control Cabinet Foundation

The Contractor shall remove and discard the existing traffic signal control cabinet foundation. The Contractor shall take measures to prevent damage to the existing traffic signal conduits in and adjacent to the existing foundation. Traffic signal conduit within the existing foundation shall be modified such that the conduit can be accommodated in a proposed pull box.

The work shall include surface restoration and maintenance of the disturbed area to their original condition until such time that the final condition of the work is in place.

#### Removal of the Existing Traffic Signal Control Cabinet Assembly

The Contractor shall remove and transport the existing traffic signal control cabinet assembly to a location designated by the City of Cambridge. In order to minimize the period between the transfer of intersection control from the existing control cabinet assembly to the proposed control cabinet assembly, the Contractor shall coordinate the removal of the existing traffic signal control cabinet assembly with the re-wiring of the traffic signals at the intersection by the City of Cambridge to the proposed traffic signal control cabinet assembly.

#### Remove and Reset Pedestrian Signal Head

The Contractor shall remove and reset a pedestrian signal head from an existing pedestal post to the side of an existing mast arm pole, as shown on the Drawings. This pedestrian signal head shall be bracket mounted to the side of the existing mast arm pole to permit internal wiring. The Contractor shall field-drill holes into the existing mast arm pole to accommodate the brackets.

Once one of the two existing pedestrian signal heads is removed and reset to the existing mast arm pole, as described above, the contractor shall provide and install the necessary adaptors and slipfitters to re-install the remaining pedestrian signal head on top of the existing pedestal post.

#### Painting

All new traffic signal equipment shall be painted as follows:

Signal housing supports	Brown (to match existing equipment)
Controller cabinet (exterior)	Flat Black
Controller cabinet (interior)	Aluminum

Flat Black shall match color number 37038 of the Federal Standard 595C "Colors used in government procurement." The Contractor shall submit for approval by the City, paint chips and sample finishes on aluminum and steel of the intended color prior to any work being done under this Item.

#### COMPENSATION

Traffic Signal Reconstruction Location No. 1 shall be measured per lump sum. Traffic Signal Reconstruction Location No. 1 will be paid for at the Contract Lump Sum price for Item 816.01, which price shall include all labor, materials, equipment and incidental costs to complete the work, which includes the installation of a new signal control cabinet assembly, traffic signal conduit, handholes, and concrete foundations as identified on the Drawings, to provide a fully functioning traffic control system at the intersection. The cost for removing the existing traffic signal control cabinet assembly, conduit, pull boxes and foundations; and providing and installing all materials (except wiring to be provided and installed by the City), to complete the new installation is included in the lump sum price bid for this item.

All costs of removing and discarding of the existing traffic signal control cabinet foundation shall be included in the lump sum bid price for Item 816.01, including labor, equipment, modification of existing traffic signal conduit and installation and materials used in surface restoration and maintenance.

The cost of furnishing and installing conduit of the appropriate size and kind shall be included in the lump sum bid price for Item 816.01 and shall include all labor, equipment, conduit fittings, supports, saw cutting of pavement, removal and offsite disposal of pavement, removal and resetting of granite or concrete rumble strips, trench excavation (except rock), gravel borrow, sand bedding, backfill, compaction, penetrations into existing and new handholes and pull boxes, connection to existing conduits, pull wires, warning tape and concrete slab at roadway crossings. Surface restoration shall include, but is not limited to, restoration of median, ramp and roadway surfaces, sidewalk surfaces, and grass areas at the end of each workday and at the completion of work. Surface restoration (temporary and permanent), shall be paid for under the lump sum bid price for Item 816.01.

The cost of furnishing and installing traffic pull boxes shall be included in the lump sum bid price for Item 816.01 and shall include furnishing all materials (including frame and cover), labor, equipment, and tools necessary to complete the installation of the pull boxes as shown on the Drawings.

The cost of removing and resetting pedestrian signal heads shall be included in the lump sum bid price for Item 816.01 and shall include all work including but not limited to brackets, adaptors, field drilling of holes into the existing mast arm pole, wiring and controller work to provide a complete operating pedestrian signal head as part of the traffic signal system.

The cost of maintenance of the proposed traffic signal equipment shall be deemed to be included in the lump sum bid price for Item 816.01, and no additional payments shall be made therefor, except as provided by the Standard Specifications.

The cost of all work associated with providing electrical service to the proposed traffic signal control cabinet assembly, including but not limited to cable & conduit, and the cost of the installation of the electrical service connection by Eversource shall be included in the lump sum bid price for Item 816.01.

The cost of all work associated with disconnecting electrical service to the existing traffic signal control cabinet assembly, including but not limited to the cost of disconnecting the electrical service connection by Eversource shall be included in the lump sum bid price for Item 816.01.

The work performed under these items shall conform to the requirements for lead paint presented in sections 961.65 through 961.69 of the Supplemental Standard Specifications.

All tests and any necessary repairs and replacements required to produce a fault-free system shall be included in the Lump Sum bid prices for Item 816.01.

**ITEM 826.55                      FIRE ALARM CABINET FOUNDATION                      LUMP SUM**

The work under this Item shall consist of constructing a new foundation for the relocated fire alarm cabinet as shown on the Plans or as required by the Engineer. The Cambridge Electrical Department will relocate the cabinet and transfer the wiring from the old location.

CONSTRUCTION METHODS

The fire alarm cabinet foundation shall be constructed using 4,000 psi, 3/4 inch, 610 Cement Concrete conforming to the relevant provisions of Section M4 of the Standard Specifications. No forms for foundations shall be set nor shall concrete be placed until the excavation has been inspected and approved by the City.

All sweeps to be installed in cabinet foundation shall be 3-inch (PVC) sweeps with sufficient 3 inch PVC riser to project above the finish grade of the base. A cement concrete pad shall abut the front of the cabinet and shall be built in accordance with the City's sidewalk specifications. The width of the concrete pad shall be equal to the width of the long side of the cabinet foundation. The depth of the concrete pad shall be 3 feet.

COMPENSATION

Payment shall be made for Item 826.55, Fire Alarm Cabinet Foundation at the contract lump sum price, which price shall be full compensation for excavation, including removal of sidewalk or pavement as required; discarding all unsuitable or unacceptable materials if required; constructing the new foundation and required conduit sweeps; backfilling; and for furnishing all materials, labor, tools and equipment, and all else in connection therewith and incidental thereto.

**ITEM 852.1                      TRAFFIC MANAGEMENT AND COORDINATION                      LUMP SUM**

**PART 1 – GENERAL**

**1.1 SUMMARY**

- A. Furnish all labor, equipment, and materials and perform all operations in connection with the maintenance and protection of vehicular, bicycle, and pedestrian traffic on all roads, state and local, directly or indirectly affected by the construction. The work of this section also includes maintaining access to all properties adjacent to the work.
- B. The Contractor is responsible for preparing and submitting a plan for traffic management to the Owner and Engineer, including updates as conditions warrant. The Contractor is

responsible for design and implementation of revisions to the traffic management procedures during the course of the project at the requirements of the Engineer and at no additional cost to the Owner.

- C. The Contractor shall develop and implement a detailed Traffic Management and Control Plan and obtain approval from the City of Cambridge Traffic Department and Department of Public Works prior to proceeding with the work.
- D. Furnish, erect, set, reset, relocate, move, remove, and dismantle sufficient signs, temporary lighting, barrels, flashers, channelizing devices (concrete barriers), fencing, and other traffic control devices on a continuous basis as necessary to protect the work and the general public at all times during construction in accordance with Contractor's approved Traffic Management and Control Plans. The work of this Section shall also include temporary bridging for traffic across excavations.
- E. The design, application, and installation of all traffic control devices required by this section shall conform to the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) published by U.S. DOT, latest edition; American Disabilities Act (ADA); Massachusetts Architectural Access Board; and the Commonwealth of Massachusetts, Highway Department (MHD), Standard Specifications for Highways and Bridges, latest edition.
- F. "Approved by the Owner" throughout this Section shall mean the approval of the Cambridge Department of Public Works and Traffic and Parking Department.
- G. Traffic control during construction also includes street sweeping and snow removal from sidewalks and streets within the work zone as described in section 3.1 D. Maintaining rubbish and recyclable removal is also required and described in Section 01560 - TEMPORARY ENVIRONMENTAL CONTROLS.

## 1.2 REFERENCES

- A. Reference is made herein to the Commonwealth of Massachusetts, Highway Department, Standard Specifications for Highways and Bridges, latest edition. References made to particular sections or paragraphs in the Standard Specifications for Highways and Bridges shall include all related articles mentioned therein.
- B. Manual of Uniform Traffic Control Devices Part VI Standard and Guides for Traffic Controls for Streets and Highway Construction, Maintenance, Utility and Incident Management Operations, latest edition.

## 1.3 SUBMITTALS

- A. Submit the following in accordance with Section 01300 – SUBMITTALS:
  - 1. Traffic Management and Control Plan: Before starting any work under this Contract, the Contractor shall prepare a plan that indicates construction equipment movement and the traffic routing proposed by the Contractor during the various stages and time periods of the work, and the location of temporary pedestrian, bicycle routes and

- construction facilities, temporary barricades, signs, drums, and other traffic control devices to be employed during each stage and time period of the work, to maintain traffic and access to abutting properties. Particular care shall be taken to establish and maintain methods and procedures that will not create unnecessary or unusual hazards to public safety. The Plan shall be submitted a minimum of four weeks prior to the start of construction for acceptance by the Engineer and approved by the Owner and the City prior to start of Work. The Plan shall be reviewed on a daily basis with the Engineer during construction. The Plan shall include procedures for the Contractor to coordinate daily with the Owner and City Departments (Department of Public Works, Traffic and Parking Department, Police, Fire, and Emergency Medical Services).
2. Temporary Pedestrian Access Ramp Work Plan, Temporary Pedestrian Protection Work Plan and Temporary Pedestrian Detour Plan: Contractor shall provide a work plan detailing the location and layout of ramps and their protection, type of ramps and protection to be used with manufacturer's information, and duration the ramps and protection will be utilized. All pedestrian detours required shall be submitted for approval with these plans.
- B. Shop Drawings shall be submitted for review four weeks prior to start of construction. Thereafter, the Contractor shall submit to the Engineer updated Traffic Management and Control Plans a minimum of 10 working days prior to the start of construction at any new location or updates required in the work zone resulting from progress of Work throughout the duration of construction.
1. Submit complete shop drawings and work plans for staged construction and traffic movement including temporary vehicle, pedestrian, and bicycle as needed, certified by a Professional Engineer registered in the Commonwealth of Massachusetts.
  2. Show on the shop drawings all materials, dimensions, sizes, and methods of installation.
  3. Safety Signing for Construction Operations: The Contractor shall submit temporary pedestrian, bicycle, and traffic management sign placement and sign size sketches showing the proposed sign setups intended to be used to provide the necessary traffic control and protection during the progress of work, plus the sign and legend size and layout. These sketches shall be submitted to the Engineer, Owner and City for review and approval before work begins.
  4. When a detour or by-passing of vehicular traffic is anticipated, the Contractor shall submit for approval by the Engineer, Owner and City, a detour plan showing the proposed alternative routes and location, size, and type of signs and traffic controls to be used. The traffic routing through or around the Work and provisions for control of same shall be approved by the Engineer, Owner, and City.
  5. The Contractor shall submit a Truck and Hauling Route Work Plan for all proposed truck routes prior to mobilizing. No trucking or hauling will be allowed without the approval of the City of Cambridge. No trucking or hauling will be allowed outside the proposed routes without the prior approval of the Engineer, Owner, and City. The Contractor is responsible for obtaining all permits and permissions. The Contractor is

further responsible for obtaining approval for and coordinating parking restrictions required to facilitate trucking and hauling.

#### 1.4 SPECIAL REQUIREMENTS

- A. The Contractor shall provide access for fire apparatus and other emergency vehicles through the work zones to abutting properties at all times.
- B. At the end of each workday, where trenches in areas of public travel are covered with steel plates, each edge of the plates shall be either beveled or protected by a bituminous concrete ramp as accepted by the Engineer. Temporary bituminous patching material may be used to construct the ramps. The cost of patching materials, and their maintenance and removal, will be considered incidental to the Traffic Management item with no separate payment elsewhere. Plates shall be pinned or welded together to eliminate movement, noise or vibration.
- C. Open excavations adjacent to the traveled way or shoulders shall not remain open through non-work hours unless steel plated for the passage of heavy vehicles or protected by concrete barricades or barriers and specifically authorized by the Owner, City and Engineer.
- D. Do not block more than one-side of the roadway at a time when making open cut or other street crossings unless otherwise approved.
- E. The Contractor shall be responsible for the costs in obtaining all permits to perform the Work.
- F. At least one serviceable driveway access to all residences and businesses within the project shall be maintained at all times.
- G. The Contractor shall provide temporary lighting to properly illuminate the work area and approaches in the event of nighttime work.
- H. The Contractor shall not allow unnecessary idling of trucks and/or equipment throughout the entire project area. The City of Cambridge prohibits idling of trucks and equipment for periods of time exceeding five (5) minutes when not in use.
- I. The Contractor shall notify the Cambridge Fire and Police Departments of any street closings.

#### 1.5 SEQUENCING AND SCHEDULING

- A. All streets within or adjacent to the contract limits, not specifically cited shall have their full roadway widths available for traffic or permitted parking at all times except for such restrictions as may be approved by the Owner, City and Engineer.
- B. Notify the Owner, City and Engineer at least 48 hours in advance (not including Saturday or Sunday or Holidays) prior to the access lane restriction of the roadway. Notification



shall include the date of the restriction, the hours of the day the roadway access will be restricted, and the estimated completion date.

- C. The Owner, City and Engineer shall be notified of any re-routing of traffic 48 hours in advance (not including Saturday or Sunday or Holidays). Approval shall be obtained from the Owner, City and Engineer prior to any re-routing of traffic (except emergencies).
- D. The Contractor shall verify street sweeping schedules in the work zone. Delivery related parking restrictions will not be permitted on days where street sweeping is scheduled unless otherwise approved.

#### 1.6 HAULING AND TRUCK ROUTES

- A. The Contractor is advised that all roads and bridges within or adjacent to the project shall be subject to legal loads, heights of vehicles and vehicle type / use restrictions. The Contractor is responsible for understanding the restrictions and obtaining all necessary permits.
- B. The Contractor is advised that no agreements have been made by the Owner, the City of Cambridge, the MHD, or with surrounding cities or towns to relieve the Contractor of liability for damage to local roads and bridges caused by the Contractor's operation. The Contractor shall contact appropriate officials of the surrounding cities, towns or agencies concerning hauling over city or town roads and bridges.

#### 1.7 STORAGE OF MATERIALS, PARKING OF CONSTRUCTION EQUIPMENT AND WORKER PARKING

- A. No material shall be stored within the work area or on adjacent roadways or residential streets except that which is needed to complete the work for that day.
- B. Construction workers shall park their vehicles within the work zone during work hours, and remove them thereafter. Parking outside the work zone will be required if the vehicles obstruct traffic flow.
- C. The Contractor shall park construction equipment within the work zone and protect equipment with barriers or barricades. Parking outside the work zone will be required if the equipment obstructs traffic flow.

#### 1.8 BARRICADES, WARNING SIGNS AND OTHER PROTECTIVE DEVICES

- A. Install, inspect, remove, maintain, and reset all temporary construction controls as frequently as required and in accordance with an approved construction staging sequence and traffic management plan.
- B. Regulatory and warning devices shall be subject to removal, replacement and repositioning as often as necessary, and as directed by the Owner and Engineer.

- C. Temporary pavement markings and devices shall be used as shown on the approved plans and as required by MUTCD and ADA standards for traffic control and pedestrian safety.

#### 1.9 DETOURS

- A. If approved by the City and/or Engineer, construct and maintain detours around the work to maintain traffic over any construction work in a public street, road, or highway where traffic cannot be maintained on alignment of original roadbed or pavement
- B. When detours are allowed, the Contractor shall provide all detour signs approved by the City and/or Engineer with directional arrows. Signs shall be placed at all streets and intersections to provide required direction to allow motorists to return to the street location beyond the detour. The Contractor must submit a written detour plan for the City and/or Engineer's approval prior to implementation of the detour.
- C. The Contractor is responsible for the notification of any parties affected by the detour, including, but not limited to Cambridge Fire Alarm, Cambridge Police, State Police, MBTA, DCR, Cambridge Traffic Department, and abutting property owners.

#### 1.10 PEDESTRIAN TRAFFIC

- A. Sidewalks shall be maintained at all times through the construction period. Temporary sidewalks, pedestrian detours and pedestrian and construction facilities shall be constructed as needed to maintain pedestrian traffic and business access. The Contractor shall anticipate that temporary pavement markings (paint or tape) will be required in order to comply with this provision.
- B. Pedestrian access shall be provided to abutting land uses and businesses at all times, as approved by the Owner, City and Engineer and in accordance with MUTCD and ADA requirements.
- C. Unobstructed walkways of 4-foot minimum width, unless otherwise approved by the Owner, City and Engineer shall be provided at all times.
- D. Temporary pedestrian walkways shall be separated from roadway and construction areas by barricades and fence as approved by the Owner, City and Engineer.
- E. The Contractor shall be notified by telephone of any location not providing adequate pedestrian access. The Contractor shall acknowledge notification of the call within one (1) hour by contacting the Project Engineer or the Public Works Dispatcher at (617) 349-4800.
- F. The Contractor shall respond to the work site within one and a half (1.5) hours of acknowledged notification with sufficient equipment and labor to perform the required work.

- G. The Contractor's failure to respond within the specified response time twice within the Contract time will result in a permanent deduction of \$250.00 from Contract payments due.
- H. The Contractor's failure to respond within the specified response time three times within the Contract time will result in an additional permanent deduction of \$400.00 from Contract payments due.
- I. The Contractor's failure to respond within the specified response time four or more times within the Contract time will result in an additional permanent deduction of \$500.00, per each additional occurrence, from Contract payments due.
- J. Continued failure to provide adequate pedestrian access may result in the City terminating the contract in accordance with Paragraph 18.3 of Section 800 (General Terms and Conditions of the Contract).

#### 1.10 VEHICULAR CONTROL REQUIREMENTS

- A. The Contractor shall meet the following conditions, unless otherwise specifically approved by the Owner, City, and Engineer:
  - 1. All work shall be prosecuted with proper regard for the convenience of the public and in a manner to permit unimpeded traffic flow whenever possible. The interruption of traffic will not be permitted unless specifically allowed by the Owner, City and Engineer and in accordance with the requirements of the Owner and City and in conformance with MUTCD requirements.
  - 2. The Contractor shall be responsible for necessary coordination with the City departments affected by the project.
  - 3. Traffic control devices and signs shall be removed, demounted or properly covered for those periods of the day not in use.
  - 4. The DPW shall be notified of any re-routing of traffic. Approval must be obtained from the City prior to any re-routing of traffic (except emergencies).
  - 5. The Contractor shall coordinate the work with the schedules of City Rubbish and Recycling Collection trucks and delivery trucks to the adjacent stores and property owners so as not to impede their access, and cooperate with delivery personnel to facilitate deliveries to properties within the work zone.
  - 6. No operations shall be conducted, including the loading or unloading of equipment or materials, on or near the traveled lanes or road shoulders without first erecting warning signs and channelizing devices. These precautions shall be maintained at all times while work, loading and unloading is in progress.
  - 7. Construction signs, temporary paint or tape pavement markings, and channelizing devices shall be used to separate traffic from the work areas and for traffic control.

Placement other than as shown in the plans or the MUTCD will require prior approval.

8. Temporary signs and channelizing devices shall not be set up until there is adequate visibility or appropriate construction lighting. The Contractor shall schedule his work so that temporary signs and channelizing devices are removed and traffic is returned to its normal pattern before the end of the work period.
9. Work requiring overnight lane closures shall not begin until all materials required for the completion of each night's work are delivered or available to the project site, unless otherwise approved by the Owner, City and Engineer.
10. Accesses to buildings shall be maintained at all times.
11. Work operations shall not be performed on the roadway in such a manner that traffic is obstructed or endangered simultaneously from both sides of the roadway.
12. The Contractor shall keep all roadway areas open to traffic as clear as possible at all times. Materials shall not be stored on any roadway area or within 4-ft. of the traveled way. Material shall be delivered to the installation areas as they are needed to provide a continuous installation. Location of storage areas shall be subject to approval.
13. The Contractor shall remove all equipment and construction vehicles from the traveled way and shoulders open to traffic during non-work hours. Vehicles shall be parked no closer than 4-feet from the traveled way in pre-approved areas unless specifically permitted.
14. Each driver of any vehicle or piece of equipment used on this contract shall be furnished written instructions concerning the manner of operation for that vehicle or piece of equipment. Specifically, these instructions shall warn against stopping on the traveled portions of the roadway, against passing other vehicles, and against traveling in close proximity to other vehicles. A copy of these instructions shall be given to the Engineer.
15. Temporary signs and channelizing devices shall not be set up in inclement weather.
16. The Contractor shall furnish 60-inch x 30-inch approved signs reading "CONSTRUCTION VEHICLE - DO NOT FOLLOW" to be used on trucks hauling to the project, when such signs are deemed necessary by the City and/or Engineer. The color, type of sheeting and size of lettering shall conform to that of the permanent construction signs.
17. Temporary signs and channeling devices shall not be set up in inclement weather.
18. The Contractor shall furnish, install, and maintain 36-inch x 36-inch approved signs reading "ROUGH ROAD" in advance of all roadway areas which have been cold-planed.

19. The Contractor shall furnish, install and maintain additional temporary cones and barrels, as required by the Engineer, after Traffic Calming devices (horizontal and vertical deflections) have been constructed.
20. The Contractor will be responsible for snow removal within active work zones.

#### 1.11 BICYCLE CONTROL REQUIREMENTS

- A. The Contractor shall meet the following conditions, unless otherwise specifically approved by the Owner, City, and Engineer:
  1. Bicycle traffic shall be accommodated on all public streets either within bicycle lanes where existing or in vehicular travel lanes.
  2. Where bicycle lanes are not present, provide a shared vehicle lane as wide as physically feasible.
  3. When travel lanes are restricted to less than 14-foot in width warning signage (W11-1/W16-1 combination - Bicycle warning symbol with SHARE THE ROAD plaque) shall be placed warning motor vehicle operators of the presence of bicycles in the roadway.
  4. If the disruption occurs in a bicycle lanes over a short distance (approximately 500 feet or less), bicyclists should be routed to share a motor vehicle lane.
  5. On projects where the disruption occurs over a longer distance (more than 500 feet), and on busy roadways, a temporary bicycle lane or wide outside lane (at least 14 foot wide) should be provided. If that is not feasible, provide access, including ramps if necessary, for bicyclists to have the option of using sidewalks, except within zones where sidewalk bicycle riding is prohibited by the City.
  6. Steel plates:

When steel plates are used in the travel way warning signage (Warning Steel Plates 100 FT) shall be placed at least 100 feet in advance.

Steel plates shall be set so there is no vertical lip over 1/4 inch between the plate and adjacent pavement. This shall be accomplished in one of the following ways:

- a. Recessing the plate so that the top of the plate matches adjacent pavement (with no lip over 1/4 inch).
- b. Providing bituminous concrete lip painted reflective orange to provide a smooth transition slope up from existing pavement to top of plate.

Non-slip surface steel plates are preferred for use, and must be used where plates are in an intersection or within a crosswalk.

7. Raised castings: Where raised castings are present after cold planing and/or in anticipation of final paving, provide the following:
  - a. Advance warning signs saying: “Caution – Raised Castings Ahead.”
  - b. Spray paint reflective fluorescent orange the raised portions of the castings.
8. Cold planing and pavement installation: Where cold planing or the installation of pavement in lifts results in vertical joints greater than 1/4 inch, provide temporary bituminous concrete lip painted reflective orange to provide a smooth transition slope between the pavement layers.
9. When the roadway or travel lanes narrow due to construction, advance warning signs should be placed at least 20 feet in advance.
10. Narrow cuts that are parallel with the direction of travel create an extreme hazard for cyclists, whose tires could get caught. These should never be made and left in an area where bicyclists will be traveling. If necessary, they should be blocked off and cyclists routed around the hazard. When performing advance pavement cutting for trenching or other roadway excavation, use only saw cutting (approximately 1/4 inch or narrower).
11. Debris should be swept to maintain a reasonably clear riding surface in the bicycle lanes or, where there are no bicycle lanes, the outer 5 or 6 feet of roadway. Promptly remove gravel, debris, litter, sand, stone, and other obstructions from bicycle lanes and travel lanes.
12. Advance construction signs shall not be placed in bicycle lanes and shall not otherwise obstruct bicyclists’ path.
13. Temporary ramps for site access ramps. The creation of ramps in the roadway is not permitted unless being created in an area that is otherwise used by on-street parking.
14. Restore pavement markings for bike lanes within 2 weeks of paving.

## PART 2 – PRODUCTS

### 2.1 MATERIAL

- A. All barricades, drums, cones and other channelizing devices shall meet the requirements for MHD Standard Specifications for Highways and Bridges Section 850 Traffic Control for Construction and Maintenance Operation (Latest Revision) and the Manual of Uniform Traffic Control Devices (Latest Revision).
- B. Traffic Control Materials
  1. Materials required for the work of this Section need not be new, but must be in first-class condition and acceptable to the Owner and Engineer. Any materials that in the judgment of the Owner are unsatisfactory in appearance or performance shall be removed and immediately replaced by acceptable units.

2. Signs, portable barricades, and drums shall have “High Intensity Encapsulated Lens Reflective Sheeting” in accordance with Section M9.30.2 of the MHD Standard Specifications for Highways and Bridges and MUTCD requirements.
3. Signs shall be fabricated with “High Intensity Encapsulated Lens Reflective Sheeting”. Transparent red, blue, yellow or black opaque paint (ink) may be used over “High Intensity Encapsulated Lens Reflective Sheeting” in accordance with the provisions of subsection M9.30.2, “D.2 Surface”, of the MHD Standard Specifications for Highways and Bridges, where these colors are specified.
4. Safety signage for construction operations shall consist of furnishing, positioning, repositioning, inspecting, maintaining, and removing regulatory, warning, and guide signs and temporary bus stop signs and taxi stop signs and their supports as approved by the Owner, City and Engineer.
5. Replace all signs and posts, which are damaged or are missing from their location at no additional cost to the Owner.
6. Maintain all signs in a satisfactory manner including the removal of dirt or road film that cause a reduction in sign reflective efficiency.

#### C. Portable Barricades

1. Furnish, install, relocate, remove, re-install, and maintain portable barricades in accordance with MHD and MUTCD requirements or as directed by the Owner, City and Engineer.
2. Portable barricades shall conform with Standard Plate No. 40612 of the MHD (Metric Edition). Reflectorized sheeting shall conform to Section M9.30.2, of the MHD Standard Specifications for Highways and Bridges.
3. Eight-foot-long units of portable barricades shall be constructed, as needed.
4. Alternating 6 inches (152.4 mil) wide diagonal stripes shall be orange and white and shall slope downward at 45 a degree toward the end by which traffic is to pass. Barricades that block the passage of traffic or designate the end of the traveled way shall have alternating vertical orange and white stripes on the rails.
5. Barricades shall be maintained in good and serviceable condition throughout the duration of the Contract.
6. Temporary pedestrian and construction facilities shall be kept clean and freshly painted as required.

#### D. Signs, Covered

1. Cover any existing regulatory and warning signs as required by the Owner, City and Engineer.

2. Use a cover approved by the Owner, City and Engineer which shall be securely fastened to the existing sign and shall completely cover the legend of the existing sign. The cover shall remain in place as long as necessary at which time it shall be promptly removed.
3. Signs shall be covered without causing any damage to the existing sign.

#### E. Traffic Signals

1. Traffic lights shall remain operable at all times throughout the duration of the contract unless approved otherwise by the City.
2. It shall be the Contractor's responsibility to maintain the traffic signal system in continuous and good working order. The Contractor at his expense, shall repair any damage to the traffic signal system resulting from the Contractor's work.

#### F. Temporary Precast Concrete Barriers and Work Zone Protection

1. Temporary precast concrete barriers shall be furnished and installed as shown on the approved traffic management plans and where required to protect work zones and excavations which cannot be completed and backfilled or plated within a daily work period. Barriers shall be removed or relocated when no longer required and with the approval of the Owner, City and Engineer.
2. Precast concrete median barrier shall conform with Standard Plate No. 401.15.1 of the MHD, as well as be acceptable for temporary pedestrian and construction facilities and signage.
3. Temporary precast barrier for use for temporary pedestrian and construction facilities shall have three sleeves cast in the barrier to receive a post for panel and fence installations. 4. Temporary chain link fence, 4-feet high, shall be erected at work zones abutting pedestrian travel paths and around work zones hazardous to pedestrians in conjunction with precast barriers to form a "safety zone" 7 feet high, or as required by the Owner, City and Engineer. The top 2-feet shall be fixed with plywood panels painted as required by the Owner and Engineer. The barriers and fencing shall be overlapped at the corners of the excavated area to provide a continuous protective screen.

### PART 3- EXECUTION

#### 3.1 GENERAL

- A. Conduct the work in manner that interferes as little as possible with public travel, whether vehicular or pedestrian.
- B. Provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel whenever it is necessary to cross, or obstruct roads, driveways, and walks, whether public or private.



1. Give a minimum of 48 hours (not including Saturday, Sunday or Holidays) written notice to owners of private driveways before interfering with them.
- C. Provide temporary surfacing on shoulders when necessary.
  - D. Provide snow removal and street sweeping within the work limits to maintain safe and efficient vehicular and pedestrian traffic flow, including accesses and sidewalks. Contractor shall plow snow out of the work zone in all areas where municipal snow removal is prevented by construction in the opinion of the Owner, City and Engineer. The Contractor shall also remove snow from all sidewalks in areas where construction related activities are occurring or have recently occurred. The Contractor shall sweep sidewalks, pedestrian walkways and detours, and streets within the work zone on a daily basis. In the event that the Contractors work zone restricts municipal street sweeping in the area, the Contractor shall sweep the restricted streets (including streets outside the work zone) to a point where municipal street sweeping can continue.
  - E. Sufficient and adequate signs, flashers, channelizing devices, lights, arrow boards and other precautions necessary to protect the work and the public, as determined by the Engineer shall be used at all times during construction.
  - F. Provide trench bituminous paving repairs on a daily basis, but at intervals no longer than weekly, unless required or allowed otherwise by the Owner, City and Engineer or applicable agency having jurisdiction.
  - G. Pedestrian access shall be maintained at all times. Access shall be a minimum of 4-feet, clear of all obstructions and meet all American with Disability Act (ADA) requirements. If an existing pedestrian walkway is interrupted, temporary walkways with ramps shall be provided.
  - H. Contractor shall post “No Parking” signs 48-hours in advance for residential permit parking locations and 24-hours in advance for metered, public, etc. If work does not take place that day, signs must be reposted. Standard Cambridge signs shall be used that provide information regarding proposed construction and parking restriction hours. Signs shall be placed at a minimum of 25-foot intervals.

### 3.2 DETOURS

- A. If approved by the Owner, City, and Engineer, construct and maintain detours around the work to maintain traffic over any construction work in a public street, road, or highway where traffic cannot be maintained on alignment of original roadbed or pavement.
- B. When detours are allowed, the Contractor shall provide all detour signs approved by the City and/or Engineer with directional arrows. Signs shall be placed at all streets and intersections to provide required direction to allow motorists to return to the street location beyond the detour. The Contractor must submit a written detour plan for the City and/or Engineer's approval prior to implementation of the detour.

- C. All detouring and signing shall meet the requirements of the applicable references specified in Parts 1 and 2 above.
- D. The Contractor shall provide Police details in the work areas. Contractor shall coordinate vehicle towing with the police.
- E. The Detour Plan shall be reviewed and approved by the Owner, City, and Engineer prior to establishing any detours.
- F. The Contractor is responsible for the notification of any parties affected by the detour, including, but not limited to Cambridge Fire Alarm, Cambridge Police, State Police, MBTA, DCR, Cambridge Traffic Department, and abutting property owners.

### 3.3 PROTECTION

#### A. Signs and Channelizing Devices:

1. Locate signs and channelizing devices with lights to protect public thoroughfares which are closed to traffic.
2. Ensure that all open trenches and other excavations have signs, channelizing devices and lights to provide protection to the public.
  - a. Provide similar warning signs and lights for obstruction such as material piles and equipment.
  - b. Ensure that the material storage and conduct of the work on or alongside streets causes minimum obstruction and inconvenience to the traveling public.
3. Install and maintain all signs, channelizing devices, lights, and other protective devices in conformity with applicable statutory requirements and as required by the municipalities or agencies having jurisdiction.
4. Illuminate all channelizing devices with flashing lights.
5. No traffic control devices shall be stored adjacent to the roadway.

### PART 4 – COMPENSATION

#### **Item 1570.1 - Traffic Management and Coordination**

##### METHOD OF MEASUREMENT:

Measurement for payment for Traffic and Pedestrian Management will be on a percent of the Lump Sum bid calculated by dividing the elapsed time to date by the original Contractual construction time limit as approved by the Engineer.

##### BASIS OF PAYMENT / INCLUSIONS:

Payment for Traffic Management shall be based on the lump sum price bid for this item in the proposal. Under the lump sum price for this item, the Contractor shall furnish all labor, materials,

tools, equipment, and incidentals required to provide, maintain, relocate, and remove Traffic Management and Control in areas directly or indirectly influenced by construction within the limits of work or outside the limits of work; along truck routes inside or outside the limits of work; as delineated in the approved Traffic Management Plan, by the MUTCD, ADA, MA AAB, and MHD standards; and as further required by the Owner and Engineer. The work further includes, but is not limited to; obtaining permits; coordination with the City Department of Public Works and Traffic and Parking Department; coordination with private property owners within the limits of work; preparing, submitting, reviewing, implementing, and revising traffic management and control plans; furnishing, installing, and maintaining traffic management devices based on approved traffic management and control plans including precast concrete barriers with fencing and plywood panels, reflectorized drums, lane delineators, portable barricades, temporary crosswalks, and cones; temporary pavement markings; removal of temporary and existing pavement markings; furnishing, installing, shimming, pinning, maintaining, and removing steel road plates; furnishing, installing, and removing cold patch pavement as necessary or as directed by the Engineer; ordering and coordinating police details; furnishing and installing temporary construction fencing; maintaining roadways and sidewalks inside or outside the limits of work; establishing and dismantling detours; covering existing traffic signs; obtaining, posting and maintaining “No Parking” signs; meeting with police details daily; coordinating police detail locations; and all incidental work, whether listed here or not, required to provide maintenance and protection of traffic and pedestrians.

**SPECIAL NOTES ON EXCLUSIONS:**

The following items are not included for payment under this item and are included for payment elsewhere; bituminous hot mix asphalt pavement; and Police Details. Police Details will be paid directly by the Owner.

<b>ITEM 865.1</b>	<b>CROSS WALKS AND STOP LINES REFL. WHITE (THERMOPLASTIC)</b>	<b>SQUARE FOOT</b>
<b>ITEM 867.04</b>	<b>4 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)</b>	<b>FOOT</b>

Work to be done under this item shall conform to the relevant provisions of Section 860 of the Standard Specifications and the following:

**CONSTRUCTION METHODS**

Broken lines through intersections are indicated only graphically on the Drawings. Actual pattern shall be 4-foot line and 4-foot space.

Pavement markings shall not be installed until a minimum of 15 days after final paving is completed. The Contractor shall notify the City of Cambridge Traffic Engineer at least 72 hours in advance of scheduled pavement marking installation. The exact location of pavement markings will be determined by the City’s Traffic Engineer at the time of installation. The City’s Traffic Engineer or representative must be present to supervise the pavement marking operations.

See Section 00850 of the Specifications for additional schedule requirements and restrictions.

## COMPENSATION

Reflectorized pavement markings will be measured and paid for as specified in Section 860 of the Standard Specifications, except the quantity of broken lines shall be 1/3 of the end-to-end length of the line.

### **ITEM 904.                    4000 PSI, 3/4 IN., 610 CEMENT CONCRETE                    CUBIC YARD**

The work under this item shall conform to the relevant provisions of Section 901 of the MassDOT Standard Specifications, the City of Cambridge Standard Specifications and Details, as shown on the plans, as required by the Engineer and the following:

The work under this item shall include the all cement concrete not included under another item required for the project.

Where necessary, at the direction of the Engineer, the design may be adjusted to fit conditions as encountered.

## CONSTRUCTION METHODS

Cement concrete shall be composed of specified proportions by weight of cement, aggregates, and water. The cement aggregates, and water shall conform to Section M4 Cement and Cement Concrete Materials of the latest edition of the MassDOT Standard Specifications.

The Contractor will furnish to the Department, for approval, a specific job mix formula for the particular uniform combination of materials and sources of supply to be used on each project complete with test results from trial batches. A new job mix formula shall be supplied anytime any source of material has been changed.

The cement concrete shall meet the specifications of Subsection M4.02.00 of the latest edition of the Standard Specifications.

The placement and treatment of forms; placement of reinforcing steel; handling and placement of concrete including transportation, depositing, consolidation; protection, curing and finishing; form removal; and cold weather construction of cement concrete shall meet the specifications of Section 901 of the latest edition of the Standard Specifications.

Cold weather concrete installation shall be strictly observed in accordance to the Standard Specifications, including section M4.02.12. The Contractor shall submit a written description of the methods he intends to use for approval. The work required for this installation shall be considered incidental to the item with no further payment allowed.

The Contractor shall not allow debris, tools, or incidental equipment of any kind in areas where vehicular or pedestrian traffic exists. Any material that accidentally falls into adjacent streams, wetland resource areas or any other environmentally sensitive area, the roadway, the path of pedestrians, or adjacent property owners shall be removed immediately.

The Contractor shall, subject to the approval of the Engineer, make any necessary adjustments to the structure in order to ensure proper bearing.



device to ensure that the sediment filter device will work properly during any heavy rain or any storm greater than a 10 year flood

MATERIALS

Minimum Requirements for catch basin inlet protection:

<b>Regular Flow Inlet Protection</b>	
<b>Physical property</b>	<b>Requirements</b>
Filtering efficiency	75%-85% (minimum): highly dependent on local conditions
Grab Tensile	390 LBS
Grab Elongation	30% (minimum)
Puncture	120 LBS
Mullen Burst	600 PSI
Trapezoid Tear	120 LBS
UV Resistance	90%
Apparent Opening	40 US Sieve
Flow Rate	40 Gal/Min/ft <sup>2</sup>
Permittivity	0.55 Sec <sup>-1</sup>

<b>High Flow Inlet Protection</b>	
<b>Physical property</b>	<b>Requirements</b>
Filtering efficiency	75%-85% (minimum): highly dependent on local conditions
Grab Tensile	390 LBS
Grab Elongation	30% (minimum)
Puncture	140 LBS
Mullen Burst	400 PSI
Trapezoid Tear	120 LBS
UV Resistance	90%

Apparent Opening	40 US Sieve
Flow Rate	175 Gal/Min/ft <sup>2</sup>
Permittivity	1.5 Sec <sup>-1</sup>

**COMPENSATION**

Erosion control shall be measured and paid for on a Lump Sum basis, complete and in place. Maintenance of erosion control devices shall be considered incidental to the work of this Item.

**ITEM 997. CONSTRUCTION STAKING LUMP SUM**

**GENERAL**

Under this item, the Contractor shall layout and set all lines, grades, and measurements necessary for construction of the work. At a minimum the following items shall be staked:

- horizontal and vertical alignment of curb
- back of sidewalk elevations
- horizontal and vertical layout of curb ramps and driveways

This work shall include the initial layout work including checking original control information as shown on the Drawings; and furnishing and setting temporary points as necessary to establish intermediate vertical and horizontal control for the construction baseline, radius points, and running bench level circuits. These points shall constitute the field control by and in accordance with which the Contractor shall govern and execute the work.

All staking work shall be directed and performed by qualified surveying personnel who are trained, experienced and skilled in construction layout of the type required under this Contract. The Contractor shall submit the qualifications of the survey personnel to the Engineer for review and approval. The Engineer reserves the right to reject any personnel which, in the Engineer's judgment, are not adequately qualified. The Engineer also reserves the right to evaluate the performance of the survey personnel during the course of the work, and to require the replacement of any personnel whose work, in the opinion of the Engineer, is unsatisfactory.

**CONSTRUCTION METHODS**

Bench mark data, grades, and alignment shall be obtained or calculated from data in the plan and shall be verified with the Engineer prior to beginning the work. Methods of survey and staking shall be approved by the Engineer prior to beginning the work. Additional bench marks and control points shall be established as necessary or as directed by the Engineer. The Contractor shall check plan dimensions, alignment, and elevations for accuracy with existing field conditions. Any errors and apparent discrepancies shall be called to the Engineer's attention immediately by the Contractor for correction or interpretation prior to proceeding with the work.

The Contractor shall maintain neat, orderly and complete survey notes and computations used in establishing the lines and grades. The survey notes and computations shall be made available to

the Engineer within 24 hours upon request as the work progresses. The Engineer may check the layout as established by the Contractor at any time as the work progresses. The Contractor will be informed of the results of these checks, but the Engineer by doing so in no way relieves the Contractor of its responsibility for the accuracy of the layout work. The Contractor shall correct or replace any deficient layout and construction work which may be the result of inaccuracies in the Contractor's layout at no additional cost to the City.

Staking work shall be completed sufficiently in advance of construction to allow the Engineer to review elevations and make adjustments to proposed grades if required.

Curb, Curb Ramps, and Sidewalks: Construction stakes for curbing and sidewalks shall be placed at a maximum 25 ft interval. Additional stakes shall be set and maintained as necessary to achieve the required accuracy and to satisfy the Contractors' method of operations. Also, additional construction stakes shall be set as necessary to establish the location and grade of curb, curb ramps, sidewalks and driveways including points of change in alignment and grade.

Additional stakes shall also be set along the back of sidewalk at each side of building entries and steps.

All construction stakes shall be located to within 0.02 ft. of the true horizontal position and shall establish the grade elevation to within 0.01 ft of the true vertical position.

#### COMPENSATION

Payment for Item 999 will be at the contract lump sum price bid, which shall constitute full compensation for the work as specified herein, including but not limited to furnishing all labor, tools, stakes, flags, pins, equipment and incidentals necessary to complete the work.

All survey notes and computations used in establishing the required lines and grades shall be given to the Engineer within 21 days of completing work under the above item and must be received before final payment for the work will be made.

#### **ITEM 998.**

#### **RECORD DRAWINGS**

#### **LUMP SUM**

During the course of the work, a survey shall be performed by a Registered Land Surveyor (RLS) registered in the Commonwealth of Massachusetts. At the completion of the work, a final Record Drawing, signed and sealed by the RLS, shall be provided by the Contractor which includes the following information:

- Location of all project boundaries.
- The location and elevation of utility cutoff and capping performed by the Contractor.
- Locations and elevations of all new utilities installed.
- Location and elevations of sidewalks and curb cuts.
- Location of all features constructed.



The Record Drawings shall be professionally drafted on 24" x 36" sheets, using a scale of 1" = 20', and shall be based on the Massachusetts Coordinate System Horizontal Datum and Cambridge City Base Vertical Datum. The Contractor shall submit the record drawing in both paper form, as specified above, and as an electronic AutoCAD file (latest version).

**ITEM 999.**

**RAILROAD ALLOWANCE**

**LUMP SUM**

This section includes coordination with the railroad companies and related entities including the Massachusetts Bay Transportation Authority (MBTA) and CSX including meetings, flagman and engineering coordination, construction support, and compliance with regulations and schedules.

COMPENSATION

Measurement for Payment for Railroad Allowance will be based on a percentage of the lump sum value bid completed or on actual invoices billed to the Contractor by the MBTA determined by the Engineer.

Payment for Railroad Allowance shall be based on the lump sum bid for this item in the proposal. Under the Unit Price for this item, the Contractor shall reimburse the MBTA for all costs invoiced for the project work including flagman, engineering and construction. The Contractor shall pay the entire allowances requested to the MBTA at the time they are requested. Any value paid to the Contractor not invoiced by the MBTA shall be credited to the CRA upon substantial completion of the project.

## ADD ALTERNATE NO. 1

### **ITEM 999.01 POURED-IN-PLACE PLAYGROUND SURFACING SYSTEM LUMP SUM W/ PLAY SPINNERS**

Work under this Item includes installation of a poured-in-place playground surfacing system and play spinners in accordance with the Drawings, Manufacturer's requirements, and as required by the Landscape Architect.

#### CONSTRUCTION METHODS

##### Poured-In-Place Playground Surfacing System

###### Manufacturer:

Surface America, Inc.; PO Box 157, Williamsville, NY 14231;

Phone: (800) 999-0555, (716) 632-8413;

E-mail: [info@surfaceamerica.com](mailto:info@surfaceamerica.com);

Website: <http://www.surfaceamerica.com> or approved equal.

- A. Aliphatic poured-in-place playground surfacing system (no substitutions), including the following:
1. PlayBound Poured-in-Place Primer:
    - a. Material: Polyurethane.
  2. PlayBound Poured-in-Place Base Course:
    - a. Material: Blend of 100% recycled SBR (styrene butadiene rubber) and polyurethane.
    - b. Thickness: 4" (51 mm).
    - c. Formulation Components: Blend of strand and granular material.
  3. PlayBound Poured-in-Place Top Wearing Surface
    - a. Material: Blend of recycled EPDM (ethylene propylene diene monomer) and polyurethane.
    - b. Thickness: Nominal 1/2" (12.7 mm), minimum 3/8" (9.5 mm), maximum 5/8" (15.9 mm).
    - c. Dry Static Coefficient of Friction (ASTM D2047): 1.0.
    - d. Wet Static Coefficient of Friction (ASTM D2047): 0.9.
    - e. Dry Skid Resistance (ASTM E303): 89.
    - f. Wet Skid Resistance (ASTM E303): 57.
    - g. Colors: Composed of a blend of the following 4 colors: 35% Royal Blue, 35% Light Grey, 15% Pearl, 15% Gold
- B. Required mix proportions by weight:
1. Base Course: 14% polyurethane, 86% rubber.
  2. Top Wearing Surface: 18% polyurethane, 82% rubber.
- C. Fall Zone Boundary: Ground surfacing within the fall zone areas of the playground structures must be configured in strict accordance with manufacturer's requirements

regarding the required fall zone boundary and the required depth of the fall zone surfacing. Site contractor shall closely coordinate layout with equipment manufacturers.

D. Subbase materials per standard details.

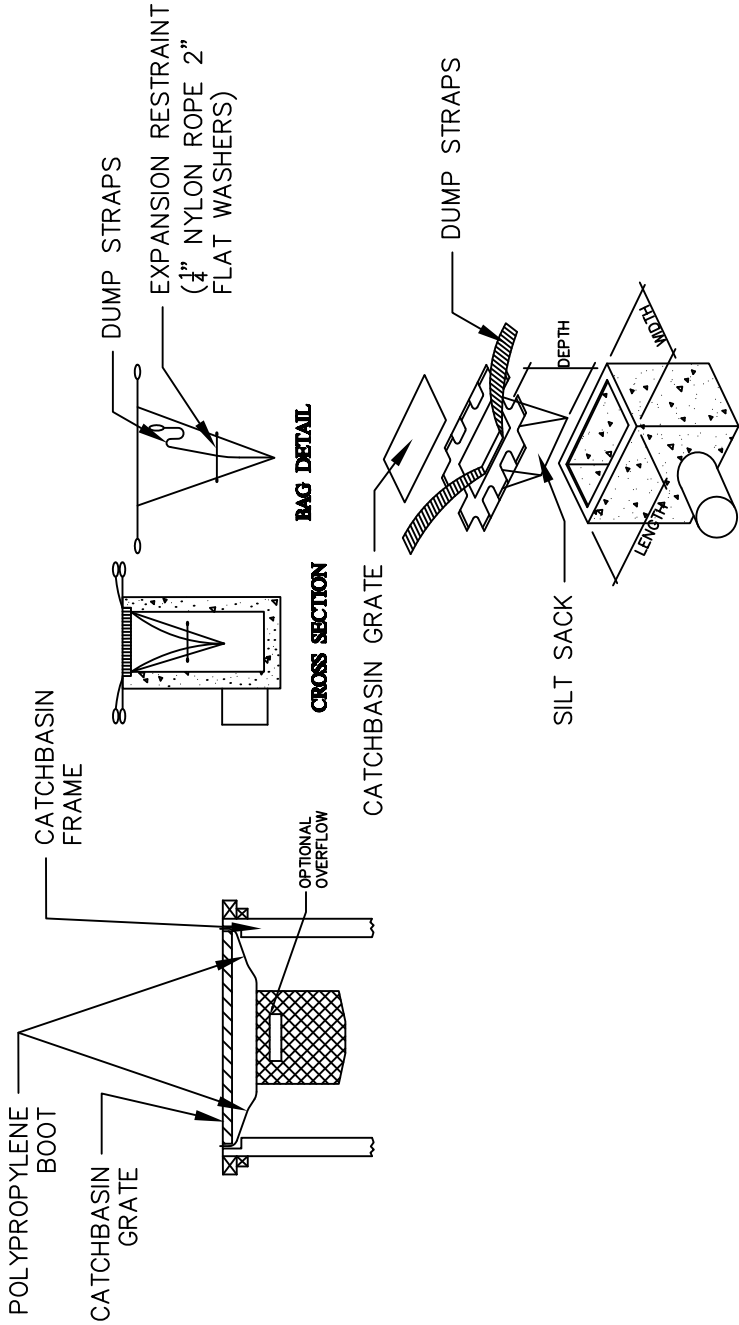
### Play Spinner

- A. Model Type: Spinner Bowl. Product Number: ELE400024. Qty: 1  
Manufactured by KOMPAN Playgrounds; 930 Broadway, Tacoma, Washington 98402;  
phone: 800-426-9788; email: USsales@KOMPAN.com; website: www.kompan.us
  - 1. Color: Blue
  
- B. Model Type: Spinner Bowl. Product Number: ELE400024. Qty: 1  
Manufactured by KOMPAN Playgrounds; 930 Broadway, Tacoma, Washington; Phone:  
800-426-9788; website: www.kompan.us
  - 1. Color: Red
  
- C. Model Type: Spinner Bowl. Product Number:: ELE400024. Qty: 1  
Manufactured by KOMPAN Playgrounds; 930 Broadway, Tacoma, Washington; Phone:  
800-426-9788; website: www.kompan.us
  - 1. Color: Yellow

### COMPENSATION

ITEM 999.01, ADD ALTERNATE NO. 1 – POURED-IN-PLACE PLAYGROUND SURFACING SYSTEM W/ PLAY SPINNERS, shall be paid for by the Lump Sum bid price, which shall include all labor, materials, equipment, and fine grading, including furnishing and installing all required foundations and sub-base materials to complete the work.

**APPENDIX A**  
**STANDARD DETAILS**



THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS SHEET, OVERLAND AND CONCENTRATED FLOWS (NOT GREATER THAN 1 CFS). THE METHOD CAN DRAIN FLAT AREA TO STEEP SLOPES. INLET CAPACITY WILL DECREASE WITH THIS METHOD AND CONTRACTOR SHALL EXPECT FLOODING TO OCCUR DURING HIGH FLOW EVENTS.

INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT

MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT SACKS SHALL BE CLEANED ONCE THE BAG IS FILLED HALF WAY WITH DEBRIS. CONTRACTOR SHALL REMOVE SILT SACK AND PLACE NEW UNIT. DO NOT EMPTY SILT SACK CONTENTS INTO THE CATCHBASIN.

### CATCH BASIN W/ SILT SACK INLET PROTECTION



### INLET PROTECTION 2

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.	DATE OF ISSUE: 07/09	SPEC. SECTION REF.#:
---------------	----------------------	----------------------

EROSION AND SEDIMENT CONTROL NOTES

1. PRIOR TO ANY LAND DISTURBANCE ACTIVITIES COMMENCING ON THE SITE, THE DEVELOPER SHALL PHYSICALLY MARK LIMITS OF NO LAND DISTURBANCE ON THE SITE WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE, SO THAT WORKERS CAN SEE THE AREAS TO BE PROTECTED. THE PHYSICAL MARKERS SHALL REMAIN IN PLACE UNTIL A CERTIFICATE OF COMPLETION HAS BEEN ISSUED.
2. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO SOIL DISTURBANCE. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
3. MINIMIZE TOTAL AREA OF DISTURBANCE AND PROTECT NATURAL FEATURES AND SOIL.
4. THE CONTRACTOR SHALL SEQUENCE ALL ACTIVITIES TO MINIMIZE SIMULTANEOUS AREAS OF DISTURBANCE. MASS CLEARINGS AND GRADING OF THE ENTIRE SITE SHALL BE AVOIDED.
5. MINIMIZE SOIL EROSION AND CONTROL SEDIMENTATION DURING CONSTRUCTION,
6. DIVERT UNCONTAMINATED WATER AROUND DISTURBED AREAS.
7. INSTALL AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES OR THE 2008 EPA'S CONSTRUCTION GENERAL PERMIT.
8. PROTECT AND MANAGE ON AND OFF-SITE MATERIAL STORAGE AREAS (OVERBURDEN AND STOCKPILES OF DIRT, BORROW AREAS, OR OTHER AREAS USED SOLELY BY THE PERMITTED PROJECT ARE CONSIDERED A PART OF THE PROJECT).
9. COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS INCLUDING WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS, AND AIR QUALITY REQUIREMENTS, INCLUDING DUST CONTROL.
10. SEDIMENT SHALL BE REMOVED ONCE THE VOLUME REACHES ¼ TO ½ THE HEIGHT OF THE EROSION CONTROL DEVICE. SEDIMENT SHALL BE REMOVED FROM SILT FENCE PRIOR TO REACHING THE LOAD-BEARING CAPACITY OF THE SILT FENCE WHICH MAY BE LOWER THAN ¼ TO ½ THE HEIGHT.
11. SEDIMENT FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS SHALL BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT.
12. BMPS TO BE USED FOR INFILTRATION AFTER CONSTRUCTION SHALL NOT BE USED AS BMPS DURING CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE BOARD. MANY INFILTRATION TECHNOLOGIES ARE NOT DESIGNED TO HANDLE THE HIGH CONCENTRATIONS OF SEDIMENTS TYPICALLY FOUND IN CONSTRUCTION RUNOFF, AND THUS MUST BE PROTECTED FROM CONSTRUCTION RELATED SEDIMENT LOADINGS.
13. SOIL STOCKPILES MUST BE STABILIZED OR COVERED AT THE END OF EACH WORKDAY. STOCKPILE SIDE SLOPES SHALL NOT BE GREATER THAN 2:1. ALL STOCKPILES SHALL BE SURROUNDED BY SEDIMENT CONTROLS.
14. FOR ACTIVE CONSTRUCTION AREAS SUCH AS BORROW OR STOCKPILE AREAS, ROADWAY IMPROVEMENTS AND AREAS WITHIN 50 FEET OF A BUILDING UNDER CONSTRUCTION, A PERIMETER SEDIMENT CONTROL SYSTEM SHALL BE INSTALLED AND MAINTAINED TO CONTAIN SOIL.
15. A TRACKING PAD OR OTHER APPROVED STABILIZATION METHOD SHALL BE CONSTRUCTED AT ALL ENTRANCE/EXIST POINTS OF THE SITE TO REDUCE THE AMOUNT OF SOIL CARRIED ONTO ROADWAYS AND OFF THE SITE.
16. ON THE CUT SIDE OF ROADS, DITCHES SHALL BE STABILIZED IMMEDIATELY WITH ROCK RIP-RAP OR OTHER NON-ERODIBLE LINERS, OR WHERE APPROPRIATE, VEGETATIVE MEASURES SUCH AS HYDROSEEDING OR JUTE MATTING.
17. PERMANENT SEEDING SHALL BE UNDERTAKEN IN THE SPRING FROM MARCH THROUGH MAY, AND IN LATE SUMMER AND EARLY FALL FROM AUGUST TO OCTOBER 15. DURING THE PEAK SUMMER MONTHS AND IN THE FALL AFTER OCTOBER 15, WHEN SEEDING IS FOUND TO BE IMPRACTICAL, APPROPRIATE TEMPORARY STABILIZATION SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN DURING THE SUMMER IF PLANS PROVIDE FOR ADEQUATE MULCHING AND WATERING.
18. ALL SLOPES STEEPER THAN 3:1 (H:V, 33.3%), AS WELL AS PERIMETER DIKES, SEDIMENT BASINS OR TRAPS, AND EMBANKMENTS MUST, UPON COMPLETION, BE IMMEDIATELY STABILIZED WITH SOD, SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES. AREAS OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST NOT BE DISTURBED.
19. TEMPORARY SEDIMENT TRAPPING DEVICES MUST NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONTRIBUTORY DRAINAGE AREAS.
20. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS OF REMOVAL.
21. PROPERLY MANAGE ON-SITE CONSTRUCTION AND WASTE MATERIALS.
22. PREVENT OFF-SITE VEHICLE TRACKING OF SEDIMENTS.
23. DUST SHALL BE CONTROLLED AT THE SITE.
24. ALL PREVIOUSLY DISTURBED LAND SHALL BE STABILIZED BY APPROVED METHODS AFTER 14 DAYS IF LEFT UNDISTURBED. THIS INCLUDES STOCKPILES, CONSTRUCTION ENTRANCES, GRADED AREAS AND OTHER CONSTRUCTION ACTIVITY RELATED CLEARING.
25. IF WORK IS HALTED OVER WINTER MONTHS THE CONTRACTOR SHALL BE RESPONSIBLE FOR STABILIZING THE AREA THROUGH GROUND COVER PRACTICES.



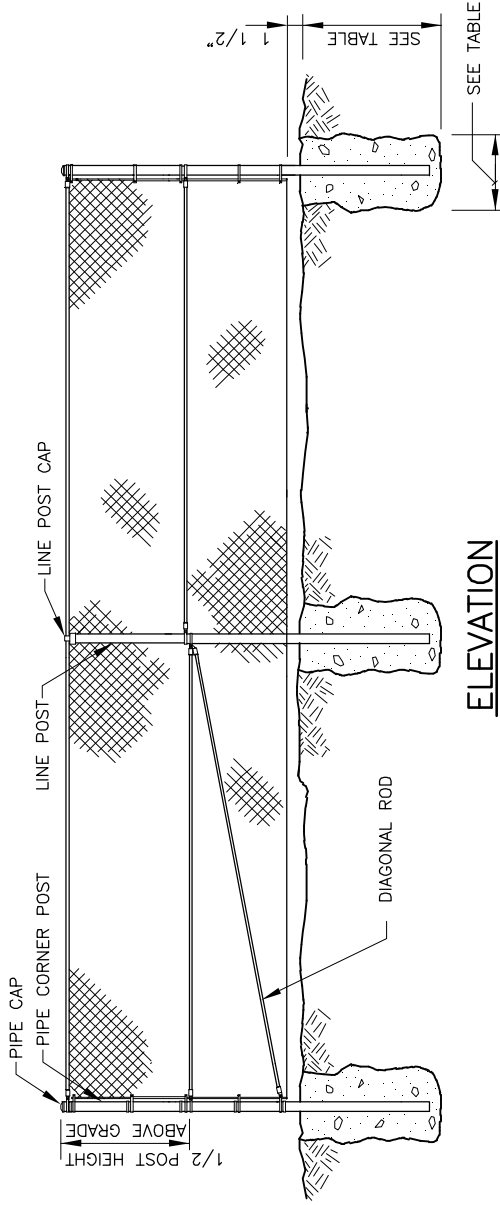
EROSION AND SEDIMENT CONTROL GENERAL NOTES

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N/A

DATE OF ISSUE: 07/09

SPEC. SECTION REF#:

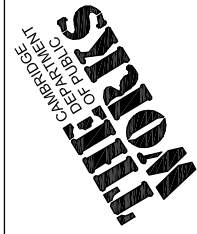


**ELEVATION**

POST SETTING REQUIREMENT			
TYPE OF POST	HOLE DIA. AT TOP*	HOLE DEPTH	POST EMBEDMENT
LINE	9"	38"	36"
TERMINAL	12"	38"	36"

\*MIN. HOLE DIAMETER IN SOFT OR LOOSE SOIL SHALL BE 18"

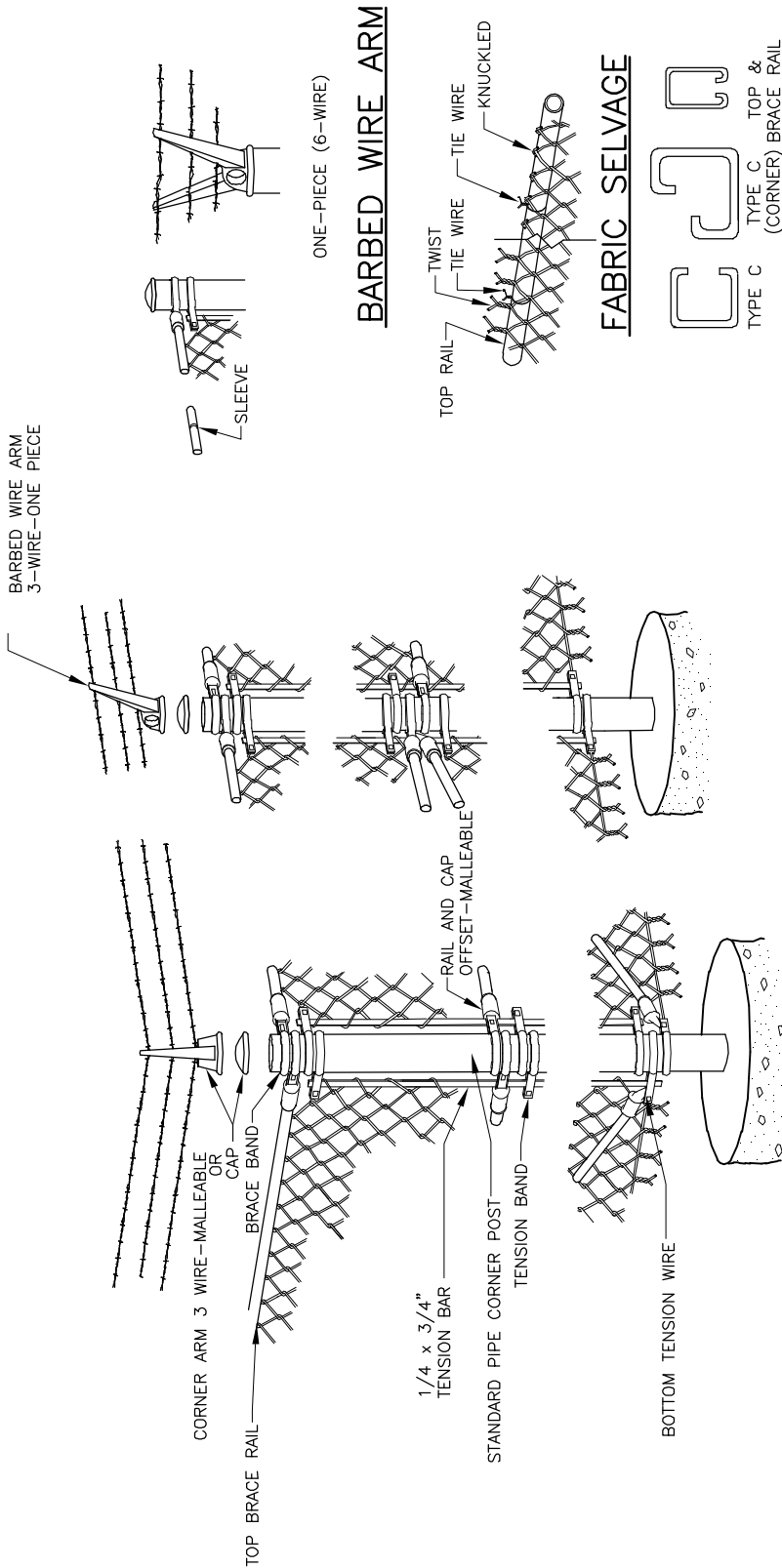
- NOTES:
1. POST SPACING: LINE POSTS SHALL BE EVENLY SPACED, CENTER TO CENTER.
  2. BARBED WIRE ARM WHERE REQUIRED SHALL BE PER CHAIN LINK FENCES AND GATES, AND CHAIN LINK FENCE DETAIL 2.
  3. POST FOOTING SHALL HAVE A 1" CROWN FINISH
  4. SEE CHAIN LINK FENCE DETAIL 2 FOR CHAIN LINK FENCE ASSEMBLY, ALTERNATE POSTS, AND FABRIC SELVAGE DETAILS.



**CHAIN LINK FENCE DETAIL 1**

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

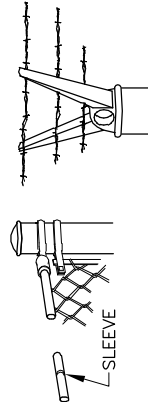
SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 02830	<b>2830.1</b>
---------------	----------------------	---------------------------	---------------



**CHAIN LINK FENCE ASSEMBLY**

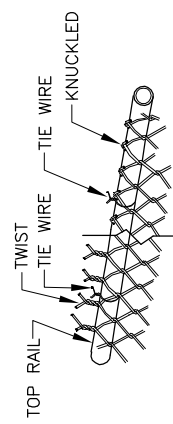
WITH ONE-PIECE BARBED WIRE ARM (3-WIRE)

BARBED WIRE ARM  
3-WIRE-ONE PIECE



ONE-PIECE (6-WIRE)

**BARBED WIRE ARM**



**FABRIC SELVAGE**



TYPE C  
TYPE C TOP &  
(CORNER) BRACE RAIL

**ALTERNATE POSTS**

SEE CHAIN LINK FENCES AND GATES

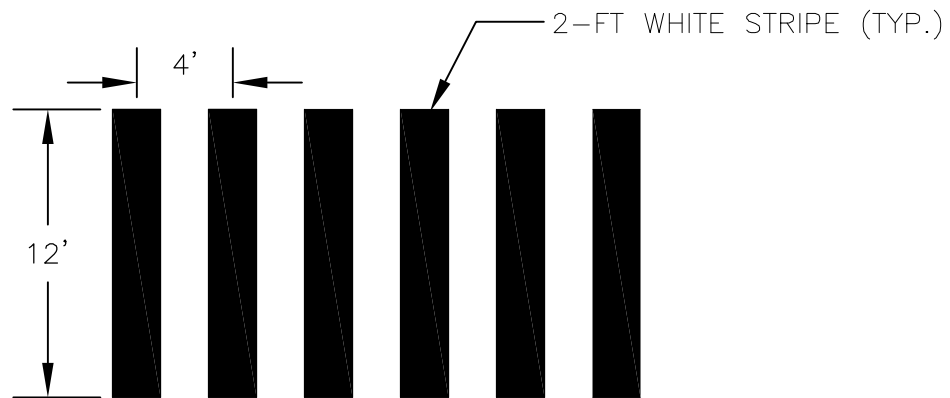


**CHAIN LINK FENCE DETAIL 2**

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 02830	2830.2
---------------	----------------------	---------------------------	--------





CAMBRIDGE STANDARD CROSSWALK



CAMBRIDGE STANDARD CROSSWALK

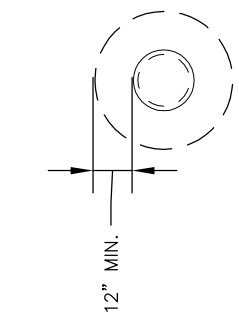
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

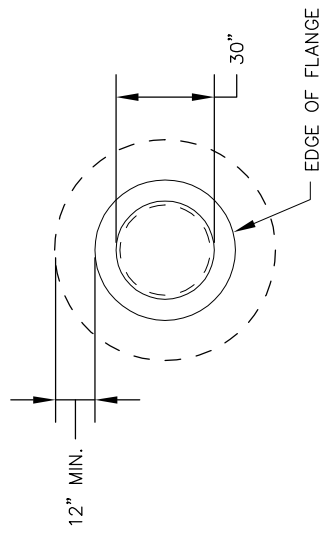
DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02577

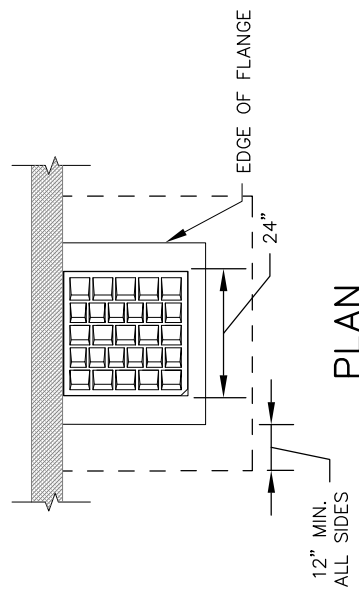
**2577.1**



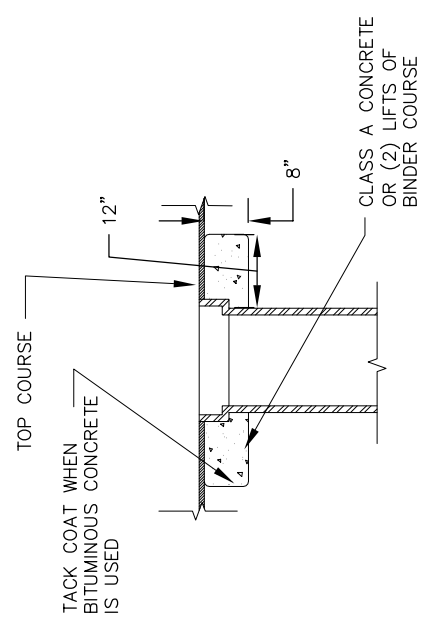
PLAN



PLAN

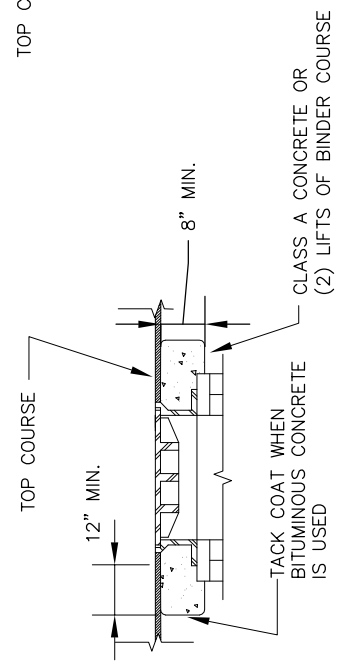


PLAN



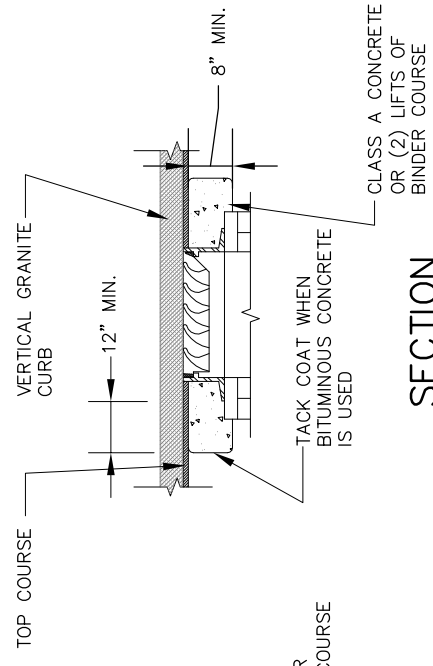
SECTION

GATE BOXES



SECTION

MANHOLES



SECTION

CATCH BASINS

95% DETAILS  
NOT FOR CONSTRUCTION



**RAISING CASTINGS DETAIL**

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

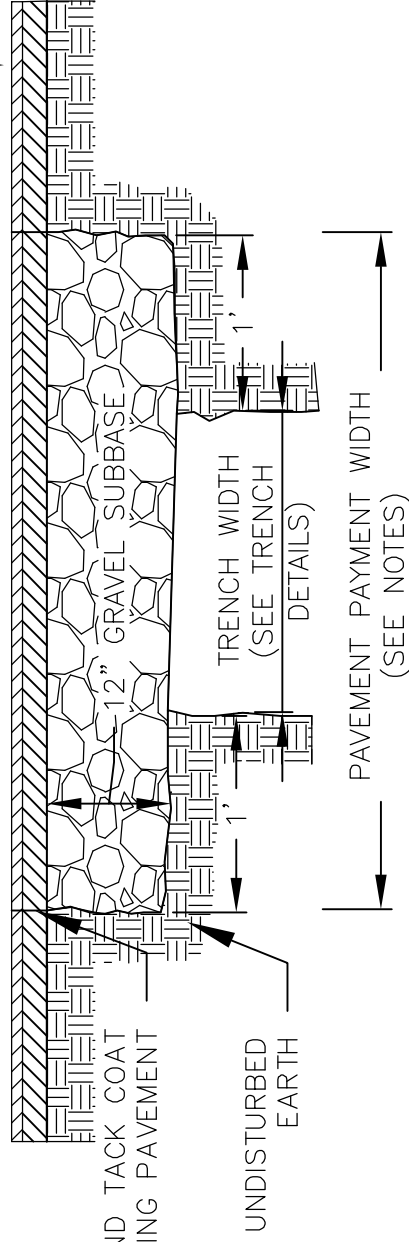
DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.14

BITUMINOUS TOP COURSE AND BITUMINOUS  
BINDER COURSE SEE PAVING AND SURFACING  
FOR THICKNESS

UNDISTURBED  
EXISTING PAVEMENT



SAWCUT AND TACK COAT  
EDGES OF EXISTING PAVEMENT

UNDISTURBED  
EARTH

NOTES:

1. PERMANENT TRENCH PAVEMENT PAYMENT WIDTH SHALL BE THE TRENCH PAY LIMIT PLUS 2 FEET
2. TEMPORARY TRENCH PAVEMENT PAYMENT WIDTH SHALL BE EQUAL TO THE TRENCH PAYMENT LIMIT
3. REMOVE AND DISPOSE ALL TEMPORARY PAVEMENT AS REQUIRED. RESTORE AND COMPACT SUBBASE AS REQUIRED PRIOR TO PERMANENT TRENCH PAVEMENT.



TRENCH PAVEMENT DETAIL

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

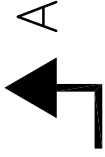
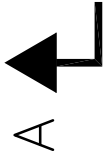
SCALE: N.T.S.

DATE OF ISSUE: 02/05

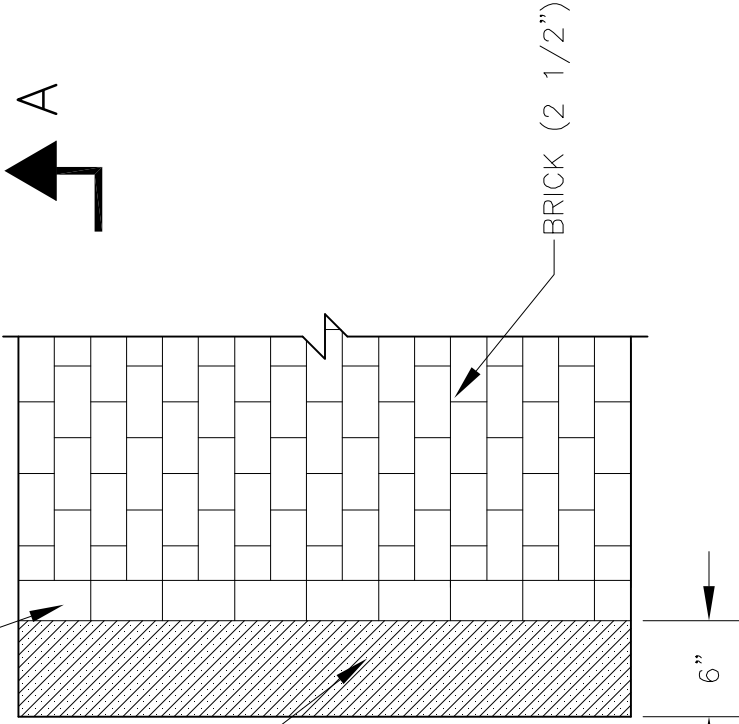
SPEC. SECTION REF#: 02500

2500.1

STRINGER COURSE



VERTICAL GRANITE CURB  
(SEE VERTICAL GRANITE CURB  
DETAIL)



NOTE:  
AROUND HYDRANTS, UTILITY POLES SIGN POSTS ETC., SEE  
EXPANSION JOINT DETAIL

PLAN



**BRICK SIDEWALK DETAIL - PLAN**

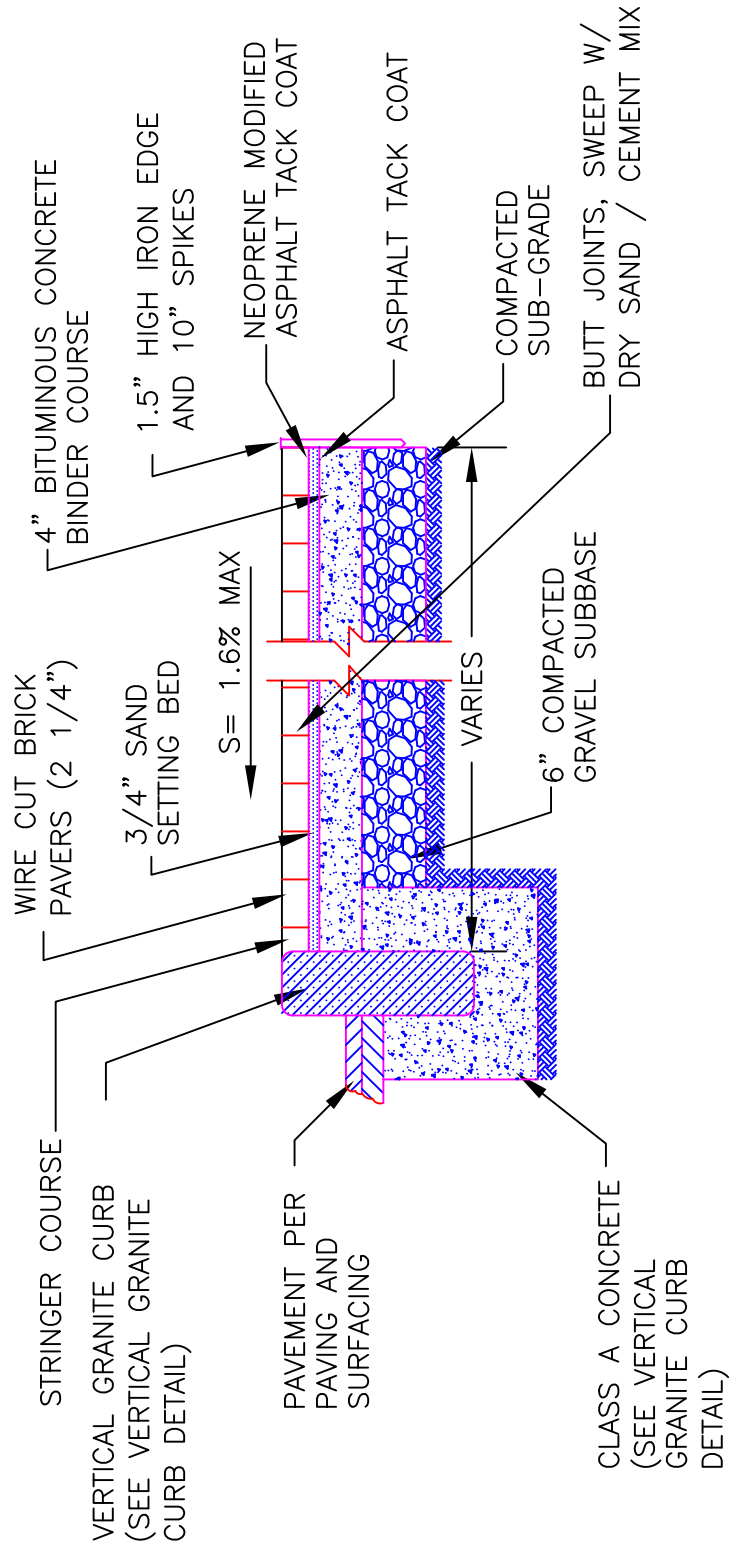
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02524

2524.8



**SECTION A-A**

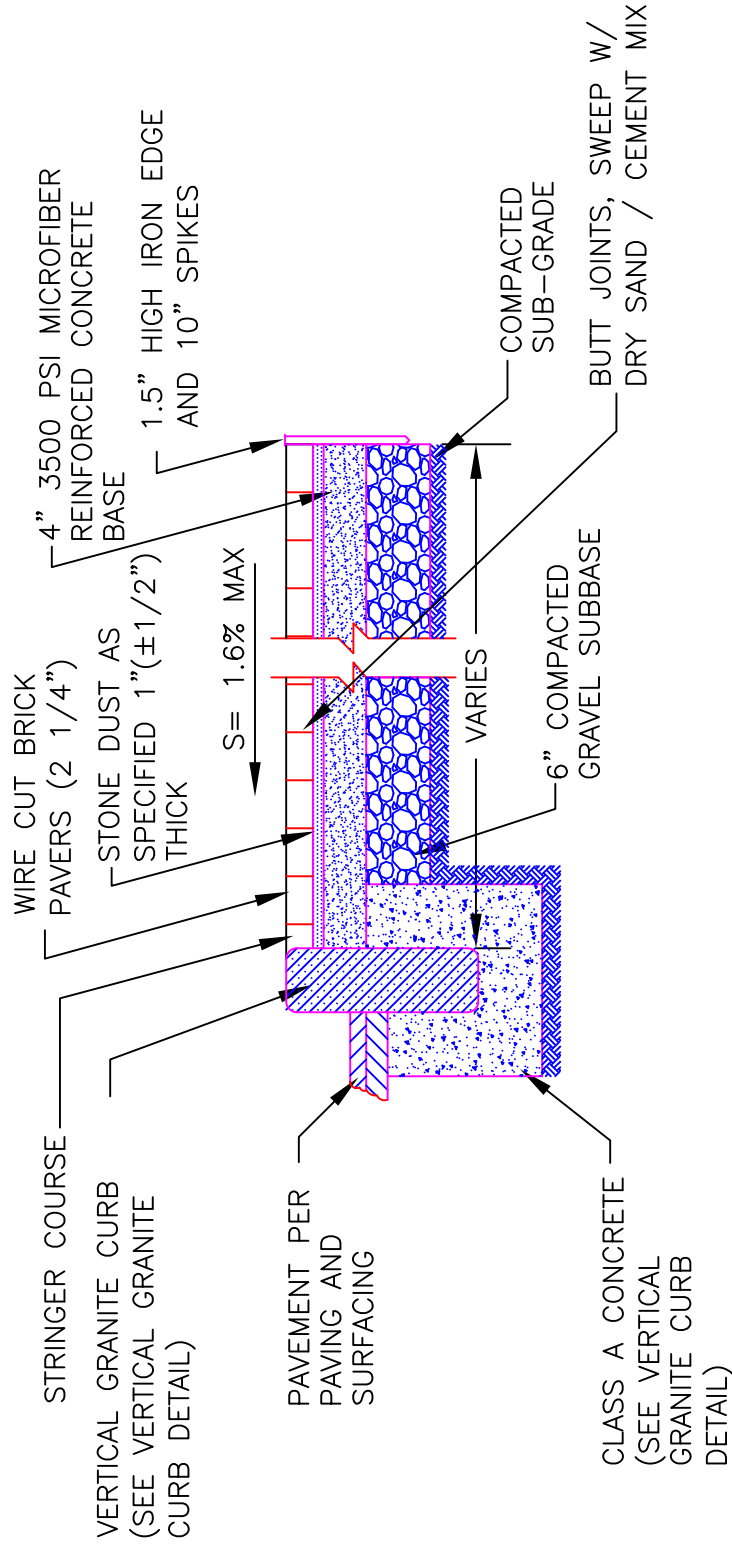
- NOTES:**
1. SIDEWALKS SHALL MATCH WIDTH AND SLOPE OF EXISTING SIDEWALKS UNLESS OTHERWISE NOTED.
  2. BITUMINOUS CONCRETE BINDER COURSE SHALL BE 6" DEPTH (IN TWO 3" COURSES) AT DRIVEWAYS. REFER TO PROJECT DRAWINGS OR ENGINEER'S INSTRUCTIONS FOR LOCATIONS
  3. FOR BRICK LAYOUT PATTERN SEE PLAN VIEW DETAIL 2524.8



**ASPHALT BASE BRICK SIDEWALK DETAIL - SECTION**

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF.#: 02524	2524.9
---------------	----------------------	----------------------------	--------



## SECTION A-A

### NOTES:

1. SIDEWALKS SHALL MATCH WIDTH AND SLOPE OF EXISTING SIDEWALKS UNLESS OTHERWISE NOTED.
2. FOR BRICK LAYOUT PATTERN SEE PLAN VIEW DETAIL 2524.8



## CONCRETE BASE BRICK SIDEWALK DETAIL - SECTION

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF.#: 02524

2524.9

VERTICAL GRANITE CURB

SIDEWALK (SEE SIDEWALK DETAILS)

VARIES  
4" MIN  
9" MAX

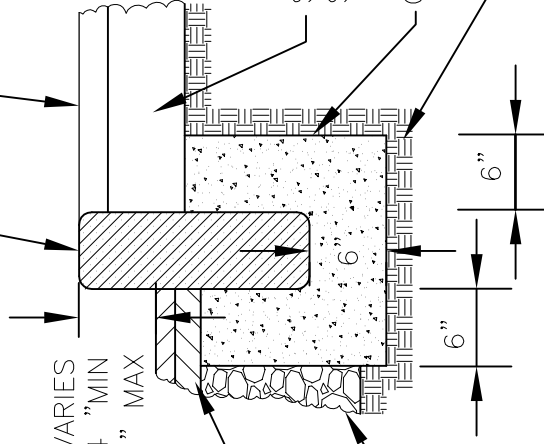
PAVEMENT (SEE PAVING AND SUFACING)

COMPACTED GRAVEL SUBBASE

SIDEWALK SUBBASE (SEE SIDEWALK DETAILS)

CLASS A CONCRETE

COMPACTED SUB-GRADE



95% DETAILS  
NOT FOR CONSTRUCTION

VERTICAL GRANITE CURB DETAIL

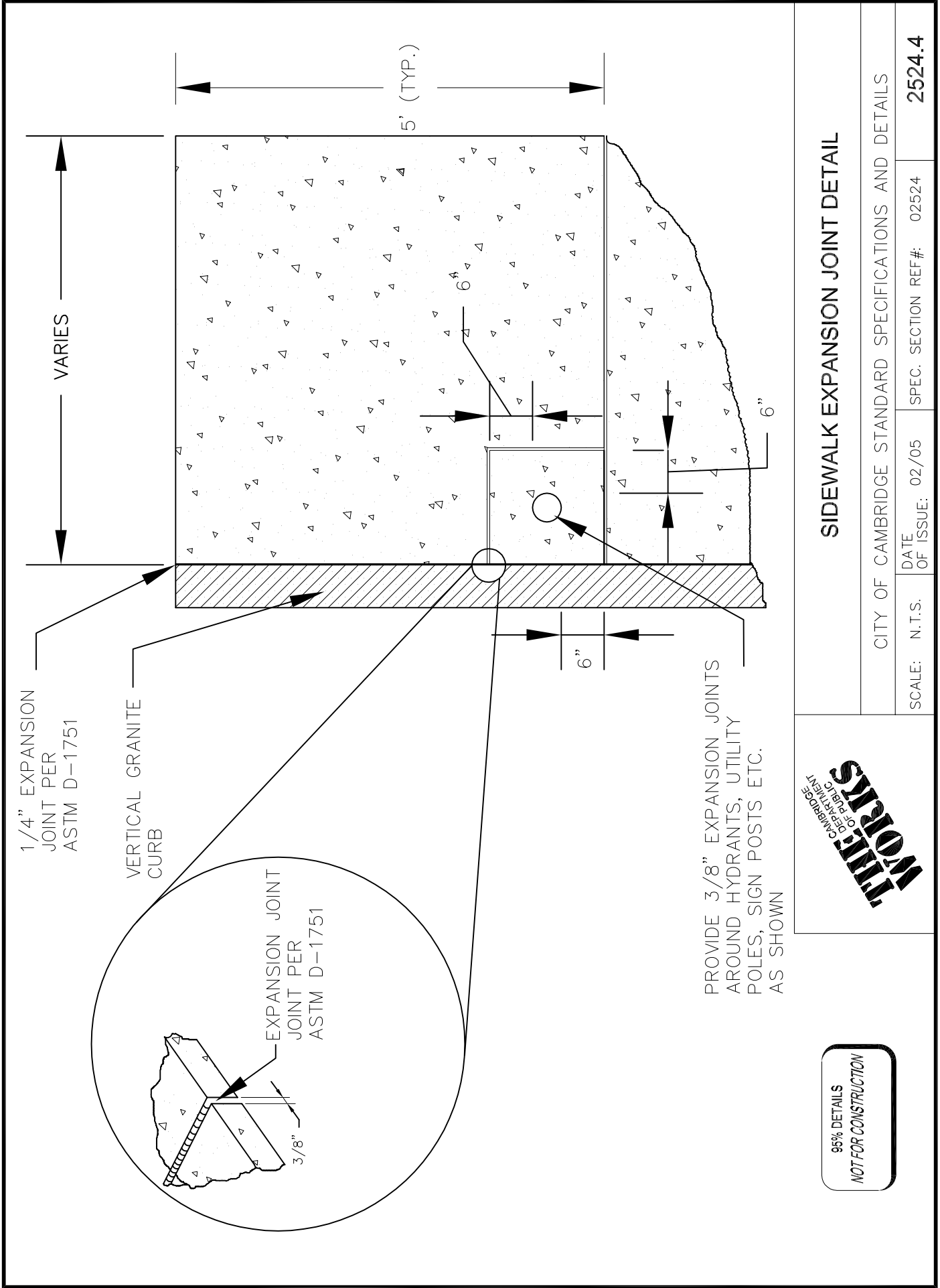
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02524

2524.1



**SIDEWALK EXPANSION JOINT DETAIL**

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 02524	2524.4
---------------	----------------------	---------------------------	--------







95% DETAILS  
NOT FOR CONSTRUCTION

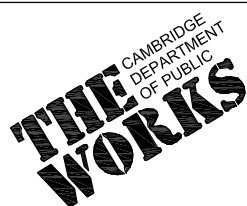
PROVIDE 3/8" EXPANSION JOINTS  
AROUND HYDRANTS, UTILITY  
POLES, SIGN POSTS ETC.  
AS SHOWN



TRAFFIC MANAGEMENT GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D)
2. ALL SIGN LOCATIONS ON DETAILS ARE SHOWN SCHEMATICALLY. FINAL LOCATIONS SHALL BE DETERMINED BASED ON ACTUAL FIELD CONDITIONS AND CITY APPROVAL
3. ADDITIONAL TRAFFIC CONTROL DEVICES SHALL BE PROVIDED UPON THE CITY'S REQUEST
4. ALL TEMPORARY SIGNAGE AND TRAFFIC CONTROL DEVICES SHALL BE PROPERLY SECURED
5. ALL DRUMS NOT OTHERWISE SPECIFIED SHALL BE EQUIPPED WITH TYPE "C" –STEADY BURN WARNING LIGHTS
6. TEMPORARY TRAFFIC LANES WITHIN THE WORK ZONE SHALL BE A MINIMUM OF 11 FEET
7. ADVISORY SPEED LIMITS SHALL BE POSTED AS DIRECTED BY THE CITY
8. FLASHING ARROW BOARDS SHALL BE UTILIZED FOR LANE SHIFTS WHERE THE EXISTING SPEED LIMIT IS 35 M.P.H. OR GREATER
9. NON-ESSENTIAL TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORK HOURS
10. ALL TRAVEL WAYS SHALL BE PROTECTED FROM DUST AND CONSTRUCTION DEBRIS AT ALL TIMES
11. TRAFFIC CONTROL INCLUDES NECESSARY STREET SWEEPING AND SNOW REMOVAL WITHIN THE WORK ZONE
12. VEHICULAR AND PEDESTRIAN SHALL BE ALLOWED ACCESS TO PRIVATE PROPERTY AT ALL TIMES DURING CONSTRUCTION
13. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNAGE AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH WORK AREAS BOTH DURING AND AFTER WORK HOURS
14. EACH ABUTTER SHALL BE NOTIFIED BY THE CONTRACTOR AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS
15. CONSTRUCTION WORK ZONE SHALL BE STAGED AS TO ALLOW FOR CONTINUOUS ACCESS AT DRIVE ENTRANCES AND TO MINIMIZE DETOURS TO CAMBRIDGE ROADS
16. EXCAVATIONS SHALL BE PROTECTED BY STEEL PLATES OR BARRICADES DURING NON-WORK HOURS
17. GRADE SEPARATIONS IN EXCESS OF 2" DURING NON WORKING HOURS WILL REQUIRE DELINEATION BY DRUMS
18. EXCAVATION EDGES IN EXCESS OF 4" DEEP SHALL BE PROTECTED DURING NON-WORKING HOURS BY BACKFILLING WITH A WEDGE OF GRAVEL COMPACTED TO A 4:1 SLOPE
19. SAFE PEDESTRIAN WALKWAYS SHALL BE PROVIDED AND ACCESS TO LOCAL BUSINESSES AND RESIDENCES. PUBLIC WALKWAYS SHALL REMAIN OPEN AND ACCESSIBLE UNLESS OTHERWISE DIRECTED BY CITY.
20. ALL EXISTING PEDESTRIAN CROSSINGS SHALL BE MAINTAINED. ALTERNATIVE CROSSING SHALL BE PROVIDED WHEN EXISTING CROSSINGS ARE DISRUPTED BY CONSTRUCTION ACTIVITY. TEMPORARY LOCATIONS, SAFETY SIGNAGE AND SAFETY CONTROLS SHALL BE APPROVED BY THE CITY PRIOR TO IMPLEMENTATION
21. PEDESTRIAN WALKWAYS SHALL BE PROTECTED ALONG WORK ZONE WITH CONCRETE BARRIERS AND FENCING
22. POLICE DETAILS SHALL BE SCHEDULED AND COORDINATED BY THE CONTRACTOR TO MAINTAIN THE SAFETY OF PEDESTRIAN AND VEHICULAR TRAFFIC
23. DETOURS TO SHALL ONLY BE ALLOWED AS INDICATED OR AS APPROVED BY THE CITY OF CAMBRIDGE TRAFFIC AND PARKING DEPARTMENT

<u>LEGEND</u>	
EXISTING DIRECTION TRAFFIC FLOW ARROW	
28" (MIN) PLASTIC DRUM (REFLECTORIZED) WITH FLASHER	
TRAFFIC MANAGEMENT SIGN DURING CONSTRUCTION	
WORK ZONE	



## TRAFFIC MANAGEMENT GENERAL NOTES AND LEGEND

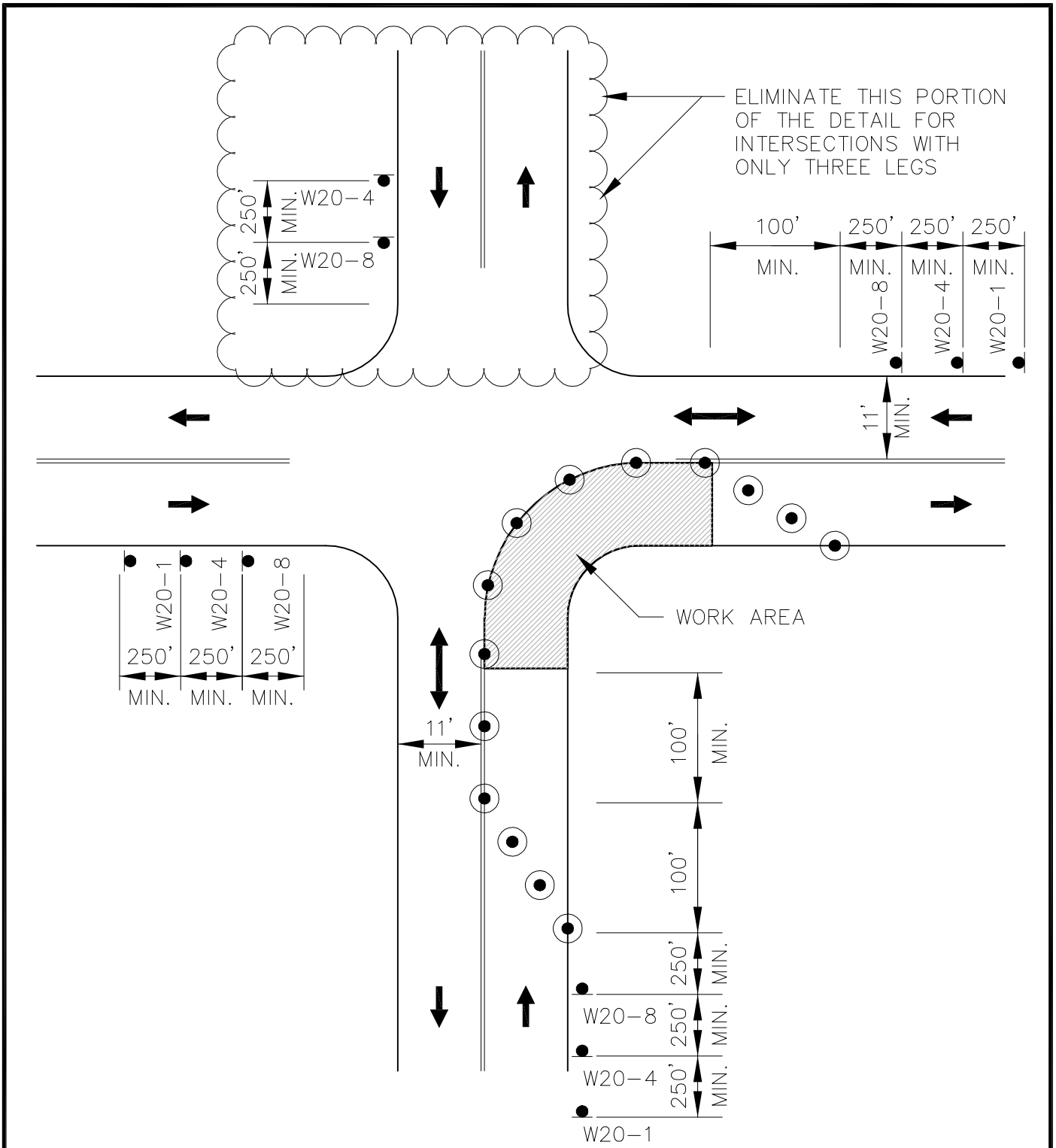
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE  
OF ISSUE: 02/05

SPEC. SECTION REF#: 01570

**1570.1**



- NOTES:
1. ADVANCE WARNING SIGN PLACEMENT TO BE ADJUSTED AS NECESSARY AND APPROVED BY THE CITY.
  2. ALL DRUMS AND CONES TO BE SPACED @ 20' O.C.



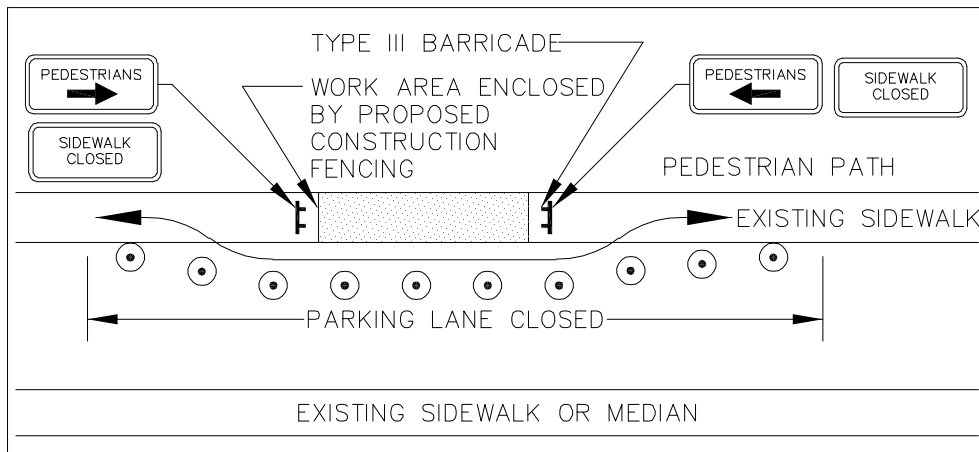
**ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTIONS**

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

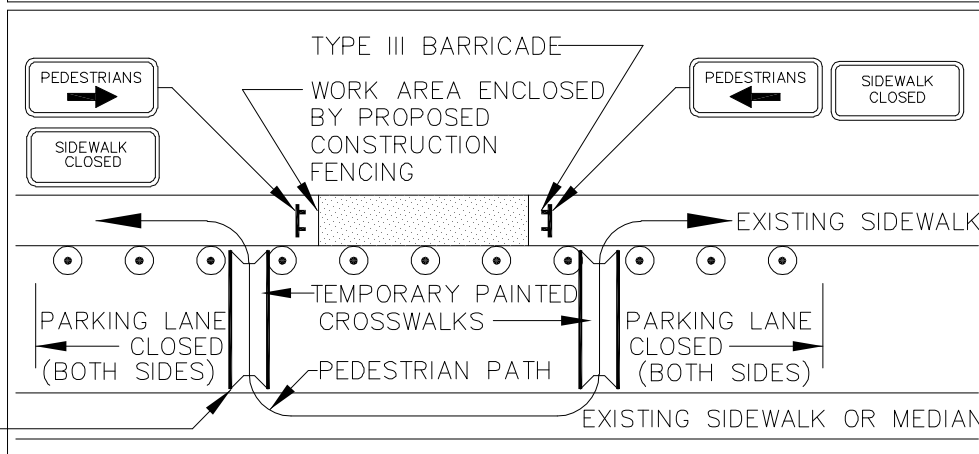
SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 01570	<b>1570.7</b>
---------------	----------------------	---------------------------	---------------

TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING AND AS DIRECTED BY THE CITY.

TYPE I  
N.T.S.




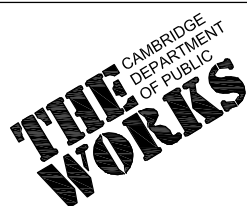
TYPE II  
N.T.S.



TEMPORARY BITUMINOUS CONCRETE WHEEL CHAIR RAMP. WIDTH AND LENGTH PER ADA REQUIREMENTS BUT SHALL NOT INTRUDE INTO TRAVEL WAY

PEDESTRIAN BYPASS NOTES:

1. ADDITIONAL ADVANCE WARNING MAY BE REQUIRED BY THE CITY.
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS DETAILED ELSEWHERE.
3. STREET LIGHTING SHALL BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. EXISTING WHEELCHAIR RAMPS SHALL BE CONSIDERED WHEN LOCATING TEMPORARY PAINTED CROSSWALKS.
5.  DIRECTION OF PEDESTRIAN TRAVEL.
6. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHALL BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER.



**PEDSTRIAN BYPASS DETAIL**

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 01570

**1570.8**

## CONSTRUCTION SIGN LEGEND

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW	BACK-GROUND	LEGEND	BORDER
G20-2	36"	24"		MUTCD STANDARD DETAIL			MUTCD STANDARD DETAIL		
W1-4L	30"	30"							
W1-4R	30"	30"							
W4-2L	48"	48"							
W4-2R	48"	48"							
W5-1	48"	48"							
W6-1	48"	48"							
W20-1	36"	36"							
W20-4	48"	48"							
W20-5L	48"	48"							
W20-5R	48"	48"							
W20-7b	36"	36"							
W20-8	36"	36"							



## CONSTRUCTION SIGN LEGEND

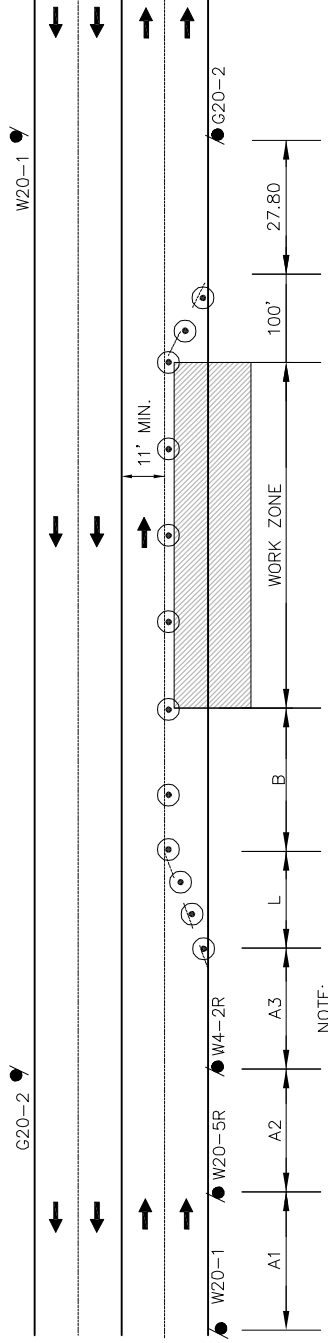
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 01570

1570.2



NOTE:  
 1. THIS DETAIL SHOWS A RIGHT LANE CLOSURE DETAIL. THIS DETAIL SHALL ALSO BE USED FOR LEFT LANE CLOSURES WITH THE SIGN PLACEMENT AND TYPE AS APPROPRIATE

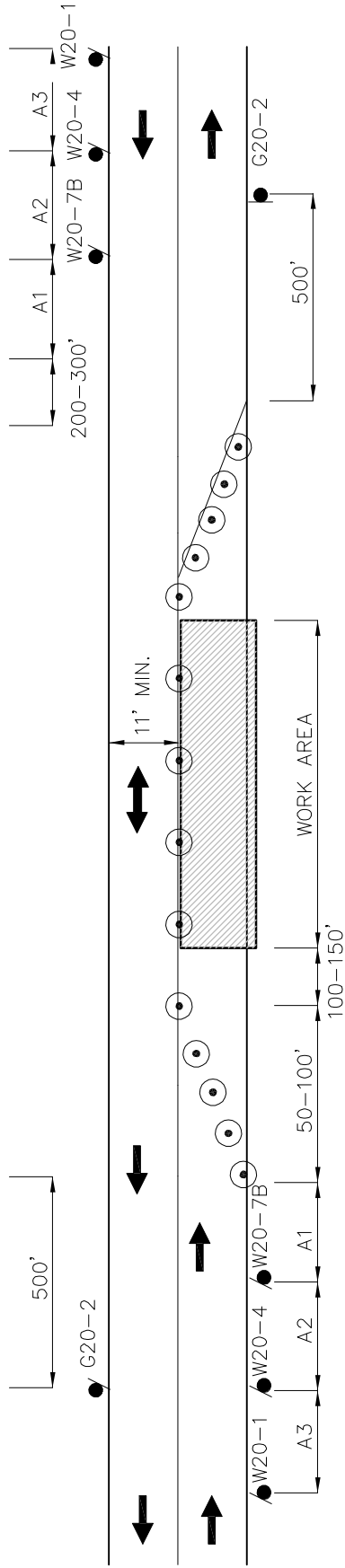
SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (A1/A2/A3)	CHANNELIZING DEVICES		
		TRANSITION LENGTH (L)	BUFFER LENGTH (B)	DEVICE SPACING MIN. #
25-40	500/500/500	320	160	30
45-55	500/1000/1000	680	360	30



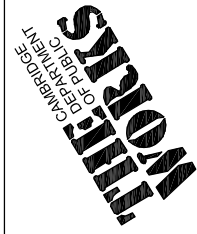
### TYPICAL ONE LANE CLOSURE

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.      DATE OF ISSUE: 02/05      SPEC. SECTION REF#: 01570      **1570.3**



SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (A1/A2/A3)	CHANNELIZING DEVICES	
		DEVICE SPACING	MIN. #
25-40	500/500/500	20	20
45-55	500/1000/1000	40	20



### TYPICAL TWO WAY ALTERNATING TRAFFIC

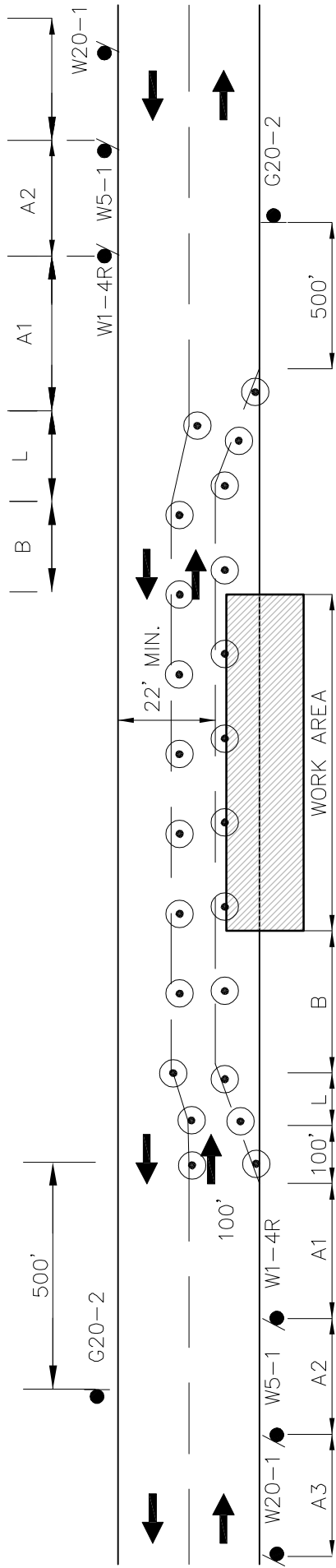
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 01570

1570.6



NOTES:  
 1. THIS DETAIL SHOWS A RIGHT LANE CLOSURE DETAIL. THIS DETAIL CAN ALSO BE USED FOR LEFT LANE CLOSURES, WITH SIGN PLACEMENT AND TYPE AS APPROPRIATE.

SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (A1/A2/A3)	CHANNELIZING DEVICES		
		TRANSITION LENGTH (L)	BUFFER LENGTH (B)	DEVICE SPACING MIN. #
25-40	500/500/500	320	160	20
45-55	500/1000/1000	680	360	40



## TYPICAL TWO-WAY STREET LANE SHIFT

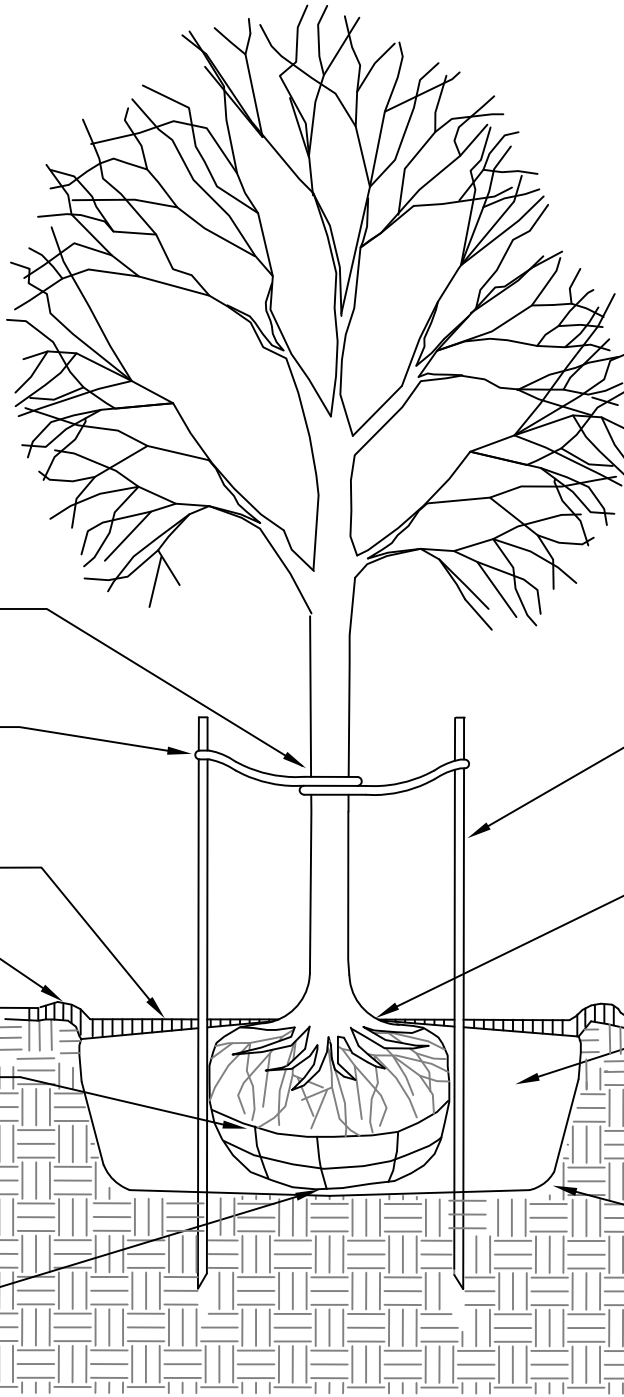
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 01570

1570.4



TIE STRAPS LOOSELY AROUND TRUNK

ARBOR TIE OR OTHER WIDE, NON-ABRASIVE BELT STRAPPING

MULCH 3" DEPTH TAPER TO 0" DEPTH AT ROOT FLARE

BUILD MULCH SAUCER AT EDGE OF PLANTING HOLE

CUT AND REMOVE TOP 1/2 TO 2/3 OF BURLAP AND WIRE BASKET

PLACE ROOT BALL ON COMPACTED OR UNDISTURBED SOIL

(2) 10' by 2" STAKES

PLANT TREE WITH EXPOSED ROOT FLARE 1" ABOVE GRADE

BACKFILL WITH PLANTING MIXTURE (SEE SPEC.)

SCARIFY & ROUGHEN PIT WALLS PRIOR TO PLANTING



TREE PLANTING DETAIL

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: NTS

DATE OF ISSUE: 09/2013

SPEC. SECTION REF#: