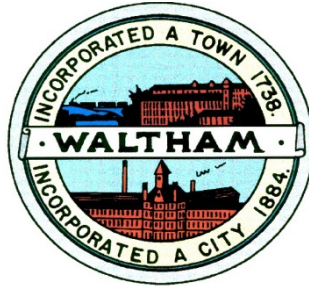


The City of Waltham



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

**ROADWAY IMPROVEMENT AND SIDEWALK CONSTRUCTION
TRAPELO ROAD FROM SMITH STREET
TO LEXINGTON STREET, Issue 2, 2018**

The bid opening will be held: 10:00AM Monday June 25, 2018

Pre-bid Meeting and Site Visit: 10A:00 AM Monday June 18, 2018

(Meet at Graverson Park, Corner of Pine Vale Rd and Trapelo Rd., Waltham)

Last Day for Written Questions: 12 noon Tuesday June 19, 2018

Via E-Mail Only to jpedulla@city.waltham.ma.us

Contractors shall be DOT Pre-Qualified

TRAPELO RD. RECONSTRUCTION PROJECT, 2018

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**SECTION 00020
CITY OF WALTHAM
MASSACHUSETTS**

**INVITATION TO BID
ROADWAY IMPROVEMENT AND SIDEWALK CONSTRUCTION
TRAPELO ROAD FROM SMITH STREET TO LEXINGTON STREET**

The City of Waltham, Massachusetts invites sealed bids from Contractors for the **ROADWAY IMPROVEMENT AND SIDEWALK CONSTRUCTION TRAPELO ROAD FROM SMITH STREET TO LEXINGTON STREET**.

PLANS, SPECIFICATIONS and other Contract Documents may be obtained by visiting the City's Web Site at www.city.waltham.ma.us/open-bids

Copies of Addenda will be e- mailed to the registered Bidders without charge. Addenda will also be posted on the web site above

Sealed **GENERAL BIDS** for this project will be accepted from eligible bidders by Joseph Pedulla, CPO at the Purchasing Department, Waltham City Hall, 610 Main Street, Waltham, MA 02452 until **10 AM on Monday June 25, 2018** 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 AM on Monday June 18, 2018** at Graverson Park, 77 Pine Vale Rd, Waltham, MA 02453 (corner of Pine Vale Rd and Trapelo Rd). 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.

LAST DAY FOR WRITTEN QUESTIONS is at 12 noon Tuesday June 19, 2018. Questions are to be sent via e-mail only to Jpedulla@city.waltham.ma.us

Each general 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

Bids shall be made on the basis of the Minimum Wage Rates as determined by the Commissioner of Labor and Industries, Pursuant to the Provisions of Chapter 149, Sections 26 to 27D inclusive of Massachusetts General Laws, a copy of which is found in the City's Web site at www.city.waltham.ma.us/open-bids .

Bidders' selection procedures and contract award shall be in conformity with the rules of Commonwealth of Massachusetts statute Chapter 30, §39M.

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, **naming the City of Waltham as an Additional Named Insured with a waiver of subrogation, for General Liability** in the amount of \$1,000,000 per occurrence and \$1,000,000 in the aggregate and Worker's Compensation Insurance as prescribed by law.

In accordance with the laws of the Commonwealth of Massachusetts 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.

CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

The work in this contract, as all city contract work, is subject to the appropriation of funds by the awarding authority.

Contractors shall be DOT Pre-Qualified

CITY OF WALTHAM

Joseph Pedulla, CPO
Purchasing Department
City Hall, 610 Main Street
Waltham, MA 02452

SECTION 00100 - INSTRUCTION TO BIDDERS

PART 1 - GENERAL

1.01 SCHEDULE OF DATES

- A. Advertisement appears in Central Register, Plans and Specifications ready for Bidders at the Offices of the Waltham Purchasing Agent after 4:30 P.M. June 6, 2018
- B. **Pre-bid walkthrough and site inspection: 10.00 AM June 18, 2018.** Meet at Graverson Park, 77 Pine Vale Rd, Waltham, MA 02453 (corner of Pine Vale Rd and Trapelo Rd).
- C. **Questions** and requests for interpretations may be submitted in writing via e-mail ONLY to Jpedulla@city.waltham.ma.us up to **12:00 noon June 19, 2018**
- D. Addenda will be issued with interpretations as determined by the Purchasing Department only via e-mail and posting on the web site.
- E. **General Bids Deadline: 10 AM on Monday June 25, 2018.** Send to Joseph Pedulla, CPO Purchasing Department, City Hall, 610 Main Street, Waltham, MA 02452, where the bids will be publicly open and read.

1.02 BIDDING PROCEDURE

- A. Bids for the work are subject to the provisions of General Laws, Chapter 30, § 39M, as amended. 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 may visit the site of the proposed work and fully acquaint himself with conditions as they exist, and may 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 for 50% of the contract value.
- 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" 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.
- C. 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:
Roadway improvement and sidewalk construction
Trapelo road from Smith Street to Lexington Street

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 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 ninety (90) 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 **10 AM June 18, 2018 Meet at Graverson Park, 77 Pine Vale Rd, Waltham, MA 02453 (corner of Pine Vale Rd and Trapelo Rd)**. Interested parties are encouraged to attend given that this will be the only time the site is available prior to the submission of bids.

1.13 LEFT BLANK INTENTIONALLY

1.14 CONTRACT DOCUMENTS

- A. The Awarding Authority shall make available the bid documents and addenda in the City Web site at www.city.waltham.ma.us/open-bids. No plans will be mailed.

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 Final Completion for the project is 365 **calendar days** after the date of the Notice-to-Proceed.

1.18 INTENTIONALLY LEFT BLANK

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 the 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 the Massachusetts General Laws. The Prevailing wage Schedule for this project can be found in the City's web Site 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 INTENTIONALLY LEFT BLANK

1.26 COMPLIANCE WITH MASSACHUSETTS GENERAL LAWS

- A. 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 INTENTIONALLY LEFT BLANK

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 \$ 1,000,000 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.
- e. Save harmless agreement for Owner and Architects set forth in ARTICLE 10.11 of the GENERAL CONDITIONS.

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 Contractors' 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. **City of Waltham shall be a Named Additional Insured for General Liability only with a Waiver of Subrogation on the insurance policy for this project.**

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 INTENTIONALLY LEFT BLANK.

1.31 INTENTIONALLY LEFT BLANK

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 issued by the Awarding Authority

2.00 FUNDS APPROPRIATION and LOAN AUTHORIZATION.

A **THE CONTRACT OBLIGATION ON BEHALF OF THE CITY IS SUBJECT TO PRIOR APPROPRIATION OF MONIES FROM THE GOVERNMENTAL BODY AND AUTHORIZATION BY THE MAYOR.**

3.0 CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

- A All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor

Signature of Individual or Corporate Name

By:

(Signature of Corporate Officer if applicable)

Title: _____

Social Security Number or Federal Identification Number: _____

END OF SECTION 00100

Contractors shall be DOT Pre-Qualified

SECTION 00200

REQUIRED FORMS

PART 1 – GENERAL

1.1 The checklists below are included for the bidders' convenience and in no way waive or abridge the Owner's right to reject any or all bids.

1.2 GENERAL BID

IMPORTANT: Bidders are cautioned that their Bid Response is required to include these forms:

A. SECTION 00300 – FORMS FOR GENERAL BID

1. A completed **Sealed** Bid Form/Proposal, also includes:
 - a. Acknowledgement of Addenda

B. SECTION 00310 – BID BOND

C. SECTION 00316 – STATEMENT OF BIDDER'S QUALIFICATIONS

D. SECTION 00321 – OSHA SAFETY TRAINING CERTIFICATION

E. Contractor's Affirmative Action Plan

F. Contractor's Equal Opportunity Statement

G. SECTION 00680 -Compliance

1.3 CONTRACT AGREEMENT

IMPORTANT: The following forms must be submitted to the Owner before the Owner can enter into a formal Contract Agreement with the successful Bidder:

A. SECTION 00500 – CONTRACT

1. Include Certificates of Insurance

B. SECTION 00610 - PERFORMANCE BOND

C. SECTION 00620 - PAYMENT BOND

**** END OF SECTION ****

SECTION 00220

AMERICANS WITH DISABILITIES ACT

Americans with Disabilities Act (42 U.S.C. 12131)
Section 504 of the Rehabilitation Act of 1973

The Americans with Disabilities Act (the "Act") applies to all employers of fifteen or more employees. All contractors that are subject to the Act must comply with its provisions. In further compliance with the Act, all Contractors who enter into contracts with the City are prohibited from discrimination against the City's employees, regardless of the size of the Contractor.

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

The bidder shall not discriminate against any qualified employee or job applicant with a disability. A "qualified" employee or job applicant is an individual with a disability who satisfies the requisite skill, experience, education and other job-related requirements of the employment position such individual holds or desires, and who with or without reasonable accommodations, is able to perform the essential functions of the job.

By submitting its bid, the bidder certifies to the City that it understands and will comply with all applicable provisions of the Act, including compliance with applicable provisions of Section 504 of the Rehabilitation Act of 1973, if the bidder is receiving federal funds.

**** END OF SECTION ****

BID PACKAGE

FORM FOR GENERAL BID 00 30 00

From: _____
 (Name of Bidder)

To: Joseph Pedulla, CPO, Purchasing Dept. City of Waltham

The Undersigned proposes to furnish all labor and materials required for the Roadway Reconstruction project on Trapelo Road from Smith Street to Lexington Street in Waltham, Massachusetts, in accordance with the accompanying plans and specifications for the contract unit prices specified below, subject to additions and deductions according to the terms of the specifications.

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
102.51	33	Tree Protection, at _____ Per Each				
102.52	680	Temp. Tree & Shrub Protection Fence, at _____ Per Foot				
103.	10	Tree Removed- Diameter Under 24 Inches, at _____ Per Each				
104.	2	Tree Removed – Diameter 24 Inches and Over, at _____ Per Each				
105.	1	Stump Removed, at _____ Per Each				
120.1	3,200	Unclassified Excavation, at _____ Per Cubic Yard				
<i>CARRIED FORWARD</i>						

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
141.	775	Class A Trench Excavation, at _____ _____ Per Cubic Yard				
141.1	50	Test Pit For Excavation, at _____ _____ Per Cubic Yard				
144.	20	Class B Rock Excavation, at _____ _____ Per Cubic Yard				
151.	2,400	Gravel Borrow, at _____ _____ Per Cubic Yard				
170.	8,500	Fine Grading and Compacting, at _____ _____ Per Square Yard				
220.	47	Drainage Structure Adjusted, at _____ _____ Per Each				
220.2	5	Drainage Structure Rebuilt, at _____ _____ Per Foot				
220.5	1	Drainage Structure Remodeled, at _____ _____ Per Each				
220.6	5	Sanitary Structure Rebuilt, at _____ _____ Per Foot				
<i>CARRIED FORWARD</i>						

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
220.7	38	Sanitary Structure Adjusted, at _____ _____ Per Each				
220.8	4	Sanitary Structure Remodeled, at _____ _____ Per Each				
222.1	6	Frame and Grate – MassDOT Cascade Type, at _____ _____ Per Each				
223.1	6	Frame and Grate (or Cover) Removed and Stacked, at _____ _____ Per Each				
227.3	5	Removal of Drainage Structure Sediment, at _____ _____ Per Cubic Yard				
346.21	26	2 Inch Service Pipe Removed and Discarded, at _____ _____ Per Foot				
358.	50	Gate Box Adjusted, at _____ _____ Per Each				
358.1	1	Gate Box Removed and Stacked, at _____ _____ Per Each				
<i>CARRIED FORWARD</i>						

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
402.	130	Dense Graded Crushed Stone for Subbase, at _____ _____ Per Cubic Yard				
415.	19,000	Pavement Micromilling, at _____ _____ Per Square Yard				
440.	12,700	Calcium Chloride for Roadway Dust Control, at _____ _____ Per Pound				
443.	20	Water for Roadway Dust Control, at _____ _____ Per Million Gallons				
450.90	2,350	Contractor Quality Control, at _____ _____ Per Ton				
451.	10	HMA for Patching, at _____ _____ Per Ton				
452.	1,400	Asphalt Emulsion for Tack Coat, at _____ _____ Per Gallon				
453.	30,680	HMA Joint Sealant, at _____ _____ Per Foot				
455.23	1,870	Superpave Surface Course-12.5 (SSC-12.5), at _____ _____ Per Ton				
<i>CARRIED FORWARD</i>						

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
455.31	150	Superpave Intermediate Course-12.5 (SIC-12.5), at _____ _____ Per Ton				
455.42	330	Superpave Base Course-37.5 (SBC-37.5), at _____ _____ Per Ton				
472.	10	Hot Mix Asphalt for Miscellaneous Work, at _____ _____ Per Ton				
482.3	2,700	Sawing Asphalt Pavement, at _____ _____ Per Foot				
482.4	300	Sawing Cement Concrete Sidewalk, at _____ _____ Per Foot				
506.	6,400	Granite Curb Type VB, Straight, at _____ _____ Per Foot				
506.1	1,000	Granite Curb Type VB, Curved, at _____ _____ Per Foot				
509.	200	Granite Transition Curb for Wheelchair Ramps, Straight, at _____ _____ Per Foot				
<i>CARRIED FORWARD</i>						

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
509.1	300	Granite Transition Curb for Wheelchair Ramps, Curved, at _____ _____ Per Foot				
514.	20	Granite Curb Inlet, Straight, at _____ _____ Per Each				
515.	1	Granite Curb Inlet, Curved, at _____ _____ Per Each				
516.	196	Granite Curb Corner – Type A, at _____ _____ Per Each				
570.1	20	Hot Mix Asphalt Curb Type 1, at _____ _____ Per Foot				
580.	600	Curb Removed and Reset, at _____ _____ Per Foot				
582.	10	Curb Corner Removed and Reset, at _____ _____ Per Each				
602.	10	Guardrail Post - Steel, at _____ _____ Per Each				
<i>CARRIED FORWARD</i>						

00 30 00

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
620.1	400	Steel W Beam Highway Guard (Single Faced), at _____ _____ Per Foot				
627.1	3	Steel W Beam Terminal Section (Single Faced), at _____ _____ Per Each				
627.8	3	Steel Beam Highway Guard Tangent End Treatment, at _____ _____ Per Each				
630.	50	Highway Guard Removed and Reset, at _____ _____ Per Foot				
645.148	210	48 Inch Chain Link Fence (PTR) Vinyl Coated-Black (Line Post Opt.), at _____ _____ Per Foot				
666.	80	Chain Link Fence Removed and Reset, at _____ _____ Per Foot				
670.	510	Fence Removed and Reset, at _____ _____ Per Foot				
691.1	65	Stone Border Removed and Reset, at _____ _____ Per Foot				
<i>CARRIED FORWARD</i>						

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
693.	3,500	Modular Block Retaining Wall, at _____ _____ Per Square Foot				
693.1	70	Concrete Block Wall Removed and Rebuilt, at _____ _____ Per Foot				
697.	720	Sedimentation Fence, at _____ _____ Per Foot				
697.1	31	Silt Sack, at _____ _____ Per Each				
701.	3,700	Cement Concrete Sidewalk, at _____ _____ Per Square Yard				
701.1	2,300	Cement Concrete Sidewalk at Driveways, at _____ _____ Per Square Yard				
701.2	600	Cement Concrete Wheelchair Ramp, at _____ _____ Per Square Yard				
702.	5	Hot Mix Asphalt Walk Surface, at _____ _____ Per Ton				
<i>CARRIED FORWARD</i>						

00 30 00

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
703.	200	Hot Mix Asphalt Driveway, at _____ _____ Per Ton				
705.1	5	Flagstone Walk Removed and Reset, at _____ _____ Per Square Yard				
706.1	10	Brick Walk (or Pavers) Removed and Relaid, at _____ _____ Per Square Yard				
711.	10	Bound Removed and Reset, at _____ _____ Per Each				
748.	1	Mobilization, at _____ _____ Per Lump Sum				
751.	300	Loam Borrow, at _____ _____ Per Cubic Yard				
756.	1	NPDES Stormwater Pollution Prevention Plan, at _____ _____ Per Lump Sum				
765.	2,500	Seeding, at _____ _____ Per Square Yard				
<i>CARRIED FORWARD</i>						

00 30 00

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
767.6	500	Aged Pine Bark Mulch, at _____ _____ Per Square Yard				
767.8	240	Bales of Hay for Erosion Control, at _____ _____ Per Each				
812.30	2	Standard Signal Post Foundation SD3.031, at _____ _____ Per Each				
824.50	2	Flashing Warning Beacon Removed and Reset, at _____ _____ Per Each				
832.	50	Warning, Regulatory and Route Marker Aluminum Panel Type A, at _____ _____ Per Square Foot				
847.1	42	Sign Support (N/Guide) and Route Marker w/1 Breakaway Post Assembly-Steel, at _____ _____ Per Each				
852.	450	Safety Signing for Construction Operations, at _____ _____ Per Square Foot				
<i>CARRIED FORWARD</i>						

00 30 00

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
853.1	20	Potable Breakaway Barricade-Type III, at _____ _____ Per Each				
854.036	10,300	Temporary Pavement Markings – 6 Inch (Tape), at _____ _____ Per Foot				
856.	360	Arrow Board, at _____ _____ Per Day				
856.12	720	Portable Changeable Message Board, at _____ _____ Per Day				
859.	18,000	Reflectorized Drum, at _____ _____ Per Drum Day				
864.04	2,710	Pavement Arrows and Legends Refl. White (Thermoplastic), at _____ _____ Per Square Foot				
866.104	10,200	4 Inch Reflectorized White Line (Thermoplastic), at _____ _____ Per Foot				
866.112	250	12 Inch Reflectorized White Line (Thermoplastic), at _____ _____ Per Foot				
<i>CARRIED FORWARD</i>						

Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
867.104	10,300	4 Inch Reflectorized Yellow Line (Thermoplastic), at _____ _____ Per Foot				
867.112	100	12 Inch Reflectorized Yellow Line (Thermoplastic), at _____ _____ Per Foot				
874.2	34	Traffic Signs Removed and Reset, at _____ _____ Per Each				
901.	5	4000 PSI, 1.5 Inch, 565 Cement Concrete, at _____ _____ Per Cubic Yard				
999.001	1	Lump Sum Police Detail, at <u>Three hundred ten thousand dollars</u> <u>and zero cents</u> Per Lump Sum	310,000	00	\$310,000	00
<i>CARRIED FORWARD</i>						
<i>Subtotal</i>						
ALTERNATE 1						
Item No.	Approx. Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
141.1	20	Test pit for Exploration, at _____ _____ Per Cubic Yard				

151	200	Gravel Borrow, at _____ _____ Per Cubic Yard				
153	30	Controlled Density Fill, at _____ _____ Per Cubic Yard				
182.2	300	Removal of Asbestos Cement Pipe, at _____ _____ Per Foot				
250.04	300	4-Inch Polyvinyl Chloride Sanitary Sewer Pipe, at _____ _____ Per Foot				
302.06	150	6-Inch Ductile Iron Water Main, at _____ _____ Per Foot				
309	500	Ductile Iron Fittings For Water Pipe, at _____ _____ Per Pound				
347.1	1,500	1-Inch Copper Tubing Type K, at _____ _____ Per Foot				
350.6	15	6-Inch Gate and Box, at _____ _____ Per Each				
363.1	8	1-Inch Corporation Cock, at _____ _____ Per Each				
		<i>CARRIED FORWARD</i>				

00 30 00

376	10	Hydrant, at _____ _____ Per Each				
384	60	Curb Stop, at _____ _____ Per Each				
472.1	1,000	Hot Mix Asphalt For Temporary Patch (3"), at _____ _____ Per Square Yard				
472.2	1,500	Hot Mix Asphalt For Permanent Patch (5"), at _____ _____ Per Square Yard				
99.001	1	Lump Sum Police Detail, at Forty Five thousand dollars _____ and zero cents _____ Per Lump Sum	45,000	00	\$45,000	00
<i>CARRIED FORWARD</i>						
<i>Subtotal</i>						
<i>ALTERNATE 1 TOTAL</i>						
<i>ESTIMATED TOTAL CONTRACT PRICE (BASE+ALTERNATE)</i>						

(ESTIMATED TOTAL CONTRACT PRICE in words)

My company acknowledges receipt of addenda #: _____, _____, _____, _____, _____, _____, _____, _____.

CONTRACTORS SHALL BE DOT Pre-QUALIFIED

SECTION 00310

5% BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____
_____, as Principal, and
_____, as Surety, are hereby held and
firmly bound unto the City of Waltham, Massachusetts, a municipality in the Commonwealth of
Massachusetts in the penal sum of _____
_____ Dollars (\$ _____), for the payment of which, well and truly to be made,
we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and
assigns. Signed this _____ day of _____, _____.

THE CONDITION OF THE ABOVE OBLIGATION is such that whereas the Principal has submitted to the City,
a certain bid attached hereto and hereby made a part hereof to enter into a contract in writing for the
“Sewer Manhole Rehabilitation - 2015”, for the City.

NOW THEREFORE,

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

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

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

SEAL

(Principal)

By _____

SEAL

(Surety)

Address _____

Telephone No. _____

Fax No. _____

SECTION 00316

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information it desires.

1. Name of Bidder

2. Business Address

3. The names, titles, residences and Social Security numbers of all persons and parties (including an Emergency Contact) interested in this Proposal as principals are as follows:

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

IMPORTANT: Be sure residences and Social Security Numbers are listed below.

Name	Title	Home Address	Social Security #
------	-------	--------------	-------------------

4. The date the company was organized.

5. If a corporation, where incorporated.

6. How many years have you been engaged in the **rehabilitation of sewer manholes** under your present firm or trade name?

7. Please explain the general character of work performed by your company.

8. List all projects that your organization is currently performing or has been awarded at the time of this bid? Provide the following information:

Name and Address of Owner for Whom Work is Being Done	Whether Work Being Done as Contractor or Sub-contractor	Description of Work	Approximate Amount of Contract	Approximate Completion Date of Work
---	---	---------------------	--------------------------------	-------------------------------------

9. What is your annual gross revenue (last year and projected for the next two years), what is your current revenue commitment (in dollars)?

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

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

12. Submit a preliminary project schedule with number of crews and construction sequencing proposed for the project.

13. What project(s) has/have your organization completed of character similar to this project? Provide the following information:

Name and Address of Owner for Whom Work Was Done	State Whether Work Was Done as Contractor or Sub-Contractor	Description of Work	Approximate Amount of Contract	Approximate Completion Date of Work
--	---	---------------------	--------------------------------	-------------------------------------

14. Describe equipment available for the performance of this contract by setting forth make, model and year, size, number, and type for each such piece of equipment (a) owned, (b) currently rented or (c) to be rented. Bidder must set forth description of all equipment it plans to use whether rented or owned.

(a) Owned

(b, c) Rented

15. Describe the background and experience of the principal members of your organization, including the officers.

16. Provide five (5) similar, successfully completed projects within the past three (3) years, involving the rehabilitation of sewer manholes, the cleaning of existing pipelines and the CCTV inspecting of existing pipelines of similar size and scope of the Project.

17. Who will be the contractor's project manager? State such person's qualifications. Also list names of any other key and/or supervisory employees who will be participating in this contract and their qualifications (years of experience, etc.).

18. Who will be the contractor's full time on-site superintendent? Submit such person's resume for review by Owner/Engineer. The Project Superintendent must have a minimum of 10 years construction experience; demonstrate ability to manage a budget, schedule, and crew coordination; demonstrate experience in traffic management, community relations with local residents, utility coordination, sewer manhole rehabilitation, and permit compliance. Also list names of other key and/or supervisory employees who will be participating in this contract and their qualifications (years of experience, etc.).

19. Submit the number, size and equipment of crews to be established to complete the work as specified.

20. Give below the name and address of one or more banks and the contact person's name(s) and phone number(s), at the bank(s), which have information that would enable them to advise regarding the financial ability of your company.

Name of Bank / Contact Person

Address / Phone Number

21. The apparent low bidder shall furnish a detailed financial statement and furnish any other information that may be required by the City of Waltham.

22. What is your available credit? The apparent low bidder shall furnish written evidence.

23. Employer Identification No. (Treasurer's No.)

24. Give below the name and address of the bidder's Surety / Bonding company and the contact person's name and phone number, at the Surety / Bonding company, which has information that would enable them to advise regarding the status of existing bonds and bonding capability of your company.

Name of Surety or Bonding Company / Contact Person

Address / Phone Number

25. Give below the name, company (or owner), address and phone number of at least five references (Owner or Engineer/Architect) who have information that would enable them to advise your performance on past or existing projects of the general nature similar to this Project.

Name of Owner or Company / Contact Person Address / Phone Number

26. Name, Signature, Social Security number and Title of officer preparing this proposal.

Name _____

Signature _____

Social Security
Number _____ Title _____

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

Dated at _____ this _____ day of _____, 20____

(Signature)

Tel. No. _____

By _____

Title _____

State of _____

County of _____

_____, being duly sworn,

deposes and says that he is

_____ of

(Name of Organization)

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

Subscribed and sworn to before me this _____ day of _____, 20____

(Notary Public)

My commission expires _____, 20____

SECTION 00321

OSHA SAFETY TRAINING CERTIFICATION

Chapter 306 of the Acts of 2004
An Act Relative to the Health and Safety on Construction Projects

_____ (Name of General Bidder) hereby certifies that it, and all its subcontractors who are not filed sub-bidders shall:

(1) certify that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is a least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

Signed under the penalties of perjury. _____(date)

Signature of authorized representative of contractor

Print name of authorized representative of contractor

SECTION 00331

PREVAILING WAGE SCHEDULE

Please visit the City Web Site at www.city.waltham.ma.us/open-bids for a copy of the schedules

CONTRACT FORMS

SECTION 00500

AGREEMENT

CITY OF WALTHAM

ARTICLE 1. This agreement, made this _____ day of _____, 2017 by and between the CITY OF WALTHAM, party of the first part, hereinafter called the CITY, by its MAYOR, and

hereinafter called the CONTRACTOR.

ARTICLE 2. Witnesseth, that the parties to this agreement, each in consideration of the agreement on the part of the others herein contained, do hereby agree, the CITY OF WALTHAM for itself, and said contractor for his heirs, executors, administrators and assigns as follows:

To furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished (except as otherwise specified) and deliver in and about the project and to do and perform all work in strict conformity with the provisions of this Contract and of the Notice to Bidders, bid, Project Manual, and Drawings hereto annexed. The said Notice to Bidders, bid, Project Manual, and Drawings are hereby made a part of this contract as fully and to the same effect as if the same had been set forth at length and incorporated in the contracts.

ARTICLE 3. In consideration of the foregoing premises the CITY agrees to pay and the CONTRACTOR agrees to receive as full compensation for everything furnished and done by the CONTRACTOR under this contract, including all work required by not included in the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such prices as are set forth in the accompanying bid.

This Agreement entered into as of the day and year first written above.

CITY OF WALTHAM, MASSACHUSETTS

FOR THE CITY

Jeannette A. McCarthy, MAYOR,
City of Waltham
Date: _____

Luke Stanton, Asst. City Solicitor
Date: _____
APPROVED AS TO FORM ONLY

Sandra Tomasello, Recreation Director
Date: _____

Joseph Pedulla, Purchasing Agent
Date: _____

Paul Centofanti, Auditor
Date: _____

I CERTIFY THAT SUFFICIENT FUNDS
ARE AVAILABLE FOR THIS CONTRACT

FOR THE COMPANY

CONTRACTOR (Signature),
Date: _____

Company

Address

SECTION 00550

NOTICE OF AWARD

TO: _____

PROJECT DESCRIPTION: _____

The Owner has considered the Proposal submitted by you for the above described Work on _____20____ in response to its Advertisement for Bids and Instructions to Bidders.

You are hereby notified that your Proposal has been accepted for Items totalling the amount of \$_____.

You are required by the Instructions to Bidders to execute the Contract Agreement and furnish the required Contractor's Performance Bond, Payment Bond and certificates of insurance within ten (10) days from the date of this Notice of Award.

If you fail to execute said Agreement and to furnish said Bonds and Insurance within ten (10) days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Proposal as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this ____ day of _____, 20__.

(Owner)

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged, this the _____ day of _____, 20__.

Authorized Signature _____

Print name and Title _____

SECTION 00560

NOTICE TO PROCEED

To: _____
(Contractor)

Date: _____

Project: _____

You are hereby notified to commence the Work in accordance with the Agreement dated _____, 20__, on or before _____, 20__, and you are to complete all work within **130 calendar days** from the written Notice to Proceed thereafter. The date of completion of all work is therefore, _____, 20__.

(Owner)

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged, this the _____ day of _____, 20__.

Authorized Signature _____

Print Name and Title _____

SECTION 00610

PERFORMANCE BOND

We, the undersigned, _____,
(Name of Contractor)

(Address of Contractor)

(Corporation, Partnership, or Individual), hereinafter called Principal,
and _____,
(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the CITY OF WALTHAM, hereinafter called Owner, in the penal sum of _____ Dollars (\$_____) in lawful money of the United States, for the payment of which sum well and truly to be made. We hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is such that the Principal entered into a certain contract with the Owner, dated the ____ day of _____, 20____, a copy of which is attached hereto and made a part hereof, for the project known as "Sewer Manhole Rehabilitation - 2015", in the City of Waltham, Massachusetts, and the Principal and Surety bind themselves to the Owner for the performance of the contract.

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

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

IN WITNESS WHEREOF, this instrument is executed on this ____ day of _____, 20__.

CONTRACTOR AS PRINCIPAL

SURETY

(Signature)

(Signature)

Name and Title: _____

Name and Title: _____

SEAL

SEAL

Address

Telephone No.

Fax No.

SECTION 00620

PAYMENT BOND

We, the undersigned, _____,
(Name of Contractor)

(Address of Contractor)

_____(Corporation, Partnership, or Individual), hereinafter called Principal,
and _____,
(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the CITY OF WALTHAM, hereinafter called Owner, in the penal sum of _____ Dollars (\$_____) in lawful money of the United States, for the payment of which sum well and truly to be made. We hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is such that the Principal entered into a certain contract with the Owner, dated the ____ day of _____ 20____, a copy of which is attached hereto and made a part hereof, for the project known as "Sewer Manhole Rehabilitation - 2015", in the City of Waltham, Massachusetts.

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

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

IN WITNESS WHEREOF, this instrument is executed on this ___ day of _____, 20__.

CONTRACTOR AS PRINCIPAL

SURETY

(Signature)

(Signature)

Name and Title: _____

Name and Title: _____

SEAL

SEAL

Address

Telephone No.

Fax No.

SECTION 00680
COMPLIANCE FORMS

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 _____

WEEKLY PAYROLL REPORT FORM

Company Name: _____ Prime Contractor

Project Name: _____ Subcontractor

Awarding Auth.: _____ List Prime Contractor: _____

Work Week Ending: _____ Employer Signature: _____

Final Report _____ Print Name & Title: _____

Employee Name & Address	Work Classification	Hours Worked							(A) Tot. Hrs.	(B) Hourly Base Wage	Employer Contributions			(F) [B+C+D+E] Hourly Total Wage (prev. wage)	(G) [A*F] Weekly Total Amount
		S	M	T	W	T	F	S			(C) Health & Welfare	(D) Pension	(E) Supp. Unemp.		

NOTE: Every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority.

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: <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <input type="checkbox"/> Other (see instructions) ▶ _____	
<input type="checkbox"/> Exempt payee	
Address (number, street, and apt. or suite no.)	Requester's name and address (optional) Chief Procurement Officer Purchasing Department, City of Waltham 610 Main Street Waltham, MA 02452
City, state, and ZIP code	
List account number(s) here (optional)	

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								

Fill out this sect. either SS or FID

Employer identification number								

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 & Date

Sign Here	Signature of U.S. person ▶	Date ▶
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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.

CONDITIONS OF THE CONTRACT

SECTION 00700

STANDARD GENERAL CONDITIONS

1. INFORMATION

All information shall come from the Office of the City Purchasing Agent. The Contractor shall inquire at this office for any information needed. Wherever the words “or equal as approved” are used, it is to be understood that the opinion of the City Purchasing Agent shall govern.

2. SUITS

The Contractor shall assume defense of and shall indemnify and hold the City and its agents harmless from all suits and claims against the City and its sub-contractors arising from the use of any invention, patent right labor or employment, or from any act of omission or neglect of the City, its agents, employees or any subcontractor in performing the work, under this contract.

3. LAWS AND REGULATIONS

The Contractor shall conform to all the applicable rules, regulations, laws and ordinances of the City of Waltham, the Commonwealth of Massachusetts, the United States of America and all agencies having jurisdiction over this contract.

4. PROTECTION OF PROPERTY

The Contractor shall take all proper precautions to protect the City’s property from damage and unnecessary inconvenience. Any City property damaged by the Contractor in carrying out the provisions of this contract shall be restored to its original condition, by and at the expense of the Contractor.

5. PROTECTION OF PERSONS

The Contractor shall take all proper precautions to protect persons from injury, unnecessary inconvenience, and shall be responsible for his failure to do so. The Contractor agrees to hold the City harmless from any and all liabilities of every nature and description, which may be suffered through bodily injury, including death, to any person, by reason of negligence of the Contractor, his agents or employees, or any subcontractor.

6. INSURANCE

A. **WORKMAN’S COMPENSATION:** The Contractor shall provide by insurance for the payment of compensation and furnishing of other benefits under Chapter 152 of the General Laws of the Commonwealth of Massachusetts to all persons to be employed under this contract, the premiums for which shall be paid by the Contractor.

B. **COMPREHENSIVE GENERAL LIABILITY**

Bodily Injury:	\$1,000,000 Each Occurrence
	\$2,000,000 Aggregate
Property Damage:	\$1,000,000 Each Occurrence
	\$2,000,000 Aggregate

C. **AUTOMOBILE (VEHICLE) LIABILITY**

Bodily Injury	\$2,000,000 Each Occurrence
Property Damage	\$1,000,000 Aggregate

D. **UMBRELLA POLICY**

General liability	\$2,000,000
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Your bid response must include a Certificate of Insurance with the above limits as a minimum. In addition, the Certificate of Insurance must have the following text contained in the bottom left box of the Certificate: **“The City of Waltham is a Named Additional Insured for all Insurance”**. The Certificate of Insurance must be mailed directly to:

Office of the Purchasing Agent

Purchasing Department
City of Waltham
610 Main Street
Waltham, MA 02452

7. LABOR AND MATERIALS BOND

The Contractor agrees to execute and deliver to the City, a Performance Bond and a Labor and Materials Bond equal to 50% of the contract value. This contract shall not be in force until said bond has been delivered and accepted by the City. Bond to be issued by a company licensed by the Commonwealth of Massachusetts.

A LETTER FROM A SURETY COMPANY CERTIFYING THAT THE CONTRACTOR IS QUALIFIED AND CAPABLE OF OBTAINING THE ABOVE BONDS MUST BE INCLUDED WITH HIS/HERS BID.

8. PERSONNEL:

The Contractor shall employ a competent supervisor and all properly licensed personnel necessary to perform the services required in this contract. The City Purchasing Agent shall have the right to require the Contractor to remove and/or replace any of the personnel for nonperformance or for unprofessional behavior. The City Purchasing Agent may require the Contractor to submit a weekly performance record of the areas and of the work performed, on forms approved by the City Purchasing Agent. The Contractor or his supervisor shall be available to inspect such work as required by the City Purchasing Agent.

9. PREVAILING WAGES

The Contractor is required to pay the prevailing wages as determined under the provisions of Chapter 149, Sections 26 and 27D of the Massachusetts General Laws, including the submission of weekly payrolls to the awarding authority. Copies of the Prevailing Wage Schedule is found on line at www.city.waltham.ma.us/open-bids

10. MATERIALS

The City or its Agent reserves the right to approve or reject any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any rejected supplies, materials or equipment, to the satisfaction of the City or its Agents.

11. TERMINATION OF CONTRACT

This contract may be terminated by the City upon deliverance to the Contractor of a five-day written notice of said termination.

12. CONTRACT OBLIGATIONS

Contract obligations on behalf of the City are subject to an annual appropriation to cover the contract obligation.

13. BIDDER EXPERIENCE EVALUATION

Each bidder shall submit with his bid, all the information relative to their experience and qualifications in performing the work required under this contract and shall have been in business for a minimum of five (5) years, in order for their bid to be considered.

14. NOT-TO-EXCEED AMOUNT

The bid amount proposed in your company's response is a "not-to- Exceed" amount unless the City makes changes, in writing, to the scope of work to be performed. The Change Order must be signed and approved by the City's Purchasing Agent, City Auditor, Law Department and the Mayor prior to the commencement of the change order work. No work is to begin until the proper approvals have

been obtained. A change order will be priced at the unit price. Failure to comply with this procedure will result in the cancellation of the contract and the non-payment of services provided

16. FINANCIAL STATEMENTS.

The City may require, within five (5) days after the bid opening, a complete and detailed Financial Statement prepared by a Certified Public Account, to determine a bidder's financial stability.

17 BREACH OF CONTRACT/ NON PERFORMANCE

If the Contractor shall provide services in a manner, which is not to the satisfaction of the City, the City may request that the Contractor refurnish services at no additional cost to the City until approved by the City. If the Contractor shall fail to provide services, which are satisfactory to the City, the City in the alternative may make any reasonable purchase or Contract to purchase services in substitution for those due from the Contractor. The City may deduct the cost of any substitute Contract for nonperformance of services together with incidental and consequential damages from the Contract price and shall withhold such damages from sums due or to become due to the Contractor. If the damages sustained by the City exceed sums due or to become due, the Contractor shall pay the difference to the City upon demand. The Contractor shall not be liable for any damages sustained by the City due to the Contractor's failure to furnish services under the terms of this Contract if such failure is in fact caused by the occurrence of a contingency the nonoccurrence of which was a basic assumption under which this Contract was made, including a state of war, embargoes, expropriation of labor strike or any unanticipated federal, state or municipal governmental regulation of order, provided that the Contractor has notified the City in writing of such cause within seven (7) days after its occurrence.

18 RIGHT TO AUDIT

The City of Waltham has the right to review and audit documents related to this contract. This right extends to any subcontractor, supplier or other entity used by the prime contractor to fulfill the obligations under this contract.

19. CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

20. BID OPENING INCLEMENT WEATHER

If, at the time of the originally scheduled bid opening, City Hall is closed to inclement weather or another unforeseeable event, the bid opening will be extended until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

21 FUNDS APPROPRIATION.

THE CONTRACT OBLIGATION ON BEHALF OF THE CITY IS SUBJECT TO PRIOR APPROPRIATION OF MONIES FROM THE GOVERNMENTAL BODY AND AUTHORIZATION BY THE MAYOR.

22 THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS, OR ANY PART OF ANY BID, WHICH IN THE OPINION OF THE AWARDING AUTHORITY, IS IN THE BEST INTERESTS OF THE CITY OF WALTHAM.

END OF SECTION 00700

The terms used in these Supplementary General Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary General Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

SECTION 00701

SUPPLEMENTARY GENERAL CONDITIONS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms Delete Paragraph 1.01.A.44 in its entirety and insert the following language in its place:

45. Substantial Completion shall mean either that the Work required by the Contract has been completed except for Work having a Contract Price of less than one (1) percent of the then adjusted total Contract Price, or substantially all of the work has been completed and opened to Owner's use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work required by the Contract (Based on MGL C30, S39G). The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

SC-1.02 Terminology Add the following new paragraphs immediately after Paragraph 1.02.B.1:

2. The words "As permitted", "As required", or words of like effect shall mean that the permission, or requirement of the Engineer is intended- the words "Approved", "Acceptable", "Satisfactory", or words of like import shall mean approved by, or acceptable to, or satisfactory to the Engineer- and the words "Necessary", "Suitable", or "Equal", or words of like import shall mean necessary, suitable, or equal in the opinion of the Engineer.

3. The words "Approval of the Owner" or "Approved by the Owner", "Approval of the Engineer" or "Approved by the Engineer", shall mean approval in writing.

SC-1.02 Terminology Add the following new paragraphs immediately after Paragraph 1.02.E.4:

5. "Furnish and Install" and "Provide" shall mean that items referred to shall be furnished and installed under this contract. The term "Furnish" shall mean that the items referred to shall be furnished, only, by the party to whom the term is directed. Similarly, the term "install" shall mean that the item referred to shall be installed, only, by the party to whom the term is directed.

SC-1.02 Terminology Add the following new paragraphs immediately after Paragraph 1.02.F:

G. The words "Schedule of Prices" shall mean the schedule of prices in the proposal.

H. The word "Owner" shall mean the City of Waltham, MA. The Owner is treated as if it were singular number and neuter gender and the Contractor and the Engineer are treated as if each were in the singular and masculine gender.

Any communication to the Owner shall be addressed to:

Michael Chiasson, Director
City of Waltham Public Works Department

I. The word "State" shall mean the Commonwealth of Massachusetts.

J. The word "City" and/or "Town" shall mean the City of Waltham, MA.

ARTICLE 2 PRELIMINARY MATTERS

SC-2.03 Commencement of Contract Times; Notice to Proceed Amend the third sentence of Paragraph 2.03.A. by striking out the third sentence "In no event is earlier." and substitute the following:

The Contractor shall commence the work not later than the time stipulated herein, after being notified to do so by the Owner, and shall continue it to completion with all practical dispatch and regularity so that it shall be completed no later than the time stipulated, as aforesaid, provided however, that, at its discretions, the Owner may in writing extend the time for the commencement and completion of the work.

ARTICLE 3 CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.02 Reference Standards Add the following new paragraph immediately after Paragraph 3.02.A.2.:

3. Where references are made on the Drawings or in these Specifications to Standard Specifications, codes, etc., of the U.S. Government, State, or local authorities, or professional and industrial societies and associations, the applicable portions thereof shall govern as fully as if they were recited at length herein, and shall include all revisions thereto in effect at the time of opening of Bids.

SC-3.03 Reporting and Resolving Discrepancies Add the following new paragraphs immediately after Paragraph 3.03.B.1.:

2. If any of the Contract Documents or their application to any situation shall be to any extent be invalidated or contrary to law, the remainder of such documents and the application to other situations of any provision found invalid as to any given situation, shall not be affected thereby.

3. No substitutions or deviations in the work as defined by the Contract Documents will be made without specific written permission of the Engineer.

4. In the event of conflicts or discrepancies among the Contract Documents, the Documents shall be interpreted on the basis of the following priorities:

- | | |
|--------|--|
| First | Agreement |
| Second | Addenda, with later date having greater priority |
| Third | Supplementary Conditions |
| Fourth | General Conditions |
| Fifth | Drawings and Specifications |

5. In Drawings, large scale details shall govern smaller scale drawings. In case of conflicts between Drawings and Specifications, the Engineer may interpret the Documents so as to secure the most substantial and comprehensive performance of the work consistent with the intent of requirements of the Contract. Such work shall be performed by the Contractor without extra cost to the Owner.

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

SC-4.02 Subsurface and Physical Conditions Add the following new paragraphs immediately after Paragraph 4.02B:

C. Contractor is also required to visit the Site to become familiar with and satisfied as to the general, local, and Site conditions that may affect cost, progress, performance, and furnishing of the Work. This is to involve an alert, heads-up, eyes-open, reasonable examination of the area and the conditions under which the Work is to be performed (see GC-4.03.C.2.b).

SC-4.03 Differing Subsurface or Physical Conditions Add the following new paragraph immediately after Paragraph 4.03.C.3:

4. Any adjustment in compensation and/or any adjustment in contract time because of a change or changes resulting from one or more of the conditions described in the foregoing paragraph will be made in accordance with the provisions of the General Conditions.

SC-4.03 Differing Subsurface or Physical Conditions Add the following new paragraph immediately after Paragraph 4.03.C:

D. The following paragraph is hereby inserted in the contract in accordance with the provision of Section 39N of Chapter 30 of the Massachusetts General Laws.

If, during the progress of the work, the Contractor or the Awarding Authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents either the Contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a Contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

SC-4.05 Reference Points Add the following new paragraphs immediately after Paragraph 4.05.A:

B. All levels or elevations shown on the drawings are referred to Mean Sea Level as established by the National Geodetic Vertical Datum of 1929.

C. The Contractor shall furnish and maintain lasers for lines and grades and such assistance and facilities, including labor and materials, for giving and taking measurements, ties and grades as the Engineer may require.

SC-4.06 Hazardous Environmental Conditions at Site Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions are known to Owner or Engineer.

B. Not Used.

ARTICLE 5 BONDS AND INSURANCE

SC-5.03 Certificates of Insurance Add the following new paragraphs immediately after Paragraph 5.03.B:

C. Failure of Owner to demand such certificates or other evidence of full compliance with these insurance requirements or failure of Owner to identify a deficiency from evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. By requiring such insurance and insurance limits herein, Owner does not represent that coverage and limits will necessarily be adequate to protect Contractor, and such coverage and limits shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

SC-5.04 Contractor's Liability Insurance Add the following new paragraphs immediately after Paragraph 5.04.B:

C. The Contractor shall take out and maintain during the life of the Contract the insurances as described in "Standard Insurance Provisions" (Contractor) in the Appendix.

1. The Contractor shall also take out and maintain, during the life of this Contract, "All Risk" Builder's Risk Insurance in a form acceptable to the Owner, upon the entire project in an amount not less than the full "completed value" of the project. The loss if any, is to be made payable to the Owner and/or to the Contractor as their interest may appear.

2. The Contractor shall take out and maintain, during the life of this Contract, Contractor's Protective Liability Insurance to protect himself against any liability which might attach to him as a result of an accident arising out of work performed by any Subcontractor.

3. The Contractor shall take out and maintain, during the life of this Contract, Owner's Protective Liability Insurance policy issued to the Owner and extended to include Fay, Spofford & Thorndike, Inc., in the amounts stated in the City of Waltham's Standard Insurance Provisions.

4. The Contractor shall carry contractual liability in the same amounts as for Commercial General Liability Insurance. This insurance shall cover the liability assumed by the Contractor under Paragraph 6.20, Indemnification, of the General Conditions.

5. The Contractor shall carry Completed Operations insurance in the same amounts as for Commercial General Liability Insurance. This insurance shall be maintained for the full guarantee period.

6. All Subcontractors shall also take out and maintain during the life of their Contracts Commercial General Liability Insurance and Automobile Liability Insurance. The limits of Liability Insurance shall be not less than \$2,000,000 per occurrence for Bodily Injury, Personal Injury and Property Damage Liability. Automobile Liability Insurance shall be as outlined in Paragraph 5.04.C.3

D. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the Contract and shall operate as an immediate termination thereof.

E. All insurance required of the General Contractor shall be in form and written with companies acceptable to the Owner. Certified copies of the Contractor's Insurance policies shall be delivered to the Owner prior to commencement of work under the Contract by the General Contractor. Such policies shall show any special coverage provisions required and shall provide for at least 30 days prior written notice to the Owner, in case of cancellation or material change to any of the insurance coverages. The Owner is to be included as an Additional Named Insured as respects the operations of the Contractor.

ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES

SC-6.01 Supervision and Superintendence Add the following new paragraphs immediately after Paragraph 6.01.A:

1. In the case of real apparent error, inconsistency or omission, no work shall proceed without authorization from the Engineer.

2. The Drawings are generally drawn to scale; however the figured dimensions or notes thereon shall govern. Before ordering any materials or doing any work, the Contractor and each Subcontractor shall verify all measurements, and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of differences between actual measurements and the dimensions indicated on the Drawings, except as otherwise allowed by law. Any differences that may be found shall be reported in writing to the Engineer for consideration before proceeding with the work.

SC-6.05 Substitutes and "Or-Equals" Add the following new paragraph immediately after Paragraph 6.05.A.2.d:

e. Reference in the Specifications or on the Drawings to any product, material, equipment, or method of construction by name, make, catalog number, or other identifying symbol shall limit the selection of the items to those types so identified. Substitutions will not be permitted in any event, with one exception: i.e. should the Contractor know of a product or system which may effect a savings

to the Owner and at the same time is (1) of equal or better quality or is (2) more appropriate for use in the project than that specified.

SC-6.06 Concerning Subcontractors, Suppliers and Others Add the following new paragraphs immediately after Paragraph 6.06.G:

H. Each Subcontractor shall employ a competent trade foreman who shall be in attendance at the project site during the progress of his work. The trade foreman shall be satisfactory to the Engineer and Owner, and shall not be changed during the course of the subcontract work, except with the consent of the Engineer, unless the trade foreman proves to be unsatisfactory to the Subcontractor and ceases to be in his employ.

I. Owner or Engineer may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor or Supplier.

SC-6.10 Taxes Add a new paragraph immediately after Paragraph 6.10.A:

B. Owner is exempt from payment of sales and compensating use taxes of the State and of cities and counties thereof on all materials to be incorporated into the Work.

1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.

2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

SC-6.17 Shop Drawings and Samples Add the following new paragraphs immediately after Paragraph 6.17.D.3.:

4. The Contractor shall furnish to the Engineer shop drawings, samples and/or descriptive data for all work:

a. Where specifically called for in the Specifications.

b. Where shop drawings, samples, and/or descriptive data are normally submitted for Engineer's approval prior to the actual fabrication or installation of the work.

c. Where specifically requested by the Engineer.

5. Submittals shall be clearly identified as to project name, Owner, Engineer, Contractor, Subcontractor or Supplier, Manufacturer or Fabricator, and the item's name and location. Shop Drawings shall clearly show all significant details of materials, fabrications, finish, and installation. Samples shall be of adequate size to permit proper evaluation and show full range of variation of color, texture, dimensions, and other characteristics that will appear in the finished work. Descriptive data shall be sufficient to provide full verbal, and pictorial description of physical, technical and performance characteristics, and complete installation instructions, adequacy of submittals shall be subject to the Engineers approval.

6. The Contractor, immediately after being awarded the Contract, shall meet with the Engineer to discuss the required Schedule of Submittals. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), the Contractor shall prepare and submit for approval a Schedule of Submittals for the work. The Schedule of Submittals shall be related to the entire project, and shall contain the following:

- a. Shop Drawing Schedule (for Shop and setting drawings to be provided by Contractor)
- b. Sample Schedule (for samples to be provided by Contractor)
- c. Descriptive Data Schedule (for manufacturer's descriptive data, technical information, test reports, catalog cuts, etc., to be provided by Contractor).

7. The schedule shall list all of the submissions required of each trade; the item, description, type, quantity, and size (where applicable) of each submission; and the following dates as estimated.

- a. Required date of submission.
- b. Required date of approval.
- c. Estimated date of beginning fabrication or manufacture of product (where applicable).
- d. Required date of submission of product to testing laboratory.
- e. Required date of testing laboratory approval.
- f. Required date for delivery of product to site.
- g. Required date for beginning of installation of product.
- h. Required date for completion of installation (and in place testing).

NOTE: Submissions of such complexity as to require additional time for review and correction shall be identified as such on the schedules to assure proper attention and time allotment.

Each schedule shall allow adequate time for review by Engineer. The Owner or Engineer will not be responsible for work performed in shop or field prior to approval. The schedules shall be subject to change in accordance with the progress of work.

8. The following procedure for submission and approval of shop drawings shall be followed.

a. The Contractor shall receive shop drawings in form of sepia transparencies from the various Subcontractors and Suppliers. He shall date-stamp them, make any corrections necessary, and verify under signature that they have been checked for dimensions, fit, and conformance with Contract Documents. He shall forward, at his own expense, a set of sepia transparencies, and six (6) sets of blackline prints to the Engineer.

b. The Engineer will check shop drawings for compliance with the design concept of the project and for general compliance with information given in the Contract Documents. (Extra time must be allotted on shop drawing schedule to provide sufficient time for review, as well as extra time for the additional mailing and handling.)

c. He shall then return the marked up sepia transparency and one blackline print to the Contractor.

d. The Contractor shall resubmit shop drawings for approval if requested to do so. A third submission from the same manufacturer will not be accepted. Upon approval, he shall furnish at his own expense all printings of drawings for all trades as required to properly carry out the work.

e. The final corrected sepia print of each approved shop drawing will be obtained from the Subcontractor or Supplier and retained by the Contractor until the completion of the job.

f. Before final completion of the project, and as a condition precedent to final payment, the Contractor shall furnish to the Owner a set of mylar prints of all corrected shop drawings which have obtained final approval.

9. The following procedure for submission and approval of samples shall be followed:

a. The Contractor shall receive samples from the various Subcontractors and Suppliers. He shall verify under signature on a letter of transmittal that they have been checked for agreement with the Contract requirements. He shall then forward (at his own expense) the samples to the Engineer for approval, testing, etc. Samples will not be returned unless return is requested at the time of submission, and if returned, all packing and transportation costs will be paid by the Contractor.

b. Where it is impractical to submit a sample because of size or other reasons, the Contractor will, upon request of the Engineer or Owner, make provision for inspection of material at its point of origin.

c. The Engineer will review the samples for general appearance and arrangement and for general compliance with the information given in the Contract Documents. He will indicate which colors and finishes, or other variable factors within the ranges specified, will be required. The Engineer will, within a reasonable time after receipt of samples, notify the Contractor in writing of his acceptance or rejection of samples and basis for his decision. Rejected samples shall be replaced with acceptable materials, as approved by the Engineer.

d. The Contractor shall store one set of all approved samples in a secure place at the project site, where they shall remain until completion of the project.

10. The following procedure for submission and approval of descriptive data shall be followed:

a. The Contractor shall receive the descriptive data from the various Subcontractors and Suppliers. He shall verify under signature on a letter of transmittal that it has been checked for agreement with the Contract requirements, and shall forward the descriptive data (at his own expense) to the Engineer for approval.

b. The Engineer will review the descriptive data for general compliance with the information given in the Contract Documents. The Engineer will, within a reasonable time, notify the Contractor of his acceptance or rejection of the data, and the basis for his decision. Rejected data will be replaced with data on acceptable materials or systems as approved by the Engineer.

c. A copy of each piece of approved descriptive data shall be maintained at the project site until completion of the project.

11. It shall be the responsibility of the Contractor to submit shop drawings, samples, and descriptive data in accordance with the above schedules. Failure to do so will not justify a delay in time of completion of the work.

12. The Engineer's review of the above materials will be general in nature, and approval by Engineer shall not relieve the Contractor from responsibility for deviations from the Contract Documents, unless the Contractor has, in writing, called the Engineer's attention to such deviations at the time of submission and secured his written agreement to such deviations.

SC-6.17 Shop Drawings and Samples Add the following new paragraphs immediately after Paragraph 6.17.E:

F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.

G. In the event that Contractor requests a substitution for a previously approved item, Contractor shall reimburse Owner for Engineer's charges for such time unless the need for such substitution is beyond the control of Contractor.

SC-6.20 Indemnification: Amend the first sentence of paragraph 6.20.A. to delete "to the fullest extent permitted" and insert "to the extent not prohibited".

ARTICLE 7 OTHER WORK AT THE SITE

HAVE NO SUPPLEMENTAL ADDITIONS OR CHANGES

ARTICLE 8 OWNER'S RESPONSIBILITIES

HAVE NO SUPPLEMENTAL ADDITIONS OR CHANGES

ARTICLE 9 ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.08 Decisions on Requirements of Contract Documents and Acceptability of Work Add the following new paragraphs immediately after Paragraph 9.08.D.:

E. The Contractor shall at his own proper cost and expense provide and do everything necessary to prepare for and perform everything required under the conditions and requirements of the contract, and he hereby agrees that the Engineer shall in the first instance be the interpreter of the Contract Documents, and all the work contemplated and described therein shall be so done as to satisfy him that its intent is fulfilled. The Engineer shall promptly render impartial decision on all claims of either party against the other and on all other matters governed by this intent, including progress of the work, the quality and fitness of materials and workmanship, the suitability of methods, and costs and values. The determination and decision of the Engineer shall be final and binding on both parties, and shall be a condition precedent to the right of the Contractor to receive any money hereunder, except as to those areas of disputed work covered in Article 11 or Article 12.

F. In accordance with the provision of the Massachusetts General Laws, chapter 30, Section 39P, all decisions of the Engineer or interpretations of the Specifications, approval of equipment, material or any other approval, or progress of the work will be made no later than thirty days after the written submission for decision - but if such decision requires extended investigation and study, the Engineer will, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

ARTICLE 10 CHANGES IN THE WORK; CLAIMS

HAVE NO SUPPLEMENTAL ADDITIONS OR CHANGES

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

SC-11.02 Allowances Delete paragraphs 11.02.A, 11.02.B, and 11.02.C in their entirety.

ARTICLE 12 CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.04 through 12.07 Add the following new paragraphs immediately after Paragraph 12.03.:

12.04 The Contractor shall commence the work not later than the time stipulated herein, after being notified to do so by the Owner, and shall continue it to completion with all practical dispatch and regularity so that it shall be completed not later than the time stipulated, as aforesaid, provided however, that, at its discretions, the Owner may in writing extend the time for the commencement and completion of the work.

A. The Contractor shall prosecute the work in accordance with a progress schedule prepared by him in advance and approved by the Engineer.

12.05 The following subparagraphs (a) and (b) are hereby inserted in this contract in accordance with the provisions of the Massachusetts General Laws, Chapter 30, Section 39(o).

- (a) The Awarding Authority may order the General Contractor in writing to suspend, delay or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the Awarding Authority, provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the Awarding Authority to act within the time specified in this contract, the Awarding Authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the General Contractor on such increase, and provided further, that the Awarding Authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.
- (b) The General Contractor must submit the amount of a claim under provision (a) to the Awarding Authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the Awarding Authority shall not approve any costs in the claim incurred more than twenty days before the General Contractor notified the Awarding Authority in writing of the act or failure to act involved in the claim.

12.06 The following 2 paragraphs shall apply to the completion of contracts terminated prior to completion of the work.

A. The excess, if any, of debit over credit is to be made good to Owner by the Contractor (to the limit stated below) from any moneys that are then due the Contractor, or that may thereafter become due the Contractor under this contract, or the excess is to be made good by the surety to the Owner. The excess to be so made good is to be limited to the amount owed the Contractor by the Owner under the contract at the time the Contractor is notified to discontinue said work, plus the amount of the bond of the contract, and it is further agreed, that, in case the Engineer shall certify to the Owner that the Contractor cannot complete fully the aforesaid work within the stipulated time, the Owner may thereupon, in lieu of the

foregoing provisions, pay the Contractor for the parts already done, according to the provisions of the contract, and may treat parts remaining as if they had never been included in or contemplated by the contract.

B. And it is further agreed that in case the Engineer shall certify to the Owner that the Contractor cannot complete fully the aforesaid work within the stipulated time, the Owner, in lieu of any of the foregoing provisions, may call upon the surety company and the surety shall complete the performance of all requirements of the contract- and the Owner shall pay the Contractor for the work done by the surety company according to the payment provision of the contract. In case the completion of the work is not performed by the Contractor, the amount of any sums due the Owner for any delay in such completion shall be determined by the Engineer. No act, proceeding, or notice contemplated by this Article 12 on the part of the Owner, or the Engineer, and nothing herein contained shall operate as a waiver or release of any of the rights of the Owner under the contract against either the Contractor or the surety company.

12.07 It is mutually agreed that the timely completion of the work under this contract has a substantial financial value to the Owner, which value it is difficult or impossible to forecast or evaluate exactly. It is of considerable mutual advantage to the parties hereto that, even if not equal exactly to the real value of each day so lost in the completion of the work, the compensation therefor which the Contractor is to give to the Owner be a fixed sum and set in advance. In view of the foregoing and other considerations the parties hereby mutually agree in the place of said value as it may be truly and finally determined, to adopt arbitrarily for the purposes of this contract, the sum per day, which is stipulated in the Agreement as the sum which the Contractor shall give to the Owner as liquidated damages for each calendar day lost by the Contractor in the completion of the work of the contract, this sum to govern in all issues, and being adopted for the mutual use of the parties hereto and for no other use.

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

SC-13.01 Notice of Defects Add the following new paragraphs immediately after Paragraph 13.01.A.:

B. The Contractor guarantees that the work and services to be performed under the contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same, shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Drawings, Specifications and other contract documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the Contractor shall be fulfilled. This guarantee shall be for a period of one year from and after the Date of Completion which date of completion shall be determined under the provisions of Article 14 hereof.

C. If at any time within the said period of guarantee any part of the work requires repairing, correction or replacement, the Owner may notify the Contractor in writing to make the required repairs, corrections, or replacements. If the Contractor neglects to commence making such repairs, corrections, or replacements to the satisfaction of the Owner within three (3) days from the date of receipt of such notice,

or having commenced fails to prosecute such work with diligence, the Owner may employ other persons to make the same, and all direct and indirect costs of making said repairs, corrections or replacements, including compensation for additional professional services, shall be paid by the Contractor.

ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02 Progress Payments Add the following new paragraphs immediately after Paragraph 14.02.A.3.:

4. The Owner shall pay and the Contractor shall receive as full compensation for providing and doing everything required to prepare for and perform everything called for by this contract, and as full compensation also for all loss or damage arising out of the nature of the work under the contract, or from the action of the elements, or from fire, or from any unforeseen obstructions or difficulties which may be encountered in the prosecution of the said work; also for all risk of every description connected with said work; also for all expenses incurred by, or in consequence of, the suspension or discontinuance of said work as herein specified; and for well and faithfully completing said work in accordance with the contract, including all work incidental thereto; the prices stated in the Schedule of Prices, or the prices revised, if such are revised as provided for in Article 11 of the General Conditions.

5. It is understood and agreed that the lump sum prices, as opposed to the unit prices, listed in the Schedule of Prices submitted by the Contractor in his bid are for the information of the Owner and the guidance of the Engineer, and all references in the contract and Specifications relating to payment of the Contractor in accordance herewith are contingent upon the acceptance for each lump sum item price by the Owner as a fair value for such item at the time payment therefor is requisitioned. Nothing in this Article 14 shall be held to abrogate the obligation of the Owner to pay the Contractor the full contract price as determined by and in accordance with the contract documents and Massachusetts General Laws, Chapter 30, and 149, and more specifically Section 39K of said Chapter 30.

6. Periodical Estimates

a. The Contractor shall, on or about the first of each month, issue a periodical estimate of the approximate amount of all materials furnished and work done during the preceding month, in accordance with the units of measurement and prices in the Schedule of Prices and for all change and extra work orders, including such portions of lump sums in the Schedule of Prices and also the value of materials furnished and delivered to the site of the work, as the Engineer deems proper. The Contractor shall furnish the Engineer satisfactory evidence that he has paid in full for all work, materials, equipment and labor included in each periodical estimate.

b. Periodical estimates shall be received by the Owner (Awarding Authority) on or before the first of each month at the office of the Engineer, Fay, Spofford & Thorndike, 5 Burlington Woods, Burlington, Massachusetts 01803.

c. The periodical estimates shall be in the form of AIA Documents G702 and G703, "Application and Certificate for Payment", latest edition, prepared by the American Institute of Engineers, Washington, DC. They shall be certified by the Engineer as to their conformity with the provisions of the contract, and shall be certified by the Contractor to the effect that all items, units, quantities, and prices of work and material in the estimate are approximately correct- that all work has been performed and

materials supplied in full accordance with the contract, that all just and lawful bills against the Contractor for labor, materials, and expendable equipment covered by the estimate have been paid in full and that the Contractor has no claims for damage, losses, or expense against the Owner for compensation in addition to that provided for payment in the periodical estimates, except such claims as the Contractor has filed with the Engineer and Owner in writing previous to his certifying the estimate.

d. Within fifteen days after receipt from the Contractor, at the place designated by the Awarding Authority in the foregoing paragraph, of a periodic estimate requesting payment of the amount due for the preceding month, the Awarding Authority will make a periodic payment to the Contractor for the work performed during the preceding month and for materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title or to which a Subcontractor has title and has authorized the Contractor to transfer title to the Awarding Authority, less (1) a retention based on its estimate of the fair value of its claims against the Contractor and less (2) a retention for direct payment to Subcontractors based on demands for same in accordance with the provisions of Section 39F, and less (3) a retention not exceeding five percent of the approved amount of the periodic payment.

e. The Owner may retain temporarily or permanently, at any time after fifty (50) percent of the work covered by this contract has been completed, a smaller amount than five (5) percent of the total amount of the latest periodical estimate, and the Owner may cause the Contractor to be paid from time to time during the progress of the work such portion of the reserve as it deems prudent or desirable. In case such payments are made, the Owner may at any time cause further payments to be withheld until the full five (5) percent reserve is reestablished. Payment may be withheld at any time, if, in the judgement of the Engineer, the work is not proceeding in accordance with the contract. The consent of the surety company shall not be required for any act or proceeding on the part of the Owner contemplated by this Article 14.

f. The Contractor shall not be entitled to demand or receive payment for any portion of the aforesaid work on materials, except in the manner above set forth in this Article 14, until the Engineer shall have been satisfied that said work has been completed in all parts and requirements in accordance with the intent of the contract, and the Engineer shall have issued a "Certificate of Completion" to that effect and shall have designated therein the date of completion.

SC-14.07 Final Payment Add the following new paragraphs immediately after Paragraph 14.07.C.:

D. Final Estimate

1. After the date of completion, the Contractor shall issue and shall forthwith submit to the Owner a periodical estimate designated "Final Estimate" of all work done under the contract in which the approximate quantities of work done, as included in the periodical estimates, will be adjusted to the exact final quantities. The Contractor shall furnish the Engineer satisfactory evidence that he has paid in full for all work, materials, equipment, and labor included in the Final Estimate. The Final Estimate shall be certified by the Engineer as to its conformity with all provisions of the contract, and shall be certified by the Contractor to the effect that all just and lawful bills against the Contractor for labor, materials, and expendable equipment covered by the Final Estimate have been paid in full, that the total cost of the work and the amount due the Contractor for payment is full compensation for all work done under the terms of the contract in its original form, that the payment is full compensation for all other work done by the Contractor and

for all damages, losses, and expenses incurred by the Contractor for doing and furnishing everything relating to or arising out of the work, and that the Contractor waives all rights to claim or receive any further compensation in addition to that provided for in the Final Estimate except as otherwise allowed by law.

2. After receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the Contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the Awarding Authority, less than one percent of the original contract price, or (b) the Contractor substantially completes the work and the Awarding Authority takes possession for occupancy, whichever occurs first, the Awarding Authority shall pay the Contractor the entire balance due on the contract less, (1) a retention based on its estimate of the fair value of its claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payment to Subcontractors based on demands for same in accordance with provisions of Section 39F, or based on the record of payments by the Contractor to the Subcontractors under this contract if such record of payment indicates that the Contractor has not paid Subcontractors as provided in Section 39F. If the Awarding Authority fails to make payment as herein provided, there shall be added to each payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the Contractor; provided that no interest shall be due, in any event, on the amount due, on a periodic estimate for final payment until fifteen days after receipt of such a periodic estimate from the Contractor, at the place designated by the Awarding Authority if such a place is so designated. The Contractor agrees to pay to each Subcontractor a portion of any such interest paid in accordance with the amount due each Subcontractor.

3, The Owner (Awarding Authority) may make changes in any periodic estimate submitted by the Contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with changes made, as provided herein, provided, that the owner (Awarding Authority) may, within seven days after receipt, return for correction any periodic estimate which is not in the required form or which contain computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of Section 39G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

4. In the event any such contract has been substantially completed and the project has been opened to public use by order of the Owner or its duly authorized representative or agent, but final acceptance of the work is subject to delay because of minor uncompleted items which do not impair the usefulness of the project, a semi-final estimate shall also be prepared within a like period of sixty-five days after such contract has been substantially completed and placed in public use. Such semi-final estimate shall include an estimate of the value of all work performed in accordance with the terms of the contract, including the amount of retained percentage withheld by the contracting authority from previous periodic payments, but excluding (A) the same deductions and retainage as in the case of final estimates, as provided hereinbefore, (B) an estimate of the value of the work remaining to be performed and (C) any items or claims for extra work, or parts thereof, that may be in dispute- and payment for such excluded items or portions thereof may be deferred until such remaining work has been satisfactorily completed, or in the case

of disputed items or claims until such time as agreement has been reached thereon or such claim has been adjudicated.

5. The following subparagraphs (a) through (i) are hereby inserted in this contract in accordance with the provisions of Section 2 of Chapter 774 of the Acts of 1972, and in accordance with MGL Ch. 30, S. 39F.

- (a) Forthwith after the General Contractor receives payment on account of a periodic estimate, the General Contractor shall pay to each Subcontractor the amount paid for the labor performed and the material furnished by the Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the General Contractor.
- (b) Not later than the sixty-fifth day after each Subcontractor substantially completes his work in accordance with the Plans and Specifications, the entire balance due under the subcontract less amounts retained by the Awarding Authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the Subcontractor and the Awarding Authority shall pay that amount to the General Contractor. The General Contractor shall forthwith pay to the Subcontractor the full amount received from the Awarding Authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the General Contractor.
- (c) Each payment made by the Awarding Authority to the General Contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a Subcontractor shall be made to the General Contractor for the account of that Subcontractor; and the Awarding Authority shall take reasonable steps to compel the General Contractor to make each such payment to each such Subcontractor. If the Awarding Authority has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the General Contractor or which is to be included in a payment to the General Contractor for payment to the Subcontractor as provided in subparagraphs (a) and (b), the Awarding Authority shall act upon the demand as provided in this section.
- (d) If, within seventy days after the Subcontractor has substantially completed the subcontract work, the Subcontractor has not received from the General Contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the General Contractor, less any amount retained by the Awarding Authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the Subcontractor may demand direct payment of that balance from the Awarding Authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the Awarding Authority, and a copy shall be delivered to or sent by certified mail to the General Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the subcontract work. Within ten days after the Subcontractor

has delivered or so mailed the demand to the Awarding Authority and delivered or so mailed a copy to the General Contractor, the General Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the Awarding Authority and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the General Contractor and of the amount due for each claim made by the General Contractor against the Subcontractor.

- (e) Within fifteen days after receipt of the demand by the Awarding Authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the Awarding Authority shall make direct payment to the Subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the General Contractor, less any amount (i) retained by the Awarding Authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the General Contractor in the sworn reply - provided, that the Awarding Authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The Awarding Authority shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.
- (f) The Awarding Authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the General Contractor and the Subcontractor in a bank in Massachusetts selected by the Awarding Authority or agreed upon by the General Contractor and the Subcontractor and shall notify the General Contractor and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the General Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.
- (g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amount payable to the General Contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the General Contractor and in the order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Awarding Authority to the General Contractor to the extent of such payment.
- (h) The Awarding Authority shall deduct from payment to a General Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the General Contractor.

- (i) If the Subcontractor does not receive payment as provided in subparagraph (a) or if the General Contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the Subcontractor and the Subcontractor does not receive payment for same when due less the deductions provided or in subparagraph (a), the Subcontractor may demand indirect payment by following the procedures in subparagraph (d) and the General Contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the Subcontractor performed or furnished the labor and materials for which the Subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the General Contractor. Thereafter the Awarding Authority shall proceed as provided in subparagraph (e), (f), (g), and (h).

SC-14.10 Add the following new paragraphs immediately after Paragraph 14.09:

14.10 The payment of the final amount due under this contract, and payment for work done under change order as herein provided, for, shall release the Owner and every agent or employee of the Owner and the agents and employees of any such agent from any or all claims or liabilities on account of work performed under the contract of any alteration hereof.

ARTICLE 15 SUSPENSION OF WORK AND TERMINATION

HAVE NO SUPPLEMENTAL ADDITIONS OR CHANGES

ARTICLE 16 DISPUTE RESOLUTION

HAVE NO SUPPLEMENTAL ADDITIONS OR CHANGES

ARTICLE 17 MISCELLANEOUS

SC-17 *Miscellaneous* Add the following new paragraphs immediately after Paragraph 17.06:

17.07 Erection of Shanties

A. Shanties or other structures for housing or storage of materials, or for office, shall be built only if permission in writing is given by the Engineer, and will then be permitted only at such places as the Engineer shall approve, and the sanitary conditions on the grounds in or about such shanties or other structures shall at all times be maintained in a manner approved by the Engineer.

17.08 Preservation of Trees

A. Within the actual lines of the structures to be built, the trees must of necessity be removed and all such removal of trees, including stumps, shall be done by the Contractor. No trees shall be cut down or otherwise injured by the Contractor except by approval of the Engineer. Should it be necessary, in the work, such removal shall be done by the Contractor. The Contractor shall protect trees and shall furnish guards or other protection of trees if required by the Engineer. Trees which are removed without prior approval or seriously damaged shall be replaced.

17.09 Fire Protection

A. The Contractor shall take all necessary precautions to prevent fires adjacent to the work and his buildings and he shall prevent the spread of fires to areas outside the limits of the work. He shall provide adequate facilities for extinguishing fires.

B. The Contractor shall limit the use of cutting torches and they shall be used only when absolutely necessary and by experienced operators. The Contractor shall have available at the point of cutting satisfactory equipment for extinguishing sparks and fire.

17.10 Weather Conditions

A. No work shall be done when, in the opinion of the Engineer, the weather is unsuitable. No concrete, masonry, earth backfill, embankment, paving, or paint shall be placed during freezing weather or upon frozen material. If there is delay or interruption in the work due to weather conditions, the necessary precautions shall be taken to bond new work to old.

17.11 Watertightness

A. All structures, pipes, and equipment which are to contain water shall be watertight under all operating conditions for which they are intended. The Contractor shall furnish at no cost to the Owner, all labor, materials and equipment and do all work required by the Engineer to make all such parts of the work watertight, or to replace them, if in the opinion of the Engineer any leakage is excessive. All such parts of the work filled with water for testing watertightness shall be left filled as ordered by the Engineer.

17.12 Use of Portions Before Entire Completion of Work

A. The Owner and its duly authorized representatives may enter upon and use any portions of the work before final completion of the whole work to be done under this contract, without any claim by the Contractor for payment for said use, or delay duly caused by such use.

17.13 Massachusetts Sales Tax Exemption

A. Chapter 757, Section 6, Legislative Acts of 1967, effective January 1, 1968, exempts the following sales and the gross receipts therefrom:

Sales of building materials and supplies to be used in the construction, reconstruction, alteration, remodeling or repair of any building, structure, public highway, bridge or other public works owned by or held in trust for the benefit of any governmental body or agency mentioned in paragraph (D) (D. sales to the United States, the Commonwealth or any

political subdivision thereof, or their respective agencies) and used exclusively for public purposes provided, however, that such governmental body or agency shall have first obtained a certificate from the commissioner stating that it is entitled to such exemption and the vendor keeps a record of the sales of each such separate sale, the name of the purchaser, the date of each such separate sale and the number of such certificate. In this paragraph the words "building materials and supplies" shall include all materials and supplies consumed, employed or expended in the construction, reconstruction, alteration, remodeling or repair of any building, structure, public highway, bridge or other such public work, as well as such materials and supplies physically incorporated therein. Said term shall also include rental charges for construction vehicles, equipment and machinery rented specifically for use on the site of any such tax exempt project or while being used exclusively for the transportation of materials for any such tax exempt project.

17.14 Remedies

A. Except as may be otherwise provided in this contract, all claims, counterclaims, disputes and other matters in question between the Owner and the Contractor arising out of or relating to this agreement or the breach thereof will be decided by a court of competent jurisdiction within the State in which the Owner is located.

17.15 Statutory Citations

A. In addition, the following additional statutes and regulations are hereby incorporated into these Supplementary Conditions by reference. The statutes listed in bold are included in their entirety on the following pages.

M.G.L. C.30 S.39F	Payment to Subcontractor
M.G.L. C.30 S.39I	Deviation from Plans and Specifications
M.G.L. C. 30 S.39J	No Arbitrary Decisions are Final
M.G.L. C.30 S.39K	Prompt Payment
M.G.L. C. 30 S.39L	Construction Work by Foreign Corporations
M.G.L. C. 30 S.39M(b)	Substitution of Equal Products
M.G.L. C.30 S.39N	Differing Site Conditions
M.G.L. C.30 S.39O	Equitable Adjustments for Delays
M.G.L. C. 30 S.39P	Decision on Interpretation of Specifications
M.G.L. C. 30 S.39R	Contractor's Records
M.G.L. C.149 S.34	Limitations on Hours of Work
M.G.L. C.149 S.44J	Advertising Invitations to Bid
M.G.L. C. 82 S.40	Excavations; Notices; Penalties

MGL C. 30 S.39F. (1) Every contract awarded pursuant to sections forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials

furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

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

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown

required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

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

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (a) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person

performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction.

MGL C.30 S.39K. Every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, shall contain the following paragraph:— Within fifteen days (30 days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and

that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149.

MGL C.30 S.39N. Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

MGL. C.30 S.39O. Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

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

17.16 Price Adjustment Clause

1. Municipalities are required to include price adjustment clauses for diesel fuel, gasoline, liquid asphalt, Portland cement concrete, structural steel and reinforcing steel in the bid documents of all construction contracts funded by the Chapter 90 Program. For more information please refer to the Price Adjustment Requirements for Cities and Towns which can be viewed at:
http://www.mhd.state.ma.us/default.asp?pgid=ch90/text_letter_cities_towns&sid=about

Current prices are posted monthly on the MassDOT website at:

<http://www.massdot.state.ma.us/highway/DoingBusinessWithUs/Construction/PriceAdjustments.aspx>

Due to the uncertainty of liquid asphalt, Portland cement, diesel fuel, gasoline, structural steel, and reinforcing steel prices, and in accordance with the requirements of Chapter 303 of the Acts of 2008, MassDOT Highway Division uses special provisions, available at the links below, on selected projects to make contract adjustments to account for the prices in effect at the time the work is performed.

- a) This contract contains a price adjustment for bituminous concrete mixtures. The base price for asphalt cement on this project is \$585.00 per ton of liquid asphalt (updated January 13, 2015).
- b) This contract contains price adjustments for diesel fuel and gasoline. The base price for diesel fuel on this project is \$2.534 per gallon and for gasoline \$2.081 per gallon (December 2014 Fuel prices).

- c) This contract contains a price adjustment for concrete. The base price for concrete on this project is \$123.78 per ton of Portland cement (last updated January 13, 2015).
- 2. The Price Adjustment will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.
- 3. No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a Department-approved extension of time.

**** END OF SECTION 00701****

TECHNICAL SPECIFICATIONS

WALTHAM

ROADWAY IMPROVEMENT AND SIDEWALK CONSTRUCTION
TRAPELO ROAD FROM SMITH STREET TO LEXINGTON STREET

SPECIAL PROVISIONS

NITSCH PROJECT NO.: 11266

JANUARY 2017



Civil Engineering · Land Surveying · Transportation Engineering · Structural Engineering · Planning · GIS Services

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**ROADWAY IMPROVEMENT AND SIDEWALK CONSTRUCTION PROJECT
TRAPELO ROAD FROM SMITH STREET TO LEXINGTON STREET
WALTHAM, MASSACHUSETTS**

SCOPE OF WORK

The work to be done under this contract consists of furnishing and all necessary labor, materials and equipment required for the reconstruction of Trapelo Road from the intersection of Trapelo Road and Smith Street to the intersection of Trapelo Road and Lexington Street in Waltham, Massachusetts. The purpose of this work is to improve pedestrian accessibility through the construction of new cement concrete sidewalks and pedestrian ramps with detectable warning panels along the south side of Trapelo Road and the reconstruction of existing sidewalks and pedestrian ramps along the north side of Trapelo Road. In addition to sidewalk construction, the proposed work will consist of pavement milling and overlay, installation of granite curbing, reconstruction of non-compliant pedestrian ramps, construction of retaining walls, installation of guardrail, pavement markings, traffic signs, removing and resetting flashing warning beacons, and the provision of safety controls and signing for construction operations and other incidental items included in the contract documents.

All work under this contract shall be done in conformance with the Massachusetts Highway Department *Standard Specifications for Highways and Bridges* dated 1988, the *Supplemental Specifications dated July 1, 2015*, and the *Interim Supplemental Specifications*; the *2014 Construction Standard Details*, the 2015 Overhead Signal Structure and Foundation Standard Drawings; the *1990 Standard Drawings for Signs and Supports*; the *1996 Construction and Traffic Standard Details* (as relates to the Pavement Markings details only); the *2009 Manual on Uniform Traffic Control Devices (MUTCD) with Massachusetts Amendments* and the *Standard Municipal Traffic Code*; the *1968 Standard Drawings for Traffic Signals and Highway Lighting*; the latest edition of *American Standard for Nursery Stock*; the Plans and these Special Provisions.

PRE-BID BRIEFING AND SITE VISIT

Will be held 10.00 AM **Monday June 18, 2018**. Meet at Graverosn Park (corner of Pine Vale Rd and Trapelo Rd). Contractors will have an opportunity to ask questions and visit the project site.

ARCHITECTURAL ACCESS BOARD TOLERANCES

The Contractor is hereby notified that they are ultimately responsible for constructing all project elements in strict compliance with the current AAB/ADA rules, regulations and standards.

All construction elements in this project associated with sidewalks, walkways, wheelchair ramps and curb cuts are controlled by 521CMR - Rules and Regulations of the Architectural Access Board (AAB).

The AAB Rules and Regulations specify maximum slopes and minimum dimensions required for construction acceptance. There is no tolerance allowed for slopes greater than the maximum slope nor for dimensions less than the minimum dimensions.

Contractors shall establish grade elevations at all wheel chair ramp locations, and shall set transition lengths according to the appropriate table in the Construction Standards (or to the details shown on the plans).

All wheelchair ramp joints and transition sections which define grade changes shall be formed, staked and checked prior to placing cement concrete. All grade changes are to be made at joints.

PERSONAL PROTECTIVE SAFETY EQUIPMENT FOR CONTRACTOR PERSONNEL

The Contractor is responsible to ensure that all personnel, including all subcontractors, working on the project are issued and are wearing all necessary personal protective safety equipment while working within the project limits. This equipment shall include, as a minimum, a hardhat and a safety vest, regardless of the type of work being performed. Other safety equipment shall be added as required to perform the work in which they are engaged and in accordance with all local, state and federal requirements in effect. Safety equipment shall be provided at no additional cost to the Department.

APPROVED EQUIVALENT

(Supplementing Subsection 5.03 and Section 6.00)

For any materials named or described in these specifications, an approved equivalent to that named or described in the said specifications may be furnished.

DISPOSAL OF EXCESS MATERIAL

Surplus materials obtained from any type of excavation, and all existing and other materials not required to be removed and stacked or needed for use on the project, as determined by the Engineer, shall become the property of the Contractor and disposed of subject to the regulations and requirements of local authorities governing the disposal of such materials, at no additional compensation.

NEGATIVE DETERMINATION OF APPLICABILITY

This project is subject to the Massachusetts General Laws, Chapter 131, Section 40 as amended, and has been issued a Negative Determination of Applicability (NDOA) by the Waltham Conservation Commission. The NDOA and Request for Determination of Applicability (RDA) is to be considered part of this contract and a copy of each of the NDOA and all plans/attachments shall be on-site while activities regulated by the NDOA are being performed.

Note: The Contractor is hereby notified that they will be responsible and held accountable for performing any/all work necessary to satisfy and comply with the entire NDOA and RDA.

The Contractor is advised that no additional compensation will be allowed for work required to establish, achieve, and maintain compliance with the NDOA and RDA, as payment for the work shall be included in the relevant bid items. This work may include, but is not limited to, the following: the hiring and paying for the services of a Professional Biologist, Botanist, Wetland Scientist, Engineer, Landscape Architect, etc.; preparation and submission of as-built plans; wetland flagging; wetland replication monitoring reports, etc.

RESTRICTIONS AND MINIMUM REQUIREMENTS

The following lane access and egress control and restrictions within the project area shall serve as a strict guide for the Contractor to follow in order to assure normal vehicular and pedestrian operations during the construction process:

1. At least one travel lane in each direction along Trapelo Road shall be open to traffic at all times unless otherwise authorized by the Engineer.
2. The Contractor shall provide and maintain access and egress at all times to all properties abutting the work.
3. After construction hours, all traffic lanes shall be open to traffic unless otherwise authorized by the Engineer.
4. No detouring of traffic shall be allowed without the permission of the Engineer.

The Contractor shall conduct his operations such that the interruption to rush hour traffic is kept to a minimum. The Contractor shall schedule his work such that the length of time during which any section of roadway is not paved will be kept to a minimum. All proposed underground utilities and drainage facilities shall be installed before the roadway is paved.

PUBLIC SAFETY AND CONVENIENCE

The work on this project is to be performed on heavily traveled roadways which are utilized by pedestrians as well as by vehicles. The Contractor shall furnish, install, maintain and move all warning devices, barricades, signs, bridging materials, special apparatus, and other safety

measures deemed necessary by the Engineer for the protection of motorists, pedestrians and the Contractor's own personnel.

DRAINAGE

It shall be the Contractor's responsibility to maintain drainage functioning properly in the areas under construction prior to the time when the final system is put into use.

Drainage structures shall not be constructed until the required castings are at the project location. The castings shall be installed immediately after completion of the structures and the drainage structures at no time shall be left unprotected during the construction.

All new drainage pipes and new drainage structures within the limits of this Contract shall be left in a clean and operable condition at the completion of the work. It shall be the responsibility of the Contractor to make certain that the new drainage systems carrying runoff from the limits of this project operate efficiently to their points of discharge into the existing systems.

Payment for the above work will be included in the Contract unit prices under the pertinent drainage items. Debris in pipes and structures as a result of the Contractor's operations shall be removed by the Contractor without additional compensation.

All frames and grates of new, rebuilt or remodeled catch basins shall conform to the specifications of the MassDOT Standard Manhole Frame and Cover and/or Catch Basin Frame and Grate as shown in the Plans.

All drainage castings in surfaced areas shall be adjusted to fit base or binder course grade when required, and the final adjustment to finished grade shall be completed before the top course of pavement is laid. Clay bricks shall be used to adjust frames to grade; no concrete grade rings shall be used.

WORK PROPOSED OUTSIDE CITY LAYOUT

The City of Waltham will acquire access rights for work shown outside of the City Layout and on private property, as shown on the plans. The Contractor is hereby made aware that work on private property may not commence until the City of Waltham has acquired access rights and provided property owners with the Contractor's schedule of work on private property.

NOTIFICATION TO ABUTTERS

The Contractor shall hand deliver notices to abutting properties at least 24 hours before the start of construction. The notice will indicate the timing of the construction and any access restrictions or other inconveniences that may result.

The Contractor shall also notify the Engineer and City of Waltham regarding any items on private property that may be disturbed as part of the work, including landscaping, fences, walls, planters, walks, sprinkler heads/irrigation systems, and any other items within or adjacent to the proposed work area so that the property owner can be notified prior to the Contractor commencing work.

TEMPORARY ACCESS TO AREA ABUTTERS

Access to all abutting properties must be maintained at all times. The Contractor shall provide a safe and ready means to enter and exit all private buildings, professional offices and any other businesses or residences in the project area, both day and night, for the duration of the project.

The Contractor shall prepare and submit to the Engineer a Maintenance of Pedestrian Access Plan outlining procedures and measures taken in maintaining safe pedestrian access through the work zone, safe means of access and egress to adjacent buildings and businesses in conformance to ADA/AAB regulations.

WORK DONE BY OTHERS

The respective utility companies will accomplish any relocation and/or resetting to new grades of all private utilities, including gas gates, electric manholes and telephone manholes, made necessary by the construction of this project.

The Contractor must prosecute the work efficiently and with the least possible delay. Immediately after award of the Contract, the Contractor shall confer with the owners of all utilities to assure that relocations of facilities and services may be made at times consistent with operations under this Contract.

WORK SCHEDULE

(Supplementing Subsection 8.02)

Work on this project is restricted to a normal eight-hour day, five-day week excluding Saturday and Sunday (except as specifically described herein), where and when appropriate with the prior approval of the Engineer, with the Contractor and all Subcontractors working on the same shifts unless otherwise approved by the Engineer.

No work, including the setting up and taking down of work zone traffic control devices shall be done on existing roadways between the hours of 6:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM without written approval from the Engineer and the City of Waltham. Work will be permitted in areas outside and off the roadway during these periods.

Work within the roadway in the vicinity of the Lexington Street/Trapelo Road intersection may be required by the City to be performed outside of normal working hours. Night work will be allowed between the hours of 9PM and 6AM only with prior written approval from the Engineer and the

City of Waltham. No additional compensation will be given for work performed at night or outside of normal working hours.

No work shall be done on this contract on Saturdays, Sundays or holidays or on the day before or the day after a long weekend which involves a holiday without prior approval by the Engineer.

Prior to the start of work, the Contractor shall prepare and submit to the Engineer a Schedule of Operations outlining their hours of operation and activities to be performed. This schedule will be updated once a month or with the submission of each request for payment, whichever is more frequent, for the duration of the contract.

PROVISIONS FOR TRAVEL AND PROSECUTION OF THE WORK

(Supplementing Subsection 8.03)

Prior to commencing any work, the Contractor shall submit a plan, based on the Contract traffic management plans, that indicates the traffic routing proposed by the Contractor during the various stages and time periods of the work and the temporary barricades, signs, drums and other traffic control devices to be employed during each stage and time period of the work and to provide for reasonable access to abutting properties.

Traffic control devices that are required only during working hour operations shall be removed and safely stored at the end of each day.

Contractual Milestones

The following Contractual Milestones shall be included in the Contractor’s Baseline Contract Progress Schedule submission. The Contractor shall complete the Work in accordance with the following milestones:

- Milestone #3:** Construction of Retaining Walls and Sidewalk on South Side of Trapelo Road
- Milestone #2:** Substantial Completion
- Milestone #1:** Final Completion

These Milestones are defined as follows:

Milestone #3: Construction of Retaining Walls and Sidewalk on South Side of Trapelo Road

Satisfaction of the Milestone shall require the following:

- All work required for Milestone #3 shall be completed within 200 days following the written Notice to Proceed from the City of Waltham for the project.
- Construction of all modular block retaining walls on private property along the south side of Trapelo Road, including all required excavation, grading, and backfilling. Final loam and seeding of all areas disturbed by construction is also to be completed prior to the end of the planting season.
- Construction of all cement concrete sidewalks, driveway aprons, pedestrian ramps, including the installation of all granite curb along the south side of Trapelo Road.

Milestone #2: Substantial Completion

Satisfaction of the Milestone shall require the following:

- All work required for Milestone #2 shall be completed within 545 days following the written Notice to Proceed from the City of Waltham for the project.
- Substantial Completion shall include all sidewalk and roadway construction, including signage and pavement markings. All material submittals must have been received and approved by the Engineer.

Milestone #1: Final Completion

Satisfaction of the Milestone shall require the following:

- All work required for Milestone #1 shall be completed within 600 days following the written Notice to Proceed from the City of Waltham for the project.
- Final Completion shall be defined as the date that all physical contract Work has been completed and accepted, including all punch list work, and the Contractor has fully demobilized from the project site. All final paving and landscaping is completed and accepted by the City.

NOTICE TO OWNERS OF UTILITIES (Supplementing Subsection 7.13)

The Contractor shall give written notice to all public service corporations or officials, owning or having charge of public or privately owned utilities, of his intention to commence operations affecting such utilities one week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

Before commencing work on service connections, the Contractor shall contact the serving utility to ensure that proper construction procedures are followed.

Before the contractor begins any work or operations that might damage any subsurface structures, the contractor shall carefully locate all such structures and conduct operations to avoid any damage to them. Any damage to these utilities caused by the operations of the Contractor shall be repaired by the contractor at the contractor's own expense and to the requirements of the Engineer and utility owner(s).

All water supply and drainage system alterations indicated on the plans or as required by the Engineer shall be performed by the Contractor unless noted otherwise. The alterations shall be done in conformance with the requirements of the City of Waltham.

The contractor shall coordinate his work with National Grid Gas (NGRID). National Grid will be replacing gas lines within the project area in conjunction with this project. National Grid requires notification at least 6 weeks in advance to schedule all work related to the gas main replacement.

The following are the contact names and addresses of some of the agencies which may be affected, and must be notified. Completeness of this list is not guaranteed by the City. The Contractor shall assure that all affected agencies are notified.

WALTHAM TRAFFIC ENGINEERING DEPARTMENT

119 School Street
Waltham, MA 02451
Attn: J. Michael Garvin, PE
781-314-3400

CONSOLIDATED PUBLIC WORKS

165 Lexington Street
Waltham, MA 02452
Attn: Michael Chiasson
781-314-3800

GAS

National Grid Gas
40 Sylvan Road, 3rd Floor – W3.2444
Waltham, MA 02451
Attn: Melissa Owens
781-907-2845

National Grid Contact for Pre-Construction Meeting:
Gene Au (Gene.Au@nationalgrid.com)

WALTHAM FIRE DEPARTMENT

175 Lexington Street
Waltham, MA 02452
Attn: Chief Paul Ciccone
781-314-3700

DESIGNER

Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108
Attn: John Michalak, PE
617-338-0063

TELEPHONE

Verizon
11666 Shawmut Avenue
New Bedford, MA 02746
Attn: Karen Nunes
508-991-3522

FIRE ALARM/TRAFFIC SIGNAL/ELECTRICAL INSPECTION WALTHAM WIRES DEPARTMENT

119 School Street
Waltham, MA 02452
Attn: Timothy Kelly
781-314-3175

WALTHAM ENGINEERING DEPT.

119 School Street
Waltham, MA 02451
Attn: Stephen Casazza, PE
781-314-3830

WALTHAM WATER & SEWER

165 Lexington Street
Waltham, MA 02452
Attn: Gerry Shaughnessy
781-314-3800

WALTHAM POLICE DEPARTMENT

155 Lexington Street
Waltham, MA 02452
Attn: Sergeant Dennis Deveney
781-314-3604

ELECTRIC

NStar d/b/a Eversource Energy
One NSTAR Way, NWBED180
Westwood, MA 02090
Attn: Steven Owens
508-441-5881

CABLE

RCN
956 Mass Ave
Arlington, MA 02476
Attn: Margot Jones
781-316-8881

CABLE

Comcast
 P.O. Box 6505
 Chelmsford, MA 01824
 Lexington, MA 02420
 Attn: Wendy Brown
 978-848-5183

CABLE

AT&T/TCG/Siena Engineering
 50 Mall Road, Suite 203
 Burlington, MA 01803
 Attn: David Edgar
 781-221-8400 x 7005

GUIDELINES FOR WORKING AROUND GAS UTILITIES (NATIONAL GRID)**Notification of Construction**

National Grid requests at least six week advanced notification prior to the start of construction to perform scheduled work in the proposed project area. Be aware that some gas work cannot be performed during the normal heating season.

Support and Protect

Contractor must call Dig Safe to have the gas mains and services marked out before construction. Care must be exercised when saw cutting over any gas infrastructure, especially services, which are more shallow than the main. Depth of gas mains vary. Contractor shall dig test pits in order to ascertain exact locations, cover and invert elevations, clearances, alignment and operating status of existing gas facilities. Contractor shall exercise extreme caution when excavating in the vicinity of any gas facility. Hand excavation shall be performed to locate all gas facilities and whenever digging within 24" of gas facilities. If cover over gas piping is removed the required cover must be replaced, or if not feasible, National Grid must be notified for review of the issue. Undermined gas pipe must be adequately supported and protected from damage. Contact National Grid engineer for guidelines regarding proper pipe support. Significant vibration from pile driving and such may negatively impact gas facilities, particularly cast iron mains and regulator station vaults. Contact National Grid engineer prior to performing such activities as well as operations which may undermine gas facilities such as micro-tunneling, jacking, directional drilling, etc.

Gas Leaks

For any gas leak please call the appropriate number immediately.

Greater Boston -	800-233-5325
Other Massachusetts –	800-548-8000
Rhode Island –	800-640-1595

Types of Gas Facilities

Gas mains and services are made of several different materials and contain a wide range of pressures. Typical materials used for buried gas pipe includes bare steel, coated steel, plastic, cast iron, wrought iron, ductile iron, and copper. Never assume that a pipe is not gas. At times gas lines are inserted into older lines to save excavation cost.

Exposure of Gas Facilities

If any gas mains or services become exposed, National Grid must be notified to inspect the line

before backfilling. Also any damage that may have been made to the pipe or pipe coating will need to be repaired by National Grid before backfilling. Contact our Dispatch office at (877) 304-1203 for inspection. It is important that even minor damage or scrapes be reported to National Grid. Backfill shall be 6" of sand around the gas line and clean compacted fill above.

Regulator Stations

Gas regulator stations are particularly critical facilities and National Grid must be notified whenever work is to take place within 200 feet of a station. Regulator stations are typically in buried vaults accessed through either manhole covers or aluminum doors. **ONLY AUTHORIZED NATIONAL GRID EMPLOYEES SHALL OPEN A REGULATOR STATION VAULT.** Be aware that a complex nest of piping and valves often exists in the vicinity outside the vaults.

Blasting

National Grid must be notified of any blasting that will take place within 200 feet of a gas utility. National Grid must be supplied with a detailed blast plan for blasting in the vicinity of gas facilities. The evaluation of the blast plan by a National Grid engineer may take some time, therefore, blast plan data should be submitted at least two weeks prior to the planned blasting. As a general rule blasting will not be permitted within 10 feet of a gas line and PPV at the nearest gas pipe shall not exceed 5 in/sec. PPV at the nearest gas main shall be monitored.

Valves

Access to gas valves must be maintained throughout construction and left at grade at the end of construction. Should valve boxes be damaged and need to be replaced National Grid will supply replacements upon request. **NEVER OPERATE A GAS VALVE. ONLY NATIONAL GRID SHALL OPERATE GAS VALVES.**

Clearance

Adequate clearance must be provided when installing other utilities, foundations, structures, etc. Contact National Grid engineer for guidance.

PROTECTION OF UNDERGROUND UTILITIES

The Contractor's attention is directed to the necessity of making his own investigation in order to assure that no damage to existing structures, drainage lines, traffic signal conduits, etcetera, will occur.

The Contractor shall notify Massachusetts DIG SAFE and procure a Dig Safe Number for each location prior to disturbing existing ground in any way. The telephone number of the Dig Safe Call Center is 811 or 1-888-344-7233.

The Contractor shall contact the City of Waltham Water & Sewer Department for water and sewer mains and services to be marked out.

WORK IN THE IMMEDIATE VICINITY OF UNDERGROUND STRUCTURES AND UTILITY POLES

Before starting any work at existing manholes, the Contractor shall test for gas and blow out the manholes.

For overhead connections, the electric company will make the connection from the top of the riser on the utility pole to the power source. The Contractor shall supply all labor, materials and equipment to install the service connection, complete in place and in accordance with the electric company, from the controller to and including the riser with enough wire coiled above the riser to permit the electric company to make the final connection.

For underground connections, the electric company will perform the actual wiring of the service connections from its power source to the sweep at the local controllers, but all sweeps, ducts, entrance holes into manholes, patching and all other necessary labor, materials and equipment required to install the electric service, complete in place, shall be furnished by the Contractor.

The Contractor shall pay the electric company for their services rendered for the connection of overhead and underground service connections.

No work is to be performed in the immediate vicinity of electric manholes or utility poles, or telephone manholes or utility poles or conduit system without prior notice (at least 48 hours) to the affected company.

PROTECTION AND RESTORATION OF PROPERTY

The Contractor, in constructing or installing facilities alongside or near sanitary sewers, storm drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls or other structures, shall, at his expense, sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them, so that the services of these structures shall be maintained. He shall also be responsible for the repair or replacement, at his own expense, of any damage to such structures caused by his acts or neglect, and shall leave them in the same condition as they existed prior to the commencement of work. In case of damage to utilities, the Contractor shall promptly notify the Owner and shall, if requested by the Engineer, furnish laborers to work temporarily under the Owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the utility company that suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation therefore.

If, as the work progresses, it is found that any of the utility structures are so placed as to render it impracticable in the judgment of the Engineer, to do the work called for under this Contract, the Contractor shall protect and maintain the services in such utilities and structures and the Department will, as soon thereafter as it reasonably can, cause the position of the utilities to be changed or take such other action as it deems suitable and proper.

If live service connections are to be interrupted by excavation of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall also be plugged off or otherwise made secure by the utility company involved.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in protecting or repairing property as specified in this Section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefore.

EROSION AND SEDIMENT CONTROL

(Supplementing Section 7.02)

This work shall consist of temporary and permanent control measures as shown on the plans or as required by the Engineer during the life of the contract to control erosion and sedimentation.

An erosion control system consisting of hay bales and sedimentation fence is to be installed in the locations shown and as detailed on the Plans.

Temporary erosion and sediment control provisions shall be coordinated with the permanent control features to the extent practical to assure economical, effective and continuous control throughout the construction and post-construction period.

The erosion and sediment control features installed by the Contractor shall be satisfactorily maintained by the Contractor until acceptance.

In the event of conflict between these specifications and laws, rules, and regulations of local agencies, the more restrictive requirements shall apply.

In the event that temporary erosion and sediment control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as part of the work as scheduled, and such additional measures are required by the Engineer, the work shall be performed by the Contractor at his own expense. Temporary erosion and sediment control work which is not attributed to the Contractor's negligence, carelessness or failure to install permanent controls, will be performed as required by the Engineer.

Repeated failures by the Contractor to control erosion, pollution, and/or siltation, shall be cause for the Engineer to employ outside assistance or to use City forces to provide the necessary corrective measures. The cost of such assistance plus project engineering costs will be charged to the Contractor and appropriate deductions made from the Contractor's monthly progress estimate.

SHEETING AND BRACING

The Contractor shall furnish, place, and remove all sheeting and bracing required to support the sides of all trenches or other excavations for this Project.

The Contractor shall be solely responsible for the safety of the workmen and the adjacent facilities from danger of caving and sliding. All work to be done shall be in strict accordance with the Department of Labor, Occupational Safety and Health Administration regulations and suggested practices for construction excavations and other applicable codes and regulations. Special precautions shall be taken to guard against any damage to or settlement of pavements, buildings, walls, pipes, ducts or other structures and facilities which are adjacent to the work.

The cost of providing and removing sheeting, shoring and bracing shall be included in the cost of the various items of work under this Contract and no additional compensation will be allowed therefore.

PRESERVATION OF ROADSIDE GROWTH

(Section 8.08 shall be amended as follows)

The Contractor shall take all necessary care when excavating or working in the vicinity of existing trees so that the root systems, trunks, and branches are not damaged. All precautions shall be taken to insure that heavy equipment does not damage any roots, including those that lie below the limits of excavation.

Do not store equipment or stockpile materials within drip line of trees or in areas enclosed by tree protection fencing.

Avoid any direct soil contamination in root zone area by petroleum, petroleum products or solvents, salts or any other pollutant during construction.

All cutting or trimming of trees to be preserved shall be executed by a Massachusetts Certified Arborist and coordinated with the City of Waltham Tree Warden. The Contractor shall provide the Engineer with a copy of the certification prior to any work on trees.

Existing plants adjacent to construction may be protected as a group using temporary fencing as specified under Item 102.52, or in the event of construction close to individual trees, using Individual Tree Protection as specified under Item 102.51.

Trees and shrubs that, in the judgment of the Engineer, have been irreparably damaged by the Contractor shall be replaced per the requirements of Division I of the Standard Special Provisions.

Cost of removal of destroyed tree, including roots and stump, as well as the cost of replacement trees and shrubs, shall be paid for by the Contractor.

MATERIALS REMOVED AND STACKED

Materials designated to be removed and stacked which are the property of the City of Waltham, shall be carefully removed, loaded, transported and carefully stacked at the City of Waltham Consolidated Public Works yard located at 165 Lexington Street, Waltham MA, 02452.

The Engineer shall be notified at least twenty-four (24) hours preceding such delivery.

An inventory of stacked materials shall be made out by the Contractor, countersigned by the Engineer, and submitted to the person or persons authorized by the Municipality to receive the materials.

Materials directed to be removed and stacked, which are privately owned, shall be removed, transported to, and stacked on the property, where materials have been removed, as required by the Engineer.

If the Engineer determines that any part of the stacked materials is unsuitable for reuse such materials shall become the property of the Contractor and shall be legally disposed of away from the site.

The contract prices for the various items shall include full compensation for the services noted above.

DISPOSAL OF EXCAVATION MATERIAL

Surplus materials, obtained from any type of excavation, not needed for further use as determined by the Engineer shall become the property of the Contractor and shall be disposed of by him outside the location subject to the regulations and requirements of local authorities governing the disposal of such materials, at no additional compensation.

SAW CUTS

Existing pavements to remain shall be saw cut at all openings for utility work, for new or reset curbing and at all joints with proposed full-depth bituminous concrete pavement, as shown on the plans and as directed by the Engineer.

Saw cutting required for the installation of traffic signal equipment and conduit, street lighting conduit, curbing, water pipes, drainage pipes and structures will be paid for separately under the respective items and shall not be included for payment under Item 482.3.

Sawcuts shall be made at limits of full depth pavement construction and limits of cold planing. Payment for this work shall be included under Item 482.3, Sawing Asphalt Pavement.

SETTING CURB

Payment for cement concrete required for setting curb in accordance with the Standard Details will be included in the price per foot for the respective curb items.

JOINTS

All joints between proposed pavement and existing pavement to remain shall be coated with a hot poured rubberized asphalt sealant meeting the requirements of the specifications.

PAVEMENT MARKINGS

All permanent pavement markings shall be thermoplastic. All permanent pavement markings must be applied within two weeks of paving the top course. The Contractor shall provide all temporary pavement markings as may be necessary or as directed by the Engineer.

PROPERTY BOUNDS

The Contractor shall exercise due care when working around all property bounds, which are to remain. Should any damage to a bound result from the actions of the Contractor, the bound shall be replaced and/or realigned by the Contractor as required by the Engineer. No additional compensation will be due the Contractor for the materials and labor required for re-establishing the bound in its proper position unless approved by the Engineer.

EXISTING TRAFFIC AND ROADWAY SIGNS

As required by the traffic management plans and the Engineer, existing traffic and roadway signs shall remain in place or be temporarily supported until no longer applicable or replaced by permanent signs. No separate measurement or payment will be made for relocating and temporarily supporting existing signs during construction but all costs connected therewith shall be included in the various contract items.

PRECAUTIONS UNDER ELECTRIC LINES

The Contractor's attention is directed to the AASHTO Guide on Occupational Safety on Highway Construction Projects, Subpart N, 1926.550, relating to construction equipment clearances at overhead electric lines, which states in part "...the minimum clearance between the lines and any part of the crane or load must be at least ten feet from lines rated 50 KV or below, and greater distances for higher voltage...".

For the protection of personnel and equipment, the Contractor shall be aware of this regulation especially during paving operations using large semi-trailer vehicles.

ITEM 102.51
ITEM 102.52

INDIVIDUAL TREE PROTECTION
TEMPORARY TREE & SHRUB PROTECTION FENCE

EACH
FOOT

The work under these items shall conform to the relevant provisions of Sections 101, 644, and 771 and the following:

The purpose of these items is to prevent damage to branches, stems and root systems of existing individual trees as well as shrubs and other quality vegetation to remain, and to ensure their survival. To the extent possible, to avoid soil compaction within the root zone, construction activities including, but not limited to, vehicle movement, excavation, embankment, staging and storage of materials or equipment shall not occur underneath the canopy (drip line) of trees to remain. Where these activities will occur within 10 feet of the canopy of trees or where directed, the Contractor shall take the appropriate protective measures specified herein.

Individual Tree Protection, Item 102.51, shall be used when construction activities are likely to occur within the canopy of individual trees or where there may be any risk of damage to trees.

Temporary Tree & Shrub Protection Fence, Item 102.52 shall be used to protect areas of existing trees or other areas of quality vegetation that is to remain.

The Contractor shall be solely responsible for judging the full extent of the work requirements, including, but not necessarily limited to any equipment and materials necessary for providing tree protection.

Incidental to the cost of this item, the Contractor shall retain the services of a certified arborist with demonstrated experience in construction protection, who shall make recommendations as to the specific appropriate treatment of trees within or near the work zone.

Prior to any construction activities, the Contractor and Arborist shall walk the site with the Engineer and City Tree Warden to identify which trees will require protection and to determine approved measures. The Arborist shall make recommendations as to appropriate methods to protect trees. The Engineer will have final decision as to trees to be protected and methods to be used.

The Contractor is responsible for the protection of all existing trees and plants within and immediately adjacent to the construction area that are not designated to be removed for the length of the construction period.

SUBMITTALS

Incidental to this item, the Contractor shall provide to the Engineer one (1) copy American National Standards Institute (ANSI) Standard Z-133.1 and A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance, Part 1: Pruning. These references shall be kept by the Engineer at his office for the length of the Contract.

Prior to start of work, the Contractor shall submit to the Engineer the name, certification number and resume of the Massachusetts Certified Arborist referenced herein. Cost for Certified Arborist for all activities pertaining to this Item shall be incidental to these items.

Submit arborists report documenting site walk and summarizing trees protected (species and quantities) as well as recommendations for protection.

MATERIALS

Fence and temporary fence posts shall be subject to the approval of the Engineer.

Fencing for individual plants shall be polyethylene fencing or chain link fence (new or used).

Staking for individual tree protection fencing shall be steel posts or 2 in. x 4 in. lumber as required and approved by the Engineer.

Wood chips shall conform to provisions of Wood Chip Mulch under Materials Section M6.04.3.

Trunk protection shall be 2 in. x 4 in. cladding, at least 8 feet in length, clad together with wire. Alternative materials shall be at the approval of the Engineer. Alternative materials shall provide adequate protection from anticipated construction activities and shall not injure or scar trunk. Trunk protection shall include burlap to separate trunk cladding from bark.

Temporary Tree Protection Fence shall be brightly colored polypropylene barricade or wooden snow fencing for tree protection or safety fencing as shown on the Contract drawings or as directed by the Engineer. Fencing shall be a minimum of 4 feet high and supported by steel or hardwood stakes spaced at a maximum of 8 feet on center or by other means acceptable to the Engineer. Fencing shall be materials and fastenings sufficient to provide sturdy and highly visible separation of the construction activities from the trees and existing plantings to be preserved

Incidental to this item, the Contractor shall provide water for maintaining plants in the construction area that will have exposed root systems for any period during construction.

CONSTRUCTION METHODS

To the extent possible, to avoid soil compaction within the root zone, construction activities including, but not limited to, vehicle movement, excavation, embankment, staging and storage of materials or equipment shall not occur underneath the canopy (drip line) of trees to remain. Where these activities will occur within 10 feet of the canopy of trees, the Contractor shall provide Individual Tree Protection as specified herein.

For individual tree protection, the Contractor shall set posts and fencing at the limits of the tree canopy. Where construction activities closer to the trees is unavoidable, the contractor shall tie branches out of the way and place wood chips to a depth of 6 inches on the ground to protect the root systems. The Contractor shall wrap the area of the trunk of the tree with burlap prior to armoring with 2x4 cladding. Cladding for tree trunks shall extend from the base of the tree to at least 8 feet from the base.

To the extent possible, temporary landscaped fencing shall be installed at the limit of tree canopy and shall be staked and maintained vertical for the length of the contract.

Where excavation within canopy is unavoidable, the Contractor shall use equipment and methods that shall minimize damage to the tree roots, per recommendations of the Certified Arborist. Such methods may require root pruning prior to, as well as during, any excavation activities.

All fencing, trunk protection, branch protection, and woodchips shall be maintained throughout the duration of the contract. Protective fencing shall be repaired and woodchip mulch replaced as necessary during the duration of the contract at no additional cost.

Cutting and Pruning

Some pruning of roots and branches may be a necessary part of construction. Pruning will be performed on the same side of the tree that roots have been severed.

The Contractor shall retain the services of a Massachusetts State Certified Arborist to oversee any cutting of limbs, stem or roots of existing trees. All cuts shall be clean and executed with an approved tool. Under no circumstances shall excavation in the tree protection area be made with mechanical equipment that might damage the existing root systems.

Any tree root area exposed by construction shall be covered and watered immediately. Exposed tree roots shall be protected by dampened burlap at all times until they can be covered with soil.

Watering

Water each tree within the construction area where work is in progress twice per week until the surrounding soil of each tree is saturated for the duration of construction activities.

Removal of Protection

After all other construction activities are complete, but prior to final seeding, wood chips, temporary fencing, branch protection, and trunk protection materials shall be removed and disposed off site by the Contractor at no additional cost.

Tree Damage

The Contractor shall be held responsible for the health and survival of the existing trees in the immediate vicinity of the of the construction area. Damage that, in the Engineer's opinion, can be remedied by corrective measures shall be repaired immediately. Broken limbs shall be pruned according to industry standards. Wounds shall not be painted. Trees or shrubs that are damaged irreparably shall, at the Engineer's discretion, be replaced by the Contractor with new plants of comparable size and type. Cost of replacement trees shall be borne by the Contractor.

Method of Measurement

Temporary Tree Protection Fence will be measured for payment complete in place per Foot of tree protection.

Basis of Payment

Where construction disturbance, such as grading activities, will occur within the limits of the canopy of groups of trees, these trees shall be protected and paid for under Item 102.52, Temporary Tree Protection Fence.

Payment under this item shall be scheduled throughout the length of contract: 30 percent of value shall be paid upon installation, 30 percent approximately halfway through the contract, and the remainder to be paid at the end of the contract after completion of construction operations that would disturb plants and after the protection materials have been removed and properly disposed of off-site by the Contractor.

Submittal of arborist's report is incidental to and required for payment of these items.

Compensation for Individual Tree Protection will be paid for at the contract unit price per each under Item 102.51. This item shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work, including the services of a certified arborist, water and fertilizer, and the subsequent removal and satisfactory disposal of the protective materials upon completion of the contract.

Temporary Tree Protection Fence will be paid for at the Contract Unit Price per Foot under Item 102.52, which shall include full compensation for all labor, equipment, materials, and incidentals necessary for the satisfactory completion of the work, including the services of a certified arborist, water and fertilizer, and the subsequent removal and satisfactory disposal of the protective materials upon completion of the Contract.

Cost of wood chips, as required, shall be incidental to this item.

ITEM 141.**CLASS A TRENCH EXCAVATION****FOOT**

The work under this item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

The work shall include any required excavation, sawcutting, and removal of existing concrete retaining walls, portions of existing walls, concrete steps, and foundations to construct the project. The work also includes excavation required to construct new retaining walls.

Method of Measurement and Basis of Payment

Class A Trench Excavation shall be measured in its original positions by the cross section method except where such measurement is not practical the volume shall be measured by such other methods as the Engineer may determine.

The work will be paid for at the Contract unit price per cubic yard, which price shall include all labor, material, equipment and incidental costs required to complete the work including excavation, sawcutting concrete, shoring or bracing, temporary storage and transportation. No separate payment will be made for the off-site disposal of excavated materials.

ITEM 220.5 and 220.8 go to page141

ITEM 220.6**SANITARY STRUCTURE REBUILT****FOOT**

The work under these items shall conform to the relevant provisions of Sections 201 and 220 of the Standard Specifications, the requirements of the City of Waltham Engineering Department, and the following:

The work shall include the adjusting and rebuilding of existing sewer manholes as shown on the plans, or as required by the Engineer, to meet the proposed grades.

The structure shall be rebuilt when, in the opinion of the Engineer, the condition of the existing structure is damaged or deteriorated or will need repairs in order to accommodate the necessary adjustments to meet the proposed grade. The sloped masonry and vertical masonry shall be removed to such depths as required by the Engineer and new masonry shall be constructed to conform to the proposed design.

Method of Measurement and Basis of Payment

Sanitary structures rebuilt will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 222.1**FRAME AND GRATE – MASSDOT CASCADE TYPE****EACH**

The work under this item shall conform to the relevant provisions of Section 201 of the Standard Specifications and the following:

Existing frames and grates along sloped roadway sections will be replaced with cascade type grates as required by the Engineer. Once the locations have been identified by the Engineer, the Contractor will be responsible for determining the number of left and right frames and grates according to the direction of flow. The Contractor shall provide a list to the Engineer for approval before ordering the castings.

Method of Measurement and Basis of Payment

Item 222.1 will be paid for at the Contract unit price each. No distinction will be made between cascade frames and grates with flow from the left or right.

Payment for the installation of frames and grates on existing structures will be included in the unit price for Items 220. or 220.2. Installation of frames and grates on new structures will be included in the unit price for the kind of structure involved, with no specific compensation being made.

Removing and stacking existing frames and grates will be paid separately under item 223.1.

ITEM 223.1 **FRAME AND GRATE (OR COVER) REMOVED AND STACKED** **EACH**

The work under this item shall conform to the relevant provisions of Section 220 of the Standard Specifications and the following:

Work under this item includes the removal and stacking of existing drainage frame, grates, and covers shown on the plans or as required by the Engineer. The grates (or covers) shall be shall be removed, loaded, transported and carefully stacked at the City of Waltham Consolidated Public Works yard located at 165 Lexington Street, Waltham MA, 02452.

Method of Measurement and Basis of Payment

Item 223.1 will be paid for at the Contract unit price each, which price shall include all labor, equipment, materials and incidental costs required to complete the work as described above.

ITEM 346.21 **2 INCH SERVICE WATER PIPE REMOVED AND DISCARDED** **FOOT**

The work under this item shall conform to the relevant provisions of Section 300 of the Standard Specifications, the requirements of the City of Waltham Water Department, and the following:

Existing water service pipe as shown on the plans or as required by the Engineer, shall be removed and discarded by the contractor. The location of the service pipe shown on the plans is approximate and is assumed to be 2-inch copper pipe. The contractor shall verify the actual size, type, and location of the service pipe prior to removal. This item includes furnishing all equipment, materials, and labor required to complete the work, including excavation, cutting and capping the pipe at the main, backfilling, and otherwise restoring any areas disturbed in order to remove the pipe. Existing corporation stops, curb stops, gate vales or gate boxes along water pipe to be removed shall also be removed as part of the work.

The Contractor shall strive to minimize inconvenience to water users during the course of water main work and service pipe removal, as required by the Engineer. The Contractor shall receive no additional compensation for coordination or provisions required to minimize water user inconvenience. Operation of existing valves on or off shall be by the City of Waltham Water Department or its authorized representatives.

Method of Measurement

2 INCH SERVICE WATER PIPE REMOVED AND DISCARDED shall be measured by linear foot of pipe removed and discarded.

Basis of Payment

Payment for 2 INCH SERVICE WATER PIPE REMOVED AND DISCARDED shall be paid for at the contract unit price FOOT, removed and discarded. The unit price bid shall include all labor, materials, and equipment necessary to remove the pipe as shown on the drawings. Excavation and backfill, including bedding material shall be included in the unit price bid. Backfill obtained from borrow (if required) shall be paid for under Item 151.

No separate payment will be made for sawcutting pavement, but all costs in connection therewith shall be included in the Contract unit price bid.

Pavement for patching utility trenches in the roadway will be paid for under Item 451.

Gate boxes to removed and stacked will be paid for under Item 358.1.

<u>ITEM 358.</u>	<u>GATE BOX ADJUSTED</u>	<u>EACH</u>
<u>ITEM 358.1</u>	<u>GATE BOX REMOVED AND STACKED</u>	<u>EACH</u>

The work to be done under these items shall conform to the relevant provisions of Section 300 of the Standard Specifications, the requirements of the City of Waltham Water Department, and the following.

Work under these items includes adjusting or the removal and stacking of existing gate boxes shown on the plans or as required by the Engineer. The gate boxes to be removed and stacked shall be delivered to the City of Waltham Consolidated Public Works Department located at 165 Lexington Street, Waltham MA, 02452.

Method of Measurement

Item 223.1 will be measured by the unit EACH for each combined frame and grate (or cover) removed regardless of its size.

Basis of Payment

Item 223.1 will be paid at the contract unit bid price per EACH, which price will be full compensation for removing and discarding the items as described above.

ITEM 415.

PAVEMENT MICROMILLING

SQUARE YARD

The work to be done under this item shall conform to the relevant provisions of Section 130 and 450 of the Standard Specifications and the following.

Description

This work shall consist of micromilling and removal of existing Hot Mix Asphalt (HMA) pavement courses from the project by the Contractor. Micromilling shall be performed in conformity with the approved QC Plan. The Contractor shall present and discuss in sufficient detail the Quality Control information and activities related to milling at the Construction Quality Meeting required under Section 450. Unless otherwise specified, the milled material shall become the property of the Contractor.

Construction Procedures

All construction procedures under Pavement Micromilling shall also conform to any of the following relevant provisions of Pavement Milling:

Milling Equipment Requirements.

The milling equipment shall be self-propelled with sufficient power, traction, and stability to remove the existing HMA pavement to the specified depth and cross-slope. The milling machine shall be capable of operating at a minimum speed of 10 feet (3 meters) per minute, designed so that the operator can at all times observe the milling operation without leaving the control area of the machine, and equipped with the following:

- (a) A built in automatic grade control system that can control the longitudinal profile and the transverse cross-slope to produce the specified results.
- (b) Longitudinal controls capable of operating from any longitudinal grade reference, including string line, 30 foot (10 meter) ski minimum, 30 foot (10 meter) mobile string line minimum, or a matching shoe.
- (c) The transverse controls shall have an automatic system for controlling cross-slope at a given rate.
- (d) Cutting heads able to provide a minimum 6 foot (2 meter) cutting width and a 0 to 4 inch (0 to 100 mm) deep cut in one pass. The teeth on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture.

- (e) An integral pickup and conveying device to immediately remove milled material from the roadway and discharge the millings into a truck, all in one operation.
- (f) All necessary safety devices such as reflectors, headlights, taillights, flashing lights and back up signals so as to operate safely in both day and night.
- (g) A means of effectively limiting the amount of dust escaping from the milling and removal operation in accordance with local, State, and Federal air pollution control laws and regulations.

When milling smaller areas or areas where it is impractical to use the above described equipment, the use of a smaller or lesser-equipped milling machine may be permitted when approved by the Engineer.

Sweeper Equipment Requirements

The Contractor shall provide a sufficient number of mechanical sweepers to ensure that the milled surface is free of millings and debris at the end of each day's milling operations. Each sweeper shall be equipped with a water tank, spray assembly to control dust, a pick-up broom, a dual gutter broom, and a dirt hopper. The sweepers shall be capable of removing millings and loose debris from the textured pavement.

Milling Operations

The milling operations shall be scheduled to minimize the duration and placement of traffic on the milled surface. The milling operations shall not proceed more than 3 miles ahead of the paving operations. Under no circumstances shall the milled surface be left exposed to traffic for a period exceeding seven days. The Engineer may allow the Contractor to adjust the above limitations on milling production when necessary.

The Contractor shall coordinate milling and paving operations to minimize the exposure of milled surfaces to traffic. The Contractor shall ensure that milled surfaces are overlaid in a timely manner to avoid damage to the pavement structure. Any damage to the pavement structure resulting from extended exposure of the milled surface to traffic shall be repaired as directed by the Engineer at the Contractor's expense.

The existing pavement shall be removed to the average depth shown on the plans, in a manner that will restore the pavement surface to a uniform cross-section and longitudinal profile. The longitudinal profile of the milled surface shall be established using a 30 foot (10 meter) mobile ski, mobile string line, or stationary string line. The cross-slope of the milled surface shall be established by a second sensing device or by an automatic cross-slope control mechanism. The Contractor will be responsible for providing all grades necessary to remove the material to the proper line, grade, cross section, superelevation, and transitions shown on the plans or as directed by the Engineer. The requirement for automatic grade or slope controls may be waived by the Engineer in locations warranted by the situation, including intersections and closely confined areas.

The Engineer may adjust the average milling depth specified on the plans by $\pm 3/4"$ ($\pm 20\text{mm}$) during each milling pass at no additional payment to minimize delamination of the underlying pavement course or to otherwise provide a more stable surface. If delamination or exposure of concrete occurs when milling a HMA pavement course from an underlying Portland Cement Concrete (PCC) pavement, the Contractor shall cease milling operations and consult the Engineer to determine whether to reduce the milling depth or make other adjustments to the operation.

Protection of Inlets and Utilities

Throughout the milling operation, protection shall be provided around existing catch basin inlets, manholes, utility valve boxes, and any similar structures. Any damage to such structures as a result of the milling operation is the Contractor's responsibility and shall be repaired at the Contractor's expense. To prevent the infiltration of milled material into the storm sewer system the Contractor shall take special care to prevent the milled material from falling into the inlet openings or inlet grates. Any milled material that falls into inlet openings or inlet grates shall be removed at the Contractor's expense.

Vertical Faces

All permanent limits of the milled area shall be sawcut or otherwise neatly cut by mechanical means to provide a clean and sound vertical face. No vertical faces, transverse or longitudinal, shall be left exposed to traffic. If any vertical face is formed in an area exposed to traffic a temporary paved transition with a maximum 12:1 slope shall be established. If the milling machine is used to temporarily transition the milled pavement surface to the existing pavement surface, the temporary transition shall be constructed at a maximum 12:1 slope.

Opening to Traffic

Prior to opening a milled area to traffic, the milled surface shall be thoroughly swept with a mechanical sweeper to remove all remaining millings and dust. This operation shall be conducted in a manner so as to minimize the potential for creation of a traffic hazard and to comply with local, State, and Federal air pollution control laws and regulations. Any damage to vehicular traffic as a result of milled material becoming airborne is the responsibility of the Contractor and shall be repaired at the Contractor's expense. Temporary pavement markings shall be placed in accordance with the provisions of Subsection 850.64.

Milled Surface Inspection

The milled surface shall provide a satisfactory riding surface with a uniform textured appearance. The milled surface shall be free from gouges, excessive longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, non-uniform milling teeth, improper use of equipment, or otherwise poor workmanship. Any unsatisfactory surfaces produced shall be corrected by remilling at the Contractor's expense and to the satisfaction of the Engineer.

The Contractor shall perform Quality Control inspection of all work items addressed as specified in the table below. Inspection activities during milling of HMA pavement may be performed by

qualified Production personnel (e.g. Skilled Laborers, Foremen, Superintendents). However, the Contractor's QC personnel shall have overall responsibility for QC inspection. The Contractor shall not rely on the results of Department Acceptance inspection for Quality Control purposes. The Engineer shall be provided the opportunity to monitor and witness all QC inspection.

The milled surface of each travel lane shall be divided into longitudinal Sublots of 500 feet (150 meters). The Contractor shall perform a minimum of one random QC measurement within each Sublot with a 10 foot (3 meter) straightedge in the transverse direction across the milled surface. Additional selective QC measurements within each Sublot will be performed as deemed necessary by the QC personnel. All QC inspection results shall be recorded on NETTCP Inspection Report Forms. The Engineer will also randomly inspect a minimum of 25% of the Sublots. The Contractor shall perform surface texture measurements with a 10 foot (3 meter) straightedge in the transverse direction across the milled surface. The milled surface shall have a texture such that the variation from the edge of the straightedge to the top of ridges between any two ridge contact points shall not exceed 1/8 inch (3 mm). The difference in height from the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed 1/16" (1.6 mm). Any point in the surface not meeting these requirements shall be corrected as directed by the Engineer at the Contractor's expense.

In isolated areas where surface delamination between existing HMA layers or a surface delamination of HMA on Portland Cement Concrete causes a non-uniform texture to occur, the straightedge surface measurement requirements stated in the preceding paragraph may be waived, subject to the approval of the Engineer.

Minimum QC Inspection of Milling Operations

Inspection Component	Items Inspected	Minimum Inspection Frequency	Point of Inspection	Inspection Method
Equipment	As specified in QC Plan	Per QC Plan	Per QC Plan	Per QC Plan
Environmental Conditions	Protection of Inlets & Utilities	Per QC Plan	Existing Surface	Visual Check
	Removal of Millings & Dust	Per QC Plan	Milled Surface	Visual Check
Workmanship	Milling Depth	Per QC Plan	Milled Surface	Check Measurement
	Cross-Slope & Profile	Per QC Plan	Milled Surface	Check Measurement
	Milled Surface Texture	Per QC Plan	Milled Surface	Visual Check
	Milled Surface Roughness	Once per 500 feet (150 meters) per milled lane	Milled Surface per Subsection 410.67	10 foot (3 meter) standard straightedge
	Sawcut Limit Vertical Face	Per QC Plan	Sawcut Limits	Visual Check

Micromilling Equipment Requirements

The micromilling machine shall be equipped with a drum specifically designed to provide the surface specified below.

Control Strip

The Contractor shall micromill a control strip. The control strip shall be 500 feet minimum in length with a uniformly textured surface and cross slope, as approved by the Engineer.

The micromilled surface of the control strip shall provide a satisfactory riding surface with a uniform textured appearance. The micromilled surface shall be free from gouges, excessive longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, non-uniform milling teeth, improper use of equipment, or otherwise poor workmanship. Any unsatisfactory surfaces produced in the control strip shall be corrected by additional micromilling at the Contractor's expense and to the satisfaction of the Engineer.

The micromilled pavement surface shall have a transverse pattern of 0.2 – 0.3 inch center to center of each strike area. The Contractor shall perform surface texture measurements with a 10 foot (3 meter) straightedge in the transverse direction across the milled surface. The milled surface shall have a texture such that the variation from the edge of the straightedge to the top of ridges between any two ridge contact points shall not exceed 1/8 inch (3 mm). The difference in height from the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed 1/16" (1.6 mm). Any point in the surface not meeting these requirements shall be corrected as directed by the Engineer at the Contractor's expense.

Micromilled Surface Inspection.

The Contractor shall perform Quality Control inspection of all work items addressed under Section 415. The Contractor shall not rely on the results of Department Acceptance inspection for Quality Control purposes.

The micromilled surface shall meet the requirements of 415.62.

Method of Measurement

Micromilling - Micromilling will be measured for payment by the number of square yards (square meters) of area from which the milling of existing HMA pavement has been completed and the work accepted. No area deductions will be made for minor unmilled areas such as catch basin inlets, manholes, utility boxes and any similar utility structures.

Basis of Payment

Micromilling - Micromilling, removal and disposal of existing HMA pavement will be paid for at the contract unit price per square yard (square meter). This price shall include all equipment, tools, labor, and materials incidental thereto. No additional payments will be made for multiple passes with the milling machine to remove the existing HMA surface to the grade specified.

No separate payments will be made for: performing handwork removal of existing pavement and providing protection around catch basin inlets, manholes, utility valve boxes and any similar structures; repairing surface defects as a result of the Contractor's negligence; providing protection to underground utilities from the vibration of the milling operation; sawcutting micromilled limits; installing and removing any temporary transition; removing and disposing of millings; furnishing a sweeper and sweeping after milling. The costs for these items shall be included in the contract unit price for Pay Item 415., Pavement Micromilling.

Payment Items

415. Pavement Micromilling	Square Yard
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<u>ITEM 450.90</u>	<u>CONTRACTOR QUALITY CONTROL</u>	<u>TON</u>
<u>ITEM 451.</u>	<u>HMA FOR PATCHING</u>	<u>TON</u>
<u>ITEM 452.</u>	<u>ASPHALT EMULSION FOR TACK COAT</u>	<u>GALLON</u>
<u>ITEM 453.</u>	<u>HMA JOINT SEALANT</u>	<u>FOOT</u>
<u>ITEM 455.23</u>	<u>SUPERPAVE SURFACE COURSE – 12.5 (SSC – 12.5)</u>	<u>TON</u>
<u>ITEM 455.31</u>	<u>SUPERPAVE INTERMEDIATE COURSE – 12.5 (SIC – 12.5)</u>	<u>TON</u>
<u>ITEM 455.42</u>	<u>SUPERPAVE BASE COURSE – 37.5 (SBC – 37.5)</u>	<u>TON</u>

Work under these Items shall conform to the relevant provisions of Document 00717 SUPERPAVE REQUIREMENTS and the following:

The Equivalent Single Axle Loads (ESALs) for the design travel lane over a 20-year period is 2.6 Million 18-kip (80-kn) ESALs. The PGAB Grade selected for this Contract is **PG 64-28**.

ITEM 482.3

SAWING ASPHALT PAVEMENT

FOOT

The work to be done under this Item shall be done in accordance with the following:

All edges of excavations made in existing bituminous concrete pavements, including driveways and sidewalks, shall be squared by sawcutting with power-driven tools to provide a neat, clean edge for joining new pavement as shown on the Plans. Ragged, uneven edges will not be accepted. Areas that have been broken or undermined shall be edged with minimum disturbance to remaining pavement.

Sawcut surfaces in bituminous pavements shall be sprayed or painted with a uniform thin coat of RS-1 asphalt emulsion immediately before placement of hot-mix asphalt material against these surfaces.

Method of Measurement and Basis of Payment

Item 482.3 shall be measured and paid for at the contract unit price per Foot. This cost shall include all labor, materials, equipment, and incidental costs required to complete the work.

RS-1 asphalt emulsion shall be incidental to this Item.

Sawcutting required as part of the installation of waterworks, storm drains, electrical and traffic conduit, curb, and hot-mix asphalt patches shall be paid for under the respective Items.

ITEM 482.41

SAWING CEMENT CONCRETE SIDEWALK

FOOT

The work under this item shall conform to the relevant provisions of Section 120 of the Standard Specifications and the following:

The work shall include sawcutting the cement concrete sidewalk to the limits as shown on the plans, and as required by the Engineer.

The existing cement concrete shall be sawn through its full depth or to the depth of the abutting proposed cement concrete sidewalk subgrade, whichever is lesser. The Contractor shall sawcut concrete sidewalks where shown on the drawings, to provide a uniform, vertical surface for the proposed cement concrete sidewalk joint with the existing cement concrete sidewalk.

Sawcut edges which become broken, ragged or undermined as a result of the Contractor's operations shall be re-sawcut prior to the placement of abutting proposed cement concrete sidewalk at no additional cost to the Department.

Method of Measurement and Basis of Payment

Item 482.41 shall be measured and paid for at the contract unit price per Foot. This cost shall include all labor, materials, equipment and incidental costs required to complete the work.

Any sawcutting required as part of the installation of waterworks, storm drains, electrical and

traffic conduit, and curb will be included as part of those respective Items and will not be included in the price per foot for this Item.

ITEM 670.

FENCE REMOVED AND RESET

FOOT

Work under this item shall conform to the relevant provisions of Section 665 of the Standard Specifications and the following:

The work includes removing existing privately owned fences that interfere with proposed sidewalk reconstruction and resetting said fences as shown on the plans or as required by the Engineer. Existing post foundations shall be removed and the holes shall be backfilled and compacted with suitable material or ordinary borrow. Work under this item also includes furnishing new fence posts of similar material, size, and color of existing posts that are set in concrete and cannot be reused.

Existing fence elements, which in the judgment of the Engineer are unsuitable for reuse due to deterioration, shall be replaced with new material of matching type as approved by the Engineer.

Existing fence or gate elements unsuitable for reuse due to damage caused by the Contractor's operations shall be replaced with new material of matching as approved by the Engineer at no additional compensation.

Fence posts shall be installed plumb in augered holes. Metal posts shall be backfilled with concrete unless otherwise required by the Engineer. Wood posts shall be backfilled with gravel unless otherwise required by the Engineer.

Lawn sod at new postholes shall be carefully removed and replaced around the posts after backfilling.

Reset fence shall be set at a uniform height matching the existing fences to remain and along the proposed lines, as shown on the plans or as required by the Engineer. Fences on the layout line shall be located with the face of rail on the layout line and the posts on the abutting properties.

Method of Measurement and Basis of Payment

Item 670. shall be measured and paid for at the contract unit price per Foot. This price shall be full compensation for dismantling, storing, and resetting the fence and all labor, material, tools, equipment, new fence posts, and incidentals necessary to complete the work as shown on the Plans and as required by the Engineer.

Excavation and disposal of the existing post foundations is incidental to Item 670. in addition to, excavation, replacement of fence elements unsuitable for reuse, and lawn sod.

Gravel Borrow required for post installations shall be paid for under Item 151.

Cement Concrete required for post installation shall be paid for under Item 901.

ITEM 691.1**STONE BORDER REMOVED AND RESET****FOOT**

Work under this item shall be done in accordance with relevant provisions of Section 690 Standard Specifications, supplemented as follows:

Existing stone borders along the back of the sidewalk shall be removed and reset similar to existing as required by the Engineer.

If in the opinion of the Engineer it is found that the existing stones are damaged or found to be unusable, new stones of equal size shall be furnished by the Contractor as necessary and as required by the Engineer. Removal and discarding of unusable stones shall incidental to this item.

Method of Measurement and Basis of Payment

Item 691.1 shall be measured along the face of the stone borders installed and paid for at the contract unit price per Foot. This price paid shall be full compensation for removing, cleaning, and resetting stones, and all other materials, labor and equipment required to complete the work.

ITEM 693.**MODULAR BLOCK RETAINING WALL****SQUARE FOOT**

The work to be done under this item includes furnishing and installing modular block retaining walls at the locations shown on the plans.

Modular block retaining walls shall be installed to the lines and grades designated on the plans or as required by the Engineer. Also included is the furnishing and installing appurtenant materials required for construction of the retaining walls, including wall caps and leveling pads. Construction of modular block retaining walls shall be done in accordance with the manufacturer's requirements and as required by the Engineer.

The contractor shall submit the following to the Engineer, for approval, prior to performing any work under this Section:

Material Submittals: The Contractor shall submit manufacturers' certifications two weeks prior to start of work stating that the Modular Block Retaining Wall Units and geosynthetic reinforcement meet the requirements of this Section. The manufacturers/suppliers of the geosynthetic reinforcement shall have demonstrated construction of similar size and types of modular block retaining walls on previous projects.

Shop Drawing: The Contractor shall submit two sets of detailed design calculation and final retaining wall plans for approval before placing his order for materials. A separate submittal shall be made for each wall location and shall include wall elevations showing reinforcement, as required, and all elevations necessary to construct each wall. The type, strength and placement location of the reinforcing geosynthetic, as required per manufacturer's recommendations, shall be included on the Shop Drawings. All calculations and drawings shall be prepared and stamped by a professional Civil Engineer (P.E.)

experienced in modular block retaining wall design and licensed in Massachusetts.

Samples: Color and texture samples shall also be provided for approval. Color and texture submitted shall closely match adjacent walls or sections of walls to remain, or walls that are to be replaced as required by the Engineer.

- A. Contractor shall check materials upon delivery to assure that specified type and grade of materials have been received and proper color and texture of wall units have been received.
- B. Contractor shall prevent excessive mud, wet concrete, epoxies, and like materials that may affix themselves, from coming in contact with materials.
- C. Contractor shall store and handle materials in accordance with manufacturer's recommendations.
- D. Contractor shall protect materials from damage. Damaged materials shall not be incorporated into the retaining wall.

Modular Block Retaining Wall Units

- A. Wall units shall be machine formed, Portland cement concrete blocks specifically designed for retaining wall applications.
- B. Color of modular block retaining wall units shall be as indicated on the plans, as required by the Engineer, and approved by the City.
- C. Finish of wall units shall be weathered split faced. A weathered split-face is a straight-face unit that is mechanically finished to create rounded corners and edges similar in appearance to naturally-worn stone or cobbles.
- D. Wall unit faces shall be of straight geometry.
- E. Wall unit heights shall be both four and six inches (minimum).
- F. Wall units (not including aggregate fill in unit voids) shall provide a minimum weight of 105-psf wall face area.
- G. Wall units shall be solid through the full depth of the unit.
- H. Wall units shall have a depth (front face to rear) to height ratio of 2:1, minimum.
- I. Wall units shall be interlocked with connection pins, designed with proper setback to provide 8:1 vertical to horizontal batter (a 7 degree cant from vertical)..
- J. Wall units shall be capable of being erected with the horizontal gap between adjacent units not exceeding 1/8 inch.

- K. Wall units shall be capable being installed with a continuous, level course at every 10 inches minimum of height so geosynthetic reinforcement layers can be placed level within the wall face.
- L. Wall units shall be capable of providing overlap of units on each successive course of a corner so that walls meeting at corner are interlocked and continuous. Wall units that require corners to be mitered shall not be allowed.
- M. Wall units shall be sound and free of cracks or other defects that would interfere with the proper placing of the unit or significantly impair the strength or permanence of the structure. Cracking or excessive chipping may be grounds for rejection. Units showing cracks longer than 1/2" shall not be used within the wall. Units showing chips visible at a distance of 30 feet from the wall shall not be used within the wall.
- N. Concrete used to manufacture wall units shall have a minimum 28 days compressive strength of 3,000 psi and a maximum moisture absorption rate, by weight, of 8% as determined in accordance with ASTM C140. Compressive strength test specimens shall conform to the saw-cut coupon provisions of ASTM C140.
- O. Wall units' molded dimensions shall not differ more than +/- 1/8 inch from that specified, in accordance with ASTM C1372.

Segmental Retaining Walls Unit Connection Pins

Wall units shall be interlocked with connection pins. The pins shall consist of glass-reinforced nylon made for the expressed use with the wall units supplied.

Geosynthetic Reinforcement

Geosynthetic reinforcement shall consist of geogrids or geotextiles manufactured as a soil reinforcement element. Reinforcement shall be installed according to the manufacturer's instructions.

Leveling Pad

Material for leveling pad shall consist of compacted sand, gravel, or combination thereof (USCS soil types GP, GW, SP, & SW) and shall be a minimum of 6 inches in depth. Lean concrete with a strength of 200-300 psi and three inches thick maximum may also be used as a leveling pad material. The leveling pad should extend laterally at least a distance of 6 inches from the toe and heel of the lowermost wall unit.

Drainage Aggregate

Drainage aggregate directly behind the wall shall be angular, clean stone or granular fill meeting the following gradation as determined in accordance with ASTM D422.

Sieve Size	Percent Passing
1 inch	100
3/4 inch	75-100
No. 4	0-60
No. 40	0-50
No. 200	0-5

Drainage Pipe

The drainage collection pipe shall be a perforated or slotted PVC, or corrugated HDPE pipe. The drainage pipe shall be wrapped with a geotextile to function as a filter.

Drainage pipe shall be manufactured in accordance with ASTM D 3034 and/or ASTM D 1248.

Modular Block Retaining Wall Caps

Wall caps shall be properly aligned and glued to underlying units with a flexible, high-strength concrete adhesive. Rigid adhesive or mortar are not acceptable.

Caps shall overhang the top course of units by $\frac{3}{4}$ inch to 1 inch. Slight variation in overhang is allowed to correct alignment at the top of the wall.

METHOD OF MEASUREMENT

Modular Block Retaining Wall will be measured by the square foot face of retaining wall constructed as measured from a line parallel to and at the top of the leveling pad to below the cap unit along the length of the wall.

BASIS OF PAYMENT

The contract unit price per square foot for Item 693. shall be considered as full compensation for providing all materials, equipment, labor, including geosynthetic reinforcement, leveling pad, drainage aggregate, backfill, underdrain, wall caps, and incidentals necessary to construct the wall, complete in place, at locations indicated on the plans in accordance with the manufacturer's requirements and as required by the Engineer.

ITEM 693.1

CONCRETE BLOCK WALL REMOVED AND REBUILT

LINEAR FOOT

The work to be done under this item includes removing and rebuilding existing concrete block walls as shown on the plan or as required by the Engineer.

Rebuilt walls shall be similar in appearance to the walls which are removed. All wall materials shall be thoroughly cleaned before being reset. If existing blocks are broken or if the use of new blocks are necessary to rebuild the walls in a new location, they shall be of the same color and texture as the existing wall.

Rebuilt walls are to be set upon a levelling pad consisting of compacted sand, gravel, or combination thereof and shall be a minimum of 6 inches in depth. The leveling pad should extend laterally at least a distance of 6 inches from the toe and heel of the lowermost wall unit.

It is the intention of this special provision that the rebuilt walls, at the new locations, shall conform as close as possible in every detail to the existing walls.

Measurement and Payment

Item 693.1 Concrete Block Wall Removed and Rebuilt will be measured for payment by the linear foot, complete in place.

Concrete Block Wall Removed and Reset be paid for at the contract unit price per linear foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No additional compensation will be made for concrete, replacement blocks, or gravel base course, if needed, but all costs in connection therewith shall be included in the contract unit price bid.

ITEM 697.1

SILT SACK

EACH

Work under this item shall conform to the relevant provisions of Sections 227 and 670 of Standard Specifications and the following:

The work to be done under this item shall include furnishing and installing sediment collection sacks in all drainage structures within the limits of work during construction operations for the protection of the environment. Devices shall be Silt-Sac, Hydro-Flogard + Plus Catch Basin Insert, or Ultra-Drainguard Insert, or approved equal.

Construction Methods

All drainage structures within the limits of work shall have sediment collection sacks installed

and maintained in good working condition until the completion of all construction activities within the drainage collection area of each drainage structure. Sediment collection sacks shall be replaced if damaged, if no longer working properly and/or as directed by the Engineer.

Refer to construction plan details showing the sediment collection sack device. The Contractor shall be responsible for field measuring all existing and new drainage structures to ensure that the proper size sediment collection sack is provided for each structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as directed by the Engineer.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and dispose of accumulated debris as required.

When emptying the silt sack, the Contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractor's expense. The silt and sediment from the silt sacks shall be legally disposed of offsite as specified in Section 227 of the Standard Specifications. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

All curb openings shall be blocked to prevent stormwater from bypassing the device.

Method of Measurement

Furnishing and installing or replacing sediment collection sacks will be paid for at the Contract unit price per each for Item 697.1 Silt Sack which includes all labor, materials, equipment, tools, and other incidentals necessary to complete the work. Sediment collection sacks that become ineffective or damaged shall be replaced and paid for separately under this item.

Basis of Payment

Payment for this work will be made on a per each basis, which shall include all labor, tools, and equipment necessary to complete the work. Removal and disposal of sediment sacks at the completion of the project shall be considered incidental to this item.

The removal and disposal of sediments and debris from the sediment collection sacks shall be paid for under Item 227.3 – Removal and Disposal of Drainage Structure Sediments.

ITEM 705.1

FLAGSTONE WALK REMOVED AND RESET

SQUARE YARD

All work under this Item shall be in accordance with the relevant provisions of Section 701 of the Standard Specifications and the following:

The work to be done under this Item consists of removing and resetting existing flagstone walks at locations as shown on the plans or where directed by the Engineer.

The reset flagstone walks shall be similar in appearance to the walks which are removed or which are to abut an existing walk. All flagstones shall be thoroughly cleaned before being reset. If existing flagstones are broken or if the use of new stones is necessary to reset the walks, they shall be of the same color and texture as the existing stones. If the existing flagstone walk is set upon a cement concrete base course, a new concrete base course shall be constructed to the same depth as the existing base course and placed on an 8-inch gravel foundation.

The cement concrete base course shall conform to Material Specification M4.02.00. Cement mortar used to reset the flagstones shall conform to Material Specification M4.02.15.

It is the intention of this special provision that the reset flagstone walks, at the new locations, shall conform as close as possible in every detail to the existing walks.

Measurement and Payment

Item 705.1 Flagstone walk removed and reset will be measured for payment by the square yard, complete in place.

Flagstone walk removed and reset will be paid for at the contract unit price per square yard, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No additional compensation will be made for the concrete or gravel base course, if needed, but all costs in connection therewith shall be included in the contract unit price bid.

ITEM 706.1

BRICK WALK REMOVED AND RELAID

SQUARE YARD

The work under this item shall conform to the relevant provisions of Section 701 of the Standard Specifications and the following:

The work shall include removing existing brick, cleaning brick, furnishing new brick of the same type as existing if required, laying of brick paving with hand-tight butt joints swept with a polymeric sand mix on a sand setting bed, on a superpave surface course (SSC 9.5), on a gravel base course as required to meet the existing base. The finished brick paver surface shall meet the required lines and grades and have a cross slope of 1.5% (2% maximum) to provide for surface drainage, unless otherwise required by the Engineer.

PREPARATION

Before proceeding with the work, the Contractor shall submit brick samples to the Engineer for approval. Samples of brick shall be submitted in whole straps or panels to show the color range

and texture. Before construction begins a sample panel of at least twenty-five (25) bricks shall be laid as a job site panel to be retained for reference until the project is accepted.

MATERIALS

Brick - If reuse of existing brick is not possible, or additional brick is needed, it shall be approved by the Engineer, with colors to match existing bricks.

Sand Setting Bed - Sand shall be clean, hard sand with durable particles uniformly graded from coarse to fine and all passing the No. 4 sieve and conforming to ASTM C 144.

Hot Mix Asphalt Walk Surface - This shall conform to Item 702., Hot Mix Asphalt Walk Surface.

Excavation - Excavation shall conform to the requirements of Item 120.1, Unclassified Excavation.

CONSTRUCTION METHODS

Superpave Surface Course (SSC 9.5)

Surface course shall be placed in accordance with the relevant provisions of Section 701 to the depths after rolling as shown on the Drawings.

Sand Setting Bed

Sweep the bituminous concrete top course clean. Set 3/4 inch depth bars; adjust with shims where necessary to bring the bars to proper grade. Spread sand mixture and pull with striking board over the control bars several times. After each pass, shower fresh mix over low spots until a smooth, firm and even setting bed is achieved. Carefully fill depressions remaining after depth control bars and shims are removed.

Brick Laying

- a) All brick shall be laid by skilled workmen under adequate supervision, true to lines and levels and patterns as required by the Engineer. Contractor will take care to select bricks which will allow accurate patterns and uniform joint alignment.
- b) Cut bricks to provide butt joints with parallel brick edges. Use no brick smaller than one-half size in any dimension for any cut pieces.
- c) All brick cutting shall be accomplished with a water-cooled masonry saw only.
- d) The brick paving has been designed to provide adequate drainage at all points. If any condition is encountered between given elevations where drain-off is questionable, the Contractor shall notify the Engineer and not proceed with the work until instructions are given. The finished work shall not deviate from the graded elevations.

- e) Set brick with hand-tight joints in the various patterns shown on the drawings. Saw cut brick to fit as required by job conditions. Use machine saw cuts only. Particular care shall be taken to set brick behind existing granite curbing that has been removed and reset to provide a tight fit and to minimize the joint width.
- f) Protect newly installed units with plywood panels against uneven settlement and misalignment and correct any deficiencies. Continually check the surface for finished line and grade with a straight edge. If any settlement occurs that produces a mismatch of more than 1/16-inch at the interface between brick pavements and other pavements prior to final acceptance, relay the bricks near the interface for a sufficient distance to provide a smooth transition of the brick surfaces and to provide a satisfactory match between brick and adjacent surfaces.
- g) Fill joints between bricks with polymeric sand mix swept into joints until completely filled. Fog surface with water to compact mix into the joints. Repeat the process until joints are compacted and filled. Clean all stains immediately by a device with capacity of 150 gallons per hour, 325° F coil temperature, 120 psi.

Measurement and Payment

Item 706.1 Brick walk removed and relaid will be measured for payment by the Square Yard of walk relaid , complete in place. Brick walk removed and relaid will be paid for at the Contract unit price per Square Yard, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for polymeric sand mix, sand setting bed, paver edging or bricks, but all costs in connection therewith shall be included in the contract unit price bid for this item. Excavation will be paid for separately under Unclassified Excavation, Item 120.1. Gravel borrow will be paid for separately under Gravel Borrow, Item 151. Hot Mix Asphalt Walk Surface will be paid for separately under Hot Mix Asphalt Walk Surface, Item 702.

ITEM 756. NPDES STORM WATER POLLUTION PREVENTION PLAN LUMP SUM

This Item addresses the preparation and implementation of a Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit.

Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more are required to apply to the U.S. Environmental Protection Agency (EPA) for coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. On February 16, 2012 (77 FR 12286), EPA issued the final NPDES Construction General Permit (CGP) for construction activity. The 2012 CGP replaces the 2008 CGP (which expired on February 15, 2012), and will provide coverage for eligible new and existing construction projects for a period of five years.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the U.S. EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a fourteen (14) day review period commencing from the date on which EPA enters the Notice into their database. The Contractor is advised that, based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Storm Water Pollution Prevention Plan for review. Work may not commence on the project until final authorization has been granted by EPA. Any additional time required by EPA for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the Storm Water Pollution Prevention Plan for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

The General Permit also requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the afore-mentioned statutes and regulations. The Plan will include the General Permit conditions and detailed descriptions of controls of erosion and sedimentation to be implemented during construction. It is the responsibility of the Contractor to prepare the SWPPP to meet the requirements of the most recently issued CGP. The Contractor shall submit the Plan to the Engineer for approval at least four weeks prior to any site activities. It is the responsibility of the Contractor to be familiar with the General Permit conditions and the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Corps of Engineers Section 404 Permit and other environmental permits applicable to this project and to include in the Stormwater Pollution Prevention Plan the methods and means necessary to comply with applicable conditions of said permits (reference to Part 9.1.1 of the 2012 CGP).

It is the responsibility of the Contractor to complete the SWPPP in accordance with the EPA Construction General Permit, provide all information required, and obtain any and all certifications as required by the Construction General Permit. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, construction methodologies, and the like are the responsibility of the Contractor. Amendments will require the approval of the Engineer prior to implementation.

Included in the General Permit conditions is the requirement for inspection of all erosion controls and site conditions on a weekly basis as well as after each incidence of rainfall exceeding 0.25 inches in twenty-four hours. For multi-day storms, EPA requires that an inspection must be performed during or after the first day of the event and after the end of the event. The Contractor shall choose a qualified individual who will be on-site during construction to perform these inspections. The Engineer must approve the contractor's inspector. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector. Written weekly inspection forms, storm event inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance

and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Contractor is responsible for preparation of the Plan, all SWPPP certifications, inspections, reports and any and all corrective actions necessary to comply with the provisions of the General Permit. Work associated with performance of inspections is not included under this Item. The Standard Specifications require adequate erosion control for the duration of the Contract. This Item addresses acceptable completion of the SWPPP, any revisions/amendments required during construction, and preparation of monthly reports. In addition, any erosion controls beyond those specified in bid items elsewhere in this contract which are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and prosecution of the work shall be considered incidental to this item.

The CGP requires the submission of a Notice of Termination (NOT) from all operators when final stabilization has been achieved, as well as removal and proper disposal of all construction materials, waste and waste handling devices, removal of all equipment and construction vehicles, removal of all temporary stormwater controls, etc. . Approval of final stabilization by the Engineer and confirmation of submission of the NOT will be required prior to submission of the Resident Engineer's Final Estimate. The permittee is required to use EPA's electronic NOI system or "eNOI system" to prepare and submit NOT. The electronic NOT form can be found at www.epa.gov/npdes/stormwater/cgpenoi. If you are given approval by the EPA Regional Office to use a paper NOT, you must complete the form in Appendix K of the 2012 CGP.

Compensation

Payment for all work under this Item shall be made at the contract unit price, Lump Sum, which shall include all work detailed above, including Plan preparation, required revisions, revisions/addenda during construction, monthly reports and filing fees.

Payment of fifty (50) % of the contract price shall be made upon acceptance of the Stormwater Pollution Prevention plan. Payment of forty (40) % of the contract price shall be made in equal installments for implementation of the Stormwater Pollution Prevention plan. Payment of the final ten (10) % of the contract price shall be paid upon satisfactory submissions of a Notice of termination (NOT) when final stabilization has been achieved.

ITEM 824.50

FLASHING WARNING BEACON REMOVED AND RESET

EACH

The work under this item shall conform to the relevant provisions of Section 815 of the Standard Specifications and the following:

The work shall include the careful removal, transporting and stacking, and resetting existing rapid flashing warning beacons as shown on the plans and as required by the Engineer. Flashing Warning Beacons shall be installed on new concrete foundations.

This item also includes the removal of the existing concrete foundations, and disposal of any materials associated with the removal.

Flashing Warning Beacon shall be reset and oriented in a similar direction as the existing beacons and as required by the Engineer. The location shall be verified prior to installation by the Engineer to ensure that the proposed beacon location has adequate sight lines from the travel lane on Trapelo Road.

Flashing Warning Beacons shall be confirmed to be in working condition prior to acceptance and payment of this item.

Measurement and Payment

Item 824.50, Flashing Warning Beacon Removed and Reset will be measured for payment per Each, complete in place. Flashing Warning Beacon Removed and Reset will be paid for at the Contract unit price per Each, which price shall include all labor, materials (including hardware to anchor the posts), equipment and incidental costs required to complete the work.

New concrete foundations will be paid for under Item 812.30, Standard Signal Post Foundation SD3.031.

Removal of the existing concrete foundations will be paid for under Item 141., Class A Trench Excavation.

ITEM 874.2

TRAFFIC SIGN REMOVED AND RESET

EACH

The work to be done this item shall conform to the relevant provisions of Sections 828 and 840 of the Standard Specifications and the following.

Work to be done under this item shall include the dismantling, removal, transporting, and resetting of the existing signs at the location indicated on the plans on existing supports that are removed and reset or if necessary new supports. The work also includes the removal and disposal of the existing sign supports and foundations determined by the Engineer to be unusable.

The Contractor shall exercise particular care in the dismantling, removal, transporting and resetting of the existing signs designated to be reused. Any sign panel damaged through carelessness or lack of protection by the Contractor shall be replaced at the Contractor's expense.

Payment for new supports, as required, for signs to be removed and reset shall be included under Item 847.1.

The Contractor shall backfill with compacted gravel all holes resulting from the removal of the existing signs and their foundations and restore the area to match existing conditions of adjacent areas.

The existing signs shall not be removed and reset without approval by the Engineer.

Method of Measurement

The work described above will be measured by the unit “each.” No additional measurement or payment will be made for the temporary support or multiple relocation of signs during construction as required to maintain traffic control and operations until the final roadway configuration is complete.

Basis of Payment

Payment for removing and resetting signs will be at the respective contract unit price each and will be full compensation for dismantling, excavation and removal, loading, transporting and resetting of the signs as designated above, the removal and disposal of their supports, gravel backfill, and concrete foundations where required.

New sign supports that are required as determined by the Engineer will be paid for under item 847.1.

Removing and resetting of street name signs shall be paid for under Item 874.2.

ITEM 999.001

LUMP SUM POLICE DETAIL

LUMP SUM

The Contractor shall furnish police services required to direct traffic on existing roadways where traffic is maintained.

The Contractor shall provide such police officers as may be deemed necessary by either the Engineer or the City for the direction and control of all traffic traveling within and through the project area. The police officers shall be obtained from the City Police Department as applicable. The police officers shall be paid by the Contractor at the prevailing rate of wages established by the City.

ALLOWANCE FOR POLICE SERVICES

An allowance of **Three Hundred Ten Thousand Dollars (\$310,000.00)** for the furnishing of police services has been included in all bids. This allowance is determined by multiplying the number of hours estimated as necessary by the prevailing hourly rate of wages established for such services. The Contractor shall submit certified copies of itemized bills of services rendered for review and approval by the Engineer. The allowance will be adjusted to the actual amount paid for authorized and approved police services as stipulated and shall include other payments due to any legal requirements of the State and Federal governments.

PAYMENT

The quantity to be paid for under this item shall be the actual amount paid by the Contractor to provide satisfactory police services as stipulated and required. Any overhead costs shall be considered to be included in the process bid for the other items of the Contract.

ITEM 220.5
ITEM 220.8

DRAINAGE STRUCTURE REMODELED
SANITARY STRUCTURE REMODELED

EACH
EACH

The work under these items shall conform to the relevant provisions of Sections 201 and 220 of the Standard Specifications, the requirements of the City of Waltham Engineering Department, and the following:

The Contractor shall remove and/or lower castings and plate holes as required to meet the finished grades within areas of full depth roadway reconstruction, and the work shall be considered incidental to this item.

Method of Measurement and Basis of Payment

Drainage structures remodeled and sanitary structures remodeled will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment, and incidental costs required to complete the work, including lowering, plating, and adjusting the structures to finished grade.

ALTERNATE 1

ITEM 141.1.**TEST FOR EXPLORATION****CUBIC YARD**

Excavate test pits, as shown on the plan, **EXHIBIT A WATER SERVICE DRAWINGS**, or at the direction of the Engineer, to locate underground utilities or structures in advance of the construction. Backfill test pits immediately after their purpose has been satisfied and restore and maintain the surface in a manner satisfactory to the Engineer.

Payment for test pits will be based on the material removed which will be paid for at the Contract unit price per cubic yard. No additional compensation shall be made for the test pits not directed by the Engineer, or shown on the plan but is carried out at the discretion of the Contractor to benefit the installation.

The work to be performed under this Item shall conform to the relevant provisions of Section 140, amended or supplemented as follows:

The work to be performed under this Item consists of all work required to excavate test pits, as required, and as approved by the Engineer, to locate structures and utilities within the proposed work area. Also included is work required to backfill test pits with excavated material and compacting.

Work required to place and compact backfill to replace unsuitable material in test pits shall be paid for under Item 151, Gravel Borrow. Gravel borrow for pavement subbase will be paid under the same item.

Test pit for exploration shall be measured in accordance with Section 140 of the Standard Specifications.

Payment for test pit for excavation shall be at the contract unit price per cubic yard, which shall be full compensation for all labor, material, tools and equipment necessary or incidental to complete the work including patching the test pit with Hot Mix Asphalt.

ITEM 153.**CONTROLLED DENSITY FILL****CUBIC YARD**

The work to be performed under this Item shall conform to the relevant provisions of Section 150 and the following:

Excavatable Controlled Density Fill (CDF) shall be used as backfill material in trenches, abandoned structures or other locations if required by the Engineer. Materials shall meet the requirements specified in the following subsection of Division III, Materials: Controlled Density Fill, Type 2E M4.08.0.

Controlled Density Fill shall be placed in a manner such that no damage will occur to utility lines, pipes or structures. The material shall be placed so that no voids are left upon completion of the backfilling process.

Controlled Density Fill shall be measured in place by the cubic yard. Payment for Controlled Density Fill will be paid for at the Contract unit price per cubic yard. No additional compensation shall be made for material placed beyond the limits of excavation as shown in the plans or as determined by the Engineer.

ITEM 182.2**REMOVAL OF ASBESTOS CEMENT PIPE****FEET**

This section specifies the requirements for handling and removal of asbestos containing material. The

Contractor must perform all asbestos handling and removal work in accordance with these specifications and the following additional requirements.

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) including but not limited to:

29 CFR 1910 Section 1001 and 29 CFR 1926 Section 58 Occupational exposure to Asbestos, Tremolite, Anthophyllite and Actinolite, Final Rule
29 CFR 1910 Section 134 Respiration Protection
29 CFR 1926 Construction Industry
29 CFR 1910 Section 2 Access to Employee Exposure and Medical Records
29 CFR 1910 Section 1200 Hazard Communication
29 CFR 1910 Section 145 Specifications for Accident Prevention Signs and Tags

U.S. Environmental Protection Agency, (EPA) including but not limited to:

40 CFR 762, CPTS 62044, FRL 2843-9, Federal Register Vol. 50 no.134, July 12, 1985
p.28530 - 28540 Asbestos Abatement Projects Rule
40 CFR 61 Subpart A Regulation for Asbestos
40 CFR 61 Subpart M (Revised Subpart B) National Emission Standard for Asbestos
U.S. Department of Transportation 49 CFR 172 and 173

Massachusetts Department of Labor and Industries Regulations, (DLI) including but not limited to:

453 CMR 6.00 Removal, Containment and Encapsulation of Asbestos

Massachusetts Department of Environmental Protection (DEP) including but not limited to (supplementing subsection 7.01):

310 CMR 7.00, Section 7.09 Odor and Dust, Section 7.10 Noise, Section 7.15 Air Pollution Control Regulations Massachusetts Department Of Transportation Highway Division Project No. 605353

310 CMR 18.00 and 19.00 Solid Waste Regulations

Massachusetts Division of Industrial Safety 45 CMR 10.00

Local Requirements including but not limited to those of Health Departments and Fire Departments.

Wherever there is a conflict or overlap of the above references, the most stringent provision shall apply.

All asbestos material shall be removed and properly disposed of by a Contractor or subcontractor with a current Massachusetts Abatement Contractors License issued by the Department of Labor and Industries. Work shall be supervised by a competent person as required by OSHA in 29 CFR 1926 to ensure regulatory compliance. This person must have completed a course at an EPA Training Center or equivalent course in asbestos abatement procedures, have had a minimum of four years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person. This person must also be certified by the Commonwealth as an Asbestos Abatement Supervisor and Asbestos Abatement Project Designer as required by 453 CMR 6.00.

Asbestos removal work shall be coordinated with all other work under the Contract and shall be completed prior to performing any activities which could disturb the asbestos material or produce airborne asbestos fibers.

Dust suppression in the form of light water sprays, foams, dust suppressants and calcium chloride will be implemented as required to control dusting during trenching and excavation. Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain conditions, which in the opinion of the HASP may pose a safety hazard to the workers.

NOTIFICATION AND PERMITS

The Contractor shall prepare a formal pre-notification form at least ten (10) days prior to the start of asbestos removal work. This form must be submitted to the appropriate Regional Office of the Massachusetts Department of Environmental Protection and to the U.S. Environmental Protection Agency Region I Air and Hazardous Material Division. A copy of the submitted forms must be provided to the Engineer and kept at the work site.

The Contractor shall also obtain and pay all other applicable asbestos waste transportation and disposal permits, licenses and fees.

STANDARD OPERATING PROCEDURES

The standard operating procedure shall ensure the following:

1. Proper site security including posting of warning signs and restricting access to prevent unauthorized entry into the work spaces.
2. Proper protective clothing and respiratory protection prior to entering the work spaces.
3. Safe work practices including provisions for communications; exclusion of eating, drinking, smoking, or use of procedures or equipment that would in any way reduce the effectiveness of respiratory protection or other engineering controls.
4. Proper exit practices from the work space through the showering and decontamination facilities.
5. Removing asbestos containing material in ways that minimize release of fibers.
6. Packing, labeling, loading, transporting and disposing of contaminated material in a way that minimizes or prevents exposure and contamination.
7. Emergency evacuation of personnel, for medical or safety (fire and smoke) so that exposure will be minimized.
8. Safety from accidents in the work space, especially from electrical shocks, slippery surfaces and entanglements in loose hoses and equipment.
9. Provisions for effective supervision and OSHA - specified personnel air monitoring for exposure during work.

REQUIRED SUBMITTALS

The Contractor shall submit to the Engineer the following listed items at least ten (10) calendar days prior to the start of asbestos work. No asbestos removal work activities shall commence until these items are reviewed by the Engineer, unless otherwise waived. Submittals shall be clearly labeled and in sufficient detail to enable the Engineer to form an opinion as to its conformity to the specifications.

1. Name, experience and DLI certification of proposed Supervisors and Foreman responsible for asbestos work.

2. Summary of workforce by disciplines and a notarized statement documenting that all proposed workers, by name, have received all required medical exams and have been properly trained and certified for asbestos removal work, respirator use and appropriate Massachusetts DLI, EPA and OSHA standards. Massachusetts
3. Notarized statement that workers are physically fit and able to wear and use the type of respiratory protection proposed for the project. Notarized certification signed by an officer of the abatement contracting firm that exposure measurements, medical surveillance and worker training records are being kept in conformance with 29 CFR 1926.
4. Written plan of action and standard operating procedures to include: location and layout of decontamination areas; sequencing of asbestos work; detailed schedule of work activities by date and interface with other project activities which affect work performance; methods used to assure safety and security; worker protection and exposure monitoring; contingency and emergency evacuation procedures; detailed description of methods to be employed to control pollution; waste handling procedures.
5. Written respiratory protection program specifying level of protection intended for each operation required by the project and details of daily inspection and maintenance elements.
6. Copies of the U.S. EPA, State and local asbestos removal pre-notification forms. If applicable, lists and copies of all permits, licenses, or manifests which will be applied for and used.
7. Name, location and applicable approval certificates for primary and secondary landfill for disposal of asbestos-containing or asbestos contaminated waste. Name, address and licenses number(s) of hauler permitted to transport waste. (Submit copies of completed manifests upon disposal).

The Contractor must provide copies of daily inspection and record logs upon request of the Engineer, at any time during project. This information will include but is not limited to work area entry data, respirator inspections and maintenance, HEPA-exhaust inspections and maintenance and other work applicable activities or reports of accidents or unusual events.

Asbestos Cement Pipe removal shall be measured in linear feet. Payment for Asbestos Cement Pipe removal will be paid for at the Contract unit price per linear feet. No additional compensation shall be made for material removed beyond the limits excavation as shown in the plans or as determined by the Engineer.

ITEM 250.04

4 INCH POLYVINYL CHLORIDE SANITARY SEWER PIPE

FOOT

The work to be done under this Item shall conform to the relevant provisions of Sections 201, 230 and the following:

The Contractor shall furnish, lay, join and test all gravity sewer pipe and appurtenant materials and equipment as indicated on the drawings and as specified herein.

1.0 MATERIALS

SANITARY SEWER PIPE

Gravity sanitary sewer pipe and fittings shall be SDR 35 (standard dimension ratio) Polyvinyl Chloride (PVC) gravity sewer pipe conforming to current ASTM standards. Joints shall be elastomeric gasket joints, providing a watertight seal, conforming to ASTM D3212 (Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals).

2.0 EXECUTION OF WORK

2.1 SEWER BYPASS

Prior to starting any sewer work, the Contractor shall submit to for approval a written sewer bypass plan indicating the proposed method of controlling and managing flows in the existing sewer during construction. Temporary service shut downs for individual residences shall only occur during normal working hours, with service restored at the end of each work day, and the work shall be scheduled so that temporary shut downs will not be required for more than one day per service.

2.2 LINES AND GRADES

A. Pipes shall be laid to the lines and grades shown on the drawings or as directed by the Engineer. The grade shown on the profile is that of the invert of the pipe. The work shall conform to this grade. A variation of one-eighth (1/8) inch or more from the true invert grade on gravity sewers laid on grades above one percent will be deemed sufficient reason to cause the work to be rejected. Work so rejected shall be corrected by the Contractor at his/her own expense.

B. The Contractor will establish the location of the pipe, manholes and other appurtenances, prior to construction for verification by the Engineer. The Engineer will establish bench marks along the route of the pipeline at convenient intervals for the use of the Contractor and for his/her own reference in checking the pipe and manhole inverts and other elevations throughout the project.

C. The grade and alignment of the pipe may be maintained, with the approval of the Engineer, by the use of laser beams if the Contractor can demonstrate that he/she possesses sufficient equipment and employs with sufficient experience, to utilize such method.

D. The Contractor shall furnish all labor, material, surveying equipment and tools to establish and maintain all lines and grades from basic control points furnished by the Engineer.

2.3 FOUNDATIONS

A. All pipes to be laid in open trench excavation shall be bedded and uniformly supported over their full length on foundations of the types specified and shown on the drawings. Flat-bottomed trenches shall be excavated and dewatered prior to preparing the specified bedding. All work shall be performed in a dry trench.

B. All pipe shall be supported on a stable soil foundation. The trench shall be excavated to a depth 6" minimum below the bottom of the pipe. Crushed stone bedding shall be furnished and placed in the trench for its full width to uniformly support the pipe at the required line and grade. Suitable recesses shall be provided in the bedding to permit adequate clearance for bells, couplings, or similar projections.

The bedding shall extend upward around the pipe barrel to a height of 12" above the pipe. Bedding material shall be spread in 6 inch layers, and each layer shall be compacted with twenty pound hand tampers or pneumatic tampers until the required total depth of bedding has been built up.

C. Where unstable soil conditions are encountered, the pipe shall be supported on a special foundation. The foundation shall be installed where a suitable supporting soil or rock stratum occurs at a depth greater than 6" minimum. The trench shall be excavated to the depth necessary to reach the suitable supporting stratum. The trench bottom and walls shall be covered with a geotextile fabric. Crushed stone shall then be furnished as bedding and placed in the trench for its full width. The bedding shall be spread in 6 inch layers, and each layer shall be compacted with twenty pound hand or pneumatic tampers. The bedding shall carry vertically from the supporting stratum up to an elevation 12" minimum above the top of the pipe. The special foundation shall extend for a minimum of 5'-0" beyond poor subgrade conditions.

D. Where required by the Engineer, check dams within the trench shall be constructed with an impervious soil material to prevent migration of groundwater around the sewer pipe along the backfilled trench. Check dams shall extend the width of the trench to undisturbed earth for a length of 3 feet along the pipe line, and shall extend to the top of the crushed stone bedding material, one foot above the pipe.

E. Manhole structures shall be installed on a firm bedding of 12" crushed stone. Extra depth excavation for installation of the crushed stone and the crushed stone itself shall be included in the payment for the structure being installed.

2.4 INSPECTION OF PIPE BEFORE INSTALLATION

A. All pipes and fittings shall be carefully inspected in the field before placing the trench. Cracked, broken, warped, out-of-round or otherwise defective pipe, fittings as determined by the Contractor or Engineer, shall be pulled and not installed. Such rejected pipe shall be pulled and not installed. Such rejected pipe shall then be removed from the job site by the Contractor at his/her own expense.

2.5 INSTALLATION OF PIPE AND FITTINGS

A. After the trench has been brought to the proper grade, as hereinbefore specified, the pipe shall be laid. Unless otherwise approved by the Engineer in writing, pipe laying shall be done only in the presence of the Engineer. The Contractor shall give ample notice of his/her schedule for pipe laying operations to the Engineer.

B. All pipe and fittings shall be carefully lowered into the trench with ropes, slings and proper equipment. Pipe cracked or otherwise damaged during or following installation shall be marked by the Contractor or Engineer and removed from the site as required.

C. Pipes shall be laid true to the grades shown on the drawings. Blocking will not be permitted except where the pipe is to be encased in concrete. Any pipe that has its grades or joints disturbed after laying shall be taken up and relaid. The interior and ends of all pipe shall be thoroughly cleaned during laying operations by means of plugs or other approved methods. Under no circumstances shall pipe be laid in water and no pipe shall be laid when trench conditions or the weather is unsuitable for such work except by permission of the Engineer.

D. Sanitary sewer cleanouts shall be installed at the property line to within 4-inches below the final grade and shall be capped with a cast iron ring and cover, fitted over the plugged PVC riser to provide protection from damage and allow future access for cleaning and inspection.

2.6 INSPECTION

A. Each section of installed sewer lines shall be visually inspected by the Engineer prior to final testing. The pipe shall be true to both line and grade, shall contain no broken pipe, shall show no leaks, shall show neither obstructions nor the projection of connecting pipes into the main pipe, and shall contain no debris or other deposits which will in any way reduce the full cross-section area of the pipe.

B. Any section of sewer pipe which does not comply with these inspection criteria, as determined by the Engineer, shall be promptly corrected, replaced or repaired by the Contractor at his/her own expense. Methods used for the correction shall be approved by the Engineer.

3.0 TESTING

4.0 MEASUREMENT AND PAYMENT

SANITARY SEWER PIPE

PVC sanitary sewer pipe will be measured in feet, from end of pipe to end of pipe installed including fittings, and paid for at the Contract unit bid price per foot of the respective pipe item. Payment shall include all necessary labor, materials, and equipment required to satisfactorily complete the work, including excavation, removal and disposal of existing pipes within the same trench, crushed stone bedding, geotextile fabric where required, trench check dams, the connection to existing or proposed sanitary sewer structures or pipes, fittings, backfill, and testing.

There will be no separate payment for pipe and fittings and castings required for sanitary sewer cleanouts required to be installed by the Contractor.

There will be no additional payment for cutting and plugging existing sanitary sewer lines as shown on the Contract Drawings.

Rock excavation when encountered in the trenching operation shall be paid for under Item 144.

<u>ITEM 302.06</u>	<u>6 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)</u>	<u>FOOT</u>
<u>ITEM 309</u>	<u>DUCTILE IRON FITTINGS FOR WATER PIPE</u>	<u>POUND</u>

Under these items, the Contractor shall furnish, lay, joint, test and disinfect all water pipe and fittings, as indicated on the Contract Drawings, **See Exhibit A**, and in accordance with the relevant provisions of Section 140 and Section 300 of the Standard Specifications, the American Water Works Association Standards, and in accordance with the current practice and standards of the Waltham Water & Sewer Division.

The Contractor shall be responsible for notifying the Waltham Water & Sewer Division and the Engineer of service shutdown 48 hours prior to the actual shutdown. The shutdown of the water services will be performed only by personnel of the Waltham Water & Sewer Division. Valves, hydrants, corporations and curb stops will be operated by the Waltham Water & Sewer Division personnel only.

No water main or service supplying any home, place of business or fire hydrant shall be shut down for more than four hours unless an approved temporary means of supply is provided. Such temporary provisions will be considered as being for the convenience of the Contractor and as much will not be measured for direct payment.

The Contractor will be responsible to flyer affected areas prior to planned water service interruption 24 hours in advance. In the event of an emergency shutdown during and after normal hours of operation the Contractor shall contact Waltham Water & Sewer Division 781-314-3855 immediately to affect shutdown. During normal hours of operation Contractor will make every attempt to notify the abutters affected by the emergency water service interruption with sensitive receptors such as schools, day care providers, restaurants and businesses receiving priority status in notification.

Data relative to existing water mains, services, etc. shown on the plans has been compiled from plans and field information but such data is not guaranteed as to exact location or elevation.

Lines and Grades

Piping shall be installed at the locations indicated on the Contract Drawings and as designated in these Specifications. Unless otherwise shown or stated, the minimum total finished cover over the top of the barrel of all installed pipe shall be 5 feet. Where pipe is installed at less than the required cover, the Contractor shall furnish and install insulation as directed by the Engineer.

All excavation necessary for the pipe installation shall be included in the cost of the pipe. The location of the pipe is to be marked with an identification tape buried 2 feet below finished grade. The tape shall be 6 inches in width by 0.004 inches in thickness and shall read "Caution - Water Line Buried Below".

Pipe Foundations and Backfilling

All pipes, fittings and appurtenances to be laid in open trench excavations shall be bedded in and uniformly supported over its full length as shown on the Contract Drawings.

Backfill to an elevation 12 inches over the top of the pipe shall be a sand blanket placed in layers not to exceed 6 inches. The sand shall conform to Section M1.04.0 Type A for sand borrow. The sand blanket may be omitted, and suitable excess excavated material used for backfilling over the pipe, provided that no stone larger than 2 inches is in contact with the water pipe. The sand blanket shall be considered incidental to the water pipe items.

Unsuitable trench backfill material shall be replaced with suitable excess excavated material. Gravel borrow or another material approved by the Engineer shall be used for backfill if suitable excess material is not available.

Inspection of Pipe Before Installation

All pipe, fittings and appurtenances shall be carefully inspected in the field by the Engineer before lowering into the trench. All pieces found to be defective as determined by the Engineer, shall be pulled out and not installed. Such rejected pipe shall be clearly tagged in such a manner as not to deface or damage it, and the pipe shall be removed from the job site.

Installation of Pipe and Fittings

The Contractor shall maintain at least 10 feet horizontally from any existing or proposed sewer pipe. If this separation is not attainable, then the elevation of the crown of the sewer shall be at least 18 inches below the invert of the water line.

All pipe and fittings shall be carefully handled by equipment of sufficient capacity and proper design to avoid damage to the pipe and fittings. No defective pipe or fittings shall be laid or placed in the trench. Any piece discovered to be defective after having been laid shall be removed and replaced by a sound and satisfactory piece at the expense of the Contractor.

Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.

Pipe and fittings shall be laid accurately to the lines and grade indicated on the drawings or as required. Care shall be taken to ensure alignment both horizontally and vertically, and to give buried pipe a firm bearing along its entire length. Pipes shall not be laid in water, nor shall water be allowed to flow through them. The Contractor shall take all necessary precautions to prevent flotation of the pipe in the trench.

Backfilling of the pipe trench shall be done as specified under Section 300 of the Standard Specifications.

Connection to Other Facilities

The water pipe shall be connected to existing or new structures and/or piping by the Contractor as shown on the Contract Drawings. Test pits shall be dug as directed by the Engineer to verify the size and the type of existing pipe where connections are to be made. The Contractor shall furnish and install all such fittings and appurtenances as are necessary to make the connections shown whether all such fittings are detailed or not. Couplings, where required, shall be of a type equal to HYMAX® by Krausz; Smith Blair, Style 441; Dresser, Style 253 or equal approved by the Water Superintendent. Couplings shall be provided with plain, Grade 27 rubber gaskets and with black, steel, track-head bolts and nuts.

All fittings relative to the water pipe shall be paid for under Item 309. All concrete for thrust blocks shall be considered incidental to the pipe and fitting items. The other means of restraint (method of restraining may either be of an interlocking type or mechanical joint with retainer and as specified by the Waltham Water & Sewer Division) shall be installed in addition to or in lieu of thrust blocks as directed by the Water Superintendent. Pipe anchors shall be used when and as directed.

Laying Pipe and Fittings

Gasket type joints shall be made up by first inserting the gasket into the groove of the bell and applying a thin film of special non-toxic gasket lubricant uniformly over the inner surface of the gasket which will be in contact with the spigot end of the pipe. The end of the plain pipe shall be chamfered to facilitate assembly. The end shall be inserted into the gasket and then forced passed it until it seats against the bottom of the socket. A metal feeler shall then be used to make certain the gasket is properly located.

A minimum of two brass wedges shall be installed per pipe joint and fitting to maintain conductivity and facilitate locating pipe in the future. Restrained type joints shall be used where straight pipe joints are deflected to bend pipe line on a curve. The method of restraining may either be of an interlocking type or mechanical joint with retainer gland as specified by the Waltham Water & Sewer Division.

Reaction or thrust blocks of concrete shall be constructed at all tees, plugs and bends, as directed or as detailed on the drawings. The blocks shall be poured against undisturbed original ground and shall be so placed that pipe joints will be accessible for any possible future repairs. Joints must be protected by felt roofing paper prior to placing concrete. Method of restraint may be either locking joint or mechanical restraint as approved by the Water Superintendent.

Hydrant connections are to be restrained for the full length of the pipe from the main to the hydrant.

Ductile Iron Pipe and Fittings

All material shall be new, conform to the current standards of the Waltham Water & Sewer Division and be approved by them.

All ductile iron pipe shall be designed in accordance with AWWA C150 and shall be manufactured in accordance with AWWA C151.

The ductile iron pipe shall be **Thickness Class 56** cement lined seal coated and conform to the ANSI A21.50, A21.51 Specification for Ductile Iron Pipe. Pipe joints and gaskets shall be of the push-on joint type in accordance with ANSI A21.11 and shall conform to AWWA C111.

Ductile iron fittings shall be Thickness Class 56, Pressure Class 350, cement lined, and shall meet the requirements of AWWA C153, ANSI A21.4 and A21.10. All fittings are required to be equipped with mechanical joints and retainer glands. Mechanical joint fittings in sizes 6 inches through 24 inches shall be ductile iron compact fittings.

Gaskets, glands, nuts, bolts and accessories shall conform to AWWA C111 or C153 as appropriate. Gaskets shall be of plain tipped rubber, suitable for exposure to the liquid within the pipe. Glands shall be ductile or cast iron. Bolts and nuts shall be high strength alloy.

Hydrant tees shall be anchor type and have line bells conforming to the requirements of the main pipe. The branch shall have a plain end with an integral gland and rotating mechanical joint gland to provide a restrained connection.

Pipe and fittings shall be furnished with approved joint restraining appurtenances as specified herein, or as indicated on the drawings, to keep the piping from pulling apart under pressure.

Flexible Couplings:

The Contractor shall use solid sleeve coupling fittings for joining pipe. With the approval of the Engineer, sleeve-type flexible couplings may be substituted.

All sleeve-type couplings and accessories shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed.

Couplings shall be cast or ductile iron and shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.

Joint Restraints:

Where indicated or necessary to prevent joints or sleeve couplings from pulling apart under pressure, anchoring and joint restraint methods shall be utilized. Methods shall be restrained joint systems. The number of joints to be restrained shall be as shown on the construction plans or provided by the Engineer.

Restrained joint system for standard mechanical joint or push on joint pipe shall be Megalug™ by EBAA Iron Sales Inc.; 1400 Series by Ford; StarGrip 3000 Series by Star Pipe Products; or approved equal. Methods that rely on the use of friction clamps and/or retainer glands with set screws alone are not acceptable.

Concrete thrust blocks may only be used for 6-inch, 8-inch, 10-inch, or 12-inch pipe where use of a joint restraint system is not feasible. Use of concrete thrust blocks shall be installed with the minimum bearing area (in square feet) against undisturbed material in accordance with the following:

Size of Main	90° Bends, Tees, Caps and Plugs	45° Bends and Wyes	22½° Bends	11¼° Bends
6 & 8 in	5	4	2	2
10 & 12 in	12	9	5	2

Tie rods may only be used for 6-inch, 8-inch, 10-inch, or 12-inch pipe where use of a joint restraint system is not feasible. Bolts shall have adequate length to allow nuts on both sides of the gland. Tie bolts shall have the same diameter as the tie rods and be in accordance with the following:

Pipe Size	Tie Rod	
	Number	Diameter
6	2	½"
8	2	¾"
10	2	¾"
12	4	¾"

Lining Coating

The inside of ductile iron pipe and fittings shall be given a cement lining and bituminous seal coat in accordance with AWWA C104/ANSI A21.4. Cement lining shall be double the thickness that is specified in AWWA C104.

The outside of ductile iron pipe and fittings shall be coated with bituminous varnish as required by AWWA C104/ANSI A21.4.

Machined surfaces shall be cleaned and coated with a suitable rust preventive coating at the shop immediately after being machined.

Handling and Cutting Pipe

The Contractor's attention is directed to the fact that the cement lining is comparatively brittle. Every care shall be taken in handling and laying pipe and fittings to avoid damaging the pipe or lining, scratching or marring machined surfaces, and abrasion of the pipe coating or lining.

Any fitting showing a crack and any fitting or pipe which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work.

If any pipe showing a distinct crack and in which it is believed there is no incipient fracture beyond the limits of the visible crack, the cracked portion, if so approved by the Engineer, may be cut off before the pipe is laid so that the pipe used is perfectly sound. The cut shall be made in the sound barrel at a point at least 12 inches from the visible limits of the crack. The cracked portion shall not be included as part of the measurement for payment under this section.

Temporary Plugs:

At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary watertight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

Deflection of Pipe

In laying ductile iron pipe, the following deflections, based upon a 20 foot length of pipe, shall not be exceeded.

<u>Nominal Size of Pipe (inch)</u>	<u>Gasket Type Jacket Deflection (inch)</u>
6 to 12	12
16 to 24	10

Field Testing

The testing shall conform to AWWA Standard C600, and all equipment shall be approved by the Waltham Water & Sewer Division. The water pipe shall be given pressure and leakage tests in sections of approved length. For these tests, the Contractor shall furnish a water measuring device and a pressure gage. The Contractor shall also furnish and install suitable temporary testing plugs or caps for the pipeline; all necessary pressure pumping equipment, pipe connections, and other similar equipment; and all labor required; all without additional compensation. Compensation for testing shall be included in the unit price for pipe and fittings. The meter and gage shall be installed by the Contractor in such a manner that all water entering the section under test will be measured and the pressure in the section indicated, and equipment shall be kept in use during both tests.

The scheduling of pressure and leakage tests shall be as approved by the Engineer.

Unless it has already been done, the section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If air release assemblies are not available at high points for releasing air, the Contractor shall make the necessary excavations and do the necessary backfilling and shall make the necessary taps at such points and install corporation stops. Corporation stops shall be capped with brass or bronze caps upon completion of the test and left in place.

The pressure and leakage tests shall be as specified in Section 301.60 L of the 1988 Standard Specifications for Highways and Bridges and the American Water Works Association Standard C600, Section 4.1. The test pressure shall be 200psi, the test duration shall be 2 hours.

The lengths of joint to be used in determining the allowable leakage shall be based on the nominal diameter of the pipe.

If the section shall fail to pass the pressure test, the leakage test, or both, the Contractor shall do everything necessary to locate, uncover, even to the extent of uncovering the entire section, and repair or replace the defective pipe, fitting, or joint, all at no additional cost to the owner and without extension of time for completion of the work.

A report containing calculations and documentation pertaining to the pressure and leakage testing shall be submitted to the Waltham Water & Sewer Division

If, in the judgment of the Engineer, it is impracticable to follow the foregoing procedure exactly for any reason, modification in the procedures shall be made as required or approved, but in any event the Contractor shall be responsible for the ultimate tightness of the line within the above leakage requirements.

The Owner, at its own expense, may test the water pipe independent of or in place of the Contractor's test. The Owner, or its agent, shall schedule such test so as to minimize any delay to the Contractor. The Contractor is notified that this test may cause delay in his/her work and he/she shall not receive reimbursement for costs incurred during a reasonable delay. Should any section of pipe fail, the Contractor shall have no claim for any expenses incurred during the delay required to schedule and complete a new test.

Insulation: Direct Buried Pipe

Insulation shall be cellular glass type. The insulation shall be a cellular glass product that is made specifically for thermal insulation of piping and is compatible with the piping material. Insulation shall be a minimum of 2 inches thick, unless otherwise shown on the drawings.

Insulation shall be composed of all glass sealed cells having no binders or fillers. The completed product shall be rigid and impermeable, with an ultimate compressive strength of at least 90 psi. The thermal conductivity of the cellular glass shall be no higher than 0.29 BTU-in.1hr e ft² CII OF @ 75°F and 0.28 BTU-in.1hr iii ft² CII OF @ 50°F.

The cellular glass insulation shall comply with all requirements of ASTM C552. The cellular glass shall be fabricated in half sections whenever possible.

Bands for securing the insulation to the pipe shall be 0.5 inches wide by 0.020 inches thick made of stainless steel.

The jacketing for the insulation shall be one of the following methods:

1. A 125 mil (3mm) thick, heat sealed high polymer asphaltic membrane with an integral glass scrim and integral 1 mil (.02mm) aluminum foil and a thin Mylar film on the surface, equal to Pittwrap Jacketing as manufactured by Pittsburgh Coming or equal.
2. Mastic - asphalt cutback mastic, equal to Pittcote 300 Finish, as manufactured by Pittsburgh Coming or equal.
3. Reinforcing fabric - an open mesh polyester fabric with a 6 x 5.5 mesh/inch configuration, equal to PC Fabric 79, as manufactured by Pittsburgh Coming or equal.

The insulation shall be "Foamglass" with jacketing as manufactured by Pittsburgh Coming Corporation, Pittsburgh, P A, or an approved equal. A minimum of 6" layer of fine sand shall surround the insulated pipe before rock free backfill is used in the trench.

The Foamglass and jacketing shall be installed per the manufacturer instructions included in the approved shop drawings.

Tees, valves, and bends shall be covered with form fitting factory made sections.

Cellular glass shall not be applied to the piping until the piping has been wiped clean and supported so that there is adequate space to apply the full thickness of insulation and the covering completely around the pipe. The Contractor must obtain the Engineer's approval before the installation begins.

Cellular glass insulation and jacketing shall be applied in accordance with the manufacturers installation procedures included in the approved shop drawings.

There shall be at least three 0.50-inch wide stainless steel bands secured around each joint and these bands shall be placed not over 9 inches on center on straight sections of pipe. Tees, valves, and bends shall be covered with form fitting factory made sections.

All testing of the piping system, such as hydrostatic, x-ray or other such testing, shall be accomplished prior to application of insulation.

Disinfection and Flushing

After a section of the main has been tested and found acceptable, it shall be flushed free of all heavily treated water by the Contractor. After completion of the flushing operation, the Contractor shall disinfect the water mains with a solution consisting of 50 ppm of chlorine in accordance with the AWWA C651 Specifications for Disinfecting Water Mains. The preferable point of chlorine application shall be at the source of the water for the section being sterilized. The chlorine solution shall be fed into the pipe through a corporation stop, using a hypo chlorinator. This work shall be done with the attendance of a representative of the Waltham Water & Sewer Division.

The water shall be tested bacteriologically for coliform group bacteria. A minimum of one (1) sample shall be taken per 3,000 linear feet. Testing must be done by a Massachusetts State Certified Laboratory and the results of all tests must be submitted to the Waltham Water & Sewer Division. The Contractor shall be solely responsible for all costs associated by the aforesaid test.

The contact period for the disinfection shall be at least 24 hours and a longer period will be required if tests of residual chlorine show it to be necessary for proper disinfection. All valves and hydrants shall be operated during treatment to insure their thorough contact with the disinfecting solution.

Following chlorination, the mains shall be flushed again to remove any evidence of contamination, as determined by the bacteriological analysis. The quality of water shall remain acceptable for at least two days after the flushing.

A report containing amounts of water flushed, amounts of chlorine used and chlorine residuals after the test period must be submitted to the Waltham Water & Sewer Division. If the initial treatment fails to produce the desired result, the chlorination procedure must be repeated.

For this work, the Contractor shall furnish all equipment, materials, and labor required.

Water pipe shall be measured in feet, in place, along the axis of the pipe, excluding, however, the length occupied by new iron fittings and gate valves. Where two pipes join, measurement will be made to the intersection of the axis, excluding the length occupied by new ductile iron fittings.

New ductile iron fittings including socket clamps and tie rods shall be measured by the pound and the quantity to be paid for shall be the weight stated on the invoice of the supplier, or the manufacturer's rated weight as listed in the catalog, whichever is the least weight.

Payment for ductile iron pipe shall be made at the Contract unit price per foot for water main of the size shown, which price shall be full compensation for the removal and disposal of existing water pipe (excluding Asbestos Cement) and appurtenances encountered during construction, cutting and plugging the existing water pipe, and furnishing all materials, preparation and installation, including all excavation, backfilling and compaction, pipe bedding, testing and disinfecting, brass caps and wedges, buried pipe identification tape, cement lining, and for all labor, equipment, tools and incidentals necessary to complete the item. Crushed stone used to replace unsuitable bottom material for water main bedding shall be paid for under Item 156.

Payment for new ductile iron fittings shall be made at the Contract unit price per pound of fitting installed and accepted, which price shall be full compensation for furnishing all materials, and for all labor, equipment, tools and incidentals necessary to complete the item, including all excavation, backfilling and compaction, pipe bedding and sand blanket, testing and disinfecting.

Rock excavation when encountered in the trenching operation shall be paid for under Item 144.

The cost of the sand blanket over the water main shall be considered incidental to the cost of the ductile iron water pipe.

The cost of furnishing and installing concrete for thrust blocks shall be incidental to the pipe and fitting items

ITEM 347.1

1 INCH COPPER TUBING TYPE K

FOOT

The Contractor shall install new water services and remove and dispose of existing water services as directed and in accordance with the relevant provisions of Section 140 and Section 300 of the Standard Specifications, amended and/or supplemented as follows:

Services shall be replaced with new 1 inch tubing up to the property line.

The depth of the service trench shall be at least 5 feet below the established finished grade and not more than 2.5 feet wide. All excavation, bedding and backfilling shall be included in the cost of the pipe.

Care shall be exercised to prevent dirt and other foreign matter from entering pipe and fittings. Corporation stops shall be left open (turned on) when the trench is backfilled.

The length of furnished and installed service pipe shall be measured beginning at the center of the corporation stop key. No deductions in length shall be made for curb stops or unions. to be paid for shall be measured by the foot, laid by the Contractor.

Payment shall be made at the Contract unit price per foot for furnishing and laying the service pipe complete in place and accepted by the Engineer. The prices shall include excavation, removing and disposing of existing services and unsuitable material from trenches, laying and connecting the new service, providing a three part union needed to connect the new service to the existing, fittings, goosenecks, bends, adapters, sand for bedding and backfill, and compactions.

Gravel borrow required to replace unsuitable backfill material as deemed by the Engineer shall be paid for under Item 151.

<u>ITEM 350.6</u>	<u>6 INCH GATE AND BOX</u>	<u>EACH</u>
<u>ITEM 350.8</u>	<u>8 INCH GATE AND BOX</u>	<u>EACH</u>
<u>ITEM 350.12</u>	<u>12 INCH GATE AND BOX</u>	<u>EACH</u>
<u>ITEM 350.16</u>	<u>16 INCH GATE AND BOX</u>	<u>EACH</u>

Under these Items, the Contractor shall furnish and install new valves, valve boxes and appurtenant materials and equipment, all as indicated on the drawings and as herein specified. Valves shall be applicable for a design working pressure of 250 psi.

Valves shall be equipped with mechanical joint ends and mechanical joint restraints as specified for Items 309 unless otherwise specified by the Water Superintendent. All internal and external surfaces must be epoxy coated, and the seal between the stem and bonnet must be composed of a cartridge.

Valves shall be Resilient seat, wedge type gate valves shall be manufactured to meet all applicable requirements of AWWA C509 or AWWA C515. All valves shall be bubble-tight at 200 psi water working pressure, tested in both directions.

Valve bodies shall be of cast or ductile iron and shall have non-rising threaded bronze stems acting through a bronze stem nut. Opening nuts shall be 2 inches square and shall open right, clockwise. All buried valves shall have mechanical joint ends.

Valve wedges shall be of ductile iron with resilient seating surfaces permanently bonded to the wedges in strict accordance with ASTM D429 or attached to the face of the wedges with stainless steel screws. Each valve shall have a smooth, unobstructed water way free from sediment pockets.

Valves shall have low friction, torque-reduction thrust bearings. All O-rings and gaskets shall be removable without taking the valves out of service.

An NSF 61-approved epoxy coating, which is safe for potable water, shall be applied to exterior and interior valve surfaces.

Valves for horizontal applications shall have Delrin wedge covers, and be specifically designed for horizontal installation.

Resilient seat gate valves shall be as manufactured by Mueller Co., Decatur, IL; or approved equal.

Post indicating valve assemblies shall have a post and indicator as an integral part of the resilient seated gate valve assembly. The unit shall be provided with a detachable crank which OPENS the valve in a clockwise (RIGHT) direction. Shafts shall be Type 304 stainless steel. Post indicators and valves shall be UL listed, FM approved. Post indicators and valves shall be as manufactured by Mueller Co.; or approved equal."

Valve Boxes And Extensions:

Valve boxes shall be manufactured in North America. The minimum outside diameter of the boxes shall be 5¼ -inches and the lengths shall be as necessary to suit the ground elevation and the depth of each valve operator, regardless of the depth of cover.

When there is more than 6 feet of cover, valve operators shall have non-rising extension stems which raise the operating nut to a depth of approximately 4 feet below grade. The extension stem shall have a centering support ring at the upper end. The lower socket shall be tapped with a set screw into the valve nut to prevent the extension stem from lifting off the valve nut.

Each valve shall be provided with a box which has a close fitting cover and is substantially dirt-tight. Covers shall provide minimum overlap of 6 inches. The top of the cover shall be flush with the top of the box rim. The word "WATER" shall be cast in the top of the cover.

Valve boxes shall be of cast iron and of the adjustable sliding, heavy pattern type. They shall be so designed and constructed as to prevent direct transmission of traffic loads to the pipe or valve. The upper or sliding section of the box shall be provided with a flange on the top of the section (not on the bottom) having sufficient bearing area to prevent undue settlement. The lower section of the box shall be designed to enclose the operating nut and stuffing box of the valve and to rest on the backfill. The boxes shall be adjustable through at least 6 inches vertically without reduction of lap between sections to less than 8 inches.

Valve boxes shall be set plumb, flush with the ground or paved surface, and centered directly over the operating nut of the valves. Earth fill shall be carefully tamped around the valve boxes to a distance of 4 feet on all sides of the boxes or to the undisturbed trench face, if less than 4 feet.

Valves shall be operational and accessible at all times during construction and warranty period. The Contractor shall verify proper operation of all valves in the presence of the Engineer and/or Owner following completion of the project and prior to the acceptance of substantial completion.

Payment for gates and gate boxes shall be made at the Contract unit price for each unit installed which price shall be full compensation for furnishing all material, including excavation and backfilling, valve box and cover, and for preparation and installation, removal of existing valves and pipes, labor, equipment, tools, and incidentals necessary to complete these items.

ITEM 363.1

1 INCH CORPORATION COCK

EACH

Under these items the Contractor shall furnish and install corporation cocks on all service lines as shown on the Plans, **Exhibit A**, and in accordance with the Relevant Provisions of Section 140 and Section 300 amended as follows.

Corporation cocks shall be of bronze, made from castings, the materials of which conform to ANSI/ASTM Standard Specification B61-76 or B62-76, latest issue.

Couplings shall be of bronze, made from castings, the material of which conforms to ANSI/ASTM Standard Specification B61-76 or B62-76, latest issue.

Each cock shall be individually tested under a hydrostatic head of 250 psi and a statement of the manufacturer shall be supplied to the Engineer prior to installation certifying that each stop supplied has been found to be watertight prior to leaving the factory.

Each corporation cock shall have a solid plug which freely operates and has a full, round, smooth, reamed waterway. Cocks shall have plugs hand ground into the body of the fittings. Cocks shall be opened by turning right, clockwise, and shall be marked on the fitting accordingly.

Corporation cocks shall be screwed firmly into the water mains. They shall be placed with the key upward and the inlet ends projecting at least 1/8 inch beyond the inside face of the main, unless otherwise permitted by the Engineer. All corporation cocks shall be easy turning, non-binding, open right and turned on before the trench is backfilled around them, so as to allow examination of connections for leaks.

All joints between cocks, fittings and service pipe shall be made watertight.

All corporation cocks for 1 inch service pipe shall be heavy pattern, solid plug, easy turning and meet the standards of the Water & Sewer Division. The inlet shall be an AWWA (CC) thread. The outlet shall be male iron pipe thread, one size larger than the inlet.

New services and services to be reconnected shall be joined to the water mains by means of a corporation stop inserted into a new tap in the main. The main, where service connections are necessary, shall be tapped by means of a tapping machine manufactured for that purpose and furnished by the Contractor. The tap and drill of the tapping machine must be kept sharp. The taps generally shall be so located that the corporation stops, when inserted in a tap, will be at or above the horizontal

diameter of the pipe and the service pipe must have a cover of at least 4 feet at all points. Any additional service pipe needed for the connection to the water mains shall be paid for under the appropriate service pipe item.

Payment shall be made at the contract unit price per each for furnishing and installing corporation cocks and such payment shall include connecting services to the new water mains; all drilling and tapping of the new mains; furnishing and installing new corporation stops, clamps, and couplings where required to connect the new services to the new corporation stops; all at locations directed on the Plans, or as required by the Engineer. Also included in these items is the abandoning of the existing corporation stops.

ITEM 376

HYDRANT

EACH

The Contractor shall furnish, install, and test fire hydrants and appurtenant materials and equipment all as indicated on the drawings and as herein specified.

Hydrants shall conform to the requirements of AWWAC502. The hydrant shall be of the anti-freeze and compression type. They shall be equipped with a 5-1/4-inch main valve and 6-inch mechanical joint inlet. Hydrants shall open right (clockwise). Valves shall open right (clockwise).

Hydrants shall have one 4-1/2-inch pumper and two 2-1/2-inch hose connections. Threads shall be NST. Hydrant operating and nozzle cap nuts shall be of pentagonal shape and measure one and one half inches from flat to point. The height of the nut shall not be less than one inch.

All internal operating parts including main valve, main valve seat, drain valve mechanism, operating rod, etc., shall be removable without excavating.

Main valve seats shall be made of brass or bronze, and shall screw into a seat ring or sub-seat, which shall also be made of brass or bronze. Hydrants shall be traffic models with frangible bolts or breakaway couplings. Details of hydrant design shall meet the requirements of the Owner.

For purposes of standardization, hydrants shall be dry barrel American-Darling model B-62.

Depth of earth cover over the main line shall be normally 5 feet. All hydrants shall meet the requirements of the Waltham Water & Sewer Division.

Pressure ratings must not be less than 350 psi. Hydrant connections are to be restrained for the full length of the pipe from the main to the hydrant. All hydrants shall be painted to conform to the Waltham Water & Sewer Division Standards.

Hydrants shall be set plumb. The hydrant connecting pipe shall have at least the same depth of cover as the distribution main. The hydrants shall be bedded on a firm foundation set upon a slab of stone or concrete not less than 4 inches thick and 15 inches square. The side of the hydrant opposite the pipe connection shall be firmly wedged against the vertical face of the trench with a concrete thrust block, which is considered incidental to the item, as indicated on the drawings. Not less than 4 cubic feet of crushed stone shall be placed around the base of each hydrant to 6 inches above the drain holes.

Broken stone shall be placed around the base of the hydrant at the location of the drain hole, and backfill around the hydrant shall be thoroughly compacted to the grade line in a satisfactory manner.

Hydrants shall have the interiors cleaned of all foreign matter before installation, and shall be inspected in both the open and closed positions.

The body of the hydrant shall be of sufficient length to allow the hydrant to be set at the proper elevation, as shown on the drawings or as directed by the Engineer. Extensions shall be furnished and installed at the Contractor's expense, when required for greater depths.

The length of the hydrant barrel shall be such that when installed with the proper depth of cover on the branch pipeline, the hydrant will be set with the normal ground line of the barrel within 3 inches of the actual finished ground surface.

In the work of removing hydrants which are to be replaced with new hydrants, the castings shall be exposed, care being taken that they are not damaged by excavating or other machinery. The joints shall then be opened and the casting carefully removed. Any materials damaged during this work due to the Contractor's negligence shall be replaced by the Contractor at no additional cost to the owner. The removed hydrant shall be delivered by the Contractor to the Waltham Water & Sewer Division. If the Owner decides not to keep the hydrants the removal and disposal of the units will become the responsibility of the Contractor at no additional cost to the Owner

Payment for this item will be at the Contract unit price per each, which price shall include full compensation for furnishing all labor, materials, tools, and equipment necessary and for furnishing, installing and/or setting hydrants as specified including testing, excavation, crushed stone, backfilling, disposal of surplus material, connection to existing, tie rods, connection couplings, restraining glands, megalugs and extension sections and all other work necessary for a complete hydrant.

ITEM 384

CURB STOP

EACH

The work to be done under this Item shall conform to the relevant provisions of Section 300 of the Standard Specifications amended and supplemented as follows:

The Contractor shall furnish and install new curb stops as indicated on the Contract Drawings or as directed by the Engineer.

The existing curb stops shall be removed and disposed of by the Contractor. The new curb stops shall meet the requirements of the Waltham Water & Sewer Division. The curb stop shall have a quarter turn stop with check, solid tee head and no waste. Curb stops with plugged wastes will not be accepted. Curb stops shall open right (clockwise).

Payment for the above shall be at the contract unit price per each, which price shall include full compensation for furnishing all labor, materials, tools and equipment necessary to complete the work and for furnishing and installing curb stops. Also included under this item is the removal and disposal of existing curb stops.

If required by the Engineer, new service boxes shall be provided by the Water & Sewer Division.

The cost of resetting existing service boxes on new curb stops shall be considered incidental to the cost the curb stop.

<u>ITEM 472.1</u>	<u>HOT MIX ASPHALT FOR TEMPORARY PATCH (3")</u>	<u>SQUARE YARD</u>
<u>ITEM 472.2</u>	<u>HOT MIX ASPHALT FOR PERMANENT PATCH (5")</u>	<u>SQUARE YARD</u>

The work to be done under this Item shall conform to all the relevant provisions of Section 472 and the following:

Work under Item 472.1 - Hot Mix Asphalt For Temporary Patch (3") and Item 472.2 - 2 Hot Mix Asphalt For Permanent Patch (5") shall consist of making roadway pavement repair patches on City roads. The areas for patching shall be identified by the Engineer. Areas to be patched shall be saw cut and the pavement removed, a gravel base of 12" compacted depth shall be installed and compacted hot mix asphalt shall be installed to be flush with the top of the adjacent roadway surface.

For item 472.1, the bituminous concrete surface shall be laid in two courses to a depth after rolling of 3 inches. The binder course shall be 1.5 inches thick and parallel to the proposed grade of the finished surface. The top course shall be 1.5 inches in thickness after rolling and flush with the adjacent pavement surface.

For item 472.2, the bituminous concrete surface shall be laid in two courses to a depth after rolling of 5 inches. The binder course shall be 2.5 inches thick and parallel to the proposed grade of the finished surface. The top course shall be 2.5 inches in thickness after rolling and flush with the adjacent pavement surface.

In place of the 12" gravel base, excess reclaimed pavement borrow material may be used at no additional cost.

All areas that are to be patched as described above shall be marked out in the field and approved by the Engineer prior to excavation.

Payment for Item 472.1 and 472.2 shall be at the Contract unit price per square yard, complete in place, which price shall be full compensation for sawcutting, excavating, installation of the gravel base, compacting, grading, paving and all labor, equipment and materials necessary to complete the work.

DRAWINGS

ROADWAY & SIDEWALK IMPROVEMENT PROJECT TRAPELO ROAD

IN THE CITY OF

WALTHAM

MIDDLESEX COUNTY

COMMONWEALTH OF MASSACHUSETTS

WALTHAM
TRAPELO ROAD

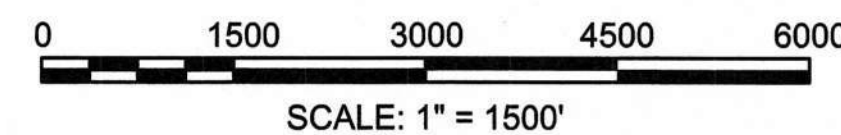
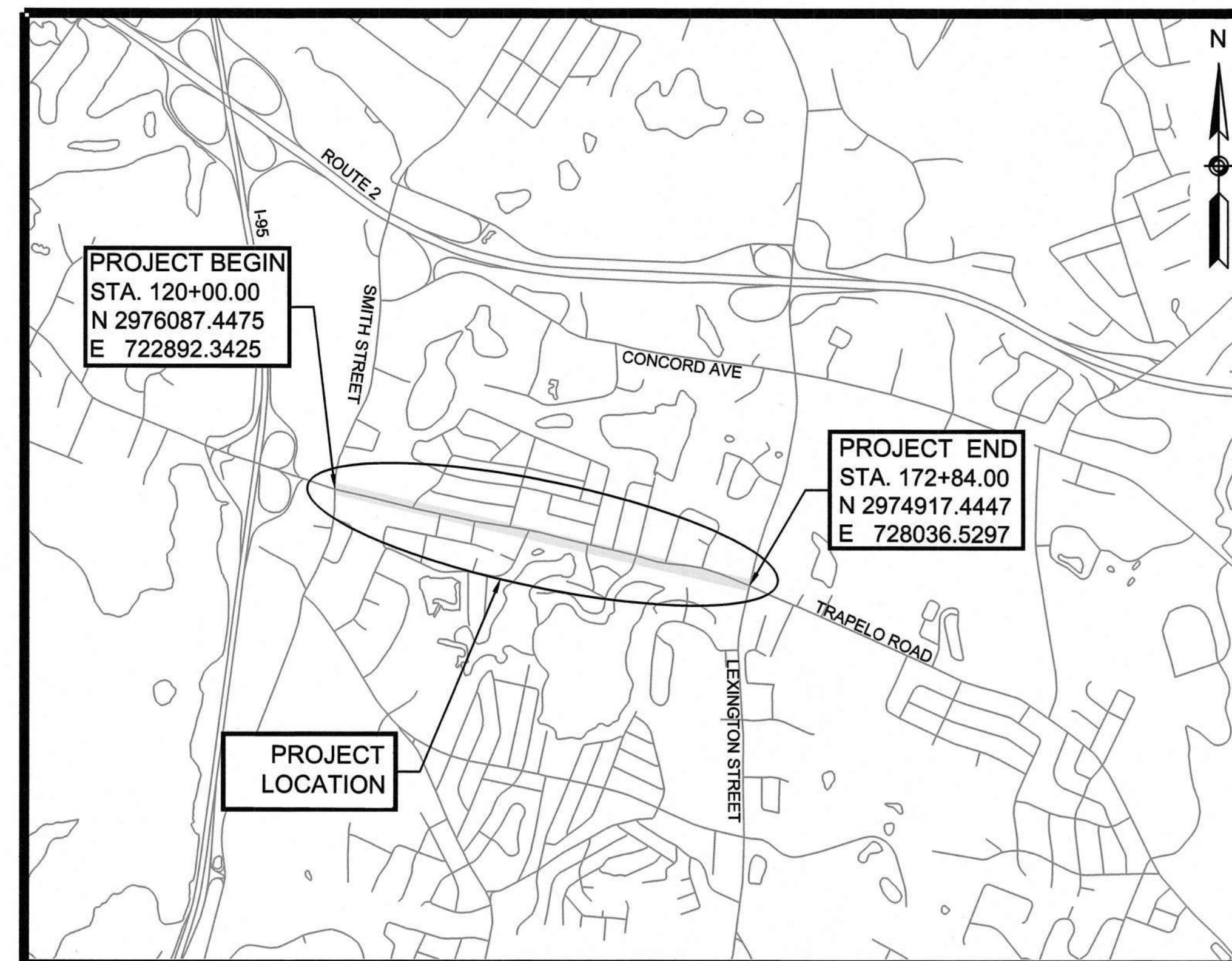
STATE	SHEET NO.	TOTAL SHEETS
MA	1	37

TITLE SHEET & INDEX

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE 2016 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX

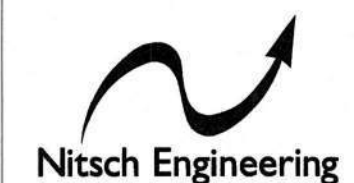
SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	TYPICAL SECTIONS
4-12	CONSTRUCTION PLANS
13	FULL DEPTH RECONSTRUCTION PROFILE
14-22	DRAINAGE & UTILITY PLANS
23-31	TRAFFIC SIGN & PAVEMENT MARKINGS
32-35	CONSTRUCTION DETAILS
36-37	TEMPORARY TRAFFIC CONTROL PLANS



LENGTH OF PROJECT = 5,300 FEET = 1.00 MILES



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- Land Surveying
- Transportation Engineering
- Structural Engineering
- Green Infrastructure
- Planning
- GIS

STATE	SHEET NO.	TOTAL SHEETS
MA	2	37

LEGEND AND ABBREVIATIONS

LEGEND

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER ON BRIDGE OR JERSEY BARRIER
		CATCH BASIN OR GUTTER INTLET
		CURB INLET
		BUOY
		GUY POLE
		FLAG POLE
		GOLF COURSE
		GAS PUMP
		GRAVEL PIT
		DROP INLET
		MAIL BOX
		GRANITE POST
		PLANTER
		POST
		TELEPHONE BOOTH
		VAULT
		VALVE
		WELL
		ELECTRIC MANHOLE (HANDHOLE)
		GATE POST
		FLOW LINE
		GAS GATE
		BORING HOLE
		MONITORING WELL
		TEST PIT
		CONCRETE HEADWALL
		PUBLIC WORKS HANDHOLE
		STONE HEADWALL
		HYDRANT
		LIGHT POLE
		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		OTHER MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		MHD BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
		TROLLEY POLE
		TRANS. POLE
		UP WITH FIREBOX
		POLE WITH DOUBLE LIGHT
		UP WITH 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP MARSH
		WATER GATE
		FIRE ALARM BOX
		PARKING METER
		ELECTRICAL GROUND
		GATE VALVE
		RIP RAP
		OVERHEAD CABLE
		DIRECT BURIAL CABLE
		CURBING
		CONTOURS
		DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		ELECTRIC DUCT
		GAS MAIN
		SEWER MAIN
		TELEPHONE DUCT
		WATER MAIN

GENERAL SYMBOLS (CONT.)

EXISTING	PROPOSED	DESCRIPTION
		BALANCE STONE WALL
		CULVERT
		GUARD RAIL
		GUTTER LINE AT DRIVEWAYS
		CHAIN LINK FENCE
		STOCKADE FENCE
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND OR 200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		COMPOST FILTER TUBE
		RETAINING WALL
		TREE LINE OR LIMIT OF CLEARING AND GRUBBING
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		AREA OF MULCH
		LIMIT OF EDGE OF PAVEMENT OR MILLING & OVERLAY

PAVEMENT MARKINGS AND SIGNING SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		STOP LINE - 12"
		CROSSWALK
		SOLID WHITE LANE LINE - 4"
		BROKEN WHITE LANE LINE (10' LINE : 30' SPACE TYP.) - 4"
		SOLID WHITE EDGE LINE - 4"
		YELLOW GORE LINE - 12"
		DOUBLE YELLOW CENTER LINE - 2 X 4"
		SOLID WHITE CHANNELIZATION LINE - 8"
		WHITE GORE LINE - 12"
		SOLID YELLOW EDGE LINE - 4"
		BROKEN YELLOW CENTER LINE (10' LINE : 30' SPACE TYP.) - 4"
		SOLID YELLOW CENTER LINE - 4"
		DOTTED WHITE LANE LINE - 4" (2' LINE : 4' SPACE)
		DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

- TOPOGRAPHICAL INFORMATION IS FROM A SURVEY PERFORMED BY NITSCH ENGINEERING THAT OCCURRED DURING JUNE 2016. HORIZONTAL DATUM IS BASED ON MASS GRID SYSTEM NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO THE NAVD OF 1988.
- LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY BASED ON RECORD INFORMATION AND SURFACE OBSERVATION. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- WHERE AN EXISTING UTILITY IS FOUND IN CONFLICT WITH THE PROPOSED WORK THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
- THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL DRAINAGE STRUCTURES AS NECESSARY FOR CHANGES IN LINE AND GRADE AND RESET ALL WATER, SEWER, AND DRAINAGE FRAMES, GRATES, AND BOXES TO THE PROPOSED FINISHED SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
- EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS. THE CONTRACTOR SHALL COORDINATE WITH NSTAR TO ENSURE THAT UTILITY POLES ARE PROPERLY SUPPORTED PRIOR TO CONDUCTING WORK NEAR POLES.
- THE CONTRACTOR SHALL IDENTIFY, LOCATE, AND PROTECT ALL EXISTING BOUNDS, MONUMENTS, AND BENCHMARKS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER BEFORE ANY DISTURBANCE OR RELOCATION.

ABBREVIATIONS

GENERAL

AAB	ARCHITECTURAL ACCESS BOARD
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCH MARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CL	CLASS (CONCRETE, EXCAVATION, ETC.)
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DWY	DRIVEWAY
ELEV (OR EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (OR EX)	EXISTING
EXC	EXCAVATION

GENERAL (CONT.)

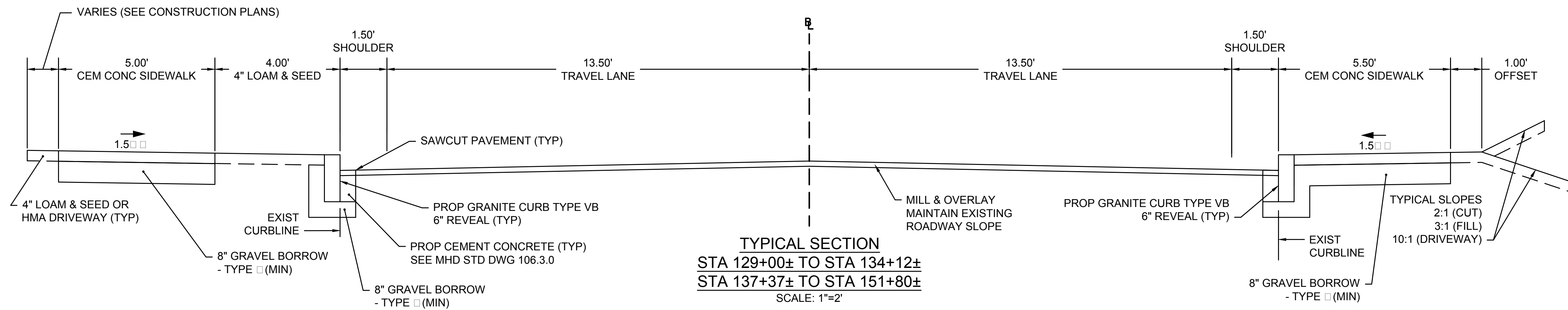
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
GWA	GUIDE WIRE
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACHING BASIN
LP	LIGHT POLE
LT	LEFT
MA	MAST ARM
MAX	MAXIMUM
MB	MAIL BOX
MGS	MASSACHUSETTS GEOGRAPHICAL SURVEY
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
M&M	MEET & MATCH
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
PM	PARKING METER
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT-OF-WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
TANGENT	TANGENT DISTANCE OF CURVE
T	TRUCK PERCENTAGE
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEELCHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER WATER MAIN
X-SECT	CROSS SECTION

- TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR WHERE APPLICABLE, RE-USING EXISTING MATERIALS IN SUITABLE CONDITION IDENTIFIED AS "REMOVE AND RESET" (R&R) OR "REMOVE AND STACK" (R&S).
- ALL LATERAL DRAIN PIPES SHALL BE 12" RCP INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- ALL EXISTING GRANITE CURB, CURB CORNERS, & EDGING REMOVED WITHIN THE LIMITS OF WORK AND IN SUITABLE CONDITION AS DETERMINED BY THE ENGINEER, SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB. ALL CURB NOT USED SHALL BE TRANSPORTED & STACKED AT THE CPW YARD, 165 LEXINGTON STREET.
- ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING DIG SAFE AND CITY OF WALTHAM WATER & SEWER DEPARTMENT, BEFORE PERFORMING ANY EXCAVATION TO DETERMINE THE LOCATIONS OF ANY UNDERGROUND UTILITIES.
- IN AREAS OF FULL DEPTH PAVEMENT AND SIDEWALK RECONSTRUCTION WHERE PROPOSED MEETS EXISTING PAVEMENT, THE EXISTING PAVEMENT SHALL BE SAWCUT TO OBTAIN A CLEAN VERTICAL FACE. ALL JOINTS BETWEEN EXISTING PAVEMENT TO REMAIN AND NEW PAVEMENT SHALL BE SEALED WITH HOT RUBBERIZED ASPHALT SEALER.
- ANY EXISTING PAVEMENTS AND SOILS TO BE REMOVED WITHIN THE LIMITS OF CONSTRUCTION SHALL BE TRANSPORTED TO A LEGAL DISPOSAL LOCATION. NO STOCKPILING WILL BE ALLOWED WITHIN THE PROJECT LIMITS.
- THE LAYOUT OF ALL PEDESTRIAN RAMPS SHALL CONFORM TO ADA/AAB STANDARDS AND CURRENT MASSDOT STANDARDS AND DIRECTIVES.
- ALL SOIL EROSION & SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY.
- SILT SACKS SHALL BE INSTALLED AT ALL EXISTING AND PROPOSED CATCH BASINS WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH THE PROVIDED DETAIL.
- THE FRAMES AND COVERS GRATES FROM EXISTING DRAINAGE STRUCTURES TO BE REMOVED OR ABANDONED SHALL BE REMOVED AND RESET ON PROPOSED STRUCTURES WHERE APPROPRIATE. ADDITIONAL FRAMES AND COVERS GRATES REQUIRED SHALL BE PAID FOR UNDER ITEM 222.3.
- DRAINAGE ELEVATIONS ARE SHOWN FOR DESIGN PURPOSE ONLY. THE CONTRACTOR SHALL VERIFY, BY TEST PIT, ALL EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE ONLY AFTER THE ENGINEER'S APPROVAL. NO DRAINAGE STRUCTURE SHALL BE ORDERED UNTIL AFTER THE CONTRACTOR VERIFIES THE CONSTRUCTABILITY OF THE SYSTEM.
- ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTIFY THE WALTHAM CONSERVATION COMMISSION AT LEAST ONE WEEK PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE WALTHAM CONSERVATION COMMISSION AT LEAST 72 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION NEAR WETLAND AREAS OR WITHIN WETLAND BUFFERS.
- BEFORE START OF ANY WORK ON THE SITE, PRECEEDING THE ARRIVAL OF EQUIPMENT, MATERIALS, OR VEHICLES TO THE SITE, AND PRIOR TO THE COMMENCEMENT OF ANY CLEARING ON THE SITE, THE CONTRACTOR AND ARBORIST SHALL ARRANGE A PRECONSTRUCTION TREE INVENTORY CONFERENCE ON THE SITE WITH THE ENGINEER AND REPRESENTATIVE CITY TREE WARDEN TO IDENTIFY TREES AND SHRUBS THAT ARE TO BE PROTECTED OR REMOVED AND REVIEW APPROVED PROTECTION MEASURES. NO CLEARING OR PRUNING SHALL BE DONE WITHOUT A CLEAR UNDERSTANDING OF EXISTING CONDITIONS TO BE PRESERVED.

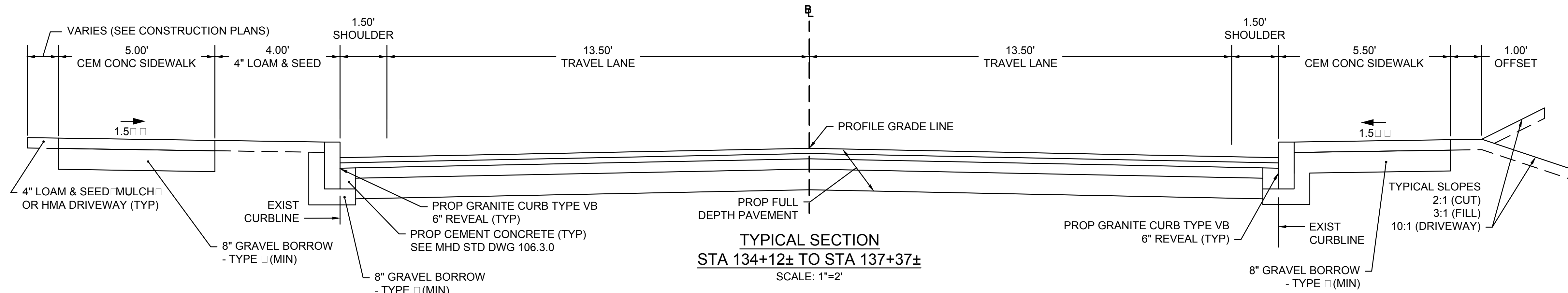
**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	3	37

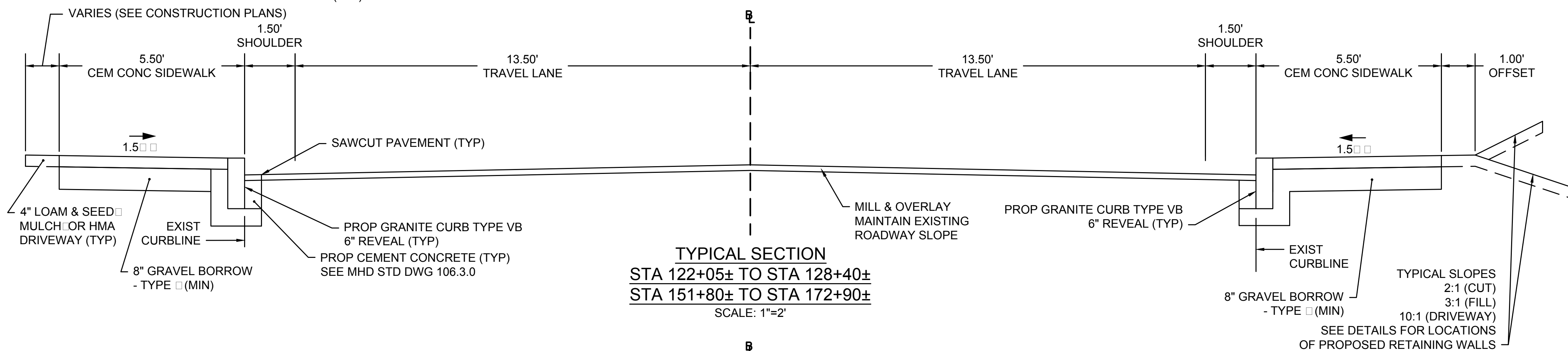
TYPICAL SECTIONS



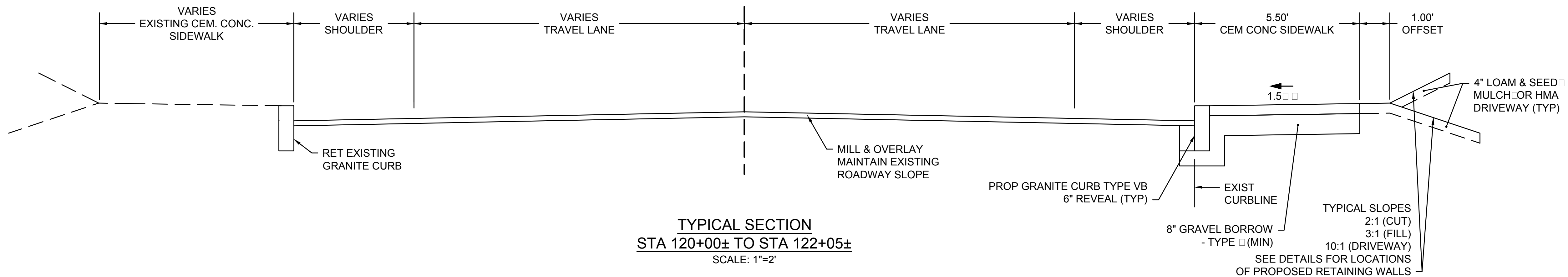
**TYPICAL SECTION
STA 129+00± TO STA 134+12±
STA 137+37± TO STA 151+80±**
SCALE: 1"=2'



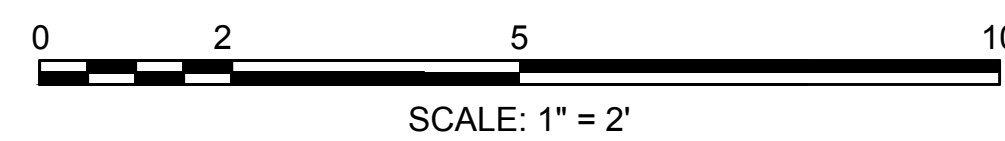
**TYPICAL SECTION
STA 134+12± TO STA 137+37±**
SCALE: 1"=2'



**TYPICAL SECTION
STA 122+05± TO STA 128+40±
STA 151+80± TO STA 172+90±**
SCALE: 1"=2'



**TYPICAL SECTION
STA 120+00± TO STA 122+05±**
SCALE: 1"=2'



PAVEMENT NOTES

PAVEMENT MILLING AND RESURFACING

SURFACE: 1-1/2" HOT MIX ASPHALT SUPERPAVE SURFACE COURSE 12.5 (SSC 12.5)

MILLING: 1-1/2" PAVEMENT MICRO MILLING

CEMENT CONCRETE SIDEWALK PEDESTRIAN RAMP DRIVEWAYS

SURFACE: 4" CEMENT CONCRETE (SIDEWALK/PEDESTRIAN RAMP)
6" CEMENT CONCRETE (DRIVEWAY)

SUBBASE: 8" GRAVEL BORROW TYPE □
(EXISTING IN-SITU GRAVEL DETERMINED TO BE SUITABLE SHALL REMAIN)

HOT MIX ASPHALT DRIVEWAYS

SURFACE: 3 1/2" PLACED IN TWO LAYERS:
1 1/2" SURFACE COURSE MATERIAL OVER
2" INTERMEDIATE COURSE MATERIAL.

SUBBASE: 8" GRAVEL BORROW TYPE □
(EXISTING IN-SITU GRAVEL DETERMINED TO BE SUITABLE SHALL REMAIN)

FULL DEPTH PAVEMENT

SURFACE: 1-1/2" HOT MIX ASPHALT SUPERPAVE SURFACE COURSE 12.5 (SSC 12.5) OVER

INTERMEDIATE: 2" HOT MIX ASPHALT SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC 12.5) OVER

BASE: 4.5" (OR MATCH EXISTING) HOT MIX ASPHALT SUPERPAVE BASE COURSE 37.5 (SBC 37.5) OVER

SUBBASE: 4" DENSE GRADED CRUSHED STONE OVER
8" GRAVEL BORROW TYPE □
(EXISTING IN-SITU GRAVEL DETERMINED TO BE SUITABLE SHALL REMAIN)

NOTES: BITUMEN FOR TACK COAT (RS-1) SHALL BE SPRAY APPLIED FOR DOUBLE OVERLAP COVERAGE AT 0.07 GAL./SY. OVER MILLED SURFACES AND 0.05 GAL./SY. OVER SMOOTH SURFACE

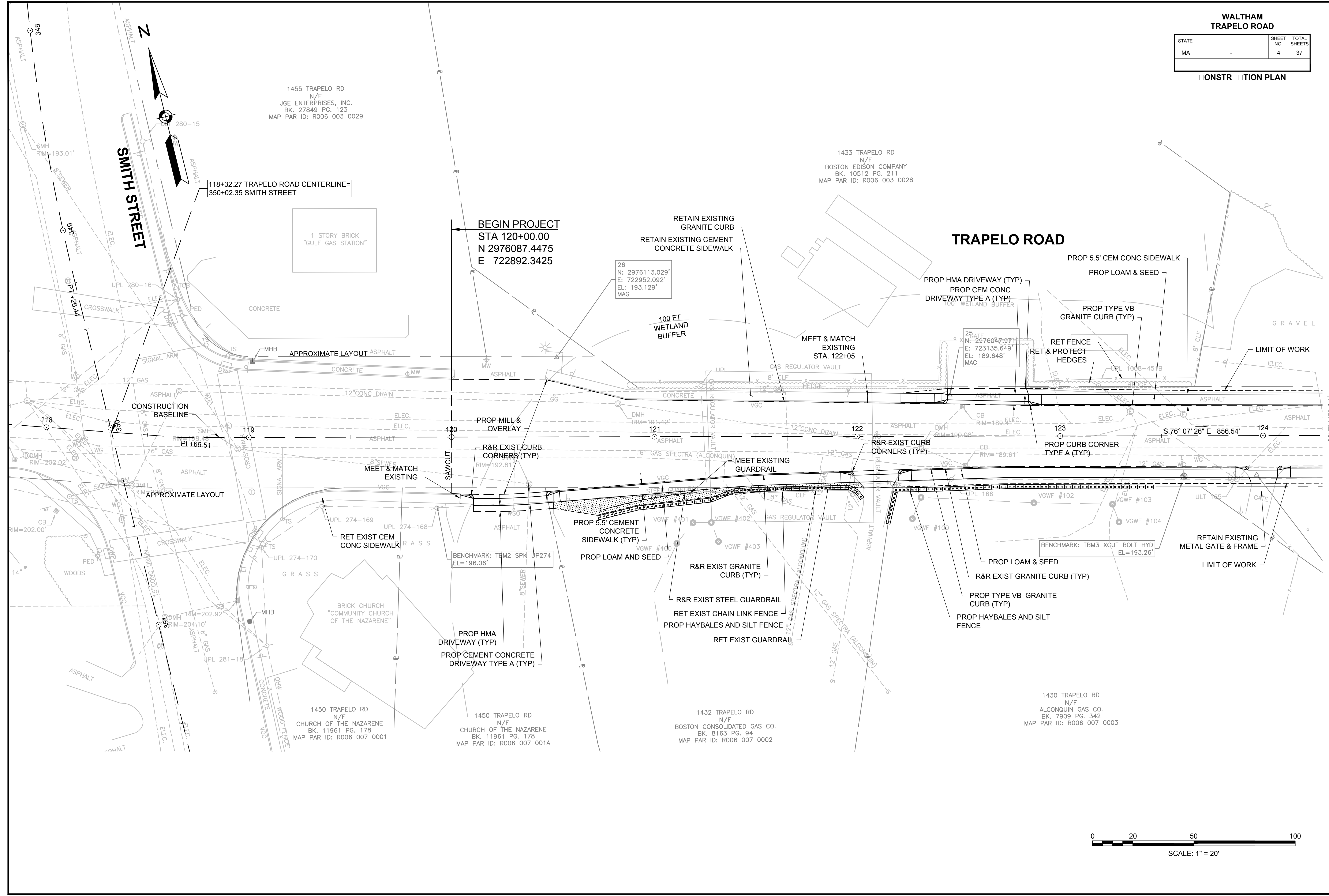
±.5 FOR CONSTRUCTION TOLERANCE

SEE SHEET 34 FOR TYPICAL RETAINING WALL SECTIONS AND DETAILS

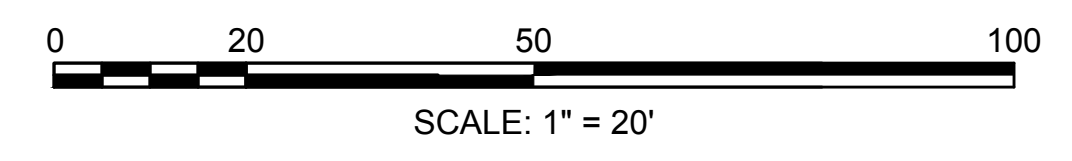
**WALTHAM
TRAPELO ROAD**

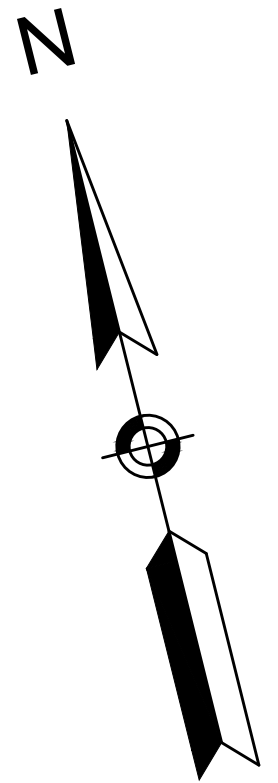
STATE	SHEET NO.	TOTAL SHEETS
MA	4	37

CONSTRUCTION PLAN



CONTINUED ON SHEET NO. 5





**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	5	37

CONSTRUCTION PLAN

1433 TRAPELO RD
N/F
CITY OF WALTHAM
BK. 13060 PG. 432
MAP PAR ID: R006 003 0017

1393 TRAPELO RD
N/F
BEARISTO, WILLIAM E. & ETHEL M
BK. 47822 PG. 43
MAP PAR ID: R006 003 0026

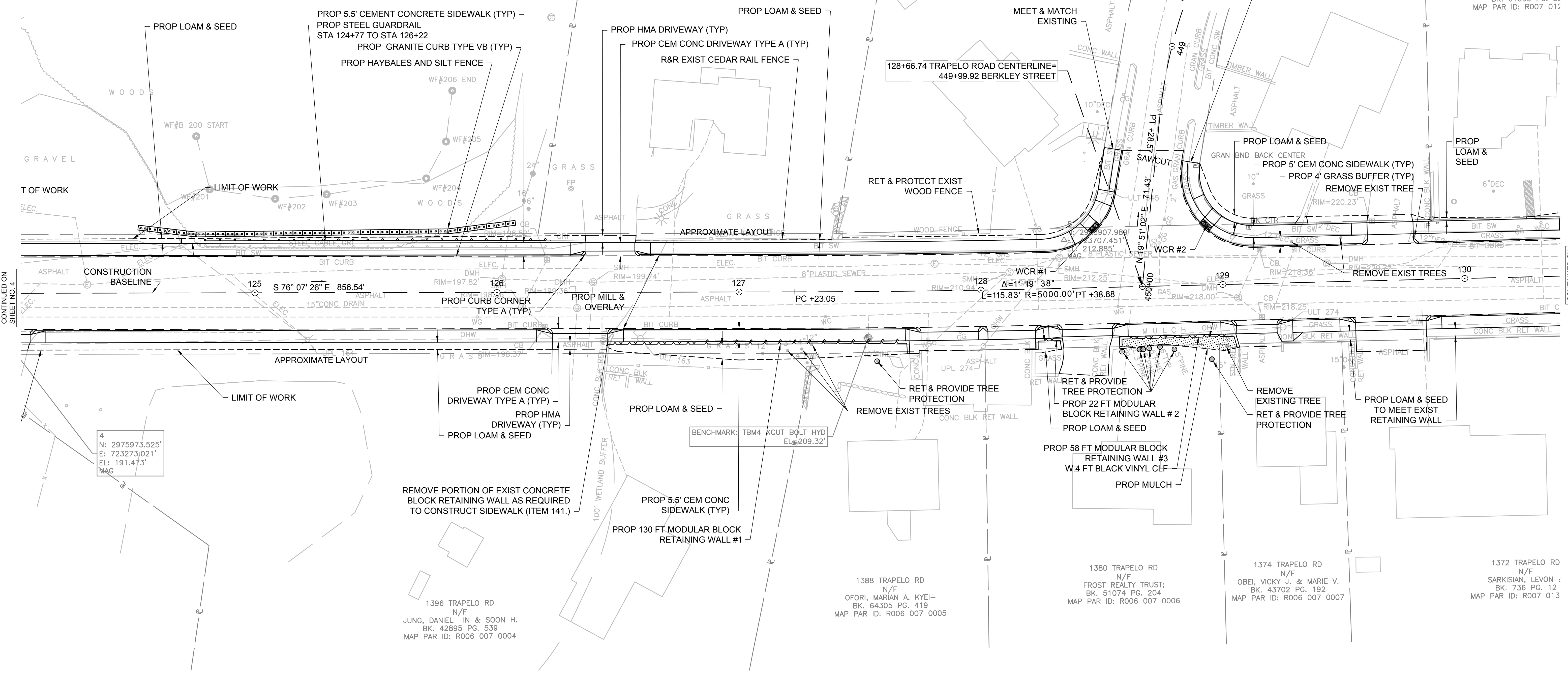
1385 TRAPELO RD
N/F
SAMIOS, LISA & CHARLES
BK. 28101 PG. 163
MAP PAR ID: R006 003 0025

1375 TRAPELO RD
N/F
FORCIER, LEA R.M. ALE;
BK. 61216 PG. 296
MAP PAR ID: R007 012 0026

1369 TRAPELO RD
N/F
PARENTE, FIORAVAN
AMEDEO & ANNA
BK. 64090 PG. 35
MAP PAR ID: R007 012

TRAPELO ROAD

BERKLEY STREET



CONTINUED ON
SHEET NO. 4

CONTINUED ON
SHEET NO. 6

4
N: 2975973.525'
E: 723273.021'
EL: 191.473'
MAG

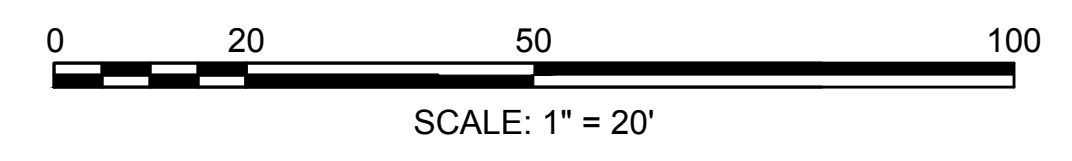
1396 TRAPELO RD
N/F
JUNG, DANIEL IN & SOON H.
BK. 42895 PG. 539
MAP PAR ID: R006 007 0004

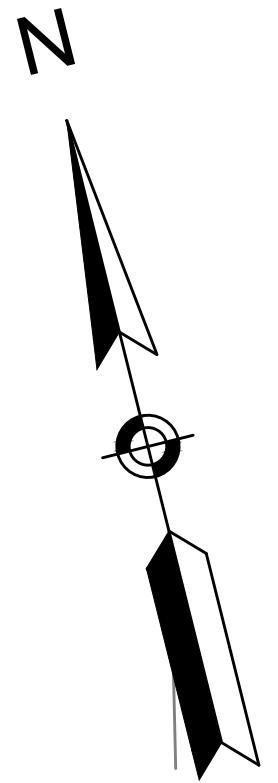
1388 TRAPELO RD
N/F
OFORI, MARIAN A. KYEI-
BK. 64305 PG. 419
MAP PAR ID: R006 007 0005

1380 TRAPELO RD
N/F
FROST REALTY TRUST;
BK. 51074 PG. 204
MAP PAR ID: R006 007 0006

1374 TRAPELO RD
N/F
OBEL, VICKY J. & MARIE V.
BK. 43702 PG. 192
MAP PAR ID: R006 007 0007

1372 TRAPELO RD
N/F
SARKISIAN, LEVON J.
BK. 736 PG. 12
MAP PAR ID: R007 013

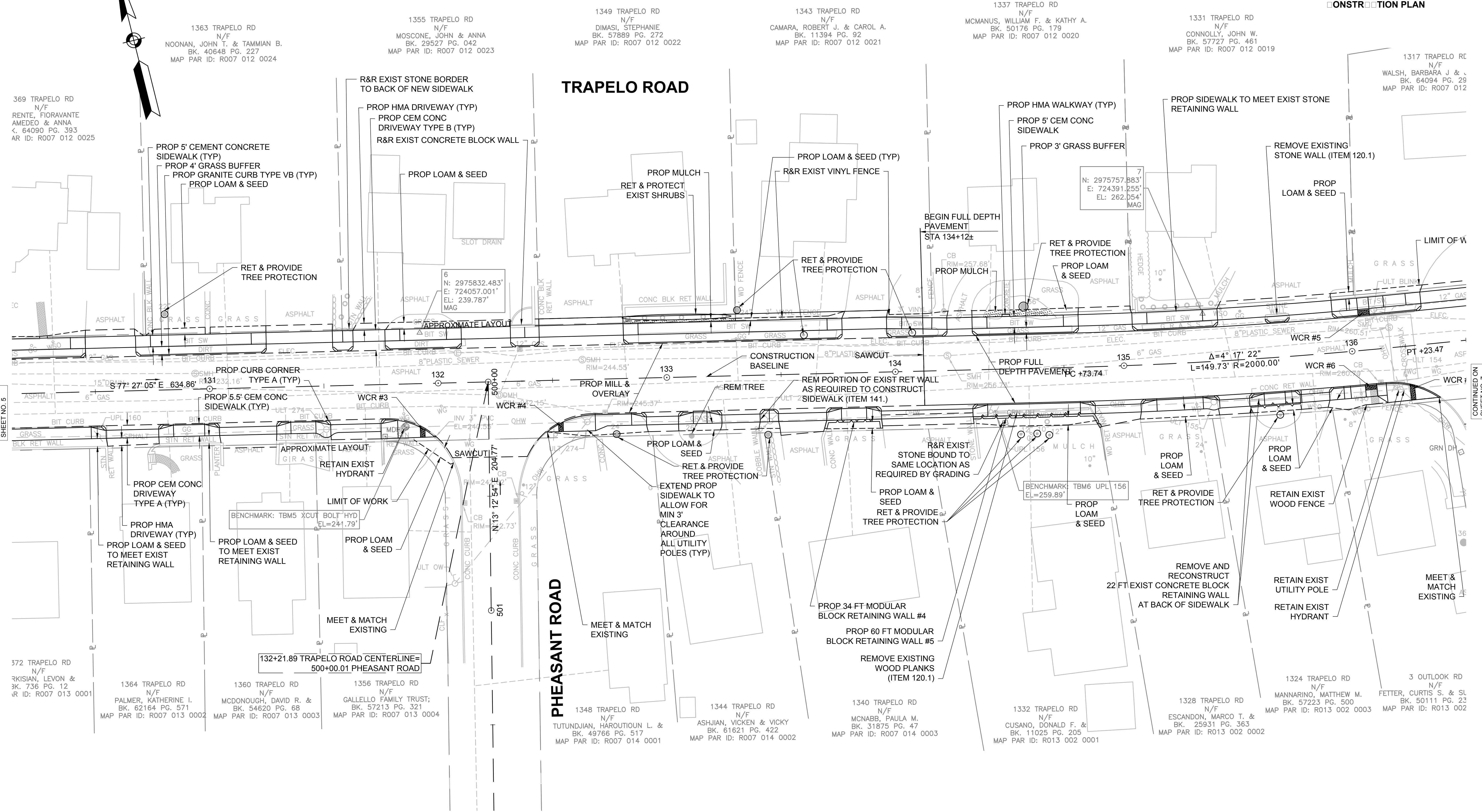




**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	6	37

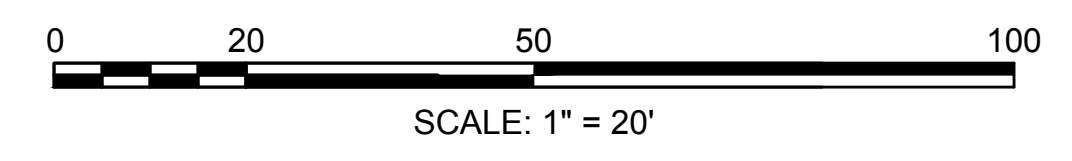
CONSTRUCTION PLAN



CONTINUED ON SHEET NO. 5

CONTINUED ON SHEET NO. 7

SEE SHEET 13 FOR PROFILE.



369 TRAPELO RD
N/F
RENTE, FIORAVANTE
AMEDEO & ANNA
C. 64090 PG. 393
AR ID: R007 012 0025

1363 TRAPELO RD
N/F
NOONAN, JOHN T. & TAMMIAN B.
BK. 40648 PG. 227
MAP PAR ID: R007 012 0024

1355 TRAPELO RD
N/F
MOSCONE, JOHN & ANNA
BK. 29527 PG. 042
MAP PAR ID: R007 012 0023

1349 TRAPELO RD
N/F
DIMASI, STEPHANIE
BK. 57889 PG. 272
MAP PAR ID: R007 012 0022

1343 TRAPELO RD
N/F
CAMARA, ROBERT J. & CAROL A.
BK. 11394 PG. 92
MAP PAR ID: R007 012 0021

1337 TRAPELO RD
N/F
MCMANUS, WILLIAM F. & KATHY A.
BK. 50176 PG. 179
MAP PAR ID: R007 012 0020

1331 TRAPELO RD
N/F
CONNOLLY, JOHN W.
BK. 57727 PG. 461
MAP PAR ID: R007 012 0019

1317 TRAPELO RD
N/F
WALSH, BARBARA J. &
BK. 64094 PG. 29
MAP PAR ID: R007 012

372 TRAPELO RD
N/F
RKISIAN, LEVON &
3K. 736 PG. 12
AR ID: R007 013 0001

1364 TRAPELO RD
N/F
PALMER, KATHERINE I.
BK. 62164 PG. 571
MAP PAR ID: R007 013 0002

1360 TRAPELO RD
N/F
MCDONOUGH, DAVID R. &
BK. 54620 PG. 68
MAP PAR ID: R007 013 0003

1356 TRAPELO RD
N/F
GALLELLO FAMILY TRUST;
BK. 57213 PG. 321
MAP PAR ID: R007 013 0004

1348 TRAPELO RD
N/F
TUTUNDJIAN, HAROUTIOUN L. &
BK. 49766 PG. 517
MAP PAR ID: R007 014 0001

1344 TRAPELO RD
N/F
ASHJIAN, VICKEN & VICKY
BK. 61621 PG. 422
MAP PAR ID: R007 014 0002

1340 TRAPELO RD
N/F
MCNABB, PAULA M.
BK. 31875 PG. 47
MAP PAR ID: R007 014 0003

1332 TRAPELO RD
N/F
CUSANO, DONALD F. &
BK. 11025 PG. 205
MAP PAR ID: R013 002 0001

1328 TRAPELO RD
N/F
ESCANDON, MARCO T. &
BK. 25931 PG. 363
MAP PAR ID: R013 002 0002

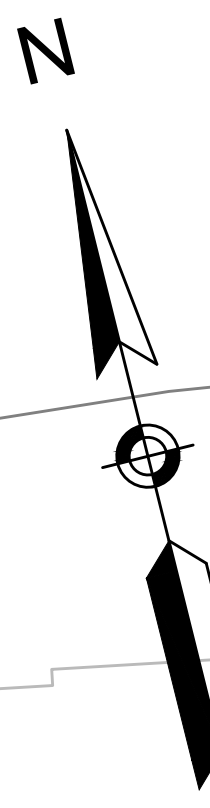
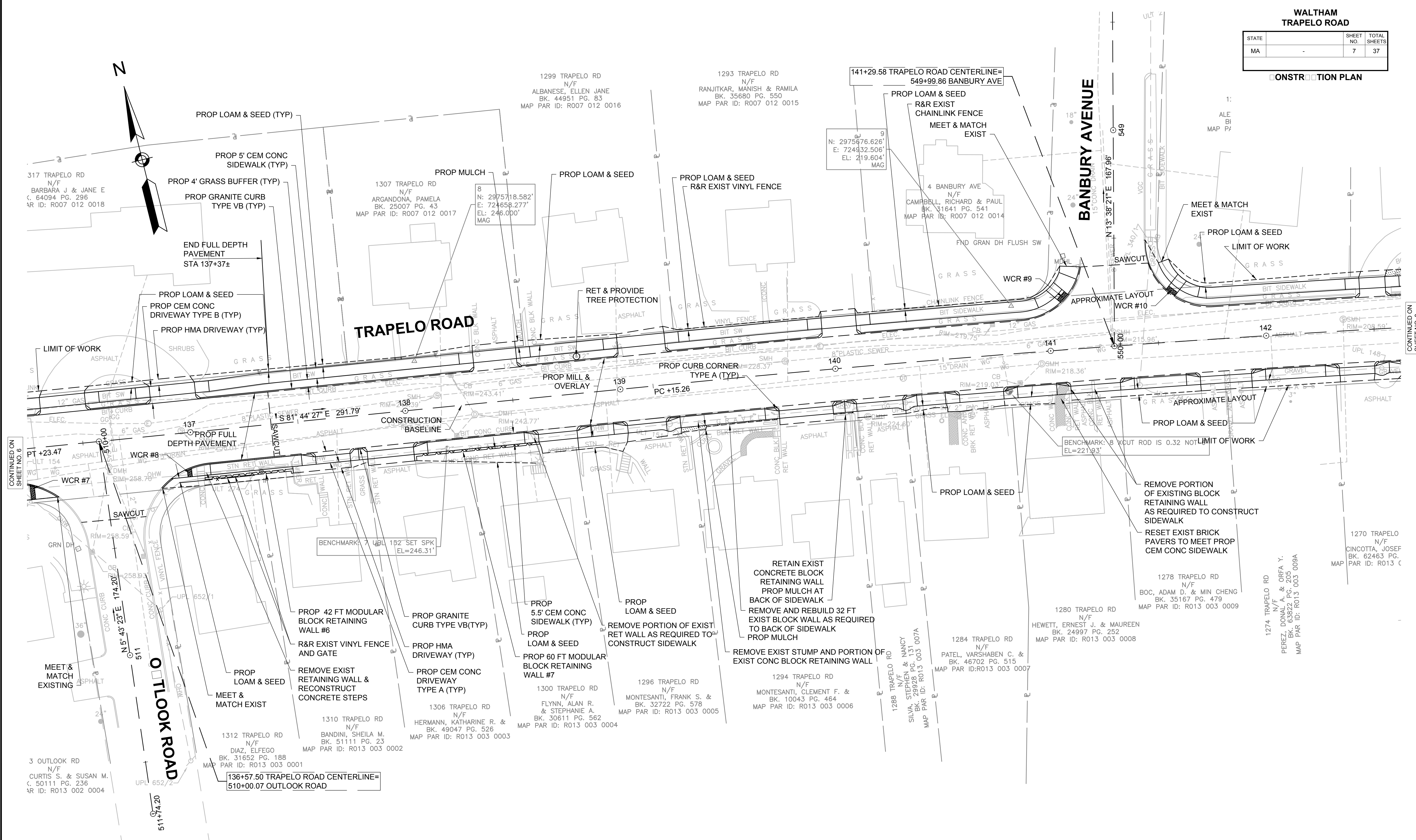
1324 TRAPELO RD
N/F
MANNARINO, MATTHEW M.
BK. 57223 PG. 500
MAP PAR ID: R013 002 0003

3 OUTLOOK RD
N/F
FETTER, CURTIS S. & SL
BK. 50111 PG. 23
MAP PAR ID: R013 002

**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	7	37

CONSTRUCTION PLAN



CONTINUED ON SHEET NO. 6

CONTINUED ON SHEET NO. 8

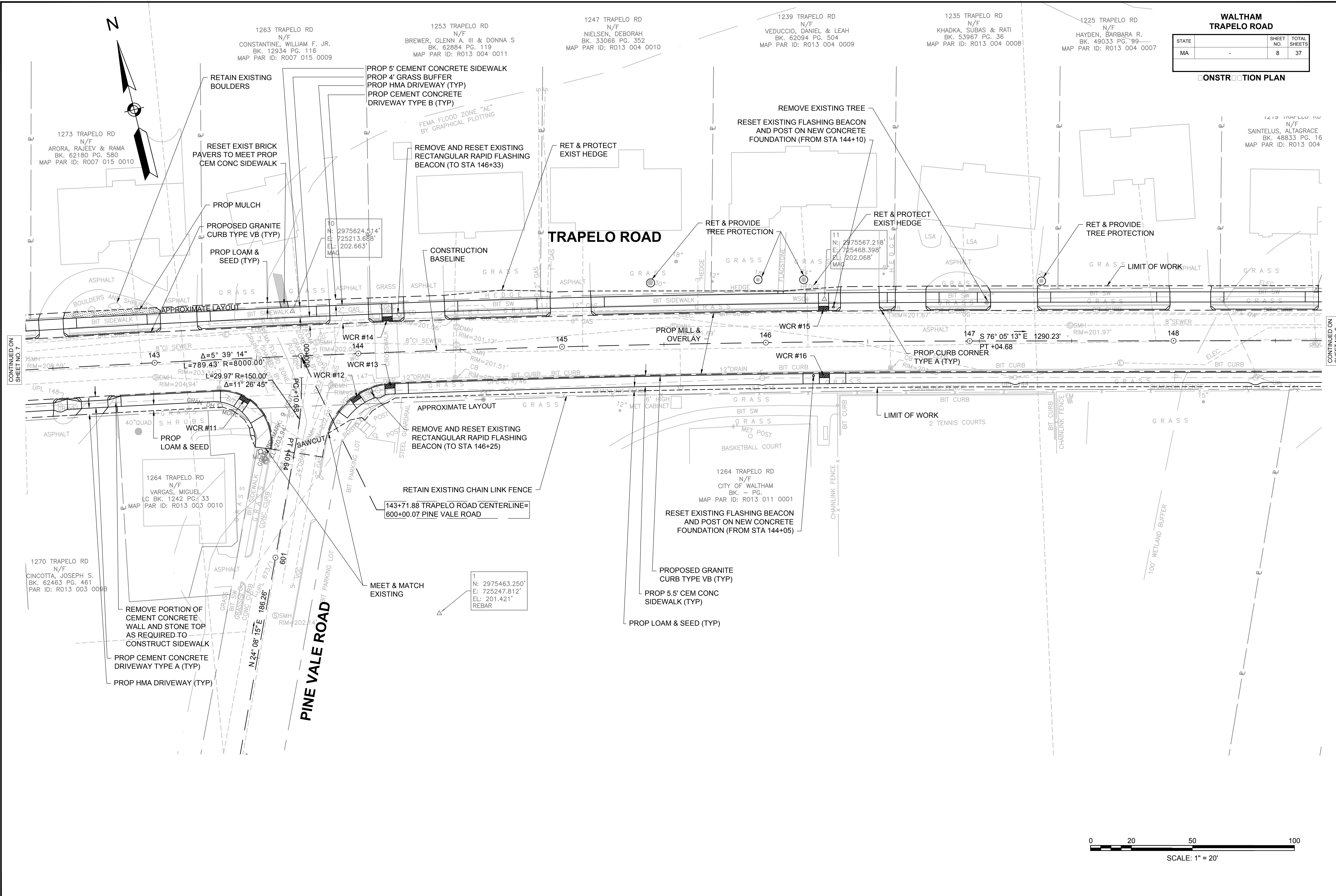
SEE SHEET 13 FOR PROFILE.



**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	8	37

CONSTRUCTION PLAN



CONTINUED ON
SHEET NO. 7

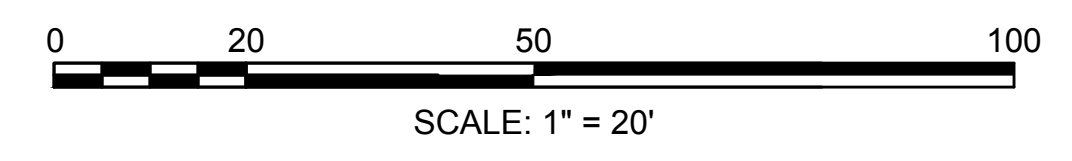
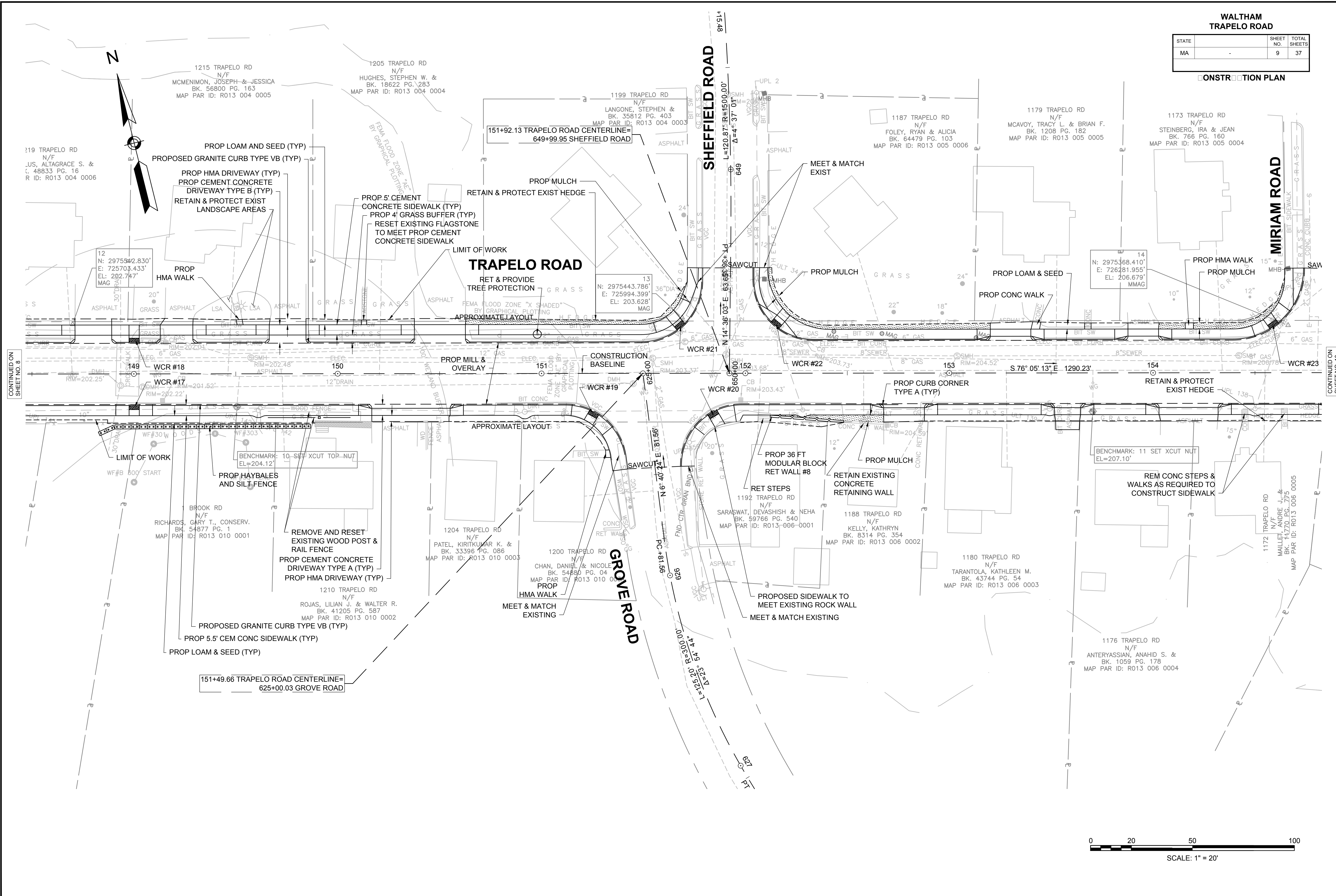
CONTINUED ON
SHEET NO. 9

11286_HPI(CONSTRUCTION).DWG Pinned on 10-Mar-2015 3:39 PM

**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	9	37

CONSTRUCTION PLAN



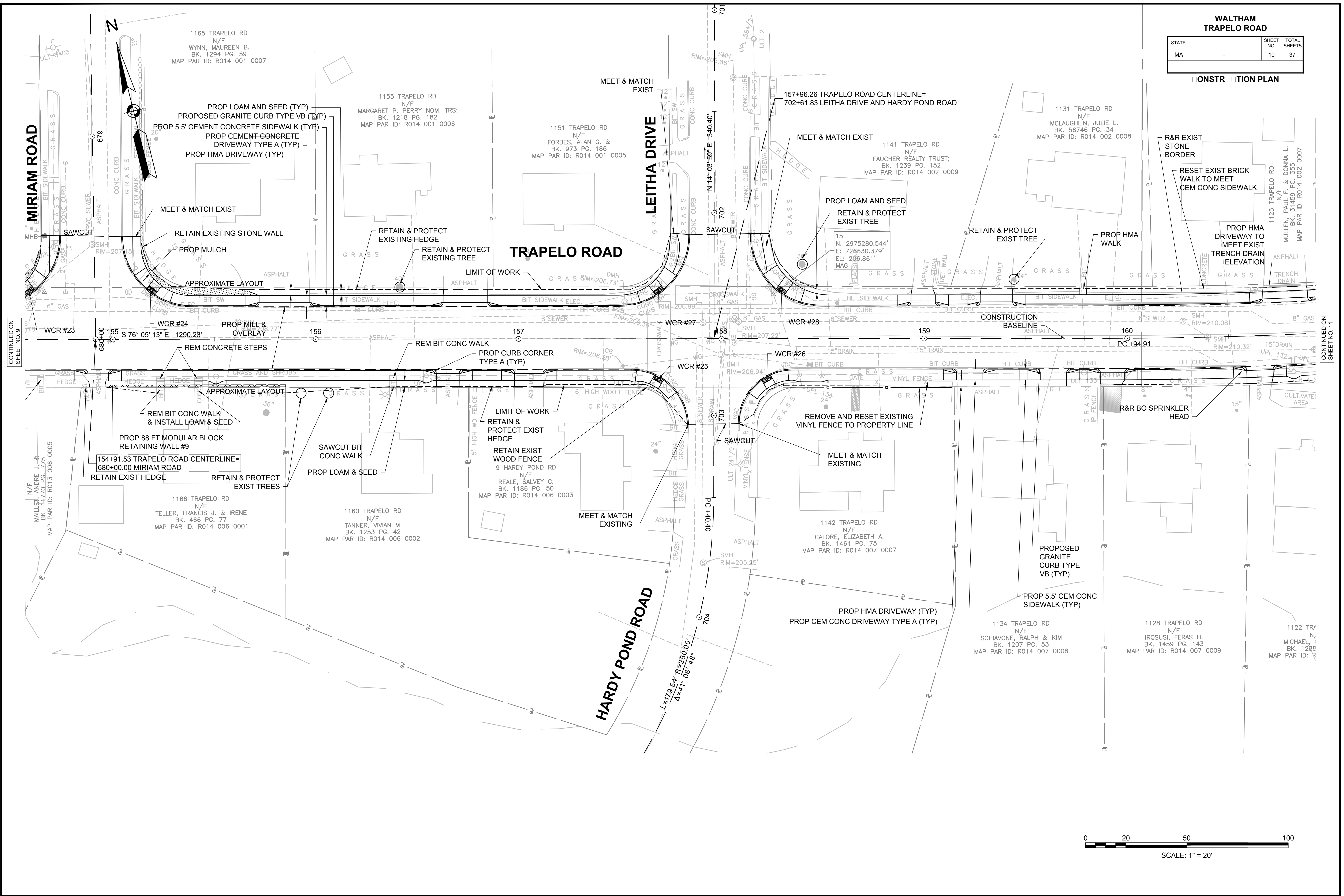
CONTINUED ON SHEET NO. 8

CONTINUED ON SHEET NO. 10

**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	10	37

CONSTRUCTION PLAN



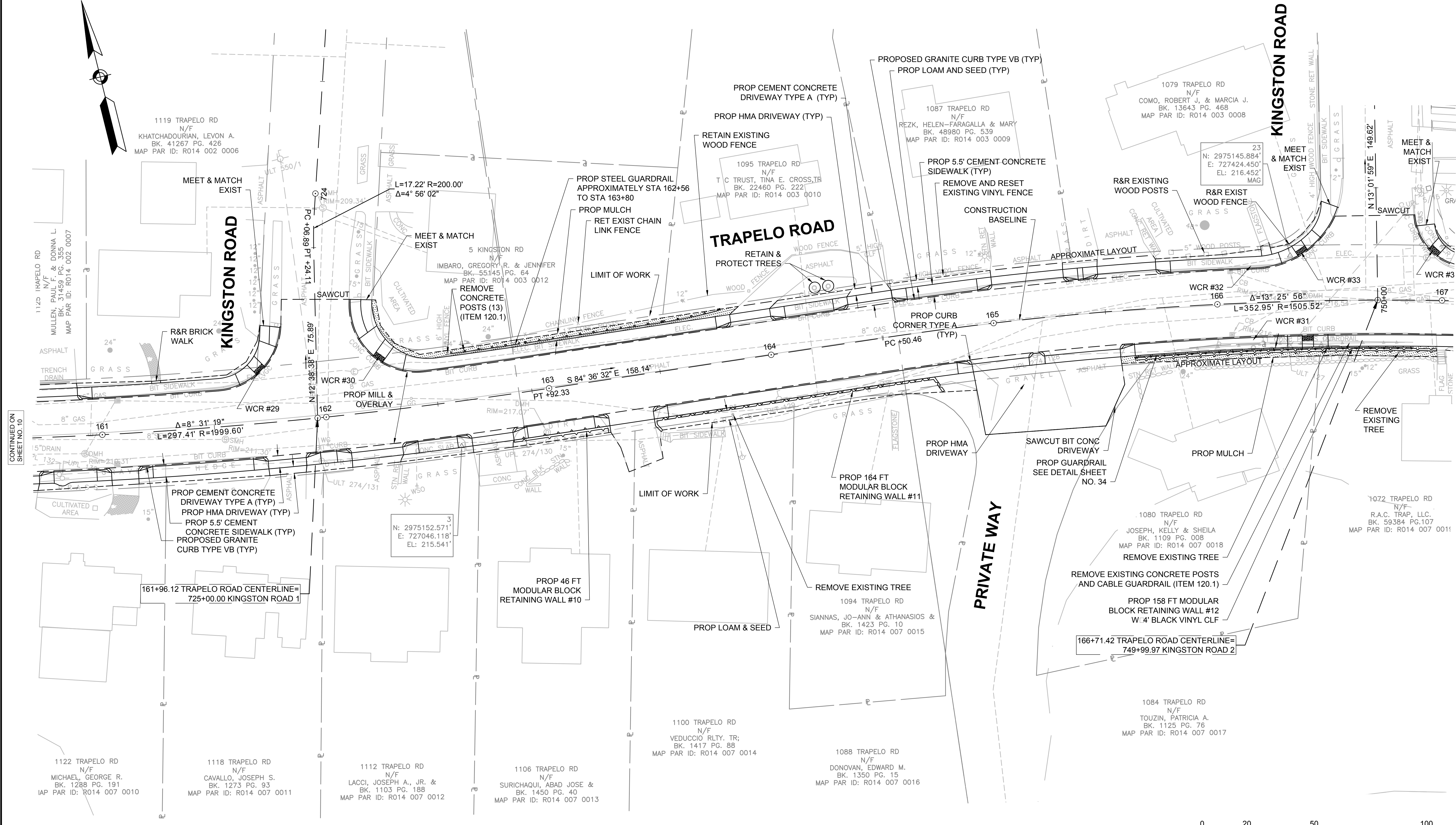
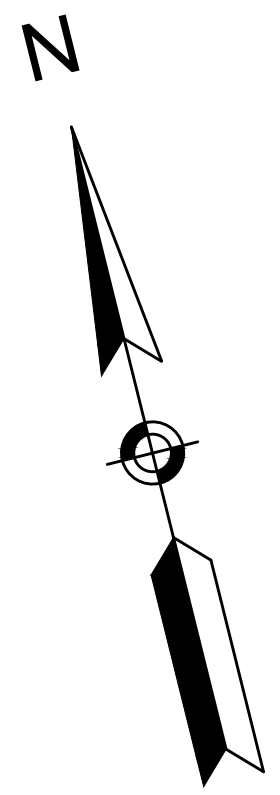
CONTINUED ON SHEET NO. 9

CONTINUED ON SHEET NO. 11

WALTHAM
TRAPELO ROAD

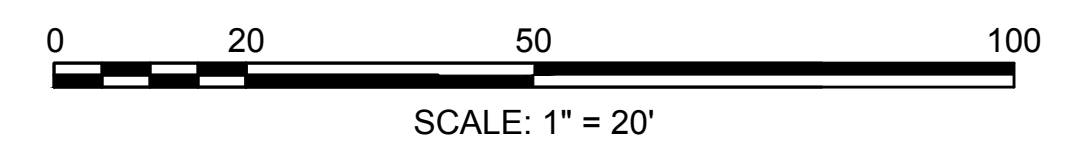
STATE	SHEET NO.	TOTAL SHEETS
MA	11	37

CONSTRUCTION PLAN



CONTINUED ON
SHEET NO. 10

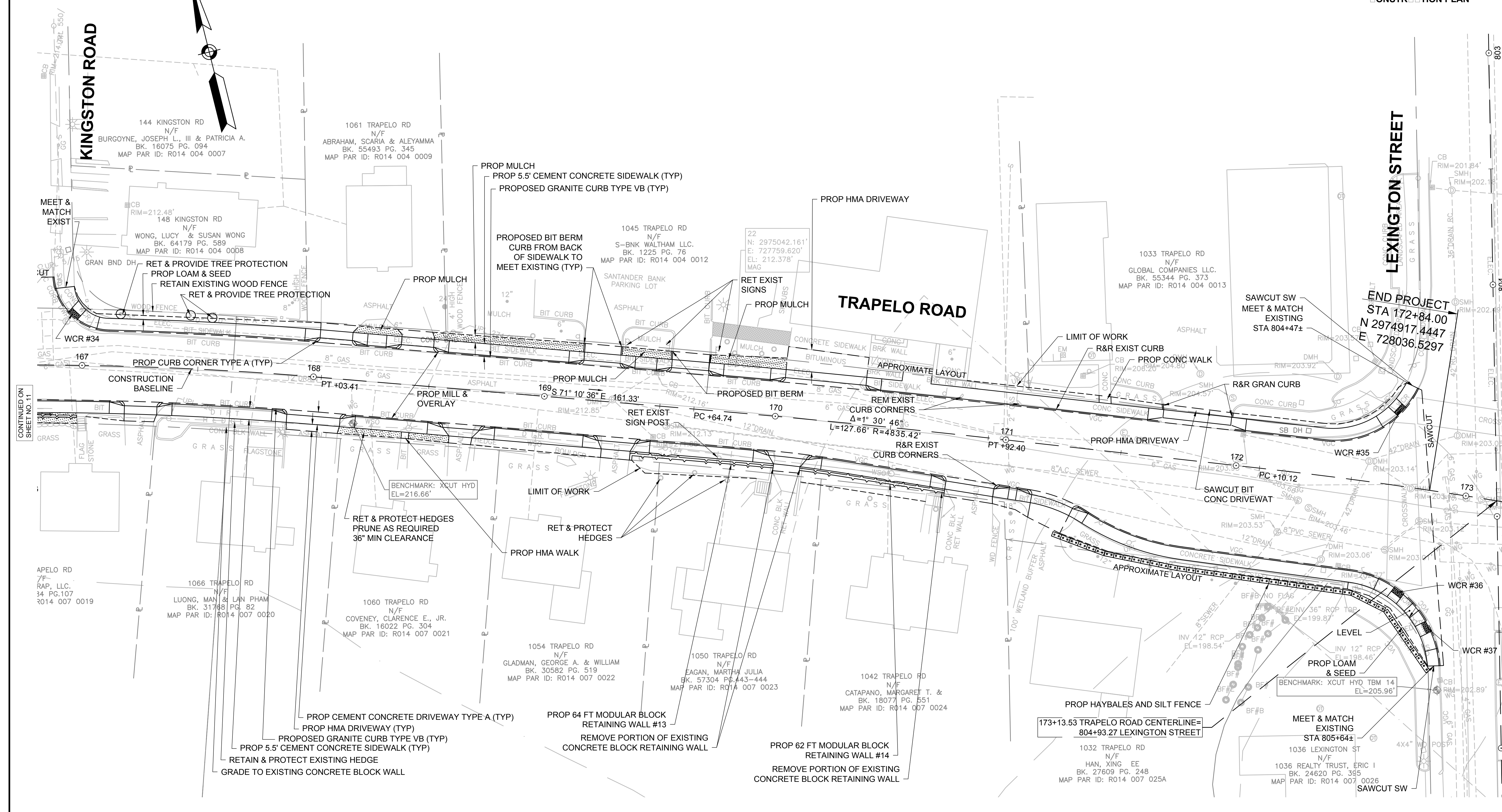
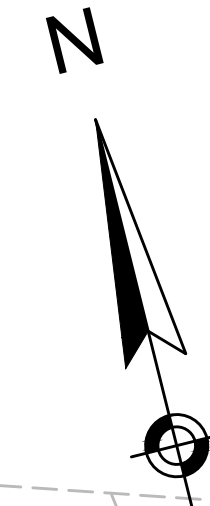
CONTINUED ON
SHEET NO. 12



WALTHAM
TRAPELO ROAD

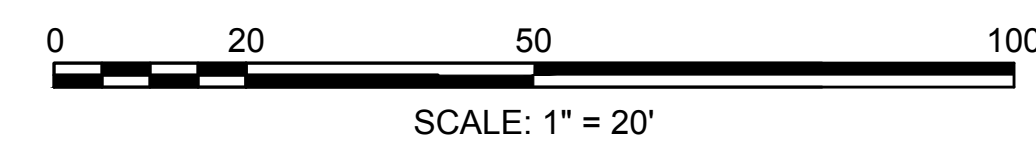
STATE	SHEET NO.	TOTAL SHEETS
MA	12	37

CONSTRUCTION PLAN



END PROJECT
STA 172+84.00
N 2974917.4447
E 728036.5297

CONTINUED ON
SHEET NO. 11

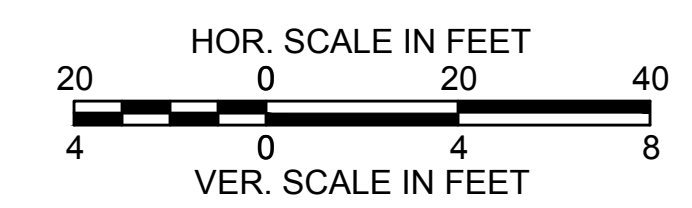
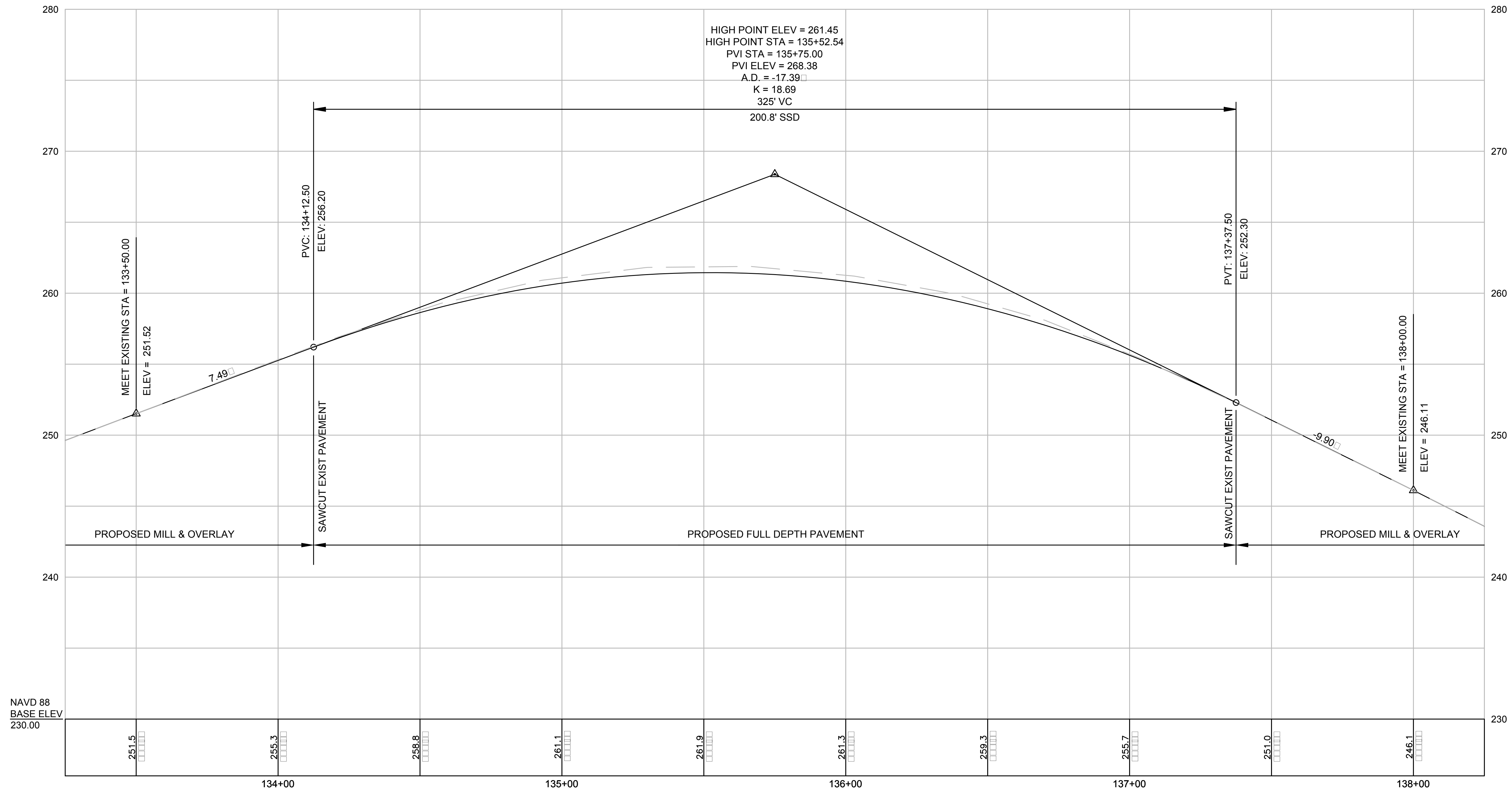


WALTHAM
TRAPELO ROAD

STATE	SHEET NO.	TOTAL SHEETS
MA	13	37

TRAPELO ROAD PROFILE

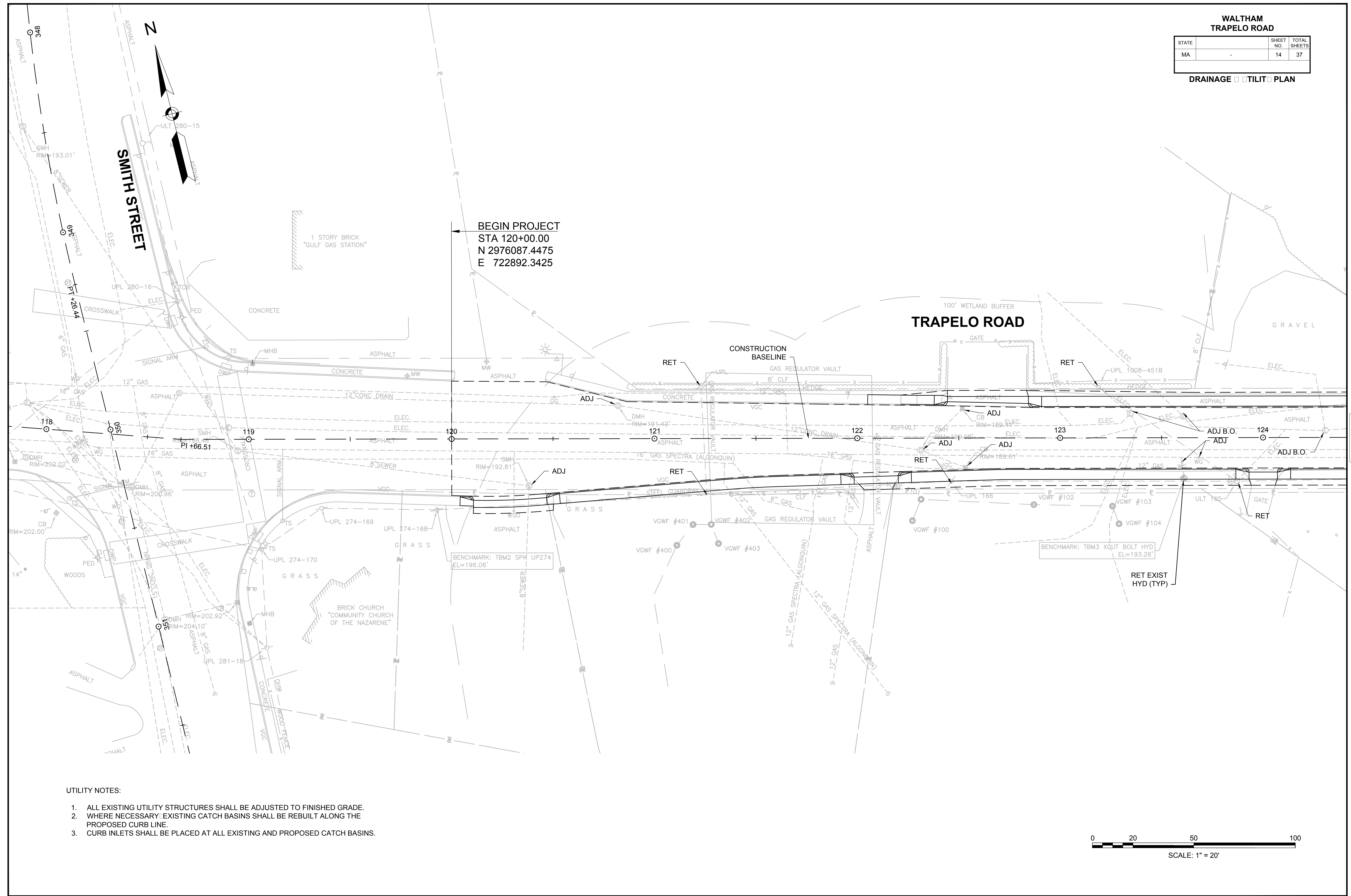
TRAPELO ROAD CENTERLINE



WALTHAM
TRAPELO ROAD

STATE	SHEET NO.	TOTAL SHEETS
MA	14	37

DRAINAGE TILIT PLAN



BEGIN PROJECT
STA 120+00.00
N 2976087.4475
E 722892.3425

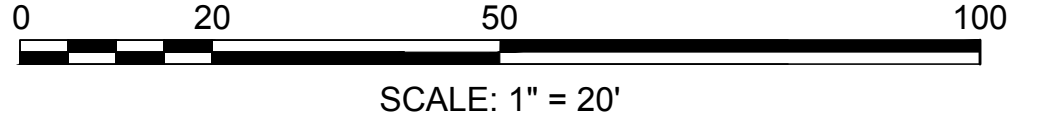
100' WETLAND BUFFER
TRAPELO ROAD

CONSTRUCTION
BASELINE

BENCHMARK: TBM2 SPK UP274
EL=196.06'

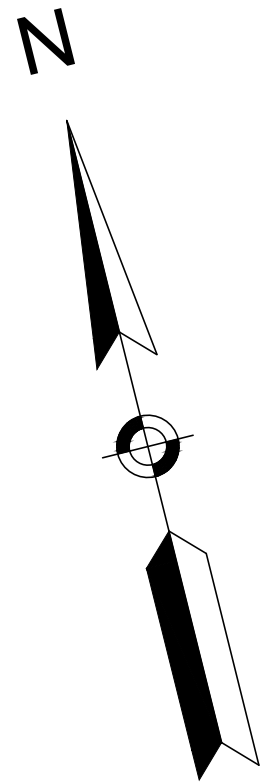
BENCHMARK: TBM3 XGUT BOLT HYD
EL=193.26'

- UTILITY NOTES:
1. ALL EXISTING UTILITY STRUCTURES SHALL BE ADJUSTED TO FINISHED GRADE.
 2. WHERE NECESSARY, EXISTING CATCH BASINS SHALL BE REBUILT ALONG THE PROPOSED CURB LINE.
 3. CURB INLETS SHALL BE PLACED AT ALL EXISTING AND PROPOSED CATCH BASINS.



11266_HD(UTILITY).DWG Ploited on 10-Mar-2015 3:39 PM

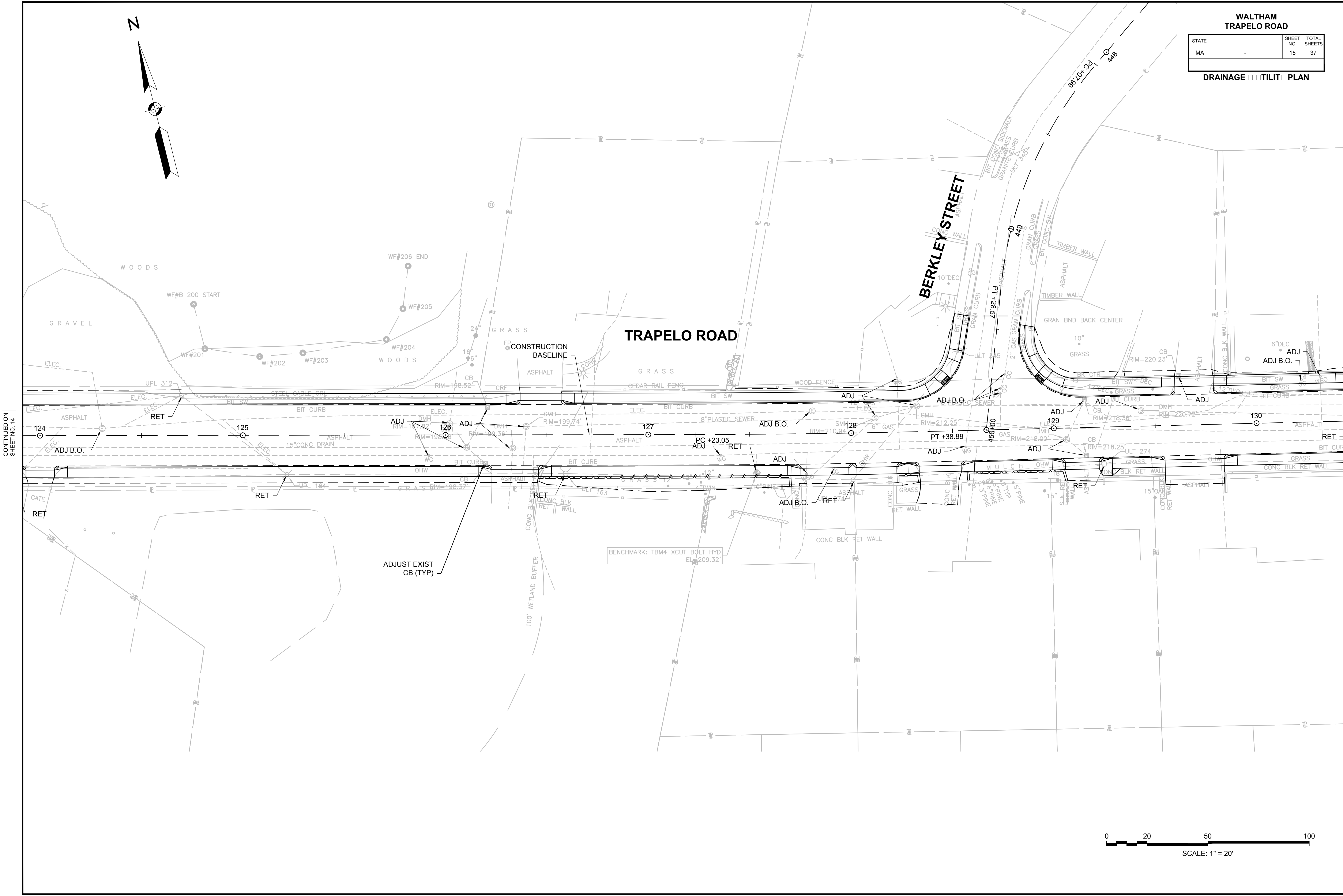
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**WALTHAM
TRAPELO ROAD**

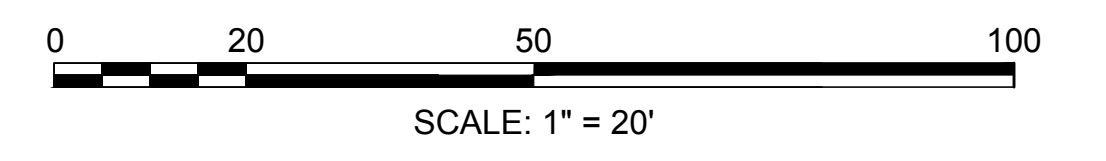
STATE	SHEET NO.	TOTAL SHEETS
MA	15	37

DRAINAGE TILT PLAN



CONTINUED ON
SHEET NO. 14

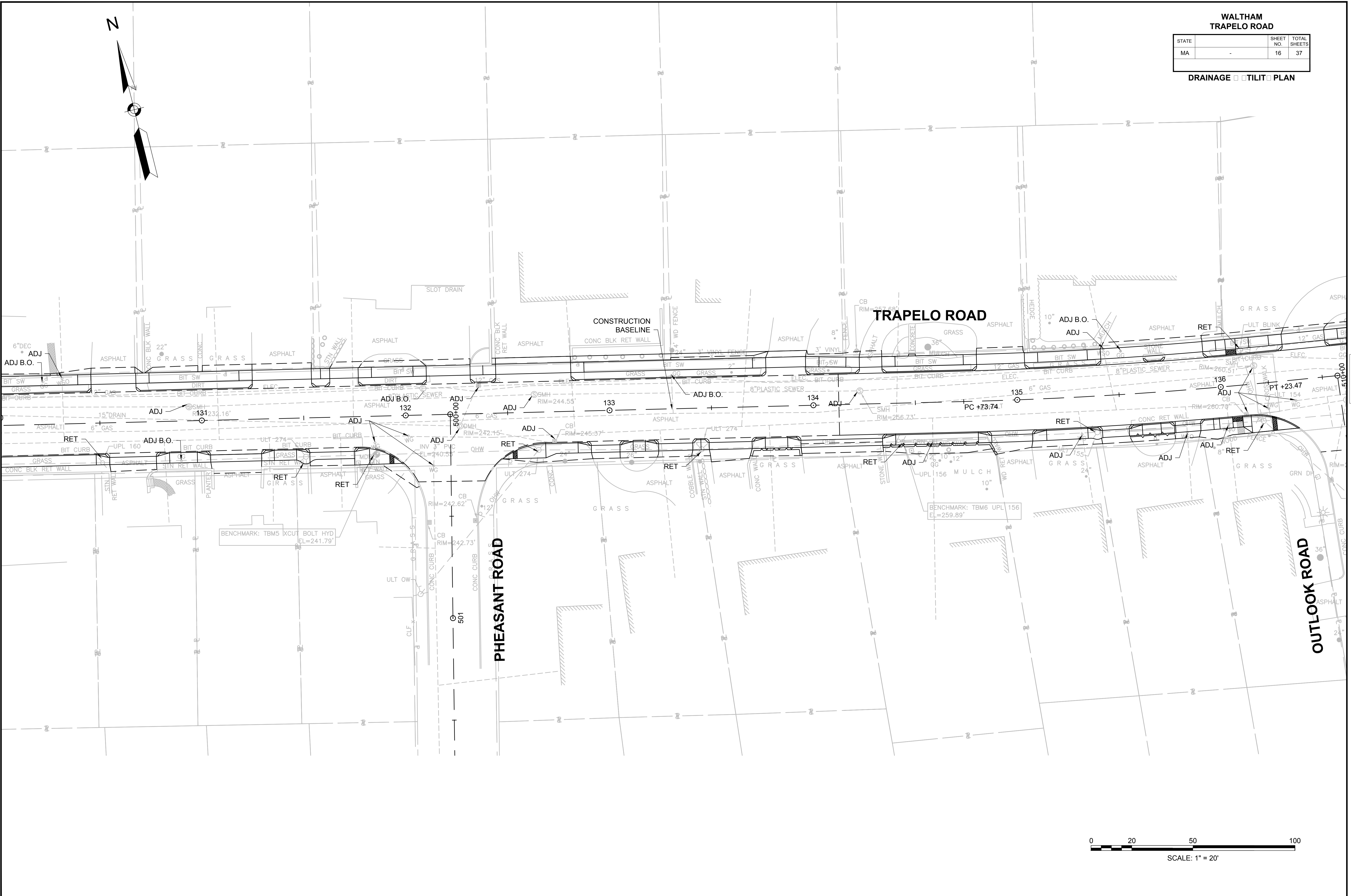
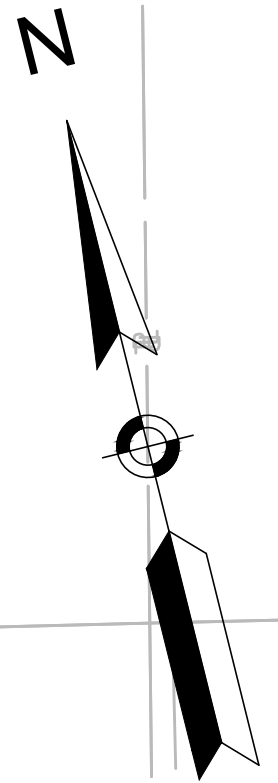
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SHEET NO. 16



WALTHAM
TRAPELO ROAD

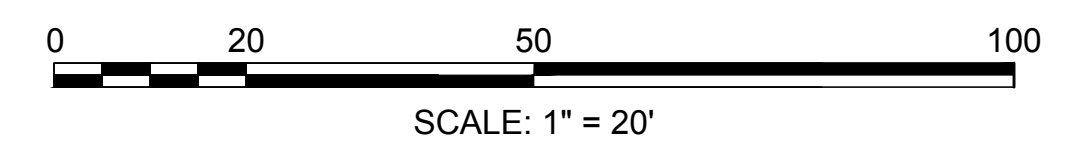
STATE	SHEET NO.	TOTAL SHEETS
MA	16	37

DRAINAGE TILIT PLAN



CONTINUED ON SHEET NO. 15

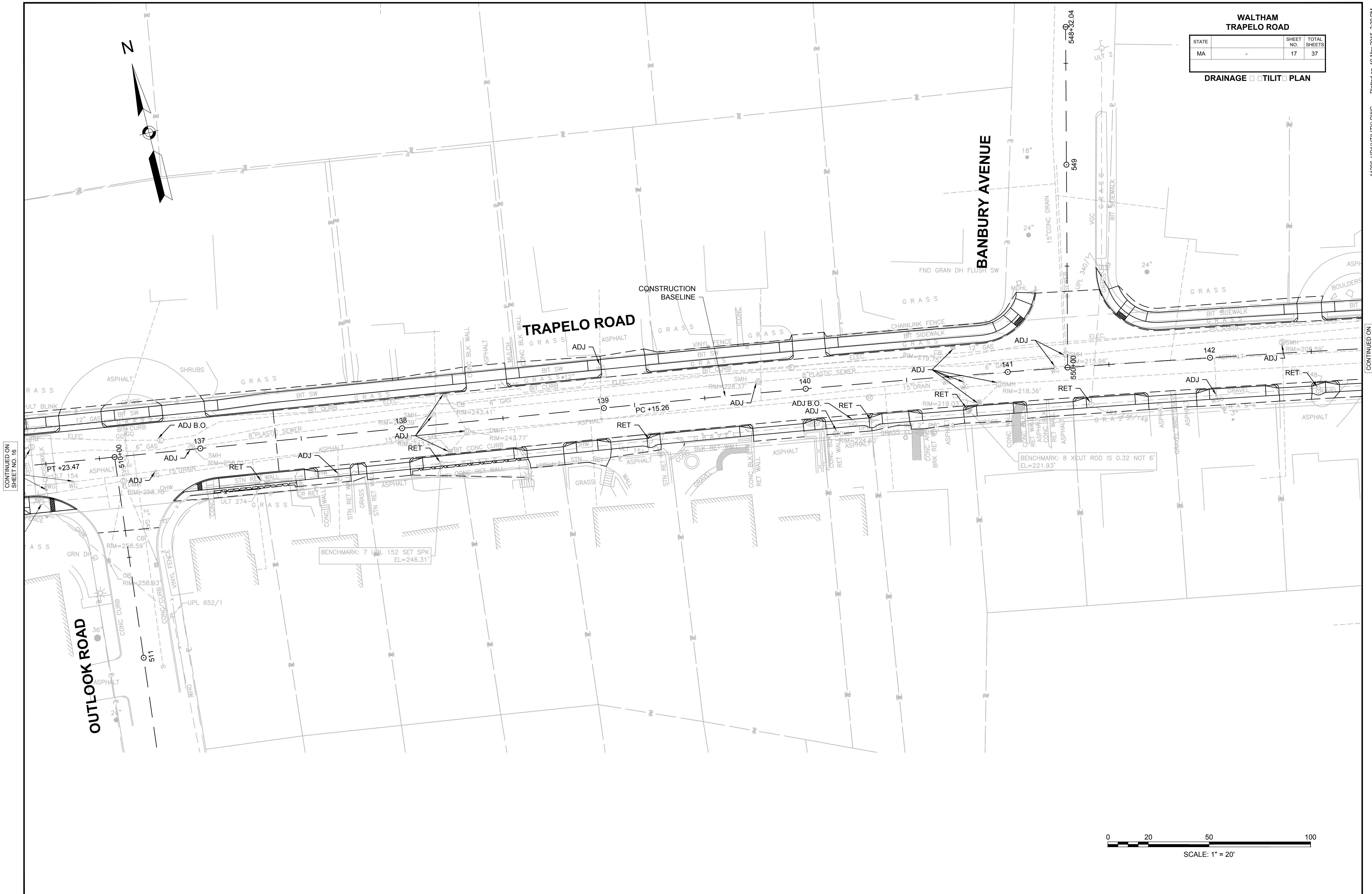
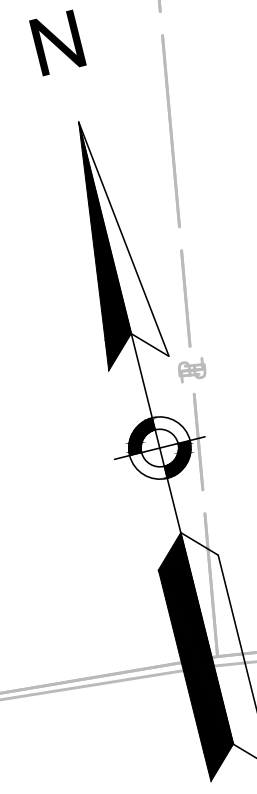
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WALTHAM
TRAPELO ROAD

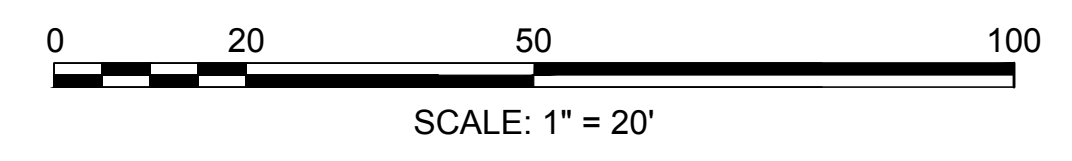
STATE	SHEET NO.	TOTAL SHEETS
MA	17	37

DRAINAGE TILT PLAN



CONTINUED ON
SHEET NO. 16

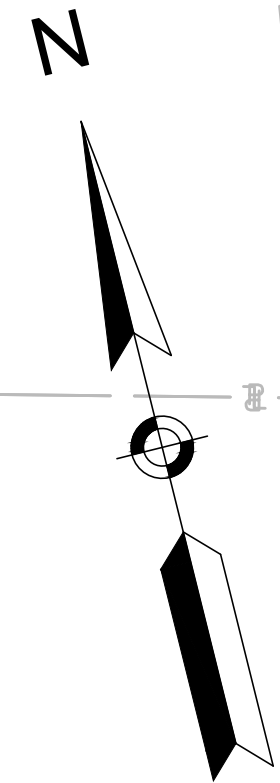
CONTINUED ON
SHEET NO. 18



WALTHAM
TRAPELO ROAD

STATE	SHEET NO.	TOTAL SHEETS
MA	18	37

DRAINAGE TILIT PLAN



TRAPELO ROAD

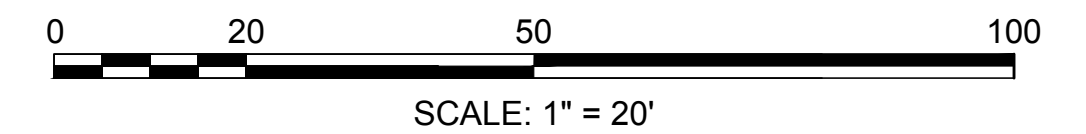
CONSTRUCTION
BASELINE

FEMA FLOOD ZONE "AE"
BY GRAPHICAL PLOTTING

REMOVE EXISTING WATER
SERVICE PIPE AND GATE BOX AND
CUT AND CAP PIPE AT MAIN

NOTES:

1. THE CONTRACTOR SHALL VERIFY WATER SHUT OFFS AND PIPE LOCATIONS WITH THE CITY OF WALTHAM PRIOR TO ANY WATER WORK.
2. THE COST OF REMOVAL AND RESETTING SECTIONS OF EXISTING CHAIN LINK FENCE AND ASSOCIATED WORK AS REQUIRED TO REMOVE THE WATER PIPE CONNECTION SHALL BE CONSIDERED INCIDENTAL TO THE PIPE REMOVAL ITEM.



CONTINUED ON
SHEET NO. 17

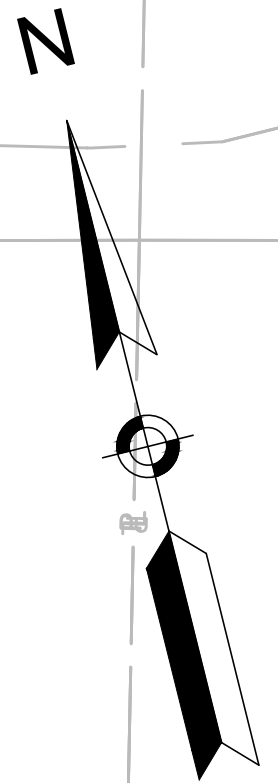
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SHEET NO. 19

11266_HD(UTILITY).DWG Plotted on 10-Mar-2015 3:39 PM

WALTHAM
TRAPELO ROAD

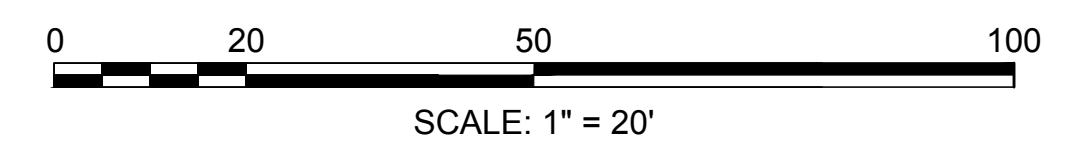
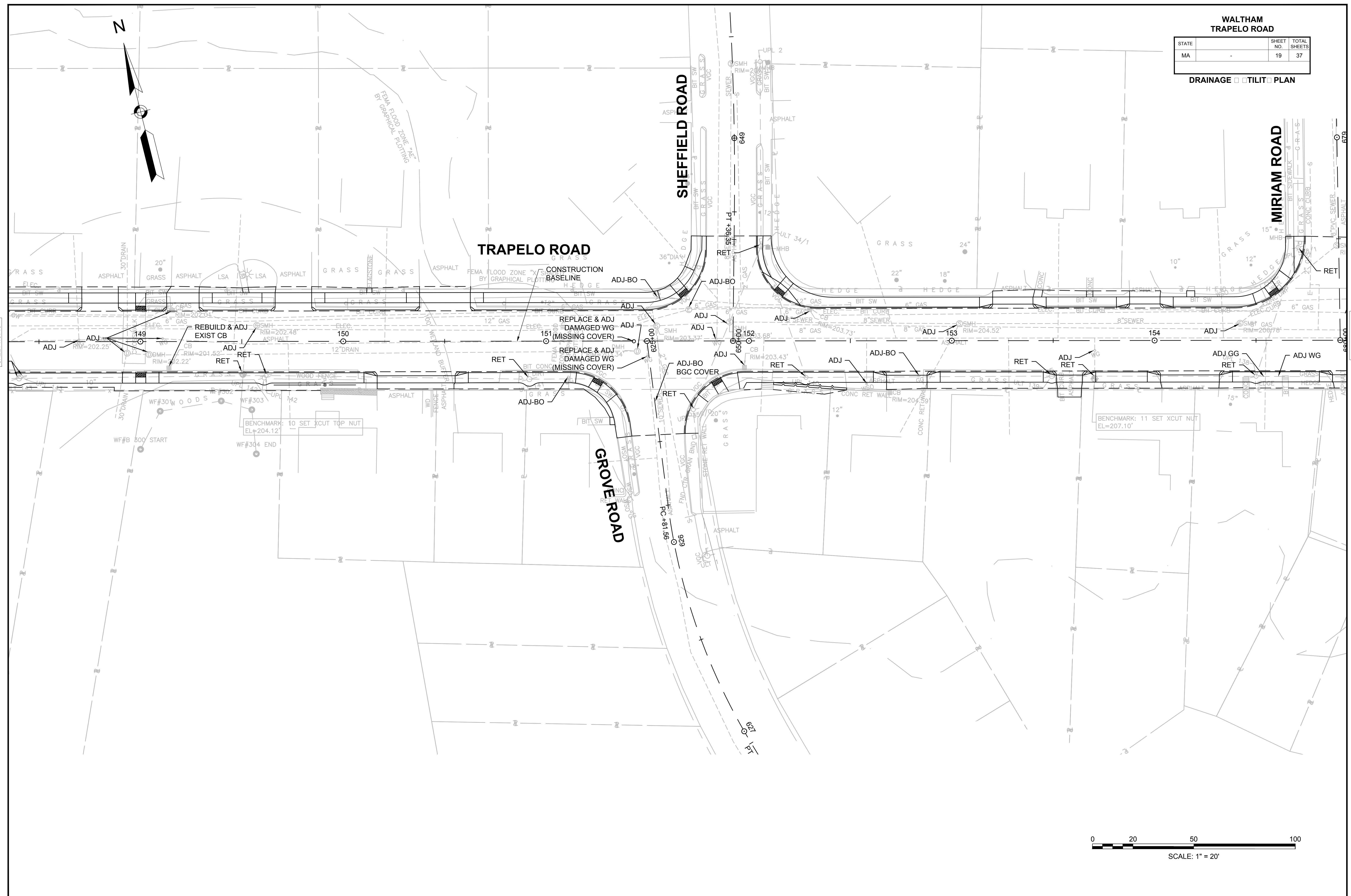
STATE	SHEET NO.	TOTAL SHEETS
MA	19	37

DRAINAGE TILIT PLAN



CONTINUED ON
SHEET NO. 18

CONTINUED ON
SHEET NO. 20



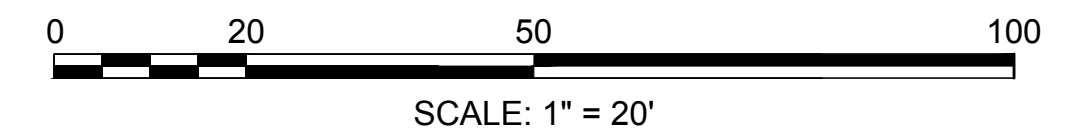
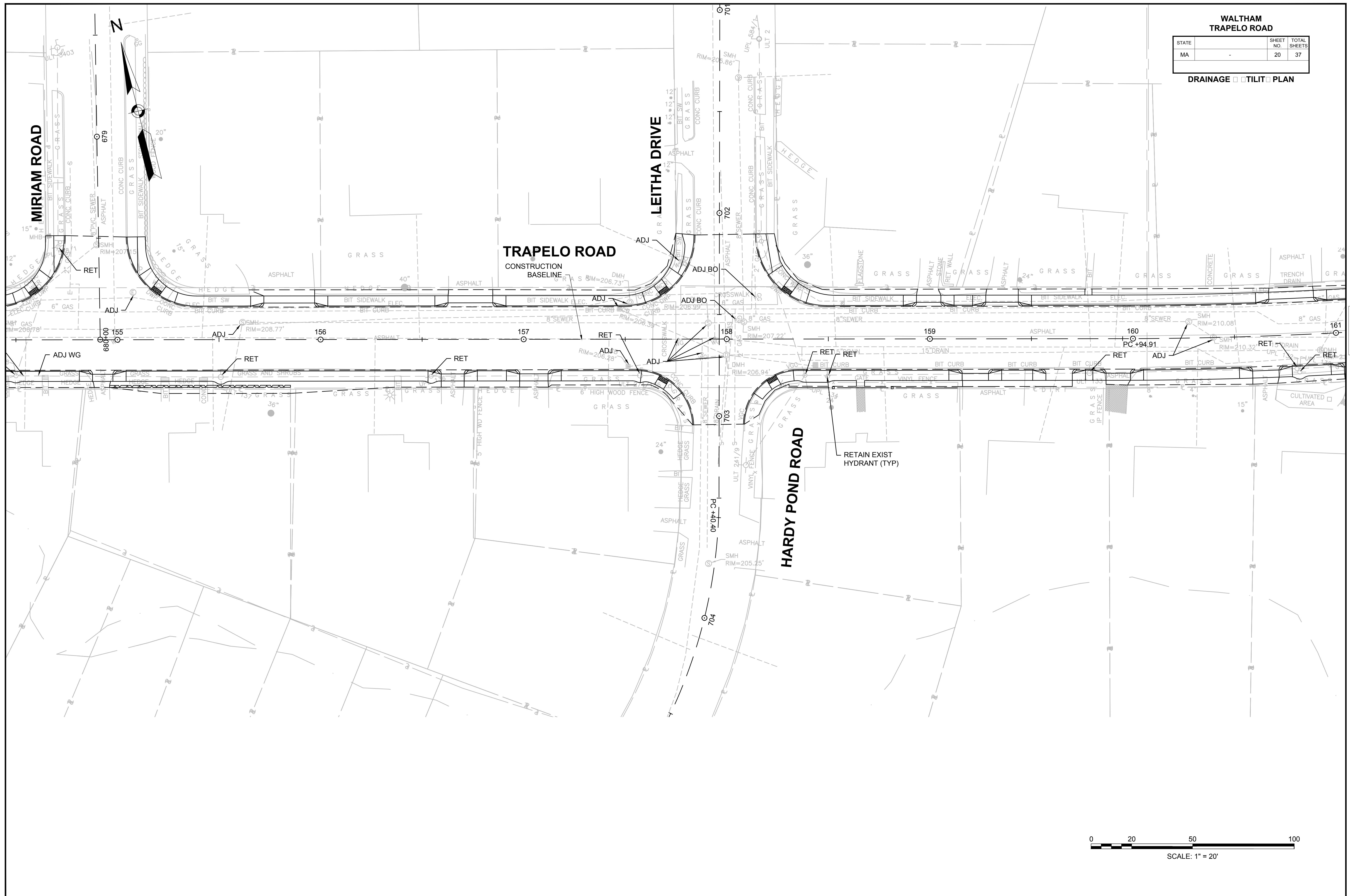
**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	20	37

DRAINAGE TILT PLAN

CONTINUED ON
SHEET NO. 19

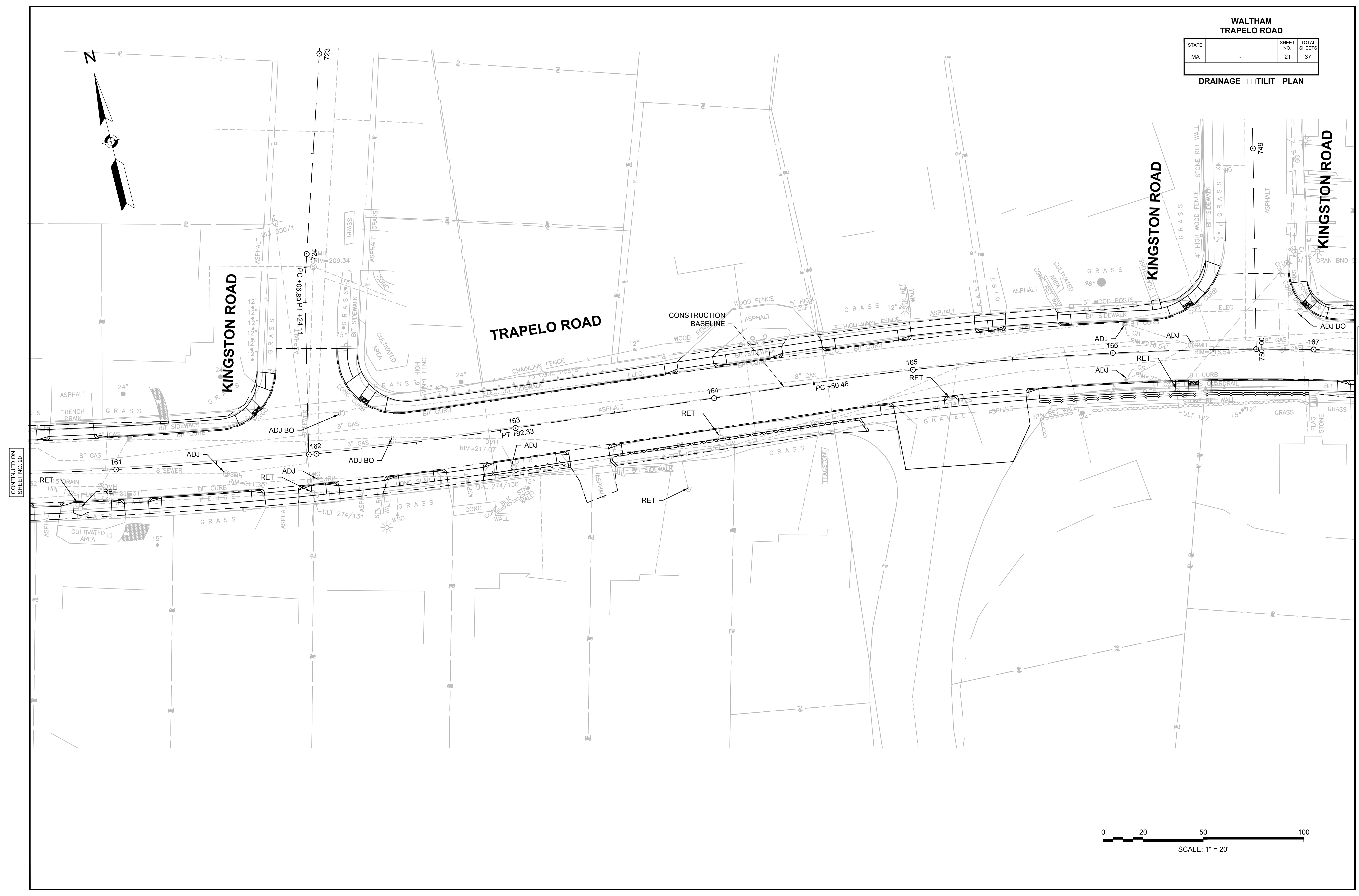
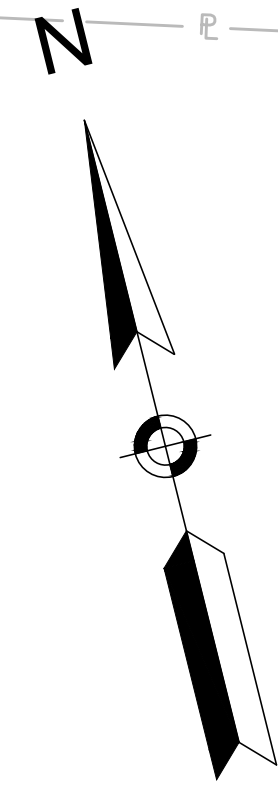
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SHEET NO. 21



WALTHAM
TRAPELO ROAD

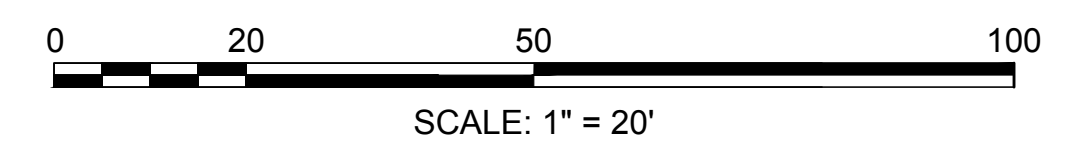
STATE	SHEET NO.	TOTAL SHEETS
MA	21	37

DRAINAGE TILIT PLAN



CONTINUED ON
SHEET NO. 20

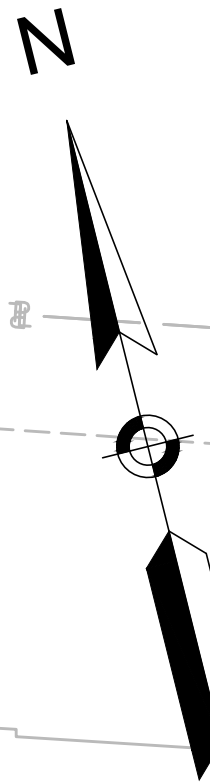
CONTINUED ON
SHEET NO. 22



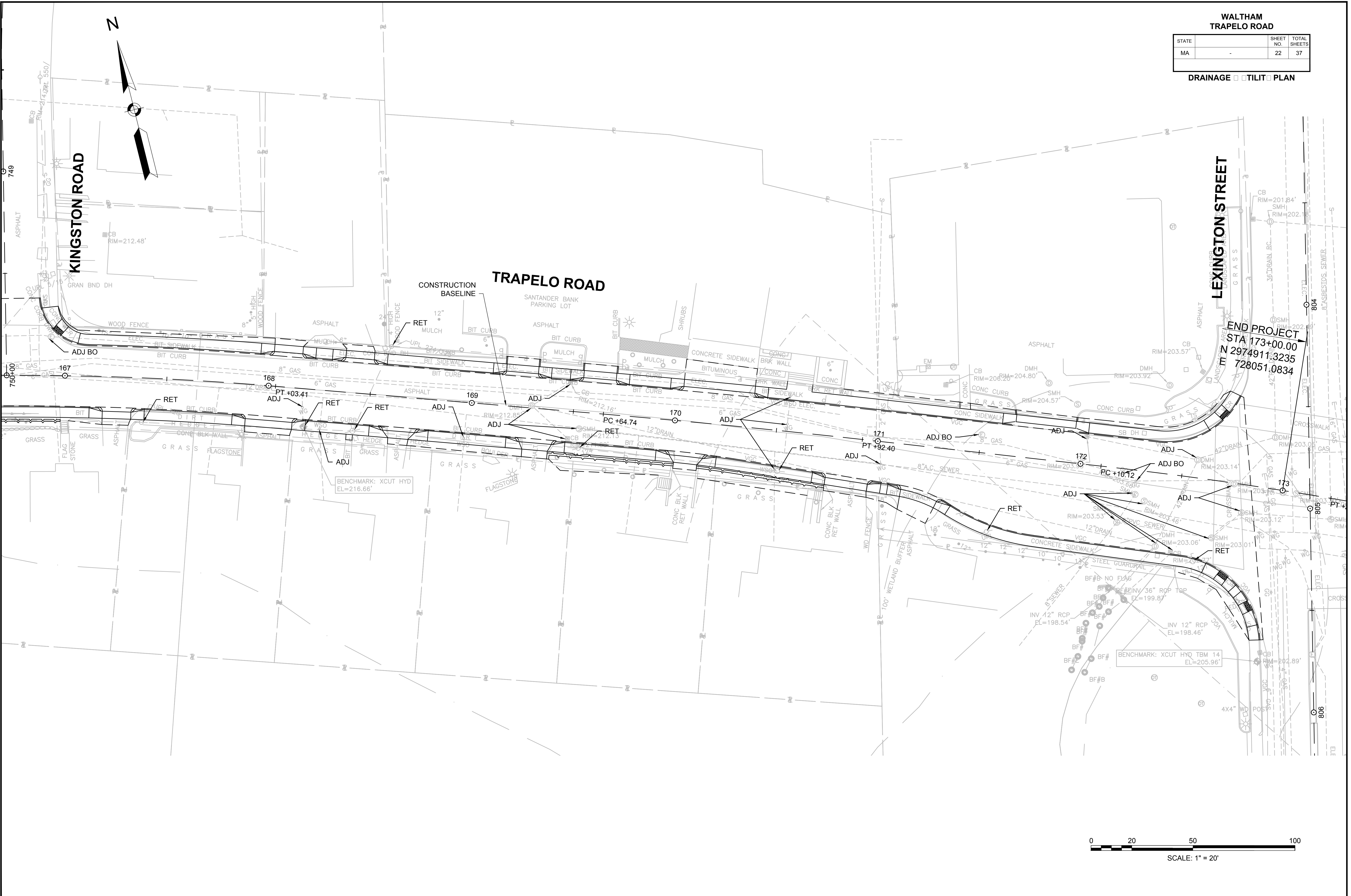
WALTHAM
TRAPELO ROAD

STATE	SHEET NO.	TOTAL SHEETS
MA	22	37

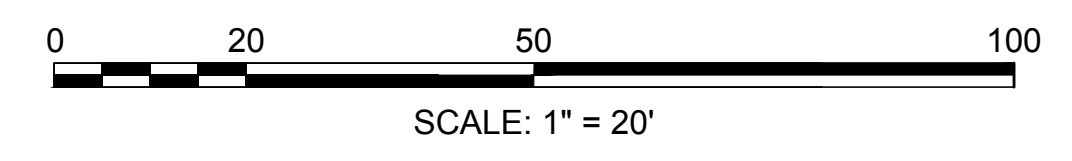
DRAINAGE TILIT PLAN

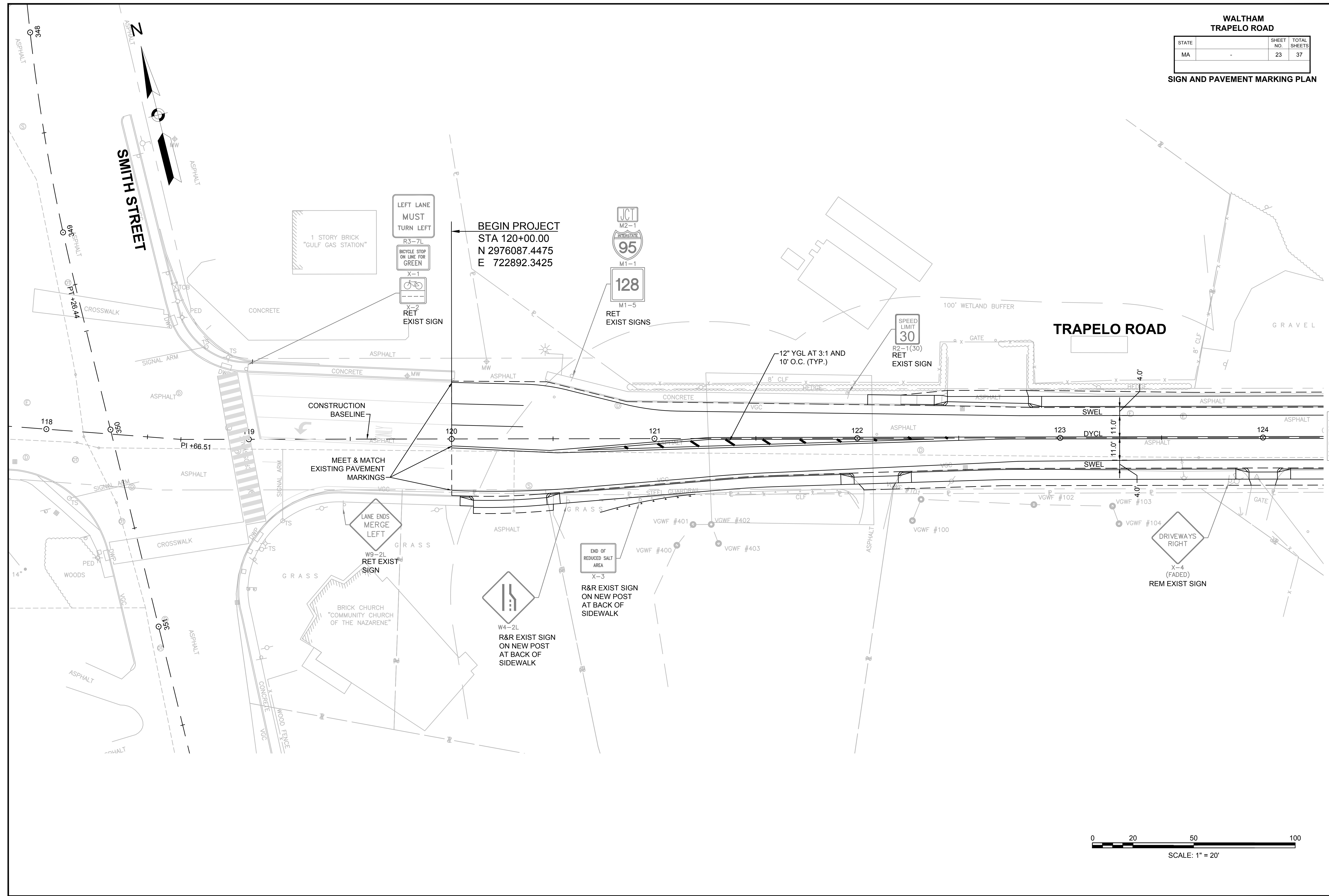


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SHEET NO. 21

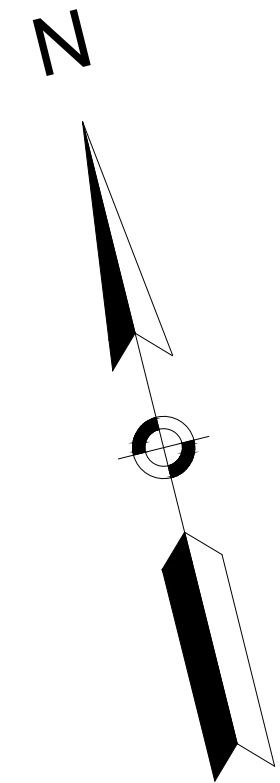


END PROJECT
STA 173+00.00
N 2974911.3235
E 728051.0834





CONTINUED ON SHEET NO. 24



**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	24	37

SIGN AND PAVEMENT MARKING PLAN

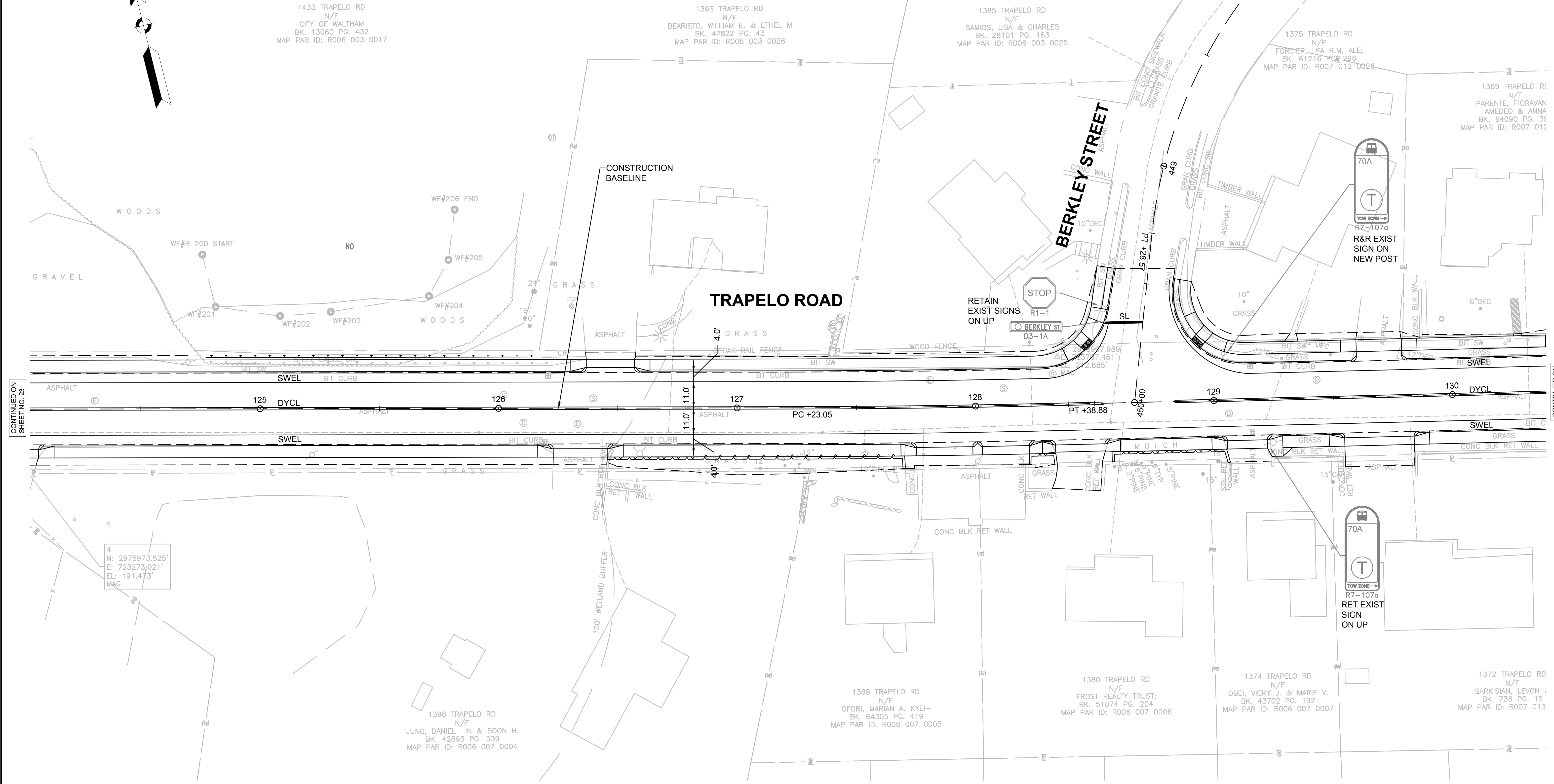
1433 TRAPELO RD
N/F
CITY OF WALTHAM
BK. 13060 PG. 432
MAP PAR ID: R006 003 0017

1393 TRAPELO RD
N/F
BEARISTO, WILLIAM E. & ETHEL M
BK. 47822 PG. 43
MAP PAR ID: R006 003 0026

1385 TRAPELO RD
N/F
SAMIOS, LISA & CHARLES
BK. 28101 PG. 163
MAP PAR ID: R006 003 0025

1375 TRAPELO RD
N/F
FORCIER, LEA R.M. ALE;
BK. 61216 PG. 296
MAP PAR ID: R007 012 0026

1369 TRAPELO RD
N/F
PARENTE, FIORAVAN
AMEDEO & ANNA
BK. 64090 PG. 35
MAP PAR ID: R007 012



CONTINUED ON
SHEET NO. 23

CONTINUED ON
SHEET NO. 25

4
N: 2975973.525'
E: 723273.021'
EL: 191.473'
MAG

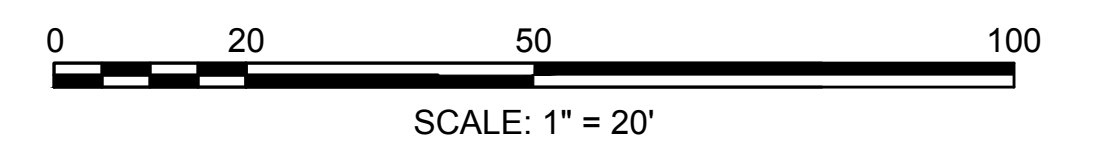
1396 TRAPELO RD
N/F
JUNG, DANIEL IN & SOON H.
BK. 42895 PG. 539
MAP PAR ID: R006 007 0004

1388 TRAPELO RD
N/F
OFORI, MARIAN A. KYEI-
BK. 64305 PG. 419
MAP PAR ID: R006 007 0005

1380 TRAPELO RD
N/F
FROST REALTY TRUST;
BK. 51074 PG. 204
MAP PAR ID: R006 007 0006

1374 TRAPELO RD
N/F
OBEL, VICKY J. & MARIE V.
BK. 43702 PG. 192
MAP PAR ID: R006 007 0007

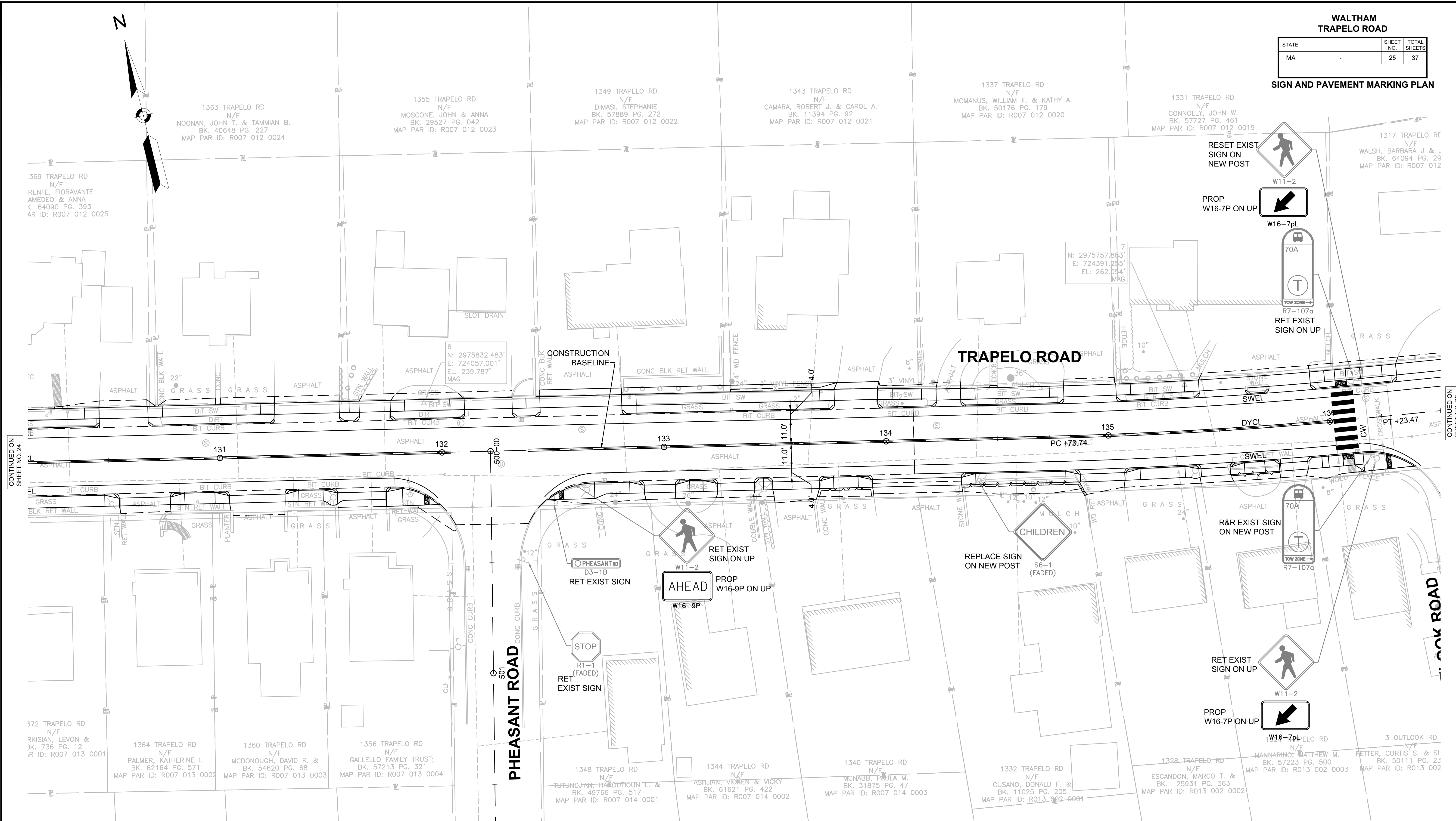
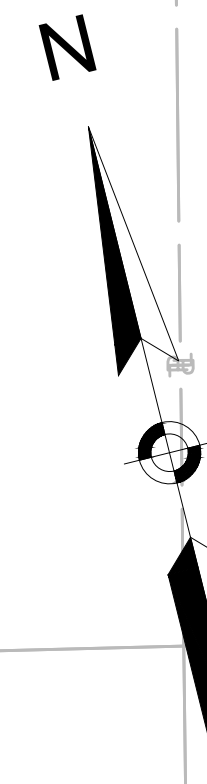
1372 TRAPELO RD
N/F
SARKISIAN, LEVON J.
BK. 736 PG. 12
MAP PAR ID: R007 013



**WALTHAM
TRAPELO ROAD**

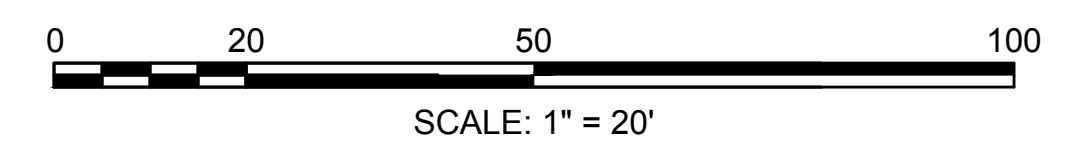
STATE	SHEET NO.	TOTAL SHEETS
MA	25	37

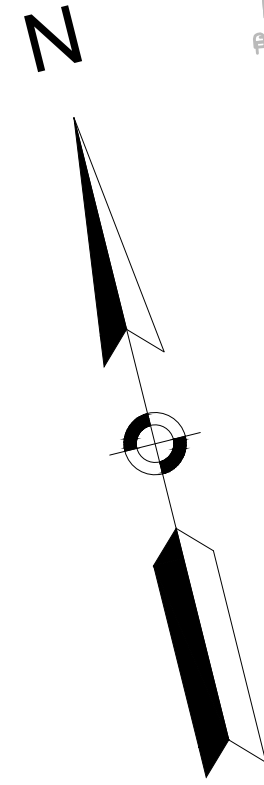
SIGN AND PAVEMENT MARKING PLAN



CONTINUED ON
SHEET NO. 24

CONTINUED ON
SHEET NO. 26





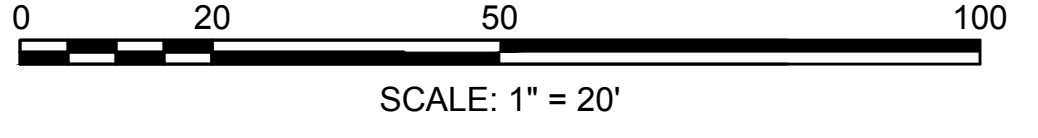
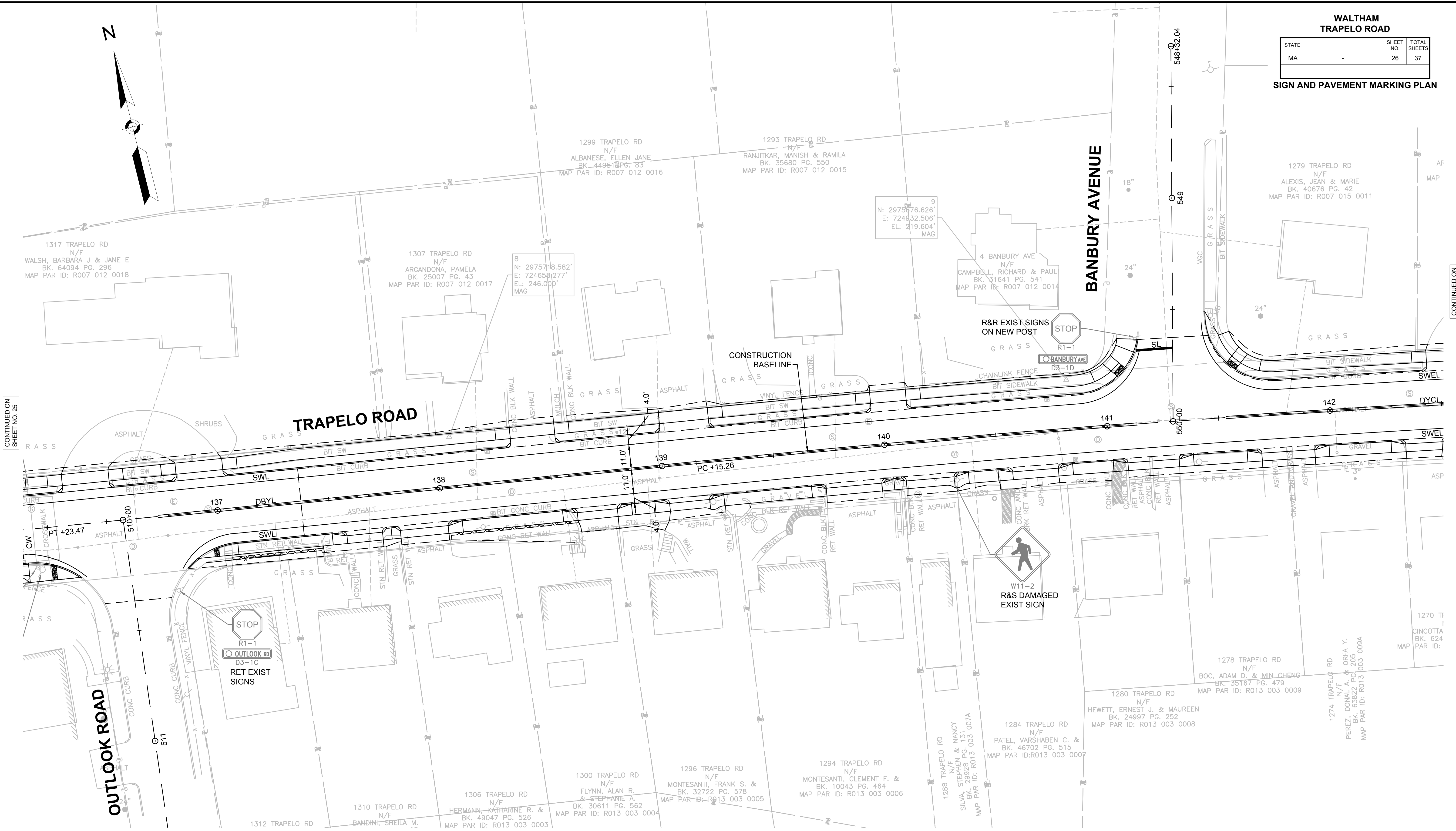
**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	26	37

SIGN AND PAVEMENT MARKING PLAN

CONTINUED ON
SHEET NO. 25

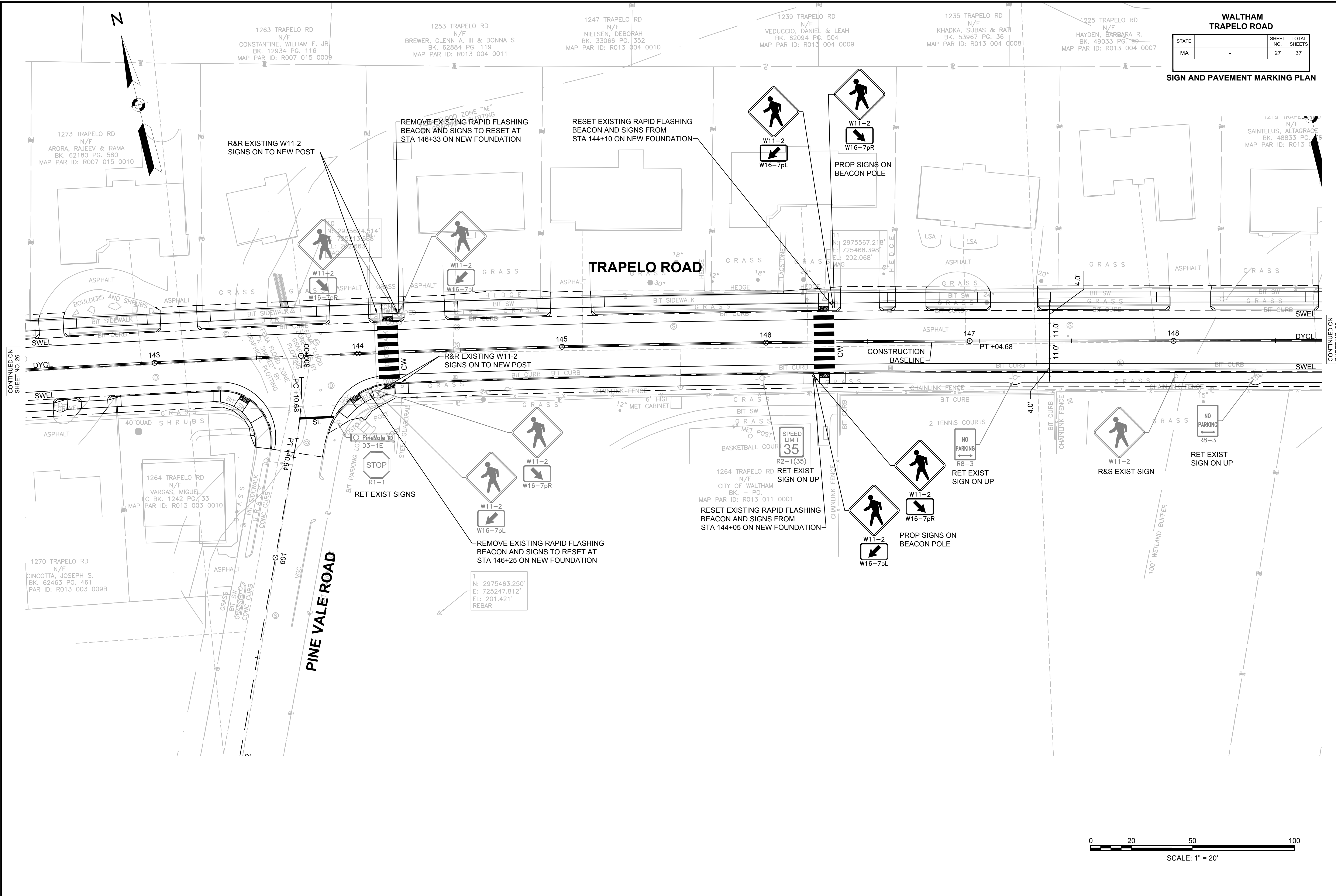
CONTINUED ON
SHEET NO. 27



**WALTHAM
TRAPELO ROAD**

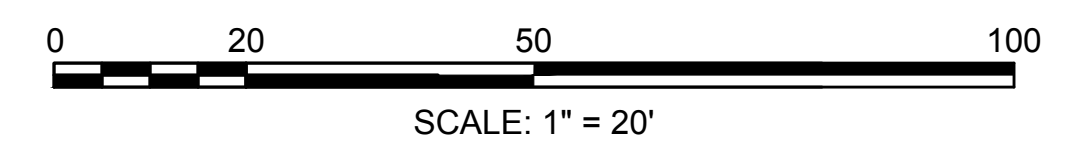
STATE	SHEET NO.	TOTAL SHEETS
MA	27	37

SIGN AND PAVEMENT MARKING PLAN



CONTINUED ON
SHEET NO. 26

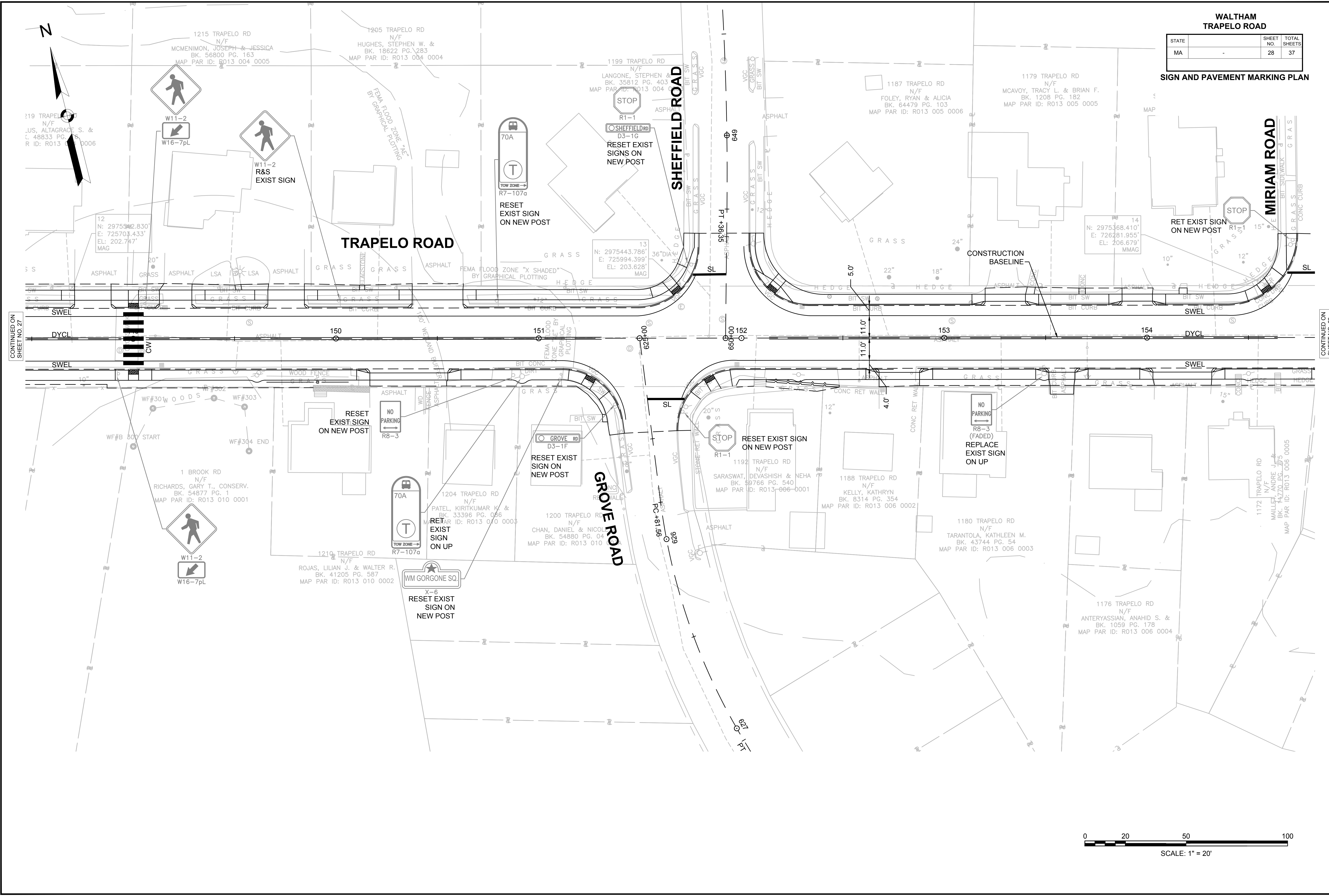
CONTINUED ON
SHEET NO. 28



**WALTHAM
TRAPELO ROAD**

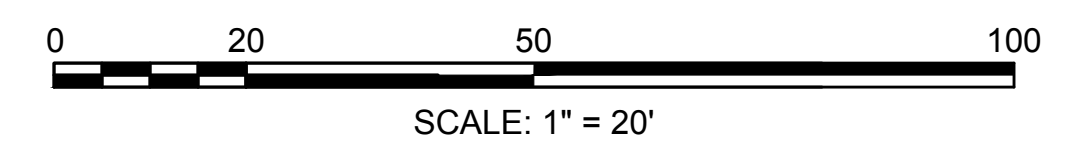
STATE	SHEET NO.	TOTAL SHEETS
MA	28	37

SIGN AND PAVEMENT MARKING PLAN



CONTINUED ON
SHEET NO. 27

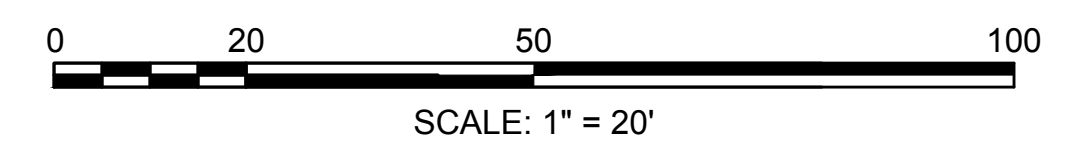
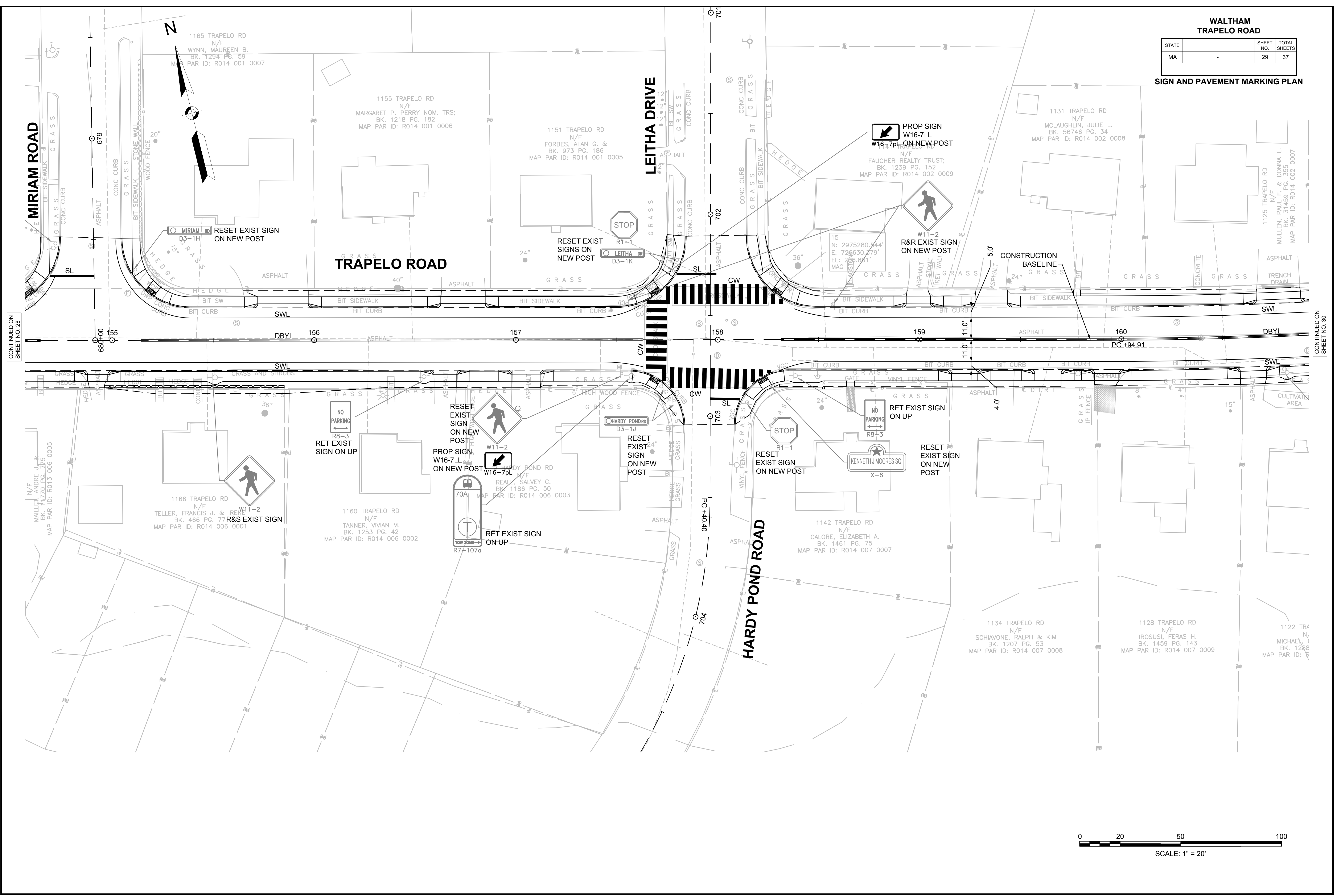
CONTINUED ON
SHEET NO. 29



**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	29	37

SIGN AND PAVEMENT MARKING PLAN



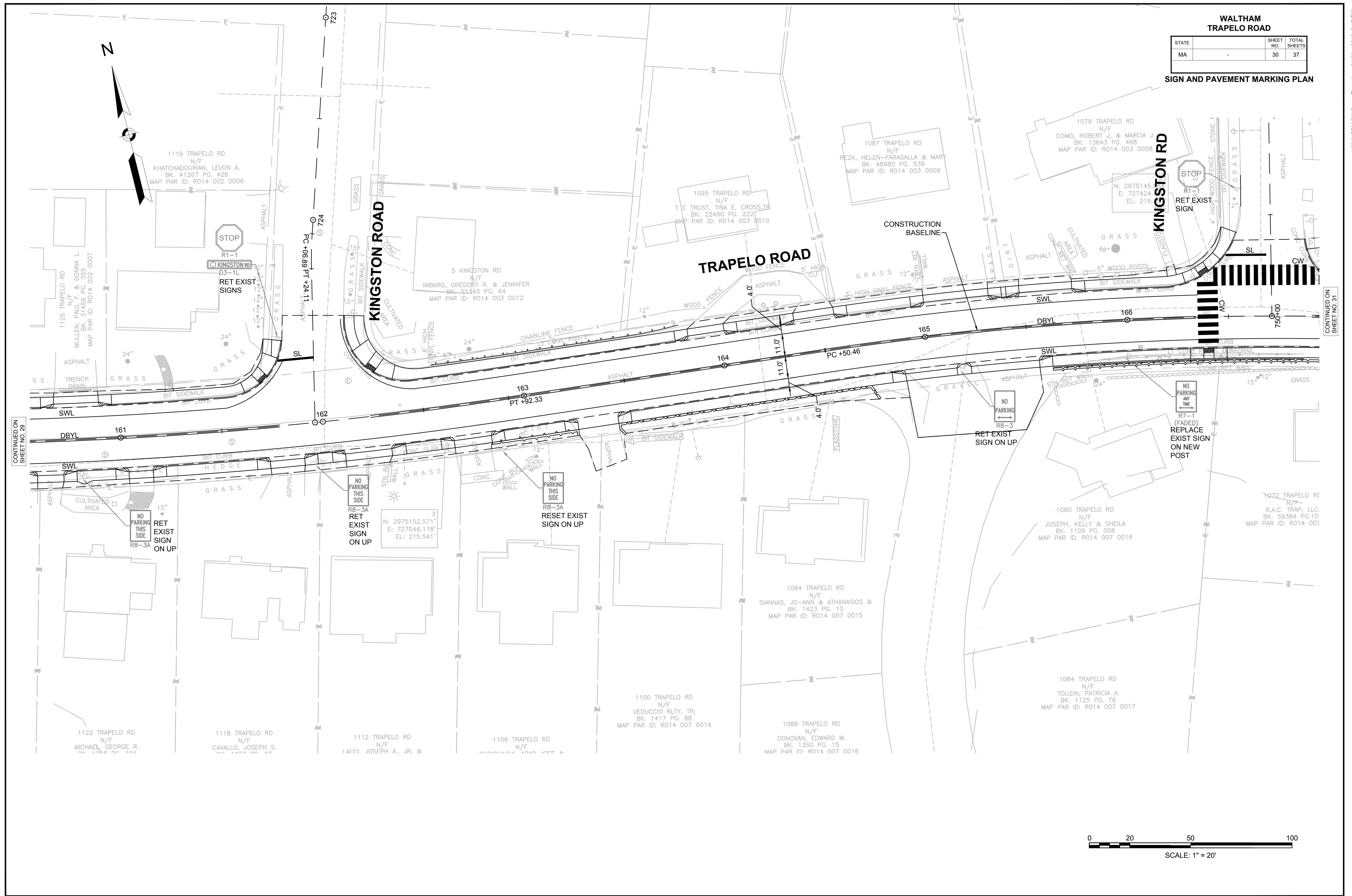
CONTINUED ON
SHEET NO. 28

CONTINUED ON
SHEET NO. 30

**WALTHAM
TRAPELO ROAD**

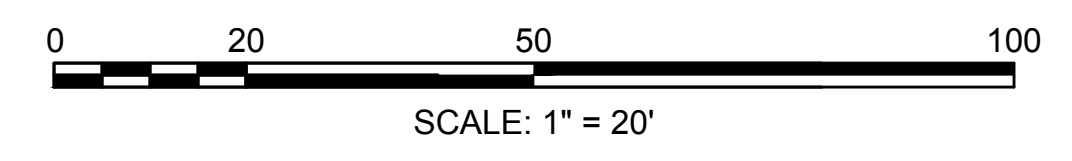
STATE	SHEET NO.	TOTAL SHEETS
MA	30	37

SIGN AND PAVEMENT MARKING PLAN



CONTINUED ON SHEET NO. 29

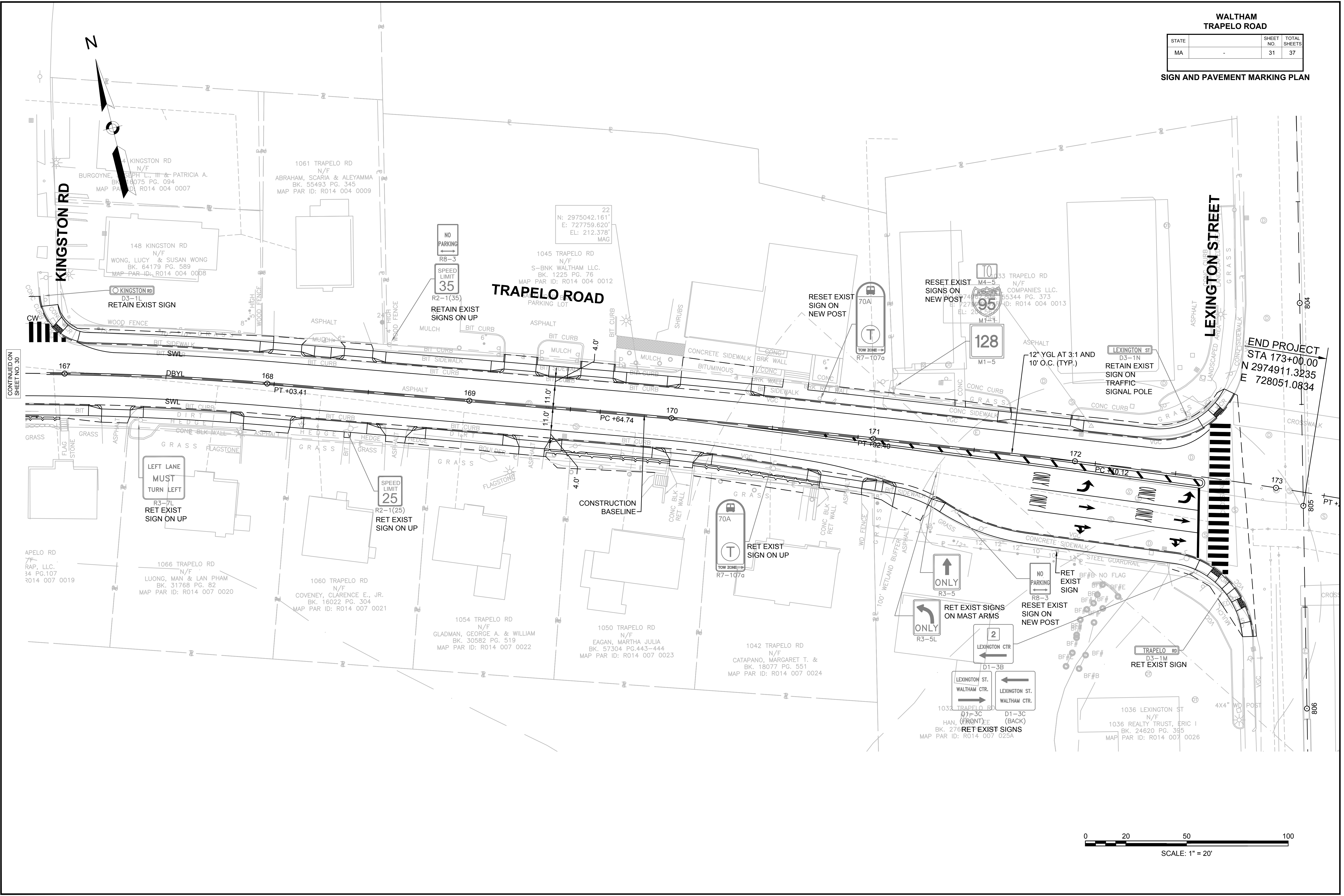
CONTINUED ON SHEET NO. 31



**WALTHAM
TRAPELO ROAD**

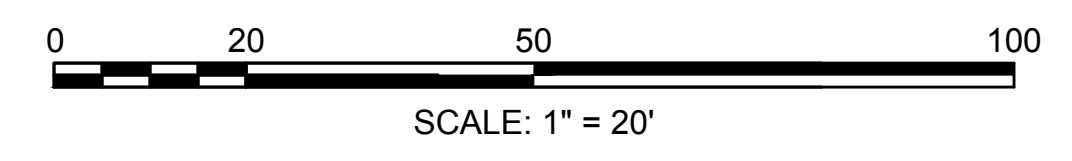
STATE	SHEET NO.	TOTAL SHEETS
MA	31	37

SIGN AND PAVEMENT MARKING PLAN



CONTINUED ON
SHEET NO. 30

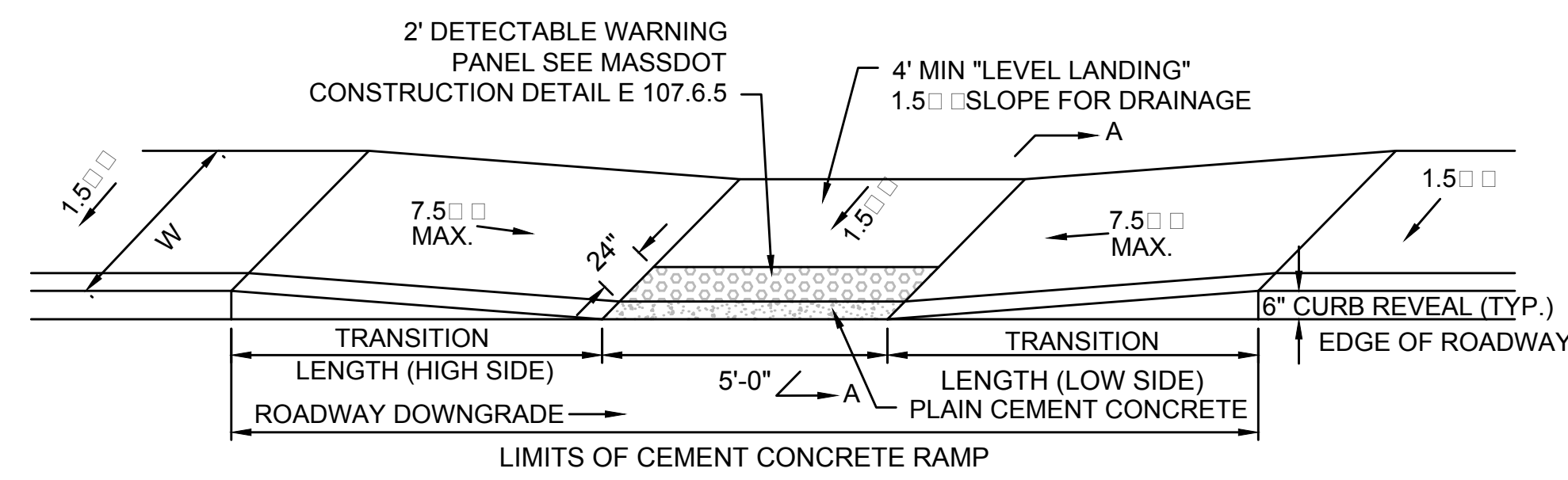
END PROJECT
STA 173+00.00
N 2974911.3235
E 728051.0834



**WALTHAM
TRAPELO ROAD**

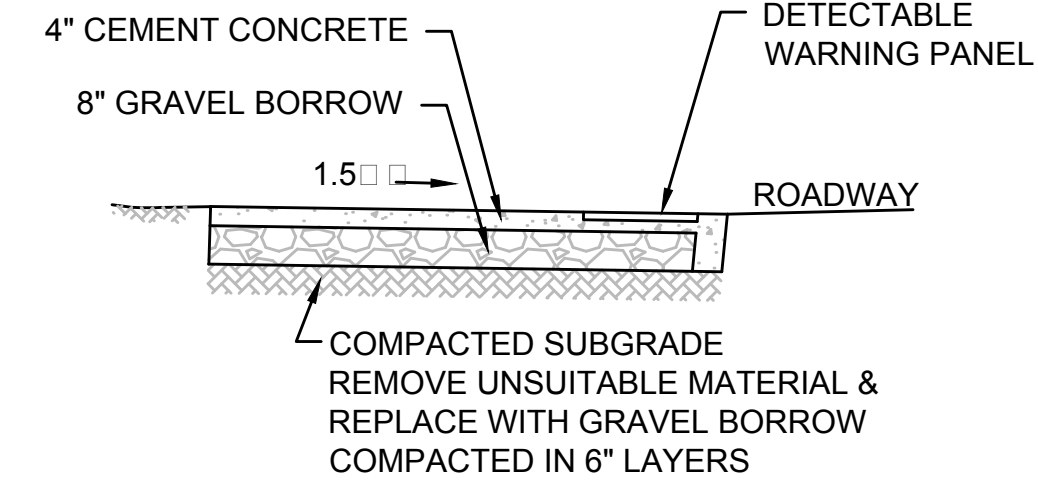
STATE	MA	SHEET NO.	32	TOTAL SHEETS	37
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CONSTRUCTION DETAILS

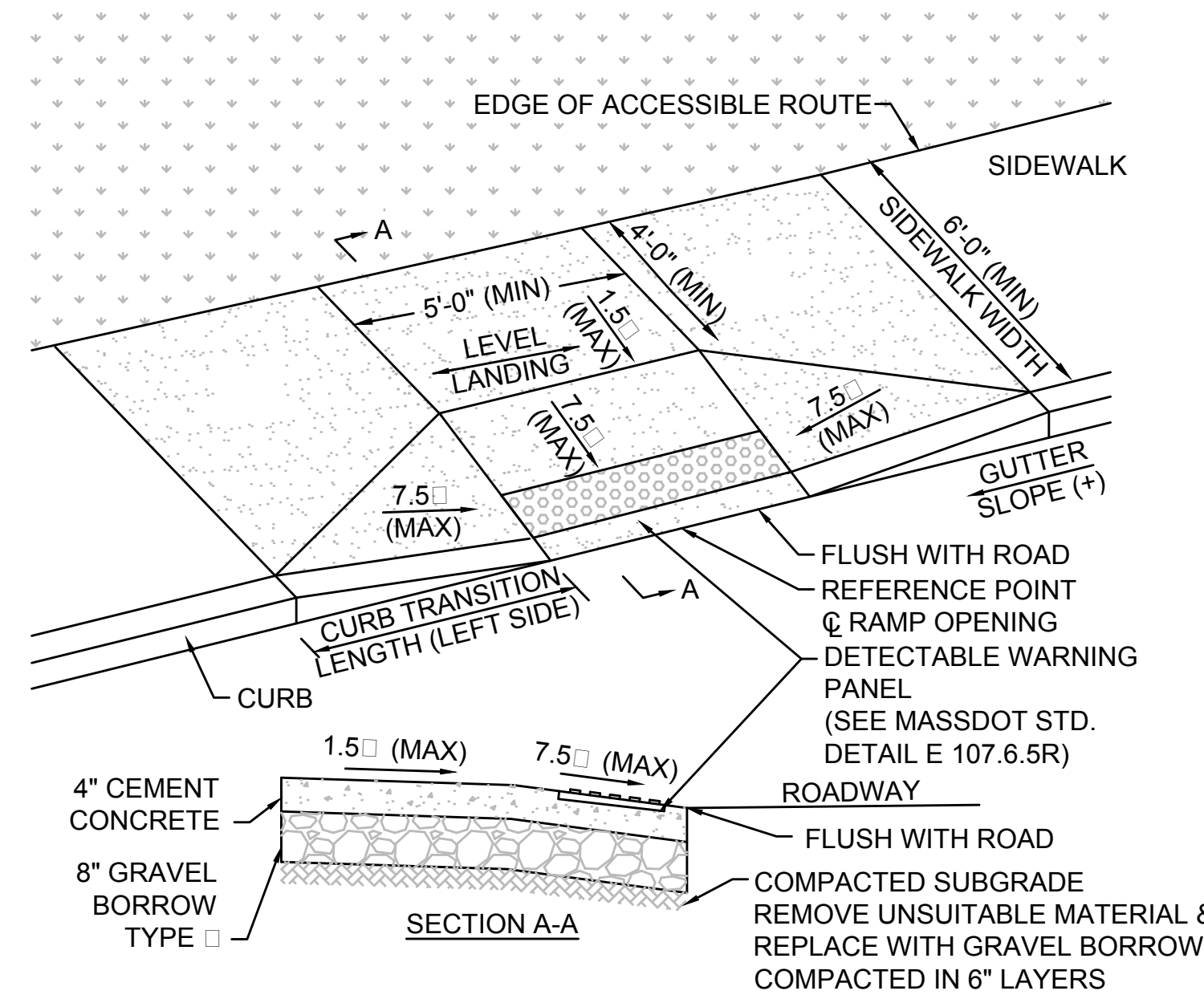


LEGEND
W = SIDEWALK WIDTH
= TOLERANCE FOR CONSTRUCTION (± 0.5')

NOTE:
1. SEE DRAWING E107.2.1R OF THE MASSDOT CONSTRUCTION STANDARDS.

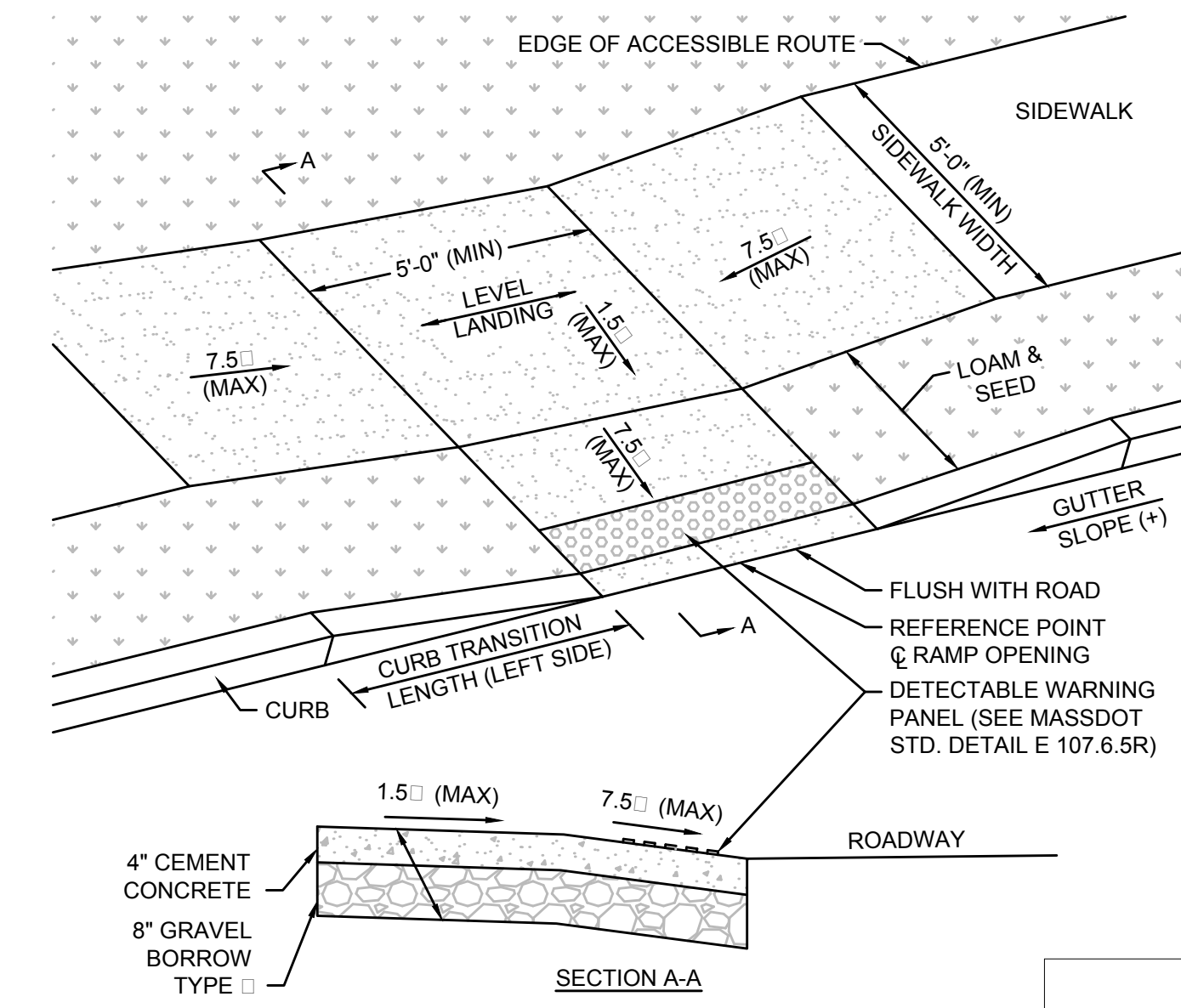


WHEELCHAIR RAMP TYPE A DETAIL
NOT TO SCALE

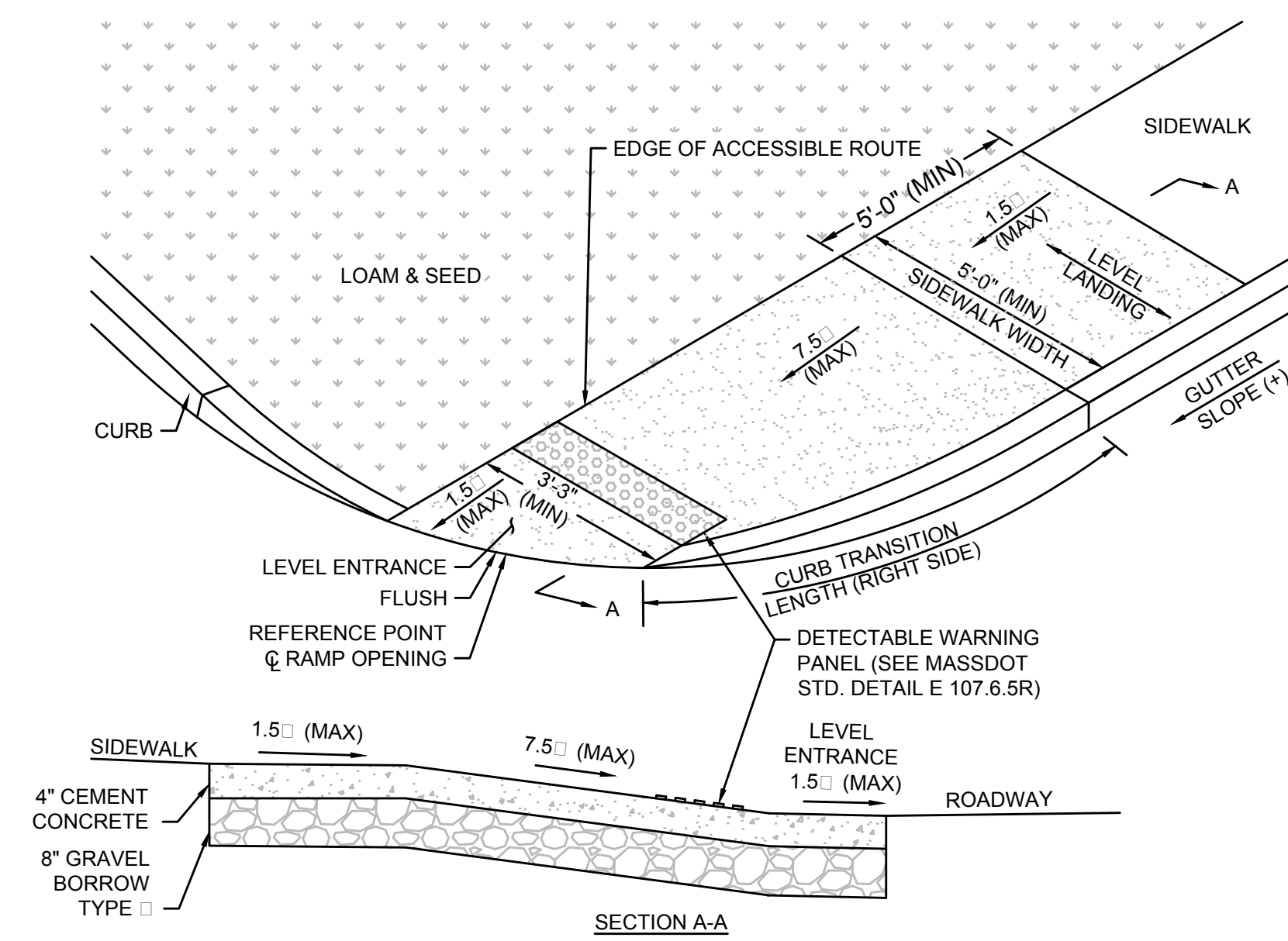


SEE MASSDOT STANDARD DRAWING NUMBER E107.2.0. FOR WHEEL CHAIR RAMP LESS THAN 12'-4" SIDEWALK.

WHEELCHAIR RAMP TYPE B DETAIL
NOT TO SCALE

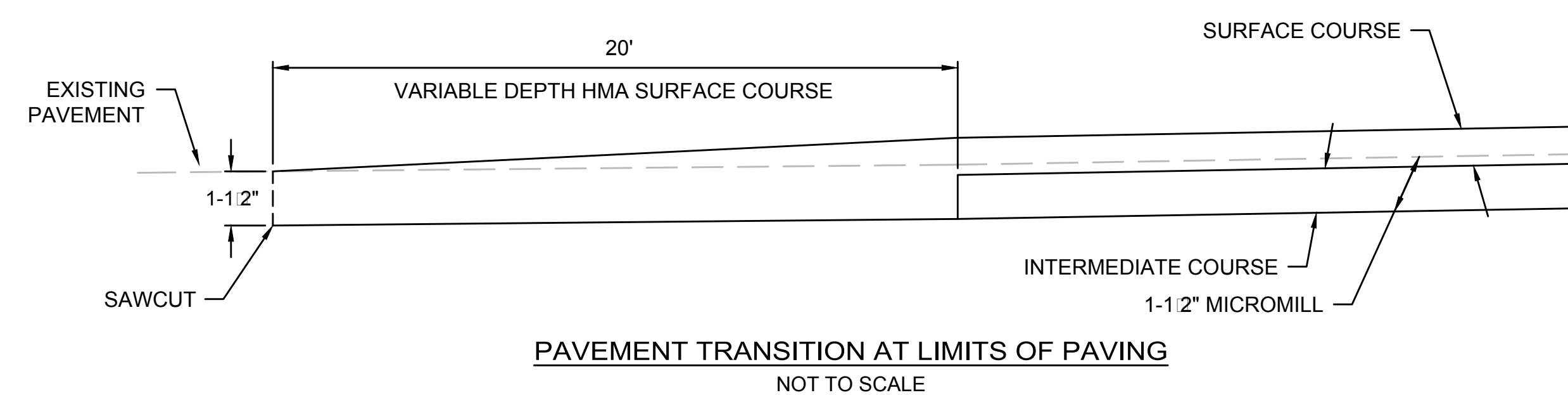


WHEELCHAIR RAMP TYPE C DETAIL
NOT TO SCALE



WHEELCHAIR RAMP TYPE D DETAIL
NOT TO SCALE

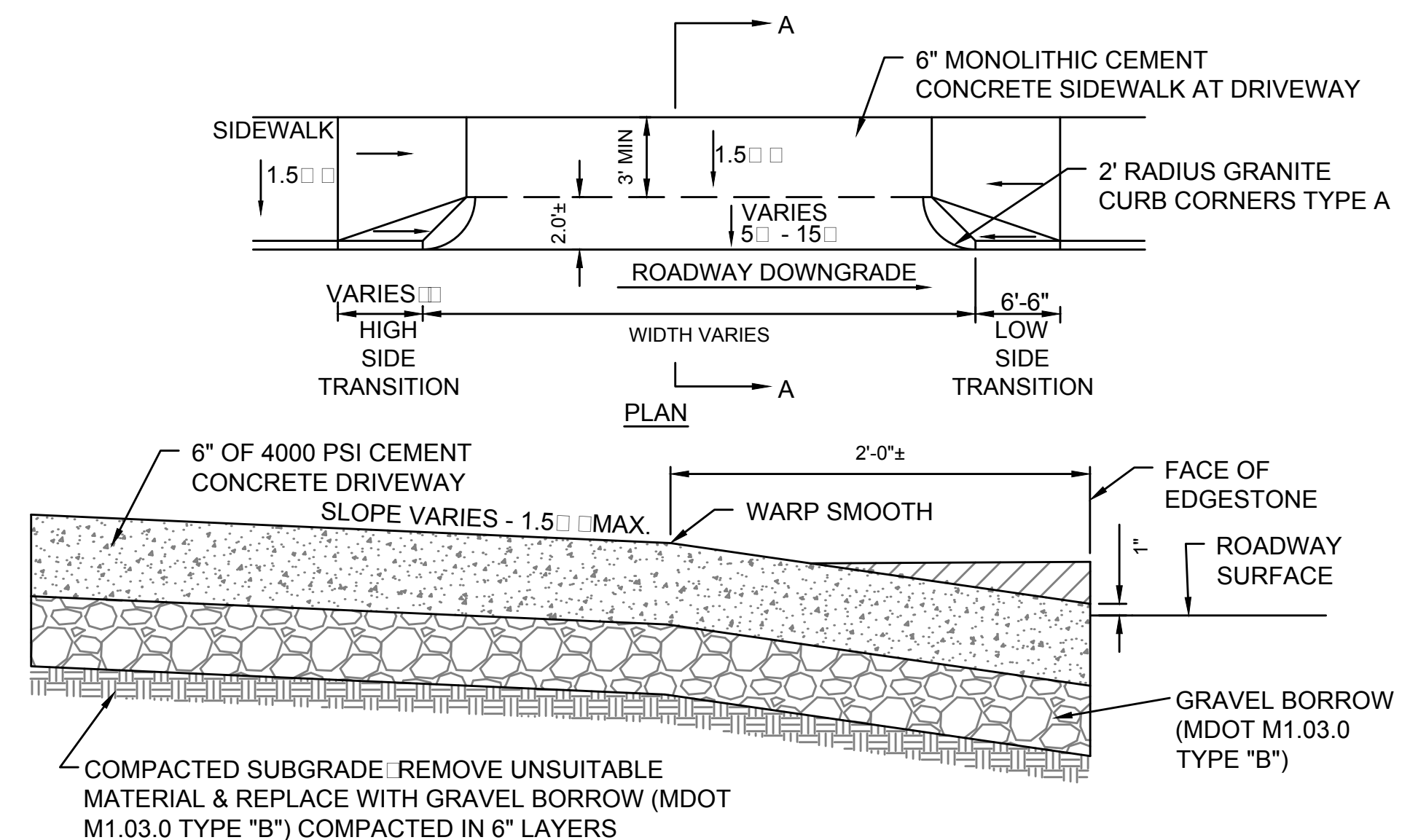
WCR #	STATION	SIDE	RAMP TYPE
1	128+50	L	B
2	128+90	L	C
3	131+90	R	D
4	132+50	R	D
5	136+00	L	C
6	136+00	R	A
7	136+30	R	D
8	137+00	R	D
9	141+00	L	C
10	141+50	L	C
11	143+50	R	A
12	144+00	R	A
13	144+15	R	A
14	144+15	L	C
15	146+30	L	C
16	146+30	R	A
17	149+00	R	A
18	149+00	L	C
19	151+25	R	B
20	151+85	R	B
21	151+70	L	C
22	152+15	L	B
23	154+60	L	A
24	155+15	L	A
25	157+70	R	A
26	158+20	R	A
27	157+70	L	B
28	158+30	L	B
29	161+75	L	B
30	162+25	L	B
31	166+15	R	A
32	166+15	L	A
33	166+40	L	A
34	167+00	L	A
35	172+70	L	A
36	172+75	R	A
37	172+90	R	A



PAVEMENT TRANSITION AT LIMITS OF PAVING
NOT TO SCALE

STATE	SHEET NO.	TOTAL SHEETS
MA	33	37

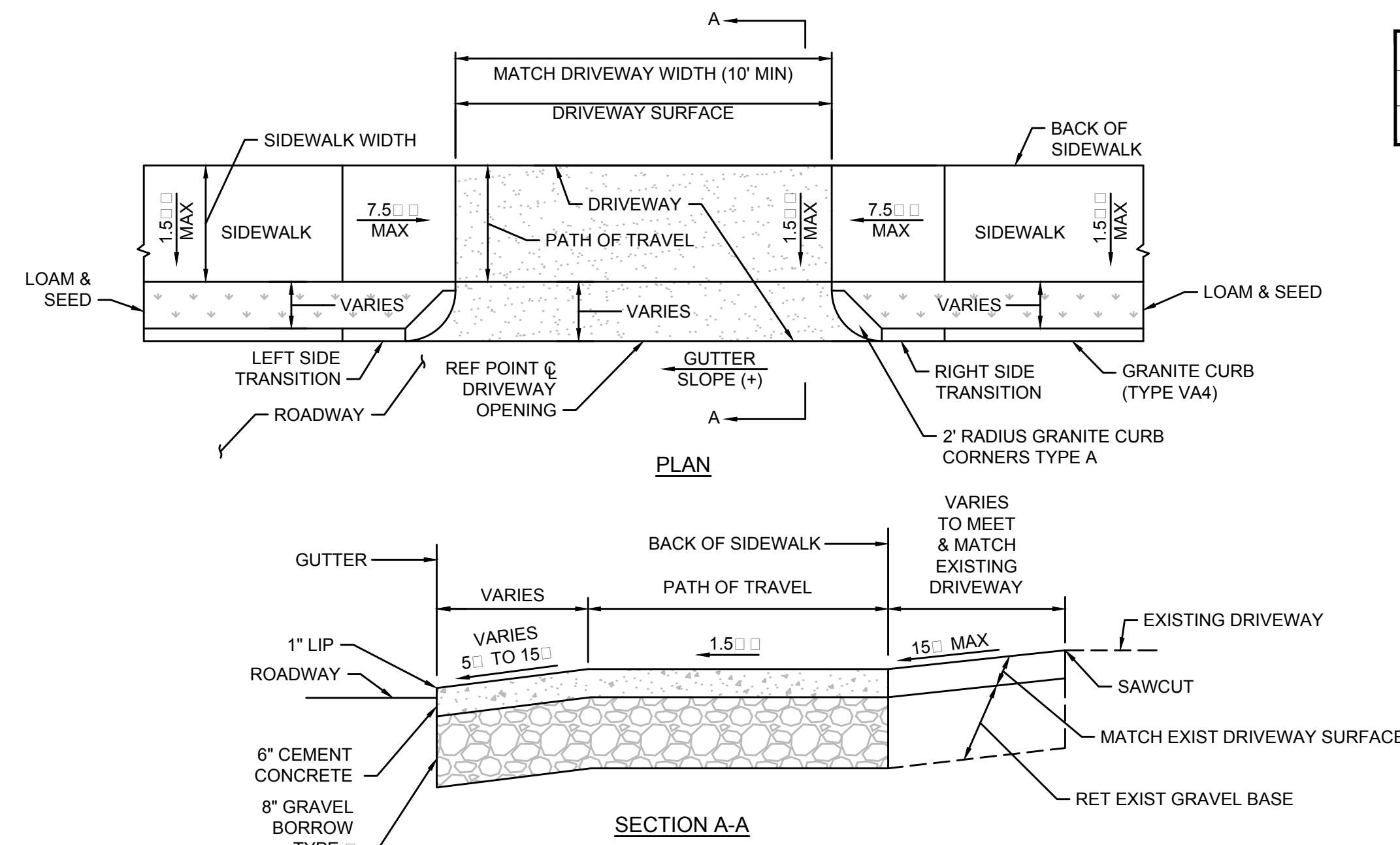
CONSTRUCTION DETAILS



DRIVEWAY TYPE A DETAIL
NOT TO SCALE

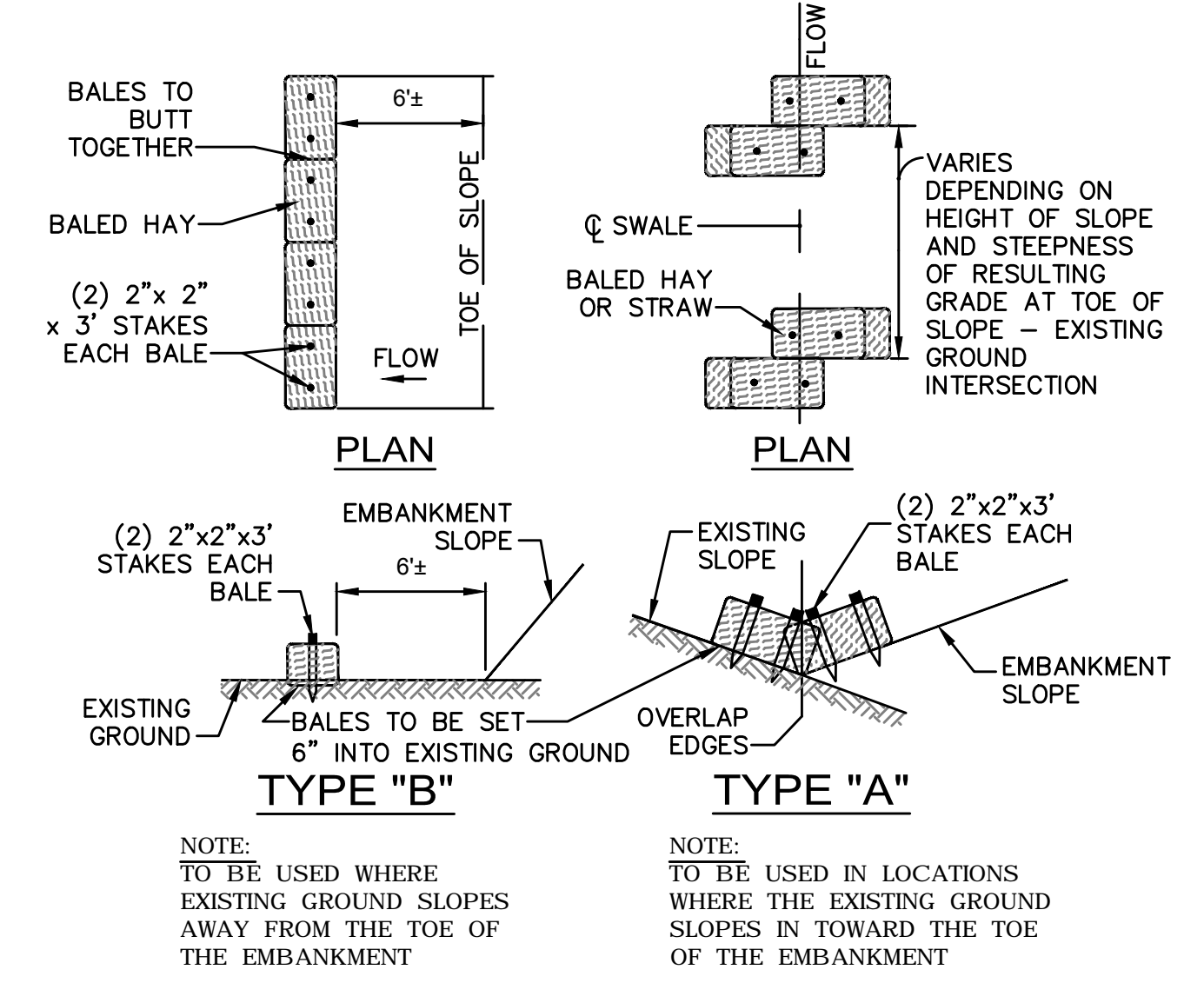
NOTE: ALL PROPOSED DRIVEWAYS ARE TYPE A UNLESS OTHERWISE NOTED ON THE CONSTRUCTION PLANS.

TOLERANCE FOR CONSTRUCTION ±0.5

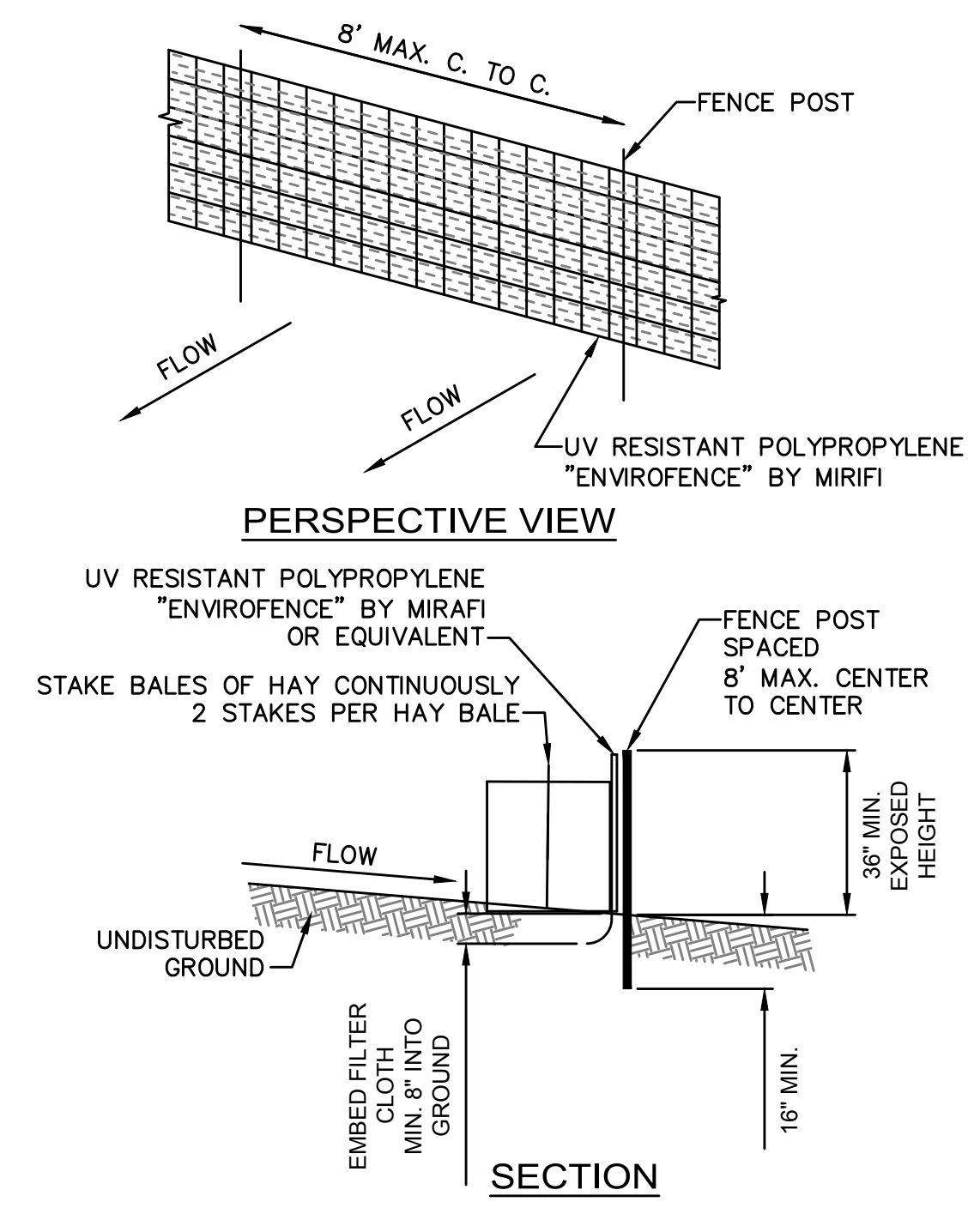


DRIVEWAY TYPE B DETAIL
NOT TO SCALE

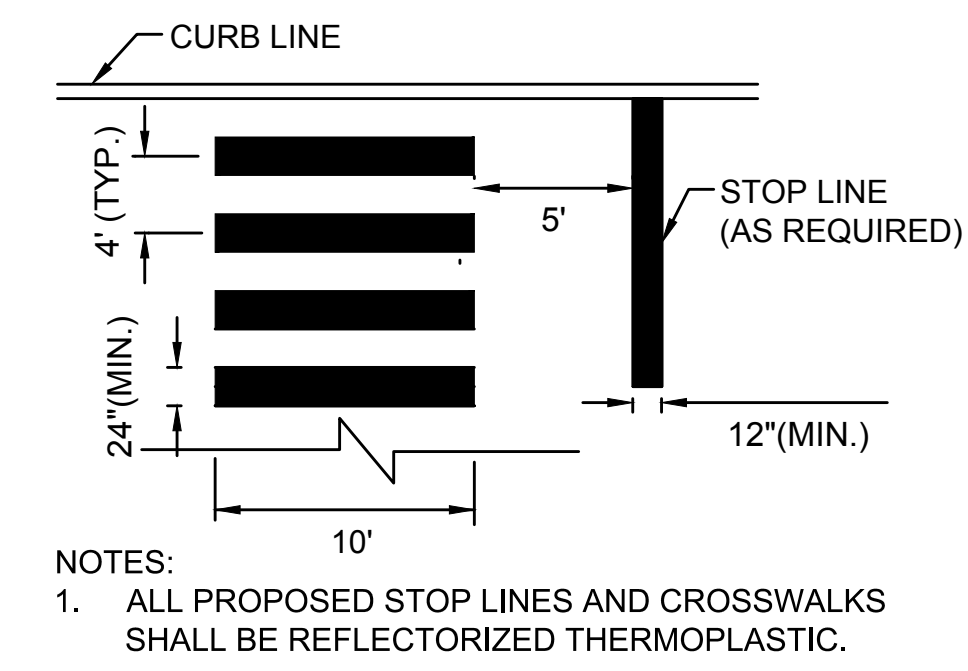
TOLERANCE FOR CONSTRUCTION ±0.5



BALED HAY EROSION CHECKS
NOT TO SCALE

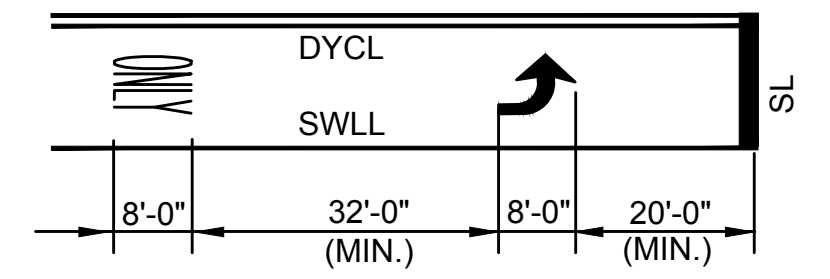


SILT FENCE DETAIL WITH HAY BALE
NOT TO SCALE

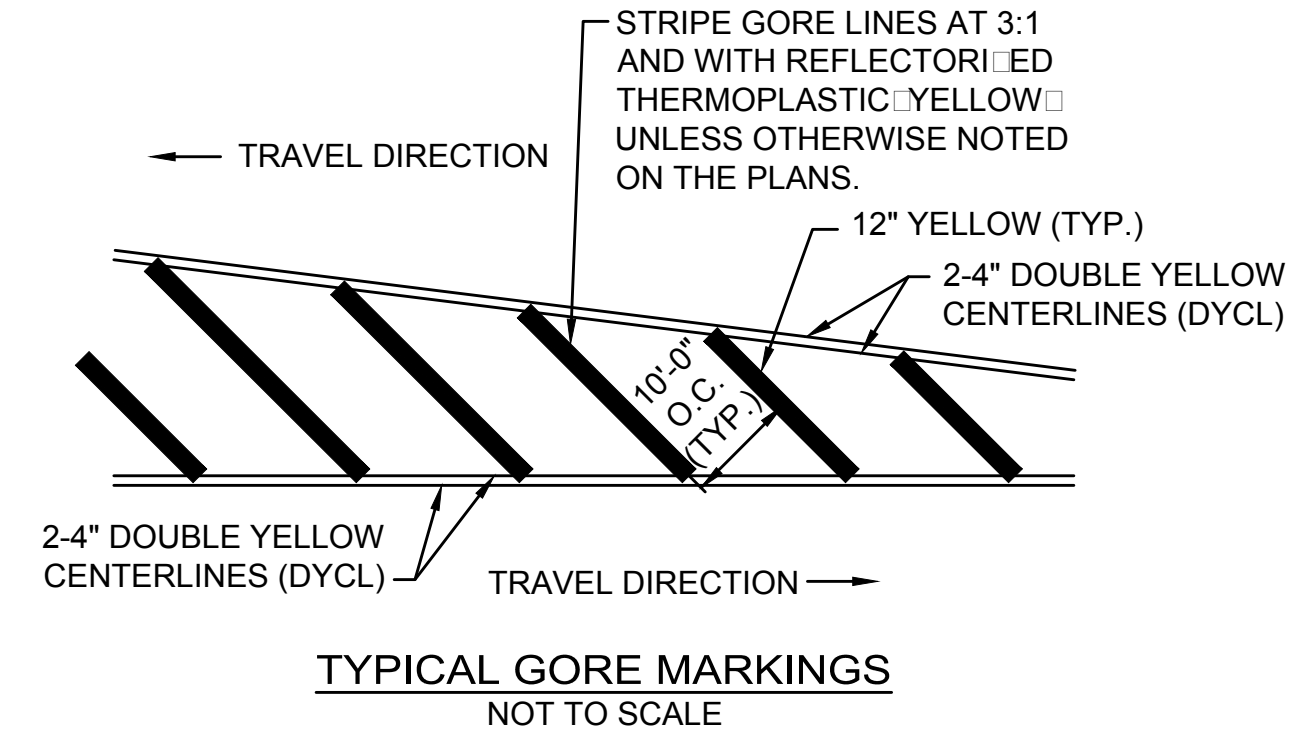


NOTES:
1. ALL PROPOSED STOP LINES AND CROSSWALKS SHALL BE REFLECTORIZED THERMOPLASTIC.

CROSSWALK & STOP LINE
NOT TO SCALE



DIMENSION FOR TYPICAL PAVEMENT MARKINGS
NOT TO SCALE



TYPICAL GORE MARKINGS
NOT TO SCALE

**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	34	37

CONSTRUCTION DETAILS

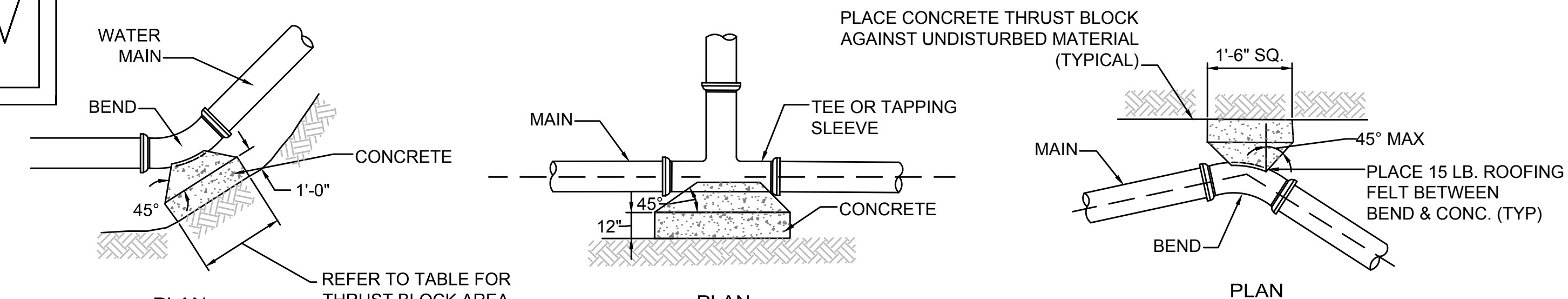
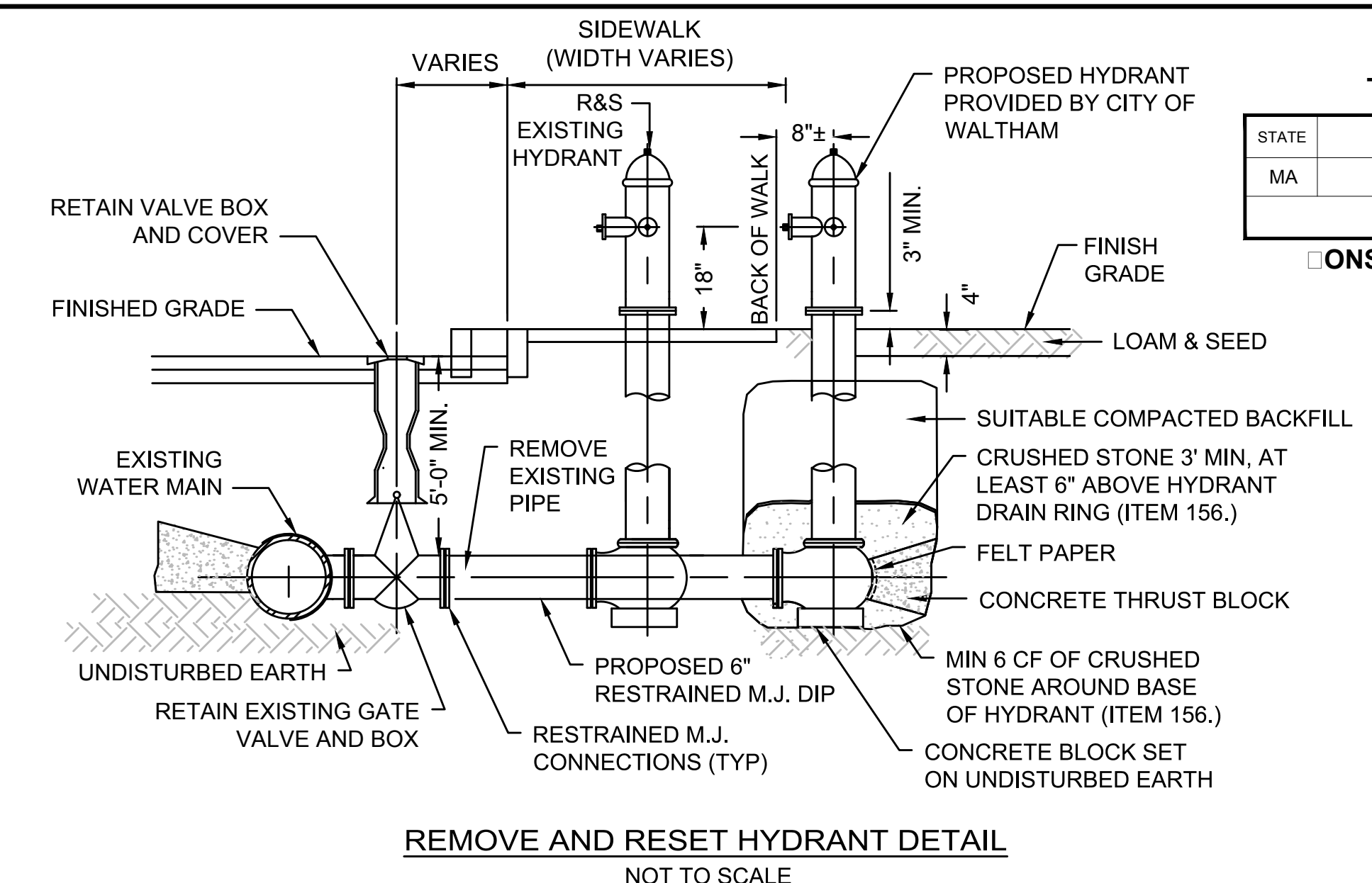
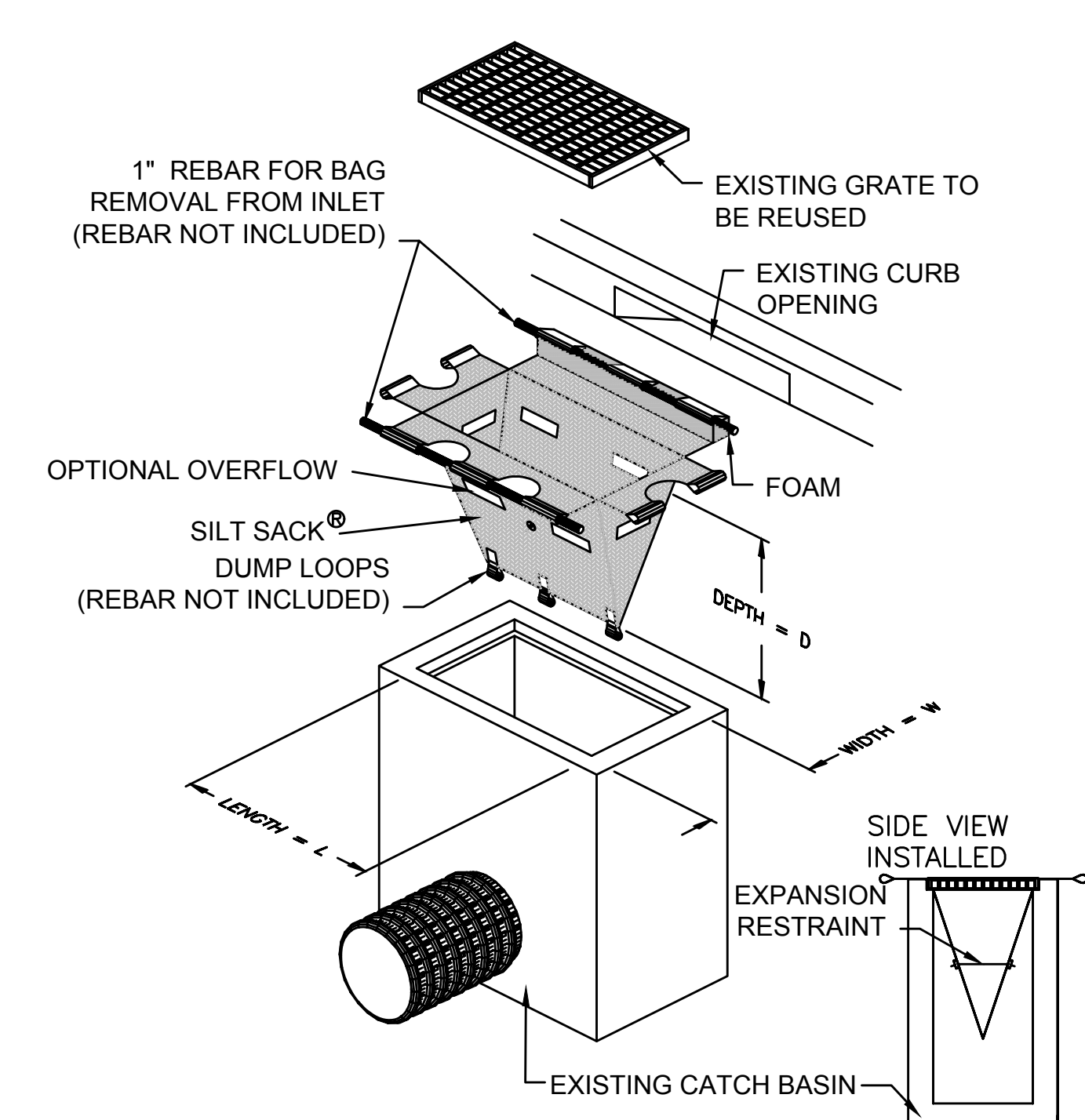
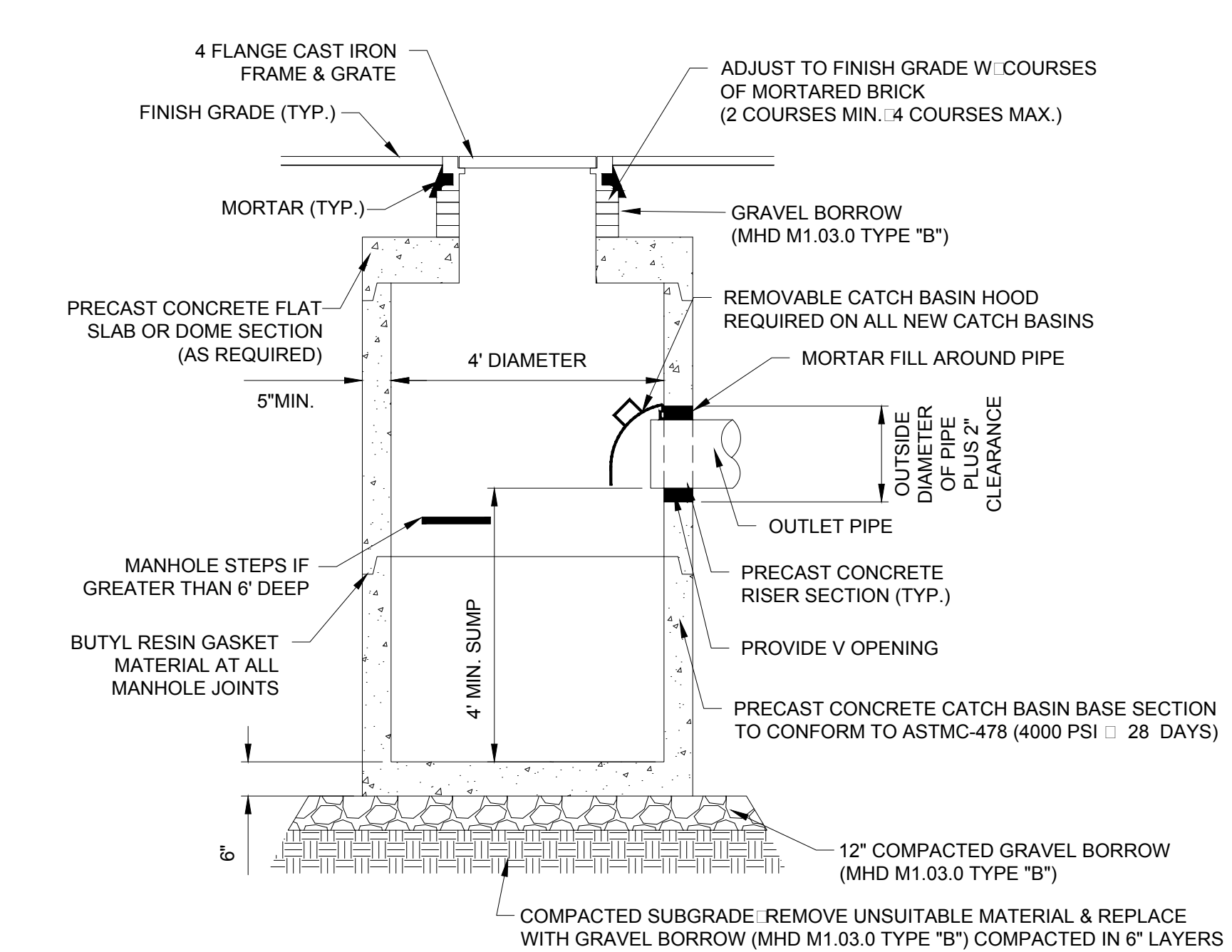
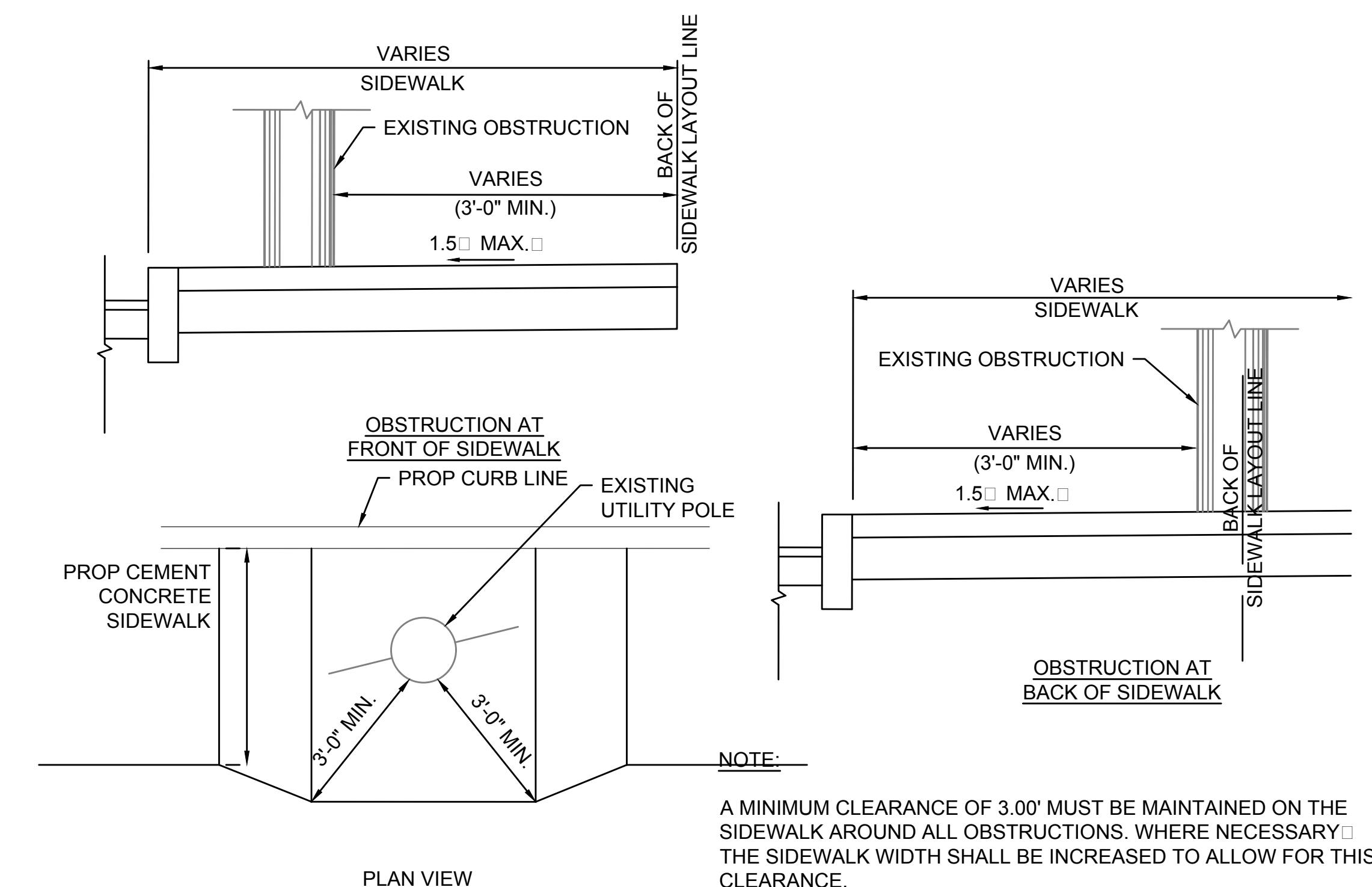
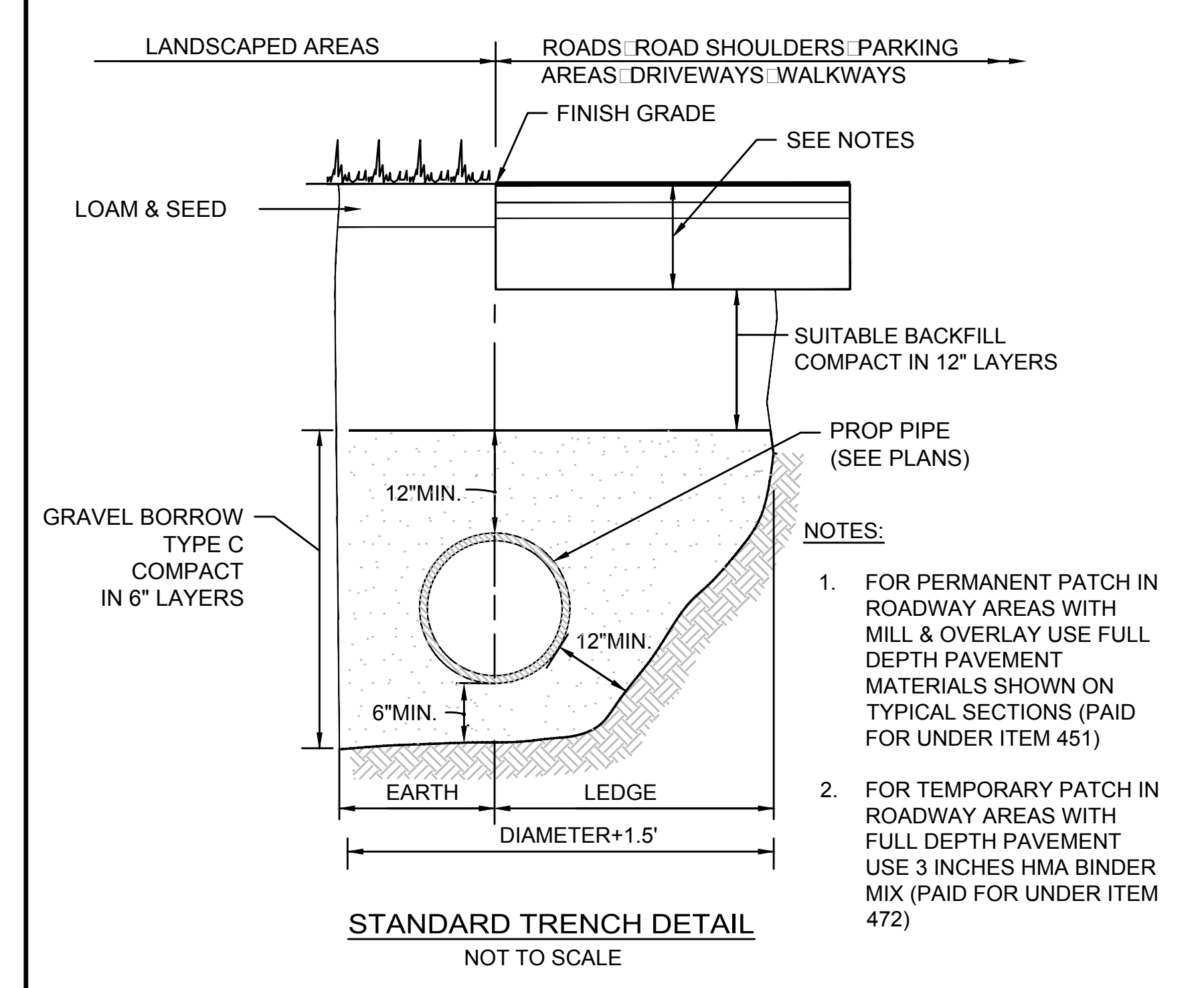


TABLE OF BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR FITTING.

SIZE OF MAIN (INCHES)	90° BEND (S.F.)	45° BEND (S.F.)	DEAD END (S.F.)
8	6.0	3.0	4.0
10 & 12	12.0	7.0	9.0
16	21.0	12.0	16.0

- NOTES:**
- THRUST BLOCKS TO BE USED ON ALL PIPES AT HORIZONTAL AND VERTICAL BENDS GREATER OR EQUAL TO 45° TEES AND DEAD ENDS.
 - FOR FITTINGS WITH LESS THAN 45° DEFLECTION USE BEARING AREAS FOR 45° BEND. BEARING AREAS FOR 45° BEND.
 - BEARING AREAS BASED ON HORIZONTAL PASSIVE SOIL PRESSURE OF 2000 PSF AND A MINIMUM INTERNAL WATER PRESSURE OF 175 PSIG. JOINTS SHALL NOT BE ENCASED IN CONCRETE. BEARING AREAS MAY BE DISREGARDED FOR TRENCHES IN ROCK WHERE THE TOP OF THE ROCK FACE IS AT OR ABOVE THE CROWN OF THE PIPE. HOWEVER, CONCRETE BACKING SHALL BE PLACED BETWEEN THE PIPE AND THE ROCK FACE.

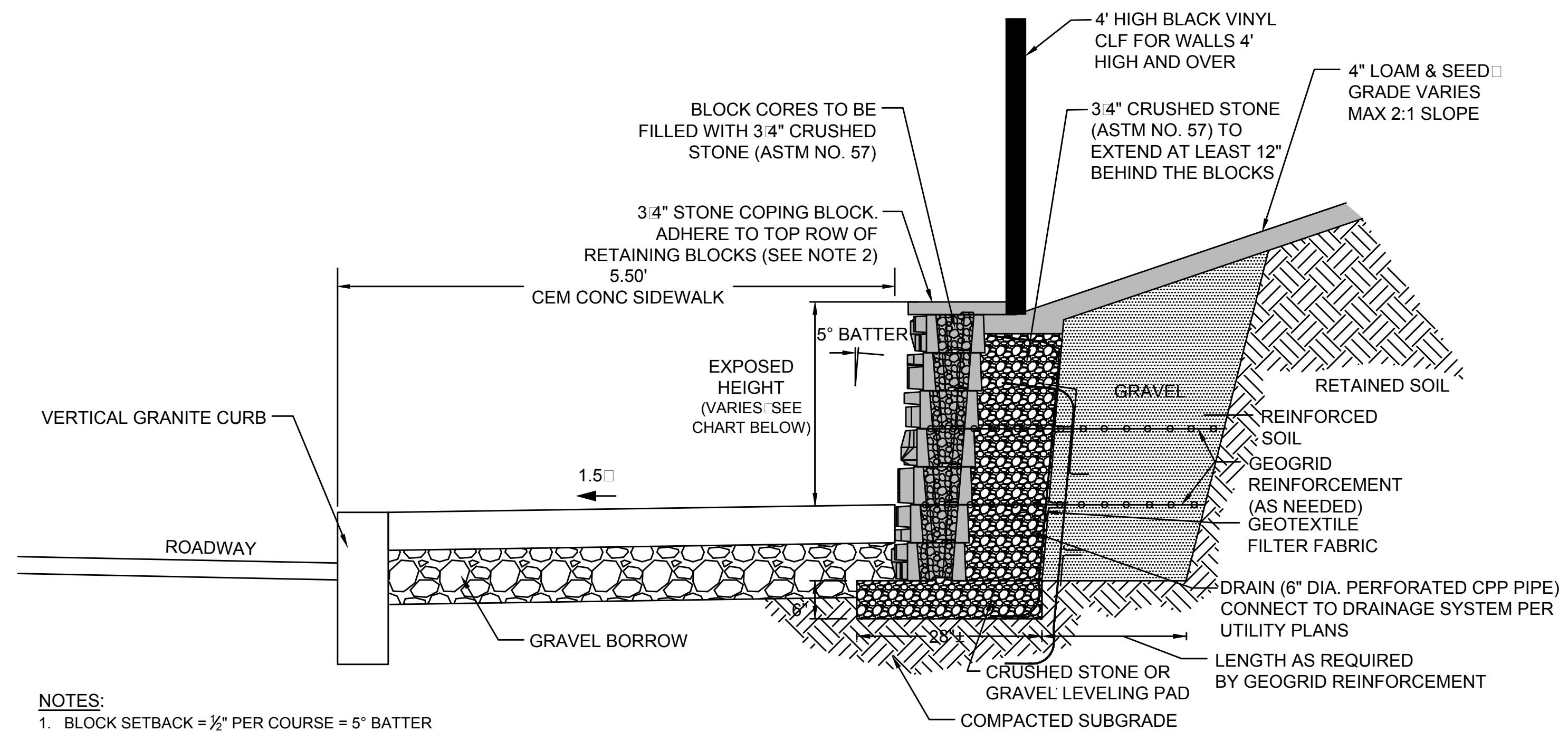


A MINIMUM CLEARANCE OF 3.00' MUST BE MAINTAINED ON THE SIDEWALK AROUND ALL OBSTRUCTIONS. WHERE NECESSARY THE SIDEWALK WIDTH SHALL BE INCREASED TO ALLOW FOR THIS CLEARANCE.

TOLERANCE FOR CONSTRUCTION ±0.5

**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	35	37

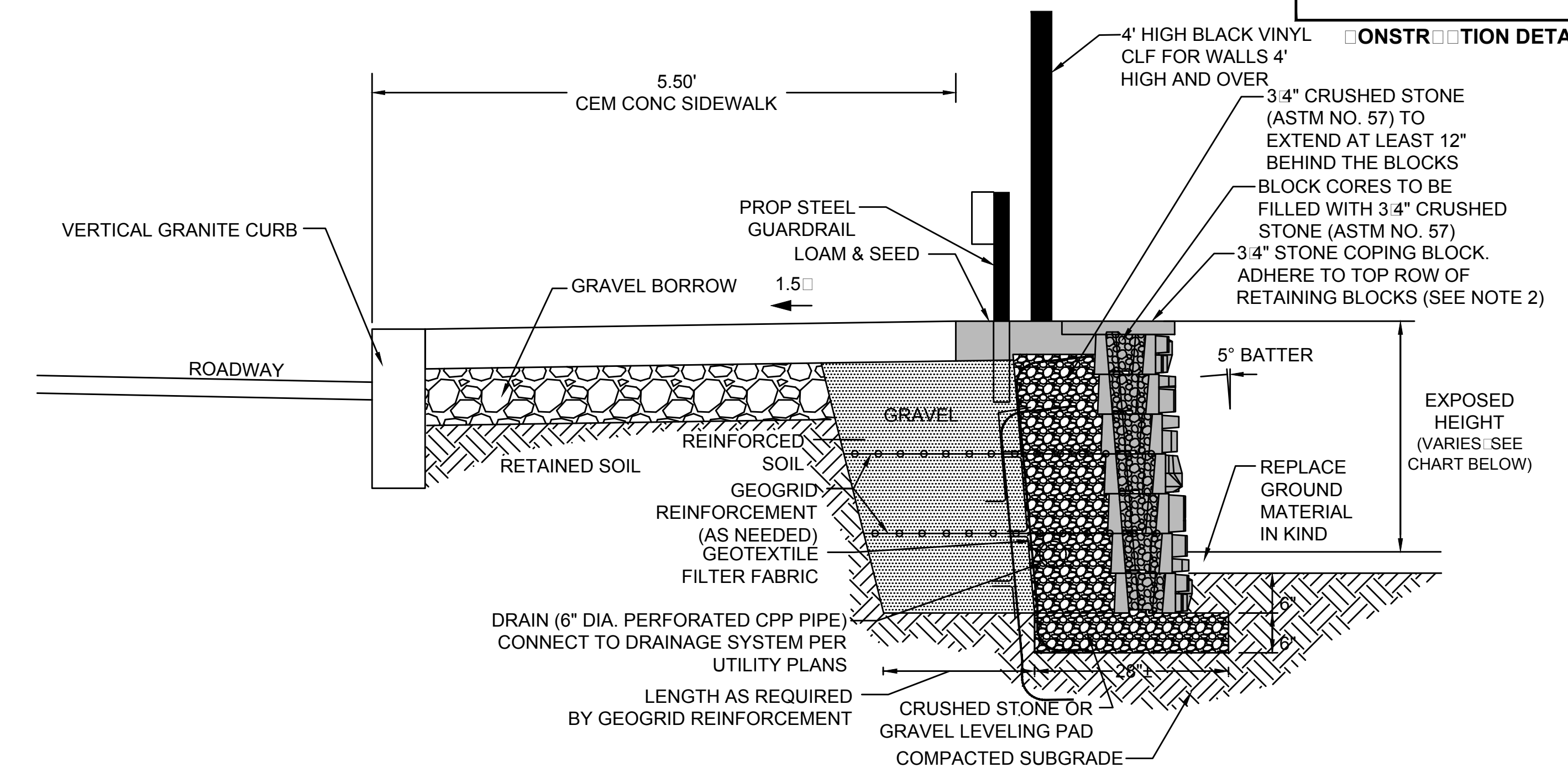


- NOTES:**
- BLOCK SETBACK = 1/2" PER COURSE = 5" BATTER
 - CONSTRUCTION ADHESIVES SHALL BE SPECIFICALLY FORMULATED FOR SEGMENTAL BLOCK WALL CONSTRUCTION AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
 - BLOCKS ARE PRODUCED WITH DIFFERENT FACE TEXTURES. EXPOSED BLOCK FACES WILL VARY THROUGHOUT THE WALL DEPENDING ON INSTALLATION PATTERN.
 - GEOGRID REINFORCEMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR HEIGHT AND PLACEMENT.

MODULAR BLOCK RETAINING WALL ABOVE BACK OF SIDEWALK
NOT TO SCALE

RWALL #	SIDE	START STATION	EXPOSED HEIGHT AT START (FT)	EXPOSED HEIGHT HIGH POINT STATION	EXPOSED HEIGHT AT HIGH POINT (FT)	END STATION	EXPOSED HEIGHT AT END (FT)	NOTES
1	RT	126+45.75	2.00	127+25.00	3.00	127+70.00	1.50	MEET EXISTING BLOCK WALL AT START AND EXISTING STAIRS AT END. HEIGHT VARIES FROM START TO FINISH
2	RT	128+22.00	3.50			128+33.00	3.50	MEET EXISTING BLOCK WALL AT START
3	RT	128+56.76	4.00			129+05.00	4.00	MEET EXISTING WALLS AT BOTH ENDS
4	RT	133+69.50	3.00			133+93.50	3.00	MEET EXISTING WALL AT START
5	RT	134+33.61	2.00	134+75.00	3.50	134+86.90	3.50	MEET EXISTING WALL AT START. HEIGHT VARIES FROM START TO HIGH POINT
6	RT	137+00.00	1.50			137+50.00	2.00	MEET EXISTING STAIRS TO START AND EXISTING TIMBER WALL AT END. HEIGHT VARIES FROM START TO FINISH
7	RT	138+00.00	3.00			138+60.00	3.00	MEET EXISTING WALL AT END
8	RT	152+12.19	1.50			152+48.20	1.00	MEET EXISTING STAIRS AT START AND EXISTING BLOCK WALL AT END
9	RT	154+96.12	1.50			155+85.17	1.50	
10	RT	162+81.28	1.00			163+24.32	1.00	
11	RT	163+44.34	3.00			164+98.80	3.00	HEIGHT VARIES FROM START TO STA 163+44.00. 3.00' EXPOSED WALL HEIGHT FROM STA 163+44.00 TO STA 164+70.00. HEIGHT VARIES FROM STA 164+70.00 TO END.
13	RT	169+38.87	2.50			170+01.00	2.50	
14	RT	170+12.64	2.50			170+76.04	2.50	

- NOTES:**
- WALL HEIGHTS AND LENGTHS PROVIDED ARE FOR ESTIMATING PURPOSES. HEIGHTS SHALL BE ADJUSTED IN THE FIELD IN ORDER TO MEET EXISTING ADJACENT WALLS TO REMAIN AND TO SUPPORT SLOPES AS REQUIRED.
 - THE CONTRACTOR SHALL PROVIDE SAMPLES THAT CLOSELY MATCH THE COLOR AND TEXTURE OF EXISTING ADJACENT WALLS TO REMAIN OR AS REQUIRED BY THE ENGINEER.
 - WALL COLORS AND FINISH SHALL BE APPROVED BY THE ENGINEER AND DIRECTOR OF CONSOLIDATED PUBLIC WORKS PRIOR TO ORDERING WALL MATERIALS.



- NOTES:**
- BLOCK SETBACK = 1/2" PER COURSE = 5" BATTER
 - CONSTRUCTION ADHESIVES SHALL BE SPECIFICALLY FORMULATED FOR SEGMENTAL BLOCK WALL CONSTRUCTION AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
 - BLOCKS ARE PRODUCED WITH DIFFERENT FACE TEXTURES. EXPOSED BLOCK FACES WILL VARY THROUGHOUT THE WALL DEPENDING ON INSTALLATION PATTERN.
 - GEOGRID REINFORCEMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR HEIGHT AND PLACEMENT.

MODULAR BLOCK RETAINING WALL BELOW BACK OF SIDEWALK
NOT TO SCALE

RWALL #	SIDE	START STATION	EXPOSED HEIGHT AT START (FT)	EXPOSED HEIGHT HIGH POINT STATION	EXPOSED HEIGHT AT HIGH POINT (FT)	END STATION	EXPOSED HEIGHT AT END (FT)	NOTES
12	RT	165+61.84	3.00	166+25.00	4.00	167+18.79	1.50	HEIGHT VARIES FROM START TO STA 166+25.00. 4.00' EXPOSED WALL HEIGHT FROM STA 166+25.00 TO STA 166+50.00. HEIGHT VARIES FROM STA 166+50.00 TO END. GUARDRAIL SHALL BE INSTALLED ON TOP OF THE PROPOSED RETAINING WALL AS REQUIRED.

NOTES

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
2. ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
6. CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
7. THE WORK TO BE DONE BETWEEN STATION 171+00 AND STA 173+00 ON TRAPELO ROAD AT THE INTERSECTION WITH LEXINGTON STREET IS REQUIRED TO BE DONE DURING OFF-PEAK HOURS AND SOME TASKS MAY BE REQUIRED TO BE COMPLETED DURING NIGHT-TIME HOURS. THE CONTRACTOR SHALL SUBMIT A SCHEDULE FOR THIS WORK TO BE APPROVED BY THE CITY OF WALTHAM CONSOLIDATED PUBLIC WORKS DEPARTMENT PRIOR TO COMMENCING WITH ANY WORK IN THIS AREA.
8. THE FIRST FIVE PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
9. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
10. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
11. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
12. MINIMUM LANE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
13. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

LEGEND

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- ➔ DIRECTION OF TRAFFIC
- ▨ WORK ZONE
- ▭ TRUCK MOUNTED ATTENUATOR
- P.F POLICE/FLAGGER DETAIL
- ▭ IMPACT ATTENUATOR
- ▭ TYPE III BARRICADE
- ▭ MEDIAN BARRIER
- ▭ CHANGEABLE MESSAGE SIGN
- ▭ MEDIAN BARRIER WITH WARNING LIGHTS
- ➔ ARROW BOARD
- ▭ WORK VEHICLE
- ➔ TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN

THE IDEAL CAPACITY OF A MAJOR HIGHWAY IS GENERALLY CONSIDERED TO BE 1900 PASSENGER CARS PER HOUR PER LANE (PCPHPL). IN WORK ZONES ON A MULTI-LANE DIVIDED HIGHWAY, THE FOLLOWING VOLUME GUIDELINES HAVE BEEN SUGGESTED:

MEASURED AVERAGE WORK ZONE CAPACITIES

NUMBER OF LANES		NUMBER OF STUDIES	AVERAGE CAPACITY	
NORMAL (EXISTING)	OPEN (TO TRAFFIC)		VPH	VPHPL
3	1	7	1,170	1,170
2	1	8	1,340	1,340
5	2	8	2,740	1,370
4	2	4	2,960	1,480
3	2	9	2,980	1,490
4	3	4	4,560	1,520

Source: Dudek, C., *Notes on Work Zone Capacity and Level of Service*. Texas Transportation Institute, Texas A&M University, College Station, Texas (1984)

BY OBTAINING HOURLY TRAFFIC COUNTS FOR A PARTICULAR ROADWAY (WITH A MINIMUM OF A 48-HOUR AUTOMATIC TRAFFIC RECORDER (ATR) COUNT), THIS WILL HELP TO DETERMINE AT WHAT TIMES OF THE DAY OR NIGHT A CERTAIN NUMBER OF LANES MAY BE CLOSED.

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS (ft)		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREEWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

* ROAD TYPE TO BE DETERMINED BY THE ENGINEER.

** DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTC SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (i.e. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

Based on: Table 6C-1 MUTCD LATEST EDITION

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED (mph)	DISTANCE (ft)	SPEED (mph)	DISTANCE (ft)
30	35	20	115
40	50	25	155
50	65	30	200
60	85	35	250
70	105	40	305
80	130	45	360
90	160	50	425
100	185	55	495
110	220	60	570
120	250	65	645
		70	730
		75	820

*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

Source: Table 6C-2 MUTCD LATEST EDITION

CONVENTIONAL ROADWAY— A STREET OR HIGHWAY OTHER THAN A LOW-VOLUME ROAD, EXPRESSWAY, OR FREEWAY.

EXPRESSWAY— A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.

FREEWAY— A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.

LOW-VOLUME ROAD— A FACILITY LYING OUTSIDE OF BUILT-UP AREAS OF CITIES, TOWNS, AND COMMUNITIES, AND IT SHALL HAVE A TRAFFIC VOLUME OF LESS THAN 400 AADT. IT SHALL NOT BE A FREEWAY, EXPRESSWAY, INTERCHANGE RAMP, FREEWAY SERVICE ROAD OR A ROAD ON A DESIGNATED STATE HIGHWAY SYSTEM.

Source: MUTCD LATEST EDITION

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L) (ft)
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN.(15 m) 100 FT(30 m) MAX.
DOWNSTREAM TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) PER LANE

Source: Table 6C-3 MUTCD LATEST EDITION

FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET	SPEED LIMIT (S)	TAPER LENGTH (L) Meter
40 MPH OR LESS	$L = \frac{WS^2}{60}$	60 KM/H OR LESS	$L = \frac{WS^2}{155}$
45 MPH OR MORE	$L = WS$	70 KM/H OR MORE	$L = \frac{WS}{1.6}$

WHERE: L = TAPER LENGTH IN FEET (METERS)

W = WIDTH OF OFFSET IN FEET (METERS)

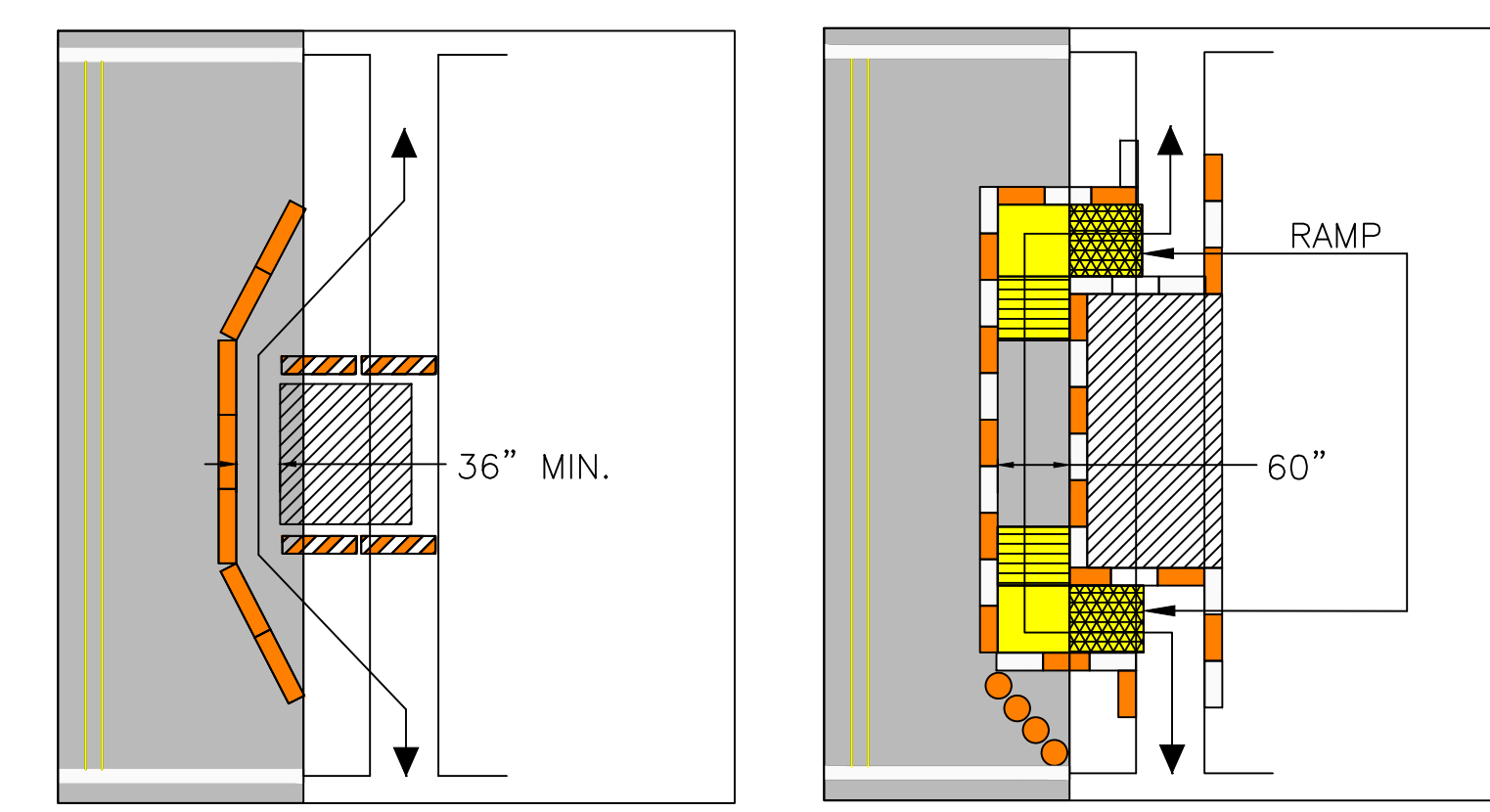
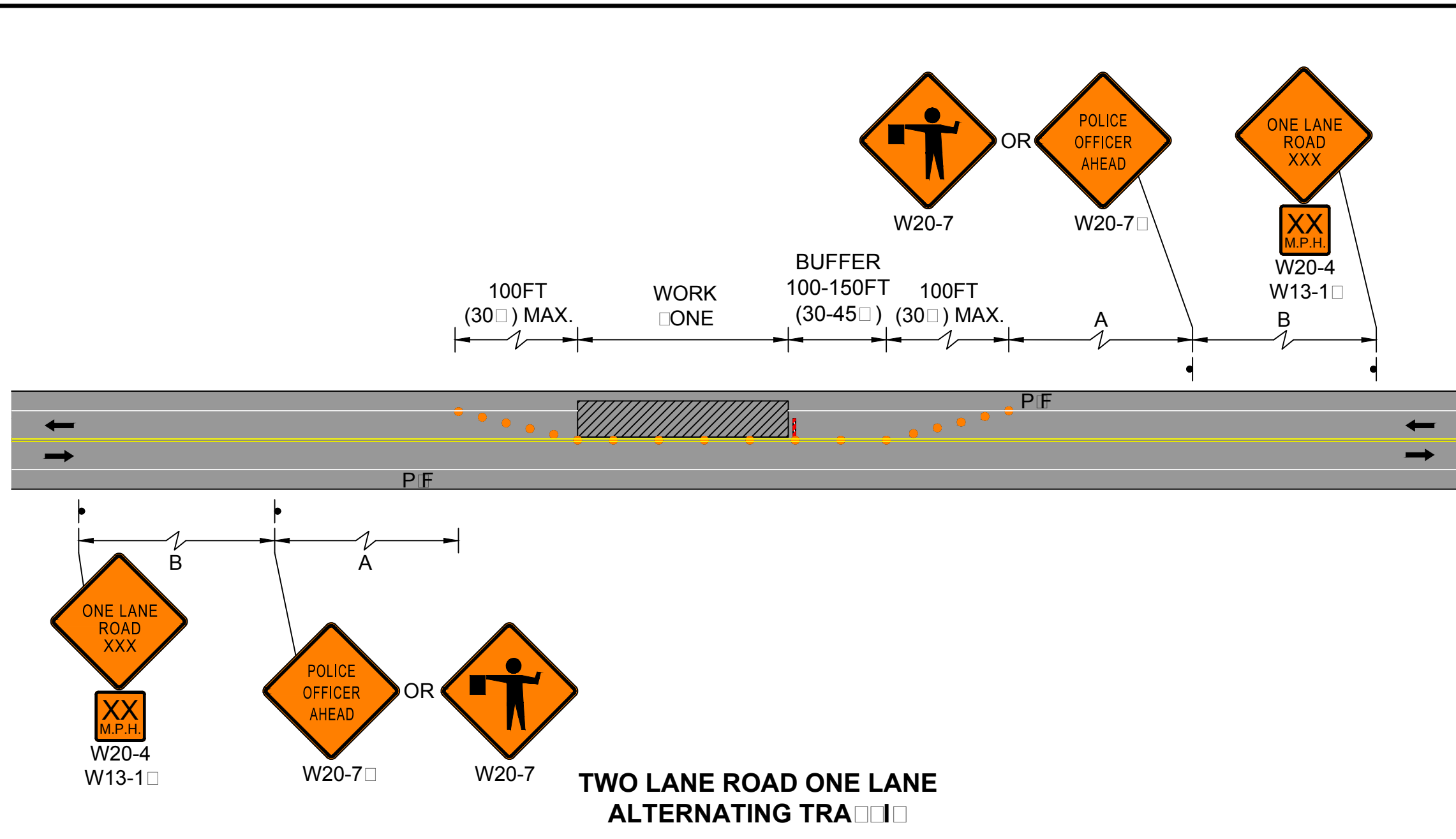
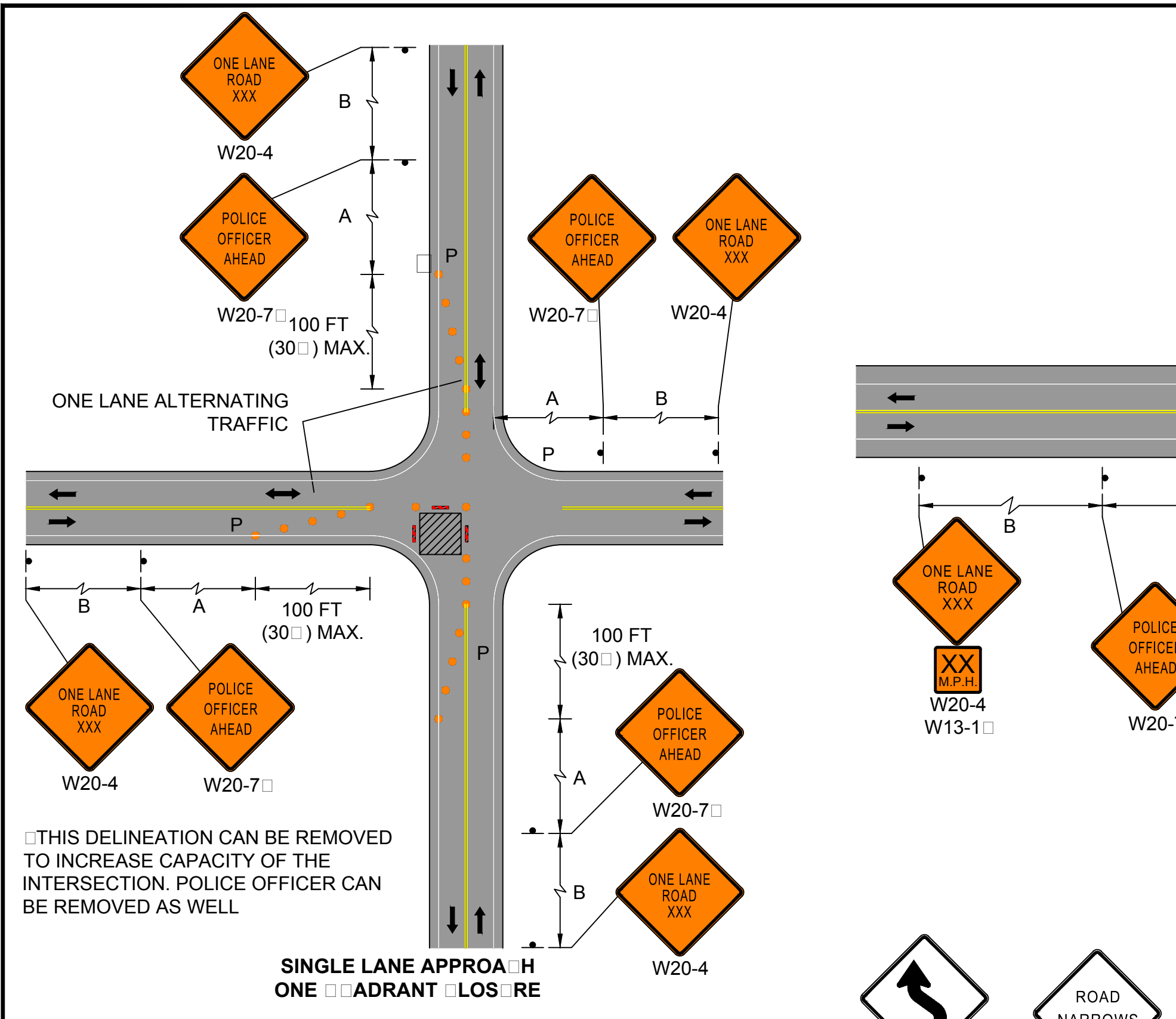
S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH (KM/H)

Source: Table 6C-4 MUTCD LATEST EDITION

**WALTHAM
TRAPELO ROAD**

STATE	SHEET NO.	TOTAL SHEETS
MA	37	37

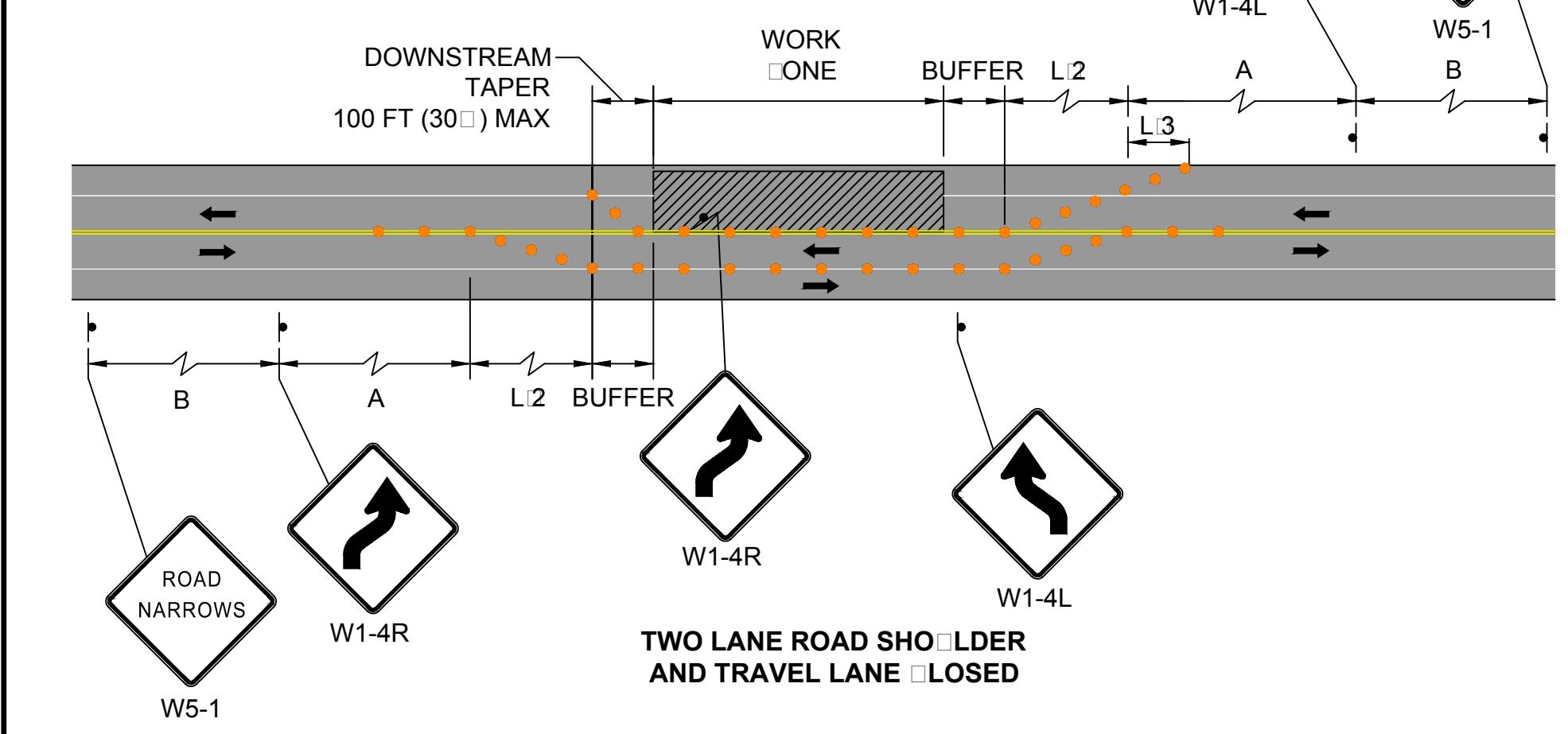
TEMPORARY TRAFFIC CONTROL PLAN



- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, temporary facilities shall be provided and they shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
- A pedestrian channelizing device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
- When used, temporary ramps shall comply with Americans with Disabilities Act (see Figures Ped-1 & Ped-2).
- The alternate pathway should have a smooth continuous hard surface for the entire length of the temporary pedestrian facility.
- The protective requirements of a TTC situation have priority in determining the need for temporary traffic barriers and their use in this situation should be based on engineering judgment.
- Audible information devices should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities.

AUDIBLE DEVICES

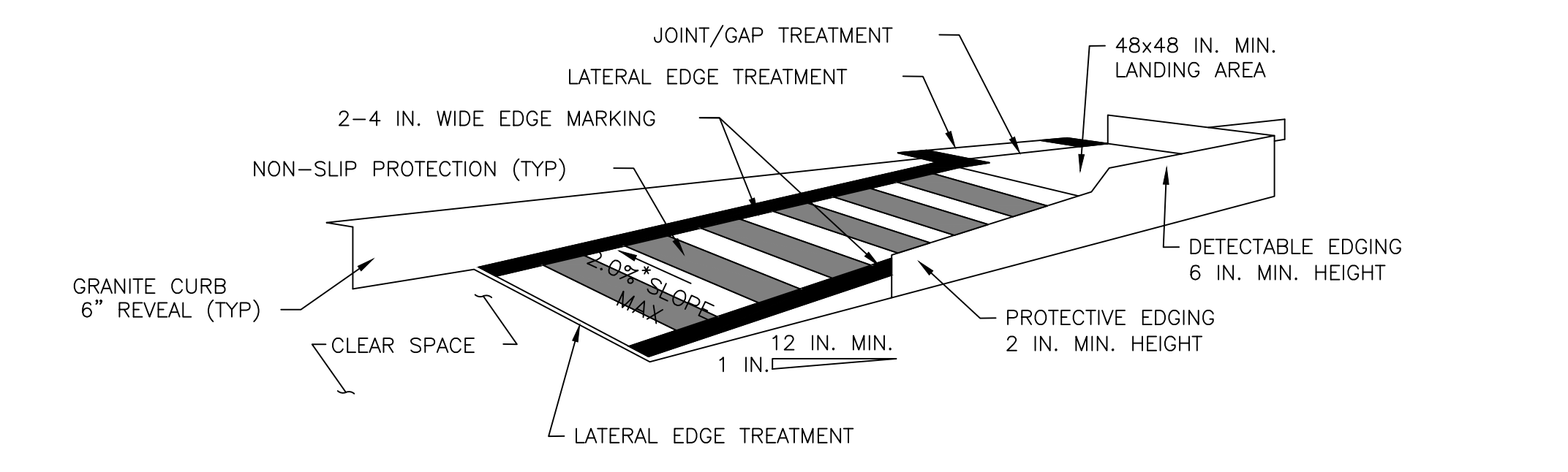
For long term sidewalk closures (at a minimum overnight) a form of speech messaging for pedestrians with visual disabilities shall be provided. Audible information devices such as detectable barriers or barricades and other passive pedestrian activation (motion activated) devices should be considered for these cases. These audible devices can be mountable or stand alone.



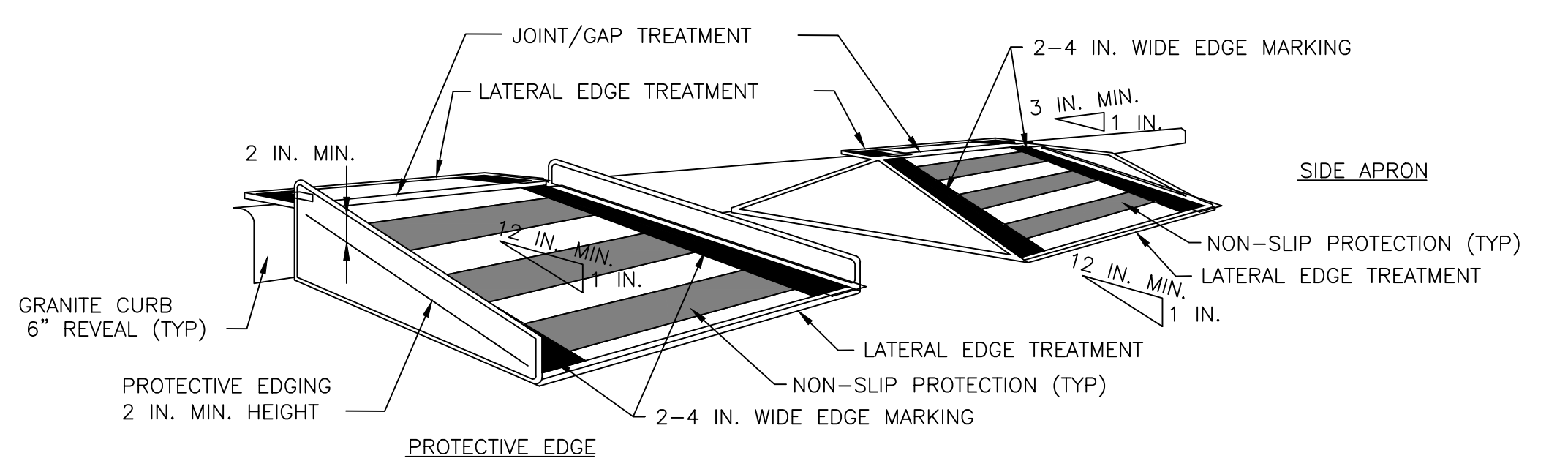
NOTES:

1. CURB RAMP SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMP OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
3. DETECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. CURB RAMP AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
5. CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
6. THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR 2 TO 4 IN. WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.

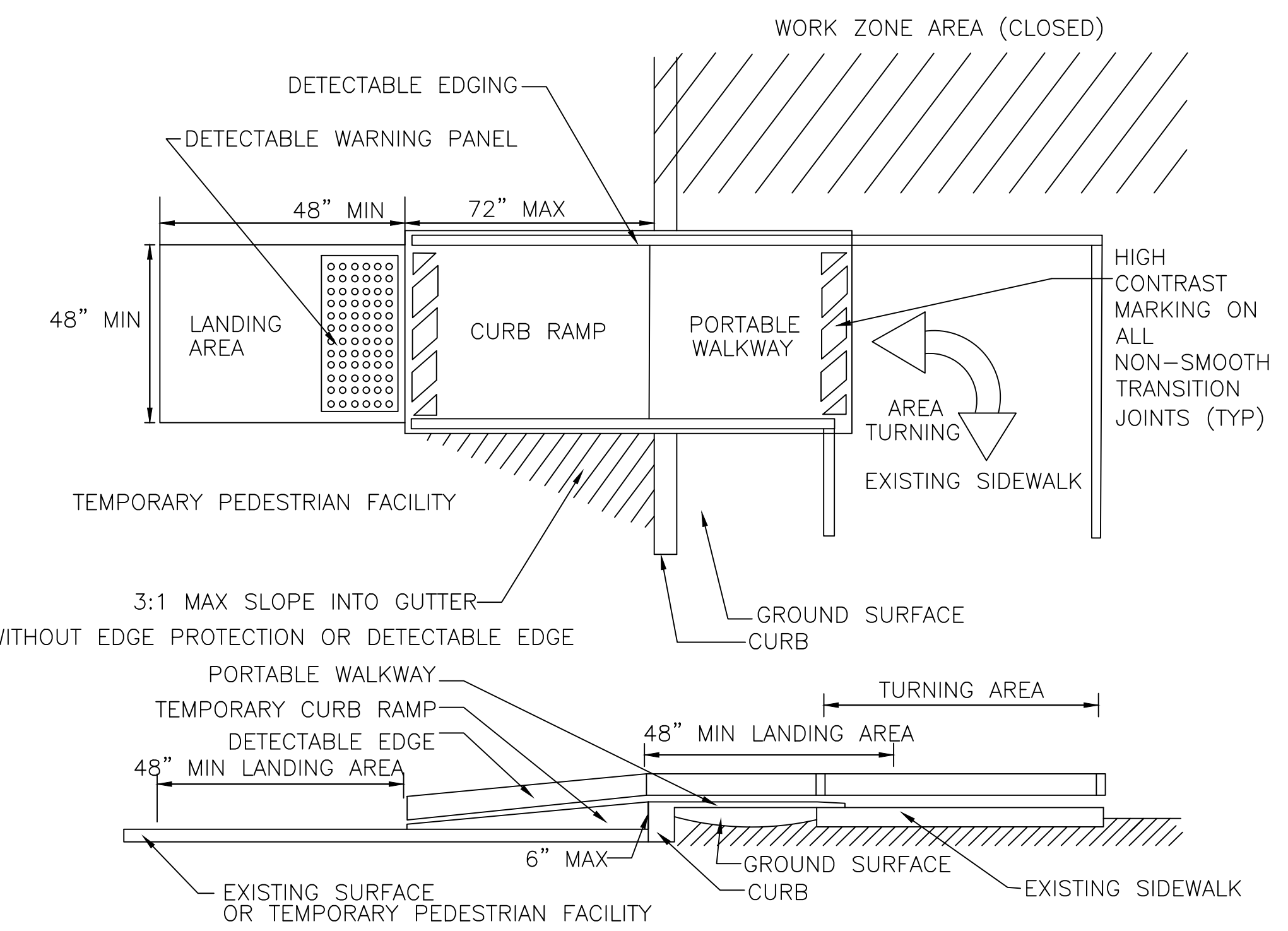
PEDESTRIAN DETAILS



TEMPORARY CURB RAMP PARALLEL TO CURB



TEMPORARY CURB RAMP PERPENDICULAR TO CURB



TEMPORARY CURB RAMP TYPE

PEDESTRIAN DETAILS