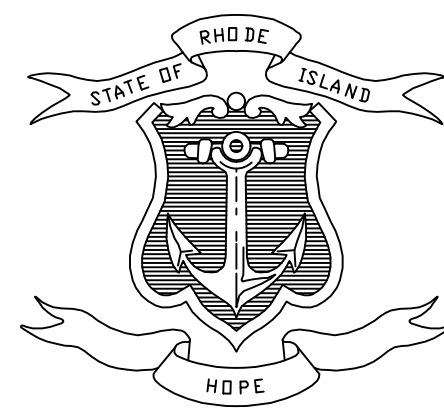


NARRAGANSETT BAY COMMISSION

PHASE III COMBINED SEWER OVERFLOW PROGRAM  
OF-217 CONSOLIDATION CONDUIT

CONTRACT NO. 308.05C

FINAL DESIGN  
JULY 2021



STATE OF RHODE ISLAND

DANIEL J. MCKEE \_\_\_\_\_ GOVERNOR



RHODE ISLAND  
INFRASTRUCTURE BANK

MERRILL W. SHERMAN \_\_\_\_\_ CHAIRMAN

JEFFREY R. DIEHL \_\_\_\_\_ EXECUTIVE DIRECTOR  
AND CEO

VINCENT J. MESOLELLA JR. \_\_\_\_\_ CHAIRMAN

LAURIE A. HORRIDGE \_\_\_\_\_ EXECUTIVE DIRECTOR

KATHRYN KELLY, P.E. \_\_\_\_\_ CSO PROGRAM MANAGER

DAVID C. BOWEN, P.E. \_\_\_\_\_ ENGINEERING  
MANAGER

PROGRAM MANAGEMENT TEAM



DESIGN TEAM



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**LIST OF DRAWINGS**

**GENERAL**

- G-1 LIST OF DRAWINGS
- G-2 LOCATION AND VICINITY MAP
- G-3 SYMBOLS
- G-4 ABBREVIATIONS

**CIVIL**

- GC-1 NOTES
- GC-2 SYMBOLS
- GC-3 LEGEND & NOTES
- C-1 CONCEPTUAL STAGING SCHEMATIC - TIDEWATER SITE
- C-2 CONSOLIDATION CONDUIT PLAN AND PROFILE I: STA 0+00 - 4+00
- C-3 CONSOLIDATION CONDUIT PLAN AND PROFILE II: STA 4+00 - 8+00
- C-4 CONSOLIDATION CONDUIT PLAN AND PROFILE III: STA 8+00 - 12+00
- C-5 CONSOLIDATION CONDUIT PLAN AND PROFILE IV: STA 12+00 - 16+00
- C-6 CONSOLIDATION CONDUIT PLAN AND PROFILE V: STA 16+00 - 18+88
- C-7 OF-217 OUTFALL PLAN AND PROFILE VI: STA 0+00 - 4+46
- C-8 WATER RELOCATION PLAN
- C-9 CIVIL DETAILS I
- C-10 CIVIL DETAILS II
- C-11 CIVIL DETAILS III
- C-12 CIVIL DETAILS IV
- C-13 CIVIL DETAILS V
- C-14 CIVIL DETAILS VI
- C-15 CIVIL DETAILS VII
- C-16 CIVIL DETAILS VIII
- C-17 CIVIL DETAILS IX

**GEOTECHNICAL**

- B-1 INSTRUMENTATION PLAN STA. 0+00 - 8+00
- B-2 INSTRUMENTATION PLAN STA. 8+00 - 16+00
- B-3 INSTRUMENTATION PLAN STA. 16+00 - 18+88, STA. 0+00 - 4+46
- B-4 INSTRUMENTATION DETAILS
- B-5 MINIMUM DESIGN CRITERIA FOR EXCAVATION SUPPORT
- B-6 NOTES FOR ANALYSIS AND DESIGN
- B-7 SECANT PILE SHAFT REFERENCE DESIGN

**TRAFFIC**

- T-1 TEMPORARY TRAFFIC CONTROL PLAN
- T-2 TEMPORARY TRAFFIC CONTROL DETAILS

**STRUCTURAL**

- S-1 OF-217 RELOCATION STRUCTURE PLAN AND SECTIONS
- S-2 OF-217 DIVERSION STRUCTURE PLAN AND SECTIONS
- S-3 OF-217 REVETMENT PLAN AND SECTION
- S-4 OF-217 DIVERSION STRUCTURE FLOATABLE SCREEN DETAILS
- S-5 STRUCTURAL DETAILS

**ELECTRICAL**

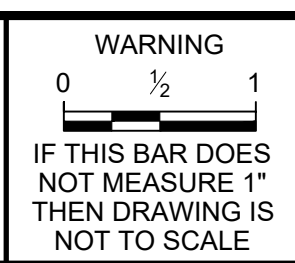
- GE-1 NOTES & SYMBOLS
- GE-2 ABBREVIATIONS
- E-1 SITE PLAN, DUCTBANK SECTIONS, AND OF-217 DIVERSION STRUCTURE PLAN
- E-2 CONDUIT RISER DIAGRAM AND DETAILS

BY: JAMIE PAYNE

DWG FILE: J:\6412 NBC CSD Consolidation Conduits\Drawing Files\Civil\Sheet Set\PAVVT\_IJA-4\_IJA-5\_LIST\_OF\_DRAWINGS.dwg PLOT DATE: Thursday, June 24, 2021 3:17:27 PM

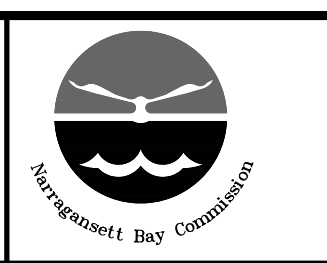
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DESIGNED C. CRONIN  
DRAWN J. PAYNE  
CHECKED J. D'ALELIO

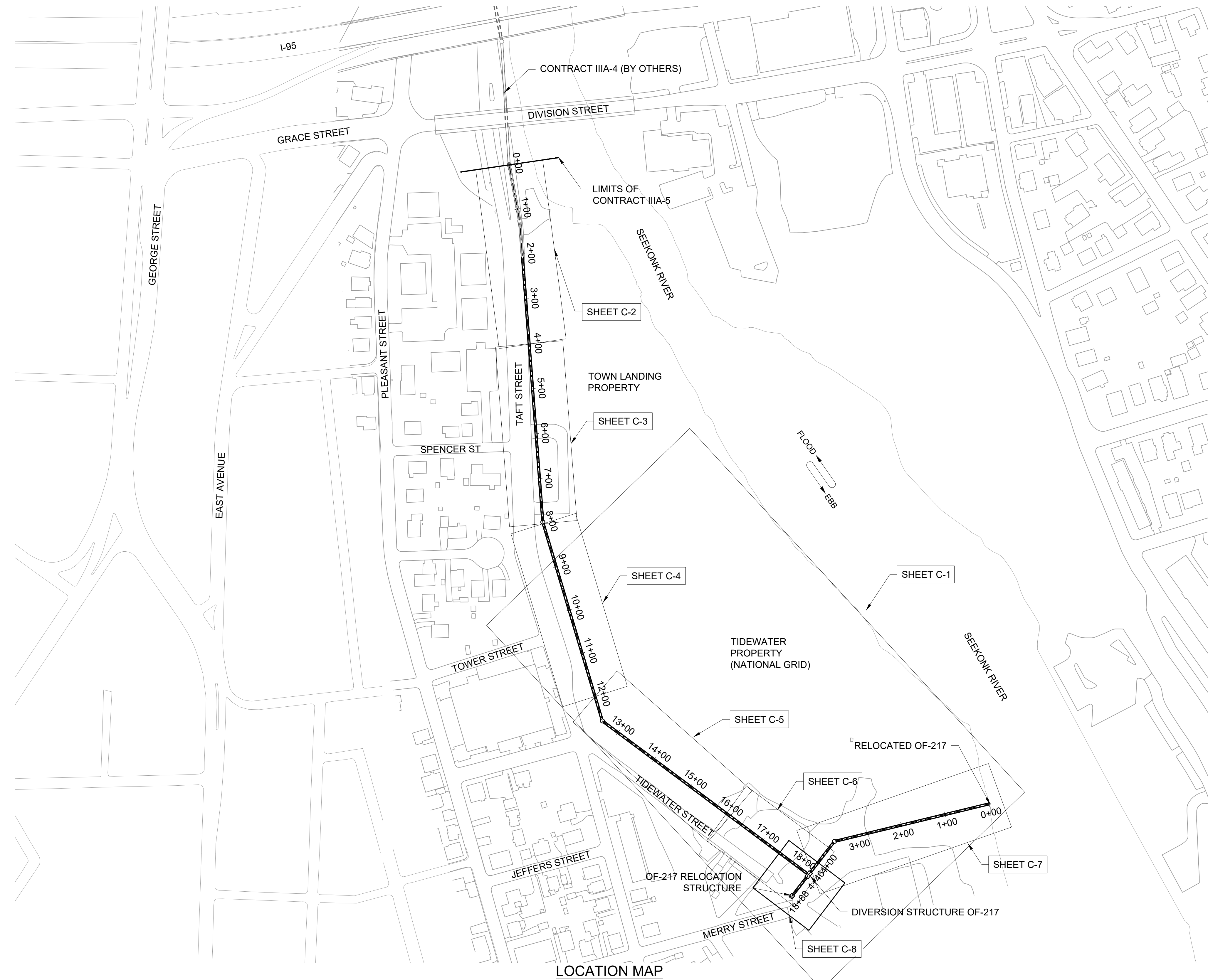
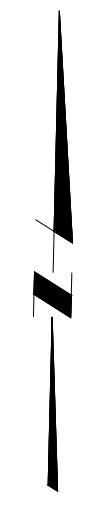
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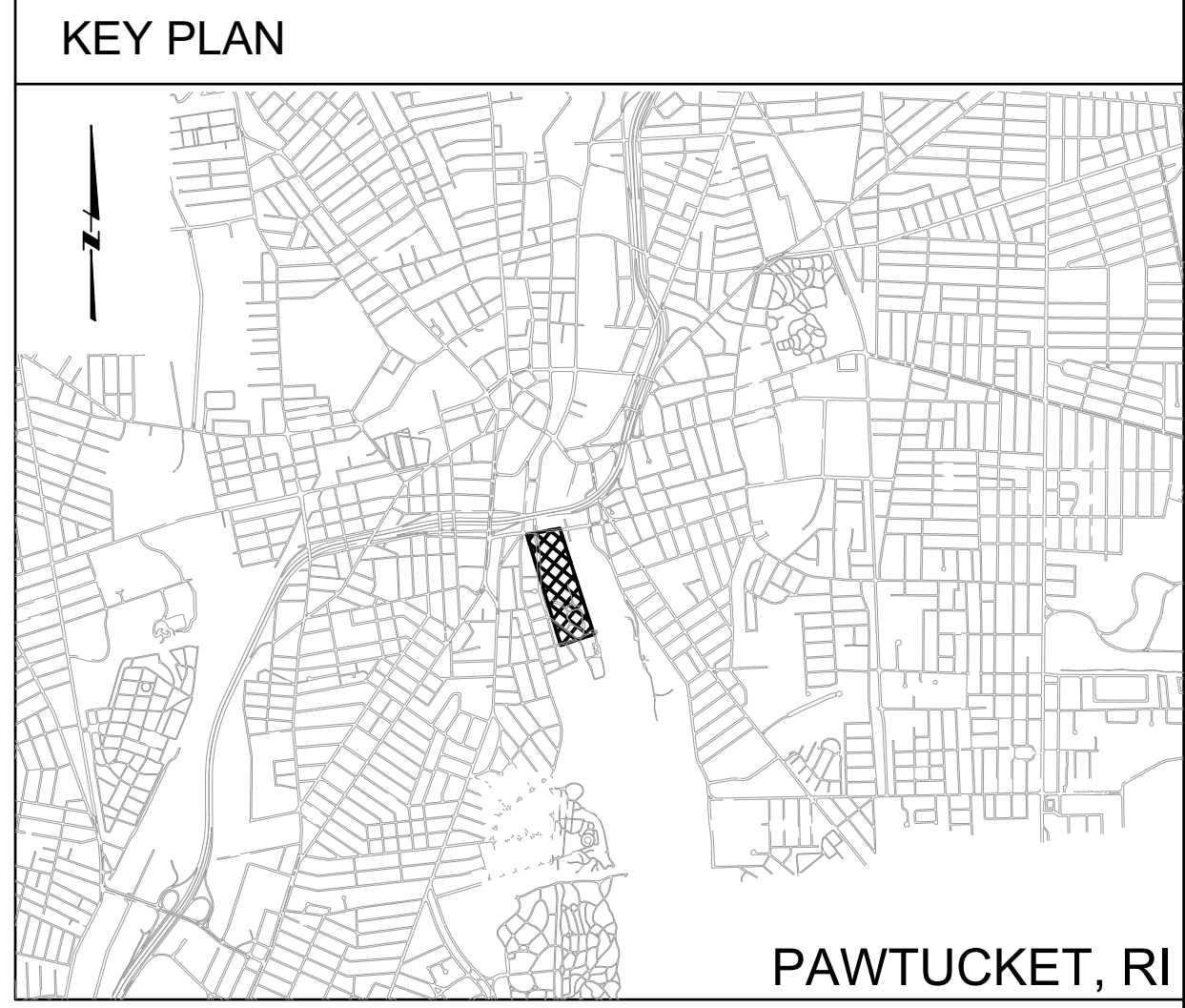
NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM  
NBC CONTRACT NO 308.05C  
GENERAL  
OF-217 CONSOLIDATION CONDUIT  
LIST OF DRAWINGS

SHEET  
G-1  
195130227

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Drawing Files\Civil\Sheet Set\PAWT\_IIA-4\_IIA-5\_LOCATION\_MAP.dwg PLOT DATE: Thursday, June 24, 2021 3:18:03 PM BY: JAMIE PAYNE



LOCATION MAP



REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

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NO SCALE

WARNING  
0 1/2 1  
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DESIGNED C. CRONIN  
DRAWN J. PAYNE  
CHECKED J. D'ALESSIO

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

Stantec PARE

NBC CONTRACT NO 308.05C  
GENERAL

OF-217 CONSOLIDATION CONDUIT  
LOCATION AND VICINITY MAP

SHEET  
G-2  
195130227

BY: JAMIE PAYNE

PLOT DATE: Thursday, June 24, 2021 3:19:51 PM

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**GENERAL SYMBOLOGY**

- NEW CONSTRUCTION
- EXISTING (SCREENED)
- FUTURE (PHANTOM)
- EXISTING TO BE REMOVED OR DEMOLISHED

**MATERIAL SYMBOLOGY**

- CONCRETE (PLAN AND SECTION)
- GROUT OR SAND (PLAN AND SECTION)
- BRICK (PLAN AND SECTION)
- STEEL/METAL/FRP (SMALL SCALE SECTION)
- GRATING OR SOLID FRP GRATING (SECTION)
- FINISHED GRADE
- GRAVEL/DRAINROCK/AGGREGATE BASE

**PIPING ENDS (SINGLE-LINE)**

- PIPE MATERIAL CHANGE
- PUSH-ON JOINT - BELL AND SPIGOT
- PUSH-ON JOINT - RESTRAINED

- SLEEVE TYPE COUPLING
- SLEEVE TYPE COUPLING - RESTRAINED

**REFERENCE SYMBOLS**

**SECTION IDENTIFICATION**

SECTION LETTER: X  
SECTION: X-###  
SCALE: ###" = 1'-0"

SHEET ON WHICH SECTION IS SHOWN (X-###)  
SHEET ON WHICH SECTION IS CUT (X-###)

**DETAIL IDENTIFICATION**

DETAIL NUMBER: #  
DETAIL: X-###  
SCALE: ##" = 1'-0"

SHEET ON WHICH DETAIL IS SHOWN (X-###)  
SHEET ON WHICH DETAIL IS CALLED-OUT (X-###)

**STANDARD DETAIL IDENTIFICATION**

DETAIL NUMBER: C-302  
DETAIL SUB-TITLE: C-302

STANDARD DETAILS ARE LOCATED ON DISCIPLINE GENERAL SHEETS, IN NUMERICAL ORDER

**INTERIOR ELEVATION IDENTIFICATION**

ELEVATION NUMBER: 6  
SCALE: ##" = 1'-0"

OR

ELEVATION NUMBER: 6A  
SCALE: ##" = 1'-0"

SHEET ON WHICH ELEVATION IS SHOWN (6, 6A)  
SHEET ON WHICH ELEVATION IS CALLED-OUT (6, 6A)

**EXTERIOR ELEVATION IDENTIFICATION**

N, S, E or W  
NORTH ELEVATION  
SCALE: ##" = 1'-0"

**MISCELLANEOUS**

- SHEET KEY NOTES
- CENTERLINE
- COORDINATE POINT
- ROUND OR DIAMETER

DISCIPLINE SPECIFIC SYMBOLS ARE SHOWN ON THE DISCIPLINE GENERAL DRAWINGS.

FOR WELDING SYMBOLS USE AMERICAN WELDING SOCIETY STANDARD SYMBOLS.

REV 012216

**MISCELLANEOUS**

WATER LEVEL

**CONTROL SYMBOLS**

- BM-XX BENCH MARK
- SITE COORDINATES (SEE TABLE ON DRAWINGS)
- N XXXXXXXX E XXXXXXXX SITE COORDINATES
- EL XXXX.XX MONUMENT
- HORIZONTAL CONTROL POINT
- VERTICAL CONTROL POINT
- HORZ AND VERT CONTROL POINT
- XXX.XX FINISHED ELEVATION
- (XXX.XX) EXISTING ELEVATION
- DELTA

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE: NO SCALE

**WARNING**

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DESIGNED C. CRONIN  
DRAWN J. PAYNE  
CHECKED J. D'ALELIO

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
GENERAL  
OF-217 CONSOLIDATION CONDUIT  
SYMBOLS

SHEET  
G-3  
195130227



DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Drawing Files\Civil\Sheet Set\PAWT\_IIA-5\_GENERAL.dwg  
PLOT DATE: Thursday, June 24, 2021 3:19:52 PM  
BY: JAIME PAYNE

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE	NO SCALE
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DESIGNED	C. CRONIN
DRAWN	J. PAYNE
CHECKED	J. D'ALELIO

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NARRAGANSETT BAY COMMISSION PHASE III COMBINED SEWER OVERFLOW PROGRAM	
Stantec	

NBC CONTRACT NO 308.05C CIVIL	
OF-217 CONSOLIDATION CONDUIT NOTES	

SHEET	
GC-1	
195130227	

BENCHMARKS / CONTROL POINTS				
POINT #	POINT DESCRIPTION	EASTING	NORTHING	ELEVATION
58	CONTROL POINT	359882.95	289468.51	38.06
59	DH SET	359813.36	289172.39	33.06
60	DH SET	359584.63	288961.99	24.31
61	DH SET	359554.63	288759.67	23.65
62	DH SET	359538.45	288626.49	24.52
63	DH SET	359519.32	288450.47	27.21
64	MN SET	359439.99	288229.12	21.28
65	DH SET	359449.71	287898.10	14.51
66	MN FND	359462.93	287548.38	12.30
67	DH SET	359521.61	287348.34	14.49
68	DH SET	359476.83	287125.65	33.42
69	CONTROL POINT	359439.99	288229.12	21.28
70	DH SET	359493.91	286667.59	37.98
71	SPIKE SET	359605.16	286687.46	35.22
72	SPIKE SET	359633.91	286616.36	34.22
73	SPIKE SET	359809.23	286476.37	22.04
74	SPIKE SET	359987.59	286149.73	25.92
75	SPIKE SET	360221.11	286003.10	12.63
76	MN SET	360294.94	286132.76	9.96
77	MN SET	360476.20	286165.27	10.04

PERMITTING

XXXXXX  
XXXX

XXXXX  
XXXXX

NATIONAL GRID GAS POLICY REQUIREMENTS	
GENERAL	
1. CONTRACTOR SHALL FOLLOW THE GUIDELINES LISTED IN NATIONAL GRID'S "GUIDELINES FOR WORKING AROUND GAS UTILITIES".	
2. DEPTH OF GAS FACILITIES ARE UNKNOWN AND COULD BE SHALLOW. USE CAUTION WHEN WORKING IN THE VICINITY OF ANY GAS FACILITY, HAND DIGGING ONLY.	
3. NATIONAL GRID REQUIRES A MINIMUM OF ONE FOOT OF SEPARATION BETWEEN CROSSING UTILITIES AND EXISTING GAS FACILITIES.	
4. NATIONAL GRID REQUIRES A MINIMUM OF THREE FEET OF SEPARATION BETWEEN THE GAS MAIN AND THE PARALLEL FACILITY FOR STEEL AND PLASTIC GAS MAINS. <b>FOR CAST IRON GAS MAIN SEE LINE ITEM FOR ENCROACHMENT GUIDELINES.</b>	
5. AT A PROPOSED UTILITY AND <b>CRITICAL</b> GAS MAIN CROSSING, A NATIONAL GRID GAS DAMAGE PREVENTION INSPECTOR MUST BE ON SITE WHEN CROSSING. CALL JON MACLEAN AT 781-296-2046 OR ED SOUZA AT 401-283-9159.	
6. IF A <b>GAS MAIN IS</b> EXPOSED OR <b>GOING TO BE EXPOSED</b> CALL NATIONAL DISPATCH OFFICE AT 877-304-1203 FOR AN INSPECTOR TO BE DISPATCHED TO THE SITE TO INSPECT THE LINE BEFORE BACKFILL.	
7. IF A <b>GAS MAIN OR GAS MAIN COATING IS</b> DAMAGED CALL NATIONAL DISPATCH OFFICE AT 877-304-1203 FOR AN INSPECTOR TO BE DISPATCHED TO THE SITE FOR REPAIR BEFORE BACKFILL.	
8. FOR ANY EXPOSED GAS FACILITY, PROVIDE BACKFILL MATERIALS AND COMPACT THE BACKFILL MATERIALS IN ACCORDANCE WITH NATIONAL GRID'S "GUIDELINES FOR BACKFILL AND COMPACTION AROUND GAS PIPES".	
9. WHEN CROSSING OR EXPOSING A STEEL OR PLASTIC GAS FACILITY SUPPORT MAY BE REQUIRED. FOLLOW THE GUIDELINES LISTED AND ILLUSTRATED IN NATIONAL GRID'S "SUPPORT REQUIREMENTS FOR EXPOSED & UNDERMINED STEEL OR PLASTIC GAS FACILITIES", DOCUMENT (DWG NO. CNST-6045).	
10. ALL GAS VALVE BOXES SHALL BE ADJUSTED TO THE NEW ROAD/SIDEWALK SURFACE. VALVE BOXES, IF REQUIRED FOR REPLACEMENT, CAN BE OBTAINED AT NATIONAL GRID'S PROVIDENCE LOCATION, 477 DEXTER STREET, PROVIDENCE, RI OR LINCOLN LOCATION, 642 GEORGE WASHINGTON HIGHWAY (QUANTITIES 5 OR LESS). GAS VALVE BOXES NEED TO BE ACCESSIBLE AT ALL TIMES TO BE OPERATED BY NATIONAL GRID IN THE EVENT OF AN EMERGENCY.	
11. ALL CATHODIC PROTECTION BOXES (BOXES THAT CONTAIN WIRES THAT GO DOWN TO THE GAS MAIN) SHALL BE ADJUSTED TO THE NEW ROAD/SIDEWALK SURFACE. CARE SHALL BE EXERCISED WHEN ADJUSTING SO AS NOT TO DAMAGE THE WIRES. IF THE WIRES ARE DAMAGED OR IF ASSISTANCE IS NEEDED, CONTACT NATIONAL GRID CORROSION ENGINEER TO VISIT THE SITE. CONTACT RICK LEPAGE 508-948-8432 OR MIKE HARMON 781-953-2545. NEW BOXES, IF REQUIRED, CAN BE OBTAINED AT NATIONAL GRID'S PROVIDENCE FACILITY, 477 DEXTER ST, PROVIDENCE, RI OR NATIONAL GRID'S LINCOLN FACILITY, 642 GEORGE WASHINGTON HIGHWAY, LINCOLN, RI (QUANTITIES 5 OR LESS). CONTRACTOR SHALL FOLLOW THE GUIDELINES LISTED IN NATIONAL GRID'S "GUIDELINES FOR WORKING AROUND CORROSION CONTROL SYSTEM COMPONENTS", DOCUMENT ATTACHED.	
12. DUE TO SYSTEM RELIABILITY AND PUBLIC SAFETY CONCERNS, IT IS NATIONAL GRID'S PRACTICE TO RESTRICT ALL CONSTRUCTION WORK ON OR NEAR GAS FACILITIES BETWEEN NOVEMBER 15TH AND APRIL 15TH. ALL SCHEDULED WORK SHOULD BE COMPLETED BETWEEN APRIL 15TH AND NOVEMBER 15TH. AS GAS USAGE PEAK DURING THE MONTHS OF DECEMBER TO MARCH DRIVEN BY HEATING NEEDS, NATIONAL GRID'S PRIORITY IS TO PROVIDE OUR CUSTOMERS WITH SAFE AND RELIABLE GAS SERVICE. ANY WORK ON OR NEAR THE GAS FACILITY WILL EXPOSE OUR CUSTOMERS TO UNNECESSARY RISK. EXCEPTIONS WILL BE CONSIDERED ON A CASE BY CASE BASIS. APPROVALS FROM GAS CONTROL, OPERATIONAL ENGINEERING, AND PROJECT ENGINEERING WILL BE REQUIRED FOR THESE CASES.	
13. FOR A GAS LEAK CALL 800-640-1595.	
14. FOR A DAMAGED GAS FACILITY CALL 800-870-1664.	
GAS MAIN ENCROACHMENT COORDINATION	
1. FOR INTRUSIVE OR EARTH DISTURBING WORK 15 FEET OR CLOSER TO STEEL GAS FACILITIES, NATIONAL GRID REQUIRES LEAK SURVEYS BEFORE AND AFTER CONSTRUCTION ACTIVITIES WHICH CREATE VIBRATION ON A DAILY BASIS.	
2. FOR INTRUSIVE OR EARTH DISTURBING WORK 12 FEET OR CLOSER TO STEEL GAS FACILITIES, NATIONAL GRID REQUIRES DAILY LEAK SURVEYS AS WELL AS VIBRATION MONITORING USING SEISMOGRAPHS. VIBRATION LEVELS SHALL NOT EXCEED 5.0 IN/SEC AS MONITORED BY NATIONAL GRID'S DAMAGE PREVENTION INSPECTORS.	
3. FOR INTRUSIVE OR EARTH DISTURBING WORK 25 FEET OR CLOSER TO CAST IRON FACILITIES, NATIONAL GRID REQUIRES DAILY LEAK SURVEYS BEFORE AND AFTER VIBRATION ACTIVITIES, AS WELL AS VIBRATION MONITORING USING SEISMOGRAPHS. VIBRATION LEVELS SHALL NOT EXCEED 5.0 IN/SEC AS MONITORED BY NATIONAL GRID'S DAMAGE PREVENTION INSPECTORS. WORK CLOSER THAN 10 FEET FROM THE LINE WILL REQUIRE RELAY OF THE LINE.	
CAST IRON INVOLVEMENT	
1. IF EXCAVATING PARALLEL TO OR CROSSING A CAST IRON GAS FACILITY THEN ENCROACHMENT OF THE CAST IRON LINE IS A POSSIBILITY AND A CONCERN WHERE REPLACEMENT MAY BE REQUIRED. WHENEVER AN EXCAVATION IS IN THE VICINITY OF A CAST IRON GAS MAIN CONTACT NATIONAL GRID ENCROACHMENT ENGINEER TO BE ON SITE, CALL CHRIS FERRANTI AT 401-465-9064. GUIDELINES IN AVOIDING AN ENCROACHMENT ARE LISTED IN NATIONAL GRID'S "CAST IRON GAS MAIN ENCROACHMENT PREVENTION".	

NATIONAL GRID GAS POLICY REQUIREMENTS THAT PERTAIN TO THIS PROJECT	
GENERAL	
2. IF EXCAVATING PARALLEL TO OR CROSSING A CAST IRON FACILITY THAT IS GREATER THAN 8". THIS LINE IS NOT COVERED UNDER THE ENCROACHMENT GUIDELINES AND LAW. NATIONAL GRID DOES NOT ALLOW MORE THAN 10' OF GAS MAIN TO BE EXPOSED AND ONLY ALLOWS (1) BELL & SPIGOT JOINT TO BE EXPOSED. IF A BELL & SPIGOT JOINT IS EXPOSED SAID JOINT MUST BE LEAK CLAMPED BEFORE BACKFILL UNLESS A CLAMP IS ALREADY IN PLACE. PROVIDE BACKFILL MATERIALS AND COMPACT THE BACKFILL MATERIALS IN ACCORDANCE WITH NATIONAL GRID'S "GUIDELINES FOR BACKFILL AND COMPACTION AROUND GAS PIPES". MINIMUM 95% COMPACTION OF THE SOIL BELOW A CAST IRON IS ALWAYS REQUIRED. ALWAYS CALL NATIONAL GRID DAMAGE PREVENTION DEPARTMENT FOR AN INSPECTOR TO BE DISPATCHED TO SITE. CALL JONATHAN MACLEAN AT 781-296-2046 OR ED SOUZA AT 401-283-9159.	
NATIONAL GRID REGULATOR STATION	
1. NATIONAL GRID REQUIRES NOTIFICATION OF CONSTRUCTION WORK WITHIN 200 FT OF A GAS REGULATOR STATION FOR SAFETY MONITORING DURING CONSTRUCTION. PLEASE CALL NATIONAL GRID I&R SUPERVISOR MIKE ROMANO AT 617-910-7854 OR GEORGE MAERKLE AT 401-595-8276 WHEN DIGGING WITHIN 200 FT OF REGULATOR STATION.	
ABANDONED GAS MAIN	
1. NATIONAL GRID WILL PURGE OUR OLD GAS MAIN OF GAS. WIPE TEST SAMPLE THE INSIDE OF THE PIPE, CAP THE ENDS AND ABANDON IN PLACE. PIPE FOUR INCHES AND LESS IN DIAMETER CAN'T BE SAMPLED; THIS PIPE WILL BE ASSUMED TO BE CONTAMINATED. IF THE WIPE TEST RESULTS SHOW PCB CONTAMINATION AND A SECTION OR SECTIONS NEED TO BE REMOVED BY THE CONTRACTOR THEN THERE ARE TWO POSSIBILITIES: IF THE QUANTITY TO BE REMOVED IS SMALL THE CONTRACTOR COULD TRANSPORT THE REMOVED SECTIONS WITH SEALED ENDS TO EITHER OUR ALLENS AVE FACILITY AT 642 ALLENS AVE IN PROVIDENCE OR OUR DEXTER ST FACILITY AT 477 DEXTER ST IN PROVIDENCE AND PLACE THEM IN OUR RED OPEN TOP "PIPE TO BE CLEANED" CONTAINER ON SITE. NATIONAL GRID WOULD THEN HANDLE THE CLEANING AND PROPER DISPOSAL. OR ... THE CONTRACTOR COULD HIRE CLEAN HARBORS TO DELIVER AN OPEN TOP CONTAINER TO THE SITE. PLACE THE REMOVED SECTION INTO THE DUMPSTER AND THEN ARRANGE TO HAVE CLEAN HARBORS PICK UP THE CONTAINER. THE CHARGES ASSOCIATED WITH DELIVERY, ONSITE RENTAL AND PICK UP OF THE DUMPSTER WOULD BE THE CONTRACTORS RESPONSIBILITY AND NATIONAL GRID'S RESPONSIBILITY WILL BE FOR THE CLEANING AND PROPER DISPOSAL. NATIONAL GRID ALSO REQUIRES THAT THE OPEN PIPE ENDS OF THE ABANDONED PIPE REMAINING IN THE GROUND BE CAPPED OR SEALED WITH EXPANDING FOAM.	
TIDEWATER SITE ACCESS	
TIDEWATER SITE ACCESS	
1. THE TIDEWATER SITE HAS SOIL AND GROUNDWATER CONTAMINATION. CONTRACTOR SHALL WORK IN STRICT ACCORDANCE WITH THEIR HEALTH AND SAFETY PLAN AND THE REQUIREMENTS OF NATIONAL GRID. SEE TIDEWATER - HEALTH AND SAFETY REQUIREMENTS.	
2. MULTIPLE CONTRACTORS WILL BE WORKING ON THE SITE CONCURRENTLY AND SOME WORK SPACE IS SHARED. THE CONTRACTOR SHALL BE REQUIRED TO ATTEND BIWEEKLY COORDINATION MEETINGS FOR THE MULTIPLE CONTRACTS. PROJECTS INCLUDE: NATIONAL GRID - SITEWIDE REMEDY DESIGN WHICH INCLUDES REMEDIATION AND CAPPING ACROSS THE ENTIRE SITE. FORTUITOUS PARTNERS: CONSTRUCTION OF A NEW SOCCER STADIUM AND AMENITIES.	
3. CONTRACTOR SHALL MAINTAIN ACCESS TO NATURAL GAS AND ELECTRICAL SUBSTATION INFRASTRUCTURE BY NATIONAL GRID EMPLOYEES AT ALL TIMES DURING THE PERFORMANCE OF THE WORK. NO SEPARATE PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROVIDING THIS ACCESS OR FOR DELAYS CAUSED BY ON-GOING SITE OPERATIONS.	
4. CONTRACTOR SHALL MAINTAIN ACCESS TO THE PAVED AREA ON THE NORTHWEST SIDE OF THE SUBSTATION AT ALL TIMES TO ALLOW MOBILIZATION AND STAGING OF A TRAILER MOUNTED MOBILE SUBSTATION. NO SEPARATE PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROVIDING THIS ACCESS OR FOR DELAYS CAUSED BY THE PRESENCE OF THE MOBILE SUBSTATION.	
5. CONTRACTOR SHALL COORDINATE WITH NATIONAL GRID ELECTRIC TO TEMPORARILY SUPPORT DISTRIBUTION AND TRANSMISSION POLES WHEN EXCAVATION HAS THE POTENTIAL TO IMPACT STABILITY OF ELECTRICAL INFRASTRUCTURE.	
6. CONTRACTOR SHALL PERFORM ALL WORK IN A MANNER TO NOT EXCEED THE GROUND VIBRATION LIMITS OUTLINED IN NATIONAL GRID REQUIREMENTS FOR WORK IN VICINITY OF GAS MAINS.	
7. CONTRACTOR SHALL PROVIDE SIGNAGE, BARRICADES, AND/OR TEMPORARY PROTECTIVE STRUCTURES TO PROTECT EXISTING MONITORING WELLS FROM DAMAGE. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER IN THE EVENT ANY MONITORING WELL TO REMAIN IS DAMAGED. MONITORING WELLS DAMAGED BY CONTRACTOR SHALL BE REPLACED AT NO COST TO OWNER.	
SELECTIVE DEMOLITION & CONSTRUCTION	
1. DUST SHALL BE STRICTLY CONTROLLED IN ALL AREAS REQUIRING DEMOLITION. CONTRACTOR SHALL PROVIDE AND EMPLOY DUST CONTROL MEASURES TO MITIGATE THE RELEASE OF VISIBLE AIRBORNE PARTICULATE MATTER AND/OR FUGITIVE DUST BEYOND THE LIMITS OF WORK. DUST CONTROL MEASURES SHALL BE IMPLEMENTED CONSISTENT WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.	
2. NOISE SHALL BE STRICTLY CONTROLLED IN ALL AREAS. NOISE CONTROL AND MONITORING SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT DOCUMENTS.	
3. VIBRATION SHALL BE STRICTLY CONTROLLED IN ALL AREAS. VIBRATION CONTROL AND MONITORING SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT DOCUMENTS.	
4. CONTRACTOR SHALL AT ALL TIMES BE SOLELY RESPONSIBLE FOR EXERCISING REASONABLE PRECAUTION TO PROTECT THE HEALTH, SAFETY, AND WELFARE, OF ALL ON-SITE PERSONNEL, THE PUBLIC AND THE ENVIRONMENT DURING PERFORMANCE OF THE WORK DESCRIBED HEREIN AND SHOWN ON THE DRAWINGS. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF FEDERAL, STATE AND LOCAL HEALTH AND SAFETY AND OCCUPATIONAL HEALTH AND SAFETY STATUTES AND CODES.	

6. CONTRACTOR SHALL FOLLOW ALL GUIDELINES AND PROCEDURES LISTED IN THE NATIONAL GRID CONTRACT SAFETY REQUIREMENTS DOCUMENTS INCLUDED IN THE CONTRACT DOCUMENTS.	
7. CONTRACTOR SHALL ESTABLISH AND MAINTAIN SUPPORT, CONTAMINATION REDUCTION AND EXCLUSION ZONES AT THE SITE IN ACCORDANCE WITH OSHA 29 CODE OF FEDERAL REGULATIONS (CFR) 1910.120.	
8. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE SITE-SPECIFIC AIR MONITORING REQUIREMENTS. THE AIR MONITORING REQUIREMENTS INCLUDE, BUT ARE NOT LIMITED TO, MONITORING FREQUENCY, ACTION LEVELS, MONITORING EQUIPMENT, MONITORING LOCATIONS AND SPECIFIC RESPONSE ACTIONS TO BE TAKEN IN THE EVENT THAT ANY ACTION LEVELS ARE TRIGGERED.	
9. CONTRACTOR SHALL BE REQUIRED TO CONDUCT THE WORK IN A MANNER THAT PREVENTS VAPOR EMISSIONS AND FUGITIVE DUST THAT MAY IMPACT PUBLIC HEALTH OR RESULT IN NUISANCE CONDITIONS. CONTRACTOR SHALL CONTROL VAPOR EMISSIONS AND DUST SO THAT PERIMETER ACTION LEVELS ARE NOT EXCEEDED.	
10. WORKERS WORKING WITHIN 25-FEET OF THE COASTAL FEATURE INCLUDING, BUT NOT LIMITED TO THE EDGE OF THE CONTAINMENT WALL AND STEEL PILE BULKHEAD SYSTEMS SHALL BE REQUIRED TO WEAR PERSONAL FLOTATION DEVICES (PFDs).	
EMPLOYEE TRAINING	
1. PRIOR TO THE INITIATION OF THE WORK, CONTRACTOR AND ALL SUBCONTRACTORS SHALL CERTIFY THAT ALL PERSONNEL ASSIGNED TO PERFORM OR SUPERVISE WORK AT THE SITE HAVE RECEIVED, AND THAT NEW HIRES WILL RECEIVE, PRIOR TO BEING ALLOWED ON THE SITE, APPROPRIATE TRAINING IN COMPLIANCE WITH OSHA 29 CFR 1926.65/1910.120. THE TRAINING FOR PERSONNEL WORKING IN THE VICINITY OF ENVIRONMENTALLY IMPACTED SITE MATERIAL SHALL CONSIST OF A MINIMUM OF FORTY (40) HOURS OF HEALTH AND SAFETY TRAINING, TWENTY-FOUR (24) HOURS OF "ON THE JOB" TRAINING, AND EIGHT (8) HOURS OF REFRESHER TRAINING ANNUALLY THEREAFTER. TRAINING REQUIREMENTS FOR PERSONNEL OR SUBCONTRACTORS NOT EXPECTED TO ENCOUNTER IMPACTED MATERIALS SHALL BE SPECIFICALLY DESCRIBED IN THE SITE-SPECIFIC HASP. IN ADDITION, THE DESIGNATED SUPERVISORY PERSONNEL SHALL HAVE A MINIMUM OF EIGHT (8) HOURS ADDITIONAL SPECIALIZED TRAINING FOR MANAGING HAZARDOUS WASTE OPERATIONS IN COMPLIANCE WITH OSHA 29 CFR 1926.65/1910.120E.	
2. ANNUAL MEDICAL MONITORING IN COMPLIANCE WITH OSHA 29 CFR 1926.65	
TIDEWATER - SOIL MANAGEMENT	
1. CONTRACTOR IS DIRECTED TO SPECIFICATION SECTION 02076 - SOIL MANAGEMENT TIDEWATER, FOR INFORMATION RELATIVE TO THE TIDEWATER SITE AND - MANAGEMENT AND DISPOSAL OF SOIL - EQUIPMENT AND VEHICLE DECONTAMINATION - DUST CONTROL	
TIDEWATER - HEALTH AND SAFETY REQUIREMENTS	
1. CONTRACTOR IS DIRECTED TO SPECIFICATION SECTION 01065 - PROJECT SAFETY AND HEALTH, FOR INFORMATION RELATIVE TO THE TIDEWATER SITE.	
2. TIDEWATER HEALTH AND SAFETY REQUIREMENTS ARE ALSO INCLUDED IN APPENDIX C - NATIONAL GRID HEALTH & SAFETY REQUIREMENTS.	

BY: JAIMIE PAYNE

PLOT DATE: Thursday, June 24, 2021 3:19:56 PM

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Drawing Files\Civil\Sheet Set\PAVWT\_IIA-5\_GENERAL.dwg

### GENERAL CIVIL SYMBOLS

	NEW
	EXISTING
	FUTURE
	EXISTING TO BE REMOVED OR DEMOLISHED
	CENTERLINE
	EARTH (IN SECTION)
	COMPACTED EARTH (IN SECTION)
	SLOPE ON PAVED SURFACE
	BERM SLOPE (HORZ TO VERT)

### TOPOGRAPHY AND MAPPING SYMBOLS

	125	MAJOR CONTOURS
		MINOR CONTOURS
		TOP OF SLOPE
		TOE OF SLOPE
		PROPERTY LINE
		RIGHT-OF-WAY LINE
		EASEMENT LINE
		TEMPORARY EASEMENT LINE
		TRAIL OR DIRT ROAD
		FLOW LINE
		FLOOD HAZARD AREA
		EDGE OF WETLANDS
		GUARDRAIL (PERMANENT)
		GUARDRAIL (REMOVABLE)
		VEGETATION
		WELL

### GEOTECHNICAL SYMBOLS

	B-X	SOIL BORING LOCATION
		TEST PIT LOCATION
	XX	OBSERVATION HOLE
	MW	MONITORING WELL

### PIPING AND UTILITIES

UTILITIES (SINGLE LINE) SEE PIPE SCHEDULE FOR ADDITIONAL PIPING INFO

	G	UTILITIES (SIZE WHERE NOTED)
	G	UNDERGROUND
	G	NATURAL GAS LINE
	W	WATER
	PW	POTABLE WATER
	FIRE	FIRE SUPPLY WATER LINE
	SDR	STORM DRAIN
	SS	SANITARY SEWER
	TEL	TELEPHONE
	COMM	COMMUNICATIONS LINE
	FOC	FIBER OPTIC CABLE
	CATV	CABLE TV
	E	POWER
	UNID	UNIDENTIFIED
	ABND	ABANDONED UTILITY

	PP	POWER POLE
		BURIED ACCESS MANOLE (IN PLAN) LOCATE ON SIDE SHOWN
		BURIED ACCESS MANHOLE (IN PROFILE)
		BLOWOFF (IN PROFILE) LOCATE ON SIDE SHOWN
		BLOWOFF (IN PLAN)
		BLOWOFF (IN PROFILE)
	FH	FIRE HYDRANT (IN PLAN)
	FH	FIRE HYDRANT (IN PROFILE)
	MH	MANHOLE (IN PLAN)
	MH	MANHOLE (IN PROFILE)
	COTG PCOTG	CLEANOUT TO GRADE OR PRESSURE CLEANOUT TO GRADE (IN PLAN)
	COTG PCOTG	CLEANOUT TO GRADE OR PRESSURE CLEANOUT TO GRADE (IN PROFILE)
		GATE VALVE
		BUTTERFLY VALVE
		ECCENTRIC PLUG VALVE
		LUBRICATED PLUG VALVE

### DRAINAGE SYMBOLS

		RIPRAP
		HAY BALE
		COMPOST FILTER SOCK

### ROAD AND PAVING SYMBOLS

		ASPHALT CEMENT PAVING
		CONCRETE PAVING (HEAVY DUTY)
		GRAVEL PAVING
		CONCRETE PAVING (LIGHT DUTY) SIDEWALKS ETC...
		CONCRETE CURB
		CONCRETE CURB AND GUTTER
		DROP INLET CATCH BASIN
		CURBSIDE DROP INLET CATCH BASIN WITH LOCAL DEPRESSION
		SIDE INLET CATCH BASIN WITH LOCAL DEPRESSION
		CONCRETE WALK
		DRIVEWAY/ACCESS RAMP

### CONTROL SYMBOLS

	BM-XX	BENCH MARK
	###	SITE COORDINATES (SEE TABLE ON DRAWINGS)
	N XXXXXXXX E XXXXXXXX	SITE COORDINATES
	EL XXXX.XX	MONUMENT
		HORIZONTAL CONTROL POINT
		VERTICAL CONTROL POINT
		HORZ AND VERT CONTROL POINT
	XXX.XX	FINISHED ELEVATION
	(XXX.XX)	EXISTING ELEVATION
		DELTA

### STRUCTURES

		SITE OR RETAINING WALL
	x x	FENCE (CHAINLINK)
		FENCE (WOOD)
		STRUCTURE
		STRUCTURE (BELOW GRADE)
	CB	CATCH BASIN

### SURVEY SYMBOLS

		GAS VALVE
		WATER VALVE
		UNKNOWN VALVE
		HYDRANT
		UTILITY POLE
		UTILITY POLE WITH LIGHT
		GUY WIRE
	CB	CATCH BASIN
	DMH	DRAIN MANHOLE
	SMH	SANITARY MANHOLE
	TMH	TELEPHONE MANHOLE
	SHH	SIGNAL HAND HOLE
	EHH	ELECTRIC HAND HOLE
		SIGN
	ER	ELECTRIC RISER
	-49-	EXISTING CONTOUR
		DECIDUOUS TREE
		CONIFEROUS TREE
		DECIDUOUS SHRUB
		DECIDUOUS SHRUB
		CONIFEROUS SHRUB
		BORING
	*	LIGHT
		LIGHT POLE
	LA	LANDSCAPED AREA
	CR & DWS	CURB RAMP & DETECTABLE WARNING SYSTEM
	TLD	TRAFFIC LOOP DETECTOR
	IHH	IRRIGATION HANDHOLE
		TEST PIT
	OW	OBSERVATION WELL

REV 050215

SCALE	NO SCALE
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
DESIGNED	C. CRONIN
DRAWN	J. PAYNE
CHECKED	J. D'ALESSIO

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
CIVIL

OF-217 CONSOLIDATION CONDUIT  
SYMBOLS

SHEET  
GC-2  
195130227

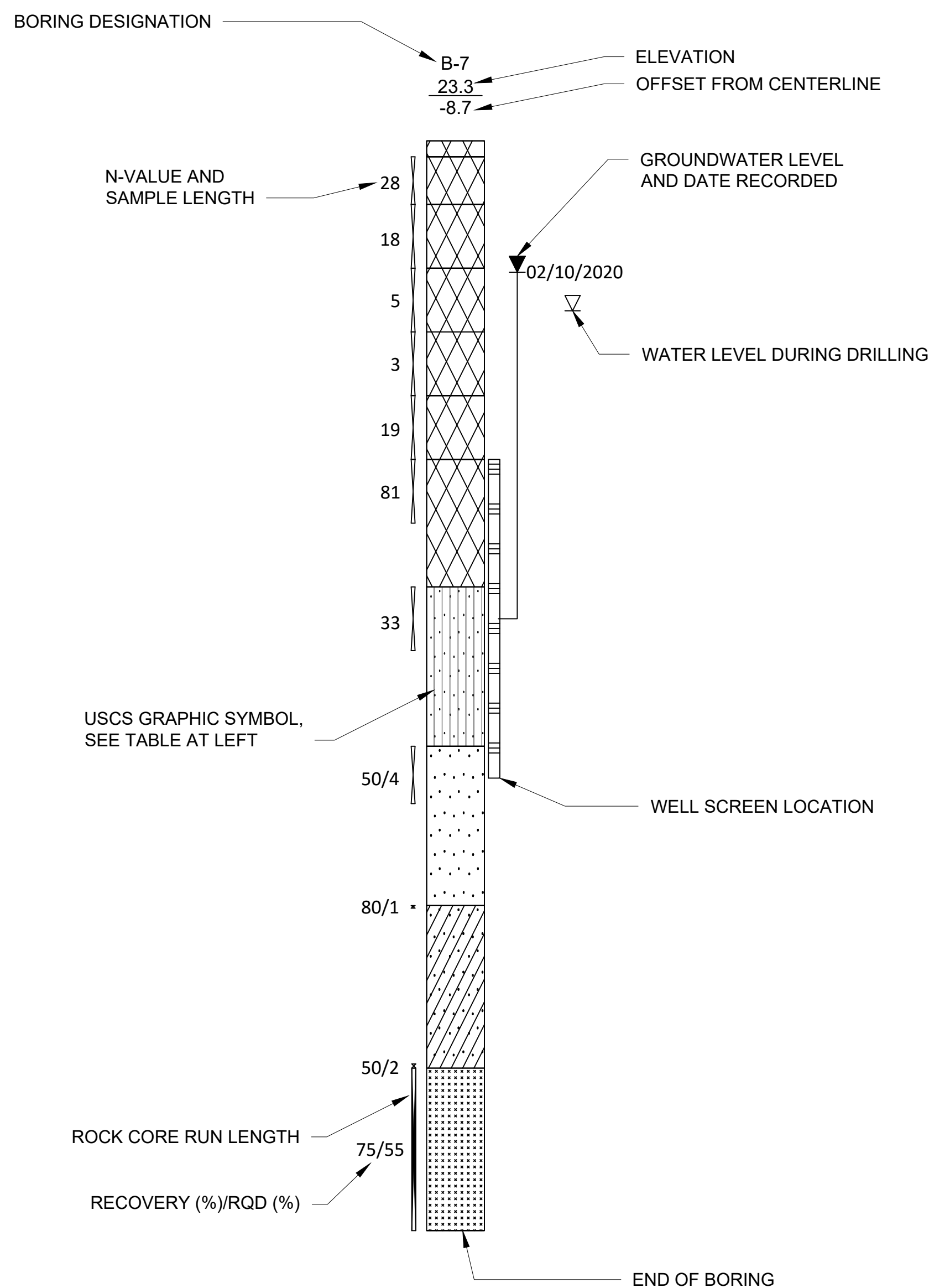
BY: JAMIE PAYNE

PLOT DATE: Thursday, June 24, 2021 3:19:57 PM

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UNIFIED SOIL CLASSIFICATION SYSTEM (Based on ASTM D2488 & D2487)						
MAJOR DIVISIONS		GROUP/GRAPHIC SYMBOL	TYPICAL DESCRIPTION			
COARSE-GRAINED SOILS (50% or more retained on No. 200 sieve)	GRAVELS (more than 50% retained on No. 4 sieve)	CLEAN GRAVELS (less than 5% fines)	GW		WELL-GRADED GRAVEL	
			GP		POORLY GRADED GRAVEL	
		GRAVELS (with 5 to 12% fines)	GW-GM		WELL-GRADED GRAVEL WITH SILT	
			GW-GC		WELL-GRADED GRAVEL WITH CLAY	
			GP-GM		POORLY GRADED GRAVEL WITH SILT	
			GP-GC		POORLY GRADED GRAVEL WITH CLAY	
	GRAVELS WITH FINES (more than 12% fines)	GM		SILTY GRAVEL		
		GC		CLAYEY GRAVEL		
		GC-GM		SILTY CLAYEY GRAVEL		
		CLEAN SANDS (less than 5% fines)	SW		WELL-GRADED SAND	
			SP		POORLY GRADED SAND	
			SANDS (less than 50% retained on No. 4 sieve)	SW-SM		WELL-GRADED SAND WITH SILT
	SW-SC			WELL-GRADED SAND WITH CLAY		
	SP-SM			POORLY GRADED SAND WITH SILT		
	SP-SC			POORLY GRADED SAND WITH CLAY		
	SANDS WITH FINES (more than 12% fines)	SM			SILTY SAND	
		SC			CLAYEY SAND	
		SC-SM		CLAYEY SAND WITH SILT		
FINE-GRAINED SOILS (50% or more passes No. 200 sieve)	SILTS & CLAYS (liquid limit less than 50)	INORGANIC	ML		SILT	
			CL		LEAN CLAY	
			CL-ML		CLAY WITH SILT	
	SILTS & CLAYS (liquid limit greater than 50)	ORGANIC	OL		LOW PLASTICTIY ORGANIC CLAY	
			INORGANIC	MH		ELASTIC SILT
				CH		FAT CLAY
OH		HIGH PLASTICTIY ORGANIC CLAY				
HIGHLY ORGANIC SOILS	PRIMARILY ORGANIC MATTER	PT		PEAT		

**BORING LEGEND:**



**NOTES:**

1. ALL ELEVATIONS ARE IN FEET AND REFER TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NVDG29).
2. POSITIVE OFFSET = RIGHT OF CENTERLINE, LOOKING UP STATION.
3. NEGATIVE OFFSET = LEFT OF CENTERLINE, LOOKING UP STATION.
4. THE SOIL STRATIGRAPHY SHOWN IS GENERALIZED INTERPRETATION BASED ON THE SAMPLES COLLECTED WITHIN EACH BORING. NO ATTEMPT WAS MADE TO INTERPOLATE SOIL STRATIGRAPHY BETWEEN BORINGS AS THE DISTRIBUTION OF MATERIALS IS VARIABLE AND NON-UNIFORM IN BOTH VERTICAL AND HORIZONTAL DIRECTIONS.

**BEDROCK LEGEND:**

GRAPHIC SYMBOL	DESCRIPTION
	SILTSTONE
	SANDSTONE
	CONGLOMERATE

REV	DATE	BY	DESCRIPTION

SCALE	WARNING	DESIGNED C. CRONIN
NO SCALE	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DRAWN J. PAYNE
		CHECKED J. D'ALELIO

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

Stantec PARE

NBC CONTRACT NO 308.05C  
CIVIL

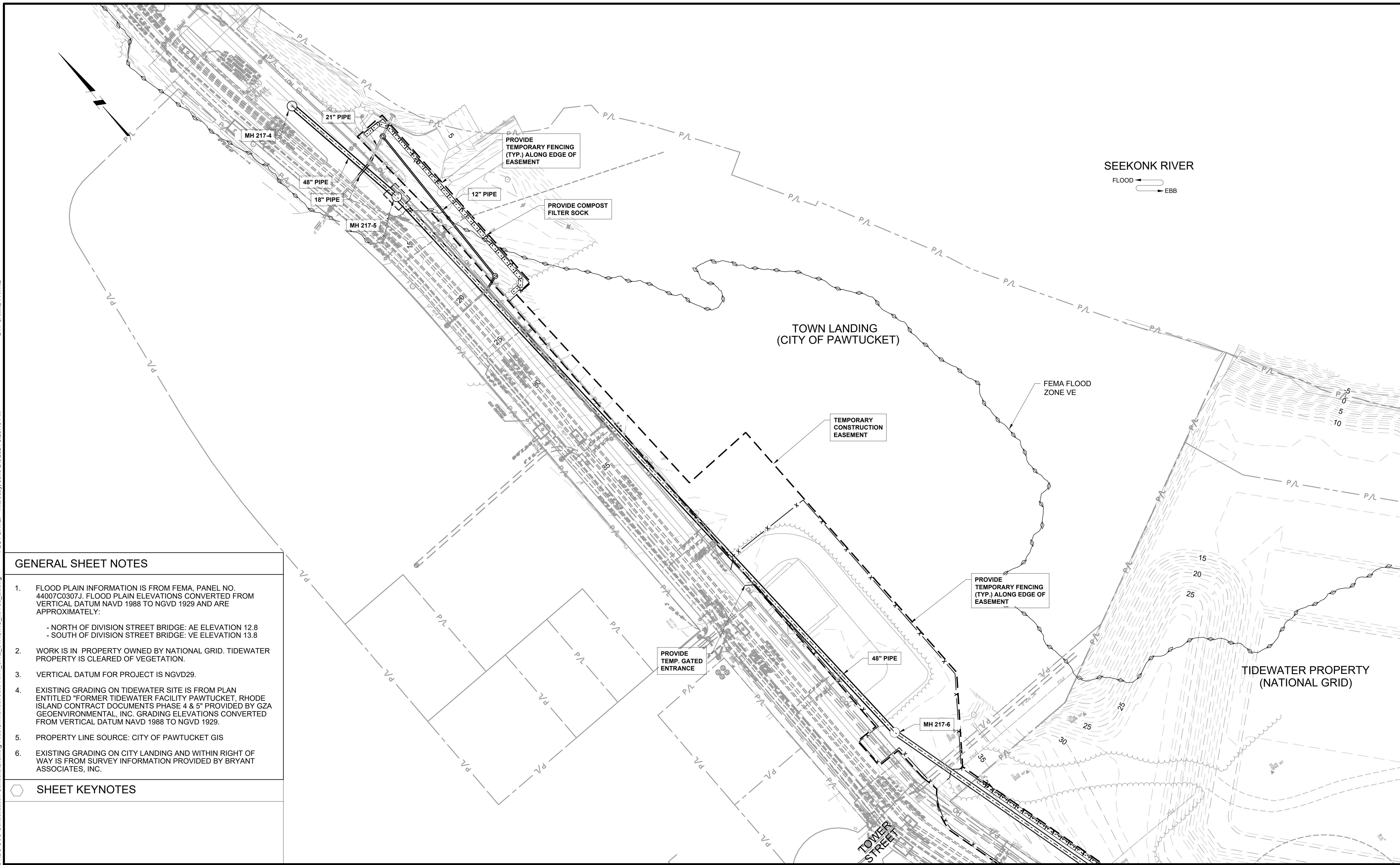
OF-217 CONSOLIDATION CONDUIT  
LEGEND AND NOTES



BY: JAMIE PAYNE

PLOT DATE: Thursday, June 24, 2021 3:20:10 PM

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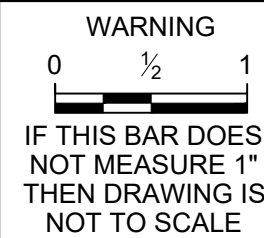
GENERAL SHEET NOTES

- FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
  - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
  - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
- WORK IS IN PROPERTY OWNED BY NATIONAL GRID. TIDEWATER PROPERTY IS CLEARED OF VEGETATION.
- VERTICAL DATUM FOR PROJECT IS NGVD29.
- EXISTING GRADING ON TIDEWATER SITE IS FROM PLAN ENTITLED "FORMER TIDEWATER FACILITY PAWTUCKET, RHODE ISLAND CONTRACT DOCUMENTS PHASE 4 & 5" PROVIDED BY GZA GEOENVIRONMENTAL, INC. GRADING ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929.
- PROPERTY LINE SOURCE: CITY OF PAWTUCKET GIS
- EXISTING GRADING ON CITY LANDING AND WITHIN RIGHT OF WAY IS FROM SURVEY INFORMATION PROVIDED BY BRYANT ASSOCIATES, INC.

SHEET KEYNOTES

REV	DATE	BY	DESCRIPTION
1	10/21/2020	JP	ALIGNMENT UPDATE TO ACCOMMODATE STADIUM

SCALE  
1" = 40'



DESIGNED: C. CRONIN  
DRAWN: J. PAYNE  
CHECKED: C. CRONIN

FINAL DESIGN PHASE - JULY 2021

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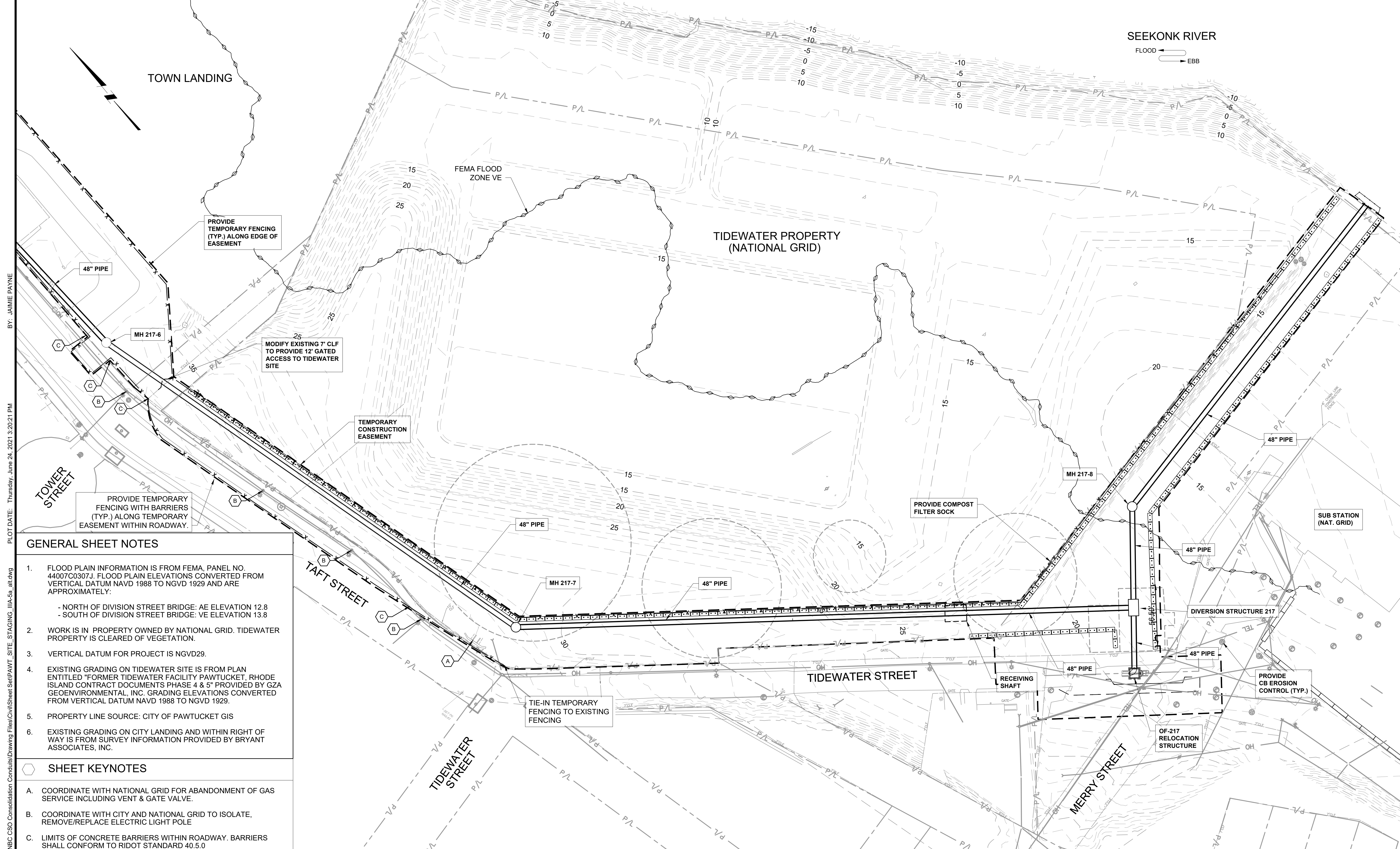
NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM



NBC CONTRACT NO 308.05C  
CIVIL

OF-217 CONSOLIDATION CONDUIT  
LIMITS OF WORK - TOWN LANDING SITE

SHEET  
C-1  
195130227



DWG FILE: J:\6412 NBC CSO Consolidation Drawings\Drawings\Sheet\PAWT\_Site\_Staging\_11A-5a\_all.dwg  
 PLOT DATE: Thursday, June 24, 2021 3:20:21 PM  
 BY: JAMIE PAYNE

**GENERAL SHEET NOTES**

1. FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:  
 - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8  
 - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
2. WORK IS IN PROPERTY OWNED BY NATIONAL GRID. TIDEWATER PROPERTY IS CLEARED OF VEGETATION.
3. VERTICAL DATUM FOR PROJECT IS NGVD29.
4. EXISTING GRADING ON TIDEWATER SITE IS FROM PLAN ENTITLED "FORMER TIDEWATER FACILITY PAWTUCKET, RHODE ISLAND CONTRACT DOCUMENTS PHASE 4 & 5" PROVIDED BY GZA GEOENVIRONMENTAL, INC. GRADING ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929.
5. PROPERTY LINE SOURCE: CITY OF PAWTUCKET GIS
6. EXISTING GRADING ON CITY LANDING AND WITHIN RIGHT OF WAY IS FROM SURVEY INFORMATION PROVIDED BY BRYANT ASSOCIATES, INC.

**SHEET KEYNOTES**

- A. COORDINATE WITH NATIONAL GRID FOR ABANDONMENT OF GAS SERVICE INCLUDING VENT & GATE VALVE.
- B. COORDINATE WITH CITY AND NATIONAL GRID TO ISOLATE, REMOVE/REPLACE ELECTRIC LIGHT POLE
- C. LIMITS OF CONCRETE BARRIERS WITHIN ROADWAY. BARRIERS SHALL CONFORM TO RIDOT STANDARD 40.5.0

REV	DATE	BY	DESCRIPTION
1	10/21/2020	JP	ALIGNMENT UPDATE TO ACCOMMODATE STADIUM

SCALE  
1" = 40'

WARNING  
0 1/2 1  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED: C. CRONIN  
 DRAWN: J. PAYNE  
 CHECKED: C. CRONIN

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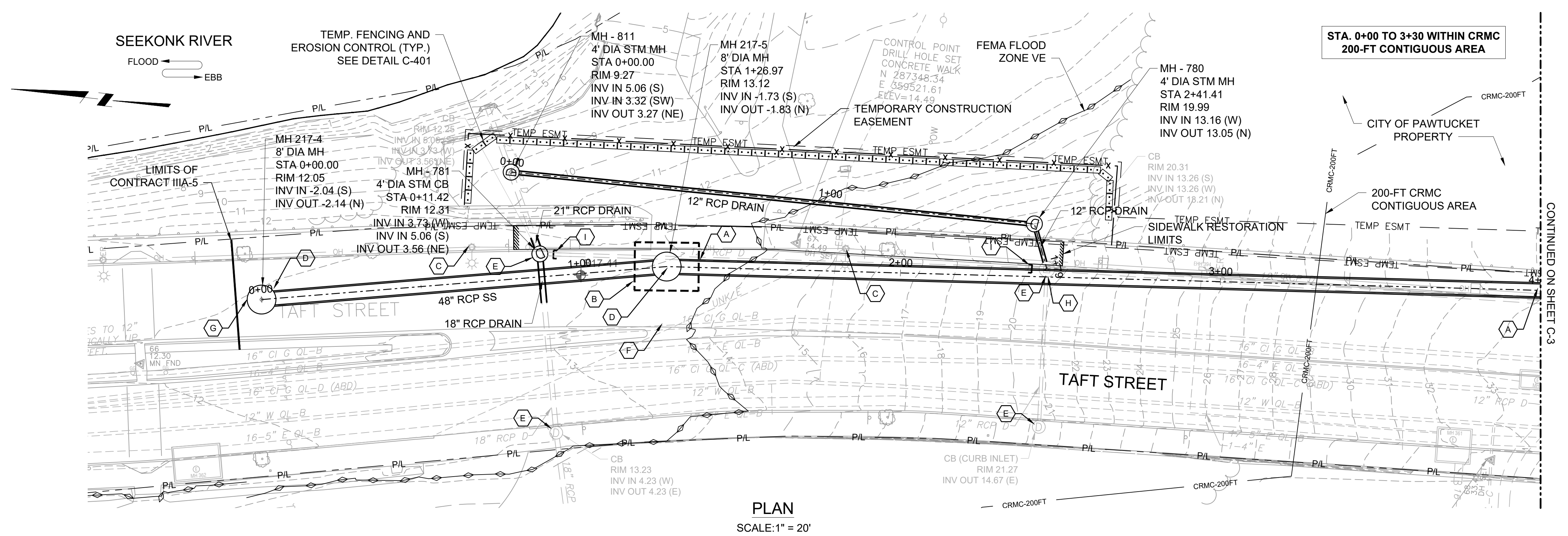


NARRAGANSETT BAY COMMISSION  
 PHASE III COMBINED SEWER  
 OVERFLOW PROGRAM

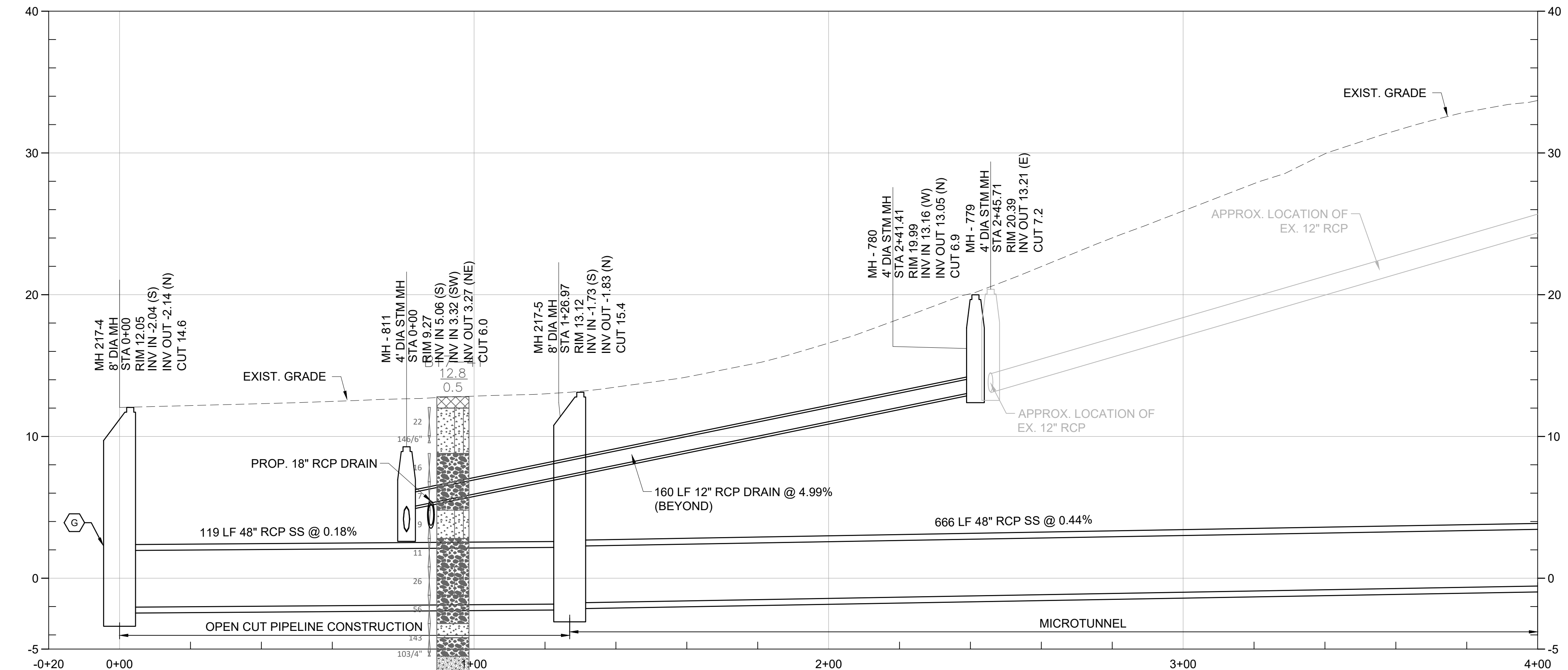
NBC CONTRACT NO 308.05C  
 CIVIL

OF-217 CONSOLIDATION CONDUIT  
 LIMITS OF WORK - TIDEWATER SITE

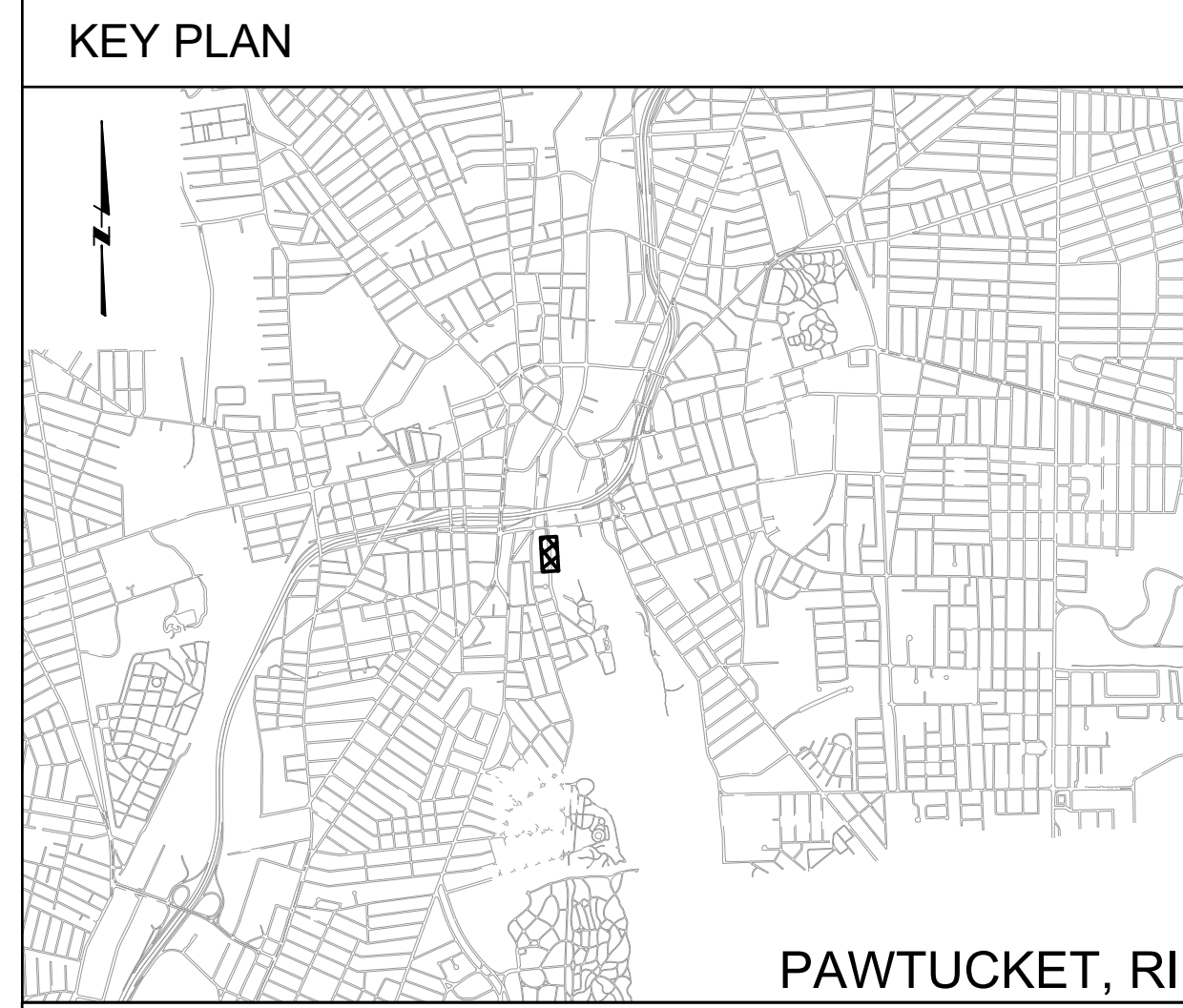
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PLAN  
SCALE: 1" = 20'



PROFILE  
SCALE: 1" = 20' (H)  
1" = 5' (V)



- ### GENERAL SHEET NOTES
- UTILITY INFORMATION DEPICTED, PROVIDED BY BSI ENGINEERING INC.
  - FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
    - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
    - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
  - VERTICAL DATUM FOR PROJECT IS NGVD29.

- ### SHEET KEYNOTES
- MICROTUNNEL: STATION 1+26 TO STATION 4+00
  - EXCAVATION FOR MH 217-5 TO BE CONSTRUCTED AS RECEIVING PIT FOR MICROTUNNEL OPERATION. SOLDIER PILE AND LAGGING SOE SYSTEM SHOWN IS CONCEPTUAL. CONTRACTOR IS FULLY RESPONSIBLE FOR SELECTING SPECIFIC SOE SYSTEM TYPE AND DESIGNING SOE IN ACCORDANCE WITH CRITERIA IN THE CONTRACT DOCUMENTS.
  - COORDINATE WITH NATIONAL GRID FOR TEMPORARY POWER SHUT OFF FOR OVERHEAD WIRES AND SUPPORT POLES AS REQUIRED TO FACILITATE INSTALLATION OF RECEIVING SHAFT, EQUIPMENT, AND STRUCTURES. PROVIDE TEMPORARY STREET LIGHTING FOR DURATION OF POWER INTERRUPTION AND FOR FULL LENGTH OF STREET WHERE LIGHTING HAS BEEN IMPACTED.
  - PROVIDE SEALED AND BOLTED MANHOLE COVERS
  - TYPICAL CATCH BASIN EROSION CONTROL
  - SEE "GAS MAIN ENCORACHMENT COORDINATION" NOTES ON SHEET GC-1.
  - PROVIDE PENETRATION IN NORTH FACE OF MANHOLE TO RECEIVE 48" RCP PIPE TO BE INSTALLED BY OTHERS. CONSTRUCT TEMPORARY BRICK BULKHEAD IN PENETRATION. INVERT TO BE CONSTRUCTED BY OTHERS.
  - MODIFY EXISTING CATCH BASIN TO ACCEPT NEW DISCHARGE PIPE AND ABANDON EXISTING DISCHARGE PIPE
  - PLUG & ABANDON EXISTING DRAIN PIPE AND FILL ABANDONED PIPE WITH CLSM.

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE AS SHOWN	WARNING IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED C. CRONIN DRAWN J. PAYNE CHECKED J. D'ALLESIO
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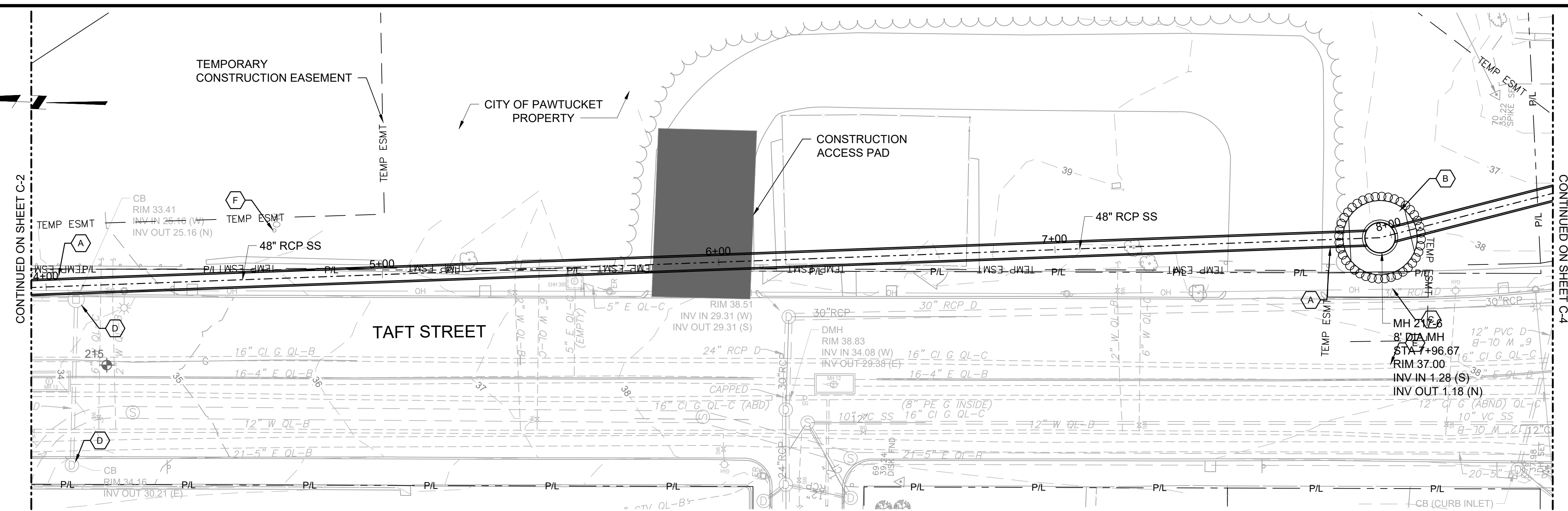
NBC CONTRACT NO 308.05C  
CIVIL

OF-217 CONSOLIDATION CONDUIT  
PLAN AND PROFILE I: STA 0+00 - 4+00

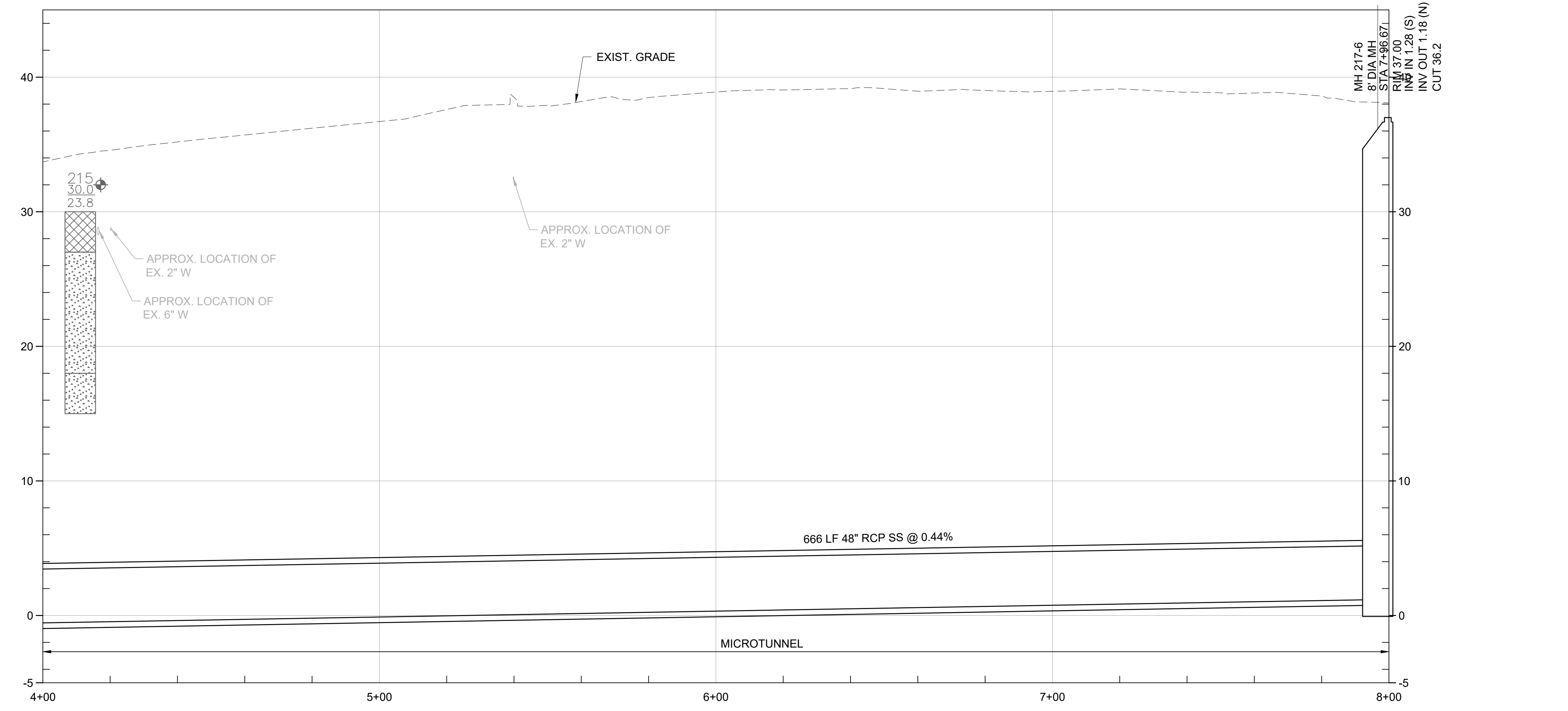
SHEET  
C-3  
195130227

BY: JAMIE PAYNE

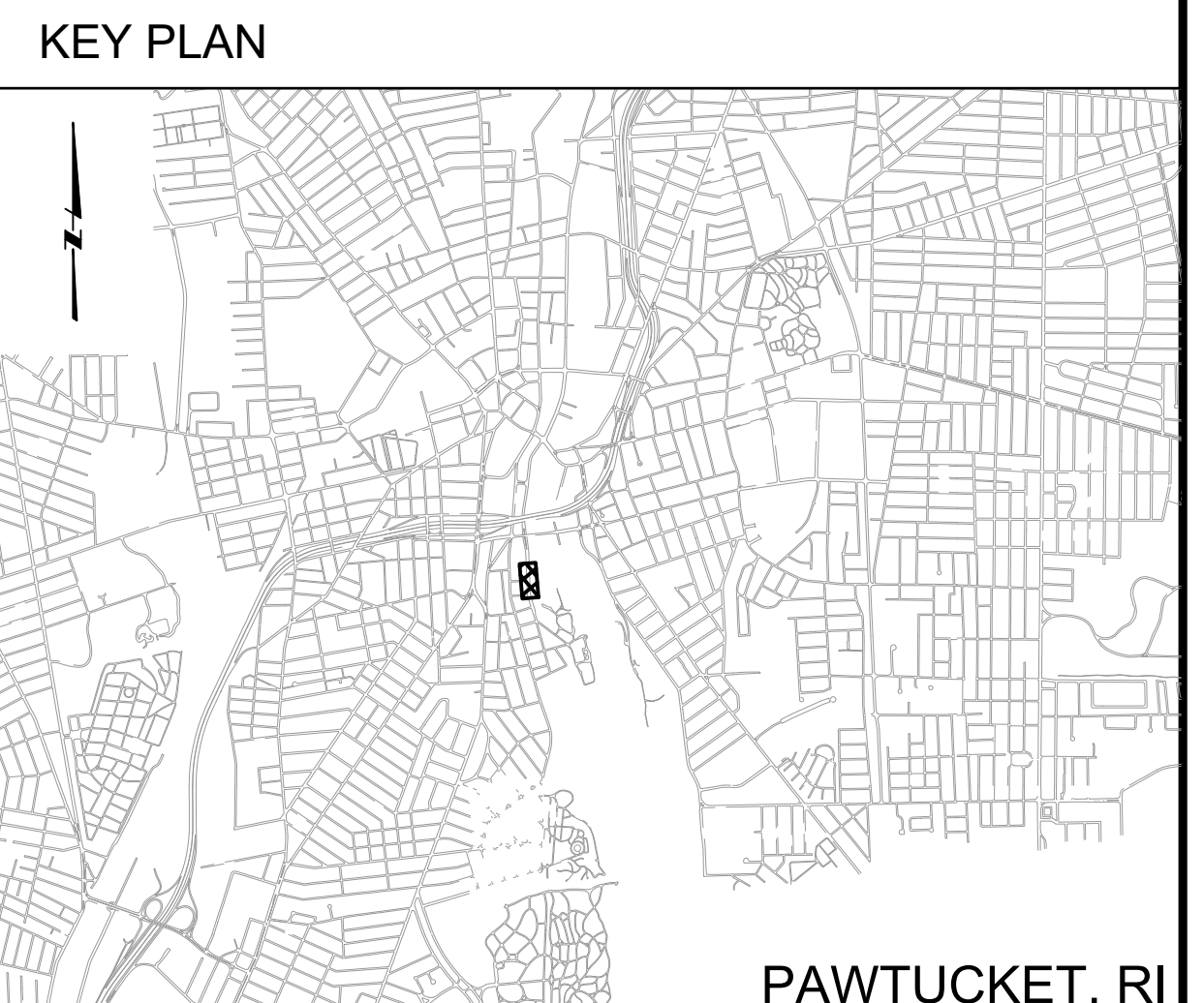
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PLAN  
SCALE: 1" = 20'



PROFILE  
SCALE: 1" = 20' (H)  
1" = 5' (V)



- GENERAL SHEET NOTES**
- UTILITY INFORMATION DEPICTED, PROVIDED BY BSI ENGINEERING INC.
  - FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
    - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
    - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
  - WORK IS IN PROPERTY OWNED BY THE CITY OF PAWTUCKET
  - VERTICAL DATUM FOR PROJECT IS NGVD29.

- SHEET KEYNOTES**
- MICROTUNNEL: STATION 4+00 TO STATION 8+00
  - EXCAVATION FOR MH 217-6 TO BE CONSTRUCTED AS WORKING SHAFT AND RECEIVING PIT FOR MICROTUNNEL OPERATION. SUPPORT OF EXCAVATION LIMITS BASED ON SECANT PILE CONSTRUCTION. CONTRACTOR RESPONSIBLE FOR DESIGNING SOE IN ACCORDANCE WITH CRITERIA IN THE CONTRACT DOCUMENTS.
  - COORDINATE WITH NATIONAL GRID FOR TEMPORARY POWER SHUT OFF FOR OVERHEAD WIRES AND SUPPORT POLES AS REQUIRED TO FACILITATE INSTALLATION OF RECEIVING SHAFT, EQUIPMENT, AND STRUCTURES. PROVIDE TEMPORARY STREET LIGHTING FOR DURATION OF POWER INTERRUPTION AND FOR FULL LENGTH OF STREET WHERE LIGHTING HAS BEEN IMPACTED.
  - TYPICAL CATCH BASIN EROSION CONTROL
  - SEE "GAS MAIN ENCROACHMENT COORDINATION" NOTES ON SHEET GC-1.
  - PRIOR TO MICROTUNNEL OPERATIONS FILL EXISTING MONITORING WELL WITH GROUT.

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE: AS SHOWN

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED: C. CRONIN  
DRAWN: B. MARINI  
CHECKED: J. D'ALELIO

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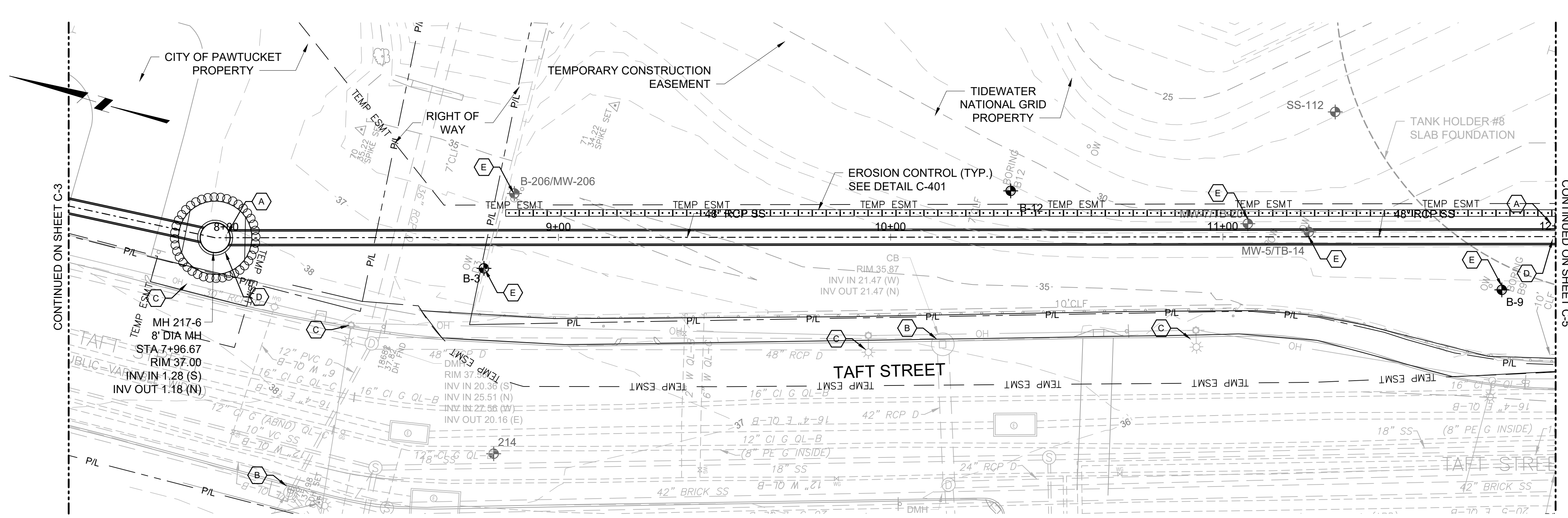


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CIVIL

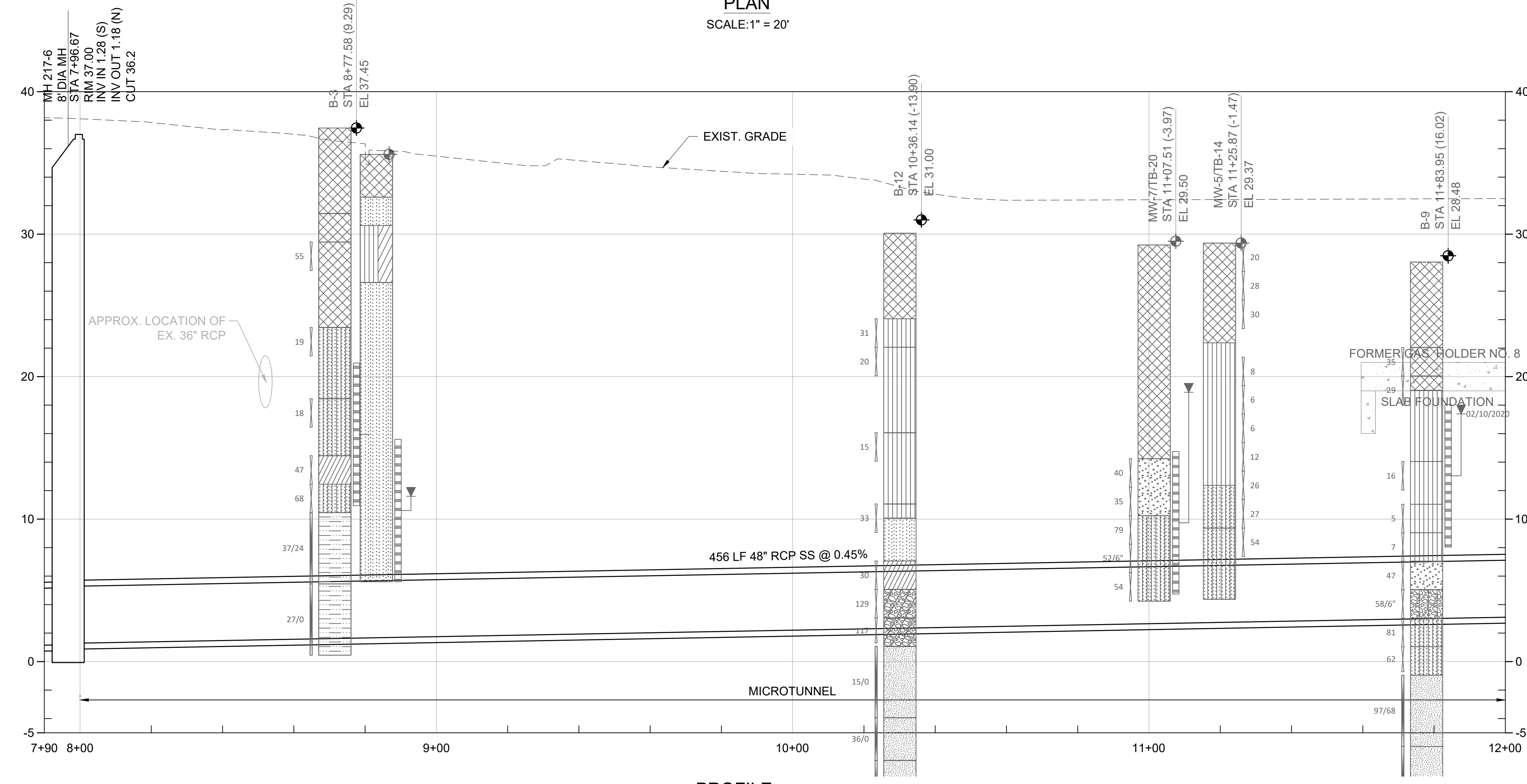
OF-217 CONSOLIDATION CONDUIT  
PLAN AND PROFILE II: STA 4+00 - 8+00

BY: JAMIE PAYNE

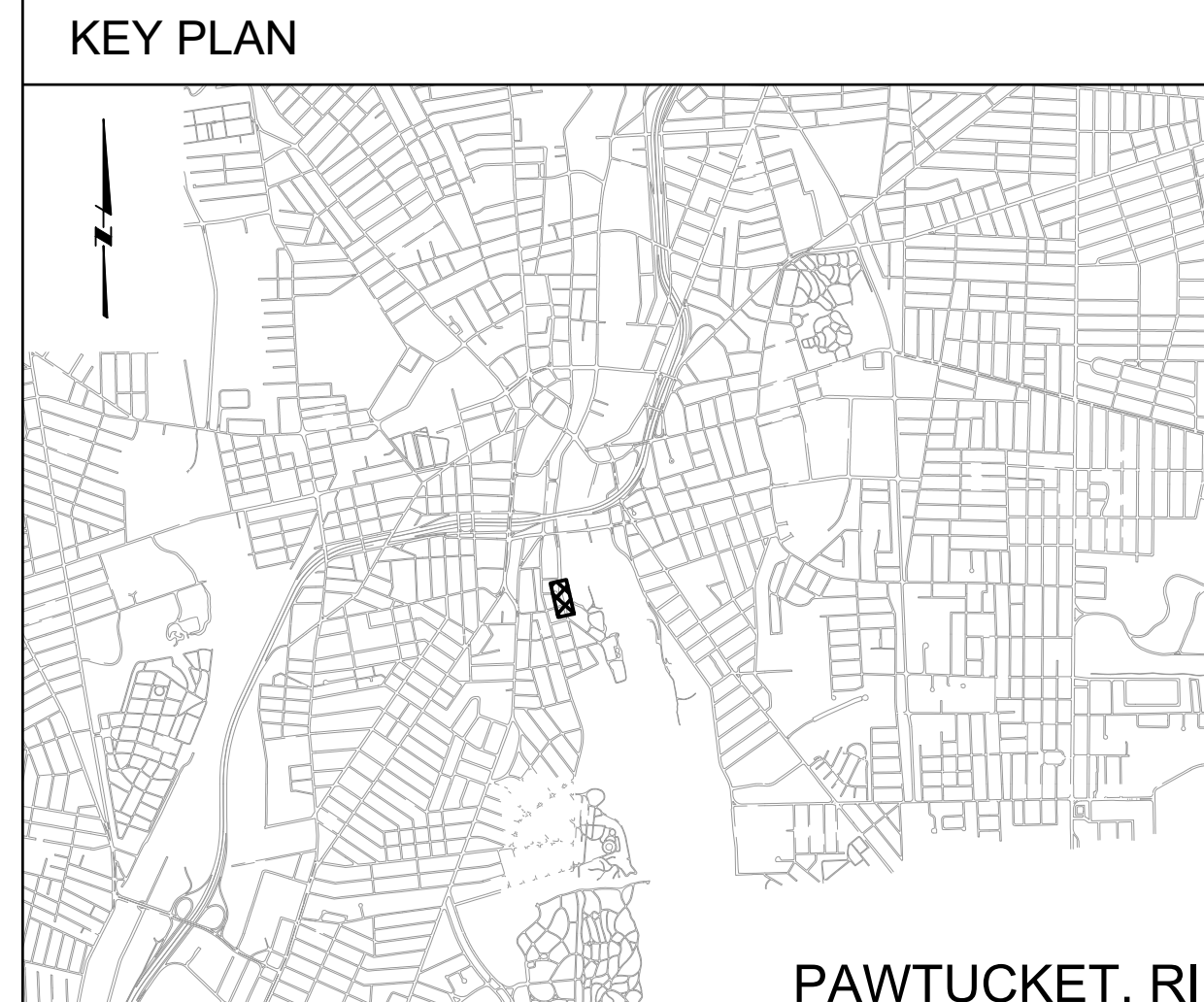
DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Civil\Sheet\Set\PAWT\_Site\_Plan\_& Profile\_III-A-5\_ALT3.dwg | LOT DATE: Thursday, June 24, 2021 4:59:20 PM



PLAN  
SCALE: 1" = 20'



PROFILE  
SCALE: 1" = 20' (H)  
1" = 5' (V)



- GENERAL SHEET NOTES**
- UTILITY INFORMATION DEPICTED, PROVIDED BY BSI ENGINEERING INC.
  - FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
    - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
    - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
  - WORK IS IN PROPERTY OWNED BY NATIONAL GRID/ CITY OF PAWTUCKET.
  - VERTICAL DATUM FOR PROJECT IS NGVD29.
  - EXISTING CONTOURS ARE APPROXIMATE.

- SHEET KEYNOTES**
- MICROTUNNEL: STATION 8+00 TO STATION 12+00
  - TYPICAL CATCH BASIN EROSION CONTROL
  - COORDINATE WITH NATIONAL GRID FOR TEMPORARY POWER SHUT OFF FOR OVERHEAD WIRES AND SUPPORT POLES AS REQUIRED TO FACILITATE INSTALLATION OF RECEIVING SHAFT, EQUIPMENT, AND STRUCTURES. PROVIDE TEMPORARY STREET LIGHTING FOR DURATION OF POWER INTERRUPTION AND FOR FULL LENGTH OF STREET WHERE LIGHTING HAS BEEN IMPACTED.
  - CONCRETE PIPE AND MANHOLES ON TIDEWATER SITE ARE TO BE LINED WITH GEOPOLYMER LINING SYSTEM: STATION 8+00 TO 12+00. MH 217-6 IS NOT TO BE LINED.
  - PRIOR TO MICROTUNNEL OPERATIONS FILL EXISTING MONITORING WELL WITH GROUT, COORDINATE WITH NATIONAL GRID.

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE: AS SHOWN

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED: C. CRONIN  
DRAWN: B. MARINI  
CHECKED: J. D'ALESIO

FINAL DESIGN PHASE - JULY 2021

NOT FOR CONSTRUCTION

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

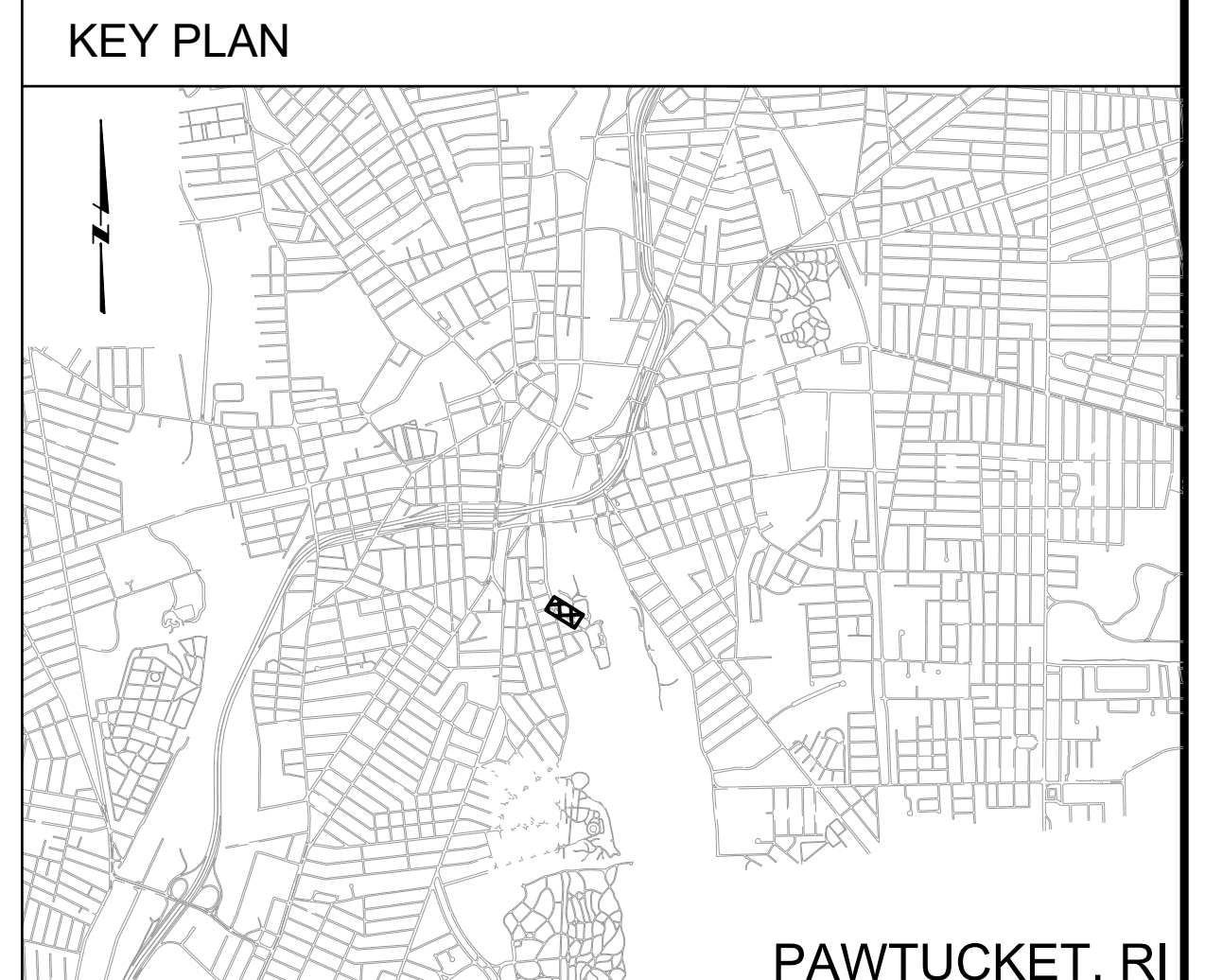
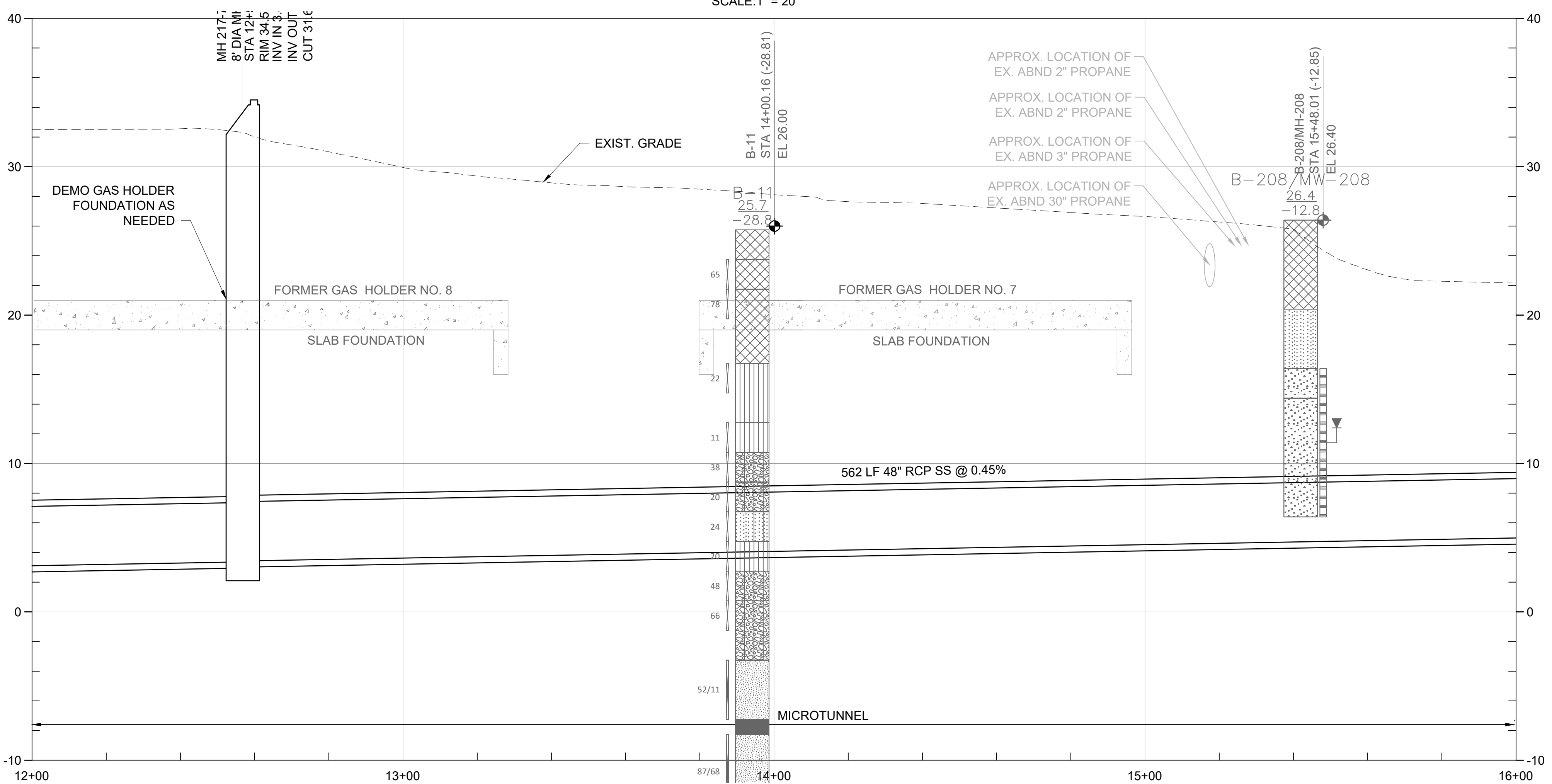
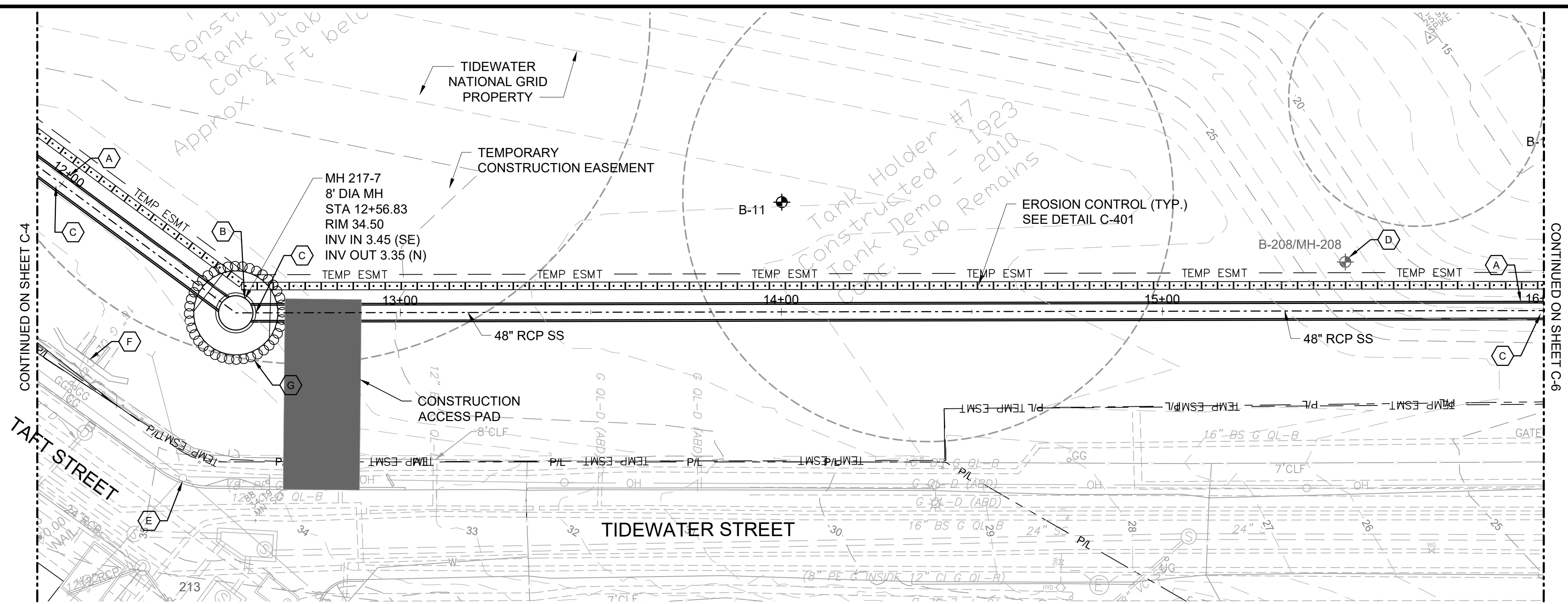
NBC CONTRACT NO 308.05C  
CIVIL

OF-217 CONSOLIDATION CONDUIT  
PLAN AND PROFILE III: STA 8+00 - 12+00

SHEET  
C-5  
195130227

BY: JAMIE PAYNE

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Drawings\Files\Civil\Sheet\Set\PAWT\_SITE\_PLAN & PROFILE.dwg; LOT DATE: Thursday, June 24, 2021 5:00:04 PM



- GENERAL SHEET NOTES**
- UTILITY INFORMATION DEPICTED, PROVIDED BY NATIONAL GRID
  - FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
    - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
    - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
  - WORK IS IN PROPERTY OWNED BY NATIONAL GRID
  - VERTICAL DATUM FOR PROJECT IS NGVD29.
  - EXISTING CONTOURS ARE APPROXIMATE.
  - TANK HOLDER NO. 7 & 8 FOUNDATION MATERIALS AND CONFIGURATION ARE APPROXIMATE BASED ON INFORMATION OBTAINED FROM THE OWNER. DRAWINGS NOT AVAILABLE

- SHEET KEYNOTES**
- MICROTUNNEL: STATION 12+00 TO STATION 16+00
  - EXCAVATION AT MH 217-7 TO BE CONSTRUCTED AS WORKING SHAFT IN SUPPORT OF MICROTUNNEL OPERATION. SECANT PILE SOE SYSTEM SHOWN. CONTRACTOR IS RESPONSIBLE FOR DESIGNING SOE IN ACCORDANCE WITH CRITERIA IN THE CONTRACT DOCUMENTS. EXISTING SOIL CAP DISTURBED BY THE EXCAVATION SHALL BE RESTORED IN ACCORDANCE WITH XXX.
  - CONCRETE PIPE AND MANHOLES ON TIDEWATER SITE ARE TO BE LINED WITH GEOPOLYMER LINING SYSTEM: STATION 12+00 TO 16+00
  - PRIOR TO MICROTUNNEL OPERATIONS FILL EXISTING MONITORING WELL WITH GROUT. COORDINATE WITH NATIONAL GRID.
  - SUPPORT POLE IN COORDINATION WITH NATIONAL GRID IF GUY WIRE IS REMOVED DURING CONSTRUCTION.
  - COORDINATE WITH NATIONAL GRID FOR ABANDONMENT OF GAS SERVICE INCLUDING VENT & GATE VALVE.
  - DEMO EXISTING CONCRETE TANK HOLDER FOR INSTALLATION OF SECANT PILES AND WORKING SHAFT.

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE AS SHOWN

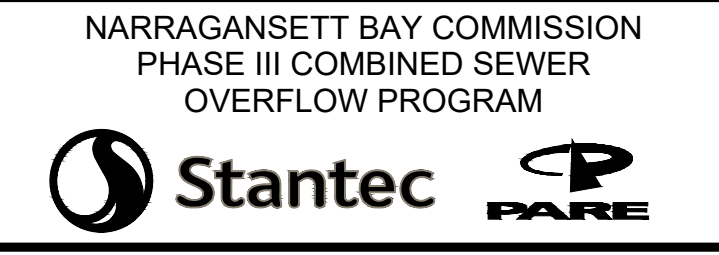
WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED: C. CRONIN  
DRAWN: B. MARINI  
CHECKED: J. D'ALESIO

FINAL DESIGN PHASE - JULY 2021

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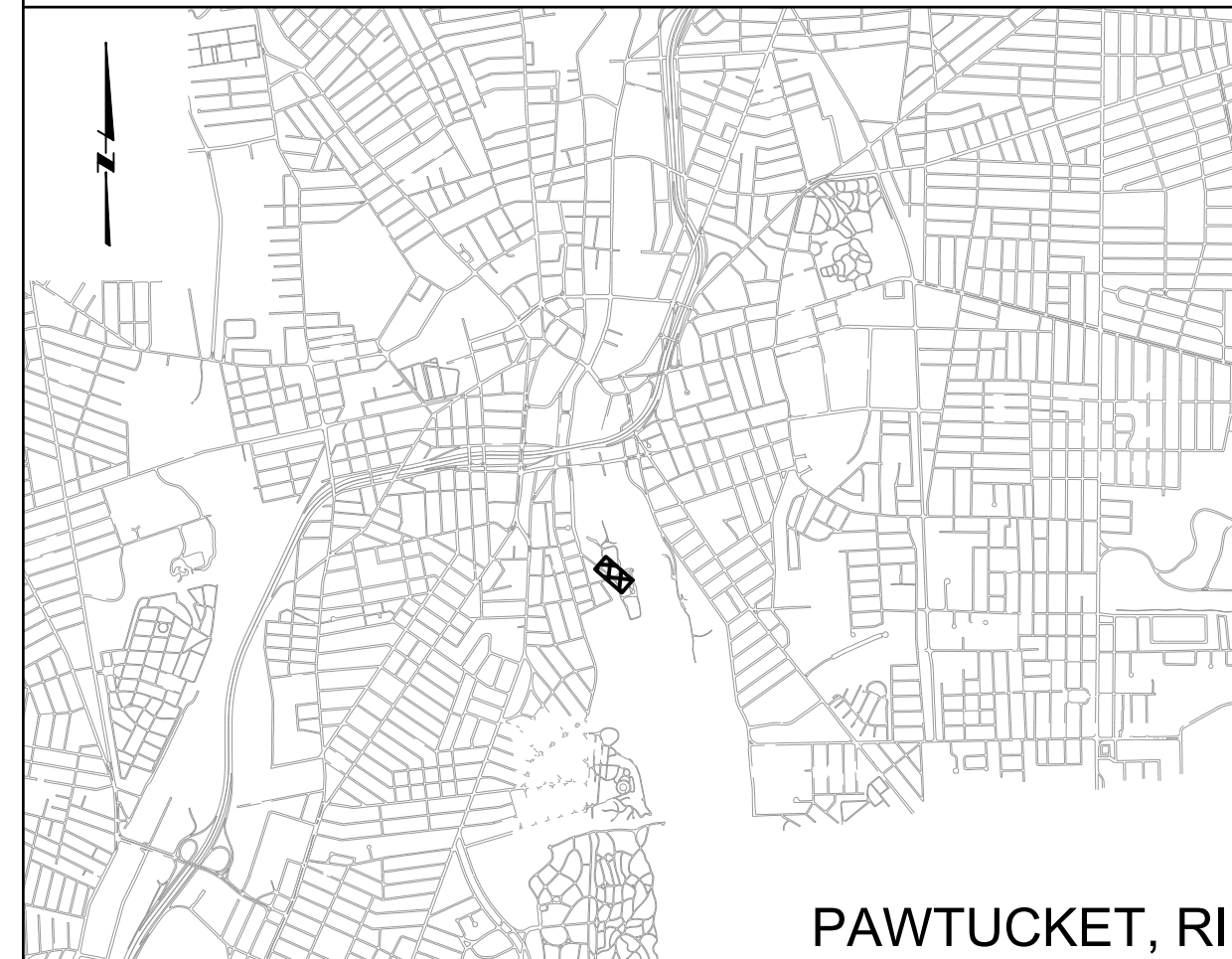
NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
CIVIL

OF-217 CONSOLIDATION CONDUIT  
PLAN AND PROFILE IV: STA 12+00 - 16+00

SHEET C-6  
195130227

KEY PLAN



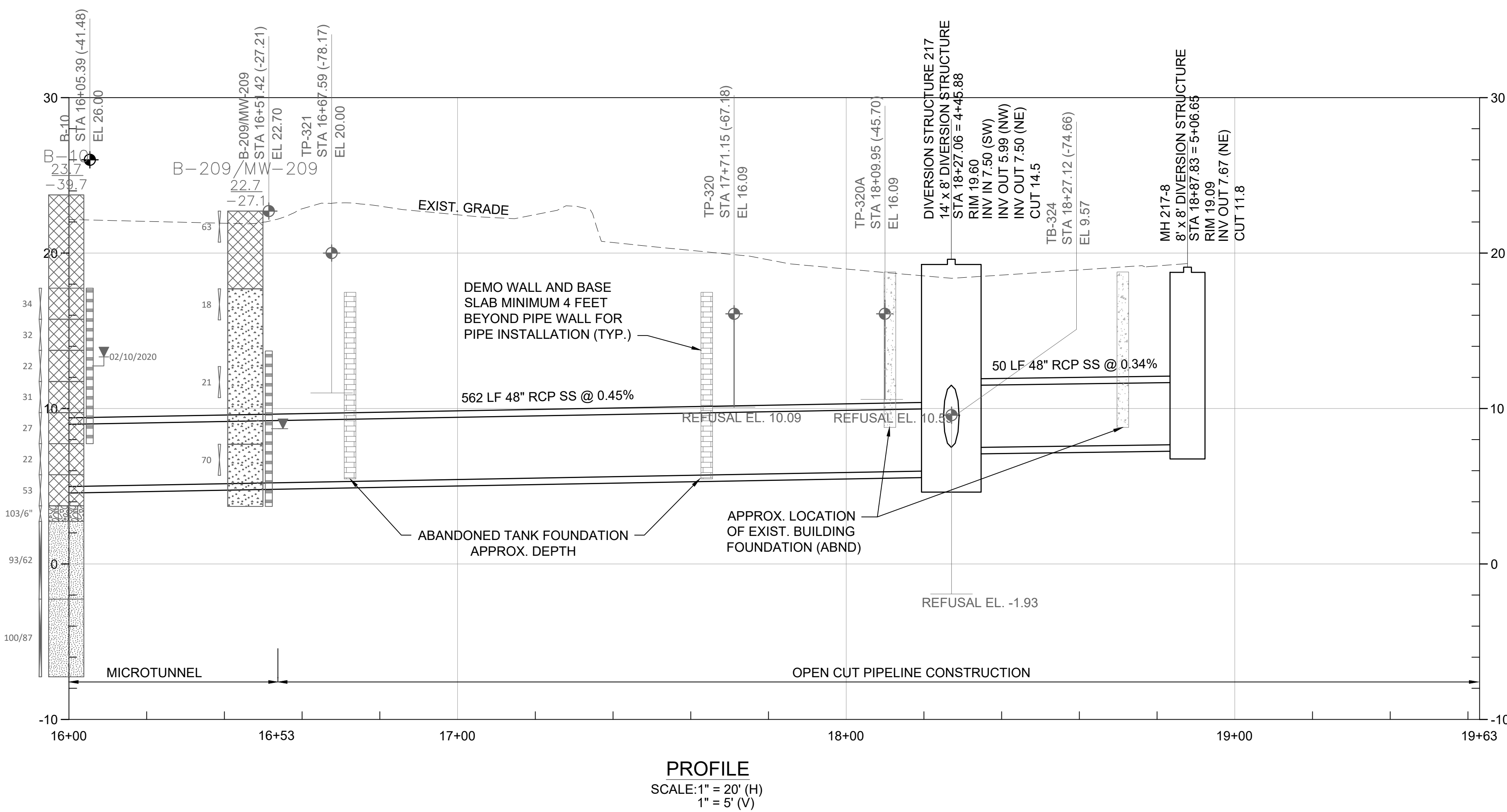
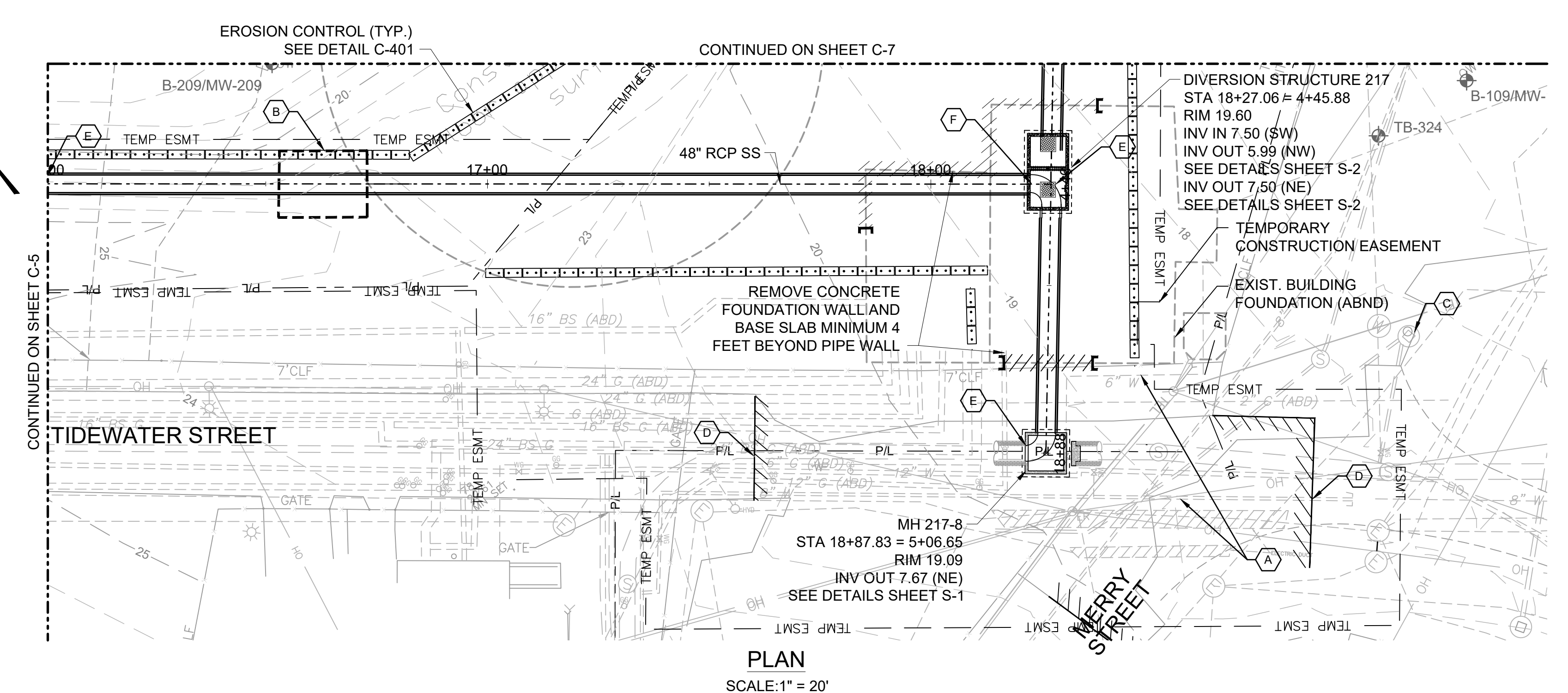
PAWTUCKET, RI

GENERAL SHEET NOTES

- UTILITY INFORMATION DEPICTED, PROVIDED BY NATIONAL GRID
- FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
  - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
  - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
- WORK IS IN PROPERTY OWNED BY NATIONAL GRID
- RELIEF HOLDER 4: APPROX. DEPTH INFORMATION BASED ON TEST PIT PERFORMED BY OTHERS AND INCLUDED IN PROJECT SPECIFICATIONS AS APPENDIX F. INFORMATION BEYOND DEPTH DEPICTED IS UNKNOWN.
- VERTICAL DATUM FOR PROJECT IS NGVD29.
- EXISTING CONTOURS ARE APPROXIMATE.
- EXISTING SOIL CAP DISTURBED BY OPEN CUT PIPELINE CONSTRUCTION EXCAVATION SHALL BE RESTORED IN ACCORDANCE WITH XXX.

SHEET KEYNOTES

- A. RELOCATE WATER MAIN: STATION 18+88. SEE SHEET C-8 FOR WATER MAIN REPLACEMENT.
- B. SOLDIER PILE AND LAGGING SOE SYSTEM SHOWN IS CONCEPTUAL. CONTRACTOR IS RESPONSIBLE FOR SELECTING SOE SYSTEM TYPE AND DESIGNING SOE IN ACCORDANCE WITH CRITERIA IN THE CONTRACT DOCUMENTS.
- C. TYPICAL CATCH BASIN EROSION CONTROL
- D. PAVEMENT SAW-CUT LIMIT
- E. CONCRETE PIPE, STRUCTURES AND MANHOLES ON TIDEWATER STREET ARE TO BE LINED WITH GEOPOLYMER LINING SYSTEM: STATION 16+00 TO 18+88
- F. CONSTRUCT TEMPORARY BRICK BULKHEAD IN NORTHWEST FACE CONSOLIDATION CONDUIT PENETRATION OF THE DIVERSION STRUCTURE. SEE DETAIL SHEET S-2.



BY: JAMIE PAYNE

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Civil\Sheet\Set\PAWT\_SITE\_PLAN\_&\_PROFILE\_ILM-5\_ALT3.dwg; LOT DATE: Thursday, June 24, 2021 5:00:41 PM

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE	AS SHOWN	WARNING	DESIGNED C. CRONIN
		IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DRAWN B. MARINI
			CHECKED J. D'ALESIO

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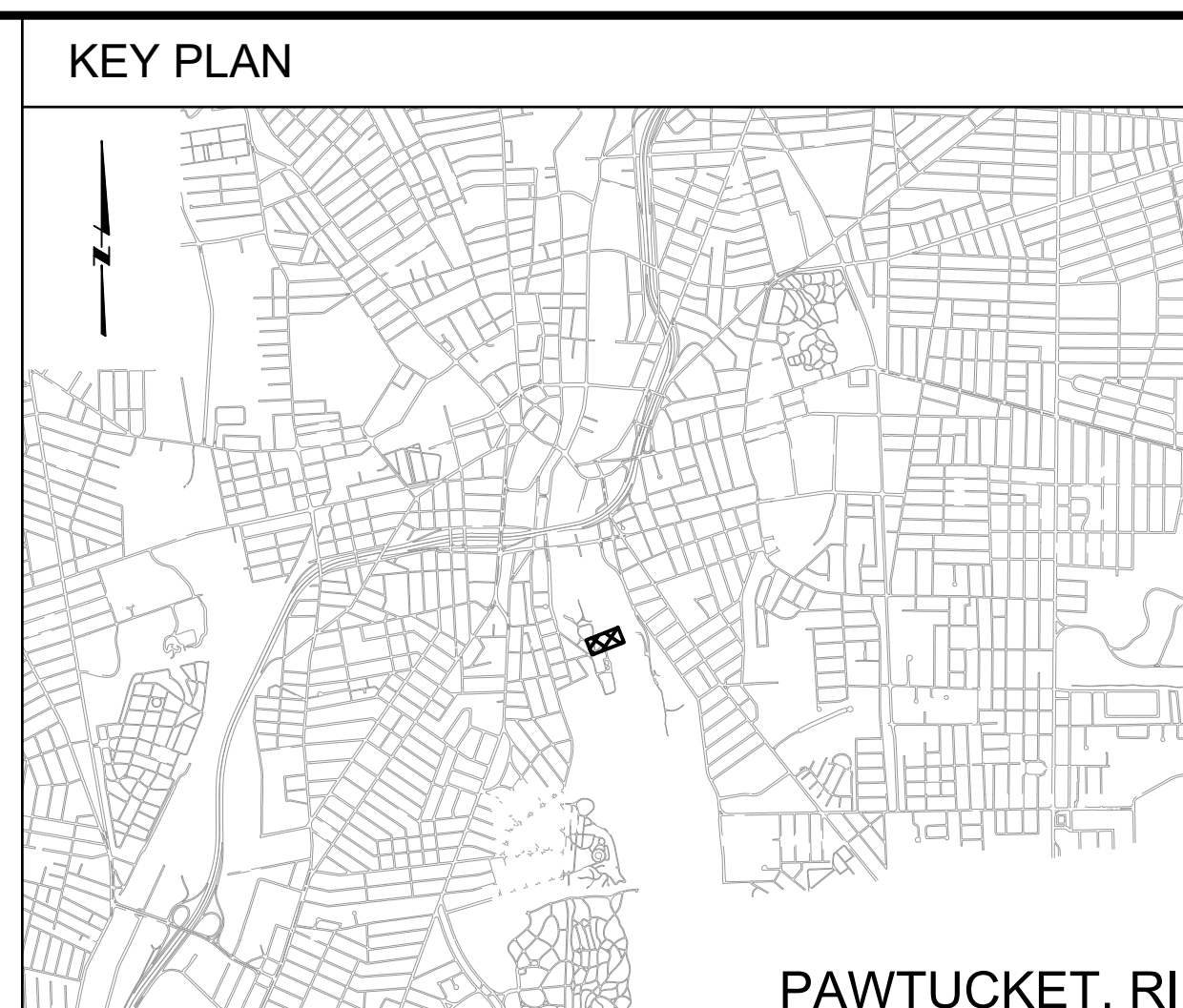
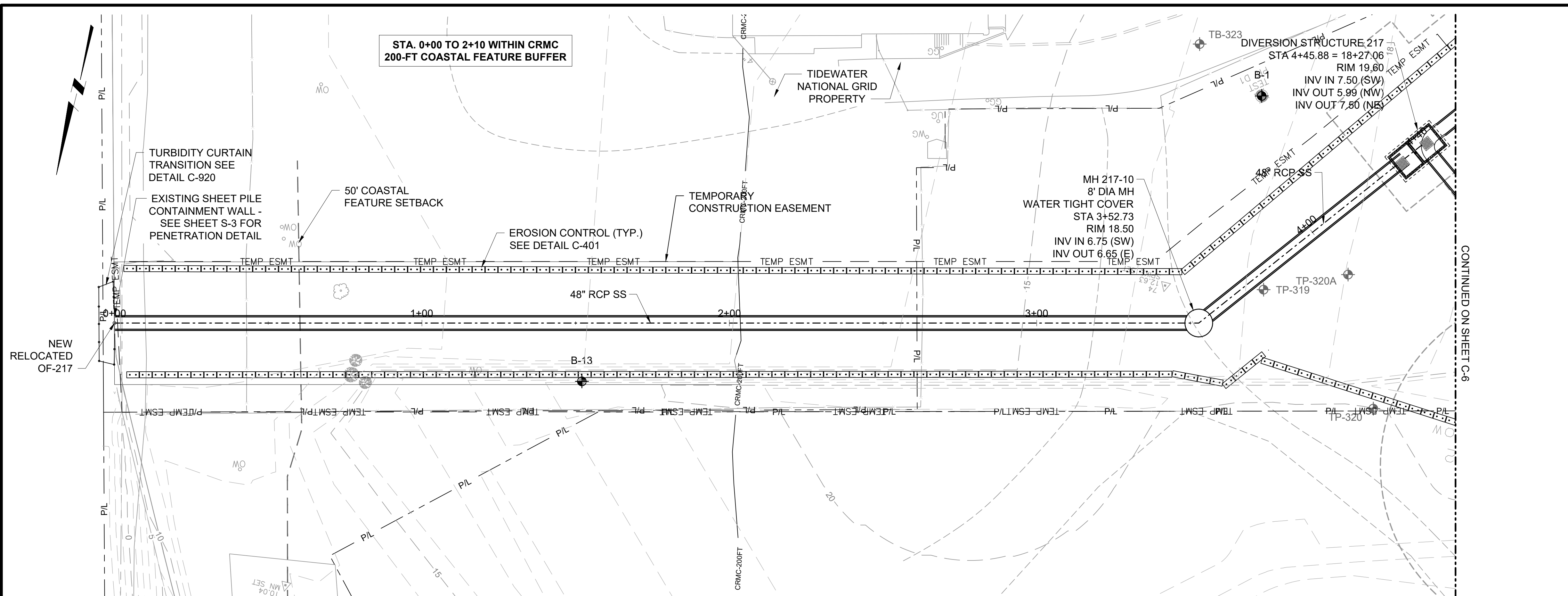


NBC CONTRACT NO 308.05C  
CIVIL

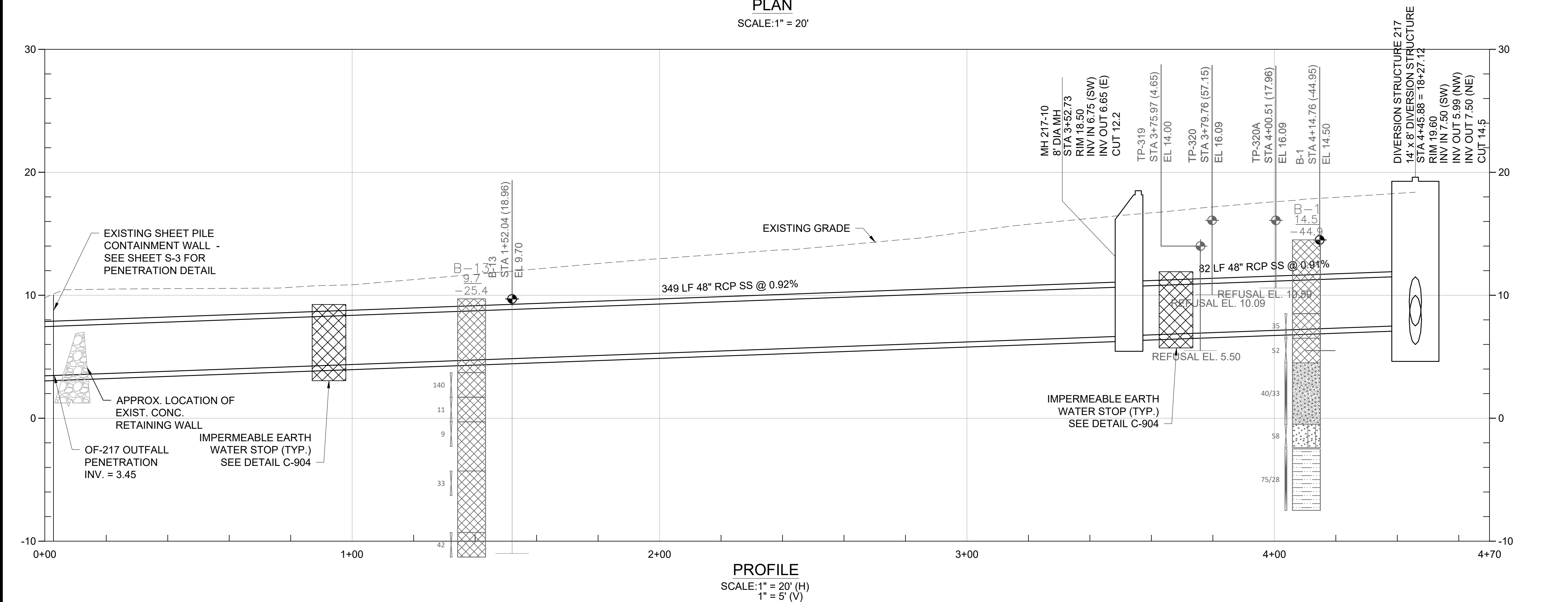
OF-217 CONSOLIDATION CONDUIT  
PLAN AND PROFILE V: STA 16+00 - 18+88

SHEET  
C-7  
195130227

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Civil\Sheet\Set\PAWT\_Site\_Plan\_Profile\_III-A-5\_ALT3.dwg PLOT DATE: Thursday, June 24, 2021 5:01:18 PM BY: JAMIE PAYNE



- GENERAL SHEET NOTES**
- UTILITY INFORMATION DEPICTED, PROVIDED BY NATIONAL GRID
  - FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
    - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
    - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
  - WORK IS IN PROPERTY OWNED BY NATIONAL GRID
  - VERTICAL DATUM FOR PROJECT IS NGVD29.
  - EXISTING CONTOURS ARE APPROXIMATE.



- SHEET KEYNOTES**
- Symbol for Keynote 1: A circle with a crosshair.

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE AS SHOWN

**WARNING**  

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DESIGNED C. CRONIN  
 DRAWN J. PAYNE  
 CHECKED J. D'ALESIO

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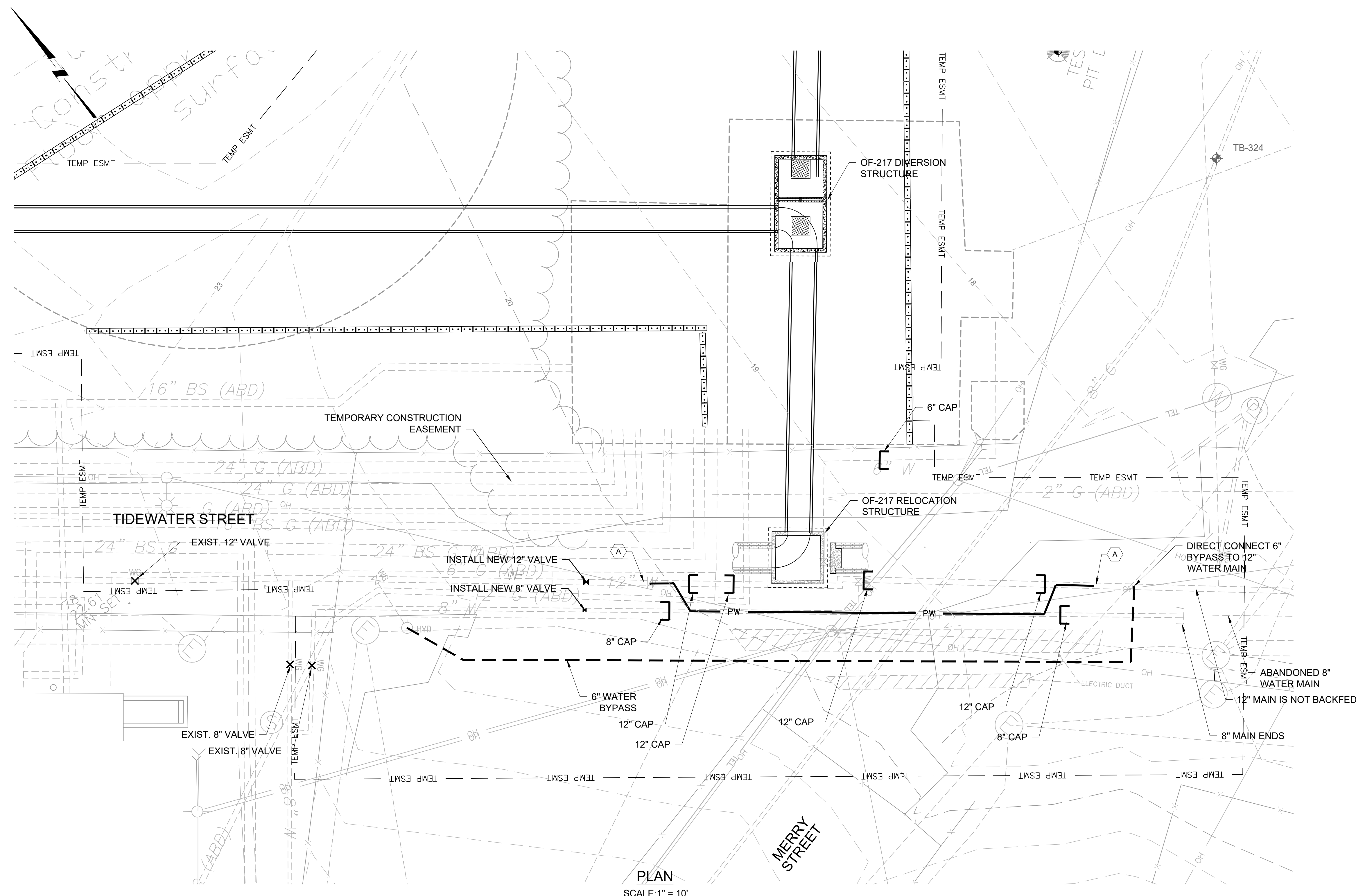
NBC CONTRACT NO 308.05C  
 CIVIL

OF-217 CONSOLIDATION CONDUIT  
 OF-217 OUTFALL PLAN AND PROFILE VI: STA 0+00 - 4+46

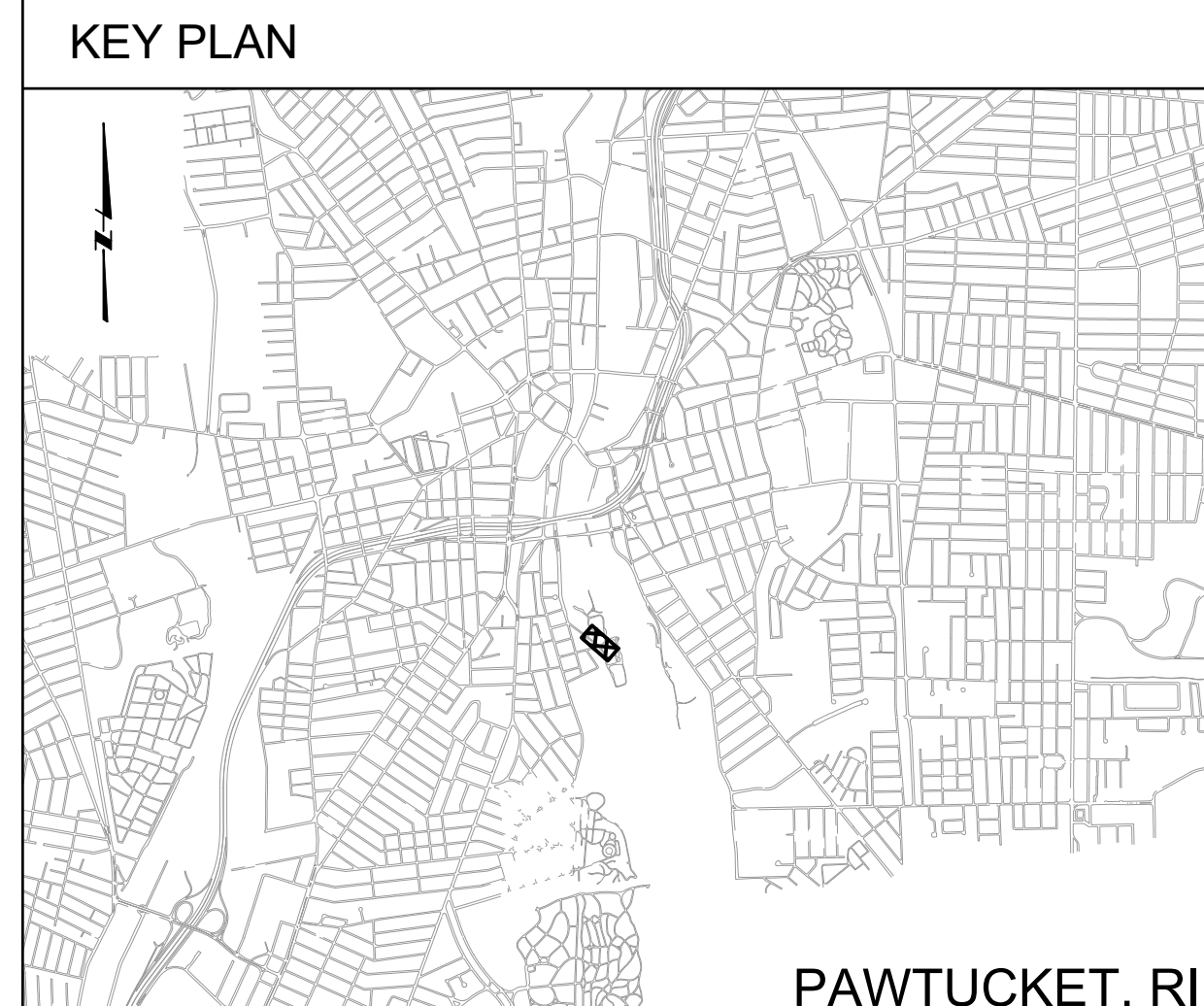


BY: JAMIE PAYNE

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Civil\Sheet\Set\PAWT\_Site\_Plan\_& Profile.dwg; DATE: Thursday, June 24, 2021 3:25:04 PM



PLAN  
SCALE: 1" = 10'



- GENERAL SHEET NOTES**
- UTILITY INFORMATION DEPICTED, PROVIDED BY NATIONAL GRID
  - FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
    - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
    - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
  - WORK IS IN PROPERTY OWNED BY NATIONAL GRID
  - VERTICAL DATUM FOR PROJECT IS NGVD29.
  - WATER MAIN RELOCATION WILL REQUIRE NIGHT WORK. ACCESS TO THE SUBSTATION MUST BE MAINTAINED AT ALL TIMES.

- SHEET KEYNOTES**
- A. RELOCATE WATER MAIN. COORDINATE WATER SHUTDOWNS WITH NATIONAL GRID

REV	DATE	BY	DESCRIPTION

SCALE  
AS SHOWN

WARNING  
0 1/2 1  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED C. CRONIN  
DRAWN R. GREENWAY  
CHECKED J. D'ALELIO

FINAL DESIGN PHASE - JULY 2021

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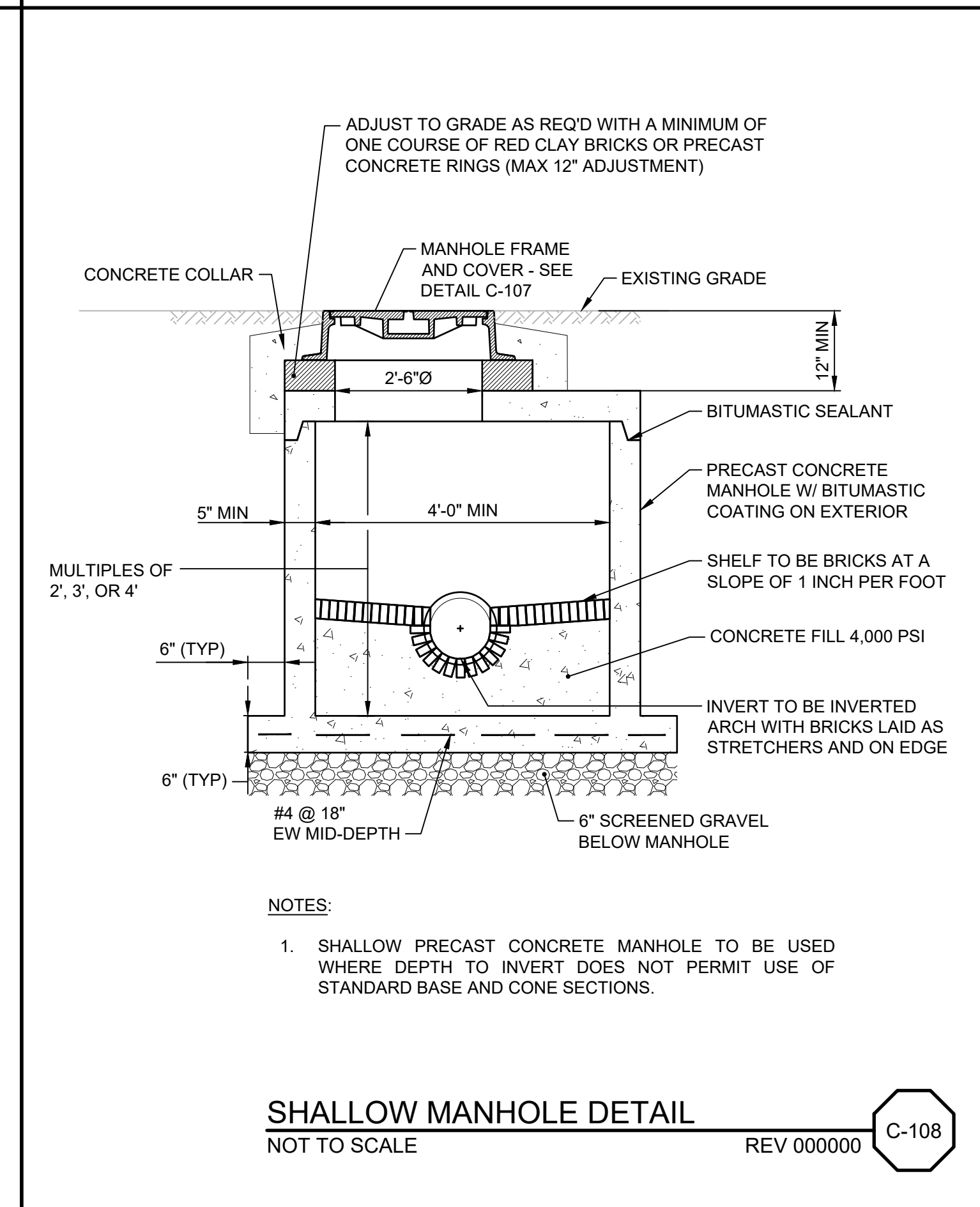
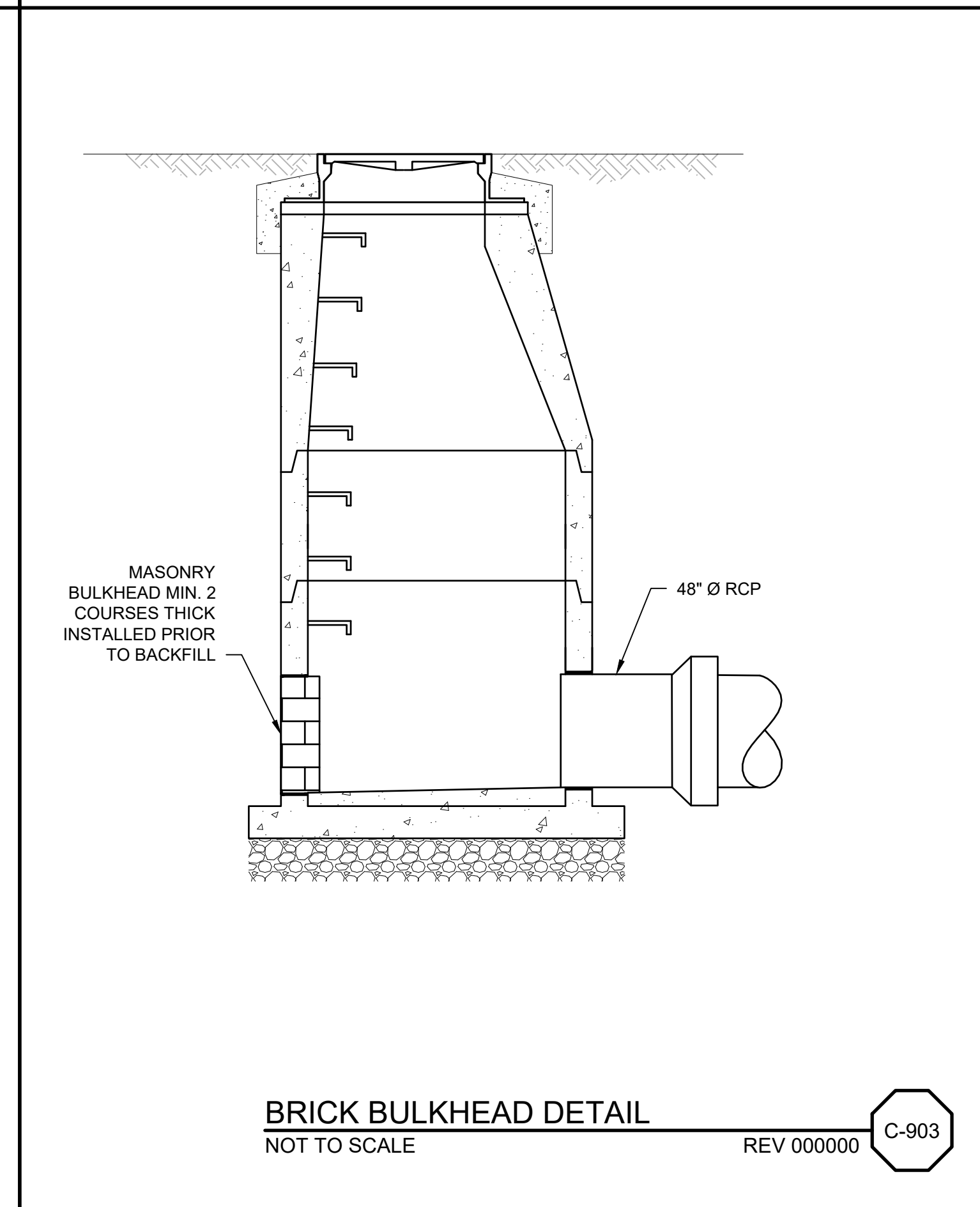
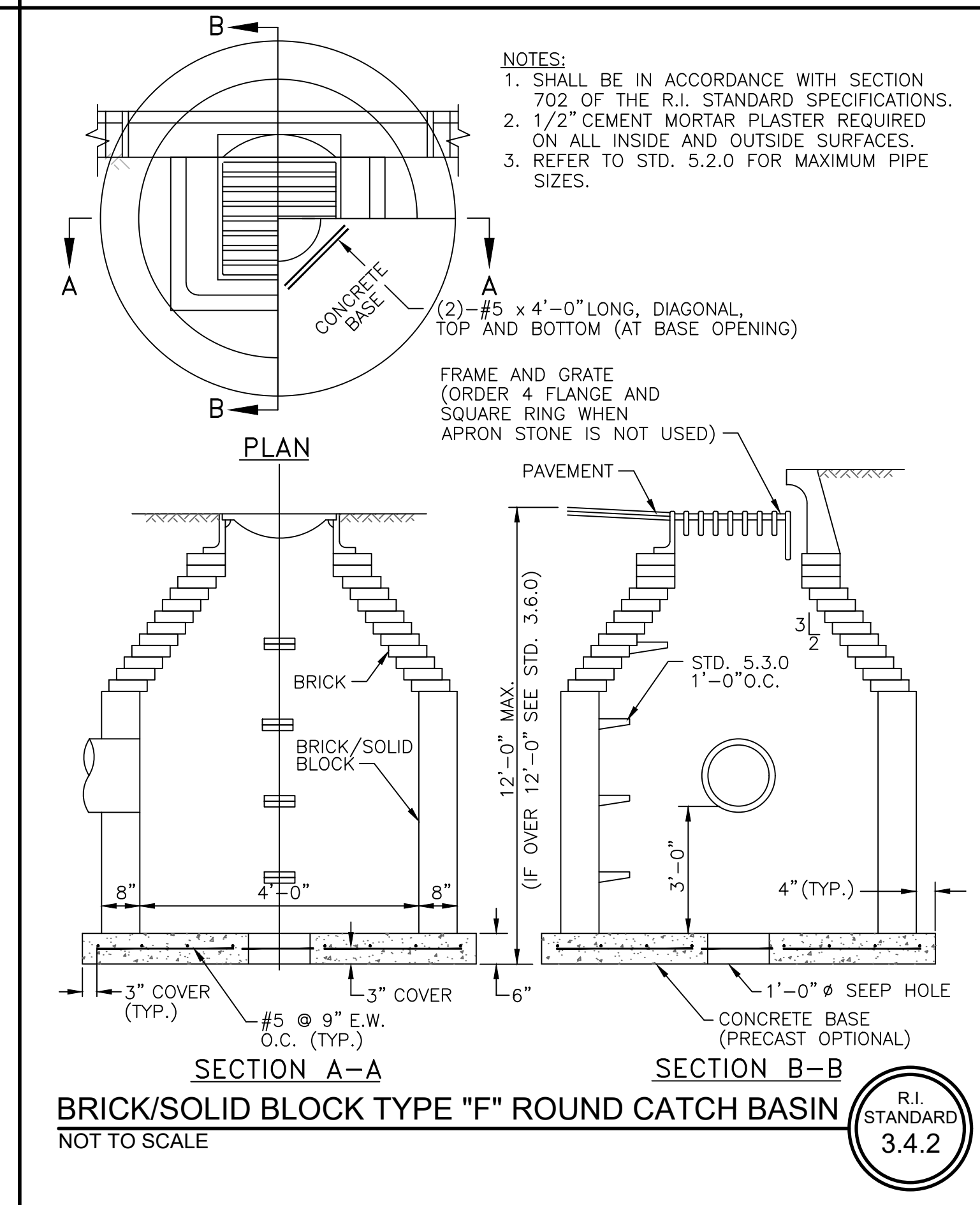
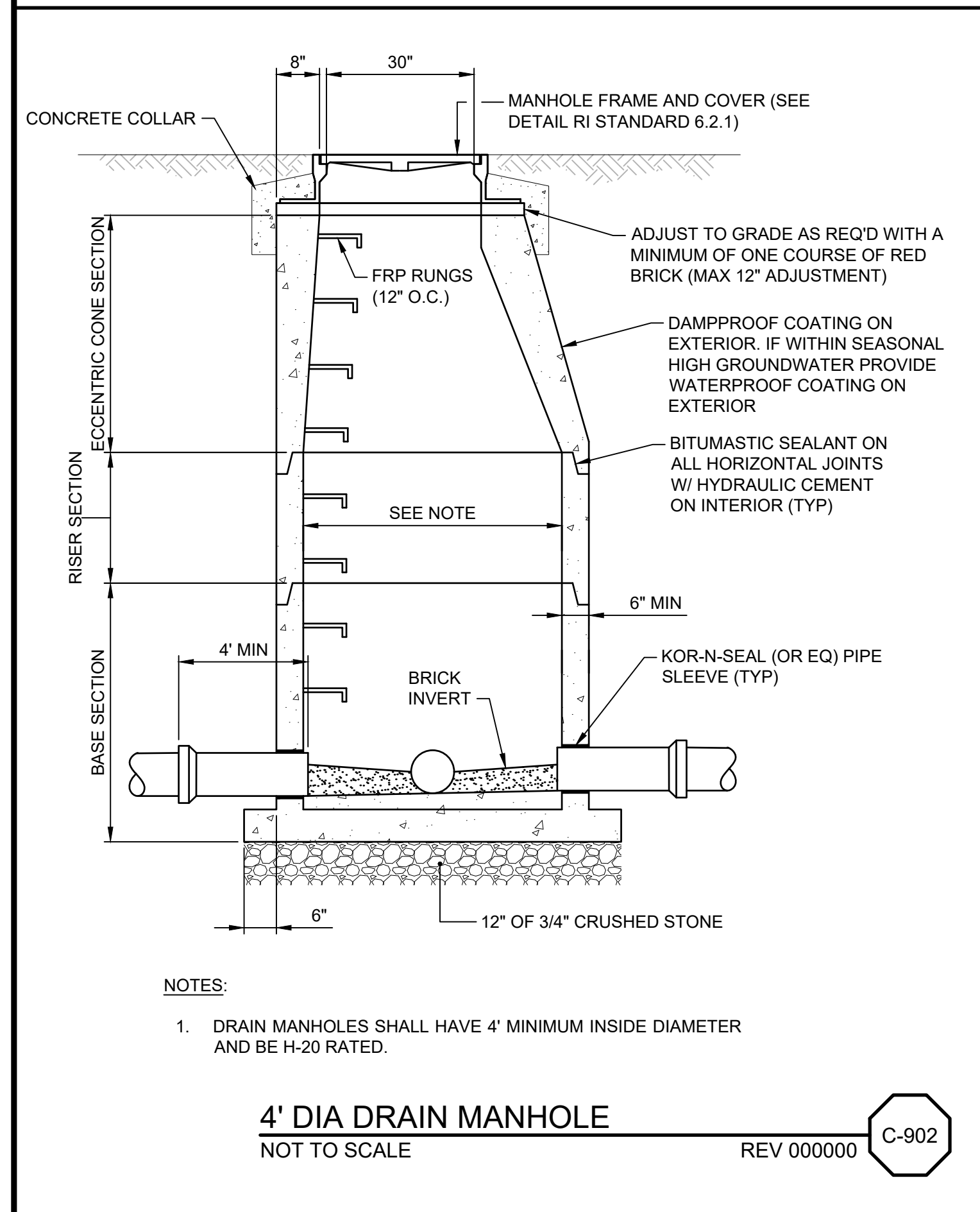
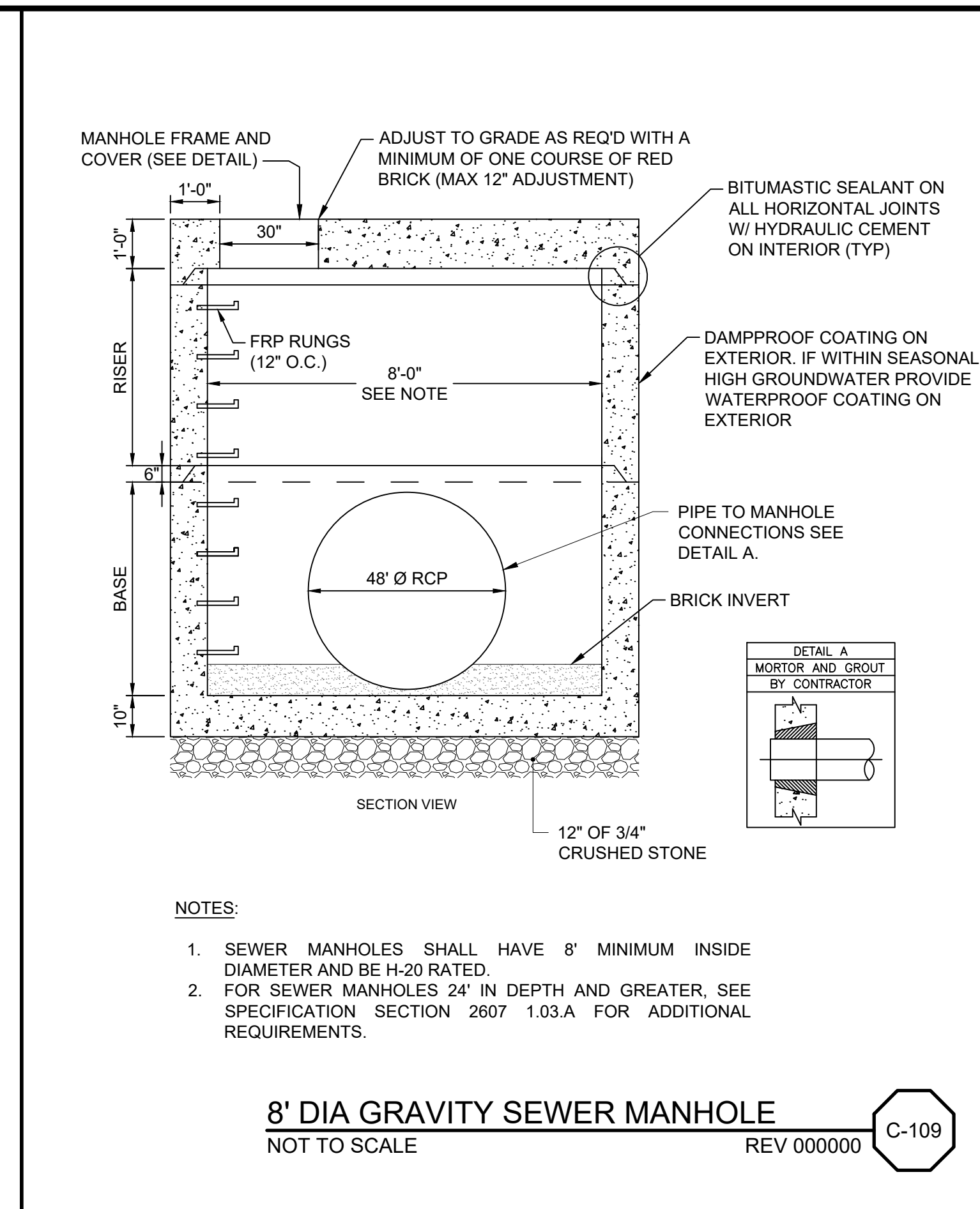
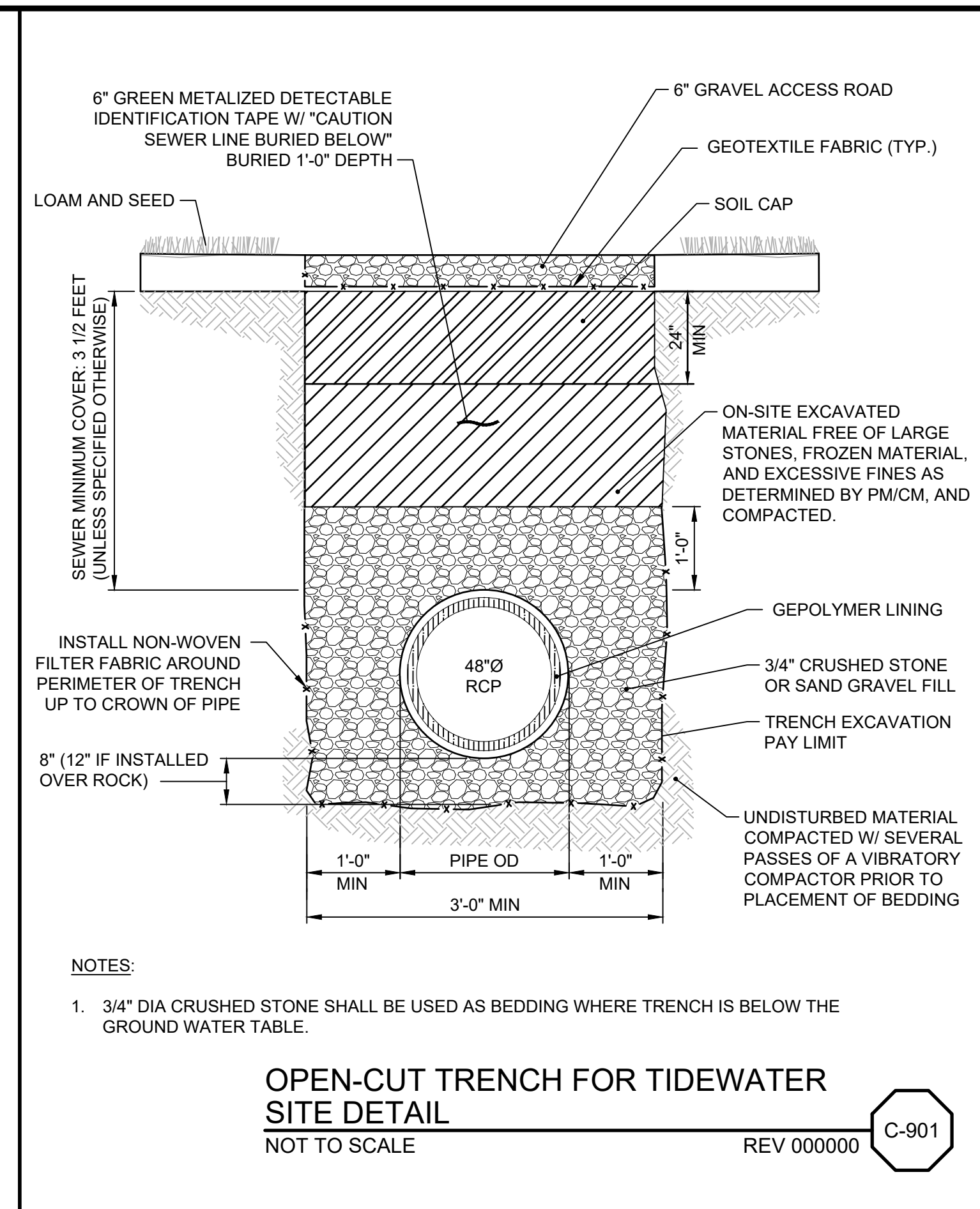
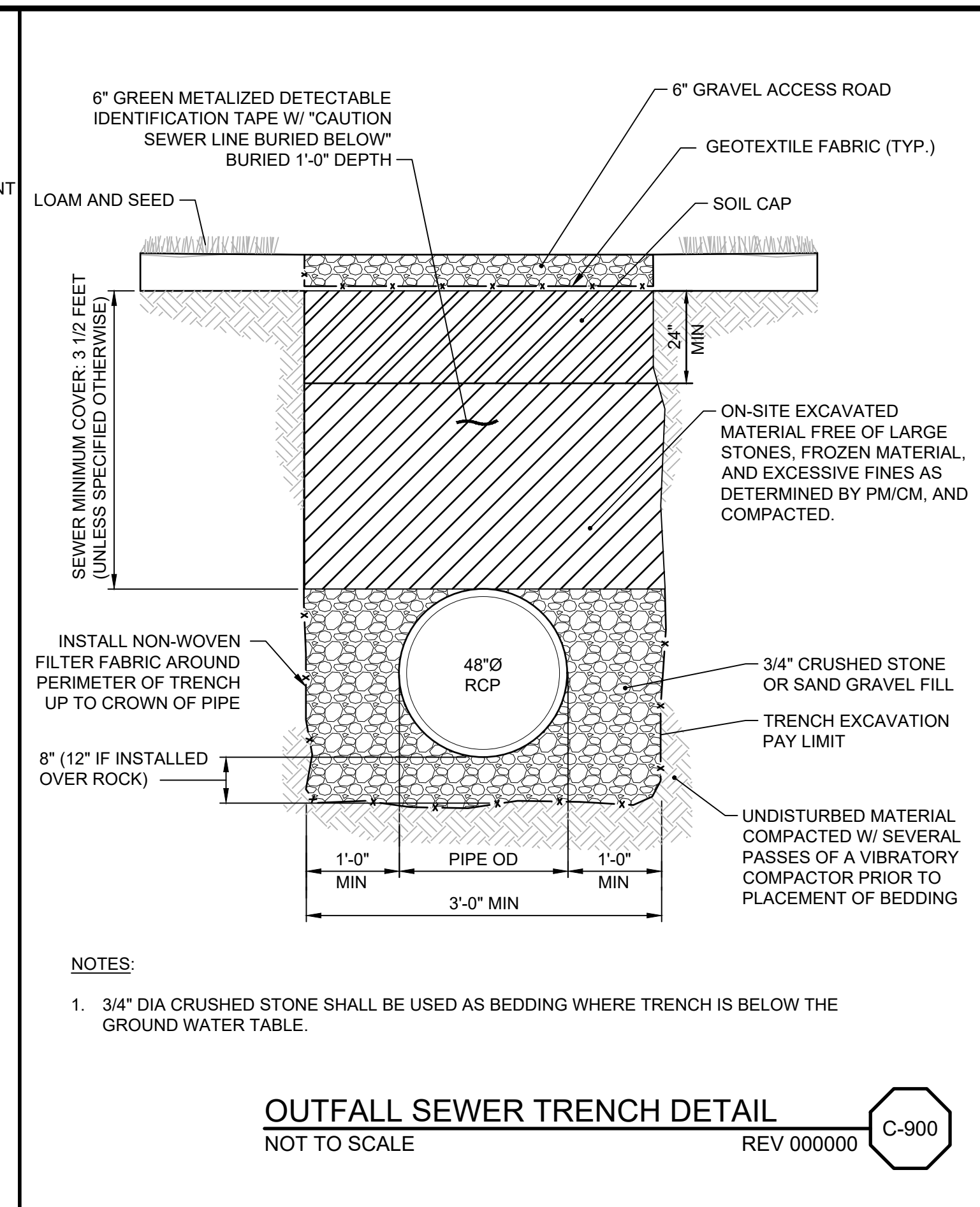
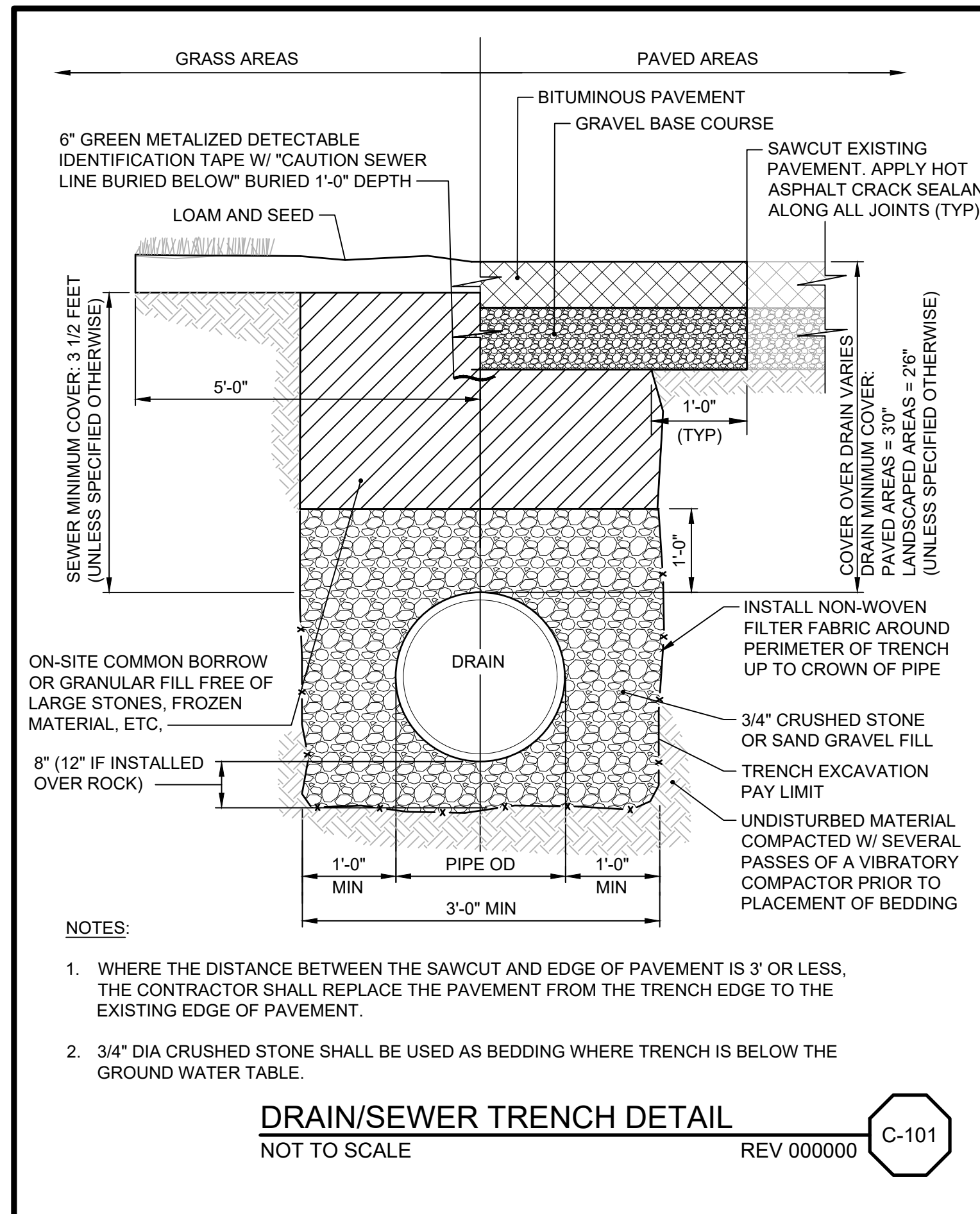


NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
CIVIL

OF-217 CONSOLIDATION CONDUIT  
WATER RELOCATION PLAN

SHEET  
C-9  
195130227



REV	DATE	BY	DESCRIPTION

SCALE AS SHOWN	WARNING IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED C. CRONIN DRAWN C. MARSHALL CHECKED J. D'ALELIO	FINAL DESIGN PHASE - JULY 2021 NOT FOR CONSTRUCTION This document is an interim document and not suitable for construction. As an interim document, it may contain data that is potentially inaccurate or incomplete and is not to be relied upon without the express written consent of the preparer.
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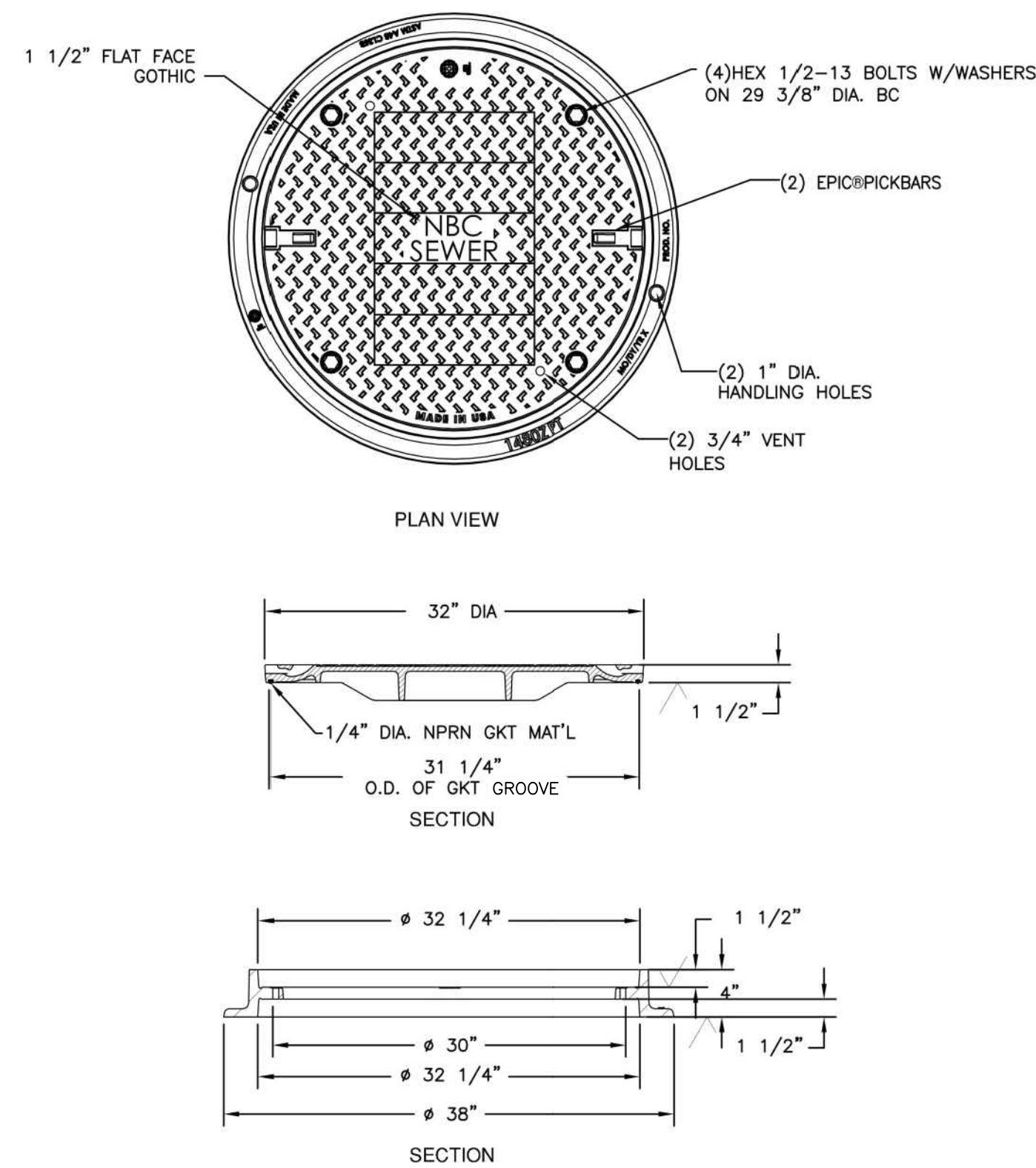
**BETA**  
www.BETA-Inc.com

**Stantec**

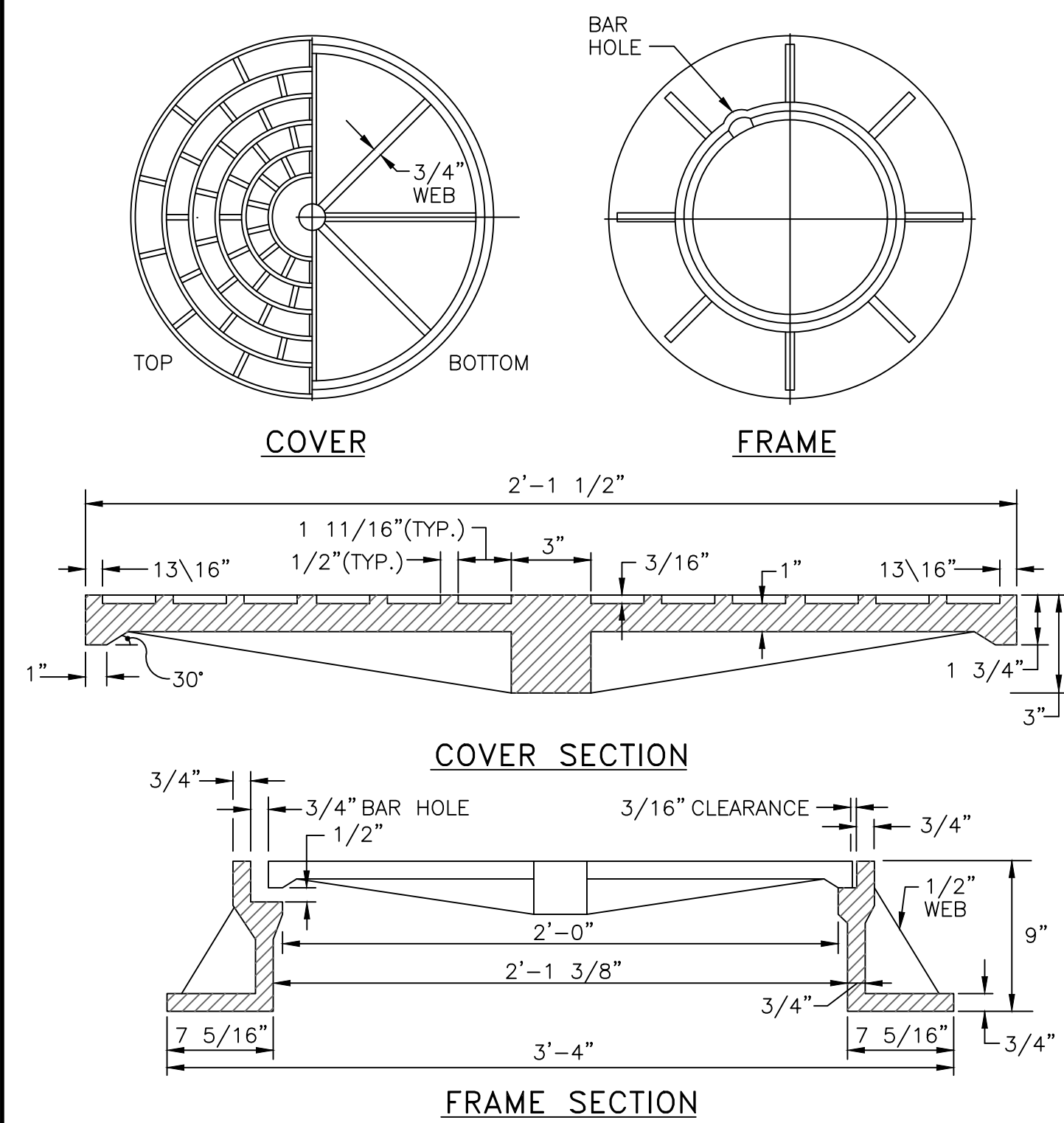
NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
CIVIL  
OF-217 CONSOLIDATION CONDUIT  
CIVIL DETAILS I

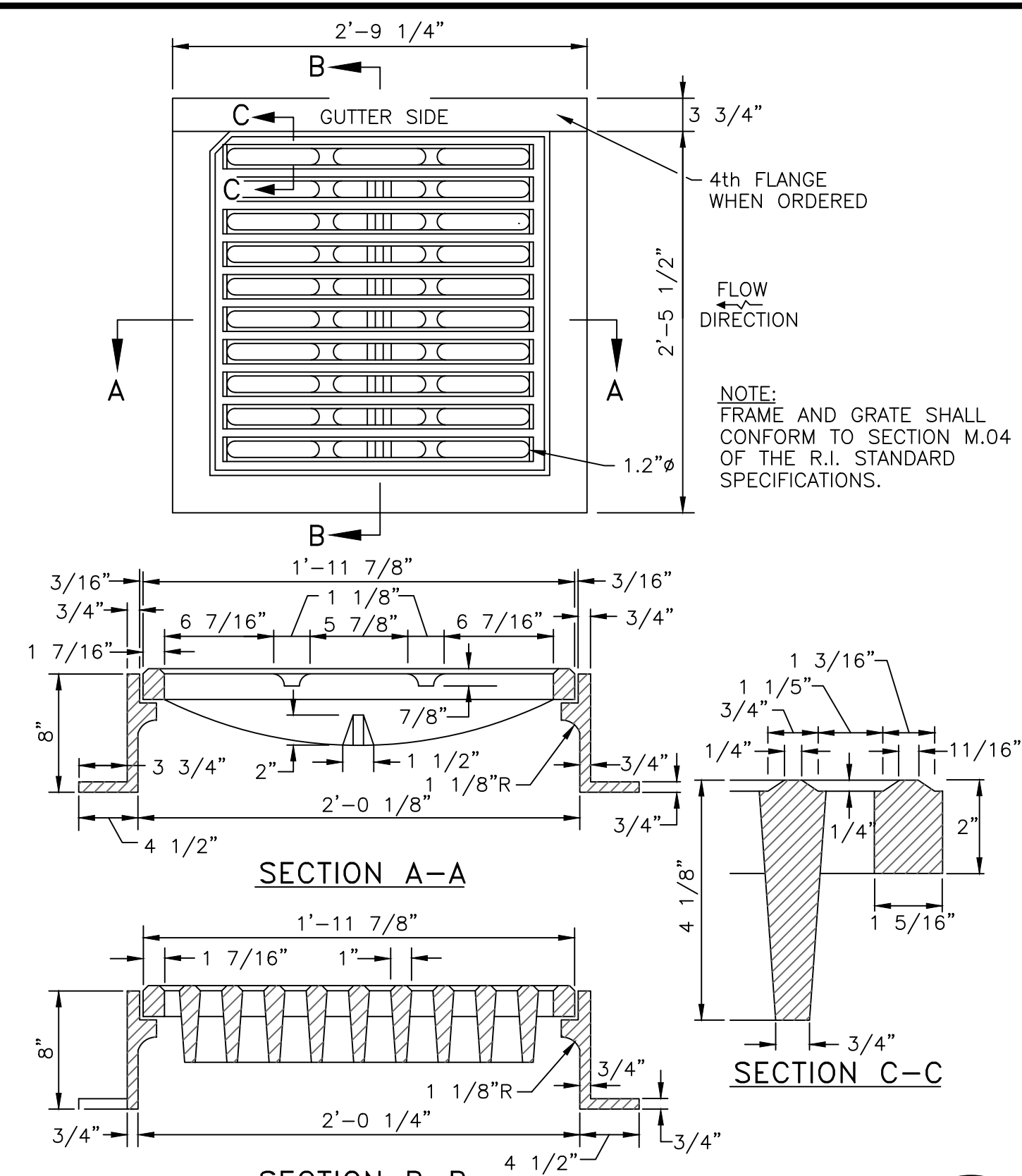
SHEET  
C-10  
195130227



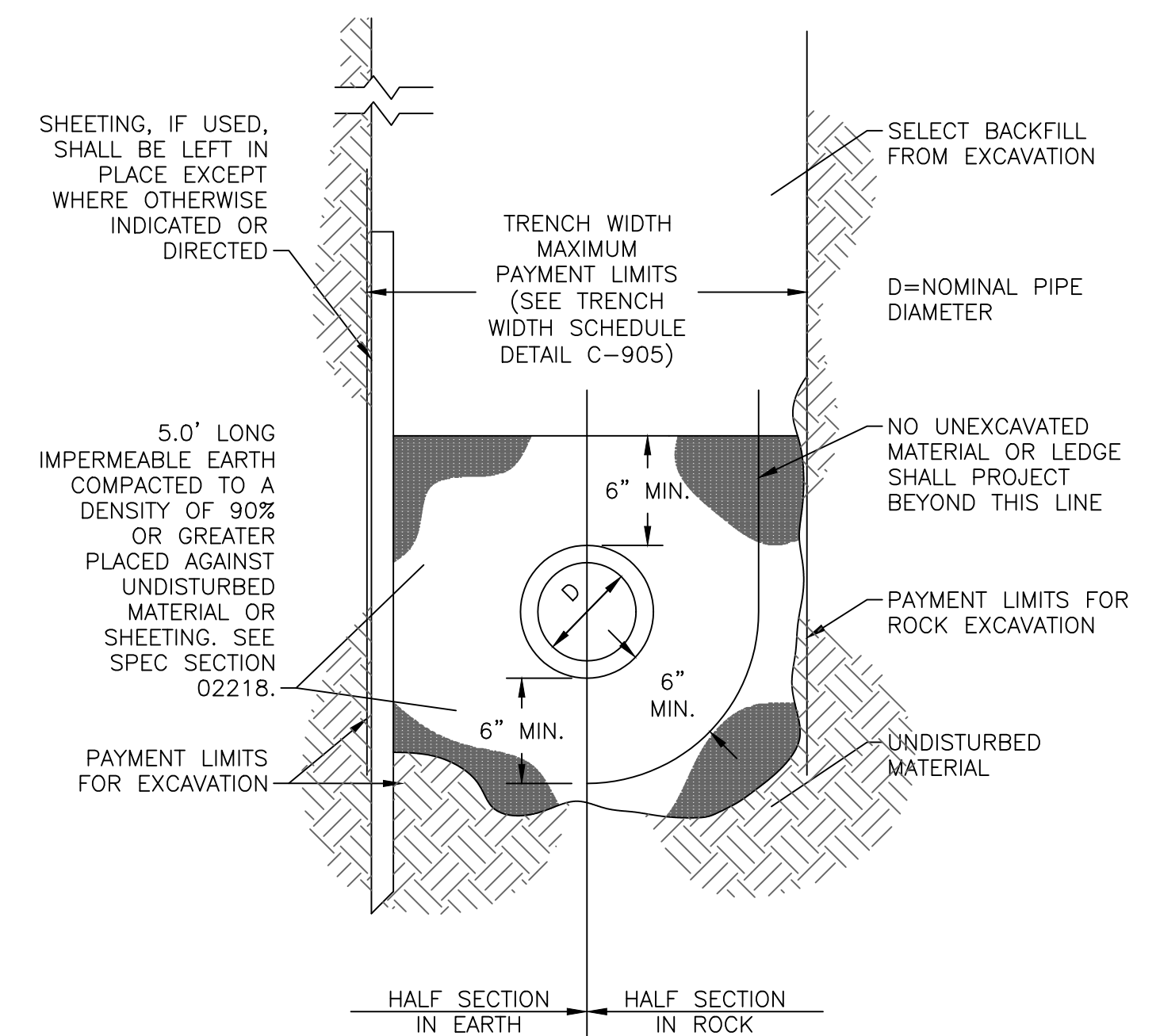
**SEWER MANHOLE FRAME AND COVER**  
NOT TO SCALE REV 000000 C-107



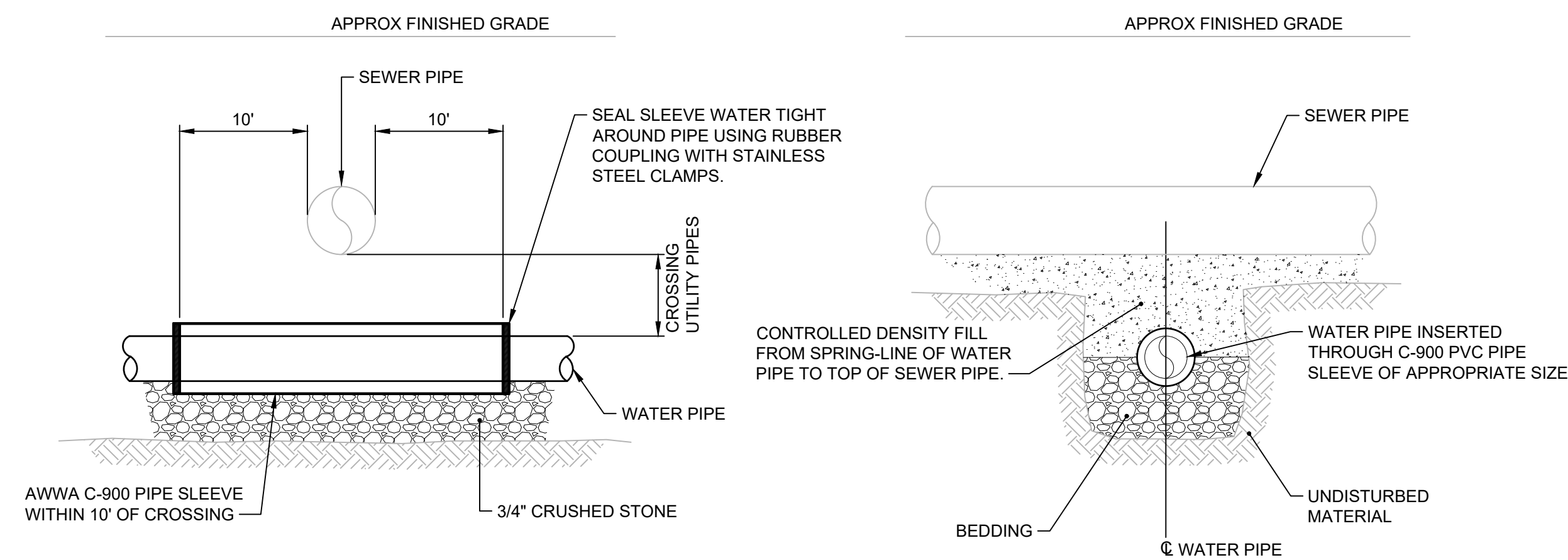
**HEAVY-DUTY ROUND FRAME AND COVER**  
NOT TO SCALE R.I. STANDARD 6.2.1



**SQUARE FRAME AND GRATE (BICYCLE SAFE)**  
NOT TO SCALE R.I. STANDARD 6.3.2

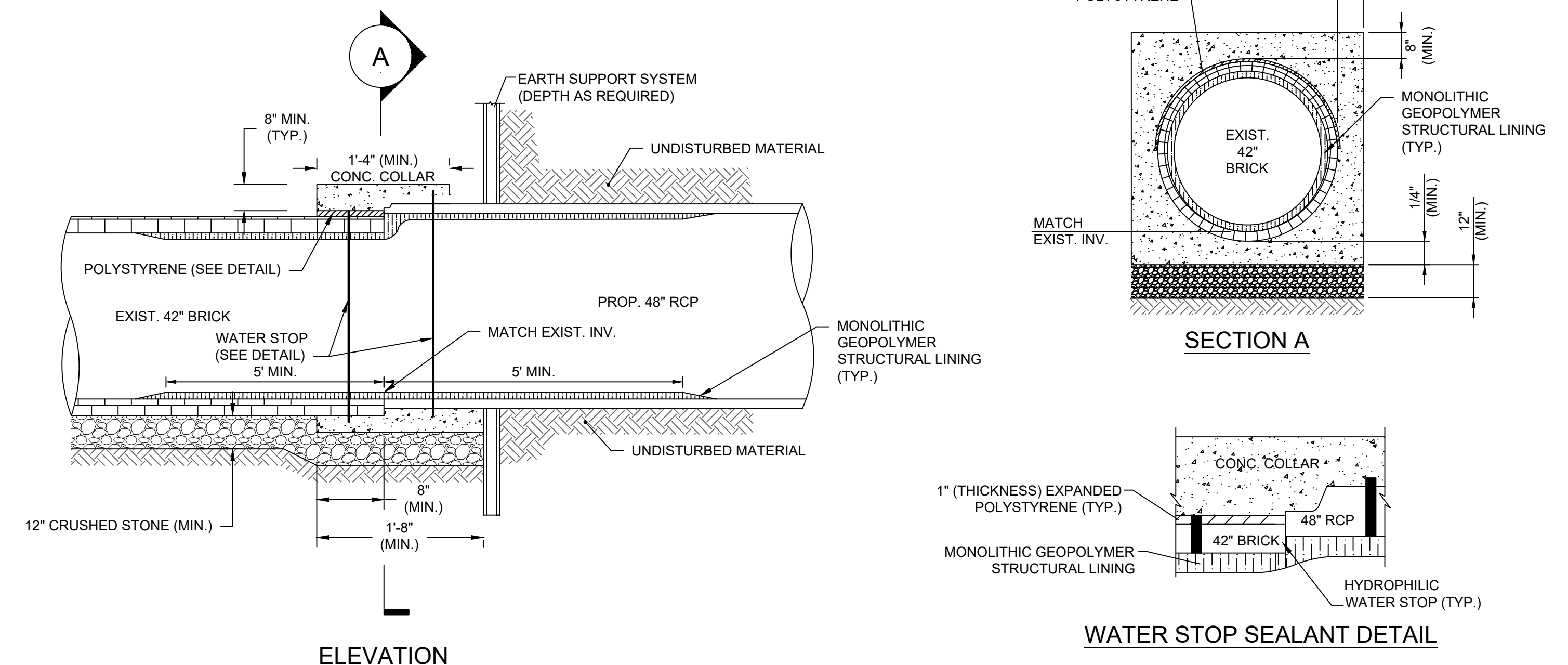


**TRENCH SECTION FOR IMPERMEABLE EARTH WATER STOP**  
NOT TO SCALE REV 000000 C-904



- NOTES:**
- WHERE SEWER CANNOT BE INSTALLED 18" BENEATH WATER, OR WHERE SEWER AND WATER PIPING ARE WITHIN 10 FEET OF EACH OTHER, PROPOSED WATER OR SEWER PIPE SHALL BE SLEEVED INSIDE AN AWWA C-900 PVC PIPE OF APPROPRIATE DIAMETER WITHIN 10 FEET OF THE CROSSING.
  - CONTRACTOR MAY ELECT TO ENCASE PIPE WITHIN CONCRETE INSTEAD OF USING PIPE SLEEVES, AT NO ADDITIONAL EXPENSE TO THE OWNER. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AFTER 28 DAYS. CONCRETE ENCASEMENT SHALL EXTEND A MINIMUM OF 6" AROUND THE PIPE IN ALL DIRECTIONS.

**WATER/SEWER CROSSING DETAIL**  
NOT TO SCALE REV 000000 C-112



**CONCRETE COLLAR DETAIL**  
NOT TO SCALE REV 000000 C-109

REV	DATE	BY	DESCRIPTION

SCALE AS SHOWN	WARNING IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED <u>C. CRONIN</u>	DRAWN <u>J. PAYNE</u>	CHECKED <u>J. D'ALELIO</u>
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FINAL DESIGN PHASE - JULY 2021

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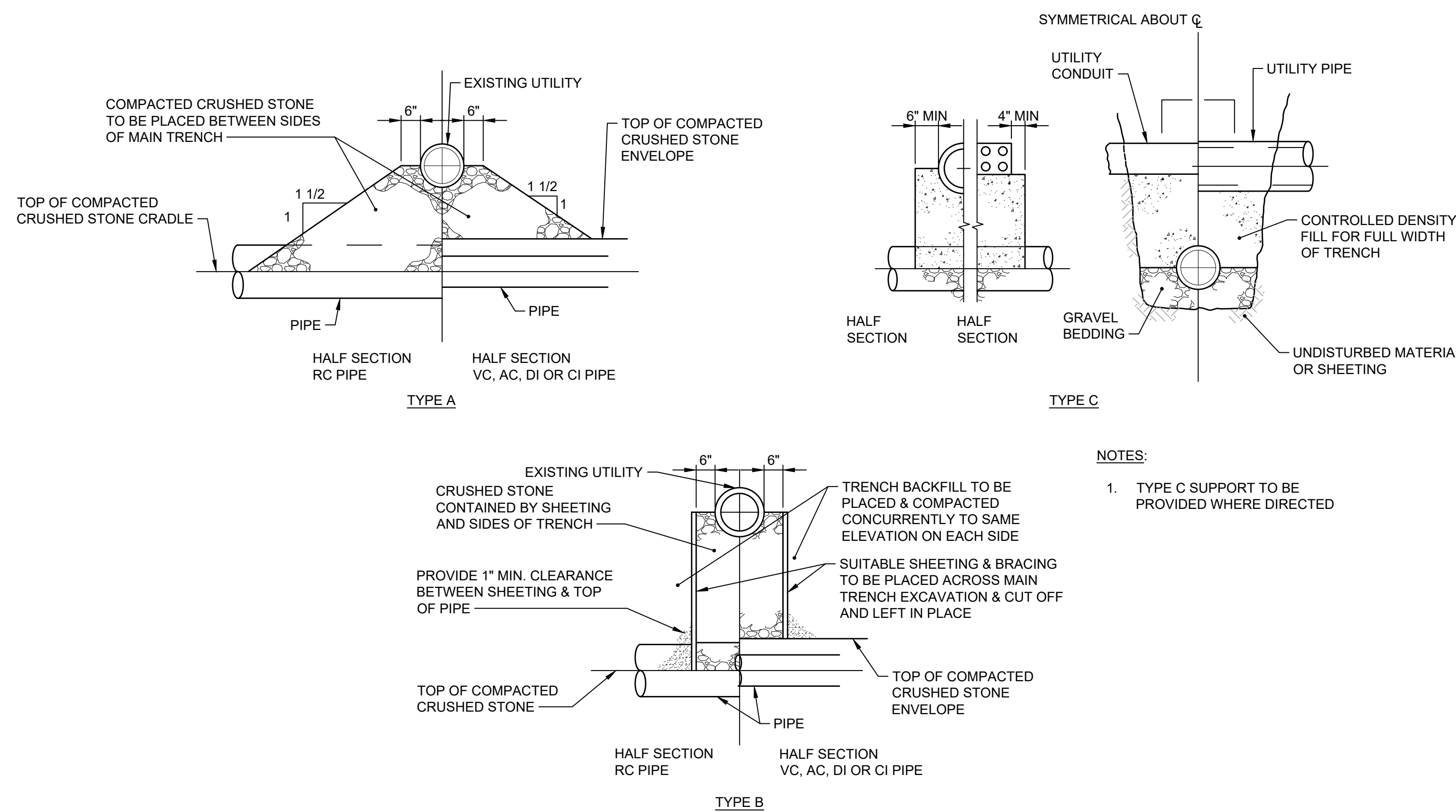
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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
CIVIL  
OF-217 CONSOLIDATION CONDUIT  
CIVIL DETAILS II

SHEET  
**C-11**  
195130227



**TYPICAL SUPPORTS FOR UTILITIES**  
 NOT TO SCALE REV 000000 C-113

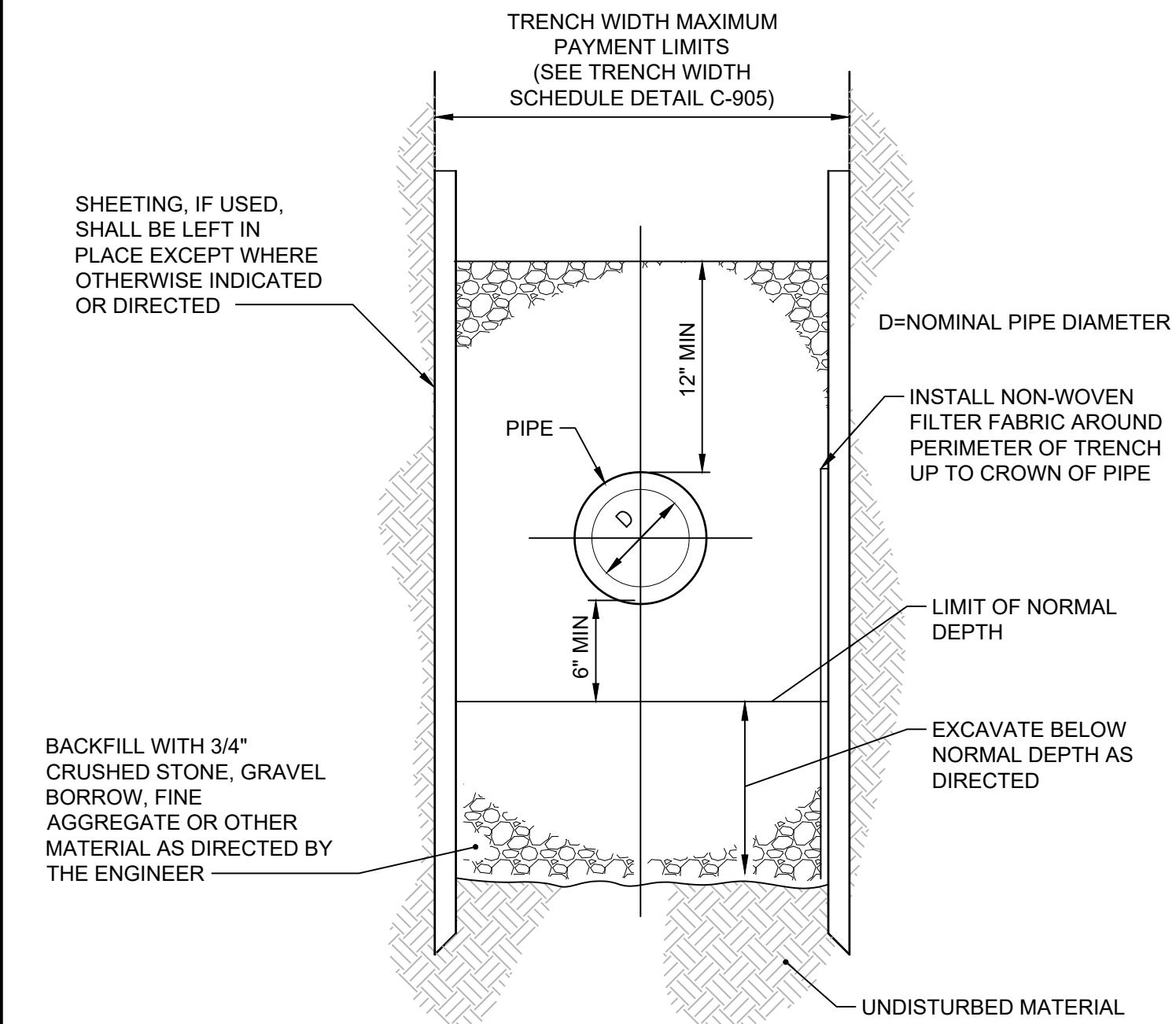
DIAMETER OF PIPE D IN INCHES	MAXIMUM PAYMENT LIMITS					
	TRENCH WIDTH IN FEET		TEMPORARY TRENCH PAVEMENT WIDTH IN FEET		PERMANENT TRENCH PAVEMENT WIDTH IN FEET*	
	TRENCH DEPTH	TRENCH DEPTH	TRENCH DEPTH	TRENCH DEPTH	TRENCH DEPTH	TRENCH DEPTH
12 AND SMALLER	< OR = 10'	> 10' TO 20'	< OR = 10'	> 10' TO 20'	< OR = 10'	> 10' TO 20'
15	5.00	6.00	7.00	8.00	9.00	10.00
18	5.25	6.25	7.25	8.25	9.25	10.25
21	5.50	6.50	7.50	8.50	9.50	10.50
24	5.75	6.75	7.75	8.75	9.75	10.75
27	6.00	7.00	8.00	9.00	10.00	11.00
30	6.25	7.25	8.25	9.25	10.25	11.25
36	6.50	7.50	8.50	9.50	10.50	11.50
42	7.00	8.00	9.00	10.00	11.00	12.00
48	7.50	8.50	9.50	10.50	11.50	12.50
54	8.00	9.00	10.00	11.00	12.00	13.00
60	8.50	9.50	10.50	11.50	12.50	13.50
66	9.00	10.00	11.00	12.00	13.00	14.00
72	9.50	10.50	11.50	12.50	13.50	14.50
	10.00	11.00	12.00	13.00	14.00	15.00

**TRENCH WIDTH SCHEDULE**

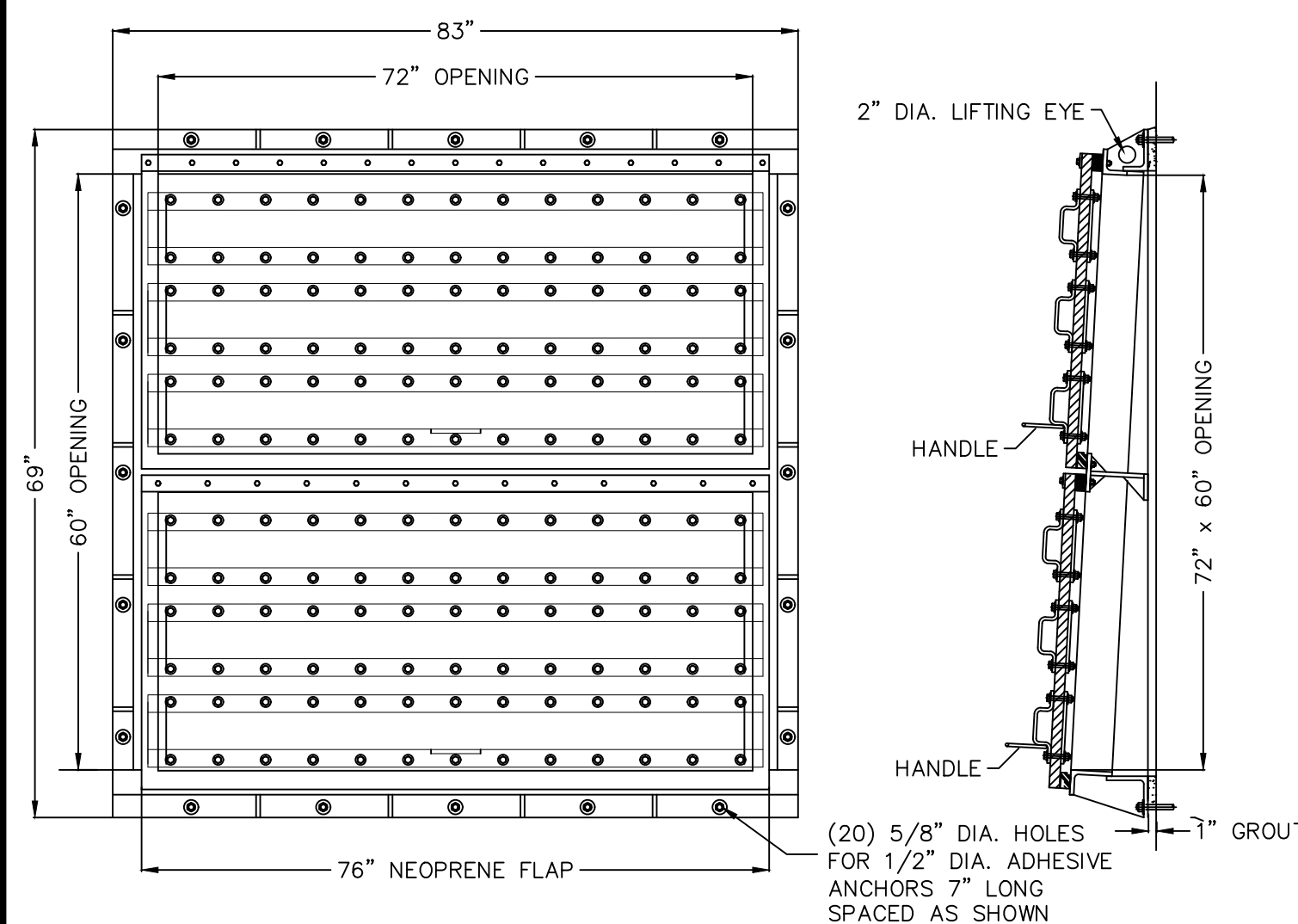
**NOTES:**

- PERMANENT TRENCH PAVEMENT INCLUDES 1' CUT BACK OF TEMPORARY PAVEMENT ALONG EACH SIDE OF THE TRENCH.
- TRENCH DEPTH MEASURED FROM THE EXISTING GROUND SURFACE TO 6" BELOW THE BOTTOM OF THE CONSTRUCTED PIPE.
- QUANTITIES FOR PAYMENT SHALL BE IN ACCORDANCE WITH THE ABOVE LIMITS OR THE ACTUAL WIDTHS, WHICHEVER IS LESS.

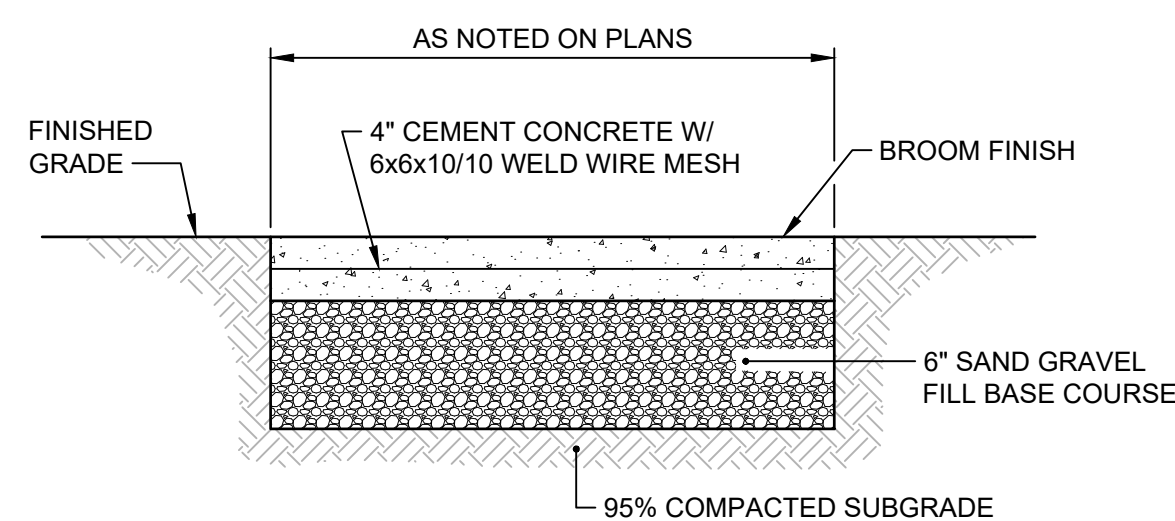
**TRENCH WIDTH SCHEDULE**  
 NOT TO SCALE REV 000000 C-905



**TRENCH SECTION (TO BE USED WHERE UNSUITABLE FOUNDATION MATERIAL EXISTS BELOW NORMAL DEPTH)**  
 NOT TO SCALE REV 000000 C-906



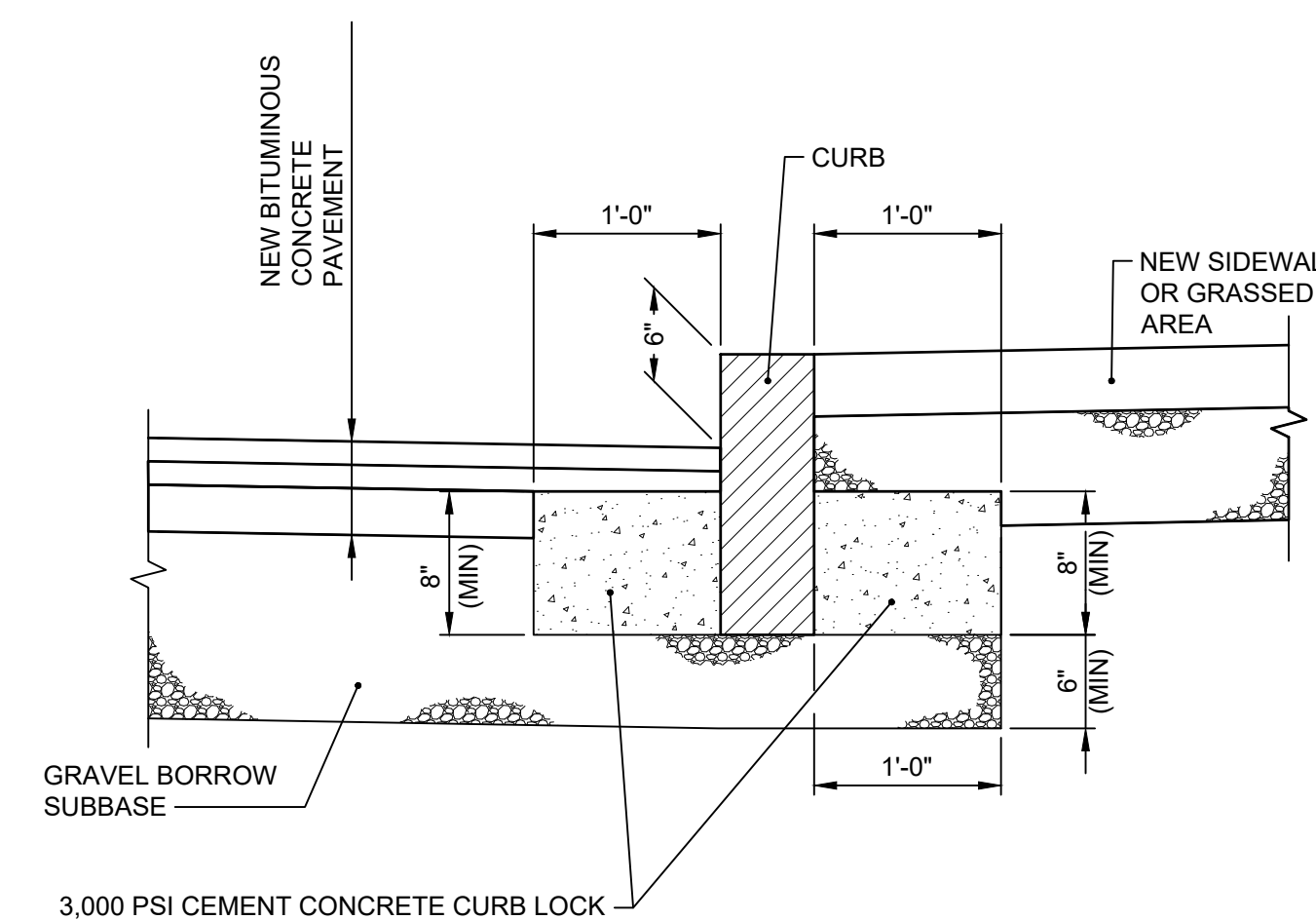
**TYPICAL FLAP GATE DETAIL**  
 NOT TO SCALE REV 000000 C-907



**NOTES:**

- CONCRETE SIDEWALK SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
- WIRE MESH SHALL BE IN ACCORDANCE WITH SECTION M.05.02 OF THE R.I. STANDARD SPECIFICATIONS.

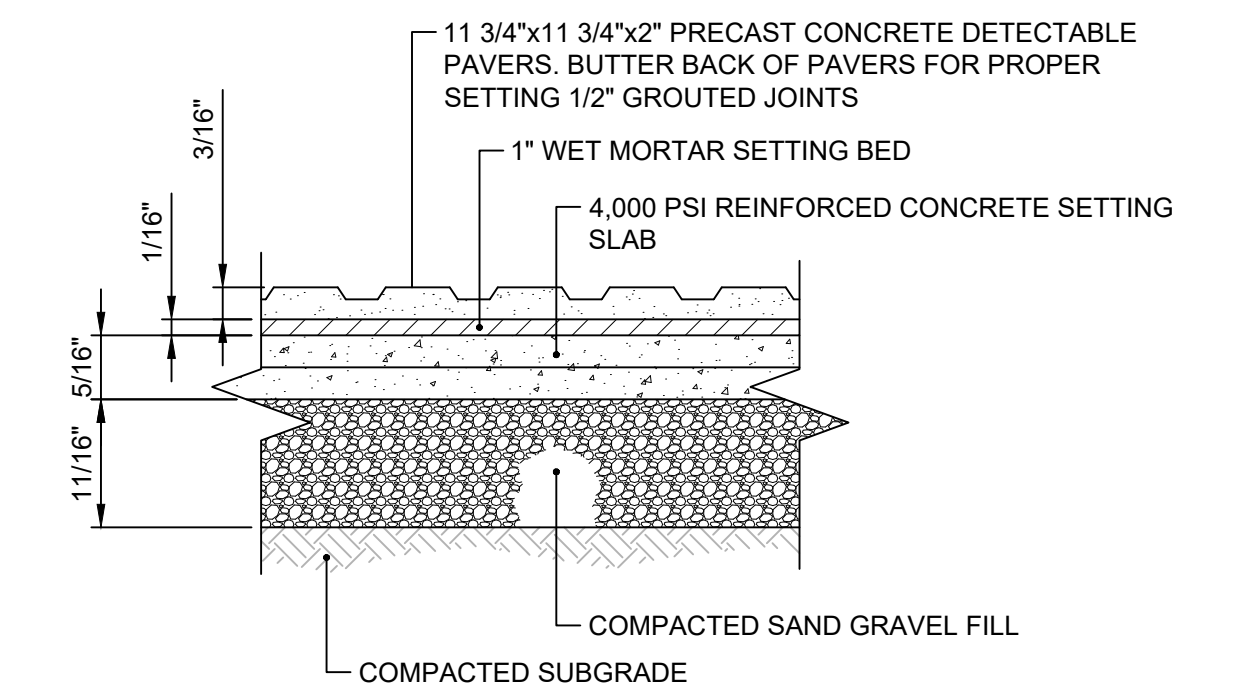
**TYPICAL CEMENT CONCRETE SIDEWALK**  
 NOT TO SCALE REV 000000 C-202



**NOTES:**

- SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
- PROVIDE CEMENT CONCRETE CURB LOCK ON ALL CURBS.

**CURB SETTING DETAIL**  
 NOT TO SCALE REV 000000 C-203



**DETECTABLE WARNING PAVER**  
 NOT TO SCALE REV 000000 C-204

REV	DATE	BY	DESCRIPTION

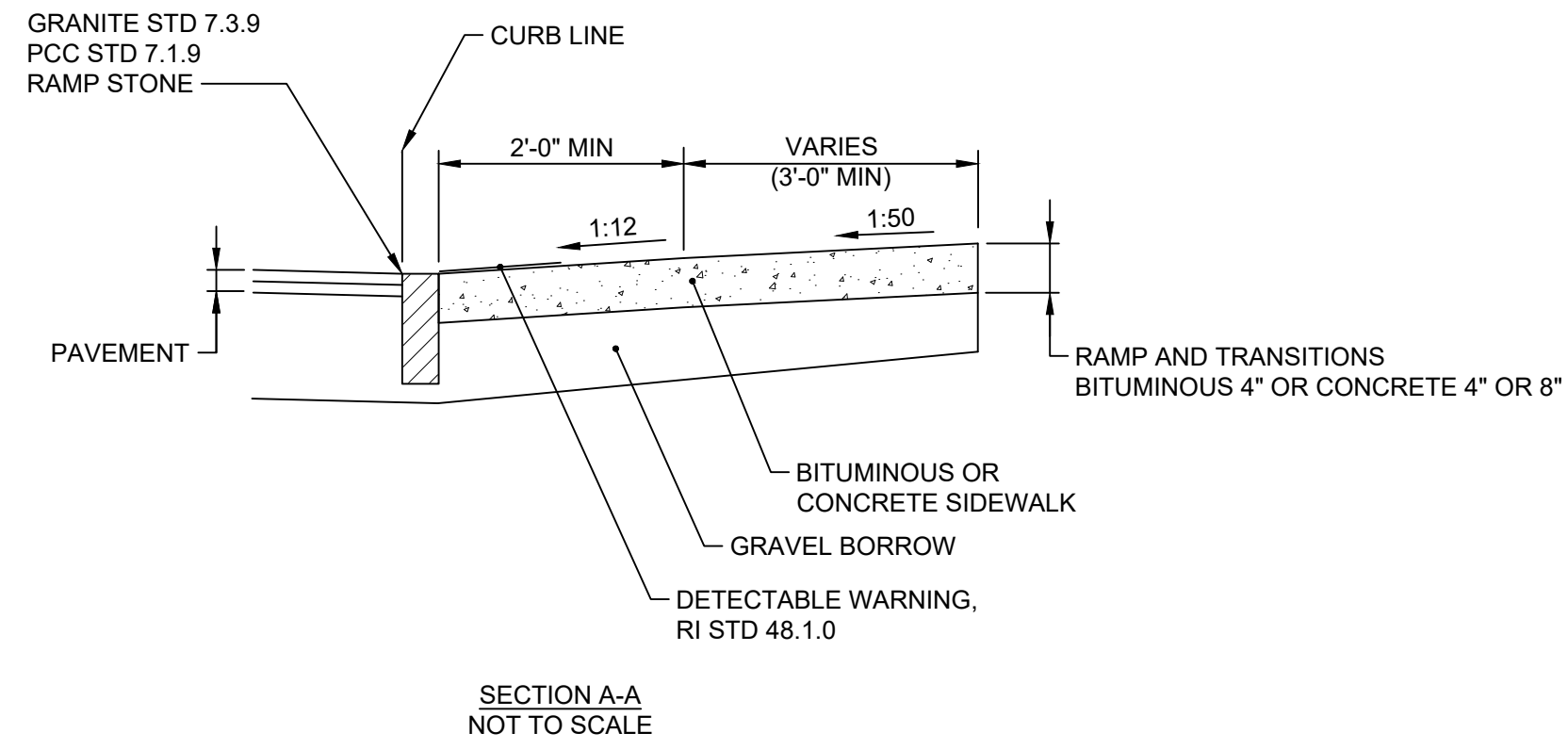
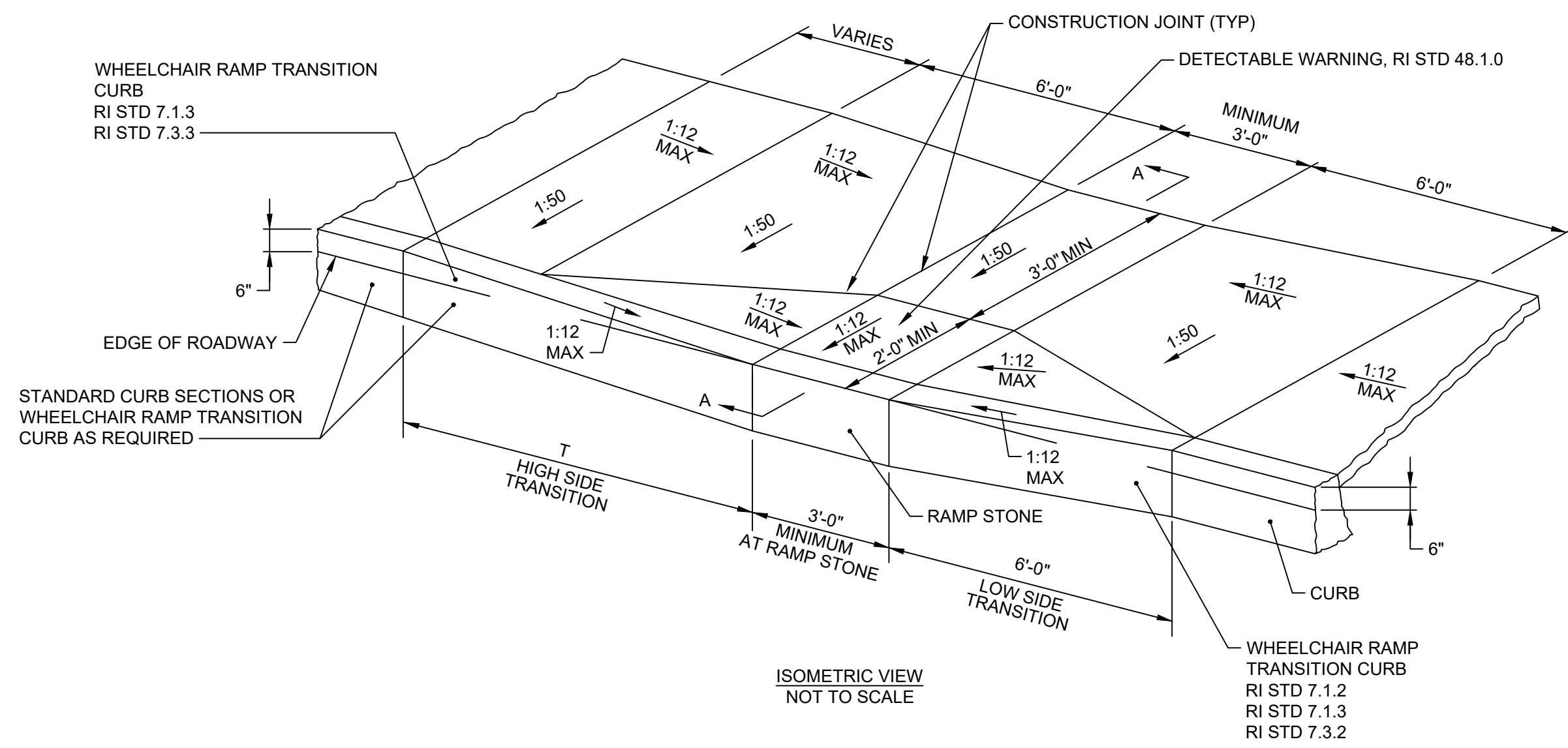
SCALE	AS SHOWN
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	C. CRONIN
DRAWN	C. MARSHALL
CHECKED	J. D'ALESSIO

FINAL DESIGN PHASE - JULY 2021  
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NBC CONTRACT NO 308.05C CIVIL OF-217 CONSOLIDATION CONDUIT CIVIL DETAILS III	SHEET <b>C-12</b> 195130227
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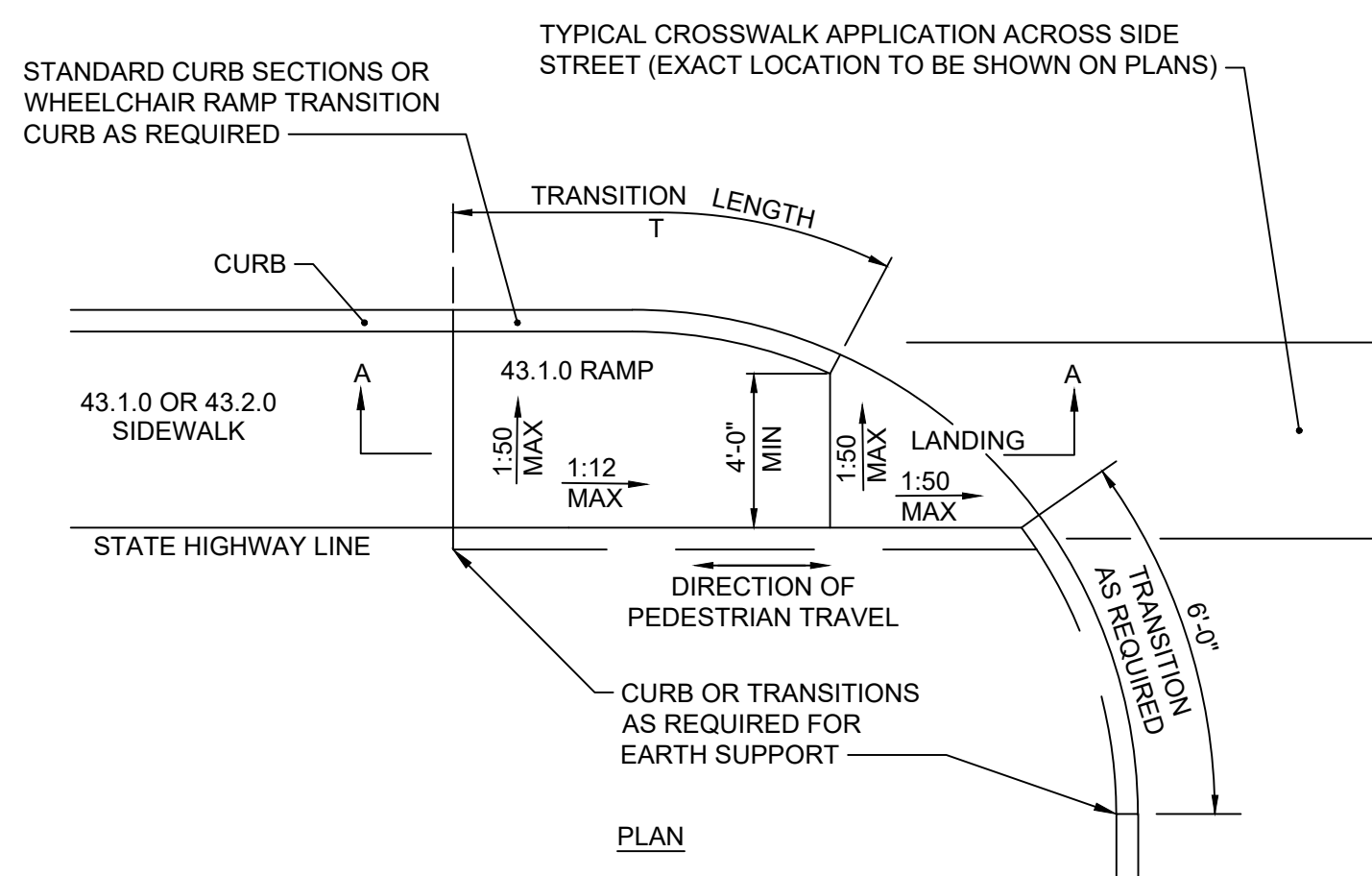
ROADWAY PROFILE GRADE	T (FT)
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0.01	7.0
0.02	8.0
0.03	9.5
0.04	11.5
0.05	15.0

NOTES:

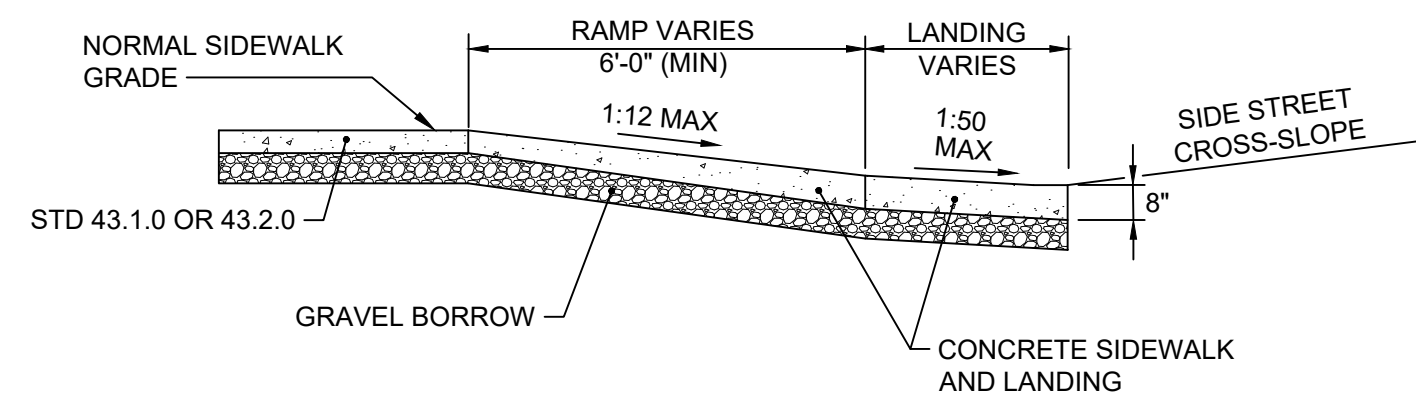
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE RI STANDARD SPECIFICATIONS.
2. WHEN ANY OBSTRUCTION LOCATED IN THE SIDEWALK FALLS WITHIN A CROSSWALK AREA, THE WHEELCHAIR RAMP WILL BE PLACED SUCH THAT THE OBSTRUCTION FALLS OUTSIDE OF THE RAMP.
3. AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP TO BE LOCATED OUTSIDE OF THE CROSSWALK, AND IT IS TO BE CENTERED WHENEVER POSSIBLE.
4. DRAINAGE FACILITIES ARE TO BE LOCATED UP-GRADE OF ALL WHEELCHAIR RAMPS.
5. LOCATION OF WHEELCHAIR RAMPS IS AS SHOWN ON CONTRACT DRAWINGS.
6. IN NO INSTANCE SHALL THE SIDEWALK CROSS SLOPE EXCEED 1:50 EXCEPT WITHIN THE RAMP AREA.
7. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'-0" SHALL BE MAINTAINED.
8. THE WHEELCHAIR RAMP SLOPE AND SIDE SLOPES (TRANSITIONS), MUST NOT EXCEED 1:12. HOWEVER, THESE SLOPES MAY BE FLATTER THAN 1:12 WHEN WARRANTED BY SURROUNDING CONDITIONS.
9. WHERE THE ROAD PROFILE EXCEEDS 5% THE HIGH SIDE TRANSITION LENGTH (T) SHALL BE EIGHTEEN FEET (18'-0").
10. IN NO CASE, WHERE A STOP LINE IS WARRANTED, SHALL A RAMP BE PLACED BEHIND THE STOP LINE.
11. THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.
12. THE WHEELCHAIR RAMP SHALL BE CENTERED RADIALLY, OPPOSITE THE RADIUS POINT WHEN POSSIBLE.
13. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0" (GREATER LENGTHS PREFERRED).
14. 8" CONCRETE DEPTH FOR RADIUS WHEELCHAIR RAMPS ONLY. USE 4" DEPTH FOR TANGENT (MID-BLOCK) LOCATIONS

WHEELCHAIR RAMP  
NOT TO SCALE

R.I. STANDARD  
43.3.0



ROADWAY GRADE	T
0.00	6.0
0.01	7.0
0.02	8.0
0.03	9.5
0.04	11.5
0.05	15.0

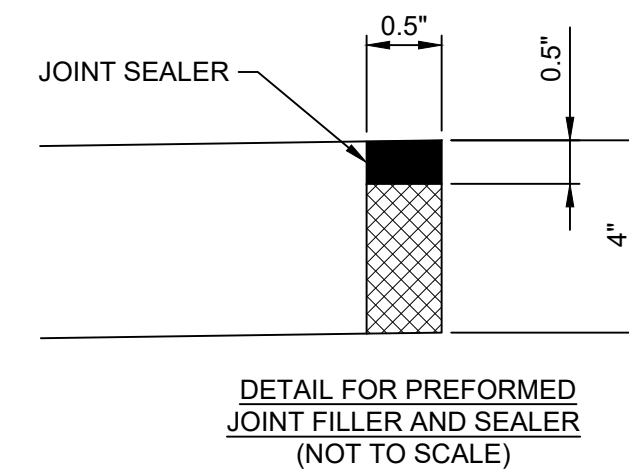
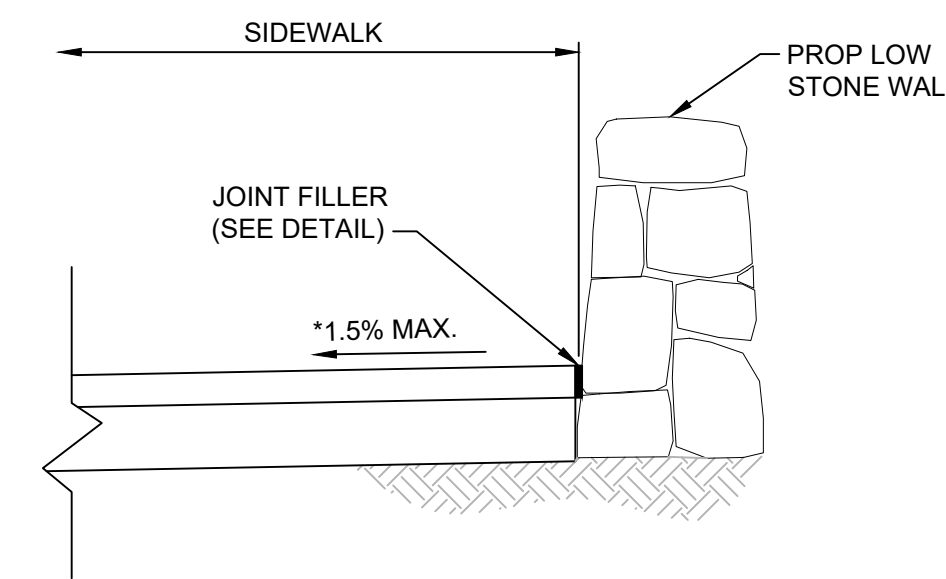


NOTES:

1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. THIS DETAIL IS TO BE USED ONLY WHEN STATE RIGHT-OF-WAY IS LIMITED TO BACK OF SIDEWALK, AND SIDEWALK IS NARROW WITH NO PEDESTRIAN TRAFFIC FROM SIDE STREET.
3. WHEN ANY OBSTRUCTION LOCATED IN THE SIDEWALK FALLS WITHIN A CROSSWALK AREA, IF POSSIBLE, THE OBSTRUCTION SHALL BE PLACED SUCH THAT IT FALLS OUTSIDE OF THE RAMP.
4. AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP TO BE LOCATED OUTSIDE OF THE CROSSWALK, AND IT IS TO BE CENTERED WHENEVER POSSIBLE.
5. DRAINAGE FACILITIES ARE TO BE LOCATED UP-GRADE OF ALL WHEELCHAIR RAMPS.
6. LOCATION OF WHEELCHAIR RAMPS IS AS SHOWN ON CONTRACT DRAWINGS.
7. ALL REQUIRED CUTTING OF CURB PIECES TO BE PAID FOR UNDER COST OF CURB.
8. WHERE THE ROAD PROFILE EXCEEDS 5% THE TRANSITION LENGTH (T) SHALL BE EIGHTEEN FEET (18'-0").
9. THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.
10. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0" (GREATER LENGTHS PREFERRED).
11. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 4'-0" SHALL BE MAINTAINED.

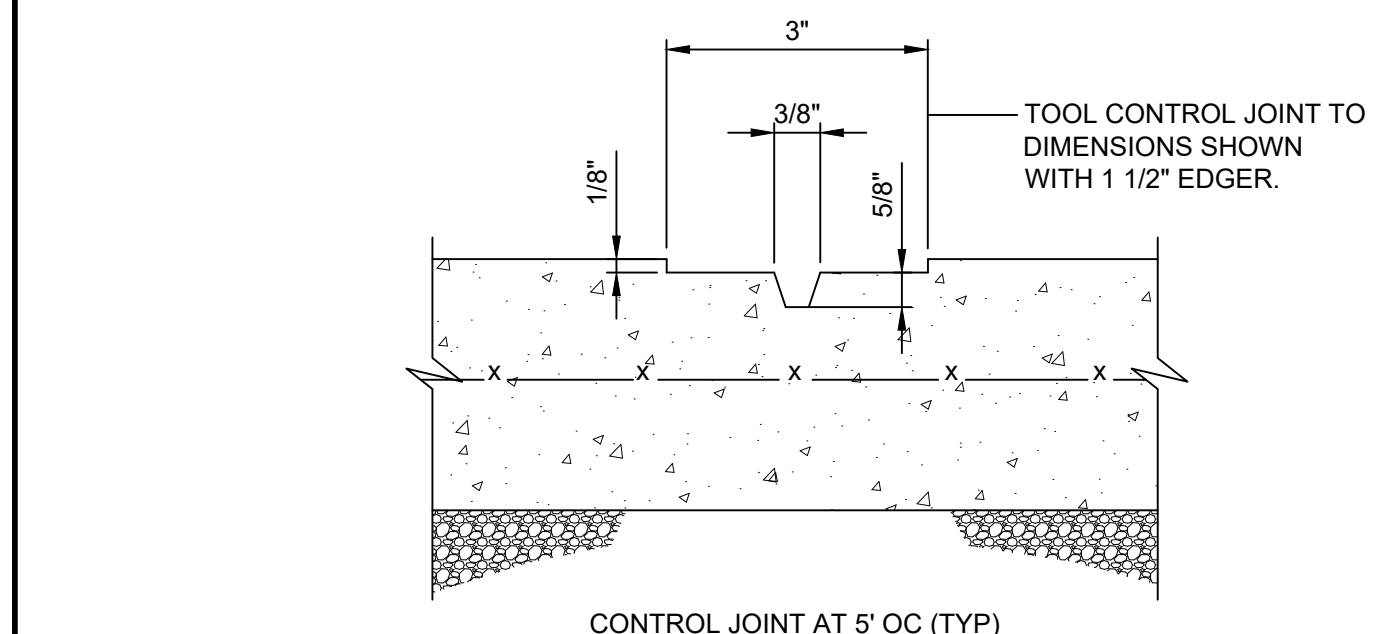
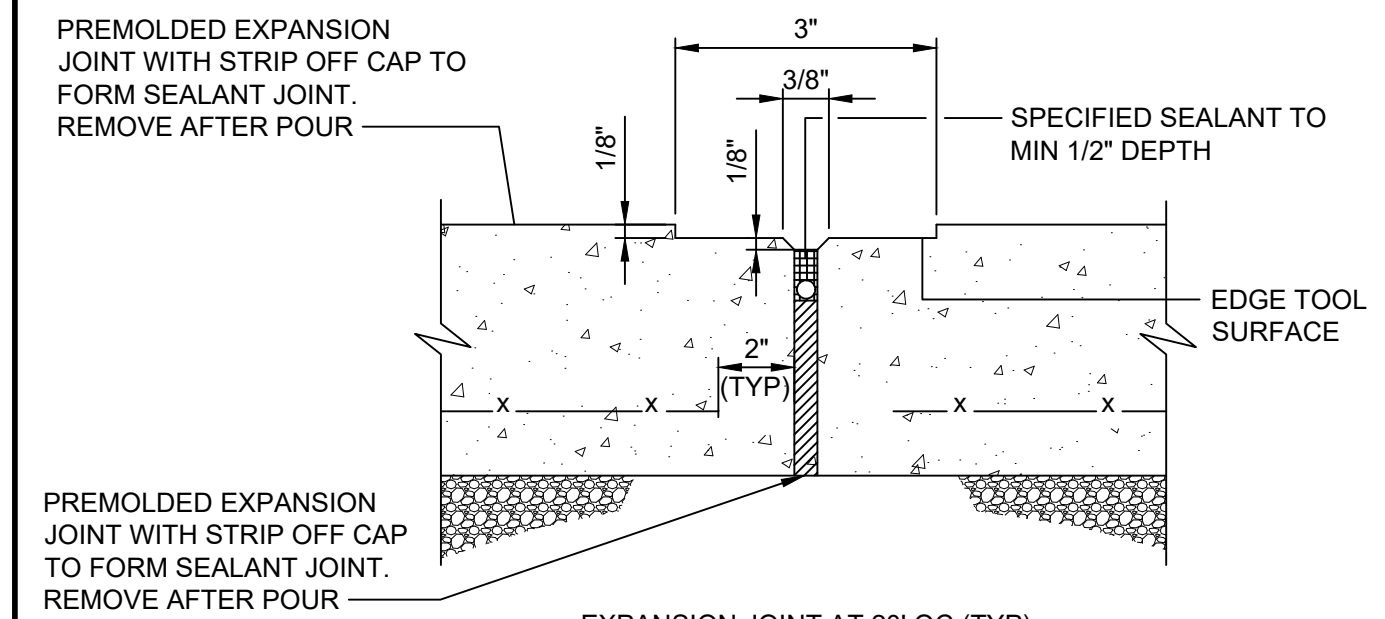
WHEELCHAIR RAMP FOR LIMITED RIGHT-OF-WAY AREAS  
NOT TO SCALE

R.I. STANDARD  
43.3.1



DETAIL FOR SIDEWALK AT STONE WALL  
NOT TO SCALE

C-908  
REV 000000



NOTES:

1. EXPANSION JOINTS (EJ) 20 FEET OC UNLESS OTHERWISE NOTED.
2. CONTROL JOINTS (CJ) 5 FEET OC UNLESS OTHERWISE NOTED.
3. WHERE EXISTING AND NEW CONCRETE SIDEWALKS MEET, SAWCUT EXISTING WALK AND INSTALL EXPANSION JOINT AND DOWELS AS SHOWN. DRILL EXISTING CONCRETE WALK EDGE TO RECEIVE STEEL DOWELS AT EXPANSION JOINT.

EXPANSION & CONTROL JOINTS FOR SIDEWALK PAVING  
NOT TO SCALE

C-205  
REV 000000

REV	DATE	BY	DESCRIPTION

SCALE	AS SHOWN
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

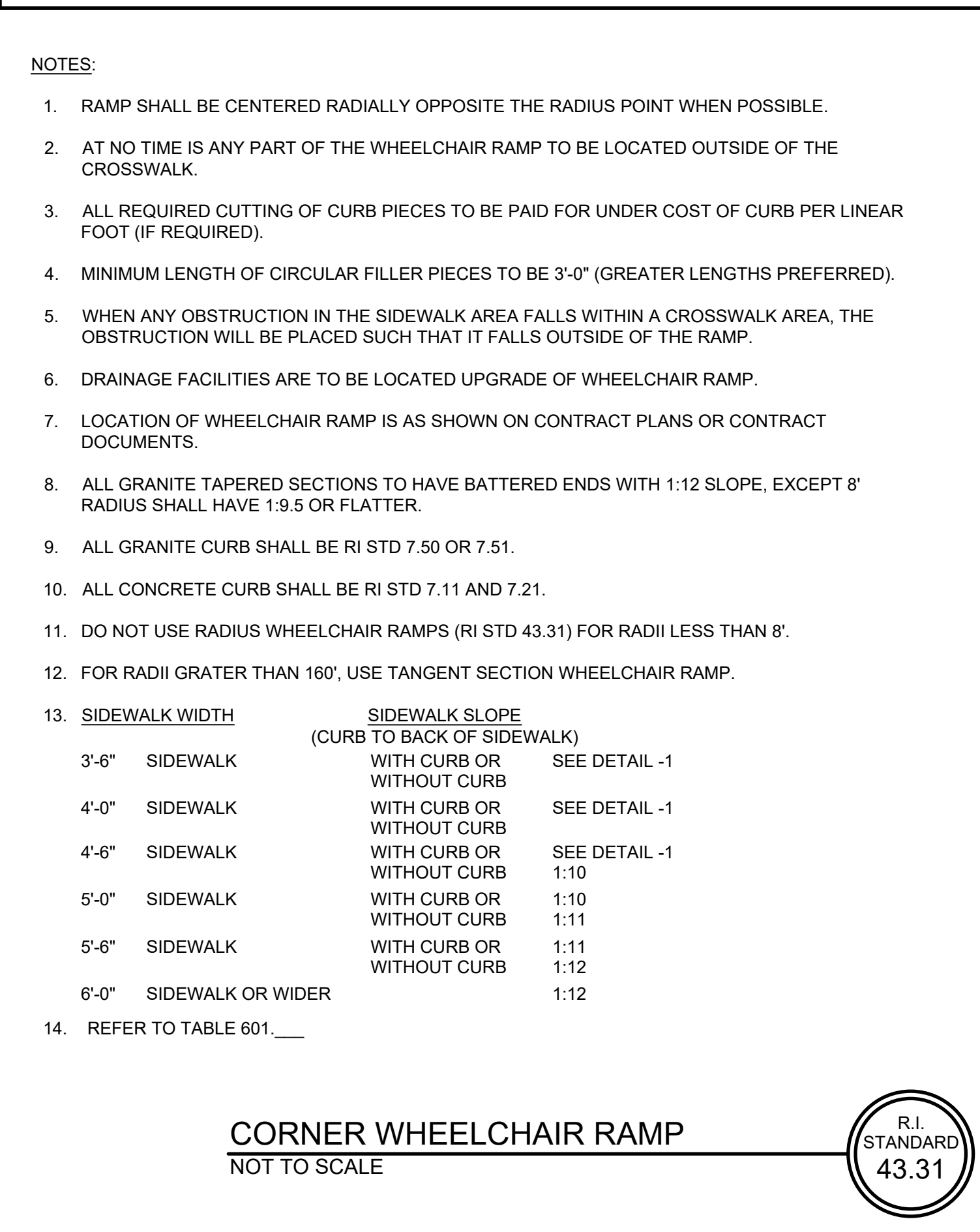
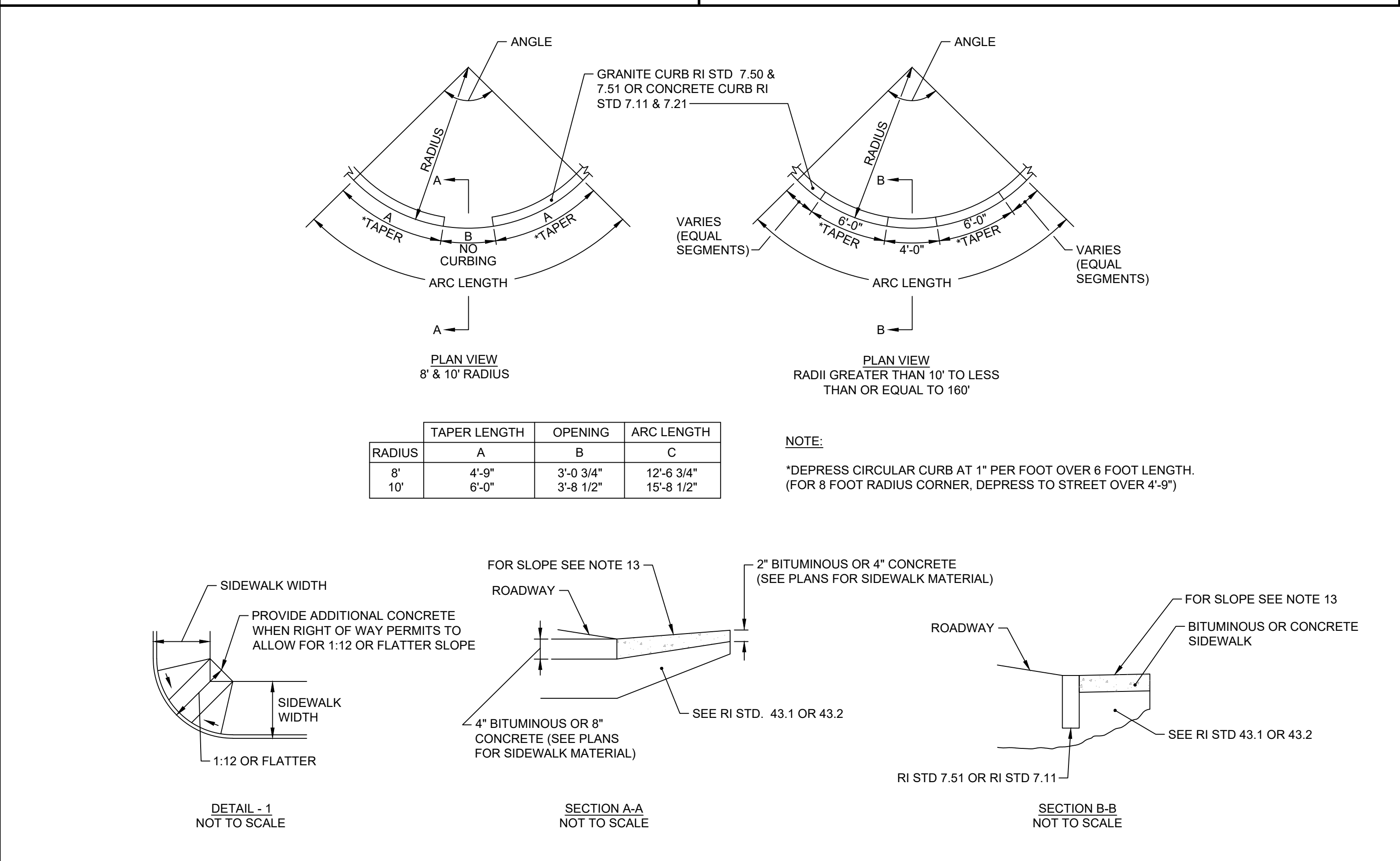
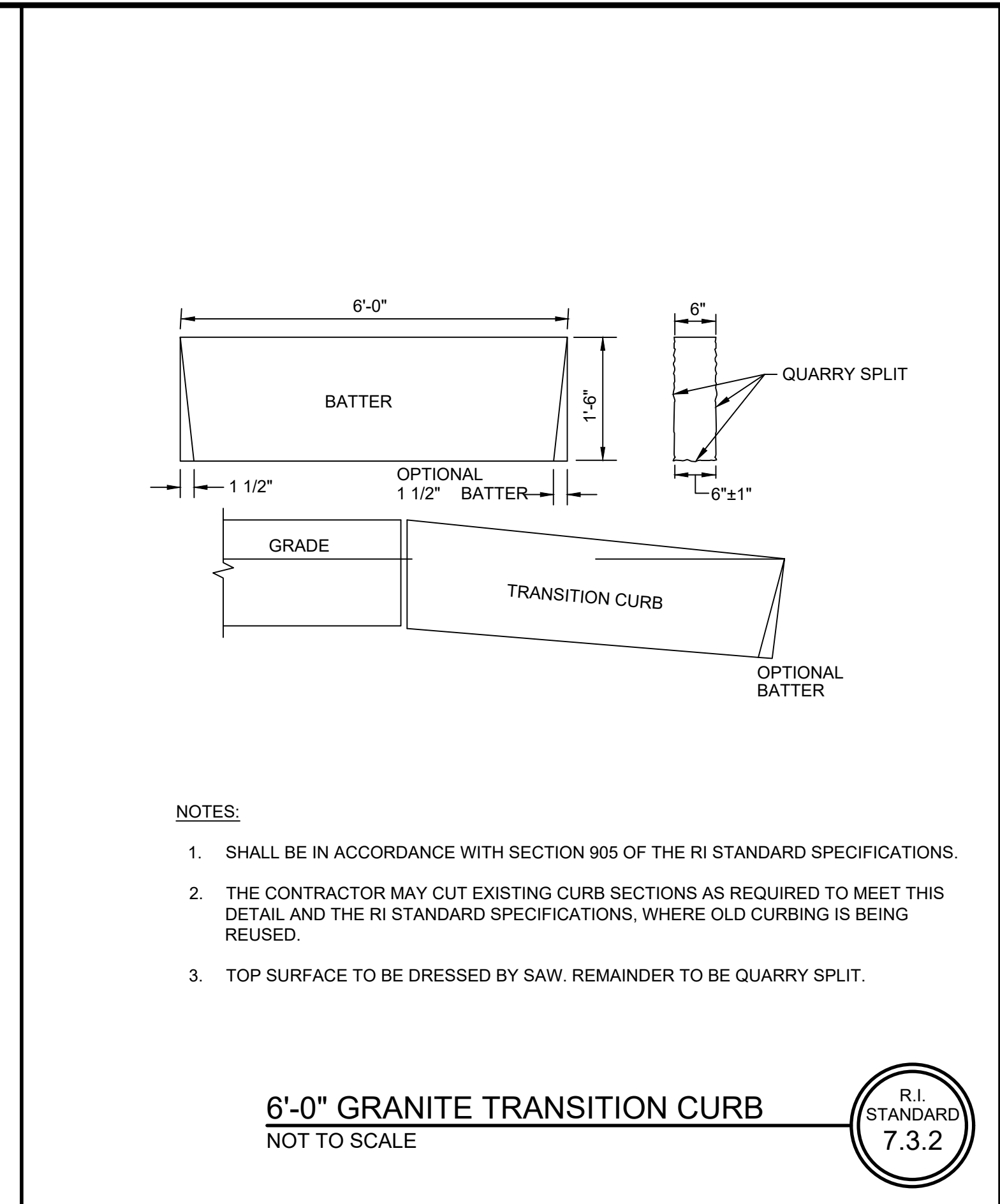
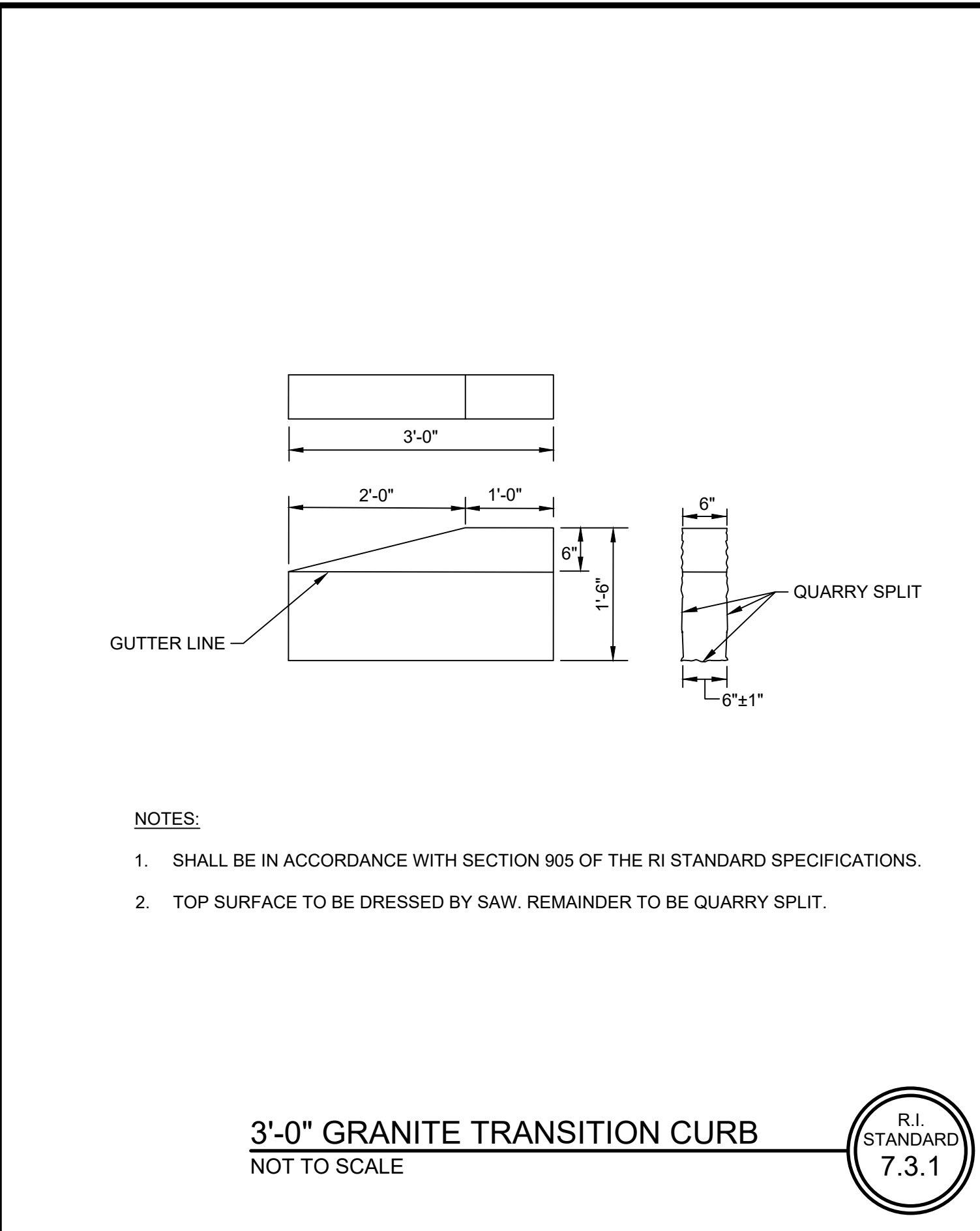
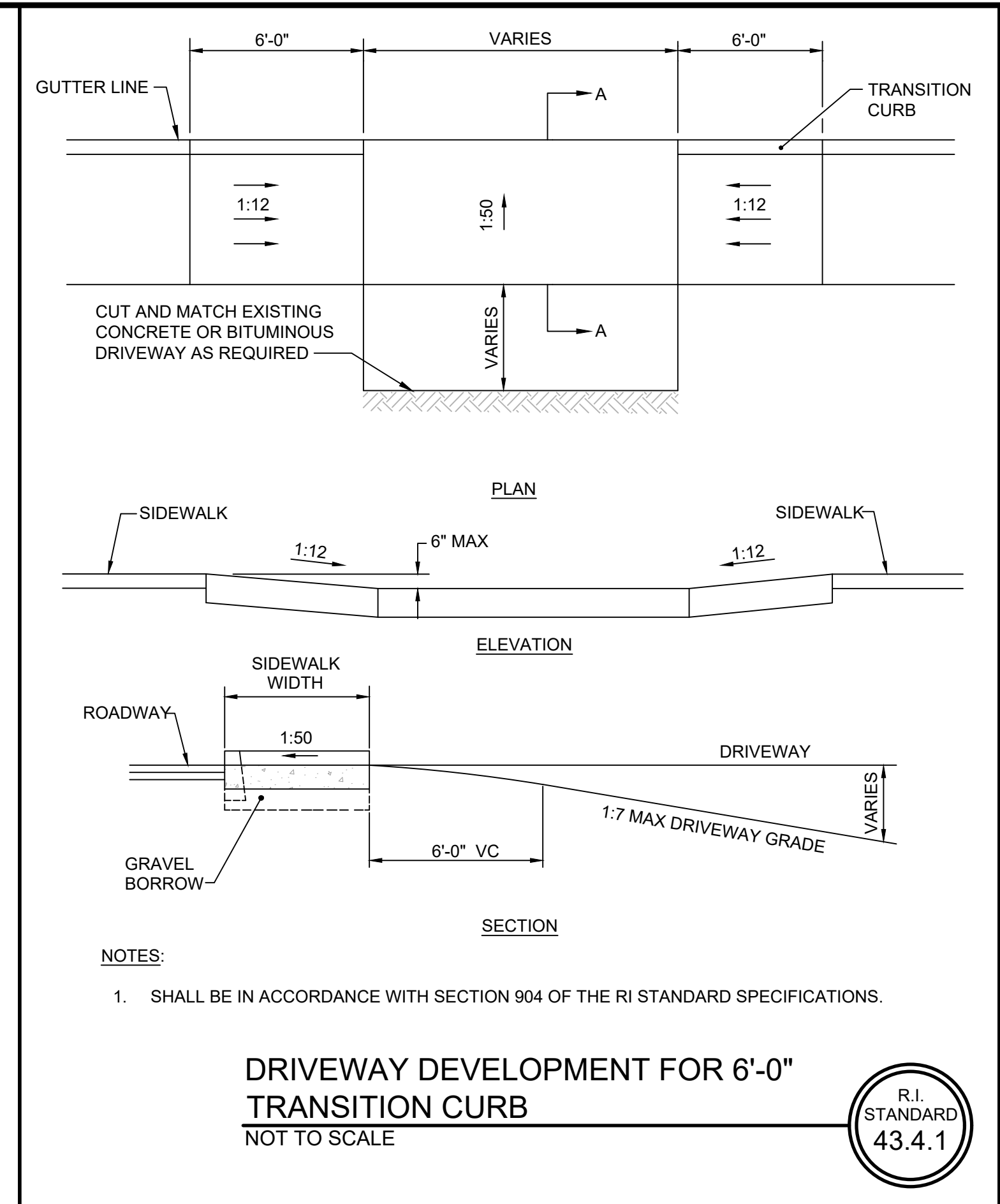
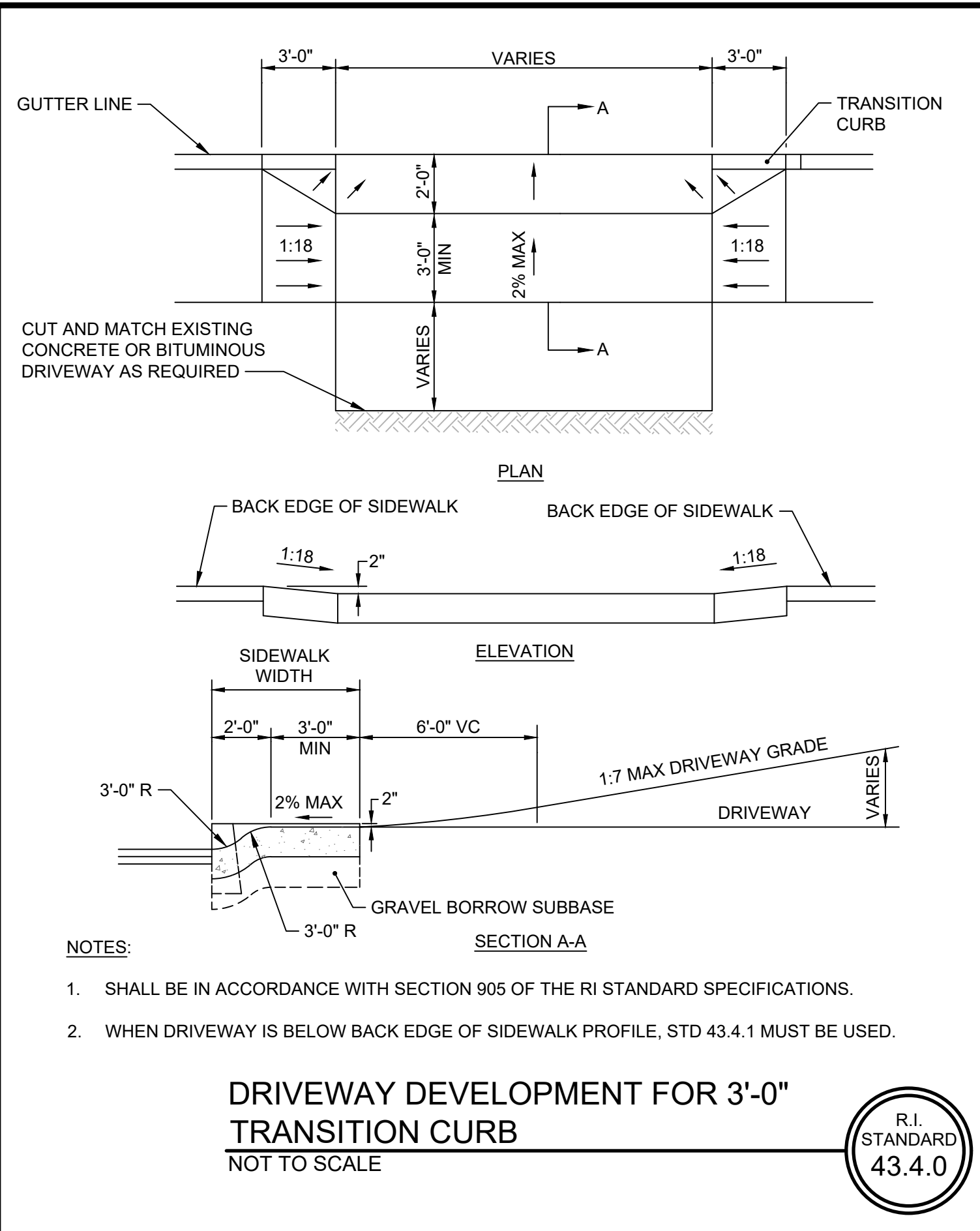
DESIGNED	C. CRONIN
DRAWN	C. MARSHALL
CHECKED	J. D'ALESSIO

FINAL DESIGN PHASE - JULY 2021  
NOT FOR CONSTRUCTION  
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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM  
Stantec logo

NBC CONTRACT NO 308.05C CIVIL	SHEET C-13
OF-217 CONSOLIDATION CONDUIT CIVIL DETAILS IV	195130227



REV	DATE	BY	DESCRIPTION

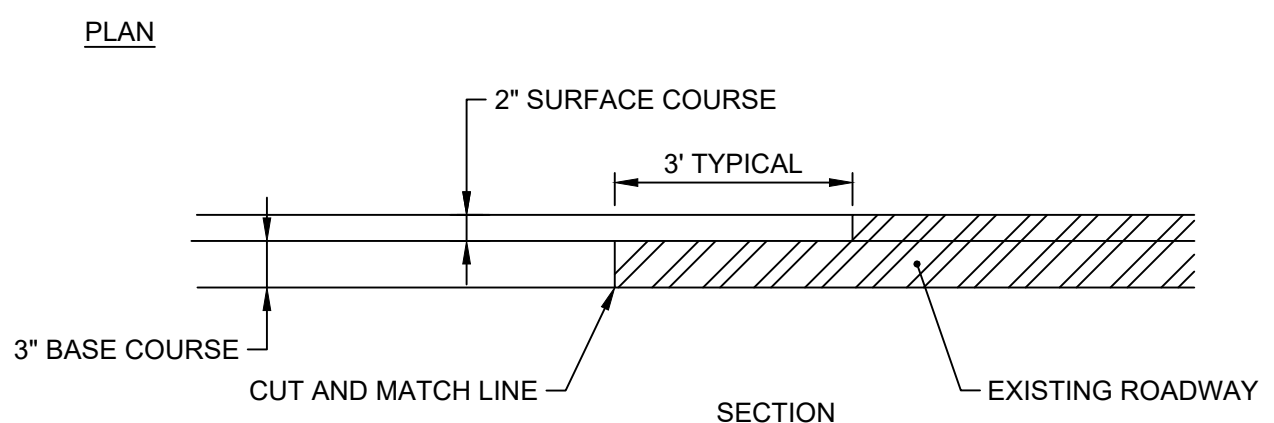
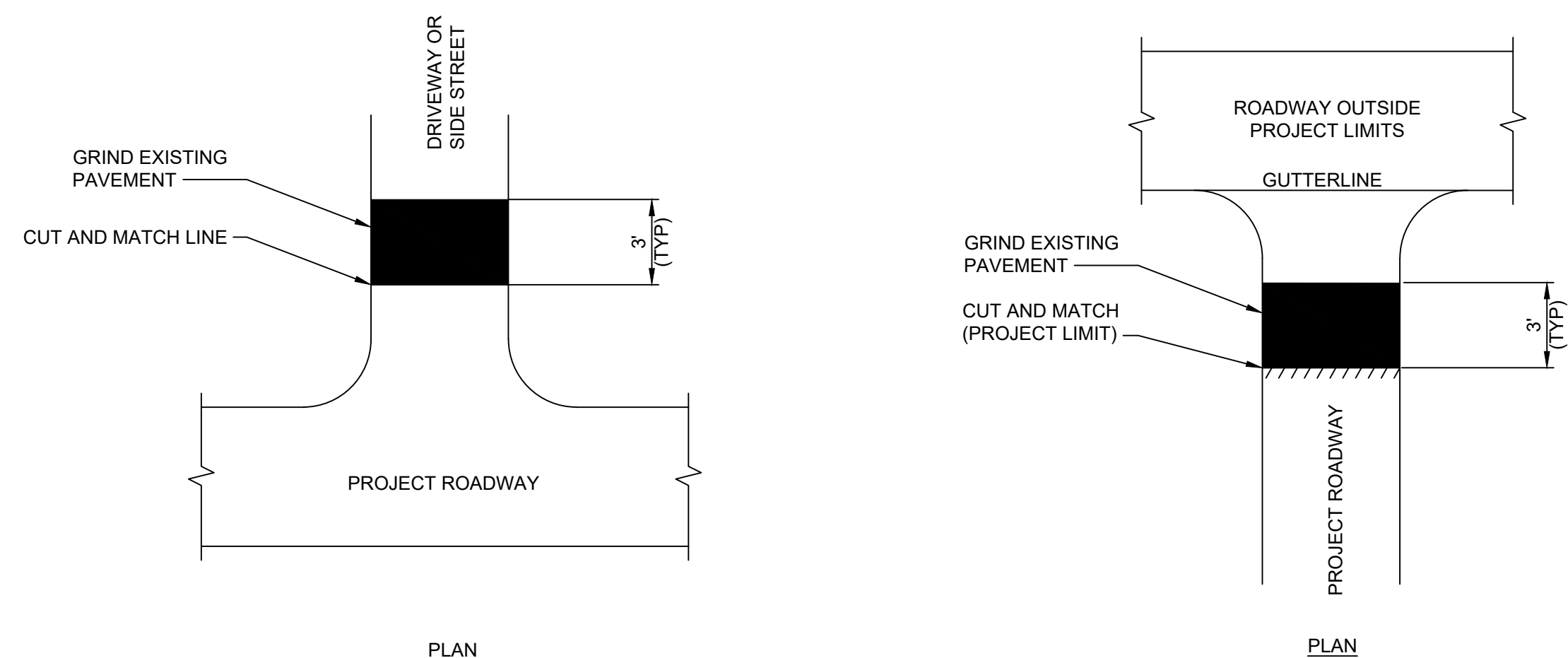
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WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
DESIGNED	C. CRONIN
DRAWN	C. MARSHALL
CHECKED	J. D'ALESSIO

FINAL DESIGN PHASE - JULY 2021

NOT FOR CONSTRUCTION

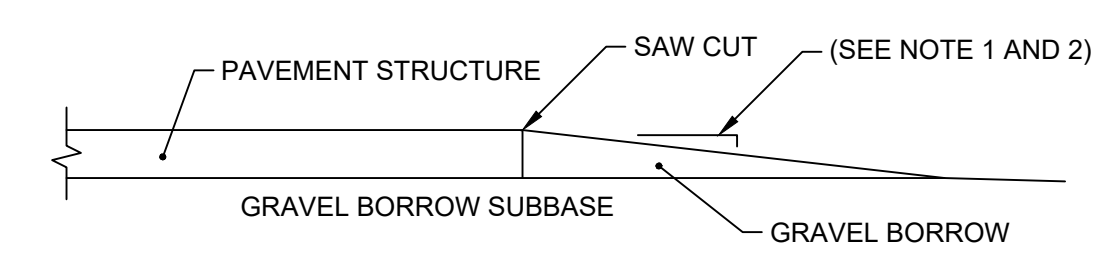
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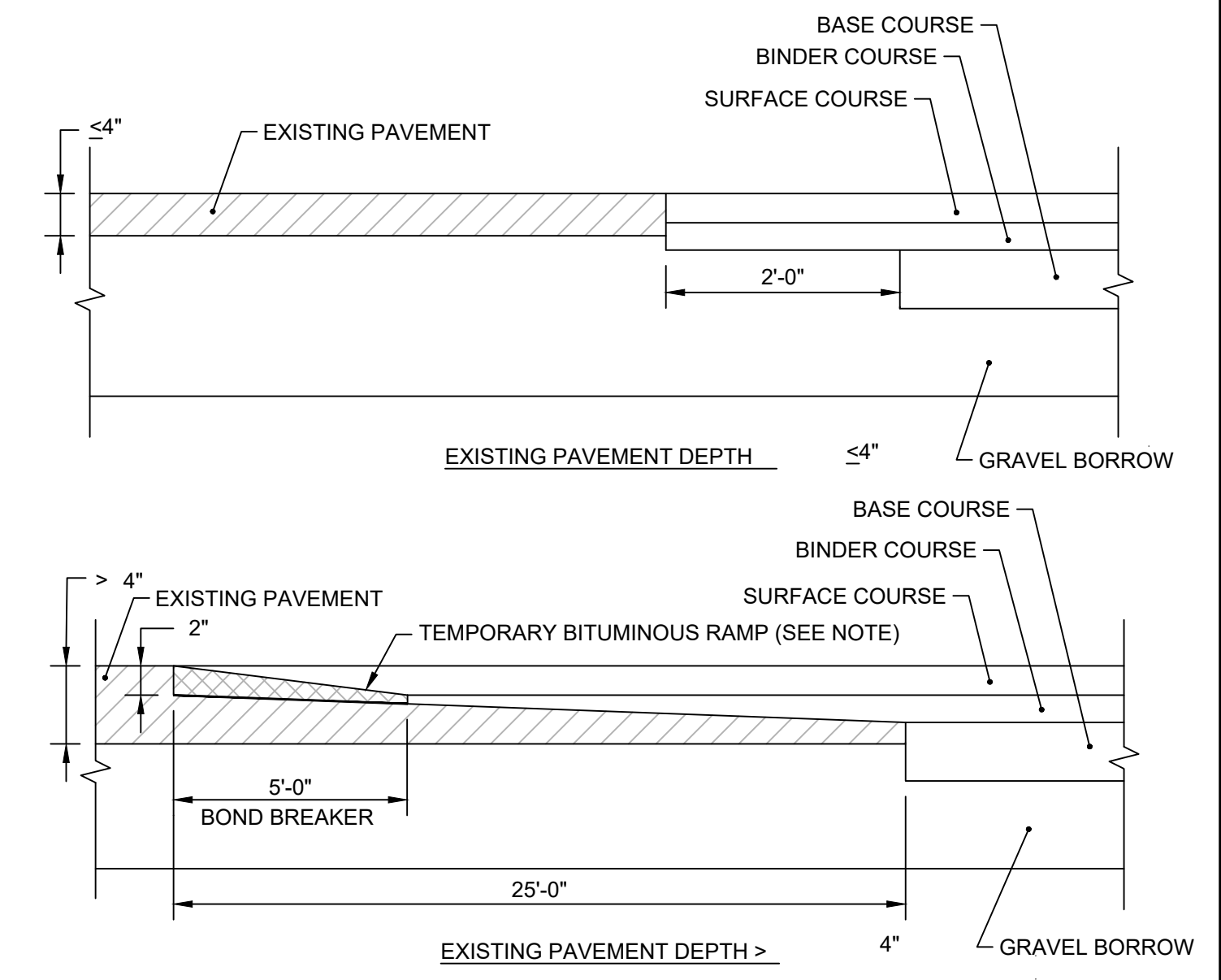
NOTES:  
1. ACTUAL LOCATIONS OF CUT AND MATCH LINES TO BE DETERMINED IN THE FIELD.

**PROJECT LIMITS CUT AND MATCH DETAIL**  
NOT TO SCALE REV 000000 C-912



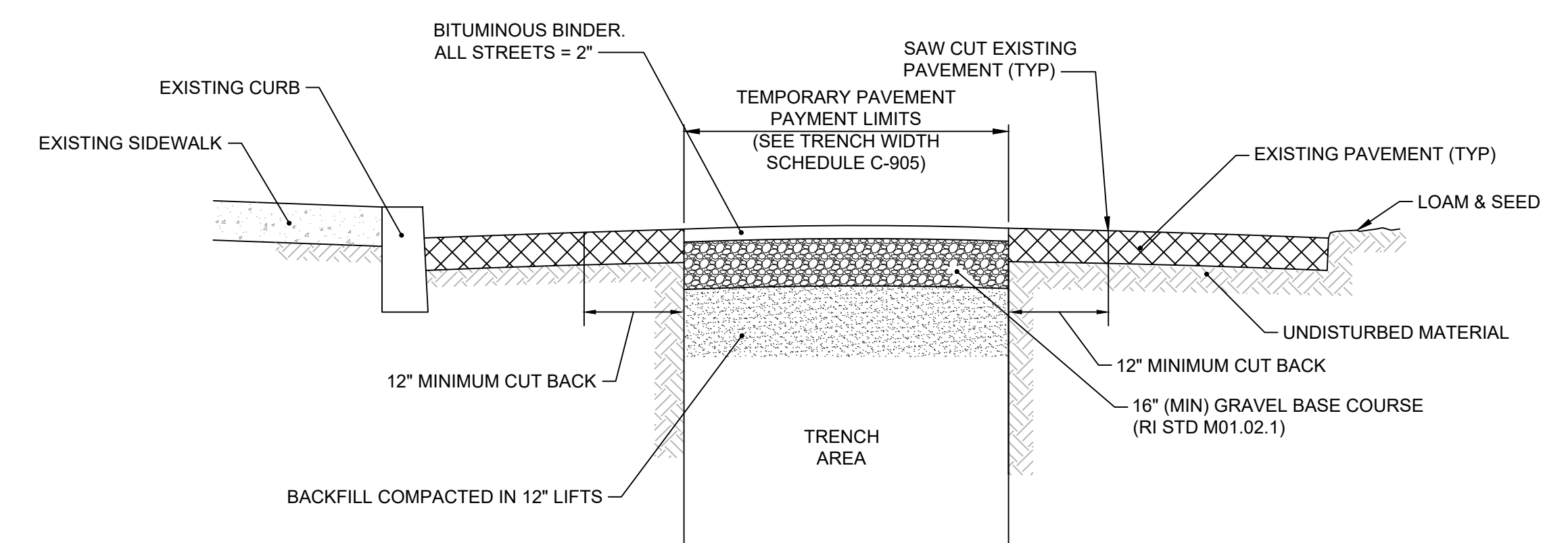
NOTES:  
1. TRANSVERSE DROP-OFF:  
POSTED SPEED < 35 MPH: 5 FEET HORIZONTALLY TO 1 INCH VERTICALLY  
POSTED SPEED > 35 MPH: 10 FEET HORIZONTALLY TO 1 INCH VERTICALLY  
2. LONGITUDINAL DROP-OFF (OUTSIDE EDGES OF PAVEMENT):  
POSTED SPEED < 35 MPH: DROP-OFFS > 3" BUT < 5" SHALL BE TAPERED TO A 1:1 OR FLATTER SLOPE TO EXISTING GROUND ALL DROP-OFFS > 5" SHALL BE TAPERED TO A 4:1 OR FLATTER SLOPE TO EXISTING GROUND.  
POSTED SPEED > 35 MPH: LONGITUDINAL DROP-OFFS WILL NOT BE PERMITTED WITHIN 2'-0" OF A TRAVEL LANE. THIS AREA MUST BE AT GRADE WITH THE TRAVEL LANE. HOWEVER, SHOULD THE CONTRACTOR'S APPROVED SEQUENCE OF OPERATIONS RESULT IN OVERNIGHT DROP-OFFS GREATER THAN THREE INCHES OCCURRING BETWEEN 2'-0" TO 6'-0" FROM A TRAVEL LANE, THEN THE DROP-OFFS SHALL BE TAPERED TO A 4:1 OR FLATTER SLOPE TO EXISTING GROUND.

**PAVEMENT REMOVAL DROP-OFF DETAIL**  
NOT TO SCALE R.I. STANDARD 47.1.0



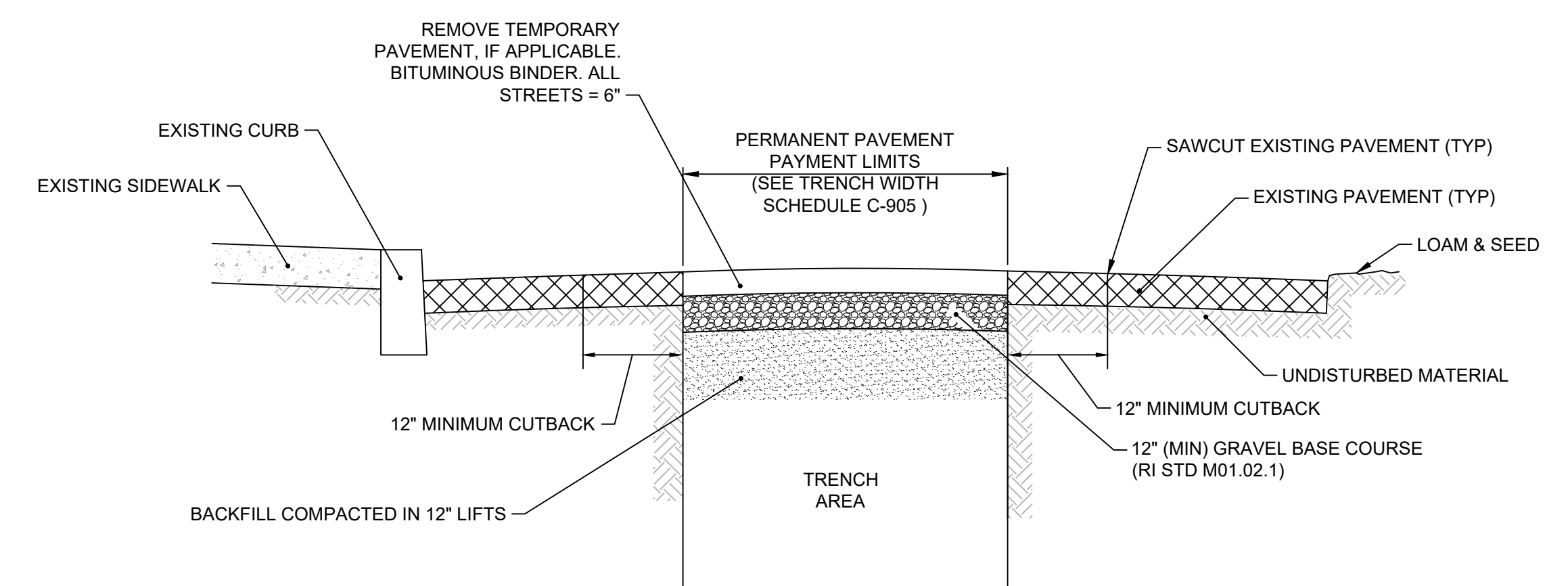
NOTES:  
1. A BOND BREAKER (TAPERED OR EQUIVALENT) WILL BE PLACED 5'-0" FROM THE JOINT AND COVERED WITH THE BINDER COURSE AS THE TEMPORARY RAMP. PRIOR TO PLACING THE SURFACE COURSE, THE BINDER COURSE AND BOND BREAKER WILL BE REMOVED.

**TRANSVERSE PAVEMENT CUT AND MATCH**  
NOT TO SCALE R.I. STANDARD 47.1.1



NOTES:  
1. CONTRACTOR TO VARY PAVEMENT THICKNESS TO MAINTAIN A MINIMUM CROSS SECTIONAL SLOPE EQUALING 0.02 FT/FT OR %.

**TEMPORARY TRENCH-WIDTH PAVEMENT**  
NOT TO SCALE REV 000000 C-913



NOTES:  
1. CONTRACTOR TO VARY PAVEMENT THICKNESS TO MAINTAIN A MINIMUM CROSS SECTIONAL SLOPE EQUALING 0.02 FT/FT OR %.

**PERMANENT TRENCH-WIDTH PAVEMENT**  
NOT TO SCALE REV 000000 C-914

REV	DATE	BY	DESCRIPTION

SCALE  
AS SHOWN

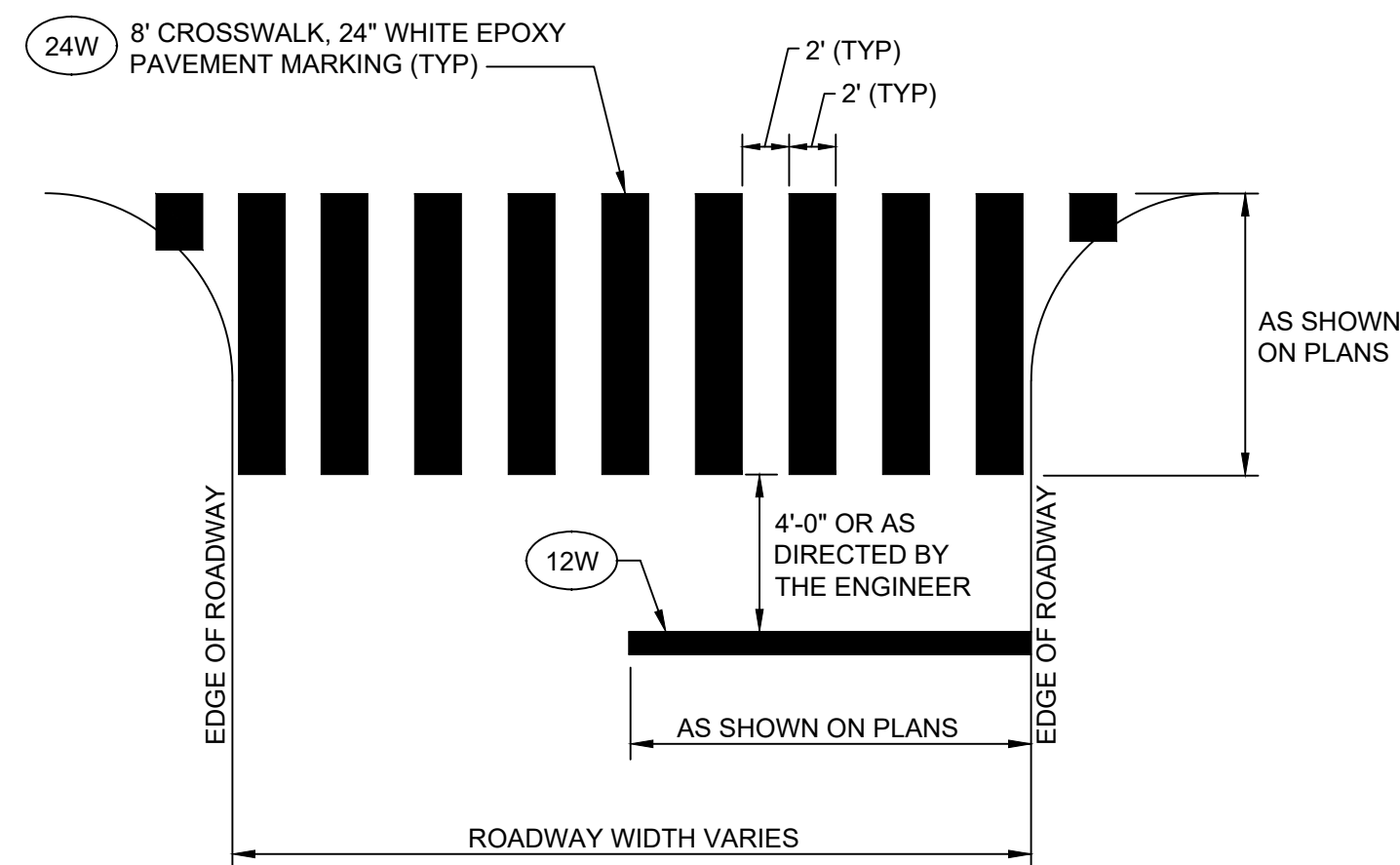
WARNING  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED C. CRONIN  
DRAWN C. MARSHALL  
CHECKED J. D'ALESSIO

FINAL DESIGN PHASE - JULY 2021  
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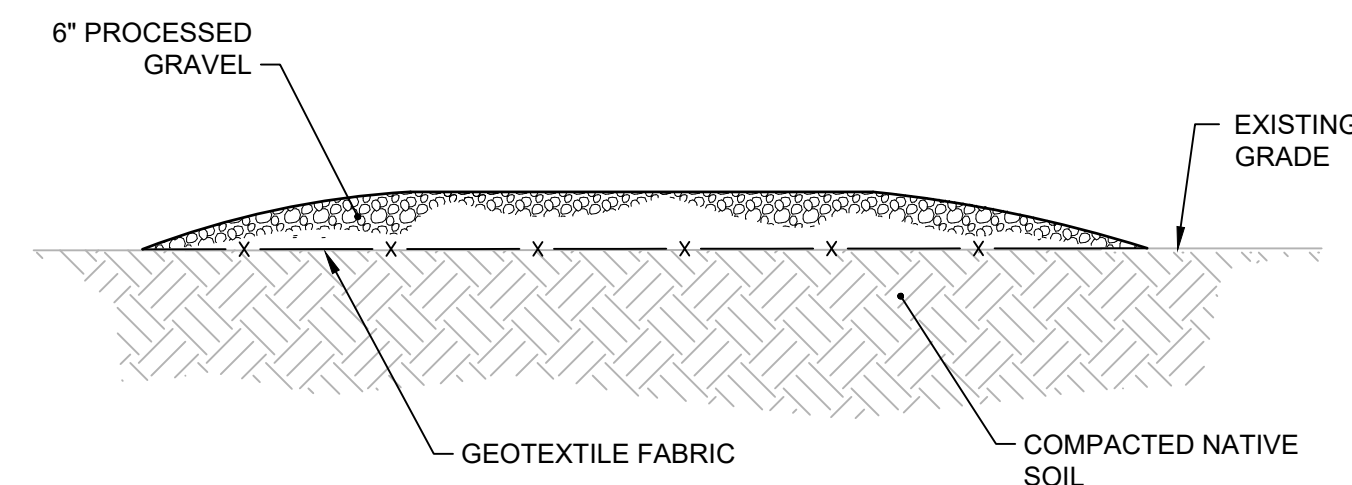
NBC CONTRACT NO 308.05C  
CIVIL  
OF-217 CONSOLIDATION CONDUIT  
CIVIL DETAILS VI



CONTRACTOR TO MATCH EXISTING STRIPING AT THE FOLLOWING LOCATIONS:

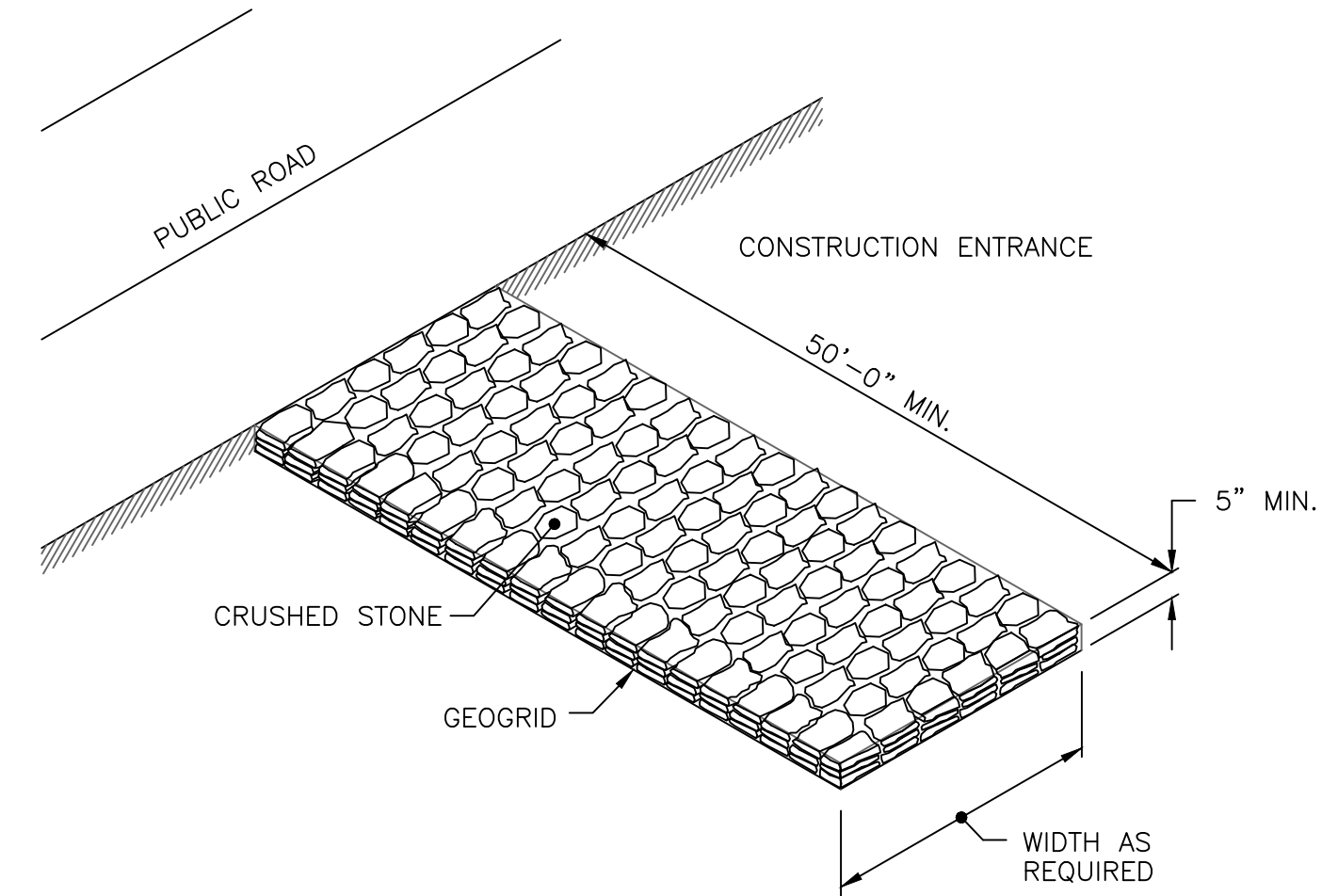
- LOCATIONS:**
- INTERSECTION OF MAIN STREET (65 FT WIDE) AND ROOSEVELT AVENUE EXT (34 FT WIDE)
    - 4 CROSSWALKS AND 4 STOPLINES
  - INTERSECTION OF JENKS WAY (44 FT WIDE) AND ROOSEVELT AVENUE EXT (31 FT WIDE)
    - 2 CROSSWALKS AND 1 STOPLINE
  - TAFT STREET (62 FT WIDE) AT APPROXIMATELY 650 FT NORTH OF SPENCER STREET
    - 1 CROSSWALK
  - INTERSECTION OF TOWER STREET (25 FT WIDE) AND TAFT STREET (48 FT WIDE)
    - 2 CROSSWALKS AND 2 STOPLINE
  - INTERSECTION OF TIDEWATER STREET (32 FT WIDE) AND TAFT STREET (30 FT WIDE)
    - 2 CROSSWALKS AND 2 STOPLINES

**CROSSWALK AND STOPLINE DETAIL - TYPE 1**  
NOT TO SCALE REV 000000 C-915



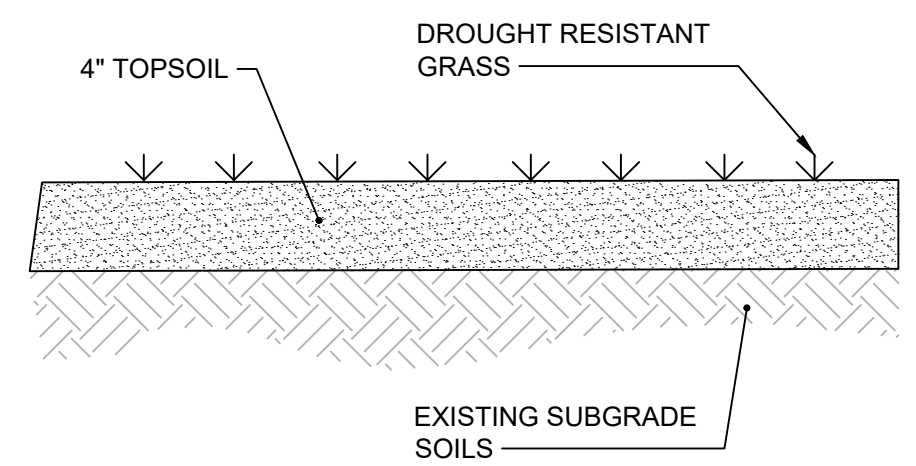
- NOTES:**
- CONTRACTOR TO INSTALL TEMPORARY GRAVEL ACCESS IN AREAS WHERE CONTRACTOR INTENDS TO DRIVE AND/OR STORE EQUIPMENT.
  - TEMPORARY GRAVEL ACCESS SHALL BE REMOVED WHEN NO LONGER REQUIRED BY THE CONTRACTOR.

**GRAVEL ACCESS ROAD**  
NOT TO SCALE REV 000000 C-916

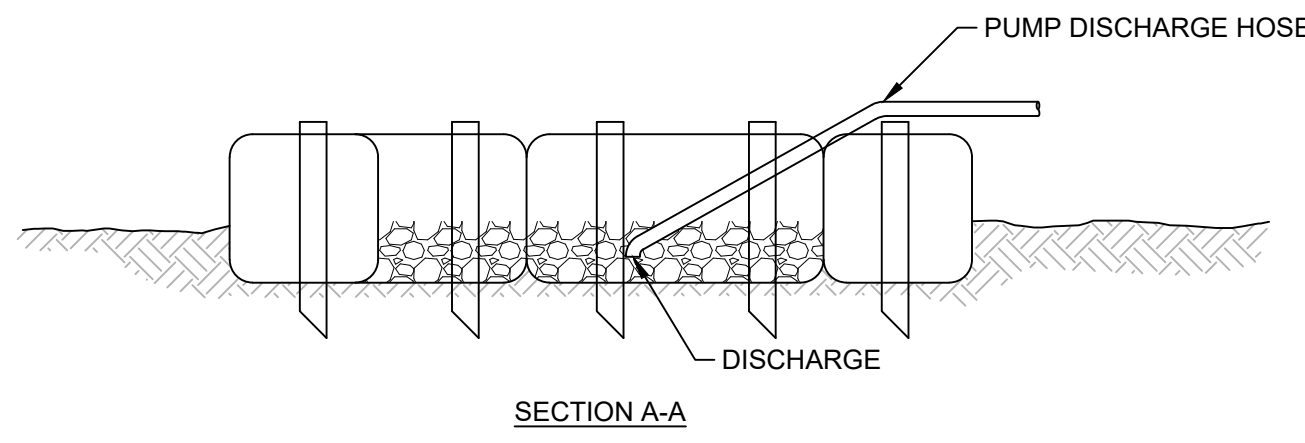
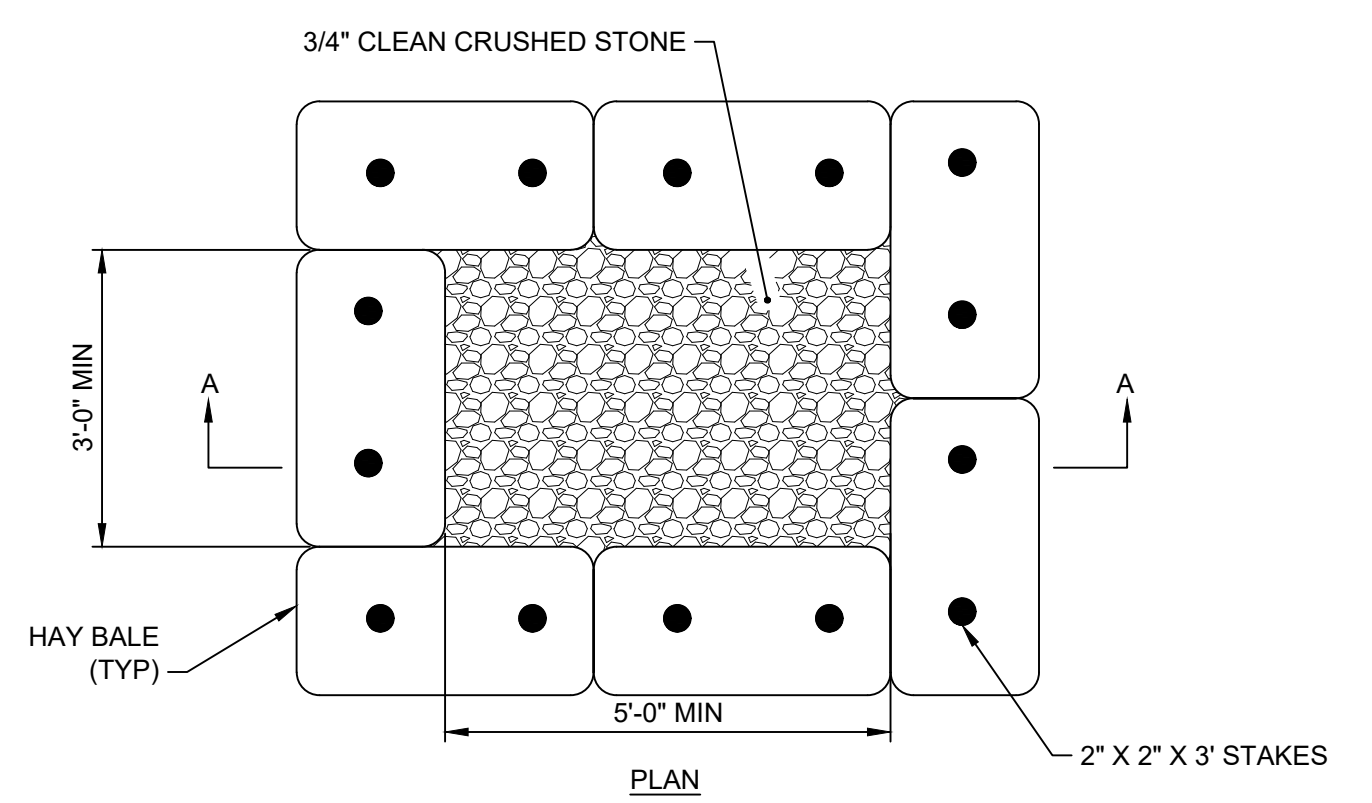


**NOTE:** SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE R.I. STANDARD SPECIFICATIONS.

**CONSTRUCTION ACCESS**  
NOT TO SCALE R.I. STANDARD 9.9.0

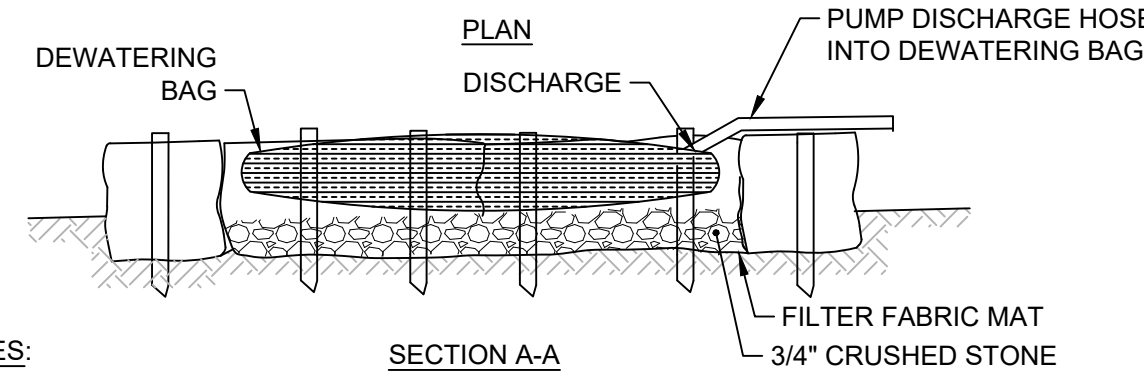
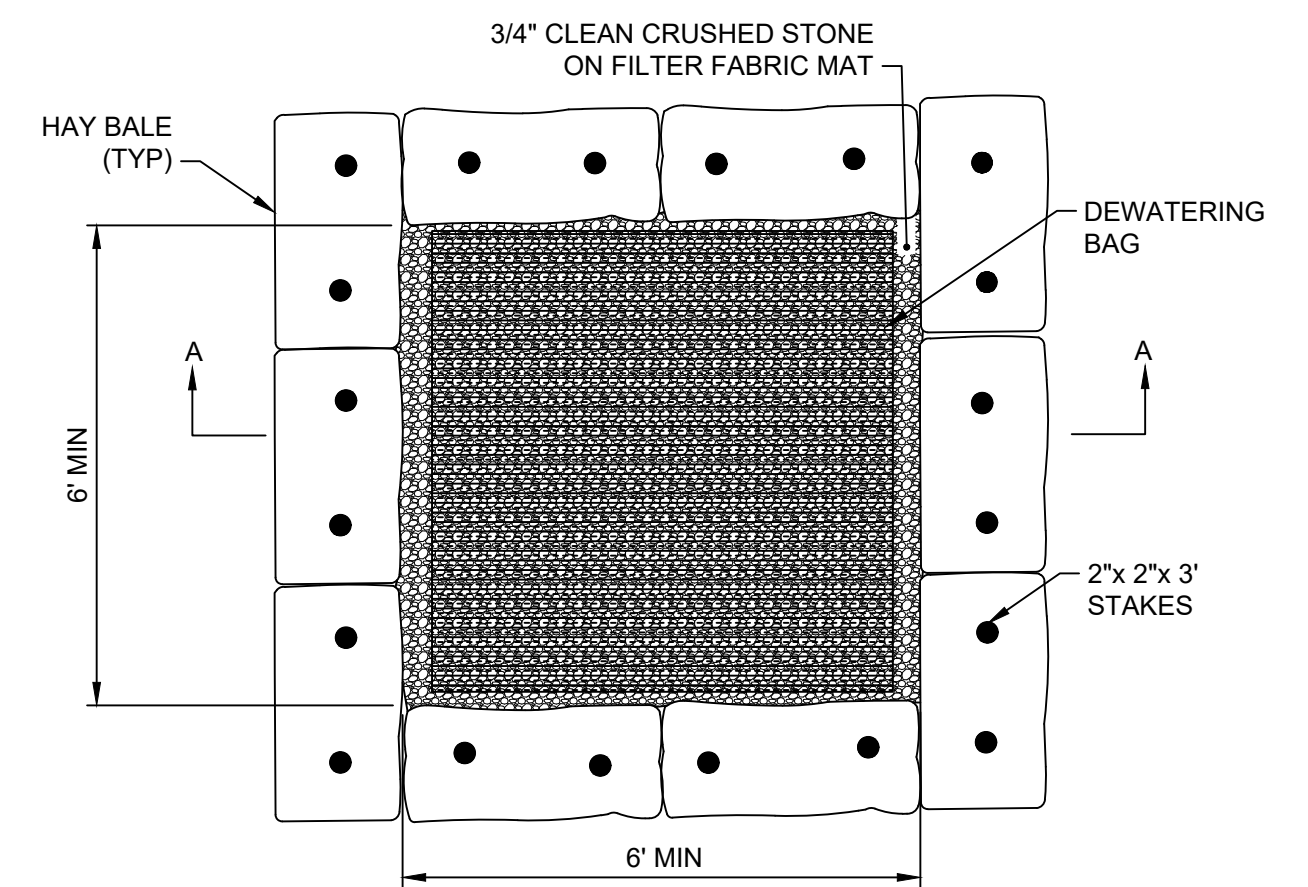


**GROUND COVER DETAIL**  
NOT TO SCALE REV 000000 C-917



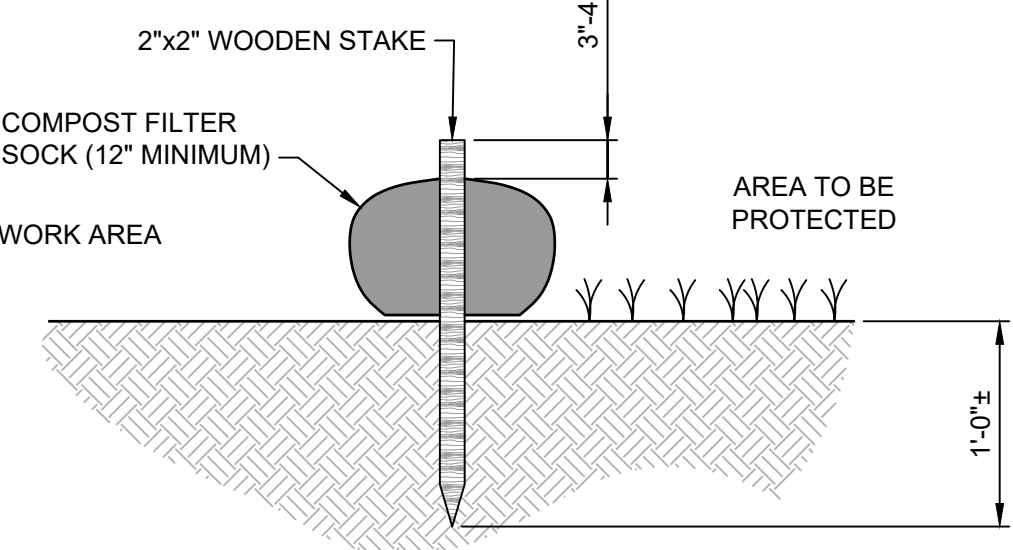
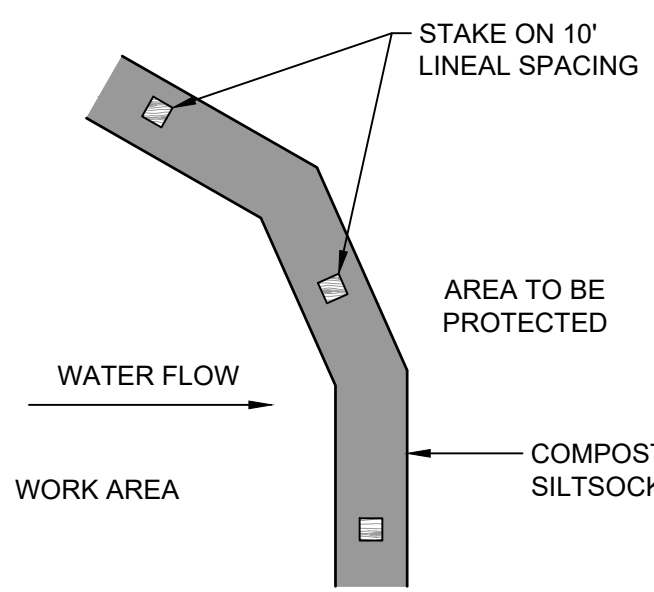
- NOTES:**
- ALL DEWATERING DISCHARGES SHALL BE THROUGH SEDIMENT CONTROL TRAPS. CONTRACTOR SHALL MAINTAIN AND CLEAN TRAP AS REQUIRED.

**SEDIMENT CONTROL TRAP**  
NOT TO SCALE REV 000000 C-918



- NOTES:**
- ALL DEWATERING DISCHARGES SHALL BE THROUGH DEWATERING BAG, CONTRACTOR SHALL MAINTAIN AND CLEAN AS REQUIRED.
  - CONTRACTOR SHALL SUBMIT DEWATERING PLANS TO THE ENGINEER/OWNER FOR APPROVAL.
  - SIZING OF DEWATERING BAG SHALL BE BASED ON BUT NOT LIMITED TO THE FOLLOWING:
    - 3a. PUMP FLOW RATE
    - 3b. QUALITY AND TYPE OF SEDIMENT
    - 3c. VOLUME OF MATERIALS NEEDING CONTAINMENT

**SEDIMENT CONTROL TRAP WITH DEWATERING BAG**  
NOT TO SCALE REV 000000 C-919



- NOTES:**
- COMPOST/ SOIL/ ROCK/ SEED FILL TO MEET APPLICATION REQUIREMENTS.
  - COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE AS DETERMINED BY ENGINEER.
  - IF SOCK NETTING MUST BE JOINED, FIT BEGINNING OF NEW SOCK OVER END OF OLD SOCK, OVERLAPPING BY 2 FEET AND STACK OVERLAP. IF SOCK NETTING IS NOT JOINED, OVERLAP OLD SOCK WITH NEW ONE BY MINIMUM OF 2 FEET.

**COMPOST FILTER SOCK**  
NOT TO SCALE REV 000000 C-401

REV	DATE	BY	DESCRIPTION

SCALE: AS SHOWN

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED: C. CRONIN  
DRAWN: C. MARSHALL  
CHECKED: J. D'ALELIO

FINAL DESIGN PHASE - JULY 2021

**NOT FOR CONSTRUCTION**

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

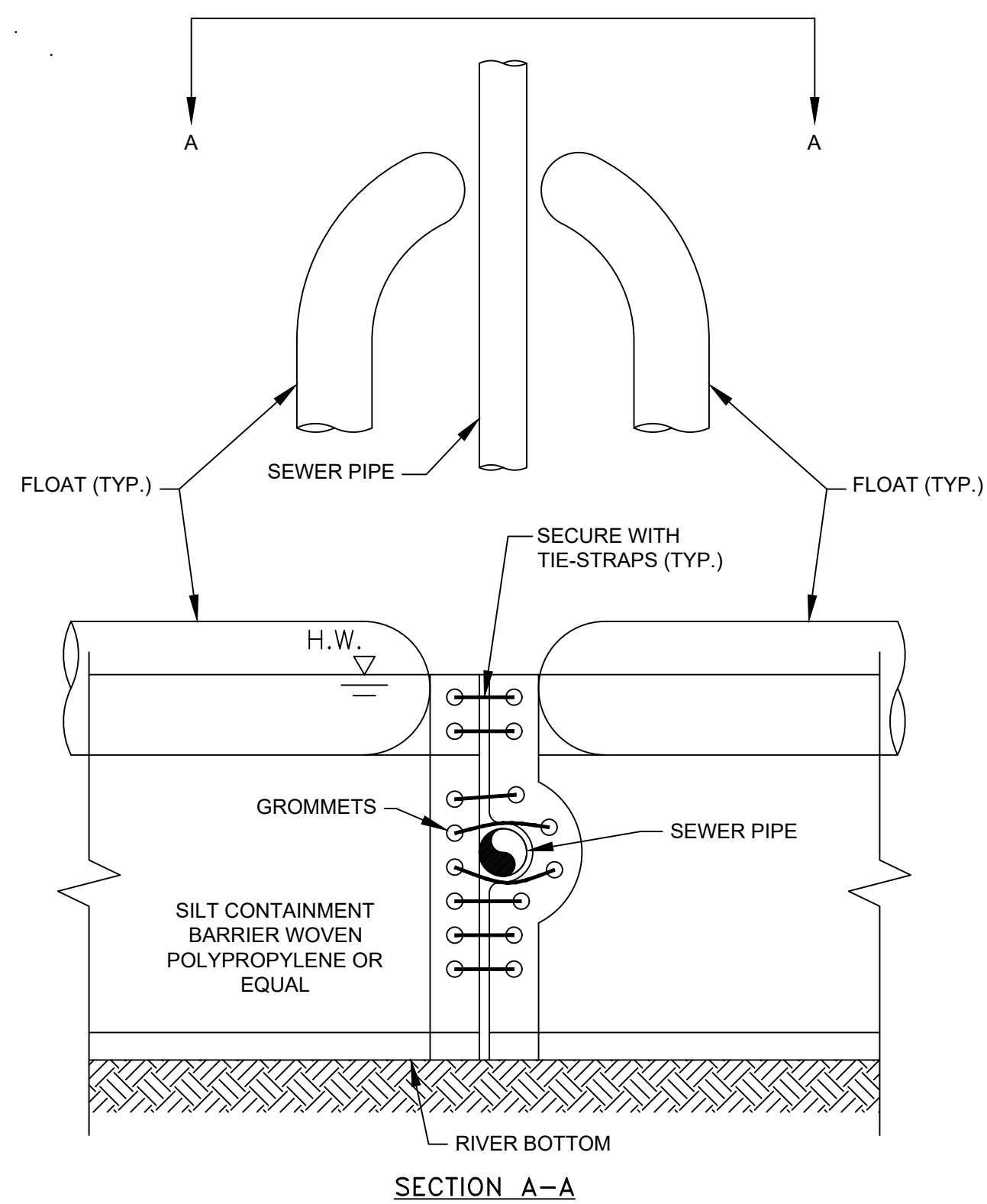
Stantec

NBC CONTRACT NO 308.05C  
CIVIL

OF-217 CONSOLIDATION CONDUIT  
CIVIL DETAILS VII

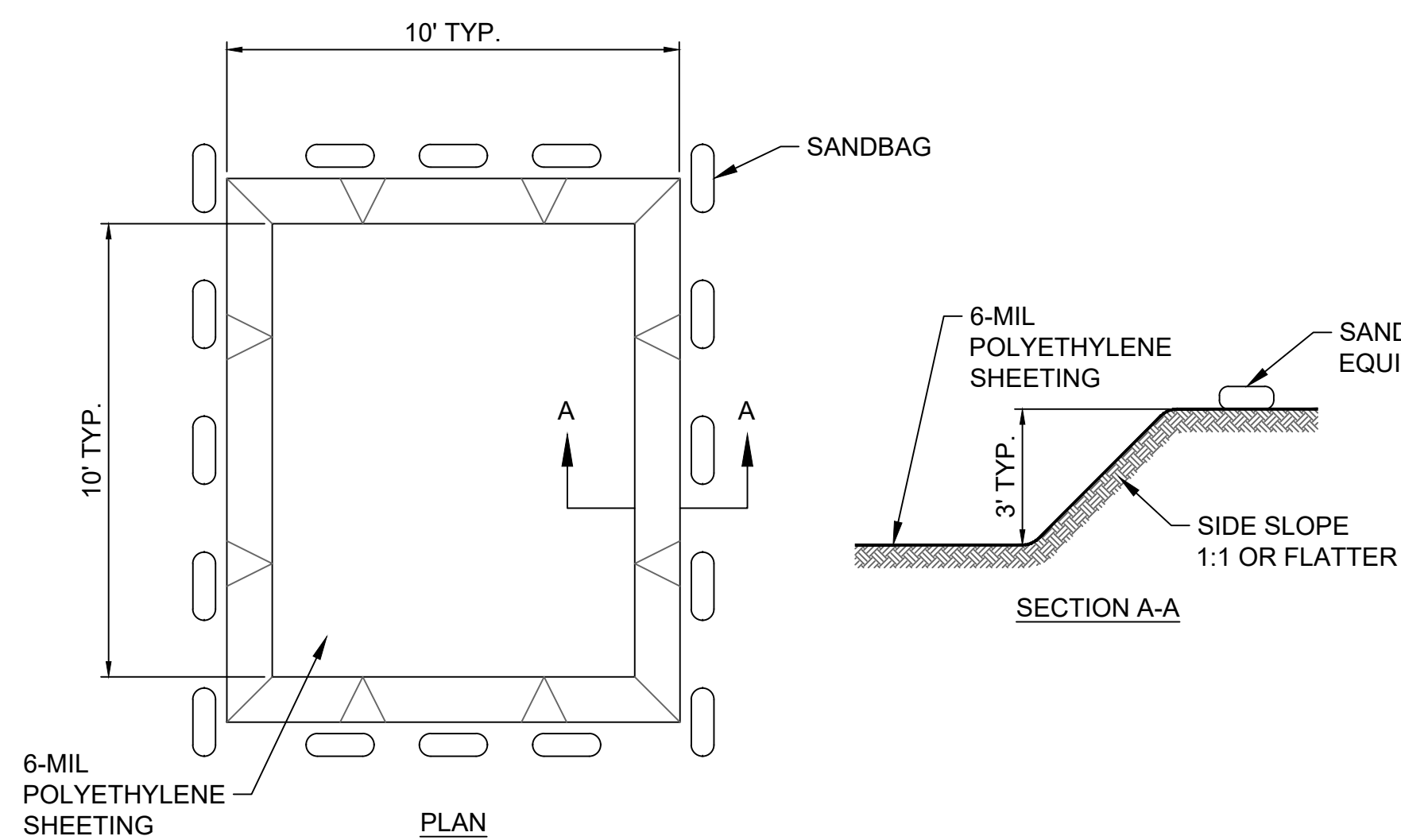
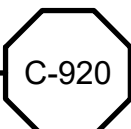
SHEET  
**C-16**  
195130227





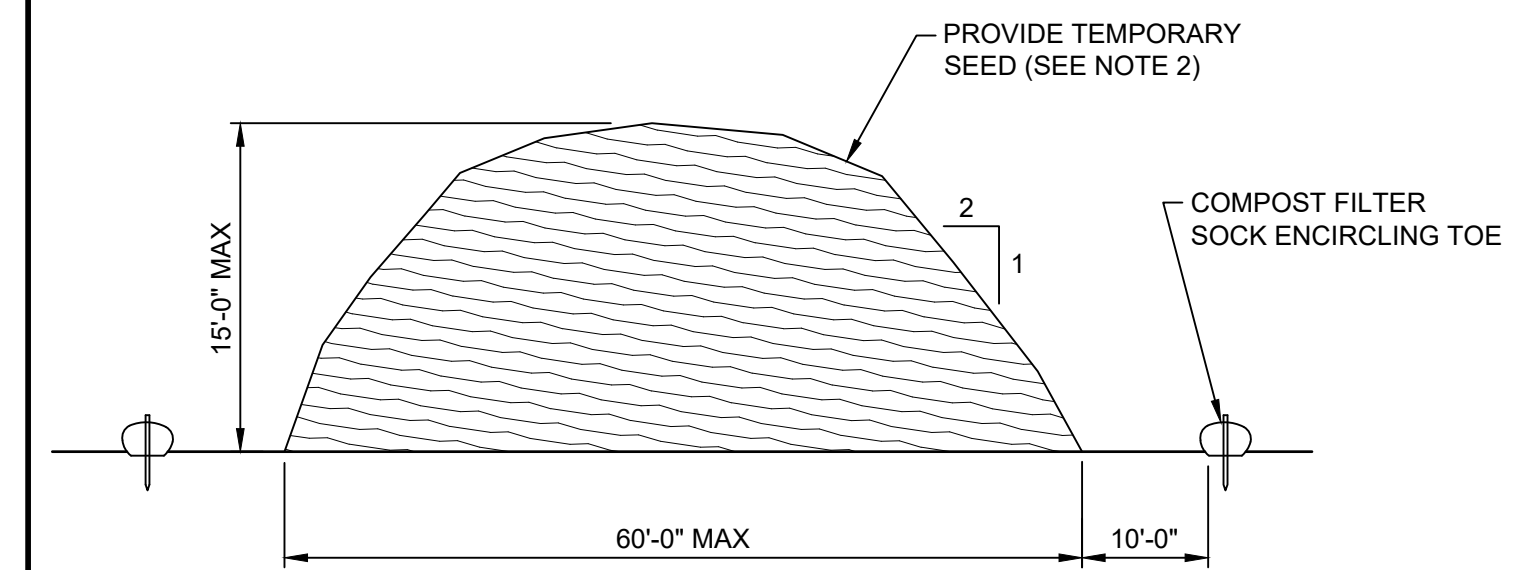
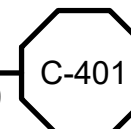
**TURBIDITY CURTAIN TRANSITION**  
NOT TO SCALE

REV 000000



**CONCRETE WASHOUT AREA DETAIL**  
NOT TO SCALE

REV 000000

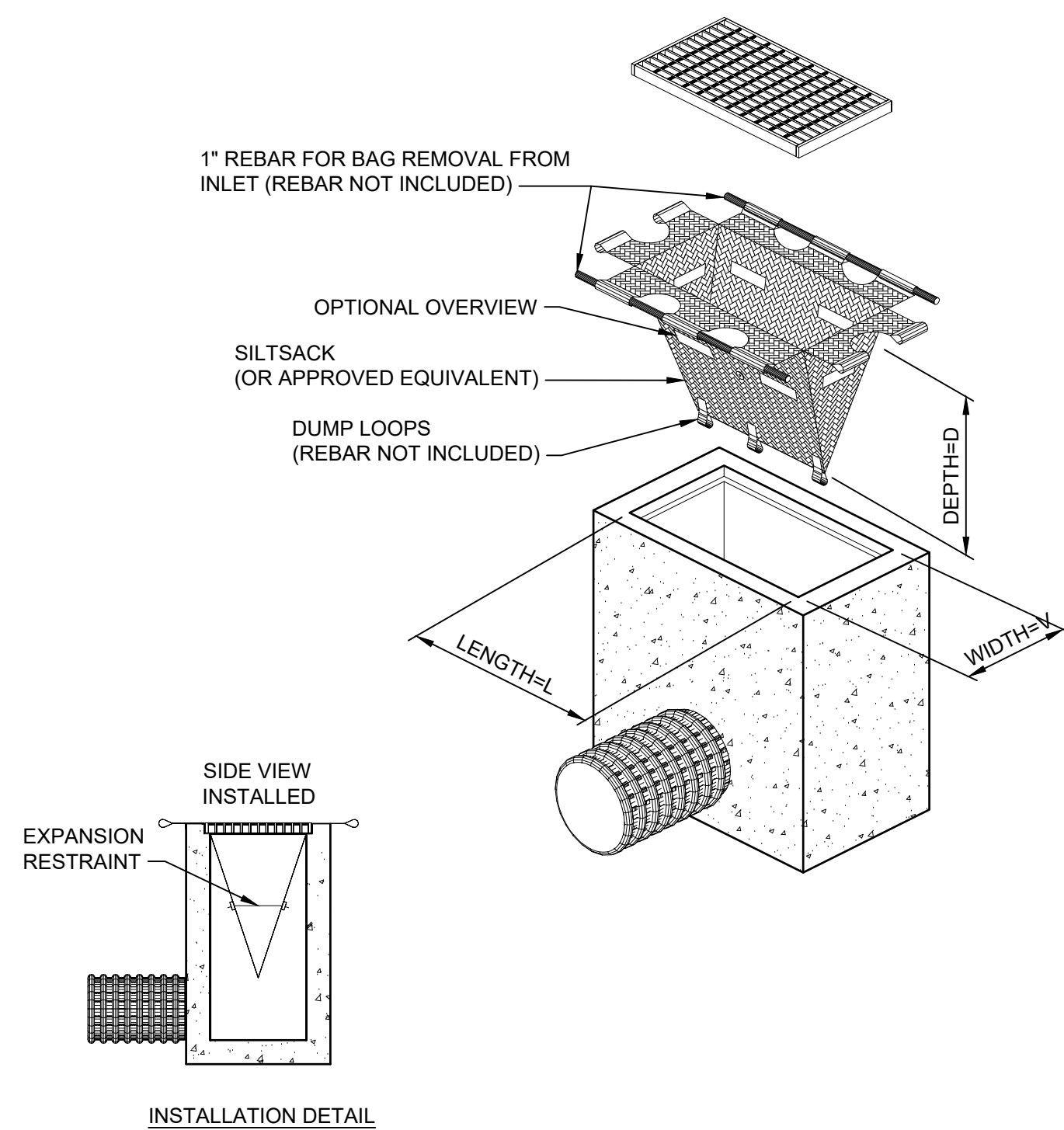
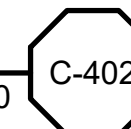


**NOTES:**

1. STOCKPILE AREA SHALL NOT EXCEED SPECIFIED DIMENSIONS WITHOUT APPROVAL FROM ENGINEER.
2. STOCKPILED ERODIBLE MATERIAL THAT WILL NOT BE USED FOR GREATER THAN 14 DAYS SHALL BE STABILIZED WITH TEMPORARY SEED IMMEDIATELY FOLLOWING PLACEMENT. USE RIDOT STD M.18.10.5 SEED MIX.
3. FOR STOCKPILING EXCESS MATERIAL ON THE TIDEWATER SITE, STOCKPILE AREA SHALL BE IN ACCORDANCE WITH SPECIFICATION 02076 SOIL MANAGEMENT TIDEWATER.

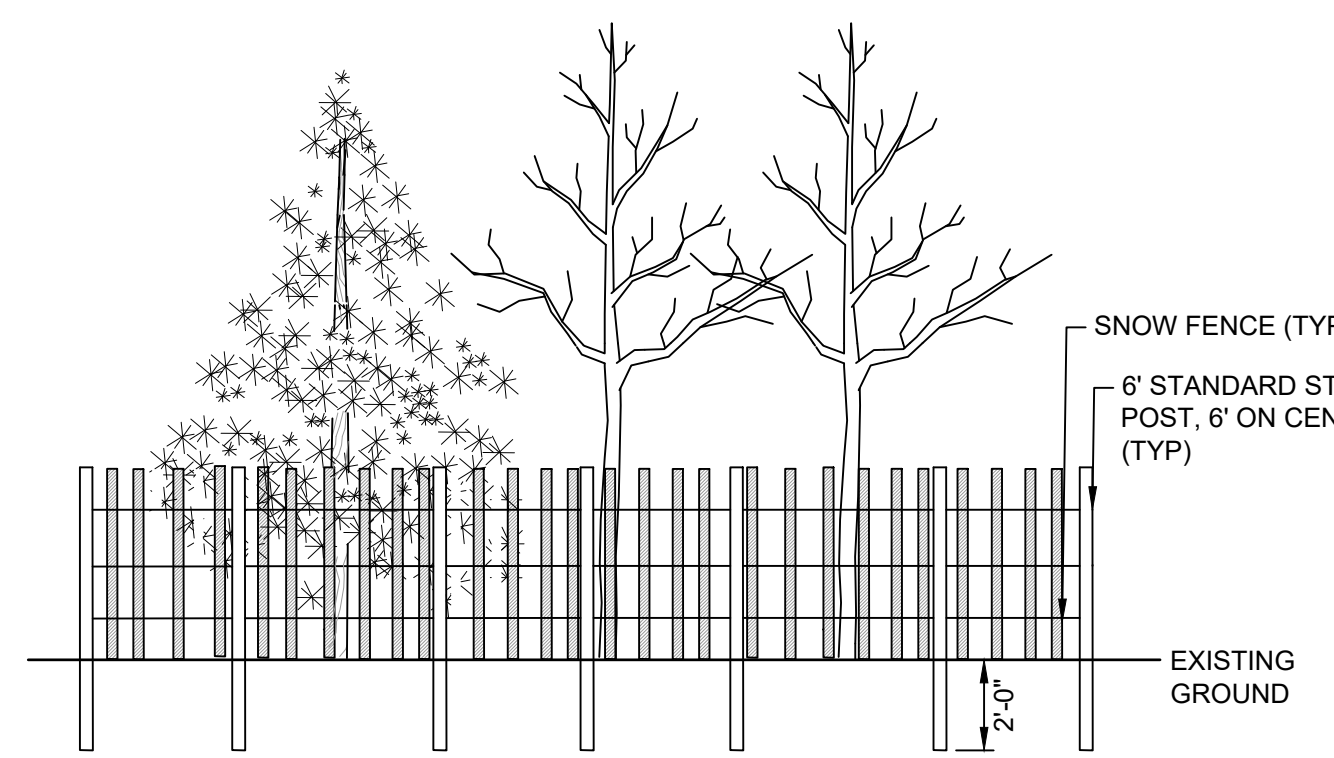
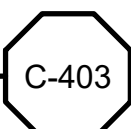
**ERODIBLE MATERIAL STOCKPILE**  
NOT TO SCALE

REV 000000



**TEMPORARY INLET PROTECTION**  
NOT TO SCALE

REV 000000

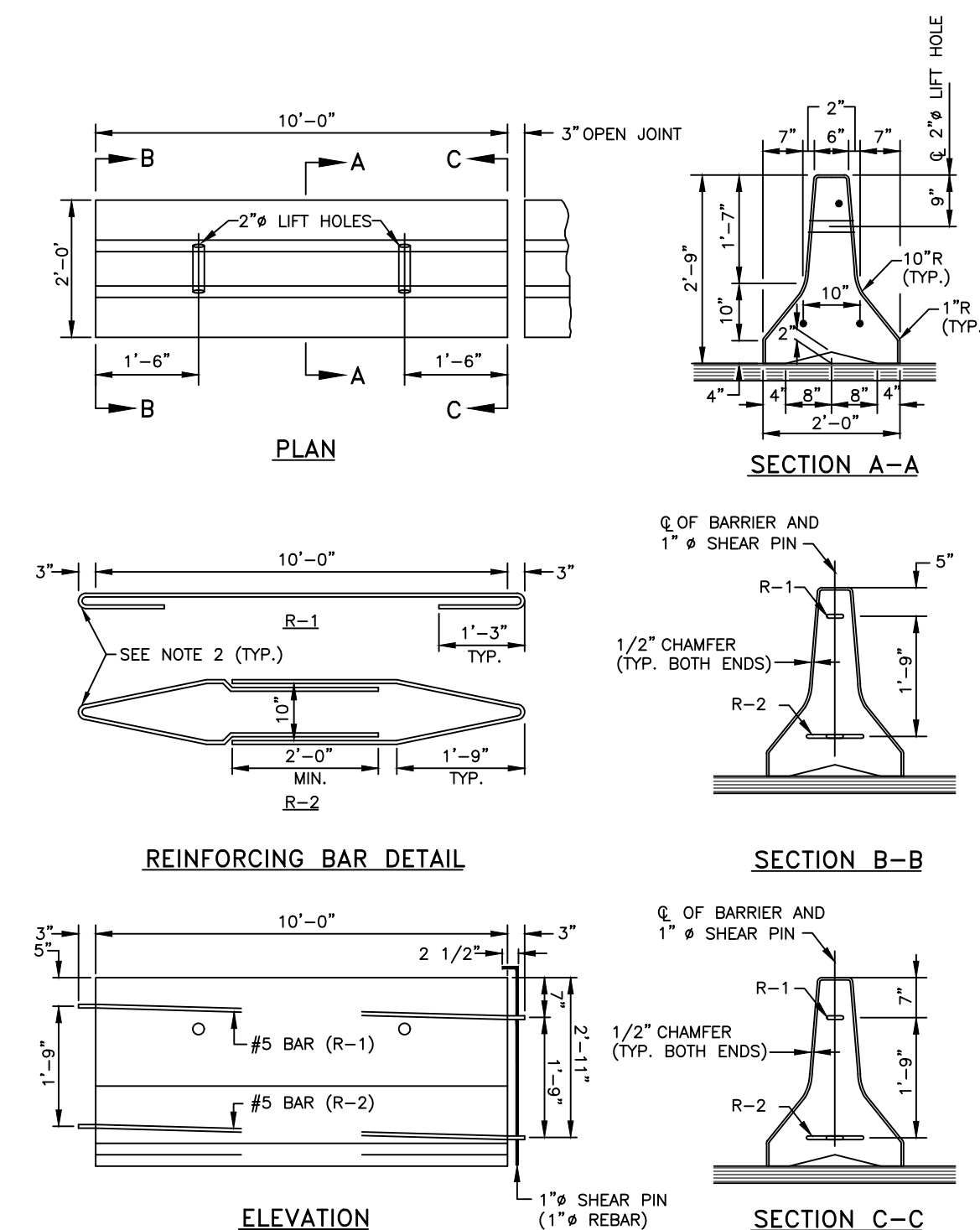
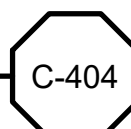


**NOTES:**

1. TREE GROUP PROTECTION SHALL BE INSTALLED AT THE DRIP LINE OF THE TREES TO BE PROTECTED.

**TREE GROUP PROTECTION DETAIL**  
NOT TO SCALE

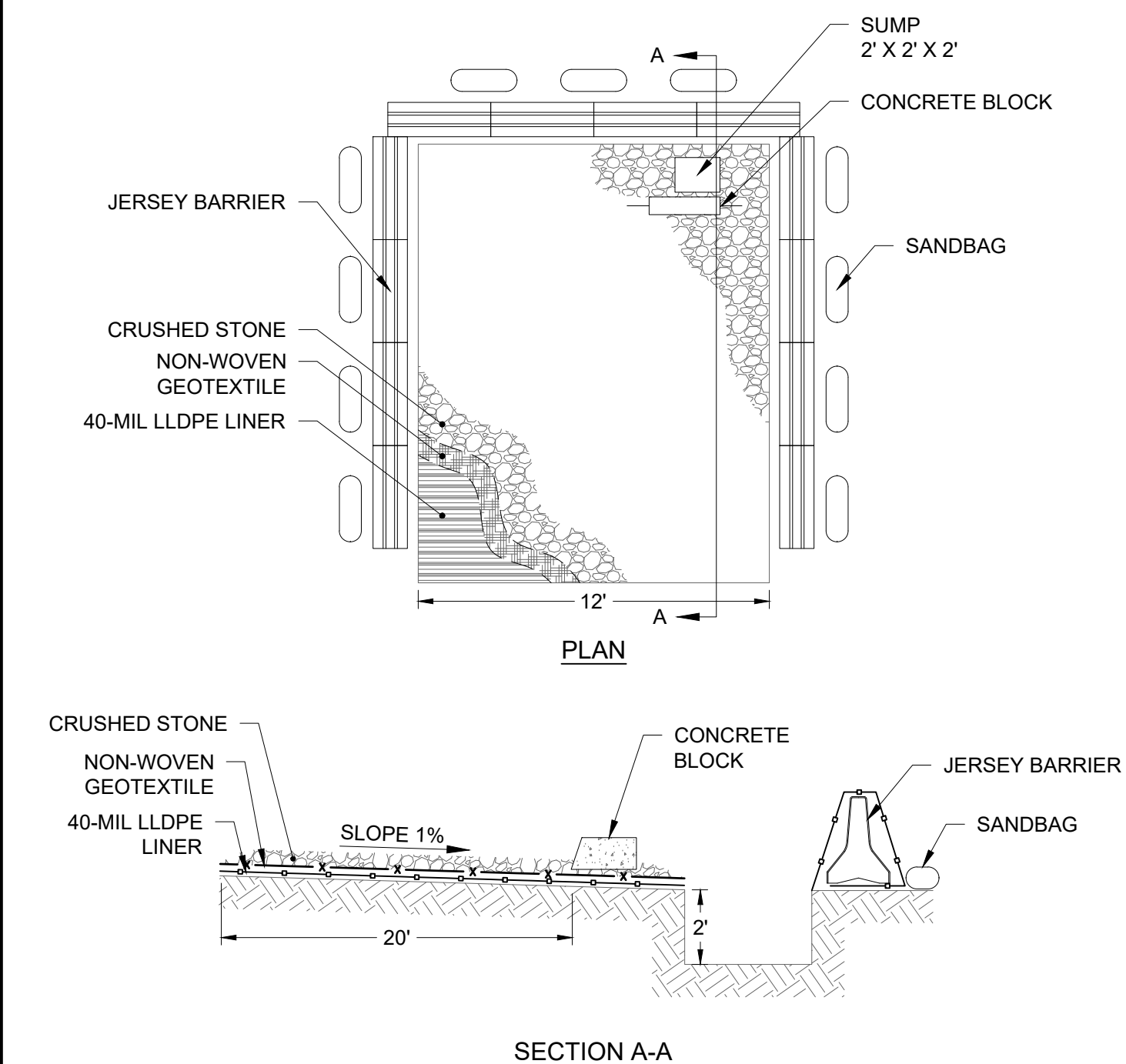
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**NOTES:**

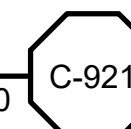
1. SHALL BE IN ACCORDANCE WITH SECTION 926 OF THE R.I. STANDARD SPECIFICATIONS.
2. BEND REBARS AROUND A 1 3/8\"/>

**PRECAST MEDIAN BARRIER FOR TEMPORARY TRAFFIC CONTROL**  
NOT TO SCALE



**DECONTAMINATION PAD DETAIL**  
NOT TO SCALE

REV 000000



REV	DATE	BY	DESCRIPTION

SCALE	AS SHOWN
WARNING	IF THIS BAR DOES NOT MEASURE 1\"/>

DESIGNED	C. CRONIN
DRAWN	C. MARSHALL
CHECKED	J. D'ALELIO

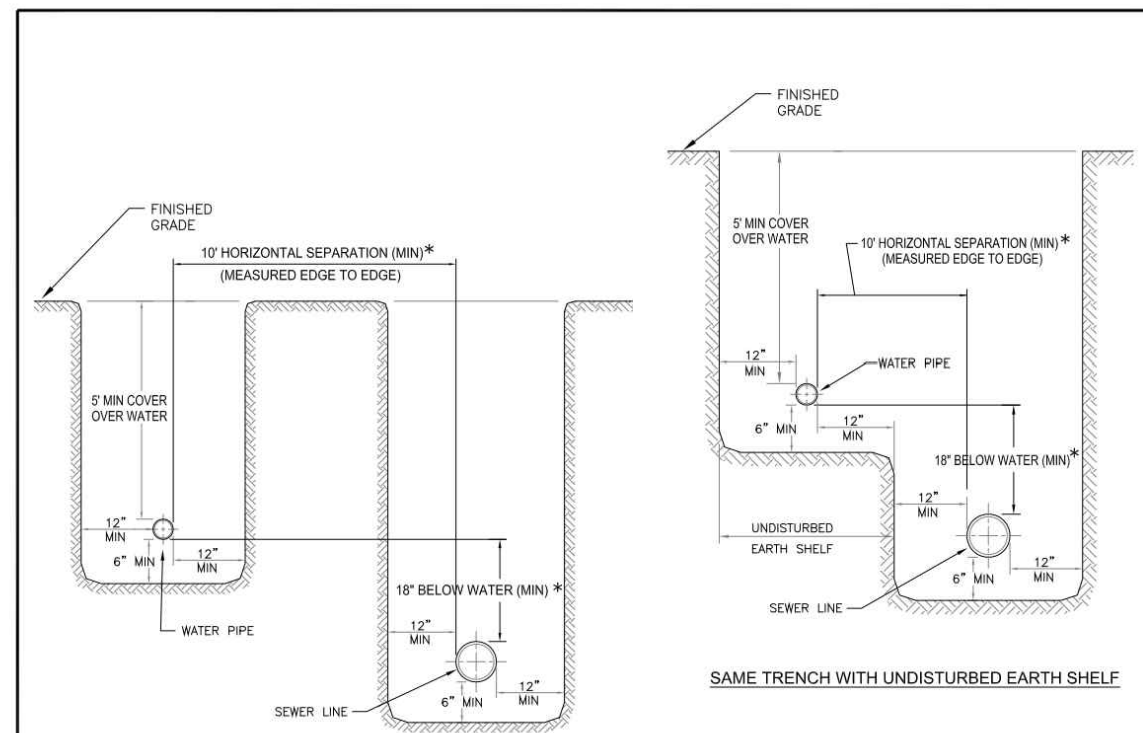
FINAL DESIGN PHASE - JULY 2021

**NOT FOR CONSTRUCTION**

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NARRAGANSETT BAY COMMISSION PHASE III COMBINED SEWER OVERFLOW PROGRAM	NBC CONTRACT NO 308.05C CIVIL OF-217 CONSOLIDATION CONDUIT CIVIL DETAILS VIII	SHEET C-17 195130227
-----------------------------------------------------------------------------	----------------------------------------------------------------------------------------	----------------------------



**SEPARATE TRENCHES (PREFERRED)**

\* NO MINIMUM VERTICAL SEPARATION IS REQUIRED PROVIDED A 10 FOOT HORIZONTAL SEPARATION IS MAINTAINED BETWEEN WATER PIPE AND SEWER LINE.

WHERE IT IS NOT POSSIBLE TO MAINTAIN A 10 FOOT HORIZONTAL SEPARATION, A DEVIATION MAY BE GRANTED ON A CASE BY CASE BASIS. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER LINE CLOSER TO THE WATER PIPE PROVIDED THAT THE SEWER LINE AND WATER PIPE ARE LAID IN SEPARATE TRENCHES OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE WATER PIPE AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER LINE SHALL BE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER PIPE.

IF BOTH THE 10 FOOT MINIMUM HORIZONTAL AND 18 INCH MINIMUM VERTICAL SEPARATION CANNOT BE MAINTAINED, ONE OF THE FOLLOWING OPTIONS MUST BE USED FOR A DISTANCE THAT WILL PROVIDE THE REQUIRED 10 FOOT HORIZONTAL OR 18 INCH VERTICAL SEPARATION:

OPTION A: CONSTRUCT SEWER LINE USING AWWA APPROVED WATER MAIN PIPE AND PRESSURE TEST TO 150psi.

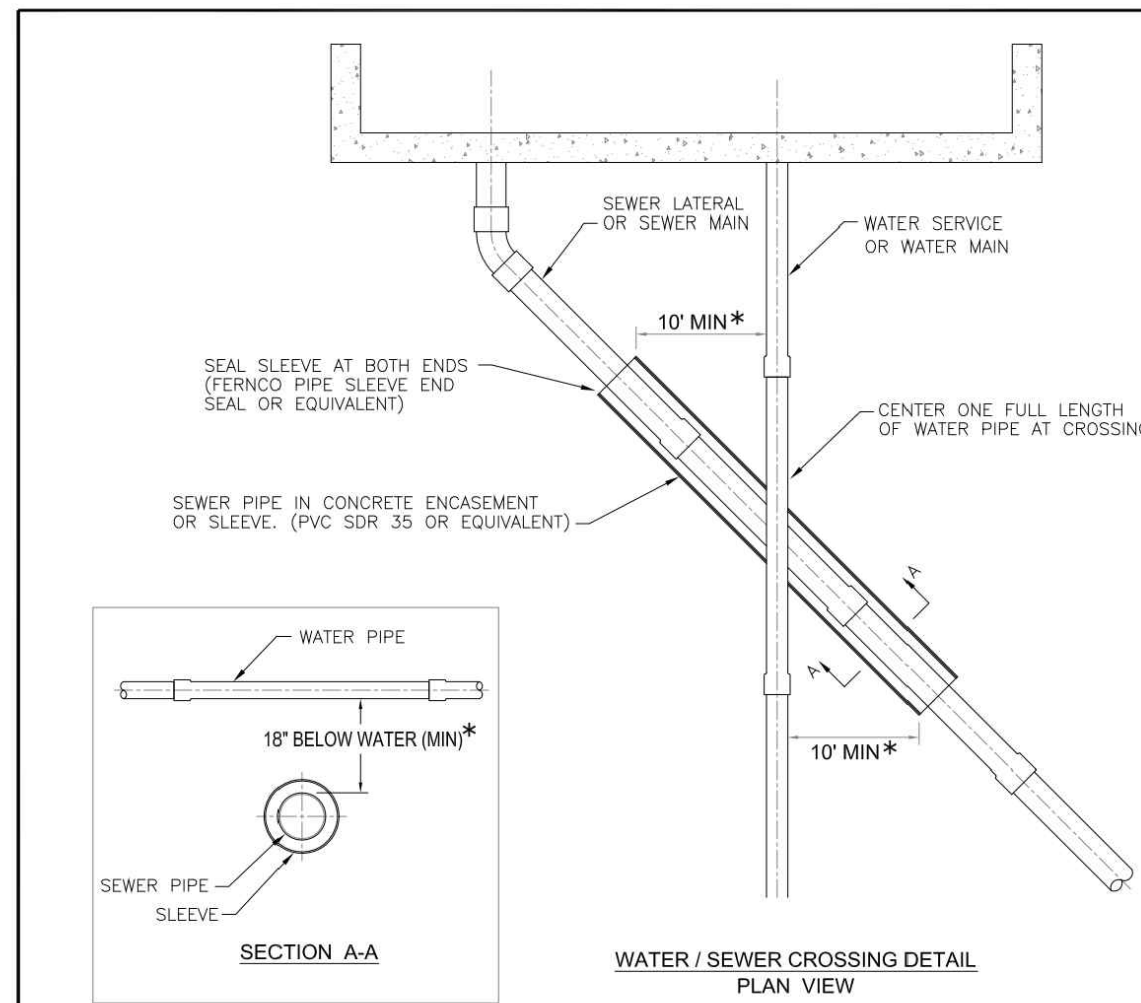
OPTION B: ENCASE SEWER LINE IN CONCRETE (MIN. 6 INCHES THICK) OR SLEEVE. (SEE PWSB STD. DETAIL 1.06 FOR SLEEVE DETAIL)

**Pawtucket WATER SUPPLY BOARD**

**WATER AND SEWER SEPARATION DETAIL FOR PARALLEL PLACEMENT**

REVISION DATE: DEC. 2013 NOT TO SCALE STD. NO. **1.05**

**WATER AND SEWER SEPARATION DETAIL FOR PARALLEL PLACEMENT** REV 000000 W-105



**SECTION A-A**

**WATER / SEWER CROSSING DETAIL PLAN VIEW**

\* IF THE 18 INCH MINIMUM VERTICAL SEPARATION CANNOT BE MAINTAINED, ONE OF THE FOLLOWING OPTIONS MUST BE USED FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, MEASURED PARALLEL TO THE WATER PIPE:

OPTION A: CONSTRUCT SEWER LINE USING AWWA APPROVED WATER MAIN PIPE AND PRESSURE TEST TO 150psi.

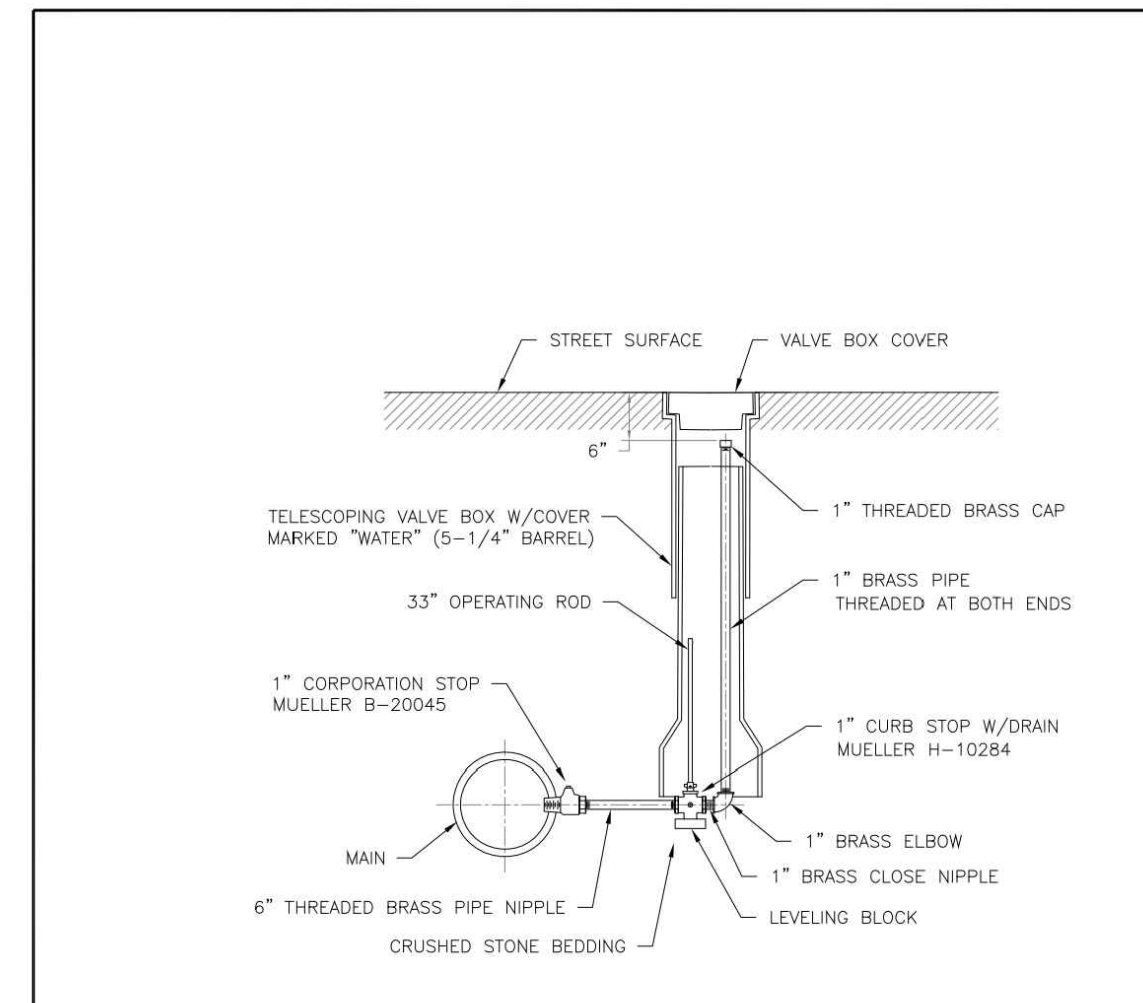
OPTION B: ENCASE SEWER PIPE IN CONCRETE (MIN. 6 INCHES THICK) OR SLEEVE.

**Pawtucket WATER SUPPLY BOARD**

**WATER AND SEWER SEPARATION DETAIL AT CROSSING**

REVISION DATE: JAN. 2012 NOT TO SCALE STD. NO. **1.06**

**WATER AND SEWER SEPARATION DETAIL AT CROSSING** REV 000000 W-106

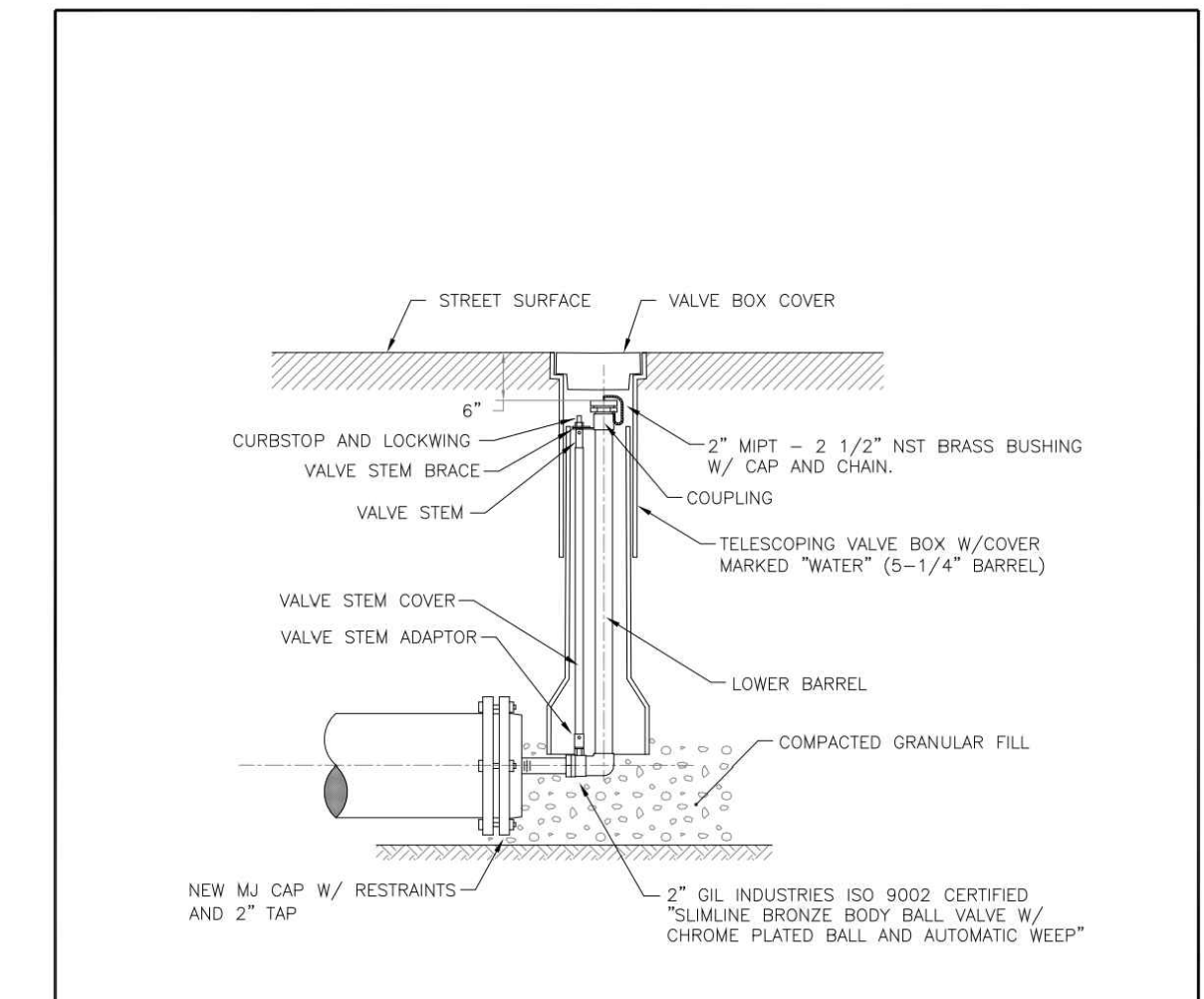


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**Pawtucket WATER SUPPLY BOARD**

**1\"/>**

**1\"/>**

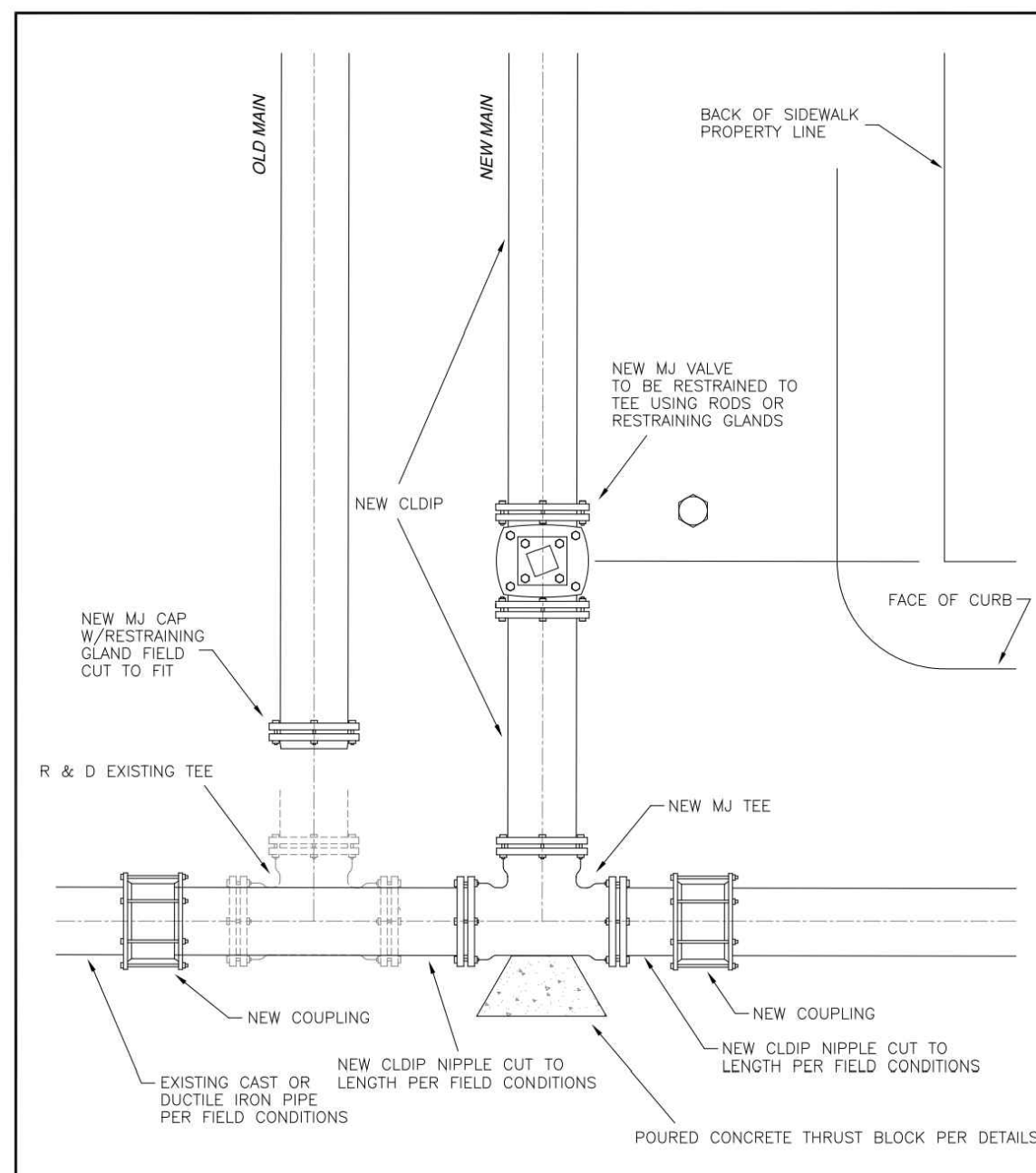


**2\"/>**

**Pawtucket WATER SUPPLY BOARD**

**2\"/>**

**2\"/>**

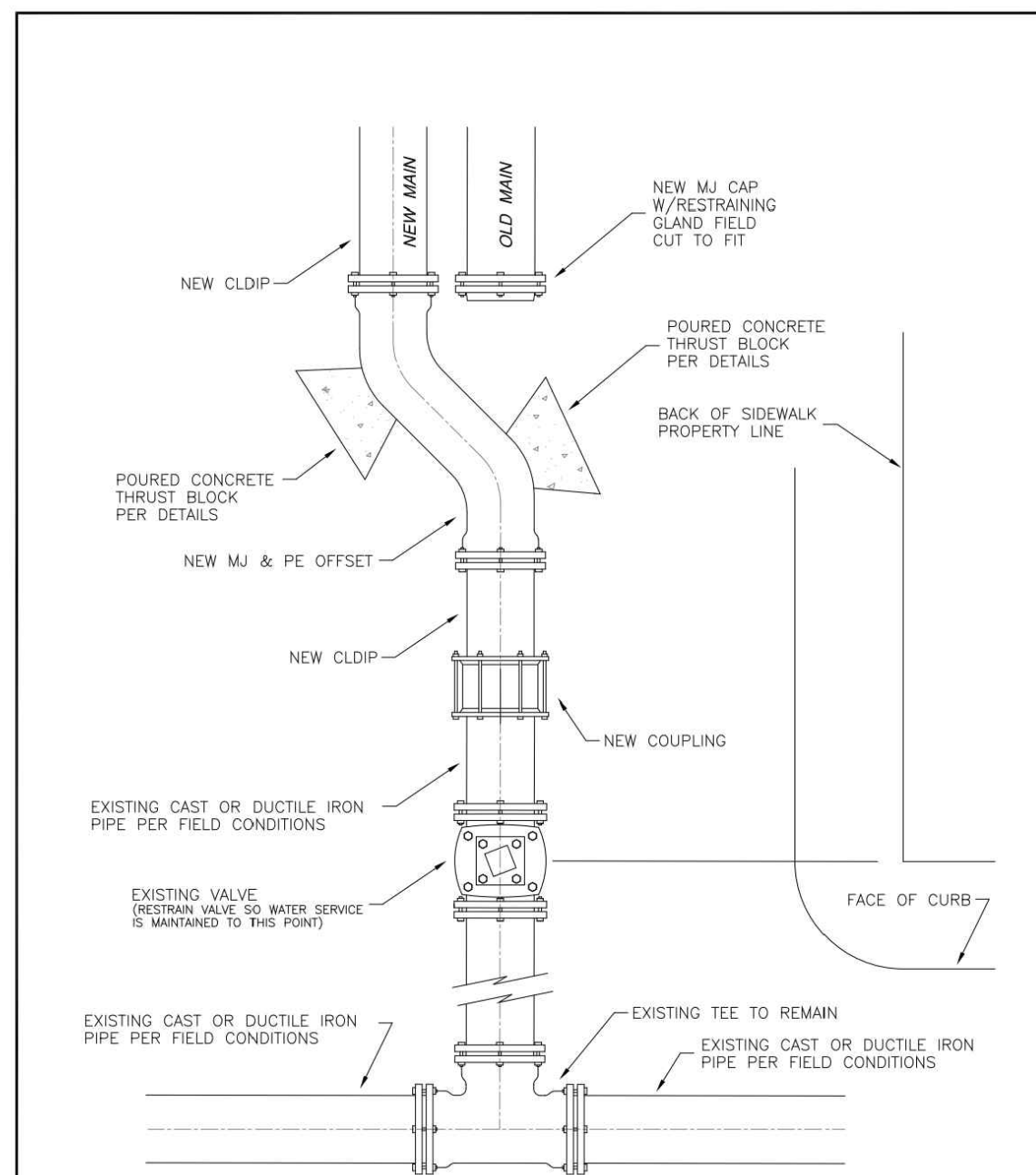


**Pawtucket WATER SUPPLY BOARD**

**MAIN CONNECTION AT INTERSECTION (CUT-IN TEE)**

REVISION DATE: FEB. 2006 NOT TO SCALE STD. NO. **5.02**

**MAIN CONNECTION AT INTERSECTION (CUT-IN TEE)** NOT TO SCALE REV 000000 W-502

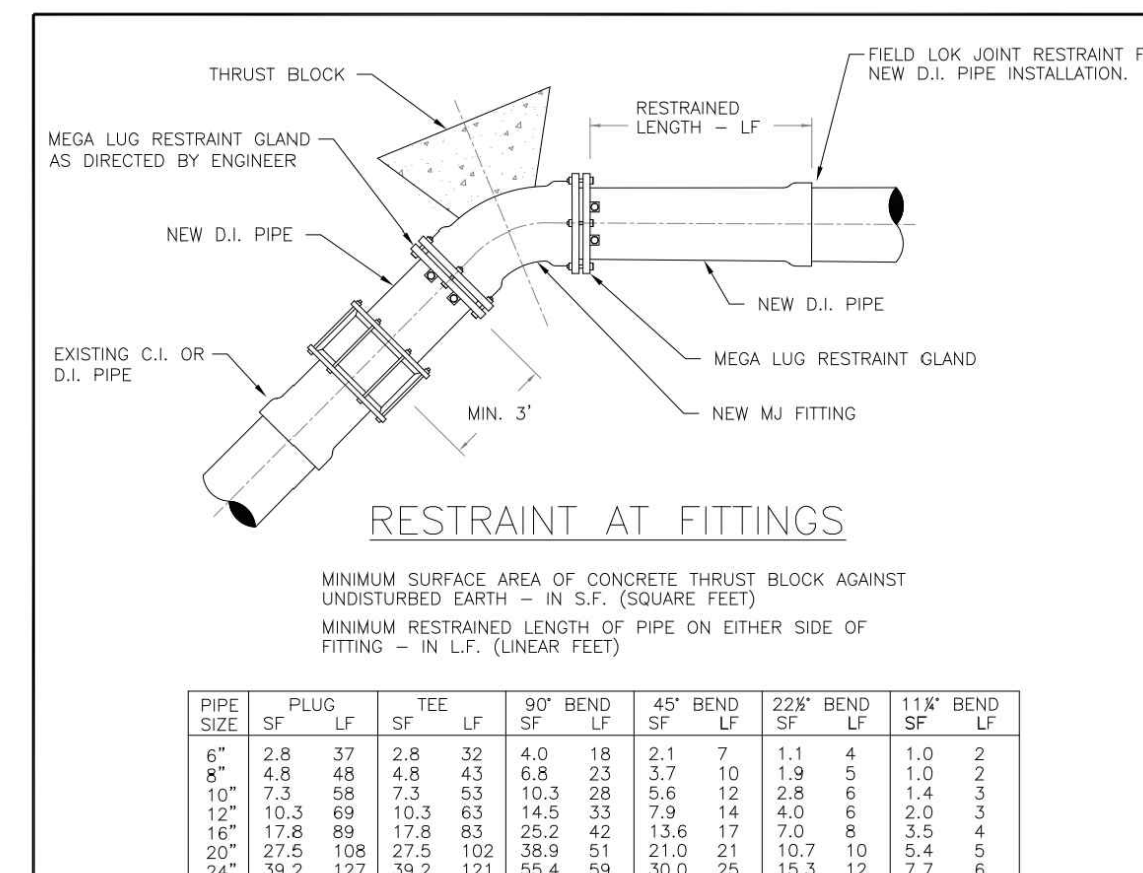


**Pawtucket WATER SUPPLY BOARD**

**MAIN CONNECTION AT INTERSECTION (OFFSET)**

REVISION DATE: FEB. 2006 NOT TO SCALE STD. NO. **5.03**

**MAIN CONNECTION AT INTERSECTION (OFFSET)** NOT TO SCALE REV 000000 W-503



**RESTRAINT AT FITTINGS**

MINIMUM SURFACE AREA OF CONCRETE THRUST BLOCK AGAINST UNDISTURBED EARTH - IN S.F. (SQ. FEET)

MINIMUM RESTRAINED LENGTH OF PIPE ON EITHER SIDE OF FITTING - IN L.F. (LINEAR FEET)

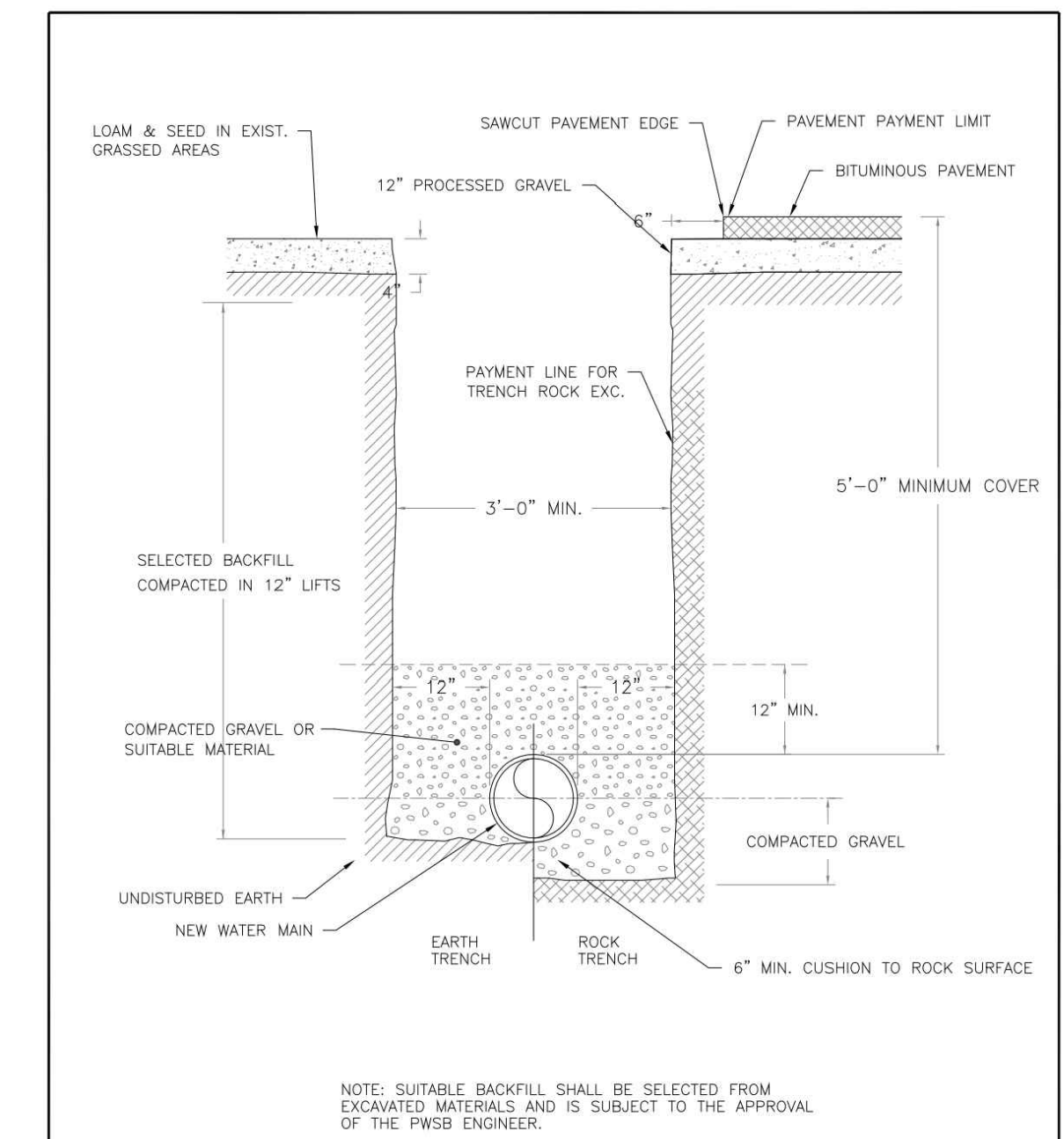
PIPE SIZE	FLG		TEE		90° BEND		45° BEND		22½° BEND		11¼° BEND	
	SF	L.F.	SF	L.F.	SF	L.F.	SF	L.F.	SF	L.F.	SF	L.F.
6"	2.8	37	2.8	32	4.0	18	2.1	7	1.1	4	1.0	2
8"	4.8	48	4.8	43	6.8	23	3.7	10	1.9	5	1.0	2
10"	7.3	58	7.3	53	10.3	28	5.6	12	2.8	6	1.4	3
12"	10.3	69	10.3	63	14.5	33	7.9	14	4.0	6	2.0	3
16"	17.8	89	17.8	83	26.2	42	13.6	17	7.0	8	3.5	4
20"	27.5	108	27.5	102	38.9	51	21.0	21	10.7	10	5.4	5
24"	39.2	127	39.2	121	55.4	59	30.0	25	15.3	12	7.7	6

**Pawtucket WATER SUPPLY BOARD**

**RESTRAINT AT FITTINGS**

REVISION DATE: MAY 2006 NOT TO SCALE STD. NO. **5.04**

**RESTRAINT AT FITTINGS** NOT TO SCALE REV 000000 W-504



**Pawtucket WATER SUPPLY BOARD**

**TYPICAL TRENCH DETAIL**

REVISION DATE: MAY 2006 NOT TO SCALE STD. NO. **6.01**

**TYPICAL TRENCH DETAIL** NOT TO SCALE REV 000000 W-601

SCALE	AS SHOWN
WARNING	IF THIS BAR DOES NOT MEASURE 1\"/>
DESIGNED	C. CRONIN
DRAWN	C. MARSHALL
CHECKED	J. D'ALELIO

FINAL DESIGN PHASE - JULY 2021

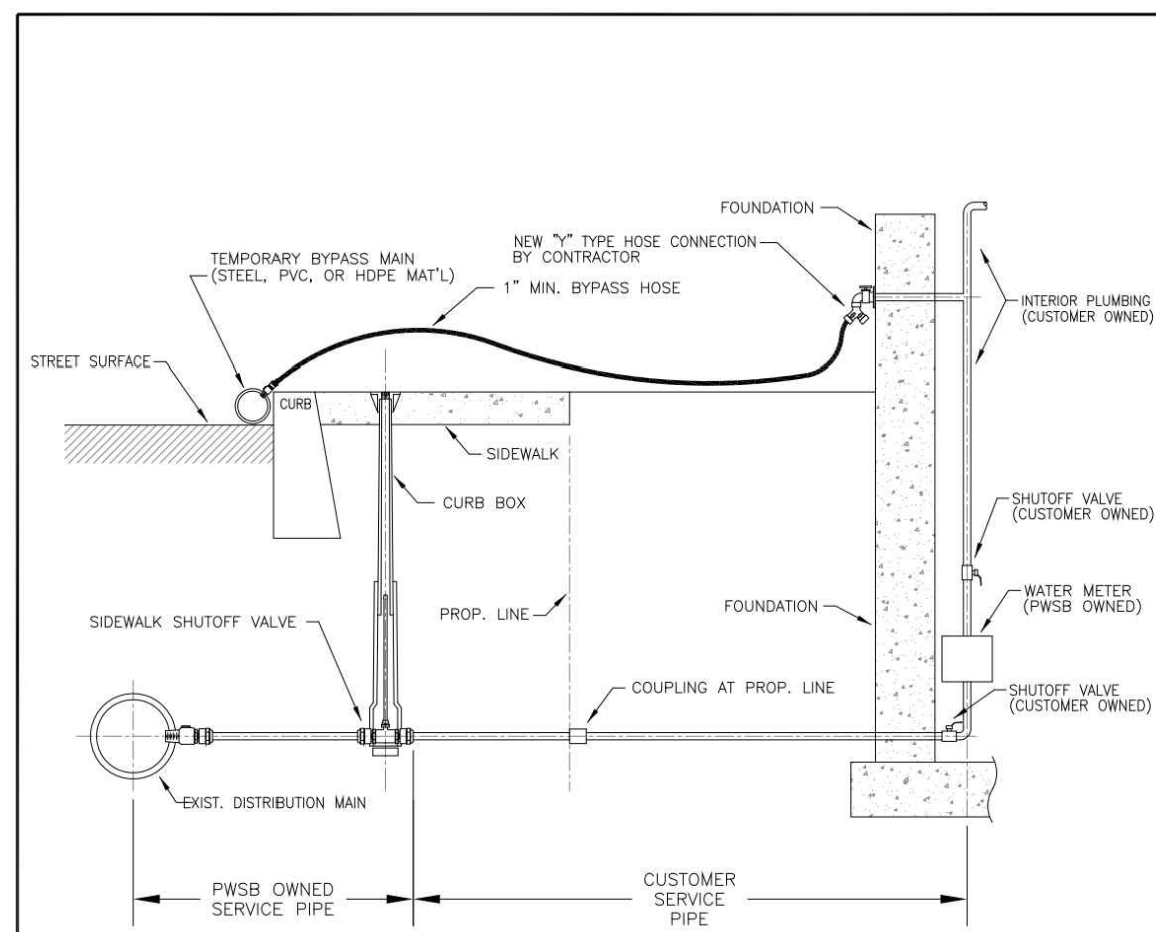
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**BETA** www.BETA-Inc.com

**Stantec**

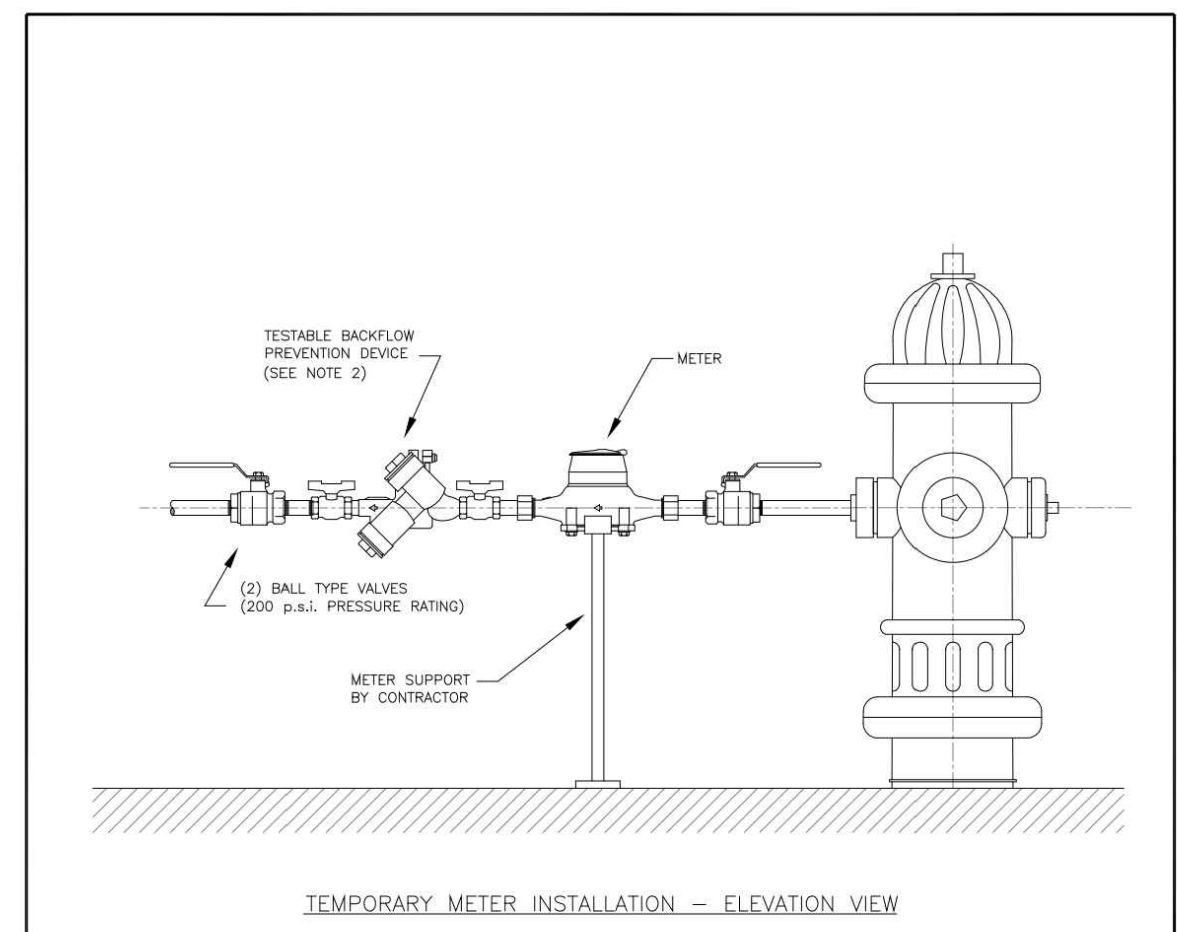
NARRAGANSETT BAY COMMISSION PHASE III COMBINED SEWER OVERFLOW PROGRAM



- TEMPORARY BYPASS PIPING & SERVICE MATERIAL SHALL BE APPROVED BY THE PWSB PRIOR TO INSTALLATION AND SHALL BE NSF-61 AND/OR FDA APPROVED FOR CONTACT WITH DRINKING WATER AND SHALL BE INSTALLED IN ACCORDANCE WITH THE PWSB SPECIFICATIONS FOR "TEMPORARY BYPASS PIPING AND SERVICES" LATEST REVISION.
- PRIOR TO INSTALLATION, CONTRACTOR SHALL SUBMIT 2 COPIES OF BYPASS LAYOUT PLAN TO THE PWSB FOR REVIEW & APPROVAL.
- TEMPORARY BYPASS MAIN SHALL REQUIRE A MINIMUM OF TWO "FEED" CONNECTIONS TO EXISTING ACTIVE HYDRANTS OR MAINS, IF POSSIBLE.
- TEMPORARY REMOVAL OF WATER METERS SHALL BE PERFORMED BY PWSB METER DEPARTMENT PERSONNEL ONLY.

**Pawtucket WATER SUPPLY BOARD**  
**TYPICAL "TEMPORARY BYPASS PIPING" INSTALLATION**  
 REVISION DATE: JAN. 2011 NOT TO SCALE STD. NO. **8.01**

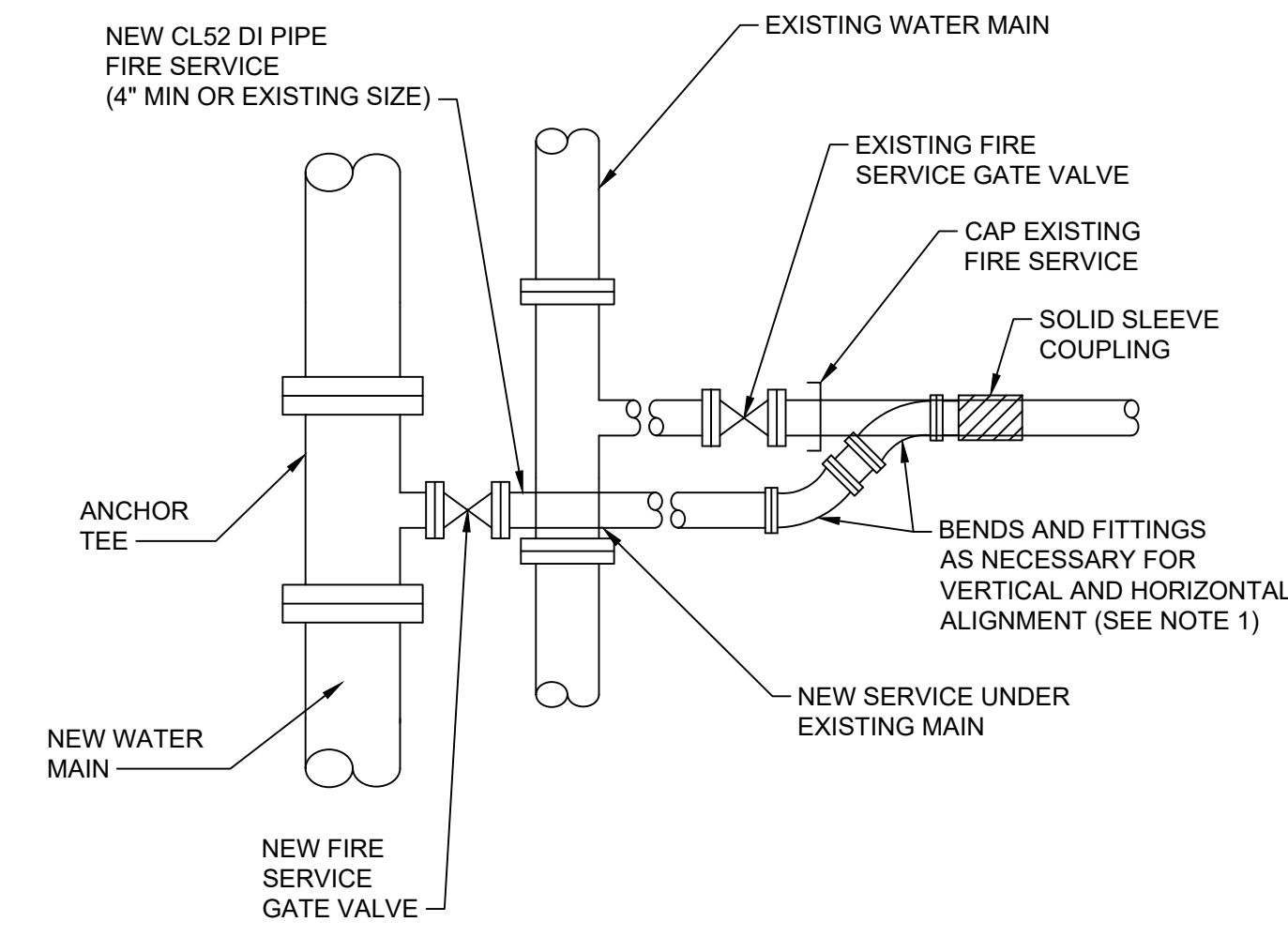
**TYPICAL "TEMPORARY BYPASS PIPING" INSTALLATION**  
 NOT TO SCALE REV 000000 W-801



- NOTES:**
- THE METER SHALL BE INSTALLED HORIZONTALLY.
  - TEMPORARY WATER SERVICE CONNECTIONS REQUIRE A PWSB APPROVED TESTABLE BACKFLOW PREVENTION DEVICE. ALL IN ACCORDANCE WITH SECTION 10 OF THE PWSB REGULATIONS, LATEST REVISION.
  - CONTRACTOR MUST NOTIFY THE PWSB METER DEPARTMENT WHEN THE METER INSTALLATION IS COMPLETE.

**Pawtucket WATER SUPPLY BOARD**  
**TEMPORARY WATER SERVICE CONNECTION AT HYDRANT**  
 REVISION DATE: JAN. 2011 NOT TO SCALE STD. NO. **8.02**

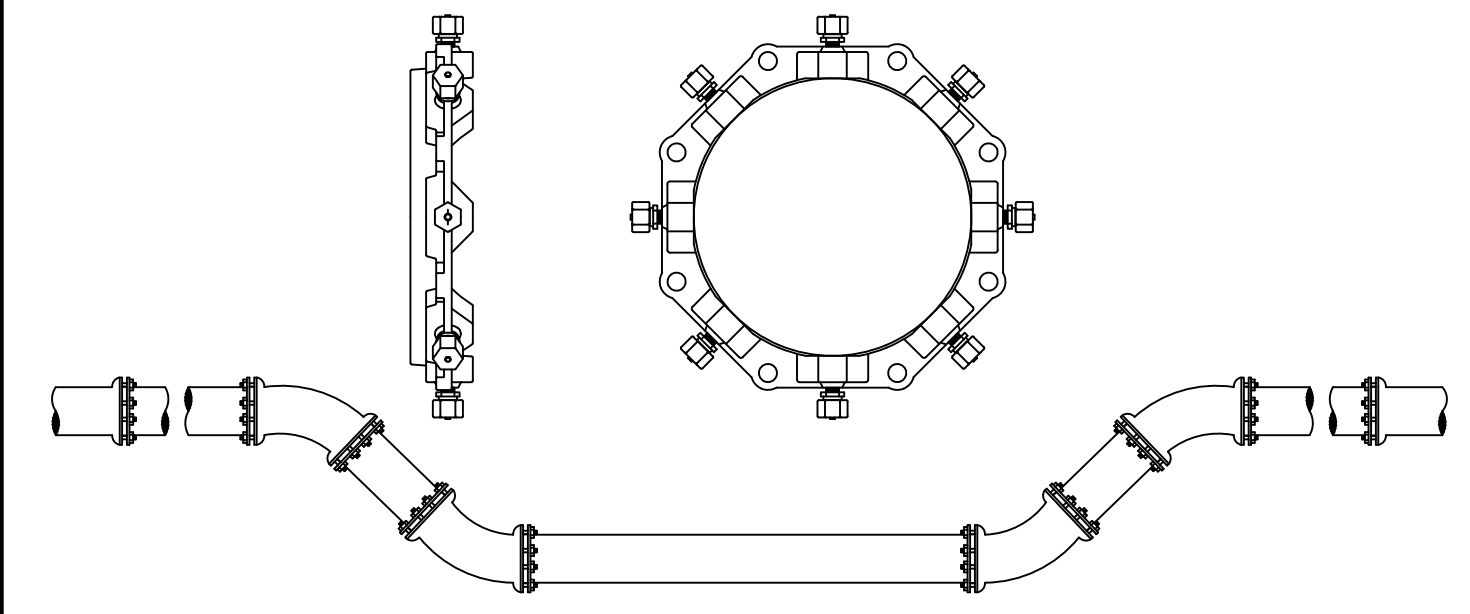
**TEMPORARY WATER SERVICE CONNECTION AT HYDRANT**  
 REV 000000 W-802



- NOTES:**
- ALL FITTINGS SHALL BE RESTRAINED.

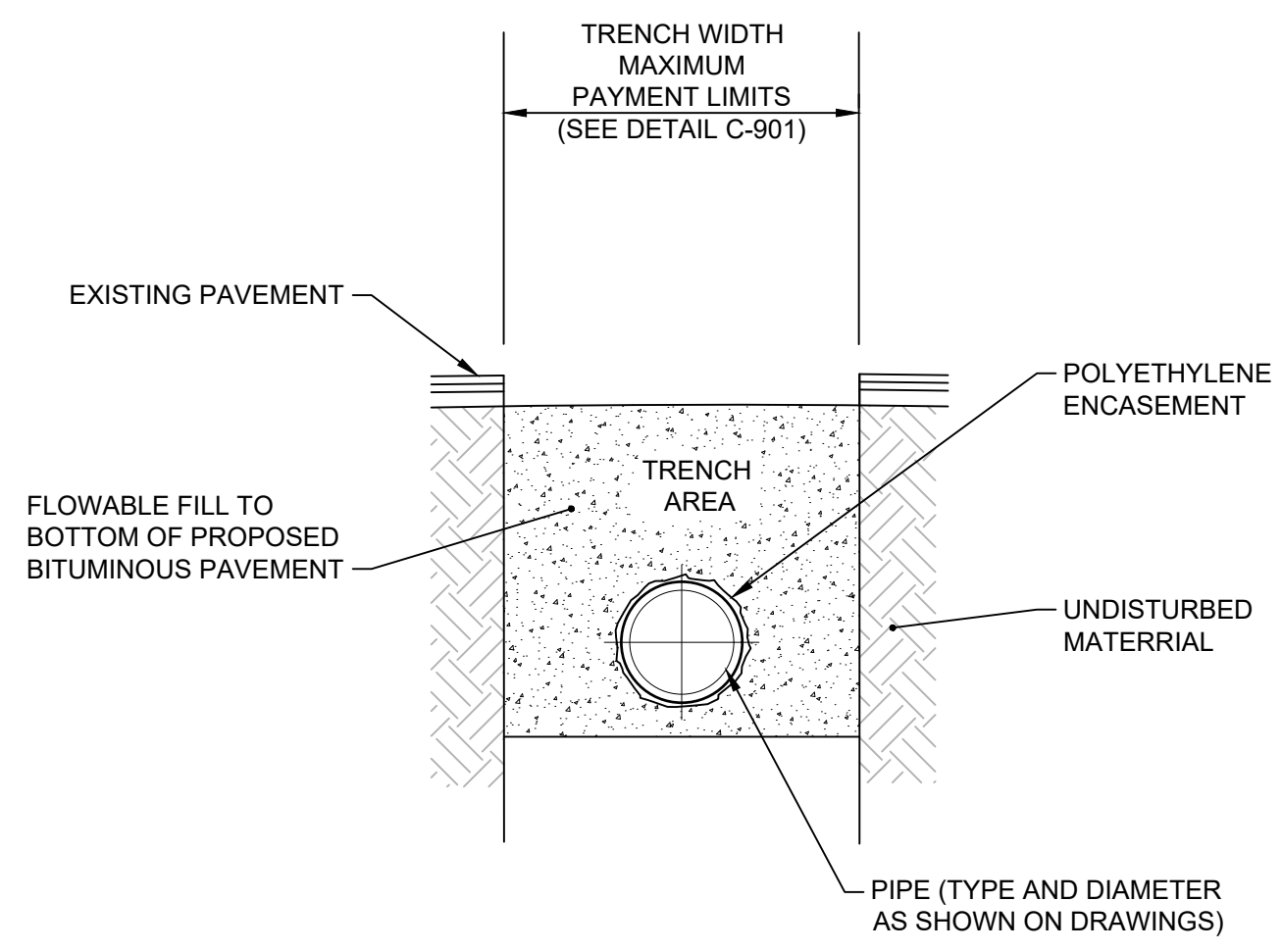
**TYPICAL FIRE SERVICE CONNECTION**  
 NOT TO SCALE

**TYPICAL FIRE SERVICE CONNECTION**  
 NOT TO SCALE REV 000000 W-901



- NOTES:**
- DEVICES NEED TO BE PLACED BEYOND THE AREA OF RESTRAINTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

**TYPICAL THRUST RESTRAINT WEDGE ACTION TYPE JOINTS**  
 REV 000000 W-902



- NOTES:**
- ALL DI/CL WATER PIPE THAT IS BACKFILLED WITH CONTROLLED DENSITY FILL MUST BE ENCASED WITH 4-MIL HDCL OR 8-MIL LLD POLYETHYLENE IN ACCORDANCE ANSII/AWWA C105/A2.5, METHOD OF INSTALLATION.
  - THE PIPE SHALL BE PROPERLY SECURED AND SUPPORTED TO PREVENT DISPLACEMENT DURING THE POURING OF CONTROLLED DENSITY FILL.

**FLOWABLE FILL BACKFILL OF DUCTILE IRON WATER PIPE**  
 REV 000000 W-903

REV	DATE	BY	DESCRIPTION

SCALE AS SHOWN  
 WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED <u>C. CRONIN</u>
DRAWN <u>C. MARSHALL</u>
CHECKED <u>J. D'ALELIO</u>

FINAL DESIGN PHASE - JULY 2021  
 NOT FOR CONSTRUCTION  
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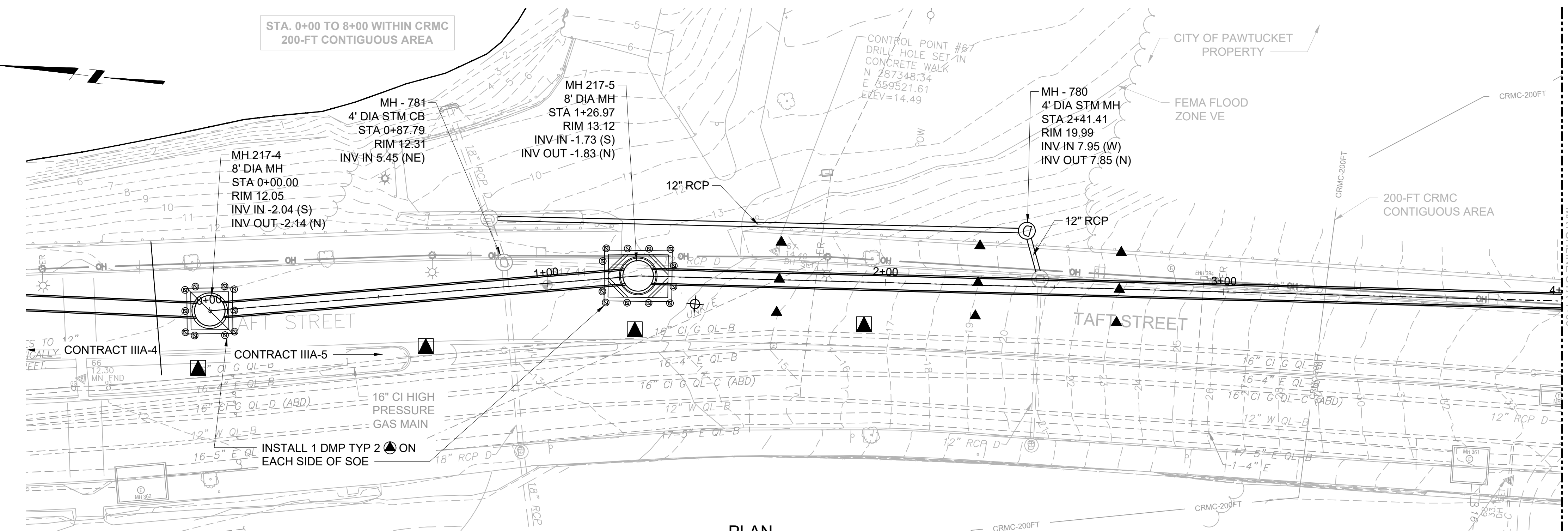
NARRAGANSETT BAY COMMISSION  
 PHASE III COMBINED SEWER OVERFLOW PROGRAM  
**Stantec**

NBC CONTRACT NO 308.05C  
 CIVIL  
 OF-217 CONSOLIDATION CONDUIT  
 CIVIL DETAILS X

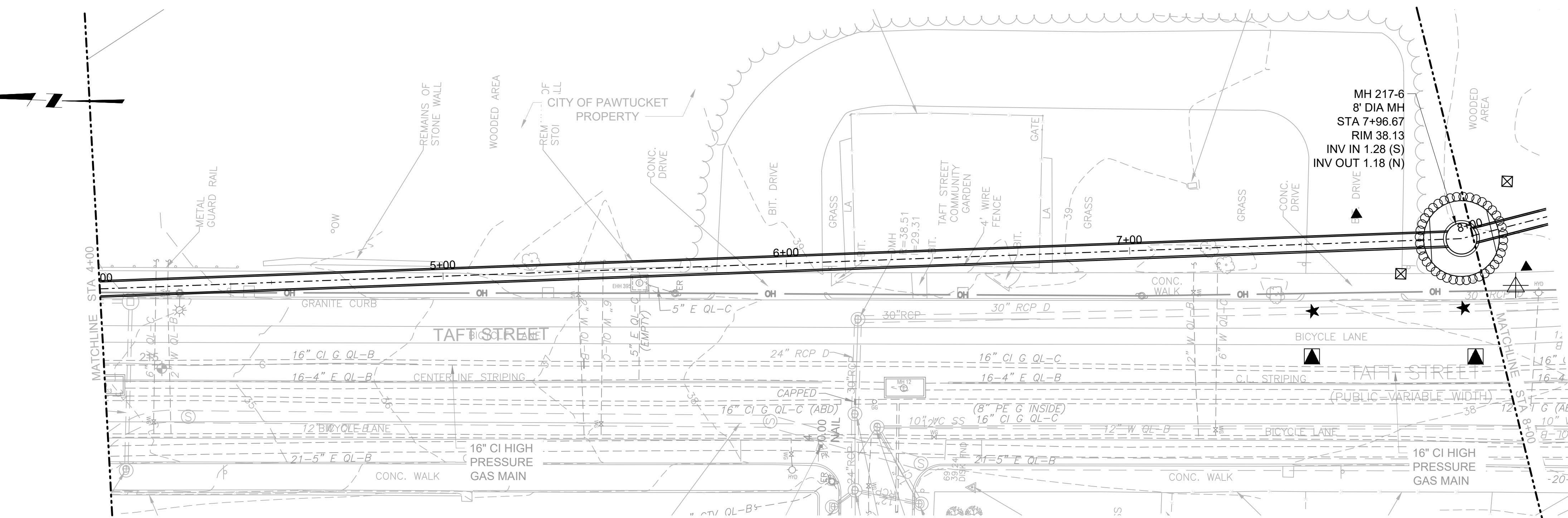
BY: OBRIEN, JANET

PLOT DATE: Thursday, April 15, 2021 3:11:43 PM

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PLAN  
SCALE: 1" = 20'



PLAN  
SCALE: 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

- UTILITY INFORMATION DEPICTED, PROVIDED BY BSI ENGINEERING INC.
- FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
  - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
  - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
- REFER TO SHEET B-4 FOR INSTRUMENTATION DETAILS AND NOTES.
- REFER TO SPECIFICATION SECTION 02295 FOR INSTRUMENTATION REQUIREMENTS.

INSTRUMENTATION LEGEND

SYMBOL	INSTRUMENT TYPE
	OBSERVATION WELL (OW)
	DEFORMATION MONITORING POINT (DMP TYPE 1)
	DEFORMATION MONITORING POINT (DMP TYPE 2)
	DEFORMATION MONITORING POINT (DMP TYPE 3)
	INCLINOMETER (INCL)
	UTILITY MONITORING POINT (UMP)
	SEISMOGRAPH

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE AS SHOWN	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
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DESIGNED K.OHARA
DRAWN S.WILBUR
CHECKED T.MUINDI

90% DESIGN PHASE - APRIL 2021

NOT FOR CONSTRUCTION

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

Stantec PARE

NBC CONTRACT NO 308.05C  
GEOTECHNICAL

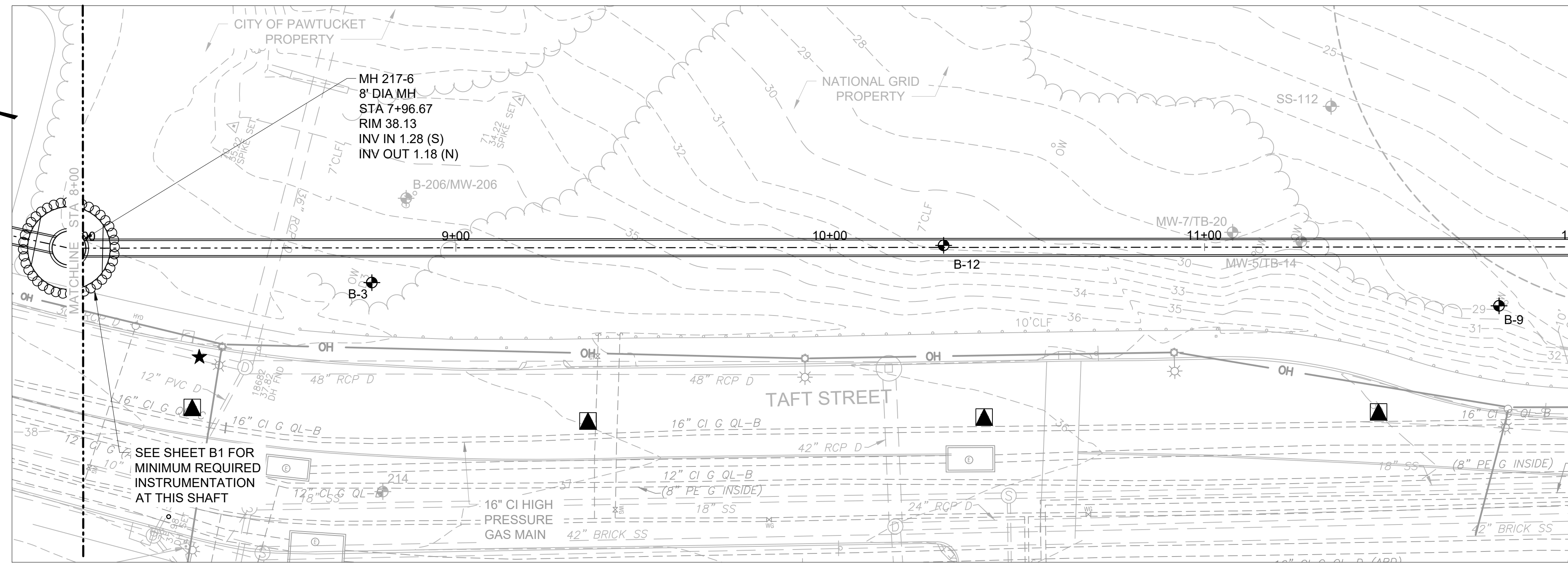
OF-217 CONSOLIDATION CONDUIT  
INSTRUMENTATION PLAN STA. 0+00 - 8+00

SHEET  
B-1  
195130227

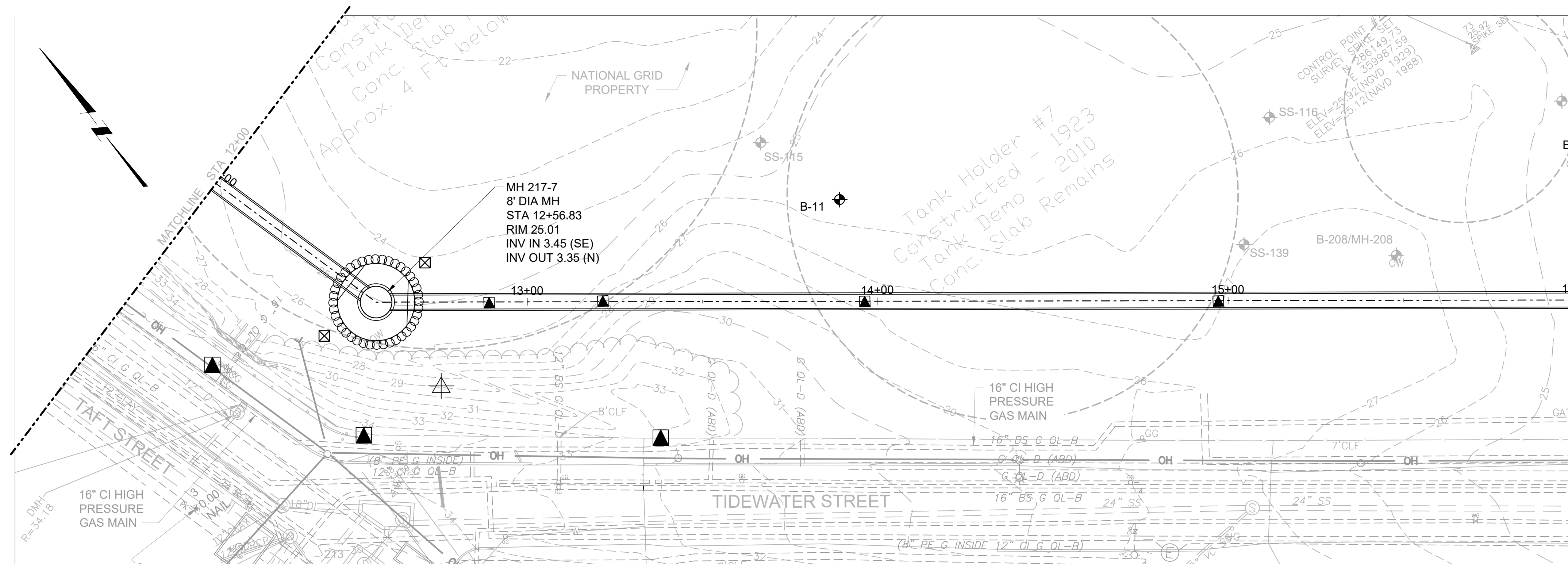
BY: OBRIEN, JANET

PLOT DATE: Thursday, April 15, 2021 3:17:38 PM

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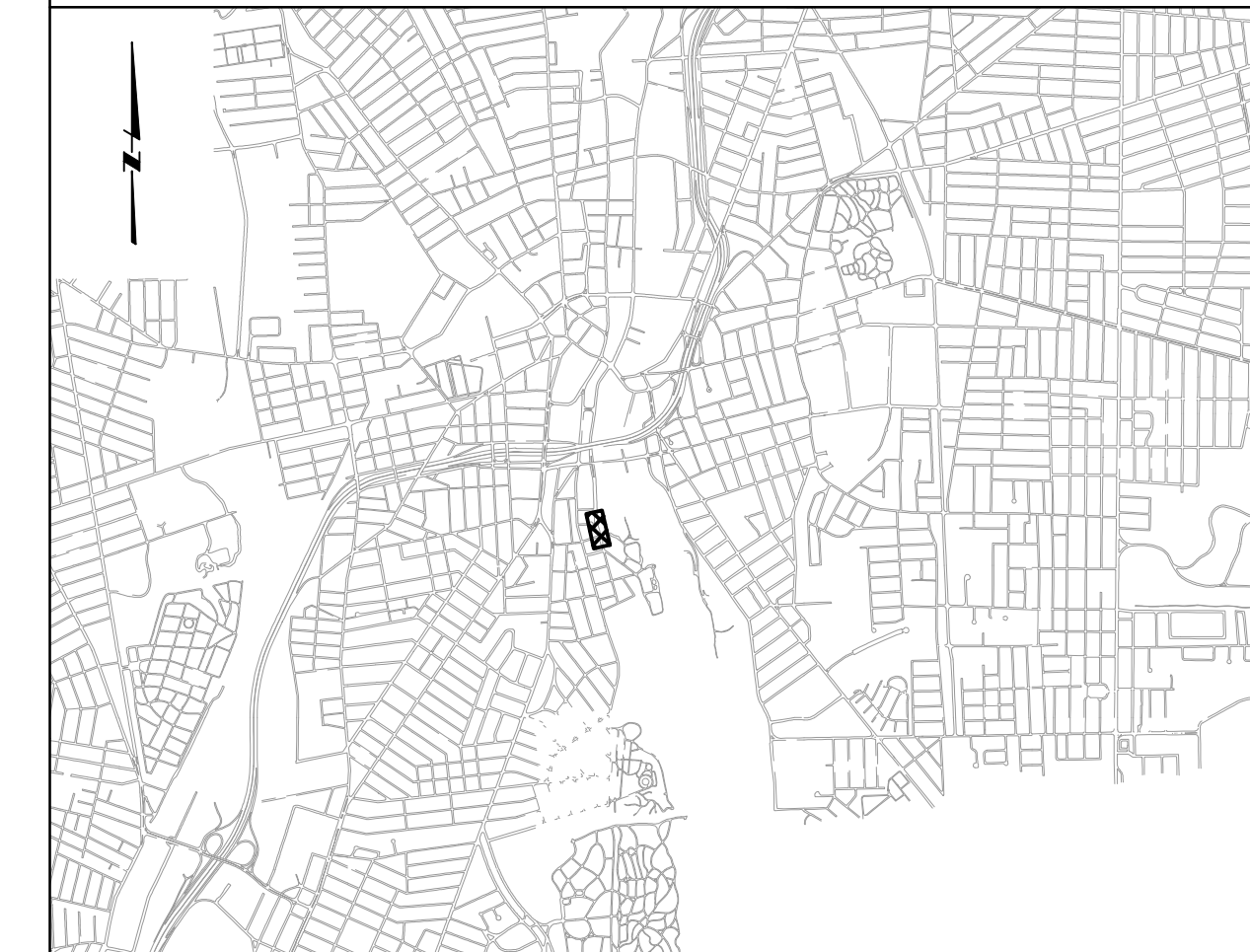


PLAN  
SCALE: 1" = 20'



PLAN  
SCALE: 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

- UTILITY INFORMATION DEPICTED, PROVIDED BY BSI ENGINEERING INC.
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  - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
  - SOUTH OF DIVISION STREET BRIDGE: VE ELEVATION 13.8
- WORK IS IN PROPERTY OWNED BY NATIONAL GRID/ CITY OF PAWTUCKET.
- REFER TO SHEET B-4 FOR INSTRUMENTATION DETAILS AND NOTES.
- REFER TO SPECIFICATION SECTION 02295 FOR INSTRUMENTATION REQUIREMENTS.

INSTRUMENTATION LEGEND	
SYMBOL	INSTRUMENT TYPE
	OBSERVATION WELL (OW)
	DEFORMATION MONITORING POINT (DMP TYPE 1)
	DEFORMATION MONITORING POINT (DMP TYPE 2)
	DEFORMATION MONITORING POINT (DMP TYPE 3)
	INCLINOMETER (INCL)
	UTILITY MONITORING POINT (UMP)
	SEISMOGRAPH

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

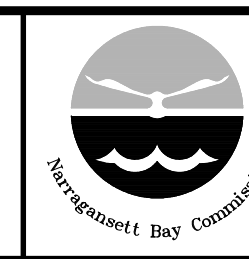
SCALE	AS SHOWN
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	K. OHARA
DRAWN	S. WILBUR
CHECKED	T. MUINDI

90% DESIGN PHASE - APRIL 2021

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

Stantec PARE

NBC CONTRACT NO 308.05C  
GEOTECHNICAL

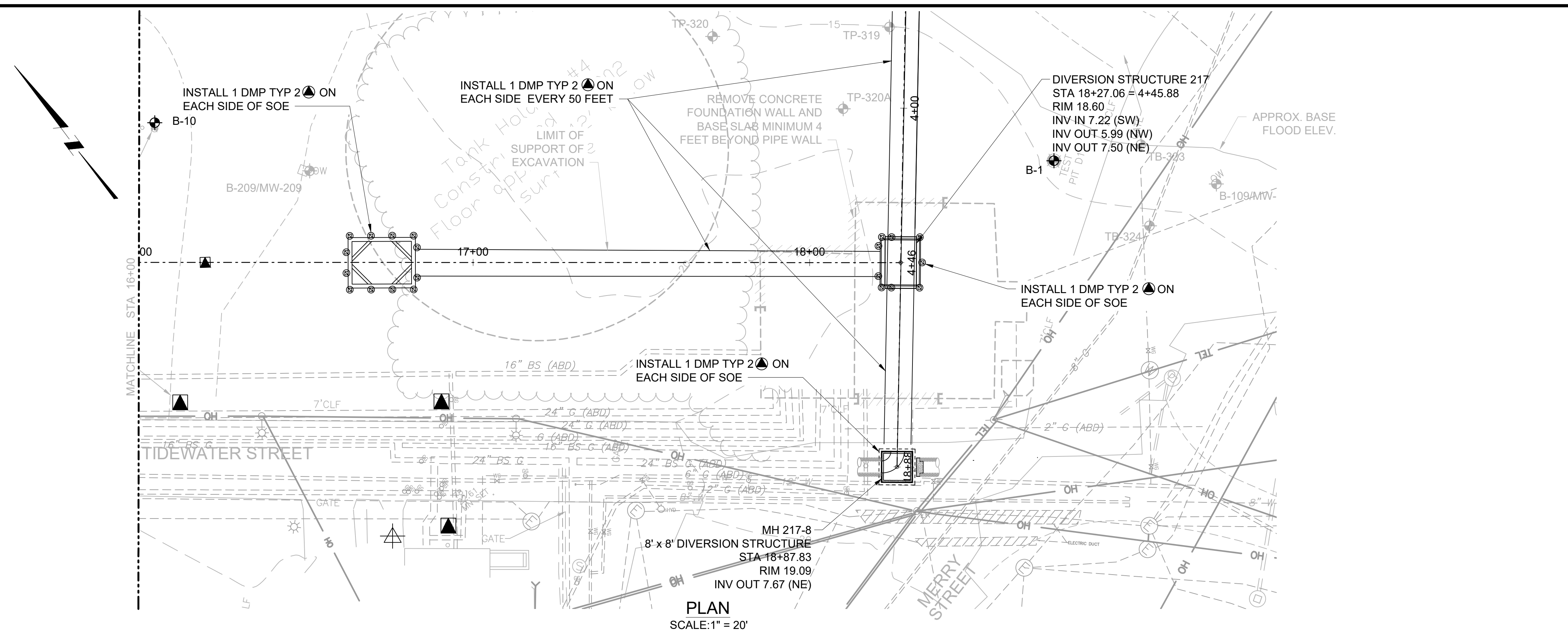
OF-217 CONSOLIDATION CONDUIT  
INSTRUMENTATION PLAN STA. 8+00 - 16+00

SHEET  
B-2  
195130227

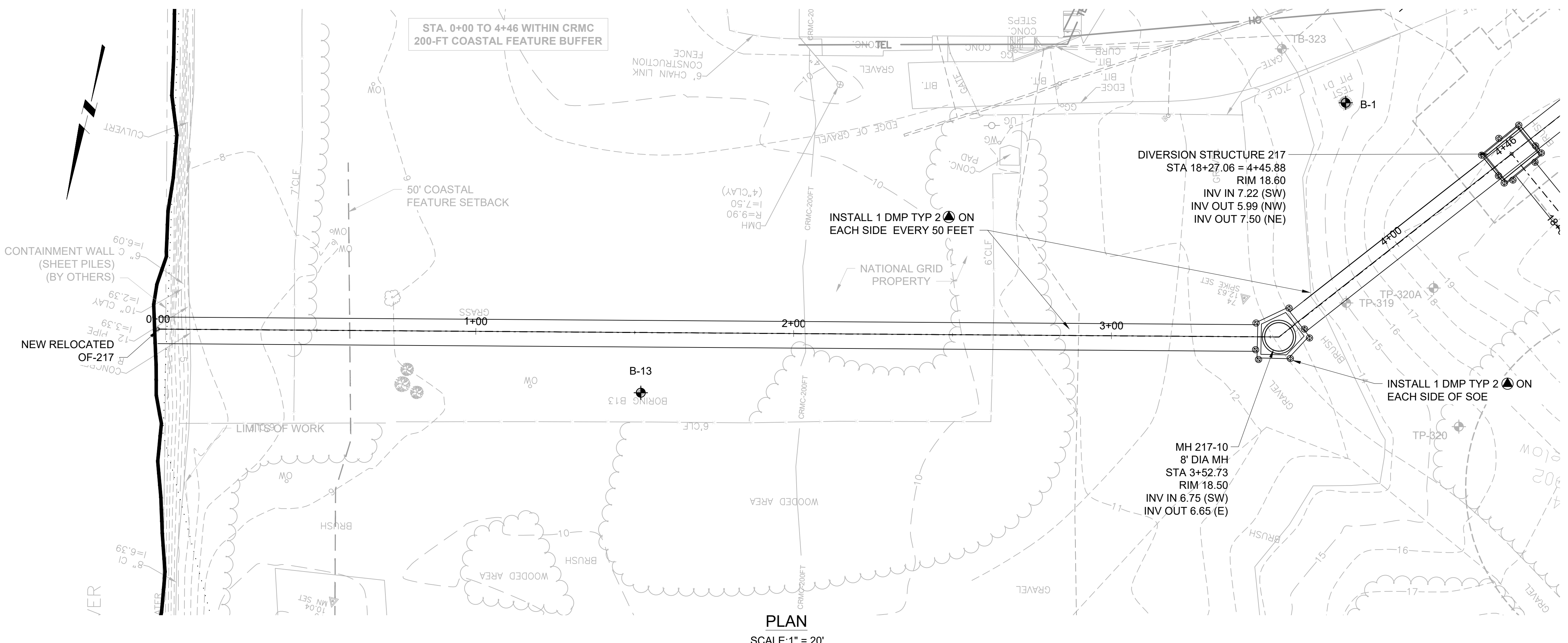
BY: OBRIEN, JANET

PLOT DATE: Thursday, April 15, 2021 2:55:52 PM

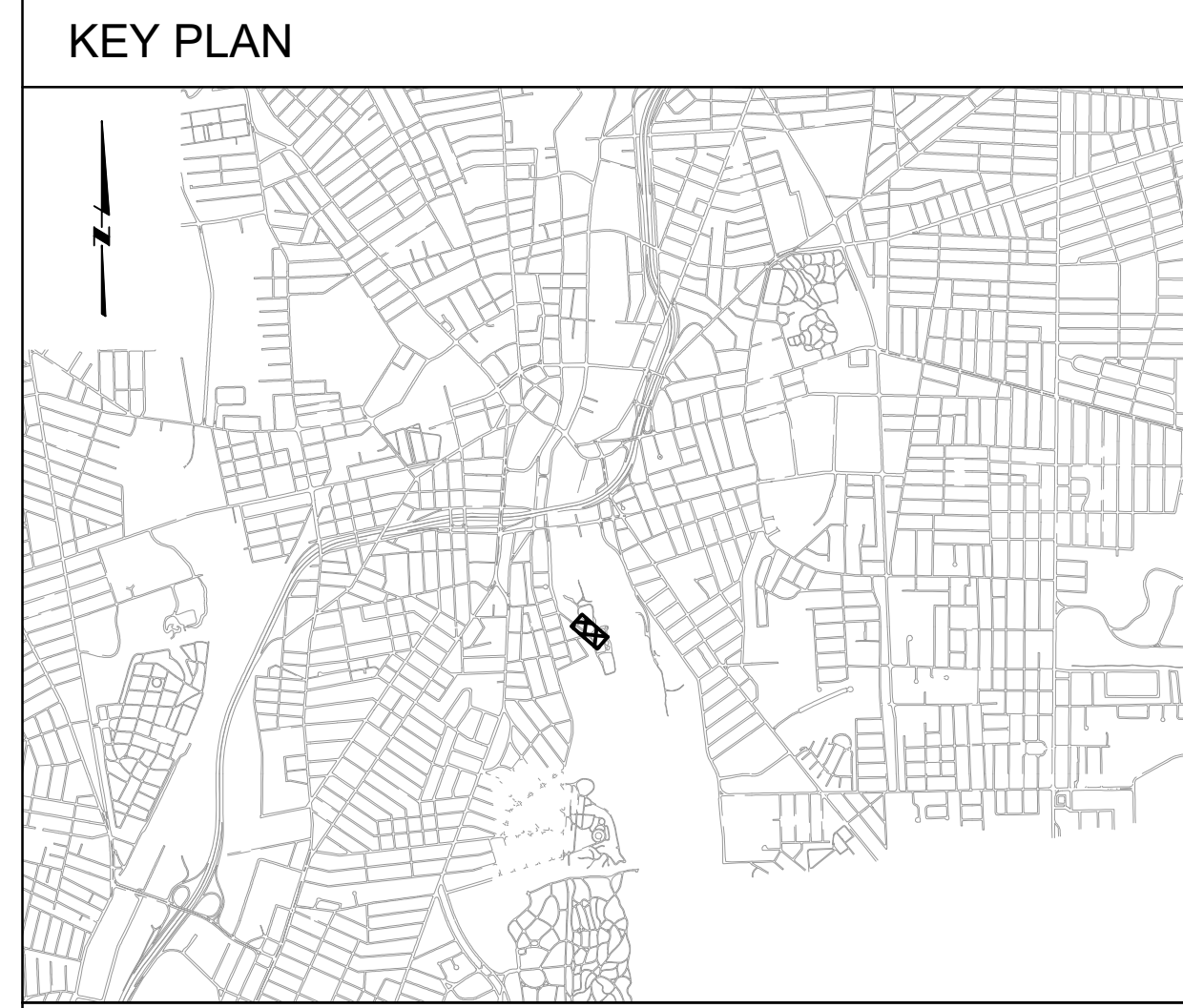
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PLAN  
SCALE: 1" = 20'



PLAN  
SCALE: 1" = 20'



- GENERAL SHEET NOTES**
- UTILITY INFORMATION DEPICTED, PROVIDED BY NATIONAL GRID
  - FLOOD PLAIN INFORMATION IS FROM FEMA, PANEL NO. 44007C0307J. FLOOD PLAIN ELEVATIONS CONVERTED FROM VERTICAL DATUM NAVD 1988 TO NGVD 1929 AND ARE APPROXIMATELY:
    - NORTH OF DIVISION STREET BRIDGE: AE ELEVATION 12.8
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INSTRUMENTATION LEGEND	
SYMBOL	INSTRUMENT TYPE
	OBSERVATION WELL (OW)
	DEFORMATION MONITORING POINT (DMP TYPE 1)
	DEFORMATION MONITORING POINT (DMP TYPE 2)
	DEFORMATION MONITORING POINT (DMP TYPE 3)
	INCLINOMETER (INCL)
	UTILITY MONITORING POINT (UMP)
	SEISMOGRAPH

REV	DATE	BY	DESCRIPTION
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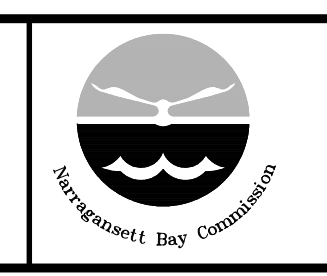
WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED: K. O'HARA  
 DRAWN: S. WILBUR  
 CHECKED: T. MUINDI

90% DESIGN PHASE - APRIL 2021

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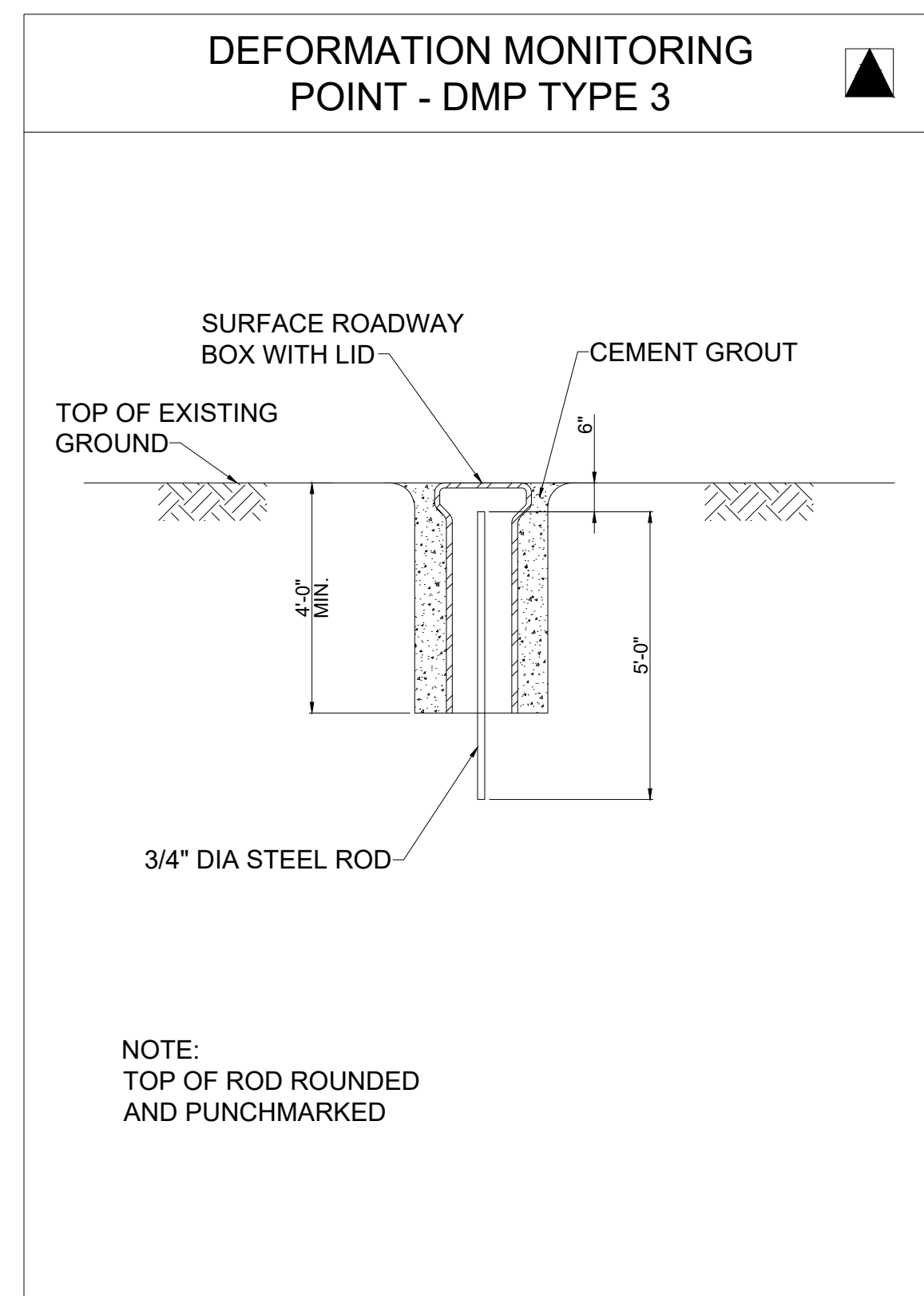
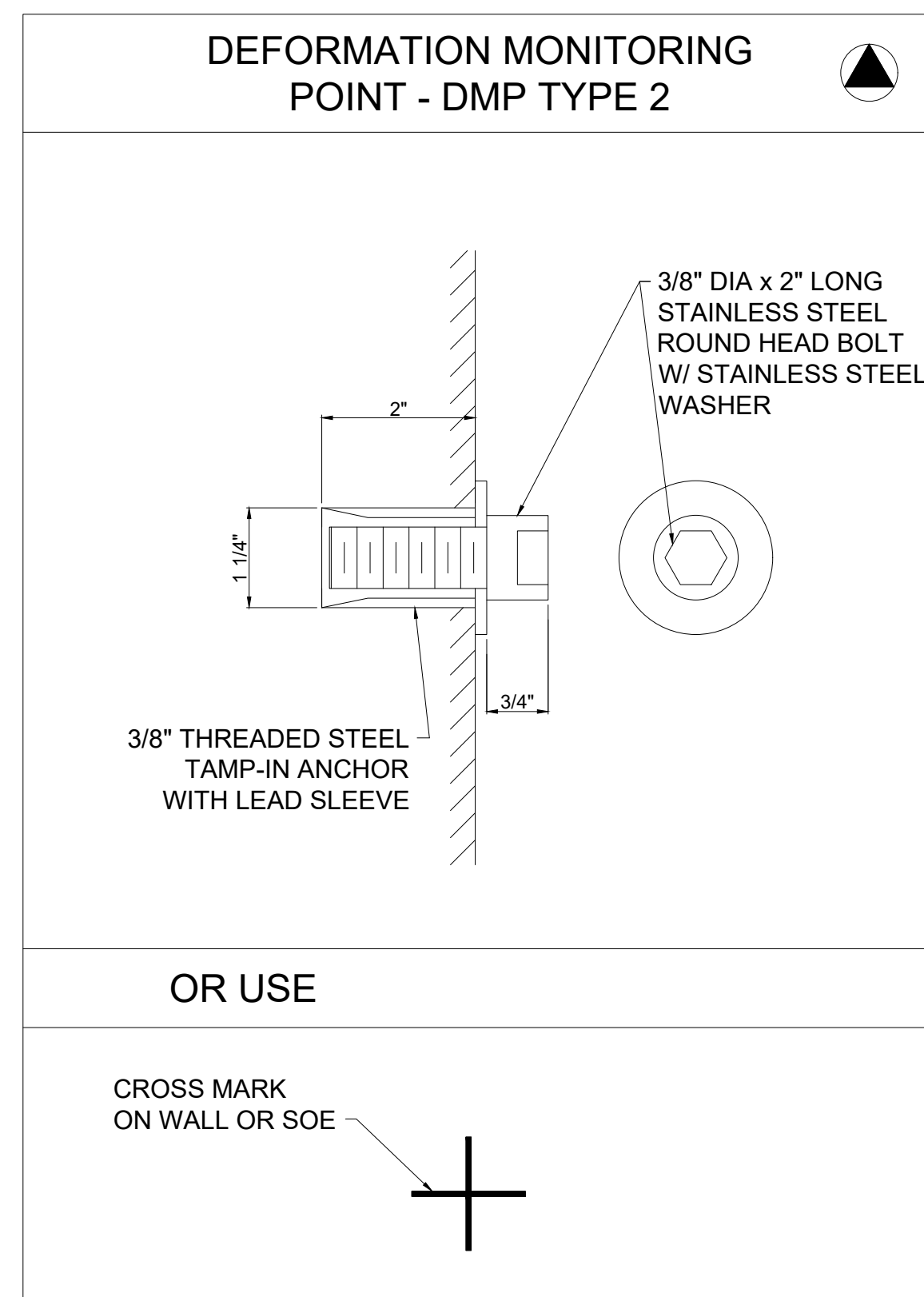
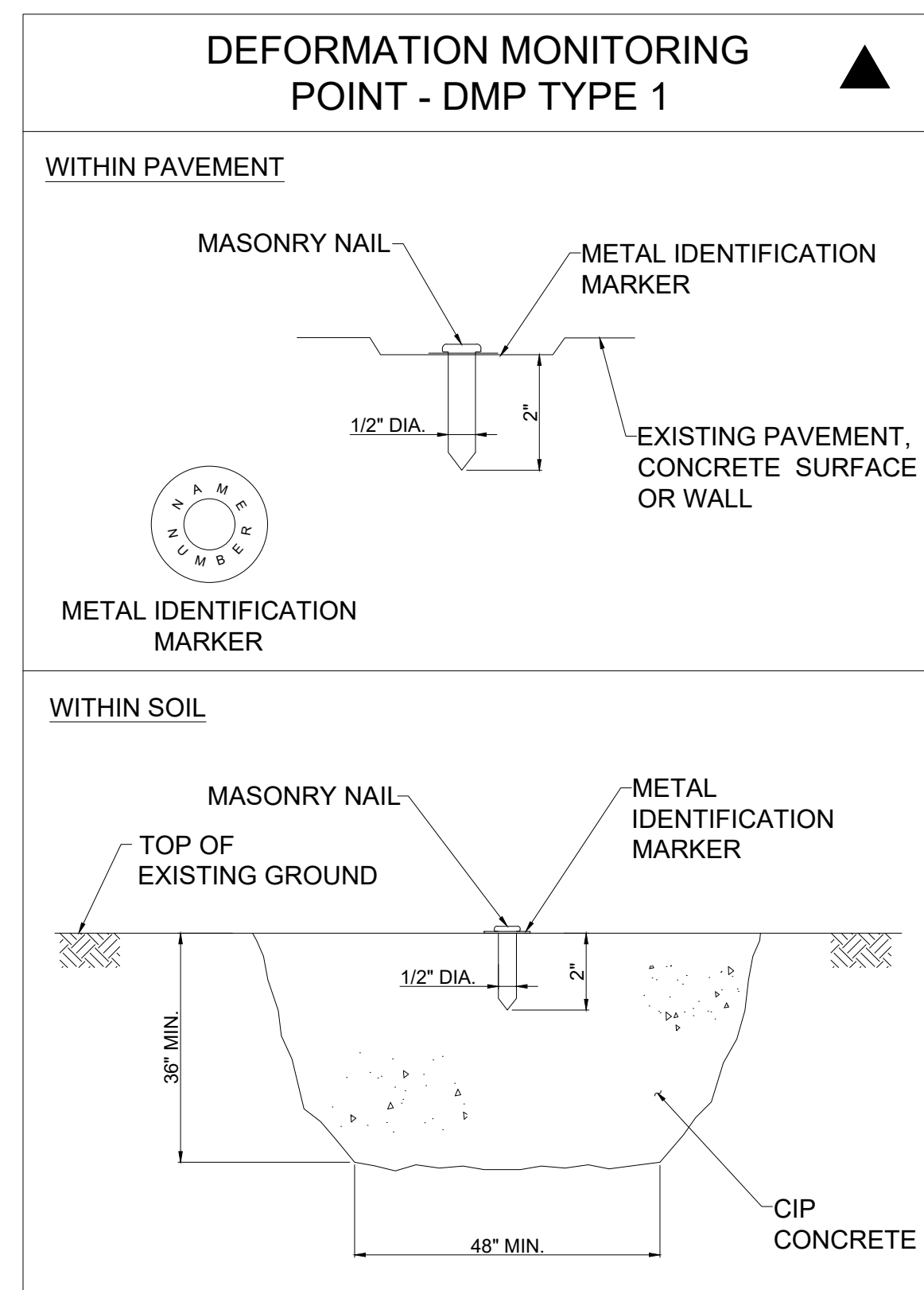
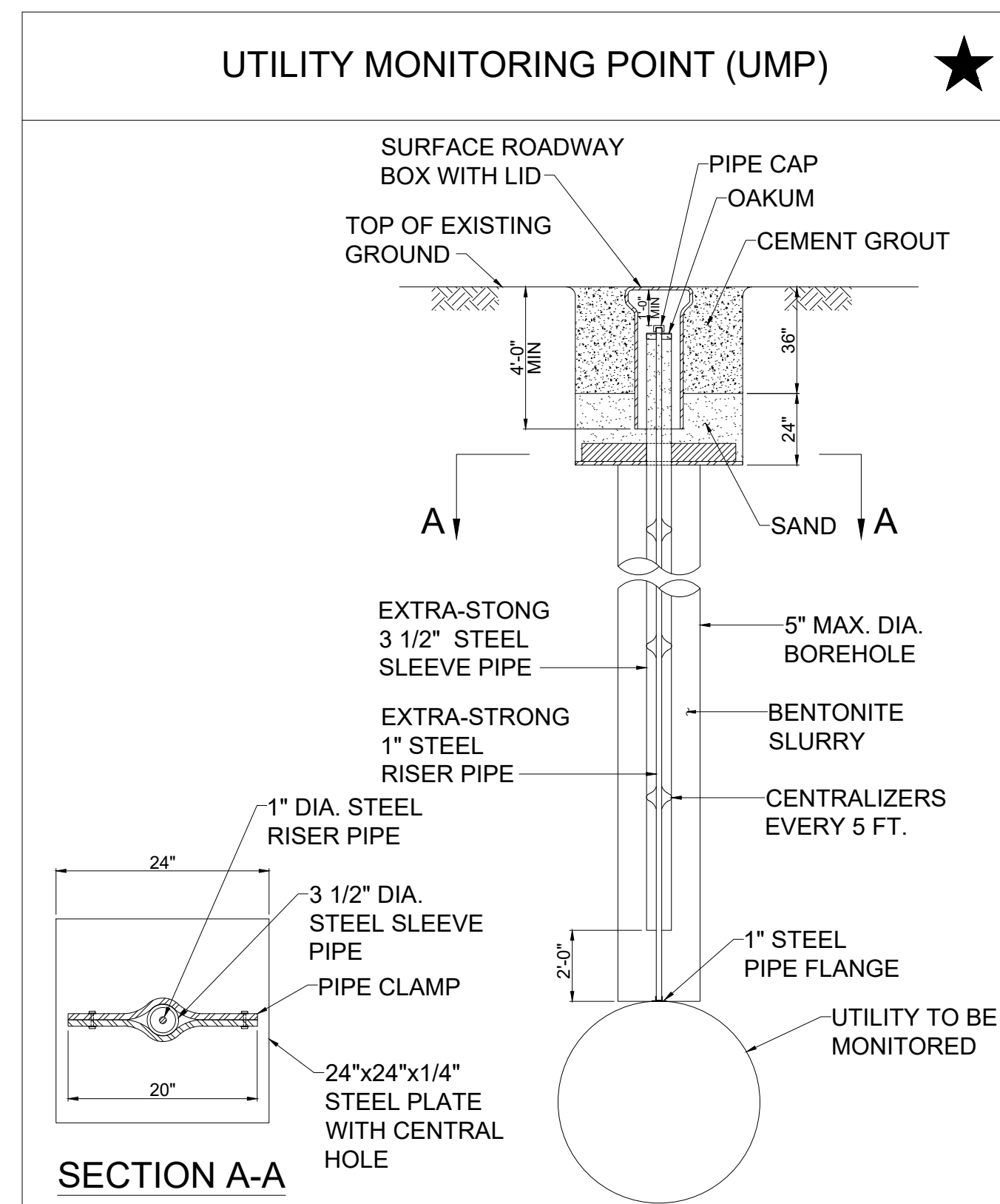
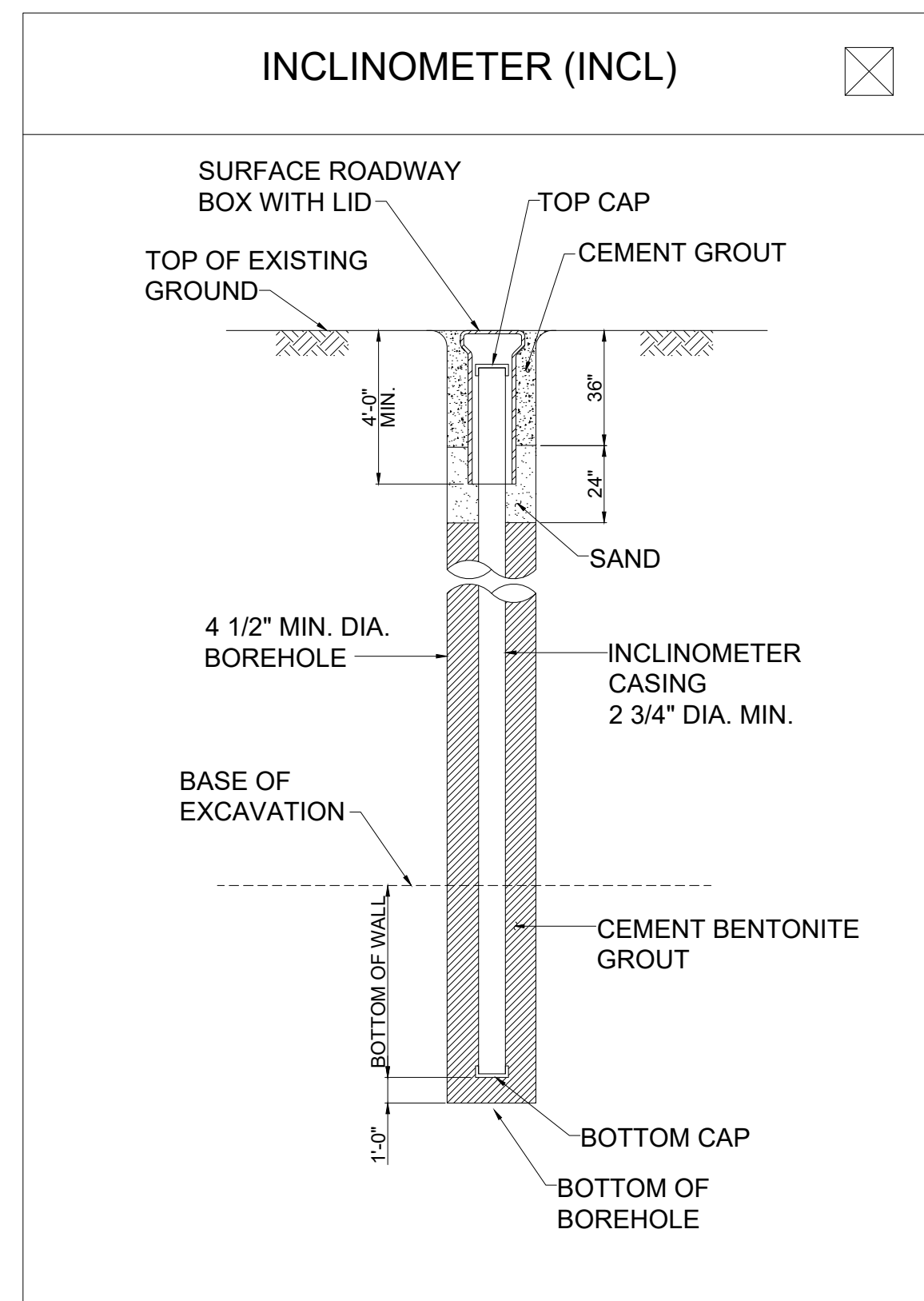
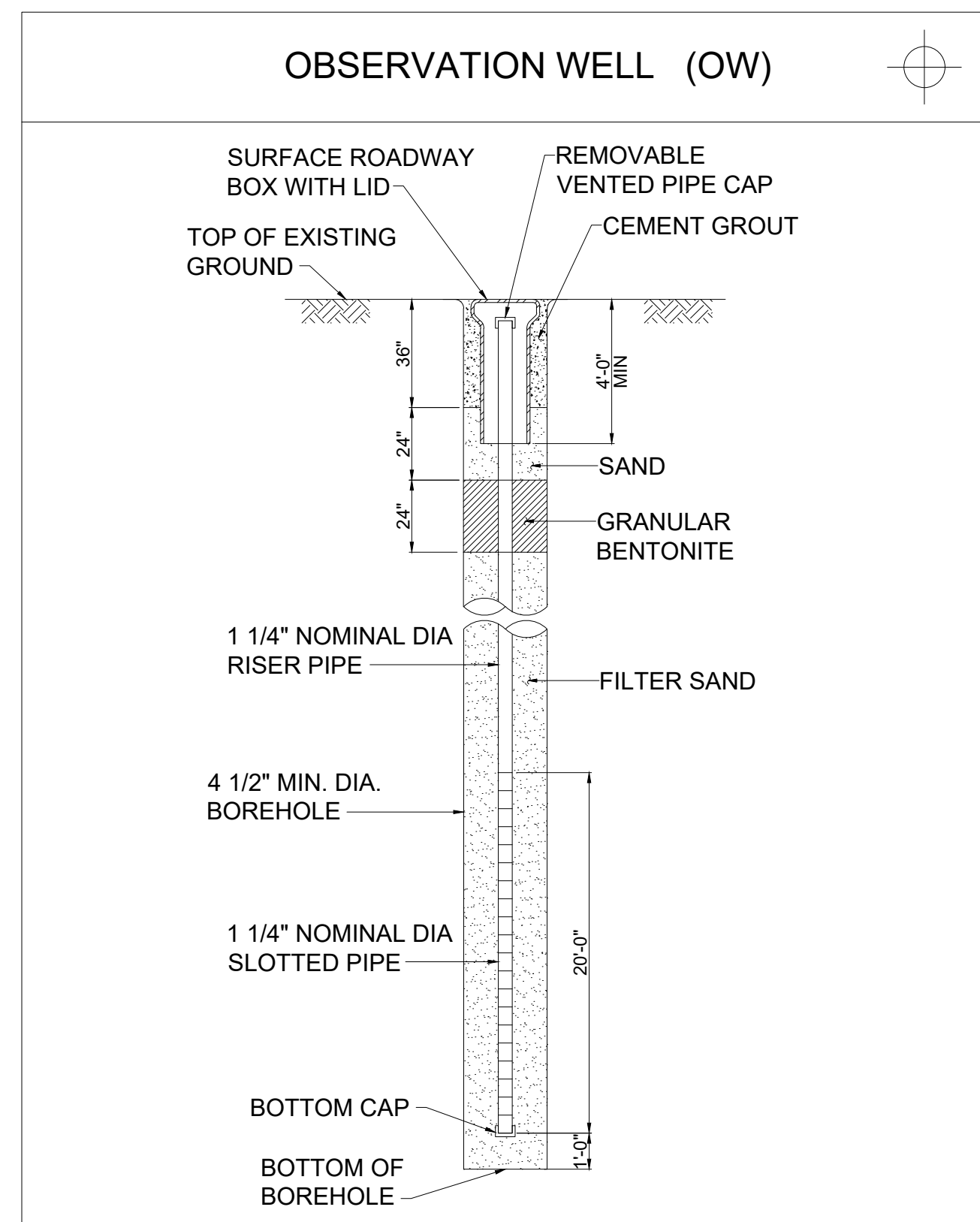
NARRAGANSETT BAY COMMISSION  
 PHASE III COMBINED SEWER  
 OVERFLOW PROGRAM

Stantec PARE

NBC CONTRACT NO 308.05C  
 GEOTECHNICAL

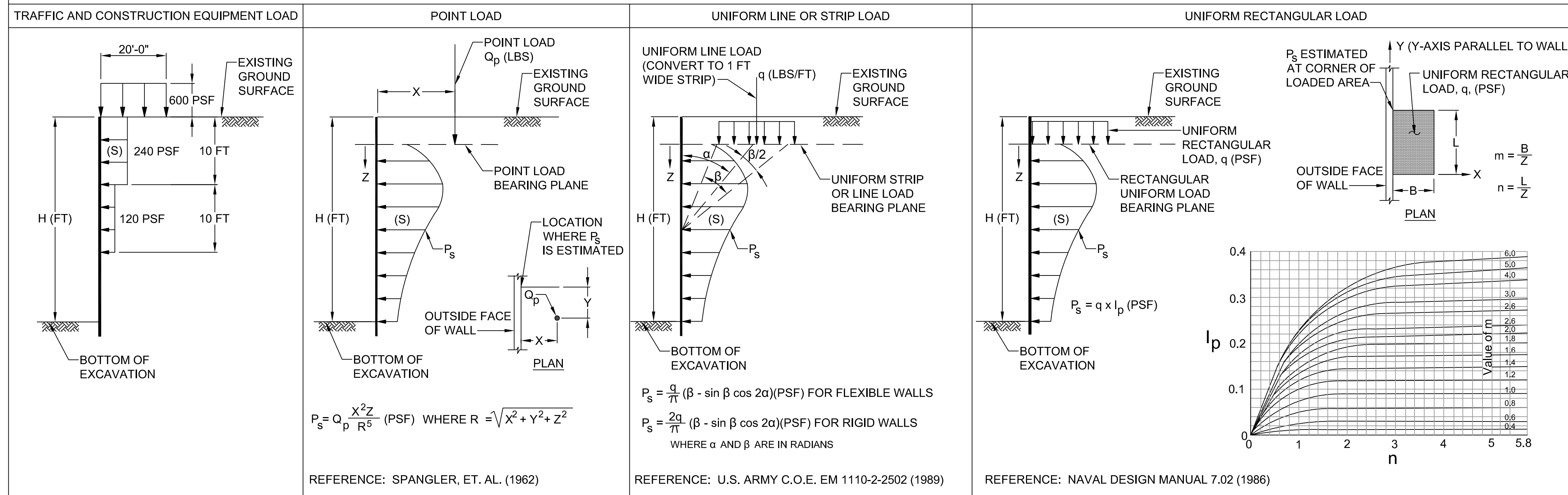
OF-217 CONSOLIDATION CONDUIT  
 INSTRUMENTATION PLAN STA. 16+00 - 18+88, STA. 0+00 - 4+48

SHEET B-3  
 195130227

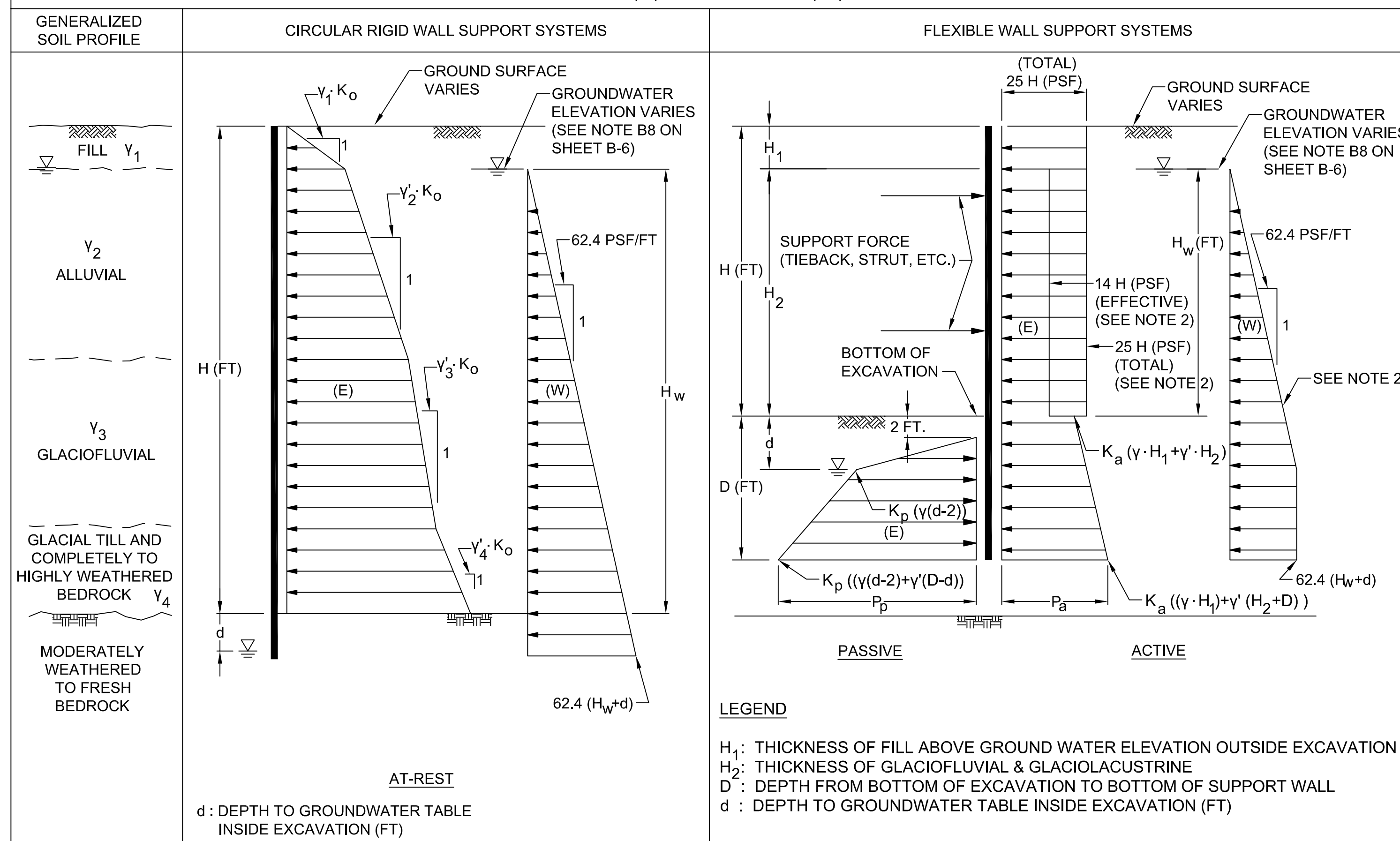


- NOTES**
1. MATERIAL AND INSTALLATION DETAILS FOR ALL APPLICABLE INSTRUMENTS SHOWN ON THIS DRAWING ARE PROVIDED IN SECTION 02295 OF THE SPECIFICATIONS.
  2. INSTRUMENT LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. ACTUAL LOCATIONS SHALL BE ADJUSTED TO ACCOMMODATE FIELD CONDITIONS, AS APPROVED BY PM.
  3. OBTAIN APPROVAL FROM PROPERTY OWNERS BEFORE INSTALLING ANY INSTRUMENTS ON PRIVATE PROPERTY.
  4. OBTAIN PERMITS AND APPROVALS FOR ALL INSTRUMENTATION TO BE INSTALLED IN THE RIGHT-OF-WAY.
  5. REMOVE INSTRUMENTS AND RESTORE LOCATIONS IN ACCORDANCE WITH THE SPECIFICATIONS.

**MINIMUM DESIGN CRITERIA FOR LATERAL EARTH PRESSURES:  
SURCHARGE (S)**



**MINIMUM DESIGN CRITERIA FOR LATERAL EARTH PRESSURES:  
SOIL (E) AND WATER (W)**



**MINIMUM DESIGN CRITERIA  
FOR TEMPORARY EXCAVATION SUPPORT SYSTEM COMPONENTS**

STRUCTURE	VERTICAL LOADS		HORIZONTAL LOADS (E), (S) AND (W)	DESIGN LOADING COMBINATIONS AND ALLOWABLE UNIT STRESSES
	DEAD LOADS (DL)	LIVE LOADS (LL)		
WALL SYSTEM (ELEMENTS IN CONTACT WITH RETAINED EARTH)	WEIGHT OF WALL	REACTIONS FROM ALL LIVE LOADS INCLUDING APPLICABLE CONSTRUCTION EQUIPMENT LOADING, OTHER SURCHARGES, PEDESTRIAN WALKWAY LOADS, AND AASHTO HS20-44 LOADING, SEE NOTES	LOADS FROM LATERAL EARTH AND WATER PRESSURES AND LATERAL SURCHARGE PRESSURES [(E)+(S)+(W)]	100% OF [(DL)+(LL)+(E)+(S)+(W)]
PRIMARY BRACING MEMBERS (MEMBERS CARRYING DIRECT LOADS INCLUDING WALES, STRUTS, CORNER BRACING, AND RAKERS)	REACTIONS FROM BRACING SYSTEM.		AXIAL LOADS FROM END WALL BRACING MEMBERS (E)+(S)+(W), WHERE APPLICABLE	CONFORM TO ACI 318 FOR REINFORCED CONCRETE DESIGN
PRIMARY BRACING MEMBERS (MEMBERS CARRYING DIRECT LOADS INCLUDING WALES, STRUTS, CORNER BRACING, AND RAKERS)	WEIGHT OF PRIMARY BRACING MEMBER		LOADS FROM WALL SYSTEM [(E)+(S)+(W)]	FOR PRIMARY BRACING MEMBERS: 100% OF [(DL)+(LL)+(E)+(S)+(W)]
SECONDARY BRACING MEMBERS FOR SUPPORT OF INTERNAL BRACING MEMBERS (IF NECESSARY)	WEIGHT OF SECONDARY BRACING MEMBER PLUS WEIGHT OF SUPPORTED PRIMARY BRACING MEMBERS, WHERE APPLICABLE	AXIAL LOAD EQUAL TO 3% OF THE DESIGN AXIAL LOAD IN THE MORE HEAVILY LOADED ADJACENT PRIMARY BRACING MEMBER	AXIAL LOADS FROM END WALLS [(E)+(S)+(W)], WHERE APPLICABLE	FOR WALLS: 120% OF ALLOWABLE UNIT STRESSES
			AXIAL LOAD EQUAL TO 3% OF THE DESIGN AXIAL LOAD IN THE MORE HEAVILY LOADED ADJACENT PRIMARY BRACING MEMBER	120% OF ALLOWABLE UNIT STRESSES

**PROPERTIES OF RETAINED SOIL**

MATERIAL	TOTAL UNIT WEIGHT, $\gamma$ (PCF)	EFFECTIVE UNIT WEIGHT, $\gamma'$ (PCF)	FRICTION ANGLE	UNDRAINED SHEAR STRENGTH $S_u$ (PSF)	AT-REST PRESSURE COEFFICIENT $K_0$	ACTIVE PRESSURE COEFFICIENT $K_a$	PASSIVE PRESSURE COEFFICIENT $K_p$
FILL	125	63	32°	NA	0.47	0.31	3.26
ALLUVIAL	120	58	30°	NA	0.5	0.33	3.00
GLACIOFLUVIAL	125	63	32°	NA	0.47	0.31	3.26
GLACIAL TILL AND COMPLETELY TO HIGHLY WEATHERED BEDROCK	135	73	34°	NA	0.44	0.28	3.54

- NOTES:**
- FOR MINIMUM DESIGN CRITERIA FOR EXCAVATION SUPPORT NOTES, SEE SHEET B-6.
  - SEE SHEET B-6, NOTE B10 FOR IMPERMEABLE VERSUS PERMEABLE SUPPORT WALL DESIGN CONSIDERATIONS.



**NOTES FOR ANALYSIS AND DESIGN**

**A. GENERAL**

- A1. DUE TO A VARIETY OF PAST USES IN THE AREA, NUMEROUS OBSTRUCTIONS WILL BE ENCOUNTERED DURING INSTALLATION OF EXCAVATION SUPPORT SYSTEMS. TYPES OF OBSTRUCTIONS ANTICIPATED TO BE ENCOUNTERED INCLUDE: BOULDERS, GRANITE, CONCRETE OR BRICK FOUNDATION WALLS, AND CONCRETE FLOORS FROM PREVIOUS STRUCTURES, ABANDONED WOOD PILES, TANK FOUNDATIONS AND VARIOUS OTHER DEMOLITION AND CONSTRUCTION DEBRIS.
- A2. FLEXIBLE WALL SYSTEMS ARE CONSIDERED TO BE SOLDIER PILE AND LAGGING WALLS AND SIMILAR SUPPORT SYSTEMS. RIGID WALL SYSTEMS ARE CONSIDERED TO BE SECANT PILE WALLS.
- A3. METHODS OF PERMITTED ANALYSIS INCLUDE:
  - LIMIT EQUILIBRIUM METHOD SHALL BE USED FOR STRENGTH DESIGN .
  - NONLINEAR ANALYSIS USING ELASTO-PLASTIC WINKLER SPRINGS SHALL BE USED FOR DEFORMATION CONTROLLED DESIGN .
- A4. TEMPORARY EXCAVATION SUPPORT SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED BY THE CONTRACTOR IN ACCORDANCE WITH CURRENT ENGINEERING PRACTICE, THE REQUIREMENTS OF THE CONTRACT DRAWINGS, AND APPLICABLE SPECIFICATIONS.
- A5. CONVENTIONAL CONSTRUCTION METHODS SHALL BE USED TO CONSTRUCT THE BELOW-GRADE SPACE. THE TEMPORARY EXCAVATION SUPPORT SYSTEM WALLS SHALL BE RESTRAINED BY TEMPORARY BRACING, AS NECESSARY, AS THE EXCAVATION IS CONDUCTED, AND THE PERMANENT SUBSTRUCTURE AND FOUNDATIONS SHALL BE CONSTRUCTED WITHIN THE TEMPORARY EXCAVATION SUPPORT SYSTEM.
- A6. DRIVING OR VIBRATING IS NOT PERMITTED TO INSTALL EXCAVATION SUPPORT WALL ELEMENTS.
- A7. THE CRITERIA ON SHEET B-5 AND THIS SHEET ARE MINIMUM CRITERIA. THE CONTRACTOR SHALL UTILIZE ADDITIONAL OR MORE CONSERVATIVE CRITERIA AS REQUIRED, TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS.
- A8. THE CONTRACTOR SHALL REVIEW THE DESIGN CRITERIA INCLUDED ON DRAWING B-6 AND CONDUCT WORK AS NECESSARY TO COMPLETE THE DESIGN. THE CONTRACTOR'S FINAL DESIGN AND ANY PROPOSED MODIFICATIONS WILL BE REVIEWED BY THE PROGRAM MANAGER/CONSTRUCTION MANAGER (PM/CM) IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND APPLICABLE SPECIFICATIONS. THE CONTRACTOR SHALL SUBMIT FOR REVIEW BY THE PM/CM, COMPLETE COMPUTATIONS, CROSS-SECTIONS, CONSTRUCTION SCHEDULE AND SEQUENCE, AND WORKING DRAWINGS FOR TEMPORARY EXCAVATION SUPPORT SYSTEMS. THE DESIGN SHALL BE IN ACCORDANCE WITH THE MINIMUM CRITERIA SPECIFIED AND INDICATED ON THIS DRAWING AND GOOD ENGINEERING PRACTICE, AND WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ALL COMPUTATIONS AND DESIGNS SHALL BE PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF RHODE ISLAND, RETAINED BY THE CONTRACTOR. THE PM'S/CM'S REVIEW WILL SOLELY BE TO DETERMINE COMPLIANCE WITH THE CONTRACT DOCUMENTS.
- A9. TEMPORARY EXCAVATION SUPPORT SYSTEMS SHALL BE ANALYZED AND DESIGNED FOR ALL CONDITIONS THAT CAN OCCUR DURING THE VARIOUS STAGES OF CONSTRUCTION. THESE CONDITIONS MAY INCLUDE: TEMPORARY OR PERMANENT ALTERATION OF THE SOILS, IN-SITU SOIL PROPERTIES CAUSED BY THE SELECTED METHODS OF CONSTRUCTION, INITIAL CANTILEVER CONDITION, INSTALLATION, RELOCATION, AND REMOVAL OF TEMPORARY BRACING, TIME RELATED EFFECTS, SOIL EXCAVATION BELOW BRACING ALREADY IN PLACE, SHRINKAGE OF CONCRETE, DEWATERING OF EXCAVATION, AND LOAD TRANSFER TO PERMANENT STRUCTURE.
- A10. ALL LATERAL PRESSURES ARE IN POUNDS PER SQUARE FOOT (PSF).
- A11. MAXIMUM LATERAL DEFORMATION ALONG FULL DEPTH OF THE EXCAVATION SHALL NOT EXCEED  $0.0025 \times$  EXCAVATION DEPTH OR  $1/2"$ , WHICHEVER IS GREATER.
- A12. IF THE LATERAL LOADING CONDITIONS ON OPPOSITE SIDES OF THE EXCAVATION ARE NOT EQUAL, THE TEMPORARY EXCAVATION SUPPORT SYSTEM DESIGN SHALL ACCOUNT FOR THE UNBALANCED LOADING. UNBALANCED LOADING COULD RESULT FROM UNEQUAL EXCAVATION LEVELS OR DIFFERENT LATERAL PRESSURE DISTRIBUTIONS AT THE PERIMETER OF THE SITE.

A13. EXCAVATION AND BRACING RESTRICTIONS SHALL BE INCORPORATED INTO THE TEMPORARY EXCAVATION SUPPORT SYSTEM DESIGN AS FOLLOWS:

- THE MAXIMUM VERTICAL DISTANCE BETWEEN THE LOWEST TEMPORARY BRACE AND THE EXCAVATION SUBGRADE SHALL NOT EXCEED 15 FT.
- EXCAVATION FOR A LOWER SUBGRADE ELEVATION MAY NOT BEGIN UNTIL THE BRACE LEVEL ABOVE HAS BEEN INSTALLED.

A14. THE MAXIMUM HEIGHT OF EXCAVATION FACE SHALL NOT EXCEED 4 FEET PRIOR TO INSTALLATION OF TEMPORARY LAGGING OR OTHER SHORING SYSTEM.

A15. THE CONTRACTOR MAY BE REQUIRED TO ADJUST CONSTRUCTION OPERATIONS IF THE ENGINEER CONSIDERS THAT BASED ON INSTRUMENTATION READINGS, EXCESSIVE SETTLEMENTS, DEFORMATION AND/OR DEFLECTIONS OCCUR.

**B. LATERAL DESIGN PRESSURES**

- B1. MINIMUM DESIGN LOADING CONDITIONS SHALL BE DETERMINED BY ADDING TOGETHER THE LOADING DIAGRAMS SHOWN ON DRAWING B-5 FOR SOIL (E) AND WATER (W), WHERE APPLICABLE, AND THE COMBINATION OF APPLIED SURCHARGES (S). TRAFFIC AND CONSTRUCTION EQUIPMENT LOAD SHALL BE ASSUMED ON ANY SIDE OF THE WALL THAT IS ACCESSIBLE.
- B2. UNLESS INDICATED OTHERWISE, ALL LOADS FOR A GIVEN CONDITION MUST BE ADDED SO AS TO FORMULATE THE MAXIMUM TOTAL DESIGN LOADING.
- B3. LATERAL PRESSURE DUE TO TRAFFIC AND CONSTRUCTION EQUIPMENT IS BASED ON AN ASSUMED SURFACE SURCHARGE OF 600 PSF ACTING OVER A 20-FT. WIDE INFLUENCE AREA. THE CONTRACTOR SHALL DETERMINE IF THE 600 PSF VERTICAL SURCHARGE LOAD IS SUFFICIENT, AND SHALL MAKE ADDITIONAL ANALYSES FOR MORE CRITICAL CONSTRUCTION EQUIPMENT LOADING CONDITIONS, AND ACCOUNT FOR THESE IN THE DESIGN OF THE TEMPORARY EXCAVATION SUPPORT SYSTEM. THE CONTRACTOR SHALL ACCOUNT FOR CRITICAL SURCHARGE LOADINGS OR OTHER LOADING CONDITIONS NOT DESCRIBED HEREIN IN DESIGN AND CONSTRUCTION, SUBJECT TO THE REVIEW OF THE PM, PRIOR TO THE APPLICATION OF THE LOADING.
- B4. FOR UNIFORM VERTICAL SURCHARGE LOADING, LATERAL PRESSURES ARE DETERMINED AT VARIOUS DEPTHS BELOW THE CORNER OF THE LOADED AREA. WHEN THE RECTANGULAR LOADED AREA IS LOCATED AT A DISTANCE BEHIND THE WALL, THE PRINCIPLE OF LOAD SUPERPOSITION SHALL BE USED TO DETERMINE LATERAL PRESSURES AGAINST THE WALL. REFER TO SOIL MECHANICS, BY LAMBE AND WHITMAN, PAGE 104, FOR AN EXAMPLE OF USING THE PRINCIPLE OF SUPERPOSITION OF LOADS.
- B5. PASSIVE EARTH PRESSURES SHALL BE COMPUTED USING RANKINE EARTH PRESSURE THEORY AND THE SOIL PROPERTIES INDICATED ON DRAWING B-5.
- B6. THE TEMPORARY EXCAVATION SUPPORT SYSTEM SHALL BE CONSIDERED TO BE SUBJECTED TO LATERAL SURCHARGE PRESSURES FROM LOADS ASSOCIATED WITH ADJACENT STRUCTURES AND GRADE INCREASES IF LOCATED WITHIN THE INFLUENCE ZONE. THE INFLUENCE ZONE IS DEFINED AS A 1H:1V LINE DRAWN FROM THE BOTTOM OF THE FINAL EXCAVATION LEVEL AT THE OUTSIDE FACE OF THE TEMPORARY EXCAVATION SUPPORT SYSTEM UPWARD AND OUTWARD AWAY FROM THE SITE TOWARD THE ADJACENT STRUCTURE OR GRADE INCREASE.
- B7. VALUES OF P ARE IN POUNDS PER SQUARE FOOT PER LINEAR FOOT OF WALL (PSF/LF).
- B8. THE EXISTING GROUNDWATER LEVEL VARIES AND MUST BE DETERMINED ON A SITE SPECIFIC BASIS FOR EACH TEMPORARY EXCAVATION SUPPORT DESIGN. THE DESIGN MUST ACCOUNT FOR THE MOST CRITICAL LOADING CONDITION, INCLUDING THE MAXIMUM LOWERING OF THE GROUNDWATER TABLE AND THE MAXIMUM WATER INGRESS INTO THE EXCAVATION. REFER TO SPECIFICATIONS FOR GROUNDWATER CONTROL REQUIREMENTS.
- B9. STRESSES DUE TO TEMPERATURE FLUCTUATIONS SHALL BE TAKEN INTO ACCOUNT IN THE DESIGN OF BRACING MEMBERS AND LOADS RESULTING FROM FROZEN SOILS SHALL BE CONSIDERED IF APPROPRIATE.
- B10. IF AN IMPERMEABLE EXCAVATION SUPPORT WALL IS INSTALLED, THEN EFFECTIVE LATERAL EARTH PRESSURES PLUS HYDROSTATIC PRESSURE SHALL BE USED FOR DESIGN. IF A PERMEABLE WALL SYSTEM IS INSTALLED THEN TOTAL LATERAL EARTH PRESSURES MUST BE USED FOR DESIGN.

**C. BRACING MEMBERS**

- C1. DESIGN OF BRACING MEMBERS SHALL SATISFY THE MOST CRITICAL CONDITIONS ANTICIPATED DURING THE CONSTRUCTION SEQUENCE
- C2. TEMPORARY INTERNAL BRACING MEMBERS (STRUTS, RAKERS, CORNER BRACES, WALES) SHALL BE STRUCTURAL GRADE STEEL, REINFORCED CONCRETE, OR A COMBINATION. NO WOOD SHIMS SHALL BE USED.
- C3. TEMPORARY BRACING MEMBERS SHALL NOT BE EMBEDDED IN PERMANENT STRUCTURES.
- C4. TEMPORARY BRACING MEMBERS SHALL BE REMOVED AT AN APPROPRIATE STAGE OF CONSTRUCTION AND IN SUCH A MANNER AS TO AVOID IMPACT LOADING ON NEW AND EXISTING STRUCTURES AND/OR PIPELINES OR ON OTHER MEMBERS OF THE TEMPORARY EXCAVATION SUPPORT SYSTEM.
- C5. ALL INTERNAL BRACING SHALL BE PRESTRESSED TO AT LEAST 50 PERCENT OF MAXIMUM DESIGN LOADS WHERE PASSIVE SOIL PRESSURE LIMIT PERMITS.

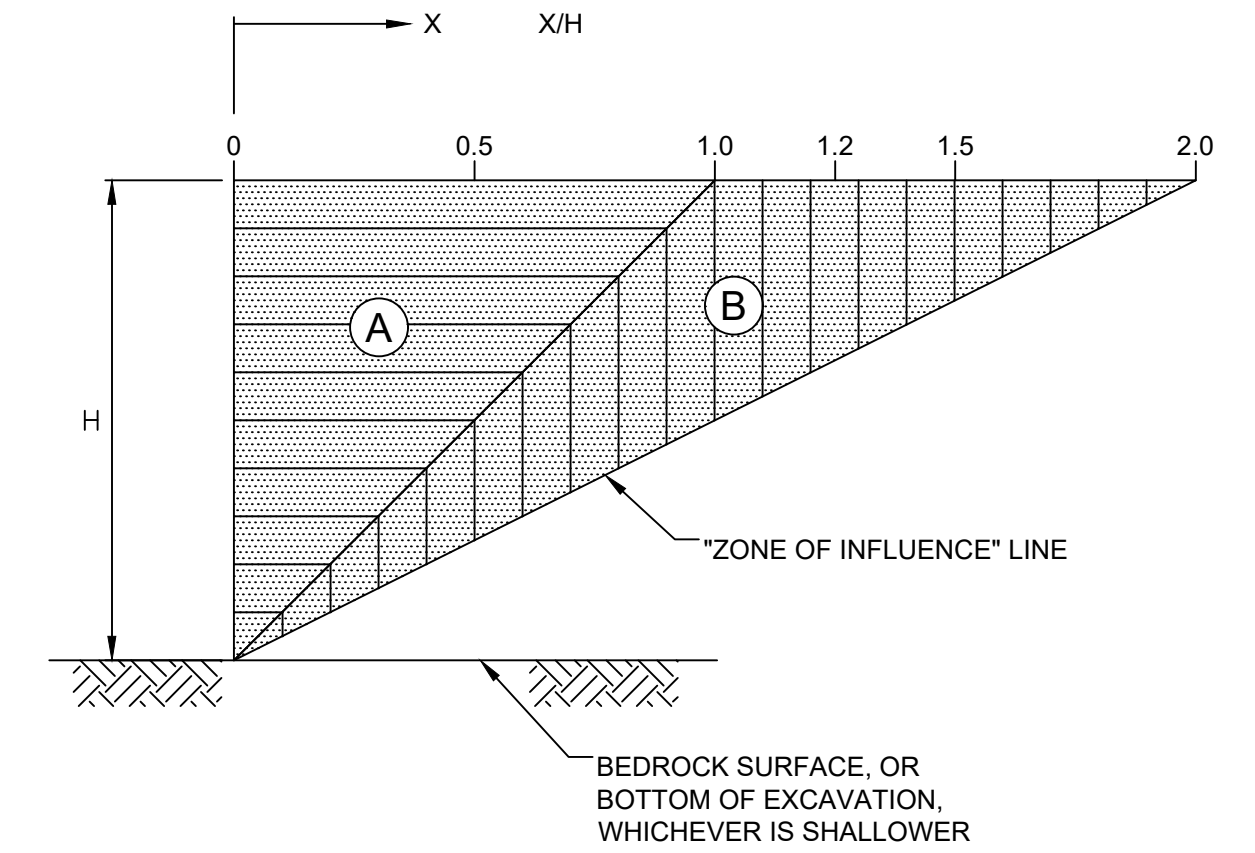
**D. TEMPORARY EXCAVATION SUPPORT SYSTEM TOE STABILITY DESIGN**

- D1. THE TOE OF THE TEMPORARY EXCAVATION SUPPORT SYSTEM PRIMARY ELEMENTS SHALL EXTEND A SUFFICIENT DISTANCE BELOW THE BOTTOM OF THE EXCAVATION IN ORDER TO LIMIT MOVEMENT AND TO ENSURE BOTTOM STABILITY AND ADEQUATE VERTICAL LOAD CAPACITY.
- D2. THE TOE OF THE TEMPORARY EXCAVATION SUPPORT SYSTEM WALL SHALL EXTEND A SUFFICIENT DISTANCE BELOW THE LOWEST EXCAVATION LEVEL TO PROVIDE VERTICAL LOAD CARRYING CAPACITY AND LIMIT HORIZONTAL MOVEMENT OF THE WALL. LOAD CARRYING CAPACITY OF THE WALL SHALL BE DETERMINED BY CONSIDERING BRACING SYSTEM LOADS. ONLY THE LENGTH OF THE WALL BELOW THE BOTTOM OF THE EXCAVATION SHALL BE CONSIDERED IN SKIN FRICTION AND/OR ADHESION CALCULATIONS.
- D3. EVALUATION OF THE REQUIRED TOE EMBEDMENT BELOW EXCAVATION SUBGRADE SHALL BE BASED ON THE NET RANKINE ACTIVE AND PASSIVE PRESSURES USING THE APPROPRIATE PRESSURE COEFFICIENTS PRESENTED IN THE SOIL PARAMETERS TABLE AND APPLICABLE SURCHARGE LOADING. FOR DETERMINING TOE EMBEDMENT, EITHER A FACTOR OF SAFETY EQUAL TO 1.5 SHALL BE APPLIED TO THE PASSIVE PRESSURE COEFFICIENT OR THE CALCULATED MINIMUM TOE EMBEDMENT SHALL BE INCREASED BY 20%.
- D4. IN SITUATIONS WHERE THE RETAINED SOIL IS NOT DEWATERED, THE DETERMINATION OF TOE PENETRATION MUST CONSIDER THE POTENTIAL FOR SEEPAGE GRADIENTS WHICH COULD CAUSE INSTABILITY AT THE BOTTOM OF THE EXCAVATION AND REDUCE THE STRENGTH OF SOILS AT THE TOE OF THE WALL.

**E. CRITERIA FOR PROTECTION OF STRUCTURES**

- E1. STRUCTURES INCLUDE EXISTING BUILDINGS, BRIDGES, UTILITIES, PAVEMENTS AND OTHER FACILITIES.
- E2. PROTECTION CRITERIA PRESENTED FOR FLEXIBLE WALL SYSTEMS ASSUME AVERAGE EXCAVATION AND BRACING PROCEDURES ARE UTILIZED.
- E3. EVALUATION OF PROTECTION REQUIREMENTS FOR STRUCTURES IS DEPENDENT ON MANY FACTORS, WHICH INCLUDE IMPLEMENTED CONSTRUCTION PROCEDURES AND DETAILS, MAGNITUDE AND TYPES OF MOVEMENT ANTICIPATED, SUBSURFACE CONDITIONS, AND PROXIMITY OF STRUCTURES TO THE EXCAVATION. AT LOCATIONS WHERE STRUCTURES ARE FOUNDED WITHIN THE ZONE OF INFLUENCE, AN EVALUATION OF PROTECTION REQUIREMENTS SHALL BE CONDUCTED BY THE CONTRACTOR ON A CASE BY CASE BASIS, CONSIDERING ALL RELEVANT FACTORS.
- E4. POSITIVE MEANS OF PROTECTION ARE DEFINED AS MEASURES WHICH MAY BE TAKEN TO CONTROL GROUND MOVEMENTS TO WITHIN ACCEPTABLE LIMITS OR, MEASURES WHICH PROVIDE ADDITIONAL SUPPORT FOR AFFECTED STRUCTURES. EVALUATION OF PROTECTION REQUIREMENTS FOR STRUCTURES GENERALLY BEGINS WITH SELECTING AND IMPLEMENTING EARTH SUPPORT, EXCAVATION AND BRACING TECHNIQUES TO MINIMIZE GROUND MOVEMENTS. IF ANTICIPATED GROUND MOVEMENTS ARE STILL EXPECTED TO EXCEED ACCEPTABLE LIMITS, THEN INDIRECT OR DIRECT STRUCTURE PROTECTION MEASURES SHALL BE IMPLEMENTED BY THE CONTRACTOR ON A CASE BY CASE BASIS. INDIRECT PROTECTION MEASURES INCLUDE SUCH PROCEDURES AS PROVIDING A STIFFER RETAINING SYSTEM, COMPACTION GROUTING OR SLAB/FOOTING JACKING. DIRECT PROTECTION MEASURES INCLUDE SUCH PROCEDURES AS STANDARD UNDERPINNING PITS.
- E5. THE CONTRACTOR SHALL CONSIDER THE EFFECTS OF VIBRATIONS ON ADJACENT STRUCTURES FROM INSTALLATION OF THE TEMPORARY EARTH SUPPORT SYSTEM.
- E6. REFER TO SPECIFICATION SECTION 02295 FOR GEOTECHNICAL INSTRUMENTATION RESPONSE LEVELS AND READING FREQUENCIES.

**PROTECTION CRITERIA**

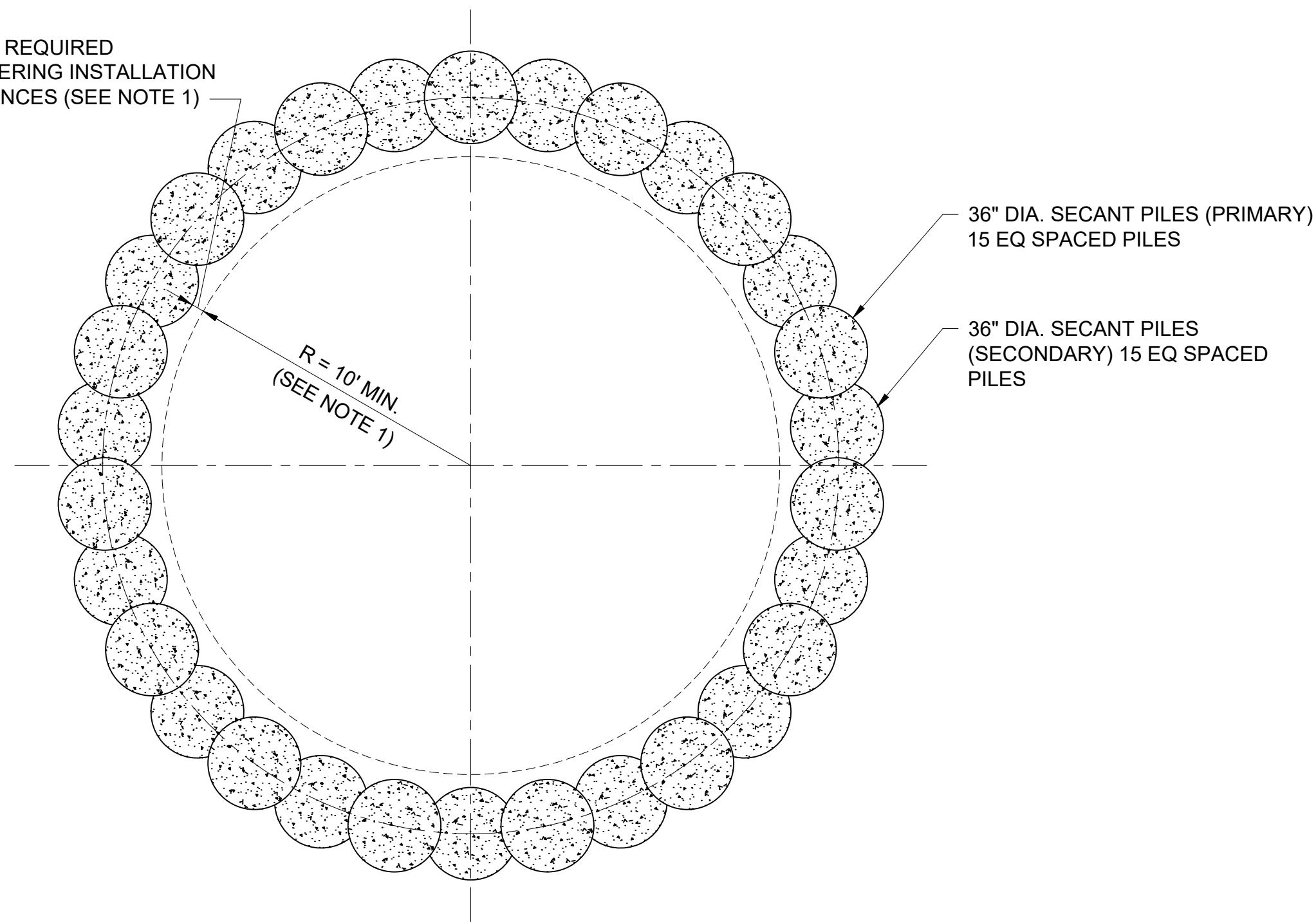


**LEGEND**

- ZONE OF INFLUENCE: DEFINES A ZONE WITHIN WHICH SOIL MOVEMENTS ARE EXPECTED TO OCCUR AS A RESULT OF CONSTRUCTION. PROTECTION OF STRUCTURES FOUNDED OR LOCATED WITHIN THIS ZONE SHALL BE CONSIDERED BY THE CONTRACTOR.
- PROTECTION ZONE A: STRUCTURES WHICH ARE FOUNDED OR LOCATED WITHIN THIS ZONE GENERALLY WILL REQUIRE SOME POSITIVE MEANS OF PROTECTION. REFER TO NOTE E.4 FOR DEFINITION OF POSITIVE MEANS OF PROTECTION.
- PROTECTION ZONE B: STRUCTURES WHICH ARE FOUNDED OR LOCATED WITHIN THIS ZONE GENERALLY WILL NOT REQUIRE PROTECTION, UNLESS THE STRUCTURES ARE PARTICULARLY SENSITIVE TO MOVEMENTS, OR SUBSURFACE SOILS ARE SENSITIVE TO CONSTRUCTION VIBRATION.

SCALE	WARNING	DESIGNED <u>K. OHARA</u>	90% DESIGN PHASE - APRIL 2021			NARRAGANSETT BAY COMMISSION PHASE III COMBINED SEWER OVERFLOW PROGRAM	NBC CONTRACT NO 308.05C GEOTECHNICAL	SHEET <b>B-6</b>
NO SCALE	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DRAWN <u>D. NOWAK</u>	NOT FOR CONSTRUCTION This document is an interim document and not suitable for construction. As an interim document, it may contain data that is potentially inaccurate or incomplete and is not to be relied upon without the express written consent of the preparer.					
REV	DATE	BY	DESCRIPTION	195130227				

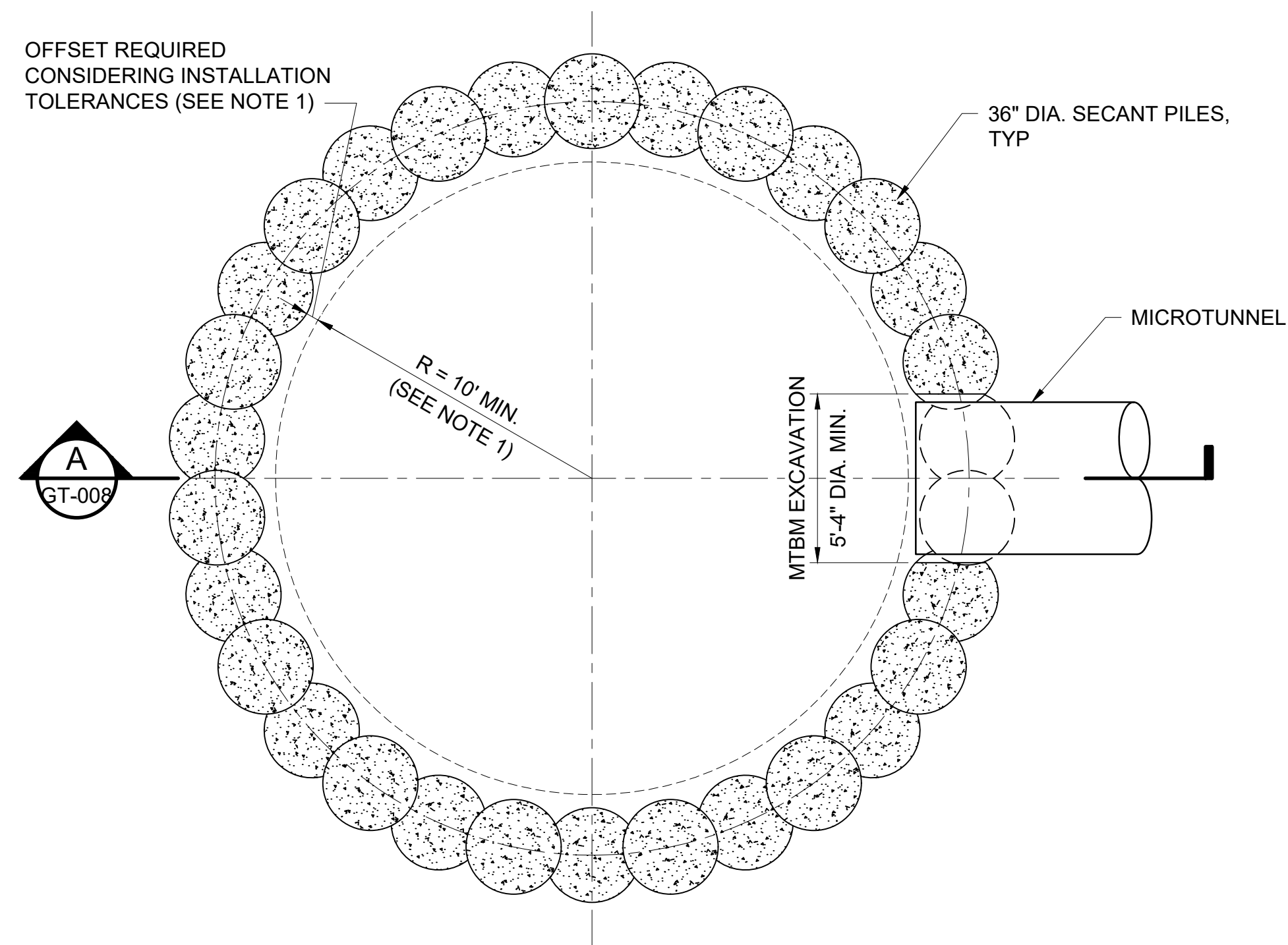
OFFSET REQUIRED  
CONSIDERING INSTALLATION  
TOLERANCES (SEE NOTE 1)



SECANT PILE SHAFT PLAN AT GROUND LEVEL

SCALE: 1/4" = 1'-0"

OFFSET REQUIRED  
CONSIDERING INSTALLATION  
TOLERANCES (SEE NOTE 1)



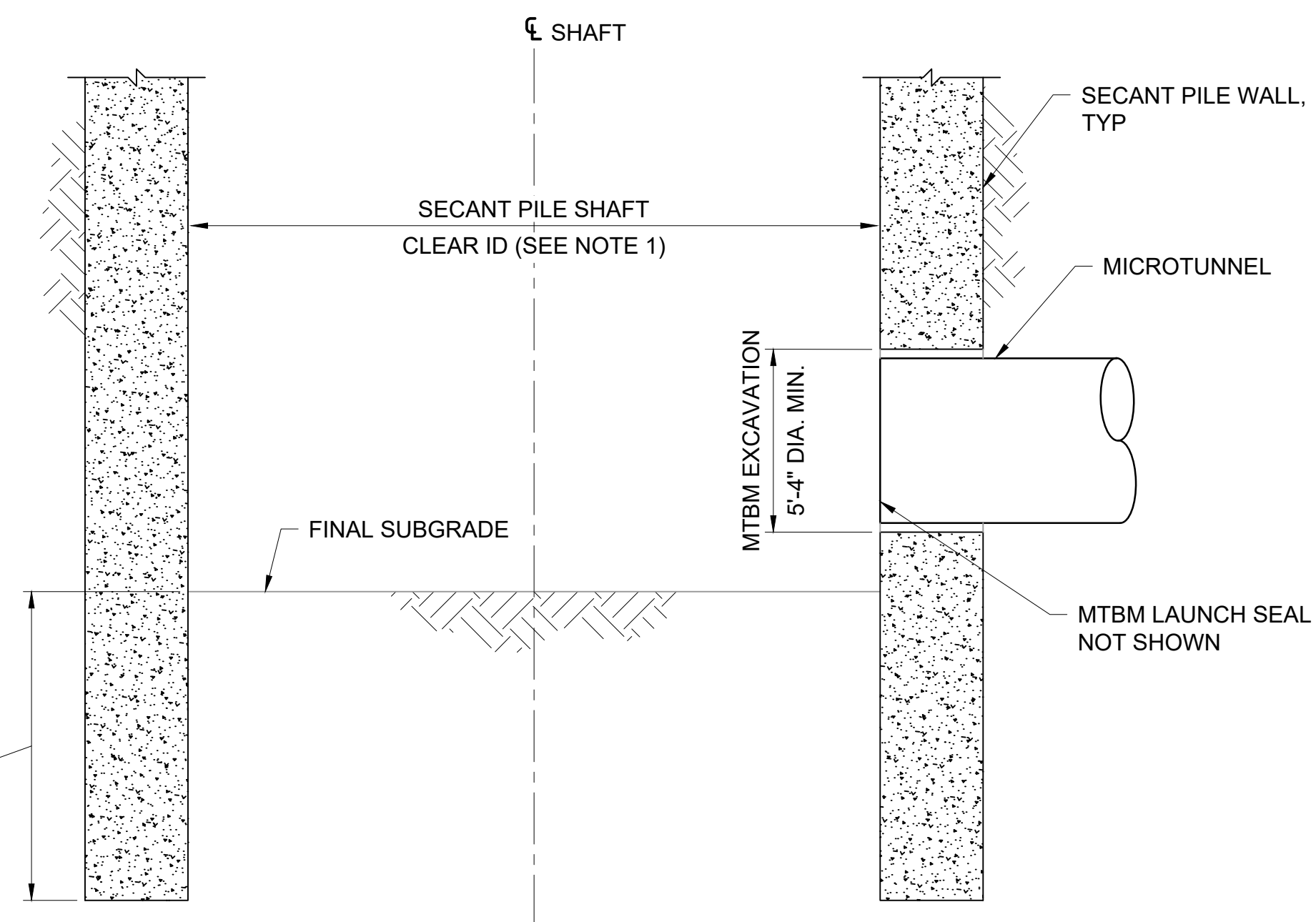
SECANT PILE SHAFT PLAN AT MICROTUNNEL SPRINGLINE

SCALE: 1/4" = 1'-0"

**NOTES**

1. MTBM LAUNCHING SHAFTS AT MH-217-6 AND MH-217-7 SHALL BE CONSTRUCTED USING THE SECANT PILE WALL METHOD AND PROVIDE A MINIMUM 20-FOOT CLEAR OF INSIDE DIAMETER CONSIDERING INSTALLATION TOLERANCES.
2. THIS DRAWING DEPICTS A REFERENCE DESIGN FOR WHICH THE CONTRACTOR SHALL DEVELOP TO A FINAL DESIGN. THE CONTRACTOR'S FINAL DESIGN SHALL INCORPORATE DESIGN AND CONSTRUCTION REQUIREMENTS SPECIFIED HERE AND ELSEWHERE IN THE CONTRACT DOCUMENTS.
3. REFERENCE DESIGN ASSUMPTIONS:
  - a. PLAIN CONCRETE DESIGN IN ACCORDANCE WITH ACI-318-19
  - b.  $F_c = 4000$  PSI
  - c. INSTALLATION TOLERANCES:
    - i. IN-PLAN LOCATION: 1/2-INCH MAXIMUM
    - ii. OUT-OF-VERTICALITY: 0.5% MAXIMUM
  - d. DESIGN PRESSURES:
    - i. AT REST EARTH PRESSURES
    - ii. GROUND WATER LEVEL AT EL. 15.0
    - iii. SURCHARGE (BALANCED AND UNBALANCED)
  - e. SHAFT DESIGN DOES NOT CONSIDER MTBM JACKING LOADS OR REINFORCEMENT AT MTBM PENETRATION LOCATIONS
3. CONTRACTOR TO DESIGN AND PROVIDE SOFT EYES IN SHAFT WALL AT MTBM PENETRATIONS AND REINFORCEMENT NECESSARY TO SUPPORT SAME PENETRATIONS THROUGH THE SHAFT WALL.
4. CONTRACTOR TO DESIGN SHAFT TO ACCOMMODATE ANTICIPATED MTBM JACKING LOADS.
5. CONTRACTOR TO DESIGN AND PROVIDE A REINFORCED CONCRETE SHAFT CAPPING BEAM.
6. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
7. SHAFT AT MH-217-6 TO BE USED FOR TWO MTBM LAUNCHES
8. SHAFT AT MH-217-7 TO BE USED FOR ONE MTBM LAUNCH TO RECEIVING PIT NEAR STA. 16+70; AND TO RECEIVE ONE MTBM LAUNCHED FROM SHAFT AT MH-217-6.

BOTTOM OF SECANT WALL TO BE A MINIMUM OF 5 FEET BELOW BOTTOM OF EXCAVATION OR EMBEDDED 5 FEET INTO MODERATELY WEATHERED TO FRESH BEDROCK AS DEFINED BY ISRM WEATHERING CLASSIFICATION SYSTEM WHICHEVER IS DEEPER.



A SECTION  
GT-008 SCALE: N.T.S.

REV	DATE	BY	DESCRIPTION

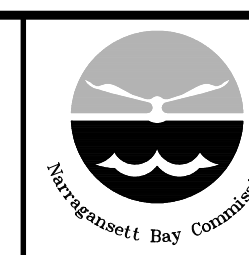
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WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	D.NOWAK
DRAWN	D.NOWAK
CHECKED	T.HENNINGS

90% DESIGN PHASE - APRIL 2021

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

Stantec

NBC CONTRACT NO 308.05C  
GEOTECHNICAL

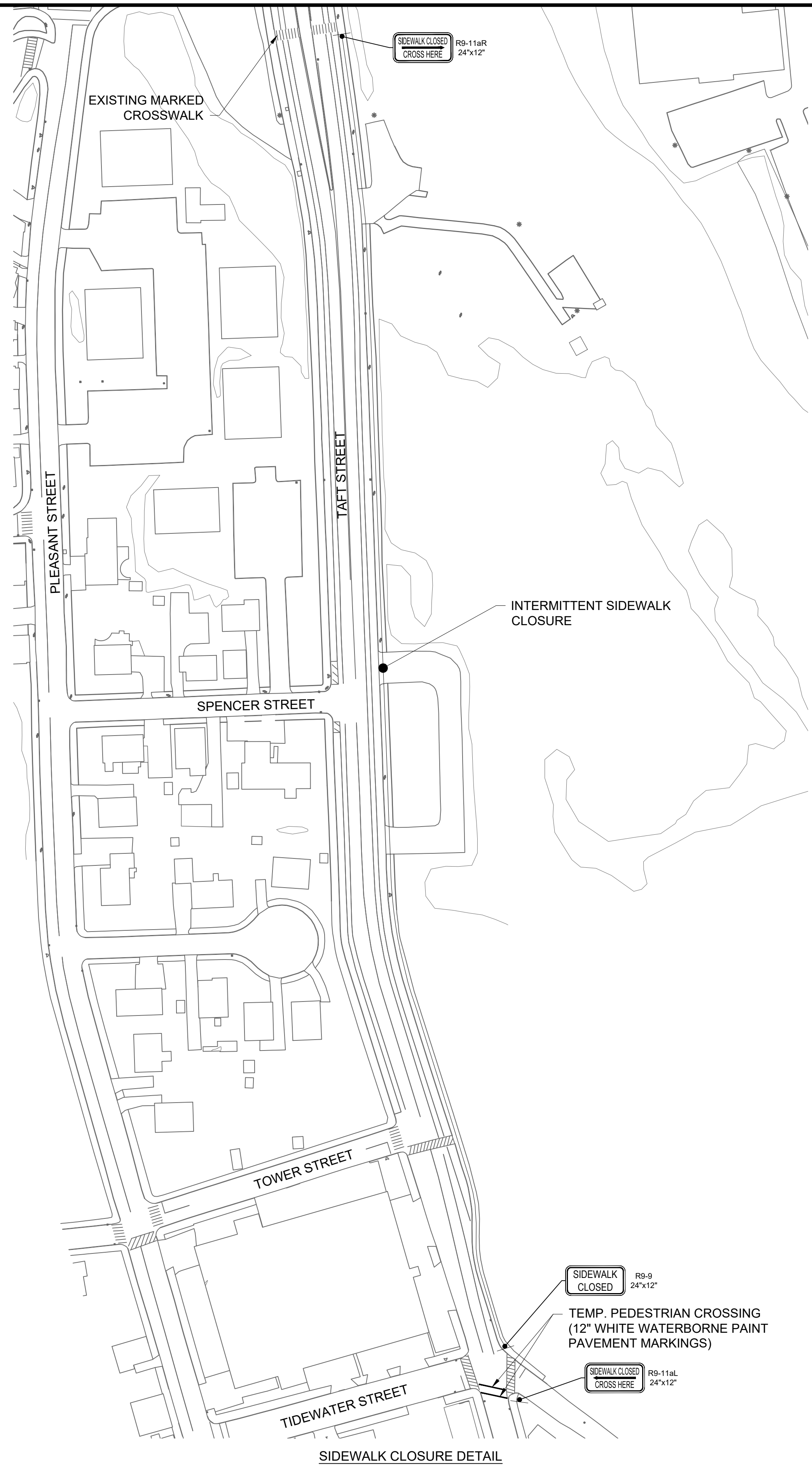
OF-217 CONSOLIDATION CONDUIT  
SECANT PILE SHAFT REFERENCE DESIGN

SHEET  
B-7  
195130227

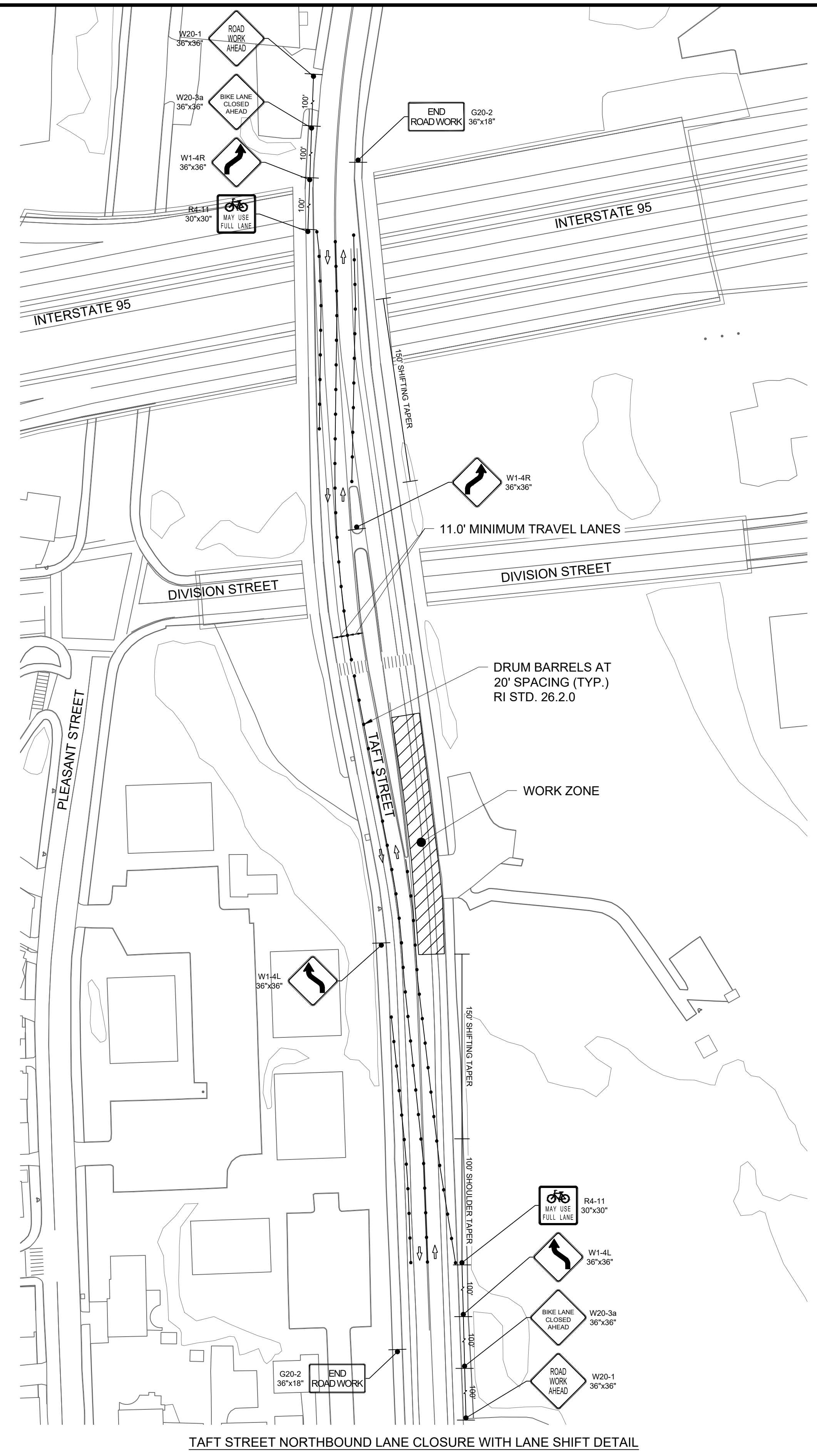
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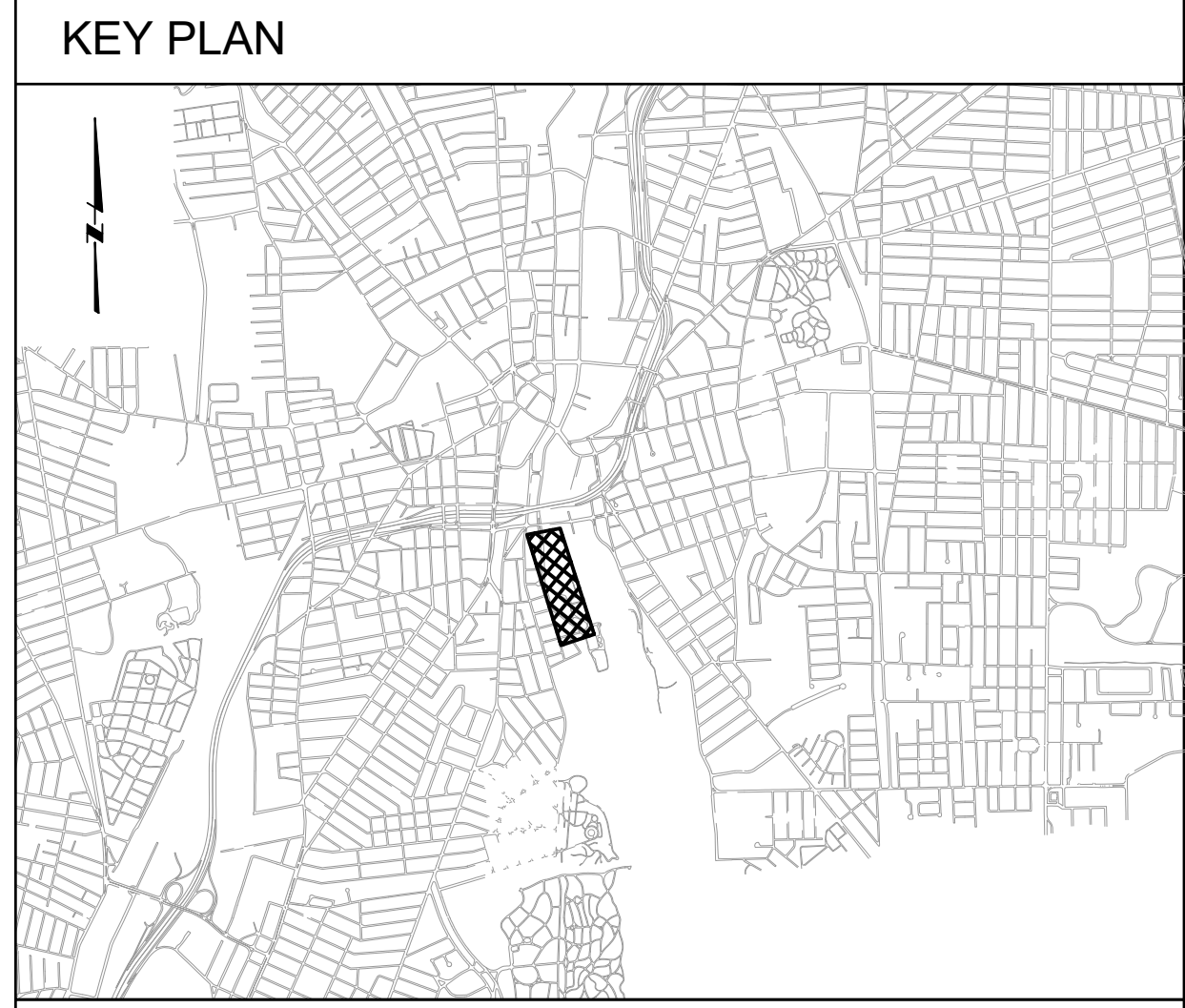
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SIDEWALK CLOSURE DETAIL



TAFT STREET NORTHBOUND LANE CLOSURE WITH LANE SHIFT DETAIL



**GENERAL SHEET NOTES**

**SHEET KEYNOTES**

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE	NO SCALE
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED H. PERALTA  
 DRAWN T. JOUBERT  
 CHECKED J. D'ALELIO

60% DESIGN PHASE - JULY 2021

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NARRAGANSETT BAY COMMISSION  
 PHASE III COMBINED SEWER  
 OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
 TRAFFIC

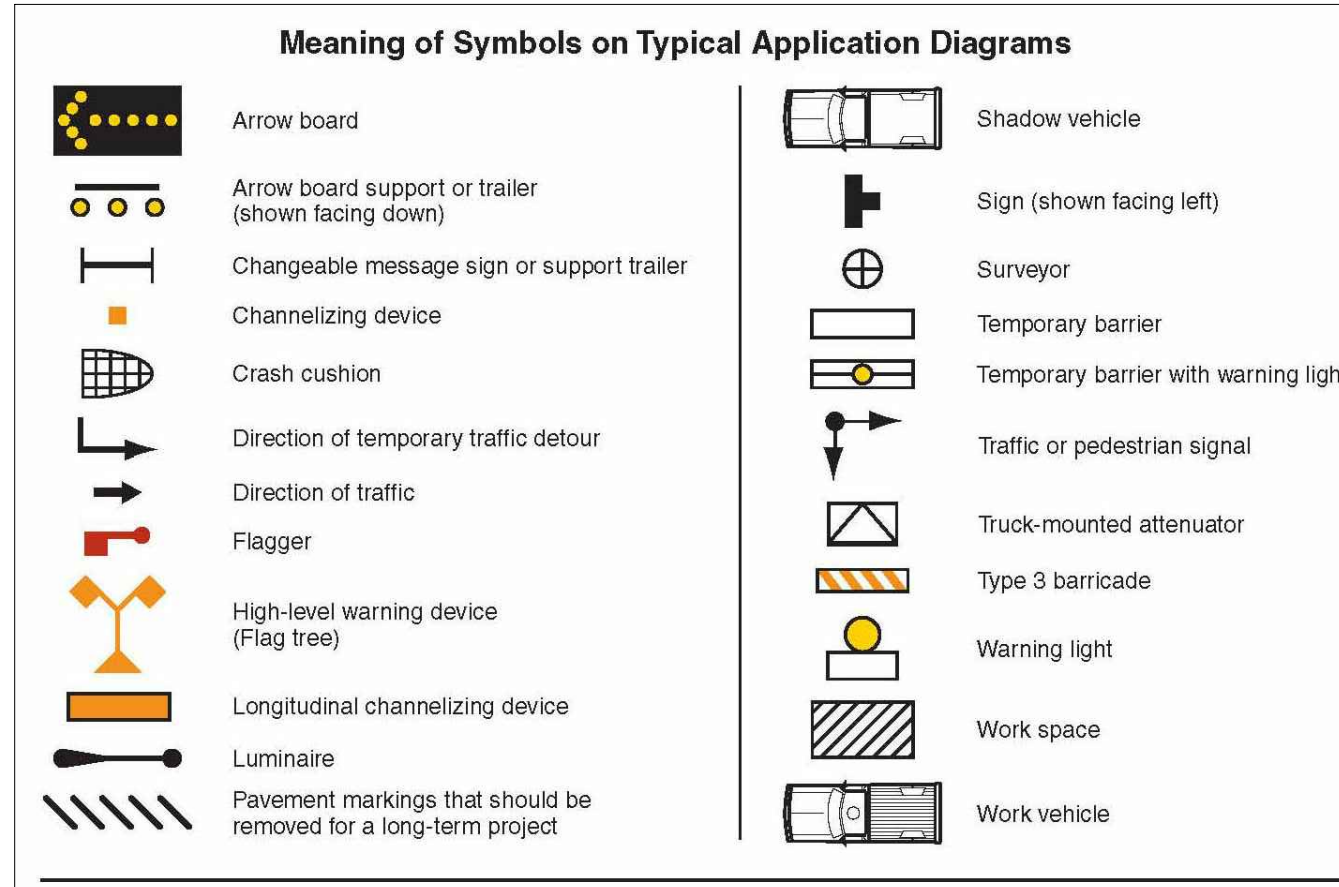
OF-217 CONSOLIDATION CONDUIT  
 TEMPORARY TRAFFIC CONTROL PLAN

SHEET  
**T-1**  
 195130227

BY: JAIMIE PAYNE

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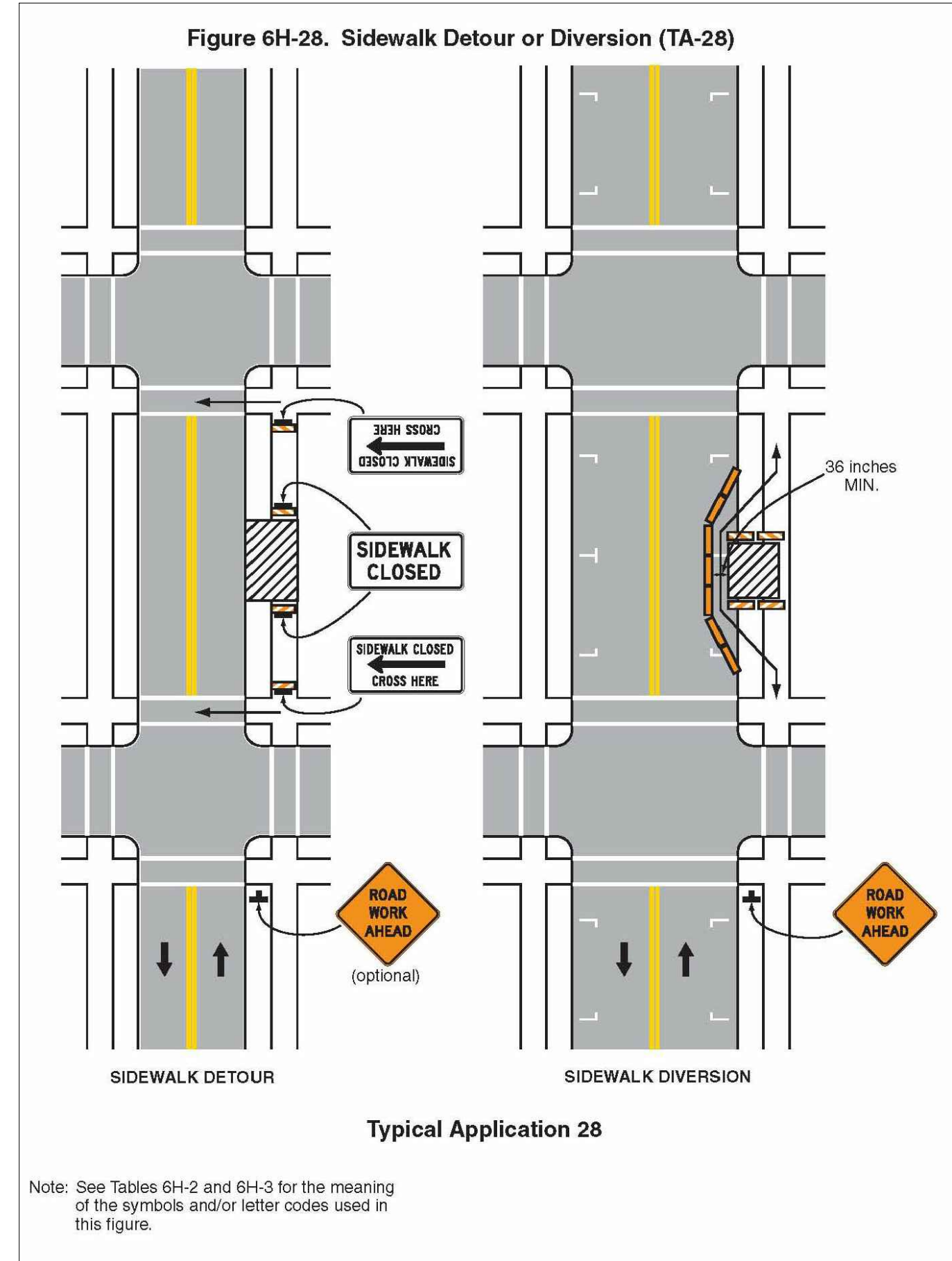
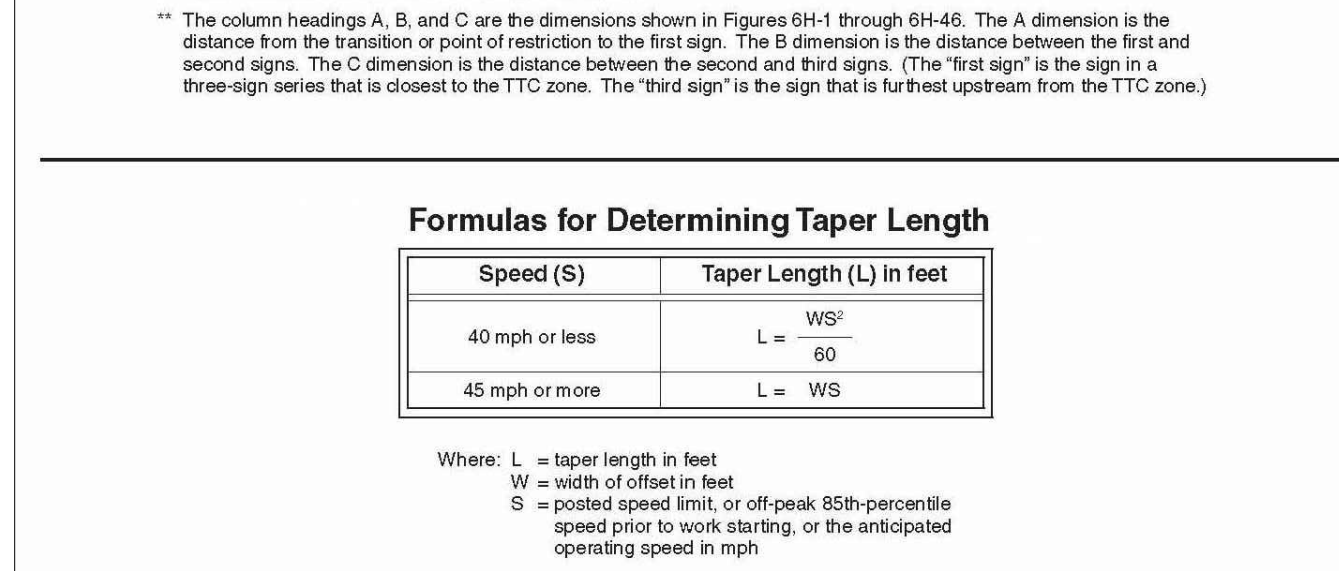
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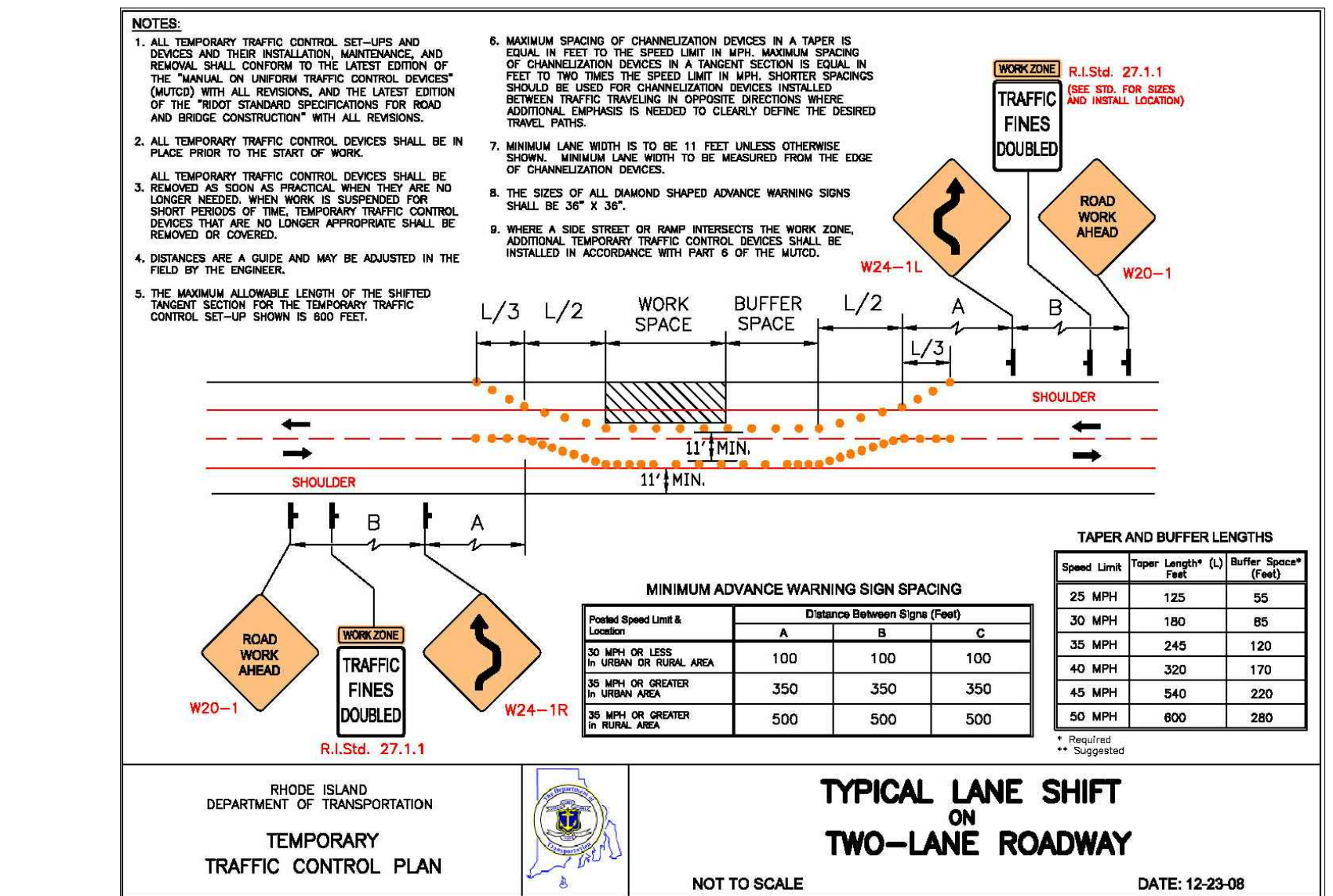
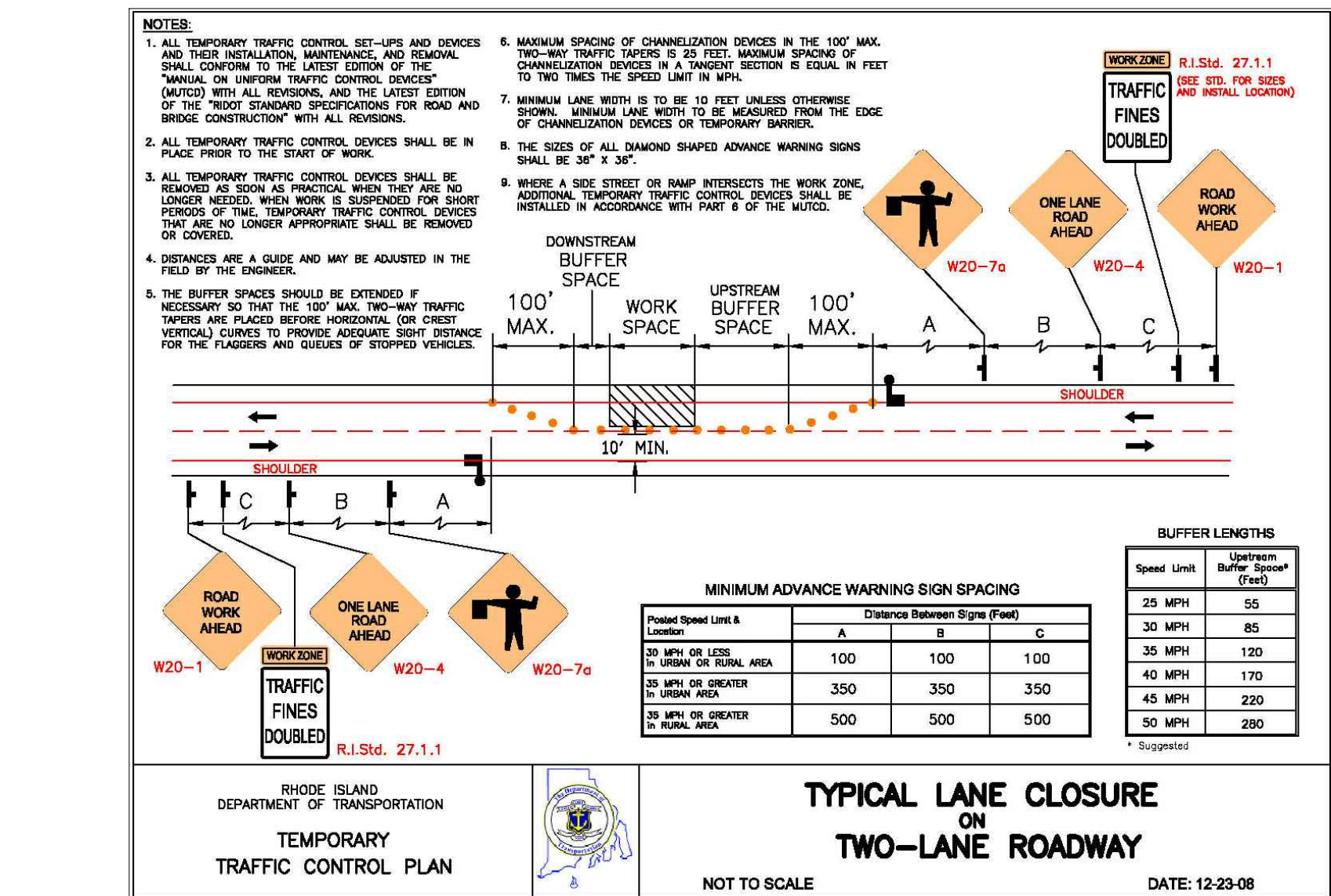
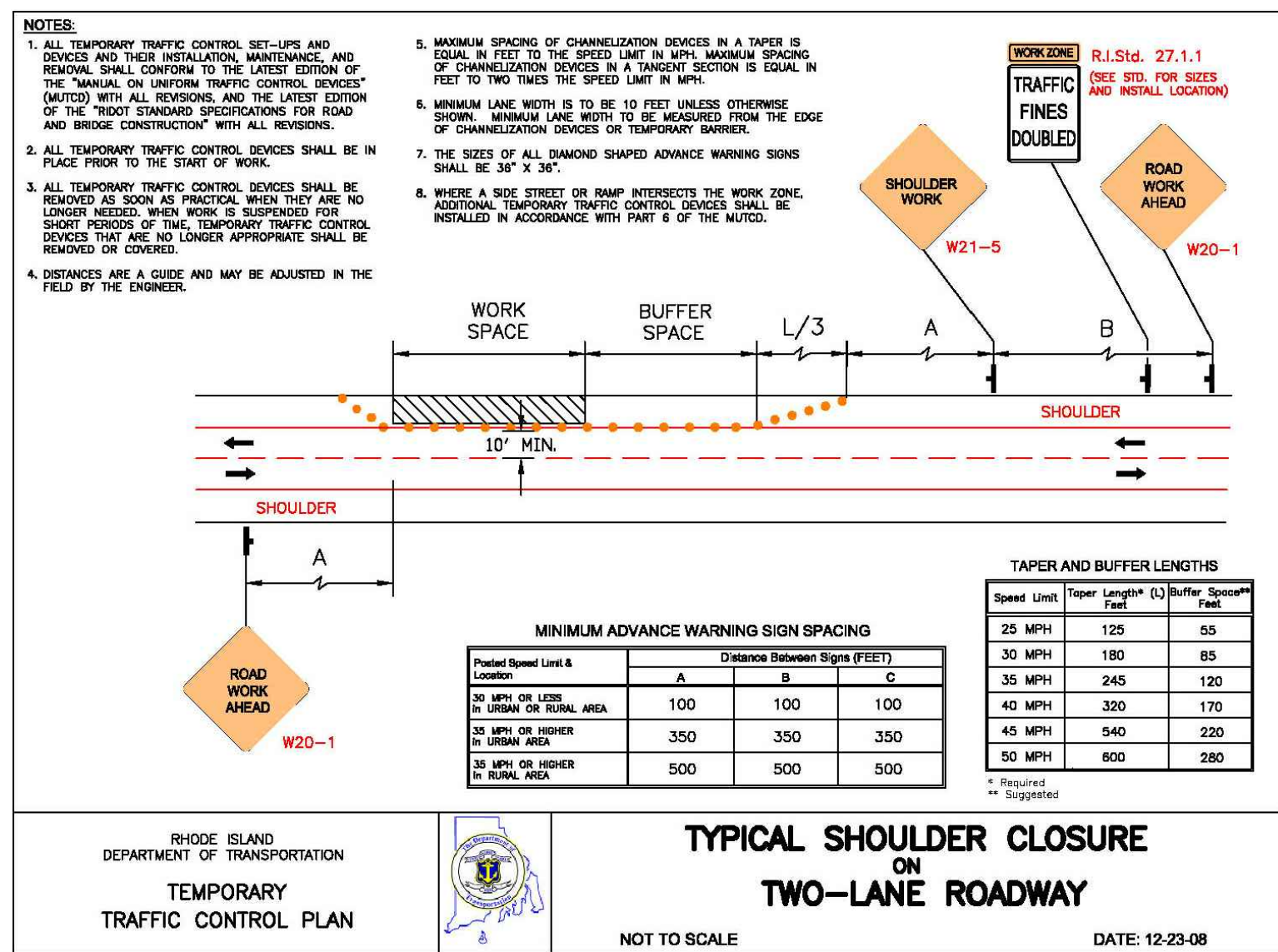
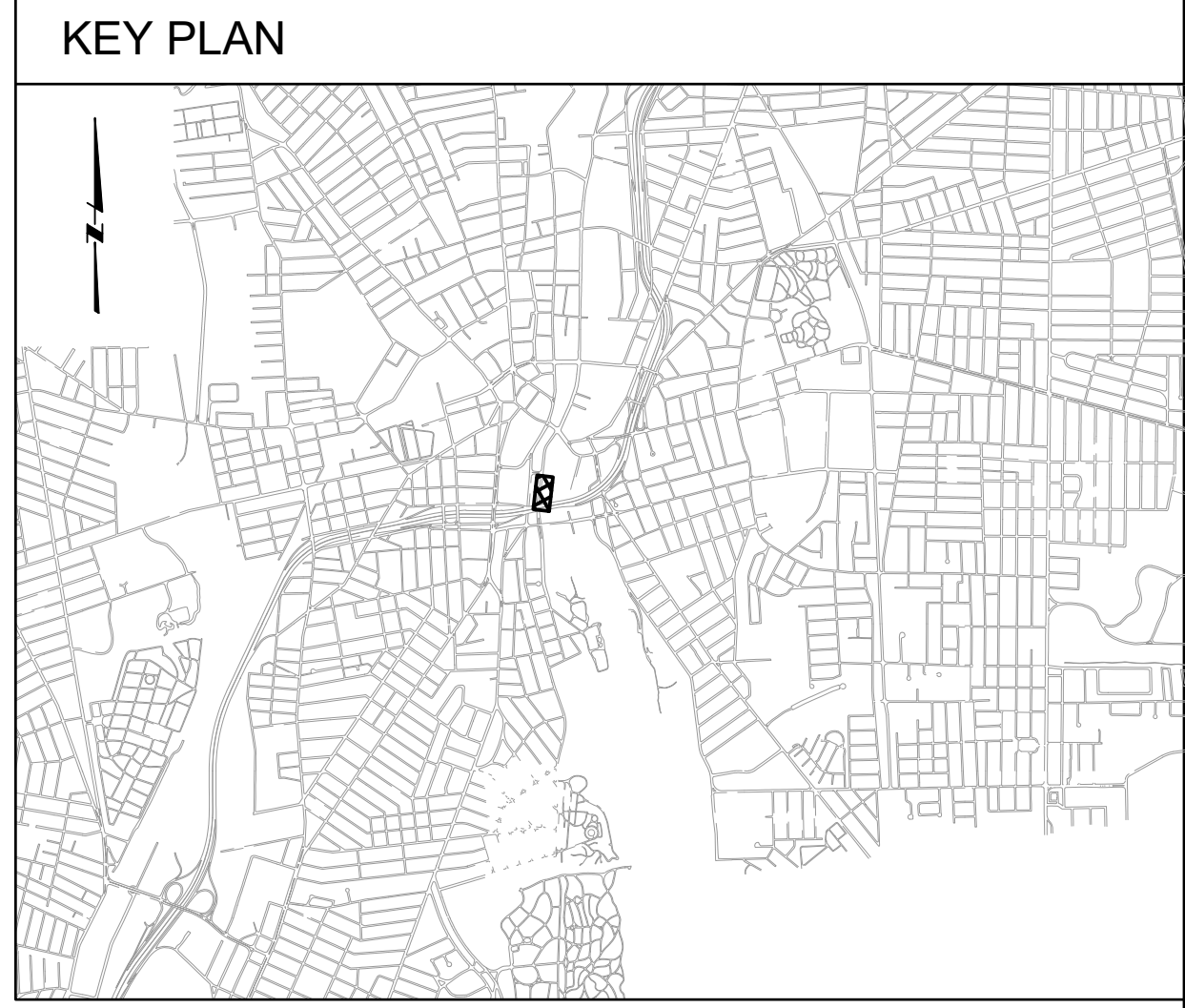
### Meaning of Letter Codes on Typical Application Diagrams

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	2,640 feet

\* Speed category to be determined by highway agency  
 \*\* The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-3. The A dimension is the distance from the transition or point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second and third signs. (The "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 upstream from the TTC zone.)

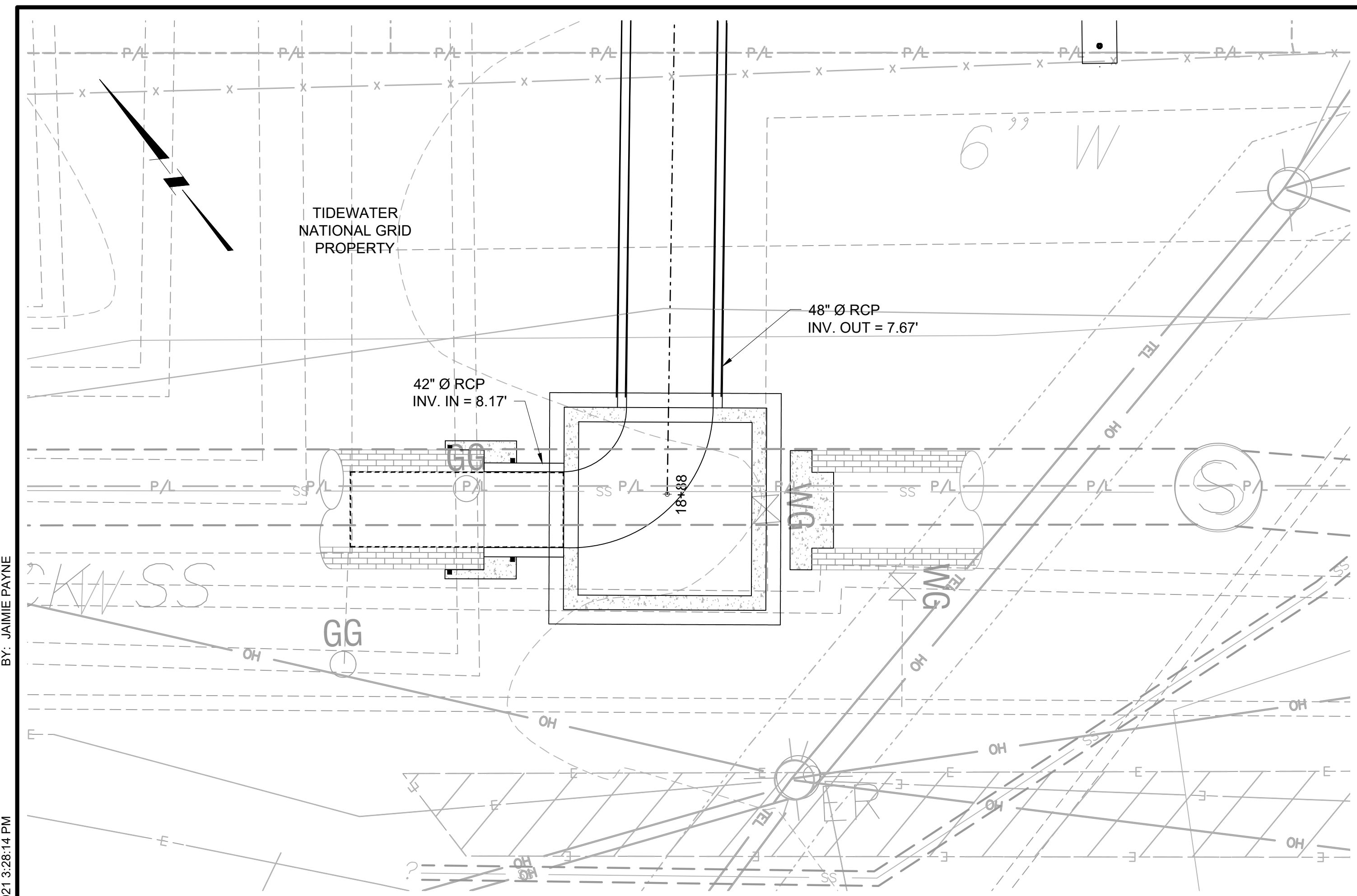


- ### TEMPORARY TRAFFIC CONTROL GENERAL NOTES:
- ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS, CHANNELIZING DEVICES, ETC., SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
  - ALL SIGN MOUNTINGS FOR TEMPORARY AND CONSTRUCTION SIGNS SHALL BE IN ACCORDANCE WITH THE R.I.D.O.T STANDARD SPECIFICATIONS, LATEST EDITION.
  - THE CONTRACTOR SHALL COVER ALL EXISTING AND/OR TEMPORARY SIGNS THAT ARE NOT RELEVANT TO THE TRAFFIC CONTROL REQUIRED DURING ANY PARTICULAR STAGE OF THE CONTRACT.
  - ADVANCE FLAGPERSON SIGNS (W20-7A) SHALL BE USED IN ADVANCE OF ANY POINT AT WHICH A FLAGPERSON OR A POLICE OFFICER HAS BEEN STATIONED TO CONTROL TRAFFIC. WHEN NEEDED, AN APPROPRIATE DISTANCE MESSAGE MAY BE DISPLAYED ON A SUPPLEMENTAL PLAQUE (24"x18") BELOW THE FLAGPERSON SYMBOL SIGN. THE SIGN SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE FLAGPERSON IS NOT AT THE STATION.
  - POLICE OFFICERS (AND NOT FLAGPERSONS) SHALL BE UTILIZED WHEN WORK WILL IMPACT SIGNALIZED INTERSECTIONS AND LIMITED ACCESS HIGHWAYS.
  - POLYETHYLENE DRUMS SHALL BE UTILIZED AS A CHANNELIZING DEVICE WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN BEYOND WORKING HOURS WHEN NO WORKERS ARE PRESENT. CONES SHALL BE UTILIZED WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN ONLY DURING WORKING HOURS AND IS SUBSEQUENTLY BROKEN DOWN AT THE END OF THE WORKDAY.
  - ARROW PANELS SHALL BE SET IN THE FLASHING FOUR CORNERS CAUTION MODE UNLESS UTILIZED FOR A MERGING TAPER. ARROW PANELS SET IN THE FLASHING MODE SHALL NOT BE UTILIZED FOR LANE SHIFTS.
  - TEMPORARY CONSTRUCTION SIGNS AND OTHER WORKZONE TRAFFIC CONTROL DEVICES THAT ARE DAMAGED OR REQUIRE RELOCATION SHALL BE REPLACED AND/OR RELOCATED UNDER THE APPROPRIATE PAY ITEM.
  - THE PRIVATE VEHICLE OF CONSTRUCTION WORKERS SHALL NOT BE PARKED ON THE TRAVEL LANES OR SHOULDERS. THEY MAY BE PARKED WITHIN THE STATE AND/OR CITY RIGHT-OF-WAY ONLY IN AREAS 30' BEYOND THE OUTSIDE EDGE OF THE TRAVEL LANES AND/OR IN AREAS APPROVED BY THE ENGINEER.
  - TEMPORARY CONSTRUCTION SIGNS AND OTHER TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC, AND SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER APPROPRIATE.
  - THE INTENDED VEHICLE PATHS THROUGH EACH WORK ZONE SHALL BE CLEARLY MARKED AT ALL TIMES. WATERBORNE PAVEMENT MARKINGS SHALL BE INSTALLED BEFORE THE END OF THE WORK SHIFT ON ALL COLD-PLANED AND NEW ROADWAY SURFACES THAT WILL BE OPENED TO TRAFFIC AT THE END OF THE SHIFT.
  - THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE TEMPORARY INTERFERENCE WITH OR CLOSURE OF ACCESS.
  - ONE SIDEWALK SHALL REMAIN OPEN AT ALL TIMES ALONG ROOSEVELT AVENUE EXTENSION AND TAFT STREET.

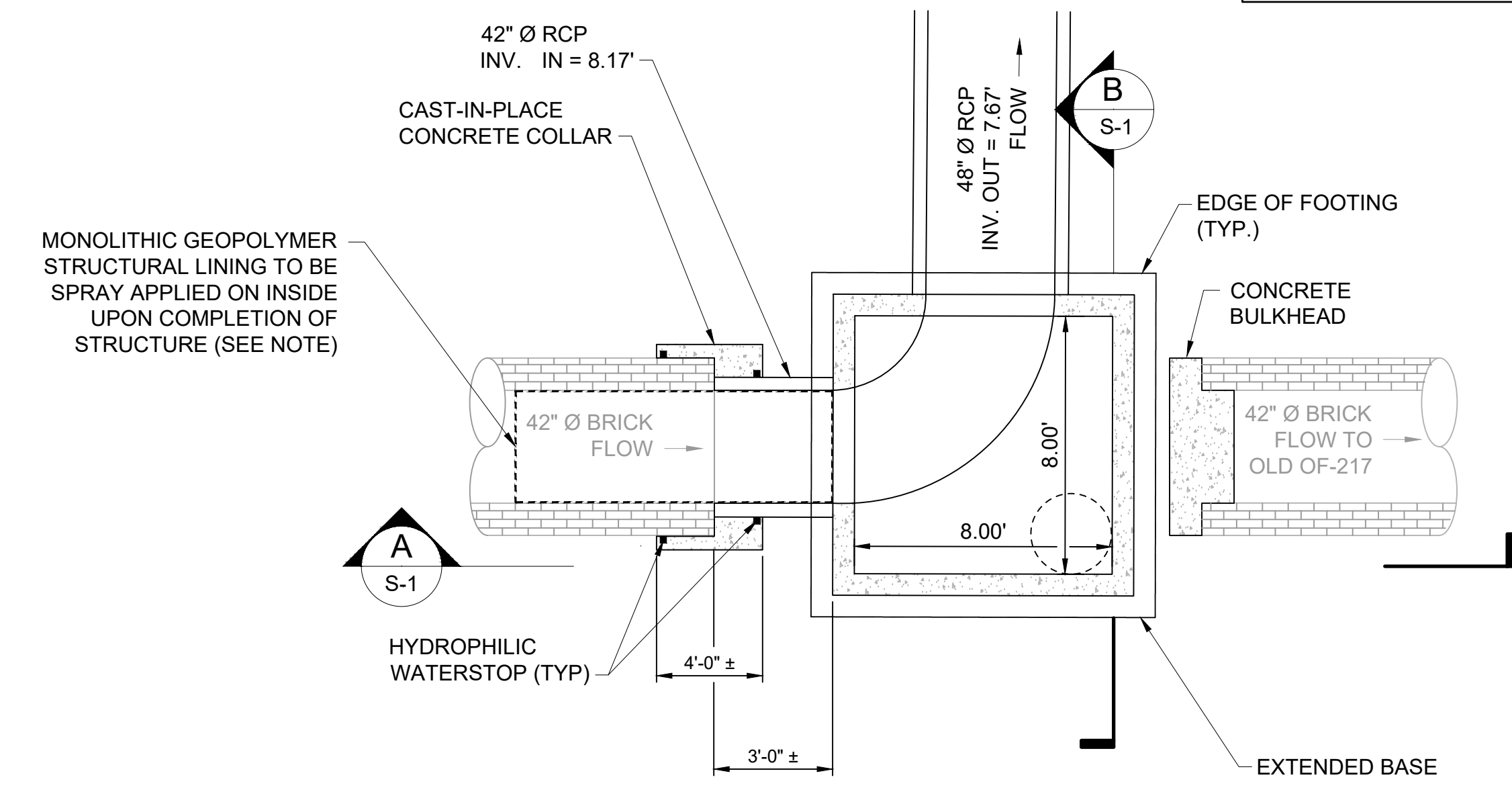


**GENERAL SHEET NOTES**

1. VERTICAL DATUM FOR PROJECT IS NGVD29.

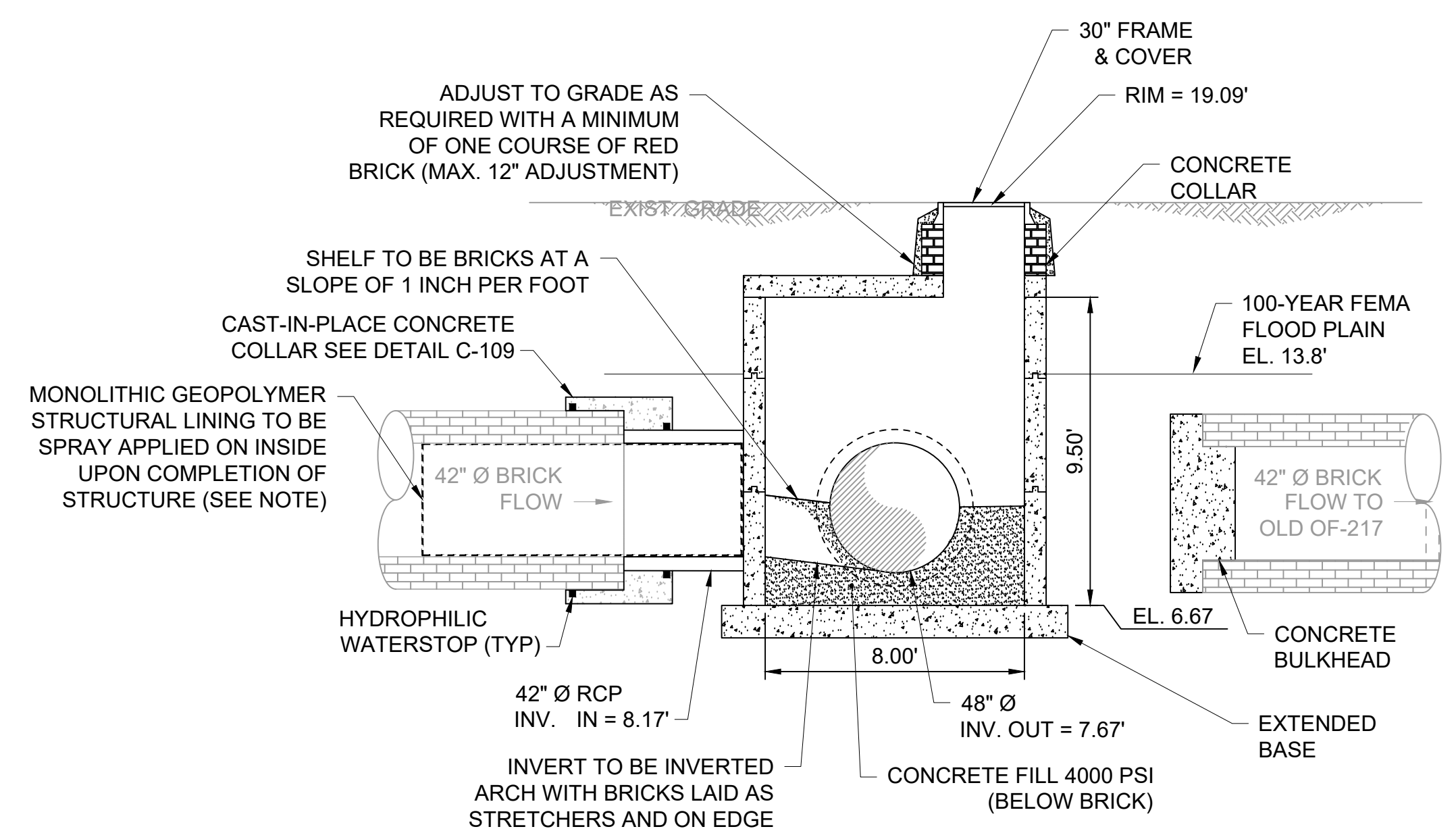


**SITE PLAN VIEW**  
SCALE: 1" = 4'-0"



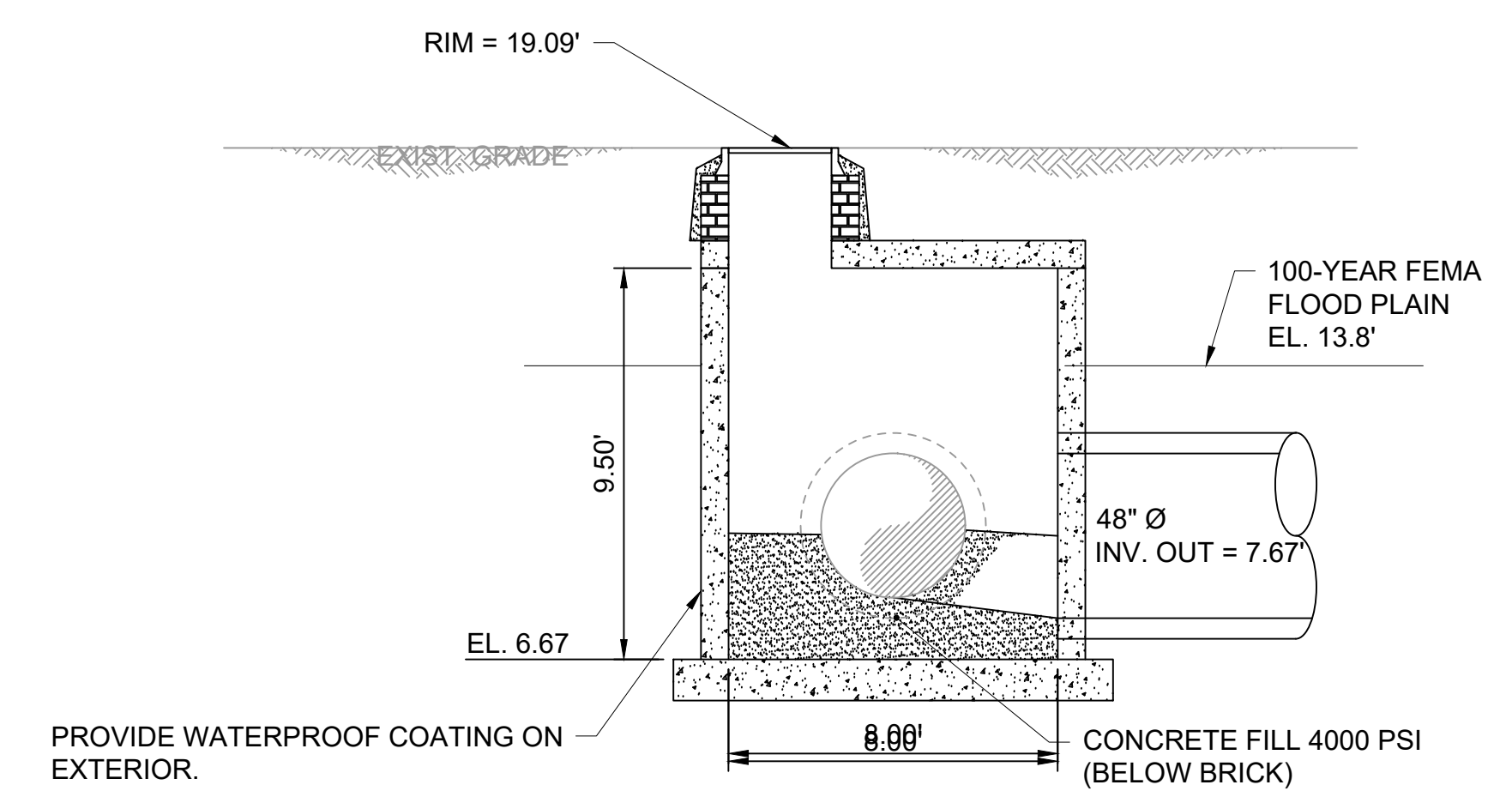
**PLAN VIEW**  
SCALE: 1/4" = 1'-0"

**NOTE:**  
THE FULL INNER CIRCUMFERENCE OF THE EXISTING 42" SEWER SHALL BE SPRAY COATED WITH A MONOLITHIC GEOPOLYMER STRUCTURAL LINING TO A DISTANCE OF 20 LF FROM THE INTERIOR FACE OF THE PROPOSED STRUCTURE



**A SECTION**  
SCALE: 1/4" = 1'-0"

**NOTE:**  
THE FULL CIRCUMFERENCE OF THE EXISTING 42" SEWER SHALL BE COATED WITH A MONOLITHIC GEOPOLYMER LINING TO A DISTANCE OF 20 LF FROM THE INTERIOR FACE OF THE PROPOSED STRUCTURE



**B SECTION**  
SCALE: 1/4" = 1'-0"

BY: JAMIE PAYNE  
DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Civil\Sheet\Set\PAWT\_III-5\_DIVERSION STRUCTURES\_PLAIN\05B6TED\Drawings.dwg, June 24, 2021 3:28:14 PM

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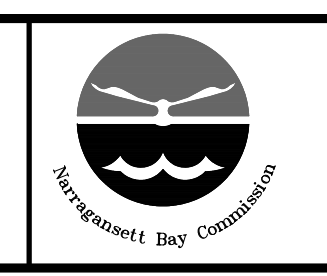
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WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	C. CRONIN
DRAWN	J. PAYNE
CHECKED	J. D'ALESIO

FINAL DESIGN PHASE - JULY 2021

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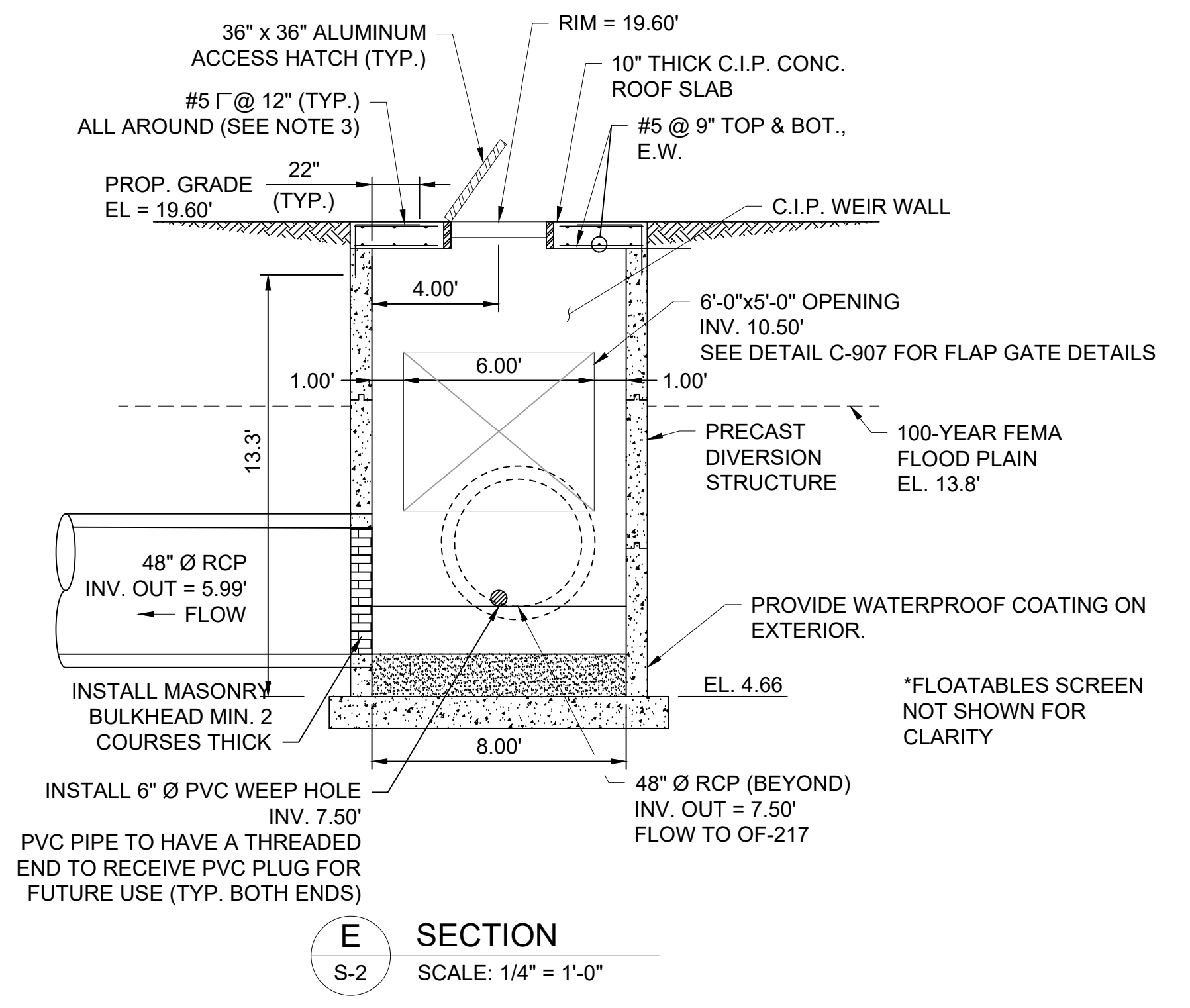
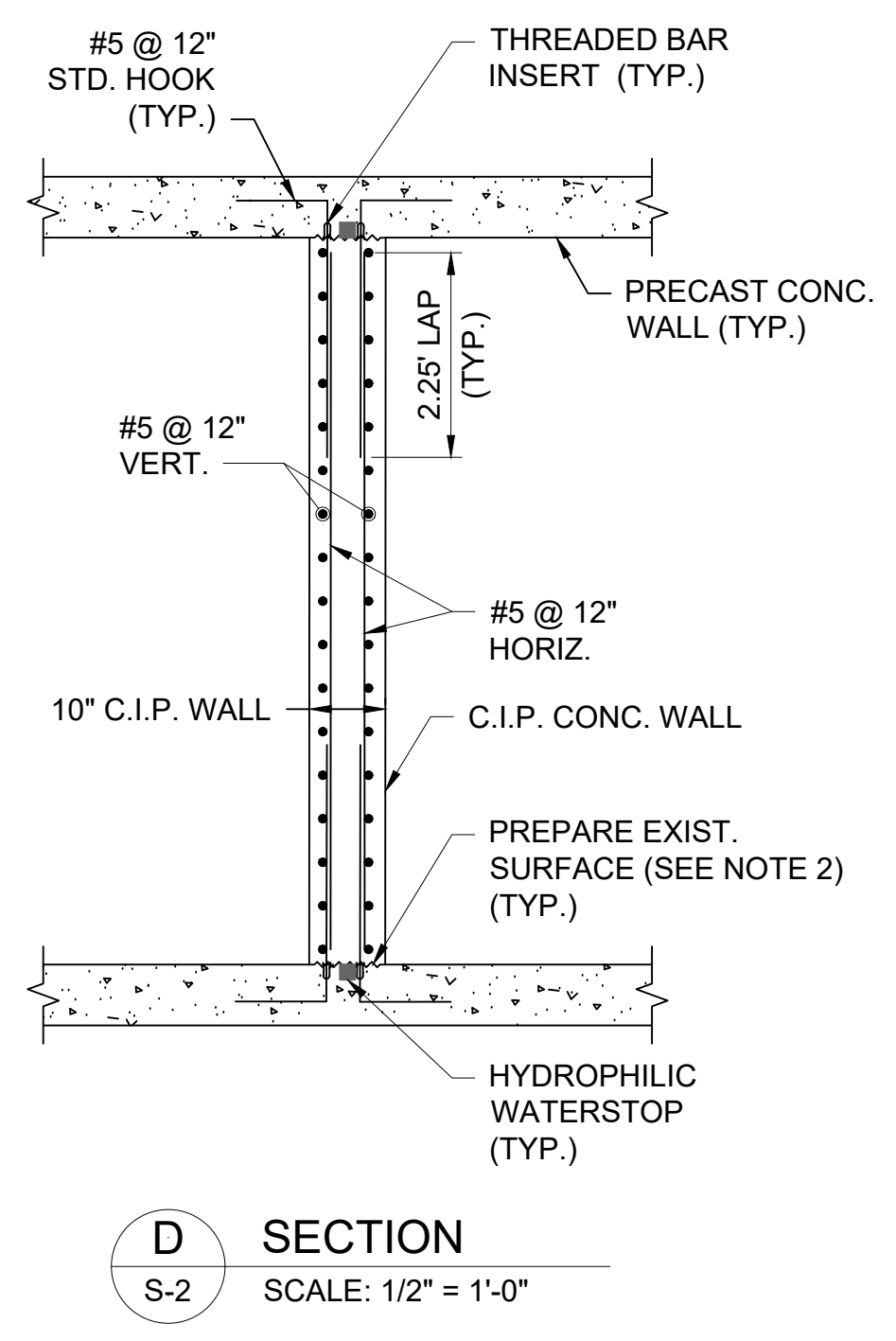
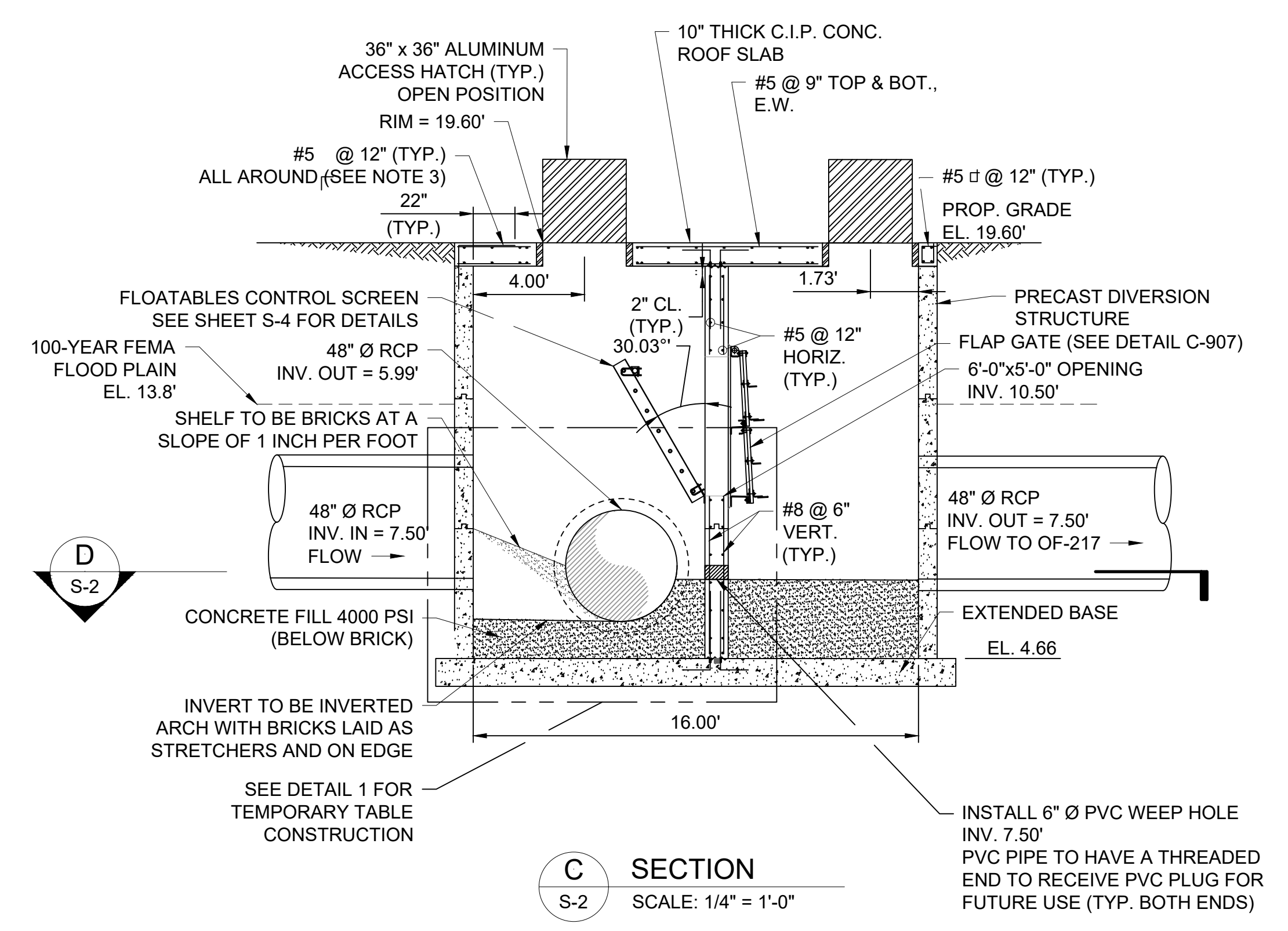
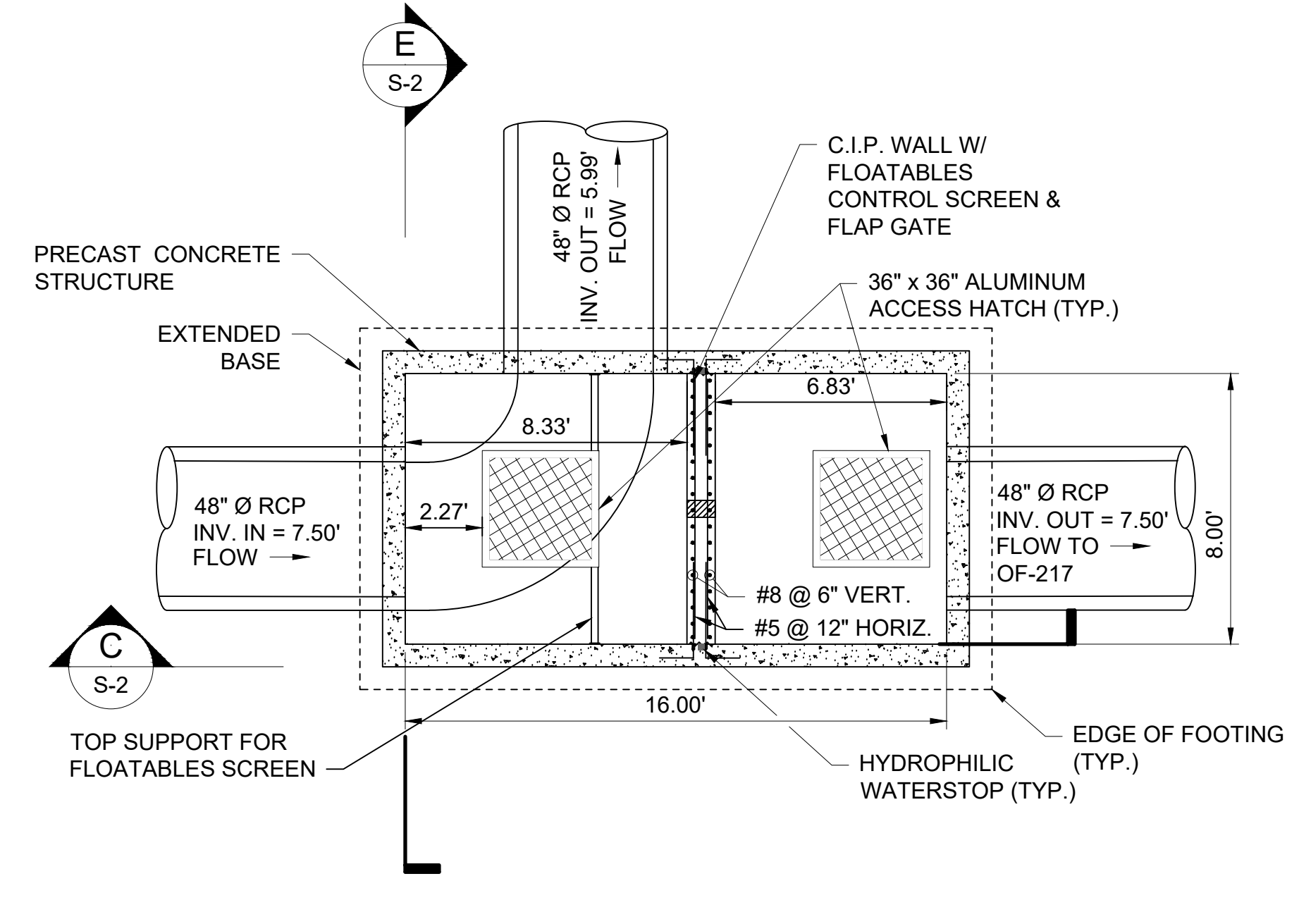
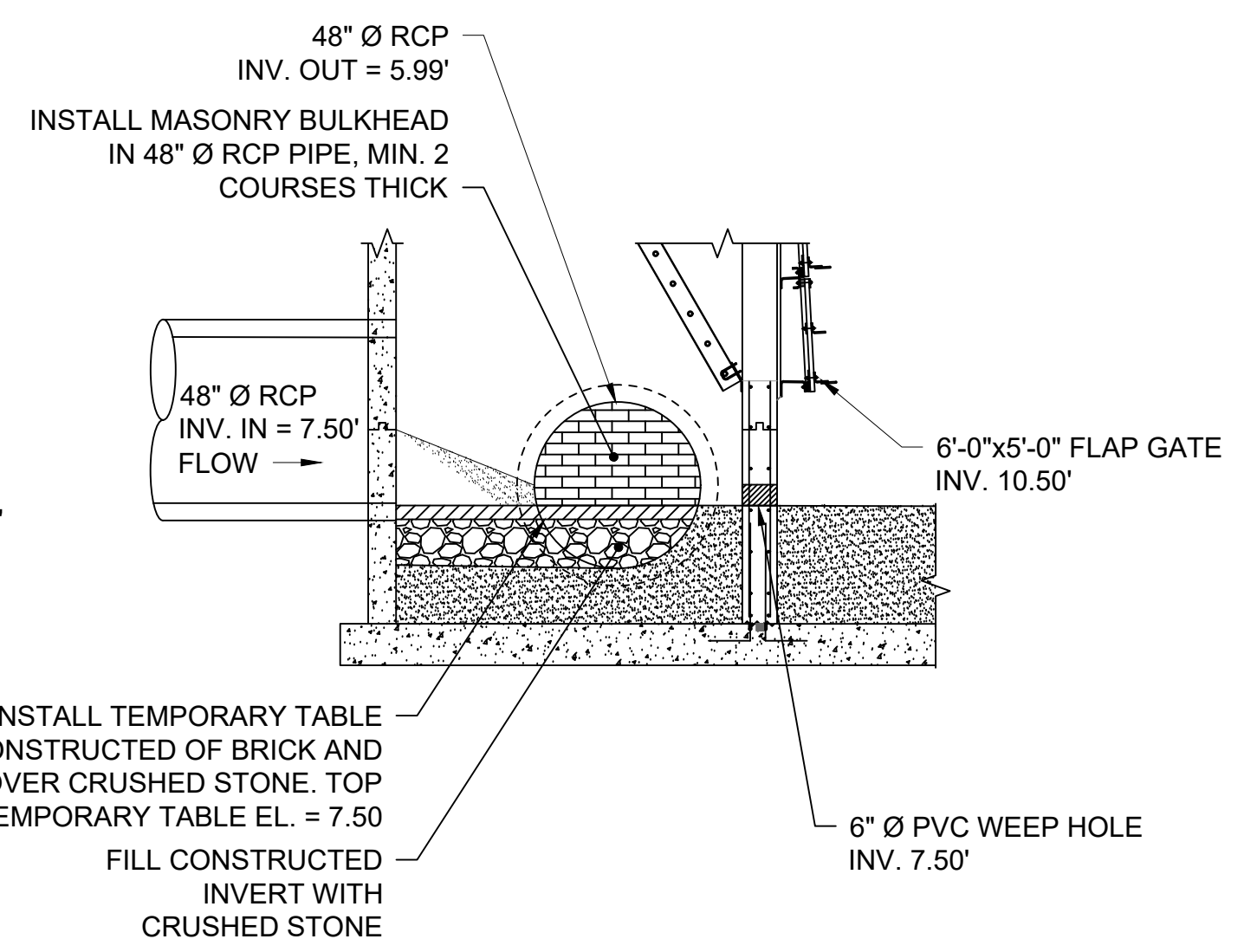
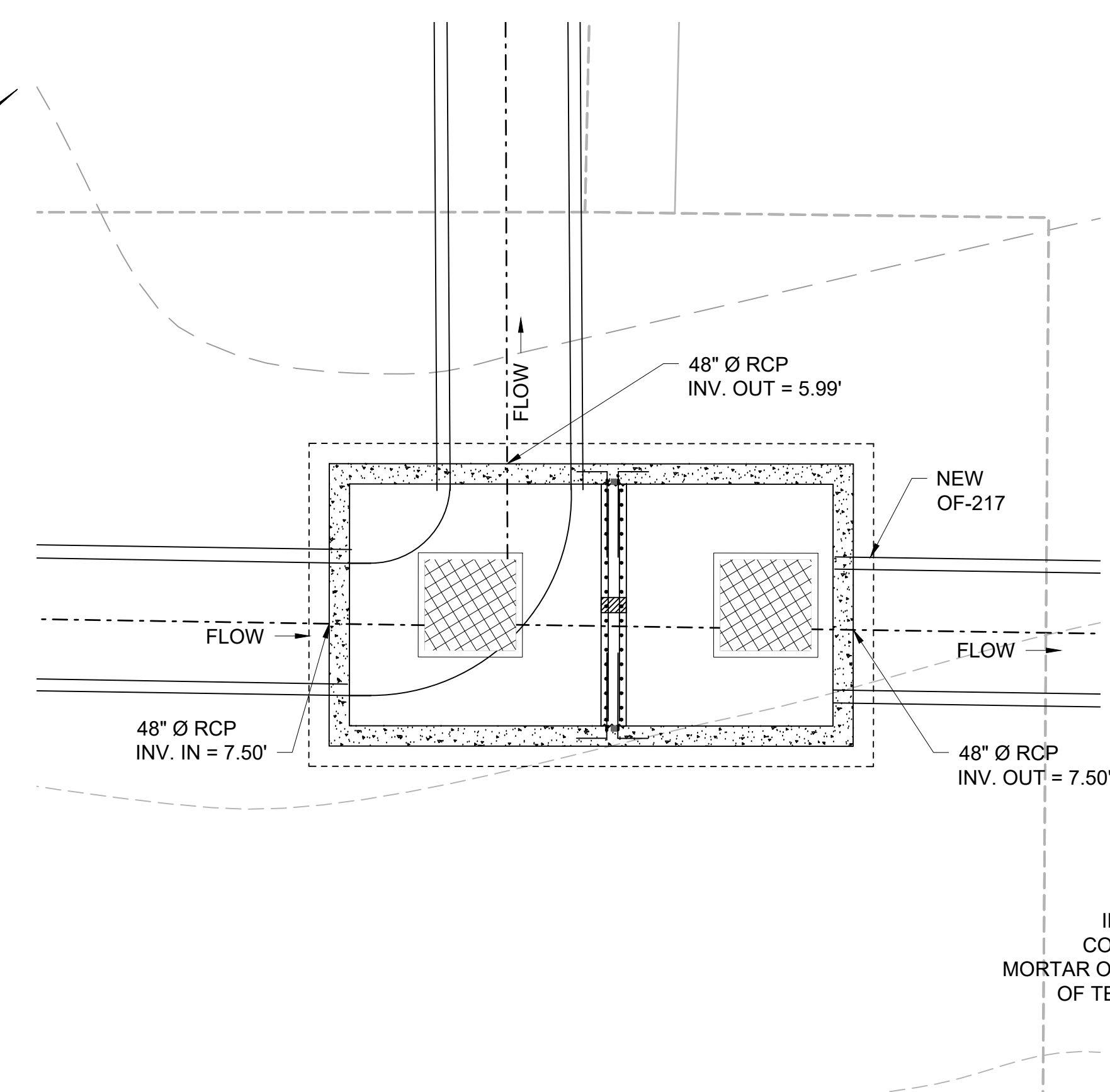


NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
STRUCTURAL  
OF-217 CONSOLIDATION CONDUIT  
OF-217 RELOCATION STRUCTURE  
PLAN AND SECTIONS

SHEET  
S-1  
195130227

- ### GENERAL SHEET NOTES
1. VERTICAL DATUM FOR PROJECT IS NGVD29.
  2. DETAIL TYPICAL AT PRECAST/C.I.P. WALL INTERFACE. ROUGHEN TO 1/4" MIN.
  3. #5 CORNER BARS SHALL BE SET BY PRECASTER. CONTRACTOR MAY COORDINATE TO HAVE THREADED INSERTS INSTALLED AS AN ALTERNATIVE.



BY: JAMIE PAYNE  
DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Civil\Sheet\Set\PAWT\_III-A-5\_DIVERSION STRUCTURES\_PLAIN\0566TEDN\Drawings.dwg, June 24, 2021 3:29:41 PM

REV	DATE	BY	DESCRIPTION
1	5/13/20	JP	STANTEC COMMENTS

SCALE	AS SHOWN
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	C. CRONIN
DRAWN	J. PAYNE
CHECKED	J. D'ALELIO

FINAL DESIGN PHASE - JULY 2021

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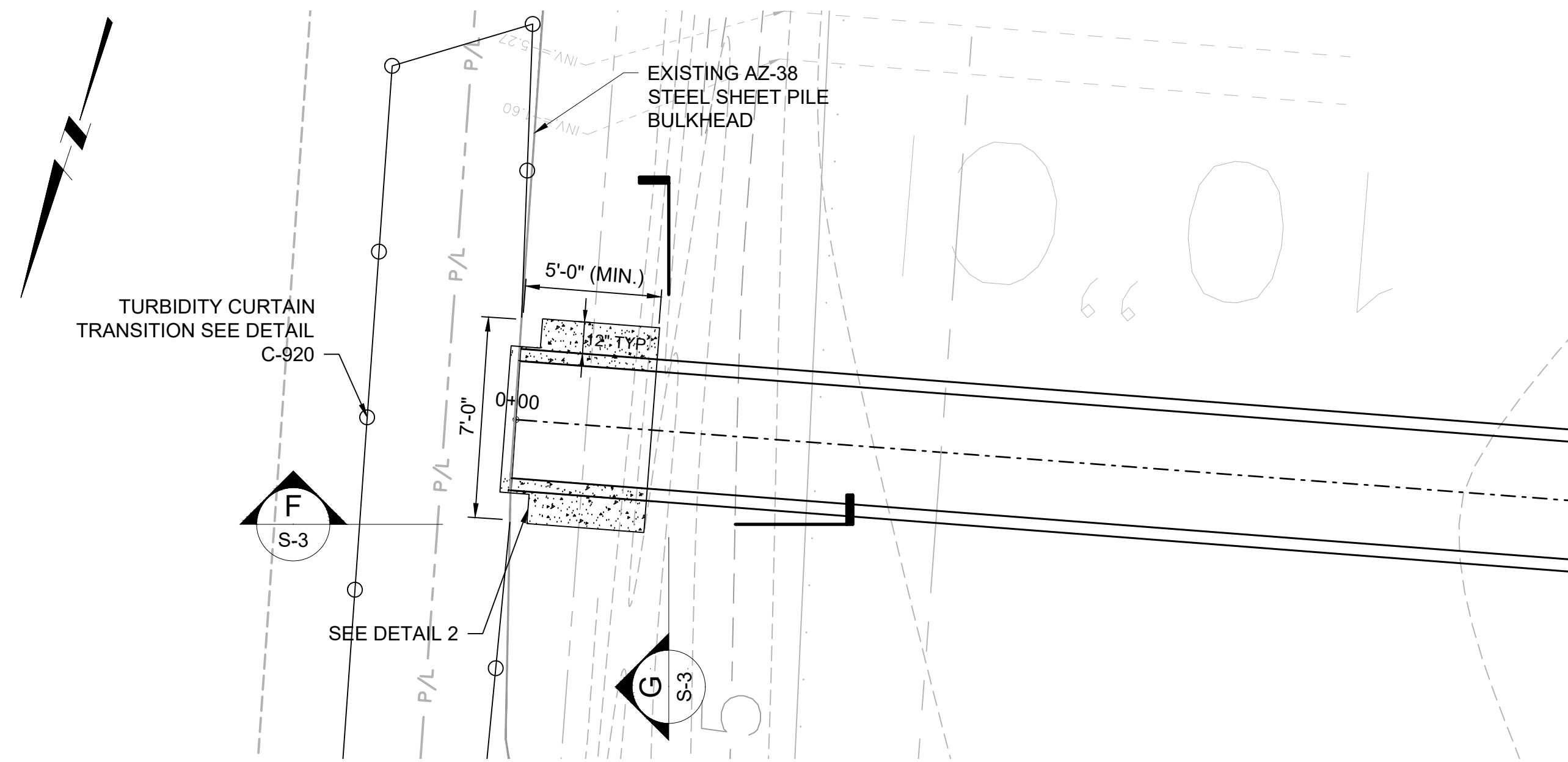


NBC CONTRACT NO 308.05C  
STRUCTURAL  
OF-217 CONSOLIDATION CONDUIT  
OF-217 DIVERSION STRUCTURE  
PLAN AND SECTIONS

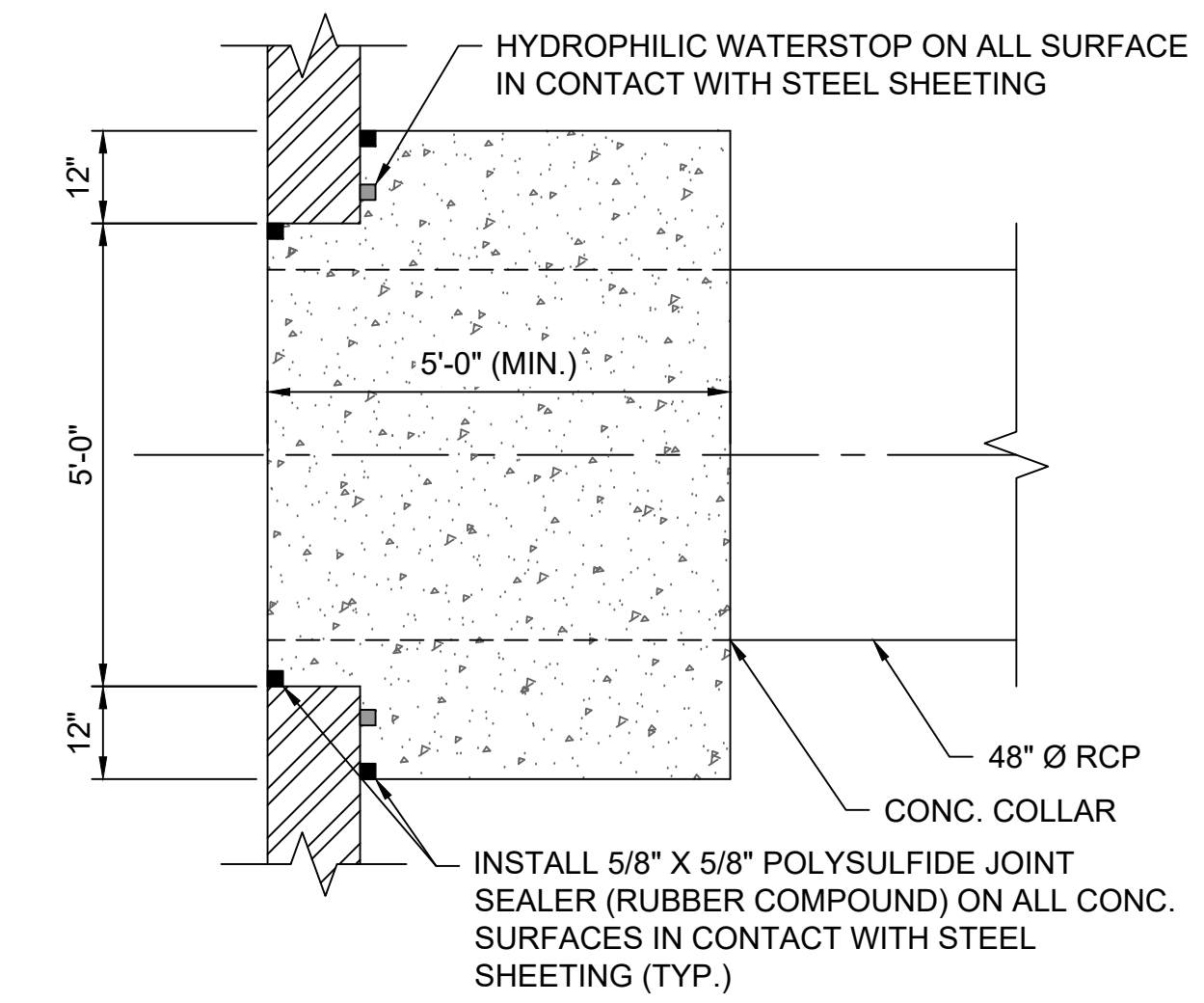
SHEET  
S-2  
195130227

GENERAL SHEET NOTES

1. VERTICAL DATUM FOR PROJECT IS NGVD29.

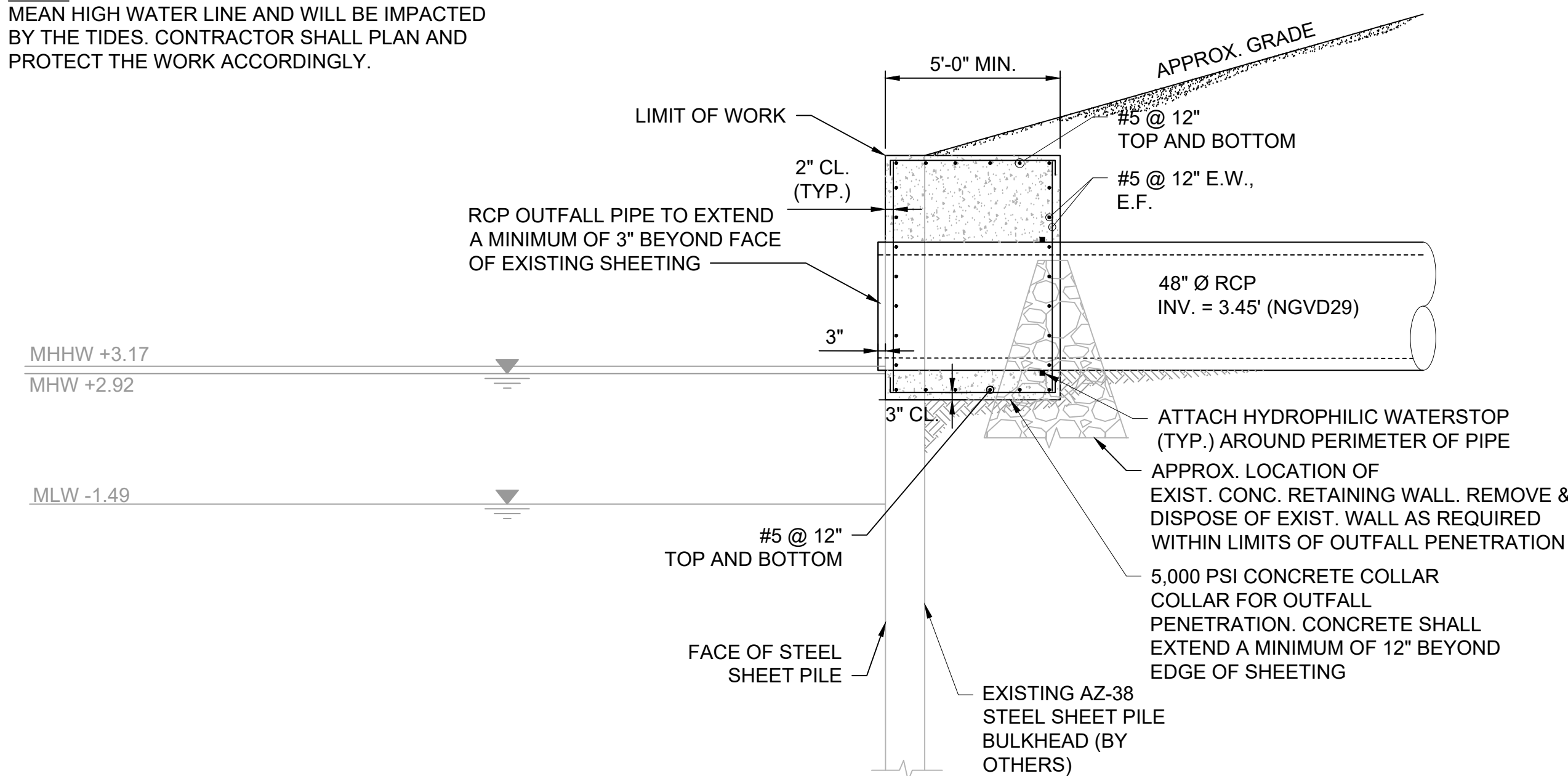


**SITE PLAN VIEW**  
SCALE: 1" = 4'-0"

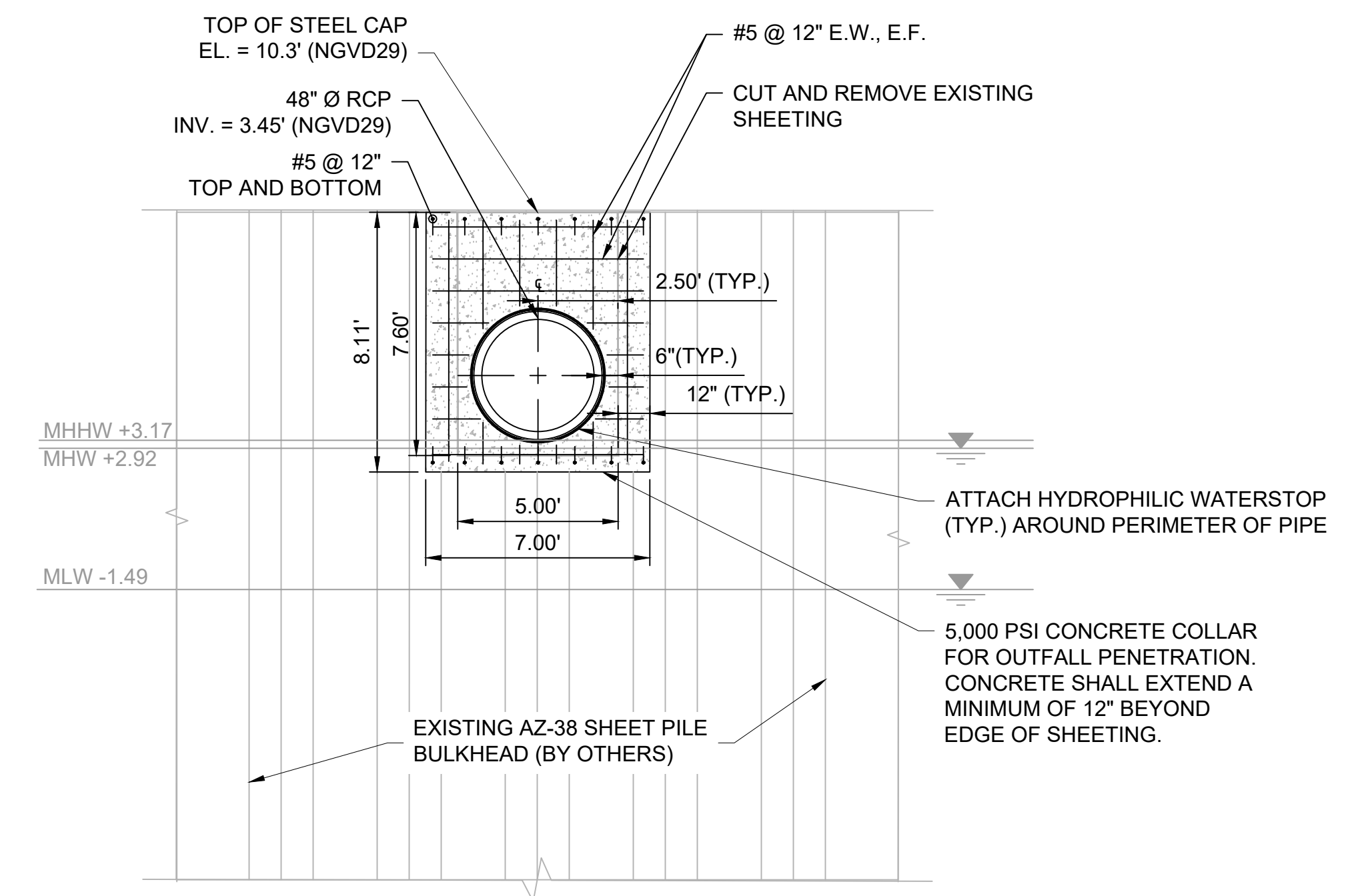


**2 DETAIL**  
S-3 SCALE: 1/2" = 1'-0"

NOTE: THE WORK AT THE OUTFALL IS ABOVE THE MEAN HIGH WATER LINE AND WILL BE IMPACTED BY THE TIDES. CONTRACTOR SHALL PLAN AND PROTECT THE WORK ACCORDINGLY.



**F SECTION**  
S-3 SCALE: 1/4" = 1'-0"



**G SECTION**  
S-3 SCALE: 1/4" = 1'-0"

BY: JAMIE PAYNE

DWG FILE: J:\6412 NBC CSO Consolidation Conduits\Drawings Files\Civil\Sheet Set\PAWT\_III-5\_DIVERSION STRUCTURES\_PLAIN\05B6TED\Drawings.dwg, June 24, 2021 3:00:43 PM

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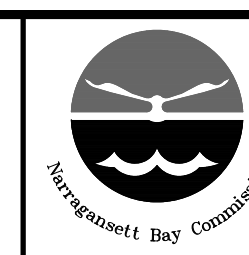
SCALE	AS SHOWN
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	C. CRONIN
DRAWN	B. MARINI
CHECKED	J. D'ALELIO

FINAL DESIGN PHASE - JULY 2021

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NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

NBC CONTRACT NO 308.05C  
STRUCTURAL  
OF-217 CONSOLIDATION CONDUIT  
OF-217 REVETMENT  
PLAN AND SECTION

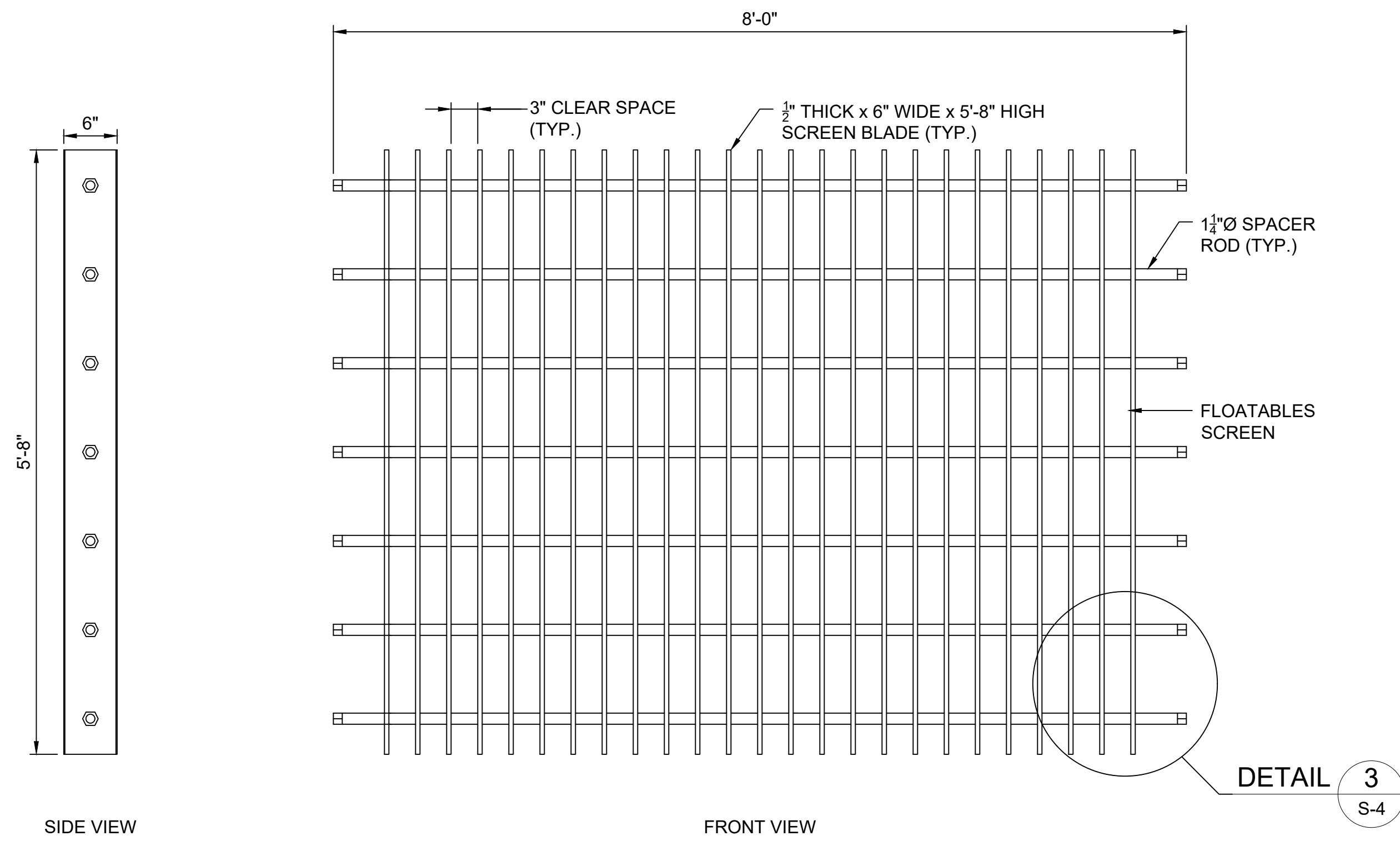
SHEET  
S-3  
195130227

BY: JAMIE PAYNE

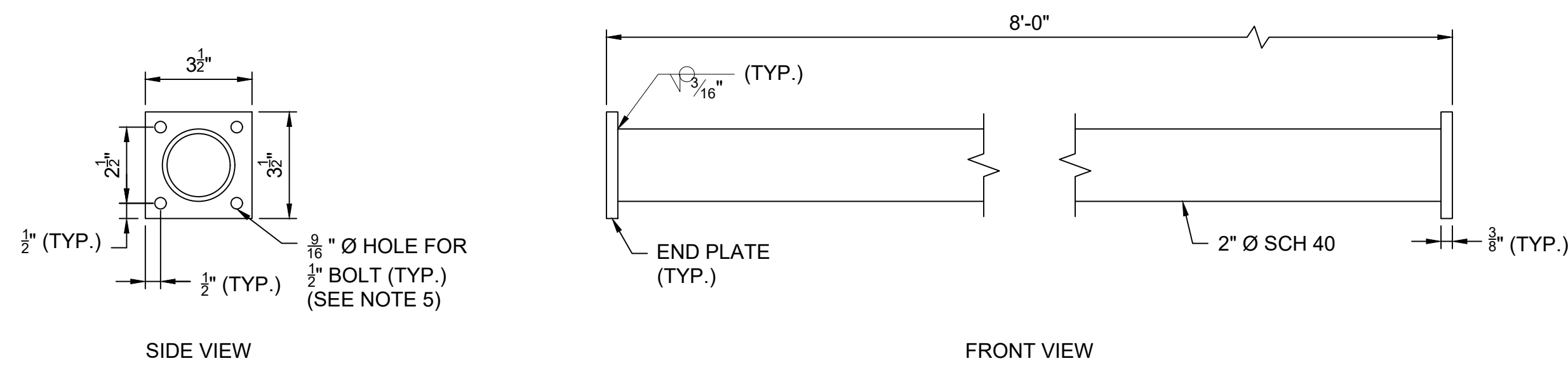
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**GENERAL SHEET NOTES**

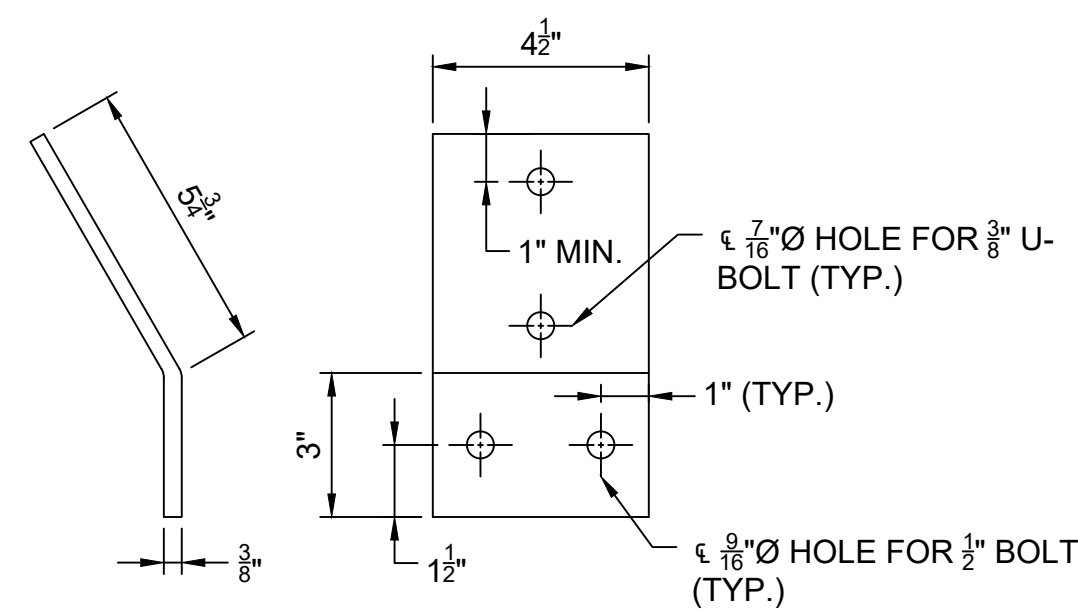
1. VERTICAL DATUM FOR PROJECT IS NGVD29.
2. GENERAL CONFIGURATION PRESENTED, PROVIDE IN ACCORDANCE WITH SPECIFICATION SECTION 06501.
3. RACK BLADES AND SPACERS TO BE EXTRA HIGH MOLECULAR WEIGHT HEXEN COPOLYMER (HXM POLYETHYLENE).
4. HORIZONTAL RODS SHALL BE PULTRUDED FRP.
5. PRECASTER SHALL COORDINATE WITH CONTRACTOR AND PROVIDE INSERTS 1/2" BOLTS (4" MIN. LENGTH).



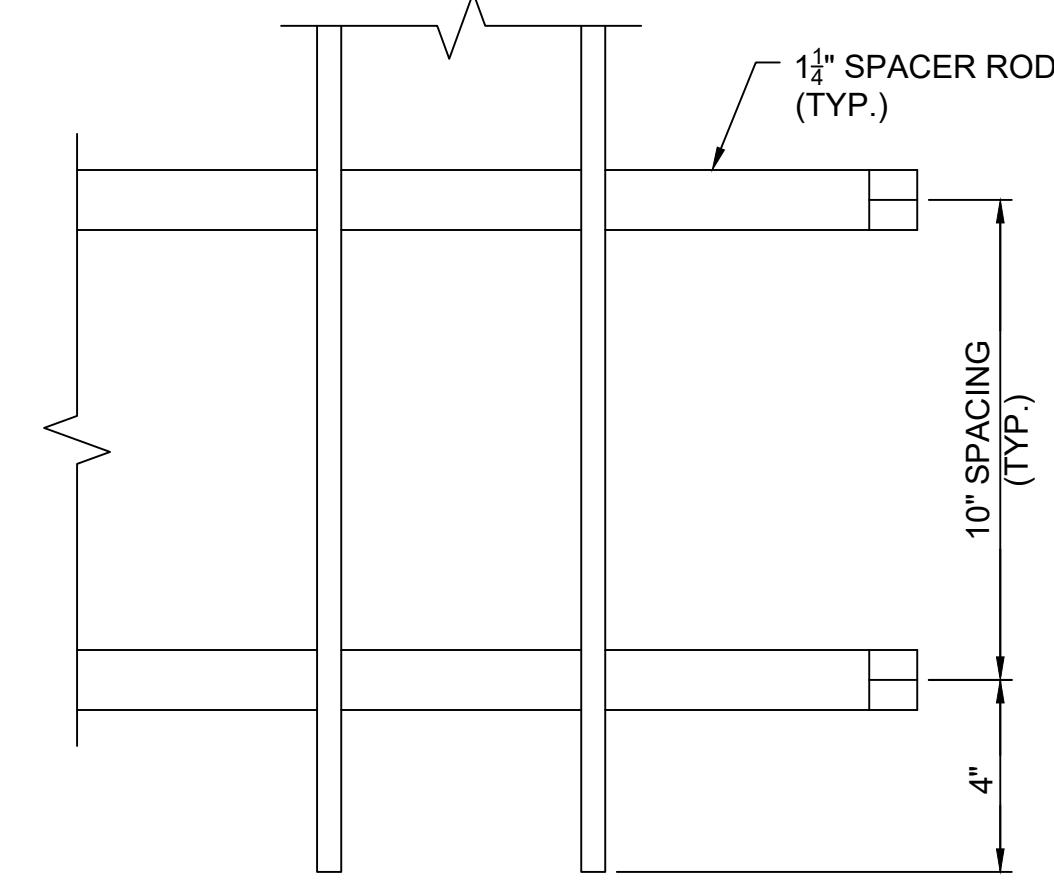
**FLOATABLES SCREEN**  
SCALE: 1" = 1'-0"



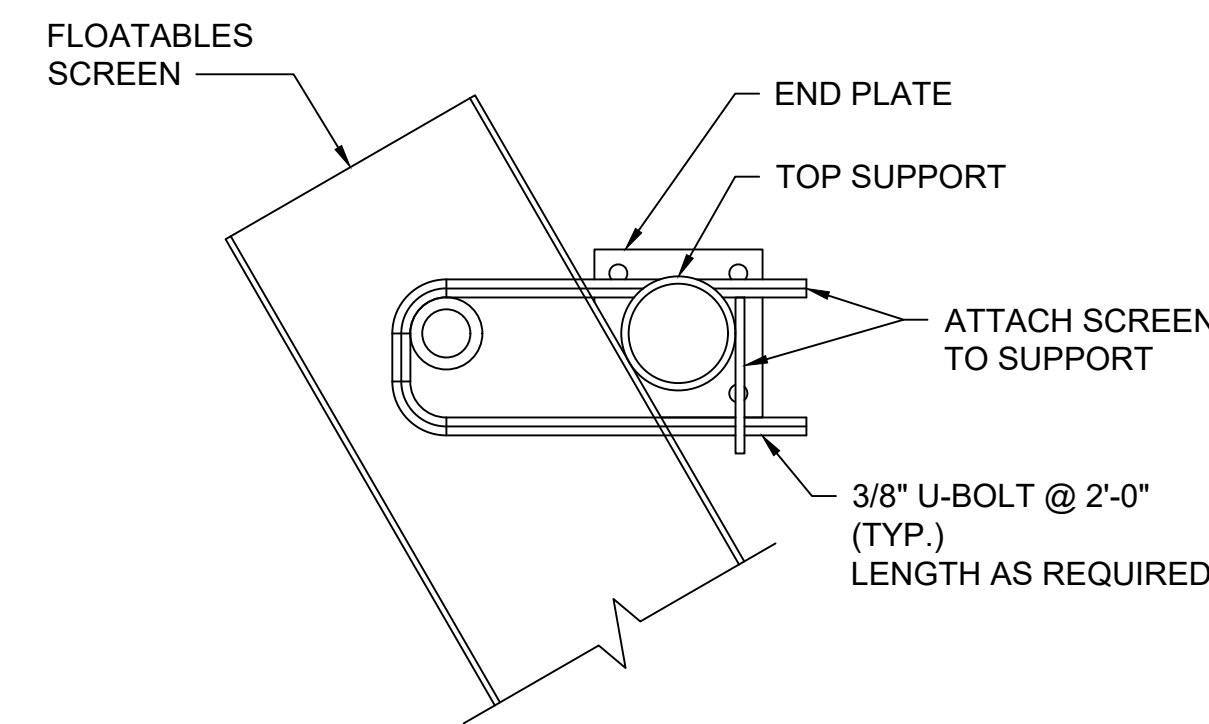
**TOP SUPPORT**  
SCALE: 3" = 1'-0"



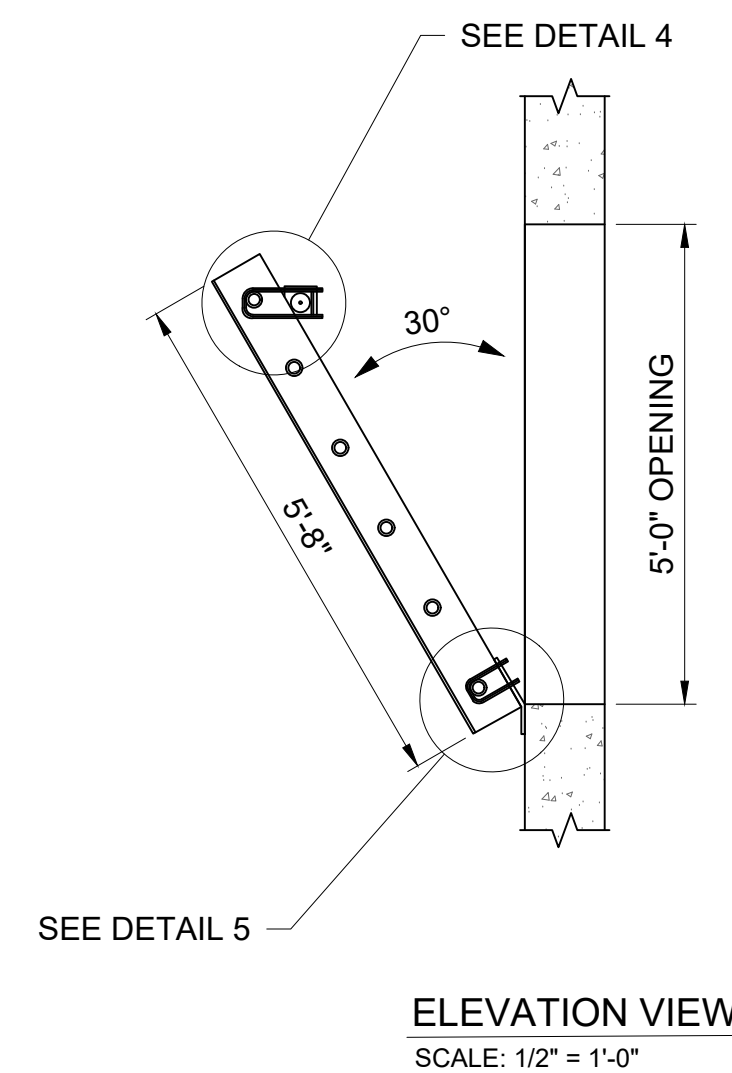
**6 DETAIL**  
S-4 SCALE: 3" = 1'-0"



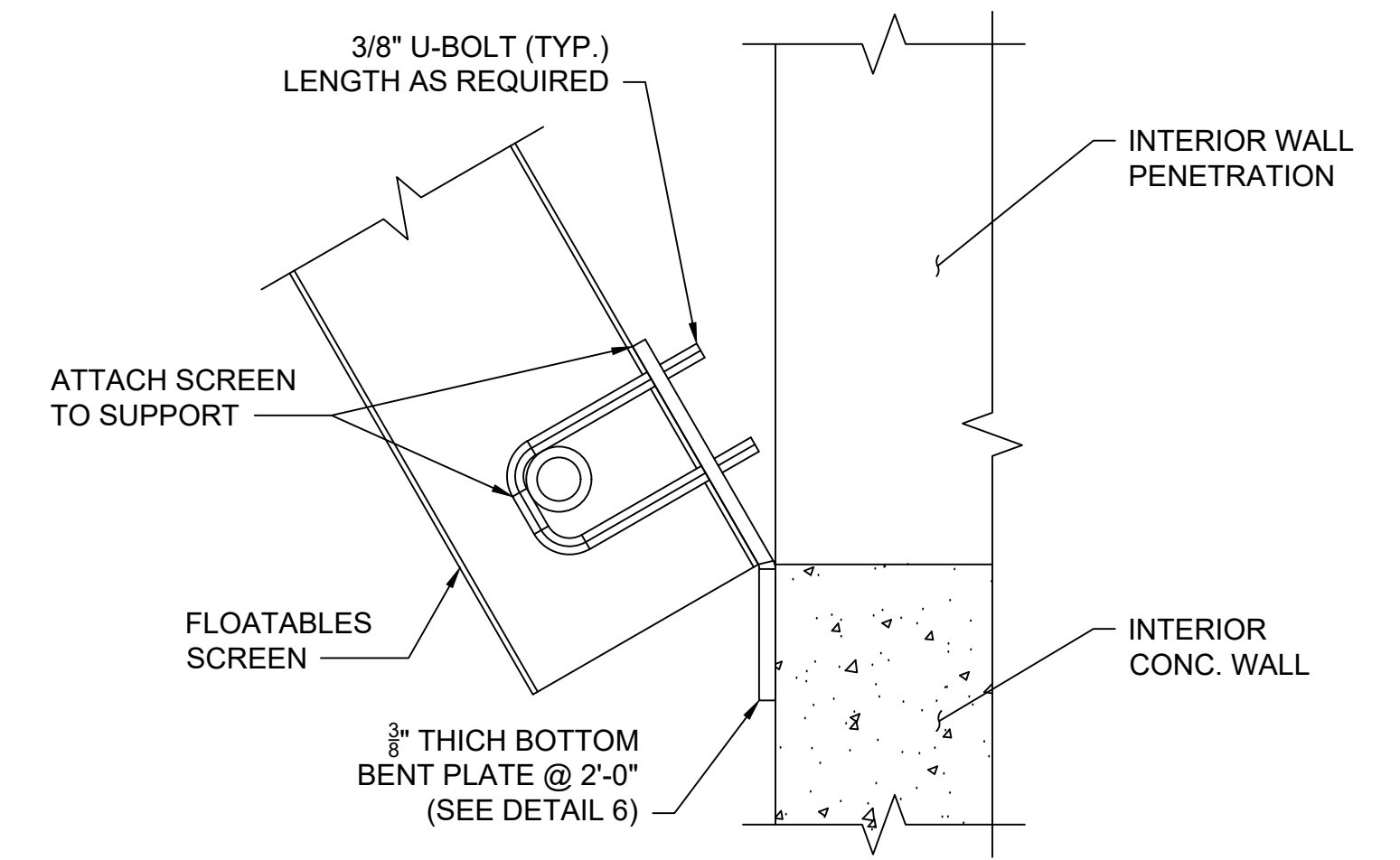
**3 DETAIL**  
S-4 SCALE: 3" = 1'-0"



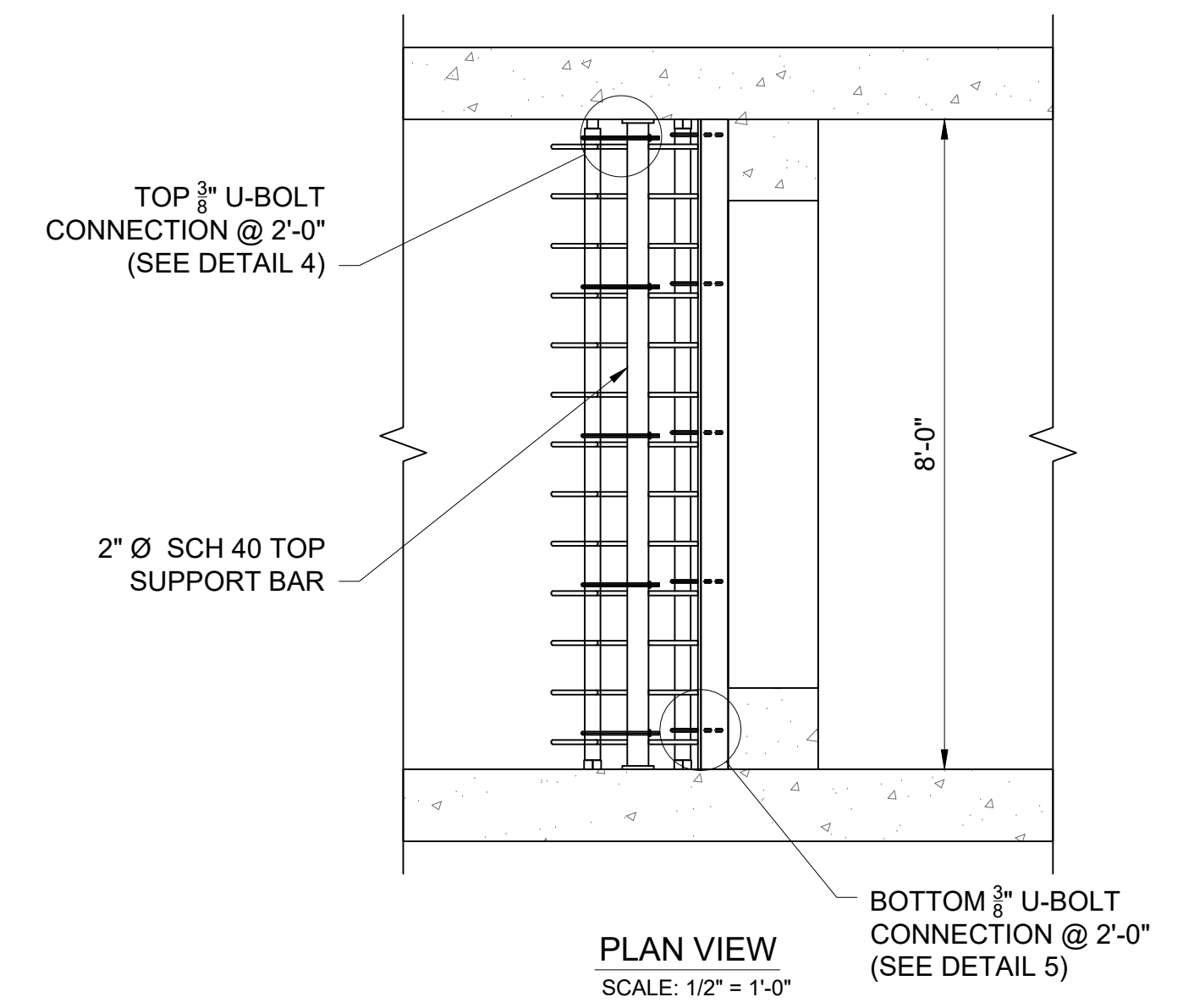
**4 DETAIL**  
S-4 SCALE: 3" = 1'-0"



**ELEVATION VIEW**  
SCALE: 1/2" = 1'-0"



**5 DETAIL**  
S-4 SCALE: 3" = 1'-0"



**PLAN VIEW**  
SCALE: 1/2" = 1'-0"

REV	DATE	BY	DESCRIPTION

SCALE	WARNING
SCALE	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED	L. TSANG
DRAWN	B. NELSON
CHECKED	T. WARZECKI

FINAL DESIGN PHASE - JULY 2021

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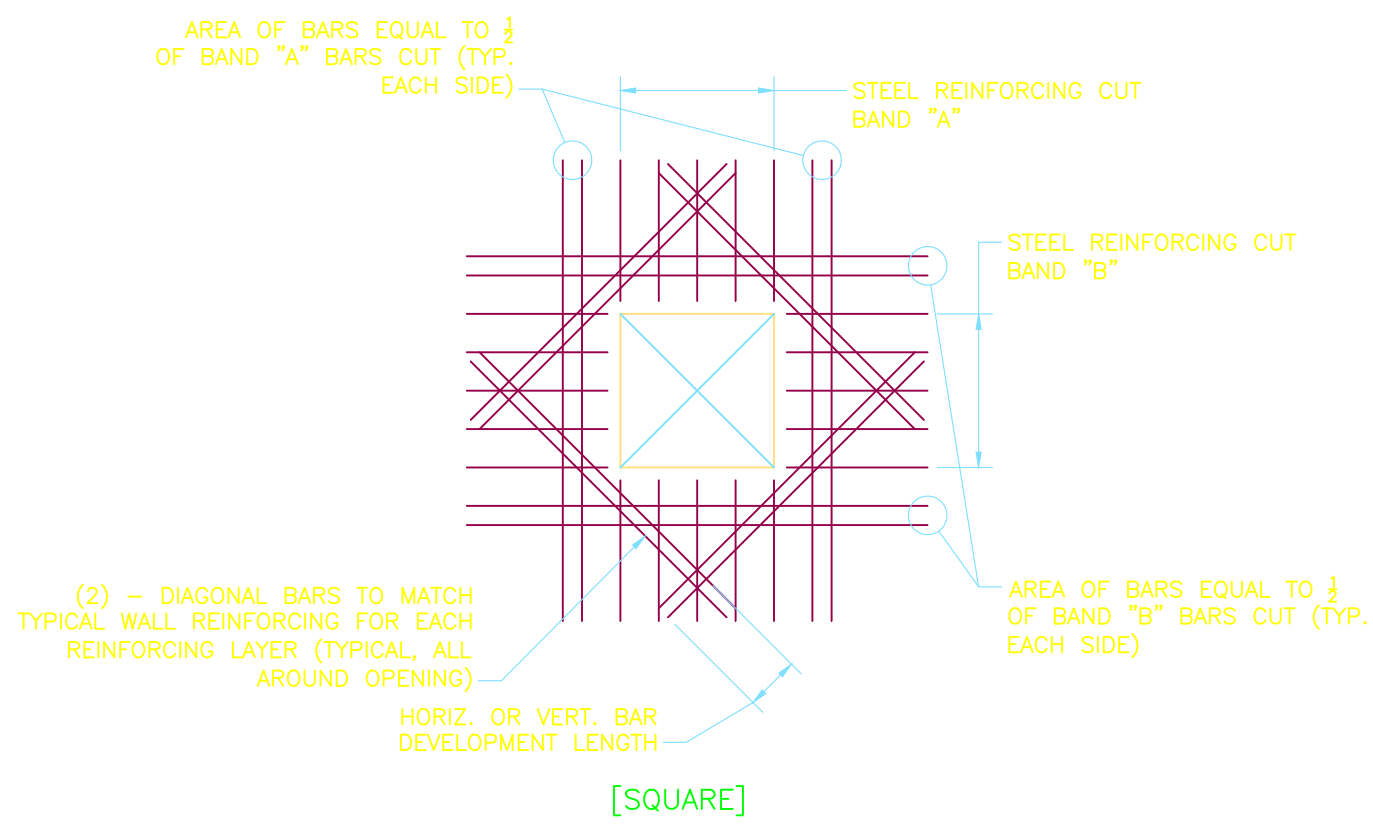
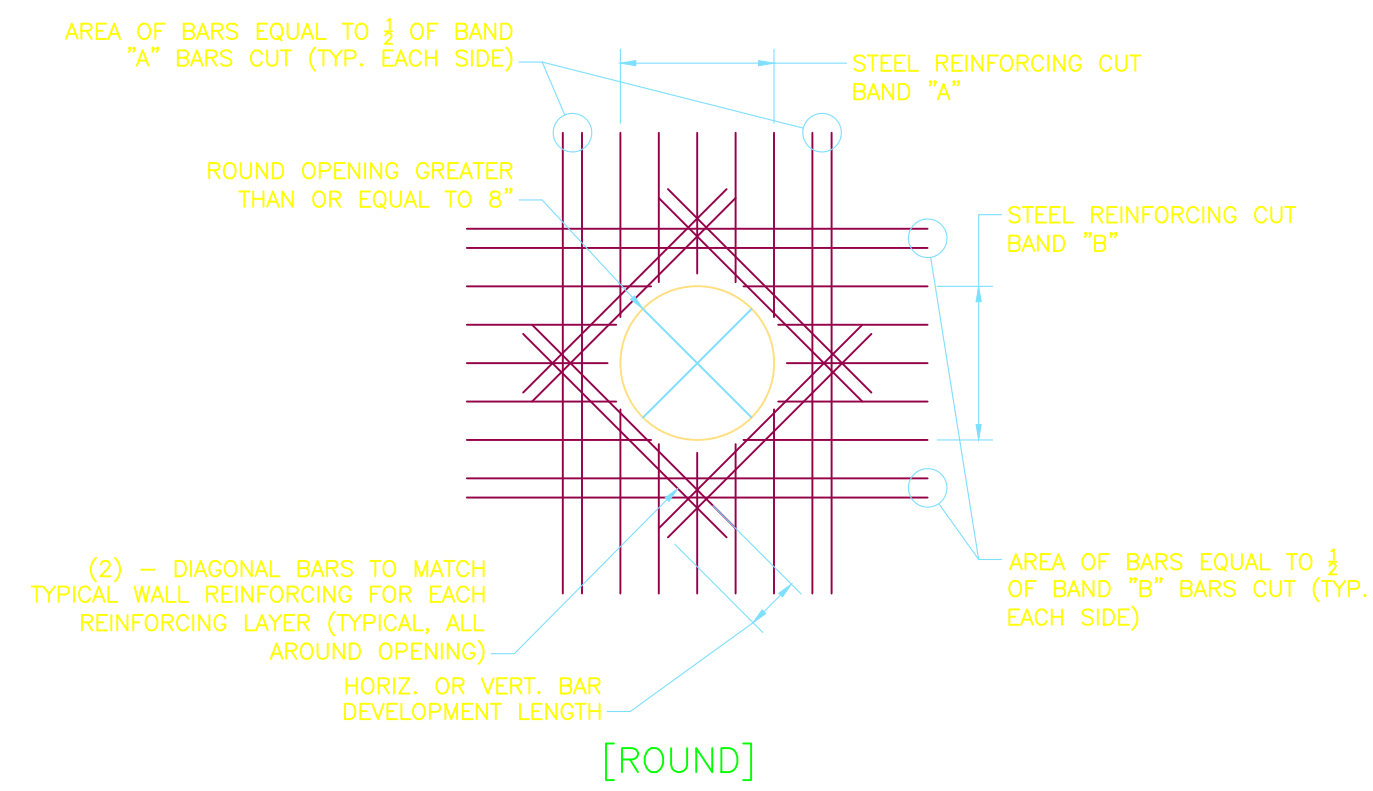
NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM

Stantec PARE

NBC CONTRACT NO 308.05C  
STRUCTURAL  
OF-217 CONSOLIDATION CONDUIT  
OF-217 DIVERSION STRUCTURE  
FLOATABLE SCREEN DETAILS

SHEET  
**S-4**  
195130227





**TYPICAL PENETRATION DETAIL**  
NOT TO SCALE

S-900

REV	DATE	BY	DESCRIPTION

SCALE  
AS SHOWN

WARNING  
0 1/2 1  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED T. WARZECKI  
DRAWN J. PAYNE  
CHECKED T. WARZECKI

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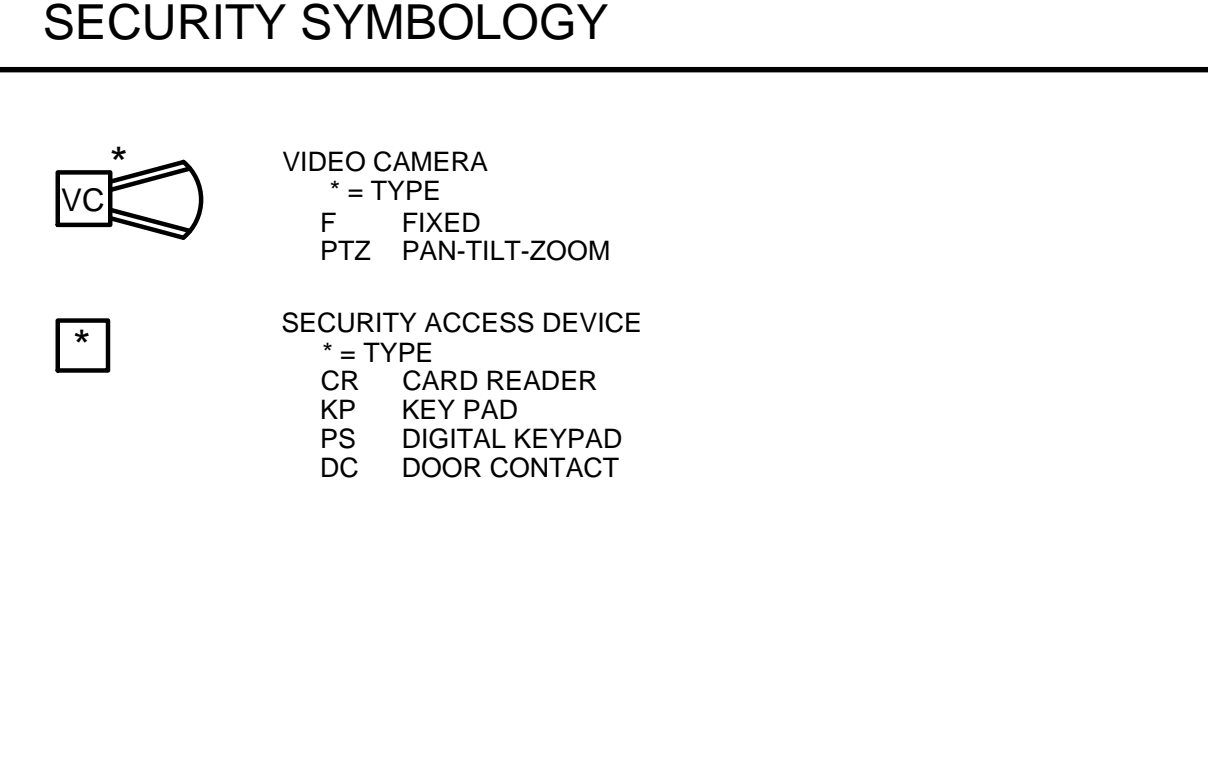
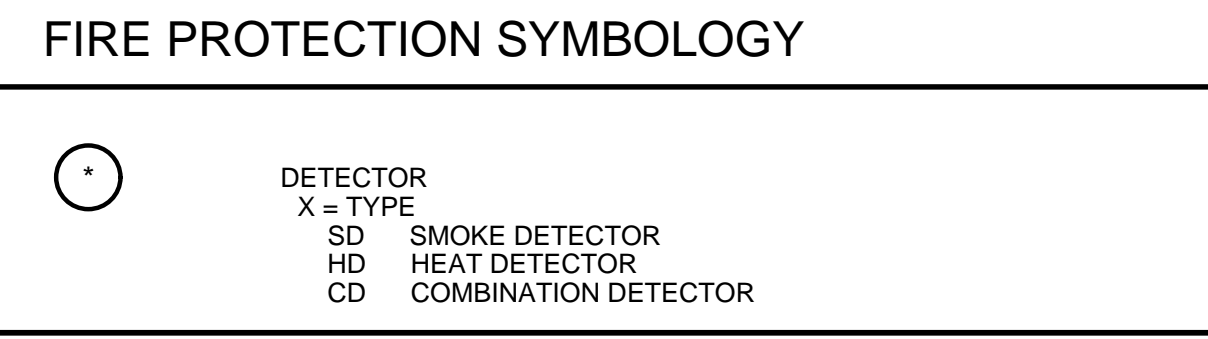
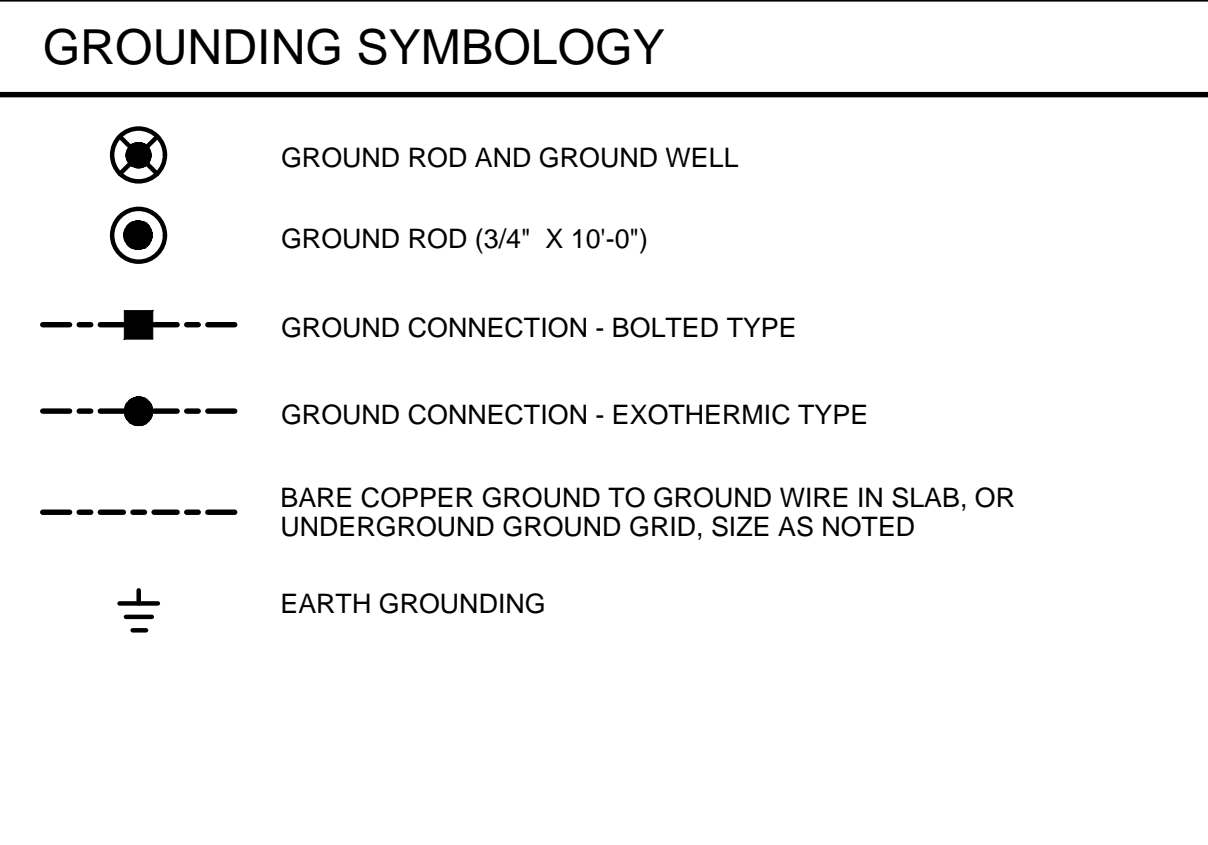
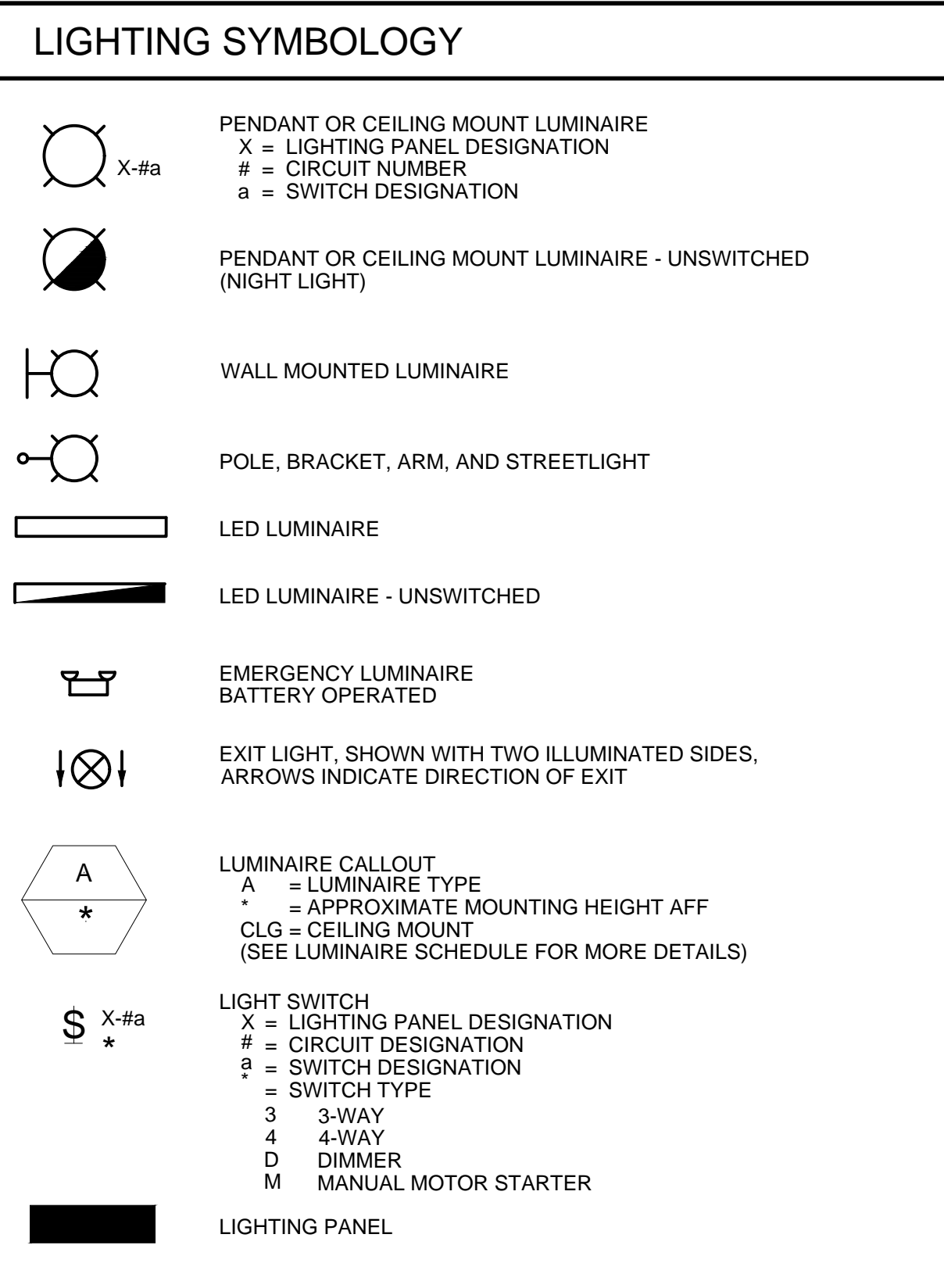
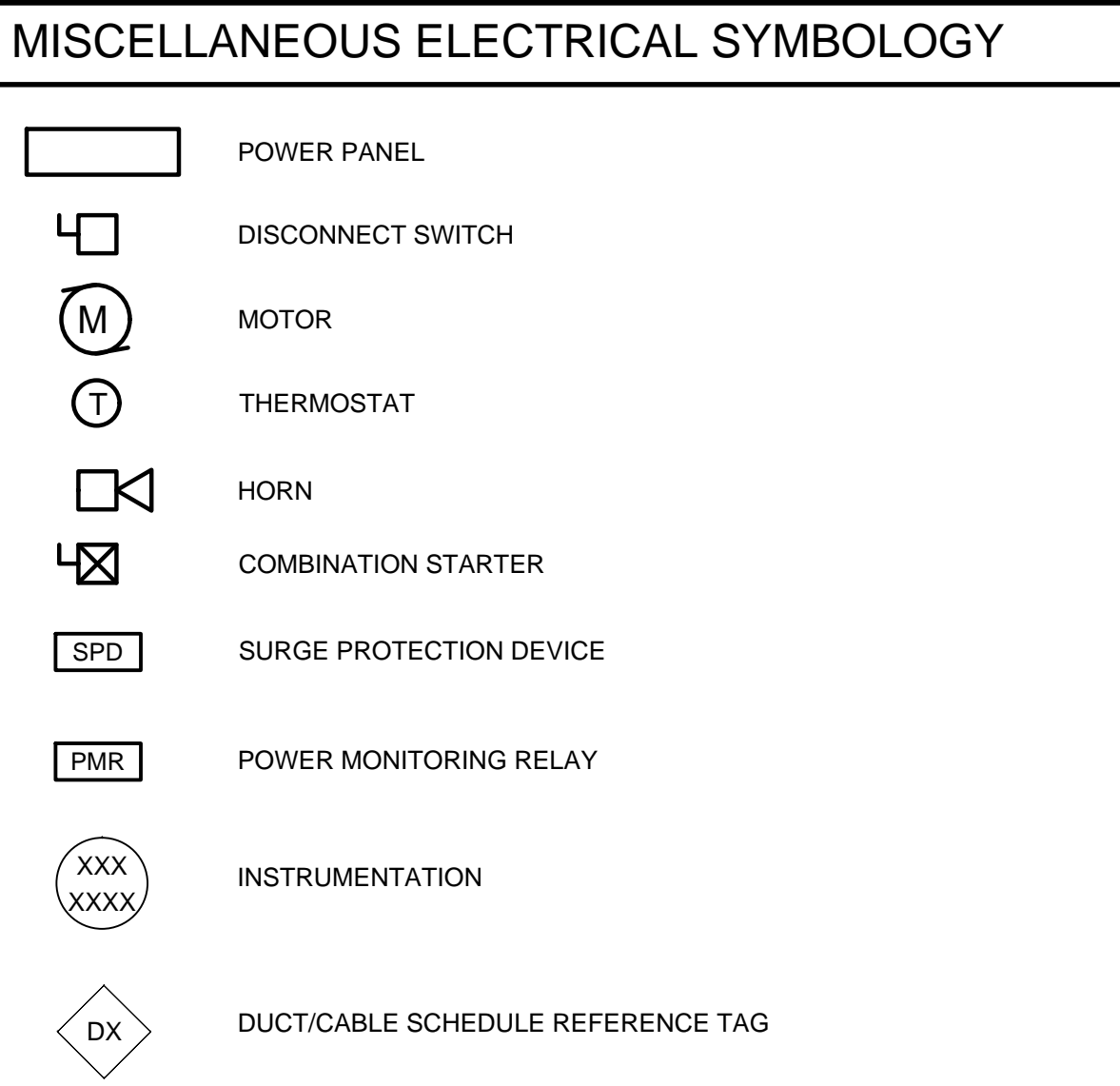
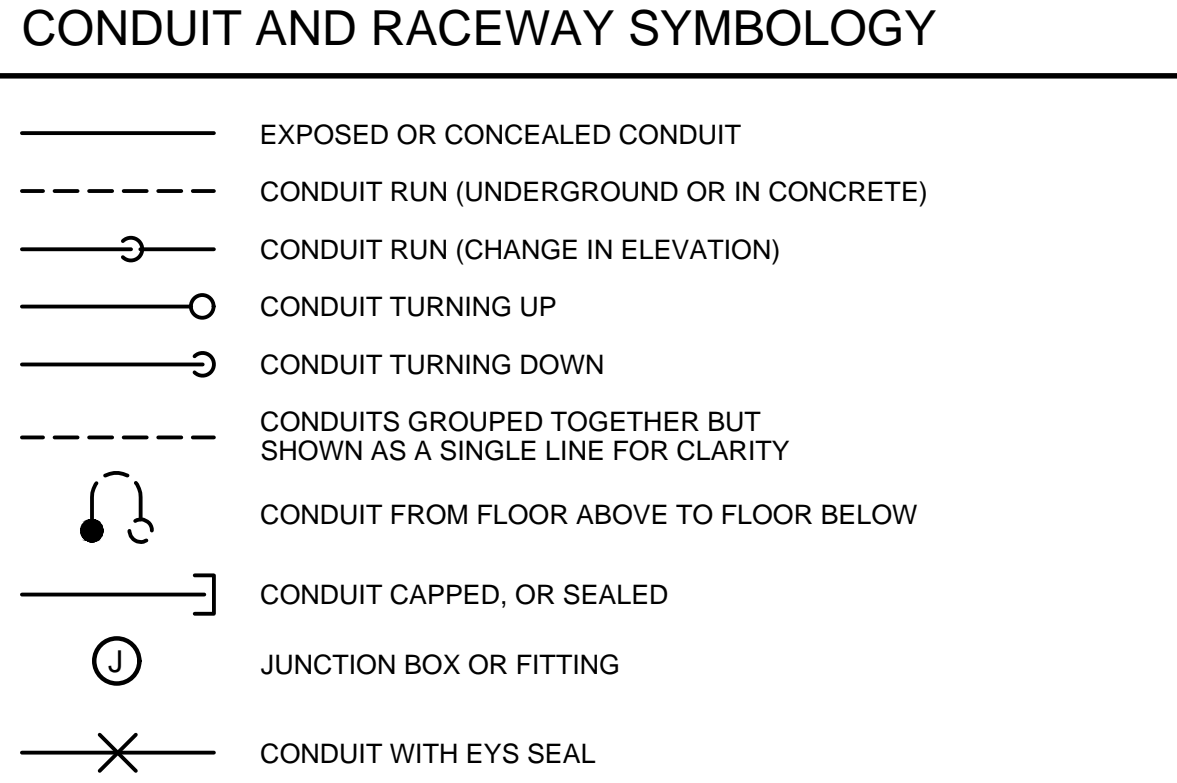
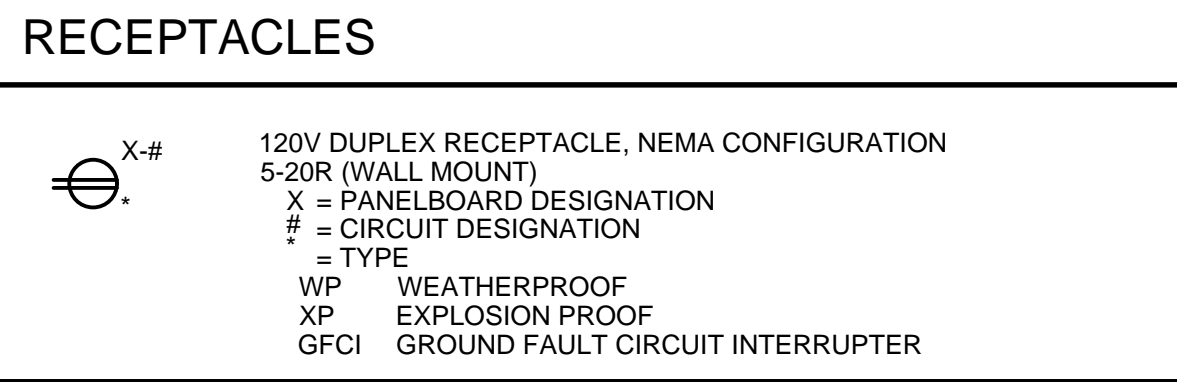
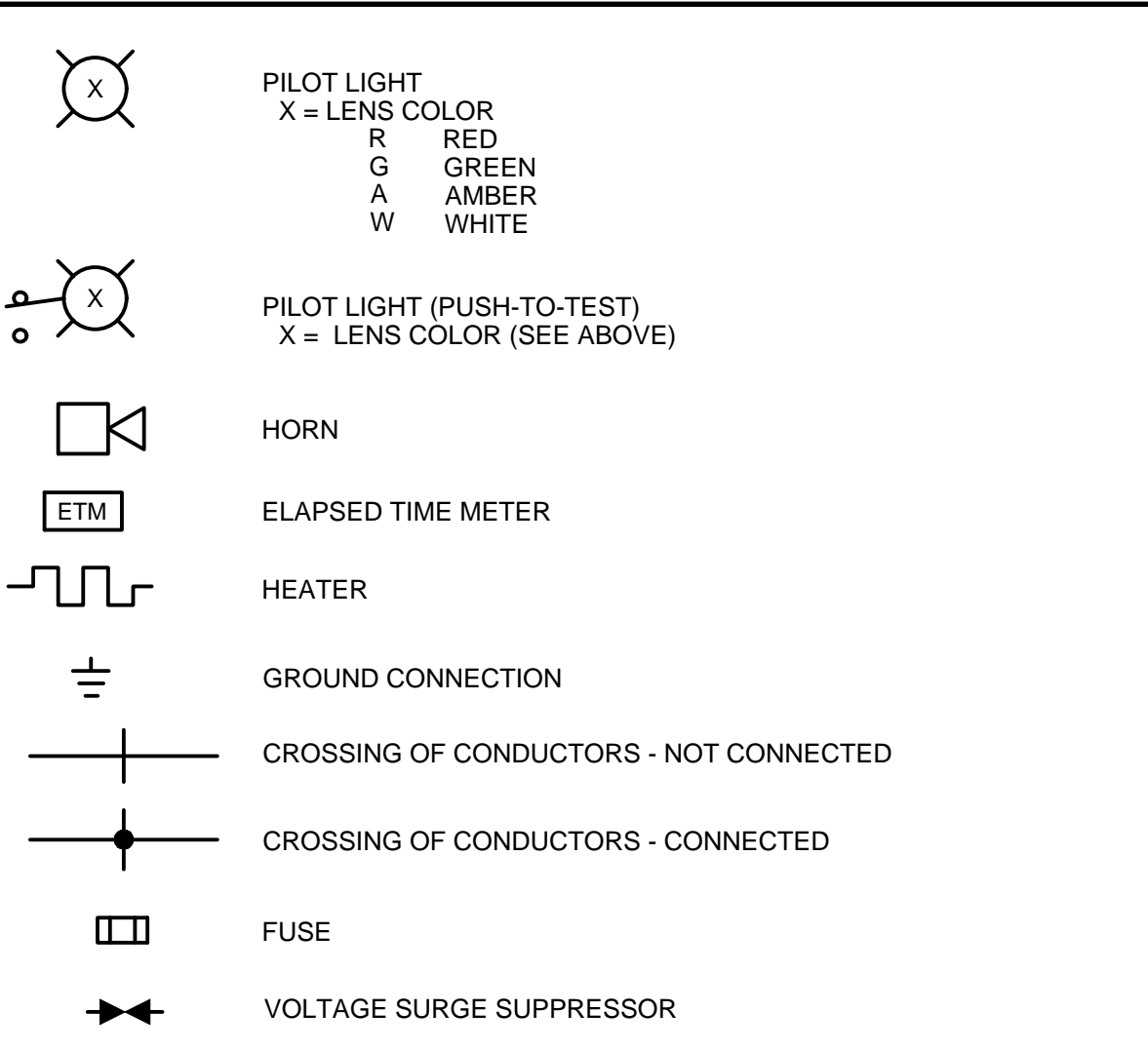
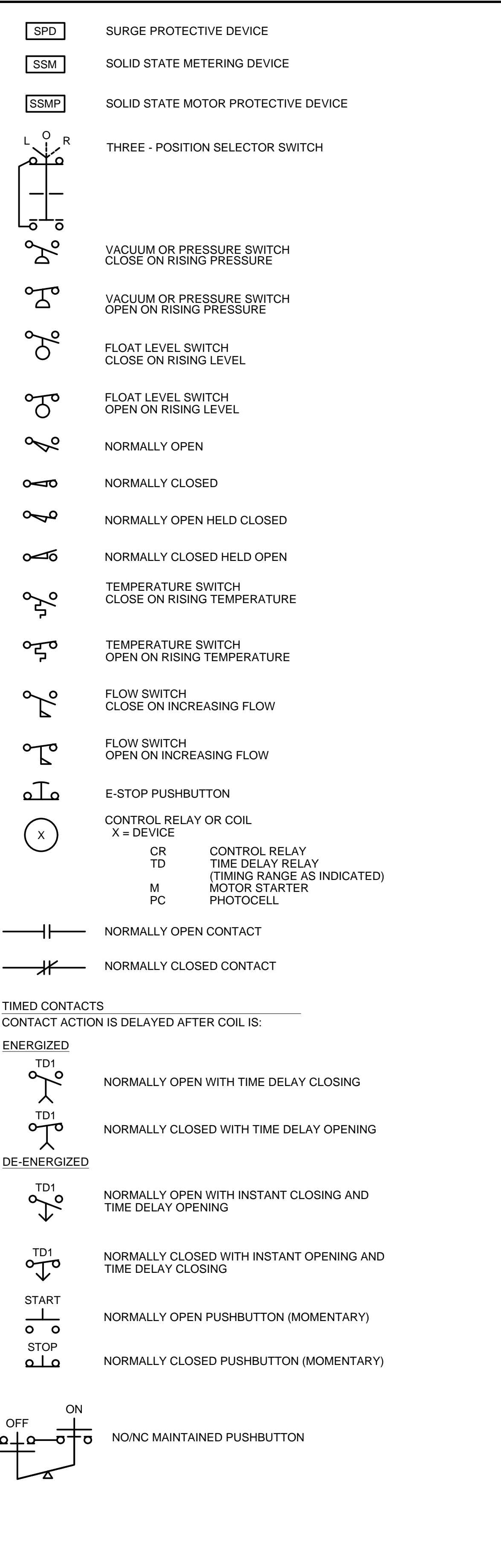
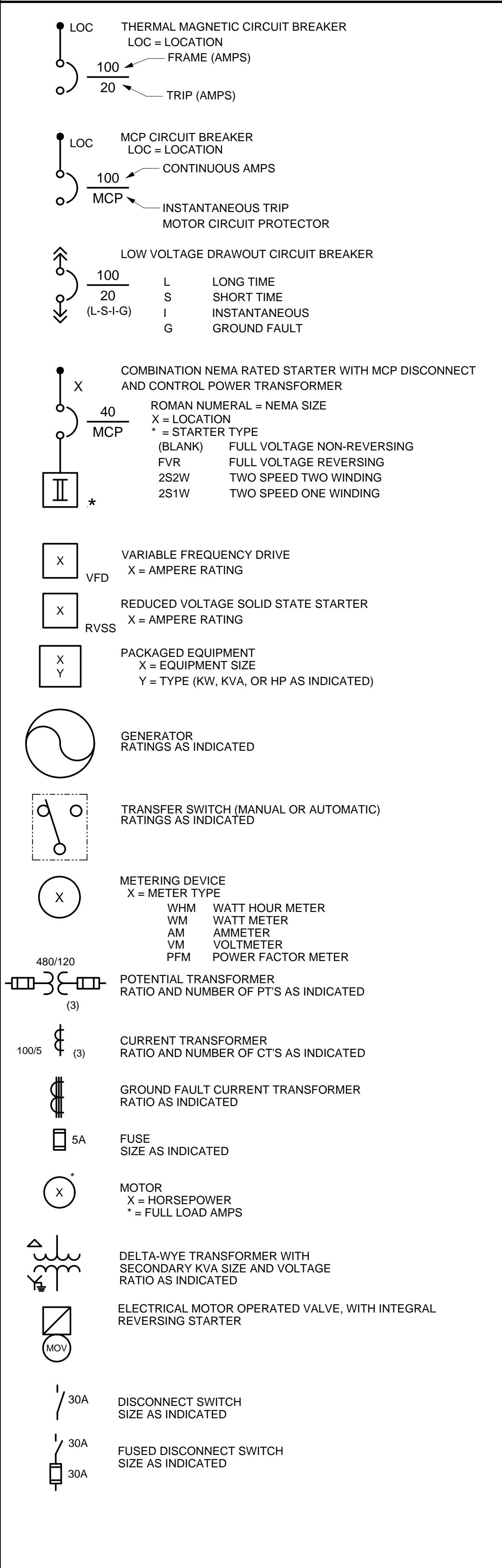
NARRAGANSETT BAY COMMISSION  
PHASE III COMBINED SEWER  
OVERFLOW PROGRAM  
**Stantec** **PARE**

NBC CONTRACT NO 308.04C  
STRUCTURAL  
OF-217 CONSOLIDATION CONDUIT  
STRUCTURAL DETAILS I

SHEET  
S-5  
195130227

SINGLE LINE DIAGRAM, SCHEMATIC DIAGRAM SYMBOLOGY AND PLAN SYMBOLOGY

GENERAL ELECTRICAL NOTES



- ALL RACEWAYS AND EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE 2020 EDITION OF THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES.
- THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF CONDUIT ENTRANCES OF ALL EQUIPMENT AGAINST APPROVED SHOP DRAWINGS BEFORE STUBBING UP CONDUITS.
- CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT OR STRUCTURAL CONDITIONS. EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BEAMS AND WALLS. REFER TO SPECIFICATION SECTION 16130.
- IN THE EVENT OF INTERFERENCE BETWEEN ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND OTHER EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING AND THE ENGINEER SHALL APPROVE PROPOSED CHANGES BEFORE THEY ARE MADE.
- THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.
- ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS. FOR LOCATIONS OF EXPANSION JOINTS, REFER TO THE STRUCTURAL DWGS.
- CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO MOTORS AND OTHER EQUIPMENT.
- CONDUITS FOR FUTURE EQUIPMENT OR EXTENSIONS SHALL BE TERMINATED AS INDICATED OR AS SPECIFIED.
- ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY THE SCOPE OF WORK WITH FIELD CONDITIONS.

BY: MIKE C PLOT DATE: Thursday, June 17, 2021 10:15:44 AM DWG FILE: C:\pwworkdir\0520868\0F-217 Electrical - 2013.dwg

SCALE	NO SCALE
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
DESIGNED	M. COTTER
DRAWN	R. BEAUVAIS
CHECKED	

90% DESIGN PHASE - APRIL 2021

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ELECTRICAL ABBREVIATIONS

A AMPERE, AUTOMATIC  
 AC ALTERNATING CURRENT  
 AF CIRCUIT BREAKER FRAME SIZE  
 AM AMMETER  
 ANN ANNUNCIATOR  
 AS ADJUSTABLE SPEED  
 AT AMPERE TRIP  
 ATS AUTOMATIC TRANSFER SWITCH  
 AUTO AUTOMATIC  
 AWG AMERICAN WIRE GAUGE

BATT BATTERY  
 BC BARE COPPER  
 BKR BREAKER

C CONDUIT, NUMBERS FOLLOWING INDICATE WIRE QUANTITIES AND WIRE GAUGE SIZES  
 CAP CAPACITOR  
 CB CIRCUIT BREAKER  
 CKT CIRCUIT  
 CLF CURRENT LIMITING FUSE  
 COM COMMON  
 COMM COMMUNICATIONS  
 COMP COMPARTMENT  
 CP CONTROL PANEL  
 CPT CONTROL POWER TRANSFORMER  
 CR CONTROL RELAY, CARD READER  
 CT CURRENT TRANSFORMER

DCS DISTRIBUTED CONTROL SYSTEM  
 DISC DISCONNECT  
 DISTR DISTRIBUTION  
 DPDT DOUBLE POLE DOUBLE THROW  
 DPST DOUBLE POLE SINGLE THROW

E EMERGENCY  
 EMT ELECTRICAL METALLIC TUBING  
 ENCL ENCLOSURE  
 ETM ELAPSED TIME METER

F FREQUENCY, FUSE, FIXED  
 FDR FEEDER  
 FLA FULL LOAD AMPS  
 FLUOR FLUORESCENT  
 FM FREQUENCY METER  
 FO FIBER OPTIC  
 FVR FULL VOLTAGE REVERSING  
 FVNR FULL VOLTAGE NON-REVERSING

GEN GENERATOR  
 GFCI GROUND FAULT CIRCUIT INTERRUPTER  
 GND GROUND

H HAND  
 HD HEAT DETECTOR  
 HH HAND HOLE  
 HID HIGH INTENSITY DISCHARGE  
 HOA HAND-OFF-AUTOMATIC  
 HPS HIGH PRESSURE SODIUM  
 HS HAND SWITCH  
 HZ HERTZ

IMC INTERMEDIATE METALLIC CONDUIT  
 INCAND INCANDESCENT  
 IND INDICATION  
 INST INSTANTANEOUS  
 I/O INPUT/OUTPUT  
 IS INTRINSICALLY SAFE  
 Isc SHORT CIRCUIT CURRENT, AMPS  
 ISO ISOLATION

J,JB JUNCTION BOX

KA KILO AMPERES  
 KAIC KILO AMP INTERRUPTING CURRENT  
 KCMIL KILO CIRCULAR MILS  
 KVA KILOVOLT AMPERE

L LOCAL  
 LCP LOCAL CONTROL PANEL  
 LCS LOCAL CONTROL STATION  
 LIT LEVEL INDICATING TRANSMITTER  
 LOC LOCAL  
 LOR LOCAL-OFF-REMOTE  
 LOS LOCKOUT STOP PUSHBUTTON  
 LP LIGHTING PANEL  
 LRA LOCKED ROTOR AMPS  
 LS LEVEL SWITCH  
 LTG LIGHTING  
 LTS LIGHTS

M MOTOR CONTACTOR COIL  
 mA MILLIAMPERE  
 MAINT MAINTENANCE  
 MCP MOTOR CIRCUIT PROTECTOR  
 MLO MAIN LUGS ONLY  
 MOV MOTOR OPERATED VALVE  
 MS MANUAL MOTOR STARTER  
 MTS MANUAL TRANSFER SWITCH

NEUT NEUTRAL  
 NP NAMEPLATE

O OPEN, OFF  
 OL OVERLOAD

PA PUBLIC ADDRESS  
 PB PUSHBUTTON, PULLBOX  
 PC PHOTOCCELL  
 PCM PROCESS CONTROL MODULE  
 PF POWER FACTOR  
 PFM POWER FACTOR METER  
 PH PHASE  
 PL PILOT LIGHT  
 PNLBD PANELBOARD  
 PP POWER PANELBOARD  
 POS POSITION  
 POT POTENTIOMETER  
 PRI PRIMARY  
 PT POTENTIAL TRANSFORMER  
 PTZ PAN-TILT-ZOOM  
 PWR POWER

R REMOTE  
 RECPRT RECEPTACLE  
 RGS RIGID GALVANIZED STEEL  
 RMS ROOT MEAN SQUARE  
 RTU REMOTE TERMINAL UNIT  
 RVSS REDUCED VOLTAGE SOLID STATE

SEL SW SELECTOR SWITCH  
 SEQ SEQUENCE  
 SHLD SHIELDED  
 SIG SIGNAL  
 SP SPARE  
 SP HTR SPACE HEATER  
 SPDT SINGLE POLE DOUBLE THROW  
 SPST SINGLE POLE SINGLE THROW  
 SS 316 STAINLESS STEEL  
 SSM SOLID STATE METER  
 SSMP SOLID STATE MOTOR PROTECTOR  
 ST, SH SHUNT TRIP  
 STR STARTER  
 SSTU SOLID STATE TRIP UNIT  
 SW SWITCH  
 SWBD SWITCHBOARD  
 SWGR SWITCHGEAR

TACH TACHOMETER  
 TB TERMINAL BOX  
 TERM TERMINAL  
 TM REPEAT CYCLE TIMER  
 TD TIME DELAY RELAY  
 TS TEMPERATURE SWITCH  
 TSP TWISTED SHIELDED PAIR

UPS UNINTERRUPTIBLE POWER SUPPLY

V VOLTAGE, VOLTS  
 VA VOLT AMPERE  
 VAR VOLT AMPERE REACTIVE  
 VFD VARIABLE FREQUENCY DRIVE  
 VM VOLTMETER  
 VP VAPOR PROOF

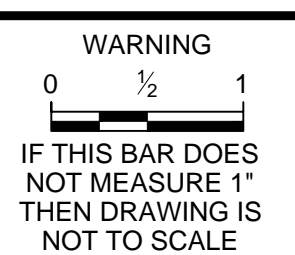
W WATTS, WIRE  
 WM WATT METER  
 WP WEATHERPROOF

XFMR TRANSFORMER  
 XMTR TRANSMITTER  
 XP EXPLOSION PROOF

BY: MIKE C  
 PLOT DATE: Thursday, June 17, 2021 10:33:43 AM  
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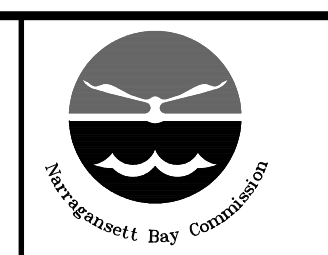
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SCALE  
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DESIGNED M. COTTER  
 DRAWN R. BEAUVAIS  
 CHECKED

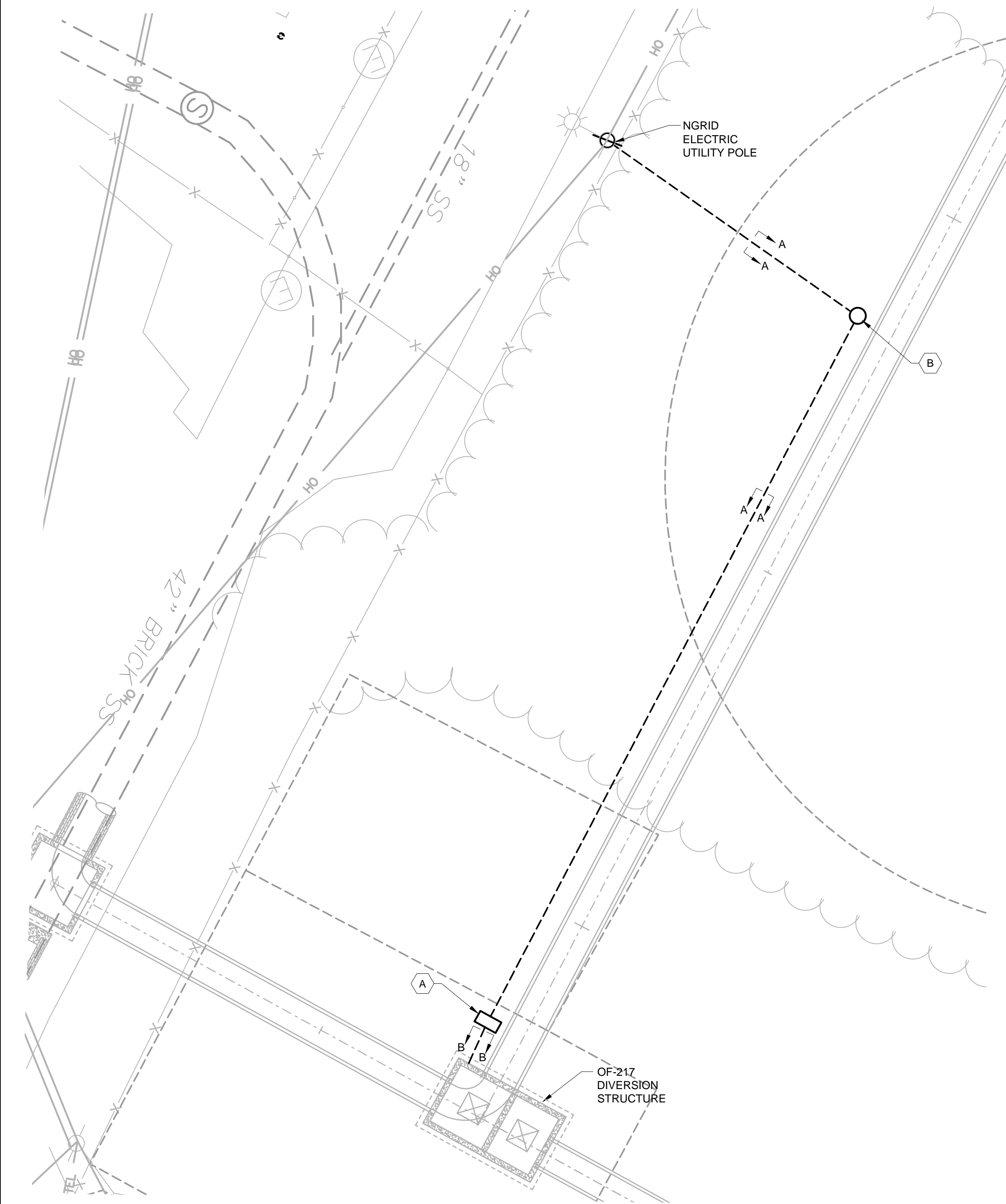
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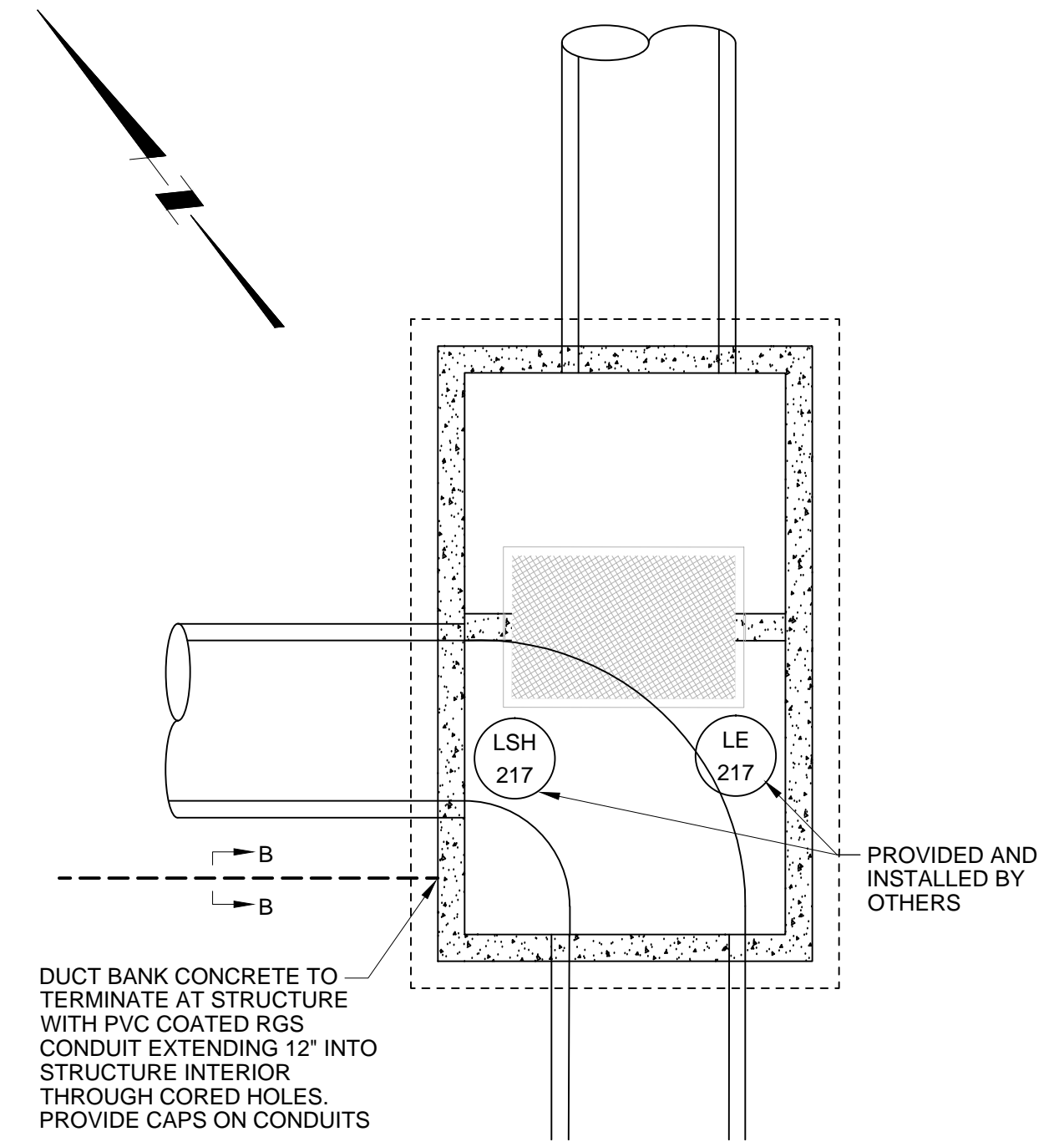
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 PHASE III COMBINED SEWER  
 OVERFLOW PROGRAM  
 Stantec logo

NBC CONTRACT NO 308.05C  
 ELECTRICAL  
 ABBREVIATIONS

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 BY: MIKE C

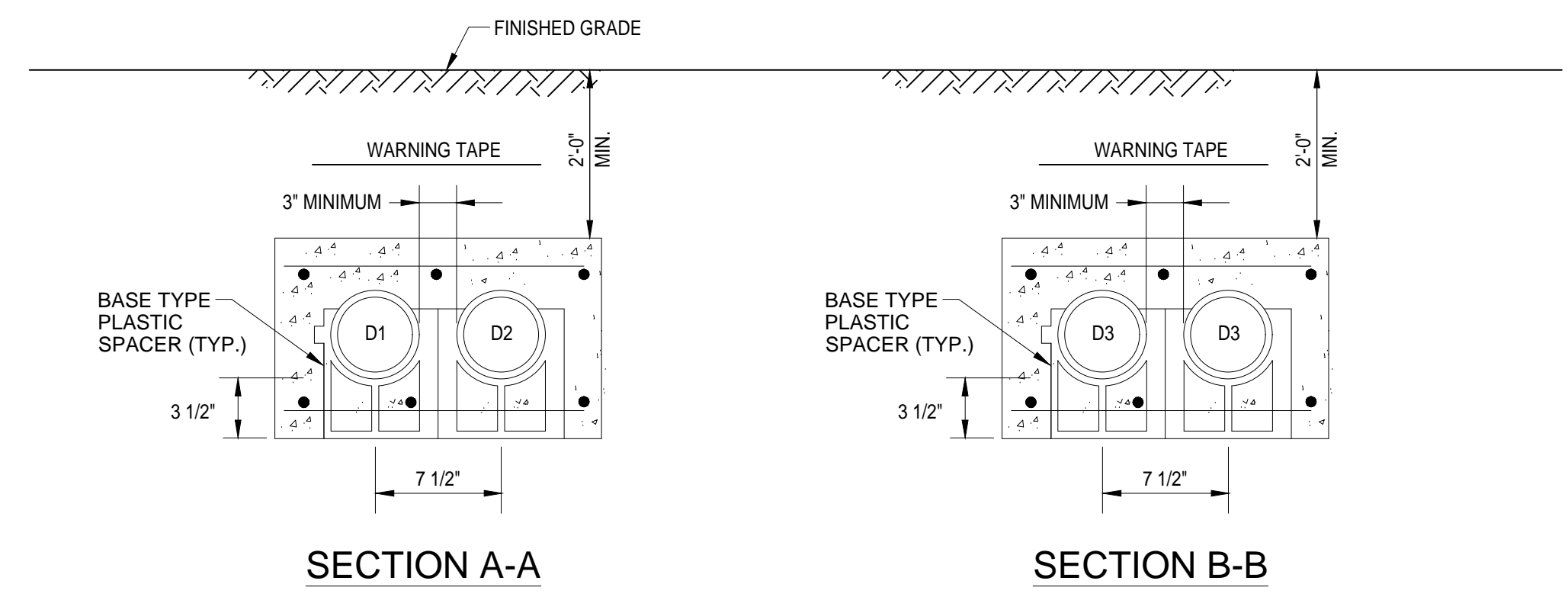


**SITE PLAN**  
SCALE: 1" = 10'



**OF-217 DIVERSION STRUCTURE**  
SCALE: 1/4" = 1'-0"

DUCT / CABLE SCHEDULE				
DUCT NO.	SIZE	CONDUCTORS	FROM	TO
D1	2"	PULL STRING - SERVICE WIRING PROVIDED BY OTHERS	UTILITY POLE	STUB UP NEXT TO ELECTRICAL ENCLOSURE
D2	2"	PULL STRING - SPARE CONDUIT	UTILITY POLE	STUB UP NEXT TO ELECTRICAL ENCLOSURE
D3	4"	PULL STRING - CABLE BY VENDOR PROVIDED BY OTHERS	ELECTRICAL ENCLOSURE	OF-217 DIVERSION STRUCTURE LEVEL TRANSMITTER LOCATION

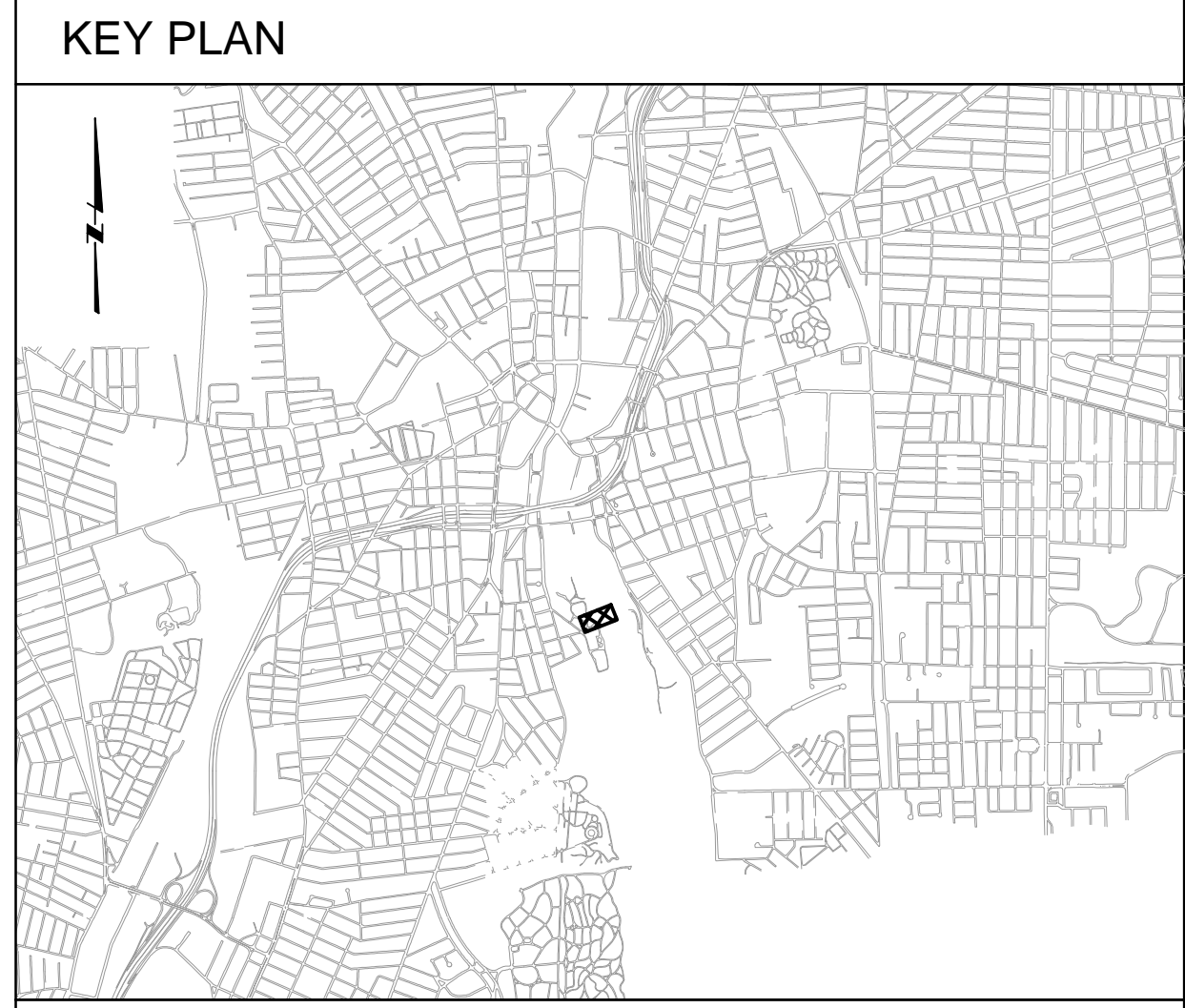


**SECTION A-A**

**SECTION B-B**

- NOTES:**
- BACKFILL DUCT BANK IN LAYERS AND MANUALLY TAMP OR "PUDDLE" CONCRETE FILL. PROVIDE RED DUCT BANK MARKER TAPES, READING "CAUTION - ELECTRICAL LINES BELOW", OVER ENTIRE LENGTH OF DUCTLINE. LOCATE TAPES 12 INCHES BELOW GRADE. PROVIDE A TAPE FOR EVERY 12 INCHES OF WIDTH OF DUCTLINE.
  - A MINIMUM OF 12" SEPARATION SHALL BE KEPT BETWEEN DUCT BANK SECTIONS WITHIN SAME TRENCH.
  - REINFORCING REBAR IS TO BE #5 ASTM A615 GRADE 60 STEEL REBAR.

**1 DUCTBANK SECTIONS**  
NOT TO SCALE



**KEY PLAN**

**GENERAL SHEET NOTES**

- NONE

**SHEET KEYNOTES**

- 60"x36"x18", NEMA 3R STAINLESS STEEL TRAFFIC BOX ELECTRICAL ENCLOSURE THAT WILL BE PROVIDED BY OTHERS AND MOUNTED ON A CONCRETE BASE PROVIDED UNDER THIS CONTRACT, REFER TO DRAWING E-2 DETAIL 2.
- ELECTRIC HANDHOLE, REFER DRAWING E-2 DETAIL 5.

REV	DATE	BY	DESCRIPTION

SCALE: AS SHOWN

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED: M. COTTER  
 DRAWN: R. BEAUVAIS  
 CHECKED: \_\_\_\_\_

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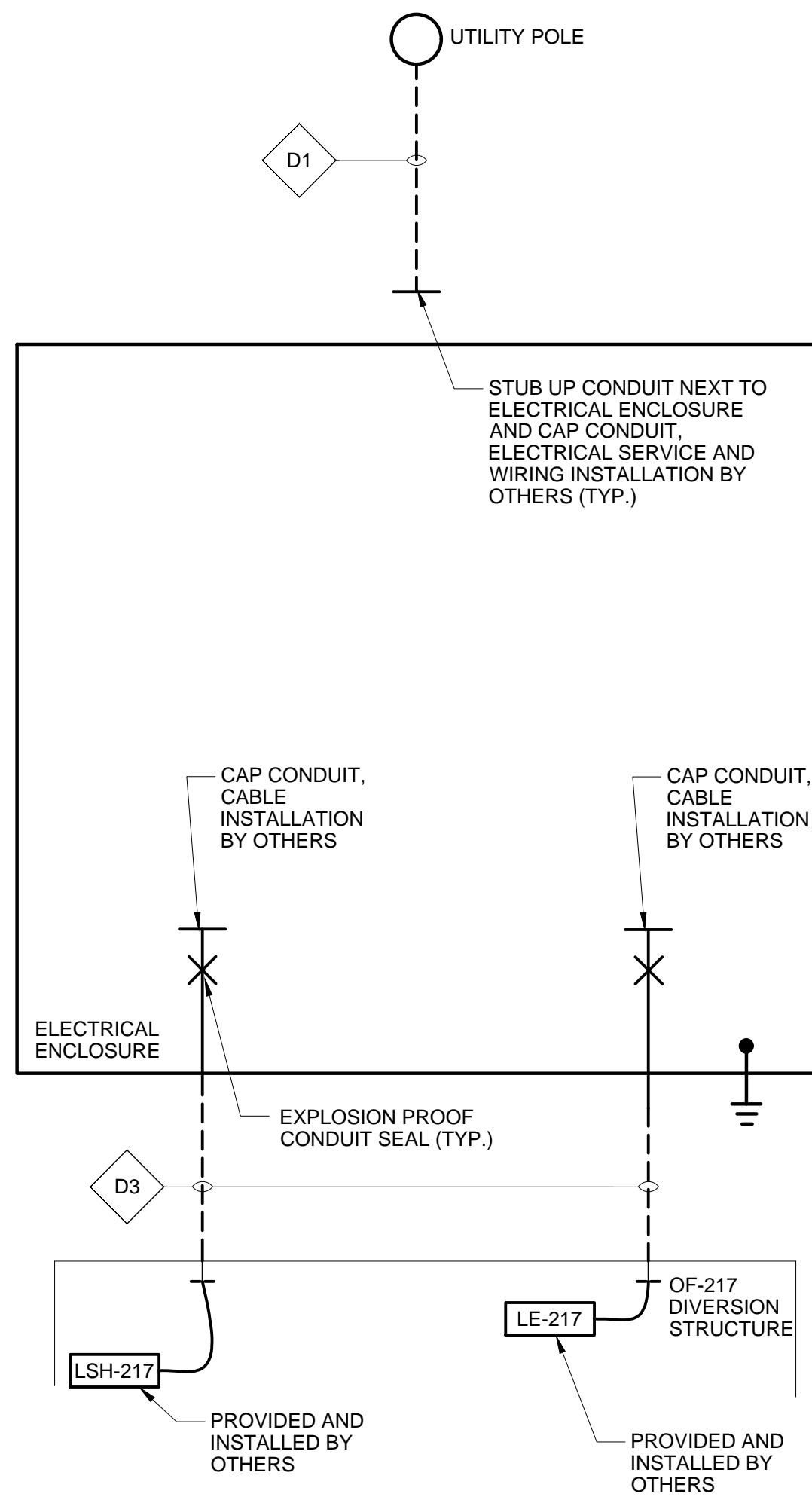


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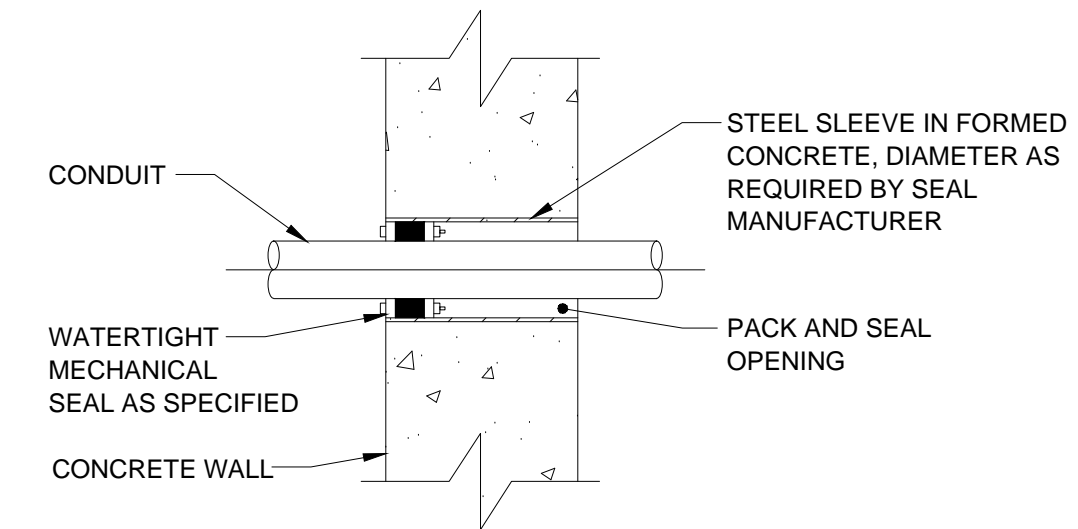
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SITE PLAN, DUCTBANK SECTIONS, AND  
 OF-217 DIVERSION STRUCTURE PLAN

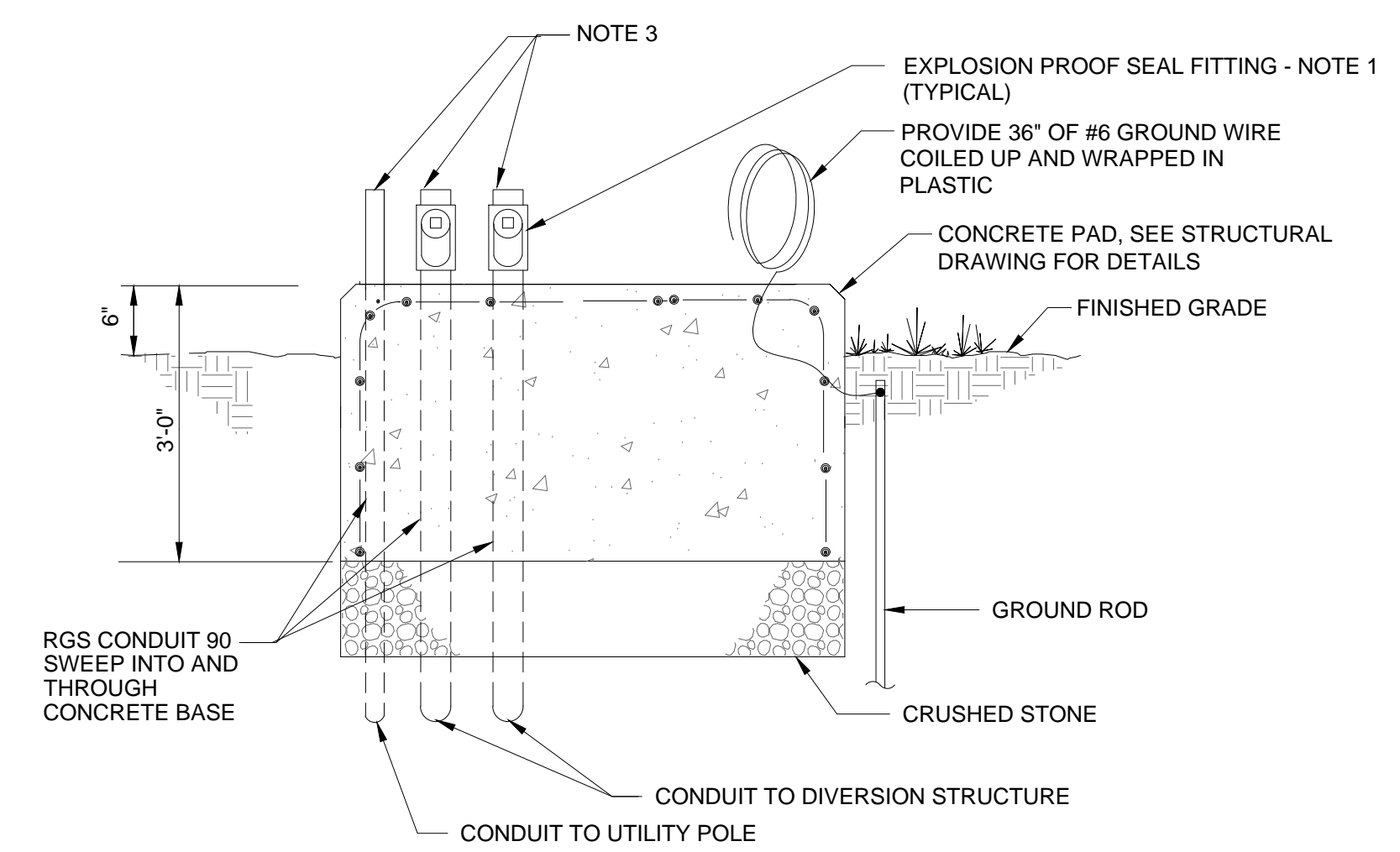
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**1 CONDUIT RISER DIAGRAM**  
NOT TO SCALE

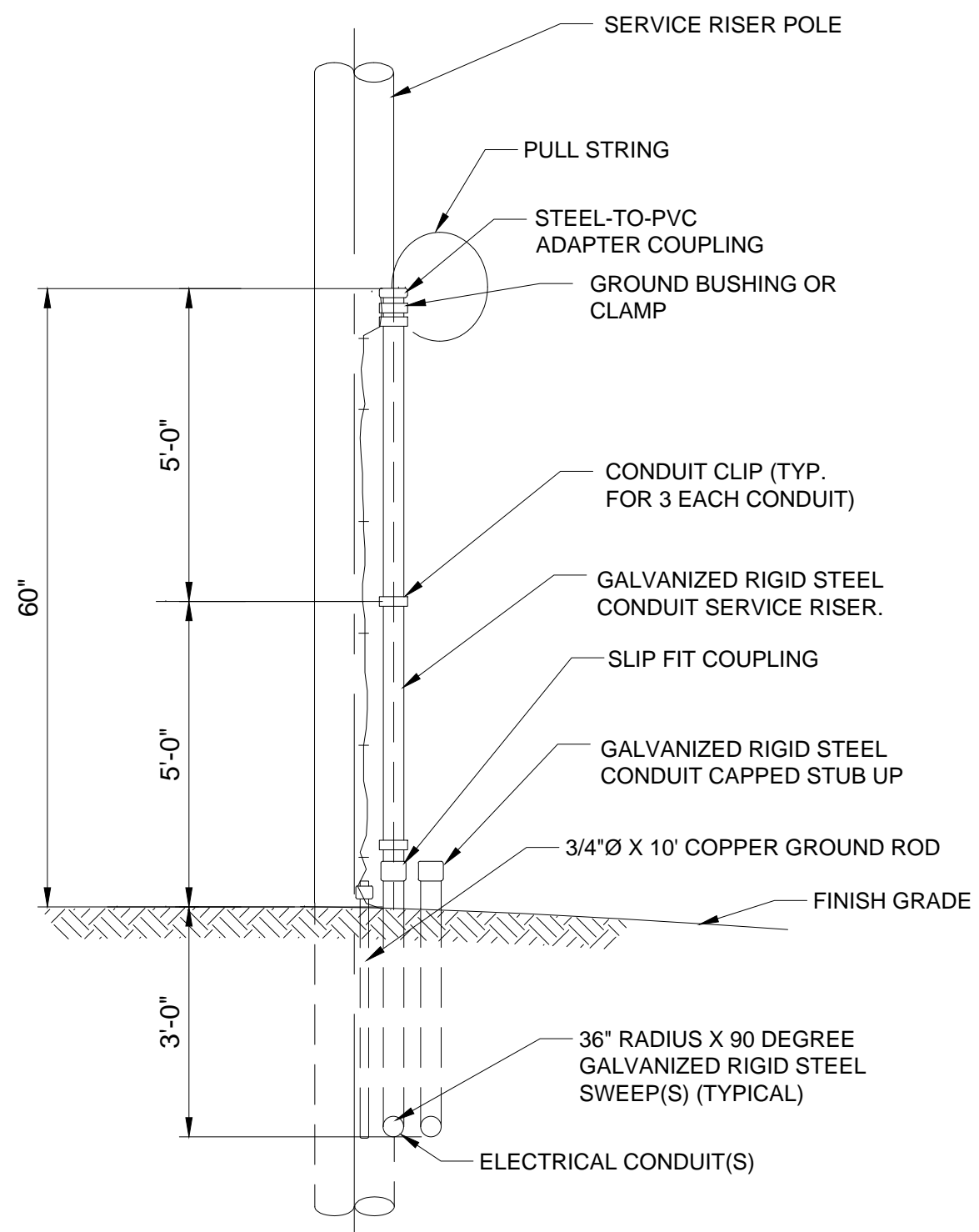


**3 CONDUIT THROUGH STRUCTURE WALL DETAIL**  
NOT TO SCALE

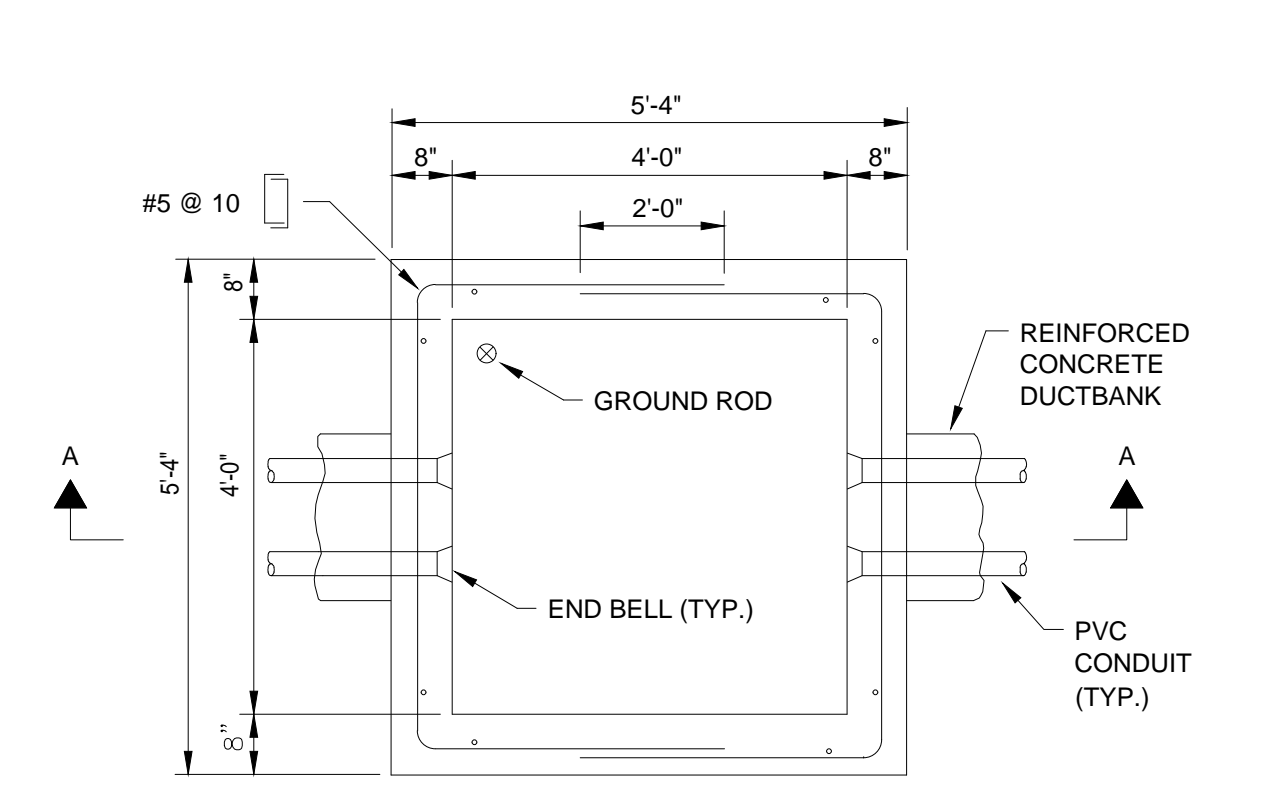


- NOTES:
- EXPLOSION PROOF SEAL FITTINGS ARE NOT TO BE FILLED, INSTALLATION OF CABLE AND SEALANT WILL BE BY OTHERS.
  - SEAL AND CAP THE ENDS OF CONDUITS.

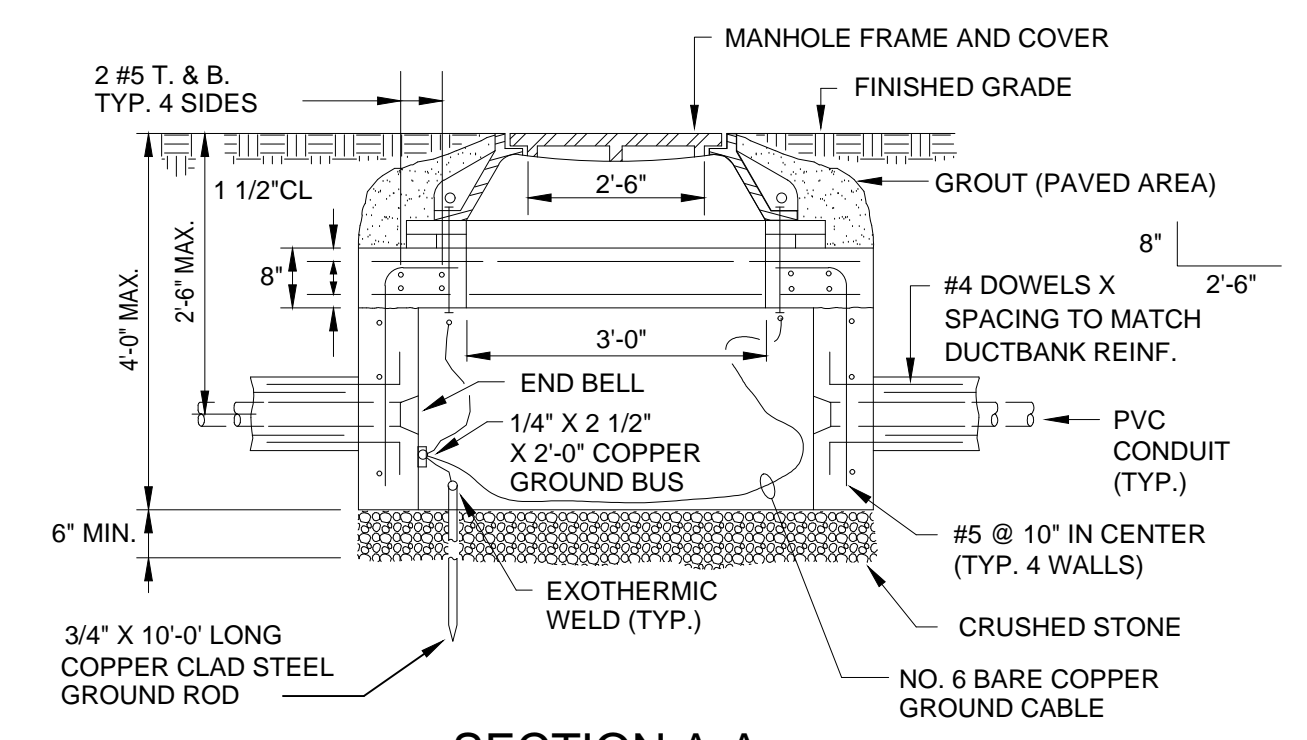
**2 ELECTRICAL ENCLOSURE BASE DETAIL**  
NOT TO SCALE



**4 SERVICE RISER POLE**  
NOT TO SCALE



**PLAN VIEW**



**SECTION A-A**

- NOTES:
- CHIMNEY HEIGHT IS KEPT TO MINIMUM TO FACILITATE WIRE PULLING IN HANDHOLE FROM ABOVE GRADE
  - CONCRETE TO HAVE MINIMUM STRENGTH OF 5,000 PSI AT 28 DAYS, REINFORCING REBAR IS TO BE #5 ASTM A615 GRADE 60 STEEL REBAR.
  - PROVIDE HANDHOLE FRAME, RING AND COVER.
  - REFER TO DUCTBANK SECTIONS FOR THE REQUIRED NUMBER OF CONDUIT ENTRANCES. PROVIDE CONDUIT ENTRY SPACE ON NON-USED SIDES FOR A MINIMUM (4) 4" FUTURE CONDUITS.
  - REFER TO SITE PLAN FOR HANDHOLE SIDES CONDUITS ARE ENTERING.

**5 ELECTRIC HANDHOLE DETAIL**  
NOT TO SCALE

REV	DATE	BY	DESCRIPTION

SCALE	NO SCALE
WARNING	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
DESIGNED	M. COTTER
DRAWN	R. BEAUVAIS
CHECKED	

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CONDUIT RISER DIAGRAM  
AND DETAILS

SHEET  
E-2  
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