

**TOWN OF NEEDHAM
INVITATION FOR BIDS (IFB)
IFB 22DPW163C
16" Water Main Replacement Central Avenue
Addendum #1**

Notice to All Prospective Bidders

Addendum #1 RELEASED (March 10, 2022)
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The following changes are made to the bid documents for IFB 22DPW163C:

The following is a summary of the above referenced project Pre-Bid meeting held on a zoom meeting on March 3, 2022 at 1:00 PM. **Deadline for Questions for 1st Addenda 5:00 PM on March 4, 2022;**

Questions Due by 5:00 PM on March 14, 2022

Please note that some sections of the bid documents reference a 22DPW103C number which are part of this contract IFB 22DPW163C

I. Summary of Pre-Bid Meeting:

- The Contractor must fill in both the number of days for price being held firm and the number of days to complete work on page 3 of the Proposal. The number of days to complete the work is essential for awarding and determines when the Contractor will take over payment of police details and construction inspections per the Contract. The DPW Engineering Division in its contracts typically does not set contract end dates. It is up to the contractor to determine in their proposal the proper schedule to complete the project.
- The Contractor will be responsible for scheduling and canceling police details and setting up detours. Police details are a reimbursable expense. The Contractor will be required to coordinate with the police and submit a proposed schedule and traffic plan for the work prior to any closures.
- Hours of work shall be 7:00 am to 3:00 pm, Monday - Friday, unless approved by the Town Engineer and the Needham Police Department. Off hours work must be requested at least 48 hours in advance.
- The Contractor must submit a list of their subcontractors who will be performing any paid item for Town approval before work on the project starts. The bonding and insurance companies must be notified immediately after the Town's acceptance of the subcontractor(s). The Contractor is solely responsible for all work, including the work of subcontractors.

- The Town Engineer must approve changes to the Contract in writing. A verbal approval will be given and logged into the field inspectors note book as paperwork is processed, as not to slow down the project. Any work that is performed outside of the Contract, without the Town Engineer's permission will not be paid. All change orders must be signed by both the Contractor and the Town Engineer prior to payment for work. Certified payroll is required with all requests for payment.
- The Town will not accept "standard" AIA Bonds. The acceptable performance and payment bonds are provided on page 21 and 69 through 72 for the Contractor's use. The Contractor may use a similarly worded bid bond that is provided in Section 2.
- Barrels, barricades, traffic cone, and signage are incidental to the work per the Contract. Item 9.20.2a is for MassDOT permit only (DOT permits require message and arrow boards not covered in the Contract). This is not a MassDOT permit project. Under the Town specification, traffic control devices and signage are incidental to the work. Barrels and barricades will be reflectorized and laminated with flashing lights that the Contractor shall provide. A minimum of 25 devices will be required per 250 lf of impacted roadway. The Engineering Division has some barrels that can be borrowed, if needed, but the Contractor will be responsible for them.
- Contractors are reminded to read Section 3 Article XLII Guaranty. The Town has additional requirements during the guarantee period that contractors need to be aware of.
- Contractors should not assume if there is a quantity for an item that it will be used. The town will expect you to perform the work at the price you bid for that item.
- Any item with quantities of zero may be left blank.
- Contractors are advised that they are required to manage their storage and staging locations so that the street has access for the residents and emergency vehicles. If the contractor negotiates staging or storage locations on private property an in writing agreement with the owner is required.
- The contractors are encouraged to visit the site.
- Contractors' bids are due Thursday, March 17, 2022 at 1 PM at PSAB, 500 Dedham Avenue, Needham, MA 02492, first floor admin office.

- Wellesley Municipal Light & Power will need to be coordinated with and they may need to assist at some point due to the proximity of the electrical conduit.
- Buffer zone wetland
- Coordinate the Central Avenue portion of the project during the summer because school is not in session.
- RTS to remain open and accessible throughout the project duration.
- Attached Stamped copies of the plan (no modifications from previous unstamped set)

Questions & Answer:

1. It is extremely difficult to get pipe, especially the larger pipe, are there any penalties for not meeting the projected contract schedule?

Answer: The Town has no penalties or rewards written into the contract. The contractor may be responsible to pay for the inspectional services and police details beyond the contract date. Due to the ongoing economic and supply issues, we are open to extensions provided that proper communications are made with the Town.

2. Is there a lay down area in the RTS?

Answer: There may be, but that will need to be coordinated with the RTS Supervisor, Greg Smith (781) 455-7584. Any lay down area agreement made will need to be in writing and a copy provided to the Engineering Division.

3. Is there an escalation clause on the ductile iron pipe?

Answer: There is no escalation clause for ductile iron pipe.

4. Is there an item for bituminous top course in this contract? Is permanent pavement required?

Answer: There is a payment item for bituminous top course. This information is contained in the bid package. Please see page 24 of the specifications Item 5.8.5d.

Revision to the Contract Specifications:

Addendum 1 was prepared in consultation with:
David Kelly, Survey Party Chief
Tom Ryder, Acting Town Engineer
BETA-Inc.

Bidders are reminded that they must acknowledge receipt of any and all Addendums in section 2 on page 3.

The Town reserves the right to reject any and all bids as determined to be in the best interest of the Town and to waive minor informalities.

TOWN OF NEEDHAM, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
CENTRAL AVE WATER MAIN REPLACEMENT
CONTRACT NO. 22DPW103C

FEBRUARY 2022



SELECT BOARD

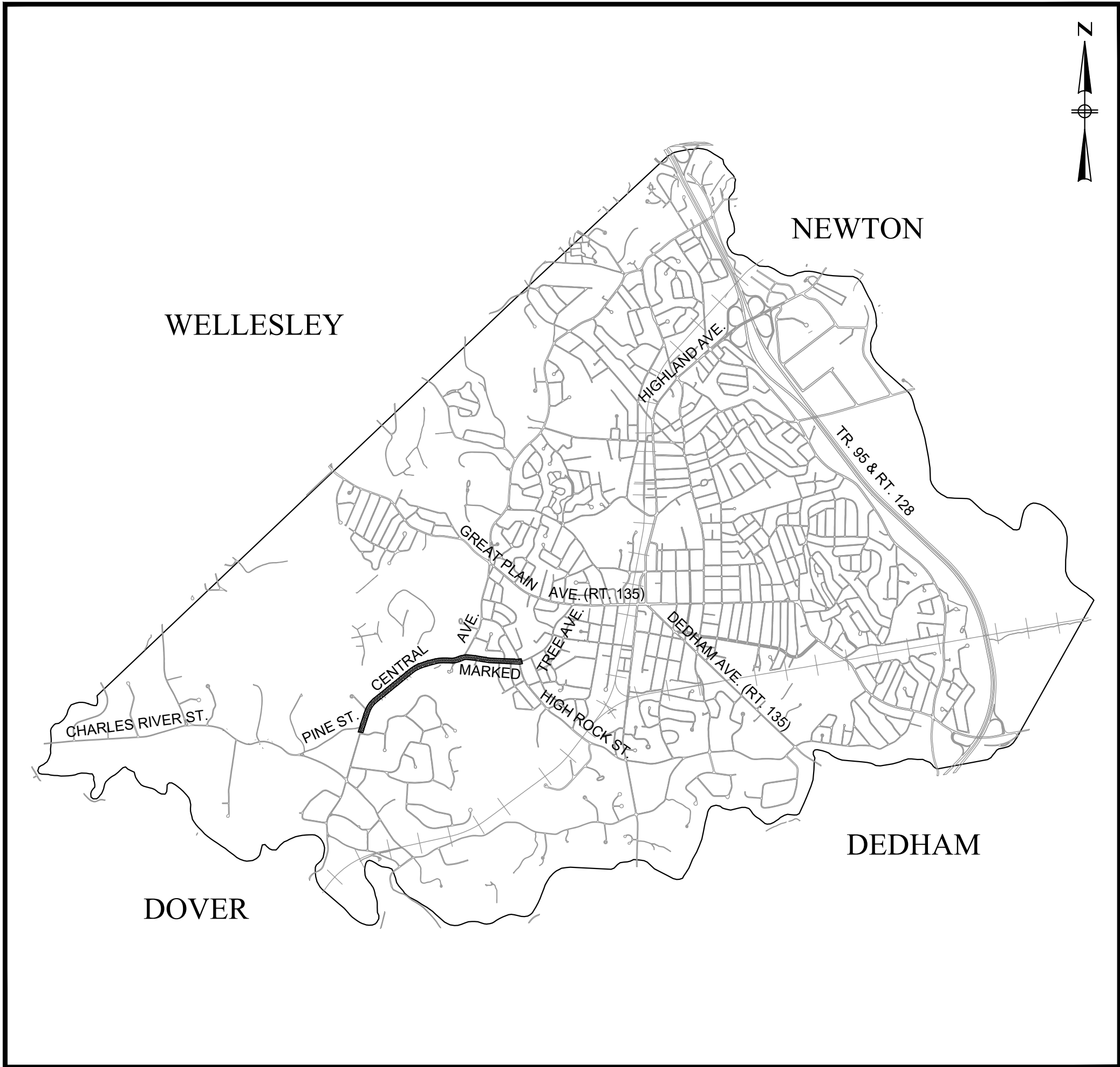
MATTHEW BORRELLI, CHAIR
MARIANNE B. COOLEY, VICE-CHAIR
MARCUS A. NELSON, CLERK
DANIEL P. MATTHEWS, MEMBER
KEVIN KEANE, MEMBER

TOWN MANAGER

KATE FITZPATRICK

DEPARTMENT OF PUBLIC WORKS

CARYS LUSTIG, DIRECTOR
ROBERT A. LEWIS, ASSISTANT DIRECTOR
THOMAS A. RYDER, P.E., ACTING TOWN ENGINEER



PROJECT LOCATION

LOCATION MAP
1"=3000'

PLAN INDEX

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	COVER SHEET
2	LEGEND, ABBREVIATIONS & GENERAL NOTES
3-5	DETAILS I-III
6-7	TEMPORARY TRAFFIC CONTROL PLAN I-II
8	CENTRAL AVENUE
9	CENTRAL AVENUE AND MARKED TREE ROAD
10	MARKED TREE ROAD

PREPARED BY:



ISSUE DATE: FEBRUARY 2022



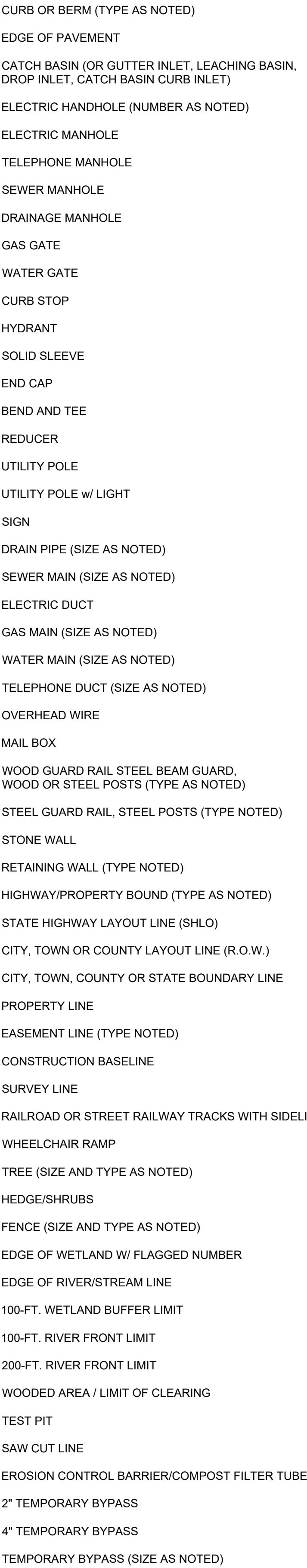
REGISTERED PROFESSIONAL

03/04/2022

DATE

GENERAL SYMBOLS

PROPOSED



UTILITIES

THE LOCATION OF SUBSURFACE UTILITIES SHOWN IS APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITY LINES AND STRUCTURES PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR MUST NOTIFY DIGSAFE THE DEPARTMENT OF PUBLIC WORKS PRIOR TO ANY EXCAVATION, DEMOLITION OR EXPLOSION WORK IN PUBLIC OR PRIVATE WAYS OR UTILITY COMPANY RIGHT OF WAY OR EASEMENT. FOR WATER AND SEWER WORK, NOTIFY NEEDHAM DEPARTMENT OF PUBLIC WORKS AT 781-455-7550. AT LEAST 72 HOURS IN ADVANCE OF THE NEED FOR MARKOUTS.

2. WHERE AN EXISTING UTILITY IS FOUND TO 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 THE RESOLUTION OF THE CONFLICT.

3. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CABLE TV, FIRE ALARM AND ANY OTHER PUBLIC OR PRIVATE UTILITIES BY THE UTILITY COMPANIES. ALL UTILITY CASTING AND FIRE ALARM BOXES SHALL BE ADJUSTED TO FINISH GRADE BY THEIR RESPECTIVE OWNERS. ONLY THE NEEDHAM DEPARTMENT OF PUBLIC WORKS SHALL OPERATE GATE VALVES AND HYDRANTS ON LIVE WATER MAINS FOR SHUT DOWNS OR TURN-ONS. THE CONTRACTOR SHALL NOTIFY THE NEEDHAM WATER DEPT. 48 HOURS IN ADVANCE OF THE NEED FOR VALVES OR HYDRANTS TO BE OPERATED.

4. TREES WITHIN THE LIMITS OF EXCAVATION, GRADING OR PAVING SHALL NOT BE REMOVED UNLESS APPROVED BY THE ENGINEER.

5. THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R) AS DIRECTED BY THE OWNER/ENGINEER.

6. PRIOR TO THE START OF ANY CONSTRUCTION THE CONTRACTOR SHALL CONDUCT TEST PITS AT LOCATIONS WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING AND STRUCTURES AND TO FIELD VERIFY THE EXACT SIZE, MATERIAL, LOCATION, INVERT ELEVATION AND ALIGNMENT (VERTICAL AND HORIZONTAL) OF EXISTING UNDERGROUND PIPES AND STRUCTURES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN PROPOSED PIPING AND EXISTING PIPING PRIOR TO STARTING INSTALLATION OF THE PROPOSED PIPING.

7. EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE PROTECTED AND SUPPORTED AT ALL TIMES BY THE CONTRACTOR. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS TO INTERFERE AS LITTLE AS POSSIBLE WITH EXISTING UTILITIES. PAYMENT FOR PROVIDING SAID PROTECTIONS AND SUPPORTS SHALL BE CONSIDERED A PART OF AND PAID FOR UNDER THE APPROPRIATE PIPE ITEMS UNLESS OTHERWISE INDICATED AND/OR DIRECTED BY THE OWNER. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION BY REASON OF DELAY AND/OR INCONVENIENCE IN ADAPTING HIS OPERATIONS ACCORDINGLY.

8. WHERE EXISTING MATERIALS ARE ENCOUNTERED THAT, IN THE OPINION OF THE OWNER/ENGINEER, ARE UNSUITABLE FOR BEDDING, BACK FILLING OR OTHER INTENDED USE, SUCH MATERIALS SHALL BE REMOVED AS DIRECTED AND REPLACED WITH SUITABLE CRUSHED STONE AND/OR SELECTED BORROW, AS DIRECTED BY THE OWNER OR THE ENGINEER AND PAID FOR UNDER THE APPROPRIATE BID ITEMS. EXCAVATION MATERIAL TO BE DISPOSED OF SHALL NOT BE STOCKPILED IN THE STREET. ARRANGEMENTS SHALL BE MADE TO DISPOSE OF UNSUITABLE MATERIAL ON A DAILY BASIS.

9. BASE PLANS AND TOPOGRAPHY WERE OBTAINED FROM MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEMS (GIS) MAPPING OBTAINED FROM THE TOWN OF NEEDHAM.

10. ALL ELEVATIONS REFER TO NAVD 88 DATUM. CONTRACTOR TO LOCATE AND PROTECT CONTROL AND REFERENCE POINTS.

11. THE CONTRACTOR SHALL NOTIFY IN ADVANCE ALL THOSE WHO WILL BE AFFECTED BY THE WORK. THE CONTRACTOR, AT NO ADDITIONAL COST TO THE OWNER, SHALL PURCHASE A GENERAL NEWSPAPER NOTICE, TO BE APPROVED BY THE OWNER AND ENGINEER, THAT SHALL BE ISSUED BY THE CONTRACTOR IN THE NEEDHAM TIMES 7-DAYS PRIOR TO THE START OF WORK. BEFORE CONSTRUCTION STARTS IN ANY STREET AND BEFORE NOTICEABLE CHANGES IN WATER OR SEWER SERVICE OCCUR, EACH CONSUMER SHALL BE DIRECTLY INFORMED OF THE WORK BY A NOTICE APPROVED BY THE ENGINEER AND DELIVERED TO THE BUILDING BY THE CONTRACTOR STATING HOW THEY WILL BE AFFECTED AND THE EXPECTED DURATION OF THE WORK. NOTICE WILL BE NO LATER THAN 48 HOURS BEFORE COMMENCEMENT OF WORK.

12. WHERE NECESSARY TO REMOVE CURBS, CATCH BASINS, OR DRAINS TO COMPLETE THE WORK, THE CONTRACTOR SHALL REPLACE THEM TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.

13. ANY EXISTING PIPE OR UTILITY DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR AT NO COST TO THE OWNER.

14. CONTRACTOR SHALL INSTALL, MAINTAIN, AND REMOVE EROSION CONTROL AROUND ALL CATCH BASINS ALONG PROJECT ROUTE, THE COST OF WHICH SHALL BE CONSIDERED A PART OF AND PAID FOR UNDER THE APPROPRIATE BID ITEM(S).

15. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT OR SEDIMENT LADEN WATER FROM ENTERING CATCH BASINS, DRAINAGE SYSTEMS, SEWER SYSTEMS OR WATER BODIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ANY SEDIMENTS THAT ENTER THE SYSTEM.

16. THE CONTRACTOR SHALL COORDINATE THE REQUIRED TRAFFIC CONTROL WITH THE TOWN OF NEEDHAM POLICE AND FIRE DEPARTMENT PRIOR TO THE START OF CONSTRUCTION. DURING THE SCHOOL YEAR THE CONTRACTOR SHALL COORDINATE TRAFFIC CONTROL WITH THE SCHOOL DEPARTMENT.

17. THE CONTRACTOR SHALL SUBMIT A TRAFFIC MANAGEMENT PLAN ACCEPTABLE TO THE NEEDHAM POLICE, FIRE AND PUBLIC WORKS DEPARTMENTS PRIOR TO CONSTRUCTION.

18. THE CONTRACTOR SHALL IMMEDIATELY FILL ALL POT HOLES THAT OCCUR DURING CONSTRUCTION.

19. ALL FRAMES, GRATES, COVERS, GATE BOXES, ETC. SHALL BE ADJUSTED TO GRADE ACCORDINGLY, THE COST OF WHICH SHALL BE CONSIDERED A PART OF AND PAID FOR UNDER THE CASTING ADJUSTMENTS BID ITEMS IN SECTION 9.

20. INVERTS AND DIRECTIONS OF PIPES AND CONDUITS ARE SHOWN FOR THE PURPOSE OF INDICATING THE BASIC PARAMETERS USED DURING THE DESIGN. HOWEVER, MINOR CHANGES IN HORIZONTAL AND VERTICAL LOCATIONS MAY BE REQUIRED DURING CONSTRUCTION AS FIELD CONDITIONS WARRANT. FINAL LOCATIONS OF OTHER PIPES AND/OR CONDUITS SHALL BE DETERMINED IN THE FIELD. ANY CHANGES SHALL BE APPROVED BY THE ENGINEER.

21. ALL GRASSED AREAS DISTURBED BY THE CONSTRUCTION OPERATIONS SHALL BE LOAMED AND SEEDED IN ACCORDANCE WITH THE SPECIFICATIONS. RESTORATION SHALL BE EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION AS DETERMINED BY THE OWNER/ENGINEER. PAYMENT SHALL BE CONSIDERED PART OF AND PAID FOR UNDER THE PIPE ITEMS AS APPLICABLE UNLESS OTHERWISE INDICATED.

22. ALL CURBING AND SIDEWALKS DISTURBED BY CONSTRUCTION OPERATIONS SHALL BE REPLACED AND RESTORED, IN KIND, AS DIRECTED BY THE OWNER OR THE ENGINEER. PAYMENT SHALL BE CONSIDERED PART OF AND PAID FOR UNDER THE PIPE ITEMS AS APPLICABLE UNLESS OTHERWISE INDICATED.

23. ALL SIDEWALKS AND WHEELCHAIR RAMP AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED IN CONFORMANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS AND THE ARCHITECTURAL ACCESS BOARD (AAB) REQUIREMENTS AT THE CONTRACTOR'S EXPENSE.

24. THE CONTRACTOR SHALL REMOVE AND RESET ALL SIGNS, TRAFFIC LOOPS AND ROADWAY MARKINGS DISTURBED DURING CONSTRUCTION IN CONFORMANCE WITH THE MASSACHUSETTS STANDARD SPECIFICATIONS AND CONSTRUCTION STANDARDS AT NO ADDITIONAL COST TO THE OWNER.

25. 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.

26. THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF WORK SCHEDULE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH SPECIFICATION SECTION 3 ARTICLE IV.

27. CONTRACTOR TO MAINTAIN EXISTING WATER, SANITARY AND STORM DRAINAGE FLOWS DURING CONSTRUCTION.

28. REPAVEMENT OF SETTLED AREAS AND PAVEMENT CROWN RESTORATION WITHIN THE TRENCH LIMITS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

29. SHEETING SHALL BE USED WHERE SHOWN ON THE DRAWINGS OR WHERE DIRECTED BY THE ENGINEER. SHEETING SHALL BE LEFT IN PLACE BELOW A LINE OF 1'-0" ABOVE THE TOP OF THE PIPE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

30. STREET SIDELINES AND LOT LINES OF ABUTTING PROPERTIES WERE COMPILED FROM THE TOWN OF NEEDHAM ASSESSOR'S MAPS AND ARE APPROXIMATE.

31. PROPERTY LINES WERE OBTAINED FROM THE TOWN GIS MAPPING FROM APRIL, 2014.

32. ALL OPEN TRENCHES SHALL BE BACKFILLED COMPLETELY AT THE END OF EACH DAY. STEEL PLATES MAY BE ALLOWED IF APPROVED BY THE ENGINEER.

33. TRENCHES SHALL BE MAINTAINED DAILY BY SWEEPING AND APPLICATION OF CALCIUM CHLORIDE TO CONTROL DUST AS DIRECTED BY THE ENGINEER.

34. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN ALL ROADWAY ACCESS PERMITS AND APPROVALS FROM THE TOWN OF NEEDHAM FOR WORK IN TOWN ROADWAYS.

35. UTILITY RECORD DRAWINGS FOR WELLESLEY MUNICIPAL LIGHT, EVERSOURCE (PREVIOUSLY NSTAR) GAS, EVERSOURCE (PREVIOUSLY NSTAR) ELECTRIC, VERIZON, RCN, COMCAST AND WATER AND SEWER WERE OBTAINED IN 2018.

36. CONTRACTOR SHALL PERFORM ALL TEST PITS IDENTIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER AT THE BEGINNING OF CONSTRUCTION. CONTRACTOR TO NOTIFY WELLESLEY MUNICIPAL LIGHT PRIOR TO PERFORMING TEST PITS. NO WORK, INCLUDING THE INSTALLATION OF TEMPORARY WATER BYPASS PIPE, SHALL COMMENCE UNTIL ALL THE TEST PITS ARE PERFORMED AND RESULTING UTILITY INFORMATION IS PROVIDED TO THE ENGINEER.

WATER NOTES

- ## Town of Needham, Massachusetts

Central Ave Water Main Replacement

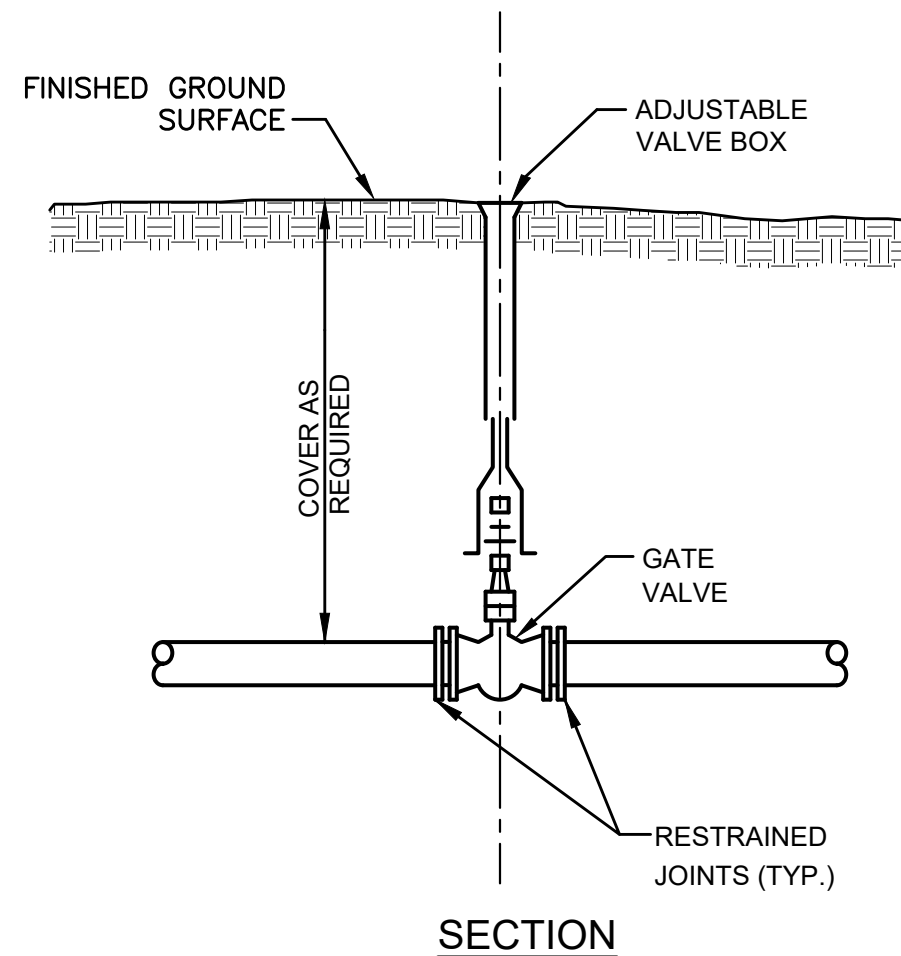
LEGEND, ABBREVIATIONS & GENERAL NOTES

BETA JOB NO. 7435

ISSUE DATE FEBRUARY 2022

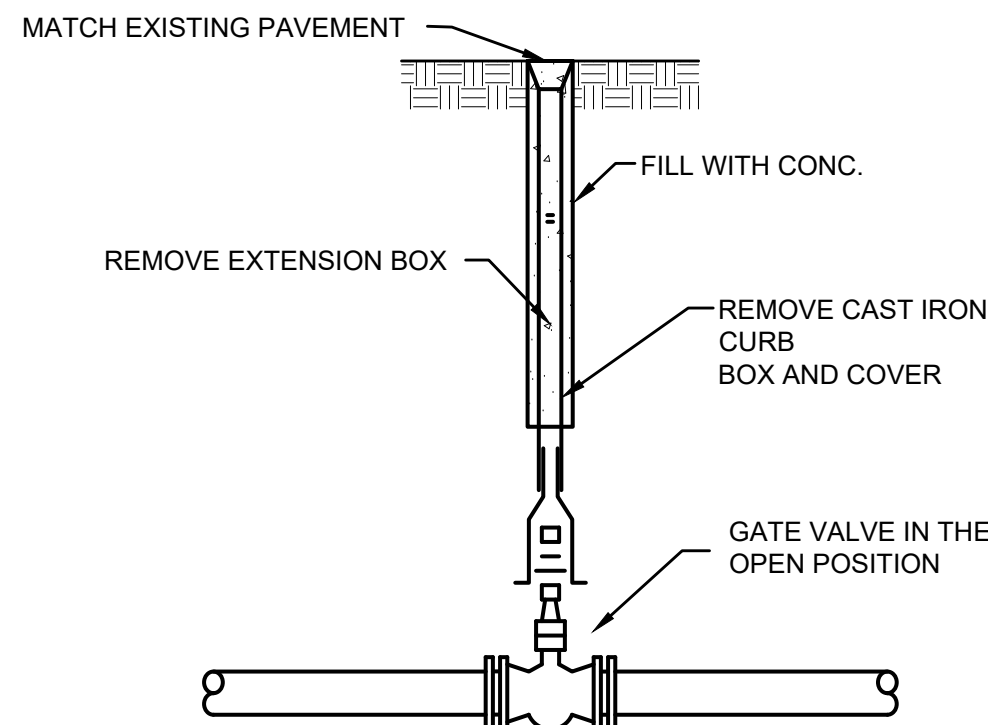
SHEET NO. 2

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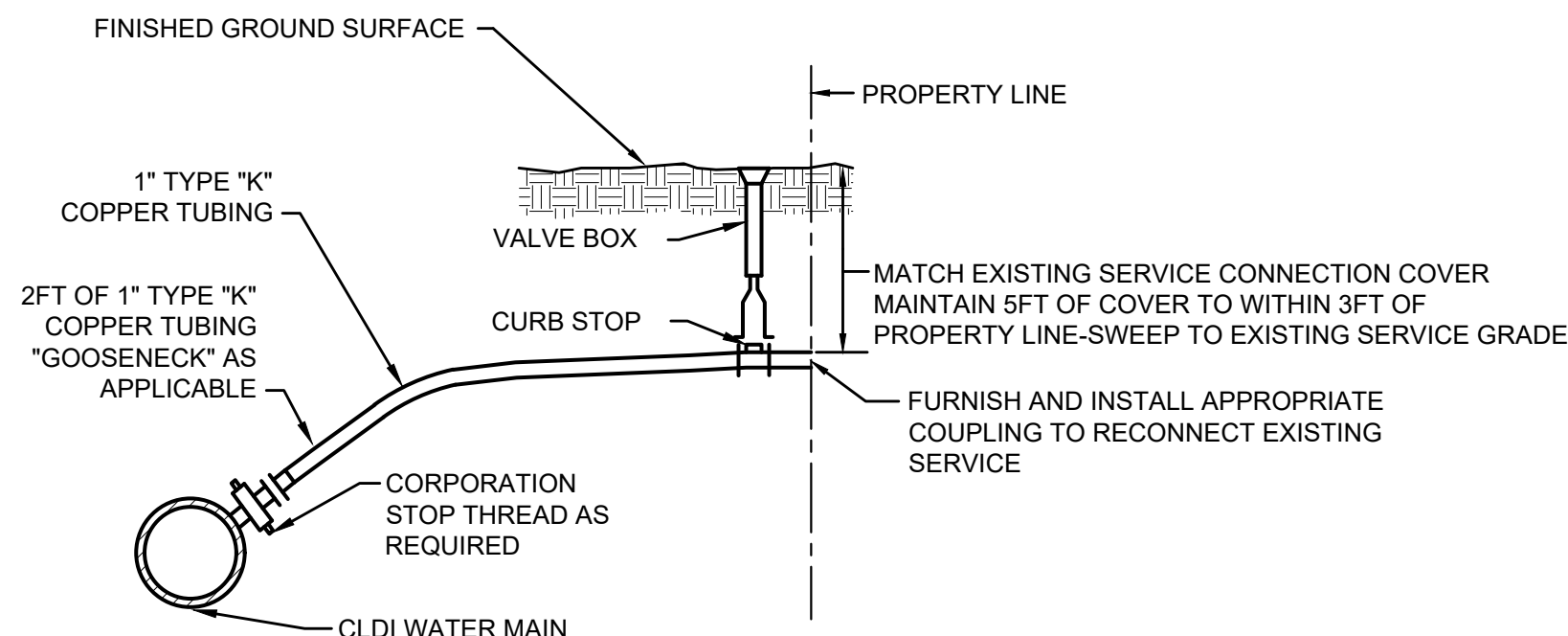
SECTION
TYPICAL GATE VALVE (TYP.)

NOT TO SCALE



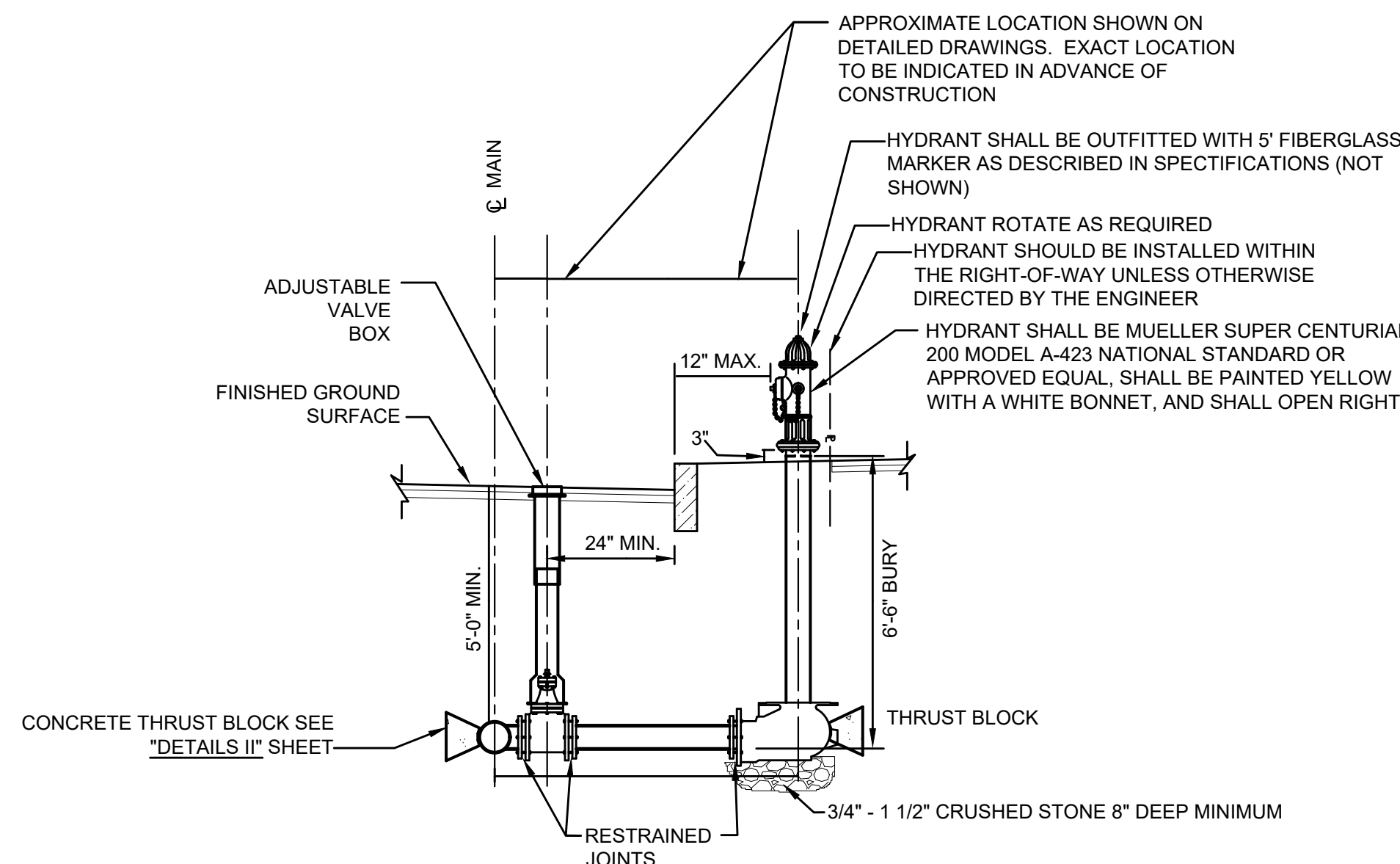
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TYPICAL ABANDONED GATE VALVE

NOT TO SCALE



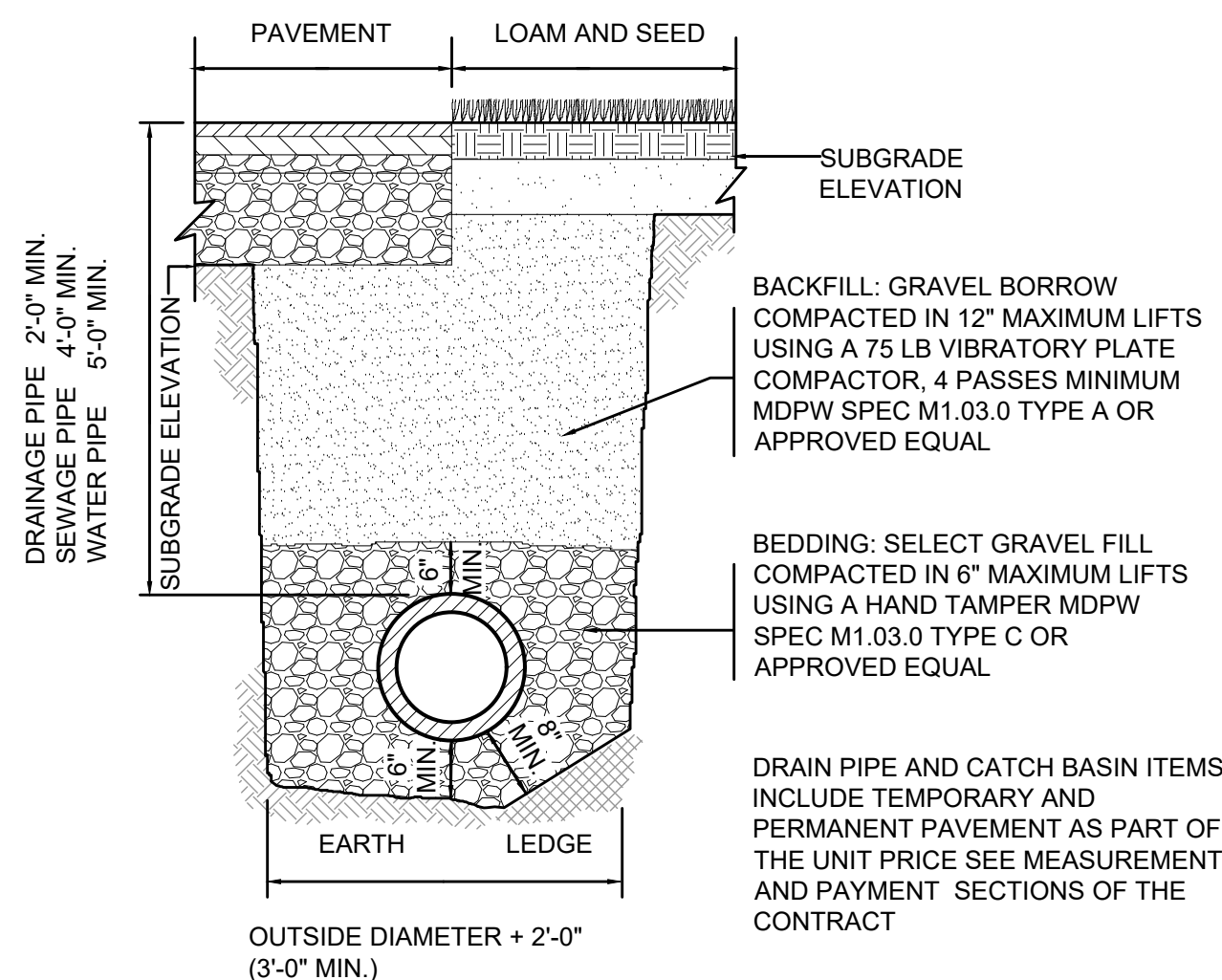
SECTION
TYPICAL SERVICE CONNECTION (TYP.)

NOT TO SCALE



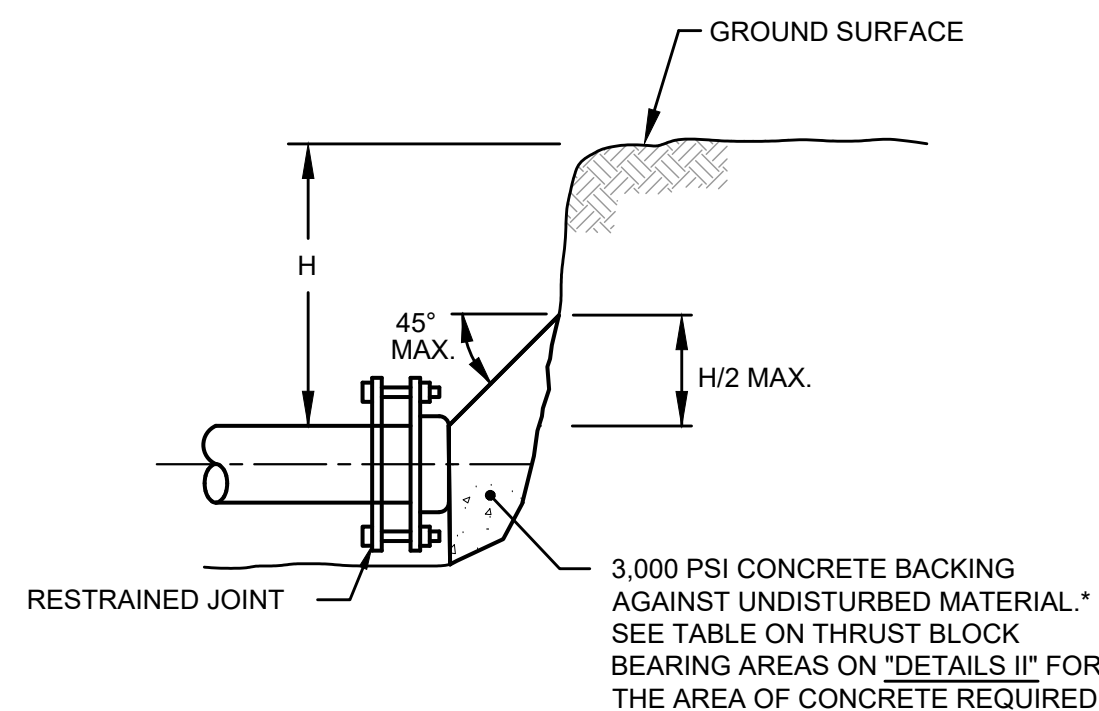
SECTION
TYPICAL HYDRANT ASSEMBLY

NOT TO SCALE



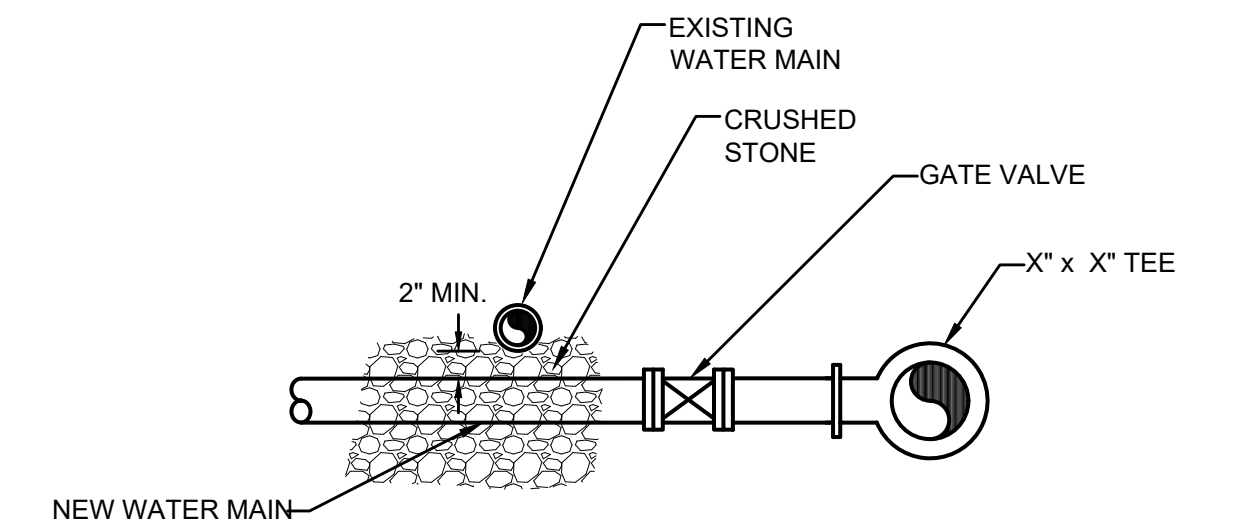
PLAN
TYPICAL TRENCH

NOT TO SCALE



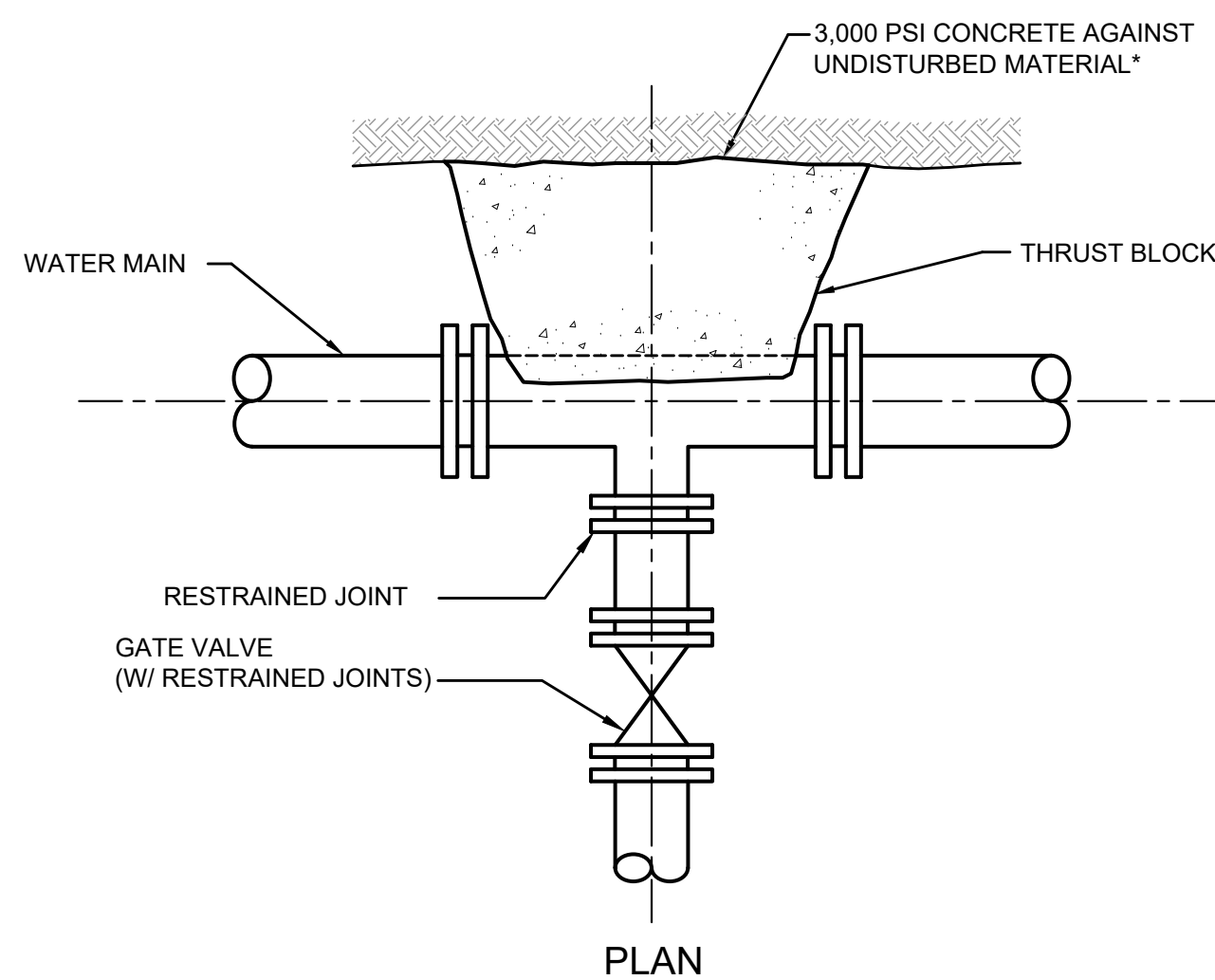
SECTION
CAP WITH THRUST BLOCK

NOT TO SCALE



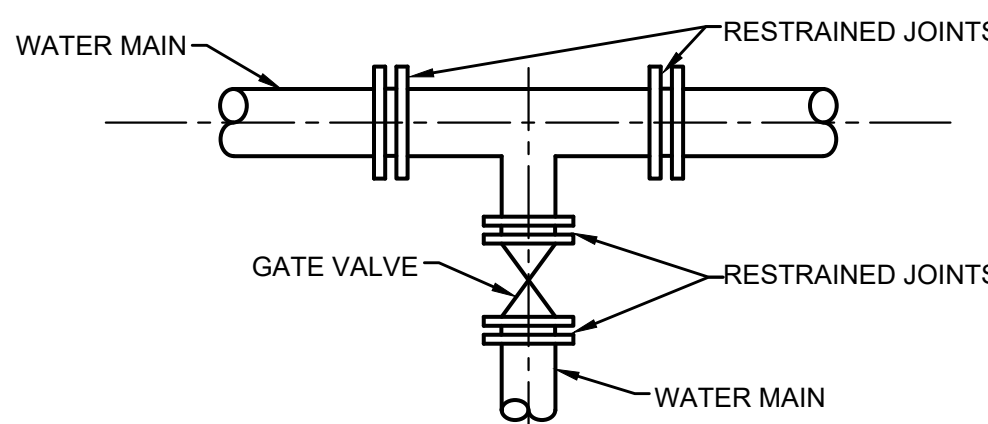
SECTION
TYPICAL CROSSING OF EXISTING WATER MAIN

NOT TO SCALE

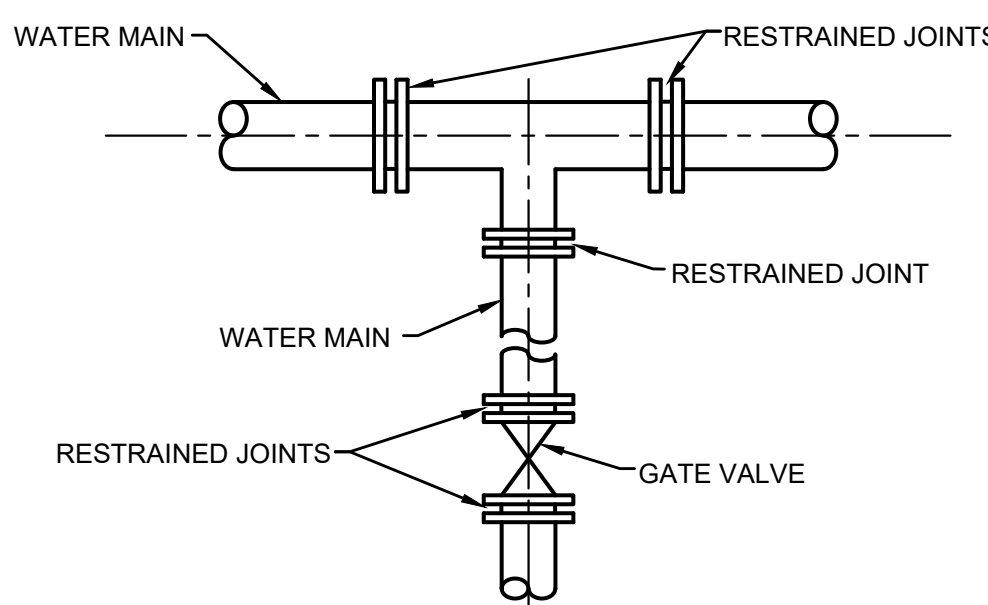


PLAN
TYPICAL RESTRAINED GASKET JOINT VALVE

NOT TO SCALE

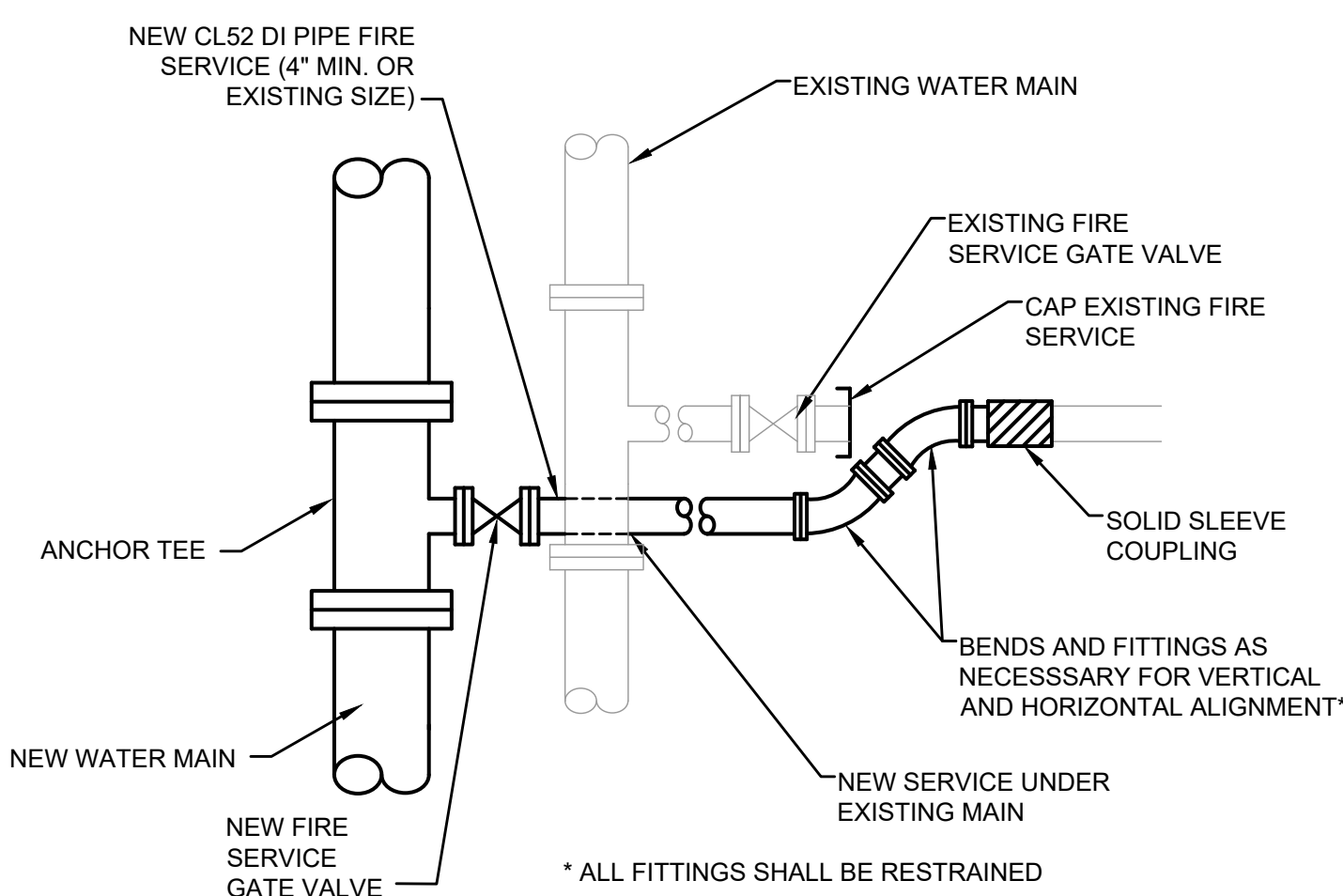


SECTION
ANCHOR TEE BRANCH



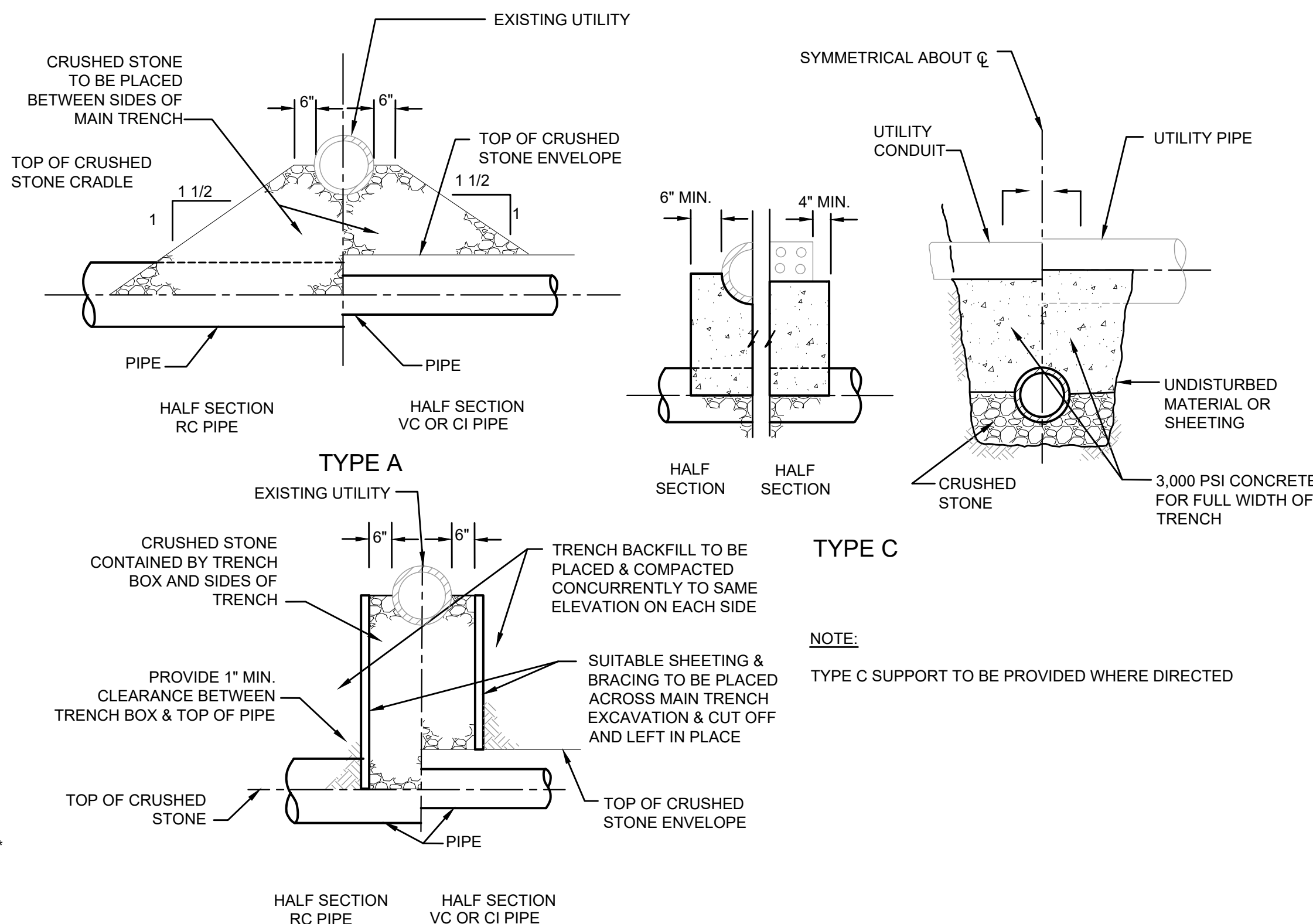
SECTION
STANDARD BRANCH

* HYDRANTS, VALVES AND TEES SHALL USE BOTH MECHANICAL JOINT AND THRUST BLOCK RESTRAINTS



SECTION
TYPICAL FIRE SERVICE CONNECTION

NOT TO SCALE



SECTION
TYPICAL UTILITY SUPPORT

NOT TO SCALE

* SEE TABLE ON THRUST BLOCK BEARING AREAS ON "DETAILS II" SHEET FOR THE AREA OF CONCRETE REQUIRED.
** HYDRANTS, VALVES AND TEES SHALL USE BOTH MEGALUGS AND THRUST RESTRAINTS

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	DPR
DESIGNED BY:	DPR
CHECKED BY:	MRH



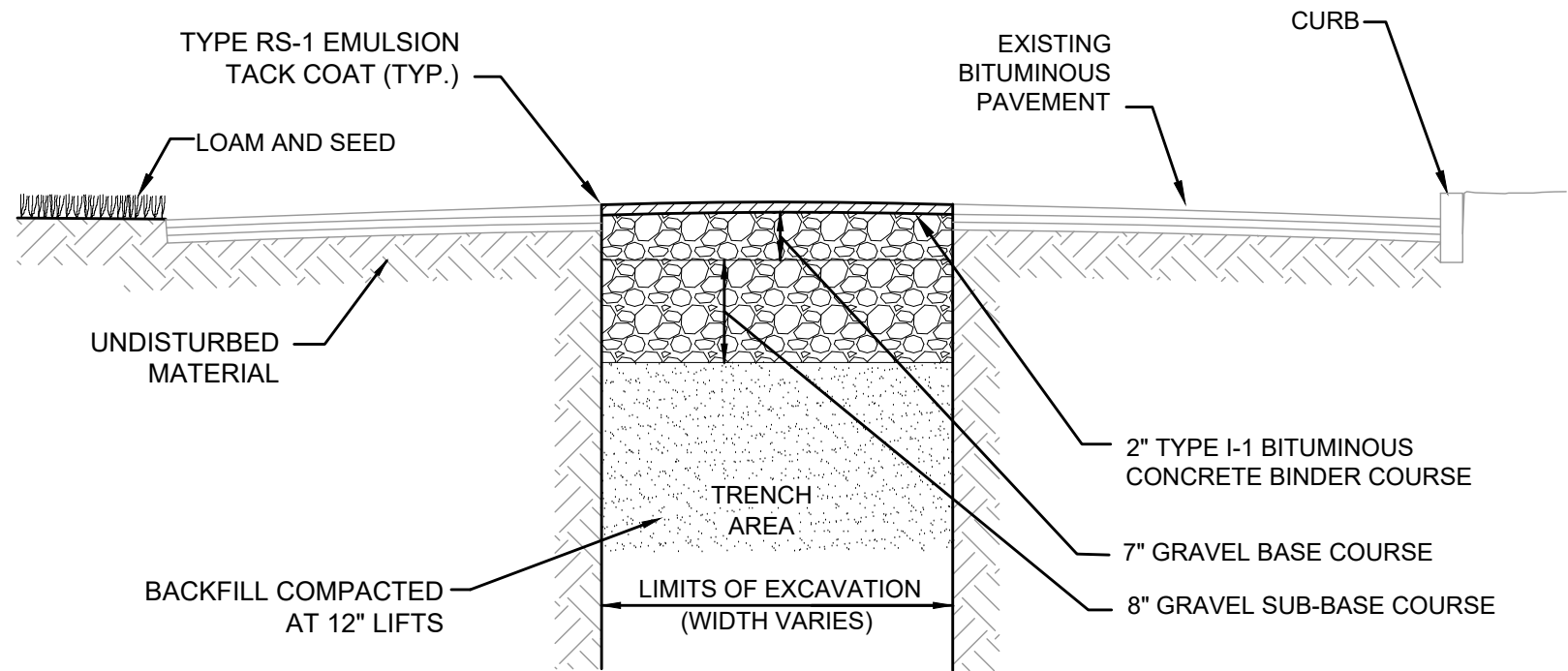
SUBCONSULTANT

SCALE
NONE
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE
Town of Needham, Massachusetts
Central Ave Water Main Replacement
DETAILS I

BETA JOB NO.	7435
ISSUE DATE	FEBRUARY 2022
SHEET NO.	3

2/14/2022 12:30 PM I:\BETA\NOR-FSD\SHARED\ENGINEERING\MAINT\7435 - CENTRAL AVE WATER MAIN\DRAWING\FILES\PLANSET\7435 CIVIL DETAILS.DWG (BETA STB BW STB)

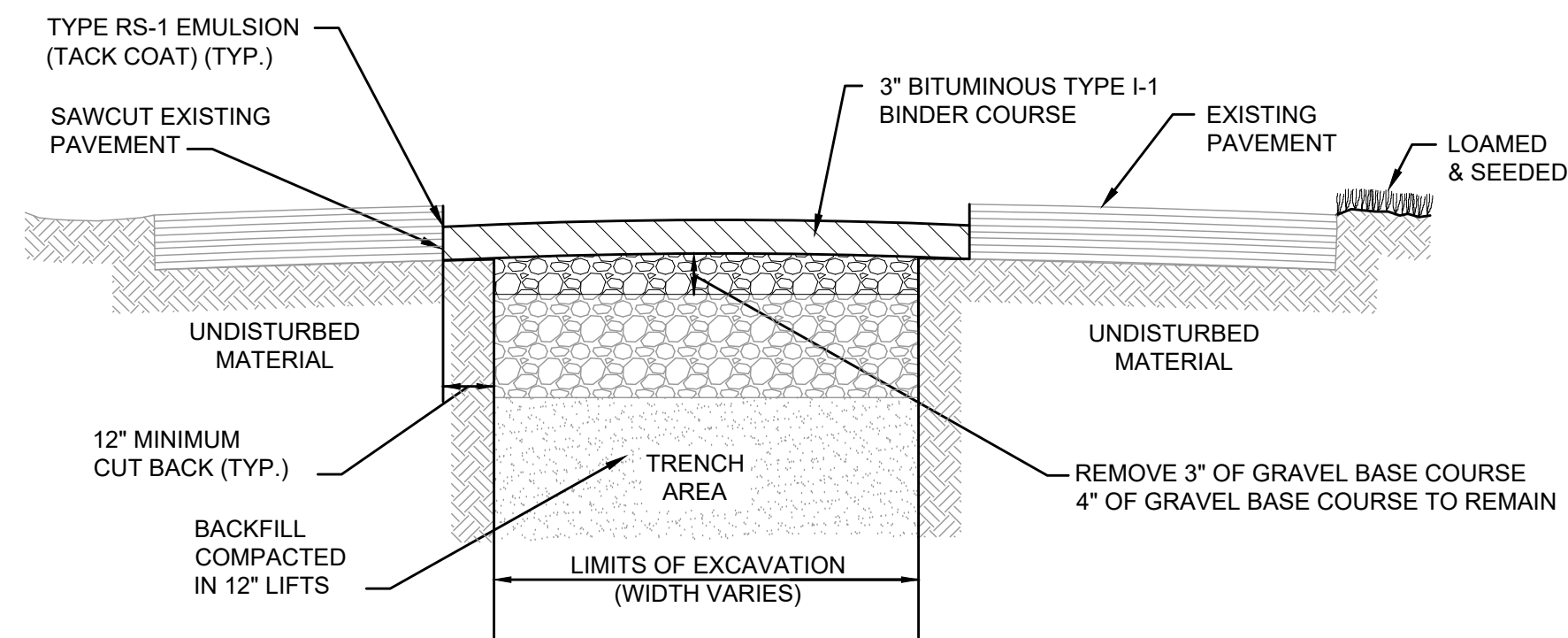


NOTES

1. MINIMUM TEMPORARY PAVEMENT THICKNESS TO BE 2-INCHES.
2. MATCH EXISTING PAVEMENT SURFACE

TEMPORARY BITUMINOUS CONCRETE
TRENCH WIDTH PAVEMENT

NOT TO SCALE

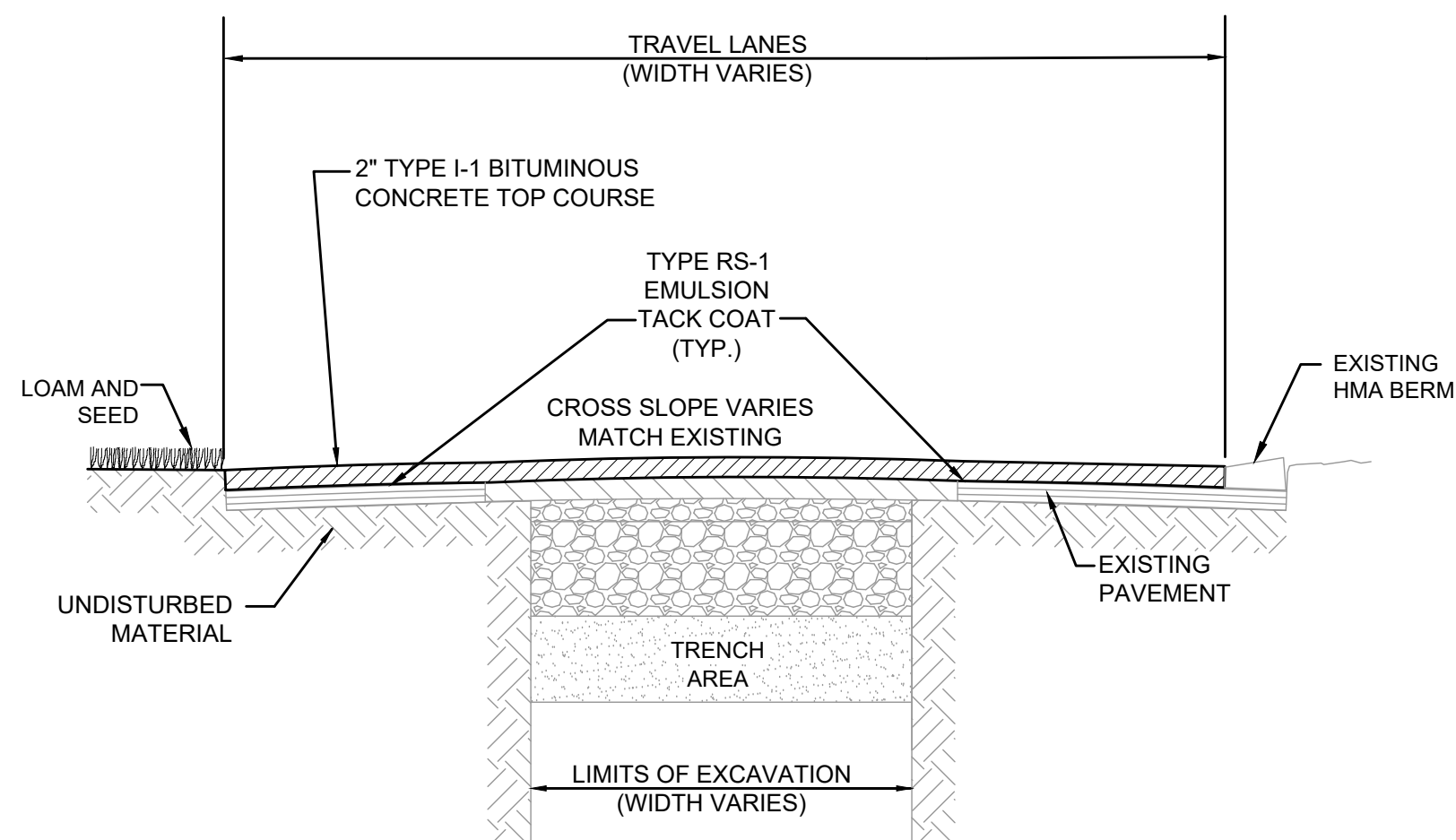


NOTES

1. MINIMUM PAVEMENT THICKNESS TO BE 3 INCHES.

PERMANENT BITUMINOUS CONCRETE TRENCH WIDTH PAVEMENT

NOT TO SCALE

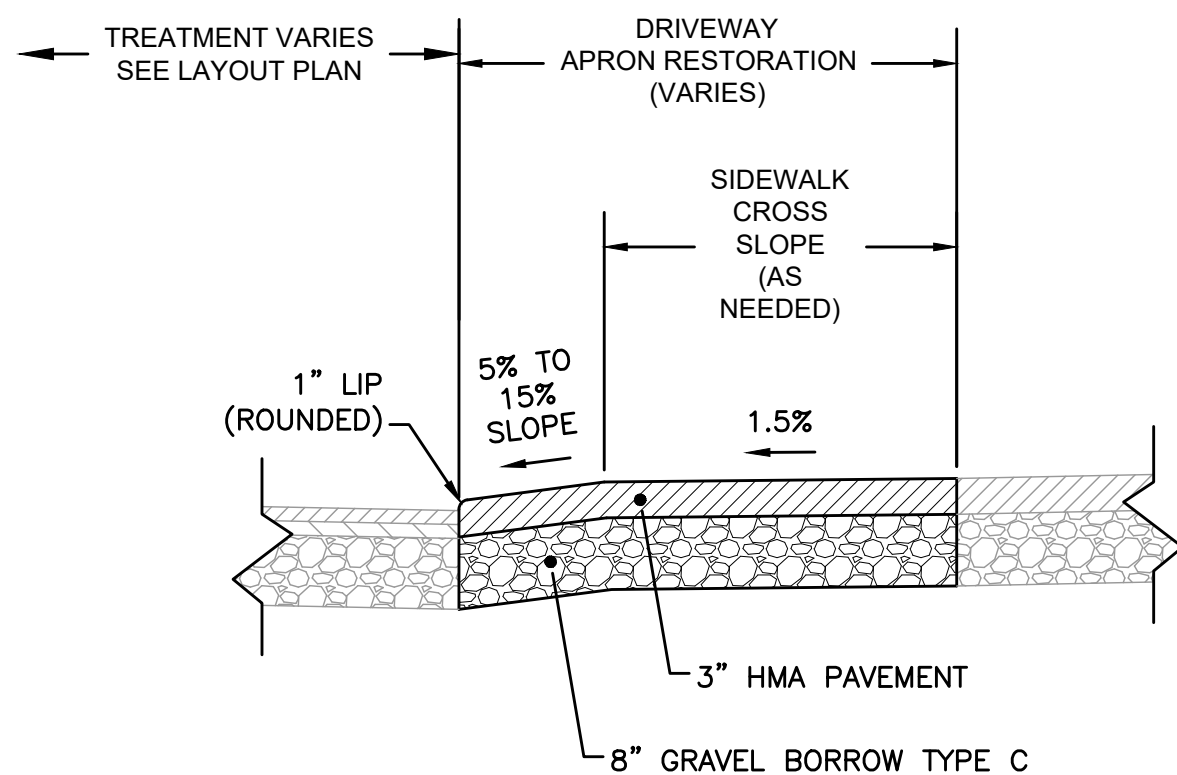


NOTES

1. CONTRACTOR TO MAINTAIN EXISTING CROSS SECTIONAL SLOPE.
2. CUT BACK DISTANCES SHALL BE AS DIRECTED BY THE ENGINEER, HOWEVER UNDER NO CIRCUMSTANCES LESS THAN THE MINIMUM INDICATED.
3. PRIOR TO INSTALLING 2 INCH TOP COURSE, PAVEMENT SHALL BE COLD PLANED WITH A 2" MINIMUM DEPTH OF CUT.

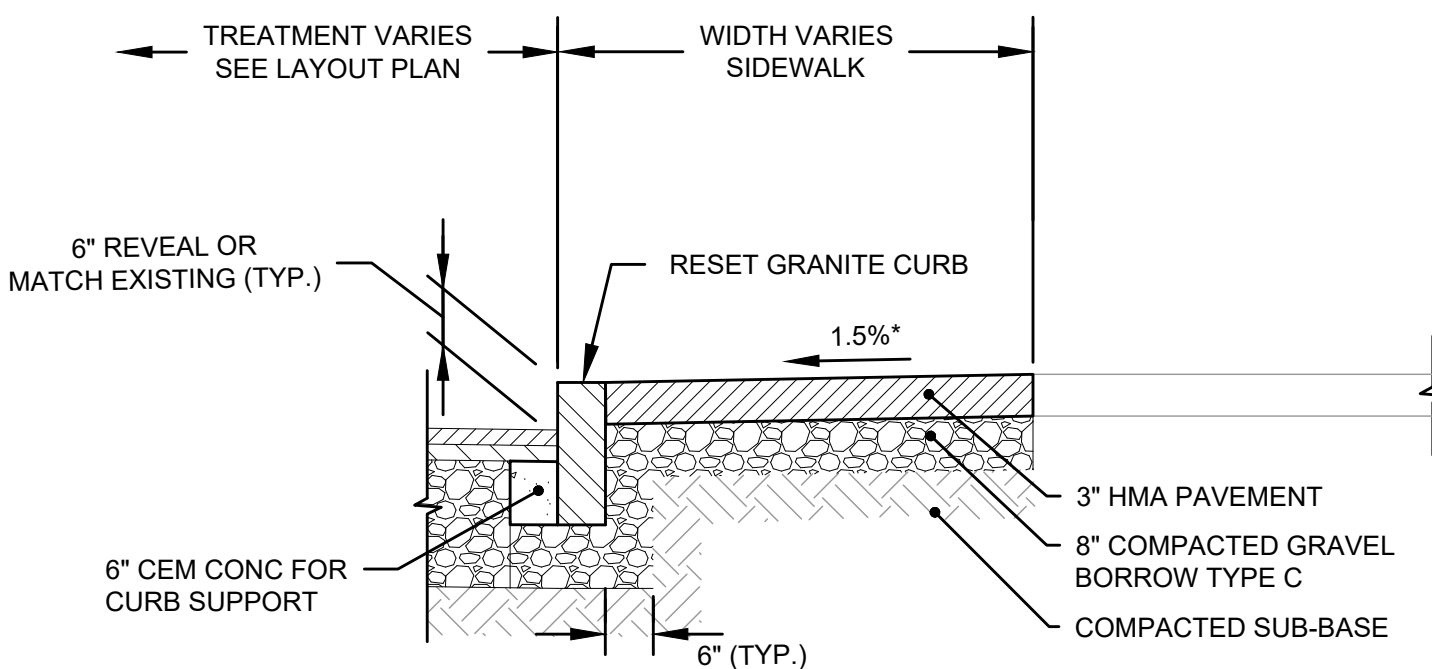
COLD PLANING AND OVERLAY

NOT TO SCALE



DRIVEWAY APRON AND SIDEWALK RESTORATION

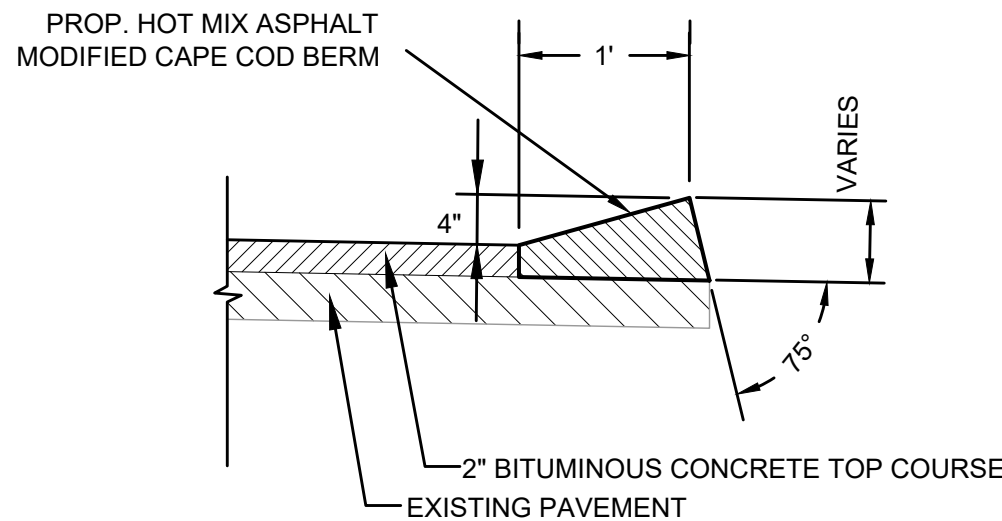
NOT TO SCALE



* TOLERANCE FOR CONSTRUCTION ±0.5%. MATCH EXISTING IF NECESSARY.

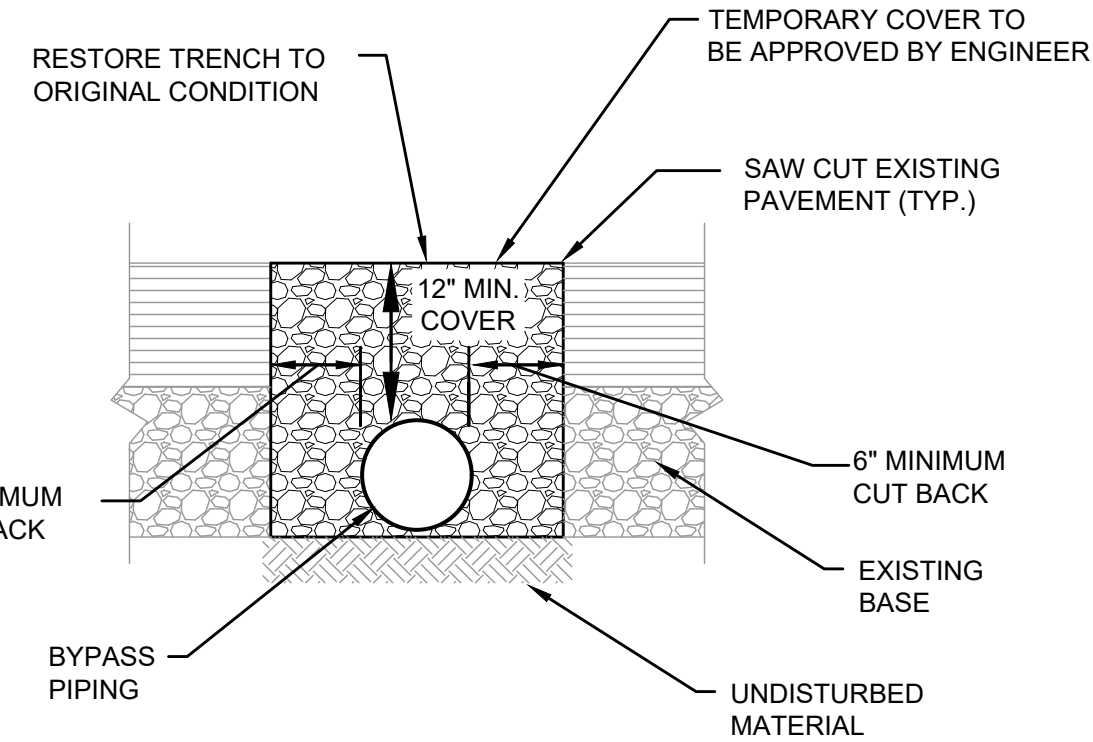
RESET VERTICAL GRANITE CURB

NOT TO SCALE



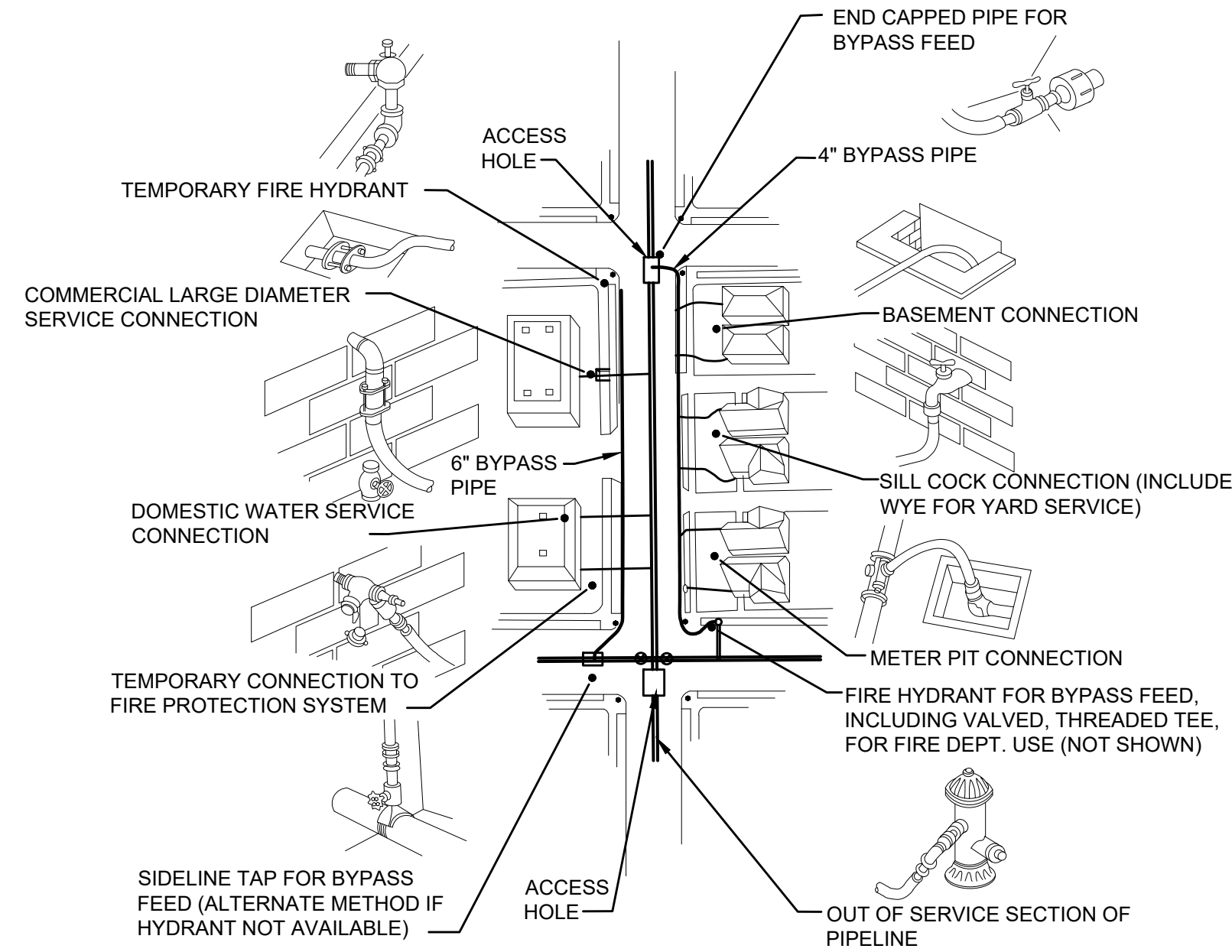
HMA BERM MODIFIED CAPE COD TYPE

NOT TO SCALE



BYPASS PIPING TRENCH

NOT TO SCALE

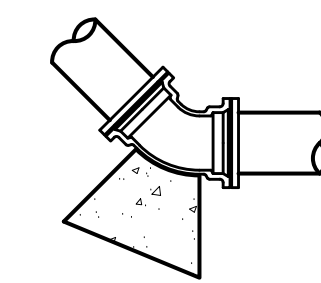


NOTE:

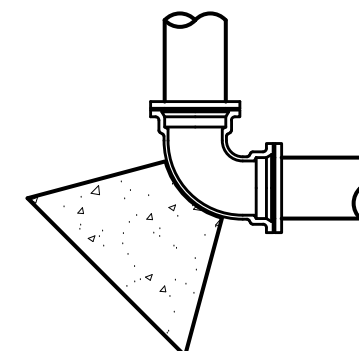
ALL MATERIALS IN CONTACT WITH POTABLE WATER SHALL BE NSF 61 APPROVED.

TYPICAL BYPASS PIPING (IF NECESSARY)

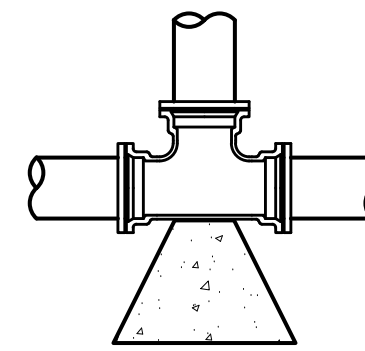
NOT TO SCALE



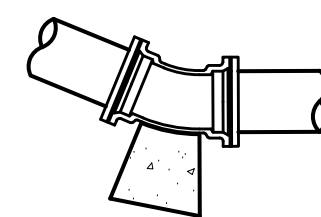
45° BEND MJ X MJ



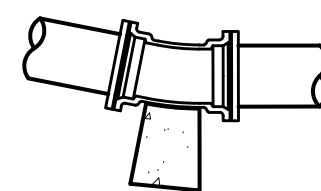
90° BEND MJ X MJ



TEE MJ X MJ X MJ



22 1/2° BEND MJ X MJ



11 1/4° BEND MJ X MJ

PIPE SIZE	MINIMUM SURFACE AREA (S.F.) OF CONCRETE AGAINST UNDISTURBED EARTH				
	11 1/4°	22 1/2°	45°	90°	TEE
6"	0.5	1.1	2.1	3.9	2.8
8"	0.9	1.8	3.6	6.6	4.7
12"	1.8	3.7	7.2	13.2	9.3
16"	3.0	6.0	11.8	21.7	15.4

NOTE: PIPE FITTINGS SHALL BE AS MANUFACTURED BY U.S. PIPE SPEC. U501, U503, U505, U507, U509 OR APPROVED EQUAL CONCRETE SHALL BE 3000 PSI

PORTLAND TYPE II CEMENT CONCRETE MEETING MDPW SPEC M4.02.00 et seq. AND SHALL BE PLACED SO AS TO NOT INTERFERE WITH THE JOINTS OF THE FITTING

THRUST BLOCK BEARING AREA TABLE FOR WATER MAIN

NOT TO SCALE

6 & 8-INCH						12-INCH					16-INCH				
END	90° BEND	45° BEND	22.5° BEND	8X6 RED.		END	90° BEND	45° BEND	22.5° BEND	12X8 RED.	END	90° BEND	45° BEND	22.5° BEND	16X12 RED.
54 FT	57 FT	17 FT	4 FT	22 FT		82 FT	82 FT	24 FT	6 FT	62 FT	112 FT	112 FT	33 FT	9 FT	63 FT

*EACH SIDE OF JOINT

RESTRAINED JOINT LENGTHS FOR
DI CL52 WATER MAIN

NOT TO SCALE

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	DPR
DESIGNED BY:	DPR
CHECKED BY:	MRH

REGISTERED PROFESSIONAL	03/04/2022
ANDREW J. DENNEY CIVIL ENGINEER NO. 46470	

PREPARED BY:	BETA
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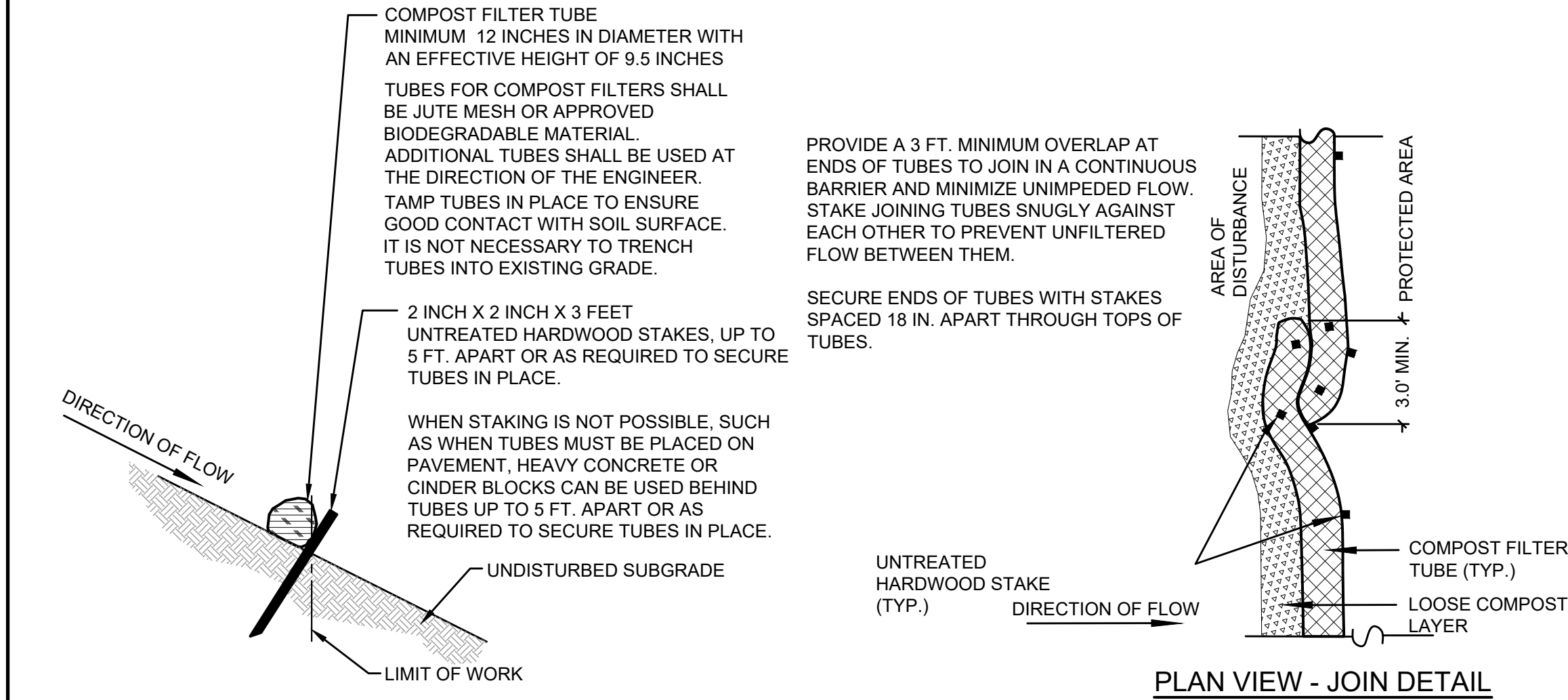
SUBCONSULTANT:	
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SCALE:	NONE
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TITLE:	Town of Needham, Massachusetts Central Ave Water Main Replacement DETAILS II
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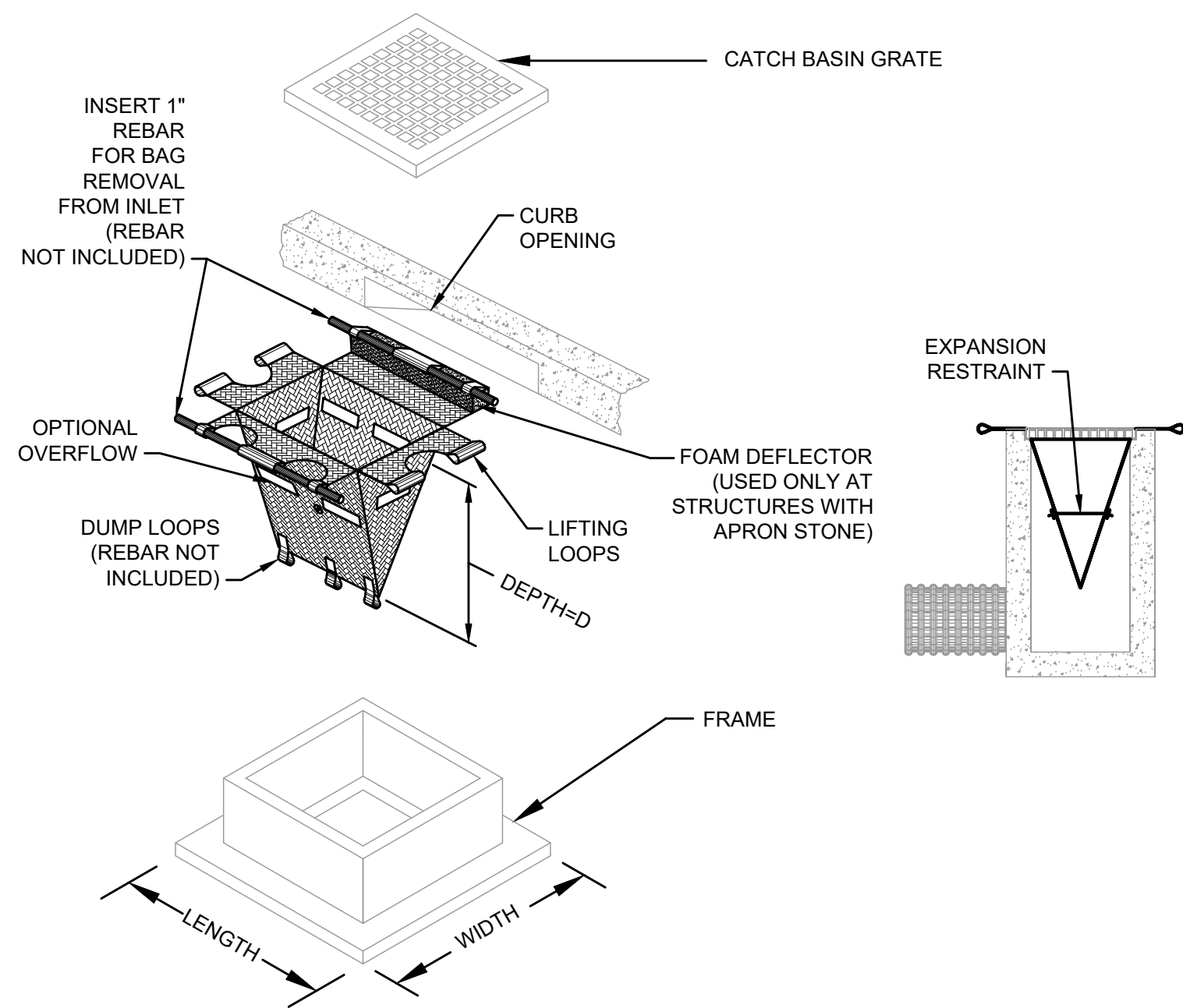
BETA JOB NO.	7435
ISSUE DATE	FEBRUARY 2022
SHEET NO.	4

2/14/2022 12:30 PM I:\BETA-NOR-FSD\ISHARE\ENGIN\NEEDHAM, MA\7435 - CENTRAL AVE WATER MAINDRAWING\FILES\PLANSET\7435 CIVIL DETAILS.DWG (BETA STB BW STB)



EROSION CONTROL BARRIER COMPOSITE FILTER TUBE

NOT TO SCALE

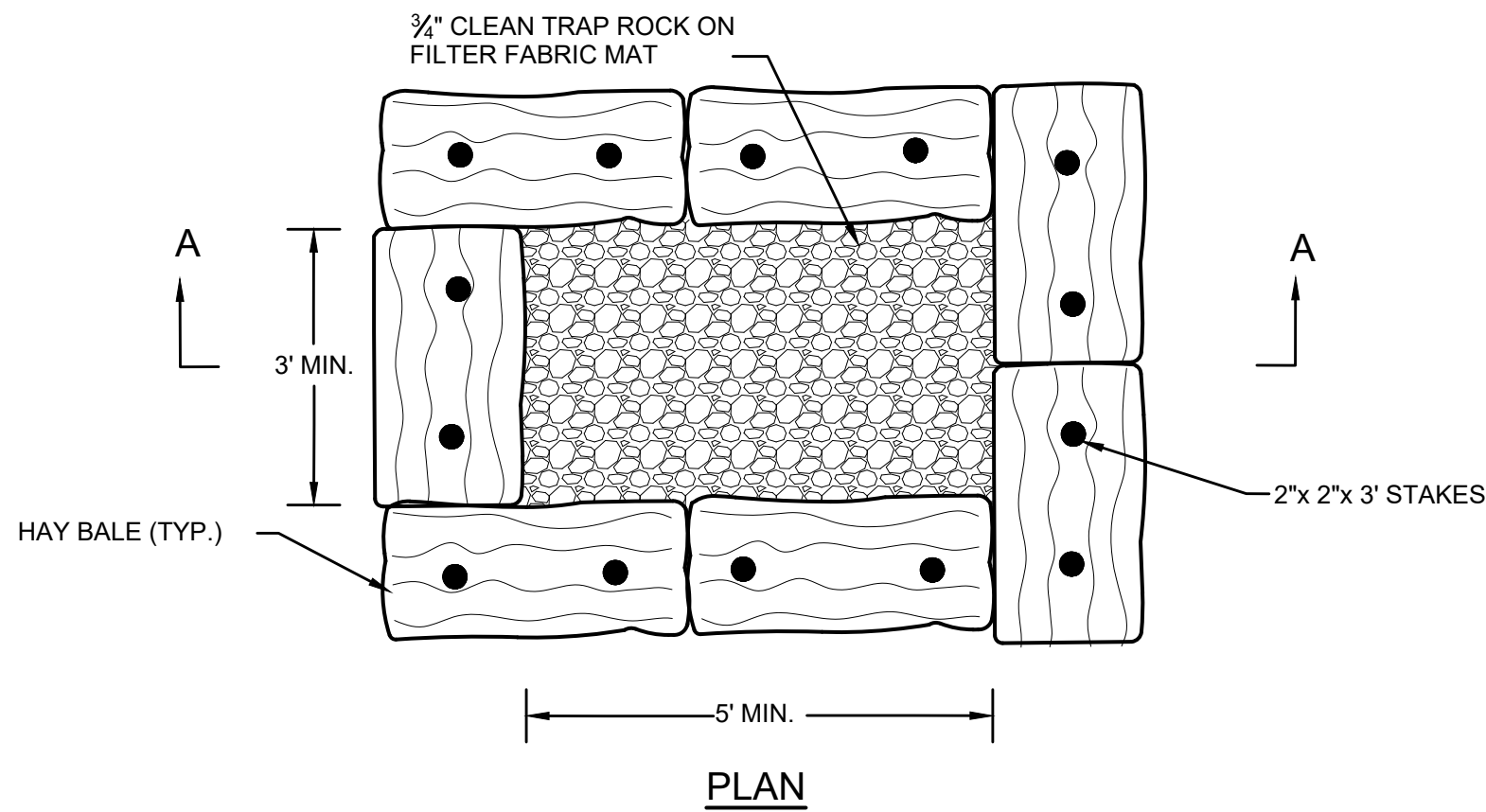


NOTES

- CONTRACTOR SHALL MAINTAIN ALL SILT SACK SEDIMENT CONTROL DEVICE INSTALLATIONS AND REPLACE WHEN SATURATED WITH SEDIMENT BASED ON MANUFACTURER RECOMMENDATIONS. SILT SACK SHALL BE INSPECTED AFTER EVERY RAIN EVENT BUT NO LONGER THAN EVERY TWO WEEKS.
- SILT SACK SHALL BE DOUBLE NEEDLE SEWN POLYPROPYLENE GEOTEXTILE FABRIC AND RATED FOR HIGH FLOW UNLESS OTHERWISE DIRECTED.
- CONTRACTOR SHALL PROVIDE CURB OPENING DEFLECTOR AT ALL CATCH BASINS AS NECESSARY.

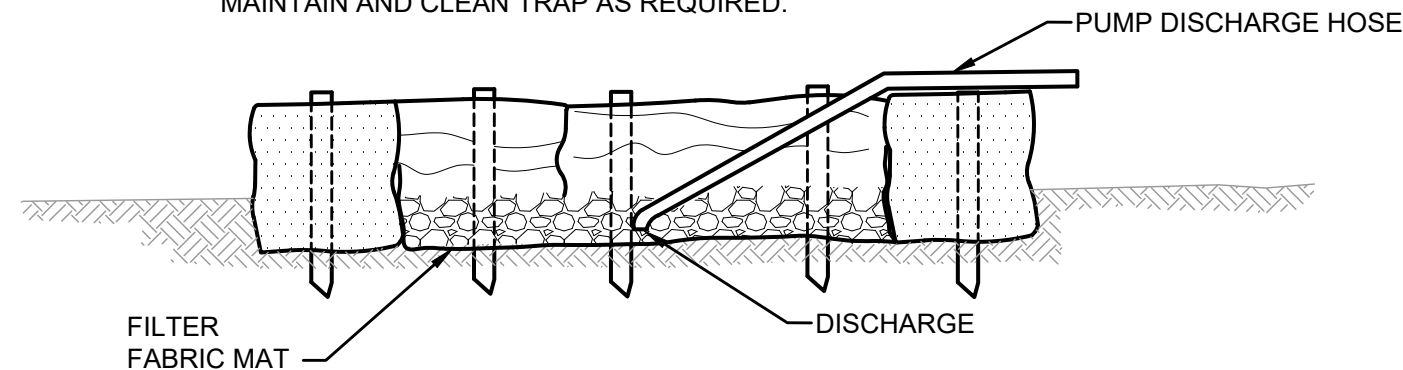
SEDIMENT CONTROL DEVICE (SILT SACK) (WITH OPTIONAL CURB DEFLECTOR)

NOT TO SCALE



NOTE

ALL DEWATERING DISCHARGES SHALL BE THROUGH SEDIMENT CONTROL TRAPS. CONTRACTOR SHALL MAINTAIN AND CLEAN TRAP AS REQUIRED.



SEDIMENT CONTROL TRAP

NOT TO SCALE

					DRAWN BY: DPR	REGISTERED PROFESSIONAL	PREPARED BY	SUBCONSULTANT	SCALE	TITLE	BETA JOB NO. 7435
					DESIGNED BY: DPR		 www.BETA-Inc.com		NONE	Town of Needham, Massachusetts Central Ave Water Main Replacement DETAILS III	ISSUE DATE. FEBRUARY 2022
					CHECKED BY: MRH						SHEET NO. 5
NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS							

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

NOTES:

1.

ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE 2009 EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS.
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, AND REFLECTORIZED PLASTIC DRUMS WITH LIGHTING DEVICES MOUNTED ON THEM, 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 FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS.
8.

THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
9.

DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
10.

MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
11.

MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
12.

ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
13.

TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL NOT COVERED IN THE PLAN SHALL REFER TO MASSDOT "STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TRAFFIC MANAGEMENT PLANS".
14.

COORDINATE ALL TRAFFIC CONTROL PATTERNS, DETOURS, LANE CLOSURES, ETC. WITH NEEDHAM POLICE DEPARTMENT, NEEDHAM FIRE DEPARTMENT, AND NEEDHAM SCHOOL DEPARTMENT.
15.

PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE INSTALLED IN LOCATIONS APPROVED BY THE OWNER. SIGN MESSAGE(S) SHALL BE PROVIDED BY THE OWNER. THE CONTRACTOR SHALL RELOCATE THE PCMS AND REVISE THE SIGN MESSAGE(S) AS OFTEN AS REQUIRED BY THE OWNER FOR THE DURATION OF THE PROJECT.
16.

ACCESS TO NEEDHAM RECYCLING AND TRANSFER STATION MUST REMAIN OPEN AT ALL TIMES.
17.

AT LEAST ONE LANE OF TRAFFIC MUST BE MAINTAINED ON CENTRAL AVE AT ALL TIMES.

LEGEND:

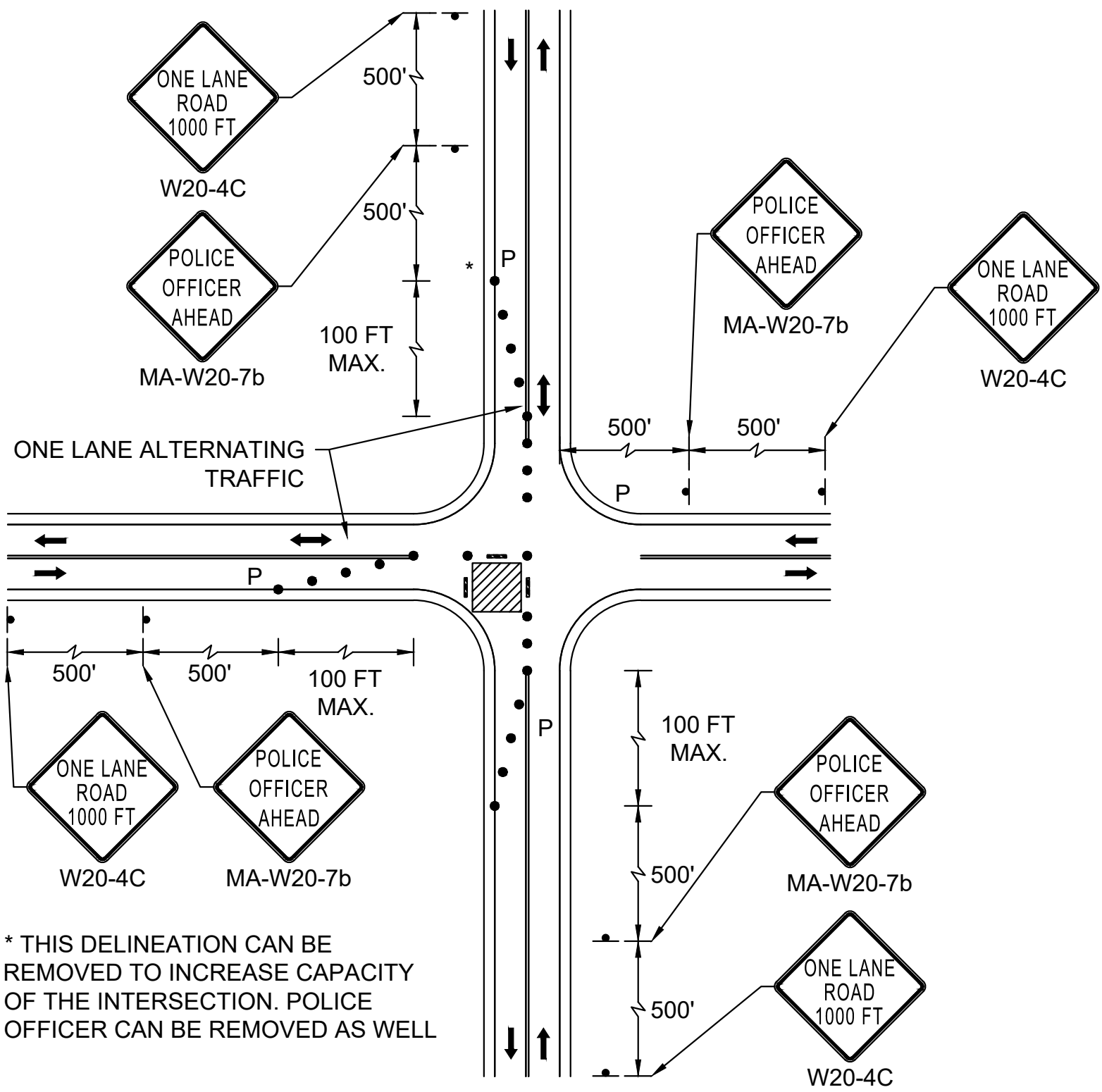
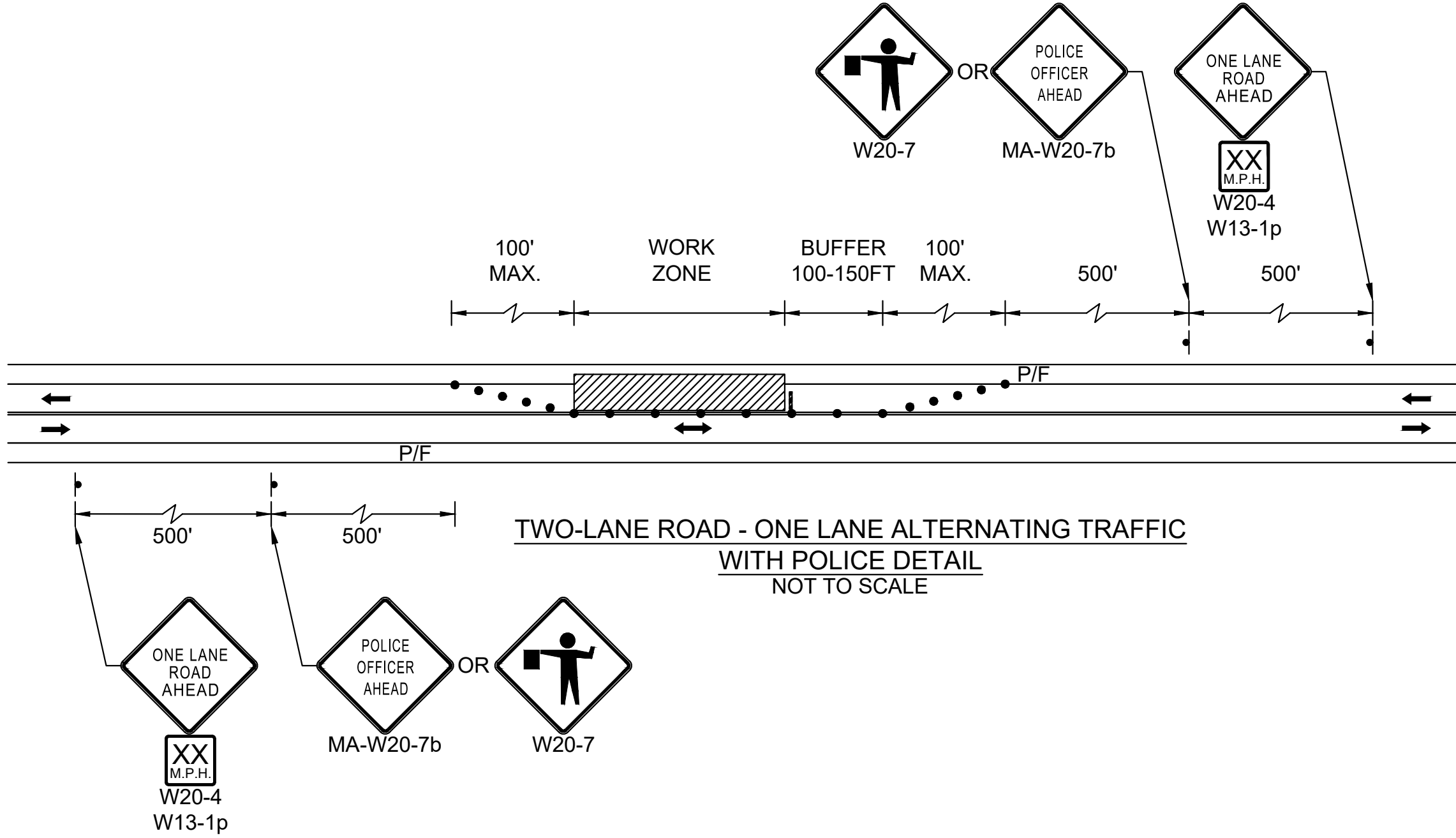
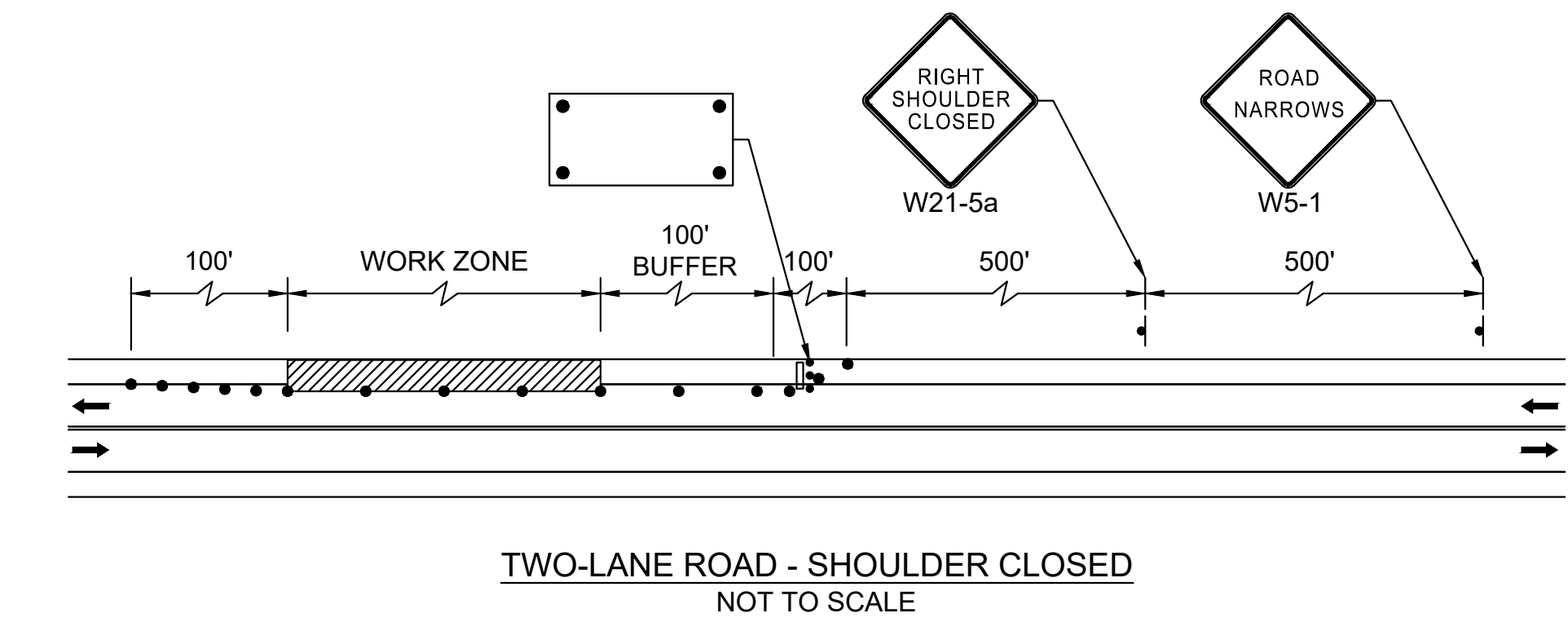
- REFLECTORIZED PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW BOARD
- FLASHING ARROW BOARD
- WORK ZONE
- DIRECTION OF TRAFFIC
- IMPACT ATTENUATOR
- MEDIAN BARRIER
- MEDIAN BARRIER WITH WARNING LIGHTS
- WORK VEHICLE
- TRUCK MOUNTED ATTENUATOR
- TRAFFIC OR PEDESTRIAN SIGNAL
- SIGN
- PORTABLE CHANGEABLE MESSAGE SIGN
- P

POLICE DETAIL
- F

FLAGGER

TAPER LENGTH

SPEED LIMIT	FORMULA
40 MPH or Less	L=WS ² /60
45 MPH or Greater	L=W x S
L = TAPER LENGTH IN FEET W = WIDTH OF OFFSET IN FEET S = POSTED SPEED IN MPH	



INTERSECTION WITH LANE CLOSURE
NOT TO SCALE

SAFETY SIGNING FOR CONSTRUCTION OPERATIONS

LEGEND	TYPE	SIZE	COLOR			UNIT AREA	NO. SIGNS*	TOTAL AREA
			BACKGROUND**	LEGEND	BORDER			
ROAD NARROWS	W5-1	36" x 36"	ORANGE	BLACK	BLACK	9 SF	2	18 SF
ADVISORY SPEED	W13-1	24" x 30"	ORANGE	BLACK	BLACK	5 SF	2	10 SF
ONE LANE ROAD AHEAD	W20-4	36" x 36"	ORANGE	BLACK	BLACK	9 SF	2	18 SF
ONE LANE ROAD 1000 FT	W20-4C	36" x 36"	ORANGE	BLACK	BLACK	9 SF	4	36 SF
FLAGGER	W20-7	36" x 36"	ORANGE	BLACK	BLACK	9 SF	2	18 SF
POLICE OFFICER AHEAD	MA-W20-7b	36" x 36"	ORANGE	BLACK	BLACK	9 SF	4	36 SF
RIGHT SHOULDER CLOSED	W21-5aR	36" x 36"	ORANGE	BLACK	BLACK	9 SF	2	18 SF
TOTAL AREA OF SIGNS:								154 SF

* NO. OF SIGNS ARE ESTIMATED FOR BIDDING PURPOSES ONLY

** ALL CONSTRUCTION SIGNAGE SHALL HAVE FLUORESCENT ORANGE BACKGROUND

2/14/2022 12:31 PM K:\NEEDHAM, MA\7435 - CENTRAL AVE WATER MAIN\DRAWING\FILES\PLANSET\7435 TMP.DWG (BETA STB BW.STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS	

DRAWN BY:	DPR
DESIGNED BY:	DPR
CHECKED BY:	MRH

REGISTERED PROFESSIONAL
03/04/2022
ANDREW J. DENENY CIVIL ENGINEER No. 46470 REGISTERED MASSACHUSETTS

PREPARED BY
www.BETA-Inc.com

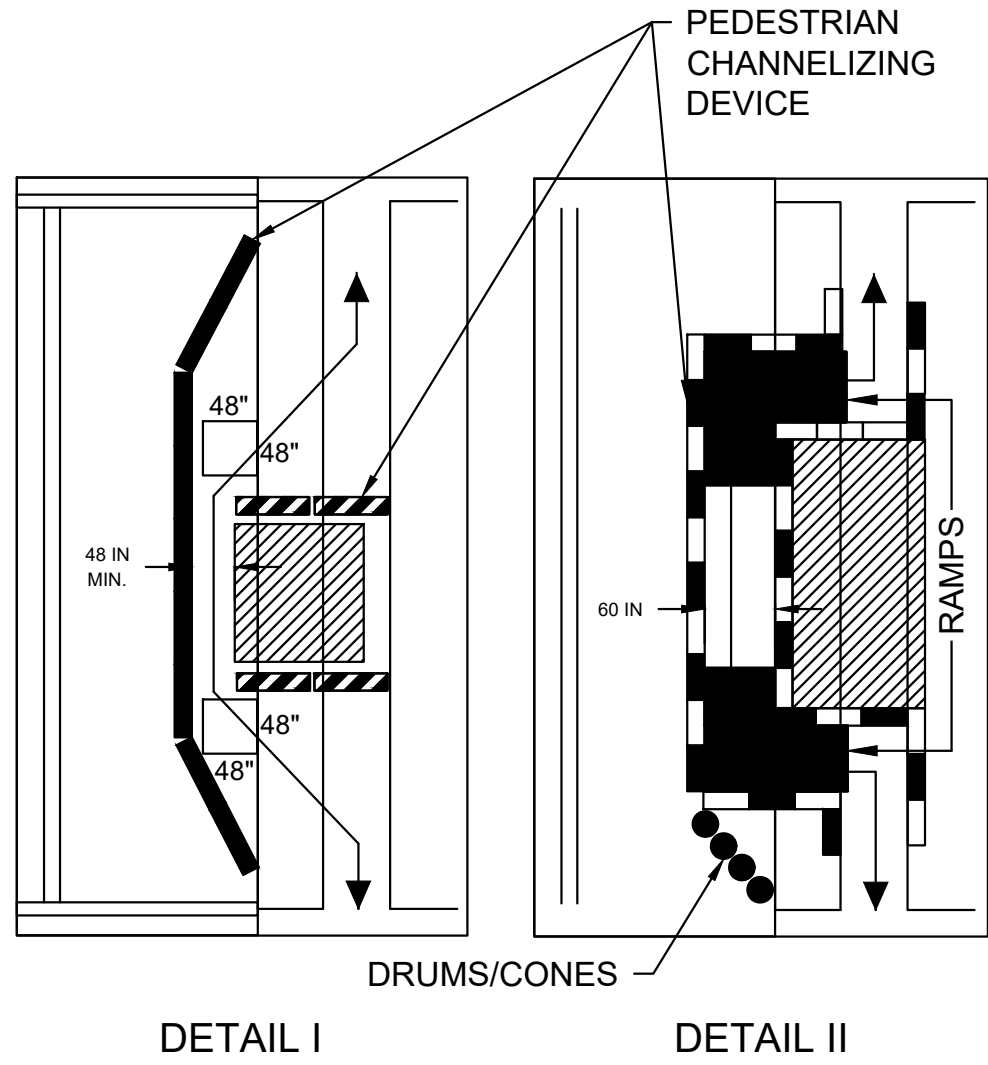
SUBCONSULTANT

SCALE
NONE
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE
Town of Needham, Massachusetts
Central Ave Water Main Replacement
TEMPORARY TRAFFIC CONTROL PLAN I

BETA JOB NO.	7435
ISSUE DATE	FEBRUARY 2022
SHEET NO.	6

2/14/2022 12:33 PM K:\NEEDHAM, MA\7435 - CENTRAL AVE WATER MAINDRAWINGFILES\PLANSET\7435 TMP.DWG (BETA STB BW STB)

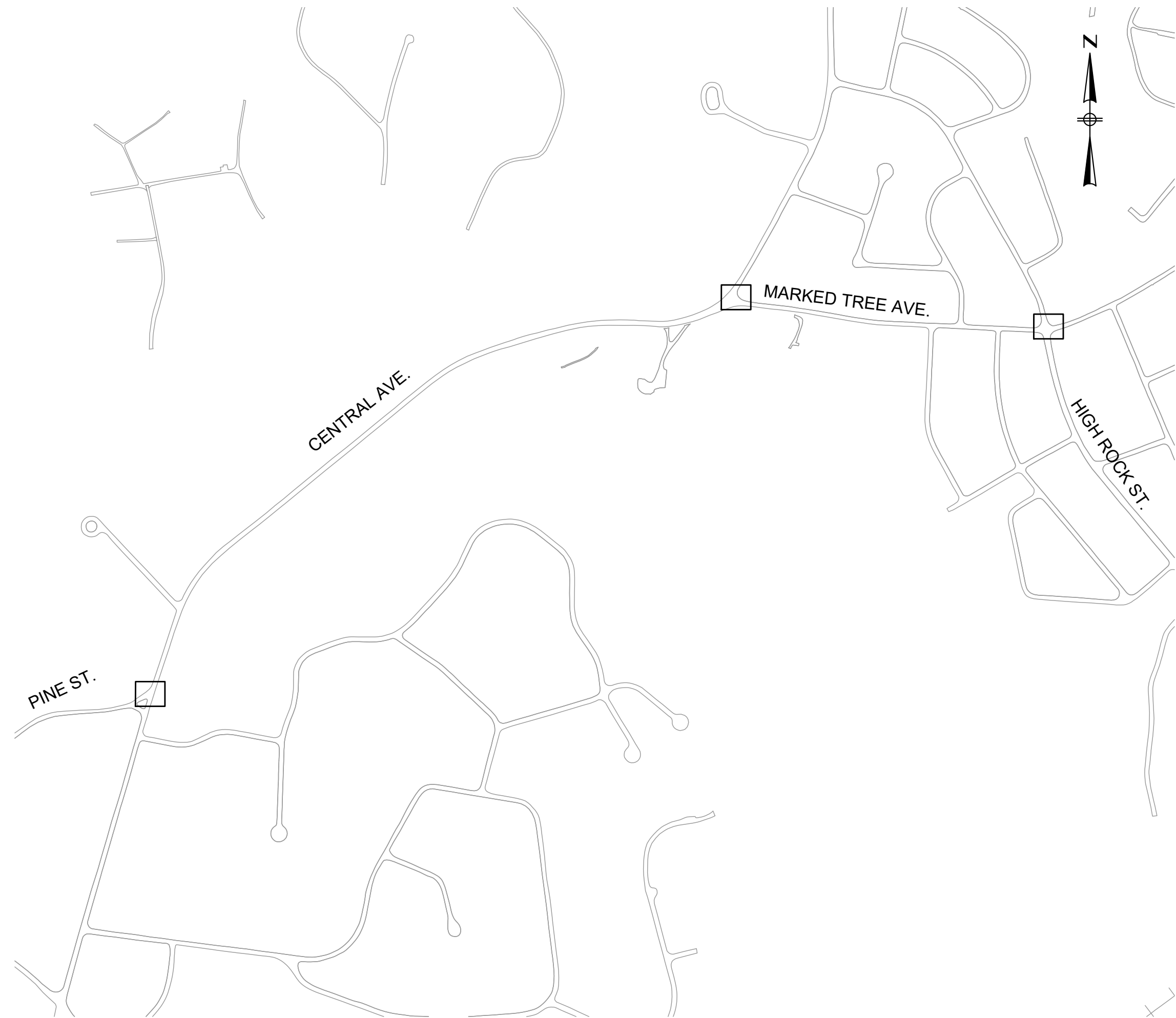


NOTES:

- DETAIL I IS CONSIDERED AN EXAMPLE OF A SHORT TERM CLOSURE AND PEDESTRIAN ASSISTANCE (PERSONEL) TO NAVIGATE AROUND THE CLOSURE/WORK AREA COULD BE CONSIDERED AS AN OPTION IN PLACE OF PROVIDING ADA/AAB DEVICES. DETAIL II IS CONSIDERED AN EXAMPLE OF A LONG TERM CLOSURE THAT WOULD REQUIRE ADDITIONAL ADA/AAB COMPLIANT DEVICES. IF A SIDEWALK CLOSURE OR RESTRICTION LASTS FOR MORE THAN ONE (1) WORK SHIFT THEN ADA/AAB COMPLIANCE SHALL BE FOLLOWED.
- 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).
- THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
- THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THE SIDEWALK EXCEEDS 200 FEET THEN A 5 FOOT BE 5 FOOT PASSING ZONE SHALL BE PROVIDED.
- THE PROTECTIVE REQUIREMENTS OF A TTC WORK ZONE MAY HAVE AN IMPACT IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN PROVIDING PEDESTRIAN DELINEATION SHOULD BE BASED ON ENGINEERING JUDGMENT .
- CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN; VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE. THESE DETAILS ARE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DETERMINED BY THE ENGINEER.
- 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.
- EXISTING AUDIBLE DEVICES NO LONGER APPLICABLE DUE TO CONSTRUCTION SHALL BE DISABLED.

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.

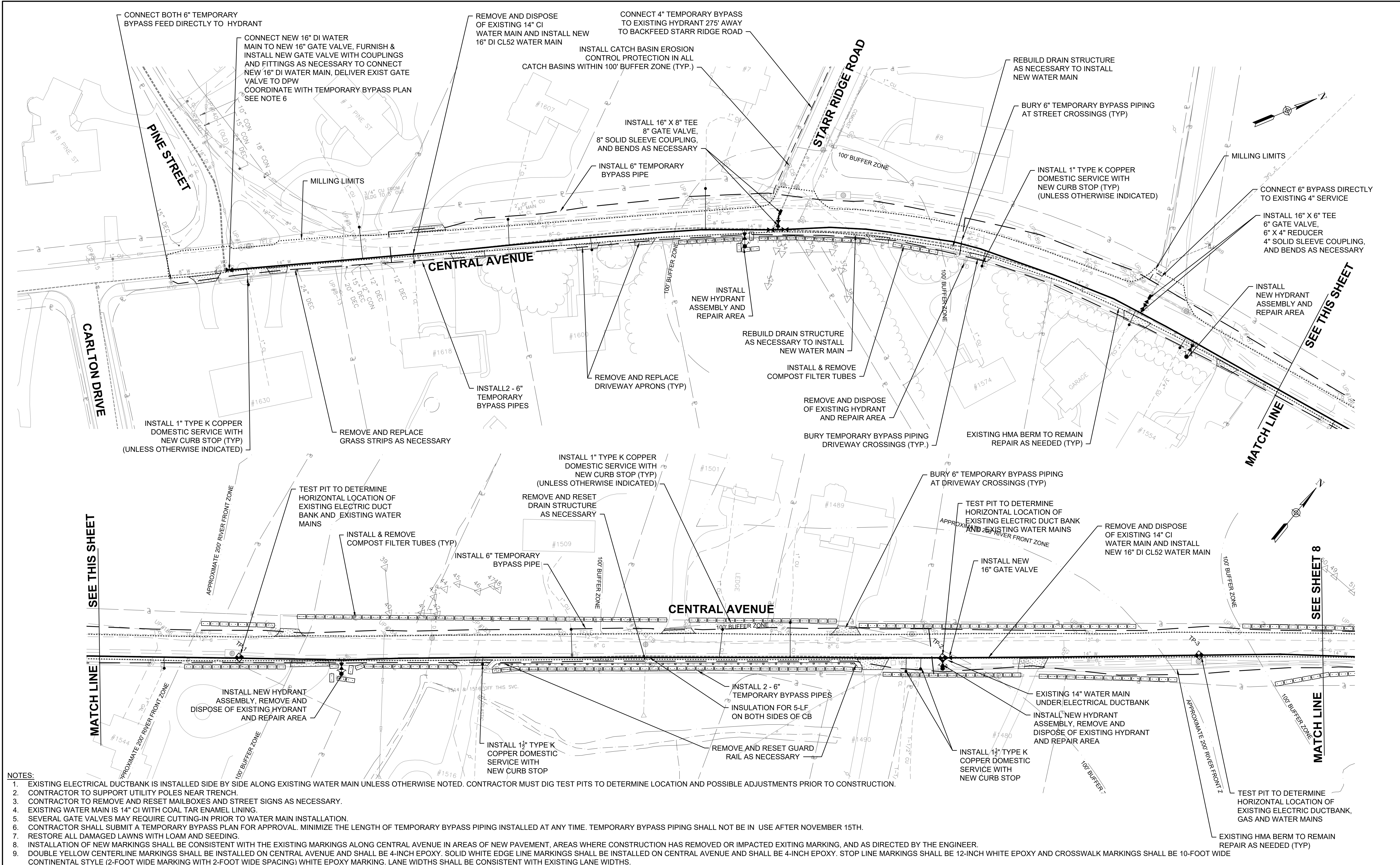


PORTABLE CHANGEABLE MESSAGE SIGNS

1" = 200'

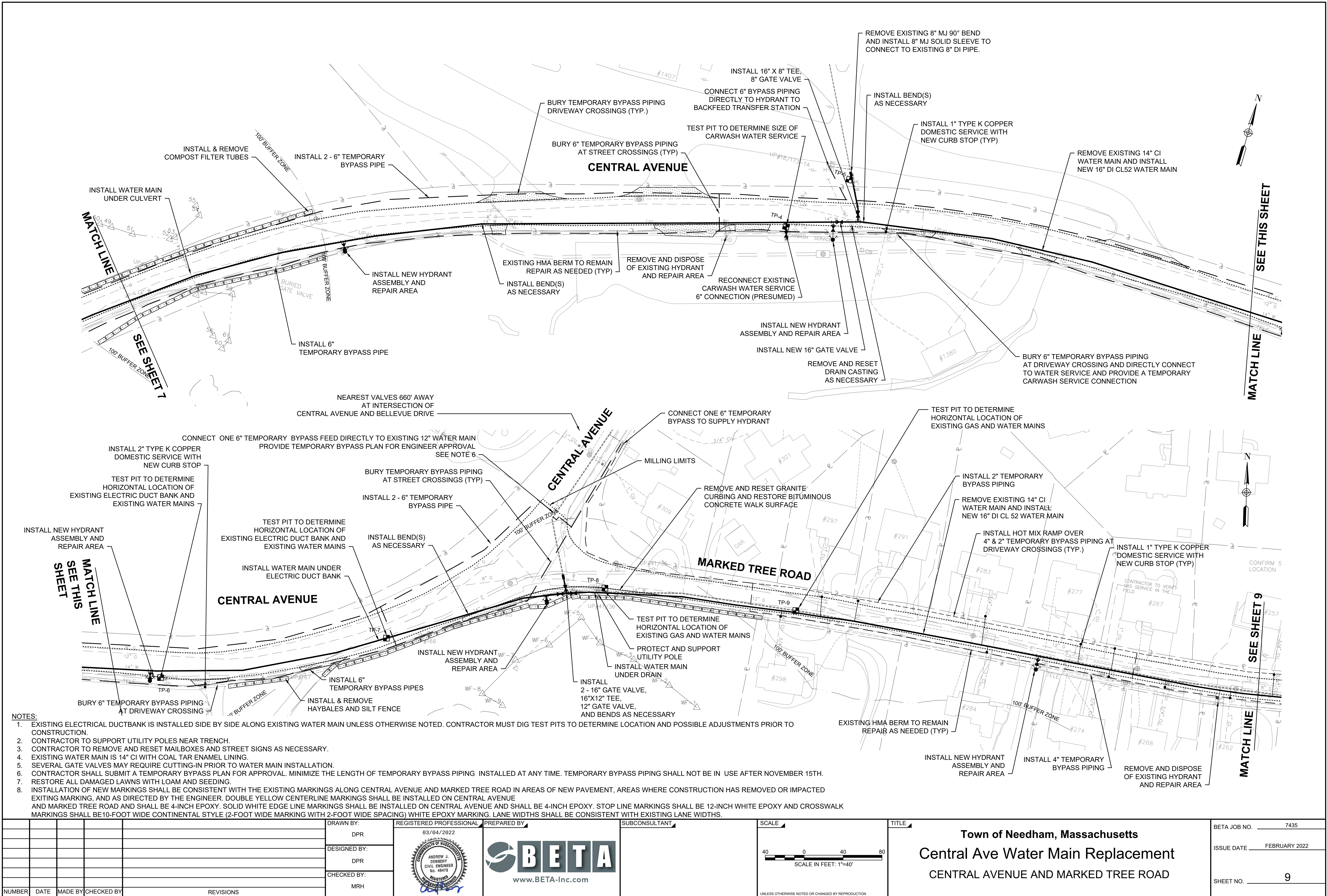
					DRAWN BY: DPR	REGISTERED PROFESSIONAL 03/04/2022	PREPARED BY	SUBCONSULTANT	SCALE AS NOTED	TITLE Town of Needham, Massachusetts Central Ave Water Main Replacement TEMPORARY TRAFFIC CONTROL PLAN II	BETA JOB NO. 7435
					DESIGNED BY: DPR						ISSUE DATE FEBRUARY 2022
				CHECKED BY: MRH	SHEET NO. 7						
NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS							

2/14/2022 12:34 PM K:\NEEDHAM, MA\7435 - CENTRAL AVE WATER MAIN\DRAWING\LES\PLANSET\7435 CENTRAL AVE WATER MAIN.DWG (BETA STB BW.STB)

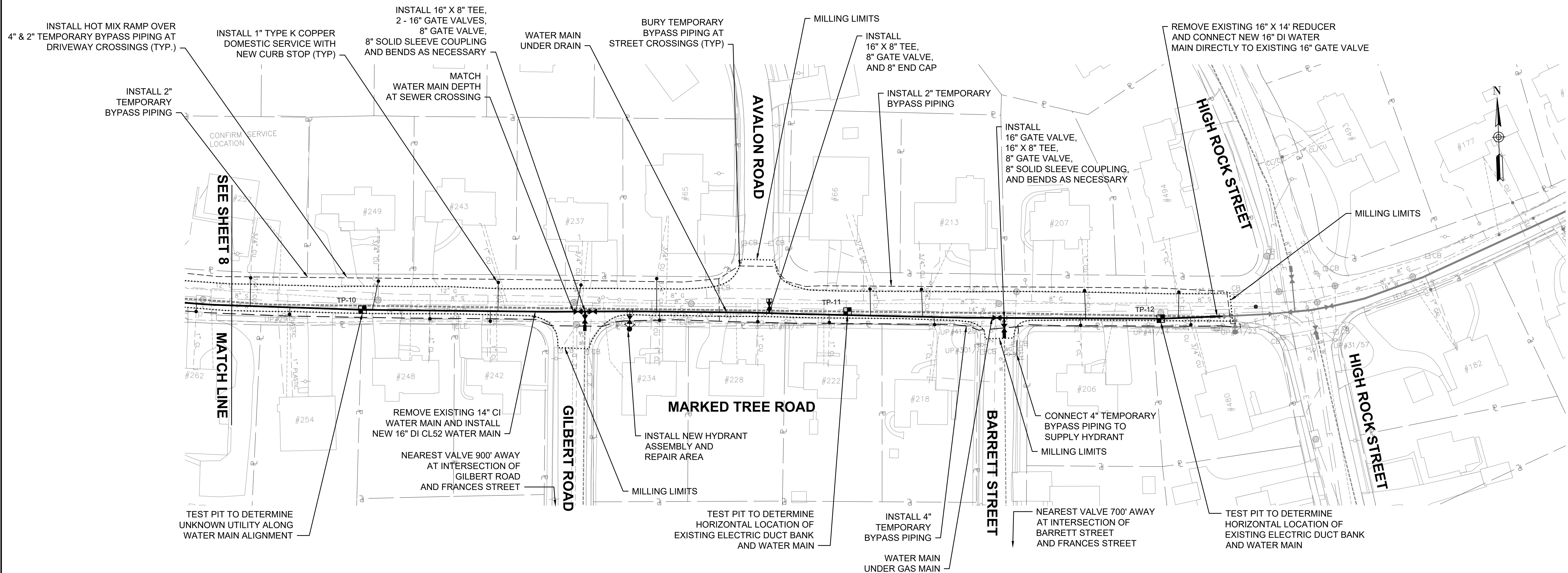


- NOTES:**
- EXISTING ELECTRICAL DUCTBANK IS INSTALLED SIDE BY SIDE ALONG EXISTING WATER MAIN UNLESS OTHERWISE NOTED. CONTRACTOR MUST DIG TEST PITS TO DETERMINE LOCATION AND POSSIBLE ADJUSTMENTS PRIOR TO CONSTRUCTION.
 - CONTRACTOR TO SUPPORT UTILITY POLES NEAR TRENCH.
 - CONTRACTOR TO REMOVE AND RESET MAILBOXES AND STREET SIGNS AS NECESSARY.
 - EXISTING WATER MAIN IS 14" CI WITH COAL TAR ENAMEL LINING.
 - SEVERAL GATE VALVES MAY REQUIRE CUTTING-IN PRIOR TO WATER MAIN INSTALLATION.
 - CONTRACTOR SHALL SUBMIT A TEMPORARY BYPASS PLAN FOR APPROVAL. MINIMIZE THE LENGTH OF TEMPORARY BYPASS PIPING INSTALLED AT ANY TIME. TEMPORARY BYPASS PIPING SHALL NOT BE IN USE AFTER NOVEMBER 15TH.
 - RESTORE ALL DAMAGED LAWNS WITH LOAM AND SEEDING.
 - INSTALLATION OF NEW MARKINGS SHALL BE CONSISTENT WITH THE EXISTING MARKINGS ALONG CENTRAL AVENUE IN AREAS OF NEW PAVEMENT, AREAS WHERE CONSTRUCTION HAS REMOVED OR IMPACTED EXITING MARKING, AND AS DIRECTED BY THE ENGINEER.
 - DOUBLE YELLOW CENTERLINE MARKINGS SHALL BE INSTALLED ON CENTRAL AVENUE AND SHALL BE 4-INCH EPOXY. SOLID WHITE EDGE LINE MARKINGS SHALL BE INSTALLED ON CENTRAL AVENUE AND SHALL BE 4-INCH EPOXY. STOP LINE MARKINGS SHALL BE 12-INCH WHITE EPOXY AND CROSSWALK MARKINGS SHALL BE 10-FOOT WIDE CONTINENTAL STYLE (2-FOOT WIDE MARKING WITH 2-FOOT WIDE SPACING) WHITE EPOXY MARKING. LANE WIDTHS SHALL BE CONSISTENT WITH EXISTING LANE WIDTHS.

<table><tr><td>NUMBER</td><td>DATE</td><td>MADE BY</td><td>CHECKED BY</td><td>REVISIONS</td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>				NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS																										<table><tr><td>DRAWN BY:</td><td>DPR</td></tr><tr><td>DESIGNED BY:</td><td>DPR</td></tr><tr><td>CHECKED BY:</td><td>MRH</td></tr></table>	DRAWN BY:	DPR	DESIGNED BY:	DPR	CHECKED BY:	MRH	<table><tr><td>REGISTERED PROFESSIONAL</td><td>PREPARED BY</td></tr><tr><td>03/04/2022</td><td> </td></tr><tr><td></td><td></td></tr></table>	REGISTERED PROFESSIONAL	PREPARED BY	03/04/2022				<table><tr><td>SUBCONSULTANT</td><td>SCALE</td></tr><tr><td> </td><td></td></tr><tr><td> </td><td>UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION</td></tr></table>	SUBCONSULTANT	SCALE				UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION	<table><tr><td>TITLE</td></tr><tr><td>Town of Needham, Massachusetts</td></tr><tr><td>Central Ave Water Main Replacement</td></tr><tr><td>CENTRAL AVENUE</td></tr></table>	TITLE	Town of Needham, Massachusetts	Central Ave Water Main Replacement	CENTRAL AVENUE	<table><tr><td>BETA JOB NO.</td><td>7435</td></tr><tr><td>ISSUE DATE</td><td>FEBRUARY 2022</td></tr><tr><td>SHEET NO.</td><td>8</td></tr></table>	BETA JOB NO.	7435	ISSUE DATE	FEBRUARY 2022	SHEET NO.	8
NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS																																																														
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2/14/2022 12:36 PM K:\NEEDHAM, MA\7435 - CENTRAL AVE WATER MAIN\DRAWINGFILES\PLANSET\7435 CENTRAL AVE WATER MAIN.DWG (BETA STB.BW.STB)



NOTES:

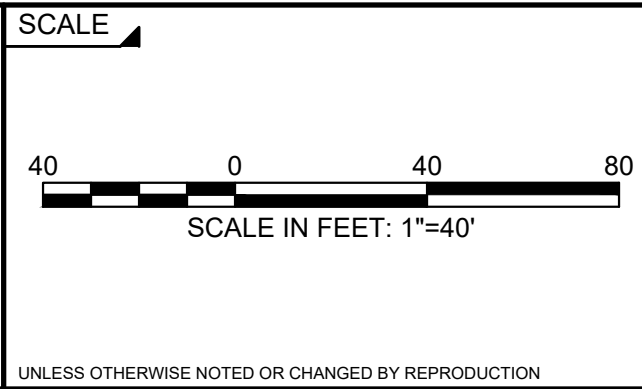
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NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	DPR
DESIGNED BY:	DPR
CHECKED BY:	MRH



SUBCONSULTANT



Town of Needham, Massachusetts

Central Ave Water Main Replacement

MARKED TREE ROAD

BETA JOB NO.	7435
ISSUE DATE	FEBRUARY 2022
SHEET NO.	10