

GENERAL NOTES:

1. NORTH PORT UTILITIES (NPU) STANDARD SPECIFICATIONS AND STANDARD DETAILS SHALL GOVERN ALL UTILITY WORK. UNDER CERTAIN CIRCUMSTANCES THE STANDARD SPECIFICATIONS AND/OR STANDARD DETAILS MAY BE MODIFIED BY THE SPECIAL PROVISION SECTION OF THE CONTRACT DOCUMENTS IN WHICH CASE THE SPECIAL PROVISIONS SHALL PREVAIL. WHEN A CONFLICT EXISTS AMONG THE REQUIREMENTS OF A REFERENCED MATERIAL OR INSTALLATION STANDARD, THE REQUIREMENTS OF NPU SHALL PREVAIL. WHERE THE REQUIREMENTS OF A STATE OR LOCAL AGENCY HAVING JURISDICTION ARE MORE STRINGENT, THOSE REQUIREMENTS SHALL PREVAIL.
2. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED CITY AND STATE PERMITS PRIOR TO COMMENCING WORK AND SHALL KEEP ONE COPY OF ALL ISSUED PERMITS AT THE SITE AT ALL TIMES DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL ASSURE COMPLIANCE WITH ANY OSHA, EPA, AND/OR OTHER FEDERAL OR STATE OF FLORIDA RULES, REGULATIONS, OR OTHER REQUIREMENTS, AS EACH MAY APPLY.
4. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE ONE CURRENT COPY OF NPU SPECIFICATIONS AND DESIGN DETAILS AND ONE COPY OF THE CONTRACT DOCUMENTS INCLUDING ENGINEERING DRAWINGS, SPECIFICATIONS, SPECIAL PROVISIONS, ETC. NO FIELD CHANGES OR DEVIATION FROM THE CONTRACT DOCUMENTS SHALL BE MADE BY THE CONTRACTOR WITHOUT PRIOR NPU WRITTEN APPROVAL.
5. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES FROM DAMAGE. THE CONTRACTOR SHALL NOTIFY "SUNSHINE 811" PRIOR TO START OF CONSTRUCTION. THE EXISTING UTILITIES SHOWN ON THE ENGINEERING DRAWINGS ARE FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL MARK LOCATIONS OF UTILITIES BY PAINTING AND/OR FLAGGING THE UTILITY ALIGNMENT. THE CONTRACTOR SHALL PERFORM EXPLORATORY EXCAVATION(S) TO FIELD VERIFY THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COMPLY WITH ALL LAWS AND ORDINANCES COVERING THE PROTECTION OF SUCH WORK AND THE SAFETY MEASURES TO BE EMPLOYED THEREIN.
6. THE CONTRACTOR SHALL REVIEW THE SITE CONDITIONS PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL BRING DISCREPANCIES TO THE ATTENTION OF THE ENGINEER PRIOR TO COMMENCING WORK.
7. THE CONTRACTOR SHALL CONTACT THE APPLICABLE CITY DEPARTMENTS AND ALL OTHER UTILITY COMPANIES A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION.
8. THE CONTRACTOR SHALL COORDINATE WITH NPU TO ENSURE ALL AFFECTED UTILITY CUSTOMERS ARE NOTIFIED 48 HOURS IN ADVANCE IF WATER AND/OR SEWER SERVICE WILL BE INTERRUPTED DURING CONSTRUCTION.
9. IF EXISTING VALVES OR FITTINGS ARE NOT RESTRAINED PROPERLY, THE CONTRACTOR SHALL RESTRAIN EXISTING UTILITIES IN ACCORDANCE WITH NPU REQUIREMENTS AS APPROVED BY NPU.
10. THE CONTRACTOR SHALL INSTALL INCIDENTAL FITTINGS REQUIRED TO RESOLVE CONFLICTS BETWEEN EXISTING AND PROPOSED UTILITIES AS DETERMINED IN THE FIELD UNLESS OTHERWISE SHOWN ON THE PLANS. ALL MATERIALS, EQUIPMENT, AND LABOR TO RESOLVE INCIDENTAL CONFLICTS SHALL BE PAID FOR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS.

11. ALL VALVES SHALL BE INSTALLED OUTSIDE OF PAVEMENTS UNLESS OTHERWISE SPECIFICALLY SHOWN ON THE PLANS OR APPROVED BY NPU.
12. THE CONTRACTOR SHALL INSTALL ALL OPEN TRENCH BURY PIPE IN AN UPRIGHT VERTICAL POSITION SO ALL LETTERING AND/OR STRIPING CAN BE READ FROM ABOVE. DIRECTIONAL BORE HDPE PIPE SHALL MEET THIS REQUIREMENT TO THE EXTENT POSSIBLE.
13. THE CONTRACTOR SHALL PUSH HOME ALL SPIGOT ENDS OF PVC AND/OR DI PIPE INTO BELL ENDS WITHIN 1/2" OF THE MANUFACTURER'S INSERTION MARK. IF PIPE IS CUT, THE CONTRACTOR SHALL REPLACE AN INSERTION MARK FROM NEW END OF PIPE AS SHOWN ON THE ORIGINAL PIPE.
14. ALL STAINLESS STEEL SHALL BE 316 AUSTENITIC, NON-MAGNETIC, UNLESS OTHERWISE APPROVED BY NPU.
15. METALLIC WARNING TAPE MUST BE INSTALLED IN ACCORDANCE WITH NPU STANDARD DETAILS AND NPU STANDARD SPECIFICATIONS.

DUCTILE IRON EXTERNAL PROTECTIVE COATING

ALL EXPOSED DUCTILE IRON UTILITIES SHALL BE PAINTED AS FOLLOWS IN ACCORDANCE WITH NPU PAINTING SPECIFICATIONS:

TYPE	COLOR DESIGNATION*
POTABLE WATER LINES	BLUE (PANTONE 287)
POTABLE WATER VALVE CAPS	BLUE (PANTONE 287)
FIRE LINES	ANSI SAFETY RED (PANTONE 485)
FIRE LINE VALVE CAPS	ANSI SAFETY RED (PANTONE 485)
WASTEWATER LINES	ANSI SAFETY GREEN (PANTONE 341C)
WASTEWATER VALVE CAPS	ANSI SAFETY GREEN (PANTONE 341C)
RECLAIMED WATER LINES	PURPLE (PANTONE 522C)
RECLAIMED WATER VALVE CAP	PURPLE (PANTONE 522C)
FIRE HYDRANTS	SHERWIN-WILLIAMS SAFETY YELLOW #7543
FIRE HYDRANT VALVE CAPS	SHERWIN-WILLIAMS SAFETY YELLOW #7543

**EQUIVALENT COLORS MATCHING THESE COLORS ARE ACCEPTABLE. PROVIDE WITH SHOP DRAWING SUBMITTAL DIRECT COLOR COMPARISONS OF COLOR NUMBERS AVAILABLE FROM MANUFACTURER SUBMITTED.*

CONSTRUCTION IN STREETS AND ROAD RIGHT-OF-WAYS:

1. OPEN ROAD CUTS REQUIRE PRIOR APPROVAL/PERMIT OF THE CITY, STATE, OR OTHER AGENCY HAVING JURISDICTION. CONSTRUCTION WITHIN THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) RIGHT-OF-WAY SHALL CONFORM TO FLORIDA DOT CONSTRUCTION STANDARDS.
2. THE CONTRACTOR SHALL MAINTAIN PEDESTRIAN TRAFFIC AT THE JOB SITE DURING CONSTRUCTION IN ACCORDANCE WITH THE PERMIT AND SAFETY REQUIREMENTS FOR THE PROJECT. PROPER DETOUR SHALL BE PROVIDED AS NECESSARY.
3. EXCAVATION SHALL BE CONDUCTED IN A MANNER TO CAUSE THE LEAST POSSIBLE INTERRUPTION TO TRAFFIC. WHERE TRAFFIC MUST CROSS EXCAVATIONS, THE CONTRACTOR SHALL PROVIDE SUITABLE BRIDGES AT STREET INTERSECTIONS AND DRIVEWAYS.
4. NOT MORE THAN ONE BLOCK OF EXCAVATION SHALL BE OPEN PER CREW AT ANY ONE TIME, AND THIS DISTANCE SHALL BE REDUCED IF CONSTRUCTION CAUSES EXCESSIVE INTERFERENCE WITH TRAFFIC. EXCAVATED OR OTHER MATERIAL STORED ADJACENT TO OR PARTIALLY UPON A ROADWAY PAVEMENT SHALL BE ADEQUATELY MARKED FOR TRAFFIC AND PEDESTRIAN SAFETY AT ALL TIMES. ALL EXCAVATED AND/OR STORED MATERIAL SHALL BE REMOVED FROM THE PAVEMENTS AT THE END OF THE WORK DAY UNLESS OTHERWISE PROVIDED FOR IN THE CONTRACT DOCUMENTS.
5. THE CONTRACTOR SHALL CARRY OUT THE WORK SO AS NOT TO DENY REASONABLE ACCESS TO PRIVATE PROPERTY. ALL ACCESS SHALL BE RESTORED AT THE END OF THE WORK DAY.
6. ALL UTILITY ACCESS MANHOLES, VALVES, AND FIRE HYDRANTS AND MAIL BOXES SHALL BE ACCESSIBLE AT ALL TIMES DURING CONSTRUCTION.
7. ROAD SURFACE RESTORATION SHALL BE PERFORMED IN ACCORDANCE WITH CITY, FDOT, OR OTHER AGENCY REQUIREMENTS.
8. THE CONTRACTOR SHALL REPLACE ALL PAVEMENT MARKINGS DAMAGED DURING THE PROJECT.

TRAFFIC REGULATIONS AND MAINTENANCE OF TRAFFIC:

1. TRAFFIC CONTROL ON ALL CITY AND STATE HIGHWAY RIGHT-OF-WAYS SHALL COMPLY WITH THE REQUIREMENTS OF THE US DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" AND REQUIREMENTS OF THE STATE AND/OR ANY OTHER LOCAL AGENCY HAVING JURISDICTION.
2. WORK AFFECTING TRAFFIC ON ANY CITY STREET, ROADWAY, RIGHT-OF-WAY, BIKE PATH, OR SIDEWALK REQUIRES THE PREPARATION AND SUBMITTAL OF MAINTENANCE OF TRAFFIC (MOT) PLAN BY THE CONTRACTOR TO NPU. THE MOT PLAN SHALL BE APPROVED BY THE PUBLIC WORKS ENGINEER OR HIS/HER DESIGNEE PRIOR TO THE START OF CONSTRUCTION.
3. WORK AFFECTING TRAFFIC ON ANY STATE ROAD OR HIGHWAY REQUIRES THE PREPARATION AND SUBMITTAL OF A MOT PLAN BY THE CONTRACTOR TO THE FDOT. THE MOT PLAN SHALL BE APPROVED BY THE FDOT PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL BE IN FULL COMPLIANCE WITH THE APPROVED MOT PLAN AT ALL TIMES.
5. THE CONTRACTOR SHALL FURNISH AND MAINTAIN ALL TRAFFIC CONTROL SIGNS AND DEVICES, BARRICADES, FLASHERS, ETC., IN WORKING CONDITION AT ALL TIMES.
6. ROAD CLOSURE WHETHER TEMPORARY ON A DAILY BASIS OR PERMANENTLY DURING CONSTRUCTION REQUIRES THE APPROVAL OF A DETOUR PLAN BY THE AGENCY OR AGENCIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY SIGNAGE WHEN THE ROADWAY IS TO BE CLOSED OR TRAFFIC DETOURED. WHEN ROAD CLOSURES ARE TEMPORARY ALL STREETS SHALL BE RE-OPENED TO TRAFFIC BY THE END OF THE WORK DAY AND ALL DETOUR SIGNS COVERED OR REMOVED. WHEN ROADS ARE PERMANENTLY CLOSED DURING CONSTRUCTION ACCESS MUST BE PROVIDED TO PROPERTIES LOCATED ON THE CLOSED ROAD AT THE END OF EACH WORK DAY AND ON WEEKENDS.
7. DURING NON-DAYLIGHT HOURS OR RESTRICTED VISIBILITY, THE CONTRACTOR SHALL PROPERLY ILLUMINATE THE WORK BY THE INSTALLATION AND MAINTENANCE OF SUITABLE LIGHTS OR FLARES ESPECIALLY ALONG OR ACROSS THOROUGHFARES.

ENVIRONMENTAL REQUIREMENTS:

1. THE CONTRACTOR SHALL FOLLOW FDEP'S NPDES STORMWATER PROGRAM FOR THE USE OF BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE EROSION AND SEDIMENTATION AND TO PROPERLY MANAGE RUNOFF. IF NECESSARY, THE CONTRACTOR WILL BE RESPONSIBLE TO OBTAIN NECESSARY PERMIT'S AND MAINTAIN A STORMWATER POLLUTION PREVENTION PLAN.
2. PRIOR TO THE START AND DURING CONSTRUCTION ACTIVITIES, FOR AREAS WITHIN AND ADJOINING THE LIMITS OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE PROTECTION BARRICADES/SILT FENCES/ADEQUATE MEASURES IN ACCORDANCE WITH CITY, COUNTY, AND STATE REQUIREMENTS FOR ALL DESIGNATED TREES/PLANTS TO BE PROTECTED, WETLANDS, THREATENED AND/OR ENDANGERED SPECIES, ETC.

BEDDING, BACKFILL, AND COMPACTION:

1. ALL PIPES AND BEDDING MATERIAL SHALL BE NEW MATERIAL UNLESS OTHERWISE APPROVED BY NPU.
2. BEDDING AND BACKFILL MATERIALS SHALL BE IN ACCORDANCE WITH NPU TECHNICAL SPECIFICATIONS 311020 AND 311030.
3. BACKFILLING OF TRENCHES SHALL NOT BE ALLOWED UNTIL THE WORK HAS BEEN APPROVED BY NPU. WORK BACKFILLED OR CONCEALED WITHOUT THE KNOWLEDGE OF NPU SHALL BE UNCOVERED OR EXPOSED FOR INSPECTION AT NO COST TO THE OWNER.
4. READY-MIX FLOWABLE FILL OR CONTROLLED LOW STRENGTH MATERIAL (CLSM) MAY BE SUBSTITUTED AS AN ALTERNATIVE TO COMPACTED SOIL WITH THE APPROVAL OF NPU OR WHERE SHOWN ON THE PLANS. APPLICATIONS FOR THE MATERIAL INCLUDE BEDDINGS, ENCASEMENTS, CLOSURES FOR TANKS AND PIPES, AND GENERAL BACKFILL APPLICATIONS FOR TRENCHES AND ABUTMENTS. FLOWABLE FILL SHALL BE DESIGNED TO BE EXCAVATED AND PUMPED FOR APPLICATIONS WHERE STRENGTH IS MORE IMPORTANT THAN EXCAVABILITY. IF FLOWABLE FILL IS SPECIFIED, ULTIMATE COMPRESSIVE STRENGTH SHALL BE LESS THAN 200 PSI AT 28 DAYS. FLOWABLE FILL IS NOT ACCEPTABLE FOR USE AS BACKFILL UNDER PAVEMENT, SIDEWALKS, OR OTHER HARD SURFACES UNLESS OTHERWISE APPROVED IN WRITING BY THE AUTHORITY WITH JURISDICTION.
5. THE CONTRACTOR SHALL COMPACT ALL PORTIONS OF A TRENCH WITHIN 7.5 FEET OF EDGE OF PAVEMENT TO 98% DENSITY, FLORIDA METHOD 1-T 180, AND 95% FOR OTHER AREAS WITHIN THE RIGHT OF WAY. IF MORE STRINGENT COMPACTION REQUIREMENTS ARE SHOWN ON THE PLANS OR IN THE TECHNICAL SPECIFICATIONS, THEY SHALL PREVAIL.
6. COMPACTION OF BACKFILL MATERIAL UNDER PAVEMENT, SIDEWALKS, OR OTHER HARD SURFACES SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
7. DENSITY TESTS SHALL BE PERFORMED FOR EACH 6-INCH LIFT AT A MINIMUM OF ONE TEST PER 200 FEET OF TRENCH.
8. ALL WELL POINT HOLES UNDER PARKING, DRIVING, OR ROADWAY SURFACES SHALL BE BACKFILLED WITH CONCRETE IMMEDIATELY AFTER PULLING THE WELL POINTS. ALL OTHER WELL POINT HOLES SHALL BE BACKFILLED WITH FDOT NO. 89 STONE IMMEDIATELY AFTER REMOVING THE WELL POINTS UNLESS SPECIFIED OR DIRECTED TO DO OTHERWISE BY NPU.

MATERIALS AND METHODS OF CONSTRUCTION:

ALL MATERIALS AND CONSTRUCTION METHODS USED IN THE CONSTRUCTION OF NPU'S UTILITIES INCLUDING BUT NOT LIMITED TO PIPING, VALVES, FITTINGS, RESTRAINTS, FIRE HYDRANTS, BLOW-OFFS, GRAVITY SEWER MAINS, MANHOLES, LIFT STATIONS, WATER AND SEWER SERVICES AND ALL ASSOCIATED APPURTENANCES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF NPU'S STANDARD DETAILS UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS.

RESTORATION:

1. THE CONTRACTOR SHALL RESTORE ALL DISTURBED OR DAMAGED AREAS TO THE SAME OR BETTER CONDITION THAN THAT PRIOR TO THE START OF CONSTRUCTION.
2. ALL AREAS IN EXISTING RIGHT-OF-WAYS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO EQUAL OR BETTER THAN THE ORIGINAL CONDITION AND GROUND COVER TO THE SATISFACTION OF THE LOCAL OR STATE AGENCY HAVING JURISDICTION.
3. ALL DISTURBED SWALE OR CANAL GRADES SHALL BE RESTORED TO THE GRADES AND ELEVATIONS THAT EXISTED PRIOR TO DISTURBANCE UNLESS OTHERWISE SPECIFIED ON THE PLANS OR IN THE TECHNICAL SPECIFICATIONS.

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GENERAL NOTES

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TABLE 1				
HORIZONTAL BENDS AND ELBOWS				
LENGTH OF RESTRAINED JOINT PIPE (FEET)				
NOMINAL PIPE DIAMETER	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
4	14	6	3	2
6	20	9	4	2
8	26	11	6	3
10	30	13	7	4
12	36	15	8	4
16	47	20	10	5
20	57	24	12	6
24	66	28	13	7
30	79	33	16	8
36	91	38	19	9

TABLE 2	
TEES AND WYES	
NOMINAL PIPE DIAMETER OF BRANCH PIPE (INCHES)	RESTRAINED LENGTH ALONG BRANCH PIPE (FEET)
4	11
6	21
8	32
10	48
12	65
16	97
20	128
24	156
30	196
36	233

TABLE 3		
REDUCERS		
NOMINAL PIPE DIAMETER		RESTRAINED LENGTH ALONG PIPE (FEET)
LARGE END (INCHES)	SMALL END (INCHES)	
6	4	33
8	6	35
10	4	81
10	6	61
10	8	34
12	4	103
12	6	86
12	8	63
12	10	35
16	12	65
20	16	66
24	20	66
30	24	94
36	30	95

TABLE 4	
DEAD ENDS AND VALVES	
NOMINAL PIPE DIAMETER (INCHES)	RESTRAINED LENGTH ALONG PIPE (FEET)
4	45
6	63
8	83
10	100
12	118
16	153
20	187
24	220
30	267
36	313

NOTES: (ALL TABLES)

1. ALL FITTINGS SHALL HAVE RESTRAINED JOINTS UNLESS OTHERWISE NOTED.
2. ALL PIPE SHALL BE RESTRAINED IN ACCORDANCE WITH THESE TABLES OR PER THE PLANS, WHICHEVER IS GREATER.
3. WHERE TWO OR MORE FITTINGS ARE TOGETHER, RESTRAIN JOINTS IN ACCORDANCE WITH FITTING WHICH YIELDS GREATEST LENGTH OF RESTRAINED PIPE.
4. RESTRAINT TABLES APPLY TO TEST PRESSURE OF 150 PSI OR LESS.
5. FOR PIPE ENCASED IN POLYETHYLENE, INCREASE THE GIVEN VALUES BY A FACTOR OF 1.5.
6. LENGTH OF RESTRAINED PIPE INDICATED IN TABLES 1 & 4 SHALL BE THE LENGTH OF PIPE ON EACH SIDE OF VALVE OR FITTING.
7. LENGTH OF RESTRAINED PIPE INDICATED IN TABLE 2 SHALL BE THE LENGTH OF PIPE ALONG BRANCH OF PIPE. PIPE ON BOTH SIDES OF BRANCH SHALL HAVE A MINIMUM LAYING LENGTH OF 10 FEET.
8. LENGTH OF RESTRAINED PIPE INDICATED IN TABLE 3 SHALL BE THE LENGTH OF PIPE ON LARGE END.

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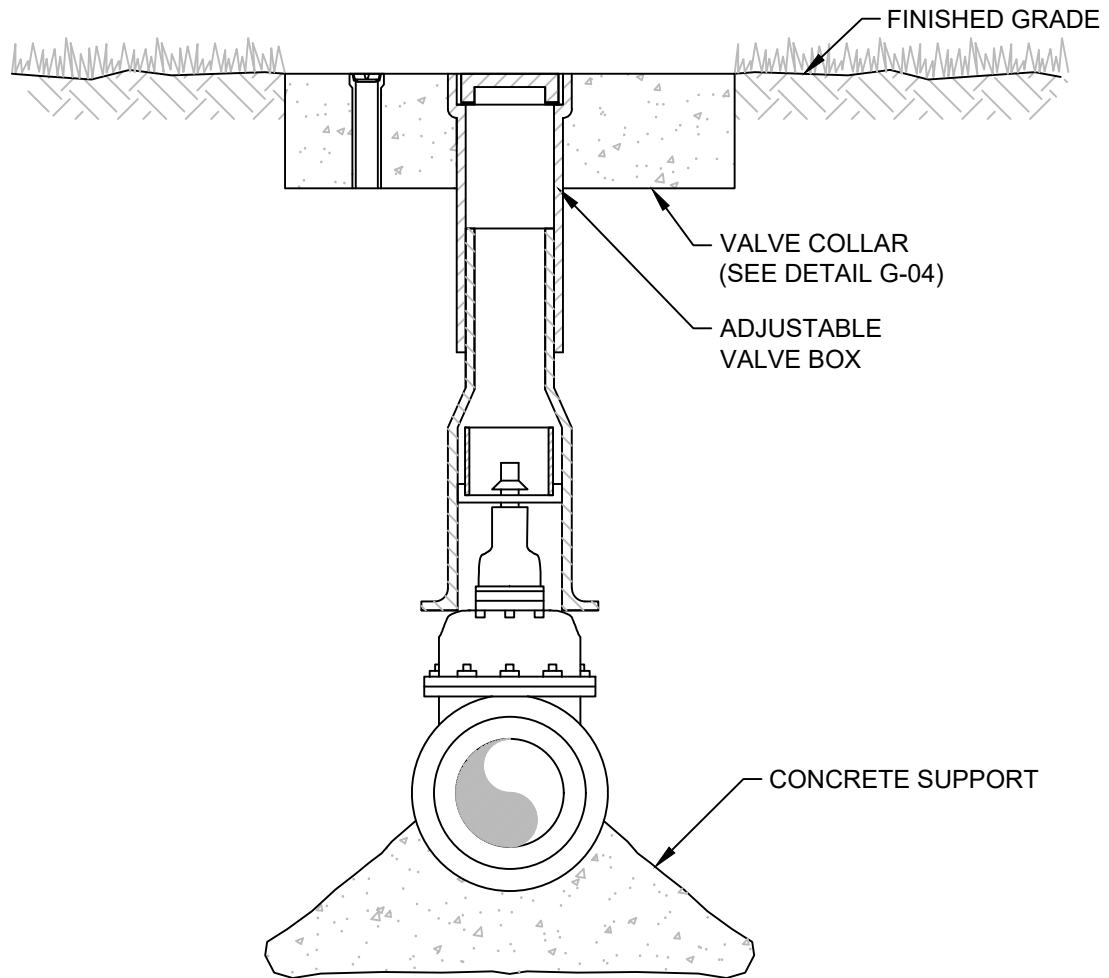


RESTRAINT TABLE

DETAIL

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NOTES:

1. WHERE THE OPERATING NUT IS GREATER THAN 48 INCHES BELOW THE TOP OF THE VALVE BOX, AN EXTENSION STEM AND ALIGNMENT RINGS SHALL BE PROVIDED TO BRING THE OPERATING NUT TO BETWEEN 6 AND 30 INCHES BELOW THE TOP OF THE VALVE BOX.

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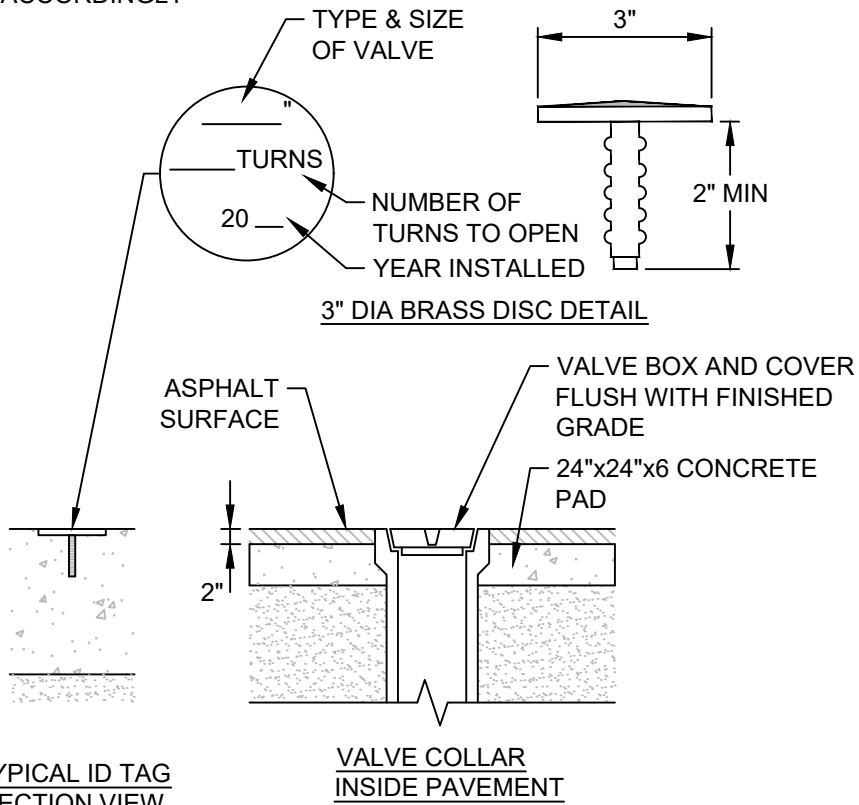
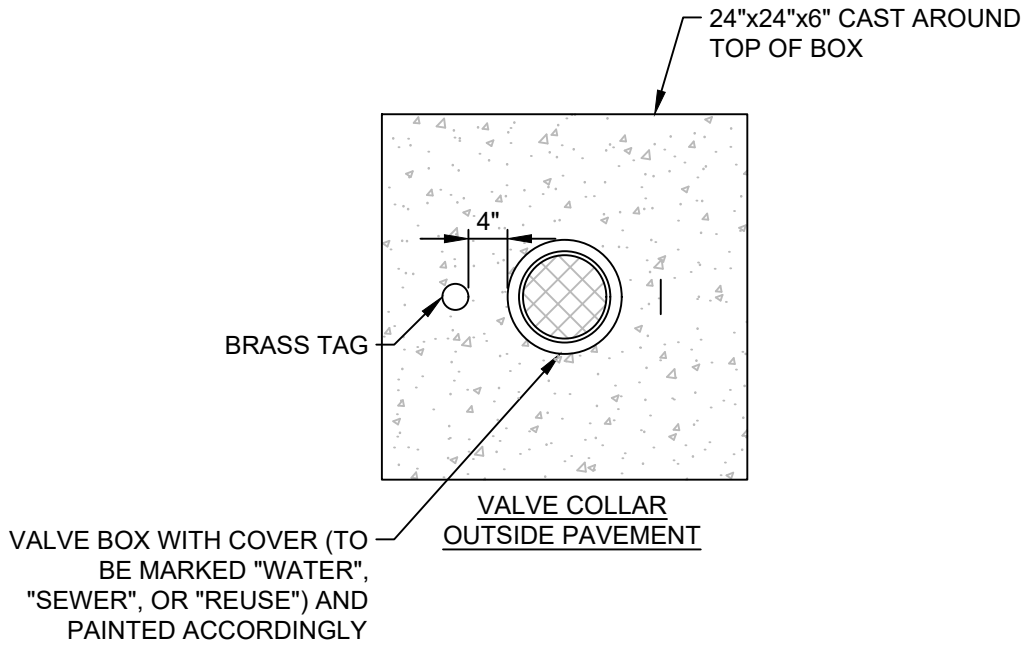


TYPICAL VALVE AND CONCRETE COLLAR

DETAIL

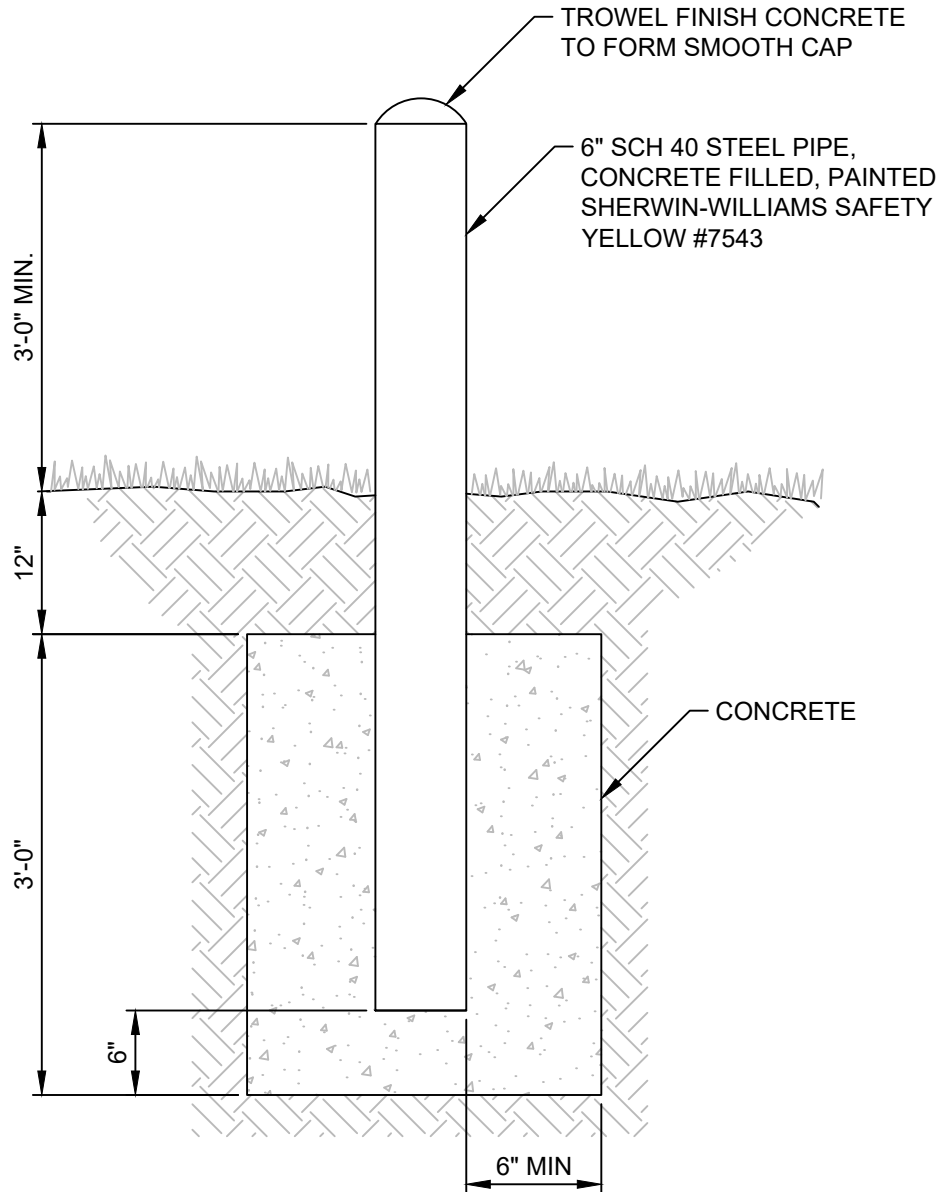
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NOTES:

1. VALVE PAD SHALL BE USED IN ALL LOCATIONS, INCLUDING SIDEWALK, DRIVEWAY AND ROADWAY APPLICATIONS, AND EXPANSION JOINTS SHALL BE USED IN ALL INSTANCES.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI AT 28 DAYS AND SHALL HAVE FIBER MESH REINFORCEMENT.
3. BRASS IDENTIFICATION DISC AND VALVE COLLAR SHALL BE REQUIRED FOR ALL VALVES LOCATED OUTSIDE OF ROADWAY PAVEMENT.
4. IN ROADWAYS, SET ID TAG IN TOP OF CURB WITHIN 3 FEET OF NEAREST EDGE OF PAVEMENT OR BACK OF CURB. IN LOCATIONS WHERE THERE IS NOT A CURB, SET ID TAG IN CONCRETE PAD.



NOTES:

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI AT 28 DAYS.
2. SITE LOCATION, AND THE INSTALLATION TO BE PROTECTED, MAY REQUIRE A LARGER DIAMETER PIPE AND CONCRETE ANCHOR.

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TYPICAL BOLLARD

DETAIL

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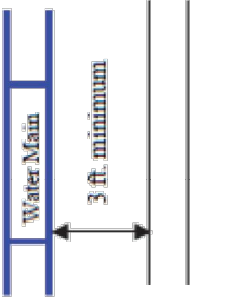
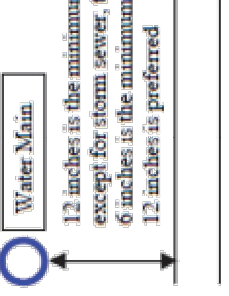
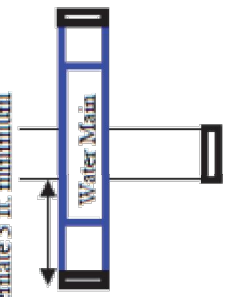
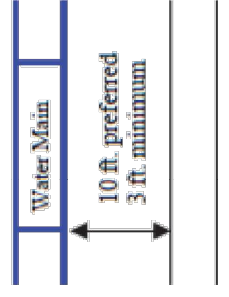
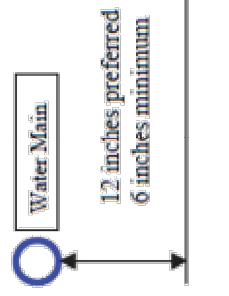
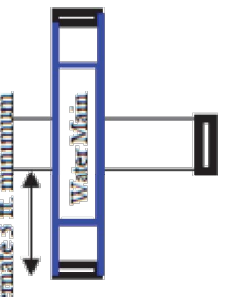
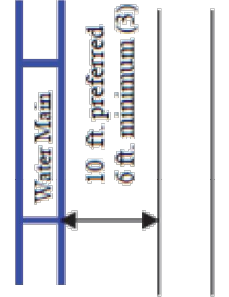
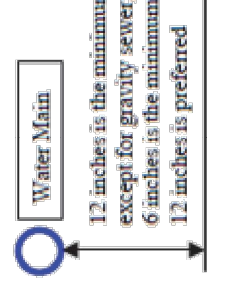
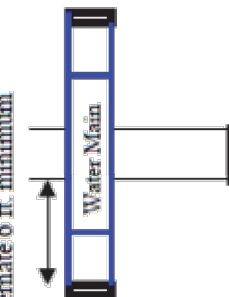
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MAIN SEPARATION

DETAIL

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Other Pipe	Horizontal Separation	Crossings (1)	Joint Spacing @ Crossings (Full Joint Centered)
Storm Sewer, Stormwater Force Main, Reclaimed Water (2)	 <p>Water Main 3 ft. minimum</p>	 <p>Water Main 12 inches is the minimum, except for storm sewer, then 6 inches is the minimum and 12 inches is preferred</p>	 <p>Alternate 3 ft. minimum</p>
Vacuum Sanitary Sewer	 <p>Water Main 10 ft. preferred 3 ft. minimum</p>	 <p>Water Main 12 inches preferred 6 inches minimum</p>	 <p>Alternate 3 ft. minimum</p>
Gravity or Pressure Sanitary Sewer, Sanitary Sewer Force Main, Reclaimed Water (4)	 <p>Water Main 10 ft. preferred 6 ft. minimum (3)</p>	 <p>Water Main 12 inches is the minimum, except for gravity sewer, then 6 inches is the minimum and 12 inches is preferred</p>	 <p>Alternate 6 ft. minimum</p>
On-Site Sewage Treatment & Disposal System	10 ft. minimum	---	---

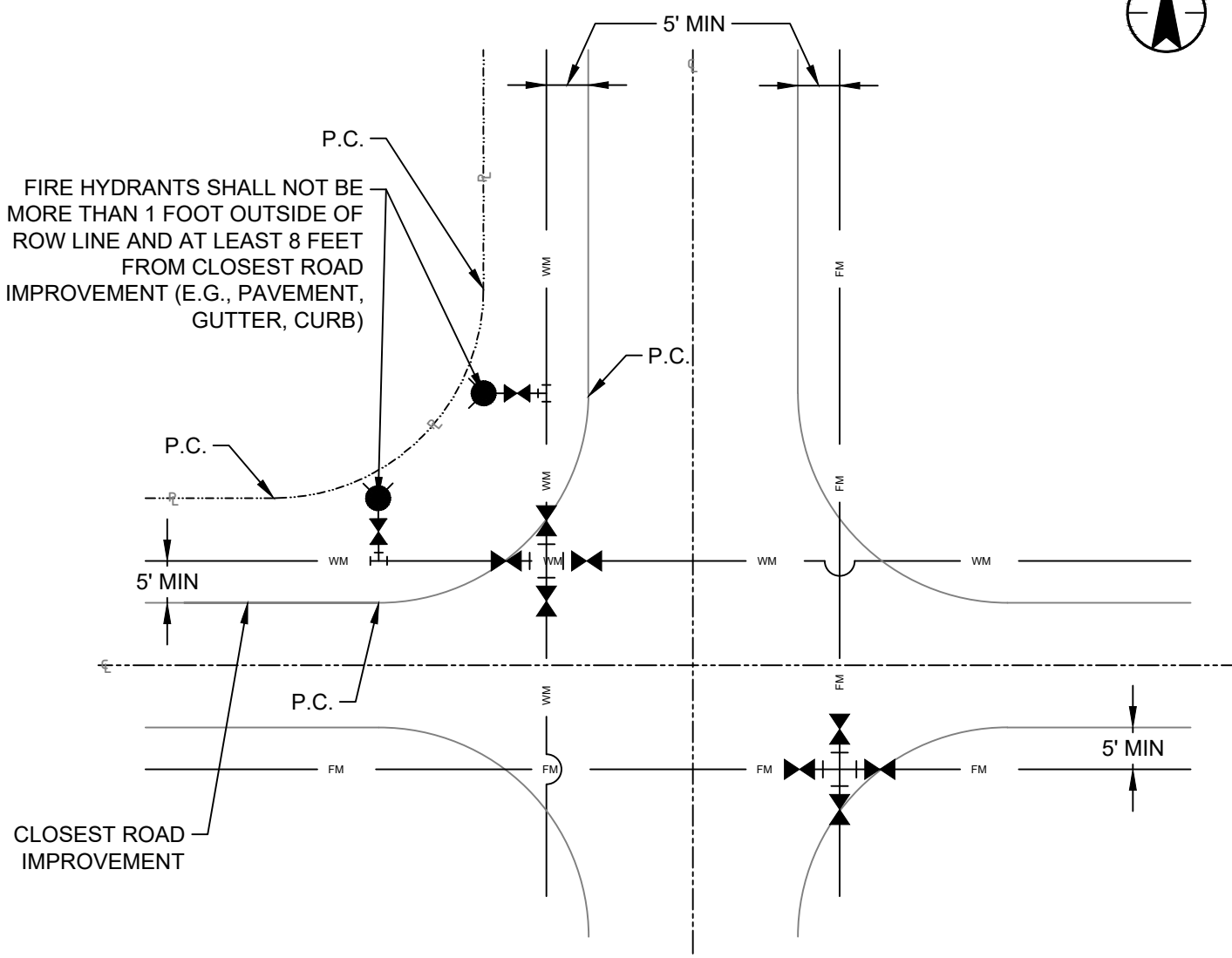
(1) Water main should cross above other pipe. When water main must be below other pipe, the minimum separation is 12 inches.

(2) Reclaimed water regulated under Part III of Chapter 62-610, F.A.C.

(3) 3 ft. for gravity sanitary sewer where the bottom of the water main is laid at least 6 inches above the top of the gravity sanitary sewer.

(4) Reclaimed water not regulated under Part III of Chapter 62-610, F.A.C.

Disclaimer - This document is provided for your convenience only. Please refer to F.A.C. Rule 62-655-314 for additional construction requirements.



NOTES:

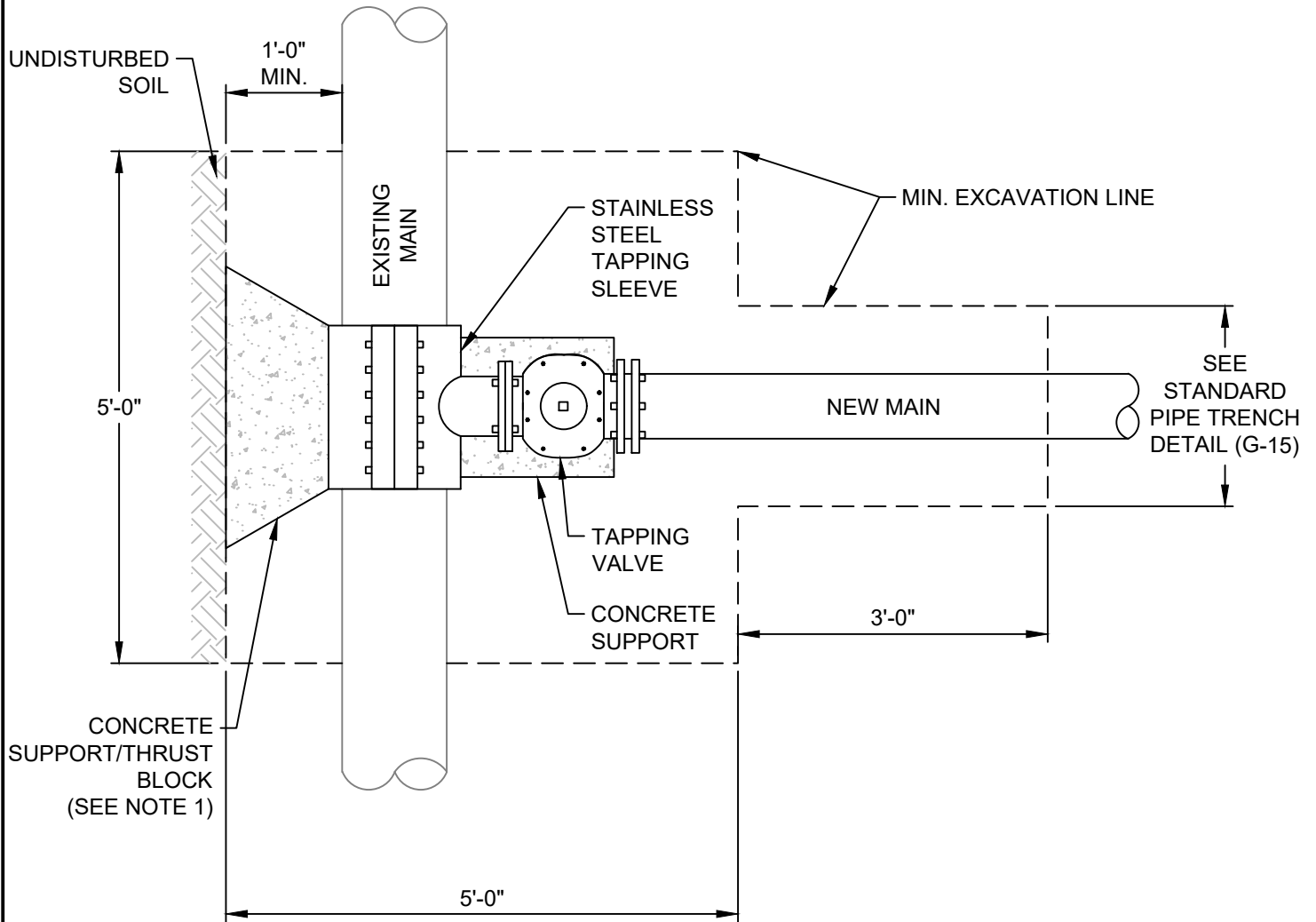
1. (R)=PROPERTY LINE, EASEMENT LINE, OR RIGHT OF WAY LINE.
2. ALL VALVES SHALL BE PLACED AT THE FITTING UNLESS APPROVED BY NPU.
3. ALL MAINS SHALL BE LOCATED A MINIMUM OF 5 FEET FROM EDGE OF ROADWAY IMPROVEMENTS (PAVEMENT, GUTTERS, CURBS, ETC..) UNLESS APPROVED BY NPU.

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LOCATION OF MAINS, VALVES, AND HYDRANTS

DETAIL
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NOTES:

1. CONCRETE THRUST BLOCK SHALL BE REQUIRED WHEN TAPPING AN EXISTING ASBESTOS CEMENT PIPE. THE THRUST BLOCK MAY BE OMITTED WHEN TAPPING A PVC, DUCTILE IRON, OR CAST IRON PIPE.
2. WRAP TAPPING SLEEVE AND VALVE WITH POLYETHYLENE SHEETING PRIOR TO PLACING CONCRETE.
3. CONCRETE SUPPORT BLOCK SHALL BE 6 INCHES (MIN) THICK.
4. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI AT 28 DAYS.
5. THE TAPPING SLEEVE AND VALVE SHALL BE PRESSURE TESTED AFTER INSTALLATION ON THE MAIN BUT PRIOR TO TAPPING OPERATIONS. TEST PRESSURE SHALL BE 150 PSI. TEST DURATION SHALL BE 15 MINUTES. NO LEAKAGE IS ALLOWED.
6. JOINT RESTRAINTS SHALL BE PROVIDED ON THE NEW MAIN IN ACCORDANCE WITH THE NPU RESTRAINT TABLE.

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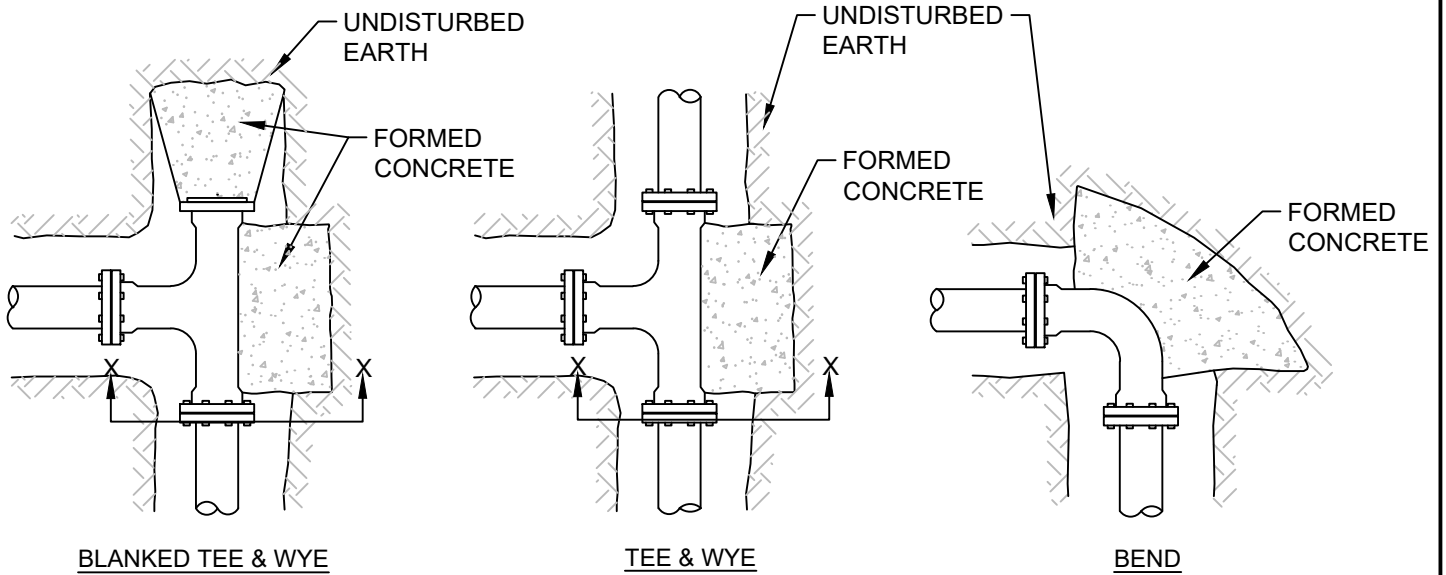


TAPPING SLEEVE AND VALVE

DETAIL

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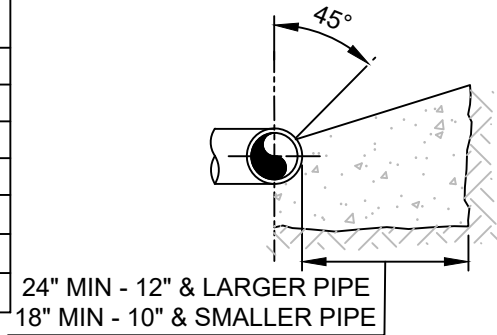


BLANKED TEE & WYE

TEE & WYE

BEND

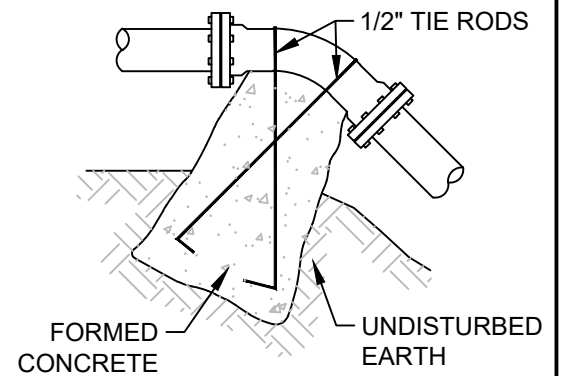
THRUST BLOCK BEARING AREA (SQ. FT.)					
SIZE OF PIPE	TEES & PLUGS	90° BENDS	45° BENDS	22.5° BENDS	11.25° BENDS
4"	2.5	2.5	1.5	1.0	1.0
6"	5.0	5.0	3.0	1.5	1.0
8"	9.0	9.0	5.0	2.5	1.5
10"	14.0	14.0	7.5	4.0	2.0
12"	20.0	20.0	11.0	5.5	3.0
14"	27.0	27.0	15.0	7.5	4.0
16"	35.0	35.0	19.0	10.0	5.0



SECTION X-X

NOTES:

1. THRUST BLOCKS MAY BE USED IN CONJUNCTION WITH THE RESTRAINED JOINT TABLE WHEN APPROVED BY NPU.
2. WRAP ALL FITTINGS WITH POLYETHYLENE SHEETING BEFORE POURING THRUST BLOCKS.
3. ALL THRUST BLOCKS SHALL BE LEFT OPEN FOR INSPECTION BY NPU PRIOR TO BACKFILLING.
4. ALL BEARING SURFACES SHALL BE CARRIED TO UNDISTURBED SOIL.
5. THIS TABLE SHOWS MINIMUM SIZE THRUST BLOCKS FOR SOIL WITH A 2,000 PSF SOIL BEARING CAPACITY (A-1 THRU A-3 CLEAN SAND AND GRAVELS).
6. POOR SOIL (A-1 THRU A-8, SILTY SOILS, CLAYS, MUCK & PEAT) SHALL REQUIRE LARGER THRUST BLOCKS.
7. THRUST BLOCK SIZES SHALL BE BASED ON 150 PSI HYDROSTATIC TEST PRESSURE.
8. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI AT 28 DAYS.
9. VERTICAL BENDS ONLY:
 - a. THRUST BLOCKS SHALL BE SIZED BY ENGINEER AND APPROVED BY NPU PRIOR TO CONSTRUCTION.
 - b. 1/2" TIE RODS SHALL BE ANCHORED TO REACTION BLOCK AND COATED WITH 2 COATS OF BITUMINOUS EPOXY (16 MILS DRY THICKNESS).



VERTICAL BENDS

general details 4-2024.dwg Apr-2024

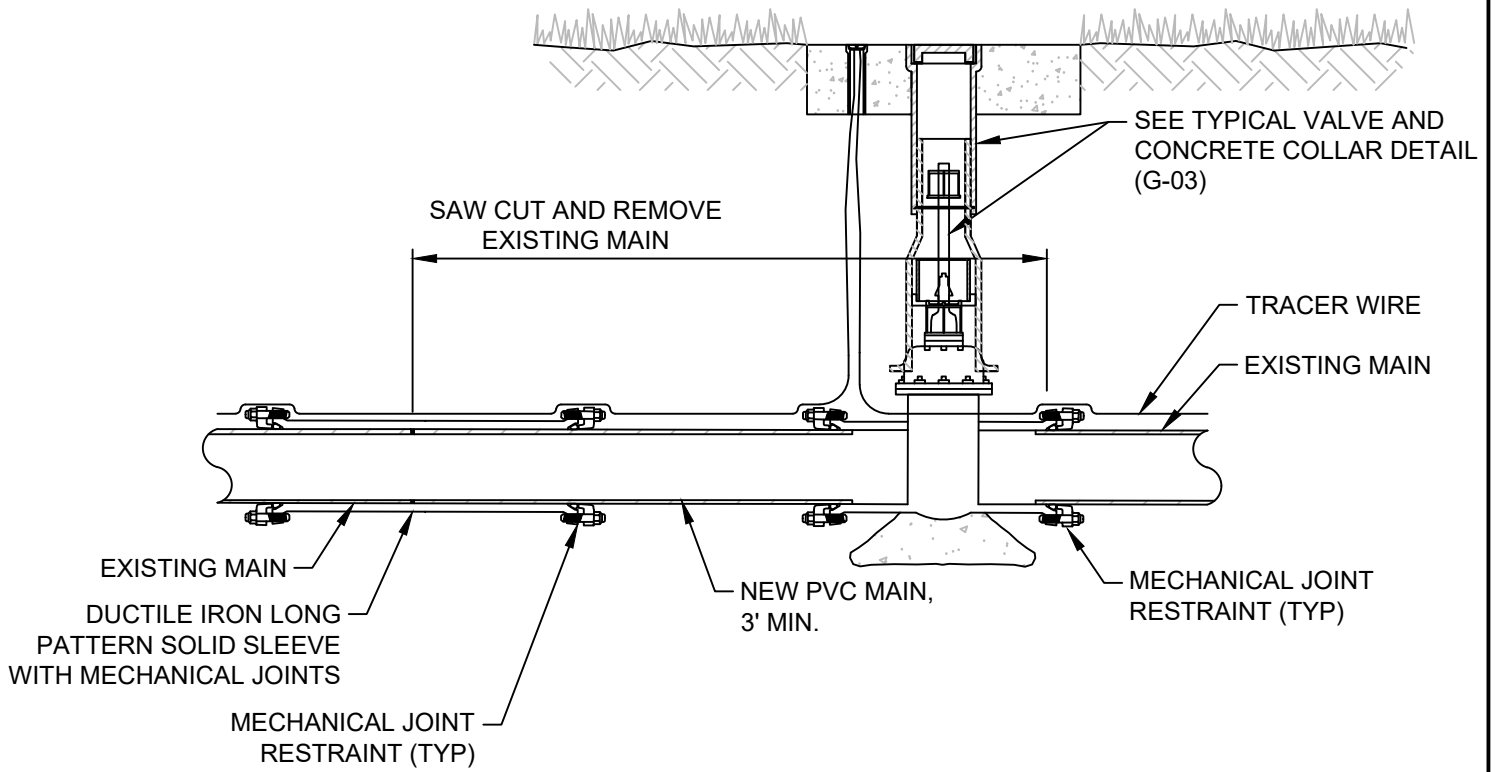


THRUST BLOCKS

DETAIL

G-09

SHEET 1 OF 1



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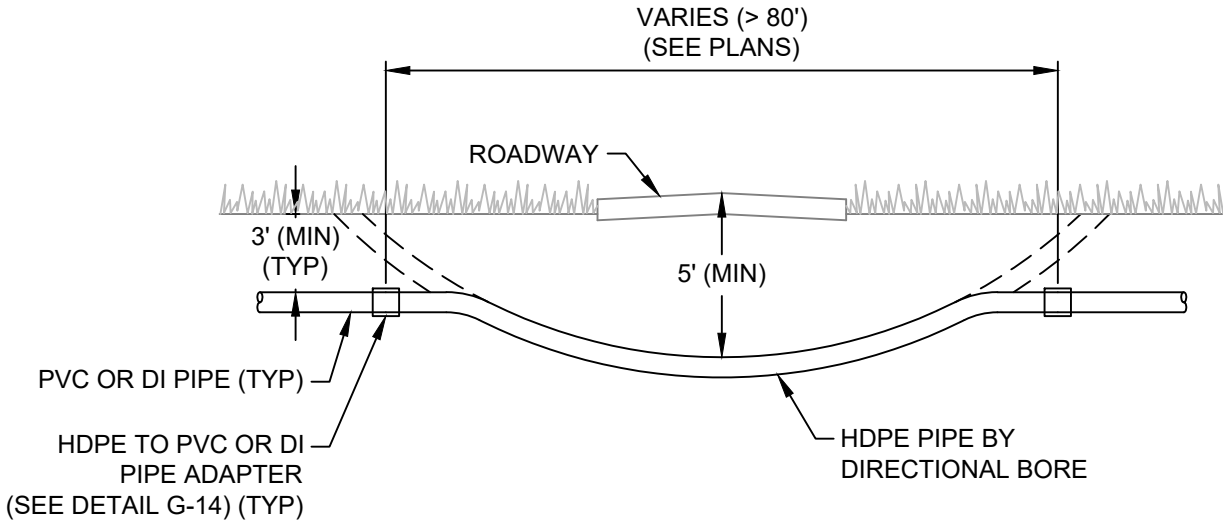


CUT-IN VALVE

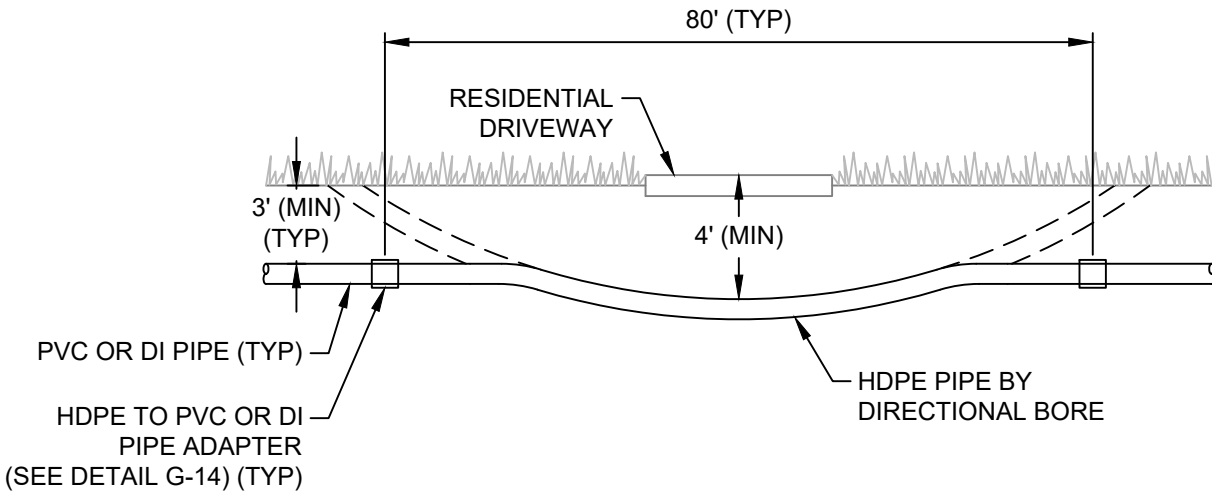
DETAIL

G-10

SHEET 1 OF 1



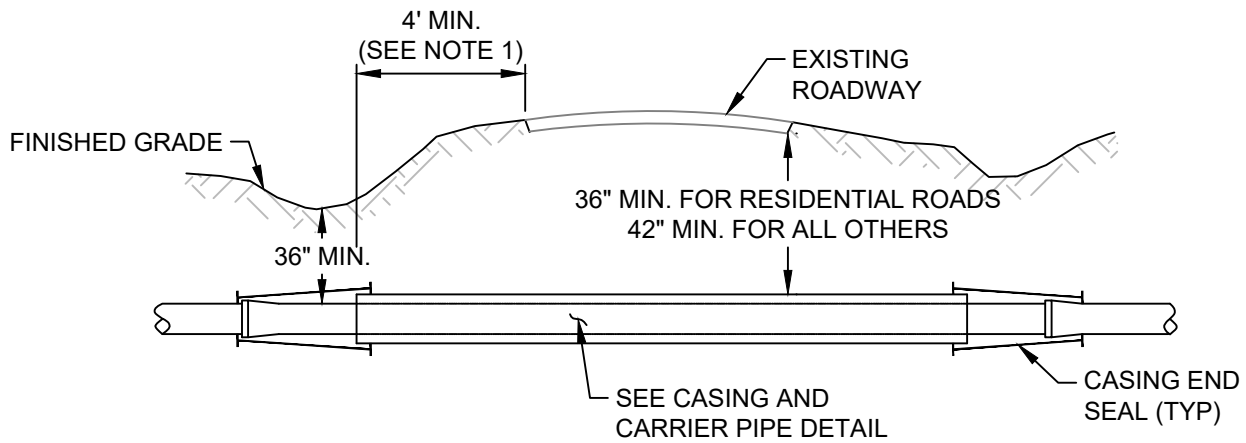
TYPICAL CITY OF NORTH PORT CROSSING BY DIRECTIONAL BORE



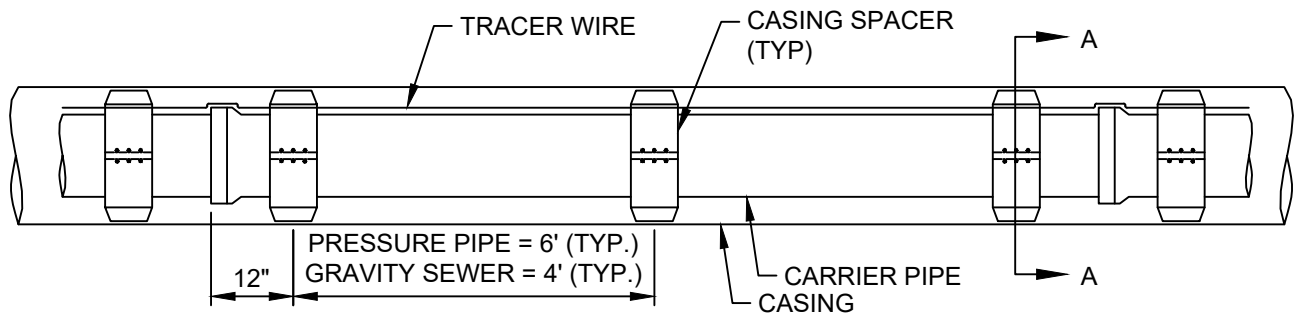
TYPICAL DRIVEWAY CROSSING BY DIRECTIONAL BORE

NOTES:

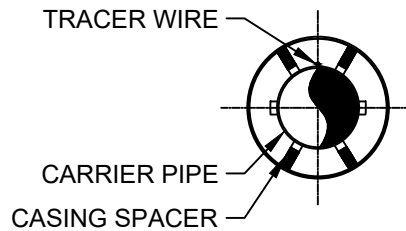
1. THE DEPTH SHALL BELOW ROADWAY/DRIVEWAY SHALL BE SUFFICIENT TO PREVENT HEAVE OR SETTLEMENT.
2. THE CONTRACTOR SHALL EXCAVATE MATERIAL BENEATH THE ENDS OF THE HDPE PIPE AND CONNECT TO PVC OR DI PIPE WITHOUT VERTICAL BENDS.



PROFILE



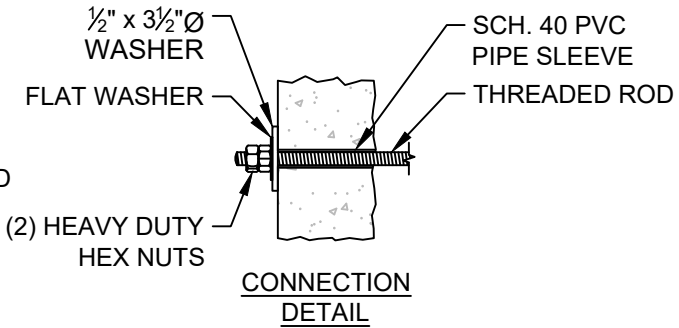
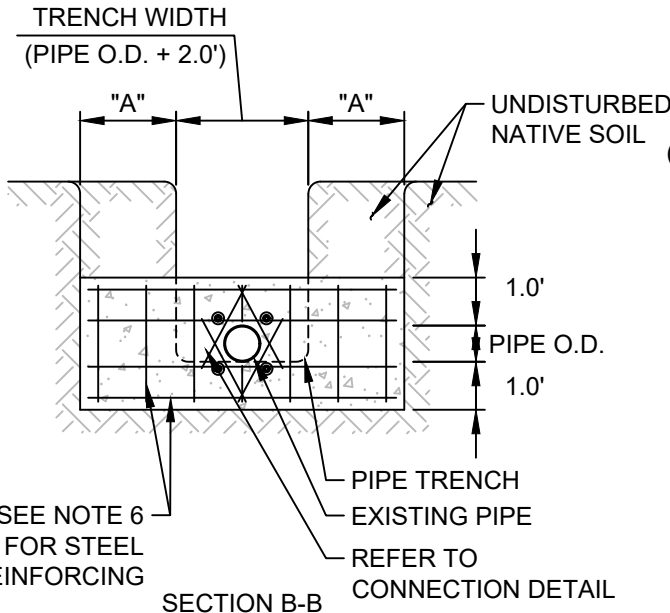
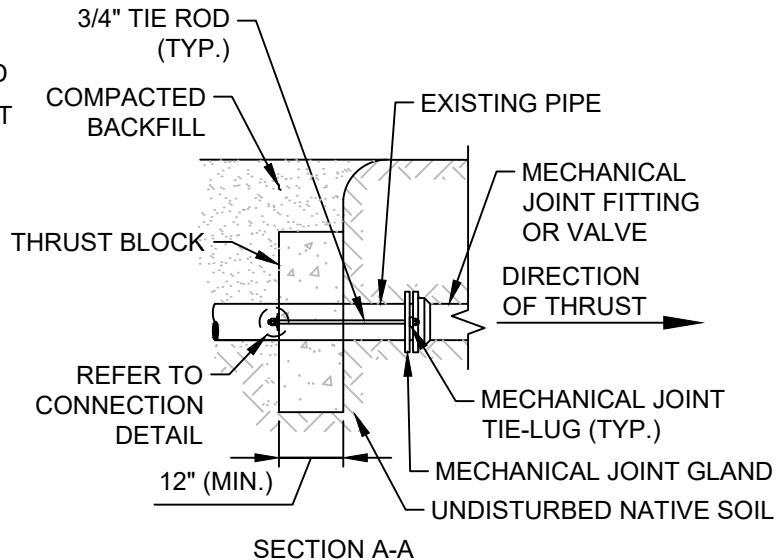
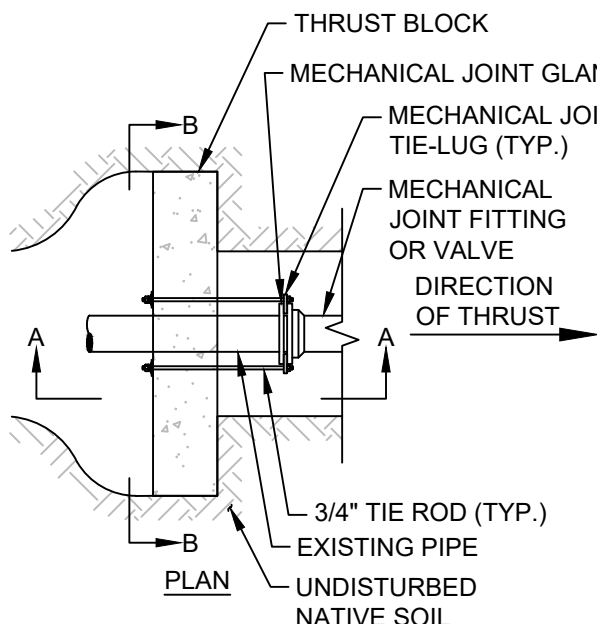
CASING AND CARRIER PIPE DETAIL



SECTION A-A

NOTES:

1. THE CASING SHALL BE EXTENDED BEYOND THE EDGE OF PAVEMENT IN ACCORDANCE WITH THE RIGHT OF WAY AUTHORITY'S REQUIREMENTS. THE MINIMUM LENGTH SHALL BE 4 FEET.
2. CARRIER PIPE SHALL BE RESTRAINED JOINT.
3. TRACER WIRE SHALL BE STRAPPED TO TOP OF THE CARRIER PIPE.
4. NO FILL OR FOREIGN MATERIAL SHALL BE PERMITTED WITHIN THE ANNULAR SPACE BETWEEN THE CARRIER PIPE AND CASING.
5. CASING END SEALS SHALL BE SECURED WITH STAINLESS STEEL BANDING STRAPS WITH WORM GEAR MECHANISMS.



VALVES AND DEAD ENDS		
NOMINAL PIPE SIZE	"A" (FEET)	NO. OF 3/4" RODS
4	1.0	2
6	1.0	2
8	1.0	2
10	1.75	4
12	2.5	4
14	3.25	5
16	4.0	6

NOTES:

1. REVERSE (DEADMAN'S) THRUST BLOCK IS DESIGNED BASED ON 150 PSI PRESSURE, 1,500 PSF SOIL BEARING CAPACITY, AND A SAFETY FACTOR OF 1.5.
2. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 2,500 PSI AT 28 DAYS.
3. THRUST BLOCK BEARING SURFACE SHALL BE AGAINST UNDISTURBED NATIVE SOIL WHERE POSSIBLE. WHERE BEARING SURFACE HAS BEEN DISTURBED, FILL MATERIAL PLACED BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL SHALL BE COMPACTED TO 95% (MIN.) STANDARD PROCTOR DENSITY.
4. WRAP EXISTING PIPE WITH POLYETHYLENE SHEETING (8 MIL.) PRIOR TO CASTING CONCRETE THRUST BLOCK.
5. ROUGH BLOCKING FORM SHALL BE USED ALONG SIDES OF THRUST BLOCK. ALL WOOD BLOCKING SHALL BE PRESSURE TREATED WITH PRESERVATIVE.
6. PROVIDE TWO LAYERS (ONE EACH FACE) OF #4 BARS @ 12" (MAX.) ON CENTER EACH WAY AND FOUR #4 DIAGONAL BARS AT PIPE OPENING. PROVIDE 3" CLEAR COVER FROM CONCRETE FACE.
7. THREADED ROD, NUTS, AND WASHERS SHALL BE TYPE 304 STAINLESS STEEL OR BETTER. RODS SHALL BE EQUALLY SPACED ABOUT THE CIRCUMFERENCE OF THE PIPE.
8. THE DIMENSION AND NUMBER OF RODS IN THE TABLE ARE FOR VALVES AND DEAD ENDS. THE ENGINEER OF RECORD SHALL BE RESPONSIBLE FOR CALCULATING THE SIZE AND NUMBER OF RODS FOR OTHER FITTINGS.

general details 4-2024.dwg Apr-2024

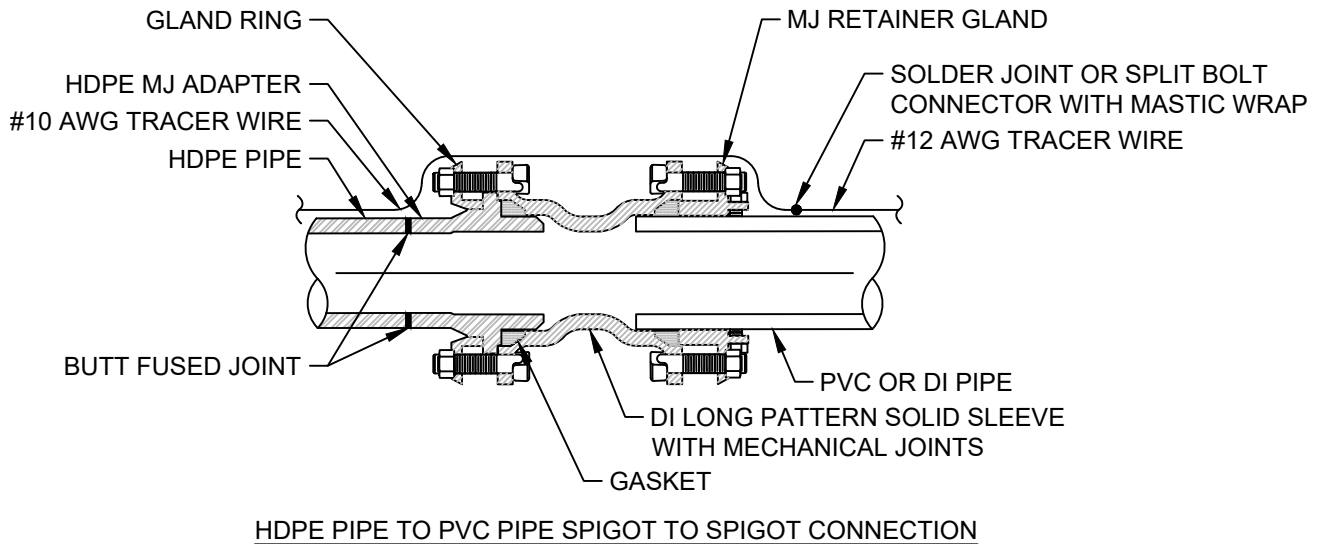
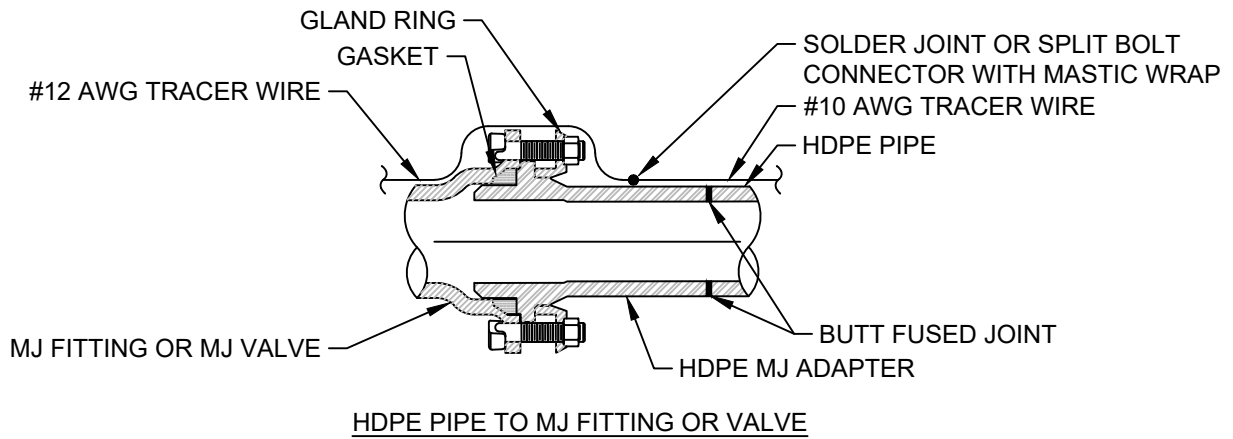
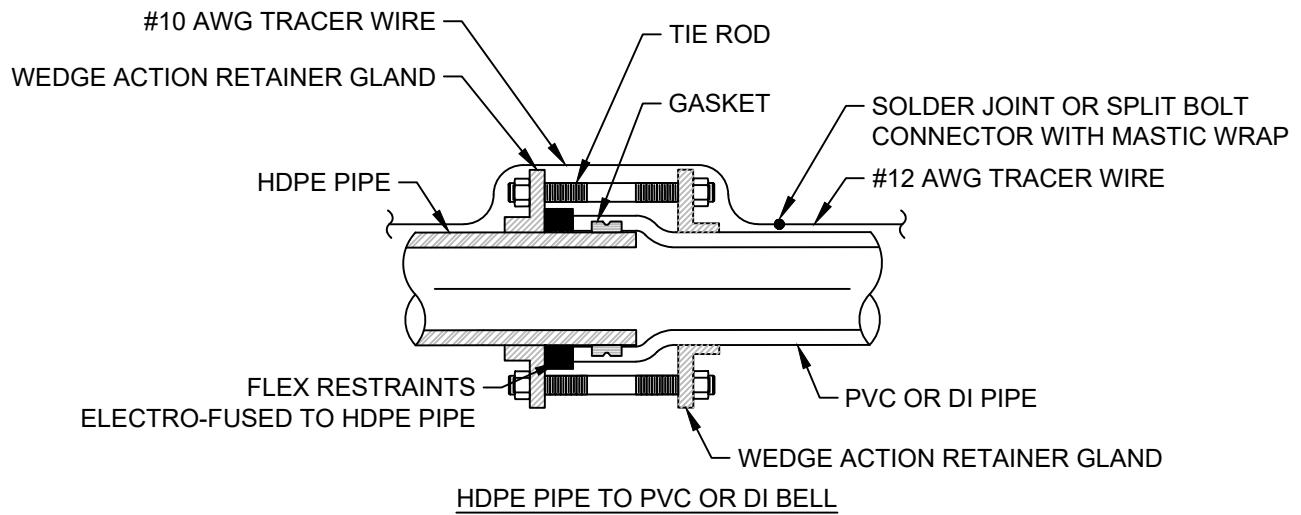


REVERSE THRUST BLOCK

DETAIL

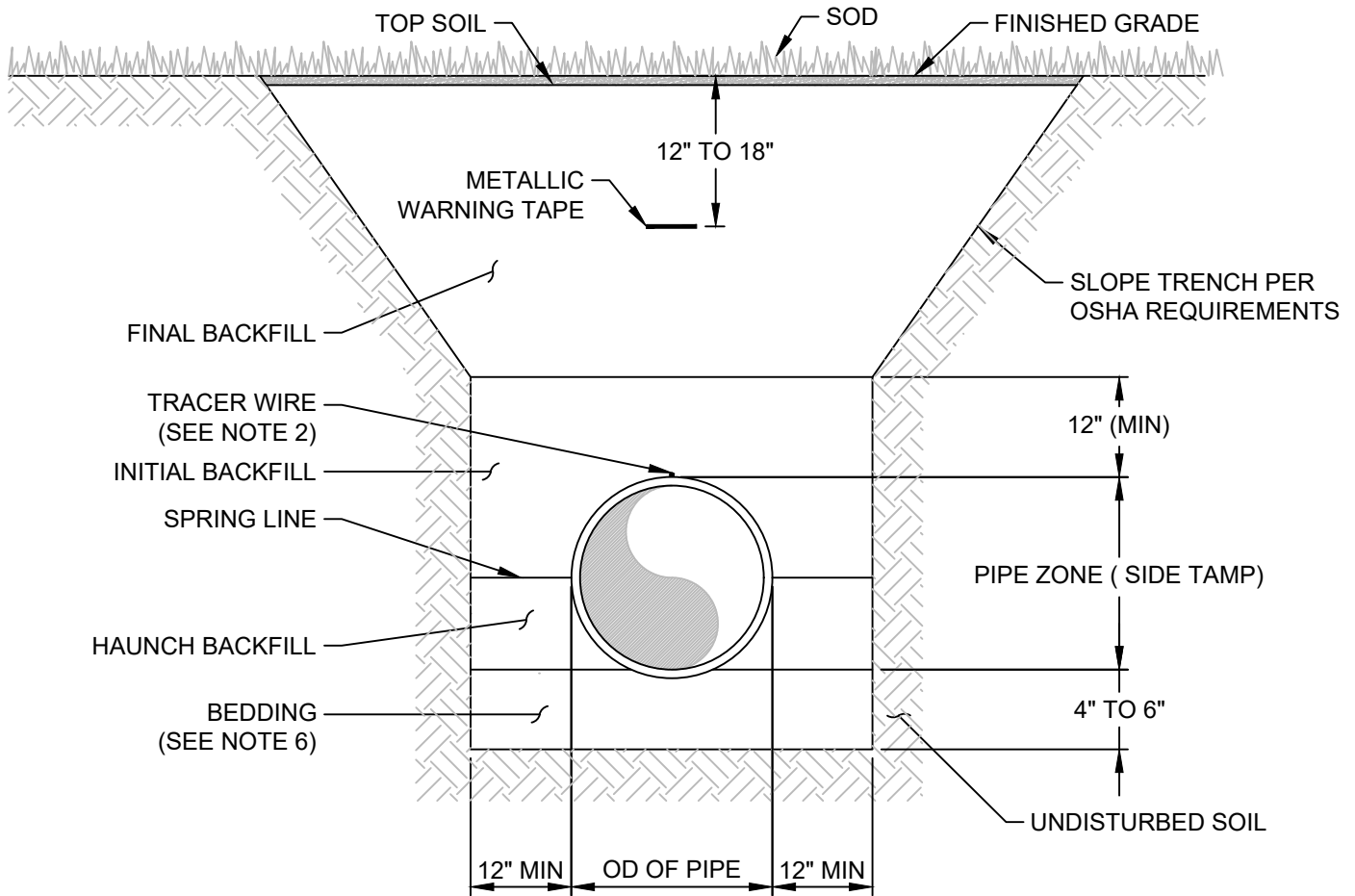
G-13

SHEET 1 OF 1



NOTES:

1. TYPE 316 STAINLESS STEEL STIFFENERS (NOT SHOWN) SHALL BE FURNISHED AND INSTALLED AT EACH CONNECTION/TRANSITION.



NOTES:

1. PROVIDE A MINIMUM OF 36 INCHES OF COVER OVER THE PIPE BELL UNLESS LESS COVER IS APPROVED BY NPU.
2. TRACER WIRE IS REQUIRED FOR ALL PRESSURE PIPES. TRACER WIRE IS NOT REQUIRED FOR GRAVITY SEWER PIPE.
3. SHEETING AND BRACING SHALL BE FURNISHED TO SUPPORT THE SIDES OF THE EXCAVATION WHERE NECESSARY TO PREVENT LOSS OF GROUND.
4. SUITABLE BEDDING AND BACKFILL MATERIAL SHALL BE AASHTO GROUPS A-2 AND A-3.
5. DENSITY OF BEDDING AND BACKFILL SHALL BE 95% (MIN) OF THE MAXIMUM DENSITY AS DETERMINED BY FLORIDA METHOD 1-T 180. WHERE THE PIPE IS WITHIN 7.5 FEET OF EDGE OF PAVEMENT, THE MINIMUM DENSITY SHALL BE 98%.
6. UNDERCUT AND PLACEMENT OF IMPORTED BEDDING SHALL BE REQUIRED WHERE EXISTING MATERIAL DOES NOT MEET THE CLASSIFICATIONS OF AASHTO GROUPS A-2 OR A-3.

general details 4-2024.dwg Apr-2024

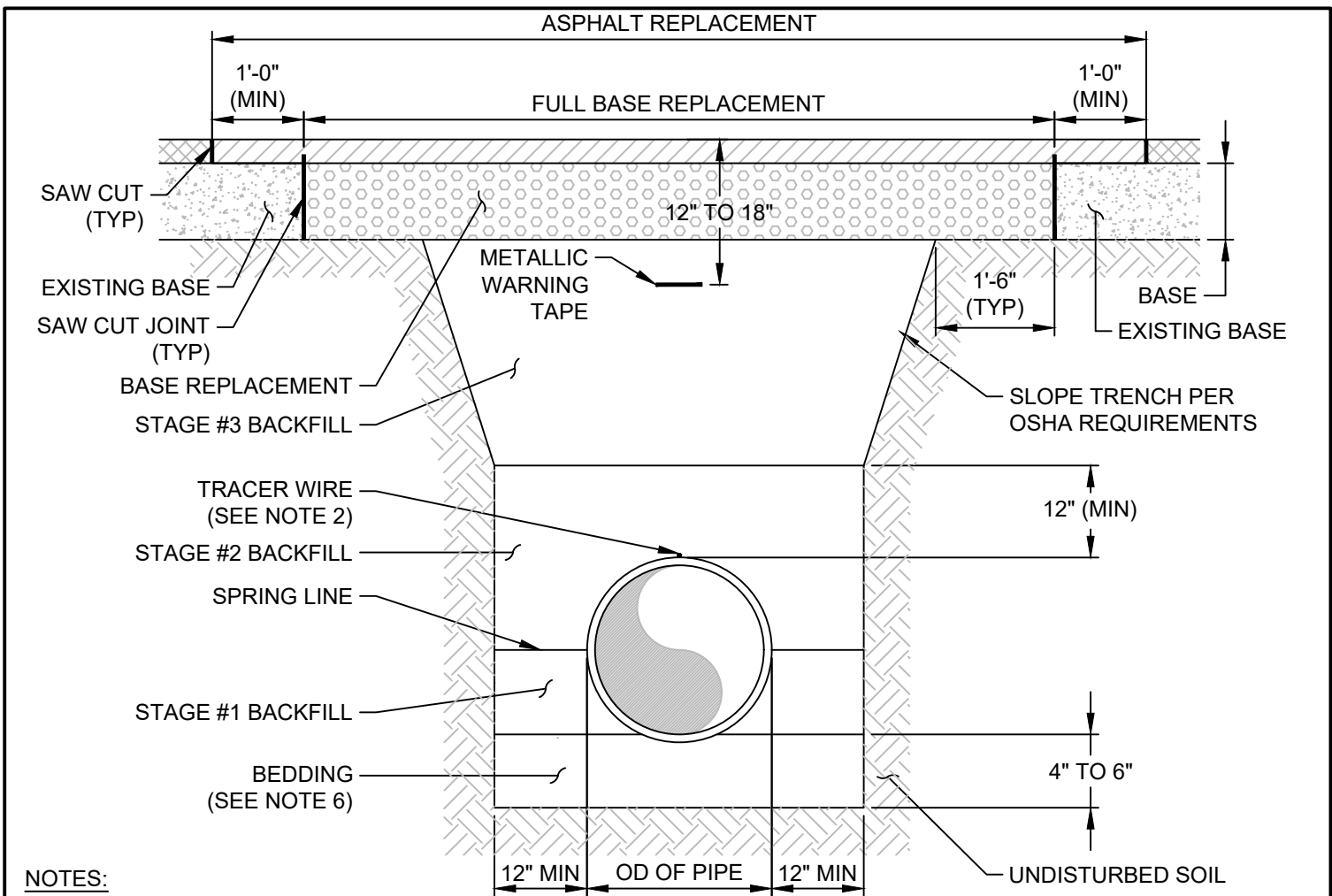


STANDARD PIPE TRENCH

DETAIL

G-15

SHEET 1 OF 1



NOTES:

1. PROVIDE A MINIMUM OF 36 INCHES OF COVER OVER THE PIPE BELL UNLESS LESS COVER IS APPROVED BY NPU.
2. TRACER WIRE IS REQUIRED FOR ALL PRESSURE PIPES. TRACER WIRE IS NOT REQUIRED FOR GRAVITY SEWER PIPE.
3. SHEETING AND BRACING SHALL BE FURNISHED TO SUPPORT THE SIDES OF THE EXCAVATION WHERE NECESSARY TO PREVENT LOSS OF GROUND.
4. SUITABLE BEDDING AND BACKFILL MATERIAL SHALL BE AASHTO GROUPS A-2 AND A-3.
5. DENSITY OF BEDDING, BACKFILL, AND BASE SHALL BE 98% (MIN) OF THE MAXIMUM DENSITY AS DETERMINED BY FLORIDA METHOD 1-T 180. MINIMUM ONE TEST REQUIRED FOR EACH LIFT PER LANE.
6. UNDERCUT AND PLACEMENT OF IMPORTED BEDDING SHALL BE REQUIRED WHERE EXISTING MATERIAL DOES NOT MEET THE CLASSIFICATIONS OF AASHTO GROUPS A-2 OR A-3.
7. IN STAGE #1, CONSTRUCT COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE AND ABOVE THE BEDDING USING SUITABLE BACKFILL MATERIALS AND MECHANICAL TAMPERS SUITABLE FOR THIS PURPOSE. MAXIMUM LIFT THICKNESS SHALL BE 6 INCHES.
8. IN STAGE #2, CONSTRUCT COMPACTED FILL ALONG THE SIDES OF THE PIPE AND UP TO 12" ABOVE THE CROWN OF THE PIPE USING SUITABLE BACKFILL MATERIALS. MAXIMUM LIFT THICKNESS SHALL BE 6 INCHES.
9. IN STAGE #3, BACKFILL WITH MINIMUM LBR 40 MATERIAL PLACED TO BOTTOM OF BASE. MAXIMUM LIFT THICKNESS SHALL BE 9 INCHES.
10. REPLACEMENT BASE SHALL BE:
 - a. LIMEROCK OR SOIL CEMENT COMPACTED IN 6-INCH (MAX) LIFTS; OR
 - b. ASPHALTIC BASE CONCRETE (ABC) COMPACTED IN 3-INCH (MAX) LIFTS.
 MINIMUM THICKNESS OF REPLACEMENT BASE SHALL BE 8 INCHES FOR LIMEROCK OR SOIL CEMENT 4 INCHES FOR ABC. WHERE EXISTING BASE THICKNESS IS GREATER, REPLACEMENT BASE THICKNESS SHALL MATCH THE THICKNESS OF THE EXISTING BASE.
11. REPAVE 1'-0" (MIN) BACK FROM JOINT SAW CUT IN EXISTING BASE. REPLACEMENT ASPHALT SHALL BE TYPE S-III OR TYPE SP-9.5.

general details 4-2024.dwg Apr-2024

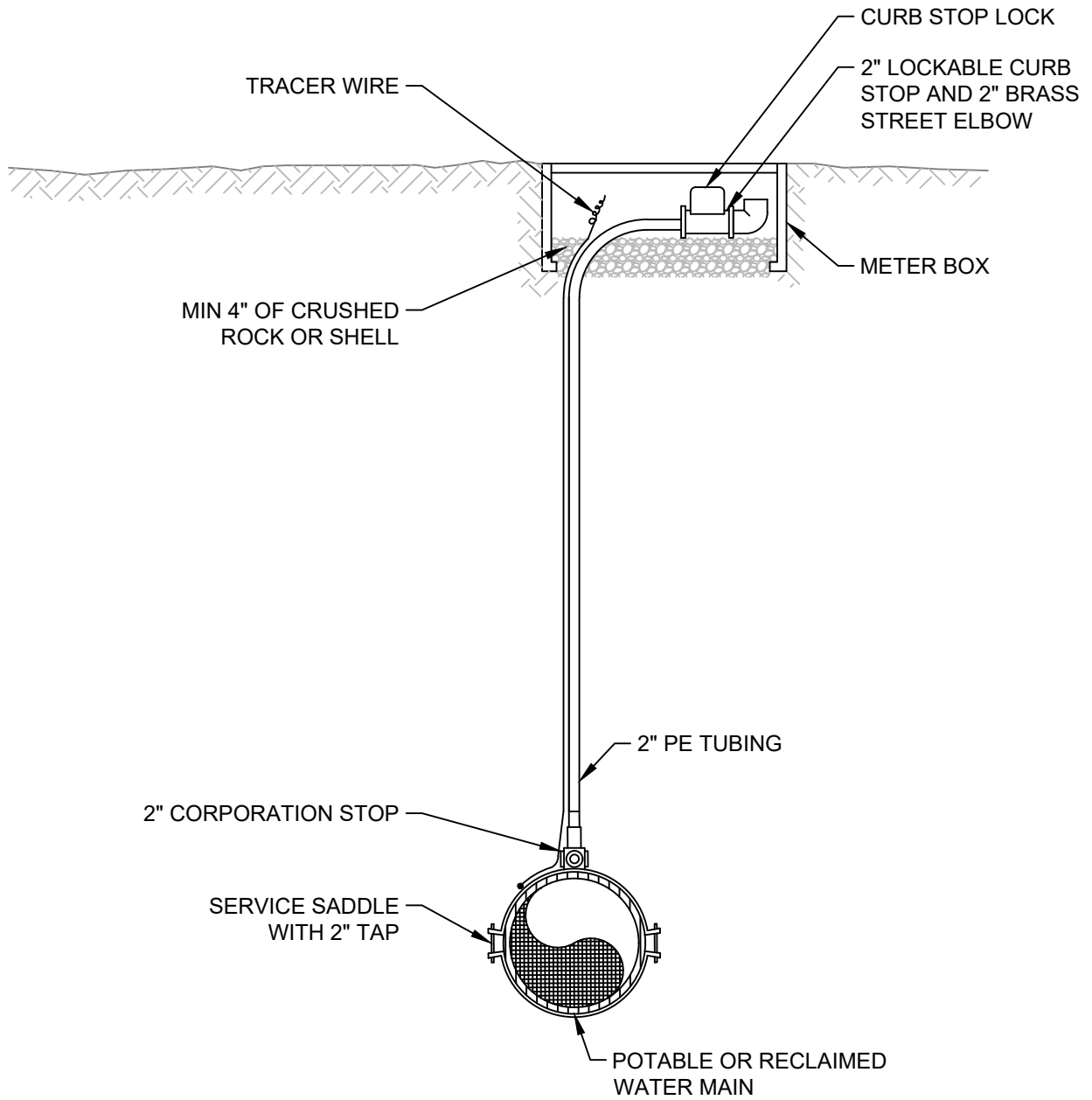


ROAD AND TRENCH RESTORATION FOR LOCAL ROADS

DETAIL

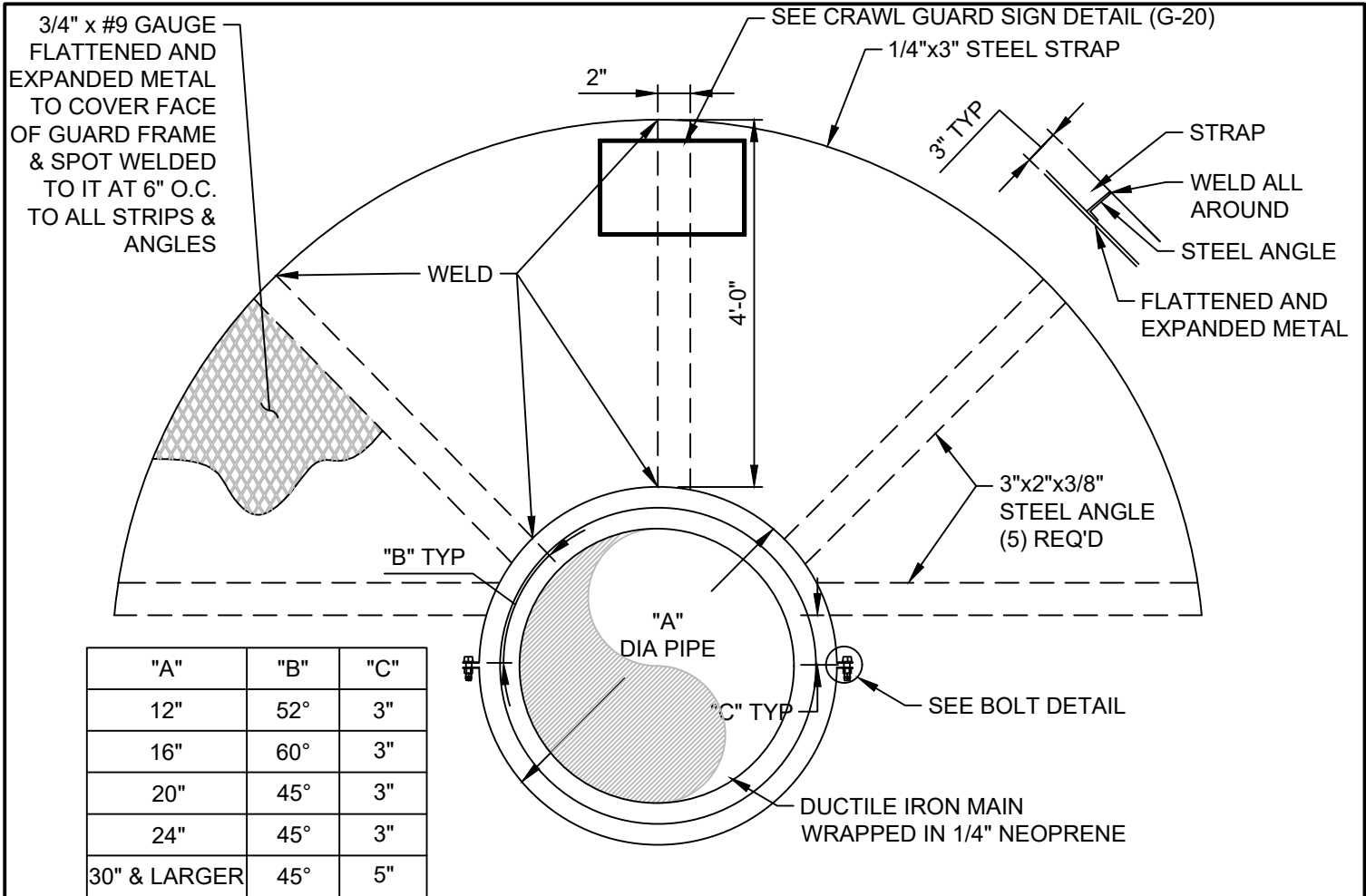
G-16

SHEET 1 OF 1

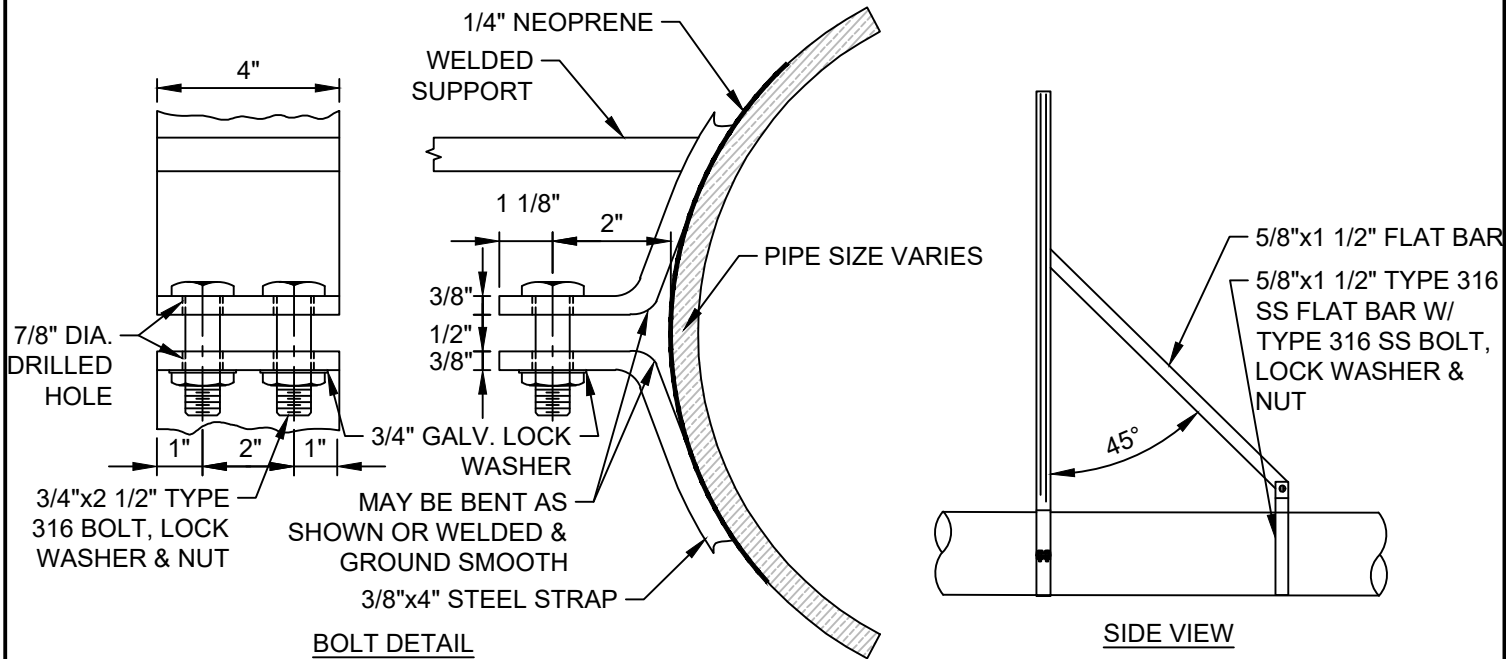


NOTES:

1. MANUAL AIR RELEASE ASSEMBLIES SHALL BE PERMITTED FOR USE WITH POTABLE AND RECLAIMED WATER ONLY.



"A"	"B"	"C"
12"	52°	3"
16"	60°	3"
20"	45°	3"
24"	45°	3"
30" & LARGER	45°	5"



NOTES:

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSINGS.
2. FAN GUARD AND HARDWARE SHALL BE COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

general details 4-2024.dwg Apr-2024



STANDARD CRAWL GUARD ASSEMBLY

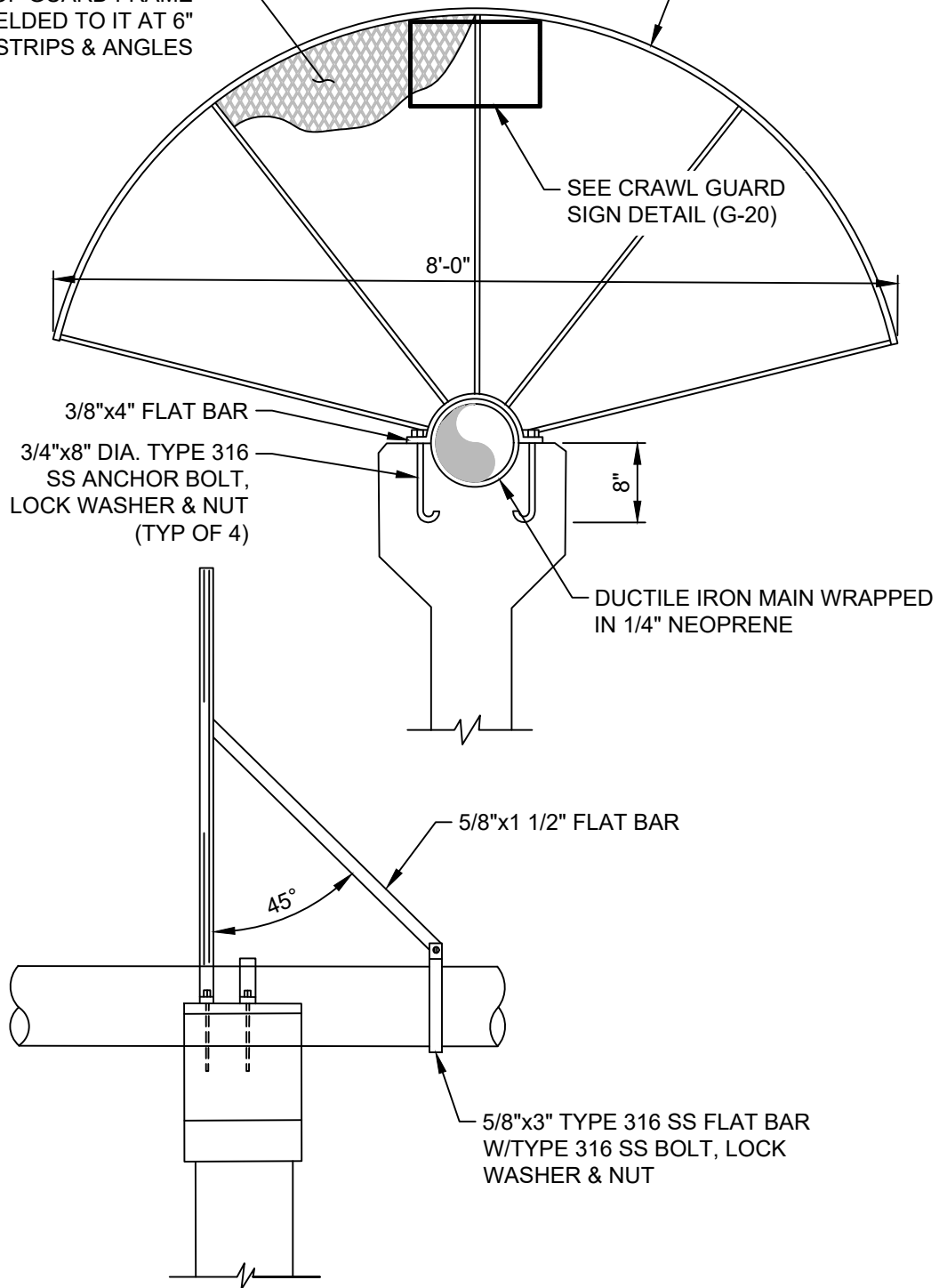
DETAIL

G-18

SHEET 1 OF 1

3/4" x #9 GAUGE FLATTENED AND EXPANDED METAL TO COVER FACE OF GUARD FRAME & SPOT WELDED TO IT AT 6" O.C. TO ALL STRIPS & ANGLES

1/4"x3" STEEL STRAP



SEE CRAWL GUARD SIGN DETAIL (G-20)

8'-0"

3/8"x4" FLAT BAR

3/4"x8" DIA. TYPE 316 SS ANCHOR BOLT, LOCK WASHER & NUT (TYP OF 4)

6"

DUCTILE IRON MAIN WRAPPED IN 1/4" NEOPRENE

5/8"x1 1/2" FLAT BAR

45°

5/8"x3" TYPE 316 SS FLAT BAR W/TYPE 316 SS BOLT, LOCK WASHER & NUT

NOTES:

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSINGS.
2. FAN GUARD AND HARDWARE SHALL BE COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

general details 4-2024.dwg Apr-2024

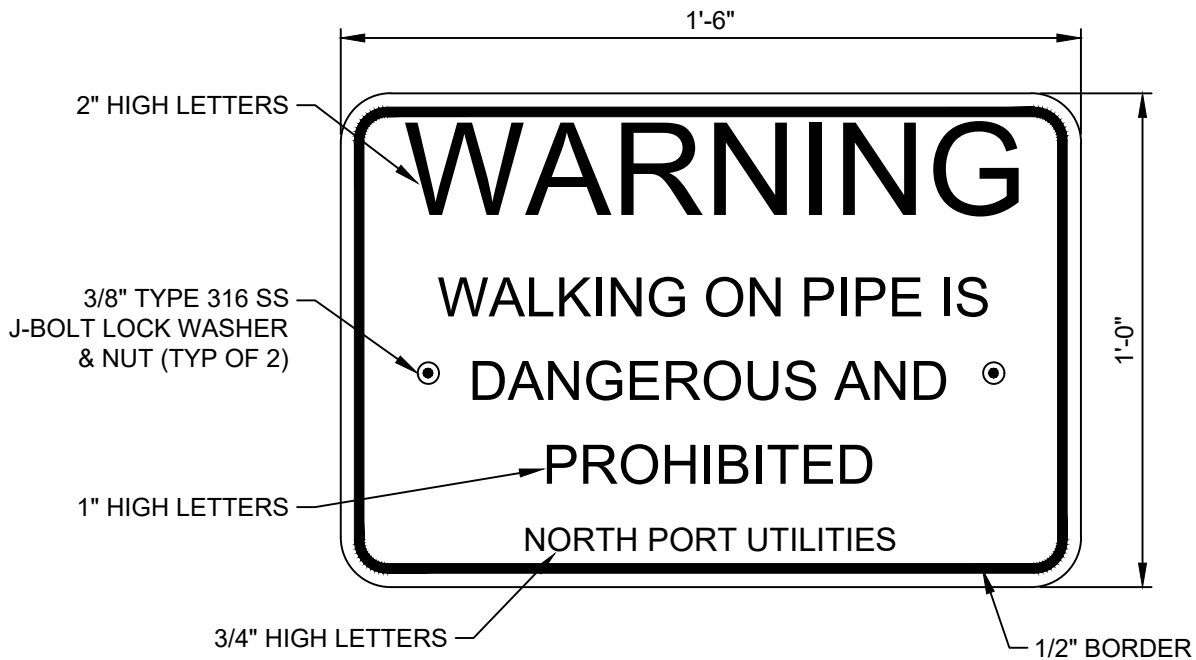


PILE CAP CRAWL GUARD ASSEMBLY

DETAIL

G-19

SHEET 1 OF 1



NOTES:

1. SIGN MATERIAL SHALL BE 14 GAUGE ANODIZED ALUMINUM.
2. BACKGROUND OF SIGN SHALL BE WHITE.
3. BORDER AND LETTERS SHALL BE BLACK, WITH THE EXCEPTION OF THE WORD "WARNING" WHICH SHALL BE RED.
4. ALL TEXT SHALL BE HELVETICA.

general details 4-2024.dwg
Apr-2024

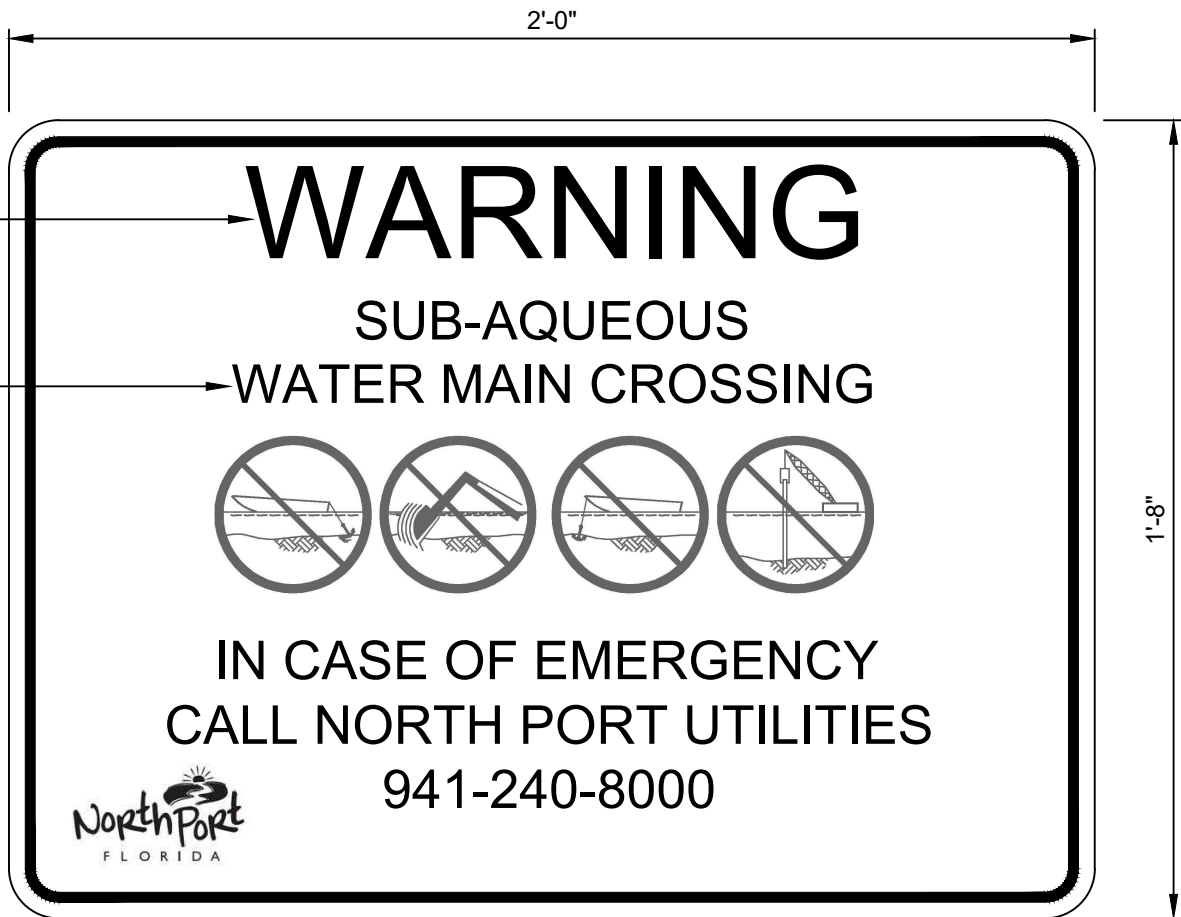


CRAWL GUARD SIGN

DETAIL

G-20

SHEET 1 OF 1



NOTES:

1. SIGN MATERIAL SHALL BE 14 GAUGE ANODIZED ALUMINUM.
2. BACKGROUND OF SIGN SHALL BE WHITE.
3. BORDER, NORTH PORT LOGO, AND LETTERS SHALL BE BLACK, WITH THE EXCEPTION OF THE WORD "WARNING" WHICH SHALL BE RED.
4. ALL TEXT SHALL BE HELVETICA.
5. IF MAIN IS FORCE MAIN OR REUSE MAIN, REPLACE "WATER MAIN CROSSING" SIGN TEXT WITH "FORCE MAIN CROSSING" OR "REUSE MAIN CROSSING".

general details.dwg Aug-2020

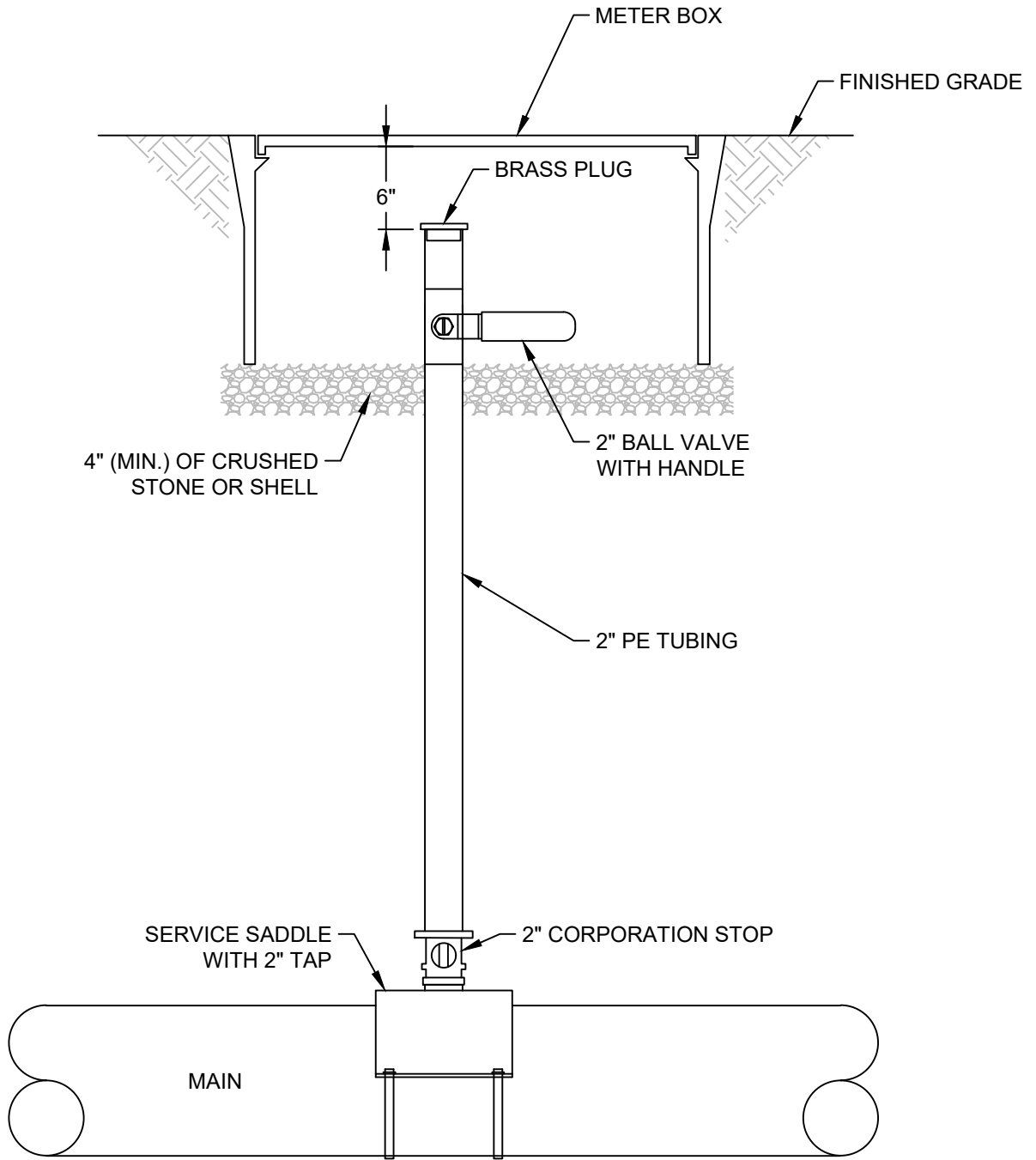


SUB-AQUEOUS MAIN
CROSSING SIGN

DETAIL

G-21

SHEET 1 OF 1



NOTES:

1. TWO (2) TESTING POINTS REQUIRED: ONE ON EACH SIDE OF UPSTREAM VALVE.
2. TESTING POINT SHALL BE LOCATED BETWEEN VALVE AND FIRST AVAILABLE SERVICE CONNECTION.

general details 4-2024.dwg Apr-2024



SUB-AQUEOUS CROSSING TESTING POINT

DETAIL

G-22

SHEET 1 OF 1

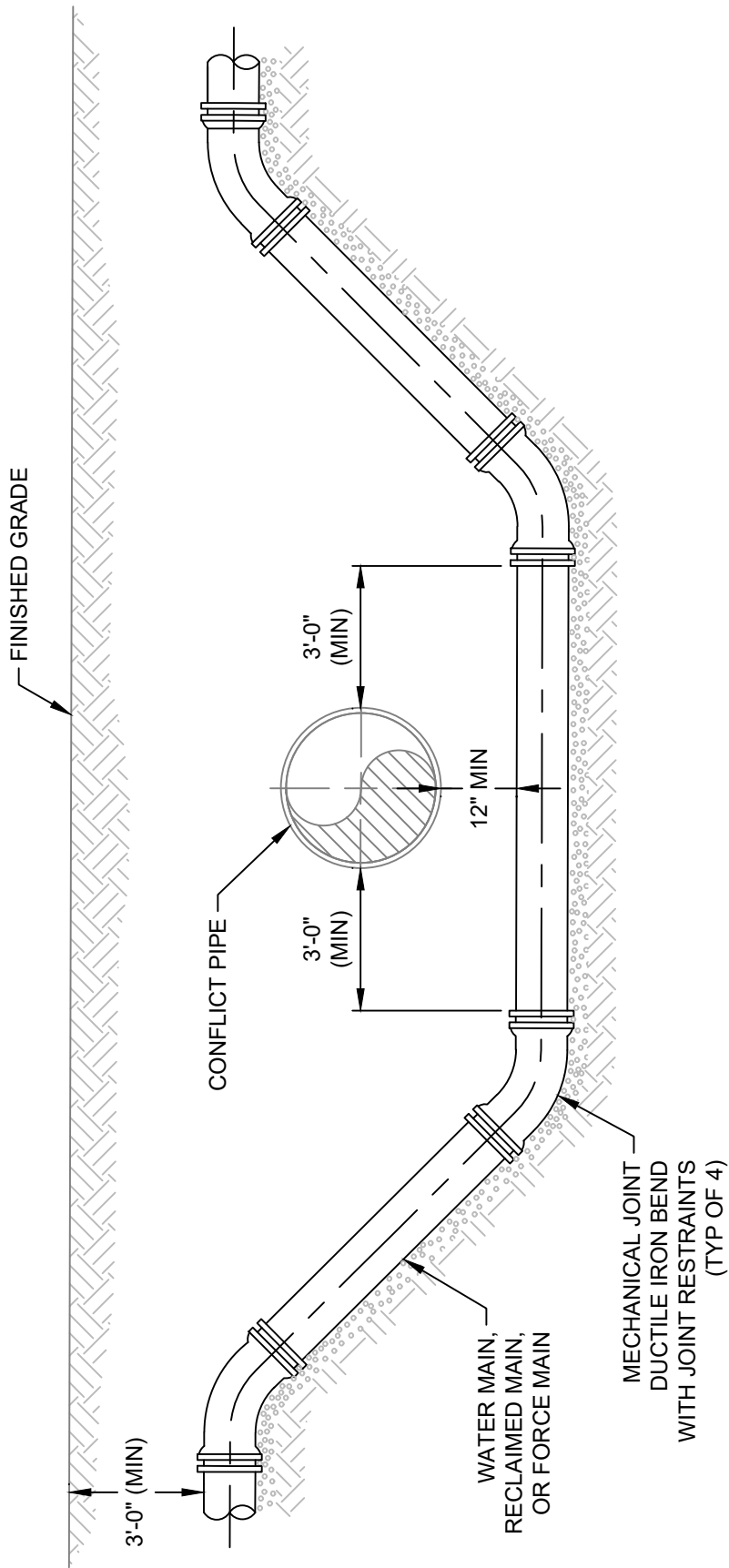


TYPICAL UTILITY DEFLECTION

DETAIL

G-23

SHEET 1 OF 1



WATER DEMAND TALLY BLOCK

USE	USAGE FACTOR (SQ FT, SEATS, BEDS, ETC.)	NUMBER OF UNITS	CONTRIBUTORY FLOW RATE (GPD)	TOTAL DAILY FLOW (GPD)

METER TALLY BLOCK

USE	NUMBER OF METERS	SIZE	TOTAL

SEWER DEMAND TALLY BLOCK

USE	USAGE FACTOR (SQ FT, SEATS, BEDS, ETC.)	NUMBER OF UNITS	CONTRIBUTORY FLOW RATE (GPD)	TOTAL DAILY FLOW (GPD)

RECLAIMED WATER TALLY BLOCK

USE	USAGE FACTOR (ACRES / SQ FT)	CONTRIBUTORY FLOW RATE (GPD)**	TOTAL DAILY FLOW (GPD)

** 1" OF RECLAIMED WATER PER ACRE PER WEEK

general details 4-2024.dwg Apr-2024



TALLY BLOCKS

DETAIL

G-24

SHEET 1 OF 1