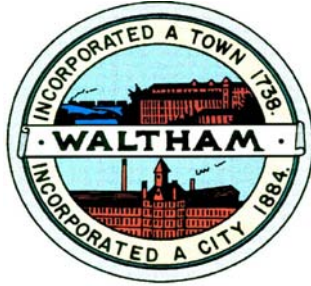


The City of Waltham



**Invites
Interested Parties
To propose the best offer and or bid
For the service or product herewith described:**

**PARKING LOT CONSTRUCTION AT THE
FORMER METROPOLITAN STATE HOSPITAL**

The bid opening will be held: Thursday August 29, 2013 at 10:00 am

Pre-Bid Meeting Wednesday August 21, 2013 at 10:00 AM

(Meet at the corner of Trapelo Road and the Former Metropolitan State Hospital)

Phone: 781-314-3244, Fax: 781-314-3245

PARKING LOT CONSTRUCTION AT THE
FORMER METROPOLITAN STATE HOSPITAL

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**SECTION 00050
CITY OF WALTHAM
MASSACHUSETTS**

NOTICE TO BIDDERS, INCLUDING SUB-BIDDERS

**PARKING LOT CONSTRUCTION AT THE FORMER METROPOLITAN STATE HOSPITAL SITE
WALTHAM, MASSACHUSETTS**

The City of Waltham, Massachusetts invites sealed bids from Contractors for the construction of a new 46 bay parking lot, roadway connection, walkway and miscellaneous site improvements at the existing Metropolitan State Administration Building, Metropolitan Parkway South, Waltham, MA 02453, as described in the Contract Documents.

PLANS, SPECIFICATIONS and other Contract Documents may be obtained after 3:00 pm August 7, 2013 by visiting the City's web Site at www.city.waltham.ma.us/open-bids Copies of Addenda will be emailed to the registered Bidders without charge.

Sealed **GENERAL BIDS** for this project will be accepted from eligible bidders at the Purchasing Department, Waltham City Hall, 610 Main Street, Waltham, MA 02452 until **10:00 AM on August 29, 2013**, at which place and time they shall be publicly opened, read aloud and recorded for presentation to the Awarding Authority.

A **PRE-BID CONFERENCE and SITE INSPECTION** will be held for all interested parties at **10:00 AM on August 21, 2013. Meet at the corner of Trapelo Road and Met. State**, Waltham, MA. Attendance at this pre-bid conference is strongly recommended but not mandatory for parties submitting a bid. It will be the only opportunity to visit the site prior to the bid opening.

Each general bid, and each sub-bid shall be accompanied by a bid deposit in the form of a bid bond, certified check, or a treasurer's or cashier's check issued by a responsible bank or trust company, payable to the City of Waltham in the amount of five percent (5%) of the value of the bid. Bid deposits will be dealt with as provided in Massachusetts General Laws.

Bids shall be made on the basis of the Prevailing Wage Rates as determined by the Commissioner of Labor and Industries, Pursuant to the Provisions of the Massachusetts General Laws, a copy of which is available in the City web site or by request to jpedulla@city.waltham.ma.us and is made a part of the Contract.

Bidders' selection procedures and contract award shall be in conformity with applicable statutes of the Commonwealth of Massachusetts.

Performance and Labor and Materials payment bonds in the full amount of the contract price will be required from the successful bidder.

The Awarding Authority reserves the right to reject any or all general bids, if it be in the public interest to do so, and to reject any sub-bid on any sub-trade if it determines that such sub-bid does not represent the sub-bid of a person competent to perform the work as specified or that less than three

such sub-bids were received and that the prices are not reasonable for acceptance without further competition.

The successful bidder will be required to furnish a Certificate of Insurance, with the following verbatim text included in the description of services: **“The City of Waltham is a named additional insured for General Liability and Vehicle Liability under the contract”** in the amount of \$500,000 per occurrence and \$1,000,000 in the aggregate and Worker’s Compensation Insurance as prescribed by law. See paragraph 1.28.

In accordance with M.G.L., the undersigned certifies that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by OSHA that is at least 10 hours in duration at the time the employee begins work and shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

CONTRACT TIME. The time for Substantial Completion of the work is **120 calendar days** from the Contractor’s receipt of the Notice to Proceed.

CITY OF WALTHAM

Joseph Pedulla, Chief Procurement Officer
Purchasing Department
City Hall, 610 Main Street
Waltham, MA 02452

END OF SECTION

SECTION 00100 - INSTRUCTION TO BIDDERS

PART 1 - GENERAL

1.01 SCHEDULE OF DATES

- A. Deadline for Advertisement for Bids: Central Register – July 30, 2013 4:00 P.M.
- B. Advertisement appears in Central Register, Plans and Specifications ready for Bidders at the Offices of the Waltham Purchasing Agent after **8:30 P.M. on August 7, 2012.**
- C. Pre-bid walkthrough on **Thursday August 21, 2012, at 10:00 AM** at the corner of Trapelo Road and Met. State, Waltham, MA.
- D. Questions and requests for interpretations may be submitted in writing to Jpedulla@city.waltham.ma.us up to and including: **August 23, 2013, 12:00 noon**
- E. Addenda will be issued to all registered contractors and copies will be posted on the city web site.
- F. General Bids Deadline: **10:00 A.M. on August 29, 2013**, in the Purchasing Department, City Hall, 610 Main Street, Waltham, MA 02452, Attn: J. Pedulla, CPO, where the bids will be publicly opened and read.

1.02 BIDDING PROCEDURE

- A. Bids for the work are subject to the provisions of General Laws, Chapter 30, 39M. Regulations governing the bidding procedures as set forth in the above mentioned amended General Laws must be followed.
- B. In the event of any inconsistencies between any of the provisions of these Contract Documents and of the cited statute, anything herein to the contrary notwithstanding, the provisions of the said statute shall control.
- C. No General Bid received by the Awarding Authority after the time respectively established herein for the opening of General Bids will be considered, regardless of the cause for the delay in the receipt of any such bid.

1.03 WITHDRAWAL OF BIDS

- A. Bids may be withdrawn prior to the time respectively established for the opening of General Bids only on written request to the Awarding Authority.

1.04 INTERPRETATION OF CONTRACT DOCUMENTS

- A. No oral interpretation will be made to any bidder. All questions or requests for interpretations must be made in writing to the Architect.

- B. Every interpretation made to a bidder will be in the form of an Addendum to the drawings and/or specifications, which will be made available to all persons to whom Contract Documents have been issued.
- C. Failure of the Awarding Authority to send, or of any bidder to receive any such Addendum shall not relieve any bidder from obligation under his bid as submitted.
- D. All such Addenda shall become a part of the Contract Documents.

1.05 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Each bidder shall visit the site of the proposed work and fully acquaint himself with conditions as they exist, and shall also thoroughly examine the Contract Documents. Failure of any bidder to visit the site and acquaint himself with the Contract Documents shall not relieve any bidder from any obligation with respect to his bid.
- B. By submitting a bid, the bidder agrees that the Contract Documents are adequate and that the required result for a full and complete installation can be produced. The successful bidder shall furnish any and all labor, materials, insurance, permits and all other items needed to produce the required result to the satisfaction of the Awarding Authority.

1.06 BID SECURITY

- A. The General Contractor's bid must be accompanied by bid security in the amount of five **percent (5%) of the bid.**
- B. At the option of the bidder, the security may be bid bond, certified, treasurer's or cashier's check issued by a responsible bank or trust company. No other type of bid security is acceptable.

Bid Bonds shall be issued by a Surety Company qualified to do business under the laws of the Commonwealth of Massachusetts.

- C. Certified, Treasurer's or Cashier's check shall be made payable to the City of Waltham, Massachusetts.
- D. The bid security shall secure the execution of the Contract and the furnishing of a Performance and Payment Bond by the successful General Bidder.
- E. Should any General Bidder to whom an award is made fail to enter into a contract therefore within five (5) days, Saturdays, Sundays and Legal Holidays, excluded, after notice of award has been mailed to him or fail within such time to furnish a Performance Bond and also a Labor and Materials or Payment Bond as required, the amount so received from such General Bidder through his Bid Bond, Certified, Treasurer's or Cashier's check as bid deposit shall become the property of the City of

Waltham, Massachusetts as liquidated damages; provided that the amount of the bid deposit, which becomes the property of the City of Waltham, Massachusetts, shall not in any event exceed the difference between his bid price and the bid price of the next lowest responsible and eligible bidder; and provided further that, in case of death, disability, bona fide clerical error or mechanical error of a substantial nature, or other unforeseen circumstances affecting the General Bidder, his deposit shall be returned to him.

1.07 BID FORM

- A. General Bids shall be submitted on the "FORM FOR GENERAL BID"- Sect 00300 - enclosed. Erasures or other changes must be explained or noted over the signature of the bidder.
- B. Bid forms must be completely filled in. Bids which are incomplete, conditional, or obscure, or which contain additions not called for will be rejected.
- D. General Bidders shall submit one set of executed bid forms to the Awarding Authority.

1.08 SUBMISSION OF BIDS AND BID SECURITIES

- A. Each bid submitted by a General Contractor shall be enclosed in a sealed envelope that shall be placed with the bid security in an outer envelope. The outer envelope shall be sealed and clearly marked as follows:

(Firm Name): _____
General Bid and Bid Security for:
Parking Lot at Met State

1.09 AWARD OF CONTRACT

- A. The Contract shall be awarded to the lowest responsible and eligible General Bidder on the basis of competitive bids in accordance with the procedure set forth in the provision of Chapter 30, 39M of the General Laws of the Commonwealth of Massachusetts.
- B. If the bidder selected as the General Contractor fails to perform his agreement to execute a contract in accordance with the terms of his General Bid, and furnish a Performance Bond and also a Labor and Materials or Payment Bond, as stated in his General Bid in accordance with Section 44F, an award shall be made to the next lowest responsible and eligible bidder.
- C. The words "lowest responsible and eligible bidder" shall be the bidder whose name is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work and who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, on the work. Essential information in regard to such qualifications shall be submitted in such form as the Awarding Authority may require.

- D. Action on the award will be taken within sixty (60) days, Saturdays, Sundays and Legal Holidays excluded after the opening of the bids.

1.10 SECURITY FOR FAITHFUL PERFORMANCE

- A. The successful bidder must deliver to the Awarding Authority simultaneously with his delivery of the executed contract, an executed Performance Bond, and also a Labor and materials or Payment Bond, each issued by 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 One Hundred Percent (100%) of the Contract Price, as surety for the faithful performance of his contract, and for the payment of all persons performing labor or furnishing materials in connection therewith. Said bonds shall provide that, if the General Contractor fails or refuses to complete the Contract, the Surety Company will be obligated to do so.
- B. Premiums are to be paid by the General Contractor, and are to be included in the Contract Price.

1.11 EQUAL OPPORTUNITY

- A. The City of Waltham is an Equal Opportunity employer and will require compliance with the minority business enterprise plan (MBE) on file in the Purchasing Department.

1.12 PRE-BID WALK-THRU

- A. A pre-bid conference will be held at the site on **August 21, 2013, at 10:00 A.M.** at site of the project. Interested parties are encouraged to attend given that this will be the only time the building is open prior to the submission of bids. Further, prior to the bid opening, potential bidders may not go onto the site any time other than the aforementioned pre-bid conference.

1.13 SITE VISITS

- A. Prospective bidders are prohibited from going onto the site prior to the Bid Opening or any time other than the pre-bid walk-thru.

1.14 SECTION LEFT BLANK

1.15 EQUALITY

- A. Except where otherwise specifically provided to the contrary, the words "or approved equal" are hereby inserted immediately following the name or description of each article, assembly, system, or any component part thereof in the Contract Documents. It is the Contractor's responsibility to provide all the research and documentation that

would prove a product or assembly is “equal”. Failure to provide research or documentation does not alleviate the Contractor’s responsibility to meet the schedule.

1.16 TAX FREE NUMBER

- A. The City of Waltham has a tax-free number.

1.17 SCHEDULE

- A. The work of the Contract shall be Substantially Complete in **120 calendar days** after the date of the Notice to Proceed (NTP).

1.18 LATE FEES

- A. If the work is not Substantially Complete as specified in 1.17, the Contractor shall be charged a maximum of Five Hundred Dollars (\$500.00) per day to pay for consulting and testing fees required to manage and arrange for the completion of the project. Late fees will be deducted from the Contract via Change Order.

1.19 WEEKLY JOB MEETINGS

- A. There will be a weekly job meeting at the site on the same agreed-upon day and time. Time will be provided to discuss and view the progress of the work and to answer questions. The Contractor’s job Superintendent and Project Manager shall attend each meeting. The City reserves the right to have job meetings conducted in location of its choosing.

1.20 PROJECT SUPERINTENDENT

- A. The Contractor shall provide the same person as Superintendent for the entire duration of the project. Failure to maintain the same person in this position shall result in a One Thousand Dollar (\$1,000.00) penalty per incident which shall cover the Architect’s time to re-orient new personnel.

1.21 AWARD

- A. The Awarding Authority reserves the right to reject any or all bids if it be in the public interest to do so, and to act upon the bids and make its award in any lawful manner.

1.22 PREVAILING WAGE SCHEDULE

- A. Bids shall be made on the basis of the Prevailing Wage Schedule, as determined by the Commissioner of Labor and Industries, pursuant to the provision of Chapter 30, 39M, of the Massachusetts General Laws. A copy of which is on line at www.city.waltham.ma.us/open-bids

1.23 CONFLICT OF INTEREST

- A. A bidder filing a proposal thereby certifies that the proposal is made in good faith, without fraud, collusion, or connection of any kind with any other bidder for the same work, and that the bidder is competing solely on its own behalf without connection with, or obligation to, any undisclosed person or firm.

1.24 PROCEED ORDERS

- A. No bidder is to proceed without a proceed order as set out in the contract.

1.25 SECTION LEFT BLANK

1.26 COMPLIANCE WITH MASSACHUSETTS GENERAL LAWS

- A. Before a contract may be executed by the City, the successful Bidder will be required, in accordance with the provisions of M.G.L. Chapter 62C, Section 49A, to execute and file with the City the certificates in the Compliance Section:
- B. Pursuant to Massachusetts General Laws, Chapter 62C, Section 49A, I certify under the penalty of perjury that I, to the best of my knowledge and belief have filed all state tax returns and paid all the state taxes required under law.

1.27 CONSTRUCTION BARRICADES/FENCING

- A. The General Contractor shall provide all barricades/fencing to enclose the work area to prevent unauthorized access to the site.
 - 1. The barricades/fencing shall provide enough room for all construction activities to be performed while separated from pedestrians, students, and staff on site.
 - 2. Safety is the sole responsibility of the Contractor and any barricades/fences necessary to protect the work and the public shall be provided.

1.28 INSURANCE

- A. The contractor shall purchase and maintain, at his expense all insurance required by the Contract. Documents and all insurance required by the applicable laws of Massachusetts, including but not limited to, General Laws, Chapter 146, in connection with all hoisting equipment.
- B. The Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation acts and from claims for damages because of bodily injury, including death and all property damage including, without limitation, damage to buildings and adjoining the site of construction which might arise from and during operations under this contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them including:

1. Statutory Worker's Compensation and Employer's Liability

The contractor shall provide insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 of the General Laws (so-called Worker's Compensation Act) to all persons to be employed under this contract and shall continue in force such insurance as aforesaid shall be deemed a material breach of this Contract and shall operate as an immediate termination thereof. The contractor shall, without limiting the generality of the foregoing, conform to the provisions of Section 34A of Chapter 149 of the General Laws, which Section is incorporated herein by reference and made a part of hereof.

2. Comprehensive General Liability Insurance

Minimum bodily injury limits of \$ 500,000 per person and \$ 1,000,000 per accident, and property damage limits of \$ 500,000 per accident and \$ 1,000,000 aggregate during any 12 month period, shall include the following:

- a. Public liability (bodily injury and property damage)
- b. X.C.U. (explosion, collapse, and underground utilities)
- c. Independent contractor's protective liability.
- d. Products and completed operations.

3. Comprehensive All Risk Motor Vehicle Liability Insurance

Minimum bodily injury limits of \$ 500,000 per person, \$ 1,000,000 per accident, and property damage limit of \$ 1,000,000 per accident.

4. All Risk Insurance

Covering all Contractor's equipment with a provision for Waiver of Subrogation against the Owner.

5. Excess Liability Insurance in Umbrella Form with combined Bodily Injury and Property Damage Limit of \$ 1,000,000.

6. The Certificate of Insurance shall read in the description of services as follows:
The City of Waltham is a named Additional Insured for General Liability and Vehicle liability as required by contract.

1.29 SITE ACCESS

A. The General Contractor shall gain access to the site via routes approved by the Owner.

- 1. The General Contractor as part of the bid price will restore all roads, curbs, driveways, walks and grassed or landscaped areas damaged during construction.

1.30 CONSTRUCTION TRAILER

- A. The General Contractor shall locate the construction trailer at locations approved by the Owner.
- B. The General Contractor shall locate all on site stored or staged materials within the enclosed area designated by the Owner.

1.31 BUILDING PERMIT FEES

- A. Building permit fees will be waived for this project. However the contractor shall apply for every permit as required by City Ordinances.

1.32 COMPLETE BID FORMS

- A. Please Note: Each bidder must fill in all the blanks on all the bid forms, even if the information is "zero dollars" or "not applicable". Also, please acknowledge all Addenda even if they do not pertain to your trade.

Signature of Individual or Corporate Name

By:

(Signature of Corporate Officer if applicable)

Title: _____

Social Security Number or Federal Identification Number: _____

END OF SECTION

SECTION 00300

FORM FOR GENERAL BID

**PARKING LOT AT MET STATE
WALTHAM, MASSACHUSETTS**

General Bid Opening Date: 10:00 am, August 29, 2013

J. Pedulla, Purchasing Agent
City of Waltham
610 Main Street
Waltham, MA 02452

A. Basic Price

The undersigned:

(Please type or print the business name of the bidding firm)

having become familiar with the site of the above project and having familiarized myself with the local conditions affecting the cost of the work and with the contract documents, including Amendments and Addenda No's. ____, ____, ____, ____, ____, ____, ____, hereby proposes to furnish all labor, materials, tools, equipment, insurance, permits and taxes, and to do and lawfully perform all things as provided in the specifications, all in accordance with the contract documents, for the sum of:

Base Bid (in words) _____ **Dollars, \$** _____

See Section 01030 - Alternates

Add Alternate 1 – Tree Planting	Dollars, \$ _____
Add Alternate 2 – Guard Rails	Dollars, \$ _____
Add Alternate 3– Light Pole Foundation & Miscellaneous Electrical Work.	Dollars, \$ _____

- A. The undersigned agrees that, if s/he is selected as General Contractor, s/he will within five 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 issued by 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.
- B. The undersigned certifies that s/he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work and that s/he will comply fully with all laws and regulations applicable to awards made.

- C. The undersigned as Bidder certifies that if this proposal is accepted, s/he will furnish to the City of Waltham with the invoice for the material or equipment supplied two copies of any and all Material Safety Data Sheets applicable to such material or equipment, as required by M.G.L. Chapter 111F, so called "Right to Know Law".
- D. The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. The word "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.
- E. Substantial Completion
1. The work of the Contract shall be Substantially Completed in **forty-five (45) calendar** days.
- H. In accordance with the Commonwealth of Massachusetts laws., the undersigned certifies that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by OSHA that is at least 10 hours in duration at the time the employee begins work and shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

Sincerely,

(Bidder)

(Address of Bidder)

By:

(Title - Owner*, Partner*)

(Seal, if Corporation)

By:

(If Corporation - Name and Office)

* If the business owned by the individual or partnership is conducted under a trade or assumed name, a certified copy of doing business under an assumed name should be annexed.

COMPLIANCE FORMS

(PLEASE COMPLETE AND SUBMIT THESE FORMS WITH YOUR RESPONSE)

NON-COLLUSION FORM AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word “person” shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. The undersigned certifies that no representations made by any City officials, employees, entity, or group of individuals other than the Purchasing Agent of the City of Waltham was relied upon in the making of this bid

_____, _____
(Signature of person signing bid or proposal) Date

(Name of business)

TAX COMPLIANCE CERTIFICATION

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

_____, _____
Signature of person submitting bid or proposal Date

Name of business

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

CERTIFICATE OF VOTE OF AUTHORIZATION

Date:

I _____, Clerk of _____ hereby certify that at a meeting of the Board of Directors of said Corporation duly held on the _____ day of _____ at which time a quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

VOTED: That _____ (*name*) is hereby authorized, directed and empowered for the name and on behalf of this Corporation to sign, seal with the corporate seal, execute, acknowledge and deliver all contracts and other obligations of this Corporation; the execution of any such contract to be valid and binding upon this Corporation for all purposes, and that this vote shall remain in full force and effect unless and until the same has been altered, amended or revoked by a subsequent vote of such directors and a certificate of such later vote attested by the Clerk of this Corporation.

I further certify that _____ is duly elected/appointed _____ of said corporation

SIGNED:

(Corporate Seal)

Clerk of the Corporation:

Print Name: _____

COMMONWEALTH OF MASSACHUSETTS

County of _____

Date:

Then personally appeared the above named and acknowledged the foregoing instrument to be their free act and deed before me, _____

Notary Public;

My Commission expires: _____

CORPORATION IDENTIFICATION

The bidder for the information of the Awarding Authority furnishes the following information.

If a Corporation:

Incorporated in what state _____
President _____
Treasurer _____
Secretary _____
Federal ID Number _____

If a foreign (out of State) Corporation – Are you registered to do business in Massachusetts?

Yes _____, No _____

If you are selected for this work you are required under M.G.L.ch. 30S, 39L to obtain from the Secretary of State, Foreign Corp. Section, State House, Boston, a certificate stating that you Corporation is registered, and furnish said certificate to the Awarding Authority prior to the award.

If a Partnership: (Name all partners)

Name of partner _____
Residence _____
Name of partner _____
Residence _____

If an Individual:

Name _____
Residence _____

If an Individual doing business under a firm's name:

Name of Firm _____
Name of Individual _____
Business Address _____
Residence _____
Date _____
Name of Bidder _____
By _____

Signature _____

Title _____

Business Address _____ (POST OFFICE BOX NUMBER NOT ACCEPTABLE)

City _____ State _____ Telephone Number _____ Today's Date _____

**WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE**

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided, A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract. In addition, every contractor and subcontractor is required to submit, on a weekly basis, a copy of his or her weekly payroll records to the awarding authority. For every week in which an apprentice is employed, a photocopy of the apprentice's identification card must be attached to the payroll report. Once collected, the awarding authority is also required to preserve those reports for three years. In addition, each such contractor, subcontractor, or public body shall furnish to the awarding authority directly, within fifteen days after completion of its portion of the work, a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

_____, 201__

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

I do hereby state that I pay or supervise the payment of the persons employed by

_____ On the _____
(Contractor, subcontractor or public body) (Building or project)

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

Signature _____, Title _____

Print _____, Date _____

RIGHT TO KNOW LAW

Any vendor who receives an order or orders resulting from this invitation agrees to submit a Material Safety Data Sheet (MSDS) for each toxic or hazardous substance or mixture containing such substance, pursuant to M.G.L. c. 111F, §§8,9 and 10 and the regulations contained in 441 CMR 21.06 when deliveries are made. The vendor agrees to deliver all containers properly labeled pursuant to M.G.L. c. 111F §7 and regulations contained in 441 CMR 21.05. Failure to furnish MSDS and/or labels on each container may result in civil or criminal penalties, including bid debarment and action to prevent the vendor from selling said substances, or mixtures containing said substances within the Commonwealth. All vendors furnishing substances or mixtures subject to Chapter 111F or M.G.L. are cautioned to obtain and read the laws, rules and regulations referenced above. Copies may be obtained from the State House Bookstore, Secretary of State, State House, Room 117, Boston, MA (617) 727-2834.

Authorized Signature Indicating Compliance with the Right-to-know laws:

Signature

Date

Print Name

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

DEBARMENT CERTIFICATION

In connection with this bid and all procurement transactions, by signature thereon, the respondent certifies that neither the company nor its principals are suspended, debarred, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts, procurement or non procurement programs from the Commonwealth of Massachusetts, the US Federal Government and /or the City of Waltham. "Principals" means officers, directors, owners, partners and persons having primary interest, management or supervisory responsibilities with the business entity. Vendors shall provide immediate written notification to the Purchasing Agent of the City of Waltham at any time during the period of the contract of prior to the contract award if the vendor learns of any changed condition with regards to the debarment of the company or its officers. This certification is a material representation of fact upon which reliance will be placed when making the business award. If at any time it is determined that the vendor knowingly misrepresented this certification, in addition to other legal remedies available to the City of Waltham, the contract will be cancelled and the award revoked.

Company Name _____

Address _____

City _____, State _____, Zip Code _____

Phone Number (____) _____

E-Mail Address _____

Signed by Authorized Company Representative: _____

_____ Print name. Date _____

10 HOURS OSHA TRAINING CONFIRMATION

Chapter 306 of the Acts of 2004

CONSTRUCTION PROJECTS

AN ACT RELATIVE TO THE HEALTH AND SAFETY ON PUBLIC

The undersigned hereby certifies that all employees to be employed at a worksite for construction, reconstruction, alteration, remodeling, repair, installation, demolition, maintenance or repair of any public work or any public building estimated to cost more than \$10,000.00 have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first payroll report for each employee and will comply with all laws and regulations applicable to awards of subcontracts subject to section 44F.

Company Name: _____

Address: _____

Signature: _____

Title: _____

Print Name _____

Date _____

See following Chapter 306 of the Acts of 2004

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package will be cause for the disqualification of your company.

Request for Taxpayer Identification Number and Certification

Give Form to the
requester. Do not
send to the IRS.

Fill Out This
Section

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)

Business name/disregarded entity name, if different from above

Check appropriate box for federal tax classification:

☐ Individual/sole proprietor ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶

☐ Other (see instructions) ▶

☐ Exempt payee

Address (number, street, and apt. or suite no.)

City, state, and ZIP code

List account number(s) here (optional)

Requester's name and address (optional)

Chief Procurement Officer
Purchasing Department, City of Waltham
610 Main Street
Waltham, MA 02452

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number

____ - ____ - ____

Employer identification number

____ - ____

Fill out this sect.
either SS or FID

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
- I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign
Here

Signature of
U.S. person ▶

Date ▶

Sign & Date

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

SECTION 01010

SUMMARY OF WORK

PART 1- GENERAL

1.01 PROJECT DESCRIPTION

- A. The project consists of construction of a new 46 bay parking lot, roadway connection, walkway and miscellaneous site improvements at the existing Metropolitan State Administration Building, Metropolitan Parkway South, Waltham, MA 02453, as described in the Contract Documents.

1.02 WORK TO BE DONE

- A. The work of this Contract includes, but is not necessarily limited to:
 - 1. Clearing and grubbing, paving demolition, installation of granite curbing, asphalt paving, speed bumps, signage and line painting for new parking lot and connection to existing parkway, guardrails, bituminous concrete walkways; installation of drainage system with storm water recharge chambers. Installation of and restoration of lawn areas, tree planting, and bike racks (to be supplied by Owner).

1.03 CONTRACT TIME AND SEQUENCING

- A. Substantial Completion
 - 1. The time for substantial completion for the improvements is 120 days from the Contractor's receipt of the Notice to Proceed.
- B. The Contractor shall submit shop drawings, data and samples and place his/her orders sufficiently early to permit consideration and approval by the Landscape Architect before materials are necessary for incorporation into the Work. Any delay resulting from the Contractor's failure to do so shall not be used as a basis of a claim against the Owner.

1.04 CONTRACT DOCUMENTS

- A. The Contract Documents are enumerated in the Agreement, and include these Specifications and the Drawings, for the City of Waltham, by Carolyn Cooney & Associates, Landscape Architects, 13 Elm Street, Milford, MA 01757.

1.05 INSPECTION OF THE SITE

- A. It is a requirement of the Contract that the Contractor and his/her subcontractors

SUMMARY OF WORK

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shall have thoroughly inspected the site during the bidding period. By submitting a bid they confirm that they are thoroughly familiar with the site and all existing conditions which impact and affect their work. Requests for extra compensation will not be considered for any work which could have been foreseen by a visual inspection of the site.

1.07 PERMIT TO WORK ON DCR PROPERTY

- A. A portion of the roadway work occurs on DCR property, the remaining work occurs on City of Waltham Property.
- B. The Contractor shall obtain and pay for a Temporary Construction Permit from the Division of Conservation and Recreation (DCR), Permit Section, 251 Causeway Street, 7th Floor, Boston 02114. The cost of the permit is \$1000. The permit application has been filed by Carolyn Cooney & Associates and will be approved and finalized upon receipt of the Contractor's name, construction schedule, and payment.

1.08 CONTRACTOR'S USE OF THE SITE

- A. The Contract Limit Line shown on the Drawings defines the boundary of the site available to the Contractor for construction purposes.
- B. The Contractor shall furnish his/her own toilet facilities on-site.
- C. The Contractor shall take all precautions necessary to protect the abutting properties during construction. Any and all damage caused by construction operations shall be repaired.
- D. The project site shall be kept clean and free from accumulation of waste material and debris.
 - 1. The Contractor, his/her Subcontractors, and their employees shall be respectful and courteous of the neighborhood while working on site.

1.09 CITY OF WALTHAM NOISE ORDINANCE

- A. The Contractor is advised that the City of Waltham has a Noise Ordinance, Section 10-6, which has the authority to regulate the noise generating activities of this Contract. In general the Ordinance prohibits excessive noise created by construction, building, remodeling, excavating, land clearing, or by any of the equipment associated with such work. The Police Department considers the startup or idle running of truck engines and/or equipment prior to 7:00 AM a violation.

1.10 ENCLOSURES

- A. Provide at the earliest practical time temporary enclosure of materials, work in progress and completed portions of the work to provide protection to the work and the employees.

1.11 SAFETY AND SECURITY

- A. The Contractor shall be responsible for the safety and security of those areas of the site where construction is occurring and for the safety of the general public.
- B. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions & programs in connection with the work. He/she shall promulgate safety regulations and shall notify the Owner of particular hazards.
- C. The Contractor shall erect and maintain, as required by existing conditions and progress of work, all reasonable safeguards for safety and security. This includes the construction of barriers, temporary fencing and the posting of danger signs and other warnings against hazards. By these and other necessary methods the Contractor shall stop unauthorized entry within the Limit of Work Line.
- D. The Contractor is responsible for provision of all means of safeguards, even if not specifically required by the Drawings if these are necessary to protect health and safety.
- E. The Contractor shall cooperate with and maintain a close liaison with the Planning Department, Police Department, and Fire Department, and he/she shall abide by safety or security related requests from any of these authorities.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1- GENERAL

1.01 BASE BID & ALTERNATES

A. Measurement & Payment

1. Measurement for payment for construction of the Metropolitan State Parking Lot Construction Project shall be on a lump-sum basis.
2. Payment of the lump-sum price under the Base Bid of the Proposal adjusted for accepted Alternates shall fully compensate the Contractor for furnishing labor, materials, equipment and incidentals required for work.

1.02 PAYMENT PROCEDURES

- A. Contractor shall submit substantiated monthly estimates for progress payments. The period covered by each Application for Payment shall be one (1) calendar month ending on the last day of the month.
- B. Payment will be made in accordance with Section 39K, M.G.L.
- C. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include:
 1. List of subcontractors
 2. Schedule of Values
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products list.
 5. Submittals Schedule (preliminary if not final).
 6. Copies of permits.
 7. Initial progress report.
 8. Certificates of insurance and insurance policies.
- D. Refer to Section 01700 - Project Close-out for additional requirements for payments at Substantial Completion and Final Completion.

1.03 ADDITIONAL WORK

- A. Additional Work, if any, shall be performed at a mutually satisfactory price agreed upon between the Contractor and the Owner through the process described in Section 01028 - Change Order Procedure.

END OF SECTION

SECTION 01028

CHANGE ORDER PROCEDURE

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to Attachment A and D of the Contract, concerning Change Orders. All Change Orders must be signed and approved by the Chief Procurement Officer and the City Auditor prior to execution of the Work.

1.02 SCOPE OF WORK

- A. Work included: Make such changes in the Work, in the Contract Sum, in the Contract Time of Completion, or any combination thereof, as are described in written Change Orders signed by the Owner and issued after execution of the Contract, in accordance with the provisions of this Section.

1.03 SUBMITTALS

- A. Make submittals directly to the Landscape Architect at the address shown on the Project Manual.
- B. Prepare in accordance with change order format in Appendix A of the Contract.

1.04 PRODUCT HANDLING

- A. Maintain a "Register of Proposal Requests and Change Orders" at the job Site, accurately reflecting current status of all pertinent data.
- B. Make the Register available to the Landscape Architect/Engineer for review at his/her request.

1.05 CHANGES INITIATED BY THE OWNER

- A. Should the City contemplate making a change in the Work or a change in the Contract Time of Completion, the Landscape Architect will issue a "Proposal Request" to the Contractor.
 - 1. Proposal Requests will be dated and will be numbered in sequence.
 - 2. The Proposal Request will describe the contemplated change, and will carry one of the following instructions to the Contractor:
 - (a) Make the described change in the Work at no change in the Contract Sum and no change in the Contract Time of Completion.
 - (b) Make the described change in the Work, credit or cost for which

CHANGE ORDER PROCEDURE

will be determined in accordance with pertinent paragraphs of Appendix D Change Orders.

1.06 CHANGES INITIATED BY THE CONTRACTOR

- A. Should the Contractor discover a discrepancy among the Contract Documents, a concealed condition, or other cause for suggesting a change in the Work, a change in the Contract Sum, or a change in the Contract Time of Completion, he shall notify the Landscape Architect.
- B. Upon agreement by the Landscape Architect that there is reasonable cause to consider the Contractor's proposed change, the Landscape Architect will issue a Proposal Request in accordance with the provisions described in Article 1.05 above.

1.07 PROCESSING PROPOSAL REQUESTS

- A. In response to each Request for Proposal, the Contractor shall:
 - 1. Submit to the Landscape Architect for review one copy of completed Change Order Form (Appendix A of the Contract).
 - 2. Meet with the Landscape Architect as required to explain costs and, when appropriate, to determine other acceptable ways to achieve the desired objective.
 - 3. Alert pertinent personnel and subcontractors as to the impending change and, to the maximum extent possible, avoid such work as would increase the Owner's cost for making the change, advising the Landscape Architect in writing when such avoidance no longer is practicable.
- B. Upon the signature of the Chief Procurement Officer and the City Auditor, the Landscape Architect will issue a "Change Order" to the Contractor.

1.08 CHANGE ORDERS

- A. Change Orders will be dated and will be numbered in sequence.
- B. The Change Order will describe the change or changes and will refer to the Proposal Request(s) involved.
- C. The Landscape Architect will issue four copies of each Change Order to the Contractor.
 - 1. The Contractor promptly shall sign all four copies and return three copies to the Landscape Architect.

END OF SECTION

CHANGE ORDER PROCEDURE

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SECTION 01030

ALTERNATES

PART 1- GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications, and the Drawings, all of which apply to work of this section.

1.02 ALTERNATE BIDS

- A. General Bidders shall insert in the space provided on the bid forms the amounts to be added to their respective Base Bids for the following Alternates. Each proposal amount shall include the entire cost of the alternate portion of the work including overhead, profit, and other costs to furnish and install the alternate complete-in-place, including the cost of interfacing and coordinating the alternate with related and adjacent work. All work shall be done in conformance with the relevant plans, specifications, and details. The following Alternates are ADD ALTERNATES, which if accepted by the Owner, shall directly increase the Contractor's base bid contract price and lump sum bid.

ADD ALTERNATE NO. 1:

Furnish and install new tree plantings in number and type as shown on the Drawings, complete-in-place including specified backfill, maintenance and guarantee.

ADD ALTERNATE NO. 2:

Furnish and Install Wood Guardrails and Steel Guardrails in quantity and location as shown on the Drawings. Price for this alternate shall include all work associated with the installation of this item furnished and installed complete-in-place.

ADD ALTERNATE NO. 3:

Furnish and install light pole foundations with associated conduit and pull-boxes, complete-in-place.

END OF SECTION

SECTION 01040

CONTROL OF WORK

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.

1.02 EQUIPMENT

- A. The Contractor shall furnish equipment which will be efficient, appropriate, and of sufficient quantity to secure a satisfactory quality of work and a rate of progress which will insure the completion of the Work within the time stipulated in the Contract Documents. If at any time such equipment appears to the Owner to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character, or increase equipment and the Contractor shall conform to such order. Failure of the Owner to give such order shall in no way relieve the Contractor of his obligations to secure the quality of work and rate of progress required. In addition, the Contractor shall maintain his equipment, including mufflers, oil seals or gaskets, and air pollution control devices, in proper working order.

1.03 PROJECT MANAGEMENT

- A. The Work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient labor and equipment to complete all the necessary work requirements within a minimum period of time and as stated in the Contract Documents.
- B. Prior to the start of work, the Contractor shall submit a Progress Schedule in a bar chart form at the preconstruction meeting to the Landscape Architect for completing the Work. See Section 01300 - Submittals of this Specification.
- C. The Contractor is fully responsible for the security and safety of partially completed work until the Project is finally accepted by the Owner and the Landscape Architect.
- D. Hours of work for construction activities are limited to 8:00 AM to 4:00 PM Monday through Friday. Any changes to the work schedule must be authorized by the Landscape Architect and City Officials.

CONTROL OF WORK

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- E. All work areas shall be secured, and materials and equipment shall be removed at the end of each work day.
- F. The Contractor shall retain on the Project during its progress, a competent full-time representative. This representative shall not be changed except with the consent of the Owner and Landscape Architect. The representative shall be in full charge of the Work and all instructions given to him shall be binding.

1.04 CITY OF WALTHAM NOISE ORDINANCE

- A. The Contractor is advised that the City of Waltham has a Noise Ordinance, Section 10-6, which has the authority to regulate the noise generating activities of this Contract. In general the Ordinance prohibits excessive noise created by construction, building, remodeling, excavating, land clearing, or by any of the equipment associated with such work. The Police Department considers the startup or idle running of truck engines and/or equipment prior to 7:00 AM a violation. Permits to waive the noise ordinance must be approved and issued by the Chief of Police.

1.05 TRAFFIC POLICE

- A. Traffic police will not be required. Execution of the Traffic Management Plan, TMP.1 to close Metropolitan Parkway South is required.
- B. Closure of the parkway requires notification to the Lexington and Waltham Police and Fire Departments as well as obtaining a street closure permit from the City of Waltham.

1.06 SITE INVESTIGATION OF EXISTING CONDITIONS

- A. The Contractor acknowledges that he/she has satisfied him/herself as to the conditions existing at the Site of the Work, the type of equipment required to perform the Work, the quality and the quantity of the materials to be furnished insofar as this information is reasonably ascertainable from an inspection of the Site, as well as from information presented by the Specifications made a part of the Contract. Any failure of the Contractor to acquaint himself/herself with available information will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the Work.
- B. No claim for extra compensation or extension of time will be allowed due to the Contractor's failure to estimate properly the quantities, locations and measurements of all items required to complete the Work.
- C. Report any discrepancies to the Landscape Architect and request her/his interpretation.

1.07 PROTECTION OF WORK AREA

- A. The Contractor shall secure all work areas by 4:00 PM each work day.
- B. All of the Contractor's equipment, supplies, etc. left on-site, shall be secured daily. In no case will the Owner assume responsibility for damage or loss of materials, tools or equipment left on-site.
- C. The Contractor shall take precautions to prevent injury to the public due to open excavations or excavated materials. All trenches, excavated materials, equipment, or other obstacles which could be dangerous to the public shall be secured in an agreed upon staging area.

1.08 LAWS AND REGULATIONS

- A. The Contractor shall keep himself fully informed of all State and Federal laws and Municipal ordinances and regulations in any manner affecting those engaged or employed in the Work, or the materials used in the Work, or in any way affecting the conduct of the Work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.
- B. If any discrepancy or inconsistency is discovered in the Plans, Specifications, or Contract for the Work in relation to any such laws, ordinances, regulations, orders or decrees, the Contractor shall forthwith report the same to the Landscape Architect in writing. He/she shall at all times himself/herself observe and comply with, and shall cause all his/her agents and employees to observe and comply with all such laws, ordinances, regulations, orders, and decrees, and shall protect and indemnify the Owner and its officers, agents and servants against any claim or liability arising from or based on the violation of any such laws, ordinances, regulations, and orders or decrees, whether by himself/herself or his/her employees or subcontractors.

1.10 PERMITS AND CODES

- A. Under this Contract, all work shall be as shown in the Contract Drawings and Specifications and shall comply with applicable codes and regulations at the local, county, state, and federal levels. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided without additional cost to the Owner.
- B. Do not close any street, sidewalk, alley, or passageway. Conduct operations as to interfere as little as possible with the use ordinarily made of roads, driveways, alleys, sidewalks, or other facilities near enough to the Work to be affected thereby.
- C. Where code references are given, the latest issue of that Code in effect at the time

of bidding shall be used. Code references are given to indicate the minimum quality and performance acceptable. Where Specifications and/or Contract Drawings indicate more stringent requirements, the Specifications or Contract Drawings shall govern.

- D. The Contractor, under this Contract shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees and secure all permits, inspections and approvals necessary for legal installation and operation of the systems and or equipment furnished under this Contract, except as otherwise specified.

- 1. Fees for City of Waltham permits will be waived by the City.
 - 2. Refer to Section 01010 – Summary of Work for requirements to pay for and obtain DCR temporary work permit.

- E. Comply also with applicable provisions of American National Standard Code for Building Construction ANSI A10.6.

1.11 INSPECTION AND TESTS

- A. Testing shall be as specified in Section 01400-Quality Control.
- B. All material and workmanship shall be subject to inspection and examination by the Landscape Architect at any and all times during construction.
- C. All work that is unsatisfactory, or fails to comply with the Specifications in the opinion of the Landscape Architect or City Officials, shall be corrected by the Contractor at his own expense to the satisfaction of the Landscape Architect.

1.12 SANITARY REGULATIONS

- A. The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the Site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work.
- B. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He/she shall vigorously prohibit the committing of nuisance on the Site of the Work, on lands of the Owner, or an adjacent property.

1.13 COORDINATION WITH UTILITIES

- A. The Contractor shall coordinate his/her Work with the utility companies to

CONTROL OF WORK

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prevent damages or disruption to existing equipment and to coordinate new utility installations. The Contractor shall contact the utility companies owning underground equipment in the area of his work prior to commencing excavation. Contact with the utility companies shall be made sufficiently in advance so they can properly locate their equipment.

- B. The contractor shall be responsible for locating all site items such as utilities which could be affected by this Contract prior to the start of construction. The Contractor shall contact Dig-Safe (811) prior to the start of construction, and obtain a Certificate verifying that the location work has been completed. Contact the City of Waltham Engineer to verify the location of additional on-site utilities. Contact telephone and communications companies to verify location of cables.
- C. All right-of-way and site utilities (water, sewer, drainage) shall be inspected and approved by the City Engineer's Office.
- D. Site information: No representations are made indicating subsurface conditions. It is expressly understood that the Owner/Landscape Architect will not be responsible for interpretations or conclusions drawn therefrom by the Contractor.

1.14 FIRE PROTECTION

- A. Gasoline and other flammable liquids shall not be stored on site. They shall be dispensed from a UL listed safety containers in conformance with the National Board of Fire Underwriters recommendations. Do not store flammables near buildings.

1.15 CLEANUP

- A. During the course of the Work, the Contractor shall keep the Site in as clean and neat a condition as possible. He/she shall dispose of all residue resulting from the work. At the conclusion of the day's work, the Contractor shall leave the entire Site of the Work in a neat and orderly condition.

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.
- B. Examine and coordinate all Contract Drawings and other section of the Specifications for requirements which affect work of this section whether or not such work is specifically mentioned in this section. Coordinate work with other trades to assure the steady progress of all work under the Contract.

1.02 SCOPE OF WORK

- A. The Work under this Section consists of field staking the horizontal and vertical alignment of site improvements.

1.03 QUALIFICATIONS AND SUBMITTALS

- A. The Contractor shall engage the services of a Professional Engineer or Land Surveyor Registered in the Commonwealth of Massachusetts and shall submit the name, address, and registration number of such person or persons to the Landscape Architect in writing.

PART 2 - MATERIALS

2.01 LAYOUT AND STAKING

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

PART 3 - EXECUTION

3.01 LAYOUT

- A. The Contractor shall use the alignments shown on the Plans to obtain the

alignment which shall be approved subject to field adjustments as ordered by the Landscape Architect.

- C. The Surveyor shall lay out the necessary grades and locations of the site improvements.
- D. The Contractor shall inform the Landscape Architect when the general layout is completed and shall not begin excavation until the various alignments are approved by the Landscape Architect. Any discrepancies encountered in field conditions shall be reported to the Landscape Architect immediately.
- E. The Contractor shall be responsible for maintaining the correct vertical and horizontal alignment of all elements, which responsibility shall not be waived by the Landscape Architect's approval of the basic layout and stakeout.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications, and the Contract Documents, all of which apply to work of this section.

1.02 SCOPE OF WORK

- A. Attend project meetings to enable orderly review during progress of the Work, and to provide for systematic discussion of problems, as long as deemed necessary by the Landscape Architect throughout the construction period.
- B. The Contractor's relations with his subcontractors and materials suppliers, and discussion relative thereto, are the Contractor's responsibility and normally are not part of Project Meetings content.

1.03 QUALITY ASSURANCE

- A. For those persons designated by the Contractor to attend and participate in Project Meetings, provide required authority to commit the Contractor to solutions agreed upon in the Project Meetings.

1.04 MEETING NOTES

- A. The Landscape Architect will compile minutes of each Project Meeting and furnish copies to the attendees, Contractor, and Owner before the next scheduled meeting.

PART 2 - NOT USED

PART 3 - EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. The Contractor shall arrange for a Preconstruction Meeting within 5 days after the award of contract, prior to commencing any work on site, in order to coordinate between him/herself, his/her Subcontractors, the Owner, and the Landscape Architect the procedures to be followed on the project.
- B. Contractor is to coordinate attendance by authorized representatives of the Owner,

the Contractor, site work subcontractors, and the Landscape Architect.

- C. Minimum agenda: Data will be distributed and discussed on at least the following items:
1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers and Owner.
 2. Channels and procedures for communication.
 3. Construction schedule, including sequence of critical work.
 4. Contract Documents and revisions.
 5. Processing of Shop Drawings and other data submitted to the Owner for review, including the process for reviewing water, sewer and drainage submittals.
 6. Processing of Bulletins, field decisions, and Change Orders.
 7. Procedures for safety, first aid, security, quality control, housekeeping, and related matters.
 8. Submittal of Construction Fence layout.
 9. Submittal of Progress Schedule, Tabulation of Submittals and Schedule of Values.

3.02 PROJECT MEETINGS

- A. Frequency: Project Meeting shall in general be held at regular intervals not less frequently than once a week. Meetings will be chaired by the Landscape Architect.
- B. Location: Project meetings will be held at the job site.
- C. Attendance:
1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at Project Meetings throughout the progress of the work.
 2. Site work subcontractors, material suppliers, and others may be invited to attend those Project Meetings in which their aspect of the Work is involved.
- D. Minimum Agenda:
1. Review progress of the Work since last meetings, including status of submittals for approval.
 2. Identify problems which impede planned progress.
 3. Develop corrective measures and procedures to regain planned schedule.

PROJECT MEETINGS

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4. Complete other current business.

E. Revision to Minutes:

1. Unless published minutes are challenged in writing prior to the next regularly scheduled Project Meeting, they will be accepted as properly stating the activities and decisions of the meeting.
2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
3. Challenge to minutes shall be settled at the start of the next regularly scheduled meeting.

END OF SECTION

SECTION 01300

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PART 1- GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications, and the Contract Drawings, all of which apply to this section.
- B. Consult the individual Sections of the Specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.

1.02 SCOPE OF WORK

- A. The scope of the work under this Specification section, without limiting the generality thereof, includes the furnishing of all labor material, equipment, services and incidentals necessary to complete all the work in accordance with the contract documents, which are intended to describe and provide for a finished piece of work.
- B. The type of work includes the following without limiting the generality thereof:
 - 1. Progress Schedules.
 - 2. Schedule of Values.
 - 3. Shop drawings.
 - 4. Product Data.
 - 5. Samples.

1.03 QUALITY ASSURANCE

- A. Coordination of submittals:
 - 1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
 - 2. Verify that each item and the associated submittal conform in all respects with the specified requirements.
 - 3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.
- B. Timeliness - The Contractor shall transmit each submittal to the Landscape Architect well in advance of performing related Work or other applicable

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activities, so that the installation shall not be delayed by processing times, including disapproval and re-submittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. **Items with long lead times for orders such as site furnishings need to be submitted immediately.** No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Landscape Architect in advance of the Work.

1. Sequence - The Contractor shall transmit each submittal in a sequence which will not result in the approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.
- C. Contractor's Review and Approval - Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Landscape Architect. Submittals shall be accompanied by a transmittal notice stating name of Project, date of submittal, "To" or "From" (Contractor, Subcontractor, Installer, Manufacturer, Supplier), Specification Section or Drawing No. to which the submittal refers, purpose (first submittal, re-submittal), description, remarks, distribution record, and signature of transmitter.
- D. "Or-Equals", "or equal as approved" or "or approved equal" - On the transmittal, or on a separate sheet attached to the transmittal, the Contractor shall direct attention to any deviations including minor limitations and variations, from the Contract Documents. Do not assume that the materials, equipment, or methods will be approved as equal unless the item has been specifically so approved for this Work by the Owner.
1. The Contractor and all Subcontractors shall submit to the Landscape Architect for consideration of any Or-Equal substitution, a written point by point comparison containing the name and full particulars of the proposed product to the product named or described in the Contract Documents.
 2. Such submittal shall in no event be made later than 30 calendar days prior to the incorporation of the item into the Work. In any case in which the time period specified in the Contract Documents from the Notice to Proceed to Substantial Completion is less than 30 days, this requirement can be waived by the Landscape Architect.
 3. Upon receipt of a written request for approval of an Or-Equal substitution, the Landscape Architect shall investigate whether the proposed item shall be considered equal to the item named or described in the Contract Documents. Upon conclusion of the investigation, the Landscape Architect shall promptly advise that the item is, or is not, considered acceptable as an Or-Equal substitution. Such written notice must have the

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concurrence of the Owner.

4. In no case may an item be furnished on the Work other than the item named or described, unless the Landscape Architect, with the Owner's concurrence, shall consider the item equal to the item so named or described, as provided by M.G.L. c.30 § 39M.
 5. The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Landscape Architect at the expense of the Contractor or Subcontractor submitting the substitution.
 6. The Landscape Architect and/or the Authority may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor or Subcontractor, as the case may be, shall bear full cost for providing, delivering, and disposal of all such samples.
 7. The Contractor or Subcontractor, as the case may be, shall assume full responsibility for the performance of any item submitted as an "Or-Equal" and assume the costs of any changes in any Work which may be due to such substitution.
- E. Processing - All costs for printing, preparing, packaging, submitting, resubmitting, handling, inspecting and mailing, or delivering submittals required by this contract shall be included in the Contract Sum.
- F. Unless otherwise indicated on the Contract Drawings, or specified, only new materials and equipment shall be incorporated into the Work. All materials and equipment furnished by the Contractor shall be subject to the inspection and approval of the Owner. No materials shall be delivered to the work without prior approval of the Owner.
- G. By approving and submitting shop drawings, product data, and samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the contract documents.
- H. The inspection and approval by the Landscape Architect of shop drawings, product data, and samples is general and does not relieve the Contractor from responsibility for compliance with the requirements of the Contract or for proper dimensions, fitting, construction, and construction sequencing.
- I. The Contractor or Subcontractors shall not be relieved of responsibility for any deviation from the Contract Drawings or Specifications unless the Contractor has specifically informed the Landscape Architect in writing of such deviation, and

the Landscape Architect has given specific written approval thereof.

- J. The Contractor shall submit to the Landscape Architect data relating to materials and equipment he proposes to furnish for the Work. Such data shall be in sufficient detail to enable the Landscape Architect to identify the particular product and to form an opinion as to its conformity to the Specifications. Submittals shall, at minimum, include the following:

1. Name of Manufacturer.
2. Dimensional requirements for the material.
3. Class and/or type of material.
4. Strength requirements for the material.
5. Sieve analysis of fill materials.
6. And any other information that is required in determining conformance of the submittal with the Specifications or the Contract Drawings.

1.04 LANDSCAPE ARCHITECT'S ACTION

- A. The Landscape Architect will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings:
1. Final Unrestricted Release: Where marked "Approved" the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.
 2. Final-But-Restricted Release: When marked "Approved as Noted" the Work may proceed provided it complies with the Landscape Architect's notations or corrections on the submittal and complies with the requirements of the Contract Documents. Acceptance of the Work will depend upon these compliances.
 3. Returned for Resubmittal: When marked "Revise & Resubmit" or "Disapproved", the Work covered by the submittal (purchasing, fabrication, delivery, or other activity) should not proceed. The submittal should be revised or a new submittal resubmitted without delay, in accordance with the Landscape Architect's notations stating the reasons for returning the submittal.

1.05 PROGRESS SCHEDULES

- A. At the Preconstruction Meeting, the Contractor shall submit a progress schedule in bar chart form. Indicate a time bar for each major category or unit of work to be performed, properly sequenced and coordinated with other elements of the work.
- B. With the progress schedule, submit a tabulation of all submittals which will

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clearly show: the submittal name, spec section, date to Landscape Architect for review, date required back to Contractor to maintain the orderly progress of the work, and those submittals required early because of long lead time for ordering, manufacture or fabrication. The Contractor shall submit shop drawings, data and samples or place his/her order sufficiently early to permit consideration and approval by the Landscape Architect before materials are necessary for incorporation into the Work. Any delay resulting from the Contractor's failure to do so shall not be used as a basis of a claim against the Owner.

- C. Monthly, as the job progresses, submit updates of the original progress schedule to show actual progress on the job and any revisions to the projected completion date.

1.06 SCHEDULE OF VALUES

- A. With the progress schedule, submit a schedule of values on an AIA "Request for Payment" form which breaks down the contract price by specification sections. This schedule of values shall be in reasonable correspondence with the Contractor's actual costs for each Subcontract or trade, and it shall serve as the basis for the evaluation and approval of monthly requests for Payment as they are submitted.

1.07 SHOP DRAWINGS

- A. Shop drawings shall be complete. Give all information necessary or requested in the individual section of the specifications. They shall also show adjoining Work and details of connection thereto.
- B. Shop drawings shall be for whole systems. Partial submissions will not be accepted.
- C. The Landscape Architect reserves the right to review and approve shop drawings only after approval of related product data and samples. Shop drawings for water, sewer, and drainage will require review by the City Engineer.
- D. Shop drawings shall be properly identified and contain the name of the project, name of the firm submitting the shop drawings, shop drawing number, date of shop drawings and revisions, Contractor's stamp of approval, and sufficient spaces near the title block for the Landscape Architect's stamp.
- E. The Contractor shall submit to the Landscape Architect one legible original and two copies of each shop drawing. Transparency and prints shall be mailed or delivered in roll form. Each submittal shall be accompanied by a transmittal notice.
- F. When the original is returned by the Landscape Architect with the stamp "Revise

and Resubmit” or “Disapproved”, the Contractor shall correct the original drawing or prepare a new drawing and resubmit the original and two copies thereof to the Landscape Architect for approval. This procedure shall be repeated until the Landscape Architect’s approval is obtained.

G. When the original is returned by the Landscape Architect with the stamp “Approved” or “Approved as Corrected”, the Contractor shall provide and distribute the copies for all Contractor and Subcontractors use, and in addition submit, within 10 calendar days after approval, 3 prints to the Landscape Architect.

H. The Contractor shall maintain one full set of approved shop drawings at the site.

1.08 SUBMISSION OF PRODUCT DATA

A. The Contractor shall submit 6 copies of Product Data to the Landscape Architect. All such data shall be specific and identification of material or equipment submitted shall be clearly marked in ink. Data of general nature will not be accepted.

B. Product Data shall be accompanied by a transmittal notice. The Contractor’s stamp of approval shall appear on the printed information itself, in a location which will not mar legibility.

C. Product Data returned by the Landscape Architect as “Disapproved” shall be resubmitted in 6 copies until the Landscape Architects approval is obtained.

D. When the Product Data are acceptable, the Landscape Architect will stamp them “Approved” or “Approved as Corrected,” retain 3 copies, and return 4 copies to the Contractor. The Contractor shall provide and distribute additional copies as may be required to complete the Work.

E. The Contractor shall maintain one full set of approved, original, Product Data at the site.

1.09 SUBMISSION OF SAMPLES

A. Unless otherwise specified in the individual section, the Contractor shall submit two specimens of each sample.

B. Samples shall be of adequate size to permit proper evaluation of materials. Where variations in color or in other characteristics are to be expected, samples shall show the maximum range of variation. Materials exceeding the variation of approved samples will not be approved in the Work.

C. Samples which can be conveniently mailed shall be sent directly to the Landscape

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Architect, accompanied by a transmittal notice. All transmittals shall be stamped with the Contractor's approval stamp of the material submitted.

- D. All other samples shall be delivered to the project site with sample identification tag attached and properly filled in. Transmittal notice of samples so delivered with the Contractor's stamp of approval shall be mailed to the Landscape Architect.
- E. If a sample is rejected by the Landscape Architect, a new sample shall be resubmitted in a manner specified hereinabove. This procedure shall be repeated until the sample is approved by the Landscape Architect.
- F. Samples will not be returned unless return is requested at the time of submission. The right is reserved to require submission of samples whether or not particular mention is made in the Specifications.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Drawings, all of which apply to this section.

1.02 SCOPE OF WORK

- A. The scope of the work under this Specification section, without limiting the generality thereof, includes the furnishing of all labor, materials, equipment, services, and incidentals necessary to complete all of the work in accordance with the Contract Documents, which are intended to describe and provide for a finished piece of work.
- B. The work includes the following, without limiting the generality thereof;
 - 1. The Contractor shall make available to the Owner's testing laboratory any samples or specimens which the laboratory may require to perform quality control testing on concrete, fill materials, or other material as the Owner may elect to provide additional testing for.
 - 2. The coordinating and scheduling of work and the giving of timely notice so as to afford the Owner's testing laboratory the opportunity to take samples and make observations or tests.

1.03 TESTING LABORATORY

- A. The Contractor shall pay for compaction testing as required in Section 02200 – Earthwork.
- B. For all other testing, the Owner will select, engage, and pay for the services of an independent testing laboratory to perform structural tests on concrete and such other materials as the Landscape Architect/Engineer may deem appropriate.
- C. Retesting of materials which fail the original test shall be paid for by the Contractor.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES & CONTROLS

PART 1- GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.

1.02 SCOPE OF WORK

- A. The scope of the work under this Specification section, without limiting the generality thereof, includes the furnishing of all labor, materials, equipment, services, and incidentals necessary to complete all of the work in accordance with the Contract Documents, which are intended to describe and provide for a finished piece of work.
- B. The work includes the following, without limiting the generality thereof;
 - 1. Temporary utilities.
 - 2. Field equipment.
 - 3. Barriers and enclosures.
 - 4. Safety and security.
 - 5. The Contractor is responsible for furnishing, installing and maintaining the temporary barricades, signage and other safety devices described in the Traffic Management Plan, Drawing TMP-1.

1.03 TEMPORARY UTILITIES

- A. The Contractor is responsible for all temporary electrical distribution, lighting, and water distribution from existing sources.
- B. The Contractor shall provide and pay for his own temporary telephone service within the Contract Limit Line.
- C. The provision for temporary toilets is included under Section 01010 - Summary of Work.

1.04 FIELD EQUIPMENT

- A. The Contractor shall provide a transit, rod and level on site for checking layouts and installations.

TEMPORARY FACILITIES & CONTROLS

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1.05 TRAFFIC CONTROL

- A. The Contractor is responsible for providing temporary traffic control devices and barriers and for performing all procedures required by the Traffic Management Plan.
- B. Temporary traffic control signs and barricades shall conform to the latest edition of the Uniform Manual on Traffic Control Devices and to the Massachusetts State Highway Department Standard Specifications for Highways and Bridges, Section 828, Traffic Signs.
- C. The Contractor is responsible for removal of all temporary signs at the completion of the project.

1.06 BARRIERS AND ENCLOSURES

- A. The Contractor shall provide and maintain sufficient fencing and warning signs around the work area to limit unauthorized entry within the Contract Limit Line.
- B. At the earliest practical time provide temporary enclosure of materials, equipment, work in progress and completed portions of the work to provide protection to the work and employees.

1.07 SAFETY AND SECURITY

- A. The Contractor shall be responsible for the safety and security of the site within the Contract Limit Line, and for the safety of all persons who enter within the Contract Limit Line.
 - 1. Gates or other temporary openings in the fencing used to allow construction personnel or equipment access shall be maintained closed at all times to prevent access by the public.
- B. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work.
- C. The Contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying the Owner of particular hazards.
- D. The Contractor shall cooperate with and maintain a close liaison with the Police Department and Fire Departments, and he shall abide by safety-related requests from any of these agencies.

END OF SECTION

TEMPORARY FACILITIES & CONTROLS

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SECTION 01700

PROJECT CLOSE-OUT

PART 1- GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Drawings, all of which apply to this section.
- B. Project close-out procedures are subject to the requirements of M.G.L. Chapter 30, Section 39G.

1.02 SCOPE OF WORK

- A. The scope of work under this Specification section, without limiting the generality thereof, includes the furnishing of all labor, materials, equipment, services, incidentals necessary to complete all of the work in accordance with the Contract Documents, which are intended to describe and provide for a finished piece of work.
- B. The type of work includes the following, without limiting the generality thereof:
 - 1. Final Cleaning.
 - 2. Substantial Completion
Recording as-built information
 - 3. Operating and Maintenance Manuals: Provide one copy to City of Waltham Recreation Department
 - 4. Final Completion.

1.03 FINAL CLEANING

- A. Immediately prior to Substantial Completion of the work, the Contractor shall perform all cleanup work as follows:
 - 1. Remove all waste materials and rubbish from the site and legally dispose of it.
 - 2. Remove all tools, equipment, machinery, surplus material, temporary enclosures, and any other material belonging to the Contractor or his Subcontractors.
 - 3. Clean all surfaces, fixtures, and equipment within the work areas, and any surfaces outside the work area which have been made dirty by the work of the contract. Leave the entire site clean and ready for use.

1.04 SUBSTANTIAL COMPLETION

- A. Related Requirements: The Contractor's attention is directed to the General and Supplementary Conditions of the Contract and M.G.L. Chapter 30, Section 39G for additional information covering substantial completion procedures and payments.
 - 1. Substantial Completion is defined in MGL 149 Section 39G.
- B. Upon Substantial Completion of the project, the Contractor shall present written certification that the work is substantially complete. The Landscape Architect will promptly, and in no case later than 21 days after the Contractor's certification, respond in writing declaring the work has reached Substantial Completion, or he shall provide an itemized list of incomplete or unsatisfactory items that must be completed to achieve Substantial Completion.
- C. Within 65 days after the effective date of a declaration of substantial completion, the Landscape Architect will send the Contractor a Substantial Completion estimate, which will be the balance of the Contract price minus a one percent retention for final completion, amounts to cover any outstanding claims, any amounts estimated to cover incomplete or unsatisfactory work, and the sum of all demands for direct payment made by Subcontractors.
 - 1. Refer to MGL 149 Section 39G for additional information concerning payment.

1.05 AS-BUILT RECORD DRAWINGS

- A. General: Do not use As-Built Record Drawings for construction purposes. Protect As-Built Record Drawings from deterioration and loss. Provide access to As-Built Record Drawings for Architect's and Owner's reference during normal working hours.
 - 1. As-Built Record Drawings: Maintain and submit one set of black-line prints of As-Built Record Contract Drawings and Shop Drawings.
 - (a) Mark As-Built Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, Subcontractor, or similar entity, to prepare the marked-up As-Built Record Prints.
 - (1) Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
 - (2) Accurately record information in an understandable

PROJECT CLOSE-OUT

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drawing technique.

- (3) Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - (4) Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
- (b) Mark as-built record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
 - (c) Mark important additional information that was either shown schematically or omitted from original Drawings.
 - (d) Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
 - (e) Identify and date each As-Built Record Drawing; include the designation "PROJECT AS-BUILT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
- (a) Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - (b) Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - (c) Note related Change Orders, As-Built Drawings, and Product Data, where applicable.
3. Record Product Data: Submit one copy of each Product Data submittal. Mark one set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
- (a) Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

- (b) Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
- (c) Note related Change Orders, As-Built Drawings, and Record Specifications, where applicable.

1.06 WARRANTIES

- A. Submittal Time: Submit written warranties on request of the Landscape Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
 - 1. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - (a) Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - (b) Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - (c) Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 - 2. Provide additional copies of each warranty to include in operation and maintenance manuals. At Substantial Completion of the project, the Contractor shall deliver to the Landscape Architect copies of all warranties for the various materials and pieces of equipment included in the project. These warranties shall be submitted in duplicate and shall be bound together with the operating and maintenance data called for above.

1.07 OPERATION AND MAINTENANCE MANUALS

- A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
 - 1. Operation Data:
 - (a) Emergency instructions and procedures.
 - (b) System, subsystem, and equipment descriptions, including operating standards.

- (c) Operating procedures, including startup, shutdown, seasonal, and weekend operations.
- (d) Description of controls and sequence of operations.
- (e) Piping diagrams.

2. Maintenance Data:

- (a) Manufacturer's information, including list of spare parts.
- (b) Name, address, and telephone number of Installer or supplier.
- (c) Maintenance procedures.
- (d) Maintenance and service schedules for preventive and routine maintenance.
- (e) Maintenance record forms.
- (f) Sources of spare parts and maintenance materials.
- (g) Copies of maintenance service agreements.
- (h) Copies of warranties and bonds.

- B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.08 FINAL COMPLETION

- A. Related Requirements: The Contractor's attention is directed to the General and Supplementary Conditions of the Contract and M.G.L. Chapter 30, Section 39G covering closeout and final payment procedures.

B. Final Completion:

- 1. Within fifteen (15) days of the effective declaration of Substantial Completion, the Landscape Architect will send the Contractor by certified mail, return receipt requested, a complete final punch list of all incomplete or unsatisfactory work items necessary to achieve Final Completion.
 - (a) If the Contractor fails to complete such work within forty-five (45) days after receipt of the list, or by the contractual completion date, whichever is later, the awarding authority may, subsequent to seven (7) days written notice to the Contractor, terminate the Contract and complete the incomplete or unsatisfactory work items and charge the cost of same to the Contractor.
- 2. The Contractor shall notify the Landscape Architect when the work is completed. The Landscape Architect will promptly make an inspection, and in no case later than thirty (30) days after notification by the

Contractor that the work is complete, send the Contractor a final estimate for the Contract balance due, holding back any amount estimated to cover work which is still incomplete or unsatisfactory.

3. Upon completion of all remaining items, and after receipt of all appropriate Record Specifications, Record Product Data, Operating and Maintenance Manuals, Warranties, Guarantees and any Spare Parts as required by the Contract Documents, the Contractor shall provide a notarized Contractor's Certificate and Release and a final Application for Payment to the Owner to complete the close-out process.

END OF SECTION

SECTION 02100

SITE PREPARATION AND DEMOLITION

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.
- B. Contact Dig-Safe (811) seventy-two hours prior to the start of any removals or excavation work, and obtain a Certificate verifying that marking the location of utilities has been completed. Contact the City of Waltham Engineer to verify the location of additional on-site utilities. Coordinate demolition work with utility companies. Dig-safe does not locate telephone and cable lines; contact the specific utilities involved for this information.

1.02 SCOPE OF WORK

- A. Provide all equipment and do all work necessary to prepare the site complete, as indicated on the Drawings and as specified.
- B. The work shall include, but is not limited to, the following:
 - 1. Erosion control
 - 2. Tree protection
 - 3. Marking the location of utilities within the Limit of Work Line.
 - 4. Demolition of items as noted on the Drawings.
 - 5. Removal of incidental site items not indicated on the site plan which will impede proposed construction.
 - 6. Clearing and grubbing in area indicated on the Drawings, and conservation of and stockpiling of all topsoil from these areas.
 - 7. Protection of existing site elements to remain.
 - 8. Salvage and stockpiling for re-use of existing granite curbing.

1.03 RELATED WORK

- A. Section 01050 - Field Engineering: Layout of site improvements.
- B. Section 01500 - Temporary Facilities and Controls.
- C. Section 02200 - Earthwork.

1.04 SUBMITTALS

- A. Copies of required permits.
- B. Provide certificate verifying marking of utilities thru Dig-safe.
- C. Submit shop drawing or description of temporary signs including text, for approval by the Landscape Architect, prior to their installation.

1.05 REFERENCES

- A. All work shall comply with the minimum standards of the latest editions of the following codes and specifications, subject to modifications and amendments outlined herein.
 - 1. MHD: "Standard Specifications for Highways and Bridges", Department of Public Works, Commonwealth of Massachusetts, latest edition.
 - 2. Federal, State and/or Municipal Codes.
 - 3. Public Safety Codes.
 - 4. U.S. Public Health Service.
 - 5. National Electric Manufacturers Association.
 - 6. American National Standards Institute.
 - 7. American Society of Mechanical Engineers.
 - 8. Commercial Standards.
 - 9. Federal Specifications.
 - 10. Occupational Safety and Health Regulations.
 - 11. Americans with Disabilities Act Guidelines (ADAAG) for Building and Facilities, 36 CFR Part 1191.
 - 12. MAAB CMR 521 Regulations.
 - 13. National Arborist Association Standards, National Arborist Association, 124 Route 101, Bedford, NH 03102.
 - 14. OSHA Construction Regulations Title 29 CFR Part 1926.

1.06 EXAMINATION OF SITE AND DOCUMENTS

- A. The Contractor shall inform him/herself of existing conditions of the site before submitting his/her bid. No claim for extra compensation or extension of contract time will be allowed on account of conditions which are apparent from a thorough visual examination of the site.

1.07 MAINTENANCE OF ACCESS ON SIDEWALKS AND ROADS

- A. The Contractor shall not close or obstruct any portion of street without obtaining permits therefor from the proper municipal authorities.

SITE PREPARATION & DEMOLITION

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- B. The Contractor shall coordinate with the City of Waltham and Town of Lexington Fire and Police at all times. The Contractor shall notify the both the Town of Lexington and City of Waltham Fire Departments and Police Departments prior to closing any street or any portion of the traveled way regardless of the length of time or day. No street shall be closed without the approval of the Consolidated Public Works Department of the City of Waltham. Refer to Division 1 for permit requirement for street closing.

1.08 PERMITS AND CODES

- A. All work shall be as shown in the Contract Drawings and Specifications and shall comply with applicable codes and regulations at the local, county, state, and federal levels. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided without additional cost to the Owner.
- B. The Contractor, under this Section, shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees and secure all permits, inspections and approvals necessary for legal installation and operation of the systems and or equipment finished under this Section.

1.09 CONDITIONS OF WORK

- A. The Work of this Project is subject to the restrictions of the City of Waltham Noise Ordinance. Refer to Section 01010 - Summary of Work, Section 1.06.
- B. Conduct the work giving consideration to protection of the public, protection of the existing work from weather; control of noise, shocks, and vibration; control of dirt and dust; orderly access and storage of materials; protection of existing buildings; protection of adjacent buildings and property. Coordinate work and cooperate with the Owner and Landscape Architect at all times.
- C. Schedule site preparation and removal work in connection with the progress schedule required by the General Conditions.
- D. The Site Preparation / Demolition Plan endeavors to describe the scope and intent of Work. No guarantee is expressed or implied that the Site Preparation and Demolition Plan describes the full extent of objects to be removed in order to facilitate construction. Site Preparation operations not specifically identified on the Contract Drawings shall be considered as part of the basic lump sum contract and do not qualify as extra work.
- E. All other work requiring removal, such as fence, tree roots and former buried

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footings shall be removed and discarded as required for proper construction of new work without additional cost to the Owner.

- F. No extra demolition shall be performed without first notifying and obtaining written approval of the Landscape Architect.

1.12 DRAINAGE AND EROSION CONTROL

- A. Upon entry to the site, the Contractor shall assume responsibility for site and subsurface drainage. During the Contract period the Contractor shall maintain drainage in a manner satisfactory to the Landscape Architect. At all times, the adjacent areas shall be protected and maintained in their existing conditions.
- B. It shall be the responsibility of the Contractor to render the site erosion-free, at all times during the Contract period. The Contractor shall take special precautions to prevent erosion run-off from slopes, drainage trenches, granular bases, structures, loam stock-piles and other improvements. Hay bales, jute mesh, catch basin insert filtration bags, and siltation fabrics shall be used, as determined by the Landscape Architect and as shown on the Drawings.

1.13 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be stored in a dry location, off the ground and in such manner as to prevent damage, intrusion of foreign matter and weather. All materials which have become damaged or otherwise unfit for use during delivery or storage shall be replaced at the expense of the Contractor.

PART 2 - PRODUCTS

2.01 LAYOUT AND STAKING

- A. Refer to Section 01050 - Field Engineering for layout and staking requirements.

2.02 DUST CONTROL

- A. Water for dust control shall be free from contaminants hazardous to human health and plant growth. No calcium chloride may be used.

PART 3 - EXECUTION

3.01 LOCATING UTILITIES & SITE ITEMS AFFECTING THE WORK

- A. Prior to site preparation and removals operation, the Contractor shall locate and mark all site items such as utilities which could be affected by site preparation and

removals.

- B. Contact Dig-Safe (811) seventy-two hours prior to the start of any removals or excavation work, and obtain a Certificate verifying that marking the location of utilities has been completed. Contact the City of Waltham Engineering Department to verify the location of additional on-site utilities. Coordinate demolition work with utility companies. Dig-safe does not locate telephone and cable lines; contact the specific utilities involved for this information.

3.02 PROJECT CONDITIONS

- A. All apparatus, storage and the operation of work in connection with activities under this Section shall be confined to the area within the Limit of Work Line as shown on the Contract Drawings and shall not encumber areas outside the site.
- B. Thoroughly wet down all work during demolition to prevent the spread of dust. Avoid flooding or contaminated run-off.
- C. All existing items to remain which are damaged by the Contractor shall be repaired or replaced at the Contractor's expense. Replacement or repaired items shall be equal to new items as specified.
- D. The Contractor shall be responsible for the methods used in this work including properly protecting against damage to existing and proposed site improvements, structures, site features, utility lines, trees, lawns, etc. Check with municipality and local utility companies for locations of existing utilities which may be in use or abandoned. Investigate and ascertain that underground utilities are correctly located and that they have been shut off and/or abandoned before disturbing them.

3.03 PROTECTION

- A. The Contractor shall assume complete responsibility and liability for the safety and structural integrity of all work and utilities to remain during the performance of all work.
- B. The Contractor shall provide safeguards including, but not limited to, warning signs, barricades, temporary construction fences, warning lights and other items required for protection of personnel and the general public during the performance of all work.
- C. The Contractor shall provide barricades for substantial construction in accordance with safety regulations of authorities having jurisdiction and insurance requirements.

- D. All features related to protection shall be maintained until that unit of work has been completed to the point that the danger no longer exists.

3.05 TRAFFIC MANAGEMENT PLAN

- A. Obtain street closure permit from the City of Waltham prior to closing the indicated portion of the North/South Parkway. Notify the Town of Lexington prior to closing the street.
- B. Provide barricades and signage as shown on the Traffic Management Plan before beginning the site work.

3.06 TREE PROTECTION

- A. All trees scheduled on the Plans for protection shall be protected as shown on the Details.

3.07 STRIPPING TOPSOIL

- A. Within the area designated for clearing and grubbing, strip all topsoil. Do not mix topsoil with subsoil.
 - 1. Strip to a depth 6" below proposed finished grade in planting areas
 - 2. Strip to full depth below finished grade of proposed pavements.
- B. Topsoil shall be protected from erosion and be reused as specified in Section 02950 – Seeding.

3.08 CLEARING AND GRUBBING

- E. Remove trees, plants, undergrowth, other vegetation, debris, large boulders, and all other items within the area indicated for clearing and grubbing.
 - 1. Fell trees in a manner to prevent injury to adjacent facilities and to trees scheduled to remain.
 - 2. Remove all stumps and roots to a clear depth of 24" below proposed finished grade.
 - a. No mechanical equipment is allowed within the canopy or drip line of existing trees to remain.
- F. Fill depressions caused by clearing and grubbing operations with

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Suitable Fill as specified in Section 02200 Earthwork.

G. Legally dispose of all removed material off-site at the end of each day.

3.09 CLEARING AND GRUBBING WITHIN THE DRIPLINE OF 30" OAK AND 20" MAPLE TO REMAIN

A. Where demolition work is required within the drip-line or canopy of existing trees to remain:

1. Notify the Landscape Architect prior to excavating these areas.
2. Hand dig in a manner which will cause minimum damage to root systems.
3. Cut roots cleanly and to a depth 3" below final grade. Do not leave surface roots exposed. Prune injured roots clean backfill as soon as possible to the satisfaction of the Landscape Architect.

B. Where trees have been disturbed within the dripline, deep water trees on a schedule and quantity as determined by the Engineer.

3.10 DEMOLITION OF PAVING

A. The line between existing pavement to be removed and existing pavement to remain shall be neatly saw-cut through full depth of pavement section so as to leave a smooth, straight and vertical edge. Cut to the dimensions given or directed. Remove the portion behind the cut with proper tools.

1. Existing pavement which is damaged, disturbed or settled by construction operations shall be cut back by the same method and replaced as directed by the Landscape architect at no additional cost to the Owner.
2. Lap pavement at line between existing and new, as shown on the pavement matching detail.

3.11 FOOTINGS & MISCELLANEOUS SITE ITEMS

A. Footings & miscellaneous site items shall be removed in their entirety and legally disposed of. Holes resulting from demolition shall be backfilled and compacted in accordance with Section 02200 Earthwork.

3.12 SALVAGE OF EXISTING GRANITE CURB

A. The Contractor shall remove and stock-pile for reuse all existing granite curbing

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meeting the requirements for granite curbing in Section 02500 Granite Curb. Existing granite curb with broken ends or less than two feet in length shall be removed and disposed of.

3.13 CLEANUP

- A. Keep work areas free from accumulation of debris during the work under this Section and leave the premises in a clean condition after completion of the Work of this Section.
- B. At the completion of the work of this Section, properly and legally dispose of all items removed and not scheduled to remain, including surplus soil material, unsuitable topsoil, demolished materials, and waste materials including trash and debris, and any other waste materials in connection with the work under this Section and leave the premises in a clean condition.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.
- B. Contact Dig-Safe (811) seventy-two hours prior to the start of any removals or excavation work, and obtain a Certificate verifying that marking the location of utilities has been completed. Contact the City of Waltham Engineer to verify the location of additional on-site utilities. Coordinate earthwork with utility companies.

1.02 SCOPE OF WORK

- A. Work under this Section shall include all labor, materials, services, equipment, transportation and accessories and the performance of all operations necessary to complete the work of this Section, as indicated on the Contract Drawings and as specified herein.
- B. The work shall include, but is not limited to, the following:
 - 1. Location of all utilities prior to earthwork operations.
 - 2. Excavating, filling, backfilling, and grading.
 - 3. Continued protection for all existing structures
 - 4. Continued provision of safety controls.
 - 5. Performing dewatering necessary to maintain excavated areas free from water from any source.
 - 6. Removal and legal off-site disposal of unsuitable or surplus excavated materials.

1.03 RELATED WORK

- A. Section 02100 - Site Preparation & Demolition
- B. Section 02500 - Granite Curb
- C. Section 02510 - Bituminous Concrete Paving
- D. Section 02725 - Drainage Pipe
- E. Section 02728 - Drainage Structures
- F. Section 02800 - Site Furnishings

- G. Section 02950 - Seeding
- H. Section 10430 - Signs
- I. Section 16100 - Light Foundations & Electrical Accessories

1.04 REFERENCES

- A. All work shall comply with the minimum standards of the latest editions of the following codes and specifications, subject to modifications and amendments outlined herein.
 - 1. MHD: "Standard Specifications for Highways and Bridges", Department of Public Works, Commonwealth of Massachusetts, Latest Edition.
 - 2. ASTM: American Society of Testing Materials.
 - 3. AASHTO: American Association of State Highway and Transportation Officials.
 - 4. ANSINFPA: American National Standards Institute, National Fire Protection Act.
 - 5. Federal, State and/or Municipal Codes.
 - 6. Public Safety Codes.
 - 7. U.S. Public Health Service.
 - 8. National Electric Manufacturers Association.
 - 9. American National Standards Institute.
 - 10. American Society of Mechanical Engineers.
 - 11. Commercial Standards.
 - 12. Federal Specifications.
 - 13. Occupational Safety and Health Regulations.
 - 14. OSHA Construction Regulations Title 29 CFR Part 1926.

1.05 EXAMINATION OF SITE AND DOCUMENTS

- A. By submitting a bid the Contractor affirms that he/she has carefully examined the site and conditions affecting Work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions which can be reasonably inferred from visual inspection of the site.

1.06 SUBMITTALS

- A. Submit to the Landscape Architect:
 - 1. A representative sample of approximately 5 pounds for each type of fill material.
 - 2. Supplier's or laboratory sieve analysis for each type of fill material demonstrating compliance with the Specifications.
 - 3. Results of the Modified Proctor laboratory test for "Suitable Backfill" and "Aggregate Basecourse".

4. Results of field compaction tests.

1.07 TESTING

- A. The Contractor shall pay for an independent laboratory, subject to the approval of the Landscape Architect, to provide testing of compaction as follows:
 1. Maximum density and optimum water content determination by the ASTM D-1557-09 or AASHTO T-180 Modified Proctor laboratory test for “Suitable Backfill” and “Aggregate Basecourse”.
 2. On-site: Provide one field density test of the subgrade, and one field density test in each compacted fill layer for every 2000 square feet of parking lot and roadway.

1.08 PERMITS AND CODES

- A. All work shall be as shown in the Contract Drawings and Specifications and shall comply with applicable codes and regulations at the local, county, state, and federal levels. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided without additional cost to the Owner.
 1. OSHA Construction Regulations Title 29 CFR Part 1926.
- B. The Contractor, under this Section, shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees and secure all permits, inspections and approvals necessary for legal installation and operation of the systems and or equipment furnished under this Section, including DCR Temporary Work Permit (see Section 01010 - Summary of Work, Section 1.07).

1.09 CONDITIONS OF WORK

- A. Conduct the work giving consideration to protection of the public, protection of the existing work from weather; control of noise, shocks, and vibration; control of dirt and dust; orderly access and storage of materials; protection of existing buildings; protection of adjacent buildings and property. Coordinate work and cooperate with the Owner and Landscape Architect at all times.
- B. Schedule earthwork in connection with the progress schedule required by the General Conditions.

1.10 DISPOSITION OF EXISTING UTILITIES AND SCHEDULING UTILITY WORK

- A. Site information: No representations are made indicating subsurface conditions. It is expressly understood that the Owner/Landscape Architect will not be responsible for interpretations or conclusions drawn therefrom by the Contractor.
- B. Existing Utilities
 - 1. Before starting earthwork, locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.
 - 2. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, notify the Landscape Architect and Owner, and consult utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility Owner.
 - 3. Do not interrupt existing utilities serving facilities occupied or used by Owner and others, during occupied hours, except when permitted in writing by Owner and then only after acceptable temporary utility services have been provided. Provide minimum of 48 hour notice to Owner, and receive written notice to proceed before interrupting any utility.
 - 4. Inactive utilities encountered or utilities abandoned during construction operations shall be removed, plugged or capped. The location of such utilities shall be noted on Record Drawings and reported in writing to the Landscape Architect.

1.11 DEFINITIONS

- A. Fill and backfill shall be, for the purpose of this Specification, considered interchangeable terms and shall mean material to be used to bring existing or construction grades up to finish subgrade levels.
- B. The words “finish grade” as used herein mean the required final grade elevations indicated on the Contract Drawings. Where not otherwise directed, areas outside buildings shall be given uniform slopes between points for which finish grades are shown, or between such point and existing grade, except that vertical curves or roundings shall be provided at abrupt changes in slope.
- C. The word “subgrade” as used herein, means the required surface of subsoil, borrow fill or compacted fill.
- D. “Trench” shall be defined as an excavation of any length where the width is less than twice the depth. All other excavations shall be classified as open.

- E. “Unsuitable Materials” shall include the following:
1. Pavements, utility structures, building foundations and other manmade structures.
 2. Peat, muck, organic silt and other organic materials subject to decomposition, consolidation or decay.
 3. Miscellaneous fill including cinders, ash, glass, wood, masonry and metal.
 4. Ledge and boulders except as specified herein for fills.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

A. Suitable Backfill

1. Suitable backfill shall be used whenever indicated on the Drawings, and for general grading.
2. “Suitable Backfill” shall be natural soil, well-graded and free from all organic weak, compressible, and frozen materials, and shall contain no stone larger than two (2) inches in maximum dimension. It shall be of such nature and character that it can be dried and compacted and shall be free of all expansive materials (such as high plastic clays) and of materials subject to decay, decomposition, or dissolution, and shall conform to the following gradations:

<u>U.S. Sieve No.</u>	<u>% Passing by Weight</u>
2 inch	100%
#4	20-75%
#40	0-25%
#200	0-5%

3. Material from excavation on the site meeting the above requirements as evidenced by testing may be used as “Suitable backfill” provided it has not been contaminated with unsuitable material.

B. Aggregate Base Course, Aggregate Backfill & Gravel:

1. Where Aggregate Base Course, Aggregate Backfill or Gravel is indicated on the Drawings, this material shall conform to the requirements of

M1.03.0 Gravel Borrow, Type C of the MHD Standard Specifications except that the largest stone dimension shall be one (1) inch. Gravel shall consist of inert material which is hard durable stone and coarse sand; free from loam, clay, organic material, surface coatings, trash, frozen materials and deleterious materials. Gradation requirements are as follows:

<u>Sieve Designation</u>	<u>Percent Passing</u>
1 inch	100
½ inch	50-85
No. 4	30-60
No. 50	8-28
No. 200	0-10

- C. Crushed Stone shall conform to the requirements of M2.01.0 Crushed Stone of the MHD Standard Specifications, sized as indicated on the Drawings, with gradation for size as required by the Standard Specifications.

- D. Bedding material for pipes and waterlines shall conform to the following:

1. Bedding shall be gravel, crushed quarry rock or crushed gravel, from off-site sources graded within the following limits:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
1 inch	100%
¾ inch	90-100%
⅜ inch	20-55%
No. 4	0-10%
No. 8	0-5%

- E. Sand

1. Shall conform to the requirements of Section M1 .04.1 of MHD Standard Specifications.
2. Sand for use in subdrain installations shall conform to the requirements of Section M1.04.0 with the following grading limitations, as determined by AASHTO-T11 and T27.

<u>Sieve Designation</u>	<u>Percent by Weight Passing Minimum</u>	<u>Percent by Weight Passing Maximum</u>
½ in.	100	
3/8 in.	85	100
No. 4	60	100
No. 16	35	80
No. 50	10	55
No. 100	2	10

PART 3 - EXECUTION

3.01 LAYOUT

- A. Lay out site improvements as required in Section 01050 - Field Engineering.
- B. The Contractor shall inform the Landscape Architect when the general layout is completed and shall not begin excavation until the various alignments are approved by the Landscape Architect. Any discrepancies encountered in field conditions shall be reported to the Landscape Architect immediately.
- C. The Contractor shall be responsible for maintaining the correct vertical and horizontal alignment of all elements, which responsibility shall not be waived by the Landscape Architect's approval of basic layout and stakeout.

3.02 PROTECTION

- A. The Contractor shall assume complete responsibility and liability for the safety and structural integrity of all work and utilities to remain during the performance of all work.
- B. The Contractor shall provide safeguards including, but not limited to, warning signs, barricades, temporary construction fences, warning lights and other items required for protection of personnel and the general public during the performance of all work.
- C. The Contractor shall provide barricades for substantial construction in accordance with safety regulations of authorities having jurisdiction and or insurance requirements.

- D. All features related to protection shall be maintained until that unit of work has been completed to the point that the danger no longer exists as approved by the Landscape Architect.

3.03 EXCAVATION

- A. Refer to Section 02725 - Drainage Pipe for additional requirements for excavating drainage pipe trenches.
- B. Excavation is “Unclassified”, and shall include excavation to subgrade elevations indicated on the Drawings, or required to accommodate new construction, regardless of the character of materials and obstructions encountered and shall be understood to include rock and boulders, shale, boulders, earth, hardpan, fill, foundations, pavements, curbs, piping and debris, except as follows:
 - 1. Notify the Landscape Architect prior to proceeding if materials greater than 1 cubic yard in size are encountered.
 - 2. Excavation of unanticipated materials encountered which are greater than 1 cubic yard in size and which could not be reasonably inferred from surface inspection will be paid for as an adjustment to the Contract Price due to unanticipated subsurface conditions, or adjustment may be made to the layout to avoid excavation of same.
- C. Unauthorized Excavation: When suitable bearing material is encountered at subgrade elevations shown and excavation is made to greater depth, bring grade back to elevation required by providing appropriate fill material at no additional cost.
- D. When excavation has reached required subgrade elevations, notify the Landscape Architect.
- E. If the “assumed” bearing materials are not encountered at the subgrade elevations indicated, additional excavation work may be authorized by the Owner. Do not perform additional excavation unless directed by the Landscape Architect in writing. Removal of unsuitable material and its replacement with proper backfill, if directed in writing by the Landscape Architect, will be paid for as an adjustment of the Contract price due to unanticipated subsurface conditions.
- F. During excavation, do not damage roots of trees which are to remain. When excavating or trenching within the branch spread of trees scheduled to remain, refer to Section 3.09 Section 02100 Site Preparation for special precautions.
- G. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space

restrictions, stability of material excavated, or depth of excavation.

- H. Dewatering: Prevent water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area. Under no circumstances lay pipe or install appurtenances in water. Keep all trenches free from water until they have been backfilled.
- I. Materials Storage: Stockpile satisfactory excavated materials where directed until required for backfill or fill. The Landscape Architect shall approve the location of all stockpiles prior to placement. Place, grade and shape stockpiles for proper drainage.
 - 1. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees to remain.
 - 2. Legally dispose of excess soil material and waste materials off-site.
- J. Frost Protection
 - 1. Make no excavations to fill depth indicated when freezing temperature may be expected unless intended improvements can be accomplished immediately after the excavations have been completed. Protect bottom so excavated from frost if progress is delayed. Should protection fail, remove frozen materials and replace with gravel as directed at no cost to the Owner.
 - 2. Keep the site clear and free of accumulations of snow within the limit of the Contract lines as necessary to carry out the work of the Contract.
 - 3. Fill materials containing frost shall not be utilized, nor shall filling be done over frozen materials.

3.04 BACKFILL AND FILL

- A. Refer to Section 02725 - Drainage Pipe for additional requirements for backfilling and filling drainage pipe trenches.
- B. Backfill excavations as promptly as work permits, but not until completion of the following:
 - 1. Acceptance of construction below finish grade by Landscape Architect.
 - 2. Inspection, testing, approval and recording locations of underground utilities to the satisfaction of the Landscape Architect.

3. Compaction testing of subgrade if required at that location.

3.05 PLACEMENT OF FILL

- A. Placement: Place backfill and fill materials in uniform lifts of not more than 12 inches in loose depth for ordinary fill and 8 inches in loose depth for other materials compacted by heavy compaction equipment and not more than 6 inches in loose depth for material compacted by hand operated tampers.
 1. Coordinate backfilling with the installation of the work of all trades.
 2. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 3. Place backfill and fill materials evenly adjacent to structures, piping or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping or conduit to approximately the same elevation in each lift.
 4. Backfill by hand around pipe and for a depth of one (1) foot above the pipe. Use earth without rock fragments or large stones and tamp firmly in layers not exceeding 6 inches in thickness, taking care not to disturb the pipe. Compact the remainder of the backfill thoroughly with a rammer of suitable weight or with an approved mechanical tamper, or if the soil is granular, by flooding, provided that under pavements, walks and other surfacing, the backfill shall be tamped solidly in layers not exceeding 6 inches in thickness.
 5. Compact backfill to match adjacent areas as specified above. Correct settlement of fill by filling to subgrade levels in all areas where settlement occurs.

3.06 COMPACTION

- A. Compact soil to not less than the following percentages of maximum density of soils in accordance with ASTM D1557, Method C or AASHTO T-180).
 1. Subgrade and base courses under all areas (with the exception of planting beds), utility trench backfill, fill at base and around footings, and curb subgrade: Compact each layer of backfill or fill material to 95 percent of maximum dry density.

2. Planting beds: Compact to 85 percent of maximum dry density.
- B. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material, to prevent free water from appearing on surface during or subsequent to compaction operations. Remove and replace soil material that is too wet to permit compaction to specified density.
- C. Provide compaction testing as required in Section 1.07 Testing this Section.

3.07 SUBGRADE PREPARATION AND GRAVEL PLACEMENT FOR PAVEMENTS

- A. Clean the rough subgrade of all loose, soft, foreign or other unsuitable material and reshape as required. Add suitable fill material to meet required grade.
- B. Compact to required grades and sections for paving. Tamp traces of trenches. Remove spongy or otherwise unsuitable material and replace with approved material. Loosen exceptionally hard spots and re-compact. Take every precaution to obtain a foundation of uniform bearing power. In absence of specific requirement, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- C. Roll longitudinally at sides, overlapping each pass by one-half of rear wheel. Fill all depressions or settlements which occur. Continue until all stones are firmly interlocked and surface is true and unyielding. After final rolling, surface is to be free of depressions or irregularities greater than 3/8 inch in ten (10) feet.
- D. Construct base course as detailed on the Contract Drawings for all areas of new paved surfaces in this Section. Placement of gravel base course shall conform to the requirements of MHD except as herein modified.
- E. Spread gravel from self-spreading vehicles, approved type of power grader or by hand upon prepared sub-grade. Spread evenly in layers so as to avoid separation of aggregates. Layers shall not exceed six (6) inches in depth after compaction. Remove stones larger than four (4) inches. When spread and rolled on the prepared surface, it shall form a stable surface. Compaction shall have a density of not less than 95% of maximum density determined in accordance with ASSHTO-T-180 Method D. All rolling shall be done with a roller weighing 8 to 10 tons. Compact any portion which is not accessible to a roller by mechanical or hand tamper.
- F. Final rolled surface shall be true to the lines and grades indicated on the Contract Drawings or as directed by the Landscape Architect. Fill any depression that may appear during and after rolling with gravel and re-roll until the surface is true and even. Tolerance shall be 3/8 inch maximum above or below the cross-section

grades and 3/8 inch maximum under a 10 foot line longitudinally.

- G. Maintain the surface of any layer in its finished condition until succeeding layer is placed. Properly drain the subbase at all times.

3.08 GRADING

- A. The Contact Drawings indicate, in general, alignment and finish grade elevations. The Landscape Architect, however, may make such adjustments in grades and alignments as are found necessary in order to avoid interference with any special conditions encountered.
- B. Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.
- C. Grade areas to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, and as follows:
 - 1. Paved areas: Shape surface of areas under paved surfaces to line, grade and cross section to provide finished grades of pavements within tolerances specified.
- D. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.
- E. Complete grading operations after utilities have been installed, site improvements included under this Contract have been completed and all rubbish, materials and debris have been properly disposed of.
- F. Do all cutting, filling, reshaping, regrading and re-compacting as necessary to meet the requirements of the Contract Drawings and this Section of the specifications. Maintain sub-grades at the levels specified until turned over to subsequent construction. Bring to required sub-grade levels any areas where settlement, erosion or other grade changes occur.

3.09 PROTECTION AND REPAIR

- A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape and compact to required density prior to further construction.

- C. Whenever streets, lawns, sidewalks or improvements outside the Contract Limit of Work Line have been excavated in fulfilling the work required under this Contract, the Contractor shall furnish and install all material necessary to bring finish surfaces level with the existing conditions in accordance with the governing authority. Notify the proper authorities prior to restoring surfaces outside the Contract Limit of Work.
- D. Do all repairs and restoration to pavements, curbs, and other work inside and outside of the project site damaged by the work under this Contract and restore all existing work to a condition at least equal to the condition specified for this Contract for such improvements.

3.10 CLEANUP

- A. Keep all work areas free from accumulation of debris during the course of work under this Section.
- B. At the completion of the Work of this Section, properly and legally dispose of all excavated materials, all rubbish, debris, waste materials from, and about the site, building, and structures, including tools, scaffolds, apparatus and appliances used in connection with work under this Section and leave the premises in a clean condition.

END OF SECTION

SECTION 02500

GRANITE CURB

PART 1- GENERAL

1.01 GENERAL PROVISIONS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.

1.02 SCOPE OF WORK

- A. This item of work shall consist of furnishing and setting curb, curb inlets, curb corners and edging as detailed on the Drawings.

1.03 RELATED SECTIONS

- A. Section 02200 - Earthwork.
- B. Section 02510 - Bituminous Concrete Paving.
- C. Section 03300 - Cast-in-Place Concrete.
- D. Section 09614 – Detectable Warning Panels

1.04 SUBMITTALS

- A. Submit the following in accordance with the requirements of section 01300 - Submittals:
 - 1. Suppliers literature demonstrating compliance with the Specifications.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle granite curb to prevent damage.

1.06 REFERENCE STANDARDS

- A. All work shall comply with the minimum standards of the latest editions of the following codes and specifications, subject to modifications and amendments outlined herein:
 - 1. Massachusetts Standard Specifications for Highways and Bridges, latest edition.
 - 2. Americans with Disabilities Act Accessibility Guidelines (ADAAG)

3. Massachusetts Architectural Access Board Regulations, CMR 521 (MAAB)

1.07 EXAMINATION OF SITE AND DOCUMENTS

- A. The Contractor shall inform him/herself of existing conditions of the site before submitting his/her bid and shall be fully responsible for carrying out all required site work to fully and properly execute the work of the Contract.

PART 2 - PRODUCTS

- 2.01 Materials shall conform to the Massachusetts Standard Specifications for Highways and Bridges, latest edition, requirements specified in the following subsection of Division III, Materials:

- A. Granite curb shall be Type VA-4, conforming to Section M9.04.01.
 1. Curbs shall be fabricated such that ends fit together to provide no greater than 1/2" visible joints.
- B. Existing on-site granite curb which has been salvaged may be re-used unless ends are broken, or curb is less than two feet in length.

- B. Mortar M4.02.15

- C. Gravel M1.03.0, Type C

- 2.02 Curb at curves shall conform to the requirements of M9.04.1 Curbs and Edging of the Mass Highway Standard Specifications.

- A. Curb set on radius of 100 feet or less shall be cut to the required curvature. The ends of all curved stones shall be cut on radial lines.
- B. On curves with radii greater than 100 feet but less than 500 feet, curb stones may be 4 feet to not more than 6 feet in length.

PART 3 - EXECUTION

- 3.01 Excavation of Trench

- A. The trench for the curb shall be excavated as detailed on the Drawings.

- 3.02 Preparing the foundation

- A. The foundation for the curb shall consist of gravel spread upon the subgrade and after being thoroughly compacted by tamping, depth as shown on the Drawings.

3.03 Setting Curb and Edging.

- A. Curbing, curb corners or edging shall be set on additional gravel spread upon the foundation.
- B. All spaces under the curb, curb corners or edging shall be filled with gravel thoroughly compacted so that the curb, curb corners or edging will be completely supported throughout their length.
- C. Concrete fill shall be placed at the front and back of the curb, continuous as detailed on the Drawings.
- D. The curb shall be set at the line and grade required as shown on the Plans unless otherwise directed.
- E. Neatly mortar joints.

END OF SECTION

SECTION 02510

BITUMINOUS CONCRETE PAVING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.
- B. Examine and coordinate all Contract Drawings and other section of the specifications for requirements which affect work of this section whether or not such work is specifically mentioned in this section. Coordinate work with other trades to assure the steady progress of all work under the Contract. The Contractor shall refer to the Contract Documents for all new work and coordinate how it relates to the paving.

1.02 SCOPE OF WORK

- A. Work under this Section shall include all labor, materials, services, equipment, transportation and accessories and the performance of all operations necessary to complete the work of this Section, as indicated on the Contract Drawings and/or as specified herein.
- B. The work shall include, but is not limited to, the following:
 - 1. Installation of new bituminous concrete pavement, speed humps, and speed bumps.

1.03 RELATED WORK

- A. Section 02100 - Site Preparation and Demolition
- B. Section 02200 - Earthwork: Aggregate Base Course
- C. Section 02800 - Site Furnishings

1.04 REFERENCE STANDARDS

- A. Work shall comply with the minimum standards of the latest editions of the following codes and specifications, subject to modifications and amendments outlined herein.
 - 1. MHDSS: Standard Specifications: Commonwealth of Massachusetts, Department of Public Works, Standard Specifications for Highways and Bridges, latest edition.
 - 2. ASTM: American Society for Testing and Materials.

3. AASHTO: American Association of State Highway and Transportation Officials.
4. Federal, State and/or Municipal Codes

1.05 QUALIFICATIONS

- A. Installer: Company specializing in performing the work of this section with documented experience on at least two similar projects.

1.06 EXAMINATION OF SITE AND DOCUMENTS

- A. By submitting a bid the Contractor affirms that he/she has carefully examined the site and all conditions affecting Work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.
- B. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall examine them for him/herself during the bidding period, as no additional compensation will be made for errors or inaccuracies that may be found therein.

1.07 SUBMITTALS

- A. The Contractor shall provide the following submittals for approval in conformance with requirements of SECTION 01300, SUBMITTALS. Do not order materials until Landscape Architect's approval of submittals, certifications or test results have been obtained. Delivered materials shall closely match the approved submittals.
 1. Submit the bituminous concrete design mix for each application, indicating aggregate sizes and proportions.
 2. Manufacturer's literature for tack coat demonstrating compliance with the specifications.

1.08 PERMITS AND CODES

- A. All work shall be as shown in the Contract Drawings and Specifications and shall comply with applicable codes and regulations at the local, county, state, and federal levels. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided without additional cost to the Owner.
- B. The Contractor, under this Section, shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees and secure all permits, inspections and approvals necessary for legal installation and operation

of the systems and or equipment finished under this Section.

1.09 CONDITIONS OF WORK

- A. Conduct the work giving consideration to protection of the public, protection of the existing work from weather; control of noise, shocks, and vibration; control of dirt and dust; orderly access and storage of materials; protection of existing buildings; protection of adjacent buildings and property. Coordinate work and cooperate with the Owner and Landscape Architect at all times.
- B. Schedule paving in connection with the progress schedule required by the General Conditions.

PART 2 - PRODUCTS

2.01 BITUMINOUS CONCRETE PAVEMENT

- A. Bituminous concrete shall be Class I, Type I-1, furnished and laid in accordance with Section 420 and 490 of the MHD Standard Specifications except as modified herein.
- B. Aggregate Base course for bituminous concrete shall be Compacted Aggregate Base Course as specified in Section 02200 - Earthwork.
 - 1. Subgrade and base course shall be installed and compacted as required in Section 02200 - Earthwork.
- C. Aggregate sizes and gradation for bituminous mixes shall be as follows:
 - 1. Binder course shall conform to MHD Standard Specifications, Section M3, Table A Job Mix Formula for "Binder Course."
 - 2. Top course shall conform to MHD Standard Specifications, Section M3, Table A Job Mix Formula for "Top Course."

2.02 TACK COAT

- A. Tack Coat shall be bitumen Grade, AC-10, or AC-20 asphalt cement conforming to Section M3 of the Standard Specifications.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Make any corrections necessary to base material furnished and placed under SECTION 02200, EARTHWORK, to bring base course materials to sections and elevations shown on the Contract Drawings.
- B. The contact surfaces of curbs, walls, manholes, catch basins or other appurtenant structures in pavement shall be painted thoroughly with a thin uniform coating of tack coat just before any bituminous mixture is placed against them.

3.02 TRANSITION BETWEEN NEW AND OLD PAVING

- A. Where the line of demarcation between new and existing paving occurs, the existing paving shall be saw-cut to provide a clean sharp joint. The pavement shall be sawn by an approved machine to a depth which will permit the cutting of the pavement without damage to the pavement left in place.
 - 1. Protect sawn edges of paving from damage until new paving is placed against it. Existing pavement which is damaged, disturbed or settled, shall be cut back by the same method and replaced as directed by the Landscape Architect without additional cost to the Owner.
- B. Where new bituminous paving meets existing paving the finish grades in the new work shall be adjusted if necessary, to blend smoothly with the existing pavement. Seal joint at saw-cut line with an approved bituminous emulsion. Notify the Landscape Architect of discrepancies before proceeding with the work.

3.03 PLACEMENT

- A. The mixtures shall be placed and compacted only at such times which permit the proper inspection and checking by the Landscape Architect.
- B. The mixtures shall be placed only upon approved surfaces that are clean and dry, when weather conditions are suitable. No bituminous material shall be applied when the temperature is below 32 F.
- C. The temperature of bituminous concrete mixture when delivered to the site shall conform to the following, with a tolerance of plus or minus 20 F.

<u>Air Temperature</u>	<u>Project Delivery Temperatures</u>
35F	300F
40F	290F
6SF	280F
90 F, or over	270F

- D. Place courses of bituminous concrete in conformance to application and depth

requirements shown on the Contract Drawings and specified herein. Depths referenced shall be compacted thicknesses. Bituminous concrete for binder course and wearing or top course shall be furnished and laid in accordance with Section 460 of the Standard Specifications, and as directed herein and by the details.

3.04 SPREADING

- A. The equipment for spreading and finishing shall be mechanical, self-powered pavers, capable of spreading and finishing the mixture true to lines, grade, width and crown by means of fully automated controls for both longitudinal and transverse slope.
- B. Mixtures shall be deposited in a mechanical spreader and immediately spread thereby, and then struck off in a uniform layer to the full width required and of such depth that each course, when compacted, shall have the required thickness and shall conform to the grade and cross section contour specified.
- C. Spreading by hand methods will be permitted only for particular locations in the work which because of irregularity, inaccessibility or other unavoidable obstacles do not allow mechanical spreading and finishing.
- D. Compaction:
 - 1. After the paving mixture has been properly spread, compaction shall be obtained by the use of power rollers of approved design and weight per inch of roller. The rollers shall be steel wheeled supplemented with pneumatic-tired rollers where required.
 - 2. Along curbs, structures and places not accessible with a roller, the mixture shall be thoroughly compacted with mechanical tamping devices. The surface of the mixture after compaction shall be smooth and true to the established line and grade.
 - 3. The densities of the completed pavement shall be not less than 95% of the density obtained from laboratory compaction of a mixture composed of the same materials in like proportions.
- E. All areas of finished paving on which water stands or which are found excessively uneven shall be promptly brought to the correct grade and line.
- F. When tested with a ten (10) foot straightedge there shall be no deviation from true surface planes represented by the grade elevations shown on the Contract Drawings in excess of one-quarter ($\frac{1}{4}$) inch.
- G. Do any repair or patching to pavements outside the project site damaged by work

of the contract. All patching work required shall be in accordance with requirements for new construction.

- H. No vehicular traffic of any kind shall be allowed to pass over the newly finished surface until it has had time to set. Twenty-four (24) hours will be considered sufficient time for the pavement to set in most cases, but this period may be extended by the Landscape Architect/Engineer as required by weather or other reasons.
- I. Install frames and rims after installation of binder course for bituminous concrete pavement. Install wearing course after the installation of the frames and rims. Frames and rims shall have the same grade and slope as adjacent construction.

3.05 QUALITY ASSURANCE

- A. The Landscape Architect may require the Contractor to remove and replace at the Contractor's expense any defective mix not conforming to the specified job mix formula.
- B. If, at any time before the final acceptance of the work, any soft, imperfect places or spots shall develop in the surface, all such places shall be removed and replaced with new materials and then compacted until the edges at which the new work connects with the old become invisible, at no additional expense to the Owner.

3.06 CLEAN-UP

- A. Keep all work areas free from accumulation of debris during the course of work under this Section.
- B. At the completion of the paving, all rubbish, debris, waste materials from, and about the site, building, and structures, including tools, scaffolds, apparatus and appliances used in connection with work under this Section shall be legally disposed of and the premises shall be left in a clean condition.

END OF SECTION

SECTION 02590

LINE PAINTING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.
- B. Examine and coordinate all Contract Drawings and other section of the specifications for requirements which affect work of this section whether or not such work is specifically mentioned in this section. Coordinate work with other trades to assure the steady progress of all work under the Contract. The Contractor shall refer to the Contract Documents for all new work and coordinate how it relates to this Section.

1.02 SCOPE OF WORK

- A. Work under this Section shall include all labor, materials, services, equipment, transportation and accessories and the performance of all operations necessary to complete the work of this Section, as indicated on the Contract Drawings and/or as specified herein.
- B. The work shall include, but is not limited to, the following:
 - 1. Pavement markings for parking lot and roadway

1.03 RELATED WORK

- A. The following items are not included in this Section and will be performed under the designated Sections:
- B.
 - 1. Section 02510 - Bituminous Concrete Paving

1.04 SUBMITTALS

- A. Submit the following in accordance with the requirements of the General Conditions:
 - 1. Paint: Submit manufacturer's product data demonstrating specification compliance for pavement marking paint.
 - (a) Submit manufacturer's directions for application, including permissible temperature for application and storage, drying time, coating thickness and application rates, and period of curing time prior to application to new bituminous concrete.

2. Submit installer name and evidence of qualifications.

1.05 REFERENCES

- A. Massachusetts Highway Department Standard Specifications for Highways and Bridges, 1988 edition.
- B. Federal Highway Administration 2012 Supplement to the 2004 Edition Standard Highway Signs
- C. Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition

1.06 QUALIFICATIONS

- A. Installer shall be from a company with at least 5 years experience in commercial painting.

1.07 REGULATORY REQUIREMENTS

- A. Materials and handling of paint shall conform to all environmental and OSHA regulations.

1.08 DELIVERY STORAGE AND HANDLING

- A. All packaged materials shall be delivered to the site in original unopened containers clearly indicating manufacturer name, brand name, and other identifying information. Paint shall be stored within the temperature ranges indicated by the manufacturer.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Paint shall be applied within the temperature ranges recommended by the paint manufacturer.

PART 2 - MATERIALS

2.01 PAINT

- A. Vehicular pavement line marking:
 1. Paint for pavement line marking of roads and parking lots shall be a thermoplastic alkyd pavement marking compound, meeting the specifications for M7.01.20 of the Massachusetts Standard Specifications for Highways and Bridges.
 2. Paint color shall be white, unless otherwise indicated on the drawings.

PART 3 - EXECUTION

3.01 APPLICATION OF PAVEMENT MARKINGS - GENERAL

- A. Paint shall be applied according to manufacturer's instructions. Adhere to recommended curing period for new bituminous pavement prior to paint application.
- B. Pavement surface should be dry and free of sand, grease, oil and other foreign substances prior to the application. The ambient air temperature is to be a minimum of 45 degrees Fahrenheit and rising at the start of paint application. Do not apply paint when rain is imminent.
- C. Thickness of each coat shall be as recommended by the manufacturer. Painted markings are to be protected until they are dry enough to withstand traffic without tracking or being damaged.

3.02 VEHICULAR PAVEMENT LINE MARKING

- A. Width of lines shall be 4" unless otherwise noted in the Drawings.
- B. Apply two coats of paint in the locations and colors indicated on the drawings. Thickness of each coat shall be as recommended by the manufacturer. Painted markings are to be protected until they are dry enough to withstand traffic without tracking or being damaged.
 - 1. Stencil handicapped parking spaces with the international symbol of access in white on a blue background. Size of symbol shall be approximately 24" x 24".
 - 2. Striped handicapped access aisles with diagonal striping consisting of 4" wide lines, 18" o.c.
- C. "BUMP" warning letters shall be approximately 44" in height and shall conform to the pavements marking graphics of the 2012 Supplement to the 2009 MUTCD Standard Highway Signs .

3.03 GUARANTEE AND ACCEPTANCE

- A. Painted lines and surfaces shall be guaranteed for a period of one year from final acceptance against cracking, peeling, checking, or other defect. The Contractor will repair, re-coat or otherwise make satisfactory, any failed lines or areas, at no cost to the Owner.

END OF SECTION

SECTION 02725

DRAINAGE PIPE

PART I - GENERAL

1.01 GENERAL PROVISIONS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.
- B. Examine and coordinate all Contract Drawings and other sections of the specifications for requirements which affect work of this section whether or not such work is specifically mentioned in this section. Coordinate work with other trades to assure the steady progress of all work under the Contract. The Contractor shall refer to the Contract Documents for all new work and coordinate how it relates to the installation of drainage pipe.

1.02 SCOPE OF WORK

- A. Under this Section the Contractor shall furnish all materials, equipment, labor, transportation, facilities and all operations and adjustments required for the installation of drainage pipe and all incidentals thereto.
- B. Drainage pipe shall be placed in the sizes and lengths indicated on the plans.

1.03 RELATED WORK

- A. Section 01050 - Field Engineering.
- B. Section 01700 - Project Closeout.
- C. Section 02100 - Site Preparation and Demolition.
- D. Section 02200 - Earthwork.
- E. Section 02728 - Drainage Structures.

1.04 REFERENCES

- A. A. The following standards and definitions are applicable to the work of this Section to the extent referenced herein:
 - 1. ASTM A74 Cast Iron Soil Pipe and Fittings.
 - 2. ASTM C76 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
 - 3. ASTM C443 Joints for Circular Concrete Sewer and Culvert Pipe, using Rubber Gaskets.
 - 4. ASTM D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using 10 lb. (4.54 kg) Rammer and 18 inch (457

DRAINAGE PIPE

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- mm) Drop.
- 5. ASTM D2729 Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
- 6. ASTM D1248 HDPE (High Density Polyethylene)(HDPE) Pipe and Fittings.
- 7. ASTM F2648 Test Methods for Non-Pressure (gravity flow) polyethylene (PE) pipes and fittings.

1.05 SHOP DRAWINGS/MANUFACTURER'S CUTS AND SPECIFICATIONS

- A. The Contractor shall submit to the Landscape Architect for approval six (6) copies of all materials and equipment proposed for use indicating manufacturers names and addresses, identifying data and expected delivery dates. No consideration will be given to partial lists submitted from time to time. Intention of using specified materials and equipment shall not relieve the Contractor from submitting the above list, nor shall submission of the list relieve him from submission of shop drawings. Any item of material or of equipment not submitted for approval on the list will not be approved unless of the exact make and characteristics specified.
- B. If the material or equipment is installed before it is approved, the Contractor shall be liable for the removal and replacement at no extra charge to the Owner, if, in the opinion of the Landscape Architect, the material or equipment does not meet the intent of the Contract Documents.
- C. The Contractor shall submit the following information with all equipment shop drawings:
 - 1. Manufacturer's certified scale drawings, cuts or catalogs, including installation details.
 - 2. Manufacturer's specifications, including certified performance characteristics and capacity ratings.
- D. Product Data: The Contractor shall provide data indicating pipe and pipe accessories, connections, etc.

1.06 SAMPLES

- A. The Contractor shall submit all samples as requested in accordance with the provisions of the General Conditions. Samples accepted will be returned to the Contractor within five (5) days and may be incorporated into the work. Samples not accepted will be returned for disposition by the Contractor.
- B. One (1) square foot filter fabric.

1.07 CODES, ORDINANCES AND PERMITS

- A. All work shall be performed in strict accordance with local and state codes and regulations including OSHA Construction Regulations Title 29 CFR Part 1926.
- B. Site utilities work shall be done in strict accordance with the Commonwealth of Massachusetts State Plumbing Code, latest edition, and all revisions thereto, and City of Waltham Engineering Department and Department of Public Works standards.
- C. Any material or workmanship called for in the above-mentioned requirements, which are not specified or shown on the drawings, shall be furnished and installed by the Contractor as though same has been specifically mentioned or indicated. If the drawings and specifications are at variance with any regulations, the bidder shall notify the Landscape Architect ten (10) days before the date for submitting his bid. In many cases the drawings are in excess of the requirements in the codes and these shall be followed to the fullest. If the Contractor fails to notify the Landscape Architect at this time and installs work in variance with the above-mentioned codes and regulations, he shall assume the responsibility and the expense to rectify the installation.
- D. Before commencing work, the Contractor shall obtain all permits necessary in connection with the installation of this equipment and pay fees required for same. He shall include the cost and back charge of installing any portion of the work where performed by municipal departments or utility companies.

1.08 SUBSTITUTIONS

- A. Any reference to a particular device, product, material, article or system shall be interpreted as establishing a standard of quality, design, performance, or function, and shall not be construed as limiting competition.

1.09 RECORD DRAWINGS

- A. The Contractor shall submit record drawings as specified in Section 01700 - Project Closeout.

1.10 SITE VISITATION

- A. It is recommended that all prospective bidders visit the job site to acquaint themselves with the general and special conditions that may be encountered which will have a bearing on labor, transportation, cutting and patching, material handling and storage, and similar items, during the prosecution of the work. Failure to do so shall not relieve him of his responsibility for properly estimating the difficulties involved in the work to be performed under this section.

1.11 REFERENCE STANDARDS

- A. References herein to any technical society, organization, group or body is made in accordance with the following abbreviations.
- B. ASTM - American Society for Testing Materials.
- C. AASHTO - American Association of State Highway and Transportation Officials.
- D. AWWA - American Water Works Association.
- E. ANSI - American National Standards Institute.
- F. MHD Standard Specifications: The Commonwealth of Massachusetts Highway Department, Standard Specifications for Highways and Bridges, 1988, including any and all Addenda.
- G. Requirements of the City of Waltham Engineering Department and Department of Public Works.

1.12 MATERIALS AND WORKMANSHIP

- A. It is the intent of these specifications to establish quality standards for all material and equipment incorporated in the work of this section. All material and equipment installed hereunder shall be new and shall be the best of each respective kind and type. Proper care shall be exercised in handling all equipment and materials herein specified.
- B. The installation shall be as indicated on the drawings and in accordance with the manufacturer's recommendations as approved by the Landscape Architect. The installation shall be accomplished by workmen skilled in this type of work.
- C. All conduits, pipes, structures, etc. in use and which are damaged during excavation, whether uncovered or not and whether or not they are shown on the plans, shall be repaired at the expense of the Contractor.
- D. Storage of materials by the Contractor for incorporation into the work shall be off the site for other than material that is scheduled to be installed in the time span of two (2) working days. The storage site selected by the Contractor shall be made accessible to the City inspection forces at all times during normal working hours.

PART 2 - MATERIALS

2.01 GENERAL

- A. Drawings and specifications are intended to supplement and explain each other.

Materials not specifically mentioned in the specifications shall be as indicated on the drawings. Where conflicts occur between the drawings or specifications, or within either document itself, the item or arrangement of better quality, greater quantity or higher cost shall be included in the Contractor's bid. Where no specific kind or quality of material is given, a first-class standard article, shall be furnished.

2.02 DRAINAGE PIPE

- A. PVC Pipe for use as storm drainage lines shall contain integrally belled and spigot type rubber gasketed joints conforming to ASTM 3034. Gaskets shall conform to ASTM F-477 and shall be marked to indicate nominal pipe size and proper insertion direction. The standard dimension ratio (SDR) of all pipe and fittings shall not exceed 35. Standard pipe lengths shall be twenty (20) feet unless otherwise approved. All necessary glues, gaskets and fittings shall be furnished in order to make the work complete and acceptable to the Engineer.
- B. HDPE Pipe shall be ADS N-12 high density polyethylene pipe (HDPE) as manufactured by Advanced Drainage Systems (ADS), or approved equal, and shall conform to the requirements of AASHTO M-294, and ASTM F2648.
 - 1. HDPE pipe shall be smooth wall perforated where indicated.
 - 2. Pipe and fittings shall be made of polyethylene compounds which conform to the physical requirements of Type III, Category 3, 4 or 5, P23, P33, or P34, Class C per ASTM D-1248 with the applicable requirements defined in ASTM D-1248. Clean reworked material may be used.
 - 3. Pipe shall be of the diameters shown on the Drawings.
- C. HDPE Fittings shall conform to:
 - 1. Fittings shall conform to ASTM F 2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the watertight performance of requirements of ASTM F 2306.
 - 2. Couplers and pipe shall be from the same manufacturer.
 - 3. Couplers shall be corrugated to match the pipe corrugations and the width shall not be less than one-half the nominal diameter of the pipe. Split couplers shall be manufactured to engage an equal number of corrugations on each side of the pipe joint.
 - 4. One half inch diameter galvanized steel bolts and nuts or nylon ties as supplied by manufacturer shall be used on coupling bands.

D. Reinforced Concrete Pipe shall conform to ASTM C76, Class III with Wall Type B, bar reinforcement; inside nominal diameter as indicated on the drawings, with bell and spigot end joints.

1. Reinforced Concrete Pipe Joint Device: ASTM C443, rubber compression gasket joint.
2. Furnish pipe in the sizes indicated on the plans and/or details.

2.04 FILTER FABRIC

- A. SUPAC 8NP by Phillips Fibers Corporation, AMOCO 4508, Trevira 1125, Mirafi 180N, or equal.

2.05 BEDDING AND COVER MATERIALS

- A. Crushed Stone Bedding: Crushed stone as specified in Section 02200 - Earthwork.
- B. Cover: Gravel as specified in Section 02200 - Earthwork.

2.06 APPURTENANCES

- A. Provide all appurtenance and incidentals necessary to make the drainage pipe installation and connection complete and acceptable, including all materials necessary for the excavation, backfill, and compaction.

PART 3 - EXECUTION

3.01 PIPE INSTALLATION

- A. Layout out utilities as required in Section 01050 - Field Engineering. Prior to excavating trenches the Contractor shall field verify all existing inverts and inform the Landscape Architect of any discrepancies. Record these inverts on Record Drawings.
- B. The trench for the pipe shall be excavated to the required line and grade and be of sufficient width to permit thorough tamping of the fill material under the haunches and around the pipe. Soft or unsuitable material encountered below the normal bedding line of the pipe shall be removed as directed, replaced with selected material, gravel or crushed stone and thoroughly compacted. The bottom of the trench shall be shaped to conform to the curvature of the pipe. This bed shall also be excavated to accommodate the bells of pipes.
- C. The pipe shall be laid true to the specified lines and grades where shown on the Plans and as directed. The bell end shall be toward rising grade and each section of pipe shall have a firm bearing throughout its length. Material placed around

and under the pipe shall be free of stones larger than three (3) inches in diameter.

- D. No load greater than three (3) tons shall be moved over any pipe until a fully-compacted backfill of at least two (2) feet has been placed over the top of the pipe. This minimum will be increased to three and one-half (3-1/2) feet for a forty thousand (40,000) pound single wheel load and to four (4) feet for a sixty thousand (60,000) pound single wheel load. However, compliance with these requirements is not to be construed as relieving the Contractor of any responsibility concerning damage to the pipe.
- E. Bedding material for pipes shall conform to the requirements of Section 02200 - Earthwork and shall be placed between the pipe and the walls of the trench in layers not exceeding six (6) inches in depth and thoroughly compacted. Each layer, if dry, shall be moistened and then compacted by rolling or by tamping with mechanical rammers. Compaction with iron hand tampers having a tamping face not exceeding twenty-five (25) square inches in area may be allowed only after permission has been given by the Landscape Architect. Special care shall be taken to thoroughly compact the fill under the haunches of the pipe. This method of filling and compacting shall be continued until the material is level with the centerline of the pipe. The remainder of the filling shall consist of suitable backfill material, as defined in Section 02200 - Earthwork, placed in successive layers not more than six (6) inches in depth. Each layer shall be thoroughly compacted in accordance with AASHTO-T99 Standard Proctor Test.

3.02 DRAINAGE PIPE

- A. Any pipe showing settlement after laying or which is not in true alignment or is otherwise unsatisfactory before final acceptance of the work shall be taken up and replaced or relayed by the Contractor without additional compensation.

3.03 PERFORATED DRAIN PIPE TRENCH

- A. Following preparation of the subgrade place filter fabric as indicated on the Drawings.
 - 1. The fabric shall be placed across the trench at approximately right angles to its centerline.
 - 2. The fabric strips shall overlap by a minimum of 12 inches.
 - 3. Fabric shall be protected at all times during construction from contamination by eroded material. If contamination occurs, the fabric shall be removed and replaced with uncontaminated fabric.
 - 4. Any fabric damaged during the installation shall be replaced by the Contractor at no additional cost to the Owner.

5. After installation of the filter fabric the specified filter material shall be placed immediately.
- B. Place, level and compact a 6" bed of underdrain filter material, just prior to placement of underdrain piping.
- C. Place pipe with perforations down and install the pipe in accordance with paragraph 3.01 PIPE INSTALLATION and manufacturer's installation instructions. Lay pipe to the slope and invert elevations shown on the Drawings.
- D. After the pipe installation has been inspected by Engineer, underdrain filter shall be loosely placed around and over the pipe to such a depth that, after compaction, underdrain filter will extend to a level six inches above the underdrain pipe. Subsequent lifts of underdrain filter shall be no more than six inches thick prior to compaction and shall be compacted by two passes of a vibrating pad or drum type compactor.
- E. Place filter fabric over leveled top surface of underdrain filter and lap 12" minimum, prior to subsequent backfilling operations.
- F. Provide all coring, cutting and patching as required to install a fully functioning leaching drain trench ground water recharge system.

3.04 WATER REMOVAL

- A. If water is encountered during construction, provisions must be made to remove the water by sheeting and pumping as required, or laying the pipe with a crushed stone bed so that the laying of pipe and other work can be done under stable conditions, all in accordance with Section 2.04 of these Specifications.

END OF SECTION

SECTION 02728

DRAINAGE STRUCTURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.
- B. Examine and coordinate all Contract Drawings and other sections of the specifications for requirements which affect work of this section whether or not such work is specifically mentioned in this section. Coordinate work with other trades to assure the steady progress of all work under the Contract. The Contractor shall refer to the Contract Documents for all new work and coordinate how it relates to the installation of drainage and sewer pipe.

1.02 SCOPE OF WORK

- A. The work to be done under this Section shall include the installation of Catch Basin(s), Manhole(s), and installation of storm water recharge chambers as indicated on the Drawings and as specified. The Contractor shall provide all material, labor, tools, equipment and transportation to complete these items. Frames, grates/covers shall be new or reused based on the particular requirements of the project. Castings not reused shall be delivered to the Municipality's DPW or Highway Storage Yard as necessary.

1.03 RELATED WORK

- A. Section 02100 - Site Preparation and Demolition.
- B. Section 02200 - Earthwork.
- C. Section 02510 - Bituminous Concrete Paving: Infill for Sewer Manhole Cover
- D. Section 02725 - Drainage Pipe.
- E. Section 03300 - Cast-in-Place Concrete.

1.04 REFERENCE STANDARDS AND SPECIFICATIONS

- A. Reference to the standards, specifications and tests of technical societies, organizations and governmental bodies is made in the Contract Documents.
- B. AASHTO - American Association of State Highway and Transportation Officials (tests or specifications).

DRAINAGE STRUCTURES

- C. ASTM - American Society for Testing and Materials.
- D. MHD Standard Specifications: Mass. Standard Specs. - Standard Specifications for Highways, Bridges and Waterways, 1988 Edition, the Commonwealth of Massachusetts, Department of Public Works, including any and all Addenda.
- E. Commonwealth of Massachusetts, Department of Public Works, Construction Standards, 1977.
- F. Municipal Standard Specifications and Procedures, as applicable.
- G. OSHA Construction Regulations Title 29 CFR Part 1926.
- H. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

1.05 CODES, ORDINANCES AND PERMITS

- A. All work shall be performed in strict accordance with local and state codes and regulations.
- B. Site utilities work shall be done in strict accordance with the Commonwealth of Massachusetts State Plumbing Code, dated September 1976, and all revisions thereto.
- C. The Contractor shall secure all permits deemed necessary in connection with the installation of this equipment and pay fees required for same. He shall include the cost and back-charge of installing any portion of the work where performed by municipal departments or utility companies.

1.06 SUBMITTALS / SHOP DRAWINGS

- A. Shop drawings shall be submitted to the Engineer for all equipment. Six (6) copies shall be submitted and shall include cuts, scale drawings, installation details, manufacturer's specifications, certified performance characteristics and capacity ratings.
- B. No material or equipment may be purchased or installed prior to the submission and written approval of the shop drawings.
- C. Product Data: Provide data indicating, catch basins, frames and grates, etc.
- D. The Contractor shall provide shop drawings showing the layout, dimensions, configuration, and materials of the proposed stormwater recharge system.

PART 2 - MATERIALS

2.01 CLAY SEWER BRICKS (FOR ADJUSTING NEW FRAMES)

- A. Clay sewer brick shall conform to the requirements of AASHTO Designation M91 with the following exceptions:
- B.
 - 1. The size of brick furnished shall be 8" x 3-3/4" x 2-1/4" nominal dimensions.
 - 2. The average of the absorption of five (5) representative samples shall not exceed fifteen percent (15%) and the individual absorption of any one (1) sample shall not exceed seventeen and one-half percent (17-1/2%). The average compressive strength of five (5) representative samples shall not be less than three thousand (3,000) pounds per square inch and the compressive strength of any one sample shall not be less than two thousand five hundred (2,500) pounds per square inch.

2.02 CEMENT MORTAR (FOR ADJUSTING NEW FRAMES)

- A. Mortar shall be composed of one (1) part of Portland cement and two (2) parts of sand by volume with sufficient water to form a workable mixture. Cement, sand and water shall conform to the applicable provisions of Mass. Standard Specifications, M4.02.15.

2.03 CEMENT CONCRETE

- A. Material shall comply with Section 03300 of these Specifications.

2.04 PRECAST CONCRETE DRAINAGE STRUCTURES

- A. All precast concrete units shall conform to Section M4.02.14 of the Standard Specifications in all aspects, and to the City of Waltham Standard Details for Drainage Structures as applicable.
- B. Refer to the Details in the Contract Drawings.

2.05 CASTINGS

- A. Iron castings for Catch Basins & Manholes (frames, grates and covers) shall conform to MassHighway Construction Manual standard designs and to the requirements of AASHTO Designation M105, Class No. 30, Gray Iron Castings, unless otherwise specified. Test Bar B, 1.20 inches in diameter.
 - 1. Catch basin frame and grate casting(s) shall be 24" round grate conforming to ADA requirements.

2. Manhole Frames and Covers: Cover shall be of minimum weight of 150 pounds, solid cover, with water tight top flange, with a pick-hole, complying with the requirements of the City of Waltham Engineering Department.

2.06 FILTER FABRIC

- A. SUPAC 8NP by Phillips Fibers Corporation, AMOCO 4508, Trevira 1125, Mirafi 180N, or equal.

2.07 STORM WATER RECHARGE CHAMBERS

- B. Recharge units and accessories shall consist of high molecular weight/high density polyethylene material. The chambers and all accessories shall be suitable for AASHTO HS20-44 loading. The units shall be manufactured in accordance with AASHTO M-294. Joints and fittings shall conform to AASHTO M-252. Shop Drawings and Design Details shall be submitted to the Engineer for review.
- C. Stormwater Retention System Filter Aggregate (Bedding): Shall consist of crushed stone that is hard, durable stone, free from clay, loam, or deleterious material. The material shall consist of 1-1/2" stone. Gradation shall conform to Section M2.01.1 of the "Standard Specification".
- D. Provide clean-out structures as shown on the Drawings.

PART 3 - EXECUTION

- 3.01 Structures of various types and depths shall be constructed to the line and grades, dimensions and design shown on the plans and as directed with the necessary frames, gratings, covers, aluminum steps, etc., and in accordance with these Specifications after verification of inverts of utilities to remain.
- 3.02 The bricks and blocks (if required) shall be wetted as necessary before laying. All joints in brick masonry shall be thoroughly flushed full of mortar and no joints on the inside face shall be greater than one-quarter (1/4) inch. After the bricks and blocks are laid up, the outside of the structure shall be plastered with one-half (1/2) inch thick mortar coat.
- 3.03 Connections will be carefully made to all existing and proposed lines to the grades and elevations shown on the contract drawing.
- 3.04 All catch basins shall have a cast iron hinged metal hood trap installed over the outlet pipe or an oil trap outlet as detailed in the drawings. Use twelve (12) inch hoods, unless sizes equal to the specified pipe sizes are available.
- 3.05 Unless otherwise directed or specified, two (2) weep holes shall be built into the walls of all new structures. Each weep hole shall consist of a section of four (4) inch pipe or

equivalent opening to carry water through the wall of the structure. The outside end of the pipe or opening shall be covered with a one-quarter (1/4) inch mesh galvanized wire screen 23 gauge satisfactorily fastened against the wall. The drain to the weep hole shall be excavated and back-filled with two (2) cubic feet of broken rock or crushed stone. The crushed stone shall be placed against and over the end of the pipe or opening with a section of filter cloth to prevent the entrance of fine material. Only one (1) type of weep hole shall be used consistently throughout the project.

- 3.06 Suitable materials obtained from the excavation or from borrow shall be placed between the outside of the structure and the limits of the excavation, uniformly distributed in successive layers not exceeding six (6) inches in depth and thoroughly compacted by tamping with mechanical rammers or tampers. When required, the backfill material shall be moistened during the compacting. Compaction with iron hand tampers having a tamping face not exceeding twenty-five (25) square inches may be allowed, but only after permission has been given by the Engineer.
- 3.07 All materials removed in the excavation for catch basins, manholes, or storm water recharge units and remaining after the filling about the finished structure has been made shall be used wherever possible within the project or removed and satisfactorily disposed of outside of the project limits without additional compensation.
- 3.08 The embedded ends of the aluminum ladder steps shall be painted with zinc chromate or bitumastic, and allowed to completely dry before they are installed. Installation shall be as shown on the plans.
- 3.09 Frame castings for structures shall be set in full mortar beds true to the lines and grades as directed.
- 3.10 Where directed, the castings shall be temporarily set at such grades as to provide drainage during the construction.
- 3.11 In general, all methods for installation of the catch basin and manhole units, brick adjustments and mortaring, and installation of frames, grates and covers, shall conform to Section 201 of the "Standard Specifications".
- 3.12 Installation of Storm Water Recharge Units:
 - A. Form bottom of excavation clean and smooth to correct elevation.
 - B. Stormwater recharge chambers shall be installed as per manufacturers requirements and guidelines, and as shown on drawings.
 - C. Establish elevations and pipe inverts for inlets and outlets as indicated.

END OF SECTION

SECTION 02800

SITE IMPROVEMENTS

PART 1- GENERAL

1.01 GENERAL PROVISIONS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.

1.02 SCOPE OF WORK

- A. Work under this Section shall include all labor, materials, services, equipment, transportation and accessories and the performance of all operations necessary to complete the work of this Section, and as indicated on the Drawings and as specified.
- B. The work shall include, but is not limited to, the following:
 - 1. Installing bicycle racks supplied by Owner.

1.03 RELATED SECTIONS

- A. Section 02200 - Earthwork
- B. Section 02510 - Bituminous Concrete Paving
- C. Section 03300 - Cast-in-Place Concrete

1.01 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle metal fabrication items to prevent damage and deterioration. Store assembled items off the ground.

1.01 EXAMINATION OF SITE AND DOCUMENTS

- A. The Contractor shall inform him/herself of existing conditions of the site before submitting his/her bid and shall be fully responsible for carrying out all required site work to fully and properly execute the work of the Contract.

PART 2 - PRODUCTS

2.01 BICYCLE RACKS

SITE IMPROVEMENTS

02800-1

- A. Bicycle racks will be supplied by the Owner to be installed by the Contractor as shown on the Drawings and Details.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Bicycle racks shall be installed in a level, plumb condition, true to the lines and grades shown on plans.
- B. The Contractor shall be responsible for timing the delivery of items so as to minimize on-site storage time prior to installation and the Contractor shall handle site improvement materials and products in such a manner as to minimize any damage to the products' finish. Stored materials and items must be protected from weather, careless handling and vandalism. Suitable touch-up material shall be readily available to repair any damage immediately.
- C. Shim bolt connections as necessary and secure bolts. Exposed bolts shall be fastened with an approved semi-permanent adhesive to protect against vandalism.
- D. Field touch-up all abraded or scratched surfaces with manufacturers recommended paint and/or cold galvanizing materials.

3.02 CONCRETE FOOTINGS

- A. Cast-in-place concrete slabs for bicycle racks shall conform to the requirements of Section 03300 - Cast-in-place Concrete and shall be 4,000 psi minimum strength at 28 days.
- B. Compacted gravel backfill shall conform to the requirements of Section 02200 - Earthwork.

END OF SECTION

SECTION 02835

VEHICULAR ACCESS GATE

PART 1- GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.

1.02 SCOPE OF WORK

- A. Work under this Section shall include all labor, materials, services, equipment, transportation and accessories and the performance of all operations necessary to complete the work of this Section, as indicated on the Contract Drawings and/or as specified herein and includes.
- B. The work shall include, but is not limited to, the following:
 - 1. Painting and installation of steel gate furnished by Owner.
 - 2. Furnishing and installation of Post-mounted Lock Box

1.03 RELATED SECTIONS

- A. Section 02200 - Earthwork
- B. Section 02510 - Bituminous Concrete Paving
- C. Section 03300 - Cast-in-Place Concrete

1.04 SUBMITTALS

- A. Submit the following in accordance with the requirements of section 01300-SUBMITTALS:
 - 1. Manufacturer's information for Lock Box.
 - 2. Primer and finish paint for steel service gate.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle metal fabrication items to prevent damage and deterioration.
- B. Store assembled items off the ground.

VEHICULAR ACCESS GATE
02835-1

1.05 REFERENCE STANDARDS

- A. All work shall comply with the minimum standards of the latest editions of the following codes and specifications, subject to modifications and amendments outlined herein.
 - 1. American Institute of Steel Construction, (AISC).
 - 2. American Welding Society, (AWS)
 - 3. American Society for Testing and Materials, (ASTM).
 - 4. National Association of Architectural Metal Manufacturers, (NAAMM).

PART 2 - PRODUCTS

2.01 VEHICULAR ACCESS GATE

- A. Gate will be furnished by the Owner. Contractor shall be responsible for transporting gate to the site from the present storage location at Prospect Hill Park, City of Waltham.
- B. Primer for painting steel gate shall be Moore Acrylic Metal Primer M04, Sherwin-Williams DTM Primer Finish B66W1, P&L Tech-Gard Acrylic Metal Primer, Z190, or equal acrylic rust-inhibitive primer.
- C. Finish paint for steel gate shall be Moore Acrylic Gloss Enamel M28, Sherwin Williams DTM Acrylic Gloss Coating, B66 Series, P&L Accolade Exterior Gloss Enamel, Z4300 or equal exterior acrylic enamel.
- D. Key Security Lock Box shall be equal to 1650 Knox Residential Box supplied by the Knox Company, Irvine, CA and of type approved by the Waltham Fire Department.
 - 1. The Contractor will need to apply to Waltham Fire Prevention and complete an application in order to purchase the Knox Box.
 - 2. Lock Box shall be securely shop-welded to lock post of vehicular gate, facing swing post.

2.02 CONCRETE FOOTINGS

- A. Concrete for gate footings shall conform to the requirements of Section 03300 - Cast-in-Place concrete and shall be 4,000 psi minimum strength at 28 days.

VEHICULAR ACCESS GATE
02835-2

PART 3 - EXECUTION

3.01 CONCRETE FOOTINGS

- A. Form top 12" of footings and provide smooth finish to visible surface.

3.02 STEEL GATE

- A. Shop weld lock box to lock post prior to installation.
- B. Painting of gate and lockpost:
 - 1. Remove all rust to bare metal and sand edges of abraded or chipped paint.
 - 2. Prime all repaired spots and bare metal.
 - 3. Paint with one coats of specified finish paint.
- C. Install gate plumb, with swing arm level, and to layout dimensions shown on the Drawings.
- D. Touch-up abrasions with primer and finish paint.

END OF SECTION

SECTION 02845

GUARDRAILS - ADD ALTERNATE #2

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.
- B. Examine and coordinate all Contract Drawings and other sections of the specifications for requirements which affect work of this section whether or not such work is specifically mentioned in this section. Coordinate work with other trades to assure the steady progress of all work under the Contract.

1.02 SCOPE OF WORK

- A. Work under this Section includes furnishing and installing wood guardrail and steel guardrail in locations shown on the Drawings.

1.03 RELATED WORK

- A. Section 02100 - Site Preparation and Demolition
- B. Section 02200 - Earthwork

1.04 SUBMITTALS

- A. Submit manufacturer's product literature for wood guardrail and steel guardrail, demonstrating compliance with the Specifications.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be stored in a dry location, off the ground and in such manner as to prevent damage, intrusion of foreign matter and weather. All materials which have become damaged or otherwise unfit for use during delivery or storage shall be replaced at the expense of the Contractor.
- B. The Contractor shall be responsible for timing the delivery of items so as to minimize onsite storage time prior to installation. Stored materials and items must be protected from the weather, careless handling and vandalism.
- C. Contractor shall handle, pack and transport in a manner to minimize damage to the finish of materials. Upon arrival at the job site, it is the responsibility of the contractor to take equal precautions. Should minor damage occur to the finish the

GUARDRAILS

02845-1

contractor shall restore damaged finishes and test for proper function. Clean and protect work from further damage.

PART 2 - PRODUCTS

2.01 Wood Guardrail

- A. Wood guardrail shall be dimensioned as shown on the Drawings.
 - 1. Guardrail shall be constructed of solid pressure treated Southern Yellow Pine, planed to a smooth splinterless surface.
- B. All hardware shall be galvanized steel.

2.02 Steel Guardrail

- A. Steel guardrail materials shall conform to Section 601 Highway Guard of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install and fasten materials and systems in proper relation with adjacent construction and with uniform appearance. Items shall be installed in a level, plumb condition, true to the lines and grades shown on the Contract Drawings. Coordinate with work of other sections or trades.
- B. Align posts and rails in consistent alignment, plumb and true.
- C. Installation of steel guardrail shall conform to Section 601 Highway Guard of the Massachusetts Highway Department Standard Specifications for Highways and Bridges.

END OF SECTION

SECTION 02900

TREE PLANTING – ADD ALTERNATE #1

PART I - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 REQUIREMENTS INCLUDED

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Drawings and as specified, including but not limited to:
 - 1. Planting trees, including provision of backfill mix.
 - 2. Maintenance of tree plantings.
 - 3. One year guarantee period for trees.

1.03 REFERENCES

- A. The following standards shall apply to the work of this Section.
 - 1. MHD Standard Specifications: Massachusetts Highway Department Standard Specifications for Highways and Bridges, 1988 Edition.
 - 2. Hortus III, 1976, L. H. Bailey Hortatorium.
 - 3. American National Standards Institute (ANSI):
Z60.1 American Standard for Nursery Stock,, latest edition, published by American Association of Nurserymen, (AAN).

1.04 RELATED SECTIONS

- A. Section 02950 - Seeding

1.05 SUBMITTALS

- A. Submit representative samples, certifications, manufacturer's product data and certified test results for materials specified below. Materials shall not be ordered

or delivered until the required submittals have been reviewed and approved by the Owner's Representative. Delivered materials shall closely match the approved samples. Approval shall not constitute final acceptance. The Owner's Representative reserves the right to reject, on or after delivery, any material which does not meet these Specifications.

- B. Fertilizer: Submit product manufacturer's data for tree planting fertilizer.

1.06 EXAMINATION OF CONDITIONS

- A. Areas to be planted shall be inspected by the Contractor before starting work and any defects such as incorrect grading or inadequate drainage shall be reported to the Owner's Representative prior to beginning this work.
- B. Protection of plants is the full responsibility of the Contractor between the time of digging at the nursery and final acceptance.

1.07 QUALITY ASSURANCE

- C. The Contractor shall locate plant material sources and ensure that plants are shipped in timely fashion for installation. No substitutions are allowed without the written permission of the Landscape Architect.
- D. Qualification of Landscape Contractor: The work of this shall be performed by a landscape contracting firm which has successfully installed work of a similar quality, schedule requirement, and construction detailing with a minimum of five years of experience.

PART 2 - PRODUCTS

2.01 LOAM BORROW

- A. Loam borrow shall conform to the requirements of MHD Standard Specifications for Loam Borrow, M1.05.0.

2.02 FERTILIZER

- A. Commercial fertilizer shall be a product complying with the State and United States fertilizer laws. Deliver fertilizer to the site in the original unopened containers bearing the manufacturer's certificate of compliance covering analysis and which shall be furnished to the Owner's Representative. Fertilizer shall contain not less than the percentages of weight of ingredients as recommended by the soil analysis.

2.03 PLANT MATERIAL INSPECTION

- A. At least one month prior to the expected planting date, the Contractor shall request that the Owner's Representative provide a representative to select and tag stock to be planted under this Section 02900 - Planting.
- B. Plants to be inspected shall be in locations and conditions that allow direct and unobscured inspection by the Owner's Representative. Container grown or balled and burlapped shrubs shall be pulled from holding blocks by the nurseryman for scrutiny by the Owner's Representative at no additional cost to the Owner. Harvested trees held in storage shall not have branches tied up. Harvested trees shall not have trunks obscured by burlap, cardboard trunk protection, or other devices that would otherwise obscure inspection. In the event that branches are tied up, trunks are obscured by burlap or cardboard trunk protection, or root flares hidden by burlap and twine and the Owner's Representative cannot inspect root flares, trunks or branching habit, the Contractor shall bear all responsibility and costs associated with tree rejection at a later date during the course of the Contract.
- C. Inspection and approval of plants at the source shall not impair the right of subsequent inspection and rejection upon delivery to the site, or during the progress of the work if the Owner's Representative finds that plants do not meet the requirements of the Plant List or this Contract, have declined noticeably due to handling abuse, lack of maintenance, or other causes. Cost of replacements, as required, shall be borne by the Contractor.

2.04 GRADES AND STANDARDS OF PLANTS

- A. The Contractor shall furnish all plants shown on the Contract Documents, as specified, and in quantities listed on the Plant List. No substitutions will be permitted, without written approval by the Owner's Representative. All plants shall be nursery grown unless specifically authorized to be collected as noted on the Plant List.
- B. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. Only plant stock grown within Hardiness Zones 1 through 6b, as established by the USDA Plant Hardiness Zone Map, latest edition, will be accepted.
- C. Plants shall be in accordance with ASNI Standards of the American Association of Nurserymen except as noted in this Section - Planting. Botanical plant names shall be in accordance with plant designations included in Hortus III.
- D. All deciduous trees shall meet the following standards:
 - 1. Trees shall have a single, straight trunk, well formed, and sturdy. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety.

2. All pruning wounds shall show vigorous bark on all edges at the time of harvest. Pruning scars within the crown of any tree shall be clean cut and shall leave no protrusion beyond the branch collar.
3. Trees shall be free from signs of pest and disease damage. The trunk shall be free from sun scald, frost cracks, and wounds resulting from abrasions, fire, animal damage, or other causes.
4. All trees shall have healthy, vigorous leaves or needles of normal size, color, shape, and texture for the particular species and variety.
5. Unless otherwise indicated on the Plant List, the height and spread of deciduous shade trees shall be the minimum requirements.
6. Take caliper measurements for deciduous trees 6 inches above ground level up to and including 4 inches caliper size and 12 inches above ground for larger sizes.
7. No deciduous tree shall be pruned after the Owner's Representative has tagged the plant in the nursery except as directed by the Owner's Representative.
8. Unless otherwise noted on the Plant List, the height to the first branch shall be not less than 6.5 feet from finish grade to comply with ADA requirements.

2.05 ROOT SYSTEMS

- A. Each plant shall have an extensive, symmetrically balanced fibrous root system. Any root ball which shows signs of asymmetry, girdling, injury, or damage to the root system shall be rejected. All parts of the fibrous root system of all plants shall be moist and fresh with a white color when washed of soil. When the plant is removed from the container, the visible root mass shall be healthy with white root tips. The root systems of all plants shall be free of disease, insect pests, eggs, or larvae.
- B. Minimum root ball diameters and depths shall be in accordance with ANSI standards.
- C. No plants shall be loose in the container.
- D. Curling or spiraling of the roots along the walls of rigid containers will not be accepted. Curling, spiraling or girdling roots within balled and burlapped material will not be accepted. Container grown plants which have roots growing out of the container will be rejected.

2.06 MYCORRHIZAL FUNGAL INOCULANT

- A. Mycorrhizal fungal inoculant shall be live spores packaged in plastic packets. At minimum each packet of inoculant shall contain the following:
 - 1. Live spores of VA Endomycorrhizal fungi: Vesicular-Arbuscular mycorrhizae fungi, minimum of 8 species.
 - 2. Live spores of Ectomycorrhizal fungi: including *Pisolithus tinctorius*.
- B. Mycorrhizal fungal inoculant shall be manufactured by Plant Health Care Incorporated, 440 William Pitt Way, Pittsburgh, PA 15238, telephone, (800) 421-9051; Horticultural Alliance, 2946 Louise Street, Sarasota, FL 34237, (800) 628-6373; BioPlex Organics, 2213 Huber Drive, Manheim, PA 17545 (800) 441-3573, or approved equal.

2.07 PLANTING BACKFILL MIX

- A. Planting soil mix shall be an approved loam borrow.

2.10 MULCH

- A. Mulch shall be aged pine-bark mulch meeting the Specifications of the MHD Standard specifications for Aged Pine Bark Mulch, M6.04.5.

2.11 WATER

- A. The Contractor shall provide labor and water required to establish plants. During the maintenance period the Contractor shall water as required to insure that soil moisture is maintained to a depth of six inches or greater at all times.
 - 1. Watering shall be done in a manner that will provide uniform coverage, prevent erosion due to application of excessive quantities over small areas, and prevent damage to the finished surface by the watering equipment. The Contractor shall furnish sufficient watering equipment to maintain required water levels in the soil.

PART 3- EXECUTION

3.01 PLANTING SCHEDULE

- A. Seasons for Planting:
 - 1. Deciduous Plants - March 15 to May 15; October 10 to December 15
 - 2. Evergreen Plants - September 1 to November 15; March 15 to May 1

- B. Notify the Owner's Representative three working days prior to the proposed arrival of plant material on the site. Plants delivered to the site and not planted within 24 hours of delivery shall have their root balls covered with mulch and shall be watered on a daily basis such that root balls are kept moist throughout.

3.02 PLANTING OF TREES

- A. Contractor shall locate all existing underground utilities that are within 10 feet of the proposed planting pits and notify the Owner's Representative of any conflicts prior to digging plant pits. Locations for trees shall be staked on the ground by the Contractor for approval by the Owner's Representative before any plant pits are dug. Notify the Owner's Representative no less than 3 days prior to requested date of inspection of staking to schedule site visit.
 - 1. Circular plant pits shall not be required provided that the minimum dimension between the edge of the pit and the face of the rootball is not less than required by this Section 02900 - Planting.
 - 2. All plant pits dug with a machine shall have the sides of the holes scraped with hand shovels to prevent glazing on compaction of the sides of the hole. Remove and stockpile excavated loam for reuse as backfill for plant pit. All subsoil excavated from the bottoms of planting pits shall be removed from the site.
 - 3. Plant pits shall be dug to the dimensions shown on the Contract Documents.
 - 4. Remove all soil from around the root flare of the stem of the plant and from the top of the rootball to determine the true depth of the rootball. Plants that have been planted such that root flares are buried will be rejected.
 - 5. Plant rootballs must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation, and at the site until the final planting.
 - 6. Trees shall be placed in the center of plant pits, plumb, with the crown of their roots exposed and located above the surrounding finish grade.
 - 7. Prior to completion of planting installations, remove rope and cut wire baskets from the top 1/3 of the root balls. Pull burlap away from the trunk or stem of the plant and cut burlap from the top 1/3 of the root balls.
 - 8. Planting soil shall be backfilled with approved planting soil to the full depth of the planting pit. Eliminate air pockets and compact the soil by flooding the tree pit within 2 hours of planting installation. After water

has drained from the planting pit and planting backfill has dried enough additional planting soil shall be spread in pit or bed to bring the finished surface of the planting pit or bed to grades shown on the Contract Documents. A saucer shall be formed around each plant at a depth of 3 inches for trees.

9. All trees shall be inoculated with mycorrhizal fungi. Inoculant shall be added after the trees have been placed in their holes. Open the required number of packets for each plant and thoroughly mix the inoculant powder into the upper 10 inches (250 mm) of backfill soil.
 - a. The application rates for mycorrhizal fungal packets shall be in accordance with the manufacturer's recommendations.

- B. Contractor shall keep trees plumb and upright at all times.
- C. In the event that rock or underground construction work or obstructions are encountered in any plant pit or bed excavation work, alternate locations will be selected by the Owner's Representative. Relocation of plant pits or beds shall be provided at no additional cost to the Owner.
- D. Absolutely no debris may be left on the site. Repair any damage to site as directed by the Owner's Representative, at no additional cost.

3.03 WATERING

- A. Plants shall be watered immediately following planting as necessary to thoroughly moisten rootball and plant pit loam and thereafter shall be inspected frequently for watering needs and watered, as required, to provide adequate moisture in the planting pit. The Contractor shall inspect tree pits 24 hours after initial watering to confirm that they are draining properly. If surface water or excessively saturated plant pit soils exist the Contractor shall immediately notify the Owner's Representative. The Owner's Representative will recommend remedial measures based upon site conditions.

3.04 MAINTENANCE

- A. Maintenance shall begin immediately after each plant is planted and shall continue for a minimum 30-day period, and afterwards as necessary to ensure establishment through the one-year guarantee period.
- B. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include but is not limited to watering, weeding, cultivating, pruning, re-mulching, tightening and repairing of guys, straightening of trees to a plumb position, removal of dead material, resetting plants to proper grades or upright position, and maintaining the planting saucer.

1. Plants shall be inspected for watering needs at least twice each week and watered to promote plant growth and vitality.
 2. For trees in lawn or mulched beds, apply water to the ground surface directly under the canopy. Water shall be applied at a sufficiently slow rate to prevent run off from the soil surface but great enough to equal 0.2 inches of water per square foot of canopy area per hour for 5 hours per week.
 3. 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.
 4. Plants that die during the maintenance period shall be removed and replaced by the Contractor during that growing season, unless directed otherwise by the Owner's Representative.
 5. Spraying of insecticides or herbicides shall be done by State-licensed professionals. Spraying for insects, pests and diseases shall conform to the National Arborist Association Standards under the section entitled "Standards for Pesticide Application Operations", as currently adopted and as approved by the Landscape Architect. All insecticides, pesticides, and herbicides shall be EPA-approved and shall conform to the requirements MCRG: Massachusetts Control Recommendation Guide for Insect, Disease, and Weed Pests of Shade Trees and Woody Ornamentals, latest edition, University of Massachusetts, Amherst, College of Food and Natural Resources.
- C. 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.

3.03 ACCEPTANCE

- A. Upon completion of all planting work, the Contractor shall request in writing that the Owner's Representative inspect the planting work.
- B. Acceptance Standards: If plant material is reviewed when it is in full leaf, leaves shall be plump with water with a shape indicative of the species and shall be free of insect, pest and disease damage. Twigs shall have living cambium for their full length. Twigs and branches shall have a full bud set for their full length, including terminal buds. Trunks and branches shall be free of frost cracks; sun scald; damage due to insects, pests, and disease; structural defects; and damage resulting from machinery or tools. Plant material inspected and reviewed when the plants are not in full leaf shall have twigs, branches and trunks meeting the

above requirements. All plants regardless of the season of review shall have a minimum of 75 percent healthy, balanced branching structure with a healthy terminal leader(s) with viable terminal bud(s).

- C. If any number of plants do not meet these Acceptance Standards at the time of inspection, or if in the opinion of the Owner's Representative workmanship is unacceptable, written notice will be given by the Owner's Representative to the Contractor in the form of a punch list which itemizes necessary planting replacements and/or other deficiencies to be remedied. All plants that do not meet these Acceptance Standards shall be removed from the project within seven days of receipt of the punch list. Replacements shall conform in all respects to the Specifications for new plants and shall be planted in the same manner.

3.04 GUARANTEE

- A. Trees shall be guaranteed for one year from the date of Substantial Completion of the entire project.
- B. At the end of the guarantee period, a final inspection will be held to determine whether any replacements are required. Each plant shall be plumb, shall have a character that is natural for its species as determined by the Owners Representative, and shall conform to the Acceptance Standards described in this Section 02900 - Planting. Plants found to be unacceptable shall be removed promptly from the site and replaced according to this Section 02900 - Planting. Replacements plants shall be guaranteed for an additional year.
- C. All replacements shall be plants of the same kind and size specified in the Plant List. The cost shall be borne by the Contractor, except for replacements due to vandalism.

END OF SECTION

SECTION 02950

SEEDING

PART I - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SCOPE OF WORK

- A. Restoration of disturbed lawn and grass areas and installation of new lawn and grass areas as indicated on the Drawings.
- B. The work of this Section consists of seeding work and related items as indicated on the Drawings including but not limited to:
 - 1. Loaming and Seeding of all areas disturbed by construction that are not otherwise scheduled for surfacing.
 - 2. At the end of seeding operations, remove and dispose of any excess stockpiled topsoil.

1.03 RELATED WORK UNDER OTHER SECTIONS

- A. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. Section 02100 - Site Preparation
 - 2. Section 02200 - Earthwork
 - 3. Section 02900 - Planting

1.04 REFERENCES

- A. The following standards shall apply to the work of this Section.
 - 1. MHD Standard Specifications: Massachusetts Highway Department Standard Specifications for Highways and Bridges, 1988 Edition.

1.05 SUBMITTALS

- A. Submit seed vendor's certification for grass seed mixtures, indicating percentage by weight, and percentages of purity, percent germination, PLS, and weed seed for each grass species.

1.06 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentages of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver seed mixes in original unopened containers, showing weight, analysis and name of manufacturer or supplier. Store in a manner to prevent wetting and deterioration.

PART 2 - PRODUCTS

2.01 LOAM BORROW

- A. Loam borrow shall be on-site topsoil, re-spread from topsoil stockpiled as required by Section 02100 - Site Preparation.

2.02 SEED

- A. Seed shall be fresh, clean, new crop seed mixture.

2.03 SEED MIXTURE

- A. Seed mixture shall be Mass Highway Standard Mix for Grass Plots and Islands

Slope & Shoulder Mix	Proportion	Germination Minimum	Purity Minimum
Creeping Red Fescue	50%	85%	95%
Kentucky Blue	25%	85%	90%
Domestic Rye	10%	90%	98%
Red Top	10%	85%	92%
Ladino Clover	5%	85%	96%

Seeding dates: May 1 to June 15; August 15 to October 15.

Seeding rate: 5 lbs/1000 s.f.

2.04 WATERING

- A. Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured due to lack of water or the use of too much water shall be the Contractor's responsibility to correct.

2.05 FERTILIZER

- A. Fertilizer shall be 10:20:10.

2.06 WOOD CELLULOSE FIBER FOR HYDROSEEDING

- A. Mulch for hydroseeding shall be wood fiber only.

PART 3 - EXECUTION

3.01 PLACING OF LOAM

- A. Soil preparation shall occur only when the soil is in a friable condition, not muddy or hard. Place topsoil only during dry weather and on dry unfrozen subgrade.
- B. Prior to spreading loam, verify that subgrade has been compacted to 85% maximum dry density as required under Section 02200 - Earthwork.
- C. Spread loam over areas to be seeded. Distribute existing stock-piled loam evenly over areas to be seeded. Rake smooth and grade to eliminate rough, low or soft areas, and to ensure positive drainage.
- D. After raking smooth apply soil amendments to adjust pH if recommended by the soils analysis. Mix thoroughly to incorporate into the upper four (4) inches of loam.
- E. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

3.02 COMPACTION OF LOAM

- A. Loam shall be rolled and compacted to between 85% and 88% of dry maximum density as determined by ASTM D-1156 or ASTM D-1557.

- B. Following the spreading of loam, equipment used on grass areas shall be restricted to turf care type equipment that will not compact the topsoil to a greater density than that specified. If topsoil appears to be compacted to densities greater than that specified, the Contractor will be required to have density tests performed at no additional cost to the Owner. Areas where over-compaction has occurred shall be roto-tilled and fine graded.

3.03 SEEDING

- A. Seeding shall occur only when the soil is in a friable condition, not muddy or hard. Do not seed when ground is wet or water is visible. The Contractor shall notify the Landscape Architect of the presence of high groundwater before proceeding with seeding.
- B. Bare soil shall be seeded within 3 days of excavation or placement. If loam is placed outside of the dates allowed for the grass mixes, then bare loam shall be shall be dormant seeded with annual winter rye.
- C. Bare soils shall be raked to remove large still clods, lumps, brush, roots, stumps, litter and other foreign matter. All depressions caused by settlement or rolling shall be filled with additional loam or compost and the soil shall be re-graded and rolled until presenting a firm, smooth and even finish corresponding to the required grades. No tracking or rolling shall be done on wet soil.

3.04 HYDROSEEDING

- A. Hydroseeding is an acceptable method of seeding. Hydroseeding shall be per the Massachusetts Highway Department 1995 Standard Specifications for Highway and Bridges Section 765.65, and manufacturer's and seed supplier's directions.

3.05 BROADCAST SEEDING

- A. Seed may be broadcast using a cyclone or whirlwind seeder or by hand. If spread by hand, small or light-seeded species such as bluestem may be mixed with filler (sawdust, rice, kitty litter, or clean washed sand) to achieve an even distribution. Seed shall be applied in two directions, each perpendicular to one another. One-half the seeding rate shall be applied in each direction. Seed shall be incorporated 1/8" to 1/4" deep by raking or dragging, cultipacking, or tracking with heavy machinery. Raked areas shall be rolled with a weighted roller to provide good seed to soil contact. Do not roll or track the seed if the soil is wet.
- B. Upon completion of broadcast seeding and packing, or within 24 hours, straw mulch or dry pelletized mulch shall be hand broadcast uniformly over the entire planting area. Straw mulch shall be free of weed seeds and shall be applied at a uniform rate of 1500 lbs/acre.

3.08 INSPECTION AND ACCEPTANCE

- A. A satisfactory stand of grass is required for acceptance. Seeded areas shall have a uniform stand of grasses with at least 60% permanent species, with a uniform count of at least 100 plants per square foot. .
- B. All areas and parts of areas which fail to show a uniform stand of grass as described above, for any reason whatsoever, shall be re-seeded.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1- GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.

1.02 SCOPE OF WORK

- A. Work under this Section shall include all labor, materials, services, equipment, transportation and accessories and the performance of all operations necessary to complete the work of this Section, as indicated on the Drawings and as specified.
- B. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes. The work shall include, but is not necessarily limited to, the following:
 - 1. Slabs for attachment of bicycle racks
 - 2. Footings
 - 3. Concrete curb ramp with cast in place detectable warning panel. See Section 09614 – Detectable Warning Panels.

1.03 RELATED WORK

- A. Section 02200 - Earthwork
- B. Section 02800 – Site Furnishings
- C. Section 09614 – Detectable Warning Panels

1.04 SUBMITTALS

- A. Submit concrete mix design

:

1.05 REFERENCE STANDARDS

- A. All work shall comply with the minimum standards of the latest editions of the following codes and specifications, subject to modifications and amendments outlined herein.
 - 1. American Concrete Institute (ACI): ACI 305 & 306 Hot Weather Concreting/ACI 306 Cold Weather Concreting.

2. Standard Specifications: Commonwealth of Massachusetts, Department of Public Works, Standard Specifications for Highways and Bridges, latest edition, Construction and Materials Specifications for Concrete.
3. 2010 ADA Standards for Accessible Design (ADAAG).
4. MAAB Access Board regulations.

1.06 PROJECT CONDITIONS

- A. Establish and maintain required lines, surfaces, and elevations.
- B. Do not install concrete work over wet, saturated, muddy, or frozen subgrade.
- C. Do not install concrete when air temperature is below 40 degrees F.
- D. Calcium chloride, salt, or any other admixture to prevent concrete from freezing is prohibited.

PART 2 - PRODUCTS:

2.01 BASE COURSES

- A. Base material shall be aggregate base as specified under Section 02200, Earthwork.

2.02 CONCRETE MIX

- A. Provide ASTM C94 ready-mixed concrete. Batch mixing at site is not acceptable. Use ACI 301 Method 1 or Method 2 to determine mix proportions.
- B. Concrete mix shall conform to the following City of Waltham standards as follows with addition of fiber reinforcing for sidewalks, slabs, and curb ramps:
 1. 7% (\pm 1-1/2%) air-entrained cement concrete
 2. 4,000 psi at 28 days
 3. 3/4" maximum stone
 4. Concrete Reinforcement Fibers: Provide polypropylene fibrillated fibers of multi-design ASTM C1116C/116M, Section 4.1.3 Type III. Fibers must be made of 100% virgin polypropylene fibrillated fibers of multi-design gradation as manufactured by Fibermesh, Synthetic Industries, 4019 Industry Drive, Chattanooga, Tennessee 37416; Masterfiber M70 by BASF, or an approved equal. Polypropylene reinforcement fibers shall be added at the rate of 1.0 lb/cubic yard of concrete.
- C. Concrete slump shall be no less than 2" nor greater than 4" determined in accordance with ASTM C143.

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- D. Concrete shall contain a water reducing agent to minimize the water cement ratio of the mix, at the specified slump.
- E. No calcium chloride or admixtures containing calcium chloride shall be added to the concrete. No admixtures other than those specified shall be used in the concrete without the specific written permission of the Landscape Architect.
- F. No concrete shall be placed by pumping methods.

2.03 CEMENT

- A. Cement shall be Portland Cement conforming to ASTM C150, Type II, Dark Color.

2.04 ADMIXTURES

- A. Except as otherwise specified, use of concrete admixtures shall conform to ACI 212.
- B. Air entraining agent shall conform to ASTM C260.
- C. Water reducing agent shall conform to ASTM C494, Type A.
- D. Water reducing agent-retarder shall conform to ASTM C494, Type D.

2.05 WATER - Water shall conform to ASTM C94.

2.06 EXPANSION JOINT FILLER shall be a pre-formed non-extruding and resilient bituminous type conforming to M.03.05.3 of the Mass Highway Standard Specifications.

PART 3 – EXECUTION

3.01 FORMS

- A. Slabs shall be formed. Top of footings shall be formed.

3.02 GRADING

- A. Make any corrections necessary to base course material furnished and installed under SECTION 02200, Earthwork, to bring base material to the sections and elevations shown on the Contract Drawings.
- B. Existing subgrade material which will not readily compact as required shall be removed and replaced with satisfactory materials. Additional materials needed to bring subgrade to required line and grade and to replace unsuitable material shall

be material conforming to Section 02200 Earthwork.

3.03 CONCRETE PLACEMENT

- A. Concrete shall be thoroughly spaded, and tamped, and vibrated to secure a solid homogenous mass, thoroughly worked around reinforcement and into corners of forms.

3.04 INSTALLATION OF DETECTABLE WARNING PANELS

- A. Install panels into fresh concrete. Refer to Section 09614 - DETECTABLE WARNING PANELS for installation instructions.

3.04 FINISH

- A. Slabs and curb ramps shall have a broom finish perpendicular to the direction of travel. Exposed tops of footings shall have a smooth troweled finish.

3.05 CLEAN-UP

- A. At the completion of the work of this section, all rubbish, debris, waste materials from, and about the site, including tools, scaffolds, apparatus and appliances used in connection with work under this Section shall be legally disposed of and the premises shall be left in a clean condition.

END OF SECTION

SECTION 09614

DETECTABLE WARNING PANELS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.

1.02 SCOPE OF WORK

- A. Provide all equipment and materials, and do all work necessary to furnish and install Cast In Place Detectable Warning Panels as indicated on the Drawings and as specified.

1.03 RELATED WORK

- A. Section 02700 - Granite Curbing.
- B. Section 03300 - Cast-in-Place Concrete.

1.04 REFERENCE STANDARDS AND SPECIFICATIONS

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
- B. Detectable warning surface panels shall comply with detectable warnings on walking surfaces section of the American with Disabilities Act Section 705.1 of the 2010 ADA Standards for Accessible Design (ADAAG).
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM C-543 Chemical Resistance
 - 2. ASTM D-1501 Simulated Sunlight
 - 3. ASTM D-756 Procedure "E" Accelerated Service Test
 - 4. ASTM D-570 Water Absorption

1.05 SUBMITTALS

- A. Product Data: Submit manufacture's literature describing products, installation procedures and maintenance.

DETECTABLE WARNING PANELS

- B. Samples: Submit a sample of the panel proposed to be used.

1.06 QUALITY ASSURANCE

- A. Provide Cast-in-Place Detectable Warning Panels and accessories as produced by a single manufacturer with a minimum of three (3) years experience in the manufacturing of Cast-in-Place Detectable Warning Panels.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Cast-in-Place Detectable Warning Panels shall be suitably packaged or crated to prevent damage in shipment or handling..

1.08 PROJECT CONDITIONS

- A. Cold Weather Protection: Maintain minimum temperature of 40°F in areas to receive Cast-in-Place Detectable Warning Panels for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.

1.09 GUARANTEE

- A. Cast-in-Place Detectable Warning Panels shall be guaranteed in writing for a period of five (5) years from date of final completion. The guarantee includes defective work, breakage, deformation, fading, and loosening of panels.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. The Polymer concrete Cast-in-Place Detectable Warning Panel specified is based on Armorcast Products Company (818-982-3600) or approved equal.
- B. Color: Brick Red conforming to Federal Color No. 22144. Color shall be homogeneous throughout the panel.

2.02 DETECTABLE WARNING PANELS

- A. Polymer concrete cast-in-place Detectable Warning Panels shall be manufactured using polymer concrete material. Polymer material shall consist of calcareous and siliceous stone, glass fibers, and thermo set polyester resin.
- B. Detectable Warning Panels shall be manufactured using matched die molds under heat and pressure for superior material compaction, controlling curing and uniform dimension. Panels shall conform to the following dimensions: 24"width x 60" depth x ½" thickness.

DETECTABLE WARNING PANELS

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- C. Polymer concrete Detectable Warning Panels shall be reinforced with fiberglass mats.
- D. Polymer concrete Detectable Warning Panels shall have ½" minimum material thickness excluding truncated dome height or reinforcement ribs.
- E. Polymer concrete Detectable Warning Panels shall be fitted with Zinc alloy concrete anchors and stainless steel bolts.
- F. Polymer concrete Detectable Warning Panels shall be coated to keep the panel surface clean during installation. The coating shall be removed after installation.
- G. Polymer concrete Detectable Warning Panels shall be fitted with hot dipped galvanized angles for installation in wet concrete.
- H. Polymer concrete Detectable Warning Panels shall be field replaceable without cutting existing concrete or pouring new concrete.
- I. Slip resistance of Polymer concrete Detectable Warning Panels when tested in accordance with ASTM C-1028 shall not be less than 0.80.
- J. Chemical resistance of Polymer concrete Detectable Warning Panels when tested in accordance with ASTM C-543 to withstand without any degradation or discoloration: 1% Hydrochloric Acid, Acetic Acid, Sulfuric Acid, Sodium Chloride, Sodium Hydroxide, Sodium Sulfate, Sodium Carbonate, Kerosene and Oil.
- K. Polymer concrete Detectable Warning Panels when tested in accordance with ASTM D-635 shall not sustain burning and be self extinguishing.
- L. Polymer concrete Detectable Warning Panels when tested in accordance with ASTM G-21 shall not promote fungus growth.
- M. Polymer concrete Detectable Warning Panel material surface flammability when tested in accordance with ASTM E-162 shall be less than 25.
- N. Polymer concrete Detectable Warning Panel smoke density when tested in accordance with ASTM E-662-03 shall be less than 0.5 at 1.5 minutes and less than 15 at 4 minutes.

2.03 MECHANICAL PROPERTIES

- A. The polymer concrete material shall meet the following for mechanical properties:

Test Method	Mechanical Properties	Average Value
ASTM C-170-99	Compressive Strength	11,430 PSI
ASTM C-580-02	Flexural Strength	3,330 PSI
ASTM C-307-99	Tensile Strength	1,710 PSI
ASTM C-372-02	Shear Strength	11,670 PSI
ASTM C-580	Modulus of Elasticity	1,776,400 PSI

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Concrete shall be placed and finished true to line and grade and smooth to the required dimensions and gradient as indicated in the Drawings and as specified in Section 03300, Cast-in-Place Concrete.
- B. Immediately after finishing concrete, an electronic level shall be used to verify that gradient and slope of finished concrete does not exceed maximum slope and gradient as indicated in the Drawings. No concrete shall be removed in the area to accept the panel.
- C. Detectable Warning Panels shall be tamped (or vibrated) into the fresh concrete to ensure that the level of the panel is flush to the adjacent concrete surface. The embedment process shall not be accomplished by stepping on the panel as this may cause uneven setting which can result in air voids under the panel surface. The base of the truncated domes shall be set flush to the adjacent surface to permit proper drainage and eliminate tripping hazards between adjacent finishes.
- D. Immediately after panel placement, the panel elevation shall be checked to be flush with adjacent concrete. The elevation and slope shall be set as indicated in the Drawings. Ensure that the surface of the panel is flush with the surrounding concrete. Finish concrete around the panel's perimeter with a steel trowel.
- E. Following the concrete curing stage, protective plastic wrap is to be removed from the panel surface by cutting the plastic wrap with a sharp knife tight to the concrete / panel interface.

3.02 CLEANING, PROTECTION AND MAINTENANCE

- A. Protect panels against damage during construction period in compliance with manufacturer's specifications.
- B. Protect panels against damage from rolling loads following installation by

covering with plywood or hardwood.

- C. Clean panels not more than four days prior to date scheduled for inspection intended to establish date of substantial completion.
- D. Comply with manufacturer's maintenance instructions for cleaning and maintaining panel surface.

END OF SECTION

SECTION 10430

SIGNS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.

1.02 REQUIREMENTS INCLUDED

- A. Provide all equipment and materials, and do all work necessary to complete the installation of exterior signs as indicated on the Drawings and as specified.
- B. The work of this Section includes, but is not limited to:
 - 1. Furnishing and installing traffic regulatory and warning signs.
 - 2. Furnishing and installing one (1) bronze plaque with text.
 - 4. For traffic management signs during construction refer to Section 01500 - Temporary Facilities.

1.03 RELATED SECTIONS

- A. Section 01500 - Temporary Facilities
- B. Section 03300 - Cast-in-Place Concrete

1.04 REFERENCE STANDARDS

- A. Manual of Uniform Traffic Control Devices (MUTCD), latest edition.
- B. Massachusetts Highway Department Standard Specifications for Highways and Bridges, latest edition.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for the products of this Section. Provide complete product description and specifications, catalog cuts, and other descriptive data indicated compliance with the Specifications.

1.06 DELIVERY, STORAGE, AND HANDLING

- B. Deliver materials and products unopened. Store and handle in strict compliance

with manufacturer's instructions and recommendations. Store under cover and protect from weather damage.

PART 2 – PRODUCTS

2.01 ALUMINUM SIGNS

- A. General: Provide manufacturer's standard extrusions, sections, sheet, and plate, of alloy and temper recommended by aluminum manufacturer or finisher for type, use, and finish indicated, but not less than strength and durability properties specified below:
 - 1. Structural Aluminum Shapes: ASTM B 308, 6061 alloy.
 - 2. Extruded Aluminum Bars, Rods, Shapes, and Tubes: ASTM B 221, 6063 alloy.
 - 3. Aluminum Sheet and Plate: ASTTv1 B 209, alloy 1100, 3003, or 5052.
- B. Reflectivity: Aluminum signs shall have high performance Type III reflective sheeting conforming to M9.30.0 of the Massachusetts Highway Department Standard Specifications.
- C. Aluminum signs shall be .080 thick flat.
- D. Sign supports shall be heavy duty high tensile steel break-away 2 lbs/foot U-channels.
- E. All fastening hardware shall be galvanized.

2.02 BRONZE PLAQUE

- A. Provide bronze casting, copper alloy UNS C83600, complying with the requirements of ASTM B584.
 - 1. Casting shall be free from pits, scale, sand holes, or other defects. Comply with the requirements specified for metal, border style, background, texture, and finish and with requirements shown for finish, size, shape, and copy.
 - 2. Border style: Single Line
 - 3. Background Finish: Baked Enamel Dark Brown
 - 4. Font Finish: Satin Polished
 - 5. Font: Helvetica Bold
 - 6. Provide Clear Organic Coating for all surfaces: Air-dried acrylic coating

equal to Inralac as developed by International Copper Research Corporation, 1.0-mil minimum dry thickness.

- B. Bronze plaque shall be the dimensioned as shown on the drawings. Text shall be as shown on the Drawings. Final text is subject to change by the Owner.

2.03 MISCELLANEOUS MATERIALS

- A. Fasteners: Unless otherwise indicated, use concealed fasteners in all work of this Section. Fabricate fasteners from metals that are non-corrosive to sign surface materials and mounting substrates.

1. Fasteners shall be roundhead or countersunk, and tamperproof.
2. Spacers and washers shall be neoprene.

PART 3 - EXECUTION

3.01 GENERAL

- A. Locate sign units and accessories where shown and scheduled. Use mounting methods indicated.
- B. Erect work square, plumb and true, accurately fitted, and with tight joints and intersections.
- C. Install Stop signs in accordance with the Massachusetts Highway Department Standard Specifications for Highways and Bridges, Section 828, Traffic Signs.

3.02 SIGN INSTALLATION

- A. General Installation Requirements: Strictly comply with manufacturer's instructions and recommendations, except where more restrictive requirements are specified in this section.
- B. Installation: Install units plumb, level, in alignment and plane without warp or rack. Anchor securely in place.
- C. Install signs on breakaway post as detailed in the Drawings.
- D. Touch-up damaged coatings and finishes.

3.03 PLAQUE INSTALLATION

- A. Install plaque as shown on the Drawings.

- B. Edge of plaque shall be flush with adjacent paving with 1/16" lippage maximum.

3.04 TOLERANCES

- C. The following allowable installed tolerances are allowable variations from locations and dimensions indicated by the Contract Documents. Do not add these tolerances to any allowable tolerances indicated for other work.

1. Allowable Variation from True Plumb: $\pm 1/8$ in. in 10 ft. - 0 in.
2. Allowable Variation from True Line: $\pm 1/8$ in. in 10 ft. - 0 in.
3. Allowable Variation from True Level: $\pm 1/16$ in. in 10 ft. - 0 in.

END OF SECTION

SECTION 16100

LIGHT FOUNDATIONS AND ELECTRICAL ACCESSORIES

ADD ALTERNATE #3

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. All of the Contract Documents, including the Contract Form, General Provisions, General Conditions, Supplemental Conditions, and all Attachments to the General Provisions, and Division 1 - General Requirements, apply to the work of this Section.
- B. Examine and coordinate all Contract Drawings and other sections of the specifications for requirements which affect work of this section whether or not such work is specifically mentioned in this section. Coordinate work with other trades to assure the steady progress of all work under the Contract. The Contractor shall refer to the Contract Documents for all new work and coordinate how it relates to electric service improvements.
- C. The Contractor shall furnish a complete finished product, which meets all applicable codes and standards, and the intent and specific requirements of the Drawings and specifications for this project. It is the intent of these specifications that the electrical system shall be suitable in every way for the service (and use) required. All materials and all work, which may be reasonably implied as being incidental to the work of this Section, shall be furnished at no extra cost to the Owner.
- D. As used in this Section, “*provide*” means “furnish and install”, “*furnish*” means “to purchase and deliver to the project site complete with every necessary appurtenance and support”, and “*install*” means “to unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project”.
- E. Perform work and provide (furnish and install) material and equipment as shown on Drawings and as specified, or indicated, in this Section of the specifications. Completely coordinate work of this Section with work of other trades and provide a complete and fully functional installation. Drawings and specifications form complimentary requirements; provide work specified and not shown, and work shown and not specified as though explicitly required by both. Although work is not specifically shown or specified, provide supplementary or miscellaneous items, appurtenances, devices and materials obviously necessary for a sound, secure and complete installation.
- F. Remove all debris caused by Contractors’ work.

- G. Provide demolition and relocation of existing electrical items as shown on the drawings.

1.02 SCOPE OF WORK

- A. Under this Section, the Contractor shall furnish all labor, materials, equipment and transportation necessary to install the following:
 - 1. Light pole foundations as detailed on the Drawings.
 - 2. Electrical conduit as detailed on the Drawings..
 - 3. Pullbox at each lightpole foundation
 - 4. Ground rod at each light pole foundation.
- B. The Contractor is required to apply and obtain all permits required for this work. The City of Waltham will waive all fees associated with these applications.

1.03 COORDINATION

- A. Coordinate all work with representatives of the City of Waltham Wiring Department Electrical Inspector and City of Waltham School Department as required and applicable at no additional cost to the Owner.
- B. The Contractor shall be responsible for arranging inspection of conduit or any other inspection required by the City or the Utility companies involved. Contact Person: Tim Kelly, City of Waltham Wiring Department (781-314-3175).

1.04 REFERENCES

- A. The following standards and definitions are applicable to the work of this Section to the extent referenced herein:

ANSI/NEMA FB 1 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

ANSI/NFPA 70 National Electrical Code, with state amendments where applicable.

NECA "Standard of Installation."

NEMA RN 1 Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

NEMA TC 2 Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).

NEMA TC 3 PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.05 STANDARDS AND REQUIREMENTS

- A. All electrical equipment required under this section shall comply with the latest requirements and standards of the National Electric Code, Federal Specifications, the National Electrical Manufacturer's Association, the Underwriters Laboratories, Inc., the ASTM, ANSI, and the American Institute of Electrical Engineers.

1.06 SUBMITTALS

- A. Submit manufacturer's specifications and samples for all materials to be furnished under this Section including:
 - 1. Conduits
 - 2. Pullboxes
 - 3. Grounding

1.07 INSPECTIONS AND FEES

- A. Obtain all necessary permits and licenses, and pay all fees for permits and inspections. Permit fees are the responsibility of the Contractor as part of his bid.

PART 2 - MATERIALS

2.01 GOVERNING SPECIFICATIONS FOR ALL MATERIALS

- A. Unless stipulated otherwise, all materials shall be furnished in accordance with the State and Local Building Codes and the requirements of NSTAR.

2.02 CONDUIT AND WIRES

- A. Conduit shall be as required and meet all Federal, State and Local electric codes. Conduit shall be gray heavy wall rigid plastic conduit of homogenous polyvinyl chloride construction with standard wall thickness, or rigid steel conduit with standard wall thickness. Conduit shall conform to the NEMA Standards Publication TC-2 for Schedule 40 type EPC Conduit.
- B. All conduit shall comply with ASTM D1784 and all solvent cements shall comply with ASTM D2564.

2.03 PULLBOXES

- A. Pullboxes shall be in accordance with the City of Waltham Wiring Department and as otherwise designated on the contract drawings.

- 1. Boxes: NEMA ICS 6, NEMA Type 3R for outdoor or wet location use.
 - 2. Box sizes shall not be less than that required by the Massachusetts Electrical Code.

2.04 LIGHT POLE FOUNDATIONS

- A. Light foundations shall be as detailed on the Drawings and shall conform to ` Specifications Section 03300 Cast-In-Place Concrete.
- B. Concrete shall be 4,000 psi at 28 days.

PART 3 - EXECUTION

3.01 ELECTRIC SERVICE INSTALLATIONS

- A. Install all equipment required under this Section in accordance with all requirements of the City of Waltham Wiring Department, all governing codes, and as applicable, in accordance with all the requirements of NSTAR.

3.02 INSPECTIONS

- A. The Contractor shall contact the City (refer to paragraph 1.03 B) to arrange for inspection of conduit, grounding and pull boxes, prior to filling around light pole foundations.

END OF SECTION

Construction Bid Documents

METROPOLITAN STATE PARKING LOT

METROPOLITAN PARKWAY WALTHAM, MASSACHUSETTS 02453

MAYOR JEANNETTE A. McCARTHY
CITY OF WALTHAM

CITY OF WALTHAM PLANNING DEPARTMENT
119 SCHOOL STREET
WALTHAM, MASSACHUSETTS 02451

CATHERINE CAGLE - DIRECTOR WALTHAM PLANNING DEPARTMENT
SANDRA J. TOMASELLO - DIRECTOR WALTHAM RECREATION DEPARTMENT

AUGUST 2, 2013

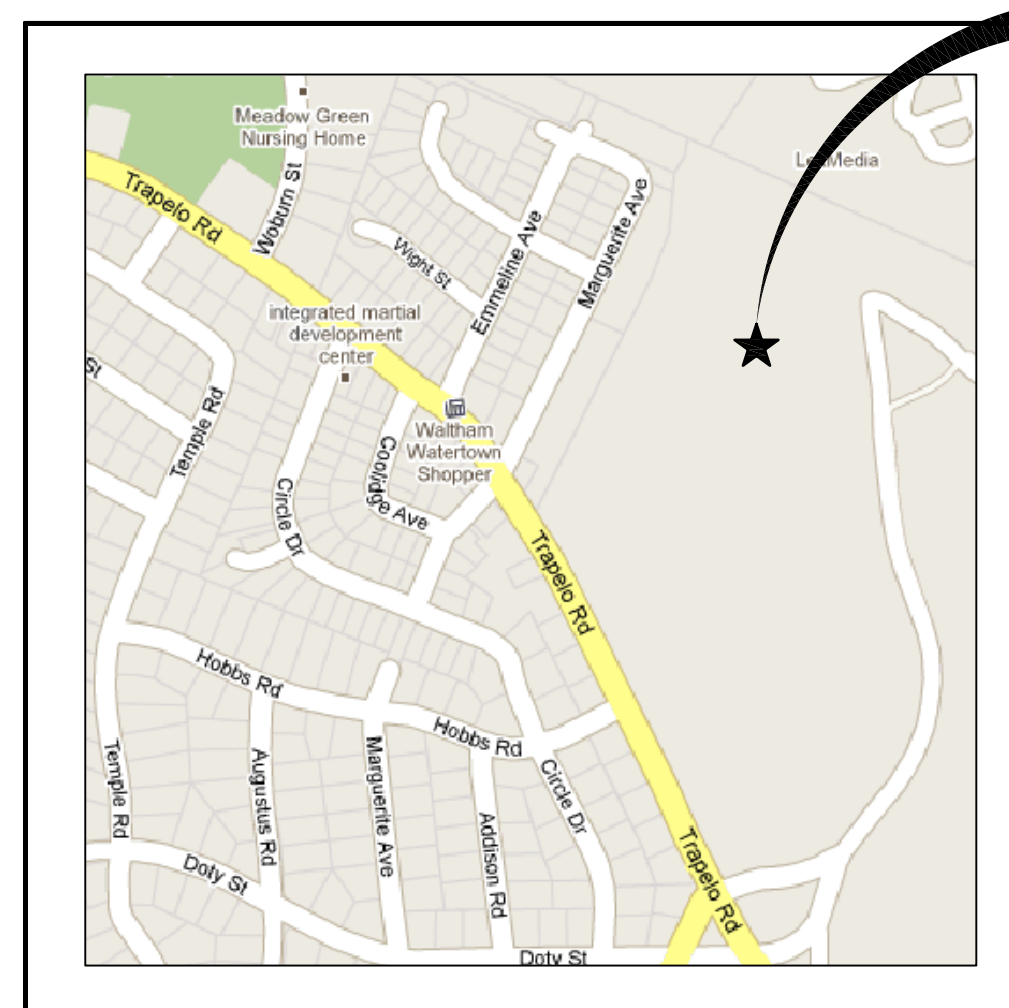
LANDSCAPE ARCHITECT:
CAROLYN COONEY & ASSOCIATES

13 ELM STREET
MILFORD, MASSACHUSETTS 01757
TEL: (508) 478-8426 FAX: (508) 478-8607

CIVIL ENGINEER:
SITE ENGINEERING CONSULTANTS, INC.

55 GRAPE SHOT ROAD
SHARON, MASSACHUSETTS 02067
TEL: (781) 784-0326 FAX: (781) 784-0492

Locus Plan

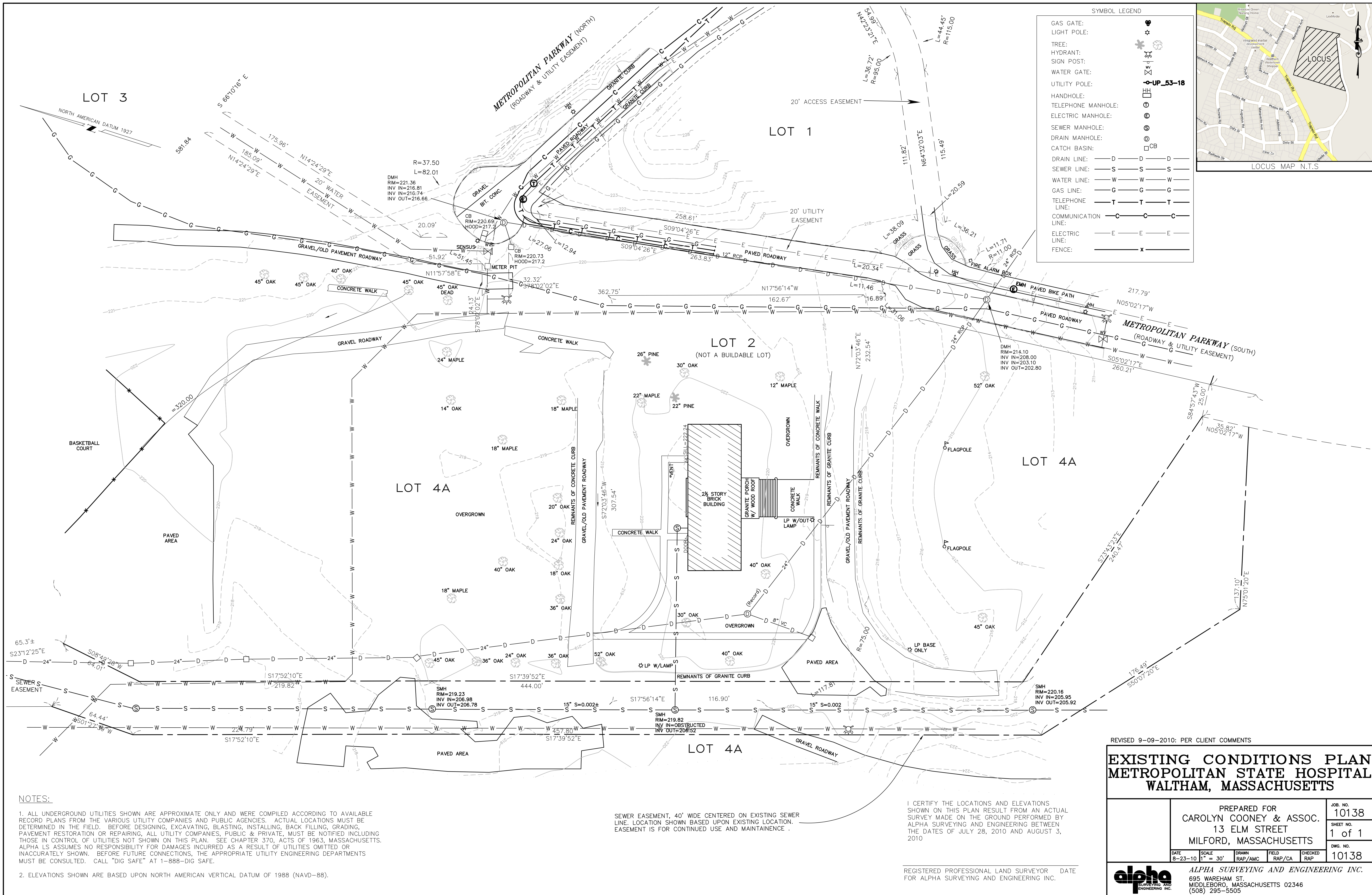


PROJECT SITE

FUNDED BY:
THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND
ENVIRONMENTAL AFFAIRS
PARC GRANT FUND

Index of Drawings

1 OF 1	EXISTING CONDITIONS PLAN
TMP.1	TRAFFIC MANAGEMENT PLAN
TMP.2	TRAFFIC SIGNAGE & STRIPING PLAN
L.1	SITE PREP & DEMOLITION PLAN
L.2	MATERIALS PLAN
L.3	LAYOUT PLAN
L.4	GRADING AND DRAINAGE PLAN
L.5	PLANTING PLAN
L.6	DETAILS
L.7	DETAILS
L.8	DETAILS
L.9	DETAILS
L.10	DETAILS
L.11	DETAILS



NOTES:

1. ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND WERE COMPILED ACCORDING TO AVAILABLE RECORD PLANS FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD. BEFORE DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACK FILLING, GRADING, PAVEMENT RESTORATION OR REPAIRING, ALL UTILITY COMPANIES, PUBLIC & PRIVATE, MUST BE NOTIFIED INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN. SEE CHAPTER 370, ACTS OF 1963, MASSACHUSETTS. ALPHA LS ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. BEFORE FUTURE CONNECTIONS, THE APPROPRIATE UTILITY ENGINEERING DEPARTMENTS MUST BE CONSULTED. CALL "DIG SAFE" AT 1-888-DIG SAFE.

2. ELEVATIONS SHOWN ARE BASED UPON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD-88).

SEWER EASEMENT, 40' WIDE CENTERED ON EXISTING SEWER LINE. LOCATION SHOWN BASED UPON EXISTING LOCATION. EASEMENT IS FOR CONTINUED USE AND MAINTENANCE.

I CERTIFY THE LOCATIONS AND ELEVATIONS SHOWN ON THIS PLAN RESULT FROM AN ACTUAL SURVEY MADE ON THE GROUND PERFORMED BY ALPHA SURVEYING AND ENGINEERING BETWEEN THE DATES OF JULY 28, 2010 AND AUGUST 3, 2010

REGISTERED PROFESSIONAL LAND SURVEYOR DATE FOR ALPHA SURVEYING AND ENGINEERING INC.

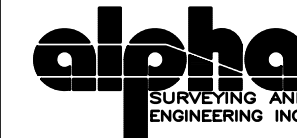
REVISED 9-09-2010: PER CLIENT COMMENTS

EXISTING CONDITIONS PLAN
METROPOLITAN STATE HOSPITAL
WALTHAM, MASSACHUSETTS

PREPARED FOR
CAROLYN COONEY & ASSOC.
13 ELM STREET
MILFORD, MASSACHUSETTS

JOB. NO.
10138
SHEET NO.
1 of 1
DWG. NO.
10138

DATE 8-23-10 SCALE 1" = 30' DRAWN RAP/AMC FIELD RAP/CA CHECKED RAP



ALPHA SURVEYING AND ENGINEERING INC.
695 WAREHAM ST.
MIDDLEBORO, MASSACHUSETTS 02346
(508) 293-5505



R3-1



R3-2



R3-27



R11-2

SEE PLAN FOR SPECIFIC TEXT



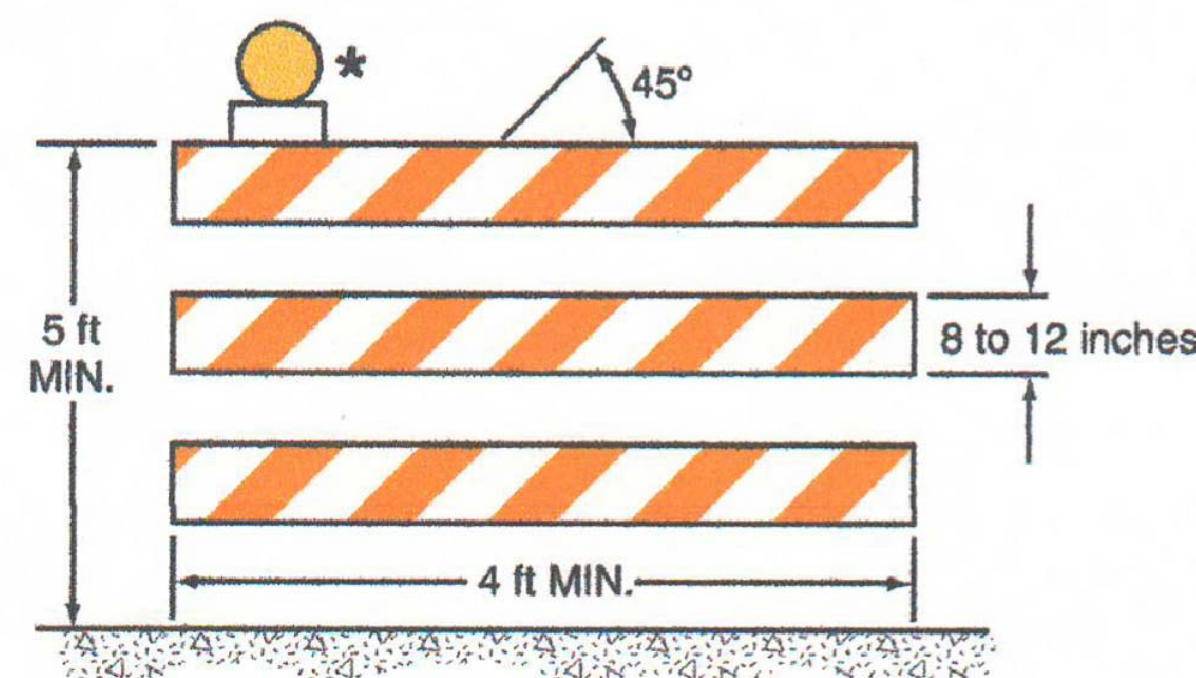
R11-4

SEE PLAN FOR SPECIFIC TEXT AND COLOR



W20-3**

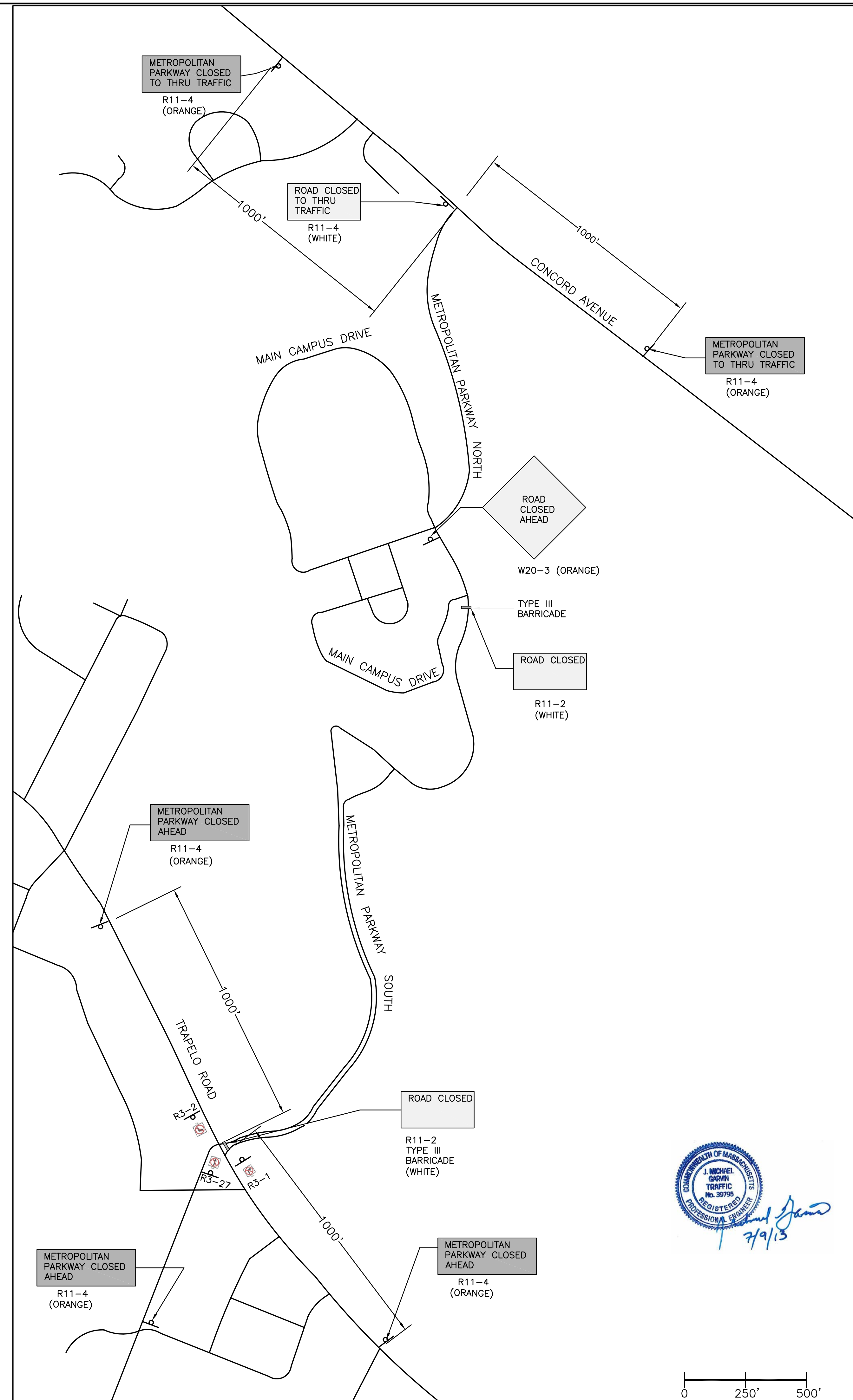
SEE PLAN FOR SPECIFIC TEXT



TYPE 3 BARRICADE **

* Warning lights (optional)

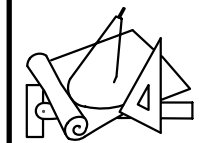
** Rail stripe widths shall be 6 inches, except that 4-inch wide stripes may be used if rail lengths are less than 36 inches. The sides of barricades facing traffic shall have retroreflective rail faces.



Carolyn Cooney & Associates, Inc.

Landscape Architecture / Planning

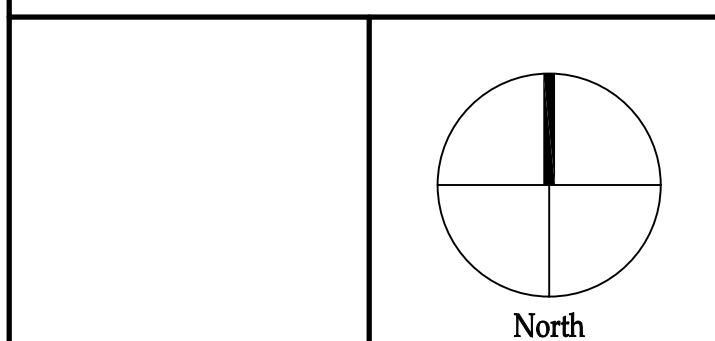
13 Elm Street, Millis, MA 01957
Telephone 508 478 8426, Facsimile 508 478 8607



55 Grape Shot Road
Sharon, Massachusetts 02067
TEL: (781) 784-0326
FAX: (781) 784-0492
CONSULTING CIVIL ENGINEERS

No.	Description	Date
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REVISIONS



METROPOLITAN STATE
PARKING LOT
CONSTRUCTION
TRAPELO ROAD
WALTHAM, MA 02453

WALTHAM PLANNING
DEPARTMENT
119 SCHOOL STREET
WALTHAM, MA 02451

TITLE:

TRAFFIC MANAGEMENT
PLAN

Scale 1"=250' Date AUG 2, 2013
Drawn By DRB
Checked By CCC
Approved By CCC
Project No. 1004.00

DWG No.

TMP.1

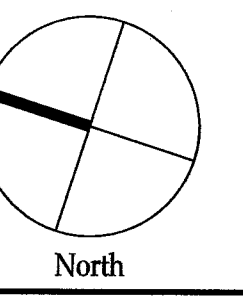
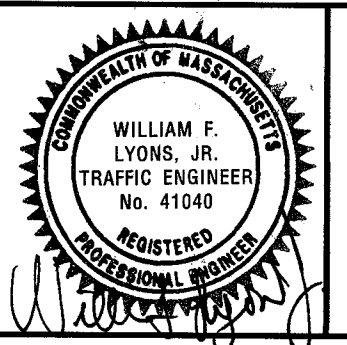
Carolyn Cooney & Associates

Landscape Architecture / Planning
13 Elm Street, Milford, MA 01757
Telephone 508 478 8426, Facsimile 508 478 8607

Site Engineering Consultants, Inc.
55 Grape Shot Road
Sharon, Massachusetts 02067
TEL: (781) 784-0326
FAX: (781) 784-0492
CONSULTING CIVIL ENGINEERS

No.	Description	Date
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REVISIONS



Project:

**METROPOLITAN STATE
PARKING LOT
CONSTRUCTION
TRAPELO ROAD
WALTHAM, MA 02453**

Prepared For:

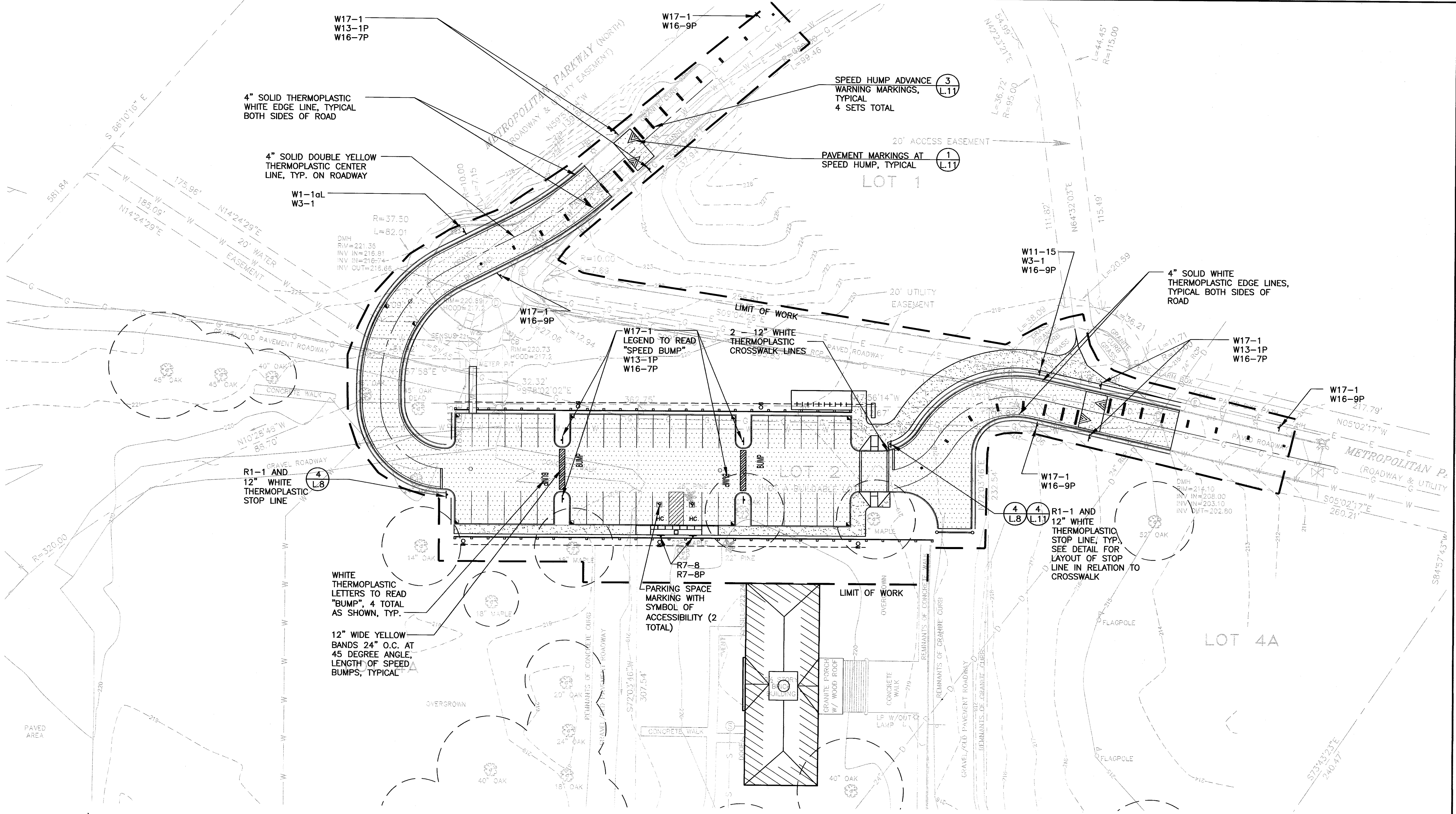
**WALTHAM PLANNING
DEPARTMENT
119 SCHOOL STREET
WALTHAM, MA 02451**

TITLE:

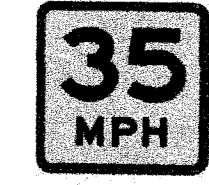
**TRAFFIC SIGNAGE &
STRIPING PLAN**

Scale 1"=30' Date AUG 2, 2013
Drawn By DRB
Checked By CCC
Approved By CCC
Project No. 1004.00

DWG No. **TMP.2**



W1-1aL
LEGEND: "10"
36" X 36"
1 TOTAL



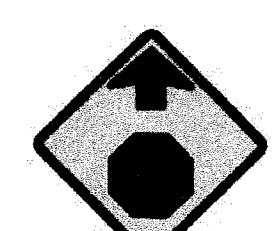
W13-1P
LEGEND: "15" AT SPEED HUMP
"5" AT SPEED BUMP
18" X 18"
8 TOTAL



W17-1
LEGEND: "SPEED BUMP" (4)
"SPEED HUMP" (8)
10 TOTAL



R1-1
30" X 30"
2 TOTAL



W3-1
30" X 30"
2 TOTAL



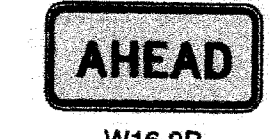
W16-7P
24" X 12"
8 TOTAL



R7-8
12" X 18"
2 TOTAL



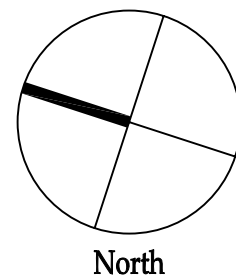
W11-15
30" X 30"
1 TOTAL



W16-9P
24" X 12"
5 TOTAL



R7-8P
18" X 9"
2 TOTAL



**METROPOLITAN STATE
PARKING LOT
CONSTRUCTION
TRAPELO ROAD
WALTHAM, MA 02453**

**WALTHAM PLANNING
DEPARTMENT
119 SCHOOL STREET
WALTHAM, MA 02451**

SITE PREP & DEMOLITION PLAN

DWG No.

46



2. DEVIATIONS: THE CONTRACTOR SHALL REPORT ALL DEVIATIONS IN THE EXISTING CONDITIONS TO THE LANDSCAPE ARCHITECT (508) 478-8426, PRIOR TO STARTING WORK.

3. SAW CUT LIMIT OF DEMOLITION AT ALL BITUMINOUS AND CEMENT CONCRETE PAVING FOR CLEAN EDGE. PAVEMENT TO BE REMOVED SHALL BE DISPOSED OF LEGALLY AT AN APPROPRIATE OFF-SITE LOCATION.

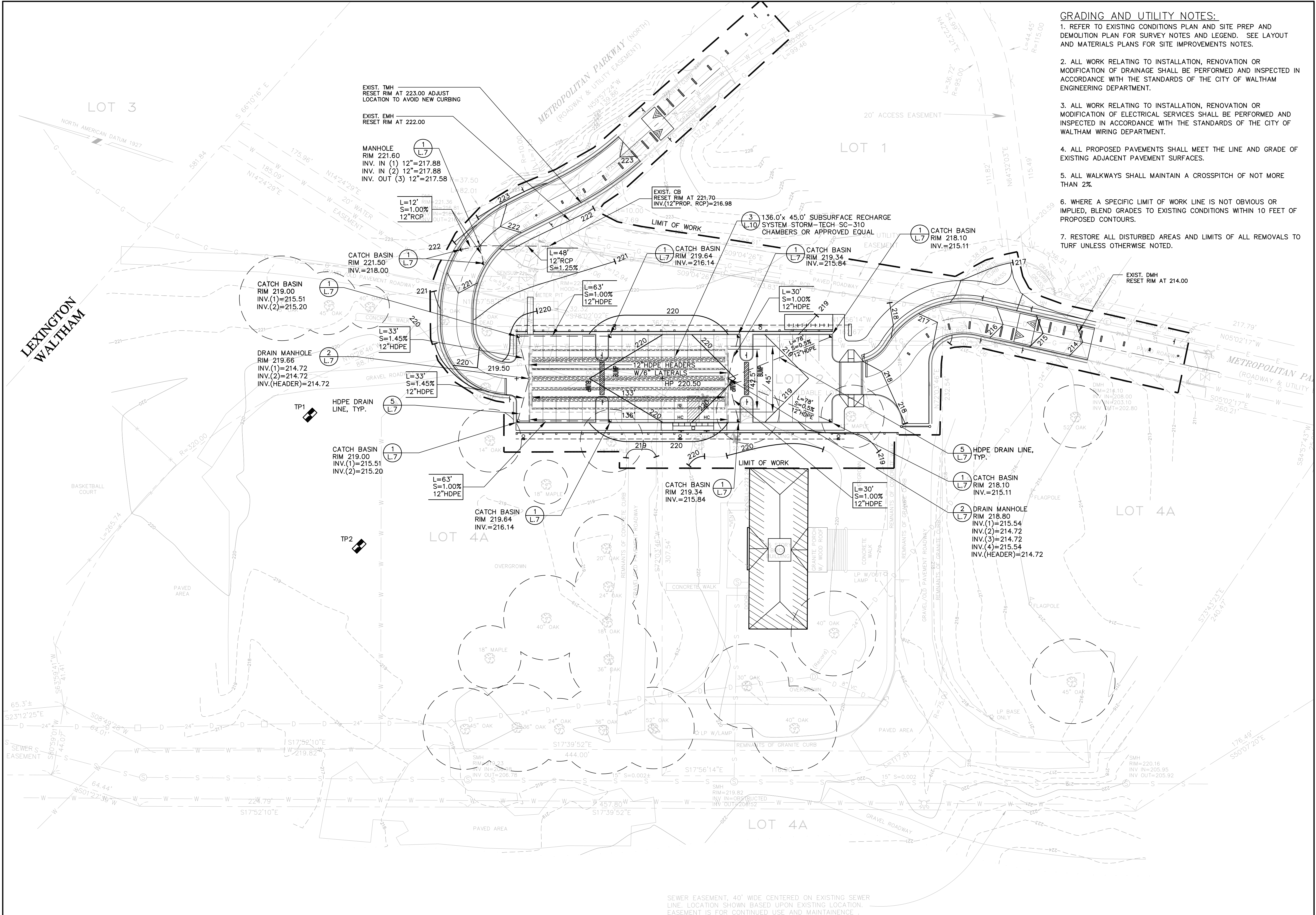
4. UTILITIES: UTILITY LOCATIONS HAVE BEEN TAKEN FROM EXISTING CONDITIONS DRAWINGS AS AVAILABLE. LOCATION AND DEPTH OF UTILITIES ARE APPROXIMATE. NO GUARANTEE IS EXPRESSED OR IMPLIED THAT UTILITY LINES ARE AT THE LOCATIONS OR DEPTH SHOWN, OR THAT THE DRAWINGS INDICATE ALL UTILITIES WHICH MAY EXIST. PRIOR TO ALL EXCAVATION, CONFIRM IN WRITING TO LANDSCAPE ARCHITECT AND CITY, THAT YOU HAVE CONTACTED: (1) "DIG SAFE" (888-344-7233) TO MARK LOCATION OF RECORDED UTILITIES, AND (2) THE CITY ENGINEERING DEPARTMENT FOR SITE INFORMATION. CONTRACTOR SHALL PROVIDE "DIG SAFE" NUMBER INDICATING THAT ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED BOTH ON AND OFF PROJECT SITE.

5. DEMOLITION SHALL INCLUDE REMOVAL OF ALL EXISTING FEATURES NECESSARY FOR THE CONSTRUCTION OF NEW WORK. NO GUARANTEE IS EXPRESSED OR IMPLIED THAT THESE DEMOLITION PLANS DESCRIBE ALL THE MATERIALS, LIMITS, EXTENT, QUANTITY OR DEPTH OF MATERIAL WHICH MUST BE REMOVED OR PROTECTED. CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT PRIOR TO REMOVAL OF ANY TREE, SHRUB, OR STRUCTURE NOT SPECIFICALLY NOTED TO BE REMOVED ON THE PLANS. FINES WILL BE IMPOSED FOR UNAUTHORIZED REMOVAL OF TREES AND SHRUBS.

6. SPRAY PAINT: DO NOT LEAVE PAINT CANS UNATTENDED AT ANY TIME. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP AND REMOVAL OF ALL GRAFFITI RESULTING FROM UNATTENDED OR CARELESSLY DISCARDED PAINT OR OTHER MATERIAL.

7. THE CONTRACTOR SHALL PROTECT ALL ABUTTING PROPERTIES AND EXISTING SITE ELEMENTS TO REMAIN. ANY DAMAGE INCURRED SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY OF WALTHAM.

5. ALL PROPOSED PAVEMENTS SHALL MEET THE LINE AND GRADE OF EXISTING ADJACENT PAVEMENT SURFACES.



GRADING AND UTILITY NOTES:

1. REFER TO EXISTING CONDITIONS PLAN AND SITE PREP AND DEMOLITION PLAN FOR SURVEY NOTES AND LEGEND. SEE LAYOUT AND MATERIALS PLANS FOR SITE IMPROVEMENTS NOTES.
2. ALL WORK RELATING TO INSTALLATION, RENOVATION OR MODIFICATION OF DRAINAGE SHALL BE PERFORMED AND INSPECTED IN ACCORDANCE WITH THE STANDARDS OF THE CITY OF WALTHAM ENGINEERING DEPARTMENT.
3. ALL WORK RELATING TO INSTALLATION, RENOVATION OR MODIFICATION OF ELECTRICAL SERVICES SHALL BE PERFORMED AND INSPECTED IN ACCORDANCE WITH THE STANDARDS OF THE CITY OF WALTHAM WIRING DEPARTMENT.
4. ALL PROPOSED PAVEMENTS SHALL MEET THE LINE AND GRADE OF EXISTING ADJACENT PAVEMENT SURFACES.
5. ALL WALKWAYS SHALL MAINTAIN A CROSSPITCH OF NOT MORE THAN 2%.
6. WHERE A SPECIFIC LIMIT OF WORK LINE IS NOT OBVIOUS OR IMPLIED, BLEND GRADES TO EXISTING CONDITIONS WITHIN 10 FEET OF PROPOSED CONTOURS.
7. RESTORE ALL DISTURBED AREAS AND LIMITS OF ALL REMOVALS TO TURF UNLESS OTHERWISE NOTED.

Carolyn Cooney & Associates

Landscape Architecture / Planning
13 Elm Street, Milford, MA 01757
Telephone 508 478 8426, Facsimile 508 478 8607

Site Engineering Consultants, Inc.
55 Grape Shot Road
Sharon, Massachusetts 02067
TEL: (781) 784-0326
FAX: (781) 784-0492
CONSULTING CIVIL ENGINEERS



No.	Description	Date

REVISIONS

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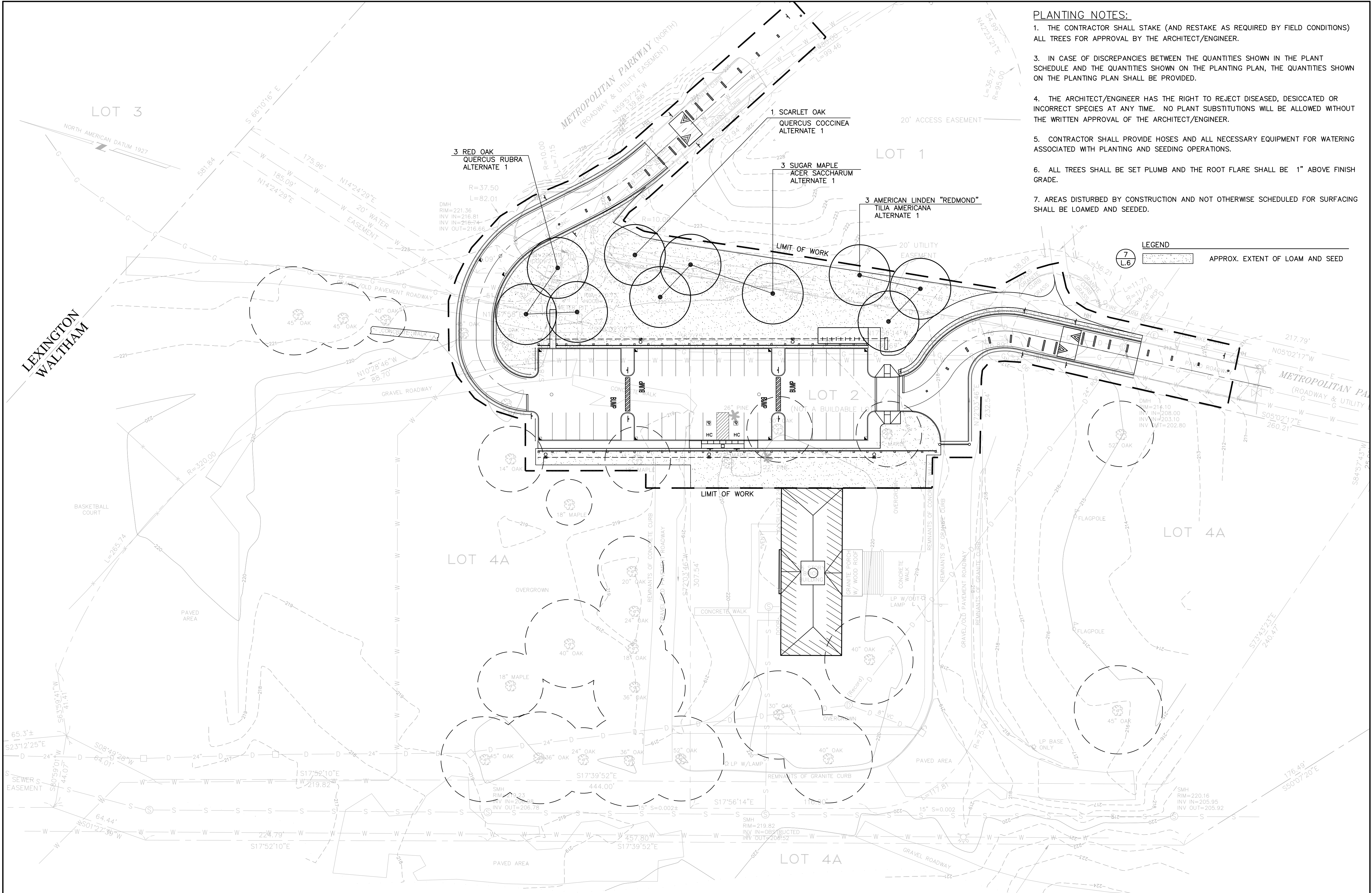
Project:
**METROPOLITAN STATE
PARKING LOT
CONSTRUCTION
TRAPELO ROAD
WALTHAM, MA 02453**

Prepared For:
**WALTHAM PLANNING
DEPARTMENT
119 SCHOOL STREET
WALTHAM, MA 02451**

TITLE:
**GRADING AND
DRAINAGE PLAN**

Scale 1"=30' Date AUG 2, 2013
Drawn By DRB
Checked By CCC
Approved By CCC
Project No. 1004.00

DWG No. **L.4**



- PLANTING NOTES:**
1. THE CONTRACTOR SHALL STAKE (AND RESTAKE AS REQUIRED BY FIELD CONDITIONS) ALL TREES FOR APPROVAL BY THE ARCHITECT/ENGINEER.
 2. THE CONTRACTOR SHALL STAKE (AND RESTAKE AS REQUIRED BY FIELD CONDITIONS) ALL TREES FOR APPROVAL BY THE ARCHITECT/ENGINEER.
 3. IN CASE OF DISCREPANCIES BETWEEN THE QUANTITIES SHOWN IN THE PLANT SCHEDULE AND THE QUANTITIES SHOWN ON THE PLANTING PLAN, THE QUANTITIES SHOWN ON THE PLANTING PLAN SHALL BE PROVIDED.
 4. THE ARCHITECT/ENGINEER HAS THE RIGHT TO REJECT DISEASED, DESICCATED OR INCORRECT SPECIES AT ANY TIME. NO PLANT SUBSTITUTIONS WILL BE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER.
 5. CONTRACTOR SHALL PROVIDE HOSES AND ALL NECESSARY EQUIPMENT FOR WATERING ASSOCIATED WITH PLANTING AND SEEDING OPERATIONS.
 6. ALL TREES SHALL BE SET PLUMB AND THE ROOT FLARE SHALL BE 1" ABOVE FINISH GRADE.
 7. AREAS DISTURBED BY CONSTRUCTION AND NOT OTHERWISE SCHEDULED FOR SURFACING SHALL BE LOAMED AND SEED.

LEGEND

7 L&B

APPROX. EXTENT OF LOAM AND SEED

PLANT SCHEDULE					
SCIENTIFIC NAME	COMMON NAME	SIZE	QUANTITY	SPACING	COMMENTS
TREES					
Acer saccharum	Sugar Maple	2-1/2"-3" CAL	3	See Plan for Location	B&B
Quercus coccinea	Scarlet Oak	2-1/2"-3" CAL	1	See Plan for Location	B&B
Quercus rubra	Red Oak	2-1/2"-3" CAL	3	See Plan for Location	B&B
Tilia americana Redmond	Redmond American Linden	2-1/2"-3" CAL	3	See Plan for Location	B&B

SEWER EASEMENT, 40' WIDE CENTERED ON EXISTING SEWER LINE. LOCATION SHOWN BASED UPON EXISTING LOCATION. EASEMENT IS FOR CONTINUED USE AND MAINTENANCE.

Carolyn Cooney & Associates

Landscape Architecture / Planning

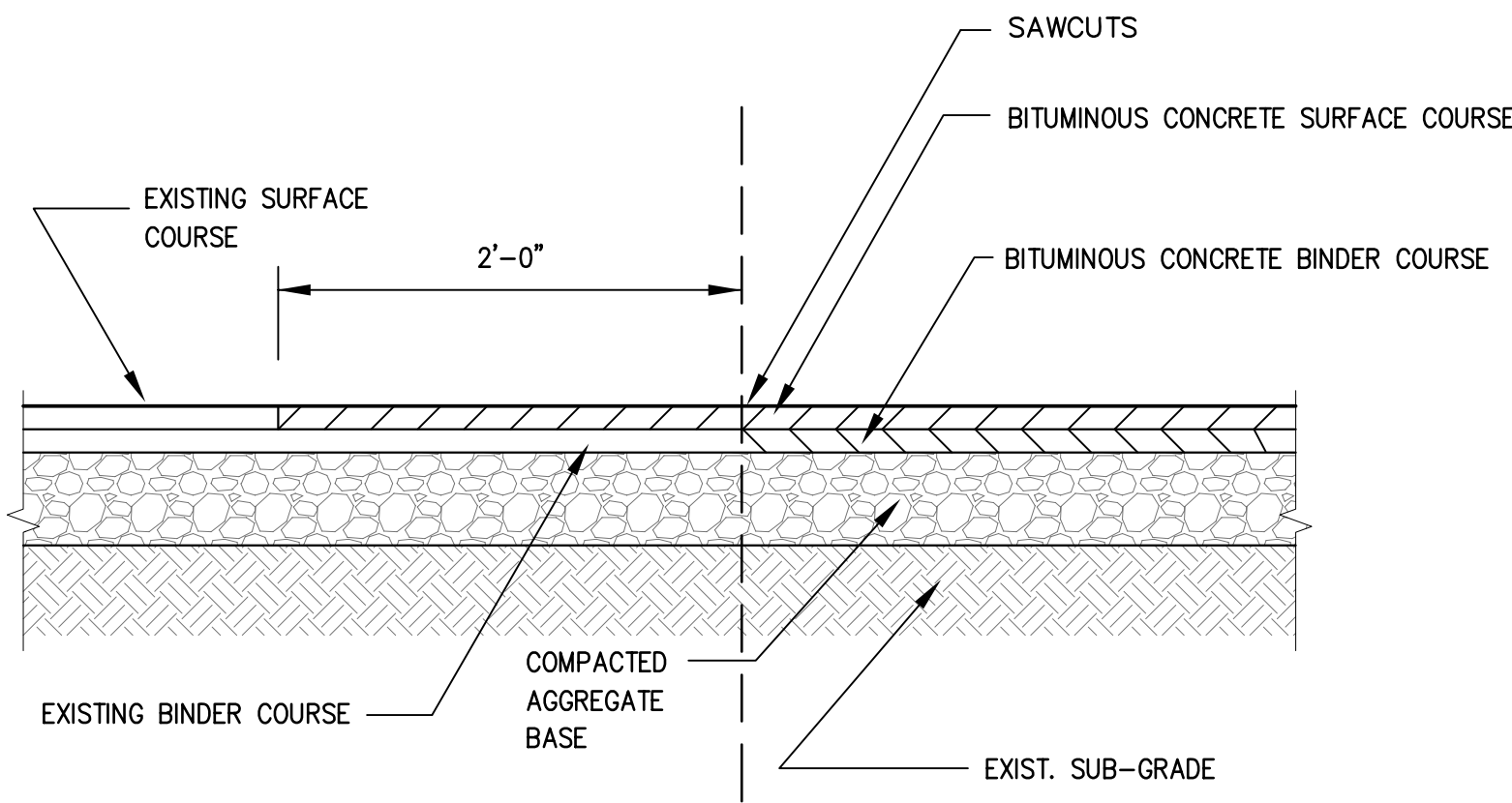
13 Elm Street, Milford, MA 01757
Telephone 508 478 8426, Facsimile 508 478 8607

Site Engineering Consultants, Inc.

55 Grape Shot Road
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TEL: (781) 784-0326
FAX: (781) 784-0492
CONSULTING CIVIL ENGINEERS

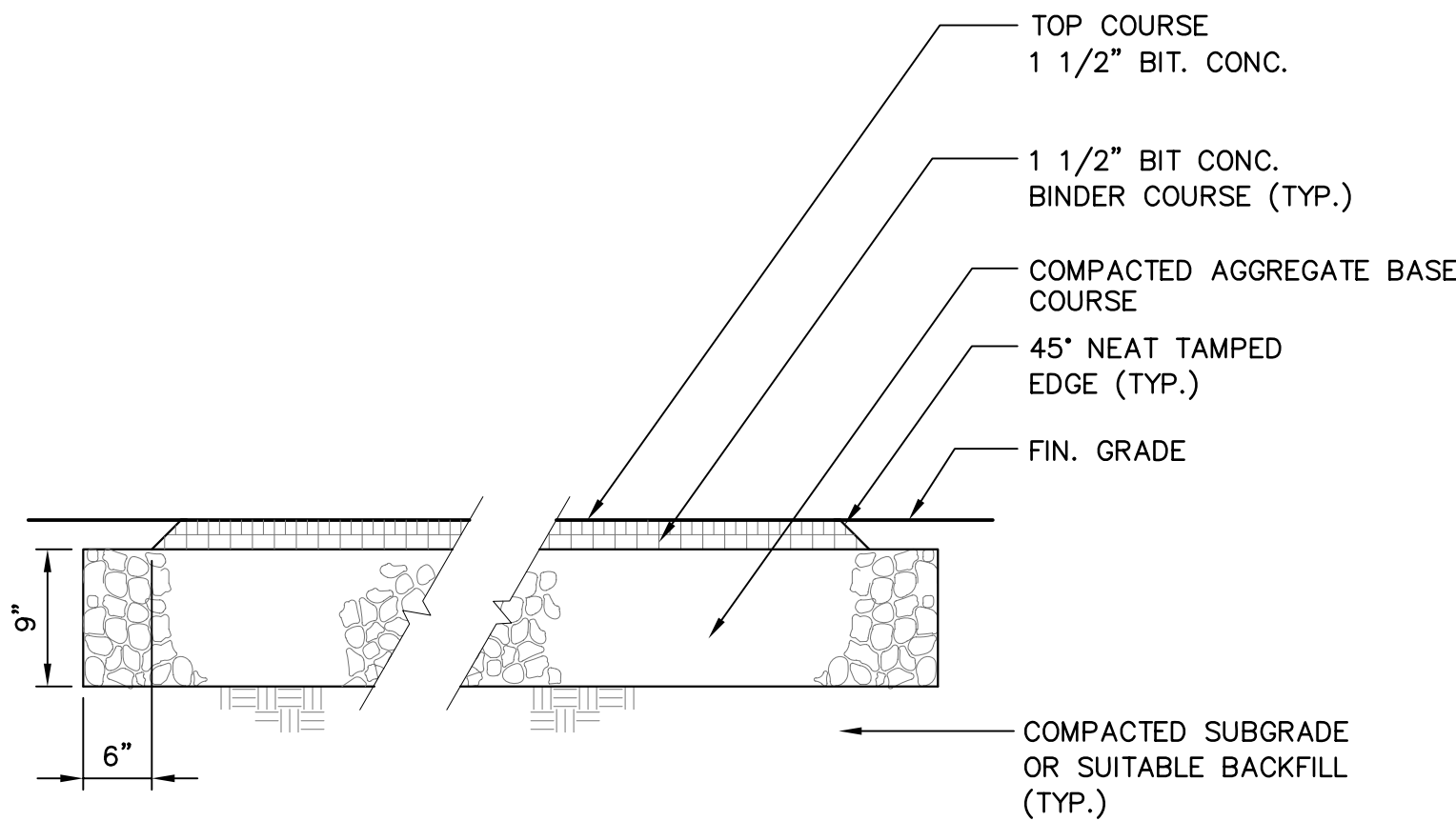
No.	Description	Date
REVISIONS		
Project:		
METROPOLITAN STATE PARKING LOT CONSTRUCTION TRAPELO ROAD WALTHAM, MA 02453		
Prepared For:		
WALTHAM PLANNING DEPARTMENT 119 SCHOOL STREET WALTHAM, MA 02451		
TITLE:		
PLANTING PLAN		
Scale 1"=30' Date AUG 2, 2013 Drawn By DRB Checked By CCC Approved By CCC Project No. 1004.00		
DWG No.	L5	

150



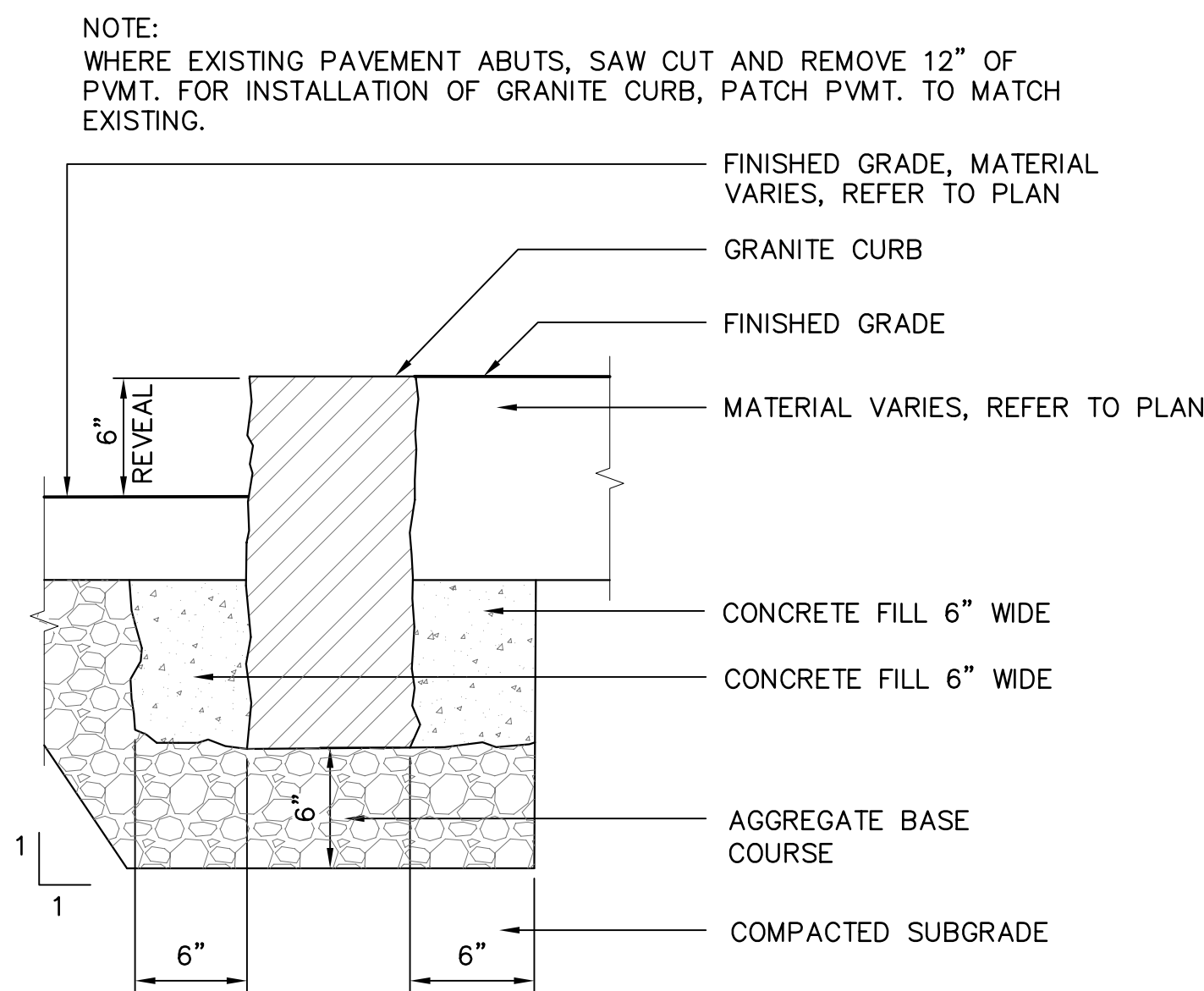
SECTION

8 PAVEMENT MATCHING DETAIL, TYP.
N.T.S.



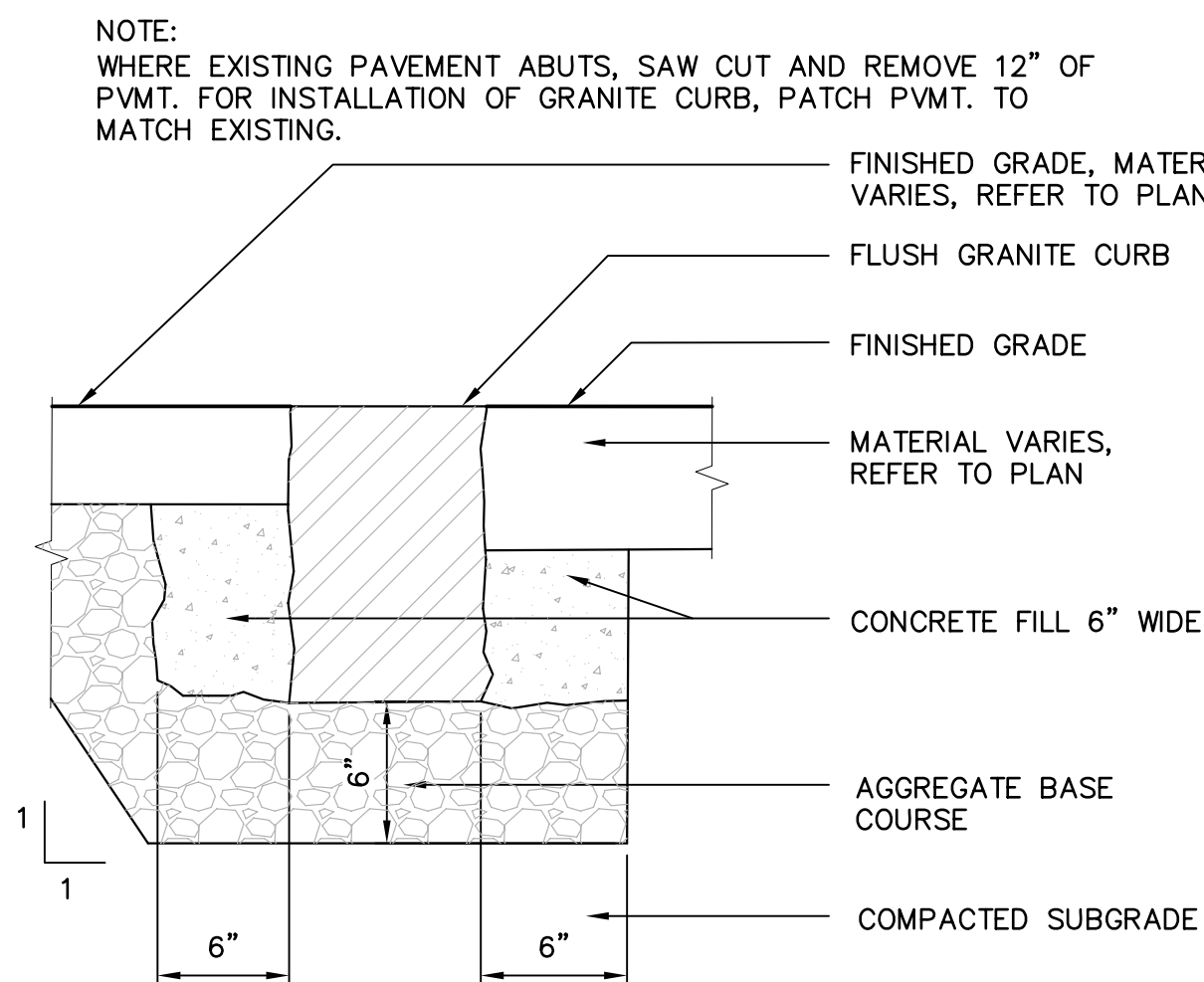
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9 BITUMINOUS WALK/PATH PAVING DETAIL, TYP.
N.T.S.



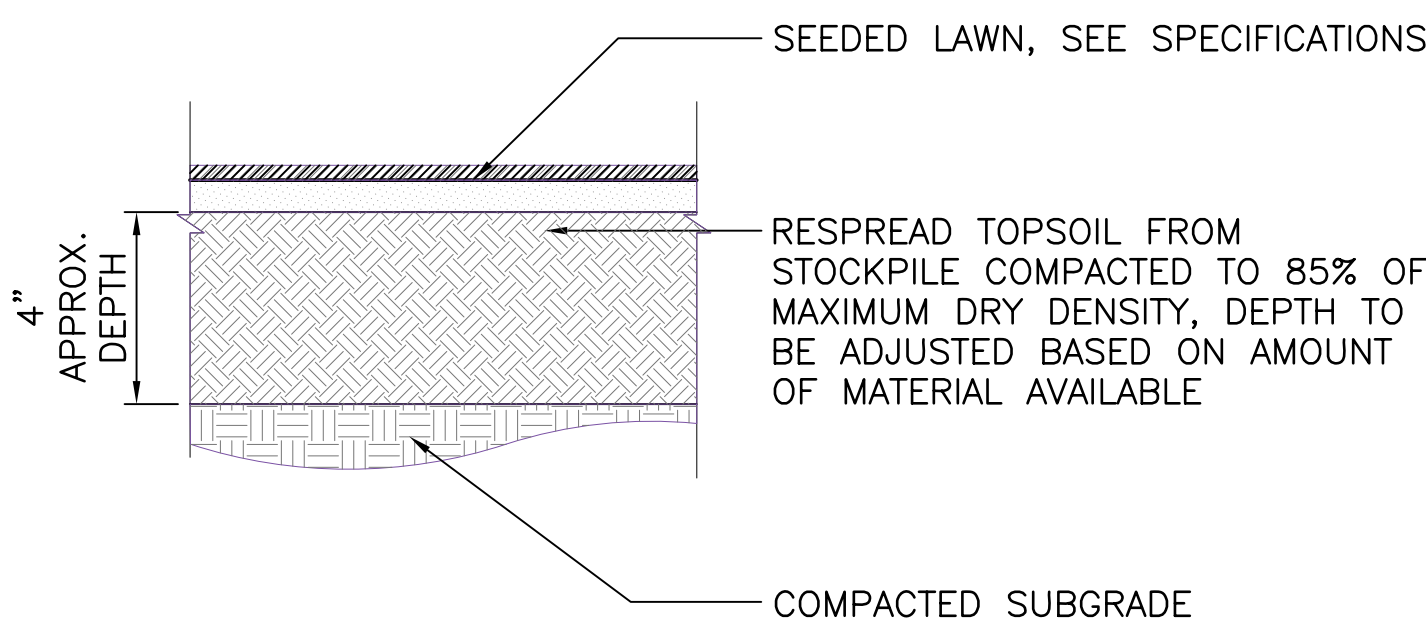
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5 VERTICAL GRANITE CURB DETAIL, TYP.
N.T.S.



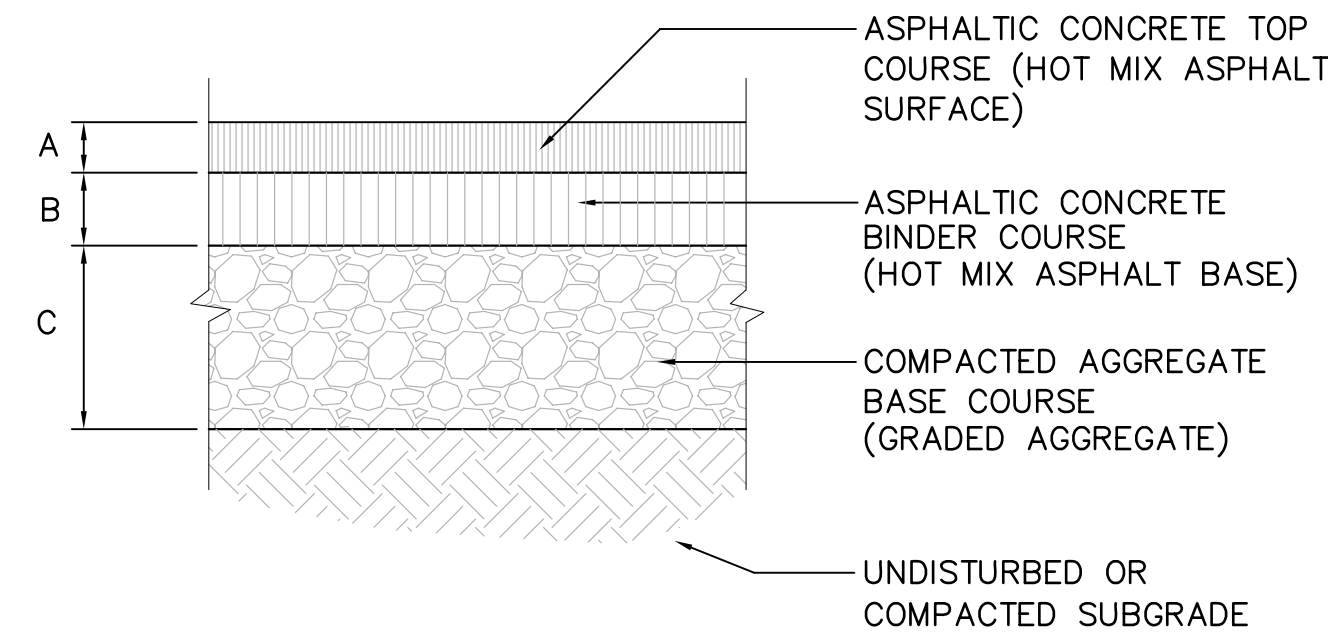
SECTION

6 FLUSH GRANITE CURB DETAIL, TYP.
N.T.S.



SECTION

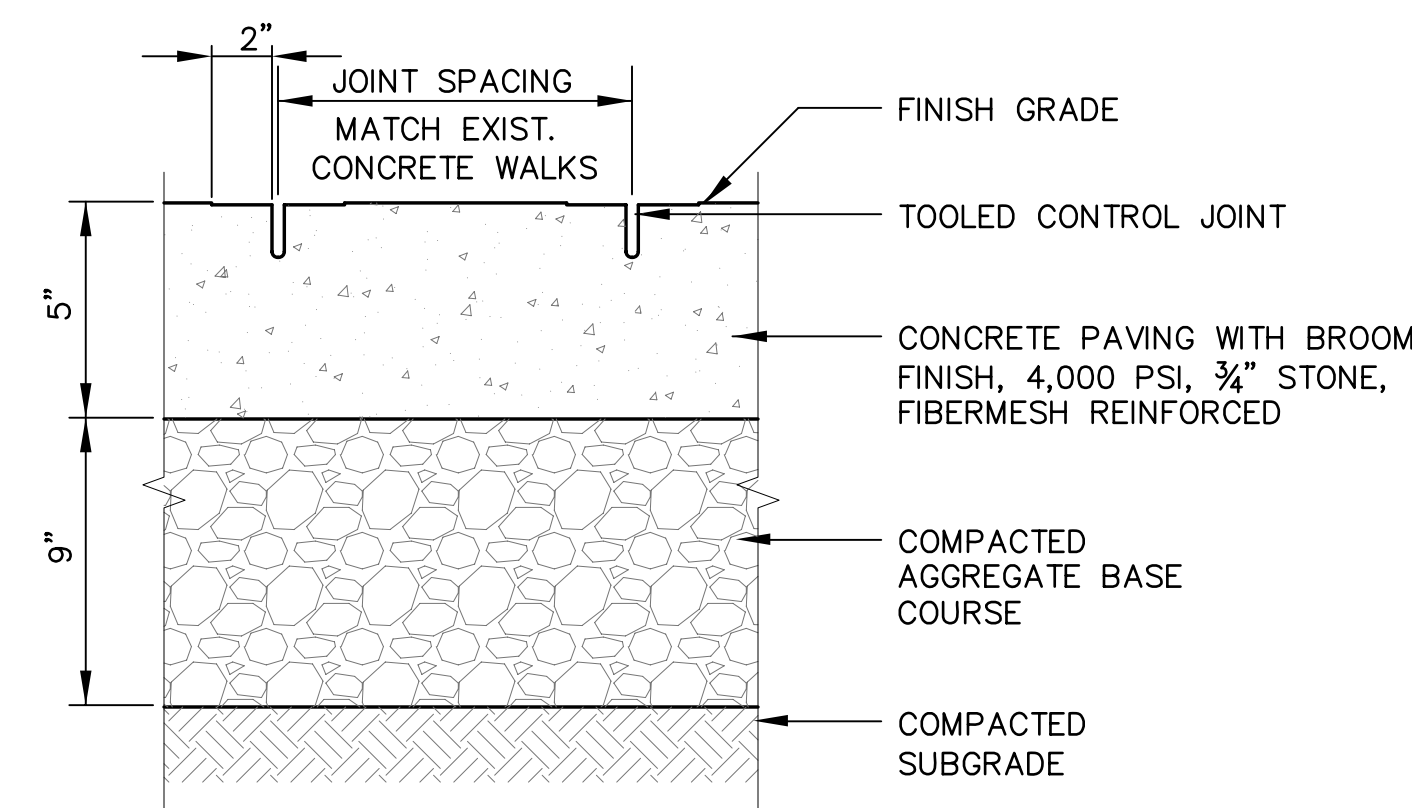
7 LOAM AND SEEDDED LAWN DETAIL
N.T.S.



THICKNESS (INCHES)			
	ROADS	PARKING LOT	WALKS/PATHS
A	1-1/2	1-1/2	1-1/2
B	2-1/2	2-1/2	1-1/2
C	12	12	9

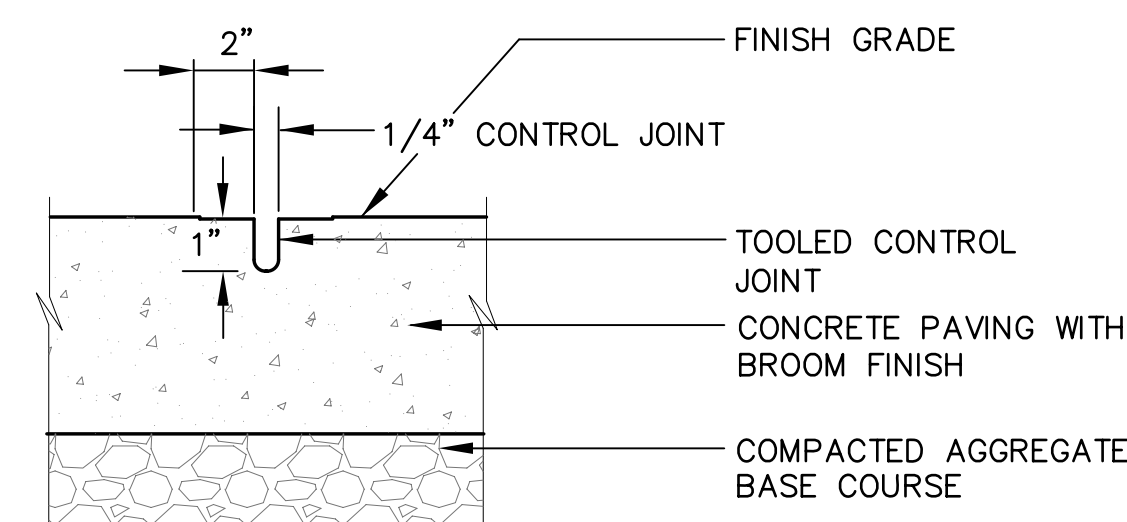
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1 BITUMINOUS CONCRETE PAVEMENT DETAIL, TYP.
N.T.S.



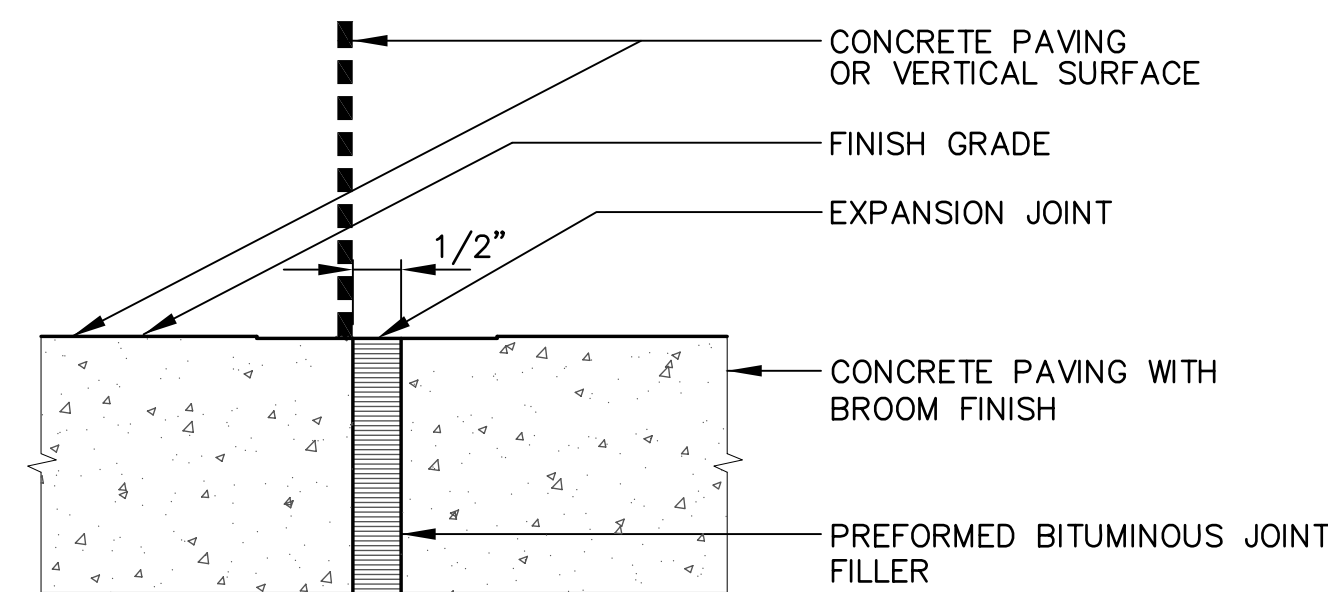
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2 TYPICAL CONCRETE PAVEMENT DETAIL
N.T.S.



SECTION

3 TYPICAL CONCRETE CONTROL JOINT DETAIL
N.T.S.

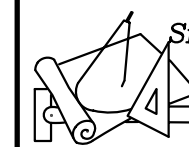


SECTION

4 TYPICAL CONCRETE EXPANSION JOINT DETAIL
N.T.S.

Carolyn Cooney & Associates

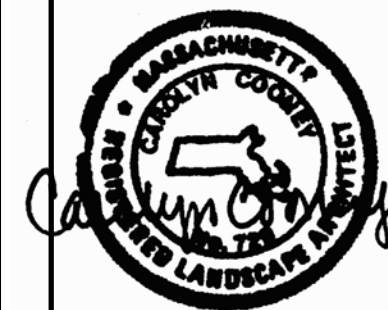
Landscape Architecture / Planning
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Telephone 508 478 8426, Facsimile 508 478 8607



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TEL: (781) 784-0326
FAX: (781) 784-0492
CONSULTING CIVIL ENGINEERS

No.	Description	Date

REVISIONS



Project:

**METROPOLITAN STATE
PARKING LOT
CONSTRUCTION
TRAPELO ROAD
WALTHAM, MA 02453**

Prepared For:

**WALTHAM PLANNING
DEPARTMENT
119 SCHOOL STREET
WALTHAM, MA 02451**

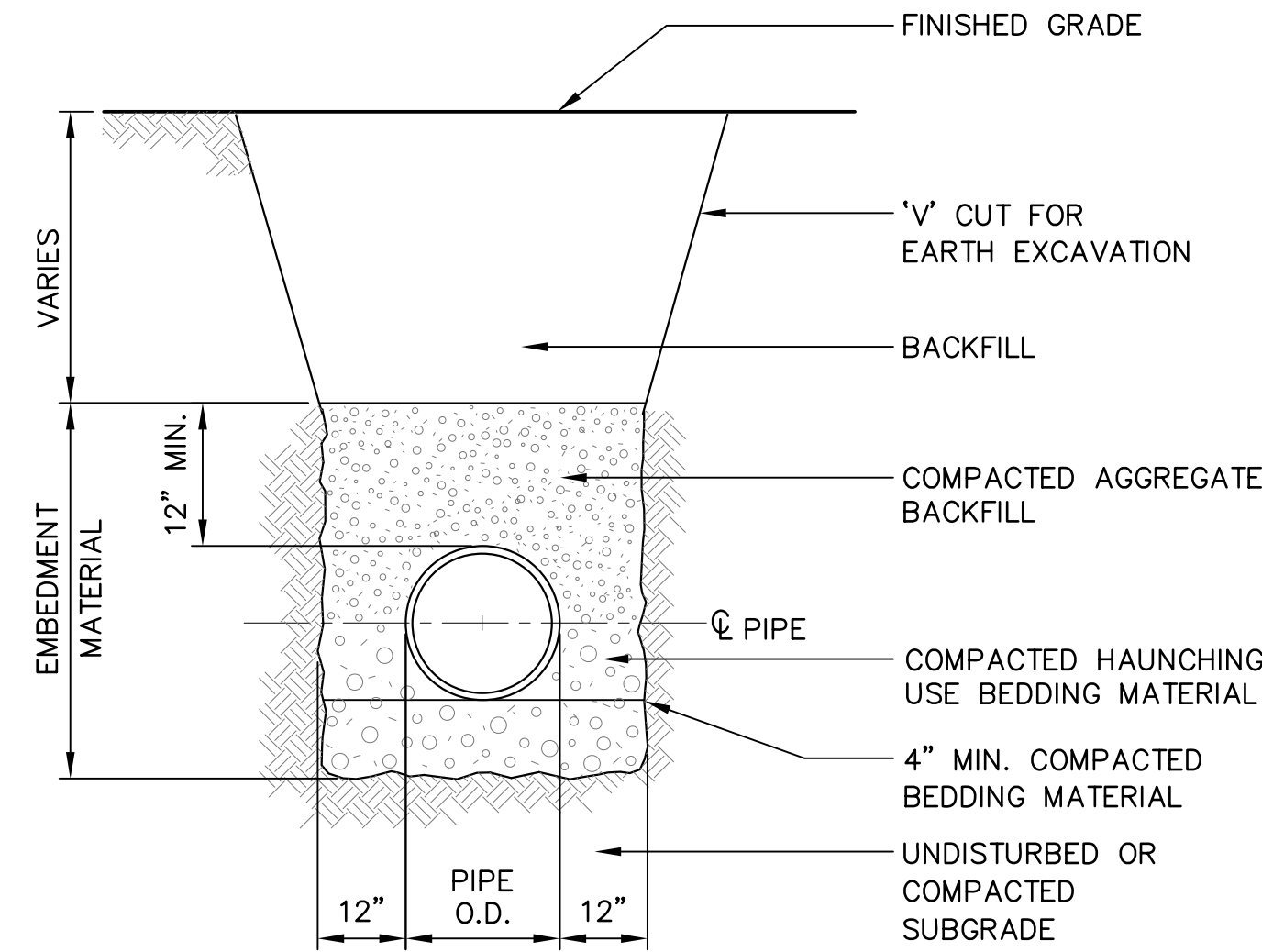
TITLE:

DETAILS

Scale AS NOTED Date AUG 2, 2013
Drawn By DRB
Checked By CCC
Approved By CCC
Project No. 1004.00

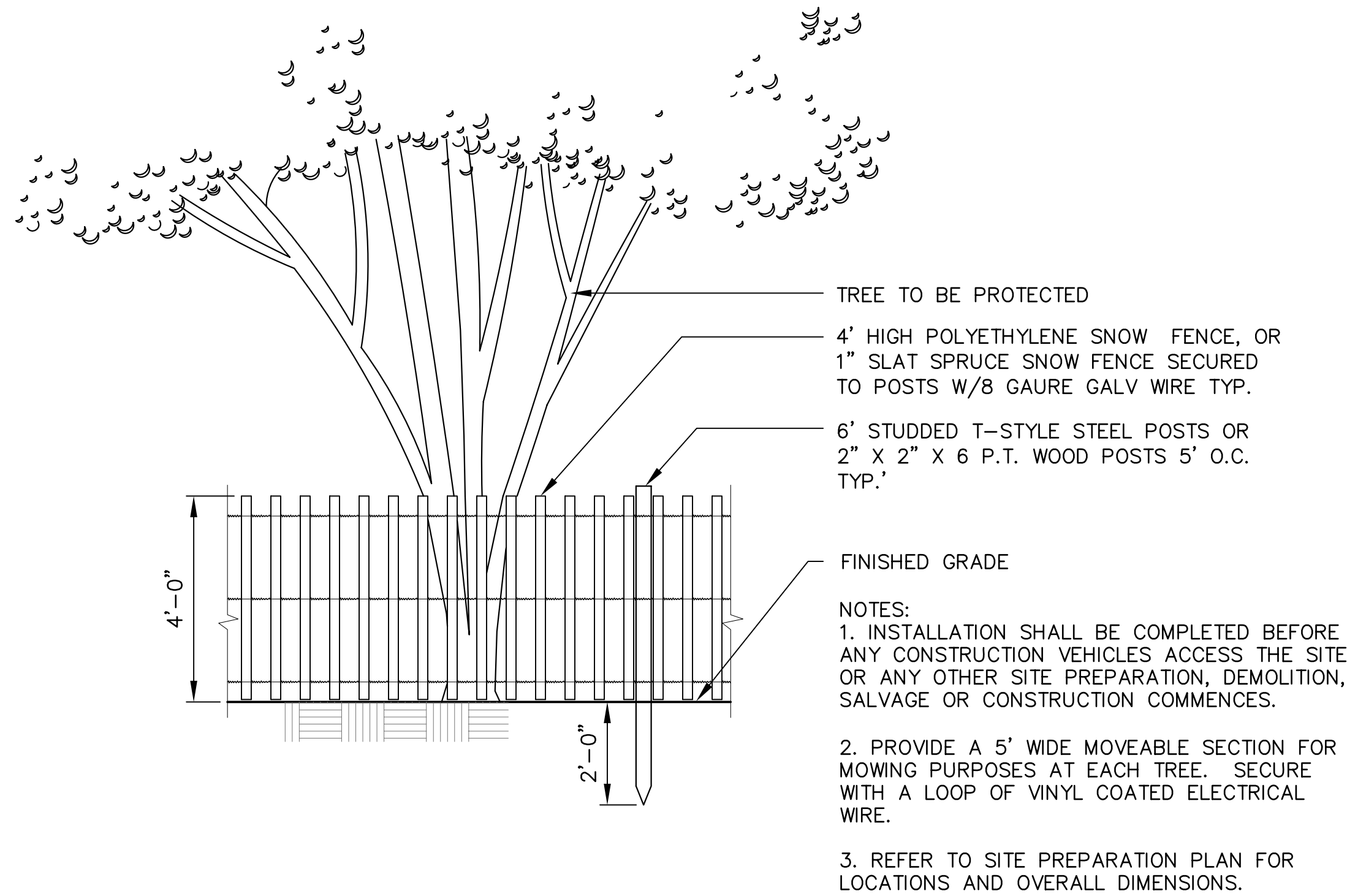
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L.6



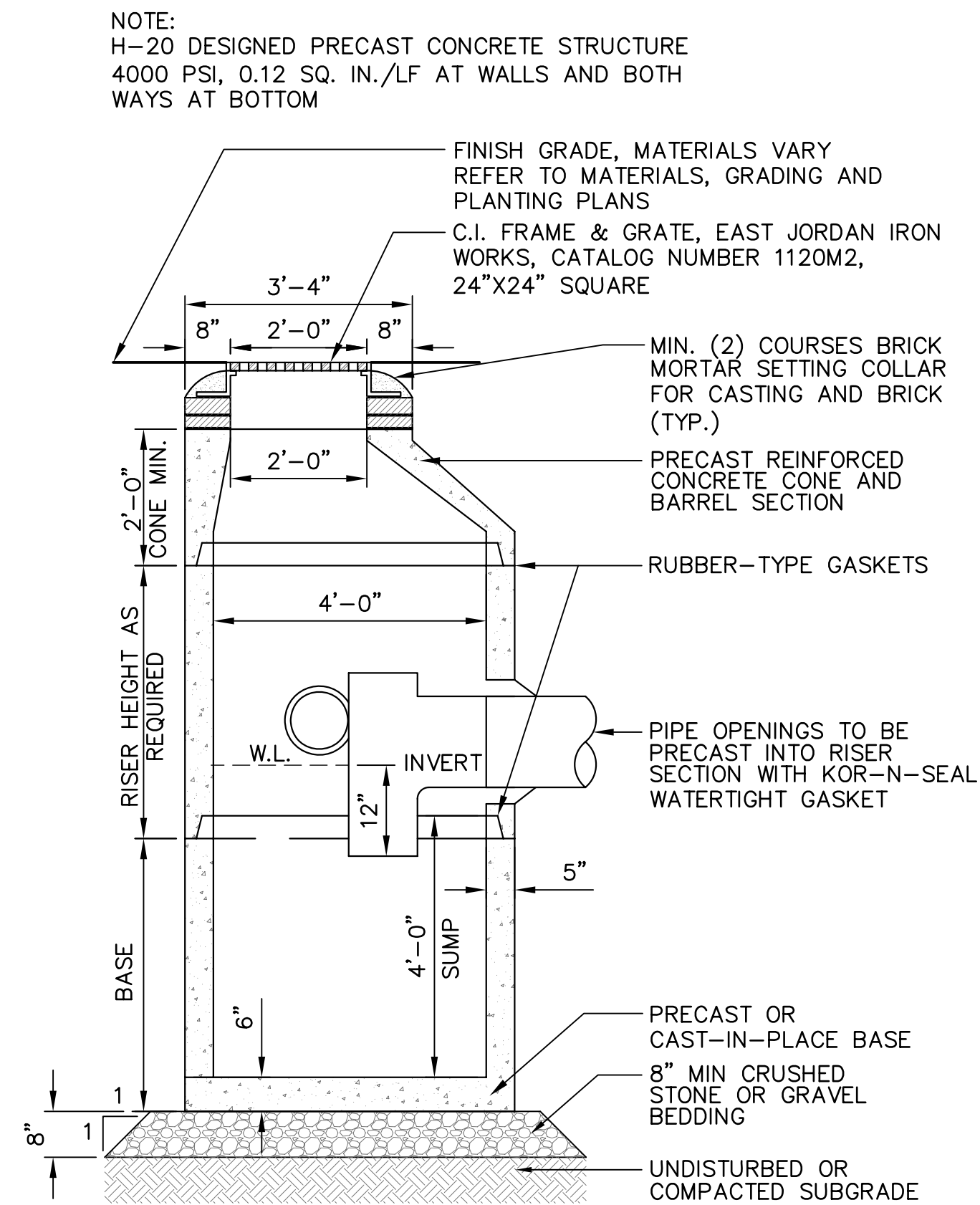
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5 STORM DRAIN PIPE TRENCH DETAIL, TYP.
N.T.S.



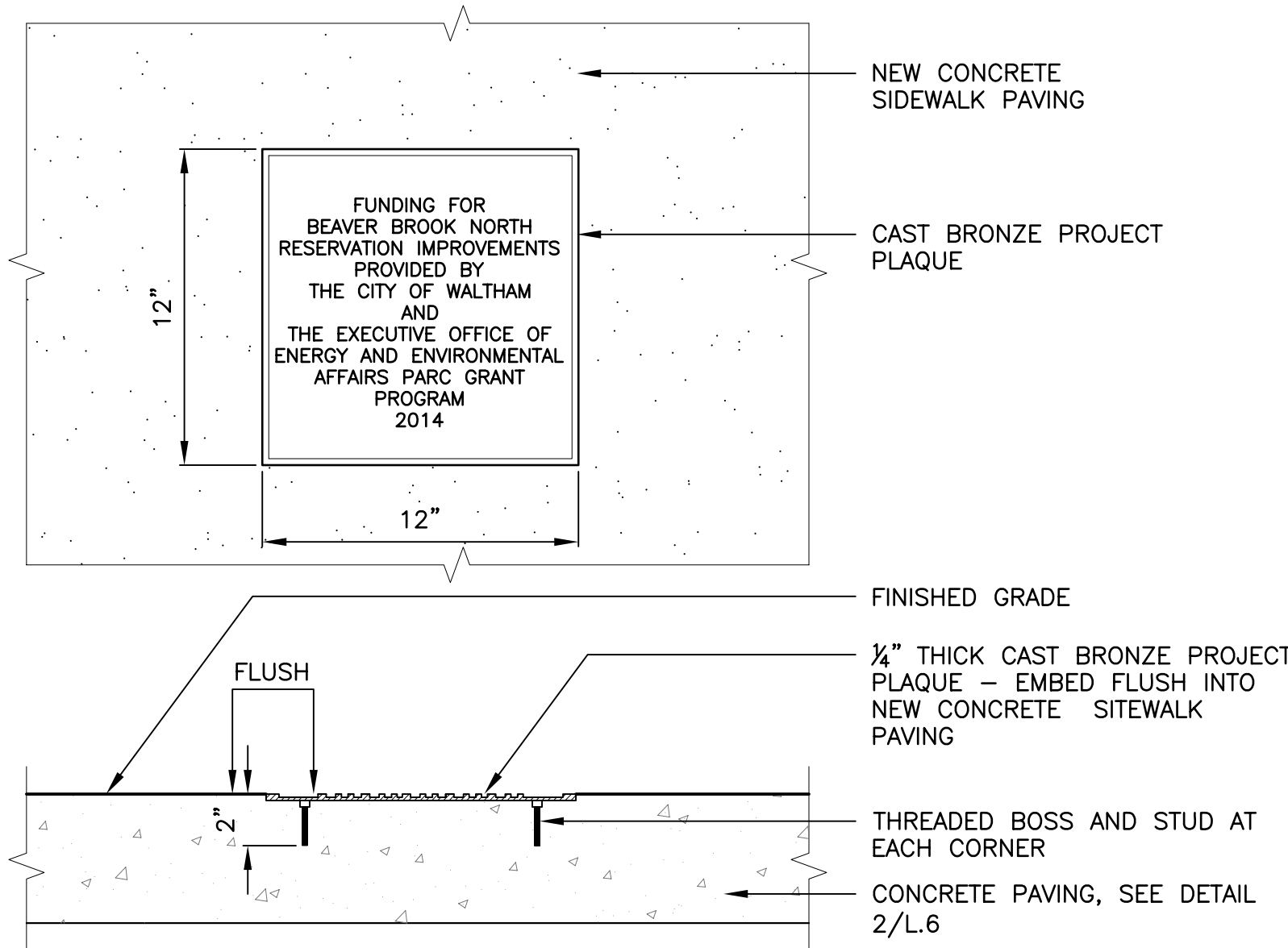
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3 TREE PROTECTION DETAIL, TYP.
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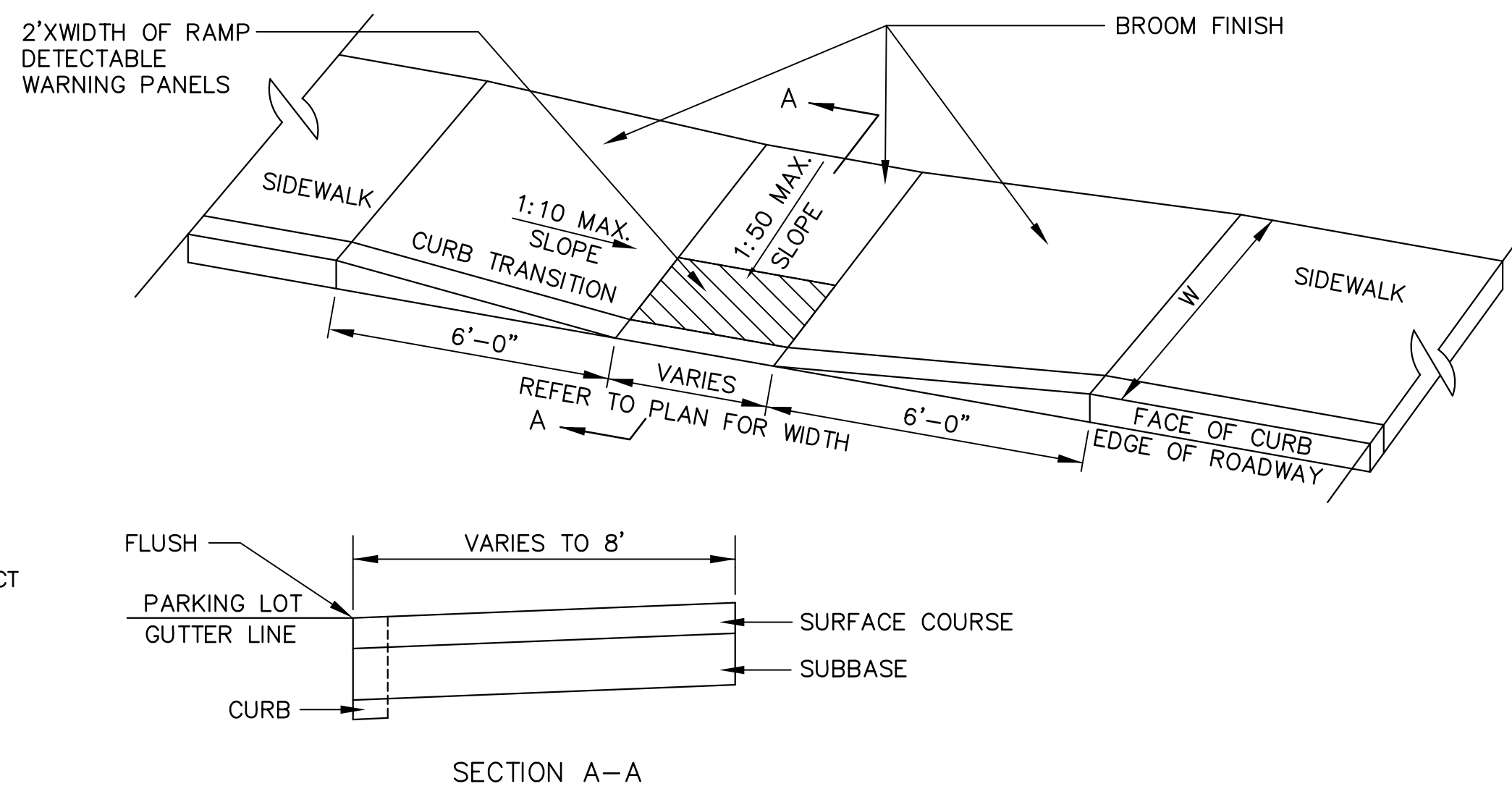
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1 DEEP SUMP (GAS TRAP) CATCH BASIN DETAIL, TYP.
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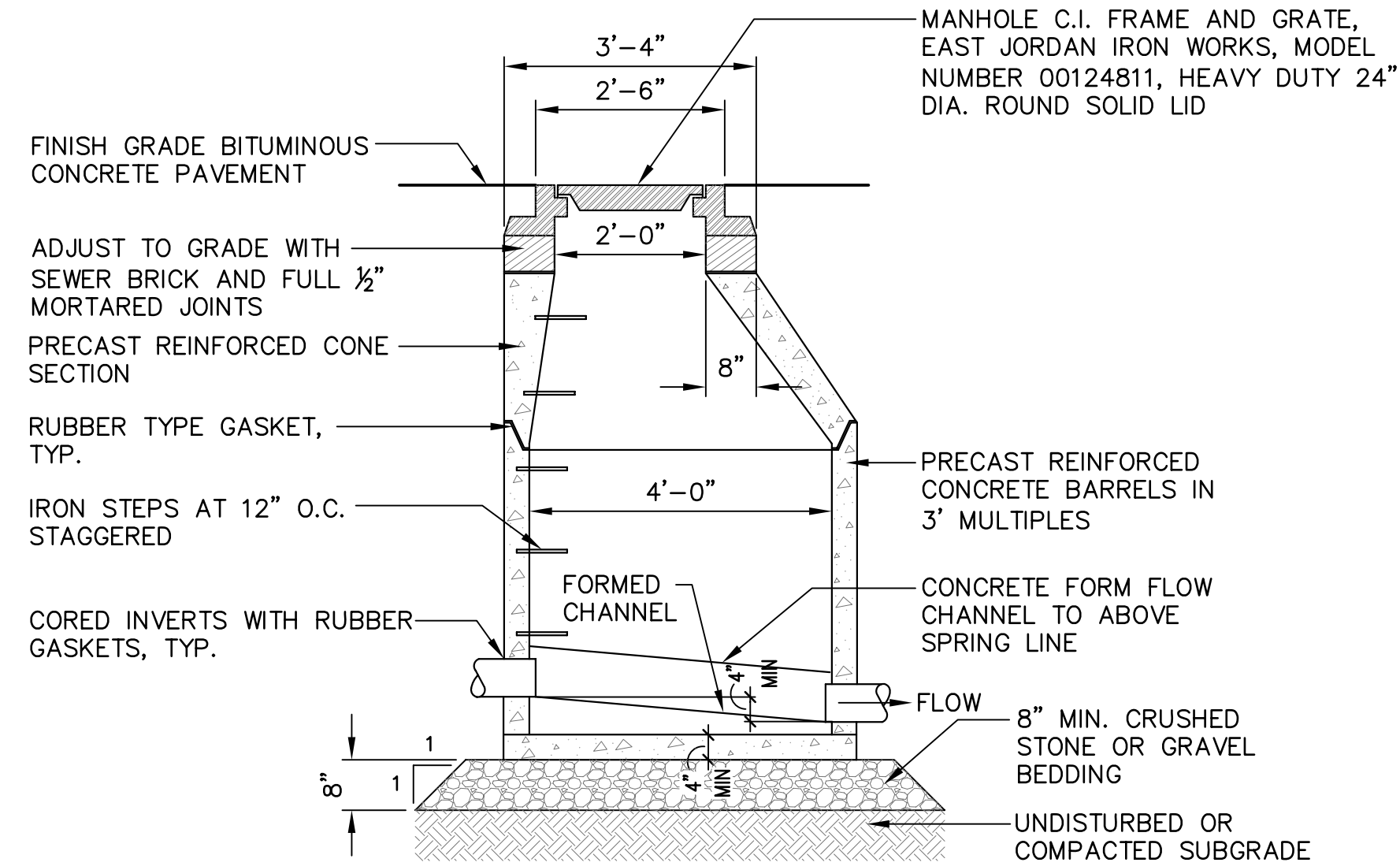
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6 BRONZE PLAQUE DETAIL
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SECTION

4 WHEEL CHAIR RAMP DETAIL, TYP.
N.T.S.



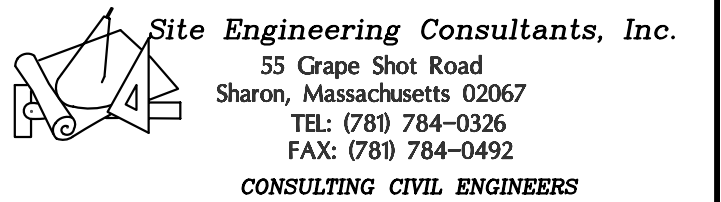
SECTION

2 STORM DRAIN MANHOLE DETAIL
N.T.S.

Carolyn Cooney & Associates

Landscape Architecture / Planning

13 Elm Street, Millford, MA 01757
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No.	Description	Date
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REVISIONS



Project:

**METROPOLITAN STATE
PARKING LOT
CONSTRUCTION
TRAPELO ROAD
WALTHAM, MA 02453**

Prepared For:

**WALTHAM PLANNING
DEPARTMENT
119 SCHOOL STREET
WALTHAM, MA 02451**

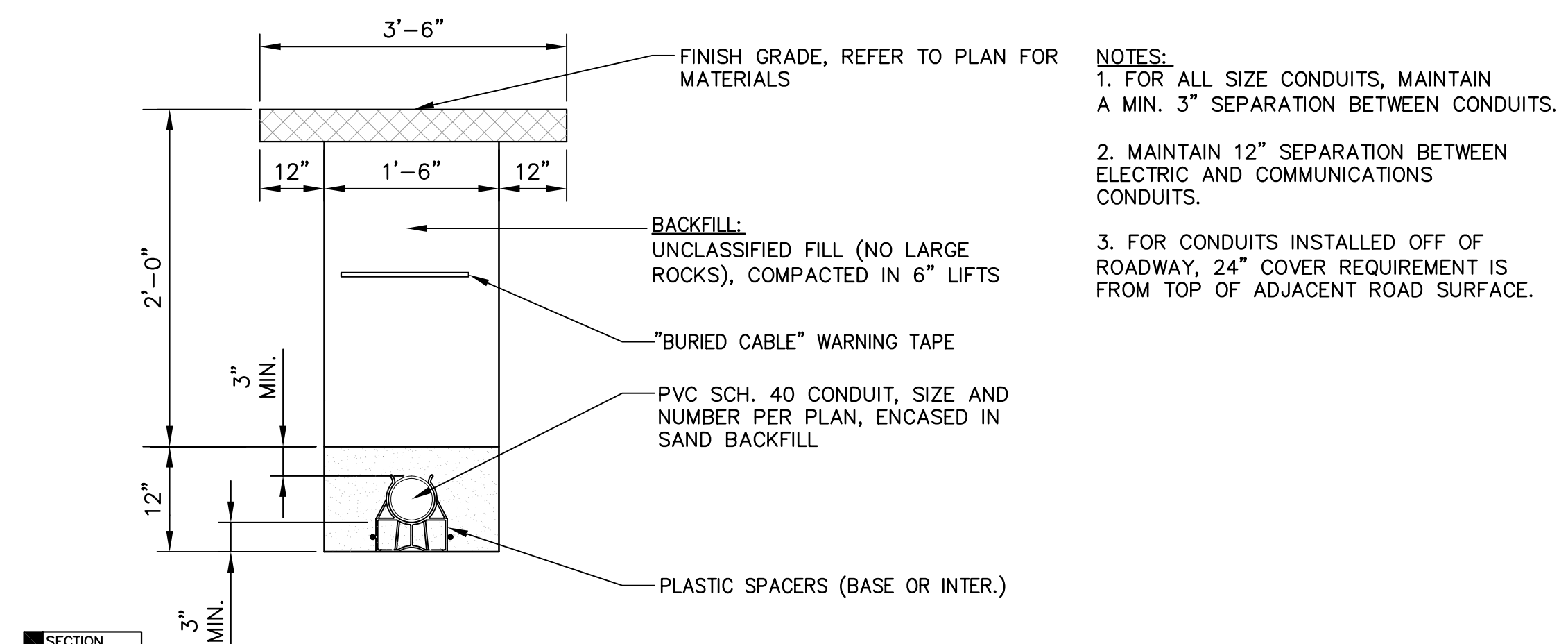
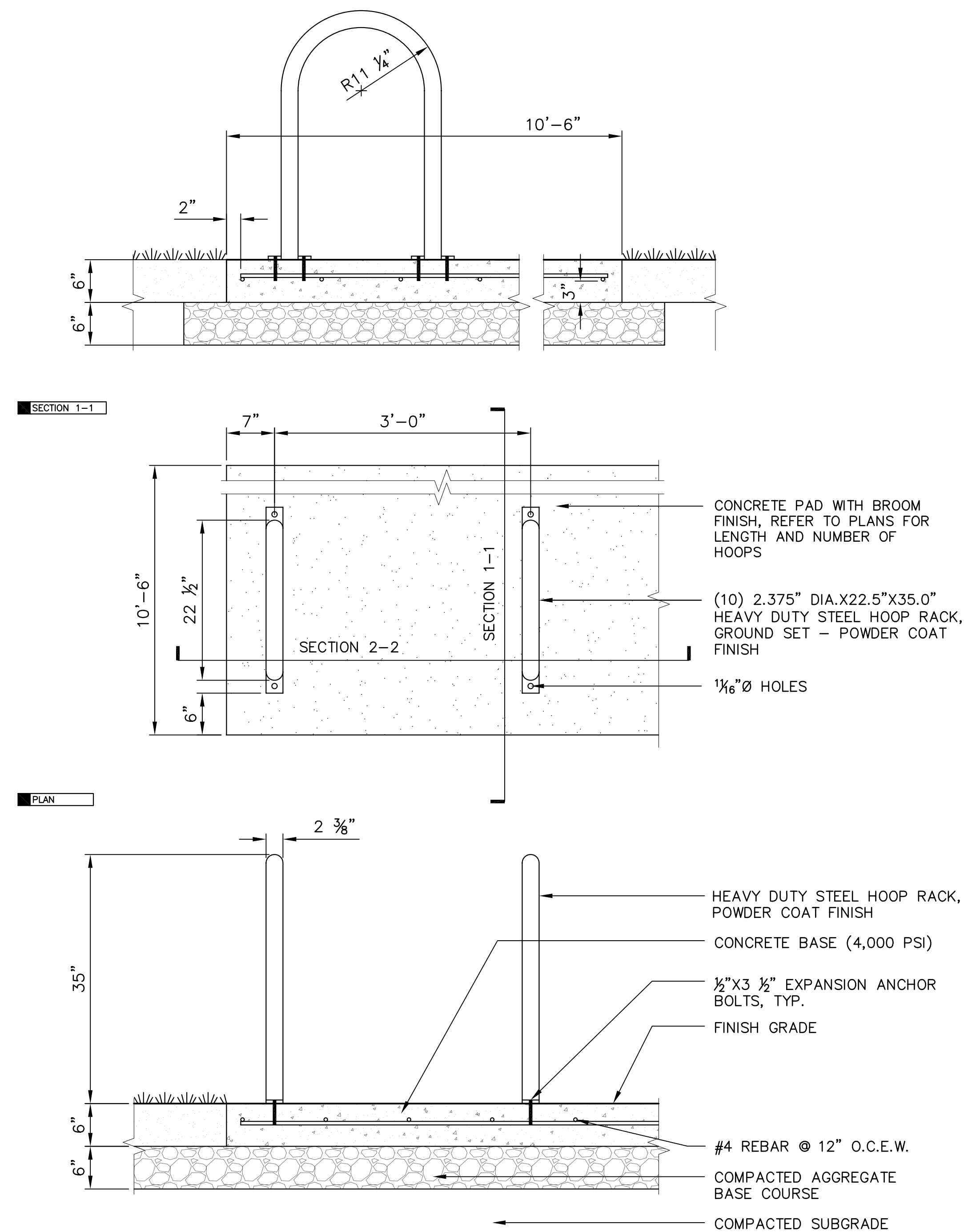
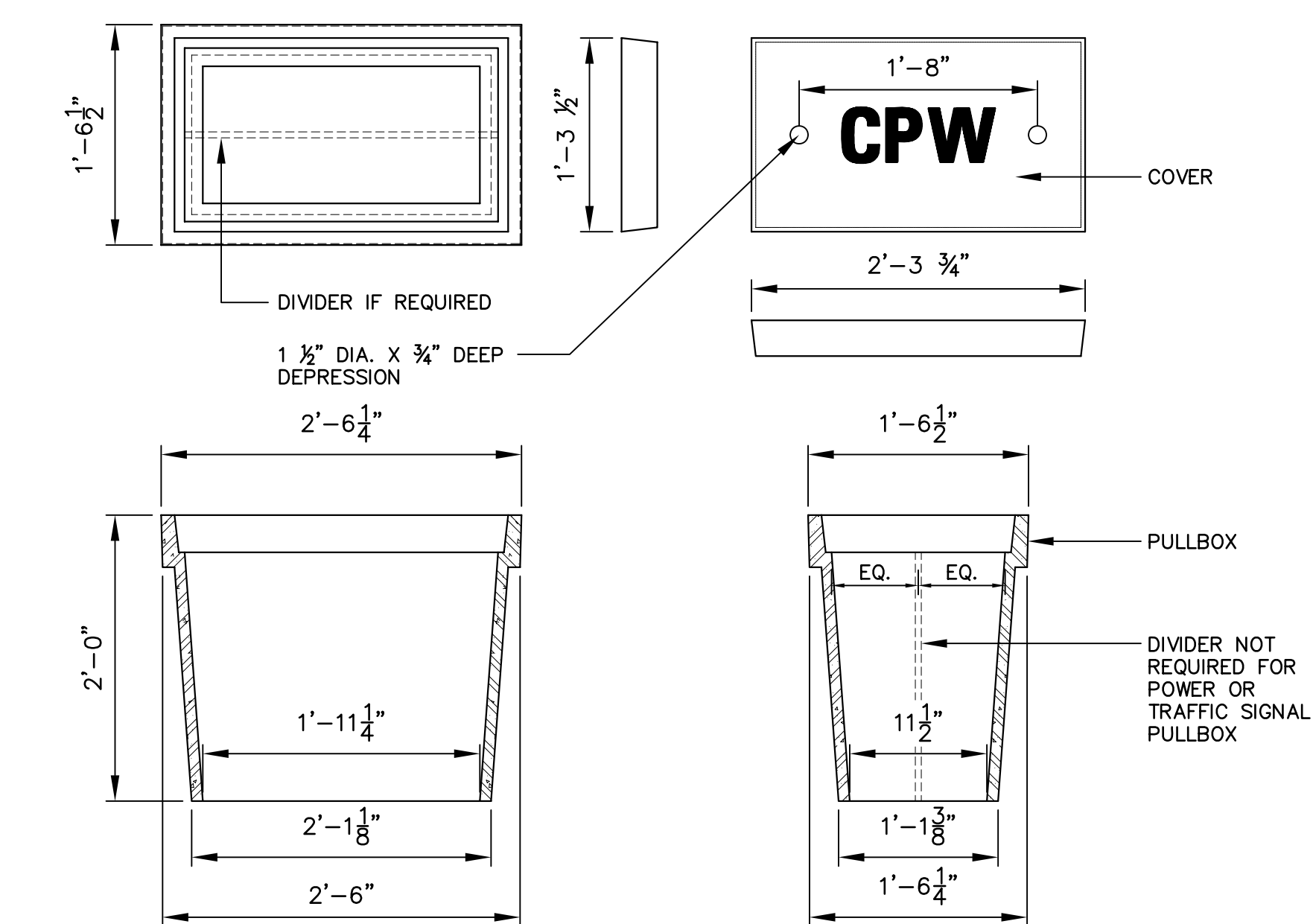
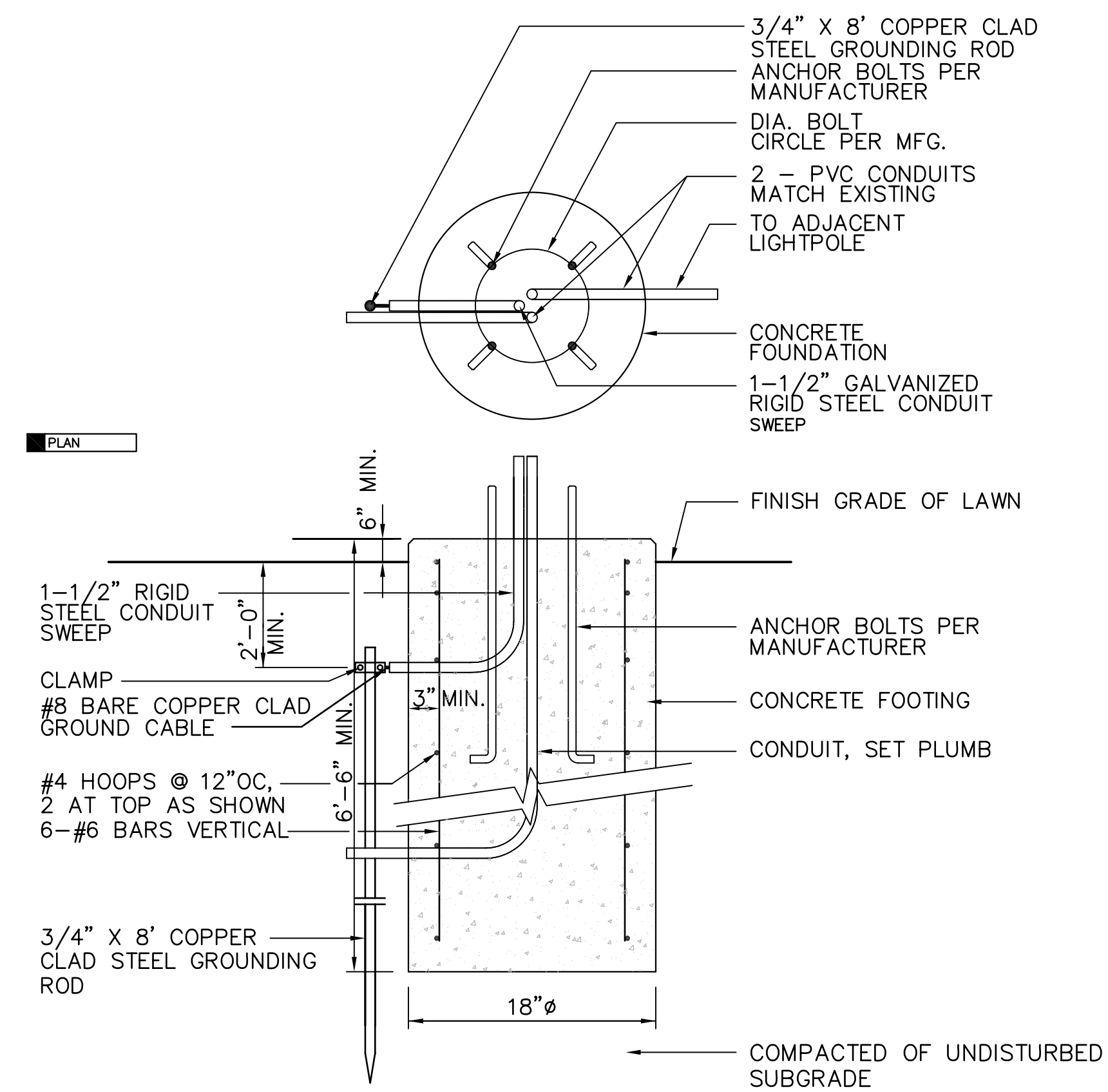
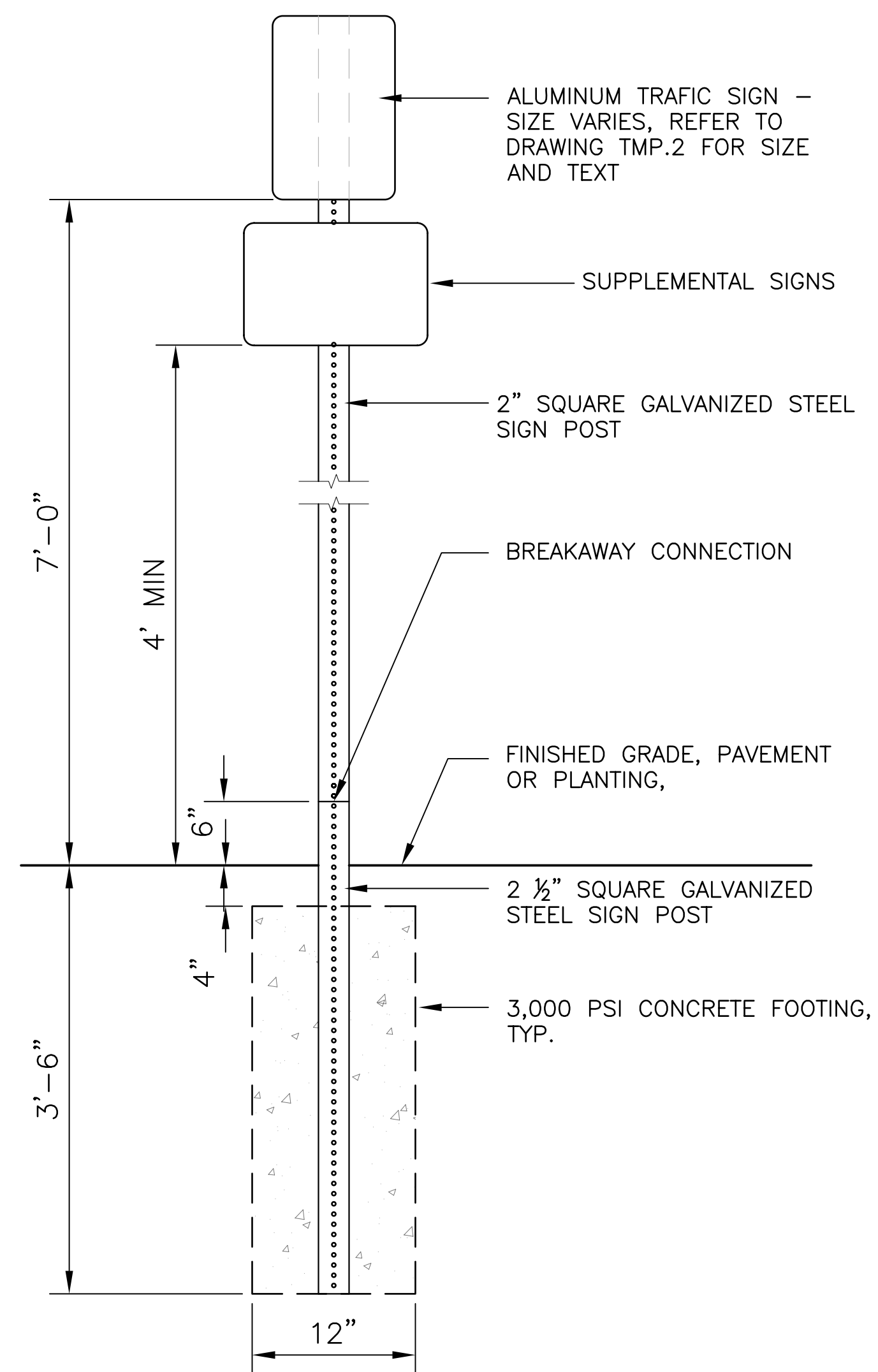
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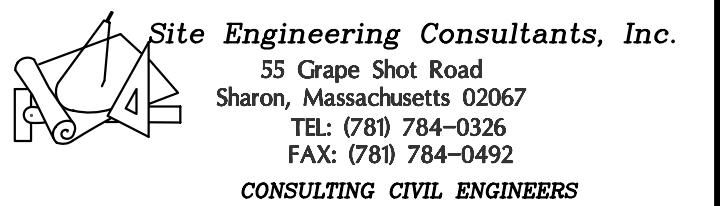
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L.7



**Carolyn Cooney &
Associates**



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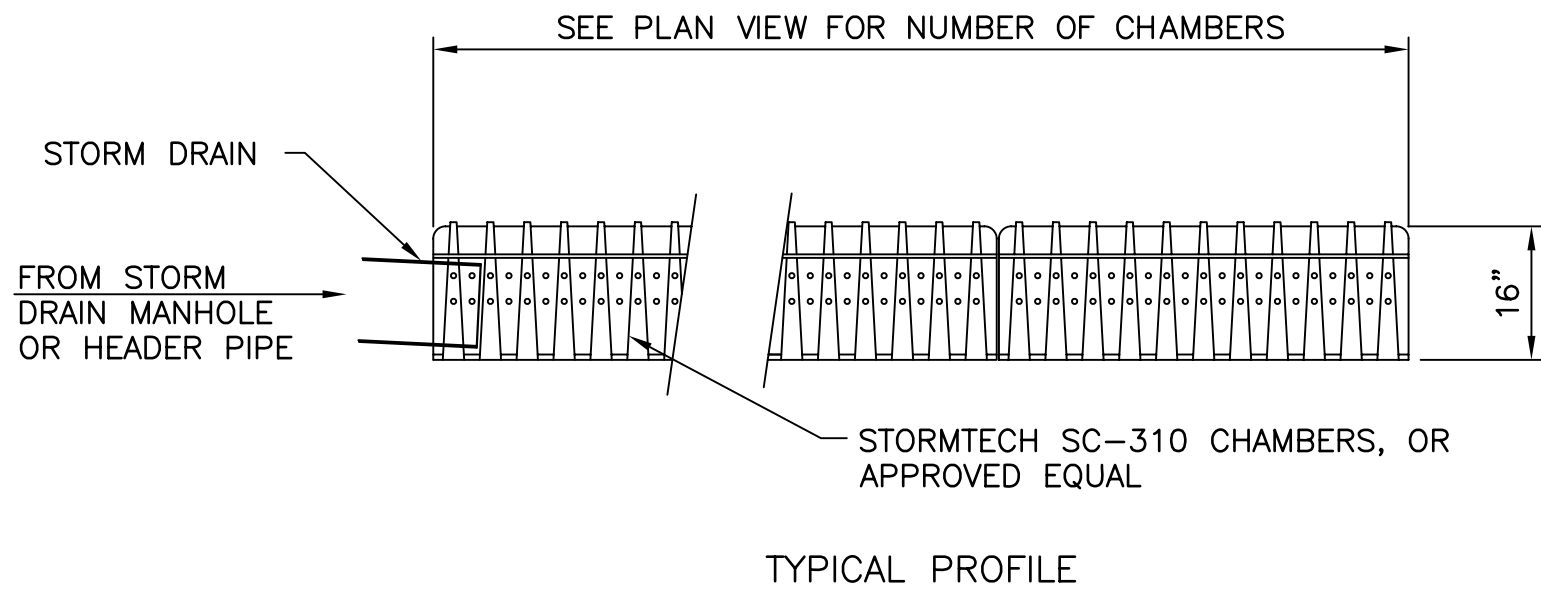


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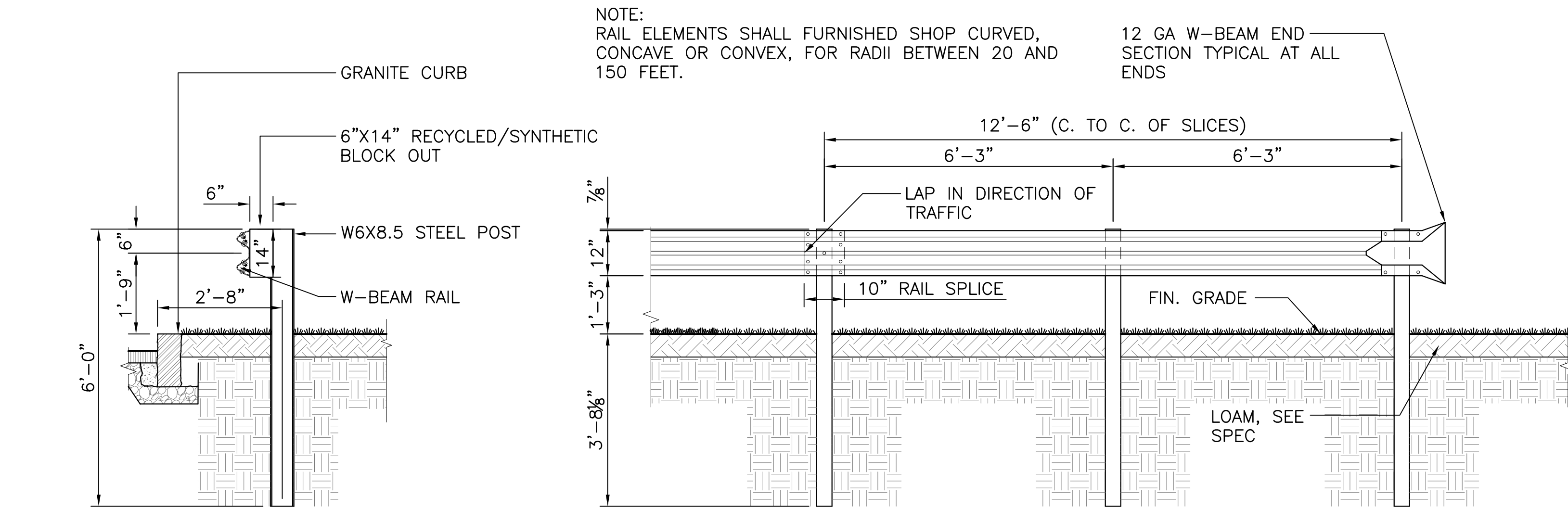
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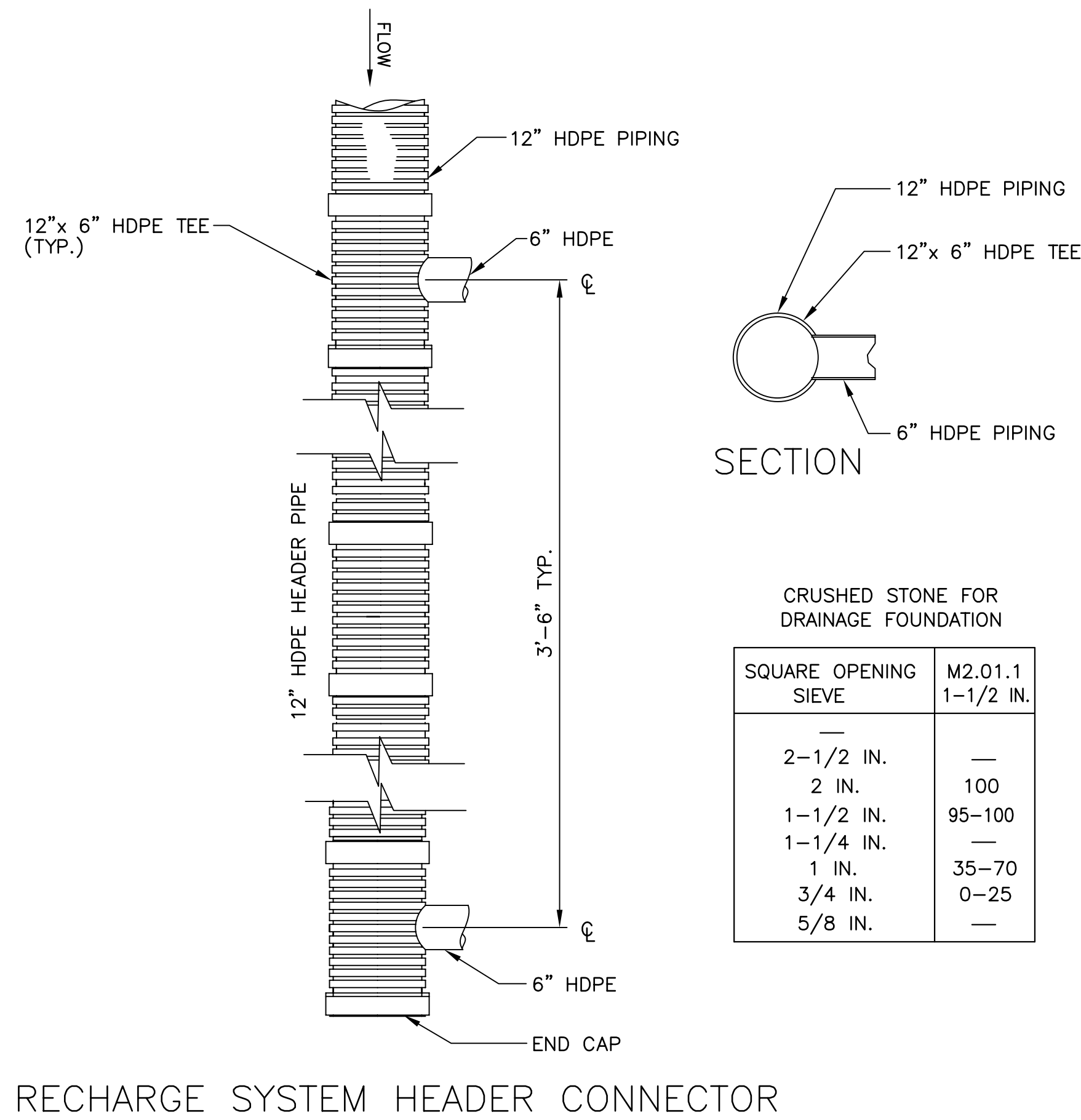
PROFILE

2 STORMWATER RECHARGE UNIT DETAIL, TYP.
N.T.S.



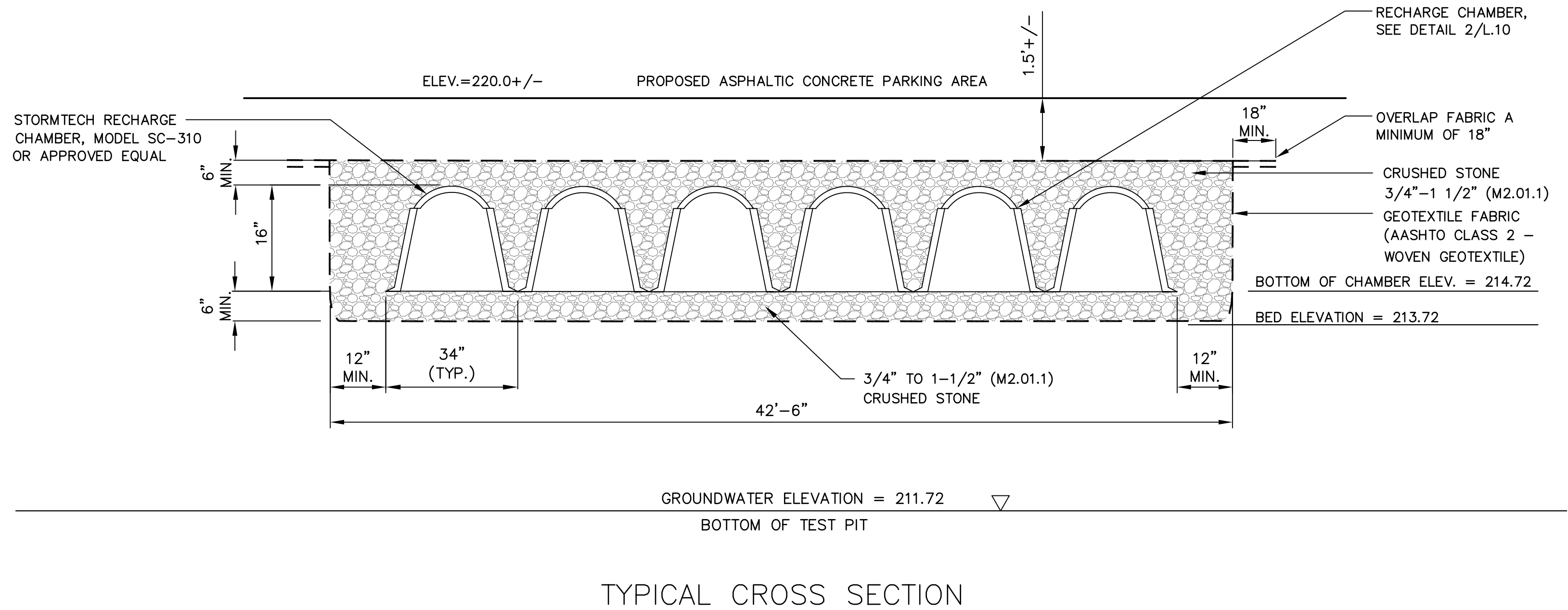
SECTION

1 W-BEAM GALVANIZED STEEL GUARDRAIL DETAIL, TYPICAL (ALTERNATE 2)
1/2" = 1'-0"



PLAN

3 STORMWATER RECHARGE SYSTEM DETAIL, TYP.
N.T.S.



SECTION

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CONSULTING CIVIL ENGINEERS



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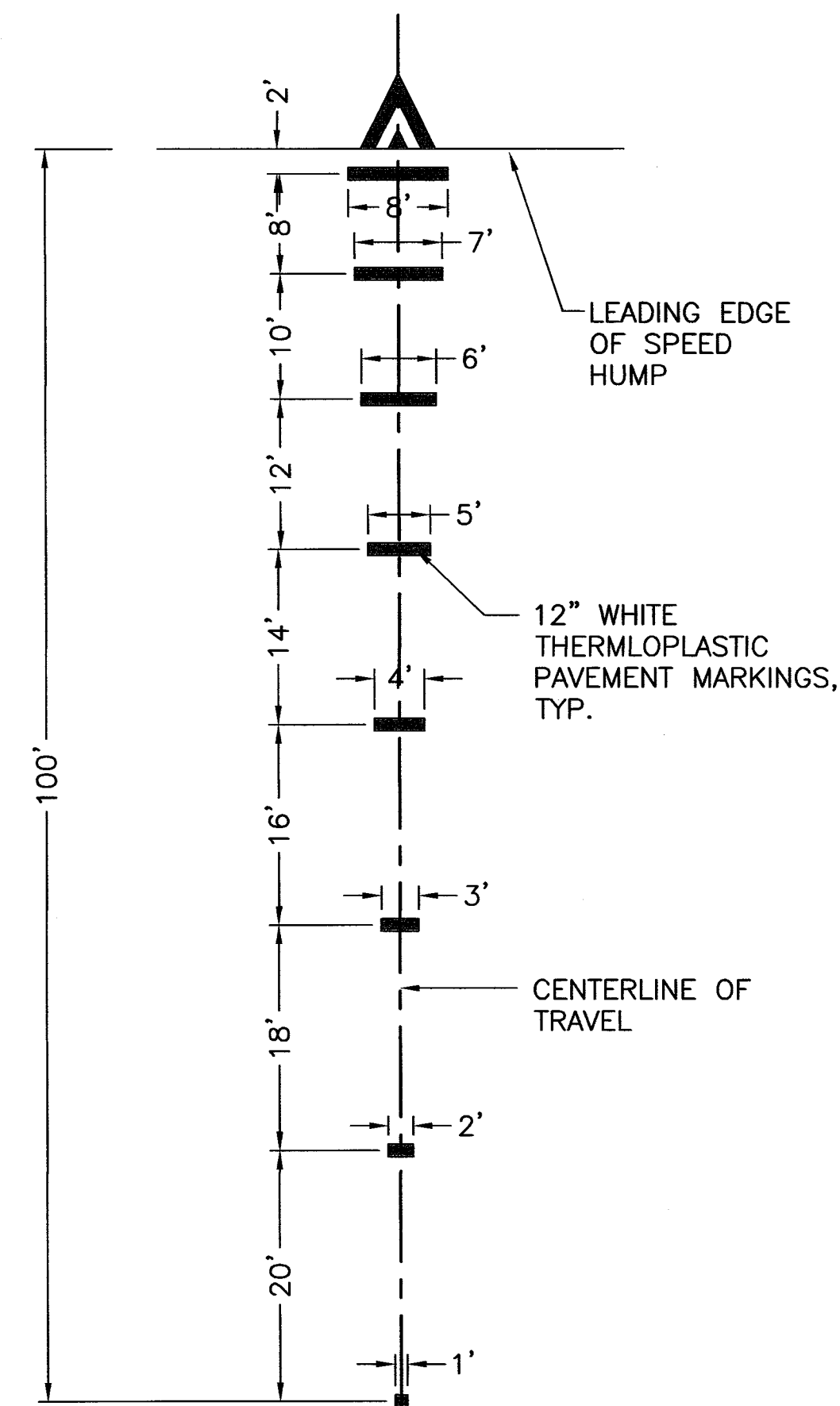
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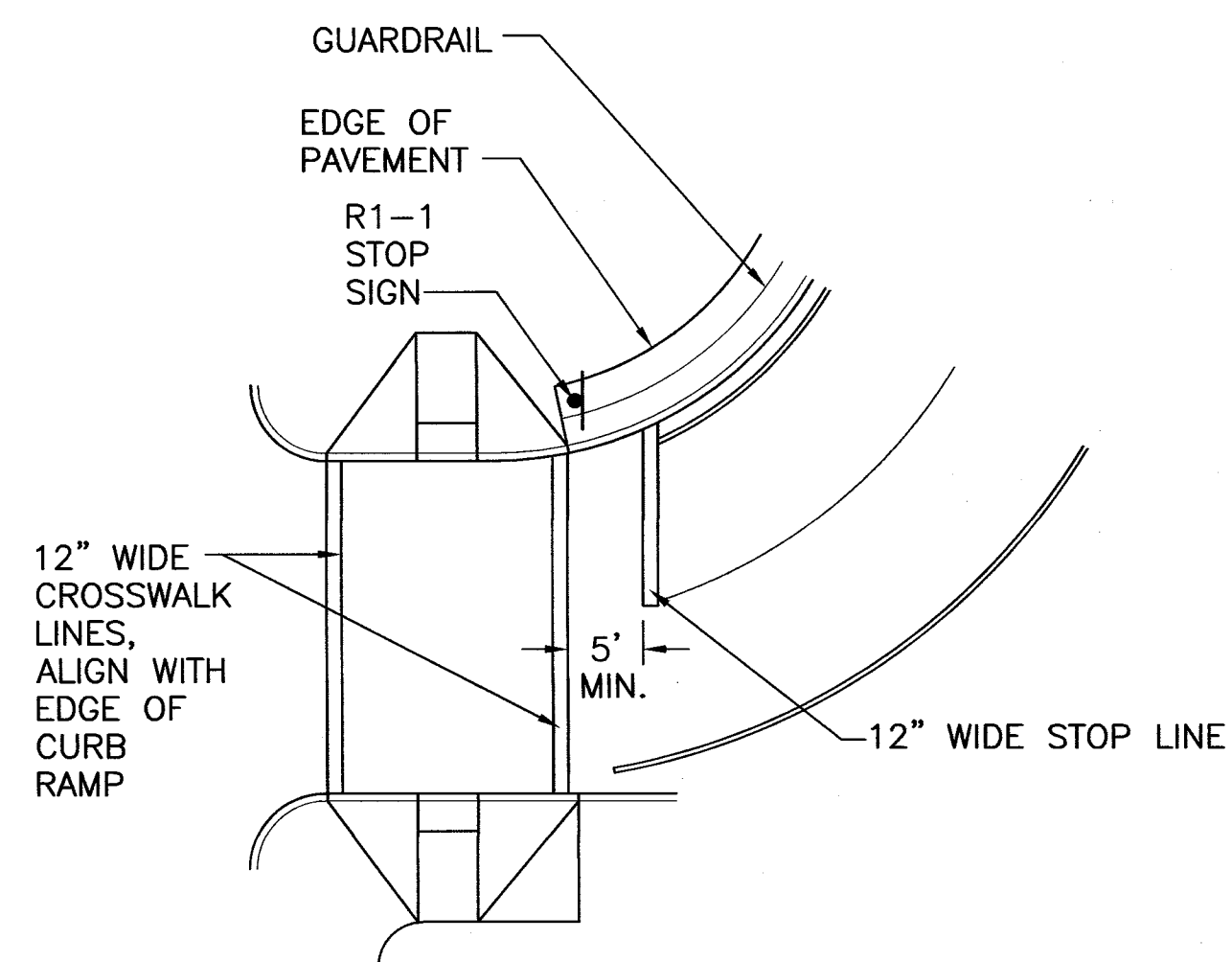
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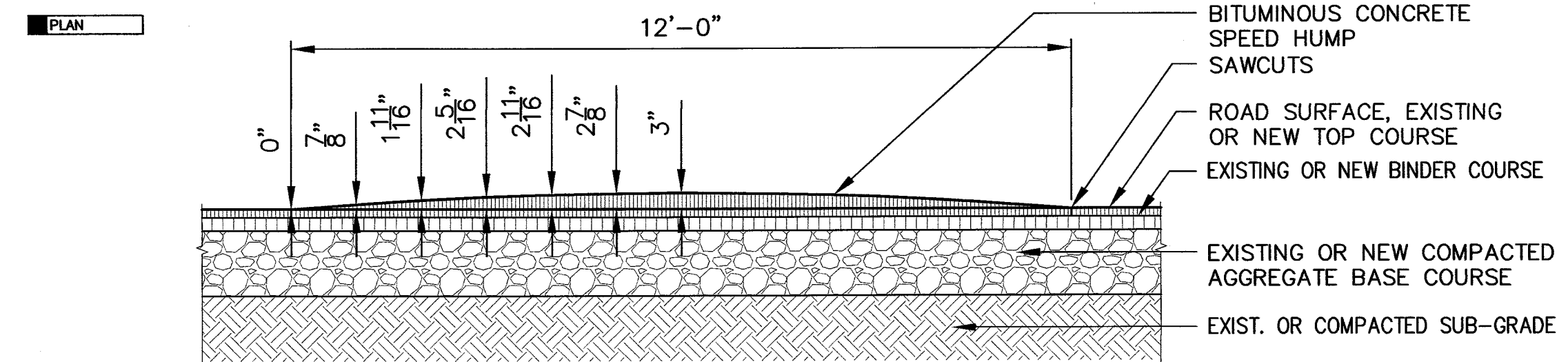
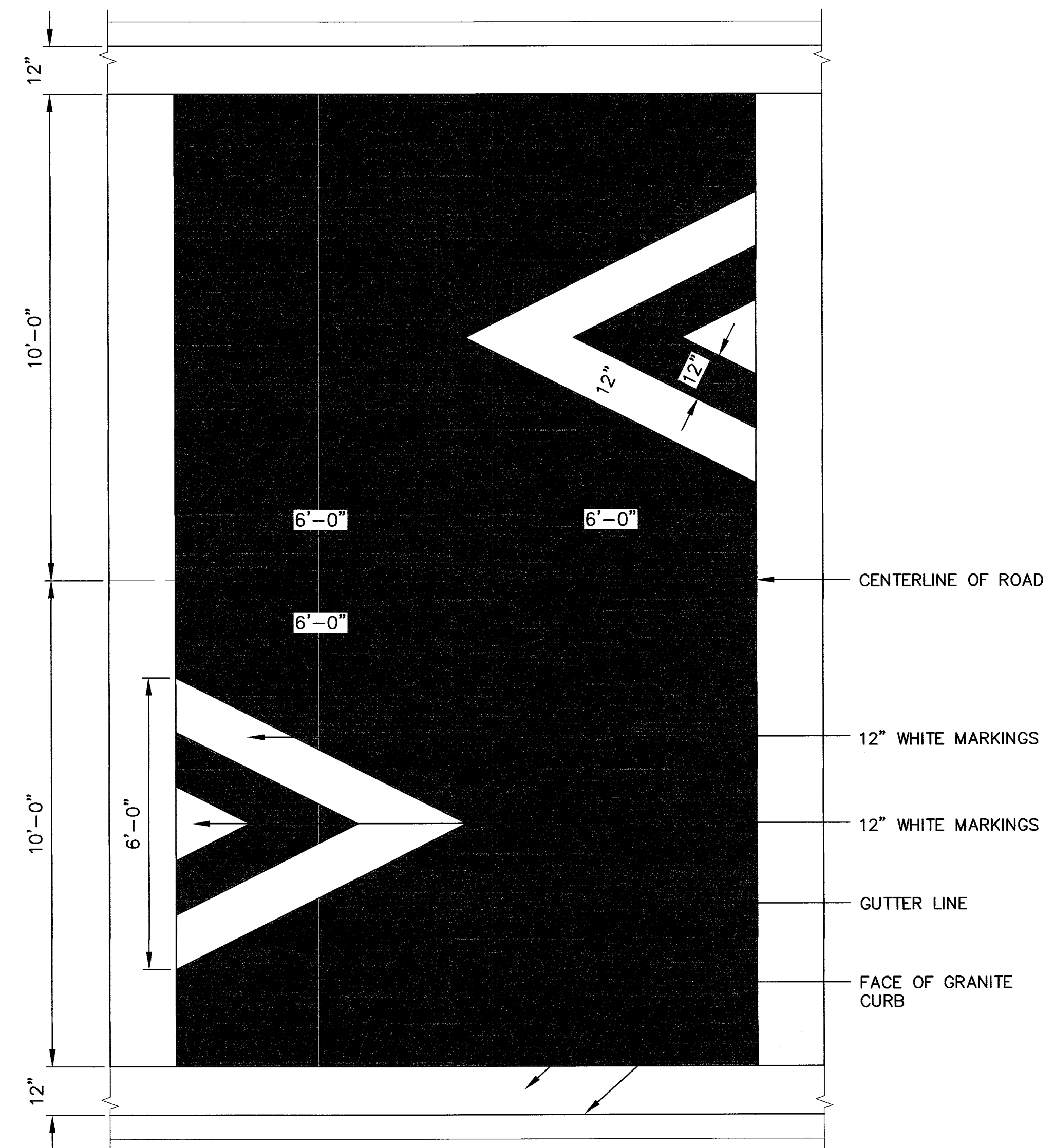
L.10



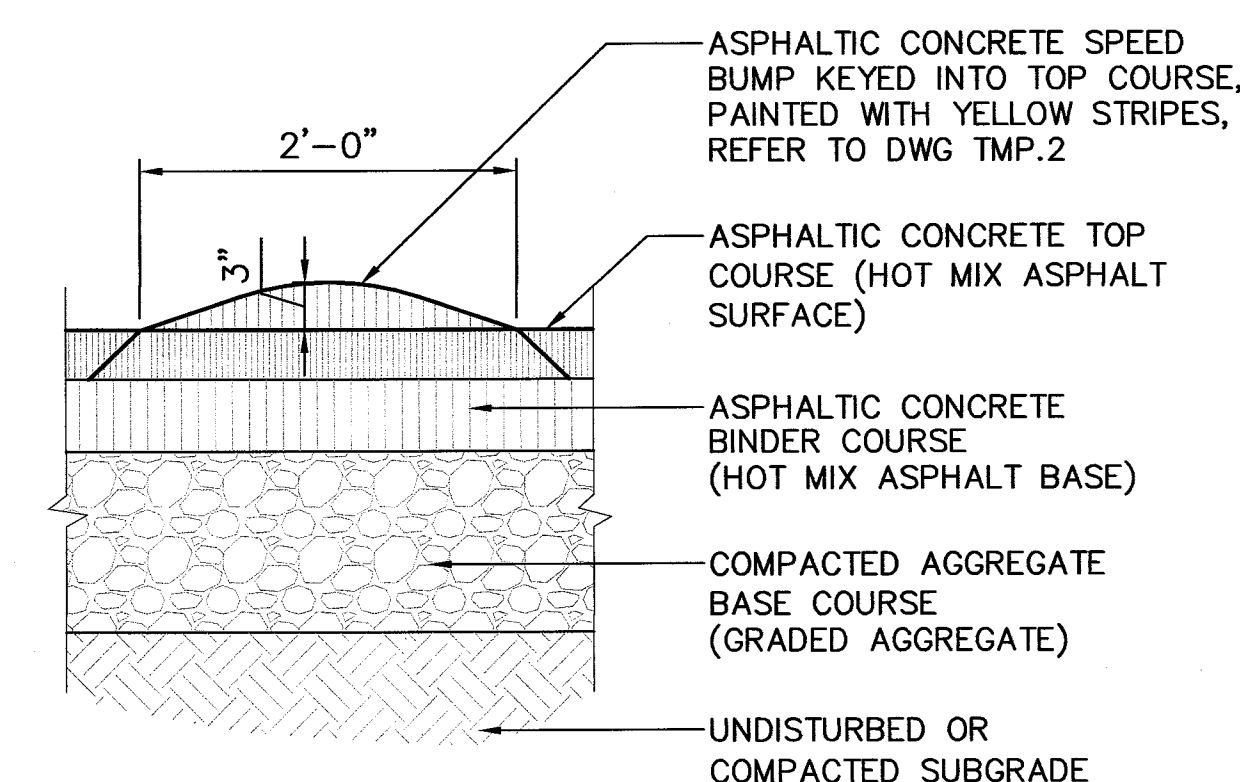
SECTION
3 SPEED HUMP ADVANCE WARNING MARKINGS
 SCALE 1" = 1'-0"



SECTION
4 CROSSWALK AND STOP LINE LAYOUT
 SCALE 1" = 1'-0"



SECTION
1 SPEED HUMP DETAIL, TYP.
 SCALE 1/2" = 1'-0"



SECTION
2 BITUMINOUS CONCRETE SPEED BUMP DETAIL, TYP.
 N.T.S.

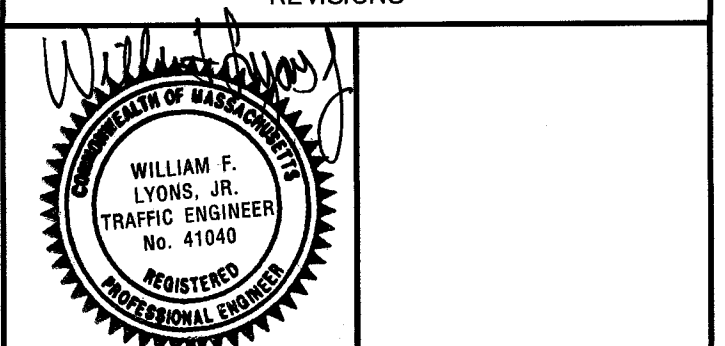
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