**CITY OF EVERETT**
**MASSACHUSETTS**

PROJECT MANUAL
FOR

# WOODLAND STREET PLAYGROUND RENOVATION
CITY OF EVERETT PROJECT NO.: ENG-25-66

Office of the Purchasing Department
Kiara M. Freeman
Chief Procurement Officer
Everett City Hall, Room 14
484 Broadway, Everett, MA 02149

Delivery Method: M.G.L. c. 30 § 39M

OWNER:

City of Everett
Everett City Hall, Room 14
484 Broadway, Everett, MA 02149

LANDSCAPE ARCHITECT:

BOHLER, LLC
50 Washington St, Suite 2000
Westborough, MA

October 15, 2025

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**SECTION 001116**

**INVITATION TO BID AND INSTRUCTIONS TO BIDDERS**

**GENERAL CONTRACTOR SERVICES**

## I. SUMMARY OF WORK AND PROJECT SCHEDULE

The summary of work includes demolition of existing site features, installation of new walkways, plaza, shade structure, play structures, misting station, fencing, site furniture and landscape.

The project is located at the intersection of Woodland St. and Central Ave, Everett, MA 02149.

Estimated construction cost is $1,277,000. All work to be performed in accordance with the Bid Documents as herein defined.

| | |
|---|---|
| **On-Site Construction Start**: | December, 1, 2025 |
| **Substantial Completion:** | May, 15, 2026 |
| **Final Completion**: | May, 25, 2026 |

## II. INVITATION FOR BIDS

The City of Everett (the "City") hereby requests sealed bids from General Contractors interested in bidding for the Work described herein pursuant to the requirements of M.G.L. c. 30, § 39M all other applicable provisions of the Massachusetts General Laws and 2CFR200 Appendix II Contract Provisions FOR CONTRACTS UTILIZING FEDERAL FUNDING.

If it be in the best interest of the City to do so, the City reserves the right to reject any and all Bids, to waive any informalities or minor deviations, to cancel the project and Bid Documents at any time prior to award, and/or to advertise for new Bids if funds are not available for the Project.

These instructions provide Bidders with information intended to enable them to prepare and submit Bids for consideration and evaluation by the City. These instructions cover all work as documented in the attached bid documents, as modified by addenda, if any (collectively, the "Bid Documents"). Bids shall be submitted in compliance with and shall be governed by the Agreement between Owner and Contractor, the General Conditions and Supplementary Conditions, if any.

## III. BIDDING REQUIREMENTS

**(A) Bid Form.** Bids shall be submitted on the appropriate Bid Form attached hereto. All entries on the Bid Form shall be made by typewriter or in ink. No modifications should be made to the Bid Forms. Sums shall be expressed in both words and figures in the space indicated on the Bid form. Where there is a discrepancy between the sum expressed in words and the sum expressed in figures, the amount expressed in words shall control. Total lump sum price will be basis of award regardless of any mathematical errors by bidders. Bids shall be signed by the person having legal authority to bind the Bidder to the terms and conditions of the Bid, and the person so signing shall give the person's own name, business address and title. **Bids not properly signed will be rejected as non-responsive**.

**(B) Bid Deposit.** Each bid must be secured by an accompanying deposit of five percent (5%) of the total amount of the Bid. Deposits shall be in the form of a bid bond, or a certified check, treasurer's or cashier's check issued by a responsible bank or trust company, payable to the City of Everett. No cash will be accepted. Bid deposits of all Bidders, except those of the three lowest responsible and eligible Bidders, will be returned within five (5) business following the Bid opening. Except as provided in the "BONDS AND INSURANCE CERTIFICATES" and "FOREIGN CORPORATION" sections appearing below, the Bid Deposits of the three lowest responsible and eligible bidders will be returned upon the execution of the Contract or, if no award is made, upon the expiration of the time prescribed for making an award.

**(C) Submission of Bids.** Bids shall be enclosed in a **sealed envelope** with the following plainly marked on the outside:

**Bid for:** **City of Everett, Purchasing Dept**
**Project Number: ENG-25-66**
**Bidder's Name**
**Business Address**
**Phone Number**

Bids must be received on or before the bid due date and time. Timely delivery of a Bid to the location designated shall be the full and sole responsibility of Bidder.

Bids will be opened in the Office of the Purchasing, City Hall, Room 14, 484 Broadway, Everett, MA 02149 on **Wednesday**, **November 12, 2025 2:00 P.M. Local Time.**

**(D) Form of Agreement.** Any contract awarded by the City pursuant to this solicitation shall be governed by the Contract Documents including, but not limited to, the Agreement between Owner and Contractor, the General Conditions, and Supplementary Conditions, if any. A bidder may not, in its Bid, take exception to the form of Agreement Between Owner

and Contractor or otherwise condition its bid on changes to the form of Agreement Between Owner and Contractor. The bidder to whom a contract is awarded will be required to enter into the City form of Agreement Between Owner and Contractor within five (5) business days of presentation of the contract by the City.

**(E) Prevailing Wage.** Minimum Wage Rates as determined by the Commissioner of the Department of Workforce Development under the provisions of Massachusetts General Law, Chapter 149, §§ 26-27, inclusive, apply to this project. It is the responsibility of each Bidder, before opening of Bids, to request if necessary any additional information on Minimum Wage Rates for those trades people who may be employed for the proposed work under this Contract. The Minimum Wage Rates to be used for this Contract are shown on the schedule provided in the Bid Documents.

## IV. BID SCHEDULE

- Bid Documents available to Bidders: **October 15, 2025**. Drawings, specifications and bid forms may be obtained via download at Purchasing - Everett, MA - Official Website, in person at the Offices of Purchasing Agent, City Hall, Monday and Thursday between 8:00 a.m.–7:30 p.m., Tuesday and Wednesday between 8:00 a.m. – 5:00 p.m. or by emailing a request to purchasing@ci.everett.ma.us**.**

- Pre-Bid Conference: A pre-bid meeting will be held on Tuesday, October 21, 2025 from 12:00pm – 1:00PM. Attendance is **STRONGLY ENCOURAGED** Attendees should meet at the intersection of Central Ave. and Woodland St. Please note, if a separate site visit is desired, access to the Playground is limited and the site may be locked.

- Question/Clarification Period closes: November 5, 2025 at 2:00 PM

- Bid Due Date: **November 12, 2025 2:00 P.M**. Local Time at the office of the Office of the Purchasing, City Hall, Room 14, 484 Broadway, Everett, MA 02149

Timely submission of Bids shall be the sole responsibility of the Bidder.

## V. BIDDER'S REPRESENTATIONS

By submitting its Bid in response to this solicitation, each Bidder makes the following representations:

a) The Bidder has read and understands the Bid Documents and the Bid is made in accordance therewith. The Bidder has visited the site where the Work is to be performed and is familiar with the local conditions under which the Work will be

performed. Failure to so examine the Bid Documents and site will not relieve any Bidder from any obligation under the Bid as submitted.

b) The information contained in the Bid is true and complete to the best knowledge of the Bidder.

c) The Bid has been prepared in good faith and the Bidder is duly authorized to submit the Bid on behalf of the Bidder.

d) In preparation and development of the Bid, the Bidder has not, directly or indirectly, solicited or received any advice, assistance, or information concerning the Project from any representative of the City of Everett, its agents, or consultants that was not issued in writing by the City of Everett to all Bidders.

e) The Bidder has filed with the Secretary of State all certificates and annual reports required by Chapter 156D, § 16.22 (domestic and foreign corporation), § 15.03 (foreign corporations), § 109 (Massachusetts business corporation), or Chapter 180, § 26A (non-profit corporation) as applicable, of the Massachusetts General Laws.

## VI. WRITTEN QUESTIONS

Bidders shall promptly notify the City in writing of any ambiguity, inconsistency or error that they may discover upon examination of the Bid Documents, the site, and local conditions.

Bidders requiring clarification or interpretation of the Bid Documents shall make a written request to the design consultant by email or by fax as follows:

BOHLER, LLC
Leslie Fanger
50 Washington St, Westborough, MA
lfanger@bohlereng.com

Requests for interpretation of the Bid Documents by phone will not be accepted. Any responses to written questions may be issued as an addendum to the Bidding Documents and posted at Purchasing - Everett, MA - Official Website. Any Bidder that contacts directly or indirectly any member or employee of the City, or the City's consultants, in connection with the selection process or the contract contemplated herein, other than by participation in the pre-bid conference, submission of a written question or request for clarification or interpretation as prescribed in this section, may be subject to disqualification.

The City will not be responsible for, and a Bidder shall not rely upon or use, any information, explanation, or interpretation of this Invitation to Bid/Instructions to Bidders rendered in any fashion except written responses by the City posted at Purchasing - Everett, MA - Official Website.

It is the sole responsibility of Bidders to ascertain the existence of any and all Addenda. Only written Addenda issued as described in these Instructions to Bidders shall be effective to modify

the Bid Documents. All registered plan holders will be electronically notified when addenda are issued. Hard copies of the addenda may not be forwarded to the registered plan holders. In preparing its bid, each Bidder must acknowledge that it has reviewed all addenda.

## VII. MODIFICATION AND WITHDRAWAL OF BIDS

After Bid opening, a Bidder may not change any provision of the Bid in a manner prejudicial to the interests of the City or fair competition. Minor informalities will be waived or the Bidder will be allowed to correct them. If a mistake and the intended Bid are clearly evident on the face of the Bid proposal, the mistake will be corrected to reflect the indeed correct Bid, and the Bidder will be notified in writing - the Bidder may not withdraw the Bid in such circumstances. 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.

A Bid may be withdrawn prior to the time designated for receipt of Bids upon written request made to the City. Withdrawal of Bids must be confirmed over the Bidder's signature by written notice post-marked or sent by facsimile on or before the date and time set for receipt of Bids. Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids.

## VIII. EVALUATION PROCESS

The City will evaluate all Bids in accordance with the provisions of the Bid Documents and the criteria described below. The City may consider in its evaluation all information contained in the Bid and any other information obtained or received by the City. Any Bid from a Bidder that is determined to be nonresponsive or not in conformance with the requirements of the Bid Documents may be rejected. Bids that are deemed, in the judgment of the City, to contain unrealistic prices or substantially deviate from the City's estimate of cost to complete all of the Work, or any portion thereof, will be considered as not responsive to the Invitation to Bid and may be rejected at the sole discretion of the Authority.

The City will award the contract in accordance with the "CONTRACT AWARD" section below. Before award, the City may conduct interviews with selected Bidders. The purpose of the interviews will be to clarify and assure understanding of the contents of the Bid, as well as the requirements of the Bid Documents, and discuss any other matters relevant to such Bid as the City may determine appropriate. No statements made or actions taken by any representative of the City during such discussions shall be binding on the City. If requested by the City, the key personnel identified in the Bid shall participate in the discussions or be available for an interview with City representatives.

## IX. BASIS OF AWARD

The criteria listed below are the criteria that will be applied to evaluate the Bids.

A. <u>Price</u>

Award will be to the lowest eligible and responsible Bidder with selected alternates provided that all required documents listed below are attached and satisfactory. The City may consider in its evaluation the reasonableness of the prices proposed by the Bidder.

B. Required Documents to be Submitted with Bid

1. Bid Form

2. Bid Deposit of 5% of the total bid amount (bid bond, certified check, or treasurer's or cashier's check payable to the City of Everett).

3. A proposed construction schedule showing all work included in the Bid. The proposed construction schedule must include key milestones substantial and final completion.

## X. CONTRACT AWARD

(A) The City will open Bids on the Bid Due Date immediately following the deadline, and a register will be maintained of those firms submitting timely Bids. Bids shall be publicly open and read.

(B) The City will award the Contract to the lowest responsible and eligible bidder within thirty (30) days after the opening of Bids, subject to the reservations contained herein and the exceptions set forth in Massachusetts General Laws Chapter 30 and 149, whichever is applicable. The selected Bidders will be notified in writing.

(C) If a selected Bidder fails or refuses to execute the Agreement between Owner and Contractor in the form included in the Bid Documents, as modified by addenda, if any, and furnish the other documents required in connection with execution of the contract, within ten (10) business days after the presentation of the Agreement between Owner and Contractor, as applicable, by the City, the City may award the Contract to another Bidder.

(D) THE CITY RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS if it determines that such action is in the best interest of the City. Any Bid which is incomplete, conditional or obscure may be considered invalid and the City may reject such Bid. In addition, the City may reject any Bid which is not prepared and submitted in accordance with all requirements of these Bid Documents and the attached forms or which contains alterations, contingencies or additions not called for or errors or irregularities of any kind; PROVIDED, HOWEVER, that the City reserves the right to waive any and all informalities or minor irregularities contained in the Bid. If these Bid Documents, the Bid Forms, or any other document or applicable law requires submission of certain information or other items as a part of or to accompany Bids and any Bidder neglects to furnish such information or other items with its Bid, the City may reject the Bid of such Bidder as incomplete; PROVIDED, HOWEVER, that the City reserves the right to deem any such omission as

an informality for which such Bid will not be rejected, and to subsequently receive such information or other items prior to award of the contract.

(E) More than one Bid from the same Bidder, whether or not the same or different names appear on the signature page, will not be considered. Reasonable grounds for believing that any bidder is so interested in more than one Bid for the work contemplated may cause rejection of all Bids made by that Bidder directly or indirectly.

(F) Any and all Bids potentially affected by collusion will be rejected if there is reason for believing that collusion exists between the Bidders. The decisions of the City will be final. Bidders whose Bids have been rejected because of evidence of collusion will not be considered in future bids for the same work and may be disqualified from bidding on future work. The City shall reject any Bid that does not include the signed Non-Collusion and Attestation Forms provided in the Bid Documents.

(G) As used herein, the term "lowest responsive and responsible bidder" shall mean the Bidder (1) whose Bid is the lowest of those Bidders possessing the skill, ability and integrity necessary for the faithful performance of the work described in the Bid documents; (2) who shall certify that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who shall certify that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (4) who obtains within ten (10) days of the notification of contract award the security by bond required under section 29 of chapter 149 from a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the City; provided further, that if there is more than one (1) surety company providing such bond, the surety companies shall be jointly and severally liable. The City may consider the reasonableness of the prices proposed for the scope of the work involved in its evaluation of the Bids.

(H) The City reserves the right to amend these Bid Documents at any time. Any amendments to these Bid Documents shall be issued by means of written addenda. All addenda so issued shall become part of these Bid Documents.

(I) The City reserves the right to withdraw this Invitation to Bid at any time in its sole discretion before award of a contract.

(J) The City assumes no responsibility for the costs incurred by the Bidders in the preparation of a Bid or any related activities. The Bid Documents and this Invitation to Bid/Instructions to Bidders have been prepared solely to solicit Bids, and are not contract offers. <u>The only document that may be binding on the City is the Agreement between Owner and Contractor, and all documents incorporated therein by reference, only when duly executed by the City and the contractor to whom the contract is awarded.</u>

## XI. ADDITIONAL PROVISION

Estimated Quantities. Unless otherwise stated, quantities shown in the Bid Documents represent the estimated quantities of labor and materials that might be expected to be encountered during the contract period. In the event of a discrepancy between the estimated quantities shown in the Specifications and those shown in the Price Sheets, quantities shown in the Price Sheets shall control. The City does not expressly or by implication agree that the actual amount of work will correspond therewith. These estimated quantities will be used solely for the comparison of Bids. The City reserves the right to increase, decrease, or delete the amount of any or all items of work after Bids have been received. Such increase, decrease or deletion in the quantity for any item shall not be regarded as cause for an increase or decrease in the unit prices. No allowance will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly or indirectly from such increased, decreased, or deleted quantities or from unbalanced allocation among the Contract items or overhead expenses on the part of the Bidder and subsequent loss of expected reimbursement therefore or from any other cause.

Bonds and Insurance Certificates. Should the successful bidder fail to perform its agreement to furnish the required bonds and insurance certificates required herein, the Bid Deposit shall become and be the property of the City as liquidated damages; provided that, the amount of the Bid Deposit which becomes the property of the City shall not, in any event, exceed the difference between its bid price and the Bid Price of the next lowest responsible and eligible Bidder.

Foreign Corporations. If the successful bidder is a foreign corporation as defined at G.L. c. 156D, § 1.40, and if successful bidder fails to perform its agreement to furnish the required certificate of the state secretary, the Bid Deposit shall become and be the property of the City as liquidated damages; PROVIDED THAT, the amount of the Bid Deposit which becomes the property of the City shall not, in any event, exceed the difference between its Bid Price and the Bid Price of the next lowest responsible and eligible Bidder.

Sales and Use Taxes. Bidders are advised that City is exempt from sales and use taxes and shall submit its Bid Prices without taxes. An Exemption Certificate may be obtained by the successful Bidder from the City upon request.

Health and Safety. This Contract is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety “Rules and Regulations for the Prevention of Accidents in Construction Operations” (Chapter 454 CMR 10.00 et seq.). Bidders shall be familiar with the requirements of these regulations.

Monthly Price Adjustments for Certain Items. Monthly price adjustments will be made for qualifying work orders using diesel fuel, gasoline, asphalt, concrete, and steel in accordance with the Bid Documents.

Permits and Approvals. The successful Bidder will be solely responsible for obtaining all necessary construction permits, licenses, and approvals required in connection with the Project and/or under the Bid Documents, including without limitation as set forth in Contract between Owner and Contractor and the General Conditions. All bidders shall be responsible for investigating in detail the permitting requirements of the work and shall be responsible for making such examination thereof as may be necessary to satisfy themselves in regard to the character of the permitting required, and shall Bid in sole reliance upon their own investigation.

Bid Information. The City's receipt or discussion of any information (including information contained in the proposal and any ideas or other material communicated or exhibited by the Bidder or on its behalf) shall not impose any obligation whatsoever on the City or entitle the Bidder to any compensation therefor, except to the extent specifically provided in such written agreement as may be entered into between the City and the Bidder. Any such information given to the City before, with, or after submission of the proposal, either orally or in writing, except as noted below, is not given in confidence, and may be used, or disclosed to others, for any purpose at any time without obligation or compensation and without liability of any kind whatsoever. Any statement which is inconsistent with the terms of this paragraph, whether made as part of or in connection with any information received from the Bidder or made at any other time in any fashion, shall be void and of no effect.

Power of Attorney. Attorneys-in-fact who sign Contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

Laws and Regulations. The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances or bylaws, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the Contract the same as though written out in full.

Project Inspection. The CONTRACTOR shall make the project site and all project records available to City Services Department (CSD) Manager of Operations or the CSD representative for review during the course of the project. The CSD will periodically monitor the progress of work to insure that the project is proceeding substantially as defined in the Scope of Work and Project Schedule.

Project Audit Provisions. The City of Everett, the Director of Engineering or their representative, and the contractor shall maintain books, records, documents, and other evidence directly related to the performance on all work receiving funding under the executed Financial Assistance Agreement in accordance with generally accepted professional practice and appropriate accounting procedures and practices. The City of Everett, the Director of Planning & Development or his representative, and the contractor shall also maintain the financial information and data used by the City or his representative, and the contractor in

the preparation or support of project invoices and associated progress reports. The City of Everett has the right to request copies of all journals and diaries as well as any financial information, weigh slips, invoices from suppliers, and any other included cost related to this contract.

Project Manager. The City may utilize the services of a project manager, whose duties shall be as set forth in the Agreement for Project Manager Services.

A contact person must be designated by the Contractor upon award of the Contract who will be accessible to the City on a twenty-four hour per day basis for the duration of the construction period.

Payroll. Payroll Records, Labor, Maximum Hours of Employment: Every employee in public work shall lodge, board and trade where and with whom he elects; and no persons or his agents or employees under Contract with the Commonwealth, a county, City or with a department, board, commission or officer acting therefore, for the doing of public work, shall directly or indirectly require as a condition of employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person (Chapter 149,Section 25 of the General Law).

No laborer, workman, mechanic, foreman or inspector working within this Commonwealth, in the employee of the Contractor, Sub-contractor or other persons doing or contracting to do the whole or a part of the work contemplated by this Contract, shall be required or permitted to work no more than eight (8) hours in any one day or no more than 48 hours in any one week, or no more than six (6) days in any one week, except in cases of emergency, or in case any City subject to Section 149 of the General Laws is a party to such a Contract, more than eight (8) hours in any one day, except as aforesaid. The Owner or the Contractor or any Subcontractor may employ laborers, work-men, mechanics, foreman and inspectors for more than eight (8) hours in any one day in the work to be done or under Contract when in the opinion of the Commissioner of Labor and Industries, public necessity so require. (Chapter 149, Section 34 of the General Laws, as amended).

Attention of Bidders is called to Section 148 of Chapter 149 of the General Laws and amendments thereof requiring the weekly payment of employees.

Upon request of the Engineer of the Massachusetts Department of Labor and Industries, the Contractor shall furnish certified copies of any or all payrolls for the Contract, showing the name, address, and occupational classification of each employee on said works, and the hours worked by, and the wages paid each such employee. Such payroll shall also include the rates paid for rented trucks or rental equipment of any kind used on the work. This requirement shall also apply to the work of any Sub-contractor having a Subcontract for any of the work performed on the project. Such records shall be kept in such manner as the Commissioner of Labor and Industries shall prescribe, and shall be open to inspection by the Director Planning & Development, City Engineer or any authorized representative of the Department of Labor and Industries at any reasonable time and as often as may be necessary.

Buy American. The Contractor agrees that preference will be given to domestic construction material by the Contractor, Subcontractor, material men, and suppliers in the performance of this Contract.

Compliance with Laws. The Contractor shall keep himself fully informed of all existing and future Federal, State and Local Laws, ordinances, rules and regulations affecting those engaged or employed on the Work, the materials and equipment used in the Work or the conduct of the Work, and of all orders, decrees and other requirements of bodies or tribunals having any jurisdiction or authority over the same. If any discrepancy or inconsistency is discovered in the Drawings, Specifications or other Contract Documents in relation to any such law, ordinance, rule, regulation, order, decree or other requirement, the Contractor shall forthwith report to the Administrator in writing. The Contractor shall at all times observe and comply with, and cause all his agents, servants and employees to observe and comply with all such existing and future laws, ordinances, rules, regulations, orders, decrees and other requirements and he shall protect, indemnify and save harmless the City, its officers, agents, servants, employees and the CSD from and against any and all claims, demands, suits, liabilities, judgments, penalties, losses, damages, costs and expenses, including attorney's fee, arising from or based upon any violation or claimed violation of any such law, ordinance, rule regulation, order, decree or other requirements, whether committed by the Contractor or any of his agents, servants or employees.

Applicable provisions of Massachusetts General Laws and Regulations and/or the United States Code and Code of Federal Regulations govern this contract and any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflict between Code of Federal Regulations and State Laws and Regulations exist, the more stringent requirement shall apply.

This project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety "Rules and Regulations for the Prevention of Accidents in Construction Operations" (Chapter 454 CMR 10.00 et seq.). Contractors shall be familiar with the requirements of these regulations.

Method of Payment to Contractor

Patented Devices, Materials and Processes. It is mutually understood and agreed that, without exception, contract prices are to include all royalties and costs arising from patents, trademarks and copyrights in any way involved in the work. It is the intent that whenever the Contractor is required or desires to use any design, device, material or process covered by letters patent or copyright, the rights for such use shall be provided for by suitable legal agreement with the patentee or owners.

Utility Company Coordination. Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of publicly or privately owned utilities

of his intention to commence operations affecting such utilities at least one (1) month in advance of the commencement of such operations that may affect their utilities and the Contractor shall at the same time file a copy of such notice with the City Engineer.

Contractor Parking. The Contractor and his employees and subcontractors and their employees shall not park personal vehicles within the Project Area.

Dig Safe. The Contractor shall notify "Mass. Dig Safe" and procure a DIG SAFE number of each location in advance of starting any construction. "DIG SAFE" Call Center: Telephone (811) or 1-888-344-7233.

City of Everett
Kiara M. Freeman
Chief Procurement Officer
Phone: 617-394-2290, Fax: 617-394-2339

SECTION 002213

**PROJECTSUPPLEMENTARY CONDITIONS**


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# PROJECT SUPPLEMENTARY CONDITIONS

## ARTICLE 1: PROJECT SITE

a. All work of this contract is located within the confines of Woodland St. Playground, owned and operated by the City of Everett.

## ARTICLE 2: SUMMARY OF WORK

a. The work to be completed under this contract involves the furnishing of all labor, materials and equipment for the following items of work and all incidentals thereto. All work shall be performed in full accordance with the specifications, other contract documents, obviously implied and necessary or under the direction of the Owner.

b. The plans and specifications are intended to be cooperative, and any item called for in one and not the other shall be as binding as if called for in both. During the bidding period discrepancies should be immediately brought to the attention of the Owner for clarification. If a discrepancy is discovered within the plans and the specifications after the bid period, **the Owner will determine which shall apply.**

c. Quality Control: In order to ensure the highest level of quality with respect to the playing surface of this greatly utilized public athletic facility, the General Contractor / Awardee shall have a minimum of five (5) years of successful experience;

   a. as the Prime Contractor constructing (provide verifiable references upon request)
   b. ability to demonstrate constructing (provide verifiable references upon request)
   c. coordinating and supervising (provide verifiable references upon request)
   d. Park Improvements of similar size and quality of this project as per the standards of the project Specifications and construction drawings.

Project Address:
Woodland St. Playground
Intersection of Central Ave and Woodland St.
Everett, MA

B. Quality Assurance:

a. The plans and specifications are intended to be cooperative, and any item called for in one and not the other shall be as binding as if called for in both. During the bidding period discrepancies should be immediately brought to the attention of the Owner for clarification. If a discrepancy is discovered within the plans and the specifications after the bid period, **the Owner will determine which shall apply.**

b. Quality Assurance/Control: Contractor/Manufacturer's Representative furnishing the equipment must have a minimum of seven (7) years experience in the manufacturing of playground and/or site furnishings with the personnel, facilities, and equipment adequate for the products specified, and shall produce written proof of such with bid.

## ARTICLE 3: WORK WITHIN A PUBLIC PROPERTY

a. As a point of information, all of the work to be undertaken is located within the confines of an unsecured public property, and as such is subject to acts of vandalism. The City of Everett will not pay for any damage to the Contractor's equipment or material. The Contractor shall take all means and measures necessary to protect the public, work in progress, work completed, and all furnishings, materials and equipment stored at the site

through the completion of the project. The repair or replacement of work in place or in progress shall be the sole responsibility of the Contractor and shall be accomplished at no cost to the Owner.

**ARTICLE 4: SITE INSPECTION**

a. It shall be contingent upon the Contractor to inspect the site as an aid to determining the extent of the work under the various contract items before submission of the bid.

**ARTICLE 5: PRE -BID AND PRE-CONSTRUCTION MEETINGS**

a. A pre-bid conference will be held onsite, **October 21, 2025, 12:00 PM (Eastern Standard Time).** Interested bidders are strongly encouraged to attend. A mandatory pre-construction meeting will be arranged by the Owner's representative after the award of the contract. Sub-consultants may be asked to attend the pre-construction meeting if determined by the Owner's Representative to be warranted.

**ARTICLE 6: SITE ACCESS**

b. Prospective bidders are advised that access to the project sites shall be in accordance with the governing traffic patterns with specific locations into the site to be designated in the field after award of the contract.

**c.** Regardless of the eventual location of the construction access, the Contractor shall make every provision to ensure the safety of pedestrians and drivers making use of the public property.

**ARTICLE 7: OWNER'S TAX EXEMPTION**

a. The Awarding Authority, as a department of a corporate municipality in the Commonwealth is exempt from the taxes listed below. Contractor shall notify all suppliers of the following current certificates.

1. Federal Excise Taxes as applied to articles taxable under Chapter 32 of the Internal Revenue Code of 1954, as amended, City Excise Tax Exemption Certificate is not required.

2. From Sales and Use Tax imposed by the Commonwealth of Massachusetts under Chapter 14, Acts of 1966, the City has been assigned and exemption certificate with respect to leases, rentals, or purchases of "Tangible Personal Property". The Owner at the Contractor's request will furnish the tax-exempt certification number.

**ARTICLE 8: TIME FOR COMPLETION AND SEQUENCE OF WORK**

a. Please be advised that this project must be completed by **May 25, 2026**. The work of this Contract shall be commenced at the time stipulated by the Owner in the Notice to Proceed (NTP) and shall be substantially completed for occupancy to the satisfaction of the Owner **,** except as the work may be interrupted by weather conditions as hereinafter specified. The Contractor shall prosecute the Work with the diligence necessary to ensure its completion within the required time. The Contractor shall provide sufficient labor, materials, and equipment, and shall promptly take such appropriate action to keep the

Work on schedule or as directed by the Owner. No additional time shall be provided for Change Orders.

b. The City of Everett Engineering Dept. shall be solely responsible for determining when the work shall be interrupted due to unsatisfactory weather conditions. Determination of the period to be included in the Time for Completion shall cease when the City directs that the work stops due to weather and shall commence again on the first working day thereafter that the City may designate for the work to be resumed.

c. The Contractor must completely understand that once the Contractor mobilizes and begins work, the Contractor must be on-site, every day during the normal work week, and must work continuously until substantial completion of the project. The City Engineering Dept. will not allow any time gaps of any length of time during the construction due to the Contractor's scheduling of other work not related to this specific Contract.

d. It should be further understood that this project will not be a "fill-in" for the Contractor and that the Contractor does not have the ability to start and stop construction at the Contractor's option. Any unauthorized time gaps will be subject to a flat fee of $500.00 per day. The Owner reserves the right to deduct said fee from the Contractor's periodic application for payment and the Contract Sum.

e. The Contractor shall carry on the Work and adhere to the schedule during all disputes and disagreements with The Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements. The Contractor shall exercise reasonable precautions, efforts and measures to avoid or mitigate situations that would cause delays.

f. The Contractor is advised that the **required calendar days** regarding Time for Completion, shall be consecutive.

## ARTICLE 9: LIQUIDATED DAMAGES

a. Prospective Bidders are advised that liquidated damages shall be in effect for this project. The Contractor and his Sureties shall be liable for and shall pay to the Owner the sum of Five Hundred and Dollars ($500.00) as fixed and agreed, as liquidated damages for each calendar day of delay from the date stipulated for completion, or as modified in accordance with the provisions of the Contract.

## ARTICLE 10: CONSTRUCTION SCHEDULES AND PAYMENT ESTIMATES

a. The Contractor must submit a construction schedule to the Owner indicating the general sequence of all work under this Contract. This schedule must be submitted within 7 days of the date of the Notice-to-Proceed and shall be revised if required to the satisfaction of the Owner.

b. The Contractor shall submit a breakdown cost estimate (schedule of values) for all items of work in categories approved by the Owner.

c. The established breakdown of items, categories and values shall be utilized to prepare the monthly pay requisition forms. It is recommended that the Contractor submit a draft pay requisition to the Owner for approval, no later than the second week of every month. The Owner shall review and edit this copy to indicate the amount of payment to be approved and return this to the Contractor after field review. Revised schedule must be submitted

with requisition. The Contractor shall then formally submit three (3) originals of the pay requisition, conforming to the Owner's approval, for payment.

**ARTICLE 11: PROGRESS MEETINGS**

a. The Contractor and Sub-Contractors may be requested to attend a regular progress meeting with the Owner at a location determined by the City representative at a pre-determined time set by the Owner. The Contractor must be present for these meetings during the course of the Contract and reserves no right to cancel the meeting. If the Contractor fails to attend the progress meeting, a flat fee of $500.00 will be charged to the Contractor. The Owner reserves the right to deduct said fee from the Contractor's periodic application for payment and the Contract Sum.

b. The Contractor will be required to take minutes for the all scheduled meetings. The Contractor will have three (3) business days from the date of the meeting to submit to the Owner the minutes of the meeting. Failure to supply the minutes of the meeting in the required timeframe will result in a flat fee of $250.00 to be charged to the Contractor. The Owner reserves the right to deduct said fee from the Contractor's periodic application for payment and the Contract Sum.

**ARTICLE 12: HOURS OF OPERATION**

a. Unless otherwise approved by the Owner, hours of operation shall be 7:30 a.m. to 3:30 p.m., Monday through Friday.

**ARTICLE 13: CONTRACT DOCUMENTS**

a. The Owner will furnish the Contractor, without charge, four (4) complete copies of the Contract Documents. Additional copies requested by the Contractor will be furnished at cost.

**ARTICLE 14: STORAGE OF MATERIALS AND EQUIPMENT**

a. Bidders are advised that the storage of equipment within the confines of the project limit shall be at the Contractors own risk. No material or equipment shall be stored outside the limits of work as defined in the contract documents, designated and agreed to by the Owner.

**ARTICLE 15: USE OF EQUIPMENT/MACHINERY**

1. The Contractor shall not use as any part of his operation any skid steered, track driven, or heavy machinery/equipment on adjacent roadways.

**ARTICLE 16: RESPONSIBILITIES OF CONTRACTOR**

a. Except as otherwise specifically stated in the Contract Documents and Technical Specifications, the Contractor shall provide and pay for all materials, tools, labor, equipment, water, light, heat, power, transportation, superintendence, temporary construction of every nature, charges, levies, fees or other expenses, permits and back charges and all other services and facilities of every nature whatsoever necessary for the performance of the Contract and to deliver all improvements embraced in this Contract completed in every respect within the specified time.

b. Unless otherwise specified herein all materials, workmanship, methods, and practices shall conform to the current Standards and Ordinances of the appropriate Departments and/or Commissions of the City.

c. The Contractor shall be responsible for detailed layout; all stakeout and grade control and shall employ a registered Professional Engineer or a registered Land Surveyor for this purpose. The Owner's Representative will verify and approve the layout and locations of improvements prior to excavation or installation.

d. The Contractor shall verify dimensions and utility locations shown on the plans and if any inconsistencies or discrepancies should be noted on the Drawings, or between the Drawings and actual field conditions, or between the Drawings and the specifications they shall immediately notify the Owner. The Contractor will be held responsible for any errors resulting from his/her failure to exercise the afore mentioned precaution. Such information shall be marked on copies of the "As-Built" drawings and the original "As-Built" drawings are to be reviewed at weekly job meetings.

e. The Contractor shall provide final As-Built Drawings to the Owner. See "Record Drawings – As Built" of this Section.

f. The Contractor shall maintain a full-time supervisor or foreman on the construction site, whether the construction forces are employed by his construction company or employed by a Sub-Contractor.

g. As soon as the Contract is executed, the Contractor shall order materials, submit construction schedules as herein after specified and otherwise anticipate the Notice to Proceed. When the Owner gives the Notice to Proceed, the work of construction shall begin at the time stipulated therein and shall be completed within the Time for Completion specified.

h. It is the Contractor's responsibility to make his own investigation and related assumptions, to satisfy themselves as to subsurface conditions and to ensure that these are reflected in the bid.

i. In order to verify locations of utilities and varying field conditions, exploratory excavations may be necessary, the cost of which is to be included in the contract bid price.

j. The Contractor's attention is called to the necessity of obtaining permits especially those required by various departments of the City. These permit fees will <u>not be waived</u> by the City and must be paid in full by the Contractor.

k. The Contractor shall furnish and maintain all temporary fences, barriers, enclosures, lights and warning devices necessary to protect his/her work area and to protect the public and his work forces throughout the life of this contract.

**ARTICLE 17: EMERGENCY CONTACT INFORMATION**

a. The Contractor will be required to submit within seven (7) business days after the Notice to Proceed, a list of all people that will be involved with the completion of this project including all principal(s), president(s), superintendent(s), and project manager(s) of the company. The list shall contain the following information, including but not limited to: name, title, address, voice mail number, cell phone number, fax number and email address.

**ARTICLE 18: ON SITE SUPERINTENDENT/PROJECT MANAGER**

a. The Contractor must, at all times, maintain an on-site superintendent during the construction and administration of this Contract. The superintendent must be completely familiar with all aspects of the project and capable of following the construction through from start to finish. The Contractor does not have the right to switch, replace, change or otherwise remove the superintendent assigned to this project unless specifically authorized in writing by the Owner. The on-site superintendent must be present a minimum of seven (7) hours per day during construction. If the on-site superintendent fails to meet the above-mentioned requirements, the Contractor will be subject to a flat fee of $500.00 per day. The Owner reserves the right to deduct said fee from the Contractor's periodic application for payment and the Contract Sum.

The Contractor must assign a Project Manager to this Contract that is completely familiar with all aspects of the project and capable of completing the project. The Contractor does not have the right to switch, replace, change or otherwise remove the superintendent assigned to this project unless specifically authorized in writing by the Owner. It should be further understood that the Owner would discuss all matters in regard to the administration of this Contract with only one (1) Project Manager, regardless of how many the Contractor assigns to the project.

All correspondence, emails, voice mail, faxes, etc. will be handled through the designated Project Manager only. The City reserves the right, in conjunction with the Contractor, to remove the Contractor's assigned Project Manager if the City feels it is the best interest to do. Upon written notification, the Contractor must assign a new Project Manager within three (3) business days.

**ARTICLE 19: PROVISIONS FOR TRAFFIC/POLICE DETAIL (As Applicable)**

a. The Contractor shall not close or obstruct any portion of a public road without obtaining the necessary permission from the proper municipal authorities. If any street or private way shall be rendered unsafe by the Contractor's opinion, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the Owner including the provision of police details required to complete the work.

b. The Contractor at their expense shall maintain public roads and sidewalks passable, and the Contractor shall assume full responsibility for the adequacy and safety of provisions made.

**ARTICLE 20: COMMUNICATIONS**

a. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing and must be presented in person or by mail to the Owner.

b. Any notice to or demand upon the Contractor shall be considered sufficiently given if delivered at the office or field office of the Contractor stated on the signature page of the Agreement (or at such other office as the Contractor may from time to time designate in writing to the Owner), or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

c. All papers required to be delivered to the **Owner** shall, unless otherwise specified in writing to the Contractor, be delivered to:

Erik Swanson., Director of Engineering
City of Everett
484 Broadway #26, Everett, MA 02149

and any notice to or demand upon the Owner shall be sufficiently given is so delivered, or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to said Owner at such address, or to such other representatives of the Owner or to such other address as the Owner may subsequently specify in writing to the Contractor for such purpose.

d. Any such notice shall be deemed to have been given as of the time of actual delivery or (in the case of mailing) when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be.

**ARTICLE 21: PARTIAL USE OF SITE IMPROVEMENTS** ***(not applicable-Park to remain closed until final acceptance by City of Everett)***

a. The Owner, at its election, may give notice to the Contractor and place in use those sections of the improvements which have been completed, inspected and can be accepted as complying with the Technical Specifications and if, in its opinion, each such section is reasonably safe, fit and convenient for the use and accommodation for which it was intended, provided:

1. The use of such sections of the improvements shall in no way impede the completion of the remainder of the work by the Contractor.

2. The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.

3. The use of such sections shall in no way relieve the Contractor of his liability due to having used defective materials or due to poor workmanship.

4. The period of guarantee stipulated in the specifications shall not begin to run until the date of the final acceptance of all work which the Contractor is required to construct under this Contract.

**ARTICLE 22: SAMPLING AND TESTING OF MATERIALS AND COMPACTION**

a. Sampling and testing ordered by the Owner to ensure that materials are as specified, and that compaction of all materials conforms to the necessary requirements shall be taken and completed by representatives of a Massachusetts certified testing laboratory satisfactory to the Owner, and shall be paid for by the City as described in the technical specifications.

**ARTICLE 23: TEMPORARY FACILITIES**

a. Furnish all labor, materials, and services to fulfill the requirements for temporary facilities, at no additional cost to the Owner, and comply with all requirements set forth herein, except where said requirements are in conflict with Federal, State, or Local laws, rules, and regulations, in which case(s) the applicable Federal, State, or Local requirements shall govern.

**ARTICLE 24: SANITARY FACILITIES**

a. Provide, place, and maintain in good order from the commencement to final completion of the work, suitable temporary toilet facilities for use by all persons employed under this contract. Toilets shall be rented from and serviced by an approved company, and shall be kept clean and sanitary and secured at all times. The type of toilets proposed for use shall

have the approval of the appropriate City agency, and the number of units shall be as recommended by the Department of Labor. Toilets shall be locked during nonworking hours and placed in a secured (fenced) location, where possible.

**ARTICLE 25: TEMPORARY LIGHT AND POWER**

a. Make all necessary arrangements with the local utility company and pay all costs including labor, in operating and maintaining all temporary services for electricity used during the construction, unless specifically noted otherwise.

b. Ensure that temporary wiring, outlets, and lighting are provided in accordance with the requirements of Bulletin No. 12, Division of Industrial Safety, Department of Public Safety, Commonwealth of Massachusetts.

**ARTICLE 26: TEMPORARY WATER**

a. If available onsite, the Contractor shall coordinate with the City of Everett water department relative to all water needs and temporary connections.

**ARTICLE 27: UTILITIES**

a. The Contractor shall obtain and pay for all licenses and/or permits, which are required by the City or any other agencies that may be involved; he/she shall comply with all codes, regulations and standards of the City.

b. Contractor shall be responsible for all on-site coordination with utility companies and public agencies and for obtaining all required permits and paying all required fees. In accordance with M.G.L., Chapter 82, Section 40, including amendments; Contractor shall notify all utility companies and government agencies in writing prior to such excavation, Contractor shall also call “Dig Safe” at 1-(888) 344-7233 no less than 72 hours (exclusive of Saturdays, Sundays and Holidays.) prior to such excavation. Documentation of requests and numbers provided to Contractor shall be provided to Owner prior to excavation work.

**ARTICLE 28: PHOTOGRAPHS**

a. The Contractor shall be required to furnish one (1) view of before, during and after photographs of each site conditions. The Contractor is encouraged to submit "during" photographs along with each pay requisition to facilitate approvals. Photographs in electronic format via compact disc (jpeg or tiff) are acceptable.

**ARTICLE 29: CONTRACTOR’S SHOP AND WORKING DRAWINGS**

a. Contractor to coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

b. All Contractors are directed to the timeliness and critical importance of expediting the submittal process. Any lead times that may impact sequencing should be prioritized to meet the project schedule. The Owner must be notified if any delays arise that impact lead times.

c. The Contractor shall coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that requires sequential activity.

d. The Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

e. To avoid the need to delay installation as a result of the time required to process submittals and to allow sufficient time for submittal review, all initial product submittals, shop drawings shall be submitted for processing and within **twenty-eight calendar days** (28) days from the date of Notice to Proceed.

f. The Contractor must allow the Owner **10 calendar days** (10) for initial review to achieve efficient construction sequencing. Allow additional time if the Owner must delay processing to permit coordination with subsequent submittals. If an intermediate submittal is necessary, process the same as the initial submittal. Allow ample time for reprocessing each submittal to achieve efficient construction sequencing.

g. No extension of Contract Time will be authorized because of the Contractor's failure to transmit submittals to the Owner for processing sufficiently in advance of the scheduled Work.

h. Shop drawings, product data and samples submitted for each item will be reviewed no more than two (2) times at the Owner's expense. Submittals failing to comply with the Contract requirements will be reviewed at times convenient to the Owner and the Owner's consultants and at the Contractor's expense, based upon a flat rate of $75.00 per hour not to exceed $600.00 for each subsequent re-submittal. The Owner reserves the right to deduct said reimbursement from the Contractor's periodic application for payment and the Contract Sum.

i. The Owner's review and approval of submittals shall be held to limitations stated in the conditions of the Contract. In no case shall approval or acceptance by the Owner be interpreted as release of Contractor of responsibility to fulfill requirements of Contract Documents. No acceptance or approval of submittals, nor any indication or note marked by the Owner on submittals, shall constitute authorization for increase in Contract Sum. The Owner will stamp each submittal with an action stamp.

j. As the timely submittal of samples, shop drawings, catalogue cuts and other related submittals is of paramount importance to the completion of the project within the stipulated time period, a contract value of 1% will be assigned to this effort. Upon receipt of the complete submittal package the General Contractor will be permitted to submit payment of this item with a value equal to 1% of the base bid contract amount.

k. Show in large-scale any unique fabrication and setting requirements or any other specified areas seen as necessary or as directed by the Owner's Representative.

l. Shop drawings shall indicate specification section and paragraph requiring items submitted.

m. Contractor shall submit to the Owner's Representative a notarized certificate of compliance from the galvanizer with all galvanizing requirements including ASTM number and weight of coatings in ounces per square foot. Certificate of compliance shall also contain the following:

    1. Sole Source Responsibility: include statement that galvanizer accepts sole responsibility for coatings under this Article. Galvanizer who does not accept this responsibility is not acceptable and will be rejected.

2. Quality Assurance: include evidence that Galvanizer meets requirements of ANSI Q90.

3. Certificate of Compliance with Current Environmental Regulations: Galvanizer shall certify that coatings proposed for use comply with applicable environmental regulations. Contractor and Galvanizer shall be responsible for penalties assessed by governmental or environmental authorities for coatings that do not comply with current environmental regulations. All coatings shall be lead-free.

**ARTICLE 30: HISTORICAL, ARCHAEOLOGICAL OR ANTIQUE ITEMS**

a. The Contractor during his excavation, site clearance and other operations may come upon, uncover or otherwise discover items of historical, archaeological or antique nature. The Contractor shall immediately stop operations at the particular site of the discovery and notify the Owner so that a proper evaluation may be made of its importance. The Owner shall arrange for the evaluation in a manner that shall not unduly interfere with the Contractor's operation.

b. All such items, if designated by competent authority to be of historical, archaeological or antique nature shall not become the property of the Contractor but shall be placed in the custody of the Owner for disposition.

c. The Contractor shall be required to remove with care or to assist in the removal of any such item or items and to transport the same to a place of safe keeping within the City. The costs for so assisting shall be reimbursed to the Contractor if approved by the Owner.

**ARTICLE 31: PROVISIONS FOR PUBLIC SAFETY AND CONVENIENCE**

a. Particular care shall be taken to establish and maintain such methods and procedures as will not create hazards. Access to adjacent sidewalks, parking and roadways shall be maintained in a reasonable and safe manner for the duration of the construction period.

b. Every reasonable effort shall be made to reduce to a minimum any interference with or inconveniences to operations and patrons due to the construction work. Excavated material shall be trucked away and returned if the Owner deems it necessary and practical as a means for avoiding serious interference with and inconvenience to business concerns and abutters.

d. The Contractor's attention is directed to the fact that the work on this project is to be performed within a public area and adjacent to drives and walkways which are utilized by pedestrians, bikers, joggers and vehicles. The Contractor shall be responsible for the installation of adequate precautions and other safety measures and controls deemed necessary by the Owner in order to protect all users.

e. Any automotive equipment not protected by traffic cones that is operating on a public way under this project shall have one amber flashing warning light mounted on the cab roof or on the highest practical point of the machinery. This light shall be in operation while the equipment is so working.

e. Trenches shall not be opened in areas until all material and equipment required for the work are on the site and available for immediate use. The work at each trench shall be practically continuous, with the placing of utilities, backfill and patching (where applicable) of the surface closely following each preceding operation. When work is not in progress, trenches

in areas subject to use by park patrons shall be covered with steel plates capable of safely sustaining all anticipated loads.

f. The Contractor shall provide traffic signs, warning markers and other construction safety measures as necessary to maintain public safety and optimum traffic flow. Parking of personal vehicles will be prohibited in construction areas as directed.

g. With suspension of construction activities during holidays, weekends and nights, the Contractor shall remove temporary traffic and/or safety control devices, as requested, and return them to their positions when work begins again. Payment for the installation and maintenance of appropriate safety provisions shall be included under the base bid price and no separate payment shall be considered.

h. The Contractor shall without additional compensation be required to maintain access to the project area for fire apparatus and other emergency vehicles at all times.

**ARTICLE 32: PROTECTION OF EXISTING FACILITIES**

a. All existing walks, pipes, conduits, poles, fences, stairways, curbing, walls, buildings, trees and other structures which are to remain in place shall be carefully supported and protected from injury by the Contractor without additional compensation and in case of injury they shall be restored by him without compensation therefore to as good condition as that in which they were found. The value of any trees damaged shall be determined in accordance with established practices of the American Association of Nurserymen or a Registered or Certified Arborist selected by the Project Manager. Limits of liability shall not be limited to the replacement with new and immature trees.

b. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings, where required, for accommodation of travel and to provide access to private property during construction, and shall remove said structures thereafter.

c. The location of prior existing utility systems is not known and therefore may not be shown on the drawings prepared for this project. The existence of utilities shall not be considered as an unusual obstacle, and the Contractor shall not be entitled to extra compensation for maintaining, protecting, or repairing these utilities. The Contractor shall use the exploratory excavation included in his contract price, whenever he/she or the Owner's representatives deem it necessary to verify, or prevent interruption of, existing services.

**ARTICLE 33: RECORD DRAWINGS - AS-BUILT**

a. The Contractor shall cooperate with the Project Manager and shall prepare and maintain a set of drawings on which shall be recorded accurately, as the work progresses, the actual "as built" locations and dimensions of all his work, indicating thereon all variations from the Contract Drawings. This record of "as built" conditions shall include the work of all subcontractors and shall be submitted, upon final acceptance of all work, to the Project Manager and shall be reviewed and updated at weekly meetings.

b. Prior to final acceptance of the work, all "as built" data shall be transferred into digital Auto CAD 2024 format files provided to the Owner by the Contractor. This work shall be performed by the Contractor's Registered Land Surveyor with the cooperation of the Contractor as required. After review and approval by the Owner the record drawings will be completed and delivered to the Owner.

1. All geographic data must be submitted in a standard real-world coordinate system. The following coordinate system is required:

| | |
|---|---|
| Projection: | Massachusetts State-plane Mainland |
| Datum: | NAD83 |
| Fipszone: | 2001 |
| Units: | Feet |
| Spheroid: | GRS1980 |

2. All digital data must be delivered in the following format:

   Autodesk AutoCAD dwg. Format, and one of the following file formats:

   ESRI Geodatabase
   ESRI Shapefile format
   ESRI Arc/Info Interchange File format (e00)
   Autodesk AutoCAD dxf format

3. All data must be clean of undershooting and overshooting arcs (dangles). Polygons must be snapped closed at nodes and lines must snap to one another at nodes.
4. All data must be thematically organized. There must be separate layers for road edges, road centerlines, buildings, streams, water and sewer mains, hydrants, easements, parcels, water bodies, etc. For example, if a stream is coincident with a parcel boundary that coincident line must appear in both the parcel layer and the stream layer. All data shown on the plan shall be submitted digitally.
5. Features, which contain a third, dimension or elevation data (z value) must have the elevation value within the attribute data. If elevation data is submitted in a CAD format, then the value must be part of the feature (polyline).
6. Documentation:
   A. A list of all files being submitted is required.
   B. CAD data shall include metadata for each layer included within the file. This documentation will provide information on the source of the data, feature type (point, line, polygon, etc), source date, and a general description of what is shown on the layer(s).
   C. GIS data submissions (e.g., mdb, shp file, e00 export) must include all items from B above as well as metadata for each of the feature's geographic data attributes. This will include a complete description of each attribute's definition as well as a description of what each of the attribute values mean for each field.
7. Documentation on the method/s used for data collection shall be submitted for all data deliverables.
8. Documentation on the horizontal and vertical accuracy shall be submitted for all data deliverables.
9. Text & Annotation:
   A. For CAD submissions, text must be placed in separate layers. Features must not be erased in order to accommodate the placement of text. Text layers must be thematically separate, meaning that text associated with hydrography should be placed on a single layer, while text pertaining to a parcel's ID number should be placed on yet another separate layer. For example, should there be text on a map defining a parcel's ID number and another piece of text defining a stream name, the deliverable to the town must include two (2) separate text layers, one for the parcel ID numbers and one for the stream names.

B. Text associated with a GIS formatted data deliverable must be in one of four forms.

1. A label attributes. This would be related to the feature's attribute fields as previously described above in Section 6.
2. Annotation subclass. This would be separate annotation included within a feature data set as a series of text attribute tables (TAT).
3. Annotation coverage (e00 export). This would be an entirely separate feature class containing text or annotation only.
4. Feature linked annotation as prescribed in ArcGIS.

10. Pertaining to CAD formatted deliverables, features, which cross map sheets, must precisely match each other at the join line between the sheets; edge matching must be seamless.
11. All deliverables, data, text and/or documentation, must be submitted on either CD-ROM or DVD.
12. The Owner shall supply the Contractor with electronic files (AutoCAD) for the sole purpose of creating As- Built Drawings.
13. **As-built tasks shall be assigned a monetary value equal to 2 percent (2%) of total construction cost and be included as an item in the approved schedule of values.**
14. **Contractor <u>shall</u> submit the final approved as-built within 30 day of notice of substantial completion or approval of final payment application.**

## ARTICLE 34: RUBBISH REMOVAL

a. The Contractor and each Subcontractor shall remove all rubbish, waste, tools, equipment, and appurtenances caused by and used in the execution of his work; but this shall in no way be construed to relieve the Contractor of his primary responsibility for maintaining the site clean and free of debris, leaving all work in a clean condition. The Contractor shall keep the site free of rubbish and construction debris at all times.

b. The Contractor shall provide sufficient metal barrels or dumpsters into which all refuse and garbage shall be deposited. All containers shall have tight fitting covers. These shall be secured overnight or removed daily.

c. At the end of each workweek, the Contractor shall thoroughly clean premises of rubbish and debris of any nature, and remove such from the premises.

## ARTICLE 35: PROJECT CONSTRUCTION SIGN

a. Contractor will provide and temporarily install one monolithic 48" high X 96" wide X ¾" thick project sign and 2- 4"x 4" posts to identify the Project at a location to be determined in the field by the Owner.

b. The Project sign shall conform exactly to the City of Everett's prototype projects sign including but not limited to: size, backer material, font style, size and relief, capitalization, color, weather proofing, fasteners and fastener locations.

c. **Final Graphic and language will be provided by the Owner**

d. The Contractor shall include the cost of furnishing, post installation and removal of sign and posts in the total project costs

*SECTION 004113*
*GENERAL BID FORM*

Date: _____

From: (Insert name of General Bidder)_____

To: City of Everett

A. The undersigned proposes to furnish all labor and materials required for the WOODLAND STREET PLAYGROUND RENOVATION in accordance with the accompanying Plans and Specifications prepared by BOHLER, LLC. for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

3. Please be advised that this project must be substantially completed by **May 15, 2026 with final acceptance from City by May 25, 2026** The work of this Contract shall be commenced at the time stipulated by the Owner in the Notice to Proceed (NTP) and shall be substantially completed for occupancy to the satisfaction of the Owner **,** except as the work may be interrupted by weather conditions as hereinafter specified. The Contractor shall prosecute the Work with the diligence necessary to ensure its completion within the required time. The Contractor shall provide sufficient labor, materials, and equipment, and shall promptly take such appropriate action to keep the Work on schedule or as directed by the Owner. No additional time shall be provided for Change Orders.

B. The bid includes addenda number(s) _____

C. The proposed Base Bid price broken down by phase is: (Bidder: insert words and numbers. In cases of conflict between words and numbers, the words shall control.)

BASE BID CONTRACT LUMP SUM PRICE

words_____

numbers _____

Broken down by as follows, including overhead and profit:

General Conditions _____

Miscellaneous General Conditions _____

Performance Bond _____

Payment Bond _____

Insurance _____

Division I: General Requirements

Temporary Facilities _____

Project Closeout _____

Record Documents _____

| Division 2: Site Work | UNIT PRICE |
|---|---|
| Site Preparation | |
| Earthwork including planting soil | |
| PIP Play Area Surfacing | |
| Play Equipment | |
| Concrete paving | |
| Ornamental Fence and Gates | |
| Shade Structure | |
| Community Garden boxes, soil, fence, gates, composters, and Tool Shed | |
| Signage | |
| Lighting and Electrical | |
| Water Service and Misting Station | |
| Irrigation System | |
| Futsal Court including CMU wall, fence and goals | |
| Perimeter and enclosure Chain link fence | |
| Plantings | |
| Site Furniture | |
| Stone seating walls | |
| Landscape Boulders | |

D. The undersigned agrees that, if selected as General Contractor, he will within five (5) 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 and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the sum of the contract price, the premiums for which are to be paid by the General Contractor and are included in the contract price.

E. The Bidder proposes to provide all labor and materials necessary to complete the work, as specified in the Contract Documents, and as is reasonably expected due to existing conditions and required construction, within the completion time specified in the General Bid Form.

F. The undersigned hereby certifies that he/she/it is able to furnish labor that can work in harmony with all other elements of the labor employed, or to be employed on the work, and that he will comply fully with all laws and regulations applicable to this award.

G. The undersigned 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 subsection the word “person” shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

_____

Company Name

_____

Name and Title of Person Signing Bid

_____

Signature

_____

Address

_____

Phone/Fax Number/Email

Note: If the bidder is a corporation, this form shall be sealed.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

_____

as Principal, and _____
as Surety, are hereby held and firmly bound unto the City of Everett, Massachusetts as OWNER in the penal sum of _____

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____day of _____, 2018.

The Condition of the above obligation is such that whereas the Principal has submitted to the Department of Planning & Development, Everett, MA, a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for **WOODLAND STREET PLAYGROUND RENOVATION**

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year set forth above

_____ (L.S.)
Principal

_____
Surety

By:_____

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

CERTIFICATE OF VOTE
(to be filed if Contractor is a Corporation)

I, _____, hereby certify that I am the duly qualified
(Secretary of the Corporation)

and acting Secretary of _____ and I further certify that a meeting of the
(Name of Corporation)

Directors of said Company, duly called and held on_____, at which
(Date of Meeting)

all Directors were present and voting, the following vote was unanimously passed:

VOTED: To authorize and empower

_____

_____

_____

_____

_____

Anyone acting singly, to execute Forms of General Bid, Contracts or Bonds on behalf of the Corporation.

I further certify that the above vote is still in effect and has not been changed or modified in any respect.

By:_____
(Secretary of Corporation)

A True Copy:

Attest: _____
(Notary Public)

My Commission Expires: _____
(Date)

# EEO/AA CERTIFICATE

The Bidder hereby certifies he/she shall comply with the minority manpower ratio and specific action steps contained in the Commonwealth of Massachusetts Equal Employment Opportunity/Affirmative Action Program (EEO/AA/WBE/MBE). The Contractor receiving the award of the Contract shall be required to obtain from each of its sub-contractors and submit to the contracting or administering agency prior to the performance of any work under said Contract a certification by said sub-contractor, regardless of tier, that it will comply with the minority manpower ration and specific affirmative steps contained in the EEO/AA Program.

DATE: _____

SIGNATURE: _____

CERTIFICATE OF COMPLIANCE WITH STATE TAX LAWS AND
WITH UNEMPLOYMENT COMPENSATION CONTRIBUTION REQUIREMENTS

Pursuant to M.G.L., Ch. 62C, §49A and M.G.L. Ch. 151A, §19A, I, _____

_____ authorized signatory for _____

_____ whose principal place of business is at

_____

do hereby certify under penalties of perjury that has filed all state tax returns and paid all taxes as required by law and has complied with all state laws pertaining to contributions to the unemployment compensation fund and to payments in lieu of contributions.

The Business Organization Social Security Number or Federal Identification Number is:

_____

Signed under the penalties of perjury the _____ day of 20 _____

Signature: _____

Name and Title: _____

If a corporation, complete below or attach to each signed copy of a contract a notarized copy of vote of corporation authorizing the signatory to sign this contract. If attesting clerk is same as individual executing contract, have signature notarized below.

At a duly authorized meeting of the Board of Directors of the

_____ held on _____
(Name of Corporation) (Date)

at which all the Directors were present or waived notice, it was VOTED that,

_____ _____
(Name) (Officer)

of this company be and hereby is authorized to execute contract and bonds in the name and behalf of said company, and affix its corporate seal thereto, and such execution of any contract or obligation in this company's name on its behalf by such _____
(Officer)

of the company, shall be valid and binding upon this company.

I hereby certify that I am the Clerk of the _____

that _____ is the duly elected

_____ of said company, and that the above vote has

not been amended or rescinded and remains in full force and effect as of the date of this contract.

a true copy,
ATTEST _____
Clerk

Place of Business _____
Corporate
_____Seal

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____

DAY OF _____, 20 _____.

_____
NOTARY PUBLIC

# STATEMENT OF WAGE COMPLIANCE

DATE: _____

I, _____
(Name of Signatory Party) (Title)

do hereby state:
That I pay or supervise the payment of the persons employed by _____

_____on the _____

_____(Contractor, sub-contractor
of public body) Building 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 Section Twenty-seven (27) and Twenty-seven A (27A) of Chapter One Hundred and Forty Nine (149) of the General Laws.

Signature: _____

Title: _____
(Signed under penalties of perjury as provided for under Section 27B of Chapter 149, General Laws.)

**CERTIFICATIONS REQUIRED BY LAW**
**PUBLIC CONSTRUCTION CONTRACTS**

**You must COMPLETE and SIGN the following certifications. You must also print, at the bottom of this page, the name of the contractor for whom these certifications are submitted.**

**TAX COMPLIANCE**

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b), I, the undersigned, authorized signatory for the below named contractor, do hereby certify under the pains and penalties of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

**NON-COLLUSION**

The undersigned 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 subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

**PUBLIC CONTRACTOR DEBARMENT**

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

**COMPLETE AND SIGN BELOW:**

Authorized Person's Signature

Date

Print Name & Title of Signatory

Name of Contractor

**CERTIFICATE OF NON-USE OF HUMAN TRAFFICKING**

**The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith COMPLIANCE WITH Executive order EO 1-2019. Contractor certifies that its firm has not been found to have engaged or promoted—directly or indirectly—human trafficking as defined in the aforementioned Executive Order.**

_____, _____

**(Signature of person signing bid or proposal)** **Date**

_____

**(Name of business)**

# FEDERAL DEBARMENT CERTIFICATION FORM

## Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension (1986) and Executive Order 12689, Debarment and Suspension (1989) at 2 C.F.R. Part 180.

**(BEFORE COMPLETING CERTIFICATION, READ THE INSTRUCTIONS ON THE WHICH ARE AN INTEGRAL PART OF THE CERTIFICATION)**

(1) The prospective recipient of Federal assistance funds certifies, by Response, that it is in compliance with the requirements of 2 C.F.R. Part 180 and that neither it, its principals, nor its subcontractors are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective recipient of Federal assistance funds is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this Response.

## ATTESTATION

By signing this report, I certify to the best of my knowledge and belief that the foregoing is true, complete, and accurate. I am aware that any false, fictitious, or fraudulent information, or the omission of any material fact, may subject me to criminal, civil or administrative penalties for fraud, false statements, false claims or otherwise. (U.S. Code Title 18, Sections 3729-3730 and 3801-3812).

Company Name

Name and Title of Authorized Representative

Signature Date

## FEDERAL DEBARMENT CERTIFICATION FORM (CONTINUED)

### Instructions for Certification

1. By signing and submitting this Response, the prospective recipient of Federal assistance funds is providing the certification as set out below.

2. The certification in this class is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective recipient of Federal assistance funds knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department of Labor (DOL) may pursue available remedies, including suspension and/or debarment.

3. The prospective recipient of Federal assistance funds shall provide immediate written notice to the person to which this Response is submitted if at any time the prospective recipient of Federal assistance funds learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The prospective recipient of Federal assistance funds agrees by submitting this Response that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the DOL.

5. The prospective recipient of Federal assistance funds further agrees by submitting this Response that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

**BYRD ANTI-LOBBYING AMENDMENT**

Contractors who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

**APPENDIX A, 44 C.F.R. PART 18 – CERTIFICATION REGARDING LOBBYING – REQUIRED FOR CONTRACTS OVER $100,000**

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “Disclosure Form to Report Lobbying,” in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Contractor,_____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

# 2CFR200 Appendix II Contract Provisions
# FOR CONTRACTS UTILIZING FEDERAL FUNDING

The work to be completed pursuant to this RFP is funded in whole or in part by American Rescue Plan Act (ARPA) State and Local Fiscal Recovery Funds (SLFRF) under Federal Assistance Listing Number (ALN) 21.027. The following terms will become a part of each solicitation (Bid/RFP) package. The Federal Government is not a party to the contract and is not subject to any obligations or liabilities to the City of Everett, Company, or any other party pertaining to any matter resulting from the contract.

## INDEX


1. Remedies for Breach of Contractual Agreement; Sanctions and Penalties.
2. Termination for Cause and Convenience.
3. Clean Air Act.
4. Debarment and Suspension (Executive Orders 12549 and 12689).
5. Procurement of recovered materials (2 C.F.R. § 200.323).
6. Prohibition on certain telecommunications and video surveillance services or equipment (2 C.F.R. § 200.216).
7. Domestic preferences for procurements (2 C.F.R. § 200.322).
8. Equal Employment Opportunity Clause.
9. Davis-Bacon Act.
10. Contract Work Hours and Safety Standards.
11. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352).
12. Rights to inventions made under a contract or agreement.

## 1. REMEDIES FOR BREACH OF CONTRACTUAL AGREEMENT; SANCTIONS AND PENALTIES

APPLICABILITY: This provision shall apply in the event that the Contract or Purchase Order exceeds the Simplified Acquisition Threshold. See 2 CFR § 200 App. II(A).

It is hereby understood and mutually agreed, by and between the Company and the City, that the date of beginning and the time for completion of the work to be done hereunder are material conditions of the Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall be commenced on a date to be specified in the "Notice to Proceed".

The Company agrees that said work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Company and the City, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

If the said Company shall neglect, fail or refuse to complete the work within the time herein specified, or any extension thereof granted by the City, then the Company does hereby agree, as a partial consideration for the awarding of this Contract, to pay the City the amount specified in the Contract, not as a penalty but as liquidated damages for such Breach of Contract as hereinafter set forth, for each and every calendar day the Company shall be in default after the time stipulated in the Contract for completing the work.

The said amount of liquidated damages is fixed and agreed upon by and between the Company and the City because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the City would sustain in such event and said amount shall be retained from time to time by the City from current periodic estimates.

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

(a) Any preference, priority or allocation order duly issued by the government;

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

(c) Any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article.

PROVIDED FURTHER, that the Company shall within ten (10) days from the beginning of such delay, unless the City shall grant a further period of time prior to the date of final settlement of the Contract, notify the City, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the Company within a reasonable time of its decision in the matter. The amount of liquidated damages for this project shall be Five Hundred Dollars ($500.00) per consecutive calendar day.

**2. TERMINATION FOR CAUSE AND CONVENIENCE**

APPLICABILITY: This provision shall apply in the event that the Contract or Purchase Order exceeds $10,000.00. See 2 CFR 200 App. II(B).

Where the Contract exceeds $10,000.00, the City may terminate this Contract by providing the Company with ten (10) days' written notice specifying the reasons for termination, as outlined below:

(a) Violation of any of the provisions of this Contract by the Company or any of their subcontractors;

(b) A determination by the City that the Company has engaged in fraud, waste, mismanagement,

(c) misuse of funds, or criminal activity with any funds provided by this Contract; or

(d) Failure of the Company, for any reason, to fulfill in a timely and proper manner their obligations under this Contract, including compliance with applicable Federal, State and/or local law or regulations, and such procedures or guidelines as may be established.

If the City determines that a continuation of work on the project would endanger the life, health or safety of those working or living at or near the project site, or that immediate action is necessary to protect public funds and/or property, the City may suspend work or terminate this agreement by providing notice to the Company in the form of a telegram, mailgram, hand-carried letter, or other appropriate written means.

In addition, notwithstanding anything to the contrary in the Contract, the City may also terminate this Contract for its conveniences, including due to the lack of sufficient funds to complete the work. In such event, the City shall provide written notice of termination to the Company, and the Company shall thereupon cease all work other than work that is required to make the work and surrounding property safe, and the City shall pay the Company for all work performed in accordance with the terms of the Contract up to the date of the Contract, provided the Company shall not be entitled to any termination (or similar) damages or other costs and expenses that may be associated with a termination for convenience.

**3. CLEAN AIR ACT**

APPLICABILITY: This provision shall apply in the event that the Contract or any subgrant thereunder is a sum in excess of $150,000.00.
See 2 CFR § 200 App. II(G)

Company shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401–7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251–1387). Company further acknowledges and understands that Company shall be required to report any violations of said acts to the Federal awarding agency and the Regional Office of the Environmental Protection Agency.

## 4. DEBARMENT AND SUSPENSION (EXECUTIVE ORDERS 12549 AND 12689)

APPLICABILITY: This provision shall apply to all Contracts.

Company certifies that neither Company nor any employer or subcontractor is a party listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared in-eligible under statutory or regulatory authority other than Executive Order 12549.

## 5. PROCUREMENT OF RECOVERED MATERIALS (2 C.F.R. § 200.323)

APPLICABILITY: This provision shall all apply to all Contracts.
See 2 CFR § 200 App. II(J); 2 CFR § 200.323.

Company acknowledges and understands that, in performing the work specified under this contract, Company shall be required to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

## 6. PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT (2 C.F.R. § 200.216)

APPLICABILITY: This provision shall all apply to all Contracts.
See 2 CFR § 200 App. II(K); 2 CFR § 200.216.

Company certifies that it shall not procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, Company covenants not to procure, obtain, use, or use systems that incorporate: video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities); or Telecommunications or video surveillance services provided by such entities or using such equipment; or Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

**7. DOMESTIC PREFERENCES FOR PROCUREMENTS (2 C.F.R. § 200.322)**

APPLICABILITY: This provision shall all apply to all Contracts. See 2 CFR § 200 App. II(L); 2 CFR § 200.322.

(a) As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.

(b) For purposes of this section:

(1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

(2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

**8. EQUAL EMPLOYMENT OPPORTUNITY CLAUSE**

APPLICABILITY: This provision shall apply in the event that the Contract meets the definition of "federally assisted construction contract" as set forth at 41 CFR § 60–§1.3, where not otherwise provided under 41 CFR Part 60. See 2 CFR § 200 App. II(C). All contracts that meet the definition of "federally assisted construction contract" set forth at 41 CFR § 60–1.3.

During the performance of this Contract, the Company agrees as follows:

(a) The Company will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Company will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Company agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(b) The Company will, in all solicitations or advertisements for employees placed by or on behalf of the Company, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(c) The Company will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Company's legal duty to furnish information.

(d) The Company will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Company's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(e) The Company will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(f) The Company will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(g) In the event of the Company's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Company may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(h) The Company will include the portion of the sentence immediately preceding paragraph (a) and the provisions of paragraphs (a) through (h) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Company will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

## 9. DAVIS-BACON ACT

APPLICABILITY: This provision shall apply to all prime construction contracts in excess of $2,000.00. See 2 CFR § 200 App. II(D). **For projects in which the only Federal funds used are ARPA State and Local Fiscal Recovery Funds, the below certification only need be provided if the total project value is $10,000,000.00 or more.**

DAVIS-BACON PREVAILING WAGE

The Company acknowledges that the decision to award this Contract is conditioned upon Company's acceptance of the wage determination, and upon continuing compliance with the Davis–Bacon Act (40 U.S.C. 3141–3144, and 3146–3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). Pursuant to the Davis-Bacon Act, Company's must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in the Secretary of Labor's wage determinations, incorporated into this Contract. Company further acknowledges and understands that Company shall be required to pay wages not less than once a week.

DAVIS-BACON PREVAILING WAGE CERTIFICATION

Company certifies that Company and all subcontractors shall provide certified payroll affidavits verifying compliance with G.L. c.149 §§ 26–27H, the federal Davis Bacon Act, and other related acts.

In the event of any inconsistency between the Davis-Bacon Wage Rates and any prevailing wage rates published by the Commonwealth of Pennsylvania and applicable to this
Contract, the higher of the two wages shall apply.

_____
Signature of Company's authorized official Date: _____

_____
Name (printed)

_____
Title (printed)

## 10. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

APPLICABILITY: This provision shall apply in the event that the contract is awarded for a sum exceeding $100,000.00 and involves the employment of mechanics or laborers.

Where the Contract: (1) is awarded for a sum exceeding $100,000; and (2) will involve the employment of mechanics or laborers, the Company shall comply with the Contract Work Hours and Safety Standards Act, 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5).

Pursuant to 40 U.S.C. 3702 of the Contract Work Hours and Safety Standards Act, Company shall be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 shall apply construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

## 11. BYRD ANTI-LOBBYING; COPELAND "ANTI-KICKBACK" ACT (40 U.S.C. § 3145)

APPLICABILITY: This provision shall all apply to all Contracts. In the event that the Contract is for a sum exceeding $100,000.00, the Company shall also certify and file the Byrd Anti-Lobbying Amendment Certification.

BYRD ANTI-LOBBYING AMENDMENT

Company certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. § 1352.

Company further understands and acknowledges that it shall disclose any lobbying with non–Federal funds that takes place in connection with obtaining any Federal award. Such disclosures shall be forwarded from tier to tier up to the non–Federal award.

COPELAND "ANTI-KICKBACK" ACT

Company acknowledges and understands that the awarding of this contract is conditioned upon Company's compliance with the Federal Copeland "Anti–Kickback" Act (40 U.S.C. § 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each Company or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non–Federal entity must report all suspected or reported violations to the Federal awarding agency.

BYRD ANTI-LOBBYING AMENDMENT:
REQUIRED CERTIFICATION FOR AWARDS EXCEEDING $100,000

The undersigned certifies, to the best of their knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.[1]

The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all Companies shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Bidder certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the bidding party understands and agrees that the provisions of 31 U.S.C. Ch. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

_____ Date: _____
Signature of Company's authorized official

_____
Name (printed)

_____
Title (printed)

1 Standard Form-LLL available at https://www.grants.gov/web/grants/forms/post-award-reporting-forms.html.

## 12. RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT

APPLICABILITY: This provision shall apply in the event that the Contract is funded by a Federal award meeting the definition of "funding agreement' under 37 CFR § 401.2(a). A "funding agreement" is "any contract, grant, or cooperative agreement entered into between any Federal agency… and any Company for the performance of experimental, developmental, or research work funded in whole or in part by the Federal government."

In the event that this Contract is funded by a Federal award meeting the definition of "funding agreement" under 37 C.F.R. § 401.2(a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 C.F.R. Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

**ATTACHMENT**

**DAVIS-BACON**

**WAGE RATES**

_____
Signature of Contractor's Authorized Official

_____
Name and Title of Contractor's Authorized Official

_____
Date

FORM W9
REQUEST FOR TAXPAYER IDENDIFICATION NUMBER AND CERTIFICATION


# City of Everett, Massachusetts
## Finance Department
484 Broadway
Everett, MA 02149
Tel: (617) 394-2214
Fax: (617) 394-2453


**VENDOR INFORMATION REQUEST FORM**

The information requested on this form is designed to help the City identify the types of work your company may be qualified to perform and to flag areas that may require further discussion prior to awarding a purchase order or contract. The intent of this form is to expedite the purchasing process by identifying potential issues early in the process. You are not restricted to the below space and pages, please add pages if necessary. Please contact the Finance Department with any questions.

***(Answering "No" to any of the following questions may not disqualify you from doing business with the City. Incomplete or blank boxes will result in unnecessary delays and the form may be rejected. Please be as thorough as possible.)***

| **List the City Department requesting the Service or Goods:** | |
|---|---|

**Business Information**

| | | | |
|---|---|---|---|
| 1. | Business Name | | |
| 2. | Business Address | | |
| 3. | Website | | |
| 4. | Payee Identification (List only one) | Federal Tax ID #: | |
| | | Social Security #: | |

5. Type of Organizational Structure

| | | C | S | LLC |
|---|---|---|---|---|
| Corporation | | Type | | | |
| Partnership | | | | |
| Sole Proprietor | | Non-Profit | | |

6. Parent Company

7. Type of Organization (Please check all that apply)

| | | | |
|---|---|---|---|
| Service | | Supplies / Materials | |
| Consulting | | Other: | |
| Construction | | | |

8. Describe the nature of products/services.

| | Yes | No |
|---|---|---|
| 9. Are your services or goods you are providing on the State bid list? | | |

11. Does your insurance coverage meet the City's requirement?

| | | | |
|---|---|---|---|
| General Commercial Liability | $5,000,000 per occurrence Minimum | | |
| Automobile Liability | $2,000,000 per accident Minimum | | |
| Employer's Liability | $2,000,000 per accident Minimum | | |
| Workers' Compensation | Statutory Limits Minimum | | |

12. Do you or your company have a Drug Screening Program?
13. Do you or your company perform employee background checks?
14. Do you or your company adhere to a code of ethics?
15. Have you or your company performed work under a U.S. Government funded program?
16. Federal Contracting Suspension/Debarment: Is your company or any of its principals under debarment, declared ineligible, or voluntarily excluded from covered transactions by any U.S. Government department or agency?
17. Are you aware of the Federal and State Prevailing Wage laws?
18. Does any principal, officer, or manager of the company have a direct family relationshionship with any of the City's elected officials or employees?
19. You have been provided and agree to adhere with the City's policy regarding Authorized Purchases. (see attached)

**Vendor Authorized Representative's Acknowledgement & Signature**

| By signing below, you acknowledge that the information provided on this form is correct. | | | |
|---|---|---|---|
| **Signature Required*** | | Date | |
| Print Name | | Title | |
| Phone | | Cell | |
| E-Mail | | Fax | |
| Complete the below if the contact person responsible for answering questions pertaining to the information on this form is different from the above listed person. | | | |
| Contact | | Title | |
| Phone | | Cell | |
| E-Mail | | Fax | |

For City use only:

Department Head Approval: _____ Date: _____

Chief Financial Officer Approval: _____ Date: _____

# City of Everett, Massachusetts
## Finance Department

**484 Broadway**
**Everett, MA 02149**
**Tel: (617) 394-2210**
**Fax: (617) 394-2453**

**Carlo DeMaria Jr., Mayor**
**Eric J Demas, Chief Financial Officer**


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## Authorized Purchase Policy

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Please be advised that the City of Everett aggressively reviews invoices to effectively monitor and ensure that purchase orders are approved prior to goods and/or services being rendered to the City. In accordance with municipal finance law, the City of Everett will not support payment for goods or services rendered to the City of Everett if they are not supported, prior to receiving those goods or services, by a purchase order and/or contract.

Municipal finance law requires that the City must have a prior appropriation before entering into a contract. These same laws prohibit a department of the City from incurring a liability in excess of an appropriation made for the department or district. [1] Purchase orders or contracts are mechanisms used by the City to ensure that funding is available for a particular good or service. If your company elects to provide a good or service, valid emergencies excluded, without a purchase order or contract, you will not be eligible for payment. In addition, there are four conditions that must be met in order for the City to approve a change order or amendment to a contract. If your company provides additional work or services prior to the execution of a written amendment or change order to the contract you will not be eligible for payment.

It is also required of all vendors to supply the City with a detailed invoice for the good/service being procured. At that point, the City will issue a requisition which will be reviewed and approved by the Purchasing Office and converted to a purchase order. Per M.G.L. c. 41:52, the City Auditor is required to disallow and refuse payment on bills that are deem fraudulent, unlawful, or excessive. Without adequate documentation for invoices submitted for payment, the City Auditor will not be able

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[1] M.G.L. Chapter 44, Section 31. See also M.G.L. Chapter 44, Section 31C relating to construction projects.

to make that determination and will be required to refuse payment until the required documentation is received.

For multi-year contracts, M.G.L. c. 30B requires a prior appropriation sufficient to fund the current year prior to the award of the contract and the continuation of the contract in subsequent years is contingent on the appropriation of funds. Vendors are required to secure a purchase order on a fiscal year basis.

If you have any questions or concerns, please do not hesitate to contact the Finance Department.

CONSTRUCTION PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____
(Name of Contractor)

a _____ hereinafter called "Principal" and
(Corporation, Partnership, Joint Venture or Individual)

_____of _____, State of _____
(Surety) (City & State)

_____ hereinafter called the "Surety" and licensed by the State Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the City of Everett, Massachusetts, hereinafter called "City", in the sum of _____ Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the City, dated the _____ day of _____, 20___ (the "Construction Contract"), for the construction described as follows:

**WOODLAND STREET PLAYGROUND RENOVATION**

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of the Construction Contract during the original term thereof, and any extensions thereof which may be granted by the City, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under the Construction Contract, and shall fully indemnify and save harmless the City from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the City all outlay and expense which the City may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the Surety's obligation under this Bond shall arise after (1) the City has declared the Principal in default of the Construction Contract or any provision thereof or (2) has declared that the Principal has failed, or is otherwise unable or unwilling, to execute the work consistent with, and in conformance to, the Construction Contract (collectively referred to as a "Contractor Default"). The determination of a Contractor Default shall be made solely by the City. The City need not terminate the Construction Contract to declare a Contractor Default or to invoke its rights under this Bond.

When the Surety's obligation under this Bond arises, the Surety, at its sole expense and at the consent and election of the City, shall promptly take one of the following steps: (1) arrange for the Principal to perform and complete the work of the Construction Contract: (2) arrange for a contractor other than the Principal to perform and complete the work of the Construction Contract; (3) reimburse the City, in a manner and at such time as the City shall decide, for all costs and expenses incurred by the City in performing and completing the work of the Construction Contract. Surety will keep City reasonably informed of the progress, status and results of any investigation of any claim of the City.

If the Surety does not proceed as provided in this Bond with due diligence and all deliberate speed, the Surety shall be deemed to be in default of this Bond, and the City shall be entitled to enforce any remedy available to the City.

After the Surety's obligation under this Bond arises, the Surety is obligated, to the limit of the amounts of this Bond, for (1) the correction of defective work and completion of the Construction Contract; (2) additional design, professional services, and legal costs, including attorneys' fees, resulting from the Contractor Default or from the default of the Surety under this Bond; (3) any additional work beyond the Construction Contract made necessary by the Contractor Default or default of the Surety under this Bond; (4) indemnification obligation of the Principal, if any, as provided in the Construction Contract; and (5) liquidated damages as provided in the Construction Contract, or if none are so specified, actual and foreseeable consequential damages resulting from the Contractor Default or default of the Surety under this Bond.

Any proceeding, legal or equitable, under this Bond shall be instituted in any court of competent jurisdiction in the Commonwealth of Massachusetts.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Construction Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way 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 Construction Contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in _____ ( ) counterparts, each one of which shall be deemed an original, this the _____ day of_____, 20 _____.

ATTEST:

_____
Principal

_____ By _____
(Principal Secretary)

_____

_____

_____
(Address-Zip Code)

_____ (SEAL)
Witness as to Principal

_____

_____
(Address-Zip Code)

ATTEST:

_____
Surety

_____ By _____
(Attorney-in-Fact)

_____

_____

(Address-Zip Code)

_____ (SEAL)

Witness as to Surety

_____

_____

(Address-Zip Code)

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

CONSTRUCTION PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____

_____ a _____
(Name of Contractor) (Corporation, Partnership, Joint Venture or Individual)

hereinafter called "Principal" and _____ of _____,
(Surety)

State of _____ hereinafter called the "Surety" and licensed by the State
(City and State)

Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the City of _____, Massachusetts, hereinafter called "City", in the penal sum of _____ Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the City, dated the _____ day of _____, 20___, for the construction described as follows:

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

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way 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 this contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the City and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in ____ ( ) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20__.

ATTEST:

_____
Surety

_____ By _____
(Attorney-in-Fact)

_____

_____
(Address-Zip Code)

_____ (SEAL)
Witness as to Surety

_____

_____
(Address-Zip Code)

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

ATTACHMENT “A”
PREVAILING WAGE RATES

# CITY OF EVERETT, MASSACHUSETTS

## AGREEMENT BETWEEN OWNER AND CONTRACTOR

This **AGREEMENT** (the "Agreement") is made and entered into as of the ___ day of ____, 20__ by and between the Owner and the Contractor in connection with the Project, all as defined below, pursuant to the applicable provisions of Massachusetts General Laws, Chapter 30, § 39M.

**Owner:** **City of Everett, Massachusetts**
**484 Broadway**
**Everett, Massachusetts 02149**

**Contractor:** _____
_____
_____

**Project:** _____
**(City Project No. _ENG-25-66 _____)**

**Landscape Architect: __Bohler, LLC_____**

**Landscape Architect's Representative: _Leslie Fanger**

**Owner's Representative: City of Everett Engineering Dept._____**

**Owner's Representative Contact Person: Erik Swanson_____**

**Contractor's Project Team:** **Project Executive: _____**
**Project Manager: _____**
**Project Superintendent: _____**

In consideration of the mutual agreements and covenants of the Owner and the Contractor (collectively, the "Parties") set forth herein, the Parties hereby agree as follows:

## ARTICLE 1

## DEFINITIONS & EXHIBITS

**1.1** Definitions. Capitalized terms not defined in this Agreement shall have the meanings defined elsewhere in this Agreement or in the General Conditions of the Contract for Construction or in other provisions of the Contract Documents. In the event of conflict in the definitions of capitalized terms, the definitions set forth in this Agreement shall take precedence followed by definitions in the General Conditions.

**1.2** Exhibits. The following is a list of the documents which, when completed or provided, shall become exhibits to this Agreement, each of which is incorporated into this Agreement by reference and shall be deemed a part hereof:

| Exhibit | Description |
|---|---|
| A | List of Specifications |
| B | List of Drawings |
| C | List of Addenda |
| D | Equal Employment Opportunity Requirements |
| E | Affirmative Action Requirements |
| F | Form of Project Workforce Monthly Report |
| G | Certificates of Insurance |
| H | Certificate of Vote of Authorization |
| I | Performance and Payment Bonds |
| J | Insurance Requirements |

**1.3** Applicable Statutory Provisions. This Project is subject to certain statutory provisions. The applicable statutory provisions are enumerated in the General Conditions and in the Special Conditions of the Contract of the Specifications and shall be deemed incorporated in the Contract Documents in their entirety to the extent such statutory provisions apply to this Project. Any other provisions required by statute to be included herein but not set forth in the Contract Documents shall be deemed to be so included. In case of a conflict between the provisions of the Contract Documents and the provisions of any applicable statute, the statutory provisions shall govern.

## ARTICLE 2

## THE WORK

**2.1** Scope of the Work. The Work of the Project includes all labor, materials, equipment, tools, supplies, supervision, coordination, administration, and all other items or services required to fully complete the Project as described in the Contract Documents or as may be reasonably inferable therefrom. The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others. The Contractor shall ensure that the Work is completed within the Contract Time at a cost no greater than the Contract Sum, as further provided in Article 4 and elsewhere in the Contract Documents.

**2.2** Contract Documents. The Contract Documents consist of this Agreement and the Exhibits hereto, the General Conditions of the Contract for Construction, the Supplementary General Conditions, if any, Drawings, Specifications, Change Orders, other written amendments to this Agreement duly executed by the Owner and the Contractor, Construction Change Directives, Performance Bond, Labor and Material Payment Bond, and all other documents set forth or incorporated by reference herein or elsewhere in the Contract Documents. The Contract Documents are all as fully a part of this Agreement as if attached to this Agreement and repeated herein and together constitute the "Agreement" or the "Contract." The Contract represents the entire and integrated agreement between the parties hereto and supersede prior negotiations, representations or agreements, either written or oral.

**2.3** Representations. In addition to other representations set forth in the Contract Documents, the Contractor represents that it is a duly-licensed and registered business entity which is experienced and skilled in construction of projects of the type, magnitude, and complexity described in the Contract Documents and that it is familiar with the special problems, regulations, and requirements of construction of the type required hereunder. The Contractor further represents that it is fully cognizant of all aspects of the overall development of the Site as described by the Owner and of the relationship of the Project to such overall development, and that it will furnish, at a cost not to exceed the Contract Sum, a complete and fully operable Project as indicated by or reasonably inferable from the Contract Documents.

## ARTICLE 3

## CONTRACT TIME

**3.1** The Contractor shall commence performance upon the issuance of a Notice to Proceed by the Owner for a portion, or all, of the Work. The period of time from the date of the initial Notice to Proceed to the Final Completion Date, together with any valid extensions thereof approved by the Owner in accordance with the Contract Documents, shall constitute the Contract Time. The Contractor shall achieve Substantial Completion of the entire Work on or before _May 15, 2026_____. Final Completion of the entire Work shall be achieved fourteen (14) calendar days after the date of Substantial Completion.

**3.2** The Contractor shall proceed to carry out the Work in a timely, diligent and continuous manner in accordance with the requirements of the Project Schedule and all other Contract Documents and in accordance with the directions of the Owner so as to ensure (i) Substantial Completion of the Work, or any specified portion thereof, on or before the Substantial Completion Date, and (ii) Final Completion of the Work, or any specified portion thereof, on or before the Final Completion Date, as such dates may be extended as provided in the Contract Documents.

**3.3** It is understood and agreed that the time of commencement and the dates of Substantial Completion and Final Completion of the Work are material conditions of this Agreement, and that TIME IS OF THE ESSENCE of this Agreement.

## ARTICLE 4

## CONTRACT SUM

**4.1** Contract Sum. The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract in accordance with the requirements of the Contract Documents. The Contract Sum is hereby established as _____ Dollars ($_____), subject to additions and deductions as provided in the Contract Documents.

**4.2** Alternates. The Contract Sum is based on, and inclusive of, the following alternates: ____ Not Applicable

| No. | Description | Price |
|---|---|---|
| X | (Insert alternate description here) | $ |

**4.3** Unit Prices. Unit prices, if any, applicable to this Contract are as follows:

| No. | Description | Unit | Price |
|---|---|---|---|
| X | (Insert alternate description here) | per _____ | $ |

**4.4** Pricing of Alternates and Unit Prices. The Alternate Prices and Unit Prices specified shall include all services, labor, materials, supplies, equipment, transportation, taxes, insurance, bonds, permits and all other expenses, including overhead, superintendence and profit required to complete the alternate or unit price Work. Unless otherwise specified, the Alternate Prices and Unit Prices listed in this Article 4 shall be applicable to both increases and decreases in the Contract Sum on an equal basis.

**4.5** Variation in Estimated Quantities. The quantities contained in the Agreement are set forth as a basis for the comparison of bids only and may not necessarily reflect the actual quantity of Work required to be performed. The Authority reserves the right to increase, decrease or eliminate the quantity of any particular item of Work. Where the actual quantity of an item

varies by more than 25 percent above or below the estimated quantity stated in the Agreement, an equitable adjustment in the Contract Price for that pay item shall be negotiated upon demand of either party regardless of the cause of the variation in quantity. No allowances will be made for loss of anticipated overhead costs or profits suffered or claimed by the Contractor resulting directly or indirectly from such increased, decreased or eliminated quantities or from unbalanced allocation among the contract items from any other cause. It is the intention of this provision to preserve the bid basis while limiting the Contractor's risk exposure to 25% of each bid quantity. In the case of an overrun, the Contractor will be compensated at the Contract Unit Price for a quantity up to 125% of the Contract quantity. The adjusted unit price shall only be applied to that quantity above 125% of the contract quantity. Neither party shall be required to demonstrate any change in the cost to perform the work based solely on the overrun. The original Contract unit bid price shall have no bearing on determining the adjusted unit price for an overrun. The adjusted unit price shall be based on the estimated cost of performing the added work over 125% of the bid quantity. To assist the Engineer in the determination of an equitable adjustment for an overrun, the Contractor shall prepare a submission in the following manner and accept as full payment for work or materials an amount for an equitable adjustment in the Contract Price equal to the following: (1) The actual cost or a reasonable cost estimate for direct labor, material (less value of salvage, if any) and use of equipment, plus 10 percent of this total for overhead; (2) Plus actual cost or a reasonable cost estimate of Worker's Compensation and Liability Insurance, Health, Welfare and Pension Benefits, Social Security deductions and Employment Security Benefits; (3) Plus 10 percent of the total of (1) and (2) for profit and other unallocated costs; (4) Plus the estimated proportionate cost of surety bonds. No allowance shall be made for general superintendence and the use of small tools and manual equipment.

**4.6** Insurance. The Owner and Contractor shall purchase and maintain insurance and bonds in accordance with the requirements of the Contract Documents. The Contractor shall carry insurance coverages with limits no less than those identified on **Exhibit J**, attached hereto.

## ARTICLE 5

## PAYMENTS

**5.1** Based upon Applications for Payment submitted to the Engineer by the Contractor in accordance with Section 10.2 of the General Conditions and Certificates for Payment issued by the Engineer in accordance with Section 10.3 of the General Conditions, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

**5.2** Prior to Substantial Completion, progress payments will be made in amounts equal to the percentage indicated below but, in each case, less than the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract Documents.

(1) 95% of Work competed (with the balance being retainage)

(2) 95% percent of the cost of materials and equipment not incorporated in the Work but which satisfies the requirements of the General Conditions (with the balance being retainage)

**5.3** Upon satisfaction of the Substantial Completion procedures set forth in Section 10.7 of the General Conditions, Owner shall pay an amount sufficient to increase total payments to Contractor to 99% of Work completed, less such amounts as Engineer may determine or Owner may withhold in accordance with the Contract Documents.

**5.4** Upon Final Completion and Acceptance of the Work and satisfaction of the procedures set forth in Section 10.8 of the General Conditions, the Owner shall pay the remainder of the Contract Sum as recommended by Engineer as provided in the General Conditions.

## ARTICLE 6

## OTHER PROVISIONS

**6.1** No Personal Liability. No member, officer, director, principal, joint venturer, beneficiary, trustee, representative, consultant, volunteer participant, employee, agent or representative of the Owner or the Contractor shall be personally liable to the other party under any term or provision of this Contract for any payment obligations or otherwise, or because of any breach hereof, each party agreeing to look solely to the assets of the other party for the satisfaction of any liability hereunder.

**6.2** Consequential Damages. In no event shall the Owner be liable to the Contractor except for payment for Work performed pursuant to and in accordance with the Contract Documents, nor shall the Owner ever be liable to the Contractor for indirect or consequential damages of any name or nature.

**6.3** Termination or Suspension. This Agreement may be terminated or suspended as provided in Articles 16 and 17, respectively, of the General Conditions and as provided elsewhere in the Contract Documents.

**6.4** Certification Relating to Tax Compliance. Pursuant to M.G.L. c. 62C, § 49A, the individual signing this Contract on behalf of the Contractor hereby certifies, under the penalties of perjury, that to the best of his or her knowledge and belief the Contractor has complied with any and all applicable state and federal tax laws.

**6.5** Certification Relating to Debarment. The individual signing this Contract on behalf of the Contractor further certifies under penalties of perjury that the Contractor is not presently debarred from doing public construction work in the Commonwealth under the provisions of M.G.L. c. 29, § 29F, or any other applicable debarment provisions of any other

chapter of the General Laws or any rule or regulation promulgated thereunder and is not presently debarred from doing public construction work by any agency of the United States.

**6.6** Certification Relating to Health and Safety (M.G.L. c. 30, § 39S). The individual signing this Contract on behalf of the Contractor further certifies: (1) Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and the Contractor shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the Work subject to this Contract have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement under seal in multiple counterparts, each of which shall be deemed to be an original hereof and collectively comprising a fully executed instrument, as of the date and year first above written.

**OWNER:**

CITY OF EVERETT, MASSACHUSETTS

By: _____
Kiara Freeman, Chief Procurement Officer
Hereunto duly authorized

**CONTRACTOR:**

_____

By: _____
Name: _____
Title: _____
Hereunto duly authorized

**Exhibits:**

Exhibit A: List of Specifications
Exhibit B: List of Drawings
Exhibit C: List of Addenda
Exhibit D: Equal Employment Opportunity Requirements
Exhibit E: Affirmative Action Requirements
Exhibit F: Form of Project Workforce Monthly Report
Exhibit G: Certificates of Insurance
Exhibit H: Certificate of Vote of Authorization

Exhibit I: Performance and Payment Bonds
Exhibit J: Insurance Requirements

# EXHIBIT A

## LIST OF SPECIFICATIONS

024100 Site Demolition.pdf

042200-Architectural-Concrete-Masonry-Units-.pdf

260001 ELECTRICAL WORK.pdf

312200 Grading.pdf

312313 Subgrade Preparation.pdf

312500 Erosion & Sedimentation Control.pdf

321012 Tree Protection and Pruning Ex Trees.pdf

321100 Base Course.pdf

321216 Asphalt Concrete Paving.pdf

321243 - Decomposed granite.pdf

321313 Concrete Paving.pdf

321600 Curbs and Sidewalks.pdf

321816.13 Poured in Place Surfacing.pdf

321823- Synthetic Turf.pdf

322800 Site Improvements.pdf

322831 Chain Link Fence.pdf

323119 Decorative Metal Fence.pdf

329100 Planting.pdf

# EXHIBIT B

## LIST OF DRAWINGS

| SHEET TITLE | SHEET NUMBER |
|---|---|
| COVER SHEET | L-101 |
| GENERAL NOTES AND LEGEND | L-102 |
| EXISTING CONDITIONS/DEMOLITION PLAN | L-201 |
| EROSION AND SEDIMENT CONTROL NOTES AND DETAILS | L-202 |
| SITE PLAN | L-301 |
| GRADING AND UTILITY PLAN | L-401 |
| LANDSCAPE PLAN | L-501 |
| LANDSCAPE NOTES AND DETAILS | L-502 |
| IRRIGATION PLAN | I-801 |
| CONSTRUCTION DETAILS | L-901-L-904 |
| ELECTRICAL PLAN | E-1 |
| ELECTRICAL DETAILS | E-2 |
| ELECTRICAL SCHEDULES | E-3 |
| ALTA SURVEY (BY CONTROL POINT ASSOCIATES) | 1 OF 1 |

# EXHIBIT C

## LIST OF ADDENDA

# EXHIBIT D

## EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

1. Definitions. For purpose of this contract, the term "minority" refers to Asian–Americans, Blacks, Spanish Surnamed Americans, North American Indians, and Cape Verdeans. The term "Commission" refers to the Massachusetts Commission Against Discrimination.

2. Obligations. During the performance of this contract, the Contractor and each of its subcontractors, and suppliers (hereinafter collectively referred to as the "Contractor") for themselves, their assignees, and successors in interest, agree as follows:

In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, handicap or sex. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising; recruitment layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship. The Contractor shall post hereafter in conspicuous places on the project site, available for employees and applicants for employment, notices to be provided by the Commission setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (M.G.L. Chapter 151B).

In connection with the performance of work under this contract, the Contractor, shall undertake, in good faith, affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age or sex. A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this construction project undertaken by the Owner.

As part of its obligation under the foregoing section, the Contractor shall use its best efforts to maintain on this project a not less than 15.3% ratio of minority employee person hours to total person hours, and a not less than 6.9% ratio of women employee person hours to total person hours.

3. Compliance with Requirements. To the extent applicable, the Contractor shall comply with the provisions of Executive Order No. 526, which is herein incorporated by reference and made a part of this contract.

4. Solicitations for Trade Contractors or Subcontractors, and for the Procurement of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential trade contractor or subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to equal employment opportunity, non-discrimination and affirmative action.

5. Compliance-Information, Reports and Sanctions. The Contractor will provide all information and reports required by the Owner, and the Contractor will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the Owner to affect the employment of personnel. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Owner and shall set forth what efforts it has made to obtain the information. Without limiting the foregoing, the Contractor shall require all trade contractors and subcontractors to submit to the Contractor a Project Workforce Monthly Report, in the form attached to the Agreement between Owner and Contractor as **Exhibit F**. The Contractor shall submit the Project Workforce Monthly Reports to the Owner on a monthly basis, together with a summary report prepared by the Contractor, in a form satisfactory to the Owner, aggregating the information provided in the trade contractors' and subcontractors' Project Workforce Monthly Reports with the Contractor's own workforce information and showing the monthly and total Project-to-date ratios of minority and women workforce hours.

Whenever the Owner believes the Contractor or any trade contractor or subcontractor may not be operating in compliance with the terms of this Section, the Owner, or its designated agent, may conduct an appropriate investigation, and may confer with the parties, to determine if the Contractor is operating in compliance with the terms of this Section. If the Owner finds the Contractor or any trade contractor or subcontractor not in compliance, it shall make a preliminary report on non-compliance, and notify the Contractor in writing of such steps as will in the judgment of the Owner bring the Contractor into compliance.

6. Severability. The provisions of this Exhibit are severable, and if any of these provisions shall be held unconstitutional or unenforceable by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

7. Equal Employment Opportunity for Persons with Disabilities. In connection with the performance of work under this contract, the Contractor, trade contractors, subcontractors and suppliers of goods and services shall not discriminate against persons with disabilities. Furthermore, the Contractor, trade contractors, subcontractors and suppliers of goods and services must give written notice of their commitments under this Exhibit to any labor union, association or brotherhood with which they have a collective bargaining contract or other agreement.

# EXHIBIT E

## AFFIRMATIVE ACTION REQUIREMENTS

During the performance of this contract, the Contractor and each of its subcontractors and suppliers (hereinafter collectively referred to as the "Contractor") for themselves, their assignees, and successors in interest, agree as follows.

1. Percentage Participation. On this contract, the Contractor shall use best efforts to enter into contracts and subcontracts including contracts with suppliers, distributors and manufacturers who are women/minority business enterprises. The Contractor shall use best efforts to enter into contracts worth a combined total 10.4% of the Contract Sum with W/MBE firms.

2. Definitions.

   a. Women/minority business enterprise ("W/MBE") means any business organization certified by SDO as an MBE or WBE. To be certified as a W/MBE, the minority or women must demonstrate at least 51% ownership and control, according to SDO rules and regulations.

   b. Joint Ventures -

      (1) A joint venture between a certified W/MBE and non-minority or non-WBE shall be certified by SDO as a W/MBE if the certified W/MBE has at least 51% control over the management and receipt of profits of the project bid upon.

      (2) A joint venture between a certified W/MBE subcontractor and a non-W/MBE subcontractor, in which the W/MBE does not exercise more than 51% control over management and profits, shall be entitled to a credit as a W/MBE for the proportion of the joint venture's contract equal to the W/MBE participation in the joint venture.

      (3) Whenever a general bid is filed by a joint venture with a certified W/MBE participant in the joint venture that does not exercise more than 51% control over management and profits, that joint venture shall be entitled to credit as a W/MBE for the portion of the joint venture's price equal to the W/MBE participation in the joint venture.

      (4) Whenever a joint venture with a certified W/MBE participant files a general bid or sub-bid, and requests a credit as a W/MBE, the bid must be accompanied by the pre-bid joint venture agreement for that project. SDO certified joint ventures should submit a copy of SDO certification.

c. Material Supplier - A vendor certified by SDO as a W/MBE engaged in sales to the construction industry from an established place of business or source of supply, which either:

(1) Manufactures goods from raw materials or substantially alters them before resale, entitling the Contractor to W/MBE credit for the full amount of the purchase order; or

(2) Maintains a storage facility for materials utilized in the work, entitling the Contractor to W/MBE credit for 10% of the purchase order.

d. Amount of Participation - The actual dollar amount which will be paid to W/MBE for work performed on this contract, in accordance with Section 2(b) and 2(c).

e. Contractor - Any successful general bidder to whom the Owner makes the contract award.

f. SDO - The Massachusetts Supplier Diversity Office (formerly SOMWBA).

g. Owner - The Massachusetts State College Building Authority.

3. Determination of W/MBE Status.

a. Any Contractor subcontractor, sub–subcontractor or material supplier may apply to SDO for W/MBE status. Applications must be made on the W/MBE application form prepared by SDO. The applicant may request a form from SDO.

b. SDO is responsible for preparing, publishing, and updating a list of certified Women and Minority Owned businesses. The list is published in the Central Register established by G.L. Chapter 9, Section 20A and is available from SDO. Bidders shall rely on the list that is most current at the time the work is advertised and shall use it as a reference source to assist in meeting the requirements of these conditions**.**

**Submission of an application to SDO does not constitute certification.**

4. Compliance with Requirements. To the extent applicable, the Contractor shall comply with the provisions of Executive Order No. 524, which is herein incorporated by reference and made a part of this contract.

# EXHIBIT F

## FORM OF PROJECT WORKFORCE MONTHLY REPORT

**CITY OF EVERETT, MASSACHUSETTS**

**PROJECT WORKFORCE MONTHLY REPORT**

MSCBA Project No._____ Project Name:_____ Project Location:_____

Name of Contractor Filing Report_____

Month Ending:_____ **Minority Participation Goal: 15.3%** **Women Participation Goal: 6.9%**

| | Current Month | | | | | Project To Date | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Job Category** | **Total Monthly Workforce Hours** | **Total Monthly Workforce Hours** | | **Monthly % of Workforce Hours** | | **Total Workforce Hours** | **Total Workforce Hours To Date** | | **% of Workforce Hours To Date** | |
| | | **Minority** | **Women** | **Minority** | **Women** | | **Minority** | **Women** | **Minority** | **Women** |
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# EXHIBIT G

## CERTIFICATES OF INSURANCE

# EXHIBIT H

## CERTIFICATE OF VOTE OF AUTHORIZATION

AT A DULY AUTHORIZED MEETING OF THE BOARD OF DIRECTORS OF THE [NAME OF CORPORATION] held on [DATE], at which a quorum of the Directors were present or waived notice, it was voted that [NAME AND TITLE] of this company be and hereby is authorized to execute contracts and bonds in the name and behalf of said company, and affix its Corporate Seal thereto, and such execution of any contract or bond of obligation in this company's name on its behalf of such [OFFICER] under seal of the company shall be valid and binding upon this company.

A TRUE COPY,

ATTEST: _____

Place of Business:
_____
_____

I hereby certify that I am the [TITLE] of the [NAME OF CORPORATION] and that [NAME OF OFFICER] is the duly elected [TITLE] of said company, and the above vote has not been amended or rescinded effect as of the date of this contract.

Signature: _____
Name/Title: _____
Date: _____

(Corporate Seal)

COMMONWEALTH OF MASSACHUSETTS, SS. _____, 20__

Then personally appeared the above named _____ and acknowledged the foregoing instrument to be his/her free act and deed before me.

NOTARY PUBLIC _____
My commission expires: _____

# EXHIBIT I

## PERFORMANCE AND PAYMENT BONDS

# EXHIBIT J

## CITY OF EVERETT, MASSACHUSETTS
## STANDARD INSURANCE LIMIT REQUIREMENTS

The following minimum insurance limits shall apply to the Contract and be provided by the Contractor. The Contractor shall refer to the Contract Documents for all other insurance requirements relating to this Contract.

| Coverage | Estimated Construction Cost | General Contractor |
|---|---|---|
| **General Liability**[1] | - | $1,000,000 per Occurrence/<br>$2,000,000 Aggregate |
| **Auto**[2] | - | $1,000,000 each accident |
| **Worker's Compensation** | - | Statutory |
| **Employers Liability** | **under $1m** | $500,000 Each Accident<br>$500,000 Disease - Each Employee<br>$500,000 Disease - Policy Limit |
| **Employers Liability** | **$1m and over** | $1,000,000 Each Accident<br>$1,000,000 Disease - Each Employee<br>$1,000,000 Disease - Policy Limit |
| **Excess/Umbrella** | **under $1m** | $2,000,000 Per Occurrence<br>$2,000,000 Aggregate or Higher |

[1] Must evidence per location aggregate or per project aggregate.

[2] Combined single limit

| Coverage | Estimated Construction Cost | General Contractor |
|---|---|---|
| **Excess/Umbrella** | **between $1m and $5m** | $5,000,000 Per Occurrence<br>$5,000,000 Aggregate or Higher |
| **Excess/Umbrella** | **under $10m** | $10,000,000 Per Occurrence<br>$10,000,000 Aggregate or Higher |
| **Excess/Umbrella** | **$10m and over** | $20,000,000 Per Occurrence<br>$20,000,000 Aggregate or Higher |
| **Contractor's Pollution Liability** | **-** | $5,000,000 per occurrence and $5,000,000 Annual Aggregate or higher. |
| **Drone/UAV Aircraft Liability**[3] | **-** | No less than $2,000,000 |

[3] Required only if the work of the vendor includes operation, or arranging for the operation, of unmanned aerial systems (i.e., drones) services.

**CIT OF EVERETT, MASSACHUSETTS**

# GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

**to the**

## AGREEMENT BETWEEN OWNER AND CONTRACTOR PURSUANT TO M.G.L. CHAPTER 30, § 39M

**Dated as of:**

**by and between**

**CITY OF EVERETT, MASSACHUSETTS**

**AS OWNER**

**and**

**TBD**
**AS CONTRACTOR**

**Project:** #ENG-25-66

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# GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

## ARTICLE 1 DEFINITIONS; CONTRACT DOCUMENTS

### 1.1 DEFINITIONS

Wherever used in the Contract Documents, the following terms shall have the meanings indicated, which shall be applicable to both the singular and plural thereof. The order of the terms defined below is alphabetical, and is not intended to indicate any priority.

**1.1.1 Affiliated Entities** - Any entity related to or affiliated with the Contractor or any Subcontractor or with respect to which the Contractor or any Subcontractor has direct or indirect ownership or control, including without limitation, any entity owned in whole or in part by the Contractor or any Subcontractor, as applicable; any holder of any issued and outstanding shares of, or the holder of any interest in, the Contractor or any Subcontractor, as applicable; any entity in which any officer, director, partner, shareholder, member, or manager (or member of the family of any of the foregoing persons) has a direct or indirect interest, which interest includes, but is not limited to, that of a partner, shareholder, officer, director, member, manager, or agent.

**1.1.2 Agreement** – The fixed-price Agreement between Owner and Contractor.

**1.1.3 Applicable Laws** - As defined in Subsection 1.2.1.

**1.1.4 "Approve", "approved" or "approval"** means written approval by a duly authorized representative.

**1.1.5 Engineer** - The Engineer designated in the Agreement or its authorized representatives.

**1.1.6 Engineer's Supplemental Instructions** - A written document issued by the Engineer for clarification which may order a minor change in the Work and which does not require an adjustment in the Contract Sum and/or an extension of the Contract Time. The Engineer's Supplemental Instructions shall be issued on AIA Document G710 or other form issued by or acceptable to the Owner.

**1.1.7 Change Order** - A written order prepared by the Engineer, issued by the Owner to the Contractor and signed by the Owner, the Contractor and the Engineer authorizing an addition to, deletion from or revision in the Work and any adjustment in the Contract Sum and/or Contract Time that may be required in accordance with the terms of the Contract. Change Orders shall be issued on AIA Document G701/2000 or other form issued by or acceptable to the Owner.

**1.1.8 Construction Change Directive** - A written order prepared by the Engineer, issued by the Owner to the Contractor, and signed by the Owner and the Engineer authorizing the Contractor to proceed with a change in the Work. Construction Change Directives shall be issued on AIA Document G714 or any other form issued by or acceptable to the Owner. A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith and shall be considered a Change Order.

**1.1.9 Construction Period** - The period of the Contract Time which commences upon the issuance of the initial Notice to Proceed with Construction and concludes on the Final Completion Date.

**1.1.10 Contract** - As defined in the Agreement.

**1.1.11 Contract Documents** - As defined in the Agreement.

**1.1.12 Contract Sum** - As defined in the Agreement, subject to amendment in accordance with the provisions of the Contract.

**1.1.13 Contract Time** - As defined in the Agreement, subject to amendment in accordance with the provisions of the Contract.

**1.1.14 Contractor** - The entity with which the Owner has executed the Agreement. Wherever the term "Contractor" appears in the Contract Documents, it means the Contractor and Subcontractors who are obligated to perform all, or a part of, the Work described by the Contract Documents.

**1.1.15 Critical Path** - The sequential Critical Path Activities shown on the Project Schedule from the date of commencement of the Work through Final Completion.

**1.1.16 Critical Path Activity** - Any activity identified on the Project Schedule which, if delayed or prolonged, would cause the Construction Period to extend beyond the Contract Time.

**1.1.17 Day** - As used in the Contract Documents, the term shall mean calendar day. The terms "working day" and "business day" shall mean any calendar day except Saturdays, Sundays, and legal holidays at the place where the Project is located.

**1.1.18 Delay Event** - As defined in Subsection 9.4.1 of these General Conditions.

**1.1.19 Drawings** - The graphic and pictorial depictions of the Work prepared by the Engineer, wherever located and whenever issued, showing the design, location, scope and dimensions of the Work, or parts thereof, generally including plans, elevations, sections, details, schedules and diagrams and any narrative notes thereon.

**1.1.20 Excusable Delay** - Any act, omission, event or condition which delays performance of the Work, for which the Contractor is entitled, under applicable provisions of the Contract Documents, to an extension of the Contract Time.

**1.1.21 Final Completion** - As defined in Subsection 10.8.5 of these General Conditions.

**1.1.22 Final Completion Date** - The date set forth in the Agreement on or prior to which Final Completion is required to be achieved.

**1.1.23 Notice to Proceed (NTP)** – A written communication issued by the Owner to the Contractor authorizing it to proceed with a specified portion of the Work.

**1.1.24 Owner's Representative** - A project manager retained by the Owner to represent it in connection with the Project. The Owner's Representative is designated in the Agreement.

**1.1.25 Product Data** - Illustrations, standard schedules, performance charts, instructions, brochures, diagrams and any other information furnished by the Contractor to illustrate a material, product, assembly, or system for a portion of the Work. Product data are not Contract Documents.

**1.1.26 Project Schedule** - As defined in Section 9.2 of these General Conditions.

**1.1.27 "Provide" or "Provided"** - where used in the Contract Documents, such words shall be construed to mean "furnish(ed)" and "install(ed)" and/or "connect(ed)", unless specifically stated otherwise.

**1.1.28 Request for Information (RFI)** - A written and logged request issued by the Contractor, or any Subcontractor through the Contractor, to the Engineer, with a copy sent to the Owner's Representative, requesting information about some aspect of the Contract Documents.

**1.1.29 Samples** - Physical examples that illustrate materials, products, equipment or workmanship and which, when approved in accordance with the Contract Documents, establish standards by which the Work will be inspected and judged. Samples are not Contract Documents.

**1.1.30** Schedule of Values – A schedule, prepared and maintained by Contractor for lump sum portions of the Work, allocating portions of the Contract Sum to various portions of the Work as required by Section 10.1 of these General Conditions.

**1.1.31 Shop Drawings** - All drawings, prints, diagrams, illustrations, brochures, schedules and other data prepared by the Contractor, a Subcontractor, or a Supplier

to illustrate how specific portions of the Work shall be fabricated and/or installed. Shop Drawings are not Contract Documents.

**1.1.32 "Shown" or "shown on Drawings"** - Where used in the Contract Documents, such words shall be construed to mean "noted", "indicated", "scheduled", "detailed", or any other diagrammatic or written reference made in any of the Contract Documents.

**1.1.33 Site -** The area or areas indicated within the contract limit lines on the Drawings or otherwise defined in the Contract Documents, together with such additional areas or locations adjacent thereto in which construction operations or Work required under the Contract may be performed.

**1.1.34 Specifications** - Written narrative descriptions, prepared by the Engineer, of requirements for materials, equipment, systems, standards and workmanship for the Work, and requirements for the performance of construction services.

**1.1.35 State University** – the State University campus on which the Project is located.

**1.1.36 Subcontractor** - An entity having a contract with the Contractor or with any other Subcontractor, regardless of tier, for the performance of a part of the Work required under the Contract Documents.

**1.1.37 Substantial Completion** - As defined in Subsection 9.1.3 of these General Conditions.

**1.1.38 Substantial Completion Date** - The date set forth in the Agreement on or prior to which Substantial Completion is required to be achieved.

**1.1.39 Supplier** - Any entity having a contract with the Contractor, any Subcontractor or other supplier regardless of tier, who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the Site.

**1.1.40 Work** – As defined in the Agreement.

## 1.2 INTERPRETATION OF CONTRACT DOCUMENTS

**1.2.1** This Contract is subject to all applicable laws, regulations, codes, ordinances, rules, and orders of the United States of America, the Commonwealth of Massachusetts, and other governmental or public agencies and authorities with jurisdiction over the Project, and to all contracts and other agreements between the Owner and any such governmental or public agencies and authorities, referred to or incorporated in the Contract Documents (the "Applicable Laws").

**1.2.2** The Contractor shall inform itself of all Applicable Laws in any manner affecting the Work, or the materials used or employed in the Work, or in any way affecting the conduct of the Work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the Work. The Contractor shall comply, and shall cause all persons and Subcontractors employed in the performance of the Work to comply, with all Applicable Laws.

**1.2.3** Where any requirements contained in the Contract Documents do not conform to or are inconsistent with such Applicable Laws to which the Contract is subject or by which it is governed, such Applicable Laws shall have precedence over any matters set forth herein and the Contractor agrees to comply fully therewith. The Owner makes no representation as to and assigns no responsibility for the correctness or completeness of such statutory matters referred to or set forth in the Contract Documents.

**1.2.4** The Contractor represents that it has examined and understands all of the Contract Documents and has visited the Site, examined and familiarized itself with the local conditions under which the Work is to be performed, including any work in progress under previously awarded contracts, verified to its satisfaction the nature and quantity of the Work involved, and correlated its observations with the requirements of the Contract Documents, and, by execution of the Agreement, the Contractor acknowledges its satisfaction with the same.

**1.2.5** The intent of the Contract Documents is to describe the Work that, once constructed by the Contractor, will result in a functionally complete facility. It is intended that the Contractor shall furnish all Work necessary for the proper execution and completion of the Project in accordance therewith, including all Work incidental to or reasonably inferable from the Contract Documents as being necessary to produce the intended results, unless it is specifically indicated in the Contract Documents that such work is to be performed by others, and to complete the Project in a satisfactory manner, ready for use, occupancy, and operation by the Owner. The Contractor recognizes, and agrees to perform the Work consistent with the extra degree of care and skill required in an occupied academic campus setting with respect to safety, protection of pedestrians, cleanliness of the Site, health and the protection of existing utilities, adjacent streets and property. In agreeing to the Contract Time and the Contract Sum, the Contractor has considered and included those circumstances.

**1.2.6** Unless the Contract Documents specifically provide otherwise or the context clearly requires a different meaning, the terms “directed,” “required,” “permitted,” “ordered,” “designated,” “prescribed,” and words of like import shall imply the direction, requirement, permission, order, designation, or prescription of the Owner’s Representative or the Engineer, subject in each case to the final determination of the Owner; and “approved,” “acceptable,” “satisfactory,” and words of like import shall mean approved by, or acceptable or satisfactory to the Owner’s Representative or the Engineer, subject in each case to the final determination of the Owner; and “necessary,” “reasonable,” “proper,” “correct,” and words of like import shall mean necessary, reasonable, proper or correct in the judgment of the Owner’s Representative or the Engineer, subject in each case to the final determination of the Owner.

**1.2.7** In case of discrepancies or conflicts among the Contract Documents or within any of the Contract Documents, the Contract Documents shall be interpreted on the basis of the following priorities:

(a) First, written amendments, including Change Orders, to the Agreement – those of a later date shall take precedence over those of an earlier date;

(b) Second, the Agreement Between Owner and Contractor;

(c) Third, Supplementary General Conditions, if any;

(d) Fourth, General Conditions;

(e) Fifth, Specifications; and

(f) Sixth, Drawings.

Among Drawings, large scale details shall control over small scale details, and indicated dimensions shall control over Drawings not dimensioned. In the event of a conflict or ambiguity within or between the Specifications or Drawings as to the quantity or quality of work or materials, the higher quality or greater quantity shall be furnished unless otherwise directed in writing by the Owner or the Engineer.

**1.2.8** Any information contained in the Specifications that has been omitted from the Drawings or vice versa shall be construed as though contained in both. In the event of any duplication, conflict, inconsistency, error, omission, or discrepancy among or within the Drawings and the Specifications (or among or within other portions of the Contract Documents so far as the same pertain to the Drawings or the Specifications), the matter shall promptly be brought to the attention of the Engineer for instructions. If, having identified any duplication, conflict, inconsistency or discrepancy, the Contractor proceeds with the Work without receiving instructions from the Engineer, the Contractor does so at its own risk and shall be responsible for performing any corrective Work at its own cost and without entitlement to any adjustment in the Contract Sum or the Contract Time.

**1.2.9** 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 Contract Documents, except where a contrary result is explicitly indicated by the Contract Documents. A typical or representative detail indicated on the Drawings shall constitute the standard for workmanship and material throughout the corresponding parts of the Work. Where necessary and where reasonably inferable from the Contract Documents, the Contractor shall adapt such representative detail for application to such corresponding parts of the Work. The details of such adaptation shall be subject to prior approval by the Engineer. Repetitive features shown in outline on the Drawings shall be in exact accordance with corresponding features completely shown.

**1.2.10** Where laws, regulations, codes, standards, requirements or publications of public or private bodies are referred to in the Contract Documents, references shall be understood to be to the latest revision in effect on the date of execution of the Contract Documents, except where otherwise indicated. The Contractor warrants that all Work performed hereunder shall meet the requirements of all such laws, regulations, codes, standards, requirements and publications which are applicable to the Project. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

**1.2.11** 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:

(a) a duly-executed amendment to the Contract;

(b) a Change Order (pursuant to Section 13.1); or

(c) a Construction Change Directive (pursuant to Section 13.2).

The Contract Sum and the Contract Time may only be changed by a Change Order or a written amendment. In addition, the requirements of the Contract Documents may be clarified or supplemented, and minor variations and deviations in the Work may be authorized, by the Engineer's Supplemental Instructions pursuant to Section 13.6 or by the Engineer's approval of Submittals pursuant to Section 3.8.

**1.2.12** The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade or subcontractor. A section or division of the Specifications may cover the Work of more than one Subcontractor and the Work of one Subcontractor may be covered by more than one section or division of the Specifications. The Contractor and all Subcontractors shall refer to all of the Drawings, and to all of the Sections of the Specifications, and shall perform all Work reasonably inferable therefrom as being necessary to produce the intended results. The Owner assumes no liability to the Contractor arising out of jurisdictional issues raised or claims advanced by trade organizations, Subcontractors or other interested parties based on the arrangement or manner of subdivision of the content of the Specifications and Drawings. In the event of any claim arising out of any duplication, conflict, inconsistency or discrepancy within the Contract Documents as to the allocation of the Work among and between the Subcontractors and the Contractor's own forces, the Contractor shall be solely responsible for resolving the claim and shall be responsible for ensuring that all of the Work is completed without additional cost to the Owner and without delay, regardless of where or how it is described in the Contract Documents.

**1.2.13** If any term or provision of any of the Contract Documents, or the application thereof to any party or circumstance shall, to any extent, be determined to be invalid or unenforceable, the remaining provisions of the Contract Documents, or the application of

such term or provision to parties or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term and provision of each of the Contract Documents shall be valid and shall be enforced to the fullest extent permitted by law.

**1.2.14** The Contract Documents shall not be construed to create a contractual relationship of any kind between: (1) the Engineer and the Contractor; (2) the Owner and any Subcontractor or Supplier; or (3) between any other persons or entities other than the Owner and the Contractor. The Contractor understands and agrees that the obligations of the Owner's Representative and the Engineer are solely to the Owner and, by performing those obligations properly, the Owner's Representative or the Engineer may increase the burdens and expenses of the Contractor, its Subcontractors, or sureties or any of them.

### 1.3 OWNERSHIP AND USE OF DOCUMENTS

**1.3.1** All Contract Documents and other related materials and copies thereof prepared or furnished to the Contractor are the property of the Owner, subject to the rights of the Engineer as provided in the Owner-Engineer Agreement. With the exception of one contract set for the Contractor, such documents shall be returned (or suitably accounted for) to the Owner, or if requested by the Owner, lawfully disposed of by the Contractor at the completion of the Work, as a condition precedent to final payment. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project shall not be construed as publication in derogation of the Engineer's common law copyright or other reserved rights.

### 1.4 OTHER REPRESENTATIONS

**1.4.1** The Contractor shall perform the Work strictly in accordance with the Contract Documents. The Contractor accepts the relationship of trust and confidence established between it and the Owner established by the Agreement and other Contract Documents. The Contractor covenants with the Owner to furnish its best skill and judgment and to cooperate with the Owner, the Owner's Representative, the Engineer and any other consultants employed by the Owner in furthering the interests of the Owner. The Contractor agrees to furnish efficient business administration, coordination, and superintendence and to furnish at all times an adequate supply of workers and materials, and to perform the Work in the best way and in the most expeditious and economical manner consistent with the interests of the Owner and to make every effort to achieve time savings and construction efficiencies with respect to the Work.

## ARTICLE 2 ADMINISTRATION OF THE CONTRACT

### 2.1 OWNER'S REPRESENTATIVE

**2.1.1** The Owner's Representative, if one has been retained by the Owner, and the Engineer will assist the Owner in the administration of the Contract as provided in the

Contract Documents. The Owner's Representative and the Engineer may act directly or through their properly authorized agents, such agents acting within the scope of the particular duties entrusted to them. The Engineer and the Owner's Representative will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents or as may be specified in writing by the Owner.

**2.1.2** The Engineer and the Owner's Representative will be representatives of the Owner during construction of the Work and until final payment is due and will advise and consult with the Owner as to the performance and progress of the Work. The Owner may communicate with the Contractor directly or through the Owner's Representative or the Engineer. The Owner will endeavor to furnish to the Engineer copies of any communications from the Owner to the Contractor, directly or through the Owner's Representative.

## 2.2 DESIGNER'S SITE VISITS

**2.2.1** The Engineer will visit the Site at intervals appropriate to the stage of construction as may be required to familiarize itself generally with the progress and quality of the Work and to determine in general whether the Work is proceeding in accordance with the Contract Documents. However, the Engineer will not be required to make exhaustive or continuous on-site inspections. On the basis of its on-site observations as a design professional, it will keep the Owner's Representative and the Owner informed of the progress and quality of the Work.

**2.2.2** Neither the Owner, the Owner's Representative, nor the Engineer will have control, or charge of, or be responsible for, construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and nor will any of them be responsible for the acts or omissions of the Contractor, Subcontractors or any other persons or entities performing any of the Work, or for the failure of any of them to carry out the Work in accordance with the Contract Documents.

**2.2.3** All portions of the Work shall be subject to inspection and testing by the Engineer and the Owner's Representative. The Engineer will have authority to reject Work which does not conform to the Contract Documents. The Contractor shall, at its sole cost and expense, furnish the Engineer with such information and assistance (including, without limitation, labor, tools, equipment and transportation) as is required for the Engineer to make complete and detailed inspections or tests. Whenever the Engineer considers it necessary or advisable for the implementation of the intent of the Contract Documents, the Engineer will have authority to require special inspection or testing of portions of the Work in accordance with Article 8 hereof whether or not such Work be then fabricated, installed or completed. However, neither the Engineer's authority to act hereunder, nor any decision made by the Engineer in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any of their agents or employees, or any other person or entity performing any of the Work.

## 2.3 DESIGNER'S SUPPLEMENTAL INSTRUCTIONS

**2.3.1** The Engineer will render, in writing, Engineer's Supplemental Instructions and other interpretations necessary for the proper execution or progress of the Work, with reasonable promptness. Either party to the Contract may request such interpretations from the Engineer by giving written notice of such request to the Engineer with a copy thereof given to the other party, or the Engineer may initiate such Engineer's Supplemental Instructions or other interpretations upon notice to the Owner's Representative. The Engineer will, as it judges necessary or desirable, issue as a part of such Engineer's Supplemental Instructions additional drawings, specifications, or instructions indicating in greater detail the construction or design of the various parts of the Work reasonably inferable from the Contract Documents, and, provided such Engineer's Supplemental Instructions are reasonably consistent with the previously existing Contract Documents, the Work shall be executed in accordance with such Engineer's Supplemental Instructions without increase in the Contract Sum or extension of the Contract Time. Such change shall be effected by written order issued by the Engineer and delivered to the Contractor. If the Engineer determines that implementation of the requested changes would result in a material change to the Contract that may cause an adjustment in the Contract Time or Contract Sum, the Engineer may make a recommendation to the Owner, which may authorize further investigation of such change. Upon such authorization, and based upon any information furnished by the Owner's Representative, the Engineer shall review and advise the Owner and the Owner's Representative concerning the additional cost and time that might result from such change. With the Owner's approval, the Engineer shall request the Contractor to incorporate those estimates into a Change Order or other appropriate documentation for the Owner's execution or negotiation with the Contractor.

## 2.4 DESIGNER'S INTERPRETATIONS

**2.4.1** Interpretations and decisions of the Engineer shall be consistent with the intent of, and reasonably inferable from, the Contract Documents and shall be in written or graphic form. In the capacity of interpreter, the Engineer shall endeavor to secure faithful performance by both the Owner and the Contractor, shall not show partiality to either, and shall not be liable for the result of any interpretation or decision rendered in good faith in such capacity.

## 2.5 SUBMITTALS

**2.5.1** The Engineer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples but only for the purpose of checking for conformance with the design concept and with the information in the Contract Documents. The Engineer shall communicate all such approvals or other actions to the Contractor with copy to the Owner's Representative. Review of such submittals is not conducted for the purpose of substantiating instructions for installation or performance of equipment or systems designed by the Contractor, all of which remain the responsibility of the

Contractor. The Engineer's review shall not constitute approval of safety precautions or of construction means, methods, techniques, sequences, or procedures. The Engineer's approval of a specific item shall not constitute approval of an assembly of which the item is a component. The Engineer shall not be required to review partial submittals nor submittals for which necessary correlated submissions have not been received.

### 2.6 REPLACEMENT DESIGNER

**2.6.1** In case of the termination of the employment of the Engineer, the Owner shall appoint a designer whose status under the Contract Documents shall be that of the former designer**.** The Contractor shall cooperate with the replacement designer in connection with the completion of the Work. Replacement of the Engineer shall not entitle the Contractor to any adjustment in the Contract Sum or the Contract Time.

## ARTICLE 3 CONTRACTOR'S RESPONSIBILITIES

### 3.1 DUTY TO REVIEW CONTRACT DOCUMENTS AND SITE CONDITIONS

**3.1.1** Before starting the Work, and continuously during the progress thereof, the Contractor shall carefully examine the Site, take field measurements, and carefully study and compare the Contract Documents with each other and with conditions at the Site, including work completed or in progress under other contracts, and with such other information, documents, plans and criteria as may be available in connection with the Project and shall immediately communicate to the Engineer and the Owner, in writing, all errors, inconsistencies and omissions it discovers. If the Contractor proceeds with the Work without such notice to the Engineer and the Owner, having discovered such errors, inconsistencies or omissions, or if by reasonable study of the Contract Documents and other conditions the Contractor could have discovered the same, the Contractor shall perform all necessary corrective work and bear all costs and expenses arising therefrom and shall have no claim for increases in the Contract Sum or extensions of the Contract Time for extra work made necessary thereby.

**3.1.2** The Contractor shall give the Engineer timely written notice of any additional Drawings, Specifications, clarifications or instructions required to define the Work in greater detail or otherwise required to permit the proper progress of the Work. The Contractor shall not proceed with any Work not clearly and consistently defined in detail in the Contract Documents, but shall request additional drawings or instructions from the Engineer. If the Contractor proceeds with such Work without obtaining further drawings or instruction, the Contractor shall correct, at its own expense, Work incorrectly done.

**3.1.3** Without limitation, the Contractor shall review the Contract Documents for clarity, consistency, constructability, maintainability, operability and coordination among trades, and time requirements for procurement, installation and construction, and sequence of

construction, including recommendations designed to minimize adverse effects of labor or material shortages.

**3.1.4** If the Contractor recognizes or discovers that any portion of the Drawings and Specifications is at variance with Applicable Laws, the Contractor shall immediately notify the Owner and the Engineer in writing and shall not proceed with such Work without specific written direction by the Owner. If the Contractor performs any Work knowing or having reason to know that said Work is contrary to Applicable Laws and without so notifying the Owner and the Engineer, the Contractor shall assume full responsibility therefor and shall bear all costs of correction thereof, and any other costs including any loss, cost or damage sustained by the Owner attributable thereto.

**3.1.5** The Contractor shall at all times provide the Engineer, its representatives and consultants, the Owner's Representative, and the Owner, and its agents, employees, representatives, other contractors, and consultants with access to the Site and the Work wherever it is in preparation and progress. The Contractor shall provide safe and proper facilities for such access and for observation, testing, and inspection of the Work.

## 3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

**3.2.1** The Contractor shall supervise, coordinate, and direct the Work competently and efficiently, using its best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract. The Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents. The Contractor shall not be relieved from its obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Engineer or the Owner's Representative in their administration of the Contract, or by inspections, tests or approvals required or performed under Article 8 hereof by persons other than the Contractor.

**3.2.2** The Contractor's Project Team shall consist of, as a minimum, a qualified Project Executive, Project Manager, Project Superintendent, and other necessary assistants and technical and administrative personnel. The Project Superintendent shall be licensed by the Commonwealth of Massachusetts. No change shall be made in the composition of the Project Team without the Owner's prior written approval. The removal or replacement without the Owner's consent of any of the identified members of the Contractor's Project Team shall constitute a material breach of the Contract. The Owner may require replacement of any member of the Contractor's Project Team upon notice to the Contractor with or without cause.

**3.2.3** Both the Project Manager and the Project Superintendent shall have full authority to act on behalf of the Contractor. The Project Manager or Project Superintendent and necessary assistants shall be in attendance at the Site at all times during the progress of the Work until Final Completion. The Project Manager and the Project Superintendent shall represent the Contractor and notices or other communications given to the Project Manager or the Project Superintendent shall be as binding as if given to the Contractor directly.

**3.2.4** During the course of construction, the Engineer or the Owner's Representative shall schedule, convene and conduct Project meetings for the purpose of conducting an orderly review of the progress of the Work, as often as the Engineer or the Owner deems necessary, but at least once each week, in accordance with a schedule established by the Engineer. Such meetings shall be held at the Site and shall be attended by representatives of the Owner, the Contractor and the Engineer. Representatives of Subcontractors shall attend such meetings as necessary when Subcontractors are performing significant work on the Project or when a Subcontractor's presence is requested by the Owner or the Engineer. The Contractor's representative(s) at each meeting shall be the Project Manager and the Project Superintendent. The Engineer shall take minutes of each meeting in form, substance, and detail acceptable to the Owner.

**3.2.5** The Contractor shall furnish sufficient forces, plant, and equipment as may be necessary to insure the progress of the Work in accordance with the Project Schedule (as defined below). If the Contractor falls behind the Project Schedule, the Contractor shall promptly submit a proposal demonstrating the manner in which the rate of progress may be increased and shall take such steps as may be necessary to meet the Project Schedule at no additional cost to the Owner. It shall be the responsibility of the Contractor to maintain its schedule so as not to delay the progress of the Work or the scheduled work of other contractors.

**3.2.6** The Contractor shall be solely responsible for properly laying out the Work, and for all lines, elevations and measurements for all of the Work. It shall verify the figures shown on the Drawings before laying out the Work and will be responsible for any errors or inaccuracies resulting from its failure to do so.

**3.2.7** 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, but 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 Owner's Representative and the Engineer in writing 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 or 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 Owner's Representative and the Engineer in writing that such means, methods, techniques, sequences or procedures are not safe or suitable, and the Contractor has then been instructed in writing to proceed at the Owner's risk.

**3.2.8** If any portion of the Work is suspended by the Contractor for any reason at any time, prior notice shall be given to the Owner's Representative of such suspension and of the resumption of such Work.

**3.2.9** If the Contractor observes or determines that any Work previously performed under the Contract or any work performed by the Owner or by a separate contractor is not in accordance with the Contract Documents or is otherwise unsatisfactory, the Contractor shall promptly notify the Owner's Representative and the Engineer in writing describing the situation in full detail.

## 3.3 LABOR AND MATERIALS

**3.3.1** The Contractor shall provide competent, suitably qualified personnel to perform all Work as required by the Contract Documents. Unless otherwise specified in the Contract Documents, the Contractor shall furnish at its expense 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 utilities, services, facilities and incidentals necessary for the proper furnishing, performance, testing and completion of the Work.

**3.3.2** All materials and equipment shall be of first quality and new and of recent manufacture, except as otherwise expressly provided in the Contract Documents. If required by the Engineer, or the Owner's Representative, the Contractor shall furnish written information or other satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment, and stating the original sources of supply of materials and products manufactured or produced at locations other than the Site of the Work. In order to permit time for required inspections, testing and approvals, such information shall be furnished at least thirty days (or as otherwise directed by the Engineer or the Owner's Representative) in advance of the incorporation of any such materials or products in the Work. The Contractor shall make no claim for extra cost or extension of the Contract Time arising directly or indirectly out of its failure to timely select materials or products to permit a reasonable time for completion of inspections, testing or approvals, or because of the Contractor's purchase of materials or products in advance of approval.

**3.3.3** Reference in the Contract Documents to any product, material, equipment, method or process by proprietary name, manufacturer, vendor, supplier, make or catalog number shall be interpreted as establishing a standard of quality.

**3.3.4** Except in the case of minor changes in the Work authorized by the Engineer in accordance with the provisions of the Contract Documents, the Contractor may make substitutions only in conformance with the provisions of Section 00.73.73 of the Specifications (M.G.L. c. 30, § 39M(b)).

**3.3.5** The Contractor's attention is directed to M.G.L. c. 30, § 39I which provides criminal penalties for unauthorized deviations from the Drawings and Specifications:

"Contractor shall perform all Work required by the Contract in conformity with the plans and specifications contained therein or made a part thereof. No willful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the Owner or by the Engineer who is duly authorized by the Owner to approve such deviations. In order to avoid delays in the prosecution of the Work required by the Contract such deviation from the plans or specifications may be authorized by a written order of the Owner or Engineer so authorized to approve such deviation. Within thirty days thereafter, such written order shall be confirmed by a certificate of the Owner stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the Project as a whole; (3) that either the work substituted for the Work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the Owner and the Contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the Owner. Such certificate shall be signed under the penalties of perjury and shall be a permanent part of the file record of the Work contracted for. Whoever violates any provision of this section willfully and with intent to defraud shall be punished by a fine of not more than five thousand dollars or by imprisonment for not more than six months, or both."

**3.3.6** The Owner will consider formal written requests made through the Engineer for the substitution of products in place of those specified only under the conditions set forth in the Contract Documents, unless otherwise expressly agreed by Owner in its sole discretion. By making requests for substitutions, the Contractor:

(a) represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified, and expressly warrants that such proposed substitute product will perform adequately the functions and achieve the results called for by the Contract Documents;

(b) represents that it will provide the same warranties and guarantees for the substitute product that it would for that specified;

(c) certifies that the cost data presented is complete and includes all related costs under the Contract but excluding costs under other contracts (but separately identifying such costs, if any, of other contracts), and excluding the Engineer's redesign costs, if any, and waives all claims for additional costs related to the substitution which subsequently become apparent;

(d) certifies that the proposed substitution will not result in any increase in the Contract Sum and represents and agrees that any cost savings will be passed through to the Owner in the form of a credit against the Contract Sum; and

(e) will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

Notwithstanding approval or acceptance of such substitution by the Owner, any additional cost, or any loss or damage to the Owner arising from the substitution of any material or any method for those originally specified, shall be borne by the Contractor, including, without limitation, the costs of modifying Contract Documents and additional fees of the Engineer, the Owner's consultants or engineers, unless such substitution was made at the written request or order of the Owner.

**3.3.7** The Contractor shall at all times enforce strict discipline and good order among and between its employees and the employees of its Subcontractors and shall not employ or permit to be employed on the Work any person who is not properly skilled in the work to be performed by it or who is otherwise unfit. Whenever the Owner shall notify the Contractor in writing that any person employed on the Work is, in the opinion of the Owner or the Engineer, incompetent, disorderly or otherwise unsatisfactory, such person shall be discharged immediately and shall not again be employed on the Work except with the prior written consent of the Owner.

**3.3.8** The Contractor shall furnish labor that can and will work in harmony with all other elements of labor employed or to be employed on the Project. The costs of maintaining labor harmony, including without limitation, the cost of security, public safety measures and necessary traffic management shall be paid by the Contractor and the Contractor shall have no claim for any costs of maintaining labor harmony.

**3.3.9** Any employee found on site subject to M.G.L. c. 30, § 39S without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration shall be subject to immediate removal and the Contractor shall immediately remove any such employee.

**3.3.10** The Contractor will not be entitled to additional compensation for Work performed outside of regular working hours, except as otherwise expressly authorized in writing by the Owner prior to the performance of such overtime or premium shift work. Additional compensation for such authorized overtime or premium shift work shall be limited to the direct cost of the premium portion of such authorized overtime. The Contractor shall comply with M.G.L. c. 149, §§ 30, 34 and 34A which provide that no laborer, workman, mechanic, foreman or inspector working within the Commonwealth in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or part of the Work shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of extraordinary emergency.

**3.3.11** All materials and equipment shall be delivered, handled, stored, installed and protected to prevent damage in accordance with the best current practice in the industry, in accordance with the manufacturers' specifications and recommendations, and in accordance

with Contract Document requirements. The Contractor shall deliver materials and equipment in ample time to facilitate inspection and testing prior to installation. The term "delivery" in reference to any item specified or indicated, means the unloading and storing with proper protection at the Site. Damaged materials or equipment may be rejected and the Contractor shall provide conforming materials or equipment at no additional cost.

**3.3.12** The Contractor shall be responsible for determining that all materials furnished for the Work meet all the requirements of the Contract Documents. The Owner's Representative or the Engineer may require the Contractor to produce reasonable evidence that a material meets such requirements, such as certified reports of studies by qualified experts, or other evidence which, in the opinion of the Engineer, would lead to a reasonable certainty that any material used, or proposed to be used, in the Work meets the requirements of the Contract Documents.

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

**3.3.14** The layout of mechanical and electrical systems, equipment, fixtures, piping, duct work, conduit, specialty items, and accessories indicated on the Contract Documents is diagrammatic, and all variations in alignment, elevations, and detail required to avoid interferences and satisfy architectural, engineering and structural limitations are not necessarily shown. Prior to the commencement of the portion of the Work relating to the mechanical, electrical, plumbing, fire protection or any similar systems, the Contractor shall furnish the Owner with a coordination drawing, illustrating all systems, equipment, fixtures, conduit, pipes, valves and all related installations in CADD format. Actual layout of such Work shall be carried out without affecting the architectural, engineering and structural integrity and limitations of the Work and shall be performed in such sequence and manner as to avoid conflicts, provide clear access to all control points, including valves, strainers, control devices, and specialty items of every nature related to such systems and equipment, obtain maximum headroom, provide adequate clearances as required for operation and maintenance, and provide an orderly appearance when exposed. Exact locations of fixtures and outlets shall be obtained from the Engineer as provided in the Contract Documents before the Work is roughed in. Work incorrectly installed without such information from the Engineer shall be relocated at the Contractor's expense.

**3.3.15** Every employee under these General Conditions 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. [NTD: see GL c. 149, s. 25]

## 3.4 PHASES OF THE WORK—CONSTRUCTION PHASE

**3.4.1** The construction phase shall commence upon the issuance by the Owner of a written Notice to Proceed with the Work.

**3.4.2** The Contractor shall be responsible for ensuring that adequate quality control programs are developed, implemented and enforced by the Contractor's staff and all Subcontractors, including assigning an experienced quality manager, who may be the Project Superintendent employed by the Contractor, who shall be stationed at the Project Site and who shall be responsible for reviewing and coordinating the quality control activities of all Subcontractors and monitoring the implementation and enforcement thereof in connection with all aspects of the Work.

**3.4.3** The Contractor shall be responsible for overall management, supervision, and coordination of all Subcontracts and of labor relations in connection with the Project 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 and in accordance with the requirements of the Contract Documents. The Contractor shall identify and resolve jurisdictional issues and disputes prior to bidding and award of the applicable Subcontracts, so as to cause no delay in the Work.

**3.4.3.1** In consultation with the Owner's Representative and the Engineer, the Contractor shall develop and implement procedures for orderly completion of Punch-List items, check out of utilities, operational systems and equipment and initial start-up and testing. The Contractor shall prepare and deliver to the Engineer warranties, as-built drawings, maintenance manuals and the like, and generally administer closeout of the Work. In connection with the closeout of the Work, the Contractor shall take steps to ensure the performance of all warranty and guarantee obligations, resolution of all claims and other post construction requirements in accordance with the terms of the Contract Documents.

## 3.5 PERMITS AND FEES; COMPLIANCE WITH LAW

**3.5.1** The Contractor, at its cost, shall secure and pay for all demolition permits, construction or building permits, utility inspection and connection fees, and all other permits and approvals and governmental fees or charges (including, without limitation, microfilming charges), licenses, inspections and certificates of inspection necessary for the proper execution, completion and use of the Work, including, without limiting the generality of the foregoing, permits for obstruction of or projection into, over or under public streets and sidewalks and other public ways, curb-cut permits, and notifications to and permits or approvals from the Massachusetts Department of Environmental Protection or others necessary in connection with the performance of the Work (the "Permits and Approvals"). The Contractor shall promptly deliver to the Owner's Representative and the Engineer copies of all such Permits and Approvals (and supporting applications), licenses and certificates, and satisfactory evidence that disposal of all waste material in connection with the Project is done in full compliance with Applicable Laws.

**3.5.2** The Contractor shall arrange for and provide at its expense all local policemen required to be present at or adjacent to the Site for traffic control purposes.

**3.5.3** The Contractor shall give all notices required by and shall otherwise comply with all Applicable Laws bearing on the performance of the Work including, without limitation, applicable environmental laws and ordinances and regulations concerning noise pollution and dust control.

## 3.6 UTILITIES

**3.6.1** The Contractor shall be solely responsible for verifying the precise locations of utilities on the Site or serving the Project. The Drawings and Specifications endeavor to indicate all pipes, conduits, lines or other structures or equipment of public and private utility companies ("Utility Equipment") at and adjacent to the Site of which the Owner is aware. However, the Owner makes no representation or warranty that the utility equipment shown on the Drawings or referred to in the Specifications is the only utility equipment that may be encountered. Prior to commencing the Work, the Contractor shall visit the Site and to the extent possible shall confirm the existence and location of all utility equipment and shall, during the course of the Work, make diligent and continuous efforts to confirm the locations of all utility equipment at and adjacent to the Site. The Contractor shall promptly notify the Owner and Engineer in writing, prior to commencing affected portions of the Work, of any Utility Equipment that it discovers and that has not been identified on the Drawings. If and as directed by the Owner, the Contractor shall make necessary arrangements with utility companies for the protection, alteration and relocation of utility equipment necessary in connection with performance of the Work, and shall notify all municipal departments and utility companies concerned of the time and location of any work which may affect them. To the extent not covered by insurance, the Contractor shall be responsible for all costs and all claims, damages and liabilities arising directly or indirectly from any damage to Utility Equipment or any intentional or unintentional interruption of service occurring in connection with the performance of the Work and caused by the Contractor or any Subcontractor or other operations of the Contractor.

**3.6.2** The Contractor shall perform the Work so as not to interfere with utility companies or municipal departments that may enter on the Site to make changes in Utility Equipment or to place new utility equipment. Except as otherwise set forth in Section 9.4 hereof, the Contractor shall have no claim for or on account of any delay which may be due to or result from such work of utility companies or municipal departments.

## 3.7 DOCUMENTS AND SAMPLES AT THE SITE

**3.7.1** The Contractor shall maintain at the Site in a safe and secure place one record copy of: (i) all Contract Documents and other Project-related documents marked currently to record all changes made during construction; (ii) approved Shop Drawings, Product Data and Samples; (iii) copies of all building, electrical, plumbing, public safety and other codes and regulations applicable to the Work; (iv) certified payroll reports; and (v) all permits,

licenses, approvals, inspection reports and certificates obtained as required by Section 3.5. These shall be available to the Engineer, the Owner's Representative, and the Owner for reference and shall be delivered to the Owner's Representative upon completion of the Work. The Contractor shall keep all such documents in good order and shall maintain current logs of all Project-related documents, which logs shall be in form and detail satisfactory to the Owner and the Engineer.

**3.7.2** The Contractor shall keep a separate and complete set of black-line prints of the Drawings and Specifications on which shall be noted neatly, accurately, completely, and promptly, as the Work progresses: (a) the progress of the Work installed by coloring in all pipe lines, ducts and apparatus as constructed or installed; and (b) all changes, deviations, revisions to the plumbing, electrical, and all other Work, wherever such Work was installed other than as shown on the Contract Documents. The Contractor shall be responsible for assuring that the progress of the Work and all changes, deviations, and revisions are delineated by the Subcontractors responsible for performing the specific Work. Failure to maintain such as-built Drawings and Specifications may result in withholding of payments to the Contractor. The Owner, the Owner's Representative, the Engineer, and their respective agents, representatives, and other consultants, shall have access to all Project documents maintained by the Contractor at all times. The Contractor shall cooperate with and assist the Engineer in connection with the Engineer's periodic reviews of the as-built Drawings and other Project documents prepared and maintained by the Contractor.

**3.7.3** Upon Substantial Completion of the Work, the Engineer shall make a final review of the as-built Drawings prepared by the Contractor and if any omissions, incorrect information, or inconsistencies are found, the Drawings shall be revised by the Contractor until acceptable to the Engineer. When the final as-built Drawings are complete to the satisfaction of the Engineer, the Contractor shall furnish to the Engineer a complete set of as-built Drawings with each sheet being clearly marked "AS-BUILT DRAWING" and containing the date of the print and the Contractor's certification that the as-built Drawing accurately and completely depicts the Work as constructed. The Contractor shall deliver the as-built Drawings to the Engineer in hand-marked and electronic form in the Engineer's and the Owner's CADD format, containing a full set of CADD as-built Drawings for the Work.

**3.7.4** Upon Substantial Completion of the Work, if appropriate, the Contractor shall prepare and deliver to the Engineer four (4) copies of a full and complete operating and maintenance manual for the Project. In accordance with the Specifications, the manual shall contain full information for each item of mechanical, electrical or other operating equipment, copies of warranties therefore, schematic diagrams of control systems, circuit directories for each electric and communications panel board, and charts showing the tagging of all valves. The Contractor shall obtain and include in the manual reduced scale photocopies of the relevant, revised as-built Drawings referred to in Subsection 3.7.3. Each volume of the manual shall contain all information required by the Specifications and these General Conditions, shall be clearly indexed, and shall include a directory of all Subcontractors and maintenance contractors, indicating the area of responsibility of each, and the name, telephone number, and other

pertinent contact information for the responsible member of each organization. Such manuals shall be delivered to the Owner prior to, and as a condition precedent to, final payment.

**3.7.5** The Contractor shall arrange for instruction in the operation and maintenance of the fire protection, plumbing, electrical and mechanical systems for State University employees. It is the intent of this Subsection 3.7.5 to require the Contractor and the applicable Subcontractors to furnish as much detailed instruction as is required by the Contract Documents to educate State University facilities personnel in the proper use of the facilities equipment. This instruction shall be provided by the manufacturer's representative for each item of equipment at no additional cost to the Owner. In some cases, this may require several visits to the Project by those responsible for the instruction. The Contractor shall, with written consent of all instructors, videotape all such training sessions, and a copy of each videotape shall be delivered to the Owner, prior to, and as a condition precedent to, final payment.

## 3.8 SUBMITTALS

**3.8.1** The Contractor shall prepare or review, approve and submit to the Engineer, with a copy of the transmittal to the Owner's Representative, for review, sufficiently in advance and in such sequence as to cause no delay in the Work or in the work of the Owner or any separate Contractor, all Shop Drawings, Product Data and Samples or other submittals required by the Contract Documents, all in accordance with the requirements set forth in the Specifications. Neither the Owner nor the Engineer shall be responsible for Work performed in shop or field prior to approval of any applicable Shop Drawings, Product Data or Samples.

**3.8.1.1** Within thirty (30) days of receiving a Notice to Proceed with construction from the Owner, the Contractor shall submit to the Engineer and the Owner's Representative a detailed submittal schedule detailing the submittal and review process for all shop drawings, product data, samples, and other submittals. The submittal schedule shall incorporate appropriate time periods for the Engineer's review of Shop Drawings and all other submittals required by the Contract Documents. The submittal schedule shall be coordinated with the Project Schedule and shall be in form, substance, and detail acceptable to the Owner and the Engineer.

**3.8.2** By preparing, approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor thereby represents that it has determined and verified all materials, design required in the implementation of the Work, dimensions, quantities, field measurements, details, relations to existing work, coordination with work to be installed later, coordination with information on previously accepted Shop Drawings, Product Data, Samples or similar submittals and compliance with all the requirements of the Contract Documents. The accuracy and completeness of all such information is the responsibility of the Contractor. Approval by the Contractor shall be clearly indicated on each submittal, in ink or by stamp, and signed or initialed and dated by the Contractor. Submittals that have not been reviewed and approved by the Contractor in accordance with the requirements stated in this Section 3.8 and the Specifications shall be returned to the Contractor with no action taken by

the Engineer. Such submissions shall be re-submitted to the Engineer with the Contractor's review and approval provided as required. Language contained in the Contractor's approval of submittals shall not be interpreted to limit in any respect or otherwise affect the Contractor's responsibilities and liabilities hereunder.

**3.8.3** The Engineer shall review the Contractor's submittals in accordance with Section 2.5. If corrections are required, a full set of copies of duplicate parts or corrected submittals shall be submitted to the Engineer for approval, and this procedure shall be followed until final approval of the submittal has been given by the Engineer. All portions of the Work shall be performed strictly in accordance with the approved submittals.

**3.8.4** If Shop Drawings submitted by the Contractor indicate a deviation from the Contract Documents, the Contractor shall specifically inform the Engineer and the Owner's Representative, in writing, of such deviation at the time of submission. The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Engineer's approval of Shop Drawings, Product Data or Samples or other submittals, unless the Contractor has specifically informed the Engineer and the Owner's Representative in writing of such deviation at the time of submission and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Engineer's approval thereof. The Engineer's approval of a specific item shall not constitute approval of an assembly of which the item is a component.

**3.8.5** The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or other submittals to revisions other than those requested by the Engineer on previous submittals. Unless such written notice has been given, the Engineer's approval of a revised submittal shall not constitute approval of any changes not requested by the Engineer on the prior submittal.

**3.8.6** No acceptance or approval of any Shop Drawing, Product Data or Sample, nor any indication or request marked by the Engineer on any Shop Drawing shall constitute an authorization for any increase in the Contract Sum.

## 3.9 SITE ACCESS

**3.9.1** The right of possession of the Site and the improvements made thereon by the Contractor shall remain at all times with the Owner. The Contractor's right to entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents. The Contractor shall confine its apparatus and equipment, storage of materials, and all operations at the Site to areas permitted by law, ordinances, permits, the Contract Documents, and the directions of the Owner's Representative, and shall not unreasonably encumber the Site with any materials or equipment.

**3.9.2** The Contractor shall not use, occupy or obstruct, nor permit any Subcontractor or any other person performing the Work to use, occupy or obstruct, any lands

or areas outside of the legal limits of the Site, unless written permission in form and substance satisfactory to the Owner has been obtained by the Contractor at the Contractor's sole cost.

**3.9.3** The Contractor may, subject to the Owner's prior written consent, install a construction sign as provided in the Specifications, but shall not permit the posting of any other sign, trademark, advertisement, or other identification symbol in or about the Site. The Owner shall have the right, without notice to the Contractor, to remove any sign, trademark, advertisement or other identification symbol installed in violation of this Subsection 3.9.3 at the Contractor's expense. The construction sign installed by the Contractor shall also identify the Subcontractors or, alternatively, the Contractor shall provide a single location, approved by the Owner in writing, for Subcontractor signage.

**3.9.4** Any damage to the premises or equipment of the Owner caused by the Contractor or any Subcontractor shall be corrected by the Contractor as directed by the Owner and at the expense of the Contractor, subject to the Contractor's right to coverage under the Owner's builders risk insurance obtained with respect to the Project, but such right shall pertain only to the extent of proceeds actually received by the Owner, the Contractor being responsible for any deductible and for any of the Owner's losses not covered.

## 3.10 CUTTING AND PATCHING

**3.10.1** The Contractor shall be responsible for all cutting and patching, as approved by the Engineer, necessary for the completion of the Work in accordance with the Contract Documents.

**3.10.2** The Contractor shall not damage or endanger any portion of the Work or the work of the Owner or any separate contractors by excavation, cutting, patching or otherwise altering any Work. The Contractor shall not unreasonably withhold from the Owner or any other contractor its consent to excavating, cutting, patching, or otherwise altering the Work.

## 3.11 INTENTIONALLY OMITTED

## 3.12 WASTE DISPOSAL AND CLEANING

**3.12.1** All wastes, including any special or hazardous wastes, construction waste, demolition waste, and general rubbish, generated as a part of the Work, shall be properly classified by the Contractor and transported and disposed in accordance will all local, state, and federal laws and regulations that pertain to such materials. The Contractor shall retain the services of a qualified and properly licensed waste transporter. The Contractor shall make all arrangements and give and obtain all notices, communications, documentation, permits, certificates, and approvals necessary for disposal from the owner or officials in charge of such landfills, disposal or recycling facilities. The Contractor shall bear all fees and costs in connection with such classification, removal, transportation, and disposal. The Contractor shall not permit any storage of debris or waste of any name or nature on the premises.

**3.12.2** Chemical waste shall be stored in corrosion resistant containers, removed from the premises, and disposed of in accordance with all Applicable Laws and any Contract Documents requirements. Disposal of chemical waste shall be performed in accordance with requirements of the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP). The Contractor shall immediately notify the Owner, the Engineer, and the appropriate governmental agency of any hazardous materials release large enough to require reporting under Applicable Laws. The Contractor shall be responsible for immediately cleaning up, in accordance with Applicable Laws, any oil or hazardous materials releases resulting from its operations on the Project. Any costs incurred by the Contractor in cleaning up any such releases and any damages incurred by the Owner arising from such release shall be borne by the Contractor.

**3.12.3** The Project and the Site shall be maintained in a neat and orderly condition and kept free from accumulation of waste materials and rubbish during the entire Construction Period. All crates, cartons and other flammable waste materials or trash shall be removed from the work areas at the end of each working day. If the Project and Site are not maintained properly, after 24 hours prior written notice to the Contractor, the Owner may have any accumulations of waste materials or trash removed and charge the cost to the Contractor. Electrical closets, pipe and duct shafts, chases, furred spaces and similar spaces which are generally unfinished, shall be cleaned and left free from rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt and dust.

**3.12.4** At the completion of the Work, the Contractor shall remove all its tools, construction equipment, machinery and surplus materials, and shall leave the Site in a neat and clean condition satisfactory to the Owner. Immediately prior to the Engineer's inspection for Substantial Completion of the entire Work, or any portion thereof, the Contractor shall, when directed to do so by the Owner, completely clean any and all portions of the Project to be inspected. Without limitation, concrete surfaces shall be cleaned and washed; resilient coverings shall be cleaned, waxed and buffed; ; fixtures, and equipment shall be thoroughly cleaned; stains, spots, dust, marks and smears shall be removed from all surfaces; and hardware and all metal surfaces shall be cleaned and polished. All damaged, broken and scratched surfaces shall be replaced by the Contractor at the Contractor's sole expense.

**3.12.5** If the Owner elects to take use or occupancy of specific areas or portions of the Work prior to the completion and acceptance of the entire Work as provided in Article 15 hereof, the Contractor shall carry out final cleaning operations as herein specified in such specific areas or portions of the Work prior to use or occupancy thereof, as directed by the Owner. The Contractor shall remove or, when appropriate, relocate, all surplus materials, equipment, supplies, construction plant, and facilities as required in order to permit the occupancy and utilization of such specific areas or portions of the Work.

## 3.13 PROJECT COMMUNICATIONS

**3.13.1** Copies of all communications from the Contractor to the Engineer or the Owner's Representative shall be provided simultaneously to the other and, if required by the Contract Documents, also to the Owner.

**3.13.2** The Contractor shall forward to the Engineer any communications which the Contractor transmits to the Owner relating to any matter within the purview of the Engineer pursuant to the provisions of the Contract Documents.

## 3.14 ROYALTIES AND INTELLECTUAL PROPERTY

**3.14.1** The Contractor shall pay all royalties and license fees, shall defend all suits or claims for alleged infringement of any intellectual property rights, and shall indemnify and save the Owner, the Owner's Representative, the Engineer, and the State University harmless from loss on account thereof, except that the Contractor shall not be responsible for such loss when a particular design, process, or the product of a particular manufacturer or manufacturers is specified, unless the Contractor has reason to believe that the design, process, or product specified is an infringement of intellectual property rights, in which event the Contractor shall be responsible for such loss unless it promptly gives such information to the Owner.

## 3.15 FINANCIAL CONDITION

**3.15.1** The Contractor warrants and represents that its financial condition is sound and that the Contractor is capable of performing the Work and obtaining any bonds now or hereafter required pursuant to the Contract Documents. Upon request by the Owner, the Contractor shall make available to the Owner, within fourteen (14) days, such audited and unaudited financial statements of the Contractor as the Owner may reasonably request or as may be required by Applicable Law. The Contractor shall promptly advise the Owner of any occurrence, event, fact, or other matter that has had, will have, or might reasonably be predicted to have a material adverse effect upon the financial condition of the Contractor.

## 3.16 PREVAILING WAGE; RECORDKEEPING; PERSONNEL

**3.16.1** The Contractor shall comply with the Massachusetts Prevailing Wage Law, M.G.L. c. 149, § 26-27H. The Prevailing Wage Law requires that a true and accurate record be kept of all persons employed on the a project for which the prevailing wage rates have been provided. The Contractor and all Subcontractors shall keep these records and preserve them for a period of three years from the date of completion of the Contract. Such records shall be open to inspection by any authorized representative of the Owner at any reasonable time, and as often as may be necessary. The Contractor shall, and shall cause its Subcontractors to, submit weekly copies of their weekly payroll records to the Owner. In addition, the Contractor and each Subcontractor shall furnish to the Executive Department of Labor within fifteen days after completion of its portion of the Work a signed statement in the form required by the Owner.

**3.16.2** The Contractor shall comply with, and shall cause its Subcontractors to comply with M.G.L. c. 149, § 148 which requires the weekly or biweekly payment of employees within six days of the end of the pay period during which wages were earned if employed for five or six days of a calendar week, and within other periods of time under certain circumstances as set forth therein.

## 3.17 EEO/AA AND M/WBE REQUIREMENTS

**3.17.1** The Contractor shall comply at all times in all respects with all government laws, regulations and ordinances affecting or regulating employment of persons in connection with the Work, and with the equal employment opportunity and affirmative action requirements set forth in **Exhibit D** and **Exhibit E** to the Agreement.

**3.17.2** The Contractor shall submit a construction employment plan to the Owner pursuant to which the Contractor will specify its plan for meeting and monitoring the Owner's employment requirements. The plan shall comply with the provisions set forth in **Exhibit D** and **Exhibit E**. The Contractor shall provide the Owner with such reports concerning its compliance with the construction employment plan as the Owner shall require.

## 3.18 LINES AND GRADES; SURVEY

**3.18.1** The Contractor agrees that the Work shall be constructed within the contract limit lines established in the Contract Documents and other information made available to the Contractor.

**3.18.2** The Contractor shall engage a land surveyor registered in the Commonwealth of Massachusetts to establish, and the Contractor shall be responsible for the accuracy of, base lines for the Work.

**3.18.3** The Contractor shall establish and plainly mark such points, lines and grades as are necessary to assure that location, orientation and elevations established for each structure or element of the Work are in accordance with the lines and elevations shown on the Drawings.

**3.18.4** After the perimeter foundation walls are in place, the Contractor shall verify that lines and grades meet the requirements of the Drawings and Specifications. Such verification shall be provided by a registered land surveyor or professional engineer who shall record actual as-built lines and grades on the as-built Drawings.

**3.18.5** During the progress of the Work the registered land surveyor or professional engineer shall record actual as-built lines and grades on the as-built Drawings. The Contractor shall, from time to time, furnish to the Owner surveys certified by a registered land surveyor, in such form as may be required by the Owner, of the location of all improvements and utilities on the Site.

# ARTICLE 4 OWNER

## 4.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

**4.1.1** If available, the Owner shall furnish to the Contractor surveys describing the physical characteristics, legal limitations for the Site, and a legal description of the Site.

**4.1.2** The Owner may furnish the Contractor with certain reports, plans, studies, tests, information and other documentation relating to utilities and subsurface and other conditions affecting or relating to the performance of the Work (the "Site Conditions Documents"). The Contractor represents that it has thoroughly studied and is familiar with the Site Conditions Documents which it has received. In the case of Site Condition Documents to be supplied by the Owner after execution of the Agreement, the Contractor shall study and become familiar with such documents. The Contractor shall advise the Owner in writing of any errors, omissions, inconsistencies discovered by the Contractor in its review of the Site Condition Documents. The Contractor represents further that it has examined the Site and local conditions and as they are developed will carefully study and compare the Contract Documents with each other and with conditions at the Site, and with the Site Conditions Documents. Unless otherwise specifically stated, the Owner does not assume any responsibility for the accuracy or completeness of the Site Condition Documents. Such information and data is furnished to the Contractor for its informational value, but the Owner does not hold out such information or data to the Contractor as being complete nor as an accurate or approximate indication of surface, subsurface or other conditions. No claim for extra cost or any extension of the Contract Time resulting from reliance by the Contractor on the Site Conditions Documents shall be allowed except as expressly provided in the Contract Documents.

**4.1.3** Information or services required of the Owner under the Contract Documents and requested in writing by the Contractor shall be furnished by the Owner, if available, with reasonable promptness so as to endeavor to avoid delay in the orderly progress of the Work.

**4.1.4** The Contractor will be furnished, free of charge, four (4) copies of the Contract Documents.

**4.1.5** The Owner may, but shall not be required to, forward instructions to the Contractor through the Owner's Representative. If communicated directly to the Contractor by the Owner, the Owner will endeavor to provide copies of such communications to the Owner's Representative and the Engineer.

## 4.2 CONFIDENTIAL INFORMATION

**4.2.1** The Contractor shall not disclose, at any time during or after the Work, either directly or indirectly, any confidential records, knowledge or information which the Contractor may acquire about the Project or the Owner, except as may be required by law or by

order of a court of competent jurisdiction. The Contractor shall treat all information relating to the Project and all information supplied to the Contractor by the Owner, the Owner's Representative, or the Engineer as confidential and proprietary information of the Owner and shall not permit its release to third parties or make any public use of such information without the Owner's prior express written authorization. The Contractor shall require all Subcontractors to comply with this provision.

### 4.3 TAX EXEMPTION

**4.3.1** The Owner, as an authority of the Commonwealth of Massachusetts, is exempt from certain taxes. The Owner's taxpayer exemption number is 042-379-317. The Contractor hereby acknowledges that the Contract Sum has been established based upon the understanding that the Owner is exempt from certain taxes. It is therefore required that the Contractor and Subcontractors purchasing materials and supplies to be used in construction of the Project (including rental charges for construction vehicles, equipment and machinery rented specifically for use on the site of the Project or while being used exclusively for the transportation of materials for the Project) ("Construction Materials") apprise vendors of the tax-exempt status of the Owner, so that certain taxes will not be imposed upon the purchase of Construction Materials. At the time of purchase of Construction Materials, the purchaser shall provide the vendor with copies of certificates or other documentation necessary to permit the sale of such Construction Materials to be exempt from sales, use and other applicable taxes imposed by any state or federal taxing authority. If such taxes are paid on any Construction Material used in the construction of the Project, the Contractor shall be responsible for reimbursing the Owner, whether the purchases were made by the Contractor, a Subcontractor or Supplier, the full amount of such taxes and the Owner shall have the right to recover any such amounts not promptly reimbursed by reducing any payment due the Contractor under the Contract by such amount. Taxes not applicable to the Owner include, but may not be limited to: (a) Sales and Use Tax imposed by the Commonwealth under M.G.L. c. 64H and c. 64I on Construction Materials; and (b) Federal Excise Taxes as applied to articles which are taxable under Chapter 32 of the Internal Revenue Code of 1986, as amended.

## ARTICLE 5 INDEMNIFICATION

### 5.1 CONTRACTOR'S INDEMNITY

**5.1.1** The Contractor shall indemnify, defend with counsel acceptable to the Owner, keep and save harmless the Commonwealth, the State University, and the Owner, including their respective board members, trustees, directors, officers, contractors, consultants, agents, employees, and other representatives, in both their respective individual and official capacities, against all liabilities, suits, claims, damages, losses, expenses, penalties, fines, fees including, but not limited, to attorneys' fees, expert witness fees and other legal expenses (including fees and expenses in connection with any alternative dispute resolution process) and other costs and liabilities caused by, arising out of, resulting from, or incidental to, the

following, each to the full extent allowed by the laws of the Commonwealth of Massachusetts and not beyond any extent that would render these provisions void or unenforceable:

(a) breach or default under or failure to perform or comply with the terms of the Contract by the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible;

(b) negligent acts or omissions of the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible;

(c) infringement of any patent or trademark, or violation of any copyright, right of privacy or any similar right protected by any law affecting intellectual property arising out of or relating to the use of methods, processes or information, or products or other materials or property, in connection with performance of the Work by the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible, or otherwise relating to the Work;

(d) violation of any Applicable Law in connection with performance of the Work by the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible;

(e) violation of or noncompliance with the conditions of any Permits and Approvals by the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible;

(f) failure of the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible to pay any federal, state or local taxes based upon gross receipts, income, purchases, rentals or sales, the use of any property, unemployment insurance or any other social security or social benefit taxes applicable to employees of the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible, or any other taxes imposed in connection with the Contract or the Work;

(g) personal injury, sickness, emotional distress, disease or death directly or indirectly caused by, arising out of, resulting from, or incidental to the performance of the Contract or otherwise relating to the Work or any act or omission of the Contractor, any Subcontractor or Supplier, or any other party for whose acts or omissions the Contractor is or becomes liable;

(h) loss or damage to any property of the Contractor, and loss or damage to any property of Subcontractor, Supplier, or other parties for whom the Contractor is or becomes responsible;

(i) claims by Subcontractors, Suppliers, or others against the Contractor or the Owner on account of amounts due or claimed to be due to such Subcontractor, Supplier, or others in connection with the performance of the Work;

(j) loss or damage to property owned by the Owner or any third parties located on or about the Site, in whole or in part arising out of, resulting from, or incidental to the performance of the Work or any acts or omissions of the Contractor, any Subcontractor, Supplier, or any other party for whom the Contractor is or becomes responsible;

(k) neglect or failure to construct the Work within the contract work lines, or by reason of any encroachment by any element or portion of the Work, or any part or projection thereof, on adjoining land if such encroachment shall result from the Contractor's failure to construct the Work within said contract work lines;

(l) release or threatened release of any hazardous material which: (i) was brought onto the Site by the Contractor, or any Subcontractor, Supplier, or any other party for whom the Contractor is or becomes responsible; or (ii) was negligently removed from, handled on, or disposed of on the Site by the Contractor, any Subcontractor, Supplier, or any other party for whom the Contractor is or becomes responsible, regardless of the source or origin of such hazardous material or the method of deposit of such hazardous material on the Site or, in the case of the removal of any hazardous material from the site, on the Site to which such hazardous material was removed;

(m) claims or assertions by any separate contractor of disruption, delay or loss caused by interference by the Contractor (or its Subcontractors or others for whom the Contractor is or becomes responsible) with or hindrance of the progress or completion of work being performed by separate contractor, or failure of the Contractor or any Subcontractor, Supplier, or any other party for whom the Contractor is or becomes responsible, to cooperate reasonably with such separate contractor; and

(n) failure of the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible to comply with their obligations to not use undocumented workers to perform any part of the Work.

Such agreement and obligation of the Contractor shall not be construed to negate, abridge, or otherwise reduce any right or remedy which would otherwise exist as to any party or person described in this Section 5.1.

**5.1.2** Provisions of this Section 5.1 shall be for the benefit of each party indemnified hereunder with the same force and effect as if each individual were in privity of contract with the Contractor, and each party so indemnified shall have the right to bring a direct action against the Contractor to enforce this indemnity. Each party so indemnified is hereby made a third party beneficiary of the Contract with respect to the provisions of this Section 5.1.

**5.1.3** In connection with any and all claims against the Owner, the Owner's Representative or the Engineer or their consultants or separate contractors, or any of their Subcontractors, agents or employees, by any employee of the Contractor, any Subcontractor or Supplier, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the Contractor's indemnification obligation under this Section 5.1 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under worker's compensation acts, disability benefit acts or other employee benefit acts.

**5.1.4** In the event that a claim, demand or action is asserted against a party indemnified under this Section 5.1 with respect to which the Contractor is obligated to indemnify such party in accordance with this Section, such party shall give timely notice to the Contractor of such claim and may request that the Contractor undertake the defense of such claim with counsel reasonably satisfactory to such indemnified party and without cost to such indemnified party, or the indemnified party may undertake the defense of such claim, with counsel satisfactory to the Contractor, in which case the Contractor shall cooperate and assist in the defense and resolution of such claim, and shall be responsible for all costs of defense, judgments, settlements and other liabilities as provided in this Section 5.1. Failure of the indemnified party to notify the Contractor as provided in the preceding sentence shall not waive, release or otherwise affect the indemnification obligations of the Contractor hereunder, except to the extent that the Contractor establishes that such failure to give notice has prejudiced the Contractor in the defense of such claim.

**5.1.5** The indemnification obligations of the Contractor under the Contract shall survive the termination or expiration of the Contract and completion of the Work.

**5.1.6** The obligations of the Contractor under this Article 5 shall not extend to the liability of the Engineer, his agents or employees, arising out of the performance of the Engineer's obligations under the Contract Documents.

## ARTICLE 6 SUBCONTRACTORS

### 6.1 SUBCONTRACTS

**6.1.1** All Subcontractors shall look solely to the Contractor for payment for their Work performed in accordance with the Contract Documents except as expressly

otherwise permitted by law. The Contractor shall furnish the Owner with executed copies of all Subcontracts promptly upon execution thereof.

**6.1.2** Contractor shall make payments to Subcontractors in accordance with M.G.L. c. 30, § 39F. For the purposes of this Contract, the word "forthwith" appearing in paragraph (1)(a) of M.G.L. c. 30, § 39F shall be deemed to mean "within five (5) business days".

**6.1.3** The Contractor hereby conditionally assigns to the Owner all Subcontracts now or hereafter executed by the Contractor in connection with the Work and in accordance with the requirements of the Contract Documents.

(a) Such assignment shall become an effective and present assignment only upon a termination by the Owner of the Contract in accordance with the provisions of the Contract Documents and only as to those Subcontracts which the Owner explicitly accepts and assumes in writing. The Owner shall have the sole option to determine which Subcontracts the Owner shall accept as aforesaid.

(b) This Subsection 6.1.3 shall serve as the instrument of assignment at such time as the assignment provided for above becomes effective. The Contractor agrees, however, at the Owner's request, to execute whatever instruments the Owner requests to confirm such assignment.

**6.1.4** The Contractor shall maintain and distribute to the Owner, the Owner's Representative, and the Engineer a Project Directory listing the names, addresses, email addresses, and telephone numbers of the principal members of the staff of each Subcontractor in addition to any other information requested by the Owner or the Engineer regarding Subcontractors. The Contractor shall update such Project Directory periodically during the Project. The principal contact for each Subcontractor and his/her home telephone number shall be indicated in the Project Directory so that such person may be reached in emergency situations.

## ARTICLE 7 OTHER WORK

### 7.1 OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

**7.1.1** In addition to the Work required to be performed under the Contract, the Owner may perform other work related to the Project at the Site with its own forces, have other work performed by utility suppliers, or award separate contracts for such work or other work on the Site under these or other conditions of the contract. If the fact that such other work is to be performed is not noted in the Contract Documents, notice thereof will be given to the Contractor prior to commencement of such other work.

**7.1.2** If, after commencement of the Work, the plans of the Contractor and any such separate contractors performing work in connection with the Project, or other contractors, are inconsistent with respect to methods, scheduling, progress or otherwise, the Contractor shall promptly take all steps necessary to coordinate its Work with that of other contractors. The Contractor shall have no claims against the Owner or such separate contractors performing work in connection with the Project or other contractors for any delays arising from joint use of any work area or staging area, or from joint use of access. All coordination undertaken by the Contractor shall be acceptable to Owner in all respects.

### 7.2 MUTUAL RESPONSIBILITY

**7.2.1** The Contractor shall provide the Owner, utility suppliers and other separate contractors proper and safe access to the Site and a reasonable opportunity for the delivery and storage of materials and equipment and the execution of their work, and for reasonable access to, and use of, the Contractor's hoisting facilities, if provided, and temporary electric, water and sanitary facilities. Disputes arising with respect to delivery or storage of materials or equipment, or otherwise relating to coordination of the Work under the Contract with the work of utility suppliers or separate contractors shall initially be submitted to the Engineer. Recognizing the constraints imposed upon the Contractor by the requirements of this Section, the Owner agrees to give the Contractor as much advance notice as is practicable of the particular needs of separate contractors and utility suppliers for access to the Site and joint use of the Site and site facilities so as to minimize the impacts upon the Contractor's scheduling and operations. The Contractor shall cooperate with the Owner, utility suppliers and separate contractors, and require and enforce the cooperation of its Subcontractors in such manner as to permit the expeditious, efficient connection of utilities and to facilitate completion of the Project as a whole and completion of specific parts of the Project for early use or occupancy by the Owner in accordance with the Project Schedule.

**7.2.2** If any portion of the Contractor's Work depends, for proper execution or results, upon other work of the Owner or any such utility supplier or other separate contractors, the Contractor shall, prior to proceeding with that portion of the Work, inspect and promptly report to the Engineer and the Owner, in writing, any delays, discrepancies or defects in such other work discoverable as a result of prudent examination, testing and observation by the Contractor that render such other work unavailable or unsuitable to receive Contractor's Work. Failure of the Contractor to so report shall constitute an acknowledgment that such other work is fit and proper to receive the Contractor's Work, except as to defects not so discoverable.

## ARTICLE 8 INSPECTION AND TESTING

### 8.1 INSPECTION AND TESTING

**8.1.1** If the Contract Documents, laws, ordinances, rules, regulations or orders of, or conditions imposed by, any government entity having jurisdiction over the Project require any portion of the Work to be inspected, tested or approved, the Contractor shall give the

Owner's Representative (with a copy to the Engineer), the Owner's testing agents or consultants, and if applicable, government entities requiring such inspection, testing or approval, timely notice (at least five (5) full business days) prior to the commencement of Work or operations requiring such inspection, testing or approval so the Engineer, such government entities and agents or consultants may perform or observe such inspection, testing or approval. The Contractor shall perform and bear all costs of such inspections, tests and approvals, unless otherwise provided in the Contract Documents. Except in the event of an unforeseen emergency, Work or operations requiring such inspection, testing or approval shall not be performed at times other than during the normal working day without the prior approval of the Owner. The Contractor will provide all required assistance (including, without limitation, labor, tools, equipment and transportation) as the Engineer or such government entities or agents or consultants may request in connection with such inspection, testing or approval. The Contractor shall make all necessary arrangements at its expense to permit the Engineer to make factory, shop or other inspections of materials or products ordered for the Work and in the process of manufacture, fabrication or extraction or in storage at locations other than the Site of the Work. Where certain testing and inspection requirements are required by the Contract Documents to be performed at the expense of the Owner, the Owner will retain the services of testing laboratories, agencies or consultants, to perform such tests or inspections and render such services as may be required to verify that the Work fulfills the requirements and intent of the Contract Documents. Such services will be performed in a manner consistent with the requirements of the Owner and the various agencies having jurisdiction over the Work and in accordance with sound standards of professional architectural and engineering practice applicable thereto. The Contractor and Subcontractors shall place their personnel at the Engineer's disposal for field checking during any inspection period. When layouts of the site work are to be made, the Contractor shall notify the Owner's Representative and the Engineer in sufficient time so that they may be present.

**8.1.2** The Contractor shall make no claim for delay or extra costs or extension of the Contract Time arising directly or indirectly out of reasonably required inspection or testing or out of the Contractor's failure to give timely notice so as to permit performance or observance of inspections, testing or approvals. Inspections and testing of the Work shall not relieve the Contractor of any obligations under the Contract Documents. Without limiting any other provisions hereof, defective work shall be made good and unsuitable materials may be rejected, notwithstanding that such Work and materials have been previously inspected by the Engineer and accepted or estimated for payment or paid for.

## 8.2 SPECIAL TESTING

**8.2.1** If the Owner or the Engineer determines that any portion of the Work requires special inspection, testing, or approval beyond that required in the Contract Documents, the Owner's Representative, upon written authorization from the Owner, or the Owner, will instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in Section 8.1 hereof. If such special inspection or testing reveals a failure of the Work to comply strictly with the requirements of the Contract

Documents, the Contractor shall correct such Work and bear all costs of such inspection, testing and corrections, including compensation for the additional services of the Engineer and other consultant made necessary by such failure; otherwise the Owner shall bear the costs of such inspection or testing, and an appropriate Change Order shall be issued. In no event shall the Contractor be entitled to any claim for delay or extra cost or extension of the Contract Time as a result of any such inspection, testing or corrections.

## ARTICLE 9 CONTRACT TIME

### 9.1 DEFINITIONS

**9.1.1** The Contract Time is the period of time stated in the Agreement to achieve Final Completion of the Work, as may be adjusted in accordance with the Contract.

**9.1.2** The date of commencement of the Work is date of the issuance of a Notice to Proceed by the Owner for a portion, or all, of the Work.

**9.1.3** The Date of Substantial Completion of the Work, or a designated portion thereof, is the date certified by the Engineer when the requirements of the Contract Documents have been satisfied. Substantial Completion of the Work shall not be deemed to be achieved until either (1) the Work required by the Contract has been completed except for Work having a contract price of less than one per cent of the then adjusted total Contract Sum, or (2) substantially all of the Work has been completed and opened to public use except for minor incomplete or unsatisfactory Work items that do not materially impair the usefulness of the Work required by the Contract

For purposes of this Article 9, Substantial Completion refers to Substantial Completion of the entire Project. In the event of any question or dispute as to the date of Substantial Completion, such question or dispute shall be determined by the Engineer in its sole discretion, and neither the Engineer nor the Owner shall have any liability to the Contractor arising out of such determination made by the Engineer in good faith.

### 9.2 PROGRESS AND COMPLETION

**9.2.1** Upon execution by the Owner of the Agreement and issuance of a written Notice to Proceed by the Owner, the Contractor agrees to proceed with the Work, or portion thereof covered by a Notice to Proceed with Construction, promptly, continuously, and diligently. The Contractor agrees to adhere to the Project Schedule, to achieve all interim completion milestones, if any, and to achieve Substantial Completion of the Work on or before the Substantial Completion Date set forth in the Agreement. It is agreed that TIME IS OF THE ESSENCE of the Contract Documents.

**9.2.2** Recognizing that, from time to time during the progress of the Work, the Owner may find it necessary to establish the current status of performance under the Contract

Documents, the Contractor shall, at the request of the Owner, promptly provide statements, documents or certificates to the Owner regarding the status of the Work, compliance of the Work with the Contract Documents, compliance by the Contractor or any Subcontractor with the Contract Documents, and such other matters within the scope of the Contractor's performance under the Contract Documents as the Owner may require.

**9.2.3** The Contractor shall submit a detailed written report on the status of the Work compared to the current Project Schedule for the Owner's review with each Application for Payment. Each such report shall reflect all items required by the Contract Documents. If the Contractor fails to complete any activity by its latest scheduled completion date, the Contractor shall, within seven (7) days of such failure, submit a written statement showing how the Contractor intends to correct such failure and return to the current Project Schedule. The Contractor shall update the Project Schedule weekly to reflect changed logic, adjusted and modified sequences of Work, and other identifiable changes, including, without limitation, specific strategies for continuing to meet the Substantial Completion Date. With its monthly report on the status of the Work, the Contractor shall submit a written certification by the Contractor's Project Manager that the Project Schedule submitted with the report is the actual schedule being utilized for execution of the Work and that the Work is progressing in accordance therewith.

**9.2.4** If, at any time, the Owner determines that the progress of the Work is delayed or has not reached the level of completion required by the current Project Schedule, the Owner shall have the right to direct the Contractor to take all measures necessary to recover any lost time and return the Work to the level of progress required by the current Project Schedule ("Recovery Measures"). In such event, within five (5) business days of receiving the Owner's direction to take Recovery Measures, the Contractor shall notify the Owner in writing of the steps which the Contractor proposes to take to remedy the situation, shall furnish Owner with an updated Project Schedule reflecting such Recovery Measures, and shall implement such steps promptly. Such Recovery Measures shall continue until the progress of the Work is returned to the stage of completion required by the current Project Schedule. If the Contractor disputes the Owner's direction to the Contractor to take Recovery Measures, the Contractor shall, nonetheless, promptly and diligently perform the Recovery Measures and shall have no right whatsoever to fail or refuse to take Recovery Measures once so directed by the Owner. If, and to the extent the delays giving rise to a direction from the Owner to the Contractor to take Recovery Measures are not Excusable Delays, the Contractor shall not be entitled to an extension of the Contract Time or an adjustment of the Contract Sum in connection with undertaking Recovery Measures. If and to the extent that any delay giving rise to a direction from the Owner to implement Recovery Measures is an Excusable Delay, the Contractor shall be entitled to assert a claim in accordance with the Contract.

## 9.3 EXTENSION OF THE CONTRACT TIME AS A RESULT OF DELAY EVENT

The provisions of this Section 9.4 govern, and constitute the Contractor's sole remedy, if a Delay Event is encountered by the Contractor in the course of performance of the Work. Any claim for an extension of the Contract Time associated with a Change in the Work shall be governed by, and subject to, the provisions of Article 13. If the Contractor is entitled, subject to the provisions of this Section 9.4, to an extension of the Contract Time by reason of a Delay Event, then an extension of the Contract Time may be granted for the period of the necessary delay caused to Critical Path Activities, determined in accordance with, and subject to, this Section 9.4, and other applicable provisions of the Contract Documents. A Change Order effecting such extension will be furnished to the Contractor within a reasonable period after such determination. No extension of the Contract Time shall be granted to the Contractor under the Contract (except as expressly authorized in connection with a Change in the Work) unless the requirements of this Section 9.4 shall have been satisfied.

### 9.3.1 Types Of Delay Events

"Delay Event" shall be limited to any of the following acts, omissions, events or conditions which delays completion of the Work or prevents performance of the Contractor's obligations under the Contract and which could not be prevented by the Contractor even though the Contractor were to take all appropriate care to avoid or diminish the adverse consequences of the Delay Event:

(a) Unavoidable casualty;

(b) Act of war, civil disorder, riot or similar occurrence;

(c) Order, legislation, judgment or other official action, of any governmental body, agency or official having jurisdiction over the Project;

(d) Any act or omission of the Owner or the Engineer, such as a temporary stoppage or suspension of Work, not resulting from, or caused, in whole or in part, by any act or omission of the Contractor, any Subcontractor or any other person or entity for whom the Contractor is responsible;

(e) Any work of utility companies or municipal departments that may enter the Site to make changes in utility equipment or to place new utility equipment, to the extent such delay does not result, in whole or in part, from the act or omission of the Contractor, any Subcontractor or any other person or entity for whom the Contractor is responsible;

(f) Unusually severe weather preventing the Contractor from engaging, on a particular day, at least 75% of the labor force and equipment that was scheduled for engagement on Critical Path Activities on that particular day for at least 50% of that day; and

(g) Strikes or work shutdowns caused by labor disputes and lockouts (other than lockouts caused by the Contractor, Subcontractors or Sub-Subcontractors unrelated to the Contractor's forces or the forces of any Subcontractor).

The financial difficulties of the Contractor (or any Subcontractor, supplier or other party for whom the Contractor is responsible) or the consequences thereof, shall not constitute a Delay Event.

### 9.3.2 NOTICE AND PROCEDURES AS TO DELAY EVENTS

**9.3.2.1** Initial Notice. The Contractor shall provide the Owner with an initial written notice of any occurrence, event or condition which the Contractor claims (or may intend to claim) constitutes a Delay Event. Such initial written notice shall be submitted to the Owner within five (5) business days of the commencement of such occurrence, event or condition, and shall:

(h) State in detail the factual circumstances which form the basis of the delay, and the current and anticipated future effects on the Contractor's performance and Project Schedule; and

(i) State the date of commencement of the delay and the duration or expected duration of the delay with respect to each affected portion of the Work.

The submission of such initial written notice within the time period provided above shall be a condition precedent to any extension of the Contract Time. Neither the Owner's Representative and nor the Engineer nor any other agent, consultant or employee of either shall have authority to modify or waive, expressly or by implication, such condition precedent or the corresponding condition precedents set forth in Subsection 9.4.2. and any action, inaction or statement by any of them to such effect shall not be binding upon the Owner.

**9.3.2.2** Second Notice. Following submission of the initial written notice, not later than fifteen (15) business days of the commencement of any occurrence, event or condition which the Contractor claims (or intends to claim) constitutes a Delay Event, the Contractor shall submit to the Owner's Representative written notice of such occurrence, event or condition. This written notice shall (i) state whether an extension of the Contract Time is claimed and the Contractor's alleged contractual entitlement thereto; (ii) state in detail the factual circumstances which form the basis of the delay; (iii) identify Work activities alleged to have been delayed; (iv) state the calendar dates on which the Work activities were delayed and are anticipated to be further delayed; (v) state the number of calendar days by which the Contractor is requesting the Contract Time to be extended; (vi) fully and completely state the analysis justifying the request, including a schedule impact (fragnet) analysis worksheet prepared in a time-scale to graphically illustrate the effect of the alleged delay on affected activities; (vii) state the date of commencement and duration or expected duration of the delay

and its effect on the various portions of the Work; and (viii) state any other information reasonably requested by Owner.

**9.3.2.2.1** The Contractor shall provide such detailed supporting documentation, including, where appropriate, an updated Project Schedule indicating all of the activities affected by the circumstances which form the basis for the claim. The submission of such written notice within the time period provided above shall be a condition precedent to any extension of the Contract Time.

**9.3.2.2.2** Because the possible necessity for an extension of the Contract Time might materially alter the scheduling, plans and other actions of the Owner and because, with sufficient opportunity, the Owner might (if it knew of the Contractor's claim) attempt to mitigate the effect of a delay for which an extension of the Contract Time was to be claimed, and only oral notice might cause disputes as to the existence or substance of such claim, and because delayed notice might seriously hinder or prevent the Owner's investigation of the pertinent facts, the giving of written notice within the time periods stated above in Subsections 9.4.2.1, and 9.4.2.2 shall be of the essence of the Contractor's obligations, and failure of the Contractor to comply with these requirements shall be deemed a conclusive, full and final waiver of any claim for extension of the Contract Time.

**9.3.2.2.3** It shall in all cases be presumed that no extension or further extension of the Contract Time is appropriate unless the Contractor shall affirmatively demonstrate the Contractor's entitlement to such extension under all applicable terms and conditions of the Contract Documents. To this end, the Contractor shall maintain adequate records supporting any claim for an extension of the Contract Time, and in the absence of such records, the foregoing presumption shall be conclusive.

### 9.3.3 Limitations On Delay Computation

**9.3.3.1** Whenever the Contractor claims an extension of the Contract Time as a result of a Delay Event, only the unavoidable delay caused to completion of the Work as a whole shall be considered in measuring or evaluating the extent of the delay. If, for example, extra work can be (or could have been) performed along with the regular Work called for by the Contract Documents so as to reduce or eliminate a delay in the progress of the Work or some portion thereof, without causing necessary delay to such regular work, no claim for extension of the Contract Time shall be granted. An extension of the Contract Time may be granted only for Delay Events affecting Critical Path Activities. In any event, even though a Delay Event meets all of the above conditions, an extension may be granted only to the extent that the effect of such cause cannot be (or could not have been) avoided or mitigated by the exercise of all reasonable precautions, efforts and measures (including planning, scheduling and rescheduling, resequencing Work activities, and reallocating and redeploying work forces), whether before or after the occurrence of the cause of delay. If a concurrent delay occurs (*i.e.*, either a single delay resulting from two or more causes where at least one delay is the responsibility of the Contractor, or multiple delays, where at least one delay is the responsibility

of the Contractor), no extension of the Contract Time shall be granted to the Contractor during the period of any such concurrent delay for which the Contractor is responsible.

### 9.3.4 Sole Remedy

**9.3.4.1** Except as expressly provided in the Contract Documents, the Contractor assumes the financial risk of all delays of any kind or duration, whether or not within the contemplation of the parties and whether foreseeable or unforeseeable. The Contractor shall have no right to rescind or terminate the Contract except as expressly provided herein, and the Contractor shall have no cause of action under any theory of quasi-contract or *quantum meruit* by reason of any such delay. The Contractor agrees that extensions of the Contract Time, as provided herein, shall be the Contractor's sole and exclusive remedy against the Owner in the event the Work is delayed, except to the extent otherwise provided in Subsections 9.4.4.2 and 9.4.4.3 below.

#### 9.3.4.2 Adjustment of the Contract Sum as a Result of Certain Delays

If, and to the extent that, the Contractor establishes that all of the following have occurred:

(j) The Contractor is entitled to an extension of the Contract Time pursuant to this Section 9.4,

(k) The Contractor suffered Compensable Losses (as defined below) as a result of the delay, and

(l) The Contractor could not have avoided or mitigated such Compensable Losses despite having taken all reasonable precautions, efforts and measures to avoid or reduce the amount thereof, including, without limitation, mitigating delays by resequencing Work activities, and reallocating and redeploying work forces of the Contractor, Subcontractors and Sub-Subcontractors to the maximum extent practicable.

In such event the Owner may adjust the Contract Sum by an amount equal to the Contractor's Compensable Losses directly attributable to the Delay Event giving rise to the extension of the Contract Time. A Change Order effecting the adjustment to the Contract Sum will be furnished to the Contractor within a reasonable period after such determination.

"Compensable Losses" include only the reasonable verified amounts of necessary direct costs of: (i) idle time of equipment; (ii) idle time of workers; and (iii) moving of equipment and extended field office overhead expenses. No mark-up of Compensable Losses will be allowed for home office overhead or profit. For purposes of the Contract, "extended field office overhead" expenses shall mean those indirect costs incurred at the Site (sometimes also referred to as general conditions costs or job site overhead costs): (i) which cannot reasonably be allocated to any specific work item within the Work, and (ii) which increase or decrease as a

function of the duration of the Contract Time. Examples of extended field office overhead items include: project manager, superintendent, temporary utilities and temporary facilities, clerical staff, office equipment and supplies and project trucks and automobiles. The Contractor shall provide to the Owner all documentation and information reasonably requested by the Owner to substantiate the sum of Compensable Losses.

**9.3.4.3** The following clauses (a) and (b) of this Subsection 9.4.4.3 are included herein pursuant to requirements of M.G.L. c. 30, § 39O. In the event that a suspension, delay, interruption or failure to act of the Owner 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 Owner, 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.

(a) The Owner 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 Owner; provided, however, that if there is a suspension, delay or interruption for fifteen (15) days or more or due to a failure of the Owner to act within the time specified in the Contract, the Owner shall make an adjustment in the Contract Sum equal to the actual increase in the cost of the Work but shall not include any profit to the Contractor with respect to such increase; and provided further, that the Owner shall not make any adjustment in the Contract Sum under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which the Contract provides for an equitable adjustment of the Contract Sum under any other contract provisions.

(b) The Contractor must submit the amount of a claim under provision (a) hereof to the Owner 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 submission of the Application for Payment seeking final payment under the Contract and, except for costs due to a suspension order, the Owner shall not approve any costs in the claim incurred more than twenty (20) days before the Contractor notified the Owner in writing of the act or failure to act involved in the claim.

## ARTICLE 10 PAYMENTS AND COMPLETION

### 10.1 SCHEDULE OF VALUES

**10.1.1** Prior to the first Application for Payment, and as a condition precedent to the making of any payments to the Contractor, the Contractor shall submit to the Owner's Representative and Engineer, for approval by the Owner, a preliminary Schedule of Values allocating the Contract Sum among the various portions of the Work, prepared in such form and detail and supported by such data to substantiate its accuracy as the Owner may require. Such Schedule of Values shall be based upon, and consistent with, the Project Schedule. The

Schedule shall be reviewed and revised from time to time to reflect changes in the Work, or if found by the Owner's Representative or Engineer to be inaccurate. Once approved by the Owner and so long as the Schedule of Values remains up to date and accurate, the approved Schedule of Values shall be used as a basis for the Contractor's Applications for Payment.

## 10.2 APPLICATIONS FOR PAYMENT

**10.2.1** The Contractor shall submit to the Owner's Representative and the Engineer for review, no later than the first day of each month, a draft of the Application for Payment which the Contractor intends to submit that month. Such draft Applications shall not be considered the Application for Payment for purposes of Subsection 10.2.2.

**10.2.2** The Contractor shall submit to the Owner's Representative and the Engineer an itemized Application for Payment for Work completed as of the end of the preceding month, based upon the approved Schedule of Values and supported by such data substantiating the Contractor's right to payment as the Owner may require, including invoices with check vouchers attached, payrolls, receipted bills, requisitions from Subcontractors and Suppliers, and reflecting the retainage set forth in the Contract. The format of such Applications for Payment shall be AIA Documents No. G702 and G703 (Contractor's Application for Payment) or such other form as may be required by the Owner. The Contractor shall submit its Applications for Payment no later than the fifth ($5^{th}$) calendar day of each month for each payment period constituting the preceding calendar month. The Application for Payment shall show the total cost of the Work performed and materials furnished by the Contractor and each Subcontractor to date, based on a percentage of the work completed.

**10.2.3** Unless otherwise provided in the Contract Documents, such Application for Payment may include materials or equipment not incorporated in the Work but delivered and suitably stored at the Site and, if approved in advance in writing by the Owner, in its sole discretion, payment may be requested for materials or equipment suitably stored at some other location agreed upon in writing, all in accordance with Section 10.9, below. Payments for materials or equipment stored on or off the Site shall be conditioned upon submission by the Contractor of bills of sale, invoices or such other documents, information or procedures as may be required by the Owner to establish the Owner's title to such materials or equipment free and clear of all liens, claims, security interests or encumbrances (collectively referred to in the Contract Documents as "liens"), or otherwise to protect the Owner's interests, and if off-site storage is involved, compliance in full with the requirements of Section 10.9, below.

**10.2.4** The Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to the Owner automatically without further action by the parties, free and clear of all liens or other encumbrances and upon the first to occur of: (i) incorporation in the construction, or (ii) the receipt of payment by the Contractor. Transfer of title to the Owner shall not relieve the Contractor of any of its duties or obligations under the Contract Documents or of any responsibility or liability for the safe delivery and safeguarding, custody, or warehousing of the materials or equipment, nor shall it constitute any

waiver of the Owner's right to absolute fulfillment by the Contractor of all of the terms of the Contract, nor shall it commence any warranty or guarantee period prior to Substantial Completion. The Contractor warrants that no Work, materials or equipment covered by an Application for Payment shall have been acquired by the Contractor, or by any other person performing Work at the Site or furnishing materials or equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or any other secured party or otherwise imposed by the Contractor or any other person or entity.

**10.2.5** At the request of the Owner, each Application for Payment shall be accompanied by an affidavit or certificate from each Subcontractor stating that it has been paid all amounts due it on the basis of the previous periodic payment(s) to the Contractor, or stating the amount not so paid and the reason for any discrepancy. In the event of any such discrepancy, the Contractor shall furnish its own written explanation to the Owner through the Owner's Representative. If requested by the Owner, the Contractor shall furnish a statement accounting for the disbursement of funds received under prior Applications for Payment.

**10.2.6** Each Application for Payment shall include a monthly status report on the progress of the Work, including those items more particularly set forth in the Contract, in these General Conditions, and in the Specifications. The Contractor acknowledges that such status report is of significant importance to the Owner in determining whether the Contractor is entitled to payment pursuant to such Application for Payment, and failure to deliver such status report, in form, substance, or detail satisfactory to the Owner, shall be deemed to be just cause for withholding payment to the Contractor. Any waiver by the Owner of the requirement of submission of such status report (or any portion thereof) with respect to any Application for Payment shall not be deemed to be a waiver of the Owner's right to require the full and complete status report with respect to any future Application for Payment. Each status report shall include the items specified in the Agreement, in these General Conditions, and in the Specifications and any other reports or items requested by the Owner's Representative or the Owner. All status reports shall be in form and substance satisfactory to the Owner.

## 10.3 CERTIFICATES FOR PAYMENT

**10.3.1** Within five (5) days after receipt of the Contractor's Application for Payment, the Engineer will either issue a Certificate for Payment to the Owner, with a copy to the Contractor, for such amount as the Engineer determines is properly due, or notify the Owner and Contractor in writing its reasons for withholding a Certificate for Payment, or any portion thereof, as provided in Subsection 10.6.1.

**10.3.2** The issuance of a Certificate for Payment will constitute a representation by the Engineer to the Owner, based on the Engineer's observations, that the Work has progressed to the point indicated, that to the best of the Engineer's knowledge, information and belief the quality of the Work indicated therein is in accordance with the Contract Documents (subject to evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of any subsequent tests required by or performed under the

Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in the Certificate), that the submission includes all necessary prevailing wage submittals and that the Contractor is entitled to payment in the amount certified. The Engineer shall not certify the final payment until an inspection for Final Completion has been performed and the Owner has acted affirmatively on the Engineer's recommendation that the Project be accepted.

## 10.4 PROGRESS PAYMENTS TO THE CONTRACTOR

**10.4.1** [Reserved]

**10.4.2** Within twenty-five (25) days after receipt of a Certificate for Payment issued by the Engineer, the Owner shall make payment of amounts properly due to the Contractor, subject to the terms and conditions of the Contract Documents.

**10.4.3** Upon receipt of payment from the Owner, the Contractor shall promptly pay each Subcontractor out of the amount paid to the Contractor on account of such Subcontractor's work, the amount to which the Subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such Subcontractor's work. The Contractor shall, by an appropriate agreement with each Subcontractor, require each Subcontractor to make payments to its lower tier Subcontractors in similar manner.

**10.4.4** Neither the Owner nor the Owner's Representative nor the Engineer shall have any obligation to pay or to see to the payment of any monies to any Subcontractor except as set forth in this Section 10.4.

**10.4.5** Pursuant to M.G.L. c. 30, § 39F, the Contractor shall make payments to Subcontractors in accordance with the following provisions:

(a) Forthwith after the Contractor receives payment on account of an Application for Payment, the Contractor shall pay to each Subcontractor the amount paid to the Contractor 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 ($65^{th}$) 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 Owner as the estimated cost of completing the incomplete and unsatisfactory items of Work, shall be due the Subcontractor; and the Owner shall pay that amount to the Contractor. The Contractor shall forthwith pay to the Subcontractor the full amount received from the Owner less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.

(c) Each payment made by the Owner to the Contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a Subcontractor shall be made to the Contractor for the account of that Subcontractor; and the Owner shall take reasonable steps to compel the Contractor to make each such payment to each such Subcontractor. If the Owner has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the Contractor or which is to be included in a payment to the Contractor for payment to the Subcontractor as provided in subparagraphs (a) and (b), the Owner shall act upon the demand as provided in this Subparagraph 10.4.5.

(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 Owner as the estimated cost of completing the incomplete and unsatisfactory items of work, the Subcontractor may demand direct payment of that balance from the Owner. The demand shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be delivered to or sent by certified mail to the Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the subcontract work. Within ten days after the Subcontractor has delivered or so mailed the demand to the Owner and delivered or so mailed a copy to the 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 Owner, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contains 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 Owner, but in no event prior to the seventieth day after substantial completion of the subcontract work, the Owner 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 Owner as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the Contractor in the sworn reply; provided that the Owner shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The Owner shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The Owner shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the Contractor and the Subcontractor in a bank in Massachusetts selected by the Owner 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 subparagraph (f) 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 Owner to the Contractor to the extent of such payment.

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

## 10.5 PAYMENT NOT ACCEPTANCE

**10.5.1** No Certificate for Payment, nor any progress payment made by the Owner, nor any partial or full use or occupancy of the Work or the Project by the Owner, shall constitute an acceptance of the Work, or any portion thereof, that is not in accordance with the Contract Documents.

## 10.6 PAYMENTS WITHHELD

**10.6.1** The Engineer may decline to certify payment, and may withhold its Certificate for Payment, in whole or in part, to the extent necessary to protect the Owner, if in the Engineer's opinion the Engineer is unable to make representations to the Owner as provided in Subsection 10.3.2. In such case, the Engineer will notify the Owner and the Contractor as provided in Subsection 10.3.1. The Engineer will issue a Certificate for Payment for the amount for which it is able to make all of the representations to the Owner set forth in Subsection 10.3.2. The Engineer may also decline to issue a Certificate for Payment or, because of subsequently discovered evidence or subsequent observations, it may nullify or amend the whole or any part of any Certificate for Payment previously issued, or, notwithstanding that the Engineer has issued a Certificate for Payment, the Owner (in addition to and without limitation of any other rights and remedies of the Owner under the Contract Documents) may withhold payment of any

amounts claimed to be due by the Contractor and certified for payment by the Engineer, in each case to such extent as may be necessary in order to provide for retention covering the fair value of any possible claims the Owner may have against the Contractor, which amounts may include, but shall not be limited to, the fair value of costs or losses arising from:

(a) defective Work not remedied,

(b) third party claims filed or reasonable evidence indicating probable filing of such claims,

(c) failure of the Contractor to make payments properly due to Subcontractors or Suppliers,

(d) reasonable evidence that the Work cannot be completed in accordance with the Contract Documents for the unpaid balance of the Contract Sum,

(e) reasonable evidence of any previous overpayment or improperly issued payment upon an Application for Payment,

(f) improper prior allocation of the Owner's contingency,

(g) damage to the Owner or another contractor,

(h) reasonable evidence that the Work is not progressing in accordance with the Project Schedule or will not be completed within the Contract Time,

(i) failure to carry out the Work in accordance with the Contract Documents or other default by the Contractor under, or failure of the Contractor to comply with any provisions of, the Contract Documents,

(j) claims for damages for delay (including accrued liquidated or actual damages, if any), or

(k) any lien, attachment or other encumbrance not discharged as required by the Contract Documents.

If and when the grounds set forth above are removed without cost to the Owner, payment may be requested and shall be made for amounts withheld because of such grounds, less any cost or damage incurred by the Owner as a result thereof.

## 10.7 SUBSTANTIAL COMPLETION

**10.7.1** When the Contractor considers that the Work, or a portion thereof designated in the Contract Documents for separate completion, is substantially complete as defined in Subsection 9.1.3, the Contractor shall prepare and submit to the Owner's Representative for delivery to the Engineer and to the Owner all documents, records, permits

and licenses required by the Contract Documents in a form satisfactory to the Engineer and the Owner, and a monetized punch list of items to be completed or corrected. Failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

**10.7.2** [Reserved] .

**10.7.3** Warranties and guarantees 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.

**10.7.4** Subject to the procedures set forth in this Section 10.7, within 21 days after presentation of Contractor's certification, Engineer on behalf of Owner shall present to 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. Engineer's declaration shall be made in accordance with the following procedures:

1. Promptly after Contractor's notification, Owner, Contractor and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing within 10 days of the Contractor's presentation of the certification required under Paragraph 10.7.1, giving reasons therefor.

2. If Engineer considers the Work substantially complete, Engineer will, within 10 days of the Contractor's presentation of the certification required under 10.7.1, deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed and corrected before final payment. Owner shall have 7 days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 21 days after presentation of Contractor's certification under Paragraph 10.7.1, notify Contractor in writing, stating the reasons therefor and providing an itemized list of incomplete or unsatisfactory Work items required by the Contract. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 21 days, execute and deliver to Owner and contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting

such changes from the tentative certificate as the Engineer believes justified after consideration of any objection from Owner

**10.7.5** At the time of Engineer's delivery of the tentative certificate of Substantial Completion to Owner, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment..Engineer shall be entitled to withhold certification of Substantial Completion if Contractor has not brought all substantially completed Work to functioning condition to the satisfaction of Owner.

**10.7.6** Within 15 days after the effective date of the declaration of Substantial Completion. Owner shall send to Contractor by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory work items, and, unless delayed by causes beyond its control, Contractor shall complete all work items within 45 days after the receipt of such list or before the then Contract Completion Date, whichever is later. If Contractor fails to complete such work within such time, Owner may, subsequent to 7 days' written notice to Contractor by certified mail, return receipt requested, terminate the Contract and complete the incomplete or unsatisfactory work items and charge the cost of same to Contractor.

**10.7.7** Within 65 days after the effective date of the declaration of Substantial Completion, Owner shall prepare and forthwith send to Contractor for acceptance a Substantial Completion estimate for the quantity and price of the Work done and all but one percent retainage on that Work, including the quantity, price, and all but one percent retainage for the undisputed part of each Work item and extra Work item in dispute but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory Work items and less the total periodic payments made to date for the Work. Owner 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 G.L. c. 30, § 39F. [NTD: the foregoing per GL c. 30, s 39G]

## 10.8 FINAL COMPLETION AND FINAL PAYMENT

**10.8.1** At such time as the Contractor has fully performed the Work, including all obligations set forth in the Contract Documents and all Work listed on the Certificate of Substantial Completion, the Contractor shall give notice to the Engineer and the Owner. The Contractor shall also provide a certificate to the Owner regarding completion of the Work in accordance with the Contract Documents, compliance by the Contractor with the Contract Documents, and such other matters within the scope of the Contractor's performance under the

Contract Documents as the Owner may require. Such certificate shall be in form and substance acceptable to the Owner.

**10.8.2** Upon receipt of written notice that the Work is ready for final inspection and acceptance, the Engineer and the Owner's Representative will promptly make such inspection. The Engineer shall, within 30 days of its and the Owner's Representative's receipt of the Contractor's written notice, notify Contractor in writing of all particulars in which the inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies. If Engineer and Owner's Representative agree that the Work is complete, the Contractor shall receive a copy of the Engineer's certificate of final inspection within 30 days of the Engineer's and Owner's Representative's receipt of the written notice provided by Contractor under this section 10.8 .

**10.8.3** The Engineer's Certificate of Final Completion will constitute a further representation that the conditions precedent to the Contractor's being entitled to final payment as set forth in this Section 10.8, and elsewhere in the Contract Documents, have been fulfilled in accordance with the requirements of the Contract Documents.

**10.8.4** Notwithstanding anything to the contrary in this Section 10.8 contained, if the Owner elects to take use or occupancy of the Project in stages, final inspection may be performed, at the request of the Contractor or the Owner, in stages (i.e., in respect of the portion of the Work to be occupied by the Owner and such systems, (e.g., mechanical, sanitary, etc.), as are necessary for the Owner's use or occupancy of such portion of the Project). The provisions of this Section 10.8 shall apply to any staged final inspection, except that in no event shall Final Completion be deemed to have occurred until final inspection has occurred with respect to the entire Work.

**10.8.5** Final Completion shall mean the completion of all of the Work in accordance with all of the terms and conditions of the Contract Documents and acceptance thereof after final inspection in accordance with Subsections 10.8.1 through 10.8.4. The date of issuance of the Owner's written notice of acceptance shall be designated as the date of Final Completion. Upon Final Completion, the Owner may take over the Site for permanent use and occupancy. A final Application for Payment may be made at any time after the date of Final Completion.

**10.8.6** Prior to, and as a condition precedent to, Final Completion, all of the following matters shall have been resolved and documents and items shall have been received and approved in writing by the Owner:

(a) final documents of similar nature to those required by the Contract Documents in connection with any Application for Payment hereunder; and

(b) all final permits, approvals, (including, without limitation, the approval of the Owner's insurance company, if required) certificates and affidavits

(including, without limitation, certificates in respect of plumbing, electrical systems and life safety systems, required by governmental authorities) and authorizations for use and occupancy of the Project required by any authority having jurisdiction, including an unconditioned permanent and full Certificate of Occupancy and any other necessary occupancy and use permits (unless such Certificate is not issued solely for reasons as to which the Contractor has no responsibility or over which it has no control); and

(c) full record "as built" Drawings in the Owner's CADD software approved by the Engineer; records and related data including all field notes and daily reports of all the Work, all in accordance with the requirements of the Contract Documents; and

(d) satisfactory proof that all claims arising out of the Work have been released or bonded; and

(e) acknowledgment of prior payments (to the extent permitted by law) from all Subcontractors and the Contractor; and

(f) the Engineer's certificate certifying that the Work is complete; and

(g) a written statement from the Engineer that all practical orientation and operating instructions for all materials, systems, and equipment have been satisfactorily completed, and that all required training of Owner's personnel has been completed; and

(h) a satisfactory report by the Contractor which is approved by the Engineer that all mechanical systems have been and are properly balanced; and

(i) a certificate of insurance for product liability and completed operations insurance coverage for the three year period following Final Completion; and

(j) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or its property might in any way be responsible, have been paid or otherwise satisfied; and

(k) consent of surety, if required, to final payment; and

(l) if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts and releases arising out of the Contract, to the extent and in such form as may be designated by the Owner; and

(m) delivery of all spare parts required to be submitted pursuant to the Contract Documents; and

(n) delivery of all Contract Documents and other related materials, with the exception of one record contract set, by the Contractor to the Owner or certification by the Contractor that all such documents were lawfully disposed; and

(o) a general release of the Owner from the Contractor and each Subcontractor.

If the final documentation submitted by the Contractor is determined not to be complete by the Owner or if the Owner deems the Work incomplete in any respect, the Contractor shall promptly complete any such Work and shall promptly resubmit the final documentation.

**10.8.7** Within 30 days after receipt by Owner of notice from Contractor that the entire Work is complete, Owner shall prepare and forthwith send to 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 Owner's inspection shows that Work items required by the Contract remain incomplete or unsatisfactory, or that documentation required by the Contract has not been completed. [NTD: per GL c. 30, s. 39G].

**10.8.8** After Final Completion and receipt by the Owner of a proper final Application for Payment, the Engineer and Owner's Representative shall review the application following the procedures set forth in this Article 10 for progress payments. Thirty days after the presentation to Owner of the Final Application for Payment (as signed by the Engineer) and accompanying documentation as required in this Article 10, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to the amounts withheld

pursuant to Subsection 10.6.1,

the aggregate of all previous payments made by the Owner, and any liquidated and actual damages, will become due and will be paid by Owner to Contractor.

If at any time the aggregate of previous payments made by the Owner exceeds the amount due the Contractor, the Construction Manger shall reimburse the difference to the Owner.

**10.8.9** The acceptance of final payment shall constitute a release and waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final payment.

## 10.9 STORAGE OF MATERIALS OFF-SITE

**10.9.1** The Contractor and its Subcontractors shall obtain prior written approval from the Owner, for permission to store at off-site locations materials or equipment to be incorporated in the Work, for which progress payments will be requested. No out-of-state storage will be permitted by the Owner. Any and all charges for storage, including insurance, shall be borne solely by the Contractor. Before approval, the Owner may require, without

limitation, (i) evidence that the location is properly secure, (ii) proper proof of insurance and proof of satisfactory contractual arrangements for transportation to the Site, (iii) proof that Owner will obtain clear title to the materials, and (iv) a certificate from the Contractor stating:

(a) The name of the Contractor and/or Subcontractor leasing or owning the storage area;

(b) The location of such storage space, including the storage area; i.e., the entire premises or certain areas of a warehouse giving the number of floors or portions thereof, and a certification that the Contractor has visited such location, verified the storage of such material or equipment therein or thereon, and payment of all current storage charges;

(c) The date on which the material or equipment is first stored; and

(d) A description, including quantities and the value of the material or equipment stored.

**10.9.2** The Contractor shall furnish to the Owner, not less often than once per month, a current inventory of all materials or equipment being stored at any off-site location.

**10.9.3** The Contractor and its Subcontractors shall mark each sealed carton or other item with the name of the Project and the Owner, and all materials or equipment stored off-site shall be segregated to the extent required by the Owner, the Owner's Representative, or the Engineer.

**10.9.4** Payment for materials or equipment stored off-site shall be at the sole discretion of the Owner. Title to materials or equipment stored off-site shall be transferred at the time at which the Owner pays for them.

## ARTICLE 11 SAFETY AND PROTECTION

### 11.1 SAFETY PRECAUTIONS AND PROGRAMS

**11.1.1** The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work, including, but not limited to, compliance by the Contractor and all Subcontractors with all safety precautions and programs and other legal requirements of the Occupational Safety and Health Act, other Applicable Laws, the Contract Documents, and any insurance carrier providing insurance coverage for the Owner or the Contractor in connection with the Project. Without limiting the generality of the foregoing, the Contractor shall, promptly after execution of the Agreement, prepare a written safety program which shall be submitted to the Owner's Representative and the Owner and issued to all Subcontractors and all forces employed on the Work. Such program shall include weekly safety meetings with representatives of all Subcontractors working on the

Site, and the Contractor shall prepare, circulate and maintain on file at the Site minutes of all safety meetings. The Contractor shall ensure that all forces employed on the Work are free of drugs and alcohol and are provided with all necessary personal protective equipment. The Contractor's written safety program shall identify, by trade, tasks for which specific safety planning and precautions are necessary and the steps necessary to implement such precautions. The Contractor shall plan hazardous sequences in advance, shall institute procedures for reporting any injuries and providing for emergency medical care and shall report to the Owner's Representative when such sequences are to commence and when completed.

**11.1.2** The Contractor shall designate a responsible member of its organization at the Site whose duty shall be the prevention of accidents. This person shall be the Contractor's Project Superintendent unless otherwise designated by the Contractor in writing to the Owner's Representative.

## 11.2 SAFETY OF PERSONS AND PROPERTY

**11.2.1** The Contractor shall take all necessary precautions for the safety of, and shall provide all protection necessary to prevent damage, injury or loss to:

(a) all employees on the Work and all other persons or other entities who may be affected thereby;

(b) all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the Site; and

(c) other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, improvements and utilities not designated for removal, relocation or replacement in the course of construction.

Without limitation, the Contractor shall provide security watch service at all such times as are necessary to protect the interests of the Contractor and the Owner and to provide for the safety and security of the general public, employees and agents of the Owner, the Owner's Representative and the Engineer, and other persons who may be affected by the Work, and to exclude unauthorized persons from the Site.

**11.2.2** The Contractor shall give all notices and comply with all Applicable Laws bearing on the safety of persons or property or their protection from damage, injury or loss.

**11.2.3** The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including fencing and posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities and other improvements as more particularly set forth in the Specifications.

**11.2.4** The Contractor shall satisfactorily conduct its work at all highway crossings and along all highways, street and other ways in accordance with the permission and requirements of the proper authorities. Vehicular traffic shall be routed over temporary detours during construction when required to maintain proper flow of traffic. The Contractor shall plan and conduct its operations in such a manner that the continuous flow of traffic is uninterrupted and with a minimum of inconvenience to the general public. The Contractor shall prepare a plan for construction and traffic management acceptable to the Owner and the municipal authorities. The Contractor shall arrange for and provide all policemen required by the town or city in which the Project is located to be present at or adjacent to the Site for traffic control purposes. The cost of all policemen so required shall be borne by the Contractor and included in the Contract Sum.

**11.2.5** The Contractor shall assume all responsibility for the protection of property of adjacent owners so far as affected by its operations. The Contractor shall provide temporary protection at all openings in the outside fences or walls to prevent unauthorized persons from obtaining access during the night and at other non-working hours. The Contractor acknowledges that there may be Construction projects being undertaken on adjacent properties and will coordinate the Work with such other projects as required.

**11.2.6** Blasting operations, if any, shall be specifically approved in advance in writing by the Engineer, shall be conducted by experienced personnel and in strict accordance with the rules and regulations of the Massachusetts Department of Public Safety governing the keeping, storage, use, manufacture, sale, handling, transportation or other disposition of explosives, and such other rules and regulations as may be promulgated from time to time by authorities having jurisdiction, and shall not be commenced until the Contractor provides written evidence to the Owner that XCU coverage is in force and effect as required by Subsection 12.2.3 hereof. When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

**11.2.7** The Contractor shall promptly remedy all damage or loss (excluding damage or loss insured under the property insurance carried by the Owner, if any, as provided in the insurance requirements contained in the Contract Documents, but including losses within the deductibles of such insurance) to any property referred to in Subsection 11.2.1 caused in whole or in part by the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under this Article 11, except to the extent that the damage or loss is attributable to the acts or omissions of the Owner, the Owner's Representative or the Engineer. The foregoing obligations of the Contractor are in addition to its obligations under Article 5.

**11.2.8** The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.

**11.2.9** The Contractor shall provide and maintain in good operating condition suitable and adequate fire protection equipment, and shall comply with all recommendations regarding fire protection made by the representatives of the insurance company or companies carrying insurance on the Work or by the local fire chief or fire marshal. The Site shall be kept orderly and clean, and all combustible rubbish shall be removed from the Site daily.

**11.2.10** The Contractor shall at all times protect excavations, trenches, structures, materials, equipment and fixtures from damage from rain water and other weather, ground water, back-up or leakage of sewers, drains and other piping, and from water of any other origin and shall remove promptly any accumulation of water at the Project Site. The Contractor shall provide and operate all pumps, piping and other equipment necessary to this end. The Contractor shall remove snow and ice which might create a hazard on or about the Site or result in damage or delay.

**11.2.11** The Contractor shall take all necessary precautions to prevent loss or damage caused by vandalism, theft, burglary, pilferage, or unexplained disappearance of property of the Owner forming part of the Work, or located within those areas of the Project to which the Contractor has access. The Contractor shall have full responsibility for the security of such property of the Owner and shall reimburse the Owner for any such loss, damage or injury resulting from vandalism, theft, burglary, pilferage, unexplained disappearance or any other cause, to the extent that the same is not covered by the Owner's insurance.

**11.2.12** In the event the Contractor discovers any active utility line which had not yet been disclosed in any survey, it shall cease all work in the immediate area which may affect such line and shall promptly notify the Owner, Owner's Representative, and the affected utility company. The Contractor shall not restart work without notice from and approval of the Owner's Representative.

**11.2.13** The Contractor shall at all times provide and maintain adequate protection against weather so as to preserve the Work, materials, equipment, apparatus, and fixtures free from injury or damage.

**11.2.14** The Contractor shall protect all finished surfaces of the Work, including the jambs and soffits of all openings used as passageways or through which materials are handled, against any possible damage resulting from the conduct of Work by the Contractor or by any separate Contractors.

**11.2.15** In the event of temporary suspension of Work and during inclement weather, or whenever further directed by the Owner or Engineer, Work and materials shall be adequately protected against damage. The Contractor shall take special precautions to prevent damage to materials and work installed in cold or freezing weather, by providing adequate temporary heat and suitable enclosures or covering. The ground surfaces under footings and under pipe lines, and all concrete and masonry work, shall be protected against frost and freezing. The minimum measures to be taken shall be in accordance with the requirements for

winter conditions as set forth in the current edition of ACI-318-83 "Building Code Requirements for Reinforced Concrete" published by the American Concrete Institute.

**11.2.16**The Contractor shall provide ventilation of enclosed areas during construction as required to permit proper curing and drying out, and to prevent excessive humidity, moisture and condensation. Ventilation shall be by natural or artificial means as required by the conditions involved.

**11.2.17**The Contractor shall control the safe handling and storage of all explosives, welding materials, acetylene and oxygen tanks, and other equipment required for blasting operations, welding and cutting work at the Site. All welding materials and equipment shall be removed promptly from the premises and upon completion of the welding and cutting work. No welding torch or other open flames will be used within any building or temporary structure without a fire watch with an appropriate fire extinguisher or within one hour of quitting time.

**11.2.18**The Work shall be performed in such a manner as to prevent fire, and during any Work involving a fire hazard the Contractor shall take all necessary precautions against fires starting and spreading on the Site, within buildings and temporary structures. The Contractor shall provide and maintain sand buckets, suitable fire extinguishers and hoses where and as required to provide adequate means of extinguishing fires. Fire prevention requirements may be directed by the Owner's insurance agents and the local Fire Department. Permanent standpipes shall be made available during construction. Gasoline and other flammable liquids shall not be stored within buildings or temporary structures; shall be stored in and dispensed from U.L. listed safety containers in conformance with N.B.F.U. recommendations and the requirements of all authorities having jurisdiction. The Contractor shall make arrangements for periodic inspection by town/city fire protection authorities and insurance underwriters' inspectors, cooperate with them and promptly carry out their recommendations.

## 11.3 EMERGENCIES

**11.3.1** In any emergency affecting the safety of persons or property, the Contractor shall act, at its discretion, to prevent threatened damage, injury or loss and shall as promptly as conditions permit notify insurance carriers and the Owner's Representative of the nature of the emergency and circumstances related thereto. Immediately thereafter, the Contractor shall prepare a written report setting forth in detail the action taken and describing in detail all circumstances and conditions which are related to such action. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined as provided in Article 13 for Changes in the Work.

## ARTICLE 12 BONDS AND INSURANCE

### 12.1 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

**12.1.1** The Contractor shall furnish a performance bond and a labor and materials payment bond, each for the full amount of the Contract Sum. The performance bond and the labor and materials payment bond shall be in the unmodified form of the AIA A312-2010 performance and payment bonds. The Owner reserves the right to specify any alternative form for the performance or payment bond. Each bond shall name the Owner as obligee and each shall be issued by a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and whose name appears on the United States Treasury Department Circular 570. The bond premiums shall be included in the Contract Sum and shall be paid by the Contractor. If the Agreement provides for the imposition of liquidated or actual damages in the event that the Contractor fails to complete the Work within the Contract Time, then the obligations assumed by the surety under the performance bond shall include the payment of such liquidated or actual damages. These bonds shall remain in effect for the entire Guarantee Period, as defined in Subsection 14.2.2. All bonds shall be executed in the required number of counterparts and shall be submitted to the Owner for insertion into the Contract Documents prior to the execution of the Agreement.

### 12.2 CONTRACTOR'S LIABILITY INSURANCE

**12.2.1** The Contractor shall purchase and maintain such insurance as will protect it and the other parties specified or referred to in Subsection 12.2.10 below from claims referred to below which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by itself or by any Subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable.

**12.2.2** The Contractor shall purchase and maintain during the life of the Agreement:

(a) Insurance sufficient to discharge its obligations under all applicable workers' compensation laws of the Commonwealth of Massachusetts and the United States.

(b) Employer's liability insurance with minimum limit per accident or disease of $1,000,000.

(c) Statutory disability and other employee benefit insurance.

**12.2.3** The Contractor shall purchase and maintain commercial general liability insurance, which coverage shall be in a form no less broad than ISO CG 00 01 12 07 or its equivalent and covering the full scope of this contract with limits not less than $1,000,000 per occurrence and $5,000,000 aggregate for personal or bodily injuries and for property damage.

A per occurrence limit of not less than $5,000,000 is acceptable. All policies issued shall include permission for partial or total use and occupancy of the premises by the Owner within the scope of the Contract. Such insurance shall include at least the following:

(a) Commercial general liability insurance, including all products, premises-operations, completed operations for at least three (3) years following acceptance and final payment, independent contractors, additional interests of employees, sudden and accidental pollution and contamination, and incidental medical malpractice, and including notice of occurrence and knowledge of occurrence endorsements satisfactory to the Owner.

(b) Blanket contractual liability insurance covering all liabilities assumed under the Contract Documents, including, but not limited to, the Contractor's obligations under Article 5 of the General Conditions.

(c) Coverage for the so-called "XCU" hazards (explosion, collapse of buildings, blasting, undermining, and damage to underground property). Before any blasting is done, the Contractor shall provide to the Owner written evidence that blasting damage is included in the Contractor's insurance coverage.

**12.2.4** The Contractor shall purchase and maintain automobile liability insurance, which coverage shall be in a form no less broad than ISO CA 00 01 03 10 or its equivalent and covering all owned, non-owned and hired vehicles with a limit of not less than $1,000,000 per accident for bodily injury, including death and property damage.

**12.2.5** The Contractor shall also purchase and maintain umbrella form excess liability insurance in the limits specified below and containing coverage no less restrictive than that required under Subsections 12.2.2, 12.2.3, and 12.2.4 above. The required primary insurance shall be listed as underlying coverage in the first layer of the umbrella policy. Nothing contained herein shall be interpreted to restrict or prohibit the Contractor from carrying, or requiring any of its Subcontractors to carry, insurance in addition to that required hereby. The Contractor's umbrella excess policies shall contain a minimum total occurrence and aggregate limit of $10,000,000.

**12.2.6** The Owner shall have the right to require that the coverages and limits of liability set forth in Subsections 12.2.2, 12.2.3, 12.2.4, and 12.2.5 be expanded or raised if required by law or any lender of the Owner, or if in the Owner's judgment economic conditions or other factors so warrant. If additional costs are incurred because of raised limits, the additional cost shall be added to the Contract Sum. The Owner shall also have the right to reduce the coverages and limits of liability set forth in Subsections 12.2.2, 12.2.3, 12.2.4, and 12.2.5 if in the Owner's judgment the degree of risk associated with any portion of the Work warrants reduced coverage and limits of liability.

**12.2.7** Insurance coverages similar to those required of the Contractor shall be provided by or on behalf of all Subcontractors to cover their operations performed under the Contract Documents. The Contractor shall be held responsible for compliance with and enforcement of the insurance requirements and for any modifications of these insurance requirements as they apply to Subcontractors. The Contractor shall not permit any Subcontractor to commence work until such Subcontractor has furnished evidence that insurance has been procured and certificates of insurance have been obtained by the Contractor providing that, in the event of non-renewal or cancellation of Subcontractor's policies, thirty (30) days advance written notice will be given to the Contractor by registered mail. Copies of such certificates and, upon Owner's written request, copies of the insurance policies shall be delivered to the Owner, who shall be designated as a certificate holder.

**12.2.8** Prior to the commencement of the Work, the Contractor shall cause its insurance company or companies to provide insurance certificates, which shall be attached as **Exhibit G** to the Agreement, and, upon Owner's written request, copies of insurance policies acceptable to the Owner and the other additional insureds specified in Subsection 12.2.10 below evidencing the above coverages to be furnished the Owner and the other additional insureds specified in Subsection 12.2.10 below by the Contractor's insurance company. Such certificates and all insurance policies required by this Article 12 shall contain provisions requiring at least 30 days' prior written notice to the Owner and to other certificate holders of any cancellations or non-renewals of the policies. Certificates shall indicate effective dates and dates of expiration of policies. An additional certificate evidencing continuation of all insurance coverages required to remain in force after final payment shall be submitted with the application for final payment, and neither final payment nor any remaining retainage under this Contract shall be due until such certificate has been submitted to the Owner.

**12.2.9** The Owner is to be furnished originals or certified copies of the policy or policies including all endorsements required to provide stated coverage within 10 days after commencement of Work under this Contract.

**12.2.10** All insurance policies provided pursuant to Article 12 shall be written by companies licensed to do business in the Commonwealth of Massachusetts and having an A.M. Best rating of A-, VIII or better, or otherwise acceptable to Owner, in its reasonable discretion, and shall be in form satisfactory to the Owner. All such policies shall name as additional insureds, under endorsements no less broad than CG 20/10 (11-85) or both CG 2026 (7/04 version) and CG 2037 (7/04 version), the Owner, affiliates and participants of the Owner, the State University, the Commonwealth of Massachusetts, and any other parties as the Owner may identify by notice to the Contractor from time to time. All such policies shall contain provisions or endorsements necessary to assure coverage of claims by one additional insured against another additional insured. All required insurance policies are to be endorsed to state that the Contractor's policies shall be primary to all other insurance available to the Owner, which insurance shall be excess of all other valid and collectible insurance policies. The Contractor shall bear all costs of any amounts deductible, retained or self-insured under the policies required to be maintained by the Contractor.

**12.2.11** The purchase of insurance to satisfy the above requirements, or the furnishing of certificates evidencing same, shall not be a satisfaction of the Contractor's liability under this Contract or in any way modify the Contractor's indemnification of the Owner.

**12.2.12** Certificates and policies of insurance shall be filed with the Owner.

## 12.3 PROPERTY INSURANCE

**12.3.1** The Contractor shall purchase and maintain property insurance insuring against the perils of fire and extended coverage and including "all risk" builders' risk insurance for physical loss or damage to the Work, including all labor, materials, supplies, machinery, equipment, fixtures, temporary structures and all other work of whatever nature, used or to be used in or incidental to the construction, fabrication, erection or completion and testing of the Work, until Final Completion. Limits shall be 100% of the replacement value of the Work. Such insurance shall protect the interests of the Owner, the Contractor and all Subcontractors performing work at the Site, and the proceeds in case of loss may be held by the Contractor and applied by it in the manner hereafter set forth. The Contractor shall have power to adjust and settle any loss with the insurers, using due diligence to protect the interests of the Owner, Contractor and Subcontractors, subject to the rights of the Owner. The Contractor's property insurance will not cover any tools, equipment, materials, supplies, temporary structures or other property owned or rented by the Contractor or Subcontractors which is not to be incorporated in the Work. The Contractor and Subcontractors assume these excluded risks, and waive all rights they may have against the Owner for damage to such items, and, further, any policy of insurance covering the Contractor's own tools, equipment, facilities and other property against loss by physical damage shall include an endorsement providing that the underwriters waive their rights of subrogation against the Owner. In accordance with Article 12, the Contractor will furnish the Owner with a certificate of such insurance coverage, which shall be attached as **Exhibit G** to the Agreement. The Contractor will furnish the Owner with originals or certified copies of the policy including endorsements within 10 days after commencement of Work under this Contract. In accordance with Article 12, the Owner shall be listed as an additional named insured on such property insurance policy.

**12.3.2** The Contractor, as trustee for the parties in interest, shall receive the proceeds of any insurance upon the occurrence of an insured loss, and shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or in accordance with an award or finding of a court of competent jurisdiction. If after such loss no other agreement is made, replacement of damaged work shall be covered by an appropriate Change Order.

**12.3.3** The Contractor shall be completely responsible for the proper care and protection of the Work. The Contractor shall be responsible for all losses within the deductible specified above, and the Contractor shall promptly, and in any event so as not to delay the progress of the Work, replace or reimburse the Owner for any property to the extent loss or damage to such property is within the deductible.

**12.3.4** If there is a casualty resulting in a loss of more than 20% of the Contract Sum, as determined by the Owner, then the Owner may elect to terminate the Contract upon seven (7) days' notice to the Contractor and the Engineer, and the Contractor shall be entitled to payment for all Work executed in accordance with the Contract Documents prior to said termination. Contractor shall have no claim for payment for loss of profit on that portion of the Work not executed.

**12.3.5** The Owner and the Contractor waive all rights against (i) each other and the Subcontractors, consultants, agents and employees each of the other, and (ii) the Engineer, the Owner's Representative, and separate contractors, if any, and their Subcontractors, sub-Subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by insurance obtained pursuant to this Section 12.3 or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by the Contractor. The foregoing waiver afforded the Engineer, its agents and employees shall not extend to the liability imposed by Subsection 5.1.4. The Owner or the Contractor, as appropriate, shall require of the Engineer, separate contractors, and Subcontractors by written agreements, similar waivers each in favor of all other parties enumerated in this Subsection 12.3.5.

## 12.4 PROFESSIONAL LIABILITY INSURANCE

**12.4.1** If the Work performed by the Contractor or any Subcontractor requires design and/or other professional services, the Contractor shall purchase and maintain, and shall cause any such Subcontractor to purchase and maintain, professional liability insurance for claims arising out of the negligent performance of such professional services. Professional liability coverage shall be written for minimum limits of $2,000,000 per claim and annual aggregate with a deductible no greater than $100,000. Professional liability coverage may be provided on a "claims made" basis if it includes a retroactive date that is no later than the effective date of this Agreement, and such insurance coverage shall be maintained for a period at least six (6) years after the earlier of: (1) the date of official acceptance of the completed Project by the Owner; (2) the date of the opening of the Project to public use; (3) the date of acceptance by the Contractor of final payment under this Agreement; or (4) the date of final completion of the Project and the taking of possession of the Project for use and occupancy by the Owner. Throughout the term of this Agreement and the entire six (6) year period, the Contractor and any such Subcontractor shall provide renewal certificates of professional liability insurance to the Owner as evidence that this coverage is being maintained. Alternatively, the six (6) year maintenance period for this coverage may be satisfied by providing an extended reporting period endorsement.

## ARTICLE 13 CHANGES IN THE WORK

### 13.1 CHANGE ORDERS

**13.1.1** The Contract Sum and the Contract Time may be changed only by duly executed Change Order. A Change Order signed by the Contractor indicates its agreement therewith, including the adjustment, if any, in the Contract Sum or the Contract Time.

**13.1.2** The Owner, without invalidating the Contract, may order Changes in the Work consisting of additions, deletions or other revisions, the Contract Sum and the Contract Time being adjusted accordingly, if necessary. All such Changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. Work submitted in a Change Order request shall not be performed prior to Owner signing the Change Order.

**13.1.3** With respect to Change Orders, upon the request of the Owner or the Engineer, the Contractor shall submit to the Engineer, as soon as reasonably possible but in any event within twenty (20) days of the Contractor's receipt of a request therefor, an accurate written statement setting forth in detail, with a suitable breakdown for each trade and work classification, and including a breakdown of the items set forth in Subsection 13.1.8 below, the net increase in the cost of the Contractor's performance and payment bond premiums attributable to such changes, and any allowable markup for overhead and profit. The Contractor shall state in such proposal any change to the Contract Time required for the completion of the Work if the Change Order is approved. The Contractor shall promptly revise and resubmit such proposal if the Engineer determines that the proposal is not in compliance with the requirements of this Article, or that it contains errors or ambiguities. Once it has been reviewed and approved by the Engineer, the Change Order shall be submitted to the Owner and the Contractor for Execution.

**13.1.4** The amount by which the Contract Sum shall be adjusted as a result of a Change Order shall be determined in one or more of the following ways, as the Owner in its sole discretion shall determine:

(a) by mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

(b) by unit prices stated in the Contract Documents or subsequently agreed upon;

(c) by cost to be determined in a manner agreed upon by the parties; or

(d) by the method provided in Subsection 13.1.5.

**13.1.5** If the amount by which the Contract Sum shall be adjusted as a result of a Change in the Work is not agreed upon using one of the methods set forth in Subsection 13.1.4

above, the Contractor, provided it receives a written order signed by the Owner, shall promptly proceed with the Work involved. The cost of such Work shall then be estimated by the Engineer on the basis of the reasonable expenditures and savings of those performing the Work attributable to the change (as set forth in Subsection 13.1.8), and including, in the case of an increase in the Contract Sum, an amount equal to the allowable markup for overhead and profit as provided in the Contract. Such estimate shall be presented by the Engineer to the Owner for approval. In such case, and also in the case of changes with respect to which the cost or credit is determined under one of the methods set forth in Subsection 13.1.4 above, the Contractor shall keep and present, in such form as the Engineer may prescribe, an itemized accounting together with appropriate supporting data for inclusion in a Change Order. The Contractor shall review all quotations from Subcontractors and shall assure that pricing is fair and equitable before forwarding such proposed pricing to the Owner. Pending final determination of cost to the Owner, payments on account, if any, shall be made on the Engineer's Certificate for Payment. The amount of credit to be allowed by the Contractor to the Owner for any deletion or change which results in a net decrease in the Contract Sum will be the amount of the actual net decrease in the cost of the Work plus the Contractor's allowable markups, as may be permitted by the Agreement, as confirmed by the Engineer. When both additions and credits covering related Work or substitutions are involved in any one change, the allowance for overhead, superintendence and profit, to the extent permitted hereunder, shall be figured on the basis of the net increase, if any, with respect to that change.

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

**13.1.7** Proposals as provided for in Subsection 13.1.4(a), above, shall be accompanied by a detailed breakdown of estimated costs of labor, materials, equipment and insurance, including a similar breakdown of costs for subcontracted Work. Such proposals shall be subject to the Engineer's review and acceptance by the Owner which will be based upon the Contractor's satisfactory demonstration that all costs and charges included therein are fair and reasonable, consistent with current price indexes for labor, materials and equipment, and do not in any way reflect exorbitant or non-applicable charges. Proposals shall be based on the approved Schedule of Values where applicable. The Contractor shall cooperate fully with the Owner's Representative and the Engineer to whatever extent necessary in providing adequate substantiation of cost and in conducting negotiations pertaining thereto.

**13.1.8** Costs of material and labor for Changes in the Work shall be limited to the following:

(a) The net cost to the Contractor of all necessary materials, including transportation to the Site.

(b) Cost of all necessary labor, in accordance with established wage rates, as evidenced by payroll records.

(c) Premium the Contractor has to pay for liability and other insurance and bonds directly required by reason of performance of such Change in the Work.

(d) Payments required to labor organizations under existing labor agreements, and directly required by reason of performance of such Change in the Work.

(e) State taxes for unemployment insurance and Federal taxes for Social Security required to be paid and directly required by reason of such Change in the Work.

(f) Taxes, if any, required to be paid on materials incorporated in such Work (subject, however, to the provisions of Section 4.2).

(g) Gas, oil, coal, electric current and other forms of energy used, where directly required by reason of such Change in the Work.

**13.1.9** The Contractor shall not subcontract any Work under a Change Order unless work under the basic Contract of a similar type was previously subcontracted, or unless the Owner specifically approves and accepts such subcontracting in advance and in writing; and Subcontractors will not be allowed to further subcontract any Work under a Change Order without the prior written approval and acceptance of the Owner, unless Work under the basic Contract of a similar type was previously subcontracted by them. No mark-up shall be allowed on bond premiums of the Contractor or any of the Subcontractors.

## 13.2 CONSTRUCTION CHANGE DIRECTIVES

**13.2.1** The Owner may order the Contractor to proceed with changes in the Work consisting of additions, deletions or other revisions prior to incorporation thereof in the Contract by issuance of a Change Order or in the event of the Owner and the Contractor to agree on an appropriate Change Order. All such changes shall be authorized by Construction Change Directives issued by the Owner through the Engineer.

**13.2.2** The Construction Change Directive shall include a description of the work involved and the basis for revision, if any, in the Contract Sum or Contract Time or both.

**13.2.3** Within the time period specified in Subsection 13.1.3, the Contractor shall submit to the Engineer and the Owner final costs for work required by the Construction Change Directive in accordance with Subsections 13.1.6 through 13.1.8, and request for change, if any, in the Contract Sum or Contract Time or both, for review by the Engineer and inclusion in a subsequent Change Order.

## 13.3 DIFFERING SUBSURFACE OR LATENT PHYSICAL CONDITIONS

**13.3.1** Pursuant to Section 39N of Chapter 30 of the Massachusetts General Laws, changes in the Work based on concealed subsurface or latent conditions shall be in accordance with the following:

If, during the progress of the Work, the Contractor or the Owner 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 Owner may request an equitable adjustment in the contract price of the Contract applying to the 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 the Contractor, or upon its own initiative, the Owner 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 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 Owner shall make an equitable adjustment in the contract price and the Contract Documents shall be modified in writing accordingly.

## 13.4 CLAIMS FOR ADDITIONAL COST OR DAMAGES

**13.4.1** If the Contractor wishes to make a claim for an increase in the Contract Sum by reason of any work required to be performed or materials furnished by it or by reason of any event, circumstance, occurrence, direction or interpretation, or if it wishes to make a claim for damages by reason of any act or omission of the Owner or the Engineer, including, without limitation, any order by the Owner to stop the Work pursuant to Section 17.1 where the Contractor was not at fault, the Contractor shall give the Owner written notice thereof within seven (7) days after the occurrence of the event giving rise to such claim, otherwise it shall be waived. Such notice shall be given by the Contractor before proceeding to execute the work involved, except in an emergency endangering life or property in which case the Contractor shall proceed in accordance with Section 11.3. A written report by the Contractor setting forth the facts and reasons for proceeding under Section 11.3 shall be submitted by it in support of its claim for relief under Section 11.3. No such claim for an increase in the Contract Sum or any other matter described above shall be valid unless so made. If the Owner and the Contractor cannot agree on the amount of the adjustment, if any, to the Contract Sum or the Contract Time, it shall be determined by the Engineer, subject to the provisions of Article 19.

**13.4.2** The Contractor understands that no director, member, trustee, officer, principal, employee, agent or other representative of the Owner, the Owner's Representative or the Engineer has authority to waive compliance with the notice provisions of this Section 13.4.

**13.4.3** The Contractor shall maintain a current listing of unresolved claims under this Section 13.4 and under Section 9.4.

### 13.5 PENALTIES FOR FALSE CLAIMS

**13.5.1** The attention of the Contractor and all Subcontractors is directed to M.G.L. c. 266, § 67B, which provides criminal penalties for false claims by the Contractor or any Subcontractor under this Contract: "Whoever makes or presents to any employee, department, agency or public instrumentality of the commonwealth, or of any political subdivision thereof, any claim upon or against any department, agency, or public instrumentality of the commonwealth, or any political subdivision thereof, knowing such claim to be false, fictitious, or fraudulent, shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than five years, or in the house of correction for not more than two and one-half years, or both."

### 13.6 MINOR CHANGES IN THE WORK

**13.6.1** The Engineer will have authority to order minor Changes in the Work not involving an adjustment in the Contract Sum or an adjustment of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written Engineer's Supplemental Instructions, and shall be binding on the Owner and the Contractor. The Contractor shall carry out such Engineer's Supplemental Instructions promptly.

## ARTICLE 14 CORRECTION OF WORK

### 14.1 UNCOVERING OF WORK

**14.1.1** If any portion of the Work should be covered contrary to the request of the Engineer or the Owner's Representative or contrary to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Engineer, the Owner's Representative, or the Owner, be uncovered for observation by the Engineer and replaced at the Contractor's expense.

**14.1.2** If any other portion of the Work has been covered which the Engineer has not specifically requested to observe prior to being covered, the Engineer through the Owner's Representative, may request to see such Work and it shall be uncovered by the Contractor. If such Work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by the Owner or a separate contractor as provided in Article 7, in which event the Owner shall be responsible for the payment of such costs.

## 14.2 CORRECTION OF WORK

**14.2.1** The Contractor shall promptly correct all Work rejected by the Engineer or the Owner as defective or as failing to conform to the Contract Documents, whether observed before or after Substantial Completion or Final Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including compensation for the Engineer's additional services made necessary thereby.

**14.2.2** Without limiting any other rights which the Owner has hereunder or pursuant to law, if, within one (1) year after the date of Substantial Completion of the Work or portion thereof designated by the Owner or within one year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable guarantee or warranty required by or referred to in the Contract Documents (the "Guarantee Period"), any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct such defective work promptly after receipt of a written notice from the Owner to do so and shall reimburse the Owner for any expenses it shall have incurred in inspecting or testing such portion of the Work. The obligations provided in this Section 14.2 shall survive termination of the Contract and the making of final payment hereunder and may be extended pursuant to the provisions of Subsection 18.1.4.

**14.2.3** The Contractor shall remove from the Site all portions of the Work which are defective or nonconforming and which have not been corrected under Article 18 or Subsections 14.2.1 and 14.2.2, unless removal is specifically waived in writing by the Owner.

**14.2.4** If the Contractor fails to correct defective or nonconforming Work as provided in Article 18 or Subsections 14.2.1 and 14.2.2, the Owner may correct it in accordance with Section 17.2.

**14.2.5** If the Contractor does not proceed with the correction of such defective or nonconforming work within a reasonable period of time (fixed by the Owner's Representative or the Engineer in writing) after receipt of a written notice from the Owner's Representative or the Engineer to correct such Work, the Owner may remove it and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten (10) days thereafter, the Owner may upon ten (10) additional days' written notice sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Contractor, including compensation for the Engineer's additional services made necessary thereby. If such proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

**14.2.6** The Contractor shall bear the cost of making good all work of the Owner or separate contractors destroyed or damaged by such correction or removal.

**14.2.7** Nothing contained in this Section 14.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Article 18 hereof, or under law. The establishment of the Guarantee Period of one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any guarantee or warranty required by or referred to in the Contract Documents relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which its 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 its obligations other than specifically to correct the Work.

### 14.3 ACCEPTANCE OF DEFECTIVE OR NONCONFORMING WORK

**14.3.1** If the Owner prefers to accept defective or nonconforming Work, it may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect a reduction in the Contract Sum where appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## ARTICLE 15 PARTIAL USE OR OCCUPANCY

### 15.1 OWNER'S RIGHT TO USE AND OCCUPY

**15.1.1** The Owner shall have the right to use and occupy spaces, areas, systems and other portions of the Work prior to completion and acceptance of all the Work or of other portions of the Work, provided that in the opinion of the Engineer such use or occupancy shall not interfere with the Contractor's operations nor delay it in completing the entire Work. If the Owner desires to exercise its right of partial occupancy and use under this Section 15.1, the Owner shall give, through the Owner's Representative, reasonable notice thereof to the Engineer and the Contractor. If the Engineer determines that the proposed use or occupancy would not interfere with the Contractor's operations or delay it in completing the entire Work, the Contractor shall cooperate with the Owner in providing basic services and facilities reasonably required for the proposed use or the health, safety and comfort of the users or occupants and other parties lawfully present on or entering or leaving the Site such as water, lighting, power, fire protection, and telephone services for the space or spaces to be occupied. If the equipment required to furnish such services is not entirely completed at the time the Owner desires to use or occupy the aforesaid space or spaces, the Contractor shall make every reasonable effort to complete the same as soon as possible so that the necessary equipment can be put into operation and use. Mutually acceptable arrangements shall be made between the Owner and the Contractor with regard to procedures, terms, and conditions governing the operation and maintenance of such services and facilities as may be utilized for the benefit of the Owner. The Owner will assume proportionate and reasonable responsibility for operation of systems, equipment and/or utilities required to provide such services, in part or in total, including proportionate and reasonable expenses of operation incidental thereto, and mutually

acceptable arrangements shall be made as to guarantees and warranties affecting designated portions or elements of the Work associated therewith.

### 15.2 PARTIAL USE NOT ACCEPTANCE

**15.2.1** The Owner's use or occupancy of such designated areas or portions of the Work prior to completion and acceptance of all or portions of the Work pursuant to Section 15.1 shall not constitute acceptance of systems, materials, or elements of the Work which are not in accordance with the requirements of the Contract Documents, nor relieve the Contractor from its obligation to complete the Work, or its responsibility for loss or damage due to or arising out of defects in, or malfunctioning of, systems, materials, equipment, or elements of the Work, nor from other unfulfilled obligations or responsibilities of the Contractor under the Contract. If, however, damage results to such designated areas or portions of the Work, in whole or in part, from any act of the Owner, then the Owner will assume its proportionate responsibility for such damage, to the extent that such damage is not covered by insurance provided in accordance with the terms of the Contract Documents.

### 15.3 NO CLAIM FOR DELAY

**15.3.1** The Contractor shall make no claim for any adjustment to the Contract Sum or the Contract Time or for damages of any kind arising directly or indirectly out of the exercise by the Owner of the rights reserved under this Article 15.

## ARTICLE 16 TERMINATION OF THE CONTRACT

### 16.1 TERMINATION BY THE CONTRACTOR

**16.1.1** If the Owner has failed to make a progress payment properly due and payable to the Contractor, then the Contractor, if not in default hereunder, may give the Owner written notice of its intention to terminate the Contract and if, after thirty (30) days after the Owner's receipt of such notice, the default of the Owner shall not have been cured or action by the Owner to effect such cure shall not have been commenced within such thirty (30) day period and diligently pursued, as the case may be, then the Contractor may terminate the Contract and recover from the Owner payment for all Work executed in accordance with the Contract Documents based on the percentage of the Work properly completed as determined by the Engineer.

### 16.2 TERMINATION BY THE OWNER

**16.2.1** If any one (1) or more of the following events set forth in clauses (i) through (xiii) hereof shall occur:

(i) a petition is filed by the Contractor, or against the Contractor with its consent, under any federal or state law concerning bankruptcy, reorganization, insolvency or relief from creditors; or

(ii) such a petition is filed against the Contractor without its consent; or

(iii) the Contractor becomes insolvent or is generally not paying its debts as they become due; or

(iv) the Contractor consents to the appointment of a receiver, trustee, liquidator, custodian or the like of the Contractor or of all or any substantial portion of its assets; or

(v) a receiver, trustee, liquidator, custodian or the like is appointed with respect to the Contractor or takes possession of all or any substantial portion of its assets; or

(vi) the Contractor makes an assignment for the benefit of creditors; or

(vii) there has been a material adverse change in the financial condition of the Contractor; or

(viii) the Contractor's bonding or surety company shall refuse to issue a labor or material payment or performance bond or other similar guarantee of performance with respect to the Project; or

(ix) due to the fault of the Contractor (and not due to causes beyond the Contractor's reasonable control): (a) the Work is unreasonably delayed or discontinued, or (b) the execution of the Work ceases for more than three (3) days, or (c) the Work is delayed so that, in the Owner's judgment, the Work cannot be completed on or prior to the expiration of the Contract Time;

(x) the Contractor defaults in its obligation to perform the Work in a skilled and expeditious manner or refuses or fails to supply sufficient labor, materials, equipment and facilities to assure the proper progress of the Work; or

(xi) the Contractor fails to make prompt payment to any Subcontractor(s);

(xii) the Contractor fails to comply with Applicable Laws; or

(xiii) the Contractor otherwise violates or fails to comply with any material provision of the Contract Documents;

then, in any such event, the Owner may, without prejudice to any other right or remedy, and after giving the Contractor seven (7) days written notice, terminate the Contract and the employment of the Contractor and hold the Contractor and its sureties liable in damages for breach of the Contract Documents, or may direct the Contractor to discontinue the Work or any

designated portion thereof and take possession of the Site or any portion thereof and possession and use of any and all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and may finish the Work or any portion thereof by whatever method it may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is fully completed. The Owner shall not be liable for any depreciation, loss or damage to such materials, equipment or tools during such use thereof, nor thereafter prior to removal thereof by the Contractor after completion of the Work. The Owner may, at its option, require the Contractor's surety or sureties to complete the Work in accordance with the Contract Documents. If the Owner elects to terminate this Contract pursuant to the provisions of this Section and it is subsequently determined that none of the foregoing events have occurred, then such termination, at Owner's election, may be deemed a termination pursuant to Subsection 16.2.3.

**16.2.2** When the Work is fully completed by the Owner, if the costs incurred by the Owner in finishing the Work, including the cost of any additional services of the Engineer or others, when added to the payments made to the Contractor prior to termination, exceed the Contract Sum, the Contractor or its sureties shall pay the amount of such excess to the Owner, together with interest thereon from the date incurred by the Owner until paid by the Contractor at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston. If the sum of such costs and payments is less than the Contract Sum, the Contractor shall be paid for any costs, as certified by the Engineer on the basis of its determination of "cost" under Subsection 13.1.8, incurred by the Contractor but not paid for prior to the termination, to the extent that such payment does not cause the total of payments to the Contractor when added to the cost of finishing the Work to exceed the Contract Sum. In case of such termination of the Contract pursuant to this Article 16, the Owner may, at its election, assume and become liable for obligations, commitments and unsettled claims that the Contractor has previously undertaken or incurred in good faith in connection with the Work. Without limiting the generality of the foregoing, the Owner shall have the right (but shall have no obligation) to assume and/or assign to a general contractor or construction manager or other third party who is qualified and has sufficient resources to complete the Work, the rights of the Contractor under its subcontracts with any or all Subcontractors. In the event of such assumption or assignment by the Owner, no such Subcontractor shall have any claim against the Owner or such third party for Work performed by such Subcontractor or other matters arising prior to termination of the Contract except as expressly provided by law, and the Owner or such third party, as the case may be, shall be liable only for obligations to the Subcontractor arising after such assumption. Should the Owner so elect, the Contractor shall execute and deliver all such documents and take all such steps, including the legal assignment of its contractual rights, as the Owner may require, for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or other obligations or commitments. All payments due the Contractor hereunder shall be subject to a right of offset by the Owner for expenses and damages suffered by the Owner as a result of any default, acts or omissions of the Contractor.

**16.2.3** Upon fifteen (15) days' written notice, the Owner shall have the right to terminate the Contract at any time and for any reason whether or not any of the events specified in Subsection 16.2.1 shall have occurred, and the Owner shall incur no liability to the Contractor or any other person by reason of such termination. In the event of such termination, the Owner shall pay to the Contractor a sum equivalent to the unpaid Contract Sum attributable to the percentage of Work completed, as determined by the Engineer, pursuant to the Contract Documents and accepted by the Owner.

**16.2.4** In the event of a termination of the Contract pursuant to this Article 16, the Owner and the Contractor shall forthwith return to the other all papers, materials and other properties of the other held by each for the purposes of execution and performance of the Contract Documents. In addition, each party will assist the other party in an orderly termination of this Contract.

## ARTICLE 17 OWNER'S RIGHT TO STOP THE WORK AND TO CARRY OUT THE WORK

### 17.1 OWNER'S RIGHT TO STOP THE WORK

**17.1.1** If, in the sole judgment of the Owner, the Contractor fails to commence to correct and diligently pursue the correction of defective work as required by Section 14.2 or fails to carry out the Work in accordance with the Contract Documents, the Owner may, by a written order through the Owner's Representative, and without prejudice to any other remedy the Owner may have, order the Contractor to stop the Work or any portion thereof, and the Contractor shall not thereafter incur any further cost or expense therefor without the Owner's prior written approval, until the cause for such order has been eliminated. Notwithstanding the foregoing, the right of the Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

### 17.2 OWNER'S RIGHT TO CARRY OUT THE WORK

**17.2.1** If the Contractor fails to perform the Work diligently and in a timely manner or defaults or neglects to carry out the Work in accordance with the Contract Documents or otherwise fails to perform its obligations under the Contract Documents, the Owner may, without prejudice to any other remedy it may have, make good such deficiencies, provided, however, that the Owner shall not take any action to perform the Work or to make good such deficiencies, except in the event of an emergency, unless the Contractor shall have failed, within seven (7) business days after receipt of written notice from the Owner of such failure, default or neglect, to commence corrective action and thereafter to promptly and diligently pursue the corrective action to completion. If the Owner undertakes to make good such deficiencies, the Owner may take possession of the Site or any portion thereof and possession and use of any and all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor in order to make good such deficiencies by whatever method it may deem expedient. The Owner shall not be liable for any depreciation, loss or damage to such materials,

equipment or tools during such use thereof. Further, if the Owner undertakes to make good such deficiencies, an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation additional services of the Engineer and others made necessary by such default, neglect or failure, and the Contract Sum shall be likewise reduced. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, then, as provided in Subsection 16.2.2, the Contractor shall, within thirty (30) days of receipt of an invoice therefor, pay to the Owner the difference with interest thereon. Further, if the Contractor fails, within such seven (7) business day notice period, to commence corrective action and thereafter to promptly and diligently pursue correction of such deficiencies, or fails to carry out the Work in a timely manner in accordance with the Contract Documents, or if the Engineer advises the Owner that the Project cannot reasonably be completed by the Contractor within the Contract Time, then, at the request of the Owner, the Contractor's surety shall promptly complete the Work in accordance with the terms of the Contract Documents.

## ARTICLE 18 POST-COMPLETION WARRANTY AND CORRECTIVE WORK

### 18.1 CONTRACTOR'S WARRANTIES

**18.1.1** In addition to the Contractor's obligations under Subsection 14.2.2 hereof, the Contractor guarantees and warrants to the Owner and the Engineer that all materials and equipment furnished under the Contract Documents will be new and of recent manufacture unless otherwise expressly required or permitted by the Contract Documents, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents in all respects. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective or as failing to conform to the Contract Documents.

**18.1.2** It is specifically agreed that the Contractor's warranties of materials, equipment and labor under this Article 18 and all other warranties, guarantees, responsibilities and liabilities of the Contractor under the Contract Documents or otherwise provided under law, shall apply to products and equipment, if any, furnished by the Owner as referred to in the Specifications and to the installation thereof by the Contractor or its Subcontractors under this Contract as fully as if such products and equipment had been purchased directly by the Contractor for incorporation in the Work. The Contractor acknowledges that it has received and approved all information and specifications for such Owner-furnished products and equipment sufficient so as to permit the Contractor to make this agreement. Such specifications for Owner-furnished products and equipment shall be considered a part of the Contract Documents, and such Owner-furnished products and equipment, upon delivery to and acceptance by the Contractor, shall become part of the Work. The Owner shall assign to the Contractor all warranties of any materials or equipment furnished by the Owner and installed

by the Contractor or its Subcontractors under the Contract. The Owner and the Contractor agree to cooperate as necessary to facilitate any claims under such warranties.

**18.1.3** The Contractor shall obtain and preserve for the benefit of the Owner manufacturer's warranties on materials, fixtures and equipment incorporated into the Work, and the Contractor shall prepare and execute a written guarantee and warranty applicable to all phases of the Work in accordance with the provisions of this Article and all other applicable provisions of the Contract Documents pertaining to warranties and guarantees, and shall also secure and pass through to the Owner written guarantees and warranties prepared in a similar manner from each Subcontractor engaged in the performance of the Work and, prior to Substantial Completion, shall deliver complete sets of all such guarantees and warranties to the Engineer for review and approval in accordance with Subsection 3.7.4.

**18.1.4** In the event that any work is performed to correct, repair or remedy any portion of the Work pursuant to any warranty or guarantee provided under the Contract Documents or otherwise available to the Owner, all such work, and all materials, equipment, supplies, appliances, fixtures and specialty devices requiring replacement during any guarantee period specified in the Contract Documents, shall be subject to a supplementary guarantee and warranty extending the guarantee or warranty period to cover all such work and all such items for the full guarantee or warranty period specified, beginning as of the date of acceptance of each such replacement item or element of work.

**18.1.5** The warranty and guarantee provisions of this Article 18 shall be in addition to and not in limitation of any other warranties, guarantees, or remedies allowed by law or the Contract Documents.

**18.1.6** No additional charge shall be made by the Contractor or by any Subcontractor for attending meetings at the Site to diagnose problems or to instruct the Owner's personnel in the proper operation or maintenance of the Work, or for making initial or seasonal adjustments (not including normal maintenance) of mechanical systems or other movable work during the applicable guarantee or warranty period (as it may be extended with respect to certain items pursuant to Subsection 18.1.4). The Contractor shall provide such service promptly upon notice from the Owner. In case of emergency, service shall be provided as necessary to avoid loss or damage or to maintain normal use of the premises. The Contractor shall furnish to the Engineer and to the Owner a list of names and telephone numbers, with a back-up name and telephone number, covering each area of potential emergency.

## ARTICLE 19 DISPUTE RESOLUTION

### 19.1 GOVERNING LAW; VENUE

**19.1.1** The Contract and all modifications, amendments, or alterations thereto, if any, shall be governed by the laws of the Commonwealth of Massachusetts. The Contractor, all Subcontractors, and other persons performing any part of the Work agree that each of them

shall be subject to the jurisdiction of the courts of the Commonwealth of Massachusetts or the federal courts for the District of Massachusetts with respect to any actions or suits at law or in equity arising out of or related to the bidding, award or performance of the Contract, subject to the dispute resolution provisions set forth herein.

## 19.2 CLAIMS AND DISPUTES

**19.2.1** All claims, disputes or other matters in controversy between the Contractor and the Owner relating to the execution and progress of the Work or the interpretation of the Contract Documents, and any claims, disputes, and other matters in question relating to whether the Contractor's performance of the Work complies with the Contract Documents, which cannot be resolved by agreement between them, shall be referred to the Engineer in writing for initial determination, with a copy to the other party. The Engineer shall afford both parties a reasonable opportunity to present written evidence in support of their respective positions. The Engineer shall render its decision in writing to each of the parties within a reasonable time and in no event later than thirty (30) days after the receipt of submissions from the parties.

**19.2.2** No such claim, dispute or other matter in question shall constitute grounds for the Contractor to delay progress of the Work, and the Contractor shall carry on the Work and maintain its progress during consideration of any such claim, dispute or other matter by the Engineer. The decision of the Engineer with respect to any and all such claims, disputes or other matters in question shall be final and conclusive, provided that any party having complied with the provisions of Subsection 19.2.3, below, may file an action in a court of competent jurisdiction challenging the decision of the Engineer or otherwise seeking final resolution of the claim, dispute or other matter in question.

**19.2.3** The decision of the Engineer on any such claim, dispute or other matter in question shall be final and binding upon the Owner and the Contractor, unless the Owner or the Contractor gives written notice to the other and to the Engineer of its objection to such decision within ten (10) days after receipt by such aggrieved party of the Engineer's decision and commences an action challenging the Engineer's decision in a court of competent jurisdiction within the time permitted by law. If either party fails to give notice of objection to the Engineer's decision within such ten (10) day period, it shall be conclusively deemed to have waived its right to object to such decision. If the Engineer renders a decision after court proceedings have been commenced, such decision may be entered as evidence but will not supersede any such proceedings unless the decision is acceptable to all parties concerned. Nothing contained in this Article 19 shall limit the Owner's right to damages for delays by the Contractor or any other rights or remedies of the Owner under the Contract Documents or otherwise available under Applicable Law.

**19.2.4** Prior to commencing litigation as to any claim, dispute or other matter in controversy, the parties shall discuss the possibility of resolution of such claim, dispute or controversy through non-binding mediation or other alternative dispute resolution methods. If

the parties agree to mediation, the fees and expenses of the mediator shall be borne equally by the parties unless otherwise agreed.

**19.2.5** Pursuant to M.G.L. c. 30, § 39J, notwithstanding any contrary provision of this Contract, no decision by the Owner or by the Engineer on a dispute, whether of fact or of law, arising under the Contract shall be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, or arbitrarily, is unsupported by substantial evidence, or is based upon error of law.

## ARTICLE 20 MISCELLANEOUS PROVISIONS

### 20.1 NOTICE

**20.1.1** Whenever written notice is required or permitted pursuant to the Contract Documents, the same shall be deemed to have been properly given if in writing and delivered by hand in person or by registered or certified mail, postage prepaid, or express overnight courier service, return receipt requested; and, in the case of notices to the Owner, to the address set forth at the beginning of the Agreement and, in the case of notices to the Owner's Representative or the Engineer, to the address set forth at the beginning of the Agreement, marked to the attention of the Owner's Representative or Engineer, as the case may be, and, in the case of notices to the Contractor, to the Contractor's Project Executive or Project Manager, addressed to such person at the Contractor's mailing address set forth at the beginning of the Agreement or the Contractor's field office at the Site. Any of the persons or addresses specified above for notice purposes may be changed by notice given in the manner provided herein from the party concerned to each of the other parties. Written notice shall be deemed to be given on the day received, if delivered by hand in person; on the next business day after mailing if sent by express overnight courier service; and three (3) business days after mailing if sent by registered or certified mail.

### 20.2 CONTRACT DOCUMENTS

**20.2.1** The Contract Documents form the comprise the entire Contract between the Owner and the Contractor, and supersede all prior negotiations, representations and agreements, whether written or oral. Subject to the provisions of Article 6, the Contractor may not assign its rights or obligations under all or any portion of the Contract Documents nor shall the Contractor assign any moneys due or to become due under the Contract Documents without the written consent of the Owner, which consent may be withheld or granted in its sole discretion. Any such assignment without the written consent of the Owner shall be void and the assignee in such case shall acquire no rights in the Contract or to receive any moneys. Nothing contained in the Contract Documents shall be construed to modify or affect in any way the rights and obligations of the Owner and the Engineer under any contract or agreement between the Owner and the Engineer.

**20.2.2** The Contract shall be governed by the laws of the Commonwealth of Massachusetts. The Contractor, all Subcontractors, and other persons performing any part of the Work agree that each of them shall be subject to the jurisdiction of the courts of Suffolk County in the Commonwealth of Massachusetts or the federal courts for the District of Massachusetts with respect to any actions or suits at law or in equity arising out of or related to the bidding, award or performance of the Contract, and that any such actions or suits commenced by any of such parties shall be commenced in the courts or appropriate administrative tribunals of Suffolk County in the Commonwealth of Massachusetts or the federal courts for the District of Massachusetts and not otherwise.

## 20.3 RIGHTS AND REMEDIES

**20.3.1** The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

**20.3.2** No action or failure to act by the Owner, Owner's Representative, Engineer, or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

**20.3.3** No consent, express or implied, by the Owner, the Owner's Representative, or the Engineer to any breach of any covenant, condition or duty of the Contractor, or waiver, express or implied, by any of same, shall be construed as a consent to or waiver of any other breach of the same or any other covenant, condition or duty.

## 20.4 DECISIONS AND INTERPRETATIONS

**20.4.1** Pursuant to M.G.L. c. 39, § 39P, in every case in which this Contract requires the Owner, any official, the Owner's Representative, or the Engineer to make a decision on interpretation of the Specifications, approval of equipment, material or any other approval, or progress of the Work, the decision shall be made promptly and, in any event, no later than thirty (30) days after the written submission for decision containing all information necessary in the judgment of the Engineer to render such decision; but if such decision requires extended investigation and study, the Owner, the official, the Owner's Representative, or the Engineer shall, within thirty (30) 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.

## 20.5 ANTI-BOYCOTT COVENANT

**20.5.1** The Contractor warrants, represents and agrees that during the time the Contract is in effect, neither it nor any affiliated company, as hereafter defined, shall participate in or cooperate with an international boycott, as defined in Section 999(b)(3) and (4) of the Internal Revenue Code of 1954, as amended, or shall engage in conduct declared to be unlawful

by M.G.L. c. 151E, § 2. If there shall be a breach in the warranty, representation, and agreement contained in this Subsection, then without limiting such other rights as it may have, the Owner shall be entitled to rescind the Agreement. As used herein, an affiliated company shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by the Contractor or by a person or persons or business entity or entities directly or indirectly owning at least 51% of the ownership interest of the Contractor, or which directly or indirectly owns at least 51% of the ownership interests of the Contractor. This provision is included in the Agreement pursuant to Commonwealth of Massachusetts Executive Order No. 130.

## 20.6 RIGHT OF AUDIT

**20.6.1** Without limiting any of the Owner's other rights under the Contract Documents, the Governor of the Commonwealth of Massachusetts or his or her designee, the Secretary of Administration and Finance of the Commonwealth of Massachusetts, and the State Auditor or his or her designee shall have the right at reasonable times and upon reasonable notice to examine the books, records and other compilations of data of the Contractor and all Subcontractors which pertain to the performance of the provisions and requirements of the Contract. This provision is included in the Contract pursuant to Commonwealth of Massachusetts Executive Order No. 195.

## 20.7 RECORD KEEPING AND REPORTING

**20.7.1** The Contractor shall maintain at the Site or at such other location as shall be approved by the Owner, on a current basis, during the term of the Agreement and shall retain for a period of six (6) years after the date of Final Payment, records of all Subcontracts, material orders, Shop Drawings, Samples, and other Project-related documents and revisions thereto which arise out of the Contract, the Contract Documents or the Work, including, but not limited to, the following:

(a) A detailed daily log of all events occurring on the Site or connected with progress of the Project. Such log shall include a listing of the Contractor staffing, manpower by Subcontractors, relevant weather information and names and purpose of all visitors to the Site. Copies of such daily logs shall be distributed weekly to the Owner's Representative;

(b) Copies of the Project Schedule as more specifically set forth in Article 9 of these General Conditions, and Schedules of Values as more specifically set forth in Article 10 of these General Conditions, and all updates thereto to reflect current conditions;

(c) A set of as-built Drawings and Specifications which records all changes made during construction and actual as-built conditions in accordance with the requirements of the Contract Documents; and

(d) Correspondence, meeting notes and minutes, clarifications and interpretations of the Contract Documents issued by the Engineer, progress reports, all other Project related documents.

**20.7.2** The Contractor shall furnish to the Owner on a weekly basis, a Progress Report for the preceding week, in form and substance acceptable to the Owner, containing, without limitation, the following information:

(a) Project Schedule, updated against baseline;

(b) List and status of outstanding issues, claims or disputes, or information required from the Owner;

(c) Safety record report.

(d) Certified payroll reports; and

(e) Suggestions for solutions to outstanding issues and schedule delays.

**20.7.3** The Contractor shall provide a system of Project monitoring and reporting. The Contractor shall assist the Owner in developing and implementing a Change Order control system. Such reports and other information shall be included in the weekly progress reports to be submitted to the Owner in accordance with the Contract Documents, and the provisions of Subsection 20.7.2 hereof.

**20.7.4** The Contractor shall establish and implement procedures for preparing and/or reviewing and processing Requests for Information and/or clarifications and interpretations of the Contract Documents, Shop Drawings, Samples and other submittals, requests for Construction Change Directives, requests for Change Orders, proposals for substitutions, Payment Applications, as-built Drawings and maintenance of logs.

**20.7.5** The Contractor shall check all materials, equipment and labor entering into the Work and shall keep such full and detailed accounts as may be necessary for proper accounting and financial management under the Contract, utilizing such procedures as shall be satisfactory to the Owner. The Owner shall, upon request, be afforded copies of, and access to, all of the Contractor's records, books, correspondence, subcontracts, instructions, drawings, estimates, budgets, receipts, invoices, vouchers, memoranda, breakdowns, accounting data, bid proposals, cost control information and any other documents relating to the Work, in a form acceptable to the Owner.

**20.7.6** Without limitation of the foregoing, the Owner shall have the right, at any time and from time to time, upon notice to the Contractor, to monitor and audit the Contractor's books and records in connection with any aspect of the Agreement or the Contract Documents at the Contractor's offices at the Contractor's sole cost and expense. The Contractor shall facilitate any such audit by making necessary facilities available to the Owner and its

representatives. Further provisions concerning the Contractor's records and the Owner's right to audit such records are set forth in the General Conditions.

**20.7.7** If any inspection of the Contractor's books, records or other documents reveals an overcharge with respect to the Contract Sum, the Contractor shall pay the Owner or, at the Owner's election, the Owner may reimburse itself by taking as a credit against future payments due the Contractor, an amount equal to the overcharge plus the administrative and auditing expenses incurred by the Owner in determining the existence and amount of the overcharge. Nothing contained in this provision is intended as a limitation of any other rights or remedies which may be available to the Owner, be they civil or criminal.

## 20.8 FINANCIAL RECORDS OF CONTRACTOR

**20.8.1** The provisions of this Section 20.8 are included in this Contract pursuant to Massachusetts General Laws Chapter 30, § 39R:

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

(b) until the expiration of six years after final payment, the Office of Inspector General, and the Commissioner of Capital Asset Management and Maintenance shall have the right to examine any books, documents, papers or records of the Contractor or of its Subcontractor that directly pertain to, and involve transactions relating to, the Contractor or its Subcontractors, and

(c) the Contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the Owner, including in its description the date of the change and reasons therefor, and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(d) the Contractor has filed a statement of management on internal accounting controls as set forth in Subsection 20.8.2 below prior to the execution of the Contract, and

(e) the Contractor has filed prior to the execution of the Contract and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in Subsection 20.8.4.

**20.8.2** Every Contractor awarded a contract shall file with the Owner a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

(a) transactions are executed in accordance with management's general and specific authorization;

(b) transactions are recorded as necessary

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. to maintain accountability for assets;

(c) access to assets is permitted only in accordance with management's general or specific authorization; and

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

**20.8.3** Every Contractor awarded a contract shall also file with the Owner 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:

(a) whether the representations of management in response to this Section and Subsection 20.8.1 above are consistent with the result of management's evaluation of the system of internal accounting controls and

(b) 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 condition.

**20.8.4** Every Contractor awarded a contract by the Commonwealth or by any political subdivision thereof shall annually file with Commissioner of Capital Asset Management and Maintenance 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 Owner upon request.

**20.8.5** Records and statements required to be made, kept or filed under the provisions of M.G.L. c. 30, § 39R shall not be public records as defined in M.G.L. c. 4, § 7, and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of Subsection 20.8.1(b).

**20.8.6** As used in this Section 20.8, the following terms have the meanings set forth below:

(a) "Contract" means any contract awarded or executed pursuant to sections thirty B through thirty P, inclusive, of chapter seven [now sections 38A½ through 38O] and any contract awarded or executed pursuant to section thirty-nine M of chapter thirty, or sections forty-four A through H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(b) "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.

(c) "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 awarding authority.

(d) "Audit", when used in regard to financial statements, 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.

(e) "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public 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 a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a 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.

(f) "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.

## 20.9 FALSE ENTRY

**20.9.1** The attention of the Contractor is called to M.G.L. c. 266, § 67C, which provides:

> Any person who knowingly and willfully, directly or indirectly makes, or knowingly and willfully causes to be made, a false entry or omission of a true entry in any books, record or account subject to the provisions of section thirty-nine R of chapter thirty shall be punished by a fine of not more than five thousand dollars, or by imprisonment in the state prison for not more than five years, or in the house of correction for not more than two years, or both.

END OF DOCUMENT

4852-9014-4057.1

# SECTION 024100

# SITE DEMOLITION

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
   1. Demolition of structures, paving, and utilities.
   2. Filling voids created as a result of removals or demolition.

B. Related Requirements:
   1. Section 311100 - Site Clearing: Clearing of trees and other plant vegetation

### 1.2 REGULATORY REQUIREMENTS

A. Conform to applicable State and local codes for demolition of structures, safety of adjacent structures, dust control, runoff control, and pollution prevention.

B. Obtain required permits and licenses from appropriate authorities. Pay associated fees including disposal charges.

C. Notify affected utility companies before starting work and comply with their requirements.

D. Do not close or obstruct public or private roadways, sidewalks, or fire hydrants without appropriate permits or written authorization.

E. If hazardous, contaminated materials or other environmental related conditions are discovered, stop work immediately and notify the Owner's Construction Manager for action to be taken. Do not resume work until specifically authorized by the Construction Manager.

F. Comply with the requirements of contract documents for hazardous construction and demolition waste management and disposal.

G. Test soils around buried tanks for contamination. Coordinate notification for mobilization to site and required observation of tank removal with Civil Engineering Consultant and Environmental Consultant.

### 1.3 SUBMITTALS

A. Project Record Documents: Accurately record actual locations of capped utilities and subsurface obstructions that will remain after demolition. Submit record as part of closeout submittals.

### 1.4 PROJECT CONDITIONS

A. Structures to be demolished will be discontinued in use and vacated prior to start of work.

B. Owner assumes no responsibility for condition of structures to be demolished.

C. Conditions existing at time of inspection for bidding purposes will be maintained by Owner as reasonably practical. Variations within structures may occur by Owner's removal and salvage operations prior to start of demolition work.

D. Unless otherwise indicated in Contract Documents or specified by the Owner, items of salvageable value to Contractor shall be removed from site and structures. Storage or sale of removed items on site will not be permitted and shall not interfere with other work specified.

E. Explosives shall not be brought to site or used without written consent of authorities having jurisdiction. Such written consent will not relieve Contractor of total responsibility for injury to persons or for damage to property due to blasting operations. Performance of required blasting shall comply with governing regulations.

F. Due to the various historical uses on the property and lack of record as-built plans, unforeseen utilities, piping, underground tanks, foundations, footings, etc. may be present on-site.

**PART 2 - PRODUCTS**

**2.1 FILL MATERIALS**

A. Fill material shall be aggregate fill materials as specified in 321313 Concrete .

**PART 3 - EXECUTION**

**3.1 PREPARATION**

A. Provide, erect, and maintain erosion control devices, temporary barriers, and security devices at locations indicated on Construction Drawings.

B. Protect existing landscaping, appurtenances, and structures, which are not to be demolished as shown on the drawings. Repair damage to existing items to remain caused by demolition operations and are the contractors responsibility to pay in full.

C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as necessary and as specified in Contract documents.

D. Mark location of utilities. Protect and maintain in safe and operable condition utilities that are to remain. Prevent interruption of existing utility service to occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities as acceptable to governing authorities and Owner.

E. Notify adjacent property owners of work that may affect their property, potential noise, utility outages, or other disruptions. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property. Coordinate notice with Owner.

**3.2 GENERAL DEMOLITION REQUIREMENTS**

A. Conduct demolition to minimize interference with adjacent structures or pavements to remain.

B. Cease operations immediately if adjacent structures appear to be in danger. Notify authority having jurisdiction. Do not resume operations until directed by authority.

C. Conduct operations with minimum of interference to public or private access. Maintain ingress and egress at all times.

D. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose.

E. Comply with governing regulations pertaining to environmental protection.

F. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.

## 3.3 DEMOLITION

A. Demolish site improvements designated to be removed as shown on the drawings. Site improvements shall include but not be limited to structures, retaining walls, foundations, pavements, curbs and gutters, drainage structures, utilities, signage or landscaping.

B. Disconnect and cap or remove utilities to be abandoned as shown on the drawings.

C. Fill or remove underground tanks, piping, and appurtenances as shown.

D. Demolish buildings completely and remove from site using methods as required to complete work within limitations of governing regulations. Small structures may be removed intact when acceptable to Owner and authorities having jurisdiction.

E. Locate demolition equipment and remove materials to prevent excessive loading to supporting walls, floors, or framing.

F. Demolish concrete and masonry in small sections. Break up concrete slabs-on-grade that are 2-feet or more below proposed subgrade to permit moisture drainage. Remove slabs-on-grade and below grade construction within 2-feet of proposed subgrade.

## 3.4 FILLING VOIDS

A. Completely fill below grade areas and voids resulting from demolition or removal of structures, underground fuel storage tanks, wells, cisterns, etc., using aggregate fill materials consisting of stone, gravel, or sand free from debris, trash, frozen materials, roots, and other organic matter.

B. Areas to be filled shall be free of standing water, frost, frozen or unsuitable material, trash, and debris prior to fill placement.

C. Place fill materials in accordance with Paving Specifications unless subsequent excavation for new work is required.

D. Grade surface to match adjacent grades and to provide flow of surface drainage after fill placement and compaction.

## 3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from site debris, rubbish, and other materials resulting from demolition operations. Leave areas of work in clean condition.

B. No burning of any material, debris, or trash on-site or off-site will be allowed except when allowed by appropriate governing authority and Owner. If allowed as stated above, burning shall be performed in manner prescribed by governing authority. Attend burning materials until fires have burned out and have been completely extinguished.

C. Transport materials removed from demolished structures with appropriate vehicles and dispose off-site to areas that are approved for disposal by governing authorities and appropriate property owners.

**END OF SECTION**

SECTION 042200

CONCRETE UNIT MASONRY

1. GENERAL

1. DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Standard concrete masonry units.

2. Architectural concrete masonry units of the following types:

a. Ground face.

2. SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: Submit the following:

1. Four representative samples of the masonry units showing the range of color, texture, dimension and any scoring, similar treatment.

2. Pigmented mortar. Make Samples using same sand and mortar ingredients to be used on Project. Label Samples to indicate types and amounts of pigments used.

3. Weep holes/vents.

4. Accessories embedded in masonry.

3. QUALITY ASSURANCE

A. Source Limitations for Masonry Units: Obtain all concrete masonry units through one source from a single manufacturer for each product required.

B. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

C. Sample Panels: Build sample panels to verify selections made under sample submittals and to demonstrate aesthetic effects. Comply with requirements in Division 01 for mockups.

1. Build sample panels for typical exterior walls in sizes approximately 72 inches long by 48 inches high by full thickness.

2. Where masonry is to match existing, erect panels adjacent and parallel to existing surface.

3. Clean one-half of exposed faces of panels with masonry cleaner indicated.

4. Protect approved sample panels from the elements with weather-resistant membrane.

5. Sample panels shall remain in place until removal is authorized by Owner or Architect.

6. Approval of sample panels is for quality, color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; clean down; and other material and construction qualities specifically approved by Architect in writing.

4. DELIVERY, STORAGE, AND HANDLING

A. Deliver concrete masonry units to the job site on manufacturer's standard pallets. Deliver ground face, polished and weathered polished units with heat shrink plastic covering and with non-staining protection cushion between faces.

B. Store masonry units on elevated platforms in a dry location. Do not double stack. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied daily. If units become wet, do not install until they are dry.

5. PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

2. PRODUCTS

1. STANDARD CONCRETE MASONRY UNITS

A. Standard Concrete Masonry Units Basis of Design:

1. Manufacturer: Jandris Block, 202 High Street, Gardner, MA 01440. Tel. 978-632-0089. Fax: 978-632-6065. www.ajandris.com (or approved equal)

2. Shapes and Sizes: As indicated on the Drawings, selected from manufacturer's standard and custom shapes and sizes.

3. Integral Water Repellent For Exterior Units Exposed to the Weather: ACM Chemistries, Rainbloc.

4. Integral Insulation at Single Wythe Exterior Walls: Manufacturer's standard Korfil or Icon inserts.

B. Manufacturing Requirements:

1. Type: Normal Weight, Medium Weight and Light Weight as required.

2. Load-Bearing Units: ASTM C 90.

3. Normal Weight Aggregates: ASTM C 33.

4. Light Weight Aggregates: ASTM C 331.

5. Portland Cements: ASTM C 150.

6. Compressive Strength: ASTM C140, 2000 minimum on the net area.

2. ARCHITECTURAL CONCRETE MASONRY UNITS

A. Ground Face Concrete Masonry Units Basis of Design:

1. Manufacturer: Jandris Block 202 High Street, Gardner, MA 01440. Tel. 978-632-0089. www.ajandris.com (or approved equal)

2. Type and Color: As selected by Architect from manufacturer's full range of types and colors.

3. Type and Color: 500 Series, color to be 590-2.

4. Shapes and Sizes: Based on Structural Design drawings prepared by a Structural Engineer licensed in Massachusetts and selected from manufacturer's standard and custom shapes and sizes.

5. Integral Water Repellent For Exterior Units Exposed to the Weather: ACM Chemistries, Rainbloc.

6. Integral Insulation at Single Wythe Exterior Walls: Manufacturer's standard Korfil or Icon inserts.

7. Factory Coating: Manufacturer's standard protective coating.

.EXECUTION

1. MASONRY CLEANERS

A. Proprietary Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/ grout stains, efflorescence, and other new construction stains from new concrete masonry

without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2. EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
2. Verify that foundations are within tolerances specified.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3. INSTALLATION

A. Comply with NCMA Recommended Practices for Laying Concrete Block and ~~NCMA~~ TEK Bulletins and with the following requirements.

B. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

C. Build chases and recesses to accommodate items specified in this and other Sections.

D. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

E. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed. Do not use units cut to less than one-half size.

F. Do not install concrete masonry units with more than 5 percent damage to the face.

G. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

H. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

I. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:

1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.

2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.

3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.

4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus

1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.

5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.

6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

4. LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in bond pattern indicated on Drawings; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs. Prior to installation review bond pattern with Architect.

C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar and remove loose masonry units and mortar.

D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

E. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.

F. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

G. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.

1. Install compressible filler in joint between top of partition and underside of structure above.

2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c., unless otherwise indicated.

3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.

4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078440 – FIRE-RESISTIVE JOINT SYSTEMS.

5. MASONRY JOINT REINFORCEMENT

*A.* Install Joint reinforcement in accordance with NCMA TEK 12-2, *Joint Reinforcement for Concrete Masonry.*

B. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch

on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches. Space reinforcement not more than 16 inches o.c.

C. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

D. Provide continuity at wall intersections by using prefabricated T-shaped units.

E. Provide continuity at corners by using prefabricated L-shaped units.

6. CONTROL AND EXPANSION JOINTS

*A.* Install control joints in accordance with NCMA TEK 10-2, *Control Joints for Concrete Masonry Walls*, NCMA TEK 10-3, *Control Joints For Concrete Masonry Walls - Alternative Engineered Method*, and NCMA TEK 10-4, *Crack Control For Concrete Brick and other Concrete Masonry Veneers.*

B. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

C. Form control joints in concrete masonry using one of the following methods:

1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.

2. Install preformed control-joint gaskets designed to fit standard sash block.

3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.

4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.

7. FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

A. Install Flashing in accordance with NCMA TEK 19-04, *Flashing Strategies for Concrete Masonry Walls*, and NCMA TEK 19-05, *Flashing Details for Concrete Masonry Walls.*

B. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

C. Install flashing as follows, unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches, and 1-1/2 inches into the inner wythe. Form 1/4-inch hook in edge of flashing embedded in inner wythe.

3. At masonry-veneer walls, extend flashing through veneer, across air space behind veneer, and up face of sheathing at least 8 inches; with upper edge covered with elastomeric membrane, lapping at least 4 inches.

4. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
5. Install air barrier transition strips to seal embedded flashings in masonry to air barrier membrane in accordance with Section 072700 – AIR BARRIERS.

D. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

E. Install metal drip edge plate in accordance with architectural details and manufacturer's requirements.

F. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:

1. Use specified weep/vent products to form weep holes.

2. Space weep holes 24 inches o.c., unless otherwise indicated.

G. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.

H. Install vents in head joints in exterior wythes at spacing indicated.

8. CLEANING

A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.

3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.

4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.

5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A, *Removal of Stains form Concrete Masonry*, applicable to type of stain on exposed surfaces, and NCMA TEK 8-04: *Cleaning Concrete Masonry.*

9. MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Masonry Waste: Remove masonry waste and legally dispose of off the Site.

END OF SECTION

# SECTION 260001

# ELECTRICAL WORK

# PART 1 – GENERAL

## 1.1 GENERAL PROVISIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Secondary distribution systems including overcurrent and switching devices, panelboards, raceways, cables, wiring, junction and pull boxes, wireways, and all other components required for complete electrical distribution system.
2. All lighting systems including all fixtures, lamps, mounting accessories, switches, controls, outlets, wiring, raceways, and all other components and fittings required for a complete lighting system.
3. Grounding and bonding of all electrical systems and equipment.
4. Wiring devices (switches and receptacles) complete with associated wall plates.
5. Testing of all electrical systems.
6. Coordination between electrical and other trades.
7. Certified seismic restraints to meet the Commonwealth of Massachusetts Building Code applicable at the time the building permit is issued
8. All other systems hereinafter specified or indicated on the Contract Drawings, complete, leaving ready an electrical system in perfect operating condition.
9. Core drilling for the Work of this Section.
10. Coordination drawings and record drawings and similar requirements.
11. Hoisting and Staging equipment for the Work of this Section.

B. Alternates: None

C. Items to Be Installed Only: Install the following items as furnished by the designated Sections:

1. Not Applicable

D. Items to Be Furnished Only: Furnish the following items for installation by the designated Sections:

1. Not Applicable.

E. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Not Applicable.

F. The Electrical Sub-Contractor shall be responsible for filing all documents, payment of all fees, and securing of all inspections and approvals necessary for the electrical work.

G. The Owner shall be responsible for Municipal (Electric, Telephone, CATV) back charges for all materials furnished and work performed by them in conjunction with the building services and pay same to the respective agency upon demand.

**1.3 SUBMITTALS**

A. Comply with requirements specified in Section 013300 – SUBMITTAL REQUIREMENTS.

B. Shop Drawing: Submittals shall include but not be limited to:

1. Identification of electrical systems
2. Hangers and supports for electrical systems
3. Raceway and fittings
4. Cable tray
5. Wiring and cables
6. Boxes and fittings
7. Wiring devices and wall plates
8. Grounding
9. Overcurrent and switching devices

**1.4 REFERENCES**

A. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any electrical item in the drawings or specifications for electrical work carries with it the instruction to furnish, install and connect the item as part of the electrical work, regardless of whether or not this instruction is explicitly stated.

B. It shall be understood that the specifications and drawings for electrical work are complimentary and are to be taken together for a complete interpretation of the electrical work except that indications on the drawings, which refer to an individual element of work, take precedence over the specifications where they conflict with same.

**1.5 REGULATORY REQUIREMENTS**

A. Comply with all applicable federal and state laws, and all local codes, by-laws, and ordinances.

B. Where provisions of the Contract Documents conflict with any codes, rules or regulations, the latter shall govern. Where the contract requirements are in excess of applicable codes, rules or regulations, the contract provisions shall govern unless the Designer rules otherwise.

C. Request inspections from authorities having jurisdiction, obtain all permits, and pay for all fees and inspection certificates as applicable and/or required. All permits and certificates shall be turned over to the Owner's Project Manager at the completion of the work. Copies of permits shall be given to the resident engineer prior to the start of work.

D. Unless otherwise specified or indicated, materials and workmanship and equipment performance shall conform with the latest edition of the following standards, codes, specifications, requirements, and regulations:

1. State Building Code
2. State Electrical Code
3. National Fire Protection Association (NFPA)
4. Local Town Regulations and By-laws
5. Underwriter's Laboratories, Inc. (UL)
6. National Electrical Manufacturer's Association (NEMA)
7. American National Standards Institute (ANSI)

E. All electrical work shall meet or exceed any other state and local codes and/or authorities having jurisdiction including all other standards indicated herein.

**1.6 SURVEYS AND MEASUREMENTS**

A. Base all required measurements, both horizontal and vertical, on reference points established by the General Contractor and be responsible for the correct laying out of the electrical work. In the event of a discrepancy between actual measurements and those indicated, notify the Construction Manager in writing, and do not proceed with the work required until written instructions have been issued by the Construction Manager.

**1.7 INSTALLATION REQUIREMENTS**

A. The arrangement of all electrical work shown on the drawings is diagrammatic only and indicates the minimum requirements of the work. Conditions at the building including actual measurements shall determine the details of the installation. All work shall be laid out and installed so as to require the least amount of cutting and patching.

B. Check the architectural plans and specifications before ordering any material and equipment. Any discrepancies shall be brought to the attention of the Designer for his determination prior to proceeding with the work.

**1.8 TYPICAL DETAILS**

A. Typical details where shown on the drawings shall apply to each and every item of the project where such items are applicable. They are not repeated in full on the drawings, which in many cases are diagrammatic only, but with the intention that such details shall be incorporated in full. Any alternate method proposed for use by the Contractor shall have the prior approval of the Designer.

**1.9 CORING, DRILLING**

A. Core, cut and/or drill all small holes 4.5" diameter or less in walls and floors required for the installation of sleeves and supports for the electrical work.

**1.10 ACCESSIBILITY**

A. Install all work such that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible.

B. Furnish all access panels appropriate to particular conditions, to be installed by trades having responsibility for the construction of actual walls, floors, or ceilings at required locations.

**1.11 SUPPLEMENTARY SUPPORTING STEEL**

A. Provide all supplementary steelwork required for mounting or supporting equipment and materials.

B. Steelwork shall be firmly connected to building construction as required.

C. Steelwork shall be of sufficient strength to allow only minimum deflection in conformity with manufacturer's published requirements.

D. All supplementary steelwork shall be installed in a neat and workmanlike manner parallel to floor, wall, and ceiling construction; all turns shall be made at forty-five and ninety degrees, and/or as dictated by construction and installation conditions.

E. All manufactured steel parts and fittings shall be galvanized.

**1.12 TOOLS AND EQUIPMENT**

A. Provide all tools and equipment required for the fabrication and installation of the mechanical and electrical equipment at the site.

**1.13 PORTABLE AND DETACHABLE PARTS**

A. Contractors shall retain in their possession all portable and/or detachable parts and portions of materials, devices, equipment etc. necessary for the proper operation and maintenance of the mechanical and electrical systems until final completion of the work, at which time they shall be handed over to Owner's Project Manager.

**1.14 RECORD DRAWINGS, PROJECT CLOSEOUT**

A. Comply with requirements specified in Section 017700 – CONTRACT CLOSEOUT.

B. This trade shall submit the record set for approval by the fire and building departments in a form acceptable to the departments, when required by the jurisdiction.

C. Drawings shall show record condition of details, sections, riser diagrams, control changes and corrections to schedules. Schedules shall show actual manufacturer and make and model numbers of final equipment installation.

**1.15 GUARANTEE/WARRANTY**

A. Guarantee Work of this Section in writing for one year following the date of Substantial Completion. The guarantee shall repair or replace defective materials, equipment, workmanship, and installation that develop within this period, promptly and to Designer's satisfaction and correct damage caused in making necessary repairs and replacements under guarantee within Contract Price.

**1.16 OPERATING, INSTRUCTION, AND MAINTENANCE MANUALS**

A. Refer to SECTION 017700 - CONTRACT CLOSEOUT for submittal procedures pertaining to operating and maintenance manuals.

B. Each copy of the approved operating and maintenance manual shall contain copies of approved shop drawings, equipment literature, cuts, bulletins, details, equipment and engineering data sheets and typewritten instructions relative to the care and maintenance for the operation of the equipment, all properly indexed. Each manual shall have the following minimum contents:

1. TABLE OF CONTENTS
2. Introduction
    a. Explanation of manual and its purpose and use.
    b. Description of the electrical systems.
    c. Safety precautions necessary for equipment.
    d. Illustrations, schematics, and diagrams.
    e. Installation drawing.
3. Maintenance
    a. Maintenance and lubricating instructions.

b. Replacement charts.

c. Trouble shooting charts for equipment components.

d. Testing instructions for each typical component.

e. Two typed sets of instructions for ordering spare parts. Each set shall include name, price, telephone number and address of where they may be obtained.

4. Manufacturer's Literature

a. The equipment for which shop drawings have been submitted and approved.

## 1.17 SERVICE CHARACTERISTICS

A. Secondary Building Voltage: 208/120V

B. All equipment and wiring shall be suitable for the applied voltage.

## 1.18 QUALITY ASSURANCE

A. The requirements of the State Building Code and local regulations establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements are indicated or specified herein.

B. All work shall comply with the latest editions of the codes as referenced herein.

C. Follow manufacturer's directions for articles furnished, in addition to directions shown on drawings or specified herein.

D. Protect all work, materials, and equipment from damage during process of work. Replace all damaged or defective work, materials, and equipment without additional cost to Owner.

E. All equipment and materials for permanent installation shall be the products of recognized manufacturers and shall be new.

F. Equipment and materials shall:

1. Where normally subject to Underwriters Laboratory Inc. listing or labeling services, be so listed or labeled.

2. Be without blemish or defect.

3. Not be used for temporary light and power purposes.

4. Be in accordance with the latest applicable NEMA standards.

5. Be products which will meet with the acceptance of all authorities having jurisdiction over the work. Where such acceptance is contingent upon having the products examined, tested and certified by Underwriters or other recognized testing laboratory, the product shall be so examined, tested and certified.

G. Except for conduit, conduit fittings, outlet boxes, wire and cable, all items of equipment or material of one generic type shall be the product of one manufacturer throughout.

H. For items which are to be installed but not purchased as part of the electrical work, the electrical work shall include:

1. The coordination of their delivery.
2. Their unloading from delivery trucks driven into any point on the property line at grade level.
3. Their safe handling and field storage up to the time of permanent placement in the project.
4. The correction of any damage, defacement, or corrosion to which they may have been subjected. Replacement if necessary shall be coordinated with Contractor who originally purchased the item.
5. Their field make up and internal wiring as may be necessary for their proper operation.
6. Their mounting in place including the purchase and installation of all dunnage, supporting members, and fastenings necessary to adapt them to architectural and structural conditions.
7. Their connection to building wiring including the purchase and installation of all termination junction boxes necessary to adapt and connect them to this wiring. Included also shall be the purchase and installation of any substitute lugs or other wiring terminations as may be necessary to adapt their terminals to the building wiring as called for and to the connection methods set forth in these specifications.

I. Items which are to be installed but not purchased as part of the electric work shall be carefully examined upon delivery to the project. Claims that any of these items have been received in such condition that their installation will require procedures beyond the reasonable scope of the electric work will be considered only if presented in writing within one week of the date of delivery to the project of the items in question. The electric work includes all procedures, regardless of how extensive, necessary to put into satisfactory operation, all items for which no claims have been submitted as outlined above.

## 1.19 DELIVERY, STORAGE, AND HANDLING

A. All materials for the work of this section shall be delivered, stored, and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the products' and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used, and shall be removed from the site.

## 1.20 STAGING AND SCAFFOLDING

A. Refer to requirements specified hereinabove.

## 1.21 FIRE STOPPING

A. Comply with the requirements of Division 07.

## 1.22 DEMOLITION AND MAINTAINING EXISTING SERVICES

A. During the execution of the work, required relocation, etc., of existing equipment and systems in the existing building areas where new work is to be installed or new connections are scheduled to be made,

shall be performed by the Electrical Subcontractor, as required by job conditions and as determined by the Construction Manager in the field, to facilitate the installation of the new system, while demolition, relocation work or new tie-ins will be performed. Outages required for construction purposes shall be scheduled for the shortest practical periods of time, in coordination

with the Owner, for specified, mutually agreeable periods of time, after each of which the interruption shall cease and the service shall be restored. This procedure shall be repeated to suit the Owner's working schedule, as many times as required until all work is completed. Any outages of service shall be approved the Owner, prior to commencing the work. No outages or shutdowns of service shall occur without the written authorization of the Owner prior to commencing the work. Give notice of any scheduled shutdowns, a minimum of weeks in advance. The Owner shall make their best efforts to meet this request without adversely affecting the electric service to the existing building.

B. Prior to any deactivation and relocation or demolition work, consult the drawings and arrange a conference with the Owner in the field to inspect each of the items to be deactivated, removed or relocated. Care shall be taken to protect all equipment designated to be relocated and reused or to remain in operation and be integrated with the new systems.

C. All deactivation, relocation and temporary tie ins of electrical systems and equipment shall be provided by the Electrical Subcontractor. All demolition and removal of electrical systems and equipment designed to be demolished shall be provided by the Electrical Subcontractor. Place all demolished electrical materials except hazardous materials (PCB lighting ballasts, fluorescent lamps, etc.) as determined by the Authority having jurisdiction in general contractors provided dumpster. All hazardous electrical materials shall be legally disposed by the General Contractor.

D. The Owner reserves the right to inspect the material scheduled for removal and salvage any items he deems usable as spare parts.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Product specifications are written in such a manner so as to specify what materials may be used in a particular location or application and therefore do not indicate what is not acceptable or suitable for a particular location or application. As an example: non-metallic sheathed cable is not specified; therefore, it is not acceptable.

B. For purpose of establishing a standard of quality and not for purpose of limiting competition, the basis of this Specification is upon specified models and types of equipment and materials, as manufactured by specified manufacturers.

C. In all cases, standard cataloged materials and systems have been selected. Materials such as lighting fixtures specially manufactured for this particular project and not part of a manufacturers standard product line will not be acceptable. In the case of systems, the system components shall be from a single source regularly engaged in supplying such systems. A proposed system made up of a collection of various manufacturers products will be unacceptable.

D. Where Specifications list manufacturer's names and/or "as approved" or "approved equal" by Designer, other manufacturers equipment will be considered if equipment meets Specification requirements and has all features of the specified items as are considered essential by Designer.

E. All materials shall be new and shall be UL listed.

**2.2 IDENTIFICATION OF ELECTRICAL SYSTEMS**

A. Warning Labels and Signs

1. Comply with NFPA 70 and 29 CFR 1910.145.
2. Warning Signs: Provide warning signs where there is hazardous exposure associated with access to or operation of electrical facilities. Provide text of sufficient clarity and lettering of sufficient size to convey adequate information at each location; mount permanently in an appropriate and effective location. Comply with recognized industry standards for color and design.
3. Operational Tags: Where needed for proper and adequate information on operation and maintenance of electrical systems, provide tags of plasticized card stock, preprinted.
4. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
5. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application. 1/4-inch (6.4-mm) grommets in corners for mounting. Nominal size, 7 by 10 inches (180 by 250 mm).
6. Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch (1-mm) galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch (6.4-mm) grommets in corners for mounting. Nominal size, 10 by 14 inches (250 by 360 mm).
7. Fasteners for Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.
8. Warning label and sign shall include, but are not limited to, the following legends:
    a. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
    b. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 mm)."

B. Electrical System Identification

1. Manufacturers
    a. T&B.
    b. 3M
    c. EMED Co.
    d. Or approved equal.
2. Identification of Equipment:
    a. All pieces of major electrical equipment shall have a manufacturer's label identifying the manufacturer's address, equipment model and serial numbers, equipment size, and other pertinent data. Care shall be taken not to obliterate this nameplate in any way.

b. The Contractor shall make it possible for the personnel operating and maintaining the equipment and systems in this project to readily identify the various pieces of equipment, junction boxes, etc., by marking them. All items of equipment, pull boxes, junction boxes, etc., shall be clearly marked using engraved nameplates as hereinafter specified. The item of equipment shall indicate the same number as shown on the Drawings, where applicable.

c. White background and black letters equipment nameplates shall be three ply laminated plastic, a minimum of 3/32" thick, black background, white letters for normal power, red background, white letters for emergency power, and blue-whiteblue for UPS power. Letters shall be similar to Roman Gothic of a size that is legible (1/2" minimum for main nameplates and 3/8" minimum for branch device nameplates) and appropriate to the application. Attachment of nameplates shall be by stainless steel screws. Rivets or adhesives are not acceptable.

1) Electrical equipment to be identified includes: All switchgear, switchboards, unit substations, distribution panels, transformers, motor control centers, panelboards, automatic transfer switches, busway plugs, disconnect switches, motor controller/starters, lighting control panels, pull boxes, junction boxes, and similar equipment.

2) Nameplates on switchgear, switchboards, unit substations, automatic transfer switches, transformers, distribution panels, motor control centers, disconnect switches, motor controller/starters, variable frequency drives and panelboards shall give voltage and current characteristics and the source feeding the panel. Current characteristics shall indicate the size of the overcurrent devices serving the equipment and not the equipment current rating.

a) Provide panel and circuit designation on disconnect switches, motor controllers/starters, variable frequency drives, etc.

Example:

PANEL PP2
120/208V, 3PH, 4 W, 225 A
Fed from DPA-3
Room 1.102

3) Individual overcurrent devices and pilot lights in switchgear, switchboards, unit substations, distribution panels, motor control centers, and similar equipment shall have nameplates showing the load served and its location, where remote. Nameplates on motor starters shall indicate variable speed, time delay operation, etc., where applicable.

4) Blank nameplates shall be mounted on each spare or bussed space in motor control centers, and on each spare or space in distribution panels.

5) Branch circuit panelboards shall have neatly typed circuit directories behind clear plastic. Identify circuits by room numbers. Room numbers shall be those finally selected by the Owner; not necessarily those given on contract Drawings. Spares and spaces shall be indicated with erasable pencil; not typed. Circuit numbers shall be provided in the directory and at each circuit breaker.

3. Conduit Systems: Provide adequate marking of major conduit which is exposed or concealed in accessible spaces, to distinguish each run as either a normal power, emergency power, fire alarm, control wiring or voice/data conduit. Except as otherwise indicated, use white banding with black

lettering except that emergency power orange and white, fire alarm conduit markers shall use red banding. Provide self-adhesive or snap-on type plastic markers. Indicate voltage ratings of conductors exceeding 250 volts. Locate markers at ends of conduit runs, near switches and other control devices, near items of equipment served by the conductors, at points where conduit passes through walls or floors, or enters non-accessible construction and at spacings of not more than 30' along each run of exposed conduit.

4. Cable Tray Systems: Provide engraved nameplates identifying cable tray systems as to use, on maximum 50' centers on all tray systems and whenever a tray enters a room or concealed accessible location. Nameplate text shall be submitted to the Engineer for review.

5. Underground Cable Identification: Bury a continuous, preprinted, red and silver metallic ribbon cable marker, Brady No. 91600 Series or an approved equal with each underground cable (or group of cables), regardless of whether conductors are in conduit or direct buried. Locate each directly over cables, 12" above cable below finished grade. Ribbons shall be detectable from above grade using a pipe or cable locator.

6. Cable/Conductor Identification: Coordinate a uniform and consistent scheme of color identification of power wiring throughout the building system. Identification shall be by the permanent color of the selected covering. On large conductors, secure identification by means of painted color banding or plastic tape.

   a. Color scheme shall be as follows, [or as required to match the existing color coding in the building for 120/240 V systems with high leg provide Orange for phase B]

| | 208/120 Volt | 480/277 Volt | 5kV/15kV |
|---|---|---|---|
| Phase A | Black | Brown | Black |
| Phase B | Red | Purple | Red |
| Phase C | Blue | Yellow | Blue |
| Neutral | White | Gray | White |
| Ground | Green | Green | |

   b. Wiring for switches shall be same color as phase wire.

   c. Colored insulation in sizes up through #4. Conductors #3 and larger may have black insulation, but color coded with 1/2" wide band of colored tape, at accessible locations. Rap conductor minimum 6" width.

   d. Feeder cables shall be tagged in pull boxes, wireways, wiring gutters of panels, and at other accessible locations. Tags shall be fireproof, nonconductive material, approved by Architect.

   e. Maintain same conductor color from service entrance to last device.

7. Phase Rotation: Phase rotation shall be maintained throughout the project.

   a. Phase rotation shall be clockwise or counterclockwise, per serving power company standards, A-B-C, and identified as such left-to-night, top-to-bottom, and front-toback with color coding as specified above at switchboards, panelboards, substations, transformers, motor control centers, motor starters, and similar locations.

   b. Motor phase reversal, if necessary, shall be made at motor controller.

8. Branch Circuit and Control Wiring Tags: All branch circuit and control wiring conductors shall be tagged using self-sticking vinyl cloth or Mylar cloth wire markers. Embossed pressure sensitive plastic or metal ribbon markers will not be accepted. Tags shall be installed at all wiring splice, tap and termination points and shall correspond to the designations shown on the control wiring diagrams or panel schedules.

9. Branch Circuit Pull Boxes and Junction Boxes: Branch circuit pull boxes shall be neatly stenciled with a black permanent marker indicating the panel name and branch circuit number. Boxes on emergency power systems shall be painted orange prior to marking. Boxes on fire alarm power systems shall be painted red prior to marking.

10. Miscellaneous Switch Plates or Device Plates: Adhesive Film Label with Clear Protective Overlay for interior use: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm).

    a. Nomenclature shall include the panel and circuit of the outlet or switch, or the indication of the pilot, or the area of control, or equipment served.

    b. Switched and non-switched device plates shall be engraved. Engraving shall be 3/16" condensed Gothic and shall be filled with black enamel.

C. Installation

1. Verify identity of each item before installing identification products.

2. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

3. Apply identification devices to surfaces that require finish after completing finish work.

4. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

5. Attach non-adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.

D. Cleaning And Painting of Electrical Work

1. Prime, protective and touch-up painting is included in the Work of this Division. Finish painting in equipment spaces, concealed locations, and other locations not exposed to the view of building occupants is included in the work of this Division. Finished painting in areas exposed to the view of building occupants is specified under Division 9.

2. All equipment and materials furnished by the Electrical Subcontractor shall be delivered to the job with suitable factory protective finish.

3. Electrical switchgear, disconnect switches, contactors, etc., with suitable factory-applied finishes shall not be repainted; except for aesthetic reasons where located in finished areas as directed by the Architect and in a color selected by the Architect. Where factory-applied finishes are damaged in transit, storage or installation, or before final acceptance, they shall be restored to factory-fresh condition by competent refinishers using the spray process.

4. All equipment not finished at the factory shall be given a prime coat and then finish painted with two coats of enamel in a color as directed by the Architect/Engineer. No nameplates on equipment shall be painted, and suitable protection shall be afforded such plates to prevent their being rendered illegible during the painting operations.

5. The surfaces to be finish-painted shall first be prepared as follows:

   a. Galvanized and black steel surfaces shall first be painted with one coat of galvanized metal primer.

   b. Aluminum surfaces shall first be painted with one coat of zinc chromate primer.

6. All ferrous metal surfaces without a protective finish and not galvanized in exposed and concealed areas including chases, under floor and above ceilings shall be painted with two coats of zinc chromate primer as the construction progresses to protect against deterioration.

7. All junction and pull boxes and covers which are part of raceway systems distributing emergency power shall be painted orange. Where a multiple branch emergency power system is installed, the branch designation (LS, CB or EQ) shall be stenciled on the box cover in minimum one inch (1") high white letters.

8. All junction and pull boxes and covers and terminal cabinets which are part of the raceway/wiring system for emergency alarm wiring shall be painted orange and fire alarm wiring shall be painted red. A system designation (FA) shall be stenciled on the box or cabinet cover in minimum one inch (1") high white letters.

9. All conduit exposed to view shall be finish painted as directed by the Architect.

10. Before painting, all surfaces to be painted shall be suitably prepared. This shall include removing all oil, rust, scale, dirt, and other foreign material. Surfaces shall be made smooth by grinding, filing, brushing, or other approved method. In the painting operations, the primer for metal surfaces shall be of the zinc dust type unless specified otherwise, and where finish painting is specified, it shall be painted using materials and colors selected and approved by the Architect. Refer to Division 9 for additional requirements.

## 2.3 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

A. Support, Anchorage, And Attachment Components

1. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

   a. Manufacturers

      1) Cooper B-Line, Inc.; a division of Cooper Industries.

      2) Thomas & Betts Corporation.

      3) Unistrut; Tyco International, Ltd.

      4) Or approved equal.

   b. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.

   c. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

   d. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.

   e. Channel Dimensions: Selected for applicable load criteria.

2. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

3. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

4. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

5. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

6. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

   a. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

      1) Manufacturers

         a) Hilti Inc.

         b) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.

         c) MKT Fastening, LLC.

         d) Or approved equal.

   b. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened Portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

      1) Manufacturers

         a) Cooper B-Line, Inc.; a division of Cooper Industries.

         b) Empire Tool and Manufacturing Co., Inc.

         c) Hilti Inc.

         d) Or approved equal.

   c. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.

   d. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.

   e. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.

   f. Toggle Bolts: All-steel springhead type.

   g. Hanger Rods: Threaded steel.

B. Fabricated Metal Equipment Support Assemblies

1. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

2. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

C. Application

1. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

2. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

3. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

   a. Secure raceways and cables to these supports with two-bolt conduit clamps.

4. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

D. Support Installation

1. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

2. Raceway Support Methods: In addition to methods described in NECA 1, EMT and RMC may be supported by openings through structure members, as permitted in NFPA 70.

3. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb. (90 kg).

4. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

   a. To Wood: Fasten with lag screws or through bolts.

   b. To New Concrete: Bolt to concrete inserts.

   c. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

   d. To Existing Concrete: Expansion anchor fasteners.

   e. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.

   f. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP69.

   g. To Light Steel: Sheet metal screws.

   h. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes,

transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

5. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

6. The Electrical Subcontractor shall install all hangers and supports for electrical systems prior to fireproofing.

E. Installation Of Fabricated Metal Supports

1. Comply with installation requirements in Division 05 Section "Metal Fabrications" for sitefabricated metal supports.

2. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

3. Field Welding: Comply with AWS D1.1/D1.1M.

F. Concrete Bases

1. Concrete bases shall be provided by the Construction Manager.

2. The Electrical Subcontractor shall provide the anchor-bolt pattern to the Construction Manager for installation of anchor bolts.

3. The Electrical Subcontractor shall provide to the Construction Manager the layout of conduit and other materials that penetrate the equipment pads.

G. Housekeeping Pads

1. Housekeeping shall be provided by the Construction Manager.

2. Provide 4 in. high housekeeping pads for floor mounted electrical equipment (switchboard, transformer, distribution panelboards, etc.).

3. The Electrical Subcontractor shall provide to the Construction Manager with the layout of the equipment requiring housekeeping pads.

H. Painting

1. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

a. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

2. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

3. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

**2.4 RACEWAYS AND FITTINGS**

A. Raceways - General:

1. Manufacturers
    a. Pittsburgh Standard Conduit Company
    b. Republic Steel and Tube
    c. Youngstown Sheet Tube Company
    d. Or approved equal
2. No raceway shall be used smaller than 3/4" diameter. No conduit shall have more than three (3) 90o bends in any one run, and where necessary, pull boxes shall be provided. Intermediate metal conduit is not allowed.
3. Rigid metal conduit conforming to, and installed in accordance with, NFPA 70 shall be heavy wall zinc coated steel conforming to American Standard Specifications C80-1 and may be used for service work, exterior work, slab work, and below grade level slab, wet locations, and in mechanical rooms and where raceway may be subject to mechanical damage, i.e., loading docks, workshops, etc.
4. Thin wall conduit (EMT), conforming to, and installed in accordance with, NFPA 70 shall be zinc coated steel, conforming to industry standards, may be used in masonry block walls, stud partitions, above furred ceilings where exposed but not subject to mechanical damage, and shall be used for fire alarm work.
5. Flexible metal conduit shall be used for connections to recessed lighting fixtures and motors. Liquid tight flexible metal conduit shall be used for the above connections which are located in moist locations. All flexible connections shall include a grounding conductor.
6. Rigid non-metallic conduit may be used at the contractor's option for underground electric and telephone services outside the foundation wall and shall be polyvinyl chloride (PVC) schedule 80, 90 degree C or as approved by the utility co. If option of rigid non-metallic conduit is exercised, underground runs outside the foundation wall shall be concrete encased at contractor's expense.

B. Raceway application
1. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
    a. Exposed Conduit: Rigid steel conduit.
    b. Concealed Conduit, above ground: Rigid steel conduit; EMT.
    c. Underground Conduit outside the foundation wall: RNC, Schedule 80 PVC, direct buried. Convert nonmetallic conduit to rigid steel conduit before rising through earth.
    d. Underground Conduit within building confines: RMC, direct buried.
    e. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
    f. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
2. Comply with the following indoor applications, unless otherwise indicated:
    a. Exposed, Not Subject to Physical Damage: EMT.
    b. Exposed, Not Subject to Severe Physical Damage: EMT.

c. Exposed and Subject to Severe Physical Damage: Rigid steel conduit. Includes raceways in the following locations:

1) Loading dock.

2) Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.

3) Mechanical rooms.

4) Fire pump room.

d. Concealed in Ceilings and Interior Walls and Partitions: EMT.

e. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.

f. Damp or Wet Locations: Rigid steel conduit.

g. Raceways for Optical Fiber or Communications Cable: EMT or plenum rated inner duct.

h. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.

C. Fittings:

1. Manufacturers

a. O.Z.

b. Crouse Hinds

c. Appleton

d. Or approved equal

2. Provide insulated bushings on all raceways 1 inch diameter or larger.

3. Manufacturer's standard fittings shall be used for raceway supports.

4. Expansion Fittings: Expansion fittings shall be used where structural and concrete expansion joints occur and shall include a ground strap.

5. Couplings for rigid metal conduit shall be threaded type.

6. Threadless fittings for EMT shall be watertight compression type. Set-screw type fittings are not acceptable. All fittings shall be concrete tight. No diecast fittings allowed except for raceways larger than 1 inch diameter.

7. Cable supports in vertical raceways shall be of the split wedge type. Armored cable supports for vertical runs to be of wire mesh basket design.

8. Wall entrance seals shall be equal to O.Z. Gedney type "WSK".

9. Couplings, elbows and other fittings used with rigid nonmetallic raceways shall be of the solvent cemented type to secure a waterproof installation.

**2.5 WIRING MATERIALS**

A. Manufacturers

1. Republic
2. Anaconda
3. General Cable
4. Or approved equal

B. Building Wire and Cable shall be copper, shall have a temperature rating of 90 degrees C and shall have a voltage rating of 600V insulation, THHN/THWN-2 for branch circuitry and XHHW2 for feeders.

C. Conductors shall be of soft drawn 98% minimum conductivity properly refined copper, stranded construction.

D. Exterior of wires shall bear repetitive markings along their entire length indicating conductor size, insulation type and voltage rating.

E. Exterior of wires shall be color coded, so as to indicate a clear differentiation between each phase and between each phase and neutral. In all cases, grounded neutral wires and cables shall be identified by the colors white or gray. In sizes and insulation types where factory applied colors are not available, wires and cables shall be color coded by the application of colored plastic tapes in overlapping turns at all terminal points, and in all boxes in which splices are made. Colored tape shall be applied for a distance of 6 inches along the wires and cables, or along their entire extensions beyond raceway ends, whichever is less.

F. Final connections to motors shall be made with 18" of neoprene sheathed flexible conduit.

G. Minimum branch circuit conductor size shall be 12 AWG installed in conduit. Motor control circuit wiring shall be minimum No. 14 AWG installed in conduit.

H. Fire alarm and security system wiring shall be 16 AWG twisted non-shielded pairs installed in conduit for alarm and trouble circuits and a minimum of 14 AWG installed in conduit for device power, control and alarm annunciation circuits. Fire alarm wiring shall be installed in conduit. Fire alarm rated MC cable may be used for fire alarm work where concealed.

I. Other wires and cables required for the various systems described elsewhere in this section of the Specifications shall be as specified herein, as shown on the Contract Drawings, or as recommended by the manufacturer of the specific equipment for which they are used, all installed in conduit.

J. Metal Clad sheathed cable NFPA 70, type MC may only be used for fixture whips. Maximum allowable length shall be 4 ft. All type MC cable used shall contain a full size insulated ground conductor. All conductors shall be copper. All type MC cable insulation used shall have voltage rating of 600 volts, shall have a temperature rating of 90 degrees C. and shall be thermoplastic material. Armor material shall be steel and armor design shall be interlocked metal tape.

K. Mineral-Insulated Metal-Sheathed Fire-Resistive Cables (Type MI) - Cables shall consist of a factory assembly of one or more solid copper conductors insulated with highly-compressed magnesium oxide and enclosed in a seamless, liquid-and -gas-tight continuous copper sheath. Cables shall be rated for 600 volts. Cable shall comply with Article 330 of the National Electrical Code. Cables shall be classified by Underwriters Laboratories, Inc. as having a 2-hour fire resistive rating. Cable terminations shall be made

with UL listed mineral-insulated cable fittings. Cables shall be as manufactured by Pyrotenax USA, Inc. or approved equal.

L. Conductor insulation and multi-conductor cable applications and wiring methods

1. Service Entrance: Type XHHW-2, single conductors in PVC.
2. Exposed Feeders: Type THHN-THWN-2, single conductors in RMC, EMT
3. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN2, single conductors in EMT.
4. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHNTHWN-2, single conductors in PVC.
5. Exposed Branch Circuits: Type THHN-THWN-2, single conductors in EMT.
6. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN-2, single conductors in EMT.
7. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN-2, single conductors in PVC.
8. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.
9. Class 1 Control Circuits: Type THHN-THWN-2, in RMC, EMT. 10. Class 2 Control Circuits: Type THHN-THWN-2, in RMC, EMT.
11. Emergency life safety system feeders: Type MI cable.

**2.6 OUTLET, JUNCTION, PULL BOXES, AND WIRING TROUGHS FOR ALL SYSTEMS**

A. Manufacturers

1. Crouse Hinds
2. Steel City
3. RACO
4. Or approved equal.

B. Outlets:

1. Each outlet in wiring or raceway systems shall be provided with an outlet box to suit conditions encountered. Boxes installed in normally wet locations shall be of cast-metal type having hubs. Concealed boxes shall be cadmium plated or zinc coated sheet metal type. Old work boxes with Madison clamps not allowed in new construction.
2. Each box shall have sufficient volume to accommodate number of conductors in accordance with requirements of NFPA 70. Boxes shall not be less than 1-1/2" deep unless shallower boxes are required by structural conditions and are specifically approved by Designer. Ceiling and bracket outlet boxes shall not be less than 4" octagonal except that smaller boxes may be used where required by particular fixture to be installed. Flush or recessed fixtures shall be provided with

separate junction boxes when required by fixture terminal temperature requirements. Switch and receptacle boxes shall be 4" square or of comparable volume.

C. Pull and Junction Boxes: Where necessary to terminate, tap off, or redirect multiple raceway runs or to facilitate conductor installation, furnish, and install appropriately designed boxes. Boxes shall be fabricated from code gauge steel assembled with corrosion resistant machine screws.

Box size shall be as required by Code. Where intermediate cable supports are necessary because of box dimensions, provide insulated removable core brackets to support conductors. Junction boxes are to be equipped with barriers to separate circuits. Where splices are to be made, boxes shall be large enough to provide ample work space. All conductors in boxes are to be clearly tagged to indicate characteristics. Boxes shall be supported independently of raceways. Junction boxes in moist or wet areas shall be galvanized type. Boxes larger than 4 inches square shall have hinged covers. Boxes larger than 12 inches in one dimension will be allowed to have screw fastened covers, if a hinged cover would not be capable of being opened a full 90 degrees due to installation location.

## 2.7 GROUNDING REQUIREMENTS

A. Ground all systems and equipment in accordance with best industry practice, the requirements of NFPA 70 and the following:

B. Provide grounding bonds between all metallic conduits of the light and power system which enter and leave cable chambers or other nonmetallic cable pulling and splicing boxes. Accomplish this by equipping the conduits with bushings of the grounding type individually cross connected.

C. The central equipment for the fire protective alarm system and telephone system shall have its grounding terminal connected to the grounding electrode by means of a No. 6 green coded insulated conductor, run in 3/4" conduit. Utilize a ground clamp of a type specifically manufactured for the purpose.

## 2.8 LIGHTING FIXTURES

A. Lighting fixtures shall be in accordance with identifications on the drawings.

B. Finishes shall be as selected by the Designer or as indicated on the plans.

C. Any additional appurtenances required for installation and operation, where same are not covered by the identification used on the drawings, shall be included.

D. Fixtures for use outdoors or in areas designated as damp locations shall be suitably gasketed and U.L. listed for such applications.

E. All lamps shall be included.

F. All lamps shall be of the type specified in the light fixture schedule.

G. Include the aiming and/or adjustments of all lighting fixtures requiring same in accordance with instructions issued by the Designer in the field.

H. Lamps shall be manufactured by General Electric, Phillips, OSRAM, or approved equal.

**2.9 WIRING DEVICES**

A. Manufacturers

1. Legrand; Wiring Devices & Accessories (Legrand).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Or approved equal.

B. Basis OofDesign

1. Basis of design based upon products by Legrand.

C. Receptacle Outlets

1. Tamper-Resistant GFCI Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD1, NEMA WD6 configuration 5-20R, UL 498, Federal Specification W-C-596 and UL943, Class A, and include indicator light that is lighted when device is tripped. a. Pass & Seymour: 2095TR.
2. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weatherresistant thermoplastic with lockable while-in-use cover. a. Hubbell: MX3200 single gang
   b. Hubbell: MX6200 dual gang
3. Single and combination types:
   a. Plate-Securing Screws: Metal with head color to match plate finish.
   b. Material for Finished Spaces: Stainless Steel.
   c. Material for Unfinished Spaces: Galvanized steel.
   d. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

**2.10 HANDHOLES**

A. Manufacturers

1. Handholes
   a. Rotondo Precast/Old Castle.
   b. Quazite.
   c. Wasau Concrete Co.
   d. Or approved equal.
2. Frames, Covers, and Accessories:
   a. Campbell Foundry Co.
   b. East Jordan Iron Works, Inc.
   c. McKinley Iron Works, Inc.
   d. Or approved equal.

B. Quality Assurance

1. Handholes, pull boxes, and accessories shall be designed, fabricated, and installed in compliance with the Drawings.
2. Provide covers that are listed and labeled by AAHSTO for loadings specified.
3. Coordinate layout and installation of handholes and pull boxes with other installations.
4. Comply with ANSI C2.
5. Comply with NFPA 70.

C. Delivery, Storage, And Handling

1. Deliver equipment as factory-fabricated modules with protective crating and covering.
2. Lift and support components with manufacturer's designated lifting or supporting points.

D. Coordination

1. Coordinate layout and installation of handholes and pullboxes with final arrangements of other utilities and site grading, as determined in the field.
2. Coordinate elevations of ducts and duct-bank entrances into handholes with final profiles of conduits as determined by coordination with other utilities and underground obstructions. Revise locations and elevations from those indicated as required to suit field conditions and to ensure duct runs drain to handholes.

E. Precast Concrete Handholes

1. Precast Concrete: Air-entrained, 3,000 psi (35 mPa) compressive strength at 28 days.
2. Reinforcing: AASHTO H20; bridge loading.
3. Construction: In modular sections with tongue and groove joints.
4. Dimensions: As shown on the drawings; Minimum inside dimensions of 12"X12".
5. Include cable pulling irons opposite each duct entry window.

F. Handhole Accessories

1. Frames and Covers: steel angle cast-in-place frame, machine finished with flat bearing surfaces. AASHTO H20; bridge loading. Galvanized checker plate steel cover with formed galvanized steel beams, torsion springs and safety bars, cover shall have either the word "ELECTRIC" for power manholes or "COMMUNICATIONS" for communications handholes engraved in steel name plate on frame.
2. Pulling Irons: 7/8-in.-diam steel bar forming a triangle of 9 in. per side when set. Galvanize to ASTM A153 for irregular shaped articles.

G. Preparation

1. Excavate, install base material, and compact base material.
2. Examine site work, duct bank installation sub-base placement, levelness, and compactness before placing the handholes.

3. Proceed with installation only after unsatisfactory conditions have been corrected.

H. Installation - Precast Concrete Handholes And Pullboxes

1. Install and seal precast sections according to manufacturer's instructions.
2. Install handholes and pullboxes plumb.
3. Set top of each handhole and pullbox to finished elevation indicated.

I. Field Quality Control

1. Verify that installed manholes, handholes, and pullboxes are installed plumb and level and that covers will be flush with final paved surfaces.
2. Check that accessories are installed according to specifications and drawings.
3. Inspect drain lines to verify proper drainage.
4. Adjust final handhole and pullbox frame elevations to match that of final paving or grade.

J. Cleaning

1. Clean inside of handholes and pullboxes from all construction debris and verify proper operation of drains.
2. Protect handhole and pullbox interiors from entrance of construction debris after final cleaning is complete.

**2.11 NEMA 3R DOUBLE DOOR ENCLOSURES**

A. Manufacturers

1. APC Enclosures, Inc.
2. Omega Engineering, Inc.
3. Hoffman
4. Or approved equal

B. Enclosure

1. The complete enclosure shall be made from 14-gauge type 304 stainless steel.
2. The enclosures are equipped with two (2) adjustable "C" mounting channels on both side walls and back wall to provide versatile positioning of shelves or rack mounting angles.
3. Enclosures wider than 60" are equipped with four (4) adjustable "C" mounting channels.
4. The door frame opening shall be double flanged on all four (4) sides. These flanges increase the strength of the door opening and help prevent dust and liquids from dropping into the enclosure when the door is opened.
5. A removable center post shall be an integral part of the three-point latching system and shall provide increased security and environmental protection.

6. All exterior seams shall be ground smooth or sealed weathertight with silicone sealant.

7. Enclosures shall have provisions for mounting a forced air fan system that can be thermostatically controlled, and air is exhausted through a slotted vent system in the roof overhang.

C. Door

1. The door shall utilize an overlapping design and equipped with a three-point latching mechanism with nylon rollers at the top and bottom.

2. The door handle shall be 0.75" stainless steel round bar and shall have provisions for a padlock.

3. The standard main door lock is Corbin #15484-1 or equal.

4. A louvered air vent with filter retaining brackets and a disposable paper filter element shall be provided.

5. The main doors shall be sealed with closed-cell neoprene gasket.

6. The continuous door hinge shall be 0.075" thick stainless steel with a 0.25" stainless steel hinge pin.

D. Finish

1. Color by Architect.

2. Painted enclosures shall be treated with an iron phosphate coating and dried by radiant heat.

## PART 3 - EXECUTION

### 3.1 BASIC REQUIREMENTS

A. Adhere to best industry practice and the following.

B. All work shall be concealed.

C. Route circuitry runs embedded in concrete to coordinate with structural requirements.

D. Equip each raceway intended for the future installation of wire or cable with a nylon pulling cord 3/16 inch in diameter and clearly identify both ends of the raceway.

E. Provide all outlet boxes, junction boxes, and pull boxes for proper wire pulling and device installation. Include those omitted from the drawings due to symbolic methods of notation.

F. Utilize lugs of the limiter type to make connections at both ends of cables installed on the line side of main service overcurrent and switching devices. Provide cable limiters for each end of each service entrance cable.

G. Beyond the termination of raceways, fireproof the following:

1. All wires and cables within pad mounted transformer enclosure.

2. All service feeder cables ahead of main service overcurrent protection devices, and elsewhere where not in raceways.

3. Fireproofing of wires and cables shall be by means of a half-lapped layer of arc proof or by means of sleeving of a type specifically manufactured for the purpose. Ends of tape or sleeving shall be served with twine. Fireproofing shall be extended up into raceways. After conductors have been finally shaped into their permanent configuration, fireproofing tape or sleeving shall be coated with silicate of soda (water glass). Fireproofing shall be applied in an overall manner to raceway groupings of conductors.

H. Provide all sleeves through fireproof and waterproof slabs, walls, etc. required for electric work.

1. Provide waterproof sealing for the sleeves through waterproof slabs, walls, etc.

Provide fireproof sealing for the sleeves through fireproof walls, slabs, etc.

3. Provide fireproof sealing for the openings in fireproof walls, slabs, etc., resulting from removal of existing electrical sleeves, conduits, poke-throughs, etc.

I. Bundle wiring passing through pull boxes and panel boards in a neat and orderly manner with plastic cable ties. Cable ties shall by Ty-Raps as manufactured by Thomas & Betts, Holub Industries Inc., Quick Wrap, Bundy Unirap or equal.

J. Turn branch circuits and auxiliary system wiring out of wiring gutters at 90 degrees to circuit breakers and terminal lugs.

## 3.2 TESTING REQUIREMENTS AND INSTRUCTIONS

A. The Electrical Subcontractor shall provide supervision, labor, materials, tools, test instruments and all other equipment or services and expenses required to test, adjust, set, calibrate, and operationally check work and components of the electrical systems and circuitry throughout the work.

B. At any stage of construction and when observed, any electrical equipment or system determined to be damaged, or faulty, is to be reported to the engineer. Corrective action by the Contractor requires prior engineer approval, retesting, and inspection.

C. Prior to testing and start-up, equipment and wiring shall be properly and permanently identified with nameplates, and other identification as specified in this Section. Check and tighten terminals and connection points, remove shipping blocks and thoroughly clean equipment, repair damaged or scratched finishes, inspect for broken and missing parts and review and collect manufacturer's drawings and instructions for delivery to the engineer. Make routine checks and tests as the job progresses to ensure that wiring and equipment is properly installed.

D. Testing and checkout work is to be performed with fully qualified personnel skilled in the particular tests being conducted. Personnel are to have at least five years of experience with tests of same type and size as specified:

E. Inspections and tests shall be in accordance with the following applicable codes and standards as amended to date, unless otherwise specified.

1. National Electrical Manufacturer's Association - NEMA.
2. American Society for Testing and Materials - ASTM.
3. Institute of Electrical and Electronic Engineers -IEEE.
4. National Electrical Testing Association - NETA.
5. American National Standards Institute - ANSI.
   a. C2: National Electrical Safety Code.
   b. Z244-1: American National Standard for Personnel Protection.
6. Insulated Cable Engineers Association - ICEA.
7. Association of Edison Illuminating Companies - AEIC.
8. Occupational Safety and health Administration.
   a. OSHA Part 1910; Subpart S, 1910.308.
   b. OSHA Part 1926; Subpart V, 1926.950 through 1926.960.
9. National Fire Protection Association - NFPA.
   a. 70B: Electrical Equipment Maintenance.
   b. 70E: Electrical Safety Requirements for Employer Workplaces.
   c. 70: National Electrical Code.
   d. 78: Lightning Protection Code.
   e. 101: Life Safety Code.
10. Inspections and tests shall utilize the following references:
    a. Contract Drawings and Specifications.
    b. Contractor's Short Circuit and Coordination Study.
    c. Manufacturer's printed test procedures for respective equipment.

F. After each electrical system installation is complete, perform the tests to determine that the entire system is in proper working order and in accordance with applicable codes, manufacturer's instructions, drawings, and specifications. Tests are in addition to shop tests of individual items at the manufacturer's plant. Perform insulation and ground resistance tests before operating tests.

G. Perform insulation tests on electrical equipment, apparatus, cables, motors, generators, transformers, circuit breakers and switches, switchgear, motor control centers, and similar electrical equipment, at the following times and conditions:

1. Prior to energization and/or placing into service.
2. When damage to the insulation is suspected, or known to exist.
3. After repairs or modifications to the equipment affecting the insulation.
4. Where lightning or other surge conditions are known to have existed on the circuit.

H. Make openings in circuits for test instruments and place and connect instruments, equipment, and devices, required for the tests. Upon completion of tests, remove instruments and instrument connections and restore circuits to permanent condition.

I. List each circuit and measured resistance as test data. Maintain record of insulation resistance values. Identify conductor, or equipment, date that value was taken and resistance value.

## 3.3 FIRESTOPPING

A. Refer to Section 078413 – PENETRATION FIRESTOPPING for coordination of floor and wall penetrations.

B. Firestopping shall be provided by the Electrical Subcontractor for all penetrations of conduit, wireways, bus ducts, cable trays, cables. etc. installed by the Electrical Subcontractor, through fire-rated walls and floors and other fire-rated separations as follows:

1. Excess space in framed openings through structural floors between conduits and concrete shall be grouted in with concrete to a depth of at least the thickness of the slab plus 2" minimum above the slab.

Conduit penetration through poured concrete or masonry walls shall be grouted in with concrete and provided with tight fitting escutcheon plates on both sides.

3. Conduit penetrations through fire-rated dry walls shall be with sleeves through the wall fitted with escutcheon plates on both sides with excess openings filled with fire stop material specifically manufactured for the purpose.

4. Excess space within conduit sleeves or stubs through floor slabs or walls where low voltage/telecommunications cables pass through shall be filled with firestopping material specifically manufactured for the purpose.

5. Utilize fire-rated fittings, as specified elsewhere for penetrations through floor slabs for supplying floor outlets.

C. All conduits/sleeves used for vertical cable passage shall be sealed utilizing suitable material after the installation of cables as follows:

1. The material shall be non-corrosive to the cable jacket or insulation that it applies to.

2. The material shall provide for a minimum of three-hour fire rating.

3. The material shall be non-shrinking, waterproof and smoke tight.

4. The material shall remain flexible and non-hardening.

5. The material shall be of the type that when installed will not slip through the openings, will stick to the surfaces of the openings and the cable and will not require any pressure to be applied to the cable in order to keep it in place.

6. The material shall be installed in a neat and workmanlike manner and the final installation shall be smooth finished to the top of the sleeve or conduit.

7. The material shall be easily removable without damaging the cables after being set or cured for at least one week.

D. All materials used for firestopping shall be approved for the purpose and the rating of the wall or floor and all methods employed shall meet with the approval of the local authorities.

## 3.4 BRANCH CIRCUITRY

A. For all lighting and appliance branch circuitry, raceway sizes shall conform to industry standard maximum permissible occupancy requirements except where these are exceeded by other requirements specified elsewhere.

B. Circuits shall be balanced on phases at their supply as evenly as possible.

C. Feeder connections shall be in the phase rotation which establishes proper operation for all equipment supplied.

D. Reduced size conductors indicated for any feeders shall be taken as their grounding conductors.

E. Feeders consisting of multiple cables and raceways shall be arranged such that each raceway of the feeder contains one cable for each leg and one neutral cable, if any.

F. For circuitry indicated as being protected at 20 Amps or less, abide by the following:

1. All 20 amp, 120/208 volt, 3 phase, 4 wire combined branch circuit homeruns shall be provided with a #8 AWG neutral conductor.
2. Minimum conductor size shall be No. 12 A.W.G. copper.
3. Conductors operating at 120 volts extending in excess of 100 Ft., or at 277 volts extending in excess of 200 ft., or the last outlet or fixture tap shall be No. 10 A.W.G. copper throughout.
4. Lighting fixtures and receptacles shall not be connected to the same circuit.
5. Circuits shall be balanced on phases at their supply point as evenly as possible.

## 3.5 REQUIREMENTS GOVERNING ELECTRICAL WORK IN DAMP OR WET LOCATIONS

A. Outlets and outlet size boxes shall be of galvanized cast ferrous metal only.

B. The finish of threaded steel conduit shall be galvanized only.

C. Wires for pulling into raceways for lighting and appliance branch circuitry shall be limited to "THWN".

D. Wires for pulling into raceways for feeders shall be limited to "THWN".

E. Plates for toggle switches and receptacles shall have gasketed snap shut covers suitable for wet locations while in use.

F. Final connections of flexible conduit shall be neoprene sheathed.

G. Apply one layer of half looped plastic electric insulating tape over wire nuts used for joining the conductors of wires.

H. Enclosures, junction boxes, pull boxes, cabinets, cabinet trims, wiring troughs, and the like, shall be fabricated of galvanized sheet metal, shall conform to the following:

1. They shall be constructed with continuously welded joints and seams.
2. Their edges and weld spots shall be factory treated with cold galvanizing compound.
3. Their connection to circuitry shall be by means of watertight hub connectors with sealing rings.

I. Enclosures for individually mounted switching and overcurrent devices shall be NEMA Class IV weatherproof construction.

J. The covers, doors and plates and trims used in conjunction with all enclosures, pull boxes, outlet boxes, junction boxes, cabinets and the like shall be equipped with gaskets.

K. Panels shall be equipped with doors without exception.

L. The following shall be interpreted as damp or wet locations within building confines:

1. Spaces where any designations indicating weatherproof (WP) or vaporproof appear on the drawings.

Below waterproofing in slabs applied directly on grade.

3. Spaces defined as wet or damp locations by article 100 of the National Electric Code.

## 3.6 REQUIREMENTS GOVERNING ELECTRIC WORK IN AIR HANDLING SPACES

A. Within air handling duct work or plenums (other than spaces within suspended ceilings used for air handling purposes): Area B and the media shall comply with requirements for return air plenums.

1. Abide by the requirements specified for electric work in damp locations within building confines.
2. Where circuitry passes through duct walls, include, in accordance with instructions issued in the field, air tight sealing provisions which allow for a relative movement between the circuitry and the duct walls.
3. Exclude the installation of type NM or NMC cable.

B. In spaces within suspended ceilings used for air handling purposes, abide by the requirements specified for normal electric work conditions except:

1. Lighting fixtures recessed into the ceilings shall be certified as being suitable for this purpose.

## 3.7 IDENTIFICATION AND TAGGING

A. Identify individually:

1. Each transformer.
2. Each panelboard.
3. Each switch and circuit breaker.
4. Each feeder, wire, or cable of all systems.
5. Each switchboard.
6. Each end of nylon pullwire in empty conduit.

B. Each wire or cable in a feeder shall be identified at its terminal points of connection and in each pullbox, junction box and panel gutter through which it passes.

C. The nomenclature used to identify panelboards or load center shall designate the numbers assigned to them.

D. The nomenclature used to identify switches or circuit breakers shall:

1. Where they disconnect mains or services designate this fact.
2. Where they control feeders, designate the feeder number and the name of the load supplied.
3. Where they control lighting and appliance branch circuitry, designate the name of the space and the load supplied.

E. The nomenclature used to identify feeder wires and cables shall designate the feeder number.

F. Identification for panelboards or load centers shall be by means of engraved lamacoid nameplates showing 1/4" high white lettering on a black background fastened to the outside face of the front.

G. Identification for switches or circuit breakers shall be by means of the following:

1. Where individually enclosed engraved lamacoid nameplates showing 1/8" high white lettering on a black background fastened on the outside front face of the enclosure.
2. Where in panelboards or load centers without doors same as for individually enclosed.
3. Where in panelboards or load centers with doors typewritten directories mounted behind transparent plastic covers, in metal frames fastened on the inside face of the doors.

H. Identification for wires and cables shall be by means of wrap around "brady" type labels.

I. Device plates for local toggle switches, toggle switch type motor starters, pilot lights and the like, whose function is not readily apparent shall be engraved with 1/8" high letters suitably describing the equipment controlled or indicated.

J. Phase identification letters shall be stamped into the metal of the bus bars of each phase of the main busses of each switchboard and each panelboard. The letters shall be visible from at least one "normal posture" location without having to demount any current carrying or supporting elements.

K. Equip the front face of all switchboard pull boxes junction boxes and the like containing cables, busing or devices operating in excess of 600 volts with enameled sheet metal "red on white" signs reading "DANGER HIGH VOLTAGE."

L. Equip all electric closets and the like with enameled sheet metal "red on white" signs reading "Electrical Equipment Room No Storage Permitted." Signs shall be mounted at clearly visible locations within the rooms.

M. Provide a sign at the service entrance equipment room indicating the type and location of all on site emergency or standby power sources.

N. Identify each outlet box, junction box, and cabinet used in conjunction with empty raceway for wires of a future system by means of indelible markings on the inside denoting the system.

O. Prior to installing identifying tags and nameplates, submit their nomenclature for approval. Conform to all revisions issued by the Designer.

## 3.8 LIMITING NOISE PRODUCED BY ELECTRICAL INSTALLATION

A. Perform the following work, in accordance with field instructions issued by the Designer to assure that minimal noise is produced by electrical installations due to equipment furnished as part of the electrical work.

B. Check and tighten the fastenings of sheet metal plates, covers, doors and trims used in the enclosures of electrical equipment.

C. Remove and replace any individual device containing one or more magnetic flux path metallic cores (e.g., discharge lamp ballast, transformer, reactor, dimmer, solenoid) which is found to have a noise output exceeding that of other identical devices installed at the project.

## 3.9 SUPPORTS AND FASTENINGS

A. Support work in accordance with best industry standards, Mass. Electric Code and the following:

B. Include supporting frames or racks for equipment, intended for vertical surface mounting, which is required in a free-standing position.

C. Supporting frames or racks shall be of standard angle, standard channel or specialty support system steel members. They shall be rigidly bolted or welded together and adequately braced to form a substantial structure. Racks shall be of ample size to assure a workmanlike arrangement of all equipment mounted on them.

D. No work intended for exposed installation shall be mounted directly on any building surface. In such locations, flat bar members or spacers shall be used to create a minimum of 1/4" air space between the building surfaces and the work. Provide 3/4" thick exterior grade plywood painted with two coats of fire-retardant grey paint for mounting of panelboards.

E. Nothing (including outlet, pull and junction boxes and fittings) shall depend on electric conduits, raceways, or cables for support.

F. Nothing shall rest on, or depend for support on, suspended ceiling media.

G. Support less than 2" trade size, vertically run, conduits at intervals no greater than 8 Ft. Support such conduits, 2-1/2" trade size or larger, at intervals no greater than the story height, or 15 Ft, whichever is smaller.

H. Where they are not embedded in concrete, support less than 1" trade size, horizontally run, conduits at intervals no greater than 7 ft. Support such conduits, 1" trade size or larger, at intervals no greater than 10 ft.

I. Support all lighting fixtures directly from structural slab, deck, or framing member.

J. Where fixtures and ceilings are such as to require fixture support from ceiling openings frames, include in the electric work the members necessary to tie back the ceiling opening frames to ceiling suspension members or slabs so as to provide actual support for the fixtures noted above.

K. As a minimum procedure, in suspended ceilings support small runs of circuitry (e.g., conduit not in excess of 1 inch trade size) from ceiling suspension members as defined above. Support larger runs of circuitry directly from structural slabs, decks, or framing members.

L. Fasten electric work to building structure in accordance with the best industry practice.

M. Floor mounted equipment shall not be held in place solely by its own dead weight. Include floor anchor fastenings in all cases.

N. For items which are shown as being ceiling mounted at locations where fastenings to the building construction element above is not possible, provide suitable auxiliary channel or angle iron bridging tying to building structural elements.

O. As a minimum procedure, where weight applied to the attachment points is 100 lbs. or less, fasten to concrete and solid masonry with bolts and expansion shields.

P. As a minimum procedure, where weight applied to building attachment points exceeds 100 lbs., but is 300 lbs. or less, conform to the following:

1. At field poured concrete slabs, utilize inserts with 20' minimum length slip-through steel rods, set transverse to reinforcing steel.

## 3.10 SPLICING AND TERMINATING WIRES AND CABLES

A. Maintain all splices and joints in removable cover boxes or cabinets where they may be easily inspected.

B. Locate each completed conductor splice or joint in the outlet box, junction box, or pull box containing it, so that it is accessible from the removal cover side of the box.

C. Join solid conductors No. 8 AWG and smaller by securely twisting them together and soldering, or by using insulated coiled steel spring "wire nut" type connectors. Exclude "wire nuts" employing non-expandable springs. Terminate conductors No. 8 AWG and smaller by means of a neat and fast holding application of the conductors directly to the binding screws or terminals of the equipment or devices to be connected.

D. Join, tap, and terminate stranded conductors No. 6 AWG and larger by means of solder sleeves, taps; and lugs with applied solder or by means of bolted saddle type or pressure indent type connectors, taps and

lugs. Exclude connectors and lugs of the types which apply set screws directly to conductors. Where equipment or devices are equipped with set screw type terminals which are impossible to change, replace the factory supplied set screws with a type having a ball bearing tip. Apply pressure indent type connectors, taps and lugs utilizing tools manufactured specifically for the purpose and having features preventing their release until the full pressure has been exerted on the lug or connector.

E. Except where wire nuts are used, build up insulation over conductor joints to a value, equal both in thickness and dielectric strength, to that of the factory applied conductor insulation. Insulation of conductor taps and joints shall be by means of half lapped layers of rubber tape, with an outer layer of friction tape; by means of half lapped layers of approved plastic electric insulating tape; or by means of split insulating casings manufactured specifically to insulate the particular connector and conductor, and fastened with stainless steel or non-metallic snaps or clips.

F. Exclude splicing procedures for neutral conductors in lighting and appliance branch circuitry which utilize device terminals as the splicing points.

G. Exclude joints or terminations utilizing solder in any conductors used for grounding or bonding purposes.

H. Exclude all but solder or pressure indent type joints in conductors used for signaling or communications purposes.

I. Lugs for conductors used to make phase leg connections on the line side of the main service overcurrent and switching device shall be of the limiter type.

## 3.11 PULLING WIRES INTO CONDUITS AND RACEWAYS

A. Delay pulling wires or cables in until the project has progressed to a point when general construction procedures are not liable to injure wires and cables, and when moisture is excluded from raceways.

B. Utilize nylon snakes or metallic fish tapes with ball type heads to set up for pulling. In raceways 2" trade size and larger, utilize a pulling assembly ahead of wires consisting of a suitable brush followed by a 3 1/2" diameter ball mandrel.

C. Leave sufficient slack on all runs of wire and cable to permit the secure connection of devices and equipment.

D. Include circular wedge type cable supports for wires and cables at the top of any vertical raceway longer than 20 feet. Also include additional supports spaced at intervals which are no greater than 10'. Supports shall be located in accessible pull boxes. Supports shall be of a nondeteriorating insulating material manufactured specifically for the purpose.

E. Pulling lubricants shall be used. They shall be products manufactured specifically for the purpose.

F. Slack on wires and cables located in cabinets and pull boxes shall be formed and set in place in groupings corresponding to their occupancy of raceways. They shall also be arranged, with insulators and supports provided where necessary, such that cable shims or other such temporary expedients do not have to be left permanently in place to prevent the wires and cables from shifting when covers or trims are removed.

## 3.12 REQUIREMENTS FOR THE INSTALLATION OF JUNCTION BOXES, OUTLET BOXES AND PULL BOXES

A. Flush wall mounted outlet boxes shall not be set back to back but shall be offset at least 12" horizontally regardless of any indication on the drawings.

B. Locate all boxes so that their removable covers are accessible without necessitating the removal of parts of permanent building structure, including piping, ductwork, and other permanent mechanical elements.

C. In conjunction with concealed circuitry, abide by one of the following instructions (as may be applicable to the conditions) in order to assure the aforementioned accessibility. (Not required for circuitry concealed by removable suspended ceiling tiles.)

1. For a small (outlet size) box on circuitry concealed in a partition or wall, locate box or fitting so that its removable cover side (or the face of any applied raised cover) penetrates through to within 1/8" a of the exposed surface of the building materials concealing the circuitry and apply a blank or device plate to suit the functional requirements.

2. For a large box on circuitry concealed in a partition, suspended ceiling, or wall, locate box totally hidden but with its removable cover directly behind an architectural access door or panel (included for the purpose, separate from the electric work) in the building construction which conceals the circuitry.

3. For a small (outlet size) box on circuitry concealed above and intended as an outlet for a surface mounted lighting fixture or other such electrical item, locate box so that its removable cover side penetrates through to the exposed surface of the building materials concealing the circuitry. Arrange the mounting of the lighting fixture or other item so that it completely covers the opening in the building construction caused by the box.

4. For a small (outlet size) box on circuitry concealed in a suspended ceiling, and intended as an outlet for a non-demountable type of recessed lighting fixtures or other such electrical items, locate box totally hidden but with its removable cover not more than one foot away from the building construction opening occupied by the demountable items.

D. Apply junction and pull boxes in accordance with the following:

1. Include pull boxes in long straight runs of raceway to assure that cables are not damaged when they are pulled in.

2. Include junction and pull boxes to assure a neat and workmanlike installation of raceways.

3. Include junction and pull boxes to fulfill requirements pertaining to the limitations to the number of bends permitted in raceway between cable access points, the accessibility of cable joints and splices, and the application of cable supports.

4. Include all required junction and pull boxes regardless of indications on the drawings (which, due to symbolic methods of notation, may omit to show some of them).

E. Apply outlet boxes in accordance with the following:

1. Unless noted below or otherwise specifically indicated, include a separate outlet box for each individual wiring device, lighting fixture and signal or communication system outlet component. Outlet

boxes supplied attached to lighting fixtures shall not be used as replacements for the boxes specified herein.

2. A continuous row of fixtures of the end to end channel type, designed for "through wiring," and wired in accordance with the specification hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.

3. A series of separate fixtures, designed for "through wiring," spaced not more than 4' apart, and inter connected with conduit or raceway and circuitry which is in accordance with the specifications hereinafter pertaining to circuitry through a series of lighting fixtures, may be supplied through a single outlet box.

4. Connection to recessed ceiling fixtures supplied with pigtails may be arranged so that more than one, but not more than four, such fixtures are connected into a single outlet box. When adopting this procedure:

   a. Utilize an outlet box no smaller than 5" square by 2 1/2" deep.

   b. Allow no fixture to be supplied from an outlet box in another room.

5. Multiple local switches indicated at a single location shall be gang mounted in a single outlet box.

6. Include all required outlet boxes regardless of indications on the drawings (which due to symbolic methods of notation, may omit to show some of them).

F. Install junction boxes, pull boxes and outlet boxes in accordance with the following:

1. Exclude surface mounted outlet boxes in conjunction with concealed circuitry.

2. Exclude unused circuitry openings in junction and pull boxes. In larger boxes each such opening shall be closed with a galvanized sheet steel plate fastened with a continuous weld all around. In small outlet type boxes, utilize plugs as specified for such boxes.

3. Close up all unused circuitry openings in outlet boxes. Unused openings in cast boxes shall be closed with approved cast metal threaded plugs. Unused openings in sheet metal boxes shall be closed with sheet metal knock out plugs.

4. Outlet boxes for switches shall be located at the strike side of doors. Indicated door swings are subject to field change. Outlet boxes shall be located on the basis of final door swing arrangements.

5. Boxes and plaster covers for duplex receptacles shall be arranged for vertical mounting of the receptacle.

6. Equip outlet boxes used for devices which are connected to wires of systems supplied by more than one set of voltage characteristics with barriers to separate the different systems.

G. Barriers in junction and pull boxes of outlet size shall be of the same metal as the box.

H. Barriers in junction and pull boxes which are larger than outlet size shall be of the polyester resin fiberglass of adequate thickness for mechanical strength, but in no case less than 1/4" thick. Each barrier shall be mounted, without fastenings, between angle iron guides so that they may be readily removed.

**3.13 LOCATING AND ROUTING OF CIRCUITRY**

A. In general, all circuitry shall be run concealed except that it shall be run exposed where the following conditions occur:

1. Horizontally at the ceiling of permanently unfinished spaces which are not assigned to mechanical or electrical equipment.
2. Horizontally and vertically in mechanical equipment spaces.
3. Horizontally and vertically in electric equipment rooms.

B. Concealed circuitry shall be so located that building construction materials can be applied over its thickest elements without being subject to spalling or cracking.

C. All circuitry and raceways shall not be run within slabs. If for field conditions requires raceways to be embedded in field poured structural building construction concrete fill or slab shall conform to the following:

1. All proposed embedded raceways shall be indicated on plan and elevation and submitted to the Designer and Structural Engineer for review and written approval prior to installation. Any costs associated with the review and approval shall be borne by the Electrical Subcontractor.
2. They shall be run "single layer" with their outside surface no closer than 1" to any surface of the structural concrete.
3. They shall not be located in any configuration which places the outside surface of one closer than 3" to the outside surface of another, except at tees, crosses, or other single level wide angle junction points.
4. Where crossovers or close grouping are unavoidable, circuitry shall be carefully field coordinated so as not to cause structural weakness.
5. Where turned up or down into a wall or partition they shall, before entering same, be routed parallel for a long enough distance to assure that no relocation of the wall or partition will be necessary to conceal the required bend.
6. They shall be routed in such a manner as to coordinate with the structural requirements of the building.
7. They shall be routed in accordance with field instructions issued by the Designer where such instructions differ from specifications set forth herein.

D. Circuitry run exposed shall be routed parallel to building walls and column lines.

E. Exposed circuitry located overhead shall be run in a completely accessible manner on the underside of all piping and ductwork.

F. Circuitry run in suspended ceilings shall be routed parallel to building walls, column lines, etc.

G. Circuitry shall be routed so as to prevent electric conductors from being subject to high ambient temperature. Minimum clearances from heated lines or surfaces shall be maintained as follows:

1. Crossing where uninsulated 3"
2. Crossing where insulated 1"
3. Running parallel where uninsulated 36"

4. Running parallel where insulated 6"

H. Circuitry shall not be run in elevator shafts, hoistways, and the like. Where outlets for trail cables, pit lights, run be level lights, and the like, are involved, only the "final connection" outlet boxes themselves shall be located within or open into, the confines of the shaft.

I. Circuitry for miscellaneous systems indicated without notation as to location and routing shall be run as per the requirements and notations governing the adjacent light and power circuitry.

**3.14 INSTALLING CIRCUITRY**

A. The outside surface of circuitry which is to be embedded in cinder concrete shall be coated with asphaltum paint.

B. In runs of conduit or raceway including flexible limit the number of bends between cable access points to a total which does not exceed the maximum specified for the particular system. Where no such maximum is specified, limit the number to four right angle bends or the equivalent thereof.

C. In each conduit or raceway assigned for the future pulling in of wires, include a nylon drag cord. In raceways 2" trade size and larger, the cord shall be pulled in utilizing a suitable brush, followed by an 85% diameter ball mandrel ahead of the cord in the pulling assembly. In the event that obstructions are encountered, which will not permit the drag cord to be installed, the blocked section of raceway shall be replaced and any cutting and patching of the structure involved in such replacement shall be included as part of the electric work.

D. Circuitry shall be arranged such that conductors of one feeder or circuitry carrying "going" current are not separated from conductors of the same feeder or circuitry carrying "return" current by any ferrous or other metal. Where not within raceways, all "going" and "return" current conductors of one feeder or circuit shall be laces together so as to minimize induction heating of adjacent metal components.

E. Sleeves used where circuitry is to penetrate waterproof slabs, decks, and walls, shall be of a type selected to suite the water condition encountered in the field.

**3.15 PHYSICAL SEPARATION OF NORMAL, OPTIONAL STANDBY, AND EMERGENCY SYSTEMS**

A. ALL emergency system generation and distribution equipment shall be installed within dedicated two-hour fire rated rooms, closets, or shafts. All equipment, conduit, piping, ductwork, etc., alien to the emergency system shall not be located within these rooms, closets, or shafts except the equipment that serves these rooms, closets, or shafts.

B. All emergency equipment such as transfer switches, switchboards, transformers, and panelboards, shall be installed in two-hour fire rated rooms. The two-hour fire rated rooms shall be provided by the General Contractor.

C. All portions of the emergency system, such as feeders, located outside of rooms, closets or shafts described in paragraph B., shall also be enclosed within two-hour fire rated enclosures, provided by the Electrical Subcontractor. Type, method, and material of two-hour rated enclosures shall be approved by the local Electrical Inspector.

D. Emergency system shall be kept entirely independent of all other wiring, devices, and equipment, and shall not enter the same raceways, boxes or cabinets with each other or other wiring, except in transfer switches.

E. The Electrical Subcontractor has the option of using UL listed two-hour fire rated MI cable system only if approved by the local Electrical Inspector. The Electrical Subcontractor shall be responsible for sizing, routing, installation, supports, etc., of this cable in accordance with manufacturers' requirements. Submit to Designer conductor sizing calculations, voltage drop calculations, etc., for review and approval.

**END OF SECTION**

**Section 31 22 00**

**GRADING**

## PART 1 – GENERAL

**1.1 RELATED DOCUMENTS**: This Section is only a portion of the Contract Documents. All the Contract Documents, including Division 1 General Requirements, apply to this Section.

**1.2 SECTION INCLUDES:**

A. Provide facilities, labor, materials, tools, equipment, appliances, transportation, supervision, and related work necessary to complete the work specified in this Section, and as shown on the Drawings.

B. The Contractor shall contact the Owner to obtain a copy of the geotechnical report. If conflicts exist between the geotechnical report and the technical specifications, the Contractor shall inform the Engineer prior to earthwork operations.

C. The work of this Section includes but is not necessarily limited to:

1. Excavation, fill, and backfill, including compaction as indicated or required, to the lines and grades indicated on the Drawings.
2. Excavation and disposal of unsuitable or excess materials off-site, unless other on-site locations are designated. Excavation shall include removal and satisfactory disposal of all unclassified material encountered throughout the site.
3. Rough grading, including placement, moisture conditioning and compaction of fills and backfills.
4. Placement of base and subbase course materials under structures, slabs and footings, including compaction.
5. The removal, hauling and stockpiling of suitable excavated materials for subsequent use in the work. Stockpiling shall include protection to maintain materials in a workable condition.
6. Rehandling, hauling and placing of stockpiled materials for use in refilling, filling, backfilling, grading and such other operations.

D. Contractor shall be responsible for notifying all owners of affected utilities and for contacting Dig Safe at least 72 hours prior to excavation.

**1.3 EXCAVATION CLASSIFICATIONS:**

A. Excavation: Excavation shall be unclassified and no consideration will be given to the nature of the materials. Excavation shall comprise and include the satisfactory removal and disposal of all materials encountered regardless of the nature of the materials and shall be understood to include but not limited to earth, fill, foundations, pavements, curbs, piping, railroad track and

ties, cobblestones, footings, bricks, concrete, previously abandoned drainage structures and utility structures abandoned and not removed by the utility and debris.

B. Rock Excavation: Rock is defined for payment purposes as stone or hard shale in original ledge, boulders over two cubic yards (2yd3) in volume in open areas and one cubic yard (1yd3) in volume in trenches, and masonry or concrete that cannot be broken or removed by normal job equipment (power shovels, scoops, or D-8 bulldozers with ripper attachment) without the use of explosives or drills. The classification does not include materials that can be removed by means other than drilling and blasting or drilling and wedging but which, for reasons of economy in excavating, the Contractor prefers to remove by drilling and blasting. The word "trenches" shall mean excavation having vertical sides the depths of which exceed the width, made for drain, sewer, water, and gas pipes; electric and steam conduits; and the like.

C. Hazardous Waste:

1. The Contractor shall be familiar with the State Department of Environmental Protection (DEP) Hazardous Waste Regulations 310 CMR 30.00 and the Massachusetts Contingency Plan (MCP) 310 CMP 40.00 when conducting earthwork operations.
2. In general, a hazardous waste (contaminated with oil or hazardous materials) is a waste or combination of wastes which, because of its quantity, concentration or physical, chemical or infectious characteristics, may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or pose a substantial present or potential hazard to human health, safety, or welfare, or to the environment when improperly stored, treated, transported, or disposed of, or otherwise managed. (Additional criteria and characteristics to determine if a waste is hazardous are contained in 310 CMR 30.111, 30.112 and 30.120 through 30.125).

## 1.4 LAWS AND REGULATIONS:

A. Work shall be accomplished in accordance with regulations of local, county and state agencies and national or utility company standards as they apply.

## 1.5 QUALITY ASSURANCE:

A. The Owner may retain and pay for the services of a Geotechnical Consultant to perform on-site observation and testing during the different phases of the construction operations. The scope of services will be determined by the Owner and the Geotechnical Consultant. The Owner reserves the right to modify or waive Geotechnical Consultant services.

B. The Geotechnical Consultant's presence does not include supervision or direction of the actual work by the Contractor, his employees or agents. Neither the presence of the Geotechnical Consultant, nor any observations and testing performed by him, nor any notice of failure to give notice shall excuse the Contractor from defects discovered in his work.

C. Costs related to retesting due to failures shall be paid for by the Contractor at no additional

expense to the Owner, and the costs thereof will be deducted by the Owner from the Contract Sum.

**1.6 COORDINATION:**

A. Prior to start of earthwork the Contractor shall arrange an on-site meeting with the Engineer and Geotechnical Consultant for the purpose of establishing the Contractor's schedule of operations and scheduling observation and testing procedures and requirements.

B. As construction proceeds, the Contractor shall be responsible for notifying the Engineer prior to the start of earthwork operations requiring observation and/or testing.

**1.7 SUBSURFACE SOIL DATA:**

A. Review logs of borings, jar soil samples, records of explorations and other pertinent data for the site. After obtaining Owner's permission, take whatever additional subsurface explorations deemed necessary at no expense to the Owner.

B. Boring logs are appended to these specifications. Jar soil samples may be examined upon written request to the Engineer.

C. A geotechnical engineering report has been prepared by GEI Consultants, Inc. This report is specifically not part of the bid documents, but is available to bidders for informational purposes for use in preparing their bids.

D. The above data is for general information and are accurate only at the particular locations and times the subsurface explorations were made. It is the Contractor's responsibility to make interpretations and to draw conclusions based on the character of materials to be encountered and the impact of his work based on his expert knowledge of the area and of earthwork techniques.

E. The Drawings showing existing ground elevations are only for whatever use the Site Work Contractor may make of them with no responsibility on the part of the Surveyors, the Owner, or their Representatives for the accuracy and/or the reliability of the information given.

**1.8 TOLERANCES:**

A. Construct finished non-paved surfaces to plus or minus 1 inch of the elevations indicated. Complete embankment slopes to plus or minus six inches of the slope line (toe or tip) shown. Maintain the moisture content of fill materials as it is being placed within plus or minus two percent of the optimum moisture content of the material as determined by the laboratory tests herein specified

**1.9** APPROVALS:

A. No earthwork materials will be accepted on the jobsite without written approval from the

Engineer.

## PART 2 – PRODUCTS

**Not Used**

## PART 3 – EXECUTION

### 3.1 GENERAL REQUIREMENTS:

A. The Contractor shall control the grading so that ground is pitched to prevent water from running to excavated areas, eroding slopes, damaging other structures, or adjacent properties.

B. Perform dewatering operations to maintain excavated subgrades in a dry condition.

C. Control dust during the course of the contract.

D. Construction Traffic: Disperse travel paths of traffic and construction equipment over entire width of compacted surfaces to aid in obtaining uniform compaction. Protect exposed soil layers with high moisture content from excessive wheel loads.

E. Use of Materials Found on Site:

1. Suitable excavated materials shall be used for embankment, backfill, or any other purpose as directed, and the material shall be placed and compacted in a manner conforming to the specifications for the particular type of work required at no additional cost to the Owner.
2. Suitable material that cannot be readily placed shall be stockpiled in an area designated by the Engineer and used in the manner and purpose described above. All work necessary to stockpile and re-handle suitable material will be at no additional cost to the Owner and will be included in the Contract unit price for the particular excavation it was obtained from. If the Contractor desires to store suitable material off the jobsite, or remove suitable material from the jobsite, written permission shall be obtained from the Engineer.
3. All unsuitable material and suitable material not required for the proper completion of the Contract will become the property of the Contractor and shall be removed and disposed of away from the job site at no additional cost to the Owner.
4. Do not excavate or remove any material from within the site which is not within the excavation, as indicated, without written authorization from the Engineer.

F. Salvaging Topsoil: Salvage topsoil within the neat lines as indicated, or as otherwise designated by the Engineer, and stockpile at the jobsite at locations approved by the Engineer. Prevent topsoil from contamination by other materials, and provide adequate drainage and erosion protection. Clear, grub, and rough-grade storage areas so that the maximum amount of stockpiled material will be available for reuse.

G. Stockpiling of Excavated Material: Establish excavated material stockpiles on site only in locations where they will not interfere with the progress of the work and only as approved by the Engineer. Offsite stockpiling and rehandling, if required, shall be the responsibility of the Contractor, at no additional expense to the Owner. Such offsite stockpiling shall require written permission from the Engineer.

H. Disposal of Surplus and Unsuitable Material: Haul from site and dispose of excavated materials which are excess or are determined to be unsuitable for embankment and backfill, at no additional expense to the Owner. When approved by the Engineer, such material may be disposed of at designated locations within the site.

I. Unfavorable Weather: Do not place, spread, roll or compact fill material that is frozen or thawing, or during unfavorable weather conditions. If interrupted by heavy rain or other unfavorable conditions, do not resume until ascertaining that the moisture content and density of the previously placed soil are as specified.

J. Maintenance of Excavation, Slopes and Embankments:

1. Excavate and remove material outside the limits of excavation which in the opinion of the Engineer, is unsuitable and constitutes potential slides, and material which comes into excavations for any reason including the driving of piles therein.
2. Maintain slopes and embankments until final completion and acceptance of the work. Promptly repair slides, slipouts, washouts, settlements, and subsidence which occur for any reason, and refinish the slope or embankment to the original lines and grades or as required by the Engineer.
3. Provide earth retention systems as required by federal, state and local regulations. Shoring and bracing of trenches and other excavations shall be in accordance with the latest OSHA Standards and Interpretation, Subpart P – Trenches and Shoring, and to all other applicable codes, rules and regulations of the federal, state and local authorities.

K. Hazardous Material:

1. The Contractor shall immediately halt soil movement activities and notify the Owner if visual, olfactory or other evidence suggests that soils are contaminated with oil or hazardous materials. Proper assessment activities shall follow.
2. The Contractor shall contact an environmental professional (such as a Licensed Site Professional) to test any earth materials suspected of containing hazardous waste. The results shall be evaluated by the environmental professional and compared with reporting thresholds found in the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000. The Contractor shall inform the Owner/Operator of the laboratory test results as soon as possible and discuss the possible soil management / disposal / recycling options available. If present, contaminated soils shall be managed and handled in compliance with the referenced state / federal regulations, guidelines and policies. Time and expenses associated with contaminated soils, if any, shall be negotiated with the Owner prior to the start of the soil management / disposal / recycling work.

3. There is a possibility of encountering oil or hazardous materials on this site. Appropriate testing, as recommended by an environmental professional, shall be accomplished to assess the potential presence of oil or hazardous material. Earth material shall not be removed from the site unless on-site reuse is not possible.
4. Proper documentation of legal disposal shall be provided by the Contractor. Additional guidance for possible disposal activities can be found in the Department of Environmental Protection's Policy #COMM-97-001, Reuse and Disposal of Contaminated Soil at Massachusetts Landfills.

**3.2 OBSTRUCTIONS NOT INDICATED AND NOT VISIBLE:**

A. All available information was used to establish the location of pipes, drains, structures, and utilities, as shown on the Drawings. However, accuracy and completeness of such drawings cannot be guaranteed. Therefore, if the Contractor encounters such items within the indicated limits of excavation which will be damaged if work is to continue or which will cause delays, notify the Engineer immediately so the obstruction can be addressed and documented for payment, as authorized by the Owner.

**3.3 TEST PITS:**

A. Test pits may be ordered by the Engineer during the course of contracted work, to locate existing pipes, drains, structures, or utilities. The Contractor shall perform the test pit operations.

**3.4 ROCK EXCAVATION:**

A. Cross Sectioning: When rock is encountered during excavation, it shall be uncovered and exposed, and the Engineer shall be notified in writing by the Contractor before blasting work proceeds. The areas in question shall then be measured, and payment shall be determined. Excavation of material in question before agreement by the Engineer as to the character of the material, or failure to notify the Engineer or to take measurements will forfeit the Contractor's right to payment for rock excavation. The quantity of rock to be removed shall be based on the limits established below. Measurements shall be made by a Registered Surveyor, paid for by the Contractor, and approved by the Engineer.

B. Measurement: Excavation of rock if ordered in writing by the Engineer with the prior written approval of the Owner, measured in place within the Contract limits as defined on the Plans or in any duly authorized modifications thereto. Measurement for rock excavation will be made for:
1. Foundations within the limits of the concrete lines as defined by the working plans or by duly authorized modifications thereto, plus twelve inches (12") outside the vertical concrete lines and twelve inches (12") below base.
2. Pipe trenches to a depth of six inches (6") below the bottom of the bell and for a width equal to the inside diameter of the pipe, plus fifteen inches (15") beyond the inside diameter on each side, provided that overlapping computed volumes of any ledge

or boulder excavation shall be paid for only once.

3. Paved areas to the underside of the respective subbase for such areas.
4. Lawns and planting areas to a depth of twenty-four (24") below finished grade.
5. Any foreseen rock or boulder encountered, which must be removed for construction of the work defined on the plans or in modification thereto, shall be measured in its original position to the limits of clearly defined vertical construction lines and to the depth required for the defined construction; payment will be at the unit prices stated above.

C. Blasting:

1. The Driller and Geotechnical Engineer shall log the bottom elevation of all drill holes made for blasting within the building area.
2. No blasting shall be done without the Engineer's approval. Written permission and approval of methods must be obtained from the local government authority.
3. Contractor shall, before doing any blasting work, present to the Engineer written certificate of insurance showing evidence that his insurance includes coverage for blasting operations.
4. Experienced powerment or persons who are licensed or otherwise authorized to use explosives shall do blasting. Accurate records shall be maintained, noting location of each blast, time of detonation, total explosive weight in each blast, maximum explosive weight per delay in each blast hole, and designation of delay cap used in each hole.
5. Explosives shall be stored, handled, and employed 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. and in accordance with applicable OSHA regulations.
6. The amount of vibration and airblast overpressure generated by blasting shall not exceed regulatory statutes or directives established by state, local or other governing authorities, such as but not limited to, 527 CMR 13.091. In no case shall the maximum Peak Particle Velocity (PPV) exceed the limits indicated on figure B-1, Appendix B, of the United States Bureau of Mines Report of Investigations, RI8507, 1980 (copy attached). These limits shall apply at all existing and under construction structures, utilities as well as at property and construction limits. (The Engineer may designate lower levels at sensitive structures.)
7. Contractor shall take great care to do no damage to existing buildings, foundations, glazing and trees to remain. All damage caused by Contractor's blasting operations shall be repaired to the full satisfaction of the Engineer at no additional cost to the Owner.

### 3.5 UNACCEPTABLE S U B G R A D E :

A. If unacceptable material is encountered below or at the subgrade which excavation was indicated to be taken to, remove such materials and dispose of it as specified herein. After removal of unsuitable materials, backfill with crushed stone or gravel borrow, and compact to

specified density requirements. Limits of removal shall be as directed by the Engineer. For such work not caused by the Contractor's operations or lack of surface drainage control, the Contractor shall be paid as Extra Work, as approved by the Owner.

B. Where subgrade has been softened or eroded by flooding, equipment traffic or placement during unfavorable weather, it shall be considered "unacceptable material" and handled in accordance with paragraph A above, at no additional cost to the Owner.

**3.6 SUBGRADE PREPARATION AND PROTECTION:**

A. General Requirements: All subgrade areas shall be made ready for fill by removal of all organic material, topsoil, loose fill, unsuitable soils and deleterious materials, as directed by the Engineer.

B. Proof Rolling Subgrades: Prior to placement of fill, proof roll natural ground above groundwater levels by making a minimum of two passes with approved compaction equipment.

C. Deep Compaction (In areas of loose fill where applicable)

D. Rock Subgrades:

1. Subgrades outside building area may have a maximum 2-foot zone of overblast rock provided that:
   a. Loose rock is covered with suitable layer of crushed stone or choke stone; and
   b. Prior to placing crushed stone or choke stone, the area is rolled with at least four passes of a heavy vibratory roller.
2. Bottom of rock excavations for support of foundations shall be cleaned of all loose materials.
3. Rock surface for footings shall have a maximum slope of 4 horizontal to 1 vertical.
4. Rock excavations for footings carried below design grades shall be backfilled by placement of concrete with same strength as footing at the Contractor's cost. At the discretion of the structural engineer, footings could be dropped below design elevation onto competent rock.

3.7 **PLACEMENT AND COMPACTION OF MATERIALS:**

A. General Requirements:

1. The soils testing laboratory will determine the optimum moisture content to achieve the maximum dry density for all soils specified or indicated to be compacted to a percentage of its maximum dry density.
2. Unless other material is indicated or specified, place excavated acceptable material for backfilling trenches and around structures and filling for embankments. The composition of these materials and tests performed to determine moisture-density relationships will govern both their acceptability for

backfill and method best suited for their placement and compaction. If sufficient excavated acceptable material is not available from the excavations, provide backfill material of ordinary borrow, or as otherwise directed by the Engineer.

3. Provide adequate pumping and drainage facilities to keep the excavation area dry from groundwater and/or surface runoff so that it does not adversely affect construction procedures or cause excessive disturbance of underlying natural ground.
4. Compaction by puddling or jetting is prohibited.
5. Protect fill area by grading to drain and providing a smooth surface, which will readily shed water. Grade the surface of the areas in such a manner as to prevent ponding of surface runoff water in areas to receive compacted fill.
6. Do not place frozen fill. Do not place fill on frozen ground.
7. Placement of fill shall not begin prior to observation and approval of subgrade conditions by Engineer.
8. To the extent that is practicable, each layer of fill shall be compacted to the specified density the same day it is placed. Fill shall be placed in horizontal layers. Where the horizontal layer meets a natural rising slope, the layer shall be keyed into the slope by cutting a bench during spreading of preceding lift.
9. Prior to backfilling between foundation wall and excavation limits, remove unsuitable material, including rubbish, organic materials or other debris.
10. Do not commence filling operations until Engineer and/or Architect have observed conditions.
11. Protect foundations, footings, foundation waterproofing, and site utilities during backfilling. Repair damage at no cost to Owner.
12. Backfill shall not be placed against masonry, concrete or walls until they are braced or have cured sufficiently to develop strength necessary to withstand, without damage, pressure from backfilling and compacting operations.
13. Provide shoring, sheeting, and/or bracing of excavations as required to assure complete safety against collapse of the earth at the side of excavations. Alternatively, lay back excavations to a stable slope.
14. Upon completion of the work, the final ground surface shall be left in a firm, unyielding, true, uniform condition, free from ruts. Repair disturbed areas caused by equipment traffic at no cost to Owner.

B. Equipment:

1. Compaction equipment used in open areas where space permits shall consist of vibratory rollers weighing at least 10,000 pounds.
2. Compaction equipment for fill against foundation walls and in other confined areas shall be accomplished by means of drum-type, power-driven, or by hand-guided vibratory plate compactors.

C. Compaction:

1. Compaction Requirements:

a. The degree of compaction is expressed as a percentage of the maximum dry density at optimum moisture content as determined by ASTM Test D1557, Method C. The compaction requirements are as follows:

Minimum Degree Area of Compaction

| | |
|---|---|
| Below footings | 95% |
| Below slabs | 95% |
| Pavement base and subbase courses | 95% |
| General fill below pavement subbase | 90% |
| Trench backfill (outside bldg.): | |
| - Below pipe to spring line | 95% |
| - Spring line to 1 ft. above pipe | 90% |
| - 1 ft. above pipe to pavement subbase or finish grade | 93% |
| Landscape areas | 90% |

Compactions percentages are based on the laboratory derived Maximum Density values.

2. Moisture Control:

a. Discontinue backfilling and compaction from November to April (wet season) unless the Contractor demonstrates successful moisture and compaction control techniques to achieve the indicated or specified density requirements.

b. Fill material that is too wet for proper compaction shall be harrowed, or otherwise dried to a proper moisture content to allow compaction to the required density. If fill cannot be dried within 24 hours of placement, it shall be removed and replaced with drier fill at his expense.

b. Fill material that is too dry for proper compaction shall receive water uniformly applied over the surface of the loose layer. Sufficient water shall be applied until the optimum moisture content is reached, as determined by the soil testing laboratory.

c. In no case shall fill be placed over material that is frozen. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, fill operations shall not be resumed until the moisture content and the density of the previously placed fill are as specified.

d. The Contractor shall continue to compact until the indicated or specified density requirements are achieved.

3. Placement and Lift Thickness of Material:

a. Distribute material such that stones and lumps do not become nested, causing voids between stones. Distribute such that voids are completely filled with fine materials regardless of compaction method.

b. Deposit and spread material in uniform parallel layers not to exceed 12 inches (12") in thickness when utilizing heavy compaction equipment, and 6 inches (6") when utilizing light hand-operated compaction equipment.

### 3.8 DISPOSAL OF SURPLUS, UNACCEPTABLE OR HAZARDOUS MATERIAL:

A. No excavated material shall be removed from the site or disposed of by the Contractor unless approved by the Engineer.

B. Surplus excavated acceptable materials shall be used to backfill normal excavations in rock or to replace other materials unacceptable for use as backfill or as otherwise directed by the Engineer. Upon written approval of the Engineer, surplus excavated materials shall be neatly deposited and graded so as to make or widen fills, flatten side slopes, or fill depressions; or shall be neatly deposited for other purposes as indicated by the Owner, within its jurisdictional limits; all at no additional cost to the Owner.

C. Surplus excavated material not needed as specified above shall be hauled away and disposed of by the Contractor at no additional cost to the Owner, at appropriate locations, and in accordance with arrangements made by him.

D. Disposal of all unacceptable, surplus, and hazardous materials shall be in accordance with all applicable local, state and federal regulations.

**END OF SECTION**

# SECTION 31 23 13

# SUBGRADE PREPARATION

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions, are hereby made a part of this Section.

### 1.2 SUMMARY

A. This Section specifies requirements for the preparation for and placement of granular pavement subbase and base materials.

B. The work includes:

1. Fine grading and compaction of pavement subgrade.
2. Furnishing, placing and compacting of subbase and base materials.

C. Related Work: The following Sections contain work related to this Section:

1. Section 31 23 23 - Fill
2. Section 32 12 16 – Asphalt Paving

D. The requirements of the MassDOT Standard Specification for Highways and Bridges and the Rules and Specifications are also made part of these Specifications, latest editions.

## PART 2 - PRODUCTS

### 2.1 GRAVEL SUBBASE AND BASE

A. Gavel of Base and Subbase shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials.

B. Gradation requirements for the Base and Subbase shall be determined by AASHTO-T11 and T27 and shall conform to the following;

| Sieve Designation | Percent Passing |
|---|---|
| Y in. | 80-85 |
| No. 4 | 40-75 |
| No. 50 | 8-28 |
| No. 200 | 0-10 |

C. Maximum size of stone in gravel shall be as follows:

M1.03.1 Type C – 2-inches largest dimension

## PART 3 - EXECUTION

### 3.1 SUBGRADE PREPARATION

A. All subsurface utility construction shall be completed before fine grading is begun.

B. The pavement and curb subgrade shall be fine graded to the location, elevations and cross slope shown on the Drawings.

C. Subgrades in in-situ soils in excavation areas and in embankment areas shall be compacted during fine grading to 95% of maximum dry density.

### 3.2 BASE MATERIAL PLACEMENT

A. Base material shall not be placed until the Engineer has approved the fine grading, compaction and condition of the subgrade.

B. Base material shall be spread on the approved subbase in layers not exceeding four inches in thickness by approved self spreading equipment. Any displacement of the subbase material by equipment shall be restored to the required grade and recompacted before of the base material.

C. Base material shall be compacted to 95% of dry density.

D. The surface of the base material shall be fine graded to the proposed location, elevations and cross slope shown on the Drawings during final layer compaction operations.

**END OF SECTION**

# SECTION 31 25 00

# EROSION AND SEDIMENTATION CONTROL (INCLUDING SWPPP)

## PART 1 - GENERAL

### 1.01 SUMMARY

A. Section Includes:

1. Installation of temporary and permanent erosion and sedimentation control systems.
2. Installation of temporary and permanent slope protection systems.
3. Storm Water Pollution Prevention Plan (SWPPP).

B. Related requirements:

1. Section 311100 – Site Clearing
2. Construction Drawings
3. Section 322950 – Trees, Shrubs and Groundcover

### 1.02 ENVIRONMENTAL REQUIREMENTS

A. Protect adjacent properties and receiving water resources from erosion and sediment damage until final stabilization is achieved. All storm water controls and systems must be installed & functioning as designed and free of accumulated sediment and debris before final project approval.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

A. Seed, sod, and ground covers for the establishment of vegetation in accordance with Contract Drawings and specification Sections 322930 – Lawns and Grasses and Section 322950 – Trees, Shrubs and Groundcover.

B. All erosion control products sediment control devices or materials for non-storm water BMPs as specified herein and on the Construction Drawings.

C. Rolled erosion control products according to Erosion Control Technology Council (ECTC) standard specifications.

D. Temporary mulches such as loose straw, wood cellulose, or agricultural silage.

E. Temporary and permanent outfall structures as specified on the drawings.

## PART 3 - EXECUTION

### 3.01 PREPARATION

A. Review the drawings and Storm Water Pollution Prevention Plan.

B. Revise SWPPP as necessary to address potential pollution from site identified after issuance of the SWPPP at no additional cost to owner.

## 3.02 EROSION AND SEDIMENTATION CONTROL AND SLOPE PROTECTION IMPLEMENTATION

A. Place erosion and sediment control systems in accordance with the drawings and Storm Water Pollution Prevention Plan or as may be dictated by site conditions in order to maintain the intent of the specifications and permits.

B. The Storm Water Pollution Prevention Plan and Site Maps shall be corrected or modified as site conditions change. Contractor must obtain approval from Owner's Engineer prior to modifying or substituting Best Management Practices. Changes during construction shall be noted in the Storm Water Pollution Prevention Plan and posted on the drawings.

C. Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct Contractor to provide immediate permanent or temporary pollution control measures.

D. Maintain erosion and sedimentation control systems as dictated by site conditions, indicated in the construction documents, or as directed by governing authorities or Owner to control sediment until final stabilization. Contractor shall respond to maintenance or additional work ordered by Owner or governing authorities immediately, but in no case, within not more than 48 hours at no additional cost to the Owner.

E. Contractor shall incorporate permanent erosion control features, paving, permanent slope stabilization and vegetation into project at earliest practical time to minimize need for temporary controls.

F. Permanently seed and mulch cut and fill slopes as construction proceeds to extent considered desirable and practical.

G. Disturbed areas that will not be graded or actively worked for a period of 7 days or more, shall be temporarily stabilized as work progresses with vegetation or other acceptable means in accordance with Section 312000 unless otherwise specified in the Contract Documents. In the event it is not practical to seed areas, slopes must be stabilized with mulch and tackifier, bonded fiber matrix, netting, blankets or other means to reduce the erosive potential of the area.

**END OF SECTION**

**SECTION 32 10 12**

**PROTECTION, PRUNING & MAINTENANCE OF EXISTING PLANTS**

## PART 1 - GENERAL

### 1.01 SUMMARY

A. Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Examine all Drawings and all other Section of the Specifications for requirements therein affecting the work of this Section.

C. The Contractor is responsible for all work furnishing all labor, equipment and materials and performing all operations in connection with the protection, pruning, and maintenance of existing plant material as specified, herein.

1. All existing plant material to remain shall be protected as directed by the Landscape Architect and shall be maintained as specified, herein, until final written acceptance by the Landscape Architect after all work under this Contract has received approval for substantial completion.

2. Any existing plant material damaged during construction shall be pruned, including root pruning as directed in the field and as approved by the Landscape Architect. All pruning to be completed by a certified arborist who is to coordinate directly with the City Arborist.

3. All existing plant material designated on the Drawings to remain shall be maintained. Any plant material damaged or placed under stress during construction shall be maintained as directed and as approved in the field by the Landscape Architect until all work under this Contract has received approval for substantial completion. Work of this Section shall include fertilizing, watering, controls for insects and diseases, aeration etc. as specified, under Section 32 90 40 PLANTING, herein.

### 1.02 REFERENCES AND STANDARDS

A. Where references are made in these Specifications to Standard Specifications, codes, etc., of the U.S. Government, State or local authorities, or professional and industrial societies and associations, the applicable portions thereof shall govern as fully as if they were recited at length herein, and shall include all revisions thereto issued as of the date of the Notice to Contractors pertaining hereto.

1. Standard Specification: Commonwealth of Massachusetts Highway Department (MHD), Standard Specifications for Highways and Bridges, latest edition.
2. AASHTO: American Association of State Highway and Transportation Officials, Standard Specifications, latest edition.

3. ASTM: American Society of Testing and Materials "Annual Book of ASTM Standards", latest edition.

4. OSHA: Occupational Safety Hazard Administration, latest requirements.

5. ISA: International Society of Arboriculture Guide for Plant Appraisal, latest requirements.

6. MAA: Massachusetts Arborists Association, Wellesley, MA. 02181-7913; telephone (617) 431-1625.

7. GPA: Council of Tree and Landscape Appraisers “Guide for Plant Appraisals”, latest edition.

8. ASNI: American National Standards Institute Standard A300-latest edition; “Standard Practices for Tree Care Operations – Tree, Shrub and Other Woody Plant Maintenance”.

**1.03 SUBMITTALS**

A. At least thirty (30) days prior to intended use, the Contractor shall provide the following samples and product literature submittals for approval. Do not order materials until Owner's approval of submittal has been obtained. Delivered materials shall closely match the approved samples. Should the source of supply be changed within the course of the contract, the Contractor shall submit new samples or submittals for approval per the original submission.

1. Tree protection fence as indicated on the construction drawings.

2. Tree wrapping protection with lumber enclosure- build sample around one (1) major tree trunk.

B. Construction Samples: Contractor shall construct the following construction samples for approval of Landscape Architect and Owner. Do not proceed with work until Landscape Architect’s approval has been obtained.

1. Build sample panels of not less than fifteen (15) linear feet for tree protection fence in the areas designated by the Landscape Architect:

2. Build sample of tree protection lumber and all materials required forming a protective enclosure around one (1) major tree trunk.

3. Obtain Landscape Architect's acceptance of visual qualities and construction technique of sample panels before proceeding with the final work.

C. Schedule: Contractor shall submit three (3) copies of a Schedule for the work of Protection, Pruning, and Maintenance of Existing Plants to the Landscape Architect for approval at least thirty- (30) days prior to the start of work under this Section. This shall include a sequence schedule for the work and schedules for all submittals and meetings required to complete the work as specified herein.

D. Legal disposal of materials: Contractor shall provide notarized copies of agreements between the Contractor and Owners of land used for disposal for any and all materials to be disposed of off site at least thirty- (30) days prior to the start of work under this Section.

E. Tree Protection Plan: At least thirty- (30) days prior to the start of work under this Section the Contractor shall submit three (3) copies of a Tree Protection Plan to the Landscape Architect for approval including proposed methods, materials, locations of all protection fences, locations of trees to be protected as individuals, and a schedule for effecting tree and plant protection.

F. Arborist Existing Condition Report: Contractor shall submit six (6) copies of the Arborist's Report to the Landscape Architect for approval by the Landscape Architect at least 30 days prior to the start of work under this Section.

G. Pruning and Fertilizing of Existing Trees: Submit three (3) copies of the proposed methods, materials, and schedule for pruning and tree fertilization for approval by the Landscape Architect at least thirty- (30) days prior to the start of work under this Section.

H. Fertilizer: Submit six (6) copies of product literature of planting fertilizer for existing trees to be protected and six (6) certificates showing composition and analysis. Submit fertilization rates for fertilizer product based upon soil testing, analysis, and recommendations as described in this Section at least thirty- (30) days prior to the start of work under this Section.

## 1.04 QUALIFICATIONS

A. The onsite site preparation work shall be performed by a firm having a minimum of five (5) years experience in the work specified herein on projects comparable to this project in scope.

B. Submit three (3) copies of the company/firm description to be employed on this project for Planting and the resume for the Project Supervisor to be employed on the Project for approval by the Landscape Architect at least thirty- (30) days prior to the start of work under this Section.

## 1.05 PRODUCT HANDLING

A. Deliver packaged materials in Manufacturer's unopened containers or bundles, fully identified with name, brand, type, weight and analysis. Store packaged materials in such a manner as to prevent damage or intrusion of foreign matter.

B. Protect all plant material to be transplanted. Do not bend or bind-tie trees in such a manner as to damage bark, break stems, or destroy natural shape. If planting of trees or plant material dug as sod is delayed more than one day after digging, protect plants from weather and mechanical damage and keep roots moist by heeling-in ball with soil, peat moss or other acceptable material. Secure all plants so as to prevent them from falling over and protect from flooding or exposure to drying out by wind.

**1.06 EXAMINATION OF CONDITIONS**

A. The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to the potential need for storing and maintaining plants temporarily and/or rehandling plants prior to final installation.

**1.07 DISPOSAL**

A. Upon request the Owner shall be provided with notarized copies of agreements between the Contractor and Owners of land used as disposal or storage areas. The Contractor shall make arrangements and negotiations necessary for the satisfactory legal disposal of trees, shrubs, stumps, roots, dead-wood, boulders, debris and other litter off site.

B. The burning of trees, brush, stumps, etc., will not be permitted. The Contractor shall provide other satisfactory methods of disposal without additional compensation.

C. Debris to be removed form the site shall be removed daily and not stockpiled on site.

**1.08 PERSONNEL FOR PRUNING**

A. The Contractor shall submit each employee's name and title prior to the commencement of work. The Contractor shall advise the Landscape Architect of any changes in roster assigned to the work of this Contract.

B. A crew shall consist of one (1) tree trimmer/ climber, and (1) ground person (one of which shall be a crew foreman). The crew foreman shall be a certified Arborist who shall have a minimum of five years experience.

C. Each trimmer shall be experienced and highly qualified with the necessary tree worker skills to successfully complete this contract, including the ability and training to perform aerial rescue. Said skill shall also include worker safety and ability in compliance with current OSHA and ANSI Z-133.1 Standards.

**1.09 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 worksite 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 work areas, provide police details and/or erect and maintain protective devices as necessary to the Owner satisfaction, including but not limited to barricades, lights and warning signs.

C. Any practice employed by the Contractor, which is obviously hazardous as determined by the Owner, shall be immediately discontinued by the Contractor upon receipt of either written or oral notice from the Owner to discontinue such practice.

**1.10 QUALIFICATIONS AND QUALITY ASSURANCE**

A. Contractor Qualifications: All site preparation and related work shall be assigned to an experienced and qualified Contractor with a minimum of five (5) years of experience with projects incorporating similar work and who employs experienced workmen who work under the full time supervision of a qualified foreman with a minimum of five (5) years of experience as a supervising foreman.

B. Work of pruning, fertilizing, spraying, and similar activities shall be undertaken only by certified Arborists and chemical applicators, as pertinent to the work being performed.

1. Application of chemicals shall be performed only by licensed chemical applicators. Submit proof of licensure for approval.

2. Arborist shall be a professional Certified Arborist with a minimum five (5) years experience in the last eight (8) years and has been certified by the Massachusetts Arborists Association, Wellesley, MA 02181-7913; Tel: (617) 431-1625. Submit proof of certification for approval.

**PART 2 - PRODUCTS**

**2.01 TREE PROTECTION**

A. Fence for tree protection shall be four (4') foot high “green plastic” fencing supported by two (2”) inch outside diameter galvanized steel posts placed a minimum of six (6’) feet on center. Submit product literature for fence and posts. The Landscape Architect in the field shall approve location of fence.

B. Tree protection lumber for wrapping of the trunks of individual trees, shall consist of two (2”) inch x four (4”) inch lumber wired together in close spacing with sixteen (16) gauge galvanized steel wire to form a protective enclosure around individual tree trunks.

**2.02 EQUIPMENT AND MATERIALS**

A. Equipment necessary for this contact shall be properly maintained and in good operating condition to the Owner satisfaction. The Contractor shall promptly remove and replace and equipment which the Owner deems to be in unsatisfactory repair or condition or otherwise unsuitable.

B. Vehicles shall display prominently the Contractor’s name, address, and telephone number on both doors.

C. 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, pintle hook and attachments for a towed chipper, or approved equal.

D. A disc chipper shall be used which will process material up to twelve (12) inches in diameter.

**2.03 FERTILIZER**

A. Fertilizer shall be a commercial product complying with the Massachusetts and United States fertilizer laws. Fertilizer shall be delivered to the site in the original unopened containers that shall bear the manufacturer's certificate of compliance covering analysis. Liquid fertilizer for subsurface hydraulic injection to correct soil nutrient deficiencies shall be a product meeting the requirements of ANSI 300 and as modified by this paragraph. Liquid fertilizer shall include a slow release form of nitrogen (50%) of N to be water insoluble), phosphorus and potassium; shall be chloride free; shall have a low salt content; and shall have a wetting agent to aid with dispersion. Fertilizer shall contain required micronutrients established by soil test analysis.

**2.04 WATER**

A. The Contractor shall be responsible for furnishing his own supply of water to the site at no extra cost. If possible, the Owner will furnish the Contractor upon request with an adequate source and supply of water at no charge. However, if the Owner's water supply is not available or not functioning, the Contractor will be held responsible to furnish adequate supplies at his own cost. Water shall be free from impurities injurious to vegetation.

B. Any existing vegetation to remain and be protected injured or damaged due to the lack of water, or the use of too much water, shall be the Contractor's responsibility to correct. If plant material dies as a result of too much or too little water the Contractor shall replace plants in-kind at no increased cost to the Owner.

**2.05 ANTIDESICCANT**

A. Antidesiccant shall be emulsions or other materials, which will provide a protective film over plant surfaces permeable enough to permit transpiration, and specifically manufactured for that purpose.

B. Manufacturer of antidesiccant shall be subject to the Landscape Architect's approval and shall be used only after approval by the Landscape Architect. Antidessicant shall be delivered in containers of the manufacturer and shall be mixed according to the manufacturer's instructions.

## PART 3 - EXECUTION

### 3.01 TIMING AND OWNER'S REQUIREMENTS

A. Before beginning site preparation, including, but not limited to tree protection and tree pruning, and maintenance of existing vegetation work, the Contractor shall meet jointly with the Owner and the Landscape Architect in order to discuss the procedures to be utilized. The Contractor shall be held responsible for any damage to vegetation designated to remain.

B. Contractor shall give the Owner adequate advance notice of his readiness to start Site Preparation work in order that the Owner can review and approve the Contractor's plans for parking and access to the construction site and to review and approve the proposed Tree Protection Plan.

C. Contractor shall be responsible for acquiring any and all permits required to complete the work of this Contract.

### 3.02 ARBORISTS EXISTING CONDITIONS REPORT

A. Contractor shall prepare and submit an Arborist's Report to the Landscape Architect and Owner of the pre-condition of all plant material to remain within the contract limits for approval by the Landscape Architect at least thirty (30) days prior to the start of work as specified herein.

B. Preconstruction Arborist's Report: The Arborist shall inspect the existing trees, document the condition of existing trees in terms of their size, condition and location, shall identify trees that are mature and whose canopies are crowding each other and shall identify a zone for root protection of the trees prior to any work proceeding under this Contract. The report shall also include an assessment of areas of shrub, groundcovers and perennials and document their location and general condition and identity a zone of protection for these planted areas. Once the protection zones are established and reviewed by the Owner, the Contractor shall demarcate the zones on all As-Built Drawings.

C. Upon the completion of construction within this Contract, the Arborist shall prepare the Final Arborist's Report, which will evaluate the condition of the existing and newly planted trees, shrubs, groundcover and perennials to be protected. Depending upon the condition of the trees, the Arborist shall, in consultation with the Owner, determine the following:

1. When to remove the tree protection and other related materials;

2. Necessary pruning and fertilization that should take place to assist the vegetations' recovery from the construction phase;
3. Necessary pruning that should take place to reduce canopy crowding;

4. Remedial measures, such as soil aeration or mulching, to mitigate the impact caused in the root zone of the vegetation located outside the protection area;

5. Removal of existing vegetation that in the opinion of the Arborist and Owner are damaged and will not recover; or

6. Removal and replacement in kind of existing or new vegetation that in the opinion of the Arborist and Owner is damaged and will not recover.

**3.03 PROTECTION OF EXISTING PLANTS**

A. The Contractor shall make every effort not to damage existing plant materials. The Contractor is required to install protection as necessary to assure undamaged plant material and adjacent conditions.

B. Damage no plants to remain by burning, by pumping of water, by cutting live roots or branches, or by any other means. No plants to be saved shall be used for crane stay, guys or other fastenings. Vehicles shall not be parked within the dripline or where damage may result to trees to be saved. Construction materials shall not, be stored beneath the leaf canopy of trees to be saved.

C. Plants as designated on the Drawings to remain shall be protected by the placement of a tree protection fence enclosure around shrubs, or at the drip line of each tree. Place tree protection additionally at all other locations where trees and/or shrubs may be jeopardized by construction activities. Trees, vines, groundcover and shrubs to be saved within the Contract Limit Line and elsewhere as designated shall be protected with a protection fence as specified, herein.

D. The Landscape Architect shall approve the installation of the tree protection fence in the field. The installation of tree protection fence shall be done in a manner that will not cause undue harm to the root systems of the trees to remain or proposed. The General Contractor is responsible for keeping the fencing in place and for ensuring that no workers or materials violate the fenced area. No encroachment is allowed into the tree protection zone without the approval and the presence of the Landscape Architect.

E. If directed and approved by the Landscape Architect Individual trees shall be protected by wiring two (2”) inch x four (4”) inch lumber closely spaced in vertical alignment around the trunk of each tree. No spikes or nails are to be driven into trees. The number of specific trees to be designated for such protection shall be as determined in the field by the Landscape Architect. The General Contractor is responsible for keeping the protection in place and for ensuring that no workers or materials violate the protected trees.

F. Existing trees to be saved within or outside the Contract Limit Line which have, in the opinion of the Landscape Architect, become damaged, shall be assessed at $500 per caliper inch and deducted from the Contract amount. The Contractor shall pay all expenses incurred without additional cost to the Owner. These plants shall be removed, according to the Specification requirements for removals, the stumps grubbed out and removed, and the ground surface repaired. Costs for this removal shall be borne by the Contractor and shall not be included as part of the above schedule.

G. Protection of vegetation shall remain in place and be maintained in working condition by the Contractor until directed for removal by the Landscape Architect. All protection devices shall be removed from the site by the Contractor just prior to spreading of screened loam under Section 02930 LAWNS, herein, or as directed in the field by the Landscape Architect.

**3.04 PRUNING OF EXISTING VEGETATION**

A. Before any work is started, the Contractor shall attend a conference with the Landscape Architect. All existing trees within the Contract Limit Line 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 raising, crown reduction, crown restoration, and hazard reduction pruning. At this conference the Landscape Architect shall 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 Landscape Architect's and Owner's review and approval prior to beginning work. Unless otherwise authorized by the Owner, failure of the Contractor to comply with the approved pruning schedule shall be sufficient cause to give notice that the Contractor is in default of the contract.

D. Pruning and removals shall conform to the following:

1. American National Standards Institute (ASNI): Standard A300-1995 Standard Practices for Tree Care Operations – Tree, Shrub and Other Woody Plant Maintenance

2. American National Standards Institute (ANSI): Standard Z-133.1. 1994 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.

D. An experienced licensed Arborist shall perform all pruning operations. Each tree to be pruned shall be serviced according to the following four types of pruning, as needed:

1. Crown raising shall consist of the removal of the lower branches of a tree in order to provide clearance over walks, drives and luminaries.
2. Crown reduction shall consist of heading back or removing branches to clear buildings and signs.

3. Crown restoration shall improve the structure, form and appearance of trees, which have been severely headed, vandalized, or storm damaged.

4. Hazard reduction pruning shall consist of removing visible hazards in a tree, including all dead wood over two (2") inches in diameter.

E. The Contractor shall adhere to the specifications and provide suitable facilities for inspecting the work. Failure of the Landscape Architect or 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.

F. The Contractor shall only work on trees designated by the Landscape Architect. No compensation will be made for work performed on any other trees.

G. 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 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.

H. The Landscape Architect shall direct the Contractor to remove plants that are scheduled to be pruned if in his opinion the plant should not be saved. All removals shall be removed as specified under Paragraph 3.09, PLANT REMOVAL, herein.

I. The Contractor shall exercise care to prevent injury to trees and shrubs designed to be preserved. If the Contractor during his operations injures any plant (s) he shall repair any injury to limbs, bark, or roots of such plant(s) without additional compensation for such repair. If the plant(s) cannot be salvaged the Contractor, as directed by the Landscape Architect, shall replace plant(s) in kind without additional compensation for such replacement.

J. Site conferences with the Landscape Architect shall be arranged during the course of this work.

K. Contractor shall adhere to the specifications and provide suitable facilities for inspecting the work.

L. All trimmings or any other form of debris (except diseased materials or trimmings from Elms) shall be collected and removed from the site daily. The Contractor shall remove all debris from the site and shall dispose of the materials off site in a legal manner. Refer to Paragraph 1.05 SPECIAL REQUIREMENTS for removal and disposal of diseased materials or trimmings from Elms.

M. No on-site or overnight parking of equipment will be allowed on the site without the written permission of the Owner.

N. Pruning Procedures and Quality Control:
   1. 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.
   2. 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.

3. All cuts shall be made sufficiently close to the parent stem so that wound closure can be readily stated under normal conditions. However, cuts shall never be made through the branch collar. Slab cuts and rip cuts will result in cancellation of the contract.
4. Pruning performed on this project shall include the provision of proper clearance from all luminaries and proper elevation over street and sidewalk surfaces to at least the following minimum specifications:
    a. 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.
    b. Street/Roads – All branches shall be pruned to allow a minimum fifteen (15) foot clearance over street surface.
    c. Sidewalk/Paths – All branches shall be pruned to allow a minimum eight (8) foot clearance over street surfaces.
    d. 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 Owner.
5. 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.
6. Remove one of the two crossed or rubbing branches where practical so the removal will not leave large holes in the general outline of the tree.
7. 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.
8. Lateral branches as well as occasional branch suckers may be retained. Complete removal of secondary laterals and branch suckers resulting in the stripping of major limbs, shall not be permitted.

## 3.05 MAINTENANCE PROGRAM FOR EXISTING VEGETATION

A. Establish and carry out maintenance program as approved by the Landscape Architect for all trees, shrubs, vines and groundcover to be saved within the work limits throughout the time of construction at no increased cost to the Owner. Submit a Maintenance Schedule for Existing Vegetation for approval of Landscape Architect thirty- (30) days prior to start of work of this Section.

B. Maintenance shall consist of keeping the plants in a healthy growing condition. The maintenance program shall at a minimum include the following:

1. Measure soil moisture by monitoring on a daily basis with tensiometers as specified herein.

2. Water all plant materials when gauge readings fall below readings specified herein.

3. Applying antidessicant as directed by Landscape Architect. All materials proposed shall be submitted to the Owner for approval prior to any application of the materials.

4. Regular fertilizing during the project. All materials proposed shall be submitted to the Owner for approval prior to any application of the materials.

5. Seasonal spraying for insect, disease, and fungus control during the project. All materials proposed shall be submitted to the Owner for approval prior to any application of the materials.

6. Pruning of all broken, dead, diseased or weak branches as specified, herein.

7. Root pruning all trees at edge of general or trench excavation.

8. Removal and legal disposal of debris generated by maintenance activities.

C. Maintenance shall begin immediately after the Contractor is given Notice to Proceed with the project by the Owner and shall continue through final acceptance of all work on the project.

D. Water trees and other vegetation to remain within the Contract Limit Line as required to maintain their health during the course of construction operations and as directed by the Landscape Architect.

E. As directed by the Landscape Architect, apply antidessicant to trees and other vegetation to remain within the Contract Limit Line as required to maintain their health during the course of construction operations.

F. Fertilize trees and other vegetation to remain within the Contract Limit Line as required to maintain their health during the course of construction operations and as directed by the Landscape Architect. If plant material is showing signs of decline Contractor shall take soil samples in the area of the plant material in decline and shall have the soil tested in accordance with the requirements of Paragraph 3.23 SOIL TESTING and Section 02940 PLANTING, herein. Fertilizer shall contain the required fertilizer ingredients and micronutriants established as required by the soil test analysis and shall be applied at the rates established by the soil test analysis. Submit copies of test results and test recommendations to the Landscape Architect for approval.

G. During the maintenance period, any decline in the condition of plantings shall require the Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, the Contractor shall engage professional arborists and/or horticulturalists to inspect plant materials and to identify problems and recommend corrective procedures.

H. Existing plants to remain that die or show obvious decline or loss of 5% of healthy growth during the maintenance program, shall be removed and replaced at once, unless designated otherwise by the Landscape Architect. All costs of replacement shall be at the Contractor's expense.

**END OF SECTION**

# SECTION 32 11 00

# BASE COURSE

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
1. Aggregate base for asphaltic concrete including sand/shell base and hot-mix sand asphalt base.
2. Aggregate base for the poured-in-place rubber surfacing at the play area.

### 1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by the basic designation only.

B. ASTM International (ASTM):
1. ASTM D698 – Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbs/ft$^3$ ASTM D1557 – Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbs/ft$^3$
2. ASTM D6938 – In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

C. Asphalt Institute.

D. Massachusetts Department of Transportation (MassDOT) Standard Specifications.

### 1.3 SUBMITTALS

A. Submit materials certificate to the Owner's Civil Engineering Consultant and the Owner's Construction Testing Laboratory, signed by materials producer and Contractor, certifying that materials comply with, or exceed, requirements specified herein or on the Construction Drawings.

B. Submit certification of base course materials and placement as specified in Parts 2 and 3 hereinafter.

### 1.4 WEATHER LIMITATIONS

A. Do not place aggregate when base surface temperature is less than 40 degrees F, nor when air temperature is below 45 degrees F. Do not place aggregate when surface is wet or frozen. Do not place aggregate when weather conditions are unfavorable otherwise.

## PART 2 - PRODUCTS

### 2.1 BASE COURSE MATERIAL

A. Aggregate Base Course: Aggregate base course shall consist of a well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction. Base course may consist of a granular base (crushed slag, stone, or gravel, etc.), sand/shell base material, or a hot-mix sand asphalt base.

B. Base course shall be as shown on the drawings, or when not shown, shall be as specified herein.

C. Aggregate base material requirements from State or other local highway agency specifications may be used for aggregate base course for roads, streets, or similar use pavements if the following conditions are met:
1. Percentage of material by weight passing the No. 200 sieve will not exceed 10.
2. Portion of the material passing the No. 40 sieve must have a liquid limit not greater than 25 and a plasticity index not greater than 5.

D. Aggregate shall consist of clean, sound, durable particles of crushed stone, crushed slag, crushed gravel, angular sand, or other approved material. Aggregate shall be free of lumps of clay, organic matter, and other objectionable materials or coatings. The portion retained on the No. 4 sieve shall be known as coarse aggregate; that portion passing the No. 4 sieve shall be known as fine aggregate.
1. Coarse aggregates shall be angular particles of uniform density.
2. Fine aggregates shall be angular particles of uniform density. Fine aggregate shall consist of screenings, angular sand, crushed recycled concrete fines, or other finely divided mineral matter processed or naturally combined with the coarse aggregate.

E. Gradation: The specified gradation requirements shall apply to the completed base course. The aggregates shall have a maximum size of 2 inches and shall be continuously well graded within the following limits:

GRADATION OF AGGREGATES
Percentage by Weight Passing Square-Mesh Sieve

| Sieve Designation | No. 1 | No. 2 | No. 3 |
|---|---|---|---|
| 2 inch | 100 | ---- | ---- |
| 1-1/2 inch | 70-100 | 100 | ---- |
| 1 inch | 45-80 | 60-100 | 100 |
| 1/2 inch | 30-60 | 30-65 | 40-70 |
| No. 4 | 20-50 | 20-50 | 20-50 |
| No. 10 | 15-40 | 15-40 | 15-40 |
| No. 40 | 5-25 | 5-25 | 5-25 |
| No. 200 | 0-10 | 0-10 | 0-10 |

NOTE: Particles having diameters less than 0.0008 inch shall not be in excess of 3 percent by weight of the total sample tested.

F. Hot-mix Sand Asphalt Bases: Asphalt Institute Type VI, VII, or VIII Mixes for Hot-mix Sand Asphalt Bases. Hot-Mix base shall be used only under asphaltic concrete surfaces.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Contractor shall verify to the Owner in writing that the subgrade has been inspected, tested, and gradients and elevations are correct, dry, and properly prepared in accordance with this specification and the contract drawings..

### 3.2 CONSTRUCTION

A. Perform base course construction in accordance with the applicable State standard specifications or as shown or specified.

B. Perform base course construction in a manner that will drain the surface properly and prevent runoff from adjacent areas from draining onto base course construction.

C. Compact base material to not less than 98 percent of optimum density as determined by ASTM D698 or 95 percent of optimum density, as determined by ASTM D1557 unless otherwise indicated on the Drawings.

D. Construct to thickness indicated on Construction Drawings. The minimum base thickness as shown on drawings shall be achieved throughout all pavement areas.
1. Granular Base: Apply in lifts or layers not exceeding 8-inches, measured loose.
2. Sand/Shell Base: Apply in lifts or layers not exceeding 4-inches, measured loose.
3. Hot-mix Sand Asphalt Bases: Apply in lifts or layers not exceeding 3-inches, measured loose.

**3.3 FIELD QUALITY CONTROL**

A. Field quality control shall be the responsibility of the Contractor in accordance with contract documents. Field quality control testing and inspection shall be at the discretion of the Contractor (except for specified mandatory testing listed below) as necessary to assure compliance with Contract requirements. Owner T&I shall not be considered a substitute for the Contractor's responsibility to perform similar routine, necessary, and customary testing and inspection of the methods and frequency suitable for the type of work involved.

B. Mandatory Testing and Inspection:
1. Measure base course tolerances no more than 25 ft. on center with a rod and level or stringline.
2. Certify in writing to the Owner that base course placement is in accordance with Contract Document requirements prior to subsequent work thereon.

**3.4 OWNER TESTING AND INSPECTION**

A. The Owner will perform testing and inspection (T & I) but only as a means to satisfy the Owner of contract compliance and as assurance to the Owner of Contractor quality control performance.

B. Owner T&I specified herein below will be performed by the Owner's Construction Testing Laboratory (CTL).

C. Testing and inspection shall be during unannounced visits on a periodic basis in accordance with Owner's requirements and as follows:
1. One day when placement begins.
2. One day when placement is approximately 25% complete.
3. One day when placement is approximately 50% complete.

D. Field testing, observation, and inspection shall be conducted only during the periodic site visits.
1. Test frequencies stated shall be based on quantities or occurrences which have accumulated up to, in between, and during each periodic visit.
2. Not less than one specified test shall be conducted each periodic visit when material has been placed since last visit.
3. In addition, at least one specified test shall be conducted on work being placed during each periodic visit.

E. Field tests for in-place materials will be performed in accordance with the following:
1. Density: Nuclear Method, ASTM D6938. One test in each lift for each 20,000 sq. ft. of in-place base material area.
2. Base Material Thickness: One test for each 20,000 sq. ft. of in-place base material area. All areas tested for thickness shall meet or exceed the base thickness shown on the drawings.
3. Verify Contractor's measurements of base course elevation

F. Prepare and distribute test reports as required by Owner.

**END OF SECTION**

**SECTION 321216**

**ASPHALT CONCRETE PAVING**

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
   1. Asphalt concrete binder and surface course.

B. Related Requirements:
   1. Section 321100 – Base Course
   2. Section 321600 – Curbs and Walks

### 1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by the basic designation only.

B. The Asphalt Institute (AI): MS-2 - Mix Design Methods For Asphalt Concrete And Other Hot-Mix Types.

C. Massachusetts Department of Transportation (MassDOT) Standard Specifications.

D. ASTM International (ASTM):
   1. ASTM D1188 - Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples.
   2. ASTM D2041 - Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.
   3. ASTM D2950 - Density of Bituminous Concrete in Place by the Nuclear Methods.
   4. ASTM D2726 - Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixture.
   5. ASTM D5444 - Mechanical Size Analysis of Extracted Aggregate.

E. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M017 - Mineral Filler for Bituminous Paving Mixtures.
   2. AASHTO M140 - Emulsified Asphalt.
   3. AASHTO M208 - Cationic Emulsified Asphalt.
   4. AASHTO M320 - Performance-Graded Asphalt Binder
   5. AASHTO M323 - Superpave Volumetric Mix Design
   6. AASHTO T164 - Quantitative Extraction of Asphalt Binder from Hot-Mix Asphalt (HMA)
   7. AASHTO T166 - Bulk Specific Gravity of Compacted Hot-Mix Asphalt Mixtures Using Saturated Surface-Dry Specimens
   8. AASHTO T209 – Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)
   9. AASHTO T245 - Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.
   10. AASHTO T275 - Bulk Specific Gravity of Compacted Hot-Mix Asphalt Mixtures Using Paraffin-Coated Specimens
   11. AASHTO T308 - Asphalt Content of Hot-Mix Asphalt (HMA) by the Ignition Method.

12. AASHTOT312 - Preparing and Determining the Density of Hot-Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor.
13. AASHTO T331 - Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method

F. National Asphalt Pavement Association (NAPA):
1. IS 123 – Recycling Hot-Mix Asphalt Pavements
2. IS 128 - HMA Pavement Mix Type Selection Guide

## 1.3 QUALITY ASSURANCE

A. Pre-installation Meeting: Convene a pre-installation meeting at the site at least two weeks prior to commencing work of this Section. Require attendance of parties directly affecting work of this Section, including, but not limited to, the Owner's representative, CTL's representative and inspector, Contractor, paving sub-contractor and job foreman.
1. Contact Owner's Construction Manager three weeks prior to pre-installation conference to confirm schedule.
2. Record discussions of meeting and decisions and agreements (or disagreements) reached, and furnish copy of record to each party attending. Review foreseeable methods and procedures related to paving work, including the following:
   a. Review preparation and installation procedures and coordinating and scheduling required with related work.
   b. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
   c. Tour, inspect and discuss condition of subgrade, drainage structures, and other preparatory work.
   d. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
   e. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   f. Review paving requirements (drawings, specifications and other contract documents).
   g. Review required submittals, both completed and yet to be completed.
   h. Review required inspections, testing procedures.
   i. Review weather and forecasted weather conditions, and procedures for coping with unfavorable conditions.
   j. Review safety precautions relating to placement of paving.

## 1.4 SUBMITTALS

A. Submit mix designs to the Civil Engineer of Record at least 30 days prior to beginning asphalt paving operations. Mix designs over one year old will not be accepted by Owner. Mix design submittal shall follow the format as recommended by Asphalt Institutes Manual MS-2 and include the following:
1. Type and Name of mix.
2. Gradation Analysis.
3. Optimum asphalt content.
4. Grade of asphalt binder.
5. Volumetric properties.

6. References to local State Highway Department Specification for each material when applicable.

B. Submit approved mix designs and laboratory test results to Owner signed by the materials producer and Contractor certifying materials and mix ratios conform to the requirements specified herein.

C. Submit certification of asphalt placement as specified in Field Quality Control.

**1.5 PROJECT CONDITIONS**

A. Weather Limitations:
1. Apply tack coat when ambient or base surface temperature is above 40 F, and when temperature has been above 35 F for 12 hours immediately prior to application. Do not apply when base is wet, contains excess moisture, during rain, or when frozen.
2. Construct asphalt concrete paving when ambient temperature is above 40 F.

B. Maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize temporary striping, flagmen, barricades, warning signs, and warning lights as required.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

A. Aggregate: the specifications and contract drawings.

B. Asphalt Binder and Top Course: Shall be Class 1 asphaltic concrete conforming to Sections 420, 460, and M3 of the MassDOT Standard Specifications.

C. Tack Coat: Emulsified asphalt; AASHTO M140 Grade RS-1 or AASHTO M208, SS-1h, CSS-1, or CSS-1h, or conforming to Section M3.03.1 of the MassDOT Standard Specifications, may be diluted with up to 1 part water to 1 part asphalt.

D. Mineral Filler: Shall consist of approved Portland Cement, limestone dust, hydrated lime, stone float or stone dust conforming to Section M3.11.05 of the MassDOT Standard Specifications.

E. Uniform gradation from fine to coarse and shall not be contaminate by foreign materials.

**2.2 ASPHALT-AGGREGATE MIXTURE**

A. MassDOT Mix:

Asphalt concrete shall be a standard plant-mixed, hot-laid paving material for road work, consisting of clean, crushed rock aggregate, mineral filler, and asphalt equal to Class I, Type I, in accordance with MHD Specifications Section M 3.11.03, except as modified herein. The master rnage composition tolerances for bituminous concrete materials shall be as follows:

Table A ( As Modified)

Percent by Weight Passing Square Opening Sieves

| Standard Sieve Size | Binder Course | Top Course |
|---|---|---|
| 1 in. | 100 | |
| ¾ in, | 80-100 | |
| 5/8 in. | | 100 |
| ½ in. | 55-75 | 95-100 |
| 3/8 in. | | 80-100 |
| No. 4 | 28-50 | 50-76 |
| No. 8 | 20-38 | 37-49 |
| No. 16 | | 26-40 |
| No. 30 | 8-22 | 17-29 |
| No. 50 | 5-15 | 10-21 |
| No. 100 | | 5-16 |
| No. 200 | 0-5 | 2-7 |
| Bitumen | 4.5-5.5 | 5.6-7.0 |

1.0 For dense mix the maximum aggregate size allowable shall be 3/8 in.

2.0 Binder course paving for roadways shall have maximum aggregate size passing 1 in. sieve, and bitumen content of 5% +/- ½% by weight.

3.0 Top course paving for roadways shall have maximum aggregate size passing 5/8 in. sieve, and bitumen content of 6.5% +/- ½% by weight.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

A. Verify that the prepared base material has been inspected, tested, and gradients and elevations are correct, dry, and properly prepared.

**3.2 PREPARATION**

A. Proof roll prepared base material surface to check for unstable areas in accordance with Section 312313 including documentation and re-proof rolling as required. Paving work shall begin only after unsuitable areas have been corrected and are ready to receive paving.

B. Support Structural Fill:
   1. Minimum compacted depth of 6-inches as measured from the bottom of pavement.

C. Establish and maintain required lines and elevations.

D. Cover the surfaces of curbs, gutters, manholes and other structures on which the asphalt concrete mixture will be placed, with a thin, uniform coat of liquid asphalt. Where the asphalt concrete mixture will be placed against the vertical face of an existing pavement, clean the vertical face to remove foreign substances and apply a coating of liquid asphalt at a rate of approximately 0.25 gallons per square yard.

E. Density Control Strips.
   1. Prior to beginning placement of asphalt, construct asphalt concrete density control strips.
   2. Source and type of material, material requirements, and laydown and compaction equipment used for compaction shall be the same as that to be used in the project.
   3. The subgrade or pavement layer upon which the control strip is constructed shall tested prior to construction of the control strip.
   4. The control strip shall be a minimum of 250 linear feet long and one paver width wide.
   5. Rolling the control strip shall continue until no appreciable increase in density is obtained by additional coverages.
   6. Upon completion of rolling, the Contractor shall use a nuclear testing device to establish the mean density of the control strip. The mean density will be based on 10 tests taken at randomly selected sites within the control strip area. The nuclear gauge will be calibrated with the average of 3 cores taken from the same area. The average of the cores shall meet the specified density requirements. The calibration factor between the average nuclear density and average core density shall be applied to the Contractor's nuclear gauge for Contractor's density monitoring.

F. Equipment:
   1. Equipment necessary for the paving of asphalt concrete shall be on the project prior to beginning paving operations.
   2. Maintain equipment in satisfactory operating condition and correct breakdowns in manner that will not delay or be detrimental to the schedule of paving operations.

## 3.3 APPLICATION

A. Tack Coat:
   1. Apply to contact surfaces of previously constructed asphalt concrete base courses or Portland cement concrete and surfaces abutting or projecting into asphalt concrete or into asphalt concrete pavement.
   2. Apply tack coat to asphalt concrete base course or sand asphalt base course. Apply emulsified asphalt tack coat between each lift or layer of full depth asphalt concrete and sand asphalt bases and on surface of bases where asphalt concrete paving will be constructed.
   3. Apply at rate which produces a residual of asphalt cement between 0.04 and 0.06 gal per sq. yd of surface.
   4. Allow drying until at proper condition to receive paving.

## 3.4 ASPHALT CONCRETE PLACEMENT

A. Place asphalt concrete mixture on completed, compacted underlying surface, spread, and strike off. Spread mixture at the minimum ambient temperature that will allow the required density to be achieved. No asphaltic concrete shall be placed when the air temperature is below forty (40) degrees Fahrenheit.

B. Whenever possible, spread pavement by finishing machine; however, inaccessible or irregular areas may be placed by hand methods. Spread hot mixture uniformly to required depth with hot shovels and rakes. After spreading, carefully smooth hot mixture to remove segregated course aggregate and rake marks. Rakes and lutes used for hand spreading shall be type designed for use on asphalt mixtures. Do not dump loads faster that they can be properly spread. Workers shall not stand on loose mixture while spreading.

C. Placement and routing of hauling and placing equipment shall be conducted in a manner to avoid tire tracking of bituminous material onto existing paved surfaces.

D. Paving Machine Placement: Apply successive lifts of asphalt concrete in transverse directions except when placing within small areas, parallel lifts may be placed when considered more practical. Joints of successive parallel lifts shall be offset a minimum of 2 feet. Place surface course parallel to flow of traffic. Place asphalt paving in typical strips not less than 10'-0" wide. Asphalt concrete pavement, including base and surface course, shall be placed in two or more lifts as indicated on drawings. Pavement thicknesses shall be thickness shown on the drawings for each course but not less than 1-1/2 inch nor more than 3 inches for each lift.

## 3.5 ROLLING AND COMPACTION

A. After being spread, mixture shall be compacted by rolling as soon as it will bear the weight of rollers without undue displacement. Number, weight, types of rollers, and sequences of rolling operations shall be such that the required density and surface are consistently attained while the mixture is in workable condition.

B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

C. Breakdown Rolling: Perform breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling with hot material.

D. Intermediate Rolling: Follow breakdown rolling as soon as possible while mixture is hot. Continue second rolling until mixture has been thoroughly compacted as follows:
   1. Minimum Average Density: 93 percent of theoretical maximum density according to AASHTO T209 or ASTM D2041, with no individual test less than 91 percent nor greater than 97 percent.

E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.

F. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked. Any masked or marred finish surfaces shall be repaired or smoothed.

H. Compaction at Unsupported Edges of Pavements: Start the first roller pass 12-15 inches from the unsupported edge. Allow the uncompacted asphalt to act as a dike to hold the mat in place. The final pass over the uncompacted dike should not slough off if the roller is supported on the compacted mat.

## 3.6 JOINTS

A. General: Place each asphalt paving layer as continuous as possible to keep the number of joints to a minimum. Create joints between old and new pavement, between successive days work, and where the mixture has become cold (less than 140 degrees F). Make these joints in such a manner as to create a continuous bond between the old and new pavement construction courses.

B. Construction joints shall have same texture, density, and smoothness as other sections of asphalt concrete course.

C. Transverse Joints: If placing of material is discontinued or if material in place becomes cold, make a joint running perpendicular to the direction traveled by the paver. Before placement continues, trim the edge of the previously placed pavement to a straight line perpendicular to the paver and cut back to expose an even vertical surface for the full thickness of the course. When placement continues, position the paver on the transverse joint so that sufficient hot mixture will be spread in order to create a joint after rolling that conforms to the required smoothness. If the temperature of the previously placed pavement material drops below 140 degrees F before paving is resumed, give the exposed vertical face a thin coat of liquid asphalt just before paving is continued.

D. Longitudinal Joints: Coat longitudinal joints that are not completed before the previously laid mixture has cooled to a temperature below 140 degrees F, with liquid asphalt just before paving is continued.

## 3.7 FIELD QUALITY CONTROL

A. Field quality control shall be the responsibility of the Contractor Field quality control testing and inspection shall be at the discretion of the Contractor (except for specified mandatory testing listed below) as necessary to assure compliance with Contract requirements. Owner T&I shall not be considered a substitute for the Contractor's responsibility to perform similar routine, necessary, and customary testing and inspection of the methods and frequency suitable for the type of work involved.

B. Mandatory Testing:
   1. Pavement Thickness: Measure pavement thickness behind the paver at the beginning of and during pavement placing operations to assure proper thickness.
   2. Field Density Test For In-Place Materials: In-place density tests by nuclear method in accordance with ASTM D2950. Nuclear density shall be correlated with ASTM D1188 or D2726 or AASHTO T166, T275, T331 as applicable.
      a. Density tests on subgrades and aggregate base courses to be overlaid by pavements shall be performed within 48 hours prior to placement of the pavement lift. If inclement weather occurs after testing, retest prior to placement of next lift. Testing frequencies shall be as specified in Sections 02300 and 02715 respectively.

C. Coring holes remaining from cores taken by the CTL shall be immediately filled by the Contractor with full depth, hot-mix asphalt concrete or non-shrink grout tinted to match the surrounding pavement.

D. Obtain test samples for volumetric testing from the truck at the asphalt plant. Mixture samples shall be taken at least 2 times for every 8 hour day. Deliver samples to the CTL for testing by the CTL:

E. Areas of deficient paving, including compaction, smoothness, thickness, and asphalt mixture, shall be delineated, removed, and replaced in compliance with specifications requirements. Alternative remedial or corrective measures for repair of deficient paving may be allowed provided a plan of corrective action is submitted in the form of a Request For Information (RFI) and the plan is approved by the Civil Engineering Consultant.

F. Provide certification in writing that asphalt placement is in accordance with specification requirements.

G. Provide documentation to the CTL of proof rolling and of subgrade and aggregate base compaction testing prior to pavement placement each day in the areas to be paved including the density control strip

**3.8 OWNER TESTING AND INSPECTION (T&I)**

A. The Owner will perform testing and inspection (T & I) but only as a means to satisfy the Owner of contract compliance and as assurance to the Owner of Contractor quality control performance.

B. Owner T&I specified herein below will be performed by the Owner's Construction Testing Laboratory (CTL) in accordance with Owner's requirements.

C. The testing and inspection shall be during unannounced visits on a periodic basis in accordance with as the following:
1. One day on the day when the density control strip is placed.
2. One day when pavement placement is approximately 25% complete.
3. One day when pavement placement is approximately 50% complete.

D. Field testing, observation, and inspection shall be conducted only during the periodic site visits except as required for subgrade testing for density control strip specified in PREPARATION paragraph above**.**
1. Number of tests to be taken at each site visit shall be the test frequencies stated based on quantities or occurrences which have accumulated up to, in between, or during each periodic visit.
2. Not less than one specified test shall be conducted each periodic visit when material has been placed since last visit.
3. In addition, at least one specified test shall be conducted on work being placed during each periodic visit.

E. Core Sampling and Testing: Asphalt surface and base courses shall be randomly cored at minimum rate of 3 cores per day's placement per mix type, but not less than 3 cores in light duty areas and 3 cores in heavy-duty areas shall be obtained. In addition to cores taken during periodic site visits, sampling shall be performed at the rate of one sample per 1000 sq. yds., or fraction thereof, of pavement placed during the absence of the CTL. Asphalt concrete pavement samples shall be tested for conformance with density and thickness requirements. Cores shall be cut from minimal loading areas representative of project**.**

F. Surface Smoothness Test: In areas of obvious depressions or bumps, suspect areas of each lift shall be checked with a 10'-0" straightedge both parallel with, and at right angles to, centerline of the paved area. The variation of the surface between two contact points shall not exceed 1/4-inch.

G. Pavement Thickness: The CTL will measure thickness of each core sample taken. At each core location, the thickness of the course shall meet or exceed the thickness shown. If the thickness of a lower course of asphalt is less than the thickness shown, it shall be identified as a deviation and recorded. The Contractor shall either remove and replace the deficient pavement or increase the thickness of the upper course so that the total thickness of the pavement meets or exceeds the design thickness, provided that the specified compaction of the lower lift is achieved.

H. Field Density Test For In-Place Materials:
   1. Density tests shall be conducted on each core sample taken in accordance with ASTM D1188 or D2726 (AASHTO T166, T275, T331) as applicable.

I. Volumetric Properties: Perform testing as follows on samples provided by the Contractor:
   1. Superpave Mix: Compact into specimens in accordance with AASHTO T312. Test each specimen for determination of relative density, VMA, VFA, and dust-to-binder ratio.
   2. Marshall Mix: Compact into specimens using compactive blows equal to mix design per side with the Marshall hammer as described in AASHTO T245. Temperature shall be equal to temperature at paving machine with reheating. Test each specimen for determination of laboratory air voids, Marshall stability, and flow.

J. Asphalt Content and Aggregate Gradation: Asphalt content extraction and gradation of extracted aggregate testing shall be performed in accordance with AASHTO T 308 or AASHTO T164 and ASTM D5444 respectively and local State Highway Department Specifications requirements. At least one asphalt content and one gradation test shall be taken for each 2000 tons or each day pavement is placed

END OF SECTION

Section 32 12 43
DECOMPOSED GRANITE

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:

1. Decomposed Granite Pavement

B. References in the contract documents to the "Owner" shall mean Milton Academy.

C. Related Sections include the following:

1. Section 312000 “Landscape Demolition & Site Preparation”
2. Section 312000 “Earthwork”
3. Section 321216 “Hot Mix Bituminous Concrete Paving”
4. Section 321313 “Concrete Pavement”

### 1.2 SCOPE OF WORK

A. The work of this Section consists of all improvements and related items as indicated on the Drawings and/or as specified herein and includes, but is not limited to, the following:

1. Preparation of Subgrade and Setting Bed.
2. Decomposed Granite Pavement.
3. Coordination with other subcontractors.
4. Clean-up.

### 1.3 EXAMINATION OF CONDITIONS

A. The Contractor shall fully inform him/herself of existing conditions of the site.

B. The Contractor shall coordinate with other trades to ensure subsurface drainage, water supply, irrigation, planting soils and planting is coordinated with the installation of the decomposed granite pavement.

### 1.4 QUALITY ASSURANCE

A. Materials and methods of construction shall comply with the following standards, latest editions and addenda:
1. ASTM: American Society for Testing and Materials.
2. ANSI: American National Standards Institute.
3. PCA: Portland Cement Association.
4. ACI: American Concrete Institute.

5. Standard Specifications: Massachusetts Highway Department, Standard Specifications for Highways and Bridges (1988) as amended in 2006.

B. Qualifications of Workers: Use adequate numbers of skilled workers who are trained in the necessary crafts and who are completely familiar with the specified requirements and methods needed for the proper performance of the work of this Section.

C. Layout and Grading: After staking out the work, and before beginning final construction, obtain the Landscape Architect's approval for layout and grades.

D. Testing: Perform gradation of crushed granite in accordance with ASTM C136 – Method for Sieve Analysis for Fine and Course particles.

E. Do not install or work with material during inclement conditions or if material is wet or frozen. Do not install decomposed granite when temperatures are 40 degrees Fahrenheit and falling.

## 1.5 SUBMITTALS

A. Product Information: Provide manufacturer's data showing installation and limitations in use. Supply Certificates of Compliance for all materials required for fabrication and installation, certifying that each material item complies with, or exceeds, specific requirements.

1. Decomposed Granite, including sieve analysis.
2. Stabilizer.

B. Material Samples for Color Selection of Decomposed Granite:

1. For each of the Color Selection steps, submit duplicate samples, each of the size or quantity indicated below. Provide one sample to the Landscape Architect and retain one sample at the project site.
2. Initial Color Selection: Contractor shall submit one pint-sized bag for each of the Supplier's six standard colors available for decomposed granite.
3. Secondary Color Selection: After approval of six Initial Color Selection samples, the Landscape Architect shall choose three colors for further selection of materials. Contractor shall submit one gallon-sized bag for each of the three colors selected.
4. Final Color Selection for Sample Panels: At the end of the Secondary Color Selection, the Landscape Architect shall choose two color samples for use in preparing Sample Panels. If requested by the Landscape Architect, the Contractor shall submit one gallon-sized bag for each of the two standard colors selected.

C. Samples for Sample Panels: Do not order final materials until Landscape Architect's approval of the Sample Panels has been obtained and final color has been chosen. If initial material samples are not approved, resubmit materials as necessary to obtain Landscape Architect's approval. Delivered materials for the Sample Panels shall closely match the approved samples and shall be representative of full range of color variation, finish and texture that can be expected in the permanent work.

D. Mix Ratio Submittal

1. In preparation for the Sample Panels, provide the approved decomposed granite sample and sieve analysis to the stabilizer manufacturer for verification of the mix ratio of stabilizer to decomposed granite. Submit certification of analysis of mix ratio, showing final mix ratio to be used for the entire project.

1.6 SAMPLE PANELS

A. Upon approval of the Mix Ratio, the Contractor shall construct sample panels on site in the minimum size indicated below. Two sample panels, each of a different color, are required to determine the final color of the Decomposed Granite pavement, workmanship, and appearance. The Contractor shall coordinate the Decomposed Granite sample panels so that they are constructed simultaneously with the other Sample Panels and Mock-ups specified for the project. If the Sample Panel(s) is not approved, the Contractor shall provide additional samples, as required, at no cost to the Owner until an approved Sample Panel is obtained. The approved sample shall become the standard for the entire job. Sample panel shall not be constructed on a location becoming part of the final work and shall remain undisturbed until all work is completed. Contractor shall completely remove any panels not set in place as part of the final work from the site upon final acceptance of work.

1. Decomposed Granite Pavement, separate sample, 5’ wide x 5’ long, using the approved materials and compaction methods expected for the Work. Manufacturer’s Representative shall be on-site for the mockup construction. Check stability of sample panel at one and two week intervals to determine if mix is hardening properly. If mix is not properly hardening, consult with Manufacturer’s Representative and adjust mix. Provide sample panels until stabilized mix is achieved and approved by the Landscape Architect.

1.7 WEATHER RESTRICTIONS

A. Decomposed Granite Pavement shall not be installed during, prior to, or immediately following rainfall or when the temperature is 40 degrees Fahrenheit and falling. Inclement weather and cold to freezing temperatures will cause an unsatisfactory installation.

1.8 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty executed by the installer agreeing to repair or replace components of stabilized surfacing that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

C. Premature wear and tear, provided the material is maintained in accordance with manufacturer's written maintenance instructions.

D. Failure of system to meet performance requirements.

E. Warranty Period: Contractor shall provide warranty for the performance of the product. The Contractor shall warranty the installation of product for the time of one year from the date of final acceptance.

F. Contractor shall provide, for a period of sixty days from Final Acceptance, unconditional maintenance and repairs of the stabilized surfacing as required.

## PART 2 - PRODUCTS

### 2.1 GRAVEL BASE AND SUBSTRATE

A. Gravel Base shall conform to the requirements of Section 312000 "Earthwork".

B. Sand Based Structural Soil shall conform to the requirements of Section 312000 "Earthwork".

### 2.2 DECOMPOSED GRANITE PAVEMENT

A. Aggregate stone for paving shall conform to the following:

1. Clean, hard, durable particles or fragments of ¼" minus select crushed stone. Fines shall be evenly mixed throughout the aggregate. When produced from gravel, 50 percent, by weight, of the material retained on a No.4 sieve shall have one fractured face.
2. The portion retained on the No.4 sieve shall have a maximum percentage of wear of 50 at 500 revolutions as determined by AASHTO T96-77.
3. The portion passing a No.40 sieve shall have a maximum liquid limit of 25 and a maximum plasticity index of 7, as determined by AASHTO T89-81 and AASHTO T90-81, respectively.
4. Size shall be 3/8" to No.200 crushed granite screenings conforming to the following crushed stone sieve analysis for percentage of weight passing a square mesh sieve, ASTM C136 – Method for Sieve Analysis for Fine and Course:

| Sieve Designation | Range of % Passing |
|---|---|
| No. 3/8" | 100% |
| No. 4 | 95 – 100% |
| No. 8 | 75 – 80% |
| No. 16 | 55 – 65 % |
| No. 30 | 40 – 50% |
| No. 50 | 25 – 35% |
| No. 10 | 15 – 20% |
| No. 200 | 10 – 15% |

5. The crushed aggregate screenings shall be free from clay lumps, vegetable matter and deleterious material.

6. Decomposed granite color shall be as selected from the Material Selection Submittal process. Acceptable Aggregate Supplier: Or approved equal.
   Read Custom Soils
   125 Turnpike Street
   Canton, MA 02021
   Tel: (888)475-5526
   www.readcustomsoils.com

B. Stabilizer binder for paving shall be Organic-lock as manufactured by Envirobond Products Corporation, 2100 Bloor St. W, Suite 6191 Toronto, ON Canada M6S 5A5 Tel: 416-628-3704. Or approved equal.

C. Stabilizer binder shall be blended with the decomposed granite aggregate at the aggregate suppliers facility.

D. Mix Ratio: The estimated mix ratio for decomposed granite pavement shall be 35 lbs of stabilizer per ton of compacted aggregate screenings. Mix ratio is approximate. The final mix ratio shall be established as part of the material sample process listed in this Section.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. The installer shall examine previous work, related work, and conditions under which this work is to be performed and notify the Contractor in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means installer accepts substrates, subgrades, previous work, and conditions.

### 3.2 PACKING, LOADING AND STORAGE

A. Packaged materials shall be carefully packed and loaded for shipment using all reasonable and customary precautions against damage in transit.

B. Loose materials shall be carefully loaded for shipment using all precautionary methods to avoid the intermingling of loose materials with foreign material. Material that is intermixed with other materials will be rejected.

C. Storage: Upon receipt of material, promptly store packaged and loose materials in a secure, dry location. For loose material, cover stockpiles to avoid wind blowing and to protect material from being contaminated by foreign material.

### 3.3 PREPARATION

A. Prior to beginning work, confirm that the following activities have been approved by the Landscape Architect:

1. Sand Based Structural Soils and 3/8” crush gravel, installed in conformance with Section 31 20 00 Earthwork.
2. Trees installed in conformance with Section 32 91 00 Landscaping.

## 3.4 DECOMPOSED GRANITE PAVEMENT

A. The Manufacturer’s Representative shall be required to be on site during the installation. Follow the Manufacturer’s recommended installation procedures.

B. Acceptance Criteria: Finished surface of pavement shall be smooth, uniform and solid. There shall be no evidence of chipping or cracking. Dried, cured, compacted pavement shall be firm throughout profile with no spongy areas. Loose material shall not be present on the surface initially. Any significant irregularities in surface shall be repaired to the uniformity of entire installation.

1. Any significant irregularities shall be smoothed out prior to final acceptance of work. Smoothing shall be accomplished by rewetting/saturating rough areas thoroughly, and then rolling the paving again with a heavy roller 2000 lbs powered walk-behind or small rider.
2. Loose gravel on the surface, or unconsolidated crushed aggregate screenings below the surface, is evidence of improper bonding due to poor mixing or insufficient watering. Test the loose material for adequate stabilizer by wetting, then tamping, and allowing it to dry. If the material is still unconsolidated, stabilizer did not get mixed adequately throughout the crushed aggregate screenings. If the material is now solid, initial watering was insufficient.

C. Maintenance: Remove debris, such as paper, leaves or other organic material by mechanically blowing or hand raking the surface as needed. Any plowing program required during winter months shall involve the use of a rubber baffle on the plow blade or wheels on the plow that lifts the blade 1/4" off the paving surface. During the first year, a minor amount of loose aggregate will appear on the paving surface. If this material exceeds a 1/4" depth, redistribute the material over the entire surface. Water thoroughly to the depth of 1”. Compact with power roller of no less than 1000 lbs. This process should be repeated as needed. If cracking occurs, simply sweep fines into the cracks, water thoroughly and hand tamp with an 8” – 10” hand tamp plate.

## 3.5 LAYOUT, GRADES AND ELEVATIONS

A. The Drawings indicate, in general, the alignment and finish grade elevations. The Landscape Architect, however, may make such adjustments in grades and alignments as are found necessary to properly complete the work. The contractor shall not receive further compensation for adjustments.

## 3.6 PROTECTION

A. All rules and regulations governing 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 and installed trees, curbs, pavement, walls, utility lines, structures, and adjoining property.

3.7 FINAL CORRECTIONS

A. The Landscape Architect reserves the right to inspect the work to determine if adjustments are necessary in grade, alignment, layout or surface condition. The Contractor shall make such adjustments without further compensation.

3.8 CLEAN –UP

A. The Contractor shall remove all debris, construction equipment and scrap material from all areas within the limit of work prior to the final inspection and acceptance.

END OF SECTION

# SECTION 32 13 13

# CONCRETE PAVING

## PART 1 – GENERAL

### 1.01 SECTION INCLUDES

A. Provide all labor, equipment, materials and perform all operations necessary to complete the work of this section as indicated within the drawings and specified herein which shall include but is not limited to the following:

1. Concrete sidewalk repair
2. Concrete walkways
3. Concrete pads
4. Concrete Plaza and Splash Pad

### 1.02 RELATED SECTIONS

A. Section 311100 Base Course.

### 1.03 SUBMITTALS

B. Submit the following:

1. Provide samples, manufacturer's product data, test reports, and material certifications as specified in the specifications and contract drawings.

2. Provide "Material Certificates" signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.

### 1.04 CONSTRUCTION OF A SAMPLE PANEL

C. Construct a sample panel for the following in areas designated by the Engineer.

1. Concrete sidewalk: Full width and a length not less than ten (10) feet demonstrating jointing and finish.

2. All sample panels shall be complete and in place. If the original sample panel is not approved, the Contractor shall provide additional sample panels as required, at no additional cost to the Owner, until an approved sample panel is obtained.

a. The approved sample panel shall become the standard for the entire job.

b. The sample panel may be constructed at a location that will become part of the work.

c. Demolish and remove, from site, any and all rejected sample panels at no additional cost to the owner.

3. The quality of workmanship must be approved by the Engineer before permanent construction is started. Obtain Engineer's acceptance of sample panel before proceeding with the final work.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

A. Comply with the requirements of the applicable Concrete for concrete materials, admixtures, bonding materials, curing materials, and other specified items.

B. Single Source: All work of this Section shall be produced by a single manufacturer, unless otherwise approved by the Architect. Concrete shall be batched from the same facility.

### 2.02 REINFORCEMENT MATERIALS

C. Reinforcing Bars: Deformed epoxy coated steel bars, ASTM A 615, Grade 60.

D. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A 185.

1. 6'' x 6'' x 10/10 W.W.M. in flat sheets only, no rolls will be allowed.

E. Bar supports, metal accessories and other devices necessary for proper assembly of concrete reinforcing shall be of standardized factory-made wire bar supports. Wire for tieing shall be 18-gauge black annealed wire conforming to ASTM Specification A-82.

### 2.03 EXPANSION JOINT MATERIAL

A. Compressible filler: Provide asphalt impregnated preformed expansion joint filler which shall be non-extruding, resilient and shall conform to AASHTO M213 requirements for premolded rigid cane fiber board impregnated throughout with asphaltic compound.

1. The Contractor shall provide certificate that the asphalt cement content is at least 35% by weight of the filler.
2. All expansion joints shall be a minimum of 1/2" thick and full depth of slab thickness.

3. Joint sealer: For use at expansion joints shall meet Federal Specification TT-S-00230C, Type II, Class A, and shall be a sealing compound, synthetic, rubber case, single component, chemically curing material.

**2.04 FORM MATERIALS**

A. The contractor shall utilize steel, wood, or other suitable material of size and strength to resistmovement during concrete placement and to retain horizontal and vertical alignment until removal.

1. Use straight forms, free of distortion and defects.
2. Use flexible spring steel forms or laminated boards to form radius bends as required.

B. Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.

**2.05 ADMIXTURES**

A. Liquid-Membrane forming and Sealing Curing Compound: Comply with ASTM C 309, Type I, Class A unless other type acceptable to the Engineer.

**2.06 CONCRETE MIX, DESIGN AND TESTING**

A. Comply with requirements of applicable Section 03 30 00 Cast-in-place Concrete for concrete mix design, sampling and testing, and quality control and as herein specified.

3. Obtain strength of 4,000 psi at twenty-eight (28) days.

**PART 3 – EXECUTION**

**3.01 EXAMINATION**

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.

B. Beginning of installation means acceptance of existing project conditions.

**3.02 SURFACE PREPARATION**

A. Remove loose material from compacted sub-base surface immediately before placing concrete.

B. Proof-roll prepared sub-base surface to check for unstable areas and need for

additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving.

**3.03 FORM CONSTRUCTION**

A. Contractor to stake our the concrete locations prior to placing forms for Owner's approval.

B. Set forms to required grades and lines braced and secured. Install forms to allow continuous progress of work and so that forms can remain in place at least twenty-four (24) hours afterconcrete placement.

C. Check completed formwork for grade and alignment to following tolerances:

i. Top of forms not more than 1/8 inch in ten (10) feet.

ii. Vertical face on longitudinal axis, not more than 1/4 inch in ten (10) feet.

D. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

**3.04 REINFORCEMENT**

A. Locate, place and support reinforcement as specified in the contract drawings.

C. Provide number four (4) rebar perpendicular to support bars two (2) inches from expansion joint or slab edge at each end.

D. Keep welded wire fabric clean and free from rust. Place individual sheet or strips flat and free from distortion. Remove bends or kinks in individual wires before the sheet is laid in the pavement.

E. Place welded wire fabric in sheets or strips at depth shown. Lap sheet six (6) inches and tie firmly together by wire or clips spaced not more than four (4) feet apart.

F. Provide sand plates at twenty-four (24) inches on-center to support welded wire mesh. Locate one (1) bar two (2) inches from expansion joint or slab edge at each end.

**3.05 EXPANSION JOINTS**

G. General: Construct expansion joints true to line with face perpendicular to surface of concrete. If joints are not installed and constructed as indicated within the drawings and specified herein the Engineer shall instruct the Contractor to remove and dispose those areas identified as non-compliant. The Contractor shall repair, replace or install new concrete in those areas

identified at no additional cost to the owner.

H. Verify location of expansion joints as indicated within the drawings and their relationship to other work.

I. Where expansion joints are not shown, the Contractor shall provide expansion joints a minimum twenty (20) feet on center in any direction and where concrete abuts all vertical surfaces and/or fixed construction including but not limited to; buildings, structures, walls, stairs, light poles and curbs.

J. Provide premolded joint filler for expansion joints abutting curbs, catch basins, manholes, inlets, structures, walks, and all other fixed objects, unless otherwise indicated.

1. Deliver materials in manufacturer's original containers, clearly labeled with manufacturer's name and address and product identification.
2. Store materials in original containers protected from direct contact with the ground and from the elements.
3. Store materials above ground on framework or blocking and cover with protective waterproofing covering. Provide for adequate air circulation throughout material stacks.
4. Extend joint fillers full width and depth of joint, top of joint filler flush with finished concrete surface.
5. Furnish joint fillers in one-piece lengths for full width being placed wherever possible. Where more than one (1) length is required, lace or clip joint filler sections together.
6. Protect top edge of joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.

**3.06 CONTRACTION AND CONSTRUCTION JOINTS**

A. General: Construct contraction and construction joints true to line with face perpendicular to surface of concrete. If joints are not installed and constructed as indicated within the drawings and specified herein the Engineer shall instruct the Contractor to remove and dispose those areas identified as non-compliant. The Contractor shall repair, replace or install new concrete in those areas identified at no additional cost to the owner.

B. Contraction Joints: Provide contraction joints, sectioning concrete into areas as shown on drawings to a depth equal to at least 1/3 concrete thickness and as follows:

1. Form joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a joiner.

C. Construction Joints: Place construction joints at end of placements and at

expansion joints.

**3.07 CONCRETE PLACEMENT**

A. General: Comply with the applicable requirements of Concrete for mixing and placing concrete, and as herein specified.

B. Do not place concrete until sub-base and forms have been checked for line and grade. Moisten sub-base if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

C. Place concrete by methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.

D. Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than hour, place a construction joint.

E. Do not place concrete on a soft, muddy or frozen base course. Do not permit workmen to walk in the concrete with boots or shoes covered with earth or other foreign substances.

F. Place lower layer of concrete followed promptly by the welded wire fabric and then place the upper layer of concrete. Remove any portions of the bottom layer of concrete which have been placed more than fifteen (15) minutes without being covered with top layer and replace with freshly mixed concrete.

G. Consolidate concrete thoroughly by tamping, spading and vibrating to eliminate honeycombing and voids. Space carefully to avoid dislocation of reinforcing materials, dowels and joints installing devices.

**3.08 CONCRETE FINISHING**

A. After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to produce uniform texture.

B. After floating, test surface for trueness with a ten (10) foot straightedge. Distribute concrete as required to remove surface irregularities and refloat repaired areas to provide a continuous smooth finish.

C. Work edges of slabs and formed joints with an edging tool, and round to one half-inch radius

or as indicated within the drawings.

1. Eliminate tool marks on concrete surface.

b. After completion of floating and when excess moisture or surface sheen has disappeared, complete troweling and finish surface as follows:

1. Broom finish by drawing a broom across concrete surface perpendicular to line of traffic.

a. On inclined slab surfaces, provide a coarse, non-slip finish by scoring surface with a stiff-bristled broom, perpendicular to line of traffic.

c. Do not remove forms for twenty-four (24) hours after concrete has been placed. After form removal, clean ends of joints and joint-up any minor honeycombed areas.

1. Remove and replace areas of sections with major defects, as directed by the Engineer.

**3.09 CURING**

A. Protect and cure finished concrete paving in compliance with applicable requirements.. Use membrane-forming curing and sealing compound or approved moist-curing methods.

**3.10 REPAIRS AND PROTECTIONS**

a. Repair or replace broken or defective concrete, as directed by the Engineer.

b. Drill test cores where directed by the Engineer when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland Cement concrete bonded to pavement with epoxy adhesive.

c. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least fourteen (14) days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

d. Sweep concrete pavement and wash free of stains, discoloration, dirt, and other foreign material one (1) week prior to substantial completion.

**END OF SECTION**

**SECTION 321600**

**CURBS AND WALKS**

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
1. Portland cement concrete curbs and sidewalks.
2. Flush concrete perimeter curb/edging at the play area.

### 1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by the basic designation only.

B. American Concrete Institute (ACI):
1. ACI 305R - Hot Weather Concreting
2. ACI 306R - Cold Weather Concreting
3. ACI 306.1 - Cold Weather Concreting.
4. ACI 308 - Curing Concrete

C. ASTM International (ASTM):
1. ASTM A185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
2. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
3. ASTM C31 - Making and Curing Concrete Test Specimens in the Field.
4. ASTM C39 - Comprehensive Strength of Cylindrical Concrete Specimens.
5. ASTM C42 - Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
6. ASTM C94 - Ready-Mixed Concrete.
7. ASTM C138 - Test Method for Unit Weight, Yield, and Air Content (Gravemetric) of Concrete.
8. ASTM C143 - Slump of Hydraulic Cement Concrete.
9. ASTM C231 - Air-Content of Freshly Mixed Concrete by the Pressure Method.
10. ASTM C172 - Sampling Freshly Mixed Concrete.
11. ASTM C173 - Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
12. ASTM C260 - Air-Entraining Admixtures for Concrete.
13. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
14. ASTM C618 - Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete.
15. ASTM C989 - Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
16. ASTM C1064 - Temperature of Freshly Mixed Portland Concrete Cement.
17. ASTM C1218 - Water-Soluble Chloride in Mortar and Concrete.
18. ASTM D98 - Calcium Chloride.
19. ASTM D994 - Preformed Expansion Joint Filler for Concrete (Bituminous).
20. ASTM D1190 - Concrete Joint Sealer, Hot Poured, Elastic Type.
21. ASTM D1751 - Performed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

22. ASTM D2628 - Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

D. Federal Specifications (FS):
1. FS HH-F-341 - Fillers, Expansion Joint: Bituminous (Asphalt & Tar)

E. Massachusetts Department of Transportation (MassDOT) Standard Specifications.

## 1.3 SUBMITTALS

A. Mix Design:
1. Fill out and submit attached Concrete Mix Design Submittal Form.
2. Submit three copies of each proposed mix.
3. Submit separate mix design for concrete to be placed by pumping in addition to the mix design for concrete to be placed directly from the truck chute.
4. Submit mix design to the Civil Engineering Consultant of Record, the Owner's Construction Testing Laboratory, and the Owner's Assigned Concrete Sub-Consultant.
5. Include applicable information shown on the Mix Design Submittal Form and the following:
   a. Proportions of cementitious materials, fine and coarse aggregate, and water.
   b. Water-cementitious material ratio, 28-day compressive design strength, slump, and air content.
   c. Type of cement, fly ash, slag and aggregate.
   d. Aggregate gradation.
   e. Type and dosage of admixtures.
   f. Special requirements for pumping.
   g. Range of ambient temperature and humidity for which design is valid.
   h. Special characteristics of mix which require precautions in mixing, placing, or finishing techniques to achieve finished product specified.
   i. Materials and methods for curing concrete.

B. Submit certified laboratory test data or manufacturer's certificates and data for the items listed below certifying that materials are in conformance requirements specified herein. Submit to the Engineering Consultant of Record and the Construction Testing Laboratory for review and approval and within 7 calendar days after receipt of Notice-to-Proceed.
1. Concrete mix design(s)
2. Type and source of Portland cement, fly ash, and slag
3. Aggregate gradations
4. Preformed expansion joint filler
5. Field molded/poured sealant
6. Dowel bars
7. Expansion sleeves
8. Tie bars
9. Reinforcing steel bars
10. Welded wire fabric
11. Air entraining admixtures
12. Water-reducing, set-retarding and set-accelerating admixtures (if used)

C. Test Reports: Submit field quality control test reports.

D. For flush concrete perimeter curb/edging at the play area, contractor to supply shop drawings indicating locations for control joints and expansion joints and reinforcing for approval by Architect prior to ordering construction. Contractor to provide a 10' linear foot mockup for owner's review.

### 1.4 PROJECT CONDITIONS

A. Maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize temporary striping, flagmen, barricades, warning signs, and warning lights as required.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

A. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. Forms shall be of depth equal to depth of curbing or sidewalk, and so designed as to permit secure fastening together at tops. Coat forms with nonstaining type of coating that will not discolor or deface surface of concrete.

B. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A185. Furnish in flat sheets.

C. Reinforcing Steel: Deformed steel bars, ASTM A615, Grade 60.

D. Portland Cement: Shall conform to ASTM C150, Type I.

E. Fly Ash: ASTM C618, Class C or F. Use only one type and source throughout project.

F. Slag: ASTM C989, Grade 100 or 120. Use only one type and source throughout project.

G. Exterior Pavement Joint Materials
   1. Joint Back-up Material: Polyethylene foam, 100% closed cell.
   2. Sealant:
      a. Dow 888, by Dow Corning.
      b. 301 NS by Pecora.
      c. Spectrum 800 or 900 by Tremco.

H. Aggregate: ASTM C33.

I. Water: Clean and potable

J. Dowel Bars: ASTM A615, grade 60, and plain steel bars.

K. Air Entrainment: ASTM C260. .
   1. Air-Mix or AEA-92, by Euclid Chemical Corp.
   2. MasterAir VR 10, MasterAir AE 90, or MasterAir E 200 by BASF Admixtures.
   3. Daravair or Darex Series, by W.R. Grace.

4. Equivalent approved products.

L. Liquid Membrane Curing and Sealing Compound: ASTM C1315, Type I, Class A or B, 25% minimum solids content, clear non-yellowing with no styrene-butadiene.
1. Water Based, VOC less than 350 g/l:
   a. Super Aqua Cure, by Euclid Chemical Corp.
   b. MasterKure CC 1315WB by BASF Admixtures.

M. Dissipating Curing Compound: ASTM C309 Type 1, Class A or B.
1. Solvent base, VOC less than 350 g/l: Cetri Vex EnvioCure 100 by Vexcon.

## 2.2 CONCRETE MIXING

A. Mix concrete and deliver in accordance with ASTM C94. Design mix shall produce normal weight concrete consisting of Portland cement, supplementary cementitious materials, aggregates, admixtures and water to produce the following:
1. Compressive Strength: 3,500 psi minimum at 28 days unless otherwise indicated on the Drawings.
2. Slump Range: 2”-4” for hand placed concrete, 1-1/4” to 3” for machine placed (slipform) concrete.
3. Air Entrainment: 5 to 8 percent.

B. Supplementary Cementitous Materials (SCM):
1. Concrete mix shall contain SCM at the amounts specified unless other amounts are approved by the Civil Engineer. Either fly ash or ground granulated blast furnace slag (GGBFS) may be used for the SCM but shall not be used together to form a ternary mix. Use of fly ash or GGBFS in the concrete mix is mandatory.
2. Fly Ash: Substitute fly ash for Portland cement at 15% of the total cementitious content.
   a. If used to mitigate potential aggregate reactivity, only Type F fly ash may be used and shall have the following maximum properties: 1.5% available alkali and 8.0% CaO. When a maximum of 25% replacement is used, up to 10.0% CaO is permitted.
3. Ground Granulated Blast Furnace Slag (GGBFS): Substitute GGBFS for Portland cement at 20% of the total cementitious content.
   a. If required to mitigate potential sulfate exposure or aggregate reactivity, up to 50% substitution of Portland cement is allowed.
4. Maintain air-entrainment at specified levels.

C. Calcium chloride:
1. Calcium chloride (Type L) may be used in solution form as part of the mixing water to accelerate concrete setting and early-strength development.
   a. Amount of calcium chloride added shall not be more than necessary to produce the desired results and shall not exceed 2% by weight of cement.
   b. The dosage range for the calcium chloride for the entire project shall not vary by more than 1%. Range is defined as the difference between the maximum and minimum dosages of calcium chloride for the entire project.
   c. Calcium chloride shall not be used in the following applications unless approved by the Civil Engineer:
      1) concrete containing embedded dissimilar metals or aluminum

2) slabs supported on permanent galvanized steel forms
3) concrete exposed to deicing chemicals
4) prestressed or post-tension concrete
5) concrete containing aggregates with potentially deleterious reactivity and concrete exposed to soil
6) concrete exposed to soil or water containing sulfates.

2. Use calcium chloride in accordance with manufacturer's recommendation.
3. Chloride-ion Concentration:
   a. Maximum water-soluble chloride-ion concentrations in hardened concrete at ages from 28 to 42 days contributed from the ingredients including water, aggregates, cementitious material, and admixtures shall not exceed the following limits unless approved by the Civil Engineer:

| Type of Member | Maximum water-soluble chloride ion (Cl-) content in concrete (percent by weight of cement) |
|---|---|
| Prestressed concrete | 0.06 |
| Reinforced concrete exposed to chloride in service | 0.15 |
| Reinforced concrete that will be dry or protected from moisture in service | 1.00 |
| Other reinforced concrete construction | 0.30 |

4. When using calcium chloride or other admixtures containing chlorides, measure water-soluble chloride-ion content (percent by weight of cementitious materials) per ASTM C1218. Sample shall be from concrete representing the submitted mix design and maximum chloride dosage anticipated for the project.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

A. Begin paving work only after unsuitable areas have been corrected and are ready to receive paving.

B. Remove loose material from compacted base material surface to produce firm, smooth surface immediately before placing concrete.

**3.2 INSTALLATION**

A. Form Construction
1. Stake out all of the concrete pavement per the Contract Drawings for owners' approval prior to setting forms. Stakes are to be placed every 25' O.C along both sides of the walkway. Finish grade shall be marked on each stake.
2. Set forms to required grades and lines, rigidly braced and secured.
3. Install sufficient quantity of forms to allow continuance of work and so that forms remain in place minimum of 24 hours after concrete placement.
4. Check completed formwork for grade and alignment to following tolerances:
   a. Top of forms not more than 1/8-inch in 10'-0".
   b. Vertical face on longitudinal axis, not more than 1/4-inch in 10'-0".

5. Clean forms after each use and coat with form release agent as often as required to ensure separation from concrete without damage.

B. Reinforcement: Fasten reinforcing bars or welded wire fabric (if required) accurately and securely in place with suitable supports and ties. Remove from reinforcement all dirt, oil, loose mill scale, rust, and other substances that will prevent proper bonding of the concrete to the reinforcement.

C. Concrete Placement
1. Concrete shall be mixed and placed when the air temperature in the shade and away from artificial heat is a minimum of 35 degrees F and rising. Hot and cold weather concreting shall be in accordance with ACI 305R (hot weather) and 306.1 and 306R (cold weather).Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until set at required finish elevation and alignment.
2. Place concrete using methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.
3. Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2 hour, place construction joint. Automatic machine may be used for curb and gutter placement. Machine placement shall be at required cross section, line, grade, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified herein.

D. Joint Construction
1. Contraction Joints: Construct concrete curb or combination concrete curb and gutter, where specified on Construction Drawings, in uniform sections of length specified on Construction Drawings. Form joints between sections either by steel templates, 1/8-inch in thickness, of length equal to width of curb and gutter, and with depth which will penetrate at least 2-inches below surface of curb and gutter; or with 3/4-inch thick performed expansion joint filler cut to exact cross section of curb and gutter; or by sawing to depth of at least 2-inches while concrete is between 4 and 24 hours old. If steel templates are used, they shall be left in place until concrete has set enough to hold its shape, but shall be removed while forms are still in place.
2. Longitudinal Construction Joints: Tie concrete curb or combination concrete curb and gutter, where specified on Construction Drawings, to concrete pavement with 1/2-inch round deformed reinforcement bars of length and spacing shown on Construction Drawings.
3. Transverse Expansion Joints: Concrete curb, combination concrete curb and gutter, or concrete sidewalk shall have filler cut to exact cross section of curb, gutter, or sidewalk. Joints shall be similar to type of expansion joint used in adjacent pavement.

E. Joint Fillers: Extend joint fillers full-width and depth of joint, and not less than 1/2-inch or more than 1-inch below finished surface where joint sealer is indicated. Furnish joint fillers in 1-piece lengths for full width being placed, wherever possible. Where more than 1 length is required, lace or clip joint filler sections together.

F. Joint Sealants: Install in accordance with manufacturer's recommendations.

## 3.3 CONCRETE FINISHING

A. After striking off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture. After floating, test surface for trueness with 10'-0" straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide continuous smooth finish.

B. Work edges of sidewalks, gutters, back top edge of curb, and formed joints with edging tool, rounding edge to 1/2-inch radius. Eliminate tool marks on concrete surface. After completion of floating and trowelling, when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:
   1. Curbs, gutters, and sidewalks: Broom finish by drawing fine-hair broom across surface perpendicular to flow of traffic. Repeat operation as necessary to produce fine line texture.

C. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point up minor honeycombed areas. Remove and replace areas or sections with major defects as directed Owner.

D. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable work as directed by Owner.

E. Concrete Perimeter Curb/ edging at the PIP Rubber Surfacing shall be constructed as shown on the Contract Drawings, and in accordance with Curbs and Sidewalks section of the specifications. Concrete finish is to have a smooth and continuous finish.

**3.4 CURING AND PROTECTION**

A. Protect and cure finished concrete paving using with curing compound or with acceptable moist-curing methods in accordance with "water-curing" section of ACI 308. Cure for a period not less than 7 days.

B. Use solvent based curing compound when compound is applied below 40 F.

**3.5 BACKFILL**

A. After concrete has set sufficiently, spaces on either side of concrete curb, combination concrete curb and gutter, or concrete sidewalk shall be refilled to required elevation with suitable material compacted in accordance with Section 02300.

**3.6 CLEANING AND PROTECTION**

A. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.

B. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials.

**3.7 FIELD QUALITY CONTROL**

A. Field quality control shall be the responsibility of the Contractor in accordance with Section 01452. Field quality control testing and inspection shall be at the discretion of the Contractor as necessary to assure compliance with Contract requirements.

**END OF SECTION**

CONCRETE MIX DESIGN SUBMITTAL FORM
(Section 321313 – Concrete Paving)

Date

**SITE INFORMATION**

**ADDRESS** _____

**CITY, ST** _____

**GENERAL CONTRACTOR**

**COMPANY** _____

**JOBSITE PHONE** _____

**A. CONCRETE INFORMATION**

**Supplier Mix Design #** _____

**Design Strength (f'c)** _____ psi

**Water / Cementitious Ratio** _____

**Total Air Content** _____ %

**Total Est. Volume of Concrete** _____ CY

**Mix Developed From:**

☐ Trial Mix Test Data (*attach test data*)

☐ Field Experience

**Density**

Wet _____ pcf Dry _____ pcf

**Slump**

_____ " ( ± 1" ) **WITHOUT** WR Admixture

_____ " ( ± 1" ) **WITH** WR Admixture

LEAVE BLANK FOR ENGINEER'S STAMP

**B. ADMIXTURE INFORMATION**

| | **ASTM Designation** | **Product** (Manufacturer/Brand) | **Dosage (ounces)** oz / cy | oz / cwt |
|---|---|---|---|---|
| **Water Reducing** | | | | |
| **Accelerating** | | | | |
| **Retarding** | | | | |
| | | | | |
| | | | | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | | | | |

**C. MIX DESIGN**

**Mix Proportions (per cubic yard)**

| | **Identification** (Type, size, source, etc.) | **Weight** (pounds) | **Density** (SSD) | **Volume** (cubic feet) | **% Aggregate Absorption** |
|---|---|---|---|---|---|
| Cement | | | | | |
| Fly Ash | | | | | |
| Slag | | | | | |
| Coarse Aggregate #1 | | | | | |
| #2 | | | | | |
| #3 | | | | | |
| Fine Aggregate #1 | | | | | |
| #2 | | | | | |
| Water | | | | | |
| Air Content | | | | | |
| | **TOTALS** | | | | |

**Coarse & Fine Aggregate Gradation Information**

| **Sieve Size** | **% Passing Each Sieve** (All Sieve Sizes must be entered) | | | | | **Combined % Passing** | **Combined % Retained** | |
|---|---|---|---|---|---|---|---|---|
| | **Coarse Agg. # 1** | **Coarse Agg. # 2** | **Coarse Agg. # 3** | **Fine Agg. # 1** | **Fine Agg. # 2** | | **Cumulative** | **Individual** |
| 1-1/2" | | | | | | | | |
| 1" | | | | | | | | |
| 3/4" | | | | | | | | |
| 1/2" | | | | | | | | |
| 3/8" | | | | | | | | |
| # 4 | | | | | | | | |
| # 8 | | | | | | | | |
| # 16 | | | | | | | | |
| # 30 | | | | | | | | |
| # 50 | | | | | | | | |
| # 100 | | | | | | | | |
| # 200 | | | | | | | | |
| % of Vol | | | | | | | | |

**Aggregate Ratios**

| | | | | |
|---|---|---|---|---|
| **Coarseness Factor =** | Combined % cumulative retained 3/8" sieve / Combined % cumulative retained #8 sieve | = | | |
| **Workability Factor =** | Combined % passing #8 sieve | = | | |
| **Adj-Workability Factor =** | WF + [(Cementitious Material - 564) ÷ 37.6] | = | | |
| **Allowable Adj-WF=** | Adj-WF = [(11.25 - .15 CF) + 34.5] ± 2.5 | = | **Low** | **High** |

**D. ATTACHMENTS:** Include the following with this Mix Design Report.

- ☐ Portland Cement mill test reports
- ☐ Fly ash mill test reports
- ☐ Slag mill test reports
- ☐ Designation, type, quality, and source (natural or manufactured) of coarse and fine aggregate materials
- ☐ Separate aggregate gradation reports including all required sieve sizes
  - All gradation sieve report tests dated within 60 days of this report
  - Report for each coarse and fine aggregate material in mix
- ☐ Statement if possible reactivity of aggregate, based on tests or past service
- ☐ Statement if possible aggregate pop-outs or their disruptions, based on tests or past service
- ☐ Product data for the following admixtures:
  - Chloride ion data and related calculations
  - Water reducing, set retarding, set accelerating, etc.
- ☐ Measured water-soluble chloride ion content in concrete (percent by weight of cement)
- ☐ Concrete compressive strength data used for standard deviation calculations

**E. CONCRETE SUPPLIER INFORMATION**

**Company Name** _____ **Tel. #** **(  )** _____

**Address** _____

**City, ST Zip** _____

**Technical Contact** _____ **Cell #** **(  )** _____

**e-mail** _____

**Sales Contact** _____ **Cell #** **(  )** _____

| **PRIMARY PLANT** | **SECONDARY PLANT** |
|---|---|

| | | |
|---|---|---|
| **Plant Location:** | | |
| **Miles from Site:** | | |
| **Travel Time to Site:** | | |
| **NRMCA Certified:** | ☐ **YES** ☐ **NO** | ☐ **YES** ☐ **NO** |
| **State DOT Certified:** | ☐ **YES** ☐ **NO** | ☐ **YES** ☐ **NO** |
| **Batch Mixing Type:** | ☐ **DRY** ☐ **CENTRAL MIX** | ☐ **DRY** ☐ **CENTRAL MIX** |

**Section 32 18 16.13**

**POURED IN PLACE RUBBER SURFACING**

## PART 1 – GENERAL

### 1.1 SUMMARY

Section Includes: Poured-in-Place, playground safety surfacing: RubberBond Elevate or approved equal.

### 1.2 RELATED SECTIONS

A. 321100 Base Course
B. 321216 Asphalt Paving
C. 321313 Concrete Paving
D. 323119 Decorative Metal Fence

### 1.3 REFERENCES

A. ASTM F 1292 - Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment.

B. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension

C. ASTM D 624 – Standard Test Method for Tear Strength of conventional Vulcanized Rubber and Thermoplastic Elastomers.

D. ASTM C 1028 – Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and other Like Surfaces by the Horizontal Dynamometer Pull Meter Method.

E. ASTM D 2047 – Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.

F. ASTM E 303 – Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulm Tester

G. ASTM D 2859 – Standard Test Method for Ignition Characteristics of finished Textile Floor Covering Materials.

H. ASTM F 1551 – Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Material: Suffix – DIN 18-035 Part 6: Water Permeability of Synthetic Turf systems and Permeable Bases.

I. US Consumer Product Safety Commission (CPSC) Handbook for Playground Safety.

## 1.4 SUBMITTALS

A. Submit listed submittals in accordance with conditions of the contract and Division 1 submittal procedures section.

B. Product Data: Submit manufacturer's product data

C. Verification Samples: Submit manufacturer's samples of RubberBond playground surfacing of at least 4 inches by 4 inches.

D. Test Reports: Submit test reports from qualified independent testing agency indicating results of the following tests:

1. Impact Attenuation: ASTM F 1292
2. Tensile Strength ASTM D 412
3. Tear Strength ASTM D 624
4. Coefficient of Friction ASTM C1028
5. Coefficient of Friction ASTM D 2047
6. Skid Resistance ASTM E 303
7. Flammability ASTM D 2859
8. Water Permeability ASTM F 1551

E. Certificate of Compliance:
1. Submit manufacturer's certificate of compliance indicating materials comply with specified requirements.
2. Submit certificate of qualifications of the playground surfacing installer

F. Manufacturer's Project References:
1. Submit list of successfully completed projects.
2. Include project name, location, and name of owner’s representative.

G. Installer's Project References:
1. Submit list of successfully completed projects.
2. Include project name, location, and name of owner’s representative.

H. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.

I. Warranty: Submit manufacturer's standard warranty.

## 1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Manufacturer shall meet a minimum of 1 of the following 2 requirements.
1. Engaged in manufacturing of poured-in-place playground safety surfacing of similar type to that specified, with a minimum of 5 years successful experience.

2. Furnished a minimum of 100,000 square feet of poured-in-place playground safety surfacing of similar type to that specified.

B. Installer's Qualifications:
1. Utilize an installer with successful experience in installation of poured-in-place playground safety surfacing of similar type to that specified.
2. Employ persons trained for installation of RubberBond poured-in-place playground safety surfacing.
3. Approved by manufacturer.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with Divison 1 Product Requirement Section.

B. Delivery: Deliver materials in manufacturer's original, unopened containers with original product identification labels.

C. Storage and Protection:
1. Store materials in accordance with manufacturer's instructions.
2. Store materials in a dry area at a minimum temperature of 50 degrees F (10 degrees C) for a minimum of 72 hours before installation.

D. Handling: Protect materials during handling and installation from harmful environmental conditions.

## 1.7 PROJECT CONDITIONS

A. Material Temperature: Ensure material temperature is a minimum of 50 degrees F (10 degrees C) at time of installation.

B. Air Temperature: Install surfacing when ambient temperature is a minimum of 40 degrees F (4 degrees C) and a maximum of 90 degrees F (32 degrees C) for a minimum of 24 hours before, during, and after installation.

## 1.8 WARRANTY

A. Project Warranty: Refer to conditions of the contract for project warranty provisions.

B. Manufacturer’s Warranty: Submit manufacturers standard warranty document.

C. Materials and Workmanship: RubberBond playground surfacing shall be warranted for defects in materials and workmanship for 5 years from date of completed installation.

D. Performance: RubberBond playground surfacing shall be warranted to meet drop height performance requirements of ASTM F 1292 for 5 years from date of completed installation.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

Surface America 45 Earhart Drive Williamsville, NY (800)-999-0555
Rubberecycle LLC., 1985 Rutgers University Blvd, Lakewood, NJ (888) 436-6846

### 2.2 EPDM PLAYGROUND SURFACING

A. Poured-in-Place Surfacing:
   1. Description: Dual-layer, playground surfacing consisting of a compacted SBR rubber base layer and a resilient, seamless EPDM poured-in-place top surface.
   2. Compliance: Meet or exceed CPSC guidelines for impact attenuation.
   3. Material: EPDM granules mixed with 100 percent solids MDI polyurethane binding resin.
   4. Base Course: Compacted SBR shredded rubber
      a. Compacted Weight: 11 pounds per sq.ft
      b. Thickness: 3.5 inches
   5. Wear Course: Granulated EPDM rubber granules mixed with 100% solids MDI polyurethane binder.
      a. Thickness: 1.5 inches
      b. Binder to Rubber Ratio: 21 percent.
   6. Compacted weight: 5 pounds per sq.ft
   7. Total System Thickness: 5 inches
   8. Total system Weight: 16 pounds per sq.ft.
   9. Colors: TBD ( or as indicated on the Drawings).

B. Test Results
   1. Impact Attenuation, ASTM F 1292:
   2. Gmax: Less than 100.
   3. Head Injury Criteria (HIC): Less than 500.
   4. Tensile Strength ASTM D 412
      a. Tensile Strength: 89.4 psi
      b. Elongation 35.93%
   5. Tear Strength ASTM D 624
      a. Machine: 5.26 lbs
      b. Cross Machine: 6.22 lbs
   6. Coefficient of Friction ASTM C1028
      a. Dry: 85
      b. Wet: 87
   7. Coefficient of Friction ASTM D 2047
      a. Dry 1.15
      b. Wet: .97
   8. Skid Resistance ASTM E 303
      a. Dry: 91
      b. Wet: 49

9. Flammability ASTM D 2859
    a. Pass
10. Water Permeability ASTM F 1551
    a. 2245.5 Inches/Hour

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Site Verification of Conditions: Verify that substrate conditions are suitable for installation of poured-in-place surfacing.

B. Verify that the appropriate sub-grade elevation has been established for the particular safety surface being installed.

C. Verify that the subsurface has been installed per the architectural, site or equipment plans including accessibility and use zones. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

### 3.2 PREPARATION

A. Prepare subsurface in accordance with manufacturer's instructions and recommendations.

B. Compacted Stone:
    1. Compacted, stone subsurface shall be as specified in Section 321100.
    2. Tolerance of stone sub-base shall be within 1/2 inch in 10 feet
    3. Verify that aggregate sub-base has been fully compacted.

### 3.3 INSTALLATION

A. Do not proceed with installation until all applicable site work, including substrate preparation, playground equipment and fence installation and other relevant work has been completed.

B. Install poured-in-place playground safety surfacing in accordance with manufacturer's instructions at locations indicated on the Drawings.

C. Ensure prepared subsurface is dry and clean.

D. Install edges in accordance with manufacturer's edge detail instructions and as indicated on the Drawings.

E. Install cold seams in areas containing graphics and as indicated on the Drawings. (Only applicable for area over 1500 sq. ft. )

## 3.5 FIELD QUALITY CONTROL

A. Post Installation Safety Testing: ASTM F 1292 Field Test Method
   1. **Provide testing of playground safety surfacing system within 30 days of installation**. Contractor shall give the Architect and the owner 48 hours previous notice.
   2. Conduct testing by competent persons trained in the use of test equipment
   3. Determine compliance with ASTM 1292 unless otherwise specified in this section.
   4. Provide written report of findings to Owner and Landscape Architect, with photographs.

## 3.5 PROTECTION

A. Do not allow foot traffic until poured-in-place playground safety surfacing has cured.

B. Protect completed playground safety surfacing from damage during construction and curing.

**END OF SECTION**

**SECTION 32 18 23**

**SYNTHETIC TURF**

## PART 1 - GENERAL

1.1 SUMMARY

A. Furnish all labor, materials, tools and equipment necessary to install slit-film artificial grass turf as indicated on the plans and as specified herein; including components and accessories required for a complete installation. including but not limited to

- Acceptance of prepared sub-base.
- Coordination with related trades to ensure a complete, integrated, and timely installation: Aggregate base course, sub-base material (tested for permeability), grading and compacting, cast-in-place concrete curb and wall, piping and drain components as provided under its respective trade section.
- The synthetic turf system indicated in this Section is selected as a Basis of Design. Equivalent or better products will be considered provided the product shall be specifically designed, manufactured and installed for high use, public playgrounds. The system shall be IPEMA Certified and 100% wheelchair accessible (ASTM F 1951) in the field. The system shall drain up to 130 inches per hour (ASTM F 1551), excluding the crushed stone base. The system's shock attenuation shall have a G-max value of less than 200 and a Head Injury Criteria (HIC) less than 1,000 (ASTM F 1292). The turf system shall consist of, but not necessarily be limited to, the following:
- Synthetic turf consisting of nominal two inch (2") long polyethylene fibers with thatch that is tufted into a single, dimensionally stable, three component primary backing with a secondary backing consisting of a minimum of 17 ounces of urethane per square yard. Shaw Legion Sports Turf 2.0 (or approved equal).
- Closed cell foam underlayment pads that meet or exceed the standard specification for impact attenuation of surfacing materials within the use zone of futsal court area (ASTM F 1292). Either Brock Shock Pad Series or approved equal depending on various fall height requirements.
- Synthetic turf Infill that is designed to cool the playing surface 30-50 degrees as well as prolong the life of the turf fibers shall be used. A combination of two (2) pounds of Turf Chiller™ (by Shawgrass or approved equal) and one (1) pound of Geofill coconut infill (or approved equal) per square foot shall be installed via drop spreader and power broomed in at the jobsite.
- Work included in this Section includes grading necessary to shape and drain the area and base
- Preparation and installation of the synthetic turf in areas shown on Drawings.

1.2 REFERENCE STANDARDS

A. FM Factory Mutual
P7825 - Approval Guide; Factory Mutual Research Corporation; current edition

B. ASTM – American Society for Testing and Materials.
D1577 - Standard Test Method for Linear Density of Textile Fiber
D5848 - Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Covering
D1338 - Standard Test Method for Tuft Bind of Pile Yarn Floor Covering
D1682 - Standard Method of Test for Breaking Load and Elongation of Textile Fabrics
D5034 - Standard Test Method of Breaking Strength and Elongation of Textile Fabrics (Grab Test)
F1015 - Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces
D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity
D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
F355 - Standard Test Method for Shock-Absorbing Properties of Playing Surfaces.
F1936 - Standard Test Method for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field
D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

1.3 SUBMITTALS

A. Shop Drawings:
Indicate layout per the drawings for the playground, performance lawn, ovals and fire pit area. Provide roll/seaming layout; methods of attachment, turf openings and perimeter conditions.
Show installation methods and construction indicating field verified conditions, clearances, measurements, terminations, drainage.
Provide joint submission with related trades.

B. Product Data:
Submit manufacturer's catalog cuts, material safety data sheets (MSDS), brochures, specifications; preparation and installation instructions and recommendations; storage, handling requirements and recommendations.
Submit fiber manufacturer's name, type of fiber and composition of fiber.
Submit data in sufficient detail to indicate compliance with the contract documents.
Submit manufacturer's instructions for installation.
Submit manufacturer's instructions for maintenance for the proper care and preventative maintenance of the synthetic turf system, including painting and markings.

C. Samples: Submit samples, 6 x 6 inches, illustrating details of finished product in amounts as required by General Requirements, or as requested by Architect.

D. Product Certification:
Submit manufacturer's certification that products and materials comply with requirements of the specifications.
Submit test results indicating compliance with Reference Standards.

E. Project Record Documents: Record actual locations of seams, drains and other pertinent information in accordance with Division 1 Specifications Series, General Requirements.

F. List of existing installations: Submit list including respective Owner's representative and telephone number.

G. Warranties: Submit warranty and ensure that forms have been completed in Owner's name and registered with approved manufacturer.

H. Testing data to the Owner to substantiate that the finished field meets the required shock attenuation, as per ASTM F1936.

I. Testing Certification: Submit certified copies of independent (third-party) laboratory reports on ASTM testing:
Pile Height, Face Weight & Total Fabric Weight, ASTM D5848.
Primary & Secondary Backing Weights, ASTM D5848.
Tuft Bind, ASTM D1335.
Grab Tear Strength, ASTM D1682 or D5034.
Shock Attenuation, ASTM F1936.
Water Permeability, ASTM D4491

1.4 QUALITY ASSURANCE

A. Comply with Section "Quality Assurance".

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section. The turf contractor and/or the turf manufacturer:
Shall be experienced in the manufacture and installation of specified type of infilled slit-film synthetic grass system for a minimum of three years. This includes a slit-film fiber, backing, the backing coating, and the installation method.
Shall have a minimum of 5 play areas containing synthetic turf resilient surfacing that are at least 8 years old, which is equal to the respective warranty period, with the same infill system.
The manufacturer must have ISO 9001, ISO 14001 and OHSAS 18001 certifications demonstrating its manufacturing efficiency with regards to quality, environment and safety management systems.
Shall have a minimum of 5 installations in the State of MA.

C. Installer: Company shall specialize in performing the work of this section. The Contractor shall provide competent workmen skilled in this specific type of synthetic grass installation.
The designated Supervisory Personnel on the project shall be certified, in writing by

the turf manufacturer, as competent in the installation of slit-film material, including sewing seams and proper installation of the infill mixture.
Installer shall be certified by the manufacturer and licensed.
The installer supervisor shall have a minimum of 5 years' experience as either a construction manager or a supervisor of synthetic turf installations

D. Pre-Installation Conference: Conduct conference at project site at time to be determined by Architect. Review methods and procedures related to installation including, but not limited to, the following:
Inspect and discuss existing conditions and preparatory work performed under other contracts.
In addition to the Contractor and the installer, arrange for the attendance of installers affected by the Work, The Owner's representative, and the Architect.

E. The Contractor shall verify special conditions required for the installation of the system.

F. The Contractor shall notify the Architect of any discrepancies.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Prevent contact with materials that may cause dysfunction.

B. Deliver and store components with labels intact and legible.

C. Store materials/components in a safe place, under cover, and elevated above grade.

D. Protect from damage during delivery, storage, handling and installation. Protect from damage by other trades.

E. Inspect all delivered materials and products to ensure they are undamaged and in good condition.

F. Comply with manufacturer's recommendations.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate the Work with installation of work of related trades as the Work proceeds.

B. Sequence the Work in order to prevent deterioration of installed system.

1.7 WARRANTY AND GUARANTEE

Commercial Playground Limited Warranty for Legion Turf (or equivalent manufacturers warranty)

The following is the Commercial Playground Limited Warranty issued by Shaw Industries, Inc. ("Shaw") for Legion 2.0 Turf made with poly-ethylene sports performance fibers, and coated with a polyurethane unitary backing system.

This Commercial Playground warranty begins when the turf is purchased. The turf must be installed in accordance with Industry installation guidelines and specifications. The turf must be

maintained in accordance with Shaw Industries maintenance (turf care) recommendations and such maintenance continues throughout the duration of the original installation.

This Warranty is further limited to the period of time the turf is owned and maintained by the original end-
use purchaser. The basis of any warranty related claim is the original authorized Shaw dealer invoice. Damage resulting from the failure to follow these instructions will not be covered under this warranty.

Installation guidelines and specifications along with turf care recommendations can be obtained from your dealer or from The Shaw Information Center at 1-800-441-7429.

Ten year limited warranty coverage:

Fiber – Fiber Degradation - Shaw warrants that the Playsafe 50 (054SG-0301) Turf, when installed and maintained as recommended by Shaw Industries for proper outdoor use, will not display ultraviolet (UV) degradation, resulting in fiber deterioration or loss.

(Failure is defined as the loss of 50 % of the tufted products based on the original weight of the products at the time of manufacturing per test method ASTM D 5848).

Actual degradation will cause a deterioration of the yarn and loss of pile as a result. Failure does not include a decrease in pile height of the face yarn from the original pile height as a result of surface compression due to normal wear.

Five year limited warranty coverage:

Backing - Tuft Bind - Shaw warrants that our Playsafe 50 (054SG-0301) Turf, when installed and maintained as recommended by Shaw Industries, under normal use, will meet industry standards for tuft bind.

Backing - Integrity/Delamination - Shaw warrants that our Playsafe 50 (054SG-0301) Turf, when installed and maintained as recommended by Shaw Industries, under normal use, will not delaminate from the face of the turf.
Note: The construction, fiber and backing system used in these products are designed and engineered for use when installed in playground and general play area applications.

What you should do if any of the above problems occur and you need warranty service: You (the original purchaser) should notify the authorized Shaw Dealer and/or your Shawgrass representative and submit in writing, the following:

- A valid proof of purchase in the form of a sales receipt or other documents which establish proof of purchase.
- A detailed description of the problem and/or a photograph/sample that clearly shows the warranty problem.

Shaw Industries will designate a representative to inspect the Turf and evaluate the warranty claim.

What Shaw Industries will do should you need warranty service:

Should a defect covered under this warranty be found, the affected area will be repaired to conform to the warranty. If repair is not commercially practical, Shaw may, at its sole option, replace the affected turf or refund the proportional purchase price for the affected area.

Shaw will pay the reasonable costs for freight and labor. Any costs incurred for the moving of equipment, furnishings, and the like, that were installed over the turf will be at the consumer's expense.

What conditions apply to Shaw Industries Commercial limited Warranty of Playsafe 50 (054SG-0301) Turf:

This commercial playground warranty specifically excludes:

a) Turf not installed in accordance with Shaw installation guidelines.
b) General soiling, discoloration and appearance change due to flattening of pile or pattern due to pile distortion.
c) Staining or fading from exposure to substances or contaminates which degrade or destroy the face fiber or the color of the turf.
d) Turf installed on stairs/landings or in areas subject to abnormal use.
e) Turf exposed to abusive wear from abrasion or from pivot points when using inappropriate foot wears i.e. ski boots, metal cleats, hard plastic cleats, metal golf spikes, or sports equipment.
f) Turf installed in inappropriate applications. I.e. under playground swings, slide exit landing areas or other high friction play equipment like "merry go rounds" etc., unless molded rubber mats are placed over the Playsafe 50 (054SG-0301) Turf and underneath each of these.
g) Turf installed where standing water, floods and/or flooding conditions exist.
h) Turf installed on contact sports fields I.E. football, soccer, lacrosse, etc., unless these fields are designed for general purpose recreational play. Example: There is a big difference between a general recreation play area where elementary school kids play soccer during recess and a regulation soccer field that hosts high school, college and professional team competitions.
i) Burns, cuts, accidents, vandalism, abuse, negligence or neglect.
j) Improper design or failure of the base or sub-base of the landscape.
k) Wear or abrasion caused by inadequate base or sub-base.
l) Wear or movement of product due to lack of infill on infilled products.
m) Use of improper infill products.
n) Use of improper cleaning agents, pesticides, herbicides, or chemicals, and maintenance methods not recommended by Shaw.

o) Failure to properly maintain, protect or repair the turf.
p) Damage caused by reflection (melting) or other flammable materials.
q) As with any manufactured flooring product, there can be occasional slight differences in color between “dye lots”. Shaw cannot be responsible for any color shading differences between different rolls of turf.

1.8 MAINTENANCE SERVICE

A. Contractor shall train the Owner's facility maintenance staff in the use of the turf manufacturer's recommended maintenance equipment.

B. Manufacturer shall provide maintenance guidelines and a maintenance video to the facility maintenance staff.

**PART 2 - PRODUCTS**

2.1 MATERIALS AND PRODUCTS

Aggregate Base – Crushed angular hard stone, ¾”minus compactible stone (not clean). (Refer to Section 3.2-B)

B. Synthetic Turf: A nominal 1.50 inch turf specifically designed for high use public park and public school playgrounds and play areas. Playsafe 50 (054SG-0301) by Shawgrass, 185 South Industrial Blvd, Calhoun GA 30701: Phone (404) 432-6185, or Architect approved equal.

a. Fiber Type: Shaw Polyethylene Slit Tape
b. Fiber Mass: 5000 denier
c. Thatch: 6 ply TXT, 7300 denier
d. Tufted Pile Height: 2 inches
e. Color: 00301 Field Green with Olive Thatch
f. Tufting Gauge: ¼”
g. Primary Backing: 7 oz/yd$^2$ (Stabilized dual layered woven polypropylene)
h. Secondary Backing: 17 oz/yd$^2$ (100% Urethane)
i. Tufted Face Weight: 50 oz/yd$^2$ (ASTM D 418).
j. Total Product Weight: 74 oz/yd$^2$ (ASTM D 418)
k. Finished Roll Width: 15 feet
l. Finished Roll Length: Up to 100 feet (standard)
m. Warranty: 5 year wear, 10-year fade

C. Pad Underlayment System: Bacteria resistant, porous, expanded polypropylene in various thicknesses depending on Critical Fall Height Requirements (ASTM F 1292). Foam pads engineered by Brock International (303) 544-5800 or Architect approved equal.

Shawgrass Multi-Use Pad 166SG
a. Green polypropylene
b. 8mm thick (approximately 1/4”)

c. 100% wheelchair accessible (ASTM F 1951

Brock #SSP20 pad (for 2'-5' falls-ASTM F 1292)
a. Expanded polypropylene
b. 20mm thick (approximately ¾")
c. 15.90 square feet (net coverage per pad)
d. 100% wheelchair accessible (ASTM F 1951)
e. 100% recyclable
f. Rainfall capacity: 730 inches per hour (ASTM F 1551)
g. Life expectancy when used under synthetic turf: 16 years

NOTE: When installing the foam pads, all seams shall be covered using "Gorilla tape" before the synthetic turf is added in order to ensure zero separation during the turf installation.

D. Synthetic Turf Infill: Turf chiller and Geofill by Shawgrass, 185 South Industrial Blvd., Calhoun, GA 30701. Phone (404) 432-6185 or Architect approved equal.
a. Color: Light Brown/Buff
b. Anti-Microbial
c. Non-toxic
d. Grain shape: Hardness: 6-8 Mohs
e. Krumbein Roundness: 0.8
f. Krumbein Sphericity: 0.8
g. Specific Gravity: 2.65 lb per cf
h. Bulk Density: 97.4 lb/ft3
i. Mesh Size: 16/30
j. Porosity: 10-15%
k. Acid Solubility: < 2.0%
l. Turbidity (FTU): <250
m. Temperature Stability Fahrenheit: 1400
n. Angle of Repose: +-30 degrees
o. Dust: Negligible

NOTE: Turf Chiller™ sand is designed to retain moisture from rainfall, dew or irrigation for days and cool the turf surface temperatures via "evaporative cooling" up to 50 degrees during the hottest times of the year compared to standard synthetic surfaces. Turf Chiller™ sand should be mixed with either Envirofill or clean silica sand at the jobsite as follows: Two (2) pounds of Turf Chiller™ with one (1) pound of Envirofill or clean silica sand per square foot. All sand should be installed using drop spreader and power broom. NOTE: Irrigation (sprinklers) can be set to water the synthetic turf surface once every 3.5 days during the hottest times of the year to achieve maximum results.

E. Splicing Material (seaming tape): Kingsport BV-Holland® 12" wide minimum, spun-bonded polyester or Architect approved equal.

F. Adhesive: Nordot 34G as manufactured by Synthetic Surfaces Inc., Scotch Plains, New Jersey (908-496-6000) or Architect approved equal.

G. Adhesive: Mapei PU2K, 2 part OD adhesive as manufactured by MAPEI Corporation, Deerfield Beach, FL. (800-992-6273) or Architect approved equal.

H. Molded rubber mats: For under all swings and slide exits. Green, 3’ x 3’ x 2”, Beveled or flush edges, 67 lbs., flat back (for glue down). RB Rubber Products, 904 McMinnville, Oregon, 504-472-4691 or Architect approved equal.

A. PREPARATION OF THE SOIL BED

1. A soil test is required on the intended surface to be covered by the synthetic turf. These tests must provide the following information:

    a. Permeability and/or hydraulic conductivity
    b. Percolation rate
    c. Moisture content at the time of the test
    d. Sieve analysis and plasticity limits determination test
    e. Depth to the water table
    f. In situ compaction, estimated or measured
    g. Any external features that could affect the drainage characteristics of the field. Surrounding slopes and conditions that could bring additional water to the field in question.
    h. Pictures or video of the site on VHS or 8mm.

2. All topsoil, organic, and non-compactable materials shall be removed.

3. The soil bed must have a minimum slope of 1% or more from the longitudinal center of the field towards the sidelines.

4. The soil bed must be compacted in both directions to attain the specified compaction rate which is 95% standard Proctor.

5. The soil bed must be prepared to tolerances of not more than ¼” in 10’ from the nominal height to allow for even drainage.

6. A geotextile fabric is required to cover the soil bed.

B. CRUSHED STONE BASE

1. The crushed stone shall be laid without damaging the soil bed. The specified stone or aggregate supplied must conform to the specifications. The finished crushed stone or aggregate base supplied must be stable and permeable.

2. The base shall be constructed in 2 or lifts of equal thickness. Each layer must be compacted in both directions to attain the specified compaction rate.

3. The finished crushed stone base shall be sloped 0.5% from the center longitudinal axis towards the sidelines or as specified.

4. The finished crushed stone base surface of the leveling course shall not vary from the specified grade by more than ¼ " in 10' when measured in any direction.

C. DRAINAGE

1. See Site Drawings and Specifications for all drainage improvements.

D. NAILER BOARD

1. Trex composite nailer board shall be provided at the perimeter of the turf installation per the contract drawings.

E. FINAL GRADE

1. The final grade aggregate layer shall not be more than 2" thick.

2. The final grade material must be sloped 0.5% from the center longitudinal axis towards the sidelines unless otherwise specified.

3. The final grade must be compacted in both directions according to the specifications.

F. BASE AND FINISHING STONE SPECIFICATIONS

%PASSING

| Sieves | Base Stone | Finishing Stone |
|---|---|---|
| 3" or 75mm | | |
| 2" or 50mm | 100 | |
| 1½" or 38mm | 90-100 | |
| 1" or 25mm | 75-100 | |
| ¾ or 19mm | 65-95 | |
| ½" or 12.5mm | 55-85 | 100 |
| 3/8" or 9.5mm | 40-75 | 85-100 |
| ¼" or 6.3mm | 25-65 | 75-100 |
| US #4 or 4.75mm | 15-60 | 60-90 |
| US #8 or 2.36mm | 0-40 | 35-75 |
| US #16 or 1.18mm | 0-20 | 10-55 |

| | | |
|---|---|---|
| US #30 or 600mm | 0-7 | 0-40 |
| US #60 or 250mm | 0-5 | 0-15 |
| US #100 or 150mm | 0-3 | 0-8 |
| US #200 or 75mm | 0-2 | 0-2 |

**PART 3 - EXECUTION**

3.1 EXAMINATION

General: The ground area to receive synthetic turf safety surface is indicated on the Drawings.

Verify that all sub-base leveling is complete prior to installation.

Leveling and Site Preparation: All organic material and organic debris to be removed. Soil to be graded level and stabilized (compacted). Compaction shall be done with mechanical compactors, including vibratory compactors, and/or powered tampers, and rollers.

A. Installer shall examine the surface to receive the synthetic turf and accept the sub-base planarity in writing prior to the beginning of installation.
Acceptance is dependent upon the Owner's test results indicating compaction and planarity are in compliance with manufacturer's specifications.
The surface shall be accepted by Installer as "clean" as installation commences and shall be maintained in that condition throughout the process.

B. Compaction of the aggregate base shall be 95%, in accordance with ASTM D1557 (Modified Proctor procedure); and the surface tolerance shall not exceed 0-1/4 inch over 10 feet and 0-½" from design grade.

C. Correct conditions detrimental to timely and proper completion of Work.

D. Do not proceed until unsatisfactory conditions are corrected.

E. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

A. Prior to the beginning of installation, inspect the sub-base for tolerance to grade.

B. Sub-base acceptance shall be subject to receipt of test results (by others) for compaction and planarity that sub-base is in compliance with manufacturer's specifications and recommendations.

C. Dimensions of the layouts shall be measured by a registered surveyor to verify conformity to the specifications and applicable standards. A record of the finished field as-built measurements shall be made.

D. When requested by Architect, installed sub-base shall be tested for porosity prior to

the installation of the turf. A sub base that drains poorly is an unacceptable substrate.

3.3 INSTALLATION - GENERAL

3.2 BASE AND SYNTHETIC TURF CONSTRUCTION

A. General: The area to be smooth and graded to allow proper drainage. Refer to grading plan. The
overall grade of the playground is not to exceed 3%.

B. Compacted Aggregate Base: Place 4 inches of aggregate base as leveling layer compacted to 90% of max density per AASHTO T99. Compaction shall be done with mechanical compactors, including vibratory compactors, and/or powered tampers, and rollers. Aggregate size should be ¾" minus (compactable).

The impact layer is to be made of rubber. The SBR rubber is to be a strand of not more than 1" in length.

The manufacturer's minimum depth or greater shall be installed as required by the fall height(s) required by the playground equipment that exists or is to be installed and to meet the test results of the finished surface as expressly required within this specification. For surrounding curbing, prime the vertical surface of the curb using the SBR Binder. Mix one fifty-pound bag of SBR buffings with 8.14 pounds of aromatic polyurethane binder so that the buffings are covered evenly. Spread the mix and trowel to the appropriate depth. Let cure.

C. Pad under Turf: Place pad and cut to fit configuration as shown on Drawings. Splice seams. Install per manufacturers recommendation.

C. Synthetic Turf: Place turf and cut to fit configuration as shown on Drawings. Splice seams. All seams must be attached with splicing film/fabric and adhesive as approved by the manufacturer for this type of installation of their product.

D. Infill: Apply layers of synthetic turf infill evenly with a spreader and broom the turf fibers with stiff bristle broom to stand fibers up and allow infill to settle into the bottom. Broom in two (2) pounds of Turf Chiller™ and one (1) pound of clean silica per square foot.

E. Anchoring/Edging: Edges of turf will be secured to ground or concrete curb with mechanical fasteners, stakes or edging.

A. The installation shall be performed in full compliance with approved Shop Drawings.

B. Only trained technicians, skilled in the installation of athletic caliber synthetic turf systems working under the direct supervision of the approved installer supervisors, shall undertake any cutting, sewing, gluing, shearing, topdressing or brushing operations.

C. The designated Supervisory personnel on the project must be certified, in writing by the turf manufacturer, as competent in the installation of this material, including

sewing seams and proper installation of the Infill mixture.

D. Designs, markings, layouts, and materials shall conform to all currently applicable rules or standards that may apply to this type of synthetic grass installation. Designs and layouts shall first be approved by the Architect or Owner in the form of final shop drawings.

3.4 INSTALLATION

A. Install at location(s) indicated, to comply with final shop drawings, manufacturers'/installer's instructions.

B. The Contractor shall strictly adhere to specified procedures. Any variance from these requirements shall be provided in writing, by the manufacturer's on-site representative, and submitted to the Architect and/or Owner, verifying that the changes do not in any way affect the Warranty. Infill materials shall be approved by the manufacturer and installed in accordance with the manufacturer's standard procedures.

C. Carpet rolls shall be installed directly over the properly prepared aggregate base. Extreme care shall be taken to avoid disturbing the aggregate base, both in regard to compaction and planarity.
Repair and properly compact any disturbed areas of the aggregate base as recommended by manufacturer

D. Full width rolls shall be laid out across the field.
Turf shall be of sufficient length to permit full cross-field installation from side to side.
No cross seams will be allowed in the main area between the sides.
Each roll shall be attached to the next roll utilizing standard state-of-the- art sewing procedures.

E. Artificial turf panel seams shall be sewn along the selvedge edging flap of the turf roll. Seams secured by other means including gluing are unacceptable. Installation shall be 99% sewn.
Minimum gluing will only be permitted to repair problem areas, corner completions etc.
Seams shall be flat, tight, and permanent with no separation or fraying.
In the case of all lines, turf carpet field fibers must be sheared to the backing (do not cut the backing) and adhered using hot melt adhesives.

F. Infill Materials:
Infill materials shall be applied in numerous thin lifts. The turf shall be brushed as the mixture is applied. The infill material shall be installed to a depth determined by the manufacturer.
Two-layered infill shall be installed in a systematic order.
Infill materials shall be installed to fill the voids between the fibers and allow the fibers to remain vertical and non-directional.

G. Synthetic turf shall be attached to the perimeter edge detail in accordance with the

manufacturer's standard procedures.

H. Upon completion of installation, the finished field shall be inspected by the installation crew and an installation supervisor, and certified in writing by the installer as conforming to the contract documents.

3.5 ADJUSTMENT AND CLEANING

A. Do not permit traffic over unprotected surface.

B. Contractor shall provide the labor, supplies, and equipment as necessary for final cleaning of surfaces and installed items.

C. All usable remnants of new material shall become the property of the Owner.

D. The Contractor shall keep the area clean throughout the project and clear of debris.

E. Surfaces, recesses, enclosures, and related spaces shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

3.6 PROTECTION

A. Protect installation throughout construction process until date of final completion.

END OF SECTION

**SECTION 322800**

**SITE IMPROVEMENTS**

**PART 1 - GENERAL**

1.1 **RELATED DOCUMENTS**

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 31 Specification Sections, are hereby made a part of this Section.

1.2 **SUMMARY**

A. Provide all labor, equipment, materials and perform all operations necessary to complete the work of this section as indicated within the drawings and specified herein which shall include, but is not limited to, the following:

1. Bike Rack
2. Trash Receptacle
3. Site Bench
4. Picnic Table
5. Game Table
6. Play Elements
7. Misting Elements
8. Tool Shed
9. Shade Structure

Contractor to provide samples, submittals and/or mockups of all items listed above to the Landscape Architect prior to ordering.

B. Related Sections: The following Section contains requirements that relate to this section:

1. Cast-in-place Concrete: Section 32 13 13
2. Concrete Paving: Section 32 13 13

1. 3 SUBMITTALS

A. Refer to "Division 01 Section 013300 SUBMITTAL PROCEDURES for general requirements for submittals.

B. Request for deviations from Specifications: If any deviations from specifications are proposed, include written description and reasons for proposed deviations. Do not proceed until written approval by the Landscape Architect for any deviations.

C. Product data:

1. Manufacturer's standard product literature.
2. Shop drawings.
3. Installation instructions.

4. Mock Up Panels as outlined below.
5. Maintenance instructions.

1. a. Submit powdercoat finish samples for approval.

D. Shop Drawings/Product Literature: Prior to ordering the below listed materials, submit Shop Drawings and/or product literature to Landscape Architect for approval as follows. Do not order materials until Landscape Architect's written approval has been obtained.

1. Coordinated Shop Drawings shall show all, but not limited too required sizes, dimensions, sections, profiles of units, the arrangement and provision for jointing, anchoring, fastening and supports and other necessary details for delivery and lifting devices and reception or installation of other work.
2. Show in large scale details any unique fabrication and setting requirements as directed by the Landscape Architect or Structural Engineer.
3. Submit a minimum of three (3) copies of the following for approval of Landscape Architect:
   a. Bench– Shop Drawings and product literature for all materials required to complete the work for each type and size required.

1.4 EXAMINATION OF EXISTING CONDITIONS

A. The Contractor shall fully inform himself of existing conditions of 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 extension of time will be allowed on account of actual conditions inconsistent with those assumed by the Contractor.

B. The Contractor shall inspect all areas before starting work and any defects, such as incorrect grading, drainage problems etc., shall be reported to the Landscape Architect prior to beginning the work. The commencement of work by the Contractor shall indicate the Contractor's acceptance of the areas for construction. The Contractor shall assume full responsibility for the work of this Section.

C. The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to the potential need for storing materials temporarily and/or rehandling items prior to final installation.

D. Contractor shall verify all utility conditions and elevations prior to work. Before construction starts, all utility companies both public and private must be contacted, including those in control of utilities not shown on this plan. See Chapter 370 Acts of 1963 Massachusetts and contact "DIG SAFE" 1-888-344-7233, or www.digsafe.com. Report any discrepancies in writing to the Landscape Architect and the Owner and receive written instructions prior to proceeding.

1.5 MANNER OF CONDUCTING THE WORK

A. The work shall be conducted with prime consideration given to the following:

1. Compliance with Americans with Disabilities Act requirements.
2. Compliance with governing laws, local, state and federal building codes.
3. Safety, protection, and convenience of the public and workmen.
4. Protection of the existing building structure, materials and finishes to remain from damage.
5. Minimization of dirt and dust proliferation.
6. Avoidance of any damage to existing vegetation to remain.
7. Maintenance of existing site drainage and drainage structures and protection of structures from siltation during construction.
8. Provide unobstructed legal exits and entrances at all times.
9. Contractor shall procure all necessary permits required for the Site Improvement work.

1.6 DELIVERY, HANDLING AND STORAGE

A. Deliver materials in original sealed containers marked with name of manufacturer and identification of contents. Store materials under waterproof covers on planking clear of ground and protect from handling damage, dirt, stain, water and wind.

B. Take all necessary precautions to prevent all items from damage during transportation of these materials to the project, unloading and storage on site. Damaged items shall not be installed and should any damaged items be found in erected work, such items shall be removed immediately and replaced with new items, and the Contractor shall assume all expenses incurred therefrom.

C. Stored materials shall be adequately protected against moisture by (1) staking in such a manner as to allow a complete circulation of air under each stack, and (2) covering each stack, top and sides with a waterproof paper or membrane. Coverings shall remain in place at all times, when not working from the particular stack.

1.7 QUALIFICATIONS

A. Contractor Qualifications: All construction and installation of site improvements and related work shall be assigned to an experienced and qualified Contractor with a minimum of five (5) years of experience with projects incorporating similar work and who employs experienced workmen who work under the full time supervision of a qualified foreman with a minimum of five (5) years of experience as a supervising foreman.

1.8 GUARANTEES

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 literature. All of these guarantees shall be in addition to, and not in lieu of, other liabilities, which the Contractor may have under law.

B. In addition to manufacturers' guarantees, the Contractor shall warrant all work of site improvements, both parts and labor, for a period of one year from date of acceptance by the Owner. The Contractor shall be held strictly responsible for all parts of his work. If failure in the work develops within one (1) year of the date of final approval and acceptance of the work, the Contractor shall be required to replace all faulty materials at his full expense. To this end, the Contractor is advised to purchase materials under a warranty from the manufacturer guaranteeing proper service under the conditions, which are established, by the Drawings, Specifications and local conditions.

C. The Contractor, at no additional cost to the Owner, shall provide a warranty for all required labor and materials to fulfill the requirements of this Section. All labor shall include premium time to correct any faulty material or workmanship.

1.9 RECORD DRAWINGS

A. The Contractor shall cooperate with the Owner and shall prepare and maintain a set of drawings on which shall be recorded accurately, as the work progresses, the actual "as-built" locations, dimensions of all work, and materials incorporated in the work within the Contract, including thereon all variations from the Contract Drawings. This record of "as-built" conditions shall include the work of all subcontractors and shall be submitted to the Owner in hard copy and digital format, upon final acceptance of all work.

B. The Contractor, prior to final acceptance of the work, shall transfer all "as-built" data to a complete set of reproducible record drawings, which can be either in ink or photolitho reproductions on mylar (4 mm), furnished by the Owner or on electronic files furnished by the

Owner on electronic disc in AUTOCAD 2018 or better. The Contractor's Registered Land Surveyor shall perform this layout work with the cooperation of the Contractor and Subcontractors as required.

C. Both as-built mylars and as-built electronic files shall be submitted to the Owner for review and approval prior to the preparation of the punch list. After review and approval by the Owner, the "Record As-built Drawings" and "Record As-built Electronic Files" shall be completed and delivered to the Owner when all punch list items are completed and approved.

1.10 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 worksite 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 work areas, provide police details and/or erect and maintain protective devices as necessary to the Owner satisfaction, including but not limited to barricades, lights and warning signs.

C. Any practice employed by the Contractor which is obviously hazardous as determined by the Owner shall be immediately discontinued by the Contractor upon receipt of either.

1.11 CLEANUP

A. At the completion of site improvements work and before acceptance of the work, the Contractor shall remove all debris, rubbish, etc, from the site. He shall dispose of them in a manner satisfactory to the Landscape Architect. The premises shall be left clean, presentable, and satisfactory.

1.12 ACCESSIBILITY CODES

A. From time to time there are changes made in the federal and /or state accessibility and /or building codes or it is determined that different codes are applicable to a site. Such determinations or changes may occur during the course of the construction of this project. If changes become necessary to meet codes a change order shall be issued by the Owner to cover statutory requirements.

B. The 521 CMR Rules and Regulations of the AAB and the ADA Americans with Disabilities Act shall be adhered to on this project. The project must be constructed in accordance with the

Wheelchair Ramp Standards booklet effective latest edition, and the Construction and Traffic Standard Details, 1996 Metric Edition.

**PART 2 – PRODUCTS-Basis of Design**

**A BIKE RACK**
Model 292-00/S-2 bike rack by Dumor or approved equal.
Powder coated Bike rack surface mount.
Color to be forest green
Quantity to be 4

**B. TRASH RECPTACLES**
Model 287-32SH Trash receptacle by Dumor or approved equal.
With shield and side deposit
Color to be forest green
Quantity to be 2

**C. BENCHES**
6’ Backed Bench:
Model 165-60PL 6’ cast bench by Dumor, recycled plastic seat
End and intermediate armrests
Color to be forest green cast metal
Quantity to be 4

Stone Seat Wall:
Pre-fabricated freestanding stone seat wall by Natural Stone Wall Solutions or approved equal. Stone to be New England Fieldstone Round

**D. PICNIC TABLES**
Model 537-40PL 4’ ADA recycled plastic Picnic Table by Dumor or approved equal
Quantity to be 2
Color to be forest green powder coat metal

Model 537-60PL 6’ ADA recycled plastic Picnic Table by Dumor or approved equal
Quantity to be 1
Color to be forest green powder coat metal

**E. GAME TABLES**
Model 294-40TX 42” Diameter Steel Table with 4 Seats and wood grain recycled plastic by Dumor or approved equal
Quantity to be 2
Color to be forest green powder coat metal

**F. PLAY ELEMENTS**
Play Structures, swings and separate elements are to be by Landscape Structures or approved equal. Colors as shown on plan enlargements

Products (and per the plans and details)
Ages 5-12: Venti Model 210739
Ages 2-5: Custom Hatch Structure
Swings: Model 221292-5" Arch Swing-3 bays
3 belt seats with vinyl coated chains
2 tot full bucket seats with viny coated chains
1 ADA (5-12) molded bucket seat w/harness and vinyl coated chains

**G. MISTING ELEMENTS**

Glomist Model VOR 7247 by Vortex or approved equal
Quantity to be 2

Glomist Nano Model VOR 7248 by Vortex or approved equal
Quantity to be 4

Playsafe Drain #4 Model VOR 1004 by Vortex or approved equal
Quantity to be 1

**H. TOOL SHED**

6'x8' metal shed with peaked roof
Sling door access
Secured to concrete pad



**I. SHADE STRUCTURE**

20' x 20' Shade Structure by Poligon or approved equal
Roof to be Parasoleil Metal Panel Constella Pattern
Engineered drawings certified by a Massachusetts licensed Structural Engineer are required to be submitted for approval.

J. DELIVERY STORAGE AND HANDLING

1. Handle products in accordance with manufacturer's instructions.
2. Store products in manufacturer's original packaging until ready for installation.
3. Protect products from impacts and abrasion during storage.

K. WARRANTY

1. Provide manufacturer's standard warranty:

2. Warranty terms: one year from date of invoice against defects in materials and workmanship.

**PART 3 – EXECUTION**

A. Install all site improvements as shown on drawings and per manufacturer's recommendations.

**END OF SECTION**

Section 322831

CHAIN LINK FENCE

**Part 1 - General**

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIERMENTS, which are hereby made a part of this Section of the Specifications.

B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

C. Coordinate work with that of all other trades affecting, or affected by work of this Section.

1.2 DESCRIPTION OF WORK

A. The work of this Section consists of all chain link fencing work and related items as indicated on the Drawings and/or as specified herein and includes, but is not limited to, the following:

1. Vinyl coated chain link fence ~~4 and 6'~~ in varying heights.
2. Vinyl coated chain link single and double leaf gates ~~4'and 6'~~ in varying height.
3. The work shall include excavation for fence post footings, the installation of concrete, the general clean up of the disturbed area, and the removal of surplus excavated materials from the site.

B. Related Work Specified Elsewhere:

1. Site Improvements.

1.3 SUBMITTALS

A. Prior to ordering the below listed materials, submit sample to Architect for approval. Sample shall be representative of designated items. Do not order materials until Architect's approval has been obtained. Delivered materials shall closely match the approved samples. Submit the following in accordance with requirements of Section SUBMITTALS:

1. One square foot of fence fabric
2. One sample of each size of post top

3. One 12-inch length of each size of pipe
4. One sample of each type of hardware and fitting.

B. Submit manufacturer's product data and certification for the following:

1. Fabric
2. Each size of pipe
3. Each type of hardware and fitting
4. Gates

C. Submit complete shop drawings of each type of fence and gate for Architect's approval

1. Shop drawings shall show typical materials, elevations, connections, fittings, and details for all elements as well as detailed layout showing all post locations.
2. Submit a complete schedule of all chain link fencing and gates showing all post locations and fabric type locations on the project.

D. Construct a representative fence section sample on site for each type of chain link fence construction. Samples shall be constructed prior to the installation of all chain link fencing and as part of the proposed finish work to facilitate comparisons during construction. The samples shall demonstrate the typical installation of fence posts and footings, framework, vinyl coatings, hardware fittings and miscellaneous materials. The accepted sample, upon approval, shall be maintained as the standard of minimal quality for approval of all proposed chain link fence work required on the project. Unacceptable sample sections shall immediately be removed from the site and additional samples constructed for acceptance by the Architect.

E. Supplier's Notarized Certification:

1. Pipe material and galvanizing meet specified requirements.
2. Fence fabric meets specified requirements.

1.4 STANDARDS

A. All work shall comply with minimum standards of the latest editions of the following codes and specifications, subject to modifications and amendments outlined herein.

1. Commonwealth of Massachusetts Highway Department Standard Specifications for Highways and Bridges
2. Chain Link Fence Manufacturer's Institute "Product Manual" – Standard Guide for Galvanized Steel Chain Link Fence and Fabric.
3. AWS: American Welding Society – Structural Welding Code

4. American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19101.

   A90 – Standard Test Method for Weight [Mass] of coating on Iron and Steel Articles with Zinc or Zinc Alloy Coatings

   A 123 – Zinc (Hot Galvanized) Coatings on Products, Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strip

   A 153 – Zinc Coating (Hot-Dip) on Iron and Steel Hardware

   A 307 – Carbon Steel Bolts and Studs

   A 392 – Zinc-Coated Steel Chain Link Fence Fabric

   A 491 – Aluminum-Coated Steel Chain Link Fence Fabric

   A 569 – Steel, Carbon Hot Rolled Sheet and Strip, Commercial Quality

   A 569 – Hot Rolled Sheet and Strip, Structural Quality

   A 824 – Metallic-Coated Steel Marcelled Tension Wire

   A900 – Industrial and Commercial Swing Gates

   B6 – Specification for Zinc (Slab Zinc)

   F 552 – Standard Definitions of Terms Relating to Chain Link Fencing

   F 567 – Installation of Chain Link Fence

   F 626 – Fence Fittings

   F1083 – Pipe, Steel, Hot-dipped Zinc-coated fence Structures

1.04 COORDINATION

A. The Work of this Section shall be completely coordinated with the Work of other Sections. Verify dimensions and work of other trades which adjoin materials of this Section before installing items specified.

B. Obtain all necessary templates and patterns required from other trades for proper execution of work of this Section. Furnish to other trades items to be built into work of other Sections. Supervise installation of such built-in work.

**PART 2 PRODUCTS**

2.1 GENERAL

A. The types of fencing required for the project are as indicated below, subject to detailed material requirements which follow:

| Location | Core Fence Type | Height | Mesh Size | Wire Size | Rails |
|---|---|---|---|---|---|
| See Drawings | Galvanized | varies | 2 in | 9 & 6 ga. | T,B |

B. All material shall be new, and products of recognized reputable manufacturers. Used, rerolled or re-galvanized materials are not acceptable.

C. Like items of materials provided hereinafter shall be the end products of one manufacturer in order to achieve standardization for appearance, maintenance and replacement.

2.2 FENCING FABRIC

Vinyl coated chain link fence fabric shall be No. 6 gauge with a uniform square mesh measuring between its parallel sides, woven out of permafused wire with a core which shall consist of a good commercial quality galvanized steel to which a 7 mil coating of polyvinyl chloride has been bonded by the fusion method. The vinyl in the coating shall have a maximum specific gravity of 1.34, be evenly applied and free of blisters, with the bond between the vinyl coating and the steel wire equal to or greater than the cohesive strength of the vinyl. The color of the coating shall be black. The minimum breaking strength of the coated wire shall be 800 pounds. Bottom of fence fabric shall be one (1) inch plus or minus 1/4" above the finished grade unless otherwise indicated within the drawings. Fabric shall be furnished with selvages knuckled on both ends, which have been coated during the waiving process. Size of fence fabric shall be two (2") inches square

A. The color of the fabric shall be black

B. Fencing Fabric Wire shall conform to the following:

| Diameter in inches | Breaking Strength Gauge Size | lbs./ft. |
|---|---|---|
| 0.192 | 6 | 2,170 |

D. Selvages: Unless directed otherwise on the plans, fence fabric shall be knuckled at both selvages.

2.3 FRAMEWORK AND FITTINGS

A. Line corner and terminal posts, top, bottom or intermediate rails shall be Schedule 40 galvanized steel conforming to ASTM-120 latest requirements and thermal fusion coated with a polyvinyl chloride (PVC) by the electrostatically applied powder fusion process. The coating depth shall be 10-15 mils. in thickness according to pipe diameter.

B. The vinyl shall be plasticised and thoroughly compounded so there are no under dispersed pigments, stabilizers or other discrete particles present. The color shall match the fabric.

C. Rails

1. All rails shall be 1-5/8" O.D. thermal fusion coated PVC galvanized steel pipe and shall be joined at line posts with thermal fusion coated PVC boulevard clamps.

D. Line Posts:

1. Line posts shall be 2.5” O.D. thermal fusion coated PVC galvanized steel pipe sized as shown on the Drawings. Posts shall be of sufficient length to allow for installation to a depth of approximately three (3) feet below grade level and shall be spaced in the line of fence not further apart than eight feet (8) or as shown on the Drawings. The fabric shall be fastened to the line posts by means of matching six (6) gauge, thermal fusion coated PVC ties, maximum twelve (12) inches on center.

2. Provide galvanized steel sleeves as required, sized to accommodate posts.

E. Corner and Terminal Posts:

1. Corner and terminal posts shall be sized as shown on the Drawings and shall be thermal fusion coated PVC galvanized steel. Each post shall be of sufficient length to allow for required depth below grade level. Fabric shall be attached to the terminal post by means of thermal fusion coated PVC tension bars and held by thermal fusion coated PVC tension bands, maximum twelve (12) inches on center.

2. Provide galvanized steel sleeves as required, sized to accommodate posts.

F. Provide internally swaged expansion couplings for rails at 30’ on center maximum spacing. Coupling shall have a 3-inch minimum overlap at joint.

G. Post tops shall be provided with post caps which fit securely and exclude moisture.

H. Fence Fittings shall be fabricated of steel or cast iron and shall conform to minimum requirements of ASTM F-626, and as below.

1. All fittings and other appurtenances shall be aluminum alloy, pressed steel, malleable or cast steel, epoxy-phenolic primed and coated with matching (PVC) by the fusionbond method. Painted fittings are not acceptable.

2. Grout shall be non-shrinking, non-metallic, non-staining, such as Halenite Por-Rok, Sonneborn, Sonogrout, Penn Dixie or Master Builders or approved equal.

3. Concrete for footings shall be air-entrained concrete conforming to the requirements and applicable provisions of Division 3 Section Cast-in-place Concrete herein. Minimum 28-day compressive strength 4,000 p.s.i. Concrete shall be air-entrained 5% minimum with a 1"-3" maximum slump.

4. Tension wire shall be No. 7 gauge (0.177 inch) galvanized marcelled steel wire with a Class 2 zinc coating in accordance with ASTM A-824. Tension wire shall be fastened to fabric at 24” on center with hog rings. Attach securely at all terminal or corner posts.

5. Tension Bars shall not be less than three-sixteenths inch by three-quarters inch (3/16" x 3/4") and not less than two inches (2") shorter than the nominal height of the fabric with which they are to be used. One tension bar shall be provided for each end and gate post, and two for each corner and pull post.

6. Fabric ties shall be provided in sufficient number for attaching the fabric to all line posts and at all top, middle and bottom rails at intervals not exceeding twelve inches (12"); and not exceeding twenty-four inches (24") when attaching fabric to top or bottom rail. Connectors shall be galvanized with a min. 0.8 oz s.f. coating of zinc.

7. Wire Ties: Unless designated otherwise on the details, tie wires shall be fabricated from rolled wire stock which has been cut to required lengths for hand-twisted connections at the site. Manufactured "hook ties" will not be accepted. Provide the following according to fencing application.

8. Tension Bands shall be provided in sufficient number for attaching the fabric and stretcher bars to all terminal posts at intervals not exceeding twelve inches (12"). Tension bands shall be formed from flat or beveled steel and shall have a minimum thickness after galvanizing of 0.078 inch; and minimum width of three-quarters inch (3/4") for posts four inch (4") O.D. or less; and 0.108-inch thickness by seven-eighths inch (7/8") for posts larger than four inch (4") O.D. Brace bands shall be formed from flat or beveled steel and shall have a minimum thickness of 0.108 inch after galvanizing; and a minimum width of

three-quarters inch (3/4"). Attachment bolts shall be five-sixteenths inch by one and one-quarter inch (5/16" x 1-1/4") galvanized carriage bolts with nuts, ASTM A307, Grade A.

9. Other hardware required shall be fabricated from steel and galvanized in accordance with ASTM A123 and/or ASTM A153.

I. Top Rails shall have lengths not less than eighteen feet and shall be fitted with min. six inch (6") long outside sleeved or internally swaged couplings for connecting the lengths into a continuous run. Provide top rail with pass-through fittings at line posts and rail end cups and brace bands at terminal or gate posts.

J. Middle and Bottom Rails shall be secured to line posts with steel boulevard clamps, and to terminal, corner, gate or pull posts with rail end cups and brace bands.

K. Posts shall be of sufficient length to allow for installation into concrete footings to a minimum depth of 4 ft. below ground level.

L. Gates:

1. Provide Double Swing gates minimum four (4') feet wide for each opening as indicated on the drawings.

2. Provide Single Swing gates minimum four (4) feet wide for each opening as indicated on the drawings.

3. Gate frame shall be made of 2" thermal fusion coated PVC galvanized pipe, nominal weight 2.72 pounds per foot, jointed at the corner using specially designed corner fittings or welded to form a rigid panel. Frames shall be filled with the same gauge fabric as the fence. The fabric shall be fastened in the frame on all sides by means of thermal fusion coated PVC fasteners and tension bars.

4. Provide heavy duty industrial grade magnetic latch with padlock eye as an integral part of latch which shall be thermal fusion coated PVC galvanized steel.

5. Provide one pair of thermal fusion coated PVC hinges per swing gate of size to suite gate size, non-liftoff-type, offset to provide 180-degree gate opening.

6. Fabric as specified herein.

7. Provide galvanized steel sleeves as required, sized to accommodate posts.

8. Gate posts – per detail.

## PART 3 EXECUTION

3.01 PREPARATION FOR FENCE INSTALLATION

A. All Shop Drawings for fencing shall have been returned as "Approved" before any fencing construction shall commence.

B. Contractor shall review as-built conditions in the field prior to preparing required Shop Drawings.

3.02 INSTALLATION

A. General: Unless modified herein, installation of fencing shall meet the requirements of ASTM F567. Erect fencing in straight lines between angle points by skilled mechanics experienced in this type of construction.

B. Postholes: Post holes for posts 2.5” o.d. or less shall be excavated to a minimum size of twelve inches by forty-eight (12" x 36"). For posts of greater than 2.5” o.d., post holes shall be excavated to a minimum size of twelve inches by forty-eight inches (24" x 48").

1. Backfill concrete to within four inches (4") of finished grade and crown top to shed water.

2. Set posts with plumb vertical alignment.

C. Space posts in the fence line with a maximum spacing of 8 feet on center, unless otherwise shown on Drawings.

D. Provide corner or pull posts at maximum intervals of 250 ft. o.c., and for any change in direction of 15 degrees or more, and for any abrupt change in grade, with bracing in both directions.

E. Hanging Fabric

1. Fasten chain link fence fabric to terminal posts, and gate posts with tension bars and tension bar bands.

2. Fence fabric shall be secured to all rails and to posts that are not terminal, or gate with wire ties at specified spacing. Tie down wire shall be woven through the fence fabric, completely around the rail and wire shall be twisted securely with three twists on the rail side of the fence and the tails of the wire cut off to preclude untwisting by hand. Twisted tie wire ends shall be turned under at horizontal rails and turned down at vertical rails to reduce potential for human contact.

3. Stretch fabric as tightly as possible without pulling the material out of shape. Top of fabric shall be parallel with top rail.

4. Unless designated otherwise fabric shall be placed on the face of the post away from the enclosed area.

F. Testing of Fence Fabric:

1. Each fence panel shall be constructed such that it will pass the following test. Deflection of fence fabric shall be no greater than two inches (2") when a force of 30 pounds is applied in the center of the panel, perpendicular to the plane of the fence fabric. Fabric shall return to original position when force is released.

END OF SECTION

**Section 32 31 19**

**DECORATIVE METAL FENCE**

## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

A. This Specification covers standard applications of picket style tubular steel ornamental iron fence systems.

### 1.2 RELATED SECTIONS

A. Section 03 30 13 - SITE CAST-IN-PLACE CONCRETE – for footings.

### 1.3 REFERENCE STANDARDS

A. ASTM A526 – Specification for steel sheet, zinc-coated (galvanized) by the hot-dip process commercial quality.

B. ASTM A513 Specification for electric resistance-welded carbon and alloy steel mechanical tubing.

C. ASTM B117 – Standard test method of salt spray (fog) testing.

### 1.4 SUBMITTALS

A. Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Shop drawings: Large scale details indicating all sizes, gages and thickness; provide complete installation details, coordinated to the specific receiving conditions.
2. Paint Sample – 3” by 3”

### 1.5 DELIVERY, STORAGE AND HANDLING

A. Do not deliver fencing to the site, until all specified submittals have been submitted to, and approved by, the Architect.

B. Store fencing, under cover, and in manner to keep it dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes until installation.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Single Source: All work of this Section shall be produced by a single manufacturer, unless

otherwise approved by the Landscape Architect.

B. The Basis of design for the metal picket fence system shall conform to Ameristar Montage Plus standard picket space Welded Ornamental Steel, extended picket bottom rail treatment, 3-Rail style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma (or approved equal)

### 2.2 MATERIAL

A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (310 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.60 oz/ft$^2$ (184 g/m$^2$), Coating Designation G-60.

B. Material for pickets shall be 3/4" square x 18 Ga. tubing. The rails shall be steel channel, 1.5" x 1.4375" x 14 Ga. Picket holes in the rail shall be spaced 4.675" o.c. for standard picket space. Fence posts and gate posts shall meet the minimum size requirements of Table 1.

### 2.3 FABRICATION

A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.

B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by Ameristar's proprietary fusion welding process, thus completing the rigid panel assembly (Note: The process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel).

C. The manufactured panels and posts shall be subjected to an inline electrode position coating (E-Coat) process consisting of a multi-stage pretreatment/wash, followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The color shall be Bronze. The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2 (Note: The requirements in Table 2 meet or exceed the coating performance criteria of ASTM F2408).

D. The manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Commercial weight fences under ASTM F2408.

E. Gates with an out to out leaf dimension less than and including 72 inches shall be fabricated using Montage Plus ornamental panel material and 1-3/4" sq. x 14ga. gate ends. Gate leafs greater than 72 inches shall be fabricated using ForeRunner rails, 17 gauge pickets, intermediate uprights, gussets and 1-3/4" sq. x 14ga. gate ends. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

## PART 3 – EXECUTION

### 2.1 PREPARATION

All new installation shall be laid out by the contractor in accordance with the construction plans.

## 2.2 INSTALLATION

Fence post shall be spaced according to Table 3, plus or minus ¼". For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels shall be attached to posts with brackets supplied by the manufacturer. Posts shall be set in concrete footers having a minimum depth of 36" (Note: In some cases, local restrictions of freezing weather conditions may require a greater depth). The "Earthwork" and "Concrete" sections of this specification shall govern material requirements for the concrete footer. 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.

## 2.3 FENCE INSTALLATION MAINTENANCE

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. Failure to seal exposed surfaces per steps 1-3 above will negate warranty. Ameristar 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. Use of non-Ameristar parts or components will negate the manufactures' warranty.

## 2.4 GATE INSTALLATION

Gate posts shall be spaced according to the manufacturers' gate drawings, dependent on standard out-to-out gate leaf dimensions 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. Gate hardware shall be provided by the manufacture of the gate and shall be installed per manufacturer's recommendations.

## 2.5 CLEANING

The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

**Table 1 – Minimum Sizes for Montage Plus Posts**

| Fence Posts | Panel Height | |
|---|---|---|
| 2-1/2" x 16 Ga. | Up to & Including 6' Height | |
| | | |
| Gate Leaf | Gate Height | |
| | Up to & Including 4' | Over 4' Up to & Including 6' |
| Up to 4' | 2-1/2" x 14 Ga. | 3" x 12 Ga. |
| 4'1" to 6' | 3" x 12 Ga. | 3" x 12 Ga. |
| 6'1" to 8' | 3" x 12 Ga. | 4" x 12 Ga. |

**Table 2 – Coating Performance Requirements**

| Quality | ASTM Test Method | Performance Requirements |
|---|---|---|

| Characteristics | | |
|---|---|---|
| Adhesion | D3359 – Method B | Adhesion (Retention of Coating) over 90% of test area (Tape and knife test). |
| Corrosion Resistance | B117, D714 & D1654 | Corrosion Resistance over 1,500 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters). |
| Impact Resistance | D2794 | Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball). |
| Weathering Resistance | D822 D2244, D523 (60˚ Method) | Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units). |

**Table 3 – Montage Plus – Post Spacing By Bracket Type**

| Span | For CLASSIC, GENESIS, MAJESTIC, & WARRIOR 8' Nominal (91.95" Rail) | | | | | |
|---|---|---|---|---|---|---|
| Post Size | 2-1/2" | 2-1/2" | 2-1/2" | 3" | 2-1/2" | 3" |
| Bracket Type | Montage Plus Universal (BB112) | Montage Plus Line Blvd. (BB114) | Montage Plus Flat Mount (BB111) | | Montage Plus Swivel (BB113)* | |
| Post Settings ± 1/4" O.C. | 95" | 95" | 95" | 95-1/2" | *95" | *95-1/2" |

*Note: When using BB113 swivel brackets on either or both ends of a panel installation, care must be taken to ensure the spacing between post and adjoining pickets meets applicable codes. This will require trimming one or both ends of the panel.

**END OF SECTION**

**SECTION 32 91 00**

**PLANTING**

## PART 1 GENERAL

### 1.01 SUMMARY

A. Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Examine all Drawings and all other Section of the Specifications for requirements therein affecting the work of this Section.

C. The work of this Section consists of all planting work and related items as indicated on the Drawings and/or as specified herein, and includes, but is not limited to, the following:

1. Preparation of planting medium.

2. Planting and vegetable garden soils

3. Maintenance.

4. Coordinate work with that of all other trades affecting, or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

D. The sum of 10% of the total cost of the planting contract shall be retained and paid to the Contractor after replacements have been made, one year from the date of acceptance of original planting.

E. Contractor shall schedule tree selection and digging operations so as to comply with nursery industry recognition of 'Spring Dig Only' or 'Fall Hazard' plant materials. No substitutions of plant materials will be allowed for fall planting based on unavailability due to the 'Spring Dig Only' or 'Fall Hazard' restrictions. Contractor and Landscape Architect shall have selected and had the material dug during the previous spring or fall.

### 1.02 REFERENCES AND STANDARDS

A. Where references are made in these Specifications to Standard Specifications, codes, etc., of the U.S. Government, State or local authorities, or professional and industrial societies and associations, the applicable portions thereof shall govern as fully as if they were recited at length herein. References and standards shall include all revisions thereto issued as of the date of the Notice to Contractors pertaining hereto.

1. Standard Specification: Commonwealth of Massachusetts Highway Department (MHD), Standard Specifications for Highways and Bridges, latest edition.

2. AASHTO: American Association of State Highway and Transportation Officials, Standard Specifications, latest edition.

3. ASTM: American Society for Testing and Materials, latest edition.

4. ASNS: “American Standard for Nursery Stock,” ANSI Z 60.1, latest edition, published by the American Association of Nurserymen (AAN).

5. SPN: “Standardized Plant Names,” latest edition, by the American Joint Committee on Horticultural Nomenclature.

6. AOAC: Association of Official Agricultural Chemists.

7. ANSI: "American National Standard Institute, Inc. "Standards for Tree Care Operations Tree Shrub and Other Woody Plant Maintenance" ANSI A300.

8. ASNS: “American Standard for Nursery Stock,” ASNA Z60.1, latest edition, published by the American Association of Nurserymen (AAN).

9. USDA: United States Department of Agriculture, latest requirements for "USDA Textural Classification."

10. Hillier’s Manual of Trees and Shrubs, 1971, Hillier & Sons.

11. Hortus III, 1976, L.H. Bailey Hortorium.

12. Manual of Cultivated Conifers, 1965, P. Den Ouden & B. K. Boom.

13. USDA: United States Department of Agriculture, USDA Plant Hardiness Zone Map;

14. USDA Miscellaneous Publication No. 1475; issued January 1990, or latest edition

15. OSHA: Occupational Safety and Health Administration, U.S. Department of Labor, latest requirements.

16. Tree Care Industry Association, latest standards.

**1.03 SUBMITTALS**

A. At least thirty (30) days prior to intended use, the Contractor shall provide the following samples and submittals for approval. Do not order materials until Owner's approval of submittal has been obtained. Delivered materials shall closely match the approved samples. Should the source of supply be changed within the course of the contract, the Contractor shall submit new samples or submittals for approval per the original submission.

1. Samples: All samples and their placement shall be subject to quality control testing. The Contractor shall bear all costs of testing regardless of results. Prior to ordering the below listed materials, submit representative samples to Landscape Architect for selection and approval in accordance with requirements of GENERAL CONDITIONS as follows. Do not order materials until Landscape Architect's written approval of samples and testing of samples has been obtained. Delivered materials shall closely match the approved samples. All samples shall be submitted for approval at least thirty- (30) days prior to the start of work under this Section.

2. Product literature: Prior to ordering all materials required to complete the work of this Contract, submit product literature to Landscape Architect for approval. Do not order materials until Landscape Architect's approval has been obtained. Delivered materials shall closely match the approved product literature for these items.

B. Testing of Samples: The following materials shall be subject to quality control testing. The Contractor will bear all costs of testing regardless of results. Test results and laboratory recommendations will be sent directly to the Landscape Architect for review and approval, but will be available to the Contractor. All tests shall be done a maximum of ninety- (90) days prior to the submittal for approval. Tests that are dated prior to this time period shall automatically be rejected. All tests shall be submitted for approval at least thirty- (30) days prior to the start of work under this Section. Test Reports of all samples shall include a mechanical sieve analysis and analysis of the percentage of each material. The following materials shall be tested. Contractor shall pay all costs of testing regardless of results. Do not use materials being tested or retested until Landscape Architect's written approval has been obtained.

1. Existing Topsoil from Stockpile and Screened Loam Borrow: The Contractor shall provide representative samples for testing and approval. Two test samples of ten (10) pounds each shall be taken and analyzed from each potential loam source and two samples of ten (10) pounds each shall be taken and analyzed of existing topsoil stockpiled on the site. Contractor shall deliver samples to testing laboratory, have testing report sent directly to the Landscape Architect and pay all costs. Report shall be submitted at least thirty- (30) days before any loam is brought on to the site.

    a. Mechanical and chemical (pH soluble salts) analysis shall be by a public extension service agency or a certified private testing laboratory in accordance with the current "Standards" of the Association of Official Agricultural Chemists.

    b. Soil Test Report shall include a mechanical sieve analysis with soil classification. Organic content and Cation Exchange Capacity (CEC) shall be reported. Chemical analysis shall include pH (1:1 soil-water ratio), buffer pH, Soluble Salts (1:2 soil-water ratio), Nitrate

Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Magnesium, Manganese, Ferric Iron and Sulfate.

c. Soil test report shall clearly recommend appropriate application of limestone, fertilizer, and other soil additives required to correct soil deficiencies and to adjust mechanically screened loam as necessary to support successful turf growth and to meet the requirements of mechanically screened loam as specified, herein.

At least thirty (30) days prior to intended use, the Contractor shall provide the following submittals for approval. Do not order materials until Owner's approval of submittal has been obtained.

1. Pruning and Fertilizing of Trees: Submit three (3) copies of the proposed methods, materials, and schedule for pruning and tree fertilization for approval by the Landscape Architect at least thirty- (30) days prior to the start of work under this Section.

2. Water Supply Method and Schedule: Submit three (3) copies of the proposed methods of providing a water source and the schedule for watering for new plantings during the specified construction establishment/maintenance period for approval by the Landscape Architect at least thirty- (30) days prior to the start of work under this Section.

3. MSDS Submittals: Submit three (3) copies of Material Safety Data Sheets (MSDS) of all chemicals to be applied on the Project for approval by the Landscape Architect at least thirty- (30) days prior to the start of work under this Section.

4. Fertilizer: Submit three (3) copies of product literature of planting fertilizer for all plantings and three (3) certificates showing composition and analysis. Submit fertilization rates for fertilizer product based upon soil testing, analysis, and recommendations as described in this Section at least thirty- (30) days prior to the start of work under this Section.

5. Pine Bark Mulch: Submit one (1) sample at least thirty- (30) days prior to the start of work under this Section.

6. Peastone Mulch: Submit one (1) sample one (1) quart in size at least thirty- (30) days prior to the start of work under this Section.

7. Antidessicant: Submit three (3) copies of product literature at least thirty- (30) days prior to the start of work under this Section.

8. Materials for anchoring and guying trees: Submit three (3) copies of product literature for all materials at least thirty- (30) days prior to the start of work under this Section.

9. Perforated aeration pipe for trees: Submit three (3) copies of product literature for all materials at least thirty- (30) days prior to the start of work under this Section.

10. Aeration Loop: Submit (1) fabricated sample.

11. Filter fabric: Submit three (3) copies of product literature for all materials at least thirty- (30) days prior to the start of work under this Section.

12. Soil additives - humus, reed peat, sedge peat, sand, etc.: Submit three (3) certificates showing composition and analysis for each additive at least thirty- (30) days prior to the start of work under this Section.

13. Disease and pest controls: Submit three (3) copies of test results and product literature for the recommended treatment at least thirty- (30) days prior to the start of work under this Section.

14. Weed control: Submit three (3) copies of test results and product literature for the recommended treatment at least thirty- (30) days prior to the start of work under this Section.

15. Legal disposal of materials: Provide three (3) copies of notarized copies of agreements between the Contractor and owners of land used for disposal at least thirty- (30) days prior to the start of work under this Section.

16. Plant suppliers' (nursery) certifications: Submit three (3) copies of written certification that the stock has actually been grown under Zone 5 or hardier conditions. Plants not so certified will not be accepted at least thirty- (30) days prior to the start of work under this Section.

D. Landscape Contractor/Subcontractor Submittal: Submit three (3) copies of the company/firm description to be employed on this project for Planting and the resume for the Project Supervisor to be employed on the Project for approval by the Landscape Architect at least thirty- (30) days prior to the start of work under this Section. The company/firm description shall include a minimum of five (5) projects of similar scale.

E. Arborist Certification(s) Submittal: Submit three (3) copies of proof of certification as a Massachusetts Certified Arborist for all arborists to be employed on the Project for approval by the Landscape Architect at least thirty- (30) days prior to the start of work under this Section.

F. Licenses: Submit three (3) copies of proof of licensure by the Massachusetts Department of Food and Agriculture for all chemical and pesticide applicators to be employed on the Project for approval by the Landscape Architect at least thirty- (30) days prior to the start of work under this Section.

G. Certification: Submit three (3) copies of manufacturer's certified analysis for standard products. Submit certified analysis by a recognized laboratory made in accordance with methods established by the Association of Official Agricultural Chemists for other materials at least thirty- (30) days prior to the start of work of under this Section.

H. Schedule: Contractor shall submit three (3) copies of a Schedule for Planting to the Landscape Architect and Owner for approval to ensure that the schedule of work will minimize the potential for plant damage and to insure timely installation of all material. Landscaping Subcontractor shall schedule tree selection and digging operations so as to comply with nursery industry recognition of 'Spring Dig Only' or 'Fall Hazard' plant materials. If required, the schedule shall show selection of the material dug during the previous spring or fall.

**1.04 CERTIFICATE OF ACCEPTANCE AND GUARANTEE**

A. Following completion of all plant material installation, the Contractor shall request the Landscape Architect in writing for a formal inspection of the planting work. If plant materials and workmanship are acceptable, written notice will be given by the Landscape Architect to the Contractor stating that the work has received provisional acceptance and that the ninety- (90) day maintenance period shall commence.

1. The ninety- (90) day maintenance period shall occur only during the growing season May1 to October 15.

2. If final inspection occurs at the end of the growing season, the ninety- (90) day maintenance period shall be extended and shall start at the beginning of the next growing season starting as of May 1 of the next year.

3. If the ninety-day maintenance period is not complete by October 15, it shall be extended into the next growing season starting again as of May 1.

4. Plants that show obvious decline or loss of five (5%) percent of healthy growth shall be inspected by a licensed Arborist or Horticulturist to determine the cause of the decline. The plant shall then be treated and if further decline or loss occurs the plant shall be removed and replaced during the ninety (90) day maintenance period. All plants of the same species shall also be inspected. Replacements shall conform in all respects to the specifications for new plants and shall be planted in the same manner.

5. Plants that die or show obvious decline or loss of five (5%) percent of healthy growth at the end of the ninety (90) day maintenance period, shall be removed and replaced at once, unless designated otherwise in writing by the Landscape Architect. Replacements shall conform in all respects to the specifications for new plants and shall be planted in the same manner.

B. After the minimum ninety- (90) day maintenance period, the Contractor shall again request the Landscape Architect, in writing, for an inspection to determine whether the plant material is acceptable. If the plant material and workmanship are acceptable, written notice will be given by the Landscape Architect to the Contractor stating that the two (2) year guarantee period begins from the date of the Certificate of Acceptance.

C. If a substantial number of plants are sickly or dead at the time of final inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly removed from the project. Replacements shall conform in all respects to the specifications for new plants and shall be planted in the same manner. The Contractor shall maintain replacements for ninety (90) days after written approval of the replacements by the Landscape Architect.

D. Plants shall be guaranteed for a period of two (2) years after the Certificate of Acceptance and shall be alive and in satisfactory growth at the end of the guarantee period. Plants that die, show obvious decline or loss of 10% of healthy growth during the guarantee period, shall be removed and replaced at once, unless designated otherwise by the Landscape Architect.

E. The sum of 10% of the total cost of the planting contract shall be retained and paid to the Contractor after replacements have been made, two (2) years from the date of acceptance of original planting.

F. At the end of the guarantee period, the Landscape Architect shall inspect the plant material and any plant required under this contract that is dead or unsatisfactory shall be removed from the site. Each plant shall show at least ninety- five (95%) percent healthy growth and shall have the natural character of a plant of its species in accordance with the American Nurserymen's Association Standards. Dead or unsatisfactory plants shall be replaced during the normal planting season, until the plants live through one year. The Landscape Architect shall make a final inspection for acceptance after the replacement plants have lived through two (2) years.

G. All replacements shall be plants of the same species, variety, and size specified in the PLANT SCHEDULE and all costs shall be borne by the Contractor, except for possible replacements due to vandalism or neglect on the part of others.

**1.05 EXAMINATION OF CONDITIONS AND DOCUMENTS**

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 for the work of this Section.

B. The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to the potential need for storing and maintaining plants temporarily and/or rehandling plants prior to final installation.

C. Contractor shall verify all underground utility locations and structure rim elevations and pipe inverts prior to excavation. Before construction starts, all utility companies, public and private must be contacted including those in control of utilities not shown on this plan. See Chapter 370 Acts of 1963 Massachusetts and contact "DIG SAFE" 1-888-DIG-SAFE to delineate locations. Report any discrepancies in writing to the Landscape Architect and receive written instructions prior to proceeding.

**1.06 QUALITY ASSURANCE AND PRODUCT HANDLING**

A. Landscaping Contractor/Subcontractor Qualifications: All construction and installation of planting and related work shall be assigned to an experienced and qualified Landscaping Subcontractor with a minimum of five (5) years of experience with projects incorporating similar work and who employs experienced workmen who work under the full time supervision of a qualified foreman with a minimum of five (5) years of experience as a supervising foreman. Submit three (3) copies for a minimum of three (3) references at least thirty- (30) days prior to the start of work of under this Section as specified herein.

1. Landscaping Contractor/ Subcontractor must be knowledgeable of National Arborist Association standards and have at least five- (5) years experience involving this scale and type of work.

2. Landscaping Contractor/Subcontractor shall be a licensed/certified Arborist in the State of Massachusetts, have an arborist on staff, or employ an arborist for the project. Submit license/certification of Arborist for approval as specified herein.

3. Landscaping Contractor/Subcontractor shall be licensed to apply chemicals for disease, pest or weed control, have a licensed individual on staff, or employ a licensed individual specifically for the project. Submit license of Chemical Spray Applicator for approval as specified herein.

B. Storage and Handling: Store and handle packaged materials in strict compliance with manufacturer's instructions and recommendations. Protect all materials from damage, injury and theft.

**1.07 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 Landscaping Subcontractor shall be solely responsible for pedestrian and vehicular safety and control within the worksite 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 Landscaping Subcontractor shall post work areas, provide police details and/or erect and maintain protective devices as necessary to the Owner satisfaction, including but not limited to barricades, lights and warning signs.

C. Any practice employed by the Landscaping Subcontractor, which is obviously hazardous as determined by the Owner, shall be immediately discontinued by the Landscaping Subcontractor upon receipt of either written or oral notice from the Owner to discontinue such practice.

**1.08 RECORD DRAWINGS**

A. The Contractor shall cooperate with the Owner and shall prepare and maintain a set of drawings on which shall be recorded accurately, as the work progresses, the actual "as-built" locations, dimensions of all work, and materials incorporated in the work within the Contract, including thereon all variations from the Contract Drawings. This record of "as-built" conditions shall include the work of all subcontractors and shall be submitted to the Owner, upon final acceptance of all work.

B. The Contractor, prior to final acceptance of the work, shall transfer all "as-built" data to a complete set of reproducible record drawings, which can be either in ink or photolitho reproductions on mylar (4 mm), furnished by the Owner or on electronic files furnished by the Owner on electronic disc in AUTOCAD 2000 or better. The Contractor's Registered Land Surveyor shall perform this layout work with the cooperation of the Contractor and Subcontractors as required.

C. Either the as-built mylars or the as-built electronic files shall be submitted to the Owner for review and approval prior to the preparation of the punch list. After review and approval by the Owner, the "Record As-built Drawings" or "Record As-built Electronic Files" shall be completed and delivered to the Owner when all punch list items are completed and approved.

**1.09 MANNER OF CONDUCTING THE WORK**

A. The work shall be conducted with prime consideration given to the following:

1. Compliance with Americans with Disabilities Act requirements.

2. Compliance with governing laws and building codes.

3. Safety, protection, and convenience of the public and workmen.

4. Protection of the existing building structure, materials and finishes to remain from damage.

5. Minimization of dirt and dust proliferation.

6. Avoidance of any damage to existing vegetation to remain.

7. Maintenance of existing site drainage and drainage structures and protection of constructions from siltation during construction.

8. Provide unobstructed legal exits and entrances at all times.

**PART 2 - PRODUCTS**

**2.1 TOPSOIL FROM STOCKPILE**

A. Mechanically screened topsoil shall be existing topsoil stripped, mechanically screened, and stockpiled. Material shall consist of natural topsoil, free from subsoil, obtained from areas on site that have never been stripped. It shall be removed to its full depth until subsoil is encountered. Topsoil shall be of uniform quality mechanically screened free on a one (1") inch screen of hard clods, stiff clay, hardpan, sods, weeds, roots, rhizomes of Witch Grass or other undesirable grasses, partially disintegrated stone, stone over one inch in diameter lime, excessive amounts of small stones or gravel, cement, ashes, slag, concrete, tar residues, tarred paper, boards, chips, glass, sticks, or any other undesirable material, and shall meet all requirements of screened loam specified herein below. Soil shall not contain excessively acid or alkaline soil containing excessive proportions of either clay or sand, or muck, or peat or gravel.

B. The mechanically screened topsoil shall be subject to quality control testing. The Contractor shall bear all costs of testing regardless of results. Test results and laboratory recommendations will be sent directly to the Landscape Architect for review and approval, but will be available to the Contractor. All tests shall be done a maximum of ninety - (90) days prior to the submittal for approval. Tests that are dated prior to this time period shall automatically be rejected.

C. Material stripped from the following site sources or condition shall not be considered suitable for use as topsoil if any of the following conditions exist:

1. Soils having less than 4.0 pH value.

2. Chemically contaminated soils.

3. Areas from which the original surface has been stripped and/or covered over such as borrow pits, open mines, demolition sites, dumps and sanitary landfills.

4. Wet excavation.

5. Soils contaminated by subsoil.

D. Not under any circumstance shall topsoil be removed from the site unless approved in writing by the Landscape Architect and the Owner.

E. Not under any circumstance shall screened topsoil be spread without prior written approval of mechanical screening and subgrade preparation.

F. In addition, tests of mechanically screened topsoil may be required from time to time. Materials in question may not be used, pending test results. Remove rejected materials and replace with new, acceptable materials, whether in stockpiles or in place. Contractor shall pay all costs of testing regardless of results. Do not use materials being tested or retested until Landscape Architect's written approval has been obtained.

**2.02 MECHANICALLY SCREENED LOAM**

A. The mechanically screened loam shall be subject to quality control testing. The Contractor will bear all costs of testing regardless of results. Test results and laboratory recommendations will be sent directly to the Landscape Architect for review and approval, but will be available to the Contractor. All tests shall be done a maximum of ninety - (90) days prior to the submittal for approval. Tests that are dated prior to this time period shall automatically be rejected.

B. Mechanically screened loam form off site will only be provided if the existing mechanically screened topsoil from on site is not sufficient to complete the work or is not acceptable due to contamination or does not conform to the requirements of screened loam. If it does not meet the requirements of screened loam as specified, herein, it can be amended to meet these requirements and then retested to confirm compliance.

C. Mechanically screened loam shall be a "sandy loam" determined by mechanical analysis and based on the "USDA Textural Classification." It shall conform to the following grain size distribution for material passing the #4 sieve:

| Textural Classification | % Total Weight |
|---|---|
| Sand (0.05 – 2.0 mm dia. range) | less than 52% |
| Silt (0.002 – 0.05 mm dia. range) | 28%-50% |
| Clay (less than 0.002 mm dia. range) | 7%-27% |

Soil test shall include breakdown of sand subfractions from course to very fine.

D. Maximum grain size shall be one and one-quarter inches largest dimension. The maximum retained on the one-quarter inch sieve shall be 20 percent by weight of the total sample. Test shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.

E. Mechanically screened loam shall be uncontaminated by salt, water, foreign matter and substances harmful to plant growth. The electrical conductivity ($EC^2$) of a 1:2 soil-water suspension shall be equal to or less than 1.0 milliohms/cm. (Test material passing #4 sieve).

F. Material shall consist of natural topsoil, free from subsoil, obtained from an area, which has never been stripped. It shall be removed to a depth of one (1) foot or less if subsoil is encountered. Loam shall be of uniform quality mechanically screened free on a one (1") inch screen of hard clods, stiff clay, hardpan, sods, weeds, roots, rhizomes of Witch Grass or other undesirable grasses, partially disintegrated stone, stone over one inch in diameter lime, excessive amounts of small stones or gravel, cement, ashes, slag, concrete, tar residues, tarred paper, boards, chips, glass, sticks, or any other undesirable material, and shall meet all requirements of screened loam specified herein below. Soil shall not contain excessively acid or alkaline soil containing excessive proportions of either clay or sand, or muck, or peat or gravel. Mechanically screened topsoil shall be tested as specified, herein.

G. Mechanically screened loam shall have an acidity range of pH 6.0 to pH 6.5 and shall contain not less than 5% or 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 degrees F. plus or minus 9 degrees. To adjust organic matter content, the soil may be amended, prior to site delivery, by the addition of composted leaf mold or peat moss. Use of organic amendments is acceptable only if random soil sampling indicates thorough incorporation.

H. Mechanically screened loam and mechanically screened topsoil shall have a Cation Exchange Capacity (CEC) of between 10 and 15.

I. All mechanically screened loam provided from off site sources shall be brought to the site meeting all specification requirements. There must be no mixing or amending of soil on site. The mechanically screened loam must not be handled or moved when in a wet or frozen condition.

J. Mechanically screened topsoil which has been stockpiled on the site, may be used provided it can be made to comply with this Specification and that it has been screened to meet the above requirements. In addition, tests of mechanically screened topsoil as taken from may be required from time to time. Materials in question may not be used, pending test results. Remove rejected materials and replace with new, acceptable materials, whether in stockpiles or in place. Contractor shall pay all costs of testing regardless of results. Do not use materials being tested or retested until Landscape Architect's written approval has been obtained.

K. To assure mechanically screened loam purchased and mechanically screened topsoil stockpiled fulfills specified requirements regarding textural analysis, organic matter content, CEC and pH, soil testing results will be obtained by the Contractor and submitted to the Landscape Architect for written approval one month before any soil is delivered to the site.

L. In addition, tests of screened loam as delivered may be required from time to time. Materials in question may not be used, pending test results. Remove rejected materials and replace with new, acceptable materials, whether in stockpiles or in place. Contractor

shall pay all costs of testing regardless of results. Do not use materials being tested or retested until Landscape Architect's written approval has been obtained.

**2.03 VEGATABLE GARDEN SOIL MIX SPECIFICATION**

60% TOPSOIL: from off site provider such as Read Custom Soils or approved equal

| Textural Class | Percentage of Total Weight | Average |
|---|---|---|
| Percentage Sand(0.05 – 2.0mm dia. range) | 45 – 75 | 60 |
| Silt (0.002 – 0.05mm dia range) | 15 – 35 | 25 |
| Clay(Less than 0.002mm dia. range) | 5 – 20 | 15 |

Coarse Sandy loam shall have: less than 30% fine /very fine sand, and 50% or more medium/coarse/very coarse sand.

30% COMPOSTED MANURE

Manure shall be well-rotted, unbleached stable manure not less than eight months and not more than two years old. It shall be free from sawdust, shavings or refuse of any kind and shall not contain over twenty-five (25) percent straw. The Contractor shall furnish proof that disinfectant or chemicals, if any, were not used in the storage of the manure.

10% ORGANIC POTTING SOIL

Potting soil is an organic soilless growing mix that contains peat moss, perlite and/or vermiculite

**2.03 PLANTING SOIL MIX SPECIFICATION**

70% TOPSOIL
15% COMPOSTED MANURE
15% COURSE SAND

**2.04 SOIL ADDITIVES AND FERTILIZER**

A. Additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as approved by the Landscape Architect.

B. Commercial fertilizer shall be a product complying with Massachusetts and United States fertilizer laws. Fertilizer shall be delivered to the site in the original unopened containers, which shall bear the manufacturer's Certificate of Compliance covering analysis, which shall be furnished to the Landscape Architect. At least 50% by weight of the nitrogen content shall be derived from organic materials. Phosphorus shall be soluble. Fertilizer shall contain not less than the percentages of weight of ingredients as follows, but shall be adjusted to meet all recommendations of the soil analysis and shall contain required micronutrients established by soil test analysis.

| | Nitrogen | Phosphorus | Potash |
|---|---|---|---|
| For deciduous trees and shrubs: | 10% | 6% | 4% |
| For evergreen trees and shrubs: | 7% | 7% | 7% |

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. The acidity range shall be approximately 5.5 pH to 7.5 pH and the organic matter shall be not less than 85% as determined by loss on ignition testing in accordance with A.O.A.C.'s latest methods of testing. 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 or leaves of any of several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue and other foreign materials. Peat moss shall have an acidity range of 4.5 pH to 6.5 pH as determined in accordance with the latest methods of testing of A.O.A.C. Its water absorbing ability shall be a minimum of 1,100% by weight on an oven-dry basis.

E. Manure shall be well-rotted unleached stable manure not less than eight months and not more than two years old. It shall be free from sawdust, shavings or refuse of any kind and shall not contain over twenty-five percent straw. The Contractor shall furnish information as to the kind of disinfectant or chemicals, if any, which may have been used in storage of the manure.

F. Bone meal shall be fine ground, steam cooked, packinghouse bone with a minimum analysis of 23% phosphoric acid and 4% nitrogen.

G. Lime for adjustment of pH: An acceptable dolomite limestone containing not less than 85% of total carbonates, ground so that 50% will pass a 100 mesh sieve and 90% will pass a 20 mesh sieve.

H. Aluminum Sulfate for adjustment of pH: Unadulterated, 57% (Ortho Division, Chevron Chemical Company), or equal.

**2.05 PLANT MATERIALS**

A. The Contractor shall furnish and plant all plants shown on the Drawings, as specified, and in quantities, sizes and varieties as shown on the PLANT SCHEDULE. No substitutions in species, variety, or size shall be permitted without prior written approval from the Landscape Architect. All plants shall be nursery grown. All plants shall be balled and burlapped or grown in containers; bare-rooted plants shall not be permitted.

B. A complete list of plants, including a schedule of species, varieties, sizes, quantities and other requirements, shall be shown on the Drawings. In the event that quantity discrepancies or material omissions occur between the list of plant materials on the PLANT SCHEDULE and the Drawings, the higher number of plants shall govern.

C. Plants shall be in accordance with the ASNI Z60.1 “American Standard for Nursery Stock” published by the American Association of Nurserymen. Botanical plant names shall be in accordance with plant designations included in Hortus III and/ or Hillier’s Manual of Trees and Shrubs.

D. 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 stocks grown within hardiness Zones 1 through 5, as established by the U. S. Department of Agriculture "USDA Plant Hardiness Zone Map", 1990 or latest edition, will be accepted. The Contractor's suppliers must certify in writing that the stock has actually been grown under Zone 5 or hardier conditions. Plants not so certified will not be accepted.

E. The root system of each plant shall be well provided with fibrous roots. All parts shall be sound, healthy, and vigorous, well branched and densely foliated when in leaf. All plants shall be free of disease, insect pests, eggs or larvae.

F. All plants shall be balled and burlapped with 100% cloth burlap and 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. No poly-burlap or wire cages shall be allowed on plant materials. Any plants delivered to the site with materials other than cloth burlap shall automatically be rejected and the Contractor shall remove them from the site within 24 hours.

1. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous root feeding system necessary for the healthy development of the plant.

2. 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.

3. The plants and root balls shall remain intact during all operations.

4. All plants that cannot be planted at once shall be heeled in by setting on the ground, covering the balls with soil, and watering them.

5. Collected stock shall not be accepted.

6. Bare-root stock shall not be accepted.

7. Plant material from cold storage will not be accepted.

G. The height of the trees (measured from the crown of the roots to the tip of the top branch) shall not be less than the minimum size designated. Take caliber measurement six (6") inches above ground level up to and including four (4") inch caliber sizes and twelve (12") inches above the ground for larger sizes. The trunk of each tree shall be a single trunk growing from a single unmutilated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sunscald, frost cracks, or wounds resulting from abrasions, fire or other causes. No pruning wounds shall be present having a diameter exceeding two inches and

such wounds must show a vigorous bark on all edges. Plants shall not be pruned prior to delivery.

H. Shrubs shall meet the requirements for spread or height specified in the PLANT SCHEDULE. The measurements for height shall be taken from the ground level to the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to the trade classification "No. 1." Single stemmed or thin plants will not be accepted. The side branches must be generous, well twigged, and the plant as a whole well branched to the ground. The plants must be in a moist vigorous condition, free from dead wood, bruises, or other root or branch injuries. Plants shall not be pruned prior to delivery.

I. Groundcover plants and perennials shall be of size, age and/or condition listed in the PLANT SCHEDULE. Plants shall be healthy, free of insects and diseases. Ground cover plants shall be potted or in sod. Perennials shall be container-grown...

J. Container grown stock (ground cover, vines, shrubs, perennials) shall have been in a container long enough for the root system to develop sufficiently to hold its soil together firm and whole. Containerized, which means they were field-grown and then transferred into a container is not acceptable.

K. Both plants delivered by truck and plants requiring storage on site shall be properly wrapped and covered to prevent wind drying and desiccation of branches, leaves, or buds. Plant balls shall be firmly bound, unbroken, reasonably moist to indicate watering prior to delivery and during storage, and tree trunks shall be free from fresh scars and damage in handling. No trees with double leaders or twin heads will be acceptable without the written approval of the Landscape Architect. The Contractor shall reject such plants at the time of delivery by the nursery/supplier.

L. If trees come wrapped from the nursery, all wrapping shall be removed during planting.

**2.06 DEADMEN, ANCHORS, WIRE AND HOSE**

A. Deadmen for anchoring trees shall be Class "C" 3000 psi concrete and shall be two (2') feet x four (4') feet x eight (8") inches thick. Submit samples of all materials for approval.

B. Drive anchors and guy wire assembly shall be as manufactured by Laconia Earth Anchors, Inc. Warwick, RI. telephone (401) 739-8541 or approved equal. Sizes and number of anchors required per caliper inch shall be in accordance with the Manufacturer’s specifications and recommendations. Installation shall be in accordance with approved Shop Drawings.

C. Hose shall be new two-ply fibber bearing garden hose, not less than one-half (1/2”) inside diameter, twelve (12”) inches long, and color shall be black.

D. Wire for guying plants shall be new pliable annealed galvanized steel wire; A.S. & W. twelve gauge or gauge as shown on the Drawings.

E. The size and quality of cables, turnbuckles, thimbles, leg hooks, eyebolts, rods, and all required hardware shall be galvanized and shall be as shown on the approved Shop Drawings.

**2.07 MULCH**

A. Pine Bark Mulch:

1. Mulch shall consist of pine (soft wood) bark fragments of such size and texture as to successfully resist washing or blowing under normal conditions, but capable of being easily and uniformly spread around the plants. Submit sample for Landscape Architect's written approval.

2. Mulch shall be aged a minimum of three (3) months. The mulch shall be dark brown in color, free of chunks and pieces thicker than 1/4 inch. Mulch must be free of stringy material, and shall not contain, in the judgment of the Landscape Architect, an excess of fine particles. No large peel strips and decayed material will be permitted.

B. Peastone mulch shall conform to the requirements of M2.01.6 of the 'Standard Specification", shall be free of all deleterious materials, shall be gray in color, and shall conform to the following gradation:

| Sieve Size | Percent Passing |
|---|---|
| 3/8" | 85-100 |
| 1/2" | 15-45 |
| 3/4" | 0-20 |

**2.08 WATER**

A. The Contractor shall be responsible for furnishing his own supply of water to the site at no extra cost. If possible, the Owner will furnish the Contractor upon request with an adequate source and supply of water at no charge. However, if the Owner's water supply is not available or not functioning, the Contractor will be held responsible to furnish adequate supplies at his own cost. Water shall be free from impurities injurious to vegetation.

B. Any 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. If plant material dies as a result of too much or too little water the Contractor shall replace plants in-kind at no increased cost to the Owner.

**2.09 ANTIDESICCANT**

A. Antidesiccant shall be emulsions or other materials, which will provide a protective film over plant surfaces permeable enough to permit transpiration, and specifically manufactured for that purpose. Manufacturer of antidesiccant shall be subject to the Landscape Architect's approval and shall be used only after approval by the Landscape Architect. Antidessicant shall be delivered in containers of the manufacturer and shall be mixed according to the manufacturer's instructions.

## PART 3 - EXECUTION

### 3.01 PLANTING

A. Furnishing and planting of any plant material, complete, includes the digging of the holes for individual plants and local excavation required for planting beds, provisions of soil additives and screened loam for planting soil mix. The Contractor shall furnish and plant all plant species as shown on the Drawings, as specified, and in quantities, sizes and varieties as shown on the PLANT SCHEDULE with roots in the specified manner. No substitutions in species, variety, or size shall be permitted without prior written approval from the Landscape Architect. Included in the work shall be the labor of planting and mulching, anchoring and maintenance as specified herein.

B. Contractor shall strictly adhere to the limits of motorized vehicular access as shown on the Drawings, including allowable limits of machine excavation of plant beds. All work outside the limits of motorized vehicular access shall be done by hand or other approved methods.

C. The placing of mechanically screened topsoil and mechanically screened loam for lawns shall be completed in accordance with the Section 02930 LAWNS, herein, prior to beginning the planting operation.

D. Seasons for Planting:

1. Spring: Deciduous materials - March 21 through May 15.
   Evergreen materials - April 15 through June 1.

2. Fall: Deciduous materials - October 1 through December 1.
   Evergreen materials - August 15 through October 15.

3. Contractor shall schedule tree selection and digging operations so as to comply with nursery industry recognition of ‘Spring Dig Only’ or ‘Fall Hazard’ plant materials. No substitutions of plant materials will be allowed for fall planting based on unavailability due to the ‘Spring Dig Only’ or ‘Fall Hazard’ restrictions. Contractor and Landscape Architect shall have selected and had the material dug during the previous spring or fall.

4. Dig trees only while dormant: i.e., prior to bud break in the spring or after the onset of dormancy in the fall.

E. Plant selection:

1. At least ten days prior to the expected planting date, the Contractor shall request, in writing, that the Landscape Architect provide a representative to select and tag stock to be planted under this Section. The Contractor shall arrange and pay for the transportation and overnight accommodations, if necessary, for the Landscape Architect' during the period of time required to select and tag plant material.

2. The Contractor shall be responsible to certify the availability of required plants in specified sizes from his sources of supply prior to requesting the Landscape Architect to make plant source inspections**.** In the event that plants at the inspection location are found to be unavailable or if insufficient in size, the Contractor shall be liable to reimburse the Owner for all costs of the Landscape Architect's hourly services incurred during unproductive inspection trips.

3. Unless specifically designated otherwise, the Contractor or his representative shall accompany the Landscape Architect on all field trips for plant material selection.

4. All plants for the project shall be individually tagged for approval with the Landscape Architect's seals, and no plants shall be accepted for delivery to the site without such seals.

5. Plants shall be selected by the Landscape Architect at the place of growth for conformity to specification requirements as to species, variety, quality, and size. 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 replacements shall be borne by the Contractor.

F. 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 individual plant pits or plant beds are dug. If ledge, underground obstructions, or utilities are encountered the Landscape Architect shall be notified immediately.

2. Maintain at all times during the planting operations one or more stockpiles of approved mechanically screened loam or mechanically screened topsoil from stockpile.

3. Install aeration pipe loop with filter fabric as shown on the Drawings and approved Shop Drawings, or as directed in the field by the Landscape Architect

4. Plant pits shall be excavated with vertical sides. Holes for trees shall be at least three (3') feet greater than the ball and six (6') six inches deeper than the ball.

All trees shall be planted at the same grade that they grew in the nursery and shall be placed so that the nursery marked north side faces north on site unless directed differently by the Landscape Architect in the field. Contractor shall locate the union of root and trunk on each plant prior to digging the whole in order to determine depth of whole required.

5. Cut and remove rope or wire from the top fifty percent (50%) of the root ball and cut off the burlap back to the edge of the ball. Remove as much woven product and twine as possible. Do not pull burlap and wires out from under the root ball. Cut and remove all rope. Any wire basket enclosed root ball will need to have at least two-thirds (2/3) of the wire basket cut away from the sides and top of the ball and removed. Remaining lateral wires must be cut to prevent future root interference. Wire must not be galvanized or aluminum wire.

6. Any plants brought to the site with plastic or synthetic fabric shall be rejected and shall be removed from the site within twenty-four (24) hours.

7. Balled and burlapped plants shall be handled so that the ball will not be loosened. After the soil has been thoroughly firmed under and around the ball, the burlap shall be cut away from the upper half of the ball, and the remaining burlap adjusted to prevent the formation of air pockets. Where directed by the Landscape Architect, the burlap shall be entirely removed.

8. Backfill the planting hole with planting soil in layers not to exceed three (3) inches to half the planting hole's depth. Add water to thoroughly settle the soil. After watering, continue backfilling the mix until planting mix level is at the level that the plant was previously grown. Water again and adjust soil level to compensate for any settlement that may occur.

9. Set trees to line and grade as shown in the Drawings, with the trunk flare two (2) inches at the sidewalk surface or finish grade, centered in the planting well, and plumbed straight.

10. All shrubs shall be planted in a continuous bed and shall be at least eighteen inches (18") greater than the ball and at least six inches (6") deeper than the ball. Contractor shall locate the union of root and trunk on each plant prior to digging the hole in order to determine depth of hole required.

11. All groundcover and perennials shall be planted in a continuous bed of planting medium and shall be at least eighteen inches (18") in depth for perennials and twelve (12") inches in depth for groundcover.

12. All plant roots and earth balls or containers 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. All trees shall have their north side marked at the nursery and shall be planted with the north side facing north on the site, unless directed differently by the Landscape Architect in the field.

13. Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

14. Vines, herbaceous, and groundcover plants shall be carefully removed from containers or flats immediately prior to planting and set to the same depths as they were grown in the nursery bed or container, to the correct spacing indicated on the plans. Roots shall be arranged in their natural position and topsoil worked in among them, taking care to avoid bruising or damaging the roots. No later than one hour after planting, all plants shall be thoroughly settled in with water.

F. Planting medium:

1. All loam/topsoil proposed for use shall be tested prior to use, and improved as necessary to satisfy specification requirements, in accordance to the testing laboratory's recommendations. No planting soil mix may be used to install trees until laboratory tests have been reviewed and approved by the owner.

2. When the topsoil otherwise complies with the requirement of the specification but show a deficiency, the following may be incorporated when and as permitted by the Owner. After the planting soil has been mixed and prior to its use, the contractor shall have it tested by an approved laboratory to confirm that the mix meets specified standards.

3. Screened loam, organic material and bonemeal for planting medium for backfill for both planting beds and individual plants shall be thoroughly premixed in the proportions of one part of organic material with seven parts of loam together with ten (10) pounds of bonemeal per cubic yard of mixture. All materials for planting medium shall be approved prior to any material being brought on to the site.

4. Planting medium for backfill mix for shrub planting beds shall be prepared with the materials as specified above to a minimum depth of twenty-four inches (24”) or as shown on the Drawings.

5. Planting medium for backfill mix for planting beds for ground cover and perennials shall be prepared with the materials as specified above to a minimum depth of eighteen inches (18”) in depth for perennials and twelve (12”) inches in depth for groundcover, or as shown on the Drawings. Prior to planting of groundcover thoroughly incorporate peat moss with planting medium in the ratio of one part peat moss to two parts planting medium for the entire depth of the planting bed.

6. All materials for planting medium shall be approved prior to any material being brought on to the site.

H. Watering:

1. All plants shall be flooded with water twice within the first twenty-four hours of the time of planting. In case of drought or late planting the leaves of all plants shall be misted and/or an antidessicant shall be applied.

2. All plants for the first three months shall be watered at least once each week unless sufficient rainfall has occurred. In case of drought water weekly until rain resumes.

3. At each watering the soil around each tree or shrub shall be thoroughly saturated. If requested by the Landscape Architect the Contractor shall test soil moisture with tensiometers water gauges to ensure that plants have received sufficient moisture. If sufficient moisture is retained in the soil, as determined by the Landscape Architect, the required watering may be reduced. Trees shall receive a minimum of ten gallons of water per week. Shrubs, ground cover, vines and perennials shall receive a minimum of five gallons of water each week.

4. If an irrigation system is not available individual trees shall be watered by laying a hose at the base of the plant and allowing water to trickle for 30-60 minutes depending on seasonal conditions. To water entire beds of plants a soaker hose shall be used. Plants shall be tested with water gauges to ensure that they have received sufficient moisture.

I. All trees shall be firmly anchored at the time of planting. Installation shall be in accordance with approved Shop Drawings. Attach white flagging to all anchor wires.

1. Trees shall be set plumb, shall be neat in appearance, and anchors shall not injure the plant balls.

2. Wire used for guying shall be secured to the tree by passing through an approved hose to prevent chafing and injury to the trees. Sizes and number of anchors required per caliper inch shall be in accordance with the manufacturer's specifications and recommendations.

3. Attach white flagging to all anchor wires.

4. Install deadmen as shown on the Drawings.

J. Mulching:

1. Pine Bark Mulch:

a. Pine bark mulch shall be placed over a maximum of twelve (12") inches in diameter off the tree trunk for individual trees and over the entire area of shrub and/or groundcover planting beds to a

depth of two inches after settlement not later than one week after planting. Submit sample for approval.

b. No mulch shall be applied prior to the first watering of plant materials.

c. NO MULCH SHALL EVER BE MOUNDED LIKE A VOLCANO. Mulch shall always lie flat on the ground. Keep mulch away from stem(s) of plant.

d. Leave a minimum of three (3”) inches of exposed soil around the trunk. Trunk flare shall be visible.

K. Pruning:

1. Pruning shall be done only with Owner’s permission and in the presence of the Owner's representative in accordance with the workmanship requirements of the most recent edition of "American National Standard Institute, Inc. "Standards for Tree Care Operations Tree Shrub and Other Woody Plant Maintenance" ANSI A300 to preserve the natural character of the plant.

2. All pruning shall be performed by a certified/licensed Arborist.

3. Plant materials that are to be maintained as hedges shall be pruned accordingly. All pruning shall be performed by a certified/licensed Arborist. Pruning shall be as directed and approved by the Landscape Architect.

4. All dead wood or suckers and all broken or badly bruised branches shall be removed. Never cut a leader.

L. 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. If a hardpan layer is present drill six (6”) inch diameter holes, twenty-four (24”) inches apart, into free-draining strata or to a depth of ten (10’) feet, which ever is less, and backfill with sand or 3/8” crushed stone to provide free-draining material in accordance with the Standard Specifications.

M. 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.

N. 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.

O. Antidesiccant:

1. The Contractor shall spray all evergreen and broadleaf evergreen plants with antidessicant the first winter after plants are planted.

2. Spraying shall be performed at the correct time for that particular year's climatic conditions to insure the maximum protection for plants during the first winter.

3. If the fall has been particularly dry, the Contractor shall thoroughly water all evergreens and broadleaf evergreens for two weeks prior to spraying.

4. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

**3.02 MAINTENANCE**

A. Maintenance shall begin immediately after each plant is planted and shall continue through both provisional acceptance and the minimum ninety- (90) day maintenance period as specified, herein.

B. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include watering, weeding, cultivating, remulching, tightening and repairing of guys, removal of dead material, resetting plants to proper grades or upright position, and maintaining the planting saucers. Seasonal spraying for insects or disease and spraying for weed control shall also be included as required and/or as directed by Landscape Architect.

1. Plants shall be inspected for watering needs at least twice each week during the growing season and watered as necessary to promote plant growth and vitality.

2. Mulched planting beds and individual plant pits shall be kept free of weeds, and mulch shall be replaced as required to maintain the specified layer of mulch. Beds and individual pits shall be neat in appearance and maintained to the designed layout.

3. Plants that die or show obvious decline, loss of 5% of healthy growth during the maintenance or guarantee period, shall be removed and replaced at once, unless designated otherwise by the Landscape Architect.

4. Spraying for both insect pests and diseases shall be included during the maintenance period as required and as directed by Landscape Architect. All materials proposed shall be submitted to the Owner for approval prior to any application of the materials.

5. Spraying for weed control shall be included during the maintenance period as required and as directed by Landscape Architect. All materials proposed shall be submitted to the Owner for approval prior to any application of the materials.

C. During the maintenance period, any decline in the condition of planted or transplanted material shall require the Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, the Contractor shall engage professional arborists and/or horticulturalists to inspect plant materials and to identify problems and recommend to the Landscape Architect and Owner corrective procedures.

**END OF SECTION**

# SITE DEVELOPMENT PLANS

FOR

PROPOSED

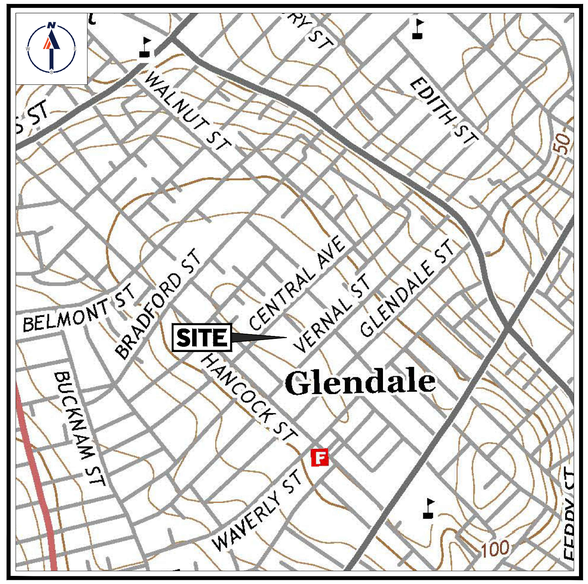
# WOODLAND ST. PLAYGROUND RENOVATION

**LOCATION OF SITE**

**CENTRAL AVE. & WOODLAND ST.**

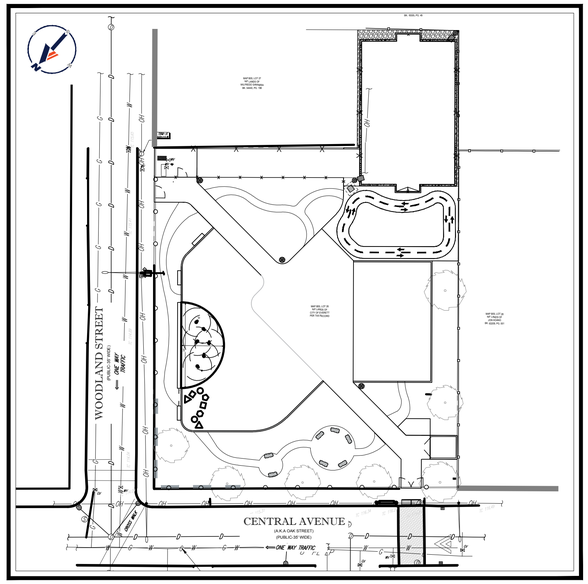
**CITY OF EVERETT**

**MIDDLESEX COUNTY, MASSACHUSETTS**




***USGS MAP***

SCALE: 1" = 600'




***SITE MAP***

SCALE: 1" = 30'

## *SHEET INDEX*

| SHEET TITLE | SHEET NUMBER |
|---|---|
| COVER SHEET | L-101 |
| GENERAL NOTES AND LEGEND | L-102 |
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| EROSION AND SEDIMENT CONTROL NOTES AND DETAILS | L-202 |
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**PREPARED BY**

**BOHLER**

CONTACT: LESLIE FANGER

GENERAL NOTE

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLANS\P-PLAD-PROP-MAA240217.00-0B-----1-LAYOUT L-101 COVR

LF

**BOHLER**

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN IS AND SHALL REMAIN THE PROPERTY OF BOHLER AND SHALL NOT BE USED FOR ANY PURPOSE, IN WHOLE OR IN PART, WITHOUT THE WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED AND SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES. © 2025 BOHLER

***REVISIONS***

| REV | DATE | COMMENT | DRAWN BY / CHECKED BY |
|---|---|---|---|
| | | | |

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| | |
|---|---|
| **PROJECT No.:** | MAA240217.00-0B |
| **DRAWN BY:** | RPK |
| **CHECKED BY:** | LDF |
| **DATE:** | 10/15/25 |
| **CAD I.D.:** | P-PLAD-PROP |

**PROJECT:**

***SITE DEVELOPMENT PLANS***

FOR

**WOODLAND ST. PLAYGROUND RENOVATION**
**CENTRAL AVE. & WOODLAND ST.**
**CITY OF EVERETT**
**MIDDLESEX COUNTY, MASSACHUSETTS**

**BOHLER**

50 WASHINGTON ST. SUITE 2000
WESTBOROUGH, MA 01581
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***M.J. MRVA***

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NEW YORK No. 002359
NEW HAMPSHIRE No. 109
CONNECTICUT No. 1359
MAINE No. 4245
VERMONT No. 01337
OHIO No. 250433

**SHEET TITLE:**

***COVER SHEET***

**SHEET NUMBER:**

**L-101**

**ORG. DATE - 10/15/25**

# GENERAL NOTES

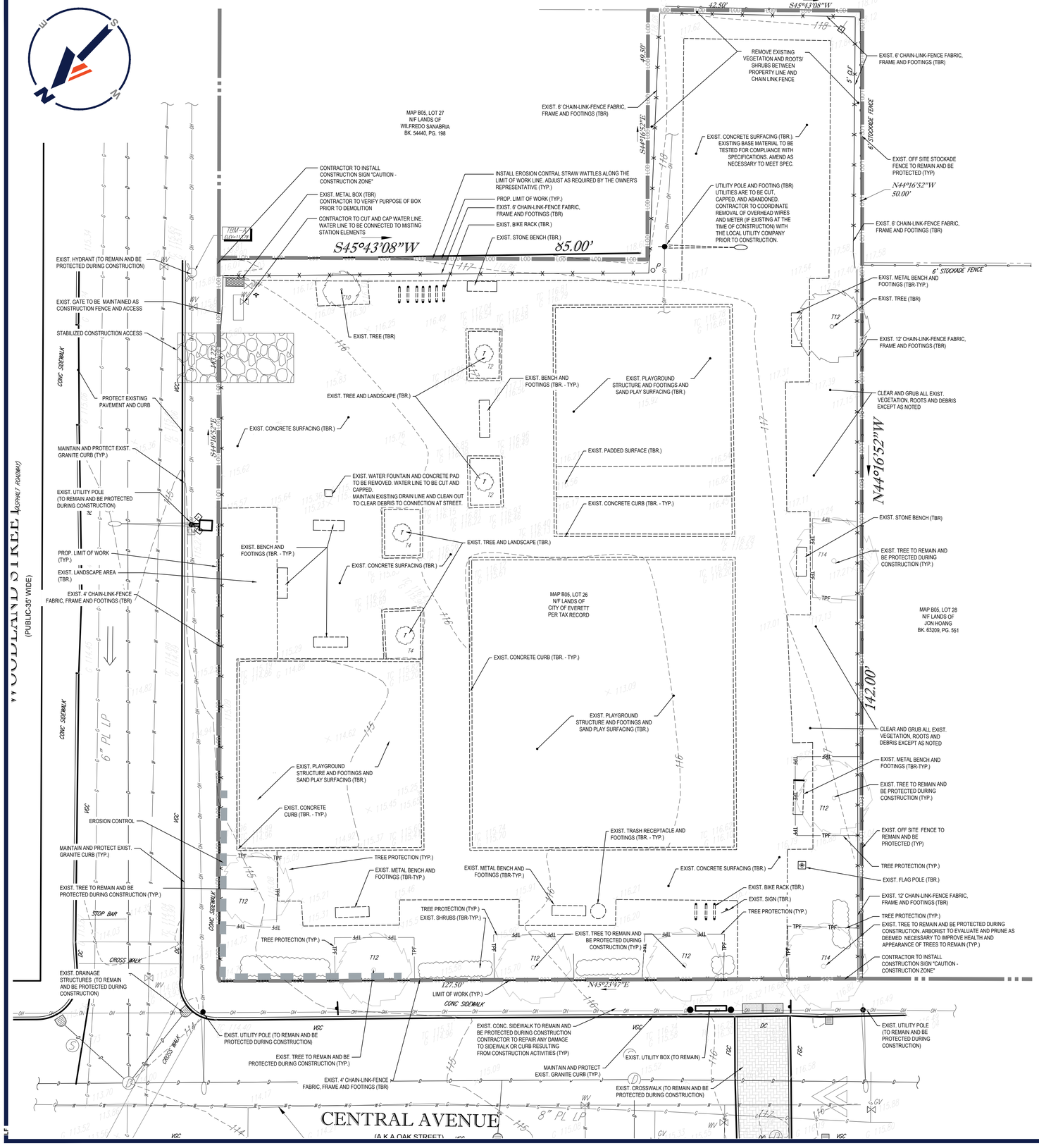
(Rev. 1/2023)

1. THESE PLANS ARE SOLELY BASED ON INFORMATION THE OWNER AND OTHERS PROVIDED TO BOHLER , LLC (HEREIN "BOHLER") PRIOR TO THE DATE ON WHICH THE PROFESSIONAL OF RECORD AND BOHLER PREPARED THESE PLANS. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS AND IMMEDIATELY NOTIFY BOHLER , IN WRITING, IF ANY ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.
2. THE CONTRACTOR MUST STRICTLY COMPLY WITH THESE NOTES AND ALL SPECIFICATIONS/REPORTS CONTAINED HEREIN. THE CONTRACTOR MUST ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS. THESE NOTES, AND THE REQUIREMENTS ARTICULATED IN THE NOTES CONTAINED IN ALL THE OTHER DRAWINGS THAT COMPRISE THE PLAN SET OF DRAWINGS. ADDITIONAL NOTES AND SPECIFIC PLAN NOTES MAY BE FOUND ON THE INDIVIDUAL PLANS. THESE GENERAL NOTES APPLY TO THIS ENTIRE DOCUMENT PACKAGE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE, PRIOR TO THE INITIATION AND COMMENCEMENT OF CONSTRUCTION.
3. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM WITH THE PROFESSIONAL OF RECORD AND BOHLER THAT THE LATEST EDITION OF THE DOCUMENTS AND/OR REPORTS REFERENCED WITHIN THE PLAN REFERENCES ARE BEING USED FOR CONSTRUCTION. THIS IS THE CONTRACTOR'S SOLE AND COMPLETE RESPONSIBILITY.
4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL COMMENCE UNTIL BOHLER HAS PERFORMED A THOROUGH REVIEW OF THE CONDITIONS OF APPROVAL TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES AND HAS ALSO CONFIRMED THAT ALL NECESSARY AND REQUIRED PERMITS HAVE BEEN OBTAINED. THE CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.
5. THE CONTRACTOR MUST ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS/REPORTS AND CONDITIONS OF APPROVAL AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, STATUTORY REQUIREMENTS, CODES, LAWS AND STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT, AND ALL PROVISIONS IN AND CONDITIONS OF THE CONSTRUCTION CONTRACT WITH THE OWNER/DEVELOPER INCLUDING ALL EXHIBITS, ATTACHMENTS AND ADDENDA TO SAME.
6. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM THE BUILDING LAYOUT BY CAREFULLY REVIEWING THE MOST CURRENT ARCHITECTURAL, CIVIL AND STRUCTURAL CONSTRUCTION DOCUMENTS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLANS, WHERE APPLICABLE). THE CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND PROFESSIONAL OF RECORD AND BOHLER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST BETWEEN THESE PLANS AND ANY OTHER PLANS THAT COMPRISE THE CONSTRUCTION DOCUMENTS.
7. CONTRACTOR MUST REFER TO AND ENSURE COMPLIANCE WITH THE ARCHITECTURAL/BUILDING PLANS OF RECORD FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.
8. THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND MEASUREMENTS SHOWN ON THESE PLANS, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR MUST IMMEDIATELY NOTIFY PROFESSIONAL OF RECORD AND BOHLER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH NEEDS TO BE RE-DONE OR REMOVED DUE TO DIMENSIONAL MEASUREMENTS OR DISCREPANCIES WHICH EXIST BETWEEN THESE PLANS PRIOR TO BOTH (A) THE CONTRACTOR GIVING PROFESSIONAL OF RECORD AND BOHLER WRITTEN NOTIFICATION OF SAME AND (B) PROFESSIONAL OF RECORD AND BOHLER, THEREAFTER, PROVIDING THE CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.
9. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND MEASUREMENTS INCLUDED ON DESIGN DOCUMENTS HEREIN AND MUST NOT SCALE OFF THE DRAWINGS DUE TO POTENTIAL PRINTING INACCURACIES. ALL DIMENSIONS AND MEASUREMENTS ARE TO BE STRICTLY CONFORMED TO THE GENERAL CONTRACTOR PRIOR TO PREPARATION OF SHOP DRAWINGS, FABRICATION/ORDERING OF PARTS AND MATERIALS AND COMMENCEMENT OF SITE WORK. SITE PLAN DRAWINGS ARE NOT INTENDED AS SURVEY DOCUMENTS. DIMENSIONS SUPERSEDE GRAPHICAL REPRESENTATIONS. THE CONTRACTOR MUST MAKE CONTRACTOR'S OWN MEASUREMENTS FOR LAYOUT OF IMPROVEMENTS.
10. THE OWNER AND CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
11. WHEN INCLUDED AS ONE OF THE REFERENCED DOCUMENTS, THE GEOTECHNICAL REPORT, SPECIFICATIONS AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND, IN CASE OF CONFLICT, DISCREPANCY OR AMBIGUITY, THE MORE STRINGENT REQUIREMENTS AND/OR RECOMMENDATIONS CONTAINED IN: (A) THE PLANS; AND (B) THE GEOTECHNICAL REPORT AND RECOMMENDATIONS, MUST TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE PROFESSIONAL OF RECORD AND BOHLER IN WRITING OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE GEOTECHNICAL REPORT AND PLANS AND SPECIFICATIONS, PRIOR TO PROCEEDING WITH ANY FURTHER WORK. IF A GEOTECHNICAL REPORT WAS NOT CREATED, THEN THE CONTRACTOR MUST FOLLOW AND COMPLY WITH ALL OF THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE SPECIFICATIONS WHICH HAVE JURISDICTION OVER THIS PROJECT.
12. PROFESSIONAL OF RECORD AND BOHLER ARE NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, HAS NO LIABILITY FOR ANY HAZARDOUS MATERIAL, HAZARDOUS SUBSTANCES OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.
13. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN AND WHERE SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES. IN THIS WORK IS TO BE PERFORMED AT CONTRACTOR'S SOLE COST AND EXPENSE.
14. THE CONTRACTOR IS TO EXERCISE EXTREME CAUTION WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONDITION. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND FOR THIRD PARTIES, PEDESTRIANS AND ANYONE ELSE WHO MAY BE INJURED OR INVOLVED WITH THE PROJECT.
15. DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION AND CONSTRUCTION WASTES, UNSUITABLE EXCAVATED MATERIAL, EXCESS SOIL AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER THE CONTRACTOR.
16. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN RECORDS TO DEMONSTRATE PROPER AND FULLY COMPLIANT DISPOSAL ACTIVITIES, TO BE PROMPTLY PROVIDED TO THE OWNER UPON REQUEST.
17. THE CONTRACTOR SHALL REPAIR, AT CONTRACTOR'S SOLE COST, ALL DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE, BUT NOT BE LIMITED TO, REDESIGN, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY OTHER ASSOCIATED ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY MUST BE COMPLETED TO A CONDITION OF EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS, RULES, REGULATIONS, STATUTORY REQUIREMENTS AND STATUTES. THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE CONTRACTOR MUST, PROMPTLY, DOCUMENT ALL EXISTING DAMAGE AND NOTIFY, IN WRITING, THE OWNER AND CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
18. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR AND HAVE NO CONTRACTUAL, LEGAL OR OTHER RESPONSIBILITIES FOR JOB SITE SAFETY JOB SITE SUPERVISION, OR ANYTHING RELATED TO SAME. THE PROFESSIONAL OF RECORD AND BOHLER HAVE NOT BEEN RETAINED TO PERFORM OR TO BE RESPONSIBLE FOR JOB SITE SAFETY, SAME BEING WHOLLY OUTSIDE OF PROFESSIONAL OF RECORD'S AND BOHLER SERVICES AS RELATED TO THE PROJECT. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES OR ANY JOB SITE CONDITIONS, AT ANY TIME.
19. THE CONTRACTOR MUST IMMEDIATELY IDENTIFY IN WRITING THE PROFESSIONAL OF RECORD AND BOHLER , ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE, OR PROJECT COST. IF THE CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER WRITTEN NOTIFICATION AS DESCRIBED ABOVE, IT WILL BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, THE CONTRACTOR MUST INDEMNIFY, DEFEND AND HOLD HARMLESS THE PROFESSIONAL OF RECORD AND BOHLER FOR ANY AND ALL DAMAGES, CLAIMS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM OR ARE IN ANY WAY RELATED TO SAME INCLUDING, BUT NOT LIMITED TO, ANY THIRD PARTY AND FIRST PARTY CLAIMS.
20. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM THE CONTRACTOR'S FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS, AND CURRENT CODES, RULES, STATUTES AND THE LIKE. IF THE CONTRACTOR AND/OR OWNER FAIL TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH APPROVED PLANS, STATUTES, CODES AND THE LIKE, THE CONTRACTOR AND/OR OWNER AGREE TO AND MUST JOINTLY, INDEPENDENTLY, SEPARATELY, AND SEVERALLY INDEMNIFY AND HOLD THE PROFESSIONAL OF RECORD AND BOHLER HARMLESS FOR AND FROM ALL INJURIES, CLAIMS AND DAMAGES THAT PROFESSIONAL OF RECORD AND BOHLER SUFFER AND ANY AND ALL COSTS THAT PROFESSIONAL OF RECORD AND BOHLER INCUR AS RELATED TO SAME.
21. ALL CONTRACTORS MUST CARRY AT LEAST THE MINIMUM AMOUNT OF THE SPECIFIED AND COMMERCIALLY REASONABLE STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND COMMERCIAL GENERAL LIABILITY INSURANCE (CGL) INCLUDING ALSO ALL UMBRELLA COVERAGES. ALL CONTRACTORS MUST HAVE CGL COVERAGE ENDORSED TO NAME BOHLER , AND ITS AGENTS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND INSURED CONTRACTORS AND SUBCONSULTANTS AS ADDITIONAL INSUREDS ON A PRIMARY AND NON-CONTRIBUTORY BASIS. PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE (DEFEND, IF APPLICABLE) AND HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED AND AGREED TO BY THE CONTRACTOR HEREIN. ALL CONTRACTORS MUST FURNISH BOHLER WITH CERTIFICATIONS OF INSURANCE OR CERTIFICATES OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE COVERAGES PRIOR TO COMMENCING ANY WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION AND FOR TWO YEARS AFTER THE COMPLETION OF CONSTRUCTION AND AFTER ALL PERMITS ARE ISSUED, WHICHEVER DATE IS LATER. IN ADDITION, ALL CONTRACTORS AGREE THAT THEY WILL, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, INDEMNIFY, DEFEND AND HOLD HARMLESS BOHLER AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONSULTANTS FROM AND AGAINST ANY AND ALL SUBCONTRACTS, CLAIMS AND DAMAGES, LIABILITIES AND PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR TO THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTOR(S), ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY PROFESSIONAL OF RECORD, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE HEREUNDER.
22. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES FOR CONNECTION OF NEW WORK TO EXISTING AS SHOWN ON THESE PLANS, AND FOR ANY CONFLICTS IN SCOPE AND REVISIONS THAT RESULT FROM SAME. THE CONTRACTOR IS FULLY AND SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND METHODS FOR COMPLETION OF THE WORK, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
23. NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER , OR BOHLER'S PRESENCE ON THE SITE SHALL BE CONSTRUED TO RELIEVE THE CONTRACTORS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE (HEREIN "BOHLER PARTIES"), RELIEVES OR WILL RELIEVE THE CONTRACTOR OF AND FROM CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, OVERSEEING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ALL HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY BODY HAVING JURISDICTION OVER THE PROJECT AND/OR PROPERTY. BOHLER PARTIES HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER (OR ANY RESPONSIBILITY FOR) ANY CONSTRUCTION, THE MEANS OR METHODS USED TO THEIR WORK AND ALL RESPONSIBILITY FOR JOB SITE SAFETY AND SAFETY PROGRAMS OR PROCEDURES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR MUST INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS BOHLER PARTIES FOR AND FROM ANY LIABILITY TO BOHLER PARTIES RESULTING FROM THE CONTRACTOR'S WORK, SERVICES AND/OR VIOLATIONS OF THIS NOTE. THESE NOTES OR ANY PART THEREOF SHALL NOT BE CONSTRUED AS THE CONTRACTOR MUST NAME BOHLER AS AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE AS DESCRIBED ABOVE.
24. WHEN IT IS CLEARLY AND SPECIFICALLY WITHIN BOHLER'S SCOPE OF SERVICES CONTRACT WITH THE OWNER/DEVELOPER, BOHLER WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF EVALUATING CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND/OR TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME. BOHLER WILL PERFORM ITS REVIEW AND PROVIDE ITS REASONABLE PROMPTNESS, AS CONDITIONS PERMIT. ANY DOCUMENT, DOCUMENTING BOHLER'S REVIEW OF A SPECIFIC ITEM OR LIMITED SCOPE, MUST NOT INDICATE THAT BOHLER HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. BOHLER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR MUST, IN WRITING, PROMPTLY AND IMMEDIATELY BRING ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS TO BOHLER'S ATTENTION. BOHLER IS NOT REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.
25. IF THE CONTRACTOR DEVIATES FROM THESE PLANS AND/OR SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PROFESSIONAL OF RECORD AND BOHLER'S PRIOR WRITTEN AUTHORIZATION FOR EACH AND EVERY DEVIATION WITHIN PROFESSIONAL OF RECORD'S SCOPE, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK PERFORMED WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR MUST DEFEND, INDEMNIFY, PROTECT, AND HOLD HARMLESS THE PROFESSIONAL OF RECORD AND BOHLER PARTIES TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, FOR AND FROM ALL FEES, ATTORNEYS' FEES, DAMAGES, COSTS, JUDGMENTS, CLAIMS, INJURIES, PENALTIES AND THE LIKE RELATED TO SAME.
26. THE CONTRACTOR IS RESPONSIBLE FOR A MAINTAINING AND PROTECTING THE TRAFFIC CONTROL PLAN AND ELEMENTS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS, FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE RIGHT OF WAY OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE AND IS THE CONTRACTOR'S SOLE RESPONSIBILITY
27. OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS IN STRICT ACCORDANCE WITH THE APPROVED PLAN(S) AND DESIGN AND, FURTHER, THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY FAILURE TO SO MAINTAIN OR PRESERVE SITE AND/OR DESIGN FEATURES. IF OWNER FAILS TO MAINTAIN AND/OR PRESERVE ALL PHYSICAL SITE FEATURES AND/OR DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, OWNER AGREES TO INDEMNIFY AND HOLD THE PROFESSIONAL OF RECORD AND BOHLER PARTIES, HARMLESS FOR ALL INJURIES, DAMAGES AND COSTS THAT PROFESSIONAL OF RECORD AND BOHLER INCUR AS A RESULT OF SAID FAILURE OR FAILURE TO PRESERVE.
28. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES AND MATERIALS COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL RULES AND REGULATIONS, LAWS, ORDINANCES, AND CODES, AND ALL APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (29 U.S.C. 651 ET SEQ.) AS AMENDED, AND ANY MODIFICATIONS, AMENDMENTS OR REVISIONS TO SAME.
29. THE CONTRACTOR MUST STRICTLY COMPLY WITH THE LATEST AND CURRENT OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION OVER EXCAVATION AND TRENCHING PROCEDURES. PROFESSIONAL OF RECORD AND BOHLER HAS NO RESPONSIBILITY FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES AND WORK.
30. THE CONTRACTOR AND THE OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDATIONS, INSTALLATION CRITERIA AND SPECIFICATIONS. IF THE CONTRACTOR AND OWNER FAIL TO DO SO, THEY AGREE TO JOINTLY, INDEPENDENTLY, SEPARATELY, COLLECTIVELY, AND SEVERALLY INDEMNIFY, DEFEND, PROTECT AND HOLD PROFESSIONAL OF RECORD AND BOHLER HARMLESS FOR ALL INJURIES AND DAMAGES THAT PROFESSIONAL OF RECORD SUFFERS AND COSTS THAT PROFESSIONAL OF RECORD INCURS AS A RESULT OF SAID FAILURE.
31. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN AN ON-SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS OR LOCAL GOVERNING AGENCY FOR SITES WHERE ONE (1) ACRE OR MORE IS DISTURBED BY CONSTRUCTION ACTIVITIES (UNLESS THE LOCAL JURISDICTION REQUIRES A DIFFERENT THRESHOLD). THE CONTRACTOR MUST ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF ALL SUBCONTRACTORS, ARE IN COMPLIANCE WITH THE SWPPP, INCLUDING BUT NOT LIMITED TO LOGGING ACTIVITIES (MINIMUM ONCE PER WEEK AND AFTER RAINFALL EVENTS) AND CORRECTIVE MEASURES, AS APPROPRIATE AND FURTHER, THE CONTRACTOR IS SOLELY AND COMPLETELY RESPONSIBLE FOR FAILING TO DO SO.
32. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED DOCUMENTS PREPARED BY THE PROFESSIONAL OF RECORD AND BOHLER, THE USE OF THE WORDS 'CERTIFY' OR 'CERTIFICATION' CONSTITUTE(S) AN EXPRESSION ONLY OF PROFESSIONAL OPINION REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE PROFESSIONAL OF RECORD'S AND BOHLER KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON AND ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE OF ANY NATURE OR TYPE, EITHER EXPRESSED OR IMPLIED, UNDER ANY CIRCUMSTANCES.

# DEMOLITION NOTES

(Rev. 1/2023)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. THE CONTRACTOR MUST CONDUCT DEMOLITION/REMOVALS ACTIVITIES IN SUCH A MANNER AS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND ALL OTHER ADJACENT FACILITIES. THE CONTRACTOR MUST OBTAIN ALL APPLICABLE PERMITS FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY(IES) PRIOR TO THE COMMENCEMENT OF ANY ROAD OPENING OR DEMOLITION ACTIVITIES IN OR ADJACENT TO THE RIGHT-OF-WAY.
3. WHEN DEMOLITION-RELATED ACTIVITIES IMPACT ROADWAYS AND/OR ROADWAY RIGHT-OF-WAY, THE CONTRACTOR MUST PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH THE CURRENT FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE FEDERAL, STATE, AND LOCAL REGULATIONS.
4. THE DEMOLITION (AND/OR REMOVALS) PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION AND TO IDENTIFY ONLY CONDITIONS REGARDING ITEMS TO BE DEMOLISHED, REMOVED, AND/OR TO REMAIN.
   A. THE CONTRACTOR MUST ALSO REVIEW ALL CONSTRUCTION DOCUMENTS AND INCLUDE WITHIN THE DEMOLITION ACTIVITIES ALL INCIDENTAL WORK NECESSARY AND/OR REQUIRED FOR THE SUCCESSFUL COMPLETION OF THE WORK.
   B. THIS PLAN IS NOT INTENDED TO AND DOES NOT PROVIDE DIRECTION REGARDING THE MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE EMPLOYED TO ACCOMPLISH THE WORK. ALL MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE EMPLOYED TO ACCOMPLISH THE WORK MUST COMPLY WITH ALL OSHA AND OTHER FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR MUST COMPLY WITH ALL OSHA AND OTHER SAFETY PRECAUTIONS REQUIRED TO PROVIDE A SAFE WORK SITE FOR THE CONTRACTOR AND THE PUBLIC.
5. THE CONTRACTOR MUST PROVIDE ALL "METHODS AND MEANS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES, AND ANY OTHER IMPROVEMENTS THAT ARE REMAINING ON OR OFF SITE. THE CONTRACTOR, AT THE CONTRACTOR'S SOLE COST, MUST REPAIR ALL DAMAGE TO ALL STRUCTURES AND FEATURES THAT ARE TO REMAIN. CONTRACTOR MUST USE NEW MATERIAL FOR ALL REPAIRS, CONTRACTOR'S REPAIRS MUST INCLUDE THE RESTORATION OF ALL ITEMS AND FEATURES DISTURBED DURING THE PRE-DEMOLITION CONDITION, OR BETTER. CONTRACTOR MUST PERFORM ALL REPAIRS AT THE CONTRACTOR'S SOLE EXPENSE.
6. THE PROFESSIONAL OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. THE CONTRACTOR MUST PROCEED WITH THE DEMOLITION IN A SAFE MANNER AND IN COMPLIANCE WITH ALL OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY AND SAFETY TO ALL PROPERTY ON THE SITE OR ADJACENT OR NEARBY THE SITE.
7. THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE SAFETY, WHICH MUST INCLUDE, BUT IS NOT LIMITED TO, THE INSTALLATION AND MAINTENANCE OF BARRIERS, FENCING, OTHER APPROPRIATE AND/OR NECESSARY SAFETY FEATURES AND ITEMS NECESSARY TO PROTECT THE PUBLIC FROM ALL DEMOLITION ACTIVITIES AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR MUST SAFEGUARD THE SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF UNAUTHORIZED PERSONS AT ANY TIME DURING THE DEMOLITION AREA.
8. PRIOR TO THE COMMENCEMENT OF ANY SITE ACTIVITY AND ANY DEMOLITION ACTIVITY, THE CONTRACTOR MUST, IN WRITING, RAISE ANY QUESTIONS CONCERNING THE ACCURACY OR INTENT OF THESE PLANS AND/OR SPECIFICATIONS, ALL CONCERNS OR QUESTIONS REGARDING THE APPLICABLE SAFETY STANDARDS, AND THE C




## MASSACHUSETTS DEMOLITION NOTES

(REV. 1/2023)

1. THE CONTRACTOR MUST LOCATE AND CLEARLY DEFINE VERTICALLY AND HORIZONTALLY ALL ACTIVE AND INACTIVE UTILITY AND/OR SERVICE SYSTEMS THAT ARE TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN ALL ACTIVE SYSTEMS THAT ARE NOT BEING REMOVED/RELOCATED DURING SITE ACTIVITY.
2. CONTRACTOR SHALL FIELD LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND IF REQUIRED, DIG EXPLORATORY TEST PITS TO CONFIRM EXACT LOCATION AND DEPTH OF UTILITIES. CONTRACTOR SHALL NOTIFY DESIGN ENGINEER WITH ANY CONFLICTS AS NEEDED TO COORDINATE FINAL LOCATION OF ALL PROPOSED IMPROVEMENTS.
3. CONTRACTOR SHALL INSPECT ALL EXISTING UTILITY STRUCTURES THAT ARE TO REMAIN FOR THE PROJECTS RE-USE TO VERIFY SUITABILITY FOR SAME. IF STRUCTURES CAN NOT BE REUSED THEN THE CONTRACTOR SHALL PROVIDE A NEW STRUCTURE. THE CONTRACTOR SHALL COORDINATE SUCH WORK WITH THE APPLICABLE UTILITY PROVIDER.
4. CONTRACTOR TO REMOVE ANY BUILDING FOUNDATION REMAINS OR ASSOCIATED IMPROVEMENTS, DELETERIOUS MATERIALS, AND/OR DEBRIS THAT IMPEDE THE WORK SHOWN ON THESE PLANS.
5. THE CONTRACTOR SHALL REVIEW THE PLANS VERSUS THE LOCATION OF EXISTING STRUCTURES, UTILITIES AND APPURTENANCES IN THE FIELD TO CONFIRM ACCURACY OF SAME AND VERIFY ITEMS TO BE REMOVED. THE CONTRACTOR SHALL CARRY COSTS FOR REMOVAL OF ANY EXISTING STRUCTURES, APPURTENANCES, AND UNDERGROUND UTILITIES, INCLUDING BUT NOT LIMITED TO, DRAIN, WATER, SEWER, STEAM, IRRIGATION, GAS, TELECOM AND ELECTRIC.
6. WHERE THE LIMIT OF WORK COINCIDES WITH PROPERTY LINE LINE, PROPOSED SAWCUT OR COMBINATION THEREOF IT IS SHOWN ADJACENT TO THESE FEATURES FOR GRAPHICAL CLARITY.
7. EXISTING TREES TO REMAIN ARE TO BE PROTECTED DURING CONSTRUCTION UNLESS CLEARLY INDICATED OTHERWISE. REASONABLE CARE AND CAUTION SHALL BE TAKEN DURING CONSTRUCTION TO PREVENT DAMAGE AND SELECTIVE PRUNING MAY BE REQUIRED TO ENSURE THAT TREES DO NOT CONFLICT WITH THE DEVELOPMENT.
8. CONTRACTOR SHALL REPAIR/REPLACE ANY TRAFFIC LOOP DETECTORS THAT ARE DAMAGED DURING CONSTRUCTION WITHIN EXISTING OR PROPOSED RIGHTS OF WAYS. ANY SUCH WORK SHALL BE PERFORMED BY A LICENSED / DOT APPROVED SIGNAL CONTRACTOR. ANY DAMAGED LOOPS OR OTHER SIGNAL EQUIPMENT SHALL BE REPAIRED IMMEDIATELY AFTER THE WORK IS COMPLETE. THE SIGNAL CONTRACTOR SHALL BE AVAILABLE TO MAKE ANY TEMPORARY SIGNAL CHANGES IF REQUESTED BY DOT AND/OR THE MUNICIPALITY.
9. THE CONTRACTOR MUST FIELD VERIFY THE LOCATIONS WHERE PROPOSED UTILITIES CROSS EXISTING UNDERGROUND UTILITIES BY USING A TEST PIT TO DETERMINE THE EXACT SIZE, DEPTH AND LOCATION, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
10. CONTRACTOR SHALL LOCATE ANY EXISTING UTILITY SERVICES THAT ARE TO BE TERMINATED AT THE EXISTING MAIN AND/OR PROPERTY LINE. THESE SERVICES ARE TO BE TERMINATED IN ACCORDANCE WITH MUNICIPAL / STATE TRANSPORTATION DEPARTMENT REQUIREMENTS.

THE FOLLOWING CONSTRUCTION SEQUENCE IS RECOMMENDED:

- INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE/EXIT (AS SHOWN)
- INSTALLATION OF EROSION CONTROL BARRIER (STRAW BALES AND SILT FENCE) (AS SHOWN)
- INSTALLATION OF INLET PROTECTION IN STREET (AS SHOWN)
- DEMOLITION OF EXISTING SITE STRUCTURES (SEE DEMOLITION PLAN)
- DEMOLITION OF EXISTING SITE PAVEMENT AND AMENITIES (SEE DEMOLITION PLAN)
- CLEARING AND GRUBBING
- INSTALLATION OF TEMPORARY SWALES AND SEDIMENT BASINS
- EARTHWORK AND EXCAVATION/FILLING AS NECESSARY
- CONSTRUCTION OF UTILITIES
- STABILIZE PERMANENT LAWN AREAS AND SLOPES WITH TEMPORARY SEEDING
- INSTALLATION OF INLET PROTECTION OF ON-SITE UTILITIES (AS SHOWN)
- CONSTRUCTION OF BUILDINGS
- CONSTRUCTION OF ALL CURBING AND LANDSCAPE ISLANDS AS INDICATED ON THE PLANS
- SPREAD TOPSOIL ON SLOPED AREAS AND SEED AND MULCH
- FINAL GRADING OF ALL SLOPED AREAS
- PLACE 6" TOPSOIL ON SLOPES AFTER FINAL GRADING COMPLETED. FERTILIZE, SEED, AND MULCH SEED MIXTURE TO BE INSTALLED AS REQUIRED.
- REMOVAL OF THE TEMPORARY SEDIMENT BASINS
- PAVE PARKING LOT
- LANDSCAPING PER LANDSCAPING PLAN
- REMOVE EROSION CONTROLS AS DISTURBED AREAS BECOME STABILIZED TO 70% STABILIZATION OR GREATER

## RECOMMENDED CONSTRUCTION SEQUENCE

NOT TO SCALE (NE-O990101 - 09/2023)

## DEMOLITION ABBREVIATIONS

| ABBREVIATION | DESCRIPTION |
|---|---|
| (TBR) | TO BE REMOVED |

## TREE PROTECTION NOTES

- ALL TREES IDENTIFIED AS "TO REMAIN" OR "TO BE TRANSPLANTED" ARE TO BE PROTECTED AND WATERED THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES AND FOR THE ONE YEAR WARRANTEE PERIOD. ANY TREES TO REMAIN OR TRANSPLANTED THAT SHOW SIGNS OF DECLINE OR DIE ARE TO BE REPLACED WITH THE SAME SPECIES AND CALIPER SIZE, AND TO BE APPROVED OF BY THE CITY AND LANDSCAPE ARCHITECT.
- COORDINATE WITH DPW PRIOR TO WORKING WITHIN PUBLIC R.O.W. / SIDEWALK FOR DIRECTION ON MAINTENANCE OF PUBLIC ACCESS.
- EXISTING TREES TO REMAIN:

a. CONSULT CITY ARBORIST PRIOR TO THE FOLLOWING;
b. REMOVE DEAD WOOD
c. PRUNE TO SHAPE
d. LIMB UP ALL BRANCHES BELOW 6' FROM GROUND SURFACE

**THIS PLAN TO BE UTILIZED FOR DEMOLITION PURPOSES ONLY**

10 5 2.5 0 10
SCALE: 1" = 10'


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SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES


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| | |
|---|---|
| PROJECT No.: | MAA240217.00-0B |
| DRAWN BY: | RPK |
| CHECKED BY: | LDF |
| DATE: | 10/15/25 |
| CAD I.D.: | P-PLAD-PROP |

PROJECT:

**SITE DEVELOPMENT PLANS**

FOR

**WOODLAND ST. PLAYGROUND RENOVATION**
**CENTRAL AVE. & WOODLAND ST.**
**CITY OF EVERETT**
**MIDDLESEX COUNTY, MASSACHUSETTS**


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VERMONT No. 01337
OHIO No. 250433


SHEET TITLE:

**EXISTING CONDITIONS/ DEMOLITION PLAN**

SHEET NUMBER:

**L-201**

ORG. DATE - 10/15/25

P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLANS\P-PLAD-PROP-MAA240217.00-0B-----\LAYOUT L-201 EXDM

## MASSACHUSETTS EROSION AND SEDIMENT CONTROL NOTES

1. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE AS SET FORTH IN THE MOST CURRENT STATE SEDIMENT AND EROSION CONTROL MANUAL.
2. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UNVEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. AT A MINIMUM, AREAS SHALL BE PERMANENTLY STABILIZED ACCORDING TO THE CURRENT EDITION OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP), OR IN THE ABSENCE OF A SWPPP, THEY SHALL BE PERMANENTLY STABILIZED WITHIN 14 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 100 FEET OF A STREAM OR POND, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO ANY STORM EVENT (THIS WOULD INCLUDE WETLANDS).
3. SEDIMENT BARRIERS (SILT FENCE, STRAW BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 8%.
4. INSTALL SILTATION BARRIER AT TOE OF SLOPE TO FILTER SILT FROM RUNOFF. SEE SILTATION BARRIER DETAILS FOR PROPER INSTALLATION. SILTATION BARRIER WILL REMAIN IN PLACE PER NOTE #5.
5. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSITION. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED. FOR SEDIMENT CONTROL DEVICES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE DEVICES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
6. NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO TO ONE (2:1) UNLESS OTHERWISE INDICATED ON THE PLANS. SLOPE PROTECTION FOR SLOPES GREATER THAN 2:1 SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER.
7. IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCH (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
8. TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST TO PROTECT FROM SPRING RUNOFF PROBLEMS.
9. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL STANDARDS.
10. REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
    a) SIX INCHES, OR DEPTH SPECIFIED ON THE LANDSCAPE PLAN, OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
    b) APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 LB PER ACRE OR 18.4 LB PER 1,000 SF USING 10-20-20 OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER 1,000 SF).
    c) FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUE-GRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYEGRASS: SEEDING RATE IS 1.03 LBS PER 1,000 SF LAWN. QUALITY SOD MAY BE SUBSTITUTED FOR SEED WHERE SLOPES DO NOT EXCEED 2:1, SOD ON SLOPES STEEPER THAN 3:1 SHOULD BE PEGGED.
    d) STRAW MULCH AT THE RATE OF 70-90 LBS PER 1,000 SF. A HYDRO-APPLICATION OF WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER WILL BE USED ON STRAW MULCH FOR WIND CONTROL.
11. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE IS 70% STABILIZED. FOR EROSION CONTROL MEASURES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE MEASURES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.
12. WETLANDS WILL BE PROTECTED WITH BARRIERS CONSISTING OF STRAW BALES, COMPOST TUBES, SILT FENCE OR A COMBINATION THEREOF.
13. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL HAVE AN EXPOSURE WINDOW OF NOT MORE THAN 7 DAYS.
14. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IF NOT BEING ACTIVELY WORKED:

| LOCATION | MULCH | MULCH RATE (1000 SF) |
|---|---|---|
| PROTECTED AREA | STRAW | 100 POUNDS |
| WINDY AREA | SHREDDED OR CHOPPED CORNSTALKS<br>STRAW (ANCHORED)* | 185-275 POUNDS<br>100 POUNDS |
| MODERATE TO HIGH VELOCITY AREAS OR STEEP SLOPES GREATER THAN 3:1 | JUTE MESH OR EXCELSIOR MAT | AS REQUIRED |
| GREATER THAN 3:1 | (REFER TO GEOTECHNICAL REPORT FOR FINAL DESIGN REQUIREMENT) | |

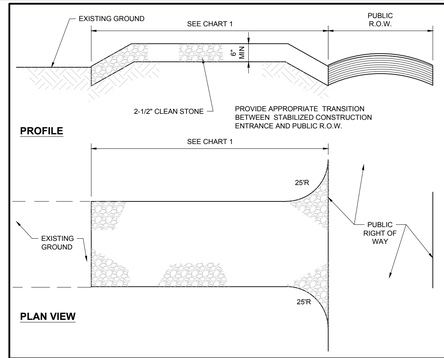
* A HYDRO-APPLICATION OF WOOD OR PAPER FIBER MAY BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER SHALL BE USED TO ADDITIONAL WIND CONTROL.

* MULCH ANCHORING: ANCHOR MULCH WITH PEG AND TWINE (1 SQ. YD/BLOCK); MULCH NETTING (AS PER MANUFACTURER); WOOD CELLULOSE FIBER (750 LBS/ACRE); CHEMICAL TACK (AS PER MANUFACTURER'S SPECIFICATIONS); USE OF A SERRATED STRAIGHT DISK. WETTING FOR SMALL AREAS AND ROAD DITCHES MAY BE PERMITTED.

15. PROPOSED LOCATIONS OF SURFACE STORMWATER MANAGEMENT BASINS CAN BE UTILIZED AS A TEMPORARY SEDIMENT TRAP DURING CONSTRUCTION SEDIMENT TRAPS SHALL BE SIZED AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.
    a) TEMPORARY SEDIMENT TRAPS SHALL BE SIZED PER THE CURRENT EDITION OF THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" AND PROVIDE A MINIMUM OF 1,800 CF PER ACRE OF TRIBUTARY AREA WITH A MAXIMUM TRIBUTARY AREA OF 5 ACRES, MAINTAIN A 2:1 LENGTH TO WIDTH RATIO, AND NOT EXCEED 5 FT IN HEIGHT. UPON SITE STABILIZATION, ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE TEMPORARY SEDIMENT TRAP EXCAVATED TO 1 FOOT BELOW THE TRAP. THE AREA SHALL THEN BE SCARIFIED TO PREVENT COMPACTION AND PROMOTE INFILTRATION, AND GRADED AND STABILIZED IN ACCORDANCE WITH THE GRADING AND LANDSCAPE PLANS.
16. STOCKPILING OF MATERIALS (DIRT, WOOD, CONSTRUCTION MATERIALS, ETC.) MUST REMAIN COVERED AT ALL TIMES TO MINIMIZE ANY DUST PROBLEMS THAT MAY OCCUR WITH ADJACENT PROPERTIES AND TO PROVIDE MAXIMUM PROTECTION AGAINST EROSION RUNOFF.
17. EXISTING CATCH BASIN STRUCTURES SHALL BE PROTECTED UNTIL SUCH TIME AS THEY ARE REMOVED.
18. THE CONTRACTOR MUST PERFORM DEWATERING (IF REQUIRED), IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND PAY FOR THE COSTS ASSOCIATED WITH ANY AND ALL NECESSARY DISCHARGE PERMITS ASSOCIATED WITH SAME.
19. THE CONTRACTOR MUST LOCATE CONSTRUCTION WASTE MATERIAL STORAGE AREAS TO MINIMIZE EXPOSURE TO STORMWATER. THE CONTRACTOR MUST IMMEDIATELY PLACE CONSTRUCTION WASTE IN ON-SITE STORAGE CONTAINERS UNTIL THAT CONSTRUCTION WASTE IS READY FOR OFF-SITE DISPOSAL. THE CONTRACTOR MUST MAINTAIN SPILL PREVENTION AND RESPONSE EQUIPMENT AND MAKE SAME CONTINUOUSLY AVAILABLE ON-SITE FOR USE BY THE CONTRACTOR'S EMPLOYEES WHO MUST BE PROPERLY TRAINED IN THE APPLICATION OF SPILL PREVENTION AND RESPONSE PROCEDURES.
20. EROSION CONTROL NOTES DURING WINTER CONSTRUCTION
21. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.
22. WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT THE AMOUNT OF AREA OPEN AT ONE TIME IS MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE AND IN CONFORMANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN SUCH THAT ADEQUATE PROVISIONS ARE EMPLOYED TO CONTROL STORMWATER RUNOFF.
23. CONTINUATION OF EARTHWORK OPERATION ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.
24. AN AREA SHALL BE CONSIDERED TO HAVE BEEN TEMPORARILY STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR STRAW AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE.
25. FOR AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR A PERIOD EXCEEDING 14 DAYS BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED. IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 200-300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED AS APPLICABLE. SLOPES SHALL NOT BE LEFT UNSTABILIZED OVER THE WINTER OR IN AREAS WHERE WORK HAS CEASED FOR MORE THAN 14 DAYS UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF SEDIMENT BARRIERS OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.
26. MULCHING REQUIREMENTS:
    a) BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING OR WOOD CELLULOSE FIBER.
    b) MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPE EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.
    c) MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
27. ALL DISTURBED AREAS SHALL BE STABILIZED IN ACCORDANCE WITH THE STORMWATER PREVENTION PLAN.
28. DURING THE WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

## GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. EROSION CONTROL MEASURES MUST CONFORM TO THE MASSACHUSETTS GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL UNLESS OTHERWISE NOTED, OR UNLESS THE PROFESSIONAL OF RECORD CLEARLY AND SPECIFICALLY, IN WRITING, DIRECTS OTHERWISE. INSTALLATION OF EROSION CONTROL, CLEARING, AND SITE WORK MUST BE PERFORMED EXACTLY AS INDICATED IN THE EROSION CONTROL CONSTRUCTION NOTES.
3. THE DISTURBED LAND AREA OF THIS SITE IS APPROXIMATELY .50 ACRE.
4. THE FOLLOWING EROSION CONTROL MEASURES ARE PROPOSED FOR THIS SITE:
    a) STABILIZED CONSTRUCTION ENTRANCE/ EXIT - A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT IS TO BE INSTALLED AT THE DESIGNATED LOCATION SHOWN ON THE PLAN. THIS AREA MUST BE GRADED SO THAT RUNOFF WATER WILL BE RETAINED ON-SITE.
    b) SEDIMENT FENCE - INSTALL SILT FENCE(S) AND/OR SILT SOCK AROUND ALL OF THE DOWNSLOPE PERIMETERS OF THE SITE, TEMPORARY FILL AND SOIL STOCKPILES.
    c) INSTALL FILTER FABRIC DROP INLET PROTECTION AROUND EACH DRAINAGE INLET AS DRAINAGE STRUCTURES ARE INSTALLED TO REDUCE THE QUANTITY OF SEDIMENT. INSTALL TEMPORARY INLET PROTECTION ON INLETS DOWNSLOPE FROM DISTURBANCE, WHICH MAY BE BEYOND THE LIMITS OF DISTURBED AREA.
5. INSTALLATION OF EROSION CONTROL DEVICES MUST BE IN ACCORDANCE WITH ALL OF THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR MUST INSPECT EROSION CONTROL MEASURES WEEKLY. THE CONTRACTOR MUST REMOVE ANY SILT DEPOSITS GREATER THAN 6 INCHES OR HALF THE EROSION CONTROL BARRIER'S HEIGHT COLLECTED ON THE FILTER FABRIC AND/OR SILT SOCK BARRIERS AND EXCAVATE AND REMOVE ANY SILT FROM DROP INLET PROTECTION.
7. THE CONTRACTOR MUST APPLY TEMPORARY SEED AND MULCH TO ALL DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINISHED GRADE AND VEGETATED WITHIN 7 DAYS. WHEN AREAS ARE DISTURBED AFTER THE GROWING SEASON, THE CONTRACTOR MUST STABILIZE SAME WITH GEOTEXTILE FABRIC AND MAINTAIN SAME IN STRICT ACCORDANCE WITH BEST MANAGEMENT PRACTICES.
8. THE CONTRACTOR MUST INSTALL ADDITIONAL EROSION CONTROL MEASURES IF THE PROFESSIONAL OF RECORD SO REQUIRES, TO PREVENT ANY, INCLUDING THE INCIDENTAL, DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
9. THE CONTRACTOR MUST BE RESPONSIBLE FOR INSPECTING AND MAINTAINING ALL EROSION CONTROL MEASURES ON THE SITE UNTIL PERMANENT PAVING AND TURF/LANDSCAPING IS ESTABLISHED. THE COSTS OF INSTALLING AND MAINTAINING THE EROSION CONTROL MEASURES MUST BE INCLUDED IN THE BID PRICE FOR THE SITE WORK AND THE CONTRACTOR IS RESPONSIBLE FOR ALL SUCH COSTS.
10. THE CONTRACTOR MUST CONTINUE TO MAINTAIN ALL EROSION CONTROL MEASURES UNTIL THE COMPLETION OF CONSTRUCTION AND THE ESTABLISHMENT OF VEGETATION.
11. THE CONTRACTOR MUST REMOVE EROSION CONTROL MEASURES, SILT AND DEBRIS AFTER ESTABLISHING PERMANENT VEGETATION COVER OR OTHER INSTALLING A DIFFERENT, SPECIFIED METHOD OF STABILIZATION.
12. THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES, MEASURES AND STRUCTURES. ADDITIONAL FACILITIES, MEASURES AND STRUCTURES MUST BE INSTALLED WHERE NECESSARY TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS AND/OR TO PREVENT ANY, INCLUDING THE INCIDENTAL DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
13. THE CONTRACTOR MUST PROTECT ALL EXISTING TREES AND SHRUBS. THE CONTRACTOR MUST REFER TO THE LANDSCAPE AND/OR DEMOLITION PLAN(S) FOR TREE PROTECTION, FENCE LOCATIONS AND DETAILS.
14. THE CONTRACTOR MUST REFER TO GRADING PLANS FOR ADDITIONAL INFORMATION.
15. THE CONTRACTOR MUST CLEAN EXISTING AND PROPOSED DRAINAGE STRUCTURES AND INTERCONNECTING PIPES ON OR OFF-SITE AS THE JURISDICTIONAL AGENCY REQUIRES, BOTH AT THE TIME OF SITE STABILIZATION AND AT END OF PROJECT.
16. SOIL EROSION CONTROL MEASURES MUST BE ADJUSTED OR RELOCATED BY THE CONTRACTOR AS IDENTIFIED DURING SITE OBSERVATION IN ORDER TO MAINTAIN THE COMPLETE EFFECTIVENESS OF ALL CONTROL MEASURES.
17. THE CONTRACTOR MUST IDENTIFY, ON THE PLAN, THE LOCATION OF WASTE CONTAINERS, FUEL STORAGE TANKS, CONCRETE WASHOUT AREAS AND ANY OTHER LOCATIONS WHERE HAZARDOUS MATERIALS ARE STORED.



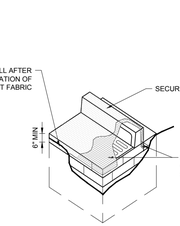

| PERCENT SLOPE OF ROADWAY | LENGTH OF STONE REQUIRED | |
|---|---|---|
| | COARSE GRAINED SOILS | FINE GRAINED SOILS |
| 0 TO 2% | 50 FT | 100 FT |
| 2% TO 5% | 100 FT | 200FT |
| >5% | ENTIRE ENTRANCE STABILIZED WITH FABC BASE COURSE (1) | |

(1) AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

**CHART 1**

### STABILIZED CONSTRUCTION ENTRANCE

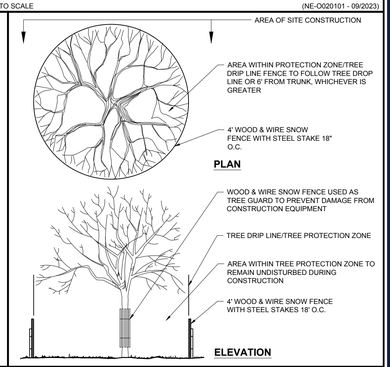
NOT TO SCALE (NE-O020101 - 09/2023)




NOTES:
1. CONTRACTOR IS TO CLEAN INLET FILTER AFTER EVERY STORM
2. CONTRACTOR TO REMOVE FABRIC AND MESH JUST PRIOR TO PAVING

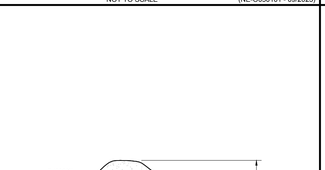
### INLET PROTECTION WITH FILTER FABRIC

NOT TO SCALE (NE-O050101 - 09/2023)



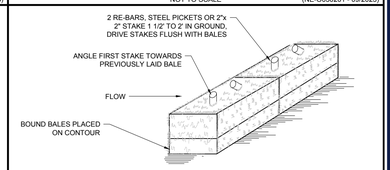

### TREE PROTECTION DURING SITE CONSTRUCTION

NOT TO SCALE (NE-O030201 - 09/2023)




### TEMPORARY STOCK PILE WITH STRAW BALES

NOT TO SCALE (NE-O060105 - 09/2023)




NOTES:
1. BALES SHALL BE PLACED AT THE TOP OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE PROMPTLY AS NEEDED.
5. DRAINAGE AREA NO MORE THAN ⅓ AC. PER 100 FEEL OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%.
6. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

### STRAW BALE BARRIER

NOT TO SCALE (NE-O030302 - 09/2023)


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**PROJECT No.:** MAA240217.00-0B
**DRAWN BY:** RPK
**CHECKED BY:** LDF
**DATE:** 10/15/25
**CAD I.D.:** P-PLAD-PROP

**PROJECT:**

## SITE DEVELOPMENT PLANS

FOR

WOODLAND ST. PLAYGROUND RENOVATION
CENTRAL AVE. & WOODLAND ST.
CITY OF EVERETT
MIDDLESEX COUNTY, MASSACHUSETTS


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MAINE No.
VERMONT No. 01337
OHIO No. 290433


**SHEET TITLE:**

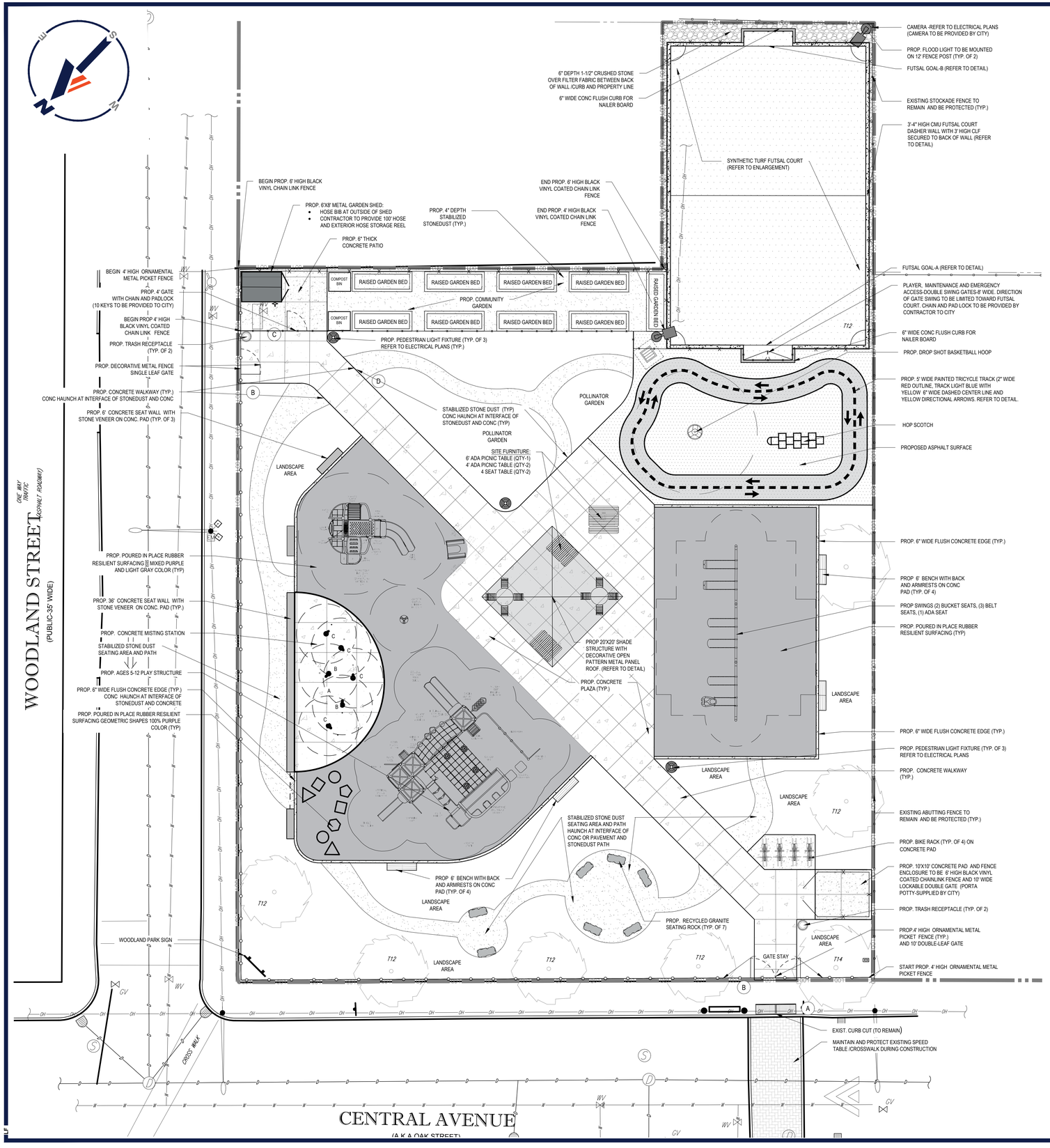
## EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

**SHEET NUMBER:**

# L-202

**ORG. DATE - 10/15/25**


P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLANS\P-PLAD-PROP-MAA240217.00-0B-----LAYOUT L-202 EXDM -NOTE




## HATCH KEY

- CONCRETE WALKWAY, PATIO & MISTING STATION
- ASPHALT PAVEMENT
- CONCRETE PADS
- STABILIZED STONEDUST
- POURED IN PLACE RUBBER SURFACING

NOTE:
DIMENSIONS ARE NOT PROVIDED. CAD DIGITAL DRAWING TO BE PROVIDED TO CONTRACTOR FOR USE IN CONSTRUCTION LAYOUT.

## SITE SIGNAGE TABLE
## (ALL SIGNS TO BE PROVIDED BY THE CITY)

| | | |
|---|---|---|
| A |  | PEDESTRIAN CROSSWALK POST TOP METAL SIGN PER MADOT STANDARDS |
| B |  | PARK RULES SIGN TYPE TO BE CITY STANDARD SIGN AFFIXED TO THE DECORATIVE METAL FENCE AT 2 LOCATIONS |
| C | CITY STANDARD COMMUNITY GARDEN RULES (TEXT TO BE PROVIDED BY CITY) | COMMUNITY GARDEN RULES |
| D | POLLINATOR GARDEN INFORMATION (SIGN DETAILS, TEXT AND GRAPHICS TO BE PROVIDED BY CITY) | INTERPRETIVE POLLINATOR GARDEN SIGN |







VORTEX MISTING STATION PRODUCT LIST (ALL ITEMS ARE BASIS OF DESIGN OR APPROVED EQUAL)

| REF | PRODUCT | QTY | GPM |
|---|---|---|---|
| A | Playsafe Drain N°4 VOR 1004 | 1 | 0 |
| B | Glomist VOR 7247 | 2 | 1 |
| C | Glomist Nano VOR 7248 | 4 | 1 |
| | TOTAL | QTY | GPM |
| | | 7 | 2 |

**THIS PLAN TO BE UTILIZED FOR SITE LAYOUT PURPOSES ONLY**

10 5 2.5 0 10
SCALE: 1" = 10'


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**PROJECT No.:** MAA240217.00-0B
**DRAWN BY:** RPK
**CHECKED BY:** LDF
**DATE:** 10/15/25
**CAD I.D.:** P-PLAD-PROP

**PROJECT:**

## SITE DEVELOPMENT PLANS
FOR

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**SHEET TITLE:**

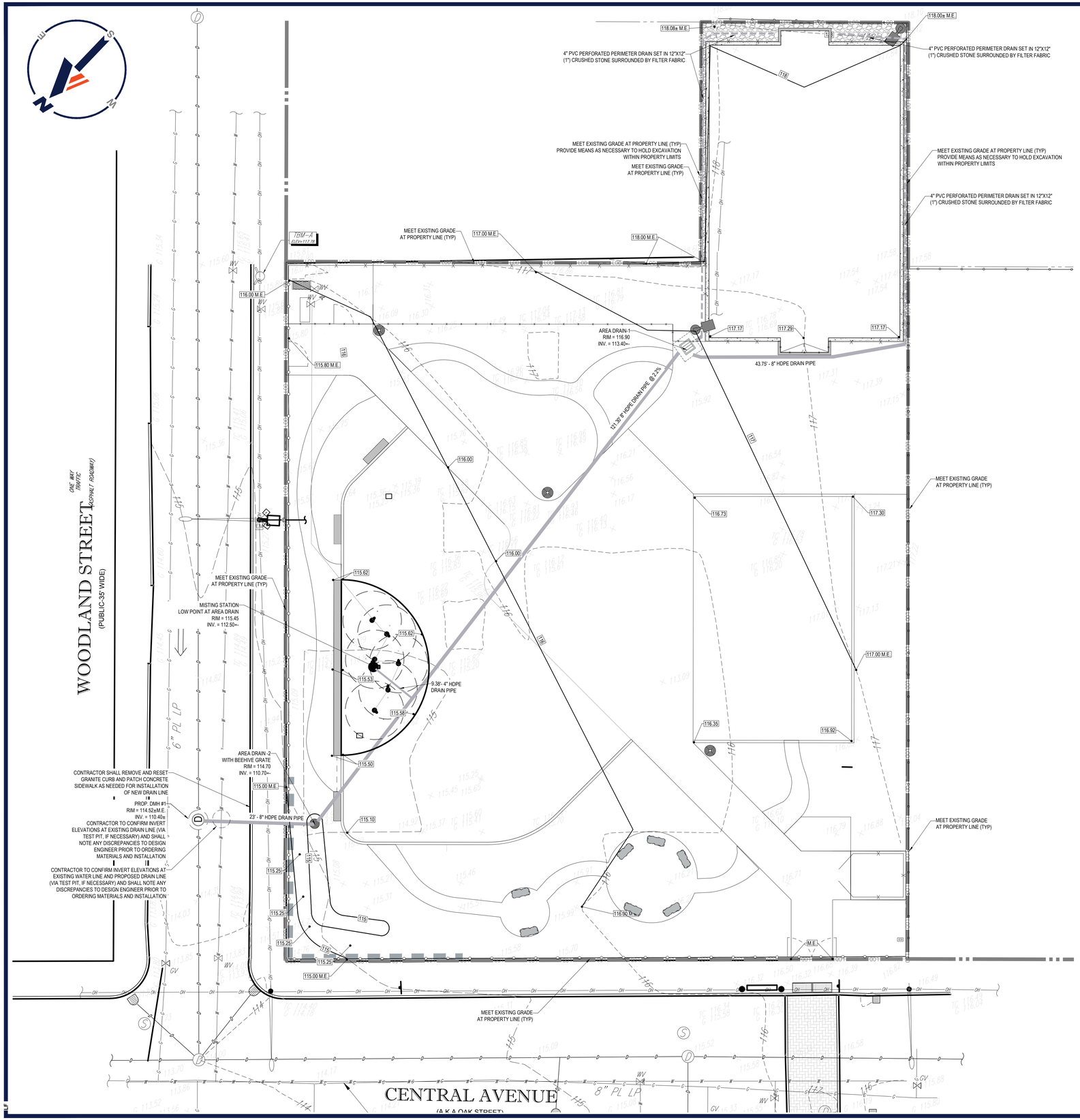
## SITE PLAN

**SHEET NUMBER:**

# L-301

ORG. DATE - 10/15/25

P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLAN\P-PLAD-PROP-MAA240217.00-0B-----1-LAYOUT L-301 SITE




**GC TO COORDINATE PROPOSED DRAINAGE CONNECTION IN WOODLAND STREET WITH CITY OF EVERETT DEPARTMENT OF PUBLIC WORKS. ALL UTILITY WORK SHALL BE PERFORMED IN ACCORDANCE WITH CITY REGULATIONS AND SPECIFICATIONS**

**GC TO COORDINATE PROPOSED SITE LIGHTING & VIDEO POWER SERVICE, CONDUITS, WIRING, VOLTAGES AND OTHER ELECTRICAL COMPONENTS WITH THE LIGHTING AND/OR ELECTRICAL CONTRACTOR**

**GC TO COORDINATE PROPOSED ELECTRIC SERVICE CONNECTION, LOCATION AND SIZE WITH UTILITY PROVIDER**

**GC TO COORDINATE PROPOSED WATER SERVICE CONNECTION, LOCATION AND SIZE WITH IRRIGATION CONSULTANT**

**THIS PLAN TO BE UTILIZED FOR GRADING, DRAINAGE AND UTILITIES PURPOSES ONLY**

10 5 2.5 0 10
SCALE: 1" =10'


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| PROJECT No.: | MAA240217.00-0B |
| DRAWN BY: | RPK |
| CHECKED BY: | LDF |
| DATE: | 10/15/25 |
| CAD I.D.: | P-PLAD-PROP |

PROJECT:

***SITE DEVELOPMENT PLANS***

FOR

WOODLAND ST. PLAYGROUND RENOVATION
CENTRAL AVE. & WOODLAND ST.
CITY OF EVERETT
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SHEET TITLE:

***GRADING AND UTILITIES PLAN***

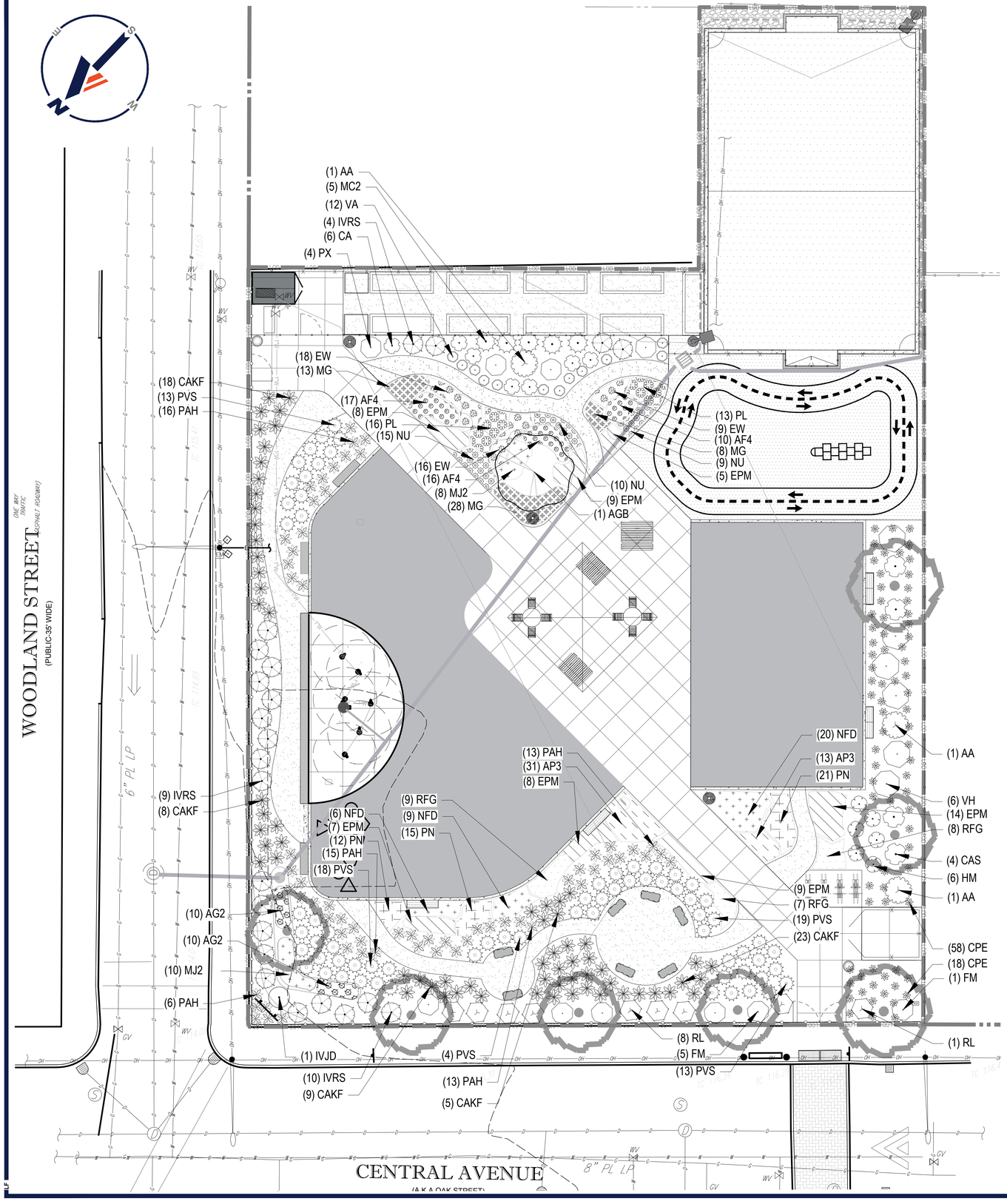
SHEET NUMBER:

**L-401**

ORG. DATE - 10/15/25

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## PLANT_SCHEDULE

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE | CONTAINER | |
|---|---|---|---|---|---|---|
| | | ORNAMENTAL TREES | | | | |
| AGB | 1 | AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' | AUTUMN BRILLIANCE SERVICEBERRY | 6` HT. | B&B | |
| | | SHRUBS | | | | |
| AA | 3 | ARONIA ARBUTIFOLIA 'BRILLIANTISSIMA' | BRILLIANT RED CHOKEBERRY | 3 GAL. | CONTAINER | |
| CA | 7 | CEANOTHUS AMERICANUS | NEW JERSEY TEA | 3 GAL. | CONTAINER | |
| CAS | 4 | CLETHRA ALNIFOLIA 'SIXTEEN CANDLES' | SIXTEEN CANDLES SUMMERSWEET | 18-24" | CONTAINER | |
| FM | 6 | FOTHERGILLA MAJOR 'MOUNT AIRY' | MOUNT AIRY FOTHERGILLA | 3 GAL. | CONTAINER | |
| HM | 6 | HYDRANGEA QUERCIFOLIA 'MUNCHKIN' | MUNCHKIN OAKLEAF HYDRANGEA | 5 GAL. | | |
| IVJD | 1 | ILEX VERTICILLATA `JIM DANDY` | JIM DANDY WINTERBERRY | 30-36" | CONTAINER | |
| IVRS | 23 | ILEX VERTICILLATA `RED SPRITE` | RED SPRITE WINTERBERRY | 30-36" HT. | CONTAINER | |
| MC2 | 5 | MORELLA CAROLINIENSIS | BAYBERRY | 3 GAL. | | |
| PX | 4 | DIERVILLA X 'G2X885411' | KODIAK® RED DIERVILLA | 3 GAL. | CONTAINER | |
| RL | 9 | RHODODENDRON X 'LANDMARK' | LANDMARK RHODODENDRON | 24-36" | B&B | |
| VA | 12 | VACCINIUM ANGUSTIFOLIUM | LOWBUSH BLUEBERRY | 1 GAL. | CONTAINER | |
| VH | 6 | VACCINIUM CORYMBOSUM | HIGHBUSH BLUEBERRY | 3 GAL. | CONTAINER | |
| | | GRASSES | | | | |
| CAKF | 68 | CALAMAGROSTIS X ACUTIFLORA `KARL FOERSTER` | FEATHER REED GRASS | 1 GAL. | CONTAINER | |
| CPE | 76 | CAREX PENSYLVANICA | PENNSYLVANIA SEDGE | 4" | POT | |
| PAH | 63 | PENNISETUM ALOPECUROIDES `HAMELN` | HAMELN FOUNTAIN GRASS | 1 GAL. | CONTAINER | |
| PVS | 69 | PANICUM VIRGATUM `SHENANDOAH` | SHENANDOAH SWITCH GRASS | 1 GAL. | CONTAINER | |
| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE | CONTAINER | SPACING |
| | | PERENNIALS | | | | |
| AF4 | 43 | AGASTACHE X 'BLUE FORTUNE' | BLUE FORTUNE ANISE HYSSOP | 1 GAL. | CONTAINER | 18" o.c. |
| AP3 | 47 | ASTER NOVAE-ANGLIAE 'PURPLE DOME' | PURPLE DOME NEW ENGLAND ASTER | 1 GAL. | CONTAINER | 18" o.c. |
| EPM | 60 | ECHINACEA PURPUREA 'MAGNUS' | MAGNUS PURPLE CONEFLOWER | 1 GAL. | CONTAINER | 24" o.c. |
| EW | 43 | ECHINACEA PURPUREA 'WHITE SWAN' | WHITE SWAN CONEFLOWER | 1 GAL. | CONTAINER | 18" o.c. |
| MG | 49 | MONARDA DIDYMA 'GRAND PARADE' | GRANDE PARADE BEE BALM | 1 GAL. | CONTAINER | 18" o.c. |
| MJ2 | 18 | MONARDA DIDYMA 'JACOB CLINE' | JACOB CLINE BEE BALM | 1 GAL. | CONTAINER | 24" o.c. |
| NFD | 35 | NEPETA X FAASSENII 'DROPMORE' | DROPMORE CATMINT | 1 GAL. | CONTAINER | 24" o.c. |
| NU | 34 | NEPETA X FAASSENII 'KITTEN AROUND' | KITTEN AROUND CATMINT | 1 GAL. | CONTAINER | 18" o.c. |
| PL | 29 | PHLOX PANICULATA 'LAURA' | LAURA GARDEN PHLOX | 1 GAL. | CONTAINER | 18" o.c. |
| PN | 48 | PEROVSKIA ATRIPLICIFOLIA 'BLUE JEAN BABY' | BLUE JEAN BABY RUSSIAN SAGE | 1 GAL. | CONTAINER | 18" o.c. |
| RFG | 24 | RUDBECKIA FULGIDA SULLIVANTII 'GOLDSTURM' | GOLDSTURM CONEFLOWER | 1 GAL. | CONTAINER | 24" o.c. |

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10 5 2.5 0 10
SCALE: 1" = 10'


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| PROJECT No.: | MAA240217.00-0A |
| DRAWN BY: | RPK |
| CHECKED BY: | LDF |
| DATE: | 10/15/25 |
| CAD I.D.: | P-PLAD-LSCP |

PROJECT:

**SITE DEVELOPMENT PLANS**

FOR

WOODLAND ST. PLAYGROUND RENOVATION
CENTRAL AVE. & WOODLAND ST.
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MIDDLESEX COUNTY,
MASSACHUSETTS


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CONNECTICUT No. 1359
MAINE No. 4248
VERMONT No. 01337
OHIO No. 250433


SHEET TITLE:

**LANDSCAPE PLAN**

SHEET NUMBER:

**L-501**

ORG. DATE - 10/15/25

P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLANS\P-PLAD-LSCP-MAA240217.00-0A-----LAYOUT( L-501 LSCP
LF

# LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:
   a) THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS
   a) GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.
   b) TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.
   c) PLANTING AREAS:
      c)a) ALL DISTURBED AREAS NOT OTHERWISE TREATED ARE TO BE FILLED WITH A MINIMUM 12" THICK LAYER OF PLANTING MIX,
      c)b) PLANTING MIX:
         1 PART PEAT MOSS
         1 PART COMPOSTED COW MANURE BY VOLUME
         3 PARTS TOPSOIL BY VOLUME
      c)c) MULCH - ALL PLANTING BEDS SHALL BE MULCHED WITH A 4" THICK LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN AND/OR LANDSCAPE PLAN NOTES / DETAILS.
   d) FERTILIZER:
      d)a) FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
      d)b) FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.
   e) PLANT MATERIAL:
      e)a) ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION (FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN).
      e)b) IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
      e)c) PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
      e)d) TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1½", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
      e)e) ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
      e)f) CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
      e)g) SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
      e)h) TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES
   a) CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.
   b) WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS
   a) BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.
   b) ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE BRANCH COLLAR. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.
   c) CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION
   a) CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.
   b) A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.
   c) WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.
   d) AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS
   a) CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.
   b) LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL, SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.
   c) THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
   d) TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
      d)a) TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
      d)b) MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING
   a) UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.
   b) LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).
   c) ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.
   d) ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. PLANTING MIX
   a) CONTRACTOR SHALL PROVIDE A 12" THICK MINIMUM LAYER OF PLANTING MIX, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. PLANTING MIX SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.
   b) ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.
   c) CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.
   d) ALL PLANTING AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (12"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA - FOR BID PURPOSES ONLY [SEE SPECIFICATION 6.A.]):
      d)a) 20 POUNDS 'GRO-POWER' OR APPROVED SOIL CONDITIONER/FERTILIZER
      d)b) 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP OR APPROVED NITROGEN FERTILIZER
   e) THE SPREADING OF PLANTING MIX SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING
   a) INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.
   b) PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.
   c) ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.
   d) ALL PLANTING CONTAINERS, BASKETS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.
   e) POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.
   f) PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
      f)a) PLANTS: MARCH 15 TO DECEMBER 15
      f)b) LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1
      f)c) PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.
   g) FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

| | |
|---|---|
| ACER RUBRUM | PLATANUS X ACERIFOLIA |
| BETULA VARIETIES | POPULUS VARIETIES |
| CARPINUS VARIETIES | PRUNUS VARIETIES |
| CRATAEGUS VARIETIES | PYRUS VARIETIES |
| KOELREUTERIA | QUERCUS VARIETIES |
| LIQUIDAMBAR STYRACIFLUA | TILIA TOMENTOSA |
| LIRIODENDRON TULIPIFERA | ZELKOVA VARIETIES |

   h) PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
      h)a) 1 PART PEAT MOSS
      h)b) 1 PART COMPOSTED COW MANURE BY VOLUME
      h)c) 3 PARTS TOPSOIL BY VOLUME
      h)d) 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
         h)d)a) 2 TABLETS PER 1 GALLON PLANT
         h)d)b) 3 TABLETS PER 5 GALLON PLANT
         h)d)c) 4 TABLETS PER 15 GALLON PLANT
         h)d)d) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK
   i) FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.
   j) ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.
   k) ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.
   l) GROUND COVER AREAS SHALL RECEIVE A ½" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.
   m) NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.
   n) ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.
   o) ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

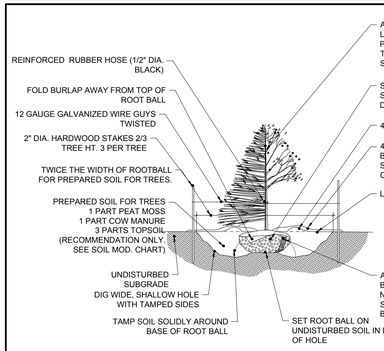
10. TRANSPLANTING (WHEN REQUIRED)
    a) ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.
    b) IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.
    c) PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.
    d) UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.
    e) TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.
    f) F TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING
    a) NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.
    b) SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.
    c) IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE
    a) THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF 1 YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.
    b) ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.
    c) TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.
    d) LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP
    a) UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.
    b) THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

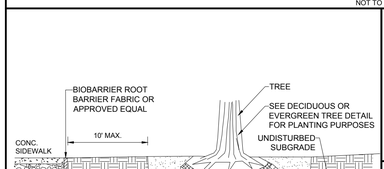
14. MAINTENANCE:
    a) A 90 DAY MAINTENANCE PERIOD SHALL COMMENCE AT THE END OF ALL LANDSCAPE INSTALLATION OPERATIONS. THE 90 DAY MAINTENANCE PERIOD ENSURES TO THE OWNER/OPERATOR THAT THE NEWLY INSTALLED LANDSCAPING HAS BEEN MAINTAINED AS SPECIFIED ON THE APPROVED LANDSCAPE PLAN. ONCE THE INITIAL 90 DAY MAINTENANCE PERIOD HAS EXPIRED, THE OWNER/OPERATOR MAY REQUEST THAT BIDDERS SUBMIT AN ALTERNATE MAINTENANCE BID FOR A MONTHLY MAINTENANCE CONTRACT. THE ALTERNATE MAINTENANCE CONTRACT WILL ENCOMPASS ANY WORK THAT IS CONSIDERED APPROPRIATE TO ENSURE THAT PLANT AND LAWN AREAS ARE HEALTHY AND MANICURED TO THE APPROVAL OF THE OWNER/OPERATOR.




NOTES:
1. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2. REMOVE ALL NON-BIODEGRADABLE MATERIAL AND ROPE FROM TRUNK & TOP OF ROOT BALL.FOLD BURLAP BACK 1/3 FROM ROOT BALL
3. PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH. AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5. THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.

## TREE PLANTING

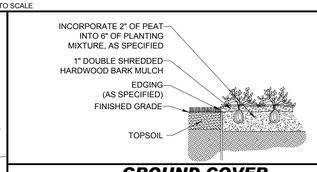
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NOTES:
1. ANY TREE INSTALLED WITHIN 10 FT. OF NEW CONCRETE SIDEWALKS SHOULD BE INSTALLED WITH BIOBARRIER ROOT BARRIER FABRIC AS SHOWN.
2. TREES SHALL BE INSTALLED ACCORDING TO THE APPROPRIATE PLANTING DETAIL.

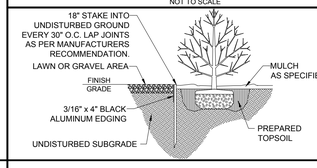
## BIOBARRIER ROOT BARRIER

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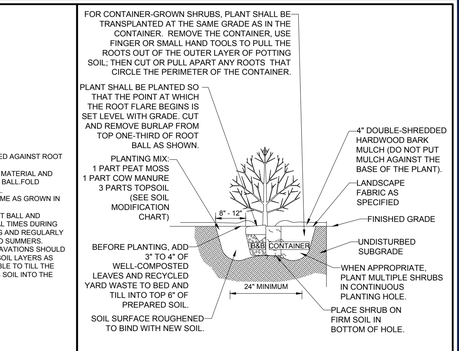

## GROUND COVER PLANTING

NOT TO SCALE




## BLACK ALUMINUM EDGING

NOT TO SCALE




## SHRUB PLANTING

NOT TO SCALE


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### REVISIONS

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| DRAWN BY: | RPK |
| CHECKED BY: | LDF |
| DATE: | 10/15/25 |
| CAD I.D.: | P-PLAD-LSCP |

PROJECT:

**SITE DEVELOPMENT PLANS**

FOR

**WOODLAND ST. PLAYGROUND RENOVATION**
**CENTRAL AVE. & WOODLAND ST.**
**CITY OF EVERETT**
**MIDDLESEX COUNTY, MASSACHUSETTS**

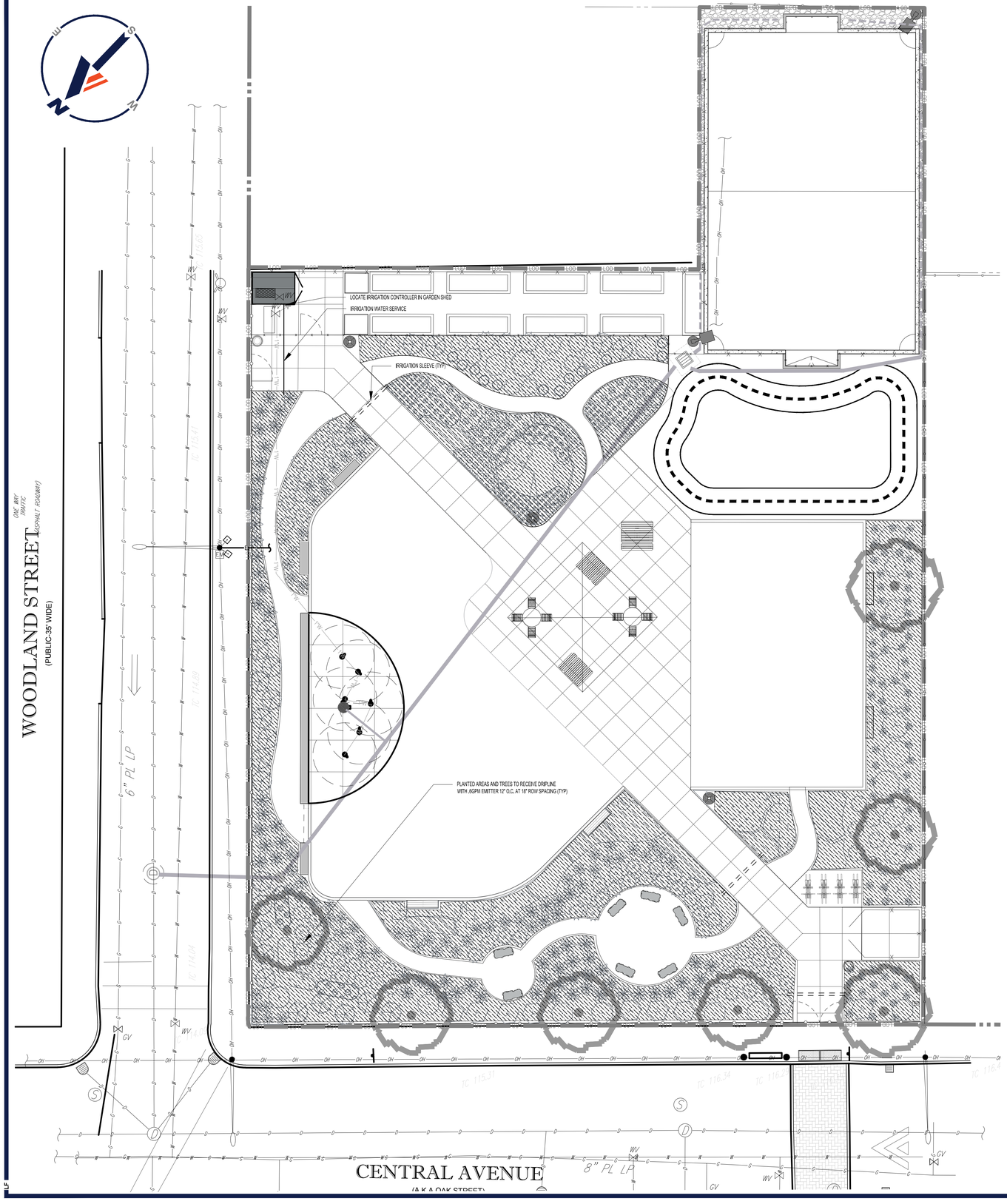

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MAINE No. 4248
VERMONT No. 01337
OHIO No. 250433


SHEET TITLE:

**LANDSCAPE NOTES AND DETAILS**

SHEET NUM




## IRRIGATION NOTES

1. Irrigation contractor to locate and protect all underground utilities prior to digging.
2. Irrigation plan is diagrammatic in nature and all system components are shown for clarity. All locations of lines, valves, and heads to be confirmed in field and located in landscape areas. Adjust as necessary to accomodate field conditions. All valves to be located in valve box with cover at grade; Locate box next to community garden shed.
3. Automatic controller and weather sensor to be located as directed by the Owners representative.Weather Sensor to be free from obstructions and exposed to the weather.
4. 45 psi. required per rotor station, 30 psi. required per spray station, and 40 psi. required per drip station. All spray and rotor bodies to have PRS (in-stem pressure regulation) .
5. Pressure regulator required by local code if static water pressure at point of connection for site is greater than 80 psi.
6. 4"- 6" SCH 40 PVC sleeves to be located as shown on drawing. Extend sleeve 18" beyond back of curb or pavement. Sleeves to be located and exposed by the general contractor prior to start of irrigation installation.
7. Pop-up height of spray heads to be as follows: 4" in Turf Zones, 12" in Shrub Zones, and 12" in Seasonal/color beds. Rotor height to be 4". MPR Rotor Nozzle size is indicated on drawing for each rotor.
8. All pipes, automatic valves, backflow preventor, manual valve and meter to be located within property lines. Shown outside on drawing for clarity only.
9. Irrigation meter and backflow preventor to be provided by the general contractor.
10. All 1.5" mainlines (class 200 PVC pipe or 100 PSI rated polyethylene) to be installed.
11. All lateral and sub-main pipe to have a minimum of 12" and a maximum of 18" cover if possible.
12. No rocks, boulders, or other extraneous materials to be used in backfilling trenches.
13. All pipe, valves, drip, spray heads, rotors, controllers, and weather sensors to be installed as per manufacturers specifications.
14. All threaded joints to be coated with Teflon Tape or Liquid Teflon.
15. All lines to be thoroughly flushed before installation of sprinkler heads.
16. Must use products specified on this drawing, unless otherwise approved by the Landscape Architect.
17. Irrigation contractor shall provide an as-built drawing to the landscape architect; this drawing shall be overnighted within 24 hours of completion of installation.
18. Irrigation Contractor to perform a walk-thru inspection with the Owners representative of the functioning system prior to final approval.
19. Irrigation is to be installed in areas denoted on the plan, unless otherwise approved by the Landscape Architect.

## TYPICAL IRRIGATION DESIGN GUIDELINES

1. CONTRACTOR TO SUBMIT A FULLY AUTOMATED IRRIGATION SYSTEM DESIGN FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT.
2. IRRIGATION SYSTEM TO BE DESIGNED TO PROVIDE HEAD TO HEAD COVERAGE IN TURF AND SHRUB BEDS.
3. MINIMIZE OVERTHROW ONTO SIDEWALK AND PAVED AREAS.
4. USE 1.5" MAINLINE AND 1" METER.
5. IRRIGATION MAINLINE, HEADS, VALVES, ETC ARE NOT TO BE PLACED IN THE PUBLIC R.O.W.
6. CARS AND DELIVERY TRUCK HAVE DIFFICULTY MAKING TURNS WITH TIGHT RADII AND WILL JUMP THE CURBS CAUSING DAMAGE TO IRRIGATION HEADS AND LINES. AVOID PLACING HEADS, LATERAL LINES AND MAIN LINES IN AREAS OF POTENTIAL DAMAGE.
7. MINIMIZE OVERTHROW ONTO ADJACENT PROPERTY.
8. USE SMART CONTROLLER ON ALL IRRIGATION SYSTEMS. (IE RAINBIRD SP-SMTe WITH WEATHER STATION OR APPROVED EQUAL)
9. USE HIGH EFFICIENCY IRRIGATION HEADS WITH LOW PRECIPITATION RATES TO AVOID RUNOFF AND WIND DRIFT, CONSERVE WATER AND REDUCE WATER USAGE COST.
10. ALL IRRIGATION SYSTEM DESIGNS AND INSTALLATIONS MUST MEET LOCAL CODES AND ORDINANCES.

LEGEND

DRIP IRRIGATION

**THIS PLAN TO BE UTILIZED FOR IRRIGATION PURPOSES ONLY**

10 5 2.5 0 10
SCALE: 1" = 10'


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SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
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| | |
|---|---|
| PROJECT No.: | MAA240217.00-0A |
| DRAWN BY: | RPK |
| CHECKED BY: | LDF |
| DATE: | 10/15/25 |
| CAD I.D.: | P-PLAD-IRRI |

PROJECT:

***SITE DEVELOPMENT PLANS***

FOR

WOODLAND ST. PLAYGROUND RENOVATION
CENTRAL AVE. & WOODLAND ST.
CITY OF EVERETT
MIDDLESEX COUNTY,
MASSACHUSETTS


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WESTBOROUGH, MA 01581
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MAINE No. 4248
VERMONT No. 01337
OHIO No. 250420


SHEET TITLE:

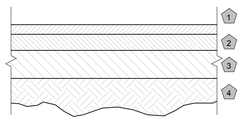
***IRRIGATION PLAN***

SHEET NUMBER:

**L-801**

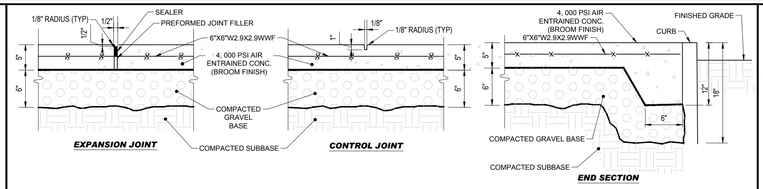
ORG. DATE - 10/15/25


P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLAN\P-PLAD-IRRI-MAA240217.00-0A-----3-LAYOUT: L-801 IRRI
MLF




## PAVEMENT SECTION

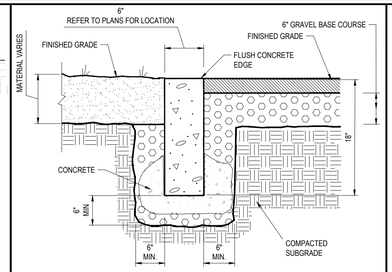
NOT TO SCALE (NE-S010101 - 09/2024)




NOTES:
1. TO BE USED FOR BUILDING SURROUNDING AND OTHER CONCRETE WALKS. USE CHAIRS TO SUPPORT REINFORCING STEEL DURING POUR. VARIES SEE PLAN
2. SEE SITE PLAN FOR WIDTH AND GRADES.
3. PROVIDE MINIMUM 1/8"/FT. CROSS-SLOPE
4. PROVIDE CONTROL JOINTS 5'-0" O.C. MIN 5. PROVIDE EXPANSION JOINTS 20'-0" O.C. MIN AT EXPANSION JOINTS, PROVIDE DOWELS @ 24" O.C.

## CONCRETE PAVEMENT

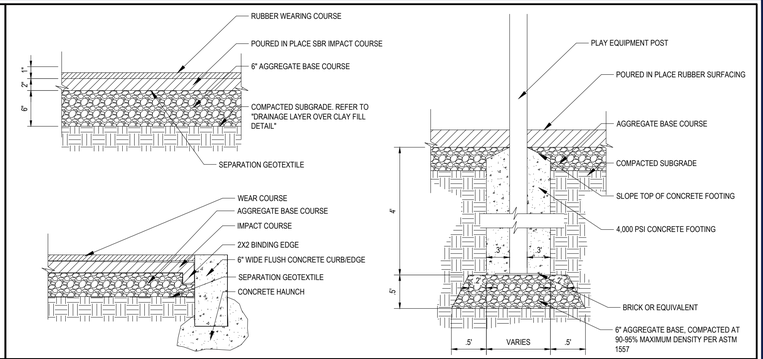
NOT TO SCALE (NE-S030201 - 09/2023)




1. CURB SHALL CONSIST OF 4,000 PSI AIR ENTRAINED CONCRETE. EXPOSED EDGES TO HAVE RUBBED FINISH AND SURFACE SHALL BE TREATED WITH A CONCRETE PENETRANT/SEALER.
2. THE ENDS OF CURB SECTIONS SHALL BE CHAMFERED 1/4 INCH.
3. THE CORNERS OF CURB SECTIONS SHALL MATCH THE ADJACENT CURB IN SIZE, COLOR AND FINISH.
4. CURBS, CURB CORNERS OR EDGING SHALL BE FITTED TOGETHER AS CLOSELY AS POSSIBLE.
5. EXPANSION JOINTS SHALL BE INSTALLED AT A MAXIMUM OF TWENTY FEET (20') ON CENTER USING PREFORMED EXPANSION JOINT FILLER HAVING A THICKNESS OF 1/2 INCH.
6. FINISH TOP WITH SMOOTH TROWEL.

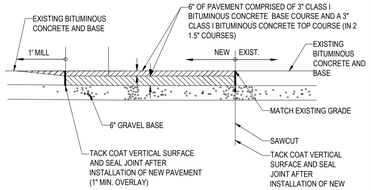
## FLUSH CONCRETE EDGE

NOT TO SCALE (NE-S030201 - 09/2023)



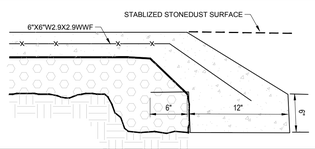

## POURED IN PLACE RUBBER SURFACING

NOT TO SCALE (NE-S030201 - 09/2023)



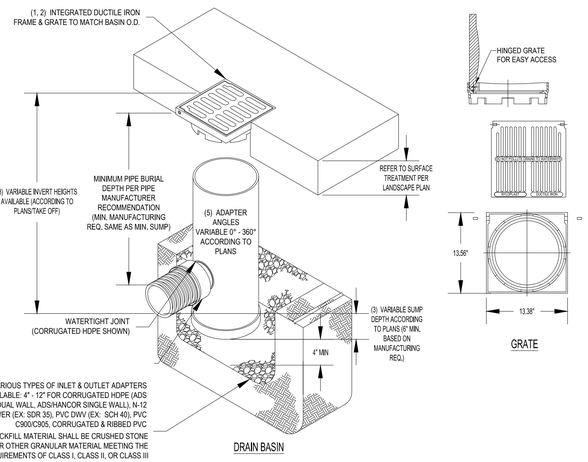

## ROAD PATCHING DETAIL

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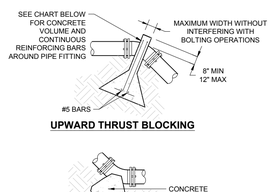

## CONCRETE HAUNCH AT INTERFACE OF STONEDUST AND CONCRETE WALK

NOT TO SCALE (NE-S030201 - 09/2023)




## AREA DRAIN

NOT TO SCALE (NE-S030201 - 09/2023)




## UPWARD THRUST BLOCKING

| UPWARD THRUST BLOCKING (REQUIRED REINFORCING BARS & CUBIC YARDS OF P.C. CONCRETE | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 90° BEND | | | 45° BEND | | | 22 1/2° BEND | | | 11 1/4°BEND | | |
| PIPE SIZE | CONC. C.Y. | REINF | | CONC. C.Y. | REINF | | CONC. C.Y. | REINF | | CONC. C.Y. | REINF | |
| | | QTY. | SIZE | | QTY. | SIZE | | QTY. | SIZE | | QTY. | SIZE |
| 6" | 1.5 | 3 | 5 | 1.5 | 3 | 5 | 1.25 | 2 | 5 | 1.25 | 2 | 5 |
| 8" | 2 | 3 | 5 | 2 | 3 | 5 | 1.5 | 2 | 5 | 1.5 | 2 | 5 |
| 10" | 2.5 | 3 | 5 | 2.5 | 3 | 5 | 2 | 3 | 5 | 2 | 3 | 5 |
| 12" | 3 | 3 | 5 | 3 | 3 | 5 | 2.5 | 3 | 5 | 2.5 | 3 | 5 |

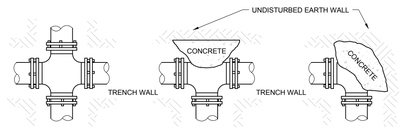



## DOWNWARD THRUST BLOCKING (SEE HORIZONTAL BLOCKING DETAIL) (ALL BENDS SIMILAR)

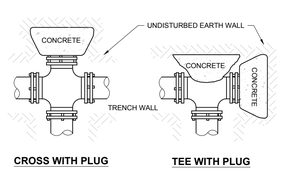
NOTES:
1. DO NOT COVER BELLS OR FLANGES WITH CONCRETE
2. WRAP ALL FITTINGS WITH VISQUEEN.
3. BACK ALL TEES ACCORDING TO SIZE OF BRANCH.
4. BACKING FUTURE LINE EXTENSIONS SHALL BE SUCH THAT LATER REMOVAL IS POSSIBLE.
5. ALL BENDS WHERE FITTINGS ARE USED, BOTH HORIZONTAL OR VERTICAL SHALL BE BACKED.
6. REACTION BACKING TABLE IS BASED ON 100 P.S.I. AND SOIL BEARING PRESSURE OF 2,000 LBS/SF ADDITIONAL BACKING MAY BE REQUIRED IN SOME AREAS AS DIRECTED BY ENGINEERS.
7. ALL CONCRETE SHALL BE 2500 P.S.I.
8. 18" AND LARGER REQUIRES SPECIFIC ANTI-THRUST DESIGN.

## VERTICAL THRUST BLOCKING

NOT TO SCALE (NE-U030502 - 09/2023)



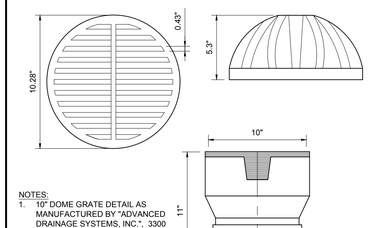

| HORIZONTAL THRUST BLOCKING (BLOCKING HEIGHT GREATER THAN PIPE O.D.) (BLOCKING WIDTH BETWEEN 1 & 2 TIMES HEIGHT) REQUIRED SQ. FT. OF UNDISTURBED EARTH WALL FOR REACTION BACKING | | | | | |
|---|---|---|---|---|---|
| | TYPE OF FITTINGS | | | | |
| PIPE SIZE | TEE & PLUG | BENDS | | | |
| | | 90° | 45° | 22 1/2° | 11 1/2° |
| 3" | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 4" | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 6" | 1.5 | 2.0 | 1.0 | 1.0 | 1.0 |
| 8" | 2.5 | 3.5 | 1.8 | 1.0 | 1.0 |
| 10" | 4.0 | 5.5 | 2.8 | 1.5 | 1.0 |
| 12" | 6.0 | 8.0 | 4.0 | 2.0 | 1.5 |




NOTES:
1. DO NOT COVER BELLS OR FLANGES WITH CONCRETE
2. WRAP ALL FITTINGS WITH VISQUEEN.
3. BACK ALL TEES ACCORDING TO SIZE OF BRANCH.
4. BACKING FUTURE LINE EXTENSIONS SHALL BE SUCH THAT LATER REMOVAL IS POSSIBLE.
5. ALL BENDS WHERE FITTINGS ARE USED, BOTH HORIZONTAL OR VERTICAL SHALL BE BACKED.
6. REACTION BACKING TABLE IS BASED ON 100 P.S.I. AND SOIL BEARING PRESSURE OF 2,000 LBS/SF ADDITIONAL BACKING MAY BE REQUIRED IN SOME AREAS AS DIRECTED BY ENGINEERS.
7. ALL CONCRETE SHALL BE 2500 P.S.I.
8. 18" AND LARGER REQUIRES SPECIFIC ANTI-THRUST DESIGN.

## HORIZONTAL THRUST BLOCKING

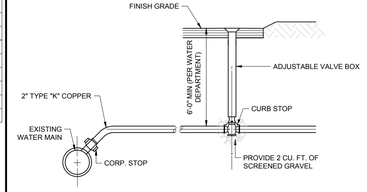
NOT TO SCALE (NE-U030501 - 09/2023)




NOTES:
1. 10" DOME GRATE DETAIL AS MANUFACTURED BY "ADVANCED DRAINAGE SYSTEMS, INC.", 3300 RIVERSIDE DRIVE, COLUMBUS, OH 43221, (800) 821-6710, OR APPROVED EQUAL.

## YARD DRAIN

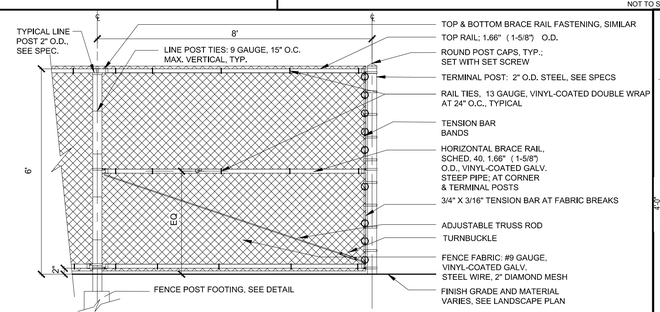
NOT TO SCALE (NE-U010210 - 09/2023)




NOTES:
1. DETAIL FOR GENERAL PURPOSES. GC TO COORDINATE CONNECTION WITH UTILITY PROVIDER.

## TYPE K COPPER WATER SERVICE CONNECTION

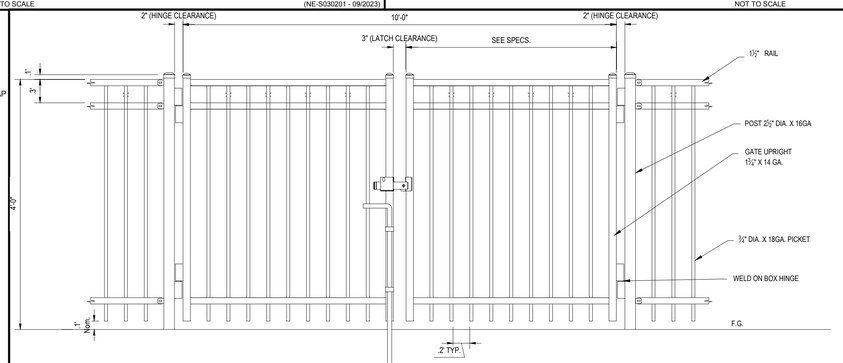
NOT TO SCALE (NE-U030402 - 09/2023)




NOTES:
1. CONTRACTOR TO SUPPLY SHOP DRAWINGS AND SAMPLES OF ALL FENCE COMPONENTS TO BE APPROVED BY ARCHITECT
2. SELVAGES AT TOP & BOTTOM OF FENCE FABRIC SHALL BE KNUCKLED. ALL FENCE FABRIC TO BE VINYL-COATED GALVANIZED STEEL AS PER SPEC. ALL POSTS AND HARDWARE TO BE VINYL-COATED GALV. STEEL AS PER SPEC.

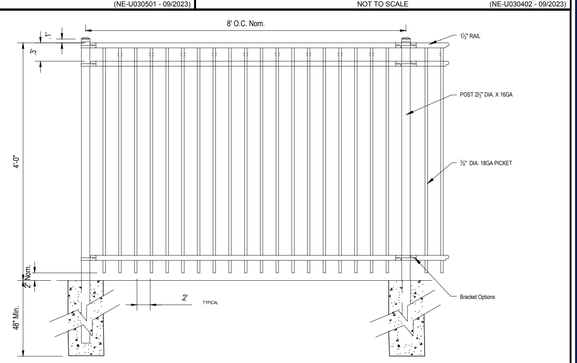
## CHAIN LINK FENCE

NOT TO SCALE (NE-S030201 - 09/2023)




## ORNAMENTAL METAL PICKET FENCE AND 5' AND 10' GATES

NOT TO SCALE (NE-S030201 - 09/2023)





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**PROJECT No.:** MAA240217.00-0B
**DRAWN BY:** RPK
**CHECKED BY:** LDF
**DATE:** 10/15/25
**CAD I.D.:** P-PLAD-PROP

**PROJECT:**

## SITE DEVELOPMENT PLANS

FOR

WOODLAND ST. PLAYGROUND RENOVATION
CENTRAL AVE. & WOODLAND ST.
CITY OF EVERETT
MIDDLESEX COUNTY, MASSACHUSETTS


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CONNECTICUT No. 1359
MAINE No. 1217
VERMONT No. 01337
OHIO No. 250433

**SHEET TITLE:**

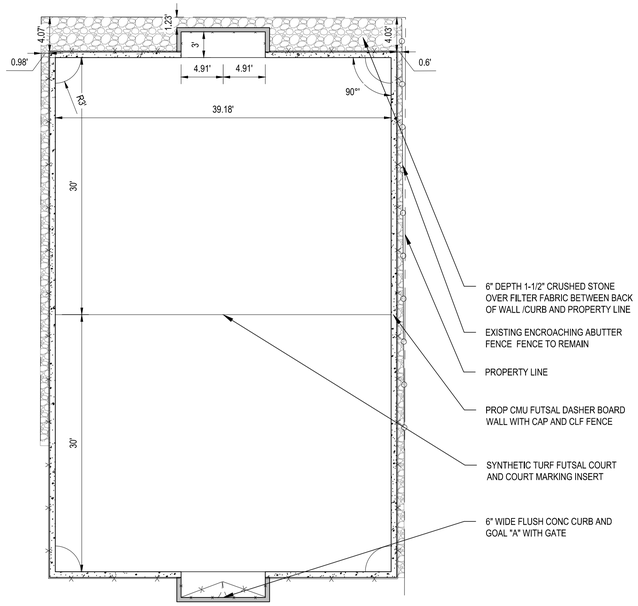
## CONSTRUCTION DETAILS

**SHEET NUMBER:**

# L-901

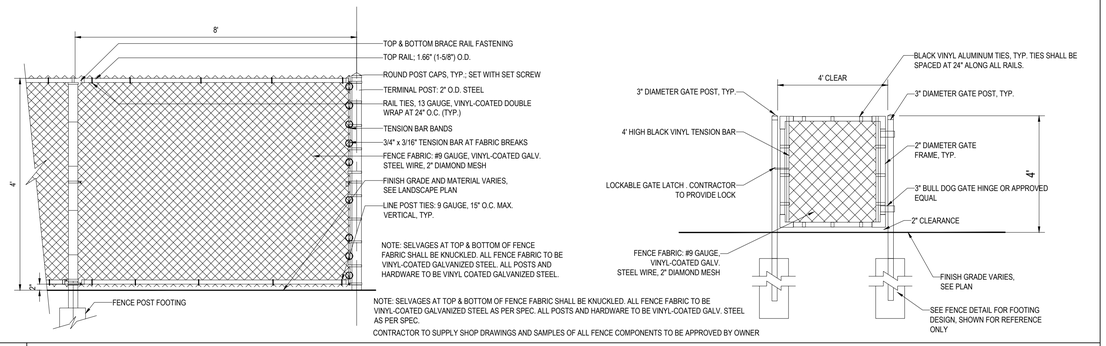
ORG. DATE - 10/15/25

P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLAN\P-PLAD-PROP-MAA240217.00-0B.----=1A1YOUT: L-901 DETL



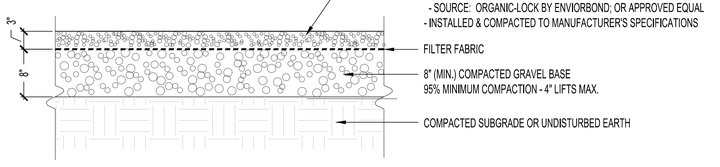

## FUTSAL COURT LAYOUT ENLARGEMENT

NOT TO SCALE



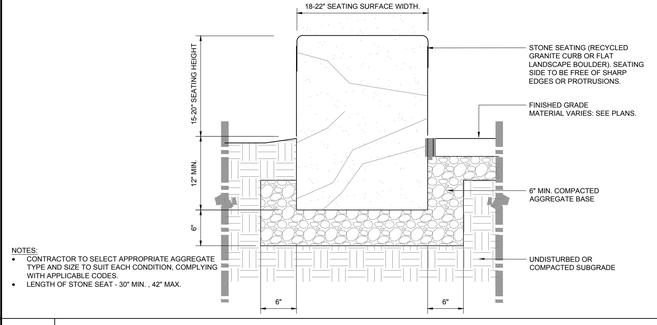

## 4' CHAIN LINK FENCE WITH GATE AT COMMUNITY GARDEN

NOT TO SCALE (S080101-01/2013)



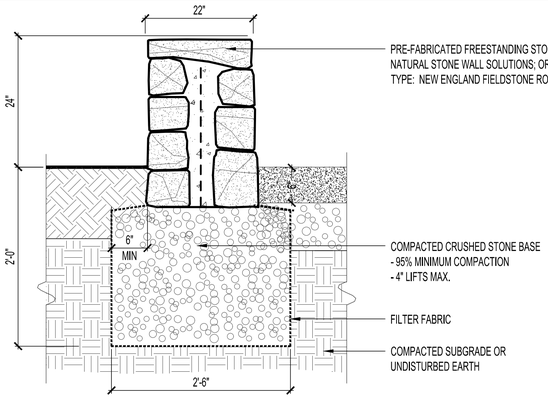

## STABILIZED STONEDUST

NOT TO SCALE (NE-S030201 - 09/2023)



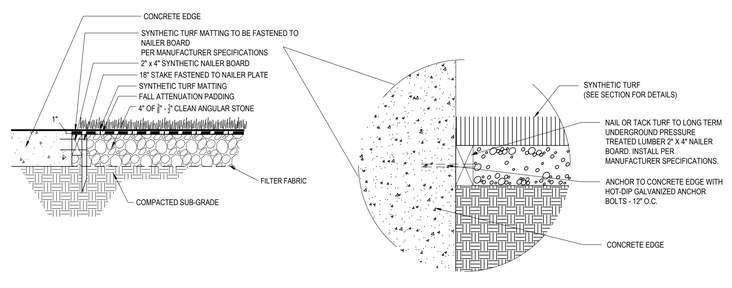

## STONE SEAT

NOT TO SCALE (S080101-01/2013)




## PREFABRICATED STONE SEAT WALL

NOT TO SCALE DTL_NUMBER



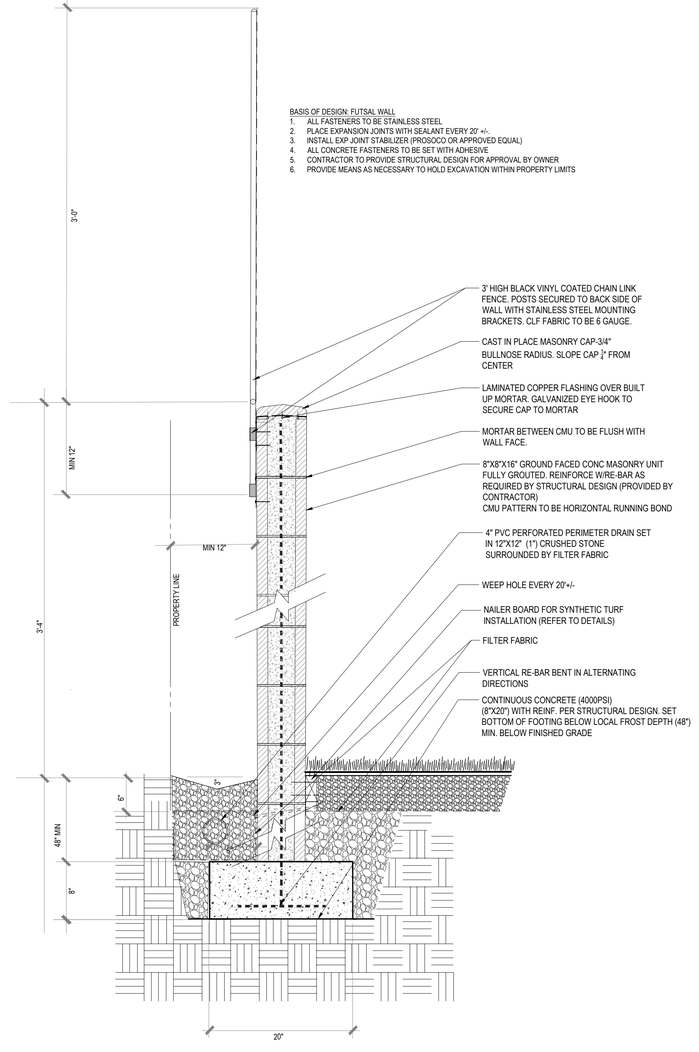

SYNTHETIC TURF ON GRADE

TURF NAILER BOARD

## FUTSAL COURT SYNTHETIC TURF SURFACE

DTL_SCALE DTL_NUMBER

BASIS OF DESIGN: FUTSAL WALL
1. ALL FASTENERS TO BE STAINLESS STEEL
2. PLACE EXPANSION JOINTS WITH SEALANT EVERY 20' +/-
3. INSTALL EXP JOINT STABILIZER (PROSOCO OR APPROVED EQUAL)
4. ALL CONCRETE FASTENERS TO BE SET WITH ADHESIVE
5. CONTRACTOR TO PROVIDE STRUCTURAL DESIGN FOR APPROVAL BY OWNER
6. PROVIDE MEANS AS NECESSARY TO HOLD EXCAVATION WITHIN PROPERTY LIMITS




## FUTSAL COURT WALL

NOT TO SCALE (NE-S030201 - 09/2023)

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PROJECT No.: MAA240217.00-0B
DRAWN BY: RPK
CHECKED BY: LDF
DATE: 10/15/25
CAD I.D.: P-PLAD-PROP

PROJECT:

**SITE DEVELOPMENT PLANS**

FOR

WOODLAND ST. PLAYGROUND RENOVATION
CENTRAL AVE. & WOODLAND ST.
CITY OF EVERETT
MIDDLESEX COUNTY, MASSACHUSETTS

BOHLER
50 WASHINGTON ST. SUITE 2000
WESTBOROUGH, MA 01581
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M.J. MRVA
REGISTERED LANDSCAPE ARCHITECT
MASSACHUSETTS No. 1217
RHODE ISLAND No. 419
NEW YORK No. 002359
NEW HAMPSHIRE No. 109
CONNECTICUT No. 1359
MAINE No. 4248
VERMONT No. 01337
OHIO No. 250433

SHEET TITLE:

**CONSTRUCTION DETAILS**

SHEET NUMBER:

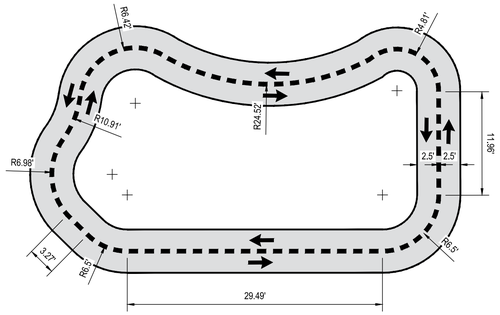
**L-902**

ORG. DATE - 10/15/25

P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLANS\P-PLAD-PROP-MAA240217.00-0B-----LAYOUT L-902 DETL

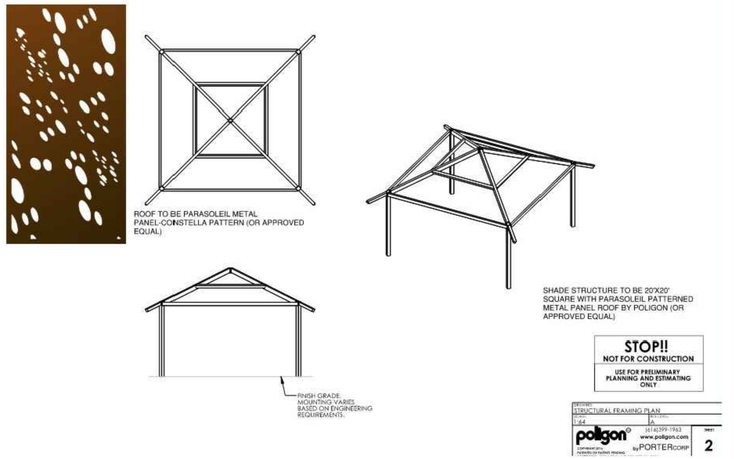
TRYCYCLE TRACK:
- 5' TOTAL WIDTH

PAVEMENT MARKINGS:
- 2" WIDE RED OUTLINE,
- TRACK LIGHT BLUE
- YELLOW 4" WIDE DASHED CENTER LINE
- YELLOW DIRECTIONAL ARROWS.
- SUBMIT COLOR SAMPLES FOR APPROVAL
- FIELD LAYOUT BY CONTRACTOR IS TO BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO APPLICATION OF PAVEMENT MARKINGS



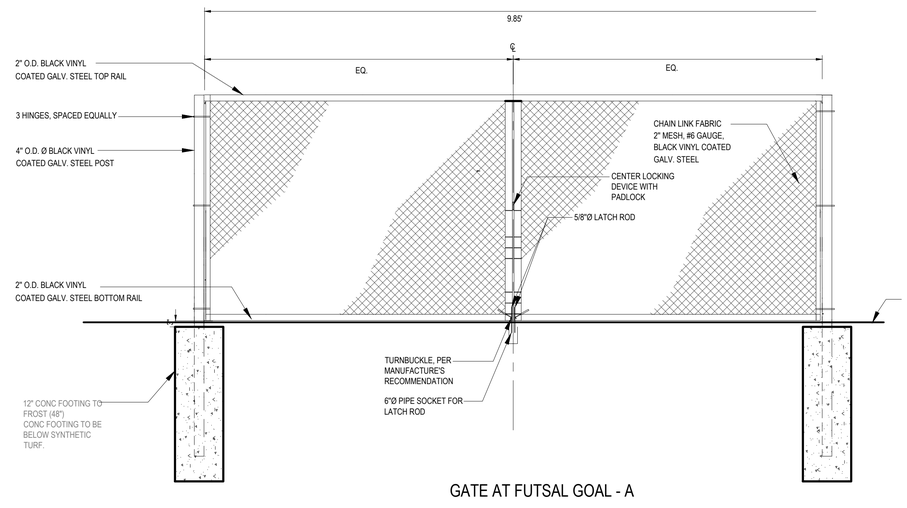

## TRICYCLE TRACK ENLARGEMENT

NOT TO SCALE (NE-S030201 - 09/2023)

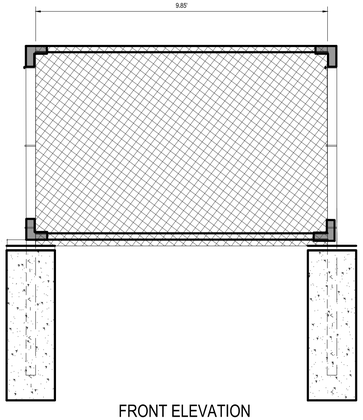



## 20' X 20' SHADE STRUCTURE

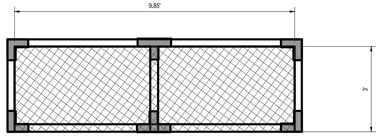
NOT TO SCALE (NE-S030201 - 09/2023)



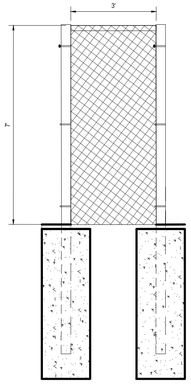

GATE AT FUTSAL GOAL - A




FRONT ELEVATION




PLAN VIEW



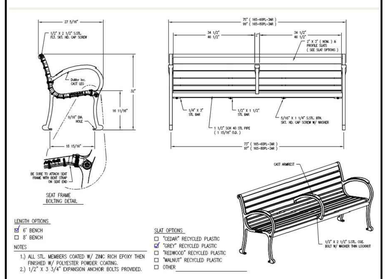

SIDE ELEVATION

BASIS OF DESIGN: PERMANENT GOAL "A"
1. DOUBLE GATE ON BACK SIDE
2. 6 GAUGE CHAIN LINK FENCE FABRIC
3. ALL COMPONENTS TO BE BLACK VINYL COATED GALVANIZED STEEL
4. FASTEN CLF FABRIC TO 2" DIA. PIPE FRAME USING BLACK BAND IT BUCKLES SPACED EVERY 18" OC (ALL EDGES FOLDED-NO EXPOSED SHARP EDGES)
5. USE CORNER AND TEE CONNECTORS WELDED AND SCREWED TO FRAME
6. SHOP DRAWINGS ARE TO BE SUBMITTED FOR APPROVAL
7. 12" DIA CONCRETE FOOTING TO FROST (48"). TOP OF CONCRETE FOOTING TO BE BELOW SYNTHETIC TURF

BASIS OF DESIGN: PERMANENT GOAL "B"
1. 6 GAUGE CHAIN LINK FENCE FABRIC
2. ALL COMPONENTS TO BE BLACK VINYL COATED GALVANIZED STEEL
3. FASTEN CLF FABRIC TO 2" DIA. PIPE FRAME USING BLACK BAND IT BUCKLES SPACED EVERY 18" OC (ALL EDGES FOLDED-NO EXPOSED SHARP EDGES)
4. USE CORNER AND TEE CONNECTORS WELDED AND SCREWED TO FRAME
5. SHOP DRAWINGS ARE TO BE SUBMITTED FOR APPROVAL
6. 12" DIA CONCRETE FOOTING TO FROST (48"). TOP OF CONCRETE FOOTING TO BE BELOW SYNTHETIC TURF

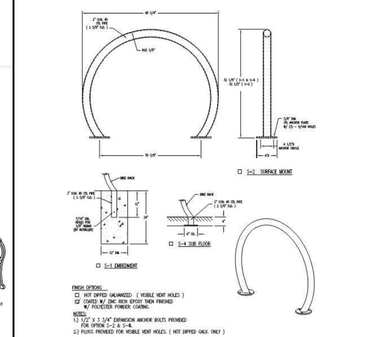
## FUTSAL COURT GOALS

NOT TO SCALE (NE-S030201 - 09/2023)



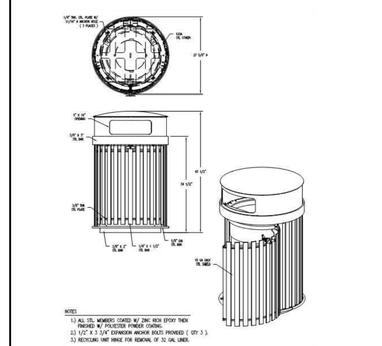

## 6' BENCH

NOT TO SCALE (NE-S030201 - 09/2023)



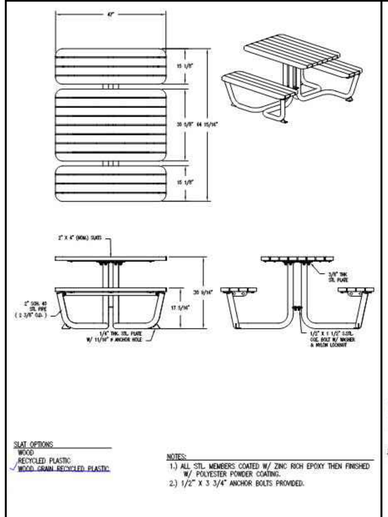

## BIKE RACK

NOT TO SCALE (NE-S030201 - 09/2023)



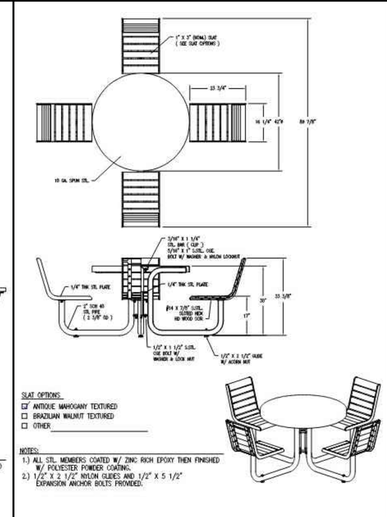

## TRASH RECEPTACLE

NOT TO SCALE (NE-S030201 - 09/2023)



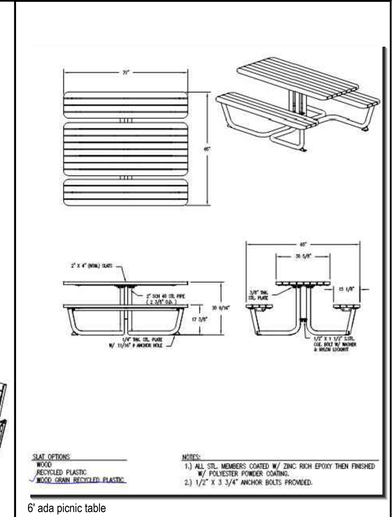

## 4' ADA PICNIC TABLE

NOT TO SCALE (NE-S030201 - 09/2023)




## 4 SEAT TABLE

NOT TO SCALE (NE-S030201 - 09/2023)




6' ada picnic table

## 6' ADA PICNIC TABLE

NOT TO SCALE (NE-S030201 - 09/2023)

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|---|---|
| PROJECT No.: | MAA240217.00-08 |
| DRAWN BY: | RPK |
| CHECKED BY: | LDF |
| DATE: | 10/15/25 |
| CAD I.D.: | P-PLAD-PROP |

PROJECT:

**SITE DEVELOPMENT PLANS**

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SHEET TITLE:

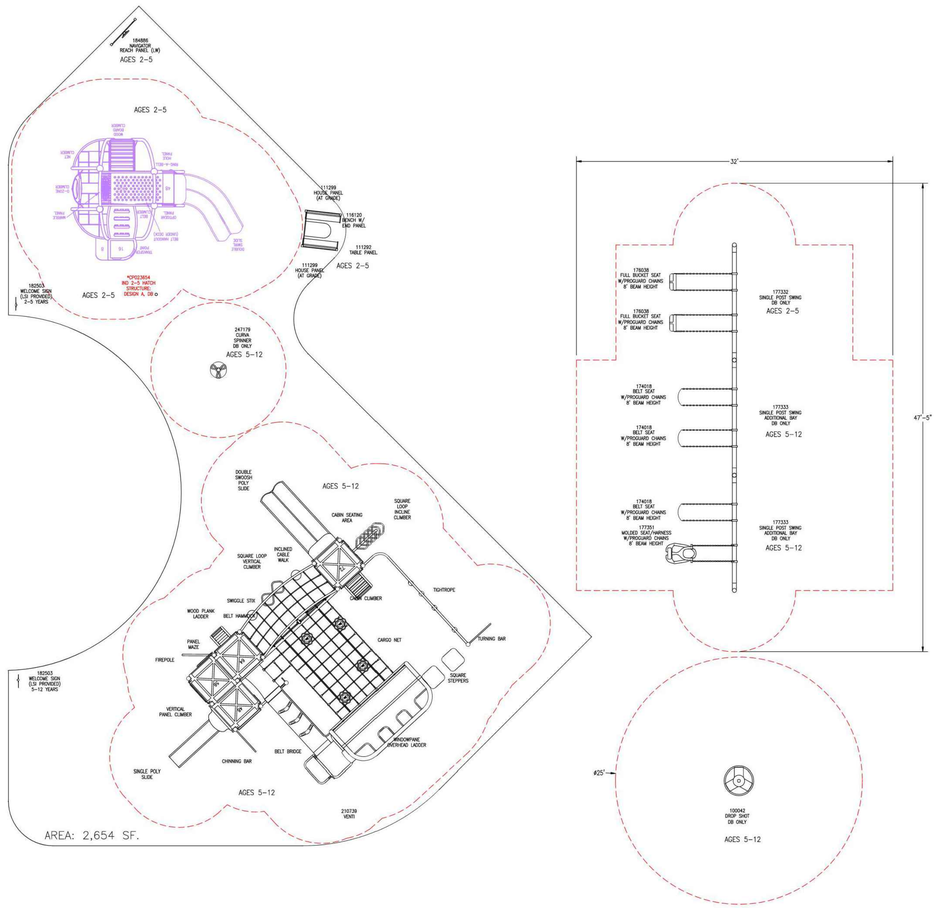
**CONSTRUCTION DETAILS**

SHEET NUMBER:

**L-903**

ORG. DATE - 10/15/25

P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLANS\P-PLAD-PROP-MAA240217.00-08-----3-LAYOUT L-903 DETL



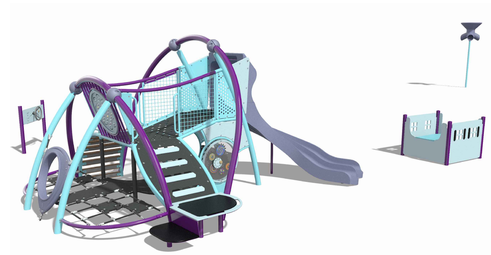

| | | | | | |
|---|---|---|---|---|---|
| TOTAL ELEVATED PLAY COMPONENTS | 13 | | | | |
| TOTAL ELEVATED COMPONENTS ACCESSIBLE BY RAMP | 0 | REQUIRED | 0 | | |
| TOTAL ELEVATED COMPONENTS ACCESSIBLE BY TRANSFER | 8 | REQUIRED | 7 | | |
| TOTAL ACCESSIBLE GROUND LEVEL COMPONENTS SHOWN | 12 | REQUIRED | 4 | | |
| TOTAL DIFFERENT TYPES OF GROUND LEVEL COMPONENTS | 8 | REQUIRED | 8 | | |

| | | | | | |
|---|---|---|---|---|---|
| TOTAL ELEVATED PLAY COMPONENTS | 4 | | | | |
| TOTAL ELEVATED COMPONENTS ACCESSIBLE BY RAMP | 0 | REQUIRED | 0 | | |
| TOTAL ELEVATED COMPONENTS ACCESSIBLE BY TRANSFER | 4 | REQUIRED | 2 | | |
| TOTAL ACCESSIBLE GROUND LEVEL COMPONENTS SHOWN | 9 | REQUIRED | 1 | | |
| TOTAL DIFFERENT TYPES OF GROUND LEVEL COMPONENTS | 8 | REQUIRED | 8 | | |

PLAY EQUIPMENT SHOWN IS BASIS OF DESIGN (OR APPROVED EQUAL)



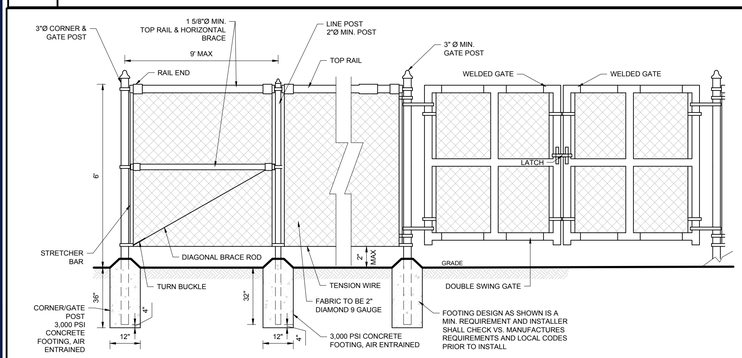
AGES 5-12 PLAY STRUCTURE



AGES 2-5 PLAY STRUCTURE

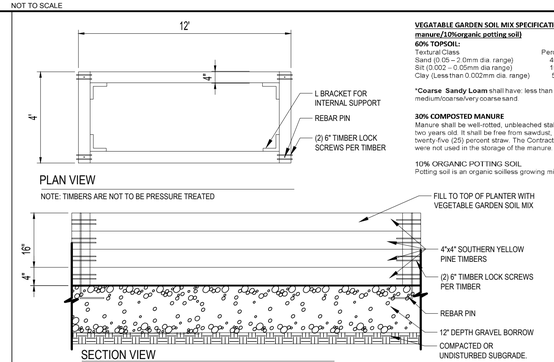
## PLAY EQUIPMENT ENLARGEMENT

NOT TO SCALE (NE-S030201 - 09/2023)




### 10' CLF GATE

NOT TO SCALE (NE-S030201 - 09/2023)




**VEGATABLE GARDEN SOIL MIX SPECIFICATION (as shown below-60%topsoil/30% composted manure/10%organic potting soil)**

**60% TOPSOIL:**

| Textural Class | Percentage of Total Weight | Average Percentage |
|---|---|---|
| Sand (0.05 – 2.0mm dia. range) | 45 – 75 | 60 |
| Silt (0.002 – 0.05mm dia range) | 15 – 35 | 25 |
| Clay (Less than 0.002mm dia. range) | 5 – 20 | 15 |

*__Coarse Sandy Loam__ shall have: less than 30% fine /very fine sand, and 50% or more medium/coarse/very coarse sand.

**30% COMPOSTED MANURE**

Manure shall be well-rotted, unbleached stable manure not less than eight months and not more than two years old. It shall be free from sawdust, shavings or refuse of any kind and shall not contain over twenty-five (25) percent straw. This Contractor shall furnish proof that disinfectant or chemicals, if any, were not used in the storage of the manure.

10% ORGANIC POTTING SOIL

Potting soil is an organic soilless growing mix that contains peat moss, perlite and/or vermiculite

### RAISED PLANTER BOX AT COMMUNITY GARDEN

NOT TO SCALE (S080101-01/2013)


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| PROJECT No.: | MAA240217.00-0B |
| DRAWN BY: | RPK |
| CHECKED BY: | LDF |
| DATE: | 10/15/25 |
| CAD I.D.: | P-PLAD-PROP |

PROJECT:

***SITE DEVELOPMENT PLANS***

FOR

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**CENTRAL AVE. & WOODLAND ST.**
**CITY OF EVERETT**
**MIDDLESEX COUNTY, MASSACHUSETTS**


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SHEET TITLE:

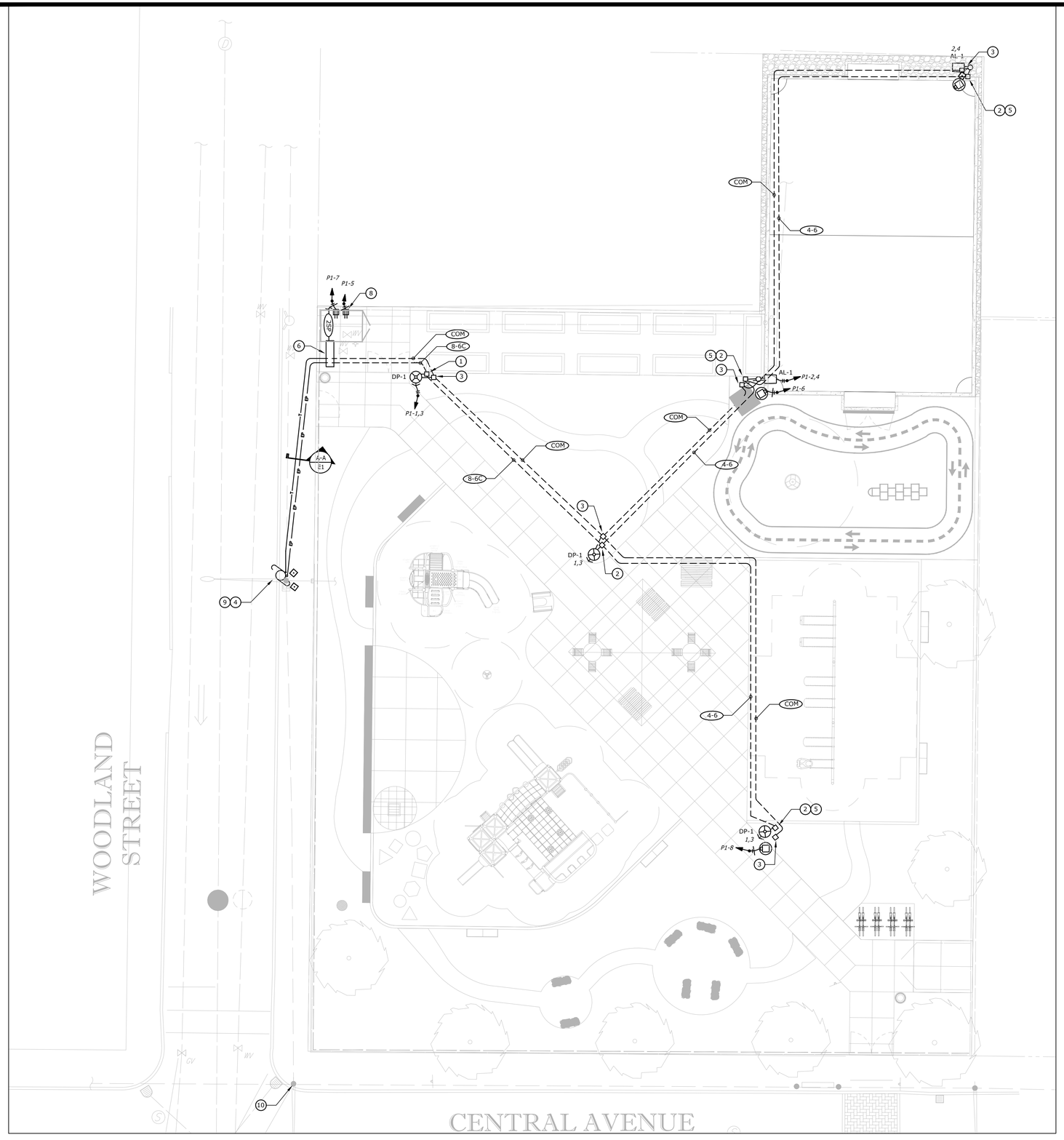
***CONSTRUCTION DETAILS***

SHEET NUMBER:

**L-904**

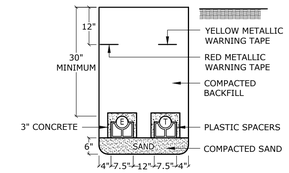
ORG. DATE - 10/15/25

P:\2024\MAA240217.00\CAD\DRAWINGS\PLAN SETS\LANDSCAPE ARCHITECTURE PLANS\P-PLAD-PROP-MAA240217.00-0B-----LAYOUT: L-904 DETL




ELECTRICAL SITE PLAN
SCALE: 1"=10'-0"

10 5 2.5 0 10
1"= 10'




LEGEND:
E - 3" PRIMARY ELECTRICAL
T - 3" TELEPHONE

SCALE: N.T.S.

## TRENCH DETAIL A-A

NOTES:

1. THE ELECTRICAL SUBCONTRACTOR SHALL VERIFY THE CONDUIT LAYOUT WITH THE UTILITY COMPANIES PRIOR TO INSTALLATION.
2. THE PRIMARY ELECTRICAL CONDUITS SHALL BE ENCASED IN MIN. 3" OF 3000 PSI CONCRETE, COMPLY WITH UTILITY COMPANY REQUIREMENTS FOR REBAR AND STIRRUP REQUIREMENTS.
3. ALL OTHER CONDUITS SHALL BE ENCASED IN 3" OF 3000 PSI CONCRETE WHEN CROSSING ROADWAYS, DRIVEWAYS AND OTHER VEHICULAR TRAFFIC AREAS.
4. EXCAVATION, CONCRETE AND BACKFILLING SHALL BE BY THE GENERAL CONTRACTOR. CONDUIT AND WIRING SHALL BE BY THE ELECTRICAL SUBCONTRACTOR.
5. HANDHOLES SHALL BE AASHTO 20 RATED WITH BOLTED HEAVY DUTY COVERS. COVERS SHALL READ "ELECTRIC", "TELEPHONE" OR "CATV" DEPENDING ON THE APPLICATION.
6. CONDUITS SHALL BE SCHEDULE 80 PVC, UNLESS NOTED OTHERWISE.
7. ALL SWEEPS AT FOUNDATIONS AND RISERS SHALL HAVE A MINIMUM RADIUS OF 36". THE RISER SWEEP SHALL BE GALVANIZED STEEL.

### GENERAL NOTES FOR E1

1. LIGHTS FIXTURES CIRCUITS SHALL BE WIRED VIA LIGHTING CONTACTOR AND CONTROLLED VIA TIMECLOCK / PHOTOCELL.
2. WIRE AND CONDUIT SIZES SHOWN APPLY TO THE ENTIRE RUN. UNLESS NOTED OTHERWISE.

### KEYED NOTES FOR E1

1. 18" X 12" POWER HANDHOLE.
2. 12" X 12" POWER HANDHOLE.
3. 12" X 12" COMMUNICATIONS HANDHOLE. RUN 1-1/4"C BETWEEN HANDHOLE AND POLE / FENCE POST FOR CAMERA.
4. UTILITY POLE.
5. POWER FOR CAMERA. FURNISH AND INSTALL INSTALL GFCI DUPLEX RECEPTACLE WITH WHILE IN-USE COVER ON THE ON LIGHT POLE SEE DETAIL ON DRAWING E3. CAMERA TO BE PROVIDED BY CITY.
6. ELECTRICAL ENCLOSURE, SEE DETAIL ON SHEET E2.
7. DISCONNECT AND REMOVE UTILITY POLE AND FOOTING. UTILITIES ARE TO BE CUT, CAPPED, AND ABANDONED. CONTRACTOR TO COORDINATE REMOVAL OF OVERHEAD WIRES AND METER WITH THE LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION. MAKE SAFE DISCONNECT AND REMOVE EXISTING LIGHT, POLE AND OVERHEAD WIRES.
8. PROVIDE (2) GFCI RECEPTACLES. ONE TO SERVE MISTING STATION CONTROLLER AND THE OTHER FOR GENERAL PURPOSE. FIELD COORDINATE LOCATIONS.
9. CONTRACTOR TO MAKE EXISTING FLOOD LIGHT AND CAMERA OPERATIONAL. CARRY IN BID $3500.00 FOR LABOR AND MATERIAL. CREDIT THE OWNER IF THE COST OF REPAIR IS LESS.
10. CONTRACTOR TO MAKE EXISTING FLOOD LIGHT OPERATIONAL. CARRY IN BID $2500.00 FOR LABOR AND MATERIAL. CREDIT THE OWNER IF THE COST OF REPAIR IS LESS.

### WIRE SCHEDULE

- 4-6 — 4#6 AWG & 1#10 AWG GND IN 2"C.
- 8-6C — 8#6 AWG & 2#10 AWG GND IN 2"C AND 2"C SPARE
- COM — EMPTY 2"C WITH PULL STRING FOR CAMERA COMMUNICATIONS.
- 2SP — 4#10 AWG & 1#10 AWG GND IN 2"C AND 1"C WITH (2) CATEGORY 6 CABLING FOR COMMUNICATIONS, COIL 20' OF CABLING FOR FUTURE USE.

## WIRING DEVICES

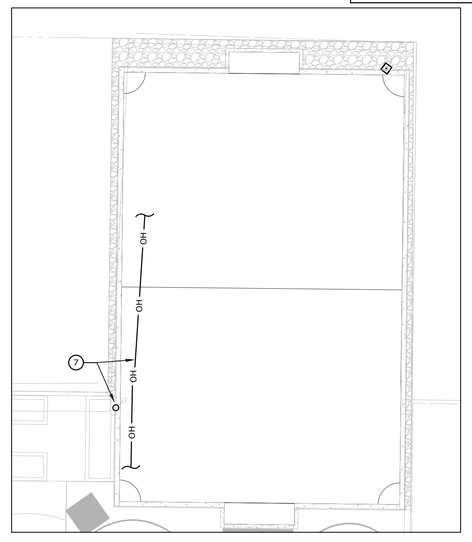
- GFCI DUPLEX RECEPTACLE
  * FOR IRRIGATION SYSTEM, PROVIDE GFICI RECEPTACLE WITH LOCKING SWITCH
- HOME RUN TO PANEL

## ABBREVIATIONS

- WP - WEATHERPROOF
- WP/WIC - DENOTES WEATHER PROOF WITH WHILE-IN-USE COVER

## VIDEO SURVEILLANCE

- CAMERA, TO BE FURNISHED BY OWNER
  FURNISH AND INSTALL FEEDER AND CONDUIT FOR POWER AND CONDUIT FOR COMMUNICATIONS




ELECTRICAL DEMOLITION SITE PLAN
SCALE: 1"=10'-0"

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|---|---|
| PROJECT No.: | MAA240217.00 |
| DRAWN BY: | AR |
| CHECKED BY: | RB |
| DATE: | 8/12/25 |
| CAD I.D.: | X-PLAD-TTLB |

PROJECT:

**SITE DEVELOPMENT PLANS**

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SHEET TITLE:

**ELECTRICAL SITE PLAN**

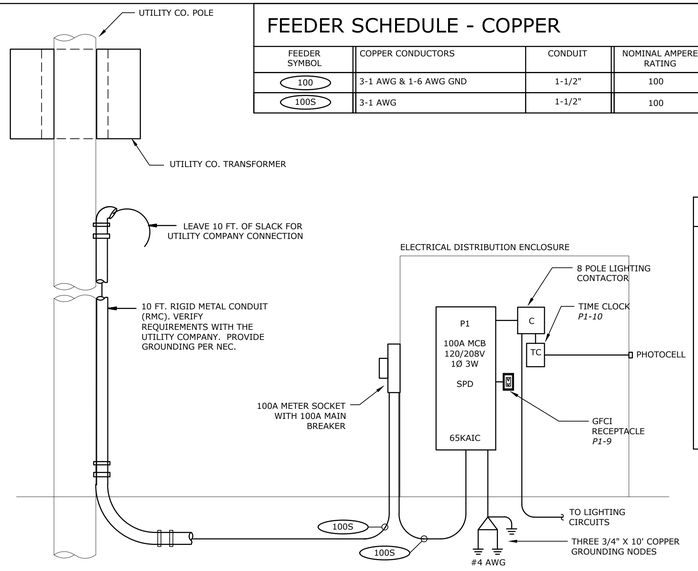
SHEET NUMBER:

**E1**

ORG. DATE - 10/02/2024

## FEEDER SCHEDULE - COPPER

| FEEDER SYMBOL | COPPER CONDUCTORS | CONDUIT | NOMINAL AMPERE RATING |
|---|---|---|---|
| 100 | 3-1 AWG & 1-6 AWG GND | 1-1/2" | 100 |
| 100S | 3-1 AWG | 1-1/2" | 100 |

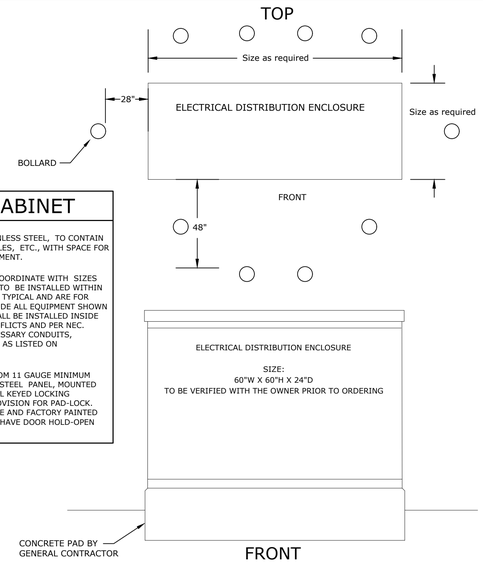



## ELECTRICAL CABINET

PROVIDE OUTDOOR NE MA 3R STAINLESS STEEL, TO CONTAIN 120/240V PANELBOARDS, RECEPTACLES, ETC., WITH SPACE FOR FUTURE VIDEO SURVEILLANCE EQUIPMENT.

CONTRACTOR TO SIZE CABINET TO COORDINATE WITH SIZES OF PANELBOARD AND EQUIPMENT TO BE INSTALLED WITHIN CABINETS. DIMENSIONS SHOWN ARE TYPICAL AND ARE FOR REFERENCE ONLY. CABINET TO INCLUDE ALL EQUIPMENT SHOWN OR IMPLIED AND ALL EQUIPMENT SHALL BE INSTALLED INSIDE OF CABINET WITHOUT PHYSICAL CONFLICTS AND PER NEC. CABINET TO BE SIZED FOR ALL NECESSARY CONDUITS, WHETHER ACTIVE, SPARE OR FUTURE AS LISTED ON PANELBOARD SCHEDULES.

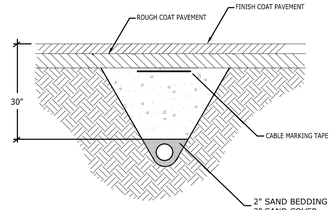
CABINETS TO BE MANUFACTURED FROM 11 GAUGE MINIMUM STAINLESS STEEL WITH 12 GAUGE STEEL PANEL, MOUNTED INSIDE. CABINETS TO HAVE INTEGRAL KEYED LOCKING MECHANISM, KEYED ALIKE, WITH PROVISION FOR PAD-LOCK. CABINETS SHALL BE VENTILATED TYPE AND FACTORY PAINTED BLACK POWDER-COAT. CABINETS TO HAVE DOOR HOLD-OPEN LATCHES.



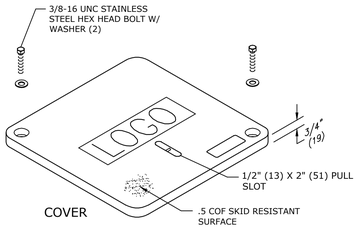

## 1 ELECTRICAL DISTRIBUTION RISER / ENCLOSURE DETAIL — NTS

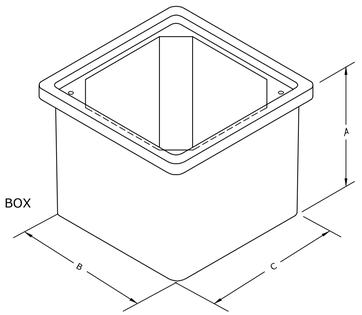
NOTES

1. ALL SITE LIGHTING CONDUITS SHALL BE INSTALLED MINIMUM 36" BELOW FINISHED GRADE. CONDUITS IN NON PAVED AREAS SHALL BE SCHEDULE 80 PVC WITH 6" COMPACT SAND ALL SIDES. CONDUITS UNDER PAVED SURFACES, SIDEWALKS, DRIVEWAYS, AND ROADS SHALL BE EITHER GALVANIZED RIGID STEEL OR SCHEDULE 40 PVC WITH 3" CONCRETE ALL SIDES.



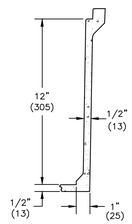

## 3 SITE LIGHTING / POWER CONDUIT DETAIL — NTS



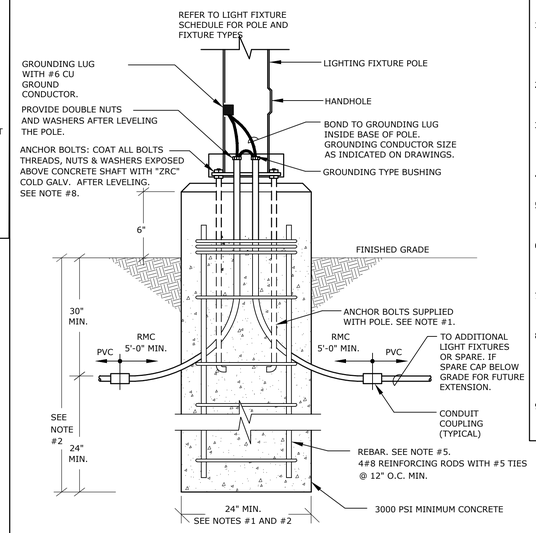




NOTES:

1. COVERS SHALL BE LABELED "ELECTRICAL", "COMMUNICATION", "CATV" OR "TELECOM" AS REQUIRED.
2. HANDHOLE SIZED PER NATIONAL ELECTRIC CODE, UNLESS OTHERWISE NOTED.
3. LOADING REQUIREMENTS SHALL BE BASED ON APPLICATION TYPE. MINIMUM RATING SHALL BE TIER 15. PROVIDE TRAFFIC RATED HANDHOLES WHERE REQUIRED.
4. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL THE REQUIRED CONDUIT AND WIRING TO THE HANDHOLES.
5. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING PRE-CAST HANDHOLES, TO BE INSTALLED BY GENERAL CONTRACTOR.
6. HANDHOLES SHALL BE AASHTO 20 RATED WITH BOLTED HEAVY DUTY COVERS. COVERS SHALL READ "ELECTRIC", "TELEPHONE", "CATV" DEPENDING ON THE APPLICATION.



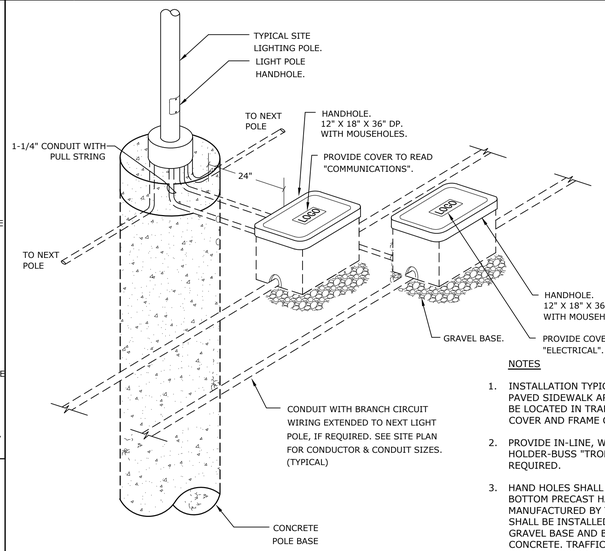

## 2 BUILDING SERVICE HANDHOLE DETAIL — NTS




NOTES

1. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR EXCAVATING AND BACKFILLING FOR THE LIGHT POLE BASES; AND FURNISHING AND INSTALLING 6" OF CRUSHED STONE AT CONCRETE BASE.
2. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING PRE-CAST LIGHT POLE BASES.
3. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING THE POLE BASE BOLT TEMPLATE AND CONDUIT REQUIREMENTS.
4. POLE BASE SIZE SHALL BE MINIMUM 24" UNLESS NOTED OTHERWISE.
5. LOCATE ANCHOR BOLTS SUCH THAT THE POLE AND BOLT COVER ARE CENTERED ON THE POLE BASE.
6. THE ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL THE REQUIRED CONDUIT AND WIRING TO THE LIGHT POLE BASES.
7. COORDINATE EXACT ANCHOR BOLT REQUIREMENTS WITH SITE POLE MANUFACTURER.
8. THE ANCHOR BOLTS SHALL BE CUT DOWN BEFORE THE POLE INSTALLATION TO ALLOW THE POLE TO BE CLOSER TO THE BASE. IF THE SPECIFIED POLE HAS NO SKIRT TO HIDE THE ANCHOR BOLTS THE POLE MUST SIT ON THE BASE TO LOOK FINISHED.
9. FOR CONCRETE POLE BASES FOR SPORTS FIELD LIGHTING SHOWN ON DRAWING E0.3B, PLEASE REFER TO SPECIFICATIONS.

## 2 BUILDING SERVICE HANDHOLE DETAIL — NTS




NOTES

1. INSTALLATION TYPICAL FOR LANDSCAPED OR PAVED SIDEWALK AREAS. HANDHOLE SHALL NOT BE LOCATED IN TRAFFIC AREAS. COORDINATE COVER AND FRAME COLOR OF HANDHOLE.
2. PROVIDE IN-LINE, WATERPROOF FUSE HOLDER-BUSS "TRON", TYPE HEB OR HEX, AS REQUIRED.
3. HAND HOLES SHALL BE STACKABLE, OPEN BOTTOM PRECAST HAND HOLES AS MANUFACTURED BY THE QUAZITE CO. AND SHALL BE INSTALLED ON 12" COMPACTED GRAVEL BASE AND BE PROVIDED WITH PRECAST CONCRETE. TRAFFIC RATED, COVERS IMPRINTED WITH THE WORD "ELECTRIC".

## 1 HANDHOLE DETAIL — NTS


BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES


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**REVISIONS**

| REV | DATE | COMMENT | DRAWN BY / CHECKED BY |
|---|---|---|---|
| | | | |

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| | |
|---|---|
| PROJECT No.: | MAA240217.00 |
| DRAWN BY: | AR |
| CHECKED BY: | RB |
| DATE: | 8/12/25 |
| CAD I.D.: | X-PLAD-TTLB |

PROJECT:

***SITE DEVELOPMENT PLANS***

FOR

WOODLAND ST. PLAYGROUND RENOVATION
CENTRAL AVE. & WOODLAND ST.
CITY OF EVERETT
MIDDLESEX COUNTY,
MASSACHUSETTS


BOHLER
50 WASHINGTON ST. SUITE 2000
WESTBOROUGH, MA 01581
Phone: (508) 480-9900
www.BohlerEngineering.com


SHEET TITLE:

***ELECTRICAL DETAILS***

SHEET NUMBER:

**E2**

ORG. DATE - 10/02/2024


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# GENERAL NOTES

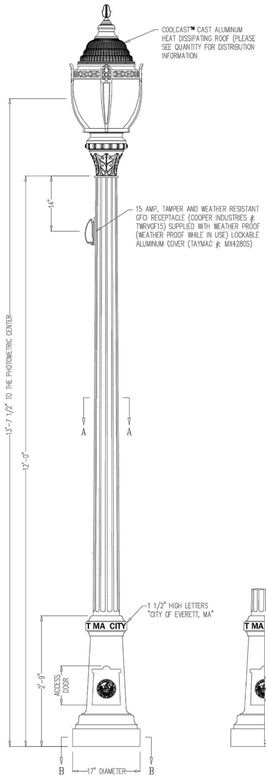
1. ALL RACEWAY SHALL BE CONCEALED UNLESS OTHERWISE NOTED. PROVIDE PULL STRINGS FOR ALL RACEWAYS. COORDINATE ROUTING OF ALL EXPOSED CONDUITS WITH THE ARCHITECT.
2. THE SIZES OF ELECTRICAL RACEWAY SHALL BE AS INDICATED ON THE CONTRACT DRAWINGS AND SHALL MEET THE REQUIREMENTS OF THE LOCAL ELECTRIC CODE, 1" MINIMUM, OR AS SHOWN ELSEWHERE.
3. CONDUIT FOR WIRING CONCEALED IN FLOOR SLABS, OR BELOW GRADE SHALL BE 1" MINIMUM.
4. ALL WORK INCLUDING DEVICES, OUTLETS, FIXTURES, WIRING, CONDUIT, RACEWAY, EQUIPMENT, ETC SHOWN ON THE ELECTRICAL PLANS IS NEW WORK AND SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL SUBCONTRACTOR OR THEIR SUB-CONTRACTORS, UNLESS NOTED OTHERWISE.
5. ALL NEW OUTLETS, DEVICES, FIXTURES, WIRING, CONDUIT, RACEWAY, EQUIPMENT, ETC SHOWN ON THE ELECTRICAL PLANS SHALL BE PROVIDED WITH ALL PARTS AND ACCESSORIES FOR A COMPLETE INSTALLATION.
6. ALL WIRE AND CABLE FOR POWER, LIGHTING, CONTROL INDICATION, ALARM, SIGNAL AND COMMUNICATION SYSTEM, UNLESS OTHERWISE NOTED, SHALL HAVE TYPE THHN INSULATION AND SHALL BE RATED FOR 600V MINIMUM.
7. MINIMUM WIRE SHALL BE #12. ALL WIRING SHALL BE NEW, UNLESS NOTED OTHERWISE. WIRING IN EXCESS OF 70 FEET FOR 120/208V AND 165 FEET FOR 277/480V MUST BE SIZED FOR VOLTAGE DROP. UPGRADE FEEDER SIZES IN ACCORDANCE WITH THE NEC. LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
8. ALL WIRING INSTALLATION SHALL BE COLOR CODED AS PER THE ELECTRICAL CODE. ALL CONDUCTORS SHALL BE STRANDED TYPE.
9. CIRCUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND FIXTURES.
10. ALL WIRING, INCLUDING BUT NOT LIMITED TO VIDEO SURVEILLANCE SYSTEM, SOUND SYSTEM, ACCESS CONTROL, FIRE ALARM, LIGHTING CONTROL, LOW VOLTAGE SYSTEMS, DATA, VOICE, BRANCH CIRCUITS AND FEEDERS SHALL BE INSTALLED IN RIGID METAL CONDUIT WHERE EXPOSED. EMT IS ALLOWED IF NOT SUBJECT TO SEVERE PHYSICAL DAMAGE.
11. WIRING (NOT SHOWN) FOR THE VIDEO SURVEILLANCE SYSTEM, SOUND SYSTEM, ACCESS CONTROL, LIGHTING CONTROL, LOW VOLTAGE SYSTEMS, SHALL BE FURNISHED AND INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS, SEE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK. EXPOSED WIRING SHALL BE INSTALLED IN RIGID METAL CONDUIT. EMT IS ALLOWED IF NOT SUBJECT TO SEVERE PHYSICAL DAMAGE.
12. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTIONS TO MOTORS AND OTHER EQUIPMENT.
13. CONDUIT AND WIRING (NOT SHOWN) FOR THE HVAC CONTROL EQUIPMENT AND MISCELLANEOUS DEVICES, OUTLET, SWITCHES, JUNCTION, PULL AND TERMINAL BOXES SHALL BE PROVIDED WITH NEMA ENCLOSURE SUITABLE TO THE ENVIRONMENT.
14. ALL WIRING DEVICES, PANEL BOARDS, DISTRIBUTION BOARDS, MOTORS, ETC., SHALL BE GROUNDED AS PER ELECTRIC CODE.
15. ALL WORK SHALL BE INSTALLED IN FULL ACCORDANCE WITH LOCAL, STATE & FEDERAL CODES, STATE AND LOCAL AUTHORITIES. FILE ALL PLANS, OBTAIN ALL PERMITS, PAY ALL FEES, SCHEDULE ALL INSPECTIONS, MAKE ALL TESTS AND OBTAIN ALL APPROVALS REQUIRED. THE ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF NATIONAL ELECTRIC CODE AND LOCAL AUTHORITIES HAVING JURISDICTION. ALL COMPONENTS SHALL BE UL LISTED.
16. WHERE CONFLICTS ARE FOUND BETWEEN DRAWINGS, SPECIFICATIONS, LAWS & ORDINANCES, THE MOST STRINGENT SHALL APPLY.
17. SUBMIT FOR APPROVAL, COMPLETE SHOP DRAWINGS, LIST OF MATERIALS AND DETAILED DATA OF EQUIPMENT GIVING THE MANUFACTURERS NAME, CATALOG NUMBER, SIZE, CAPACITY AND DIMENSIONS. SUBMIT SHOP DRAWINGS FOR APPROVAL ONLY AFTER VERIFYING ALL DIMENSIONS, CONFIRM THAT THE EQUIPMENT, DEVICES, FIXTURES, ETC. CAN BE INSTALLED WITHOUT MODIFICATIONS. NO EQUIPMENT SHALL BE INSTALLED OR FABRICATED WITHOUT OBTAINING APPROVAL. ANY MODIFICATIONS REQUIRED, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
18. SUBMIT FOR APPROVAL PRODUCTS THAT ARE APPROVED EQUAL ONLY. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL SUBCONTRACTOR TO VERIFY THAT THE SUBSTITUTED SYSTEMS ARE APPROVED EQUAL. IN THE EVENT THAT UNAPPROVED SYSTEMS ARE SUBMITTED FOR APPROVAL, THE ELECTRICAL SUBCONTRACTOR SHALL RETURN THESE SYSTEMS TO THE VENDOR AND FURNISH AND INSTALL APPROVED SYSTEMS AT NO ADDITIONAL COST TO THE OWNER.
19. ELECTRICAL SUBCONTRACTOR SHALL FURNISH AND INSTALL MOTOR STARTERS FOR ALL MOTORS, UNLESS CLEARLY INDICATED OTHERWISE ON THE CONTRACT DOCUMENTS. PROVIDE WITH NEMA ENCLOSURE SUITABLE TO THE ENVIRONMENT.THREE PHASE MOTORS SHALL BE PROVIDED WITH A COMBINATION MAGNETIC MOTOR STARTER WITH AMBIENT COMPENSATED OVERLOAD HEATERS IN EACH UNGROUNDED LEG. SHORT CIRCUIT AND GROUND FAULT PROTECTION SHALL BE BY FUSED DISCONNECT SWITCH AS SHOWN OR SPECIFIED. PROVIDE (1) SET OF NO AND (1) SET OF NC AUXILIARY CONTACTS.
20. MANUALLY CONTROLLED SINGLE PHASE MOTORS SHALL HAVE FULLY RATED MANUAL MOTOR STARTER SWITCHES WITH O.L. HEATERS IN EACH UNGROUNDED LEG.
21. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED.
22. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE TOP CIRCUIT BREAKER OPERATING HANDLE TO THE FLOOR SHALL NOT EXCEED 6'-6".
23. ALL NON-LOCKING RECEPTACLES IN DAMP AND WET LOCATIONS SHALL BE GFCI AND LISTED AS WEATHER RESISTANT TYPE PER NEC.
24. SWITCHGEAR & PANEL DESIGNATIONS ARE INTENDED TO BE INTERPRETED AS INDICATED BELOW:
    - BLANK: CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF BREAKERS OR STARTERS WITHIN SIZE RANGE SHOWN.
    - SPACE: CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF BREAKERS OR STARTERS WITHIN SIZE RANGE SHOWN.
    - SPARE: CONTAINS A COMPLETE BREAKER OR STARTER INSTALLED, SIZE AS INDICATED AVAILABLE FOR FUTURE USE.
25. THE ELECTRICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING ELECTRICAL SERVICES AND CONNECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY CONFLICTS OR DISCREPANCIES FOUND PRIOR TO BID.

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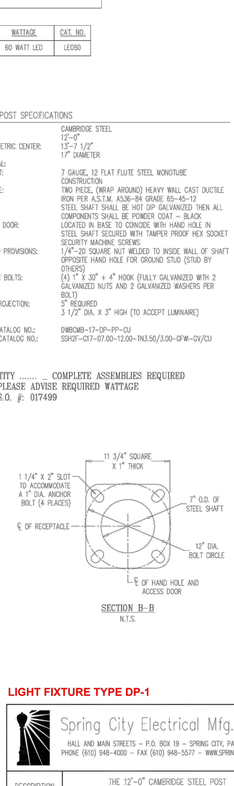













### LUMINAIRE SPECIFICATIONS

| | |
|---|---|
| STYLE: | NEW FRONTIER WITH THE COOLCAST™ CAST ALUMINUM HEAT DISSIPATING ROOF AND THE TARBORO STRUT ASSEMBLY |
| HEIGHT: | 43 1/4" |
| WIDTH: | 19 1/8" |
| MATERIAL: | CAST ALUMINUM ALLOY ANSI 356 PER A.S.T.M. B26-95 |
| FINISH: | POWDER COAT - BLACK |
| GLOBE: | CLEAR STIPPLED ACRYLIC |
| LAMPING: | PLEASE SELECT AVAILABLE WATTAGES BELOW |
| VOLTAGE: | ELECTRONIC WIRED AT 120-277 VOLTS |
| COLOR TEMP: | 3000K COLOR TEMPERATURE |
| OPTICAL SYSTEM: | TYPE III REFRACTIVE OPTICS (ASYMMETRIC DISTRIBUTION) |

CATALOG NO.: ALMNWF-LE____/EVX/X2-30-CR3-YS11-FPA-TB-CU

| | WATTAGE | CAT. NO. |
|---|---|---|
| X | 60 WATT LED | LE060 |

### LAMP POST SPECIFICATIONS

| | |
|---|---|
| STYLE: | CAMBRIDGE STEEL |
| HEIGHT: | 12'-0" |
| PHOTOMETRIC CENTER: | 13'-7 1/2" |
| BASE: | 17" DIAMETER |
| MATERIAL: | |
| SHAFT: | 7 GAUGE, 12 FLAT FLUTE STEEL MONOTUBE CONSTRUCTION |
| BASE: | TWO PIECE, (WRAP AROUND) HEAVY WALL CAST DUCTILE IRON PER A.S.T.M. A536-84 GRADE 65-45-12 |
| FINISH: | STEEL SHAFT SHALL BE HOT DIP GALVANIZED THEN ALL COMPONENTS SHALL BE POWDER COAT - BLACK |
| ACCESS DOOR: | LOCATED IN BASE TO COINCIDE WITH HAND HOLE IN STEEL SHAFT SECURED WITH TAMPER PROOF HEX SOCKET SECURITY MACHINE SCREWS |
| GROUND PROVISIONS: | 1/4"-20 SQUARE NUT WELDED TO INSIDE WALL OF SHAFT OPPOSITE HAND HOLE FOR GROUND STUD (STUD BY OTHERS) |
| ANCHOR BOLTS: | (4) 1" X 30" + 4" HOOK (FULLY GALVANIZED WITH 2 GALVANIZED NUTS AND 2 GALVANIZED WASHERS PER BOLT) |
| BOLT PROJECTION: | 5" REQUIRED |
| TENON: | 3 1/2" DIA. X 3" HIGH (TO ACCEPT LUMINAIRE) |
| BASE CATALOG NO.: | DWBCMB-17-DP-PP-CU |
| SHAFT CATALOG NO.: | SSHOF-G17-07.00-12.00-TN3.50/3.00-GFW-GV/CU |

QUANTITY ..... COMPLETE ASSEMBLIES REQUIRED
• PLEASE ADJUSE REQUIRED WATTAGE
PER S.O. #: 017499

**LIGHT FIXTURE TYPE DP-1**

Spring City Electrical Mfg. Co.
HALL AND MAIN STREETS - P.O. BOX 19 - SPRING CITY, PA. 19475
PHONE (610) 948-4000 - FAX (610) 948-5577 - WWW.SPRINGCITY.COM

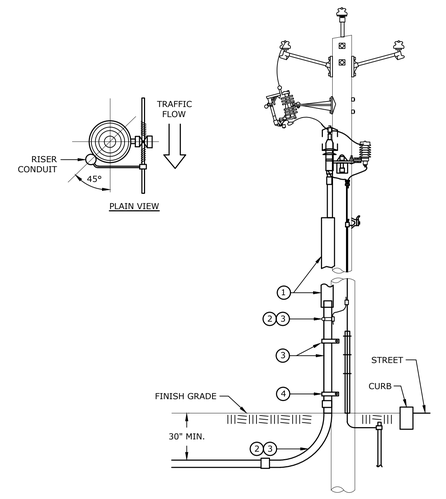
| | | | |
|---|---|---|---|
| DESCRIPTION | THE 12'-0" CAMBRIDGE STEEL POST WITH THE NEW FRONTIER LED LUMINAIRE | | |
| CUSTOMER / JOB | MASS BAY ELECTRICAL CORP. GRAMSTORF PARK (EVERETT, MA) | | |
| SCALE: N.T.S. | DRAWN BY: B.K.R. | DATE: 08-28-2017 | DRAWING NO.: LP-30030 |

New Panel — MOUNTING SURFACE — VOLTS 208/120V 2P 3W
# P1
FED FROM UTILITY — BUS AMPS 100

| CKT # | CKT BKR | CIRCUIT DESCRIPTION | | CKT # | CKT BKR | CIRCUIT DESCRIPTION |
|---|---|---|---|---|---|---|
| 1 | 20/2 | LIGHTING | a | 2 | 20/2 | LIGHTING |
| 3 | \| | | b | 4 | \| | |
| 5 | 20/1 | IRRIGATION SYSTEM | a | 6 | 20/1 | CAMERA POWER |
| 7 | 20/1 | PUMP | b | 8 | 20/1 | CAMERA POWER |
| 9 | 20/1 | RECEPTACLE - ELECTRIC DIST. ENCLOSURE | a | 10 | 20/1 | TIMECLOCK - ELECTRIC DIST. ENCLOSURE |
| 11 | 20/1 | SPARE | b | 12 | 20/1 | SPARE |
| 13 | 20/1 | SPARE | a | 14 | 20/1 | SPARE |
| 15 | 20/1 | SPARE | b | 16 | 20/1 | SPARE |
| 17 | 20/1 | SPARE | a | 18 | 20/1 | SPARE |
| 19 | 20/1 | SPARE | b | 20 | 20/1 | SPARE |
| 21 | 20/1 | SPARE | a | 22 | 20/1 | SPARE |
| 23 | 20/1 | SPARE | b | 24 | 20/1 | SPARE |
| 25 | 20/1 | SPARE | a | 26 | 20/1 | SPARE |
| 27 | 20/2 | SPARE | b | 28 | 20/2 | SPARE |
| 29 | \| | | a | 30 | \| | |

# LIGHTING FIXTURE SCHEDULE

| CALLOUT | LAMP | DESCRIPTION | MOUNTING | MODEL | VOLTS |
|---|---|---|---|---|---|
| AL-1 | LED | FIXTURE MOUNTED ON FENCE POST | POLE | LITHONIA DSX0 LED P1 30K XCCO MVOLT- MOUNTING ADAPTER FOR FENCE POST-CONFIRM MOUNTING TYPE PRIOR TO ORDERING. PROVIDE POINT BY POINT CALCULATION PRIOR TO ORDERING THE LIGHT FIXTURE. DSX0 Area Light \| Left Side Optic \| Mounted 12'-0" | 208V 2P 2W |
| DP-1 | LED | POLE MOUNTED FIXTURE WITH POLE | POLE | SPRINGCITY 12'-0" CAMBRIDGE STEEL POST WITH THE NEW FRONTIER LED LUMINAIRE ALMNWF-LE060/EVX/X2-30-CR3-YS11-FPA-TB-CU. SEE DETAIL ON DWG. E3. | 208V 2P 2W |




TYPICAL POLE RISER DETAIL — NTS

RISER POLE NOTES:

1. THE UTILITY COMPANY SHALL DESIGNATE CONDUIT RISER LOCATION ON THE POLE. ALL PRIMARY RISERS SHALL BE GALVANIZED STEEL, THIS INCLUDES THE 90 DEGREE SWEEP. PER NEC ALL STEEL RISERS MUST BE BONDED 6" DOWN FROM TOP OF RISER AND THE BOND MUST BE AT LEAST 8' HIGH FROM FINISHED GRADE.
2. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING THE BOND CLAMPS AND THE TAP. THE UTILITY COMPANY WILL MAKE THE BOND CONNECTION FROM THAT RISER BOND TAP TO THE GROUND SYSTEM ON THE POLE. SPARE RISER SWEEP SHALL BE BONDED ALSO. RISER SWEEP IN DIRECT BURIED APPLICATIONS SHALL BE CONCRETE ENCASED.

KEYED NOTES

1. U GUARD
2. GALVANIZED STEEL CONDUIT AND BEND ARE TO BE USED, THEY SHALL BE GROUNDED BY BONDING TO AN APPROVED U-BOLT TYPE GROUND CLAMP 6"(150mm) FROM TO OF THE CONDUIT. A 24" (600mm) CONDUCTOR SHALL BE PROVIDED TO EXTEND TO THE UTILITY COMPANY'S GROUNDING CONDUCTOR. THE CONDUCTOR SHALL BE SIZED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE. ARTICLE 250, BUT IN NO CASE SHALL IT BE SMALLER THAN #4 AWG COPPER. USE CORROSION RESISTANT BENDS IN LOCATIONS SUBJECT TO HIGHWAY SALTING.
3. GALVANIZED STEEL CONDUIT, GALVANIZED STEEL SWEEP, ATTACHMENT CLAMPS, GROUNDING CLAMP AND 24" GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL SUBCONTRACTOR. NORMALLY, THE CONDUIT SHALL RISE ON THE SIDE OF THE POLE AWAY FROM TRAFFIC UP TO 8 FT. (2.5m) TO 11 FT. (3.4m). CONSULT UTILITY COMPANY FOR PROPER LOCATION ON POLE.
4. PIPE STRAPS, INSTALL AT NOT MORE THAN 30" (750mm) INTERVALS.
5. THE CONDUIT BURIAL DEPTH SHALL BE 30" (750mm) MINIMUM.

# ABBREVIATIONS

| | | |
|---|---|---|
| AHJ | - | AUTHORITY HAVING JURISDICTION |
| AIC | - | AMPERES INTERRUPTING CAPACITY |
| EC | - | ELECTRICAL SUBCONTRACTOR |
| GFP | - | GROUND FAULT PROTECTION |
| MCB | - | MAIN CIRCUIT BREAKER |
| MLO | - | MAIN LUGS ONLY |
| NTS | - | NOT TO SCALE |
| SPD | - | SURGE PROTECTION DEVICE |
| WIC | - | WHILE IN-USE COVER |
| WP/WIC | - | DENOTES WEATHER PROOF WITH WHILE-IN-USE COVER |

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
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**REVISIONS**

| REV | DATE | COMMENT | DRAWN BY / CHECKED BY |
|---|---|---|---|
| | | | |

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| | |
|---|---|
| PROJECT No.: | MAA240217.00 |
| DRAWN BY: | AR |
| CHECKED BY: | RB |
| DATE: | 8/12/25 |
| CAD I.D.: | X-PLAD-TTLB |

PROJECT:

**SITE DEVELOPMENT PLANS**

FOR

WOODLAND ST. PLAYGROUND RENOVATION
CENTRAL AVE. & WOODLAND ST.
CITY OF EVERETT
MIDDLESEX COUNTY,
MASSACHUSETTS

BOHLER
50 WASHINGTON ST. SUITE 2000
WESTBOROUGH, MA 01581
Phone: (508) 480-9900
www.BohlerEngineering.com

SHEET TITLE:

**ELECTRICAL SCHEDULES AND DETAILS**

SHEET NUMBER:

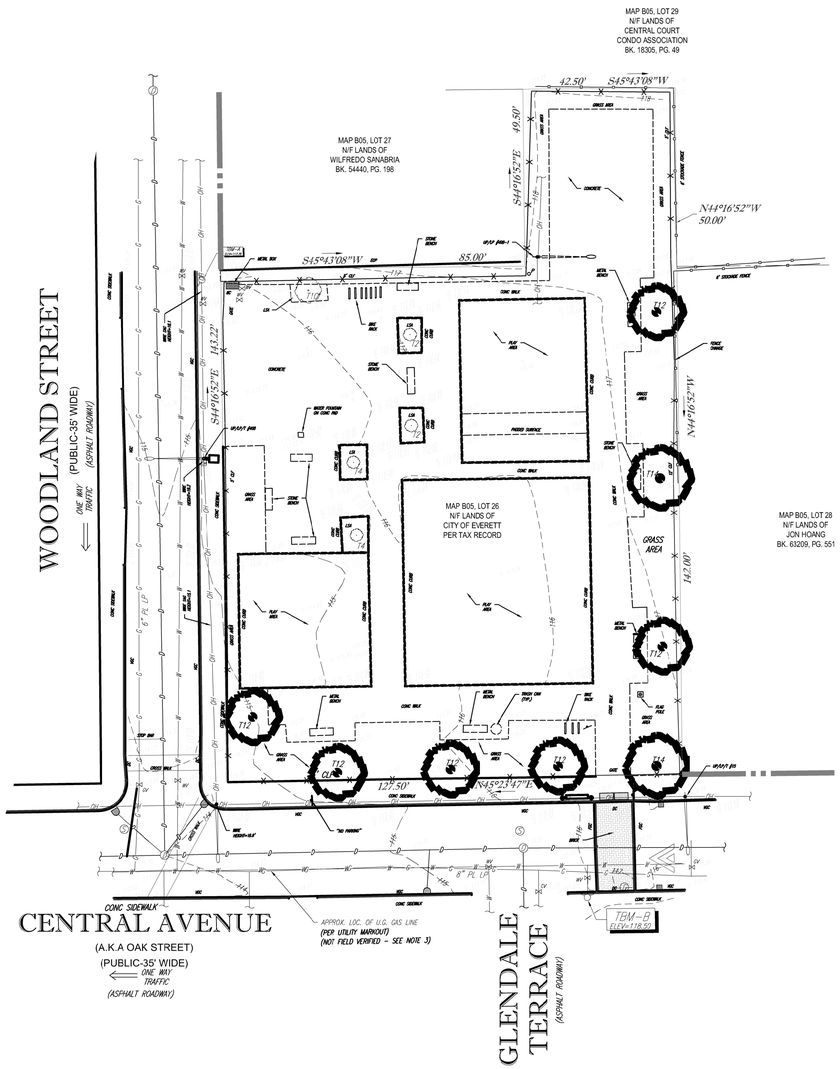
**E3**

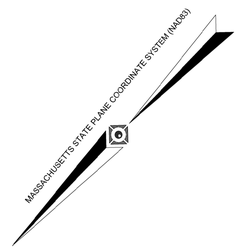
ORG. DATE - 10/02/2024

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## LEGEND

| | |
|---|---|
| 124 / 125 | EXISTING CONTOUR |
| x 123.4 | EXISTING SPOT ELEVATION |
| TC 123.4 | EXISTING TOP OF CURB ELEVATION |
| GU 123.4 | EXISTING GUTTER ELEVATION |
| HYD | HYDRANT |
| WV | WATER VALVE |
| GV | GAS VALVE |
| DMH | DRAINAGE/STORM MANHOLE |
| SMH | SANITARY/SEWER MANHOLE |
| | CATCH BASIN OR INLET |
| | DETECTABLE WARNING PAD |
| OH | OVERHEAD WIRES |
| D | APPROX. LOC. UNDERGROUND DRAIN LINE |
| W | APPROX. LOC. UNDERGROUND WATER LINE |
| G | APPROX. LOC. UNDERGROUND GAS LINE |
| UPLP # | UTILITY POLE/LIGHT POLE |
| C/O | CLEAN OUT |
| | SIGN |
| | BOLLARD |
| P | POST |
| CLF | CHAIN LINK FENCE |
| DC | DEPRESSED CURB |
| EOC | EDGE OF CONCRETE |
| EOP | EDGE OF PAVEMENT |
| MC | METAL COVER |
| (TYP) | TYPICAL |
| FGC | FLUSH GRANITE CURB |
| VGC | VERTICAL GRANITE CURB |
| | DECIDUOUS TREE & TRUNK SIZE |
| | CONIFEROUS TREE & TRUNK SIZE |




## NOTES:

1. PROPERTY KNOWN AS LOT 26 AS SHOWN ON THE CITY OF EVERETT, MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS; ASSESSOR'S MAP NO. B05.
2. AREA = 20,318 SQUARE FEET OR 0.466 ACRES
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X-UNSHADED (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER REF. #2
7. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS).

   TEMPORARY BENCH MARKS SET:
   TBM-A: TOP OF SPINDLE BOLT OF FIRE HYDRANT ALONG WOODLAND STREET. ELEVATION = 117.78

   TBM-B: TOP OF SPINDLE BOLT OF FIRE HYDRANT ALONG CENTRAL AVENUE. ELEVATION = 118.50

   PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.
8. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.

## REFERENCES:

1. THE TAX ASSESSOR'S MAP OF EVERETT, MIDDLESEX COUNTY, SHEET #B05.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, MIDDLESEX COUNTY, MASSACHUSETTS (ALL JURISDICTIONS) PANEL 441 OF 656," MAP NUMBER 25017C0441E, MAP EFFECTIVE: JUNE 4, 2010.
3. MAP ENTITLED "CENTRAL CCURT CONDOMINIUM EVERETT, MASS" PREPARED BY CARTER & TOWERS ENGINEERING CORP, DATED FEBRUARY 10, 1987, PLAN RECORDED IN THE MIDDLESEX REGISTRY OF DEEDS SOUTHERN DISTRICT AS PLAN NO. 93 OF 1987.
4. MAP ENTITLED "PLAN OF LANDS IN SOUTH MALDEN BELONGING TO BARNABAS T. LOVING AND PURCHASED BY HIM OF PR. SOUTHWICK TO BE SOLD AT AUCTION, WITHOUT RESERVE, ON A SATURDAY AUGUST 31ST ESTATE OF CHARLES D. ABBOTT" PREPARED BY DWIGHT EASTON, DATED AUGUST 1850, RECORDED IN THE MIDDLESEX SOUTH REGISTRY OF DEEDS IN PLAN BK. 3A PLAN. 31(A OF 2). & PLAN BK. 3A PLAN 31 (B OF 2).
5. MAP ENTITLED "AS-BUILT SITE PLAN THE WOODLAND APARTMENTS DIBIASE EVERETT REALTY TRUST EVERETT, MASS" PREPARED BY CHARTER & TOWERS ENGINEERING CORP, DATED NOVEMBER 4,1974, RECORDED IN THE MIDDLESEX SOUTH REGISTRY OF DEEDS IN PLAN BK. 12724 PG. 419.

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UTILITIES:

THE FOLLOWING COMPANIES WERE NOTIFIED BY MASSACHUSETTS ONE-CALL SYSTEM (1-888-344-7233) AND REQUESTED TO MARK OUT UNDERGROUND FACILITIES AFFECTING AND SERVICING THIS SITE. THE UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS BASED UPON THE UTILITY COMPANIES RESPONSE TO THIS REQUEST.
SERIAL NUMBER(S):

| UTILITY COMPANY | PHONE NUMBER |
|---|---|
| NATIONAL GRID ELECTRIC-MASS ELECTRIC | 800-322-3223 |
| NATIONAL GRID GAS-BOSTON | 800-233-5325 |
| VERIZON | 800-922-0204 |
| ON TARGET LOCATING | 508-429-1022 |

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THE COMMONWEALTH OF MASSACHUSETTS REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.

GRAPHIC SCALE
20 0 10 20 40 80
( IN FEET )
1 inch = 20 ft.

| No. | DESCRIPTION OF REVISION | FIELD CREW | DRAWN: | APPROVED: | DATE |
|---|---|---|---|---|---|
| 1 | ADDITIONAL TOPOGRAPHY | S.B.H. | B.A.L. | G.L.H. | 04-27-2021 |

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL

GERRY L. HOLDRIGHT, PLS — DATE
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #49211

FIELD DATE: 10-31-17, 04-23-21
FIELD BOOK NO.: 17-13 MA, 1-21 MA
FIELD BOOK PG.: 59, 67
FIELD CREW: S.B.H., S.B.H.
DRAWN: E. LOC/RK, B.A.L.
REVIEWED: S.P.P.

BOUNDARY, TOPOGRAPHIC & UTILITY SURVEY
# BOHLER ENGINEERING MA, LLC
37 CENTRAL AVENUE
MAP B05, LOT 26
EVERETT, MIDDLESEX COUNTY
COMMONWEALTH OF MASSACHUSETTS

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
508.948.3000 - 508.948.3003 FAX
ALBANY, NY 5182175010
CHALFONT, PA 2157129880
MANHATTAN, NY 6467800411
MT.LAUREL, NJ 6095572099
WARREN, NJ 9086680099

| APPROVED: | DATE | SCALE | FILE NO. | DWG. NO. |
|---|---|---|---|---|
| G.L.H. | 11-7-17 | 1"=20' | 03-170304 | 1 OF 1 |