

PATH/FILENAME: L:\LEGACY\USCHLIFR001\DATA\PROJECTS\WAKEFIELD\DATA\3\PROJ\60183636 - SUDBURY STREET\60183636 - SUDBURY STREET PHASE A\SHEETS\G00 G-001.DWG
LAST UPDATE: Thursday, May 13, 2021 8:27:48 AM
PLOT DATE: Thursday, May 13, 2021 9:06:16 AM
ANSI D - 13-May-21

CITY OF MARLBOROUGH, MASSACHUSETTS

SUDBURY STREET AREA SEWER PROJECT

CONTRACT NO. ED 2021-06

MAYOR

ARTHUR G. VIGEANT

DEPARTMENT OF PUBLIC WORKS

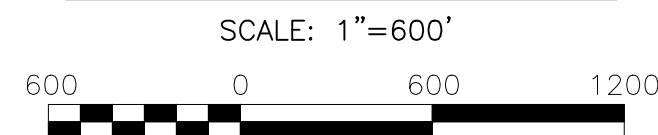
SEAN M. DIVOLL, P.E. COMMISSIONER

THOMAS DIPERSIO, JR., P.E., P.L.S. CITY ENGINEER



PROJECT
LOCATION

LOCATION PLAN



MAY 2021

AECOM
250 APOLLO DRIVE
CHELSEA, MA 01824
PHONE (978) 905-2100

AECOM

CITY OF MARLBOROUGH, MA
SUDBURY STREET AREA SEWERS
CONTRACT NO. ED 2021-06

COVER SHEET

GENERAL

PROJECT NO: 60183636
CAD DWG FILE: 00 G-001
DESIGNED BY: C. COSTELLO
DRAWN BY: S. EISENLRD
DEPT CHECK: C. BENZIGER
PROJ CHECK: C. COSTELLO
DATE: MAY 2021
SCALE: AS NOTED

00 G-001

PATH/FILENAME: L:\LEGACY\USCHL\F001\DATA\PROJECTS\WAKEFIELD\DATA_3\PROJ\60183636 - SUDBURY STREET PHASE A\SHEETS\G-002.DWG
LAST UPDATE: Friday, May 07, 2021 2:26:25 PM
PLOT DATE: Thursday, May 13, 2021 9:06:37 AM
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* PREPARED BY THE MARLBOROUGH DEPARTMENT OF PUBLIC WORKS

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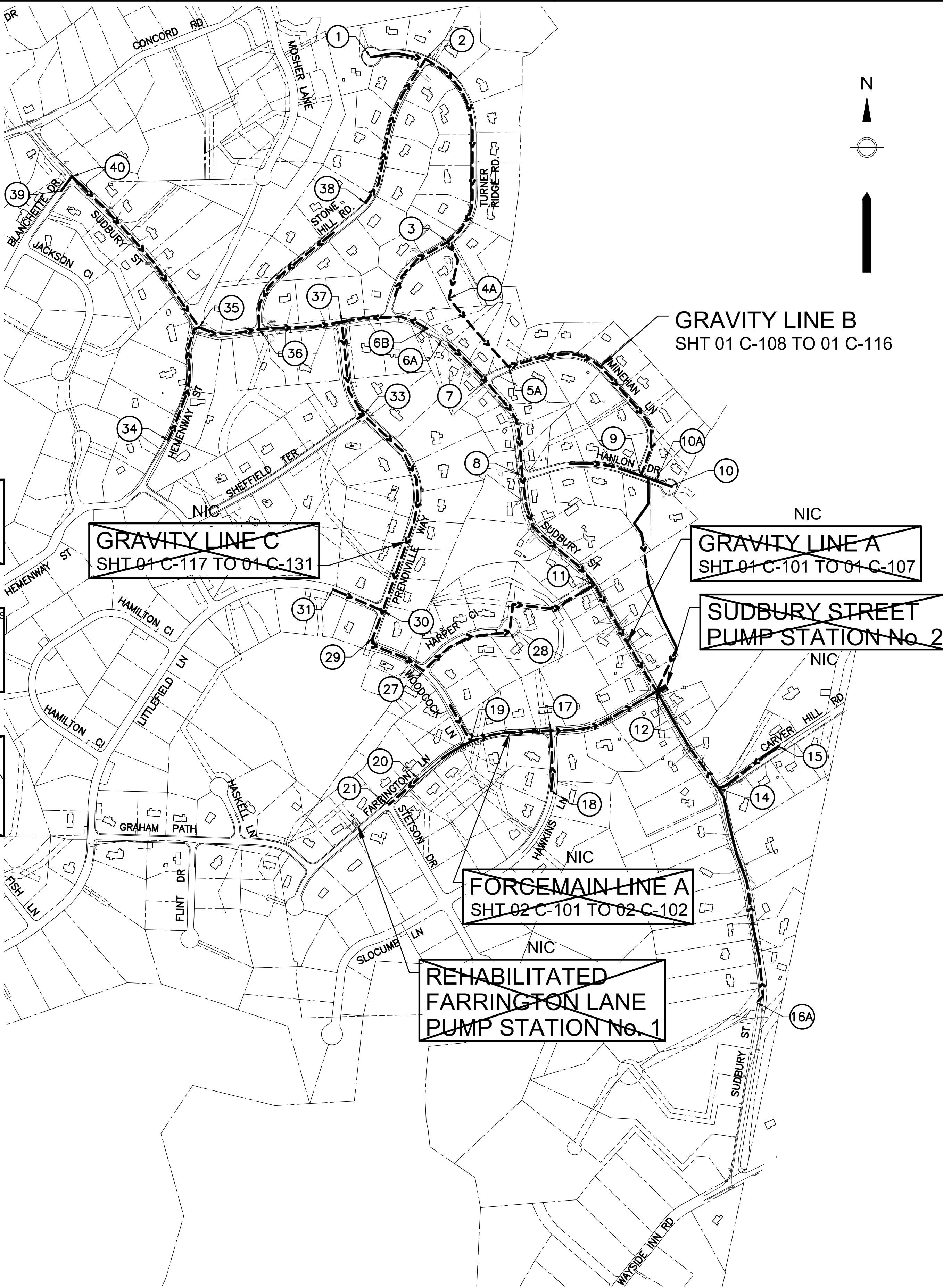
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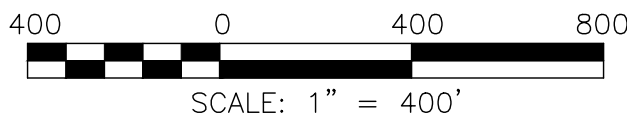
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- * PREPARED BY THE MARLBOROUGH DEPARTMENT OF PUBLIC WORKS



KEY PLAN

SCALE: 1"=400'



ACOM
250 APOLLO DRIVE
CHELSEA, MA 01824
PHONE (978) 905-2100

AECOM

CITY OF MARLBOROUGH, MA
SUDBURY STREET AREA SEWERS
CONTRACT NO. ED 2021-06

INDEX OF DRAWINGS

PROJECT NO: 60183636
CAD DWG FILE: 00 G-002
DESIGNED BY: C. COSTELLO
DRAWN BY: S. EISENROD
DEPT CHECK: C.BENZIGER
PROJ CHECK: C. COSTELLO
DATE: MAY 2021
SCALE: AS NOTED

00 G-002

GENERAL NOTES

- EXISTING INFORMATION SHOWN ON THE PLANS IS BASED ON FIELD SURVEY PROVIDED BY BRYANT ASSOCIATES, INC. OF BOSTON, MA, MAY 8, 2009, AND AS UPDATED MARCH 30, 2010. THE REFERENCE HORIZONTAL DATUM IS MASSACHUSETTS COORDINATE SYSTEM NAD83. THE REFERENCE VERTICAL DATUM IS NAVD 1988.
- PROJECT BENCHMARKS ARE BASED ON CONTROL POINTS USED BY TOWN FOR THE 2000 MAPPING OF THE TOWN.
- PROPERTY LINES SHOWN ARE APPROXIMATE ONLY.
- BORING LOCATIONS ARE SHOWN ON THE PLANS. BORING LOGS ARE PROVIDED IN APPENDIX TO THE SPECIFICATIONS.
- THE WETLANDS SHOWN WERE FIELD LOCATED AND FLAGGED IN THE FIELD BY A CERTIFIED SOIL SCIENTIST FROM AECOM IN MAY OF 2010 AND BY THE CITY OF MARLBOROUGH IN OCTOBER 2012.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM ALL WORK AS INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER IN CONFORMANCE WITH ALL APPLICABLE CODES IN A PROPER AND WORKMANLIKE MANNER.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS AT THE SITE.
- THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE PROPOSED WORK DURING CONSTRUCTION TO MEET EXISTING CONDITIONS.
- ALL CONSTRUCTION ACTIVITY SHALL BE CONFINED TO THE AREA WITHIN THE PERMANENT EASEMENTS AND STREET RIGHT-OF-WAY LINES UNLESS OTHERWISE AUTHORIZED BY THE CITY AND PRIVATE PARTIES.
- NO EQUIPMENT, VEHICLES OR CONSTRUCTION MATERIALS SHALL BE STORED OUTSIDE OF DESIGNATED WORK AREAS DURING EITHER WORKING OR NON-WORKING HOURS. THE LOCATION FOR ANY STORAGE OF EQUIPMENT BY THE CONTRACTOR DURING NON-WORKING HOURS SHALL BE AS APPROVED BY CITY.
- WORKING HOURS WITHIN THE CITY ARE 7:00 A.M. TO 3:30 P.M., MONDAY THROUGH FRIDAY. PERMISSION IS REQUIRED FROM THE CITY VIA THE ENGINEER TO WORK ON SATURDAY, SUNDAY, LEGAL HOLIDAYS, OR ANY WEEKDAY NIGHT PAST THE HOURS SPECIFIED. THIS PERMISSION MUST BE REQUESTED 72 HOURS IN ADVANCE. SUNDAY WORK WILL ONLY BE ALLOWED IN CASE OF EMERGENCY.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF THE EXISTING FEATURES AND STRUCTURES WITHIN AND ADJACENT TO THE WORK. ANY ITEM DISTURBED OR IN CONFLICT WITH THE PROPOSED WORK SHALL BE REMOVED AND RESET OR REPLACED AT THE CONTRACTOR'S EXPENSE. IN THE EVENT OF DAMAGE, THE REPAIRS OR REPLACEMENT SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE AS APPROVED BY THE ENGINEER.
- THE CONTRACTOR SHALL DO ALL THE CLEARING AND GRUBBING NECESSARY TO CONSTRUCT THE SEWER AND APPURTENANCES AS SHOWN ON DRAWINGS. NO TREES OR TREE LIMBS SHALL BE CUT UNLESS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUS CLEANING OF MUD, DIRT AND DEBRIS OFF STREETS, WHEN SUCH MUD, DIRT OR DEBRIS IS DEPOSITED THERE AS A RESULT OF HIS CONSTRUCTION ACTIVITY. ANY DEBRIS, MUD, OR DELETERIOUS MATERIAL FROM THE PROJECT WILL BE REMOVED FROM THE STREET AND SURROUNDING STREETS BY CONTRACTOR AT THE END OF EACH WORKING DAY, OR BEFORE, IF DIRECTED BY THE CITY.
- USE WATER SPRINKLING, TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS TO LIMIT DUST AND DIRT RISING AND SCATTERING IN THE AIR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING A SITE FOR DISPOSAL OF ALL EXCAVATED UNACCEPTABLE MATERIAL THAT IS UNSUITABLE FOR USE AS BACKFILL AND ALL OTHER EXCESS EXCAVATED MATERIALS. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH THE LOCATION OF THE DISPOSAL SITE AND WRITTEN PERMISSION FOR USE OF THE SITE FROM THE PROPERTY OWNER. THE COST FOR SECURING AND MAINTAINING THE DISPOSAL SITE SHALL BE INCIDENTAL TO THE TOTAL PROJECT COST.
- ROCK REMOVAL BY THE MECHANICAL METHOD SHALL CONSIST OF CUTTING AWAY ROCK AT TRENCH BOTTOM TO FORM A LEVEL BEARING SURFACE 12-INCHES BELOW INVERT ELEVATION OF PIPE.
- ALL UNEXCAVATED ROCK WITHIN 3'-0" HORIZONTALLY OF THE ENDS OF BUILDING CONNECTIONS, BRANCHES AND STUBS, AND DOWN TO A HORIZONTAL PLANE 12-INCHES BELOW THE BOTTOMS OF SUCH CONNECTIONS, BRANCHES AND STUBS, SHALL BE REMOVED.
- ALL EXCESS SOIL FROM CONSTRUCTION TO BE STOCKPILED OUTSIDE OF 100 FOOT BUFFER ZONE. DISPOSE OF EXCESS AND UNSUITABLE MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02210.
- IF AT ANY TIME THE CONSTRUCTION EXCAVATION REVEALS ANY ARTICLE OF HISTORIC OR ARCHEOLOGICAL SIGNIFICANCE, WORK AT THE LOCATION WILL CEASE AND THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE FOR RESTORING UNPAVED AREAS DISTURBED BY THE CONTRACTOR TO ORIGINAL CONDITIONS INCLUDING ALL GRADING, LOAMING, SEEDING, ETC. ASSOCIATED WITH CONSTRUCTION.
- THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO APPROXIMATE EXISTING GRADES UPON COMPLETION OF THE SEWER CONSTRUCTION AND TESTING, EXCEPT WHERE PERMANENT GRADE CHANGES ARE SPECIFICALLY NOTED OR ORDERED.

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL TAKE NECESSARY MEASURES TO CONTROL SOIL EROSION AND PREVENT THE FLOW OF SEDIMENT FROM THE CONSTRUCTION SITE SO AS TO PREVENT DAMAGE TO ANY STREAM OR WETLANDS. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE SEQUENCE OF OPERATIONS FOR EROSION AND SEDIMENT CONTROL PRESENTED IN THE DETAILS ON THE DRAWINGS.
2. INSTALL EROSION AND SEDIMENTATION CONTROL STRUCTURES IMMEDIATELY AFTER SITE IS CLEARED AND BEFORE TRENCH EXCAVATION.
3. ALL DRAINAGE OUTLETS SHALL BE LOCATED AND HAVE SILT FENCE OR STRAW BALES INSTALLED AS REQUIRED PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR'S OPERATIONS SHALL NOT EXTEND INTO ANY WETLAND AREA OR THE 20' BUFFER ZONE. DISTURBANCE OF AREAS OUTSIDE OF THE LIMITS ESTABLISHED FOR EROSION CONTROL BARRIERS IS NOT ALLOWED.
5. ALL EROSION AND SEDIMENTATION CONTROL STRUCTURES SHALL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
6. EROSION CONTROLS SHALL BE INSPECTED AND MAINTAINED ON A DAILY BASIS IN ACCORDANCE WITH REQUIREMENTS OF ORDER OF CONDITIONS ATTACHED AS APPENDIX TO THE SPECIFICATIONS.
7. IN ALL AREAS WHERE DEWATERING IS NECESSARY, MEASURES SHALL BE TAKEN TO ENSURE THE PRESERVATION OF WATERCOURSES AND COMPLIANCE WITH ALL REGULATIONS AND LAWS. ALL DEWATERING MUST BE DISCHARGED INTO SEDIMENT TRAPS AS INDICATED IN THE DETAILS AND AS SPECIFIED IN SPECIFICATION SECTION 01568. UNDER NO CIRCUMSTANCES SHALL THE DISCHARGE BE ALLOWED TO DIRECTLY ENTER ANY STORM DRAIN SYSTEM.
8. EASEMENTS ARE TO BE RESTORED AS SOON AS PRACTICABLE FOLLOWING INSTALLATION OF SEWER.

EXISTING UTILITIES NOTES

3. THE SURFACE EVIDENCE OF THE UTILITIES SHOWN HAS BEEN LOCATED BY FIELD SURVEY UNLESS DENOTED WITH RECORD (REC) NOTATION.
2. EXISTING WATER DISTRIBUTION SYSTEM AND HYDRANT LATERALS ARE FROM CITY OF MARLBOROUGH RECORD DRAWING INFORMATION.
3. ASSUMED DEPTH OF COVER FOR EXISTING GAS MAINS IS 30". ASSUMED DEPTH OF COVER FOR EXISTING WATER MAINS IS 4'-6".
4. EXISTING PROPERTY LINES AND UNDERGROUND UTILITIES AS SHOWN ARE FROM THE BEST INFORMATION AVAILABLE. ADDITIONAL UTILITIES MAY BE PRESENT. PRIOR TO EXCAVATING, THE CONTRACTOR SHALL DETERMINE THE ACCURATE LOCATIONS OF THE UTILITIES SHOWN AND THE POSSIBLE EXISTENCE OF OTHER UNDERGROUND UTILITIES BY PROVIDING OBSERVATION TEST PITS AND CONTACTING UTILITY COMPANIES. CHAPTER 82, SECTION 40 OF THE M.G.L. REQUIRES 72 HOURS NOTICE TO ALL UTILITY OWNERS PRIOR TO ANY EXCAVATION. CALL "DIG SAFE" (1-888-344-7233) AND EACH UTILITY OWNER.
5. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL COORDINATE UTILITY SUPPORT AND/OR RELOCATION WITH THE UTILITY OWNER FOR ALL EXISTING UTILITIES WHICH WILL BE AFFECTED DURING CONSTRUCTION. WHERE EXISTING POWER OR TELEPHONE POLES ARE IN CLOSE PROXIMITY TO WORK, THE CONTRACTOR SHALL COORDINATE HIS WORK EFFORTS WITH THOSE OF THE UTILITY COMPANIES SUCH THAT THE MAINTENANCE OF THEIR EXISTING FACILITIES CAN BE MAINTAINED AND PROTECTED DURING THE TIME WORK IS GOING ON ADJACENT TO THE UTILITY.
6. EXISTING UTILITIES IN THE STREETS AND WITHIN THE LIMITS OF THE WORK ARE TO REMAIN IN OPERATION DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL ARRANGEMENTS FOR ANCHORING, SUPPORTING AND/OR RELOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL COSTS SHALL BE INCLUDED IN THE UNIT PRICES BID. IN THE EVENT OF DAMAGE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL REPAIRS.
8. ALL PIPES OR OTHER UTILITIES DAMAGED DURING THE CONTRACTOR'S OPERATIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE AT NO COST TO THE CITY OF MARLBOROUGH.
9. ALL UTILITY BOXES, FRAMES, GRATES, ETC. DISTURBED BY CONTRACTOR AND NOT TO BE ABANDONED SHALL BE RESET TO THE PROPER GRADE.
10. DELAYS TO THE CONTRACTOR AS A RESULT OF TIMING OF ANY UTILITY RELOCATION OR PROTECTION SHALL NOT BE CONSIDERED COMPENSABLE DELAYS, AS IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE HIS WORK IN CONFORMANCE TO THE UTILITY COMPANY'S SCHEDULE.
11. THE UTILITIES' OWNERSHIPS INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

PUBLIC UTILITIES
MUNICIPAL GARAGE
135 NEIL STREET
MARLBOROUGH, MA 01752
PHONE: 508.624.6910x33200

NATIONAL GRID
245 SOUTH MAIN STREET
HOPEDALE, MA 01747
PHONE: 508.482.1283
CONTACT: ROBERT W. RUSSELL

COMCAST/AT&T BROADBAND
4 LYBETRY WAY
WESTFORD, MA 01886
PHONE: 800.556.9979
CONTACT: OPERATIONS CENTER

VERIZON
146 LELAND STREET
FRAMINGHAM, MA 01702
PHONE: 508.820.3557
CONTACT: ELLEN CUMMINGS

EVERSOURCE ENERGY
157 CORDAVILLE ROAD
SOUTHBOROUGH, MA 01772
PHONE: 508.305.7034
CONTACT: CHRISTOPHER HOWARD

OPEN EXCAVATIONS NOTES

1. THE CONTRACTOR SHALL NOTIFY PROPERTY OWNERS IN WRITING 48 HOURS PRIOR TO BEGINNING EXCAVATION ON THEIR PROPERTY.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING PROPER AND ADEQUATE TRENCH SHORING AND BRACING AT ALL TIMES IN ACCORDANCE WITH RECOMMENDED/REQUIRED SAFETY STANDARDS.
3. CONTRACTOR SHALL COVER OPEN EXCAVATIONS AND TRENCHES FOR UTILITY RELOCATION WITH STEEL PLATES SUITABLE FOR VEHICULAR TRAFFIC OR OTHER METHOD ACCEPTABLE TO THE CITY, DURING NON-WORK HOURS. SUCH WORK SHALL BE INCIDENTAL TO THE TOTAL PROJECT COST.
4. IN ADDITION TO COMPLIANCE WITH THE GENERAL REQUIREMENTS SECTION OF THE SPECIFICATIONS, THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND SHALL PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH DAY'S WORK.

WATER NOTES

1. THE PROPOSED WATER MAINS ARE TO BE CONSTRUCTED IN THE SAME HORIZONTAL AND VERTICAL LOCATION AS THE EXISTING WATER MAIN, EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER. REMOVE EXISTING 8" ASBESTOS CEMENT WATER MAINS AND ASSOCIATED COMPONENTS AND SERVICES. THE CONTRACTOR IS TO DISPOSE OF EXISTING WATER MAINS AND ASSOCIATED COMPONENTS IN ACCORDANCE WITH STATE AND FEDERAL LAWS. THE CITY HAS FIRST RIGHT OF REFUSAL ON FITTINGS AND APPURTENANCES BEFORE DISPOSAL.
2. THE CONTRACTOR IS TO PROVIDE TEMPORARY BY-PASS PIPING TO SUPPLY WATER TO RESIDENTS, IN ACCORDANCE WITH SPECIFICATION SECTION 02630.
3. WHEN CROSSING EXISTING UTILITIES, THE CONTRACTOR SHALL DEFLECT THE PIPE WHERE POSSIBLE TO REDUCE THE AMOUNT OF BENDS REQUIRED.
4. NEW WATER AND SEWER LINES SHALL MAINTAIN A 10 FT. SEPARATION TO THE EXTENT POSSIBLE.
5. ALL WATER SERVICES SHALL BE TYPE "K" COPPER WITH A MIN. DIAMETER OF ¾". LARGER SERVICES SHALL BE REPLACED IN KIND AS DIRECTED BY THE ENGINEER.
6. ALL EXIST. WATER SERVICES SHALL BE REMOVED AND REPLACED FROM THE MAIN TO THE CURB STOP/PROPERTY LINE IN THE SAME LOCATION OR AS DIRECTED BY THE ENGINEER.
7. ALL CURB STOPS AND BOXES ARE TO BE REMOVED AND REPLACED WITH NEW, AND SHALL BE LOCATED BEHIND THE BACK OF SIDEWALK OR IMMEDIATELY OUTSIDE THE RIGHT OF WAY LAYOUT WHERE POSSIBLE .
8. THE EXIST. HYDRANTS TO BE REPLACED (AS NOTED ON THE PLAN) SHALL BE REPLACED IN THE LOCATIONS INDICATED ON THE PLANS. HYDRANTS REMOVED ARE TO BE RETURNED TO THE DEPARTMENT OF PUBLIC WORKS LOCATED AT 135 NEIL STREET, MARLBOROUGH, MA. REMOVAL AND DELIVERY OF HYDRANTS IS TO BE INCLUDED IN THE APPROPRIATE UNIT PRICE ITEM IN THE BID.
9. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ANY ABUTTERS AFFECTED BY A SHUTDOWN (48 HOURS IN ADVANCE).
10. TEMPORARY PIPING AND HOSE DISINFECTION MUST BE PERFORMED IN ACCORDANCE WITH AWWA STANDARDS AND MUST BE DESIGNATED FOR POTABLE WATER USE BY NSF.
11. ANALYTICAL TESTING OF WATER SHALL BE CONDUCTED BY A LABORATORY CERTIFIED IN THE STATE OF MASSACHUSETTS.
12. A NIGHT CAP/PLUG, PROVIDED BY THE PIPE SUPPLIER, SHALL BE USED TO CAP THE PIPE AT THE END OF EACH WORK DAY.
13. WATER SERVICE CONNECTIONS ON THE EXISTING WATER MAINS ARE SHOWN ACCORDING TO THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING SERVICE CONNECTIONS PRIOR TO CONSTRUCTING THE NEW SERVICE CONNECTIONS.
14. WATER MAINS AND SERVICE CONNECTIONS TO BE INSTALLED TO A MINIMUM DEPTH OF 5-FEET TO TOP OF PIPE, UNLESS OTHERWISE INDICATED ON THE DRAWINGS..

PIPELINE (GRAVITY) NOTES

1. PIPE SHALL BE AS INDICATED IN THE SPECIFICATIONS.
2. THE ALIGNMENT AND PROFILES SHOWN FOR THE PROPOSED PIPING MAY BE REVISED BASED UPON LAYING LENGTHS OF PIPE AND FIELD CONDITIONS.
3. ALL STATIONING SHOWN ON PLANS IS APPROXIMATE IN NATURE AND MAY BE REASONABLY ADJUSTED, AS NECESSARY, IN THE FIELD UPON APPROVAL OF THE ENGINEER AND/OR CITY.
4. ALL PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS SHOWN UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR DIRECTED BY THE ENGINEER.
5. PIPE LENGTHS FOR THE GRAVITY SYSTEM SHOWN ON THE DRAWINGS ARE FROM MANHOLE CENTERLINE TO MANHOLE CENTERLINE.
6. PIPE DEFLECTION SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATION.
7. MINIMUM PIPE COVER WILL BE 4'-6", UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS. COVER IS TO BE MEASURED FROM EXISTING TOP OF ROAD, OR GROUND SURFACE TO TOP OF PIPE.
8. WHENEVER POSSIBLE, THE GRAVITY SEWER SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM AN EXISTING WATER MAIN, WHERE THE GRAVITY SEWER CROSSES UNDER EXISTING WATER MAINS, THE GRAVITY SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP IS AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN. WHEN THE ELEVATION OF THE GRAVITY SEWER CANNOT BE VARIED TO MEET THIS VERTICAL SEPARATION, THE WATER MAIN SHALL BE RELOCATED OR RECONSTRUCTED WITH MECHANICAL JOINT PIPE FOR A DISTANCE OF 10 FEET ON EITHER SIDE OF THE SEWER. WHEREVER THIS HORIZONTAL AND/OR VERTICAL SEPARATION CANNOT BE MAINTAINED, BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF MECHANICAL-JOINT CEMENT LINED DUCTILE IRON PIPE. BOTH PIPES SHALL BE PRESSURE TESTED AS SPECIFIED IN SECTION 02615. CONCRETE ENCASEMENT SHALL NOT BE USED.

MANHOLE NOTES

1. MANHOLE FRAMES AND COVERS IN OFF STREET AREAS (I.E. WETLANDS, NOT LAWNS) SHALL EXTEND 2-FEET ABOVE FINISHED GRADE UNLESS OTHERWISE DIRECTED BY ENGINEER.
2. ALL STREET MANHOLES SHALL HAVE THEIR RIMS SET TO ACTUAL FINISH GRADE REGARDLESS OF ANY PROPOSED ELEVATIONS INDICATED, UNLESS SPECIFICALLY NOTED OTHERWISE.

HOUSE SEWER CONNECTION NOTES

1. EXACT LOCATIONS OF HOUSE SEWER CONNECTIONS WILL BE DETERMINED IN THE FIELD BY THE CONTRACTOR WITH COORDINATION WITH HOME OWNERS AND THE CITY OF MARLBOROUGH.

ROADWAY AND PAVEMENT CONTROL NOTES

1. PAVEMENT SHALL BE COMPLETED AS INDICATED AND SPECIFIED.
2. SAW CUT ALL PAVEMENT FOR REMOVAL. ANY PAVEMENT INTENDED TO REMAIN THAT IS DAMAGED DURING CONSTRUCTION SHALL BE SAW CUT, REMOVED, AND REPLACED AT NO ADDITIONAL COST TO THE CITY.
3. INITIAL TRENCH WIDTH PAVEMENT SHALL BE INSTALLED AT THE END OF EACH WORK WEEK UNLESS OTHERWISE DIRECTED BY THE CITY.
4. DRIVE APRONS DAMAGED AS A RESULT OF CONSTRUCTION OR CONSTRUCTION EQUIPMENT SHALL BE REPLACED IN FULL, FROM THE EDGE OF PAVEMENT TO THE LIMIT OF DISTURBANCE.

MAINTENANCE OF TRAFFIC NOTES




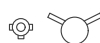









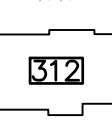








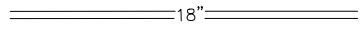
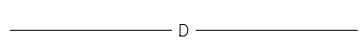
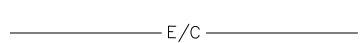




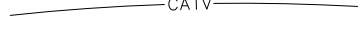

1. THE CONTRACTOR SHALL MAINTAIN VEHICLE ACCESS AT ALL TIMES DURING THE PROJECT TO RESIDENTS AND BUSINESSES. THE RESPECTIVE RESIDENTS AND BUSINESS OWNERS SHALL RECEIVE WRITTEN NOTICE AT LEAST 48 HOURS IN ADVANCE OF ANY WORK IN DRIVEWAY OR ACCESS AREAS. ALL EFFORTS SHALL BE MADE TO MINIMIZE DISRUPTION AND INCONVENIENCE TO THE OWNERS AND PATRONS. STEEL PLATES AND GRAVEL MAY BE USED FOR TEMPORARY ACCESS.
2. THE CITY RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO FURNISH, ERECT, OPERATE, MAINTAIN, MOVE, RELOCATE AND REMOVE TRAFFIC CONTROL DEVICES AND/OR MODIFY THE TRAFFIC CONTROL PLAN TO MORE EFFECTIVELY ACCOMMODATE CHANGED TRAFFIC CONDITIONS, AT NO ADDITIONAL COST TO THE CITY. IF PROPER MAINTENANCE OF TRAFFIC FACILITIES, AND PROVISIONS FOR TRAFFIC CONTROL ARE NOT BEING PROVIDED BY THE CONTRACTOR, AND THE SAFETY OF THE PUBLIC IS ENDANGERED, THE CITY MAY TAKE THE NECESSARY STEPS TO PLACE THEM IN PROPER CONDITION AND THE COST OF SUCH SERVICES SHALL BE DEDUCTED FROM ANY PAYMENT WHICH MAY BE DUE THE CONTRACTOR.
3. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE PROPER MAINTENANCE OF ALL TRAFFIC CONTROL DEVICES INSTALLED INCLUDING PROPER LOCATION, INSTALLATION, ARRANGEMENT, AND CONDITIONS AS DESIGNATED IN THE CONTRACT PLANS AND SPECIAL PROVISIONS, OR REQUIRED BY THE CITY FOR THE DURATION OF THIS CONTRACT. THE CONTRACTOR SHALL PROVIDE THE NECESSARY MANPOWER, VEHICLES, EQUIPMENT, AND SUPPLIES OF EXTRA TRAFFIC CONTROL DEVICES TO ADEQUATELY FULFILL THIS RESPONSIBILITY. AS A MINIMUM, ONE INDIVIDUAL SHALL BE DESIGNATED BY THE CONTRACTOR WHOM THE CITY MAY CONTACT TO REPORT TRAFFIC CONTROL DEFICIENCIES, AND WHO WILL BE RESPONSIBLE FOR INSURING THAT THEY ARE CORRECTED. IN ADDITION, THE CONTRACTOR SHALL PROVIDE THE CITY THE NAMES AND TELEPHONE NUMBERS OF TWO INDIVIDUALS WHO WILL BE AVAILABLE 24-HOURS A DAY, 7-DAYS A WEEK TO RESPOND TO CALLS FROM THE CITY TO CORRECT TRAFFIC CONTROL DEFICIENCIES DURING THOSE PERIODS OF TIME WHEN THE CONTRACTOR'S INDIVIDUAL RESPONSIBLE FOR TRAFFIC CONTROL CANNOT BE REACHED.

[illegible]

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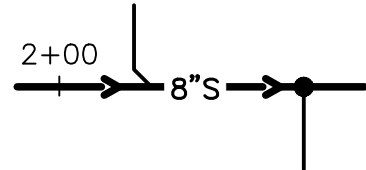

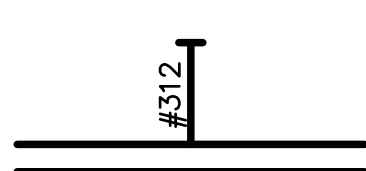


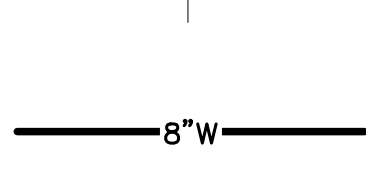
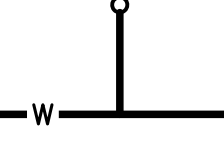









ANSI D - 7-May-21

EXISTING

	DECIDUOUS
	STUMP
	ROCK
	HYDRANT
	UTILITY POLE
	POLE
	WATER GATE VALVE
	CATCH BASIN
	DRAIN MANHOLE
	ELECTRIC MANHOLE
	GUY WIRE
	SPOT GRADE
	CABLE
	HOUSE
	TREE LINE
	MAJOR CONTOUR
	MINOR CONTOUR
	WATER MAIN
	STONE WALL
	FENCE
	PROPERTY LINE
	DRAIN PIPE
	DRAIN LINE
	ELECTRIC/COMMUNICATIONS
	GAS LINE
	FORCE MAIN SEWER
	SEWER LINE
	CABLE TV
	ELECTRIC, FIRE, TELEPHONE AND CABLE
	WETLAND
	BORING NUMBER AND LOCATION

LEGEND

PROPOSED

	SANITARY SEWER PIPE WITH FLOW DIRECTION, STATION POINT AND BUILDING CONNECTION WITH WYE OR CHIMNEY
	SEWER MANHOLE
	CHIMNEY WITH BUILDING ADDRESS
	SEWER/FM INTERSECTION NODE
	WATER MAIN
	WATER SERVICE CONNECTION
	TYPICAL HYDRANT ASSEMBLY
	GATE VALVE
	TEE FITTING
	BEND FITTING
	REDUCER
	TRANSITION COUPLING
	WATER MAIN CAP
	WATER MAIN BLOWOFF
	MANUAL AIR RELEASE VALVE
	TEST PIT

ABBREVIATIONS

APPROX	APPROXIMATE	LN.	LANE
BIT	BITUMINOUS CONCRETE	MECH	MECHANICAL
BLDG	BUILDING	MH	MANHOLE
CATV	CABLE TV	NIC	NOT IN CONTRACT
CBBC	CATCH BASIN BACK CENTER	NO.	NUMBER
CL	CENTER LINE	N.P.V.	NO PIPES VISIBLE
CONC	CONCRETE	PLNTR	PLANTER
CMP	CORRUGATED METAL PIPE	PROP.	PROPOSED
D	DRAIN	PVC	POLYVINYL CHLORIDE
DI	DUCTILE IRON	PS	PUMP STATION
DICL	DUCTILE IRON CEMENT LINED	R	RIM
DIA OR Ø	DIAMETER	RCP	REINFORCED CONCRETE PIPE
DIM	DIMENSION	RED	REDUCER
DEC	DECIDUOUS TREE	RET	RETAINING
DS	DOWN SPOUT	RWW	RAW WASTE WATER
EL OR ELEV	ELEVATION	S	SANITARY
EXIST.	EXISTING	SEW	SEWER
FFE	FINISHED FLOOR ELEVATION	SHT	SHEET
EFT	ELECTRIC, FIRE & TELEPHONE	SMH	SEWER MANHOLE
E/C	ELECTRIC/COMMUNICATIONS	STA.	STATION
EHH	ELECTRIC HAND HOLE	STR.	STRUCTURE
FM OR FS	FORCE MAIN	STY	STORY
GP	GATE POST	T.H.	TOP HOOD
GV	GATE VALVE	VERT	VERTICAL
G/S	GAS SERVICE	W	WATER
HR	HAND RAIL	WCR	WHEEL CHAIR RAMP
INV	INVERT	W/S	WATER SERVICE
LOW	LIMIT OF WORK		

CITY OF MARLBOROUGH, MA
SUDBURY STREET AREA SEWERS
CONTRACT NO. ED 2021-06

LEGEND AND ABBREVIATIONS

PROJECT NO:	60183636
CAD DWG FILE:	00 C-002
DESIGNED BY:	C. COSTELLO
DRAWN BY:	S. EISENLROD
DEPT CHECK:	C. BENZIGER
PROJ CHECK:	C. COSTELLO
DATE:	MAY 2021
SCALE:	AS NOTED

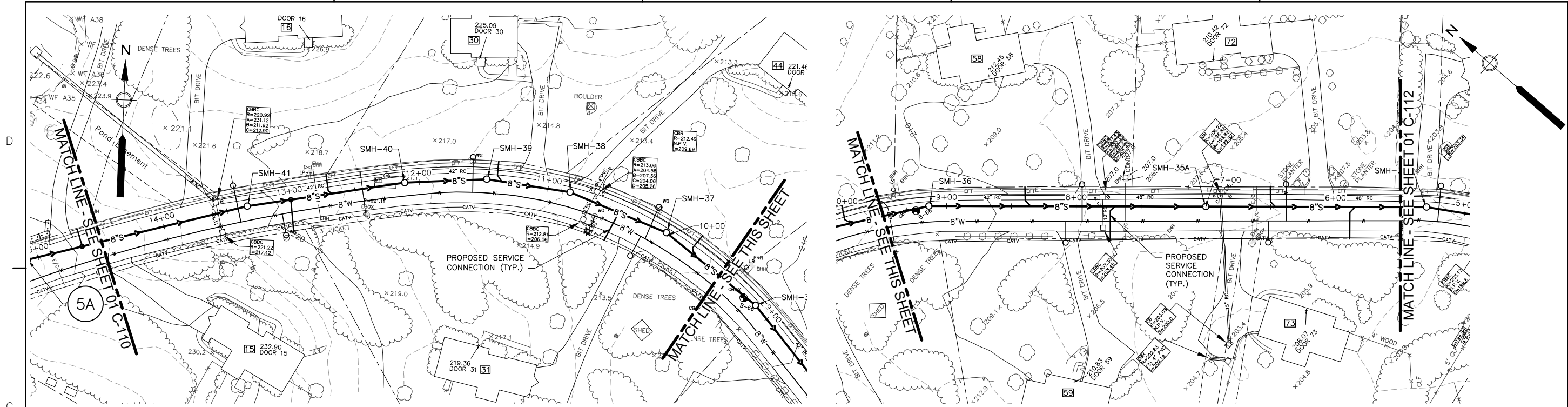
00 C-002

AECOM
250 APOLLO DRIVE
CHELSEA, MA 01824
PHONE (978) 905-2100

AECOM

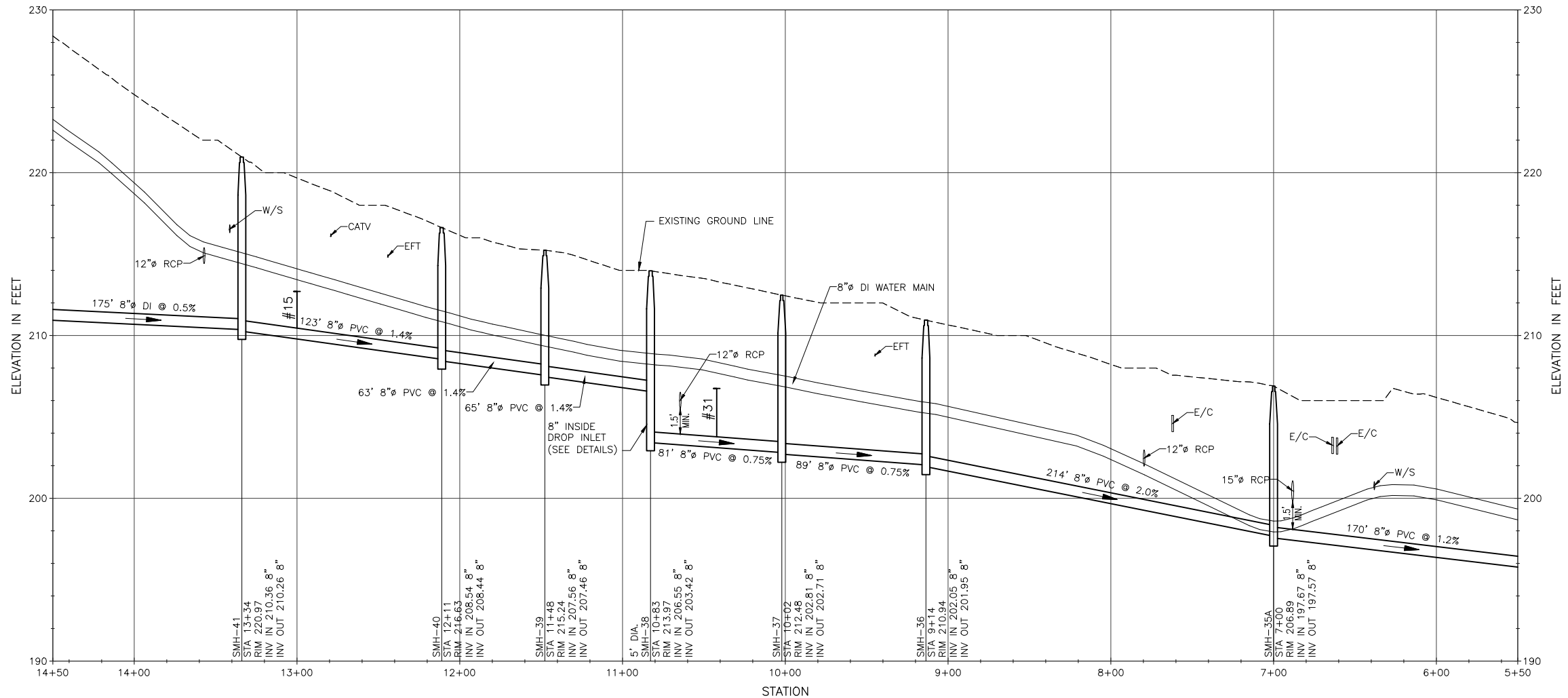
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ANSI D - 4-May-21



MINEHAN LANE SEWER PLAN

SCALE: 1"=40'

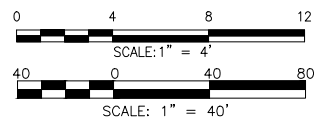


SEWER PROFILE

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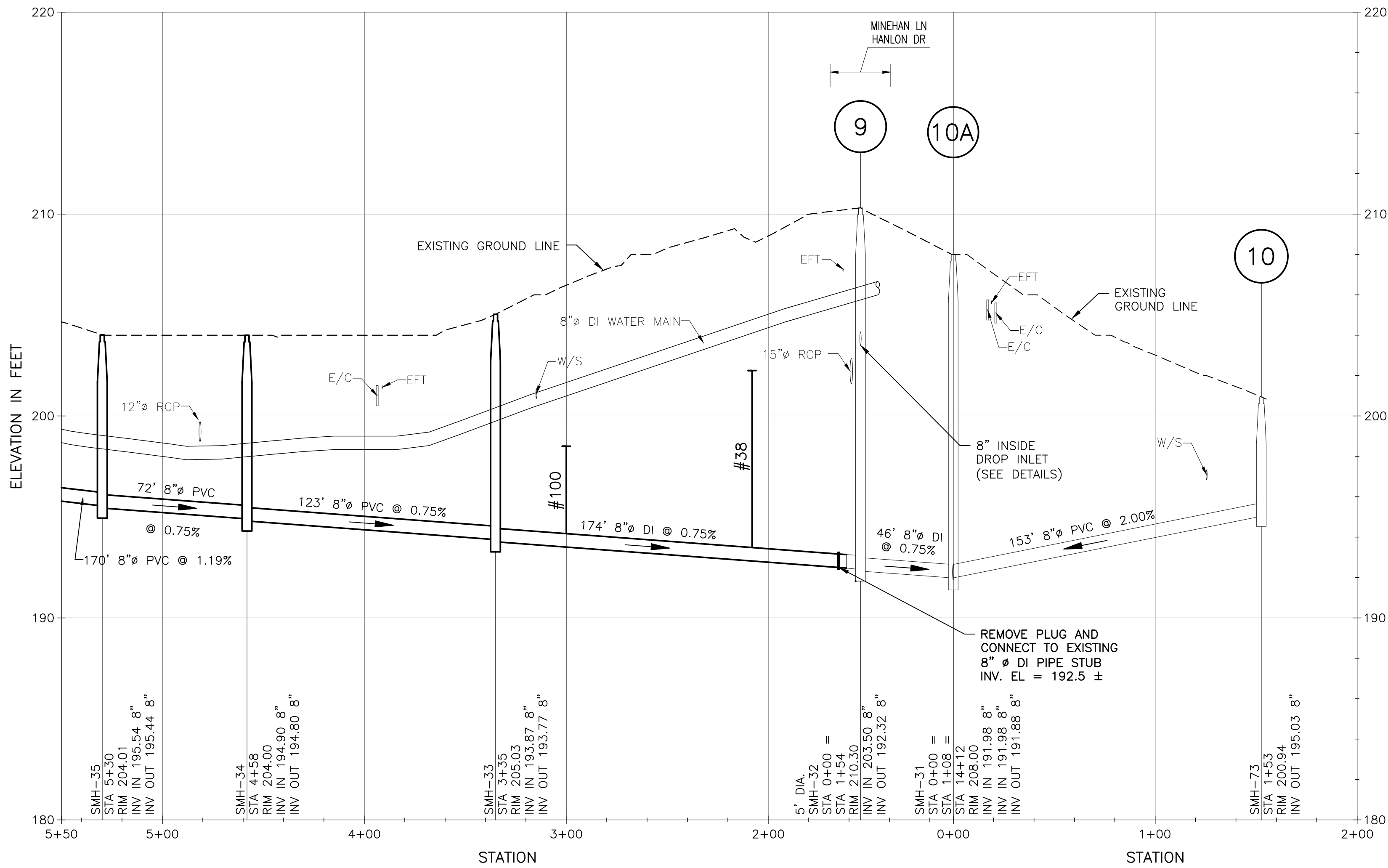
- FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.



CITY OF MARLBOROUGH, MA SUBURBY STREET AREA SEWERS CONTRACT NO. ED 2021-06 MINEHAN LANE STA. 14+50 TO 5+50 SEWER PLAN AND PROFILE CIVIL		AECOM 250 APOLLO DRIVE CHELSEA, MA 01824 PHONE (978) 905-2100		REVISIONS DESCRIPTION MADE BY CHECKED DATE MARK	
PROJECT NO: 60183636 CAD DWG FILE: 01 C-111 DESIGNED BY: G. SCUDDER DRAWN BY: Z. BANKOVIC DEPT CHECK: C. BENZIGER PROJ CHECK: C. COSTELLO DATE: MAY 2021 SCALE: AS NOTED		01 C-111			

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ANSI D - 13-May-21

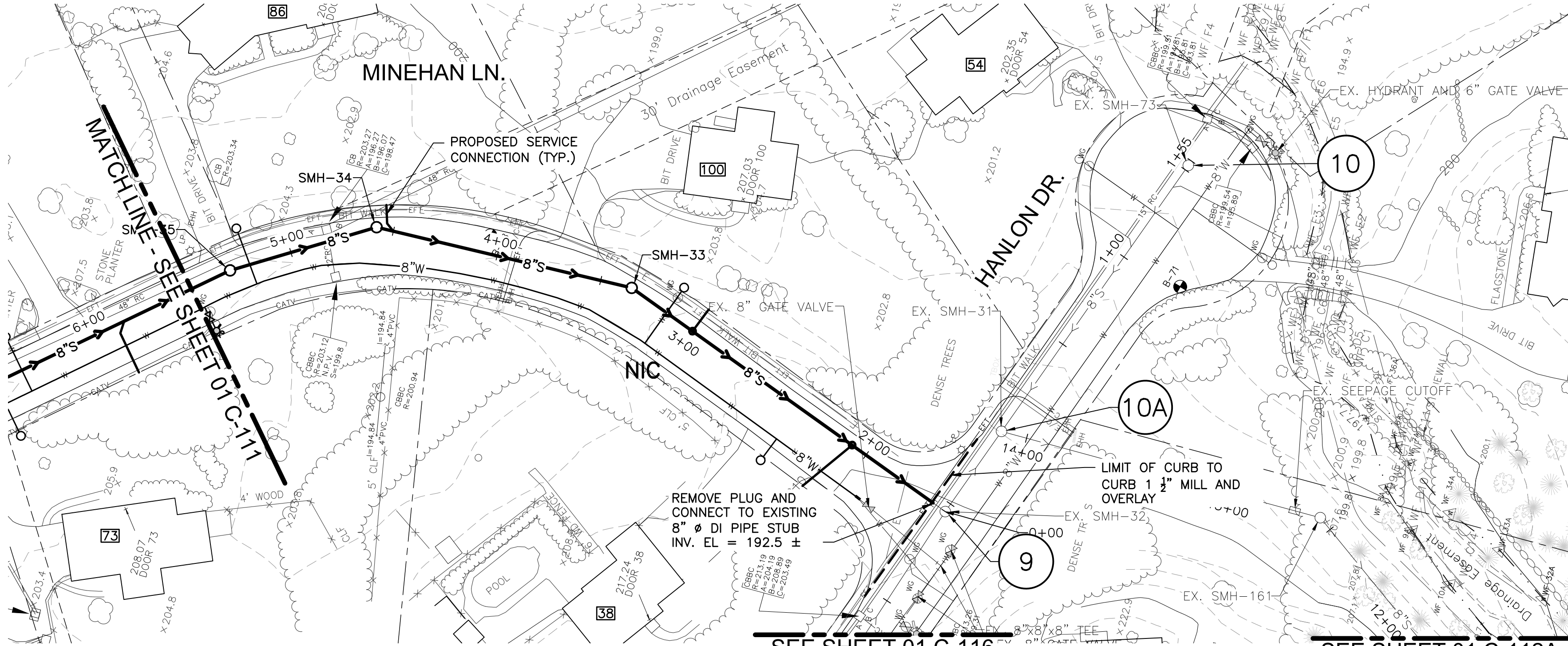
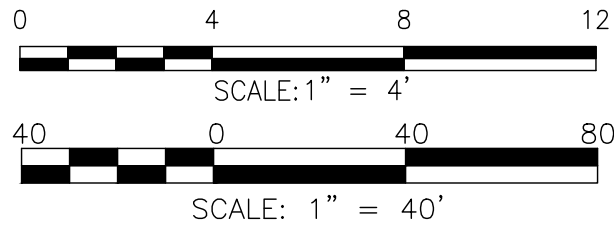


SEWER PROFILE

SCALE: 1"=40' (HORIZ.)
1"= 4' (VERT.)

NOTES:

- FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.



MINEHAN LANE / HANLON DRIVE SEWER PLAN

SCALE: 1"=40'

CITY OF MARLBOROUGH, MA
SUDBURY STREET AREA SEWERS
CONTRACT NO. ED 2021-06
MINEHAN LANE STA. 5+50 TO 1+41
SEWER PLAN AND PROFILE
SEWER PLAN AND PROFILE
CIVIL

PROJECT NO: 60183636
CAD DWG FILE: 01 C-112
DESIGNED BY: G. SCUDDER
DRAWN BY: Z. BANKOVIC
DEPT CHECK: C. BENZIGER
PROJ CHECK: C. COSTELLO
DATE: MAY 2021
SCALE: AS NOTED

01 C-112

AECOM
250 APOLLO DRIVE
CHELSEA, MA 01824
PHONE (978) 905-2100

AECOM

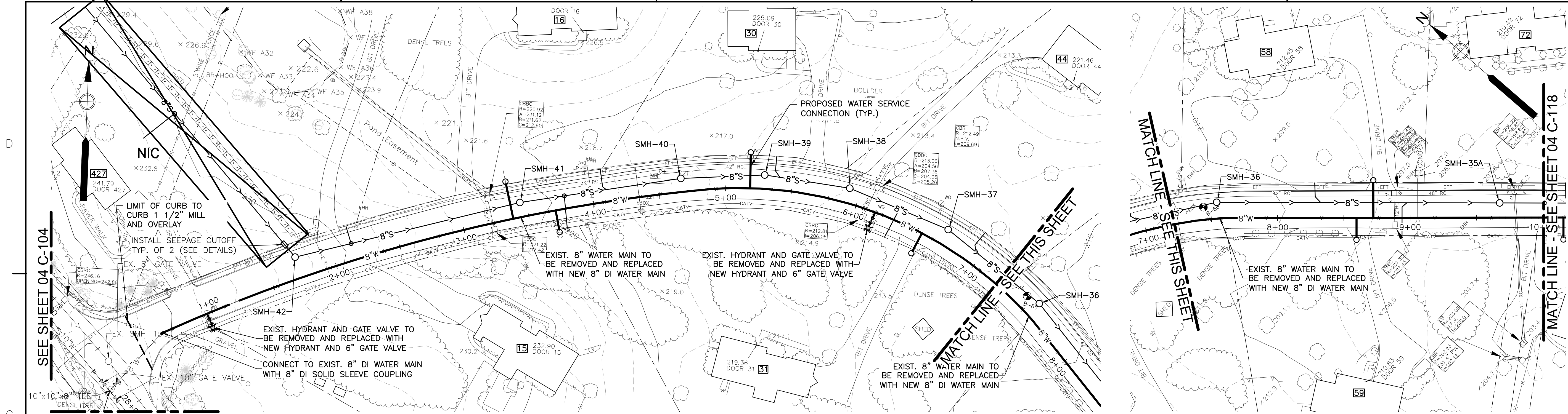
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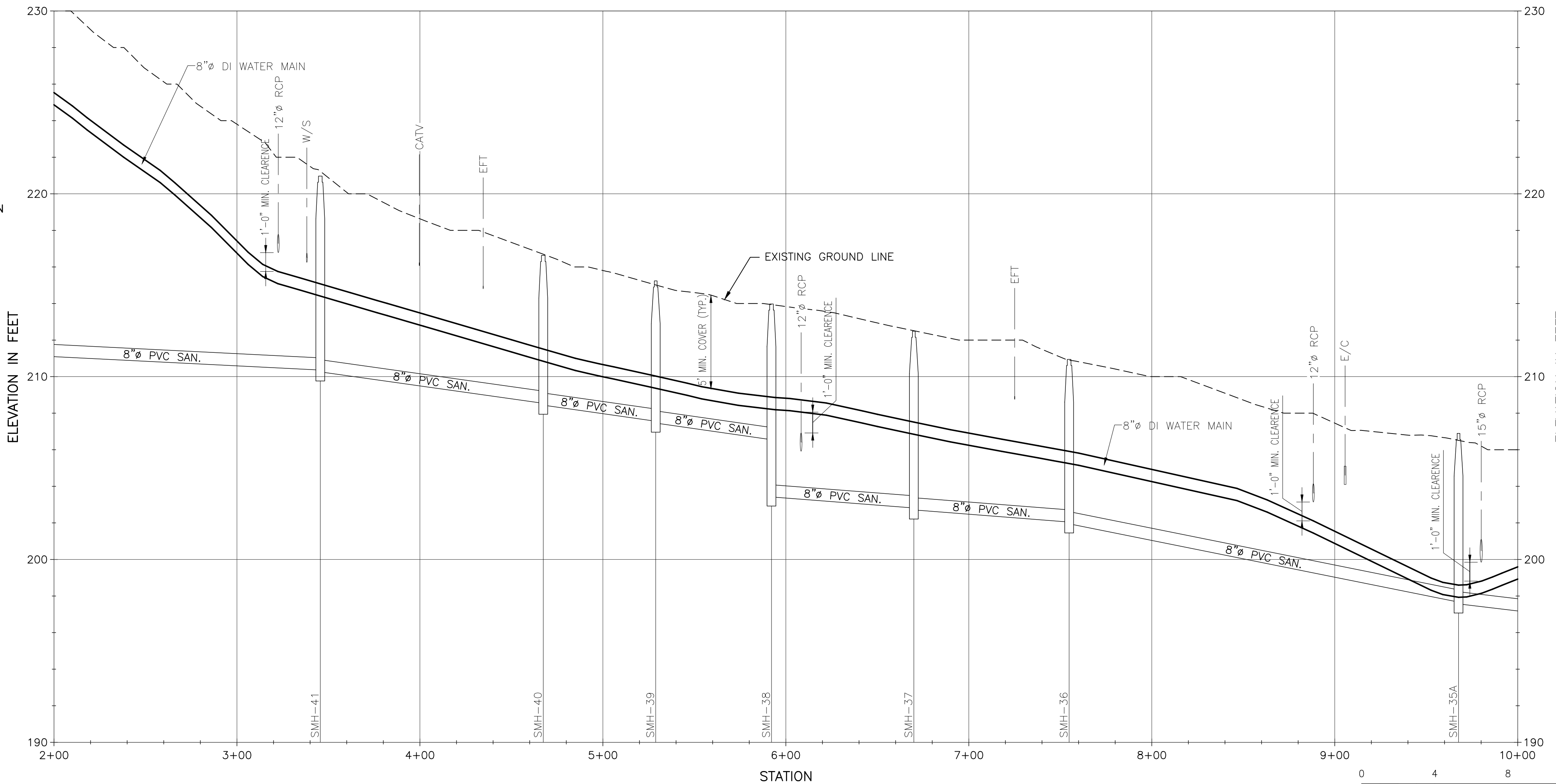
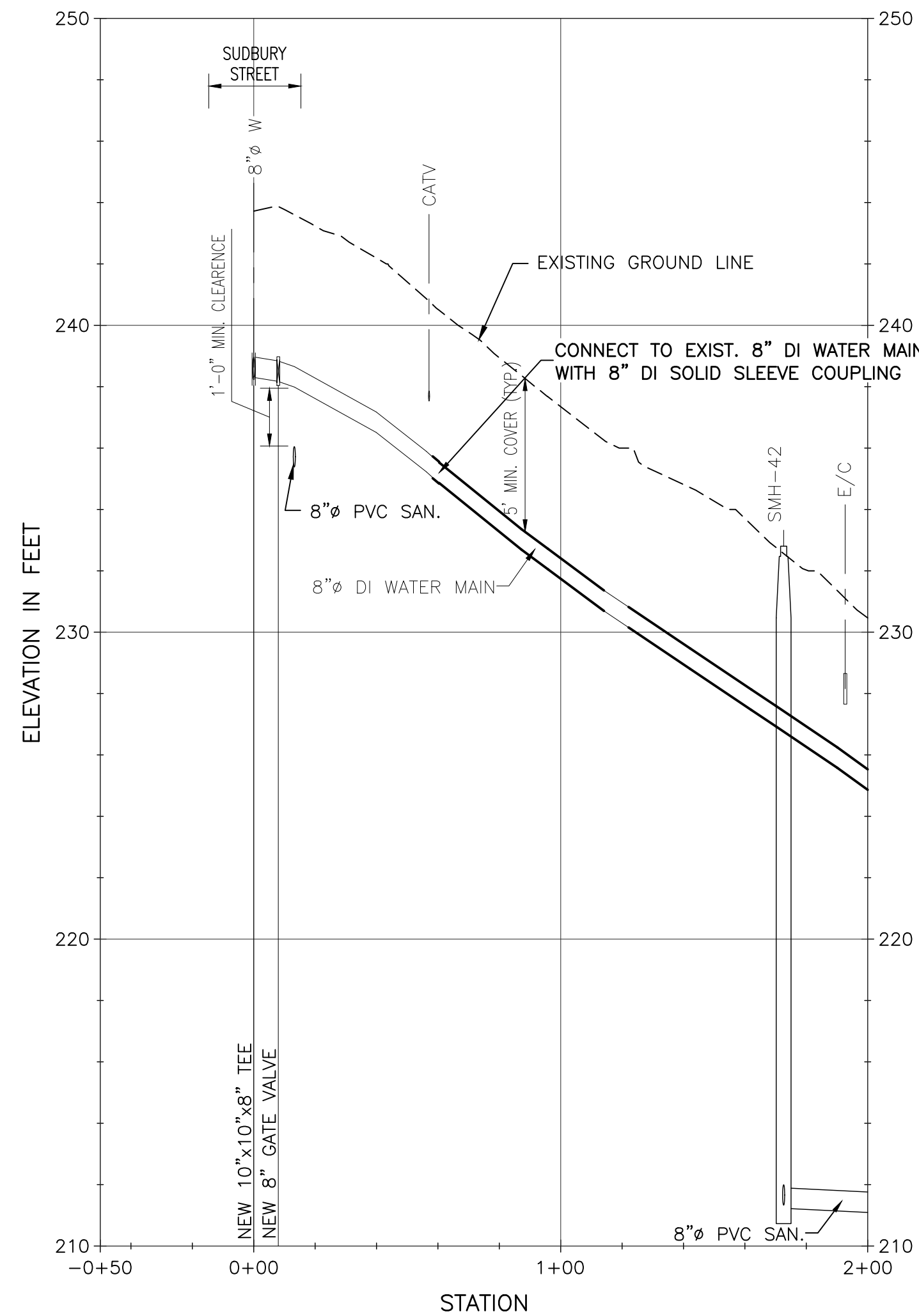
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ANSI D - 7-May-21



MINEHAN LANE WATER MAIN PLAN

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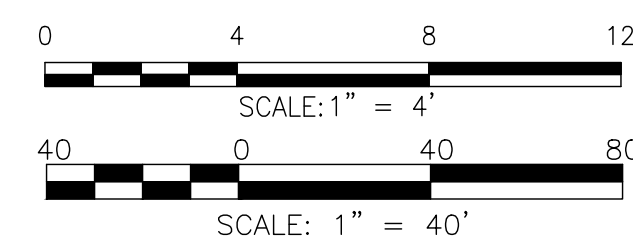


WATER MAIN PROFILE

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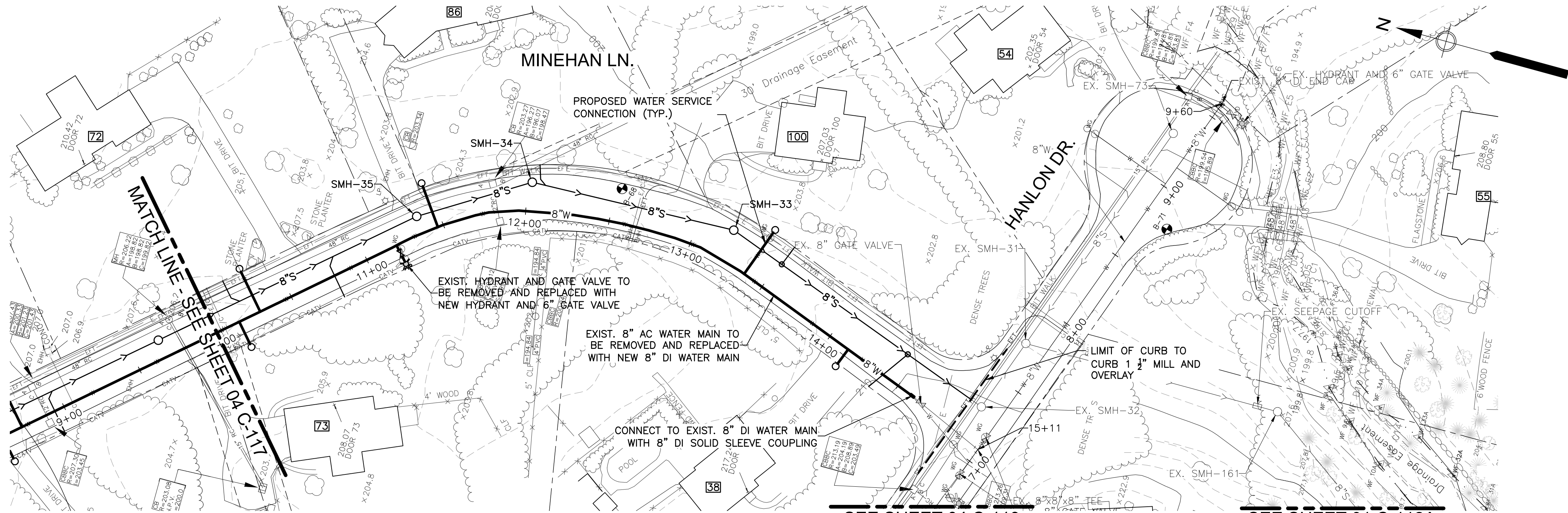
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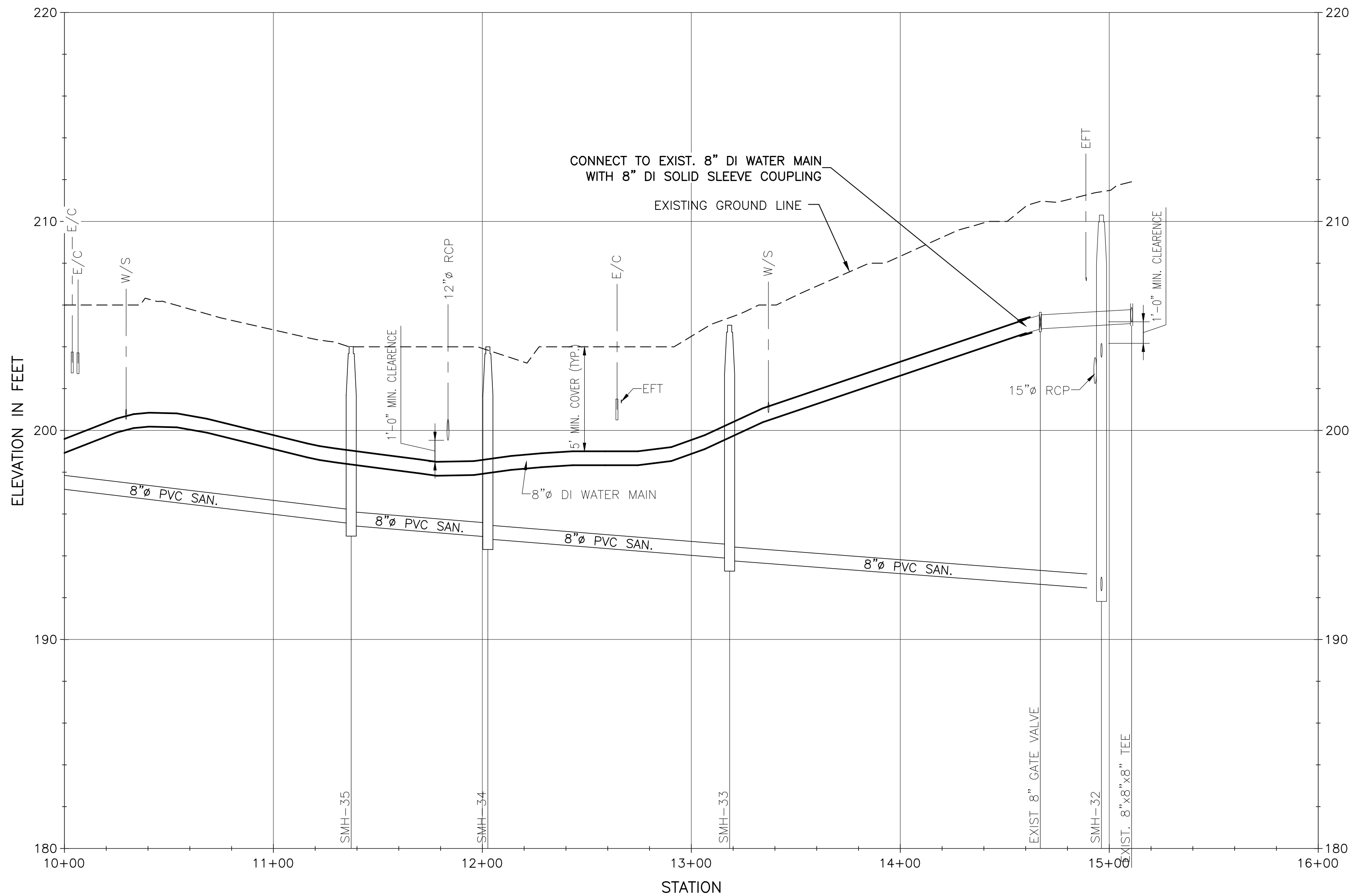
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CAD DWG FILE: 04 C-117			
DESIGNED BY: G. SCUDDER			
DRAWN BY: Z. BANKOVIC			
DEPT CHECK: C. BENZIGER			
PROJ CHECK: C. COSTELLO			
DATE: MAY 2021			
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ANSI D - 13-May-21



MINEHAN LANE WATER MAIN PLAN

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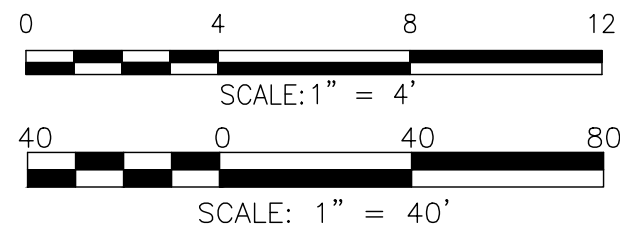


WATER MAIN PROFILE

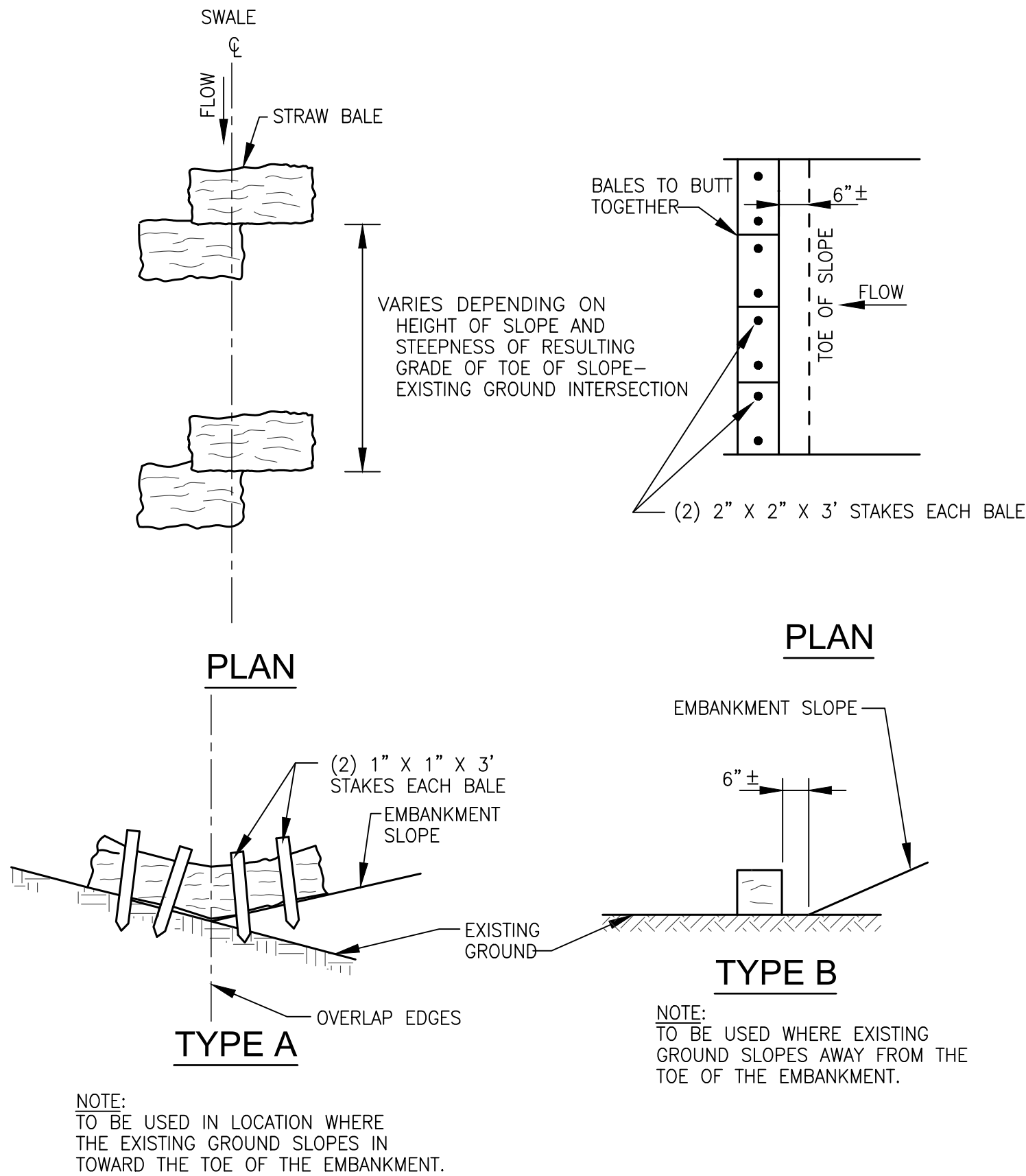
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1"= 4' (VERT.)

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.



CITY OF MARLBOROUGH, MA SUDBURY STREET AREA SEWERS CONTRACT NO. ED 2021-06 MINEHAN LANE STA. 10+00 TO 16+00 WATER MAIN PLAN AND PROFILE CIVIL		AECOM 250 APOLLO DRIVE CHELSEA, MA 01824 PHONE (978) 905-2100		REVISIONS	
PROJECT NO: 60183636		DATE: MAY 2021		MADE BY	
CAD DWG FILE: 04 C-118		SCALE: AS NOTED		CHECKED	
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PROJ CHECK: C. COSTELLO					
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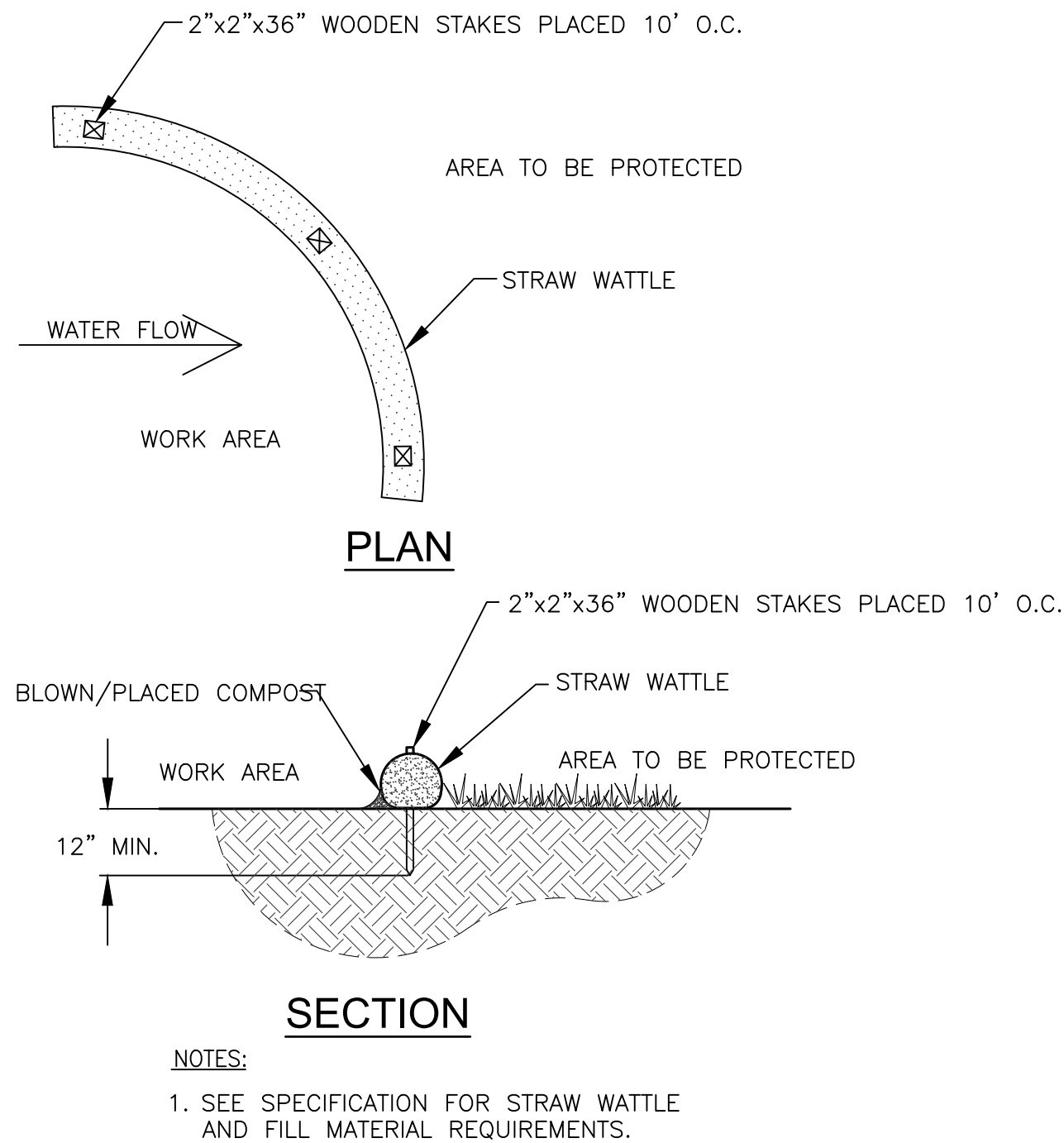
STRAW BALE EROSION CONTROL

NTS
2-1.60.4A (REV. 01-10-13)

CONSTRUCTION SEQUENCE

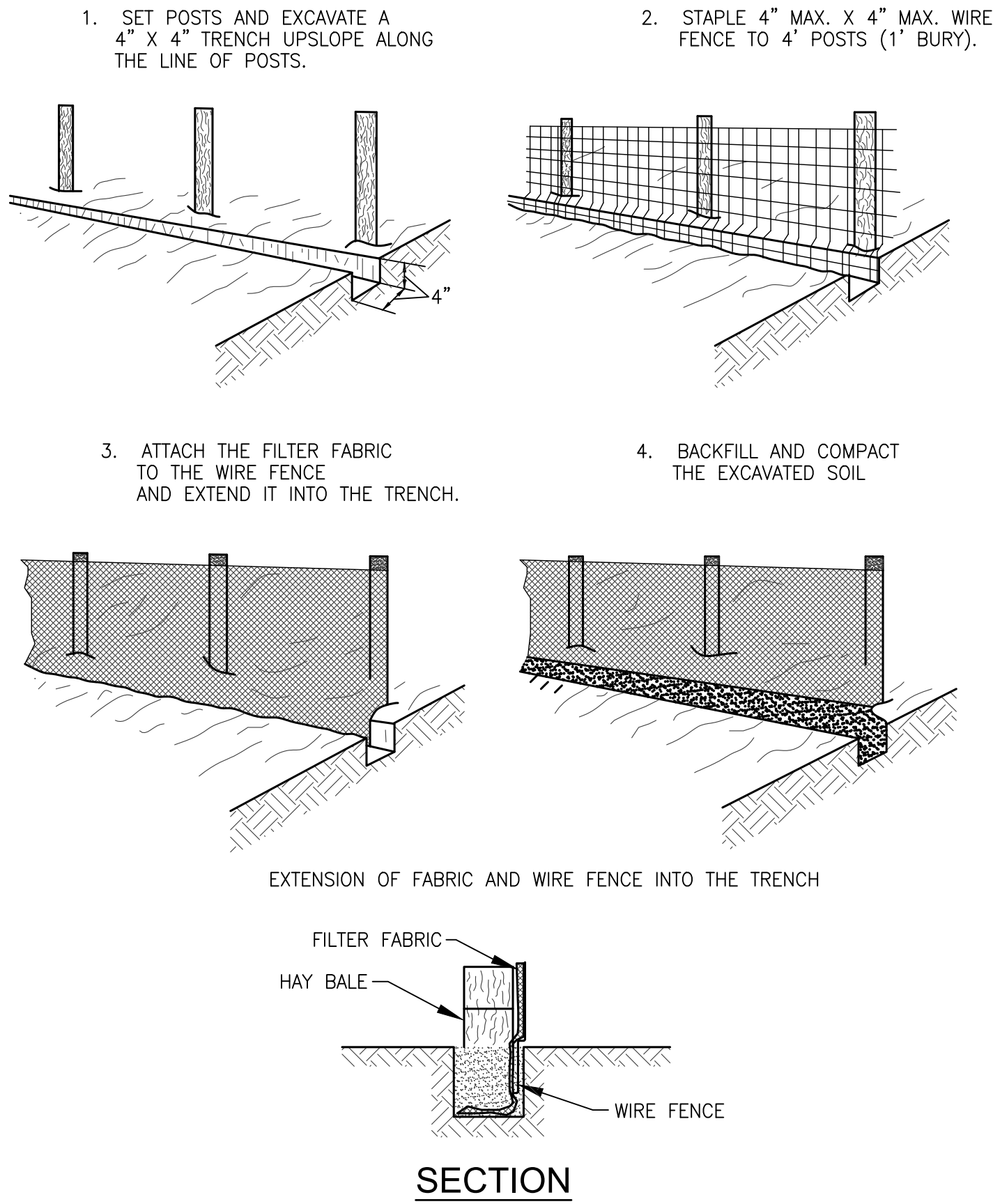
TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, THE CONTRACTOR SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE. MODIFICATIONS TO THE SEQUENCE NECESSARY TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS IN THE CITY OF MARLBOROUGH CONSERVATION COMMISSION ORDER OF CONDITIONS PROVIDED IN APPENDIX C OF THE SPECIFICATIONS.

1. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS AND AS INDICATED BY THE EROSION PROTECTION NOTES PRIOR TO THE COMMENCEMENT OF EARTH WORK.
2. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUN-OFF QUALITY.
3. EROSION PROTECTION MEASURES SHALL BE CONSTRUCTED AROUND MATERIAL STOCKPILES IN A MANNER TO PROVIDE ACCESS AND AVOID EROSION OUTSIDE OF THE AREA.
4. CONSTRUCT TEMPORARY CULVERTS AND DIVERSIONS CHANNELS AS REQUIRED.
5. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED, MULCH AND RIPRAP.
6. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
7. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND CONSTRUCTION IS COMPLETE.
8. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, DRAIN PIPES, DITCHES, CURB LINES, ETC., RESULTING FROM SOIL EROSION AND/OR CONSTRUCTION OPERATIONS. MATERIAL SHALL NOT BE DEPOSITED NEAR WETLANDS AND OR WATER COURSE.



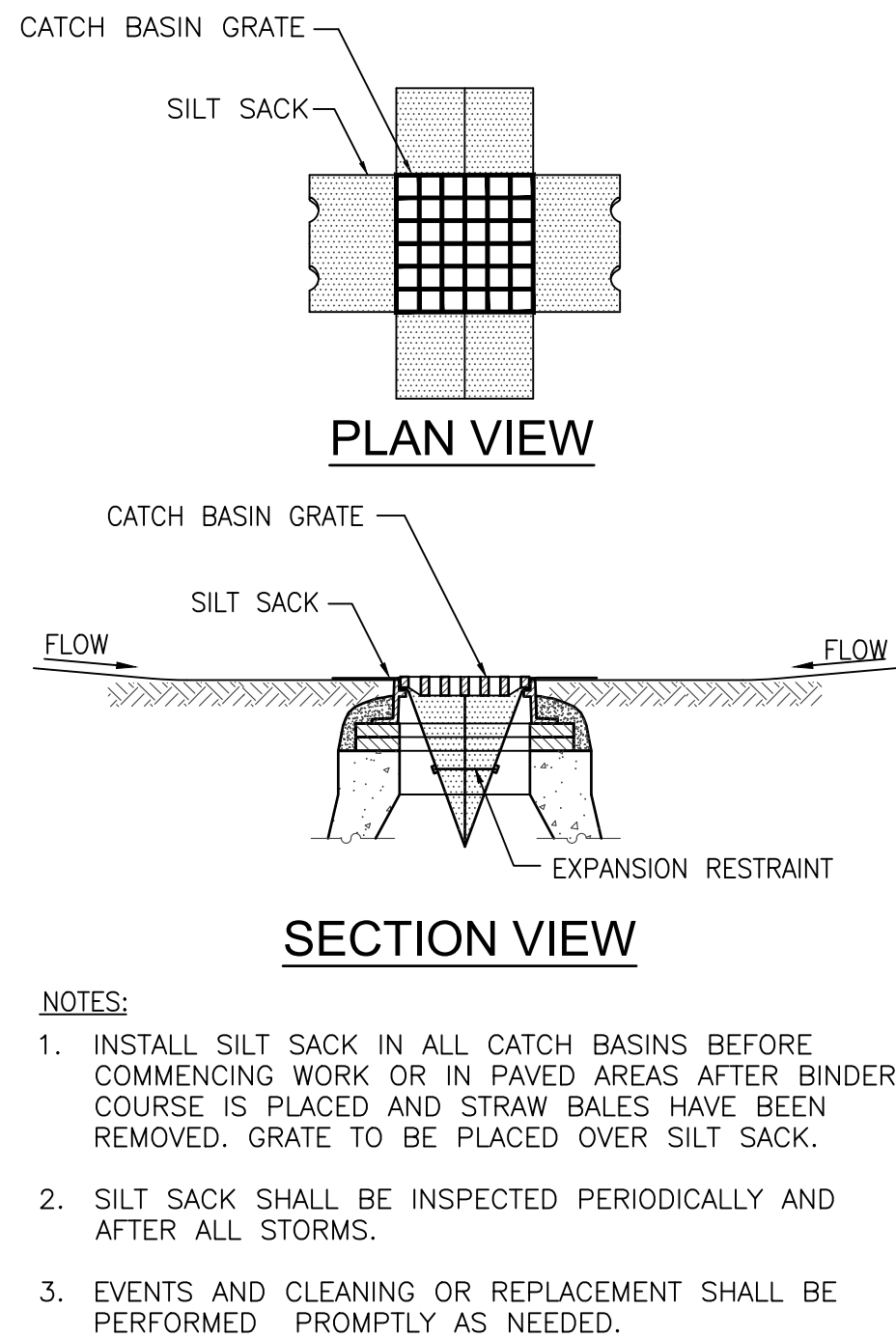
STRAW WATTLE

NTS



SILT FENCE

NTS
2-1.60.3 (REV. 05-20-09)



SILT SACK SEDIMENT TRAP

NTS

ACOM
250 APOLLO DRIVE
CHELMSFORD, MA 01824
PHONE (978) 905-2100

AECOM

CITY OF MARLBOROUGH, MA
SUBURBY STREET AREA SEWERS
CONTRACT NO. ED 2021-06

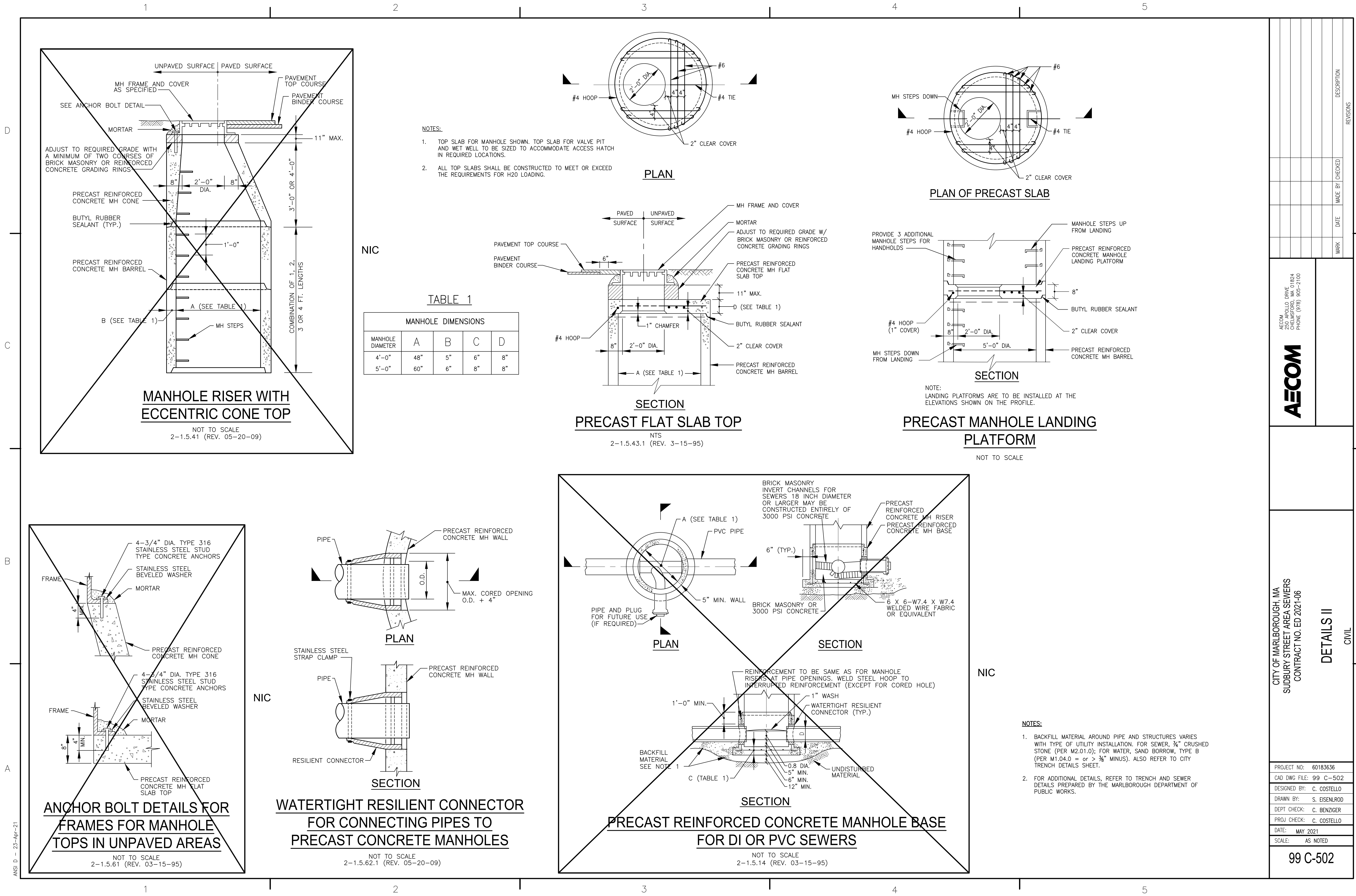
DETAILS I

CIVIL

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CAD DWG FILE: 99 C-501
DESIGNED BY: C. COSTELLO
DRAWN BY: S. EISENROD
DEPT CHECK: C. BENZIGER
PROJ CHECK: C. COSTELLO
DATE: MAY 2021
SCALE: AS NOTED

99 C-501

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 ANS I D - 23-Apr-21



AECOM
 250 APOLLO DRIVE
 CHELSEA, MA 01824
 PHONE (978) 905-2100

AECOM

CITY OF MARLBOROUGH, MA
 SUDBURY STREET AREA SEWERS
 CONTRACT NO. ED 2021-06

DETAILS II

CIVIL

PROJECT NO: 60183636
 CAD DWG FILE: 99 C-502
 DESIGNED BY: C. COSTELLO
 DRAWN BY: S. EISENLROD
 DEPT CHECK: C. BENZIGER
 PROJ CHECK: C. COSTELLO
 DATE: MAY 2021
 SCALE: AS NOTED

99 C-502

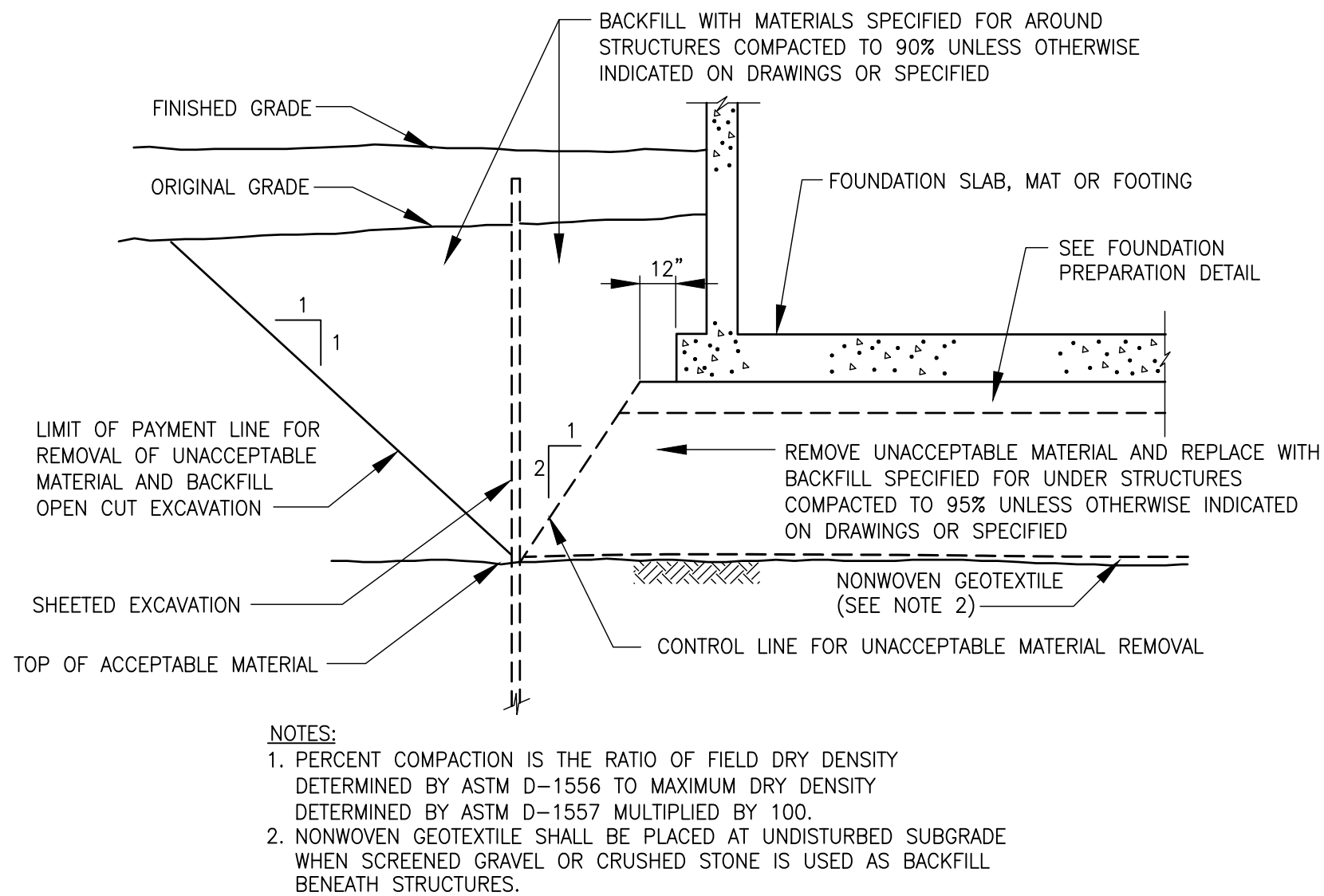
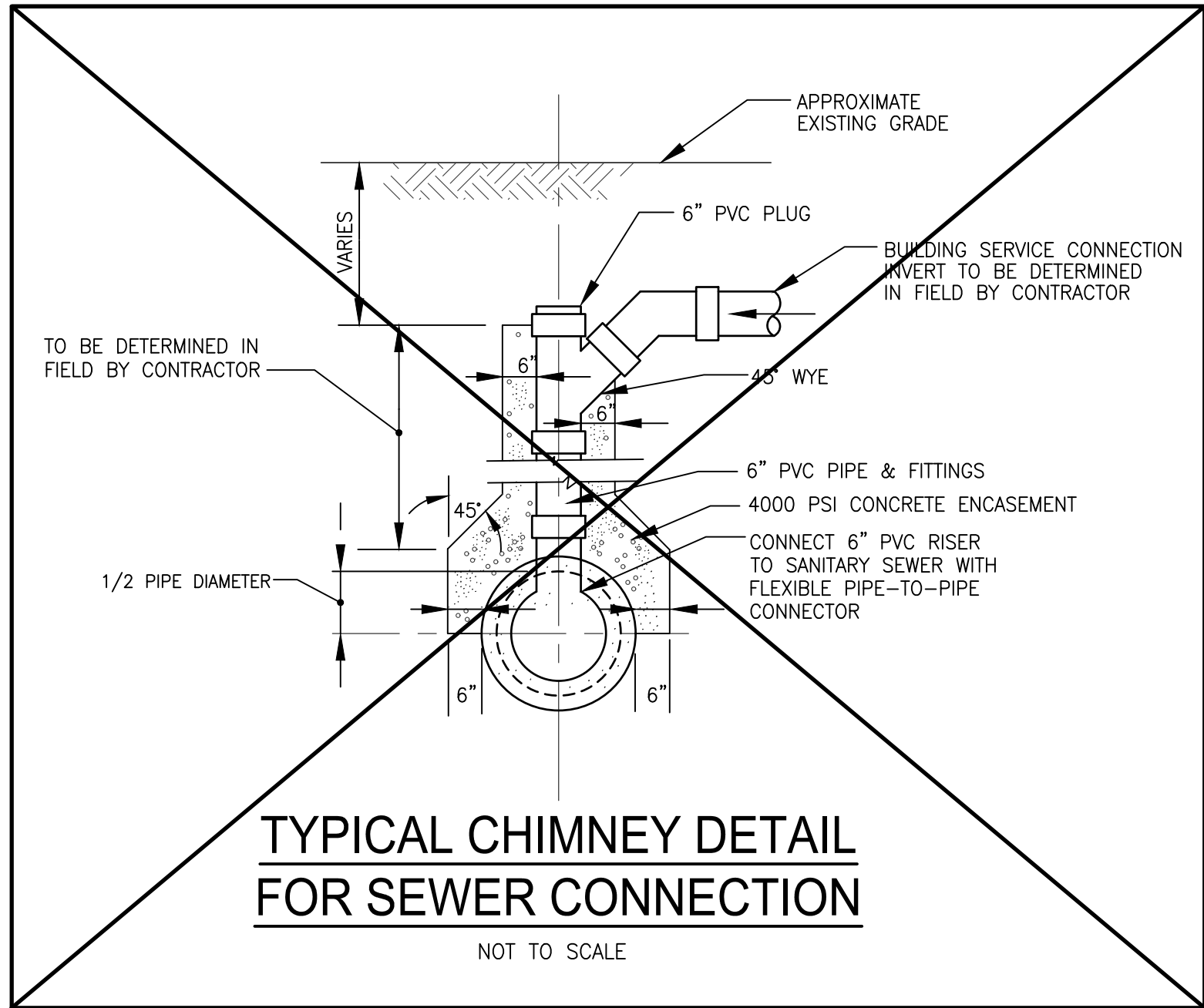
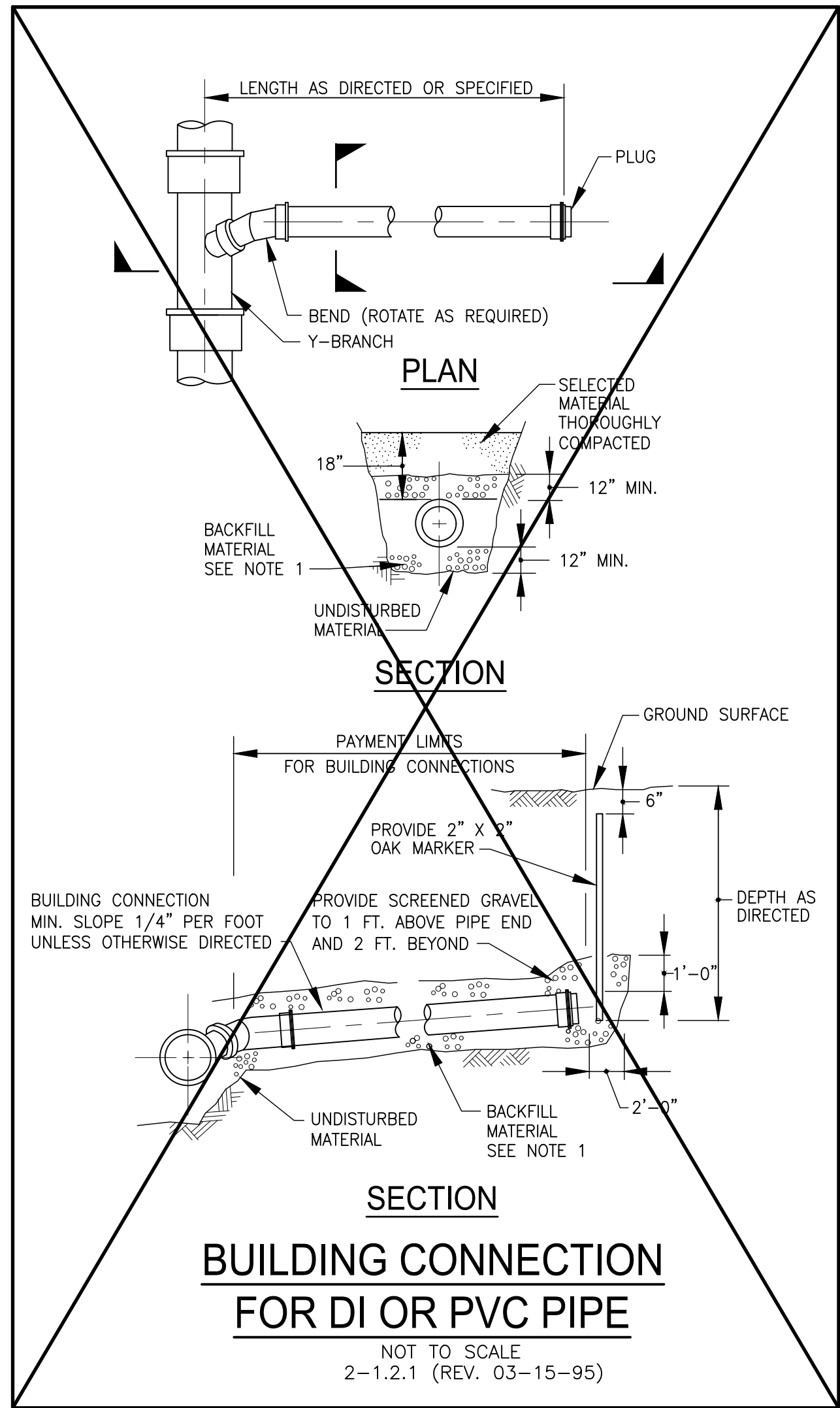
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LAST UPDATE: Tuesday, May 04, 2021 2:26:01 PM
PLOT DATE: Thursday, May 13, 2021 9:17:49 AM
ANSI D - 4-May-21

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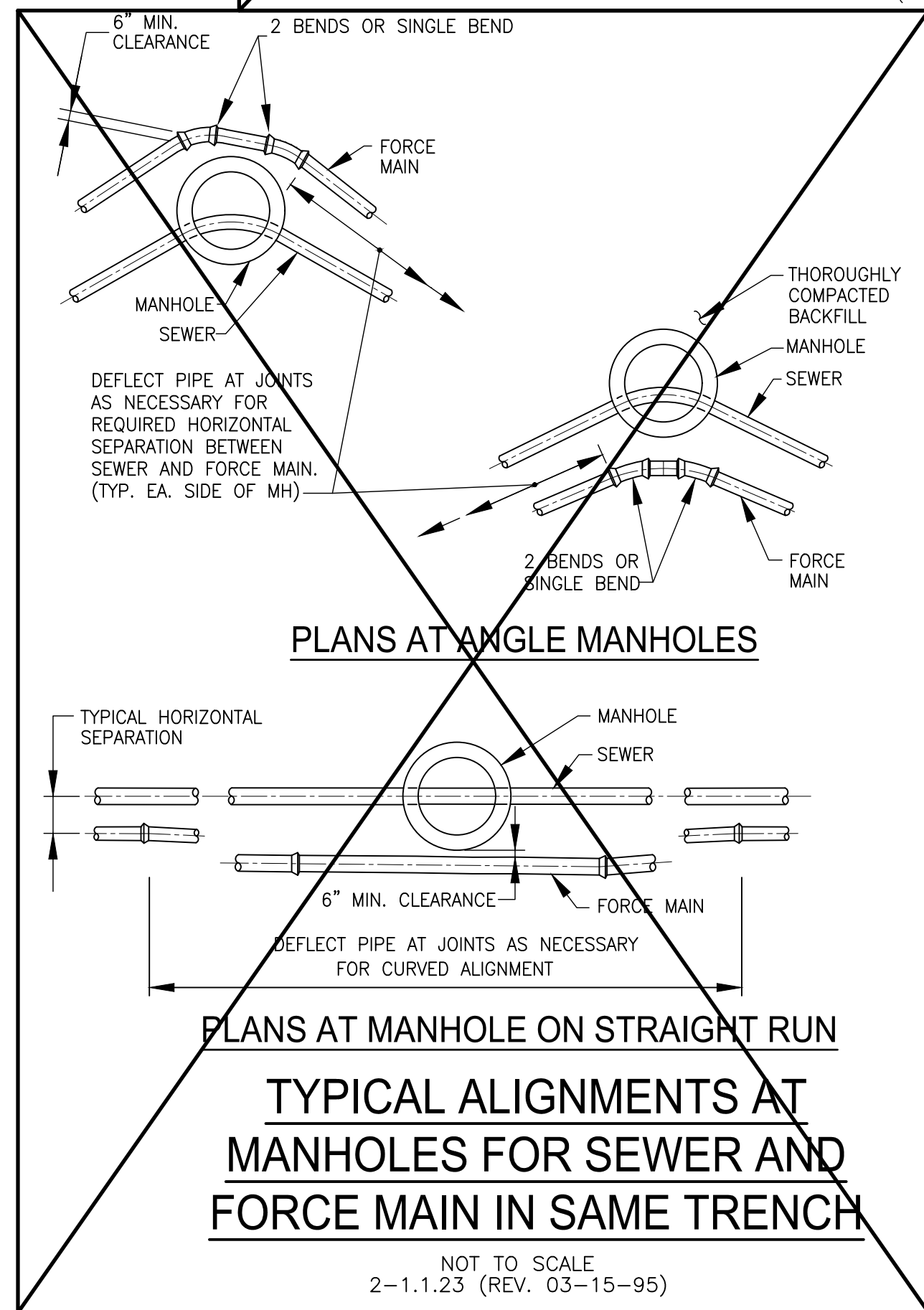
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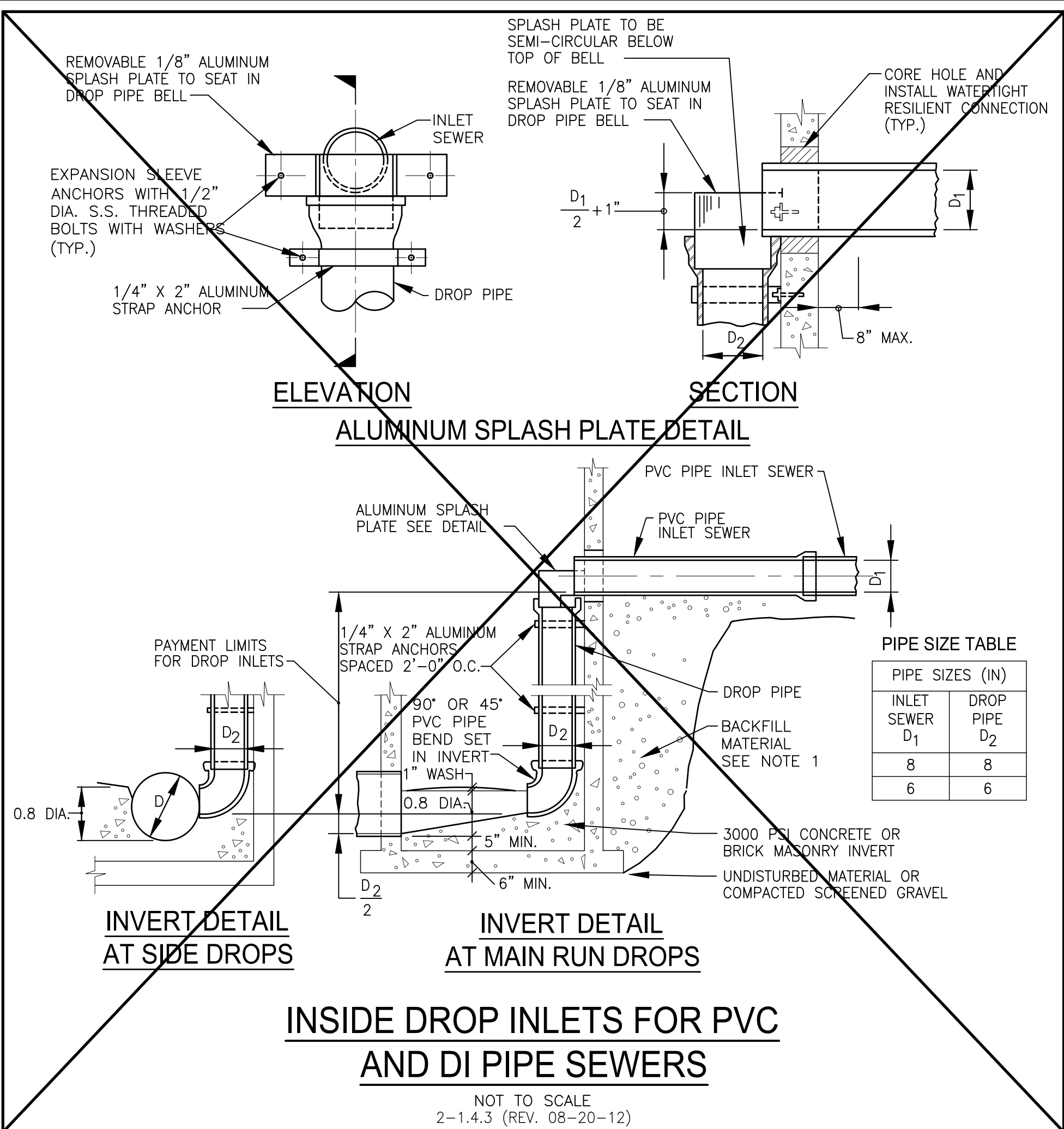


REMOVAL OF UNACCEPTABLE MATERIAL FROM BENEATH STRUCTURES

NOT TO SCALE
2-9.3.2 (REV. 7-18-06)



NIC
SEE CITY TRENCH DETAILS SHEETS



NIC

NOTES:

- BACKFILL MATERIAL AROUND PIPE AND STRUCTURES VARIES WITH TYPE OF UTILITY INSTALLATION. FOR SEWER, 3/4" CRUSHED STONE (PER M2.01.0); FOR WATER, SAND BORROW, TYPE B (PER M1.04.0 = or > 3/8" MINUS). ALSO REFER TO CITY TRENCH DETAILS SHEET.
- FOR ADDITIONAL DETAILS, REFER TO TRENCH AND SEWER DETAILS PREPARED BY THE MARLBOROUGH DEPARTMENT OF PUBLIC WORKS.

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AECOM

CITY OF MARLBOROUGH, MA
SUBURBY STREET AREA SEWERS
CONTRACT NO. ED 2021-06

DETAILS IV

CIVIL

PROJECT NO: 60183636
CAD DWG FILE: 99 C-504
DESIGNED BY: G. SCIABA
DRAWN BY: Z. BANKOVIC
DEPT CHECK: C. BENZIGER
PROJ CHECK: C. COSTELLO
DATE: MAY 2021
SCALE: AS NOTED

99 C-504

THE FOLLOWING DESCRIBES MATERIALS AND METHODS AS THEY PERTAIN TO ROAD OPENING WORK. ALL WORK SHALL CONFORM TO THE 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, AND ALL SUBSEQUENT SUPPLEMENTAL SPECIFICATIONS THERETO.

EXCAVATIONS IN THE STREET PAVEMENT AREAS SHALL BE CAREFULLY BACKFILLED WITH LAYERS OF SUITABLE GRAVEL. THE TWELVE (12) INCHES OF BEDDING MATERIAL AROUND PIPES SHALL BE SAND (M1.04.0) FOR WATER, 3" CRUSHED STONE (M2.01.0) FOR SEWER, GRAVEL BORROW - TYPE C (M1.03.0) FOR RCP DRAIN & TYPE D (M1.03.0) FOR CDDP DRAIN OR AS SPECIFIED BY THE OWNER OF THE UTILITY AND APPROVED BY THE CITY OF MARLBOROUGH.

SUITABLE BANK-RUN GRAVEL MATERIAL FOR BACKFILLING SHALL BE GRANULAR FILL CONSISTING OF MINERAL SOIL SUBSTANTIALLY FREE FROM CLAY, ORGANIC MATERIALS, LOAM, WOOD, TRASH OR OTHER OBJECTIONABLE MATERIAL WHICH MAY NOT BE COMPRESSIBLE OR WHICH CANNOT BE PROPERLY COMPACTED. IT SHALL NOT CONTAIN STONES, BROKEN CONCRETE, MASONRY RUBBLE OR OTHER SIMILAR MATERIALS. IT SHALL HAVE PHYSICAL PROPERTIES SUCH THAT IT CAN BE READILY SPREAD AND COMPACTED. IT SHALL NOT CONTAIN ANY SNOW, ICE OR FROZEN SOIL.

BACKFILL MATERIAL SHALL CONSIST OF CONTROLLED DENSITY FILL (CDF) - TYPE 1E OR 2E (M4.08.0) FOR ALL MAJOR ROADWAYS OF THE CITY OR AS DIRECTED BY THE COMMISSIONER OF PUBLIC WORKS. WHERE REQUIRED, CDF SHALL BE PLACED TO WITHIN A MINIMUM OF 5" FROM THE TOP OF THE EXISTING PAVEMENT OR AS DIRECTED BY THE CITY'S INSPECTOR. CDF SHALL BY TYPE 1E VERY FLOWABLE (EXCAVATABLE) OR TYPE 2E FLOWABLE (EXCAVATABLE) WITH A MAXIMUM STRENGTH OF 200 PSI AND 25-30% AIR. CDF (TYPE 1E AND 2E) SHALL BE EXCAVATABLE USING SIMPLE HAND TOOLS WHERE REQUIRED.

IF CONTROL DENSITY FILL IS USED TO BACKFILL THE TRENCH, PERMANENT TRENCH PAVING CAN BE PERFORMED ONCE THE CONTROL DENSITY FILL HAS SET, ELIMINATING THE TEMPORARY TRENCH PAVING REQUIREMENT. PROOF OF CONTROL DENSITY FILL SHALL BE REQUIRED IN ORDER TO BE GRANTED RELIEF FROM PERMANENT TRENCH PAVING. PLEASE NOTE, SHOULD THE TRENCH SHOW ANY SIGNS OF FAILURE, THE CONTRACTOR SHALL EXCAVATE THE HOT MIX ASPHALT IN QUESTION AND PERFORM TRENCH PAVING MEETING THE CITY OF MARLBOROUGH'S SPECIFICATIONS.

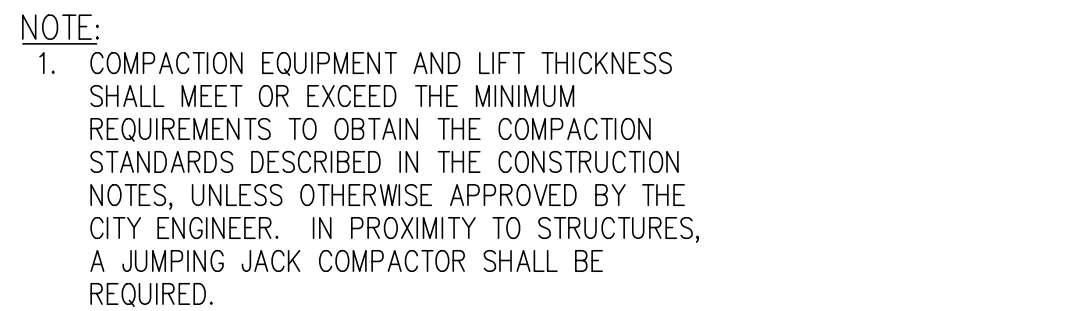
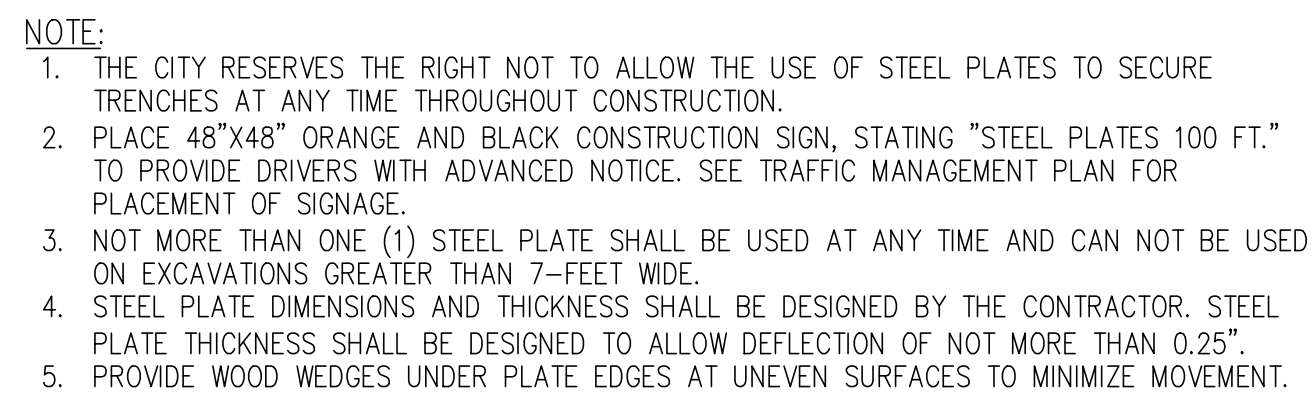
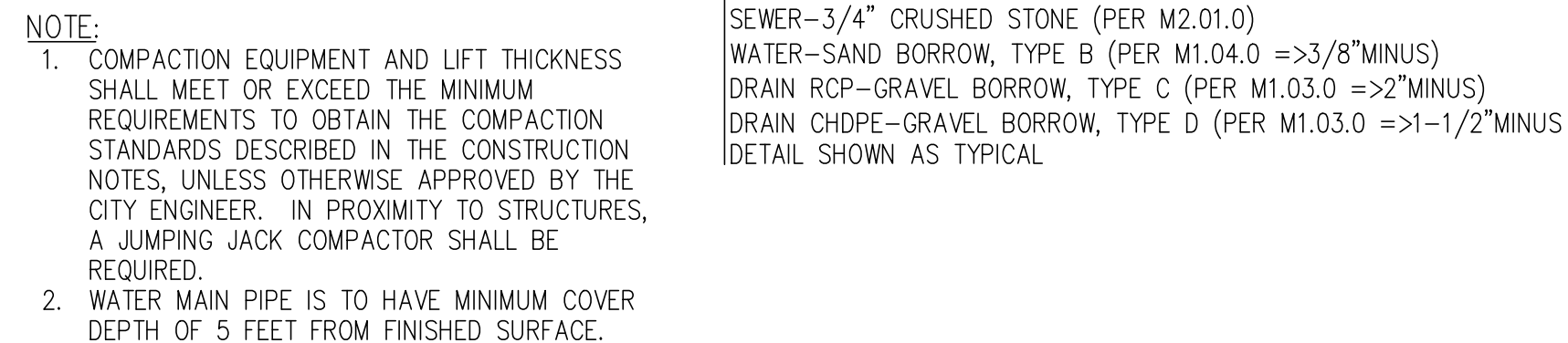
BACKFILL SHALL BE UNIFORMLY DISTRIBUTED IN SUCCESSIVE LAYERS, EACH LAYER BEING THOROUGHLY COMPACTED BEFORE THE SUCCEEDING LAYER IS PLACED. THE ENTIRE WIDTH OF THE TRENCH SHALL BACKFILLED AND MECHANICALLY TAMPED IN LIFT DEPTHS NOT GREATER THAN (6) INCHES. COMPACTATION EQUIPMENT AND LIFT THICKNESS SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS TO OBTAIN THE COMPACTION STANDARDS UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. THE TOP LAYER OF BACKFILL SHALL BE FOURTEEN (14) INCHES OF GRAVEL COMPACTED TO 97% OF MAXIMUM DENSITY.

PAVEMENT PLACED SHALL BE PLACED AND RAKED TO A UNIFORM SURFACE, ROLLED TO THE REQUIRED THICKNESS AND TO A GRADE THAT WILL MATCH THE EXISTING BITUMINOUS ROAD SURFACE. THE PERMITTEE SHALL MAINTAIN THE SURFACING AND SHALL PROMPTLY FILL WITH SIMILAR MATERIAL ANY DEPRESSION AND HOLES THAT MAY OCCUR SO AS TO KEEP THE SURFACING IN A SAFE AND SATISFACTORY CONDITION FOR TRAFFIC.

A TEMPORARY PAVEMENT SHALL BE PLACED ON THE SURFACE OF THE FILL AND THOROUGHLY COMPACTED. A TEMPORARY PAVEMENT SHALL BE HOT MIX ASPHALT NO LESS THAN THE EXISTING BASE COURSE OR A MINIMUM THREE (3) INCHES THICK (SEE EXCAVATION TRENCH DETAIL). IF PLATES ARE USED PRIOR TO TEMPORARY PAVING, THEY SHALL BE RAMPED TO MATCH THE EXISTING PAVEMENT. TEMPORARY PAVING OR STEEL PLATING SHALL IMMEDIATELY FOLLOW THE BACKFILLING OPERATION OR AS DIRECTED BY ENGINEER.

THE FINAL HOT MIX ASPHALT SURFACE SHALL NOT BE PLACED ANY EARLIER THAN 65 DAYS OR NO LATER THAN 90 DAYS FROM THE DATE OF COMPLETION OF THE TEMPORARY SURFACE WITHOUT APPROVAL FROM THE COMMISSIONER OF PUBLIC WORKS. THE TEMPORARY PAVEMENT SHALL BE MILLED TO A DEPTH OF ONE AND ONE-HALF (1 1/2) INCHES, TWELVE (12) INCHES OUTSIDE OF THE TEMPORARY PAVING LIMITS. PAVEMENT LIMITS JOINTS ARE TO BE SEALED WITH HOT APPLIED HMA CRACK SEALER, PER M3.05.4. IN SOME INSTANCES, FOR PROJECTS BEYOND A SIMPLE TRENCH EXCAVATION ADDITIONAL PAVEMENT DETAILS AND RESURFACING REQUIREMENTS MAY BE INCLUDED AS A SPECIAL CONDITION IN THE PERMIT.

ALL EXCAVATIONS MUST BE PROPERLY SLOPED, SHORED, OR SHIELDED UNLESS THEY ARE MADE ENTIRELY IN STABLE ROCK, OR LESS THAN (5) FEET DEEP AND DECLARED SAFE AFTER AN INSPECTION BY A COMPETENT PERSON.



DEPARTMENT OF
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REVISIONS

Drawn By: Designed By: Checked By: Approved By:

Project Title:

Sheet Title:

Contract No:
ED-2019-01

Date: 1/10/2018

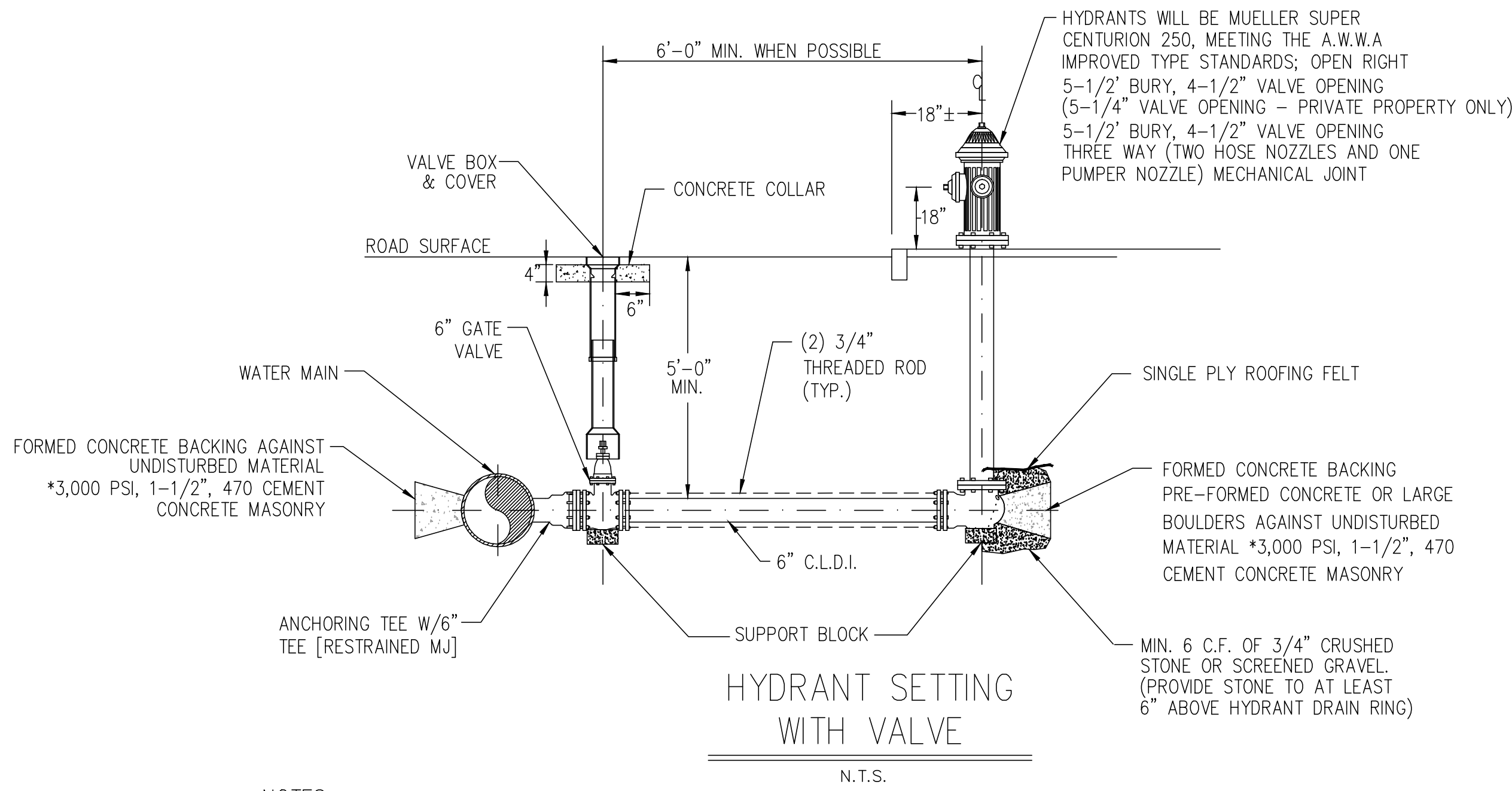
Scale: N.T.S.

Sheet No.1

99 C-506

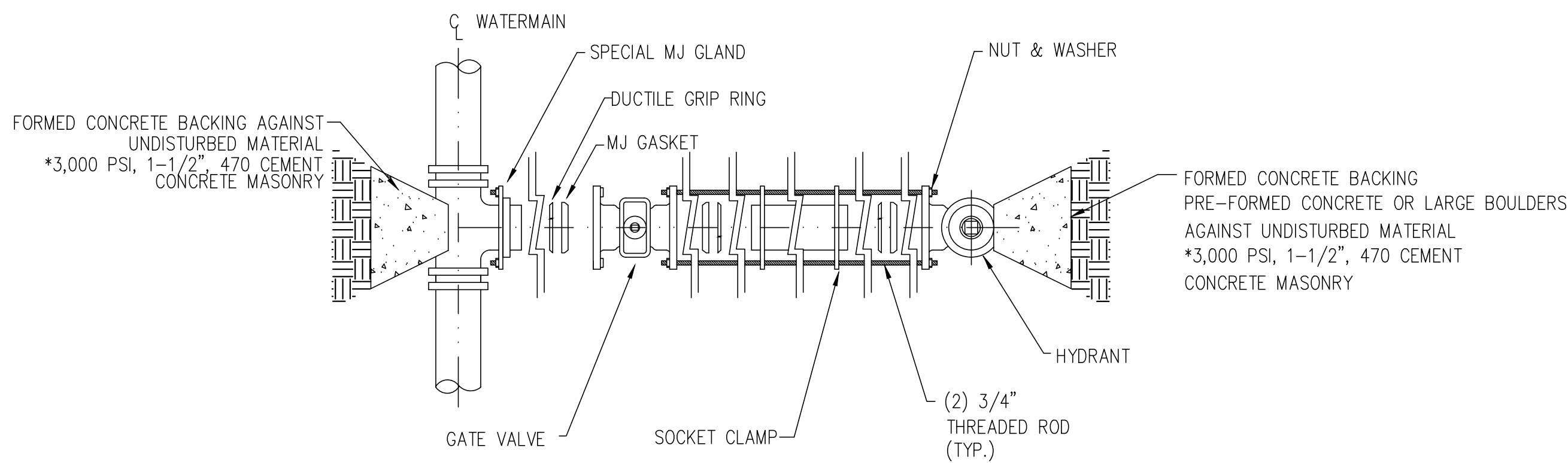
WATER NOTES

1. THE PROPOSED WATER MAINS ARE TO BE CONSTRUCTED IN THE SAME HORIZONTAL AND VERTICAL LOCATION AS THE EXISTING WATER MAIN, EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER. REMOVE EXISTING WATER MAINS AND ASSOCIATED COMPONENTS AND SERVICES. THE CONTRACTOR IS TO DISPOSE OF THE EXISTING WATER MAINS AND ASSOCIATED COMPONENTS IN ACCORDANCE WITH STATE AND FEDERAL LAWS. THE CITY HAS THE FIRST RIGHT OF REFUSAL ON FITTINGS AND APPURTENANCES BEFORE DISPOSAL
2. THE CONTRACTOR IS TO PROVIDE TEMPORARY BY-PASS PIPING TO SUPPLY WATER TO RESIDENTS, IN ACCORDANCE WITH SPECIFICATION.
3. WHEN CROSSING EXISTING UTILITIES, THE CONTRACTOR SHALL DEFLECT THE PIPE WHERE POSSIBLE TO REDUCE THE AMOUNT OF BENDS REQUIRED
4. NEW WATER AND SEWER LINES SHALL MAINTAIN A 10 FT. SEPARATION TO THE EXTENT POSSIBLE
5. ALL WATER SERVICES SHALL BE TYPE 'K' COPPER WITH A MIN. DIAMETER OF $\frac{3}{4}$ ". LARGER SERVICES SHALL BE REPLACED AS DIRECTED BY THE ENGINEER
6. ALL EXISTING WATER SERVICES SCHEDULED TO BE REMOVED AND REPLACED SHALL BE FROM THE MAIN TO THE CURB STOP/PROPERTY LINE IN THE SAME LOCATION OR AS DIRECTED BY THE ENGINEER.
7. THE EXISTING HYDRANTS TO BE REPLACED (AS NOTED ON THE PLAN) SHALL BE REPLACED IN THE LOCATIONS INDICATED ON THE PLANS. HYDRANTS REMOVED ARE TO BE RETURNED TO THE DEPARTMENT OF PUBLIC WORKS LOCATED AT 135 NEIL STREET, MARLBOROUGH, MA. REMOVAL AND DELIVERY OF HYDRANTS IS TO BE INCLUDED IN THE APPROPRIATE UNIT PRICE ITEM IN THE BID.
8. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ANY ABUTTERS AFFECTED BY A SHUTDOWN (48 HOURS IN ADVANCE)
9. TEMPORARY PIPING AND HOSE DISINFECTION MUST BE PERFORMED IN ACCORDANCE WITH AWWA STANDARDS AND MUST BE DESIGNATED FOR POTABLE WATER USE BY NSF.
10. ANALYTICAL TESTING OF WATER SHALL BE CONDUCTED BY A THIRD PARTY LABORATORY CERTIFIED IN THE STATE OF MASSACHUSETTS.
11. A NIGHT CAP/PLUG, PROVIDED BY THE PIPE SUPPLIER, SHALL BE USED TO CAP THE PIPE AT THE END OF EACH WORK DAY
12. WATER SERVICE CONNECTIONS ON THE EXISTING WATER MAINS ARE SHOWN ACCORDING TO THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING SERVICE CONNECTIONS PRIOR TO CONSTRUCTING THE NEW SERVICE CONNECTIONS.
13. WATER MAINS AND SERVICE CONNECTION TO BE INSTALLED TO A MINIMUM DEPTH OF 5 FEET TO TOP OF PIPE, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.



NOTES:

1. PROVIDE HYDRANT AND VALVE JOINTS WITH MECHANICAL JOINTS (MEGALUG OR APPROVED EQUAL).
2. SUPPORT BLOCKS TO BE PRESSURE TREATED WOOD OR CONCRETE MASONRY BLOCKS.
3. ALL VALVES OPEN RIGHT.
4. 6 MIL POLYETHYLENE SHALL BE PLACE BETWEEN THE THRUST BLOCK AND PIPE AT ALL MECHANICAL JOINTS PRIOR TO PORING CONCRETE.

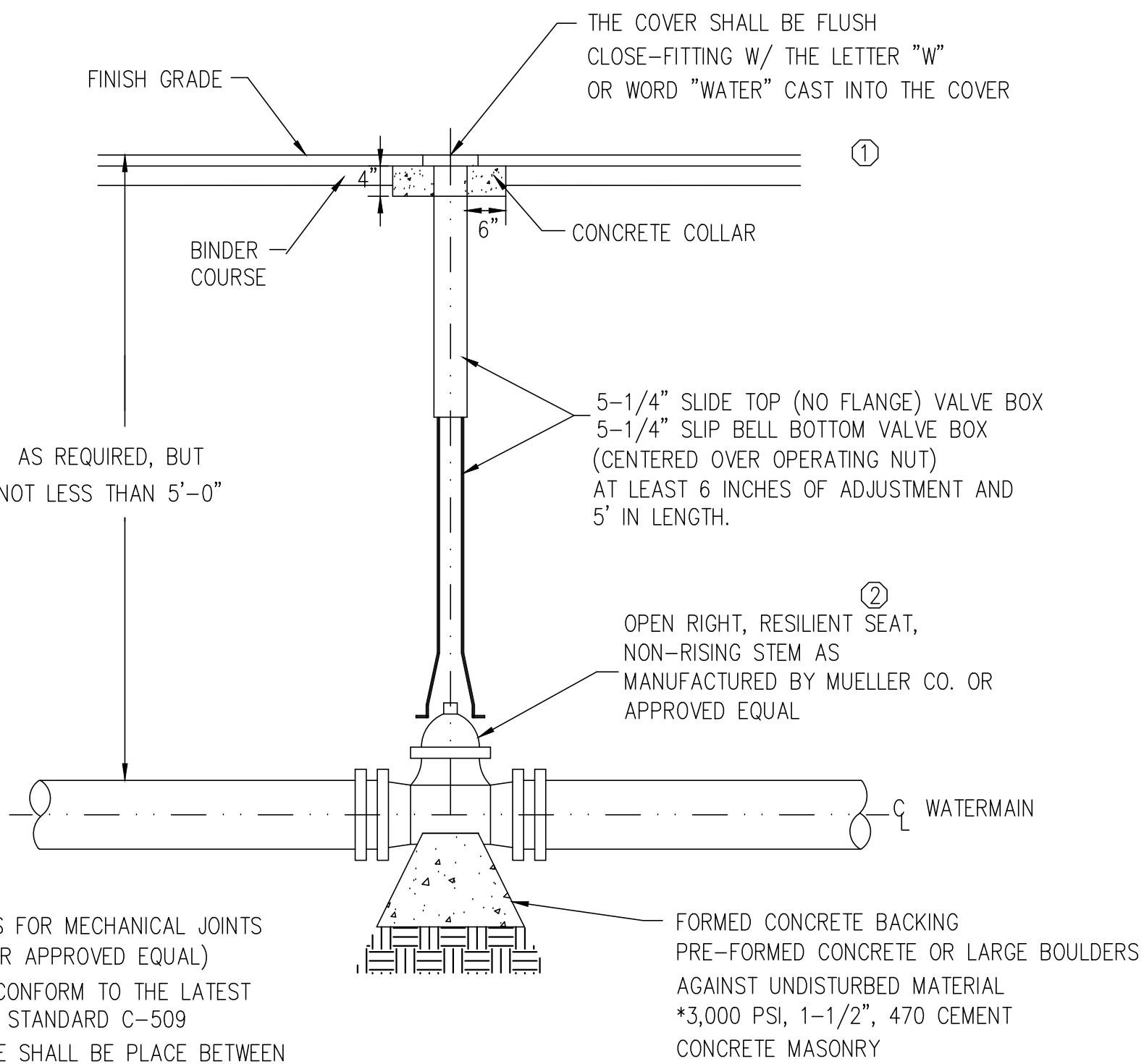


NOTES:

1. PROVIDE RESTRAINTS FOR MECHANICAL JOINTS (MEGALUGS OR FRICTION CLAMPS).
2. 6 MIL POLYETHYLENE SHALL BE PLACE BETWEEN THE THRUST BLOCK AND PIPE AT ALL MECHANICAL JOINTS PRIOR TO PORING CONCRETE.

VALVE CONNECTION

N.T.S.

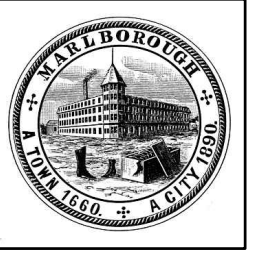


NOTES:

1. PROVIDE RESTRAINTS FOR MECHANICAL JOINTS (MEGALUG, RODS OR APPROVED EQUAL)
2. GATE VALVE MUST CONFORM TO THE LATEST REVISION OF AWWA STANDARD C-509
3. 6 MIL POLYETHYLENE SHALL BE PLACED BETWEEN THE THRUST BLOCK AND PIPE AT ALL MECHANICAL JOINTS PRIOR TO PORING CONCRETE.

TYPICAL GATE VALVE

N.T.S



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REVISIONS

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Drawn By: Designed By: Checked By: Approved By:

Project Title:

SUDBURY STREET AREA
SEWER PROJECT PHASE 4

Sheet Title:

WATER DETAILS

Contract No:
ED-2019-01

Date: 8/30/2010

Scale: N.T.S.

Sheet No.1

99 C-508

SEWER NOTES

TESTING (CONTINUED)

AIR TEST PROCEDURE (WET CONDITIONS): ALL TEST PRESSURES ARE MEASURED AS GAGE PRESSURE, WHICH IS ANY PRESSURE GREATER THAN ATMOSPHERIC. SINCE WATER PRODUCES A PRESSURE OF 5 PSIG FOR EVERY FOOT OF DEPTH OVER THE MAIN, AIR TEST PRESSURE MUST BE INCREASED TO OFFSET THE DEPTH OF GROUND WATER OVER THE SEWER LINE. IN AREAS WHERE THE GROUNDWATER IS KNOWN TO EXIST, THE CONTRACTOR SHALL INSTALL A ONE-HALF INCH DIAMETER CAPPED PVC PIPE NIPPLE, APPROXIMATELY 10' LONG, THROUGH THE MANHOLE WALL ON TOP OF ONE OF THE SEWER LINES ENTERING THE MANHOLE. THIS SHALL BE DONE AT THE TIME THE SEWER LINE IS INSTALLED. IMMEDIATELY AFTER PERFORMING THE LINE ACCEPTANCE TEST, THE GROUND WATER ELEVATION SHALL BE DETERMINED BY REMOVING THE PIPE GAGE BLOWING AIR THROUGH THE PIPE NIPPLE INTO THE GROUND SO AS TO CLEAR IT, AND THEN CONNECTING A CLEAR PLASTIC TUBE TO THE NIPPLE. THE HOSE SHALL BE HELD VERTICALLY AND A MEASUREMENT OF THE HEIGHT IN FEET OF WATER OVER THE INVERT OF THE PIPE SHALL BE TAKEN AFTER THE WATER HAS STOPPED RISING IN THE PLASTIC TUBE. MULTIPLY THE HEIGHT IN FEET ABOVE THE PIPE INVERT TO THE GROUND WATER TABLE BY 0.43 PSIG/FT AND ADD IT TO THE REQUIRED 3.5 PSIG MINIMUM TEST PRESSURE. FOR EXAMPLE, IF THE HEIGHT OF WATER IS 11.5 FT, THEN THE ADDED PRESSURE WILL BE 4.93 PSIG/FT X 11.5 FT OR 4.9 PSIG. THIS INCREASES THE TEST PRESSURE FROM 3.5 PSIG TO 8.4 PSIG AND THE 2.5 PSIG TO 7.4 PSIG, RESPECTIVELY. THE ALLOWABLE DROP OF 1 PSIG FOR THE TIME ALLOWED AS OUTLINED IN TABLE 1 STILL REMAINS. IF THE SEWER LINE GROUND WATER LEVEL IS 2 FT OR MORE ABOVE THE MAIN, THE CONTRACTOR SHALL DRAIN ENDS, OR IF THE AIR PRESSURE REQUIRED FOR THE TEST CALCULATED OUT TO BE GREATER THAN THE 9 PSIG GAGE, THE AIR TEST METHODS SHOULD NOT BE USED. IN THIS CASE, A VISUAL INSPECTION FOR LEAKAGE WOULD PRODUCE A MORE CONSERVATIVE TEST. BEFORE THE AIR TEST METHOD IS USED, THE GROUND WATER LEVEL SHOULD BE LOWERED BY PUMPING OR DEWATERING.

VACUUM TESTING OF MANHOLES: ALL SANITARY SEWER MANHOLES CONSTRUCTED BY THE CONTRACTOR SHALL BE VACUUM TESTED FOR LEAKAGE IN THE PRESENCE THE CITY REPRESENTATIVE. VACUUM TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM C1244. THE VACUUM TEST REQUIREMENTS WILL NOT APPLY TO ANY EXISTING MANHOLE, OR ANY EXISTING MANHOLE THAT HAS BEEN CONVERTED TO A DROP MANHOLE BY THE CONTRACTOR.

VACUUM TESTING PROCEDURE: ALL LIFTING HOLES SHALL BE PLUGGED WITH AN APPROVED NON-SHRINKING GROUT INSIDE AND OUT. MANHOLE JOINTS SHALL BE GROUTED FROM THE OUTSIDE ONLY. ALL TIES ENTERING THE MANHOLE SHALL BE GROUTED TO THE TOP OF THE MANHOLE. BRACKETS SHALL BE USED TO KEEP THEM FROM BEING DRAWN INTO THE MANHOLE. THE TEST HEAD SHALL BE PLACED AT THE INSIDE OF THE TOP OF THE CONE SECTION OF THE MANHOLE AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. A VACUUM OF 10 INCHES OF MERCURY SHALL BE DRAWN AND THE VACUUM PUMP SHUT OFF. WITH THE VALVES CLOSED, THE TIME FOR THE VACUUM TO DROP TO 9 INCHES SHALL NOT BE LESS THAN THAT SHOWN IN (TABLE 1) BELOW:

TEST FAILURE

SHOULD A LINE OR MANHOLE FAIL TO PASS ANY OF THE ACCEPTANCE TEST AS OUTLINED, THE CONTRACTOR SHALL AT HIS EXPENSE, DETERMINE THE SOURCE OF THE FAILURE, MAKE ANY REPAIRS AND RE-TEST THE SEGMENT OF PIPING OR MANHOLE IN QUESTION AT NO COST TO THE CITY.

MANDREL EQUIPMENT

EQUIPMENT SYSTEMS USE TO PERFORM MANDREL TESTS SHALL BE SPECIFICALLY DESIGNED FOR THE PIPE MATERIAL BEING TESTED. MANDRELS THAT DO NOT SPECIFICALLY STATE THE SIZE AND TYPE OF PIPING FOR WHICH IT IS APPLICABLE SHALL NOT BE ALLOWED.

AIR/VACUUM TEST EQUIPMENT

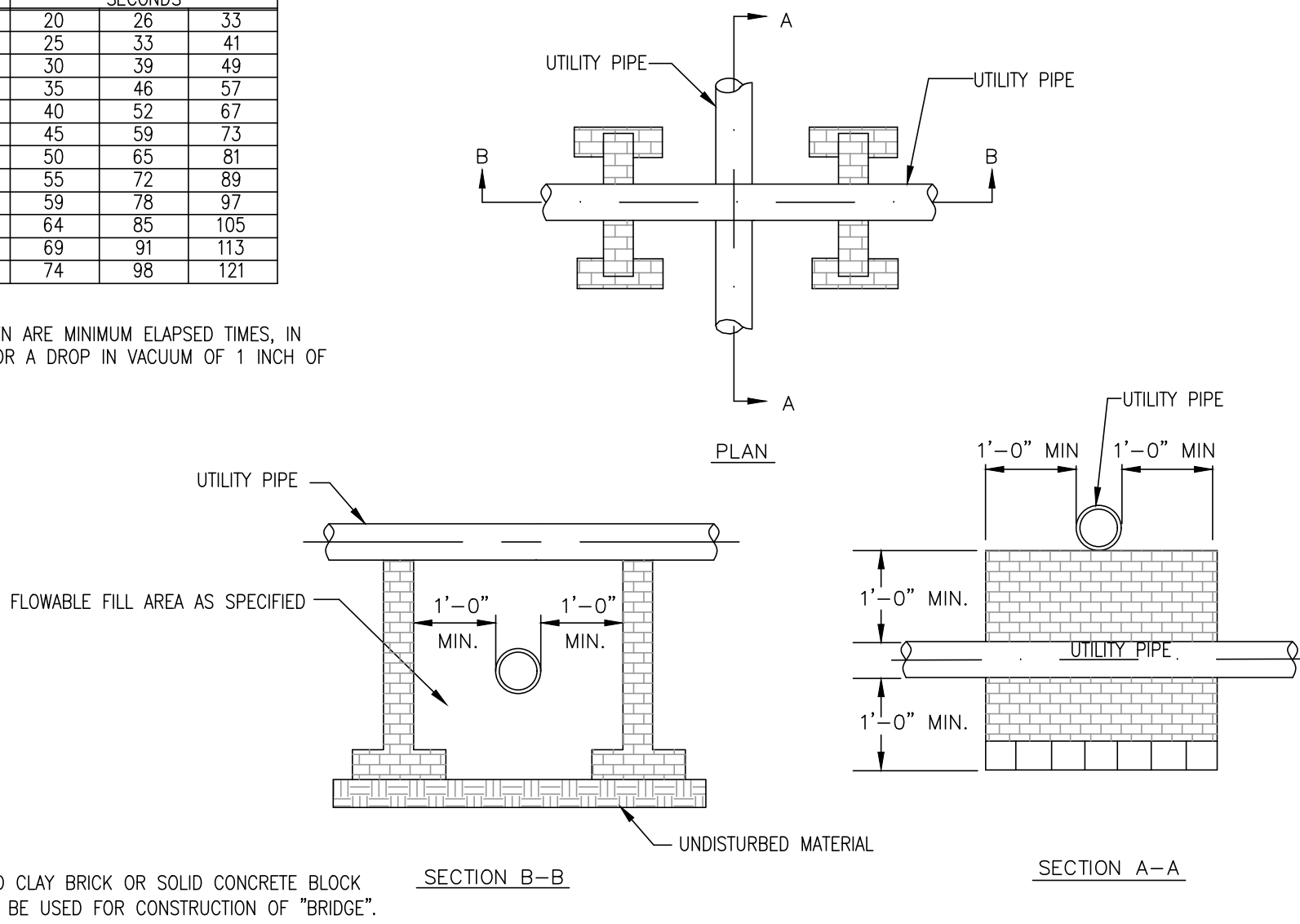
EQUIPMENT SYSTEMS USED TO PERFORM LOW-PRESSURE AIR TESTS SHALL BE SPECIFICALLY DESIGNED FOR THIS PURPOSE. SYSTEMS SHALL BE APPROVED BY THE CITY PRIOR TO THE TEST TAKING PLACE. ISOLATION OF PIPE SEGMENTS SHALL BE ACCOMPLISHED THROUGH THE USE OF PLUGS (MECHANICAL OR PNEUMATIC TYPE). PRESSURIZATION OF THE SEWER MAIN SHALL BE ACCOMPLISHED THROUGH THE USE OF AN AIR COMPRESSOR THAT HAS AN OIL FREE AIR SOURCE, SINGULAR CONTROL PANEL, MAIN SHUT-OFF VALVE, PRESSURE-REGULATING VALVE, 9 PSIG PRESSURE RELIEF VALVE, INPUT PRESSURE GAUGE AND A CONTINUOUS MONITORING PRESSURE GAUGE. THE CONTINUOUS MONITORING PRESSURE GAUGE SHALL HAVE A PRESSURE RANGE FROM 0 PSIG TO AT LEAST 10 PSIG WITH MINIMUM DIVISIONS OF .10 PSIG. THE GAUGE FACE SHALL HAVE A MINIMUM OF 4 INCHES IN DIAMETER AND HAVE AN ACCURACY OF ± 0.4 PSIG.

SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR ALL PRODUCTS SPECIFIED WITHIN THE BID/CONTRACT DOCUMENTS AND INDICATED OR IMPLIED ON THE DRAWINGS. THE SHOP DRAWINGS SHALL BE SUBMITTED AT LEAST (1) DAYS PRIOR TO SCHEDULED USE OF THE PRODUCT FOR REVIEW BY THE ENGINEER. EACH SHOP DRAWING SHALL INCLUDE THE SPECIFICATIONS OF THE PRODUCT, MATERIAL CONTENT, PHYSICAL AND CHEMICAL PARAMETERS, TESTING RESULTS, DIMENSIONS, QUALIFICATIONS, COLOR CHOICES, SAMPLES (IF SPECIFICALLY REQUIRED), AND DRAWINGS (IF SPECIFICALLY REQUIRED). EXACTLY FOUR (4) COPIES OF SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OR DESIGNATED REPRESENTATIVE. THE SUBMITTED SHOP DRAWINGS SHALL BE STAMPED AND SIGNED BY THE CONTRACTOR WITH A STATEMENT INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SHOP DRAWINGS AND ACCEPTED THE PRODUCT. UPON RECEIPT OF THE SHOP DRAWINGS, THE ENGINEER SHALL REVIEW THE PRODUCT INFORMATION AND DETERMINE ACCEPTABILITY BASED ON THE CONTRACT DOCUMENTS. THE ENGINEER SHALL RETURN AT LEAST TWO (2) COPIES OF THE REVIEWED SHOP DRAWINGS TO THE CONTRACTOR WITH A MEMO DETAILING THE ENGINEER'S REVIEW. IN THE CASE THAT THE SHOP DRAWING IS REJECTED, THE ENGINEER WILL RETURN THREE (3) COPIES TO THE CONTRACTOR WITH A REASONABLE EXPLANATION AS TO WHY THE PRODUCT WAS REJECTED.

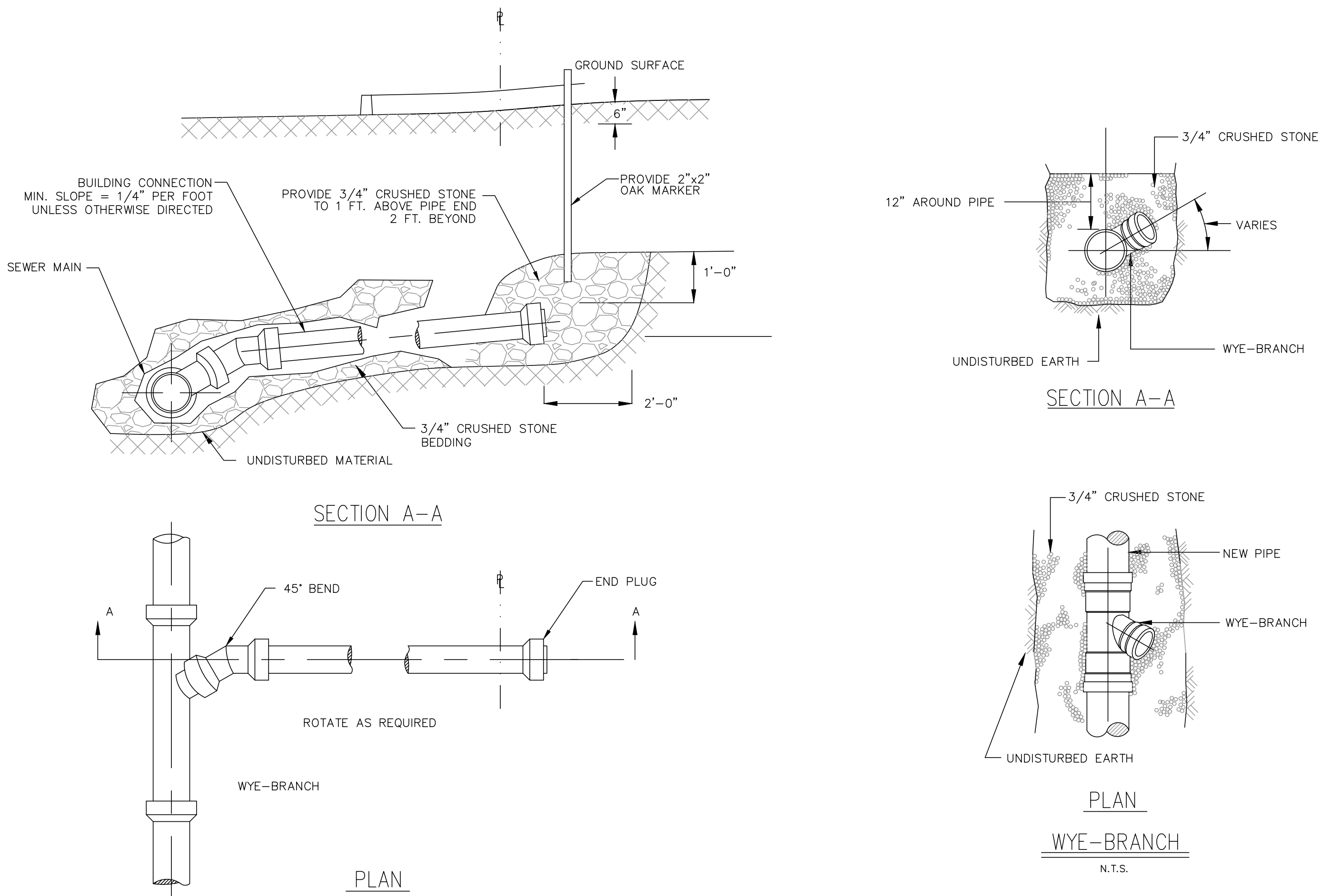
DEPTH (FEET)	MANHOLE DIAMETER (INCHES)		
	48	60	
		SECONDS	
0-8	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
16	40	52	67
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

TABLE 1
(TIMES SHOWN ARE MINIMUM ELAPSED TIMES, IN SECONDS, FOR A DROP IN VACUUM OF 1 INCH OF MERCURY.)



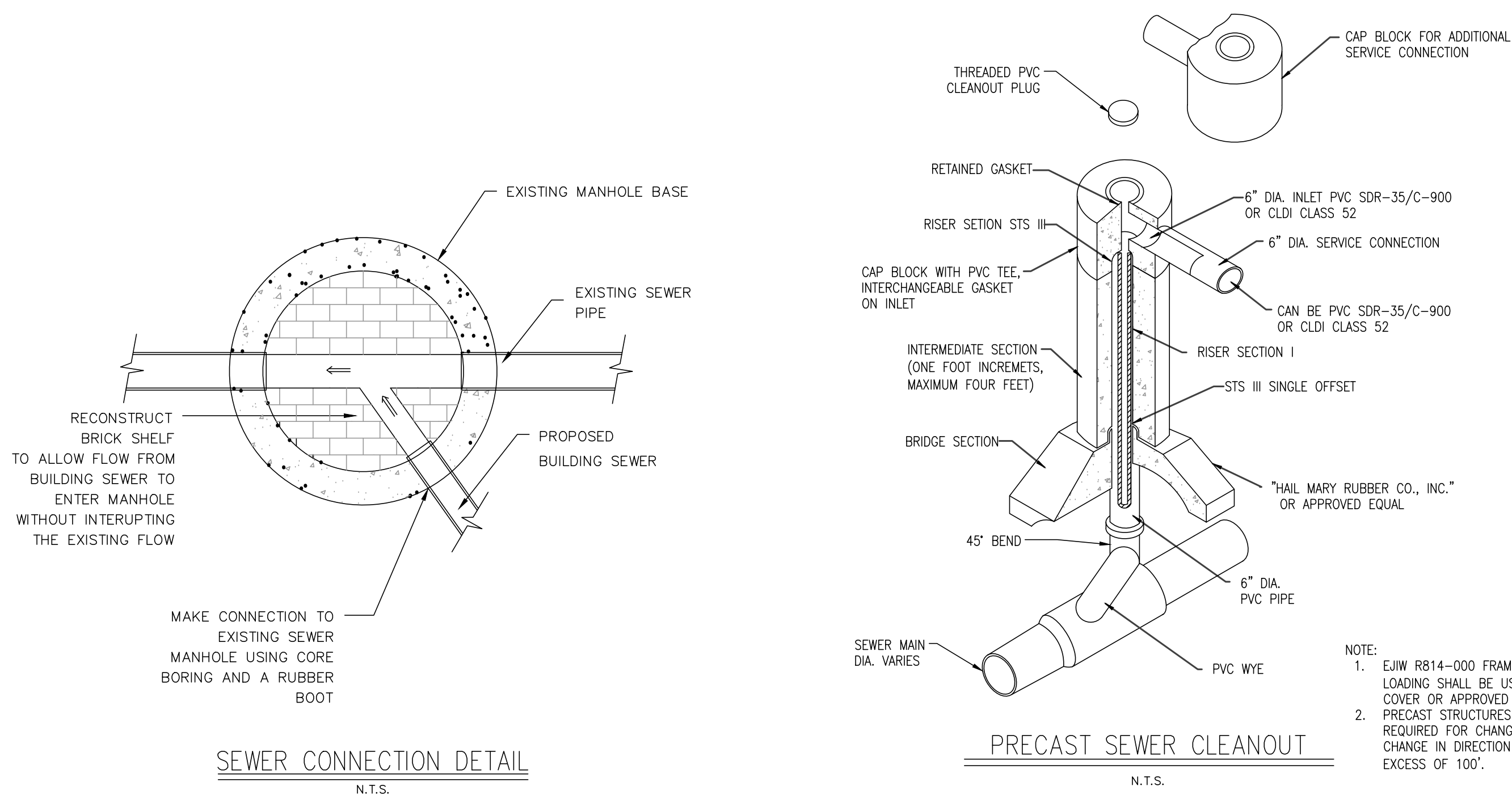
UTILITY CROSSING BRIDGE

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SEWER SERVICE CONNECTION

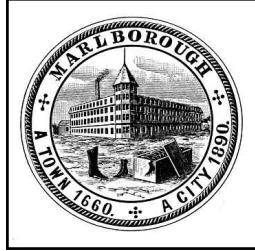
N.T.S.



SEWER CONNECTION DETAIL

N.T.S

CITY_{OF}
MARLBOROUGH



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REVISIONS

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Drawn By: ENG Designed By: ENG Checked By: ENG Approved By: ENG

Project Title:

SUDBURY STREET AREA
SEWER PROJECT PHASE 4

Sheet Title:

SEWER DETAILS

Contract No:
ED-2019-01

Date: 2/02/2012

Scale: N.T.S

Sheet No.

99 C-510

