

CONTRACT DOCUMENTS
FOR:

FLORENCE AVENUE PLAYGROUND IMPROVEMENTS
Arlington, Massachusetts

Bid #13-07
April 3, 2013

Prepared for:

Parks & Recreation Commission
Arlington, Massachusetts

Prepared by:

CBA Landscape Architects, LLC
24 Thorndike Street
Cambridge, MA 02141

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INVITATION TO BID

Sealed Bids for:

FLORENCE AVENUE PLAYGROUND IMPROVEMENTS

In accordance with the Bidding and Contract Documents prepared by:

CBA Landscape Architects, LLC
24 Thorndike Street
Cambridge, MA 02141
(617)945-9760

Will be received by:

TOWN OF ARLINGTON acting through its Town Manager

Hereinafter referred to as the "Awarding Authority" at the Office of the Town Manager/Purchasing Department, Town Hall Annex, 730 Massachusetts Avenue, Arlington, MA, 02476, no later than the time & date specified below, at which time & place they will be publicly opened and read aloud. Any bid received after the time & date specified will be set aside and not considered.

Bidding procedures and award of the contract shall be in accordance with the applicable provisions of the Commonwealth of Massachusetts General Laws, Chapter 30, Section 39M as amended and Chapter 149, Sections 44A through 44L, inclusive, as amended.

General Bids are Due: **April 25, 2013, 11:00 A.M.**
Town Manager's Office/Purchasing Department,
Town Hall Annex, 730 Massachusetts Avenue,
Arlington, MA 02474

Pre-bid Walk-thru and Site Visit will be held on Tuesday April 16, 2013 at 11:00 A.M. At the Florence Avenue Playground adjacent to the Dallin School. All prospective bidder's are encouraged to attend.

In general, the project generally includes but is not limited to the removal of existing play equipment footings, benches & footings, removal of pavement, removal of sand and organic matter, removal of timber edge sections & retaining walls, installation of new play equipment, installation of benches & game tables, installation of area drains, pipes & leaching catch basins, installation of trash receptacle, installation of pavement, installation of precast concrete curbing, installation of wood fiber safety surface, installation of fencing, lawn seeding, the planting of trees, relocation of existing memorial, bench, & picnic table, and all other work as indicated in the contract documents & technical specifications. The site is available to the contractor on June 24, 2013. Substantial completion is September 12, 2013. The final completion date for the project, with the exception of turf grass & planting maintenance, is September 20, 2013. Refer to section 32 92 00 for turf grass maintenance & 32 90 00 planting maintenance.

Bidders are required to state their experience and qualifications to perform the work on the bid form.

If mailed, the sealed proposals shall be addressed and mailed to:

Town Purchasing Agent, Town Hall Annex
730 Massachusetts Avenue
Arlington, MA 02474

Contract documents including, but not limited to, Instructions to Bidders, Bid Contract Price, Contract Agreement, General and Special Conditions, Contract Specifications, and Contract Drawings, will be available at the Office of the Purchasing Agent (Town Manager's Office), first floor, Town Hall Annex, 730 Massachusetts Avenue, Arlington, MA 02474 on or after 10am on April 3, 2013 for a refundable deposit of \$50.00 for each set of Plans & Specifications. One set of Contract Documents may be obtained for for each General Contractor requesting Plans & Specifications. Requests for Contract Documents to be mailed must include a separate non-refundable \$25.00 check for the mailing fee. All checks (Cashiers or Treasurer's Checks only), shall be made payable to "Town of Arlington."

A bid deposit in the amount of five percent (5%) on the Bid amount, including all alternates, shall be submitted with each Bid. Bid deposits shall be in the form of certified check, or a treasurer's or Cashier's Check issued by a responsible or trust company payable to the Town of Arlington or a bid bond (a) in a form satisfactory to the Awarding Authority, (b) with a surety company qualified to do business in the Commonwealth of Massachusetts, and (c) conditioned upon faithful performance of the principal of the agreements contained in the Bid. Return of bid deposits will be in accordance with the provisions of the applicable General Laws. All bid bonds shall be retained by the Town of Arlington unless accompanied by a stamped, self-addressed envelope.

The Awarding Authority will reject any Bid when required to do so by the above referenced General Laws. In addition, The Awarding Authority reserves the right to waive any informalities in bidding and to reject any and all bids if it deems in the public interest to do so.

The successful bidder will be required to furnish a Performance Bond and a Labor and Materials Payment Bond, each in the amount of 100% of the Contract Amount. The cost of such bonds, including all alternates, shall be stated in the bid form. Such bonds shall be of a surety company qualified to do business under the laws of the Commonwealth of Massachusetts. Insurance certificates standard to the Town of Arlington will also be required.

U.S. Department of Housing and Urban Development Federal Labor Standards Provisions And Minimum Wages Rates govern this project.

Attached By-Law of the Town of Arlington, Title I, Article 16, concerning Construction Projects which exceed \$200,000.00 is part and parcel if the bid.

Deposits will be refunded upon return of complete Bidding and Contract Documents in good condition within ten (10) days after opening of Bids; otherwise the deposit shall become the property of the Awarding Authority.

The Town of Arlington is exempt from sales tax, for which reason Bidders should not include sales tax in figuring or in reference to any bid.

Commonwealth of Massachusetts General Laws Section 149, Sections 44A through 44L inclusive, and Chapter 30, Sections 39F through 39P inclusive, are incorporated herein by reference. Any inconsistency between the Invitation to Bid, Instructions to Bidders, Bid Forms, Conditions of the Contracts and any other contract documents and these Statutes, or any other applicable statutes, bylaws or regulation shall be deemed to govern.

The attention of bidders is particularly called to the requirements as to conditions of employment to be observed, the minimum wage rates to be paid under the contract and affirmative action to ensure equal employment opportunity.

No bidder may withdraw his bid for a period of sixty (60) days, excluding Saturdays, Sundays and legal holidays, after the actual date of the opening thereof.

Adam W. Chapdelaine, Town Manager
TOWN OF ARLINGTON, MASSACHUSETTS

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INSTRUCTIONS TO BIDDERS

I. COMPLEMENTARY DOCUMENT

- A. INVITATION TO BID, including herewith, is complementary to this document and shall be reviewed by bidder for specific instruction which are not repeated herein.

2. STATUTES REGULATING COMPETITIVE BIDDING

- A. Bidding procedures and award of general contract and subcontracts shall be in accordance with the provisions of Chapter 30, Section 39M and Chapter 149, Section 44A through 44L inclusive, of the General Laws of the Commonwealth of Massachusetts, including all current amendments.
- B. In the event of any discrepancy or inconsistency between the provisions of these Bid and Contract Documents and the above-mentioned statutes, the provisions of the above-mentioned statutes shall govern. In such event, the application of all remaining provisions not in conflict to any circumstance other than that in which the conflict occurs shall not be affected thereby.

3. BIDDER'S QUALIFICATIONS

- A. DCPO Certification not required.
- B. The Contractors' Update Statements are not public records and will not be open to public inspection.

4. INTERPRETATION OF DOCUMENTS: NOTIFICATION OF ERRORS

- A. Interpretations of the provisions of the Bid and Contract Documents will be made by the designer upon written request of any general bidder or subbidder, provided that such request is received by the Designer at least seven (7) days prior to the date of the applicable bid opening, and that the Designer considers such interpretation to be of sufficient importance. Oral or telephone interpretations will not generally be made, and if made shall be strictly informal and not legally valid or binding.
- B. Such written interpretations shall be in the form of Addenda to the Bid and Contract Documents.
- C. Bidders are urged to communicate all errors and discrepancies found in the Bid and Contract Documents to the Designer. Telephone calls pointing out any such errors or discrepancies will be taken by the Designer, but only for the purpose of receiving the information in order that it may be properly processed, and not for interpretation or clarification.

5. EXAMINATION OF BIDDING AND CONTRACT DOCUMENTS

- A. Each Bidder shall carefully examine the Bid and Contract Documents to obtain a thorough understanding of the work of his bid in addition to the work of related trades. In addition, each General Bidder shall personally visit the

site to thoroughly acquaint himself/herself with the conditions as they exist t hereon.

- B. Failure of any Bidder to thoroughly examine the Bid and Contract Documents or to visit and examine the site shall in no way relieve him/her of any obligation with respect to his/her bid or of any responsibility assigned to him under the Contract.

6. PRE-BID CONFERENCE

- A. Pre-bid conference will be held at the location and time stipulated in the Invitation to Bid.

7. MODIFICATION AND WITHDRAWAL OF BIDS

- A. Modification of withdrawal of Bids will be permitted after the submission of such bids provided clearly written, readily understandable instructions for same are received by the Owner in writing prior to the time established for opening of such bids. No Bid may be withdrawn after that time, except as otherwise provided herein or by law.

8. ADDENDA

- A. Addenda may be required during the bidding period to modify, clarify or interpret the Bid and Contract Documents. It is intended, but not guaranteed, that such Addenda shall be mailed or telegraphed by the Owner to all persons or parties to whom Bid and Contract Documents have been issued (Bidders of Record.) Failure to receive such Addenda shall in no way relieve any bidder from the execution of its provisions. All bidders are cautioned to verify the number of Addenda which have been issued and to secure any needed copies from the Designer before submitting a Bid.

9. FORM FOR BIDS

- A. The Owner will make available, to every person applying therefor, a Bid Form. Each bona fide Bidder will be furnished forms for his proposal upon request. Such forms will be made available at the Owner's office during the regular office hours throughout the bidding period. Bids must be submitted on the forms provided by Owner or of forms included in the bid documents of the Project Manual.
- B. All blank spaces provided on the bid forms shall be filled in with ink or typewriter. Where space is provided, sums shall be expressed in both words and figures. In case of a discrepancy between the two, the written words shall govern.
- C. No interlineations, additional, alterations or erasures shall be made on the forms.

10. ALTERNATES

- A. Each Bidder shall bid on alternatives listed. In the event that any alternate does not involve a change in the amount of the Bid, the Bidder shall so

indicate by using the words "No Change" in the space provided for that alternate.

- B. General Bidders shall enter on the form for General Bid a single amount for each alternate, each amount to consist of the total of all the subbidders' amounts for the given alternate plus the amount of for work of the alternate to be performed by the General Contractor.
- C. If alternate(s) are accepted, they shall be accepted in the order listed. The low bidder will be determined on the basis of the sum of the Base Bid and the alternates accepted.

11. SUBMISSION OF BIDS

- A. The Bid Form shall be properly executed and enclosed with the required bid deposit in a sealed envelope plainly marked on the outside with the following information.

Bid For:

SUBMITTED BY:

(Name of Bidder)

(Address of Bidder)

- B. If Bids are mailed, the above required envelope shall be enclosed in a second envelope identified with the above markings and mailed to the place of bid opening, as described in the Invitation to Bid. Mailed Bids must be received before the time scheduled for opening of Bids.

12. PERFORMANCE AND PAYMENT BONDS

- A. the Performance and Labor and Materials Payment Bonds required of the general contractor shall each be in the amount of 100% of the contract sum from a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and approved by the Owner.

13. FOREIGN CORPORATIONS

- A. The attention of bidders is called to General Laws, Chapter 30, Section 39L, as amended by Acts of 1967, Chapter 3, under which the Owner may not enter into a contract with a foreign corporation as a subcontractor unless the foreign corporation has filed with the Owner a certificate by the State Secretary stating that the foreign corporation has complied with General Laws Chapter 181, Sections 3 and 5 and stating the date of such compliance.

14. AWARD OF CONTRACT

- A. The Contract will be awarded to the lowest responsible and eligible bidder except in the event of a substitution as provided by under Chapter 149, Sections 44E and 44F of the above-reference General Laws.

15. COMMENCEMENT AND COMPLETION OF WORK

- A. The successful bidder, upon completion of the Contract Agreement, shall commence the work of the Contract within seven (7) calendar days from receipt of written Notice to Proceed issued by the Owner within fourteen (14) calendar days after said execution of the Contract Agreement, and shall therefore diligently and continuously carry on the work in such manner as to substantially complete the work on or before September 12, 2013 except as noted herein.

16. LIQUIDATED DAMAGES

- A. The attention of bidders is particularly called to the requirements as to the conditions of employment to be observed, the minimum wage rates to be paid under the Contract and affirmative action to ensure equal employment opportunity.
- B. Contractor shall make full good faith efforts to secure at least ten percent (10%) of the Labor and Materials incorporated in the Work from Minority Business Enterprises and five percent (5%) of the Labor and Materials incorporated in the Work from Women Business Enterprises certified by the Commonwealth of Massachusetts and consistent with the Federal Equal Employment Opportunity requirements attached hereto as Attachment A. Satisfactory documentation of such effort shall be furnished promptly upon request by Owner.
- C. The Owner is an equal employment opportunity employer and has an active Affirmative Action Plan (AAP). For more information, direct correspondence to Patricia M. Libby, Affirmative Action Officer for the Town of Arlington.

BID FORM

For: Florence Avenue Playground Improvements (Bis #13-07)

Proposal (BID) of _____
(hereinafter called "Bidder") a corporation, organized and existing under the laws of the
Commonwealth of Massachusetts.

_____ doing business as _____
(corporation, proprietorship, partnership)
to the TOWN OF ARLINGTON hereinafter called "Owner".

Gentlemen:

A. The Bidder, in compliance with your invitation for bids for the Florence Avenue Playground Improvements, Arlington Massachusetts, having examined the plan and specifications with related documents and the site of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in the written "Notice to Proceed" from the Owner, and to complete the work by Friday, September 20, 2013. The Bidder further agrees to pay as liquidated damages, the sum of \$100.00 for each consecutive calendar day thereafter that the works remains incomplete, as provided in the Instruction to Bidders, Modifications to General Conditions. Required completion dates are as follows:

B. Bidder acknowledges receipt of the following addendum:

_____ Dated _____
_____ Dated _____
_____ Dated _____

C. Bidder agrees to perform all work described in the specifications and shown on the drawings, for the following lump sum price of:

1. Total Proposed Base Bid Contract Price:
_____ Dollars (\$_____)

2. Bid Deposit on total bid price, including alternates, in the sum of:
_____ Dollars (\$_____)

the form of _____ is submitted herewith in accordance with the INSTRUCTION FOR BIDDERS and is to become property of the Owner in the event the

Contract and bonds are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

3. The Bid does not include premiums on Performance/Labor and Materials Bond. Cost of required Bond Premiums (for base bid and any and all alternates):

Bond Premiums Add \$ _____

4. Alternates

This bid includes Alternates as follows:

ADD Alternate No. 1: _____ dollars
and _____ cents \$(_____).

ADD Alternate No. 2: _____ dollars
and _____ cents \$(_____).

ADD Alternate No. 3: _____ dollars
and _____ cents \$(_____).

D. If the Bid is accepted by the Owner, the undersigned agrees to complete the entire work provided to be done under the contract within the time stipulated by the Owner.

E. The undersigned agrees that for extra work, if any, performed in accordance with the AGREEMENT, he will accept compensation as stipulated therein in full payment for such extra work.

F. Bidder understands that the Owner reserves the right to reject any and all bids.

G. The undersigned hereby agrees that he will not withdraw the Bid within sixty (60) consecutive calendar days after the actual date of the opening of Bids and that, if the Owner accepts this Bid, the undersigned will duly execute and acknowledge the required Contract Bonds within 10 days after notification that the AGREEMENT is ready for signature.

H. Should the undersigned fail to fulfill any of his agreements as hereinbefore set forth, the Owner shall have the right to retain as liquidated damages the amount of the Bid security, which shall become the Owner/s property. If a bid was furnished as bid security, it is agreed that the amount thereof shall be paid as liquidated damages to the Owner by the Surety.

I. The Undersigned certifies under penalty of perjury that this Bid is in all respect bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the "person" shall mean natural person, joint venture,

partnership, corporation or other business or legal entity.

J. The undersigned certifies that he is able to furnish labor that can work in harmony with all other Elements of labor employed or to be employed on the work and that he will comply fully with all laws and regulations applicable to awards made subject forty-four A.

1. Have been in business under the present name for _____ years.

2. Ever failed to complete any work awarded? ____ (Yes), ____ (No). If yes, explain:

3. Bank Reference: _____

K. The bidder is required to state below all work he/she and his/her subcontractors (if subcontractors are to perform substantial portions of the work) has complete within the past 5 years of a similar character and value to that of the work included in the proposed Contract and to give references that will enable the Owners to judge the Bidder's experience, skill and business standing. The Bidder is required to list a minimum of 3 completed projects that are comparable in scope, complexity and value. For each project, include the name, location, type, date complete, construction value and owner contact.

(add supplementary page if necessary)

L. The Bidder is required to state below all construction projects he/she currently has under contract. For each project, include the name, location, type, scheduled completion date, construction value and owner contact.

M. The undersigned bidder hereby certifies that the tools and equipment required to meet the specified requirements of the Contract document, with special attention called to Section 31 00 00 Earthwork, will be utilized in the performance of the work.

N. The undersigned further certifies under the penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provisions of section 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation declared there under.

O. The undersigned bidder hereby certifies he/she will comply with the minority workforce percentage ratio and specific affirmative action steps contained in the EEO/AA provisions of the Contract, including compliance with Minority/Women Business Enterprise as required under these contract provisions. The contractor receiving the award of the Contract shall be required to obtain from each of its subcontractors a copy of its bidder's certification and submit it to the contracting agency prior to the award of such subcontract, regardless of tier, that it will comply with the minority workforce ratio and specific affirmative action steps contained in these EEO/AA contract provisions.

Date: _____

Name of General Bidder

By:

Name and Title of Person Signing Bond

Business Address

FORM A

CERTIFICATE OF NON-COLLUSION

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

Authorized Name

Authorized Signature

Date

Social Security Number or Federal Identification Number

Legal Name of Business Entity (Print or Type)

Address

City, State, Zip Code

Corporate Seal (If applicable)

FORM B

CERTIFICATE OF FOREIGN CORPORATION

The undersigned certifies that it has been duly established, organized, or chartered as a corporation under the laws of:

Jurisdiction

The undersigned further certifies that it complies with the requirements of M.G.L., c. 30, sec. 39L and with the requirements of M.G.L., c. 181 relative to the registration and operation of foreign corporations within the Commonwealth of Massachusetts.

Name of Person Signing the Bid or Proposal

Date

Signature of Person Signing the Bid or Proposal

Date

Name of Business (Print or Type)

Corporate Seal (If applicable)

FORM C

COMMONWEALTH OF MASSACHUSETTS

SCHEDULE FOR PARTICIPATION BY WOMEN/MINORITY BUSINESS ENTERPRISE

BIDDER CERTIFICATION

A bidder agrees to expend at least the amount of the contract set forth below if awarded, for W/MNE. For the purposes of this commitment, the designation means a business that has been certified by SOMWBA as such. The Bidder must indicate the W/MBE it intends to utilize in this document as follows: (Attach another sheet of necessary.)

Company Name and Address	Nature of Participant	Dollar Value of Participation
<hr/>		
1.		\$ _____
2.		\$ _____
3.		\$ _____

The undersigned hereby certifies that he or she read the terms of this condition and is authorized to bind the Bidder to the commitment herein set forth.

Name of Person Signing the Bid or Proposal

Signature of Person Signing the Bid or Proposal

Title

Name of Business (Print or Type)

Corporate Seal (If applicable)

FORM D

BIDDER CERTIFICATION REGARDING PAYMENT OF PREVAILING WAGES

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

Date

Name of Person Signing the Bid or Proposal

Signature of Person Signing the Bid or Proposal

Title

Name of Business (Print or Type)

Corporate Seal (If applicable)

FORM E

CERTIFICATION OF PAYMENT OF STATE TAXES

Legislation enacted by the Commonwealth of Massachusetts, effective, 1983, requires that attestation below be signed:

Pursuant top M.G.L c. 62C, sec. 49A, I certify under the penalties of perjury, that I, to my best knowledge and belief, have filed all state tax returns and paid all state taxes required by law.

APPROVAL OF A CONTRACT OR ANY OTHER AGREEMENT WILL NOT BE GRANTED UNLESS THIS CERTIFCATION CLAUSE IS SIGNED BY AN AUTHORIZED CORPROATE OFFICER.

THE TAX PAYER IDENTIFICATION NUMBER WILL BE FURNISHED TO THE MASSACHUSETTS DPEARTMENT OF REVENUE TO DETERMINE IF TAX FILINGS AND/OR TAX PAYMENT OBLIGATIONS HAVE BEEN MET. PROVIDERS WHO FAIL TO CORRECT THIER NON-FILING AND/OR DELIQUENCY STATUS SHALL NOT HAVE A CONTRACT OR ANY OTHER AGREEMENT ISSUED, RENEWED OR EXTENDED

(Signature of Individual) Title

Social Security Number or Federal Identification Number

Corporate Name

Name of Person Signing the Proposal (Print or Type) Date

Legal Name of Business Entity (Print or Type)

Business Address

Corporate Seal (If applicable)

FORM F

**CERTIFICATION OF AUTHORITY
MEETING OF BOARD OF DIRECTORS**

(Note: if business entity is a partnership or individual, all owners shall sign this form.)

At a meeting of the Directors of the _____ duly called and held at
(Corporation)

_____ on the _____ day of _____, 20____,
(Location)

at which a quorum was present and acting, it was voted that _____, the
(Name)

_____ of this Corporation, is hereby authorized and empowered to make,
(Title/Position)

into, sign, seal and deliver on behalf of the Corporation a Contract for _____

with the _____, and the performance and payment bonds each in the
amount as specified by the Owner.

I 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 as of this date and that

_____ is duly elected _____ of the corporation
(Name) (Title/Position)

Clerk or secretary of the Corporation Date

(Note: If the Bidder is a corporation, affix corporate seal and give below the names of its
president, treasurer, and general manager, if any: if a partnership, give full names and
residential addresses of all partners; and if an individual, give residential dress if different
form business address.)

the required names and addresses of all person interested in this proposal, as Principals,
area as follows:

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**CONTRACT FOR FLORENCE AVENUE PLAYGROUND IMPROVEMENTS
AGREEMENT**

THIS AGREEMENT, made as of this _____ day of _____, 20____, by and between the TOWN OF ARLINGTON, MASSACHUSETTS, acting through its TOWN MANAGER, hereinafter called the 'Owner' and _____,
(Name of Contractor)
of _____, country of _____ and State of _____, hereinafter called the 'Contractor'.

WITNESSETH; That the Contractor and the Owner for the consideration hereinafter named agrees as follow:

1. SCOPE: The Contractor will furnish at his own proper cost and expense all materials, supplies, machinery, equipment, appliances, tools, superintendence, labor, insurance and other items and services necessary to complete the work as shown and described on the contract Documents entitled "Florence Avenue Playground Improvements", Arlington, Massachusetts, hereinafter call the 'Project', prepared by CBA Landscape Architects, LLC, hereinafter called the 'Designer', or 'Landscape Architect'.
2. CONTRACT SUM: The owner agrees to pay the contractor, and the contractor agrees to accept in full consideration for the performance of the contract, subject to additions and deductions provided for in the contract documents, in current funds, the sum of _____ dollars (\$ _____), hereinafter called the 'Contract Sum' and to make payments on account thereof, as described below and elsewhere in the Contract Documents.
3. COMMENCEMENT OF WORK AND TIME OF COMPLETION: The contractor agrees to commence work on the contract within seven (7) calendar days from the receipt of written Notice to Proceed issued by the Owner and/or within fourteen (14) calendar days after execution of the contract Agreement and to thereafter diligently and continuously carry on the work. He agrees to complete the work on or before Friday, September 20, 2013, except as herein noted.
4. LIQUIDATED DAMAGES: The Contractor agrees to pay the Owner liquidated damages for failure to complete the Project in conformance with the time allowances as set forth above at the rate of \$100.00 per calendar day.
5. ALTERNATES: The following Alternates have been accepted and the Contract Sum stated in Paragraph 2 of this Agreement includes and is adjusted to reflect the total cost of each accepted alternate:

Alternate No.	Indicate Accepted or Rejected	Original Bid Value of Alternate
Alternate No. 1	_____	_____
Alternate No. 2	_____	_____
Alternate No. 3	_____	_____

6. PAYMENTS TO CONTRACTOR: Payments shall be made in accordance with Chapter 30, Section 39K of the General Laws of the Commonwealth of Massachusetts, including all current amendments, generally as follows:

- A. Within fifteen days after receipt from the Contractor, at the place designated by the Owner if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the Owner 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 Owner, 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 39F, and less (3) a retention not exceeding five percent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the Contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the Owner, less than one percent of the original contract price, or (b) the Contractor substantially completes the work and the Owner takes possession for occupancy, whichever occurs first, the Owner 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 claim 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 the demands for same in accordance with the provisions of Section 39F, 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 39F. If the Owner fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of five percent per annum 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 after receipt of such a periodic estimate from the Contractor, at the place designated by the Owner 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.
- B. The Owner 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 Owner 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 for such 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 39G shall not apply to any contract for the construction, reconstruction, remodeling, repair or demolition of any public building to which this section applies.

7. PAYMENTS TO SUBCONTRACTORS: Payments shall be made in accordance with Chapter 30, Section 39F of the General Laws of the Commonwealth of Massachusetts, including all current amendments, generally as follows:

A. Forthwith after the General Contractor receives payment on account of a period estimate, the General Contractor shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the General Contractor.

B. Not later than the sixty-fifth day after each Subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the Subcontract less amounts retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the Subcontractor, and the Owner shall pay that amount to the General Contractor. The General Contractor shall forthwith pay to the Subcontractor the full amount received from the Owner less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the General Contractor.

C. Each payment made by the Owner to the General Contractor pursuant to subparagraphs (A) and (B) of this paragraph for the labor performed and the materials furnished by a Subcontractor shall be made to the General Contractor for the account of that Subcontractor: and the Owner shall take reasonable steps to compel the General Contractor to make each payment to each such Subcontractor. If the Owner has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the General Contractor for payment to the Subcontractor as provided in subparagraphs (A) and (B), the Owner shall act upon demand as provided in this Section.

D. If, within seventy days after the Subcontractor has substantially completed the Subcontract work, the Subcontractor has not received from the General Contractor the balance due under the Subcontract including any amount due for extra labor and materials furnished to the General Contractor, less any amount retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of work, the Subcontractor may demand direct payment of that balance from the Owner. The demand shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be delivered to or sent by certified mail to the General Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the Subcontract and also a statement of the status of completion of the Subcontract work. Any demand made after Substantial Completion of the Subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the Subcontract work. Within ten days after the Subcontractor has delivered or so mailed the demand to the Owner and delivered or so mailed a copy to the General Contractor, the General Contractor may reply to the demand. The reply shall be a sworn statement delivered to or sent by certified mail to the Owner and a copy shall be delivered to or sent by

certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the Subcontract including any amount due for extra labor and materials furnished to the General Contractor and of the amount due for each claim made by the General Contractor against the Subcontractor.

E. Within fifteen days after receipt of the demand by the Owner, but in no event prior to the seventieth day after Substantial Completion of the Subcontract work, the Awarding Authority shall make direct payment to the Subcontractor of the balance due under the Subcontract, less any amount (i) retained by the Owner as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the General Contractor in the sworn reply: provided, that the Owner 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 in subparagraph (D); The Owner shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

F. The Owner shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (E) in an interest-bearing joint account in the names of the General Contractor and the Subcontractor in a bank in Massachusetts; selected by the Owner and agreed upon by the General Contractor and the Subcontractor and shall notify the General Contractor and the Subcontractor of the date of deposit and the bank receiving the deposit. The bank shall pay the amount on the account, including accrued interest, as provided in an agreement between the General Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.

G. All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (F) shall be made out of amounts payable to the General Contractor at the time of receipt of a demand for direct payment from a Subcontractor and out of amounts later become payable to the General Contractor and in order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Owner to the General Contractor to the extent of such payment.

H. The Owner shall deduct from payments to a General Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (F), are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the General Contractor.

I. On all contracts for building construction subject to the provisions of Sections 44A to 44L, inclusive, of Chapter 149, periodic payments for work performed by a Subcontractor shall be made to the General Contractor for payment to the Subcontractor and shall be paid to the Subcontractor forthwith after receipt thereof by the General Contractor and without any ten day waiting period as provided above, less any amount claimed by the General Contractor in a letter containing a breakdown of the claim and sent to the Subcontractor with such payment, provided that a General Contractor, who has received a periodic estimate for a periodic payment in proper form from a Subcontractor three days, Saturdays, Sundays and holidays excluded, before the due date of the General Contractor's periodic estimate for the same periodic payment period less any amount claimed by the

General Contractor in a letter containing a breakdown of the claim and sent to the Subcontractor with such payment, even though the General Contractor does not submit a periodic estimate to the Owner for that payment period; and provided, further, that the Owner shall take all reasonable steps to compel the General Contractor to make payment to the Subcontractors as provided in this paragraph, and upon the written request of a Subcontractor setting forth the amount payable but not paid, a copy of which shall be sent to the General Contractor, shall make direct payment to a Subcontractor, as provided for above, which shall discharge the obligation of the Owner to the General Contractor to extent of any such payment.

J. The Owner shall not include in any direct payment to a Subcontractor pursuant to this section any amount claimed from that Subcontractor by the General Contractor in a letter containing a breakdown of the claim and sent to the Owner within ten days after the receipt by the General Contractor of the copy of the request of the Subcontractor to the Owner for direct payment.

8. CONDITIONS OF EMPLOYMENT

A. The schedule of Minimum Wage Rates and Health and Pension Fund Contributions as determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 m 27D, inclusive, AS amended, is hereby made a part of this Agreement.

B. The Contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wages paid to regular police officers in such city or town.

C. No laborer, workman, mechanic, foreman or inspector working within the Commonwealth, in the employ of the Contractor, Subcontractor or any other person doing or contracting to do the whole or a part of the work contemplated by the Contract, shall be required or permitted to work more than eight hours in any one day or forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency.

D. Every employee of the Contractor or any Subcontractor shall lodge, board and trade where and with whom he elects; and no person or his agents or employees shall be directly or indirectly required, as a condition of employment that the employee to lodge, board or trade at a particular place or with a particular person.

9. SUBCONTRACTORS

A. The Contractor will employ the following Subcontractors on the work and will pay for the execution of his as defined in the Contract Documents; and subject to the additions and deductions provided in the subject to the additions and deductions provided in the Contract Documents, the sum shown opposite his name.

<u>Class Of Work</u>	<u>Subcontractor</u>	<u>Subcontractor Sum</u>
----------------------	----------------------	--------------------------

B. The names of any additional Subcontractors whom the Contractor proposed to employ shall be submitted to the Designer for approval. No such Subcontractor shall be employed to whose standing or ability the Owner or the Designer has any reasonable objection.

10. THE CONTRACT DOCUMENTS: The General Conditions of the Contract, the Specifications and the Drawings, together with this Agreement, for the Contract, and they are as fully a part of the Contract as if hereto attached or herein repeated Drawings and Specifications titled: FLORENCE AVENUE PLAYGROUND IMPROVEMENTS

11. INCORPORATION OF STATUTES BY REFERENCE: If statutes of the Commonwealth of Massachusetts in any way relating to the construction, alterations, repair and installation of public works, particularly with reference to labor and labor rates, they shall be strictly complied with by the Contractor and it is understood that all such statutes are incorporated by reference in this Contract.

12. It is expressly agreed that this Agreement is to be executed for and in behalf of the Owner by the members of its Board of Selectmen and any of its appoints and that such persons are acting in a representative capacity for and in behalf of Owner, and that such persons shall not incur any personal liability hereunder.

IN WITNESS whereof, inhabitants of the Town of Arlington and

have caused these presents to be executed by their

hereunto duly authorized the day and year first written.

TOWN OF ARLINGTON

Adam W. Chapdelaine, Town Manager

Certification:
I hereby Certify that an
appropriation in the amount
of the Contract is available.

Town Accountant

Contractor

By: _____
(Title)

Approved as to Matter of Form:

Town Counsel

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PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we

(Name of Contractor)

a _____
(Corporation, Partnership or Individual)

hereinafter called "Principal" and

(Surety)
of _____, State of _____, hereinafter called the
"Surety", are held and firmly bound into

THE TOWN OF ARLINGTON, MASSACHUSETTS
(Owner)

acting through its TOWN MANAGER

ARLINGTON, MASSACHUSETTS
(City and State)

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

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a
certain contract with the Owner, dated _____ day of _____, a copy of
which is hereto attached and made a part hereof for the construction of

Arlington, Massachusetts

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 if he 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 reason of failure to do so, and shall reimburse and repay
the Owner all outlay and expense which the Owner may incur in making good any default,
then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and
agrees that no change, extension of time, alteration or addition to the terms of the Contract
or to the work to be performed thereunder or the specifications accompanying the same

shall in any way affect its obligation of "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, the parties to these present have duly executed in this Bond on the day of _____

ATTEST:

Principal

By _____
Secretary

(Address - zip code)

Witness as to Principal

(Seal)

(Address - zip code)

ATTEST:

Surety

BY _____
(Surety)

Secretary

(Address-Zip Code)

Witness as to Surety

(Seal)

(Address-Zip Code)

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

END OF DOCUMENT

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LABOR AND MATERIALS PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we

(Name of Contractor)

a _____

(Corporation, Partnership or Individual)

hereinafter called "Principal" and

(Surety)

of _____, State of _____, hereinafter called the
"Surety", are held and firmly bound into

TOWN OF ARLINGTON, MASSACHUSETTS
(Owner)
acting through its TOWN MANAGER

ARLINGTON, MASSACHUSETTS
(City and State)

herein called "Owner", in the penal sum of

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

THE CONDITION OF THIS OBLIGATION is such that 'Whereas, the Principal entered into a
certain contract with the Owner, dated the day of _____, _____, a copy of which
is hereto attached and made a part hereof for the construction of:

ARLINGTON MASSACHUSETTS

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

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the Same shall in any 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, the parties to these present have duly executed in this Bond on the day of _____,

ATTEST:

Principal

BY _____
Secretary

(Address - zip code)

(Seal)

Witness as to Principal

(Address - zip code)

ATTEST:

Surety

Secretary

(Address-Zip Code)

(Seal)

Witness as to Surety

(Address-Zip Code)

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

END OF DOCUMENT

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

STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by

The Associated General

Contractors of America

Construction Specifications Institute

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2) (1996 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC User's Guide (No. 1910-50). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17) (1996 Edition).

EJCDC No. 1910-8 (1996 Edition)

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.

3. *Application for Payment*--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

7. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.

8. *Bonds*--Performance and payment bonds and other instruments of security.

9. *Change Order*--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract

Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

* 12. *Contract Documents*--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER's written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. *Contract Price*--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment.

15. *CONTRACTOR*--The individual or entity with whom OWNER has entered into the Agreement.

16. *Cost of the Work*--See paragraph 11.01 A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop

* See Supplementary Conditions

Drawings and other CONTRACTOR submittals are not Drawings as so defined

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

* 19. *ENGINEER*--The individual or entity named as such in the Agreement.

* 20. *ENGINEER's Consultant*--An individual or entity having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

21. *Field Order*--A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. *General Requirements*--Sections of Division I of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. *Notice of Award*--The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

29. *Notice to Proceed*--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.

** 30. *OWNER*--The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.

31. *Partial Utilization*--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. *PCBs*--Polychlorinated biphenyls.

33. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

34. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

35. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. *Resident Project Representative*--The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

38. *Samples*--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.

39. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

40. *Site*--Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.

* 41. *Specifications*--~~That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.~~

42. *Subcontractor*--An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.

** 43. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

44. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

45. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

46. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

47. *Unit Price Work*--Work to be paid for on the basis of unit prices.

48. *Work*--The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

49. *Work Change Directive*--A written statement to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

50. *Written Amendment*--A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms "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 an action or determination of ENGINEER as to the Work, it is intended that such action or determination 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). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

B. Day

1. The word "day" shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

C. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the

Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).

D. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, "provide" is implied.

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02 Copies of Documents

A. OWNER shall furnish to CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times, Notice to Proceed *

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Starting the Work

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 Before Starting Construction

A. *CONTRACTOR's Review of Contract Documents:* Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby, however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.

B. *Preliminary Schedules:* Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for its timely review:

1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents,

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

3. a preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the

* See Supplementary Conditions

** See Supplementary Conditions 17.08

basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

~~* C. Evidence of Insurance: Before any Work at the Site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with Article 5.~~

2.06 Preconstruction Conference

A. Within 20 days after the Contract Times start to run, but before any Work at the Site is started, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 Initial Acceptance of Schedules

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

1. The progress schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor.

2. CONTRACTOR's schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

* A. The Contract Documents are complementary, what is called for by one is as binding as if called for by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to OWNER.

C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.

3.02 Reference Standards

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER's Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04, provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

- a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
- b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Amending and Supplementing Contract Documents

A. 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: (i) a Written Amendment, (ii) a Change Order, or (iii) a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways: (i) a Field Order, (ii) ENGINEER's

approval of a Shop Drawing or Sample, or (iii) ENGINEER's written interpretation or clarification

3.05 Reuse of Documents

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER's furnishing the Site, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

* See Supplementary Conditions

4.02 Subsurface and Physical Conditions

* A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 Differing Subsurface or Physical Conditions

A. *Notice:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate, or

2. is of such a nature as to require a change in the Contract Documents, or

3. differs materially from that shown or indicated in the Contract Documents, or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents,

then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

**

B. *ENGINEER's Review:* After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in paragraph 4.03.A, and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.08 and 11.03.

2. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as

* See Supplementary Conditions

** See Supplementary Conditions 17.08

a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

c. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.03.A.

3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in paragraph 10.05. However, OWNER, ENGINEER, and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04 Underground Facilities

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions.

1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents.

c. coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

2. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable *adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or *indicated or ~~not shown or indicated with reasonable accuracy~~ in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, OWNER or CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

4.05 Reference Points

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points

* See Supplementary Conditions

** See Supplementary Conditions 17.08

or property monuments by professionally qualified personnel.*

4.06 Hazardous Environmental Condition at Site

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those* reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents. *

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.

D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify

OWNER and ENGINEER (and promptly thereafter confirm such notice in writing) OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefor as provided in paragraph 10.05.

F. If after receipt of such written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06 E shall obligate OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

* See Supplementary Conditions

** See Supplementary Conditions 17.08

H. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.F shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

A. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Contract Documents. *

B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01 B, CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of paragraphs 5.01 B and 5.02.

5.02 Licensed Sureties and Insurers

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to *purchase and maintain. ~~OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain.~~

5.04 CONTRACTOR's Liability Insurance

* A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason,

* See Supplementary Conditions

** See Supplementary Conditions 17.08

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:

1. with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance,

4. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.07, 6.11, and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).*

5.05 OWNER's Liability Insurance

* A. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.04, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

5.06 Property Insurance

* A. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an additional insured,

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils or causes of loss as may be specifically required by the Supplementary Conditions,

3. include expenses incurred in the repair or replacement of any insured property (including but

* See Supplementary Conditions

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not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER;

5. allow for partial utilization of the Work by OWNER;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

* B. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

* C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.07.

* D. OWNER shall not be responsible for purchasing and maintaining any property insurance specified in this paragraph 5.06 to protect the interests of CONTRACTOR, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by CONTRACTOR, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

* E. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraph 5.06, OWNER shall, if

possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the Site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.07 Waiver of Rights

* A. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraph 5.06 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance * held by OWNER as trustee or otherwise payable under any policy so issued.

B. OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of, or resulting from fire or other peril whether or not insured by OWNER; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss

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covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.05, after Substantial Completion pursuant to paragraph 14.04, or after final payment pursuant to paragraph 14.07.

C. Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against CONTRACTOR, Subcontractors, ENGINEER, or ENGINEER's Consultants and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

5.08 Receipt and Application of Insurance Proceeds

~~* A. Any insured loss under the policies of insurance required by paragraph 5.06 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.08.B. OWNER shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.~~

~~* B. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.~~

5.09 Acceptance of Bonds and Insurance, Option to Replace

~~* A. If either OWNER or CONTRACTOR has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by paragraph 2.05.C. OWNER and CONTRACTOR shall~~

~~each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.~~

5.10 Partial Utilization, Acknowledgment of Property Insurer

A. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

~~* B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.~~

6.02 Labor, Working Hours

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out, and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday, or any legal holiday without OWNER's written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER.

6.03 Services, Materials, and Equipment

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any

provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

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6.05 Substitutes and "Or-Equals"

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.

1. "Or-Equal" Items: If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength, and design characteristics, (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and,

b. CONTRACTOR certifies that (i) there is no increase in cost to the OWNER, and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents

2. Substitute Items

a. If in ENGINEER's sole discretion an item of material or equipment proposed by

* See Supplementary Conditions

** See Supplementary Conditions 17.08

CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

c. The procedure for review by ENGINEER will be as set forth in paragraph 6.05.A.2.d, as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances.

d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.

If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2.

C. *Engineer's Evaluation:* ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. *Special Guarantee:* OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

E. *ENGINEER's Cost Reimbursement:* ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute.

F. *CONTRACTOR's Expense:* CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. CONTRACTOR shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to OWNER as indicated in paragraph 6.06.B), whether initially or as a replacement, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

B. *Substitute Construction Methods or Procedures*

* See Supplementary Conditions

** See Supplementary Conditions 17.05

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to OWNER in advance for acceptance by OWNER by a specified date prior to the Effective Date of the Agreement, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

C. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR.

E. CONTRACTOR shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with ENGINEER through CONTRACTOR.

** F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 Patent Fees and Royalties

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

* See Supplementary Conditions

** See Supplementary Conditions 17.08

6.08 Permits

** A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto, such as plant investment fees.

6.09 Laws and Regulations

A. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in paragraph 10.05.

** 6.10 Taxes

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

** 6.11 Use of Site and Other Areas

A. *Limitation on Use of Site and Other Areas*

1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER, or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

* See Supplementary Conditions

D. *Loading Structures:* CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER.

6.13 Safety and Protection

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other 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. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by

CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

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

6.15 Hazard Communication Programs

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 Shop Drawings and Samples

A. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies 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 ENGINEER the

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services, materials, and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.17.E.

B. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

D. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and

d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents

2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of that submittal

3. At the time of each submittal, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

E. ENGINEER's Review

* 1. ENGINEER will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. ENGINEER's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure 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.

3. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval, nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1

F. Resubmittal Procedures

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct

specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.18 Continuing the Work

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 CONTRACTOR's General Warranty and Guarantee

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or
2. normal wear and tear under normal usage.

B. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

1. observations by ENGINEER;
2. recommendation by ENGINEER or payment by OWNER of any progress or final payment;
3. the issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;
4. use or occupancy of the Work or any part thereof by OWNER;
5. any acceptance by OWNER or any failure to do so;
6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER;

7. any inspection, test, or approval by others, or

8. any correction of defective Work by OWNER.

6.20 Indemnification

~~* A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:~~

~~1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and~~

~~2. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.~~

B. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

~~* C. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not extend to the liability of ENGINEER and ENGINEER's Consultants or~~

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to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of:

~~1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or~~

~~2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.~~

ARTICLE 7 - OTHER WORK

7.01 Related Work at Site

A. OWNER may perform other work related to the Project at the Site by OWNER's employees, or let other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to CONTRACTOR prior to starting any such other work; and

2. if OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.

B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the other work with OWNER's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

C. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed

by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

A. If OWNER intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 Communications to Contractor

A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.02 Replacement of ENGINEER

A. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer to whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.03 Furnish Data

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

8.04 Pay Promptly When Due

A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02 C and 14.07 C.

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8.05 Lands and Easements, Reports and Tests

A. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

8.06 Insurance

~~* A. OWNER's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.~~

8.07 Change Orders

A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

8.08 Inspections, Tests, and Approvals

A. OWNER's responsibility in respect to certain inspections, tests, and approvals is set forth in paragraph 13.03.B.

8.09 Limitations on OWNER's Responsibilities

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

8.10 Undisclosed Hazardous Environmental Condition

A. OWNER's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in paragraph 4.06.

8.11 Evidence of Financial Arrangements

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 OWNER'S Representative

A. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and will not be changed without written consent of OWNER and ENGINEER.

*

9.02 Visits to Site

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER's visits and observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER's visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the Site who is not ENGINEER's Consultant, agent or em-

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ployee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 Clarifications and Interpretations

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a Claim may be made therefor as provided in paragraph 10.05.

9.05 Authorized Variations in Work

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefor as provided in paragraph 10.05.

9.06 Rejecting Defective Work

A. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that 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. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.07 Shop Drawings, Change Orders and Payments

A. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraph 6.17.

B. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

C. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

9.08 Determinations for Unit Price Work

A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, subject to the provisions of paragraph 10.05.

9.09 Decisions on Requirements of Contract Documents and Acceptability of Work

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing, in accordance with the provisions of paragraph 10.05, with a request for a formal decision.

B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.07) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

9.10 Limitations on ENGINEER's Authority and Responsibilities

A. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any

other individual or entity, or to any surety for or employee or agent of any of them.

B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER's Consultants, Resident Project Representative, and assistants.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

A. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, 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).

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

10.02 Unauthorized Changes in the Work

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 Execution of Change Orders

A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

1. changes in the Work which are: (i) ordered by OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or OWNER's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive, and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05, provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 Notification to Surety

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 Claims and Disputes

A. *Notice:* Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 30 days) after

the start of the event giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the ENGINEER and the other party to the Contract within 60 days after the start of such event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

B. ENGINEER's Decision: ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER's written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:

1. an appeal from ENGINEER's decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16, or

2. if no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

**

11.01 Cost of the Work

~~A. **Costs Included:** The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.~~

- ~~1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by OWNER.~~

- ~~2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.~~

- ~~3. Payments made by CONTRACTOR to Subcontractors for Work performed by~~

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Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, who will then determine, with the advice of ENGINEER, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in this paragraph 11.01.

4. ~~Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.~~

5. ~~Supplemental costs including the following:~~

a. ~~The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.~~

b. ~~Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.~~

c. ~~Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.~~

d. ~~Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.~~

e. ~~Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.~~

f. ~~Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee.~~

g. ~~The cost of utilities, fuel, and sanitary facilities at the Site.~~

h. ~~Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work.~~

i. ~~When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.~~

j. ~~When all the Work is performed on the basis of cost plus, the costs of premiums for all Bonds and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.~~

B. ~~Costs Excluded.~~ The term Cost of the Work shall not include any of the following items:

1. ~~Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed-upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.~~

~~2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.~~

~~3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.~~

~~4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.~~

~~5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.~~

~~C. CONTRACTOR's Fee: When all the Work is performed on the basis of cost plus, CONTRACTOR's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR's fee shall be determined as set forth in paragraph 12.01.C.~~

~~D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to ENGINEER an itemized cost breakdown together with supporting data.~~

~~11.02 Cash Allowances~~

~~A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:~~

~~1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and~~

~~2. CONTRACTOR's costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no~~

~~demand for additional payment on account of any of the foregoing will be valid.~~

~~B. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.~~

~~11.03 Unit Price Work~~

~~A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.~~

~~B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.~~

~~*~~

~~C. OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.05 if:~~

~~1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and~~

~~2. there is no corresponding adjustment with respect any other item of Work; and~~

~~3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.~~

ARTICLE 12 - CHANGE OF CONTRACT PRICE, CHANGE OF CONTRACT TIME'S

12.01 Change of Contract Price

~~**~~

~~A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on~~

written notice submitted by the party making the Claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in paragraph 11.01) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 12.01.C).

C. ~~CONTRACTOR's Fee:~~ The CONTRACTOR's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee, or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR's fee shall be 15 percent;

b. for costs incurred under paragraph 11.01.A.3, the CONTRACTOR's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2 is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2 through 12.01.C.2.e, inclusive.

12.02 Change of Contract Times

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the Contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be determined in accordance with the provisions of this Article 12.

12.03 Delays Beyond CONTRACTOR's Control

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

12.04 Delays Within CONTRACTOR's Control

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 Delays Beyond OWNER's and CONTRACTOR's Control

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay.

12.06 Delay Damages

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of CONTRACTOR, or
2. delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone for whom OWNER is responsible.

* ARTICLE 13 - TESTS AND INSPECTIONS, CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

A. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's Site safety

procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

A. CONTRACTOR shall give 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.

B. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D below;
2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and
3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.

D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such 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 OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

13.05 OWNER May Stop the Work

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution

costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 Correction Period

*

~~A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11A is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.~~

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

D. CONTRACTOR's obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

* See Supplementary Conditions

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

13.09 OWNER May Correct Defective Work

* A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.06.A, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days written notice to CONTRACTOR, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors, and ENGINEER and ENGINEER's Consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.

C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this paragraph 13.09 will be charged against CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefor as provided in paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

A. The schedule of values established as provided in paragraph 2.07 A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments

1. At least 20 days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect

* See Supplementary Conditions

** See Supplementary Conditions 17.08

OWNER's interest therein, all of which must be satisfactory to OWNER.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied on account to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

~~* 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.~~

B. Review of Applications

~~** 1. ENGINEER will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.~~

2. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.0B, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

3. By recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

4. Neither ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.

5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Written Amendment or Change Orders;

c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09, or

d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

C. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by OWNER to CONTRACTOR.

★★

D. *Reduction in Payment*

1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

a. claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;

c. there are other items entitling OWNER to a set-off against the amount recommended; or

d. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02.B.5.c or paragraph 15.02.A.

2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

3. If it is subsequently determined that OWNER's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 *CONTRACTOR's Warranty of Title*

* ~~A. 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 OWNER no later than the time of payment free and clear of all Liens.~~

14.04 *Substantial Completion*

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.05 Partial Utilization

A. Use by OWNER at OWNER's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.10 regarding property insurance.

14.06 Final Inspection

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete,

ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

A. Application for Payment

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed, and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

B. Review of Application and Acceptance

~~** 4. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final~~

* See Supplementary Conditions

** See Supplementary Conditions 17.08

~~Application for Payment and accompanying documentation as required by the Contract Documents; ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled; ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.~~

C. *Payment Becomes Due*

1. Thirty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

14.08 Final Completion Delayed

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

A The making and acceptance of final payment will constitute

1 a waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph

14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

2 a waiver of all Claims by CONTRACTOR against OWNER other than those previously made in writing which are still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 OWNER May Suspend Work

~~** A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Time, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefor as provided in paragraph 10.05.~~

15.02 OWNER May Terminate for Cause

A. The occurrence of any one or more of the following events will justify termination for cause:

1. CONTRACTOR's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);

2. CONTRACTOR's disregard of Laws or Regulations of any public body having jurisdiction;

3. CONTRACTOR's disregard of the authority of ENGINEER; or

4. CONTRACTOR's violation in any substantial way of any provisions of the Contract Documents.

*

B If one or more of the events identified in paragraph 15.02 A occur, OWNER may, after giving CONTRACTOR (and the surety, if any) seven days written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment, and machinery at the

Site, and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by OWNER arising out of or relating to completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses, and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

C. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.03 OWNER May Terminate For Convenience

A. Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items)

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of

terminated contracts with Subcontractors, Suppliers, and others; and

4. for reasonable expenses directly attributable to termination.

B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 CONTRACTOR May Stop Work or Terminate

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or OWNER fails for 30 days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 15.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 30 days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, seven days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude CONTRACTOR from making a Claim under paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping the Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 Methods and Procedures

A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of paragraphs 9.09 and 10.05, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 - MISCELLANEOUS

17.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of

the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice

17.02 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

A. 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 or termination or completion of the Agreement.

17.05 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located

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★★

* See Supplementary Conditions

** See Supplementary Conditions 17.08

SUPPLEMENTARY CONDITIONS

TABLE OF CONTENTS

Article Number	Title
1	DEFINITIONS AND TERMINOLOGY
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SUPPLEMENTARY CONDITIONS

AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. I910-8, 1996 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE I. DEFINITIONS AND TERMINOLOGY

Add the following language at the beginning of definition I.01 A.12 entitled "Contract Documents" in the General-Conditions:

"The Advertisement for Bids, Instructions to Bidders, State Regulations, ..."

Delete the words "The individual or entity named as such in the Agreement" in 1.01.A.19 and insert the following in their place:

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

Delete the words "and who is identified as such in the Supplementary Conditions" at the end of definition 1.01 A.20, entitled "ENGINEER'S Consultant."

Delete definition 1.01 A.41 entitled "Specifications" in the General Conditions in its entirety and insert the following in its place:

"Sections included under Division 1 through Division 16 of the Contract Documents."

ARTICLE 2. PRELIMINARY MATTERS

SC-2.05

Delete paragraph 2.05C of the General Conditions in its entirety and insert the following in its place:

"C. Evidence of Insurance: CONTRACTOR shall deliver to OWNER, with a copy to the ENGINEER, Certificates of Insurance within 10 days after receipt of the notice of the acceptance of bid (and other evidence requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with the requirements of Article 5."

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE
SC-3.0

Add the following sentence at the end of Paragraph 3.01A of the General Conditions:

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

ARTICLE 4. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS;
REFERENCE POINTS

SC-4.02

Delete the term "Supplementary Conditions" of paragraph 4.02 A of the General Conditions and replace it with "Contract Documents".

SC-4.04

Change "of" to "or" on line 6 of paragraph 4.04 B.2 of the General Conditions. Delete the following words from lines 8 and 9 of paragraph 4.04 B2 of the General Conditions:

"...Or not shown or indicated with reasonable accuracy..."

SC-4.05

Add a new paragraph immediately after paragraph 4.05A of the General Conditions which is to read as follows:

B. ENGINEER may check the lines elevations and reference marks set by CONTRACTOR, and CONTRACTOR shall correct any errors disclosed by such check. Such a check shall not be considered" as approval of CONTRACTOR'S work and shall not relieve CONTRACTOR of the responsibility for construction of the entire Work in accordance with the Contract Documents. CONTRACTOR shall furnish personnel to assist ENGINEER in checking lines and grades."

SC-4.06

Delete the term Supplementary Conditions in paragraph 4.06A of the General Conditions and replace it with "Contract Documents".

ARTICLE 5. BOND AND INSURANCE

NOTICE TO CONTRACTOR:

1. Proof of Insurance coverage shall be furnished to the OWNER in accordance with the schedule for submittal of Bonds and Agreements.
2. Additionally refer to Article 2. PRELIMINARY MATTERS, Paragraph SC-2.05.C

SC-5.01

Insert these sentences following SC-5.01.A: The Surety Company providing the bonds shall have a rating of A or better within the Best Key Rating Guide and be licensed by the Massachusetts Division of Insurance. The contractor shall pay the premiums for such Bonds.

SC-5.03

Delete the second sentence following SC-5.03.A: of the General Conditions, which beings "OWNER shall deliver to..."

SC-5.04

The limits of liability for the insurance required by paragraph 5.04A of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law:

5.04 A.1 and 5.04 A.2 Worker's Compensation

(1) Worker's Compensation	Statutory Requirements
(2) Coverage B - Employer's Liability	\$100,000/\$500,000/\$100,000

5.04 A.3, 5.04 A.4, and 5.04 A.5 Commercial General Liability Limits shall include Coverage for... independent Contractors, Personal Injury, Owners and Contractors Protective Liability, Explosion, Underground and Collapse, Broad Form Property Damage, Blanket Contractual Liability per locations/project endorsement.

Commercial General Liability	\$1,000,000/\$2,000,000
Products/completed Operations	\$2,000,000 Aggregate

5.04 A.6 Automobile Liability for owned, hired and non-owned vehicles:

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

The following indemnity agreement: shall be made part of this contract:

1.To the fullest extent permitted by law, Contractor(s) hereby acknowledges and agrees that it shall indemnify, hold harmless and defend the Engineer, the Owner, the Engineer and any of their officers, directors, employees, agents, affiliates, subsidiaries and partners from and against all-claims, damages, losses and expenses, including but not limited to, attorney's fees, arising out of or resulting from the performance of the contractor's work under this contract, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury to or destruction of tangible property (other than to the work itself) including loss of use resulting therefrom, and (2) is (CAUSED) in whole or in part by any

negligent acts omissions of the contractor, its employees, agents or contractors or anyone directly or indirectly employed by any of them, or anyone whose acts any of them may be liable.

2. The Contractor hereby acknowledges its obligation under the foregoing paragraph to indemnify the Engineer and Owner against judgments suffered because of the contractor's work and to assume the cost of defending the Engineer and Owner against claims as described in the foregoing paragraph.

A. Engineer and Owner shall be named as Additional Insured on contractors General Liability and Umbrella Liability Contractors.

The Contractual Liability required by paragraph s.04n.4 of the General Conditions shall provide coverage for not less than the following amounts:

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

SC-5.04

Add two new paragraphs immediately after paragraph 5.04B of the General Conditions, which are to read as follows:

"C. The CONTRACTOR shall also provide:

1. CONTRACTOR shall, as a minimum, purchase and maintain excess liability insurance in the umbrella form with a combined single limit of not less than \$5,000,000 per claim and in the aggregate. Evidence of such excess liability shall be delivered to OWNER in accordance with paragraph 2.05C in the form of a certificate indicating the policy numbers and limits of liability of all underlying insurance.

A. General Liability, Workers' Compensation, Automobile Liability and Umbrella Liability Policies will contain waivers of subrogation in favor of the Engineer and Owner.

2. If the aggregate limits of liability indicated in CONTRACTOR' insurance provided in accordance with paragraphs 5.03 and 5.04 are not sufficient to cover all claims for damages arising from his operations under this Contract and from any other work performed by him or if policies of insurance do not provide that the aggregate limits of liability for bodily injury and property damage apply to each contract or project separately, CONTRACTOR shall have such policies amended so that the aggregate limits of liability required by this Contract will be available to cover all claims for damages due to operations under this Contract."

SC-5.05

Delete paragraph 5 .05 of the General Conditions in its entirety.

SC-5.06

Delete Paragraph 5.06 A of the General Conditions in its entirety and insert the following in its place:

"A. CONTRACTOR shall purchase and maintain, until final payment, property insurance upon the Work at the site in an amount equal to the total bid price for the completed construction. This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEERS consultants in the Work, shall insure against the perils of fire and extended coverage, shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and shall include damages, losses and expenses rising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). This insurance shall be provided on the completed value form. If not covered under the "all risk" insurance or otherwise provided in these Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment." A \$20,000 deductible shall be acceptable. Any other deductible amount shall be approved in advance by the OWNER and any deductible amount shall be borne by the CONTRACTOR.

Delete paragraph 5.06B of the General Conditions in its entirety.

Delete Paragraph 5.06C of the General Conditions in its entirety and insert the following in its place:

"C. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER by certified mail and will contain waiver provisions in accordance with paragraph 5.07B. The words "**Endeavor to**" shall be struck from the Certificate Of Insurance in the Cancellation Statement"

Delete paragraph 5.06D of the General Conditions in its entirety.

Delete paragraph 5.06E of the General Conditions in its entirety.

SC-5.07

Amend the last sentence of paragraph 5.07A of the General Conditions by striking out the words "held by OWNER as trustee or." As so amended, paragraph 5.07A remains in effect.

SC-5.08

Delete paragraph 5.08A of the General Conditions in its entirety.

Delete paragraph 5.0813 of the General Conditions in its entirety.

SC-5.09

Delete paragraph 5.09A of the General Conditions in its entirety and insert the following in its place:

"A. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with this Article 5 on the basis of its not complying with the Contract Documents, OWNER will notify CONTRACTOR in writing thereof within thirty days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.05C. CONTRACTOR will provide such additional information in respect of insurance provided by him as OWNER may reasonably request."

ARTICLE 6. CONTRACTOR'S RESPONSIBILITIES

SC-6.01

Delete paragraph 6.01B of the General Conditions in its entirety and replace with the following:

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

SC-6.04

Add the following paragraph after paragraph 6.04 A.2 of the General Conditions: -

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

SC-6.17

In paragraph 6.17 E.1 of the General Conditions, delete the word "timely" from the first line.

SC-6.20

Delete paragraph 6.20A of the General Conditions in its entirety and replace with the following:

"A. To the fullest extent permitted by law, the CONTRACTOR shall indemnify and hold harmless the OWNER, the ENGINEER, ENGINEER'S consultants, and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys fees, arising out of or resulting from the 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, but only to the extent caused in whole or in part by 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 apply to any such claims, damages, losses and expenses which arise and/or are incurred by any person or entity either during the performance of the Work and/or after completion of construction. Nothing in this paragraph shall be construed to negate, abridge, or reduce other rights or obligations of indemnity or contribution which would otherwise exist as to a party or person indemnified hereunder. CONTRACTOR hereby assumes the responsibility and liability for injury to or death of any and all persons, including the CONTRACTOR's employees, and for any and all damage to property caused by, resulting from, or arising out of any act, omission or neglect on the part of the CONTRACTOR, or of any Subcontractor or of anyone directly or indirectly employed by any of them or of anyone for whose acts, any of them may be liable."

Delete paragraph 6.2OC of the General Conditions in its entirety.

ARTICLE 8. OWNER'S RESPONSIBILITIES

SC-8.06

Delete paragraph 8.06A of the General Conditions in its entirety.

ARTICLE 9. ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.01

Add a new paragraph 9.0113 after paragraph 9.01A of the General Conditions, which is to read as follows:

"B. Nothing contained in the Contract Documents shall be construed to create a contractual relationship of any kind (1) between the ENGINEER and CONTRACTOR, (2) between the OWNER and a Subcontractor or Subcontractors, or (3) between any person or entities other than the OWNER and CONTRACTOR. The ENGINEER shall, however, be entitled to performance and enforcement of obligations under the CONTRACT DOCUMENTS intended to facilitate performance of the ENGINEERS duties."

ARTICLE 11. COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

Delete Article 11 of the General Conditions in its entirety and replace with the following:

"A. The unit price of an item of Unit Price work shall be subject to reevaluation and adjustment under the following conditions:

(1) If the total extended bid price [Estimated Quantity times the Bid Unit Price] of a particular item of Unit Price Work amounts to 5 percent or more of the Original Contract Price and the variation in the quantity of the particular item of Unit Price Work performed by CONTRACTOR differs by more than 15 percent from the estimated quantity of such item indicated in the Agreement;
and

(2) If there is no corresponding adjustment with respect to any other item of work; and

(3) If CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11- if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed. If OWNER believes that the quantity variation entitles OWNER to an adjustment in the unit price, OWNER shall be entitled to an adjustment in the unit price in an amount determined by the ENGINEER. ENGINEER shall not be liable in connection with any determination relating to adjustments which is rendered in good faith."

ARTICLE 12. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.06

Add the following new paragraphs after paragraph 12.06 of the General Conditions:

"12.07 Liquidated Damages:

A. If the CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the OWNER, then the CONTRACTOR does hereby agree, as a part consideration for the awarding of this Contract, to pay to the OWNER the amount specified in the Contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contract shall be in default after the time stipulated in the Contract for completing the work. Such damages may be retained from time to time by the OWNER from progress payments or any amounts owing to the CONTRACTOR, or otherwise collected.

B. The said amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would in such event sustain, and said amount is agreed to be the amount of damages which the OWNER would sustain and said amount shall be retained from time to time by the OWNER from current periodical estimates.

C. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein as definite and certain length of times if fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided that the CONTRACTOR shall not be charged with liquidated damages of any excess cost when the OWNER determines that the CONTRACTOR is without fault and the CONTRACTOR'S reasons for the time extension are acceptable to the OWNER; Provided, further, that the CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

1) to any preference, priority or allocation order duly issued by the Government;

2) to unforeseeable cause beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and

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

D. Provided, further, that the CONTRACTOR shall, within ten (10) days from the beginning of such delay, unless the OWNER shall grant a further period of time prior to the date of final settlement of the Contract, notify the OWNER, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the CONTRACTOR within a reasonable time of its decision in the matter."

ARTICLE 13. TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-13.07

Delete paragraph 3.07A of the General Conditions and insert the following in its place:

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

SC-13.09

Revise paragraph 13.09A of the General Conditions

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

ARTICLE 14. PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02

Delete paragraph 14.02A.3 and insert the following in its place:

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

Add Paragraph 4. to read as follows:

"4. The CONTRACTOR shall submit Weekly Payroll Records Report and Statement of

Compliance verifying compliance with the Minimum Prevailing Wage Law, MGL ch. 149, Sections 26-27H. "These Statements of Compliance shall be submitted as a condition of payment for work performed during the period the reports apply."

SC-14.03

Delete paragraph 14.03A in its entirety and insert the following in its place:

"A CONTRACTOR warrants and guarantees that title to all work, material and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than at the time of Application for Payment free and clear of all liens. CONTRACTOR shall provide written transfer of title and a certified paid invoice provided by the supplier."

ARTICLE 15. SUSPENSION OF WORK AND TERMINATION

SC-15.02

Add a new paragraph immediately after paragraph 15.02 AA of the General Conditions which is to read as follows:

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

ARTICLE 17. MISCELLANEOUS

SC-17.06, 17.07, 17.08, 17.09

Add the following new paragraphs after paragraph 17.05 of the General Conditions:

"17.06 Assignment:

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

17.07 Liability

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

17.08 State Statutes and Regulations

See Superseding Changes To General & Supplementary Conditions 12/29/04 for further modifications of the General Conditions due to state statutes and regulations.

17.09 Severability

If any provision of this Agreement shall be invalid or unenforceable to any extent or in any application, then the remainder of this Agreement and of such terms and conditions, except to such extent or in such application, shall not be affected thereby, and each and every term and condition of this Agreement shall be valid and enforced to the fullest extent and in the broadest application permitted by law."

END OF SECTION

**STATE STATUTES AND REGULATIONS
COMMONWEALTH OF MASSACHUSETTS**

A. REVISIONS TO GENERAL CONDITIONS

1. Definitions
2. Subsurface Conditions Found Different
3. Subcontracting
4. Permits
5. Contractor Records
6. Massachusetts Sales and Use Tax I
7. Clarifications and Interpretations
8. Change of Contract Price _
9. Payments
10. Suspension of Work and Termination
11. Labor Classification and Minimum Wage Rates

B. OTHER REGULATORY REQUIREMENTS

1. Working Hours
2. DEP Community Sound Level Criteria

ATTACHMENT A - Wage Rates

ATTACHMENT B

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

ATTACHMENT C - (not used on this project)

Special Provisions for Minority/Women Business Enterprises and the Commonwealth of Massachusetts Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program.

ATTACHMENT D --

Change Orders

A. REVISIONS TO GENERAL CONDITIONS:

1. Definitions

The term "AWARDING AUTHORITY," as used herein, shall be considered to be synonymous with the term "OWNER," described in definition 1.01 A.30.

Delete definition 1.01 A.43 entitled "Substantial Completion" in the General Conditions in its entirety and insert the following in its place:

"Substantial Completion shall be interpreted in accordance with Massachusetts General Law Chapter 30, Section 39G or 39K as appropriate."

2. Subsurface Conditions Found Different

Add the following sentence to the end of paragraph 4.03A of the General Conditions:

"...to do so. Adjustments resulting from subsurface or latent physical conditions will be in accordance with Massachusetts General Law Chapter 30, Section 39N."

3. Subcontracting

Add the following language at the end of paragraph 6.06F of the General Conditions:

"Except as required otherwise by Massachusetts General Law Chapter 149, Section 44F, for Work governed by Chapter 149, sections 44A through 44H.

4. Permits

Delete paragraph 6.08A of the General Conditions in its entirety and insert the following in its place: -

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

5. Contractor Records

Add a new paragraph immediately after paragraph 6.09C of the General Conditions, which is to read as follows:

"d. The CONTRACT shall comply with all applicable provisions Chapter 30, Section 39R of the Massachusetts General Laws Regarding, CONTRACTOR'S records.

6. Massachusetts Sales and Use Tax

Add the following paragraph after paragraph 6.10A of the General Conditions:

"B. The material and supplies to be used by the CONTRACTOR in the Work of this Contract are exempt from the Sales and Use Tax of the Commonwealth of Massachusetts. The AWARDING AUTHORITY tax exemption certificate number will be furnished to the CONTRACTOR.

7. Clarifications and Interpretations

Add the following language at the end of paragraph 9.04A of the General Conditions:

"The ENGINEER'S interpretation will be made in accordance with the requirements of Massachusetts General Law Chapter 30, Section 39P."

8. Change of Contract Price

Delete paragraphs 11.01, 11.02, and 12.01 of the General Conditions, having to do with Change of Contract Price. Changes in contract price will be governed by the section called "Change Orders" in Attachment D, Section XXX and Article 11 in the Supplementary Conditions.

9. Payments

Delete paragraph 12.02B.1 of the General Conditions, in its entirety and insert the following in its place:

"1. Progress Payments will be made in accordance with the Massachusetts General Law Chapter 30, Section 39G or 39K, as applicable."

Add the following new paragraph following paragraph 14.02C.1 of the General Conditions:

"2. The CONTRACTOR shall make payments to Subcontractors in accordance with the requirements of Massachusetts General Law Chapter 30, Section 39F."

Delete paragraph 14.07B of the General Conditions in its entirety and insert the following in its place:

"1. If, on the basis of the ENGINEER's observation of the Work during construction and final inspection and, upon the ENGINEER's review of the final Application for Payment and accompanying documentation, the ENGINEER is satisfied that the Work has been completed and that the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the ENGINEER will indicate in writing his recommendation of payment and present the Application to the AWARDING AUTHORITY for payment. Thereupon the ENGINEER will give written notice to the AWARDING AUTHORITY and the CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, the ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment. In such case the CONTRACTOR shall make the

necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, the AWARDING AUTHORITY shall in accordance with the applicable Massachusetts General Law, pay the CONTRACTOR the amount recommended by the ENGINEER."

10. Suspension of Work and Termination

Delete paragraph 15.01A of the General Conditions in its entirety and insert the following in its place:

"A. The AWARDING AUTHORITY may order, at any time and without cause, the CONTRACTOR to suspend or delay the Work in accordance with Massachusetts General Law Chapter 30, Section 39-0."

11. Labor Classifications and Minimum Wage Rates

Add the following paragraphs under the heading "Wage Rates" after paragraph 17.10 of the Supplementary Conditions:

"17.11 Wage Rates

A. Minimum wage rates as determined by the Commissioner of the Department of Labor and Industries under the provisions of Massachusetts General Laws Chapter 149, Sections 26-27D apply to this project A copy of the wage schedule is included in the front end of the specifications under Federal Minimum Wage Rates - Davis Bacon. If, after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the Commissioner. Such approved minimum rate shall be retro-active to the time of the initial employment of such person in such trade or occupation. The CONTRACTOR shall notify the AWARDING AUTHORITY of its intention to employ persons in trades or occupations not classified in the wage determinations as soon as possible .in order to allow sufficient time for the AWARDING AUTHORITY to obtain approved rates for such trades or occupations. '

B. The schedule of wages referred to above are minimum rates only, and the AWARDING AUTHORITY will not consider any claims for additional compensation made by CONTRACTOR because of payment by the CONTRACTOR of any wage rate in excess of the applicable rate contained in the Contract. All construction associated with this Contract will be governed by Heavy and Highway Rates.

C. The said schedule of wages shall continue to be the minimum rates to be paid during the life of this Agreement and a legible copy of said schedule shall be kept posted in a conspicuous place at the site of the Work.

D. CONTRACTOR and subcontractors shall submit a copy of weekly payroll records to the AWARDING AUTHORITY and the AWARDING AUTHORITY shall retain the records of a minimum of three years."

B. OTHER REGULATORY REQUIREMENTS:

1. Working Hours

No laborer, workman, mechanic, foreman, or inspector, working within the Commonwealth, in the employ of the CONTRACTOR, subcontractor, or other person doing or contracting to do the whole or a part of the work contemplated by this contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency.

2. DEP Community sound Level Criteria

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

A. The increase in the broad band noise level shall not be in excess often (10) dB(A) above ambient at the station boundary. The ambient level is defined as the A-weighted noise level that is exceeded ninety (90) percent of the time measured during the period in question.

B. The primary noise source(s) shall not produce a puretone condition. Puretone is any given octave band center frequency that exceeds the two adjacent center frequencies by three (3) or more decibels.

END OF SECTION

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SUPERSEDING CHANGES TO GENERAL AND SUPPLEMENTARY CONDITIONS

1. GENERAL CONDITIONS

2.06A - insert at end: Said conference shall be scheduled and arranged by the Contractor. I

4.01B - delete

4.06G - delete

5.07B - delete

6.17E - restore the word "timely" in the first line. Delete the word "only" from the 5" line. Where "only" has been deleted, insert "to determine their general conformance with the contract documents, in accordance with good and accepted engineering practices, and".

8.02A - delete "to whom contractor makes no reasonable objection".

9.02A - Insert, after "Work" in the 6" line, "While construction is active at the project, said visits and inspections will take place at least once per week."

12.06 - delete subparts A and B, and replace with the following: "The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner or the Engineer on account of any delay in the commencement of the Work and/or any delay in, or suspension of any portion of the Work, whether such delay is caused by the Owner, the Engineer, or otherwise. 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 these general conditions.

No claims shall be allowed on account of the failure of the Engineer to furnish Drawings, specifications or instructions or to return Shop Drawings or Samples until the expiration of the applicable time period referenced in Mass. Gen. L. c. 30, §39P, and not then unless such claim be reasonable.

No extension of time shall be granted because of seasonable or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the Contract, whether occurring within the time originally scheduled for completion, or within any period of extension granted. There shall be no increase in the Contract Sum on account of any additional costs or operations or conditions resulting therefrom.

14.02C - change "Ten" to "Twenty-One"

14.07A(3) - delete the first three lines through the word "Owner,". In the third line, after Contractor, substitute "shall" for "may". In the fourth line, after the word "full" insert "on behalf of both Contractor and all of its Subcontractors,".

14.09A(1) - delete -

15.03B - add after "termination" ", with respect to this project or any other project of the Contractor."

Add "15.03C. If this Contract is terminated by Owner with or without cause, and regardless of whether said termination is rightful or wrongful, in no event shall the Contractor be paid a sum which, together with prior payments to Contractor, exceeds the sum payable to Contractor under the Agreement (Section 00520), as adjusted by any agreed change orders.

II. SUPPLEMENTARY CONDITIONS

Article V - Bonds and Insurance

Employer's liability coverage must be \$2 million per accident, \$2 million disease limits, and \$2 million per employee disease limits.

General liability insurance limits must be \$5 million aggregate, \$2 million dollars' products/completed operations aggregate; \$2 million personal injury and advertising; and \$2 million per occurrence.

The contractual liability insurance coverage must have limits corresponding to the foregoing. At 5.04A.6, the following changes should be made to paragraph I of the indemnity clause: four lines from the bottom, the parenthesis should be removed from the word "CAUSED" and the word "CAUSED" should be changed to lower-case (caused). Also, in the last line of said clause, insert the word "for" after the word "anyone."

At SC-5.04C 1 - insert the following sentence at the end: "The Contractor's excess liability insurance coverage must follow from with its underlying liability coverages."

SC-6.20A - insert the word "defend" after the word "shall" in the first line.

SC-14.02A.3 - insert the following sentence at the end: "Retainage for the entire project will be withheld until substantial completion of the entire project, at which time retainage shall be accounted for, subject to all of the other terms and conditions of payment at the time of substantial completion.

Add the following Article SC-18.

SC-I 8 Arbitration - J

18.1 Controversies and Claims Subject to Arbitration. Any Claim arising out of or related to the Contract, or the breach thereof, except claims relating to aesthetic effect, shall be settled by arbitration, subject to the provisions of Subparagraph 18.7. Arbitration will be conducted 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. In any such arbitration in which the amount stated in the demand is \$100,000 or less, a single arbitrator shall be appointed in accordance with the procedures set forth in the American Arbitration Association Construction Industry Arbitration Rules. In any such arbitration in which the amount stated in the demand is in excess of \$100,000, a panel of three arbitrators shall be appointed in accordance with the procedures set forth in the American Arbitration

Association Construction Industry Arbitration Rules. The parties may agree to use any arbitration service. In the absence of such agreement, the American Arbitration Association shall be utilized.

18.2 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. The arbitration panel shall have all 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:

18.2.1 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.

18.2.2 After the neutral arbitrator has been appointed, neither party may engage in ex parte communication with the arbitrator appointed by that party.

18.2.3 Contract Performance During Arbitration. During arbitration proceedings, the Owner and Contractor shall otherwise continue their performances hereunder.

18.3 When a written decision of the Engineer states that the decision is final, any demand for arbitration of the matter covered by such decision must be made within two months after substantial completion of the project, as determined by the Engineer in accordance with the provisions hereof. The failure to demand arbitration within said two month period will result in the Engineer's decision becoming final and binding upon the Owner and the Contractor.

18.4 A demand for arbitration shall be made with the time limits specified in Subparagraph 18.3, and in no event shall 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.

18.5 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.

18.6 Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and the judgment maybe entered upon it in accordance with applicable law in any court having jurisdiction thereof.

18.7 Notwithstanding any provision contained in this Paragraph 18 or elsewhere in the Contract Documents, the Owner reserves the following right in connection with claims and disputes between the Owner and Contractor:

1. the right to institute the legal action against the Contractor in any court of competent jurisdiction in lieu of demanding arbitration pursuant to this paragraph 18, in which case the dispute or disputes which are the subject of such action shall be decided by such court, and not by arbitration.

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;

3. the right to require the Contractor to join as a party in any arbitration between the Owner and Architect relating to the Project in which case the Contractor agrees to be bound by that decision of the arbitrator arbitrators in such arbitration.

In case the Owner elects to proceed in accordance with 18.7.1 or 18.7.2 above, the word "litigation", shall be deemed to replace the word "arbitration" wherever the latter word appears in the Contract Documents.

SC-19 MBE and WBE participation

The Contractor shall comply with the provision of G.L.c. 7 40N, and any associated regulations effective during the time of the project, relative to the participation of minority and women-owned businesses in connection with the project. At present, the current participation goals are 7.4% MBE and 4% WBE.

END OF SECTION

EQUAL OPPORTUNITY REQUIREMENTS

1. EQUAL EMPLOYMENT OPPORTUNITY

A. Equal Employment Plan: The Contractor and each Subcontractor shall implement an effective affirmative action plan to assure equal employment opportunity throughout the performance of work on this project. Do not discriminate against any employee or applicant for employment because of race, color, sex, religion, age, or national origin. Affirmative action plan shall include, but not be limited to, the following:

1. Employment, upgrading, demotion, or transfer.
2. Recruitment or recruitment advertising.
3. Layoff or termination.
4. Rates of pay or other forms of compensation.
5. Selection for training, including apprenticeship.

B. Rules and Regulations: The Contractor and each Subcontractor shall comply with all applicable local, state and federal laws and regulations regarding equal employment opportunity and with the provisions of the following:

1. Governors "Executive Order No. 74", dated July 20, 1970, entitled the "Governor's Code of Fair Practices", as amended by the Governor's Executive Order No. 116, dated May 1, 1975.

2. The Fair Employment Practices Law of the Commonwealth, Chapter 1518 of the General Laws of Massachusetts, as amended.

3. The rules and regulations of the Massachusetts Commission Against Discrimination as in force at the date of the Contract.

4. The rules, regulations and relevant orders of the United States Secretary of Labor, the Commonwealth of Massachusetts Department of Labor and Industries, and other authorities having jurisdiction as in force at the date of the Contract.

5. Governor's 'Executive Order No. 237'.

C. Employment Advertisements: State in all solicitations or advertisements for employees that all qualified applicants will receive consideration for employment without regard to race, color, sex, religion, age, or national origin.

D. Referral Notices: Direct special effort toward the recruitment of minority workers through the unions and through referral agencies representing the minority community.

E. Advising Labor Unions: Send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representative of the Contractor's equal employment opportunity commitment and post copies of these notices in conspicuous places available to employees and applicants for employment.

F. Posting: Post copies of equal opportunity employment notices in conspicuous places available to employees and applicants for employment and post notices setting forth the provisions of this non-discrimination equal employment opportunity clause.

G. Manning Table: Assume and be responsible for the affirmative duty of achieving the range of minority employment and women work force participation set forth in a manning table for the entire project. Submit a manning table at the request of the Owner and obtain Owners approval prior to the Award of Contract.

H. Percentage Participation: Both Contractor and Sub-contractor shall comply with requirements of Minority and Women Business percentage of Contract percentage participation requirements specified in the Minority and Women Business Enterprise Set Aside Requirements Section.

END OF SECTION

MINORITY AND WOMEN BUSINESS ENTERPRISE SET ASIDE REQUIREMENTS

1. GENERAL

A. All provisions of the Contract Documents shall be subject to all applicable provisions of law, including, without limitation, Federal, State, and Local statutes and ordinances regarding setting aside a portion of the Contract for qualified Minority and Women Business Enterprises. The Contractor shall recognize that other duties and obligations are required by laws, statutes, and ordinances which may not be provided herein, but must be considered and made a part of this Contract. In case of a conflict between the Contract Documents and applicable laws, statutes, and ordinances, the provisions of law, statutes, and ordinances shall govern.

2. MINORITY AND WOMEN OWNED BUSINESS ENTERPRISE SET ASIDE REQUIREMENTS

A. Requirements For minority and women business enterprise set aside requirements, provided to the Architect by the Awarding Authority Follow. The Architect does not warrant or guarantee the completeness or accuracy of this information, and every bidder and contractor shall be responsible for ascertaining the MWBE set aside requirements in the area where the work will be performed.

1. Bidders shall agree to contract with minority and women owned businesses as certified by the State Office of Minority and Women Business Assistance [SOMWBA]. "the amount of participation which shall be reserved for such enterprises shall not be less than fifteen percent [15%] of the total contract amount including accepted alternates, of which at least ten percent [10%] shall be reserved for minority business enterprises and five percent [5%] shall be reserved for women—owned business enterprises.

2. The Contractor and each Subcontractor shall furnish to the Awarding Authority, within fifteen days after completion of its portion of the work, a certified 'Statement of Compliance' certifying compliance with minority and women business enterprise set aside requirements. Submit the 'Statement of Compliance' in a form acceptable to the Awarding Authority.

3. See Massachusetts Executive Order 237 as amended.

END OF SECTION

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DEVAL L. PATRICK
Governor
TIMOTHY P. MURRAY
Lt. Governor

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

Prevailing Wage Rates

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

JOANNE F. GOLDSTEIN
Secretary
HEATHER E. ROWE
Director

Awarding Authority: Town of Arlington, MA

Contract Number: **City/Town:** ARLINGTON

Description of Work: The project consists of renovation of existing playground area and creation of new playground. Bidders shall include all labor, equipment and mats to complete all work described in the Dwgs and Specs.

Job Location: Florence Avenue, Arlington MA

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- Awarding authorities must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project. The wage schedule must be posted in a conspicuous place at the work site during the life of the project in accordance with M.G.L. c. 149, § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices must be registered with the Massachusetts Division of Apprenticeship Training (DAT) in order to be paid at the lower apprentice rates. All apprentices must keep his/her apprentice identification card on his/her person during all work hours. If a worker is not registered with DAT, he/she must be paid the "total rate" listed on the wage schedule regardless of experience or skills.
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports directly to the awarding authority and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.55	\$8.91	\$8.00	\$0.00	\$48.46
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.62	\$8.91	\$8.00	\$0.00	\$48.53
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.74	\$8.91	\$8.00	\$0.00	\$48.65
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$82.32	\$9.80	\$17.67	\$0.00	\$109.79
	08/01/2013	\$85.47	\$9.80	\$17.67	\$0.00	\$112.94
	08/01/2014	\$88.62	\$9.80	\$17.67	\$0.00	\$116.09
	08/01/2015	\$91.77	\$9.80	\$17.67	\$0.00	\$119.24
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2012	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	06/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	12/01/2013	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	06/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	12/01/2014	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	06/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	12/01/2015	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	06/01/2016	\$38.30	\$7.10	\$12.45	\$0.00	\$57.85
	12/01/2016	\$39.30	\$7.10	\$12.45	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2012	\$29.08	\$10.40	\$5.95	\$0.00	\$45.43
	06/01/2013	\$29.88	\$10.40	\$5.95	\$0.00	\$46.23
	12/01/2013	\$30.68	\$10.40	\$5.95	\$0.00	\$47.03
	06/01/2014	\$31.58	\$10.40	\$5.95	\$0.00	\$47.93
	12/01/2014	\$32.48	\$10.40	\$5.95	\$0.00	\$48.83
	06/01/2015	\$33.43	\$10.40	\$5.95	\$0.00	\$49.78
	12/01/2015	\$34.38	\$10.40	\$5.95	\$0.00	\$50.73
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$40.09	\$10.00	\$13.02	\$0.00	\$63.11
	06/01/2013	\$40.87	\$10.00	\$13.02	\$0.00	\$63.89
	12/01/2013	\$41.65	\$10.00	\$13.02	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$40.09	\$10.00	\$13.02	\$0.00	\$63.11
	06/01/2013	\$40.87	\$10.00	\$13.02	\$0.00	\$63.89
	12/01/2013	\$41.65	\$10.00	\$13.02	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	12/01/2012	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	06/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	12/01/2013	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	06/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	12/01/2014	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	06/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	12/01/2015	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	06/01/2016	\$38.30	\$7.10	\$12.45	\$0.00	\$57.85
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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (BOSTON)</i>	02/01/2013	\$47.41	\$10.18	\$17.83	\$0.00	\$75.42
	08/01/2013	\$48.31	\$10.18	\$17.90	\$0.00	\$76.39
	02/01/2014	\$48.87	\$10.18	\$17.90	\$0.00	\$76.95
	08/01/2014	\$49.77	\$10.18	\$17.97	\$0.00	\$77.92
	02/01/2015	\$50.33	\$10.18	\$17.97	\$0.00	\$78.48
	08/01/2015	\$51.23	\$10.18	\$18.04	\$0.00	\$79.45
	02/01/2016	\$51.80	\$10.18	\$18.04	\$0.00	\$80.02
	08/01/2016	\$52.70	\$10.18	\$18.12	\$0.00	\$81.00
	02/01/2017	\$53.27	\$10.18	\$18.12	\$0.00	\$81.57

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

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.71	\$10.18	\$17.83	\$0.00	\$51.72
2	60	\$28.45	\$10.18	\$17.83	\$0.00	\$56.46
3	70	\$33.19	\$10.18	\$17.83	\$0.00	\$61.20
4	80	\$37.93	\$10.18	\$17.83	\$0.00	\$65.94
5	90	\$42.67	\$10.18	\$17.83	\$0.00	\$70.68

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.16	\$10.18	\$17.90	\$0.00	\$52.24
2	60	\$28.99	\$10.18	\$17.90	\$0.00	\$57.07
3	70	\$33.82	\$10.18	\$17.90	\$0.00	\$61.90
4	80	\$38.65	\$10.18	\$17.90	\$0.00	\$66.73
5	90	\$43.48	\$10.18	\$17.90	\$0.00	\$71.56

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2012	\$33.45	\$7.10	\$12.60	\$0.00	\$53.15
	06/01/2013	\$34.20	\$7.10	\$12.60	\$0.00	\$53.90
	12/01/2013	\$34.95	\$7.10	\$12.60	\$0.00	\$54.65
	06/01/2014	\$35.70	\$7.10	\$12.60	\$0.00	\$55.40
	12/01/2014	\$36.45	\$7.10	\$12.60	\$0.00	\$56.15
	06/01/2015	\$37.20	\$7.10	\$12.60	\$0.00	\$56.90
	12/01/2015	\$37.95	\$7.10	\$12.60	\$0.00	\$57.65
	06/01/2016	\$38.70	\$7.10	\$12.60	\$0.00	\$58.40
	12/01/2016	\$39.70	\$7.10	\$12.60	\$0.00	\$59.40

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2012	\$32.30	\$7.10	\$12.60	\$0.00	\$52.00
	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2012	\$32.30	\$7.10	\$12.60	\$0.00	\$52.00
	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2013	\$33.92	\$9.80	\$15.61	\$0.00	\$59.33
	09/01/2013	\$34.53	\$9.80	\$15.61	\$0.00	\$59.94
	03/01/2014	\$35.13	\$9.80	\$15.61	\$0.00	\$60.54
	09/01/2014	\$35.90	\$9.80	\$15.61	\$0.00	\$61.31
	03/01/2015	\$36.67	\$9.80	\$15.61	\$0.00	\$62.08

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.96	\$9.80	\$1.57	\$0.00	\$28.33
2	60	\$20.35	\$9.80	\$1.57	\$0.00	\$31.72
3	70	\$23.74	\$9.80	\$10.90	\$0.00	\$44.44
4	75	\$25.44	\$9.80	\$10.90	\$0.00	\$46.14
5	80	\$27.14	\$9.80	\$12.47	\$0.00	\$49.41
6	80	\$27.14	\$9.80	\$12.47	\$0.00	\$49.41
7	90	\$30.53	\$9.80	\$14.04	\$0.00	\$54.37
8	90	\$30.53	\$9.80	\$14.04	\$0.00	\$54.37

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.27	\$9.80	\$1.57	\$0.00	\$28.64
2	60	\$20.72	\$9.80	\$1.57	\$0.00	\$32.09
3	70	\$24.17	\$9.80	\$10.90	\$0.00	\$44.87
4	75	\$25.90	\$9.80	\$10.90	\$0.00	\$46.60
5	80	\$27.62	\$9.80	\$12.47	\$0.00	\$49.89
6	80	\$27.62	\$9.80	\$12.47	\$0.00	\$49.89
7	90	\$31.08	\$9.80	\$14.04	\$0.00	\$54.92
8	90	\$31.08	\$9.80	\$14.04	\$0.00	\$54.92

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING	02/01/2013	\$42.55	\$10.65	\$18.61	\$1.30	\$73.11
BRICKLAYERS LOCAL 3 (BOSTON)	08/01/2013	\$43.32	\$10.65	\$18.61	\$1.30	\$73.88
	02/01/2014	\$43.75	\$10.65	\$18.61	\$1.30	\$74.31
	08/01/2014	\$44.50	\$10.65	\$18.61	\$1.30	\$75.06
	02/01/2015	\$44.93	\$10.65	\$18.61	\$1.30	\$75.49
	08/01/2015	\$45.68	\$10.65	\$18.61	\$1.30	\$76.24
	02/01/2016	\$46.13	\$10.65	\$18.61	\$1.30	\$76.69
	08/01/2016	\$46.88	\$10.65	\$18.61	\$1.30	\$77.44
	02/01/2017	\$47.33	\$10.65	\$18.61	\$1.30	\$77.89

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.28	\$10.65	\$12.11	\$1.30	\$45.34
2	60	\$25.53	\$10.65	\$13.61	\$1.30	\$51.09
3	65	\$27.66	\$10.65	\$14.61	\$1.30	\$54.22
4	70	\$29.79	\$10.65	\$15.61	\$1.30	\$57.35
5	75	\$31.91	\$10.65	\$16.61	\$1.30	\$60.47
6	80	\$34.04	\$10.65	\$17.61	\$1.30	\$63.60
7	90	\$38.30	\$10.65	\$18.61	\$1.30	\$68.86

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.66	\$10.65	\$12.11	\$1.30	\$45.72
2	60	\$25.99	\$10.65	\$13.61	\$1.30	\$51.55
3	65	\$28.16	\$10.65	\$14.61	\$1.30	\$54.72
4	70	\$30.32	\$10.65	\$15.61	\$1.30	\$57.88
5	75	\$32.49	\$10.65	\$16.61	\$1.30	\$61.05
6	80	\$34.66	\$10.65	\$17.61	\$1.30	\$64.22
7	90	\$38.99	\$10.65	\$18.61	\$1.30	\$69.55

Notes:
Steps are 6000 hours

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR LABORERS - ZONE 1	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4	12/01/2012	\$41.09	\$10.00	\$13.02	\$0.00	\$64.11
	06/01/2013	\$41.87	\$10.00	\$13.02	\$0.00	\$64.89
	12/01/2013	\$42.65	\$10.00	\$13.02	\$0.00	\$65.67

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 4	12/01/2012	\$28.17	\$10.00	\$13.02	\$0.00	\$51.19
	06/01/2013	\$28.72	\$10.00	\$13.02	\$0.00	\$51.74
	12/01/2013	\$29.27	\$10.00	\$13.02	\$0.00	\$52.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2	01/01/2013	\$45.01	\$7.80	\$15.60	\$0.00	\$68.41
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Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$7.80	\$0.00	\$0.00	\$30.31
2	55	\$24.76	\$7.80	\$3.52	\$0.00	\$36.08
3	60	\$27.01	\$7.80	\$3.84	\$0.00	\$38.65
4	65	\$29.26	\$7.80	\$4.16	\$0.00	\$41.22
5	70	\$31.51	\$7.80	\$13.68	\$0.00	\$52.99
6	75	\$33.76	\$7.80	\$14.00	\$0.00	\$55.56
7	80	\$36.01	\$7.80	\$14.32	\$0.00	\$58.13
8	90	\$40.51	\$7.80	\$14.96	\$0.00	\$63.27

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 1	12/01/2011	\$31.80	\$7.10	\$12.45	\$0.00	\$51.35
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 1	12/01/2011	\$32.80	\$7.10	\$12.45	\$0.00	\$52.35
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS LABORERS - ZONE 1	12/01/2011	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 1	12/01/2011	\$32.80	\$7.10	\$12.45	\$0.00	\$52.35
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 1	12/01/2011	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER LABORERS - ZONE 1	12/01/2011	\$31.80	\$7.10	\$12.45	\$0.00	\$51.35
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR OPERATING ENGINEERS LOCAL 4	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2012	\$54.88	\$9.80	\$17.67	\$0.00	\$82.35
	08/01/2013	\$56.98	\$9.80	\$17.67	\$0.00	\$84.45
	08/01/2014	\$59.08	\$9.80	\$17.67	\$0.00	\$86.55
	08/01/2015	\$61.18	\$9.80	\$17.67	\$0.00	\$88.65
DIVER TENDER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2012	\$54.88	\$9.80	\$17.67	\$0.00	\$82.35
	08/01/2013	\$56.98	\$9.80	\$17.67	\$0.00	\$84.45
	08/01/2014	\$59.08	\$9.80	\$17.67	\$0.00	\$86.55
	08/01/2015	\$61.18	\$9.80	\$17.67	\$0.00	\$88.65

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$58.80	\$9.80	\$17.67	\$0.00	\$86.27
	08/01/2013	\$61.05	\$9.80	\$17.67	\$0.00	\$88.52
	08/01/2014	\$63.30	\$9.80	\$17.67	\$0.00	\$90.77
	08/01/2015	\$65.55	\$9.80	\$17.67	\$0.00	\$93.02
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$82.32	\$9.80	\$17.67	\$0.00	\$109.79
	08/01/2013	\$85.47	\$9.80	\$17.67	\$0.00	\$112.94
	08/01/2014	\$88.62	\$9.80	\$17.67	\$0.00	\$116.09
	08/01/2015	\$91.77	\$9.80	\$17.67	\$0.00	\$119.24
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	03/01/2013	\$43.52	\$13.00	\$14.16	\$0.00	\$70.68
	09/01/2013	\$44.20	\$13.00	\$14.18	\$0.00	\$71.38
	03/01/2014	\$44.92	\$13.00	\$14.20	\$0.00	\$72.12
	09/01/2014	\$45.60	\$13.00	\$14.22	\$0.00	\$72.82
	03/01/2015	\$46.32	\$13.00	\$14.24	\$0.00	\$73.56
	09/01/2015	\$47.27	\$13.00	\$14.27	\$0.00	\$74.54
	03/01/2016	\$48.23	\$13.00	\$14.30	\$0.00	\$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2013	\$43.52	\$13.00	\$14.16	\$0.00	\$70.68
	09/01/2013	\$44.20	\$13.00	\$14.18	\$0.00	\$71.38
	03/01/2014	\$44.92	\$13.00	\$14.20	\$0.00	\$72.12
	09/01/2014	\$45.60	\$13.00	\$14.22	\$0.00	\$72.82
	03/01/2015	\$46.32	\$13.00	\$14.24	\$0.00	\$73.56
	09/01/2015	\$47.27	\$13.00	\$14.27	\$0.00	\$74.54
	03/01/2016	\$48.23	\$13.00	\$14.30	\$0.00	\$75.53

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 103

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.41	\$13.00	\$0.52	\$0.00	\$30.93
2	40	\$17.41	\$13.00	\$0.52	\$0.00	\$30.93
3	45	\$19.58	\$13.00	\$10.53	\$0.00	\$43.11
4	45	\$19.58	\$13.00	\$10.53	\$0.00	\$43.11
5	50	\$21.76	\$13.00	\$10.85	\$0.00	\$45.61
6	55	\$23.94	\$13.00	\$11.19	\$0.00	\$48.13
7	60	\$26.11	\$13.00	\$11.51	\$0.00	\$50.62
8	65	\$28.29	\$13.00	\$11.85	\$0.00	\$53.14
9	70	\$30.46	\$13.00	\$12.17	\$0.00	\$55.63
10	75	\$32.64	\$13.00	\$12.51	\$0.00	\$58.15

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.68	\$13.00	\$0.53	\$0.00	\$31.21
2	40	\$17.68	\$13.00	\$0.53	\$0.00	\$31.21
3	45	\$19.89	\$13.00	\$10.54	\$0.00	\$43.43
4	45	\$19.89	\$13.00	\$10.54	\$0.00	\$43.43
5	50	\$22.10	\$13.00	\$10.86	\$0.00	\$45.96
6	55	\$24.31	\$13.00	\$11.20	\$0.00	\$48.51
7	60	\$26.52	\$13.00	\$11.53	\$0.00	\$51.05
8	65	\$28.73	\$13.00	\$11.86	\$0.00	\$53.59
9	70	\$30.94	\$13.00	\$12.19	\$0.00	\$56.13
10	75	\$33.15	\$13.00	\$12.53	\$0.00	\$58.68

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

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2012	\$52.45	\$8.78	\$6.96	\$0.00	\$68.19
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Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.23	\$8.78	\$0.00	\$0.00	\$35.01
2	55	\$28.85	\$8.78	\$6.96	\$0.00	\$44.59
3	65	\$34.09	\$8.78	\$6.96	\$0.00	\$49.83
4	70	\$36.72	\$8.78	\$6.96	\$0.00	\$52.46
5	80	\$41.96	\$8.78	\$6.96	\$0.00	\$57.70

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

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2012	\$38.59	\$8.78	\$6.96	\$0.00	\$54.33
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2012	\$38.26	\$10.00	\$12.65	\$0.00	\$60.91
	05/01/2013	\$38.87	\$10.00	\$12.65	\$0.00	\$61.52
	11/01/2013	\$39.63	\$10.00	\$12.65	\$0.00	\$62.28
	05/01/2014	\$40.40	\$10.00	\$12.65	\$0.00	\$63.05
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2012	\$39.66	\$10.00	\$12.65	\$0.00	\$62.31
	05/01/2013	\$40.28	\$10.00	\$12.65	\$0.00	\$62.93
	11/01/2013	\$41.05	\$10.00	\$12.65	\$0.00	\$63.70
	05/01/2014	\$41.82	\$10.00	\$12.65	\$0.00	\$64.47
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2012	\$21.18	\$10.00	\$12.65	\$0.00	\$43.83
	05/01/2013	\$21.54	\$10.00	\$12.65	\$0.00	\$44.19
	11/01/2013	\$22.00	\$10.00	\$12.65	\$0.00	\$44.65
	05/01/2014	\$22.45	\$10.00	\$12.65	\$0.00	\$45.10
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2013	\$43.52	\$13.00	\$14.16	\$0.00	\$70.68
	09/01/2013	\$44.20	\$13.00	\$14.18	\$0.00	\$71.38
	03/01/2014	\$44.92	\$13.00	\$14.20	\$0.00	\$72.12
	09/01/2014	\$45.60	\$13.00	\$14.22	\$0.00	\$72.82
	03/01/2015	\$46.32	\$13.00	\$14.24	\$0.00	\$73.56
	09/01/2015	\$47.27	\$13.00	\$14.27	\$0.00	\$74.54
	03/01/2016	\$48.23	\$13.00	\$14.30	\$0.00	\$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS</i> <i>LOCAL 103</i>	03/01/2013	\$32.64	\$13.00	\$12.51	\$0.00	\$58.15
	09/01/2013	\$33.15	\$13.00	\$12.52	\$0.00	\$58.67
	03/01/2014	\$33.69	\$13.00	\$12.54	\$0.00	\$59.23
	09/01/2014	\$34.20	\$13.00	\$12.56	\$0.00	\$59.76
	03/01/2015	\$34.74	\$13.00	\$12.57	\$0.00	\$60.31
	09/01/2015	\$35.45	\$13.00	\$12.59	\$0.00	\$61.04
	03/01/2016	\$36.17	\$13.00	\$12.62	\$0.00	\$61.79
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$33.61	\$10.00	\$13.02	\$0.00	\$56.63
	06/01/2013	\$34.26	\$10.00	\$13.02	\$0.00	\$57.28
	12/01/2013	\$34.92	\$10.00	\$13.02	\$0.00	\$57.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 1</i>	12/01/2012	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	06/01/2013	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	12/01/2013	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	06/01/2014	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	12/01/2014	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	06/01/2015	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	12/01/2015	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	06/01/2016	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2013	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12
	09/01/2013	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12
	03/01/2014	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$40.09	\$10.00	\$13.02	\$0.00	\$63.11
	06/01/2013	\$40.87	\$10.00	\$13.02	\$0.00	\$63.89
	12/01/2013	\$41.65	\$10.00	\$13.02	\$0.00	\$64.67

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$28.17	\$10.00	\$13.02	\$0.00	\$51.19
	06/01/2013	\$28.72	\$10.00	\$13.02	\$0.00	\$51.74
	12/01/2013	\$29.27	\$10.00	\$13.02	\$0.00	\$52.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2013	\$35.51	\$7.80	\$14.60	\$0.00	\$57.91
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.76	\$7.80	\$0.00	\$0.00	\$25.56
2	55	\$19.53	\$7.80	\$3.25	\$0.00	\$30.58
3	60	\$21.31	\$7.80	\$3.54	\$0.00	\$32.65
4	65	\$23.08	\$7.80	\$3.84	\$0.00	\$34.72
5	70	\$24.86	\$7.80	\$12.83	\$0.00	\$45.49
6	75	\$26.63	\$7.80	\$13.13	\$0.00	\$47.56
7	80	\$28.41	\$7.80	\$13.42	\$0.00	\$49.63
8	90	\$31.96	\$7.80	\$14.01	\$0.00	\$53.77

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS	12/01/2012	\$40.09	\$10.00	\$13.02	\$0.00	\$63.11
OPERATING ENGINEERS LOCAL 4	06/01/2013	\$40.87	\$10.00	\$13.02	\$0.00	\$63.89
	12/01/2013	\$41.65	\$10.00	\$13.02	\$0.00	\$64.67

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.05	\$10.00	\$0.00	\$0.00	\$32.05
2	60	\$24.05	\$10.00	\$13.02	\$0.00	\$47.07
3	65	\$26.06	\$10.00	\$13.02	\$0.00	\$49.08
4	70	\$28.06	\$10.00	\$13.02	\$0.00	\$51.08
5	75	\$30.07	\$10.00	\$13.02	\$0.00	\$53.09
6	80	\$32.07	\$10.00	\$13.02	\$0.00	\$55.09
7	85	\$34.08	\$10.00	\$13.02	\$0.00	\$57.10
8	90	\$36.08	\$10.00	\$13.02	\$0.00	\$59.10

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.48	\$10.00	\$0.00	\$0.00	\$32.48
2	60	\$24.52	\$10.00	\$13.02	\$0.00	\$47.54
3	65	\$26.57	\$10.00	\$13.02	\$0.00	\$49.59
4	70	\$28.61	\$10.00	\$13.02	\$0.00	\$51.63
5	75	\$30.65	\$10.00	\$13.02	\$0.00	\$53.67
6	80	\$32.70	\$10.00	\$13.02	\$0.00	\$55.72
7	85	\$34.74	\$10.00	\$13.02	\$0.00	\$57.76
8	90	\$36.78	\$10.00	\$13.02	\$0.00	\$59.80

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2013	\$42.32	\$9.82	\$18.24	\$2.11	\$72.49
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2013	\$43.52	\$13.00	\$14.16	\$0.00	\$70.68
	09/01/2013	\$44.20	\$13.00	\$14.18	\$0.00	\$71.38
	03/01/2014	\$44.92	\$13.00	\$14.20	\$0.00	\$72.12
	09/01/2014	\$45.60	\$13.00	\$14.22	\$0.00	\$72.82
	03/01/2015	\$46.32	\$13.00	\$14.24	\$0.00	\$73.56
	09/01/2015	\$47.27	\$13.00	\$14.27	\$0.00	\$74.54
	03/01/2016	\$48.23	\$13.00	\$14.30	\$0.00	\$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2013	\$42.32	\$9.82	\$18.24	\$2.11	\$72.49
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) PIPEFITTERS LOCAL 537	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC PIPEFITTERS LOCAL 537	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS LABORERS - ZONE 1	12/01/2012	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	06/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	12/01/2013	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	06/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	12/01/2014	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	06/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	12/01/2015	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	06/01/2016	\$38.30	\$7.10	\$12.45	\$0.00	\$57.85
	12/01/2016	\$39.30	\$7.10	\$12.45	\$0.00	\$58.85

For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	09/01/2012	\$41.46	\$10.65	\$11.50	\$0.00	\$63.61
	09/01/2013	\$43.06	\$10.65	\$11.50	\$0.00	\$65.21
	09/01/2014	\$45.06	\$10.65	\$11.50	\$0.00	\$67.21

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

Effective Date - 09/01/2012						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.73	\$10.65	\$8.60	\$0.00	\$39.98
2	60	\$24.88	\$10.65	\$9.18	\$0.00	\$44.71
3	70	\$29.02	\$10.65	\$9.76	\$0.00	\$49.43
4	80	\$33.17	\$10.65	\$10.34	\$0.00	\$54.16

Effective Date - 09/01/2013						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.53	\$10.65	\$8.60	\$0.00	\$40.78
2	60	\$25.84	\$10.65	\$9.18	\$0.00	\$45.67
3	70	\$30.14	\$10.65	\$9.76	\$0.00	\$50.55
4	80	\$34.45	\$10.65	\$10.34	\$0.00	\$55.44

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7 (BOSTON AREA)	03/16/2013	\$40.23	\$7.70	\$18.35	\$0.00	\$66.28
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 03/16/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$24.14	\$7.70	\$18.35	\$0.00	\$50.19
2	70	\$28.16	\$7.70	\$18.35	\$0.00	\$54.21
3	75	\$30.17	\$7.70	\$18.35	\$0.00	\$56.22
4	80	\$32.18	\$7.70	\$18.35	\$0.00	\$58.23
5	85	\$34.20	\$7.70	\$18.35	\$0.00	\$60.25
6	90	\$36.21	\$7.70	\$18.35	\$0.00	\$62.26

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 1	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 1	12/01/2012	\$32.30	\$7.10	\$12.45	\$0.00	\$51.85
	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 1

Effective Date - 12/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.38	\$7.10	\$12.45	\$0.00	\$38.93
2	70	\$22.61	\$7.10	\$12.45	\$0.00	\$42.16
3	80	\$25.84	\$7.10	\$12.45	\$0.00	\$45.39
4	90	\$29.07	\$7.10	\$12.45	\$0.00	\$48.62

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.83	\$7.10	\$12.45	\$0.00	\$39.38
2	70	\$23.14	\$7.10	\$12.45	\$0.00	\$42.69
3	80	\$26.44	\$7.10	\$12.45	\$0.00	\$45.99
4	90	\$29.75	\$7.10	\$12.45	\$0.00	\$49.30

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER LABORERS - ZONE 1	12/01/2012	\$32.30	\$7.10	\$12.45	\$0.00	\$51.85
	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 1	12/01/2012	\$32.30	\$7.10	\$12.45	\$0.00	\$51.85
	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 1	12/01/2011	\$31.80	\$7.10	\$12.45	\$0.00	\$51.35
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For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.30	\$7.10	\$12.45	\$0.00	\$51.85
	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.30	\$7.10	\$12.45	\$0.00	\$51.85
	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10
This classification applies to the wholesale removal of standing trees including all associated trimming of branches and limbs, and applies to the removal of branches at locations not on or around utility lines. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2013	\$36.20	\$10.18	\$16.51	\$0.00	\$62.89
	08/01/2013	\$36.91	\$10.18	\$16.58	\$0.00	\$63.67
	02/01/2014	\$37.36	\$10.18	\$16.58	\$0.00	\$64.12
	08/01/2014	\$38.07	\$10.18	\$16.65	\$0.00	\$64.90
	02/01/2015	\$38.52	\$10.18	\$16.65	\$0.00	\$65.35
	08/01/2015	\$39.23	\$10.18	\$16.72	\$0.00	\$66.13
	02/01/2016	\$39.68	\$10.18	\$16.72	\$0.00	\$66.58
	08/01/2016	\$40.38	\$10.18	\$16.80	\$0.00	\$67.36
	02/01/2017	\$40.84	\$10.18	\$16.80	\$0.00	\$67.82

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

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.10	\$10.18	\$16.51	\$0.00	\$44.79
2	60	\$21.72	\$10.18	\$16.51	\$0.00	\$48.41
3	70	\$25.34	\$10.18	\$16.51	\$0.00	\$52.03
4	80	\$28.96	\$10.18	\$16.51	\$0.00	\$55.65
5	90	\$32.58	\$10.18	\$16.51	\$0.00	\$59.27

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.46	\$10.18	\$16.58	\$0.00	\$45.22
2	60	\$22.15	\$10.18	\$16.58	\$0.00	\$48.91
3	70	\$25.84	\$10.18	\$16.58	\$0.00	\$52.60
4	80	\$29.53	\$10.18	\$16.58	\$0.00	\$56.29
5	90	\$33.22	\$10.18	\$16.58	\$0.00	\$59.98

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2013	\$47.45	\$10.18	\$17.83	\$0.00	\$75.46
	08/01/2013	\$48.35	\$10.18	\$17.90	\$0.00	\$76.43
	02/01/2014	\$48.91	\$10.18	\$17.90	\$0.00	\$76.99
	08/01/2014	\$49.81	\$10.18	\$17.97	\$0.00	\$77.96
	02/01/2015	\$50.37	\$10.18	\$17.97	\$0.00	\$78.52
	08/01/2015	\$51.27	\$10.18	\$18.04	\$0.00	\$79.49
	02/01/2016	\$51.84	\$10.18	\$18.04	\$0.00	\$80.06
	08/01/2016	\$52.74	\$10.18	\$18.12	\$0.00	\$81.04
	02/01/2017	\$53.31	\$10.18	\$18.12	\$0.00	\$81.61

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.73	\$10.18	\$17.83	\$0.00	\$51.74
2	60	\$28.47	\$10.18	\$17.83	\$0.00	\$56.48
3	70	\$33.22	\$10.18	\$17.83	\$0.00	\$61.23
4	80	\$37.96	\$10.18	\$17.83	\$0.00	\$65.97
5	90	\$42.71	\$10.18	\$17.83	\$0.00	\$70.72

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.18	\$10.18	\$17.90	\$0.00	\$52.26
2	60	\$29.01	\$10.18	\$17.90	\$0.00	\$57.09
3	70	\$33.85	\$10.18	\$17.90	\$0.00	\$61.93
4	80	\$38.68	\$10.18	\$17.90	\$0.00	\$66.76
5	90	\$43.52	\$10.18	\$17.90	\$0.00	\$71.60

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	04/01/2011	\$33.57	\$8.67	\$15.61	\$0.00	\$57.85
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - MILLWRIGHT - Local 1121 Zone 1

Effective Date - 04/01/2011

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.79	\$8.67	\$11.64	\$0.00	\$37.10
2	55	\$18.46	\$8.67	\$11.64	\$0.00	\$38.77
3	60	\$20.14	\$8.67	\$13.23	\$0.00	\$42.04
4	65	\$21.82	\$8.67	\$13.23	\$0.00	\$43.72
5	70	\$23.50	\$8.67	\$14.02	\$0.00	\$46.19
6	75	\$25.18	\$8.67	\$14.02	\$0.00	\$47.87
7	80	\$26.86	\$8.67	\$14.82	\$0.00	\$50.35
8	85	\$28.53	\$8.67	\$14.82	\$0.00	\$52.02

Notes:

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER LABORERS - ZONE 1	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2012	\$21.28	\$10.00	\$13.02	\$0.00	\$44.30
	06/01/2013	\$21.70	\$10.00	\$13.02	\$0.00	\$44.72
	12/01/2013	\$22.12	\$10.00	\$13.02	\$0.00	\$45.14

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2012	\$24.62	\$10.00	\$13.02	\$0.00	\$47.64
	06/01/2013	\$25.10	\$10.00	\$13.02	\$0.00	\$48.12
	12/01/2013	\$25.59	\$10.00	\$13.02	\$0.00	\$48.61

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2013	\$45.01	\$7.80	\$15.60	\$0.00	\$68.41
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Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$7.80	\$0.00	\$0.00	\$30.31
2	55	\$24.76	\$7.80	\$3.52	\$0.00	\$36.08
3	60	\$27.01	\$7.80	\$3.84	\$0.00	\$38.65
4	65	\$29.26	\$7.80	\$4.16	\$0.00	\$41.22
5	70	\$31.51	\$7.80	\$13.68	\$0.00	\$52.99
6	75	\$33.76	\$7.80	\$14.00	\$0.00	\$55.56
7	80	\$36.01	\$7.80	\$14.32	\$0.00	\$58.13
8	90	\$40.51	\$7.80	\$14.96	\$0.00	\$63.27

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2013	\$35.91	\$7.80	\$15.60	\$0.00	\$59.31
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* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 2*

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

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.96	\$7.80	\$0.00	\$0.00	\$25.76
2	55	\$19.75	\$7.80	\$3.52	\$0.00	\$31.07
3	60	\$21.55	\$7.80	\$3.84	\$0.00	\$33.19
4	65	\$23.34	\$7.80	\$4.16	\$0.00	\$35.30
5	70	\$25.14	\$7.80	\$13.68	\$0.00	\$46.62
6	75	\$26.93	\$7.80	\$14.00	\$0.00	\$48.73
7	80	\$28.73	\$7.80	\$14.32	\$0.00	\$50.85
8	90	\$32.32	\$7.80	\$14.96	\$0.00	\$55.08

Notes:

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2013	\$33.97	\$7.80	\$15.60	\$0.00	\$57.37
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.99	\$7.80	\$0.00	\$0.00	\$24.79
2	55	\$18.68	\$7.80	\$3.52	\$0.00	\$30.00
3	60	\$20.38	\$7.80	\$3.84	\$0.00	\$32.02
4	65	\$22.08	\$7.80	\$4.16	\$0.00	\$34.04
5	70	\$23.78	\$7.80	\$13.68	\$0.00	\$45.26
6	75	\$25.48	\$7.80	\$14.00	\$0.00	\$47.28
7	80	\$27.18	\$7.80	\$14.32	\$0.00	\$49.30
8	90	\$30.57	\$7.80	\$14.96	\$0.00	\$53.33

Notes:

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) LABORERS - ZONE 1	12/01/2012	\$32.30	\$7.10	\$12.45	\$0.00	\$51.85
	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	01/01/2013	\$34.51	\$7.80	\$15.60	\$0.00	\$57.91
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* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.26	\$7.80	\$0.00	\$0.00	\$25.06
2	55	\$18.98	\$7.80	\$3.52	\$0.00	\$30.30
3	60	\$20.71	\$7.80	\$3.84	\$0.00	\$32.35
4	65	\$22.43	\$7.80	\$4.16	\$0.00	\$34.39
5	70	\$24.16	\$7.80	\$13.68	\$0.00	\$45.64
6	75	\$25.88	\$7.80	\$14.00	\$0.00	\$47.68
7	80	\$27.61	\$7.80	\$14.32	\$0.00	\$49.73
8	90	\$31.06	\$7.80	\$14.96	\$0.00	\$53.82

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2013	\$32.57	\$7.80	\$15.60	\$0.00	\$55.97
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Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.29	\$7.80	\$0.00	\$0.00	\$24.09
2	55	\$17.91	\$7.80	\$3.52	\$0.00	\$29.23
3	60	\$19.54	\$7.80	\$3.84	\$0.00	\$31.18
4	65	\$21.17	\$7.80	\$4.16	\$0.00	\$33.13
5	70	\$22.80	\$7.80	\$13.68	\$0.00	\$44.28
6	75	\$24.43	\$7.80	\$14.00	\$0.00	\$46.23
7	80	\$26.06	\$7.80	\$14.32	\$0.00	\$48.18
8	90	\$29.31	\$7.80	\$14.96	\$0.00	\$52.07

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.38	\$8.91	\$8.00	\$0.00	\$48.29
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$39.20	\$9.80	\$17.67	\$0.00	\$66.67
	08/01/2013	\$40.70	\$9.80	\$17.67	\$0.00	\$68.17
	08/01/2014	\$42.20	\$9.80	\$17.67	\$0.00	\$69.67
	08/01/2015	\$43.70	\$9.80	\$17.67	\$0.00	\$71.17

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2012	\$39.20	\$9.80	\$17.67	\$0.00	\$66.67
	08/01/2013	\$40.70	\$9.80	\$17.67	\$0.00	\$68.17
	08/01/2014	\$42.20	\$9.80	\$17.67	\$0.00	\$69.67
	08/01/2015	\$43.70	\$9.80	\$17.67	\$0.00	\$71.17

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.60	\$9.80	\$17.67	\$0.00	\$47.07
2	60	\$23.52	\$9.80	\$17.67	\$0.00	\$50.99
3	70	\$27.44	\$9.80	\$17.67	\$0.00	\$54.91
4	75	\$29.40	\$9.80	\$17.67	\$0.00	\$56.87
5	80	\$31.36	\$9.80	\$17.67	\$0.00	\$58.83
6	80	\$31.36	\$9.80	\$17.67	\$0.00	\$58.83
7	90	\$35.28	\$9.80	\$17.67	\$0.00	\$62.75
8	90	\$35.28	\$9.80	\$17.67	\$0.00	\$62.75

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.35	\$9.80	\$17.67	\$0.00	\$47.82
2	60	\$24.42	\$9.80	\$17.67	\$0.00	\$51.89
3	70	\$28.49	\$9.80	\$17.67	\$0.00	\$55.96
4	75	\$30.53	\$9.80	\$17.67	\$0.00	\$58.00
5	80	\$32.56	\$9.80	\$17.67	\$0.00	\$60.03
6	80	\$32.56	\$9.80	\$17.67	\$0.00	\$60.03
7	90	\$36.63	\$9.80	\$17.67	\$0.00	\$64.10
8	90	\$36.63	\$9.80	\$17.67	\$0.00	\$64.10

Notes:

Apprentice to Journeyworker Ratio:1:3

PIPEFITTER & STEAMFITTER <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PIPEFITTER - Local 537

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.74	\$8.75	\$6.50	\$0.00	\$34.99
2	45	\$22.20	\$8.75	\$14.39	\$0.00	\$45.34
3	60	\$29.60	\$8.75	\$14.39	\$0.00	\$52.74
4	70	\$34.54	\$8.75	\$14.39	\$0.00	\$57.68
5	80	\$39.47	\$8.75	\$14.39	\$0.00	\$62.61

Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

PIPELAYER LABORERS - ZONE 1	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS PLUMBERS & GASFITTERS LOCAL 12	03/01/2013	\$49.31	\$9.32	\$13.29	\$0.00	\$71.92
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Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.26	\$9.32	\$4.97	\$0.00	\$31.55
2	40	\$19.72	\$9.32	\$5.61	\$0.00	\$34.65
3	55	\$27.12	\$9.32	\$7.53	\$0.00	\$43.97
4	65	\$32.05	\$9.32	\$8.81	\$0.00	\$50.18
5	75	\$36.98	\$9.32	\$10.09	\$0.00	\$56.39

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$53.29 Step5 with lic\$59.49

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) PIPEFITTERS LOCAL 537	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
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For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 1</i>	12/01/2012	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	06/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	12/01/2013	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	06/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	12/01/2014	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	06/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	12/01/2015	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	06/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10
	12/01/2016	\$39.55	\$7.10	\$12.45	\$0.00	\$59.10
For apprentice rates see "Apprentice- LABORER"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$40.09	\$10.00	\$13.02	\$0.00	\$63.11
	06/01/2013	\$40.87	\$10.00	\$13.02	\$0.00	\$63.89
	12/01/2013	\$41.65	\$10.00	\$13.02	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$40.09	\$10.00	\$13.02	\$0.00	\$63.11
	06/01/2013	\$40.87	\$10.00	\$13.02	\$0.00	\$63.89
	12/01/2013	\$41.65	\$10.00	\$13.02	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$28.17	\$10.00	\$13.02	\$0.00	\$51.19
	06/01/2013	\$28.72	\$10.00	\$13.02	\$0.00	\$51.74
	12/01/2013	\$29.27	\$10.00	\$13.02	\$0.00	\$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 25c</i>	05/01/2011	\$31.21	\$7.25	\$6.19	\$0.00	\$44.65
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	04/01/2011	\$24.24	\$8.67	\$15.51	\$0.00	\$48.42
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 2 (Residential Wood)</i> 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	\$24.24	\$6.34	\$6.23	\$0.00	\$36.81

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Inc.Roofing Waterproofing &Roofing Damproofing) <i>ROOFERS LOCAL 33</i>	02/01/2013	\$37.41	\$10.50	\$10.70	\$0.00	\$58.61
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Apprentice - ROOFER - Local 33

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.71	\$10.50	\$3.38	\$0.00	\$32.59
2	60	\$22.45	\$10.50	\$10.70	\$0.00	\$43.65
3	65	\$24.32	\$10.50	\$10.70	\$0.00	\$45.52
4	75	\$28.06	\$10.50	\$10.70	\$0.00	\$49.26
5	85	\$31.80	\$10.50	\$10.70	\$0.00	\$53.00

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 <i>ROOFERS LOCAL 33</i>	02/01/2013	\$37.66	\$10.50	\$10.70	\$0.00	\$58.86
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For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2013	\$42.32	\$9.82	\$18.24	\$2.11	\$72.49
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.93	\$9.82	\$4.00	\$0.00	\$30.75
2	40	\$16.93	\$9.82	\$4.00	\$0.00	\$30.75
3	45	\$19.04	\$9.82	\$8.00	\$1.11	\$37.97
4	45	\$19.04	\$9.82	\$8.00	\$1.11	\$37.97
5	50	\$21.16	\$9.82	\$8.75	\$1.19	\$40.92
6	50	\$21.16	\$9.82	\$9.00	\$1.20	\$41.18
7	60	\$25.39	\$9.82	\$10.24	\$1.36	\$46.81
8	65	\$27.51	\$9.82	\$10.99	\$1.45	\$49.77
9	75	\$31.74	\$9.82	\$12.49	\$1.62	\$55.67
10	85	\$35.97	\$9.82	\$13.49	\$1.78	\$61.06

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SIGN ERECTOR	06/01/2012	\$25.37	\$6.82	\$6.85	\$0.00	\$39.04
PAINTERS LOCAL 35 - ZONE 2	06/01/2013	\$25.81	\$7.07	\$7.05	\$0.00	\$39.93

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SIGN ERECTOR - Local 35 Zone 2

Effective Date - 06/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$12.69	\$6.82	\$0.00	\$0.00	\$19.51
2	55	\$13.95	\$6.82	\$2.35	\$0.00	\$23.12
3	60	\$15.22	\$6.82	\$2.35	\$0.00	\$24.39
4	65	\$16.49	\$6.82	\$2.35	\$0.00	\$25.66
5	70	\$17.76	\$6.82	\$6.85	\$0.00	\$31.43
6	75	\$19.03	\$6.82	\$6.85	\$0.00	\$32.70
7	80	\$20.30	\$6.82	\$6.85	\$0.00	\$33.97
8	85	\$21.56	\$6.82	\$6.85	\$0.00	\$35.23
9	90	\$22.83	\$6.82	\$6.85	\$0.00	\$36.50

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>	12/01/2012	\$31.84	\$8.91	\$8.00	\$0.00	\$48.75
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$32.13	\$8.91	\$8.00	\$0.00	\$49.04
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A)</i>	03/01/2013	\$52.58	\$8.42	\$12.60	\$0.00	\$73.60

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SPRINKLER FITTER - Local 550

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$18.40	\$8.42	\$8.00	\$0.00	\$34.82
2	40	\$21.03	\$8.42	\$8.00	\$0.00	\$37.45
3	45	\$23.66	\$8.42	\$8.00	\$0.00	\$40.08
4	50	\$26.29	\$8.42	\$8.00	\$0.00	\$42.71
5	55	\$28.92	\$8.42	\$8.00	\$0.00	\$45.34
6	60	\$31.55	\$8.42	\$8.00	\$0.00	\$47.97
7	65	\$34.18	\$8.42	\$8.00	\$0.00	\$50.60
8	70	\$36.81	\$8.42	\$8.00	\$0.00	\$53.23
9	75	\$39.44	\$8.42	\$8.00	\$0.00	\$55.86
10	80	\$42.06	\$8.42	\$8.00	\$0.00	\$58.48

Notes:
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:1

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2013	\$32.64	\$13.00	\$12.51	\$0.00	\$58.15
	09/01/2013	\$33.15	\$13.00	\$12.52	\$0.00	\$58.67
	03/01/2014	\$33.69	\$13.00	\$12.54	\$0.00	\$59.23
	09/01/2014	\$34.20	\$13.00	\$12.56	\$0.00	\$59.76
	03/01/2015	\$34.74	\$13.00	\$12.57	\$0.00	\$60.31
	09/01/2015	\$35.45	\$13.00	\$12.59	\$0.00	\$61.04
	03/01/2016	\$36.17	\$13.00	\$12.62	\$0.00	\$61.79

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.06	\$13.00	\$0.39	\$0.00	\$26.45
2	40	\$13.06	\$13.00	\$0.39	\$0.00	\$26.45
3	45	\$14.69	\$13.00	\$10.77	\$0.00	\$38.46
4	45	\$14.69	\$13.00	\$10.77	\$0.00	\$38.46
5	50	\$16.32	\$13.00	\$11.02	\$0.00	\$40.34
6	55	\$17.95	\$13.00	\$11.27	\$0.00	\$42.22
7	60	\$19.58	\$13.00	\$11.52	\$0.00	\$44.10
8	65	\$21.22	\$13.00	\$11.77	\$0.00	\$45.99
9	70	\$22.85	\$13.00	\$12.02	\$0.00	\$47.87
10	75	\$24.48	\$13.00	\$12.26	\$0.00	\$49.74

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.26	\$13.00	\$0.40	\$0.00	\$26.66
2	40	\$13.26	\$13.00	\$0.40	\$0.00	\$26.66
3	45	\$14.92	\$13.00	\$9.79	\$0.00	\$37.71
4	45	\$14.92	\$13.00	\$9.79	\$0.00	\$37.71
5	50	\$16.58	\$13.00	\$10.04	\$0.00	\$39.62
6	55	\$18.23	\$13.00	\$10.29	\$0.00	\$41.52
7	60	\$19.89	\$13.00	\$10.54	\$0.00	\$43.43
8	65	\$21.55	\$13.00	\$10.79	\$0.00	\$45.34
9	70	\$23.21	\$13.00	\$11.04	\$0.00	\$47.25
10	75	\$24.86	\$13.00	\$11.29	\$0.00	\$49.15

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	02/01/2013	\$46.35	\$10.18	\$17.83	\$0.00	\$74.36
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2013	\$47.25	\$10.18	\$17.90	\$0.00	\$75.33
	02/01/2014	\$47.81	\$10.18	\$17.90	\$0.00	\$75.89
	08/01/2014	\$48.71	\$10.18	\$17.97	\$0.00	\$76.86
	02/01/2015	\$49.27	\$10.18	\$17.97	\$0.00	\$77.42
	08/01/2015	\$50.17	\$10.18	\$18.04	\$0.00	\$78.39
	02/01/2016	\$50.74	\$10.18	\$18.04	\$0.00	\$78.96
	08/01/2016	\$51.64	\$10.18	\$18.12	\$0.00	\$79.94
	02/01/2017	\$52.21	\$10.18	\$18.12	\$0.00	\$80.51

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.18	\$10.18	\$17.83	\$0.00	\$51.19
2	60	\$27.81	\$10.18	\$17.83	\$0.00	\$55.82
3	70	\$32.45	\$10.18	\$17.83	\$0.00	\$60.46
4	80	\$37.08	\$10.18	\$17.83	\$0.00	\$65.09
5	90	\$41.72	\$10.18	\$17.83	\$0.00	\$69.73

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.63	\$10.18	\$17.90	\$0.00	\$51.71
2	60	\$28.35	\$10.18	\$17.90	\$0.00	\$56.43
3	70	\$33.08	\$10.18	\$17.90	\$0.00	\$61.16
4	80	\$37.80	\$10.18	\$17.90	\$0.00	\$65.88
5	90	\$42.53	\$10.18	\$17.90	\$0.00	\$70.61

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER LABORERS - FOUNDATION AND MARINE	12/01/2012	\$33.70	\$7.10	\$12.60	\$0.00	\$53.40
	06/01/2013	\$34.45	\$7.10	\$12.60	\$0.00	\$54.15
	12/01/2013	\$35.20	\$7.10	\$12.60	\$0.00	\$54.90
	06/01/2014	\$35.95	\$7.10	\$12.60	\$0.00	\$55.65
	12/01/2014	\$36.70	\$7.10	\$12.60	\$0.00	\$56.40
	06/01/2015	\$37.45	\$7.10	\$12.60	\$0.00	\$57.15
	12/01/2015	\$38.20	\$7.10	\$12.60	\$0.00	\$57.90
	06/01/2016	\$38.95	\$7.10	\$12.60	\$0.00	\$58.65
	12/01/2016	\$39.95	\$7.10	\$12.60	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER LABORERS - FOUNDATION AND MARINE	12/01/2012	\$32.42	\$7.10	\$12.60	\$0.00	\$52.12
	06/01/2013	\$33.17	\$7.10	\$12.60	\$0.00	\$52.87
	12/01/2013	\$33.92	\$7.10	\$12.60	\$0.00	\$53.62
	06/01/2014	\$34.67	\$7.10	\$12.60	\$0.00	\$54.37
	12/01/2014	\$35.42	\$7.10	\$12.60	\$0.00	\$55.12
	06/01/2015	\$36.17	\$7.10	\$12.60	\$0.00	\$55.87
	12/01/2015	\$36.92	\$7.10	\$12.60	\$0.00	\$56.62
	06/01/2016	\$37.67	\$7.10	\$12.60	\$0.00	\$57.37
	12/01/2016	\$38.67	\$7.10	\$12.60	\$0.00	\$58.37

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2012	\$32.30	\$7.10	\$12.60	\$0.00	\$52.00
	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$39.72	\$10.00	\$13.02	\$0.00	\$62.74
	06/01/2013	\$40.49	\$10.00	\$13.02	\$0.00	\$63.51
	12/01/2013	\$41.27	\$10.00	\$13.02	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$32.42	\$9.07	\$8.00	\$0.00	\$49.49
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2012	\$44.58	\$7.10	\$13.00	\$0.00	\$64.68
	06/01/2013	\$45.33	\$7.10	\$13.00	\$0.00	\$65.43
	12/01/2013	\$46.08	\$7.10	\$13.00	\$0.00	\$66.18
	06/01/2014	\$46.83	\$7.10	\$13.00	\$0.00	\$66.93
	12/01/2014	\$47.58	\$7.10	\$13.00	\$0.00	\$67.68
	06/01/2015	\$48.33	\$7.10	\$13.00	\$0.00	\$68.43
	12/01/2015	\$49.08	\$7.10	\$13.00	\$0.00	\$69.18
	06/01/2016	\$49.83	\$7.10	\$13.00	\$0.00	\$69.93
	12/01/2016	\$50.83	\$7.10	\$13.00	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2012	\$46.58	\$7.10	\$13.00	\$0.00	\$66.68
	06/01/2013	\$47.33	\$7.10	\$13.00	\$0.00	\$67.43
	12/01/2013	\$48.08	\$7.10	\$13.00	\$0.00	\$68.18
	06/01/2014	\$48.83	\$7.10	\$13.00	\$0.00	\$68.93
	12/01/2014	\$49.58	\$7.10	\$13.00	\$0.00	\$69.68
	06/01/2015	\$50.33	\$7.10	\$13.00	\$0.00	\$70.43
	12/01/2015	\$51.08	\$7.10	\$13.00	\$0.00	\$71.18
	06/01/2016	\$51.83	\$7.10	\$13.00	\$0.00	\$71.93
	12/01/2016	\$52.83	\$7.10	\$13.00	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2012	\$36.65	\$7.10	\$13.00	\$0.00	\$56.75
	06/01/2013	\$37.40	\$7.10	\$13.00	\$0.00	\$57.50
	12/01/2013	\$38.15	\$7.10	\$13.00	\$0.00	\$58.25
	06/01/2014	\$38.90	\$7.10	\$13.00	\$0.00	\$59.00
	12/01/2014	\$39.65	\$7.10	\$13.00	\$0.00	\$59.75
	06/01/2015	\$40.40	\$7.10	\$13.00	\$0.00	\$60.50
	12/01/2015	\$41.15	\$7.10	\$13.00	\$0.00	\$61.25
	06/01/2016	\$41.90	\$7.10	\$13.00	\$0.00	\$62.00
	12/01/2016	\$42.90	\$7.10	\$13.00	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2012	\$38.65	\$7.10	\$13.00	\$0.00	\$58.75
	06/01/2013	\$39.40	\$7.10	\$13.00	\$0.00	\$59.50
	12/01/2013	\$40.15	\$7.10	\$13.00	\$0.00	\$60.25
	06/01/2014	\$40.90	\$7.10	\$13.00	\$0.00	\$61.00
	12/01/2014	\$41.65	\$7.10	\$13.00	\$0.00	\$61.75
	06/01/2015	\$42.40	\$7.10	\$13.00	\$0.00	\$62.50
	12/01/2015	\$43.15	\$7.10	\$13.00	\$0.00	\$63.25
	06/01/2016	\$43.90	\$7.10	\$13.00	\$0.00	\$64.00
	12/01/2016	\$44.90	\$7.10	\$13.00	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.84	\$8.91	\$8.00	\$0.00	\$48.75
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2012	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2012	\$40.09	\$10.00	\$13.02	\$0.00	\$63.11
	06/01/2013	\$40.87	\$10.00	\$13.02	\$0.00	\$63.89
	12/01/2013	\$41.65	\$10.00	\$13.02	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	03/01/2013	\$49.31	\$9.32	\$13.29	\$0.00	\$71.92
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$25.18	\$8.20	\$4.17	\$0.00	\$37.55
	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>	03/03/2013	\$35.67	\$8.20	\$4.98	\$0.00	\$48.85
	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>	03/03/2013	\$29.38	\$8.20	\$5.68	\$0.00	\$43.26
	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>	03/03/2013	\$23.08	\$8.20	\$3.94	\$0.00	\$35.22
	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>	03/03/2013	\$35.67	\$8.20	\$8.98	\$0.00	\$52.85
	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>	03/03/2013	\$31.48	\$8.20	\$6.19	\$0.00	\$45.87
	09/01/2013	\$32.08	\$8.70	\$6.59	\$0.00	\$47.37
For apprentice rates see "Apprentice- LINEMAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	03/03/2013	\$23.08	\$8.20	\$3.42	\$0.00	\$34.70
	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>	03/03/2013	\$18.89	\$8.20	\$2.61	\$0.00	\$29.70
	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>	03/03/2013	\$41.97	\$8.20	\$11.26	\$0.00	\$61.43
	09/01/2013	\$42.77	\$8.70	\$11.78	\$0.00	\$63.25

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 03/03/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.18	\$8.20	\$3.92	\$0.00	\$37.30
2	65	\$27.28	\$8.20	\$4.36	\$0.00	\$39.84
3	70	\$29.38	\$8.20	\$5.06	\$0.00	\$42.64
4	75	\$31.48	\$8.20	\$5.76	\$0.00	\$45.44
5	80	\$33.58	\$8.20	\$6.46	\$0.00	\$48.24
6	85	\$35.67	\$8.20	\$7.17	\$0.00	\$51.04
7	90	\$37.77	\$8.20	\$8.36	\$0.00	\$54.33

Effective Date - 09/01/2013

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

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$26.33	\$4.18	\$2.79	\$0.00	\$33.30
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/01/2009	\$16.59	\$2.42	\$0.00	\$0.00	\$19.01
This classification applies only to the trimming of branches on and around utility lines.						
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/01/2009	\$14.64	\$2.42	\$0.00	\$0.00	\$17.06
This classification applies only to the trimming of branches on and around utility lines.						

Additional Apprentices Information:

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

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

All steps are six months (1000 hours) unless otherwise specified.

- * Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.
- ** Multiple ratios are listed in the comment field.
- *** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
- **** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

BY-LAWS OF THE TOWN OF ARLINGTON
TITLE 1
ARTICLE 16: CONSTRUCTION PROJECTS

ART. 15 , A.T.M. 4/22/96

Section 1. Women Work Force Participation

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

ART. 17, A.T.M. 4/28/99

A. The contractor shall maintain as a goal on this project a not less than five percent ratio of women work force to total project hours in both the general contract and individual filed sub-bid contract, if applicable. The preceding sentence shall be included in all construction contracts whether entered into the Town pursuant to the provisions of M.G.L. c.149 or M.G.L. c.30 §.39M, et seq., provided however, that if entered into under Chapter 30 same shall not be deemed to apply where the projected bid price as determined by the Director of Public Works is not likely to exceed \$200,000.

B. A Labor Scheduling Table which will be used as a tool for achieving a range of women work force participation for the entire project in both the general contract and each individual filed sub-bid contract.

Section 2. Equal Opportunity Goal Compliance

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

ART. 16 A.T.M. 4/24/96; ART. 17, A.T.M. 4/28/99

A. Before starting work, the contractors (includes general contractor, for itself and its subcontractors, as well as all filed sub-bid contractors, if applicable) will submit plans for achievement of the equal opportunity goals of the contract. All contractors will be required to make a good faith effort to achieve these goals. The plan will indicate if the contractors expect to achieve the requirements during the first quarter. If there are reasons why the contractors do not expect to achieve the requirements during the first quarter year of the contract construction phase, then the contractors shall provide a plan calculated to address, to the extent reasonably possible, these obstacles to a good faith effort to achieve such goals.

B. Not more than ten days following the end of each work quarter, the contractors will report on the achievement of the goals, detailing the good faith efforts that have been made and will continue to be made and any other appropriate efforts not yet undertaken.

C. All reports will be signed by an officer or principal of the company who has the authority to contractually obligate the company.

Section 3. Recruitment and Training

ART. 53 ATM 5/19/97

Any board, officer, committee, or other agency of the Town, which acts on behalf of the Town in making or supervising any contract, in an amount exceeding the sum of \$100,000 for the purchase of goods or services or for the construction, renovation, or repair of buildings or other improvement of real estate, may make arrangements with contractors and other interested agencies for special programs of recruitment and training in connection with the work to be performed on such contract, with the objective of promoting equal employment opportunity for members of minority groups protected by the fair employment

laws of the Commonwealth and the United States. Any board, officer, committee or other Town agency may expend Town funds in carrying them out provided that appropriations specifically designed for such purposes have been voted by the Town Meeting.
ART. 32, ATM 5/14/03

Section 4. LEED

It is the intent of the Town to reduce the life-cycle operating costs and increase the environmental efficiency of Town buildings, by adopting the goal that all construction of new Town buildings and major renovations and additions to existing Town buildings meet or exceed a Silver Certification based on the most current criteria of the Leadership in Energy and Environmental Design (LEED) Green Building Rating System promulgated by the United States Green Building Council, or comparable scoring system. The Town shall include a minimum of LEED Silver Certification, or equivalent level in comparable building scoring system, as a required element in requests for proposal or bids it issues soliciting architectural design services for construction, major renovation, and addition to its buildings, unless the Permanent Town Building Committee makes the finding that such certification is not in keeping with the use or purpose of the building or is otherwise inappropriate. No building project shall be deemed complete until LEED Silver Certification or greater, or equivalent, has been confirmed, unless the PTBC makes the finding that such certification is not in keeping with the use or purpose of the building or is otherwise inappropriate.
ART. 18, ATM 4/00, ART. 32 ATM 5/14/03

http://www.town.arlington.ma.us/Public_Documents/ArlingtonMA_TownBylaws/title1#article16

END OF SECTION

INSURANCE REQUIREMENTS

1. GENERAL

A. This section specifies the Owner's requirements for insurance and relates to the General Conditions of the Contract for Construction and Supplementary Conditions of the Contract for Construction.

B. Provisions of the General Conditions of the Contract for Construction and Supplementary General Conditions of the Contract for Construction, which are not modified by the following insurance Requirements, remain in full effect.

2. INSURANCE REQUIREMENTS

A. Insurance Limits: The insurance required should be written for not less than the limits of liability required by law or the following limits, whichever is greater: State and federal Workmen's Compensation Statutory Benefits required by union contract as required.

GENERAL LIABILITY*

General Liability- Bodily Injury and Property Damage Each Occurrence	\$1,000,000.00
General Liability — Bodily Injury and Property Damage Aggregate	\$2,000,000.00

General Liability shall include coverage for the following:

- Comprehensive form
- Premise/Operations Liability
- Explosion, Collapse and Underground (XCU).
- Products/Completed Operations (aggregate limit \$2,000,000.00)
- Contractual Liability
- Independent Contractors
- Broad Form Property Damage
- Personal Injury Including Libel and Slander Coverage
- Broad Form CGL Endorsement

AUTOMOBILE LIABILITY**

Comp. Automobile Liability** Bodily Injury and Property Damage Per Accident	\$1,000,000.00
-----------------------------------------------------------------------------	----------------

**Provide coverage for All Owned, Non—Owned, and Hired vehicles.

EXCESS LIABILITY — Umbrella Form

Each occurrence	\$5,000,000.00
Aggregate	\$5,000,000.00

B. Exclusions: The Owner's property insurance shall not cover tools, equipment, shoring, staging, forms, temporary buildings or other equipment owned or rented by the Contractor, its Subcontractors, or any Worker.

C. Named Insured: Each Insurance policy certificate of insurance provided by the Contractor shall name the Town of Arlington as an additional insured. Each insurance policy and certificate of insurance provided by the Contractor shall contain a provision that the Owner shall be notified of cancellation or restrictive amendment at least thirty (30) days prior to the effective date of such cancellation or amendment.

D. Insurance Certificates: Submit insurance certificates for the Owner's review and approval prior to commencement of the work. The Contractor and all subcontractors who are required to provide insurance under the Contract shall provide accurate and bona fide "Certificates of insurance "issued by a responsible agent of the insurance company.

1. Certificate Content: Such "Certificates of Insurance" shall clearly indicate the insurance coverage. Each "Certificate of Insurance" shall be accompanied by a sworn and duly notarized statement from the responsible agent of the insurance company issuing the certificate clearly stating that all insurance specified and required by the Contract Documents is provided and in force, and also a clear statement of all exceptions and deviations, if any, from the Contract Document issuance requirements.

2. Responsibility: The insurance agent issuing and authorizing the "Certificate of Insurance" shall be responsible and liable for the accuracy and validity of the "Certificate of Insurance". Each insured party shall certify by sworn and duly notarized statement that the "Certificate of Insurance" issued for them are bona fide.

3. Disclaimers Prohibited: "Certificates of Insurance" shall not contain any disclaimers such as: "This Certificate is issued as a matter of information only and confers no right upon the certificate holder. This Certificate does not amend, extend, or alter the coverage afforded by the policies listed below." Disclaimers are not acceptable.

4. Certificates of Insurance Can Be Relied Upon: Parties receiving "Certificates of insurance" shall be entitled to rely upon the "Certificates of insurance" and shall have the right to claim the benefits and protection provided by the insurance as it applies to them.

5. Alternate to "Certificates of Insurance": Instead of providing the "Certificates of Insurance" and the sworn statements required above, the insured may provide bona fide and accurate copies of all insurance policies and riders accompanied by a sworn and duly notarized statement from the insured that the policies, riders, and documents submitted are bona fide and valid, and that parties receiving the insurance documents may rely on the documents as satisfaction of the Contract insurance requirements.

E. The Contractor shall provide "builder's risk" insurance as described in the General Conditions of the Contract for Construction and with limits equal to the full insurable completed value of the building under construction. The "Builder's Risk" insurance shall include "all risk" insurance for physical loss and damage including theft, vandalism, and malicious mischief. The "Builder's Risk" insurance shall be amended to delete any and all endorsements relating to cancellation of the policy due to partial occupancy by the Owner.

1. Builder's Risk Deductible Amount: \$1,000,000.00

END OF SECTION

01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including the conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. The Contractor shall carefully examine all the Contract Documents for requirements that affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specification sections and other Contract Documents.

1.2 DESCRIPTION OF WORK

- A. Definition: The work of the Contract can be summarized through reference of the Contract Documents. Work under this Contract includes coordination of all the work of the Contract Documents.
 - 1. In general, the project consists of renovation of existing playground area and creation of new playground. Bidders shall include all labor, equipment and materials to complete all work described in the Drawings and Specifications including installation of specific play equipment and surfacing materials. The project includes site preparation; drainage improvements; construction of play areas (play structures , zipline, swings and surfacing); fencing; pavement & curb installation; installation of park amenities; lawn seeding; tree installation; pruning existing trees and miscellaneous repairs and improvements indicated in the Drawings and Specifications.
- B. Schedule: Scheduling of all work under these Contract Documents should abide by local ordinances or requirements established by the Commonwealth.
 - 1. Hours of work: Monday through Friday, 7:30 A.M. to 5:00 P.M.
 - 2. Work for the project may start on or about June 24 , 2013 and must be Substantially Complete by September 12, 2013 with Final Completion by September 20, 2013 except turfgrass & planting maintenance. Refer to Section 32 90 00 for planting maintenance and 32 92 00 for turfgrass maintenance requirements.
- C. Tax Exemption: The Owner is exempt from payment of sales tax on materials and products permanently incorporated into the work under the Contract. Provide the Owner's tax exemption certificate number on all invoices and provide two copies of each invoice to the Owner for record.

END OF SECTION

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01 23 00 ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including the conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. The Contractor shall carefully examine all the Contract Documents for requirements that affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specification sections and other Contract Documents.

1.2 SUMMARY

- A. The Schedule of Alternates included in this Section lists all the Alternates that appear in the Contract Documents, and the Specification Sections which are affected by each Alternate.
- B. For each of the Alternates scheduled at the end of this Section, bidders shall state the amount in the proposal to be added to or deducted from the Contract Sum for the work.
- C. Consult the individual Specification Sections and the Drawings for detailed requirements of each Alternate.

1.3 GENERAL INSTRUCTIONS

- A. Each Bidder shall be held fully responsible for examining the scope of the Alternates generally defined herein and for recognizing any modifications to his work caused by any Alternate.
- B. The Bid Alternate Price shall be complete cost, including overhead, profit, bonds, insurance, transportation, and all other costs connected with, or incidental to, the work described.
- C. Alternates listed below in the Schedule of Alternates are listed in order. The Contract will be awarded on the basis of the Base Bid only, or the Base Bid plus any number of Alternates strictly added in order.

1.4 ALTERNATES

- A. Definition: "Alternates" are alternate products, materials, equipment, systems, methods, units of work, or major elements of the construction, which may, at the Authority's option and under the terms established by the Contract or Agreement, be selected for the work in lieu of the corresponding requirements of the Contract Documents or in addition to the work of the Base Bid as noted.
- B. Alternate Requirements: A Schedule of Alternates is included at the end of this Section. Each Alternate is defined using abbreviated language, recognizing that the Contract Documents define the requirements. Coordinate related work to ensure

that work affected by each Alternate is complete and properly interfaced with work of each selected Alternate.

- C. Provide written proposals for each Alternate on the Bid Form for the Authority's consideration. Each proposal amount shall include the entire cost of the Alternate portion of the work, including overhead, profit, and other costs including cost of interfacing and coordinating the Alternate with related and adjacent work.

1.5 SCHEDULE OF ALTERNATES

- A. Alternate No. 1– Splash Pad
 - 1. Work:
 - a. ADD the splash pad, water cabinet, water lines, and all associated plumbing including back flow preventer.
 - 2. Refer to the following Specification sections for the work of Alternate No. 1
 - a. Section 11 68 00, Play Equipment and Structures
 - b. Section 33 00 00, Utilities
- B. Alternate No. 2– Replace Chain Link Fence of Backstop.
 - 1. Work:
 - a. ADD the removal of the existing chain link fabric on the back stop.
 - b. ADD the installation of the chain link fabric to the back stop.
 - 2. Refer to the following Specification Sections for the work of Alternate No. 2:
 - a. Section 02 41 00, Demolition and Removals;
 - b. Section 32 31 10, Fencing
- C. Alternate No. 3 – Tubular Steel Fence and Double Gate
 - 1. Work:
 - a. ADD Tubular Steel Fence and Double Gate per Drawings L2.0, and L5.1.
 - b. DEDUCT the chain link fence and double gate replaced by the Tubular Steel Fence and Double Gate.
 - 2. Refer to the following Specification sections for the work of Alternate No. 3:
 - a. Section 32 31 10, Fencing.

END OF SECTION

01 33 00 SUBMITTALS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The work to be performed under this Section shall include the compilation and submittal of all required shop drawings, manufacturer's cuts, specifications, and certifications of all materials and equipment for the Landscape Architect's approval. Actual product samples may also be required as stipulated in the technical specifications sections.

- B.

PART 2 - SUBMITTALS

2.1 REQUIREMENTS

- A. References are made throughout the Specifications and Drawings where submittals are required. All finishes, colors, and patterns are to be reviewed and approved by submittal or field sample.

- B. Where the Contractor's intention is to furnish the materials or equipment as specified, a list of all such elements, by Specification section, shall accompany the submittals so that the entire submittal is complete for the project.

PART 3 - EXECUTION

- 3.1 All submittals shall be submitted within four (4) weeks after the award of the contract, and may be made and distributed digitally with the approval of the Owner via email or File Transfer Protocol (FTP) site. Alternatively, submittals may be made in hard copy form; at least four (4) copies (Contractor, Owner's Rep, Landscape Architect, and Other Town Department) shall be provided so that a manual can be prepared for office and field reference.

- 3.2 Submit all required product or material samples concurrent with the materials/equipment information manuals described above. Each submittal shall reference its appropriate specification section, part and paragraph.

END OF SECTION

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01 41 00 PERMITS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 SCOPE OF WORK

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

1.3 PERMITS BY CONTRACTOR

- A. The Contractor shall prepare permit applications and obtain applicable permits after the contract is awarded, **bearing all expenses**. All required permits shall be obtained, INCLUDING BUT NOT LIMITED TO the following:
 - 1. Backflow Preventers / Cross Connection Permit
 - 2. Plumbing Permit

1.4 DIGSAFE

- A. Contact Digsafe seventy-two (72) hours prior to initiating work at telephone #1-888-344-7233.

PART 2 - MATERIALS

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

PART 3 - EXECUTION

- 3.1 Execute all work per permit requirements. All plumbing work to be approved by Town Inspectors.

PART 4 - GUARANTEE

- 4.1 Guarantee all work per permit requirements.

END OF SECTION

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01 57 00
ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 SCOPE OF WORK

- A. The work covered by this section of the specifications consists of furnishing all labor, materials, tools and equipment and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.
 - 1. Implementation
 - 2. Area of Construction Activity
 - 3. Protection of Water Resources
 - 4. Protecting and Minimizing Exposed Areas
 - 5. Location of Storage Areas
 - 6. Protection of Landscape
 - 7. Specific Measures for Tree Protection
 - 8. Clearing and Grubbing
 - 9. Discharge of Dewatering Operations
 - 10. Dust Control
 - 11. Separation and Replacement of Topsoil
 - 12. Baled Hay or Straw
 - 13. Silt Fence
 - 14. Noise Control

1.3 NOTIFICATION

- A. The Landscape Architect or Owner's Representative will notify the Contractor in writing of any non-compliance with the foregoing provisions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work,

shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Landscape Architect or Owner's Representative may order stoppage of all or part of the work until satisfactory corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop work orders shall be made unless it was later determined that the Contractor was in compliance.

PART 2 - MATERIALS

NOT USED

PART 3 - EXECUTION

3.1 IMPLEMENTATION

- A. Prior to commencement of work, the Contractor shall meet with the Landscape Architect and Owner's Representative to develop mutual understandings relative to compliance of the environmental protection program.
- B. The Contractor shall submit for approval details and literature fully describing environmental protection methods to be employed in carrying out construction activities.

3.2 AREA OF CONSTRUCTION ACTIVITY

- A. Insofar as possible, the Contractor shall confine his construction activities to those areas defined by the Contract Drawings and Specifications. All land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be restored to a condition, after completion of construction, at least equal to that which existed prior to work under this contract. The Contractor shall keep the active vehicular access to the site clear of debris, equipment and vehicles at all times for Fire Department access.

3.3 PROTECTION OF WATER RESOURCES

- A. The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acids, solvents, or other harmful materials. The Contractor shall also prevent the transport of soil, dirt, and salt to surface streams, wetlands, and/or catch basins. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers and streams.
- B. Special measures should be taken to insure against spillage of any pollutants into public waters, and run-off of demolition site sediments into stormwater collection systems. Measures shall include placement of haybales around catchbasins and along temporary construction fencing, and where so indicated on Drawing L-1 – Demolition & Removals Plan.

3.4 PROTECTING AND MINIMIZING EXPOSED AREAS

- A. The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, temporary vegetation, mulching or other protective measures shall be provided as specified.

- B. The Contractor shall take account of the conditions of the soil where temporary cover crop will be used to insure that materials used for temporary vegetation are adaptive to the sediment control. Materials to be used for temporary vegetation shall be approved by the Landscape Architect and Owner's Representative.

3.5 LOCATION OF STORAGE AREAS

- A. The location of the Contractor's storage areas for equipment and/or materials shall be placed upon cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Landscape Architect and Owner's Representative. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Landscape Architect and Owner's Representative.
- B. No excavated materials or materials used in backfill operations shall be deposited within a minimum distance of one hundred (100) feet of any watercourse or any drainage facility. Adequate measures for erosion and sediment control such as the placement of baled hay or straw around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.
- C. There shall be no storage of equipment or materials in areas designated on the Contract Drawings as within a wetlands buffer zone.
- D. The Landscape Architect or Owner's Representative may designate a particular area or areas where the Contractor may store materials used in his operations. Temporary storage trailers shall be installed at Contractor's cost.

3.6 PROTECTION OF LANDSCAPE

- A. The Contractor shall not deface, injure, or destroy trees or shrubs nor remove or cut them without written authority from the Owner. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized by the Landscape Architect or Owner's Representative. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees which are not to be removed, particularly overhanging branches and limbs. The Contractor shall, in any event, be responsible for any damage resulting from such use.
- B. Branches, limbs, and roots shall not be cut except by permission of the Landscape Architect or Owner's Representative. All cutting shall be smoothly and neatly done without splitting or crushing. When there is unavoidable injury to branches, limbs and trunks of trees, the injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed.
- C. Where, in the opinion of the Landscape Architect or Owner's Representative or as indicated on the Drawings, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his blasting or other operations, the Contractor shall protect such trees by placing protective measures as shown on the drawings. Any trees or landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the expense of the Contractor. The Landscape Architect or Owner's Representative will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of.

- D. Cultivated hedges, shrubs, and plants which could be injured by the Contractor 's operations shall be protected by suitable means or shall be dug up, balled and temporarily replanted and maintained. After construction operations have been substantially completed, they shall be replanted in their original positions and cared for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of a kind and quality at least equal to that existing at the start of the work.

3.7 SPECIFIC MEASURES FOR TREE PROTECTION

- A. All existing trees not specifically indicated for removal or transplanting on the Drawings shall be protected as identified below.
- B. Tree protection fencing shall be installed and maintained throughout the period of construction as shown on the Drawings; specific attention is directed to sheets L-1.
 - 1. The limits of tree protection fencing shall be installed AT THE DRIP LINE of trees wherever feasible, or at the maximum extent practicable where not feasible. At NO POINT shall tree protection fencing be installed at a distance less than 3 times the caliper of the tree from the root flare.
 - 2. Prior to commencing any demolition or removals, the Contractor shall lay out all paving and demolition required within the drip lines of all trees, and shall establish in the field with the Landscape Architect and the Owner's Representative the extents and limits of tree protection fencing to be installed.
 - 3. If, after demolition is complete, tree protection fencing can be expanded to cover a greater area, the Contractor shall revise the fencing line as directed by the Landscape Architect or Owner's Representative.
 - 4. Areas within tree protection fencing shall be protected from disturbance, excavation, and compaction.
- C. ALL EXCAVATIONS and ALL REMOVALS within the drip lines of existing trees (NOT limited to areas within tree protection fencing) shall be HAND WORK or AIR SPADE only. Cut no roots without the express permission of Landscape Architect or Owner's Representative.
- D. DO NOT REMOVE any existing drainage fabric, soil separator fabric, or other geotextiles without the prior approval of the Landscape Architect or Owner's Representative to avoid damage to feeder roots which often intertwine with the fabric. Where necessary, Contractor shall cut fabric and leave areas entangled by roots in place in the ground.

3.8 CLEARING AND GRUBBING

- A. The Contractor shall clear and grub only on the Owner's land or the Owner's easements, and only the area required for demolition operations, as approved by the Landscape Architect or Owner's Representative.

3.9 DISCHARGE OF DEWATERING OPERATIONS

- A. Any water that is pumped and discharged from a trench and/or excavation as part of the Contractor's water handling shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.
- B. Under no circumstances shall the Contractor discharge water to any areas designated as wetlands.
- C. The pumped water shall be filtered through baled hay, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. Accumulated sediment shall be cleared from the channel periodically.
- D. Contaminated dewatering effluent shall be handled, and if necessary, disposed of in accordance with applicable regulations and permits. Any required monitoring and analysis of the effluent shall be performed by the Contractor and the laboratory results shall be submitted to the Landscape Architect and Owner's Representative.
- E. Water pumped or drained from excavations, water courses, or other structures encountered in the work shall be disposed of in strict compliance with pertinent federal, state and local environmental regulations. Any damage caused by or resulting from dewatering operations shall be the sole responsibility of the Contractor.

3.10 DUST CONTROL

- A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, to minimize creation and dispersion of dust. If the Landscape Architect or Owner's Representative decides it is necessary to use calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed.

3.11 SEPARATION AND REPLACEMENT OF TOPSOIL

- A. Topsoil approved by the Owner and Landscape Architect for reuse shall be carefully removed from areas where excavations are to be made, and separately stored to be used again as directed. The topsoil shall be stored in an area acceptable to the Landscape Architect or Owner's Representative and adequate measures shall be employed to prevent erosion of said material.
- B. Topsoil proposed for reuse shall be tested in accordance with 32 90 00, Planting.

3.12 BALED HAY OR STRAW

- A. To trap sediment and to prevent sediment from clogging drainage systems, baled hay or straw shall be used where shown on Drawing L-1 – Demolition and Removals Plan. Care shall be taken to keep the bales from breaking apart. The bales should be securely staked to prevent overturning, flotation, or displacement. All deposited sediment shall be removed periodically.

3.13 SILT FENCE

- A. Where so indicated on the drawings and/or where directed by the Landscape Architect or Owner's Representative, the Contractor shall erect and maintain a temporary silt fence. In areas designated as wetlands, the Contractor shall line the limits of the construction easement with a silt fence. The silt fence shall be used specifically to contain sediment from runoff water and to minimize environmental damage caused by construction.
- B. The silt fence shall consist of a 3-foot wide continuous length sediment control fabric, stitched to a 22-foot wide, continuous length support netting, and stapled to preweathered oak posts installed as shown on the drawings. The oak posts shall be 1½" by 1½" (Minimum Dimension) by 48" and shall be tapered. The support netting shall be industrial strength polypropylene. The bottom edge of the sediment control fabric shall be buried as shown on the drawings. The sediment control fabric shall conform to the following properties:

Property	Value	Test Method
1. Grab Strength (lbs.)	124	ASTM D-4632
2. Elongation (%)	15%	ASTM D-4632
3. Puncture Strength (lbs.)	65	ASTM D-4833
4. Burst Strength (psi)	300	ASTM D-3786
5. Trapezoid Tear (lbs.)	60	ASTM D-4533
6. Equivalent Opening Size (U.S. Sieve)	No. 30	ASTM D-4571
7. Permittivity (sec-1)	0.10	ASTM D-4491
8. Water Flow Rate (gal/min/sf.)	10	ASTM D-4491
9. UV Resistance (%)	70	ASTM D-4355

- A. The silt fence shall be Mirafi Envirofence by Mirafi, Inc. or approved equal.

3.14 NOISE CONTROL

- A. The Contractor shall adhere to the City ordinances for Noise Control throughout the construction period. Noise control will be strictly enforced by the City.
- B. No construction shall occur between 7pm-7am Monday through Saturday, or any time on Sunday. Any exemption to prohibited construction hours must be authorized by a City representative.

- C. Contractor shall not permit engine idling on the job site. This shall be enforced through random, unannounced periodic inspections.

END OF SECTION

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02 41 00 SITE PREPARATION AND DEMOLITION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 0, and applicable parts of Division 1 apply to the Work under this Section.
- B. The Contractor shall, prior to any removal of rubbish or debris from the site, furnish written evidence satisfactory to the Owner's Representative that he has an approved dumping location for debris and/or spoil from his removals and excavation activities.
- C. On-site cleaning of materials for the purpose of salvage on the site shall not be permitted.
- D. The Contractor shall secure all necessary permits from the Town of Arlington before starting this project.
- E. The Town of Arlington shall have the right of first refusal on all removed materials, at the direction of the Town's Project Manager. All materials refused by the Town shall become the property of the Contractor.
- F. For all earthwork, excavation, and removals within the driplines of protected trees (not limited to areas within designated tree protection fencing), the Owner's Representative or Landscape Architect must be present on the site or have specifically waived that obligation in writing to the Contractor to ensure tree protection measures are being observed. Provide 48 hours' notice prior to commencement of all such work.

1.2 WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all Site Preparation work complete, as shown on the Drawings and as specified herein.
- B. Work includes, but is not limited to the following:
 - 1. Temporarily shut off any utilities to the affected areas of the project site.
 - 2. Removal of existing benches, tables, edging, mulch, sports structures, safety surfacing and any and all associated footings, etc., as designated on Drawings;
 - 3. Removal of subgrade material and all organic material, including mulch, as required by the Construction Documents ;
 - 4. Removal of shrub(s), stump(s), lawn, other vegetation, and topsoil where indicated on the Drawings. Remove root structures over 1/4-inch diameter within 5-feet of the stump;
 - 5. Sawcutting (where required) and removal of indicated sections of existing bituminous concrete pavement, and concrete pad / paving, as indicated on the Drawings.
 - 6. Removal and disposal of indicated play equipment, swings, and all footings;

7. Removal and disposal of wood fiber safety surfaces, sand safety surface, and associated subbases where subbase removal is required for grade or existing subbase does not meet specifications for new subbase ;
8. Materials not indicated to be reused or protected, and not desired by the Town of Arlington maintenance department, shall be removed legally off-site. Provide for proper disposal of all removals off-site, including documentation of approved dumping location as described in 1.01.B;
9. Protect existing trees, walls, curbing, concrete edges, catch basins, paving, utility poles, fences, railings, utilities, and buildings not indicated to be removed on the Drawings ;
10. Protect the existing sidewalk within the public right-of-way;
11. Protect the public right-of-way from the entry of erosion and construction debris;
12. Any other necessary preparations for installation of improvements.

1.3 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of the other trades. Cooperate with all trades and all departments of Town of Arlington and coordinate all work under this Section.
- B. The following related items are included under the Sections listed below
 1. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading
 2. Section 33 00 00 - Utilities

1.4 LAWS, ORDINANCES, PERMITS AND FEES

The Contractor shall:

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

Disposal of the materials shall be done in such a manner that there shall be no accumulation of any demolished material which may, in the opinion of the Owner's Representative, the Fire Department or any other public agency having jurisdiction, constitute a hazard.

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

1.5 DEFINITIONS

The following related items are included herein and shall mean:

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

1.6 SITE CONDITIONS

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

1.7 PROTECTION

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

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

1.8 SPECIAL PROTECTION FOR MAINTAINING STREETS AND PUBLIC WAYS

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

1.9 UTILITIES

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

all damage to any such utility to the satisfaction of the affected utility operator and the Owner.

1.10 Cleaning of Catch Basins and Storm Water Line

- A. Contractor shall clean all existing catch basins and their storm water lines on site, removing accumulated silt in the basin and clearing all pipes connecting to the street or to other drainage structures in order to provide sufficiently positive and continuous drainage to existing system.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 REMOVALS

- A. All holes and trenches resulting from removals shall be backfilled as appropriate with gravel borrow and compacted as specified in Section 31 00 00 - Earthwork -Excavation, Filling and Grading.
- B. Tree, stump, and shrub removal: In areas where the finish condition shall be lawn or planting bed, the existing stump shall be ground and roots over 1/4 inch in diameter within 5 feet of the stump shall be removed, all to a minimum of 24 inches below new finish grade. In areas where the finish condition shall be pavement, the stump and roots shall be completely removed.
- C. Tree Protection: All removals and earthwork within ten feet of tree trunks shall be handwork only.

3.2 DUST CONTROL

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

3.3 CLEAN-UP

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

END OF SECTION

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03 30 00 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract apply to the work under this Section.
- B. The Contractor shall prior to any removal of surplus fill, excavated material, or debris from the site, furnish written evidence satisfactory to the Owner or Owner's representative that he has an approved dumping location for debris and/or spoil from his/her excavation activities.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform cast-in-place concrete as shown on the Drawings and as specified herein.
- B. To be included:
 - 1. Concrete for concrete paving, pads, flush concrete curbs, and for all footings for benches, play equipment, etc.
- C. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the Town of Arlington and coordinate all work under this Section therewith.
- D. The following related items are included under the Sections listed below.
 - 1. Section 02 41 00 - Site Preparation and Demolition
 - 2. Section 11 68 00 - Play Equipment and Structures
 - 3. Section 12 93 00 - Site Furnishings
 - 4. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading
 - 5. Section 32 10 00 - Bases, Ballasts, and Paving

1.3 SUBMITTALS

- A. All manufacturers' product literature.
- B. Test reports for concrete. Compression tests at 7 days and one at 28 days and slump test. One test is to be done for every 10 cubic yards of concrete.

1.4 LAWS, ORDINANCES, PERMITS AND FEES

The Contractor shall:

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

1.5 DEFINITIONS

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

1.6 SUBSURFACE INFORMATION

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

1.7 FINISHED GRADES

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

1.8 GRADES AND ELEVATIONS

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

1.9 WORK IN THE PUBLIC WAYS

- A. Notify the appropriate municipal officials at least seven calendar days in advance of commencing any work in the public ways to obtain all required permission to perform this work. Perform all work in the public ways in a manner required by the municipal authorities.

- B. Should there be any conflict between requirements specified in the Contract Documents and those of the Town of Arlington, the municipal requirements shall govern.
- C. Do not close or obstruct any streets or sidewalks unless and until they have been discontinued by the appropriate municipal authority or unless and until he shall have first secured all necessary and required permits. No materials whatsoever shall be placed or stored in the streets. Conduct all operations to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

PART 2 - PRODUCTS

2.1 General

- A. Cast-in-place concrete shall be Class D, air-entrained concrete conforming to the requirements and applicable provisions of Section 701 of the S.S.H.B. Minimum 28-day compressive strength shall be 4,000 psi. Concrete shall be air-entrained 5% minimum with a two (2") to four (4") inch maximum slump.

2.2 Form Materials

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

2.3 Reinforcing Materials

- A. Reinforcing Bars: ASTM A615, Grade 60.
- B. Welded Wire Fabric (WWF): ASTM A185, welded steel wire fabric.
- C. Supports for Reinforcement: Provide supports for reinforcement including bolsters, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise acceptable.

2.4 Cement

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

2.5 Aggregate

- A. Fine aggregate for all concrete shall consist of washed inert natural sand conforming to ASTM-C330.

2.6 Water

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

2.7 Related Materials

- A. Grout: Non-shrink, non-metallic grout. Provide one of the following (or approved equal):
 - 1. "Five Star Grout": U.S. Grout Company.
 - 2. "Masterflow 713": Master Builders.
- B. Chemical Hardener (chHD-Fn): Colorless aqueous solution containing a blend of magnesium fluosilicate and zinc fluosilicate combined with a wetting agent, containing not less than 2 lbs. of fluosilicates per gal.
- C. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.
- D. Moisture-Retaining Cover: One of the following, complying with ASTM C171.
- E. Waterproof paper
- F. Polyethylene film.
- G. Polyethylene-coated burlap
- H. Filler strips for expansion joints where used with caulking or sealants shall be cork type, non-extruding, self-expanding filler strips, AASHTO M-153-111, ASTM D1752, III, as manufactured by Celotex Corporation, W.R. Meadows, Inc., W.R. Grace and Company, or equal. Where no sealant is required strips may be non-extruding bituminous type in accordance with ASTM D1751.

I. Admixtures

1. Admixtures causing accelerated setting of the cement in concrete shall not be used.
2. In general, all concrete shall not contain additives, but an admixture may be employed therein (to improve workability, durability, etc.) subject to prior test and/or approved by the Landscape Architect in writing.
3. Water-reducing and air-entraining agents shall be used in concrete in strict accordance with the manufacturer's printed instructions. Agents shall be stored safe from adverse temperature in accordance with manufacturer's printed instructions. Total air entrained in freshly mixed concrete shall be 5.0% plus or minus 1.0% of volume of concrete with required strengths maintained.
4. Water-reducing agent: "Sonotard WR" by Sonneborn Building Products, "WRDA" by W.H. Grace Company, "Pozzolith 100" by Master Builders Company, or equal. Water reducing agent must be by same manufacturer as air-entraining agent.
5. Air-entraining Agent: "Darex" by W.R. Grace Company, "Aerolith" by Sonneborn Building Products, "MB-VR" by Master Builders Company, "Sealtight Air Entraining Agent" by W.R. Meadows, or equal.
6. No other admixtures may be used without Landscape Architect's approval.

2.8 Slump Limits:

Proportion and design mixes to result in concrete slump at point of placement as follows:

- A. Ramps and sloping surfaces: Not more than 3".
- B. Reinforcing wall systems: Not less than 1" and not more than 3".
- C. Other concrete: Not less than 1" and not more than 4".

2.9 Curing Compounds

- A. All curing compounds shall conform to requirements of ASTM Designation C-309, Type I, clear and C-156. No materials containing wax or saponifiable materials will be permitted.
- B. Curing compound in areas that will be exposed to view in the finished work, or to receive a painted finish, and areas to receive a concrete topping or ceramic tile mortar beds, seamless composition flooring, synthetic athletic surfacing, or other similar finishes, shall contain a fugitive dye, and shall be of a type that will become brittle and easily removable after about 3 weeks to allow dust-proofing treatment specified here in after.
- C. Curing compound shall be Master Builders "Master Seal", Symons "Cure and Seal", Sonneborn "Kure-N-Seal", "CS-309" by W.R. Meadows or equal, conforming to ASTM 309, Type 1 and 2.

2.10 Proportioning and Design of Mixes

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

2.11 Concrete Mix

- A. Job-Site Mixing: Mix materials for concrete in appropriate drum type batch machine mixer. For mixers of one cu. yd., or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than one cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. yd. or fraction thereof.
- B. Provide batch ticket for each batch discharged and use in work indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.
- C. Ready-Mix Concrete: Comply with requirements of ASTM C94, and as herein specified.
- D. Addition of water to the batch will not be permitted.
- E. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.
- F. When air temperature is between 85 Deg. F (30 deg. C) and 90 Deg. F (32 deg. C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 Deg. F. (32 deg. C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 Formwork

- A. Forms shall conform to the lines, dimensions and shapes of concrete shown providing for openings, recesses, keys, slots, beam pockets and projections as required.
- B. Make forms clean and free of foreign material before placing concrete.

- C. Do not use earth cuts as forms for vertical surfaces, unless approved by the Landscape Architect.
- D. Design of Formwork
 - 1. Comply with ACI 301, Chapter 4, Paragraph 4.2. Formwork drawings shall bear the seal of licensed professional engineer.
 - 2. Form rods and tie wires of exterior surfaces shall slope down from the inside to outside of forms.
 - 3. Provide forms so that no discernible imperfection is in evidence in finished concrete surfaces due to deformation, bulging, jointing, or leakage of forms.

3.2 Mixing Concrete

- A. Ready Mix Concrete
 - 1. Comply with ASTM C94.
 - 2. Add mixing water only at the site.
 - 3. Discharge the concrete completely at the site within 1-1/2 hours after the introduction of the cement to the aggregates. In hot weather reduce this time limit so that no stiffening of the concrete shall occur until after it has been placed.
 - 4. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.
- B. Batch Mixing at Site
 - 1. Comply with ACI 301, Chapter 7, Paragraph 7.2.
 - 2. Excessive mixing requiring the addition of water to preserve the required consistency will not be permitted. Mix concrete to a consistency which can be readily placed without segregation.
 - 3. Where admixtures are specified, equip mixers with a device for measuring and dispensing the admixture.
- C. Hand-Mixed Concrete: When hand-mixed concrete is allowed and approved for certain parts of the work, mix on watertight platforms. Proportion cement, sand and aggregate loose by volume, carefully measured. Thoroughly mix sand and cement together dry until the mixture is a uniform color. Add the aggregate and turn the mass over until the mixture is uniform and homogeneous. Add water by sprinkling and turn the mass over until it is uniformly mixed and of the required consistency.

3.3 Placing Concrete

- A. Preparation Before Placing: Conform to ACI 310, Chapter 8, Paragraph 8.1.
- B. Conveying
 - 1. Comply with ACI 301, Chapter 8, Paragraph 8.2.

2. Provide a spout or downpipe and elephant trunk or other appropriate method to prevent concrete from falling freely through a height greater than 3 feet.

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

3.4 Curing

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

3.5 Form Removal

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

3.6 Finishing

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

3.7 Field Quality Control

- A. Sampling and testing for quality control during placement of concrete may include the following, as directed by the Landscape Architect.

- B. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
- C. Slump: ASTM C143, one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.
- D. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; one for each set of compressive strength test specimens.
- E. Concrete Temperature: Test hourly when air temperature is 40 deg. F (4 deg. C) and below, and when 80 deg. F (27 deg. C) and above; and each time a set of compression test specimens made.
- F. Compression Test Specimen: ASTM C31; one set of 6 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
- G. Compressive Strength Tests: ASTM C39; one set for each 100 cu. yds. or fraction thereof, of each concrete class placed in any one day or for each 5,000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
- H. When total quantity of a given class of concrete is less than 50 cu. yds., strength test may be waived by Landscape Architect if, in his/her judgment, adequate evidence of satisfactory strength is provided.
- I. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
- J. Strength level of concrete will be considered satisfactory if average of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive by more than 500 psi.
- K. Test results will be reported in writing to Landscape Architect and Contractor on same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day test.
- L. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Landscape Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

3.8 Protection of Concrete

- A. Under no circumstances shall the Contractor pour and leave the fresh concrete open to vandalism, while it is setting up. Damaged concrete shall be subject to rejection by the Owner or Landscape Architect.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 - GENERAL

1.1 General Requirements

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the notation "or approved equal" shall be as determined by the Landscape Architect and the City.

1.2 Work Included

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

1.3 References

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Section 03 30 00 – Cast-In-Place Concrete
 - 2. Section 11 68 00 – Play Equipment
 - 3. Section 32 10 00 – Bases, Ballasts, and Paving
 - 4. Section 33 00 00 – Utilities

1.4 Submittals

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

1.5 Product Delivery, Storage and Handling

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.

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

1.6 Definitions

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

1.7 Maintenance Kit

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

PART 2 - PRODUCT

2.1 Metal Fabrications: General Requirements

- A. Steel Members:
 - 1. Metal surfaces: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, beam marks, roller marks, rolled trade names and roughness.

2. Provide all materials of the best commercial quality for the purpose intended free from all defects that would impair the strength or durability of the work.
- B. Finishing: Fabrications shall be finished using a Hot-Dip Galvanizing and factory-applied Powdercoat Architectural Finish process, ColorGalv Thermoset by Duncan Galvanizing or Approved Equal.
1. Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragalv® by Duncan Galvanizing or Approved Equal. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain special high grade zinc, nickel, and other earthly materials.
 - a. Galvanizing shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
 - b. Surface blasting prior to application of factory-applied post galvanizing wet coatings will produce a high rugosity and not be acceptable.
 2. Powdercoat Architectural Finish: Provide factory-applied high-performance thermosetting-based durable coating over hot-dip galvanized steel, Thermoset® by Duncan Galvanizing or Approved Equal. Colors shall be selected from the Galvanizer's standard color range.
 - a. Primer coat shall be factory-applied prime coating. Apply primer within 12 hours after galvanizing and within 3 hours of surface preparation at the same facility where the galvanizing is done in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer.
 - b. Finish coat shall be factory-applied high performance architectural finish. Apply finish coating at the galvanizer's plant, in a controlled environment meeting applicable environmental regulations and as recommended by the finish coating manufacturer.
 - c. Coatings shall be certified VOC compliant and conform to applicable regulations and EPA standards.
 - d. Apply the galvanizing, primer and coating within the same facility and provide single-source responsibility for galvanizing, priming and finish coating.
 - e. Blast cleaning of the galvanized surface is not acceptable.

2.2 Water Cabinet

- A. Cabinet Fabrication:
1. The Water Cabinet shall be a custom built or standard manufactured RPV-type cabinet of sufficient size to comfortably house and service all required components and connections, of galvanized, zinc-primed steel, ¼" thick,

fabricated and finished in compliance with 2.02, Metal Fabrications, color to be selected. Shop Drawings required; see below.

2. Cabinet shall have louvers with insect screens at the top of the doors, at the sides, and at the back, and a hinged lockable door with stay-open door catches and a vandal-resistant cover over the handle/padlock area. No lifting eyebolts or holes shall be permitted in the tops of the cabinets.
3. Cabinet shall be set on a concrete pad, as shown on the Drawings, in accordance with 03 30 00, Cast-In-Place Concrete.

B. Shop Drawings and Diagrams

1. Provide Manufacturer's Cut Sheets or Shop Drawings for all components and cabinet, and plumbing wiring diagrams, including detailing of proposed hangings and supports, with all features clearly labeled, for review and Approval by the Landscape Architect, the Owner's Representative, and the City of Boston Department of Public Works.

- C. For Cabinet contents, and additional required Shop Drawings and Submittals, see Section 33 00 00 – Utilities.

PART 3 - EXECUTION

3.1 Metal Fabrications (General Requirements)

A. Fabrication

1. Form exposed work true to shape and size, and line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise indicated. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work. Cutting, shearing, and punching shall leave clean, true lines and surfaces.
 - a. All exposed edges and ends of plates, bars, shapes, or tubing shall be square and smooth, free of cutting marks, shear distortion, burrs and nicks.
 - b. Provide uniform and consistent joints with all exposed copes, miters and butt cuts.
2. Weld corners and seams continuously on all exposed surfaces and where required for strength on concealed surfaces in accordance with AWS recommendations. Tack welding will not be permitted unless specifically noted. Where flush butt joints are required, slightly oversize welds, fill with plastic filler and grind flat. Grind exposed connections smooth and flush to match and blend with adjacent surfaces.
3. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated use Phillips flathead, countersunk, screws and bolts.
4. Bolted connections: Provide holes in bolted parts with 1/16 inch diameter greater than the nominal diameter of the bolt except where otherwise shown. Cut, drill or punch holes as required perpendicular to metal surfaces and so as

not to deform or mar adjacent surfaces. No unfair holes will be accepted. Do not flame cut or enlarge holes by burning. Holes shall be clean cut without torn or ragged edges. Remove outside burrs resulting from drilling or punching operations.

5. Provide for anchorage of type indicated, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use. Provide cardboard sleeves around all iron work to be set in masonry.
 6. Cut, reinforce, drill and tap miscellaneous metal work as indicated.
 7. Fabricate joints which will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.
- B. Sandblasting
1. All metal components shall be sandblasted prior to finishing. Sandblasting shall conform to SSPC-SP7, brush off blast cleaning.
- C. Finishing
1. All finishes to be applied in the shop except what is required to touch up after installation in the field.
 2. Galvanizing shall be performed by a company with a minimum of ten years experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
 3. Factory-applied metal coatings shall be performed in a facility acceptable to the coating manufacturer.
 4. Submit two 3 inch by 6 inch samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
 5. Handle and install materials with factory-applied coatings as recommended by galvanizer and coating manufacturer to prevent damage to coatings prior to and after installation.
 6. Touch-up factory-applied metal coatings as recommended by galvanizer and coating manufacturer.
 7. Provide 20 year warranty against 10% or more visible rust. Warranties for fading or discoloration of the finish shall be that which is supplied by the coating manufacturer .
 8. Fabricator shall provide a notarized statement from the galvanizer, along with a description of the material processed, indicating that all work has been done in conformance with this specification prior to receiving payment.
 9. Certificate of Compliance for Shop Drawing Review by Galvanizer: Submit galvanizer's certification that shop drawings for metal fabrications to receive metal coatings have been reviewed and that fabrications are acceptable to galvanizer for proper application of galvanizing and metal coatings. All drawings should be stamped by the galvanizer to indicate approval of design for galvanizing.

10. Galvanizer/coater shall supply a certificate of compliance that all coatings have been performed in accordance with QP-3 standards and procedures.

D. Installation

1. Fastening to in place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in place construction, including threaded fasteners for concrete and other connectors as required.
 - a. In existing or previously-installed concrete footings, set posts as indicated on the Drawings, plumb and in alignment. Drill or core concrete in a neat fashion such that the diameter of the hole is 1 inch greater than the width of the post or anchor to be placed in it (3" dia. for 2" posts). Provide sinkages for supports as shown and as necessary to secure work in place. Cut and backcheck as required for proper fit and clearance. Clear post holes of loose material. Provide cardboard sleeves around all iron work to be set in masonry. Fill the space between the masonry and post solidly with grout, finished to divert water running down the post away from the post base. Grout shall have a waterproof sealant. Ensure that posts, concrete, and adjacent surfaces are free and clean of grout and debris before final inspection.
2. Cutting, fitting and placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment, elevation, level, true and free of rack, measured from established lines and levels.
 - a. Provide all temporary bracing, guy wires, turnbuckles, horizontal struts, etc., as may be required to plumb and hold the metal fabrications in place and aligned at all times during assembly and to take care of all lateral and vertical loads to which the work may be subjected. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.
3. Fit exposed connections accurately together for form tight hairline joints that cannot be shop welded because of shipping size limitations. Grind exposed joints smooth.
4. Field welding: Comply with AWS JCode for procedures of manual shielded metal arc welding, appearance and quality of welds made, and methods used in correcting welding work.
5. Bolted connections: Do not drive bolts into holes so as to injure threads. Make the hole fair by further drifting or removing burrs. Tighten bolts in a sequence toward free edges and in a manner to distribute loads evenly. Do not mix bolt heads and nuts. Keep each on one side of the connection. For exposed connections, keep heads on the visible side where practical.

E. Non-shrink Grout

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

3.2 Utility Cabinet

- A. Fabrication and finishing of cabinet shall be in accordance with 3.01, Metal Fabrications, and with all applicable codes and approved shop drawings.
- B. See also Section 33 00 00, Utilities.
- C. Installation to comply with all applicable codes and standards, and with City of Boston Department of Public Works requirements.
- D. The Contractor performing the work on these items shall be a licensed MA Plumber and/or Electrician, as appropriate.
- E. All plumbing work shall be inspected by the City Plumbing Inspector, before backfilling occurs.
- F. Contractor to touch up any scratches and all mars to surfaces and finishes.

END OF SECTION

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11 68 00
PLAY EQUIPMENT AND STRUCTURES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract and Division 1 General Requirements apply to the Work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
 - 1. NOTE: Proposed alternate manufacturers of Play Equipment should be submitted for consideration regarding conformance to the specifications prior to bid submission. Alternative manufacturers, if submitted after bid submission and found, in the judgment of the Landscape Architect and the City, not to be in substantial compliance with the specifications, shall not be considered as grounds for an amendment to the Contract Price due to price differences.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. 2-to-5-Year-Olds' Composite Play Structure;
 - 2. 5-to-12-Year-Olds' Composite Play Structure;
 - 3. Zip line;
 - 4. Belt and Bucket Swings;
 - 5. Water Play Activators and Jets.

1.3 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the Town of Arlington and coordinate all Work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Section 02 41 00 - Site Preparation and Demolition
 - 2. Section 03 30 00 - Cast In Place Concrete
 - 3. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading
 - 4. Section 32 10 00 - Bases, Ballasts, and Paving
 - 5. Section 32 18 16 - Playground Protective Surfacing

1.4 SUBMITTALS

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

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.6 DEFINITIONS

- A. The following items are included herein and shall mean:
 - 1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 - 2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
 - a. A36...Steel
 - b. A153...Zinc Coating (hot-dip) on hardware
 - c. A307...Carbon Steel bolts 66000 psi tensile
 - d. F1487...Standard Consumer Safety Performance Specification for Playground Equipment for Public Use
 - 3. CPSC - Consumer Product Safety Council.
 - 4. ADA - Americans with Disabilities Act and its current regulations.
 - 5. AWS: American Welding Society
 - 6. SSPS: Steel Structures Painting Council

PART 2 - PRODUCT

2.1 COMPOSITE PLAY STRUCTURES GENERAL SPECIFICATIONS

- A. All play equipment must be IPEMA certified.
- B. Manufacturer/Product: The 2-5 Year Old Playstructure, 5-12 Year Old Playstructure, and Single-Post Swing Bays shall be supplied by one manufacturer and shall be in compliance with the layout, features, and arrangements shown on the Drawings. All structures shall be manufactured by Landscape Structures, Inc. (LSI) or Approved Equal.

1. The 2-5 Year Old Playstructure shall be a custom PlayBooster(PB) structure by LSI or Approved Equal as shown on the Drawings and as specified below.
 2. The 5-12 Year Old Playstructure shall be a custom PlayBooster (PB) + Evos structure by LSI or Approved Equal as shown on the Drawings and as specified below.
 3. The Swing Bays shall be a Single-Post Swing structure by LSI or Approved Equal as shown on the Drawings and as specified below.
- C. Material: All materials shall be structurally sound and suitable for safe play. Durability shall be ensured on all steel parts by the use of time-tested coatings such as zinc plating, zinc-nickel plating, powdercoating, soft PVC coating (TenderTuff by LSI or Approved Equal), etc. Colors shall be specified.
- D. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). All primary fasteners shall include a locking patch type material that will meet the minimum torque requirements of IFI-125. Manufacturer to provide special tools for pinned tamperproof fasteners.
- E. Soft PVC Coating: All metal components to be PVC-coated (TenderTuff Coating by LSI or Approved Equal) shall be thoroughly cleaned in a hot phosphatizing pressure washer, then primed with a water-based thermosetting solution. Primed parts shall be preheated prior to dipping in U.V. stabilized, liquid polyvinyl chloride (PVC), then salt cured at approximately 400 degrees. The finished coating shall be approximately .080" +/- .020" thick at an 85 durometer hardness and have a matte finish. Four standard colors shall be available. Colors to be selected by Landscape Architect.
- F. Polyester Powdercoating: All metal components to be powdercoated shall be free of excess weld and spatter. Parts shall be thoroughly cleaned via a 5-Stage Pretreatment process. Parts shall then be thoroughly dried and proceed through a set of automatic sprayers that apply electrostatic powdercoat. Parts shall be oven cured at 400 degrees F. The average powdercoat thickness shall be .0025".
- G. Super Durable TGIC polyester powder shall be specially formulated for optimum Ultra Violet (U.V.) stability and gloss retention. It shall meet or exceed ASTM Standards for:
1. Hardness (D-3363)
 2. Impact (D-2794)
 3. Salt Spray resistance (B-117 and D-1654)
 4. U.V. Exposure (G-154)
 5. Adhesion (D-3359, Method B)
- The Paint Line shall employ a "checkered" adhesion test daily.
- A minimum of seventeen standard colors shall be available.
- H. Decks: All decks shall be soft-PVC coated perforated metal decks (Tenderdecks by LSI or Approved Equal). Decks shall be of modular design and have 5/16" diameter holes on the standing surface. There shall be a minimum of (4) slots in each face to accommodate face mounting of components. Decks shall be manufactured from a single piece of low carbon 12 GA (.105") sheet steel conforming to ASTM specification A-569. The sheet shall be perforated then flanged formed and

reinforced as necessary to ensure structural integrity. The unit shall then be soft PVC coated. Decks shall be designed so that all sides are flush with the outside edge of the supporting posts.

- I. **Rotationally Molded Poly Parts:** These parts shall be molded using prime compounded linear low-density polyethylene (LDPE) with a tensile strength of 2500 psi per ASTM D638 and with color and UV-stabilizing additives. Wall thickness shall vary by product from .187" (3/16") to .312" (5/16"). Four standard colors shall be available.
- J. **HDPE Panel Parts:** These parts shall be manufactured from 3/4" thick high-density polyethylene (HDPE) that has been specially formulated for optimum U.V. stability and color retention (Permalene by LSI or Approved Equal). Products shall meet or exceed density of .960 G/cc per ASTM D1505, tensile strength of 2400 PSI per ASTM D638. Five standard solid colors shall be available. Some HDPE panel parts are specified in a two-color product with (2) .10" thick exterior layers over a .55" interior core of a contrasting color.
 - 1. For non-recycled HDPE panels, a minimum of eight standard two-color options shall be available.
 - 2. For panels noted as "Recycled," the interior core shall be 100% recycled HDPE, black in color; a minimum of 5 (non-black) options for the exterior layers shall be available.
- K. **Hardware Packages:** All shipments shall include individual component-specific hardware packages. Each hardware package shall be labeled with the part number, description, a component diagram showing the appropriate component, package weight, a bar code linking the hardware package to the job number, assembler's name, date and time the package was assembled, work center number, and work order number.
- L. **Installation Documentation:** All shipments shall include a notebook or packet of order-specific, step-by-step instructions for assembly of each component, including equipment assembly diagrams, estimated hours for assembly, footing dimensions, concrete quantity for direct bury components, fall height information, area required information and detailed material specifications.
- M. **Packing List:** All shipments shall include a packing list for each skid/container, specifying the part numbers and quantities on each skid or within each container.
- N. **Packaging:** Posts shall be individually packaged in sturdy, water-resistant, mar-resistant cardboard boxes. Other components shall be individually wrapped or bulk wrapped to provide protection during shipment. Small parts and hardware packages will be placed in crates for shipment. The components and crates are then shrink-wrapped to skids (pallets) to ensure secure shipping.
- O. **Maintenance Kit:** An order-specific maintenance kit shall be provided for each structure order. The kit will include a notebook or packet with a second set of installation documents and order-specific maintenance documentation with recommendations on how often to inspect, what to look for and what to do to keep the equipment in like-new condition. The kit also includes touch-up primer, appropriate color touch-up paint, sandpaper, appropriate color touch-up PVC, graffiti remover and additional installation tools for the tamperproof fasteners.
- P. **Posts:**

1. Aluminum Posts: All aluminum posts are manufactured from 6005-T5 extruded tubing conforming to ASTM B-221.
 - a. Aluminum Post Mechanical Properties:
 - Yield Strength (min.): 35,000 PSI
 - Tensile Strength (min.): 38,000 PSI
 - % Elongation in 2 inches: 10
 - Modulus of Elasticity: 10 x 10⁶ PSI
 - b. Straight Round Posts (PlayBooster or Approved Equal) shall have a 5" outside diameter with a 0.125" wall thickness.
 2. Round Steel Posts (PB): All steel posts are manufactured from 5" O.D. tubing with a wall thickness of 0.120", shall be galvanized after rolling and shall have both the I.D. and the cut ends sprayed with a corrosion resistant coating.
 - a. Steel Post Mechanical Properties:
 - Yield Strength (min.): 50,000 PSI
 - Tensile Strength (min.): 55,000 PSI
 - % Elongation in 2 inches: 25
 - Modulus of Elasticity: 29.5 x 10⁶ PSI
 3. Round Steel Arches (Evos): All steel arches are manufactured from 5" O.D. tubing with a wall thickness of 0.120", shall be galvanized after rolling and shall have both the I.D. and the cut ends sprayed with a corrosion resistant coating.
 - a. Steel Arch Mechanical Properties:
 - Yield Strength (min.): 50,000 PSI
 - Tensile Strength (min.): 55,000 PSI
 - % Elongation in 2 inches: 25
 - Modulus of Elasticity: 29.5 x 10⁶ PSI
- Q. Clamps:
1. All clamps, unless otherwise noted, shall be die cast using a 369.1 aluminum alloy and have the following mechanical properties:
 - Ultimate Tensile: 47,000 PSI
 - Yield Strength: 28,000 PSI
 - Elongation: 7% in 2 inches
 - Shear Strength: 29,000 PSI
 - Endurance Limit: 20,000 PSI
 2. Each functional clamp assembly shall have an appropriate number of half clamps and shall be fastened to mating parts with (2) 3/8" x 1 1/8" pinned button head cap screws (SST) and (2) stainless steel (SST) recessed "T" nuts. A 1/4" aluminum drive rivet with stainless steel pin is used to ensure a secure fit to the post.

3. Clamps have three functional applications and shall be named as follows:
 - a. Offset hanger clamp assembly.
 - b. Deck hanger clamp assembly.
 - c. Hanger clamp assembly.
- R. Cables:
 1. Comprised of six-stranded and tempered Corocord-cable (or Approved Equal) with a polypropylene core. The galvanized steel wire cores of the six strands are heated and covered with polyamide, color to be selected.

2.2 2-TO-5 COMPOSITE PLAY STRUCTURE

- A. Colors to be specified by landscape architect on shop drawings. Posts for PlayBooster by LSI or Approved Equal:
 1. Post length shall vary depending upon the intended use and shall be a minimum of 42" above the deck height.
 2. All posts shall have a "finished grade marker" positioned on the post identifying the 34" bury line required for correct installation and the top of the required protective surfacing.
 3. Top caps for posts shall be aluminum die cast from 369.1 alloy and powdercoated to match the post color. All caps shall be factory installed and secured in place with (3) self sealing rivets.
 4. A molded low-density polyethylene (LDPE) cap, with drain holes, shall be pressed onto the bottom end of the post to increase the footing area.
 5. Posts shall have a post number sticker for installation purposes.
 6. All posts shall be powdercoated to specified color.
- B. Components for 2-5 Year Old Play Structure (PlayBooster or Approved Equal) shall include, but not be limited to the following
 1. Kick Plates (flat steel, PVC coated)
 2. Perforated Steel Decks, various sizes/shapes, PVC Coated
 3. Pipe Barriers and Guardrails: Weldment comprised of 5/8" solid steel vertical rails, 1 1/8" O.D. x 11 GA (.120") steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" internal threads, 1 1/2" x 1 1/2" x 29 1/2" angle iron. Barrier shall measure 39 13/16" high. Finish: soft PVC coated, color to be selected.
 4. Double Poly Slide. Slide: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Rail: Extruded from 1.125" ((28,58 mm) O.D. x .312" (7,92 mm) wall. 6005-T5 aluminum. Finish: powdercoated. Hood: Rotationally molded from U.V. stabilized linear low density polyethylene. Exit Support: Weldment comprised of 2.375" (60,33 mm) O.D. RS-20 (.095" - .105") (2,41 mm x 2,66 mm) galvanized steel tubing and 1/4" x 3" (6,35 mm x 76 mm) mounting plate. Finish: powdercoated. Rail Spacer: Fabricated from

- 1.312" (33,32 mm) O.D. x 16 GA (.065") (1,65 mm) steel tubing. Finish: powdercoated.
5. Conical Climber. Belt: PVC belting, 5/16" (7,92 mm) thick, 300 PIW tension rating. Center Loop: Weldment comprised of 1.315" (33,40 mm) O.D. RS-20 (.080" - .090") (2,03 mm-2,28 mm) galvanized steel tubing, 1/4" x 1 1/4" (6,35 mm x 31,75 mm) HR flat steel and 1/4" x 2 3/4" (6,35 mm x 69,85 mm) HR flat steel. Finish: powdercoated. Footer: Fabricated from 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) galvanized steel tubing. Finish: powdercoated. Hand Grip: Made from Polyester Resin. Hand Grips measure 5 3/4" (146,05 mm) long x 2 1/2" (63,5 mm) wide x 1 3/4" (44,45 mm) high. Rails: Weldment comprised of 1.315" (33,40 mm) O.D. RS-20 (.080" - .090") (2,03 mm-2,28 mm) galvanized steel tubing, and 1/4" x 1 1/4" (6,35 mm x 31,75 mm) HR flat steel. Finish: powdercoated. Handhold Panel: Solid color HDPE.
 6. Deck Link. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Panels & Barriers Solid HDPE. Step Sections/Top Step Section: Formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011. Standing surface is 24 3/8" (619,13 mm) wide x 14" (355,6 mm) deep and is perforated with 5/16" (7,92 mm) diameter holes. Finish: PVC.
 7. Loop Ladder 48". Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Handhold Panel: HDPE. Loop Ladder: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) black steel tubing. Finish: PVC.
 8. Pod Climber 32". Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Panel: HDPE. Handloop: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) steel tubing with 203 or 303 stainless steel inserts, with 3/8" (9,53 mm) internal thread. Finish: HDPE. Handrail: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) steel tubing with 203 or 303 stainless steel welded inserts with 3/8" (9,53 mm) internal threads. Finish: HDPE. Disc: Rotationally molded from U.V. stabilized linear low density polyethylene, disc measures 14" (356 mm) in diameter x 7" (178 mm) high. Support: Weldment comprised of 1.900" (48,26 mm) O.D. RS-20 (.090" - .100") (2,28 mm-2,54 mm), 1.315" (33,40 mm) O.D. RS-20 (.080" - .090") (2,03 mm-2,28 mm) and 3/16" x 5" (4,75 mm x 127 mm) diameter plate. Finish: powdercoated.
 9. Wiggle Ladder 48". Rail: Fabricated from 13/16" (20,64 mm) diameter x 27 15/16" (709,60 mm) long CRS solid bar stock with both ends tapped 3/8" (9,53 mm). Finish: HDPE. Support: Fabricated from 1.315" (33,40 mm) O.D. RS-20 (.080" - .090") (2,03 mm-2,28 mm) galvanized steel tubing. Chain: 4/0 Chain zinc plated. Finish: HDPE.
 10. Hole Panel. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). HDPE Panel: Solid color panel measures 39 1/2" (1003,3 mm) wide x 30" (762 mm)

- high. HDPE Panel: Solid color panel measures 39 1/2" (1003,3 mm) wide x 30" (762 mm) high, color specified.
11. Storefront Panel. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Store Panel: Solid color HDPE.
 12. Wire Barrier. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Barrier: Weldment comprised of 1 1/8" (28,58 mm) O.D. steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" (15,88 mm) internal threads, 1/4" x 1 1/4" (6,35 mm x 31,75 mm) HR flat steel and 1/4" (6,35 mm) diameter wire. Barrier measures 39 1/4" (996,95 mm) wide x 30 13/16" (782,62 mm) high. Finish: HDPE.
 13. Wire Barrier w/Wheel. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Barrier: Weldment comprised of 1 1/8" (28,58 mm) O.D. steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" (15,88 mm) internal threads, 1/4" x 1 1/4" (6,35 mm x 31,75 mm) HR flat steel and 1/4" (6,35 mm) diameter wire. Barrier measures 39 1/4" (996,95 mm) wide x 30 13/16" (782,62 mm) high. Finish: Powdercoated. Wheel: 12" (305 mm) diameter cast A319.1 aluminum alloy. Shaft-303 stainless steel. Finish: HDPE. Wheel Block: HDPE, tan in color.
 14. Handbar. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Handloop: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) steel tubing with 203 or 303 stainless steel inserts, with 5/8" (15,88 mm) internal thread. Finish: HDPE.
 15. Kick Plate 8"Rise. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Kick Plate: Fabricated from 11 GA (.120") (3,04 mm) HR flat steel. Finish: HDPE.
 16. Square Tenderdeck. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Square Deck: Flange formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011. Standing surface is perforated with 5/16" (7,92 mm) diameter holes. Deck face has (4) slotted holes for face mounting components. The finished size measures 2 5/8" x 44 3/8" x 44 3/8" (66,68 mm x 1127,13 mm x 1127,13 mm). Finish: HDPE.
 17. Triangular Tenderdeck. See above but deck face has (6) slotted holes.
 18. Tri-Deck Kick Plate 8"Rise. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Kick Plate: Fabricated from 11 GA (.120") (3,04 mm) HR flat steel. Finish: HDPE.

2.3 5-TO-12 COMPOSITE PLAY STRUCTURE

- A. Posts for PlayBooster and Evos by LSI or Approved Equal. All colors to be specified at time of ordering:
1. Post length shall vary depending upon the intended use and shall be a minimum of 42" above the deck height.
 2. All posts shall have a "finished grade marker" positioned on the post identifying the 34" bury line required for correct installation and the top of the required protective surfacing.
 3. Top caps for posts shall be aluminum die cast from 369.1 alloy and powdercoated to match the post color. All caps shall be factory installed and secured in place with (3) self sealing rivets.
 4. A molded low-density polyethylene (LDPE) cap, with drain holes, shall be pressed onto the bottom end of the post to increase the footing area.
 5. Posts shall have a post number sticker for installation purposes.
 6. All posts shall be powdercoated to specified color.
 7. Evos (or equal) General Specifications 5" (127 mm) Clamps: All clamps are ProShield finished and, unless otherwise noted, shall be sand cast using a 356-T6 aluminum and having the following mechanical properties: • Ultimate Tensile: 35,000 PSI (241316,57 kilopascals) • Yield Strength: 18,000 PSI (124105,66 kilopascals) • Elongation: 8% in 2 inches(51 mm) 5" (127 mm) Arches: All steel arches are powdercoated finished and manufactured from 5" (127 mm) O.D. galvanized tubing with a wall thickness of .120" (3,04 mm). Steel Arch Mechanical Properties: • Yield Strength (min): 50,000 PSI (344737,95 kilopascals) • Tensile Strength (min): 55,000 PSI (379211,75 kilopascals) • % Elongation in 2 inches (51 mm): 25 • Modulus of Elasticity: 29.5 x 1,000,000 PSI (6894759,09 kilopascals) Cable: Comprised of six-stranded and tempered cable with a polypropylene core. The galvanized steel wire cores of the six strands are inductively fused to polyamide coating, black in color.
 8. Evos Post: Fabricated from 5.000" (127 mm) O.D. x 11 GA. (.120") (3,04 mm) wall galvanized steel tube, top cap shall be die-cast 369.1 aluminum alloy. Finish: powdercoated.
- B. Components for 5-12 Year Old Play Structure (Evos and PlayBooster or Approved Equal) shall include, but not be limited to the following
1. Perforated Steel Decks and steps, various sizes/shapes, PVC Coated
 2. Pipe Barriers and Guardrails: Weldment comprised of 5/8" solid steel vertical rails, 1 1/8" O.D. x 11 GA (.120") steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" internal threads, 1 1/2" x 1 1/2" x 29 1/2" angle iron. Barrier shall measure 39 13/16" high. Finish: soft PVC coated, color to be selected.
 3. LDPE Molded Modular Slide with rotationally molded Hood with U.V. stabilized inear low density polyethylene. (Rush Slide or Approved Equal).
 4. Loop Ladder: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) black steel tubing. Finish: PVC coating, color specified.
 5. Pod Climber: rotationally molded LDPE pods with steel weldment supports.

6. Vertical Ladder: Weldment comprised of 1.125" ((28,58 mm) O.D. x 11 GA (.120") (3,04 mm) steel tubing, 1.029" (26,14 mm) O.D. RS-20 (.070" - .080") (1,78 mm-2,03 mm) and 3/16" x 2" (4,75 mm x 51 mm) wide steel flat plates. Finish: PVC coating.
7. Wiggle Ladder 72". Rail: Fabricated from 13/16" (20,64 mm) diameter x 27 15/16" (709,60 mm) long CRS solid bar stock with both ends tapped 3/8" (9,53 mm). Finish: PVC coating.
8. Pipe Barrier: Weldment comprised of 5/8" (15,88 mm) solid steel vertical rails, 1 1/8" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" (15,88 mm) internal threads, 1 1/2" x 1 1/2" x 29 1/2" (38,1 mm x 38,1 mm x 749,3 mm) angle iron. Barrier measures 33 7/8" (860,43 mm) wide x 39 13/16" (1011,22 mm) high. Finish: PVCcoating.
9. Pipe Barrier with wheel above dect to be comprised of 5/8" (15,88 mm) solid steel vertical rails, 1 1/8" (28,58 mm) O.D. x 11 GA (.120") (3,04 mm) steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" (15,88 mm) internal threads, 1 1/2" x 1 1/2" x 29 1/2" (38,1 mm x 38,1 mm x 749,3 mm) angle iron. Barrier measures 33 7/8" (860,43 mm) wide x 39 13/16" (1011,22 mm) high. Finish: PVC coating.
10. Table panel support Leg: Weldment comprised of 2.375" (60,33 mm) O.D. RS-20 (.095" - .105") (2,41 mm-2,66 mm) galvanized steel tubing and 1/4" x 2 1/2" x 9" (6,35 mm x 63,5 mm x (229 mm) flat plate. Finish: ProShield, color specified. Table End Panel: Solid color panel measures 34" (864 mm) wide x 13 3/8" (339,73 mm) high. Table Panel: Solid color panel measures 19 1/2" (495,3 mm) wide x 34 3/4" (882,65 mm) long, color specified. Frame: Weldment comprised of 3/16" x 2" x 1 1/4" (4,75 mm x 51 mm x 31,75 mm) HRS angle and 3/16" x 2" (4,75 mm x 51 mm) flat steel bar. Finish: PVC, color matched to posts.
11. Playstructure Seat: Flange formed from 11 GA (.120") (3,04 mm) sheet steel. Seating surface is perforated with 1/4" (6,35 mm)diameter holes. Finish: PVC.
12. Square Poly Roof: Rotationally molded from U.V. stabilized linear low density polyethylene, with Logo panel, words to be specified at time of ordering.
13. Curved Transfer Module Right 40". Step Sections/Top Step Section: Formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011. Standing surface is 24 3/8" (619,13 mm) wide x 14" (355,6 mm) deep and is perforated with 5/16" (7,92 mm) diameter holes. Finish: PVC. Railings: Weldment comprised of 1.125" (28,58 mm) O.D. x 11 GA. (.120") (3,04 mm) steel tubing with 203 or 303 stainless steel 3/8" (9,53 mm) threaded inserts. Finish: PVC. Square Deck: Flange formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011. Standing surface is perforated with 5/16" (7,92 mm) diameter holes. Deck face has (4) slotted holes for face mounting components. The finished size measures 2 5/8" x 47" x 47" (66,68 mm x 1194 mm x 1194 mm). Finish: TenderTuff, color specified.
14. Rush Slide. Hood: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified. Handbar: Fabricated from A356 aluminum. Finish: powdercoated. Crossover: Weldment comprised of 2.375" (60,33 mm) O.D. RS40 (.130"- .140") (3,30 mm-3,56 mm) wall galvanized steel

- tubing, 3/16" (4,74 mm) HRPO steel sheet and 1 7/8" (47,63 mm) steel ball. Finish: powdercoated. Handhold: Weldment comprised of 1.315" (33,4 mm) O.D. RS20 (.080"-.090") (2,03 mm-2,28 mm) wall galvanized steel tubing and 7 GA. (4,54 mm) HRPO steel sheet. Finish: powdercoated. Slide: Rotationally molded from U.V. stabilized linear low density polyethylene.
15. BalanceWinder, attached to One Arch & One Arch Post. Ball Clamp/Ball Retainer: Cast from 356-T6 Aluminum. Finish: powdercoated. Lower Beam: Weldment comprised of 2.375" (60,33 mm) O.D. RS20 (.095"-.105") (2,41 mm-2,66 mm) wall galvanized steel tubing, 1.900" (48,26 mm) O.D. RS20 (.090"-.100") (2,28 mm-2,54 mm) wall galvanized steel tubing, 3/8" (9,53 mm) thick HRPO steel plate, and 1 7/8" (47,62 mm) steel ball. Finish: powdercoated. Upper Beam: Weldment comprised of 2.375" (60,33 mm) O.D. RS20 (.095"-.105") (2,41 mm-2,66 mm) wall galvanized steel tubing, 3/8" (9,53 mm) thick HRPO steel plate, and 1 7/8" (47,62 mm) steel ball. Finish: powdercoated. Footer: Fabricated from 1.900" (48,26 mm) O.D. RS20 (.090"-.100") (2,28 mm-2,54 mm) wall galvanized steel tubing. Finish: powdercoated. Cable: Made of tightly woven polyester-wrapped, six-stranded galvanized-steel cable with a polypropylene core. (Cable Connector) 6061-T6 aluminum. Finish: powdercoated, black in color. Ring: Rotationally molded from U.V. stabilized linear low density polyethylene. Support: Fabricated from 2.375" (60,33 mm) O.D. RS20 (.095"-.105") (2,41 mm-2,66 mm) wall galvanized steel tubing. Finish: powdercoated. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). 5" (127 mm) Round Clamp: All clamps, unless otherwise noted, shall be sand cast using a 535 aluminum alloy and having the following mechanical properties: Ultimate Tensile: 35,000 PSI. Yield Strength: 18,000 PSI. Elongation: 8% in 2 inches.
16. Overhead Trekker or equal. Support: Fabricated from 2.375" (60,33 mm) O.D. RS20 (.095"-.105") (2,41 mm-2,66 mm) wall galvanized steel tubing. Finish: powdercoated. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). E-Pod Rotationally molded from U.V. stabilized linear low density polyethylene, color specified. Pod: Rotationally molded from U.V. stabilized linear low density polyethylene. Pod Casting: Fabricated from sand cast alloy 356 in accordance with ASTM B26. Finish: powdercoated. Overhead Trekker: Weldment comprised of 2.375" (60,32 mm) O.D. RS20 (.095"-.105") (2,41 mm-2,66 mm) wall galvanized steel tubing, 1.315" (33,40 mm) O.D. RS20 (.080"-.090") (2,03 mm-2,28 mm) wall galvanized steel tubing, and 1 7/8" (47,62 mm) steel ball. Finish: powder coated.
17. Gyro Twister or equal. Ball Clamp/Ball Retainer: Cast from 356-T6 Aluminum. Finish: powdercoated. Bushing: Oil-filled UHMW PE. Footer: Weldment comprised of 2.375" (60,32 mm) O.D. RS40 (.130"-.140") (3,30 mm-3,56 mm) wall galvanized steel tube, 12 GA. (.105") (2,66 mm) HR flat steel and 1 7/8" (47,62 mm) steel ball. Finish: powdercoated. Gyro Twister Assy: Weldment comprised of 1.900" (48,26 mm) O.D. RS40 (.130"-.140") (3,30 mm-3,56 mm) wall galvanized steel tube, 1.660" (42,16 mm) O.D. RS40 (.111"-.121") (2,82 mm-3,07 mm) wall galvanized steel tube, 3/16" (4,75 mm) HRPO steel plate, and 1 7/8" (47,62 mm) steel ball. Finish: powdercoated. Fasteners: Primary fasteners shall be socketed and pinned

tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). Upper Spinner Mount: Weldment comprised of 2.375" (60,33 mm) O.D. RS40 (.130"-.140") (3,30 mm-3,56 mm) wall galvanized steel tube, 2.750" (69,85 mm) O.D. 1018 steel, and 1 7/8" (47,62 mm) steel ball. Finish: powdercoated.

18. Evos 2 Arch w/3-5 Attach Points. Ball Clamp/Ball Retainer: Cast from 356-T6 Aluminum. Finish: powdercoated.

2.4 SINGLE-POST SWINGS COMPOSITE

- A. Shall be a four-bay "Single Post Swing" system by LSI or Approved Equal, with 5" posts, clamps, and swing support bar.
- B. Posts: See Composite Play Structures general specifications.
- C. Beam: Powdercoated steel weldment comprised of 2.375" galvanized steel tubing, 3" wide zinc-plated steel clamps, and 1.25" housings with bronze bushings.
- D. Chains: shall be galvanized steel.
- E. Chain attachment to horizontal post shall be "non-wrapping."
- F. Belt Seat: Molded from UV stabilized black EPDM rubber encapsulating a weldment comprised of a 22 GA (.029") spring stainless steel sheet and (4) .105" thick stainless steel washers. The belt seat elliptical shape measures 7" wide x 26" long x .700" thick.
- G. Full Bucket Seat: Made of U.V. stabilized high-quality black rubber encapsulating a 24 GA (.024") stainless steel reinforcement plate. Handles cast from 356-T6 aluminum alloy with a 60 durometer black neoprene grip placed over handles. Handles attach to seat with (3) 1/4" x 1 5/16" long stainless steel rivets. The full bucket measures 9" deep x 10 1/2" wide.
- H. Molded Bucket Seat: Rotationally molded from UV stabilized linear low density polyethylene, color to be black. Mounting bracket cast from 535 aluminum magnesium. Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel per ASTM F 879.

2.5 ZIP LINE

- A. Zip line shall be by BerlinerSeilfabrik or equal.
- B. Zip line to be IPEMA certified.
- C. Arched steel construction uprights shall be 139.7 mm diameter with 11mm wall thickness, half bend tubing to be 133 mm diameter with 8mm wall thickness.
- D. Cable shall be
- E. Trolley enclosed casing shall be made from stainless steel, safety pendulum seat shall be suspended from coated chain.

2.6 WATER SPRAY NOZZLES AND CONTROLLER

- A. Materials Specifications:
 1. Stainless Steel Structural Tubing: Shall be type 304/304L, structurally strong, durable, and resistant to corrosive environments. Rigid centricast fiber

reinforced (FRP) and/or moulded fiberglass, PVC, filament wound tubing, Galvanized Steel, or Aluminium shall not be utilized for any above or below grade play product structures.

2. Brass: Spray nozzles, caps and heads shall be manufactured from C360 brass and shall use tamper resistant tools for installation and removal. They shall be structurally strong and resistant to corrosive environments offering years of consistent spray effects. In addition, as a softer alloy than stainless steel they shall guard the nozzle housing thread integrity. PVC, Nylon, and Delrin™, shall not be utilized.
3. Painted Finish: Shall be a polyester smooth glossy heat-cured powder coat that is UV and chemical resistant and suitable for public spaces.
4. Mounting and Assembly Hardware: All hardware and anchoring systems shall be 304/304L stainless steel. Exposed and accessible hardware shall be tamper resistant, requiring a special tool for removal to deter vandalism and theft.
5. Handle Sphere: Shall consist of two (2) half spheres and each shall be constructed of high density, high impact 356.2 aluminium, with a heat-cured polyester coat finish. Each half sphere shall be assembled to the other using a tamper resistant stainless steel system.
6. Safety & Craftsmanship: All edges shall be machined to a rounded edge. All welds shall be watertight, buffed smooth, or polished to a non-visible finish and factory pressure tested. Accessible nozzles and spray heads shall be recessed to ensure a completely safe play environment with no pinch points, head entrapments or protrusion hazards. All products shall be designed in accordance with ASTM F1487 and CSA Z614-98 regulations for public playgrounds.

B. Play Product Specifications:

1. Activator Bollard: Shall be "Hydraulic Activator, VOR-605.000x" by Vortex International, Inc. or Approved Equal. Activator shall be constructed of stainless steel 304/304L tubing with an external diameter of 4.500" and a wall thickness of 0.12". The activator shall consist of a brass hydraulic valve and a stainless steel push-button activator. The hydraulic solenoid valve and push-button activator shall be factory assembled and recessed into the upper portion of the tubular post. The hydraulic valve assembly shall control the operation of the Play Product(s). Once activated the flow of water will commence for a period of 1-2 minutes, before re-activation is required. The mechanical vault shall be a prefabricated unit attached to the lower portion of the tubular section and act as the anchoring system for the entire unit. It shall house one (1) main water inlet that shall have a 1 ½" National Pipe Thread connection that shall be pre-assembled to a 1 ½" hydraulic solenoid valve. The vault shall also house three (3) 1" inch National Pipe Thread water outlets for the Play Product(s). The vault shall be accessible via removable stainless steel access panels. The drainage system shall consist of a ¾" PVC ball valve in the vault. The top of the post assembly shall be fitted with a heat-cured, polyester painted, handle-sphere, consist of two (2) half spheres assembled to each other with a tamper resistant system using stainless steel hardware. The hydraulic requirements of all connected products shall not exceed 40 gpm.

2. Water Jets type A: Shall be "Ground Geyser VOR-301.0000" by Vortex International, Inc. or Approved Equal. Type A Jets shall be constructed of stainless steel structural tubing with an outside diameter of 3.500" inches and a wall thickness of 0.113" inches. The brass spray cap & winter cap shall be threaded into the geyser body using a tamper-resistant tool. The spray cap shall have a 10-hole spray pattern angled at 5° (degrees) from vertical. The hydraulic requirements shall be 5-10 gpm @ 5-10 psi. Low consumption nozzles that minimize water usage while maximizing spray effects are also available. Tamper resistant winter caps shall be included.
3. Water Jets type B: Shall be "Side Winder Vor-7518.0000" by Vortex International Inc. or Approved Equal. Type B Jets shall be constructed of stainless steel with an outside diameter of 4.500" inches. The brass spray cap & winter cap shall be fastened to the body using tamper-resistant fasteners. Each spray head shall have an 18-hole radial spray pattern arranged at 5 degrees from vertical. The hydraulic requirements shall be 10-20 gpm @ 5-15 psi. Tamper resistant winter caps shall be included.
4. Water Jets type C: Shall be "Water Jelly 01 Vor-7010.0002" by Vortex International Inc. or Approved Equal. Small Jets shall be constructed of stainless steel with an outside diameter of 4.500" inches. The brass spray cap & winter cap shall be fastened to the body using tamper-resistant fasteners. Each spray head shall produce an inverted laminar bell spray effect. The hydraulic requirements shall be 10-15 gpm @ 1-2 psi. Tamper resistant winter caps shall be included.
5. Water Jets type D: Shall be "Jet Stream with Smart-Flow Vor-7512.0100" by Vortex International Inc. or Approved Equal. Type D Jets shall be constructed of stainless steel with an outside diameter of 4.500" inches. The brass spray cap & winter cap shall be fastened to the body using tamper-resistant fasteners. Each spray head shall produce a single soft vertical stream. The hydraulic requirements shall be 3-7 gpm @ 1-4 psi. Tamper resistant winter caps shall be included.

PART 3 - EXECUTION

3.1 CAST-IN-PLACE CONCRETE FOOTINGS

- A. Concrete footings shall conform to the specifications contained in 03 30 00, Cast-In-Place Concrete.
- B. Install all footings plumb and true.
- C. Embedments into footings shall be cast-in-place, cored and embedded, or sleeved and embedded, following all instructions in 03 30 00.3.01.D.3, Cast-In-Place Concrete: Embedded Items. Cored or sleeved items shall be securely anchored in place with a non-shrink, non-metallic waterproof grout suitable for buried use.
 1. All corings shall be done in such manner as to avoid damage to the cast footing. Where feasible, sleeved embedments or cast-in-place embedments are preferred. All proposed corings shall be discussed with the Landscape Architect prior to casting the footings.
- D. The Contractor shall do all necessary excavation required for the installation of the play equipment. Excavation shall be defined as the digging of all required footings

and the removal of all materials encountered (footings, pavements, earth, boulders, broken concrete pieces, etc.) while digging those footings.

- E. The depth of the top of the footing depends on the safety surfacing specified. See Drawings.

3.2 COMPOSITE PLAY STRUCTURES (2-5 YEAR OLD., 5-12 YEAR OLD, AND SWINGS).

- A. Play equipment and play items to be installed per manufacturer's directions and specifications, and per the Drawings.
- B. Erection
 - 1. All tubular Posts shall be set square and plumb in concrete footings, to grade required, to assure level installation of platform angle frames and rails. All Posts shall extend 34" min. below theoretical finish grade, or as directed by manufacturer.
 - 2. Equipment shall be assembled to conform to the approved shop drawings. All fastenings shall be made as shown on the drawings and shall be securely tightened. All work shall be done so that no hazardous projections shall be left on the finished work.
- C. Installation: Play equipment to be installed per manufacturer's directions. Contractor to repair all damage to surfaces and finishes per manufacturer's instructions after installation is complete.
- D. Cleanup: Upon completion of the work under this Section, all excess materials and debris resulting from work under this Section, including all packaging, shall be cleaned up, removed from the Site, and properly disposed of.

3.3 ZIP LINE

- A. Zip line to be installed following all manufacturer's directions.

3.4 WATER SPRAY NOZZLES AND CONTROLLER

- A. Finish shall be in compliance with local, state and federal codes.
- B. Anchoring and Leveling Systems: The anchoring system shall have an integrated leveling system facilitating installation and a plumb finished to the activity deck surface.
- C. Earth Bonding/Grounding: All Water Play products are to be equipped with a Grounding Lug and are to be grounded against a lightning strike as per article 680 of the N.E.C.
- D. Drawings and Instructions: Product drawings and installation manuals shall be supplied by the manufacturer for ease of installation.

END OF SECTION

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SECTION 12 93 00
SITE FURNISHINGS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
 - 1. The Town and the Landscape Architect, after a reasonable investigation, have not identified three manufacturers that can meet the following specifications for recycled plastic lumber benches or the recycled plastic bulletin board, for reasons due to the nature of distributed public-works systems such as a consistent site furniture palette. Therefore, for sound reasons in the public interest (which, per MGL c. 30 s. 39M, part b, will be provided to prospective bidders in writing upon formal request) the following Basis of Design specifications are being used for ALL ITEMS in this Section.
 - 2. Alternate manufacturers for plastic lumber benches and or plastic lumber bulletin boards will be considered, per MGL c.30 s.39M part b criteria 1, provided that they substantially conform (even with deviations), in the sole judgment of the Owner and the Landscape Architect, to the specifications.
 - 3. Proposed alternate manufacturers plastic lumber benches or the plastic lumber bulletin board should be submitted for consideration regarding conformance to the specifications at least one week prior to bid submission. Alternative manufacturers, if submitted later than one week prior to bid submission and found, in the judgment of the Landscape Architect and the City, not to be in substantial compliance with the specifications, shall not be considered as grounds for an amendment to the Contract Price due to price differences.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein. This includes, but is not limited to the following:
 - 1. Metal & Recycled Plastic Lumber Bench – New & Re-installed Existing;
 - 2. Trash Receptacle;
 - 3. Game Tables;
 - 4. Re-installed Existing Metal & Plastic Lumber Picnic Table;
 - 5. Plastic Timber Bulletin Board.

1.3 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all

trades and all departments of the City of Boston and coordinate all work under this Section therewith.

- B. The following related items are included under the Sections listed below:
 - 1. Section 02 41 00 - Site Preparation and Demolition
 - 2. Section 32 13 13 – Cast in Place Portland Cement Concrete

1.4 SUBMITTALS

- A. Provide complete Shop Drawings, manufacturer's literature and/or samples for all new items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.6 DEFINITIONS

- A. The following items are included herein and shall mean:
 - 1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 - 2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
 - 3. AAB: Architectural Access Board.
 - 4. ADA: Americans with Disabilities Act and its current regulations.
 - 5. CPSC: Consumer Product Safety Council.

PART 2 - PRODUCT

2.1 METAL & RECYCLED PLASTIC LUMBER BENCH

- A. Bench to be by Dumor, model number 57-60 PF.
- B. Color of metal to be black.
- C. Color of plastic timber to be redwood.

2.2 TRASH RECEPTACLE

- A. Trash receptacle to be by Custom Fabrications, model number CFTR-003-02 or approved equal.
- B. Metal to be polyester powder-coated. Color to be black.
- C. All hardware to be supplied by manufacturer and shall be tamper resistant and stainless steel.

2.3 GAME TABLES

- A. All hardware to be supplied by manufacturer and shall be tamper-resistant and stainless steel.
- B. Tables and chairs to be embedded.
- C. Metal components shall be polyester powder-coated; color to be selected by Landscape Architect from standard colors. Slats to be recycled plastic.
- D. Checkerboard to be 16-1/4" sq., porcelain checkerboard. Colors to be selected from manufacturer's standard colors.
- E. Contractor shall touch up any scratches or other marks to surfaces and finishes.

2.4 PLASTIC TIMBER BULLETIN BOARD

- A. Plastic timber Bulletin Board including frame, lockable acrylic door, cork board, overhang, and all elements shown on the drawing, to be purchased as a unit from manufacturer.
- B. Finish and color of plastic timber to be selected by Owner and Landscape Architect from Manufacturer's Standard List of colors.

2.5 RESET EXISTING METAL & PLASTIC LUMBER PICNIC TABLE

- A. Use metal and plastic lumber picnic table salvaged from the park during demolition.

PART 3 - EXECUTION

3.1 METAL & RECYCLED PLASTIC LUMBER BENCH – NEW & RESET EXISTING

- A. Install as directed by Drawings and manufacturer's specs. Contractor to touch up any scratches and all mars to surfaces and finishes.

3.2 TRASH RECEPTACLE

- A. Install as directed by Drawings and manufacturer's specs. Contractor to touch up any scratches and all mars to surfaces and finishes.

3.3 GAME TABLES

- A. Install as directed by Drawings and manufacturer's specs. Contractor to touch up any scratches and all mars to surfaces and finishes.

3.4 RESET EXISTING METAL & PLASTIC LUMBER PICNIC TABLE

- A. Install as directed by Drawings.

3.5 PLASTIC TIMBER BULLETIN BOARD

- A. Install per manufacturer's directions.

END OF SECTION

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31 00 00 EARTHWORK - EXCAVATION, FILLING AND GRADING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract, Division 0, and applicable parts of Division 1 apply to the Work under this Section.
- B. The Contractor shall prior to any removal of surplus fill, excavated material, or debris from the site, furnish written evidence satisfactory to the Owner or Owner's representative that he has an approved dumping location for debris and/or spoil from his/her excavation activities.
- C. For all earthwork, excavation, and removals within the driplines of protected trees (not limited to areas within designated tree protection fencing), the Owner's Representative or Landscape Architect must be present on the site or have specifically waived that obligation in writing to the Contractor to ensure tree protection measures are being observed. Provide 48 hours' notice prior to commencement of all such work. (SEE 01 57 00 3.07)

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform Earthwork as shown on the Drawings and as specified herein.
- B. To be included:
 - 1. Excavating, filling, trenching and backfilling of all descriptions required for the construction of pavements, safety surfaces, equipment, site improvements, utilities, filling voids left by hardscape and plant removals, and all specialties. Provide all additional fill materials as required and specified herein.
 - a. All work within the protected areas under existing trees including demolition and removal (see Sheet L2.1 and L2.2 of the Drawings), shall be HAND WORK or AIR SPADE ONLY to protect the root structures of existing trees.
 - 2. Pumping and/or bailing necessary to maintain excavated spaces free from water from any source whatsoever.
 - 3. Provide graded materials, as specified, for fills, base courses and backfills as required.
 - 4. Perform all compaction of fill materials as hereinafter specified.
 - 5. Obtain all required permits, licenses and approvals of appropriate municipal and utility authorities prior to commencing work, and pay all costs incurred there from.
 - 6. If subgrade is deemed unsuitable for placement of subbase material, backfill with processed gravel. Work under this Section shall include the excavation of 20 cubic yards of unsuitable material beyond the line and grades as shown on drawings, and as determined by the Landscape Architect. Such removals shall be measured by a Civil Engineer or Land Surveyor employed by the Contractor

and verified by the Landscape Architect. If this work is not performed, credit to the extent of unsuitable material removal less than twenty (20) cubic yards in total quantity shall be applied to the contract price at a value of \$35.00 per cubic yard. The contract price shall be reduced by the extent of the work not undertaken as called for in this Section. The contract price shall be increased, if additional work is authorized by the Landscape Architect, at a value of \$40.00 per cubic yard.

- a. Unsuitable material shall be measured in place by a Civil Engineer employed by the Contractor with quantities verified by the Landscape Architect. No unsuitable material removals shall be credited to the Contractor without prior measurements and verifications.
 - b. For unsuitable material amounts greater five (5) cubic yards, the unsuitable material shall be measured in place by a Civil Engineer employed by the Contractor with quantities verified by the Landscape Architect. No unsuitable material removals shall be credited to the Contractor without prior measurements and verifications.
7. Work under this Section shall include the removal and backfill of twenty-five (25) cubic yards of ledge in mass or trench and open rock excavations, or boulder over one (1) cubic yard in size in trench excavations or removal of solid masonry or concrete foundations. Such removals shall be measured by a Civil Engineer or Land Surveyor employed by the Contractor and verified by the Landscape Architect. If this work is not performed, credit to the extent of ledge or boulder or concrete footing removal less than twenty-five (25) cubic yards in total quantity shall be applied to the contract price at a value of \$75.00 per cubic yard. The contract price shall be reduced by the extent of the work not undertaken as called for in this Section. The contract price shall be increased, if additional work is authorized by the Landscape Architect, at a value of \$90.00 per cubic yard.
- a. Rock excavation shall be measured in place by a Civil Engineer employed by the Contractor with quantities verified by the Landscape Architect. No rock removals shall be credited to the Contractor without prior measurements and verifications.
- C. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the Town of Arlington and coordinate all work under this Section therewith.
- D. The following related items are included under the Sections listed below.
1. Section 02 41 00 - Site Preparation and Demolition
 2. Section 03 30 00 - Cast In Place Concrete
 3. Section 11 68 00 - Play Equipment
 4. Section 12 93 00 - Site Furnishings
 5. Section 32 10 00 - Bases, Ballasts, and Paving
 6. Section 32 90 00 - Planting

7. Section 33 00 00 – Utilities

1.3 SUBMITTALS

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

1.4 LAWS, ORDINANCES, PERMITS AND FEES

The Contractor shall:

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

1.5 DEFINITIONS

- A. The following related items are included herein and shall mean:
 - 1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition
 - 2. A.S.T.M. - American Society for Testing and Materials
 - 3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials
- B. Rock excavation shall be defined as:
 - 1. Open rock excavation shall be classified as rock 3 cubic yards in size or larger.
 - 2. Trench rock excavation shall be classified as rock 1 cubic yard or larger.

3. Ledge shall be classified as solid, continuous rock mass, unable to be removed without mechanical measures, and larger than the size/location conditions stated in paragraphs 1 and 2 above.

1.6 BENCH MARKS AND ENGINEERING

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

1.7 SUBSURFACE INFORMATION

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

1.8 FINISHED GRADES

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

1.9 GRADES AND ELEVATIONS

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

1.10 WORK IN THE PUBLIC WAYS

- A. Notify the appropriate municipal officials at least seven calendar days in advance of commencing any work in the public ways to obtain all required permission to perform this work. Perform all work in the public ways in a manner required by the municipal authorities.
- B. Should there be any conflict between requirements specified in the Contract Documents and those of the Town of Arlington, the municipal requirements shall govern.

- C. Do not close or obstruct any streets or sidewalks unless and until they have been discontinued by the appropriate municipal authority or unless and until he shall have first secured all necessary or other permits therefor. No materials whatsoever shall be placed or stored in the streets. Conduct all operations to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

1.11 DISPOSITION OF EXISTING UTILITIES

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

1.12 PROTECTION

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

PART 2 - PRODUCTS

2.1 General Notes

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

2.2 Samples and Testing:

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

2.3 Ordinary Borrow

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

2.4 Structural Fill (Processed Gravel/Dense-Graded Gravel):

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

2.5 Structural Fill (Dense Graded Crushed Stone):

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

2.6 Drainage Stone (Crushed Stone):

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

PART 3 - EXECUTION

3.1 GRADES AND ELEVATIONS

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

3.2 EXCAVATION

A. General

1. Excavate all material to the elevations, dimensions and form as shown on the Drawings and as specified for the construction of site improvements and other structures necessary for the completion of the utilities and site work. All unsuitable materials within the indicated and specified limits shall be excavated and removed at no additional cost to the contract as specified in 1.02 (B-6) of this section. Any quantities involving an extra or other adjustment of the Contract Price shall be subject to measurement verification and approval by the Landscape Architect prior to the excavation and removal of such materials. Unsuitable materials shall include the following:
 - a. Utility structures, building foundations and other man-made structures.
 - b. Peat, organic silt and other organic materials subject to decomposition, consolidation or decay.
 - c. Miscellaneous fill including cinders, ash, glass, wood, and metal.
 - d. Ledge or boulders except as specified for fills herein.
2. In general, the General Contractor shall be permitted to use machine excavation except for the final six (6) inches under footings, foundations, utility lines and structure, which shall be hand work. Also, all excavation in the planting areas and areas specified for tree protection shall be hand work.

3. If any part of the excavation is carried through error beyond the depth and dimensions indicated on the Drawings or specified herein, or if the foundation soils are disturbed by dewatering or other construction operation, the General Contractor shall, at his own expense, refill with structural fill compacted to ninety-five (95) percent of the maximum dry density at optimum moisture content or with concrete as determined by the Engineer.
 4. When excavation has reached the prescribed depth, the Landscape Architect shall be notified and will make an inspection of the condition and approve the placing of fill material.
 5. The Contractor shall obtain from the proper authorities locations of all utilities within the scope of this work so that there will be no damage done to such utilities. Neither the Owner nor the Landscape Architect will be responsible for any such damage, and the Contractor shall restore any structure or utility so damaged without additional compensation. Attention is called to that fact that there are electric lines, and other utilities in certain locations within and adjacent to the sites. Written notifications to the appropriate utility agencies shall be made at least ten (10) days prior to the commencement of any work.
 6. Wherever culverts, sewers, drains, manholes, catch basins, catch basin connections, water mains, valve chambers, utility tunnels, gas pipes, electric and telephone conduits, house service connections of any other underground constructions are encountered in excavating for utilities or any other site work, they shall be protected and firmly supported by the Contractor, at his own expense, until the trench is backfilled and the existing structures are made secure. Injury to any such structures caused by or resulting from the Contractor's operations shall be repaired at the Contractor's expense. The authority having charge of any particular underground structure shall be notified promptly of injury to its structure. All utility lines shall be noted on the required "As-Built" Plan.
 7. Excess material - Suitable excavation material which is allowable for fill and backfill shall be separately stockpiled as directed by the Landscape Architect. All surplus fill other than that required to complete the intent of the Contract shall become the property of the Contractor and shall be legally disposed of off the property by the General Contractor. All excavated materials which, in the opinion of the Landscape Architect are not suitable for fill and backfill shall be removed and legally disposed of off the property.
 8. Any unsanitary conditions encountered, such as broken sewer mains or uncovered garbage, shall be corrected or completely removed as directed by the Landscape Architect.
- B. Excavation for Site Improvements.
1. Excavate to the lines and grades shown on the Drawings and as specified to obtain the subgrades for the site improvements.
 2. Trenching for all water, utility, and drain lines shall comply with the standards in S.S.H.B., especially Section 150.64.
 3. Existing service and utilities encountered shall be immediately repaired, protected and maintained in use until relocation of same has been completed or

to be cut and capped where directed or be prepared for connection when so required.

3.3 SUBGRADE PREPARATION AND PROTECTION

A. General Requirements

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

B. Proof Rolling Subgrades

1. Prior to placement of fill, or bottom filter fabric where shown on drawings, proof roll natural ground by making a minimum of two passes with approved compaction equipment. Proof rolling may be waived by the Landscape Architect where excessively wet or saturated subgrade conditions are encountered.

3.4 PROTECTION

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

3.5 FILL AND COMPACTION

- A. Samples and Testing -- See Earthwork Section 31 00 00 A (Samples and Testing).
- B. Compaction Equipment and Tests
 1. Compaction equipment, unless otherwise specified, shall consist of heavy vibratory rollers, such as a Raygo 400 or other compaction equipment approved by the Landscape Architect. Equipment shall make a minimum of four (4) passes to achieve compaction as specified; to provide an evenly dense and compacted thickness throughout. All ruts shall be filled, the surface even and compacted to the density called for. The Landscape Architect retains the right to disapprove the use of any equipment that does not meet the above

Specifications or perform the work as intended. Any modifications of equipment or method must be approved by the Landscape Architect.

2. All fill material shall be compacted to at least ninety-five (95) percent of maximum density(s) determined by A.S.T.M. Test Designation D-1557, Method D or A.S.T.M. D-1556.
3. Compaction tests shall be performed at five (5) locations as directed by the Landscape Architect.

C. Placing Fills and Compacting

1. Fill material shall be placed in horizontal layers not exceeding six (6) inches. Each layer shall be compacted to the percentage of maximum dry density specified for the particular type of fill and at a water content equal to optimum dry density and optimum water content shall be as specified herein.
2. Where water content of the fill must be adjusted to meet this Specification, the fill shall be thoroughly disked to insure uniform distribution of any water added.
3. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water. Do not place fill when materials or layers below it are frozen.
4. Notify the Landscape Architect when excavation is ready for inspection. Filling and backfilling shall not be started until conditions have been approved by the Landscape Architect.
5. In confined areas adjacent to footings and foundation walls and in utility trenches, the fill shall be compacted with hand-operated vibration tampers. The maximum lift thickness shall be four (4) inches. The degree of compaction attained shall be equivalent to that attained in the adjacent open areas where heavy rolling equipment is used. Any areas which subsequently settle shall be refilled to true subgrade and properly compacted.

D. Placing Subbase Fills (Compacted Graded Gravel)

1. Subbase fills, as specified herein above, shall be provided as follows:
 - a. As subbase under all pavement unless otherwise called for
 - b. As subbase under and/or around footings and as shown on the Drawings or specified.
2. Place subbase in six (6) inch maximum layers; fill and compact each layer to ninety-five (95) percent maximum dry density.

3.6 GRADING

- A. Do all grading required for the work including shaping, trimming, rolling and finishing of the surface of the subgrades for all surfaces. All ruts shall be eliminated. Grading for subgrades for paved areas shall be finished at the required depth below and parallel to the proposed surface within 1/4" in 10'-0" tolerance.

- B. If, during the progress of rough grading work, any water pipe, sewer, conduit, drain, or other construction is damaged as a result of operations under this Contract, the Contractor shall repair all such damage at no additional cost to the Owner and restore work to its original condition.
- C. Do all other cutting, filling and rough grading to the lines and grades indicated on the Drawings. Grade evenly to the finished grades shown on the Drawings. No stone larger than 3" in largest dimension shall be placed in upper 6" of fill.
- D. Grading shall be brought to bottom of base course under areas to be paved.
- E. Complete grading operations after site improvements are constructed, and all materials, rubbish and debris removed from the site. Leave subgrade for planting clean at required grades. Provide sufficient grade staking to witness correct lines and grades, as determined by the Landscape Architect.
- F. Where streets or sidewalks within or outside the limit of Contract lines have been excavated in fulfilling the work required under this Contract, the Contractor shall furnish and install all material necessary to bring finish surfaces level with the existing adjacent surfaces. All work shall be installed to match the existing conditions in accordance with the governing authority. Notify the proper authorities prior to restoring surfaces outside the limit of Contract line.
- G. Tolerances

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

END OF SECTION

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31 13 00
TREE PRUNING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. Under this Section, the Contractor shall furnish all labor, materials, equipment and transportation required to complete all aspects of the work in accordance with all local, state and federal regulations in force at the time of this Contract and in accordance with the various Items specified herein.
- C. The work of this Section consists of all tree pruning and removal work and related Items as specified herein and includes, but is not limited to:
 - 1. Crown Cleaning;
 - 2. Crown Raising;
 - 3. Crown Reduction;
 - 4. Crown Thinning;
 - 5. Crown Training;
- D. All work in this section shall be performed by a Massachusetts Certified Arborist. (See 1.02, Qualification of Arborist, below.)
- E. All trees to be pruned or removed are located on the site. All trees indicated shall be inspected by the Arborist and Landscape Architect before work is to be done. In addition to trees indicated for removal on the Drawings, trees should be removed for the following reasons: dead trees, hazardous trees, or trees in serious decline, as determined by a certified Arborist. If the Arborist discovers tree(s) which have not been marked for removal and are intended for pruning, but whose condition is such that removal is warranted, whether due to death, disease, decay, damage, or structural weakness, such tree(s) shall not be pruned and the Arborist shall immediately report these findings in writing to the Owner and await the Owner's direction before proceeding with work on the particular tree(s) in question.
- F. The intent of this portion of the Contract is to identify trees that should be removed while pruning all remaining trees on the site to provide safety, protection of property, clearance of roadways, walks, buildings and luminaries, and to improve the overall structure of the trees.
- G. The Contractor is required to review and inspect the site regarding trees to be removed (as indicated on the Drawings) prior to bid proposal in order to form his/her own assumptions as to the ultimate cost of the work.
- H. The Contractor shall be required to measure the DBH (Diameter of the tree at 4.5' from the ground) of each tree pruned and to record the species of the tree and its overall condition after pruning. If a police detail is required, this report shall also

include any police detail information. Payments will not be processed until this information is received.

1.2 QUALIFICATION OF ARBORIST

- A. Work on this section of the Contract shall be limited to individuals, partnerships and corporations who are actively engaged in the field of Arboriculture, and who demonstrate competence, experience and financial capability to carry out the terms of this project. Subcontractors must derive a majority of their income from arboricultural work. The Owner may require proof of these qualifications.
- B. Unless otherwise approved by the Owner, all work shall be conducted by qualified and trained personnel under the direct supervision of a Massachusetts Certified Arborist, in good standing. A Massachusetts Certified Arborist must be on site at all times during any pruning operations. The Contractor shall be required to provide proof of certification.
- C. Any subcontractor hired by the General Contractor to perform any portion of the work shall meet all qualifications herein and be acceptable to the Owner.

1.3 SPECIAL REQUIREMENTS

- A. Dutch elm disease wood (if any) shall be disposed of in accordance with provisions of General Laws, Chapter 87, Section 5, and Chapter 132, Section 8 and 11 as amended; and in accordance with any additional local regulations. All wood shall be removed from the site and be properly disposed of in accordance with state and local regulations.
- B. No burning is permitted on the project site.
- C. Prior to commencing work, the Contractor shall submit a plan for legal disposal of removed materials, acceptable to the Owner.
- D. The Contractor shall be required to place door hangers at all properties that abut a tree to be serviced. The door hanger will contain information regarding the City's intention to prune the trees near their property. The Contractor shall be required to indicate the date when the trees will be serviced on the door hanger. The door hanger is to be placed 48 hours in advance of the work. Door hangers will be provided by the Owner.

1.4 STANDARDS AND DEFINITIONS

- A. Pruning and Removals shall conform to the following:
 - 1. American National Standards Institute (ANSI): Standard A300-2001 Standard Practices for Tree Care Operations – Tree, Shrub and Other Woody Plant Maintenance
 - 2. American National Standards Institute (ANSI): Standard Z-133.1.-2001 Safety Requirements for Tree Care Operations – Pruning, Trimming, Repairing, Maintaining, and Removing Trees, and Cutting Brush
 - 3. All other applicable Occupational Safety and Health Administration (OSHA) standards, and state and local regulations.

- B. American National Standards Institute- (ANSI) is the private, non-profit organization that administers the safety and maintenance regulations for the Tree Care Industry.
- C. Crown Cleaning- The removal of dead, diseased, obstructing, split, and/or broken branches that are 2 inches in diameter or greater. Limbs that are susceptible to failure from dense or heavy foliar masses should be thinned.
- D. Crown Raising- The removal of lower tree branches to allow safe movement of vehicles and pedestrians under the canopy of the tree. Limbs above sidewalks shall be no lower than 10 feet from the ground. Limbs over the road shall be no lower than 16 feet from the ground.
- E. Crown Reduction- The technique used to reduce the overall mass of the tree by thinning out the top and sides or just removing individual limbs of the tree. Reduction pruning is commonly associated with pruning away from buildings, structures, signs, lights and other overhead obstructions.
- F. Crown Thinning- The selective removal of branches to increase light penetration and air movement. No more than 25% of the trees living branches shall be removed.
- G. Crown Training- A pruning process that utilizes all the major pruning types to promote a strong central leader and strong scaffold branches on recently planted trees.
- H. D.B.H.- Diameter at breast height. The location on a tree 4.5 feet above ground where the diameter of the tree is measured.
- I. Massachusetts Certified Arborist- (MCA) An individual who is listed by the Massachusetts Arborist Association as a MCA who has passed a comprehensive exam and maintained their certification through the accumulation of continuing education credits.
- J. Occupational Safety & Health Administration- (OSHA) is the Federal agency responsible for insuring worker safety.
- K. Owner- the individual or designated representative responsible insuring the requirements of this Contract are adhered to.
- L. Street tree- Any tree planted and maintained with in the public right of way under the jurisdiction of the Boston Parks and Recreation Department.

1.5 EXAMINATION OF SITE AND DOCUMENTS

- A. The Contractor shall be responsible for having a clear understanding of the existing conditions of the site before submitting a bid for this Contract and shall be responsible for fully carrying out the work of the Contract, regardless of actual site conditions encountered.

1.6 ORDER OF WORK

- A. Before any work is started, the Contractor shall attend a conference with the Owner and the Landscape Architect. The Contractor shall provide a list of trees that should be removed for the following reasons: dead trees, hazardous trees, or trees in

serious decline. All trees to remain shall be pruned to provide safety, protection of property, clearance of roadways, walk, buildings and luminaries, and to improve the overall structure of the tree. The type of pruning to be performed includes but is not limited to crown cleaning, crown raising, crown reduction, crown thinning, and crown training. At this conference the Owner will also establish the order of precedence for carrying out the work.

- B. Based on the conference, the Contractor shall submit a schedule of work for the Owner's review and approval prior to beginning work. Any changes to this schedule must be approved by the Owner. Unless otherwise authorized by the Owner, failure of the Contractor to comply with the approved pruning and removal schedule shall be sufficient cause to give notice that the Contractor is in default of the Contract and will result in its termination. Unless otherwise authorized by the Owner, the Contractor must complete ALL pruning work within 40 business days from the notice to proceed.

1.7 CHANGES IN THE WORK

- A. The Owner reserves the rights to change, add, or delete areas or quantities to be pruned or removed as deemed to be in the City's best interest.
- B. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed.
- C. Any alterations or modifications of the work performed under this contract shall be made only by written agreement between the Contractor and the Owner. No claims for extra work or materials shall be allowed unless covered by written agreement.

1.8 PROTECTION OF VEGETATION TO BE PRESERVED

- A. The Contractor shall protect all existing trees, shrubs and lawns designated to remain for the length of the construction period. The placement of protection devices, such as snow fence enclosures, shall, however, be at the Contractor's discretion except those required by the Owner.
- B. Damage no plant to remain by burning, by pumping of water, by cutting of live roots or branches, or by any other means. No plants to be saved shall be used for crane stays, guys or their fastenings. Vehicles shall not be parked within the dripline of trees to remain, or wherever damage may result to trees to be saved. Construction material shall not be stored beneath trees to be saved.
- C. The Contractor shall be liable for any damage to any tree, shrub or lawn to remain, and shall immediately report to the Owner for appraisal of any damage and for determination of corrective treatment of compensation to the Owner.
- D. The Contractor shall compensate the Owner for damages by installing replacement tree(s) of the size and species approved by the City, and of sufficient quantity such as the sum of the DBH inches for replacement trees equals the total DBH inches of the damaged tree(s). Damaged shrubs shall be replaced with shrub(s) of the same size, species, and quantity, unless determined otherwise by the Owner.
- E. Damaged shrubs or lawns shall be restored or replaced to match existing to remain to the satisfaction of the Owner, at no cost to the Owner.

PART 2 - MATERIALS

2.1 EQUIPMENT AND MATERIALS

- A. Equipment necessary for this Contract shall be properly maintained and in good operating condition to the City's satisfaction. The Contractor shall promptly remove and replace any equipment which the Owner deems to be in unsatisfactory repair or condition or otherwise unsuitable.
- B. At the discretion of the Owner, if the equipment failures, breakdowns or other related problems occur that are jeopardizing the meeting of deadlines established in the written schedule provided by the Contractor, the Contract will be terminated.
- C. Vehicles shall display prominently the Contractor's name, address, and telephone number on both doors.
- D. Aerial lift equipment shall be required for pruning and removal work unless otherwise approved by the Owner. Such equipment shall have a minimal working height of fifty-five (55) feet, and shall include an articulated upper boom, insulated lower boom, a ten to fifteen (10-15) cubic yard enclosed hydraulic dump body, pintlehook and attachments for a towed chipper, or approved equal.
- E. A chipper, meeting all OSHA requirements, shall be used which will process material up to twelve (12) inches in diameter.
- F. A crane or log loader shall be used on site to remove logs too large to be chipped.

2.2 PERSONNEL

- A. The Contractor shall submit each employee's name and title prior to the commencement of work. The Contractor shall provide a list of all Massachusetts Certified Arborists who will be working on this contract. This list shall include the names of those individuals and their certification number. The Contractor shall advise the Owner of any changes in the roster assigned to this contract.
- B. A crew shall consist of a minimum, one (1) tree trimmer/ climber, and one (1) ground person (one of which shall be a crew foreman and a Massachusetts Certified Arborist in good standing). The crew foreman shall have a minimum of five (5) years climbing and pruning experience.
- C. Each worker shall be experienced and highly qualified with necessary tree work skills to successfully complete this contract, including the ability and training to perform aerial rescue. Said skill shall also include worker safety and ability to be in compliance with current OSHA and ANSI Z-133.1 Standards.

PART 3 - EXECUTION

3.1 DESCRIPTION OF WORK

- A. Each tree to be pruned shall be serviced according to the following types of pruning, as needed: Crown Cleaning, Crown Raising, Crown Reduction, Crown Thinning and Crown Training.
- B. The Contractor shall adhere to the specifications and provide suitable facilities for inspecting the work. Failure of the Owner to immediately reject unsatisfactory work or to notify the Contractor of deviations from the Specifications shall not relieve the Contractor of responsibility to correct or remedy unsatisfactory work.

- C. The Contractor shall only work on trees designated by the Owner. No compensation will be made for work performed on any other trees.
- D. If the Contractor discovers tree(s) which have been marked for pruning, but whose condition is such that removal is warranted, whether due to death, disease, decay, or structural weakness, such tree(s) shall not be pruned and the Contractor shall report these findings to the Owner, in writing, within 24 hours, and await the Owner's direction before proceeding with work on the particular tree(s) in question.
- E. Tree removal is generally described as the removal of individual trees that have been found to be dead, hazardous, and/ or otherwise marked for removal by the Owner.

3.2 USE AND CARE OF THE SITE

- A. The Contractor shall leave the work site at the end of each working period in a condition satisfactory to the Owner.
- B. Pavements shall be swept and lawns or other surfaces raked or otherwise cleaned of all material related to the work operation. Degree of clean up required will be described by the Owner at the Pre-construction Conference and will be based upon the character of the work area.
- C. All trimmings or any other form of debris shall be collected, chipped, hauled and disposed of properly in accordance with all applicable laws at the Contractor's expense.
- D. No over night parking of equipment will be allowed

3.3 PRUNING PROCEDURES AND QUALITY CONTROL

- A. All pruning shall be performed in manner which maintains the natural aesthetic characteristics of the species and variety of trees. No topping or dehorning of trees or stubbing back of branches shall be permitted. All cuts shall be made to a lateral branch a minimum of one third (1/3) the size of the branch being removed, unless otherwise instructed by the Owner.
- B. The use of climbing spurs or spiked shoes shall not be permitted for pruning trees and their use will result in immediate cancellation of the Contract. They are only permitted during tree removal operations and emergency aerial rescue operations.
- C. All cuts shall be made sufficiently close to the parent stem so that wound closure can be readily started under normal conditions. Cuts shall never be made through the branch collar. Slab cuts, rip cuts and all other cuts that do not meet the most current edition of the ANSI A300 pruning standard will result in cancellation of the Contract.
- D. Luminaries and proper elevation over street and sidewalk surfaces to at least the following minimum specifications:
 - 1. Sidewalk/Paths – All branches shall be pruned to allow a minimum ten (10) foot clearance over sidewalks and paths, including proposed new paths.

2. Luminaries – Any and all branches extending directly below a street light, limiting the light reaching the street or path shall be removed and all branches shall be cut back to afford a minimum four (4) foot clearance.
 3. House/Building – All branches shall be pruned to allow a minimum of five (5) foot clearance away from homes and buildings, or if possible ten (10) foot clearance where trees will not be severely disfigured due to crown reduction, this shall be determined by the City Arborist.
 4. Street/Roads – All branches shall be pruned to allow a minimum sixteen (16) foot clearance over street surface.
- E. All limbs over two inches in diameter to be removed shall be precut to prevent splitting. Any branches that would injure the tree or other objects by falling shall be lowered to the ground by proper rigging and rope procedures.
 - F. Remove one of two crossed or rubbing branches where practical so the removal will not leave large holes in the general outline of the tree.
 - G. On trees known to be diseased, tools are to be disinfected with alcohol after each cut between trees and where there is known to be a danger of transmitting the disease on tools.
 - H. Lateral branches as well as occasional water sprouts may be retained. Complete removal of secondary laterals and water sprouts resulting in the stripping of major limbs, will not be permitted.

3.4 SAFETY

- A. All equipment to be used and all work to be performed must be in full compliance with all standards as promulgated by OSHA at the time of bidding, including, but not limited to those regulations concerning noise levels, protective devices and operator safety.
- B. The Contractor shall be solely responsible for pedestrian and vehicular safety and control within the work site and shall protect the public and its property from injury or damage that could be caused by the progress of the work. To this end the Contractor shall post all work areas. The Contractor must also provide police details and / or erect and maintain protective devices acceptable to the City Arborist, including but not limited to barricades, lights and warning signs.
- C. Any practice employed by the Contractor that is obviously hazardous, as determined by the City Arborist, shall be immediately discontinued.

3.5 FINAL ACCEPTANCE

- A. Upon completion of the work the Contractor shall notify the Owner in writing and request that a final inspection for acceptance be made.

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SECTION 32 10 00
BASES, BALLASTS & PAVING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all paving operations complete as shown on drawings and specified herein.
- B. Work includes, but is not limited to the following:
1. Concrete Paving;
 2. Bituminous Concrete Paving;
 3. Acrylic Resurfacer;
 4. Acrylic color coating for graphics;
 5. Poured in Place Rubber Surfacing;
 6. Rubber Wearing Tiles for Under Swings;
 7. Wood Fiber Safety Surface;
 8. Sand for Sandbox;

1.3 REFERENCES

- A. Examine all other sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Boston and coordinate all work under this Section.
- B. The following related items are included under the Sections list below
1. Section 11 68 00 – Play Equipment
 2. Section 31 00 00 – Excavation, Filling & Grading
 3. Section 32 93 00 – Planting
 4. Section 32 40 00 – Site Furnishings
 5. Section 32 31 29 – Fencing
 6. Section 03 30 00 – Cast in Place Concrete

1.4 DEFINITIONS

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

3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.

1.5 JOB CONDITIONS

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

1.6 SUBMITTALS

- A. All Manufacturers product literature, including asphalt and concrete mix analysis
- B. Sample and color chart for poured in place rubber surfacing.
- C. Acrylic color coating color chart.

PART 2 - PRODUCTS

2.1 CONCRETE PAVEMENT

- A. Concrete Paving materials shall be in accordance with Section 03 30 00, Cast-In-Place Concrete.

2.2 BITUMINOUS CONCRETE PAVEMENT

- A. Pavement: Shall be bituminous concrete Class I-1 conforming to the Standard Specifications. The bituminous concrete shall be laid in two (2) courses with a minimum finished pavement depth after rolling of 3 1/2".
- B. Base Course: Shall consist of 2" minimum thickness. Composition of mixture shall be dense mix conforming to requirements for binder course.
- C. Wearing Course: Shall consist of 1 1/2" minimum thickness. Composition mixture shall be dense mix conforming to requirements for top course.

2.3 ACRYLIC RESURFACER

- A. Acrylic resurfacer shall be Acrylic Resurfacer by Plexipave, a division of California Products Corporation, Andover, MA; NovaPlay Base Coat, by Nova Sports USA, Milford, MA; Dynaflex® Acrylic Resurfacer, by Neyra Industries, Inc., Cincinnati, OH; and/or equal as approved by the Landscape Architect.
- B. Sand shall be clean, dry sand with 100% passing through a #80 mesh sieve.
- C. Portland Cement.
- D. Water shall be clean and potable.

2.4 ACRYLIC COLOR COATING FOR GRAPHICS

- A. The coating shall be a 100% acrylic emulsion type containing no alkyds, butadiene styrene, or vinyls, and shall be thinned with water only. The coating shall also be suitable for application by brush, spray, or roller. Coating shall be Acrylotex® by Plexipave, a division of California Paint Products, Andover, MA; NovaPlay, by Nova

Sports USA, Milford, MA; Dynaflex® Color Coat by Neyra Industries, Inc., Cincinnati, OH; and/or equal as approved by the Landscape Architect.

- B. Line paint shall be Hi-Hide Plexicolor® by Plexipave; Novatex by Nova Sports; PermaLine by Neyra Industries, and/or approved equal by Landscape Architect.
- C. The coating shall be suitable for use over all types of bituminous and concrete surfaces. When applied over emulsified asphalt, it shall not cause lifting, crazing, peeling, or other damage to the base.
- D. Color coat colors shall be approved by the Landscape Architect.

2.5 POURED IN PLACE RUBBER SAFETY SURFACE

- A. The Poured-in-Place Rubber Safety Surfacing System shall be “PlayBound Poured-In-Place” by Surface America, Inc. or Approved Equal, and shall be composed as follows:
 - 1. Material shall have a wearing course composed of aliphatic (NON-AROMATIC), 100% solids, moisture-cured polyurethane binder and either EPDM rubber granules (a man-made rubber containing minimum of 30% EPDM) or manufactured thermoplastic virgin rubber pebbles. It shall not contain hazardous substances, such as toluene, lead, or mercury compounds or cadmium coloring pigments.
 - 2. Material shall also have a base course composed of MDI, 100% solids, moisture-cured Polyurethane binder and either black recycled SBR rubber fibers or recycled black ground EPDM rubber granules. It shall not contain hazardous substances, such as toluene, lead, or mercury compounds or cadmium coloring pigments.
 - 3. Color or color blend shall be selected by Landscape Architect from among manufacturer’s standard colors; assume no blacks; sample squares (not loose bags) of the selected mix shall be submitted to the Landscape Architect for Approval.
 - 4. The finished surface shall be slip-resistant and compliant with ASTM 1951; supply ASTM-E-303 slip characteristic test results.
 - 5. Material shall be ignition-resistant; supply passing ASTM-D 2859 test results.
 - 6. Material in the thicknesses to be installed shall pass the required fall-height impact tests for the play equipment as installed, as detailed in ASTM 1292 and all other applicable standards.
 - 7. Material shall be water-permeable, and wear and weather-resistant. Sealants shall be low odor and non-yellowing. Wearing course sealants to be aliphatic only; no aromatic solvents.
- B. If another manufacturer is proposed, Critical Heights and required rubber surface depths MAY DIFFER from those shown on the Drawings; rubber surface depth as installed shall meet all applicable critical height criteria of ASTM 1292 and all other applicable standards for the fall heights of the play equipment as installed.

2.6 ALUMINUM PAVEMENT EDGE RESTRAINTS FOR RUBBER SURFACE

- A. Product shall be an extruded, 6005 Aluminum edge restraint **specifically designed for use with asphalt pavements** and available in sizes from 1” to 4” high, with 0.210 inch thick exposed top lip, Permaloc AsphaltEdge as manufactured by

- Permaloc Corporation, Holland MI 49424 (telephone (800) 356-9660 or (616) 399-9600) or Approved Equal.
- B. Horizontal base to have upward facing angle profile designed to integrate restraint and asphalt surfaces for straight-line and curvilinear applications.
 - C. Each 8' long section shall have holes in base spaced 4 inches apart along its length to receive anchors.
 - D. Connection Method: Section ends shall splice together with horizontal 0.060 inch thick x 1 inch wide (or 0.530 inch wide for 1 inch high edging) x 4 inches long aluminum sliding connector.
 - E. Anchors: 3/8 inch x 10 inches bright spiral steel spike, 3/16 inch x 1-1/2 inches or longer Ardox concrete nail, or drive pin fastener equal to Hilti DX 40 powder actuated pin or Ramset Trakfast Automatic Fastening System pin.
 - F. Finish shall be available in Natural Mill Aluminum and Black Painted, AAMA 2603, electrostatically baked on paint.
 - G. Manufacturer shall offer a 15-year limited material warranty for asphalt restraint edging from manufacturing defects in workmanship or material.

2.7 RESILIENT RUBBER SAFETY SURFACE TILES FOR WEARING PADS

- A. Resilient Rubber Safety Surface Tiles shall be a single layer rubber tile playground surfacing system with a factory-molded surface composed of high-quality, 100% post-consumer SBR (Styrene Butadiene Rubber) tire rubber and EPDM colored granules bound together by a wear and weather resistant polyurethane and a 3 mm top wear layer with tapered, conical support legs, Ultra-Tile by Surface America Inc. or Approved Equal.
- B. The system shall be designed, manufactured and installed to meet the following criteria:
 - 1. Shock Attenuation (ASTM F1292) – for 4', 6', and 8' fall heights or as otherwise required by the installed condition.
 - a. Gmax - Less than 200.
 - b. Head Injury Criteria - Less than 1000.
 - 2. Flammability (ASTM D2859) - Pass.
 - 3. Tensile Strength (ASTM D412) - 180 lbs/in² min.
 - 4. Water Permeability Rate: 0.034 cm/sec.
 - 5. Accessibility: Comply with requirements of ASTM F1951-08 - Pass.
 - 6. Lead Content: (US EPA Method 3052: 1996) - Pass.
 - 7. Void Volume: 42% minimum for tiles 2-1/2". 50% minimum for tiles 4-1/4".
 - 8. Coefficient of Thermal Expansion: .0011 in/ft/^oF.
 - 9. Wear Surface Density: 70 lbs/cu ft min.

10. Abrasion Testing (ASTM D3389): Less than 0.010" lost or less than 1 g lost.
11. Elongation At Break (ASTM D412): 70% min.

2.8 REQUIRED ADHESIVES AND ACCESSORIES SHALL BE AS PROVIDED AND INSTRUCTED BY THE MANUFACTURER. RUBBER WEARING TILES FOR UNDER SWINGS

2.9 WOOD FIBER SAFETY SURFACE

- A. Play surface shall be handicapped-accessible processed wood fiber. Material used will consist only of recently harvested North American hardwoods including Oak, Maple, Ash, Poplar, Hickory, Beech, Birch and Locust. All woods shall have been debarked and shall be free of soil, leaves, twig materials and other contaminants, which hasten decomposition. The moisture content shall be between 25% and 55% by weight. No chemical treatment or additives are allowed. Positively no recycled wood from pallets or waste wood is permitted due to the possibility of contamination and the risk of poor surface stability.
- B. The density of the material shall be from 18 lbs. Per cubic foot to 23 lbs. Per cubic foot. Wood fiber resilient surfacing shall be randomly sized approximately ten times longer than wide. The materials shall meet the gradation requirements of ASTM C136.
- C. No chemicals or additives shall be present in the surface material.
- D. Contractor shall provide a sieve analysis that the surface material meets the following gradation requirements: Sieve Size Percent Passing by Weight -- 3/4" 100%; 3/8" 60-90%; No. 4 30-50-%; No. 10 10-20%; No. 60 0-5%; No. 200 0-1% (ASTM C 136).
- E. The filter fabric shall be 100% continuous filament polyester nonwoven needle-punched geotextile fabric. The fabric must meet the following requirements: Fabric weight 4.2 oz/yd (ASTM D-3776); Mullen Burst Strength 210 psi (ASTM D-3786); Water flow rate 140 gpm/ft (ASTM D-4491). Fabric must meet grade 1114 data for minimum physical properties or equal.
- F. Drainage Stone is specified in Section 31 00 00.

2.10 SAND FOR SANDBOX

- A. Sand shall be Quikrete brand or equal.
- B. Sand to be graded, washed, dried, and screened specifically for children's play.

PART 3 - EXECUTION

3.1 CONCRETE PAVING

- A. See Section 03 30 00, Cast-in-Place Concrete.

3.2 BITUMINOUS CONCRETE PAVING

- A. Grades: All grades in pavement areas shall be established and maintained to a tolerance of 1/4" in 10'-0".
- B. Apply in two courses. Installation to comply with all standard and specifications set forth in the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

3.3 ACRYLIC RESURFACER

- A. No portions of the installation process shall be conducted during rainfall, or when rainfall is imminent. The air temperature must be at least 50°F and rising. Do not apply when surface temperature is above 140°F.
- B. Apply one (1) coat of acrylic resurfacer under areas that are to receive color coating. Apply two (2) coats on all existing and new bituminous concrete that is not to receive color coating. Dilution with water and sand (or Portland cement, depending on manufacturer) is required.
- C. Contractor shall follow printed manufacturer's instructions for application including, but not limited to, dilution ratio of water to sand or Portland cement, gradation of sand, surface preparation and installation of acrylic resurfacer.

3.4 ACRYLIC COLOR COATING

- A. No portions of the installation process shall be conducted during rainfall, or when rainfall is imminent. The air temperature must be at least 50°F and rising. Do not apply when surface temperature is above 140°F.
- B. Landscape architect to approve colors before ordering. Apply color coat in colors as noted on the Drawings. Graphics to be laid out in the field for approval by the Landscape Architect.
- C. Edges of painted areas shall be smooth, regular, and accurately laid out.
- D. All acrylic paint shall be applied as per manufacturer's recommendations. Apply three (3) coats of all final paint colors, for all graphics shown on the Drawings. Final paint color shall be solid color fully saturated without holidays, voids, or areas of acrylic resurfacer showing through.
- E. Contractor must adequately protect newly painted and resurfaced areas to deter vandalism of the painted surfaces until paint has completely dried and cured. Any and all defacement, vandalism, or damage to the painted surface during the drying or curing period shall be completely repaired by the Contractor without additional cost to the Owner.

3.5 POURED IN PLACE RUBBER SURFACING

- A. Contractor shall provide copies of testing procedures and results, performed by an independent testing source, which demonstrate compliance with the CPSC and ASTM guidelines. Per CPSC and ASTM F-1292 Critical Height testing procedures at 30, 72, and 120 degrees F, the installed surface shall pass the 200 G-max and 1000 HIC test for a height at least equal to the highest fall height of equipment as installed within its zone.
- B. When installed, the system shall be handicapped-accessible and comply with the Civil Rights Restoration Act of 1987 and the Americans with Disabilities Act of 1990 (ADA).

- C. Contractor shall provide a written five (5) year performance guarantee from date of installation. The manufacturer shall provide a written guarantee for three (3) years from date of installation against decay and biochemical degradation calling for replacement of defective materials during the guarantee period. Contractor shall install system so as to comply with manufacturers' warranty requirements.
- D. Installers of the rubber safety surface system shall have five years experience, minimum, and shall provide three (3) local references where installation can be inspected.
- E. Install material per manufacturer's specifications.

3.6 ALUMINUM PAVEMENT EDGE RESTRAINTS FOR RUBBER SURFACE

- A. Edging Installation:
 - 1. Install edging leaving 3/8" (9.5 mm) between sections for expansion.
 - 2. Corners should be made by bending a single section to form the angle. Additional cutting of the base may be required for tight angles.
 - 3. Drive spikes through edging holes in base of asphalt restraint edging (or drive nails through aluminum base when using powder actuated fastening system) at spaces for following applications:
 - a. Anchor each section end with anchor.
 - b. Aggregate Base: Spiral steel spikes at 4 inches to 12 inches on center as recommended by manufacturer for the application.
 - c. Softer or Thinner Asphalt Base: 3/8 inch x 10 inches (9.5 mm x 254 mm) spiral steel spikes at 4 inches (102 mm) to 12 inches (305 mm) on center spacing.
 - d. Older, Harder, or Thicker Asphalt Base: Hilti DX A41 Fully Automatic Powder Actuated Tool is desirable where sufficient hold can be obtained. Provide 1-1/2 inches (38 mm) to 2-1/2 inches (64 mm) nail at 4 inches (102 mm) to 12 inches (305 mm) on center spacing with applicable charge recommended.
 - e. Concrete Base: Hilti DX A41 Fully Automatic Powder Actuated Tool is desirable where sufficient hold can be obtained. Provide 3/4 inches (19 mm) to 1 inches (25 mm) nail at 4 inches (102 mm) to 12 inches (305 mm) on center spacing with applicable charge recommended. Anchor into outer 1 inch (25 mm) of base of restraint edging and not less than 2.5 inches (63.5 mm) from edge of concrete.
 - 4. Securely connect sections in accordance with manufacturer's instructions. Provide additional anchors at closer spacing as necessary to firmly secure edging for permanent intended use.

B. Pavement Installation:

1. If asphalt installation is over restraint edging, avoid excessive asphalt temperatures to minimize aluminum expansion.
2. Lay asphalt pavement adjacent to and approximately ½ inch (12.7 mm) over top of restraint edging, depending on expected compaction results. Then, compact first pass with desired equipment within 6 inches (152 mm) of restraint edging. "Pinch roll" to create a hard joint. Subsequent passes may be directly against or over top of edging to ensure complete compaction of asphalt pavement.
3. Finish pavement shall be compacted and level with, but not to exceed 1/4 inch (6.4 mm) above top of restraint edging.

C. Rubber Safety Surface Installation

1. Where rubber safety surface is to be installed **over** edge restraint (for areas adjacent to plant beds or lawn):
 - a. Edge restraint shall be sized to accommodate the full depth of rubber safety surface indicated for the area in question on the drawings. If rubber depth falls between two available sizes, the larger size shall be used; thicken rubber as needed at edges.
 - b. Thickened top course of rubber shall be wide enough to allow for top course material only above the anchoring spikes.
 - c. Binding agent shall be used to secure the rubber crumb to the edge restraint.
 - d. Backfill on planted side and compact backfill material along edging to provide top of edging at ¼ to ½ inch above finish grade on bed/lawn side.
2. Where rubber safety surface is to be installed **adjacent to** edge restraint (for areas adjacent to bit. conc. paving):
 - a. Thickened top course of rubber shall be 1-1/2" wide as shown on the drawings.
 - b. Finish grade of rubber shall be smooth and level with adjacent pavement.
 - c. Binding agent shall be used to secure the rubber crumb to the edge restraint.

3.7 RESILIENT RUBBER SAFETY SURFACE TILES FOR WEARING PADS

- A. Comply with the instructions and recommendations of the playground surfacing manufacturer.

- B. Site Verification of Conditions: Verify that substrate conditions are suitable for installation of the playground surfacing system. Do not proceed with installation until unsuitable conditions are corrected.
- C. Install tiles through full adhesion of tiles side-to-side and directly to the substrates using an easy-to-use one-part polyurethane adhesive supplied and recommended by the manufacturer.
 - 1. Follow the site layout instructions to prepare the site area for installation. The tiles, accessories and substrates must be dry before, during and 24 hours after the application of adhesive.
 - 2. Using a 1/8" square-notched trowel, apply the adhesive slightly wider than the tile being placed.
 - 3. Place tile into fresh adhesive bed following pre-established lines.
 - 4. Allow 24 hours for adhesive to cure before installing adjacent surfaces.
- D. When working beneath the play structure, it will be necessary to occasionally notch out portions of tiles so that the tiles will properly fit around the posts supporting the play equipment. Cut tile so that the cutout is approximately 1/4" larger in all dimensions than the support it will surround, to prevent binding of the tile around the support. Voids between the equipment supports and tile cuts should be filled in with silicone sealant or a permanently elastic urethane sealant/adhesive.
- E. Install tiles before poured-in-place surfacing. Bond poured-in-place surface to rubber tiles using manufacturer's recommended adhesive/solvent.

3.8 WOOD FIBER SAFETY SURFACE

- A. Contractor shall provide copies of testing procedures and results, performed by an independent testing source, which demonstrate compliance with the CPSC and ASTM guidelines.
- B. When installed, the surface system shall be handicapped-accessible and with the Civil Rights Restoration Act of 1987 and the Americans with Disabilities Act of 1990 (ADA).
- C. Contractor shall provide a written five (5) year performance guarantee from date of installation. The manufacturer shall provide a written guarantee for three (3) years from date of installation against decay and biochemical degradation calling for replacement of defective materials during the guarantee period. Contractor shall install system so as to comply with manufacturers' warranty requirements.
- D. Installation
 - 1. The area shall be brought to elevations shown on drawings and be well-compacted, especially in any areas where additional fill has been brought in, as described in Section 2B.
 - 2. Cover sub-grade with filter fabric, overlapping all seams a minimum of twelve inches (12"). It will be necessary to slit the filter fabric to fit around the footings of the equipment; where possible, overlap all slits with next piece of fabric.

3. Bring in drainage stone as specified. Back-dump the stone onto the filter fabric and spread using hand labor, being careful not to damage the fabric.
4. Cover the stone with the other layer of filter fabric. Overlap all seams a minimum of 12". Slit to fit around footings as necessary; keep the cuts as short as possible and, where practical, overlapped with the next strip of fabric.
5. Spread wood chips/fiber using a Bobcat or small front end loader. Operator must be careful not to travel on the filter fabric or turn sharply on the wood chips. Hand labor shall also be used to spread the chips to finish grade directly around the equipment. To allow for natural compaction, additional material shall be supplied, and all of it shall be installed at this time.
6. Surface shall be harrowed or raked until it has a smooth finish.

3.9 SAND FOR SANDBOX

- A. Fill sandbox from bottom of plastic timbers to within 3 inches of top of timbers.
- B. Rake smooth.

3.10 GRADE STAKES

- A. Install and maintain grade stakes, as directed. All subgrades must be approved before base course construction.

3.11 FINISH GRADES

- A. The words "finish grades" as used herein mean the required final grade elevations.

END OF SECTION

SECTION 32 16 00
CURBS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the City.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein. This includes, but is not limited to the following:
 - 1. Pre-Cast Concrete Curb;
 - 2. Cast in Place Flush Curb;
 - 3. Plastic Timber Edge for Sand Area.

1.3 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Boston and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Section 02 41 00 - Site Preparation and Demolition
 - 2. Section 32 13 13 – Cast in Place Portland Cement Concrete

1.4 SUBMITTALS

- A. Provide complete Shop Drawings, manufacturer's literature and/or samples for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.
- B. Provide photographs of stepping stones, boulders and stumps for approval of Landscape Architect before ordering.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.6 DEFINITIONS

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

1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
3. AAB: Architectural Access Board.
4. ADA: Americans with Disabilities Act and its current regulations.
5. CPSC: Consumer Product Safety Council.

PART 2 - PRODUCT

2.1 PRECAST CONCRETE CURB

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

2.2 CAST IN PLACE FLUSH CONCRETE EDGE

- A. See 03 30 00 C.I.P. Concrete.

2.3 PLASTIC TIMBER EDGE FOR SAND AREA

- A. Frame shall be formed of 6"x6" (nominal) recycled plastic wood, color to be selected from full range.
- B. Reinforcing rods to be #6 (3/4") re-bar, at least 2 per timber, 4' O.C. (Max.) refer to schedule shown on drawings.

PART 3 - EXECUTION

3.1 PRE-CAST CONCRETE CURB;

- A. Curb shall be set in a trench, which shall have been excavated to a width of 18". The subgrade of the trench shall be at a depth below proposed finish grade of the curb equal to 6" plus the depth of the curbstone. Subgrade shall then be filled to proper level to support curb at final grade. Fill for this purpose shall consist of structural fill thoroughly tamped. Curb units shall then be placed in accurate line, each piece butting the next with maximum joint spacing no larger than 1/4". Final points may be joined by closure pieces made to order. After alignment, curb shall be carefully backfilled with suitable material. Extreme care shall be taken not to destroy alignment.

3.2 CAST IN PLACE FLUSH CONCRETE CURB

- A. See 03 30 00 C.I.P. Concrete.

3.3 TIMBER EDGE FOR SAND AREA

- A. Install as directed by Drawings and manufacturer's specs. Contractor to touch up any scratches and all mars to surfaces and finishes.

END OF SECTION

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SECTION 32 30 00
SITE IMPROVEMENTS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the City.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein. This includes, but is not limited to the following:
 - 1. Collapsible Bollard;
 - 2. Granite Pier;
 - 3. Boulders;

1.3 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Boston and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Section 02 41 00 - Site Preparation and Demolition
 - 2. Section 32 13 13 – Cast in Place Portland Cement Concrete

1.4 SUBMITTALS

- A. Provide complete Shop Drawings, manufacturer's literature and/or samples for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.6 DEFINITIONS

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

1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
3. AAB: Architectural Access Board.
4. ADA: Americans with Disabilities Act and its current regulations.
5. CPSC: Consumer Product Safety Council.

PART 2 - PRODUCT

2.1 COLLAPSIBLE BOLLARD

- A. Bollards, chains and hardware for these items shall be as specified on Drawings.
- B. Steel shall conform to ASTM A53.

2.2 GRANITE PIER

- A. Granite to be Woodbury Grey
- B. Finish to be split on two sides, thermal on two sides.
- C. Weight per post to be 1,200 pounds.

2.3 BOULDERS

- A. Boulders shall be naturally weathered and rounded with no sharp edges.
- B. Boulders shall vary in size with a minimum size of approximately 18" (Ht.) X 24" (Length).

PART 3 - EXECUTION

3.1 COLLAPSIBLE BOLLARD

- A. Install as directed by Drawings and manufacturer's specs. Contractor to touch up any scratches and all mars to surfaces and finishes.

3.2 GRANITE PIER

- A. Install as shown on Drawings.

3.3 BOULDERS

- A. Landscape Architect to place boulders in field.
- B. Install per drawing detail.

END OF SECTION

SECTION 32 31 29
FENCING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the City.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. 4' High Black Permafused Chain Link Fence & Gates
 - 2. ADD. ALTERNATE #2 – Replace Chain Link Fence Fabric on existing Backstop;
 - 3. ADD. ALTERNATE #3 – Substitute 4' High Chain Link Fence & Gate with 4' High Tubular Steel Fence & Gate;

1.3 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Boston and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Section 31 00 00 – Excavation, Filling, and Grading
 - 2. Section 32 12 16 – Paving, Color Coating, Poured in Place Rubber Surfacing
 - 3. Section 32 40 00 – Site Furnishings and Precast Concrete Curb
 - 4. Section 32 93 00 – Planting

1.4 SUBMITTALS

- A. Shop Drawings of all Fences and Gates
- B. All Manufacturer's product literature

- C. Sample chain link fabric, permafused for four foot fence and galvanized for back stop chain link replacement.

1.5 SHOP DRAWINGS AND SAMPLES

- A. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.7 DEFINITIONS

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

PART 2 - PRODUCT

2.1 4' HIGH BLACK PERMAFUSED CHAIN LINK FENCE & GATE

- A. Steel Framework:
 - 1. The steel material used to manufacture fence pipes shall be cold-formed, circular, ASTM A-120 Schedule 40 pipe, zinc-coated. All structural shapes shall be galvanized by the hot-dip process conforming to ASTM A123.
 - 2. The manufactured framework shall be subjected to a complete thermal

stratification coating process (multi-stage, high-temperature, multi-layer) including, at a minimum, a six-stage pretreatment/wash with zinc phosphate, an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish.

3. The material used for the base coat shall be a zinc-rich, gray color thermosetting epoxy; the minimum thickness of the base coat shall be two (2) mils. The material used for the finish coat shall be a thermosetting, no-mar TGIC polyester powder; the minimum thickness of the finish coat shall be two (2) mils. The stratification-coated pipe shall demonstrate the ability to endure a salt-spray resistance test in accordance with ASTM B117 without loss of adhesion for a minimum exposure time of 3500 hours. Additionally, the coated pipe shall demonstrate the ability to withstand exposure in a weatherometer apparatus for 1000 hours without failure in accordance with ASTM D1499 and to show satisfactory adhesion when subjected to the crosshatch test, Method B, in ASTM D3359. The polyester finish coat shall not crack, blister, or split open under normal use.
4. The finish coat color for all framework shall be black.
5. Post, rail, and bracing sizes shall be as indicated in the drawings.
6. Rails to be furnished in manufacturers' standard lengths of approximately 21'-0" with outside sleeve type coupling, at least 6" long for each joint. One coupling in each five shall have an expansion spring. Provide means for attaching rail securely to each corner, pull, and end post. Rail shall form continuous brace from end to end of each run of fence.
7. Provide post bracing assemblies at each corner, pull, and end post for fences six (6) feet or higher.

B. Fence Fabric:

1. The material for chain link fence fabric shall be manufactured from 6 gauge steel core wire, hot-dipped galvanized to Type I, AISI Specifications, and shall be mesh of a size indicated by the drawings made from a medium high carbon quality steel wire. The tensile strength shall be 80,000 PSI unless otherwise noted.
2. The coating color shall be class 668-2B, thermally fused wire - black.
3. Selvage Edges: Top and bottom of fabric shall have knuckled selvage, both sides.
4. Accessories: All of the following fittings and fasteners shall be manufactured of stainless steel unless otherwise specified below, and shall all be galvanized and polyester-coated through the same process required for the framework (see above); the color shall match the framework.
 - a. Post Tops shall be manufactured of pressed steel or malleable iron, designated as a weather-tight closure cap (for tubular posts). Provide one (1) cap for each post. Where top rail is used, provide tops to permit passage of top rail.
 - b. Stretcher Bars shall be one-piece lengths equal to the full height of fabric with a minimum cross-section of 3/16" by 3/4". Provide one (1) stretcher bar for each end post and two (2) for each corner and pull post. Tension bands and brace bands, if utilized, shall be 7/8" by 12 gauge, beveled, galvanized, sized to fit pipe sizes, and furnished with galvanized fasteners.

- c. Stretcher Bar Bands shall be manufactured of heavy pressed steel or malleable iron of 1/8" by 3/4" minimum cross-section and be of sufficient size to secure stretcher bars to end, corner, and pull posts.
 - d. Rail Clamps shall be standard clamps (boulevard clamps) furnished complete with fasteners with ASTM designation A153.
 - e. Ties for fastening fabric to posts, rails, and braces shall use minimum 9-gauge galvanized, annealed steel wire ties – aluminum not accepted. Color shall be black.
5. Modifications to the above which are standard manufacturers' practice will be permitted if strength and security are maintained.
- C. Gates shall be latchable and capable of being locked by a padlock. Latch and closing mechanism to be approved by Landscape Architect and Owner.

2.2 ADD. ALTERNATE #2 – REPLACE CHAIN LINK FENCE FABRIC ON BACKSTOP

A. Fence Fabric:

- 1. The material for chain link fence fabric shall be manufactured from 6 gauge steel core wire, hot-dipped galvanized to Type I, AISI Specifications. Dimensions of openings to match openings in exist. 10' Fence. Mesh to be made from a medium high carbon quality steel wire. The tensile strength shall be 80,000 PSI unless otherwise noted.
- 2. Selvage Edges: Top and bottom of fabric shall have knuckled selvage, both sides.
- 3. Accessories: All of the following fittings and fasteners shall be manufactured of stainless steel unless otherwise specified below, and shall all be galvanized and polyester-coated through the same process required for the framework (see above); the color shall match the framework.
 - a. Post Tops shall be manufactured of pressed steel or malleable iron, designated as a weather-tight closure cap (for tubular posts). Provide one (1) cap for each post. Where top rail is used, provide tops to permit passage of top rail.
 - b. Stretcher Bars shall be one-piece lengths equal to the full height of fabric with a minimum cross-section of 3/16" by 3/4". Provide one (1) stretcher bar for each end post and two (2) for each corner and pull post. Tension bands and brace bands, if utilized, shall be 7/8" by 12 gauge, beveled, galvanized, sized to fit pipe sizes, and furnished with galvanized fasteners.
 - c. Stretcher Bar Bands shall be manufactured of heavy pressed steel or malleable iron of 1/8" by 3/4" minimum cross-section and be of sufficient size to secure stretcher bars to end, corner, and pull posts.
 - d. Rail Clamps shall be standard clamps (boulevard clamps) furnished complete with fasteners with ASTM designation A153.
 - e. Ties for fastening fabric to posts, rails, and braces shall use minimum 9-gauge galvanized, annealed steel wire ties – aluminum not accepted. Color shall be black.
- 4. Modifications to the above which are standard manufacturers' practice will be permitted if strength and security are maintained.

- B. Gates shall be latchable and capable of being locked with a padlock. Latch and closing mechanism to be approved by Landscape Architect and Owner.

2.3 ADD. ALTERNATE #3 – SUBSTITUTE 4' HIGH CHAINLINK FENCE & GATE WITH 4' HIGH TUBULAR STEEL FENCE & GATE

A. Steel material for fence framework (i.e. tubular pickets, rails and posts), shall be galvanized prior to forming in accordance with the requirements of ASTM A653/A653M, with minimum yield strength of 45,000 psi (310 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 oz/ft² (276 g/m²), Coating Designation G-90.

B. Material for pickets shall be 1" square x 14 Ga. tubing. The cross-sectional shape of the rails shall conform to the manufacturer's double wall design with outside cross-section dimensions of 1.75" square and a minimum thickness of 14 Ga. Picket holes in the rail shall be spaced 4.715" o.c. Picket retaining rods shall be 0.125" diameter galvanized steel. High quality PVC grommets shall be supplied to seal all picket-to-rail intersections. Fence posts and gate posts shall meet the minimum size requirements of the Drawings

C. Fabrication

1. Pickets, rails and posts shall be precut to specified lengths. Rails shall be prepunched to accept pickets. Pickets shall be predrilled to accept retaining rods.
2. Grommets shall be inserted into the prepunched holes in the rails and pickets shall be inserted through the grommets so that predrilled picket holes align with the internal upper raceway of the rails (Note: This can best be accomplished by making an alignment jig). Retaining rods shall be inserted into each rail so that they pass through the predrilled holes in each picket.
3. The manufactured galvanized framework shall be subjected to a thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a "no-mar" TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be Black. The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown on the Drawings.
4. Completed sections (i.e., panels) shall be capable of supporting a 600 lb. load applied at midspan without permanent deformation. Panels shall be biasable to a 25% change in grade.
5. Swing gates shall be fabricated using 1.75" x 14ga double channel rail, 1.75" sq. x 14ga. gate ends, and 1" sq. x 14ga. pickets. Gates that exceed 6' in width will have a 1.75" sq. x 14ga. intermediate upright. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

PART 3 - EXECUTION

3.1 4' HIGH BLACK PERMAFUSED CHAIN LINK FENCE & DOUBLE SWING GATE
POSTS

- A. Posts shall be placed straight and true. See drawings.
- B. Posts shall be a maximum distance of 10'-0" on center.
- C. Fence Erection
 - 1. Rails: Rail shall form a continuous brace from end to end of each fence run. Couplings shall be located a maximum of 12" from line posts.
 - 2. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.
 - 3. Fabric: Leave approximately 1-1/2" between finish grade and bottom selvage. Pull fabric taut and tie to posts and rails. Install fabric on street side of fence and anchor to framework so that fabric remains in tension after pulling force is released.
 - 4. Stretcher Bars: Thread through fabric and secure to posts with approved fasteners spaced not over 12" O.C.
 - 5. Steel Ties: Steel ties shall be placed 12" O.C. and securely fastened.
 - 6. Fasteners: Install nuts for tension band and hardware bolts on side of fence opposite fabric side.

3.2 ADD. ALTERNATE #2 – REPLACE CHAIN LINK FENCE FABRIC ON BACKSTOP

- A. Fabric installation
 - 1. Fabric: Leave approximately 1-1/2" between finish grade and bottom selvage. Pull fabric taut and tie to posts and rails. Install fabric on street side of fence and anchor to framework so that fabric remains in tension after pulling force is released.
 - 2. Stretcher Bars: Thread through fabric and secure to posts with approved fasteners spaced not over 12" O.C.
 - 3. Steel Ties: Steel ties shall be placed 12" O.C. and securely fastened.

Fasteners: Install nuts for tension band and hardware bolts on side of fence opposite fabric side.

3.3 ADD ALTERNATE #3 - – SUBSTITUTE 4' HIGH CHAINLINK FENCE & GATE WITH 4' HIGH TUBULAR STEEL FENCE & GATE

- A. Steel material for fence framework (i.e. tubular pickets, rails and posts), shall be galvanized prior to forming in accordance with the requirements of ASTM A653/A653M, with minimum yield strength of 45,000 psi (310 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 oz/ft² (276 g/m²), Coating Designation G-90.
- B. Material for pickets shall be 1" square x 14 Ga. tubing. The cross-sectional shape of

the rails shall conform to the manufacturer's double wall design with outside cross-section dimensions of 1.75" square and a minimum thickness of 14 Ga. Picket holes galvanized steel. High quality PVC grommets shall be supplied to seal all picket-to-rail intersections. Fence posts and gate posts shall meet the minimum size requirements of the Drawings

C. Fabrication

1. Pickets, rails and posts shall be precut to specified lengths. Rails shall be prepunched to accept pickets. Pickets shall be predrilled to accept retaining rods.
2. Grommets shall be inserted into the prepunched holes in the rails and pickets shall be inserted through the grommets so that predrilled picket holes align with the internal upper raceway of the rails (Note: This can best be accomplished by making an alignment jig). Retaining rods shall be inserted into each rail so that they pass through the predrilled holes in each picket.
3. The manufactured galvanized framework shall be subjected to a thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a "no-mar" TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be Black. The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown on the Drawings.
4. Completed sections (i.e., panels) shall be capable of supporting a 600 lb. load applied at midspan without permanent deformation. Panels shall be biasable to a 25% change in grade.
5. Swing gates shall be fabricated using 1.75" x 14ga double channel rail, 1.75" sq. x 14ga. gate ends, and 1" sq. x 14ga. pickets. Gates that exceed 6' in width will have a 1.75" sq. x 14ga. intermediate upright. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

3.3 NON-SHRINK GROUT

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

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PLANTING

PART 1 - GENERAL

1.1 General Requirements

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. The Work of this section is integral with the whole of the Contract Documents and is not intended to be interpreted outside the context. This Section consists of the provision of all materials, labor, equipment and the like for the complete execution of all planting and lawn establishment and related items as indicated on the Drawings and/or as specified herein.
- C. All reference to products by manufacturer, trade name or performance Specification bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the City.
- D. Contractor shall comply with all laws, regulations, and quarantines for agricultural and horticultural products.

1.2 WORK INCLUDED

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

1.3 SPECIAL CONDITIONS

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

1.4 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all other trades and all departments of the Town of Arlington and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Section 02 41 00 - Site Preparation and Demolition
 - 2. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading
 - 3. Section 32 92 00 - Turf and Grasses

1.5 SUBMITTALS AND PRODUCT LITERATURE

- A. Prior to ordering the below listed materials, submit representative samples to Landscape Architect for selection and approval, in accordance with requirements of General Condition and special provisions as follows. Do not order material until Landscape Architect's approval has been obtained. Delivered materials shall closely match the approved samples.
- B. For each product or material used, submit manufacturer's product data, including installation instructions, use, limitations and recommendations.
- C. Submit the following samples:
 - 1. Topsoil Tests: The Contractor shall provide a one (1) cubic foot representative sample from each proposed source for testing and approval as directed by the Landscape Architect. The Contractor shall deliver samples to testing laboratory prior to any loaming and shall have the testing report sent directly to the Landscape Architect, and pay all costs.

Mechanical and chemical (pH soluble salts) analysis shall be by public extension service agency or a certified private testing laboratory in accordance with the current standards of the Association of Official Agricultural Chemists and approved by Landscape Architect.

Report shall be submitted at least one (1) month before any loaming is to be done. Soil tests shall be for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts and Lead, and show acidity and USDA classification of the soil.

Report shall include recommendations based on the analysis and the proposed planting plan.
 - 2. Pine Bark Mulch: Submit a sample
 - 3. Submit material specifications and installation instructions where applicable attesting that soil additives, fertilizer, and lime, meet the requirements specified.

1.6 PRODUCT DELIVERY AND HANDLING

- A. All topsoil, whether from stockpiles on site or loam borrow, shall be stored in piles not to exceed six feet in height, and shall not be handled when frozen or not in a friable condition.

B. Preparation of Plants

1. All precautions customary in good trade practice shall be taken in preparing plants for moving, and workmanship that fails to meet the highest standards will be rejected. All plants shall be dug immediately before moving unless otherwise specified. All plants shall be dug to retain as many fibrous roots as possible. Balled and burlapped plants shall have a solid ball of earth. Loose, broken or manufactured balls will be rejected. Balled and burlapped plants shall be securely tied with stout rope to sturdy platforms equal in size to diameter of the upper half of the ball of earth.

C. Delivery

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

D. Inspection

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

1.7 DEFINITIONS

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

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

1.8 CERTIFICATE OF ACCEPTANCE AND GUARANTEE FOR PLANTINGS

- A. Upon completion of all plantings, and following written verification by the Landscape Architect, the Contractor shall maintain all plantings for ninety (90) days or through the end of the growing season, whichever comes later. After the maintenance period, the Contractor shall request of the Landscape Architect, in writing, an inspection to determine whether the plant material is acceptable. If the plant

material and workmanship are acceptable, written notice will be given by the Landscape Architect to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.

- B. If a substantial number of plants are sickly or dead at the time of inspection, as specified in paragraph 'D' below, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly removed from the project. Replacements shall conform in all respects to the Specifications for new plants and shall be planted in the same manner.
- C. Plants shall be guaranteed for a period of one (1) year after inspection and acceptance and shall be alive and in satisfactory growth at the end of the guarantee period. The sum of 10% of the total cost of the planting shall be retained and paid to the Contractor after replacements have been made, one (1) year from acceptance of original planting.
- D. At the end of the guarantee period, inspection will be made again. Any plant required under this contract that is dead or unsatisfactory shall be removed from the site. Each plant shall show at least 75% healthy growth and shall have the natural character of the plant of its species in accordance with American Nurserymen's Association Standards. These plants shall be replaced during the normal planting season, until the plants live through one year. A final inspection for acceptance will be made after the replacement plantings have lived through one (1) year.
- E. All replacements shall be plants of the same kind and size specified in the Plant List. The cost shall be borne by the Contractor.

1.9 EXAMINATION OF SITE CONDITIONS

- A. All areas to be planted shall be inspected by the Contractor before starting work and any defects shall be reported to the Landscape Architect prior to beginning this work. The commencement of work by the Contractor shall indicate his acceptance of the areas to be planted and he shall assume full responsibility.
- B. Environmental Requirements: Contractor shall not work on or with soils when they are dry, wet, or frozen. Field Test: Form soil in palm of hand; if soil retains shape and crumbles upon touching, then it may be worked (if it will not retain its shape, it is too dry; if it does not crumble, it is too wet). Landscape Architect shall be final authority on condition of soil.

1.10 PROTECTION

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

trees to remain, or wherever damage may result to trees to be saved. Construction material shall not be stored beneath trees to be saved.

1.11 QUALITY ASSURANCE

- A. Qualifications: Planting shall be performed only by a certified landscape contractor with experienced workmen familiar with planting procedures and under the supervision of a qualified supervisor. Contractor shall have a minimum of five (5) years experience with Work similar in nature and scope to this Section.

1.12 WARRANTIES

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

PART 2 - PRODUCTS

2.1 TOPSOIL (Loam Borrow)

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

2.2 SOIL ADDITIVES

- A. Commercial fertilizer, peat, humus or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the Landscape Architect.
 - 1. Commercial fertilizer shall be a product complying with the State and United States Fertilizer Laws. Deliver to the site in the original unopened containers which shall bear the manufacturer's Certificate of Compliance covering analysis which shall be furnished to the Landscape Architect. At least 50% by weight of

the Nitrogen content shall be derived from organic materials. Fertilizer shall contain the percentages of weight of ingredients as follows, or as recommended by the soil analysis when that is significantly different:

	<u>Nitrogen</u>	<u>Phosphorus</u>	<u>Potash</u>
For all plants	10%	10%	10%

- B. Ground dolomite limestone shall be an approved agricultural limestone containing not less than 85% of total calcium or magnesium carbonates. Limestone shall be ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20 mesh sieve.
- C. Humus shall be natural humus, reed peat or sedge peat. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C., latest edition, the acidity range shall be approximately 5.5 pH to 7.6 pH and the organic matter shall be not less than 85% as determined by loss on ignition. The minimum water absorbing ability shall be 200% by weight on an oven-dry basis.
- D. Peat moss shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue and other foreign matter. It shall have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the methods of testing of A.O.A.C., latest edition. Its water absorbing ability shall be a minimum of 1,100% by weight on an oven-dry basis.
- E. Superphosphate: Superphosphate shall be composed of finely ground phosphate rock as commonly used for agricultural purposes containing not less than 18% available phosphoric acid.
- F. Water retention gel shall be used. Mix with soil per manufactures directions.

2.3 PLANT MATERIALS

- A. The Contractor shall furnish and plant all plants shown on the Drawings, as specified, and in quantities as indicated in the Drawings. No substitutions will be permitted. All plants shall be nursery grown, unless specifically authorized to be collected.
- B. Plants shall be in accordance with the USA Standard for Nursery Stock of the American Association of Nurserymen, latest edition.
- C. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. Only plant stock grown within the hardiness Zones 3 through 6, as established by the United States Department of Agriculture, will be accepted. The Contractor's suppliers must certify in writing that the stock has actually been grown under Zone 6 or hardier conditions. Plants not so certified will not be accepted.
- D. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.

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

2.4 BARK MULCH

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

2.5 WATER

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

2.6 WATERING BAGS

- A. The Contractor shall furnish, maintain, and keep filled watering bags (Treegator Bags or Approved Equal) for all new tree plantings, to ensure a consistent and even supply of water throughout the maintenance period.

2.7 TRANSPLANTED PLANT MATERIAL

- A. Plants indicated on the plans (See sheets L2.1 and L7.1) shall be transplanted from their existing location on site. The contractor shall be responsible to avoid damage to transplanted trees.
- B. Equipment appropriate to the transplanting of the indicated material shall be used. The Contractor shall detail the proposed transplanting procedure to the Landscape Architect and Owner for their approval prior to beginning work.

2.8 PROTECTIVE FENCING

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

PART 3 - EXECUTION

3.1 FINE GRADING AND LOAMING

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

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

3.2 SOIL ADDITIVES

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

3.3 PLANTING

- A. Furnishing and planting of any plant material includes the digging of the holes, provision of soil additives and loam, furnishing the plants of specified size with roots in the specified manner, the labor of planting and mulching and guying and staking where called for.
- B. Season for Planting
 - 1. Spring: Deciduous Material April 1 through May 1
 Groundcover & Perennials April 15 through June 1
 - 2. Fall: Deciduous Material August 15 through October 15
 Groundcover & Perennials August 15 through October 15
- C. Planting (New and Transplanted Material)
 - 1. Location for all plants and outlines for planting areas shall be staked on the ground by the Contractor for approval by the Landscape Architect before any plant pits or plant beds are dug.
 - 2. At least fifteen (15) days prior to the expected planting date, the Contractor shall request that the Landscape Architect provide a representative to select and tag

stock to be planted under this Section. The Contractor shall provide for the transportation and overnight accommodations, if necessary, for the Landscape Architect's representative during the period of time required to select and tag the plant material, at no extra cost to the Owner.

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

Landscape Architect, the required watering may be reduced. Trees will require a minimum of ten (10) gallons of water each.

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

3.4 BARK MULCH

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

3.5 MAINTENANCE AND PROTECTION OF NEW PLANTINGS

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

- E. Contractor shall warrant trees for one (1) year. Contractor shall also warrant any replacement trees for one (1) year.
- F. Protection: Planting areas and plants shall be protected against trespassing and damage of any kind. This shall include the provision and installation of approved temporary fencing if necessary. If any plants become damaged or injured by vandalism or neglect prior to provisional acceptance, the Contractor shall treat or replace them at his own expense.

END OF SECTION

32 92 00
TURF AND GRASSES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract , Division 0, and applicable parts of Division 1 apply to the work under this Section.
- B. The Work of this section is integral with the whole of the Contract Documents and is not intended to be interpreted outside the context. This Section consists of the provision of all materials, labor, equipment and the like for the complete execution of all planting and lawn establishment and related items as indicated on the Drawings and/or as specified herein.
- C. All reference to products by manufacturer, trade name or performance Specification bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the Town of Arlington.
- D. Contractor shall comply with all laws, regulations, and quarantines for agricultural and horticultural products.

1.2 WORK INCLUDED

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

1.3 SPECIAL CONDITIONS

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

1.4 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all other trades and all departments of the Town of Arlington and coordinate all work under this Section therewith.

- B. The following related items are included under the Sections listed below:
1. Section 02 41 00 - Site Preparation & Demolition
 2. Section 31 00 00 - Earthwork
 3. Section 31 13 00 - Tree Pruning and Removals
 4. Section 32 90 00 - Planting

1.5 SUBMITTALS AND PRODUCT LITERATURE

- A. Prior to ordering the below listed materials, submit representative samples to Landscape Architect for selection and approval, in accordance with requirements of General Condition and special provisions as follows. Do not order material until Landscape Architect's approval has been obtained. Delivered materials shall closely match the approved samples.
- B. For each product or material used, submit manufacturer's product data, including installation instructions, use, limitations and recommendations.
- C. Submit the following samples:
1. Topsoil (see Section 32 90 00).
 2. Seed specifications.
 3. Submit material specifications and installation instructions where applicable attesting that soil additives, fertilizer, and lime are as specified
 4. Submit information on hydroseeding machinery.

1.6 PRODUCT DELIVERY AND HANDLING

- A. All topsoil, whether from stockpiles on site or loam borrow, shall be stored in piles not to exceed six feet in height, and shall not be handled when frozen or not in a friable condition.
- B. Inspection may be made before digging if the Landscape Architect directs, but no lawn shall be planted by the Contractor until planted area is inspected by the Landscape Architect at the site of the work.

1.7 DEFINITIONS

- A. The following related items are included herein and shall mean:
1. SSHB: The Commonwealth of Massachusetts, Department of Public Works, Standard Specifications for Highways and Bridges, latest edition
 2. AOAC: Association of Official Agricultural Chemists
 3. AAN: American Association of Nurserymen

1.8 CERTIFICATE OF ACCEPTANCE AND GUARANTEE FOR PLANTINGS

- A. The Contractor shall maintain all seeded areas for ninety (90) days or through the end of the growing season, whichever comes later. After the maintenance period, the Contractor shall request of the Landscape Architect, in writing, an inspection to determine whether the plant material is acceptable. If the plant material and workmanship are acceptable, written notice will be given by the Landscape Architect to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.

1.9 EXAMINATION OF SITE CONDITIONS

- A. All areas to be planted shall be inspected by the Contractor before starting work and any defects shall be reported to the Landscape Architect prior to beginning this work. The commencement of work by the Contractor shall indicate his acceptance of the areas to be planted and he shall assume full responsibility.
- B. Environmental Requirements: Contractor shall not work on or with soils when they are dry, wet, or frozen. Field Test: Form soil in palm of hand; if soil retains shape and crumbles upon touching, then it may be worked (if it will not retain its shape, it is too dry; if it does not crumble, it is too wet). Landscape Architect shall be final authority on condition of soil.

1.10 PROTECTION

- A. The Contractor shall be liable for any damage to property caused by the work, and all areas disturbed shall be returned to their original condition to the satisfaction of the Landscape Architect. During all work of this section, the Contractor shall protect all site improvements from contact with agricultural chemicals, soil amendments, and fertilizers.
- B. The Contractor shall provide all erosion, sedimentation, and environmental controls necessitated by site and governing codes.

1.11 QUALITY ASSURANCE

- A. Qualifications: Seeding shall be performed only by a certified landscape contractor with experienced workmen familiar with seeding procedures and under the supervision of a qualified supervisor. Contractor shall have a minimum of five (5) years experience with Work similar in nature and scope to this Section.

1.12 WARRANTIES

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

PART 2 - PRODUCTS

2.1 TOPSOIL (Loam Borrow)

- A. See Section 32 90 00

2.2 SOIL ADDITIVES

- A. See Section 32 90 00

2.3 GRASS SEED

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

Lawn areas:

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

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

2.4 WATER

- A. See Section 32 90 00

PART 3 - EXECUTION

3.1 FINE GRADING AND LOAMING

- A. See Section 32 90 00

3.2 SOIL ADDITIVES

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

3.3 HYDROSEEDING

- A. Limit of seeding shall be shown on the Drawings. All areas on the plan shall be loamed and seeded only after written approval of the finished grading or as directed by the Landscape Architect. All seeded areas are to be hydroseeded.

The actual planting of seed shall be done, however, only during periods within this season which are normal for such work as determined by weather conditions and be accepted practice in this locality. At his/her option and on his/her responsibility the Contractor may plant seed under unseasonable conditions without additional compensation, but subject to the Architect's approval as to time and methods.

- B. Planting may be done between August 15, 2011 and October 15, 2011, or between April 15, 2012 and June 15, 2012.
- C. Soil additives shall be spread and thoroughly incorporated into the later of loam and the upper 1 inch of the underlying subsoil by harrowing or other methods approved by the Architect. The following soil additives shall be incorporated:
 - 1. Ground limestone as required by soil analysis to achieve a pH of 6.0 to 6.5.
 - 2. Fertilizer as required by soil analysis.
 - 3. Superphosphate at the rate of 20 lbs. Per 1,000 square feet.
 - 4. Humus as required by soil analysis.
- D. Seeding of lawns shall be done only by experienced workmen under the supervision of qualified foreman. Seeding shall consist of soil preparation, rolling, hydroseeding, weeding, fertilizing, watering and otherwise providing all labor and materials necessary to secure the establishment of acceptable turf.
- E. The soil on which the seed is spread shall be reasonably moist and shall be watered, if directed by the Architect. The seeded areas shall be watered evenly and at a rate of 5 gallons per square yard, unless otherwise directed by the Architect.
- F. Contractor shall place and maintain barriers (in a neat condition) around hydroseeded areas to keep people off during the first sixty (60) days.
- G. The actual seeding of lawns shall be done only during periods within the season which are normal for such work as determined by weather conditions and by accepted practice in this locality, except as approved by the Architect.
- H. The application of grass seed, fertilizer, limestone, and a suitable wood fiber or other mulch shall be accomplished in one operation for hydroseeding.
- I. Hydroseeding shall be done by use of an approved spraying machine, which shall be operated only by personnel thoroughly familiar with this type of seeding operation.
- J. Prior to starting work, Contractor shall furnish the Architect with a certified statement as to the number of pounds of materials to be used per 100 gallons of water and the number of square feet to be covered with the quantity of solution in the hydroseeder.
 - 1. Materials shall be mixed with water in the machine and kept in an agitated state in order that the materials may be uniformly suspended in the water.
 - 2. Solution shall be sprayed evenly over the area so that resulting deposits of all materials shall equal the required rates.
 - 3. Spraying equipment shall be thoroughly cleaned and flushed prior to start of work and after every ten acres.

4. When inoculum is required, if the inoculum is left in the solution with fertilizer for longer than thirty minutes, a fresh charge of inoculum shall be added to the mixture.

3.4 MAINTENANCE AND PROTECTION OF LAWNS

- A. During construction, Contractor is responsible for mowing all of the existing lawn within the Limit of Work shown on the drawings. This includes the portion of lawn within the no cut / no fill zone.
- B. Maintenance shall begin immediately after an area is planted and shall continue until final acceptance. The minimum maintenance period shall be ninety (90) calendar days after completion of all plant installations. Watering and mowing shall be done by the Contractor for the full 90 days. If 90 day period has not elapsed before watering, mowing, and maintenance must stop due to cold weather, the remaining days of the maintenance period will be fulfilled when the growing season begins the following spring.
- C. Maintenance shall consist of keeping the grass in a healthy growing condition and shall include replacements, watering, weeding, cultivating, fertilizing, re-seeding, and mowing,
- D. Contractor shall warrantee lawn for one (1) year after acceptance.
- E. Protection: Seeded areas shall be protected against trespassing and damage of any kind. This shall include the provision and installation of approved temporary fencing if necessary. If any lawn becomes damaged or injured by vandalism or neglect prior to provisional acceptance, the Contractor shall treat or replace them at his own expense.
- F. Watering of Lawn Areas:
 1. First week: The Contractor shall provide all labor and arrange for all watering necessary for rooting of the seed. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantity to maintain moist soil to a depth of at least 4 inches. Watering shall not be done during the heat of the day to help prevent wilting.
 2. Second and Subsequent weeks: The Contractor shall water the lawn as required to maintain adequate moisture, until final acceptance, in the upper 4 inches of soil.
 3. Watering shall be done in a manner that will provide uniform coverage, prevent erosion due to application of excessive quantities over small areas, and prevent damage to the finished surface by the watering equipment. The Contractor shall furnish sufficient watering equipment to apply one (1) complete coverage to the lawn areas in an eight (8) hour period.
- G. Mowing: The first mowing of lawn areas shall not be attempted until the seed is firmly rooted and secure in place. Not more than 40% of the grass leaf shall be removed by initial or subsequent mowings. Grass height shall be maintained between 2 inches and 2-1/2 inches unless otherwise specified. Thereafter grass shall be maintained at 2 inches until acceptance.

- H. Fertilizing: A second application of fertilizer, as specified herein, shall be applied approximately 6 weeks after the seed has been installed as directed by the Landscape Architect. Fertilizer shall be applied at the rate of 10 pounds per 1,000 square feet.
- I. Erosion Control: Contractor is responsible for soil stabilization while lawns are being established. Erosion control methods include mulching and installation of biodegradable mesh.

3.5 FINAL ACCEPTANCE

- A. Contractor is to maintain all lawn upon installation. Ninety day maintenance period begins after all lawn has been planted. After the 90 day maintenance period, lawn areas will be reviewed for final acceptance.
- B. Conditions of Final Acceptance
 - 1. Lawn acceptance shall be given for entire completed lawn area. No partial acceptance shall be given.
 - 2. Lawns shall exhibit uniform, thick, well-developed stand of grass. Lawn areas shall have no bare spots.
 - 3. No lawn areas shall exhibit signs of damage from erosion, washouts, gullies, or other causes.
 - 4. Pavement surfaces and site improvements adjacent to lawn areas shall be clean and free of spills from placing or handling of loam borrow and seeding operations.
- C. Inspection and Final Acceptance
 - 1. Upon completion of 90 day maintenance period, request Landscape Architect's review to determine if work is acceptable.
 - a. If work is not accepted, Landscape Architect will issue a written list of outstanding work. Maintenance period to be extended until completion of work.
 - b. Contractor shall notify Landscape Architect when outstanding work is completed and ready for review. When work is complete, as determined by Landscape Architect, a letter of Final Acceptance will be issued.

END OF SECTION

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UTILITIES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the notation "or approved equal" shall be as determined by the Landscape Architect and the Owner.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. The Contractor shall pay for all costs and fees related to connecting the utilities and drainage systems to existing services and shall file all applications, details, and drawings required by the local authority having jurisdiction.
- C. To be included, but not limited to the following:
 - 1. Water Cabinet Contents;
 - 2. Water Connections, Service Lines, Fittings, and Accessories;
 - 3. Testing and Disinfection of Water Systems;
 - 4. Precast Drainage Structures;
 - 5. Drop Inlets;
 - 6. Connection Of New Drainage Structures To Existing Drainage System.

1.3 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Section 02 41 00 – Demolition and Site Preparation
 - 2. Section 05 50 00 – Metal Fabrications
 - 3. Section 11 68 00 – Play Equipment
 - 4. Section 31 00 00 – Earthwork
 - 5. Section 32 10 00 – Bases, Ballasts, and Paving
 - 6. Section 32 90 00 – Planting

1.4 SUBMITTALS

- A. Shop Drawings and Samples

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

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.6 REFERENCE STANDARDS AND SPECIFICATIONS

- A. Perform work strictly as required by rules, regulations, standards, codes, ordinances, and laws of local, state, and federal government, and other authorities that have lawful jurisdiction.
- B. All materials and installations for Electrical components shall be in accordance with the latest edition of the Massachusetts Electrical Code, and all applicable local codes and ordinances. Materials and equipment shall be listed by Underwriters Laboratories (UL). Special Attention shall be paid to the latest edition of the following standards:
 1. Town of Arlington Department of Public Works Regulations and Standards
 2. American Association of State Highway and Transportation Officials
AASHTO:
 - a. Standard Specifications for Highway Bridges SSHB
 3. American Concrete Pipe Association ACPA
 - a. Concrete Pipe Design Manual CPDM
 4. American National Standards Institute ANSI
 5. American Society for Testing & Materials ASTM
 6. American Water Works Association AWWA
 7. Commonwealth of Massachusetts Highway Department MHD
 - a. Standard Specifications for Highways and Bridges SSHB
 8. National Fire Protection Association NFPA
 9. Occupational Safety & Health Administration OSHA
 10. Underwriter's Laboratories, Inc. UL
- C. The above listed codes and standards are referenced to establish minimum requirements; wherever this Section requires higher grades of materials and workmanship than required by the listed codes and standards, this Section shall apply. In the event a conflict occurs between the above listed codes and standards and this Section, the more stringent requirement shall govern.

1.7 MAINTENANCE KIT

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

1.8 PERMITS AND FEES

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

PART 2 - PRODUCTS

2.1 NEW UTILITY CONNECTIONS AND CABINET

- A. Water cabinet fabrication shall comply with 05 50 00, Metal Fabrications, and as shown on the Drawings and required by code.
- B. Water connections from the new service line to individual features shall be made within the underground vault associated with the drinking fountain unless otherwise required by code; backflow prevention device and hose bib shall be located within the above-grade water cabinet.
- C. Connect water supply to existing meter in indicated meter pit. Contractor to confirm that available water pressure is sufficient for all proposed use before finalizing plumbing. Include pressure reducers where appropriate.
- D. Shop Drawings and Diagrams
 - 1. Provide Manufacturer's Cut Sheets or Shop Drawings for all components, and plumbing diagrams, including detailing of proposed hangings and supports, with all features clearly labeled, for review and Approval by the Landscape Architect and the Owner's Representative.
 - 2. Required Component Submittals:
 - a. Pipes and tubing (Copper, CLDI, PVC, and polybraid);
 - b. Service Equipment;
 - c. Backflow Preventers;
 - d. Pressure Regulators as needed;
 - e. Hose Bib;
 - f. Straps and clamps for mounting;
 - g. Shop Drawings for Water Cabinet.

2.2 EMBEDMENT MATERIALS

- A. Ductile iron water pipe shall use materials defined in AWWA C 600, Sec. 3.5, Backfilling.
- B. Crushed stone fill shall consist of clean, crushed stone conforming to that specified in Section 02200, EARTHWORK.
- C. Fill for water service lines shall be clean washed sand.
- D. PVC pipe shall use Class III embedment materials as defined in ASTM D 2321.

2.3 WATER SERVICE PIPING

- A. Service lines two (2) inches or smaller shall be copper water tubing, Type K, for underground water service and shall be in accordance with ANSI/AWWA C800, latest issue.
- B. Type K copper tubing material shall be in conformance with ASTM B88.
- C. Water service fittings including couplings and adapters, check valves and service saddles shall be in conformance with ANSI/AWWA C800, "Underground Service Line Valves and Fittings."
- D. Joints in copper tubing shall be made with three part compression couplings, flared tube fittings, or an approved equal.
- E. Service lines greater than two [2] inches (none anticipated on project) shall be ductile iron pipe.

2.4 PRECAST DRAINAGE STRUCTURES

- A. Leaching Catch Basin shall be precast concrete similar to "Precast Drywell", manufactured by E. F. Shea. Manhole Structure for connection to new pipe shall be precast concrete as shown on the Drawings.
 - 1. Holes in sections to receive piping may be cast into concrete or drilled.
 - 2. Diameter of hole shall be 2 to 4 in. larger than outside diameter of entering pipe.
 - 3. Structures shall conform to AASHTO HS-25 loading, as specified in the AASHTO Specifications.
- B. All frames and covers shall be ADA-compliant, cast iron, heavy duty castings, conforming to ASTM A 48, Class 35 and shall be designed to safely withstand an AASHTO HS-25 loading.
- C. All frames and covers shall conform to the MassDOT Specifications M 8.03.0.
- D. Castings shall have a shop-applied coal-tar-pitch varnish coating, thoroughly covering all metal.
- E. Catch Basin Inlet frame and grate shall have a rectangular clear opening of 18"x18" inches. Manhole frame and cover shall have a circular clear opening of 18" dia.
- F. Upon completion of all hardscape and paving work all covers shall be cleared of foreign material (i.e. bituminous material, concrete, mortar etc). After cleaning the covers shall be removed and build-up of material inside the frame cleared to ease future removal of covers.
- G. All proposed area drains/catch basins with outlets shall be constructed with Nyloplast snout or tee Oil Separator Hood or Approved Equal.

2.5 PVC PIPE AND FITTINGS (NON PRESSURE)

- A. Polyvinyl chloride (PVC) non-pressure pipe for gravity drainage shall conform to ASTM D 3034, Schedule 40.
- B. Pipe shall be bell-and-spigot type, furnished in standard lengths of 12'-6".
- C. Bell end shall be an integral wall section with solid cross section rubber ring, factory assembled.
- D. Spigot end shall be beveled to ensure proper insertion. Spigot end shall be imprinted with an "assembly stripe", to which the bell end of the mated pipe will extend upon proper jointing of the two pipes.
- E. Rubber rings shall conform to ASTM D 3212.
- F. Pipe ends shall permit checking of the rings with a feeler gauge to ensure their proper location in the coupling grooves.
- G. PVC fittings shall be bell-and-spigot type compatible with the pipe.
- H. Perforations, when applicable, shall be 5/8" holes on 5 inch centers in two rows 120 degrees apart.
- I. Cleanouts shall be threaded PVC cleanouts compatible with the pipe.

2.6 DROP INLET

- A. Drop inlets to be polypropylene by NDS or equal.
- B. Grate to be polyolefin with u.v. Inhibitors.
- C. Drop inlet and grate to be strong enough to support a vehicle running over it.

2.7 PORTLAND CEMENT MORTAR

- A. Mortar shall be a Portland cement mortar conforming to ASTM C 270, Type M.
- B. Mortar shall contain a waterproofing admixture. Waterproofing admixture shall be one of the following (or approved equal):

<u>ADMIXTURE</u>	<u>MANUFACTURER</u>
1. Hydratite Plus	W.R. Grace and Company
2. Medusa Waterproofing	Medusa Portland Cement Company
3. Omicron Mortarproofing	Master Builders Company
4. Mortaron	The Aquabar Company
5. Hydrocide Powder	Sonneborn Building Products

2.8 NONSHRINK GROUT

- A. Grout shall be non-shrink type similar to (or approved equal):

<u>PRODUCT</u>	<u>MANUFACTURER</u>
1. Embeco	Master Builders, Cleveland, OH
2. 5 Star Grout	U.S. Grout Corp., Old Greenwich, CT

3. Upcon 262 Upco Co., Cleveland, OH

2.9 FILTER FABRIC

- A. Filter fabric shall be a nonwoven geotextile filter fabric with high hydraulic permittivity and a minimum 25% recycled content, Mirafi MiraGreen D Recycled Nonwoven Geotextile or Approved Equal.

2.10 CONTINUITY OF SERVICES

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

2.11 NEW WATER CABINET

- A. Fabrication and finishing of cabinet shall be in accordance with Section 05 50 00, Metal Fabrications, and with all applicable codes and approved shop drawings.
- B. Installation to comply with all applicable codes and standards, and with Town of Arlington Department of Public Works requirements.
- C. The Contractor performing the work on these items shall be a licensed MA Plumber.
- D. All plumbing work shall be inspected by the City Plumbing Inspector, before backfilling occurs.
- E. Contractor to touch up any scratches and all mars to surfaces and finishes.

2.12 NEW WATER CONNECTIONS

- A. Installation to comply with all applicable codes and standards, and with Town of Arlington Department of Public Works requirements.
- B. The Contractor performing the work on these items shall be a licensed MA Plumber.
- C. All plumbing work shall be inspected by the City Plumbing Inspector, before backfilling occurs.
- D. Contractor to touch up any scratches and all mars to surfaces and finishes.

2.13 WATER SERVICES

- A. Copper Service Pipe: Care shall be exercised in placing and laying of service line to be sure that the pipe does not have kinks or sharp bends and to assure against its being in contact with sharp stones or ledge which would cause damage to the pipe. At least 6 inches of sand shall be placed adjacent to, under, and above the pipe, and no stone larger than 2 inches shall be placed over the pipe until the depth of backfill above the pipe is in excess of 1 foot.
- B. Ductile Iron Service Pipe: Each ductile iron service pipe shall be valved with gate valve where and as directed, and a valve box shall be installed over the valve, all as specified elsewhere in these Specifications. Connections of service lines at the main shall be made with appropriate size tees.

2.14 WATER SERVICES TESTING

- A. All portions of the water system shall be tested for leakage. System may be tested by the use of either water or low-pressure air.

- B. General test requirements.
 - 1. Piping shall be adequately restrained against movement before testing. Pressure line shall have thrust blocks installed and the concrete shall have attained full design strength before test pressure is applied to the line.
 - 2. Piping system shall be flushed clean, and sediment, scale, dirt, and debris removed before piping is tested.
 - 3. Adequate provision shall be made for carrying off flushing water without causing erosion or other damage.
 - 4. Piping shall be tested before joints are concealed or made inaccessible.
 - 5. Tests shall be made in the presence of an Inspector of the authority having jurisdiction.
- C. Notice of tests shall be made in writing to the Landscape Architect and the Owner, and received by them not less than five days before the date of test.
- D. Pressure and Leakage Tests.
 - 1. Pressure pipe shall be given combined pressure and leakage tests in sections of acceptable length.
 - 2. The Contractor shall furnish and install suitable temporary testing plugs or caps; all necessary pressure pumps, pipe connections, meters, gages, and other necessary equipment; and all labor required.
 - 3. Unless it has already been done, the section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations and do the necessary backfilling and shall make the necessary taps at such points, and shall plug said holes after completion of the test.
 - 4. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
 - 5. The pressure test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gage location) to a pressure of 125 lbs. per sq. in. If the Contractor cannot achieve the specified pressure and maintain it for a period of one hour with no additional pumping, the section shall be considered as having failed to pass the test.
 - 6. Following a successful pressure test, or concurrently therewith, the Contractor shall make a leakage test by metering the flow of water into the pipe while maintaining in the water main a pressure equal to the specified test pressure. If the average leakage during the 4-hour period exceeds a rate of 20 gallons per 24 hours per inch of inside diameter per mile of pipeline, the section shall be considered as having failed the leakage test.
 - 7. If the section shall fail to pass the pressure test, the leakage test, or both, the Contractor shall do everything necessary to locate, uncover, and repair or replace defective pipes, fittings, or joints, all at his own expense, and without extension of the time for completion of the work. Additional tests and repairs shall be made until the section passes the specified tests.

8. All joints within vaults shall have no visible leakage. Joints from which water continues to run or squirt in an active manner will not be accepted.
 9. Upon successful completion of the tests, plugs or caps installed for the testing shall be removed.
 10. If, in the judgment of the Landscape Architect, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure shall be made as required and accepted, but in any event the Contractor shall be responsible for the ultimate tightness of the line within the above leakage and pressure requirements.
- E. Before submitting system for final approval of the authorities having jurisdiction, the Contractor shall submit to the Architect a written statement stating that the work has been completed in accordance with the Specifications and Drawings.
 - F. Promptly following satisfactory completion of leakage testing, a report fully describing test procedures and listing test results shall be submitted to the Architect and to governmental agencies having jurisdiction. The Contractor's Superintendent shall sign the report.

2.15 WATER SERVICES DISINFECTION

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

2.16 PRECAST CONCRETE DRAINAGE STRUCTURES

- A. The Leaching Catch Basin, Precast Manhole, and associated overflow pipe shall be installed in accordance with the Manufacturer's installation instructions and recommendations, and in accordance with the Drawings.
- B. Precast structures shall be set to the required elevation and shall be plumb and vertical, with each section in true alignment.
 1. Lifting holes in precast sections shall be thoroughly plugged with mortar and finished smooth and flush with adjoining surfaces.
 2. Drain pipe shall extend, around its entire circumference, to inside surface of wall of structure into which it is inserted. Pipe shall be joined to manhole wall using either a flexible manhole sleeve or nonshrink grout. For grouted joints, surface between pipe and wall shall be filled with nonshrink grout.
- C. Brick shall be employed to bring cast iron frame, cover, and grate to required elevation. Completed brick installation shall be coated with at least a 3/4 in.

thickness of mortar on outside to provide a fully sealed and watertight collar between the top of the manhole section and the cover or grate frame.

1. Before installation of castings, chipped and scraped areas shall be touched up with one coat of bituminous paint.
 2. Cast iron frame shall be set concentric with manhole opening in a full bed of mortar. A thick ring of mortar extending to the outer edge of brick or concrete shall be placed all around the bottom flange of the cast iron frame. Mortar surface shall be smooth and shall be sloped to shed water away from the frame.
 3. Waterproofing shall be added to the mortar for underground masonry in accordance with the water proofing manufacturers directions. Other additives will not be permitted in the mortar.
- D. Portland cement-based mixtures used on this work shall receive a minimum of three days of moist curing, which shall start immediately after the material has been placed. Suitable means shall be employed to protect cement-based mixtures from too rapid drying and damage from cold weather and frost.

2.17 PVC PIPE INSTALLATION

- A. Piping shall be installed essentially as indicated on the Drawings.
- B. PVC pipe installation shall conform to ASTM D 2321.
 1. Bottom of trench excavation shall be kept dry and free of water during pipe installation. Adequate measures shall be taken to prevent flotation of pipe in the trench.
 2. Pipe shall be thoroughly cleaned before installation, and shall be maintained free from foreign matter during installation.
 3. Each pipe length shall be installed to form a close joint with the next adjoining length and bring inverts to the required grade.
 4. Piping shall be properly graded, free from pockets.
 5. No pipe or fitting shall be permanently supported on saddles, blocking, or stones.
 6. Where necessary, tight-fitting temporary wood bulkheads shall be employed to close ends of pipeline at end of each day's work.
 7. Entire length of pipe shall be thoroughly flushed clean following completion of backfill.

PART 3 - EXECUTION

3.1 MATERIALS AND WORKMANSHIP

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

3.2 CONTINUITY OF SERVICES

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

3.3 NEW WATER CABINET

- A. Fabrication and finishing of cabinet shall be in accordance with Section 05 50 00, Metal Fabrications, and with all applicable codes and approved shop drawings.
- B. Installation to comply with all applicable codes and standards, and with City of Boston Department of Public Works requirements.
- C. The Contractor performing the work on these items shall be a licensed MA Plumber.
- D. All plumbing work shall be inspected by the City Plumbing Inspector, before backfilling occurs.
- E. Contractor to touch up any scratches and all mars to surfaces and finishes.

3.4 NEW WATER CONNECTIONS

- A. Installation to comply with all applicable codes and standards, and with City of Boston Department of Public Works requirements.
- B. The Contractor performing the work on these items shall be a licensed MA Plumber.
- C. All plumbing work shall be inspected by the City Plumbing Inspector, before backfilling occurs.
- D. Contractor to touch up any scratches and all mars to surfaces and finishes.

3.5 WATER SERVICES

- A. Copper Service Pipe: Care shall be exercised in placing and laying of service line to be sure that the pipe does not have kinks or sharp bends and to assure against its being in contact with sharp stones or ledge which would cause damage to the pipe. At least 6 inches of sand shall be placed adjacent to, under, and above the pipe, and no stone larger than 2 inches shall be placed over the pipe until the depth of backfill above the pipe is in excess of 1 foot.
- B. Ductile Iron Service Pipe: Each ductile iron service pipe shall be valved with gate valve where and as directed, and a valve box shall be installed over the valve, all as specified elsewhere in these Specifications. Connections of service lines at the main shall be made with appropriate size tees.

3.6 WATER SERVICES TESTING

- A. All portions of the water system shall be tested for leakage. System may be tested by the use of either water or low-pressure air.
- B. General test requirements.
 - 1. Piping shall be adequately restrained against movement before testing. Pressure line shall have thrust blocks installed and the concrete shall have attained full design strength before test pressure is applied to the line.
 - 2. Piping system shall be flushed clean, and sediment, scale, dirt, and debris removed before piping is tested.

3. Adequate provision shall be made for carrying off flushing water without causing erosion or other damage.
 4. Piping shall be tested before joints are concealed or made inaccessible.
 5. Tests shall be made in the presence of an Inspector of the authority having jurisdiction.
- C. Notice of tests shall be made in writing to the Landscape Architect and the Owner, and received by them not less than five days before the date of test.
- D. Pressure and Leakage Tests.
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 3. Unless it has already been done, the section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations and do the necessary backfilling and shall make the necessary taps at such points, and shall plug said holes after completion of the test.
 4. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
 5. The pressure test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gage location) to a pressure of 125 lbs. per sq. in. If the Contractor cannot achieve the specified pressure and maintain it for a period of one hour with no additional pumping, the section shall be considered as having failed to pass the test.
 6. Following a successful pressure test, or concurrently therewith, the Contractor shall make a leakage test by metering the flow of water into the pipe while maintaining in the water main a pressure equal to the specified test pressure. If the average leakage during the 4-hour period exceeds a rate of 20 gallons per 24 hours per inch of inside diameter per mile of pipeline, the section shall be considered as having failed the leakage test.
 7. If the section shall fail to pass the pressure test, the leakage test, or both, the Contractor shall do everything necessary to locate, uncover, and repair or replace defective pipes, fittings, or joints, all at his own expense, and without extension of the time for completion of the work. Additional tests and repairs shall be made until the section passes the specified tests.
 8. All joints within vaults shall have no visible leakage. Joints from which water continues to run or squirt in an active manner will not be accepted.
 9. Upon successful completion of the tests, plugs or caps installed for the testing shall be removed.
 10. If, in the judgment of the Landscape Architect, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure shall be made as required and accepted, but in any event the Contractor

shall be responsible for the ultimate tightness of the line within the above leakage and pressure requirements.

- E. Before submitting system for final approval of the authorities having jurisdiction, the Contractor shall submit to the Architect a written statement stating that the work has been completed in accordance with the Specifications and Drawings.
- F. Promptly following satisfactory completion of leakage testing, a report fully describing test procedures and listing test results shall be submitted to the Architect and to governmental agencies having jurisdiction. The Contractor's Superintendent shall sign the report.

3.7 WATER SERVICES DISINFECTION

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

3.8 PRECAST CONCRETE DRAINAGE STRUCTURES

- A. The Leaching Catch Basin, Precast Manhole, and associated overflow pipe shall be installed in accordance with the Manufacturer's installation instructions and recommendations, and in accordance with the Drawings.
- B. Precast structures shall be set to the required elevation and shall be plumb and vertical, with each section in true alignment.
 - 1. Lifting holes in precast sections shall be thoroughly plugged with mortar and finished smooth and flush with adjoining surfaces.
 - 2. Drain pipe shall extend, around its entire circumference, to inside surface of wall of structure into which it is inserted. Pipe shall be joined to manhole wall using either a flexible manhole sleeve or nonshrink grout. For grouted joints, surface between pipe and wall shall be filled with nonshrink grout.
- C. Brick shall be employed to bring cast iron frame, cover, and grate to required elevation. Completed brick installation shall be coated with at least a 3/4 in. thickness of mortar on outside to provide a fully sealed and watertight collar between the top of the manhole section and the cover or grate frame.
 - 1. Before installation of castings, chipped and scraped areas shall be touched up with one coat of bituminous paint.
 - 2. Cast iron frame shall be set concentric with manhole opening in a full bed of mortar. A thick ring of mortar extending to the outer edge of brick or concrete shall be placed all around the bottom flange of the cast iron frame. Mortar

surface shall be smooth and shall be sloped to shed water away from the frame.

3. Waterproofing shall be added to the mortar for underground masonry in accordance with the water proofing manufacturers directions. Other additives will not be permitted in the mortar.
- D. Portland cement-based mixtures used on this work shall receive a minimum of three days of moist curing, which shall start immediately after the material has been placed. Suitable means shall be employed to protect cement-based mixtures from too rapid drying and damage from cold weather and frost.

3.9 POLYPROPYLENE DROP INLETS

- A. The drop inlets shall be installed in accordance with the Manufacturer's installation instructions and recommendations, and in accordance with the Drawings.

3.10 PVC PIPE INSTALLATION

- A. Piping shall be installed essentially as indicated on the Drawings.
- B. PVC pipe installation shall conform to ASTM D 2321.
 1. Bottom of trench excavation shall be kept dry and free of water during pipe installation. Adequate measures shall be taken to prevent flotation of pipe in the trench.
 2. Pipe shall be thoroughly cleaned before installation, and shall be maintained free from foreign matter during installation.
 3. Each pipe length shall be installed to form a close joint with the next adjoining length and bring inverts to the required grade.
 4. Piping shall be properly graded, free from pockets.
 5. No pipe or fitting shall be permanently supported on saddles, blocking, or stones.
 6. Where necessary, tight-fitting temporary wood bulkheads shall be employed to close ends of pipeline at end of each day's work.
 7. Entire length of pipe shall be thoroughly flushed clean following completion of backfill.

END OF SECTION

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