

INVITATION FOR BIDS
(IFB # 14-66)

Kenney Park
REFURBISHING OF AN EXISTING PARK

Bid Opening: 11:00 AM, Wednesday, March 5, 2014



CITY OF SOMERVILLE, MASSACHUSETTS
Joseph A. Curtatone, Mayor

Purchasing Department
Angela M. Allen, Purchasing Director

Luisa Oliveira
Office Strategic Planning & Community Development.
City of Somerville
93 Highland Avenue
Somerville, MA 02143
PH: 617-625-6600 x2529
FX: 617-625-0722

Kenney Park
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Kenney Park – REFURBISHING OF AN EXISTING PARK

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**PART 1 SECTION 00020:
CITY OF SOMERVILLE MASSACHUSETTS
INVITATION TO BID
KENNEY PARK – REFURBISHING OF AN EXISTING PARK
Bid No. 14-66**

**Enclosed you will find an invitation to bid for:
KENNEY PARK – REFURBISHING OF AN EXISTING PARK
Highland Ave. at Grove Street, Somerville, MA 02144.**

Plans and specifications will be available from 8:30 AM to 4:30 PM, Monday through Wednesday, 8:30 AM to 7:30 PM on Thursday, and 8:30 AM to 12:00 Noon, Fridays, at the Purchasing Department, 1st Floor, City Hall, 93 Highland Avenue, Somerville, MA 02143 from **Wednesday, February 12, 2014** upon deposit of \$ 50.00 for each set in the form of a check made payable to the City of Somerville. **The deposit will be non-refundable.** Any person requesting additional sets will be required to pay a nonrefundable fee for each additional set in the amount of \$ 50.00, per set.

A Mandatory Pre-Bid Conference, will be held on Wednesday, February 19, 2014 at 11:30 AM, Somerville City Hall, Alderman’s Chambers, 2nd Floor, 93 Highland Avenue, Somerville, MA 02143.

When submitting bid, please identify the bid item and number clearly. All bids must be sealed and delivered to Purchasing Department, City of Somerville, 93 Highland Ave., Somerville, MA 02143, **no later than 11:00AM, on Wednesday, March 5, 2014.** Please mark the outside of all bid envelopes with the following: **“Bid #14-66, Kenney Park”** on the bid envelope.

BIDS SUBMITTED MUST BE AN ORIGINAL.

The completion of the following forms is necessary for consideration of a potential contract award. When submitting bid documents, please retain the order of documents as provided below:

- 1) Form for General Bid**
- 2) Bid Form for Alternates**
- 3) Unit Price Form**
- 4) Somerville Living Wage Form**
- 5) Acknowledgement of Notice to Bidders**
- 6) Quality Requirements Form**
- 7) Certificate of Non-Collusion & Tax Compliance**
- 8) Certificate of Signature Authority**
- 9) Signature Form complete when submitting your bid.**
- 10) Reference Form**
- 11) 5% Bid Deposit**
- 12) Wages, Statement of Compliance Form**

NOTE: If Vendor is incorporated an updated “CERTIFICATE OF GOOD STANDING” from the Commonwealth of Massachusetts will be needed for the awarded vendor only.

CITY HALL HOURS HAVE BEEN CHANGED. WE ARE OPEN UNTIL 7:30 P.M. ON THURSDAYS AND CLOSE ON FRIDAYS AT 12:30 P.M.

Please review and return with your sealed bids as sent. Also, ensure that all forms are completed and that your bid response is submitted as requested.

Your cooperation is greatly appreciated.

Kenney Park
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PART 1, SECTION 2:

INSTRUCTIONS TO BIDDERS

(Chapter 30:39M or 30B:5 – Construction- Competitive Sealed Bids)

1. NAME OF PROJECT

Kenney Park – REFURBISHING OF AN EXISTING PARK

2. AWARDING AUTHORITY

The City of Somerville (City), acting by and through the Purchasing Department, invites sealed bids for the Kenney Park, in accordance with contract documents.

OSPCD Contact:

Luisa Oliveira
Office of Strategic Planning & Community Development
City of Somerville
93 Highland Avenue
Somerville, MA 02143
Phone (617) 625-6600 x2529
Fax: (617) 625-0722

3. LANDSCAPE ARCHITECT:

**CBA Landscape Architects LLC
24 Thorndike St.
Cambridge, MA 02141**

Contact: DJ Chagnon, Principal
Phone: 617-945-9760 Ext. 2
dj@cband.com

4. LOCATION OF PROJECT

Highland Ave. at Grove Street, Somerville, MA 02144

5. BRIEF DESCRIPTION OF WORK MORE PARTICULARLY DESCRIBED IN THE PLANS AND SPECIFICATIONS INCLUDED AS PART OF THIS BID PACKAGE.

Kenney Park is located in Davis Square at the intersection of Highland Ave. and Grove Street in Somerville, MA. Highland Ave is a busy commercial street and Grove is a secondary street;

both with limited parking. Work on this project is scheduled to start on April 1, 2014 and be completed by September 1, 2014.

Construction documents for this project have been prepared by CBA Landscape Architects LLC who will act as the agent of the City, overseeing construction to ensure conformity to construction drawings, specifications, and standards. The City's Office of Strategic Planning and Community Development (OSPCD) is responsible for project management, and will also interact with the General Contractor during construction.

Kenney Park

The scope of work is to refurbish a small existing City park (.3 acres), located on the Eastern edge of Davis square. The existing park includes a basketball court, small plaza and play area. Although the layout of the park will remain the same, the park requires resurfacing of a basketball court, brick plaza area and playground (with poured in place rubber surfacing). Play equipment will be rehabilitated and enhanced, fences repaired or replaced and a water feature with integrated lighting will be constructed in the plaza. Some additional site furnishings, lighting and plantings will be added in an effort to enhance the space. Please consult the plans and specifications for full scope of work, including important permitting requirements. Contractor will be responsible for providing as-built drawings and a maintenance manual at final completion. The City will not assume maintenance of Kenney Park until final completion and a park walk-through/review meeting with the Somerville Department of Public Works at which all systems and maintenance plans will be reviewed and approved by the Somerville Department of Public Works. After this approval, the contractor will submit the maintenance manual and as-built drawings to the City.

6. ESTIMATED CONSTRUCTION COST OF THE PROJECT

The estimated cost for the project is \$ 450,000.00

7. PROJECT SCHEDULE:

Estimated Construction Start: April 1, 2014

Date of Substantial Completion: August 15, 2014

Date of Final Completion: September 01, 2014

100% completion of all work.

Bidders are instructed to note the firmness of the dates of: Substantial Completion, and Final Completion. For the purpose of meeting these deadlines, the City may be prepared to authorize extended work hours beyond those prescribed by City ordinance, to include work on Sundays with the prior permission of the City.

Contractor submission of all paperwork required for the Construction Contract, including but not limited to insurance certificates, performance and payment bonds, a certificate of good standing from the Secretary of Corporations, and signature pages shall be submitted to the Purchasing Director no later than 5 working days from award of the contract.

The successful bidder shall be required to submit a preliminary construction schedule within 10 days of the established date of award of the Contract and a more detailed Gantt-type construction schedule within 15 days of the established award of the contract, which shows the dates of substantial and final completion.

While the work is not scheduled to start until April 1, 2014, the City is requesting that the Contractor be mobilized on that date and any materials should be ordered as soon as possible, after contract execution, to prevent delays. However, the City cannot pay for any work prior to April 1, 2014.

8. GOVERNING LAW

Massachusetts General Laws, c. 30, §39M.

9. SALES TAX EXEMPTION

Materials, equipment, and supplies for this project are exempt from sales tax in accordance with M.G.L. Chapter 64H, Section 6 (d). The city will furnish the successful bidder with its sales tax exemption number.

10. PERMIT FEES(Contractor responsible obtaining permits/City of Somerville permit fees waived)

DPW permits to obstruct or excavate the public streets and/or sidewalks; ISD building code permits; and Traffic and Parking permits; are waived by the City of Somerville. However, license fees are not waived by the City of Somerville. The Contractor shall pay all license fees (e.g., drain layer's license fee). The City of Somerville Traffic and Parking Department must be contacted directly for all required permits.

If water usage is required in the commitment of this project, the Contractor needs to contact the DPW Water Dept., and make arrangements for a water meter. There will be a charge for the water meter and the water usage.

The Contractor is responsible for obtaining NSTAR work orders and for all costs and fees associated with NSTAR.

Permits to excavate the public way cannot be issued until the applicant has notified the appropriate utility companies, as required by Massachusetts General Laws, Chapter 370 of the Acts of 1963. The applicant must either: 1) obtain written receipts from the affected utilities, and provide copies of same to the owner; or 2) utilize the Dig-Safe System for the required

notifications, and also submit written notifications for those utilities not participating in the Dig-Safe System. Written notifications must state that utility companies have been notified and the contractor cleared to begin work.

The following utility companies must be notified in writing:

M.B.T.A. Engineering and Maintenance Division 617-722-5454
Attn: Mr. William Bregoli, Chief Engineer
500 Arborway
Jamaica Plain, MA 02130

M.W.R.A. Sewer Division 617-242-6000
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

M.W.R.A. Water Division 617-242-6000
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

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

Algonquin Gas Transmission Corp. 617-254-4050
Attn: Mr. James Grasso
Manager of Land and Public Relations
1284 Soldiers Field Road
Brighton, MA 02135

Verizon 781-290-5154
Attn: Mr. Jim Warren
460 Totten Pond Road
Waltham, MA 02154

Boston Edison 617-541-5730
Attn: Mr. William Lemos
Right of Way
1165 Massachusetts Avenue
Dorchester, MA 02125

Boston Gas Company 617-323-9210
Attn: Mr. Dennis Peri
201 Rivermoor Street
West Roxbury, MA 02132

N-Star Electric
Attn: Mr. Wendell Berthelson
46 Blackstone Street
Somerville, MA 02139

617-497-1236, x4195

N-Star Steam
Attn: Mr. Thomas Connelly
Supervisor of Maintenance
265 First Street
Somerville, MA 02142

617-225-4568

N-Star Gas
Attn: Mr. Steve Richmond
303 Third Street
Somerville, MA 02142

617-369-5591

A T & T Broadband
Attn: Mr. Rich Ferrucci
760 Main Street
Malden, MA 01887

981-658-0400, x2210

Somerville Public Works Department
One Franey Road
Somerville, MA 02145

617-625-6600, x5200

Somerville Fire Department
266 Broadway
Somerville, MA 02143

617-625-6600, x8100

Dig-Safe

1-800-322-4844

The contractor shall have all utilities marked out along the course of this work by such means as the Engineer shall approve and shall preserve such marked locations until the work has progressed to the point where the encountered utility is fully exposed and protected as required. It shall be the contractor's responsibility to notify utilities at least 48 hours prior to the start of any excavation.

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

11. MINIMUM BID CRITERIA

- All bidders must have been conducting business, in this specified field, for a minimum of five (5) years.
- All bidders must have successfully constructed a minimum of three (3) municipal park projects similar in magnitude within the last six (6) years.

12. PRE-BID CONFERENCE QUESTIONS AND INFORMATION

A Mandatory Pre-Bid Conference, will be held on Wednesday, February 19, 2014 at 11:30 AM, Somerville City Hall, Aldermen's Chambers, 2nd Floor, 93 Highland Avenue, Somerville, MA 02143.

All questions regarding the project and this Invitation to Bid should be in writing, submitted to Alex Nosnik, Asst. Purchasing Director, Purchasing Department, Somerville City Hall, First Floor, 93 Highland Avenue, Somerville, Massachusetts, 02143. Questions may be submitted either by mail or email to anosnik@somervillema.gov. Questions must be submitted in writing **by 12:30 pm, Thursday, February 20, 2014**; they will be answered in writing (via addendum) to all holders of the bid proposals. Bidders must submit e-mail address (preferred) or a fax number with their inquiries. If any bidders contact any other person or department outside of Purchasing with inquiries, they may be disqualified from the bidding process.

Key Dates

Mandatory Pre-bid Conference	11:30 AM	Wednesday, February 19, 2014
Deadline for Questions	12:30 PM	Thursday, February 20, 2014
Proposals Due and Bids Opened	11:00 AM	Wednesday, March 5, 2014
Evaluation of Bid Documentation Begins		March 6, 2014
Anticipated Contract Award		March 21, 2014
Anticipated Notice to Proceed		March 28, 2014
Commencement of Work		April 1, 2014

13. BID SUBMISSION TIME AND PLACE OF BID OPENING

Sealed bids (clearly identified as a bid and endorsed with the name and address of the bidder) must be received at the Purchasing Department, First floor, City Hall, 93 Highland Avenue, Somerville, MA, 02143 on or before **11:00 AM, Wednesday, March 5, 2014**, at which time they will be publicly opened and read aloud. In the event City Hall is closed, the deadline shall be 11:00 a.m. on the next day City Hall is open for business.

ADDITIONAL REQUIREMENTS: PLEASE READ CAREFULLY, FAILURE TO MEET THESE REQUIREMENTS COULD RESULT IN REJECTION OF A BID.

14. BID SUBMISSION REQUIREMENTS

Bid Signature

A bid must be signed as follows: 1) if the bidder is an individual, by her/him personally; 2) if the bidder is a partnership, by the name of the partnership, followed by the signature of each general partner; and 3) if the bidder is a corporation, by the authorized officer, whose signature must be a person named on the Corporate Secretary's Certificate of Authority.

Changes and Addenda

If any changes are made to this IFB, an addendum will be issued. Addenda will be emailed to all bidders on record as having picked up the IFB. No changes may be made to the bid documents, except as authorized in an addendum from the Purchasing Department.

Modification or Withdrawal of Bids, Mistakes, and Minor Informalities

A bidder may correct, modify, or withdraw a bid by written notice received by the City of Somerville prior to the time and date set for the bid opening. Bid modifications must be submitted in a sealed envelope clearly labeled "Modification No. ___" to the address listed in part one of this section. Each modification must be numbered in sequence, and must reference the original IFB.

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

Right to Cancel/Reject Bids

The City of Somerville may cancel this IFB, or reject any and all bids, if the City determines that cancellation serves the best interests of the City; or that such rejection of bids is in the public interest.

Bid Prices to Remain Firm

All bid prices submitted in response to this IFB must remain firm for 60 days following the bid opening.

Unbalanced Bids

The City reserves the right to reject unbalanced, front loaded, and conditional bids.

Documents to be Submitted as part of Bid

The following documents must be submitted with the complete signed bid package:

Form for General Bid (Section 00300)

Bid Form for Alternates (Section 00310)

Unit Price Form (Section 00315)

Somerville Living Wage Form (Section 00320)

Acknowledgement of Notice to Bidders (Section 00330)

Quality Requirements Form (Section 00335)

Certificate of Non-Collusion and Tax Compliance (Section 00340)

Certificate of Signature Authority (Section 00350)

Signature Form (Section 00360)

Reference Form (Section 00370)

Bid bond (Section 00380)

Wage Compliance Form (Section 00385)

Schedule of Values. Bidders do NOT need to include a Schedule of Values with their bid package. The successful bidder will be required to submit a refined and detailed schedule of values for review and approval by the design professional prior to signing the construction contract.

5% Statutory Bid Guaranty. All bids shall be accompanied by a bid bond or bank certified check or bank treasurer's check in the amount of 5% of the bid price, which shall become the property of the City of Somerville if the bid is accepted and the bidder neglects or refuses to comply with the terms of the bid.

For successful bidder: Certificate of Good Standing: If the bidder is a corporation, a Certificate of Good Standing should accompany the signed contract. Certificate available online at: http://corp.sec.state.ma.us/corp/Certificates/Certificate_Request.asp or call Tel: (617) 727-9640 for more information.

15. PREVAILING WAGE RATE REQUIREMENTS

The contractor shall pay Mass. Prevailing Wage Rates. The applicable prevailing wage rates are attached as part of this bid package and will be included as Appendix J in the contract. A signed Compliance Form must be included with the bid package, Form included.

- (a) The Contractor shall pay wages at no less than the Mass. Prevailing Wage Rates set forth in Appendix J. Notwithstanding anything to the contrary, the City may, in its sole discretion withhold payment unless the City has in its possession payroll records that are complete, accurate, and current as of the date of said application for payment.

- (b) The Contractor shall:
 - (1) Pay wages at least once a week;
 - (2) Submit payroll information on a weekly basis in a format approved by the City, numbered in numerical sequence and signed by the Contractor (including forms for weeks when the Contractor is not on the Project Site, in which case there shall be a notation to the effect "no work this payroll period" and a date anticipated for resuming work).
- (c) The Contractor shall submit to the City within the first week of construction:
 - (1) A list of apprenticeship programs with which the Contractor is affiliated;
 - (2) The number of apprentices that will be employed by the Contractor on the Project;
 - (3) A list of the Contractor's employee fringe benefits;
 - (4) A copy of each project schedule, including the anticipated commencement date for each Subcontractor; and
 - (5) A list of each Subcontractor's suppliers and material men.
- (d) The Contractor shall include language similar to the above in all subcontracts.

16. SAMPLE CONSTRUCTION CONTRACT

The successful bidder shall execute with the City of Somerville a Public Works Contract ("Contract") in substantially the same form as the sample contract included in this bid package. In addition to the items submitted with the bid, the contract includes certain other documents which may be executed by the Bidder selected as contractor and which are included as Appendices to the Sample Construction Contract (see Part 2) include:

Appendix F: Certificate of Authority (for corporations if the contract is signed by anyone other than the President, there must be a current Certificate of Vote signed by the corporate clerk or secretary stating who is authorized to sign contracts on the Corporations behalf)

Appendix D: Insurance Certificates—evidencing minimum coverage as follows:

General Liability - \$2,000,000 per occurrence, \$2,000,000 aggregate

Automobile Liability: \$1,000,000 per occurrence, \$1,000,000 aggregate

Workman's Compensation: statutory coverage

Certificates must stipulate "City of Somerville" as a certificate holder and as an additional insured for general liability.

Appendix F: Certificate of Good Standing: Certificate available online at http://corp.sec.state.ma.us/corp/Certificates/Certificate_Request.asp or call Tel: (617) 727-9640 for more information.

Appendix H: Statement of Management (for contracts over \$100,000.00)

Appendix I: Performance and Payment Bonds for 100% of the contract sum

All paperwork required for the contract shall be completed and delivered to the Purchasing Department no later than five (5) working days after the Award of the Contract.

ITEMS OF SPECIAL CONSIDERATION

The Contractor's attention is specifically drawn to the following items of special consideration relative to this project, most of which are also addressed in the Technical Specifications.

- a. The Contractor must provide police details at the Contractor's expense.
- b. All new Handicapped Accessible ramps must meet the most current state ADA and City of Somerville standards.
- c. The Contractor must obtain all street and sidewalk permits as necessary.

19. RESERVATION OF RIGHTS

The City reserves the right to extend the deadline for submission of bids, to waive minor informalities, and to reject any and all bids, if in its sole judgment, the best interests of the City of Somerville would be served by doing so.

20. RULE FOR AWARD

A contract will be awarded to the lowest responsible and eligible bidder. All required bid documents must be provided to be deemed responsible and eligible.

21. MAINTENANCE MANUAL AND AS-BUILT DRAWING REQUIREMENTS

Upon Final Completion of all park construction, the contractor shall submit: two complete copies of a park maintenance manual, and two copies of an as-built drawing set, with two compact disc (CD) copies of the as-built drawings.

The City will not issue the final check for park retainage until the submittal and approval of the maintenance manual and as-built drawings.

- 1) The Maintenance Manual shall be in the form of a three ring binder, organized and tabbed into appropriate sections, and shall include the following items:
 - A complete landscape maintenance plan with recommended maintenance schedules and procedures for all park systems including: watering, fertilization, spring start up procedures, fall clean-up, irrigation and water systems shut-down procedures, and park winterization procedures;
 - A letter from the contractor stating the period of warranty for all parts, materials, and workmanship, from the date of Final Completion;
 - A letter from the contractor stating the period of warranty for the irrigation system;
 - All product information, product directions, and warranties;
 - List of all plant material, and sizes of plant containers;
 - Copies of City permits with signatures of inspectors;
 - Contact information for all subcontractors including email addresses; and,

- A record of all submittals and dates of approvals.
- 2) As-Built drawing shall be a complete and accurate record that incorporate any and all changes to the construction plan set issued at the time of contract initiation. As-built drawings shall be clearly marked and annotated and shall include but not be limited to: all field changes, change orders, and supplemental drawing provided by the landscape architect.
 - 3) The Compact Discs shall include an electronic copy of all as-built drawings.

PART 1 SECTION 3

Kenney Park

(IFB # 14-66)

BID SUBMISSION DOCUMENTS

BIDDERS NAME: _____

This Bid Submission includes the following:

- _____ Form for General Bid
- _____ Bid Form for Alternates
- _____ Unit Price Form
- _____ Somerville Living Wage Form
- _____ Acknowledgement of Notice to Bidders
- _____ Quality Requirements
- _____ Certificate of Non-Collusion and Tax Compliance
- _____ Certificate of Signature Authority
- _____ Signature Form
- _____ Reference Form
- _____ 5% Statutory Bid Bond or Guaranty
- _____ Wage Rate Compliance Forms

**Part 1 Section 00300: FORM FOR GENERAL BID
FOR CONSTRUCTION CONTRACT**

To the Awarding Authority:

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

Kenney Park

in accordance with the accompanying plans and specifications prepared by

**CBA Landscape Architects LLC
24 Thorndike St.
Cambridge, MA 02141**

Contact: DJ Chagnon, Principal
Phone: 617-945-9760 Ext. 2
dj@cband.com

specified below, subject to additions and deductions according to the terms of the specifications.

- B. This bid includes addenda #1_____, #2 _____, #3 _____, #4 _____.

- C. The proposed contract price is:

\$_____.
(total bid in figures)

_____ DOLLARS
(total bid in words)

- D. While the proposed contract price does not include the items listed on the attached "Bid Form for Alternates," the bidder understands that the project construction cost estimate provided by the city is inclusive of all the work described in this form.
- E. The Undersigned Bidder agrees that, if it is selected as general contractor, it will within five working days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the Awarding Authority, execute a contract in accordance with the terms of this bid, including furnishing a 100% performance bond and a 100% labor and materials or payment bond, each of a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and

satisfactory to the Awarding Authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price; and, in addition, furnishing a certificate of good standing and insurance certificates as required by the bid documents.

- F. The Undersigned Bidder hereby certifies that it is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Project and that it will comply fully with all laws and regulations applicable to this Award, including applicable provisions of MGL Chapter 30, ss. 39M et seq.
- G. The Undersigned Bidder further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.
- H. The Undersigned Bidder certifies under the penalties of perjury that:
- (1) Pursuant to M.G.L. c. 62C, §49A, to the best of the signatories knowledge and belief, that the Undersigned Bidder is in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support, as well as paid all contributions and payments in lieu of contributions pursuant to MGL 151A, §19A(b), and
- (2) the Federal Employer Identification Number (EIN) of the Bidder is # _____, and that it is in compliance with all federal, state, and local laws regarding taxation.
- I. The Undersigned Bidder certifies under penalties of perjury that the Bidder is not presently debarred from doing federal or state public construction work, that the Bidder has not had its low bid rejected by any municipality in the previous two years, except
- _____
- in which case the reasons for rejection were as follows:
- _____
- J. The Undersigned Bidder has submitted the information on the Reference Form:
- (00370-1), requesting three references for municipal park projects completed during the previous six (6) years. The Undersigned Bidder understands that the contractor and subcontractors will be required to pay prevailing wages to laborers and mechanics, and that if the Undersigned's bid is significantly below the average bid, the Awarding Authority may require the Bidder to substantiate that the bid is based on payment of wages at prevailing rates.

M. The Undersigned Bidder certifies that it can achieve substantial completion by: _____ and achieve Final Completion by: _____.

N. Unit Price Form

1. Should certain additional work be required, or should the quantities of certain classes of work be increased or decreased from those required by the Contract Documents, by authorization of the City, unit prices listed on the attached "Unit Price Form" shall at the option of the City be the basis of payment to the Contractor or credit to the City, for such increase or decrease in the work. The unit prices shall represent the exact net amount per unit to be paid the Contractor (in the case of addition or increase) or to be refunded the City (in the case of decrease). Contractually noted adjustments will be allowed for overhead, profit, insurance or other direct or indirect expenses of the Contractor or Subcontractors.
2. The unit prices shall include cost of fuel, all labor, materials, equipment, overhead, profit, insurance, etc. to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the provisions of the General Conditions governing changes in the work.

Executed this ____ day of ____ 2014.

On behalf of :

(Undersigned Bidder Business Name)

(Business Address) and (Telephone)

By:

(Name and Address of Person Signing Bid)

(Title of Person Signing bid)

FORM 00 43 23
BID FORM FOR ALTERNATES

See Specifications Section 01 23 00, Alternates, for instructions.

PLEASE PRINT CLEARLY

The following are ALTERNATES which, if adopted by the City, shall either increase or decrease the Contractor's base bid contract price and lump sum bid. The City reserves the right to determine the lowest eligible bidder on the basis of the base bid or the adoption of the ALTERNATES, selected in order, and in combination with the base bid. (For example: Base Bid, Base Bid + Alternate 1)

Alternate Number	Change	Description	Price Change
1	ADD	REPLACE the renovation of indicated sections of Chain Link Fencing, Gate, and Latch, with the removal of the indicated sections of Chain Link Fencing and Gate, and furnish and install the indicated lengths of New 10' Chain Link fencing and hardware, as shown on the Drawings and as specified in Sections 02 41 00 and 32 31 00; and ADD the renovation and reinstallation of 3 metal ribbon benches as shown on the Drawings and as specified in Sections 02 41 00 and 12 93 00.	ADD \$ _____
2	ALTERNATE	Replace the Grinding and new Top Course Only bituminous paving in the Basketball Court area with Removal and new Full Depth bituminous concrete, as shown on the Drawings and as specified in Sections 02 41 00 and 32 10 00.	ADD \$ _____
3	ADD	REPLACE the renovation of indicated sections of Chain Link Fencing with the removal of the indicated sections, and furnish and install the same length of New 10' Chain Link fencing and hardware, as shown on the Drawings and as specified in Sections 02 41 00 and 32 31 00; and ADD the furnishing and installation of additional shrubs and planting bed, as shown on the Drawings and as specified in Section 32 90 00.	ADD \$ _____

END OF FORM

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FORM 00 43 22
BID FORM FOR UNIT PRICES

See Specifications Section 01 22 00, Unit Prices, for instructions.

PLEASE PRINT CLEARLY

The Unit Prices set forth herein shall, at the option of the City, be used to determine any equitable adjustment of the Contract Price in connection with the changes or extra work performed under this Contract as directed by the City.

It is mutually understood and agreed that such Unit Prices include all items of costs, equipment, taxes and insurance of every kind, overhead, and profit for the Contractor and they shall be used uniformly, without modification for addition and deductions. Prices listed under ADDITIONS and DEDUCTIONS are to be the complete total price billed to and paid by the City therefor. There can be no more than fifteen (15) percent difference in price between the additions and deductions.

UNIT PRICES FORM

(Note that items marked with * are not included in the base scope of work or the proposed alternates, and are included in the unit price list in case of field changes.)

ITEM DESCRIPTION (All references to items shall correspond to work as described in the relevant portions of the Construction Documents.)		UNIT	ADDITIONS	DEDUCTIONS	Appr.
1	Trenching for utilities, not including removal/replacement of finish	C.Y.	\$	\$	
2	Saw Cut bituminous concrete pavement	L.F.			
3	Removal and disposal of bituminous concrete pavement, full depth (assume 3½")	S.F.	\$	\$	
4	Bituminous concrete: removal by grinding, top course only (1.5")	S.F.	\$	\$	
5	Removal, stockpiling, and reinstallation of granite edging (12"x6")	L.F.	\$	\$	
6	Removal and disposal of timber edging (assume 12" depth)	L.F.	\$	\$	
7	Ordinary gravel borrow/clean fill, complete in place	C.Y.	\$	\$	
8	Dense Graded Gravel, complete in place	C.Y.	\$	\$	
9	¾" Crushed Stone/Drainage Stone, complete in place	C.Y.	\$	\$	
10	Clean screened loam, complete in place	C.Y.	\$	\$	
11	Planting Medium, complete in place	C.Y.	\$	\$	
12	Bituminous concrete paving, complete in place including base and subbase preparation	S.F.	\$	\$	
13	Bituminous concrete top course over existing base course	S.F.	\$	\$	
14	Color sealcoating for bituminous concrete (PER COAT)	S.Y.	\$	\$	
15	Brick Paving on bituminous base, complete in place including base and subbase preparation	S.F.	\$	\$	
16	4" reinforced concrete paving (uncolored), complete in place including base and subbase preparation	S.F.	\$	\$	
17	Cost for addition of integral color to concrete paving (to be in addition to item 16 above)	S.F.	\$	\$	
18	6"x18" Precast Concrete Curbing, complete in place	L.F.	\$	\$	
19	Rubber Safety Surface (Bonded Top over Loose Fill), complete in place including base and subbase preparation	S.F.	\$	\$	
20	Aluminum Edging for rubber safety surface, complete in place	L.F.	\$	\$	
21	Cast-In-Place Concrete footing, 4000 PSI, without reinforcements, complete in place	C.F.	\$	\$	
22	Removal of chain link fence, structure, fabric, and footings, 4' h.	L.F.	\$	\$	
23	Repair and repainting of chain link fence structure, 4' high	L.F.	\$	\$	
24	New Black Chain Link Fencing, 4' high (mesh and frame)	L.F.	\$	\$	
25	New 4' high Chain Link Gate, per 5' Nom. Gate leaf	Ea.	\$	\$	
26	Removal of chain link fence, structure, fabric, and footings, 10' h.	L.F.	\$	\$	
27	Repair and repainting of chain link fence structure, 10' high	L.F.	\$	\$	
28	New Black Chain Link Fencing, 10' high (mesh and frame)	L.F.	\$	\$	

29	New 8' high Chain Link Gate with 2' infill panel above, per 5' Nom. Gate leaf	Ea.	\$	\$	
30	Ornamental Steel Fencing, 48" high	L.F.	\$	\$	
31	Refurbish Existing Play Structure In Place Per 11 65 00 and P-1	Ea.	\$	\$	
32	Refurbish and Relocate Existing Swings, incl. new footings	Ea.	\$	\$	
33	Furnish and install Proposed Fitness Equipment	Ea.	\$	\$	
34	Furnish and install EPDM Balance Blocks, set of 3 (8", 11", 14")	Set	\$	\$	
35	Refurbish and Reinstall Existing Metal Bench, 6' long, straight	Ea.	\$	\$	
36	Trash Receptacle with Bonnet Lid and Side Door	Ea.	\$	\$	
37	Recycling Receptacle with Recycler Lid and Side Door	Ea.	\$	\$	
38	Unlit Metal Bollard	Ea.	\$	\$	
39	LED Lighted Metal Bollard	Ea.	\$	\$	
40	In-ground LED lighting transformer, controller, dimmer, and any other required accessories, complete in place	Ea.	\$	\$	
41	In-ground LED lighting, complete in place (Set of 4)	Set	\$	\$	
42	Pedestrian-Scale LED light on 14' Pole (Complete)	Ea.	\$	\$	
43*	*2-outlet GFI Receptacle with Locking Cover, complete in place (if needed – none in base scope)	Ea.	\$	N/A	
44	Electrical connection from electrical box to light/fixture, incl. Conduit, trenching to req'd depth, wiring, and all backfill materials	L.F.	\$	\$	
45	Ground Spray, single unit, complete in place (Type A or Type B)	Ea.	\$	\$	
46	Flush-Mounted Water Activator	Ea.	\$	\$	
47	Water line within site, Type K Copper, 1", complete in place including trenching to required depth and all backfill materials	L.F.	\$	\$	
48	Backflow Prevention Device (per Drawings)	Ea.	\$	\$	
49	New Utility Cabinet per Drawings	Ea.	\$	\$	
50	New Water Meter (purchased as directed by Water Dept.)	Ea.	\$	\$	
51*	*New Water Meter Pit (if needed – none in base scope)	Ea.	\$	N/A	
52*	*New 2" Connection to Water Main in street, incl. Corporation Stop, Curb Valve Box, all excavation, trenching, fees, permits, and details (if needed – none in base scope)	Ea.	\$	N/A	
53	Trench Drain System with Slot Cover, 0.5m section, mitered, complete in place	Ea.	\$	\$	
54	Inline Catch Basin for Trench Drain with Slot Cover	Ea.	\$	\$	
55	Custom Steel Cover for Trench Drain System (complete circle)	Ea.	\$	\$	
56	New Precast Concrete Drainage Structure, complete with Frame and Grate, per Drawings	Ea.	\$	\$	
57	New Grate or solid cover for existing frame	Ea.	\$	\$	
58	New 6" solid PVC Drain Line, complete in place including trenching to required depth and all backfill materials	L.F.	\$	\$	
59*	*New 6" perforated PVC Subdrain, complete in place including all excavation and all backfill materials (6" drainage stone all sides and filter fabric "sock") (if needed – none in base scope)	L.F.	\$	N/A	
60	PVC Irrigation Pipe and Fittings, complete in place	L.F.	\$	\$	
61	Polyethylene Irrigation Pipe and Fittings, complete in place	L.F.	\$	\$	
62	Irrigation Wire Conduit and Wire, complete in place	L.F.	\$	\$	
63	PVC Sleeve under Paving for Pipe/Conduit, complete in place	L.F.	\$	\$	
64	Pop-up Spray Sprinkler, complete in place	Ea.	\$	\$	
65	Rotary Spray Head, Small, complete in place	Ea.	\$	\$	
66	Rotary Spray Head, Medium, complete in place	Ea.	\$	\$	
67	Control Valves including Valve Box, complete in place	Ea.	\$	\$	
68	Irrigation control system, all accessories and rain sensor	Ea.	\$	\$	
69	Shredded Pine Bark Mulch	C.Y.	\$	\$	
70	Seeded lawn, installed and maintained	S.Y.	\$	\$	
71*	*Tree Removal, less than 5" caliper (none in base scope)	Ea.	\$	N/A	
72*	*Tree Removal, 5" to 10" caliper (none in base scope)	Ea.	\$	N/A	
73*	*Tree Removal, greater than 10" caliper (none in base scope)	Ea.	\$	N/A	
74*	*Tree Transplanting, less than 5" caliper (none in base scope)	Ea.	\$	N/A	
75*	*Tree Transplanting, 5" to 10" caliper (none in base scope)	Ea.	\$	N/A	
76	Provide itemized plant list, with cost for each type of plant shown on the Drawings, furnished, installed, maintained per specifications, and guaranteed, one price for both Addition or Deduction.				

END OF FORM



SOMERVILLE LIVING WAGE ORDINANCE CERTIFICATION FORM

CITY OF SOMERVILLE CODE OF ORDINANCES SECTION 2-397 et seq¹.

Instructions: This form shall be included in all Invitations for Bids and Requests for Proposals which involve the furnishing of labor, time or effort (with no end product other than reports) by vendors contracting or subcontracting with the City of Somerville, where the contract price meets or exceeds the following dollar threshold: \$10,000. If the undersigned is selected, this form will be attached to the contract or subcontract and the certifications made herein shall be incorporated as part of such contract or subcontract. **Complete this form and sign and date where indicated below on page 2.**

Purpose: The purpose of this form is to ensure that such vendors pay a “Living Wage” (defined below) to all covered employees (i.e., all employees except individuals in a city, state or federally funded youth program). In the case of bids, the City will award the contract to the lowest responsive and responsible bidder paying a Living Wage. In the case of RFP’s, the City will select the most advantageous proposal from a responsive and responsible offeror paying a Living Wage. In neither case, however, shall the City be under any obligation to select a bid or proposal that exceeds the funds available for the contract.

Definition of “Living Wage”: For this contract or subcontract, as of 7/1/2013 “Living Wage” shall be deemed to be an hourly wage of no less than \$11.89 per hour. From time to time, the Living Wage may be upwardly adjusted and amendments, if any, to the contract or subcontract may require the payment of a higher hourly rate if a higher rate is then in effect.

CERTIFICATIONS

1. The undersigned shall pay no less than the Living Wage to all covered employees who directly expend their time on the contract or subcontract with the City of Somerville.
2. The undersigned shall post a notice, (copy enclosed), to be furnished by the contracting City Department, informing covered employees of the protections and obligations provided for in the Somerville Living Wage Ordinance, and that for assistance and information, including copies of the Ordinance, employees should contact the contracting City Department. Such notice shall be posted in each location where services are performed by covered employees, in a conspicuous place where notices to employees are customarily posted.
3. The undersigned shall maintain payrolls for all covered employees and basic records relating hereto and shall preserve them for a period of three years. The records shall contain the name and address of each employee, the number of hours worked, the gross wages, a copy of the social

¹Copies of the Ordinance are available upon request to the Purchasing Department.

security returns, and evidence of payment thereof and such other data as may be required by the contracting City Department from time to time.

4. The undersigned shall submit payroll records to the City upon request and, if the City receives information of possible noncompliance with the provisions the Somerville Living Wage Ordinance, the undersigned shall permit City representatives to observe work being performed at the work site, to interview employees, and to examine the books and records relating to the payrolls being investigated to determine payment of wages.

5. The undersigned shall not fund wage increases required by the Somerville Living Wage Ordinance by reducing the health insurance benefits of any of its employees.

6. The undersigned agrees that the penalties and relief set forth in the Somerville Living Wage Ordinance shall be in addition to the rights and remedies set forth in the contract and/or subcontract.

CERTIFIED BY:

Signature: _____
(Duly Authorized Representative of Vendor)

Title: _____

Name of Vendor: _____

Date: _____

INSTRUCTIONS: PLEASE POST

**NOTICE TO ALL EMPLOYEES
REGARDING PAYMENT OF LIVING WAGE**

Under the Somerville, Massachusetts' Living Wage Ordinance (Ordinance No. 1999-1), any person or entity who has entered into a contract with the City of Somerville is required to pay its employees who are involved in providing services to the City of Somerville no less than a "Living Wage".

The Living Wage as of 7/1/2013 is **\$11.89** per hour. The only employees who are not covered by the Living Wage Ordinance are individuals in a Youth Program. "Youth Program" as defined in the Ordinance, "means any city, state or federally funded program which employs youth, as defined by city, state or federal guidelines, during the summer, or as part of a school to work program, or in any other related seasonal or part-time program."

For assistance and information regarding the protections and obligations provided for in the Living Wage Ordinance and/or a copy of the Living Wage Ordinance, all employees should contact the City of Somerville's Purchasing Department directly.

Part 1 Section 3: BID SUBMISSION DOCUMENTS

NOTICE TO BIDDERS BID #14-66

All bids must be in accordance with terms and conditions set forth herein as stated.

SECTION A. Sealed bids for: **Kenney Park**. The bids will be received at the office of the Purchasing Director, Somerville City Hall, 93 Highland Avenue, Somerville, MA. 02143 no later than **Wednesday, February 12, 2014 at 11:00 A.M.** at which time and place they will be publicly opened and read.

A Mandatory Pre-Bid Conference will be held on Wednesday, February 19, 2014 at 11:00 AM, Somerville City Hall, Aldermen's Chambers, 2nd Floor, 93 Highland Avenue, Somerville, MA 02143.

SECTION B. Forms of price bid, specifications and terms of contract can be obtained at the Purchasing Department office on or after **Wednesday, February 12, 2014.**

SECTION C. Bid envelopes shall be clearly marked as follows: **"Bid No: 14-66, Bid for Kenney Park"**.

SECTION D. If **awarded** vendor is a Corporation, vendor must comply with request for "Certificate of Good Standing". See attached instructions.

SECTION E. **INSURANCE: Awarded Vendor** must comply with insurance requirements as stated in the bid package.

SECTION F. Living Wage - see Somerville Living Wage Form (00320)
Prevailing Wage Rates – and Compliance Form

SECTION G. The requirements in Section **E or F** will be waived if the words "Non-Applicable" (N/A) are inserted in the space designated.

SECTION H. The copy of the bid deposited with the City will be accompanied by a bid guarantee in the amount of 5% of the proposed bid amount. A Bid bond, Certified Check, Treasurer's Check, or Cashier's Check made payable to the City must be submitted with each bid. Said bid guarantee will become the property of the City of Somerville if the proposal is accepted and the bidder either neglects or refuses to comply with the terms of the proposal. Bid guarantee will be returned within 30 days to all unsuccessful bidders.

SECTION I. A Performance Bond and a Payment Bond in the amount of 100% of the total contract price will be required by the City.

Part 1 Section 3: BID SUBMISSION DOCUMENTS

- SECTION J. The Purchasing Director reserves the right to accept or reject any or all bids, to waive any minor informalities, if in her sole judgment, the best interest of the City of Somerville would be served by so doing.
- SECTION K. The City reserves the right to cancel a contract, if awarded bidder does not respond to all necessary documents and required signature forms within ten (10) working days of receipt of contract.
- SECTION L. The Vendor must certify that all employees to be provided have successfully completed at least ten (10) hours of OSHA approved training in Construction Safety and Health.

Signature: _____

Company: _____

By: _____ Title: _____

Date: _____ Tel. No: _____ Fax: _____

Applicable to Corporations:

I hereby attest that the signatory to this bid has the authority to sign and submit bids for the Corporation.

ATTEST: _____
Secretary

Part 1, Section 3: BID SUBMISSION DOCUMENTS

QUALITY REQUIREMENTS

Please respond to the following questions. A negative response to any of the first four questions will automatically disqualify the Bidder. A negative response to the fifth question about SOMWBA will not disqualify the Bidder.

	Yes	No
Has the contractor been established in this specified field for at least 5 years?		
Has the contractor successfully completed a minimum of three (3) similar Municipal Park projects within the past six (6) years?		
Has the Contractor included a Health and Safety Plan Form with their bid documents?		
Can the contractor certify that all employees to be provided, have successfully completed at least 10 hours of OSHA approved training in Construction Safety and Health?		
Optional: Vendor: Are you a State Office for Minority and Women Owned Business Assistance (SOMWBA) certified minority- or woman-owned business?		

Part 1, Section 3: BID SUBMISSION DOCUMENTS

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 paragraph, the word "person" shall mean any natural person, joint venture, partnership, corporation, or other organization or legal entity.

Signature of individual submitting bid or proposal

Date

Name of business

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, §49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support, as well as paid all contributions and payments in lieu of contributions pursuant to MGL 151A, §19A(b).

Signature of person submitting bid or proposal

Name of business

Date

FID#

Part 1, Section 3: BID SUBMISSION DOCUMENTS

CITY OF SOMERVILLE

SIGNATURE FORM

NAME OF COMPANY: _____

ADDRESS: _____

TELEPHONE #: _____ FAX #: _____

DATE: _____ EMAIL: _____

SIGNATURE OF AUTHORIZED CONTRACTING OFFICIAL:

TITLE: _____

RESIDENCE: _____

IF COMPANY IS A PARTNERSHIP:

FULL NAME AND RESIDENCE OF EACH PARTNER:

IF COMPANY IS A CORPORATION:

THE CORPORATE NAME IS: _____

THE CORPORATION IS ORGANIZED UNDER THE LAWS OF: _____

THE PRESIDENT IS: _____

THE TREASURER IS: _____

THE CLERK/SECRETARY OR ASSISTANT CLERK/SECRETARY WHO WILL EXECUTE THE
CONTRACT AND SIGN THE CERTIFICATE OF AUTHORITY IS:

NAME OF CORPORATION THAT WILL APPEAR ON A POTENTIAL CONTRACTUAL
AGREEMENT IF DIFFERENT FROM ABOVE: _____.

NAME AND TITLE OF PERSON WHO WILL BE THE PRINCIPAL SIGNATORY ON THE
CONTRACT IF OTHER THAN THE PRESIDENT:

NAME: _____ TITLE: _____

Form:_____
Contract Number:_____

CITY OF SOMERVILLE

Rev. 08/01/12



Certificate of Authority (Limited Liability Companies Only)

Instructions: Complete this form and sign and date where indicated below.

1. I, the undersigned, being a member or manager of

(Complete Name of Limited Liability Company)

a limited liability company (LLC) hereby certify as to the contents of this form for the purpose of contracting with the City of Somerville.

2. The LLC is organized under the laws of the state of: _____.

3. The LLC is managed by **(check one)** a ☐ Manager or by its ☐ Members.

4. I hereby certify that each of the following individual(s) is:

- a member/manager of the LLC;
- duly authorized to execute and deliver this contract, agreement, and/or other legally binding documents relating to any contract and/or agreement on behalf of the LLC;
- duly authorized to do and perform all acts and things necessary or appropriate to carry out the terms of this contract or agreement on behalf of the LLC; and
- that no resolution, vote, or other document or action is necessary to establish such authority.

<u>Name</u>	<u>Title</u>

5. **Signature:**_____

Printed Name: _____

Printed Title:_____

Date: _____

Print



Certificate of Authority (Corporations Only)

Instructions: Complete this form and sign and date where indicated below.

1. I hereby certify that I, the undersigned, am the duly elected Clerk/Secretary of

(Insert Full Name of Corporation)

2. I hereby certify that the following individual _____
(Insert the Name of Officer who Signed the Contract and Bonds)

is the duly elected _____ of said Corporation.
(Insert the Title of the Officer in Line 2)

3. I hereby certify that on _____
(Insert Date: Must be on or before Date Officer Signed Contract/Bonds)

at a duly authorized meeting of the Board of Directors of said corporation, at which a quorum was present, it was voted that

(Insert Name of Officer from Line 2) (Insert Title of Officer from Line 2)

of this corporation be and hereby is authorized to make, enter into, execute, and deliver contracts and bonds in the name and on behalf of said corporation, and affix its Corporate Seal thereto, and such execution of any contract of obligation in this corporation's name and on its behalf, with or without the Corporate Seal, shall be valid and binding upon this corporation; and that the above vote has not been amended or rescinded and remains in full force and effect as of the date set forth below.

4. **ATTEST:**

Signature: _____
(Clerk or Secretary)

AFFIX CORPORATE SEAL HERE

Printed Name: _____

Printed Title: _____

Date: _____

(Date Must Be on or after Date Officer Signed Contract/Bonds)

Print

Part 1, Section 3: BID SUBMISSION DOCUMENTS

REFERENCE FORM

Bidder: _____

IFB Title: **Harris Park**

Bidder must provide references from three municipalities for similar municipal park projects completed during the previous six (6) years.

Reference: _____ Contact: _____

Address: _____ Phone: _____

_____ Fax: _____

Description and date(s) of supplies or services provided: _____

Reference: _____ Contact: _____

Address: _____ Phone: _____

_____ Fax: _____

Description and date(s) of supplies or services provided: _____

Reference: _____ Contact: _____

Address: _____ Phone: _____

_____ Fax: _____

Description and date(s) of supplies or services provided: _____

BID BOND OR GUARANTY

BIDDER TO INSERT HERE

**Prevailing Wage Rates
Payroll Submission Forms**



DEVAL L. PATRICK
Governor

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

Prevailing Wage Rates

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

JOANNE F. GOLDSTEIN
Secretary
HEATHER E. ROWE
Director

Awarding Authority: City of Somerville

Contract Number:

City/Town: SOMERVILLE

Description of Work: Kenney Park: Rehabilitation of Park Site.

Job Location: Highland Ave./Grove St.

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2013	\$32.05	\$9.41	\$8.80	\$0.00	\$50.26
	06/01/2014	\$32.40	\$9.41	\$8.80	\$0.00	\$50.61
	08/01/2014	\$32.40	\$9.91	\$8.80	\$0.00	\$51.11
	12/01/2014	\$32.40	\$9.91	\$9.33	\$0.00	\$51.64
	06/01/2015	\$32.75	\$9.91	\$9.33	\$0.00	\$51.99
	08/01/2015	\$32.75	\$10.41	\$9.33	\$0.00	\$52.49
	12/01/2015	\$32.75	\$10.41	\$10.08	\$0.00	\$53.24
	06/01/2016	\$33.25	\$10.41	\$10.08	\$0.00	\$53.74
	08/01/2016	\$33.25	\$10.91	\$10.08	\$0.00	\$54.24
	12/01/2016	\$33.25	\$10.91	\$10.89	\$0.00	\$55.05
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2013	\$32.12	\$9.41	\$8.80	\$0.00	\$50.33
	06/01/2014	\$32.47	\$9.41	\$8.80	\$0.00	\$50.68
	08/01/2014	\$32.47	\$9.91	\$8.80	\$0.00	\$51.18
	12/01/2014	\$32.47	\$9.91	\$9.33	\$0.00	\$51.71
	06/01/2015	\$32.82	\$9.91	\$9.33	\$0.00	\$52.06
	08/01/2015	\$32.82	\$10.41	\$9.33	\$0.00	\$52.56
	12/01/2015	\$32.82	\$10.41	\$10.08	\$0.00	\$53.31
	06/01/2016	\$33.32	\$10.41	\$10.08	\$0.00	\$53.81
	08/01/2016	\$33.32	\$10.91	\$10.08	\$0.00	\$54.31
	12/01/2016	\$33.32	\$10.91	\$10.89	\$0.00	\$55.12
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2013	\$32.24	\$9.41	\$8.80	\$0.00	\$50.45
	06/01/2014	\$32.59	\$9.41	\$8.80	\$0.00	\$50.80
	08/01/2014	\$32.59	\$9.91	\$8.80	\$0.00	\$51.30
	12/01/2014	\$32.59	\$9.91	\$9.33	\$0.00	\$51.83
	06/01/2015	\$32.94	\$9.91	\$9.33	\$0.00	\$52.18
	08/01/2015	\$32.94	\$10.41	\$9.33	\$0.00	\$52.68
	12/01/2015	\$32.94	\$10.41	\$10.08	\$0.00	\$53.43
	06/01/2016	\$33.44	\$10.41	\$10.08	\$0.00	\$53.93
	08/01/2016	\$33.44	\$10.91	\$10.08	\$0.00	\$54.43
	12/01/2016	\$33.44	\$10.91	\$10.89	\$0.00	\$55.24
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$84.21	\$9.80	\$18.17	\$0.00	\$112.18
	08/01/2014	\$87.36	\$9.80	\$18.17	\$0.00	\$115.33
	08/01/2015	\$90.51	\$9.80	\$18.17	\$0.00	\$118.48
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2013	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
	06/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
	12/01/2014	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
	06/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
	12/01/2015	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
	06/01/2016	\$37.85	\$7.30	\$12.70	\$0.00	\$57.85
	12/01/2016	\$38.85	\$7.30	\$12.70	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2013	\$30.68	\$10.40	\$5.95	\$0.00	\$47.03
	06/01/2014	\$31.58	\$10.40	\$5.95	\$0.00	\$47.93
	12/01/2014	\$32.48	\$10.40	\$5.95	\$0.00	\$48.83
	06/01/2015	\$33.43	\$10.40	\$5.95	\$0.00	\$49.78
	12/01/2015	\$34.38	\$10.40	\$5.95	\$0.00	\$50.73
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
	For apprentice rates see "Apprentice- OPERATING ENGINEERS"					
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
	For apprentice rates see "Apprentice- OPERATING ENGINEERS"					
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	12/01/2013	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
	06/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
	12/01/2014	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
	06/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
	12/01/2015	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
	06/01/2016	\$37.85	\$7.30	\$12.70	\$0.00	\$57.85
	12/01/2016	\$38.85	\$7.30	\$12.70	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2010	\$37.70	\$6.97	\$11.18	\$0.00	\$55.85

Classification

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

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2010

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

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	08/01/2013	\$48.06	\$10.18	\$18.15	\$0.00	\$76.39
BRICKLAYERS LOCAL 3 (BOSTON)	02/01/2014	\$48.06	\$10.18	\$18.15	\$0.00	\$76.39
	08/01/2014	\$48.96	\$10.18	\$18.22	\$0.00	\$77.36
	02/01/2015	\$49.52	\$10.18	\$18.22	\$0.00	\$77.92
	08/01/2015	\$50.42	\$10.18	\$18.29	\$0.00	\$78.89
	02/01/2016	\$50.99	\$10.18	\$18.29	\$0.00	\$79.46
	08/01/2016	\$51.89	\$10.18	\$18.37	\$0.00	\$80.44
	02/01/2017	\$52.46	\$10.18	\$18.37	\$0.00	\$81.01

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.03	\$10.18	\$18.15	\$0.00	\$52.36
2	60	\$28.84	\$10.18	\$18.15	\$0.00	\$57.17
3	70	\$33.64	\$10.18	\$18.15	\$0.00	\$61.97
4	80	\$38.45	\$10.18	\$18.15	\$0.00	\$66.78
5	90	\$43.25	\$10.18	\$18.15	\$0.00	\$71.58

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.03	\$10.18	\$18.15	\$0.00	\$52.36
2	60	\$28.84	\$10.18	\$18.15	\$0.00	\$57.17
3	70	\$33.64	\$10.18	\$18.15	\$0.00	\$61.97
4	80	\$38.45	\$10.18	\$18.15	\$0.00	\$66.78
5	90	\$43.25	\$10.18	\$18.15	\$0.00	\$71.58

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER OPERATING ENGINEERS LOCAL 4	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN LABORERS - FOUNDATION AND MARINE	12/01/2013	\$34.45	\$7.30	\$12.90	\$0.00	\$54.65
	06/01/2014	\$35.20	\$7.30	\$12.90	\$0.00	\$55.40
	12/01/2014	\$35.95	\$7.30	\$12.90	\$0.00	\$56.15
	06/01/2015	\$36.70	\$7.30	\$12.90	\$0.00	\$56.90
	12/01/2015	\$37.45	\$7.30	\$12.90	\$0.00	\$57.65
	06/01/2016	\$38.20	\$7.30	\$12.90	\$0.00	\$58.40
	12/01/2016	\$39.20	\$7.30	\$12.90	\$0.00	\$59.40
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER LABORERS - FOUNDATION AND MARINE	12/01/2013	\$33.30	\$7.30	\$12.90	\$0.00	\$53.50
	06/01/2014	\$34.05	\$7.30	\$12.90	\$0.00	\$54.25
	12/01/2014	\$34.80	\$7.30	\$12.90	\$0.00	\$55.00
	06/01/2015	\$35.55	\$7.30	\$12.90	\$0.00	\$55.75
	12/01/2015	\$36.30	\$7.30	\$12.90	\$0.00	\$56.50
	06/01/2016	\$37.05	\$7.30	\$12.90	\$0.00	\$57.25
	12/01/2016	\$38.05	\$7.30	\$12.90	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2013	\$33.30	\$7.30	\$12.90	\$0.00	\$53.50
	06/01/2014	\$34.05	\$7.30	\$12.90	\$0.00	\$54.25
	12/01/2014	\$34.80	\$7.30	\$12.90	\$0.00	\$55.00
	06/01/2015	\$35.55	\$7.30	\$12.90	\$0.00	\$55.75
	12/01/2015	\$36.30	\$7.30	\$12.90	\$0.00	\$56.50
	06/01/2016	\$37.05	\$7.30	\$12.90	\$0.00	\$57.25
	12/01/2016	\$38.05	\$7.30	\$12.90	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 1 (Metro Boston)</i>	09/01/2013	\$40.35	\$9.80	\$15.61	\$0.00	\$65.76
	03/01/2014	\$41.18	\$9.80	\$15.61	\$0.00	\$66.59
	09/01/2014	\$42.20	\$9.80	\$15.61	\$0.00	\$67.61
	03/01/2015	\$43.22	\$9.80	\$15.61	\$0.00	\$68.63

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - CARPENTER - Zone 1 Metro Boston
Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.18	\$9.80	\$1.57	\$0.00	\$31.55
2	60	\$24.21	\$9.80	\$1.57	\$0.00	\$35.58
3	70	\$28.25	\$9.80	\$10.90	\$0.00	\$48.95
4	75	\$30.26	\$9.80	\$10.90	\$0.00	\$50.96
5	80	\$32.28	\$9.80	\$12.47	\$0.00	\$54.55
6	80	\$32.28	\$9.80	\$12.47	\$0.00	\$54.55
7	90	\$36.32	\$9.80	\$14.04	\$0.00	\$60.16
8	90	\$36.32	\$9.80	\$14.04	\$0.00	\$60.16

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.59	\$9.80	\$1.57	\$0.00	\$31.96
2	60	\$24.71	\$9.80	\$1.57	\$0.00	\$36.08
3	70	\$28.83	\$9.80	\$10.90	\$0.00	\$49.53
4	75	\$30.89	\$9.80	\$10.90	\$0.00	\$51.59
5	80	\$32.94	\$9.80	\$12.47	\$0.00	\$55.21
6	80	\$32.94	\$9.80	\$12.47	\$0.00	\$55.21
7	90	\$37.06	\$9.80	\$14.04	\$0.00	\$60.90
8	90	\$37.06	\$9.80	\$14.04	\$0.00	\$60.90

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

01/01/2014	\$43.60	\$10.90	\$18.71	\$1.30	\$74.51
07/01/2014	\$43.77	\$10.90	\$18.71	\$1.30	\$74.68
01/01/2015	\$44.69	\$10.90	\$18.71	\$1.30	\$75.60
07/01/2015	\$45.29	\$10.90	\$18.71	\$1.30	\$76.20
01/01/2016	\$46.21	\$10.90	\$18.71	\$1.30	\$77.12

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.80	\$10.90	\$12.21	\$1.30	\$46.21
2	60	\$26.16	\$10.90	\$13.71	\$1.30	\$52.07
3	65	\$28.34	\$10.90	\$14.71	\$1.30	\$55.25
4	70	\$30.52	\$10.90	\$15.71	\$1.30	\$58.43
5	75	\$32.70	\$10.90	\$16.71	\$1.30	\$61.61
6	80	\$34.88	\$10.90	\$17.71	\$1.30	\$64.79
7	90	\$39.24	\$10.90	\$18.71	\$1.30	\$70.15

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.89	\$10.90	\$12.21	\$1.30	\$46.30
2	60	\$26.26	\$10.90	\$13.71	\$1.30	\$52.17
3	65	\$28.45	\$10.90	\$14.71	\$1.30	\$55.36
4	70	\$30.64	\$10.90	\$15.71	\$1.30	\$58.55
5	75	\$32.83	\$10.90	\$16.71	\$1.30	\$61.74
6	80	\$35.02	\$10.90	\$17.71	\$1.30	\$64.93
7	90	\$39.39	\$10.90	\$18.71	\$1.30	\$70.30

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
LABORERS - ZONE 1	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	12/01/2013	\$41.49	\$10.00	\$14.18	\$0.00	\$65.67
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR	12/01/2013	\$28.11	\$10.00	\$14.18	\$0.00	\$52.29
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE)	01/01/2014	\$45.91	\$7.85	\$16.10	\$0.00	\$69.86
PAINTERS LOCAL 35 - ZONE 1	07/01/2014	\$46.76	\$7.85	\$16.10	\$0.00	\$70.71
	01/01/2015	\$47.66	\$7.85	\$16.10	\$0.00	\$71.61
	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - PAINTER Local 35 - BRIDGES/TANKS
Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.96	\$7.85	\$0.00	\$0.00	\$30.81
2	55	\$25.25	\$7.85	\$3.66	\$0.00	\$36.76
3	60	\$27.55	\$7.85	\$3.99	\$0.00	\$39.39
4	65	\$29.84	\$7.85	\$4.32	\$0.00	\$42.01
5	70	\$32.14	\$7.85	\$14.11	\$0.00	\$54.10
6	75	\$34.43	\$7.85	\$14.44	\$0.00	\$56.72
7	80	\$36.73	\$7.85	\$14.77	\$0.00	\$59.35
8	90	\$41.32	\$7.85	\$15.44	\$0.00	\$64.61

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$7.85	\$0.00	\$0.00	\$31.23
2	55	\$25.72	\$7.85	\$3.66	\$0.00	\$37.23
3	60	\$28.06	\$7.85	\$3.99	\$0.00	\$39.90
4	65	\$30.39	\$7.85	\$4.32	\$0.00	\$42.56
5	70	\$32.73	\$7.85	\$14.11	\$0.00	\$54.69
6	75	\$35.07	\$7.85	\$14.44	\$0.00	\$57.36
7	80	\$37.41	\$7.85	\$14.77	\$0.00	\$60.03
8	90	\$42.08	\$7.85	\$15.44	\$0.00	\$65.37

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1
DEMO: ADZEMAN
LABORERS - ZONE 1

12/01/2013	\$33.50	\$7.30	\$12.70	\$0.00	\$53.50
06/01/2014	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
12/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
06/01/2015	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
12/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR
LABORERS - ZONE 1

12/01/2013	\$34.50	\$7.30	\$12.70	\$0.00	\$54.50
06/01/2014	\$35.25	\$7.30	\$12.70	\$0.00	\$55.25
12/01/2014	\$36.00	\$7.30	\$12.70	\$0.00	\$56.00
06/01/2015	\$36.75	\$7.30	\$12.70	\$0.00	\$56.75
12/01/2015	\$37.50	\$7.30	\$12.70	\$0.00	\$57.50

For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS
LABORERS - ZONE 1

12/01/2013	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
06/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
12/01/2014	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
06/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50
12/01/2015	\$37.25	\$7.30	\$12.70	\$0.00	\$57.25

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 1</i>	12/01/2013	\$34.50	\$7.30	\$12.70	\$0.00	\$54.50
	06/01/2014	\$35.25	\$7.30	\$12.70	\$0.00	\$55.25
	12/01/2014	\$36.00	\$7.30	\$12.70	\$0.00	\$56.00
	06/01/2015	\$36.75	\$7.30	\$12.70	\$0.00	\$56.75
	12/01/2015	\$37.50	\$7.30	\$12.70	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2013	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
	06/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
	12/01/2014	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
	06/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50
	12/01/2015	\$37.25	\$7.30	\$12.70	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.50	\$7.30	\$12.70	\$0.00	\$53.50
	06/01/2014	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
	12/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
	06/01/2015	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
	12/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$56.14	\$9.80	\$18.17	\$0.00	\$84.11
	08/01/2014	\$58.24	\$9.80	\$18.17	\$0.00	\$86.21
	08/01/2015	\$60.34	\$9.80	\$18.17	\$0.00	\$88.31
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$40.10	\$9.80	\$18.17	\$0.00	\$68.07
	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$60.15	\$9.80	\$18.17	\$0.00	\$88.12
	08/01/2014	\$62.40	\$9.80	\$18.17	\$0.00	\$90.37
	08/01/2015	\$64.65	\$9.80	\$18.17	\$0.00	\$92.62
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2013	\$84.21	\$9.80	\$18.17	\$0.00	\$112.18
	08/01/2014	\$87.36	\$9.80	\$18.17	\$0.00	\$115.33
	08/01/2015	\$90.51	\$9.80	\$18.17	\$0.00	\$118.48
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	03/01/2014	\$44.45	\$13.00	\$14.68	\$0.00	\$72.13
	09/01/2014	\$45.12	\$13.00	\$14.70	\$0.00	\$72.82
	03/01/2015	\$45.84	\$13.00	\$14.72	\$0.00	\$73.56
	09/01/2015	\$46.80	\$13.00	\$14.75	\$0.00	\$74.55
	03/01/2016	\$47.75	\$13.00	\$14.78	\$0.00	\$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	03/01/2014	\$44.45	\$13.00	\$14.68	\$0.00	\$72.13
	09/01/2014	\$45.12	\$13.00	\$14.70	\$0.00	\$72.82
	03/01/2015	\$45.84	\$13.00	\$14.72	\$0.00	\$73.56
	09/01/2015	\$46.80	\$13.00	\$14.75	\$0.00	\$74.55
	03/01/2016	\$47.75	\$13.00	\$14.78	\$0.00	\$75.53

Classification

Effective Date Base Wage Health Pension Supplemental
Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 103
Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.58	\$13.00	\$0.53	\$0.00	\$31.11
2	40	\$17.58	\$13.00	\$0.53	\$0.00	\$31.11
3	45	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
4	45	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
5	50	\$21.98	\$13.00	\$11.11	\$0.00	\$46.09
6	55	\$24.18	\$13.00	\$11.45	\$0.00	\$48.63
7	60	\$26.38	\$13.00	\$11.77	\$0.00	\$51.15
8	65	\$28.57	\$13.00	\$12.11	\$0.00	\$53.68
9	70	\$30.77	\$13.00	\$12.43	\$0.00	\$56.20
10	75	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.78	\$13.00	\$0.53	\$0.00	\$31.31
2	40	\$17.78	\$13.00	\$0.53	\$0.00	\$31.31
3	45	\$20.00	\$13.00	\$11.04	\$0.00	\$44.04
4	45	\$20.00	\$13.00	\$11.04	\$0.00	\$44.04
5	50	\$22.23	\$13.00	\$11.37	\$0.00	\$46.60
6	55	\$24.45	\$13.00	\$11.70	\$0.00	\$49.15
7	60	\$26.67	\$13.00	\$12.03	\$0.00	\$51.70
8	65	\$28.89	\$13.00	\$12.37	\$0.00	\$54.26
9	70	\$31.12	\$13.00	\$12.69	\$0.00	\$56.81
10	75	\$33.34	\$13.00	\$13.03	\$0.00	\$59.37

Notes: :

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

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR	01/01/2012	\$52.45	\$8.78	\$6.96	\$0.00	\$68.19
ELEVATOR CONSTRUCTORS LOCAL 4						

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
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2013	\$38.73	\$10.00	\$13.55	\$0.00	\$62.28
	05/01/2014	\$39.50	\$10.00	\$13.55	\$0.00	\$63.05
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2013	\$40.15	\$10.00	\$13.55	\$0.00	\$63.70
	05/01/2014	\$40.92	\$10.00	\$13.55	\$0.00	\$64.47
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2013	\$21.10	\$10.00	\$13.55	\$0.00	\$44.65
	05/01/2014	\$21.55	\$10.00	\$13.55	\$0.00	\$45.10
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	03/01/2014	\$44.45	\$13.00	\$14.68	\$0.00	\$72.13
	09/01/2014	\$45.12	\$13.00	\$14.70	\$0.00	\$72.82
	03/01/2015	\$45.84	\$13.00	\$14.72	\$0.00	\$73.56
	09/01/2015	\$46.80	\$13.00	\$14.75	\$0.00	\$74.55
	03/01/2016	\$47.75	\$13.00	\$14.78	\$0.00	\$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>LOCAL 103</i>	09/01/2013	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74
/ COMMISSIONING <i>ELECTRICIANS</i>	03/01/2014	\$33.44	\$13.00	\$13.03	\$0.00	\$59.47
	09/01/2014	\$33.84	\$13.00	\$13.05	\$0.00	\$59.89
	03/01/2015	\$34.38	\$13.00	\$13.06	\$0.00	\$60.44
	09/01/2015	\$35.10	\$13.00	\$13.08	\$0.00	\$61.18
	03/01/2016	\$35.81	\$13.00	\$13.10	\$0.00	\$61.91

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$33.76	\$10.00	\$14.18	\$0.00	\$57.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 1</i>	12/01/2013	\$20.50	\$7.30	\$12.70	\$0.00	\$40.50
	06/01/2014	\$20.50	\$7.30	\$12.70	\$0.00	\$40.50
	12/01/2014	\$20.50	\$7.30	\$12.70	\$0.00	\$40.50
	06/01/2015	\$20.50	\$7.30	\$12.70	\$0.00	\$40.50
	12/01/2015	\$20.50	\$7.30	\$12.70	\$0.00	\$40.50
	06/01/2016	\$20.50	\$7.30	\$12.70	\$0.00	\$40.50
	12/01/2016	\$20.50	\$7.30	\$12.70	\$0.00	\$40.50
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	09/01/2013	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12
	03/01/2014	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12

Apprentice - FLOORCOVERER - Local 2168 Zone 1

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$28.11	\$10.00	\$14.18	\$0.00	\$52.29

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	01/01/2014	\$41.20	\$7.85	\$16.10	\$0.00	\$65.15
GLAZIERS LOCAL 35 (ZONE 1)	07/01/2014	\$42.05	\$7.85	\$16.10	\$0.00	\$66.00
	01/01/2015	\$42.95	\$7.85	\$16.10	\$0.00	\$66.90
	07/01/2015	\$43.85	\$7.85	\$16.10	\$0.00	\$67.80
	01/01/2016	\$44.80	\$7.85	\$16.10	\$0.00	\$68.75
	07/01/2016	\$45.75	\$7.85	\$16.10	\$0.00	\$69.70
	01/01/2017	\$46.70	\$7.85	\$16.10	\$0.00	\$70.65

Apprentice - GLAZIER - Local 35 Zone 1

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.60	\$7.85	\$0.00	\$0.00	\$28.45
2	55	\$22.66	\$7.85	\$3.66	\$0.00	\$34.17
3	60	\$24.72	\$7.85	\$3.99	\$0.00	\$36.56
4	65	\$26.78	\$7.85	\$4.32	\$0.00	\$38.95
5	70	\$28.84	\$7.85	\$14.11	\$0.00	\$50.80
6	75	\$30.90	\$7.85	\$14.44	\$0.00	\$53.19
7	80	\$32.96	\$7.85	\$14.77	\$0.00	\$55.58
8	90	\$37.08	\$7.85	\$15.44	\$0.00	\$60.37

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.03	\$7.85	\$0.00	\$0.00	\$28.88
2	55	\$23.13	\$7.85	\$3.66	\$0.00	\$34.64
3	60	\$25.23	\$7.85	\$3.99	\$0.00	\$37.07
4	65	\$27.33	\$7.85	\$4.32	\$0.00	\$39.50
5	70	\$29.44	\$7.85	\$14.11	\$0.00	\$51.40
6	75	\$31.54	\$7.85	\$14.44	\$0.00	\$53.83
7	80	\$33.64	\$7.85	\$14.77	\$0.00	\$56.26
8	90	\$37.85	\$7.85	\$15.44	\$0.00	\$61.14

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
OPERATING ENGINEERS LOCAL 4						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.27	\$10.00	\$0.00	\$0.00	\$32.27
2	60	\$24.29	\$10.00	\$14.18	\$0.00	\$48.47
3	65	\$26.32	\$10.00	\$14.18	\$0.00	\$50.50
4	70	\$28.34	\$10.00	\$14.18	\$0.00	\$52.52
5	75	\$30.37	\$10.00	\$14.18	\$0.00	\$54.55
6	80	\$32.39	\$10.00	\$14.18	\$0.00	\$56.57
7	85	\$34.42	\$10.00	\$14.18	\$0.00	\$58.60
8	90	\$36.44	\$10.00	\$14.18	\$0.00	\$60.62

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK)	12/09/2013	\$42.35	\$9.82	\$19.33	\$2.14	\$73.64
<i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2014	\$42.76	\$9.82	\$19.74	\$2.17	\$74.49
	08/01/2014	\$43.61	\$9.82	\$19.74	\$2.17	\$75.34
	02/01/2015	\$44.51	\$9.82	\$19.74	\$2.17	\$76.24
	08/01/2015	\$45.51	\$9.82	\$19.74	\$2.17	\$77.24
	02/01/2016	\$46.51	\$9.82	\$19.74	\$2.17	\$78.24
	08/01/2016	\$47.66	\$9.82	\$19.74	\$2.17	\$79.39
	02/01/2017	\$48.76	\$9.82	\$19.74	\$2.17	\$80.49
	08/01/2017	\$49.86	\$9.82	\$19.74	\$2.17	\$81.59
	02/01/2018	\$51.01	\$9.82	\$19.74	\$2.17	\$82.74

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS)	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
<i>ELECTRICIANS LOCAL 103</i>	03/01/2014	\$44.45	\$13.00	\$14.68	\$0.00	\$72.13
	09/01/2014	\$45.12	\$13.00	\$14.70	\$0.00	\$72.82
	03/01/2015	\$45.84	\$13.00	\$14.72	\$0.00	\$73.56
	09/01/2015	\$46.80	\$13.00	\$14.75	\$0.00	\$74.55
	03/01/2016	\$47.75	\$13.00	\$14.78	\$0.00	\$75.53

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR)	12/09/2013	\$42.35	\$9.82	\$19.33	\$2.14	\$73.64
<i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2014	\$42.76	\$9.82	\$19.74	\$2.17	\$74.49
	08/01/2014	\$43.61	\$9.82	\$19.74	\$2.17	\$75.34
	02/01/2015	\$44.51	\$9.82	\$19.74	\$2.17	\$76.24
	08/01/2015	\$45.51	\$9.82	\$19.74	\$2.17	\$77.24
	02/01/2016	\$46.51	\$9.82	\$19.74	\$2.17	\$78.24
	08/01/2016	\$47.66	\$9.82	\$19.74	\$2.17	\$79.39
	02/01/2017	\$48.76	\$9.82	\$19.74	\$2.17	\$80.49
	08/01/2017	\$49.86	\$9.82	\$19.74	\$2.17	\$81.59
	02/01/2018	\$51.01	\$9.82	\$19.74	\$2.17	\$82.74

For apprentice rates see "Apprentice- SHEET METAL WORKER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 1</i>	12/01/2013	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
	06/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
	12/01/2014	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
	06/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
	12/01/2015	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
	06/01/2016	\$37.85	\$7.30	\$12.70	\$0.00	\$57.85
	12/01/2016	\$38.85	\$7.30	\$12.70	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2013	\$42.11	\$10.95	\$12.10	\$0.00	\$65.16
	09/01/2014	\$44.11	\$10.95	\$12.10	\$0.00	\$67.16

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

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.06	\$10.95	\$9.00	\$0.00	\$41.01
2	60	\$25.27	\$10.95	\$9.62	\$0.00	\$45.84
3	70	\$29.48	\$10.95	\$10.24	\$0.00	\$50.67
4	80	\$33.69	\$10.95	\$10.86	\$0.00	\$55.50

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.06	\$10.95	\$9.00	\$0.00	\$42.01
2	60	\$26.47	\$10.95	\$9.62	\$0.00	\$47.04
3	70	\$30.88	\$10.95	\$10.24	\$0.00	\$52.07
4	80	\$35.29	\$10.95	\$10.86	\$0.00	\$57.10

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (BOSTON AREA)</i>	09/16/2013	\$40.85	\$7.70	\$18.60	\$0.00	\$67.15

Classification

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

Apprentice - IRONWORKER - Local 7 Boston
Effective Date - 09/16/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$24.51	\$7.70	\$18.60	\$0.00	\$50.81
2	70	\$28.60	\$7.70	\$18.60	\$0.00	\$54.90
3	75	\$30.64	\$7.70	\$18.60	\$0.00	\$56.94
4	80	\$32.68	\$7.70	\$18.60	\$0.00	\$58.98
5	85	\$34.72	\$7.70	\$18.60	\$0.00	\$61.02
6	90	\$36.77	\$7.70	\$18.60	\$0.00	\$63.07

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
LABORERS - ZONE 1	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

LABORER	12/01/2013	\$33.35	\$7.30	\$12.70	\$0.00	\$53.35
LABORERS - ZONE 1	06/01/2014	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
	12/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
	06/01/2015	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
	12/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
	06/01/2016	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
	12/01/2016	\$38.10	\$7.30	\$12.70	\$0.00	\$58.10

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - LABORER - Zone 1
Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.01	\$7.30	\$12.70	\$0.00	\$40.01
2	70	\$23.35	\$7.30	\$12.70	\$0.00	\$43.35
3	80	\$26.68	\$7.30	\$12.70	\$0.00	\$46.68
4	90	\$30.02	\$7.30	\$12.70	\$0.00	\$50.02

Effective Date - 06/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.46	\$7.30	\$12.70	\$0.00	\$40.46
2	70	\$23.87	\$7.30	\$12.70	\$0.00	\$43.87
3	80	\$27.28	\$7.30	\$12.70	\$0.00	\$47.28
4	90	\$30.69	\$7.30	\$12.70	\$0.00	\$50.69

Notes:
Apprentice to Journeyworker Ratio:1:5
LABORER: CARPENTER TENDER
LABORERS - ZONE 1

12/01/2013	\$33.35	\$7.30	\$12.70	\$0.00	\$53.35
06/01/2014	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
12/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
06/01/2015	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
12/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
06/01/2016	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
12/01/2016	\$38.10	\$7.30	\$12.70	\$0.00	\$58.10

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER
LABORERS - ZONE 1

12/01/2013	\$33.35	\$7.30	\$12.70	\$0.00	\$53.35
06/01/2014	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
12/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
06/01/2015	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
12/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
06/01/2016	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
12/01/2016	\$38.10	\$7.30	\$12.70	\$0.00	\$58.10

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER
LABORERS - ZONE 1

12/01/2013	\$33.50	\$7.30	\$12.70	\$0.00	\$53.50
06/01/2014	\$34.25	\$7.30	\$12.70	\$0.00	\$54.25
12/01/2014	\$35.00	\$7.30	\$12.70	\$0.00	\$55.00
06/01/2015	\$35.75	\$7.30	\$12.70	\$0.00	\$55.75
12/01/2015	\$36.50	\$7.30	\$12.70	\$0.00	\$56.50

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.35	\$7.30	\$12.70	\$0.00	\$53.35
	06/01/2014	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
	12/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
	06/01/2015	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
	12/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
	06/01/2016	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
	12/01/2016	\$38.10	\$7.30	\$12.70	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.35	\$7.30	\$12.70	\$0.00	\$53.35
	06/01/2014	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
	12/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
	06/01/2015	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
	12/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
	06/01/2016	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
	12/01/2016	\$38.10	\$7.30	\$12.70	\$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>	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	08/01/2013	\$36.66	\$10.18	\$16.83	\$0.00	\$63.67
	02/01/2014	\$36.66	\$10.18	\$16.83	\$0.00	\$63.67
	08/01/2014	\$37.37	\$10.18	\$16.90	\$0.00	\$64.45
	02/01/2015	\$37.82	\$10.18	\$16.90	\$0.00	\$64.90
	08/01/2015	\$38.53	\$10.18	\$16.97	\$0.00	\$65.68
	02/01/2016	\$38.98	\$10.18	\$16.97	\$0.00	\$66.13
	08/01/2016	\$39.68	\$10.18	\$17.05	\$0.00	\$66.91
	02/01/2017	\$40.14	\$10.18	\$17.05	\$0.00	\$67.37

Classification

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

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

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.33	\$10.18	\$16.83	\$0.00	\$45.34
2	60	\$22.00	\$10.18	\$16.83	\$0.00	\$49.01
3	70	\$25.66	\$10.18	\$16.83	\$0.00	\$52.67
4	80	\$29.33	\$10.18	\$16.83	\$0.00	\$56.34
5	90	\$32.99	\$10.18	\$16.83	\$0.00	\$60.00

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.33	\$10.18	\$16.83	\$0.00	\$45.34
2	60	\$22.00	\$10.18	\$16.83	\$0.00	\$49.01
3	70	\$25.66	\$10.18	\$16.83	\$0.00	\$52.67
4	80	\$29.33	\$10.18	\$16.83	\$0.00	\$56.34
5	90	\$32.99	\$10.18	\$16.83	\$0.00	\$60.00

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH	08/01/2013	\$48.10	\$10.18	\$18.15	\$0.00	\$76.43
BRICKLAYERS LOCAL 3 - MARBLE & TILE	02/01/2014	\$48.10	\$10.18	\$18.15	\$0.00	\$76.43
	08/01/2014	\$49.00	\$10.18	\$18.22	\$0.00	\$77.40
	02/01/2015	\$49.56	\$10.18	\$18.22	\$0.00	\$77.96
	08/01/2015	\$50.46	\$10.18	\$18.29	\$0.00	\$78.93
	02/01/2016	\$51.03	\$10.18	\$18.29	\$0.00	\$79.50
	08/01/2016	\$51.93	\$10.18	\$18.37	\$0.00	\$80.48
	02/01/2017	\$52.50	\$10.18	\$18.37	\$0.00	\$81.05

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile
Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.05	\$10.18	\$18.15	\$0.00	\$52.38
2	60	\$28.86	\$10.18	\$18.15	\$0.00	\$57.19
3	70	\$33.67	\$10.18	\$18.15	\$0.00	\$62.00
4	80	\$38.48	\$10.18	\$18.15	\$0.00	\$66.81
5	90	\$43.29	\$10.18	\$18.15	\$0.00	\$71.62

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.05	\$10.18	\$18.15	\$0.00	\$52.38
2	60	\$28.86	\$10.18	\$18.15	\$0.00	\$57.19
3	70	\$33.67	\$10.18	\$18.15	\$0.00	\$62.00
4	80	\$38.48	\$10.18	\$18.15	\$0.00	\$66.81
5	90	\$43.29	\$10.18	\$18.15	\$0.00	\$71.62

Notes:
Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 4	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE OPERATING ENGINEERS LOCAL 4	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 1) MILLWRIGHTS LOCAL 1121 - Zone 1	10/01/2013	\$35.20	\$9.80	\$16.01	\$0.00	\$61.01
	04/01/2014	\$35.98	\$9.80	\$16.01	\$0.00	\$61.79
	10/01/2014	\$36.93	\$9.80	\$16.01	\$0.00	\$62.74
	04/01/2015	\$37.89	\$9.80	\$16.01	\$0.00	\$63.70

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - MILLWRIGHT - Local 1121 Zone 1						
Effective Date - 10/01/2013						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$19.36	\$9.80	\$4.40	\$0.00	\$33.56
2	65	\$22.88	\$9.80	\$13.21	\$0.00	\$45.89
3	75	\$26.40	\$9.80	\$14.01	\$0.00	\$50.21
4	85	\$29.92	\$9.80	\$14.81	\$0.00	\$54.53
Effective Date - 04/01/2014						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$19.79	\$9.80	\$4.40	\$0.00	\$33.99
2	65	\$23.39	\$9.80	\$13.21	\$0.00	\$46.40
3	75	\$26.99	\$9.80	\$14.01	\$0.00	\$50.80
4	85	\$30.58	\$9.80	\$14.81	\$0.00	\$55.19
Notes:						
Steps are 2,000 hours						
Apprentice to Journeyworker Ratio:1:5						
MORTAR MIXER	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
LABORERS - ZONE 1	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS)	12/01/2013	\$20.96	\$10.00	\$14.18	\$0.00	\$45.14
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS)	12/01/2013	\$24.43	\$10.00	\$14.18	\$0.00	\$48.61
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS)	01/01/2014	\$45.91	\$7.85	\$16.10	\$0.00	\$69.86
PAINTERS LOCAL 35 - ZONE 1	07/01/2014	\$46.76	\$7.85	\$16.10	\$0.00	\$70.71
	01/01/2015	\$47.66	\$7.85	\$16.10	\$0.00	\$71.61
	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS**Effective Date - 01/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.96	\$7.85	\$0.00	\$0.00	\$30.81
2	55	\$25.25	\$7.85	\$3.66	\$0.00	\$36.76
3	60	\$27.55	\$7.85	\$3.99	\$0.00	\$39.39
4	65	\$29.84	\$7.85	\$4.32	\$0.00	\$42.01
5	70	\$32.14	\$7.85	\$14.11	\$0.00	\$54.10
6	75	\$34.43	\$7.85	\$14.44	\$0.00	\$56.72
7	80	\$36.73	\$7.85	\$14.77	\$0.00	\$59.35
8	90	\$41.32	\$7.85	\$15.44	\$0.00	\$64.61

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.38	\$7.85	\$0.00	\$0.00	\$31.23
2	55	\$25.72	\$7.85	\$3.66	\$0.00	\$37.23
3	60	\$28.06	\$7.85	\$3.99	\$0.00	\$39.90
4	65	\$30.39	\$7.85	\$4.32	\$0.00	\$42.56
5	70	\$32.73	\$7.85	\$14.11	\$0.00	\$54.69
6	75	\$35.07	\$7.85	\$14.44	\$0.00	\$57.36
7	80	\$37.41	\$7.85	\$14.77	\$0.00	\$60.03
8	90	\$42.08	\$7.85	\$15.44	\$0.00	\$65.37

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *

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

NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 1*

01/01/2014	\$42.60	\$7.85	\$16.10	\$0.00	\$66.55
07/01/2014	\$43.45	\$7.85	\$16.10	\$0.00	\$67.40
01/01/2015	\$44.35	\$7.85	\$16.10	\$0.00	\$68.30
07/01/2015	\$45.25	\$7.85	\$16.10	\$0.00	\$69.20
01/01/2016	\$46.20	\$7.85	\$16.10	\$0.00	\$70.15
07/01/2016	\$47.15	\$7.85	\$16.10	\$0.00	\$71.10
01/01/2017	\$48.10	\$7.85	\$16.10	\$0.00	\$72.05

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 1 - Spray/Sandblast - New
Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.30	\$7.85	\$0.00	\$0.00	\$29.15
2	55	\$23.43	\$7.85	\$3.66	\$0.00	\$34.94
3	60	\$25.56	\$7.85	\$3.99	\$0.00	\$37.40
4	65	\$27.69	\$7.85	\$4.32	\$0.00	\$39.86
5	70	\$29.82	\$7.85	\$14.11	\$0.00	\$51.78
6	75	\$31.95	\$7.85	\$14.44	\$0.00	\$54.24
7	80	\$34.08	\$7.85	\$14.77	\$0.00	\$56.70
8	90	\$38.34	\$7.85	\$15.44	\$0.00	\$61.63

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.73	\$7.85	\$0.00	\$0.00	\$29.58
2	55	\$23.90	\$7.85	\$3.66	\$0.00	\$35.41
3	60	\$26.07	\$7.85	\$3.99	\$0.00	\$37.91
4	65	\$28.24	\$7.85	\$4.32	\$0.00	\$40.41
5	70	\$30.42	\$7.85	\$14.11	\$0.00	\$52.38
6	75	\$32.59	\$7.85	\$14.44	\$0.00	\$54.88
7	80	\$34.76	\$7.85	\$14.77	\$0.00	\$57.38
8	90	\$39.11	\$7.85	\$15.44	\$0.00	\$62.40

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2014	\$40.66	\$7.85	\$16.10	\$0.00	\$64.61
PAINTERS LOCAL 35 - ZONE 1	07/01/2014	\$41.51	\$7.85	\$16.10	\$0.00	\$65.46
	01/01/2015	\$42.41	\$7.85	\$16.10	\$0.00	\$66.36
	07/01/2015	\$43.31	\$7.85	\$16.10	\$0.00	\$67.26
	01/01/2016	\$44.26	\$7.85	\$16.10	\$0.00	\$68.21
	07/01/2016	\$45.21	\$7.85	\$16.10	\$0.00	\$69.16
	01/01/2017	\$46.16	\$7.85	\$16.10	\$0.00	\$70.11

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - PAINTER Local 35 Zone 1 - Spray/Sandblast - Repaint
Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.33	\$7.85	\$0.00	\$0.00	\$28.18
2	55	\$22.36	\$7.85	\$3.66	\$0.00	\$33.87
3	60	\$24.40	\$7.85	\$3.99	\$0.00	\$36.24
4	65	\$26.43	\$7.85	\$4.32	\$0.00	\$38.60
5	70	\$28.46	\$7.85	\$14.11	\$0.00	\$50.42
6	75	\$30.50	\$7.85	\$14.44	\$0.00	\$52.79
7	80	\$32.53	\$7.85	\$14.77	\$0.00	\$55.15
8	90	\$36.59	\$7.85	\$15.44	\$0.00	\$59.88

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.76	\$7.85	\$0.00	\$0.00	\$28.61
2	55	\$22.83	\$7.85	\$3.66	\$0.00	\$34.34
3	60	\$24.91	\$7.85	\$3.99	\$0.00	\$36.75
4	65	\$26.98	\$7.85	\$4.32	\$0.00	\$39.15
5	70	\$29.06	\$7.85	\$14.11	\$0.00	\$51.02
6	75	\$31.13	\$7.85	\$14.44	\$0.00	\$53.42
7	80	\$33.21	\$7.85	\$14.77	\$0.00	\$55.83
8	90	\$37.36	\$7.85	\$15.44	\$0.00	\$60.65

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS)

LABORERS - ZONE 1

12/01/2013	\$33.35	\$7.30	\$12.70	\$0.00	\$53.35
06/01/2014	\$34.10	\$7.30	\$12.70	\$0.00	\$54.10
12/01/2014	\$34.85	\$7.30	\$12.70	\$0.00	\$54.85
06/01/2015	\$35.60	\$7.30	\$12.70	\$0.00	\$55.60
12/01/2015	\$36.35	\$7.30	\$12.70	\$0.00	\$56.35
06/01/2016	\$37.10	\$7.30	\$12.70	\$0.00	\$57.10
12/01/2016	\$38.10	\$7.30	\$12.70	\$0.00	\$58.10

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *

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

NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 1

01/01/2014	\$41.20	\$7.85	\$16.10	\$0.00	\$65.15
07/01/2014	\$42.05	\$7.85	\$16.10	\$0.00	\$66.00
01/01/2015	\$42.95	\$7.85	\$16.10	\$0.00	\$66.90
07/01/2015	\$43.85	\$7.85	\$16.10	\$0.00	\$67.80
01/01/2016	\$44.80	\$7.85	\$16.10	\$0.00	\$68.75
07/01/2016	\$45.75	\$7.85	\$16.10	\$0.00	\$69.70
01/01/2017	\$46.70	\$7.85	\$16.10	\$0.00	\$70.65

Apprentice - PAINTER - Local 35 Zone 1 - BRUSH NEW**Effective Date - 01/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.60	\$7.85	\$0.00	\$0.00	\$28.45
2	55	\$22.66	\$7.85	\$3.66	\$0.00	\$34.17
3	60	\$24.72	\$7.85	\$3.99	\$0.00	\$36.56
4	65	\$26.78	\$7.85	\$4.32	\$0.00	\$38.95
5	70	\$28.84	\$7.85	\$14.11	\$0.00	\$50.80
6	75	\$30.90	\$7.85	\$14.44	\$0.00	\$53.19
7	80	\$32.96	\$7.85	\$14.77	\$0.00	\$55.58
8	90	\$37.08	\$7.85	\$15.44	\$0.00	\$60.37

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.03	\$7.85	\$0.00	\$0.00	\$28.88
2	55	\$23.13	\$7.85	\$3.66	\$0.00	\$34.64
3	60	\$25.23	\$7.85	\$3.99	\$0.00	\$37.07
4	65	\$27.33	\$7.85	\$4.32	\$0.00	\$39.50
5	70	\$29.44	\$7.85	\$14.11	\$0.00	\$51.40
6	75	\$31.54	\$7.85	\$14.44	\$0.00	\$53.83
7	80	\$33.64	\$7.85	\$14.77	\$0.00	\$56.26
8	90	\$37.85	\$7.85	\$15.44	\$0.00	\$61.14

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)

PAINTERS LOCAL 35 - ZONE 1

01/01/2014	\$39.26	\$7.85	\$16.10	\$0.00	\$63.21
07/01/2014	\$40.11	\$7.85	\$16.10	\$0.00	\$64.06
01/01/2015	\$41.01	\$7.85	\$16.10	\$0.00	\$64.96
07/01/2015	\$41.91	\$7.85	\$16.10	\$0.00	\$65.86
01/01/2016	\$42.86	\$7.85	\$16.10	\$0.00	\$66.81
07/01/2016	\$43.81	\$7.85	\$16.10	\$0.00	\$67.76
01/01/2017	\$44.76	\$7.85	\$16.10	\$0.00	\$68.71

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - PAINTER Local 35 Zone 1 - BRUSH REPAINT
Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.63	\$7.85	\$0.00	\$0.00	\$27.48
2	55	\$21.59	\$7.85	\$3.66	\$0.00	\$33.10
3	60	\$23.56	\$7.85	\$3.99	\$0.00	\$35.40
4	65	\$25.52	\$7.85	\$4.32	\$0.00	\$37.69
5	70	\$27.48	\$7.85	\$14.11	\$0.00	\$49.44
6	75	\$29.45	\$7.85	\$14.44	\$0.00	\$51.74
7	80	\$31.41	\$7.85	\$14.77	\$0.00	\$54.03
8	90	\$35.33	\$7.85	\$15.44	\$0.00	\$58.62

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.06	\$7.85	\$0.00	\$0.00	\$27.91
2	55	\$22.06	\$7.85	\$3.66	\$0.00	\$33.57
3	60	\$24.07	\$7.85	\$3.99	\$0.00	\$35.91
4	65	\$26.07	\$7.85	\$4.32	\$0.00	\$38.24
5	70	\$28.08	\$7.85	\$14.11	\$0.00	\$50.04
6	75	\$30.08	\$7.85	\$14.44	\$0.00	\$52.37
7	80	\$32.09	\$7.85	\$14.77	\$0.00	\$54.71
8	90	\$36.10	\$7.85	\$15.44	\$0.00	\$59.39

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1
PANEL & PICKUP TRUCKS DRIVER
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A

12/01/2013	\$31.88	\$9.41	\$8.80	\$0.00	\$50.09
06/01/2014	\$32.23	\$9.41	\$8.80	\$0.00	\$50.44
08/01/2014	\$32.23	\$9.91	\$8.80	\$0.00	\$50.94
12/01/2014	\$32.23	\$9.91	\$9.33	\$0.00	\$51.47
06/01/2015	\$32.58	\$9.91	\$9.33	\$0.00	\$51.82
08/01/2015	\$32.58	\$10.41	\$9.33	\$0.00	\$52.32
12/01/2015	\$32.58	\$10.41	\$10.08	\$0.00	\$53.07
06/01/2016	\$33.08	\$10.41	\$10.08	\$0.00	\$53.57
08/01/2016	\$33.08	\$10.91	\$10.08	\$0.00	\$54.07
12/01/2016	\$33.08	\$10.91	\$10.89	\$0.00	\$54.88

PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)
PILE DRIVER LOCAL 56 (ZONE 1)

08/01/2013	\$40.10	\$9.80	\$18.17	\$0.00	\$68.07
08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07

PILE DRIVER
PILE DRIVER LOCAL 56 (ZONE 1)

08/01/2013	\$40.10	\$9.80	\$18.17	\$0.00	\$68.07
08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07

Apprentice - PILE DRIVER - Local 56 Zone 1**Effective Date - 08/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.05	\$9.80	\$18.17	\$0.00	\$48.02
2	60	\$24.06	\$9.80	\$18.17	\$0.00	\$52.03
3	70	\$28.07	\$9.80	\$18.17	\$0.00	\$56.04
4	75	\$30.08	\$9.80	\$18.17	\$0.00	\$58.05
5	80	\$32.08	\$9.80	\$18.17	\$0.00	\$60.05
6	80	\$32.08	\$9.80	\$18.17	\$0.00	\$60.05
7	90	\$36.09	\$9.80	\$18.17	\$0.00	\$64.06
8	90	\$36.09	\$9.80	\$18.17	\$0.00	\$64.06

Effective Date - 08/01/2014

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

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

PIPEFITTER & STEAMFITTER

03/01/2013

\$49.34

\$8.75

\$14.39

\$0.00

\$72.48

PIPEFITTERS LOCAL 537

Apprentice - PIPEFITTER - Local 537**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.74	\$8.75	\$6.50	\$0.00	\$34.99
2	45	\$22.20	\$8.75	\$14.39	\$0.00	\$45.34
3	60	\$29.60	\$8.75	\$14.39	\$0.00	\$52.74
4	70	\$34.54	\$8.75	\$14.39	\$0.00	\$57.68
5	80	\$39.47	\$8.75	\$14.39	\$0.00	\$62.61

Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.

Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
LABORERS - ZONE 1	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS	09/01/2013	\$49.06	\$9.82	\$14.04	\$0.00	\$72.92
PLUMBERS & GASFITTERS LOCAL 12	03/01/2014	\$50.06	\$9.82	\$14.04	\$0.00	\$73.92
	09/01/2014	\$51.06	\$9.82	\$14.04	\$0.00	\$74.92
	03/01/2015	\$52.06	\$9.82	\$14.04	\$0.00	\$75.92
	09/01/2015	\$53.06	\$9.82	\$14.04	\$0.00	\$76.92
	03/01/2016	\$54.21	\$9.82	\$14.04	\$0.00	\$78.07
	09/01/2016	\$55.26	\$9.82	\$14.04	\$0.00	\$79.12
	03/01/2017	\$56.26	\$9.82	\$14.04	\$0.00	\$80.12

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.17	\$9.82	\$5.26	\$0.00	\$32.25
2	40	\$19.62	\$9.82	\$5.92	\$0.00	\$35.36
3	55	\$26.98	\$9.82	\$7.95	\$0.00	\$44.75
4	65	\$31.89	\$9.82	\$9.30	\$0.00	\$51.01
5	75	\$36.80	\$9.82	\$10.65	\$0.00	\$57.27

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.52	\$9.82	\$5.26	\$0.00	\$32.60
2	40	\$20.02	\$9.82	\$5.92	\$0.00	\$35.76
3	55	\$27.53	\$9.82	\$7.95	\$0.00	\$45.30
4	65	\$32.54	\$9.82	\$9.30	\$0.00	\$51.66
5	75	\$37.55	\$9.82	\$10.65	\$0.00	\$58.02

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$54.16 Step5 with lic\$60.40

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.)	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
PIPEFITTERS LOCAL 537						

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>	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 1</i>	12/01/2013	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	06/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	12/01/2014	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	06/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	12/01/2015	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	06/01/2016	\$38.10	\$7.30	\$12.70	\$0.00	\$58.10
	12/01/2016	\$39.10	\$7.30	\$12.70	\$0.00	\$59.10
For apprentice rates see "Apprentice- LABORER"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$28.11	\$10.00	\$14.18	\$0.00	\$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 25a</i>	05/01/2011	\$29.99	\$7.75	\$5.91	\$0.00	\$43.65
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 1 (Residential Wood)</i>	04/01/2011	\$37.25	\$8.67	\$15.51	\$0.00	\$61.43
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 1 (Residential Wood)</i>	05/01/2011	\$27.49	\$6.34	\$6.23	\$0.00	\$40.06
As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.						

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - CARPENTER (Residential Wood Frame) - Zone 1
Effective Date - 05/01/2011

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

Notes:
Apprentice to Journeyworker Ratio:1:5
RIDE-ON MOTORIZED BUGGY OPERATOR
LABORERS - ZONE 1

12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

ROLLER/SPREADER/MULCHING MACHINE
OPERATING ENGINEERS LOCAL 4

12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)
ROOFERS LOCAL 33

08/01/2013	\$38.31	\$10.50	\$10.70	\$0.00	\$59.51
02/01/2014	\$39.21	\$10.50	\$10.70	\$0.00	\$60.41
08/01/2014	\$40.11	\$10.50	\$10.70	\$0.00	\$61.31
02/01/2015	\$41.01	\$10.50	\$10.70	\$0.00	\$62.21
08/01/2015	\$41.91	\$10.50	\$10.70	\$0.00	\$63.11
02/01/2016	\$42.81	\$10.50	\$10.70	\$0.00	\$64.01

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.16	\$10.50	\$3.38	\$0.00	\$33.04
2	60	\$22.99	\$10.50	\$10.70	\$0.00	\$44.19
3	65	\$24.90	\$10.50	\$10.70	\$0.00	\$46.10
4	75	\$28.73	\$10.50	\$10.70	\$0.00	\$49.93
5	85	\$32.56	\$10.50	\$10.70	\$0.00	\$53.76

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.61	\$10.50	\$3.38	\$0.00	\$33.49
2	60	\$23.53	\$10.50	\$10.70	\$0.00	\$44.73
3	65	\$25.49	\$10.50	\$10.70	\$0.00	\$46.69
4	75	\$29.41	\$10.50	\$10.70	\$0.00	\$50.61
5	85	\$33.33	\$10.50	\$10.70	\$0.00	\$54.53

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

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE	08/01/2013	\$38.56	\$10.50	\$10.70	\$0.00	\$59.76
ROOFERS LOCAL 33	02/01/2014	\$39.46	\$10.50	\$10.70	\$0.00	\$60.66
	08/01/2014	\$40.36	\$10.50	\$10.70	\$0.00	\$61.56
	02/01/2015	\$41.26	\$10.50	\$10.70	\$0.00	\$62.46
	08/01/2015	\$42.16	\$10.50	\$10.70	\$0.00	\$63.36
	02/01/2016	\$43.06	\$10.50	\$10.70	\$0.00	\$64.26
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER	12/09/2013	\$42.35	\$9.82	\$19.33	\$2.14	\$73.64
SHEETMETAL WORKERS LOCAL 17 - A	02/01/2014	\$42.76	\$9.82	\$19.74	\$2.17	\$74.49
	08/01/2014	\$43.61	\$9.82	\$19.74	\$2.17	\$75.34
	02/01/2015	\$44.51	\$9.82	\$19.74	\$2.17	\$76.24
	08/01/2015	\$45.51	\$9.82	\$19.74	\$2.17	\$77.24
	02/01/2016	\$46.51	\$9.82	\$19.74	\$2.17	\$78.24
	08/01/2016	\$47.66	\$9.82	\$19.74	\$2.17	\$79.39
	02/01/2017	\$48.76	\$9.82	\$19.74	\$2.17	\$80.49
	08/01/2017	\$49.86	\$9.82	\$19.74	\$2.17	\$81.59
	02/01/2018	\$51.01	\$9.82	\$19.74	\$2.17	\$82.74

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - SHEET METAL WORKER - Local 17-A
Effective Date - 12/09/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.94	\$9.82	\$4.28	\$0.00	\$31.04
2	40	\$16.94	\$9.82	\$4.28	\$0.00	\$31.04
3	45	\$19.06	\$9.82	\$8.70	\$1.13	\$38.71
4	45	\$19.06	\$9.82	\$8.70	\$1.13	\$38.71
5	50	\$21.18	\$9.82	\$9.49	\$1.21	\$41.70
6	50	\$21.18	\$9.82	\$9.74	\$1.22	\$41.96
7	60	\$25.41	\$9.82	\$11.05	\$1.39	\$47.67
8	65	\$27.53	\$9.82	\$11.84	\$1.48	\$50.67
9	75	\$31.76	\$9.82	\$13.41	\$1.65	\$56.64
10	85	\$36.00	\$9.82	\$14.48	\$1.81	\$62.11

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.10	\$9.82	\$4.28	\$0.00	\$31.20
2	40	\$17.10	\$9.82	\$4.28	\$0.00	\$31.20
3	45	\$19.24	\$9.82	\$8.70	\$1.13	\$38.89
4	45	\$19.24	\$9.82	\$8.70	\$1.13	\$38.89
5	50	\$21.38	\$9.82	\$9.49	\$1.22	\$41.91
6	50	\$21.38	\$9.82	\$9.74	\$1.23	\$42.17
7	60	\$25.66	\$9.82	\$11.05	\$1.40	\$47.93
8	65	\$27.79	\$9.82	\$11.84	\$1.48	\$50.93
9	75	\$32.07	\$9.82	\$13.41	\$1.66	\$56.96
10	85	\$36.35	\$9.82	\$14.48	\$1.82	\$62.47

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4
SIGN ERECTOR

PAINTERS LOCAL 35 - ZONE 1

06/01/2013

\$25.81

\$7.07

\$7.05

\$0.00

\$39.93

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - SIGN ERECTOR - Local 35 Zone 1
Effective Date - 06/01/2013

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

Notes:

Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1
SPECIALIZED EARTH MOVING EQUIP < 35 TONS
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A

12/01/2013	\$32.34	\$9.41	\$8.80	\$0.00	\$50.55
06/01/2014	\$32.69	\$9.41	\$8.80	\$0.00	\$50.90
08/01/2014	\$32.69	\$9.91	\$8.80	\$0.00	\$51.40
12/01/2014	\$32.69	\$9.91	\$9.33	\$0.00	\$51.93
06/01/2015	\$33.04	\$9.91	\$9.33	\$0.00	\$52.28
08/01/2015	\$33.04	\$10.41	\$9.33	\$0.00	\$52.78
12/01/2015	\$33.04	\$10.41	\$10.08	\$0.00	\$53.53
06/01/2016	\$33.54	\$10.41	\$10.08	\$0.00	\$54.03
08/01/2016	\$33.54	\$10.91	\$10.08	\$0.00	\$54.53
12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34

SPECIALIZED EARTH MOVING EQUIP > 35 TONS
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A

12/01/2013	\$32.63	\$9.41	\$8.80	\$0.00	\$50.84
06/01/2014	\$32.98	\$9.41	\$8.80	\$0.00	\$51.19
08/01/2014	\$32.98	\$9.91	\$8.80	\$0.00	\$51.69
12/01/2014	\$32.98	\$9.91	\$9.33	\$0.00	\$52.22
06/01/2015	\$33.33	\$9.91	\$9.33	\$0.00	\$52.57
08/01/2015	\$33.33	\$10.41	\$9.33	\$0.00	\$53.07
12/01/2015	\$33.33	\$10.41	\$10.08	\$0.00	\$53.82
06/01/2016	\$33.83	\$10.41	\$10.08	\$0.00	\$54.32
08/01/2016	\$33.83	\$10.91	\$10.08	\$0.00	\$54.82
12/01/2016	\$33.83	\$10.91	\$10.89	\$0.00	\$55.63

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPRINKLER FITTER	01/01/2014	\$53.33	\$8.42	\$12.85	\$0.00	\$74.60
<i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2014	\$54.58	\$8.42	\$12.85	\$0.00	\$75.85
	10/01/2014	\$55.73	\$8.42	\$12.85	\$0.00	\$77.00
	01/01/2015	\$55.73	\$8.42	\$13.00	\$0.00	\$77.15
	03/01/2015	\$56.73	\$8.42	\$13.00	\$0.00	\$78.15
	10/01/2015	\$57.88	\$8.42	\$13.00	\$0.00	\$79.30
	01/01/2016	\$57.88	\$8.67	\$13.15	\$0.00	\$79.70
	03/01/2016	\$58.88	\$8.67	\$13.15	\$0.00	\$80.70
	10/01/2016	\$60.03	\$8.67	\$13.15	\$0.00	\$81.85
	03/01/2017	\$61.03	\$8.67	\$13.15	\$0.00	\$82.85

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

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$18.67	\$8.42	\$8.25	\$0.00	\$35.34
2	40	\$21.33	\$8.42	\$8.25	\$0.00	\$38.00
3	45	\$24.00	\$8.42	\$8.25	\$0.00	\$40.67
4	50	\$26.67	\$8.42	\$8.25	\$0.00	\$43.34
5	55	\$29.33	\$8.42	\$8.25	\$0.00	\$46.00
6	60	\$32.00	\$8.42	\$8.25	\$0.00	\$48.67
7	65	\$34.66	\$8.42	\$8.25	\$0.00	\$51.33
8	70	\$37.33	\$8.42	\$8.25	\$0.00	\$54.00
9	75	\$40.00	\$8.42	\$8.25	\$0.00	\$56.67
10	80	\$42.66	\$8.42	\$8.25	\$0.00	\$59.33

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.10	\$8.42	\$8.25	\$0.00	\$35.77
2	40	\$21.83	\$8.42	\$8.25	\$0.00	\$38.50
3	45	\$24.56	\$8.42	\$8.25	\$0.00	\$41.23
4	50	\$27.29	\$8.42	\$8.25	\$0.00	\$43.96
5	55	\$30.02	\$8.42	\$8.25	\$0.00	\$46.69
6	60	\$32.75	\$8.42	\$8.25	\$0.00	\$49.42
7	65	\$35.48	\$8.42	\$8.25	\$0.00	\$52.15
8	70	\$38.21	\$8.42	\$8.25	\$0.00	\$54.88
9	75	\$40.94	\$8.42	\$8.25	\$0.00	\$57.61
10	80	\$43.66	\$8.42	\$8.25	\$0.00	\$60.33

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
<i>OPERATING ENGINEERS LOCAL 4</i>						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN OPERATING ENGINEERS LOCAL 4	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN ELECTRICIANS LOCAL 103	09/01/2013	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74
	03/01/2014	\$33.44	\$13.00	\$13.03	\$0.00	\$59.47
	09/01/2014	\$33.84	\$13.00	\$13.05	\$0.00	\$59.89
	03/01/2015	\$34.38	\$13.00	\$13.06	\$0.00	\$60.44
	09/01/2015	\$35.10	\$13.00	\$13.08	\$0.00	\$61.18
	03/01/2016	\$35.81	\$13.00	\$13.10	\$0.00	\$61.91

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.19	\$13.00	\$0.40	\$0.00	\$26.59
2	40	\$13.19	\$13.00	\$0.40	\$0.00	\$26.59
3	45	\$14.84	\$13.00	\$10.04	\$0.00	\$37.88
4	45	\$14.84	\$13.00	\$10.04	\$0.00	\$37.88
5	50	\$16.49	\$13.00	\$10.29	\$0.00	\$39.78
6	55	\$18.13	\$13.00	\$10.53	\$0.00	\$41.66
7	60	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
8	65	\$21.43	\$13.00	\$11.03	\$0.00	\$45.46
9	70	\$23.08	\$13.00	\$11.28	\$0.00	\$47.36
10	75	\$24.73	\$13.00	\$11.53	\$0.00	\$49.26

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.38	\$13.00	\$0.40	\$0.00	\$26.78
2	40	\$13.38	\$13.00	\$0.40	\$0.00	\$26.78
3	45	\$15.05	\$13.00	\$10.29	\$0.00	\$38.34
4	45	\$15.05	\$13.00	\$10.29	\$0.00	\$38.34
5	50	\$16.72	\$13.00	\$10.54	\$0.00	\$40.26
6	55	\$18.39	\$13.00	\$10.79	\$0.00	\$42.18
7	60	\$20.06	\$13.00	\$11.04	\$0.00	\$44.10
8	65	\$21.74	\$13.00	\$11.29	\$0.00	\$46.03
9	70	\$23.41	\$13.00	\$11.54	\$0.00	\$47.95
10	75	\$25.08	\$13.00	\$11.79	\$0.00	\$49.87

Notes:

Apprentice to Journeyworker Ratio:1:1

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	08/01/2013	\$47.00	\$10.18	\$18.15	\$0.00	\$75.33
	02/01/2014	\$47.00	\$10.18	\$18.15	\$0.00	\$75.33
	08/01/2014	\$47.90	\$10.18	\$18.22	\$0.00	\$76.30
	02/01/2015	\$48.46	\$10.18	\$18.22	\$0.00	\$76.86
	08/01/2015	\$49.36	\$10.18	\$18.29	\$0.00	\$77.83
	02/01/2016	\$49.93	\$10.18	\$18.29	\$0.00	\$78.40
	08/01/2016	\$50.83	\$10.18	\$18.37	\$0.00	\$79.38
	02/01/2017	\$51.40	\$10.18	\$18.37	\$0.00	\$79.95

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.50	\$10.18	\$18.15	\$0.00	\$51.83
2	60	\$28.20	\$10.18	\$18.15	\$0.00	\$56.53
3	70	\$32.90	\$10.18	\$18.15	\$0.00	\$61.23
4	80	\$37.60	\$10.18	\$18.15	\$0.00	\$65.93
5	90	\$42.30	\$10.18	\$18.15	\$0.00	\$70.63

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.50	\$10.18	\$18.15	\$0.00	\$51.83
2	60	\$28.20	\$10.18	\$18.15	\$0.00	\$56.53
3	70	\$32.90	\$10.18	\$18.15	\$0.00	\$61.23
4	80	\$37.60	\$10.18	\$18.15	\$0.00	\$65.93
5	90	\$42.30	\$10.18	\$18.15	\$0.00	\$70.63

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2013	\$34.70	\$7.30	\$12.90	\$0.00	\$54.90
	06/01/2014	\$35.45	\$7.30	\$12.90	\$0.00	\$55.65
	12/01/2014	\$36.20	\$7.30	\$12.90	\$0.00	\$56.40
	06/01/2015	\$36.95	\$7.30	\$12.90	\$0.00	\$57.15
	12/01/2015	\$37.70	\$7.30	\$12.90	\$0.00	\$57.90
	06/01/2016	\$38.45	\$7.30	\$12.90	\$0.00	\$58.65
	12/01/2016	\$39.45	\$7.30	\$12.90	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2013	\$33.42	\$7.30	\$12.90	\$0.00	\$53.62
	06/01/2014	\$34.17	\$7.30	\$12.90	\$0.00	\$54.37
	12/01/2014	\$34.92	\$7.30	\$12.90	\$0.00	\$55.12
	06/01/2015	\$35.67	\$7.30	\$12.90	\$0.00	\$55.87
	12/01/2015	\$36.42	\$7.30	\$12.90	\$0.00	\$56.62
	06/01/2016	\$37.17	\$7.30	\$12.90	\$0.00	\$57.37
	12/01/2016	\$38.17	\$7.30	\$12.90	\$0.00	\$58.37

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2013	\$33.30	\$7.30	\$12.90	\$0.00	\$53.50
	06/01/2014	\$34.05	\$7.30	\$12.90	\$0.00	\$54.25
	12/01/2014	\$34.80	\$7.30	\$12.90	\$0.00	\$55.00
	06/01/2015	\$35.55	\$7.30	\$12.90	\$0.00	\$55.75
	12/01/2015	\$36.30	\$7.30	\$12.90	\$0.00	\$56.50
	06/01/2016	\$37.05	\$7.30	\$12.90	\$0.00	\$57.25
	12/01/2016	\$38.05	\$7.30	\$12.90	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.11	\$10.00	\$14.18	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2013	\$32.92	\$9.41	\$8.80	\$0.00	\$51.13
	06/01/2014	\$33.27	\$9.41	\$8.80	\$0.00	\$51.48
	08/01/2014	\$33.27	\$9.91	\$8.80	\$0.00	\$51.98
	12/01/2014	\$33.27	\$9.91	\$9.33	\$0.00	\$52.51
	06/01/2015	\$33.62	\$9.91	\$9.33	\$0.00	\$52.86
	08/01/2015	\$33.62	\$10.41	\$9.33	\$0.00	\$53.36
	12/01/2015	\$33.62	\$10.41	\$10.08	\$0.00	\$54.11
	06/01/2016	\$34.12	\$10.41	\$10.08	\$0.00	\$54.61
	08/01/2016	\$34.12	\$10.91	\$10.08	\$0.00	\$55.11
	12/01/2016	\$34.12	\$10.91	\$10.89	\$0.00	\$55.92
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2013	\$45.58	\$7.30	\$13.30	\$0.00	\$66.18
	06/01/2014	\$46.33	\$7.30	\$13.30	\$0.00	\$66.93
	12/01/2014	\$47.08	\$7.30	\$13.30	\$0.00	\$67.68
	06/01/2015	\$47.83	\$7.30	\$13.30	\$0.00	\$68.43
	12/01/2015	\$48.58	\$7.30	\$13.30	\$0.00	\$69.18
	06/01/2016	\$49.33	\$7.30	\$13.30	\$0.00	\$69.93
	12/01/2016	\$50.33	\$7.30	\$13.30	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2013	\$47.58	\$7.30	\$13.30	\$0.00	\$68.18
	06/01/2014	\$48.33	\$7.30	\$13.30	\$0.00	\$68.93
	12/01/2014	\$49.08	\$7.30	\$13.30	\$0.00	\$69.68
	06/01/2015	\$49.83	\$7.30	\$13.30	\$0.00	\$70.43
	12/01/2015	\$50.58	\$7.30	\$13.30	\$0.00	\$71.18
	06/01/2016	\$51.33	\$7.30	\$13.30	\$0.00	\$71.93
	12/01/2016	\$52.33	\$7.30	\$13.30	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2013	\$37.65	\$7.30	\$13.30	\$0.00	\$58.25
	06/01/2014	\$38.40	\$7.30	\$13.30	\$0.00	\$59.00
	12/01/2014	\$39.15	\$7.30	\$13.30	\$0.00	\$59.75
	06/01/2015	\$39.90	\$7.30	\$13.30	\$0.00	\$60.50
	12/01/2015	\$40.65	\$7.30	\$13.30	\$0.00	\$61.25
	06/01/2016	\$41.40	\$7.30	\$13.30	\$0.00	\$62.00
	12/01/2016	\$42.40	\$7.30	\$13.30	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2013	\$39.65	\$7.30	\$13.30	\$0.00	\$60.25
	06/01/2014	\$40.40	\$7.30	\$13.30	\$0.00	\$61.00
	12/01/2014	\$41.15	\$7.30	\$13.30	\$0.00	\$61.75
	06/01/2015	\$41.90	\$7.30	\$13.30	\$0.00	\$62.50
	12/01/2015	\$42.65	\$7.30	\$13.30	\$0.00	\$63.25
	06/01/2016	\$43.40	\$7.30	\$13.30	\$0.00	\$64.00
	12/01/2016	\$44.40	\$7.30	\$13.30	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2013	\$32.34	\$9.41	\$8.80	\$0.00	\$50.55
	06/01/2014	\$32.69	\$9.41	\$8.80	\$0.00	\$50.90
	08/01/2014	\$32.69	\$9.91	\$8.80	\$0.00	\$51.40
	12/01/2014	\$32.69	\$9.91	\$9.33	\$0.00	\$51.93
	06/01/2015	\$33.04	\$9.91	\$9.33	\$0.00	\$52.28
	08/01/2015	\$33.04	\$10.41	\$9.33	\$0.00	\$52.78
	12/01/2015	\$33.04	\$10.41	\$10.08	\$0.00	\$53.53
	06/01/2016	\$33.54	\$10.41	\$10.08	\$0.00	\$54.03
	08/01/2016	\$33.54	\$10.91	\$10.08	\$0.00	\$54.53
	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2013	\$33.60	\$7.30	\$12.70	\$0.00	\$53.60
	06/01/2014	\$34.35	\$7.30	\$12.70	\$0.00	\$54.35
	12/01/2014	\$35.10	\$7.30	\$12.70	\$0.00	\$55.10
	06/01/2015	\$35.85	\$7.30	\$12.70	\$0.00	\$55.85
	12/01/2015	\$36.60	\$7.30	\$12.70	\$0.00	\$56.60
	06/01/2016	\$37.35	\$7.30	\$12.70	\$0.00	\$57.35
	12/01/2016	\$38.35	\$7.30	\$12.70	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2013	\$40.49	\$10.00	\$14.18	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	09/01/2013	\$49.06	\$9.82	\$14.04	\$0.00	\$72.92
	03/01/2014	\$50.06	\$9.82	\$14.04	\$0.00	\$73.92
	09/01/2014	\$51.06	\$9.82	\$14.04	\$0.00	\$74.92
	03/01/2015	\$52.06	\$9.82	\$14.04	\$0.00	\$75.92
	09/01/2015	\$53.06	\$9.82	\$14.04	\$0.00	\$76.92
	03/01/2016	\$54.21	\$9.82	\$14.04	\$0.00	\$78.07
	09/01/2016	\$55.26	\$9.82	\$14.04	\$0.00	\$79.12
	03/01/2017	\$56.26	\$9.82	\$14.04	\$0.00	\$80.12
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$25.66	\$8.70	\$4.48	\$0.00	\$38.84
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.55	\$8.70	\$6.58	\$0.00	\$51.83
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$29.94	\$8.70	\$6.05	\$0.00	\$44.69
For apprentice rates see "Apprentice- LINEMAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$5.24	\$0.00	\$37.46
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.35	\$8.70	\$9.43	\$0.00	\$54.48
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$32.08	\$8.70	\$6.59	\$0.00	\$47.37
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$3.72	\$0.00	\$35.94
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$19.25	\$8.70	\$2.85	\$0.00	\$30.80
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$42.77	\$8.70	\$11.78	\$0.00	\$63.25

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 09/01/2013

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

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$26.33	\$4.18	\$2.79	\$0.00	\$33.30
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/29/2012	\$17.18	\$3.37	\$0.00	\$0.00	\$20.55
This classification applies only to the trimming of branches on and around utility lines.						
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/29/2012	\$15.15	\$3.37	\$0.00	\$0.00	\$18.52
This classification applies only to the trimming of branches on and around utility lines.						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours) 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.

Division of Labor and Industries Statement of Compliance

WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

In addition, every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority. For every week in which an apprentice is employed, a photocopy of the apprentice's identification card must be attached to the payroll report. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor, or public body shall furnish to the awarding authority directly, within fifteen days after completion of its portion of the work a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

_____, 20____

I, _____,
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by
_____ on the _____

(Contractor, subcontractor or public body)

(Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM



Company's Name:		Address:		Phone No.:		Payroll No.:														
Employer's Signature:		Title:		Contract No.:		Work Week Ending:														
Awarding Authority's Name:		Public Works Project Name:		Public Works Project Location:		Min. Wage Rate Sheet No.														
General / Prime Contractor's Name:		Subcontractor's Name:		"Employer" Hourly Fringe Benefit Contributions																
Employee Name & Complete Address	Employee is OSHA 10 Certified (?)	Work Classification:	Appr. Rate (%)	Worked							Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C)	ERISA Pension Plan (D)	Supp. Unemp. (E)	Total Hourly Prev. Wage (F)	(A x F)		Check No. (H)	
				Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.							Project Hours (A)	Project Gross Wages (G)		Total Gross Wages
	☐																			
	☐																			
	☐																			
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NOTE: Pursuant to MGL Ch. 149 s.27B, every contractor and subcontractor is required to submit a "true and accurate" copy of their weekly payroll records directly to the awarding authority. Failure to comply in the commencement of a criminal action or the issuance of a civil citation.

GENERAL TERMS & CONDITIONS

General Conditions

GENERAL TERMS AND CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, RECONSTRUCTION, ALTERATION, REMODELING, OR REPAIR OF ANY PUBLIC BUILDING OR PUBLIC WORK IN THE CITY OF SOMERVILLE

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GENERAL TERMS AND CONDITIONS OF THE CONTRACT

**FOR CONSTRUCTION, RECONSTRUCTION, INSTALLATION,
DEMOLITION, MAINTENANCE, OR REPAIR OF ANY
PUBLIC BUILDING OR PUBLIC WORK
IN THE CITY OF SOMERVILLE**

ARTICLE 1: DEFINITIONS

1.1. In General.

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

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

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

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

1.2. Definitions.

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

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

1.2.3. City. The **City** refers to the City of Somerville, which is the owner of the Project and is the public awarding authority with whom the **Contractor** has entered into the Contract and for whom the Work is to be provided.

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

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

1.2.6. Contract Documents. The Contract Documents consist of the Agreement; the notice of award of the Contract; the Notice to Proceed; the entire Project Manual; Change Orders; Construction Change Directives; the **Contractor's** Bid and all accompanying documents; and the **Design Professional's** written interpretations and clarifications issued on or after the issuance of the Notice to Proceed. Shop Drawing submittals and reports or drawings utilized by the **Design Professional** in preparing the Contract Documents are not Contract Documents.

1.2.7. Contractor. The **Contractor** is the person who is awarded the Contract for the Project herein pursuant to M.G.L. c. 149, §44A or M.G.L. c. 39, §39M; and is identified in the Agreement as such. The term "**Contractor**" is intended to include the **Contractor** as well as its authorized representative(s).

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

1.2.9. Contract Time. Unless otherwise provided, the Contract Time is the number of days allotted in the Contract Documents or the dates stated in the Agreement, including authorized adjustments, for Substantial Completion. We usually put a contract end date that is beyond the date of substantial completion.

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

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

1.2.12. Design Professional. The **Design Professional** is the person lawfully licensed to practice architecture, engineering, or landscape architecture and has been selected by the **City** to administer the Contract. The term "**Design Professional**," while referred to in the singular, means the **Design Professional** and/or the **Design Professional's** representative. For the purposes of this project, **Design Professional** shall mean the firm of Weston Sampson Engineers and appropriate consultants.

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

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

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

1.2.16. Modification. A Modification is a written instrument that amends the Contract after execution of the Agreement.

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

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

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

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

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

1.2.22. Proposed Change Order. A Proposed Change Order is a Change Order that has been submitted by the **Contractor** to the **Design Professional**, is under review, and has not been approved by the **City**.

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

part of the Contract Documents.

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

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

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

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

1.2.28. Submittals. Submittals are those Shop Drawings, Product Data, Samples, or any other required document that are provided to the Design Professional for review and approval.

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

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

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

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

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

by the **Design Professional**.

ARTICLE 2: ABOUT THE CONTRACT DOCUMENTS

2.1. Priority/Conflict.

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

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

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

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

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

which it knew or should have known.

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

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

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

2.2. Execution.

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

2.3. Intent.

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

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

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

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

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

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

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

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

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

Documents.

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

2.4. Organization.

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

2.5. References.

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

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

2.6. Reuse of Design Professional's Written Instruments.

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

2.7. Written Material of the Contractor.

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

2.8. Modifying Words.

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

2.9. Use of Certain Words and Terms.

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

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

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

2.10. Modification of the Contract Documents.

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

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

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

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

ARTICLE 3: THE CITY

3.1. Signatory.

3.1.1. All documents which require a signature or an endorsement by the **City** must be signed by the Mayor in order to be deemed ratified by the **City**.

3.2. Requirements to Provide Documents.

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

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

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

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

3.3. Clerk of the Works.

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

3.4. City's Right to Perform Construction and to Award Separate Contracts.

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

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

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

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

3.5. Limitations on the City's Responsibilities.

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

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

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

3.6. Reservation of Rights.

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

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

3.7. Waivers.

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

ARTICLE 4: THE DESIGN PROFESSIONAL

4.1. City's Representative.

4.1.1. The **Design Professional** is the **City's** representative (1) during construction, (2)

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

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

4.2. Administration of the Contract.

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

4.3. Visits to the Site.

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

4.4. Communications Facilitating Contract Administration.

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

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

4.5. Certification of Applications for Payment.

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

4.6. Rejection of Work.

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

4.7. Review of Submittals.

4.7.1. The **Design Professional** will review or take other appropriate action upon the **Contractor's** submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents and only to the extent that the **Design Professional** believes desirable to protect the **City's** interest. The **Design Professional's** action will be taken with reasonable promptness, while allowing sufficient time in the **Design Professional's** professional judgment to permit adequate review, taking into account the time periods set forth in the latest schedule prepared by the **Contractor** and approved by the **Design Professional**. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the **Contractor** as required by the Contract Documents. The **Design Professional's** review of the **Contractor's** submittals shall not relieve the **Contractor** of the obligations under Article 5. The **Design Professional's** review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The **Design Professional's** approval of a specific item shall not indicate approval of an assembly of which the item is a component. After the rejection of the second resubmittal of any one Submittal, the **Contractor** shall bear the cost of the review of each subsequent resubmittal.

4.8. Preparation of Change Orders and Construction Change Directives.

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

4.9. Inspections.

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

4.10. Interpretations, Clarifications, and Decisions.

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

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

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

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

4.11. Limitation on the Design Professional's Responsibilities.

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

4.11.2. The **Design Professional** will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the **Contractor's** responsibility as provided in Article 5. The **Design Professional** will not be responsible for the **Contractor's** failure to carry out the Work in accordance with the Contract Documents. The **Design Professional** will not have control over or charge of and will not be responsible for acts or omissions of the **Contractor**, Subcontractors, Suppliers, or of any other persons performing portions of the Work.

ARTICLE 5: THE CONTRACTOR

5.1. Relationship with the City.

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

5.2. Code of Conduct.

5.2.1. M.G.L. c. 268A establishes standards of conduct for officials and employees of the **City**. The **Contractor** shall familiarize itself with the statute and act accordingly.

5.3. Quality Assurance.

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

5.4. Supervision.

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

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

5.4.3. Variance between the Contract Documents and Statutes, Ordinances, Codes, Rules, and Regulations. The **Contractor** shall promptly notify the **Design Professional** and

the **City** in writing of any variances between the Contract Documents and statutes, ordinances, codes, rules, and regulations. If the **Contractor**, without written notice to the **Design Professional** and the **City**, performs Work knowing that it is contrary to statutes, ordinances, codes, rules, and regulations, the **Contractor** shall assume full responsibility for such Work and shall bear the costs associated therewith, i.e., replacement, repairs, removal, and fines.

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

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

5.5. Personnel.

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

5.5.2. Sexual Harassment. Sexual harassment is an unlawful practice under M.G.L. c. 151B. The **Contractor**, Subcontractors, and all other persons responsible for any portion of the Work shall refrain from engaging in sexual harassment. The **Contractor** shall be responsible for any acts of sexual harassment committed by any persons responsible for any portion of the Work. The **Contractor** shall take appropriate action against any such individuals.

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

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

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

5.5.6. Wage Rates. (*Reference:* M.G.L. c. 149, §27). Mechanics and apprentices, teamsters, chauffeurs and laborers performing Work shall be paid no less than the minimum rate of wages included in the bid documents and the Project Manual and which are made part of the Contract. They shall continue to be the minimum rate of wages for said employees during the life of the Contract. The **Contractor** shall keep a legible copy of the wage rates posted in a conspicuous place at the site during the life of the Contract. These rates of wages shall include payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans as provided in M.G.L. c. 149, §26, and such payments shall be considered as payments to persons under M.G.L. c. 149, §27 performing work as therein provided. If the **Contractor** does not make payments to a health and welfare plan, a pension plan and a supplementary unemployment benefit plan, where such payments are included in the rates of wages, the **Contractor** shall pay the amount of said payments directly to each employee engaged in the Work. If the **Contractor** pays less than the rate of wages, including payments to health and welfare funds and pension funds, or the equivalent payments in wages to any person performing Work within the classifications as determined by the Commissioner of Labor and Industries, and if the **Contractor** takes or receives for its own use or the use of any other person, as a rebate, refund or gratuity, or in any other guise, any part or portion of the wages, including payments to health and welfare funds and pension funds, or the equivalent payment in wages, paid to such person for Work done or service rendered on the Project, the **Contractor** will be subject to the penalties set forth in M.G.L. c. 149, §27. Notwithstanding the foregoing and the requirements of 5.5.7.1 and 5.5.7.2 below, if the Contract is federally funded, federal labor standards apply, including Davis Bacon minimum wage rates and payroll reporting requirements. See the “Federal Requirements” section at the end of these contract documents.

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

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

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

5.6. Superintendence.

5.6.1. Employment of a Superintendent. The **Contractor** shall employ a competent, properly licensed superintendent, reasonably acceptable to the **City**, and necessary assistants who shall be in attendance at the Site full time during the progress of the Work until the date of Substantial Completion and for such additional time thereafter as the **Design Professional** or the **City** may determine to be necessary for the expeditious completion of the Work, including final completion. If continually in the employ of the Contractor, the same Superintendent shall be assigned to this project.

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

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

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

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

5.6.6. Job Meetings. There shall be job meetings held on a weekly basis, or more often if required by the **City**. The **Contractor** shall arrange for and attend weekly job meetings with the **Design Professional** and such other persons as the **Design Professional** may from time to time wish to have present. The **Contractor** shall be represented by a principal, project manager, general superintendent or other authorized main office representative, as well as by the **Contractor's** own superintendent. An authorized representative of any Subcontractor or Sub-subcontractor shall attend such meetings if the representative's presence is requested by the **Design Professional**. Such representatives shall be empowered to make binding commitments

on all matters to be discussed at such meetings, including costs, payments, Change Orders, time schedules and workforce power. Any notices required under the Contract may be served on such representatives.

5.7. Materials, Labor, Equipment, Etc.

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

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

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

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

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

5.8.1.1. “Contractor” means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to M.G.L. c.149, §44A-H or M.G.L. c. 30, §39M, inclusive.

5.8.1.2. “Contract” means any contract awarded or executed pursuant to M.G.L. c. 149, §44A-H or M.G.L. c. 30, §39M, which is for an amount or estimate amount that exceed the dollar amount set forth in M.G.L. c. 30, §39R.

5.8.1.3. “Records” means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

5.8.1.4. “Independent Certified Public Accountant” means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant’s independence shall not be confined to the relationships existing in connection with the filing of reports with the **City**.

5.8.1.5. “Audit,” when used in regard to financial statement, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

5.8.1.6. “Accountant’s Report,” when used in regard to financial statements, means a document in which an independent certified accountant indicates the scope of the audit which s/he has made and sets forth his/her opinion regarding the financial statements taken as a whole with listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefore shall be stated. An accountant’s report shall include as part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.

5.8.1.7. “Management,” when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the Contractor.

5.8.1.8. Accounting terms, unless otherwise defined herein shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

5.8.2. The Contractor shall make, and keep for at least six (6) years after final payment, books, Records, and accounts that in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

5.8.3. Until the expiration of six (6) years after final payment, the Office of the Inspector General, and the Deputy Commissioner of the Division of Capital Asset Management shall have the right to examine any books, documents, papers or Records of the Contractor or of its Subcontractors that directly pertain to, and involve transactions relating to, the Contractor or its Subcontractors.

5.8.4. The Contractor shall describe any change in the method of maintaining Records

or recording transactions which materially affect any statements filed with the **City**, including in its description the date of the change and reasons therefore, and shall accompany said description with a letter from the Contractor's Independent Certified Public Accountant approving or otherwise commenting on the changes.

5.8.5. The Contractor shall file a Statement of Management on internal accounting controls as set forth below prior to the execution of the Contract.

5.8.6. The Contractor shall file prior to the execution of the contract and shall continue to file annually, an Audited Financial Statement for the most recent completed fiscal year as set forth below.

5.8.7. The Contractor shall file with the **City** a Statement of Management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

5.8.7.1. transactions are executed in accordance with Management's general and specific authorization;

5.8.7.2. transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles, and to maintain accountability for assets;

5.8.7.3. access to assets is permitted only in accordance with Management's general or specific authorization; and

5.8.7.4. the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any difference.

5.8.7.5. The Contractor shall also file with the **City** a statement prepared and signed by an Independent Certified Public Accountant stating that s/he has examined the Statement of Management on internal accounting controls, and expressing an opinion as to:

5.8.7.5.1. whether the representation of Management in response to this paragraph and paragraphs 5.8.2. through 5.8.6 above are consistent with the result of Management's evaluation of the system of internal accounting controls; and

5.8.7.5.2. whether such representations of Management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

5.8.8. The Contractor shall annually file with the Commissioner of the Division of Capital Asset Management during the term of the contract a financial statement prepared by an Independent Certified Public Accountant on the basis of an Audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the **City** upon request.

5.9. Taxes.

5.9.1 The **Contractor** shall pay all sales, consumer, use, and other similar taxes for the Work or portions thereof which are provided by the **Contractor** which are legally enacted when bids are received, whether or not yet effective or merely scheduled to go into effect. However, the **Contractor** shall not pay, and the **City** shall not reimburse or pay the **Contractor** for, any sales taxes for building supplies or materials for which an exemption is provided in M.G.L. c. 64H, §6(f). The **City's** tax exemption number to be used by the **Contractor** in this regard is E04-600-1414.

5.10. Permits, Licenses, and Fees.

5.10.1 Unless otherwise provided, the **Contractor** shall obtain and pay the fees for all permits, licenses, and inspections that are necessary for the proper execution and completion of the Work and which are customarily secured after execution of the Contract and which are legally required. All fees for permits, and inspections required by any **City** department shall be waived. Fees for licenses (e.g. drainlayer's license) are not waived. In addition the contractor shall pay for water meters and water usage. The contractor is responsible for obtaining NSTAR work orders and paying all costs and fees associated with NSTAR work.

5.11. Notices Required By Statutes, Ordinances, Codes, Rules, Regulations, and Orders of the City.

5.11.1 The **Contractor** shall give notices required by statutes, ordinances, codes, rules, regulations, and orders of the **City** bearing on performance of the Work.

5.12. Additional Information from Design Professional.

5.12.1. The **Contractor** shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Article 4.

5.12.2. The **Contractor** shall give the **Design Professional** timely notice of any additional Plans, Specifications, or instructions required to define the Work in greater detail, or to permit the proper progress of the Work.

5.12.3. The **Contractor** shall not proceed with any Work not clearly and consistently defined in detail in the Contract Documents, but shall request additional drawings or instructions from the **Design Professional** as provided in the previous Paragraph. If the **Contractor** proceeds with such Work without obtaining further drawings, Specifications, or instructions, the **Contractor** shall correct Work incorrectly done at the **Contractor's** own expense.

5.13. “Or equal.”

5.13.1. Requirements for Substitutions. (*Reference: M.G.L. c. 30, §39M(b).*) Where products or materials are prescribed by manufacturer name, trade name, or catalog reference, the words “or approved equal” shall be understood to follow. An item shall be considered equal to the item so named or described if, in the opinion of the **Design Professional**:

5.13.1.1. it is at least equal in quality, durability, appearance, strength, and design;

5.13.1.2. it performs at least equally the function imposed by the general design for the Work;

5.13.1.3. it conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the Specifications.

5.13.2. Net Savings. No proposed substitution will be permitted unless the **Contractor** certifies that the proposed substitution will yield a net savings to the **City** and will not extend the Contract Time.

5.13.3. Contractor’s Expense. Any structural or mechanical changes made necessary to accommodate substituted equipment under this paragraph (including but not limited to engineering fees) shall be at the expense of the **Contractor** or **Subcontractor** responsible for the Work item.

5.13.3.1. Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the **Contractor**, notwithstanding approval or acceptance of such substitution by the **City** or the **Design Professional**, unless such substitution was made at the written request or direction of the **City** or the **Design Professional**.

5.13.3.2. All data to be provided by the **Contractor** in support of any proposed “or equal” or substitute item will be at the **Contractor's** expense.

5.13.4. Meeting Requirements. The **Contractor** shall be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The **Design Professional** may require the **Contractor** to produce reasonable evidence that a material meets such requirements, such as certified reports of past tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which, in the opinion of the **Design Professional**, would lead to a reasonable certainty that any material used, or proposed to be used, in the Work meets the requirements of the Contract Documents. All such data shall be furnished at the **Contractor's** expense. This provision shall not require the **Contractor** to pay for periodic testing of different batches of the same material, unless such testing is specifically required by the Contract Documents to be performed at the **Contractor's** expense.

5.13.5. Named Manufacturer's Product. In all cases in which a manufacturer's name, trade name, or other proprietary designation is used in connection with materials or articles to be furnished under this Contract, whether or not the phrase "or equal" is used after such name, the **Contractor** shall furnish the product of the name manufacturer(s) without substitution, unless a written request for a substitute has been submitted by the **Contractor** and approved in writing by the **Design Professional** as provided in the following paragraph.

5.13.6. Deviations. If the **Contractor** proposes to use a material which while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, the **Contractor** shall inform the **Design Professional** in writing of the nature of such deviations at the time the material is submitted for approval and shall request written approval of the deviation from the requirements of the Contract Documents.

5.13.7. Rejection of Deviations. In requesting approval of deviations or substitutions, the **Contractor** shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation will provide a quality of result at least equal to that otherwise attainable. If, in the opinion of the **Design Professional**, the evidence presented by the **Contractor** does not provide a sufficient basis for such reasonable certainty, the **Design Professional** may reject such substitution or deviation without further investigation.

5.13.8. Consistent Character and Quality of Design. The Contract Documents are intended to produce a building of consistent character and quality of design. All components of the building including visible items of mechanical and electrical equipment have been selected to have a coordinated design in relation to the overall appearance of the Project. The **Design Professional** shall judge the design and appearance of proposed substitutes on the basis of their suitability in relation to the overall design of the Project, as well as for their intrinsic merits. The **Design Professional** will not approve as equal to materials specified proposed substitutes that, in the **Design Professional's** opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the Project. In order to permit coordinated design of color and finishes the **Contractor** shall, if required by the **Design Professional**, furnish the substituted material in any color, finish, texture, or pattern which would have been available from the manufacturer originally specified, at no additional cost to the **City**.

5.13.9. Warranty. The warranties provided herein shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law.

5.13.10. Design Professional's Approval. The **Design Professional** will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed, or utilized without the **Design Professional's** prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. The **City** may require the **Contractor** to furnish at the **Contractor's** expense a special performance guarantee or other surety with respect to any "or equal" or substitute. The **Design Professional** will record the time required by the **Design Professional** and its consultants in evaluating substitutes proposed or submitted by the **Contractor** and in making changes in the Contract Documents (or in the provisions of any other

direct contract with the **City** for work on the Project) occasioned thereby. Whether or not the **Design Professional** accepts a substitute item so proposed or submitted by the **Contractor**, the **Contractor** shall reimburse the **City** for the charges of the **Design Professional** and its consultants for evaluating each such proposed substitute item.

5.14. Substitute Construction Methods or Procedures.

5.14.1 If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, the **Contractor** may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to the **Design Professional**. The **Contractor** shall submit sufficient information to allow the **Design Professional**, in the **Design Professional's** sole discretion, to determine whether the substitute proposed is equivalent to that expressly called for by the Contract Documents.

5.15. Contractor's Progress Schedule.

5.15.1. Before Starting Construction. Within ten (10) days after the date of the Notice to Proceed, the **Contractor** shall submit to the **Design Professional** for review:

5.15.1.1. a preliminary progress schedule indicating the times (number of days or dates) for starting and completing the various stages of the Work;

5.15.1.2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

5.15.1.3. a refined schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Sum and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

5.15.2. Review of Progress Schedule. At least ten (10) days prior to the commencement of construction, the **Design Professional**, the **Contractor**, and any other appropriate persons will meet to review and discuss the acceptability to the **Design Professional** of the progress schedule. The **Contractor** will have an additional ten (10) days to make corrections and adjustments and to complete and resubmit the schedule. No progress payment shall be made to the **Contractor** until the schedule is submitted to and found acceptable by the **Design Professional** as provided below.

5.15.3. Acceptability of Progress Schedule. The progress schedule will be acceptable to the **Design Professional** if, according to the **Design Professional**, it provides an orderly progression of the Work to completion within any specified time frame, but such acceptance will neither impose on the **Design Professional** responsibility for the sequencing, scheduling, or progress of the Work nor interfere with or relieve the **Contractor** from the **Contractor's** full

responsibility therefore. The **Contractor's** schedule of Submittals must be acceptable to the **Design Professional** in providing a workable arrangement for reviewing and processing the required Submittals. The **Contractor's** schedule of values must be acceptable to the **Design Professional** as to form and substance.

5.15.4. Sepia and Copies. After the **Design Professional** has approved the schedule, the **Contractor** shall submit to the **Design Professional** one (1) sepia and four (4) copies bearing the **Contractor's** stamp of approval as a representation to the **City** that the **Contractor** has determined or verified all data on that progress schedule and that the **Contractor**, the Subcontractors and Suppliers have reviewed and coordinated the sequences in that progress schedule with the requirements of the Work.

5.15.5. Adjustment of Schedule. The **Contractor** shall adhere to the established progress schedule which may be adjusted from time to time as follows: the **Contractor** shall submit to the **Design Professional** for acceptance proposed adjustments in the progress schedule that will not change the Contract Time. Such adjustments will conform generally to the progress schedule then in effect and will comply with any provisions of the requirements applicable thereto.

5.15.6. During Construction. The **Contractor** shall submit monthly progress schedules to the **Design Professional**. The schedules shall stay current with the **Contractor's** approach to the Work remaining.

5.15.7. Schedule of Submittals. The **Contractor** shall prepare and keep current, for the **Design Professional's** approval, a schedule of Submittals that is coordinated with the **Contractor's** construction schedule and allows the **Design Professional** reasonable time to review Submittals.

5.16. Project Coordination.

5.16.1. In General. The **Contractor** shall be responsible for the proper coordination of the Work of all of the trades.

5.16.2. Coordination with Subcontractors. The **Contractor** shall coordinate the work of each Subcontractor with the Work of every other Subcontractor whose Work affects the other.

5.16.3. Coordination with the City's Own Forces or Separate Contractors. The **Contractor** shall coordinate its operations with those of the **City's** own forces or separate contractors. The **Contractor** shall provide the **City's** own forces and separate contractors a reasonable opportunity for the handling, unloading and storage of their materials and equipment and execution of their work. The **Contractor** shall connect and coordinate its Work with theirs.

5.16.4. Coordination with Utility Companies. The **Contractor** shall coordinate its operations with all the appropriate utility companies to assure that the utilities required on the Project are available and functioning properly pursuant to the requirements of the Contract

Documents.

5.17. Project Photographs.

5.17.1. In General. The **Contractor** shall take, at its own expense, interior and exterior photographs at the site, from different vantages as directed by the **Design Professional** or the **City**, before beginning any Work and thereafter, at a minimum, on the first work day of each month until final completion of the Work, including final Site photos. Photos shall be taken of any Work that will be buried or concealed while the Work is still exposed. The photographs shall be taken by a skilled commercial photographer. The number of photographs required shall be at the discretion of the **City** or the **Design Professional**. One aerial photo shall be required a) prior to commencement of the work and b) at the completion of the work. See Section 01320 – Construction Progress Documentation.

5.17.2. Prints and Digital Media. Within fourteen (14) days after the photographs have been taken, the **Contractor** shall cause prints to be made and delivered to the **City** and the **Design Professional**. All photographs shall be 8" x 10". Each print shall state the date of the photograph, the name of the Project, the description of the view and the name and address of the photographer. The **City** shall receive one glossy print of each photo as well as all prints in digital form on compact disc. The **Design Professional** shall receive one glossy print.

5.17.3. Failure to Comply. Should the **Contractor** fail to adhere to any requirement set forth in the previous two paragraphs, the **City** may have the photographs taken at the **Contractor's** expense or receive a set-off against the **Contractor's** next application for payment.

5.18. Record Documents and Samples at the Site.

5.18.1 The **Contractor** shall maintain in a safe place at the site one record copy of all Plans, Specifications, Modifications, Change Orders, **Construction Change** Directives, Field Orders and written interpretations and clarifications in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to the **Design Professional** for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered by the **Contractor** to the **Design Professional** for the **City**.

5.19. Submittals.

5.19.1. Purpose. The purpose of Submittals is to demonstrate for those portions of the Work for which Submittals are required the way the **Contractor** proposes to conform to the information given and the design concept expressed in the Contract Documents.

5.19.2. Submittal Procedure. Within ten (10) days from the Notice to Proceed, the **Contractor** shall submit to the **Design Professional** a completed Submittals schedule. The **Contractor** shall review, approve, and submit to the **Design Professional** Submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the **City** or of separate contractors. Submittals made by the **Contractor** that are not required by the Contract Documents may be returned without action. The schedules shall be updated and resubmitted each month. All Submittals will be identified as

the **Design Professional** may require and in the number specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show the **Design Professional** the materials and equipment that the **Contractor** proposes to provide and to enable the **Design Professional** to review the information for the limited purposes stated below.

5.19.3. Samples. The **Contractor** shall also submit Samples to the **Design Professional** for review and approval in accordance with said accepted schedule of Submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which it is intended and otherwise as the **Design Professional** may require to enable the **Design Professional** to review the Submittal for the limited purposes stated below. The numbers of each Sample to be submitted will be as specified in the Specifications. Unless otherwise specified in the Specifications, three (3) specimens of each Sample shall be submitted.

5.19.3.1. The Samples shall be of sufficient size to permit proper evaluation of material. Where variations in color or other characteristics are to be expected, samples showing the minimum range of variation shall be submitted. Materials exceeding the range of variation of the approved Samples will not be approved on the Work.

5.19.3.2. All costs associated with delivery of Samples will be paid by the **Contractor**.

5.19.4. Contractor's Verifications. Before submitting each Submittal, the **Contractor** shall have determined and verified:

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

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

5.19.4.3. all information relative to the **Contractor's** sole responsibilities in respect of means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto.

5.19.5. Contractor's Representations. By approving and providing Submittals, the **Contractor** thereby represents that the **Contractor** has determined and verified all dimensions, quantities, field dimensions, relations to existing Work, coordination with Work to be installed later, coordination with information on previously accepted Submittals and verification of compliance with all the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the **Contractor**. In reviewing Submittals, the **Design Professional** shall be entitled to rely upon the **Contractor's** representation that such information is correct and accurate.

5.19.6. Coordination. The **Contractor** shall also have reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and the Contract Documents.

5.19.7. Stamp or Specific Written Indication. Each Submittal will bear a stamp or specific written indication that the **Contractor** has satisfied the **Contractor's** obligations under the Contract Documents with respect to the **Contractor's** review and approval of that Submittal.

5.19.8. Written Notice of Variations. At the time of each Submittal, the **Contractor** shall give the **Design Professional** specific written notice of such variations, if any, that the Submittal may have from the requirements of the Contract Documents. Such notice is to be in a written communication separate from the Submittal. Moreover, the **Contractor** shall make a specific notation on each Submittal to the **Design Professional** for review and approval of each such variation.

5.19.9. Review and Approval by the Design Professional. The **Contractor** shall perform no portion of the Work requiring a Submittal until the respective Submittal has been approved by the **Design Professional**. Such Work shall be in accordance with approved Submittals.

5.19.9.1. The **Design Professional** will review and approve Submittals in accordance with the schedule of Submittals accepted by the **Design Professional** as required above. The **Design Professional's** review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated in the Contract Documents. The **Design Professional's** review and approval will not extend to means, method, technique, sequences, or procedures of construction (except where a particular means, method, technique, sequences or procedures of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

5.19.10. Deviations. The **Contractor** shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the **Design Professional's** approval of Submittals unless the **Contractor** has specifically informed the **Design Professional** in writing of such deviation at the time of Submittal and the **Design Professional** has given written approval to the specific deviation. The **Contractor** shall not be relieved of responsibility for errors or omissions in Submittals by the **Design Professional's** approval thereof.

5.19.11. Revisions. The **Contractor** shall make corrections required by the **Design Professional** and shall return the required number of corrected copies of Submittals and submit as required new Submittals for review and approval. The **Contractor** shall direct specific attention, in writing or on resubmitted Submittals, to revisions other than those requested by the **Design Professional** on previous Submittals. Unless such written notice has been given,

the **Design Professional's** approval of a resubmitted Submittal shall not constitute approval of any changes not requested on the prior Submittal.

5.19.12. Related Work. Where a Submittal is required by the Contract Documents or the schedule of Submittals accepted by the **Design Professional**, any related Work performed prior to the **Design Professional's** review and approval of the pertinent Submittal will be at the sole expense and responsibility of the **Contractor**.

5.19.13. Informational Submittals. Informational Submittals upon which the **Design Professional** is not expected to take responsive action may be so identified in the Contract Documents.

5.19.14. Certification. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the **City** shall be entitled to rely upon such certifications, and neither the **City** nor the **Design Professional** shall be expected to make any independent examination with respect thereto.

5.20. Continuing the Work.

5.20.1. The **Contractor** shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the **City**. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as otherwise provided herein or as the **City** and the **Contractor** may agree in writing.

5.21. Use of Site; Access to Work.

5.21.1. The right of possession of the premises and the improvements made thereon by the **Contractor** shall remain at all times in the **City**. The **Contractor's** right to entry and use thereof arises solely from the permission granted by the **City** under the Contract Documents. The **Contractor** shall confine the **Contractor's** apparatus, the storage of materials, and the operations of the **Contractor's** workers to limits indicated by law, ordinance, the Contract Documents and permits and/or directions of the **Design Professional** and shall not unreasonably encumber the premises with the **Contractor's** materials. The **City** shall not be liable to the **Contractor**, the Subcontractors, Suppliers, or anyone else with respect to the conditions of the premises, except for a condition caused directly and solely by the negligence of the **City**.

5.21.2. At all times, the **City** and the **Design Professional** shall have access to the Work.

5.22. Protection of Persons and Property.

5.22.1. In General. The **Contractor** shall be responsible for initiating, maintaining, and supervising all health and safety precautions and programs in connection with the performance of the Contract. The **Contractor** is responsible for the implementation of all Federal, State, and local health and safety requirements.

5.22.2. The **Contractor** shall take reasonable precautions for safety of, and shall provide

reasonable protection to prevent damage, injury, or loss to:

5.22.2.1. employees on the site and other persons who may be affected thereby;

5.22.2.2. the Work, materials, and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the **Contractor**, Subcontractors, or Sub-subcontractors;

5.22.2.3. other property at the site or adjacent or in close proximity thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and

5.22.2.4. any other property of the **City**, whether or not forming part of the Work, located at the site or adjacent thereto in areas to which the **Contractor** has access.

5.22.3. Notices and Compliance. The **Contractor** shall give notices and comply in all other respects with applicable laws, ordinances, rules, regulations, codes, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss. The **Contractor** shall notify owners of adjacent and nearby properties of underground facilities and utility owners when prosecution of the Work may affect them and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

5.22.4. Erection and Maintenance of Safeguards. The **Contractor** shall erect and maintain, as required by existing conditions and the terms of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent and nearby sites and utilities.

5.22.5. Hazardous Materials and Equipment. When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the **Contractor** shall exercise utmost care and carry on such activities under the supervision of properly qualified personnel.

5.22.6. Damage to Property. The **Contractor** shall promptly remedy damage and loss to property referred to above. If the damage or loss is due in whole or in part to the **Contractor's** failure to take the precautions required herein, the **Contractor** shall bear the cost, subject to any reimbursement to which the **Contractor** is entitled under property insurance required by the Contract Documents. The **Contractor** shall be fully and solely responsible for all Work and other operations carried out on adjacent properties. The insurance required under Article 8 shall cover such Work or operations, and the **Contractor** shall indemnify and defend the **City**, the **Design Professional**, and the owners of such adjacent or nearby properties from and against all claims, suits, losses, or costs arising out of such Work or operations.

5.22.7. Fire Protection Equipment and Services. The **Contractor** shall provide and maintain in good operating condition suitable and adequate fire protection equipment and services and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the Work or by the local fire chief or fire marshal. The area within the site limits shall be kept orderly and clean and all combustible rubbish shall be promptly removed from the site.

5.22.8. Protection of Excavations, Trenches, etc. The **Contractor** shall at all times protect excavations, trenches, buildings and materials from rain water, ground water, backup or leakage of sewers, drains and other piping, and from water of any other origin and shall remove promptly any accumulation of water. The **Contractor** shall provide and operate all pumps, piping, and other equipment necessary to this end.

5.22.9. Snow and Ice Removal. The **Contractor** shall remove snow and ice that might result in damage or delay.

5.22.10. Safety Representative. The **Contractor** shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

5.22.11. Weather Protection. (*Reference: M.G.L. c. 149, §44F(1).*) The **Contractor** shall install weather protection and furnish adequate heat in the protected area from November 1 through March 31.

5.22.12. Security. The **Contractor** shall provide, within the Contract Sum, a sufficient number of security personnel at the Site at all times when the **Contractor's** personnel are not present, from commencement of the Work until Substantial Completion to assure that the Site, the facility, and the Work, and all materials and equipment stored at the Site are fully and completely protected against loss or damage due to vandalism, theft, or malicious mischief. If the **Contractor** elects, in addition, to use guard dogs for this purpose, each dog shall at all times be accompanied by an adult handler. If the **Contractor** fails to comply with the requirements of this paragraph, then the **City** may provide appropriate security and charge the cost thereof to the **Contractor**. The **City's** provision of such security, or failure to do so, shall not relieve the **Contractor** of its responsibility to pay for loss or damage due to vandalism, theft, or malicious mischief at the Site.

5.22.13. Hazard Communication Programs. The **Contractor** shall be responsible for coordinating any exchange of material safety data sheets or other hazard communications information required to be made available to or exchanged between or among employers at the site in accordance with laws, codes and regulations.

5.22.14. Noise Pollution Control. The **Contractor** shall comply with all applicable provisions of Somerville Municipal Code §9-109.

5.23. Cutting and Patching.

5.23.1. In General. Unless otherwise provided in the Contract Documents, the **Contractor** shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly, including the work of the City or of separate contractors.

5.23.2. Damage to Work of City or of Separate Contractor. The **Contractor** shall not damage or endanger a portion of the Work or fully or partially completed construction of the **City** or separate contractors by cutting, patching, or otherwise altering such construction, or by excavation. The **Contractor** shall not cut or otherwise alter such construction by the **City** or a separate contractor except with prior written consent of the **City** and of such separate contractor; such consent shall not be unreasonably withheld. The **Contractor** shall not unreasonably withhold from the **City** or a separate contractor the **Contractor's** consent to cutting or otherwise altering the Work.

5.23.3. Damage Caused by Contractor. Should the **Contractor** cause damage to the work or property of any separate contractor at the Site, or should any claim arising out of the **Contractor's** performance of Work at the Site be made by any separate contractor against the **Contractor**, the **City**, the **Design Professional**, or any of the **Design Professional's** consultants, the **Contractor** shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. The **Contractor** shall, to the fullest extent permitted by laws and regulations, indemnify and hold harmless the **City**, the **Design Professional**, and the **Design Professional's** consultants from and against all claims, damages, losses and expenses (including, but not limited to, fees of the Design Professional, the Design Professional's consultants, attorneys, and other professionals, and court and arbitration or mediation costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against the **City**, the **Design Professional**, or any of the **Design Professional's** consultants, to the extent based on a claim arising out of the **Contractor's** performance of the Work. Should a separate contractor cause damage to the Work or property of the **Contractor** or should the performance of work by any separate contractor at the site give rise to any other claim, the **Contractor** shall not institute any action, legal or equitable, against the **City**, the **Design Professional**, or any of the **Design Professional's** consultants, or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from the **City**, the **Design Professional**, or any of the **Design Professional's** consultants, on account of any such damage or claim. If the **Contractor** delays at any time in performing or furnishing Work by any act or neglect of a separate contractor and the City and the Contractor are unable to agree as to the extent of any adjustment in the Contract Time attributable thereto, the **Contractor** may make a claim for an extension of time in accordance with Article 16. An extension of the Contract Time shall be the **Contractor's** exclusive remedy with respect to the **City**, the **Design Professional**, and the **Design Professional's** consultants, for any delay, disruption, interference, or hindrance caused by any separate contractor.

5.24. Cleaning Up.

5.24.1. During the progress of the Work, the **Contractor** shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract or other debris. At the completion of the Work, the **Contractor** shall remove from and about the Project all waste materials, rubbish, and debris, and the **Contractor's** tools, construction equipment, machinery, and surplus materials. Surplus materials to be provided to the **City** by specifications shall be stored in a clean, safe and secure area as directed by the **City**. The **Contractor** shall leave the site clean and ready for occupancy by the **City** at Substantial Completion of the Work. Immediately prior to the **Design Professional's** inspection for Substantial Completion, the **Contractor** shall completely clean the premises. Concrete and ceramic surfaces shall be cleaned and washed. Resilient coverings shall be cleaned, waxed and buffed. Woodwork shall be dusted and cleaned. Sash, fixtures and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and all metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the **Contractor** at the **Contractor's** expense. The **Contractor** shall restore to original condition all property not designated for alteration by the Contract Documents.

5.24.2. If the **Contractor** fails to clean up as provided herein, the **City** may do so and charge the cost thereof to the **Contractor**.

5.25. Royalties and Patents.

5.25.1 The **Contractor** shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. To the fullest extent permitted by law, the **Contractor** shall indemnify and hold harmless the **City** and the **Design Professional** from and against all claims, costs, losses, and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the work or resulting from the incorporation in the work of any invention, design, process, product, or device not specified in the Contract Documents.

5.26. Contractor's Obligation to Perform.

5.26.1. The **Contractor's** obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of the **Contractor's** obligation to perform the Work in accordance with the Contract Documents:

5.26.1.1. observations by the **Design Professional**;

5.26.1.2. recommendation of any progress or final payment by the **Design Professional**;

5.26.1.3. the issuance of a certificate of Substantial Completion or any payment by the **City** to the **Contractor** under the Contract Documents;

5.26.1.4. use or occupancy of the Work, Project, or Site, or any part thereof, by the **City**;

5.26.1.5. any acceptance by the **City** or any failure to do so;

5.26.1.6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptance by the **Design Professional**;

5.26.1.7. any inspection, test, or approval by others; or

5.26.1.8. any correction of defective Work by the **City**.

5.27. Indemnification; and Covenant Not To Sue.

5.27.1. To the fullest extent permitted by law, the **Contractor** shall assume the defense of, indemnify and hold harmless the **City**, the **Design Professional**, the **Design Professional's** consultants, and agents and employees of any of them, from and against claims, damages, losses, and expenses, including, but not limited, to attorneys' fee, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting there from, caused in whole or in part by alleged negligent acts or omissions of the **Contractor**, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this paragraph.

5.27.2. In claims against any person or entity indemnified under the foregoing paragraph by an employee of the **Contractor**, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under the foregoing paragraph shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for the **Contractor** or a Subcontractor under Workers' Compensation laws, disability benefit acts or other employee benefit acts.

5.27.3. The obligations of the **Contractor** in this Article shall not extend to the liability of the **Design Professional**, the **Design Professional's** consultants, and agents or employees of any of them arising out of (1) the preparation of maps, Plans, opinions, reports, surveys, Change Orders, designs, or Specifications, or (2) directions or instructions given by the **Design Professional**, the **Design Professional's** consultants and agents or employees of any of them, provided such instructions or directions are the primary cause of the injury or damage.

5.27.4. The **Contractor**, or any successor, assign, or subrogee of the **Contractor** agrees not to bring any civil suit, action, or other proceeding in law, equity or arbitration against the

Design Professional, or the officers, employees, agents, or consultants of the **Design Professional**, for the enforcement of any action which the **Contractor** may have arising out of or in any manner connected with the Work. The **Contractor** shall assure that this covenant not to sue is contained in all subcontracts and sub-subcontracts of every tier and shall assure its enforcement. The **Design Professional**, its officers, employees, agents, and consultants are intended third-party beneficiaries of this covenant not to sue, and are entitled to enforce this covenant in law or equity.

5.28. Survival of Obligations.

5.28.1 All representations, indemnifications, warranties, and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Contract.

ARTICLE 6: SUBCONTRACTORS

6.1 Use of Subcontractors.

6.1.1 The **Contractor** shall use the Subcontractors named in the **Contractor's Bid**.

6.2 Substitution of Subcontractors.

6.2.1 The **Contractor** shall not substitute another Subcontractor therefore without notice to the **City** and the **City's** prior written consent of such substitution.

6.3 Names of Subcontractors.

6.3.1 Upon execution of the Contract with the **City**, the **Contractor** shall provide in writing to the **City**, through the **Design Professional**, the names, addresses, telephone numbers, and fax numbers of all persons proposed for each principal portion of the Work.

6.4. Objections to Subcontractors.

6.4.1 The **Contractor** shall not use any Subcontractor against whom the **City** has a reasonable objection. The **Contractor** shall not be required to contract with any person or entity against whom it has a reasonable objection.

6.5. Form of the Subcontract.

6.5.1 All Work performed by a Subcontractor shall be through an appropriate subcontract. The form of subcontract shall be submitted to the **City's Law Department** for its approval, which shall not be unreasonably withheld or delayed.

6.6. Content of the Subcontract.

6.6.1. In addition to all statutorily mandated provisions and provisions required elsewhere in the Contract Documents, each subcontract shall expressly provide that:

6.6.1.1. Each subcontract agreement for a portion of the Work is assigned by the **Contractor** to the **City** provided that:

6.6.1.1.1. the assignment is effective only after termination of the

Contract by the **City** or the **Contractor** and only for those subcontract agreements which the **City** accepts by notifying the Subcontractor in writing; and

6.6.1.1.2. the assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

6.6.1.2. Each Subcontractor is bound by the requirements of the Contract Documents for the express benefit of the **City**.

6.6.1.3. Each Subcontractor shall assume toward the **Contractor** all the obligations that the **Contractor** assumes toward the **City** and the **Design Professional**, unless otherwise provided by law.

ARTICLE 7: PERFORMANCE AND PAYMENT BONDS

7.1. Form of Bonds.

7.1.1 The performance and labor and material or payment bonds shall be in the form required by the **City**, copies of which are included in the Project Manual. The **City** reserves the right to reject any bond that does not conform to the **City's** requirements.

7.2. Furnished by the Contractor. *(Reference: M.G.L. c. 30, §39M(c);, M.G.L. c. 149, §29).*

7.2.1 The **Contractor** shall furnish a performance bond and a labor and materials or payment bond, each with a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the **City** and each in the sum of the Contract Sum, the premiums for which are to be paid by the **Contractor** and are included in the Contract Sum. The bonds shall remain in effect until final payment is made. The sum of the performance bond shall increase each time the Contract Sum is increased as a result of a Change Order.

7.3. Submission to the City.

7.3.1 The **Contractor** must submit the performance and a labor and materials or payment bonds to the **City** upon the **Contractor's** execution of the Agreement.

ARTICLE 8: INSURANCE REQUIREMENTS

8.1 Insurance Certificates.

8.1.1 Prior to starting work on this project, the contractor shall deposit with the **City**, certificates from insurers clearly stating that the required insurance policies have been issued to the **Contractor** and will remain in effect during the time period required to complete this contract. ACCORD forms will not be accepted. The certificates must be in a form satisfactory to the **City**. The insurance shall include all major divisions of coverage, and shall be on a comprehensive general basis including: Premises and Operations (including X-C-U), Owners and Contractors Protective, Products and Completed Operations, Owned, Non-owned or Hired and/or Leased Motor Vehicles. Such insurance shall be written for not less than any limits of liability, required by law or the following limits, whichever are greater.

8.2 Minimum Coverages. The **Contractor** shall possess and maintain throughout the contract period/project, insurance in the kinds and amounts as provided in Appendix D. The **Contractor** may purchase and maintain excess liability insurance in the in the umbrella form in order to satisfy the limits of liability required for the insurance to be purchased and maintained in accordance with the required requirements set forth above (in addition to the umbrella limits required). Evidence of such excess liability shall be delivered to the **City** in the form of a certificate and the certificate indicating the policy numbers and limits of liability of all underlying insurance.

8.3 Additional Insured. The **City** shall be named as an additional insured on each certificate, and the certificate must have the endorsement of the insurance agency.

8.4 Notice. Each certificate shall contain a notation that the insurer will give 30 days notice to the **City** prior to cancellation, change or non-renewal of policy.

8.5 Carrier Rating. Insurance carriers MUST have an A.M. Best rating of "A" or better.

8.6 Material Breach. Failure of the contractor to provide and continue in force such insurance shall be deemed a material breach of contract and shall operate as immediate termination thereof.

ARTICLE 9: TESTS AND INSPECTIONS

9.1. Access.

9.1.1 The **City**, the **Design Professional**, and all other persons designated by the **City** shall have access to the Work at reasonable times for observing, inspecting, and testing. The **Contractor** shall provide them with proper and safe conditions for such access and advise them of the **Contractor's** site safety procedures and programs so that they may comply therewith as applicable.

9.2. Tests and Inspections.

9.2.1. The **Contractor** shall give the **Design Professional** timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

9.2.2. Unless otherwise provided, the **Contractor** shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the **City**, or with the appropriate public authority and shall bear all related costs of tests, inspections, and approvals. If the laws or regulations of any public body having jurisdiction require any Work or part thereof specifically to be inspected, tested, or approved by an employee or other representative of such public body, the **Contractor** shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith and furnish the **Design Professional** with the required certificates of inspection, testing, or approval.

9.2.3. The **Contractor** shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for the **Design Professional's** acceptance of materials or equipment to be incorporated into the Work, or of materials, mix designs, or equipment submitted for approval prior to the **Contractor's** purchase thereof for incorporation into the Work.

9.2.4. If any Work that is to be inspected, tested, or approved is covered by the **Contractor**, Subcontractor, or Sub-subcontractor without the prior written consent of the **Design Professional**, it must be uncovered for observation, inspection, testing, or approval, if requested by the **Design Professional**. The **Contractor** must recover the Work at its own expense.

9.2.5. The **Contractor** shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the **Design Professional** in the **Design Professional's** administration of the Contract or by tests, inspections, or approvals required or performed by persons other than the **Contractor**.

ARTICLE 10

UNCOVERING AND CORRECTING WORK

10.1. Uncovering Work.

10.1.1. If a portion of the Work is covered contrary to the **Design Professional's** request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the **Design Professional**, be uncovered for the **Design Professional's** observation and be replaced, both at the **Contractor's** expense and without change in the Contract Time.

10.1.2. If a portion of the Work has been covered which the **Design Professional** has not specifically requested to observe prior to its being covered, the **Design Professional** may request to see such Work, and it shall be uncovered by the **Contractor**. If it is found that such Work is in accordance with the Contract Documents, costs of uncovering and replacing shall, by appropriate Change Order, be charged to the **City**. If it is found that such Work is defective or not in accordance with the Contract Documents, the **Contractor** shall pay all claims, costs, losses, and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection, and testing and of satisfactory replacement or reconstruction (including, but not limited to, all costs of repair or replacement of work of others); and the **City** shall be entitled to an appropriate decrease in the Contract Sum. The **City** may take such decrease by reducing the then current application for payment accordingly or subsequent applications, if necessary, until the decrease is paid in full.

10.2. Correcting Work.

10.2.1. The **Contractor** shall promptly correct Work rejected by the **Design Professional** or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed. The **Contractor** shall bear all costs of correcting such rejected Work including additional testing and inspections and compensation for the **Design Professional's** services and expenses made necessary thereby and any cost, loss, or damages to the **City** resulting from such failure or

defect.

10.2.2. If, within one (1) year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established in Article 15, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the **City** to do so, unless the **City** has previously given the **Contractor** a written acceptance of such condition. This period of one (1) year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation to correct under this paragraph shall survive acceptance of the Work under the Contract and termination of the Contract. The **City** shall give such notice promptly after discovery of the condition.

10.2.3. The **Contractor** shall correct, remove, or replace portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the **Contractor** nor accepted by the **City**.

10.2.4. If the **Contractor** fails within a reasonable time to correct nonconforming Work, or to remove and replace rejected Work, or fails to perform the Work in accordance with the Contract Documents, the **City** may correct it in accordance with the provisions herein. If the **Contractor** does not proceed with correction, removal, or replacement of such nonconforming Work within seven (7) days from the date of written notice from the **Design Professional**, the **City** may correct it and store any salvageable materials or equipment at the **Contractor's** expense. If the **Contractor** does not pay costs of any such removal and storage within ten (10) days after written notice, the **City** may upon ten (10) additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the **Contractor**, including compensation for the **Design Professional's** services and expenses made necessary thereby. If such proceeds of sale do not cover all the costs that the **Contractor** should have born, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the **Contractor** are not sufficient to cover such amount, the **Contractor** shall pay the difference to the **City**.

10.2.5. The **Contractor** shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the **City** or separate contractors caused by the **Contractor's** correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

10.2.6. Nothing contained in this paragraph shall be construed to establish a period of limitation with respect to other obligations that the **Contractor** might have under the Contract Documents. Establishment of the time period of one (1) year as described in the above paragraph related only to the specific obligation of the **Contractor** to correct the Work and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced nor to the time within which proceedings may be commenced to

establish the **Contractor's** liability with respect to the **Contractor's** obligations other than specifically to correct the Work.

10.3. Acceptance of Nonconforming Work.

10.3.1 If, instead of requiring correction or removal and replacement of defective or nonconforming Work, the **City** prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the **City** may do so instead of requiring its removal and correction, in which case the **Contractor** shall pay all claims, costs, losses, and damages attributable to the **City's** evaluation of and determination to accept such defective or nonconforming Work. The Contract Sum will be reduced as appropriate. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 11: CHANGES IN THE WORK

11.1. In General.

11.1.1. The Contract Sum constitutes the total compensation (subject to authorized adjustments) payable to the **Contractor** for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the **Contractor** shall be at the **Contractor's** expense without any change in the Contract Sum.

11.1.2. Without invalidating the Contract and without notice to any surety, the **City** may, at any time or from time to time, order additions to, deletions from, or revisions in the Work. Such additions, deletions, or revisions will be authorized by a Change Order, a Modification or a **Construction Change Directive**. Upon receipt of any such document, the **Contractor** shall promptly proceed with the Work involved that will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

11.1.3. The **Contractor** shall not be entitled to an increase in the Contract Sum or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified, or supplemented, except as otherwise provided herein.

11.2. Change Orders.

11.2.1. (*Reference: M.G.L. c. 30, §39I*). The **Contractor** shall perform all the Work required by this Contract in conformity with the Plans and Specifications contained herein. No willful and substantial deviation from said Plans and Specifications shall be made unless authorized in writing by the **City** and the **Design Professional** in charge of the Work who is duly authorized by the **City** to approve such deviations. In order to avoid delays in the prosecution of the Work required by such Contract, such deviation from the Plans or Specifications may be authorized by a written order of the **City** or the **Design Professional** so authorized to approve such deviation. Within thirty (30) days thereafter, such written order shall be confirmed by a certificate of the **City** stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures, or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefore; (2) that the specified deviation does not materially injure the Project as a whole; (3) that either the work

substituted for the Work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the **City** and the **Contractor** and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the **City**.

11.3. Construction Change Directive.

11.3.1. A **Construction Change** Directive shall be used in the absence of total agreement on the terms of a Change Order.

11.3.2. Upon request of the **City** or the **Design Professional**, the **Contractor** shall without cost to the **City** submit to the **Design Professional** in such form as the **Design Professional** may require, an accurate written estimate of the cost of any proposed extra work or change. The estimate shall indicate the quantity and unit cost of each item of materials, and the number of hours of work and hourly rate for each class of labor, as well as the description and amounts of all other costs chargeable under the terms of this Article. Unit labor costs for the installation of each item of materials shall be shown if required by the **Design Professional**. If required by the **Design Professional**, in order to establish the exact cost of new Work added or of previously required Work omitted, the **Contractor** shall obtain and furnish to the **Design Professional** bona fide proposals from recognized Suppliers for furnishing any material included in such Work. Such estimates shall be furnished promptly so as to occasion no delay in the Work, and shall be furnished at the **Contractor's** expense.

11.3.3. The **Contractor** shall state in the estimate any extension of time required for the completion of the Work if the change or extra Work is ordered. The **Contractor** shall document, through a critical path analysis, or some other clearly delineated explanation, how the proposed change affects other aspects of the Work, and why it would require an extension of time. The **Contractor** shall promptly revise and resubmit such estimate if the **Design Professional** determines that it is not in compliance with the requirements of this Article, or that it contains errors of fact or mathematical errors.

11.3.4. If the **Construction Change** Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods, as selected by the **City**, selection of which does not require the consent of the **Contractor**:

11.3.4.1. by unit prices stated in the Contract Documents or otherwise mutually agreed upon; or

11.3.4.2. by Cost and Percentages estimated by the **Contractor** as provided herein and accepted by the **City**, whereupon the **Contractor's** estimate shall become a fixed price which shall not be changed by any variation in the actual cost of executing the Work covered by the change; or

11.3.4.3. by actual Cost determined after the Work covered by the change is completed, plus Percentage; or

11.3.4.4. by submission to arbitration or a court, which shall determine the fair

value of the Work covered by the change.

11.3.5. “Cost” shall mean the estimated or actual net increase or decrease in cost to the **Contractor**, Subcontractor, or Sub-subcontractor for performing the Work covered by the change, including actual payments for materials, equipment rentals, expendable items, wages, and associated benefits to the workers and to supervisors employed full time at the Site, insurance, bonds, and other provable direct costs, but not including any administrative, accounting or expediting costs, or other indirect or overhead costs, or any wages or benefits of supervisory personnel not assigned full time to the Site, or any amount for profit or fee to the **Contractor**, Subcontractor, or Sub-subcontractor.

11.3.6. “Percentage” shall mean an allowance to be added to or subtracted from the Cost in lieu of overhead and profit and of any other expense that is not included in the Cost of the Work covered by the change, as defined above. Percentage for a Sub-subcontractor shall be 8% of any net increase or decrease of Cost of any Work performed by the Sub-subcontractor’s own forces plus 4% of any net increase or decrease in Cost of any Work performed for the Sub-subcontractor by lower tier Sub-subcontractors. Percentage for a Subcontractor shall be 12% of any net increase or decrease of Cost of any Work performed by the Subcontractor’s own forces plus 4% of the Cost of Work performed by Sub-subcontractors. Percentage for the **Contractor** shall be 15% of any net increase or decrease of Cost of any Work performed by the **Contractor's** own forces plus 5% of any net increase or decrease in the Cost for all other Work covered by the change. When the **Contractor** is also performing Work as a Subcontractor or Sub-subcontractor, the **Contractor** shall only be entitled to a total of no more than 15% of any net increase or decrease of Cost of any Work.

11.3.7. When in the reasonable judgment of the **Design Professional** a series of **Construction Change** Directives or Change Orders effect a single change, Percentage shall be calculated on the cumulative net increase or decrease in Cost, if any.

11.3.8. If unit prices are stated in the Contract Documents or are subsequently agreed upon, and if quantities originally contemplated are so changed in a Proposed Change Order or **Construction Change** Directive that the application of such unit prices to quantities of Work proposed will cause substantial inequity to the **City** or the **Contractor**, the applicable unit prices shall be equitably adjusted.

11.3.9. If the **City** elects to determine the Cost of the Work as provided in method (11.3.4.1) using unit prices stated in the Contract Documents or subsequently agreed upon, the unit prices shall be subject to the prior paragraph. Notwithstanding the inclusion of unit prices in the Contract Documents, it shall be the **City's** option to require the Cost of any given change to be determined by one of the other methods stated in 11.3.4. If the **City** elected to determine the Cost of the change by unit prices and the nature of the work is such that its extent cannot readily be measured after the completion of such work or any subsequent Work, the **Contractor** shall keep daily records, available at all times to the **Design Professional** for inspection, of the actual quantities of such Work put in place, and delivery receipts or other adequate evidence, acceptable to the **Design Professional**, indicating the quantities of materials delivered to the Site

for use in such unit price Work, and distinguishing such from other similar material delivered for use in Work include in the base Contract Sum. If so required by the **Design Professional**, materials for use in unit price Work shall be stored apart from all other materials on the Project.

11.3.10. If the **City** elects to determine the Cost of the Work as provided in methods 11.3.4.3. or 11.3.4.4. or if the method of determining the Cost has not been established before the Work is begun, the **Contractor** shall keep detailed daily records of labor and material costs applicable to the Work.

11.3.11. Upon receipt of a **Construction Change Directive**, the **Contractor** shall promptly proceed with the change in the Work involved and advise the **Design Professional** in writing of the **Contractor's** agreement or disagreement with the method, if any, provided in the **Construction Change Directive** for determining the proposed adjustment in the Contract Time.

11.3.12. A **Construction Change Directive** signed by the **Contractor** indicates the agreement of the **Contractor** therewith, including adjustment in the Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

11.3.13. If the **Design Professional** and the **Contractor** do not agree with the adjustment in the Contract Time or the method for determining it, the adjustment or the method shall be referred to the **Design Professional** for determination.

11.4. Minor Changes in the Work.

11.4.1. The **Design Professional** has the authority to order minor changes in the Work. "Minor changes" as used in this paragraph mean changes which are so insignificant as to not affect the Contract Sum or the Contract Time and which are not inconsistent with the intent of the Contract Documents. Any minor change shall be committed to a written order which shall be binding on both the **City** and the **Contractor** and which shall be promptly carried out by the **Contractor**.

11.5. Certificate of Appropriations. (*Reference: M.G.L. c. 44, §31C;*). This Contract shall not be deemed to have been made until the **City's** auditor has certified thereon that an appropriation in the amount of this Contract is available therefor and that an officer or agent of the **City** has been authorized to execute said Contract and approve all requisitions and change orders. No order to the **Contractor** for a change in or addition to the Work, whether in the form of a drawing, plan, detail or any other written instruction, unless it is an order which the **Contractor** is willing to perform without any increase to the Contract price, shall be deemed to be given until the auditor has certified thereon that an appropriation in the amount of such order is available therefore; but such certificate shall not be construed as an admission by the **City** of its liability to pay for such work. The certificate of the auditor that an appropriation in the amount of this Contract or in the amount of such order is available shall bar any defense by the **City** on the grounds of insufficient appropriation.

ARTICLE 12: CHANGE IN THE CONTRACT TIME

12.1. Date of Commencement.

12.1.1 The date of commencement of the Work is the date established in the Notice to Proceed. The date shall not be postponed by the failure to act of the **Contractor** or persons or entities for whom the **Contractor** is responsible.

12.2. Progress and Completion.

12.2.1. Time is of the essence; all time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the **Contractor** confirms that the Contract Time is a reasonable period for performing the Work.

12.2.2. The **Contractor** shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

12.2.3. Within five (5) working days of award of contract, the **Contractor** shall submit to the **Design Professional** a progress schedule showing for each class of Work included in the schedule of values, the percentage of completion to be obtained and the total dollar value of Work to be completed as of the first of each month until Substantial Completion. All calculations shall be on the basis of Work in place, but may include, at the **Design Professional's** discretion, the value of materials delivered but not in place.

12.2.4. The progress schedule shall be based on an orderly progression of the Work, allowing adequate time for each operation (including adequate time for submission and review of submittals), and leading to a reasonable certainty of Substantial Completion by the date established in the Agreement. The progress schedule will be reviewed by the **Design Professional** for compliance with the requirements of this Article and will be accepted by the **Design Professional** or returned to the **Contractor** for revision and resubmittal. Unless specifically required by law, no payment under this Contract shall be due until the progress schedule has been approved by the **Design Professional**. The **Design Professional's** review of the progress schedule shall not impose any duty on the **Design Professional** or the **City** with respect to the timing, planning, scheduling, or execution of the Work. In particular, if the **Contractor** proposes a progress schedule indicating a date of Substantial Completion which is earlier than the Contract Time, the **Contractor** shall not be entitled to additional payment or compensation of any kind if, for any reason, the full Contract Time is required to achieve Substantial Completion of the Work.

12.2.5. If in any Application for Payment, the total value of the completed Work in place, as certified by the **Design Professional**, is less than 90% of the total value of the Work in place estimated in the progress schedule, the **City** may, at the **City's** option, require the **Contractor** to accelerate the progress of the Work without cost to the **City** by increasing the workforce or hours of Work or by other reasonable means approved by the **Design Professional**.

12.2.6. If each of three successive applications, as certified by the **Design Professional**, indicate that the actual Work completed is less than 90% of the values estimated in the progress schedule to be completed by the respective dates, the **City** may at the **City's** option, treat the

Contractor's delinquency as a default justifying the action permitted under Article 18.

12.2.7. If the **Design Professional** has determined that the **Contractor** should be permitted to extend the time for completion as provided below, the calendar dates in the progress schedule shall be adjusted accordingly to retain their same relationship to the adjusted date of Substantial Completion, and the dollar value of the Work to be completed as of the first of each month shall be adjusted pro rata.

12.2.8. If the **Contractor** fails to submit any application for payment in any month, the **Design Professional** shall, for the purpose of this evaluation of progress, certify separately to the actual value of the Work in place completed as of the first of the month to the best of the **Design Professional's** knowledge.

12.2.9. Nothing herein shall limit the **City's** right to liquidated or other damages for delays by the **Contractor** or to any other remedy which the **City** may be entitled or may possess under other provisions of the Contract Documents or by law.

12.3. Delays and Extensions of Time.

12.3.1. If the **Contractor** is delayed at any time in the progress of the Work by an act or neglect of the **City** or the **Design Professional**, or of an employee of either, or of a separate contractor employed by the **City**, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes (except weather) beyond the **Contractor's** control, or by delay authorized by the **City**, or by other causes which the **Design Professional** determines may justify delay, then the Contract Time shall be extended by Change Order or **Construction Change Directive** for such reasonable time as the **Design Professional** may determine.

12.3.2. Claims relating to time shall be made in accordance with applicable provisions of Article 16.

12.3.3. No claim for extension of time shall be allowed on account of failure of the **Design Professional** to furnish Plans, Specifications or instructions or to return Shop Drawings or Samples until fifteen (15) days after receipt by the **Design Professional** by registered or certified mail of written demand for such instructions, Plans, Specifications, or Samples, and then not unless such claim is reasonable.

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

12.3.5. The **Contractor** hereby agrees that the **Contractor** shall have no claim for damages of any kind against the **City** or the **Design Professional** on account of any delay in the commencement of the Work and/or any hindrance, delay, or suspension of any portion of the

Work, whether such delay is caused by the **City**, the **Design Professional**, or otherwise, except as and to the extent expressly provided under M.G.L. c. 30, §39O, in the case of written orders by the **City**. The **Contractor** acknowledges that the **Contractor's** sole remedy for any such delay and/or suspension will be an extension of time as provided in this Article.

12.3.6. (*Reference: M.G.L. c. 30, §39O;*). (a) The **City** may order the **Contractor** in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as it may determine to be appropriate for the convenience of the **City**, provided however that if there is a suspension, delay, or interruption for fifteen (15) days or more due to a failure of the **City** to act within the time specified in this Contract, the **City** shall make an adjustment in the Contract prices for any increase in the cost of performance of this Contract under this provision for any suspension, delay, interruption, or failure to act to the extent that such is due to any cause for which this Contract provides for an equitable adjustment of the Contract price under any other Contract provisions.

(b) The **Contractor** must submit the amount of a claim under provision (a) to the **City** in writing as soon as practicable after the end of the suspension, delay, interruption, or failure to act and, in any event, not later than the date of final payment under this Contract and, except for costs due to a suspension order, the **City** shall not approve any costs in the claim incurred more than twenty (20) days before the **Contractor** notified the **City** in writing of the act or a failure to act involved in the Claim.

In the event a suspension, delay, interruption, or failure to act of the **City** increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the **Contractor** for payment for an increase in the cost of its performance as provisions (a) and (b) give the **Contractor** against the **City**, but nothing in provisions (a) and (b) shall in any way change, modify, or alter any other rights which the **Contractor** or the Subcontractor may have against each other.

12.4. Liquidated Damages.

12.4.1. If the **Contractor** shall fail to achieve Substantial Completion within the Contract Time, it shall be liable to pay the **City** the daily amount specified in the Agreement, not as a penalty, but as a fixed and agreed upon damages for breach of contract. The said amount is fixed and agreed upon because of the difficulty of ascertaining the **City's** actual damages. It is mutually understood that the said amount is a reasonable approximation or estimate thereof as of the date of the Agreement. The **City** may elect to withhold said amount from periodic or final payments due to the **Contractor**, in addition to retainage and other back charges.

12.5. Changes in the Contract Time.

12.5.1. In Writing. The Contract Time may only be changed by a Change Order or a Modification. Any claim for an adjustment of the Contract Time shall be based on a written notice delivered to the party making the claim to the other party and to the **Design Professional** promptly (but in no event later than seven (7) days) after the occurrence of the event giving rise

to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within thirty (30) days after such occurrence and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by the **Design Professional** in accordance with Article 16. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph.

12.5.2. Early Completion. The Contract Time shall not be changed due to a delay in the **Contractor's** early completion date.

ARTICLE 13: PAYMENTS

13.1. Schedule of Values.

13.1.1. The **Contractor** shall submit to the **Design Professional** a schedule of values which shall subdivide the Work into its component parts and shall include quantities, direct craft labor worker hours, labor cost and material/equipment cost. Labor cost shall include an appropriate amount of construction equipment costs, supplemental costs, administrative expenses, contingencies, and profit. The **Contractor** shall prepare the schedule of values in such form and supported by such data to substantiate its accuracy as the **Design Professional** may require and shall be revised if later found by the **Design Professional** to be inaccurate. This schedule, unless objected to by the **Design Professional**, shall be used as a basis for reviewing the **Contractor's** applications for payment.

13.2. Content and Submission of Applications for Payment.

13.2.1. At least ten (10) days before the date established for each progress payment, the **Contractor** shall submit to the **Design Professional** six (6) copies of an itemized application for payment for Work completed in accordance with the schedule of values. Such application shall be in a form or format established or approved by the **Design Professional** and shall be supported by documentation substantiating the **Contractor's** right to payment.

13.2.2. When **Construction Change** Directives have set forth an adjustment to the Contract Sum but have not yet been included in Change Orders, the value established by the **City** may be included in the application.

13.2.3. Applications covering Work of Subcontractors or Suppliers shall not include requests for payments of amounts the **Contractor** does not intend to pay to a Subcontractor or Supplier because of a dispute or other reason. The **Contractor** shall not be paid for any Work performed by a Subcontractor unless and until the **City** receives for that Subcontractor a certificate of insurance that conforms to the requirements of the Contract Documents .

13.2.4. Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the Site for subsequent incorporation in the Work. If approved in advance by the **City**, payment may similarly be made for materials and equipment suitably stored off the Site at a location agreed upon in writing. Payment for materials and equipment stored on or off the Site shall be conditioned upon the

application for payment being accompanied by a bill of sale, an invoice, or other documentation warranting that the **City** has received the materials and equipment free and clear of all liens, claims, security interests, or encumbrances, hereinafter collectively referred to as “liens,” and evidence that the materials and equipment are covered by appropriate insurance and other arrangements to protect the **City’s** interest therein.

13.2.5. Each application for payment or periodic estimate requesting payment shall be accompanied by, at the **City's** option, a certificate from each Subcontractor stating that the Subcontractor has been paid all amounts due the Subcontractor on the basis of the previous periodic payment to the **Contractor**, or else stating the amount not so paid and the reason for the discrepancy. In the event of any such discrepancy, the **Contractor** shall furnish the **Contractor's** own written explanation to the **City** through the **Design Professional**. Such waiver or certificate shall be in a form acceptable to the **City**.

13.3. False Applications for Payment.

13.3.1. (*Reference:* M.G.L. c. 266, §§67B). Any person who makes or presents to any claim upon or against any employee or department of the **City**, knowing such claim to be false, fictitious, or fraudulent shall be punished by a fine or not ore than ten thousand dollars (\$10,000) or by imprisonment in the state prison for not more than five (5) years, or in the house of correction for not more than two and one-half years, or both.

13.4. Review of Applications for Payment.

13.4.1. The **Design Professional** shall review each application for payment and will reject any application that (1) is not accompanied by the required documentation or (2) contains errors, mathematical or otherwise.

13.4.2. Within five (5) business days after receipt of an application for payment, the **Design Professional** will either (1) return the application to the **Contractor** with a written explanation as to why it was rejected or (2) issue to the **City** a certificate for payment, with a copy to the **Contractor**, for such amount as the **Design Professional** determines is properly due. In the event an application is returned to the **Contractor**, the date of receipt of the application shall be the date of receipt of the corrected application.

13.4.3. The **Design Professional** or the **City** may make changes to any application submitted by the **Contractor**.

13.4.4. By recommending any payment, the **Design Professional** will not thereby be deemed to have represented that: (1) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to the **Design Professional** in the Contract Documents or (2) that there may not be other matters or issues between the parties that might entitle the **Contractor** to be paid additionally by the **City** or entitle the **City** to withhold payment to the **Contractor**. The **Design Professional's** approval of the application for payment and the accompanying documentation shall indicate that to the best of the **Design Professional's** knowledge, information, and belief, the Work has progressed to the point indicated by the **Contractor**, and that the quality of the

Work is in accordance with the Contract Documents, subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests specified in the Contract Documents, final determination of quantities and classifications for unit price work and any other qualifications so stated.

13.4.5. The **Design Professional's** recommendation of any payment shall not mean that the **Design Professional** is responsible for the **Contractor's** means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of the **Contractor** to comply with laws and regulations applicable to the furnishing or performance of Work, or for any failure of the **Contractor** to perform or furnish Work in accordance with the Contract Documents.

13.4.6. No certificate given or payment made shall be evidence of the performance of this Contract, either wholly or in part and no payment, whether made upon the final certificate or otherwise, shall be construed as an acceptance of defective work or materials.

13.5. Decisions to Withhold Certification.

13.5.1. The **Design Professional** may refuse to recommend the whole or any part of any payment if, in the **Design Professional's** opinion, it would be incorrect to make the representations to the **City** referred to above.

13.5.2. If the **Contractor** and the **Design Professional** cannot agree on a revised amount, the **Design Professional** will promptly approve a certificate for payment for the amount for which the **Design Professional** is able to make such representations to the **City**. The **Design Professional** may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a certificate for payment previously issued, to such extent as may be necessary in the **Design Professional's** opinion to protect the **City** from loss because of:

13.5.2.1. defective Work not remedied;

13.5.2.2. third party claims filed or reasonable evidence indicating probable filing of such claims;

13.5.2.3. failure of the **Contractor** to make payments properly to Subcontractors or for labor, materials or equipment;

13.5.2.4. reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

13.5.2.5. damage to the **City** or another contractor;

13.5.2.6. reasonable evidence that the Work will not be completed within the Contract Time, and that retainage currently held by the **City** would not be adequate to

cover actual or liquidated damage for the anticipated delay;

13.5.2.7. persistent failure to carry out the Work in accordance with the Contract Documents; or

13.5.2.8. failure of mechanical trade or electrical trade subcontractors to comply with mandatory requirements for maintaining record drawings. The **Contractor** shall check record drawings each month. Written confirmation that the record drawings are current will be required by the **Design Professional** before approval of the **Contractor's** monthly payment requisition.

13.5.3. When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

13.6. Progress Payments.

13.6.1. After the **Design Professional** has issued a certificate for payment, the **City** shall make payment in the manner and within the time provided in the Contract Documents.

13.6.2. (*Reference: M.G.L. c. 30, §39G;*). The **City** shall pay the amount due pursuant to any periodic, Substantial Completion or final estimate within thirty-five (35) days after receipt of written acceptance for such estimate from the **Contractor**. In the case of periodic payments, the **City** may deduct from its payment a retention based on its estimate of the fair value of its claims against the **Contractor**, a retention for direct payments to Subcontractors based on demands for same in accordance with M.G.L. c. 30, §39F; and a retention to secure satisfactory performance of the contractual work, not exceeding five percent (5%) of the approved amount of any periodic payment, and the same right to retention shall apply to bonded Subcontractors entitled to direct payment under M.G.L. c. 30, §39F; provided, that a five percent (5%) value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.

13.6.3. No periodic, Substantial Completion or final estimate or acceptance or payment thereof shall bar the **Contractor** from reserving all rights to dispute the quantity and amount of, or the failure of the **City** to approve a quantity and amount of, all or part of any Work item or extra Work item.

13.7. Final Payment.

13.7.1. After final inspection and after the **Contractor** has completed all the required corrections to the satisfaction of the **Design Professional** and the **City** and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, bonds, certificates, or other evidence of insurance, certificates of inspection, marked-up record documents, and all other documents called for in the Contract Documents, as well as any surplus materials requested by the **City**, the **Contractor** may make an application for final payment as provided below.

13.7.2. (*Reference:* M.G.L. c. 30, §39G;). Within thirty (30) days after receipt by the **City** of a notice from the **Contractor** stating that all of the Work required by the Contract has been completed, the **City** shall prepare and forthwith send to the **Contractor** for acceptance a final estimate for the quantity and price of the Work done and all retainage on the Work less all payments made to date, unless the **City's** inspection shows that Work required by the Contract remains incomplete or unsatisfactory, or that documentation required by the Contract has not been completed.

13.7.3. The making and acceptance of final payment will constitute a waiver of all claims by the **Contractor** against the **City** other than those previously made in writing and still unsettled.

13.8. Payments to Subcontractors.

13.8.1. Neither the **City** nor the **Design Professional** shall have an obligation to pay or see to the payment of money to a Subcontractor, Sub-subcontractor, or Supplier except as may otherwise be required by law.

13.8.2. (*Reference:* M.G.L. c. 30, §39F;). (1)(a) Forthwith after the **Contractor** receives payment on account of a periodic estimate, the **Contractor** shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished by that Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the **Contractor**.

(b) Not later than the sixty-fifth day after each Subcontractor substantially completes its Work in accordance with the Plans and Specifications, the entire balance due under the subcontract, less amounts retained by the **City** as the estimated cost of completing the incomplete and unsatisfactory items of Work, shall be due the Subcontractor; and the **City** shall pay that amount to the **Contractor**. The **Contractor** shall forthwith pay to the Subcontractor the full amount received from the **City** less any amount specified in any court proceeding barring such payment and also less any amount claimed due from the Subcontractor by the **Contractor**.

(c) Each payment made by the **City** to the **Contractor** pursuant to paragraphs (a) and (b) of M.G.L. c. 30, §39F(1);, for the labor performed and the materials furnished by a Subcontractor shall be made to the **Contractor** for the account of that Subcontractor; and the **City** shall take reasonable steps to compel the **Contractor** to make each such payment to each such Subcontractor. If the **City** has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the **Contractor** or which is to be include in a payment to the **Contractor** for payment to the Subcontractor as provided in paragraphs (a) and (b) of M.G.L. c. 30, §39F(1), the **City** shall act upon the demand as provided in M.G.L. c. 30, §39F.

(d) If, within seventy (70) days after the Subcontractor has substantially completed the subcontract Work, the Subcontractor has not received from the **Contractor** the balance due under the subcontract including any amount due for extra labor and materials furnished to the **Contractor**, less any amount retained by the **City** as the estimated cost of completing the incomplete and unsatisfactory items of Work, the Subcontractor may demand direct payment of that balance from the **City**. The demand shall be by a sworn statement delivered to or sent by certified mail to the **City**, and a copy shall be delivered to or sent by certified mail to the **Contractor** at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract Work. [The demand letter shall indicate the certified mail number assigned by the postal service or the date of delivery to the **Contractor**.] Any demand made after substantial completion of the subcontract Work shall be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the subcontract Work. Within ten (10) days after the Subcontractor has delivered or so mailed the demand to the **City** and delivered or so mailed a copy to the **Contractor**, the **Contractor** may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the **City**, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the **Contractor** and of the amount due for each claim made by the **Contractor** against the Subcontractor.

(e) Within fifteen (15) days after receipt of the demand by the **City**, but in no event prior to the seventieth day after substantial completion of the subcontract Work, the **City** shall make direct payment to the Subcontractor of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the **Contractor**, less any amount (i) retained by the **City** as the estimated cost of completing the incomplete or unsatisfactory items of Work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the **Contractor** in the sworn reply; provided that the **City** shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to or for which the sworn reply does not contain the detailed breakdown required by the previous paragraph. The **City** shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this paragraph.

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

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

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

(i) If the Subcontractor does not receive payment as provided in paragraph (a) or if the **Contractor** does not submit a periodic estimate for the value of the labor or materials performed or furnished by the Subcontractor and the Subcontractor does not receive payment for same when due less the deductions provided for in paragraph (a), the Subcontractor may demand direct payment by following the procedure in paragraph (d) and the **Contractor** may file a sworn reply as provided in that same paragraph. A demand made after the first day of the month following that for which the Subcontractor performed or furnished the labor and materials for which the Subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the **Contractor**. Thereafter the **City** shall proceed as provided in paragraphs (e), (f), (g), and (h). "Subcontractor" as used in this paragraph (1)(i) shall mean a person approved by the **City** in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the **Contractor**.

(2) Any assignment by a Subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of M.G.L. c. 149, §29; shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the **City** or which are on deposit pursuant to paragraph (g) shall be subordinate to the rights of all Subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) A **Contractor** or a Subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in herein by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A Subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in paragraph (f) by a petition in equity in the superior court against the **City** and the **Contractor** shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. M.G.L. c. 231, §§59 and 59B shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due

pursuant to §§59 and 59B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any Subcontractor with the petition of one or more Subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will present unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a Subcontractor filing a demand for direct payment for which no funds due the **Contractor** are available for direct payment shall have a right to file a petition in court of equity against the **City** claiming a demand for direct payment is premature, and such Subcontractor must file the petition before the **City** has made a direct payment to the Subcontractor and has made a deposit of the disputed portion as provided in part (iii) of paragraph (e) and in paragraph (f).

(4) In any petition to collect any claim for which a Subcontractor has filed a demand for direct payment the court shall, upon motion of the **Contractor**, reduce by the amount of any deposit of a disputed amount by the **City** as provided in part (iii) of paragraph (e) and in paragraph (f) any amount held under a trustee writ or pursuant to a restraining order or injunction.

ARTICLE 14: SUBSTANTIAL COMPLETION

14.1. Substantial Completion.

14.1.1. Upon Substantial Completion of the Work, the **Contractor** shall present in writing to the **City** its certification that the Work has been substantially completed and include in its certification (1) a list of items to be completed or corrected, (2) all special warranties required by the Contract Documents, endorsed by the **Contractor** and in a form reasonably acceptable to the **Design Professional** and (3) the permits and certificates referred to in 13.7.1., or elsewhere. The failure to include any item on the list mentioned in the preceding sentence does not alter the responsibility of the **Contractor** to complete all Work in accordance with the Contract Documents. When the **Design Professional** on the basis of an inspection determines that the Work or designed portion thereof is substantially complete and the other conditions have been met, the **Design Professional** will then prepare a certificate of Substantial Completion which shall establish the date of Substantial Completion, shall state the responsibilities of the **City** and the **Contractor** for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the **Contractor** shall complete the items listed therein. The certificate of Substantial Completion shall be submitted to the **City** and the **Contractor** for their written acceptance of the responsibilities assigned to them in such certificate.

14.1.2. Within twenty-one (21) days after receipt of the certification from the **Contractor**, the **City** shall present to the **Contractor** either a written declaration that the Work has been substantially completed or an itemized list of incomplete or unsatisfactory work items

required by the Contract sufficient to demonstrate that the Work has not been substantially completed. The **City** may include with such list a notice setting forth a reasonable time within which the **Contractor** must achieve Substantial Completion of the Work. If the **City** fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the **Contractor's** certification within the twenty-one (21) day period, the **Contractor's** certification shall take effect as the **City's** declaration that the Work has been substantially completed.

14.2. Partial Use or Occupancy of the Premises.

14.2.1. The **City** may occupy or use any completed or partially completed portion of the Work at any stage. Such partial occupancy or use may begin whether or not the portion is substantially complete, provided that the respective responsibilities of the **City** and the **Contractor** with respect to payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work, insurance, correction of the Work, and warranties shall be established by agreement of the **City** and the **Contractor** or, absent such agreement, shall be determined by the **Design Professional** subject to the right of either party to contest such determination as provided in Article 16.

14.2.2. Immediately prior to such partial occupancy or use, the **City**, the **Contractor** and the **Design Professional** shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

14.2.3. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

14.2.4. (*Reference:* M.G.L. c. 30, §39G;). Within sixty-five (65) days after the effective date of a declaration of Substantial Completion, the **City** shall prepare and send to the **Contractor** for acceptance a Substantial Completion estimate for the quantity and price of the Work done and all but one percent (1%) retainage on that Work, including the quantity, price and all but one percent (1%) retainage for the undisputed part of each item and extra work item in dispute, but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory items and less the total periodic payments made to date for the Work. The **City** shall also deduct from the Substantial Completion estimate an amount equal to the sum of all demands for direct payment filed by Subcontractors and not yet paid to Subcontractors or deposited in joint accounts pursuant to M.G.L. c. 30, §39F.

14.2.5. (*Reference:* M.G.L. c. 30, §39G). If the **City** fails to prepare and send to the **Contractor** any Substantial Completion estimate required by the provisions herein on or before the date specified, the **City** shall pay to the **Contractor** interest on the amount which would have been due to the **Contractor** pursuant to such Substantial Completion estimate at the rate of three (3) percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the **City** sends that Substantial Completion estimate to the **Contractor** for acceptance or to the date of payment therefor, whichever occurs first. The **City** shall include the amount of such interest in the Substantial Completion estimate.

14.2.6. (*Reference: M.G.L. c. 30, §39G*). Within fifteen (15) days after the effective date of the declaration of Substantial Completion, the **City** shall send to the **Contractor** by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory items, and unless delayed by causes beyond its control, the **Contractor** shall complete all such items within forty-five (45) days after the receipt of such list or before the date for final payment and acceptance, whichever is later. If the **Contractor** fails to complete such Work within such time, the **City** may, subsequent to seven (7) days' written notice to the **Contractor** by certified mail, return receipt requested, terminate the Contract and complete the incomplete or unsatisfactory items and charge the cost of same to the **Contractor**.

14.3. Final Inspection.

14.3.1. Upon written notice from the **Contractor** that the entire Work or an agreed portion thereof is complete, the **Design Professional** will make a final inspection with the **City** and the **Contractor** and will notify the **Contractor** in writing of all particulars which this inspection reveals that the Work is incomplete or defective. The **Contractor** shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

ARTICLE 15: GUARANTEES AND WARRANTIES

15.1. In General.

15.1.1. All guarantees and warranties specifically called for by the Specifications shall expressly run to the benefit of the **City**.

15.2. Warranties.

15.2.1. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof, unless otherwise provided in the certificate of Substantial Completion.

15.2.2. The **Contractor** warrants that the materials and equipment furnished under the Contract will be new and of recent manufacture unless otherwise specified, and that all Work will be of good quality, free from faults and defects, and in conformance with the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The **Contractor's** warranty excludes remedy for damage or defect caused by abuse, Modifications not executed by the **Contractor**, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the **Design Professional**, the **Contractor** shall furnish satisfactory evidence as to the kind and quality of material and equipment.

15.2.3. The **Contractor** warrants that title to all Work covered by an application for payment will pass to the **City** either by incorporation in the construction or upon the receipt of payment by the **Contractor**, whichever occurs first, free and clear of all liens. The **Contractor** further agrees that the submission of any application for payment shall conclusively be deemed to waive all liens with respect to said Work to which the **Contractor** may then be entitled, provided that such waiver of the lien rights shall not waive the **Contractor's** right to payment for such Work.

15.2.4. The **Contractor** warrants and guarantees that title to all Work, materials, and equipment covered by any application for payment, whether incorporated in the Project or not, will pass to the **City** no later than the time of payment free and clear of all liens.

15.2.5. No materials or supplies for the Work shall be purchased by the **Contractor** or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The **Contractor** warrants that it has good title to all materials and supplies used by it in the Work, free from all liens.

15.2.6. The **Contractor** shall indemnify and hold the **City** harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workers, mechanics, material persons, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. The **Contractor** shall at the **City's** request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the **Contractor** fails to do so, then the **City** may, after having served written notice on the **Contractor** either pay unpaid bills, of which the **City** has written notice, direct, or withhold from the **Contractor's** unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the **Contractor** shall be resumed, in accordance with the terms of this

Contract, but in no event shall the provisions of this sentence be construed to impose any obligations on the **City** to either the **Contractor** or its surety. In paying any unpaid bills of the **Contractor**, the **City** shall be deemed the agent of the **Contractor** and any payment so made by the **City** shall be considered as payment made under the Contract by the **City** to the **Contractor** and the **City** shall not be liable to the **Contractor** for any such payment made in good faith.

15.3. Extended Warranties and Guarantees.

15.3.1. Any defective Work that is either corrected or replaced will be warranted and guaranteed for a period of three (3) years from the date of such correction or replacement.

ARTICLE 16: CLAIMS

16.1. In General.

16.1.1. Written Notice. A Claim must be made by written notice to the other party.

16.1.2. Content of Notice. The notice must include all written supporting data.

16.1.3. Burden of Proof. The party making the Claim must substantiate the Claim.

16.2. Time Limits on Claims.

16.2.1. Unless otherwise provided, all Claims must be made within twenty-one (21) days after the occurrence of the event giving rise to such Claim or within twenty-one (21) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Any change or addition to a previously made Claim shall be made by a written notice within the twenty-one-day period in order to be valid.

16.3. Continuing Contract Performance.

16.3.1. Pending final resolution of a Claim including arbitration, unless otherwise agreed in writing, the **Contractor** shall proceed diligently with performance of the Contract and the **City** shall continue to make payments in accordance with the Contract Documents.

16.4. Types of Claims.

16.4.1. Claims for Differing Subsurface or Latent Physical Conditions. (*Reference: M.G.L. c. 30, §39N;*). If, during the progress of the Work, the **Contractor** or the **City** discovers that the actual subsurface or latent physical conditions encountered at the Site differ substantially or materially from those shown on the Plans or indicated in the Contract Documents, either the **Contractor** or the **City** may request an equitable adjustment in the Contract Sum of the Contract applying to Work affected by the differing Site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a **Contractor**, or upon its own initiative, the **City** shall make an investigation of such physical conditions, and if they differ substantially or materially from those shown on the Plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the **City** shall make an equitable adjustment in the Contract Sum and the Contract shall be modified in writing accordingly.

16.4.2. Claims for Additional Cost. If the **Contractor** claims that any acts or omissions of the **City** or the **Design Professional**, including any instructions or orders, whether oral, written, by drawings, or otherwise, involve extra cost or time, and the **Contractor** has not received a written acknowledgment by the **City** or the **Design Professional** that extra payment will be made or time extended on account thereof, the **Contractor** shall promptly so notify the **Design Professional** in writing of such Claim and shall proceed with the Work relating to such Claim and all rights of both parties with respect to such Claim shall be deemed to have been reserved. No Claim by the **Contractor** on account of such acts, omissions, instructions, or orders shall be valid unless the **Contractor** has so notified the **Design Professional** before proceeding.

16.4.2.1. Under no circumstances shall a Claim be made for additional cost where adverse weather conditions are the basis for the Claim.

16.4.3. Claims for Additional Time. If the **Contractor** wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The **Contractor** shall have the burden of demonstrating the effect of the claimed delay on the Contract Time and shall furnish the **Design Professional** with such documentation relating thereto as the **Design Professional** may reasonably require. Under no circumstances shall the **Contractor** make a Claim for an increase in the Contract Time due to a change in the **Contractor's** early completion

date. If the increase in the Contract Time extends beyond the Contract Time established by the **City**, only the time that so extends beyond the Contract Time shall be reviewed and considered. In the case of a continuing delay, only one Claim is necessary.

16.4.3.1. Under no circumstances shall a Claim be made for additional time where adverse weather conditions are the basis for the Claim.

16.4.4. Claims for Injury to Person or Damage to Property. Should either party to the Contract suffer injury to person or damage to property because of any error, omission, or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, a Claim will be made in writing to the other party within twenty-one (21) days of the occurrence of the act giving rise to the injury or damage.

16.5. Review of Claims.

16.5.1. Initial Referral. All Claims, the bases of which arise prior to final payment or the earlier termination of the Contract, shall be referred initially to the **Design Professional** for action as provided herein.

16.5.2. Time Period and Action. The **Design Professional** shall review Claims and shall do one of the following within fourteen (14) days of receipt of the Claim:

16.5.2.1. defer any action with respect to all or any part of a Claim for the purpose of requesting and receiving additional information from either party;

16.5.2.2. decline in writing to render a decision for any reason which it deems appropriate (including, but not limited to, the fact that the Claim involves allegations of fault on the part of the **Design Professional**); or

16.5.2.3. render a decision on all or a part of the Claim.

16.5.3. If the **Design Professional** requests additional information, the **Design Professional** shall take action with respect to the Claim no later than fourteen (14) days after receipt of the additional information. The **Design Professional** shall notify the parties in writing of its disposition of such Claim. If the **Design Professional** renders a decision or declines to render a decision, either party may proceed in accordance with paragraph 16.7.

16.6. Decisions.

16.6.1. Decisions by the City or the Design Professional. (*Reference: M.G.L. c. 30, §39P*);). In every case in which this Contract requires the **City**, any official, or its **Design Professional** to make a decision on interpretation of the Specifications, approval of equipment, material or any other approval, or progress of the Work, the decision shall be made promptly and, in any event, no later than fourteen (14) days after the written submission for decision; but if such decision requires extended investigation and study, the **City**, the official, or the **Design Professional** shall, within fourteen (14) days after the receipt of the submission, give the party

making the submission written notice of the reasons why the decision cannot be made within the thirty-day period and the date by which the decision will be made.

16.6.2. When Decision of the Design Professional is Final and Binding. The decision of the **Design Professional** shall be final and binding on the parties, unless a party files suit or a demand for arbitration within thirty (30) days after the date of the decision.

16.6.3. When Decision of the Design Professional is Not Final and Binding. (*Reference: M.G.L. c. 30, §39J*). Notwithstanding any contrary provision of this Contract, no decision by the **City** or by the **Design Professional** on a dispute, whether of fact or of law, arising under said Contract shall be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, arbitrarily, is unsupported by substantial evidence, or is based upon error of law.

16.6.4. Resolved Claims. If a Claim is resolved, the **Design Professional** shall obtain or prepare the appropriate documentation and provide the **City** and the **Contractor** with a copy of same.

16.7. Arbitration.

16.7.1. Controversies and Claims Subject to Arbitration. Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims relating to aesthetic effect, subject to the provisions of paragraph 16.7.7. In any such arbitration in which the amount stated in the demand is \$100,000 or less, the American Arbitration Association shall appoint a single arbitrator in accordance with such Rules, who shall be a lawyer. In any such arbitration in which the amount stated in the demand is in excess of \$100,000, the demand shall include the name of an arbitrator appointed by the claimant. The respondent shall appoint a second arbitrator and shall notify the claimant in writing of such appointment within thirty (30) days of receipt of the demand, failing which the matter shall be decided by the arbitrator named in the claimant's demand. Within thirty (30) days after the claimant's receipt of notice of the appointment of the second arbitrator, the two arbitrators shall appoint a neutral arbitrator and shall notify the parties in writing of such appointment, failing which either party may apply to the American Arbitration Association to appoint such neutral arbitrator. If such neutral arbitrator is appointed by the American Arbitration Association, he or she shall be a lawyer.

16.7.2. Rules for Arbitration. If the neutral arbitrator is appointed by the American Arbitration Association, the said Association shall administer the arbitration and its Construction Industry Arbitration Rules shall govern all aspects of the proceeding including the enforcement of any award. If the neutral arbitrator is not appointed by the American Arbitration Association, then the panel of arbitrators shall act as the administrator of the arbitration but the Construction Industry Arbitration Rules of the Association shall nonetheless govern all aspects of the proceeding, including the enforcement of any award, provided however that the arbitration panel shall have all of the powers and duties conferred on the Association pursuant to said rules. In

addition, the following rules shall govern the selection of arbitrators and the proceedings:

16.7.2.1. Neither party may appoint as arbitrator an employee or an owner of that party, nor the parent, spouse, or child of an employee or owner of that party.

16.7.2.2. After the neutral arbitrator has been appointed, neither party may engage in *ex parte* communication with any arbitrator.

16.7.3. When Arbitration May Be Demanded. Demand for arbitration of any Claim, the basis of which arises prior to final payment or the earlier termination of the Contract may not be made before the earlier of (1) the date on which the **Design Professional** has rendered a written decision on the Claim or has notified the parties in writing that such decision will not be rendered or (2) forty-five (45) days following receipt by the **Design Professional** of a written request for a decision sent by registered or certified mail to both the **Design Professional** and the other party to this Contract.

16.7.3.1. In no event shall a demand for arbitration be made after the date when the institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations.

16.7.4. Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the **Design Professional**, the **Design Professional's** employees or consultants, except by written consent containing specific reference to the Contract and signed by the **Design Professional**, the **City**, the **Contractor**, and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the **City**, the **Contractor**, a separate contractor, and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the **City**, the **Contractor**, or a separate contractor shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity so named or described herein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Contract shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

16.7.5. Claims and Timely Assertion of Claims. A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a Claim through oversight, inadvertence, or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

16.7.6. Award Final. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having

jurisdiction thereof.

16.7.7. The City's Reservation of Rights. Notwithstanding any provision contained in this Article 16 or elsewhere in the Contract Documents, the **City** reserves the following rights in connection with Claims between the **City** and the **Contractor**, which rights may be exercised by the **City** unilaterally, in the **City's** sole discretion, and without the consent of the **Contractor**:

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

16.7.7.2. the right to obtain from any court of competent jurisdiction a stay of any arbitration instituted by the **Contractor**, provided that the application for such stay is made before the appointment of the neutral arbitrator in such arbitration, in which case the dispute or disputes which are the subject of such arbitration shall be decided by such court and not by arbitration;

16.7.7.3. the right to require the **Contractor** to join as a party in any arbitration between the **City** and the **Design Professional** relating to the Project, in which case the **Contractor** agrees to be bound by the decision of the arbitrator or arbitrators in such arbitration.

16.7.8. In case the **City** elects to proceed in accordance with 16.7.7.1. or 16.7.7.2. above, the word "litigation" shall be deemed to replace the word "arbitration" wherever the latter word appears in the Contract Documents.

ARTICLE 17: EMERGENCIES

17.1. In an emergency affecting the health and safety of persons or property, the **Contractor** shall act to prevent threatened damage, injury, or loss.

17.2. In emergencies affecting the health, safety, or protection of persons, the Work or property at the Site or adjacent thereto, the **Contractor**, without special instruction or authorization from the **City** or the **Design Professional**, is obligated to act to prevent threatened damage, injury, or loss. The **Contractor** shall give the **Design Professional** prompt written notice if the **Contractor** believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the **Design Professional** determines that a change in the Contract Documents is required because of the action taken by the **Contractor** in response to such an emergency, a **Construction Change Directive** or **Change Order** will be issued to document the consequences of such action.

ARTICLE 18: TERMINATION OR SUSPENSION OF THE CONTRACT

18.1. Suspension by the City.

18.1.1. At any time and without cause, the **City** may suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to the **Contractor** and

the **Design Professional** that will fix the date on which Work will be resumed. The **Contractor** shall resume Work on the date so fixed. The **Contractor** shall be allowed an adjustment in the Contract Sum or an extension of the Contract Time, or both, directly attributable to any such suspension if the **Contractor** makes an approved Claim therefor.

18.1.2. If the Work is defective, if the **Contractor** fails to provide a sufficient number of skilled workers or suitable materials or equipment, or if the **Contractor** defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the **City** to begin and prosecute correction of such default or neglect with diligence and promptness, the **City** may correct such deficiencies, without prejudice to other remedies the **City** may have. In such case, an appropriate **Construction Change Directive** shall be issued deducting from payments then or thereafter due to the **Contractor** the cost of correcting such deficiencies including compensation for the **Design Professional's** additional services and expenses made necessary by such default, neglect, or failure and any and all direct, indirect, or consequential costs associated with the order to stop the Work. If such payments then or thereafter due the **Contractor** are not sufficient to cover such amounts, the **Contractor** shall immediately pay the difference to the **City**. The **Contractor** shall remain responsible for maintaining progress and shall not be entitled to any increase in the Contract Time or the Contract Sum.

18.2. Termination by the Contractor.

18.2.1. If, through no act or fault of the **Contractor**, a Subcontractor, or a Sub-subcontractor, the Work is suspended for a period of more than ninety (90) days by the **City**, or under an order of court or other public authority, or the **Design Professional** fails to act on any application for payment within thirty (30) days after it is submitted in proper form and content or the **City** fails for thirty (30) days to pay the **Contractor** any sum finally determined to be due, then the **Contractor** may terminate the Contract upon seven (7) days' written notice to the **City**, provided that the **City** does not remedy such suspension or failure within that time.

18.3. Termination by the City.

18.3.1. If the **Contractor** is adjudged a bankrupt, or if the **Contractor** makes a general assignment for the benefit of the **Contractor's** creditors, or if a receiver is appointed on account of the **Contractor's** insolvency, or if the **Contractor** persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if the **Contractor** fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction or disregards an instruction, order, or decision of the **Design Professional**, or otherwise is guilty of substantial violation of any provision of the Contract, then the **Contractor** shall be in default, and the **City** may, without prejudice to any other right or remedy and upon written notice to the **Contractor**, take possession of all materials, tools, appliances, equipment, construction equipment and machinery and vehicles, offices and other facilities on the Project Site, and all materials intended for the Work, wherever stored, and, seven (7) days after such notice, may terminate the employment of the **Contractor**, accept assignment of any or all subcontracts pursuant to Paragraph __, and finish the Work by whatever method the **City** may deem expedient. The **City** shall be entitled to

collect from the **Contractor** all direct, indirect, and consequential damages suffered by the **City** on account of the **Contractor's** default, including without limitation additional services and expenses of the **Design Professional** made necessary thereby. The **City** shall be entitled to hold all amounts due to the **Contractor** at the date of termination until all of the **City's** damages have been established, and to apply such amounts to such damages.

18.3.2. (*Reference:* Somerville Municipal Code Chapter 2.117, Section 2.117.110C). In the event the **Contractor** or any of its agents or employees violates any provision of Somerville Municipal Code Chapter 2.117 that is applicable to **City** contractors in connection with the awarding, administration, or performance of the Contract, the **City** may terminate the Contract.

ARTICLE 19: AMERICANS WITH DISABILITIES ACT; (42 U.S. 12131)

19.1. On July 26, 1994, the Americans with Disabilities Act ("the Act") became effective for employers of fifteen or more employees.

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

19.3. If the **Contractor** is subject to the Act, it must comply with its provisions.

ARTICLE 20: WRITTEN NOTICE TO THE PARTIES

20.1. In General.

20.1.1. All written communications from the **Design Professional** to the **Contractor** shall be copied to the **City**. All written communications from the **Contractor** to the **Design Professional** shall be copied to the **City**. All written communications from the **Contractor** to the **City** shall be copied to the **Design Professional**.

20.2. Addresses.

20.2.1. To the City. Written notice to the **City** shall be sent or hand-delivered to:

Purchasing Director
City of Somerville
93 Highland Avenue
Somerville, MA 02143

City Solicitor
Law Department
93 Highland Avenue
Somerville, MA 02143

Part 1, Section 4: OTHER BID DOCUMENTS

Executive Director
Office of Strategic Planning & Community Development 93
Highland Avenue
Somerville, MA 02143

20.2.2. To the Contractor. Both the address given on the bid form upon which the Agreement is founded and the **Contractor's** office at or near the Site of the Work are hereby designated as places to either of which notices, letters, and other communications to the **Contractor** shall be certified, mailed, or delivered. Delivery of any notice, letter, or other communication to the **Contractor** at or depositing same in a postpaid wrapper directed to either place shall be deemed sufficient service thereof upon the **Contractor**. Written notice shall be deemed to have been duly served on the **Contractor** if it is sent or hand-delivered to any member or officer of the **Contractor**. The date of said service shall be the date of such delivery or mailing. The address may be changed at any time by an instrument in writing, executed and acknowledged by the **Contractor** and delivered to the **City** and to the **Design Professional**. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon the **Contractor** personally. Moreover, any notice, letter, or other communication required under the Contract may be served on the **Contractor's** representative at job meetings. The **Contractor** shall provide the **City** with its change of address seven (7) days prior to its effective date.

20.2.3. To the Design Professional. Written notice to the **Design Professional** shall be sent or hand-delivered to the address appearing on the Project Manual. Written notice shall be deemed to have been duly served on the **Design Professional** if it is sent or hand-delivered to any member or officer of the **Design Professional**.

ARTICLE 21: MISCELLANEOUS PROVISIONS

21.1. Governing Law.

21.1.1. This Contract shall be governed by the laws of the Commonwealth of Massachusetts.

21.2. Venue.

21.2.1. Venue for any court action or proceeding shall be Middlesex County in the Commonwealth of Massachusetts only. The **Contractor**, all Subcontractors, and Suppliers waive any and all jurisdictional and venue defenses.

21.3. Successors and Assigns.

21.3.1. The **Contractor** shall not assign, in whole or in part, its rights and obligations under the Contract Documents without prior written consent of the **City**. An assignment without the prior written consent of the **City** shall not relieve the **Contractor** of its obligations thereunder.

21.3.2. The **City** and the **Contractor** respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners,

successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents.

21.4. Statutory Limitation Period.

21.4.1. It is expressly agreed that the obligations of the **Contractor** hereunder arise out of contractual duties, and that the failure of the **Contractor** to comply with the requirements of the Contract Documents shall constitute a breach of contract, not a tort, for the purpose of applicable statutes of limitations and repose. Any cause of action which the **City** may have on account of such failure shall be deemed to accrue only when the **City** has obtained actual knowledge of such failure, not before.

21.5. Rights and Remedies.

21.5.1. Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

21.5.2. No action or failure to act by the **City**, the **Design Professional**, or the **Contractor** shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

PART 2 - SAMPLE CONSTRUCTION CONTRACT

IMPORTANT INFORMATION REGARDING CERTIFICATE OF GOOD STANDING

- Sample Contract
- Certificate of Authority
- Appendix A – Scope of Work (including Technical Specifications)
- Appendix B – Contractor’s Bid Price; Form for General Bid (From Bid Book)
- Appendix C – General Terms and Conditions
- Appendix D – Insurance Requirements
- Appendix E – Wage Rates and Living Wage (From Bid Book)
- Appendix F – Certificate of Good Standing (for corporations; from Bid Book)
- Appendix G – Procurement documentation (Advertisements and Notice to Bidders)
- Appendix H – Statement of Management
- Appendix I – Performance Bond and Payment Bond, if contract over \$2000

S A M P L E C O N T R A C T

CONTRACT NUMBER

A-

PURCHASE ORDER # AND AMOUNT

BID NUMBER

OSPCD

ISSUING DEPARTMENT

FUNDING DEPARTMENT (Division)

CONTRACT PERIOD

CITY OF SOMERVILLE
MAYOR'S OFFICE OF STRATEGIC PLANNING AND COMMUNITY DEVELOPMENT

PUBLIC CONSTRUCTION CONTRACT

FOR: **Kenney Park**

CONTRACTOR: Vendor
 Address
 Townname, Ma

ACCORDING TO SPECIFICATIONS CONTAINED HEREIN

**CITY OF SOMERVILLE
OWNER-CONTRACTOR PUBLIC CONSTRUCTION AGREEMENT**

AGREEMENT made this --- day of _____, by and between the City of Somerville, a Massachusetts municipal corporation, acting by and through its Purchasing Department, with a usual address of 93 Highland Ave., Somerville, MA 02143 ("City", "Owner" or "Awarding Authority") and the following General Contractor ("Contractor" or "General Contractor"):

GENERAL CONTRACTOR:

Name:

Address:

Telephone:

Fax:

E-Mail:

PROJECT: ADA Ramps (12) at Four Locations

The work consists of the construction of twelve (12) Wheelchair Ramps to Massachusetts Architectural Access Board (AAB) standards (521 MR 21.00, effective January 27, 2006); hiring a design professional to verify that all AAB requirements have been fulfilled; and resetting crosswalk signs. Substantial completion of work shall be by September 1, 2009.

PROJECT MANAGER:

Name: Luisa Oliveira

Address: City Hall, 3rd floor, 93 Highland Avenue, Somerville, MA 02143

Telephone: 617-625-6600, x.2529 Fax: 617-625-0722

E-Mail: afranzen@somervillema.gov

DESIGN PROFESSIONAL:

Name: **CBA Landscape Architects LLC**

Address: **24 Thorndike St.
Cambridge, MA 02141**

Contact: DJ Chagnon, Principal
Phone: 617-945-9760 Ext. 2
dj@cband.com

Profession: Architect [] Landscape Architect [X] Engineer []

FUNDING SOURCE: Federal [] State [] City [X]

THIS CONTRACT IS A:

 X Public Works Contract estimated to cost more than \$10,000 subject to the bidding requirements of G.L. c. 30, § 39M

Part 1, Section 4: OTHER BID DOCUMENTS

- ☐ Public Building Contract estimated to cost under \$10,000, subject to the price quote requirements of G.L. c. 149 §44A (2)(A)
- ☐ Public Building Contract estimated to cost more than \$10,000 but less than \$25,000, subject to the written response requirements of G.L. c. 149, §44A(2)(B) of the General Laws
- ☐ Public Building Contract estimated to cost more than \$25,000 but less than \$100,000, subject to the bidding requirements of G.L. c. 149, §44A(2)(C) and G.L. c. 30, § 39M
- ☐ Public Building Contract estimated to cost more than \$100,000, subject to the bidding requirements of G.L. c. 149, §44A(D).

Section 1: CONTRACT DOCUMENTS/APPENDICES

The Contract Documents consist of this Agreement; the notice of award of the Contract; the Notice to Proceed; the entire Project Manual; Change Orders; Construction Change Directives; the Contractor's Bid and all accompanying documents; and the Design Professional's written interpretations and clarifications issued on or after the issuance of the Notice to Proceed. Shop Drawing submittals and reports or drawings utilized by the Design Professional in preparing the Contract Documents are not Contract Documents.

The following Appendices are hereby incorporated by reference as part of this Agreement.

- ☒ Certificate of Authority
- ☐ Appendix A - Scope of Services - Misc. Bid Documents: includes a brief description of the Project, the Plans and Technical Specifications (Plans on File) and Addenda issued during the bid process
- ☒ Appendix B - Contractor's Bid Price; Form for General Bid
- ☒ Appendix C - General Conditions
- ☒ Appendix D - Insurance Requirements with Contractor's Insurance Certificate(s)
- ☒ Appendix E - Wage Rates; Living Wage
- ☒ Appendix F - Certificate of Good Standing (for corporations)
- ☒ Appendix G - Procurement Documentation (includes Advertisement; Notice to Bidders)

Part 1, Section 4: OTHER BID DOCUMENTS

- X Appendix H - Statement of Management (over \$100,000)
- X Appendix I - Performance Bond and Payment Bond, if contract is over \$2,000
- X Appendix J - Section 3 Requirements
- X Appendix K – Laws Applicable to Federally Funded Contracts

- X = Attached
- * = Included in the Project Manual and incorporated herein by reference
- ** = Attached and also duplicated in the Project Manual

Section 2: THE CONTRACTOR’S WORK.

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

Section 3: PROJECT DATES.

- (a) Contract Period: The Contract shall begin on April 1, 2014 and end on September 1, 2014.
- (b) Date of Commencement of Work: The Date of Commencement of the Work shall be stipulated by a written Notice to Proceed given by the City to the Contractor.
- (c) Date of Substantial Completion: The Contractor shall achieve Substantial Completion of the Work on or before _____ or --- calendar days after the Date of Commencement of the Work, time being of the essence. Substantial Completion means that the Work has been completed and the Site or the facility is opened for full and intended public use, except for minor incomplete or unsatisfactory items that do not materially impair the usefulness of the Work. The Design Professional shall decide what constitutes “minor,” “incomplete,” “unsatisfactory,” and “materially” and the Design Professional's decision shall be final.
- (d) Date of Final Completion:
The Date of Final Completion shall be _____.

Section 4. CONTRACT SUM/LIQUIDATED DAMAGES

- (a) Contract Sum: The Contract Sum shall be \$_____.
- (b) Liquidated Damages: The Contractor and the City agree to a Liquidated Damages sum of \$250.00 per calendar day.

SIGNATURE PAGE FOLLOWS

Part 1, Section 4: OTHER BID DOCUMENTS

IN WITNESS WHEREOF, the City and the Contractor have executed this Contract as a sealed instrument as of the date first written above.

CITY OF SOMERVILLE

I hereby certify that an unencumbered balance of \$_____ is available for this Contract and I further certify that the sum of \$_____ is hereby encumbered against the appropriate account for the purposes of this contract.

Edward Bean, City Auditor

VENDOR:

Signature of Authorized Agent of Vendor

Printed Name: _____
Title: _____

Vendor Address: _____

Federal Tax ID: # _____

FOR CORPORATIONS ONLY:

Joseph A. Curtatone
Mayor

Clerk's Signature

Michael F. Glavin, OSPCD
Executive Director

Clerk's Name

Angela M. Allen, Purchasing Director

Approved as to form:

Francis X. Wright, Jr., City Solicitor

SAMPLE CERTIFICATE OF AUTHORITY

____, 2014.
(Contract Date)

At a meeting of the directors of _____ duly
(Name of Corporation)
called and held at _____ on _____, 2010.
(Address) (Date)

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

the _____ of this corporation is hereby authorized and empowered to
(Office)

make, enter into, sign, seal and deliver on behalf of this corporation a contract for

_____ with the City of Somerville, Mayor's (Describe Service)

Office of Strategic Planning and Community Development. I do hereby certify that the above

is a true and correct copy of the record that said vote has not been amended or repealed and is in

full force and in effect at of this date, and that _____ is duly elected
(Name)

_____ of this corporation.
(Office)

(Clerk) (Secretary) of the Corporation

Attest:

(Affix Corporation Seal Here)

APPENDIX A

Scope of Services – Miscellaneous Bid Documents

Includes a brief description of the project
The Plans and Technical Specifications (Plans on File)
And all addenda issued during the bid process.

APPENDIX B
Contractor's Bid Price - Form for General Bid
(From Bid Book)

APPENDIX C
General Conditions
(From Bid Book)

**APPENDIX D
INSURANCE REQUIREMENTS**

APPENDIX D - INSURANCE REQUIREMENTS INSURANCE SPECIFICATIONS

INSURANCE REQUIREMENTS FOR AWARDED VENDOR ONLY:

Prior to commencing performance of any work or supplying materials or equipment covered by these specifications, the contractor shall furnish to the Office of the Purchasing Director a Certificate of Insurance evidencing the following:

A. GENERAL LIABILITY - Comprehensive Form

Bodily Injury Liability.....\$ Two Million

Property Damage Liability.....\$ Two Million

B. COVERAGE FOR PAYMENT OF WORKER'S COMPENSATION BENEFIT PURSUANT TO CHAPTER 152 OF THE MASSACHUSETTS GENERAL LAWS IN THE AMOUNT AS LISTED BELOW:

WORKER'S COMPENSATION.....\$ Statutory

EMPLOYERS' LIABILITY.....\$ Statutory

C. AUTOMOBILE LIABILITY INSURANCE AS LISTED BELOW:

AGGREGATE.....\$ One Million

1. A contract will not be executed unless a certificate (s) of insurance evidencing above-described coverage is attached.

2. Failure to have the above-described coverage in effect during the entire period of the contract shall be deemed to be a breach of the contract.

3. All applicable insurance policies shall read:

"CITY OF SOMERVILLE" as a certificate holder and as an additional insured for general liability only along with a description of operation in the space provided on the certificate.

Certificate Should Be Made Out To:

City Of Somerville

Purchasing Department

93 Highland Avenue

Somerville, Ma. 02143

Note: If your insurance expires during the life of this contract, you shall be responsible to submit a new certificate(s) covering the period of the contract. No payment will be made on a contract with an expired insurance certificate.

APPENDIX E
PREVAILING WAGE RATES
AND LIVING WAGE FORM

PREVAIING WAGE RATES

INSERT MANUALLY



SOMERVILLE LIVING WAGE ORDINANCE CERTIFICATION FORM
CITY OF SOMERVILLE CODE OF ORDINANCES SECTION 2-397 et seq².

Instructions: This form shall be included in all Invitations for Bids and Requests for Proposals which involve the furnishing of labor, time or effort (with no end product other than reports) by vendors contracting or subcontracting with the City of Somerville, where the contract price meets or exceeds the following dollar threshold: \$10,000. If the undersigned is selected, this form will be attached to the contract or subcontract and the certifications made herein shall be incorporated as part of such contract or subcontract. **Complete this form and sign and date where indicated below on page 2.**

Purpose: The purpose of this form is to ensure that such vendors pay a "Living Wage" (defined below) to all covered employees (i.e., all employees except individuals in a city, state or federally funded youth program). In the case of bids, the City will award the contract to the lowest responsive and responsible bidder paying a Living Wage. In the case of RFP's, the City will select the most advantageous proposal from a responsive and responsible offeror paying a Living Wage. In neither case, however, shall the City be under any obligation to select a bid or proposal that exceeds the funds available for the contract.

Definition of "Living Wage": For this contract or subcontract, as of **7/1/2013** "Living Wage" shall be deemed to be an hourly wage of no less than **\$11.89** per hour. From time to time, the Living Wage may be upwardly adjusted and amendments, if any, to the contract or subcontract may require the payment of a higher hourly rate if a higher rate is then in effect.

CERTIFICATIONS

1. The undersigned shall pay no less than the Living Wage to all covered employees who directly expend their time on the contract or subcontract with the City of Somerville.
2. The undersigned shall post a notice, (copy enclosed), to be furnished by the contracting City Department, informing covered employees of the protections and obligations provided for in the Somerville Living Wage Ordinance, and that for assistance and information, including copies of the Ordinance, employees should contact the contracting City Department. Such notice shall be posted in each location where services are performed by covered employees, in a conspicuous place where notices to employees are customarily posted.
3. The undersigned shall maintain payrolls for all covered employees and basic records relating hereto and shall preserve them for a period of three years. The records shall contain the name and

²Copies of the Ordinance are available upon request to the Purchasing Department.

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address of each employee, the number of hours worked, the gross wages, a copy of the social security returns, and evidence of payment thereof and such other data as may be required by the contracting City Department from time to time.

4. The undersigned shall submit payroll records to the City upon request and, if the City receives information of possible noncompliance with the provisions the Somerville Living Wage Ordinance, the undersigned shall permit City representatives to observe work being performed at the work site, to interview employees, and to examine the books and records relating to the payrolls being investigated to determine payment of wages.

5. The undersigned shall not fund wage increases required by the Somerville Living Wage Ordinance by reducing the health insurance benefits of any of its employees.

6. The undersigned agrees that the penalties and relief set forth in the Somerville Living Wage Ordinance shall be in addition to the rights and remedies set forth in the contract and/or subcontract.

CERTIFIED BY:

Signature: _____
(Duly Authorized Representative of Vendor)

Title: _____

Name of Vendor: _____

Date: _____

INSTRUCTIONS: PLEASE POST

**NOTICE TO ALL EMPLOYEES
REGARDING PAYMENT OF LIVING WAGE**

Under the Somerville, Massachusetts' Living Wage Ordinance (Ordinance No. 1999-1), any person or entity who has entered into a contract with the City of Somerville is required to pay its employees who are involved in providing services to the City of Somerville no less than a "Living Wage".

The Living Wage as of 7/1/2013 is **\$11.89** per hour. The only employees who are not covered by the Living Wage Ordinance are individuals in a Youth Program. "Youth Program" as defined in the Ordinance, "means any city, state or federally funded program which employs youth, as defined by city, state or federal guidelines, during the summer, or as part of a school to work program, or in any other related seasonal or part-time program."

For assistance and information regarding the protections and obligations provided for in the Living Wage Ordinance and/or a copy of the Living Wage Ordinance, all employees should contact the City of Somerville's Purchasing Department directly.

APPENDIX F
CERTIFICATE OF GOOD STANDING
(FOR CORPORATIONS)

INSERT DOCUMENT FROM BID BOOK HERE

Certificate of Good Standing: If the bidder is a corporation, a Certificate of Good Standing should accompany the bid. Certificate of Good Standing available online at:
http://corp.sec.state.ma.us/corp/Certificates/Certificate_Request.asp
or call Tel: (617) 727-9640 for more information.

CERTIFICATE OF GOOD STANDING

TO: Vendor

FROM: Purchasing Department

RE: **CERTIFICATE OF GOOD STANDING**

The **Awarded Vendor** must comply with our request for a **CURRENT “Certificate of Good Standing”**.

If you require information on how to obtain the “Certificate of Good Standing” or Certificate of Registration (Foreign Corporations) from the Commonwealth of Massachusetts, please call the Secretary of State’s Office at (617) 727-2850 (Press #1) located at One (1) Ashburton Place, 17th Floor, Boston, MA 02133 or you may access their web site at: www.MA.GOV/SEC/COR

If your company is incorporated outside of Massachusetts and therefore is a “foreign corporation”, but is registered to do business in Massachusetts, please comply with our request for the Certificate of Registration from the Commonwealth of Massachusetts. If your company is a foreign corporation, but is not registered to do business in Massachusetts, please provide the Certificate of Good Standing from your state of incorporation.

Please note that without the above certificate (s), the City of Somerville cannot execute your contract.

IMPORTANT NOTICE

Requests for Certificates of Good Standing by mail may take a substantial amount of time. A certificate may be obtained immediately in person at the Secretary’s Office at the address above. Also, at this time, the Secretary of State’s Office may not have your current annual report recorded. If this is the case, and you are therefore unable to obtain the Certificate of Good Standing, please forward a copy of your annual report filing fee check with your signed contracts. Please forward your original Certificate of Good Standing to the Purchasing Department upon receipt.

Thank You,

Purchasing Director

APPENDIX G
PROCUREMENT DOCUMENTATION

ADVERTISEMENTS, NOTICE TO BIDDERS, ETC.

APPENDIX H
STATEMENT OF MANAGEMENT
FOR CONTRACTS OVER \$100,000

STATEMENT OF MANAGEMENT

In accordance with M.G.L. Chapter 30, Section 39R, the undersigned successful bidder states that its system of internal accounting controls and that of its subsidiaries reasonably assure (1) that transactions are executed in accordance with management's general and specific authorization; (2) that transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles, and to maintain accountability for assets; (3) that access to assets is permitted only in accordance with management's general or specific authorization, and (4) that the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Executed this _____ day of _____ 2014

On behalf of _____
(Successful bidder name)

(Address and telephone of successful bidder)

(Name and title of person signing statement)

By: _____
(Signature)

CERTIFIED PUBLIC ACCOUNTANT STATEMENT

In accordance with M.G.L. 30, Section 39R I, _____
a certified public accountant, state that I have examined the above Statement of Management on internal accounting controls, and that in my opinion (1) the representations of management are consistent with the result of management's evaluation of the system of internal accounting controls; and (2) that such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the above referenced successful bidder's financial statements.

(Signature)

(Business name, address and telephone number)

APPENDIX I
PERFORMANCE BOND AND PAYMENT BOND
FOR CONTRACTS OVER \$2000

PERFORMANCE BOND

We, the undersigned,

_____,
(Name of Contractor)

_____,
(Address of Contractor)

_____, hereinafter called Principal, and
(Corporation, Partnership, or Individual)

_____,
(Name of Surety)

_____, (Address of Surety)

hereinafter called Surety, are held and firmly bound unto CITY OF SOMERVILLE, 93

Highland Avenue Avenue, Somerville, MA 02139, hereinafter called Owner, in the penal

sum of _____ Dollars

(\$____) in lawful money of the United States, for the payment of which sum well and truly to

be made. We hereby jointly and severally bind ourselves, our heirs, executors,

administrators, successors, and assigns.

The condition of this obligation is such that the Principal entered into a certain contract with the Owner, dated the ____ day of ____, 20__, a copy of which is attached hereto and made a part hereof, for the project known as Zero New Washington Street Community Park and Off-Leash Recreation Area and the Principal and Surety bind themselves to the Owner for the performance of the contract.

Now, therefore, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the

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original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety and during the guaranty period set forth in the contract, and if it shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by a reason of failure to do so, and shall reimburse and repay the Owner all outlay and expenses which the Owner may incur in making good any default, then this obligation shall be void; otherwise, this bond shall remain in full force and effect; provided, further, that the said Surety for value received hereby agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder of the specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications. Provided, further, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed on this ____day of ____,2014.

CONTRACTOR AS PRINCIPAL

SURETY

(Signature)
Name and Title:

(Signature)
Name and Title:

SEAL

SEAL

Payment Bond

We, the undersigned,

_____,
(Name of Contractor)

_____,
(Address of Contractor)

_____, hereinafter called Principal, and
(Corporation, Partnership, or Individual)

_____,
(Name of Surety)

_____, (Address of Surety)

hereinafter called Surety, are held and firmly bound unto CITY OF SOMERVILLE, 93
Highland Avenue, Somerville, MA 02139, hereinafter called Owner, in the penal sum of
Dollars

(\$____) in lawful money of the United States, for the payment of which sum well and truly to
be made. We hereby jointly and severally bind ourselves, our heirs, executors,
administrators, successors, and assigns.

The condition of this obligation is such that the Principal entered into a certain
contract with the Owner, dated the ____ day of ____, 20__, a copy of which is attached
hereto and made a part hereof, for the project known as Zero New Washington Street
Community Park and Off-Leash Recreation Area.

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

Part 1, Section 4: OTHER BID DOCUMENTS

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

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

IN WITNESS WHEREOF, this instrument is executed on this __ day of __, 2014.

CONTRACTOR AS PRINCIPAL

SURETY

(Signature)

(Signature)

Name and Title:

Name and Title:

SEAL

SEAL

MEETING OF THE BOARD OF DIRECTORS

CERTIFICATE OF AUTHORITY

____20

At a meeting of the Directors of the
_____ duly called and held at _____ on the __ day of ____20__, at which a quorum
was present and acting, it was

VOTED THAT

the _____ of this corporation is hereby authorized and empowered to make, enter into, sign,
seal and deliver, in behalf of this corporation, a Contract for Site Improvements at Perry Park
and Stone Place Park with the City of Somerville, and performance and payment bonds (each
in the full amount of the Contract) in connection with such Contract.

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

ATTEST:

Clerk or Secretary of the Corporation

(Affix Corporate Seal Here)

PART 3: TECHNICAL SPECIFICATIONS

DOCUMENT TITLE	SECTION

SECTION 1 - General Requirements

012200	Unit Prices	012200
012300	Alternates	012300
013300	Submittals	013300
014100	Permits	014100
015500	Vehicular Access and Parking	015500
015600	Temporary Barriers and Enclosures	015600
015700	Environmental Protections	015700
015716	Rodent Control	015716
017100	Construction Layout	017100
017800	Closeout Documentation	017800

SECTION 2 - Demolition

024100	Demolition and Removals	024100

SECTION 3 – Concrete, Metal Fabrication, Signage, Recreation & Fountain Equipment, Site Furnishings, Lighting, Earthwork, Tree Pruning & Removal, Paving, Fencing, Irrigation, Planting, & Utilities

033000	Concrete	033000
055000	Metal Fabrications	055000
101400	Project Signage	101400
116500	Recreational Equipment	116500
129300	Site Furnishings	129300
131200	Fountain Equipment	131200
265600	Site Lighting	265600
310000	Earthwork	310000
311300	Tree Pruning and Removals	311300
321000	Bases Ballasts Paving	321000
323100	Fencing	323100
328000	Irrigation	328000
329000	Planting	329000
331000	Water Utilities	331000
334000	Drainage Utilities	334000
337000	Electric Utilities	337000

SECTION 01 22 00 UNIT PRICES

PART 1 - GENERAL

1.1 GENERAL NOTES

- A. The Unit Prices set forth herein shall, at the option of the City, be used to determine any equitable adjustment of the Contract Price in connection with the changes or extra work performed under this Contract as directed by the City.
- B. It is mutually understood and agreed that such Unit Prices include all items of costs, equipment, taxes and insurance of every kind, overhead, and profit for the Contractor and they shall be used uniformly, without modification for addition and deductions. Prices listed under ADDITIONS and DEDUCTIONS are to be the complete total price billed to and paid by the City therefor. There can be no more than fifteen (15) percent difference in price between the additions and deductions.

1.2 UNIT PRICES FORM

(Note that items marked with * are not included in the base scope of work or the proposed alternates, and are included in the unit price list in case of field changes.)

ITEM DESCRIPTION (All references to items shall correspond to work as described in the relevant portions of the Construction Documents.)		UNIT	ADDITIONS	DEDUCTIONS	Approval
1	Trenching for utilities, not including removal/replacement of finish	C.Y.	\$	\$	
2	Saw Cut bituminous concrete pavement	L.F.			
3	Removal and disposal of bituminous concrete pavement, full depth (assume 3½")	S.F.	\$	\$	
4	Bituminous concrete: removal by grinding, top course only (1.5")	S.F.	\$	\$	
5	Removal, stockpiling, and reinstallation of granite edging (12"x6")	L.F.	\$	\$	
6	Removal and disposal of timber edging (assume 12" depth)	L.F.	\$	\$	
7	Ordinary gravel borrow/clean fill, complete in place	C.Y.	\$	\$	
8	Dense Graded Gravel, complete in place	C.Y.	\$	\$	
9	¾" Crushed Stone/Drainage Stone, complete in place	C.Y.	\$	\$	
10	Clean screened loam, complete in place	C.Y.	\$	\$	
11	Planting Medium, complete in place	C.Y.	\$	\$	
12	Bituminous concrete paving, complete in place including base and subbase preparation	S.F.	\$	\$	
13	Bituminous concrete top course over existing base course	S.F.	\$	\$	
14	Color sealcoating for bituminous concrete (PER COAT)	S.Y.	\$	\$	
15	Brick Paving on bituminous base, complete in place including base and subbase preparation	S.F.	\$	\$	
16	4" reinforced concrete paving (uncolored), complete in place including base and subbase preparation	S.F.	\$	\$	
17	Cost for addition of integral color to concrete paving (to be in addition to item 16 above)	S.F.	\$	\$	
18	6"x18" Precast Concrete Curbing, complete in place	L.F.	\$	\$	
19	Rubber Safety Surface (Bonded Top over Loose Fill), complete in place including base and subbase preparation	S.F.	\$	\$	
20	Aluminum Edging for rubber safety surface, complete in place	L.F.	\$	\$	
21	Cast-In-Place Concrete footing, 4000 PSI, without reinforcements, complete in place	C.F.	\$	\$	
22	Removal of chain link fence, structure, fabric, and footings, 4' h.	L.F.	\$	\$	
23	Repair and repainting of chain link fence structure, 4' high	L.F.	\$	\$	
24	New Black Chain Link Fencing, 4' high (mesh and frame)	L.F.	\$	\$	
25	New 4' high Chain Link Gate, per 5' Nom. Gate leaf	Ea.	\$	\$	
26	Removal of chain link fence, structure, fabric, and footings, 10' h.	L.F.	\$	\$	

27	Repair and repainting of chain link fence structure, 10' high	L.F.	\$	\$	
28	New Black Chain Link Fencing, 10' high (mesh and frame)	L.F.	\$	\$	
29	New 8' high Chain Link Gate with 2' infill panel above, per 5' Nom. Gate leaf	Ea.	\$	\$	
30	Ornamental Steel Fencing, 48" high	L.F.	\$	\$	
31	Refurbish Existing Play Structure In Place Per 11 65 00 and P-1	Ea.	\$	\$	
32	Refurbish and Relocate Existing Swings, incl. new footings	Ea.	\$	\$	
33	Furnish and install Proposed Fitness Equipment	Ea.	\$	\$	
34	Furnish and install EPDM Balance Blocks, set of 3 (8", 11", 14")	Set	\$	\$	
35	Refurbish and Reinstall Existing Metal Bench, 6' long, straight	Ea.	\$	\$	
36	Trash Receptacle with Bonnet Lid and Side Door	Ea.	\$	\$	
37	Recycling Receptacle with Recycler Lid and Side Door	Ea.	\$	\$	
38	Unlit Metal Bollard	Ea.	\$	\$	
39	LED Lighted Metal Bollard	Ea.	\$	\$	
40	In-ground LED lighting transformer, controller, dimmer, and any other required accessories, complete in place	Ea.	\$	\$	
41	In-ground LED lighting, complete in place (Set of 4)	Set	\$	\$	
42	Pedestrian-Scale LED light on 14' Pole (Complete)	Ea.	\$	\$	
43*	*2-outlet GFI Receptacle with Locking Cover, complete in place (if needed – none in base scope)	Ea.	\$	N/A	
44	Electrical connection from electrical box to light/fixture, incl. Conduit, trenching to req'd depth, wiring, and all backfill materials	L.F.	\$	\$	
45	Ground Spray, single unit, complete in place (Type A or Type B)	Ea.	\$	\$	
46	Flush-Mounted Water Activator	Ea.	\$	\$	
47	Water line within site, Type K Copper, 1", complete in place including trenching to required depth and all backfill materials	L.F.	\$	\$	
48	Backflow Prevention Device (per Drawings)	Ea.	\$	\$	
49	New Utility Cabinet per Drawings	Ea.	\$	\$	
50	New Water Meter (purchased as directed by Water Dept.)	Ea.	\$	\$	
51*	*New Water Meter Pit (if needed – none in base scope)	Ea.	\$	N/A	
52*	*New 2" Connection to Water Main in street, incl. Corporation Stop, Curb Valve Box, all excavation, trenching, fees, permits, and details (if needed – none in base scope)	Ea.	\$	N/A	
53	Trench Drain System with Slot Cover, 0.5m section, mitered, complete in place	Ea.	\$	\$	
54	Inline Catch Basin for Trench Drain with Slot Cover	Ea.	\$	\$	
55	Custom Steel Cover for Trench Drain System (complete circle)	Ea.	\$	\$	
56	New Precast Concrete Drainage Structure, complete with Frame and Grate, per Drawings	Ea.	\$	\$	
57	New Grate or solid cover for existing frame	Ea.	\$	\$	
58	New 6" solid PVC Drain Line, complete in place including trenching to required depth and all backfill materials	L.F.	\$	\$	
59*	*New 6" perforated PVC Subdrain, complete in place including all excavation and all backfill materials (6" drainage stone all sides and filter fabric "sock") (if needed – none in base scope)	L.F.	\$	N/A	
60	PVC Irrigation Pipe and Fittings, complete in place	L.F.	\$	\$	
61	Polyethylene Irrigation Pipe and Fittings, complete in place	L.F.	\$	\$	
62	Irrigation Wire Conduit and Wire, complete in place	L.F.	\$	\$	
63	PVC Sleeve under Paving for Pipe/Conduit, complete in place	L.F.	\$	\$	
64	Pop-up Spray Sprinkler, complete in place	Ea.	\$	\$	
65	Rotary Spray Head, Small, complete in place	Ea.	\$	\$	
66	Rotary Spray Head, Medium, complete in place	Ea.	\$	\$	
67	Control Valves including Valve Box, complete in place	Ea.	\$	\$	
68	Irrigation control system, all accessories and rain sensor	Ea.	\$	\$	
69	Shredded Pine Bark Mulch	C.Y.	\$	\$	
70	Seeded lawn, installed and maintained	S.Y.	\$	\$	
71*	*Tree Removal, less than 5" caliper (none in base scope)	Ea.	\$	N/A	
72*	*Tree Removal, 5" to 10" caliper (none in base scope)	Ea.	\$	N/A	
73*	*Tree Removal, greater than 10" caliper (none in base scope)	Ea.	\$	N/A	
74*	*Tree Transplanting, less than 5" caliper (none in base scope)	Ea.	\$	N/A	
75*	*Tree Transplanting, 5" to 10" caliper (none in base scope)	Ea.	\$	N/A	
76	Provide itemized plant list, with cost for each type of plant shown on the Drawings, furnished, installed, maintained per specifications, and guaranteed, one price for both Addition or Deduction.				

1.3 UNIT PRICE REQUIREMENTS

- A. Sufficient prior notice shall be given in accordance with the General Conditions so that proper measurements of materials removed or to be replaced may be taken. All quantities used in the determination of additions to or deductions from the Contract Price due to Unit Prices shall only be those that have been determined and approved by the City in advance.
- B. The unit price bid shall be taken to include all labor and materials necessary to make the item of work complete in place, including all associated footings, base materials, backfill materials, excavations, equipment, overhead, and profit.
- C. In case of substitution of items shown on the Drawings or called for in the Contract Documents, the change to the Contract Price for both item deleted and the item added, if of the same class of work, shall be based on the addition column.

1.4 METHOD OF MEASUREMENT OF EARTH EXCAVATION

- A. Attention is directed to the instructions in section 31 00 00 part 1.2.B.6, regarding assumed quantities of unsuitable base material excavation and prices for additional removal or credit for unperformed removal.
- B. For walls, the excavation will be computed from the surface of the ground as it existed at the time of commencing work to the underside of the structure and to vertical planes 2'-0" outside of the footings of the structure, except where the limit of payment is specifically shown or specified.
- C. For pipe line trenches in earth, except as otherwise indicated on the Drawings or directed by the Designer, the excavation will be computed from the existing surface of the ground, as mentioned above, to the bottom of the barrel of the pipe measured vertically and between vertical planes to width of 24" plus the outside diameter of the pipe regardless of the actual width of the trench. In rock, where the excavation shall be carried 6" below the bottom of the barrel of the pipe and to vertical planes as specified for the trenches in earth.
- D. Where concrete or gravel fill under foundations is required, the excavation will be computed to the bottom of such foundations.
- E. No payment will be made for the excavation of bell or coupling holes.
- F. Excavation outside the specified lines, whether due to slides or other causes, or made for any reason, will not be paid for. Any material sliding into the excavation shall be removed by the Contractor at his/her own expense.
- G. Excavation in each excavation shall be measured to nearest cubic yard.
- H. Basis of Payment: The unit price per cubic yard for excavation shall include the cost of all labor, materials, and equipment necessary to complete the earth excavation work, except shoring, sheeting and bracing required by state and local codes.
- I. Rock Excavation (See also 02200, EARTHWORK)
 - 1. Attention is directed to the instructions in section 31 00 00 part 1.2.B.7, regarding assumed quantities of rock/ledge/foundation excavation and prices for additional removal or credit for unperformed removal.
 - 2. Material to be excavated is assumed to be earth and other materials that can be removed by power excavation equipment. The following items, if they can be removed by power excavation equipment and require the use of drills or explosives, as defined as rock excavation (a) rock or stone in original ledge; (b) hard shale in original ledge; (c) boulders over one cubic yard.

3. When during the process of general excavation rock is encountered, uncover and expose it and notify the Designer before proceeding further. The areas in question shall then be cross-sectioned as specified. Any rock removed prior to notification to the Designer and the subsequent cross-sectioning shall be considered "general excavation" and the requirements and prices for rock excavation shall not apply.
4. Carefully examine rock excavation for foundations and remove loose or shaken rock down to solid bearing; level the rock surface or shelve it to a slope not exceeding 1" per foot or, as directed, leaving no undrained pockets in the surface.
5. Remove all excavated rock from the site and legally dispose of same.
6. Blasting: Obtain written permission and approval of method from local or other authorities having jurisdiction before proceeding with rock excavation. Store, handle, and employ explosives in accordance with state and local regulations or, in the absence of such, in accordance with the provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc.
 - a. In general, no blasting will be allowed within 100 feet of new or existing construction or in trenches within 25 feet of laid utility piping. Notify the Designer at least 48 hours before any intended blasting and do no blasting operation until the Designer has had the opportunity to perform an inspection. However, such inspection shall not relieve the Contractor of any of his/her obligations or liabilities under the Contract. Cover all rock blasting with heavy mats or timber chained together and do not damage existing buildings, foundations, and glazed areas. Repair any damage caused by this work to the satisfaction of the City. Use time delay fuses as possible to reduce shock.
7. If any part of the rock excavation at footings is carried beyond the depth and the dimensions indicated on the Drawings or called for in the Specifications, the Contractor shall at his/her own expense furnish and install concrete of the same strength as footings to the required level. Where rock excavation is carried below depths and dimensions indicated or specified at other areas, the Contractor shall at his/her expense furnish and install compacted fill, as specified herein, to the required level.
8. Method of Measurement: The quantity of rock excavation to be paid for by the City under this item will be the number of cubic yards of rock excavation measured in its original position.
9. Payment lines for wall footings shall be vertical line 1 foot from the toe of the footings; the depth shall be measured at 6 inches below the bottom elevations shown on the Drawings. Payment lines for manholes and catch basins shall be 1 foot outside of the outerwalls and 6 inches below the bottom of the structure.

END OF SECTION

SECTION 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.
- D. All dimensional and quantity estimates provided in the descriptions of the work below (noted with "approx.") are provided for initial reference only; exact dimensions and quantities for the full extent of the work as described in the Drawings and Specifications shall be confirmed in field by the Contractor before submitting the price. The Contractor shall be responsible for the full extent of the work described, not to be limited by the approximate quantities.

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 – Expand Basketball Court and Replace Fences
 - 1. Work:
 - a. ADD the removal of the indicated sections of Chain Link Fencing, posts, footings, and gate, per Drawing L-1 and L-2 (approx. 270 linear feet).
 - b. DEDUCT the refurbishment of the indicated sections of Chain Link Fence and gate being removed, per Drawing L-2. (approx. 270 linear feet).
 - c. ADD the furnishing and installation of new 10' high Black Vinyl Clad Chain Link Fence (gates to remain per Base Bid) (approx. 190 linear feet), per Drawing L-2 and Detail 2/L-10.
 - d. ADD the furnishing and installation of new full-depth bituminous concrete pavement, per Drawings L-2, L-3, and Detail 2/L-7.
 - e. ADD the refurbishment and reinstallation of three (3) additional existing metal ribbon benches, per Drawings L-2, L-3, and Detail 2/L-8.
 - 2. Refer to the following Specification sections for the work of Alternate No. 1:
 - a. Section 02 41 00 – Demolition and Removals
 - b. Section 12 93 00 – Site Furnishings
 - c. Section 32 10 00 – Bases, Ballasts, Paving, and Edging
 - d. Section 32 31 00 – Fencing
- B. Alternate No. 2 – Remove and Replace Basketball Court Paving in lieu of Topcoat
 - 1. Work:
 - a. ADD the removal of the full depth of bituminous concrete pavement in the Basketball Court area, including any improper base course material encountered, per Drawing L-1 and L-2 (approx. 3,550 square feet).
 - b. REPLACE the furnishing and installation of new Top Course Only Bituminous Concrete within the Basketball Court Area with new Full Depth Bituminous Concrete Pavement, per Drawing L-2 and Detail 2/L-7.
 - 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 10 00 – Bases, Ballasts, Paving, and Edging

(continued on next page)

C. Alternate No. 3 – Replace Plantings and Fencing along Southern Property Line

1. Work:

- a. ADD the removal and disposal of the indicated section of existing chain link fencing, posts, and footings along the southern property line (to the existing wood fence, approx. 78 linear feet) per Drawings L-1 and L-2.
- b. DEDUCT the reattachment and repair of the indicated section of chain link fencing, per Drawings L-1 and L-2.
- c. ADD the furnishing and installation of new 10' high Black Vinyl Clad Chain Link Fence (approx. 78 linear feet), per Drawing L-2 and Detail 2/L-10.
- d. ADD the pruning of existing vines to facilitate fence removal, per Drawings L-1, L-2, and L-6.
- e. ADD the removal of existing lawn, preparation of new planting bed, and furnishing and installation of (23) additional shrubs in the indicated area, per Drawing L-6 and detail 1/L-6.

2. Refer to the following Specification section for the work of Alternate No. 3:

- a. Section 02 41 00 – Demolition and Removals
- b. Section 32 31 00 – Fencing
- c. Section 32 90 00 – Planting

END OF SECTION

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SECTION 01 33 00 SUBMITTALS

PART 1 - GENERAL

1.1 SCOPE OF WORK

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

PART 2 - SUBMITTALS

2.1 REQUIREMENTS

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

PART 3 - EXECUTION

3.1 SUBMISSIONS

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

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SECTION 01 41 00 PERMITS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 SCOPE OF WORK

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

1.3 PERMITS BY CONTRACTOR

- A. The Contractor shall prepare permit applications and obtain applicable permits after the contract is awarded, bearing all expenses. All required permits shall be obtained, INCLUDING BUT NOT LIMITED TO the following:
 - 1. Backflow Preventers (Cross-Connection Permit)
 - 2. Trench Permit for trenching in the Public Way (520 CMR 14.00) if needed
 - 3. Electrical Permit
 - 4. Plumbing Permit
 - 5. Parking Permits as needed and appropriate.

1.4 DIGSAFE

- A. Contact Digsafe seventy-two (72) hours prior to initiating work at #1-888-344-7233.

PART 2 - MATERIALS

2.1 GENERAL

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

PART 3 - EXECUTION

3.1 GENERAL

- A. Execute all work per permit requirements. All plumbing and electric work to be approved by City Inspectors; sidewalk ramps to be approved by City Engineer.

PART 4 - GUARANTEE

4.1 GENERAL

- A. Guarantee all work per permit requirements.

END OF SECTION

SECTION 01 55 00 VEHICULAR ACCESS AND PARKING

PART 1 - GENERAL

1.1 SCOPE

- A. The conditions and general requirements of the Contract, Division 0, apply to the work under this Section.
- B. This section addresses requirements, restrictions, and available options for the Contractor, subcontractors, work crews, and delivery vehicles during the duration of the project.

PART 2 - MATERIALS - NOT APPLICABLE

PART 3 - EXECUTION

3.1 ON-SITE PARKING

- A. Site soils in unpaved or cleared areas shall be protected from compaction, spills, and other damage at all times. The Contractor shall be responsible for ensuring that no vehicles are parked and no equipment or materials are stored on existing pavements intended to remain, or on areas intended as lawn or planting bed.
- B. Vehicular access for fire prevention shall remain unblocked by parked vehicles or stored equipment and materials at all times.
- C. The Contractor shall be solely responsible for all vehicles, materials, and equipment left on the premises outside working hours.
- D. The Contractor shall repair or replace, at no cost to the Owner, any existing pavement or curbing intended to remain which is damaged by vehicular use or entry into the project site.

3.2 ON-STREET PARKING

- A. The Contractor is responsible for observing all regulations of the Somerville Traffic and Parking Department.
 - 1. The majority of the surrounding streets are 2-hour metered parking areas in the vicinity of the Project Site, with Resident Only parking on other nearby streets. The public parking lots in the vicinity are either metered, or business permit parking only.
 - 2. "Contractor Permits" valid for a 30-day period in the neighborhood of a specific address or addresses are available (with a valid Building Permit) from the Traffic and Parking office at 133 Holland Street. (As of the Bid Date, the permits are \$35/vehicle/month.) See the City Traffic & Parking Department website at <http://www.parksomerville.com/parking-permits> for further information.

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SECTION 01 56 00 TEMPORARY BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. Temporary Construction Perimeter Fencing;
 - 2. Tree or Plant Protection Fencing as indicated on the Drawings;
 - 3. All other temporary barriers and controls needed for protection of the public during construction.

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 01 57 00 – Environmental Protections;
 - 2. Section 02 41 00 – Site Preparation and Demolition;
 - 3. Section 10 14 00 – Project Signage.

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. NCLMA – National Chain Link Manufacturers' Association;
 - 2. OSHA – Occupational Safety and Health Act.

PART 2 - MATERIALS

2.1 BARRIERS AND BARRICADES

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.
 - 1. Comply with standards and code requirements for erection of structurally adequate barriers.
 - 2. Install barriers of a neat and uniform appearance.
 - 3. Provide graphics and signs warning of the hazard being protected against.
 - 4. Where appropriate and needed provide lighting, including flashing red or amber lights.
 - 5. Provide barriers at public rights-of-way and for public access to existing buildings when adjacent to construction operations.
- B. Provide barricades with blinking beacon light at all open trenches and other excavations.
- C. Provide protection as specified below for plant life designated to remain.
- D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

2.2 TEMPORARY CONSTRUCTION FENCING

- A. Prior to any excavation work the Contractor shall provide temporary construction fencing as shown on the Drawings and/or as required to completely protect the work area and injury to persons or property.
- B. The Contractor shall furnish and install temporary fencing of the following type in all areas where existing fencing lengths are inadequate to enclose the construction.
 - 1. Chain link fencing, eight feet (8') high, fabricated from No. 9 gauge galvanized wire woven in a 2" diamond mesh with top salvage and having galvanized steel H or pipe intermediate and terminal posts. Post spacing shall not exceed eight feet (8') on center. Cross bracing, reinforcing gates and other parts of fencing shall conform to standard Specifications of the National Chain Link Manufacturers Association. All posts shall be set into temporary concrete footings or on temporary chain link fencing stands as approved by the Landscape Architect.
- C. The Contractor shall furnish and install matching gates equipped with suitable locks and other hardware where necessary to provide access for construction apparatus or

fire fighting equipment. The Owner shall be provided with a copy of the key used for all locks.

2.3 TEMPORARY WORK IN PUBLIC WAYS

- A. Prior to commencing any work in public ways and other areas which are legally used by vehicles or pedestrians, the Contractor shall submit in writing the proposed methods of protection to the Official. Work shall not be commenced in these areas until written approval is received from the Official.
- B. In general, all excavations in public ways shall be protected by substantial barriers which will offer complete protection against accidents for pedestrian and vehicular traffic without interrupting the normal flow of traffic. All barriers must be properly lighted with electric or battery powered safety lights and must be maintained in good working order by the Contractor for the duration of the time such barriers are required.
- C. Trenches across sidewalks shall be completely covered with a temporary walkway, comprised of properly supported nominal 2" thick lumber laid with butt joints and covered with exterior grade plywood, 1/2" minimum thickness. Provide continuous 2" x 4" rails and posts secured to the temporary walkway conforming to the requirements of the Occupational Safety and Health Act (OSHA).
- D. Wherever temporary chutes are to be extended over sidewalks or other pedestrian or vehicular traffic areas, the bottom and sides of the chutes shall be provided with continuous dustproof and weatherproof lining, applied to the exterior surfaces.
- E. The Contractor will be required to furnish, install, and maintain in good condition, at no increase in Contract Price or Contract Time, all other safety measures which in the judgment of the Official are required to protect the public from accidents due to work performed under this Contract. This requirement is supplementary to the Contractor's rights and obligations to provide and employ safety measures as s/he may deem necessary or as may be required by law or standard safety practices.

2.4 TREE PROTECTION FENCING

- A. Where indicated on the Drawings or as specified elsewhere, tree protection fencing shall be installed to protect existing trees to remain, in accordance with 01 57 00 and 02 41 00, and with the Details shown on the Drawings.
- B. Tree Protection Materials (if not otherwise specified elsewhere):
 - 1. Posts: 2 inch by 4 inch pressure treated wood spaced 5' on center.
 - 2. Fencing: Shall be a heavy-duty bright orange 2.5"-max diamond-mesh HDPE safety/barrier fence with tensile strength of at least 250 lb/ft, 4'-0" high, with smooth upper and lower edges, "Sentry HD" by Tenax of Baltimore, MD or Approved Equal. Fencing shall be stapled with construction-grade staples to each post at a minimum of 3 locations.
 - 3. Exposed height above grade: 4 feet.
 - 4. Minimum post embedment: 18 inches.
 - 5. Stake or spray layout of all proposed work under the driplines of existing trees for approval before beginning construction. Install fencing over the greatest extent feasible within the driplines of the trees, allowing for the work.
 - 6. Maintain fencing in sound condition until project completion. Do not relocate installed fencing without the express approval of the Landscape Architect.

PART 3 - EXECUTION

3.1 BARRIERS, BARRICADES AND ENCLOSURES

- A. Install temporary items as specified herein and in the Drawings or, where not specified, to level of quality suitable for the intended purpose as judged by the Project Consultant.

3.2 REMOVAL OF TEMPORARY BARRIERS, ENCLOSURES AND PROTECTIONS

- A. Remove temporary barriers, barricades, fencing, enclosures and protections as warranted by the progress of the Work and prior to Substantial Completion.
- B. Remove in-ground elements of all temporary barrier installations (if any) completely. Grade site as noted.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition at start of work or as specified elsewhere in the Contract Documents.

END OF SECTION

SECTION 01 57 00 ENVIRONMENTAL PROTECTIONS

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. Clearing and Grubbing
 - 8. Discharge of Dewatering Operations
 - 9. Dust Control
 - 10. Separation and Replacement of Topsoil
 - 11. Baled Hay or Straw
 - 12. Silt Fence
 - 13. 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

2.1 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.

2.2 SILT FENCE

- A. If so indicated on the drawings 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 (if any are present on site), 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 be Mirafi Envirofence manufactured by Mirafi, Inc. or approved equal.
- C. 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

2.3 DUST CONTROL MEASURES

- A. 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 herein.
- B. Calcium Chloride
 - 1. Calcium chloride shall conform to the requirements of AASHTO-M 144, Type I or Type II and Specification for Calcium Chloride, ASTM D98. The calcium chloride shall be packaged in moisture proof bags or in airtight drums with the manufacturer, name of product, net weight, and percentage of calcium chloride guaranteed by the manufacturer legibly marked on each container.
 - 2. Calcium chloride failing to meet the requirements of the aforementioned specifications or that which has become caked or sticky in shipment, may be rejected by the Landscape Architect and Owner's Representative.
- C. Water shall not be brackish and shall be free from oil, acid, and injurious alkali or vegetable matter.

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. 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, if used, 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 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.

3.8 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.

3.9 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 herein.
- B. Application
 - 1. Calcium chloride shall be applied when ordered by the Landscape Architect or Owner's Representative and only in areas which will not be adversely affected by the application.
 - 2. Calcium chloride shall be uniformly applied at the rate of 1-1/2 pounds per square yard or at any other rate as directed by the Landscape Architect or

Owner's Representative. Application shall be by means of a mechanical spreader, or other approved methods. The number and frequency of applications shall be determined by the Landscape Architect and Owner's Representative.

3. Water may be sprinkler applied with equipment including a tank with gauge-equipped pressure pump and a nozzle-equipped spray bar.
4. Water shall be dispersed through the nozzle under a minimum pressure of 20 pounds per square inch, gauge pressure.

3.10 SEPARATION AND REPLACEMENT OF TOPSOIL

- A. Topsoil 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.

3.11 NOISE CONTROL

- A. The Contractor shall adhere to the City ordinances for Noise Control (Article VII, Division 2) 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

SECTION 01 57 16 RODENT CONTROL

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.

1.2 WORK INCLUDED:

- A. This section specifies requirements for rodent control activities by the Contractor at all work and laydown (or staging) areas in connection with this Contract.
- B. The Contractor shall retain the services of a licensed rodent exterminator to conduct an inspection of the work and laydown areas and report on the presence of rodents and take any necessary measures to eliminate existing rodent populations prior to start of work. All rodent control to be in place and approved prior to any equipment delivery or demolition.

1.3 SUBMITTALS:

In accordance with requirements of general specifications, submit the following:

- A. Within ten days after Notice to Proceed, submit to the Landscape Architect and Owner's Representative a written description of rodent control measures to be used and the areas to be included in the program.
- B. Provide the name and background of the licensed rodent exterminator retained to provide any necessary rodent eradication measures prior to start of work. The licensed rodent exterminator must be approved by City Director of Inspectional Services.

PART 2 - MATERIALS

2.1 CONTAINERS:

- A. Use metal or heavy-duty plastic refuse containers with tight-fitting lids for disposal of all garbage, or trash associated with food. These containers shall not have openings that allow access by rodents.

PART 3 - EXECUTION

3.1 WORK AND LAYDOWN AREAS WITHIN THE CONTRACT AREA:

- A. Before mobilization begins, obtain written verification from the rodent exterminator that rodent populations have been effectively controlled in areas to be occupied.
- B. Following site clearing and before demolition, excavation, or construction, inspect work and laydown areas and remove all remaining trash, debris, and weeds.
- C. Maintain work and laydown areas free of trash, garbage, weeds, and debris. Provide and enforce proper use of refuse containers to ensure that rodents and other pests are not harbored or attracted.

- D. Designate specific locations as lunch and coffee break areas to prevent random disposal of garbage and trash. Keep those areas free of litter and garbage, and provide refuse containers as described in 2.01 of this section. Keep refuse containers upright with their lids shut tight.
- E. Have all refuse containers emptied daily to maintain site sanitation.
- F. Notify the Owner's Representative within 24 hours whenever rodents (rats or mice) or signs of rodent activity (burrows or droppings) are observed in work or laydown areas. Take appropriate action to locate and control the rodents.

3.2 LAYDOWN AREAS OUTSIDE THE CONTRACT AREA:

- A. Implement pest control at all laydown areas that are not areas of this Contract, but that are used by the Contractor in connection with this Contract. Undertake rodent control at least two weeks prior to use of the area and with time to ensure that the site is free of rodent populations (rats and mice) prior to site occupancy. Maintain the site free of rodents throughout the duration of its use.
- B. Clear laydown areas of trash, debris, and weeds prior to occupancy. Initiate those actions only after rodent populations have been effectively controlled.
- C. Maintain laydown areas free of trash, garbage, weeds, and debris. Provide and enforce proper use of refuse containers to ensure that rodents and other pests are not harbored or attracted.
- D. Dispose of all garbage or trash associated with food in refuse containers with tight-fitting lids as described in 2.01 of this Section. Have refuse containers emptied daily to maintain site sanitation.

END OF SECTION

SECTION 01 71 00 CONSTRUCTION LAYOUT

PART 1 - GENERAL

1.1 SCOPE OF WORK

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

1.2 QUALIFICATIONS & SUBMITTALS

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

PART 2 - MATERIALS

2.1 LAYOUT AND STAKING

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

PART 3 - EXECUTION

3.1 SURVEY LAYOUT

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

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

END OF SECTION

SECTION 01 78 00 CLOSEOUT DOCUMENTATION

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 maintenance manuals, maintenance and repair products, warranty information, detailed procedures, product information, submittal records, as-built drawings, and certifications of all materials and equipment for the Landscape Architect's approval. Additional submissions may also be required as stipulated in the technical specifications sections.
- B. Upon Final Completion of all park construction, the contractor shall submit: three complete copies of a park maintenance manual, and three copies of an as-built drawing set, with three compact disc (CD) copies of the as-built drawings.
- C. The City will not issue the final check for park retainage until the submittal and approval of the maintenance manual and as-built drawings.

PART 2 - SUBMITTALS

2.1 MAINTENANCE MANUAL

The Maintenance shall be in the form of a three ring binder, organized and tabbed into appropriate sections, and shall include the following items:

- A. A complete landscape maintenance plan with recommended maintenance schedules and procedures for all park systems including: watering, fertilization, spring start up procedures, fall clean-up, irrigation and water systems shut-down procedures, and park winterization procedures;
- B. A letter from the contractor stating the period of warranty for all parts, materials, and workmanship, from the date of Final Completion;
- C. A letter from the contractor stating the period of warranty for the irrigation system;
- D. All product information, product directions, and warranties;
- E. List of all plant material, and sizes of plant containers;
- F. Copies of City permits with signatures of inspectors;
- G. Contact information for all subcontractors including email addresses; and
- H. A record of all submittals and dates of approvals.
- I. References are made throughout the Specifications and Drawings where additional record submittals are required.

2.2 PARK 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.

2.3 AS-BUILT DRAWINGS

- A. As-Built drawing shall be a complete and accurate record that incorporate any and all changes to the construction plan set issued at the time of contract initiation. As-built drawings shall be clearly marked and annotated and shall include but not be limited to: all field changes, change orders, and supplemental drawings provided by the Landscape Architect.
- B. As-Built Drawings shall include complete records of all water, drainage, and electric utilities installed, including sizing, location, and inverts of all drainage pipes and structures, and sizing and location of all water service lines and electrical conduits.
- C. The Compact Discs shall include an electronic copy of all as-built drawings.

PART 3 - EXECUTION

3.1 SUBMISSIONS

- A. Submit all documents and data in a collated, manual format, with three (3) manuals to be submitted. Include a Table of Contents of the material for reference. The submittal is to be entire and complete, addressing all requirements listed above.

END OF SECTION

SECTION 02 41 00 DEMOLITION AND REMOVALS

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/she has an approved dumping location for debris and/or spoil from all removals and excavation activities.
- C. On-site cleaning of materials for the purpose of salvage other than as specifically directed in the Contract Documents shall not be permitted.
- D. The Contractor shall secure all necessary permits from the City of Somerville before starting this project.
- E. The City of Somerville shall have the right of first refusal on all removed materials, at the direction of the City's Project Manager. All materials refused by the City shall become the property of the Contractor.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all Site Preparation work complete, as shown on the Drawings and as specified herein.
- B. Work includes, but is not limited to the following:
 - 1. Removal and disposal of existing wood fiber safety surface, filter fabric, and timber edging completely;
 - 2. Sawcutting, removal, and disposal of indicated bituminous concrete pavements to the full depth;
 - 3. Preparation of bituminous concrete pavements for topcoating and sealcoating in the indicated areas (under Base Bid and Alternate 1);
 - 4. Removal and disposal of indicated areas of brick paving on bituminous concrete base, including sawcutting of existing base where indicated;
 - 5. Removal and disposal of concrete pavements and pads as indicated;
 - 6. Removal and disposal of stone or gravel base material under removed pavements and safety surfacing as required to adjust grades or to remove base material which is not suitable for the new finish condition;
 - 7. Removal, stockpiling, and salvage for re-use of indicated sections of existing granite edging, including base material;
 - 8. Refurbishment of indicated sections of chain link fencing and gates;
 - 9. Removal of indicated sections of chain link fencing and of gates (Quantity increases under Alternates 1 and 3);
 - 10. Refurbishment and relocation of existing metal benches;
 - 11. Removal and transfer to City or (if refused) disposal of indicated existing trash receptacles, wood-and-metal bench, and granite bollards;

12. Removal and disposal of indicated play equipment items (see P-1) including all footings;
13. Refurbishment of those play equipment items not noted for removal, and relocation of the existing swingset (see P-1);
14. Refurbishment of the existing basketball posts, and removal and transfer to City or (if refused) disposal of backboards, rims, and nets;
15. Removal and disposal of indicated plantings and of lawn, mulch bed, weeds, etc as needed to install the improvements;
16. Removal and disposal of all portions of the existing fountain and its plumbing;
17. Termination of service (if necessary) to, and removal of, indicated small electrical cabinets, delivery of salvaged cabinets to the City, and disposal (if refused) of cabinet contents;
18. Removal and disposal of indicated drain structures;
19. Protection of all other utilities except as specifically noted;
20. Protection of all furnishings, features, pavements, fence material, and other items not indicated for removal, and all pavements and surfaces outside the Limit Of Work;
21. Installation and maintenance of temporary construction fencing and other necessary measures to ensure the protection of the general public;
22. Any other necessary preparations for installation of improvements.

1.3 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of the other trades. Cooperate with all trades and all departments of City of Somerville and coordinate all work under this Section.
- B. The following related items are included under the Sections listed below
 1. Section 01 56 00 – Temporary Barriers
 2. Section 01 57 00 – Environmental Protection
 3. Section 31 00 00 – Earthwork
 4. Section 32 90 00 – Planting
 5. 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 (including Traffic Management Plan for all street and other work affecting the Public Right-Of-Way), 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, whether or not

shown on the drawing and/or specified. The disturbed areas shall be secured with a 8'-0" high chain link construction fence and fence shall be maintained at all times while site is under construction.

- D. Provide all safety controls during construction including temporary walkways, fencing, barricades, etc. at no additional cost to the Owner. All such controls affecting the Public Right-Of-Way must meet with the approval of the City (coordinated through the Owner's Representative).
- E. Completely remove from the project area all demolition materials, except as designated for stockpiling for re-use or as requested by the City of Somerville, 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 demolition 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 removals.

1.5 SITE CONDITIONS

- A. The Contractor shall visit and accept the site as he/she finds it and shall inform him- or herself 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 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.

1.6 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 and structures, drainage lines and structures, and adjoining property. Monuments and benchmarks shall be carefully maintained and, if disturbed or destroyed, replaced as directed.
- B. 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 (1-800-322-4844) before proceeding within the Contract limits.
- C. 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.
- D. 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.
- E. Trees not indicated for removal that are damaged during construction shall be removed by the Contractor at his expense if instructed to do so by the Landscape

Architect, and the Contractor shall, at the Owner's sole discretion, either replace each such tree with a comparable specimen or pay for each damaged and removed tree based on the following schedule:

1. \$1,500. per tree for 2" through 6" caliper
2. \$2,000. per tree for over 6", through 12" caliper
3. \$4,000. per tree for over 12", through 18" caliper
4. \$5,000. per tree for over 18" caliper.

1.7 SPECIAL PROTECTION FOR MAINTAINING STREETS AND PUBLIC WAYS

- A. Do not close or obstruct streets 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 the public, streets, sidewalks, and adjoining property.
- D. Ensure that all current accessible routes around the perimeter of the site remain ADA compliant at all times (surfacing, width of passage, and slope) and that alterations to the accessible route are clearly marked during sidewalk and street work.
- E. Completely remove all protection when the work is completed or when ordered in writing to do so by the Owner.

1.8 UTILITIES

- A. All work shall be performed in accordance with federal, state, and local codes.
- B. Discontinuance or Interruption: Before starting demolition, the Contractor shall be solely responsible for making all necessary arrangements and for performing any necessary work involved in connection with the discontinuance or interruption of all public and private utilities or services under the jurisdiction of the utility companies or corporations, and the Owner. These include gas, electricity, steam, refrigeration, low tension system, telephone, telegraph, police signal, fire alarm, water, sanitary sewer, storm drainage, and without limiting the generality of the foregoing, including any system or systems which will be affected by the work to be performed under this Contract.
- C. Protection: Preserve in operating condition any active utilities found to be 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/her own expense, repair all damage to any such utility to the satisfaction of the Owner.

PART 2 - MATERIALS - NOT USED

Specifications continue on following page.

PART 3 - EXECUTION

3.1 REMOVALS

- A. Tree, stump, and shrub removal:
 - 1. 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 at least 24 inches below new finish grade.
 - 2. In areas where the finish condition shall be pavement, the stump and roots shall be completely removed.
- B. All holes and trenches resulting from removals shall be backfilled as appropriate with topsoil or fill material and compacted as specified in Section 31 00 00 - Earthwork.

3.2 TEMPORARY CONSTRUCTION FENCING

- A. Eight foot (minimum) high temporary chain link fence shall be installed and maintained by the contractor around the perimeter of site from the commencement of the job through substantial completion. See 01 56 00, Temporary Barriers.

3.3 SALVAGE, MODIFICATION, REFURBISHMENT, & REUSE OF EXISTING MATERIAL

- A. Chain Link Fencing:
 - 1. Indicated lengths of chain link fencing fabric and appended materials shall be carefully removed from their installed locations, taking appropriate measures to protect structural fencing components from damage during removal. Where fencing can be properly refurbished in place without removing the mesh, the Contractor shall be permitted to do so with the approval of the Landscape Architect.
 - a. Mesh shall not be removed for refurbishment along the southern property line, in order to avoid damage to vines. If Alternate 3 is accepted and the fence is to be replaced, the vines shall be pruned cleanly to promote their regrowth on the new fencing.
 - 2. Fence posts and rails shall be refurbished in place and reused according to 32 31 00, Fencing. At the contractor's discretion, new framework meeting the specifications in 32 31 00 may instead be installed provided such work is at no additional cost to the Owner.
 - 3. The Owner shall be the sole judge when determining if salvaged material is in satisfactory condition for re-use, according to the guidelines given in Section 32 31 00, Fencing.
 - 4. All weeds shall be removed from refurbished sections of fencing.
 - a. Note
- B. Metal Benches:
 - 1. The six (6) existing metal ribbon style benches on the project site (indicated for relocation on L1 and L2) shall be refurbished as outlined below and re-installed as shown on the drawings.
 - 2. Benches shall be thoroughly cleaned, and repainted as needed, prior to reinstallation using appropriate products suited to the purpose. See also 12 93 00, Site Furnishings.

3. All missing or broken hardware (including but not limited to anchor bolts) shall be replaced. All new or replacement hardware shall be tamper-resistant and stainless steel.
 4. All damaged or broken welds shall be repaired. All new welds shall be welded to meet AWS standards and local code requirements.
 5. New steel embedment legs shall be ordered from the fence manufacturer, or shop fabricated, to conform to the drawings and permit embedment mounting of the new benches in a variety of surfaces. Do not anchor bolt reinstalled benches through bituminous concrete or rubber surfacing.
- C. Drinking Fountain:
1. Contractor shall clean all rust and other deterioration from the existing drinking fountain and repaint the entire painted portion of the exterior, as described in Sections 05 50 00 and 12 93 00; color to be semi-gloss black.
 2. Replace any damaged or missing components of the existing drinking fountain as needed for proper function and to meet all codes.
- D. Basketball Hoops:
1. The existing Basketball Posts shall be thoroughly refurbished as described in Section 11 65 00, Athletic and Recreational Equipment.
 2. The posts shall be thoroughly cleaned in order to determine which areas have damaged paint. All areas which are rusting or have damaged paint shall be cleaned to bare white metal, and the ENTIRE POST shall be repainted; see 11 65 00.
 3. Basketball hoops, nets, and backboards shall be replaced. See 11 65 00.
- E. Play Equipment and Swingset:
1. For further information on play structure refurbishment, see Section 11 65 00.
 2. The existing play equipment shall be inspected by a Certified Playground Safety Inspector retained by the Contractor to determine compliance and any parts which require replacement.
 3. Replacements shall include (these categories may overlap):
 - a. All parts which are broken or pose a safety hazard in the judgment of the CPSI;
 - b. All items noted on the Drawings by PlayArtDesign (Sheet P-1);
 - c. All rusting chains.
 4. Painting:
 - a. The existing play structures shall be thoroughly cleaned in order to determine which metal components have damaged paint and need to be repainted.
 - b. All metal components which are rusting or have damaged paint shall be cleaned to bare white metal and repainted using a galvanizing primer and a two-coat finish epoxy system; see 11 65 00.
 5. Relocation of swingset: The existing swingset posts shall be cleaned of all attached concrete. The swingset shall be relocated as shown on the Drawings, and reinstalled using new concrete footings of the Dimensions indicated on the Drawings.

F. Granite Edging

1. Handle granite sections to be removed carefully; avoid damage to corners, bullnoses, inscriptions, and exposed finishes, and avoid cracking slabs of granite.
2. Stones shall be salvaged and cleaned for reuse in the resetting of the granite edge to provide a finished appearance matching the original edging to the satisfaction of the Landscape Architect and Owner.
3. Repair new end of walls as needed neatly, in accordance with the Drawings.

3.4 ELECTRICAL REMOVALS

- A. Confirm inactive status and lack of current use of two (2) indicated small electrical cabinets before beginning this work.
- B. Disconnect and discontinue electric service to cabinets, make safe, and abandon service in place. All other existing electrical service on the site shall remain active.
- C. Carefully remove cabinets and contents. The cabinets shall be delivered to the City of Somerville Dept. of Public Works Lights and Lines Division. The City shall have right of first refusal on the contents of the cabinets.
- D. Completely remove the underlying concrete pad, taking care to protect the canopy and roots of nearby trees and all remaining electrical services not scheduled for removal.

3.5 DRAINAGE SYSTEM WORK

- A. The indicated portions of the subsurface drainage system to be modified or removed shall be cleanly removed so as to prevent damage or siltation of, or the entry of construction debris into, the portions of the drainage system to remain. Tight-fitting temporary wooden bulkheads and filter fabric shall be used to protect the open ends of protected drainage lines until reconnection to new drainage lines.
- B. Contractor shall clean all portions of the existing drainage system and storm water lines indicated to remain, removing accumulated silt and clearing all pipes in order to provide sufficiently positive and continuous drainage to existing system.
- C. See Section 33 40 00, Storm Drainage System, for more information.

3.6 DUST CONTROL

- A. Wet down thoroughly all work during excavation to prevent spread of dust; see Section 01 57 00 – Environmental Protection, for more information. Make all arrangements and pay for all water use and necessary water connections.

3.7 CLEAN-UP

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

END OF SECTION

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SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform Earthwork as shown on the Drawings and as specified herein.
- B. To be included:
 - 1. Concrete for concrete paving, edges, and walls, and for all footings for furnishings, 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 City of Somerville and coordinate all work under this Section therewith.
- D. The following related items are included under the Sections listed below.
 - 1. Section 11 65 00 – Recreation Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 26 56 00 – Site Lighting
 - 4. Section 31 00 00 – Earthwork
 - 5. Section 32 10 00 – Bases, Ballasts, and Paving
 - 6. Section 32 31 00 – Fencing
 - 7. Section 33 10 00 – Water Utilities
 - 8. Section 33 40 00 – Drainage Utilities
 - 9. Section 33 70 00 – Electrical Utilities

1.3 SUBMITTALS

- A. All manufacturers' product literature.
- 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. 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.

- D. Compressive Strength Test Results and other applicable tests as noted in 3.1.K, Field Quality Control, below.

1.4 LAWS, ORDINANCES, PERMITS AND FEES

The Contractor shall:

- A. Give necessary notices, obtain all permits and pay all governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.
- B. Obtain all required certificates of inspection for this work and deliver same to the Landscape Architect before request for acceptance and final payment for the work.
- C. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations of the City of Somerville 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 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.

1.7 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 public ways in the manner required by the City.

- B. Should there be any conflict between requirements specified in the Contract Documents and those of the City of Somerville, 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.

PART 2 - PRODUCTS

2.1 CAST-IN-PLACE CONCRETE

- 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 unless otherwise noted on the Drawings or in a related Specification section. Concrete shall be air-entrained 5% minimum with a two (2") to four (4") inch maximum slump unless otherwise noted on the Drawings or in a related Specification section.
- B. Form Materials
 - 1. 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.
 - 2. 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.
 - 3. 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.
 - 4. 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.
- C. Reinforcing Materials
 - 1. Reinforcing Bars: ASTM A615, Grade 60.
 - 2. Welded Wire Fabric (WWF): ASTM A185, welded steel wire fabric.
 - 3. 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.

D. Cement

1. 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.
2. 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.

E. Aggregate

1. Fine aggregate for all concrete shall consist of washed inert natural sand conforming to ASTM-C330.

F. Water

1. Water for concrete shall be clean, potable, and free from deleterious substances.
2. 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.

G. Related Materials

1. Grout: Non-shrink, non-metallic grout. Provide one of the following (or approved equal):
 - a. "Five Star Grout": U.S. Grout Company.
 - b. "Masterflow 713": Master Builders.
2. 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.
3. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.
4. Moisture-Retaining Cover: One of the following, complying with ASTM C171.
 - a. Waterproof paper
 - b. Polyethylene film.
 - c. Polyethylene-coated burlap
5. 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.
6. Admixtures
 - a. Admixtures causing accelerated setting of the cement in concrete shall not be used.
 - b. 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.

- c. Water-reducing and air-entraining agents shall be used in concrete, as required by the Landscape Architect, in strict accordance with the manufacturer's printed instructions. Agents shall be stored safe from adverse temperature in accordance with manufacturer's printed instructions. Total air entrained in freshly mixed concrete shall be 5.0% plus or minus 1.0% of volume of concrete with required strengths maintained.
 - d. 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.
 - e. 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.
 - f. No other admixtures may be used without Landscape Architect's approval.
- H. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
- 1. Ramps and sloping surfaces: Not more than 3".
 - 2. Reinforcing wall systems: Not less than 1" and not more than 3".
 - 3. Other concrete: Not less than 2" and not more than 4".
- I. Curing Compounds
- 1. 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.
 - 2. 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.
 - 3. 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.
- J. Proportioning and Design of Mixes
- 1. 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.
 - 2. 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.
 - 3. 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.

K. Concrete Mix

1. 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.
2. 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.
3. Ready-Mix Concrete: Comply with requirements of ASTM C94, and as herein specified.
4. Delete reference for allowing additional water to be added to batch for material with insufficient slump. Addition of water to the batch will not be permitted.
5. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.
6. 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 CAST-IN-PLACE CONCRETE

A. Formwork

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

5. Tolerance
 - a. Comply with ACI 301, Chapter 4, Paragraph 4.3, except as otherwise noted.
6. Preparation of Form Surfaces
 - a. Comply with ACI 301, Chapter 4, Paragraph 4.4
 - b. Use non-staining mineral oil or form lacquer.
- B. Reinforcement
 1. General: Comply with ASI 301, Chapter 5, Paragraph 5.4.
 2. Placing Tolerance: Comply with ACI 301, Chapter 5, Paragraph 5.4.
 3. Placing
 - a. Comply with ACI 301, Chapter 5, Paragraph 5.5. When splices not shown on the Drawings are approved by the Landscape Architect, such splicing shall conform to ACI 318.
 - b. Place reinforcing bars having assigned positions so that distinguishing marks agree with those given on the Shop Drawings relating to or calling for bars.
 - c. Secure all reinforcing bars in place with high-density plastic supporting and spacing devices and metal tying devices. Reinforcing in concrete members that have one or more surfaces exposed, whether painted or unpainted finish, shall be tied with 14 gauge soft annealed galvanized wire. Uncoated tie wire in exposed members will not be accepted.
 4. Minimum Reinforcement: Where no other reinforcement is shown for concrete fill or toppings, provide 6x6 - W1.4XW1.4 welded wire.
- C. Mixing Concrete
 1. Ready Mix Concrete
 - a. Comply with ASTM C94.
 - b. Add mixing water only at the site.
 - c. 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.
 - d. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.
 2. Batch Mixing at Site
 - a. Comply with ACI 301, Chapter 7, Paragraph 7.2.
 - b. 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.
 - c. Where admixtures are specified, equip mixers with a device for measuring and dispensing the admixture.
 3. 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.

D. Joints and Embedded Items

1. Construction and Control Joints

- a. Comply with ACI 301, Chapter 6, Paragraph 6.1.
- b. When construction and control joints are required or permitted, obtain bond by roughening the surface of the concrete in a manner which will expose the aggregate uniformly and will not leave loosened particles of aggregate or damaged concrete at the surface. Saturate the cleaned surface with water and slush with a coating of 1: 1-1/2 cement-sand grout. Place new concrete before grout has attained its initial set. Clean horizontal construction joints and pour the cement-sand mortar over joints in walls to a depth of 1 in. before depositing concrete. In walls, do not space construction joints more than 40 feet apart, unless otherwise shown.

2. Expansion Joints

- a. Comply with ACI 301, Chapter 6, Paragraph 6.2.b. Install joint filler to allow the required dimension for sealant, as indicated. Dimensions shown on Drawings are based on an assumed design temperature of 70 deg. F. Concreting procedures shall take into account the ambient temperature range at the time of the respective operations.
- b. Sealant to comply with Mass Highway SSHB requirements.

3. Embedded Items

- a. Comply with ACI 301, Chapter 7, Paragraph 6.4 and 6.5.
- b. Accurately set anchorage devices by line and transit, and coordinate in locating all anchorage devices for the accommodation of all work.
- c. Locate anchor bolts as shown on the Drawings and on Shop Drawings. Obtain necessary templates from manufacturers or other trades as required for the proper setting of anchor bolts and other items.
- d. Assist other trades in the installation of piping, pipe sleeves, conduit, and similar items where such items are to be installed in concrete. Provide frames to securely hold anchor bolts and anchorage devices in place during construction, and take care that no displacement occurs during the pouring of concrete. Under this Section furnish and set items using approved standard type items suitable for their intended purpose.

E. Placing Concrete

1. Preparation Before Placing: Conform to ACI 310, Chapter 8, Paragraph 8.1.
2. Conveying
 - a. Comply with ACI 301, Chapter 8, Paragraph 8.2.
 - b. Provide a spout or downpipe and elephant trunk or other appropriate method to prevent concrete from falling freely for a height greater than 3'.
3. Depositing: Comply with ACI 301, Chapter 8, Paragraph 8.3.

F. Curing

1. 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.

G. Form Removal

1. 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. Ensure proper form removal; replace any work damaged due to inadequate maintenance or improper or premature form removal.
2. 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 spill the concrete or cause any injury whatsoever. Hammering or prying against concrete will not be permitted.

H. Patching

1. Comply with ACI 301, Chapter 9.

I. Finishing

1. General Requirements for Flatwork:
 - a. 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. Take measurements and control tolerances by the use of transit instrument.
 - b. 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. Upon completion of leveling, remove screed and fill spaces with concrete.
 - c. Concrete paving shall have a medium broom finish of parallel marks unless otherwise noted. Brooming shall be at right angles to the axis of walk or as shown on the Drawings.
2. Exposed concrete for cast-in-place walls and curbs shall have an architectural concrete finish. Top horizontal surface shall be steel trowelled smooth, top edge shall be radiused and vertical exposed surfaces shall be rubbed with a carborundum stone to provide a hand smooth surface. Finished surface to be approved by Landscape Architect.

J. Grout

1. Mix grout in accordance with the approved manufacturer's instructions to a consistency which will permit placement. Place grout so as to ensure complete bearing and elimination of air pockets.

K. Field Quality Control

1. Sampling and testing for quality control during placement of concrete may include the following, as directed by the Landscape Architect.
 - a. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
 - b. Slump: ASTM C143, one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens. SLUMP TESTS REQUIRED.
 - c. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; one for each set of compressive strength test specimens.
 - d. 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.
 - e. 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.
 - f. 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.
 - g. 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 judgement, adequate evidence of satisfactory strength is provided.
 - h. 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.
 - i. 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.
2. 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.
3. 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.

- L. Protection of Concrete: 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 City.

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SECTION 05 50 00 METAL FABRICATIONS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. Cast-In-Place Concrete Footings and Pads
 - 2. Utility Cabinets
 - 3. Metal Fabrications noted in other sections

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 65 00 – Recreation Equipment
 - 3. Section 32 31 00 – Fencing
 - 4. Section 33 10 00 – Water Utilities
 - 5. Section 33 40 00 – Drainage 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 CAST-IN-PLACE CONCRETE (FOOTINGS AND PADS)

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

2.2 METAL FABRICATIONS: GENERAL REQUIREMENTS

- A. Steel Members:
 - 1. Metal surfaces: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, beam marks, roller marks, rolled trade names and roughness.
 - 2. Provide all materials of the best commercial quality for the purpose intended free from all defects that would impair the strength or durability of the work.

3. Provide ferrous metals conforming to the following:
 - a. Steel pipe conforming to ASTM A53, type and grade as selected by fabricator and as required for design loading, standard weight (schedule 40) unless otherwise indicated or required.
- B. Finishing: Except as noted on the Drawings or in the applicable sections, 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.

2.3 UTILITY CABINETS

A. Cabinet Fabrications:

1. The Utility 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 2.2, Metal Fabrications (General Requirements), 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 new concrete pad, as shown on the Drawings, cast 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 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 Somerville Department of Public Works.
- C. For Cabinet contents, meters, and additional required Shop Drawings and Submittals, see Section 33 10 00 – Water Utilities. See also 33 70 00 – Electrical Utilities for electrical work within the existing electrical cabinet.

PART 3 - EXECUTION

3.1 CAST-IN-PLACE CONCRETE FOOTINGS

- A. Concrete footings shall conform to the specifications contained in 03 30 00, Cast-In-Place Concrete.
- B. Install all footings plumb and true.
- C. Embedments into footings shall be cast-in-place, cored and embedded, or sleeved and embedded, following all instructions in 03 30 00.3.01.D.3, Cast-In-Place Concrete: Embedded Items. Cored or sleeved items shall be securely anchored in place with a non-shrink, non-metallic waterproof grout suitable for buried use.
1. All corings shall be done in such manner as to avoid damage to the cast footing. Where feasible, sleeved embedments or cast-in-place embedments are preferred. All proposed corings shall be discussed with the Landscape Architect prior to casting the footings.

3.2 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 posts or other attachments.

3.3 UTILITY CABINETS

- A. Fabrication and finishing of cabinet shall be in accordance with 3.2, Metal Fabrications (General Requirements), and with all applicable codes and approved shop drawings.
- B. Water Cabinet shall be mounted on a concrete pad, as shown on the Drawings. Size pad to accommodate cabinet and all required clearances; note final size of pad on Shop Drawings for approval.
- C. See also Section 33 10 00, Water Utilities, and 33 70 00, Electrical Utilities.
- D. Installation to comply with all applicable codes and standards, and with City of Somerville Department of Public Works requirements.
- E. The Contractor performing the work on these items shall be a licensed MA Plumber and/or Electrician, as appropriate.
- F. All plumbing work shall be inspected by the City Plumbing Inspector, and all electrical work inspected by the City Electrical Inspector, before backfilling occurs.
- G. Contractor to touch up any scratches and all mars to surfaces and finishes.

END OF SECTION

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SECTION 10 14 00 PROJECT SIGNAGE

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.

1.2 SCOPE OF WORK

- A. Provide all materials, labor, mountings and incidentals for:
 - 1. One (1) temporary construction project information sign, four feet by eight feet (4' x 8'), installed in a location directed by the Owners Representative;
 - 2. One (1) temporary "Pardon Our Appearance" construction sign, four feet by eight feet, to be provided by the City and installed by the Contractor at a location directed by the Owner's Representative;
 - 3. Five (5) small park rules signs with varying texts, installed as directed in the field by the Landscape Architect and Owner;
 - 4. One (1) replacement Park Information Sign on Existing Pole.

PART 2 - MATERIALS

2.1 GENERAL

- A. All signs shall be professionally lettered/printed. The City will provide the vendor with electronic images of all signage artwork, but it shall be the responsibility of the vendor to convert those images to the proper electronic format. The Vendor shall provide final proofs of all signs to the City for approval before manufacture.
- B. Painting / Finishes: All Permanent signs, poles, and hardware including nuts, bolts, and welds shall be painted a dark hunter green. Signs shall be painted on front, back, and edges. Paint will include two (2) coats primer, and two (2) coats paint. Background Color will be Pantone PMS 350—hunter green. Lettering and images shall be in white. (Temporary signs shall be as specified; typically white background.)
- C. Signage artwork and text may be vinyl or silk screened. If vinyl is used, the artwork and text shall have a non-yellowing, UV-resistant, urethane clear coat applied to protect the vinyl and provide a graffiti resistant coating. Vendor shall provide color samples and paint color and product specifications to the City upon request.
- D. All signs shall have rounded corners.

2.2 TEMPORARY CONSTRUCTION INFORMATION SIGN

- A. Sign shall be made of durable, exterior 3/4" marine grade plywood or 1/4" metal, securely mounted to wood posts or attached to existing fencing, as directed by the Owner's Representative. Sign shall be professionally lettered. Wording and layout to be supplied by the Owner. Submit samples of color and a Shop Drawing indicating lettering layouts to Engineer for approval. Electronic file with sign layout to be provided to Contractor and Owner's representative by the Landscape Architect.

1. Sign shall be a project sign and will include a drawing of the final layout as well as the City Seal, 311 Logo and other pertinent information to be provided by the Owner's Representative. See example included on following page.
- B. Sign shall be securely mounted to 4"x4" min. wood posts with galvanized metal attachments and shall be framed so as to be durable. All attachments and mountings shall be child safe and vandal resistant.

2.3 PARDON OUR APPEARANCE SIGN

- A. Sign shall be provided to the Contractor by the City from a prior project.
- B. Sign shall be securely mounted to 4"x4" min. wood posts with galvanized metal attachments and shall be framed so as to be durable. All attachments and mountings shall be child safe and vandal resistant.

2.4 SMALL METAL "PARK RULES" SIGNS

- A. Park rules signs shall be 18"x18" (or smaller if directed by Landscape Architect and Owner) exterior-grade vinyl or screenprinted signs with painted green background on 1/8" Aluminum or steel, single-sided, sign finish and lettering to be as 2.1 above.
- B. Text and artwork may include the City Seal, logos, park regulations text, and park use icons indicating the uses allowed within that park. The information for up to five (5) different signs shall be provided to the Contractor by the Owner during construction. Please refer to the attached images for typical park regulatory signage dimensions and layout.
- C. Signs shall include a backing plate, and tamper proof hardware as necessary to attach the signs to chain link or metal picket fencing, in a location to be determined by the City or landscape architect. Metal backing plate shall be the same material and finish as the sign and all mounting hardware shall be painted and will be non-rusting, aluminum, or stainless steel tamper proof nuts, bolts, washers as necessary.

2.5 PARK INFORMATION SIGN ON EXISTING POLE

- A. The existing Park Information Sign (green flag sign on existing pole, noted on plans) shall be removed and delivered to the City's Project Manager. The Contractor shall furnish and install, on the existing pole, a new double-sided Park Information Sign. The sign shall match the existing sign in size, finish, and style.
- B. Sign Dimensions shall be 0.90" Aluminum or Steel stock, 18' x 24" inches. Signage artwork will include the City Seal and text, to be provided by the Owner, which typically includes the name and a paragraph or two describing the site history. Artwork and text may be vinyl or silk screened. Please refer to the attached images for layout dimensions, and typical signage text.

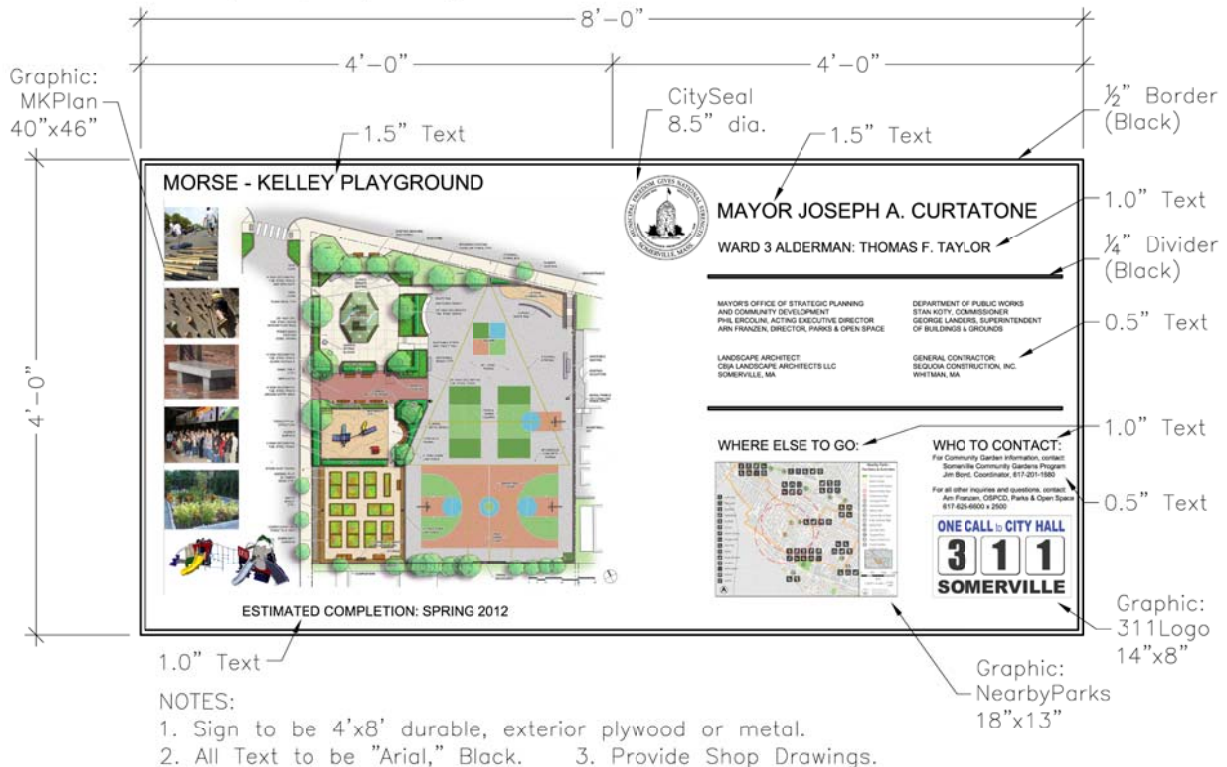
PART 3 - EXECUTION

3.1 PLACEMENT

- A. Temporary Sign shall be installed facing the street or access point to the construction area so as to be visible and inform the general public. Where possible, the sign should be located so as not to conflict with the construction activity nor to require moving during the construction process.

3.2 SAMPLE PROJECT SIGNS:

A. Temporary Project Sign



B. Pardon Our Appearance Sign (To Be Provided by Owner)



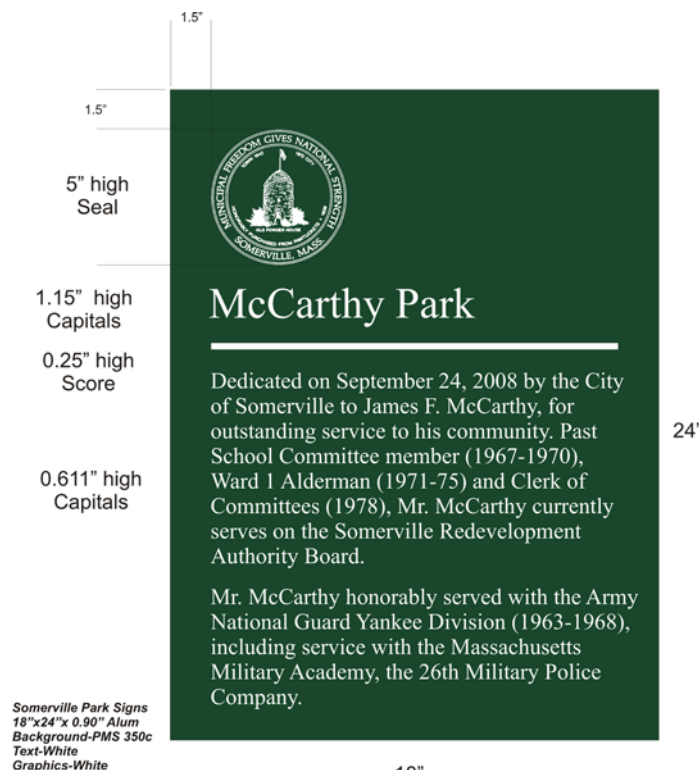
Font: Times New Roman
Size: 24" x 48"
Color: Hunter Green, PANTONE PMS 350

C. Park Regulations Sign

18"w x 18"h



D. Park Information Sign (2-Sided; Use Existing Pole)



Somerville Park Signs
18"x24"x 0.90" Alum
Background-PMS 350c
Text-White
Graphics-White

END OF SECTION

SECTION 11 65 00 ATHLETIC AND RECREATIONAL EQUIPMENT

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
 - 1. The City and the Landscape Architect, after a reasonable investigation, have not identified three manufacturers that can meet the following specifications for Play Equipment refurbishment and new items, because of the requirement of compatibility with the existing playstructures, and for EPDM Cube Climbers, due to the field of manufacturers. Therefore, for sound reasons in the public interest (which, per MGL c. 30 s. 39M, part b, will be provided to prospective bidders in writing upon formal request) the following Basis of Design specifications are being used for the following Items:
 - a. Item 2, Repairs and Refurbishment of Existing Composite Playstructure;
 - b. Item 3, Addition of New Ground Level Play Elements;
 - c. Item 6, EPDM Cube Balance Blocks.
 - 2. Alternate manufacturers for items noted in 1.01.B.1 will be considered, per MGL c.30 s.39M part b criteria 1, provided that they substantially conform (even with deviations), in the sole judgment of the Owner and the Landscape Architect, to the specifications.
 - 3. Proposed alternate manufacturers of items noted in 1.01.B.1 should be submitted for consideration regarding conformance to the specifications at least one week prior to bid submission. Alternative manufacturers, if submitted later than one week prior to bid submission and found, in the judgment of the Landscape Architect and the City, not to be in substantial compliance with the specifications, shall not be considered as grounds for an amendment to the Contract Price due to price differences.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. Cast-In-Place Concrete Footings
 - 2. Repairs And Refurbishment Of Existing Composite Playstructure;
 - 3. Addition Of New Ground Level Play Elements Under Existing Playstructure;
 - 4. Relocation And Refurbishment Of Existing Swing Set;
 - 5. New Fitness/Balance Equipment;
 - 6. EPDM Cube Balance Blocks;

7. Age-Appropriateness Signage for all Play and Fitness Elements;
8. Refurbishment of Basketball Hoop Posts, and New Backboards and Nets;
9. Striping and Sealcoating of Basketball Court.

1.3 REFERENCES

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

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.
 2. Provide a copy of the inspection certificate from a Certified Playground Safety Inspector confirming that the Play Equipment (after refurbishment and addition of play elements), including the Swings, 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.
- 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 CAST-IN-PLACE CONCRETE (FOOTINGS)

- A. Cast-in-place concrete for footings shall conform to all specifications in 03 30 00: Cast-in-Place Concrete. The bury on all footings shall be 36" minimum below Finished Grade (FG) on all in-ground play events/posts. Other types of anchoring shall be available upon request from the manufacturer (if so specified on the Drawings).

2.2 REPAIRS AND REFURBISHMENT OF EXISTING COMPOSITE PLAYSTRUCTURE

- A. Scope of Refurbishment:
 1. The existing play equipment shall be inspected by a Certified Playground Safety Inspector retained by the Contractor to determine compliance and any parts which require replacement.
 2. Replacements shall include (these categories may overlap):
 - a. All parts which are broken or pose a safety hazard in the judgment of the CPSI;
 - b. All items noted on the Drawings by PlayArtDesign (Sheet P-1);
 - c. All rusting chains.
 3. Painting:
 - a. The existing play structures shall be thoroughly cleaned in order to determine which metal components have damaged paint and need to be repainted.
 - b. All metal components which are rusting or have damaged paint shall be cleaned to bare white metal and repainted using a galvanizing primer and a two-coat finish epoxy system; see C below.
 4. Prior to any removal, the Contractor, the CPSI, the Manufacturer's Representative for replacement parts, the Landscape Architect, and the Owner's Representative shall meet on the site to review the proposed removals, replacements, and refurbishments.

B. Quality Assurance and Manufacturer Approval:

1. Playground Equipment Manufacturer for Replacement Parts
 - a. The Playground Equipment Replacements specified herein and indicated on the drawings shall be manufactured by a firm who can furnish supporting evidence of experience to perform this work.
 - b. Qualifications of the installer shall be subject to the review of the Landscape Architect.
 - c. The manufacturer of the Playground Equipment shall maintain and have in effect at the time of completed installation an insurance policy covering completed operations (Product Liability) with a minimum limit of \$1,000,000.00 (One Million Dollars) for each occurrence. A certificate of insurance shall be provided for the Owner upon request.
 - d. A representative of the manufacturer shall be available for consultation during the installation of the equipment.
2. It is the responsibility of the manufacturer to indicate on the shop drawings in writing any and all variations from the following specifications, standards, and codes which shall hereby form a part of this specification:
 - a. Latest edition of the Handbook for Public Playground Safety of the US Consumer Product Safety Commission.
 - b. ASTM, 1487 Standard Consumer Safety Performance Specification for Playground Equipment for Public Use
 - c. Standards for Welding: American Welding Society (AWS), latest edition.
 - d. Standards for Structural Steel: American Steel Institute, latest edition.
 - e. American Society for Testing Materials, latest edition, Standards A-120, VA 569, and A-500 and F 1292 and F 1487.
 - f. Standard Steel Composition.
 - g. Society of American Engineers.
3. Compatibility of Replacement Parts: The existing Play Structure was manufactured by Playground Environments, Inc. in 1995. The proposed manufacturer/fabricator of all replacement parts shall provide written certification of compatibility with the existing playstructure.
4. Fabrication shall be by AZA, Inc. of 1556 West Main Street, Riverhead, NY 11901, 631.325.1484 or Approved Equal.

C. Replacement Parts:

1. All metal work shall be in accordance with the general notes in section 05 50 00, Metal Fabrications.
2. Materials for Replacement Parts shall be according to the following:
 - a. Steel: Round pipe shall be schedule 40 steel pipe conforming to ASTM Designation A-120 or SS40 steel pipe conforming to ASTM Designation A-569. Angles, C channels, flat stock, plates, punched sheets and tees shall be hot rolled steel, conforming to ASTM Designation A 36. Square or Rectangular tubing shall have a wall thickness of 0.1875", or more, and shall conform to ASTM Designation 500. All sharp edges and corners shall be ground smooth. See also 05 50 00.

- b. Dimensional Material: Dimensional Material shall be used for platform planks, stair treads and other play components as herein specified. Dimensional Material shall be a Composite Plastic, Cellulose-polymer composite material, Polyboard or other Dimensional Material otherwise specified herein. The intersection of the planes of faces, edges and ends of all materials shall be eased to a minimum 1/8" radius.
 - c. Plastic Components: Plastic components shall be fabricated from Polyethylene, Acrylic, Polypropylene, or other plastic materials.
 - d. Hardware: All bolts, lag screws, hexagonal nuts, washers, pins, rivets, screws and 'T' nuts shall be stainless steel. Components, platforms, roofs and walls shall be bolted to factory- or field-installed threaded inserts in Support Posts using tamper resistant Button Head Cap Bolts and Washers. Dimensional Material shall be fastened using stainless steel or galvanized hardware as appropriate.
 - e. Threaded Inserts: Threaded Inserts shall be plated to resist corrosion, "Rivnut" inserts or Approved Equal.
 - f. Rings: Rings shall be triangular, 6" polished cast aluminum, with a cast eyelet for attachment. Rings shall be attached to tabs on Support Beam(s) or Rails with chain. Shackles shall be used to attach rings to chains.
 - g. Nylon Webbing: Nylon Webbing shall be 2" wide with an average tensile strength of 1,200-lbs./square inch. Nylon webbing shall be woven to form a grid. Voids in grid shall be 2" x 2" square.
3. The following Refurbishment and Replacement Components shall be manufactured in accordance with the Design Intent of the Construction Drawings as produced by PlayArtDesign.
- a. Steel Pyramid Roofs
 - b. 36" Tandem Slide
 - c. 72" Spiral Slide and Platform
 - d. 36" Vertical Ladder
 - e. 72" Vertical Ladder
 - f. Vertical Ladder Wall
 - g. Steering Wheel Kits
4. Finish for metal replacement parts shall be a polyester powdercoat finish; colors to be determined.
- D. Painting (for Existing Elements being refurbished):
- 1. All metal pieces of the play equipment which are rusting or have damaged paint shall be entirely repainted as described below. Each component unit, defined as a single weldment, which needs any repainting shall be repainted in its entirety.
 - a. Priming - Primer shall be an inorganic zinc-rich coating, Zinc-Clad I by Sherwin Williams or equivalent.
 - b. Intermediate coat - Intermediate coat shall be Hi-bild and Finish Epoxy by Sherwin Williams or equivalent.

- c. Finish coat - Finish coat shall be Hi-bild Aliphatic Polyurethane Enamel by Sherwin Williams or equivalent.
 - d. Colors to be selected by the Landscape Architect from the manufacturer's full standard color range (provide color charts for selection) to match the existing playground finishes. Finishes to be semi-gloss or as otherwise directed by the Landscape Architect.
- E. Safety: All moving and rotating parts shall be secured against breakage and loosening of vital components. In safety critical cases, bolted connections are to be secured and covered with plastic after assembly. Uncovered bolts are to be fixed with anti-theft devices, which can only be removed by the use of special tools.
- F. Tests: Where new play component parts are required, products shall be designed to fulfill the relevant safety standards/guidelines, including ASTM1487-98 (S), CPSC (G), and EN1176 (S), and shall be supplied by a manufacturer with an IPEMA membership in compliance with all applicable standards.
- G. Replacement Playground Equipment Product Warranty: The manufacturer of all replacement parts shall warrant, at a minimum, the following:
 - 1. 2 years- All workmanship and materials.
 - 2. 2 years- Limited warranty on powder coated surfaces against corrosion or peeling.
 - 3. 2 years- Limited warranty on all plastic components, molded rubber products, and all moving parts and connections.
 - 4. 15 years- Limited warranty on steel posts and steel components against structural failure due to corrosion excluding moving parts.
 - 5. 15 years- Limited warranty on Dimensional Material against structural failure due to decay.

2.3 ADDITION OF NEW GROUND LEVEL PLAY ELEMENTS UNDER EXISTING PLAYSTRUCTURE

- A. Quality Assurance and Manufacturer Approval:
 - 1. Playground Equipment Manufacturer for New Ground Level Play Elements
 - a. The New Ground Level Play Elements specified herein and indicated on the drawings shall be manufactured by a firm who can furnish supporting evidence of experience to perform this work.
 - b. Qualifications of the installer shall be subject to the review of the Landscape Architect.
 - c. The manufacturer of the Ground Level Play Elements shall maintain and have in effect at the time of completed installation an insurance policy covering completed operations (Product Liability) with a minimum limit of \$1,000,000.00 (One Million Dollars) for each occurrence. A certificate of insurance shall be provided for the Owner upon request.
 - d. A representative of the manufacturer shall be available for consultation during the installation of the equipment.
 - 2. It is the responsibility of the manufacturer to indicate on the shop drawings in writing any and all variations from the following specifications, standards, and codes which shall hereby form a part of this specification:

- a. Latest edition of the Handbook for Public Playground Safety of the US Consumer Product Safety Commission.
 - b. ASTM, 1487 Standard Consumer Safety Performance Specification for Playground Equipment for Public Use
 - c. Standards for Welding: American Welding Society (AWS), latest edition.
 - d. Standards for Structural Steel: American Steel Institute, latest edition.
 - e. American Society for Testing Materials, latest edition, Standards A-120, VA 569, and A-500 and F 1292 and F 1487.
 - f. Standard Steel Composition.
 - g. Society of American Engineers.
3. Compatibility of New Ground Level Play Elements: The existing Play Structure was manufactured by Playground Environments, Inc. in 1995. The proposed manufacturer/fabricator of all new Ground Level Play Elements shall provide written certification of compatibility with the existing playstructure.
 4. Fabrication shall be by AZA, Inc. of 1556 West Main Street, Riverhead, NY 11901, 631.325.1484 or Approved Equal.
- B. New Ground Level Play Elements:
1. All metal work shall be in accordance with the general notes in section 05 50 00, Metal Fabrications.
 2. Materials for New Ground Level Play Elements shall be according to the following:
 - a. Steel: Round pipe shall be schedule 40 steel pipe conforming to ASTM Designation A-120 or SS40 steel pipe conforming to ASTM Designation A-569. Angles, C channels, flat stock, plates, punched sheets and tees shall be hot rolled steel, conforming to ASTM Designation A 36. Square or Rectangular tubing shall have a wall thickness of 0.1875", or more, and shall conform to ASTM Designation 500. All sharp edges and corners shall be ground smooth. See also 05 50 00.
 - b. Dimensional Material: Dimensional Material shall be used for platform planks, stair treads and other play components as herein specified. Dimensional Material shall be a Composite Plastic, Cellulose-polymer composite material, Polyboard or other Dimensional Material otherwise specified herein. The intersection of the planes of faces, edges and ends of all materials shall be eased to a minimum 1/8" radius.
 - c. Plastic Components: Plastic components shall be fabricated from Polyethylene, Acrylic, Polypropylene, or other plastic materials.
 - d. Hardware: All bolts, lag screws, hexagonal nuts, washers, pins, rivets, screws and 'T' nuts shall be stainless steel. Components, platforms, roofs and walls shall be bolted to factory- or field-installed threaded inserts in Support Posts using tamper resistant Button Head Cap Bolts and Washers. Dimensional Material shall be fastened using stainless steel or galvanized hardware as appropriate.
 - e. Threaded Inserts: Threaded Inserts shall be plated to resist corrosion, "Rivnut" inserts or Approved Equal.

3. The following New Ground Level Play Elements shall be manufactured in accordance with the Design Intent of the Construction Drawings ("Under Play Area") as produced by PlayArtDesign.
 - a. Security Wall
 - b. High Seat Walls
 - c. Crawl Thru/Mirror Wall
 - d. Double Chime Wall
 - e. Door Wall
 - f. Color Wheel
 4. Finish for new Ground Level Play Elements shall be a polyester powdercoat finish; colors to be determined.
- C. Safety: All moving and rotating parts shall be secured against breakage and loosening of vital components. In safety critical cases, bolted connections are to be secured and covered with plastic after assembly. Uncovered bolts are to be fixed with anti-theft devices, which can only be removed by the use of special tools.
- D. Tests: Where new play component parts are required, products shall be designed to fulfill the relevant safety standards/guidelines, including ASTM1487-98 (S), CPSC (G), and EN1176 (S), and shall be supplied by a manufacturer with an IPEMA membership in compliance with all applicable standards.
- E. New Play Amenities Product Warranty: The manufacturer of all replacement parts shall warrant, at a minimum, the following:
1. 2 years- All workmanship and materials.
 2. 2 years- Limited warranty on powder coated surfaces against corrosion or peeling.
 3. 2 years- Limited warranty on all plastic components, molded rubber products, and all moving parts and connections.
 4. 15 years- Limited warranty on steel posts and steel components against structural failure due to corrosion excluding moving parts.
 5. 15 years- Limited warranty on Dimensional Material against structural failure due to decay.

2.4 RELOCATION AND REFURBISHMENT OF EXISTING SWING SET

- A. Scope of Refurbishment:
1. The existing swing set shall be refurbished as noted below, and installed in the new location indicated on the Drawings.
 2. Replacements shall include (these categories may overlap):
 - a. All parts which are broken or pose a safety hazard in the judgment of the CPSI;
 - b. All bearings, swing chains, belt swings, and bucket swings. Swing belts and toddler bucket swings shall be submitted for approval by Landscape Architect and Owner; a range of colors shall be available. Swing chains shall be of at least equal grade to the replaced existing chains, and shall be in accordance with ASTM 1487.
 3. Submit manufacturer's information for all replacement parts.

4. Painting:
 - a. The existing swingset framework shall be thoroughly cleaned in order to determine which metal components have damaged paint and need to be repainted.
 - b. All metal components which are rusting or have damaged paint shall be cleaned to bare white metal and repainted using a galvanizing primer and a two-coat finish epoxy system matching the Play Structure Refurbishment; see 2.2.D above.
5. New Concrete Footings, 36"h x 36"w x 42"d, shall be poured for each swingset post assembly, as shown on the Drawings, in accordance with 03 30 00, Cast-in-Place Concrete.

2.5 NEW FITNESS / BALANCE EQUIPMENT

- A. Manufacturer/Product:
 1. The new Fitness / Balance Equipment shall be a composite structure in compliance with the layout, features, and arrangements shown on the Drawings. Submit Manufacturer's product information, including a plan showing all required clearances and safety/use zones, for approval.
 2. The composite structure shall be a custom "PlayBooster" structure for users 13+ years in age, manufactured by Landscape Structures, Inc. (LSI) or Approved Equal.
 3. Note that the functionally-linked grouping also includes items by another manufacturer, the EPDM Cube Balance Blocks specified in 2.6 below.
- B. Colors: Colors to be selected by Landscape Architect and Owner from Manufacturer's full color range.
- C. Material: All materials shall be structurally sound and suitable for safe play/fitness use. 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, 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. At least 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".

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.

- G. 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.
- H. 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.
- I. 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.
- J. 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.
- K. 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.
- L. 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.
- M. 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.
 1. 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

N. 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.

O. Components of the Composite Structure:

1. (4) Rail Assemblies for Pull-Up and Spring-Up Bars:
 - a. Rail: Shall be a weldment comprised of 1.125" O.D. x 11 GA (.120") steel tubing with 203 or 303 stainless steel 5/8" threaded inserts. Finish: Soft PVC Coating, per E above.
 - b. Offset Hanger Clamp Assembly, per N above.
 - c. Fasteners: per D above.
2. Pod-Shaped Step/Seats:
 - a. Pod shall be Rotationally-Molded LDPE per G above.
 - b. Pod Framework shall be fabricated from sand cast alloy 356 in accordance with ASTM B26. Finish: Powdercoat per F above.
3. Curved Balance Beam
 - a. Balance Beam: Shall be a weldment comprised of 1 1/2" x 3" x 11 GA (.120") rectangular steel tubing. Finish: Soft PVC Coating, per E above.
 - b. Support Legs: Shall be a weldment comprised of 2 3/8" O.D. RS20 (.095"-.105") galvanized steel tubing and 3/8" x 4" mounting plate. Finish: Powdercoated per F above.
 - c. Fasteners: Per D above.
4. (5) Posts per M above, powdercoated per F above.

2.6 NEW EPDM CUBE BALANCE BLOCKS

A. Materials:

1. Rubber cube balance/climbing blocks shall be molded from EPDM rubber granules (a man-made rubber containing minimum of 30% EPDM) combined with a 100% solids, moisture-cured polyurethane binder. The rubber mix shall not contain hazardous substances, such as toluene, lead, or mercury compounds or cadmium coloring pigments.
2. Each rubber cube shall be mounted on a galvanized steel post, 5" nominal diameter, or other similar mounting structure suitable for permanent embedment mounting in a concrete footing as shown on the Drawings.

B. Product:

1. Balance/Climbing Units shall be "Toddler Cube Climbers" as manufactured by Trassig, Inc. of New Milford, CT (www.trassig.com) or Approved Equal.
2. The balance/climbing units shall be cubes, available in three sizes: 8, 11, and 14 inch cubes.
3. 15 total cubes shall be supplied, 3 of each size in one color blend, and 2 of each size in a second color blend. Color blends to be selected by the Landscape Architect from the manufacturer's full color ranges.

2.7 AGE-APPROPRIATENESS SIGNAGE FOR ALL PLAY AND FITNESS ELEMENTS

- ### A.
- All Renovated and New Playground Equipment, all Fitness Equipment, and all Balance Equipment shall be furnished with Age Appropriate Signage and all other recommended safety signage, as per the Drawings and as per the recommendations of ASTM 1487 and CPSC. (No safety signage is required for the basketball court; however, see 10 14 00 for signage at court regarding hours and park rules.)

2.8 REFURBISHMENT OF BASKETBALL HOOP POSTS, NEW BACKBOARDS AND NETS

- ### A.
- The existing Basketball Posts shall be thoroughly refurbished as noted below.
- ### B.
- The existing posts shall be thoroughly cleaned in order to determine which areas have damaged paint. All areas which are rusting or have damaged paint shall be cleaned to bare white metal, and the ENTIRE POST shall be repainted using a galvanizing primer and a two-coat finish epoxy system matching the Play Structure Refurbishment; see 2.2.D above.
- ### C.
- Basketball hoops, nets, and backboards shall be replaced.
1. Backboards shall be a 36"x54" fan-shaped aluminum backboard intended for retrofit use on an existing gooseneck pole, "Hoop Rejuv Kit Fan BB" by Jaypro Sports or Approved Equal.
 2. Goals (rims) shall be a NON-BREAKAWAY, highly durable outdoor steel rim with secure net mounting, suitable for playground use, "Ultimate Playground Goal" by Jaypro Sports or Approved Equal. Goal and Backboard shall be by the same manufacturer to ensure compatibility.
 3. Nets shall be a high-strength nylon net supplied by the goal/backboard manufacturer.
 4. All replacement parts shall meet City of Somerville Office of Strategic Planning and Community Development and Department of Public Works standards, except as otherwise authorized by Owner's representative.

- D. Contractor shall touch up any scratches or other marks to surfaces and finishes.

2.9 STRIPING AND SEALCOATING OF BASKETBALL COURT

- A. Striping and Sealcoating of Basketball Court shall be in accordance with 32 10 00, Bases, Ballasts, and Paving, parts 2.4, 2.5, and 2.6.
- B. Note that layout of Basketball Court is NOT a regulation-size court due to limitations in the size of the existing court; follow the dimensions noted on detail 5/L-10.
- C. Colors to be selected by the City and Landscape Architect.

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 REPAIRS AND REFURBISHMENT OF EXISTING COMPOSITE PLAYSTRUCTURE

- A. All replacement parts shall be installed per manufacturers directions, and in compliance with all applicable standards.
- B. Avoid damage to all components which are not removed.
- C. All rust or damaged paint shall be removed to bare white metal, and all exposed spots shall be primed and repainted with the paint system specified above. All metal new or replacement elements necessary for complete refurbishment shall be factory powdercoated and touched up on site after reinstallation.
- D. The finished painted surfaces shall be free of foreign materials, and shall be a smooth even surface without visible brush marks. Finishes shall be subject to the approval of the Landscape Architect and Owner.
- E. All removed materials shall be reinstalled per original manufacturer's instructions. Contractor to touch up any scratches and all mars to surfaces and finishes.
- F. Contractor shall submit written certification from Manufacturer's Representative that all replacement components have been installed in accordance with their prescribed standards.

- G. A Certified Playground Safety Inspector shall inspect and approve the completed repairs. The play equipment will not be accepted by the Landscape Architect or the Owner until they are satisfied with the installation of all new elements, and the repairs to existing elements. No additional compensation will be given for any necessary corrective work required to attain CPSI approval.

3.3 ADDITION OF NEW GROUND-LEVEL PLAY ELEMENTS UNDER EXISTING PLAY STRUCTURE

- A. All Ground Level Play Components and Barriers shall be installed per Manufacturer's directions, and in compliance with all applicable standards.
- B. Avoid damage to all components which are not removed as part of the work.
- C. Contractor to touch up any scratches and all mars to surfaces and finishes.
- D. Contractor shall submit written certification from Manufacturer's Representative that all new play elements have been installed in accordance with their prescribed standards.
- E. A Certified Playground Safety Inspector shall inspect and approve the completed repairs. The play equipment will not be accepted by the Landscape Architect or the Owner until they are satisfied with the installation of all new elements, and the repairs to existing elements. No additional compensation will be given for any necessary corrective work required to attain CPSI approval.

3.4 REPAIRS AND REFURBISHMENT OF EXISTING COMPOSITE PLAYSTRUCTURE

- A. All replacement parts shall be installed per manufacturers' directions, and in compliance with all applicable standards.
- B. Avoid damage to all components which are not removed.
- C. All rust or damaged paint shall be removed to bare white metal, and all exposed spots shall be primed and repainted with the paint system specified above. All new or replacement elements necessary for complete refurbishment shall be primed and painted on all surfaces with the paint system specified below and touched up on site after reinstallation.
- D. The finished painted surface shall be free of foreign materials, and shall be a smooth even surface without visible brush marks. Finish shall be subject to the approval of the Landscape Architect and Owner.
- E. All removed materials shall be reinstalled per original manufacturer's instructions and as shown on the Drawings. Footings shall be cast in accordance with 03 30 00. Contractor to touch up any scratches and all mars to surfaces and finishes.
- F. A Certified Playground Safety Inspector shall inspect and approve the completed refurbishment and reinstallation. The play equipment will not be accepted by the Landscape Architect or the Owner until they are satisfied with the installation of all new elements, and the repairs to existing elements. No additional compensation will be given for any necessary corrective work required to attain CPSI approval.

3.5 NEW FITNESS / BALANCE EQUIPMENT

- A. Fitness equipment 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: Fitness 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.

3.6 NEW EPDM CUBE BALANCE BLOCKS

- A. EPDM Balance Blocks shall be installed as shown on the Drawings, spaced and placed appropriately so as to create a functionally-linked balance and fitness group with the fitness/balance equipment specified above.
- B. Install EPDM Balance Blocks so that the appropriate height is exposed above the finish grade.
- C. The Contractor shall coordinate all work so that the installed EPDM blocks are properly protected from damage during the installation of the rubber safety surface (due to compatible binders/solvents) and that rubber wearing course does not become adhered to the exposed surfaces of the blocks.

3.7 AGE-APPROPRIATENESS SIGNAGE FOR ALL PLAY AND FITNESS ELEMENTS

- A. All Renovated and New Playground Equipment, all Fitness Equipment, and all Balance Equipment shall be furnished with Age Appropriate Signage and all other recommended safety signage, as per the Drawings and as per the recommendations of ASTM 1487 and CPSC. (No safety signage is required for the basketball court; however, see 10 14 00 for signage at court regarding hours and park rules.)

3.8 REFURBISHMENT OF BASKETBALL HOOP POSTS, NEW BACKBOARDS AND NETS

- A. All replacement parts shall be installed per manufacturers' directions, and in compliance with all applicable standards.
- B. Avoid damage to all components which are not removed.
- C. All rust or damaged paint shall be removed to bare white metal, and all exposed spots shall be primed and repainted with the paint system specified above. All new or replacement elements necessary for complete refurbishment shall be primed and painted on all surfaces with the paint system specified below and touched up on site after reinstallation.
- D. The finished painted surface shall be free of foreign materials, and shall be a smooth even surface without visible brush marks. Finish shall be subject to the approval of the Landscape Architect and Owner.

3.9 STRIPING AND SEALCOATING OF BASKETBALL COURT

- A. Striping and Sealcoating of Basketball Court shall be performed in accordance with 32 10 00, Bases, Ballasts, and Paving, parts 3.4, 3.5, and 3.6.

3.10 CLEANUP

- A. 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.

END OF SECTION

SECTION 12 93 00 SITE FURNISHINGS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. Refurbishment and Relocation of Existing Benches;
 - 2. New Metal Trash Receptacles and Recycling Receptacles;
 - 3. Two-Seat and Four-Seat Metal Ribbon Tables;
 - 4. Metal Picnic Tables & Benches: 6' (Non-ADA) & 8' with 5'-6" benches (ADA);
 - 5. Toddler Play Table;
 - 6. Non-Lit Metal Bollards;
 - 7. Refurbishment of Drinking Fountain;
 - 8. Commemorative Plaque.

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.
- B. The following related items are included under the Sections listed below:
 - 1. Section 03 30 00 – Cast-In-Place Concrete
 - 2. Section 26 56 00 – Site Lighting
 - 3. Section 31 00 00 – Earthwork
 - 4. Section 32 10 00 – Bases, Ballasts, and Paving
 - 5. Section 33 10 00 – Water Utilities

1.4 SUBMITTALS

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

- A. Contractor shall clean all rust and other deterioration from the site furnishings as noted on the Drawings, and shall repaint bare or damaged areas as described below; color to be Black.
- B. Painting – all components of the Paint System shall be provided by a single manufacturer and designed for compatibility.
 - 1. Priming - Primer shall be an inorganic zinc-rich coating, Zinc-Clad I by Sherwin Williams or equivalent.

2. Intermediate coat - Intermediate coat shall be Hi-bild and Finish Epoxy by Sherwin Williams or equivalent.
 3. Finish coat - Finish coat shall be Hi-bild Aliphatic Polyurethane Enamel by Sherwin Williams or equivalent.
 4. Color to be Black or as otherwise selected by the Landscape Architect from the manufacturer's full standard color range. Finishes to be semi-gloss or as otherwise directed by the Landscape Architect.
- C. All benches to be reused shall be furnished with **new** embedment-mounting leg extensions; no benches shall be surface-mounted through bituminous concrete or rubber safety surface.
 - D. Any benches not relocated on the site (3 benches under Base Bid) shall be turned over to the Somerville Department of Public Works for their use at other sites.
 - E. Benches to be relocated as shown on the Drawings and installed with new, tamperproof, stainless steel hardware.

2.2 NEW METAL TRASH RECEPTACLES AND RECYCLING RECEPTACLES

- A. Trash Receptacles shall be 36-Gallon Steel Slat Trash Receptacle with Bonnet Lid and Hinged Lockable Side Door by Custom Fabrication, Inc. (Model CFTR-003) or Approved Equal as shown on the Drawings.
- B. Recycling Receptacles shall be a matching 36-Gallon Steel Slat Receptacle with 3-Opening Recycling-style lid and Hinged Lockable Side Door by the same manufacturer as the Trash Receptacle.
- C. Trash and Recycling Receptacles shall be surface-mounted; anchor to concrete pads or existing concrete with tamperproof hardware.
- D. All hardware to be supplied by manufacturer and shall be tamper-resistant and stainless steel.
- E. Metal components shall be polyester powder-coated; colors to match City of Somerville standards for the respective items (submit color chart for selection).

2.3 TWO-SEAT AND FOUR-SEAT METAL RIBBON TABLES

- A. Small Tables and associated chairs shall be Square Steel Slat Table with Chairs (no Checkerboards) by Custom Fabrication, Inc. (Model CFPB-012 adapted for 2 or 4 Chairs with no Checkerboard) or Approved Equal as specified on the Drawings.
- B. Tables and Chairs shall be embedment-mounted.
- C. All hardware to be supplied by manufacturer and shall be tamper-resistant and stainless steel.
- D. Metal components shall be polyester powder-coated; colors to be selected (submit color chart for selection).
- E. See the Plans for the number and arrangement of chairs at each table. All table/chair orientations shall be confirmed in the field with the Landscape Architect.

2.4 6' METAL PICNIC TABLE AND BENCHES (NON-ADA) AND 8' METAL PICNIC TABLE WITH 5'-6" BENCHES (ADA)

- A. 6' Picnic Table (Non-ADA) and 8' ADA Picnic Table shall be custom steel slat tables with matching benches conforming to the Drawings, by Custom Fabrication, Inc. of Harpursville, NY or Approved Equal.

- B. Tables and Benches shall be embedment-mounted.
- C. All hardware to be supplied by manufacturer and shall be tamper-resistant and stainless steel.
- D. Metal components shall be polyester powder-coated; colors to be selected (submit color chart for selection).

2.5 TODDLER PLAY TABLE

- A. The toddler table and accompanying seats shall be Model "M261P Daisy Desk with Clover Patch" with optional Infill Panel by Kompan, Inc. of Tacoma, WA or Approved Equal. Table and seats shall be sized for children ages 2-5 and of the approximate size and configuration shown on the Drawings.
- B. The footing pipes shall be constructed of steel tubing with 42 mm O.D. and 3 mm wall thickness and hot-dip galvanized per ISO 1461.
- C. The table panel and center infill plate (if the Basis of Design is used) shall be constructed of 19 mm high-density polyethylene. The center shall NOT be a bowl, hole, or other opening.
- D. The seat panels shall be constructed of 19 mm high-density polyethylene.
- E. All hardware shall be constructed of stainless steel or appropriately coated for corrosion protection.
- F. PVC (vinyl, plastisol) shall not be present on any portion of the table and seats assembly.
- G. The Basis-of-Design product contains no painted or powder coated items.

2.6 NON-LIT METAL BOLLARDS

- A. Non-Lit Bollards shall match the selected LED Lighted Bollard, by the same manufacturer. (Philips Gardco Model 822, Unlit Option, S*BRM822-42-BLP-UNLIT or Approved Equal.) See 26 56 00, Site Lighting, for more information.
- B. Bollards shall be set in and filled with concrete as shown on the Drawings.

2.7 REFURBISHMENT OF DRINKING FOUNTAIN

- A. Contractor shall provide all parts necessary to restore the drinking fountain to as-new condition, and to bring the drinking fountain up to current City of Somerville codes and standards.
- B. Drinking Fountain body shall be painted as described below; do not paint bowl. Color shall be selected by the Landscape Architect.

2.8 COMMEMORATIVE PLAQUE

- A. Plaque shall be a ¼" thick, stainless steel plaque with reverse-etched lettering and artwork, of the size and approximate design shown on the Drawings. The raised lettering and details shall have a brushed satin finish; the background shall be sandblasted. Plaque fabrication and finish shall be ADA compliant.
 - 1. The design shown on the Drawings is a representative design showing the approximate complexity and detailing of the plaque. The final design will be as supplied to the Contractor by the Owner and Landscape Architect. The size of the plaque will remain unchanged.

- B. The plaque shall have four (4) anchor rods affixed to the back side, suitable for setting into a concrete slab. Pins shall be cast or grouted in place.

PART 3 - EXECUTION

3.1 REFURBISHMENT AND RELOCATION OF EXISTING BENCHES

- A. All rust or damaged paint shall be removed to bare white metal, and all exposed spots shall be primed and repainted with the paint system specified. All new or replacement elements necessary for complete refurbishment shall be primed and painted on all surfaces with the paint system specified below and touched up on site after reinstallation.
- B. Painting: Apply all paints and finishes according to the manufacturer's supplied instructions. The finished painted surface shall be free of foreign materials, and shall be a smooth even surface without visual brush marks. The final finish shall be subject to the approval of the Landscape Architect and the Owner.
- C. All removed materials shall be reinstalled per Drawings and per manufacturer's instructions. Contractor to touch up any scratches and all mars to surfaces and finishes.
- D. New embedment-mount supports shall be installed as shown on the Drawings. Do not surface-mount benches, or bolt through bituminous concrete or rubber surfaces.

3.2 NEW METAL TRASH RECEPTACLES AND RECYCLING RECEPTACLES

- A. To be installed per Drawings and per manufacturer's instructions.
- B. Contractor shall touch up any scratches or other marks to surfaces and finishes to the satisfaction of the Landscape Architect and Owner's Representative.

3.3 TWO-SEAT AND FOUR-SEAT METAL RIBBON TABLES

- A. To be installed per Drawings and per manufacturer's instructions.
- B. Contractor shall touch up any scratches or other marks to surfaces and finishes to the satisfaction of the Landscape Architect and Owner's Representative.

3.4 6' METAL PICNIC TABLE AND BENCHES (NON-ADA) AND 8' METAL PICNIC TABLE WITH 5'-6" BENCHES (ADA)

- A. To be installed per Drawings and per manufacturer's instructions.
- B. Contractor shall touch up any scratches or other marks to surfaces and finishes to the satisfaction of the Landscape Architect and Owner's Representative.

3.5 TODDLER PLAY TABLE

- A. To be installed per Drawings and per manufacturer's instructions.
- B. Contractor shall touch up any scratches or other marks to surfaces and finishes to the satisfaction of the Landscape Architect and Owner's Representative.

3.6 NON-LIT METAL BOLLARD

- A. To be installed per the Drawings and per manufacturer's instructions.

- B. Contractor shall touch up any scratches or other marks to surfaces and finishes to the satisfaction of the Landscape Architect and Owner's Representative.

3.7 REFURBISHMENT OF DRINKING FOUNTAIN

- A. All rust or damaged paint shall be removed to bare white metal, and all exposed spots shall be primed and repainted with the paint system specified. All new or replacement elements necessary for complete refurbishment shall be primed and painted on all surfaces with the paint system specified below and touched up on site after reinstallation.
- B. Painting: Apply all paints and finishes according to the manufacturer's supplied instructions. The finished painted surface shall be free of foreign materials, and shall be a smooth even surface without visual brush marks. The final finish shall be subject to the approval of the Landscape Architect and the Owner.
- C. All removed materials shall be reinstalled per Drawings and per manufacturer's instructions. Contractor to touch up any scratches and all mars to surfaces and finishes.
- D. All plumbing work shall meet City of Somerville Plumbing Inspector's requirements and standards, and all applicable codes.

3.8 COMMEMORATIVE PLAQUE

- A. Install as shown on the drawings and per manufacturer's instructions.
- B. Non-shrink Grout
 - 1. Grout, if used, shall be a non-shrink, exterior, epoxy cement grout.

3.9 CLEANING

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

3.10 STANDARDS AND COMPLETION

- A. Upon completion, the contractor(s) shall remove and properly dispose of all construction debris, surplus materials, and empty containers, and leave the site in a condition acceptable to the Owner.

END OF SECTION

SECTION 11 68 00 PLAY EQUIPMENT

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. Custom Flush-Mounted Standalone Activator;
 - 2. Single-Stream Low-Volume Pedestal Mounted Jets (Type A);
 - 3. Cone-Shaped Mist Low-Volume Pedestal Mounted Jets (Type B).

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 03 30 00 – Cast In Place Concrete
3. Section 26 56 00 – Site Lighting
4. Section 31 00 00 – Earthwork
5. Section 32 10 00 – Bases, Ballasts, and Paving
6. Section 32 80 00 – Irrigation
7. Section 33 10 00 – Water Utilities
8. Section 33 40 00 – Drainage Utilities
9. Section 33 70 00 – Electrical Utilities

1.4 SUBMITTALS

A. Shop Drawings and Samples

1. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.

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, and from vandalism.
- 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 WATER SPRAY NOZZLES AND CONTROLLER – GENERAL SPECIFICATIONS

A. Materials Specifications:

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

- B. All products shall be manufactured by a single supplier, WaterPlay Inc. of Kelowna, British Columbia or Approved Equal.

2.2 CUSTOM FLUSH-MOUNTED STANDALONE ACTIVATOR

- A. Standalone activator shall be a Custom Flush Mount Eco Activator per Drawing "Est 07981" by WaterPlay Inc. or Approved Equal.
1. The activator shall contain its own 4-valve, individually adjustable manifold; battery-operated control module with adjustable run time; battery-operated solenoid valve to control water flow; and drain system; and shall be directly connected to an at-grade flush-mounted, foot-activated piezoelectric sensor for activation. (Hydraulically-driven activators shall not be accepted.
- B. This custom Activator shall be constructed of a stainless steel utility box with dimensions of 12.1" x 12.1" x 12.5" high installed flush to grade.
- C. The Utility Box shall house a 4 valve schedule 80 manifold with 1 inch ball valves to allow for flow regulation.
- D. The activation sensor shall be placed in a 5.563 inch diameter plate set flush into 1 corner at the top of the utility box with a piezoelectric sensor. When touched the piezo sensor shall send a direct signal to the controller to start a pre-programmed sequence of water play activities within the aquatic play pad.

- E. The battery operated electronic controller shall have time adjustment allowing operating times of 60-600 seconds.
- F. Located in the bottom of the utility box shall be a 3 inch (76mm) hole to allow for connection to drain (by other).
- G. A .5 inch (13mm) hose bib shall allow for winterization and drainage.
- H. There shall be an anti slip decal adhered to the flush grade lid to provide slip resistance.
- I. The finish of all exposed metal components shall be powdercoated metal (color to be selected by Landscape Architect and Owner from the Manufacturer's full color range, including specialty colors) or brushed stainless steel, at the discretion of the Landscape Architect and Owner.

2.3 SINGLE-STREAM LOW-VOLUME PEDESTAL MOUNTED JETS (TYPE A)

- A. The single-stream jets, noted as Type A on the Drawings, shall be a low-flow single laminar flow jet, "Solo Spurt Model C02-337" by WaterPlay or Approved Equal.
- B. Jet body canister shall be constructed of schedule 40 stainless steel structural tubing with an outside diameter of 2.875 inches with a wall thickness of 0.203". The canister shall be a total height of 11.38 inches tall with a .25 inch thick X 5.5 inch diameter base plate.
- C. The Acetal spray nozzle and winter cap shall be seated into the canister with an o-ring and secured using a tamper resistant security bolt. The spray nozzle shall have one .1875 inch hole that sprays at 90 degrees from horizontal. The hydraulic requirements shall not exceed 1.7 gpm @ 15 psi. Tamper resistant winter caps shall be included.
- D. The water inlet shall be 1 inch National Pipe Thread located 1.41 inches below the base plate.
- E. The canister shall be secured into place by securing three (3) 3/8 inch x 11 inches L bolts (Stainless Steel) through three (3) anchor holes on the side of the canister.

2.4 CONE-SHAPED MIST LOW-VOLUME PEDESTAL MOUNTED JETS (TYPE B)

- A. The cone-shaped mist jets, noted as Type B on the Drawings, shall be a low-flow mist-forming jet, "Misty Mountain Model C02-313" by WaterPlay or Approved Equal.
- B. Jet body canister shall be constructed of schedule 40 stainless steel structural tubing with an outside diameter of 2.875 inches with a wall thickness of 0.203". The canister shall be a total height of 11.38 inches tall with a .25 inch thick X 5.5 inch diameter base plate.
- C. The Acetal spray nozzle and winter cap shall be seated into the canister with an o-ring and secured using a tamper resistant security bolt. The spray nozzle shall have two (2) slant jet holes that create a mist under pressure. The hydraulic requirements shall not exceed 1 gpm @ 15 psi. Tamper resistant winter caps shall be included.
- D. The water inlet shall be 1 inch National Pipe Thread located 1.41 inches below the base plate.
- E. The canister shall be secured into place by securing three (3) 3/8 inch x 11 inches L bolts (Stainless Steel) through three (3) anchor holes on the side of the canister.

2.5 TIMER SYSTEM FOR SPRAY FEATURE

- A. Water Cabinet to be furnished with a brass solenoid valve controlled by a dedicated programmable zone of the irrigation system, to enable use of the spray feature to be limited to park operating hours. See 32 80 00 for specifications of the timer zone required and appropriate solenoid valve.

PART 3 - EXECUTION

3.1 CAST-IN-PLACE CONCRETE FOOTINGS

- A. Concrete footings shall conform to the specifications contained in 03 30 00, Cast-In-Place Concrete.
- B. Install all footings plumb and true.
- C. Embedments into footings shall be cast-in-place, cored and embedded, or sleeved and embedded, following all instructions in 03 30 00.3.01.D.3, Cast-In-Place Concrete: Embedded Items. Cored or sleeved items shall be securely anchored in place with a non-shrink, non-metallic waterproof grout suitable for buried use.
 - 1. All corings shall be done in such manner as to avoid damage to the cast footing. Where feasible, sleeved embedments or cast-in-place embedments are preferred. All proposed corings shall be discussed with the Landscape Architect prior to casting the footings.
- D. The Contractor shall do all necessary excavation required for the installation of the fountain equipment and plumbing. 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.

3.2 WATER SPRAY NOZZLES AND CONTROLLER

- A. Install all fountain equipment per Manufacturer's Instructions.
- B. The finished work shall be in compliance with local, state and federal codes.
- C. Anchoring and Leveling Systems: The anchoring system shall have an integrated leveling system facilitating installation plumb to the activity deck surface.
- D. Earth Bonding/Grounding: All Water 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.
- E. Adjustment: The four manifold valves shall be adjusted in the field with the Landscape Architect and Owner to their satisfaction after installation to provide the intended effect and spray area.
- F. Drawings and Instructions: Product drawings and installation manuals shall be supplied by the manufacturer for ease of installation.

3.3 TIMER SYSTEM FOR SPRAY FEATURE

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

END OF SECTION

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SECTION 26 56 00 SITE LIGHTING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
 - 1. The City and the Landscape Architect, after a reasonable investigation, have not identified three manufacturers that can meet the following specifications for Site Lighting items, for reasons due to the compatibility needs of a distributed nature of a Public Works system (Items 2.2 and 2.3), and due to the field of manufacturers (Item 2.4). 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 Items 2.2, 2.3, and 2.4 in this Section.
 - 2. Alternate manufacturers for items noted in 1.01.B.1 will be considered, per MGL c.30 s.39M part b criteria 1, provided that they substantially conform (even with deviations), in the sole judgment of the Owner and the Landscape Architect, to the specifications.
 - 3. Proposed alternate manufacturers of items noted in 1.01.B.1 should be submitted for consideration regarding conformance to the specifications at least one week prior to bid submission. Alternative manufacturers, if submitted later than one week prior to bid submission and found, in the judgment of the Landscape Architect and the City, not to be in substantial compliance with the specifications, shall not be considered as grounds for an amendment to the Contract Price due to price differences.

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. Concrete Footings;
 - 2. LED Pedestrian Post-Top Light Fixtures and Poles;
 - 3. LED Lighted Bollards;
 - 4. In-Ground Low-Voltage LED Lighting and Accessories.

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 03 30 00 – Cast-In-Place Concrete
3. Section 12 93 00 – Site Furnishings
4. Section 31 00 00 – Earthwork
5. Section 32 10 00 – Bases, Ballasts, and Paving
6. Section 33 70 00 – Electric 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 CONCRETE FOOTINGS

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

2.2 LED PEDESTRIAN POST-TOP LIGHT FIXTURES AND POLES

- A. Pedestrian Scale Acorn Lights: Lumiere to be "Serenade DSX" series S55 acorn-style lumiere with fluted adapter (SFX), 60W LED lamping, acrylic globe, optical system as noted, finish Black Powdercoat, S55-60W30LED4K-ACDR-LE(3/5)-120-SFX-FN10-BKTX from Phillips Lumec (available through OmniLite of Burlington, MA, 781-272-2300) or Approved Equal. Lights shall be Type 5 Optical System, LE5.
- B. Posts for Pedestrian Scale Acorn Lights to be by the same manufacturer. Post to be a 5" dia., 13'-6" nom. mounting height 12-fluted round aluminum post with decorative pole base, black powdercoat finish, and added GFI duplex outlet with lockable weatherproof cover mounted at 12' height, model RA54-13.5-GFII-BKTX from Phillips Lumec or Approved Equal.
- C. Provide Manufacturer's cut sheets and color samples for approval.
- D. Provide all required conduits, ground rod, and footings as shown on the Drawings. Provide handhole for each new pole; handholes to be located in the field with the Landscape Architect and the Owner's Representative.

2.3 LED LIGHTED BOLLARDS

- A. Lighted Bollard shall be a "schoolyard-style" 42" high LED lighted bollard with a high-strength galvanized steel tenon throughout the length of the luminaire for solid vandal resistance. Bollards shall have a domed top, continuous full lighting, 360 degree cominal coverage, neutral white (4000K) LED lamping, Universal voltage configuration, with Black powdercoat finish, Model "BRM832-42-CWL-NW-360-UNIV-BLP" by Phillips Gardco of San Marco, TX or Approved Equal matching the City-wide standard for LED bollard lighting. Bollard shall be available in a matching unlit version (see Section 12 93 00).

- B. GENERAL : Each louvered LED School Bollard shall be a luminaire with three luminous louvers, each louver containing 10 1-watt LEDs (360° Lighted Coverage), appropriately spaced. A die cast louvered head assembly shall provide low-glare, high performance lighting. A concealed high strength steel tenon mounting system shall be included to address the challenges of public-space environments.
- C. UPPER HOUSING: Shall be a diecast aluminum dome top which secures to a one-piece diecast zinc louver assembly with three (3) concealed tamper resistant screws.
- D. LOWER HOUSING: Shall be a .125" (.318 cm) wall 6063-T5 extruded aluminum which connects to the top flange of the mounting tenon with four (4) internal hex bolts, inaccessible after installation.
- E. OPTICAL SYSTEM: LED Bollard shall feature advanced stacked louver LED technology, assuring maximized light output. Each individual louver shall be replaceable if needed or desired.
- F. ANCHORAGE: A high strength steel mounting tenon, hot-dip galvanized after fabrication, shall be secured and double-nut leveled to the concrete footing with (4) 3/8" x 8" x 1 1/2" (.953 cm x 20.32 cm x 3.81 cm) anchor bolts on a 4 3/4" - 5" (12.07 cm - 12.70 cm) bolt circle.
- G. ELECTRICAL : The LED power supply shall be located within the bollard head. Bollards shall accept from 120 Volts through 277 Volts, 50hz to 60 hz, input. The LED driver shall be located in the upper dome. LED power supplies and LED drivers shall be replaceable. Neutral White (4000K) LEDs shall be provided as specified.
- H. LUMINA IRE FINISH: Each luminaire shall receive a fade and abrasion resistant, electrostatically applied, thermally cured textured powdercoat finish (Black).
- I. LABELS: All luminaires shall bear UL Wet Location labels.
- J. WARRANTY: The manufacturer shall provide a minimum 5 year limited warranty on the luminaire body, as well as a 5 year limited warranty covering the LED components.

2.4 IN-GROUND LOW-VOLTAGE LED LIGHTING AND ACCESSORIES

- A. The In-Ground Low-Voltage LED Lighting system shall be "DEKDOTS" by Dekor of Denver, CO or Approved Equal providing similar design details and performance to the following specifications. 24 lights are required. For the Basis-of-Design system, one transformer, one photocell-activated adjustable timer, and one waterproof dimmer module are also required.
 - 1. If ordering the Basis-of-Design product, one "DEKDOTKITOUT" Outdoor Light Kit and four "DEKDOT4" additional light four-packs will provide all standard components.
 - 2. For in-concrete installation, compression-type gel-filled splice connectors are required instead of the supplied gel-filled wire nuts, and should be ordered in addition to the standard components.
 - 3. Rigid Sch.80 PVC conduit, fittings, additional wire, transparent waterproof caulk, and other accessories and parts as needed for the full installation and operation of the system shall also be included under this work item.
- B. The individual LED luminaires shall be composed of a low-voltage LED light permanently housed in a rigid polycarbonate housing, 0.9"dia. x 5/8" high, supplied with wire "pigtail" connections, "DEKDOTS" by Dekor or Approved Equal.

1. LED Requirements: The LED shall be a 3500 Kelvin color temperature (warm white) highest grade LED with high lumen output, and shall be waterproof and capable of being submerged in water, with no thermal or heat output.
- C. Components located in Electrical Cabinet: The Transformer, Timer, and Dimmer shall be installed in the existing electrical enclosure as shown on the Drawings.
1. The Transformer shall be a waterproof outdoor-rated transformer as recommended by Manufacturer, "EZ- Transformer" by Dekor or Approved Equal. Transformer requirements:
 - a. 100v to 240v AC input range at 50/60Hz with three-prong or hardwired cord as appropriate to the electrical cabinet;
 - b. 2.5 amp, 12v, 36W DC constant current output;
 - c. Light capacity of at least 30 lights;
 - d. Thermal and voltage overload circuits and a Mean Time Between Failures of greater than 50,000 hours;
 - e. Waterproof design IP66 rated and UL approved;
 - f. Physical size 1 .7" tall x 1.8" wide x 6.9" long (approx) or per Manufacturer.
 2. The Timer shall be a photocell-activated timer with rotary dial control variable duration (on at dusk, off after 1-8 hours or at dawn as set by Owner) suitable for installation on Electrical Cabinet, "EZ-Timer" by Dekor or Approved Equal. Photocell shall be installed in a location exposed to exterior light for proper operation, and protected from vandalism and other damage.
 3. The Dimmer shall be a waterproof dimmer module capable of zero-to-full adjustment directly at the unit, "EZDIMMERWP" by Dekor or Approved Equal.
- D. Conduit used for LED in-ground lighting shall be Schedule 80 Conduit & Elbows:
1. PVC Rigid Nonmetallic Conduit (Extra Heavy Wall EPC-80) listed for use in aboveground and belowground applications including areas subject to physical damage in accordance to 352.12(C).
 2. Rated for use with 90°C conductors
 3. Superior weathering characteristics
 4. 1/2" – 6 " Standard Radius and Special Radius Elbows shall be available.
 5. Conduit shall meet NEMA TC-2, Federal Specification WC1094A, and NEC 352 requirements, and shall be ETL Listed to UL651.
 6. Conduits for continuous runs shall be sized as needed and as required by codes. Conduits for individual light risers shall be 3/4" nominal diameter.
 7. Landscape Architect and Owner's Representative to inspect and approve lighting conduit layout prior to pouring concrete slab.
- E. Connect wiring with "UR2" by 3M Corporation or Approved Equal waterproof gel-filled splice connectors (telecomm-style) small enough to fit within conduit. Cut manufacturer-provided pigtails to length needed.
- F. Recess sleeve into concrete with manufacturer's recommended forstner bit; seal light in place with transparent waterproof caulking per manufacturer. (Provide caulking product's cut sheet for approval.)

- G. Warranties: The manufacturer shall offer a 10-Year warranty on all LED recessed lighting components when installed with the Manufacturer's recommended transformers and accessories; a 3-year warranty on LED Transformers; and a 1-year warranty on LED Controllers.

PART 3 - EXECUTION

3.1 CAST-IN-PLACE CONCRETE FOOTINGS

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

3.2 LED LIGHT FIXTURES AND BASES

- A. All electrical work shall comply with all applicable codes and regulations, and shall be reviewed by the City of Somerville Department of Public Works.
- B. Install all lighting, poles, bases, footings, and conduits per Manufacturer's directions and in accordance with all applicable state, local, and environmental regulations and codes.
- C. Post Lights shall be installed true and plumb, with lighting and all other connections secured using tamperproof hardware. Provide shop drawings and wiring diagrams for approval. Provide Manufacturer's cut sheets for approval.
- D. Installation to be by a licensed Electrician, in compliance with applicable Codes.
- E. Contractor to touch up any scratches and all mars to surfaces and finishes.

3.3 LED LIGHTED BOLLARDS

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

3.4 IN-GROUND LOW-VOLTAGE LED LIGHTING AND ACCESSORIES

- A. Install per manufacturer's instructions for permanent installation in concrete paving (which may differ from typical installations in non-paved surfaces) and in accordance with all applicable codes and all requirements of the City of Somerville.
- B. Transformer Location: The transformer shall be located in the existing electrical cabinet. Install transformer in a location that is accessible in the event of future servicing. Depending on the conditions within the electrical cabinet and the applicable codes, the transformer may either be plugged into a switched/breakered GFI outlet receptacle or hard wired directly to a switched/breakered circuit as long as access to the transformer is provided per electrical code.
- C. Wire Requirements and Connections: 16 or 14 gauge stranded outdoor wire (as required by codes/standards) shall be used. For making the connections within the existing conduits, UR2 or equivalent splice connectors shall be used as recommended by the manufacturer.
- D. Location of Lights: See Drawings for light locations. The Contractor shall provide complete shop drawings showing proposed wiring, layout of conduits, and all connections for approval before beginning installation.
 - 1. The proposed conduit layout shall be assembled in place in the field, and inspected by the Owner's Representative and Landscape Architect for approval, before concrete is poured. Pour concrete only AFTER receiving approval for the layout and conduit, and installing wiring if necessary.
- E. Drill Stop Assembly: The manufacturer shall provide a custom sized Forstner bit, a large washer, and a snap ring. Place the washer on the shaft of the bit and slide down past the snap ring groove. Install the snap ring in the groove as instructed by the Manufacturer. Take care not to break or damage the snap ring during installation.
- F. Conduit Preparation:
 - 1. After concrete has cured completely, cut conduits approximately flush with upper surface of concrete, taking care not to cut the wiring. Recess wiring ends at least 1" below the end of the conduit to avoid damage during drilling.
 - 2. Using a drill motor and the manufacturer's Forstner bit, drill the installation hole perpendicular to the surface. Drill until the washer bottoms out against the surrounding concrete, approximately 5/8" depth. Because drill filings have no place to go make sure to clean hole out periodically during the drilling process to avoid build up of material in hole.
- G. Attach and Test Luminaires: Cut manufacturer-provided pigtails to length. Attach luminaires using splice connectors, testing each luminaire as work progresses to ensure all connections and wiring are sound and all luminaires are functioning properly. Never pull on the wires from the opposite side.
- H. Install: Once all luminaires have been connected and tested, push light element housing into the hole using your thumb or a soft-ended tool, taking care not to damage the polycarbonate housing. A bead of transparent waterproof silicone caulk should be used around the perimeter of each luminaire (before installation) to seal the unit in place. Luminaires should fit snugly into hole without excessive pressure.
- I. Verify Flushness: Either by feel or placing a straight edge on the housing, verify that the light is flush with the surrounding concrete. If it's not, remove the lighting element and re-drill hole. Do not recess housing below the surrounding concrete pavement. Clean all silicone caulk off the exposed top surface. Allow the silicone to dry overnight before walking on lighting elements.

3.5 OTHER INFORMATION

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

END OF SECTION

SECTION 31 00 00 EARTHWORK

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions 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 surplus fill, excavated material, or debris from the site, furnish on a form supplied by the Owner, written evidence satisfactory to the Owner that he has an approved dumping location for debris and/or spoil from his/her excavation activities.
- C. The Contractor shall keep all public areas clean and free of dirt and debris during the construction period.

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 description required for the construction of pavements, safety surfaces, equipment, site improvements, filling voids left by play equipment and other removals, and all specialties. Provide all additional fill materials as required and specified herein.
- 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 of this Section 31 00 00, and pay all costs incurred therefrom.
- 6. If subgrade is deemed unsuitable for placement of subbase material or backfill, work under this Section shall include the additional 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. For unsuitable material amounts greater than 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 total of:
 - a. Ledge in mass or in trench excavations, and/or;
 - b. Boulder over one (1) cubic yard in size in trench excavations, and/or;
 - c. Solid masonry or concrete foundations other than those for features indicated for removal on the drawings.

Such removals shall be measured by a Civil Engineer or Land Surveyor employed by the Contractor and verified by the Landscape Architect. No rock/foundation removals shall be credited to the Contractor without prior measurements and verifications.

If this work is not performed, credit to the extent of ledge or boulder or concrete masonry 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.

- C. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City 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 – Demolition and Site Preparation
 2. Section 03 30 00 – Cast-In-Place Concrete
 3. Section 32 10 00 – Bases, Ballasts, and Paving
 4. Section 32 90 00 – Planting
 5. Section 33 10 00 – Water Utilities
 6. Section 33 40 00 – Drainage Utilities
 7. Section 33 70 00 – Electric Utilities

1.3 SUBMITTALS

- A. Submit certified gradation test data for borrow materials a minimum of one week prior to delivery to the site.
- B. Provide 10-pound samples of each borrow material to a soil testing facility for moisture density testing a minimum of one week prior to delivery to site.

1.4 LAWS, ORDINANCES, PERMITS AND FEES

The Contractor shall:

- A. Give necessary notices, obtain all permits and pay all governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.

- B. Obtain all required certificates of inspection for this work and deliver same to the Landscape Architect before request for acceptance and final payment for the work.
- C. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations of the City and the Commonwealth of Massachusetts, whether or not shown on the Drawings and/or specified.
- D. The Contractor shall provide a temporary sidewalk whenever a sidewalk is closed because of the construction. This temporary sidewalk must be at the same level as the existing closed sidewalk and it 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 use ordinarily made to roads, driveways, alleys, sidewalks, or other facilities near enough to the work to be affected thereby.

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
- 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 sub-paragraphs 1 and 2 above.

1.6 BENCHMARKS 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 benchmarks, to which access can easily be had during the progress of the work. The Contractor shall maintain all established bounds and benchmarks 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 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, as per the direction of the Owner's Representative.
- B. Should there be any conflict between requirements specified in the Contract Documents and those of the City of Somerville, 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. 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 added cost to 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, structures and adjoining property. Monuments and benchmarks 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.
- F. Storm drains and other drainage structure shall be protected from dirt and debris during the construction process through the use of haybales and siltation fence, as shown on the Drawings.

PART 2 - PRODUCTS (NOT USED)

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 Owner. 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. Pavements, 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, metal and ledge.
- 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 footing, foundations, utility lines and structure, which shall be handwork. Also, all excavation in the planting areas and areas specified for tree protection shall be hand work or by air spade.
- 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 gravel 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 on those utilities.
- 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 removed entirely 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 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 condition 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.
- 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 2.01A (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. (For multiple sites, requirements are for each site.)

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 that subsequently settle shall be refilled to true subgrade and properly compacted.

D. Placing Subbase Fills

1. Subbase fills, as specified herein above, shall be provided as subbase under all pavement unless otherwise called for, and 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 Constructor 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	1/2" prior to placement of loam
2. Pavement areas	1/4" in 10'

END OF SECTION

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SECTION 31 13 00 TREE PRUNING AND REMOVALS

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;
 - 6. Tree Removal (if required).
- 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 City of Somerville.

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. No removal is anticipated. 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 REMOVAL PROCEDURES AND QUALITY CONTROL

- A. Trees designated to be removed shall be taken down and all leaves, branches and trunks of trees properly disposed of by chipping or removal from the premises.

- B. Trees are to be felled in such a manner that does not injure trees to be saved or endangers or harms the public and adjacent property.
- C. Removal of all parts of each tree, excluding the stump, shall be completed on the same day that the removal process is started, including the trunk (or butt) of the tree.
- D. Stump removal shall consist of grinding the stump and any roots to a depth of six inches below grade and the disposal of the wood waste. The area or tree pit is to be left at the finish grade using the specified planting mix that meets the requirements laid out in section 02900. Unless otherwise approved by the Owner, the stump must be removed within ten (10) business days from the date the above ground portion of the tree is removed.

3.5 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.

3.6 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, AND PAVING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all paving operations complete as shown on drawings and specified herein.
- B. Work includes, but is not limited to the following:
 - 1. Fill Materials;
 - 2. New Bituminous Concrete (full depth);
 - 3. Top Course Bituminous Concrete over Existing Base Course;
 - 4. Acrylic Resurfacer for under Color Coating;
 - 5. Color-Coating for Bituminous Concrete;
 - 6. Court and Game Striping;
 - 7. Brick Paving on Bituminous Concrete;
 - 8. Concrete Paving;
 - 9. In-Ground Anchors for Temporary Installations;
 - 10. Detectable Warning Panel at Crosswalk;
 - 11. Precast Concrete Curbing;
 - 12. Re-set Existing Granite Edging;
 - 13. Aluminum Edging for Rubber Safety Surfacing;
 - 14. Rubber Safety Surfacing (Loose Fill with Bonded Top Course).

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 Somerville and coordinate all work under this Section.
- B. The following related items are included under the Sections list below:
 - 1. Section 02 41 00 – Demolition and Site Preparation
 - 2. Section 03 30 00 – Cast-In-Place Concrete
 - 3. Section 31 00 00 – Earthwork

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. Do not order materials or begin installation of work of this Section until Owner approval of submittals has been obtained.

1.7 PROTECTION

- A. All existing items indicated to remain on the Drawings, including but not limited to furnishings, trees, play equipment, or any installed improvements, shall be protected from any damage during paving. Any damaged materials shall be replaced at the expense of the Contractor. For tree protection fencing, see Drawings.
- B. Ensure that a safe, ADA-compliant Accessible Route in the public right-of-way remains open during all paving work, including drying and curing periods. The safe pedestrian alternate route shall be clearly marked at the public sidewalks.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

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

- A. Reuse of Existing Material In Place:
 - 1. As the existing pavements are generally true to grade and have not substantially subsided or heaved, the existing base course material may be reused provided that it is, in the judgment of the Landscape Architect and the Owner, essentially suited for continued use after the pavements above have been removed.
 - 2. The Contractor shall be responsible for protecting the quality and integrity of the base material after the pavements have been removed, and shall be responsible for its removal and replacement at no additional cost to the Owner if, after exposure and acceptance for reuse, it becomes contaminated with other soils which would render it unsuitable for reuse. The Contractor shall re-compact all disturbed areas due to removals.

B. Samples and Testing:

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

C. Compacted Graded Gravel / Structural Fill

1. All new material under paving shall be compacted graded gravel; all footings and all voids left from equipment removal shall be filled with compacted graded gravel.
2. All structural fill 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.

D. Drainage Stone (3/4" Crushed Stone):

1. Drainage stone, or 3/4" 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. Drainage Stone shall comply with M2.01.4 of SSHB.

2.2 BITUMINOUS CONCRETE PAVEMENT (FULL DEPTH)

- A. Pavement: Shall be bituminous concrete Class I-1 conforming to the Standard Specifications. Full-depth 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 NEW TOP COURSE BITUMINOUS CONCRETE OVER EXISTING BASE COURSE

- A. Pavement: Shall be bituminous concrete Class I-1 conforming to the Standard Specifications. "Top Course Only" bituminous concrete shall be laid in a single wearing course (1 1/2") over existing pavement which has been ground to the proper subgrade and which provides a rough surface for adhesion.

- B. Wearing Course: Shall consist of 1 1/2" minimum thickness. Composition mixture shall be dense mix conforming to requirements for top course.

2.4 ACRYLIC RESURFACER FOR UNDER COLOR COATING

- A. Underneath the painted game graphics shall be two coats of Acrylic Resurfacer for Bituminous Concrete.
 - 1. The acrylic resurfacer shall be manufactured or supplied by Nova Sports USA; California Paint Products; DECO; or Approved Equal.
- B. Sand shall be clean, dry sand with 100% passing through a #80 mesh.
- C. Water shall be potable and clean.

2.5 COLOR COATING

- A. Final layout and color selections for color coating and game striping to be provided by the Landscape Architect before installation.
- B. An acrylic color surfacer manufactured by the same company that manufactures the acrylic resurfacer shall be used. The acrylic color surface system shall be designed for high traffic athletic area use. All coatings shall be pure acrylic containing no asphaltic or tar emulsions nor any vinyl, alkyd or non-acrylic resins. The color system shall be factory mixed compounds requiring only the addition of water at the job site except for the addition of sand to the surfacing layer. All materials shall be delivered to the job site in sealed containers with the manufacturer's label affixed. Colors to be selected by Landscape Architect. Prepare a sample area for the approval of the Landscape Architect and the Owner's Representative.
- C. Sand shall be clean, bagged sand of 50 to 60 mesh.
- D. For white color, the opaque portion of the pigment shall be a rutile titanium dioxide, and the vehicle shall consist of a 100% acrylic polymer dispersed in water together with the minimum amounts of necessary additives, such as pigment dispersants, anti-foaming agents, and preservatives, but no dryers shall be used.
- E. The paint shall meet a minimum requirement of total solids (percent by weight of paint) of 51.1% and maximum pigment content (percent by weight of paint) of 36%. White paint shall contain not less than three pounds of treated rutile titanium dioxide. A minimum fineness of grind of 4 and a viscosity (Krebs Units) of 80 minimum and 95 maximum is required. The paint shall brush easily; have good lowing, leveling, and spreading characteristics; and shall be suitable for application by spray equipment or rollers.
- F. The paint shall be suitable for use over all types of bituminous surfaces. When applied over emulsified asphalt, it shall not cause lifting, crazing, peeling, or other damage to the base.
- G. Paint colors available for color selection shall include each of the following from one manufacturer's source: red, green, light green, sky blue, brown, tan, yellow, orange, purple, gray, black, and white as approved by the Landscape Architect. Specific colors to be selected.

2.6 COURT AND GAME STRIPING

- A. Striping Paint shall be a highly reflective, high-hide, 100% acrylic marking paint intended and suited for use over any bituminous concrete surface or acrylic color-coating system in recreational or light traffic areas, "Hi-Hide Line Paint" by DecoTurf

or Approved Equal. Paint shall not cause cracking, crazing, peeling, or deterioration to asphalt as is common with solvent-style traffic paints.

- B. The paint shall be available in at least the following colors: White, Yellow, Blue, Green, Red, and Black. Colors to be used shall be selected by the Landscape Architect and Owner's Representative. Provide samples for selection and approval.
- C. The supplied paint shall not require mixing of separate components.

2.7 BRICK PAVING ON BITUMINOUS CONCRETE BASE

A. Brick Pavers

- 1. Brick pavers shall be an extruded clay brick paver, "Belden Brick - City Line Series - Regimental Full Range" with straight edge, no lugs and no chamfer, 2 ¼ x 4 x 8" nominal size, or Approved Equal. Supply sample with no less than eight (8) bricks. Final approval of brick to be made by Owner and Landscape Architect.
- 2. Brick shall be installed over an asphalt setting bed, as shown on the Drawings. Brick shall be butt jointed and swept with portland cement/fine sand mixture (1:1 ratio) free of deleterious soluble salts and containing not more than 3% silt.

B. Sand

- 1. Sand for sweeping into joints for Pavers: Sand shall be a sharp, washed concrete sand, conforming to ASTM C-33. It shall be free of deleterious soluble salts and contain not more than 3% silt.

C. Bituminous Setting Bed

- 1. Bituminous setting bed shall be same as bituminous finish course as specified in S.S.H.B. section 460 and Division II, Section M3. Asphalt cement to be used in the bituminous setting bed shall conform to ASTM Designation D-3381, viscosity grade A.C.10 or A.C.20.
- 2. The fine aggregate to be used in bituminous setting bed shall be clean, hard sand with durable particles and shall be free from adherent coating, lumps of clay, alkali salts, and organic matter. It shall be uniformly graded from "coarse" to "fine" and all passing the No. 4 sieve, and it shall meet the gradation requirements when tested in accordance with the standard method of test for sieve of screen analysis of fine and coarse aggregates ASTM Designation C-136-81.
- 3. The dried fine aggregate shall be combined with hot asphalt cement, and the mix shall be heated to approximately 300 degrees F, at an asphalt plant. The approximate proportion of materials shall be 7% asphalt cement and 93% fine aggregate. Each tone shall be apportioned by weight in the approximate ratio of 145 pounds asphalt to 1,855 pounds sand. The Contractor shall determine the exact proportions to produce the best possible mixture for construction of the bituminous setting bed to meet construction requirements.

D. Neoprene Modified Asphalt Adhesive

- 1. Neoprene modified asphalt adhesive under brick shall be:

MASTIC (asphalt adhesive)

Solids (base)	75+ 1%
Lbs/Gal	8-8.5 lb
Solvent	Varsol (over 100 F Flash)

BASE (2% Neoprene, 10% Asbestos-free fibers 88% Asphalt)
Melting Point- ASTM D-36 200 F Min.
Penetration - 77 F 100 Gram Load 5 Second (.1mm) 23-27
Ductility - ASTM D-113-44 @ 25 C 5 cms/per minute 125cm Min.

2.8 CONCRETE PAVING

- A. Cast-in-place concrete shall be Class D, air-entrained concrete conforming to the requirements and applicable provisions of Section 701 of the S.S.H.B. Minimum 28-day compressive strength shall be 4,000 psi. Concrete shall be air-entrained 6% with a three (3") to four (4") inch maximum slump.
- B. For all specifications other than above (4000 PSI), Concrete Paving shall conform to the materials, procedures, performance standards, formwork requirements, and all other specifications in Section 03 30 00, Cast-In-Place Concrete.
- C. Integral Color System For Decorative Concrete Paving (Fountain Area Only):
 - 1. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are limeproof and ultra-violet resistant, such as CHROMIX Admixtures by L.M. Scofield & Company; Davis Colors Powdered Pigments by Davis Colors of Los Angeles, CA; or Dry Integral Color from Solomon Colors of Springfield, IL.
 - 2. Colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494 and ASSHTO M194.
 - 3. Color additives containing Carbon Black shall not be used.
 - 4. Color to be selected from manufacturer's full range of colors. Provide product information and color samples for approval and selection.

2.9 IN-GROUND ANCHORS FOR TEMPORARY INSTALLATIONS

- A. The Contractor shall furnish and install six (6) in-ground zinc or stainless steel cast-in-place style threaded anchor sleeves, threaded for 3/8" diameter National Coarse Thread (3/8x16) bolts, with at least 1-1/4" bolt engagement possible (1-3/8" total minimum length), and with a flared base for permanent embedment, "Zinc Threaded Insert model MI-038" by PA Insert Corp. of Royersford, PA (www.painsert.com) or Approved Equal.
- B. Each anchor shall be filled with a 3/8" diameter x 1" long UNC-Threaded Button Head Set Screw fabricated of 304 Stainless Steel. Do NOT apply thread-lock or any other fixative; set screws should be removable with a hex wrench (allen wrench) after installation.
- C. Embedded Anchors may be cast in place during the pouring of the concrete slab, or cored and set after slab has completely cured. If casting in place, no further materials are required. If coring, the core shall be drilled no deeper than necessary using an appropriate bit, and the anchor shall be set into the cored hole (1.5" dia.) using a non-shrink waterproof masonry grout with strength at least equal to the surrounding concrete, colored to match (submit grout and colorant for approval).

2.10 DETECTABLE WARNING PANEL AT CROSSWALK

A. Materials and configuration:

1. Cast In Place Tactile Warning Surface Tiles (henceforth CIP Tiles) shall be manufactured using a matte finish exterior grade homogeneous (uniform color throughout thickness of product) glass and carbon reinforced polyester based Sheet Molding Compound (SMC) composite material. Truncated domes must contain fiberglass reinforcement within the truncated dome for superior structural integrity and impact resistance. A matte finish will be required on the Tactile Warning Surface.
2. Color shall be homogeneous throughout CIP Tile, per Federal Standard 595B Table IV, Color No. 20109. (Name varies depending on manufacturer; color shall be a dark red, not bright red.)
3. Domes: Square grid pattern of raised truncated domes of 0.2" nominal height, base diameter of 0.9" and top diameter of 0.45". For superior wheelchair, walker and shopping cart mobility, the preferred truncated dome spacing shall have a center-to-center (horizontally and vertically) spacing of 2.35", measured between the most adjacent domes on square grid.
4. Configuration: CIP Tile sizes shall be as indicated on the Contract Drawings. For superior load bearing capacity, CIP Tile shall feature internal embedment ribs at 3" (nominal) on center maximum. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry. At a minimum, CIP Tile thickness shall measure 0.20" (nominal).
5. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry.
6. Truncated Dome Surface of Composite CIP Tile shall be protected with factory installed plastic sheeting for cleanliness during the installation process. Basic Installation Guidelines shall be printed on the plastic sheeting in both English and Spanish for customer convenience.

B. Basis of Design Manufacturer:

1. CIP Tiles shall be "Cast-In-Place" by ADA Solutions Inc. of Chelmsford, MA (Phone: 800-372-0519, Fax: 978-262-9125, Web Site: www.adatale.com , E: info@adatale.com), or Approved Equal.

C. Performance Requirements:

1. CIP Tiles must be compliant with ADAAG, PROWAG, and California Title 24 requirements. Division of the State Architect IR 11B-3 (1/26/05) and IR 11B-4 (1/01/11). IR 11B-4 (1/01/11) removed the requirement for a "staggered" pattern and now calls for the "square grid" (in-line) pattern.
2. Cast In Place Tactile Warning Surface Tiles (CIP) shall meet or exceed the following test criteria using the most current test methods:
 - a. Compressive Strength: 28,000 psi minimum (ASTM D695).
 - b. Flexural Strength: 29,000 psi minimum (ASTM D790).
 - c. Water Absorption: Not to exceed 0.10% (ASTM-D570).
 - d. Slip Resistance: 1.00 minimum wet/dry static coefficient of friction (ASTM C1028).
 - e. Flame Spread: 25 maximum (ASTM E84).

- f. Salt and Spray Performance of Tactile Warning Surface: No deterioration or other defects after 200 hours of exposure (ASTM-B117).
- g. Chemical Stain Resistance: No reaction to 1% hydrochloric acid, motor oil, calcium chloride, gum, soap solution, bleach, and antifreeze (ASTM D543).
- h. Abrasion Resistance: 500 minimum (ASTM C501).
- i. Accelerated Weathering of Tactile Warning Surface when tested by ASTM-G155 or ASTM G151 shall exhibit the following result: $\Delta E < 5.0$ at 2,000 hours minimum exposure.
- j. Tensile Strength: 11,000 psi minimum (ASTM D638).
- k. AASHTO-H20 Load Bearing Test: No Damage at 16,000# loading.
- l. Freeze/Thaw/Heat: No deterioration (ASTM C 1026).

2.11 PRECAST CONCRETE CURBING

- 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 six (6) feet. Straight and curved curb may be cast in lengths of not less than (3) three feet where needed and as directed. Curb on a radius of 100 feet or less shall be cast in radius forms to the correct radius (radius measured to the outside face of the curb).
- B. Curb shall be made of 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 5,000 psi at 28 days. An air entraining agent, either "Darex" by W.R. Grace Company, "Aerolith" by Sonneborn Building Products, "MB-VR" by Master Builders Company, "Sealtight Air Entraining Agent" by W.R. Meadows, or approved equal, 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) such as Master Builders Pozzolith 400-N, Mighty 150 or approved equal 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.

2.12 RE-SET EXISTING GRANITE EDGING

- A. All granite edging to be re-set shall be carefully removed from its existing base course and neatly stockpiled to prevent damage. Particular care shall be taken to preserve the integrity and finish of exposed surfaces and inscriptions, and to record the proper locations of all removed sections for their reinstallation in the same locations at the adjusted grades.

- B. Mortar for setting bed and joints shall be a latex-modified portland cement concrete mortar. The Setting Bed shall be at least 3/4" (1" typ.) in thickness; all joints shall be evenly spaced, of approximately the same width as the joints in those areas of edging still in place (not re-set). New mortar shall match existing mortar in color.
- C. Granite at the perimeter of the plaza area shall be set atop the bituminous base course of the adjacent brick paving to provide a 4" reveal. as shown on the Drawings; see 2.7 above.
 - 1. For the circle around the fountain area, the granite shall be set flush, atop a separate concrete base slab, as shown on the Details for the Trench Drain.

2.13 ALUMINUM EDGING FOR RUBBER SAFETY SURFACING

- 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; to be selected by Landscape Architect and Owner.
- G. Manufacturer shall offer a 15-year limited material warranty for asphalt restraint edging from manufacturing defects in workmanship or material.

2.14 RUBBER SAFETY SURFACING (LOOSE FILL WITH BONDED TOP COURSE)

- A. The rubber safety surfacing supplier shall have been in operation and have marketed the supplied system within the United States for a minimum of five (5) years. The proposed installer shall be trained and registered by the system supplier.
- B. The Rubber Safety Surfacing shall be a bonded-rubber over loose-fill system (NOTE: NOT the traditional EPDM/TPV Poured in Place fully-bonded systems), "Bondflex" by Vitriturf, "RubberBond" by Rubberecycle, or Approved Equal.
- C. The System shall be composed as follows:
 - 1. The Rubber Safety Surface Base and Wearing Courses shall both be composed of granules manufactured from a combination of post consumer, shredded rubber with various sizings with none larger than 3/4". (Base and Wearing Courses may be composed of the same or different gradations of rubber. Submit Manufacturer's Info. They shall not contain any metal fragments (tire wire) or any hazardous substances, such as toluene, lead, or mercury compounds or cadmium coloring pigments.

2. For the Wearing Course, the granules shall be mixed with a proprietary, elastic MDI-based polyurethane pre-polymer, with extremely low odor, capable of excellent weathering and binding characteristics. Binder shall contain no TDI Monomers. The Wearing Course shall be installed to a minimum thickness of 1.5" for the Basis of Design systems.
 - a. IF an EPDM- or TPV-based system is proposed for substitution, the top-course binder shall be aliphatic (NON-AROMATIC) only.
 3. For the Base Course, under the Basis-of-Design, NO BINDER shall be present. The Base Course shall be installed to a minimum thickness of 3" for the Basis of Design systems.
 4. The Rubber Safety Surface shall also include a reinforcing layer located between the Base Course and the Wearing Layer, composed of either Geotextile Fabric ("Rubberbond") or 1.4x1.4 Welded Wire Mesh ("Bondflex") or Approved Equal, as recommended by the system manufacturer.
 5. Primers and related adhesives used shall be a single-component moisture-cured polyurethane primer.
 6. Color Blends shall be selected from the Manufacturer's standard offerings by the Landscape Architect; samples to be approved by Landscape Architect.
 - a. The rubber safety surface may, at the Landscape Architect's discretion and at no added cost to the Owner, be divided into areas of two different colors, of approximately equal square footage, each of which can be installed within a given day's work. Exact layout shall be determined during Construction by the Landscape Architect with the Contractor.
 7. The finished surface shall be slip-resistant; supply ASTM-E-303 slip characteristic test results.
 8. Material shall be ignition-resistant; supply passing ASTM-D 2859 test results.
 9. 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; the thicknesses shown on the drawings are based on the stated manufacturer's test data at time of design and shall be reviewed at time of installation.
 10. Material shall be water-permeable, and wear and weather-resistant. Sealants shall be low odor and non-yellowing.
- D. Subgrade fill material shall be comprised of 3/4" Dense Graded Gravel, as detailed in section 2.01, Fill Materials, above, and shown on the drawings. Subgrade layers shall be compacted to 95% Proctor Density in lifts not exceeding 4".
- E. NOTE: Due to the desired density of the subgrade material, the rubber safety surfacing shall be installed per the manufacturer's recommended depths for HARD base (NOT Aggregate base) installation.
- F. If another manufacturer is proposed, Critical Heights and required rubber surface depths MAY BE GREATER THAN 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.
1. If another manufacturer is proposed, and the required rubber surface depth for a given Critical Height from that manufacturer differs from that shown on the Drawings, the GREATER of the two depths shall be used.

PART 3 - EXECUTION

3.1 FILL MATERIALS

- A. Fill materials shall be installed in accordance with Section 31 00 00, Earthwork (special attention is directed to 31 00 00.3.05, Fill and Compaction) and as indicated on the Drawings.

3.2 BITUMINOUS CONCRETE PAVEMENT (FULL DEPTH)

- A. Grades: All grades in pavement areas shall be established and maintained to a tolerance of 1/4" in 10'-0".
- B. Installation to comply with all standard and specifications set forth in the Massachusetts Highway Department S.S.H.B.
- C. Edges of Bituminous Concrete Pavement and transitions to adjacent materials shall be even and smooth.

3.3 NEW TOP COURSE BITUMINOUS CONCRETE OVER EXISTING BASE COURSE

- A. Grades: All grades in pavement areas shall be established and maintained to a tolerance of 1/4" in 10'-0". Adjust thickness of top course as needed (to a minimum of 1" and a maximum of 2") to meet the proposed grades shown on the plans; such adjustments shall smooth out irregularities in the underlying base course.
- B. Installation to comply with all standard and specifications set forth in the Massachusetts Highway Department S.S.H.B.
- C. Edges of Top Course Only Bituminous Concrete Pavement and transitions to adjacent materials shall be even and smooth. In areas where new Top Course Only pavement abuts new Full Depth pavement, the Wearing Course layers for both pavements shall be installed as a single entity (do not leave a visible seam).

3.4 ACRYLIC RESURFACER FOR UNDER COLOR COATING

- A. Surface Preparation
 - 1. Prior to acrylic resurfacing, the surface shall be flooded. Any ponding water remaining that is deep enough to cover the thickness of a five cent piece shall be corrected using a patch mix consisting of an acrylic resurfacer, 50 mesh sand, and Portland cement, as per manufacturer's directions. Depressions must be primed with a 50% dilution of the acrylic resurfacer and water prior to patching. All cracks must be cleaned and filled.
 - 2. Acrylic Resurfacer: Apply two (2) coats of acrylic resurfacer to the areas on top of which color will be painted. Wait until first coat is completely dry before applying the second coat. Follow manufacturer's specifications for required dilution of sealant with water and sand. Approximate mixture:
 - a. Acrylic resurfacer 55 gallons
 - b. Sand (60-80 mesh) 600-900 lbs.
 - c. Water 20 – 40 gallons
 - d. Liquid Yield 112-138 gallons
 - e. Application Rate .07 – 0.08 gallons/SY

3.5 COLOR COATING

A. Surface Preparation

1. No color coating to be applied for four days after the installation of the acrylic resurfacer.
2. The surface to be coated shall be inspected and made sure to be free of grease, oil, dust, dirt, and other foreign matter before starting work. All loose material shall be removed by sweeping and pressure washing with water.
3. Limits of areas to be color coated shall be taped with minimum 2-inch width tape, true as to alignment prior to application of the color coating material. Protect all adjacent areas and structures (fences, walls, etc.) which are not to be coated. Protect all site features that are not to receive color coating. In the event that coatings are applied to any of these features, remove immediately, before drying is complete.

B. Application

1. Application shall proceed only if the surface is dry and clean and the air temperature is at least fifty (50) degrees F and rising and the surface temperature is not in excess of one hundred forty (140) degrees F. Do not apply if it is raining or if rain or sub-50 degree temperatures are anticipated in the next 8 hours.
2. Each coat shall be applied 90 degrees to the previous coat. After each coat is allowed to dry, inspect entire surface. Any defects shall be repaired. Scrape surface to remove any lumps and broom or blow off all loose matter.
3. Apply a minimum of two (2) coats of color coating. After two (2) coats are applied to the pavement, the color coating is ready for final approval only once the color appears solid and no black subsurface is showing through.
4. The color coating is to be diluted by following manufacturer's recommendations.

C. Standards and Completion

1. The finished surface shall be smooth and uniform and free of depressions, ridges, or other irregularities.
2. Upon completion, the contractor shall remove and properly dispose of all construction debris, surplus materials, and empty containers, and leave the site in a condition acceptable to the owner. The coated area is to be left secure so as to prevent vandalism.

3.6 COURT AND GAME STRIPING

- A. Apply line paint per manufacturer's instructions, including all instructions regarding curing times before painting, weather conditions, surface conditions, and priming.
- B. Both sides of all lines to be striped shall be taped to provide a clean, straight, consistent edge to the finished work. Apply primer or resurfacer over the tape to provide a solid seal. Do not remove tape until product has dried completely.
- C. All indicated lines (on plan) are to be 4" wide. Landscape Architect shall provide a color key denoting which courts are to be striped in which color.

3.7 BRICK PAVING ON BITUMINOUS CONCRETE BASE

- A. Prepare compacted graded gravel base as shown on the Drawings. Follow above directions for bituminous concrete paving.
- B. Bituminous setting bed shall be rolled with a power roller to a nominal depth of $\frac{3}{4}$ -1-inch, while still hot. The thickness shall be adjusted so that when the brick pavers are placed, the top surface of the pavers will be at the required finished grade.
- C. A coating of 2% neoprene-modified asphalt adhesive shall be applied by squeegeeing or troweling over the top surface of the bituminous base so as to provide a bond under the pavers. If it is troweled, the trowel shall be serrated with serrations not to exceed $\frac{1}{16}$ ".
- D. Install pavers by the patterns indicated in the Drawings. Brick pavers shall be hand tight, having an average joint of $\frac{1}{8}$ -inch (maximum $\frac{1}{4}$ -inch). Install full pavers first, with cuts done subsequently. Set brick pavers by moving forward over previously installed units.
- E. Where required, cut brick pavers with a paver splitter or saw to fit pieces accurately, neatly and without damaged edges.
- F. Joint filler for pavers: Fill joints by sweeping a dry mixture of one part Portland Cement and one part sand until joints are completely filled. Portland Cement shall conform to ASTM C-150. Sand shall conform to ASTM C-33. Hand tight joints shall read from 0" to maximum of $\frac{1}{4}$ ". Fog lightly with water. Cement stains that remain should be cleaned. Make at least one additional pass with the plate vibrator to consolidate this cement sand in the joints, and then sweep in additional cement sand until joints are filled flush to the top of the pavers. Sweep excess cement sand off pavers and remove from site.

3.8 CONCRETE PAVING

- A. Concrete paving shall be installed according to the specifications contained in section 03 30 00, Cast In Place Concrete.
- B. Edges of concrete pavement shall be even and smooth.
- C. Integral Color System For Decorative Concrete Paving (Fountain Area Only):
 - 1. Mix in accordance with manufacturer's instructions. Mix until color additives are uniformly dispersed throughout mixture and disintegrating bags, if used, have disintegrated.
 - 2. Do not retemper mix by adding water in field.
 - 3. Do not add calcium chloride to the concrete mix, as it causes mottling.
 - 4. Dosage rate of color additive shall not exceed 10 percent of weight of cementitious materials in mix.
 - 5. Colored concrete paving to have a light broom finish.

3.9 IN-GROUND ANCHORS FOR TEMPORARY INSTALLATIONS

- A. Install insert so that it meets Manufacturer's specifications regarding Working Load and Ultimate Strength capacity.
- B. If casting anchor into place, align anchors properly with layout of score joints, and protect anchors while joints are tooled or sawn.

- C. If setting insert after concrete is tooled, core cleanly so as not to damage finish of surrounding concrete, and core only to a depth sufficient to enable flush installation of threaded anchor. Use non-shrink waterproof grout with strength at least equal to concrete, colored to match.
- D. Anchors shall be evenly spaced 60° apart, 4'-10" from center of plaza, as shown on the Drawings, and placed at the intersections of score joints as shown.
- E. Protect anchors and bolts from damage, concrete, debris, or other foreign matter that would impede the easy removal and reattachment of set screws, both during and after construction, until final completion of the work.

3.10 DETECTABLE WARNING PANEL AT CROSSWALK

A. Preparation

- 1. During all concrete pouring and Cast-In-Place (henceforth CIP) Tile Installation, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
- 2. The physical characteristics of the concrete shall be consistent with the Contract Specifications while maintaining a slump range of 4 - 7 to permit solid placement of the CIP Tile. An overly wet mix will cause the CIP Tile to float. Under these conditions suitable weights such as 2 concrete blocks or sandbags (25 pounds) shall be placed on each CIP Tile.
- 3. The concrete shall be poured and finished, true and smooth to the required dimensions and slope prior to CIP Tile placement.

B. Installation

- 1. Contractor will not be allowed to install Tactile Warning Surface Tiles until all submittals have been reviewed and approved by the Landscape Architect.
- 2. CIP Tile shall be installed per manufacturer's instructions.
- 3. To the maximum extent possible, the CIP Tiles shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple CIP Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface Tiles and throughout the entire tactile warning surface installation.
- 4. In accordance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board): Sections 304 + 305), Tactile Warning Surface Tile shall be located relative to the curb line as shown within Sections 304+305 of the Guidelines.
- 5. CIP Tiles shall be tamped or vibrated into the fresh concrete to ensure that there are no voids or air pockets, and the field level of the CIP Tile is flush to the adjacent concrete surface or as the Drawings indicate to permit proper water drainage and eliminate tripping hazards between adjacent finishes.
- 6. Cutting and Setting of CIP Tiles shall be cut into size and configuration indicated on the Drawings using a 60 tooth carbide blade on a table saw or equivalent cutting device. Minimize any cantilever effect (to the maximum extent practicable) when cutting between successive embedment ribs as concrete will tend to flow up and over the CIP Tiles. The top of the body of the CIP Tiles shall be fully seated and flush with the adjacent concrete substrate.

For specific instructions for cutting and setting refer to Tactile Warning Surface manufacturer's written instructions.

C. Cleaning And Protecting

1. Protect CIP Tiles against damage during construction period to comply with CIP Tiles manufacturer's Specifications.
2. During and after the CIP Tiles installation and the concrete curing stage, it is imperative that there are no walking, leaning or external forces placed on the CIP Tiles to rock the CIP Tile, causing a void between the underside of the CIP Tile and the concrete.
3. Remove Protective Plastic Sheeting from CIP Tile within 24 hours of installation of the CIP Tile. Particularly under hot weather conditions (80 degrees or higher), plastic sheeting will adhere strongly (resulting in difficult removal of same) to Tactile Warning Surface Tile when not removed quickly.
4. Clean CIP Tiles not more than four (4) days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean CIP Tile by method specified by Tactile Warning Surface Products manufacturer.

3.11 PRECAST CONCRETE CURBING

- A. Curb shall be set in an 18" wide trench, with French bottom at 6" below bottom of curb. Excavation shall be filled to required level to support curb at final grade with base course material. Fill for this purpose shall consist of fine gravel or very coarse sand thoroughly tamped.
- B. Vertical face of vertical curb shall be plumb, with curb parallel to adjacent surface.
- C. Curb shall be set accurately to line and grade. Curb units shall be fitted together as closely as possible, with maximum joint spacing no larger than 1/4". Curb shall not be field cut. Final points may be joined by closure pieces made to order.
- D. Joints, between curb units shall be carefully filled with a cement mortar, and neatly pointed on the top and front exposed portions. After pointing, excess mortar shall be cleaned from curb surface.
- E. Backfill material on each side of the curb shall be specified for adjacent surface and shall be thoroughly compacted by means of power tampers. Extreme care shall be taken not to destroy alignment. Curb sections disturbed during backfilling or otherwise shall be reset to line and grade, and properly backfilled.

3.12 RE-SET EXISTING GRANITE EDGING

- A. Stake layout of granite edging for review with Landscape Architect before beginning construction.
- B. Prepare compacted graded gravel base as shown on the Drawings. Install bituminous concrete base (for perimeter) or concrete slab (for circle around fountain) as directed in the applicable sections above and as shown on the Drawings.
- C. The mortar setting bed shall be installed to a 1" typical uncompacted thickness, as indicated on the drawings, and edging shall be firmly pressed into the mortar with joints matching the existing, non-re-set edging. Clean any mortar off exposed surfaces before it sets. Install only as much mortar at one time as can be adequately paved before it cures. The installed edging shall be inspected by the Landscape Architect and Owner, who shall be the final judges of proper bonding and adhesion.

- D. NO CUTS are permitted. All original existing pieces shall be re-set in situ at the new grades, without modifications.
- E. Tamp edging with a high-frequency, low-amplitude plate vibrator, or otherwise settle into place, until the edging is uniformly true to grade and free of movement, all lipping has been eliminated, and the granite is firmly set in the mortar bed.
- F. Fill joints with mortar until joints are filled flush to the top of the edging, to match the existing granite edging which is not being re-set. Clean excess mortar off granite, and surrounding pavers, to the approval of the Landscape Architect.

3.13 ALUMINUM EDGING FOR RUBBER SAFETY SURFACING

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 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. 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 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 $\frac{1}{4}$ to $\frac{1}{2}$ 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. Edge restraint shall be sized to accommodate the full depth of the adjacent pavement.
 - b. Binding agent shall be used to secure the rubber top course layer to the edge restraint.

3.14 RUBBER SAFETY SURFACING (LOOSE FILL WITH BONDED TOP COURSE)

- 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), as well as ASTM 1951 criteria.
- C. Contractor shall provide a written performance guarantee of at least five (5) years from date of installation. The manufacturer shall provide a written guarantee for at least 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.
 - 1. Loose-fill material shall be installed above the prepared subgrade per the supplier's instructions to the required depth (3" min.). Material shall be lightly raked/smoothed to ensure that further settling at a later date is minimized.
 - 2. Reinforcement materials (wire mesh or geotextile) shall be installed as required by the system supplier above the loose-fill layer, before installation of the thickened wearing course.
 - 3. Mix wearing-course rubber granules with the manufacturer's supplied binder in the approved ratio (82/18 for Vitriturf Bondflex) and apply to desired thickness with a steel trowel. Apply at a minimum finished thickness of 1.5".
 - 4. For compacting: Lubricate trowel with diesel fuel or soapy water.
 - 5. For finishing: Spray a light mist of water on surface and trowel smooth.
- F. Installation Conditions:
 - 1. Observe minimum temperature requirements and all other manufacturer's guidelines (such as in regards to precipitation) for placement of rubber surfaces, substrates, and reinforcement layers.

2. Ambient air temperature shall be 40 F and rising at the time of installation of the wearing course (even in cases where the manufacturer's recommendations state a lower temperature).
 - a. The System may be installed with temperatures below 40 but above 32 F provided that the supplier certifies that the temperature only affects the system in workability of the materials and the dry time.
3. Adjacent materials and the Rubber Safety Surface shall be protected during installation while curing and/or unattended from weather and other damage.

3.15 GRADE STAKES

- A. Install and maintain grade stakes, as directed. All subgrades must be approved before base course construction.

3.16 FINISH GRADES

- A. The words "finish grades" as used herein mean the required final grade elevations.

END OF SECTION

SECTION 32 31 00 FENCING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. To be included, but not limited to the following:
 - 1. Concrete Footings;
 - 2. Refurbished and New Black Chain Link Fencing;
 - 3. New Black Chain Link Single and Double Gates;
 - 4. Ornamental Steel Fencing;
 - 5. New Gate Latches for all Gates.

1.3 REFERENCES

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

1.4 SUBMITTALS AND SHOP DRAWINGS

- A. Submit complete shop drawings, product literature, catalog cuts and / or samples for all items indicating material characteristics, fabrications, details of construction, connections and relationship with adjacent construction, called for on the Drawings and as specified and in accordance with applicable requirements under Division 1.
- B. Take field measurements prior to preparation of shop drawings and fabrication. Allow sufficient time for shop drawing review and approval, before fabricating or ordering.
- C. Do not order materials or begin installation of Work of this Section until Owner's / Landscape Architect's approval of submittals has been obtained. Delivered materials shall closely match approved samples.

1.5 SAMPLES

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

1.6 PRODUCT LITERATURE

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

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.8 JOB CONDITIONS

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

1.9 DEFINITIONS

- A. The following items are included herein and shall mean:
 - 1. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.
 - 2. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 - 3. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
 - a. A36...Steel
 - b. A153...Zinc Coating (hot-dip) on hardware
 - c. A307...Carbon Steel bolts 66000 psi tensile

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

1.10 WARRANTIES

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

1.11 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.1 CAST-IN-PLACE CONCRETE (FOOTINGS)

- A. Cast-in-place concrete for footings shall conform to all specifications in 03 30 00: Cast-in-Place Concrete.
- B. Cement for anchoring posts in concrete shall be a non-shrink, non-metallic cementitious grout suitable for exterior use, "Super Por-rok" by Hallmite, "Sika Colma-Dur" by Sika Co., "Five Star Grout" by Five Star Co., or Approved Equal.

2.2 NEW AND REFURBISHED BLACK CHAIN-LINK FENCING

- A. Refurbished and Salvaged Materials:
 - 1. Existing posts, rails, stretcher bars, and fabric in good structural condition, at the judgment of the Landscape Architect, may be reused where so indicated on the drawings. All material to be reused shall be cleaned by the contractor to be free of rust and other deterioration, and shall be compatible with all new or replacement parts provided.
 - 2. Refurbished fence structure (posts, rails, caps, etc.) shall be repainted with a zinc-rich primer, intermediate coat of a high-build epoxy and finish coat of a

high-build polyurethane enamel, semi-gloss black, as detailed under "2.23.E, Refurbishment and Repainting of Existing Features: Painting."

3. Mesh shall not be refurbished and painted. Existing black-coated mesh in good condition may be reused. Damaged or bare-metal mesh shall not be reused, and shall be replaced with new fence fabric as described below.

B. New 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, 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.
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 weather-ometer 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.

C. New 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. The galvanized wire shall be covered with a Class 2B, Fused-and-Bonded PVC coating to meet the requirements of ASTM F668.
2. The coating color shall match the framework (see above).
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 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. One sample of each proposed

fitting shall be submitted to the Landscape Architect and Owner's Representative for Approval.

- 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. Vandal-resistant Band-It Ties or approved equal shall be used for tying fabric to posts, rails, and braces. Ties shall be vinyl coated to match fabric.
 - f. For non-standard 10' chain link fence refurbishment (around Basketball Court under Base Bid, and along southern property line for Base Bid and Alts. 1 and 2), existing material shall be reused wherever unbroken; all replacement parts shall be compatible with the existing fencing.
- D. All gate hinges shall be refurbished and adjusted (if in condition acceptable to the Landscape Architect and Owner) or replaced.
 - E. See 2.4 for Gate Latches.
 - F. Modifications to the above which are standard manufacturers' practice will be permitted if strength and security are maintained.

2.3 ORNAMENTAL STEEL FENCING

- A. The fencing and gates shall be constructed in accordance with the Drawings and with all specifications in 05 50 00, Metal Fabrications. The finish shall be color galvanized semi-gloss black.
- B. Provide field-measured Shop Drawings showing post placement and all panel lengths for approval. Fabricate panels to length as needed to divide the run evenly.

2.4 GATE LATCH REPLACEMENTS AND NEW GATE LATCHES

- A. All chain link fence gate latches on refurbished existing gates shall be replaced.
- B. Replacement latches as well as all latches for new gates shall be a two-direction-operable, lockable durable metal latch with minimal projections suitable for industrial-grade use, hasp-style or approved equal. Ease all corners; ends of hasp arms shall have a rounded tab to facilitate opening and minimize chance of injury due to projections. Submit manufacturer's product information or shop drawings for approval before ordering or fabricating latches.

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. Excavation for posts footings shall be in firm undisturbed or compacted soil. Excavate the holes to the lines and grades shown in the drawings with a 6" minimum clearance between the bottom of the hole and the bottom of the fence post in its final location. Where ledge is encountered, the Contractor shall notify Landscape Architect to determine method of installation. Payment for any additional work required when installations are in ledge shall be in accordance with 31 00 00.
- D. Embedments into footings shall be cast-in-place, cored and embedded, or sleeved and embedded, following all instructions in 02500.3.06.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.
- E. Place concrete around posts in a continuous pour, tamp for consolidation. Check each post for vertical and top alignment and hold in position during placement and finishing operation. All posts to be plumb.

3.2 NEW AND REFURBISHED BLACK CHAIN LINK FENCING

- A. Refurbished Materials:
 - 1. All rust or damaged paint shall be removed to bare white metal, and all exposed spots shall be primed and repainted with the paint system specified below. All new or replacement elements necessary for complete refurbishment to meet the below specifications for new fencing shall be primed and painted on all surfaces with the paint system specified below and touched up on site after reinstallation.
 - 2. Painting:
 - a. Primer shall be an inorganic zinc-rich coating, Zinc-Clad I by Sherwin Williams or approved equal. Intermediate coat shall be Hi-bild and Finish Epoxy by Sherwin Williams or approved equal. Finish coat shall be Hi-bild Aliphatic Polyurethane Enamel by Sherwin Williams or approved equal. Color shall be black, and finish shall be semi-gloss. Provide a material sample for approval before painting, and provide a sample refurbished section for on-site inspection of finish before continuing. Sample section shall be free of bumps, pits, debris, etc.
 - b. All removed materials to be reinstalled, shall be reinstalled per Drawings and according to the below specifications. Contractor to touch up any scratches and all mars to surfaces and finishes.
- B. Posts:
 - 1. Posts shall be placed straight and true. Where fence is to be installed on concrete curb or mow strip, concrete is to be cored for placement of new

fence posts. Use non-metallic high strength, non-shrink epoxy adhesive for anchoring; epoxy adhesive to be approved by Landscape Architect.

2. New Posts shall be a maximum distance of 8'-0" on center in straight sections, and a maximum of 6'-0" on center along curves. Typical spacing shall be as indicated on the drawings.

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 metal bands spaced not over 12" O.C.
5. Clips: Band-It Clips or Approved Equal 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.

D. Gate Installation

1. Gate posts shall be spaced according to the Drawings, dependent on out-to-out gate leaf dimensions as shown on the Drawings and gate hardware selected. Type and quantity of gate hinges shall be based on the application; weight, height, and number of gate cycles. The manufacturers' gate drawings shall identify the necessary gate hardware required for the application, as amended by the Contract Documents.
2. Gate hardware shall be provided by the manufacturer of the gate and shall be installed per manufacturer's recommendations.
3. Double gates shall include lockable drop bar/cane bolt on one leaf.

3.3 ORNAMENTAL STEEL FENCING

- A. Fabrication and finishing shall be in accordance with 05 50 00, Metal Fabrications.

- B. All new installation shall be laid out by the contractor in accordance with the construction plans.

C. Fence Installation

1. Posts shall be placed straight and true.
2. Fence posts shall be spaced evenly along fence runs, plus or minus 1/2", with maximum panel length as shown on the Drawings. For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade.
3. Fence panels shall be attached to posts with brackets. Posts shall be set in concrete footings having a minimum depth of 48". The "Earthwork" and "Concrete" sections of this specification shall govern material requirements for the concrete footer.

4. Posts setting by other methods such as plated posts or grouted core-drilled footers are permissible only if shown by engineering analysis to be sufficient in strength for the intended application.
5. When cutting/drilling rails or posts adhere to the following steps to seal the exposed steel surfaces; 1) Remove all metal shavings from cut area. 2) Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole; let dry. 3) Apply 2 coats of custom finish paint matching fence color. Manufacturer-provided spray cans or paint pens shall be used to prime and finish exposed surfaces; it is recommended that paint pens be used to prevent overspray.

3.4 GATE LATCHES

- A. Gate Latches shall be installed per manufacturer's instructions and standard industry practices, secured using full welds or (if non-weldable) with tamperproof hardware.
- B. Latches shall be installed so that gates close easily and latch securely. Minimize projections so as to prevent the likelihood of injury, and ease all edges and corners.
- C. Contractor to touch up any scratches and all mars to surfaces or finishes after installation.

3.5 CLEANING

- A. Waste disposal: Comply with all regulations regarding handling, storage, and disposal of all hazardous materials and waste. Consult local agencies or disposal companies for individual instructions and requirements. Improper disposal of paint and their related materials is illegal and may result in large fines. Please comply with all regulations and minimize waste whenever possible.
- B. Perform cleaning during installation and upon completion of paving work. Remove from site all excess materials, debris, and equipment. Post Hole Excavations shall be disposed of off-site or scattered uniformly away from posts.

3.6 STANDARDS AND COMPLETION

- A. Upon completion, the contractor(s) shall remove and properly dispose of all construction debris, surplus materials, and empty containers, and leave the site in a condition acceptable to the Owner.

END OF SECTION

SECTION 32 80 00 IRRIGATION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 SCOPE OF WORK

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

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

1.3 RELATED WORK SPECIFIED ELSEWHERE

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

1.4 ORDINANCES, PERMITS AND FEES

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

1.5 SUBMITTALS & PRODUCT LITERATURE

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

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

1.6 PRODUCT, DELIVERY, STORAGE AND HANDLING

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

1.7 EXAMINATION OF CONDITIONS

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

1.8 QUALITY ASSURANCE

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

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

1.9 TESTS

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

1.10 GUARANTEE

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

1.11 COORDINATION

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

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

1.12 MAINTENANCE AND OPERATING INSTRUCTIONS

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

1.13 PROCEDURE

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

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

PART 2 - PRODUCTS

2.1 GENERAL

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

2.2 POINT OF CONNECTION

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

2.3 PVC IRRIGATION PIPE

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

2.4 BRASS PIPE AND FITTINGS

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

2.5 PVC PIPE SLEEVES

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

2.6 WIRE CONDUIT

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

2.7 PVC IRRIGATION FITTINGS

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

2.8 POLYETHYLENE IRRIGATION PIPE

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

2.9 POLYETHYLENE IRRIGATION FITTINGS

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

2.10 SPRAY SPRINKLERS

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

2.11 SMALL/MEDIUM ROTARY SPRINKLERS

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

Approved Performance Chart (25' Spacing):

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

Approved Performance Chart (35' Spacing):

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

2.12 ELECTRIC CONTROL VALVES

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

2.13 VALVE BOXES

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

2.14 AUTOMATIC CONTROLLER

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

2.15 QUICK COUPLING VALVES

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

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

2.16 WIRE

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

2.17 SWING JOINTS

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

2.18 AUTOMATIC RAIN SENSOR

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

2.19 CONTROLLER ENCLOSURE

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

2.20 CONTROLLER GROUNDING

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

separation between rod and plate. Minimum 12-foot separation between controller and ground rod. All connections to rod shall be with Cadweld connector as specified. All connections to plates shall be performed by the plate manufacturer (Paige or Approved Equal #182199L) with 25-feet of bare copper wire already attached. Grounding rod is to be covered by a 4-inch round, grated top, plastic valve cover with metal detection and six inches of 4-inch ADS drainage pipe. Plate shall be installed in ground enhancement material. Plate shall be covered with 4-inch plastic grated cover with detection and minimum 36 inches of 4 inch ADS drainage pipe. Ground rod and plate shall be UL listed.

- B. Controller shall be grounded to one rod and one plate. The 10-foot rod shall be installed penetrating into the soil to its full length. Plate shall be installed at a 36-inch depth with 50 lbs of Power Set ground enhancement material spread evenly below the plate and 50 lbs spread evenly above the plate in accordance with manufacturer's requirements. The grounding electrodes shall be installed at least 10 feet from wires connected to the field controllers.

2.21 SPARE PARTS

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

2.22 CONTROL OF WATER SPRAY SYSTEM TIMING USING IRRIGATION SYSTEM

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

PART 3 - EXECUTION

3.1 GENERAL

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

3.2 PIPE AND FITTINGS INSTALLATION

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

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

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

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

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

3.3 ELECTRICAL WIRE CONDUIT INSTALLATION

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

3.4 PIPE SLEEVING INSTALLATION

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

3.5 VALVE BOX INSTALLATION

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

3.6 24 VOLT CONTROL VALVE INSTALLATION

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

3.7 WIRING INSTALLATION

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

expansion and contraction shall be maintained and wiring shall at no point be installed tightly. Provide and install an additional 8 inches to 12 inches slack at all changes of direction. Wiring in valve boxes shall be a sufficient length to allow the valve solenoid, splice, and all connections to be brought above grade for servicing. This additional slack shall be coiled for neatness in the valve box. Each valve shall have a separate wire back to the controller.

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

3.8 CONTROLLER INSTALLATION

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

3.9 CONTROLLER GROUNDING INSTALLATION

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

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

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

3.10 RAIN SENSOR INSTALLATION

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

3.11 SPRINKLER INSTALLATION

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

3.12 QUICK COUPLING VALVE INSTALLATION

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

3.13 CHECK/TEST/START-UP/ADJUST

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

3.14 CLEANING AND ADJUSTING

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

3.15 ACCEPTANCE AND OPERATION BY OWNER

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

3.16 CONTROL OF WATER SPRAY SYSTEM TIMING USING IRRIGATION SYSTEM

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

END OF SECTION

SECTION 32 90 00 PLANTING

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.
- C. Contractor shall comply with all laws, regulations, and quarantines for agricultural and horticultural products.

1.2 WORK INCLUDED

- A. The work of this Section consists of the provision of all materials, labor, equipment and the like for the complete execution of all lawn establishment by sodding and related items as indicated on the Drawings and/or as specified herein.
- B. Work includes but is not limited to the following:
 - 1. Topsoil (loam borrow), fine grading and loaming;
 - 2. Plant Materials;
 - 3. Soil additives;
 - 4. Mulch;
 - 5. Hydroseeded Lawn;
 - 6. Maintenance, watering, and protection of plantings until final acceptance.

1.3 SPECIAL CONDITIONS

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

1.4 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all other trades and all departments of the City and coordinate all work under this Section therewith.
- B. Related items include but are not limited to work under the Sections listed below:
 - 1. Section 02 41 00 - Site Preparation
 - 2. Section 31 00 00 - Earthwork
 - 3. Section 31 13 00 - Tree Pruning, Removal, and Transplanting
 - 4. Section 32 80 00 - Irrigation

1.5 SUBMITTALS

- 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.
1. Topsoil: The Contractor shall provide a one (1) cubic foot representative sample from each proposed source for testing and approval as directed by the Landscape Architect. The Contractor shall deliver samples to testing laboratory prior to any loaming and shall have the testing report sent directly to the Landscape Architect, and pay all costs.
 - a. Mechanical and chemical (pH soluble salts) analysis shall be by public extension service agency or a certified private testing laboratory in accordance with the current standards of the Association of Official Agricultural Chemists.
 - b. Report shall be submitted at least one (1) month before any loaming is to be done. Soil tests shall be for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts, and Lead, and show acidity and USDA classification of the soil.
 2. Submit a written guarantee of conformance to specifications for lawn seed.
 3. Submit material specifications and installation instructions where applicable attesting that soil additives meet the requirements specified.

1.6 DEFINITIONS

- A. The following related items are included herein and shall mean:
1. S.S.H.B.: The Commonwealth of Massachusetts, Department of Public Works, Standard Specifications for Highways and Bridges, latest edition
 2. A.O.A.C.: Association of Official Agricultural Chemists
 3. A.A.N.: American Association of Nurserymen

1.7 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.

1.8 CERTIFICATION OF ACCEPTANCE AND GUARANTEE

- A. The Contractor shall be responsible for maintenance until the LATER of: the acceptance of the project as substantially complete, or 90 days after installation. After the minimum ninety (90) day maintenance period and substantial completion of the project, the Contractor shall request of the Landscape Architect, in writing, an inspection to determine whether the lawns and plantings are 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. Acceptance shall be given only for the entire lawn area covered by the Contract, and for all plantings.

- B. Lawns shall exhibit a uniform, thick, well-developed stand of grass, which has received a minimum of three cuttings. Lawn areas shall have no bare spots in excess of four inches in diameter, and bare spots shall comprise no more than two percent of the total area of the lawn. No lawn areas shall exhibit signs of damage from erosion, washouts, gullies, or other causes.
- C. Lawns, shrubs, and perennials shall be guaranteed for a period of one calendar year after inspection and acceptance and shall be alive and in satisfactory growth at the end of the guarantee period. Trees 3" caliper or greater shall be guaranteed for a period of two calendar years after inspection and acceptance.
- D. At the end of the guarantee period, inspection will be made again. Any lawn area or planting covered under this contract that is dead or unsatisfactory shall be replaced according to the planting seasons called for herein, until the lawn or planting lives through one guarantee period. A final inspection for acceptance will be made after the replacement plantings have lived through one guarantee period. Contractor shall test soil and add fertilizer and lime as needed in the fall after installation.
- E. All replacements shall be the same turf mix (sod) or species and cultivar (plantings) as originally installed and accepted. The cost shall be borne by the Contractor.

1.9 SITE CONDITIONS

- A. All areas to be planted shall be inspected by the Contractor before starting work and any defects such as incorrect grading, etc., 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. See Drawings and Section 01 56 00 for Tree Protection.

PART 2 - PRODUCTS

2.1 TOPSOIL/LOAM

- 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. 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 have an acidity range of pH 5.6 to pH 6.5.
- C. 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 PLANT MATERIALS

- A. The Contractor shall furnish and plant all plants shown on the Drawings, as specified, and in quantities listed on the Plant List. No substitutions will be permitted. All plants shall be nursery-grown unless otherwise specifically authorized.
- 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 1 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 for a minimum of 2 years. Plants not so certified will not be accepted.
- D. 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.
- E. 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, covering the balls with soil, and watering them.
- F. 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 unmutated 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.

- G. 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.

2.3 SOIL ADDITIVES

- A. Commercial fertilizer, manufactured compost, 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 that 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 not less than the percentages of weight of ingredients as follows or as recommended by the soil analysis:

	<u>Nitrogen</u>	<u>Phosphorus</u>	<u>Potash</u>
First application	18%	21%	12%
Second application	5%	10%	5%

- 2. Fertilizer plan, including schedule and specific mix, must be submitted and approved by the Landscape Architect and the Owner's Representative.
- 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. Manufactured Compost of comparable qualities will be accepted in lieu of peat moss.

- 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.

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 WOOD CELLULOSE FIBER MULCH

- A. Mulch to cover hydroseeded areas shall be fiber processed from whole wood chips manufactured specifically for standard hydraulic mulching equipment. Fiber shall not be produced from recycled material such as sawdust, paper, or cardboard.
- B. Moisture content shall not exceed 10%, plus or minus 3%, as defined by the pulp and paper industry standards. Fiber shall have a water holding capacity of not less than 900 grams water per 100 grams fiber.
- C. The mulch shall be of such character that the fiber will be dispersed into a uniform slurry when mixed with water. It shall be nontoxic to plant or animal life.
- D. The mulch shall contain a non-petroleum based organic tackifier and a green dye to allow for easy visual metering during application but shall not be injurious to plant growth. Tackifier shall be Hydrotack or approved equal.

2.6 LAWN AREA SEED MIX

- A. Seed for lawn areas shall be nursery grown seed composed of grasses grown from the following seed mixtures, or an Approved Equal seed mixture selected for the site and the intended lawn use (pedestrian traffic).

<u>% by Weight</u>	<u>Common Name of Grass</u>
30	Jamestown Fescue
25	Nassau Kentucky Bluegrass
25	Georgetown Kentucky Bluegrass
20	P 104 Kentucky Bluegrass

2.7 INSECTICIDE

- A. No insecticide shall be used except as specifically approved in writing by the Landscape Architect and the Owner's Representative.

2.8 WATER

- A. The Contractor shall be responsible to furnish his/her own supply of water to the site at no extra cost.
 - 1. City of Somerville water may be used during construction with the prior approval of the City Water Department. The Contractor shall adhere to all City Water Department regulations, including the installation of a water meter for the construction period.

- B. 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.
- C. All new or transplanted trees shall be furnished with a Portable Drip Irrigation System (PDIS) water bag, "Gator Bags" or Approved Equal. PDIS water bags shall be UV-treated, reinforced polyethylene bags with a nylon toothed zipper extending from top to bottom of bag, capable of holding a minimum of 20 gallons of water, constructed so that they can be attached to the trees, which provide water from a minimum of three drip points.

PART 3 - EXECUTION

3.1 FINE GRADING AND LOAM

- A. 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.
- B. 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.
- C. No subsoil or loam shall be handled in any way if it is in a wet, dry, or frozen condition.
- D. 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.
- E. 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.
- F. 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. The finish grades shall be inspected by the Landscape Architect for approval before final acceptance.

3.2 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:
 - a. Deciduous materials March 21 through May 15
 - b. Evergreen materials April 15 through June 1
2. Fall:
 - a. Deciduous materials October 1 through December 1
 - b. Evergreen materials August 15 through October 15

C. Planting

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.
4. Plant pits shall be circular pits with sloping sides, except for plants specifically indicated to be planted in beds. Holes for trees and shrubs shall be at least two feet (2') greater in diameter than the ball, and shall be at least three (3) times the diameter of the ball for trees where space allows, and shall be of a depth that maintains the plant's prior relation to finish grade. Bottom of pit shall be flat or deepest at the perimeter. If pit is dug deeper than required to maintain plant's relation to finish grade, then soil replaced under rootball shall be compacted to prevent subsequent settling of tree or shrub. If soil at bottom of pit is impermeable or poorly drained, pit shall be dug one extra foot, backfilled with planting soil mix, and compacted before installing plant.
5. After excavation, fill pit twice successively with water. If water does not drain out of pit at a minimum of two inches per hour, provisions for drainage must be made. Contractor shall document drainage test results for review by Landscape Architect.
6. Topsoil, organic material and fertilizer mix for planting soil mix shall be thoroughly premixed in the proportions of one (1) part of organic material with four (4) parts of topsoil together with fertilizer at the rate determined by soil test. The organic material to be added shall be as directed by the Landscape Architect. One part of existing soil shall be mixed with two parts of planting soil mix for use in backfilling around rootball. Maintain at all times during the planting operations one or more stockpiles of approved quality planting mix.
7. Install slow release fertilizer packets per manufacturers' directions with each newly planted tree.

8. All plant roots and earth balls must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation and on the ground until the final planting. The plants shall be planted in the center of the holes and at the same depth as they previously grew (see a. below). 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.
 - a. The Root Flare of each plant shall be located at the finish grade and visible. All planting depths shall be inspected by the Landscape Architect and the Owner's Representative, and if not at the proper depth shall be corrected at the Contractor's expense.
- D. All plants shall be flooded with water twice within the first 24 hours of the time of planting and all plants during the maintenance period shall be watered at least twice each week. At each watering the soil around each plant shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Landscape Architect, the required watering may be reduced. Trees will require a minimum of ten (10) gallons of water each.
- E. Mulch material shall be placed over entire saucer areas of individual trees and over the entire area of planting beds 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 tree trunks.
- F. Portable Drip Irrigation System watering bags shall be installed as directed by the bag manufacturer, and shall be kept filled as necessary to maintain optimum health.
- G. Antidesiccant shall be applied to all plants before digging at the nursery and/or as directed by the Landscape Architect once the plants have been delivered to the site.
- H. Antidesiccant shall be applied to all evergreen plants in the late fall as directed by the Landscape Architect.
- I. If planting is done after lawn preparation or installation proper protection of lawn areas shall be provided and any damage resulting from planting operations shall be repaired immediately at no cost to the Owner.
- 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.

3.3 SOIL ADDITIVES

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

3.4 BARK MULCH

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

3.5 HYDROSEEDING

- A. Limit of seeding for seeded lawn and field grass area 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.
- B. Planting season for seed shall be from April 15 to June 1. 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 this option and on his responsibility the Contractor may plant seed under unseasonable conditions without additional compensation, but subject to the Landscape Architect's approval as to time and methods.
- 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 Landscape 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, seeding, rolling, pegging, weeding, fertilizing, watering and otherwise providing all labor and materials necessary to secure the establishment of acceptable turf. Seed shall be applied at six pounds per 1,000 square feet.
- E. The soil on which the seed is laid shall be reasonably moist and shall be watered, if directed by the Landscape Architect. The seed shall be laid smoothly, edge to edge, and where continuous or solid seeding is called for on the plans seed shall be laid with the longest dimension parallel to the contours. Seeding shall start at the base of slopes and progress upward in continuous parallel rows. Vertical joints between seeds shall be staggered. Immediately after laying, so shall be pressed firmly into contact with the seed bed by tamping, rolling, or by other approved method – press firmly as to eliminate all air pockets, provide true and even surfaces, insure knitting and protect all exposed seed edges, but without displacement of the seed or deformation of the seed surfaces. The seeded areas shall be watered evenly and at a rate of 5 gallons per square yard, unless otherwise directed by the Landscape Architect.
- F. Contractor shall place and maintain barriers around Hydroseeded areas to keep people off during the first 60 days.

3.6 MAINTENANCE AND PROTECTION OF PLANTS AND LAWN AREAS

- A. Maintenance shall begin immediately after an area is planted or sodded 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.
- B. Maintenance shall include resodding, replacement of shrubs, mowing, watering, weeding, and fertilizing.
- C. Watering of Lawn Areas and Shrub Plantings:
 - 1. First week: The Contractor shall provide all labor and arrange for all watering necessary for rooting of the sod or plant materials. 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 and plantings 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 and plantings in an eight hour period.
- D. Watering of Tree Plantings and Transplantings:
 - 1. Portable Drip Irrigation System watering bags shall be kept filled as needed to maintain optimal plant health. Bags shall be filled a minimum of once each week regardless of rain conditions. The contractor shall be responsible for ensuring that watering bags are kept full for one full growing season after installation.
- E. Mowing: The first mowing of lawn areas shall not be attempted until the sod 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.
- F. Fertilizing: A second application of fertilizer, as specified herein and as outlined in the fertilizing schedule to be submitted by the Contractor, shall be applied approximately 6 weeks after the sod has been installed as directed by the Landscape Architect. Fertilizer shall be applied at the rate of 10 pounds per 1,000 square feet or as otherwise approved as part of the fertilizing schedule.

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SECTION 33 10 00 WATER UTILITIES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. The Contractor shall pay for all costs and fees related to connecting the utilities and drainage systems to existing services and shall file all applications, details, and drawings required by the local authority having jurisdiction.
- C. To be included, but not limited to the following:
 - 1. Addition of new above-grade Water Cabinet, to house hose bib, irrigation system, backflow prevention devices, shutoff and solenoid timer control to spray feature, and any other components required by code or by the Somerville Water Department to be above grade.
 - 2. New water service lines as needed to new features, and between existing water vault and new Water Cabine.
 - 3. Refurbishment of existing Drinking Fountain.

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 13 12 00 – Fountain Equipment
 - 3. Section 31 00 00 – Earthwork
 - 4. Section 32 10 00 – Bases, Ballasts, and Paving
 - 5. Section 32 80 00 – Irrigation

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. City of Somerville 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 National Standards Institute ANSI
 - 4. American Society for Testing & Materials ASTM
 - 5. American Water Works Association AWWA
 - 6. Commonwealth of Massachusetts Highway Department MHD
 - a. Standard Specifications for Highways and Bridges SSHB
- C. The above listed codes and standards are referenced to establish minimum requirements; wherever this Section requires higher grades of materials and workmanship than required by the listed codes and standards, this Section shall apply. In the event a conflict occurs between the above listed codes and standards and this Section, the more stringent requirement shall govern.

1.7 MAINTENANCE KIT

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

1.8 PERMITS AND FEES

- A. Obtain all necessary permits and licenses, file necessary plans and pay all fees for permits and inspections. Permit fees are the responsibility of the Contractor as part

of his bid, as is all coordination with the local utilities. Contractor is also responsible for obtaining any site specific utility requirements for this project prior to the start of construction and notifying local utilities for all inspections prior to backfilling, etc.

PART 2 - PRODUCTS

2.1 EMBEDMENT MATERIALS

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

2.2 NEW UTILITY CABINET AND METER

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

2.3 EMBEDMENT MATERIALS

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

2.4 CORPORATION STOPS/CURB STOPS

- A. No new water connection at the street is expected in this work; the following specifications are only to be used in the unanticipated event that the existing water service is not suitable for the new construction, and a new water supply is required.
- B. Corporation stops shall be bronze or brass with ground keys, threaded to receive compression-type fittings. The stop shall be of the size shown on the Contract Drawings or as required by the Public Works Department if not shown, and shall be as manufactured by Mueller, Red Head, Ford or equal.
- C. Curb stops shall be Mueller Oriseal II curb stop or Approved Equal, threaded to receive compression-type fittings.
- D. Curb boxes shall be cast iron improved extension type with arch pattern base. Covers shall be held in place with bronze bolts and the word "Water" shall be cast into the cover. Curb box shafts shall have a minimum inside diameter of 2-1/2 inches. Curb boxes shall be as manufactured by Mueller Corp. or Approved Equal.

2.5 WATER SERVICE PIPING

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

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 UTILITY CABINET AND METER

- A. Fabrication and finishing of cabinets 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 Somerville 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 WATER SERVICES

- A. Copper Service Pipe: Care shall be exercised in placing and laying of service line to be sure that the pipe does not have kinks or sharp bends and to assure against its being in contact with sharp stones or ledge which would cause damage to the pipe. At least 6 inches of sand shall be placed adjacent to, under, and above the pipe, and no stone larger than 2 inches shall be placed over the pipe until the depth of backfill above the pipe is in excess of 1 foot.
- B. Corporation Cock: Corporation cock (if required) shall be of a size equal to the size of the service pipe. Taps to the main shall be threaded and shall be made at the horizontal diameter of the main. The tap made in the main by means of a tapping machine manufactured for this purpose and supplied by the Contractor. Corporation cock shall be screwed firmly into the water main with the key upward and the inlet end projecting at least 1/8-inch beyond the inside face of the main. Corporation cock shall be left in the on [open] position.
- C. Curb Stop and Curb Boxes (if required) shall be of a size equal to the size of the service pipe and shall be installed in the locations shown on the Drawings or as ordered by the Landscape Architect. The boxes shall be set in a true vertical position and flush with the adjoining ground.
- D. Ductile Iron Service Pipe: Each ductile iron service pipe (if required) shall be valved with gate valve where and as directed, and a valve box shall be installed over the valve, all as specified elsewhere in these Specifications. Connections of service lines at the main shall be made with appropriate size tees.

3.5 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 Somerville DPW, and received by them not less than five days before the date of test.
- D. Pressure and Leakage Tests.
 - 1. Pressure pipe shall be given combined pressure and leakage tests in sections of acceptable length.
 - 2. The Contractor shall furnish and install suitable temporary testing plugs or caps; all necessary pressure pumps, pipe connections, meters, gages, and other necessary equipment; and all labor required.
 - 3. Unless it has already been done, the section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high points for releasing air, the Contractor shall make the necessary excavations and do the necessary backfilling and shall make the necessary taps at such points, and shall plug said holes after completion of the test.
 - 4. The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.
 - 5. The meter and gage shall be installed by the Contractor and shall be kept in use during the test in such a manner that all water entering the water main under test will be measured and the pressure in the water main indicated.
 - 6. The pressure test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gage location) to a pressure of 125 lbs. per sq. in. If the Contractor cannot achieve the specified pressure and maintain it for a period of one hour with no additional pumping, the section shall be considered as having failed to pass the test.
 - 7. Following a successful pressure test, or concurrently therewith, the Contractor shall make a leakage test by metering the flow of water into the pipe while maintaining in the watermain a pressure equal to the specified test pressure. If the average leakage during the 4-hour period exceeds a rate of 20 gallons per 24 hours per inch of inside diameter per mile of pipeline, the section shall be considered as having failed the leakage test.
 - 8. If the section shall fail to pass the pressure test, the leakage test, or both, the Contractor shall do everything necessary to locate, uncover, and repair or replace defective pipes, fittings, or joints, all at his own expense, and without extension of the time for completion of the work. Additional tests and repairs shall be made until the section passes the specified tests.
 - 9. All joints within vaults shall have no visible leakage. Joints from which water continues to run or squirt in an active manner will not be accepted.
 - 10. Upon successful completion of the tests, plugs or caps installed for the testing shall be removed.
 - 11. If, in the judgment of the Landscape Architect, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure shall be made as required and accepted, but in any event the Contractor shall be responsible for the ultimate tightness of the line within the above leakage and pressure requirements.

- E. Before submitting system for final approval of the authorities having jurisdiction, the Contractor shall submit to the Architect a written statement stating that the work has been completed in accordance with the Specifications and Drawings.
- F. Promptly following satisfactory completion of leakage testing, a report fully describing test procedures and listing test results shall be submitted to the Architect and to governmental agencies having jurisdiction. The Contractor's Superintendent shall sign the report.

3.6 WATER SERVICES DISINFECTION

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

END OF SECTION

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SECTION 33 40 00 DRAINAGE UTILITIES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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

1.2 WORK INCLUDED

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.
- B. The Contractor shall pay for all costs and fees related to connecting the utilities and drainage systems to existing services and shall file all applications, details, and drawings required by the local authority having jurisdiction.
- C. To be included, but not limited to the following:
 - 1. Slot-Opening Trench Drainage System with Inline Catch Basin;
 - 2. Custom Steel Grate for Trench Drain;
 - 3. Precast Drainage Structures;
 - 4. PVC Drainage Pipe;
 - 5. New Drainage System Grates and Solid Covers;
 - 6. Cleaning of Drainage Structures to Remain;
 - 7. Removal of Disused Drainage Structures;
 - 8. 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 13 12 00 – Fountain Equipment
 - 4. Section 31 00 00 – Earthwork
 - 5. Section 32 10 00 – Bases, Ballasts, and Paving

1.4 SUBMITTALS

A. Shop Drawings and Samples

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

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

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

1.6 REFERENCE STANDARDS AND SPECIFICATIONS

- A. Perform work strictly as required by rules, regulations, standards, codes, ordinances, and laws of local, state, and federal government, and other authorities that have lawful jurisdiction.
- B. Special Attention shall be paid to the latest edition of the following standards:
 1. City of Somerville Department of Public Works Regulations and Standards
 2. American Association of State Highway and Transportation Officials
AASHTO: 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. Commonwealth of Massachusetts Highway Department MHD
 - a. Standard Specifications for Highways and Bridges SSHB
 7. Occupational Safety & Health Administration OSHA
- 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 TRENCH DRAIN WITH BRICK SLOT COVER AND INLINE CATCH BASIN

- A. The surface drainage system shall be ACO Drain Brickslot/K100S, as manufactured by ACO Polymer Products, Inc. or Approved Equal. All precast units shall be 0.5m nominal sections. Sections and covers shall be field-mitered; see 3.1 below.
- B. The slotted top shall be manufactured from 11 gage galvanized steel. The nominal clear opening for slot shall be 7/16" (11mm) with overall width of 4.84" (123mm). Slot shall be tapered to prevent debris from being trapped. Slotted top shall be secured with a boltless locking system.
- C. Inline access unit and catch basin shall have a frame that fits a provided catch basin with a separate cover unit that can be removed for maintenance.
- D. The trench system bodies shall be manufactured from polyester polymer concrete with minimum properties as follows:
 - 1. Compressive strength: 14,000 psi
 - 2. Flexural strength: 4,000 psi
 - 3. Water absorption 0.07%
 - 4. Frost proof
 - 5. Salt proof
 - 6. Dilute acid and alkali resistant
- E. The nominal clear opening shall be 4.00" (100mm) with overall width of 5.10" (130mm). Pre-cast units shall be manufactured with either an invert slope of 0.6% or with neutral invert and have a wall thickness of at least 0.50" (13mm). Each unit shall feature a full radius in the trench bottom and a male to female interconnecting end profile. Units shall have horizontal cast-in anchoring features on the outside wall to ensure maximum mechanical bond to the surrounding bedding material and pavement surface. The galvanized steel edge rail will be integrally cast in by the manufacturer to ensure maximum homogeneity between polymer concrete body and edge rail. Each edge rail shall be at least 1/8" (3mm) thick. After removal of grates and locking bar there shall be uninterrupted access to the trench to aid maintenance.
- F. The drain system shall be fitted with a custom steel drain grate above the manufacturer's slotted cover, as specified below.

2.2 CUSTOM STEEL GRATE FOR TRENCH DRAIN

- A. The custom steel drain grate shall be fabricated from 304 Stainless Steel sheet stock, 3/8" thick, as shown on the Drawings and as specified in 05 50 00, Metal Fabrications. The finish shall be a brushed satin finish (uncoated).
- B. 11 standard 30-degree sections are required, as shown on the Drawings. Additionally, one 10-degree section for mounting in the inline catch basin cover, and

one 20-degree section for the adjacent arc of trench drain, are required; for the two shorter sections, the grate surface shall omit openings where the two pieces meet, as shown on the Drawings.

- C. Submit fabricator's shop drawings for approval.

2.3 PRECAST DRAINAGE STRUCTURE

- A. New Catch Basin in Playground area shall be precast concrete, 36" in interior diameter, 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. 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.
- C. All proposed area drains/catch basins with outlets shall be constructed with Nyloplast snout or tee Oil Separator Hood or Approved Equal.

2.4 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.
- J. Embedment Materials
 - 1. Crushed stone fill shall consist of clean, crushed stone conforming to that specified in Section 02200, EARTHWORK.
 - 2. PVC drainage pipe shall use Class III embedment materials as defined in ASTM D 2321.

2.5 NEW DRAINAGE SYSTEM GRATES AND SOLID COVERS

- A. 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.
- B. All frames and covers shall conform to the MassDOT Specifications M 8.03.0.
- C. Castings shall have a shop-applied coal-tar-pitch varnish coating, thoroughly covering all metal.
- D. Frame and cover for new Catch Basin in the play area shall have a square clear opening of 18" x18", and shall be an ADA-compliant grate with square drain openings. Replacement grates and covers for existing structures shall fit the existing rims and shall be ADA-compliant.

2.6 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

2.7 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

2.8 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.

PART 3 - EXECUTION

3.1 TRENCH DRAIN SYSTEM WITH BRICK SLOT COVER AND INLINE CATCH BASIN

- A. The trench drain system shall be installed in accordance with the Manufacturer's installation instructions and recommendations, and in accordance with the Drawings.
 - 1. Note that due to the installation for a flush-mounted finish adjacent to the bullnosed granite edge, the drain will need to be installed deeper than the Manufacturer's typical detail, as shown on the Drawings. Ensure that all

finished grades drain into the slot opening, that pavers are soundly seated above the cover, and that all finishes are flush with the surrounding surface and all verticals are plumb.

- B. Sections and covers shall be field-mitered to fit tightly around the reinstalled granite curb and form a segmented circle; the angle of miters shall be 5 degrees on each end of each section, so that the 35 drain sections and the single catch basin are equally spaced around the circle. (Do not miter catch basin; adjust end miters of adjacent sections as needed.)
- C. Form and pour concrete cradle as shown on the drawings, with clearances sufficient to fit the drain sections and catch basin. Set drain sections into channel using non-shrink cementitious grout.
- D. The Custom Steel Drain Grates shall be installed above the trench drain slot inlet cover as specified below and as shown on the Drawings.
- E. After installation, inspection, and approval of drain and grate, install pavers over grate as shown on the Drawings and as specified in Section 32 10 00, Bases, Ballasts, and Paving.

3.2 CUSTOM STEEL DRAINAGE GRATE

- A. Fabrication shall be as shown on the drawings and as detailed in Section 05 50 00, Metal Fabrications. The finish shall be brushed stainless steel (non-powdercoated.)
- B. Install grate as shown in the Drawings. The grate shall be securely mortared in place, flush and level with the adjacent granite curb. Set pavers after installing grate.

3.3 PRECAST CONCRETE DRAINAGE STRUCTURES

- A. The Precast Concrete Catch Basin 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.
 - 3. Where shown on the Drawings or otherwise indicated, oil and debris separator hoods shall be installed, per hood manufacturer's instructions.
- C. 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.

3.4 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.

3.5 DRAINAGE SYSTEM GRATES AND SOLID COVERS

- A. Install per manufacturer's directions and as shown on the Drawings.
- B. 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 drainage structure 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 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.
- C. 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.

3.6 CLEANING OF EXISTING DRAINAGE SYSTEM TO REMAIN

- A. Existing portions of drainage system to remain shall be thoroughly cleaned to clear pipes of all debris, roots, sediment, etc., including through the use of a "drain snake" cleaning apparatus if necessary, in such manner as to avoid damage to the system. (Drainage snakes may only be used for rigid PVC pipe, not for flexible corrugated pipe. If flexible pipe is found, notify Landscape Architect for alternate instructions.) Submit proposed cleaning apparatus and methodology to Landscape Architect for approval before commencing work.
- B. Clean all drainage structures to remain and flush lines.
- C. All material damaged in the cleaning process shall be replaced by the Contractor at no additional charge to the Owner per the specifications in 2.4 below.

- D. After removal of the portions of the original system scheduled for removal, the portions to remain shall be protected from construction debris through the use of landscape filter fabric (see 2.8) securely connected and tight-fitting temporary wooden bulkheads.

3.7 REMOVAL OF INDICATED DRAIN STRUCTURES IN PLAZA AREA

- A. The indicated portions of the subsurface drainage system to be modified or removed shall be cleanly removed so as to prevent damage or siltation of, or the entry of construction debris into, the portions of the drainage system to remain. Tight-fitting temporary wooden bulkheads and filter fabric shall be used to protect the open ends of protected drainage lines until reconnection to new drainage lines.
- B. The indicated (2) Drain Structures in the existing Plaza and fountain area shall be completely removed and disposed of in accordance with all applicable regulations and standard practices.
- C. If existing drainage lines from structures or features to remain enter into structures scheduled for removal, they shall be re-routed to a remaining structure or a new drainage structure, as directed by the Landscape Architect.
- D. Permanently close all discontinued inverts into existing structures from removed structures according to standard practices.

3.8 CONNECTION OF NEW DRAIN STRUCTURES TO EXISTING DRAINAGE SYSTEM

- A. Connections shall be made as shown on the Grading and Drainage Plan (L-4) unless otherwise directed by the Landscape Architect.
- B. Measure all inverts of existing structures in the field; submit a plan marked up with proposed new invert elevations, existing inverts, and resulting pipe slopes to the Landscape Architect for approval. Installation shall follow standard practices regarding differences between inverts into and out of a structure (6" or the difference in pipe size, whichever is greater); pipe slopes (0.5% minimum, 1% preferred); cover over pipes (see Details); and other related information.

3.9 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.

3.10 CONTINUITY OF SERVICES

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

END OF SECTION

SECTION 33 70 00 ELECTRICAL UTILITIES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 0 and applicable parts of Division 1, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.
- C. The term "This Contractor" as used under this section shall mean the Electrical Contractor, but shall not absolve the General Contractor of the responsibility for ensuring the proper completion of all work specified herein.

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 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. Termination of Electrical Service (if any) to two disused electrical cabinets, removal and salvage of the cabinets and delivery to the City of Somerville DPW, and removal and disposal of the existing concrete pad;
 - 2. Conduits, sleeves, wiring, and connections as needed to install all lighting elements noted on the Drawings.

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 26 56 00 – Site Lighting
 - 3. Section 31 00 00 – Earthwork
 - 4. Section 32 10 00 – Bases, Ballasts, and Paving

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.

2. Submit Shop Drawings and product data within thirty (30) days after award of the Contract. Check, stamp, and mark with project name all submittals before transmitting to Landscape Architect. Indicate all proposed deviations from Contract Documents.
3. Electrical Cabinet Required Component Submittals:
 - a. Wiring Diagram and Cabinet Shop Drawings showing all clearances, connections, and components for review by Department of Public Works;
 - b. Electrical conduits, fittings, and switches as required;
 - c. Straps and clamps for mounting.

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, OSHA codes, National Electrical Codes, and NFPA, 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. City of Somerville Department of Public Works Regulations and Standards
 2. American Association of State Highway and Transportation Officials
AASHTO: Standard Specifications for Highway Bridges SSHB
 3. American National Standards Institute ANSI
 4. American Society for Testing & Materials ASTM
 5. American Water Works Association AWWA
 6. Commonwealth of Massachusetts Highway Department MHD
 - a. Standard Specifications for Highways and Bridges SSHB
 7. National Fire Protection Association NFPA
 8. Occupational Safety & Health Administration OSHA
 9. 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. This Contractor shall give all necessary notices, obtain all necessary permits and licenses, file necessary plans and pay all fees and any back charges 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 ELECTRICAL SYSTEM: GENERAL

- A. Materials and products furnished shall be designed for the intended use, shall meet all requirements of the latest edition of the National Electric Code (NEC), and all local codes.
- B. Materials shall be manufactured in accordance with the standards indicated in this Section, and typical industry standards and codes for the products specified. Materials and equipment shall be Underwriter's Laboratory (UL) listed, and ASME and AGA approved, for the intended service.
- C. The materials used shall be new, unused, and of the best quality for the intended use. All equipment shall have the manufacturer's name, address, model or type designation, serial number and all applicable ratings clearly marked thereon in a location which can be readily observed after installation. The required information should be marked on durable nameplates that are permanently fastened to the equipment.
- D. Electrical equipment shall at all times during construction be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored outside exposed to the elements. If any equipment or apparatus is damaged, such damage shall be repaired at no additional cost, or replaced at no additional cost as directed by the Landscape Architect.

2.2 EMBEDMENT MATERIALS AND DUCT BANKS

- A. Backfill containing large rock, paving materials, cinders, large or sharply corrosive material shall not be placed in an excavation where materials may:
 - 1. Damage raceways, cables, or other substructures;
 - 2. Prevent adequate compaction of fill; or
 - 3. Contribute to corrosion of raceways, cables, or other substructures.

- B. Where necessary to prevent physical damage to the raceway or cable, protection shall be provided in the form of granular or selected material, suitable running boards, suitable sleeves, or other approved means.
 - 1. Provide concrete encasement around sleeves, running boards, etc. under all paved areas, with 3" minimum cover on all sides of all sleeves.
 - 2. Provide sleeves and encasements under paved areas for current and/or future use where so indicated on the Drawings, including the Landscape plans. Spare (unused) raceways shall include pull lines.
 - 3. Raceways in duct banks shall be separated by 7.5" minimum on center.
- C. Crushed stone fill shall consist of clean, crushed stone conforming to that specified in Section 31 00 00, EARTHWORK.
- D. Sand fill for service lines shall be clean washed sand.

2.3 RACEWAYS

- A. Rigid Metallic Conduit: UL6 and ANSI C80.1.
- B. Flexible Metallic Conduit: UL1. Liquidtight flexible metal conduit shall be used in wet locations.
- C. Polyvinyl Chloride (PVC) Conduit, electrical, gray, Schedule 40 or Schedule 80 as specified, meeting the requirements of UL 651 and NEMA TC-2. If concrete encasement is required, a minimum of 3,000 psi concrete shall be used. All conduits placed under paving, and subject to vehicular traffic, shall be concrete-encased Schedule 40 or Schedule 80 as directed.
- D. Minimum size of conduit shall be 3/4". Unless indicated on Drawings, conduit sizes can be sized in accordance with National Electric Code (NEC). Conduit bends shall not have kinks or flats, and shall not be less than standard radii.
- E. Rigid Galvanized Steel (RGS) conduit shall be used for all power, control signal, and instrumentation wiring, except where noted. Conduit shall be fully threaded at both ends and each length shall be furnished with one threaded coupling. All 90 degree conduit sweeps shall be RGS for all entry and exit into concrete pads and at riser poles, with ground bushings connected to new grounding with minimum #4Awg ground wire for conduit grounding bushings.
- F. Conduits shall be made electrically continuous at coupling and connections to boxes and cabinets by means of joining fasteners or copper bond wires. Conduit shall be connected to grounded structural steel or the ground network. After assembly all conduit locknuts, all EMT coupling fittings, and all bond wire screws shall be set up tight before installation of wiring. Insulated metallic bushings shall be used on all conduits entering panel cabinets, pull-boxes, and wiring gutters, except on branch lighting circuits.
- G. Expansion fittings shall be provided on all conduits as required by the 2008 National Electrical Code, and as required by local and state codes. This includes, but is not limited to, vertical conduit risers coming from below-grade.

2.4 WIRE AND CABLE

- A. Unless otherwise noted, conductors for power, lighting, and grounding above grade shall be No. 12 through No. 8 AWG, NEC type THWN/THHN, meeting the requirements of UL 83. Conductors for power and lighting shall be no smaller than No. 12 AWG.

- B. Conductors for power, lighting, grounding, and control below grade (and in wet locations) shall be No. 2 AWG and larger, NEC type XHHW (or XHHW-2), meeting the requirements of NEMA WC7 and ICEA S-66-524.
- C. All conductors shall be annealed copper, 98% conductivity, Class B stranded, except conductors used for power and lighting circuits No. 10 AWG and smaller which may be solid. All conductors should be rated for 600 volts or less, with a thermal rating of 90° C.
- D. The outside covering of all wiring for power, lighting, grounding, and control uses shall be color coded to identify polarity as follows:

	208Y/120 V. 3 Phase	240D/120 V 3 Phase	480Y/277 V 3 Phase
Phase A	Black	Black	Brown
Phase B	Red	Red	Orange
Phase C	Blue	Orange	Yellow
Neutral	White	White	Gray
Ground	Green	Green	Green

2.5 WIRE AND CABLE CONNECTORS AND DEVICES

- A. Wire and cable connectors and devices shall meet the requirements of UL 486. Connectors, including miscellaneous nuts, bolts, and washers shall be silicon bronze. Ferrous materials shall not be used. All connectors below grade shall be water-proof secondary type, gel-filled, bolted submersible connectors (gel-port style). No "wire-nuts" are allowed to be used below grade.
 - 1. Connectors for in-ground LED lighting at the fixture shall be as noted on the Drawings and as recommended by Manufacturer.

2.6 BOXES

- A. Outlet and Switch Boxes: NEMA OS 1.
- B. Pull Boxes, Junction Boxes, and Equipment Enclosures: NEMA ICS 6.
- C. Pull boxes, junction boxes, and equipment enclosures shall be of NEMA Type 3R construction for outdoor or wet location use, unless otherwise noted.
- D. Box sizes shall not be less than that required by the Massachusetts Electrical Code.

2.7 WIRING DEVICES

- A. Wiring Devices: NEMA WD 1.
- B. Wiring devices shall be specification grade, 20 ampere, ivory with Type 302 stainless steel plates. Ground fault current interrupting (GFCI) devices shall be provided where specified and/or required by applicable codes.

2.8 WARNING TAPE

- A. Warning tape shall be six (6) inches wide, polyethylene not less than 3.5 mil thick with a minimum strength of 1,500 psi. Install 8 inches below final grade. Tape shall be red for electric conduit. Tape shall have black lettering on two lines as indicated below:

CAUTION CAUTION CAUTION
BURIED ELECTRIC LINE BELOW

2.9 WIRING:

- A. All exposed wiring shall be in electric metallic tubing. All concealed wiring shall be in accordance with local codes.
- B. All branch circuit conductors shall be copper, minimum #12 AWG size, THHN or THWH as required, 600V rated.
- C. All feeder conductors shall be copper, AWG size as noted, XHHW insulation, 600V rated.

2.10 ELECTRIC HANDHOLES

- A. Electric Handholes are to be strong, lightweight, and non-conductive, and provided in the dimensions as shown on the Contract Drawings if indicated, or as required by codes and standards if not indicated. Electric Handholes shall be Ultraviolet (UV) resistant, along with being unaffected by moisture, freezing temperatures, soil, and sub-soil chemicals. Electric Handholes to be polymer concrete composite, as approved by Landscape Architect.
- B. Handholes shall be provided with skid-resistant surface covers, with an "Electric" logo. Handholes and Covers shall be design for street-rated, heavy duty applications, meeting the requirements of either: AASHTO HS-20 or ANSI/SCTE 77-2002 Tier 15 loading, with a minimum design load of 15,000 lbs for both the handhole box and cover. Covers shall include recessed stainless steel captive bolts of a penta-head design. The nuts for the bolts shall be selfcentering and corrosion resistant. Handholes shall meet the requirements of the latest edition of the National Electric Code (2008 or later) with regards to structural integrity, installation methods, grounding of the cover and metallic parts, etc. Handholes shall be UL listed for the intended use.
- C. Color of handholes and covers to be green in grass areas and to coordinate with pavement in sidewalk areas, as approved by Landscape Architect. Handholes to be installed flush with final grade. A layer of 6-inches of crushed rock shall be installed below and in the bottom of each handhole to assist with drainage, and this compacted gravel base material shall extend out beyond the sidewalls of the handhole. Conduits shall sweep up and be at least 4-inches above top of stone.
- D. Handholes are NOT required for bollard lights or in-ground LED lighting unless explicitly required by code. Handholds shall be used for Pedestrian Post Lights ONLY IF required by any of: the City Electrical Inspector, City Public Works Standards, or applicable codes.
- E. Handhole size to be 13"W x 24"L x 18"D minimum for this project.

2.11 REMOVAL OF EXISTING CABINETS

- A. The two existing cabinets to which service has been discontinued shall be carefully removed, cleaned, and delivered to the City of Somerville Department of Public Works, Lights and Lines Division, by the Contractor.
- B. The concrete pad shall be removed and disposed of completely.
- C. The City of Somerville Dept. of Public Works shall have the right of first refusal on all existing contents of the discontinued cabinets.

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 ELECTRICAL SERVICES: GENERAL

- A. This Section covers the requirements for installation of materials, proper workmanship, testing, cleaning, grounding, and work methods to be followed by the Contractor. This Section also includes specific instructions to be used in conjunction with the contract Drawings. Any discrepancies noted between the specification, Drawings, and actual installation shall be reported immediately to the Owner, Engineer, and Architect. Failure on the part of the Contractor to report discrepancies immediately will be considered negligent and Contractor will be responsible for correcting actions at no cost to Owner.
- B. Contractor is responsible for coordinating work with other trades, Owner, and Architect's schedule. Work will be coordinated such that systems can be properly located, and conflicts and delays are avoided. Contractor shall consider commencement of work acceptance of existing conditions.

3.4 ELECTRICAL SYSTEM TESTING, INSPECTION AND CLEANING

- A. Test wiring and connections for continuity and grounds before fixtures are connected; demonstrate insulation resistance by megger test as required at not less than 500 volts. Insulation resistance between conductors and grounds for secondary distribution systems shall meet National Electrical Code (NEC) and interNational Electrical Testing Association (NETA) requirements.
- B. Verify and correct as necessary: voltages, tap settings, trip settings and phasing on equipment from secondary distribution system to point of use. Test secondary voltages at transformers, bus in panelboards, and at other locations on distribution systems as necessary. Test secondary voltages under no-load and full-load conditions.
- C. Test lighting fixtures with specified lamps in place for 100 hours. Replace lamps that fail within 90 days after acceptance by Owner at no extra cost to Owner (no exceptions).
- D. Provide necessary testing equipment and testing services.
- E. Failures or defects in workmanship or materials revealed by tests or inspection shall be corrected promptly and retested. Replace defective material.
- F. Clean panels and other equipment. Panelboard interiors shall be cleaned and vacuumed.

- G. Equipment with damage to painted finish shall be repaired to Owner's and Landscape Architect's satisfaction. After completion of project, clean exterior surfaces of electrical equipment.

3.5 WIRING METHODS

- A. Install wire and cables in approved raceways as specified and as approved by authorities that have jurisdiction.
- B. Follow homerun circuit numbers and/or notes as shown on the Drawings to connect circuits to panelboards. Where homerun circuit numbers are not shown on Drawings, divide similar types of connected loads among phase buses so that currents are approximately equal in normal usage.
- C. Run concealed conduit in as direct lines as possible with a minimum number of bends of longest possible radius. Run exposed conduit parallel to or at right angles to paving/curbing lines. Bends shall be free from dents or flattening. The exact locations and routing of conduit shall be determined by the Contractor subject to the approval of the Owner and Landscape Architect.
- D. Polarity of all electrical connections shall be observed in order to preserve phase relationship in all feeders and equipment.
- E. Splices shall be made in neat, workmanlike manner using approved mechanical connectors. After splicing, insulation equal to that on the spliced wires shall be applied at each splice. Splices are permitted only in junction boxes, outlet boxes, or other permanently accessible locations. Splices installed in electric handholes shall be weather and waterproof, pre-molded polymer splices. Hand taping of splices below-grade is not acceptable.

3.6 GROUNDING

- A. Bond and ground equipment and systems connected under this Section in accordance with standards of the NEC and other applicable regulations and codes.
- B. Conduit system shall be electrically continuous throughout, grounded at service entrance. Equipment frames, enclosures, boxes, etc. shall be grounded by use of green-jacketed (or bare copper) ground, sized as per Table 250-95 of the NEC.
- C. Green bonding jumper shall be installed in flexible conduits.
- D. Copper fittings for ground connections shall conform to the requirements of ASTM B 30. All bolts, u-bolts, cap screws, nuts, and lock washers for copper fitting shall be of approved corrosion-resisting material. Compression connectors required for all below-grade grounding connections. Exothermic (cad-weld) connectors are also acceptable for use below grade. The use of bolted grounding and ground rod connectors below grade is not acceptable.
- E. Ground Rods shall be 5/8" diameter and 8' in length, copperweld as required by applicable codes (NEC, NESC). Bonding connections to ground rods shall be permanent, welded or crimped, with copper connectors. All wire used for grounding shall be no smaller than #4 Awg copper, stranded conductor. Contractor shall bond all meter enclosure cabinets, meter sockets, safety disconnects, conduit grounding bushes, etc.

3.7 INSTALLATION OF LIGHTING FIXTURES

- A. Verify construction of light pole foundations is suitable, and provide fixtures, poles, hardware, and other accessories suitable for construction encountered.

- B. Install Lighting System, as specified elsewhere in this Specification. Ground pole steel/aluminum to power system grounding conductor at each pole location, per NEC.
- C. Coordinate installation of fixtures with installation of surrounding materials and landscaping (if applicable). Investigate lighting fixture locations and foundation supports to ensure that no interference exists between lighting fixtures, supports, and other equipment including that provided by other trades. Report any possible interferences to the Landscape Architect.

3.8 INSTALLATION OF ELECTRICAL EQUIPMENT

- A. Contractor to Furnish and Install the indicated major electrical components, and all necessary minor and expected accessories.
- B. Contractor to meet with local wiring inspector prior to the start of any work and obtain any local site requirements and restrictions, which must be followed. Contractor shall also meet with local utility, any other Town/City officials, as directed by Owner and wire inspector, prior to the start of work, or ordering of materials. Failure to meet with the local officials and utility prior to ordering materials and start of construction will be considered negligent and all necessary corrections resulting from this failure will be at no cost to Owner.
- C. Provide, furnish and install all products and work outlined in Paragraph 1.02.G of this Specification Section.
- D. Provide all grounding of electrical installations and lighting. Grounding to be installed per installation details and National Electrical Code.
- E. Balance the lighting, receptacle and electrical load evenly on all circuits and on all phases of each circuit.
- F. Provide new handholes and conduit system for lighting and electrical work, in locations as shown on Contract Drawings or as directed in the field by the Landscape Architect and Owner.
- G. Install all equipment in locations as shown on Contract Drawings. All deviations must be approved, in advance by Owner, Architect and Engineer.
- H. Install all equipment per manufacturer's instructions.

3.9 EMBEDMENT MATERIALS AND DUCT BANKS

- A. Pitch all ductbanks away from the electrical cabinet.
- B. Minimum cover on all ductbanks shall be as follows:
 - 1. 12" under any building or structure with a 4" minimum slab.
 - 2. 18" under pedestrian areas;
 - 3. 24" under all areas subject or potentially subject to vehicular traffic (including all park pathways and plaza areas).

3.10 REMOVAL OF EXISTING CABINETS

- A. Confirm inactive status and lack of current use of two (2) indicated small electrical cabinets before beginning this work.
- B. Disconnect and discontinue electric service to cabinets, make safe, and abandon service in place. All other existing electrical service on the site shall remain active.

- C. Carefully remove cabinets and contents. The cabinets shall be delivered to the City of Somerville Dept. of Public Works Lights and Lines Division. The City shall have right of first refusal on the contents of the cabinets.
- D. Completely remove the underlying concrete pad, taking care to protect the canopy and roots of nearby trees and all remaining electrical services not scheduled for removal.

3.11 GUARANTEES

- A. Guarantee all work in writing for one year from date of final acceptance. Repair or replace all defective materials or installation at no cost to the Owner. Correct, to the satisfaction of the Landscape Architect and Owner, all damage to finishes or other materials caused in making the necessary repairs and replacements under this guarantee at no cost to the Owner.
- B. Submit guarantee to Landscape Architect before submitting for final payment.

END OF SECTION



City of Somerville, Massachusetts

Plans for the Construction of: **IMPROVEMENTS TO KENNEY PARK**

Grove Street & Highland Avenue

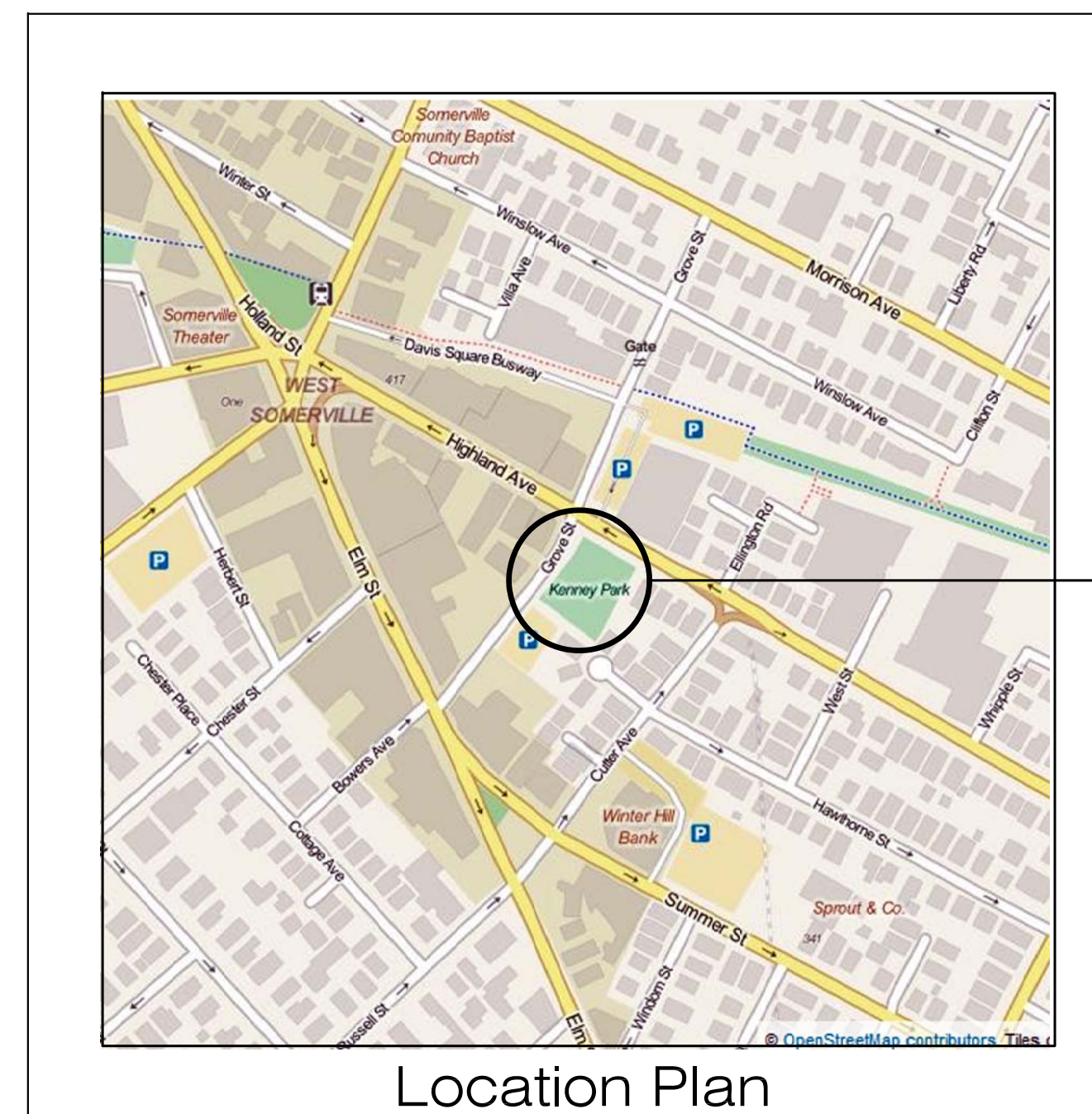
City of Somerville, Massachusetts
Joseph A. Curtatone, Mayor

Mayor's Office of Strategic Planning & Community
Development

Michael F. Glavin, Executive Director
Hayes Morrison, Director of Transportation
and Infrastructure

Luisa Oliveira, Proj. Mgr., Parks & Open Space
Phone: 617-625-6000 x2529

Plans Prepared By:



Project Location

DRAWING LIST - Project No. 1305

- L-0 Site Survey
- L-1 Demolition & Removals Plan
- L-2 Materials Plan
- L-3 Layout Plan
- L-4 Grading & Drainage Plan
- L-5 Water & Electric Utilities Plan
- L-6 Planting Plan
- L-7 Site Details
- L-8 Site Details
- L-9 Site Details
- L-10 Site Details
- L-11 Site Details
- P-1 Play Equipment Renovation Plans and Details

February 12, 2014

100% Construction Documents

DEMOLITION NOTES

1.

The Contractor shall verify location of and protect all utilities, drainage, and sub-drainage structures prior to starting construction. Call DIG-SAFE (1-888-DIG-SAFE).
2.

Contractor shall complete all demolition and removals required to complete the intent of the proposed design.
3.

The Owner shall have right of first refusal on all removed materials not indicated for reuse or stockpiling. Contractor is responsible for proper disposal of all reused materials, off-site and in accordance with all local and state regulations.
4.

Protect from damage all removed items designated for reuse in the project, or for reuse or stockpiling by the City of Somerville. These items shall be stored in a location designated by the City.
5.

Protect from damage all trees, shrubs, curbs, paving, and any other site feature that is not designated for removal. (See also Note 7 below.)
6.

Any damaged item not scheduled for removal shall be restored by the Contractor at no extra charge to Owner. Contractor shall restore at no cost to the Owner any existing lawn areas incurring damage during construction; see L-2, L-5, and Specifications.
7.

ALL REMOVALS AND ALL EXCAVATIONS outside Tree Protection Fencing but within the dripline of existing trees shall be **HAND WORK** or **AIR SPADE ONLY**. Cut no roots without the express permission of Landscape Architect or Owner's Representative. Provide 48 hours notice before all such work in "Hand Work Only" areas to allow Landscape Architect or Owner's Representative to observe work. (See Specifications 01 57 00.)
8.

Evergreen trees on the site (along the eastern property line) shall be pruned for health and safety (Crown Cleaning only). All deciduous trees on the site shall be pruned for health, safety, and structure, Crown Cleaning only except where Crown Raising is needed to maintain 7' minimum clearance from play structures (per ASTM 1487) and to allow proper clearance around new lighting elements and circulation areas. The indicated shrubs along the southern property line shall be pruned to restore the usable width of the adjacent path to 5' min. All Pruning work shall be by a MA Certified Arborist. See 31 13 00 for more information.
9.

Temporary fencing with construction signage shall be installed around the perimeter of the work and staging areas to secure project site and notify the public of the closure for construction; see Specifications section 01 56 00. The Temporary Fencing shall be the Limit of Work unless otherwise directed in the Field. All public pathways outside the indicated fencing shall remain open.
10.

Contractor shall review items to be removed, proposed staging areas, access routes, and intended procedure for accomplishing the Work with the Landscape Architect and Owner's Representative prior to commencement of work.
11.

Utility Termination: The two indicated small electrical control cabinets shall be confirmed to be inactive by the Contractor. Once confirmed, all existing services to the cabinets shall be terminated and made safe in accordance with all applicable codes and requirements. The two cabinets shall be removed carefully and delivered to the City's Dept. of Public Works, Lights and Lines Division, for their reuse. The concrete pad shall be removed completely. (If services are found to be in active use, DO NOT REMOVE; notify the City and Landscape Architect immediately for further instructions.

LEGEND

Remove & Dispose Of Wood Fiber & Subbase

Remove & Dispose Of Bituminous Conc. &/or Poured Concrete Pavement & Assoc. Subbase

Remove & Dispose of All Shrubs, Shrub Roots & Mulch

Remove & Dispose of Brick & Subbase

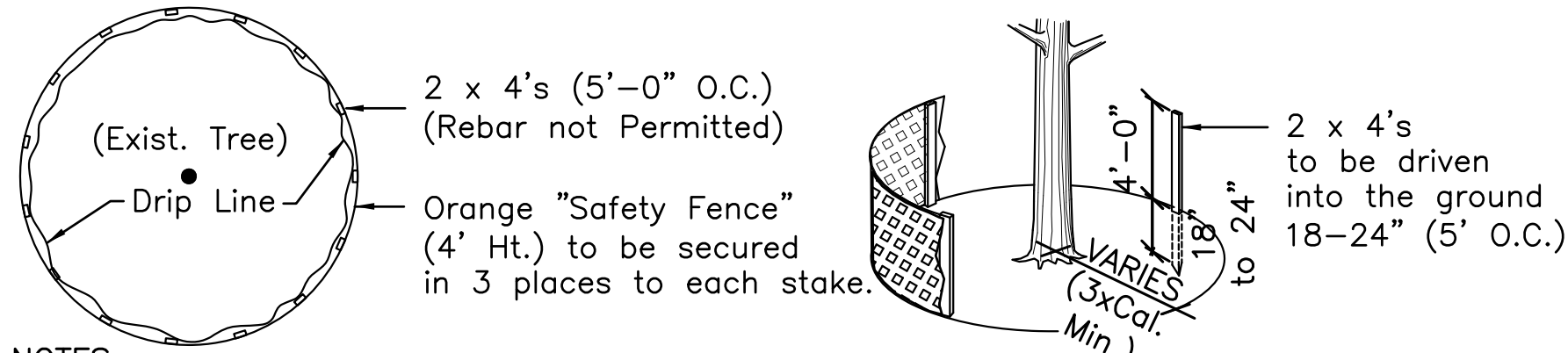
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Existing Site Feature To Be Removed & Disposed Of

Existing Tree Or Other Site Feature To Be Protected; (Prune Trees To Remain Per Note #8 and Section 31 13 00)

— LoW —

Limit Of Project Area



- NOTES:
1.

Maintain fence protection in sound condition until project completion.
2.

Protective fence to run along dripline unless otherwise required to install improvements. Spray or stake layout of all proposed paving edges and site features within the dripline of existing trees before beginning any demolition work in order to determine the maximum extents of site fencing.
3.

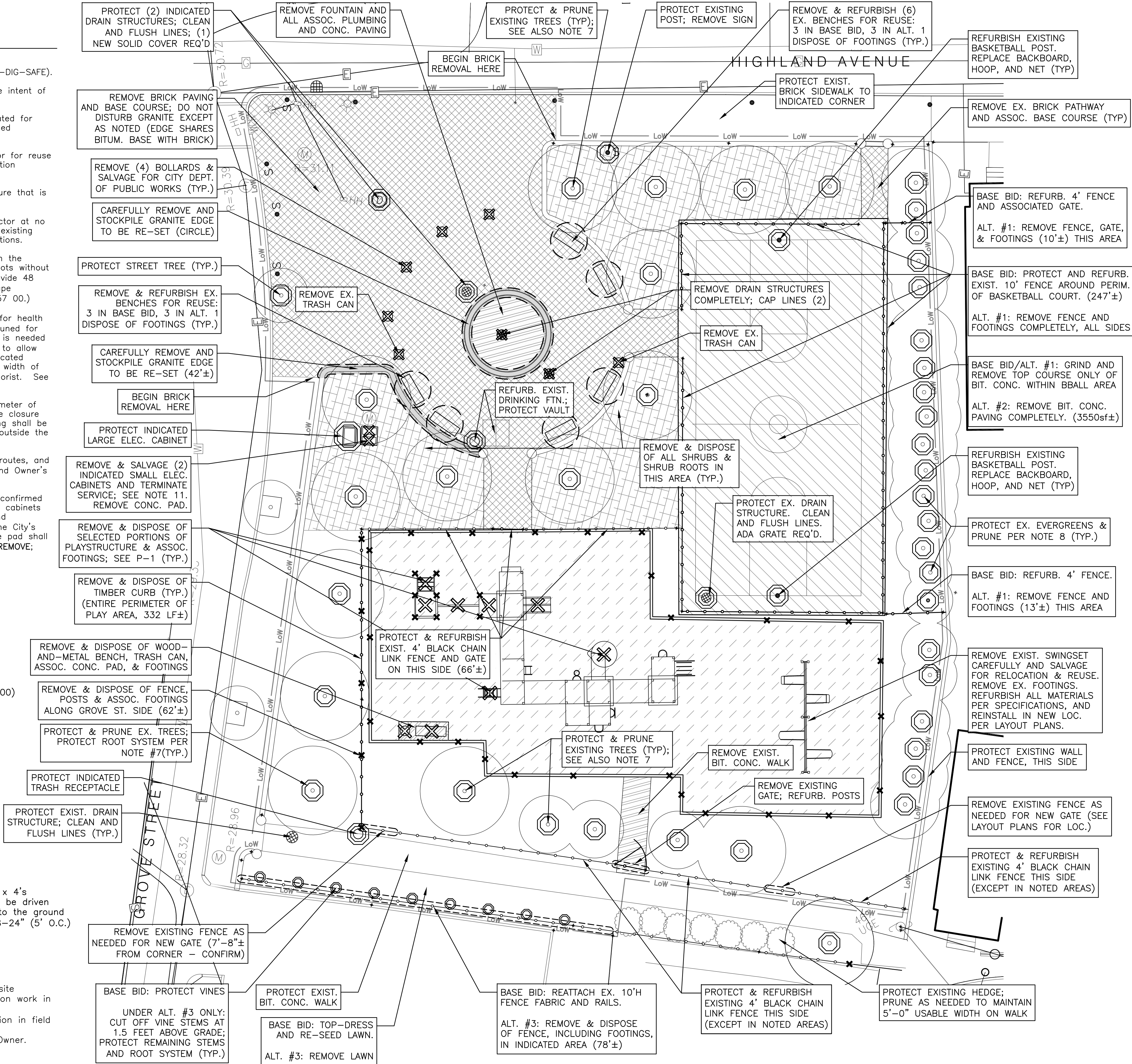
Landscape Architect and Owner's Representative to approve fence installation in field before construction begins.
4.

Do not relocate approved fence without notifying Landscape Architect or Owner.

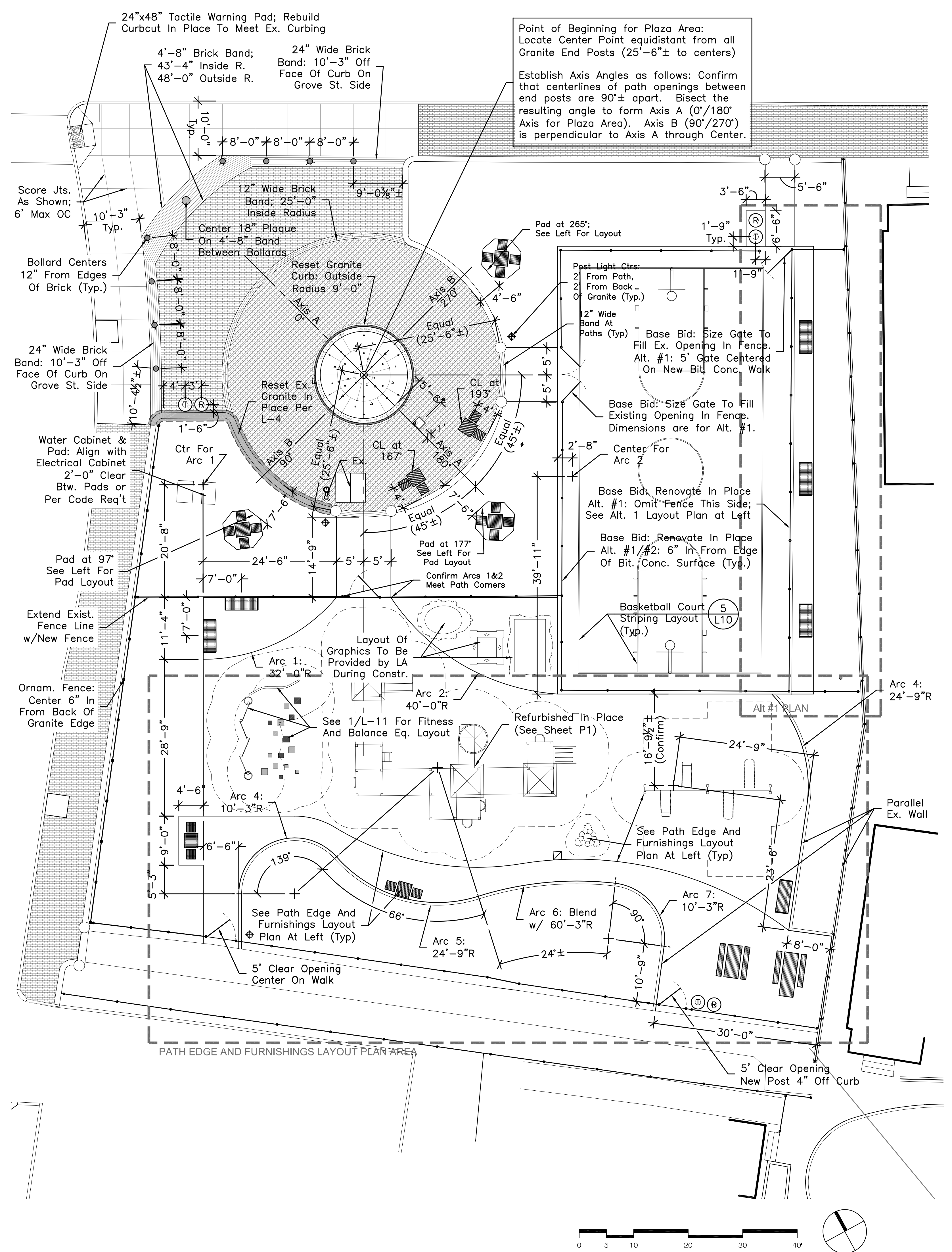
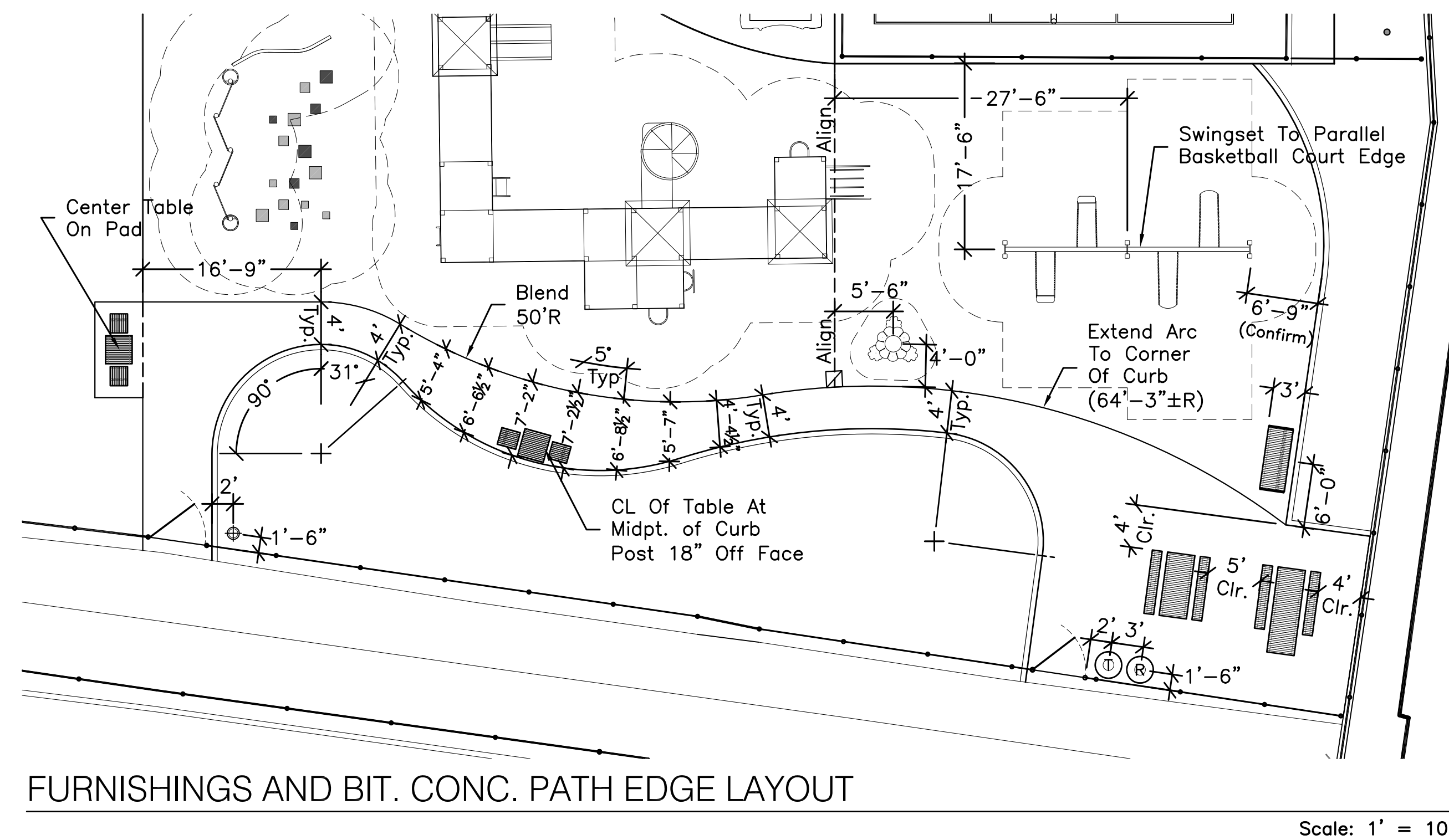
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TREE PROTECTION

Scale: 1/2" = 1'-0"



1. The Contractor shall verify location of and protect all utilities, drainage, and sub-drainage structures. All utility lines and subsurface drainage to be coordinated with footings for site features.
2. Contractor shall verify all dimensions and elevations on the ground and report any discrepancies to the Landscape Architect before commencement of construction.
3. Contractor shall stake layout of plan on the site for approval of Landscape Architect before commencement of construction. All curves shall be staked with markers at a minimum of one every two feet.
4. Property Lines shall be marked in the field by a Registered Surveyor, and all layout shall be performed by a registered surveyor. See Specifications Section 01 71 00.
5. SHOP DRAWINGS REQUIRED for fence post layout. Post-to-Post distances to be equal for each run of new fencing.
6. Where not otherwise indicated, all dimensions are to the faces of curbs and walls and to the centerlines of paths or other items shown. Dimensions are measured perpendicular to guidelines, centerlines, and features unless otherwise indicated.
7. Lay out all play and fitness equipment and all nearby furnishings and edging and confirm safety zones and required clearances, including safety zones from existing equipment to remain in place, before setting any footings or installing adjacent paving or curbing.
8. All layout shall be by the dimensions noted; do not scale directly from the plan. If clarification regarding a dimension or layout order is required, the Contractor shall contact the Landscape Architect. Layout to be done by a Registered Engineer.
9. Dimensions marked with "±" and/or "(Confirm)" are intended for confirmation of conformance to the expected conditions and (where applicable) that acceptable slopes and clearances are provided. Once layout has been established using other dimensions, the Contractor shall verify these dimensions (to within a tolerance of 1/2") and report any discrepancy to the Landscape Architect for acceptance or instruction regarding adjustment. These dimensions should not be used to lay out elements.



GRADING NOTES

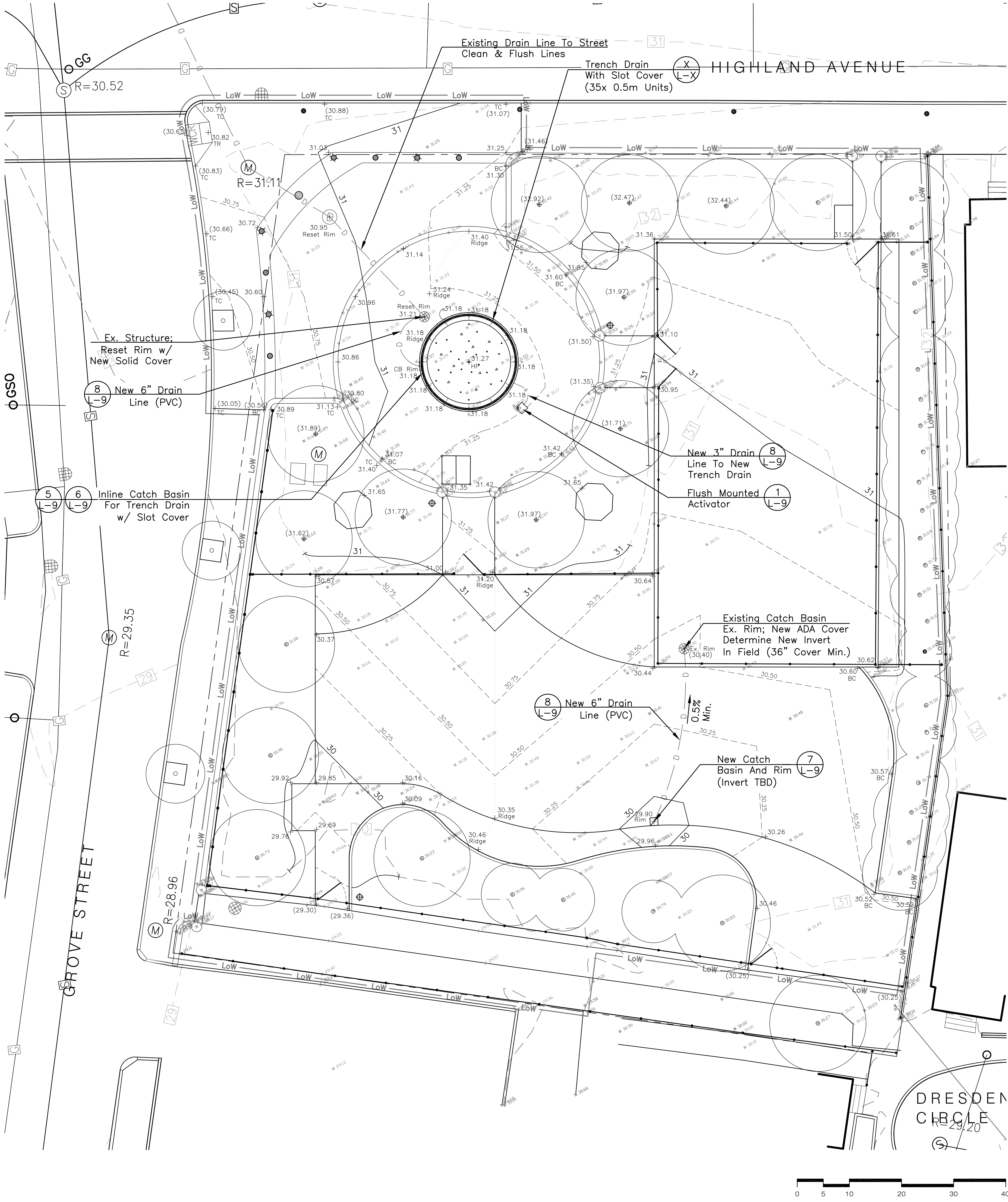
- Grade stakes to be set for approval by Landscape Architect prior to installation of gravel bases and prior to installation of all paving, edges, walls, and play structures.
- All transitions to existing grades to be smooth and gradual.
- 2% maximum Cross-Slopes on accessible routes.
- Do not leave footings of existing walls exposed; if encountered, notify Landscape Architect and await instructions.

DRAINAGE NOTES

- The Landscape Contractor shall protect all utilities prior to starting construction.
- Landscape Contractor to verify all invert elevations prior to construction.
- All covers & rims for drainage and utility structures are to be ADA compatible; replace covers which are not ADA compliant.
- Proposed drain lines shown are schematic layouts only; adjust as needed to avoid footings and existing structures. Contractor shall submit as-built drawings showing installed locations upon completion.
- All existing drainage structures and lines within the site scheduled to remain shall be cleaned, and all lines flushed.

LEGEND

	Existing Contour		Pre-Construction Elev.
	Proposed Contour		+ (96.79) Match Existing Grade
	Quarter-Foot (New Paving Areas Only)		+ 96.79 Proposed Grade
	Grading Ridge Line (for reference)		+BW 96.79 Bottom of Wall
	Drainage Pipe (Proposed)		+TW 96.79 Top of Wall
	Drainage Pipe (Existing)		+BC 96.79 Bottom of Curb
	Proposed Catch Basin (1)		+TC 96.79 Top of Curb
	Existing Drain Struct. (Adj. Rim)		+Rim 96.79 Rim Elevation
	New Trench Drain Section (35)		
	Trench Drain Inline Catch Basin (1)		



KENNEY PARK IMPROVEMENTS
Somerville, MA
Grading & Drainage Plan

DATE: 02-12-14
SCALE: 1" = 10' - 0"
FILE: Ken-grade util.dwg
DWN BY: JMF
CKD BY: DJC
PROJ. #: 1305



L-4

CBA Landscape Architects LLC
24 THORNDIKE STREET CAMBRIDGE MA 02141
phone 617.945.9760 cba@cbland.com www.cbland.com
landscape architecture
urban design
master planning

UTILITY NOTES

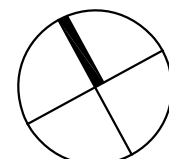
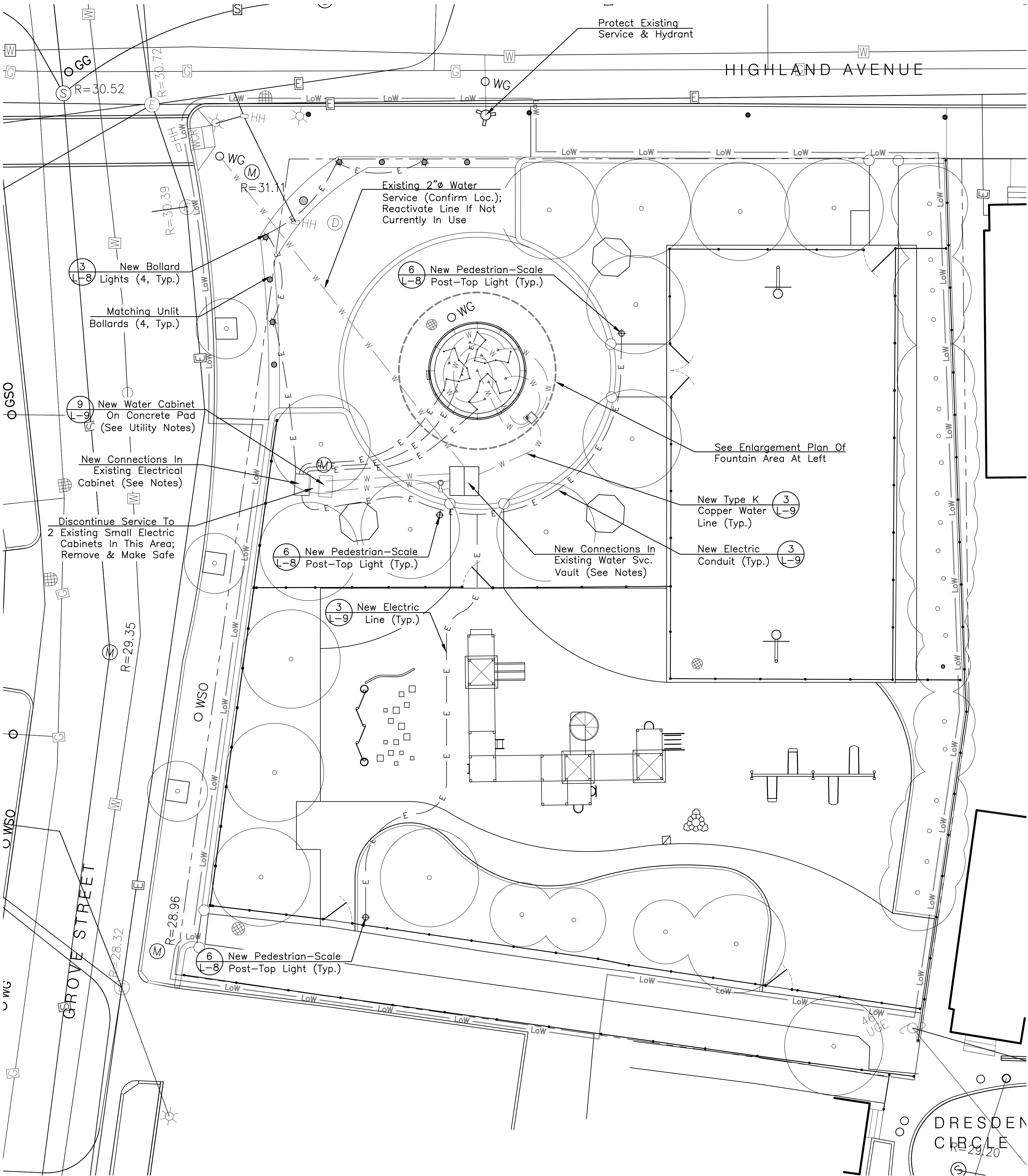
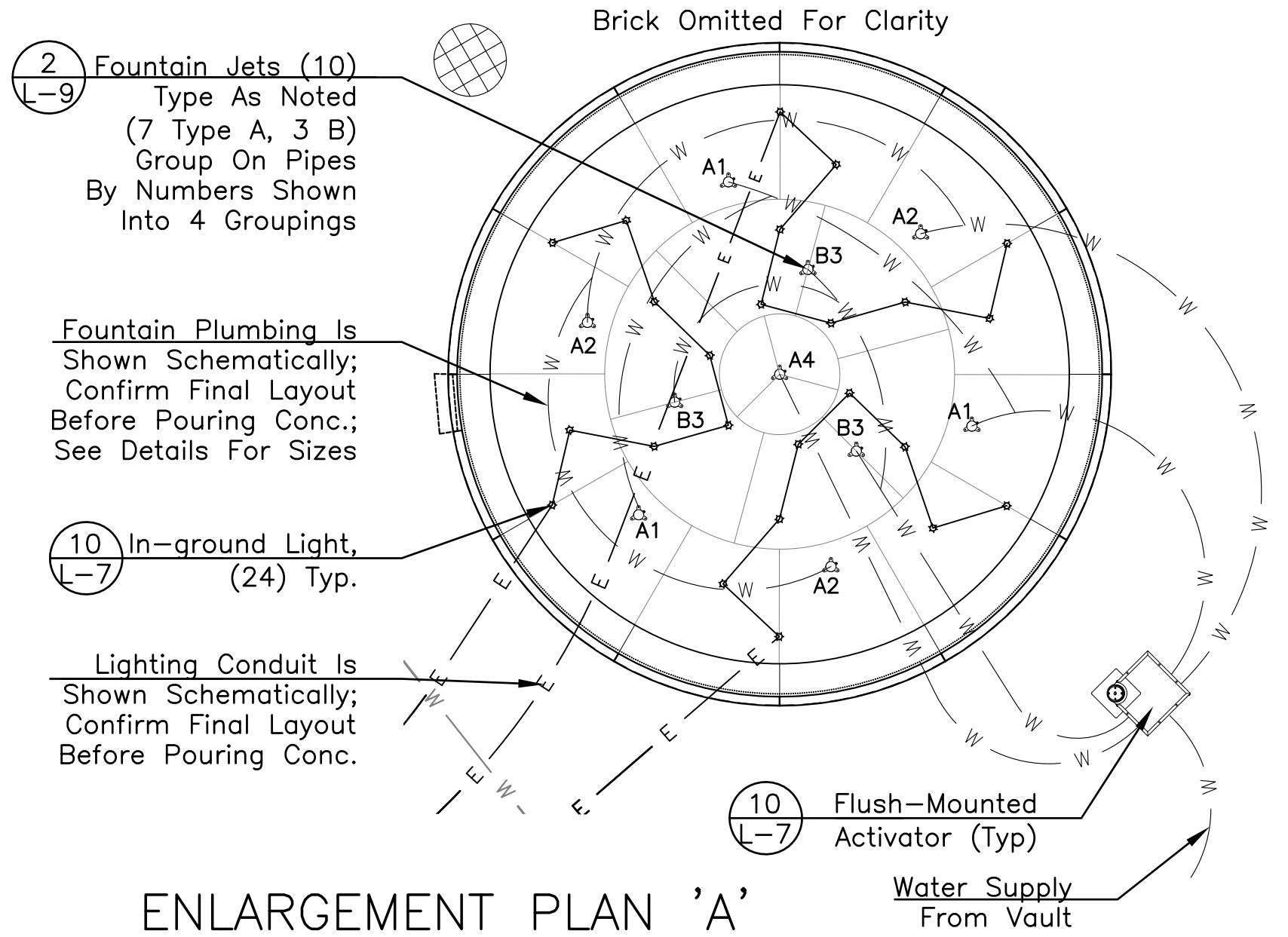
- GENERAL:
- The Landscape Contractor shall protect all utilities prior to starting construction.
 - All plumbing and electrical work shall comply with local, state and federal codes and with all City of Somerville standards. All services abandoned, discontinued, or terminated as part of the work shall be made safe according to the applicable codes. Structures abandoned as part of the work shall be removed and disposed of.
 - All covers & rims for drainage and utility structures are to be ADA compatible; replace covers which are not ADA compliant.
 - Proposed conduit and water supply lines shown are schematic layouts only; adjust as needed to avoid footings and existing structures. Contractor shall submit proposed conduit layout, wiring, and plumbing diagrams for approval before beginning utility work, and shall submit as-built drawings showing installed line locations upon completion.

- WATER:
- The existing 2" water service into the site shall be reactivated (if it is shut off). The Contractor shall purchase (through the City of Somerville Dept. of Public Works) and install a new 2" Water Meter on the existing line within the existing Water Vault. All abandoned lines shall be made safe according to code.
 - The Contractor shall furnish and install a new above-grade Water Cabinet on concrete pad at the location shown on the plans, supplied from the existing vault and meter with lines as needed. The Cabinet shall house, at a minimum: all required backflow prevention devices; the irrigation controller; and a 3/4" hose bib.
 - Other plumbing connections may be made within existing vault where allowed by code. See Specifications for more information.
 - Confirm pressure and volume available is sufficient for the proposed irrigation and the proposed fountain system before installation.
 - Remove and dispose of all plumbing related to the existing fountain system completely.
 - Irrigation system shall use one "zone" to control water play feature hours of operation using a solenoid valve located in the Cabinet or Vault; program as directed by the City.

- ELECTRICAL:
- All new electrical connections shall be made within the existing large electrical cabinet to remain. (Confirm that sufficient capacity and space exist before beginning installation.)
 - The Contractor shall discontinue and make safe according to code all abandoned lines to the two smaller electrical cabinets, deliver the abandoned cabinets to the City Dept. of Public Works, remove all associated pads completely, and dispose of all removed material (other than the cabinets) properly.

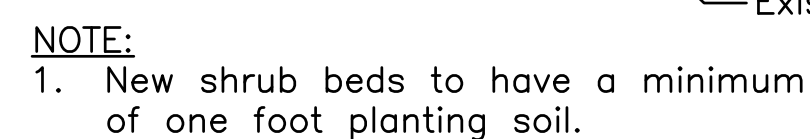
LEGEND

— W — Existing Water Line (Approx.)	⊕ Pedestrian Post Light
— W — Proposed Water Line	⊛ Bollard Light
— E — Proposed Electrical Line (Ex. Not Shown)	● Unlit Bollard
△ Fountain Jet (Type as shown below)	• In-Ground LED Light
⊞ Fountain Activator	⊙ Drinking Fountain

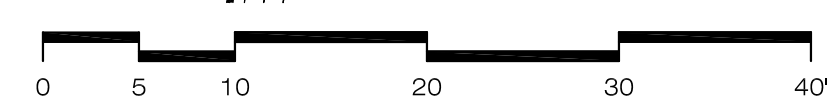
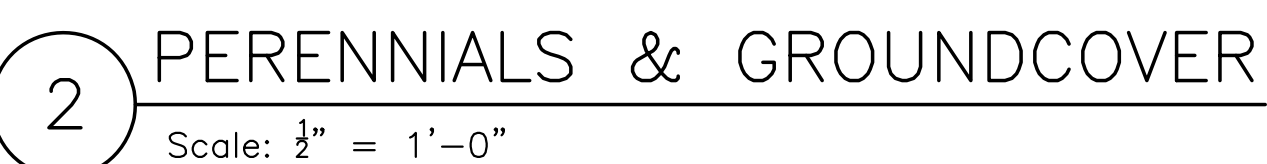


1. The Landscape Contractor shall protect all utilities prior to starting construction.
2. The Contractor shall supply all plant materials in quantities sufficient to complete all planting shown on this drawing.
3. All plant materials to conform to guidelines established by the American Standard for Nursery Stock published by the American Assn. of Nurserymen.
4. All plant materials to be selected by the Landscape Architect with the Contractor at the nursery.
5. All plants to be located on the site for approval of the Landscape Architect prior to installation.
6. If the plant list does not agree with the planting plan, the plan shall be followed.
7. The Contractor shall guarantee all trees for two years, and all other plant materials for one year following acceptance.
8. All plant beds to receive 3" shredded bark mulch; supply sample for approval of Landscape Architect.
9. All planting beds to have a minimum 12" depth of topsoil; all lawns to be sod. Remove old lawn, shrubs, weeds, mulch, rototill. Add topsoil so that all lawns to have a minimum 6" depth of topsoil. See Specs for requirements.
11. Daylilies to be a mix of 3 colors of similar-height reblooming daylilies: Happy Returns, Earlybird Cardinal, Joan Senior or similar varieties. Submit Proposed Mix.
12. No substitution of plant materials shall be allowed without approval of Landscape Architect.

1. Irrigation system to be design / build, and irrigation company and design to be approved by Landscape Architect. Irrigation company to provide plan for approval, before installation begins. See Specifications, section 32 80 00, for further information.
2. Control box and clock to be approved by the City and shall be sized to irrigate and provide 100% coverage of all planting beds and lawns within limit shown
3. 'Pop-up' spray heads for use in lawn areas and trees. 'Drip' system for use in all perennial and shrub beds. Drip for the shrub beds shall not be installed until after plants are installed.
4. Irrigation system to be guaranteed for one (1) year following installation. Contractor to provide first winterization and spring start up.
5. Contractor to provide irrigation sleeves under paved areas. Seal all pipe ends and joints tightly.
6. Contractor to provide an "As-Built Plan", which includes sleeve locations, zone information and Operation Instructions.
7. Control Box to have a maximum of ten (10) zones and to be located within the new Water Cabinet.
8. Location of rain gauge to be determined in field with Landscape Architect and Owner's Representative.
9. Irrigation System to use one "zone" to control water play element hours of operation (program as directed by City).

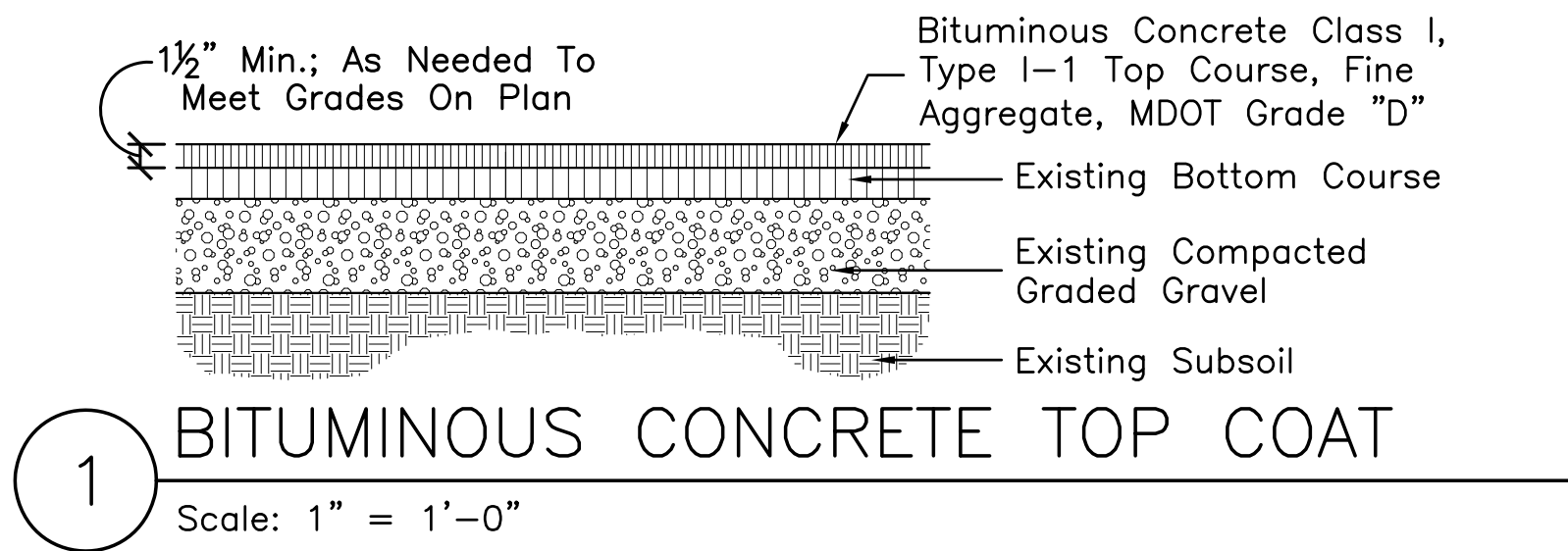


Scale: $\frac{1}{2}" = 1'-0"$



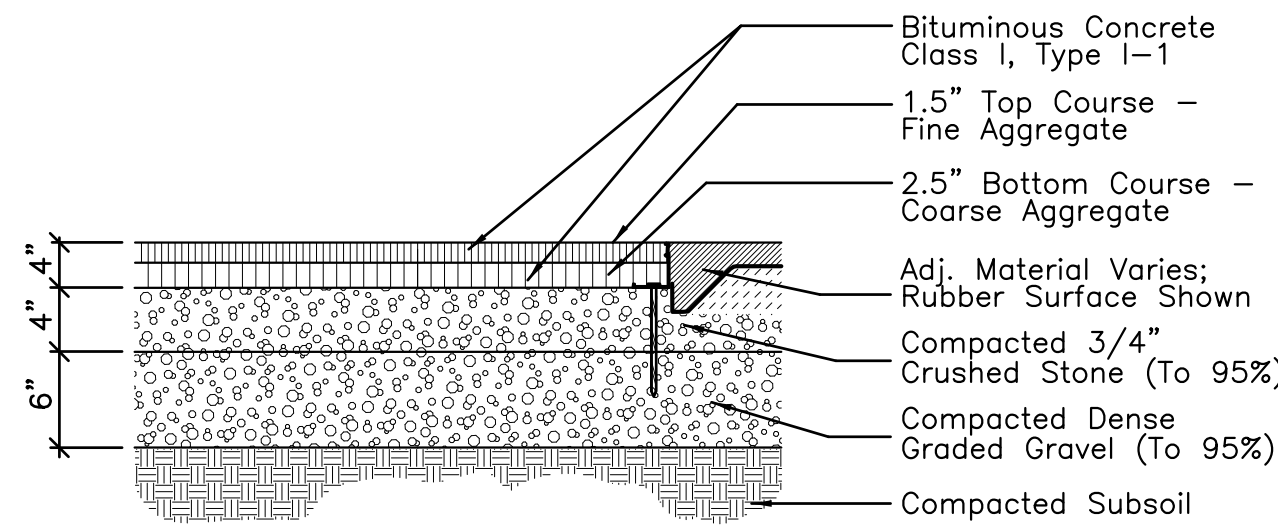
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	NOTES
17	CS	Cornus sericea 'Arctic Fire'	Dwarf Red Twig Dogwood	2.5'-3' ht.	48" o.c.	
39	IGS	Ilex glabra 'Shamrock'	Compact Inkberry Holly	18"-24" spr.	36" o.c.	
23	IG3	Ilex glabra 'Shamrock'	Compact Inkberry Holly	18"-24" spr.	36" o.c.	
14	AD	Aruncus dioicuis	Goatsbeard	#2 pot	24" o.c.	
53	AS	Astilbe chinensis 'Visions'	Pink Perennial Spiraea	#2 pot	18" o.c.	
22	ASW	Astilbe chinensis 'Deutschland'	White Perennial Spiraea	#2 pot	18" o.c.	
40	AO	Symphotrichum oblongifolium 'October Skies'	Aromatic Aster	#2 pot	18" o.c.	
29	DX	Dicentra eximia	Fringed Bleeding Heart	#1 pot	18" o.c.	
44	EP	Echinacea purpurea 'White Swan'	White Coneflower	#1 pot	18" o.c.	
13	ER	Eupatorium rugosum	White Snakeroot	#2 pot	24" o.c.	
72	HM	Hemerocallis (Mixed)	Mixed Daylilies (see notes)	#2 pot	18" o.c.	
18	HO	Hosta x 'Patriot'	Patriot Hosta	#2 pot	24" o.c.	
346	LM	Liriope muscari 'Variegata'	Variegated Lilyturf	4" pot	10" o.c.	
17	PV	Panicum virgatum 'Heavy Metal'	Switch Grass	#2 pot	36" o.c.	





1 BITUMINOUS CONCRETE TOP COAT

Scale: 1" = 1'-0"

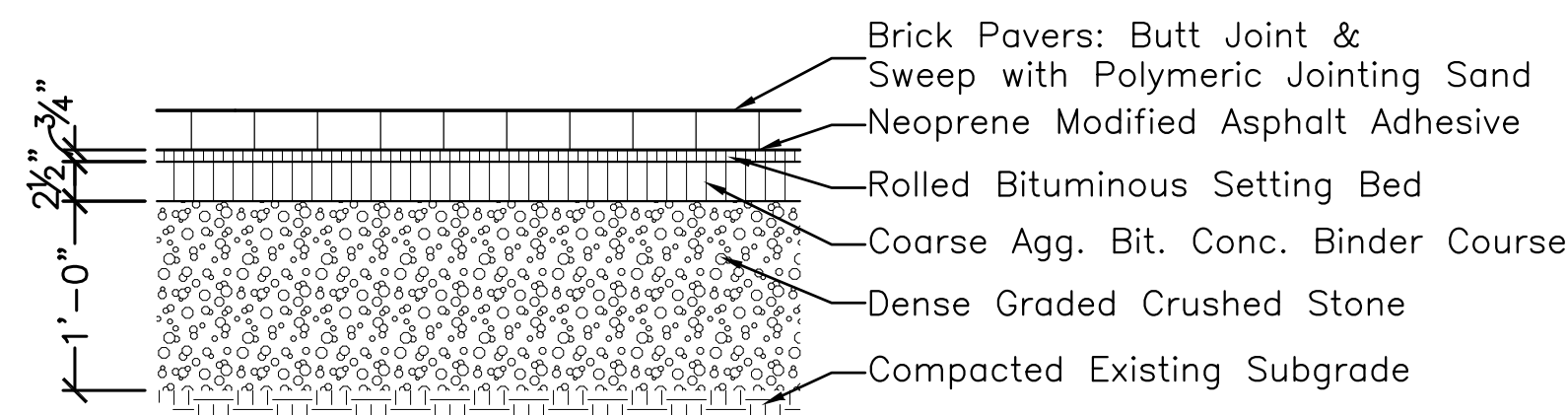


NOTE:

- Where Bituminous Concrete abuts Paired Rubber Surface (shown), Bit. Conc. shall be installed with a curvable aluminum asphalt restraint; see Rubber Safety Surface detail (4/L7) for information, detail, and requirements.

2 BITUMINOUS CONCRETE PAVING (FULL DEPTH)

Scale: 1" = 1'-0"

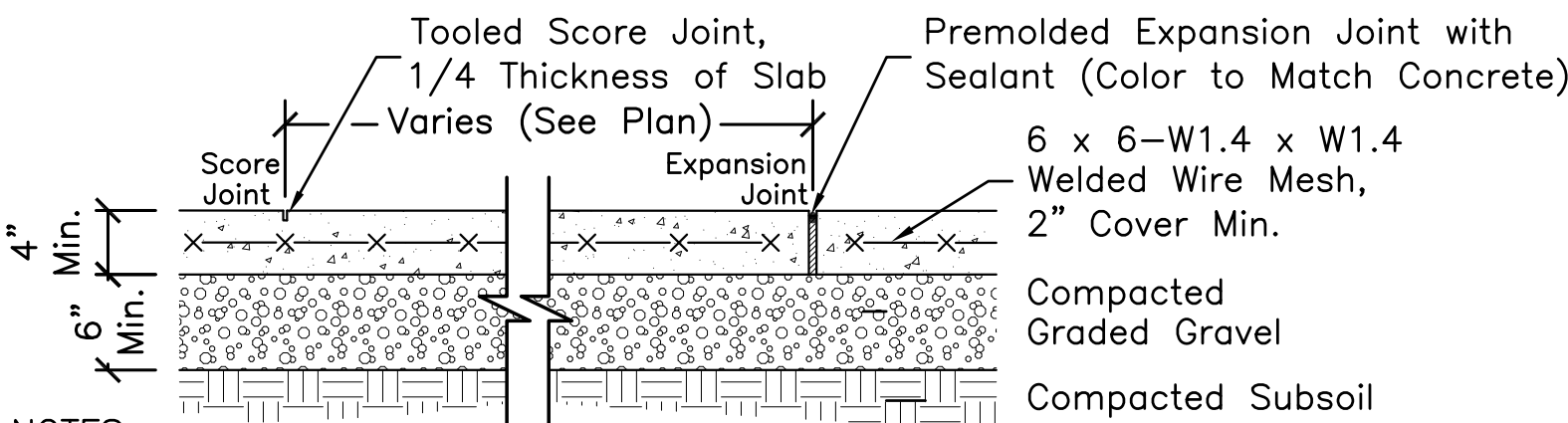


NOTES:

- Brick shall be installed in running bond pattern with accent bands as shown on the Materials and Layout Plans. Confirm layout with L.A. before installing.
- Brick shall be a wire-cut brick, Belden Brick "City Line Series" in "Regimental Full Range" color palette with straight edge, no lugs and no chamfer. 2 1/4 x 4 x 8" nominal size, or Approved Equal (see Specifications). Provide samples showing full color range and actual brick shape, size, and edges for approval.

3 BRICK PAVING ON BIT. CONC.

Scale: 1" = 1'-0"

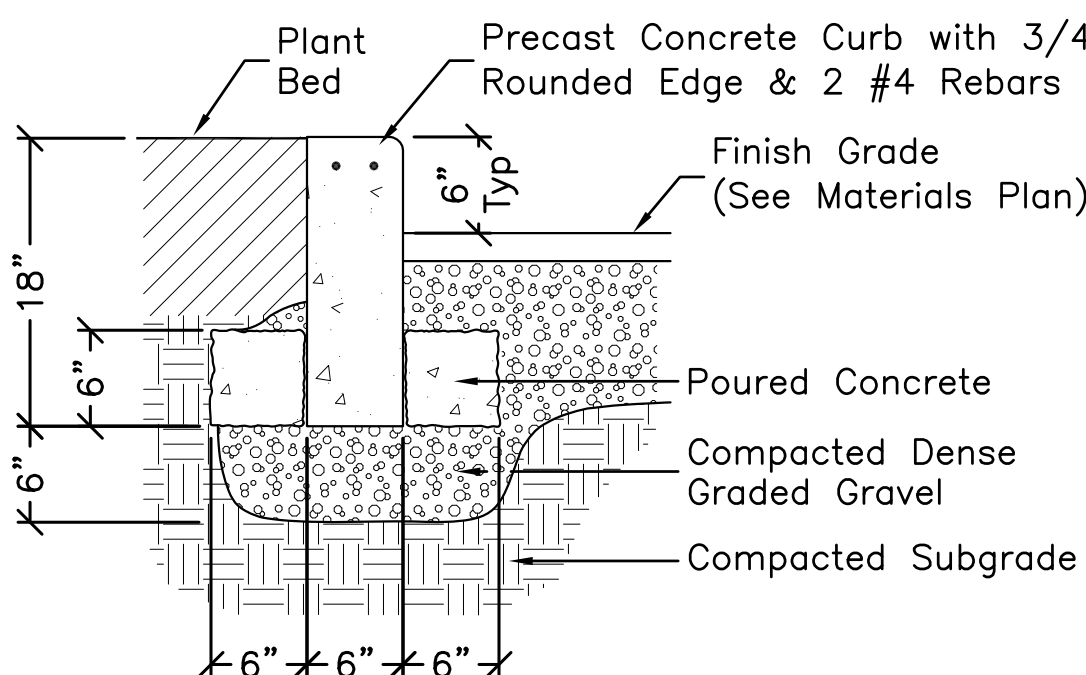


NOTES:

- Score joints every 6' Max., both directions (see Plan). Exp. joints every 25' Max. Locate expansion joints where paving abuts structures and curbs.
- Concrete to be 4000 PSI (28 days) with broom finish and troweled edges.
- All walks shall slope to drain as shown on Grading Plan L-4a (1.9% max. cross slope). Coordinate with existing grades.
- Circular central plaza to have an integral color admixture - see specifications.

4 CONCRETE PAVING

Scale: 1" = 1'-0"

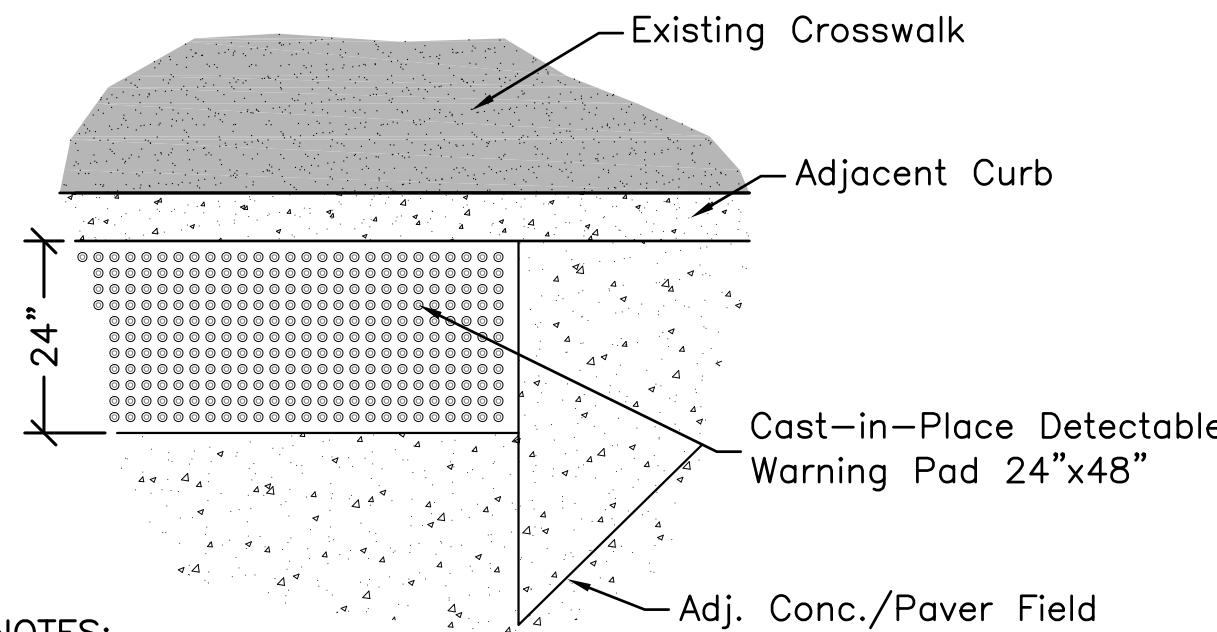


NOTES:

- Concrete to be 5,000 PSI air-entrained, super-plasticized concrete. Top and 10" down face to have rubbed finish.
- For Flush curbing, Rounded Edge to face bit. conc. or plant bed (not Rubber Surface). All transitions to be flush.

5 PRE-CAST CONCRETE CURB

Scale: 1" = 1'-0"

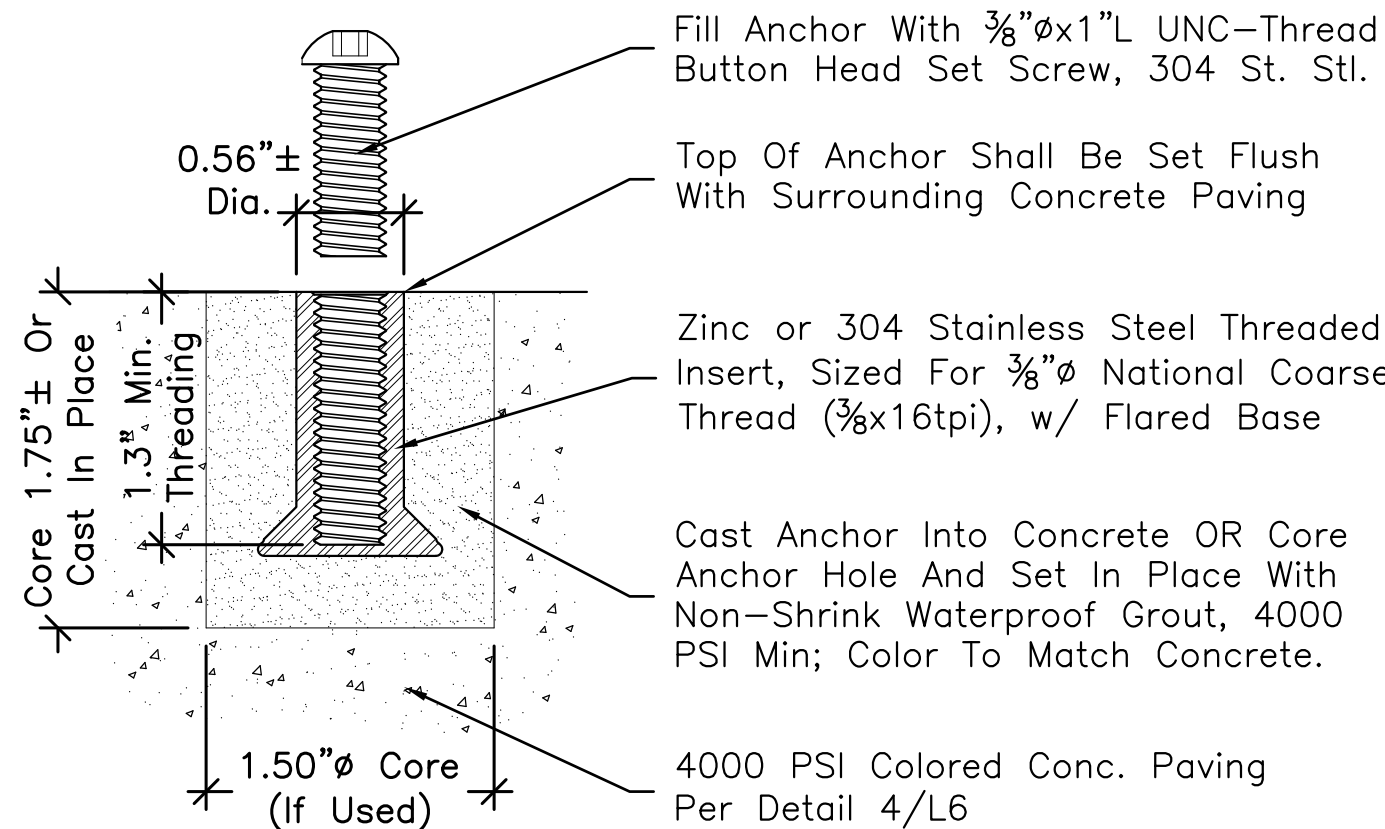


NOTES:

- All Pads to be Federal Color #20109, matching City standards. Submit Sample for approval.
- Detectable Warning Pads in permanent sidewalks to be set atop 4" concrete slab, cast into place per manufacturer's instructions.

6 TACTILE WARNING SURFACE

Scale: 1" = 1'-0"

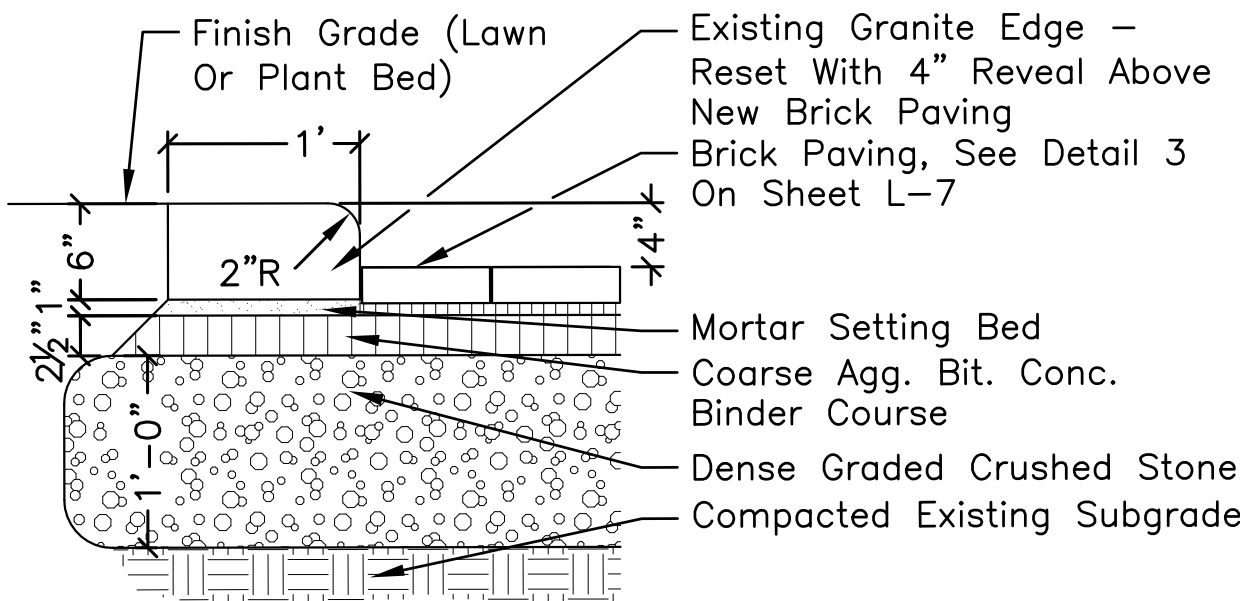


NOTES:

- Threaded Insert to be "Zinc Threaded Insert" Model MI-038 by PA Insert Corp. of Royersford, PA (www.painert.com) or Approved Equal.
- Install insert so that it meets Manufacturer's specifications regarding Working Load and Ultimate Strength capacity.
- If casting anchor into place, align anchors properly with layout of score joints, and protect anchors while joints are tooled or sawn.
- If setting insert after concrete is tooled, core cleanly so as not to damage finish of surrounding concrete. Use non-shrink waterproof grout with strength at least equal to concrete, colored to match.
- Anchors shall be evenly spaced 60" apart, 4'-10" from center of plaza.

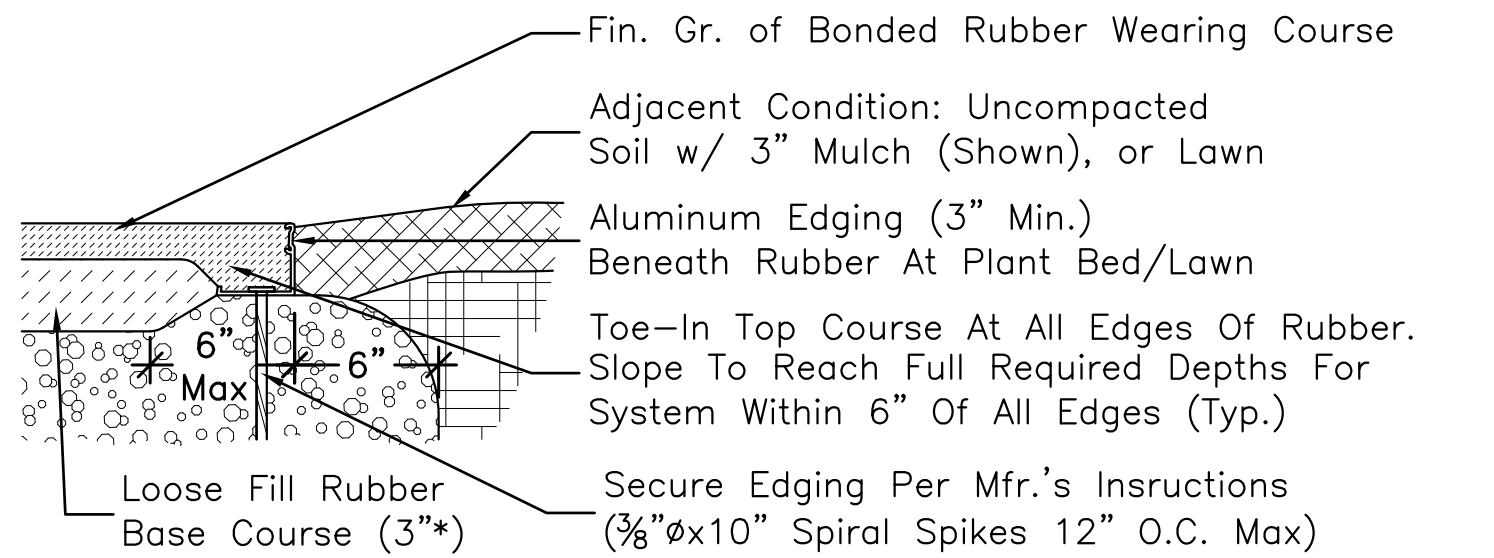
7 Anchor Sleeve In Conc. Plaza

Scale: Actual Size

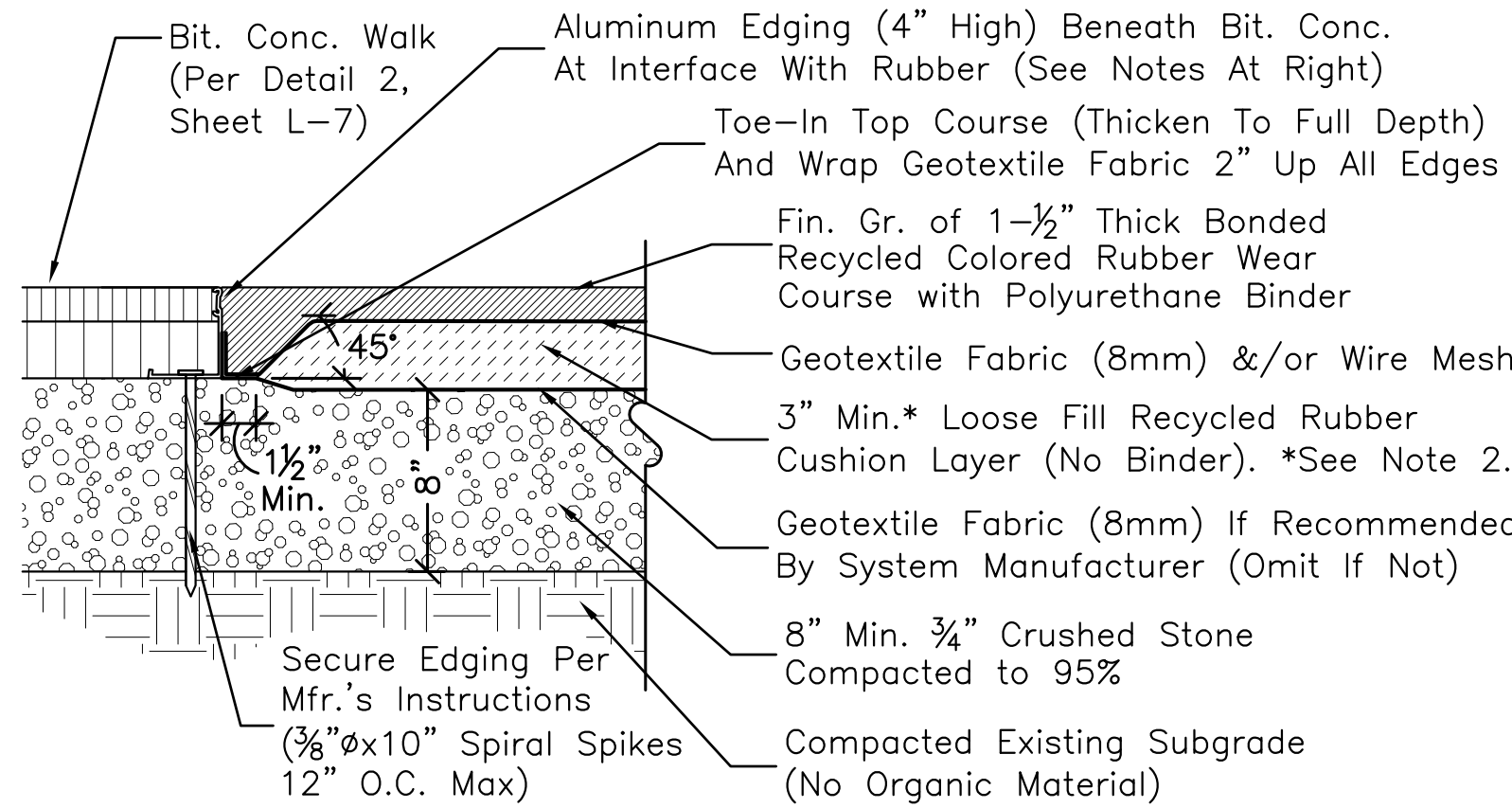


8 RESET GRANITE EDGING

Scale: 1" = 1'-0"



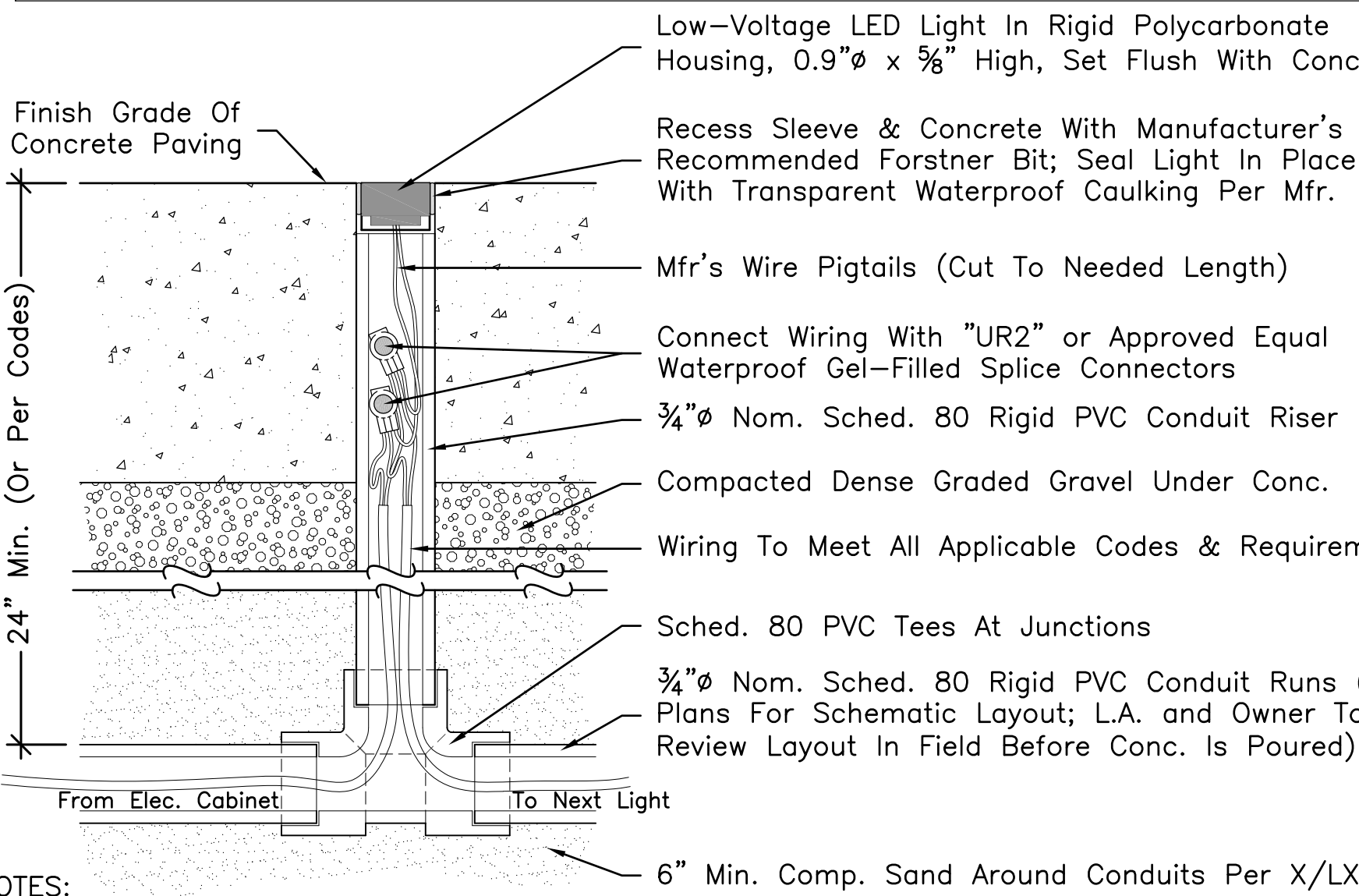
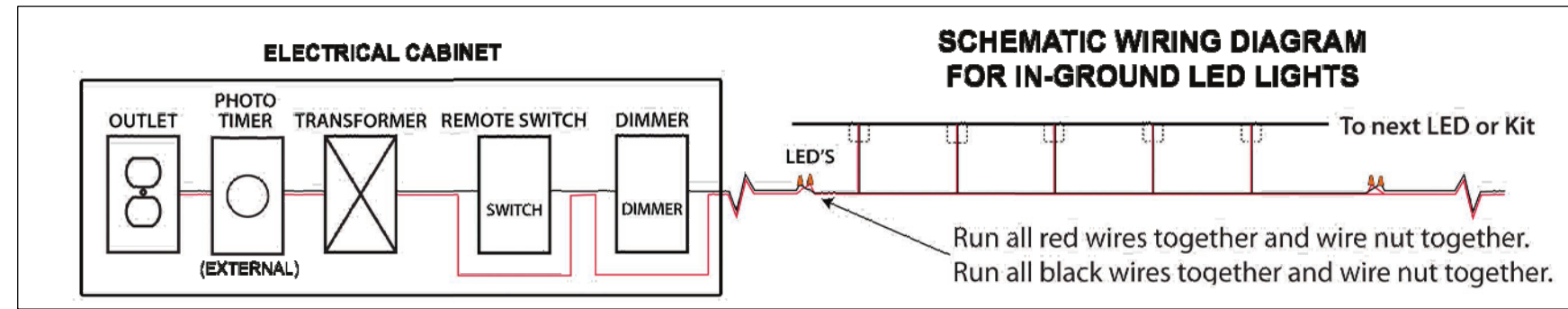
EDGE CONDITION AT LAWN/PLANT BED



RUBBER SURFACE CONSTRUCTION AND EDGE CONDITION AT BIT. CONC.

9 RUBBER SAFETY SURFACE (BONDED TOP OVER LOOSE FILL)

Scale: 1-1/2" = 1'-0"



NOTES:

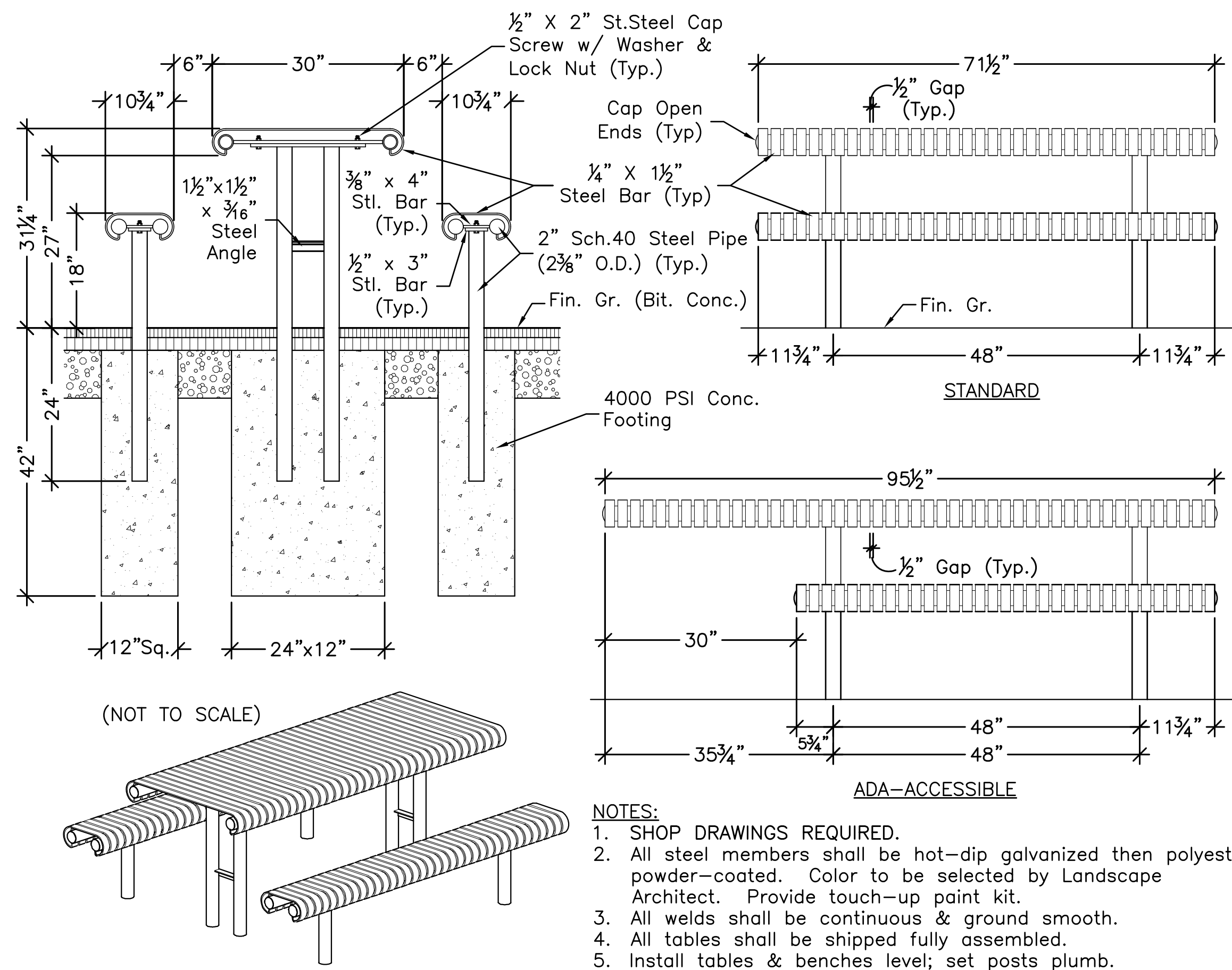
- Lighting system to be "DEKDOTS" by Dekor of Denver, CO or Approved Equal; see Specifications. 24 lights required. Install per manufacturer's instructions & in accordance with applicable codes.
- Install Transformer, Timer, and Dimmer in Electrical Cabinet. Transformer to be a waterproof outdoor-rated transformer as recommended by Manufacturer, "EZ-Transformer" by Dekor or Approved Equal. Timer to be a photocell-activated timer with variable duration (on at dusk, off after 1-8 hours as set by Owner) suitable for installation on Electrical Cabinet, "EZ-Timer" by Dekor or Approved Equal. Dimmer to be a waterproof dimmer module capable of zero-to-full adjustment, "EZDIMMERWP" by Dekor or Approved Equal.
- Landscape Architect and Owner's Representative to inspect and approve lighting conduit layout prior to pouring concrete slab.

10 IN-GROUND LED LIGHTING

Scale: 6" = 1'-0"

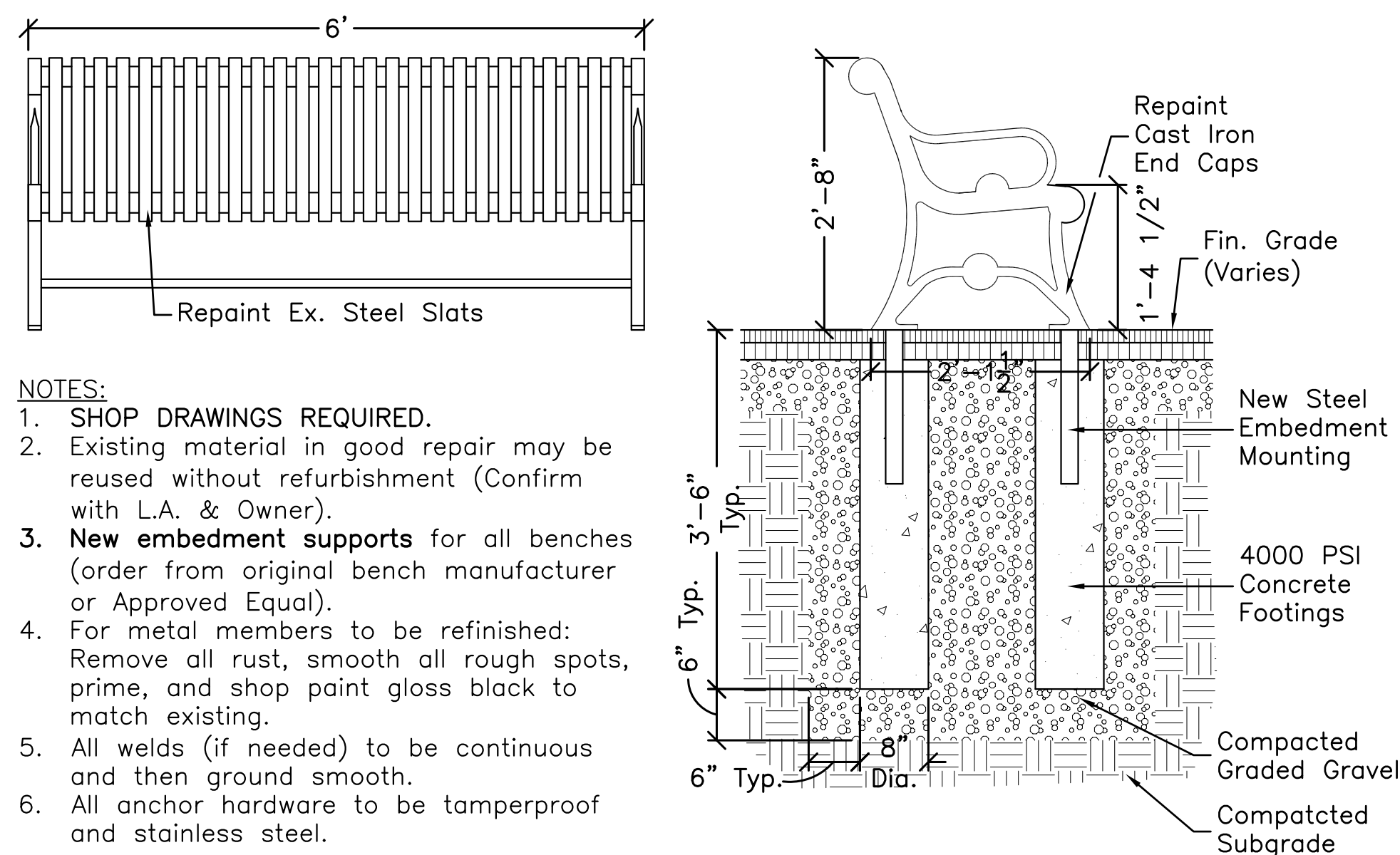
NOTES:

- Rubber Safety Surface to be "PlaySafer Rubber Bond" by Rubberecycle, "Bondflex" by Vitriturf, or Approved Equal conforming with ASTM 1292 per note 2, and ASTM 1951 and specifications. Install per mfr's instructions by a qualified installer.
- Total Surface Depths indicated on plans are projected thicknesses based on proposed surfacing supplier and play equipment. Verify that critical height of surface at depth to be installed meets ASTM 1292 and all other applicable standards for all fall heights of play equipment as installed. The Compacted Stone base is to be considered a "Hard Base" when determining the required thickness.
- Colors to be selected from Mfr's full color range (see Specifications). Provide samples for approval. Two color blends to be used (plan to be provided).
- Aluminum Edge Restraints shall be a 3/16 inch thick, L-shaped curvable aluminum edging system designed for use with bituminous concrete pavements, available in a range of sizes from 1" to 4" high from a single manufacturer, with black finish, "Asphalt Edge" by PermaLoc (www.permaloc.com) or Approved Equal. Install according to manufacturer's instructions and as shown in Drawing. Landscape Architect shall inspect all edging in place before installation of bit. concrete and rubber surfaces.



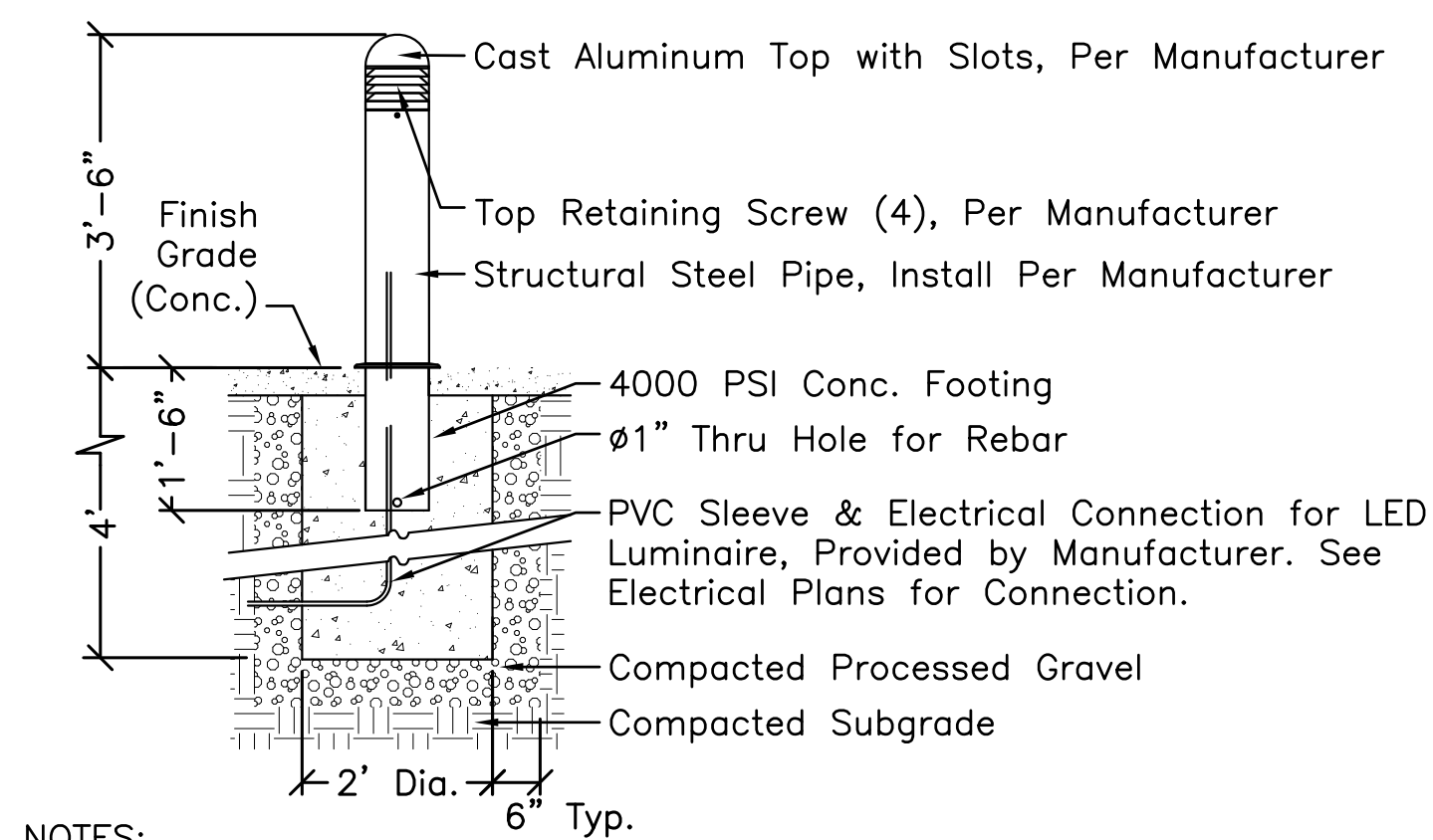
1 METAL PICNIC TABLES (STD. & ADA-ACCESSIBLE)

Scale: 3/4" = 1'-0"



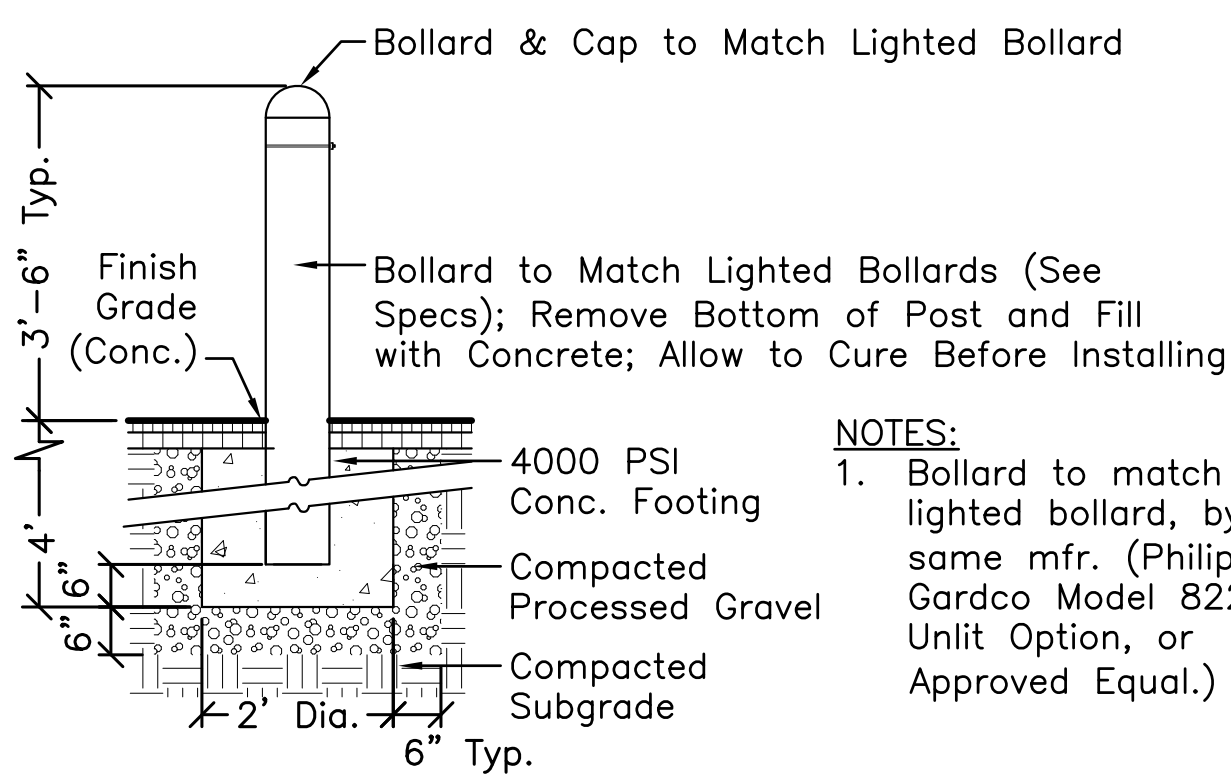
2 REFURBISHED 6'-0" BENCHES

Scale: 3/4" = 1'-0"



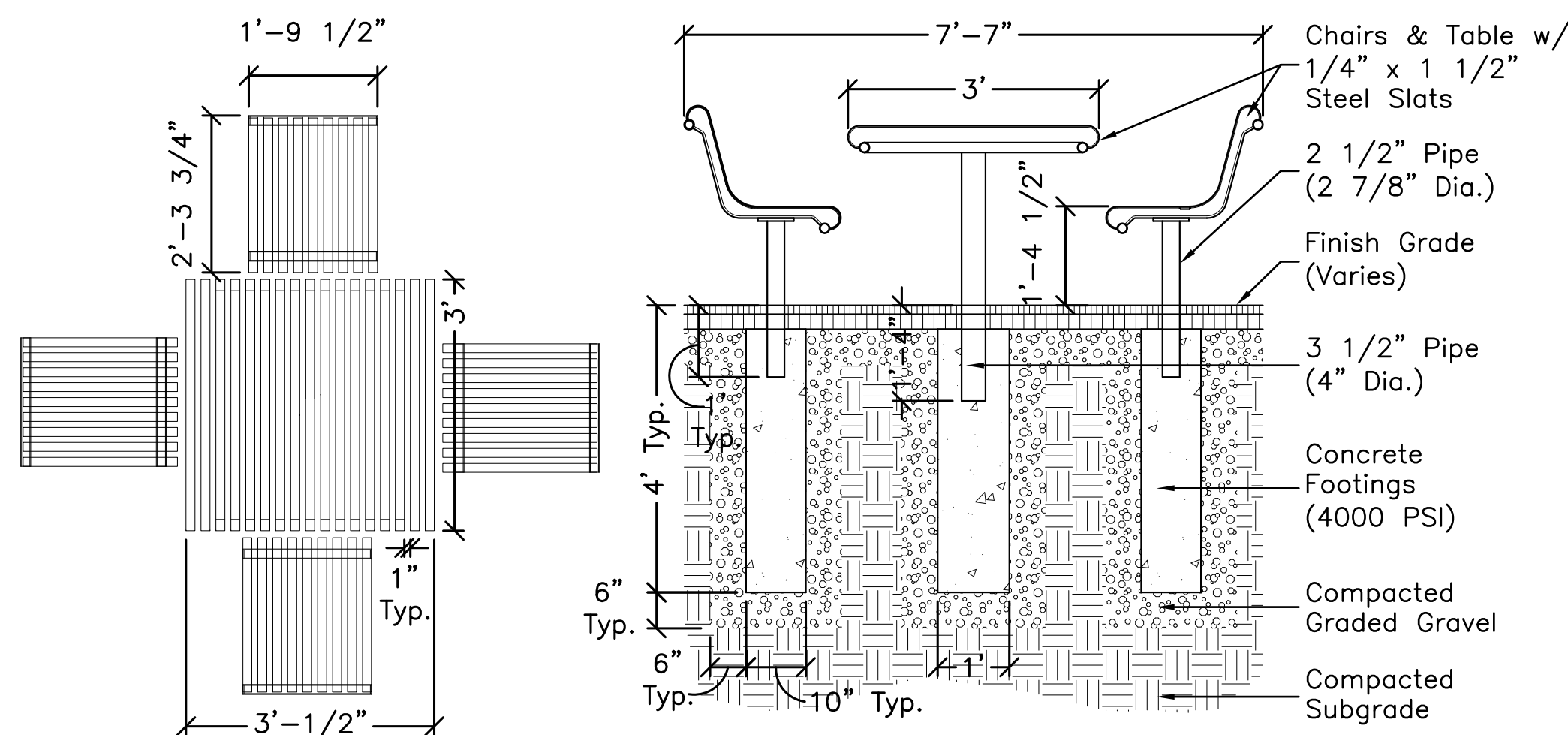
3 LED LIGHTED BOLLARD

Scale: 1/2" = 1'-0"



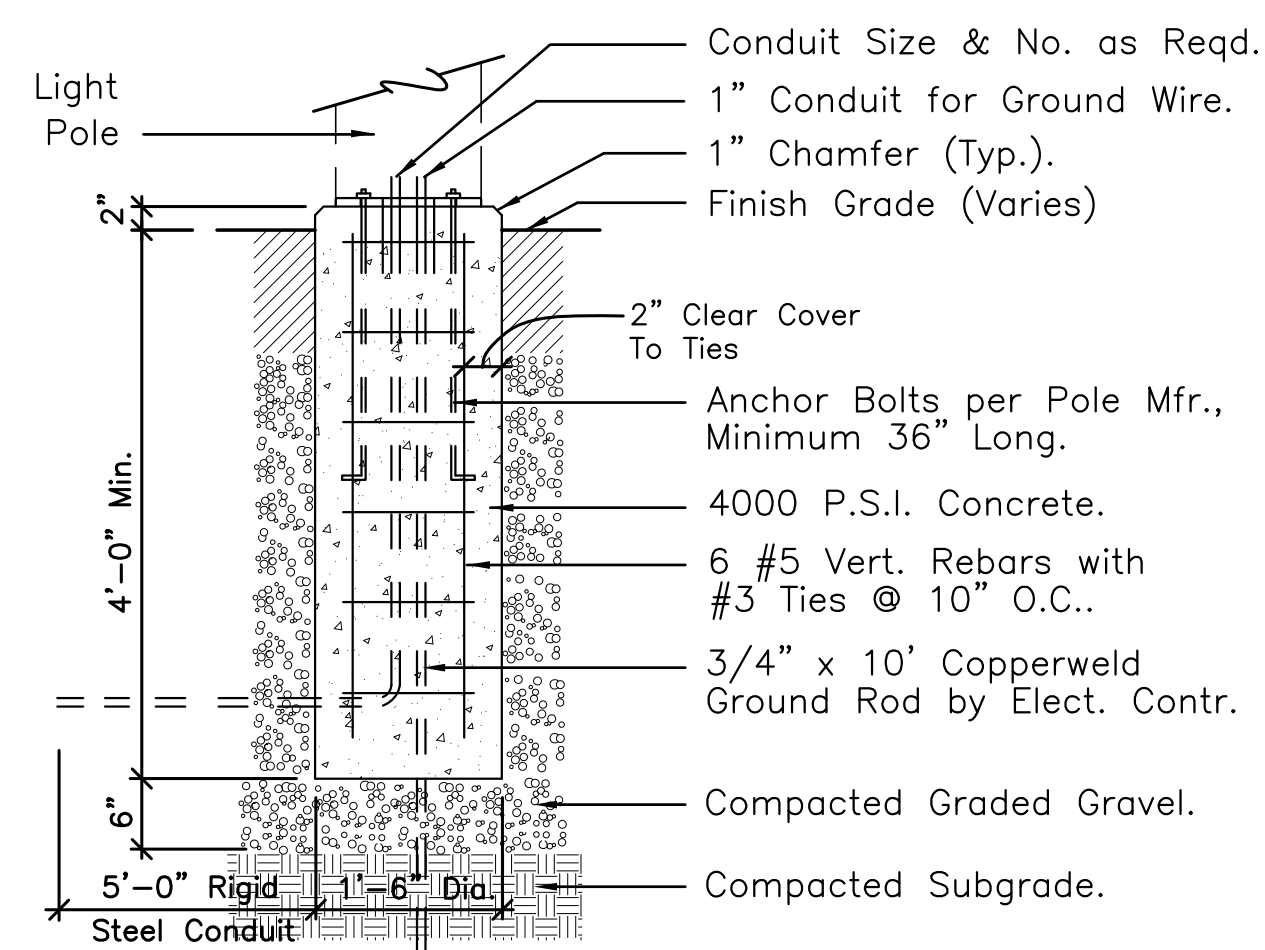
4 UNLIT BOLLARD

Scale: 1/2" = 1'-0"



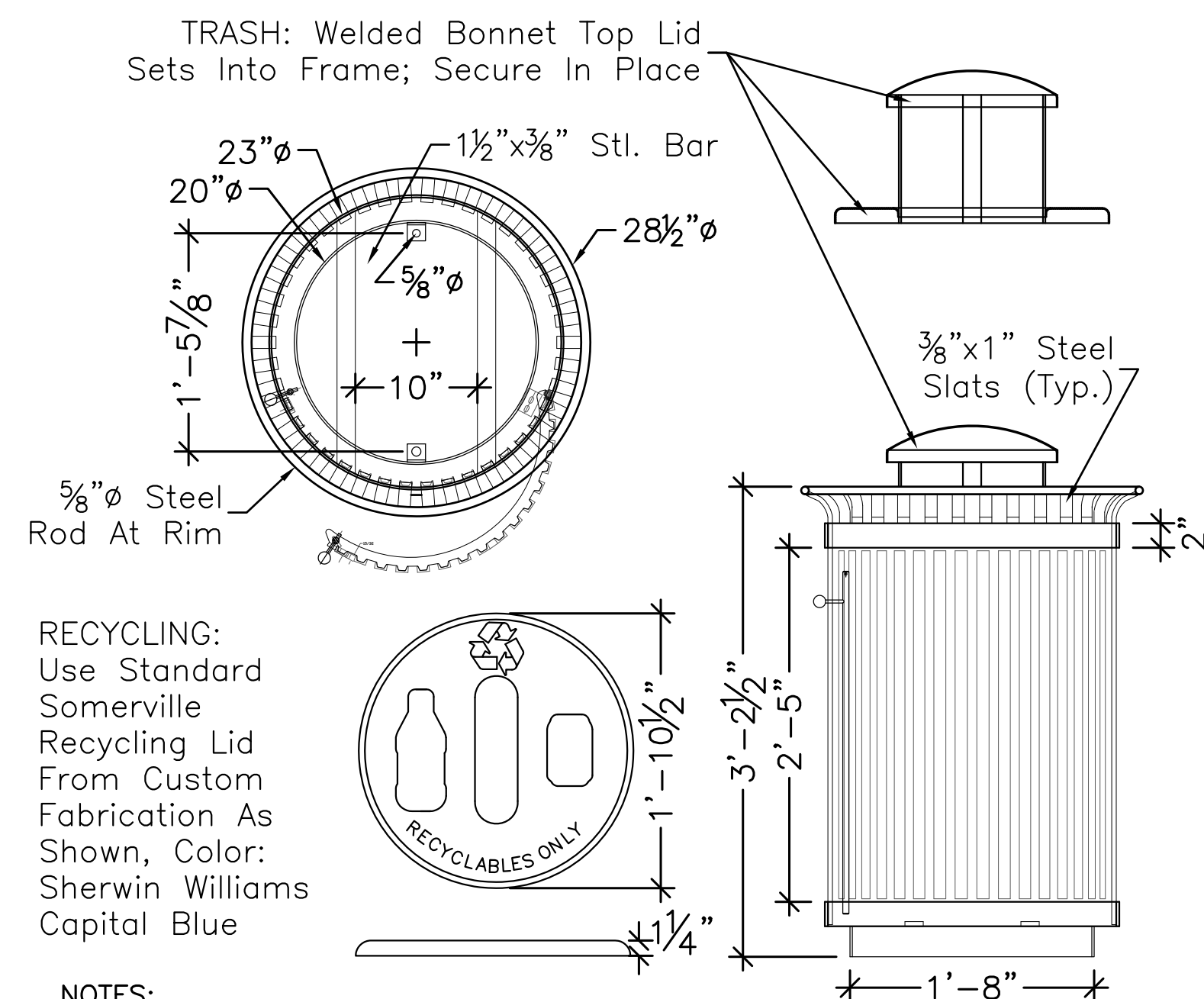
5 SMALL TABLE AND CHAIRS

Scale: 1/2" = 1'-0"



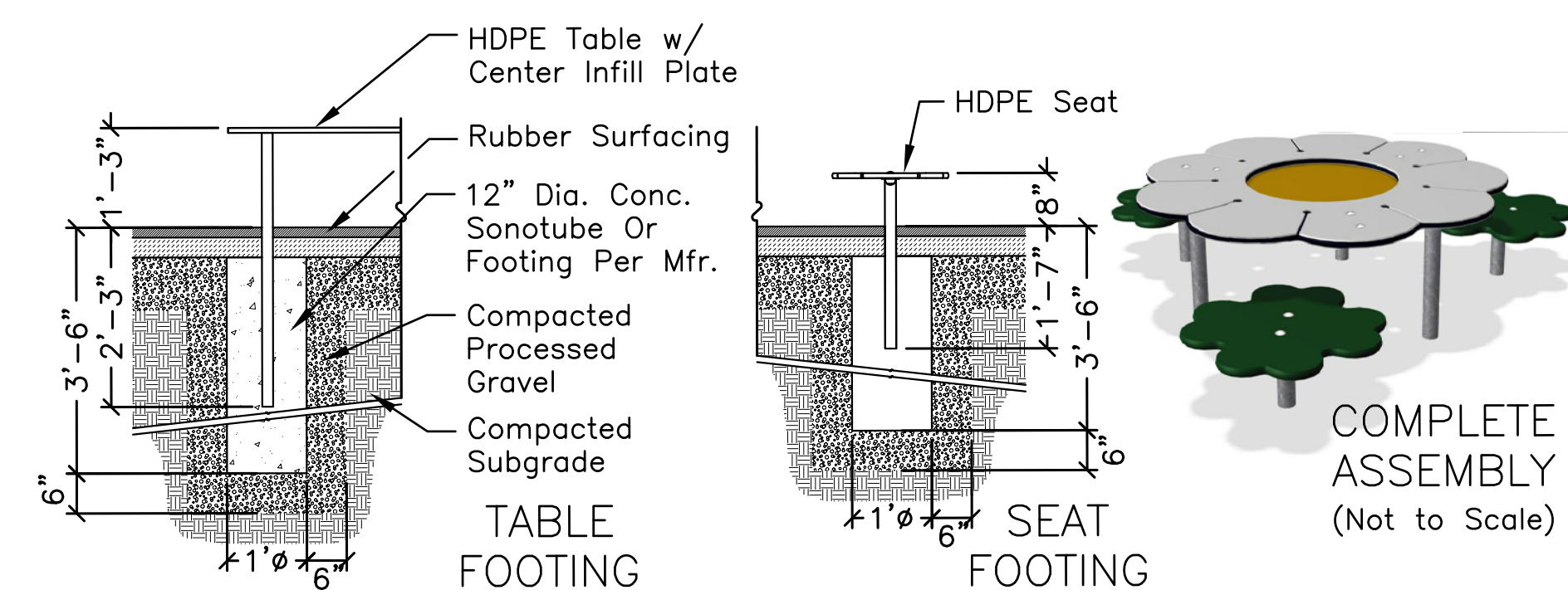
6 PEDESTRIAN SCALE LIGHT AND FOOTING

Scale: 3/4" = 1'-0"



7 TRASH / RECYCLE RECEPTACLE

Scale: 1" = 1'-0"



8 DAISY DESK AND CLOVER SEAT FOOTINGS

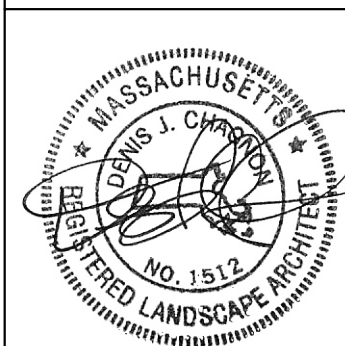
Scale: 1/2" = 1'-0"

KENNEY PARK IMPROVEMENTS

Somerville, MA
Site Details

CBA | Landscape Architects LLC
24 THORNDIKE STREET | CAMBRIDGE, MA 02141
phone 617.945.9760 | www.cbald.com | cba@cbald.com
landscape architecture
urban design
master planning

DATE: 2-12-14
SCALE: As Noted
FILE: Ken-details.dwg
DWN BY: SK/DC/KB
CKD BY: DJC
PROJ. #: 1305

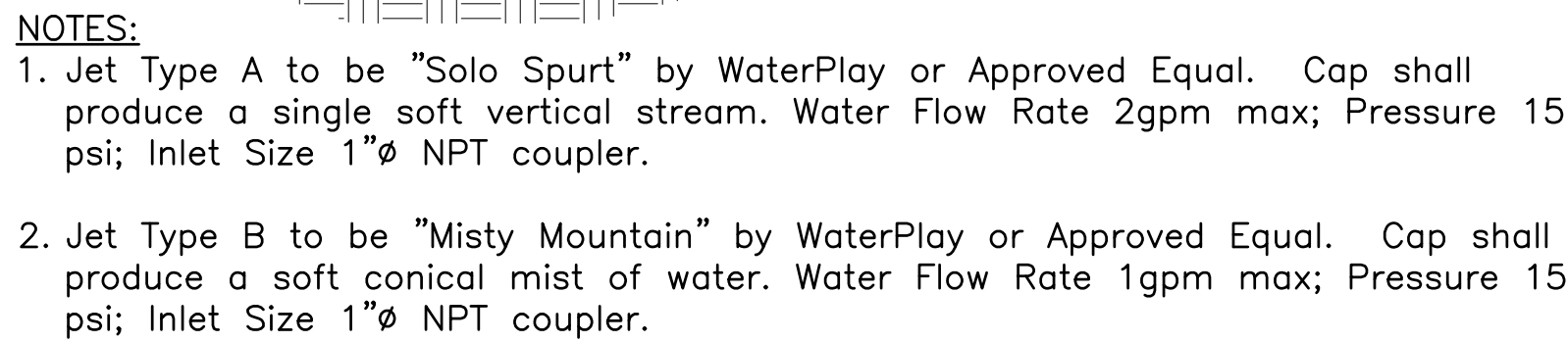


L-8

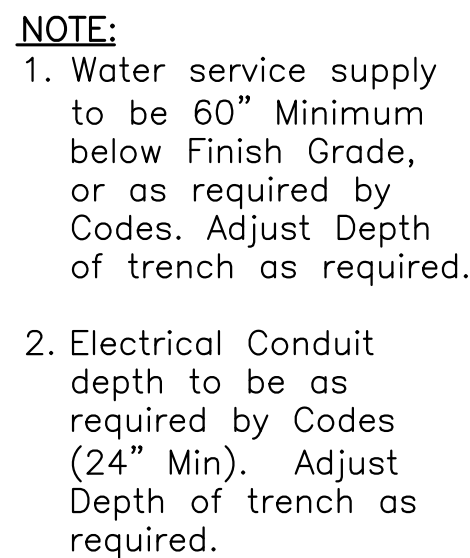
1. Activator shall be a flush-operated standalone battery-powered unit, produced by the same company as the spray jets, "Custom Flush-Mount Eco-Activator" per drawing number EST-07981-02 by Waterplay Inc. of Kelowna, BC, or Appr. Equal.
2. Color of cover and plate to be selected from standard colors by LA and Owner.
3. Install per manufacturer's instructions and according to all applicable Codes.



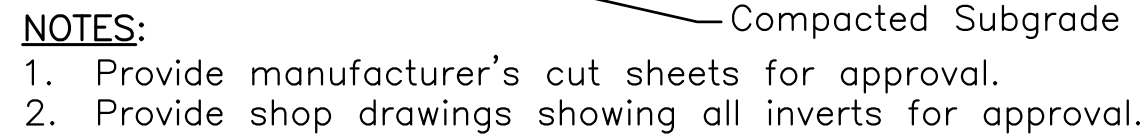
Scale: $\frac{3}{4}" = 1'-0"$



Scale: 1" = 1'-0"



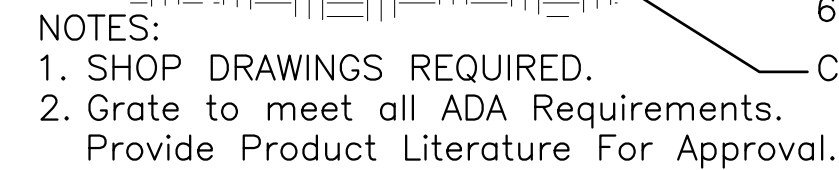
Scale: 1" = 1'-0"



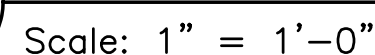
Scale: 1" = 1'-0"



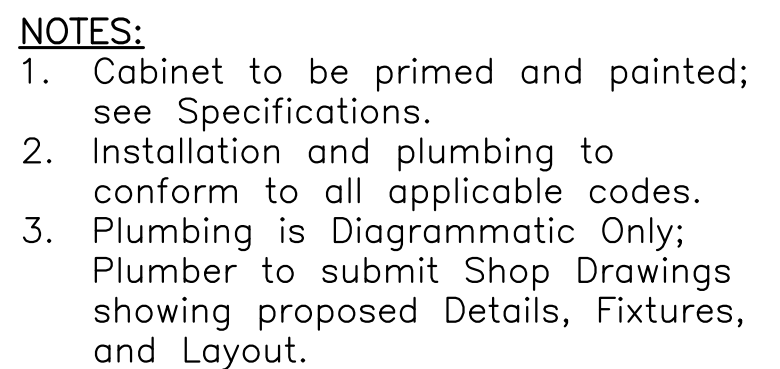
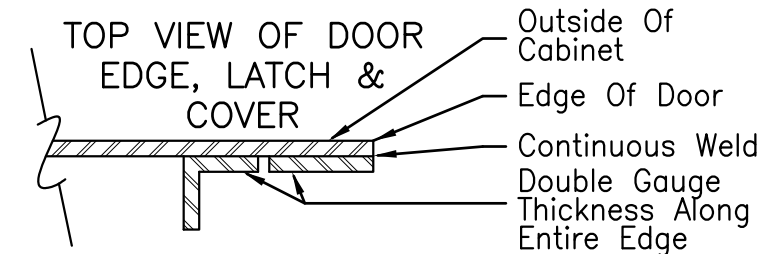
Scale: 3" = 1'-0"



Scale: $1/2" = 1'-0"$

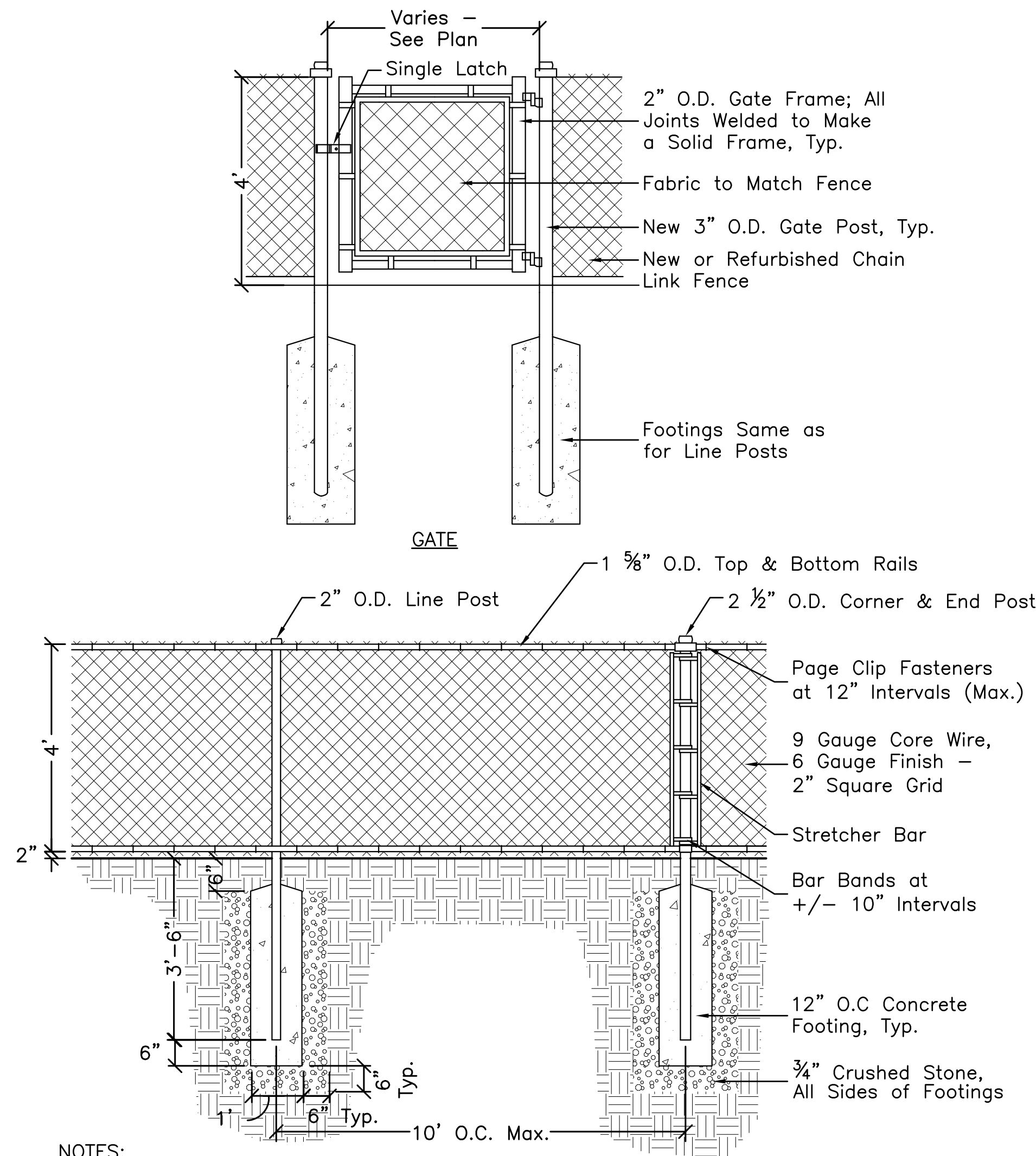


Scale: 1" = 1'-0"



Scale: 1/2" = 1'-0" (Plan/Section Elev. Only - Other NTS)



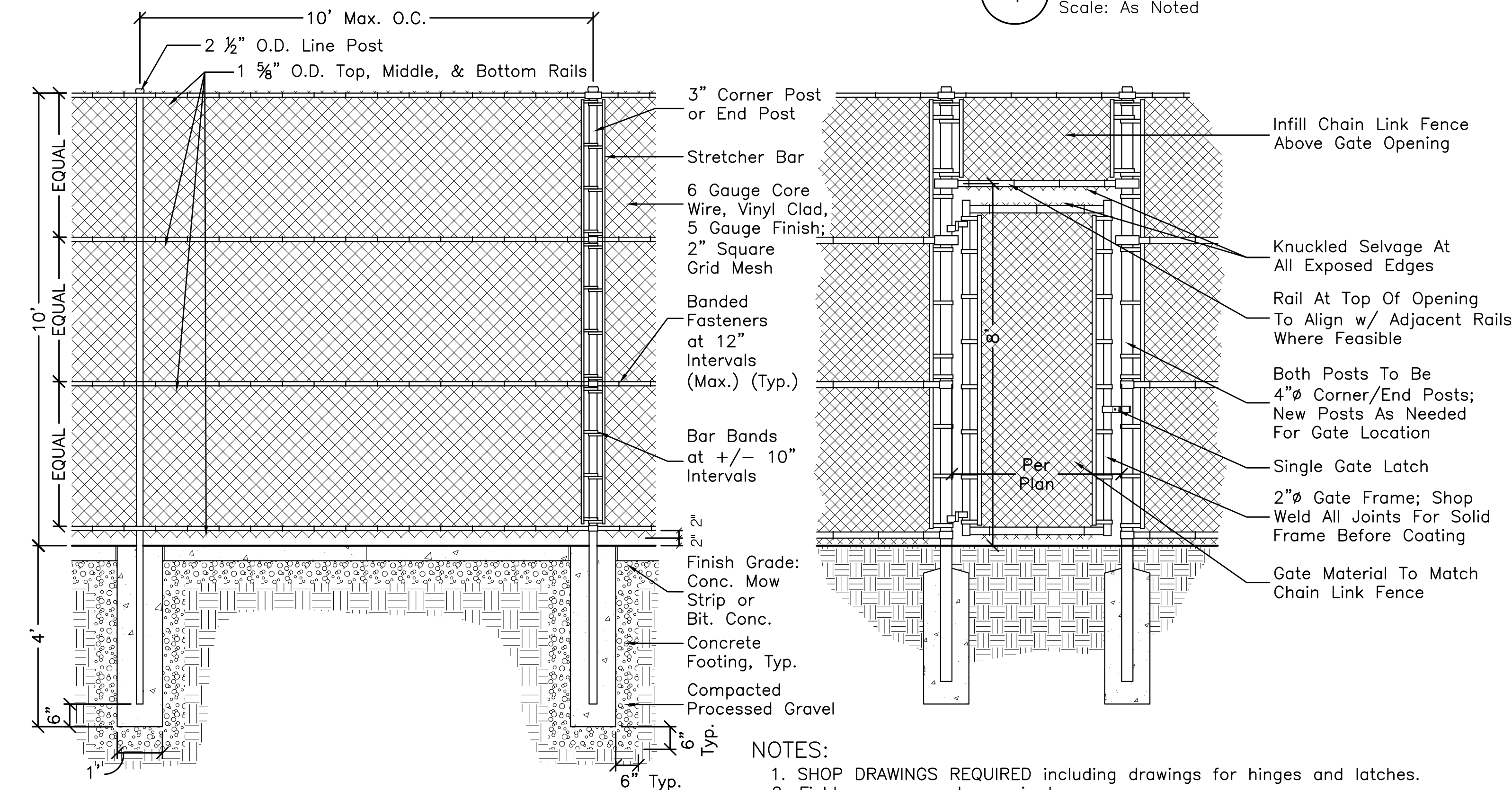


NOTES:

1. SHOP DRAWINGS REQUIRED.
2. All new posts, rails, and hardware to be powdercoated. All fabric to be galvanized with fused-and-bonded PVC. Color to be black. Gap dimensions per manufacturer's specs.

1 4-FT HIGH VINYL-CLAD CHAIN LINK FENCE

Scale: 1/2" = 1'-0"

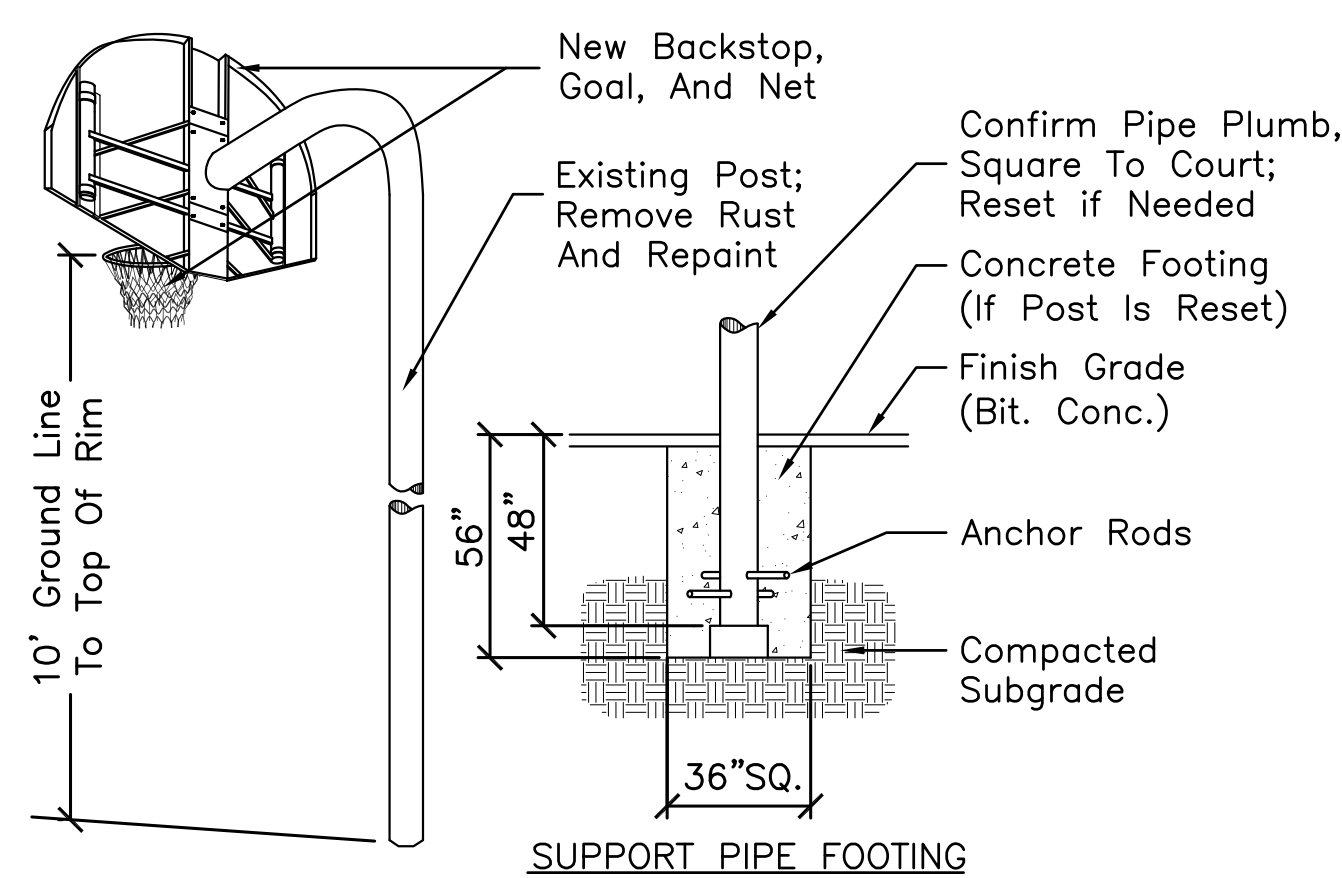


NOTES:

1. SHOP DRAWINGS REQUIRED including drawings for hinges and latches.
2. Field measurements required.
3. All structural members to be powdercoated black. All fabric to be coated with fused-and-bonded PVC, 9 Gauge Finished Thickness.
4. Gate Frame and top track to be welded into a one-piece rigid unit.

2 CHAIN LINK FENCE & GATE (10 Ft. Ht.)

Scale: 1/2" = 1'-0"

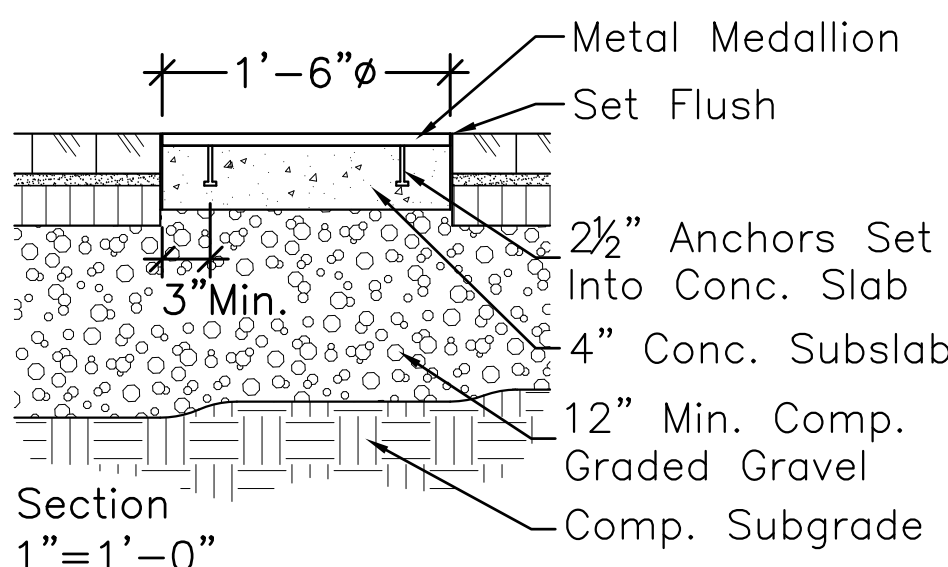


NOTES:

1. SHOP DRAWINGS REQUIRED.
2. All hardware to be galvanized.
3. See Specs for backboard, rim, and net.
4. Refurbish existing basketball poles from on site.

3 BASKETBALL POLE & HOOP

Scale: NTS



NOTES:

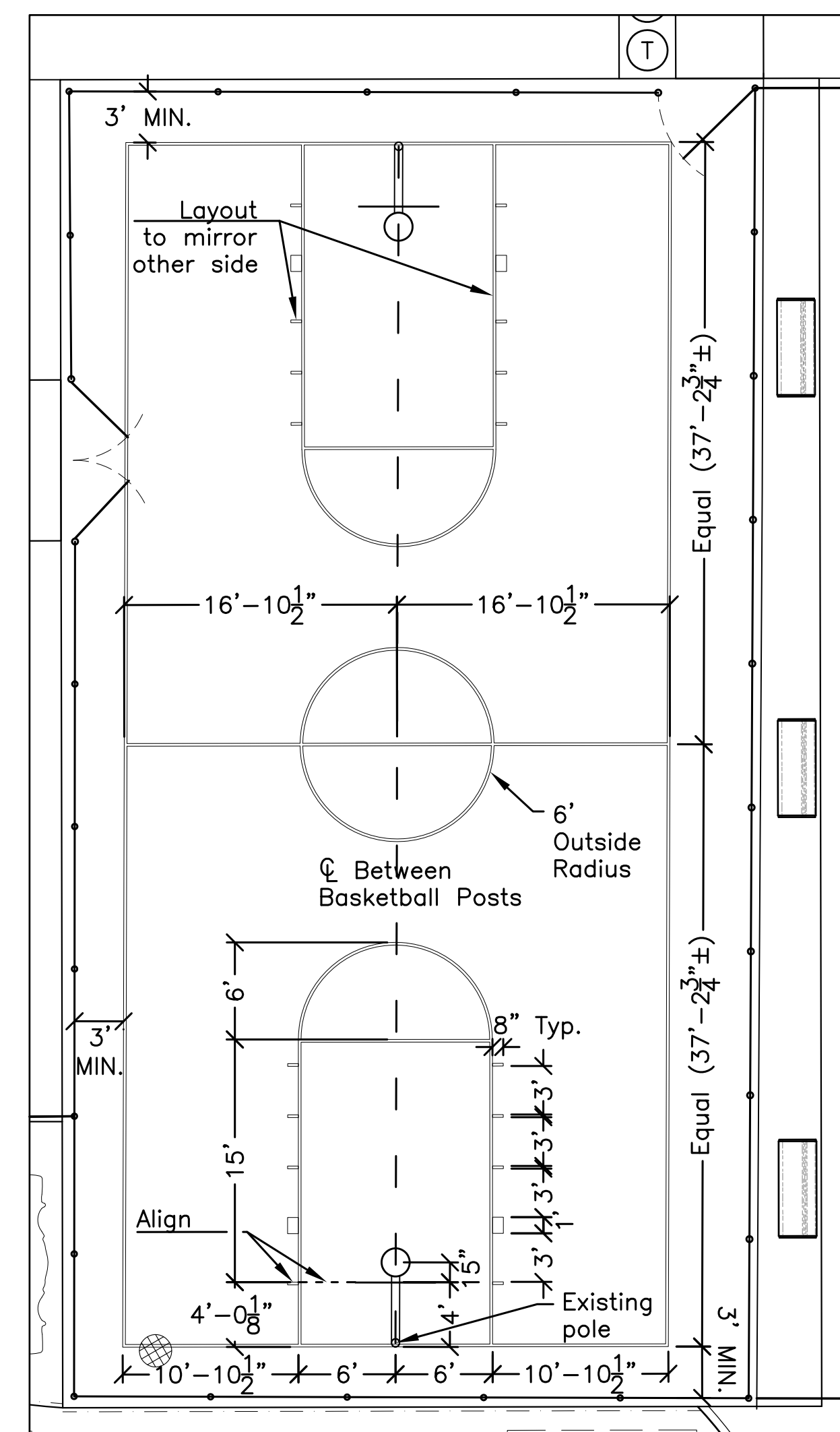
1. Medallion to be Stainless Steel, 1/4" Thick. Lettering and Artwork to be "Reverse Etched" (raised with brushed satin finish, sandblasted background). Mount using anchors. Anchors to be grouted or cast into place. Set flush and seal joints.
2. Design shown is representative; final design to be provided by Owner. Size and level of detail shall be as indicated. Shop Drawings Required.

4 COMMEMORATIVE MEDALLION

Scale: As Noted



Sample Plan
2"=1'-0"

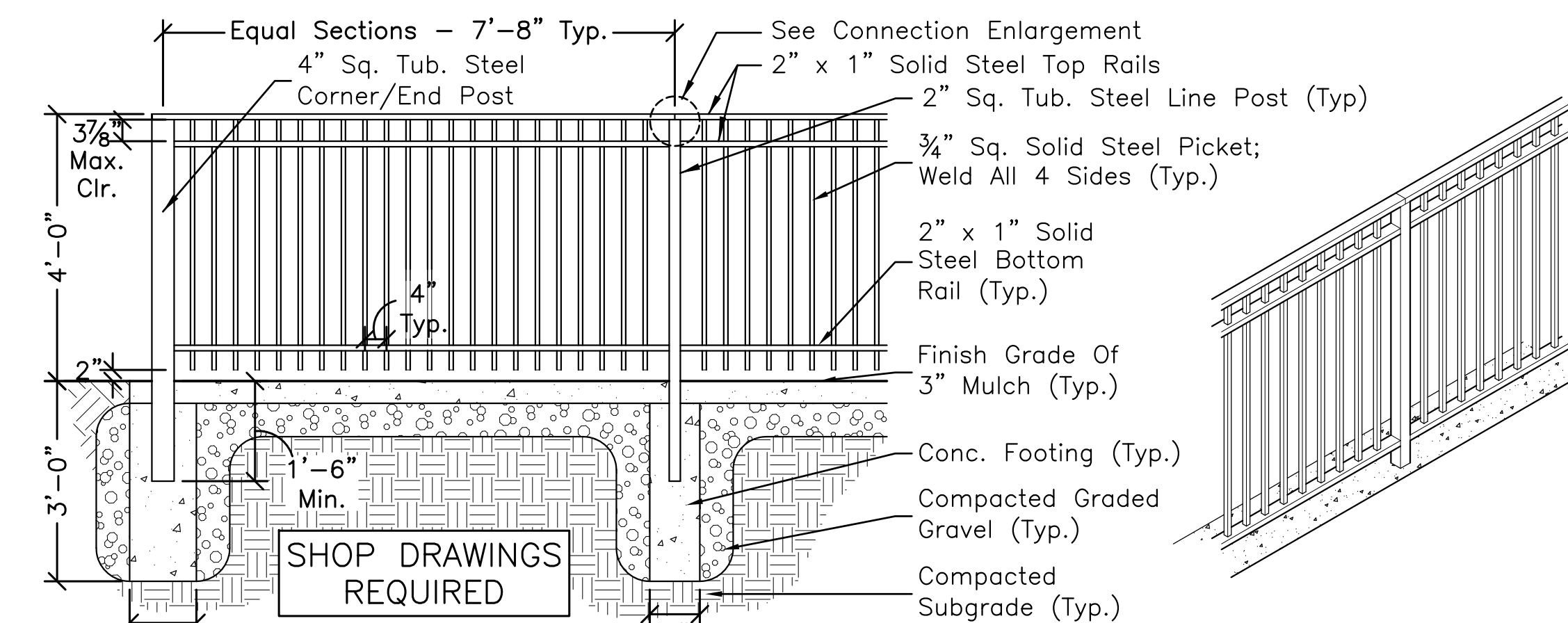


NOTES:

1. Point of beginning for layout to be new backboards on existing poles.
2. All layout is to edge of striping unless otherwise indicated.
3. All striping to be 2" thick unless otherwise indicated.
4. Edge of court to be laid out a minimum of 3'-0" from all fencing (confirm in field).
5. Colors of striping and seal-coating to be selected.

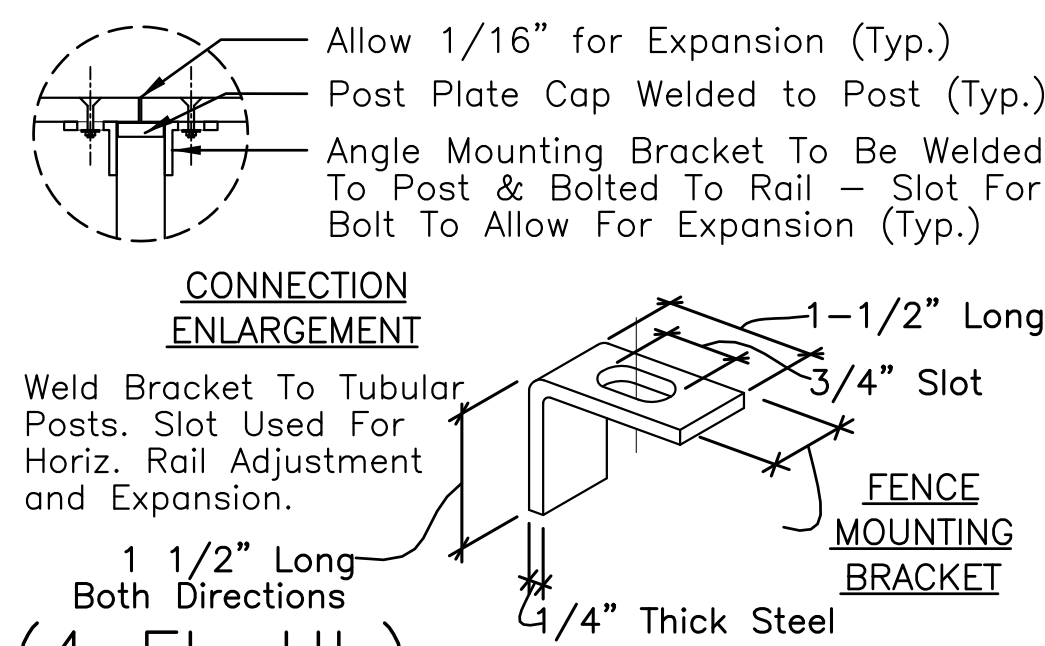
5 BASKETBALL COURT STRIPING DIAGRAM

Scale: 1" = 10'-0"



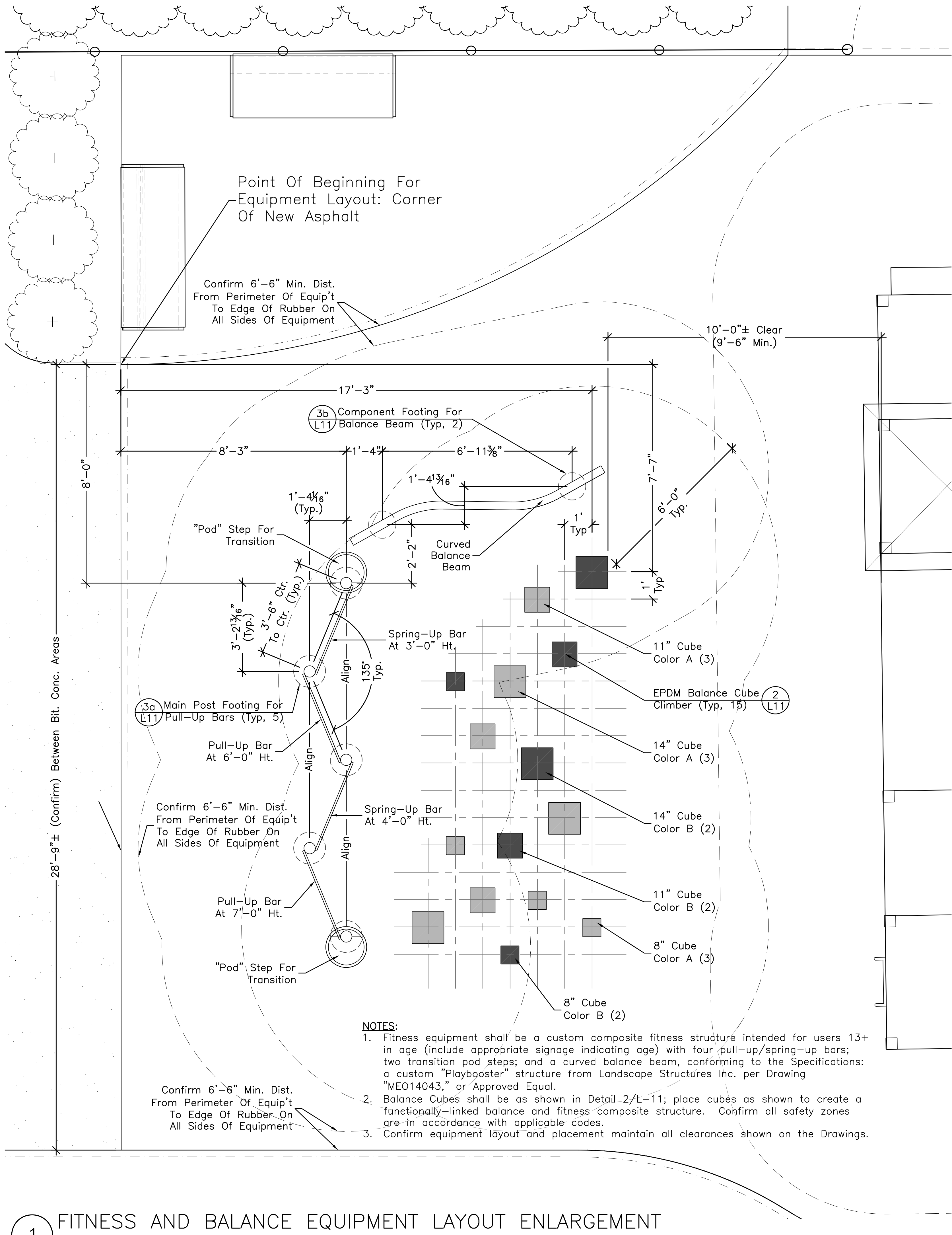
NOTES:

1. SHOP DRAWINGS REQUIRED.
2. Grind smooth all edges and welds; all edges to be hand smooth. All welds to be continuous; no spot/tack welds.
3. Fence to be Color Galvanized - See specifications. Color to be Semi-Gloss Black. (Touchup on site with same coatings, provided by galvanizer.)

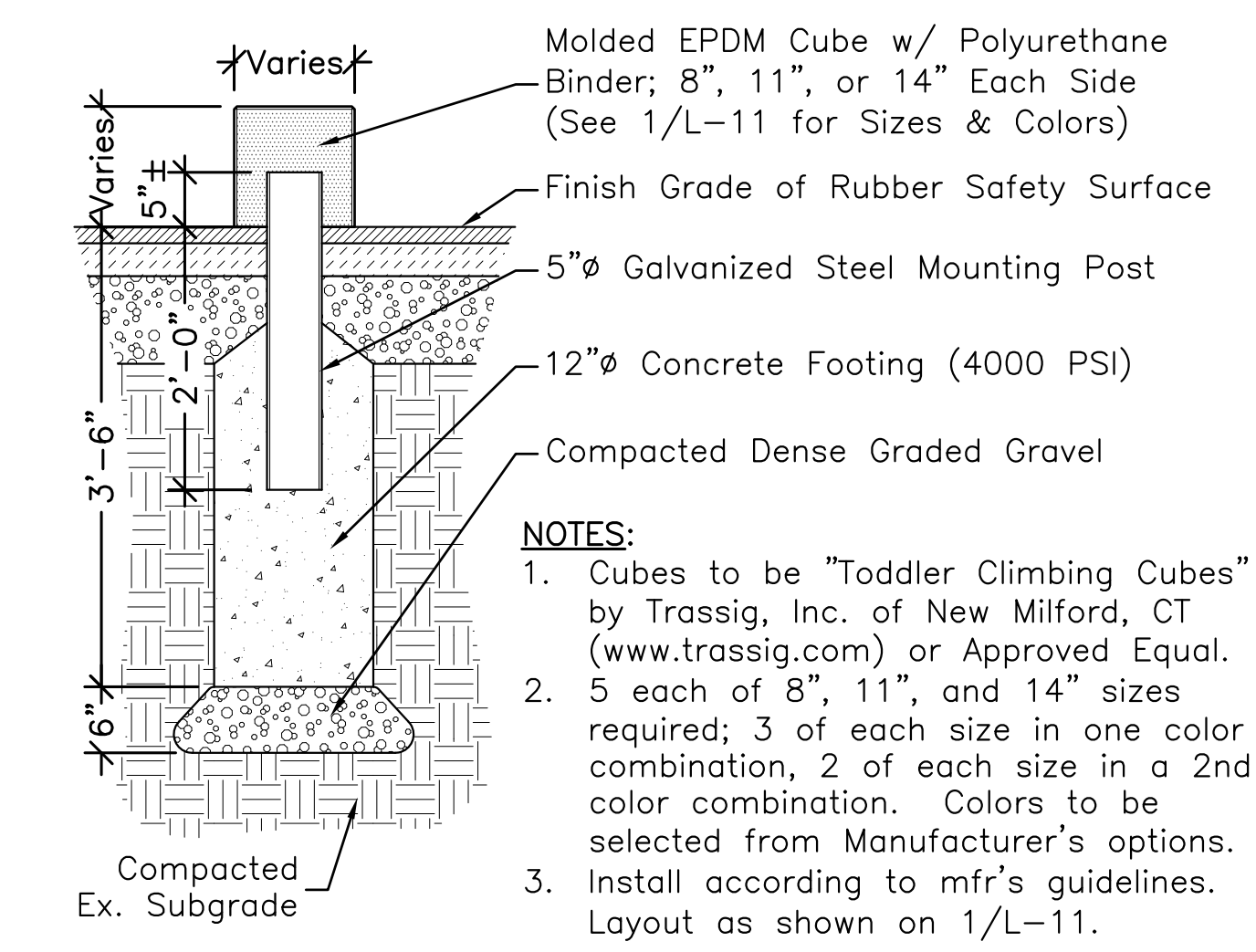


6 ORNAMENTAL STEEL FENCE (4 Ft. Ht.)

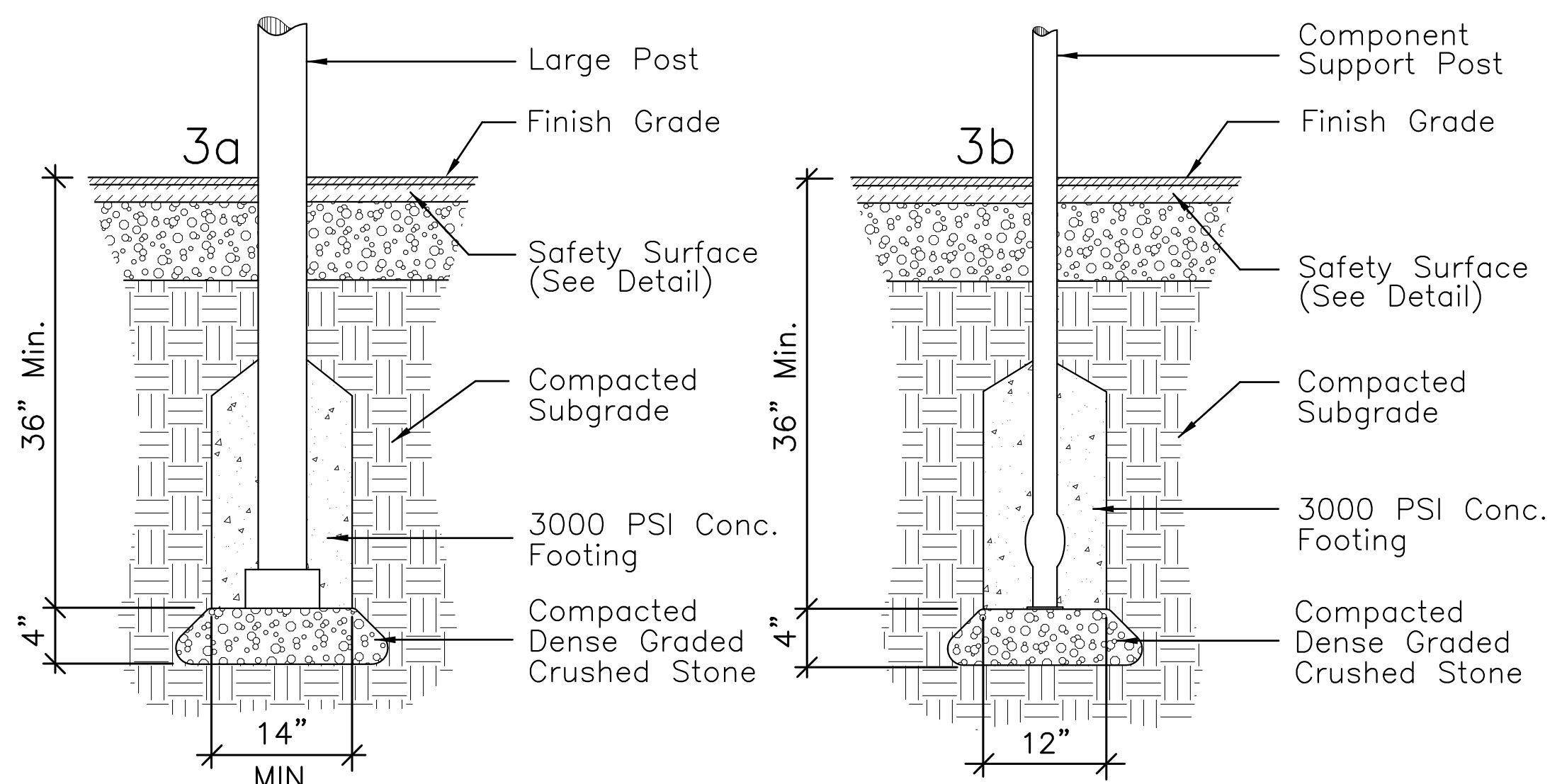
Scale: 1/2" = 1'-0"



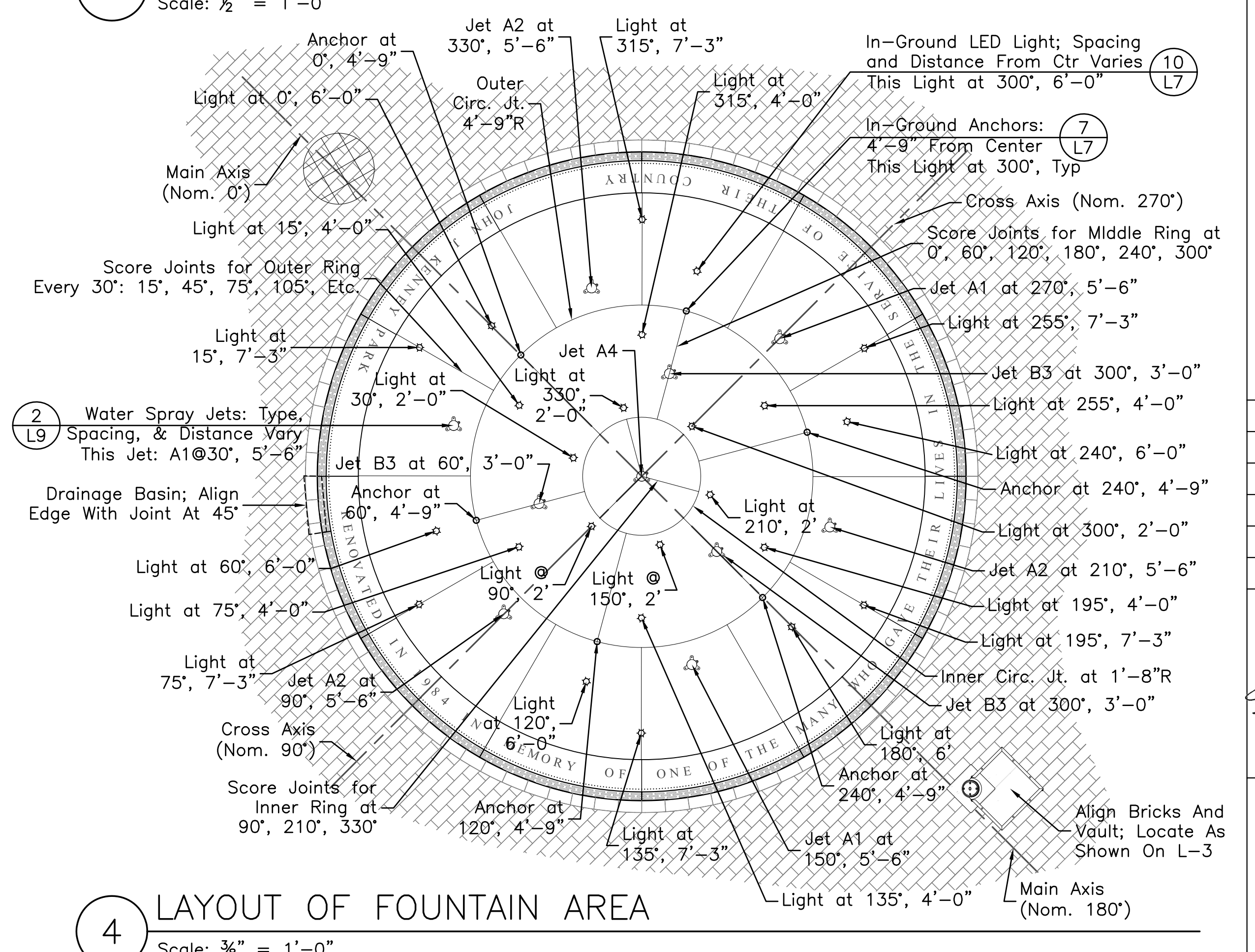
1 FITNESS AND BALANCE EQUIPMENT LAYOUT ENLARGEMENT
Scale: 1/2" = 1'-0"



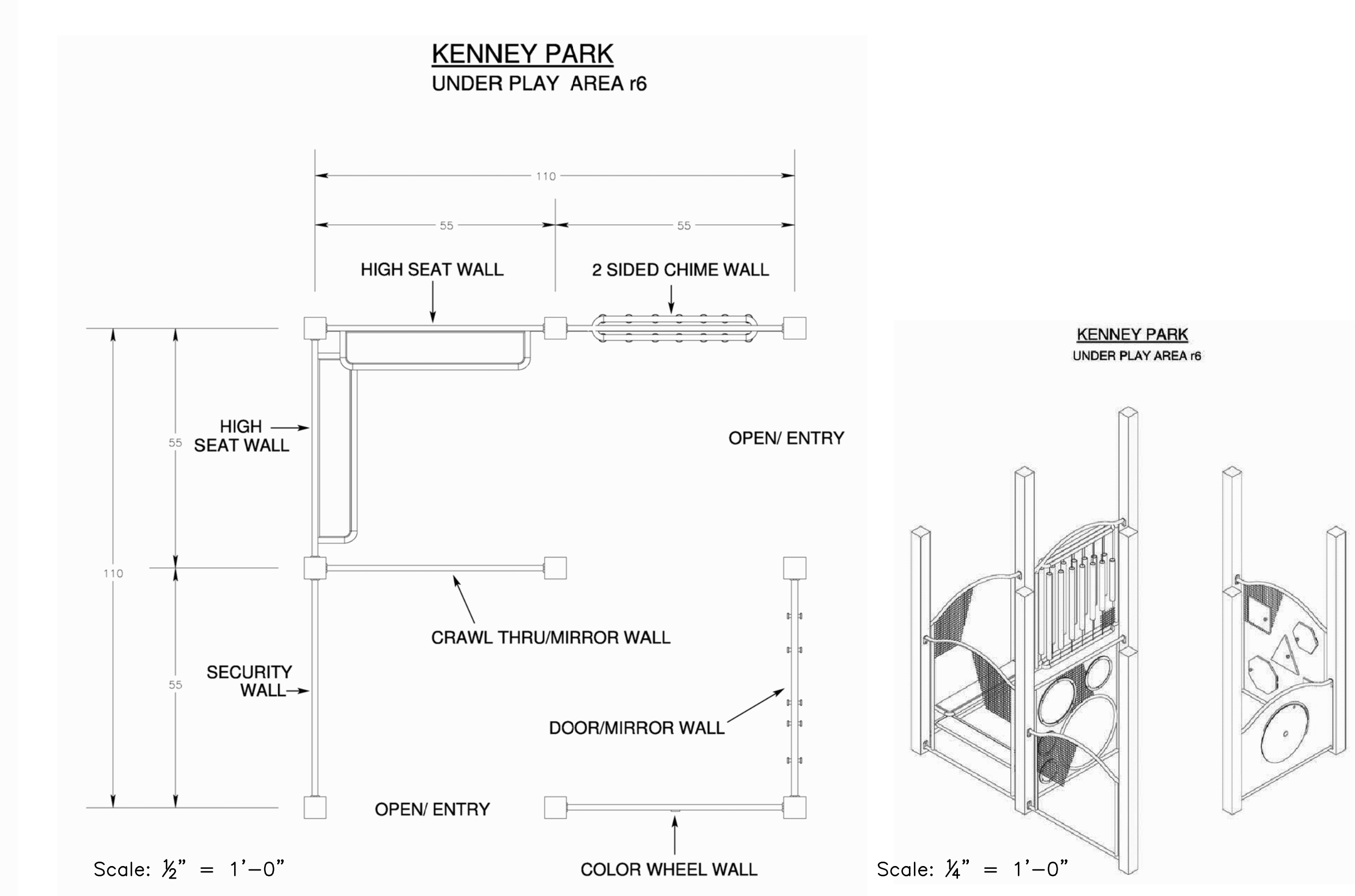
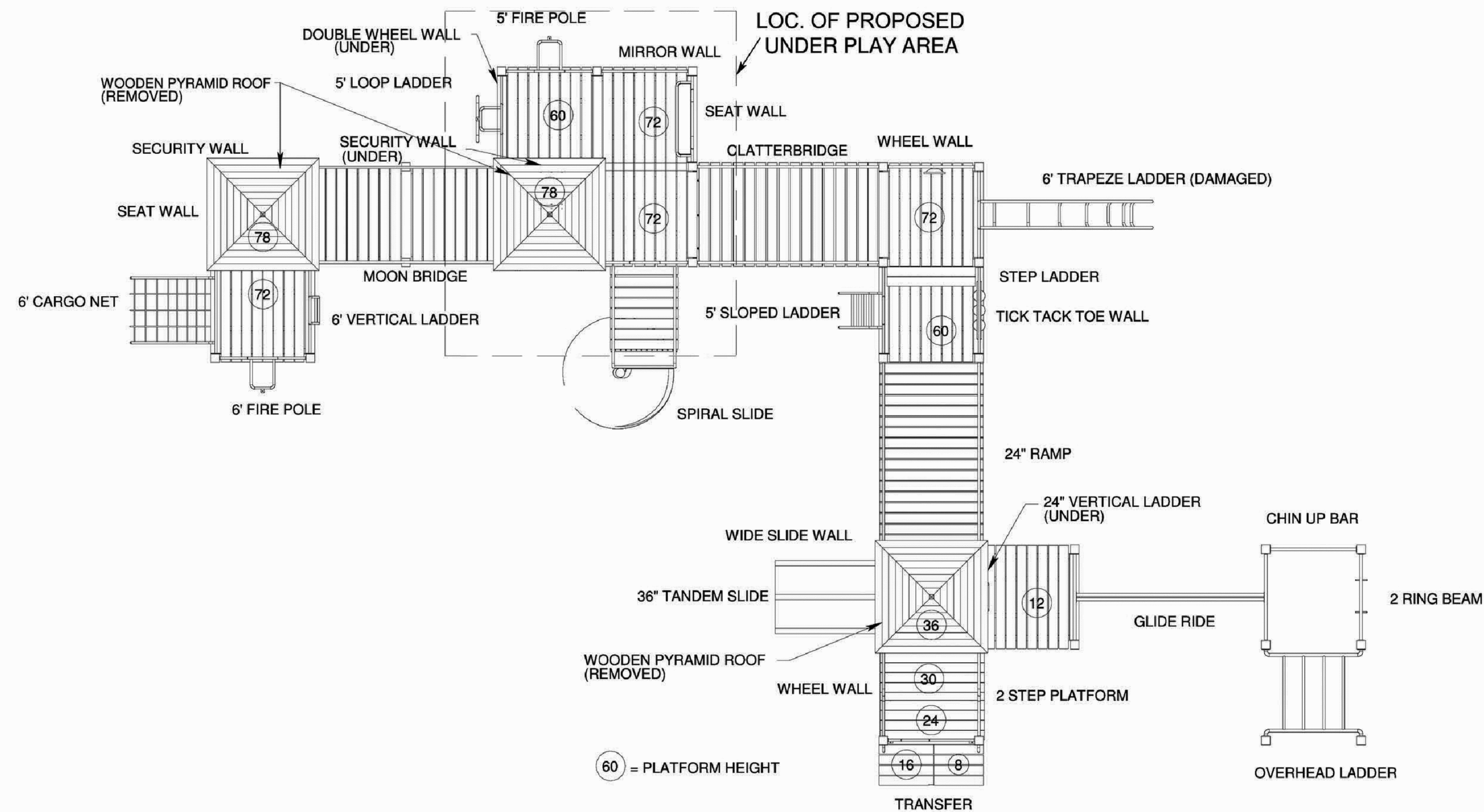
2 EPDM CUBE BALANCE BLOCK
Scale: 3/4" = 1'-0"



3 FITNESS EQUIPMENT SUPPORT FOOTING
Scale: 1/2" = 1'-0"

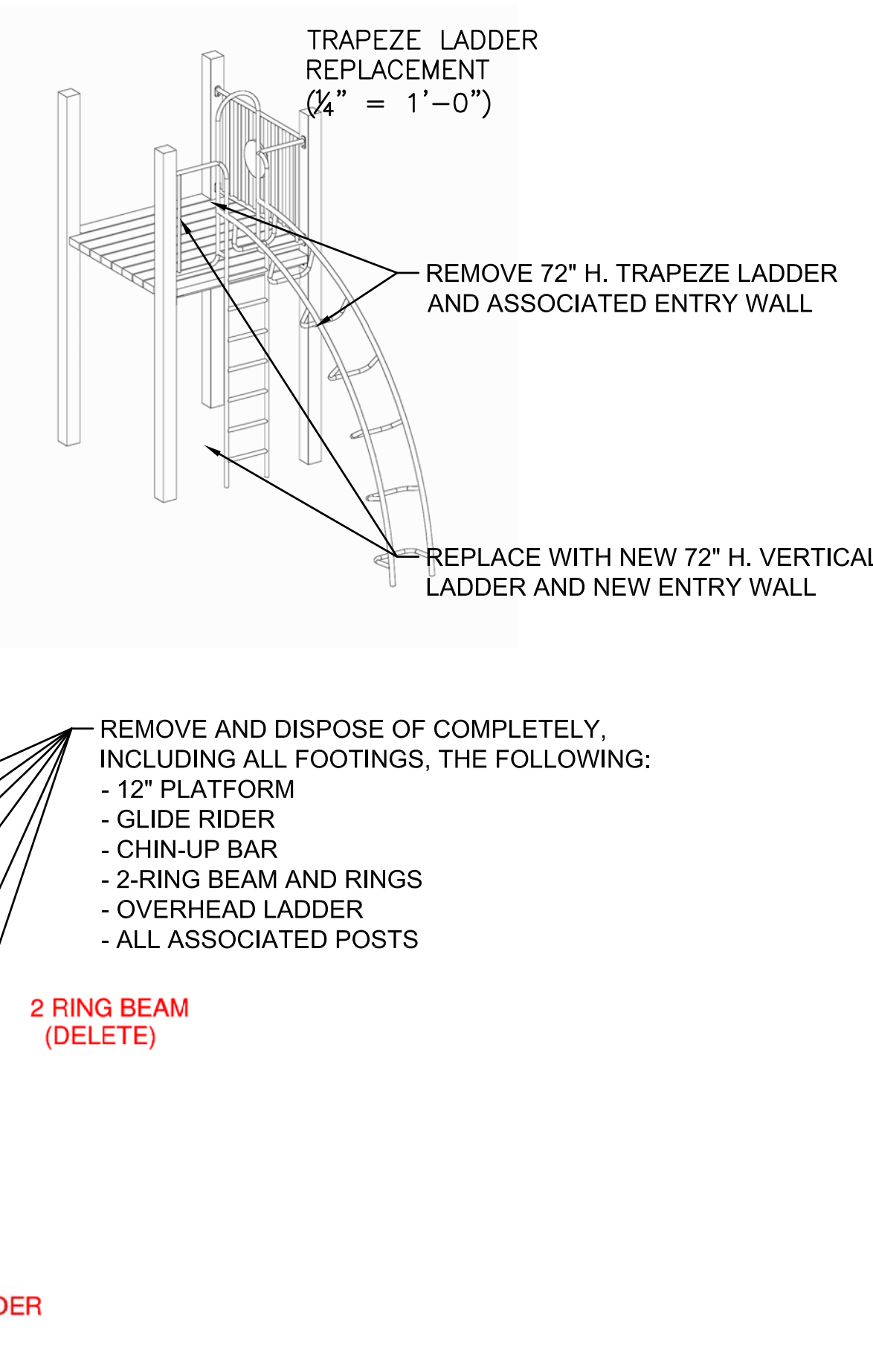
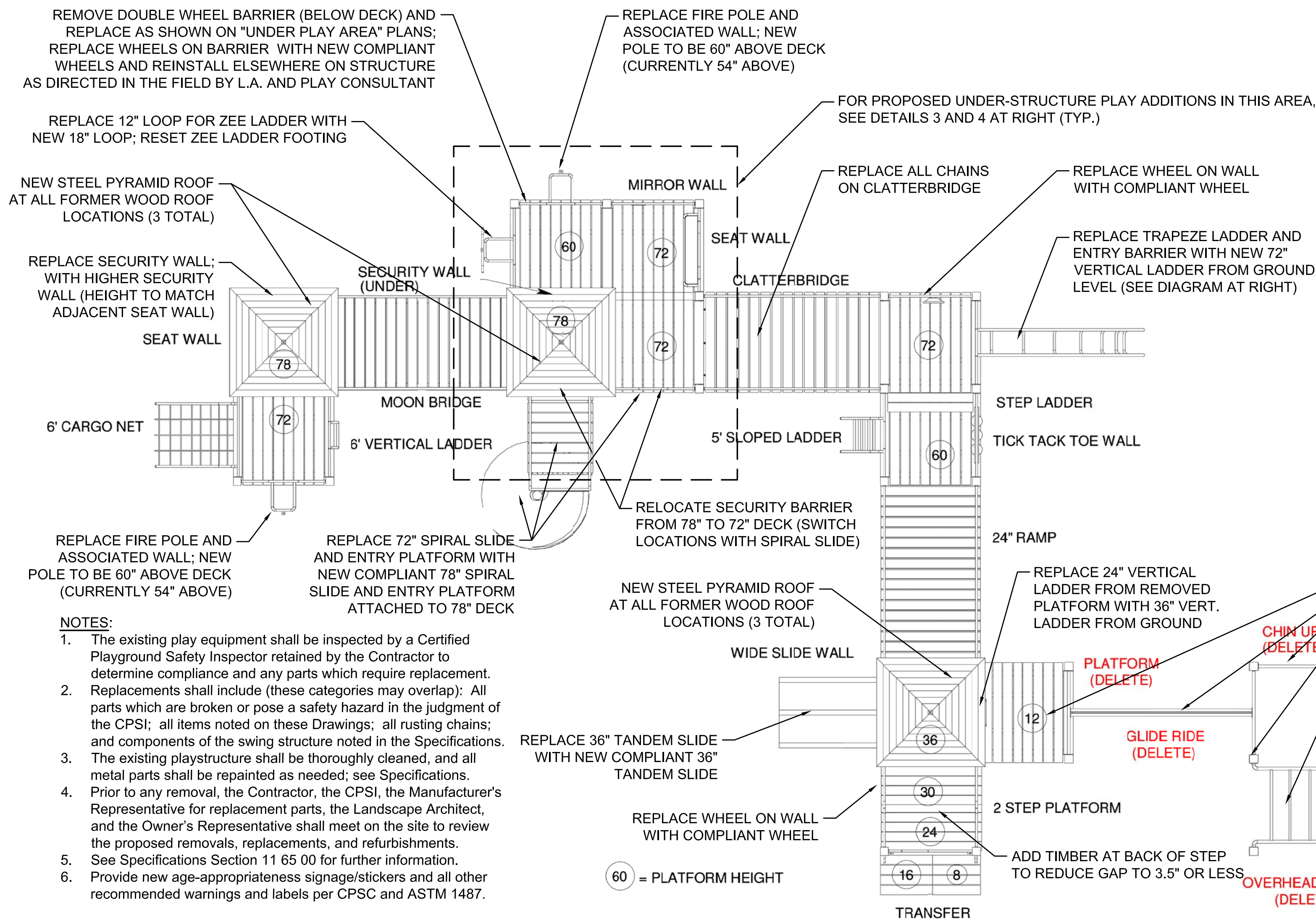


4 LAYOUT OF FOUNTAIN AREA
Scale: 3/8" = 1'-0"

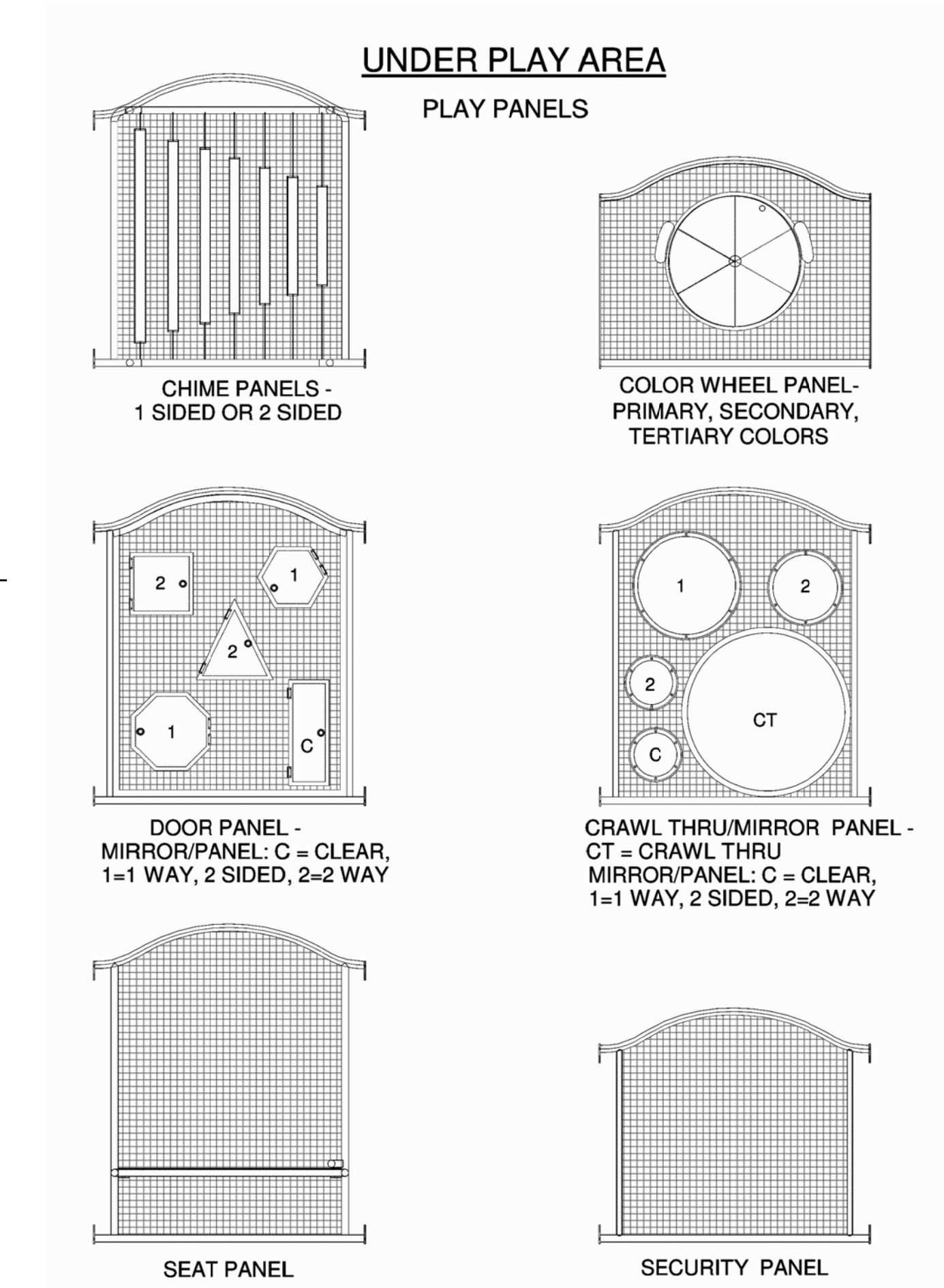


1 EXISTING PLAYSTRUCTURE PLAN VIEW
Scale: 1/4" = 1'-0"

3 PROPOSED UNDER-STRUCTURE ADDITIONS PLAN & ISOMETRIC
Scale: As Noted



2 PROPOSED RENOVATIONS AND REPLACEMENTS: PLAN VIEW
Scale: 1/4" = 1'-0"



4 PROPOSED UNDER-STRUCTURE PANELS
Scale: 1/2" = 1'-0"