

CITY OF WALTHAM, MASSACHUSETTS

CONTRACT DRAWINGS FOR

AREA 5A RELIEF SEWER

JANUARY 2017

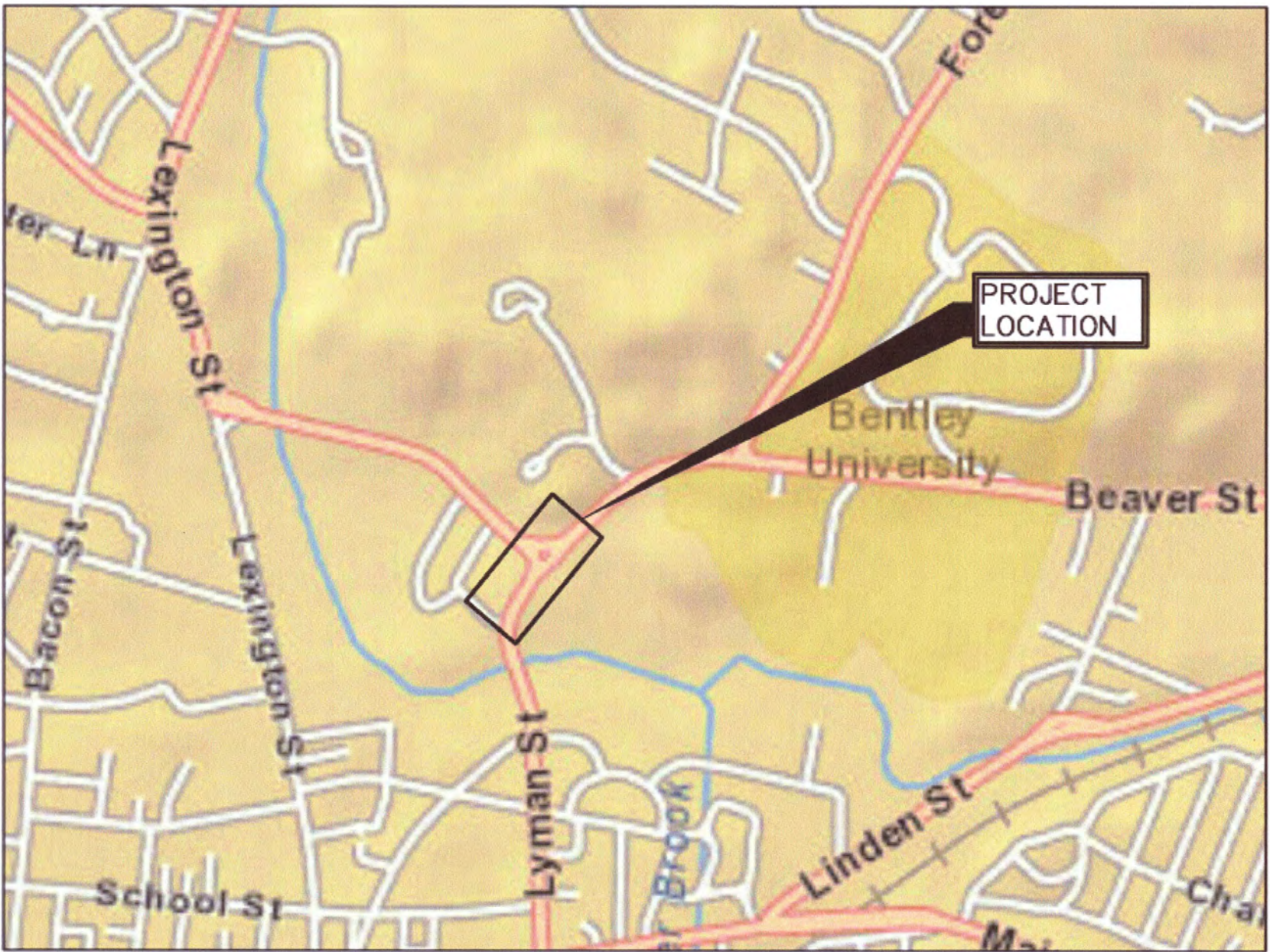
DRAWING INDEX

<u>SHEET</u>	<u>TITLE</u>
-	COVER
<u>CIVIL</u>	
C-1	GENERAL NOTES, LEGEND, AND ABBREVIATIONS
C-2	LYMAN STREET PLAN AND PROFILE
C-3	DETAILS I
C-4	DETAILS II
C-5	DETAILS III AND TRAFFIC CONTROL
C-6	EROSION CONTROL NOTES AND DETAILS

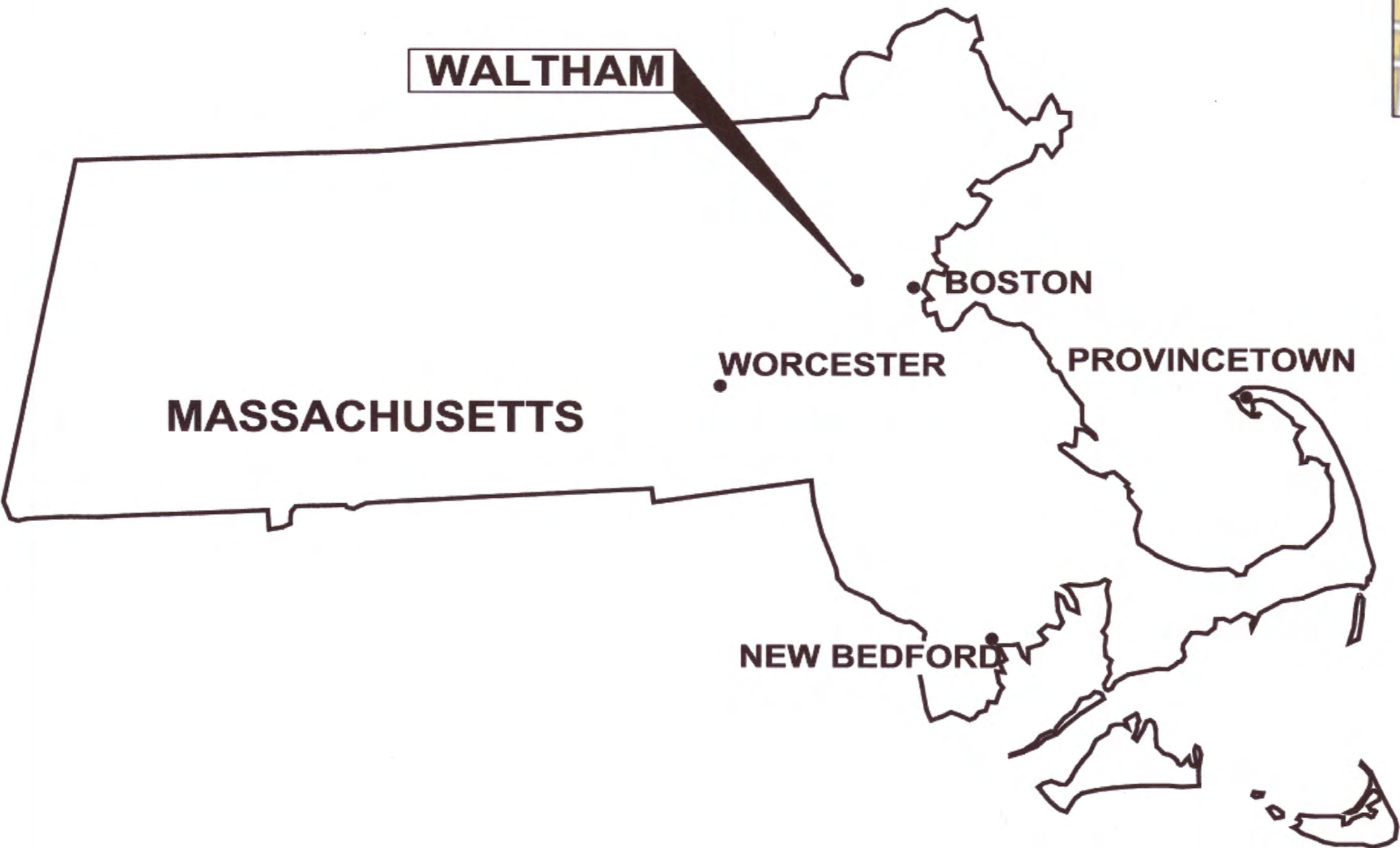
CITY ENGINEER
STEPHEN A. CASAZZA, PE

ASSISTANT CITY ENGINEER
IAN MCKENZIE, PE

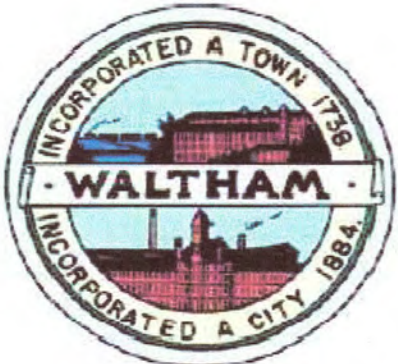
WATER AND SEWER SUPERINTENDENT
GERARD SHAUGHNESSY



LOCATION PLAN
SCALE: NTS



CITY OF WALTHAM
ENGINEERING DEPARTMENT
119 SCHOOL STREET
WALTHAM, MA 02451



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FOR REVIEW JANUARY 2017

FOR BIDDING _____

WP PROJECT NO. 13406D

GENERAL NOTES

- POLICE DEPARTMENT:
155 LEXINGTON STREET
WALTHAM, MA 02452
TEL: (781) 314-3600

FIRE DEPARTMENT:
175 LEXINGTON STREET
WALTHAM, MA 02452
TEL: (781) 314-371
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ELECTRIC:
NSTAR
ONE NSTAR WAY
WESTWOOD, MA 02090
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TREE WARDEN
165 LEXINGTON ST.
WALTHAM, MA 02452
(781) 314-3850
KEVIN THOMPSON

WATER & SEWER DIVISION:
169 LEXINGTON ST
WALTHAM, MA 02452
TEL: (781) 314-3820

CABLE:
VERIZON: 1-800-837-4966
RCN: 1-800-746-4726
COMCAST: 1-800-266-2278

WIRES DEPARTMENT
119 SCHOOL ST. RM 12
WALTHAM, MA 02452
(781) 314-3175, TIMOTHY KELLY

GAS:
NATIONAL GRID
NORTHBOROUGH, MA 01532

TELEPHONE:
VERIZON
TEL: 1-800-837-4966

3. THE CONTRACTOR SHALL NOTIFY RESIDENTS 48 HOURS IN ADVANCE OF WHEN CONSTRUCTION WILL BE OCCURRING IN PROXIMITY TO THEIR RESIDENCE OR BUSINESS.

4. PLANS DEVELOPED BASED ON SURVEY PROVIDED BY THE CITY OF WALTHAM, CITY OF WALTHAM GIS DATA, AND EXISTING RECORD DRAWINGS PROVIDED BY THE CITY OF WALTHAM. TOPOGRAPHY BASED ON SURVEY DATA DATED 2016, BY DAVE O'BRIEN LAND SURVEY. SOME UTILITIES MAY EXTEND BEYOND THE LIMITS OF THE SURVEY.

5. THE CONTRACTOR SHALL EMPLOY A MASSACHUSETTS LICENSED SURVEYOR TO ESTABLISH VERTICAL CONTROL POINTS FOR CONSTRUCTION PURPOSES. THE ELEVATION OF EXISTING STRUCTURES TO BE TIED INTO SHALL BE CONFIRMED OR ESTABLISHED. VERTICAL CONTROL POINTS AND ELEVATIONS ON DRAWINGS ARE FOR DESIGN PURPOSES ONLY.

6. TO THE EXTENT POSSIBLE ASBESTOS CEMENT (AC) PIPE MATERIAL IS IDENTIFIED. CONTRACTOR MAY ENCOUNTER AC MATERIALS OUTSIDE OF THOSE IDENTIFIED. CONTRACTOR SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF OSHA AND ALL OTHER FEDERAL, STATE AND LOCAL REGULATIONS WHEN HANDLING, REMOVING AND DISPOSING OF ASBESTOS CEMENT PIPES. A BID ITEM HAS BEEN INCLUDED IN THE BID FORM TO ESTABLISH A UNIT PRICE FOR THE REMOVAL AND DISPOSAL OF ASBESTOS CEMENT PIPE. SEE SPECIFICATION SECTION 02076.

7. DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. WRITTEN DIMENSIONS AND STATIONING SHALL PREVAIL.

8. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW AT ALL TIMES. THE CONTRACTOR IS REQUIRED TO SUBMIT A TRAFFIC CONTROL PLAN TO THE OWNER PRIOR TO COMMENCING CONSTRUCTION. THE WALTHAM POLICE DEPARTMENT AND FIRE DEPARTMENT ARE TO BE NOTIFIED AT LEAST 24 HOURS IN ADVANCE OF ANY WORK. IN ADDITION, CONTRACTOR IS TO COORDINATE WITH WALTHAM POLICE DEPARTMENT FOR UNIFORMED TRAFFIC CONTROL FOR ALL WORK ON STREETS. THE CONTRACTOR SHALL COMPLY WITH ANY CONDITIONS SET BY THE PUBLIC SAFETY OFFICIALS. CONTRACTOR SHALL INSTALL AND MAINTAIN PERMANENT AND TEMPORARY TRAFFIC CONTROL DEVICES AS NECESSARY AND IN A MANNER CONSISTENT WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).

9. THE OWNER WILL BE RESPONSIBLE FOR OBTAINING ANY PERMITS REQUIRED TO PERFORM THE WORK INCLUDING THOSE PERMITS LISTED IN THE SUPPLEMENTARY OR SPECIAL CONDITIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE APPLICABLE PROVISIONS OF EACH PERMIT AS THEY APPLY TO THE WORK PRIOR TO BIDDING AND ABIDE BY THOSE PROVISIONS DURING CONSTRUCTION. ALL OTHER PERMITS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

10. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RIGHTS OF WAY AND EASEMENTS. THE CONTRACTOR SHALL VERIFY THAT THE NECESSARY EASEMENTS HAVE BEEN SECURED BY THE OWNER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE APPLICABLE PROVISIONS OF EACH EASEMENT AS THEY APPLY TO THE WORK PRIOR TO BIDDING AND ABIDE BY THOSE PROVISIONS DURING CONSTRUCTION. COPIES OF ALL RIGHTS-OF-WAY AND EASEMENTS ARE AVAILABLE FOR REVIEW FROM THE WALTHAM ENGINEERING DEPARTMENT.

11. EXCAVATION WITHIN 18" OF ANY UTILITY SHALL BE COMPLETED BY HAND TO EXPOSE THE UTILITY LOCATION. AFTER VERIFYING THE UTILITY LOCATION AND DEPTH, MECHANICAL EXCAVATION METHODS CAN RESUME, TAKING CARE NOT TO DAMAGE THE UTILITY.

12. ALL TEST PITS SHALL BE EXCAVATED PRIOR TO CONSTRUCTION LAYOUT AND RESULTS REPORTED TO THE ENGINEER FOR REVIEW FOR CONFORMANCE TO THE PLANS. TEST PITS ARE REQUIRED WHERE SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. NOT ALL REQUIRED TEST PITS ARE SHOWN ON THE PLANS. TEST PITS WILL BE DUG AT LEAST 15 DAYS PRIOR TO CONNECTING PROPOSED SEWERS TO EXISTING SEWERS. THE RESULTS OF TEST PITS DUG TO DETERMINE EXISTING SEWER/DRAIN ELEVATIONS AND LOCATIONS WILL BE REPORTED TO THE ENGINEER AT LEAST TEN DAYS PRIOR TO ANY WORK. ADJUSTMENTS TO INVERTS, LENGTHS, AND SLOPES OF PROPOSED SEWER/DRAIN MAY BE REQUIRED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF ALL PROPOSED LINES AND STRUCTURES AS SHOWN ON THE DRAWINGS. THE LAYOUT PLAN SHALL BE REVIEWED BY THE ENGINEER PRIOR TO CONSTRUCTION. THE HORIZONTAL ALIGNMENT OF THE NEW SEWERS MAY BE ADJUSTED IN THE FIELD SUBJECT TO PRIOR APPROVAL BY THE ENGINEER. ALL ELEVATIONS REFER TO THE NATIONAL GEODETIC VERTICAL DATUM. ORIENTATION IS GRID NORTH MASSACHUSETTS STATE PLANE COORDINATE SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ALL ELEVATION REFERENCE INFORMATION PRIOR TO USE IN CONSTRUCTION.

13. CONTRACTOR SHALL MINIMIZE CLEARING OPERATIONS. CLEARING AND GRUBBING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110. CLEARING LIMITS SHALL BE AS INDICATED ON THE DRAWINGS, BUT AT ALL TIMES WITHIN EXISTING ROAD RIGHTS-OF-WAY AND PROPERTY LINES ON STATE OR COUNTY-OWNED PROPERTY OR EASEMENTS. ALL GRUBBINGS AND EXCESS EXCAVATED MATERIAL ARE THE PROPERTY OF THE CONTRACTOR AND WILL BE DISPOSED OF AT A SITE PROVIDED BY THE CONTRACTOR IN COMPLIANCE WITH ALL STATE AND LOCAL LAWS.

14. NO TREE OR LIMB SHALL BE CUT WITHOUT THE PRIOR APPROVAL OF THE CITY OF WALTHAM. TREES ALLOWED TO BE CUT WILL BE FLAGGED BY THE CONTRACTOR AND PAINT MARKED BY THE CITY FOR VERIFICATION PRIOR TO CUTTING. FOR TREES THAT ARE ALLOWED TO BE CUT, CONTRACTORS SHALL REMOVE TREE AND STUMP, AND REPAIR SIDEWALK AND CURB. THE CONTRACTOR IS TO TAKE SPECIAL CARE NOT TO DAMAGE TREES WITHIN THE CONSTRUCTION AREA UNLESS THEY ARE NOTED TO BE REMOVED.

15. LOCATION OF PROPOSED STORM DRAIN OR SANITARY SEWER SHALL MINIMIZE DISTURBANCE OF ROOT SYSTEMS OF EXISTING TREES OR SHRUBS. CONTRACTOR SHALL EXERCISE CARE TO PREVENT DAMAGE THERETO.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREVENTION OF EROSION. ALL DISTURBED EARTH SURFACES ARE TO BE STABILIZED IN THE SHORTEST PRACTICAL TIME AND TEMPORARY EROSION CONTROL DEVICES SHALL BE EMPLOYED UNTIL SUCH TIME AS ADEQUATE SOIL STABILIZATION HAS BEEN ACHIEVED. TEMPORARY STORAGE OF EXCAVATED MATERIAL IS TO BE IN A MANNER THAT WILL MINIMIZE EROSION. THE CONTRACTOR SHALL DISPOSE OF UNSUITABLE EXCAVATED MATERIAL AT A SITE PROVIDED BY HIM WHICH IS IN COMPLIANCE WITH ALL STATE AND LOCAL LAWS. REFER TO EROSION CONTROL SHEET AND SPECIFICATION SECTIONS 02226 AND 02270 FOR MORE INFORMATION.
17. COMPACTION TESTS SHALL BE PERFORMED IN ACCORDANCE WITH SPECIFICATION SECTION 02200. ANY SETTLEMENT OCCURRING WITHIN ONE YEAR OF SUBSTANTIAL COMPLETION OF THE PROJECT WILL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.

18. OPEN TRENCHES MUST BE BACKFILLED AND PAVED AT THE END OF EACH WORKDAY, REFER TO THE TEMPORARY PAVING DETAIL.

19. CONTRACTOR SHALL CONTROL DUST TO A TOLERABLE LIMIT AS OUTLINED IN SPECIFICATION SECTION 01562. CONTRACTOR SHALL NOT TRACK OR SPILL EARTH AND DEBRIS ON PUBLIC STREETS OUTSIDE THE PROJECT AREA. STREETS OPENED TO THE PUBLIC SHALL BE KEPT SWEEP AND FREE OF DEBRIS.

20. WHEREVER PROPOSED SEWER AND DRAIN MANHOLES ARE LOCATED PARTLY WITHIN A PAVED AREA AND PARTLY IN A NON-PAVED AREA, A BITUMINOUS CONCRETE PAVED APRON 2-FEET WIDE SHALL BE SUPPLIED AROUND THE PROPOSED COVER. PAVEMENT SHALL SLOPE AWAY FROM THE COVER.

21. SERVICE CONNECTIONS ARE SHOWN FOR ESTIMATING PURPOSES ONLY. THE ACTUAL NUMBER, LENGTH, AND LOCATION SHALL BE AS FIELD DETERMINED AT THE TIME OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE LOCATION OF SERVICES BY EXPLORATORY EXCAVATION.

22. THE LOCATIONS AND DEPTHS OF EXISTING GAS, WATER AND SEWER SERVICES ARE UNKNOWN. FOR UTILITY PIPE CROSSINGS THAT ARE SHOWN IN THE PROFILE, WATER MAINS ARE SHOWN WITH 5 FEET OF COVER OVER THE PIPE, AND GAS MAINS ARE SHOWN WITH 3 FEET OF COVER OVER THE PIPE. ACTUAL FIELD ELEVATIONS MAY VARY, CONTRACTOR SHALL FIELD VERIFY. CONTRACTOR SHALL ANTICIPATE AT LEAST ONE GAS, WATER AND SEWER SERVICE FOR EACH BUILDING. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING GAS, WATER AND SEWER MAINS AND SERVICES. THE CONTRACTORS SCHEDULE SHALL TAKE INTO CONSIDERATION REASONABLE TIME TO CROSS AND IF REQUIRED TO RELOCATION EXISTING SERVICES AND WATER MAINS AFFECTED BY THE WORK AND HE SHALL HAVE NO CLAIMS FOR ADDITIONAL TIME OR COSTS ASSOCIATED WITH THESE ROUTINE RELOCATIONS. ADDITIONALLY, DEPTHS OF NEW PIPE MAY BE ADJUSTED AT THE DISCRETION OF THE ENGINEER TO MINIMIZE CONFLICTS WITH WATER, GAS AND SEWER SERVICES.

23. ALL MANHOLES ARE 4 FOOT DIAMETER, ECCENTRIC CONE TOP, UNLESS OTHERWISE NOTED ON THE PROFILES. THE INVERTS SHOWN ARE AT THE INSIDE FACE OF THE MANHOLE.

24. INSULATE OVER ANY GRAVITY SEWER PIPE WHEN COVER IS LESS THAN 4 FT, OR THERE IS LESS THAN 2 FT BETWEEN THE SEWER AND A CULVERT OR DRAIN LINE.

25. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

26. SEE APPENDIX A OF THE SPECIFICATIONS FOR BORING LOGS. THESE ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

27. THE CONTRACTOR SHALL NOT HAVE ANY RIGHT OF PROPERTY IN ANY MATERIALS TAKEN FROM ANY EXCAVATION. SUITABLE EXCAVATED MATERIAL MAY BE INCORPORATED IN THE PROJECT, WITH EXCESS MATERIAL DISPOSED OF AT A LOCATION PROVIDED BY THE CONTRACTOR. THESE PROVISIONS SHALL IN NO WAY RELIEVE THE CONTRACTOR OF HIS OBLIGATIONS TO PROPERLY DISPOSE OF AND REPLACE ANY MATERIAL DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING. THE CONTRACTOR SHALL DISPOSE OF UNSUITABLE AND EXCESS MATERIAL IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CONTRACT DOCUMENTS.

28. WATER MAIN CROSSING SEWER PIPE SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER PIPE. WHERE POSSIBLE, WATER MAINS SHOULD BE INSTALLED OVER SEWER PIPE. WHERE A WATER MAIN CROSSES UNDER A SEWER PIPE, A FULL LENGTH OF SEWER PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE. THE FIRST SEWER JOINTS ON EITHER SIDE OF THE WATER MAIN SHALL BE ENCASED IN FLOWABLE FILL. WHERE IS IT IMPOSSIBLE TO OBTAIN 18 INCHES VERTICAL SEPARATION, BOTH THE WATER MAIN AND SEWER PIPE SHOULD BE ENCASED IN FLOWABLE FILL FOR A DISTANCE OF 10 FEET ON EITHER SIDE OF THE CROSSING. THE WATER AND SEWER WILL BE TESTED FOR WATER TIGHTNESS BY THE CONTRACTOR. THE CROSSING MAY REQUIRE SPECIAL STRUCTURAL SUPPORTS FOR THE WATER MAIN AND SEWER PIPE. SEE WATER CROSSING DETAILS.

29. THE CONTRACTOR SHALL MAINTAIN RECORDS OF THE ACTUAL AS-BUILT LOCATIONS AND DIMENSIONS OF THE WORK.

30. THE CONTRACTOR SHALL RE-SHAPE INVERTS AS REQUIRED WHEN CONNECTING INTO EXISTING MANHOLES.

31. CONTRACTOR TO NOTE THAT IN GENERAL EXISTING CONDITIONS INFORMATION ON THE DRAWINGS ARE SHOWN IN LIGHTER WEIGHTS AND WITH A SLANTED TYPE TEXT. THE PROPOSED SANITARY SEWER PIPES AND STRUCTURES ON THE PROFILES ARE SHADED.

32. ALL PIPE LINES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS OR SAGS IN PIPING WILL BE PERMITTED.

33. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE AS REQUIRED TO COMPLETE THE CONNECTION. CONTRACTOR SHALL VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION.

34. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND DISPOSING OF ALL DEMOLISHED PIPING, AND MATERIALS. DISPOSAL SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS. THE OWNER RESERVES THE RIGHT TO RETAIN ANY SUCH PIPING, AND MATERIALS DESIGNATED FOR DEMOLITION FOR HIS USE. SUCH MATERIALS TO BE RETAINED SHALL BE PROPERLY STORED IN AN APPROVED LOCATION. COORDINATE LOCATION AND MATERIALS TO BE SALVAGED WITH THE OWNER/ENGINEER.

35. THE CONTRACTOR SHALL KEEP A RECORD OF DEMOLITION AS PART OF THE PROJECT RECORD DOCUMENTS IN ACCORDANCE WITH SPECIFICATION SECTION 01720.

36. THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO ENSURE THAT UTILITIES ARE MAINTAINED ACTIVE DURING CONSTRUCTION. GRAVITY OR PUMPED BYPASSES AND OTHER MEANS OF MAINTAINING FLOW SHALL BE SUBJECT TO THE REVIEW AND ACCEPTANCE OF THE ENGINEER. THE CONTRACTOR SHALL COORDINATE ANY TEMPORARY STOPPAGES OR BYPASSES WITH THE OWNER AND ENGINEER.

37. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE APPROPRIATE DISPOSAL OF FLOWS RESULTING FROM PRECIPITATION AND DEWATERING OPERATIONS. REFER TO SPECIFICATION SECTION 02401 FOR MORE INFORMATION.

38. CONTRACTOR SHALL REMOVE AND REPLACE, OR REPAIR, ALL CURBS, SIDEWALKS, PAVEMENT AND OTHER ITEMS DAMAGED BY HIS CONSTRUCTION ACTIVITIES TO AT LEAST THEIR ORIGINAL CONDITION, TO THE SATISFACTION OF THE OWNER AND ENGINEER.

39. WHERE EXISTING PAVEMENT IS REMOVED AND REPLACED, MATCH EXISTING GRADES TO THE EXTENT POSSIBLE.

40. CONTOUR INTERVAL EQUALS ONE (1) FOOT.

41. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF ALL PROPOSED WORK AS SHOWN ON THE DRAWINGS.

42. THE RIGHT-OF-WAY FOR ROADS AND PERMANENT EASEMENT BOUNDARIES ARE THE TYPICAL CONSTRUCTION LIMITS.

43. ABANDON OR REMOVE EXISTING PIPING AS REQUIRED FOR CONSTRUCTION OF NEW UTILITIES. ALL PIPING TO BE ABANDONED OR REMOVED SHALL BE COORDINATED WITH THE OWNER AND ENGINEER BEFORE COMMENCING THAT WORK. SEVERING OF EXISTING UTILITIES FOR ABANDONMENT OR REMOVAL OF A SEGMENT FROM SERVICE SHALL BE PERFORMED IN SUCH A MANNER AS TO ALLOW THE REMAINING ACTIVE SEGMENT TO CONTINUE IN ITS INTENDED SERVICE. CAP ACTIVE SEGMENTS WITH APPROPRIATE FITTINGS, JOIN RESTRAIN, ETC TO ENSURE THEIR
- INTEGRITY. ABANDONING A PIPE IS DEFINED AS LEAVING THE PIPE IN ITS EXISTING LOCATION AND FILLING THE PIPE WITH FLOWABLE FILL AND CAPPING THE ENDS OF THE PIPE AS SHOWN ON THE DETAILS. WHERE CAPPING OF PIPE OCCURS NEAR A MANHOLE, THE PIPE CAPPING SHALL OCCUR INSIDE THE MANHOLE. REMOVING A PIPE IS DEFINED AS REMOVING AND DISPOSING OF THE BURIED PIPE. IF ABANDONED PIPE CONFLICTS WITH NEW PIPING THEN A PORTION OF THE ABANDONED PIPE SHALL BE REMOVED BEFORE THE NEW ENDS OF THE PIPE IS ABANDONED.
44. ALL STRUCTURES AND PIPELINES LOCATED ADJACENT TO THE TRENCH EXCAVATION SHALL BE PROTECTED AND FIRMLY SUPPORTED BY THE CONTRACTOR UNTIL THE TRENCH IS BACKFILLED. DAMAGE TO ANY SUCH STRUCTURES CAUSED BY, OR RESULTING FROM, THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL UTILITIES REQUIRING REPAIR, RELOCATION OR ADJUSTMENT AS A RESULT OF THE PROJECT SHALL BE COORDINATED THROUGH THE RESPECTIVE UTILITY.

45. IN THOSE INSTANCES WHERE POWER OR TELEPHONE POLE SUPPORT IS REQUIRED, THE CONTRACTOR SHALL NOTIFY AND COORDINATE WITH UTILITY(S) ACCORDINGLY. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR TEMPORARY BRACING OF UTILITIES. THE CONTRACTOR SHALL COORDINATE RELOCATION OF TELEPHONE POLES WITH THE RESPECTIVE UTILITY.

46. ALL PIPING, AND/OR STRUCTURES TO BE DEMOLISHED AND/OR REMOVED FROM SERVICE AND REMAIN IN-PLACE SHALL BE PLUGGED AND FILLED IN IT'S ENTIRETY WITH FLOWABLE FILL.

47. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESETTling ALL EXISTING PROPERTY MONUMENTATION THAT IS DISTURBED BY HIS OPERATIONS AT NO EXPENSE TO THE OWNER. THIS WORK IS TO BE DONE BY A LAND SURVEYOR LICENSED IN THE COMMONWEALTH OF MASSACHUSETTS. PROPERTY BOUNDS FOUND ARE SHOWN ON LAYOUT PLANS, THIS MAY NOT BE INCLUSIVE OF ALL BOUNDS THAT EXIST IN THE PROJECT AREA. IF ANY ADDITIONAL BOUNDS ARE FOUND, THE CONTRACTOR SHALL DOCUMENT THE LOCATION AND NOTIFY THE ENGINEER.
- ABBREVIATIONS
- | | |
|------|---|
| AC | ASBESTOS CEMENT |
| BB | BITUMINOUS BERM |
| C | CABLE |
| CB | CATCH BASIN |
| CI | CAST IRON PIPE |
| DI | DUCTILE IRON PIPE |
| DMH | DRAIN MANHOLE |
| EP | EDGE OF PAVEMENT |
| FF | FINISHED FLOOR |
| HYD | HYDRANT |
| INV | INVERT ELEVATION |
| OHE | OVERHEAD ELECTRICAL |
| PE | OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION |
| PVC | POLYETHYLENE PIPE |
| RCP | POLYVINYL CHLORIDE PIPE |
| S | SEWER |
| SD | STORM DRAIN |
| SMH | SEWER MANHOLE |
| SO | SEWER OVERFLOW |
| T | TELEPHONE |
| UGE | UNDERGROUND ELECTRIC |
| VC | VITRIFIED CLAY |
| VGC | VERTICAL GRANITE CURB |
| W | WATER |
| XFMR | TRANSFORMER |
- | EXISTING | LEGEND | PROPOSED |
|----------|-----------------------|----------|
| | PROPERTY/ROW LINE | |
| | SETBACK LINE | |
| | EASEMENT LINE | |
| | CENTERLINE | |
| | EDGE OF PAVEMENT | |
| | CURBING | |
| | EDGE OF GRAVEL | |
| | EDGE OF CONCRETE | |
| | CONTOUR | |
| | BUILDING | |
| | TREELINE | |
| | GUARDRAIL | |
| | SEWER | |
| | SEWER FORCE MAIN | |
| | GAS | |
| | WATER | |
| | STORM DRAIN | |
| | UNDERDRAIN | |
| | CULVERT | |
| | UNDERGROUND ELECTRIC | |
| | OVERHEAD ELECTRIC | |
| | MONUMENT | |
| | SURVEY CONTROL POINT | |
| | SPOT ELEVATION | |
| | SEWER MANHOLE | |
| | DRAINAGE MANHOLE | |
| | CATCH BASIN | |
| | GATE VALVE | |
| | CURB STOP | |
| | YARD HYDRANT | |
| | HYDRANT | |
| | UTILITY POLE | |
| | UTILITY POLE W/ GUY | |
| | UTILITY POLE W/ LIGHT | |
| | LIGHT POLE | |
| | FLAGPOLE | |
| | CONIFEROUS TREE | |
| | DECIDUOUS TREE | |
| | SHRUB | |
| | SIGN | |
| | MAILBOX | |
| | TEST PIT | |
| | LIMIT OF WORK | |
| | SILT FENCE | |
| | MATCHLINE | |
| | SILT SACK | |
- DRAWN BY: DXS
CHECKED BY: MAS2
DATE: 11/30/16
APPROVED BY: MJC
DATE: 01/25/17
BOOK NO.: 13406D
PROJECT NO.:
SCALE:

DATE: 01/17

APPROVED: [Signature]

SUBMISSIONS/REVISIONS

CONTRACT DRAWINGS

NO. 1 2 3 4

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CITY OF WALTHAM MASSACHUSETTS
AREA 5A RELIEF SEWER

NOTES, LEGEND, AND ABBREVIATIONS

DRAWING
C-1

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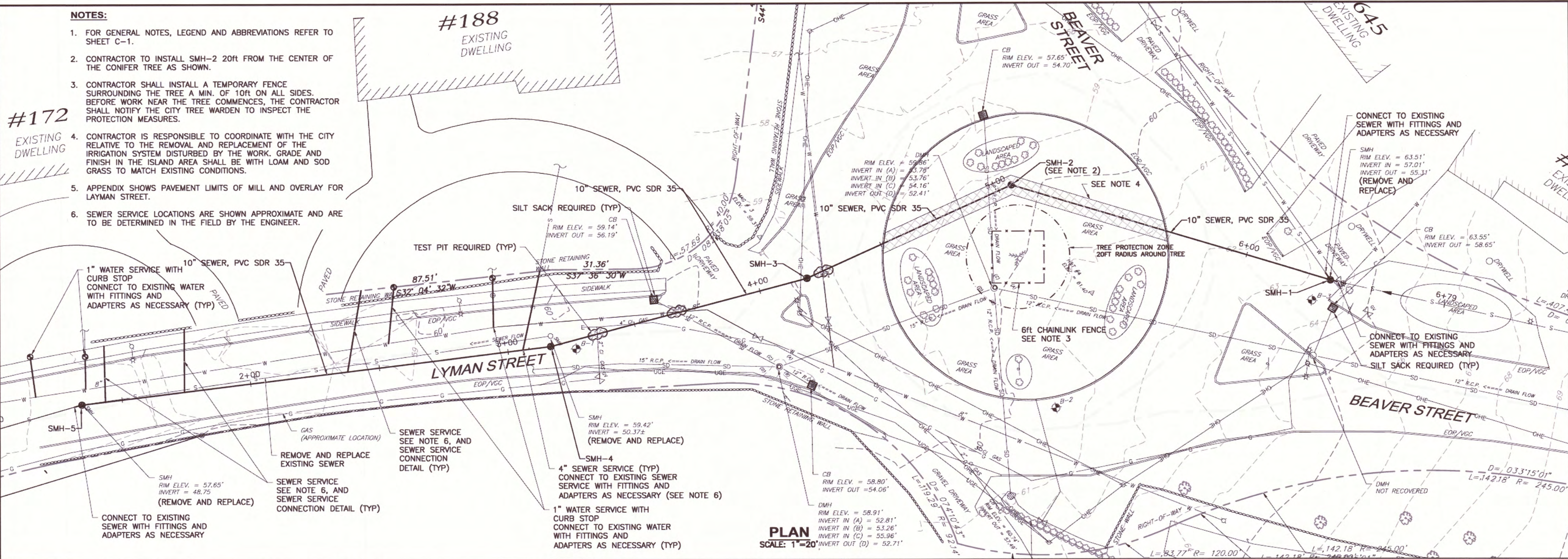
NOTES:

1. FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS REFER TO SHEET C-1.
2. CONTRACTOR TO INSTALL SMH-2 20ft FROM THE CENTER OF THE CONIFER TREE AS SHOWN.
3. CONTRACTOR SHALL INSTALL A TEMPORARY FENCE SURROUNDING THE TREE A MIN. OF 10ft ON ALL SIDES. BEFORE WORK NEAR THE TREE COMMENCES, THE CONTRACTOR SHALL NOTIFY THE CITY TREE WARDEN TO INSPECT THE PROTECTION MEASURES.
4. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE CITY RELATIVE TO THE REMOVAL AND REPLACEMENT OF THE IRRIGATION SYSTEM DISTURBED BY THE WORK. GRADE AND FINISH IN THE ISLAND AREA SHALL BE WITH LOAM AND SOD GRASS TO MATCH EXISTING CONDITIONS.
5. APPENDIX SHOWS PAVEMENT LIMITS OF MILL AND OVERLAY FOR LYMAN STREET.
6. SEWER SERVICE LOCATIONS ARE SHOWN APPROXIMATE AND ARE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

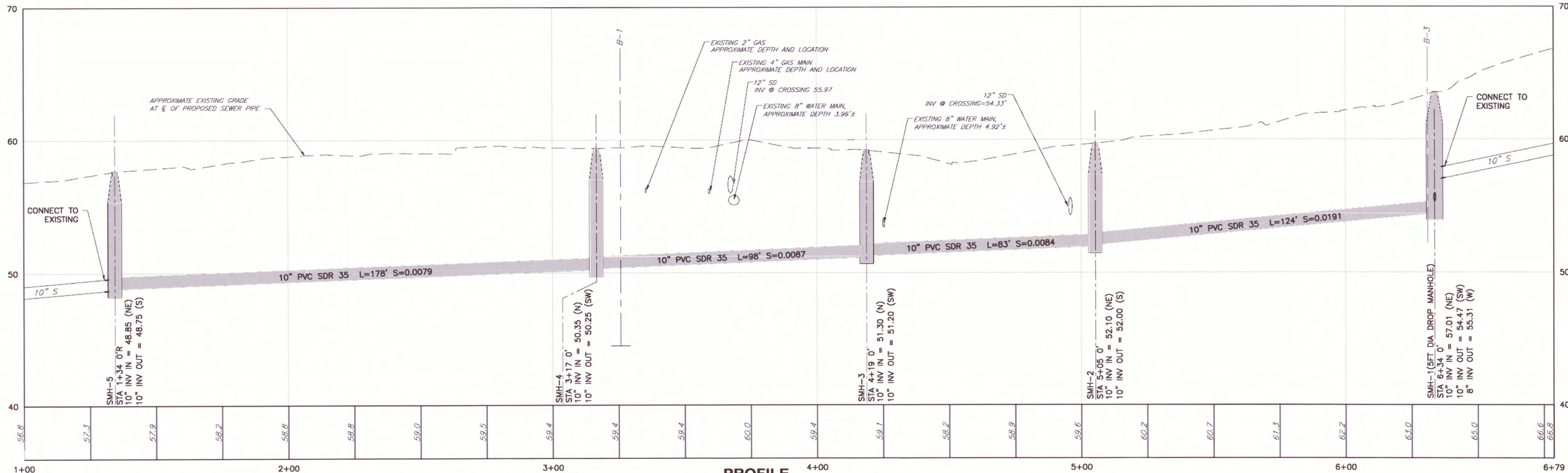
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EXISTING
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DWELLING

645
EXISTING
DWELLING



PLAN
SCALE: 1"=20'



PROFILE
SCALE:
HORIZ: 1"=20'
VERT: 1"=4'

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CITY OF WALTHAM MASSACHUSETTS
AREA 5A RELIEF SEWER

LYMAN STREET
PLAN AND PROFILE

DRAWING
C-2

NO.	DATE	APPROVED	REVISIONS
1	01/17		

DRAWN BY: DVS	CHECKED BY: MAS2
DATE: 11/30/16	DATE: 11/30/16
APPROVED BY: JMC	APPROVED BY: JMC
DATE: 01/25/17	DATE: 01/25/17
BOOK NO.	PROJECT NO. 13406D
SCALE	



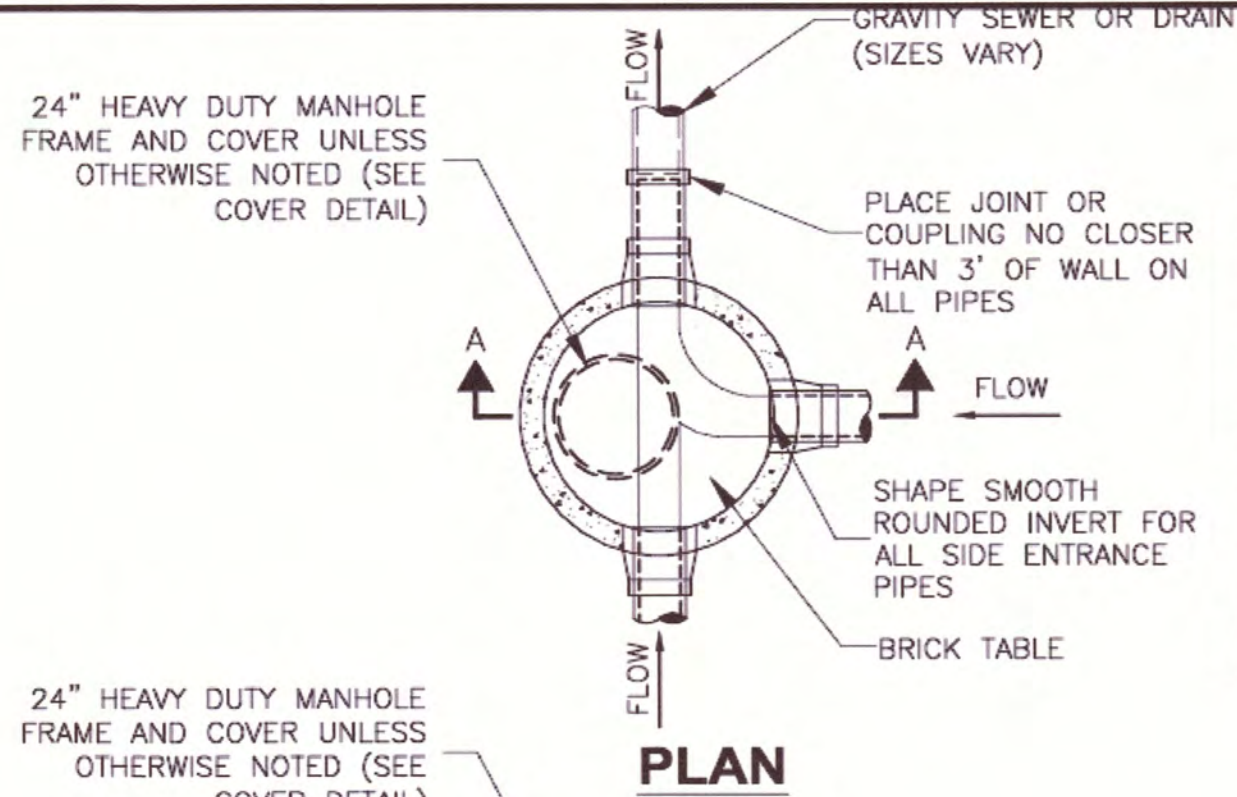
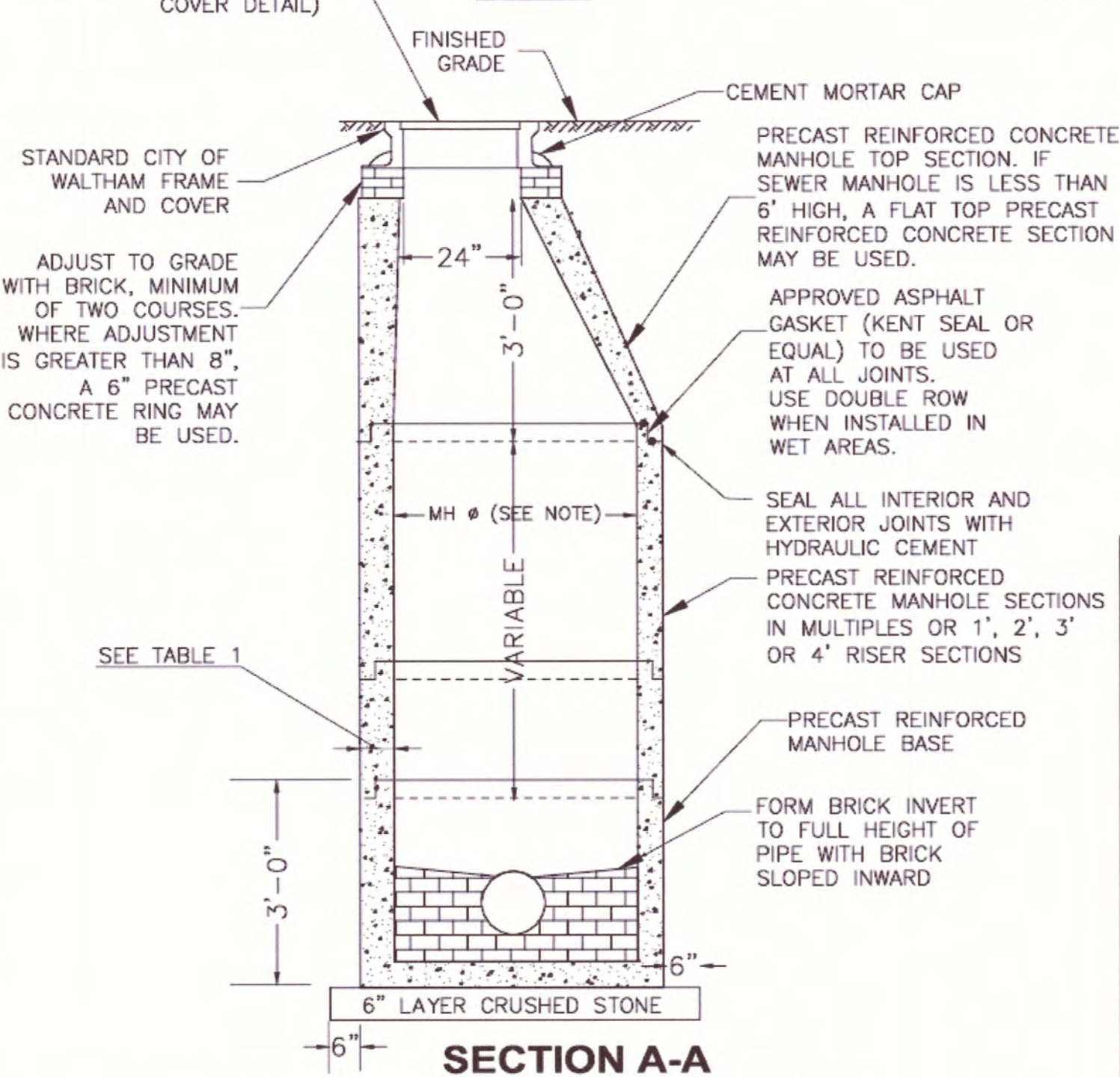


TABLE 1				
MANHOLE DIAMETER	SIDE WALL MIN. THICKNESS	BOTTOM SLAB MIN. THICKNESS	MAX PIPE DIAMETER * DI/PVC	
4'	5"	6"	24"	30"
5'	6"	8"	36"	42"
6'	7"	8"	48"	54"
8'	9"	8"	66"	72"
10'	11"	10"	72"	84"

* MAY VARY DEPENDING ON SIZE AND LOCATION OF ADDITIONAL PENETRATIONS OR RELATIONSHIP OF PENETRATIONS IN MANHOLE



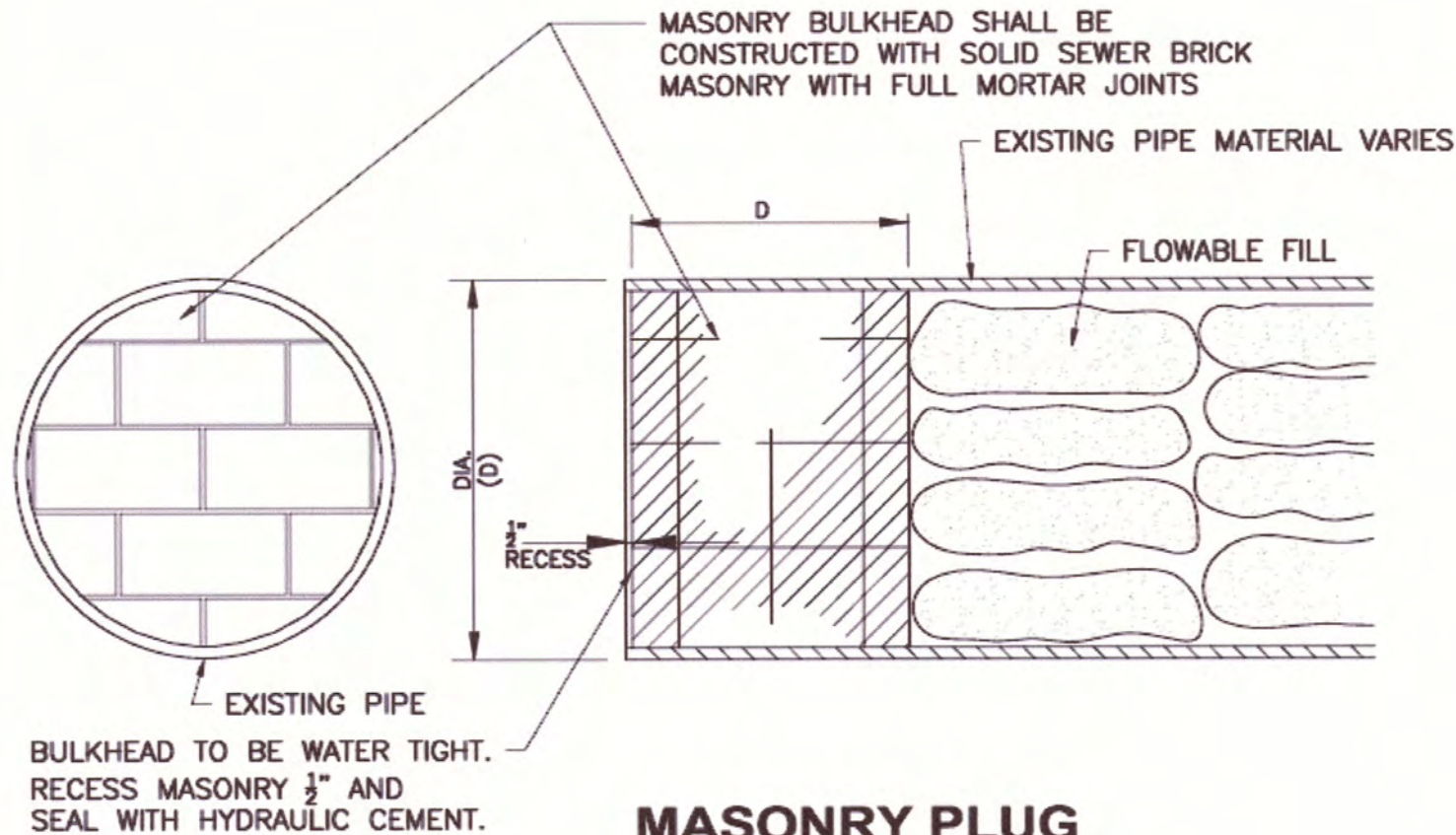
STANDARD MUNICIPAL MANHOLE

- MANHOLE GENERAL NOTES:
- HIGHEST POINT OF BRICK TABLE AT MANHOLE WALL, TO BE AT ELEV. OF CROWN OF PIPE. TABLE TO SLOPE AT 8.3%.
 - SEWER OR DRAIN MANHOLE DIAMETER SHALL BE 4', 5', 6', 8' OR 10' AS SHOWN ON PLAN/PROFILE VIEWS.
 - DESIGN PRECAST SECTIONS WITH FRAME AND COVER FOR AASHTO H20 LOADINGS, UNLESS OTHERWISE NOTED.
 - PRECAST MANHOLES SHALL BE PRE-ORDERED WITH PENETRATIONS AT ELEVATIONS INDICATED ON CONTRACT DRAWINGS.

WALL THICKNESS	MAX TRENCH WIDTH
LESS THAN 6"	I.D. + 5'-0"
6" TO 12"	I.D. + 6'-0"
13" TO 18"	I.D. + 7'-0"
19" & GREATER	O.D. + 6'-0"

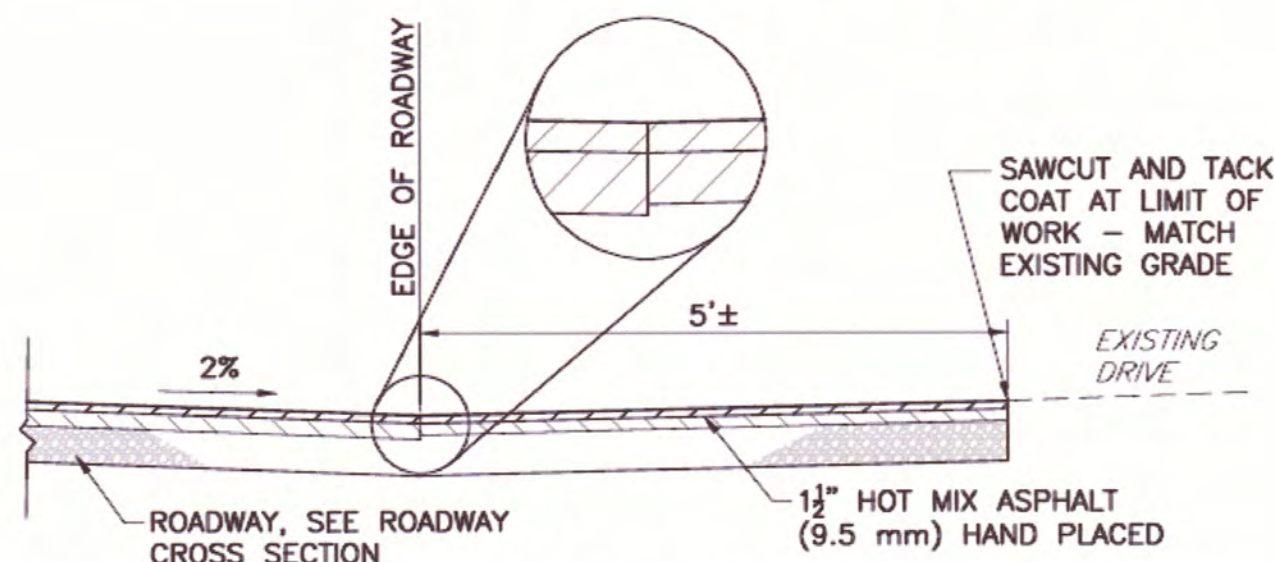
I.D. = INSIDE DIMENSION
O.D. = OUTSIDE DIMENSION
FOR TRENCHES GREATER THAN 5' DEEP ADD 3' FOR TEMPORARY SUPPORT OF EXCAVATION

SUMMARY OF PAVEMENT RESTORATION METHOD TABLE		
STREET	PERMANENT PAVEMENT	NUMBER OF COURSES
BEAVER STREET	MILL AND OVERLAY	4
LYMAN STREET	MILL AND OVERLAY	4
FOREST STREET	MILL AND OVERLAY	4
FOREST CIRCLE	MILL AND OVERLAY	2
FOREST STREET EXT.	MILL AND OVERLAY	2
WOODCLIFF DRIVE	MILL AND OVERLAY	2
AZALEA ROAD	MILL AND OVERLAY	2
LEDGE ROAD	MILL AND OVERLAY	2
GENTLEMAN'S WAY	MILL AND OVERLAY	2



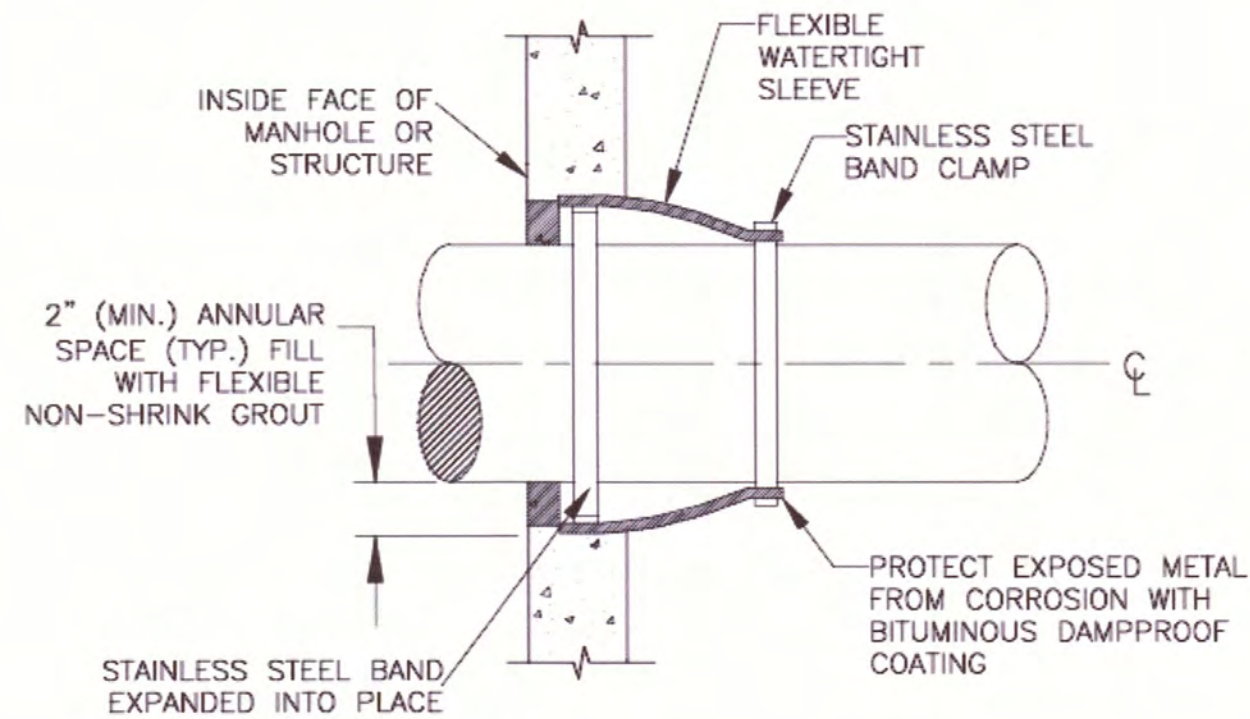
MASONRY PLUG

NOTE:
SEWER BRICK MASONRY PLUG TO BE USED FOR ABANDONED DRAIN OR SEWER LINES.



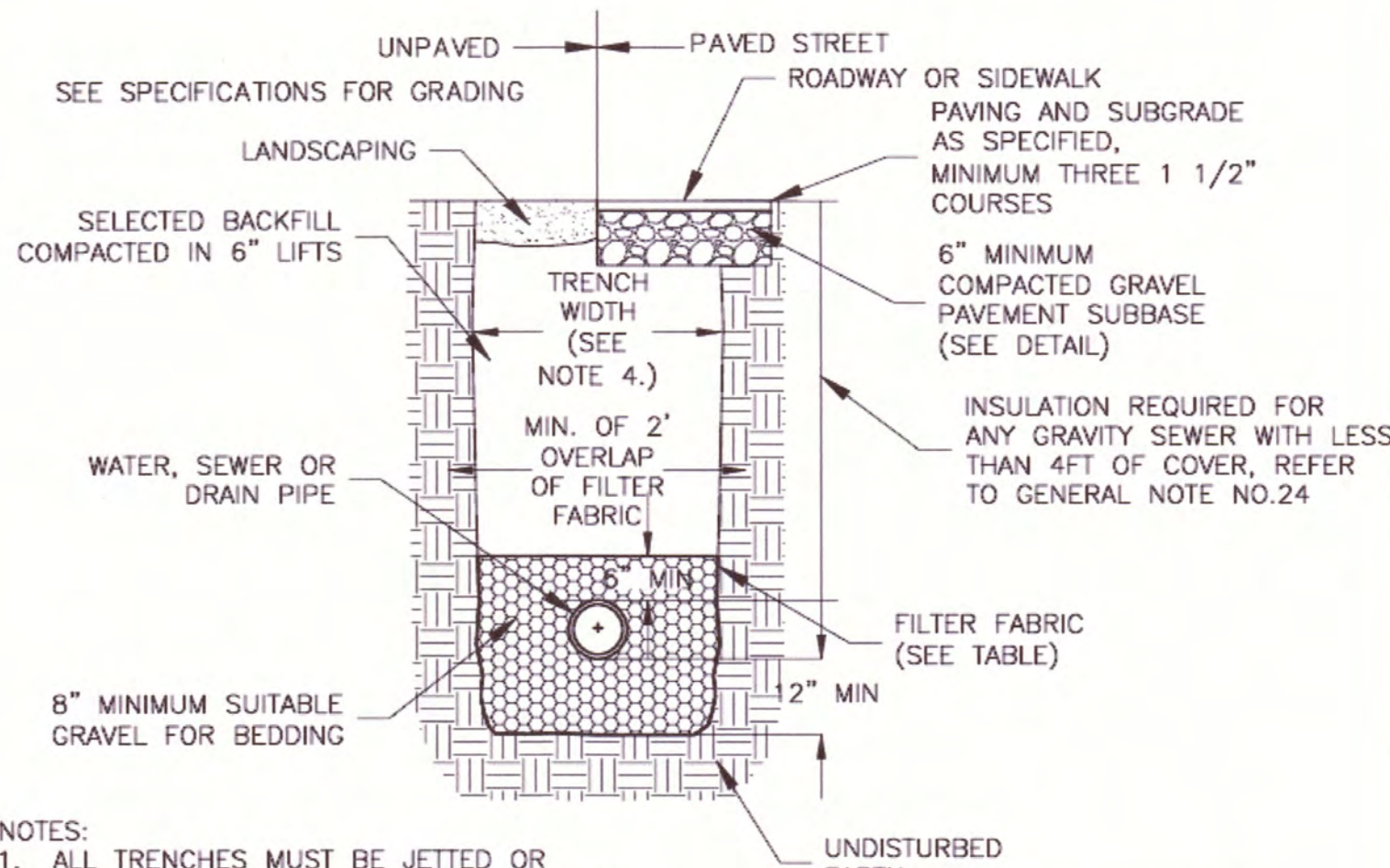
TYPICAL DRIVE SECTION

NTS



FLEXIBLE SLEEVE CONNECTION DETAIL

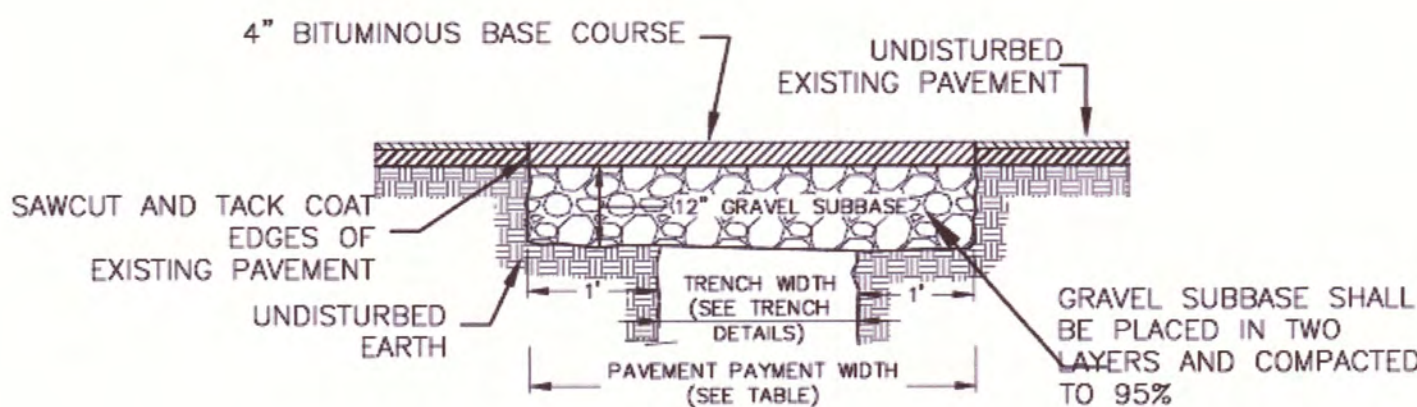
NOTE:
1. PRECAST OPENING OR CORE DRILLED INTO EXISTING STRUCTURE. SIZE VARIES TO ACCOMMODATE EXTENSION BONNET FLANGE DIAMETER OR PIPE.



- NOTES:
- ALL TRENCHES MUST BE JETTED OR PUDDLED AS REQUIRED BY THE ENGINEER.
 - PRIOR TO FINISHING PAVING, CUT SQUARE EDGES AT EXISTING PAVEMENT, AT LEAST 6 INCHES BEYOND OUTERMOST DISTURBED PAVEMENT.
 - NO LEDGE TO BE WITHIN 6" OF PIPE.
 - TRENCH WIDTH:
 - LEDGE: OUTSIDE DIAMETER OF PIPE PLUS 2 FEET
 - EARTH: GREATER OF LEDGE VALUE OR 3 FEET (OR AS DETERMINED BY THE ENGINEER)

WATER, SEWER, AND DRAIN TRENCH DETAIL

	SOIL TYPE	
	SILT OR CLAY	GRANULAR SOIL
ABOVE GROUND WATER	FILTER FABRIC NOT REQUIRED	FILTER FABRIC NOT REQUIRED
BELOW GROUND WATER	FILTER FABRIC REQUIRED	FILTER FABRIC NOT REQUIRED



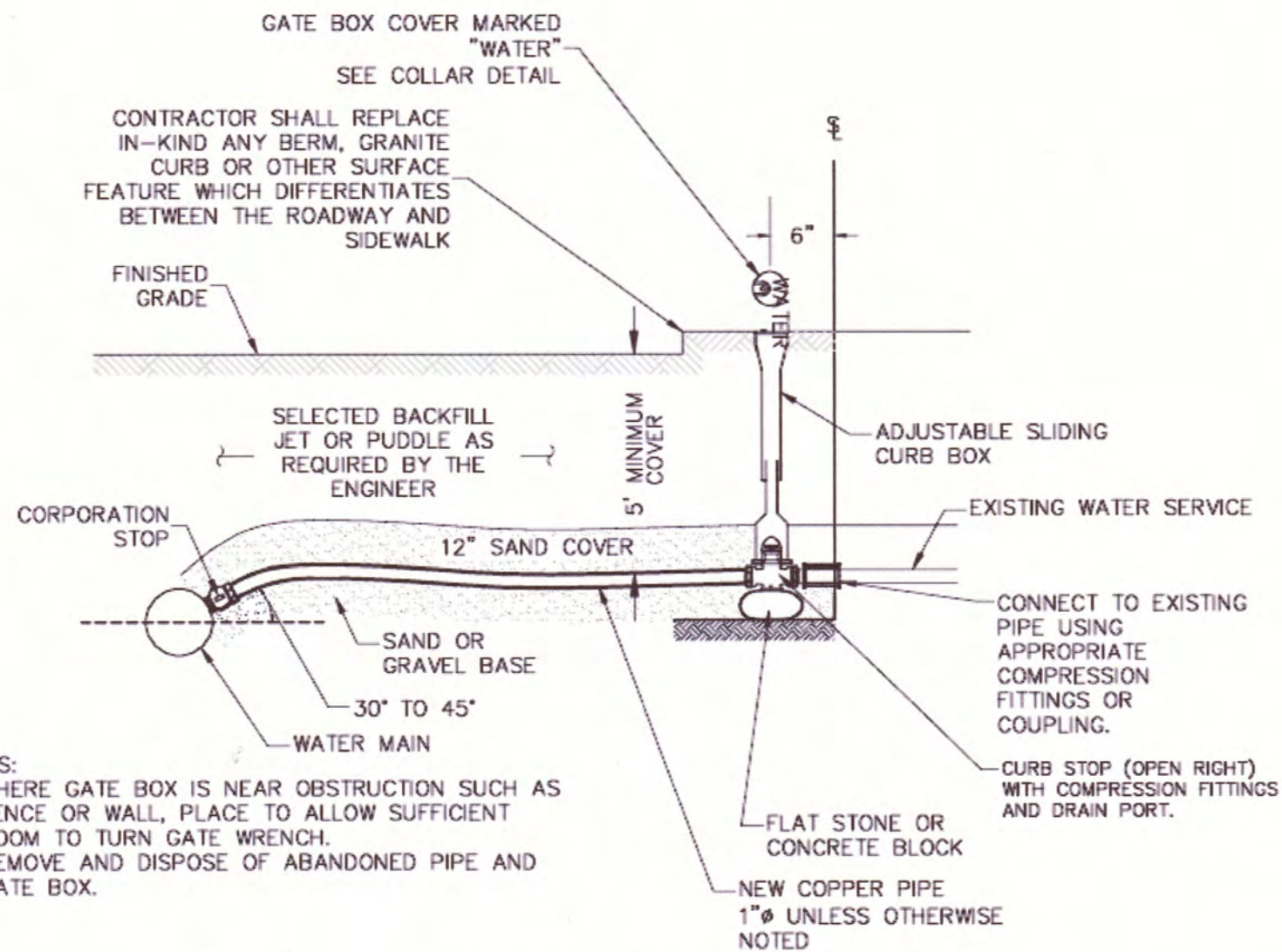
TRENCH PAY LIMIT TABLE FOR TEMPORARY PAVEMENT

PIPE SIZE (I.D.)	DEPTH TO PIPE INVERT				PAY WIDTH
	0 - 8'	OVER 8' - 12'	OVER 12' - 16'	OVER 16' - 20'	
0" - 24"	6'-6"	9'-6"	12'-6"	15'-6"	
OVER 24"	O.D. + 4'-0"	O.D. + 7'-0"	O.D. + 10'-0"	O.D. + 13'-0"	

I.D. = INSIDE DIMENSION
O.D. = OUTSIDE DIMENSION
FOR EACH ADDITIONAL 4'-0" OF PIPE INVERT DEPTH OVER 20', ADD 3'-0" TO WIDTH LIMITS
TEMPORARY PAVEMENT DEPTH SHALL BE 3'-IN.

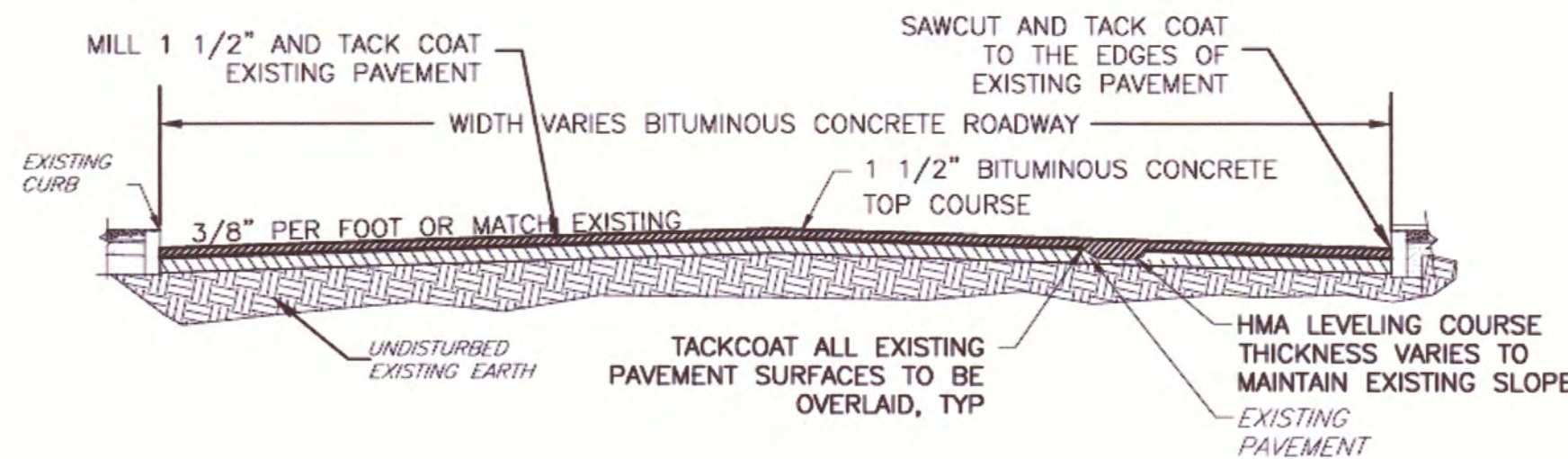
TEMPORARY TRENCH PAVEMENT DETAIL

TEMPORARY AND PERMANENT TRENCH PAVEMENT NOTES:
1. TEMPORARY TRENCH PAVEMENT PAYMENT WIDTH SHALL BE EQUAL TO THE TRENCH PAYMENT LIMIT



WATER SERVICE DETAIL

- NOTES:
- WHERE GATE BOX IS NEAR OBSTRUCTION SUCH AS FENCE OR WALL, PLACE TO ALLOW SUFFICIENT ROOM TO TURN GATE WRENCH.
 - REMOVE AND DISPOSE OF ABANDONED PIPE AND GATE BOX.



TYPICAL CROSS SECTION FOR MILL AND OVERLAY

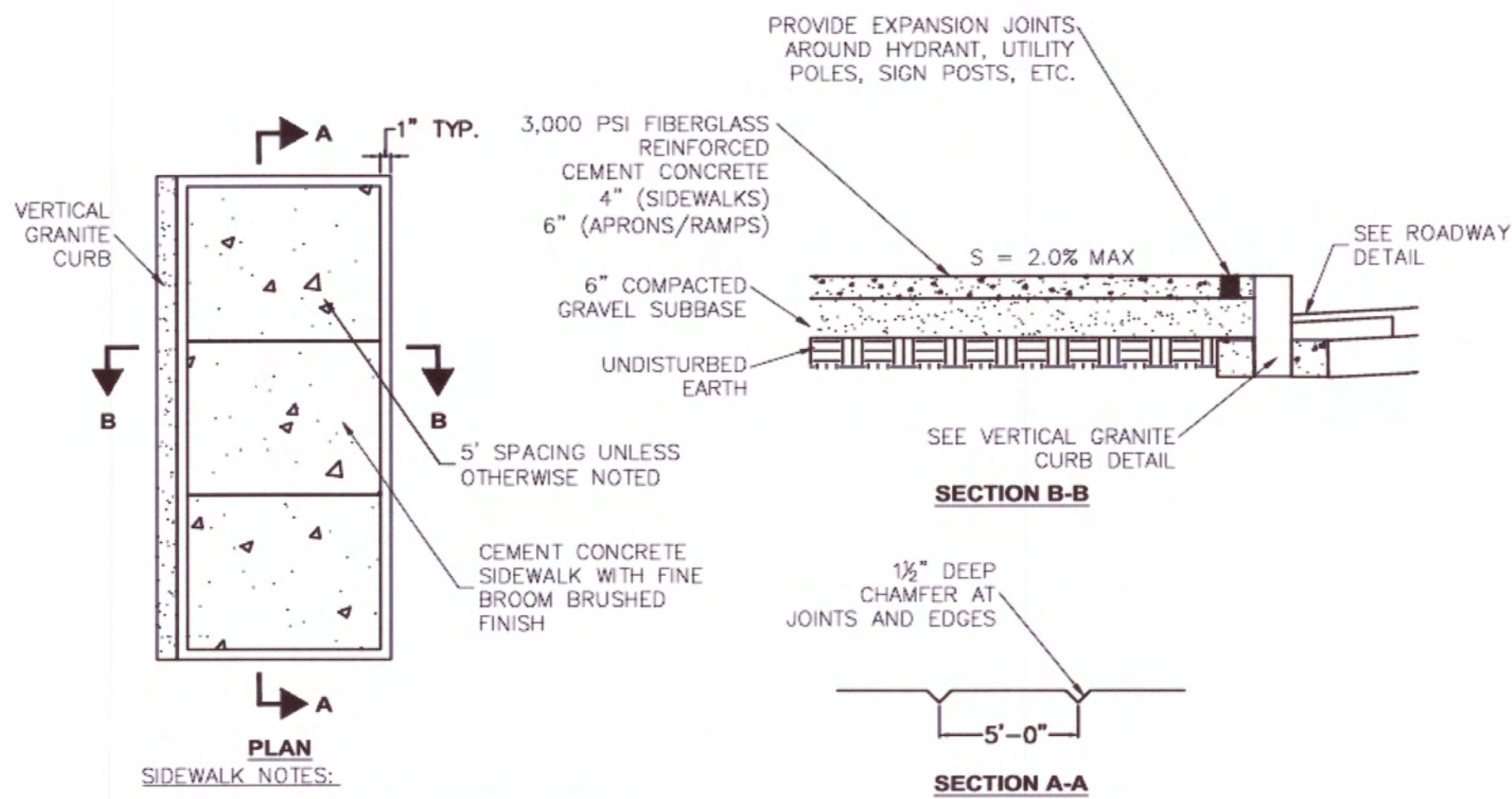
- NOTE:
- PAVEMENT WIDTH TO MATCH EXISTING. COORDINATE PAVEMENT WIDTH WITH OWNER AND ENGINEER.
 - ALL STRUCTURES SUCH AS MANHOLES, CATCH BASINS AND VALVE BOXES SHALL BE ADJUSTED TO FINAL GRADE.
 - REVIEW GRADING WITH OWNER AND ENGINEER PRIOR TO PAVING.

DATE	01/17
AP'D	
SUBMISSIONS/REVISIONS	
CONTRACT DRAWINGS	

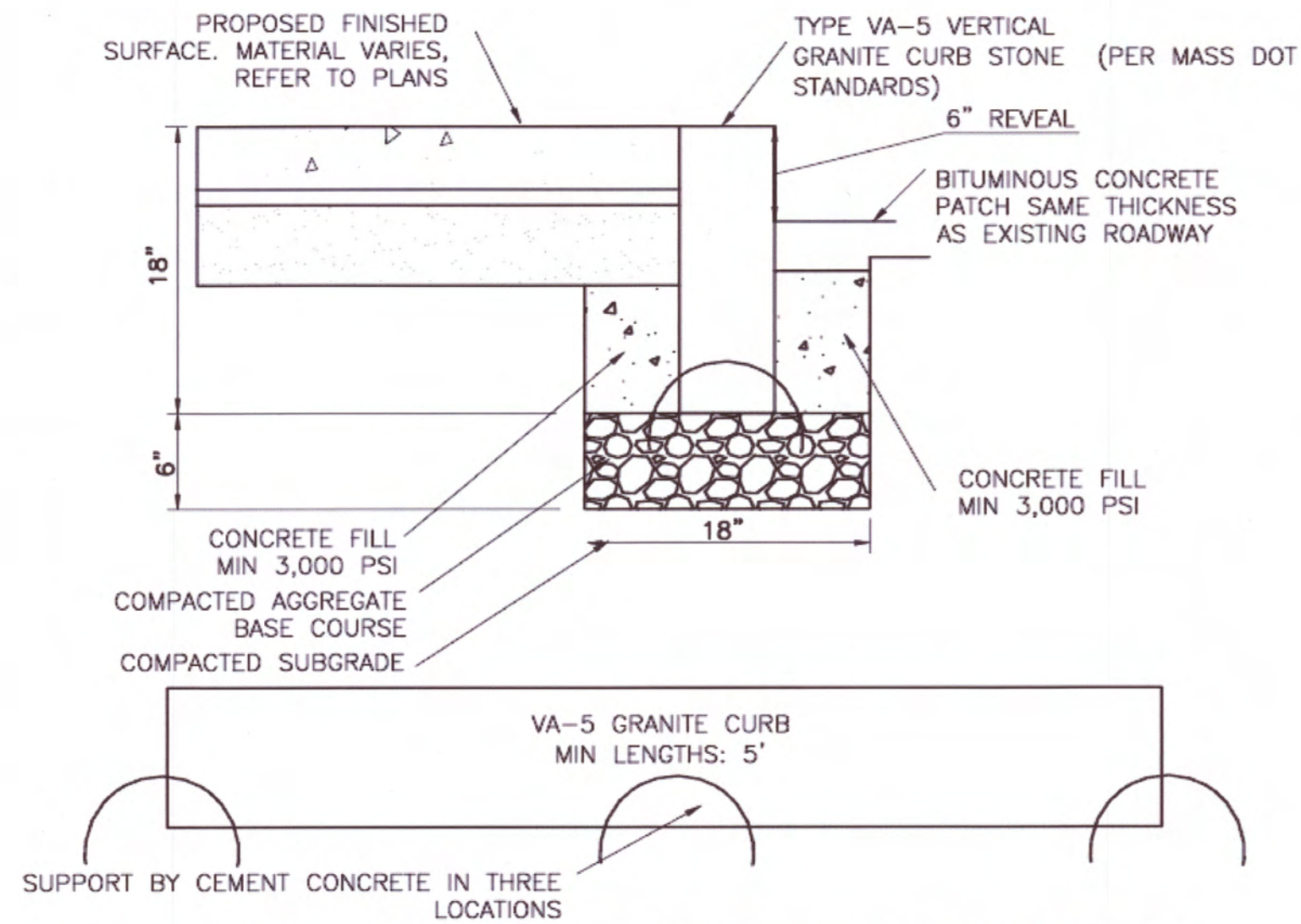
DRAWN BY	DVS
CHECKED BY	MAS2
DATE	11/30/16
APPROVED BY	MJC
DATE	01/25/17
BOOK NO.	13406D
PROJECT NO.	13406D
SCALE	

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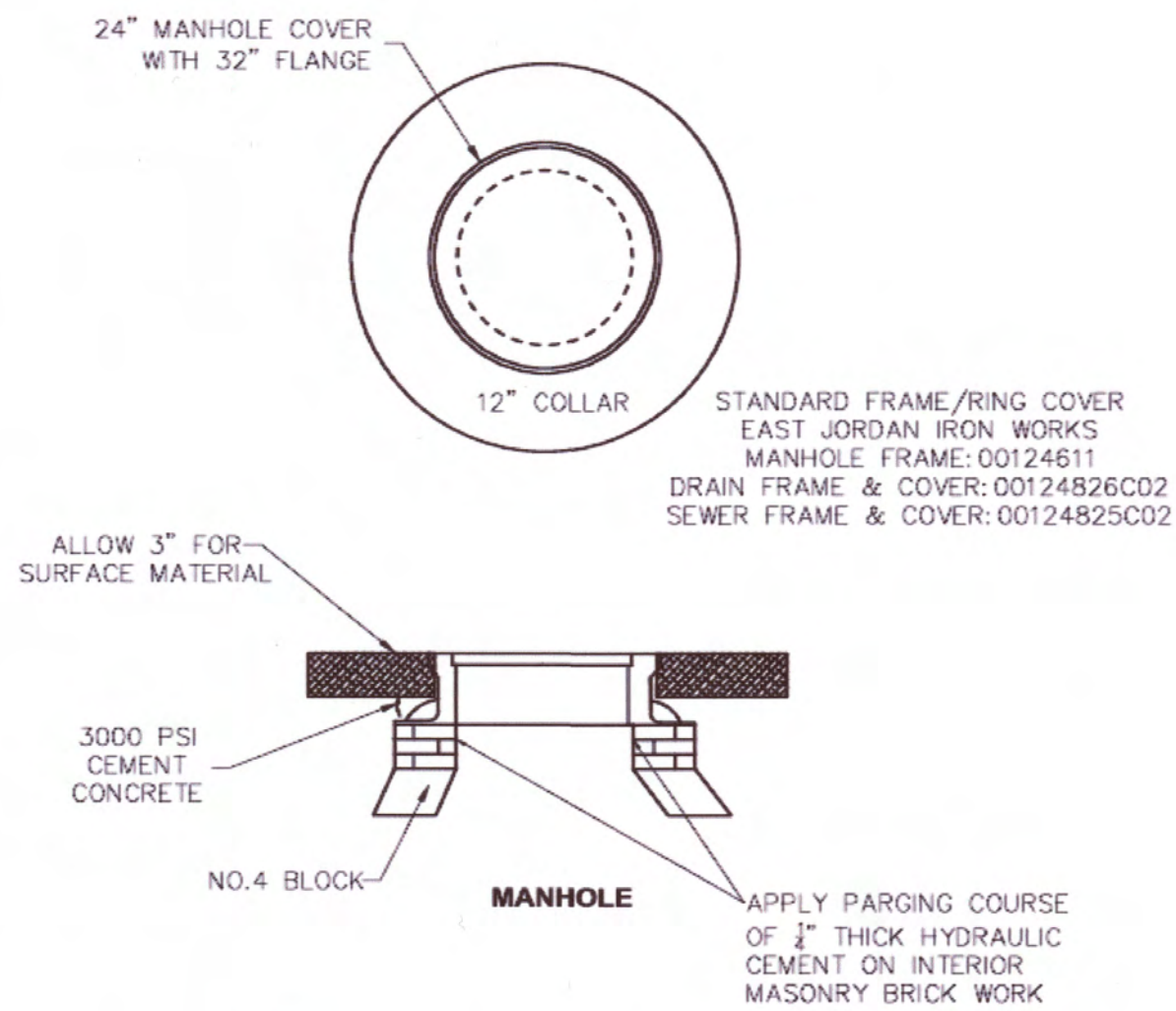
CITY OF WALTHAM MASSACHUSETTS AREA 5A RELIEF SEWER	DETAILS 1
DRAWING C-3	



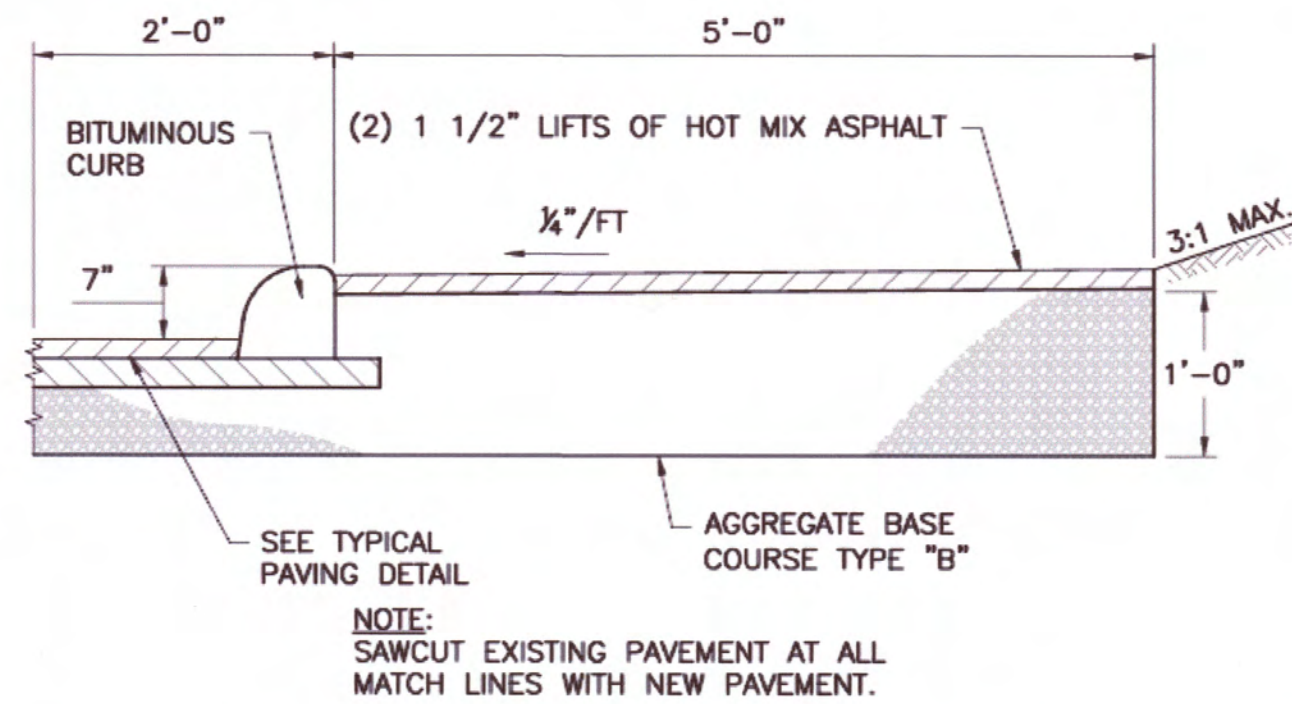
CONCRETE SIDEWALK DETAIL



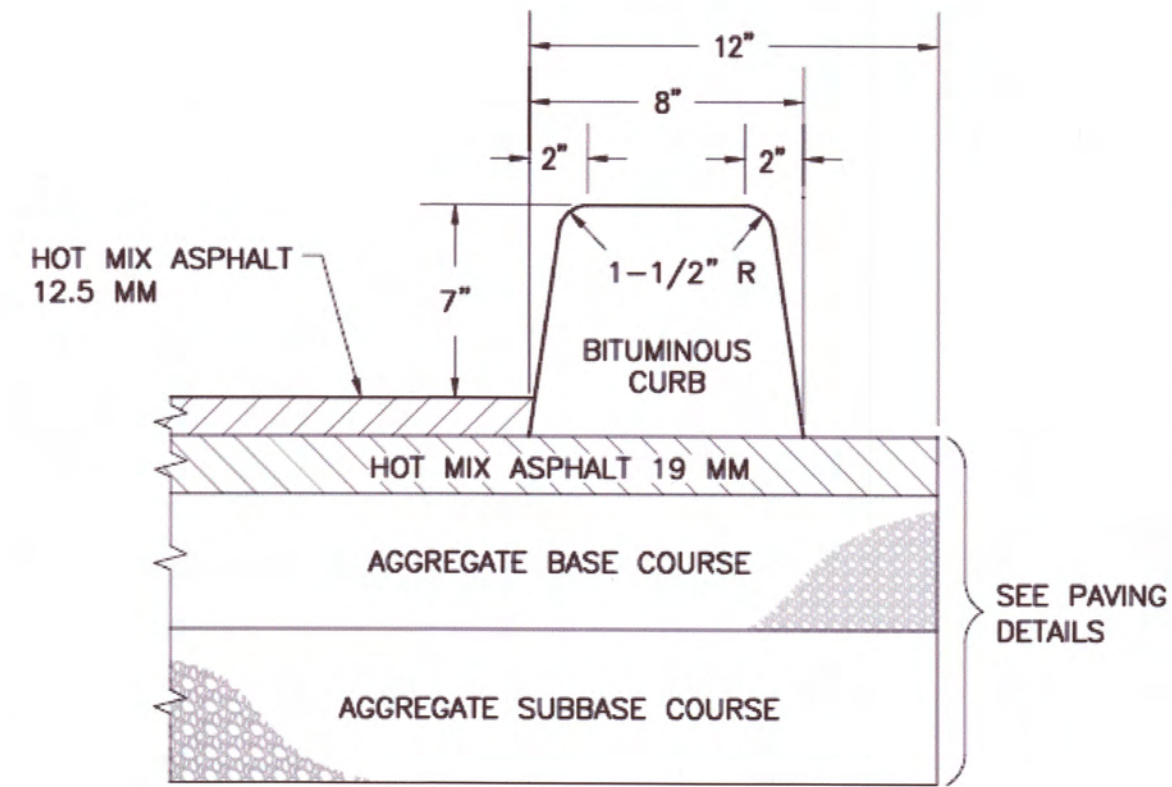
TYPICAL VERTICAL GRANITE CURB DETAIL



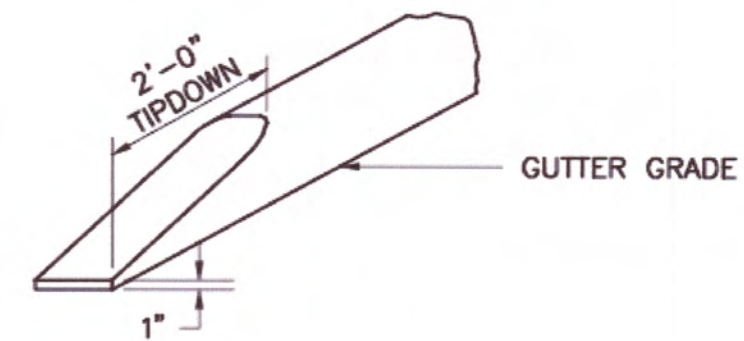
CEMENT CONCRETE COLLARS FOR MANHOLES AND CATCH BASINS



BITUMINOUS SIDEWALK CONSTRUCTION DETAIL



BITUMINOUS CURB
SCALE: NTS



BITUMINOUS TERMINAL CURB
SCALE: NTS

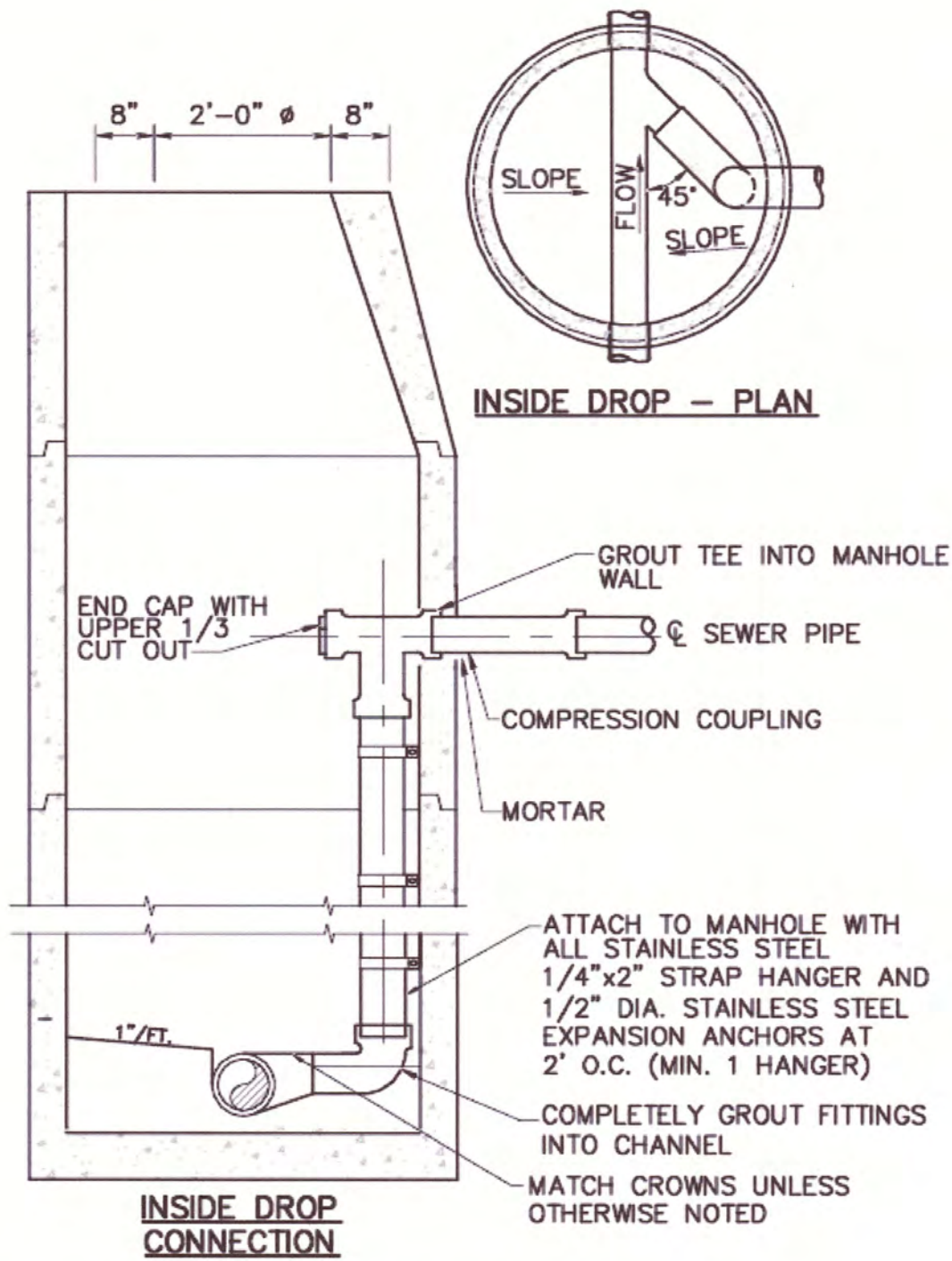
NO.	CONTRACT	DRAWINGS	SUBMISSIONS/REVISIONS	APP'D	DATE
1					01/17

DRAWN BY	DYS
CHECKED BY	MAS2
DATE	11/30/16
APPROVED BY	MJC
DATE	01/25/17
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SCALE	



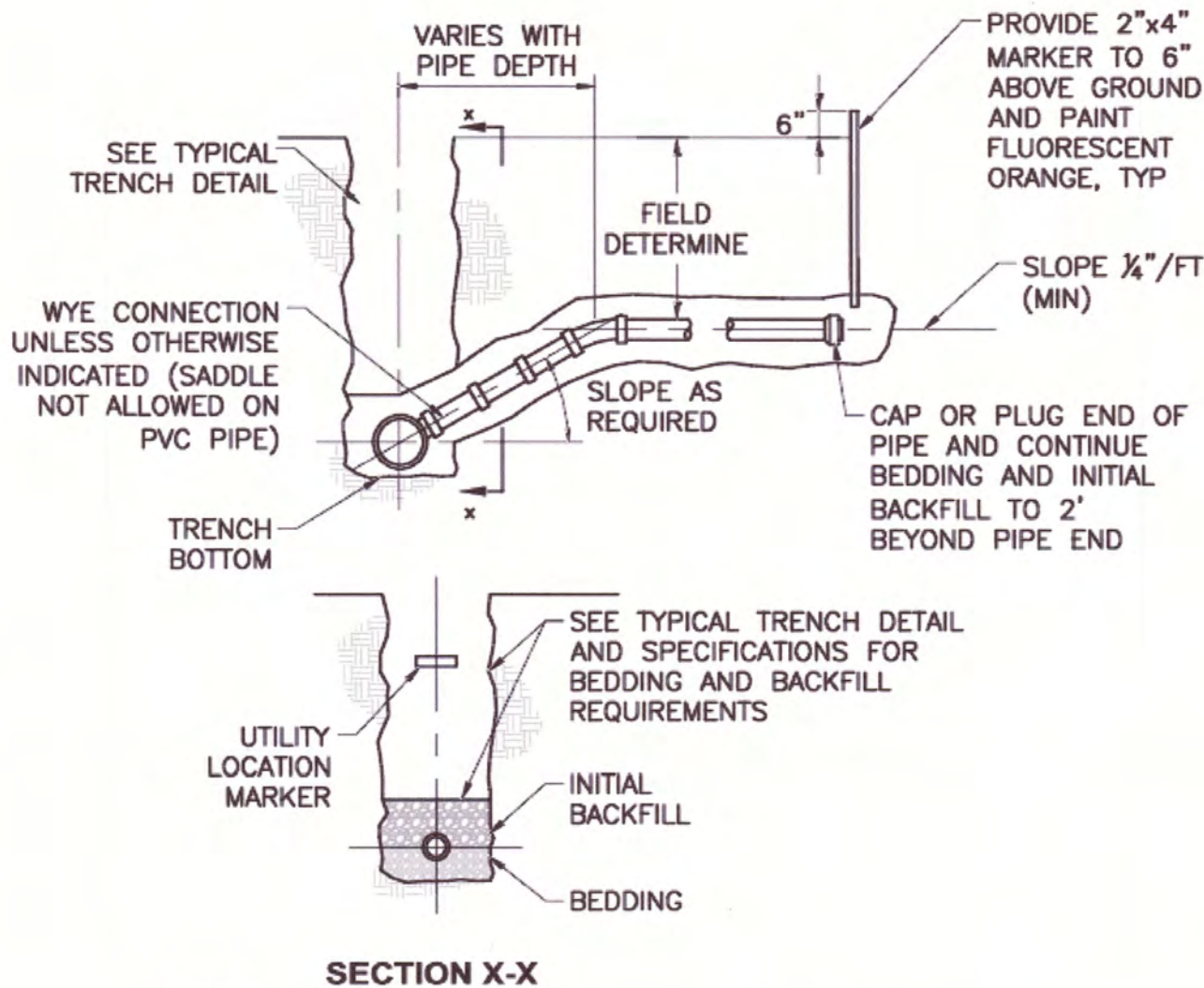
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CITY OF WALTHAM MASSACHUSETTS AREA 5A RELIEF SEWER	DETAILS II
DRAWING C-4	



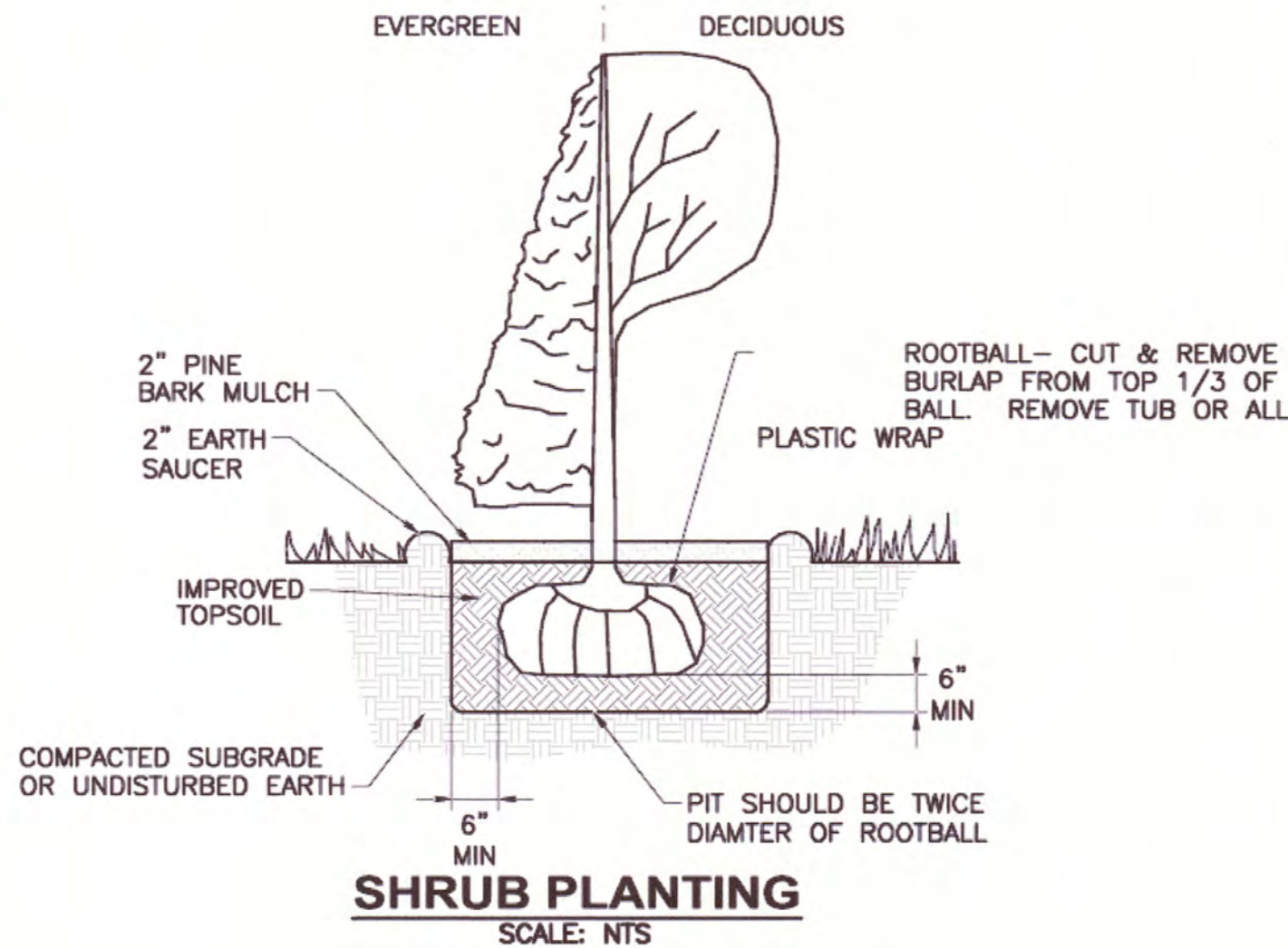
INSIDE DROP MANHOLE WITH PVC PIPE
SCALE: NTS

- NOTES:
1. PROVIDE DROP PIPE FOR A SEWER PIPE INVERT ENTERING A MANHOLE MORE THAN 24 INCHES ABOVE THE MANHOLE INVERT. WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE INCOMING SEWER AND THE MANHOLE INVERT IS LESS THAN 24 INCHES, THE INVERT IS TO BE FILLETED TO PREVENT SOLIDS DEPOSITION.
 2. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE DROP BOWL AS SHOWN.
 3. SECURE DROP PIPE TO MANHOLE WALL WITH STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS.

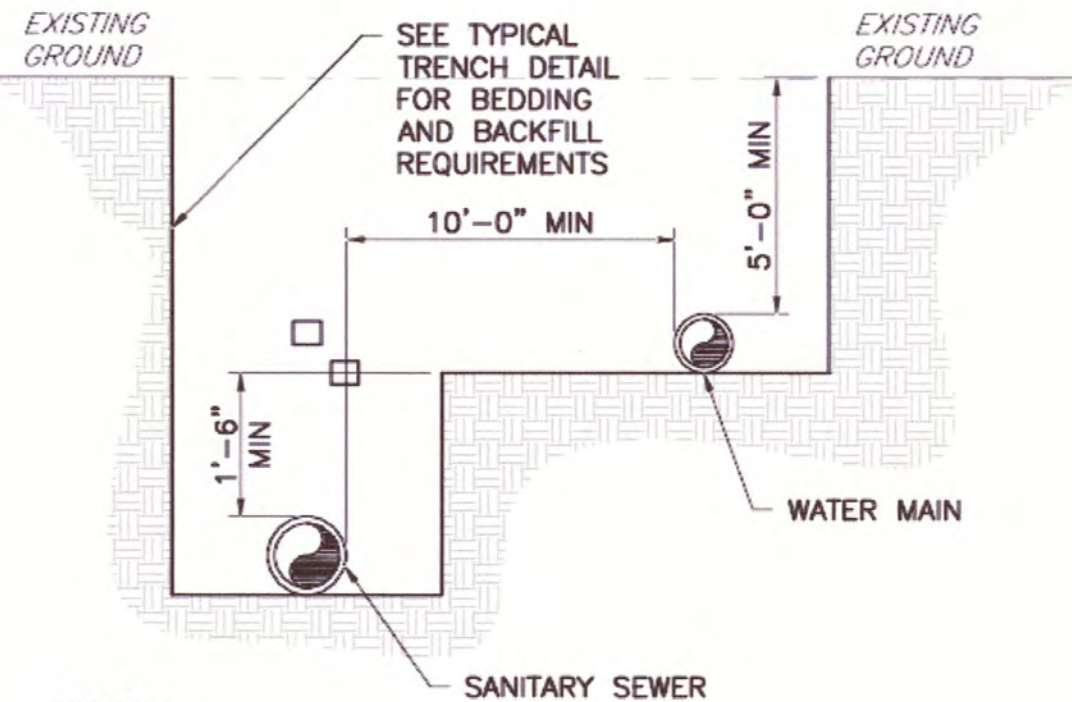


- NOTES:
1. ALL SERVICE CONNECTIONS TO BE 6"Ø UNLESS OTHERWISE SHOWN ON THE PLANS.
 2. USE CHIMNEY DETAIL WHERE SERVICE CONNECTION ENTERS SEWER AT GREATER THAN 60" TO THE HORIZONTAL.
 3. EXTEND SERVICE 4'(MIN) BEYOND LIMIT OF SIDEWALK.

SEWER SERVICE CONNECTION
SCALE: "NTS"

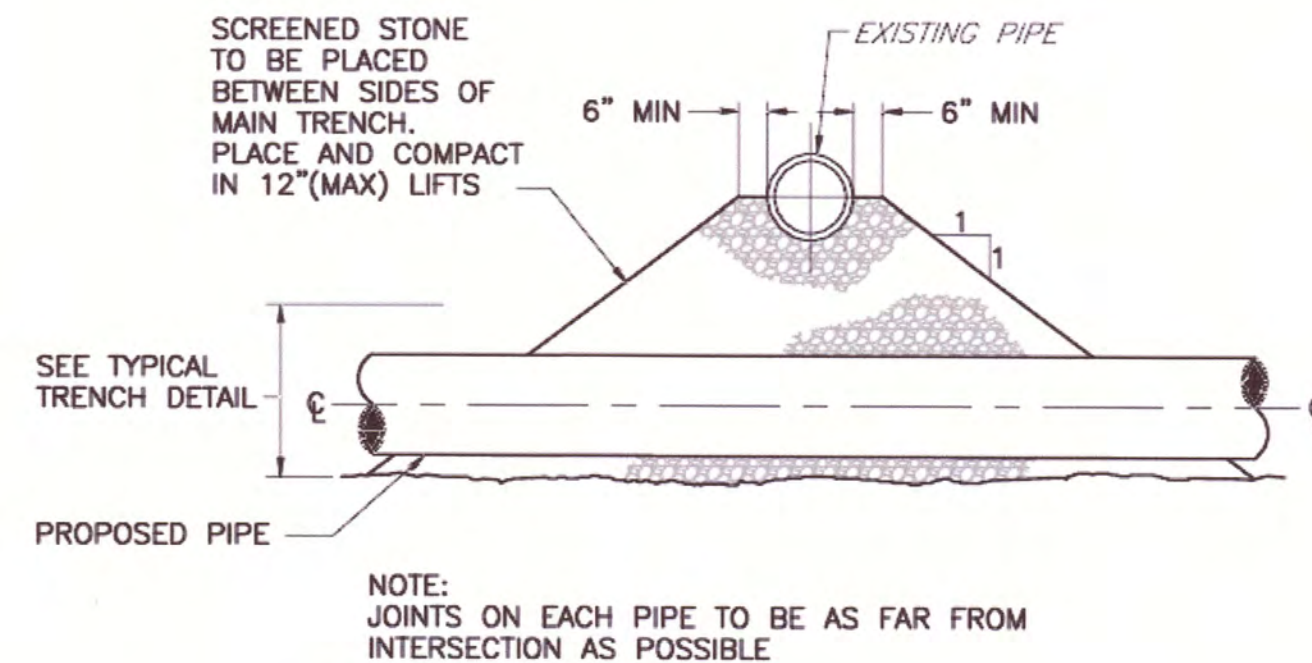


SHRUB PLANTING
SCALE: NTS



- NOTES:
1. INSTALL WATER AND SEWER MAINS WITH 10-FOOT SPACING WHERE POSSIBLE.

MINIMUM WATER / SEWER PIPE SPACING
SCALE: NTS



PIPE CROSSING
SCALE: "NTS"

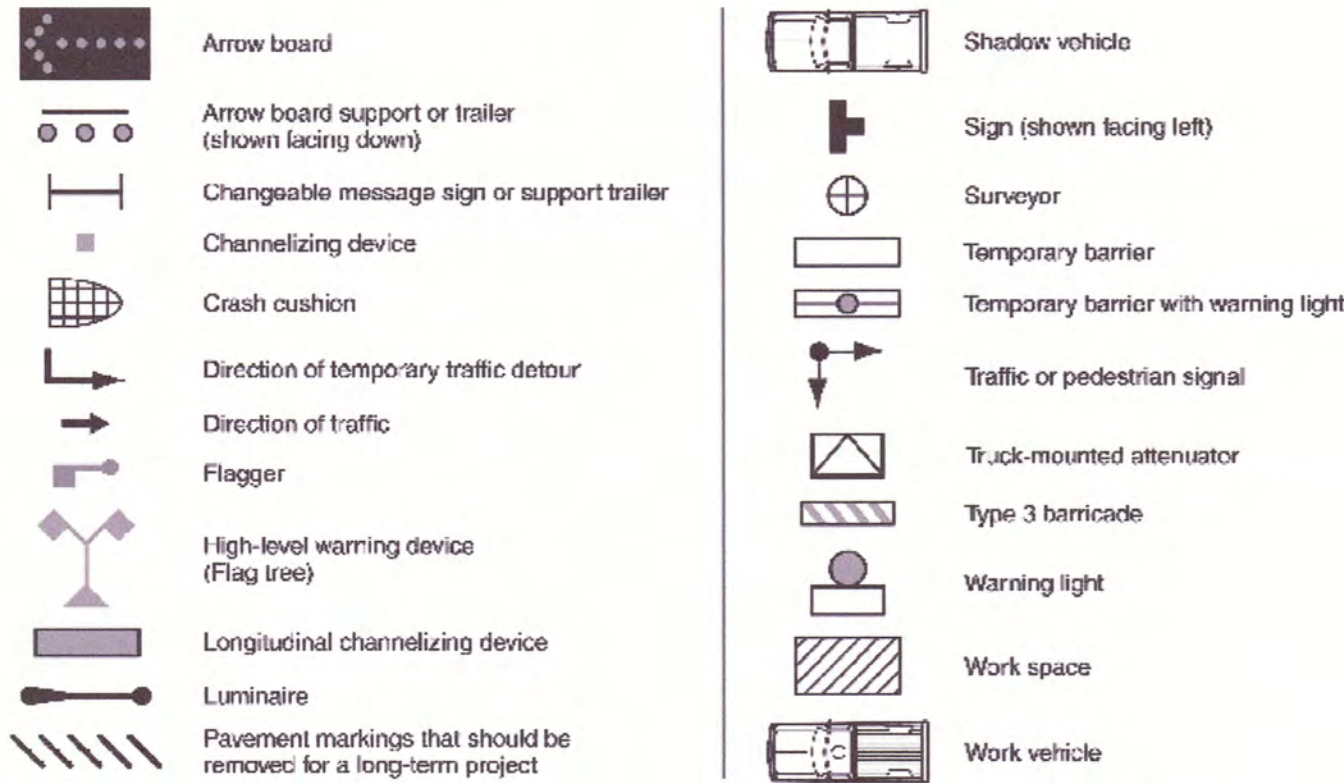


TABLE 6H-2 - MEANING OF SYMBOLS
NTS

Table 6H-3. Meaning of Letter Codes on Typical Application Diagrams

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)	100 feet	100 feet	100 feet
Urban (high speed)	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,000 feet

* Speed category is to be determined by "flowing agency".
** The column headings A, B, and C are the distances shown in Figures 6H-1 through 6H-4. The A dimension is the distance from the installation point of the first sign to the second 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 "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest from the TTC zone.)

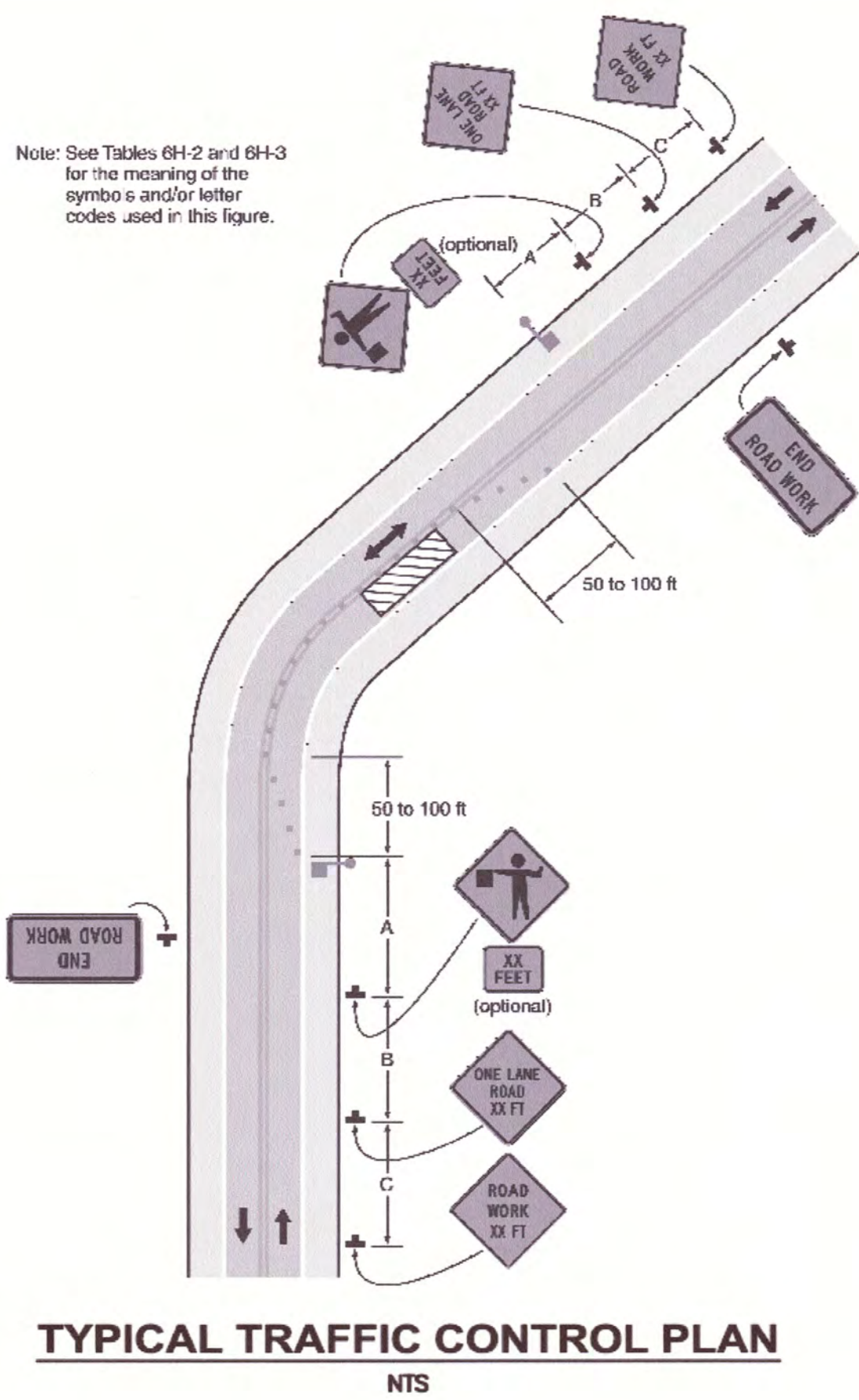
TABLE 6H-3 - MEANING OF LETTER CODES
NTS

Speed (S)	Taper Length (L) in feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$

Where: L = taper length in feet
W = width of offset in feet
S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

- NOTES:
1. ALL SIGNS SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE CURRENT EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", FHWA; AND TO "STANDARD HIGHWAY SIGNS", FHWA, 2000. REFER TO MUTCD, PART VI FOR ANY INFORMATION NOT SHOWN IN THESE DETAILS.
 2. STEEL U-CHANNELS ARE REQUIRED AS SIGN POSTS.
 3. MOUNT SIGNS THAT ARE WIDER THAN 900mm OR LARGER THAN ONE SQUARE METER IN AREA ON TWO OR MORE POSTS.
 4. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
 5. FINAL PLACEMENT OF SIGNS AND DEVICES MAY BE CHANGED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

TRAFFIC CONTROL DETAILS
SCALE: "NTS"



TYPICAL TRAFFIC CONTROL PLAN
NTS

CONSTRUCTION SIGN		
TEXT	SIZE OF SIGN	M.U.T.C.D. NO.
ROAD WORK AHEAD	36 X 36	W20-1
SPEED LIMIT 25	36 X 36	W3-5
BELOW HIGHER FINES ZONE	24 X 30	R2-10a
ONE LANE ROAD AHEAD	36 X 36	W20-4
25 MPH	24 X 24	W13-1
BE PREPARED TO STOP	36 X 36	W3-4
DO NOT BLOCK INTERSECTION	36 X 36	W3-3
STOP HERE ON RED	24 X 36	R10-6L
DO NOT BLOCK INTERSECTION	24 X 30	R10-7
END ROAD WORK	36 X 18	G20-2
ROAD WORK 1500 FT	36 X 36	W20-1
CUBAN STREET	60 X 24	D3-1

APPROVED DATE 01/17

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CITY OF WALTHAM MASSACHUSETTS

AREA 5A RELIEF SEWER

DETAILS III AND TRAFFIC CONTROL

DRAWING

C-5

G:\DWGS\MA\WALTHAM\13406-BEAVERTREETRELIEFSEWER\13406-FD\CIV\C-5 EROSION CONTROL.DWG | 1:4.56 | 1/26/2017 4:49:44 PM | DON.SAVAGE | 1/26/2017 4:06 PM

EROSION AND SEDIMENTATION CONTROL NOTES

THIS PLAN HAS BEEN DEVELOPED AS A STRATEGY TO CONTROL SOIL EROSION AND SEDIMENTATION DURING AND AFTER CONSTRUCTION. THIS PLAN IS BASED ON THE STANDARDS AND SPECIFICATIONS FOR EROSION PREVENTION IN URBAN AND SUBURBAN AREAS AS CONTAINED IN THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS", FRANKLIN, HAMPDEN, HAMPDEN, HAMPSHIRE CONSERVATION DISTRICTS, DATED MARCH, 1997.

1.

ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE IN ACCORDANCE WITH THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS", FRANKLIN, HAMPDEN, HAMPSHIRE CONSERVATION DISTRICTS, DATED MARCH, 1997.
2.

THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE MAINTAINED IN AN UNTREATED OR UNVEGETATED CONDITION FOR THE MINIMUM TIME REQUIRED. IN GENERAL, AREAS TO BE VEGETATED SHALL BE PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL.
3.

SEDIMENT BARRIERS (SILT FENCE, STONE CHECK DAMS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF UPGRADIENT DRAINAGE AREAS.
4.

INSTALL SILT FENCE AT TOE OF SLOPES TO FILTER SILT FROM RUNOFF. SEE SILT FENCE DETAIL FOR PROPER INSTALLATION. SILT FENCE WILL REMAIN IN PLACE PER NOTE #5.
5.

ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSURE. SEDIMENT DEPOSITS MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED.
6.

NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2 TO 1) UNLESS STABILIZED WITH PERMANENT EROSION CONTROL MEASURES.
7.

IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT TO BE COMPLETED 30 DAYS PRIOR TO THE ANTICIPATED DATE OF THE FIRST KILLING FROST, USE TEMPORARY MULCHING (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY PERMANENT SEEDING, UNTIL UPGRADIENT AREAS ARE STABILIZED.
8.

WHEN FEASIBLE, TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINISH GRADED SHALL BE COMPLETED 30 DAYS PRIOR TO THE FIRST KILLING FROST.
9.

DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO THE SITE AND REGRADED ONTO OPEN AREAS. POST SEEDING SEDIMENT, IF ANY, WILL BE DISPOSED OF IN AN ACCEPTABLE MANNER.
10.

REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND REVEGETATED AS FOLLOWS:

A.

A MINIMUM OF FOUR (4) INCHES OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.

B.

APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT DEEMED FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 POUNDS PER ACRE OR 18.4 POUNDS PER 1,000 SQUARE FEET USING 10-20-20 (N-P205-K20) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER 1,000 SQ. FT.).

C.

FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDED WITH A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED WITH A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUEGRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYE GRASS. SEEDING RATE IS 3.0 LBS PER 1000 SQ. FT. LAWN QUALITY SOD MAY BE SUBSTITUTED FOR SEED.

D.

HAY MULCH AT THE RATE OF 70-90 LBS PER 1000 SQUARE FEET OR A HYDRO-APPLICATION OF CELLULOSE FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER WILL BE USED ON HAY MULCH FOR WIND CONTROL.
11.

ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE WORK AREA IS STABILIZED.
12.

WETLANDS (EXCEPTING THOSE WHICH ARE TO BE FILLED IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS) WILL BE PROTECTED WITH SILT FENCE INSTALLED AT THE EDGE OF THE WETLAND OR THE BOUNDARY OF WETLAND DISTURBANCE.
13.

IN GENERAL, AREAS WITHIN 100 FEET OF DELINEATED WETLANDS OR STREAMS SHALL HAVE A MAXIMUM PERIOD OF EXPOSURE OF NOT MORE THAN 15 DAYS.
14.

FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IN ALL AREAS WITHIN 100 FEET OF DELINEATED WETLANDS OR STREAMS.

EROSION CONTROL DURING WINTER CONSTRUCTION

1.

WINTER CONSTRUCTION PERIOD DEFINED: NOVEMBER 1 THROUGH APRIL 15
2.

WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
3.

EXPOSED AREA SHOULD BE LIMITED TO THAT THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY PRECIPITATION EVENT.
4.

AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SUCH THAT SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.
5.

BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE-FREEZING TEMPERATURES, THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE 200 - 300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT EXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF HAY OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.
6.

A) BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE EITHER WOOD CELLULOSE FIBER OR BE ANCHORED WITH MULCH NETTING OR CHEMICAL TACK.

B)

MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3%, FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.

C)

MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1ST, THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
7.

AFTER NOVEMBER 1ST THE CONTRACTOR SHALL APPLY DORMANT SEEDING OR MULCH AND ANCHORING ON ALL BARE EARTH AT THE END OF EACH WORKING DAY.
8.

DURING WINTER CONSTRUCTION PERIODS ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

MULCH ANCHORING

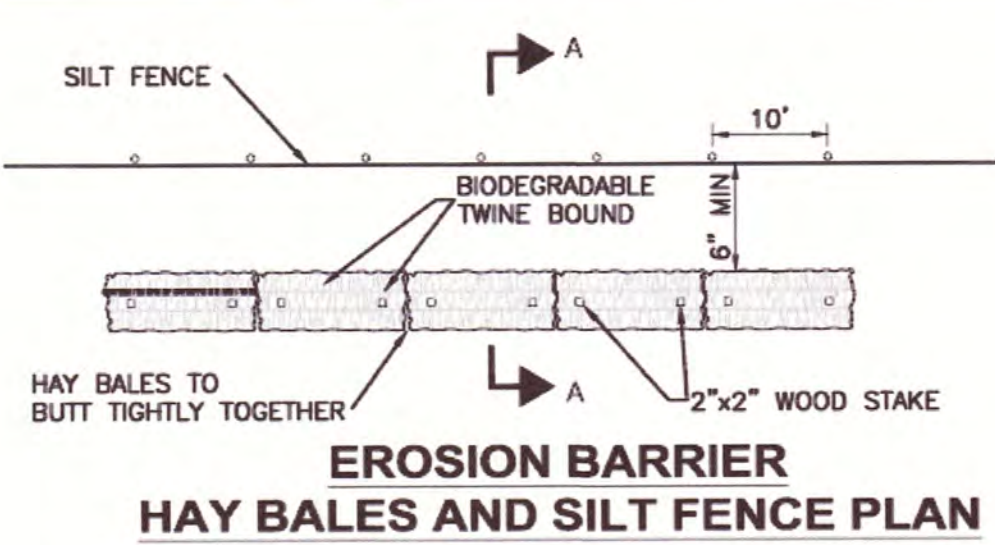
ANCHOR MULCH WITH: MULCH NETTING (AS PER MANUFACTURER); ASPHALT EMULSION (0.05 GALLONS PER SQ. YD.); CHEMICAL TACK (AS PER MANUFACTURER'S SPECIFICATIONS); OR BE WOOD CELLULOSE FIBER (2000 LBS/ACRE). WETTING FOR SMALL AREAS AND ROAD DITCHES MAY BE PERMITTED.

ADDITIONAL TEMPORARY SEED MIXTURE (OR PERIODS LESS THAN 12 MONTHS)		
DATES	SEED	RATE
4/1/17 - 7/1/17	OATS	80 LBS/ACRE
8/15/17 - 9/15/17		
4/1/17 - 6/1/17	ANNUAL RYE GRASS	40 LBS/ACRE
(8/15/17 - 9/15/17)		
(8/15/17 - 10/15/17)	WINTER RYE	120 LBS/ACRE
(11/1/17 - 4/1/17)	MULCH W/ DORMANT SEED	80 LBS/ACRE*
(5/1/17 - 6/30/17	FOXTAIL MILLET	30 LBS/ACRE
*SEED RATE ONLY		

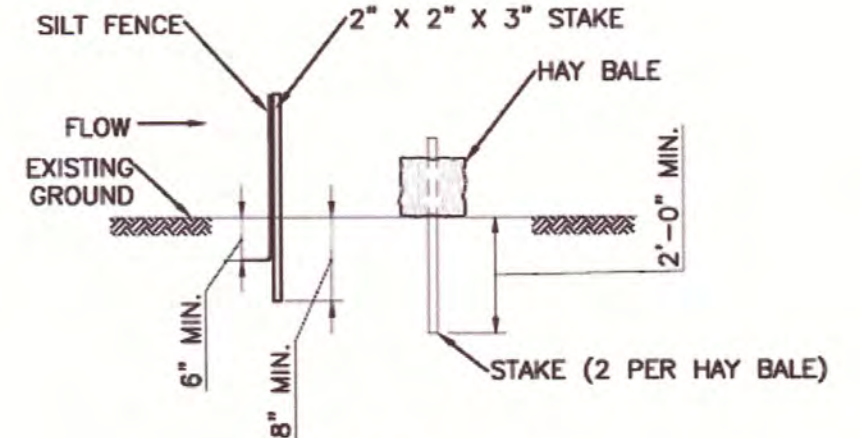
MULCH AND MULCH ANCHORING

LOCATION	MULCH	RATE (1000 S.F.)
PROTECTED AREA	STRAW OR HAY *	100 POUNDS
WINDY AREAS	STRAW OR HAY (ANCHORED) *	100 POUNDS
MODERATE TO HIGH VELOCITY AREAS OR STEEP SLOPES (GREATER THAN 3:1)	JUTE MESH, EXCELSIOR MAT OR EQUIV.	AS REQUIRED AS REQUIRED

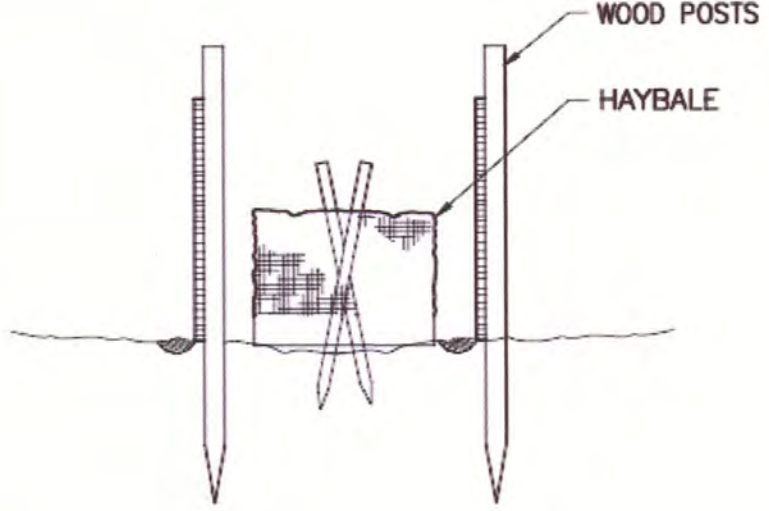
* A HYDRO-APPLICATION OF CELLULOSE FIBER MAY BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER SHALL BE USED ON HAY MULCH FOR WIND CONTROL.



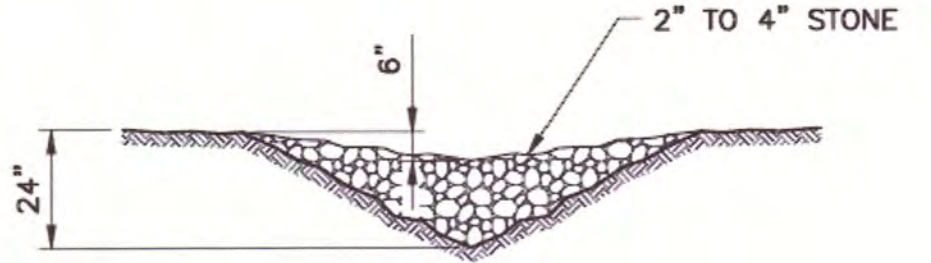
EROSION BARRIER
HAY BALES AND SILT FENCE PLAN



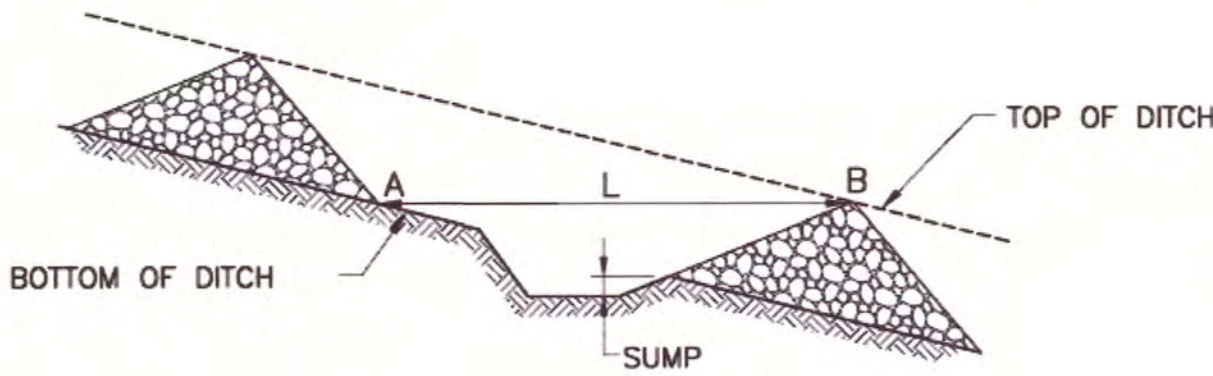
SECTION A-A



COMBINATION SILT FENCE
AND HAY BALE BARRIER
SCALE: "NTS"

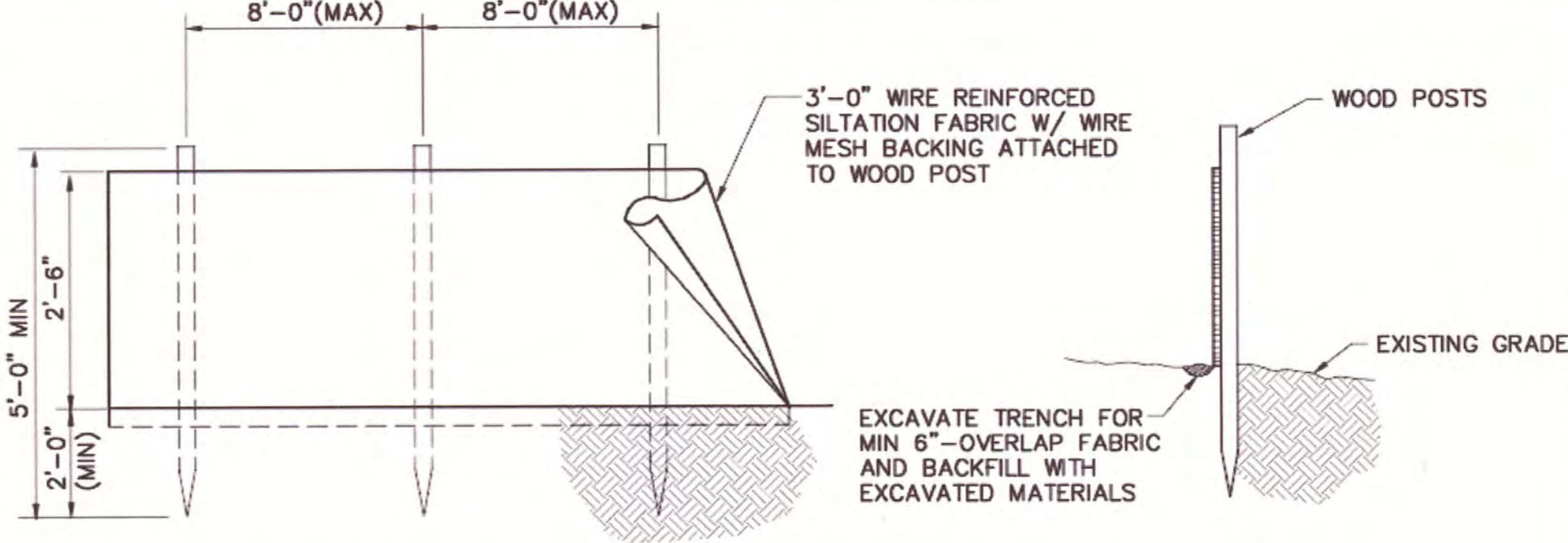


CROSS SECTION

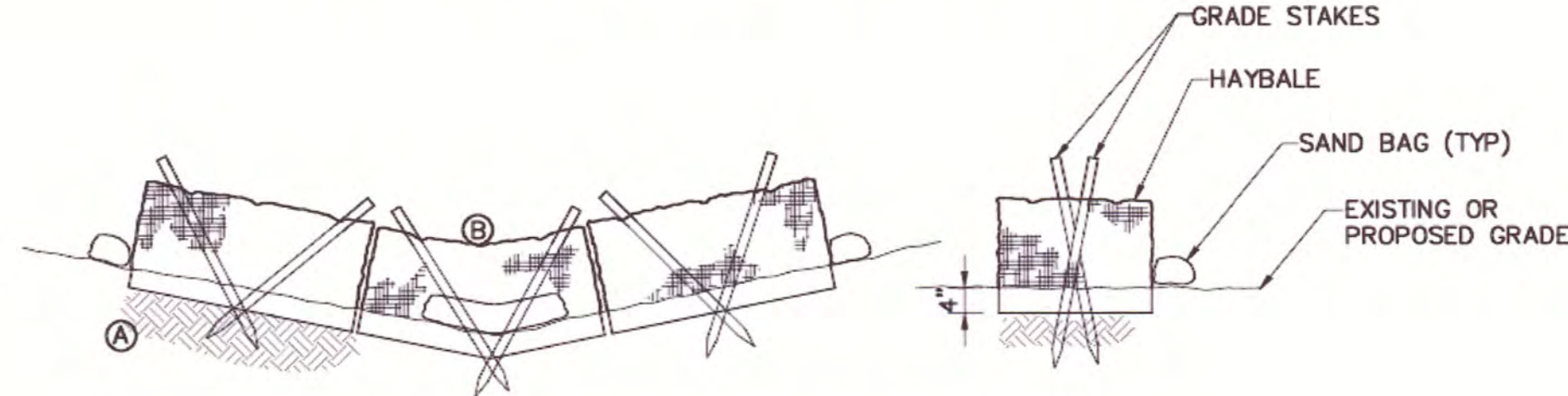


PROFILE

STONE CHECK DAM DETAIL
SCALE: "NTS"

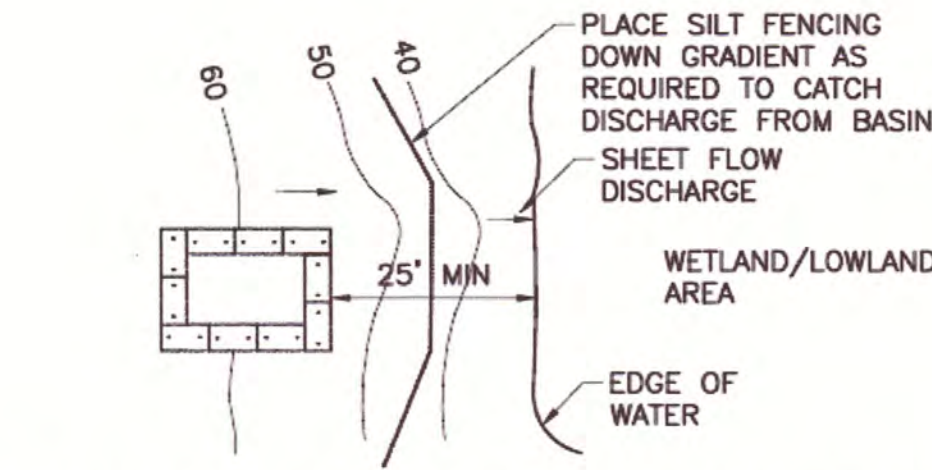
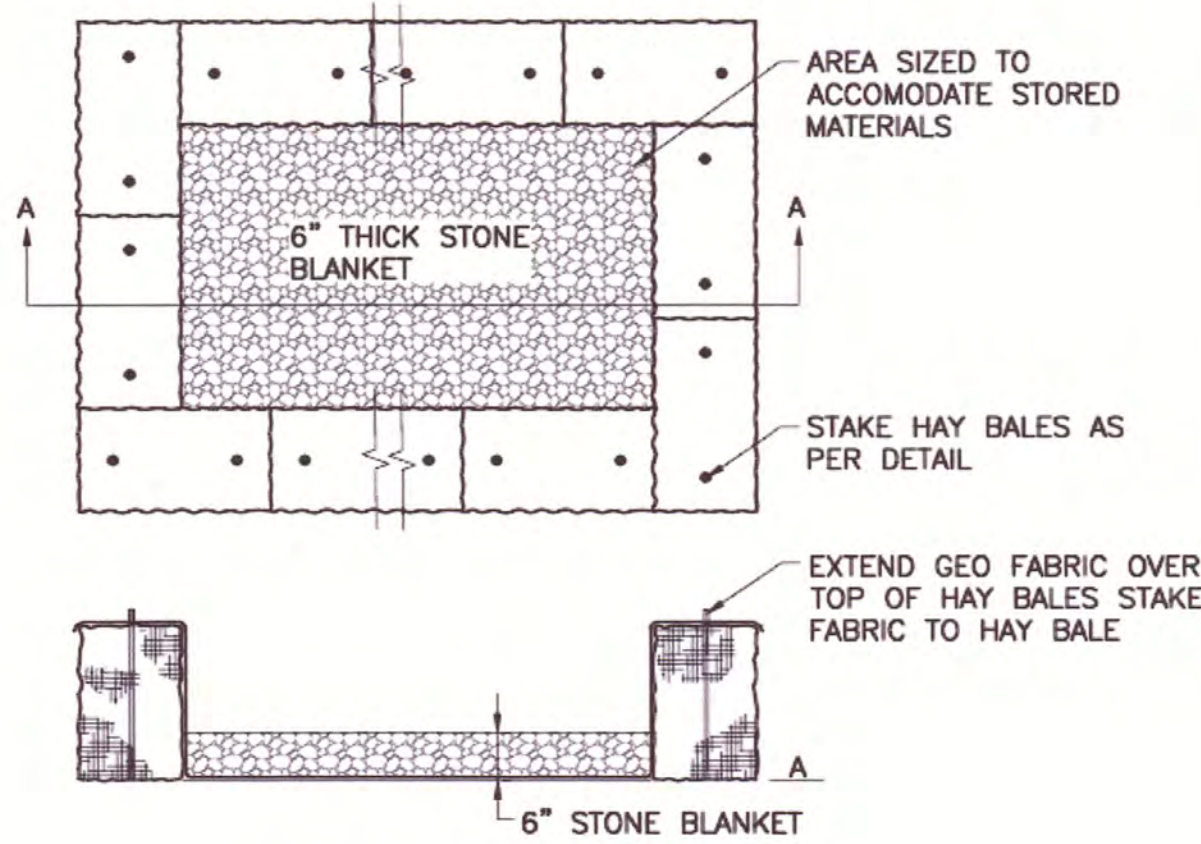


SILT FENCE INSTALLATION DETAIL
SCALE: "NTS"



EROSION CHECK TO BE BALES OF HAY SECURED TO THE GROUND WITH TWO 4' LONG GRADE STAKES FOR EACH BALE. SAND BAG AS REQUIRED, PLACE SUFFICIENT BALES TO ESTABLISH ELEVATIONS AT (A) AT LEAST 6 INCHES ABOVE OVERFLOW AT (B)

HAY BALE CHECK DAM
SCALE: "NTS"



TEMPORARY HAY BALE SEDIMENT BASIN
SCALE: "NTS"

DATE	01/17
APPD	
SUBMISSIONS/REVISIONS	
CONTRACT DRAWINGS	
NO	
DXS	
CHECKED BY	MS2
DATE	11/30/16
APPROVED BY	JAC
DATE	01/25/17
BOOK NO.	
PROJECT NO.	13406D
SCALE	



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CITY OF WALTHAM MASSACHUSETTS AREA 5A RELIEF SEWER	EROSION CONTROL NOTES AND DETAILS
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