A. Plan Set Notes

a. General

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE APPROPRIATE GOVERNING AGENCY. THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT ALL TIMES ONE SIGNED COPY OF THE PLANS AND THE STANDARDS, AND SPECIFICATIONS AS APPROVED BY THE APPROPRIATE GOVERNING AGENCY. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ANY VARIANCE TO THE ABOVE DOCUMENTS.

2. CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE CODES, LICENSES, STANDARDS, SPECIFICATIONS, PERMITS, BONDS, ETC. WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK.

3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER/DEVELOPER AND ENGINEER OF ANY PROBLEM IN CONFORMING TO THE APPROVED PLANS FOR ANY ELEMENT OF THE PROPOSED IMPROVEMENTS PRIOR TO ITS CONSTRUCTION.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE APPROPRIATE GOVERNING AGENCIES AT LEAST 48 HOURS PRIOR TO START OF ANY CONSTRUCTION. IF WORK IS SUSPENDED FOR ANY PERIOD OF TIME AFTER INITIAL START-UP, THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCIES 48 HOURS PRIOR TO RESTART.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE APPROPRIATE FIRE DEPARTMENT OF ALL STREET CLOSING AND EXISTING FIRE HYDRANTS TAKEN OUT OF SERVICE AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

6. THE CONTRACTOR SHALL NOTIFY ALL PUBLIC UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. ALL WORK PERFORMED IN THE AREA OF PUBLIC UTILITIES SHALL BE PERFORMED ACCORDING TO THE REQUIREMENTS OF THESE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ANY EXISTING UTILITY (INCLUDING DEPTH) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL PROTECT, AT HIS OWN EXPENSE, ALL EXISTING UTILITIES AND BE RESPONSIBLE FOR THEIR REPAIR IF THEY ARE DAMAGED DURING CONSTRUCTION. ALL KNOWN EXISTING UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ON THE PLANS. THE ACTUAL LOCATION MAY VARY FROM THE PLANS, ESPECIALLY IN THE CASE OF UNDERGROUND UTILITIES. WHENEVER CONTRACTOR DISCOVERS A DISCREPANCY IN LOCATIONS HE SHALL CONTACT THE ENGINEER IMMEDIATELY.

7. ANY CONSTRUCTION DEBRIS OR MUD TRACKED ONTO EXISTING ROADWAYS SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR. THE CONTRACTOR SHALL REPAIR ANY EXCAVATIONS OR PAVEMENT FAILURES CAUSED BY HIS CONSTRUCTION.

8. PRIOR TO BEGINNING THE WORK, THE CONTRACTOR SHALL OBTAIN ANY WRITTEN AGREEMENTS FOR INGRESS AND EGRESS TO THE WORK FROM ADJACENT PRIVATE PROPERTY IF NEEDED AND SUCH ACCESS SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

9. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMEN, OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

10. ALL EXCAVATIONS SHALL MEET CURRENT OSHA GUIDELINES AND BE IN CONFORMANCE WITH THE SOILS ENGINEER'S RECOMMENDATIONS. ALL EXCAVATION IS UNCLASSIFIED.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF ALL MATERIALS DISTURBED WITHIN DEDICATED RIGHT- OF-WAYS AND ALL MATERIALS AND WORKMANSHIP SHALL MEET THE CONSTRUCTION STANDARDS OF THE APPROPRIATE GOVERNING AGENCY.

12. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE PROPER FUNCTIONING OF THE IMPROVEMENTS FOR A MINIMUM OF ONE OR TWO YEARS FROM THE DATE OF ACCEPTANCE OF THE IMPROVEMENTS BY THE APPROPRIATE GOVERNING AGENCY. ANY FAILURE DURING THIS PERIOD OF GUARANTEE SHALL BE REMEDIED BY THE CONTRACTOR TO THE SATISFACTION OF THE APPROPRIATE GOVERNING AGENCY AT NO EXPENSE TO THE AGENCY.

13. THE OWNER SHALL, AT HIS EXPENSE, PROVIDE ONE SET OF CONSTRUCTION STAKES. THE CONTRACTOR SHALL PRESERVE THE STAKES FOR HIS USE. ANY CONSTRUCTION STAKING WHICH IS QUESTIONABLE AS TO CORRECTNESS SHALL BE LEFT IN PLACE UNTIL SUCH TIME AS THE OWNER CAN VERIFY THE CORRECTNESS OF SAID STAKING. SHOULD THE STAKES BE FOUND CORRECT, THE COSTS FOR CHECKING SHALL BE AT THE CONTRACTOR'S EXPENSE. IF CONSTRUCTION STAKING IS OBLITERATED, DESTROYED, OR OTHERWISE RENDERED USELESS DUE TO NEGLIGENCE OR CARELESSNESS BY THE CONTRACTOR OR HIS EMPLOYEES, SAID STAKING SHALL BE REPLACED OR CORRECTED AT THE CONTRACTOR'S EXPENSE.

14. COMPACTION TESTING SHALL BE PROVIDED BY THE CONTRACTOR. IF RETESTING IS REQUIRED DUE TO FAILURES, THE COST OF RETESTING SHALL BE AT THE CONTRACTOR'S EXPENSE.

15. THE CONTRACTOR SHALL KEEP ACCESS OPEN TO ALL PROPERTIES ADJACENT TO THE SITE.

16. WATER SHALL BE USED AS A DUST PALLATIVE WHERE REQUIRED. LOCATIONS SHALL BE AS ORDERED. COST ASSOCIATED WITH DUST CONTROL IS CONSIDERED INCIDENTAL TO THE WORK.

17. ALL PIPE DEFLECTIONS REQUIRE HIGH DEFLECTION COUPLINGS OR APPROVED FITTINGS. BENDS IN THE BARREL OF THE PIPE SHALL NOT BE ALLOWED.

18. BEFORE STARTING ANY CONSTRUCTION, THE CONTRACTOR SHALL LOCATE ANY AND ALL UNDERGROUND FACILITIES/UTILITIES WHICH MAY BE AFFECTED BY THIS PROJECT.

19. REFER TO RECORDED PLAT FOR GEOMETRY.

b. Water System

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE MERIDIAN METROPOLITAN DISTRICT (MMD) STANDARDS, MATERIALS, SPECIFICATIONS AND STANDARD DRAWINGS. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE DISTRICT ENGINEER. THE CONTRACTOR SHALL NOTIFY THE DISTRICT ENGINEER AND MERIDIAN METROPOLITAN DISTRICT AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

2. ALL WATER MAINS INSTALLED SHALL CONFORM TO MERIDIAN METROPOLITAN DISTRICT MATERIALS SPECIFICATIONS:

DUCTILE IRON -	4" & 20" CLASS 51
	MS - 1 6" THROUGH 16" CLASS 50/ WITH POLY WRAP
POLYVINYL CHLORIDE (PVC)	4" CLASS 200
BLUE BRUT	MS - 2 6" THROUGH 12" CLASS 150

3. ALL PIPES SHALL HAVE A TRACER WIRE ATTACHED DURING CONSTRUCTION TO THE TOP OF EVERY LENGTH OF INSTALLED PIPE. THE TRACER WIRE SHALL BE MULTI-STRAND 12 GAUGE COPPER WIRE, AND SHALL BE PERMANENTLY AFFIXED TO THE TOP OF THE PIPE USING NYLON PIPE STRAPS AT 50 FOOT INTERVALS. THE TRACER WIRE SHALL ALSO BE PERMANENTLY CONNECTED TO ALL FIRE HYDRANT TEES, METALLIC PIPE BENDS, MAIN VALVES OR OTHER METALLIC FITTINGS, WITH SUCH CONNECTION NOT INTERFERING WITH CONDUCTIVITY OF THE TRACER WIRE. ALL POINTS OF CONNECTION SHALL BE PROTECTED FROM CORROSION BY AN EPOXY OR SILICONE COATING. TRACER WIRE SHALL TERMINATE AT A TEST PORT (TEST STATION) LOCATED AT EACH PROPOSED FIRE HYDRANT. SPLICES TO WIRE WILL REQUIRE THE USE OF 3M SPLICE KITS. ALSO INSTALL 6 INCH WIDE DETECTABLE ALUMINUM FOIL PLASTIC BACKED TAPE INDICATING BURIED WATER LINE BELLOW. INSTALL 12 TO 18 INCHES BELOW SURFACE GRADE. TAPE MUST BE BLUE IN COLOR AND BE MANUFACTURED BY THORTEC OR EQUAL.

4. ALL FITTINGS SHALL BE MADE FROM GRAY-IRON OR DUCTILE IRON AND FURNISHED WITH MECHANICAL JOINT ENDS. ALL FITTINGS SHALL HAVE A PRESSURE RATING OF 250 PSI AND SHALL BE WRAPPED WITH AN 8-MIL MINIMUM THICKNESS POLYETHYLENE MATERIAL PER AWWA STANDARD C105 (MS-3).

5. THERE SHALL BE A MINIMUM COVER OF 5 FEET OVER ALL WATER MAINS UNLESS INDICATED OTHERWISE ON THESE PLANS.

6. FIRE HYDRANTS SHALL BE WATEROUS PACER 150 OR MUELLER CENTURION, OPEN LEFT, AND THE THREADED HOSE CONNECTIONS SHALL BE 2 ½" NOMINAL DIAMETER WITH 4½ THREADS PER INCH ON THE STEAMER NOZZLE, IN COMPLIANCE WITH SOUTH METRO FIRE PROTECTION DISTRICT REQUIREMENTS. FIRE HYDRANT ASSEMBLIES SHALL INCLUDE ALL PIPE, FITTINGS, OPEN RIGHTVALVES, AND MATERIALS NECESSARY TO INSTALL THE HYDRANT COMPLETE AND IN PLACE.

7. ALL FIRE HYDRANTS ARE TO BE PAINTED DIAMOND VOGEL, MERIDIAN METROPOLITAN DISTRICT GREY, USING AMERCOAT 220 WATERBORNE ACRYLIC, AMERCOAT 220 DEEP TINT 3349710 BTL 408416-334-970.

8. ALL BENDS, TEES, FIRE HYDRANTS, BLOW-OFFS AND PLUGS AT DEAD END MAINS SHALL BE PROTECTED FROM THRUST BY USING CONCRETE THRUST BLOCKS PER MERIDIAN METROPOLITAN DISTRICT STANDARDS.

9. NOT MORE THEN ONE CONNECTION SHALL BE MADE TO EXISTING MAINS UNTIL ALL TESTING IS COMPLETE AND PASSING.

10. CHLORINATION AND FLUSHING: ALL WATER MAINS SHALL BE INSTALLED AND CHLORINATED PER MERIDIAN METROPOLITAN DISTRICT STANDARDS. THE LINES SHALL BE CHLORINATED IN ACCORDANCE WITH AWWA C-651. "DISINFECTING WATER MAINS." THE PREFERRED METHOD IS TO USE SUFFICIENT CHLORINE TABLETS TO PRODUCE A 25 MG/L SOLUTION. THESE TABLETS SHOULD BE ADHERED TO THE TOP OF THE PIPE SECTION WITH PERMATEX CLEAR R.T.V. CHLORINATION OF 16-INCH AND LARGER PIPE REQUIRES A CHLORINE SLURRY. THE CHLORINATION OF ANY FINISHED PIPELINE SHALL BE DONE PRIOR TO HYDROSTATIC TESTING.

11. HYDROSTATIC TESTING: ALL WATER MAINS SHALL BE TESTED PER THE REQUIREMENTS OF MERIDIAN METROPOLITAN DISTRICT STANDARDS. ALL WATER MAIN PIPE SHALL BE FIELD PRESSURE TESTED TO A MINIMUM OF 150 PSI. ALL TESTING SHALL BE DONE IN THE PRESENCE OF THE MERIDIAN METROPOLITAN DISTRICT ENGINEER. ALLOWABLE LEAKAGE FOR EACH SECTION OF PIPE BETWEEN LINE VALVES SHALL NOT EXCEED THE LEAKAGE RATE SET FORTH BELOW,

PIPE SIZE (INSIDE DIAMETER)	ALLOWABLE LEAKAGE PER 1,000 FEET (GAL/HR)	
	DUCTILE IRON PIPE (D.I.P.)	POLYVINYL CHLORIDE (P.V.C.)
4 INCHES	0.37	0.33
6 INCHES	0.55	0.50
8 INCHES	0.74	0.66
12 INCHES	1.10	1.00
16 INCHES	1.47	
20 INCHES	1.84	

12. ALL VALVES SHALL BE OPEN RIGHT AND ARE TO BE LOCATED ON PROPERTY LINE EXTENSIONS EXCEPT FOR TAPPING TEES WHERE AN ADDITIONAL VALVE SHALL BE PLACED ON THE TAPPING TEE. OTHER VALVE LOCATIONS MAY BE REQUIRED AS SHOWN ON THE PLANS.

13. WHEN IT IS NECESSARY TO LOWER OR RAISE WATER LINES AT STORM DRAINS AND OTHER UTILITY CROSSINGS, A MINIMUM CLEARANCE OF 1.5 FEET (18 INCHES) SHALL BE MAINTAINED BETWEEN THE OUTSIDE OF PIPES.

14. THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT ALL TIMES ONE (1) SIGNED COPY OF THE APPROVED PLANS.

15. COMPACTION OF ALL TRENCHES MUST BE ATTAINED BY THE CONTRACTOR AND THE COMPACTION TEST RESULTS SUBMITTED TO THE DISTRICT ENGINEER.

16. ALL BENDS SHALL BE RESTRAINED PER THE RESTRAINING TABLE.

17. METER LOCATIONS SHALL BE DETERMINED AND APPROVED BY THE DISTRICT ENGINEER. IT IS THE DEVELOPERS RESPONSIBILITY TO CONTACT THE MERIDIAN METROPOLITAN DISTRICT AT 303-790-0345.

18. THE CONTRACTOR SHALL CONFORM TO ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY RULE AND REGULATIONS. ALL TRENCHES SHALL BE OPEN CUT FROM THE GROUND SURFACE AND SHALL CONFORM TO THE MERIDIAN METROPOLITAN DISTRICT STANDARDS, TYPICAL TRENCH SECTION. ALL TRENCHES SHALL BE OPEN CUT FROM GROUND SURFACE AND SHALL NOT EXCEED A WIDTH OF 48-INCHES AT A POINT 12-INCHES ABOVE THE CROWN OF THE PIPE. ALL TRENCHES SHALL BE PROPERLY BRACED AND/OR SHORED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL OCCUPATIONAL SAFETY AND HEALTH (OSHA) REQUIREMENTS. SHORING SHALL BE REMOVED AS THE WORK AND BACKFILLING OPERATIONS PROGRESS.

19. THE DISCHARGE FROM ANY TRENCH DEWATERING OPERATIONS SHALL BE DISCHARGED INTO NATURAL DRAINAGE CHANNELS OR OTHER STRUCTURES AS APPROVED BY THE ENGINEER. BY NO MEANS SHALL GROUND WATER BE ALLOWED TO BE DISCHARGED INTO THE SANITARY SEWER SYSTEMS.

PIPE TRENCHES SHALL BE KEPT FREE FROM WATER DURING EXCAVATION, FINE GRADING, PIPE LAYING AND JOINTING. DEWATERING SUFFICIENT TO PROVIDE A COMPLETELY DRY TRENCH SHALL BE MAINTAINED DURING ALL PIPE LAYING AND JOINTING OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE OF ANY NATURE RESULTING FROM THE DEWATERING OPERATIONS.

20. BEDDING CONFORMING TO THE MERIDIAN METROPOLITAN DISTRICT REQUIREMENTS SHALL BE USED THROUGHOUT THE PROJECT (BEDDING SHALL BE PLACED 6” MINIMUM AROUND AND BELOW THE PIPE AND 12" MINIMUM ABOVE THE PIPE).

21. EXCAVATED MATERIALS SHALL NORMALLY BE CONSIDERED SUITABLE FOR BACKFILL UNLESS ANOMALOUS CONDITIONS ARE DISCOVERED DURING EXCAVATION. NO RUBBISH, DEBRIS, ORGANIC MATERIALS, RUBBLE AND STONES LARGER THAN 3 INCHES IN DIAMETER SHALL BE USED IN THE BACKFILL. CLAYS WITH A PLASTICITY INDEX IN EXCESS OF 20 SHALL NOT BE USED FOR BACKFILL IN TRENCHES LOCATED IN APPROVED STREETS. BACKFILL (ABOVE BEDDING MATERIAL) WITHIN STREET RIGHT-OF-WAY OR UNDER PAVEMENT SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% STANDARD PROCTOR AS DETERMINED BY AASHTO METHOD T-99. BACKFILL NOT IN STREET RIGHT-OF-WAY OR UNDER PAVEMENT SHALL BE COMPACTED TO A STANDARD PROCTOR DENSITY TO THAT OF THE UNDISTURBED NATURAL GROUND BEFORE CONSTRUCTION.

22. ONLY THE FOLLOWING FIRE HYDRANTS, VALVE BOXES AND JOINT RESTRAINTS LISTED BELOW SHALL BE ACCEPTED FOR CONSTRUCTION:

FIRE HYDRANTS:
WATEROUS PACER 150 OR MUELLER CENTURION (SEE NOTES 6 & 7)

VALVE BOXES:
TYLER SCREW - TYPE "C" CAST IRON VALVE BOX ASSEMBLY - SERIES 6860 WITH NO. 160 OVAL BASE

MECHANICAL JOINT RESTRAINT DEVICES SHALL BE:

FOR DUCTILE IRON PIPE (DIP):	POLYVINYLCHLORIDE (PVC) PIPE:
MEGALUG 1100 SERIES	MEGALUG 2000 PV SERIES
UNI-FLANGE 1400 SERIES	UNI-FLANGE 1500 SERIES

PIPE JOINT RESTRAINT DEVICES SHALL BE:

FOR DUCTILE IRON PIPE (DIP):	POLYVINYLE CHLORIDE (PVC) PIPE:
MEGALUG 1700 SERIES	MEGALUG 1500 SERIES
UNI-FLANGE 1300 SERIES	UNI-FLANGE 1300 SERIES

23. ALL WATER MAIN VALVES SHALL BE OPEN RIGHT (RED TOP), AND THE PLANS SHOULD INDICATE THIS AT EACH VALVE LOCATION.

24. EXISTING VALVES IN THE DISTRICT MAY ONLY BE OPERATED BY THE MERIDIAN METROPOLITAN DISTRICT PERSONNEL, (303-790-0345).

25. PRIOR TO INSTALLATION OF WATER MAINS, ROAD CONSTRUCTION MUST HAVE PROGRESSED TO AT LEAST THE "SUB-GRADE" STATE. SUB-GRADE IS DEFINED AND AN ELEVATION OF NO MORE THEN SEVEN (7) INCHES BELOW THE FINISHED STREET GRADE.

26. ALL VALVE BOXES AND HYDRANTS WILL BE SET TO THE FINAL FINISHED GRADE BY THE CONTRACTOR. ANY VALVE BOXES IN NON-PAVED LOCAIONS SHALL BE MARKED WITH A MARKER POST PER THE DISTRICT'S SPECIFICATIONS.

27. BEFORE ANY TAPS ARE MADE, APPLICATION FOR SAID TAPS MUST BE RECEIVED AND APPROVED BY THE MERIDIAN METROPOLITAN DISTRICT.

28. ALL POLYVINYL CHLORIDE (PVC) PIPE IS TO BE DEPRESSURIZED PRIOR TO TAPPING.

29. ALL WATER MAIN AND APPURTENANCES ARE TO BE CLEARLY STAKED WITH OFFSET STAKES PRIOR TO INSPECTION. TO ASSURE PROPER PLACEMENT OF PIPE, ANY AND ALL WATER EASEMENTS SHALL BE CLEARLY IDENTIFIED AS WELL.

30. "AS-BUILT" MYLAR DRAWINGS ARE TO BE REPRODUCIBLE COPIES 24"X 36" SIZE OF THE APPROVED CONSTRUCTION DRAWINGS. ANY FIELD CHANGES ARE TO BE NOTED. THE DRAWING(S) WILL STATE "AS-BUILT" IN LARGE BLOCK LETTERS. A PRINT OF THE MYLAR IS TO BE SIGNED, DATED AND STAMPED BY THE REGISTERED ENGINEER OR THE "AS-BUILT" PRINT MAY BE STAMPED AND SIGNED BY A COLORADO-REGISTERED PROFESSIONAL LAND SURVEYOR INSTEAD OF, OR IN ADDITION TO, A REGISTERED ENGINEER. THE SURVEYOR'S CERTIFICATION IS FOR SURVEY DATA ONLY AND A NOTE TO THIS EFFECT SHOULD BE INCLUDED BY THE LS SEAL.

"AS-BUILT" FIELD NOTES, FROM WHICH THE "AS-BUILT" DRAWINGS ARE PREPARED, ARE TO BE PROVIDED AND STAMPED / SIGNED AND DATED BY THE REGISTERED LAND SURVEYOR.

31. THE DEVELOPER SHALL BE RESPONSIBLE FOR OBTAINING THE FOLLOWING:

A. PROVIDE THE DISTRICT ENGINEERS A DEVELOPER'S WARRANTY, INCLUDING LIEN WAVERS AND ALL OTHER ASSURANCES THAT PAYMENT OF ALL SUPPLIES OF LABOR AND/OR MATERIAL HAS OCCURRED.

B. PROVIDE THE DISTRICT ENGINEERS A BILL OF SALE, INCLUDING A DESCRIPTION OF THE FACILITIES.

32. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR THE FOLLOWING:

A. SUPPLYING THE DISTRICT ENGINEER WITH AN "ENGINEERS ESTIMATE" OF ALL COSTS ASSOCIATED WITH THE WATER INSTALLATION, PRIOR TO CONSTRUCTION.

B. STREET CUTTING PERMITS FROM THE APPROPRIATE AUTHORITIES.

C. RESTORATION OF DISTURBED STREET PAVEMENT AS REQUIRED BY GOVERNING AUTHORITIES.

D. ALL COSTS ASSOCIATED WITH INSPECTION BY THE APPOINTED REPRESENTATIVES OF GOVERNING AUTHORITIES.

E. TESTING OF COMPLETED WATER LINES AS REQUIRED BY APPOINTED REPRESENTATIVE OF THE MERIDIAN METROPOLITAN DISTRICT.

F. COORDINATING WITH THE DISTRICT ENGINEER ANY AND ALL WATER OUTAGES NECESSARY FOR CONSTRUCTION WELL IN ADVANCE IN ORDER TO ALLEVIATE ANY UNEXPECTED OUTAGES, AND ALLOW THE DISTRICT MAINTENANCE CREWS TIME TO LOCATE AND OPERATE SAID VALVES.

G. A PERFORMANCE AND PAYMENT BOND GUARANTEEING PAYMENT BY THE CONTRACTOR OF ALL BILLS BEFORE FINAL PAYMENT UNDER THIS CONTRACT.

H. VERIFICATION OF ALL OTHER UNDERGROUND FACILITIES WHICH MAY BE AFFECTED BY THIS PROJECT AND REPAIR THEREOF IN CASE OF DAMAGE.

I. SCHEDULE A PRE-CONSTRUCTION MEETING TO INCLUDE AT LEAST THE CONTRACTOR, ENGINEER, OWNER OR OWNER'S REPRESENTATIVE, AND A REPRESENTATIVE FROM THE MERIDIAN METROPOLITAN DISTRICT. THE CONTRACTOR SHALL GIVE AT LEAST 48-HOURS NOTICE TO THE ATTENDEES PRIOR TO THE PRE-CONSTRUCTION MEETING AND PRIOR TO COMMENCING CONSTRUCTION.

J. "AS-CONSTRUCTED" MYLARS, ELECTRONIC FILES, FIELD NOTES AND CUT-SHEETS SHALL BE SUPPLIED TO THE DISTRICT ENGINEER PRIOR TO CONDITIONAL ACCEPTANCE OF THE WATER LINES.

33. A BACKFLOW PREVENTION ASSEMBLY APPROVED BY THE MERIDIAN METROPOLITAN DISTRICT IS REQUIRED ON ALL COMMERCIAL AND MULTI-FAMILY DOMESTIC TAPS.

35. ALL COMBINATION FIRE-LINE AND DOMESTIC TAPS MUST BE INSPECTED AND APPROVED BY THE DISTRICT ENGINEER PRIOR TO THE RELEASE OF THE WATER MAINS

36. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL PERSONNEL(S) ASSOCIATED WITH THIS PROJECT AND THE GENERAL PUBLIC WHERE THE PROJECT IS ON PUBLIC RIGHT-OF-WAY.

37. SAFETY/CONSTRUCTION FENCING MUST BE PLACED ENTIRELY AROUND ANY OPEN EXCAVATION AT THE END OF EACH DAY.

38. OBSERVATION OF CONSTRUCTION/WORK IN PROGRESS AND ON-SITE VISITS ARE NOT TO BE CONSTRUED AS A GUARANTEE BY THE DISTRICT OR DISTRICT ENGINEER, OF CONTRACTORS PERFORMANCE, OR OBLIGATIONS TO THE COMPLIANCE OF THE CONTRACT.

39. MERIDIAN METROPOLITAN DISTRICT PERSONNEL ARE NOT RESPONSIBLE FOR SAFETY IN, ON, OR ABOUT THE PROJECT SITE, NOR FOR THE COMPLIANCE BY THE APPROPRIATE PARTY OF ANY REGULATION RELATING THERETO. ALL SAFETY COMPLIANCE/ENFORCEMENT AT THE WORK SITE SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

IN CASE OF AN EMERGENCY AFTER WORKING HOURS, CALL THE MERIDIAN METROPOLITAN DISTRICT AT 303-790-1498

c. Sanitary Sewer System

1. THE MERIDIAN METROPOLITAN DISTRICT STANDARD CONSTRUCTION SPECIFICATIONS AND DRAWINGS SHALL BE THE MINIMUM REQUIREMENTS FOR THIS PROJECT.

2. PIPE SHALL BE POLYVINYL CHLORIDE (PVC) CONFORMING TO ASTM-3034 SDR-35 WITH ELASTROMERIC GASKETED JOINTS FOR SIZES 15-INCHES AND SMALLER, AND ASTM F-679 (WALL THICKNESS T-1) WITH ELASTROMERIC GASKETED JOINTS FOR SIZES 18-INCHES AND LARGER.

3. THE MAXIMUM DEFLECTION OF PVC PIPE, AFTER INSTALLATION AND BACKFILLING, SHALL NOT EXCEED 5% OF THE PIPE DIAMETER. THE MAXIMUM INDIVIDUAL PIPE LENGTH OF PVC PIPE SHALL BE 20-FEET, 10-FOOT LENGTHS WHERE PIPE IS LAID AT MINIMUM GRADE.

4. ALL DUCTILE IRON PIPE (DIP) SHALL CONFORM TO AWWA C-151 CLASS 51.

5. THE CONTRACTOR SHALL CONFORM TO ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY RULES AND REGULATIONS. ALL TRENCHES SHALL BE OPEN CUT FROM GROUND SURFACE AND SHALL NOT EXCEED A WIDTH OF 48-INCHES AT A POINT 12-INCHES ABOVE THE CROWN OF THE PIPE. ALL TRENCHES SHALL BE PROPERLY BRACED AND/OR SHORED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL OCCUPATIONAL SAFETY AND HEALTH (OSHA) REQUIREMENTS. SHORING SHALL BE REMOVED AS THE WORK AND BACKFILLING OPERATIONS PROGRESS.

6. MERIDIAN METROPOLITAN DISTRICT "CLASS B" BEDDING SHALL BE USED THROUGHOUT THE PROJECT (BEDDING SHALL BE PLACED 6” MINIMUM AROUND AND BELOW THE PIPE AND 12" MINIMUM ABOVE THE PIPE). BEDDING MATERIAL SHALL CONFORM TO ASTM C-33 OR D-448 GRADATION No. 67 OR 6 RESPECTIVELY.

7. EXCAVATED MATERIAL SHALL NORMALLY BE CONSIDERED SUITABLE FOR BACKFILL UNLESS ANOMALOUS CONDITIONS ARE DISCOVERED DURING EXCAVATION. NO RUBBLE AND STONES LARGER THAN 3-INCHES IN DIAMETER, RUBBISH, DEBRIS, OR ORGANIC MATERIALS, SHALL BE USED IN BACKFILL. CLAYS WITH A PLASTICITY INDEX IN EXCESS OF 20 SHALL NOT BE USED FOR BACKFILL IN TRENCHES LOCATED IN APPROVED STREETS. BACKFILL (ABOVE CLASS B MATERIAL) WITHIN STREET AREAS SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% STANDARD PROCTOR AS DETERMINED BY AASHTO METHOD T-99. BACKFILL NOT UNDER STREETS SHALL BE COMPACTED TO A STANDARD PROCTOR DENSITY EQUAL TO THAT OF THE UNDISTURBED NATURAL GROUND BEFORE CONSTRUCTION.

8. THE DISCHARGE FROM ANY TRENCH DEWATERING OPERATIONS SHALL BE DISCHARGED INTO NATURAL DRAINAGE CHANNELS OR OTHER STRUCTURES AS APPROVED BY THE ENGINEER. BY NO MEANS SHALL GROUND WATER BE ALLOWED TO BE DISCHARGED INTO THE SANITARY SEWER SYSTEMS.

PIPE TRENCHES SHALL BE KEPT FREE FROM WATER DURING EXCAVATION, FINE GRADING, PIPE LAYING AND JOINTING. DEWATERING SUFFICIENT TO PROVIDE A COMPLETELY DRY TRENCH, SHALL BE MAINTAINED DURING ALL PIPE LAYING AND JOINTING OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE OF ANY NATURE RESULTING FROM THE DEWATERING OPERATIONS.

9. INFILTRATION AND EX-FILTRATION SHALL NOT EXCEED 100 GALLONS PER INCH OF PIPE DIAMETER PER MILE OF SEWER PER DAY FOR VITRIFIED CLAY PIPE (VCP), AND 50 GALLONS PER INCH OF PIPE DIAMETER PER MILE OF SEWER PER DAY FOR PVC PIPE.

10. EVERY SECTION OF PIPE SHALL BE TELEVISED AND TESTED USING A LOW-PRESSURE AIR TEST.

TESTING OF PVC PIPE LINES SHALL CONFORM TO UNI-BELL PLASTIC PIPE ASSOCIATION'S "RECOMMENDED PRACTICE FOR LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE", UNI-B-6-79.

11. IF LASERS ARE USED TO GIVE LINE AND GRADE FOR THE SEWER LINES, THEY MUST BE CHECKED EVERY 25-FEET FOR THE FIRST 100-FEET AND EVERY 50-FEET THEREAFTER.

12. THE CONTRACTOR SHALL HAVE ONE (1) SET OF PLANS APPROVED BY THE MERIDIAN METROPOLITAN DISTRICT ON SITE AT ALL TIMES.

13. THE CONTRACTOR SHALL NOTIFY THE DISTRICT ENGINEER AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION.

14. COMPACTION TEST RESULTS SHALL BE SUBMITTED TO THE DISTRICT ENGINEER PRIOR TO FINAL ACCEPTANCE.

15. SANITARY SEWER SERVICES SHALL BE WYES OFF OF THE MAIN LINE ON NEW CONSTRUCTION AND WYE SADDLES WITH STAINLESS STEEL STRAPS ON EXISTING MAINS.

16. ALL SANITARY SEWER MAINS AND APPURTENANCES ARE TO BE CLEARLY STAKED WITH OFFSET STAKES PRIOR TO INSPECTION TO ASSURE PROPER PLACEMENT OF PIPE. ANY AND ALL SANITARY SEWER EASEMENTS SHALL BE CLEARLY IDENTIFIED AS WELL.

17. "AS-BUILT" MYLAR DRAWINGS ARE TO BE REPRODUCIBLE COPIES 24"X36"SIZE OF THE APPROVED CONSTRUCTION DRAWINGS. ANY FIELD CHANGES ARE TO BE NOTED. THE DRAWING(S) WILL STATE "AS-BUILT" IN LARGE BLOCK LETTERS. A PRINT OF THE MYLAR IS TO BE SIGNED, DATED AND STAMPED BY THE REGISTERED ENGINEER OR THE "AS-BUILT" PRINT MAY BE STAMPED AND SIGNED BY A COLORADO-REGISTERED PROFESSIONAL LAND SURVEYOR INSTEAD OF, OR IN ADDITION TO, A REGISTERED ENGINEER. THE SURVEYOR'S CERTIFICATION IS FOR SURVEY DATA ONLY AND A NOTE TO THIS EFFECT SHOULD BE INCLUDED BY THE LS SEAL.

"AS-BUILT" FIELD NOTES, FROM WHICH THE "AS-BUILT" DRAWINGS ARE PREPARED, ARE TO BE PROVIDED AND STAMPED / SIGNED AND DATED BY THE REGISTERED LAND SURVEYOR.

18. THE DEVELOPER SHALL BE RESPONSIBLE FOR OBTAINING THE FOLLOWING:

A. PROVIDE THE DISTRICT ENGINEERS A DEVELOPER'S WARRANTY, INCLUDING LIEN WAVERS AND ALL OTHER ASSURANCES THAT PAYMENT OF ALL SUPPLIES OF LABOR AND/OR MATERIAL HAS OCCURRED.

B. PROVIDE THE DISTRICT ENGINEERS A BILL OF SALE, INCLUDING A DESCRIPTION OF THE FACILITIES.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR THE FOLLOWING:

A. SUPPLYING THE DISTRICT ENGINEER WITH AN "ENGINEERS ESTIMATE" OF ALL COSTS ASSOCIATED WITH THE SANITARY SEWER INSTALLATION, PRIOR TO CONSTRUCTION.

B. STREET CUTTING PERMITS FROM THE APPROPRIATE AUTHORITIES.

C. RESTORATION OF DISTURBED STREET PAVEMENT AS REQUIRED BY GOVERNING AUTHORITIES.

D. ALL COSTS ASSOCIATED WITH INSPECTION BY THE APPOINTED REPRESENTATIVE OF THE MERIDIAN METROPOLITAN DISTRICT AND GOVERNING AUTHORITIES.

E. TESTING OF COMPLETED SANITARY SEWER LINES AS REQUIRED BY APPOINTED REPRESENTATIVE OF THE MERIDIAN METROPOLITAN DISTRICT.

F. A PERFORMANCE AND PAYMENT BOND GUARANTEEING PAYMENT BY THE CONTRACTOR OF ALL BILLS BEFORE FINAL PAYMENT UNDER THIS CONTRACT.

G. VERIFICATION OF ALL OTHER UNDERGROUND FACILITIES WHICH MAY BE AFFECTED BY THIS PROJECT AND REPAIR THEREOF IN CASE OF DAMAGE.

H. SCHEDULE A PRE-CONSTRUCTION MEETING TO INCLUDE AT LEAST THE CONTRACTOR, ENGINEER, OWNER OR OWNER'S REPRESENTATIVE, A REPRESENTATIVE OF THE MERIDIAN METROPOLITAN DISTRICT. THE CONTRACTOR SHALL GIVE AT LEAST 48-HOURS NOTICE TO THE ATTENDEES PRIOR TO THE PRE-CONSTRUCTION MEETING AND PRIOR TO COMMENCING CONSTRUCTION.

I. JETTING AND TELEVISING ALL MAINLINE SANITARY SEWER MAINS UPON COMPLETION.

J. "AS-CONSTRUCTED" MYLARS, ELECTRONIC FILES, FIELD NOTES AND CUT-SHEETS SHALL BE SUPPLIED TO THE MERIDIAN METROPOLITAN DISTRICT PRIOR TO CONDITIONAL ACCEPTANCE OF THE SANITARY SEWER LINES.

20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL PERSONNEL(S) ASSOCIATED WITH THIS PROJECT AND THE GENERAL PUBLIC WHERE THE PROJECT IS ON PUBLIC RIGHT-OF-WAY.

21. SAFETY/CONSTRUCTION FENCING MUST BE PLACED ENTIRELY AROUND ANY OPEN EXCAVATION AT THE END OF EACH DAY.

22. OBSERVATION OF CONSTRUCTION/WORK IN PROGRESS AND ON-SITE VISITS ARE NOT TO BE CONSTRUED AS A GUARANTEE BY THE DISTRICT OR DISTRICT ENGINEER, OF CONTRACTORS PERFORMANCE, OR OBLIGATIONS TO THE COMPLIANCE OF THE CONTRACT.

23. MERIDIAN METROPOLITAN DISTRICT PERSONNEL ARE NOT RESPONSIBLE FOR SAFETY IN, ON, OR ABOUT THE PROJECT SITE, OR FOR THE COMPLIANCE BY THE APPROPRIATE PARTY OF ANY REGULATION RELATING THERETO. ALL SAFETY COMPLIANCE/ENFORCEMENT AT THE WORK SITE SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

d. Sanitary Sewer Manhole

1. ALL CONCRETE USED IN MANHOLE CONSTRUCTION SHALL DEVELOP 4000 PSI COMPRESSIVE STRENGTH AFTER 28 DAYS. TYPE II CEMENT SHALL BE USED AND AIR ENTRAINMENT IS REQUIRED.

2. ALL MANHOLES SHALL HAVE SEMI-CIRCULAR SHAPED INVERTS FOR SMOOTH FLOW. THE INVERT MAY BE FORMED DIRECTLY IN THE CONCRETE OF THE BASE.

3. PRE-CAST MANHOLE RISERS (BODIES), AND CONES SHALL CONFORM TO ASTM C-478. ALL MANHOLES SHALL HAVE ECCENTRIC CONES (NO FLAT TOPS).

4. ALL JOINTS IN PRE-CAST MANHOLES SHALL BE SEALED WITH A PREFORMED, FLEXIBLE SEALING COMPOUND CONFORMING TO FEDERAL SPECIFICATION SS-S-00210 (GSA-FSS), SUCH AS "RAM-NEK" OR EQUAL AND CEMENT GROUT SHALL BE USED ON ALL OUTSIDE JOINTS WHERE GROUNDWATER IS PRESENT

5. MANHOLE STEPS SHALL BE EXTRUDED ALUMINUM, CONFORMING TO FEDERAL SPECIFICATION QQ-A-200/8, OR POLYPROPYLENE REINFORCED PLASTIC, INSTALLED IN A STRAIGHT LINE VERTICALLY AND SPACED 16-INCHES MAXIMUM APART, STEPS SHALL BE PRE-CAST IN THE MANHOLE WALL.

6. MANHOLE RING AND COVER SHALL BE NOMINAL 24-INCH DIAMETER STANDARD PATTERN CAST IRON.

7. COVER SHALL BE THE DISTRICT STANDARD PATTERN. ALL CAST IRON CASTINGS SHALL BE OF GRAY CAST IRON, ASTM DESIGNATION A48 CLASS 35B. CASTINGS SHALL NOT BE PAINTED OR DIPPED. ALL ALUMINUM CASTINGS SHALL BE DIPPED IN POLYMERIC PAINT AND CONTRACTOR MUST HAVE WRITTEN DISTRICT APPROVAL PRIOR TO INSTALLATION.

8. AN APPROVED MANHOLE WATER STOP GASKET SHALL BE INSTALLED ON ALL PLASTIC PIPE ENTERING A MANHOLE.

9. ALL MANHOLE BASES SHALL BE CAST-IN-PLACE CONCRETE. USE OF PRE-CAST MANHOLE BASES IS NOT PERMITTED, UNLESS APPROVED BY THE DISTRICT ENGINEER.

MERIDIAN METROPOLITAN DISTRICT

UTILITY DETAIL DRAWINGS

November 2012

Meridian Metropolitan District

Utility Detail Drawings

Table of Contents

WATER MAIN

WATER & IRRIGATION SERVICE

WATER & IRRIGATION SERVICE (CONT.)

SANITARY SEWER MAIN

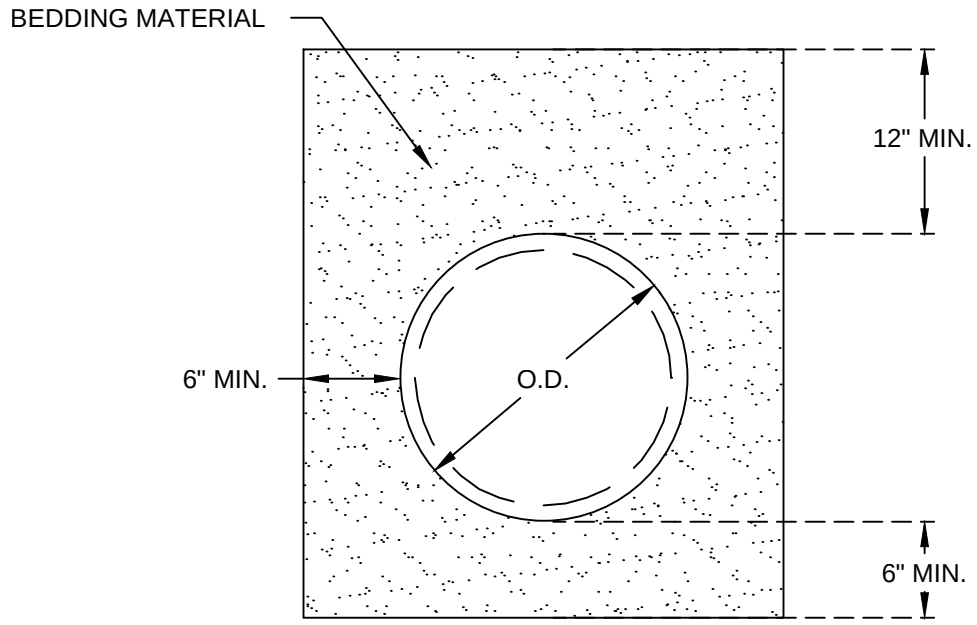
SANITARY SEWER MAIN (CONT.)

SANITARY SEWER SERVICE

STANDARD DETAILS

COMMUNICATION DETAILS

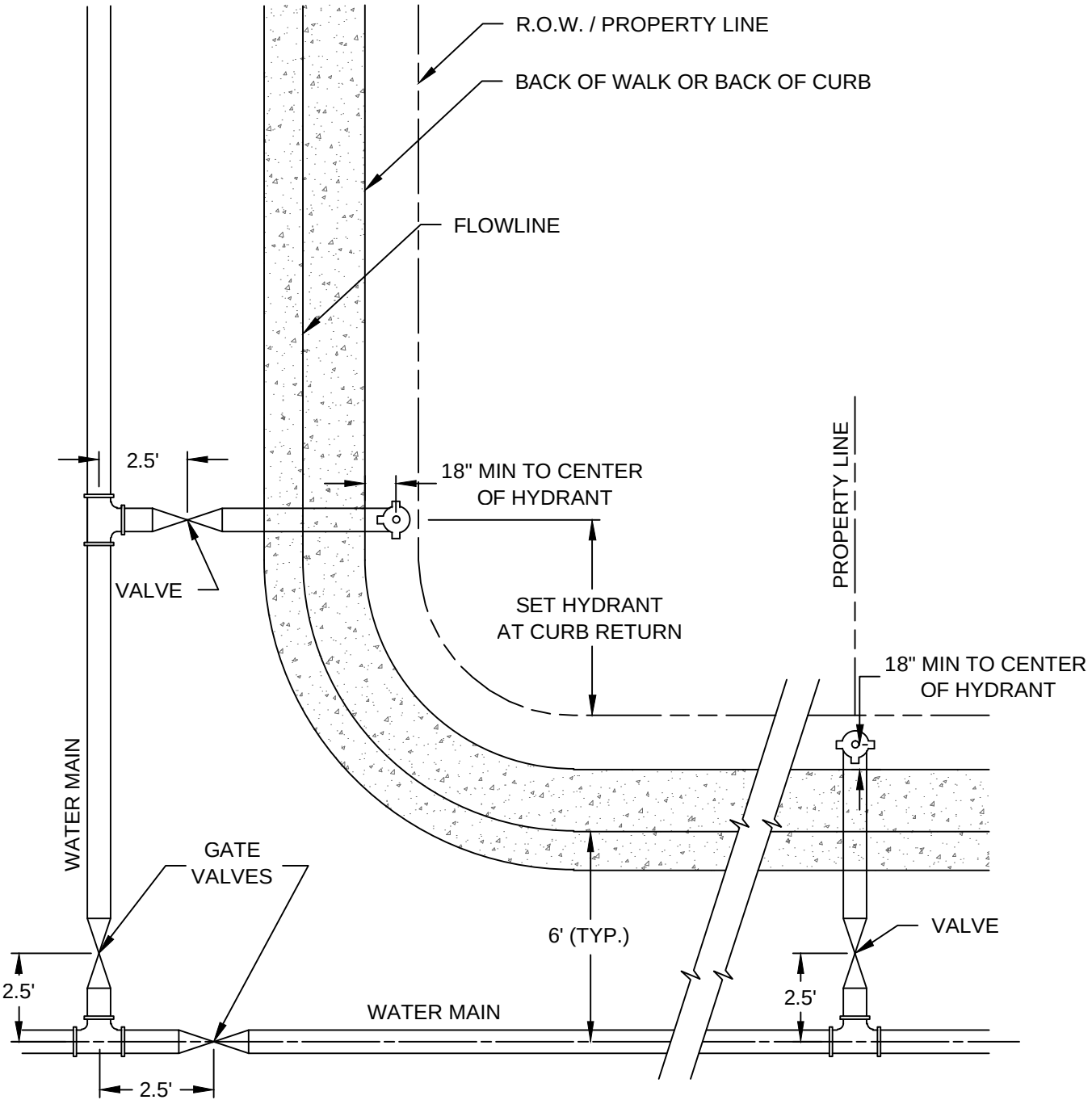
STREET LIGHTING DETAILS



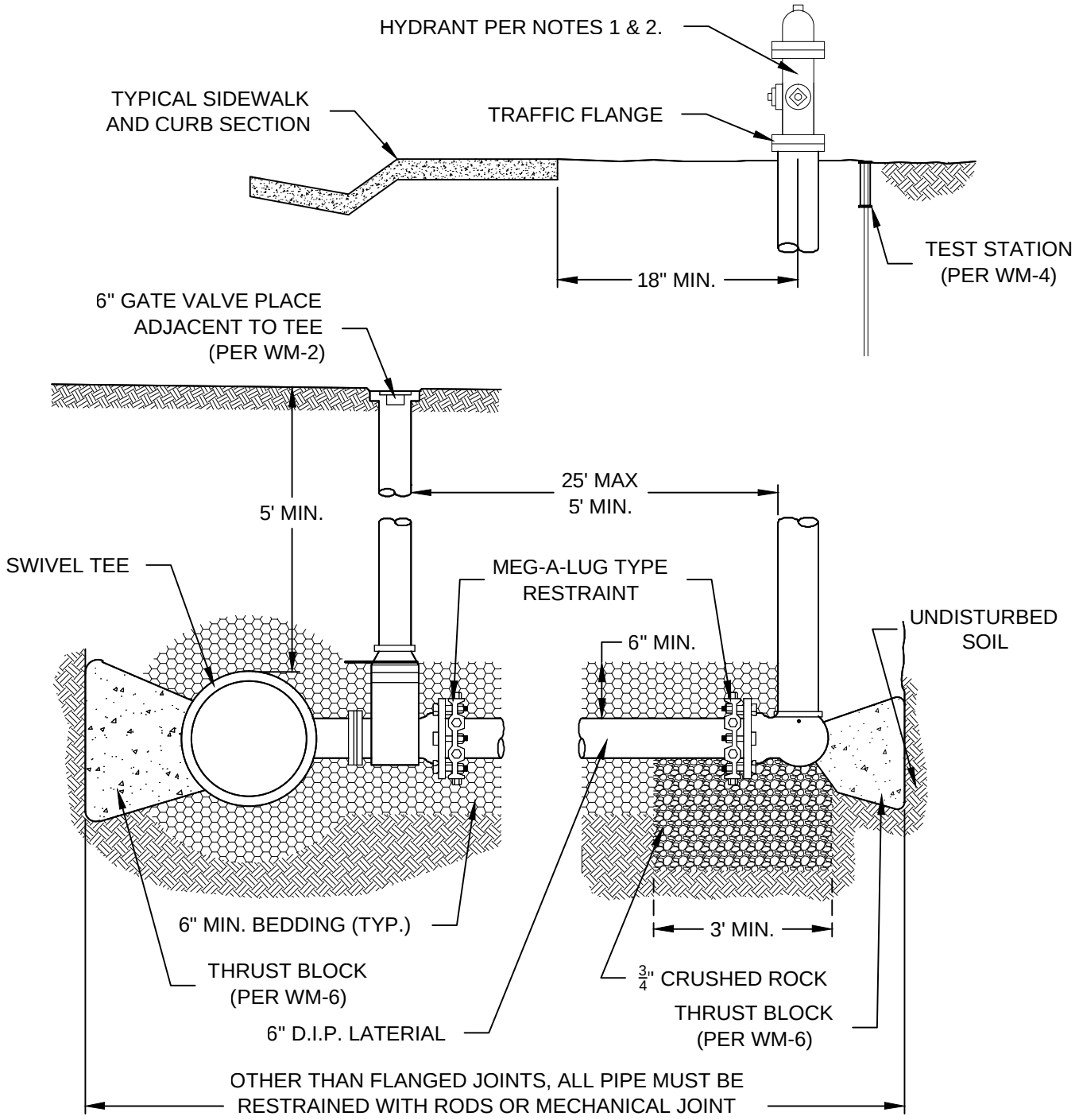
1. BACKFILL OVER PIPE SHALL BE COMPACTED TO 90% MAXIMUM DRY WEIGHT DENSITY ASHTO T-99

2. PIPE BEDDING SHALL BE SQUEEGEE OR $\frac{3}{4}$" CRUSHED ROCK.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-1
August, 2012		PIPE BEDDING DETAIL	



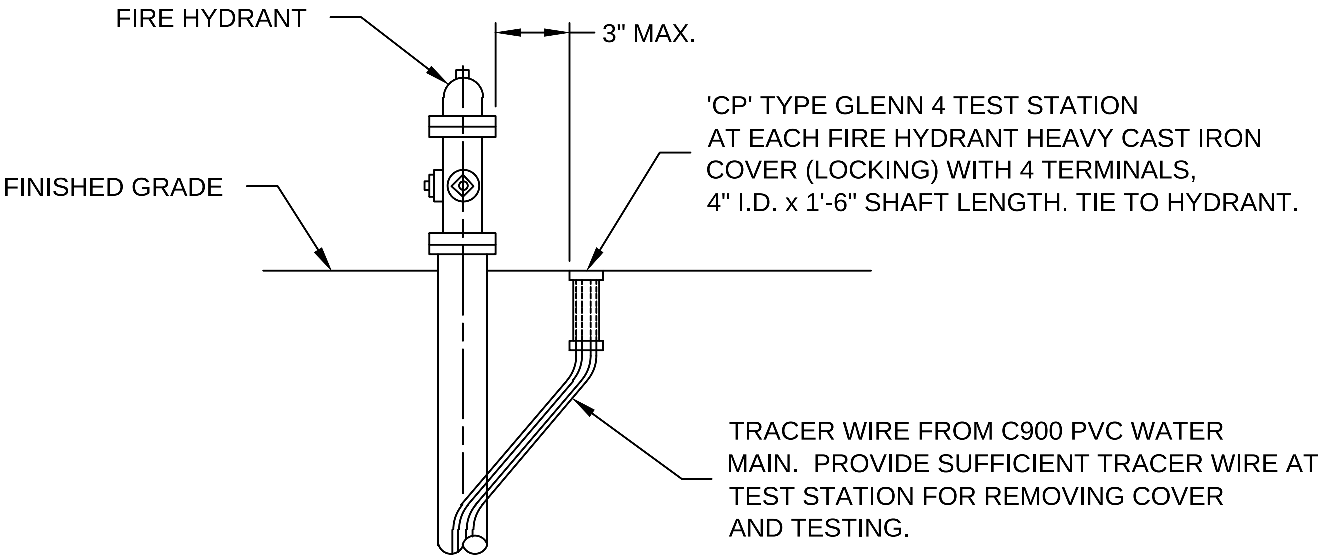
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-2
August, 2012		VALVE AND FIRE HYDRANT LOCATION DETAIL	



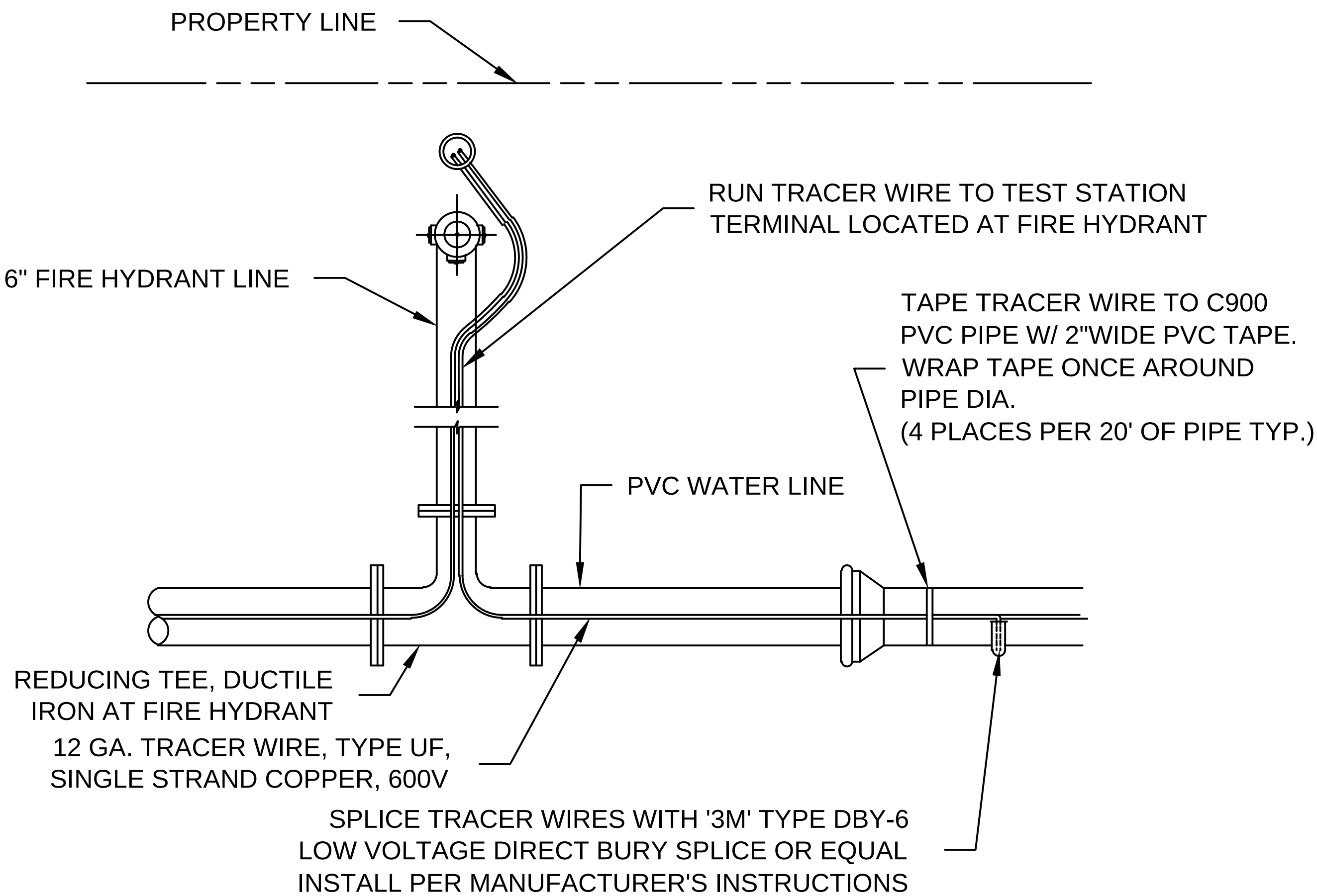
NOTES:

1. HYDRANT SHALL BE WATEROUS PACER 150 OR MUELLER CENTURION, OPEN LEFT, AND THE THREADED HOSE CONNECTIONS SHALL BE 2½" NOMINAL DIAMETER WITH 4½ THREADS PER INCH ON THE STEAMER NOZZLE, IN COMPLIANCE WITH SOUTH METRO FIRE PROTECTION DISTRICT REQUIREMENTS. FIRE HYDRANT ASSEMBLIES SHALL INCLUDE ALL PIPE, FITTINGS OPEN RIGHT VALVES, AND MATERIALS NECESSARY TO INSTALL THE HYDRANT COMPLETE AND IN PLACE.
2. ALL FIRE HYDRANTS ARE TO BE PAINTED DIAMOND VOGEL, MERIDIAN METROPOLITAN DISTRICT GREY, USING AMERCOAT 220 WATERBORNE ACRYLIC, AMERCOAT 220 DEEP TINT 3349710 BTL 408416-334-970.
3. HYDRANT PIT SHALL CONTAIN A MINIMUM OF 1 C.Y. OF ¾" CRUSHED ROCK
4. DISTANCE FROM BACK OF WALK, SEE WM-2.

REV. DATE			
August, 2012	MERIDIAN METROPOLITAN DISTRICT		WM-3
	TYPICAL FIRE HYDRANT & ASSEMBLY		

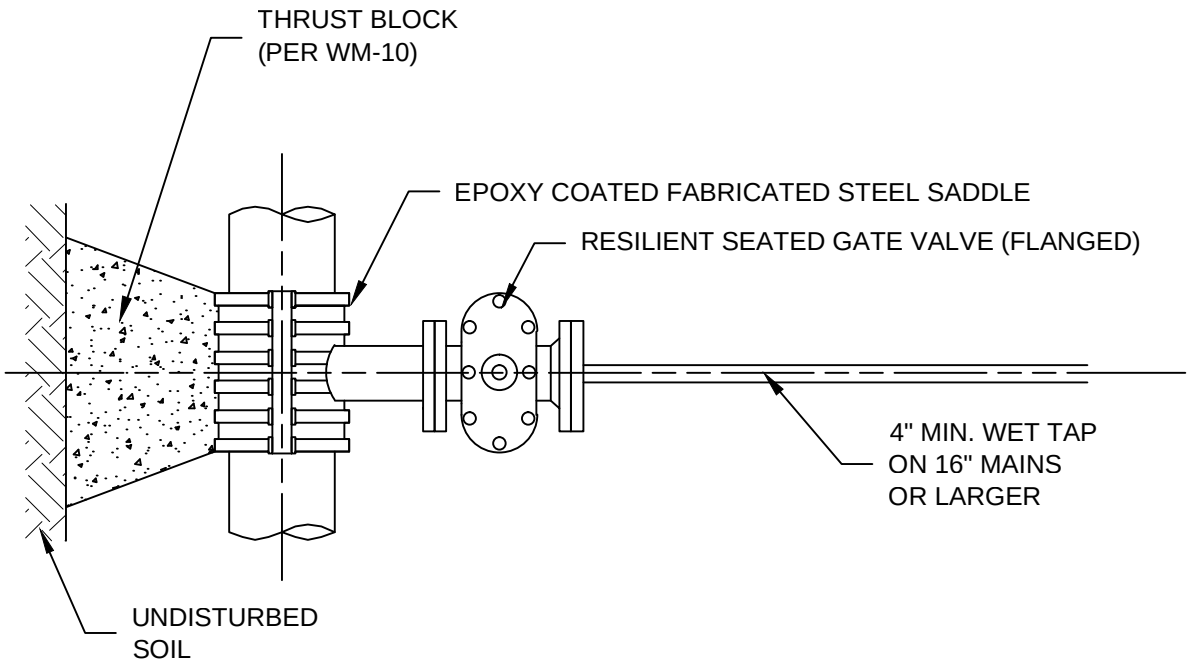


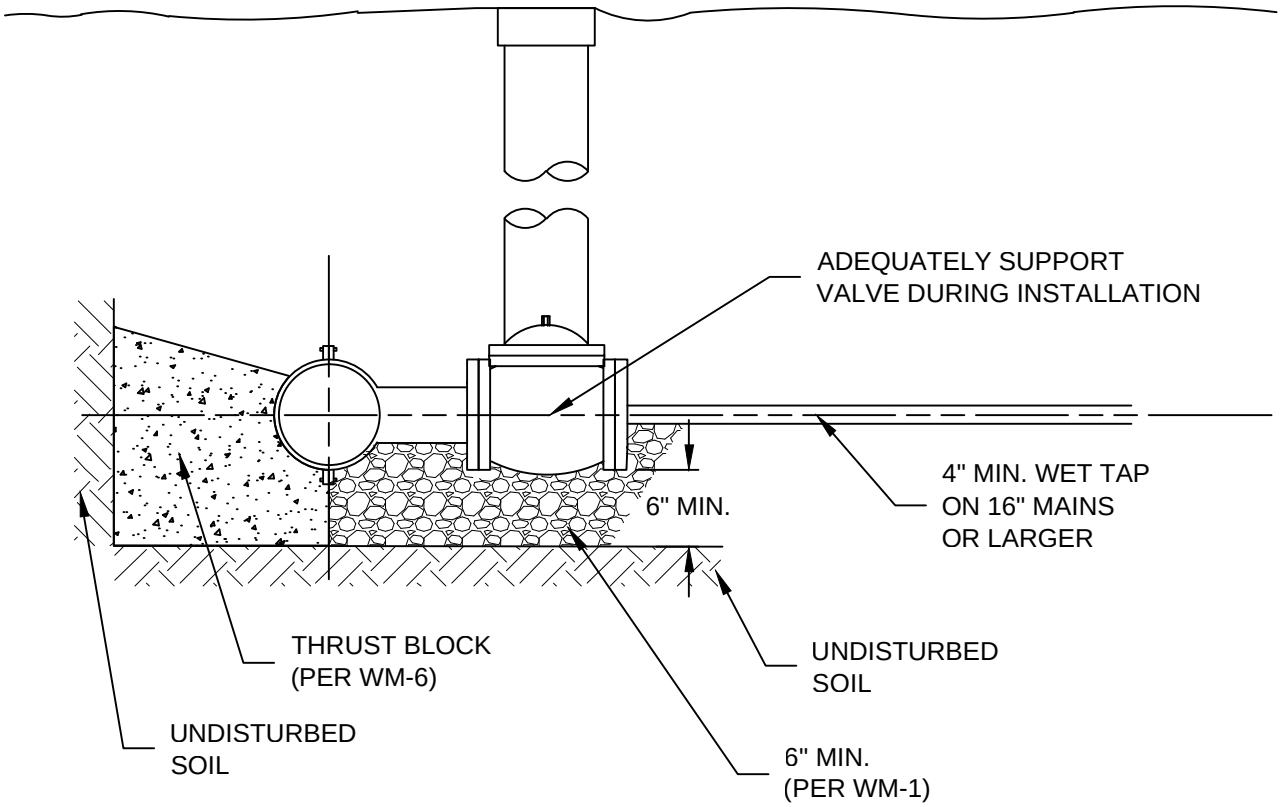
PROFILE



PLAN

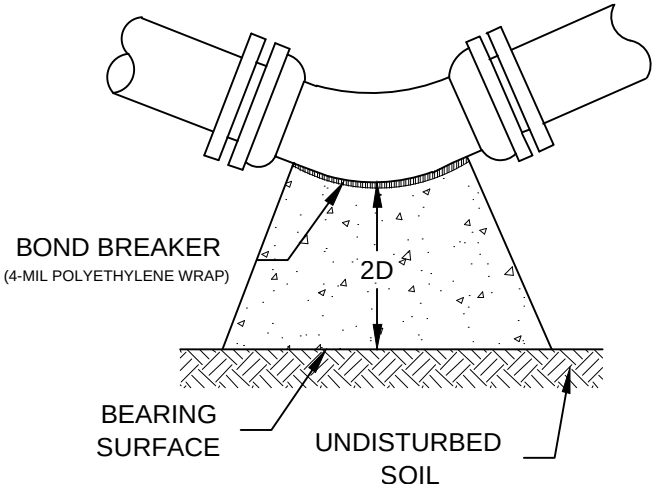
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WM-4
August, 2012	TRACER WIRE INSTALLATION DETAIL	



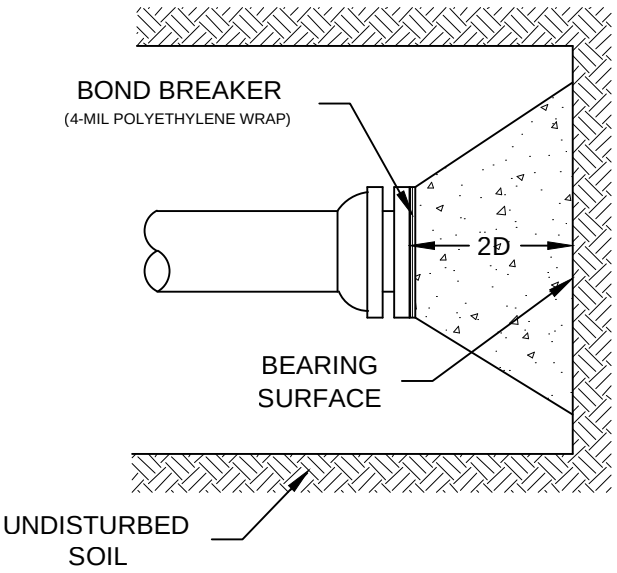


REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WM-5
August, 2012	WET TAP	

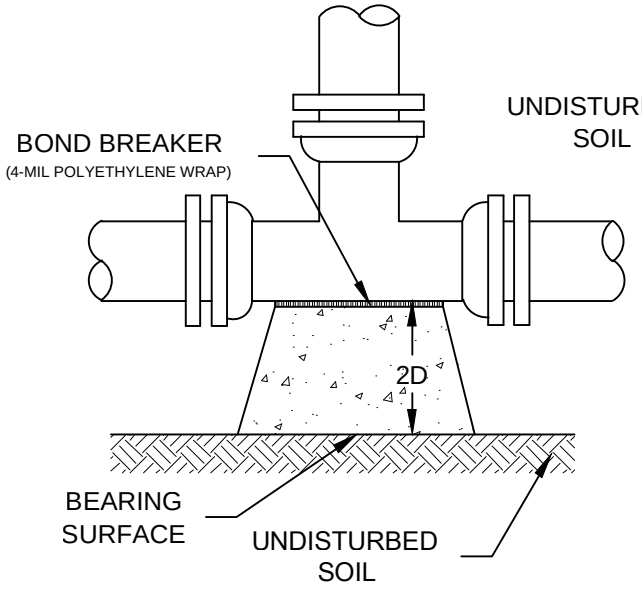
$11\frac{1}{4}°$, $22\frac{1}{2}°$, 45°, AND 90° BENDS



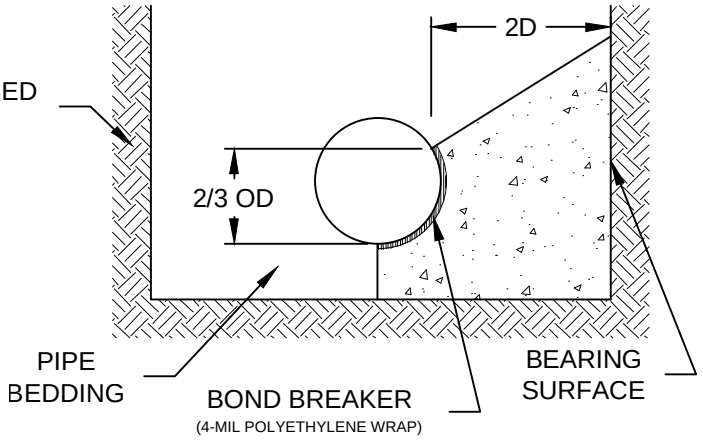
DEAD END



TEE



TYPICAL CROSS SECTION



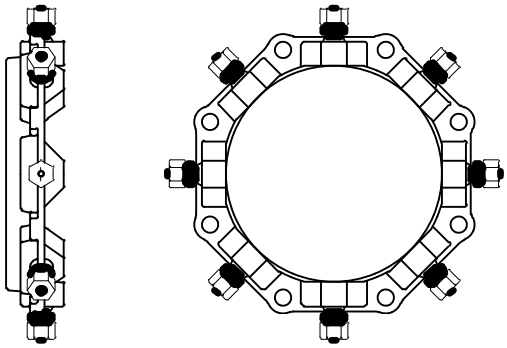
MINIMUM BEARING SURFACE AREA

SQUARE- FOOT AREA FOR
150 PSI INTERNAL PRESSURE PIPES

PIPE SIZE	BEND				TEE	DEAD END
	$11\frac{1}{4}°$	$22\frac{1}{2}°$	45°	90°		
6"	0.6	1.3	2.5	4.6	2.3	3.1
8"	1.1	2.2	4.3	7.9	4.0	5.4
12"	2.4	4.6	9.1	16.8	8.6	11.4
16"	3.9	7.7	15.2	28.0	14.9	20.0
20"	8.5	17.0	33.5	61.7	32.7	43.6
24"	8.5	17.0	33.5	61.7	32.7	43.6
36"	18.9	37.5	73.5	135.0	72.0	96.0

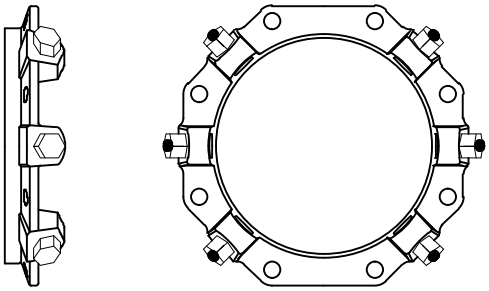
REV. DATE			
August 2012		MERIDIAN METROPOLITAN DISTRICT	WM-6
		CONCRETE THRUST BLOCK DETAILS	

MECHANICAL JOINT RESTRAINT FOR PVC - C-900 PIPE (TYPICAL)



PVC RESTRAINT - SERIES 2000 MEGALUG, SERIES 1500 UNI-FLANGE OR MMD PRE-APPROVED EQUIVALENT; COLOR IS RED

MECHANICAL JOINT RESTRAINT FOR DUCTILE IRON PIPE (TYPICAL)



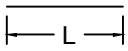
DUCTILE IRON RESTRAINT - SERIES 1100 MEGALUG, SERIES 1400 UNI-FLANGE OR MMD PRE-APPROVED EQUIVALENT; COLOR IS BLACK

NOTE: DO NOT MODIFY RESTRAINTS AND INSTALL PER MANUFACTURES' RECOMMENDATION.

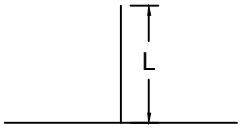
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-7
August 2012		MECHANICAL JOINT RESTRAINT	

ROD DIAMETER, GRADE AND LENGTH OF RESTRAINED PIPE

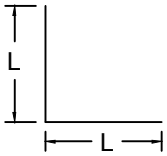
PIPE SIZE	4"			6"			8"			12"			16"			20"			24"			30"		
FITTING	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G
90° BEND, TEE, VALVE > 12", PLUG	$\frac{3}{4}$"	40'	MS	$\frac{3}{4}$"	45'	MS	$\frac{3}{4}$"	60'	MS	$\frac{3}{4}$"	86'	MS	$\frac{3}{4}$"	108'	HS	1"	132'	HS	1"	155'	HS	1"	218'	HS
45° BEND	$\frac{3}{4}$"	9'	MS	$\frac{3}{4}$"	13'	MS	$\frac{3}{4}$"	18'	MS	$\frac{3}{4}$"	25'	MS	$\frac{3}{4}$"	32'	MS	$\frac{3}{4}$"	39'	HS	$\frac{3}{4}$"	45'	HS	$\frac{3}{4}$"	64'	HS
$22\frac{1}{2}°$ BEND	$\frac{3}{4}$"	2'	MS	$\frac{3}{4}$"	4'	MS	$\frac{3}{4}$"	5'	MS	$\frac{3}{4}$"	7'	MS	$\frac{3}{4}$"	8'	MS	$\frac{3}{4}$"	10'	MS	$\frac{3}{4}$"	12'	MS	$\frac{3}{4}$"	17'	MS
$11\frac{1}{4}°$ BEND	$\frac{3}{4}$"	2'	MS	$\frac{3}{4}$"	2'	MS	$\frac{3}{4}$"	2'	MS	$\frac{3}{4}$"	2'	MS	$\frac{3}{4}$"	2'	MS	$\frac{3}{4}$"	3'	MS	$\frac{3}{4}$"	3'	MS	$\frac{3}{4}$"	5'	MS
VERTICAL BENDS	ALL TOTALLY RESTRAINED, L = 40'																							



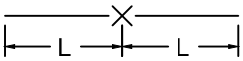
PLUG



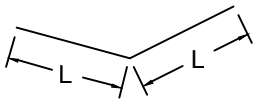
TEE



90° BEND



VALVE



BENDS

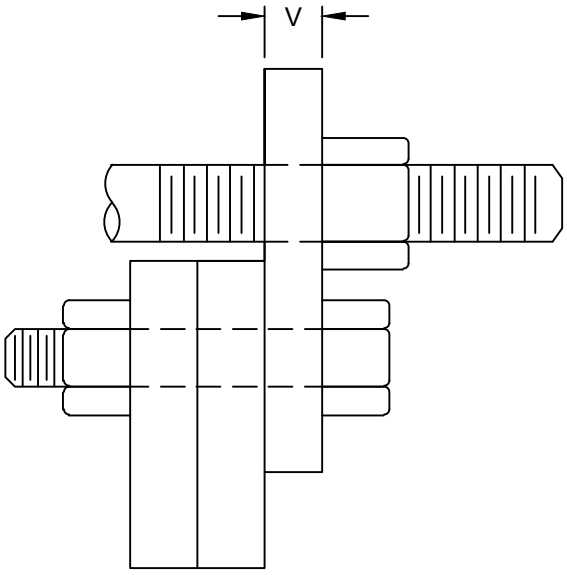
NOTES

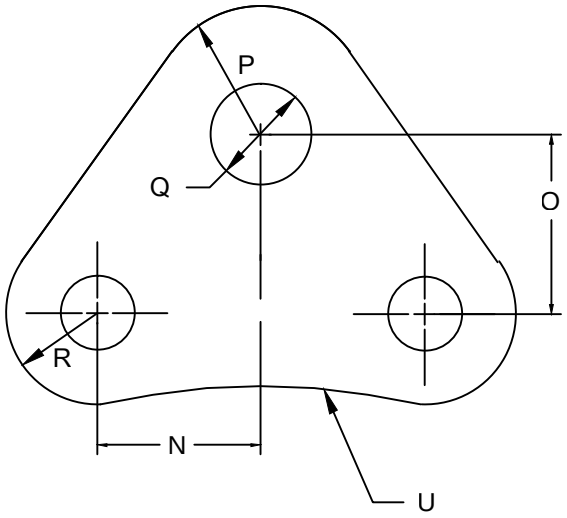
1. LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. CLAMPS, RODS & MEGALUGS NOT ALLOWED FOR PIPES LARGER THAN 30". CLAMPS AND RODS SHALL BE EXTENDED TO THE NEXT PIPE.
3. D=DIAMETER, L=LENGTH, G=GRADE, MS=MILD STEEL, HS=HIGH STRENGTH.
4. MIN 4.5' GROUND COVER REQUIRED.
5. BASED ON 150 PSI INTERNAL PRESSURE, FOR L AND PRESSURES LISTED ON SHEET 22 FOR D AND G.
6. MS = MILD STEEL ROD ASTM A-36. HS = HIGH STRENGTH ROD ASTM A-193 GRADE B7.
7. NUTS SHALL BE ASTM A-307 GRADE A OR B HEXAGON HEAVY SERIES.
8. SEE TIE ROD DETAIL DRAWING. ALSO, TIE ROD COUPLING DETAILS, CLAMP DETAILS AND SET CLAMP DETAILS.
9. LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED TOGETHER AND IS NOT NECESSARILY THE LENGTH OF THE RODS.
10. LENGTH OF RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
11. CROSSES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
12. 12" AND SMALLER IN LINE VALVES AND TEES SHALL HAVE A MECHANICAL JOINT RESTRAINT DEVICE ON EACH SIDE OF THE FITTING OR VALVE. MECHANICAL JOINT RESTRAINT DEVICE SHALL BE PER WM-11.
13. A SECOND VALVE WILL BE REQUIRED TO BE CLOSED WHEN EXCAVATING NEXT TO A EXISTING VALVE.
14. ON PLUGS, TEES AND BENDS KICKBLOCKS SHALL BE USED IN ADDITION TO RESTRAINT.
15. WHEN REDUCERS ARE USED ON VALVE INSTALLATIONS THE LENGTH OF RESTRAINT SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-8
August 2012		LENGTH OF RESTRAINED PIPE	

FLANGE LUG DETAIL

PIPE SIZE	N	O	H.S. RODS			M.S. RODS			R	S	U	V	PIPE SIZE
			P	Q	ROD ∅	P	Q	ROD ∅					
6"	$1\frac{13}{16}$"	$2\frac{1}{4}$"	1"	$\frac{7}{8}$"	$\frac{3}{4}$"	1"	$\frac{7}{8}$"	$\frac{3}{4}$"	$\frac{7}{8}$"	$\frac{7}{8}$"	$3\frac{3}{4}$"	$\frac{3}{4}$"	6"
8"	$2\frac{1}{4}$"	$2\frac{3}{4}$"	1"	$\frac{7}{8}$"	$\frac{3}{4}$"	1"	$\frac{7}{8}$"	$\frac{3}{4}$"	1"	$\frac{7}{8}$"	$4\frac{7}{8}$"	$\frac{3}{4}$"	8"
12"	$2\frac{3}{16}$"	$2\frac{3}{4}$"	$1\frac{1}{8}$"	$\frac{7}{8}$"	$\frac{3}{4}$"	$1\frac{1}{4}$"	$1\frac{1}{8}$"	$\frac{3}{4}$"	$1\frac{1}{8}$"	1"	$7\frac{1}{4}$"	$\frac{7}{8}$"	12"
16"	$2\frac{1}{16}$"	$2\frac{3}{4}$"	$1\frac{1}{8}$"	$\frac{7}{8}$"	$\frac{3}{4}$"	$1\frac{1}{2}$"	$1\frac{3}{8}$"	$\frac{3}{4}$"	$1\frac{1}{4}$"	$1\frac{1}{8}$"	$9\frac{3}{8}$"	$1\frac{1}{8}$"	16"
20"	$1\frac{31}{32}$"	$2\frac{3}{4}$"	$1\frac{1}{4}$"	$1\frac{1}{8}$"	1"	-	-	-	$1\frac{7}{16}$"	$1\frac{1}{4}$"	$11\frac{1}{16}$"	$1\frac{1}{4}$"	20"

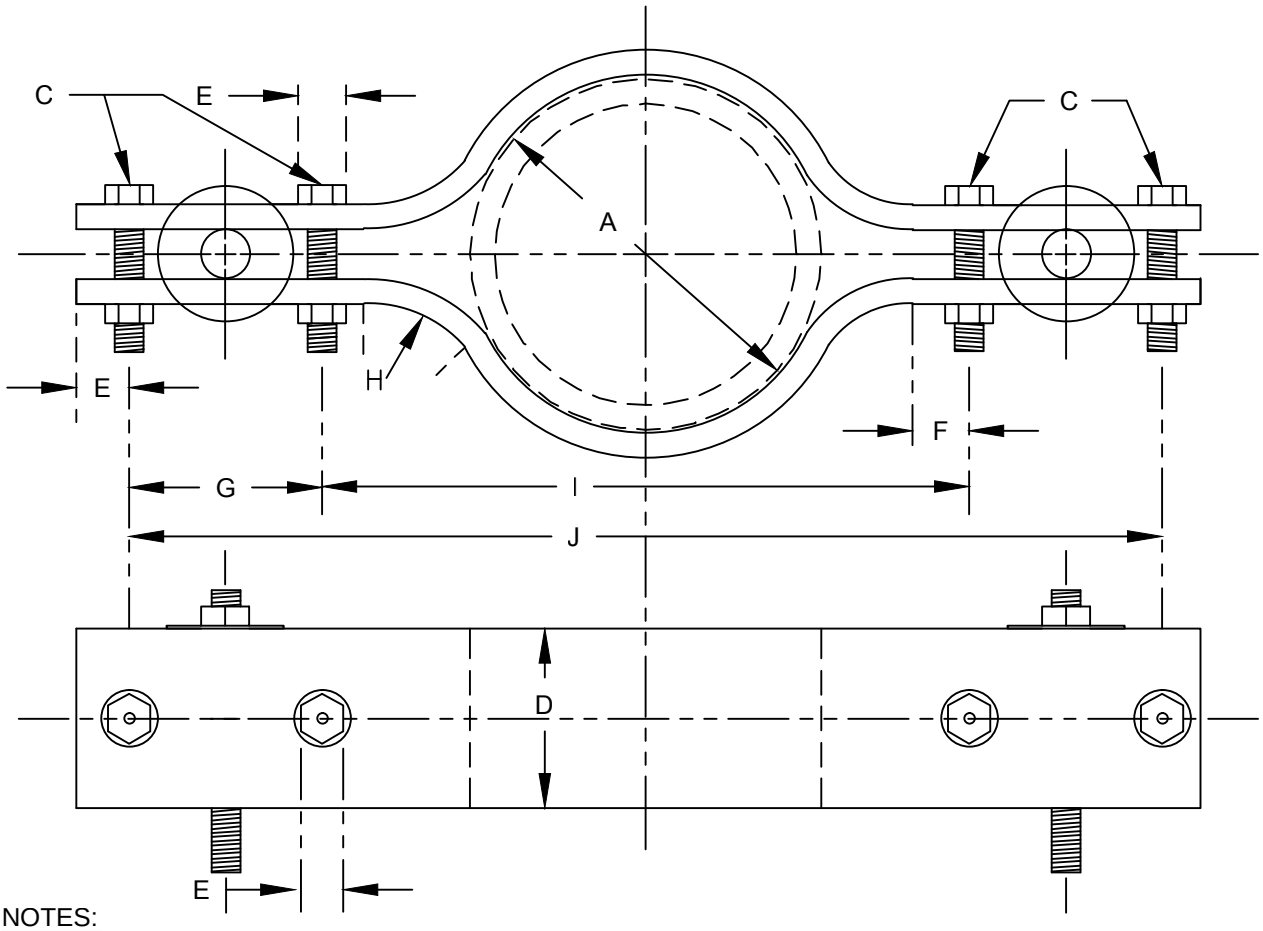




REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-9
August 2012		FLANGE LUG DETAIL	

TIE-ROD RETAINING CLAMP

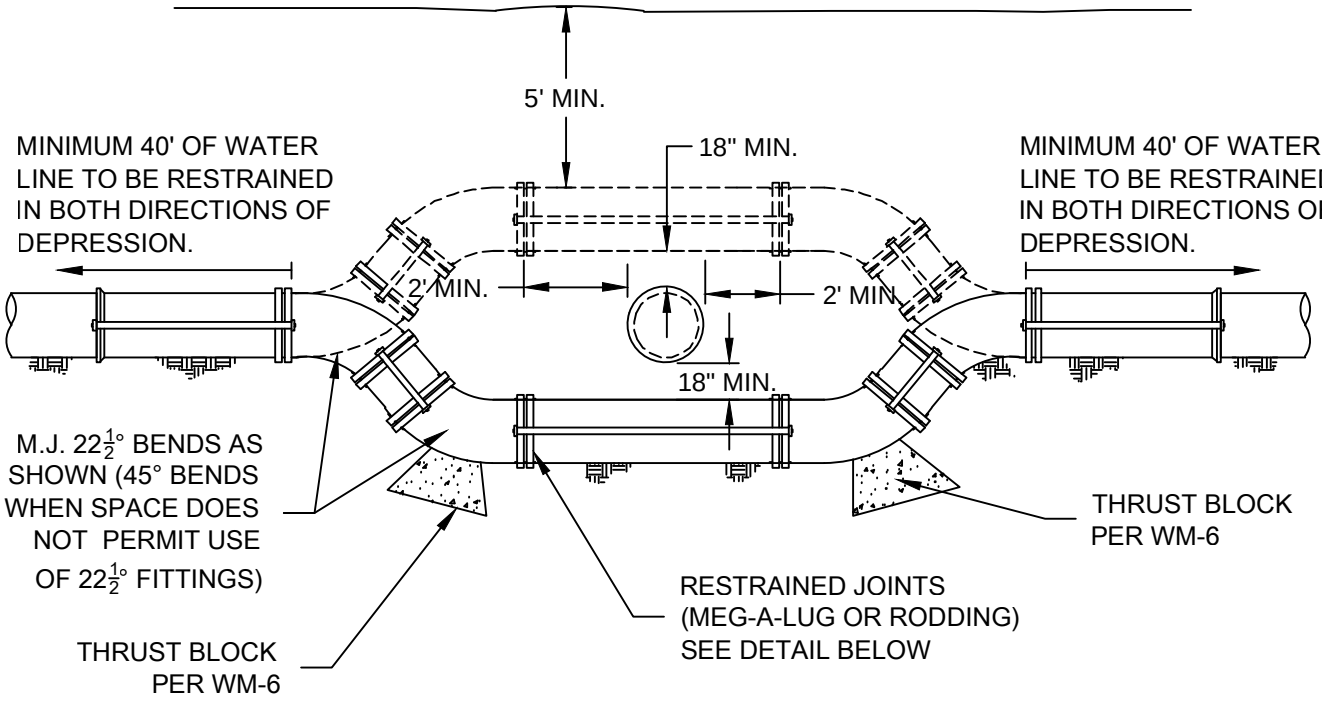
PIPE SIZE	ROD DIA.	A	B	C	D	E	F	G	H	I	J
4"	$\frac{3}{4}$"	5"	$\frac{1}{2}$" x $3\frac{1}{2}$"	$\frac{1}{2}$"	2"	$\frac{3}{4}$"	0.660"	3.10"	1.13"	8.58"	16.28"
6"	$\frac{3}{4}$"	$7\frac{1}{16}$"	$\frac{1}{2}$" x $3\frac{1}{2}$"	$\frac{1}{2}$"	2"	$\frac{3}{4}$"	0.660"	3.10"	1.13"	10.64"	18.34"
8"	$\frac{3}{4}$"	$9\frac{3}{16}$"	$\frac{1}{2}$" x $3\frac{1}{2}$"	$\frac{1}{2}$"	2"	$\frac{3}{4}$"	0.660"	3.10"	1.13"	12.78"	20.48"
10"	$\frac{3}{4}$"	$11\frac{3}{8}$"	$\frac{1}{2}$" x $3\frac{1}{2}$"	$\frac{1}{2}$"	2"	$\frac{3}{4}$"	0.660"	3.10"	1.13"	14.96"	22.66"
12"	$\frac{3}{4}$"	$13\frac{1}{2}$"	$\frac{1}{2}$" x $3\frac{1}{2}$"	$\frac{1}{2}$"	2"	$\frac{3}{4}$"	0.660"	3.10"	1.13"	17.08"	24.78"
14"	1"	$15\frac{3}{4}$"	$\frac{5}{8}$" x $4\frac{1}{2}$"	$\frac{3}{4}$"	3"	$\frac{15}{16}$"	0.780"	4.14"	1.69"	20.70"	30.86"
16"	1"	$17\frac{7}{8}$"	$\frac{5}{8}$" x $4\frac{1}{2}$"	$\frac{3}{4}$"	4"	$\frac{15}{16}$"	0.780"	4.14"	1.69"	22.80"	32.96"
18"	1"	20"	$\frac{3}{4}$" x 5"	$\frac{3}{4}$"	4"	$1\frac{1}{8}$"	0.950"	4.14"	1.69"	25.28"	35.81"
20"	1"	$22\frac{1}{8}$"	$\frac{3}{4}$" x 5"	$\frac{3}{4}$"	4"	$1\frac{1}{8}$"	0.950"	4.14"	1.69"	27.40"	37.93"
24"	$1\frac{1}{4}$"	$26\frac{3}{8}$"	$\frac{3}{4}$" x $5\frac{1}{2}$"	$\frac{3}{4}$"	5"	$1\frac{1}{8}$"	0.950"	5.18"	1.69"	31.66"	42.19"



NOTES:

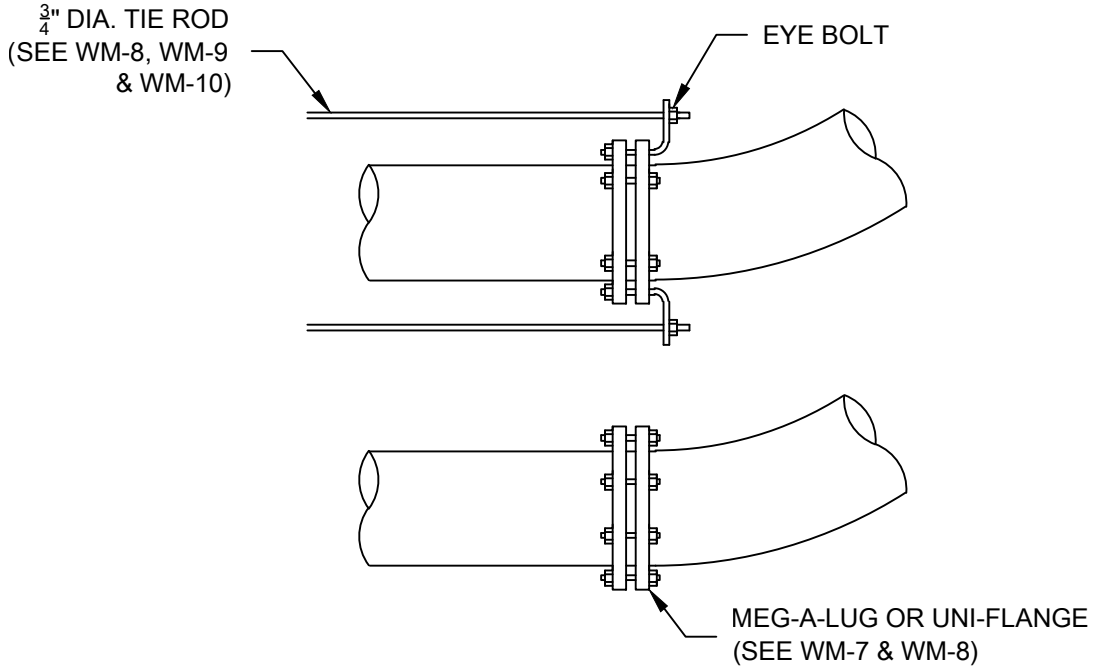
1. DIMENSIONS ARE BASED ON BOX END WRENCH CLEARANCES.
2. DIMENSION "G" HAS BEEN SIZED TO ACCOMMODATED TWO (2) RODS, IF NEEDED.
3. STEEL PLATES OR WASHERS ARE TO BE USED TO SECURE TIE ROD.
4. CLAMPS SHALL BE EPOXY COATED.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-10
August 2012		TIE-ROD RETAINING CLAMP	



TYPICAL DETAIL FOR WATER LINE DEPRESSION

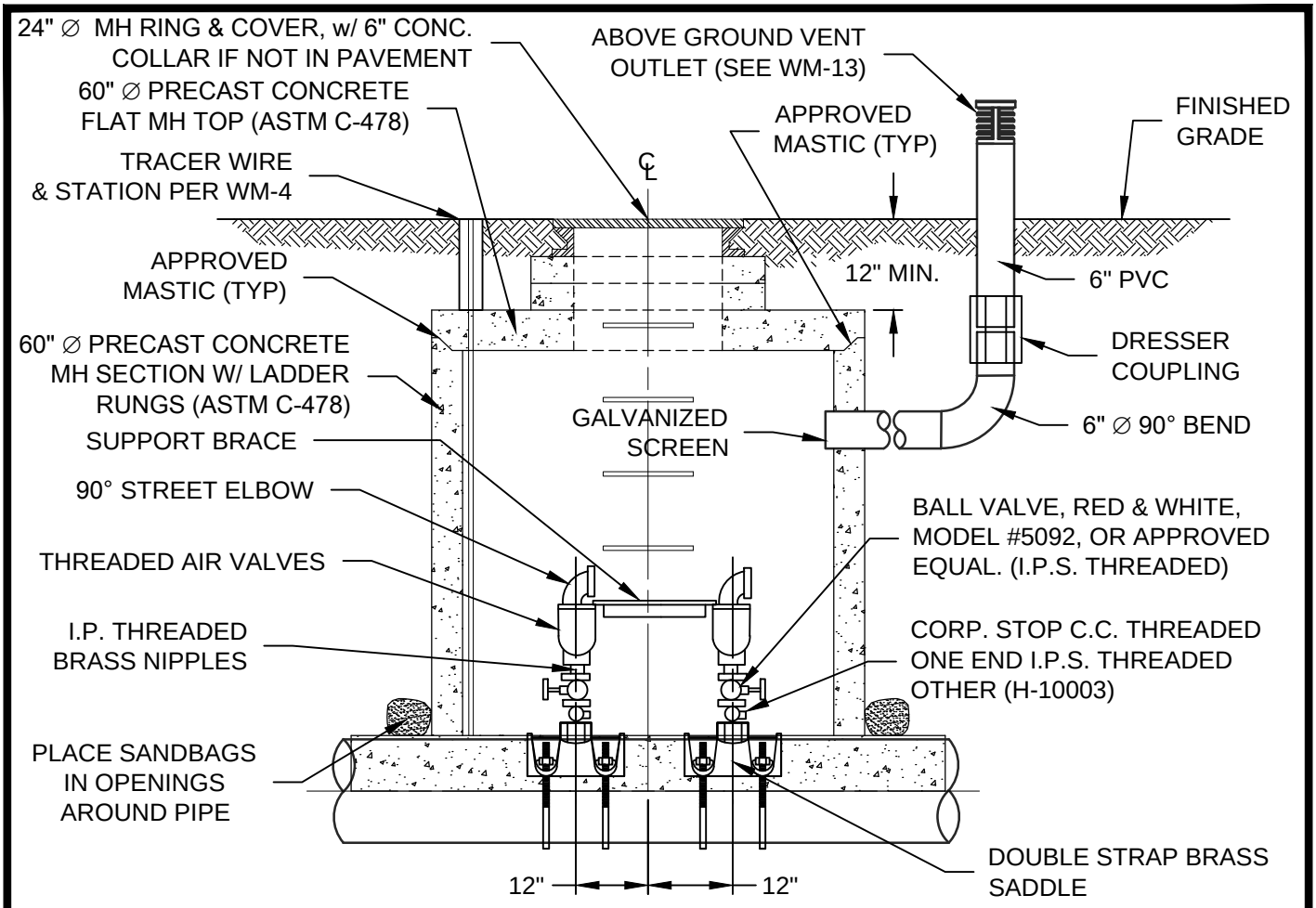
4", 6" 8", 10" & 12"DIAMETERS

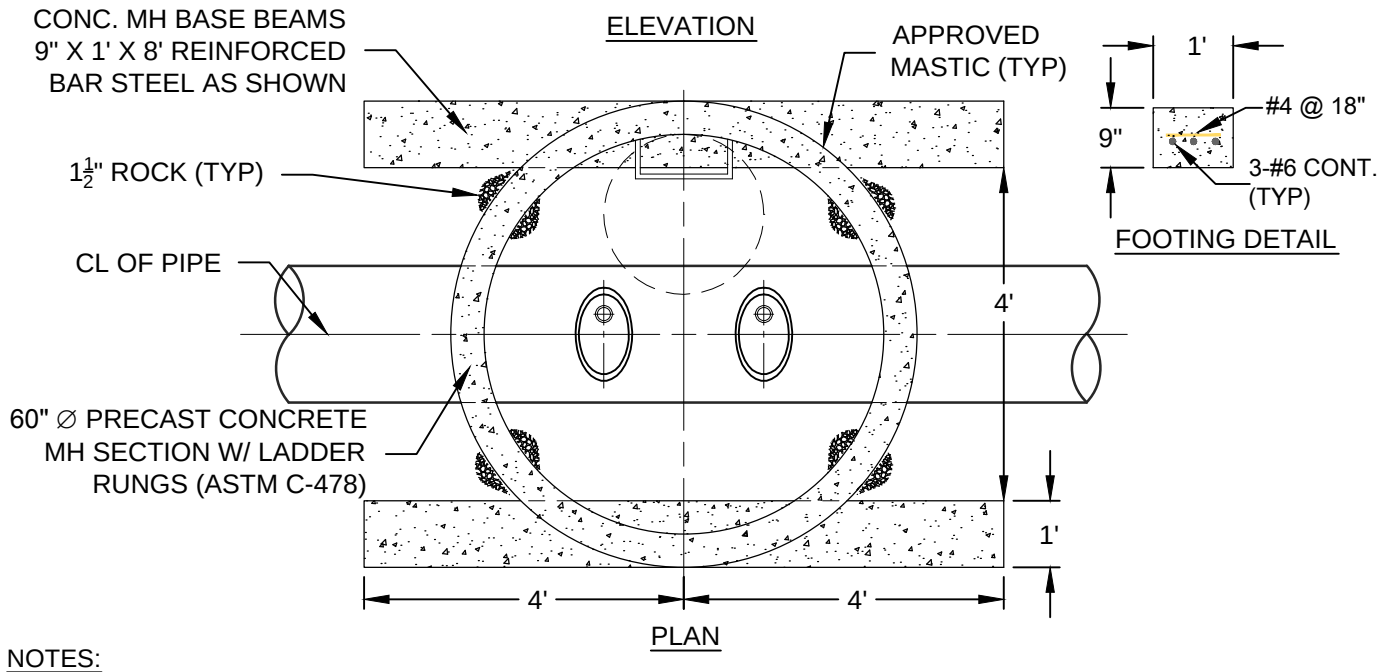


TYPICAL RESTRAINED JOINTS

MAY USE MEG-A-LUG OR RODDING

REV. DATE			
August 2012		MERIDIAN METROPOLITAN DISTRICT	WM-11
		RESTRAINED JOINTS AT VERTICAL BENDS	

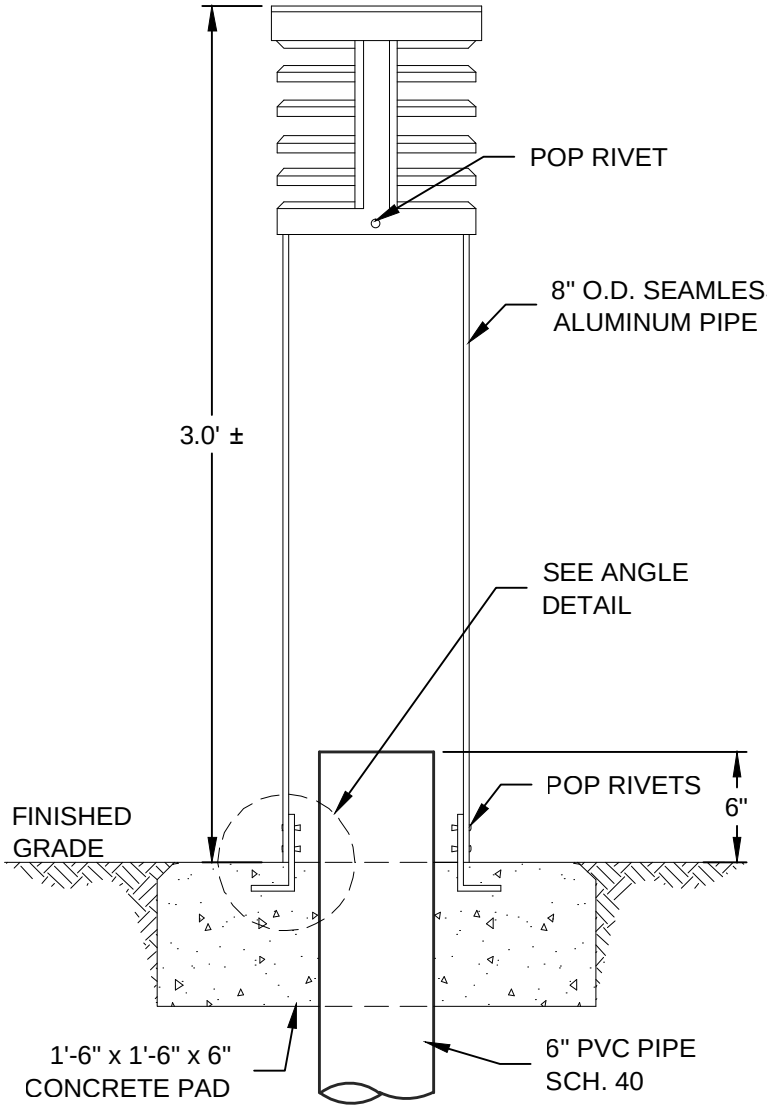




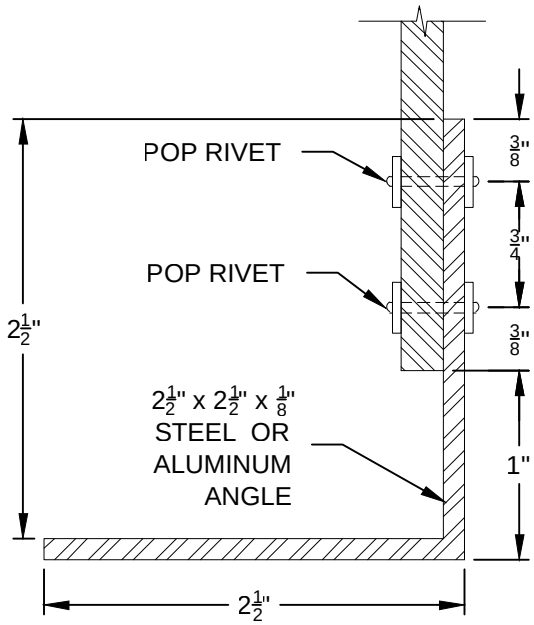
NOTES:

1. 1½" ROCK SHALL BE PLACED IN BOTTOM OF MANHOLE TO CROWN OF PIPE ONLY.
2. ALL PIPE AND FITTINGS SHALL BE BRASS.
3. 6" THRU 10" LINES SHALL HAVE, 2 EA., 1" COMBINATION AIR VALVE.
4 12" LINES AND LARGER SHALL HAVE, 2 EA., 2" COMBINATION AIR VALVE.
5. SUPPORT BRACE SHALL BE CONSTRUCTED OF ¼" STEEL STRAPPING DRILLED TO MATCH AIR PORT HOLES.

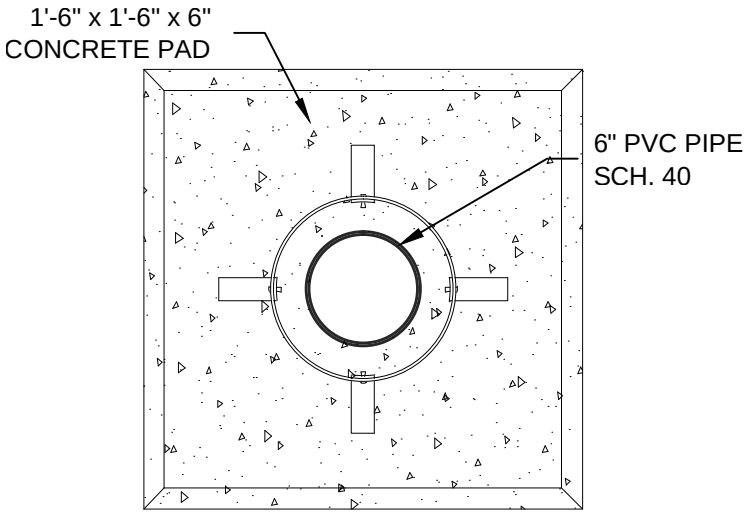
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WM-12
05/13	AIR VALVE ASSEMBLY	



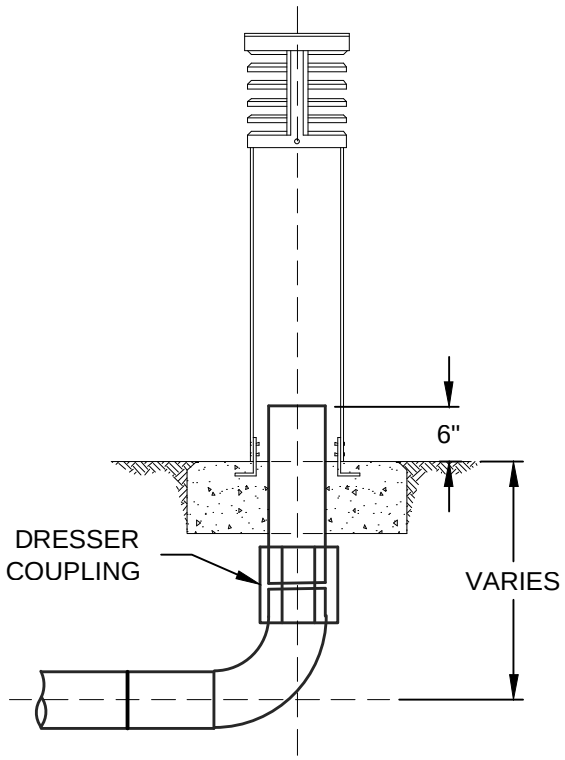
VENT SCREEN DETAIL



ANGLE DETAIL



BASE DETAIL

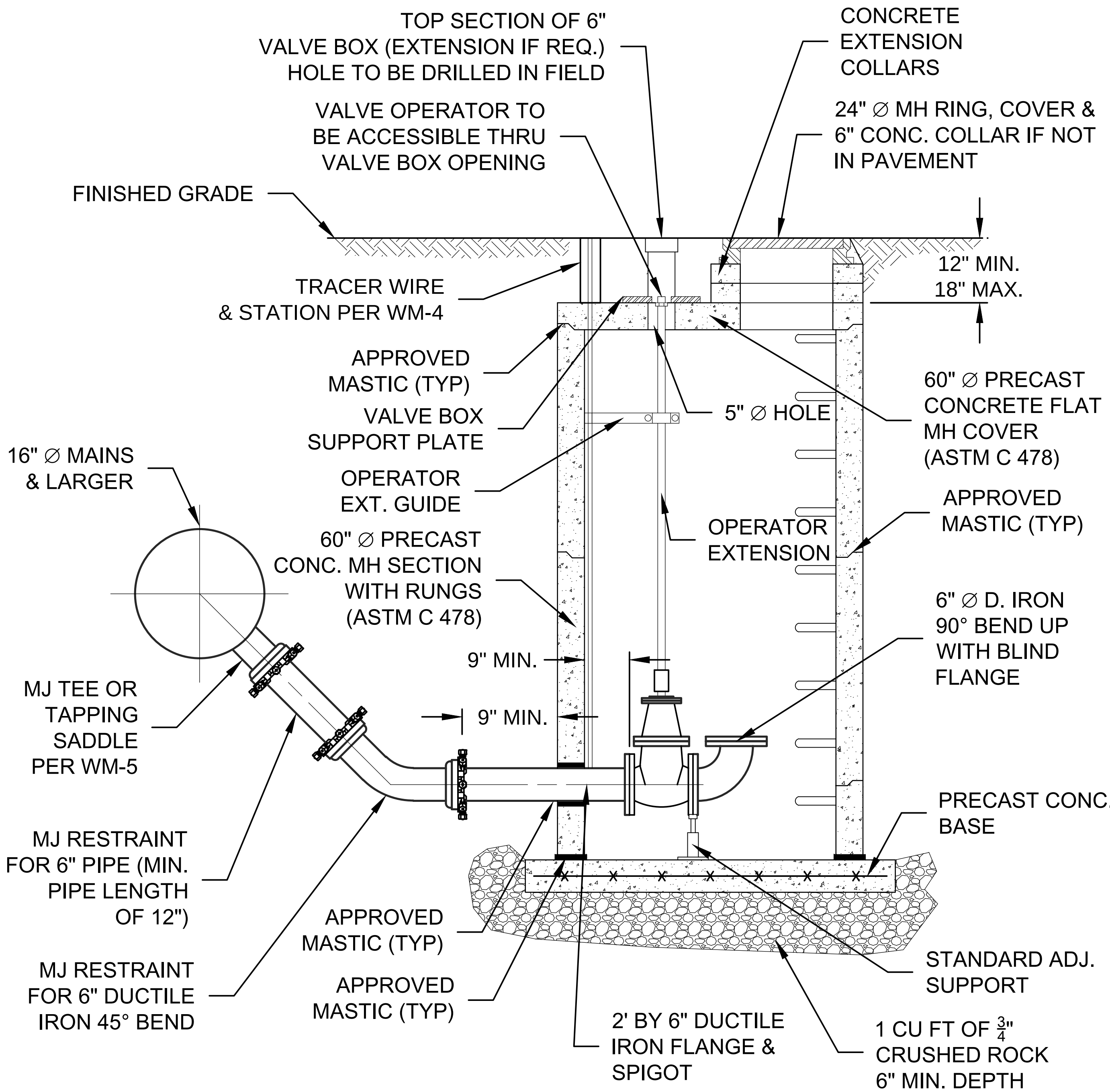


VENT SCREEN DETAIL

NOTE:

1. COLOR SHALL BE DISTRICT GREY - SEE WM-3.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-13
August 2012		AIR VENT DETAIL	



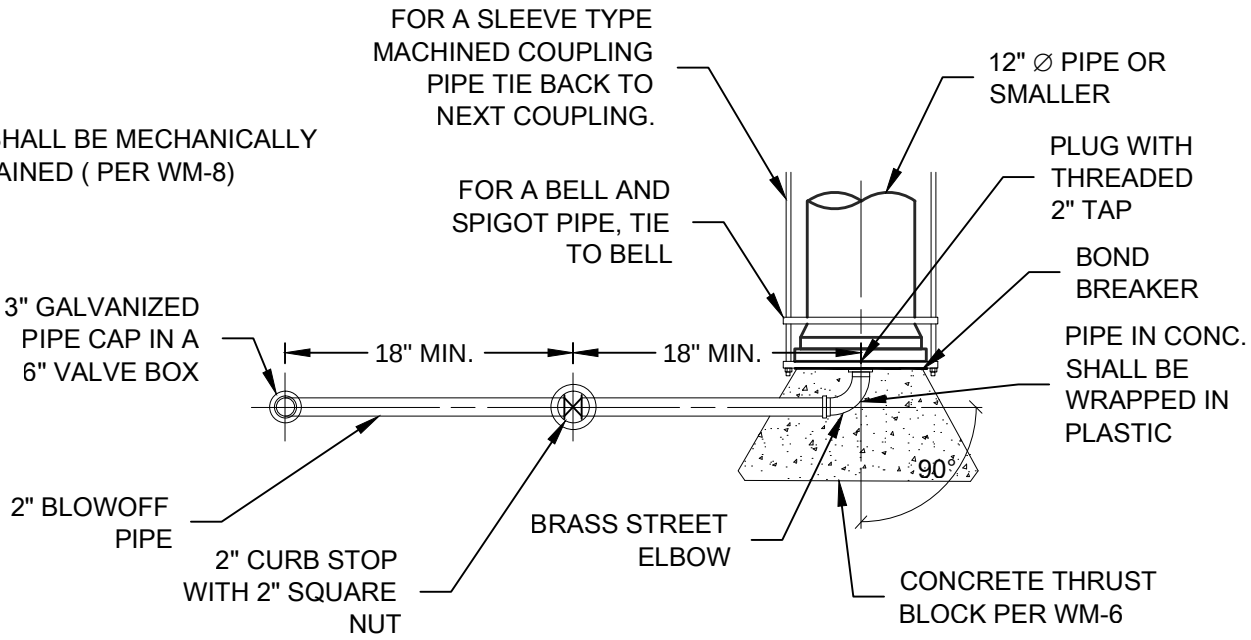
ELEVATION

NOTE:

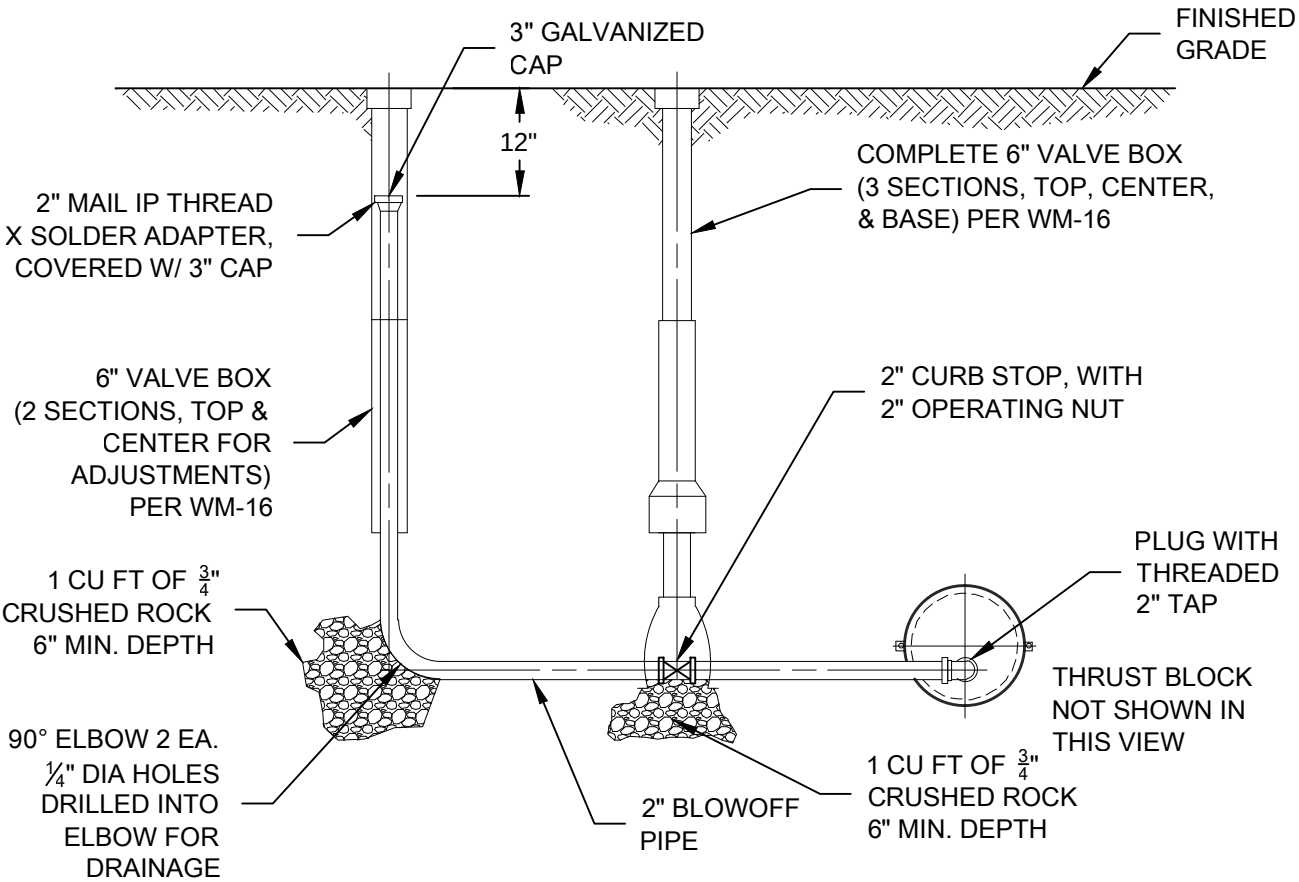
THIS INSTALLATION MAY BE REPLACED BY A FIRE HYDRANT WHERE PRE-APPROVED BY THE MERIDIAN METROPOLITAN DISTRICT.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WM-14
05/13	TRANSMISSION MAIN BLOWOFF	

NOTE:
PLUG SHALL BE MECHANICALLY RESTRAINED (PER WM-8)



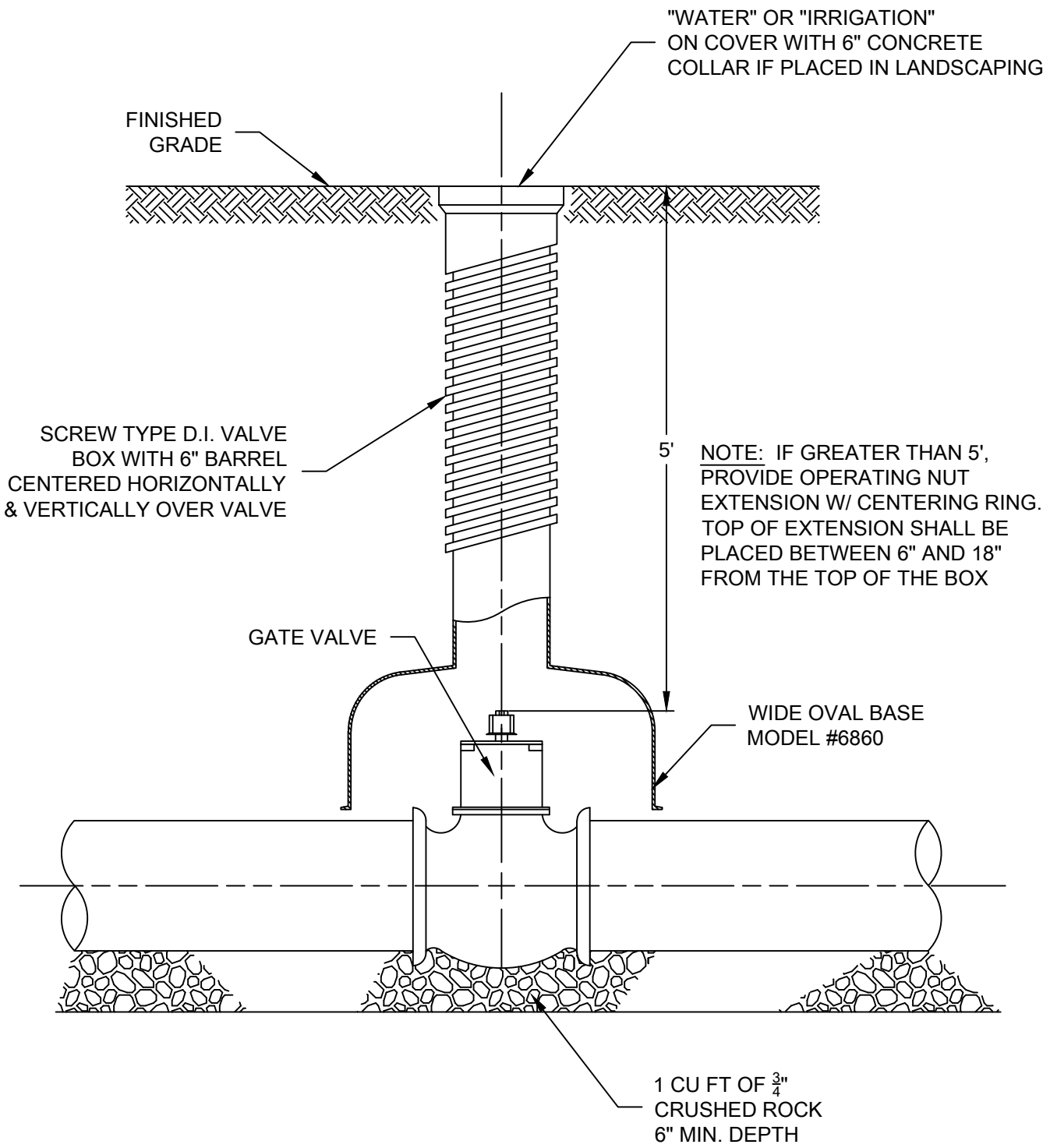
PLAN



ELEVATION

NOTE:
BLOWOFF PIPE TO BE TYPE K SOFT COPPER OR BRASS.

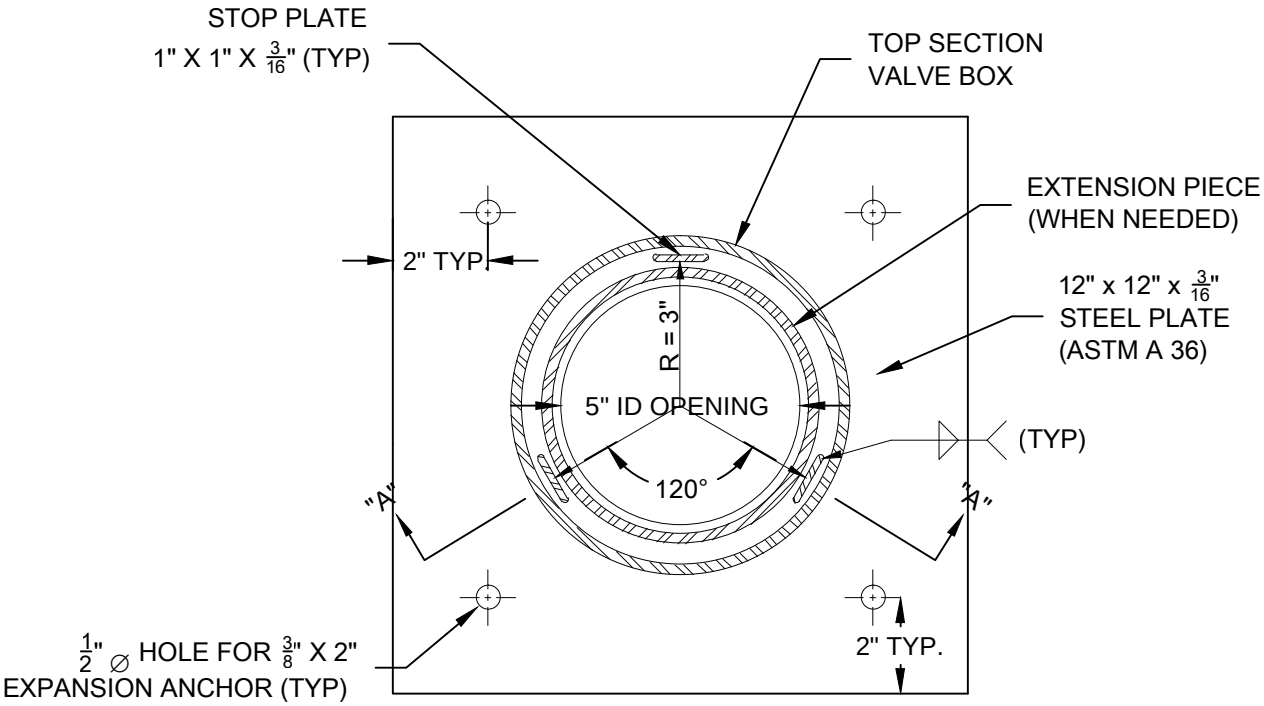
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-15
August 2012		BLOWOFF FOR 12" AND SMALLER PIPE	



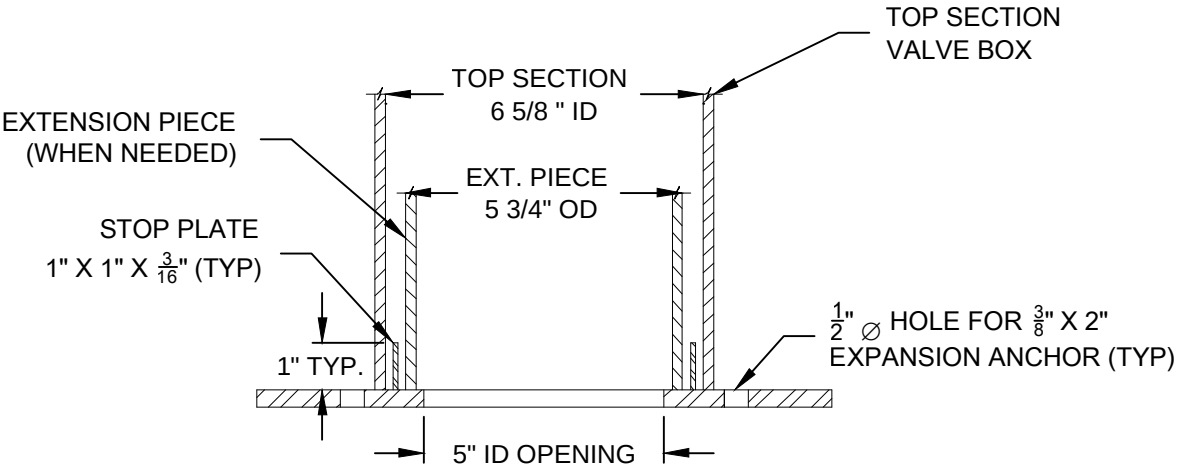
NOTE:

1. FITTINGS SHALL BE WRAPPED WITH 8 MIL THICKNESS POLYETHYLENE.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-16
05/13		VALVE BOX DETAIL	



PLAN

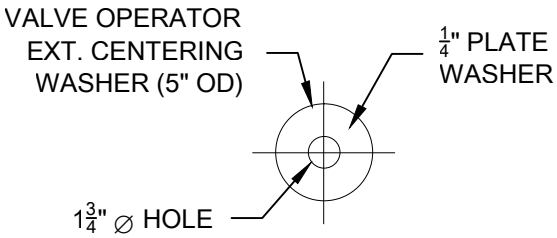


SECTION "A" - "A"

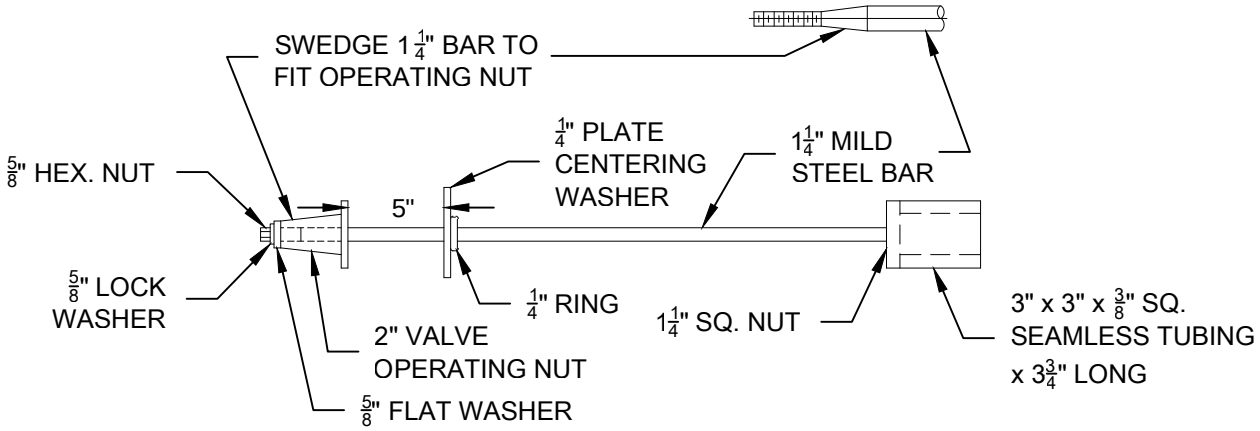
NOTE:

1. PLATE SHALL BE COATED WITH LIQUID EPOXY, 16 MIL DRY FILM THICKNESS IN ACCORDANCE WITH AWWA C210.

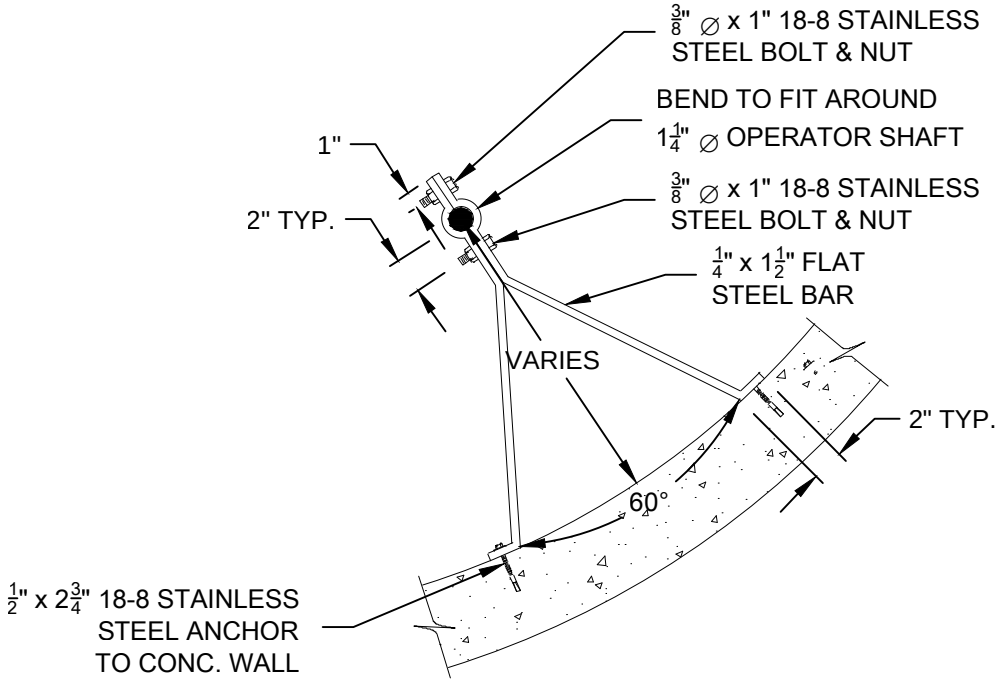
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-17
August 2012		VALVE BOX SUPPORT PLATE	



CENTERING WASHER



VALVE OPERATOR EXTENSION

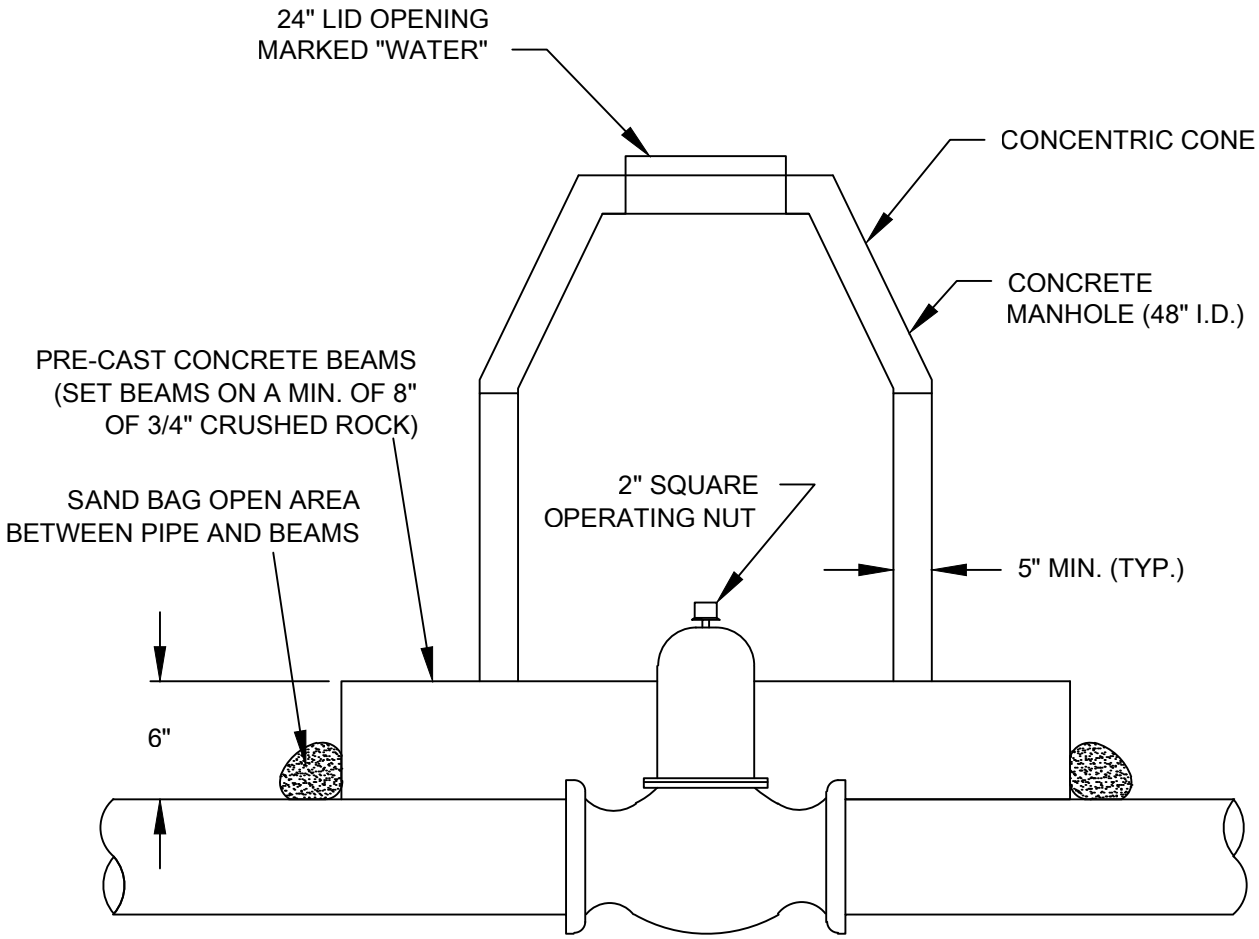


VALVE EXTENSION GUIDE

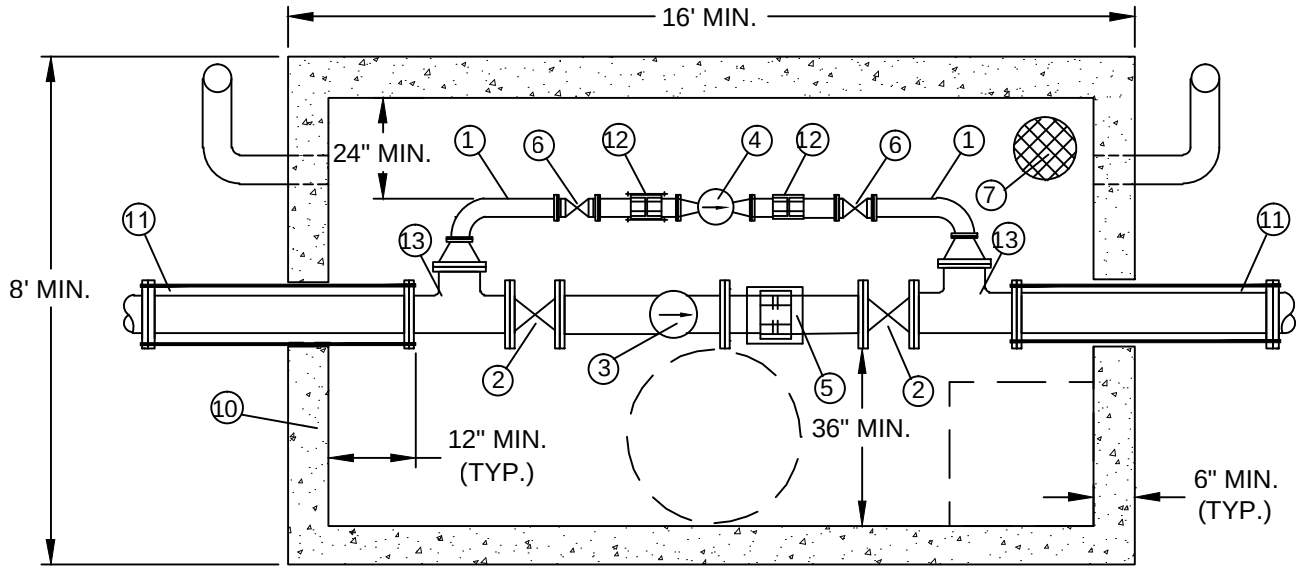
NOTE:

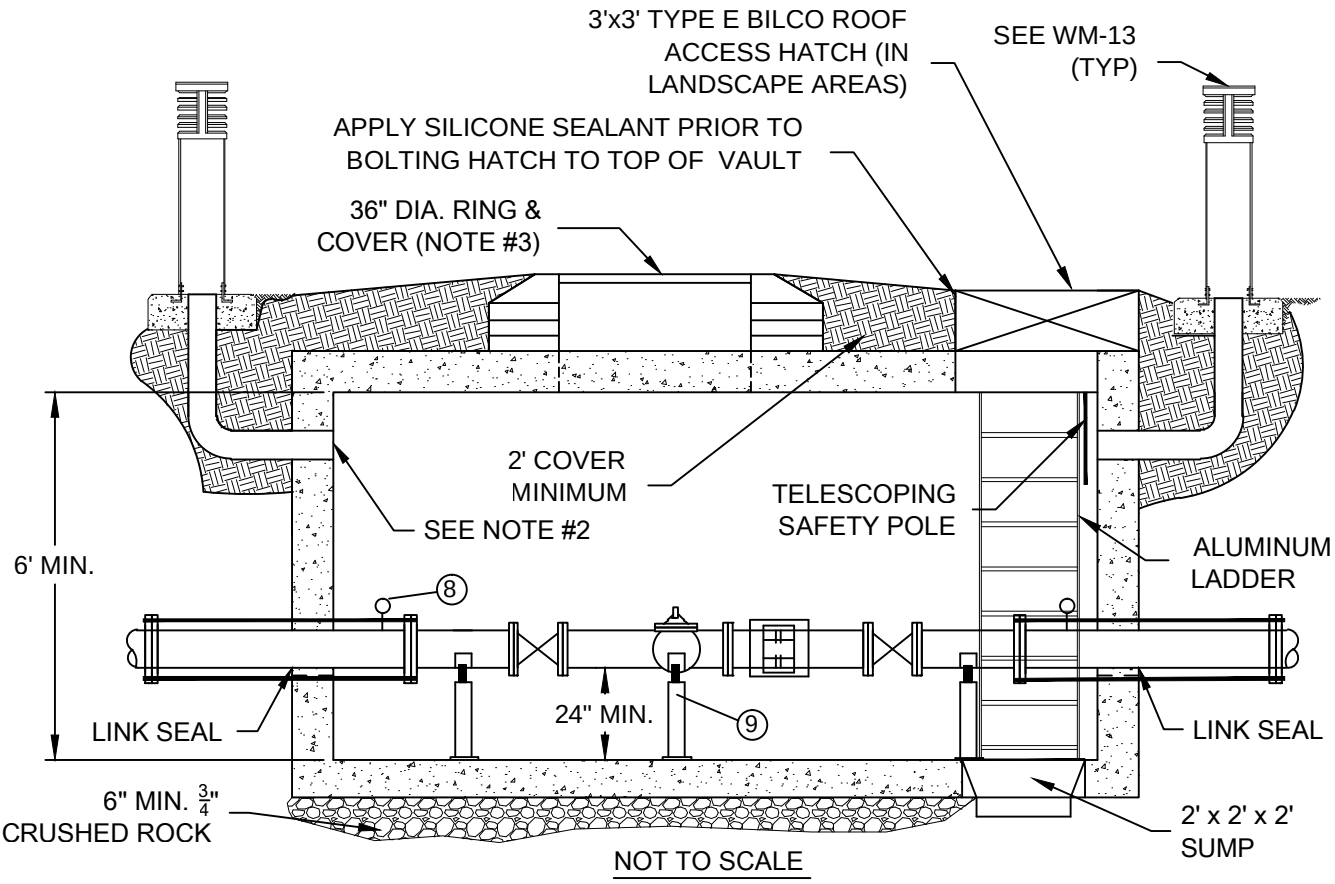
1. BAR SHALL BE COATED WITH LIQUID EPOXY, 16 MIL DRY FILM THICKNESS IN ACCORDANCE WITH AWWA C210. BAR SHALL BE ASTM A 36.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-18
August 2012		VALVE OPERATOR GUIDE & EXTENTION	



REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-19
August 2012		ZONE VALVE MANHOLE	





NOT TO SCALE

NOTES:

1. EXTERIOR CONCRETE SHALL BE DAMP-PROOFED IN ACCORDANCE WITH THE SPECIFICATIONS.
2. CONNECT GALVANIZED SCREEN TO VENT PIPE WITH HOSE CLAMP AROUND PIPE - TYPICAL.
3. ALL FITTINGS AND PIPING WILL BE PAINTED "PRECAUTION BLUE" ENAMEL.
4. IF PRV IS LOCATED IN A PAVED AREA, THE ACCESS WILL BE A 36" DIA. RING & COVER. VAULT LID SHALL HAVE A REMOVABLE SECTION (MIN. 6' WIDE) WITH LIFTING RING. VENTS TO BE LOCATED IN THE NEAREST LANDSCAPE AREA WITH DISTRICT APPROVAL.
5. SEE WM-20A FOR ADDITIONAL DETAILS.

REV. DATE			
06/12		MERIDIAN METROPOLITAN DISTRICT	WM-20
		PRESSURE REDUCING VAULT	

LABEL DESCRIPTIONS FOR WM-20:

(1) 4" DIP CLASS 50.

(2) "d" GATE VALVE (MATCH THE SIZE OF THE MAIN).

(3) "d" PRESSURE REDUCING/SUSTAINING VALVE (CLA-VAL SERIES 92G-01); GPM TO 3900.

(4) 4" PRESSURE REDUCING/SUSTAING VALVE (CLA-VAL SERIES 92G-01); GPM TO 580.

(5) DRESSER STYLE PIPE COUPLING.

(6) 4" GATE VALVE.

(7) SUMP AND COVER.

(8) ¾" CORP. WITH IRON PIPE THREAD OUTLET & PRESSURE GAUGE WITH 4" FACE & 5 PSI INCREMENTS (0-200 PSI RANGE) - TYPICAL.

(9) PIPE SUPPORTS - SEE D-4 AND D-5.

(10) RECTANGULAR PRECAST VAULT, TOP, BOTTOM & SIDES.

(11) MEGA LUG PIPE RESTRAINTS.

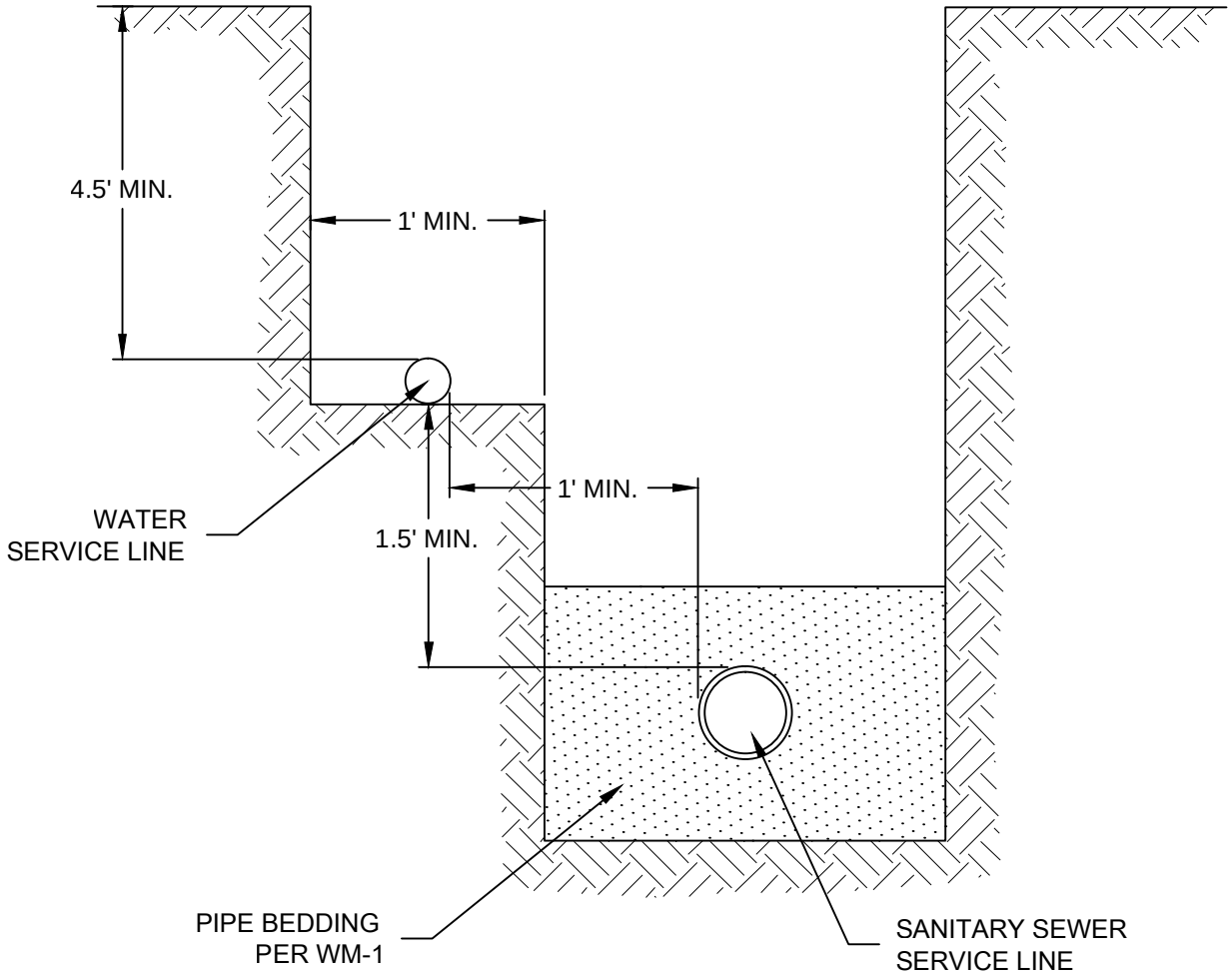
(12) 4" DRESSER STYLE COUPLING.

(13) "d" x 8" TEE.

NOTES FOR WM-20

1. "d" = DIAMETER OF MAIN LINE PIPE.
2. ALL BACKFILL SHALL BE COMPACTED TO 90% ASTM 1557.
3. ACTUAL LENGTHS OF PIPE TO BE FIELD VERIFIED BY CONTRACTOR.
4. PIPE NOT SHOWN IN TRUE GEOGRAPHICAL POSITION FOR CLARITY.

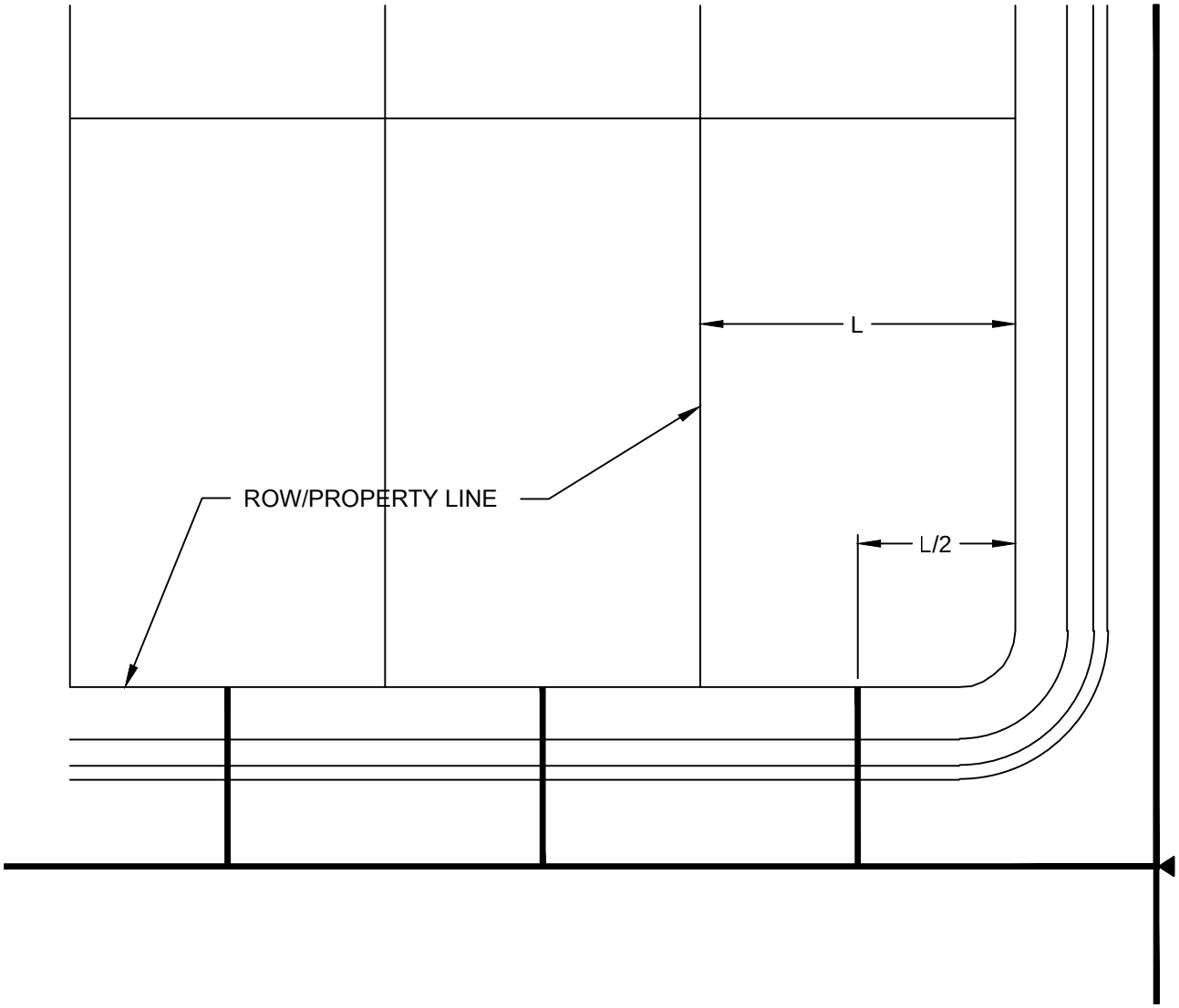
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WM-20A
06/12		PRESSURE REDUCING VAULT NOTES	



NOTES:

1. FOR LOTS WITH JOINT TRENCH ALONG FRONT OF LOT, WATER SERVICE LINE SHALL BE PLACED WITH 4.5' MINIMUM COVER.
2. ALL WATER SERVICES SHALL BE PLACED AT THE CENTER OF THE LOT.
3. A "V" SHALL BE CUT IN THE FACE OF THE CURB AND GUTTER BY THE BUILDER TO PERMANENTLY MARK THE LOCATION OF THE CURB STOP BOX.
4. THIS DETAIL IS FOR CENTER OF FRONT LOT ONLY.

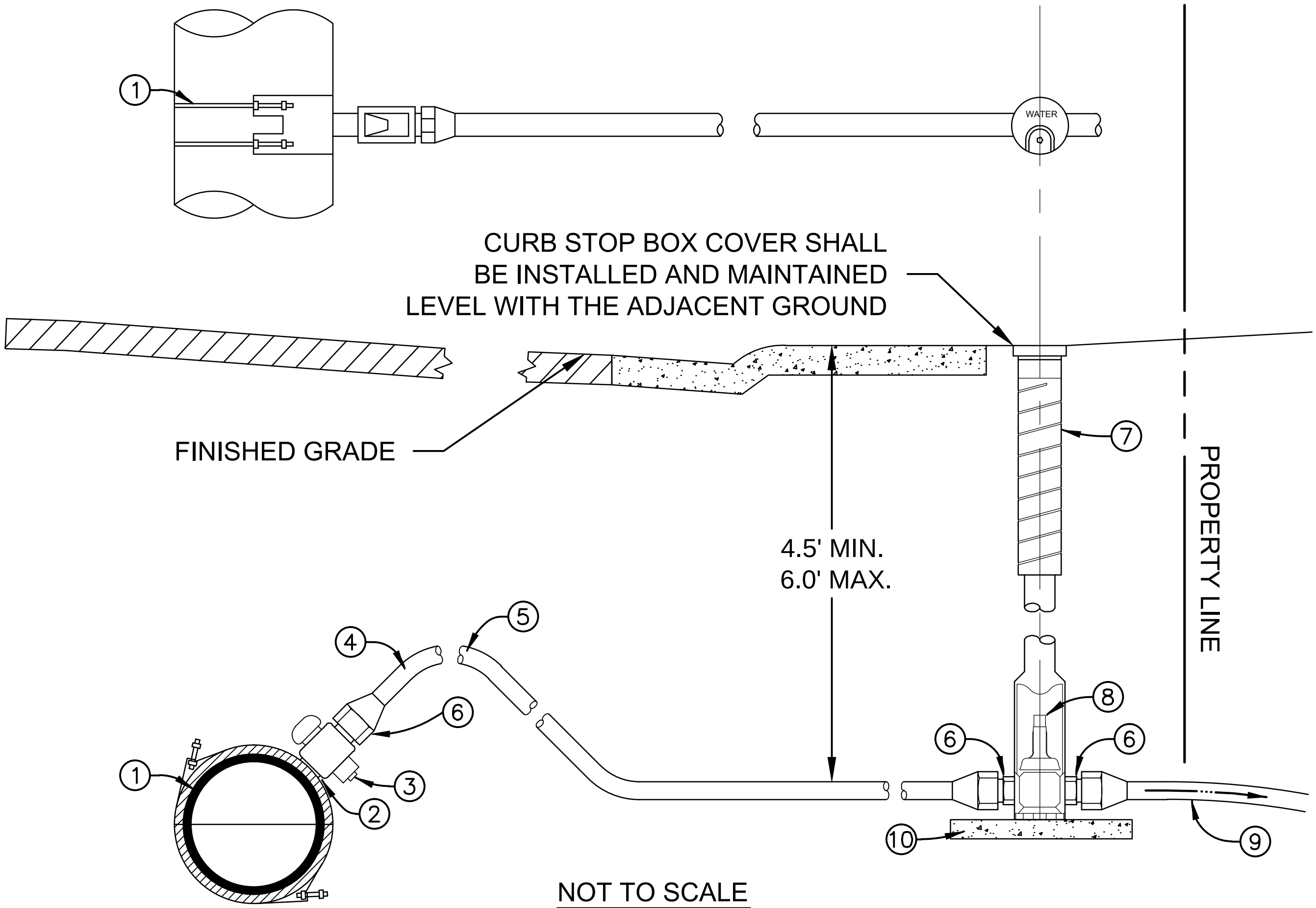
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-1
06/12	WATER AND SEWER JOINT TRENCH	



NOTES:

1. WATER SERVICE LINES SHALL ONLY BE PERMITTED IN THE FRONT OF LOTS. CURB STOP VALVE LOCATIONS SHALL COMPLY WITH DETAIL WS-5, WS-6 AND WS-7.
2. A 3 INCH "V" SHALL BE CUT IN THE FACE OF THE CURB AND GUTTER BY THE BUILDER TO PERMANENTLY MARK THE LOCATION OF THE CURB STOP BOX.
3. WATER MAIN SERVICE CONNECTION SHALL FOLLOW DETAIL WS-3

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-2
06/12	RESIDENTIAL WATER SERVICE LOCATION	



NOT TO SCALE

① WATER MAIN WITH TAPPING SADDLE

② INLET SIDE - AWWA TAPER THREAD (CC STYLE)

③ CORPORATION STOP, FORD #FB1000, MUELLER #H15008 & #H15013, MCDONALD & 4701BQ & 4701BT OR APPROVED EQUAL

④ TYPE K COPPER PIPE

⑤ PROVIDE AMPLE BEND

⑥ OUTLET SIDE - GRIP TITE JOINT COMPRESSION

⑦ TYLER 6500 SERIES, 95E, 4 $\frac{7}{8}$" DROP LID VARIABLE EXTENSION SHAFT WITH 5'0" TO 7'0" RANGE

⑧ CURB STOP WITH GRIP TITE COMPRESSION OUTLETS (FORD B44G, MUELLER B25209 MCDONALD #6100-Q OR APPROVED EQUAL) 2" SQUARE NUT FOR 1.5" AND 2" BALL VALVES

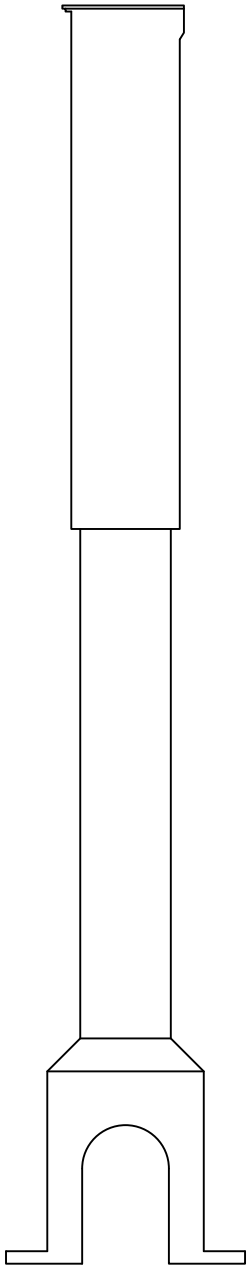
⑨ TYPE K COPPER PIPE

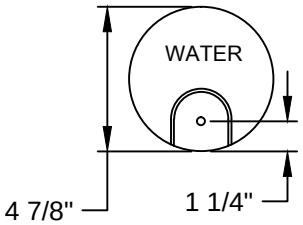
⑩ 12" x 12" x 2" CONCRETE PAD PLACED UNDER CURB STOP VALVE & BOX

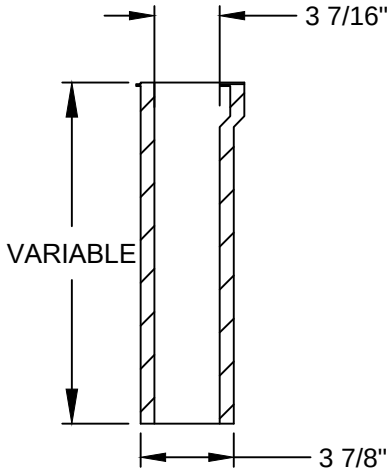
NOTES:

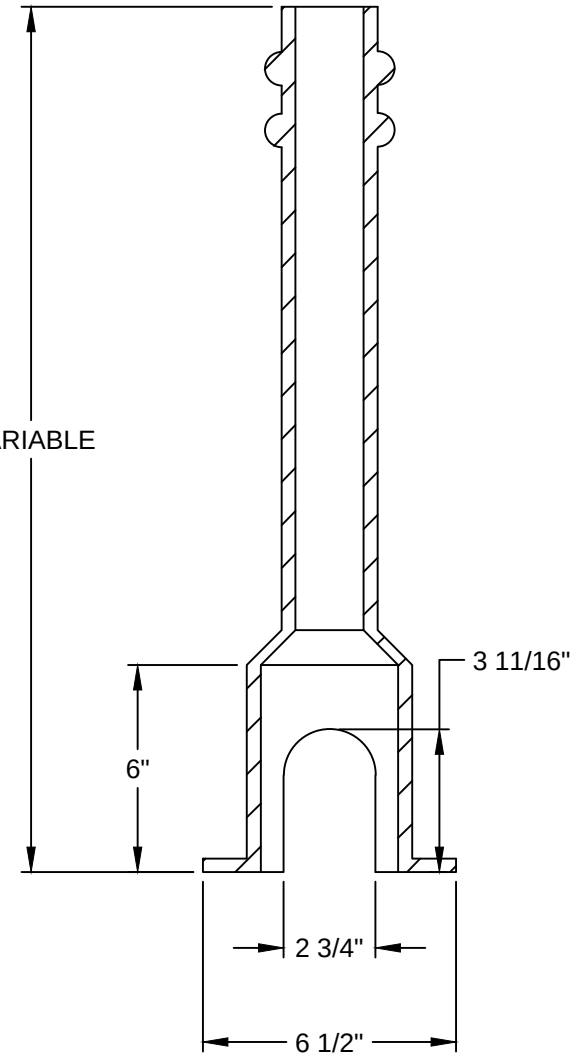
1. PLACE STOP BOX WITHIN 5 FT OF PROPERTY LINE. PLACEMENT INSIDE PROPERTY LINE IS PREFERRED.
2. PROPERTY OWNER IS RESPONSIBLE FOR THE ENTIRE SERVICE LINE (REPLACEMENT & REPAIRS) AND LEAKS FROM THE CURB STOP TO THE METER. MMD WILL REPAIR SERVICE LINE LEAKS BETWEEN THE WATER MAIN AND THE OUTLET SIDE OF THE CURB STOP ONLY (SEE WS-7).
3. NO BENDS, FITTINGS, CONNECTIONS, OR CHANGES IN THE PIPE SIZE ARE PERMITTED ON THE SERVICE LINE FROM THE CORPORATION STOP TO THE METER OUTLET VALVES EXCEPT AS SHOWN.
4. MMD IS NOT RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR DUE TO A LEAK ANYWHERE ON THE SERVICE LINE. ALL DAMAGE IS THE RESPONSIBILITY OF THE PROPERTY OWNER.
5. A 3 INCH "V" SHALL BE CUT IN THE FACE OF THE CURB AND GUTTER TO PERMANENTLY MARK THE LOCATION OF THE CURB STOP BOX.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-3
05/13	WATER MAIN SERVICE CONNECTION	





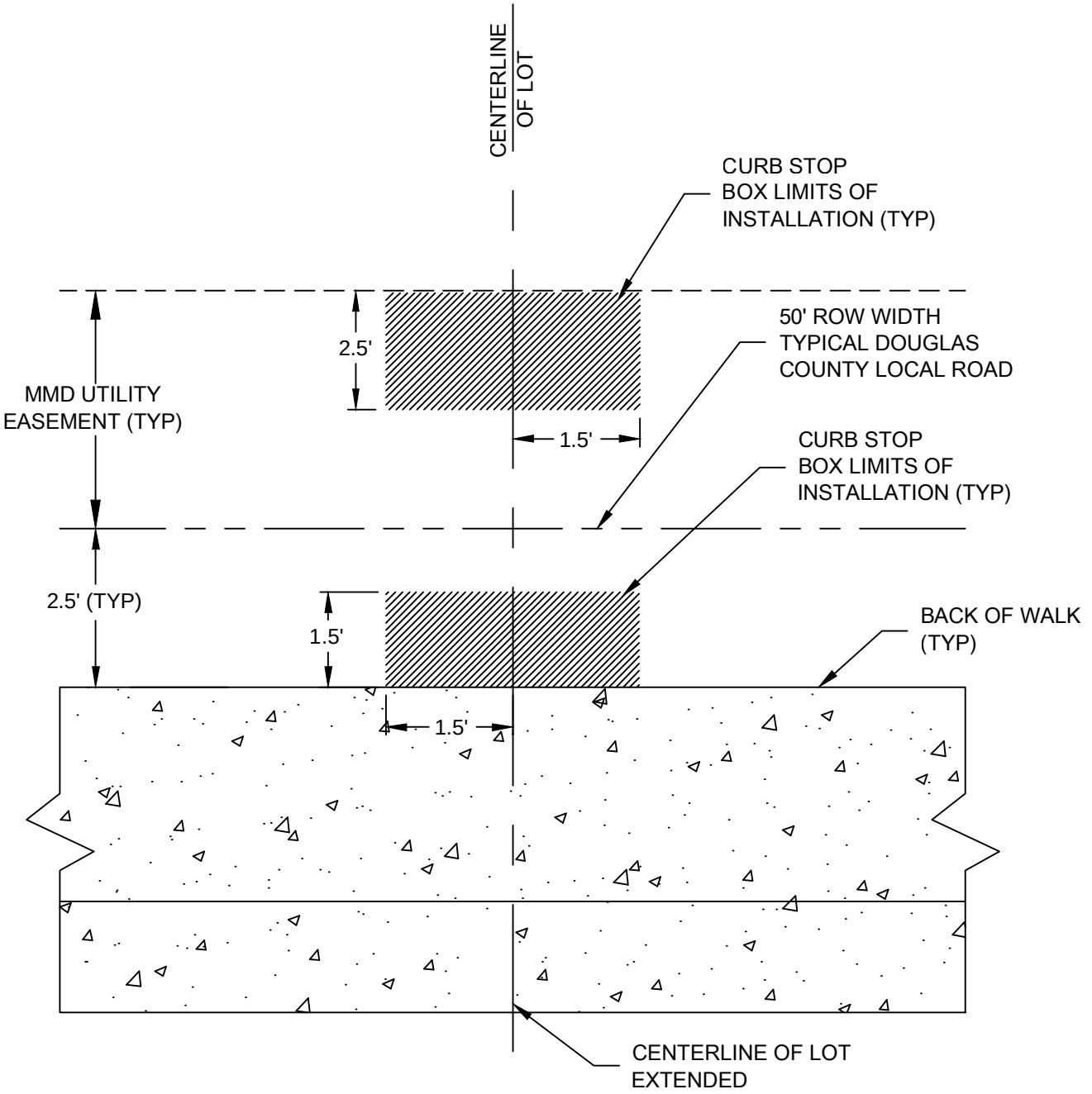




NOTES:

1. CURB STOP BOX SHALL BE TYLER MODEL 6500 SERIES, SIZE 95E OR APPROVED EQUAL
2. ALL SECTIONS OF THE BOX SHALL BE WRAPPED IN 8 MIL POLYETHYLENE PLASTIC.
3. A 12" x 12" x 2" CONCRETE PAD SHALL BE PLACED UNDER THE CURB STOP VALVE AND BOX.

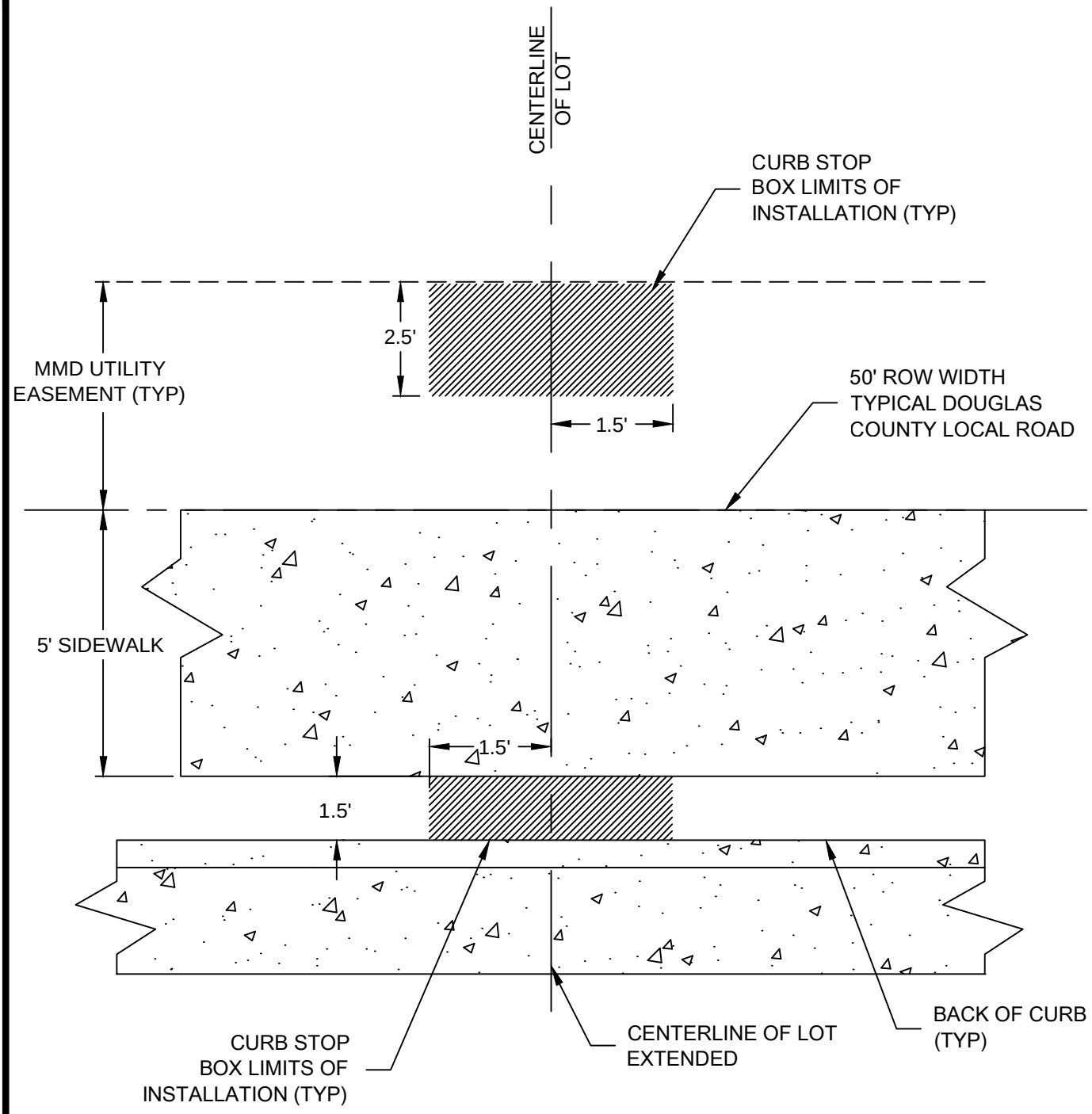
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-4
05/13	CURB STOP FOR $\frac{3}{4}$" AND 1" LINES	



NOTES:

1. A "V" SHALL BE CUT IN THE FACE OF THE CURB AND GUTTER BY THE BUILDER TO PERMANENTLY MARK THE LOCATION OF THE CURB STOP BOX. THE "V" SHALL BE A MINIMUM OF 3 INCHES IN HEIGHT AND ⅛" DEEP.
2. ALL WATER SERVICE LINES SHALL BE PLACED AT THE CENTER OF THE LOT.

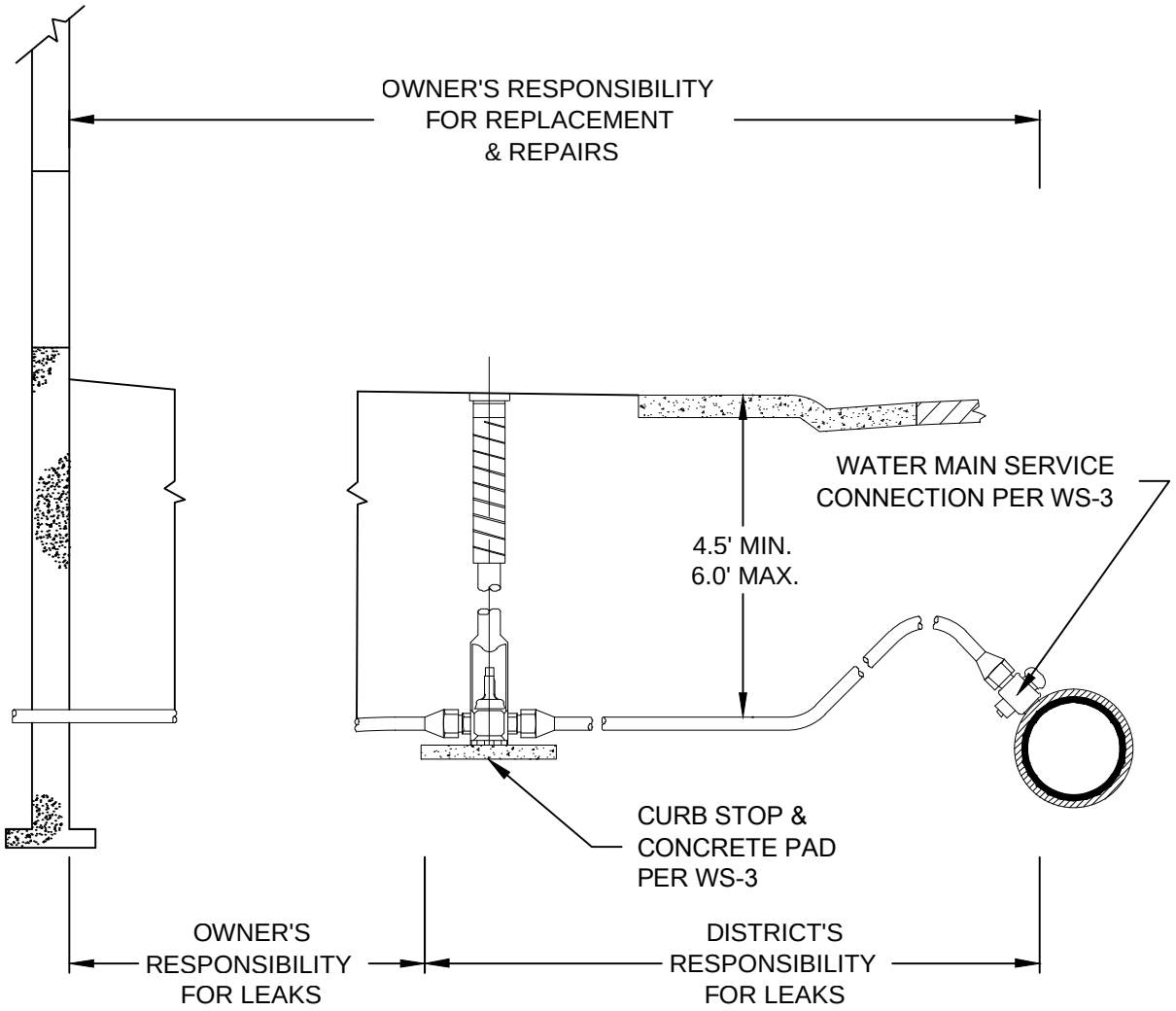
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-5
06/12	CURB STOP BOX LOCATION	



NOTES:

1. A "V" SHALL BE CUT IN THE FACE OF THE CURB AND GUTTER BY THE BUILDER TO PERMANENTLY MARK THE LOCATION OF THE CURB STOP BOX. THE "V" SHALL BE A MINIMUM OF 3 INCHES IN HEIGHT AND ⅛" DEEP.
2. ALL WATER SERVICE LINES SHALL BE PLACED AT THE CENTER OF THE LOT.
3. DISTANCE BETWEEN BACK OF CURB AND WALK MAY INCREASE DEPENDING ON ROW WIDTH.

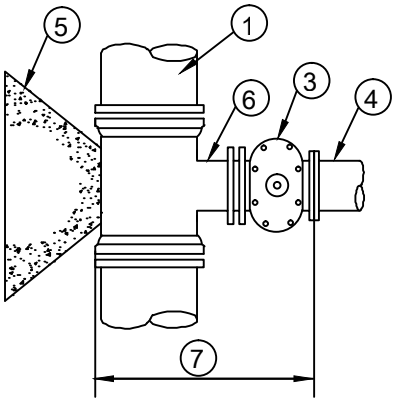
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-6
06/12	CURB STOP BOX LOCATION FOR DETACHED WALK	

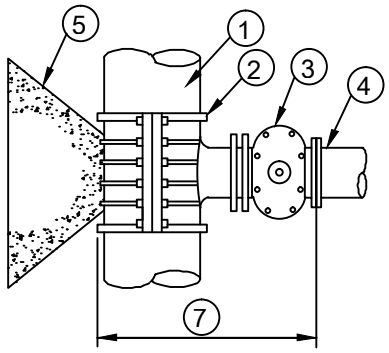


NOTES:

1. A "V" SHALL BE CUT IN THE FACE OF THE CURB AND GUTTER BY THE BUILDER TO PERMANENTLY MARK THE LOCATION OF THE CURB STOP BOX. THE "V" SHALL BE A MINIMUM OF 3 INCHES IN HEIGHT AND ⅛" DEEP.
2. ALL WATER SERVICE LINES SHALL BE PLACED AT THE CENTER OF THE LOT.
3. DISTANCE BETWEEN BACK OF CURB AND WALK MAY INCREASE DEPENDING ON ROW WIDTH.
4. SEE WS-8, WS-9 AND WS-10 FOR CURB STOP LOCATION FOR COMMERCIAL TAP AND SERVICE LINE DETAIL. SEE WS-5 AND WS-6 FOR THE CURB STOP LOCATION FOR A RESIDENTIAL SERVICE.
5. SHOULD ANY SITUATION ARISE OTHER THAN SHOWN CONCERNING THE DEPTH OR OBSTRUCTION OF SERVICE LINE THE DISTRICT MUST BE CONTACTED.

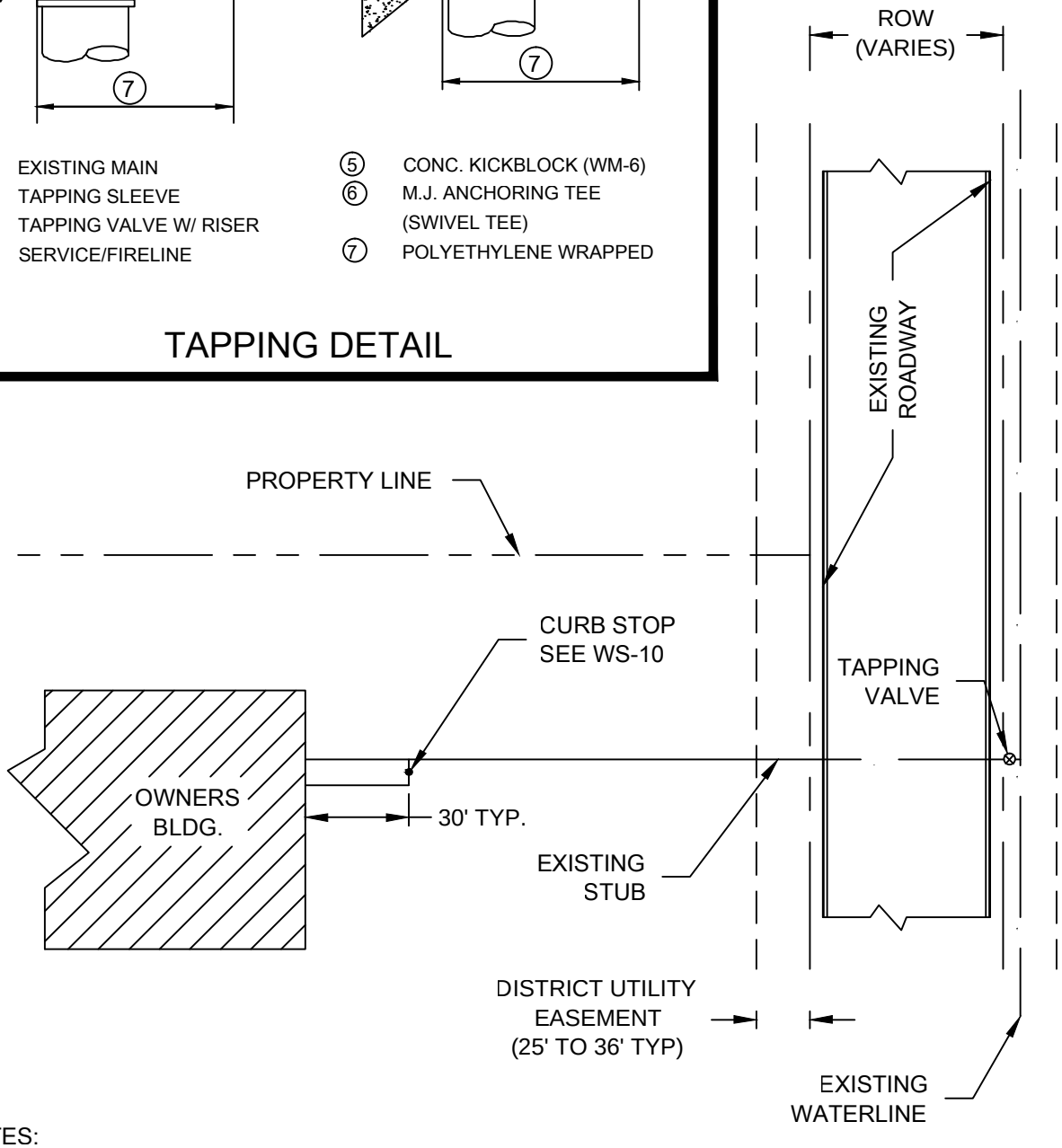
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-7
06/12	STANDARD WATER SERVICE LINE INSTALLATION	





① EXISTING MAIN
② TAPPING SLEEVE
③ TAPPING VALVE W/ RISER
④ SERVICE/FIRELINE
⑤ CONC. KICKBLOCK (WM-6)
⑥ M.J. ANCHORING TEE (SWIVEL TEE)
⑦ POLYETHYLENE WRAPPED

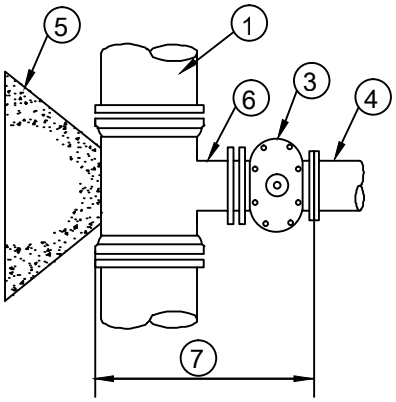
TAPPING DETAIL

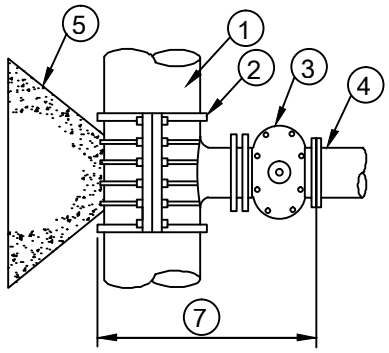


NOTES:

1. A "V" SHALL BE CUT IN THE FACE OF THE CURB AND GUTTER BY THE BUILDER TO PERMANENTLY MARK THE LOCATION OF THE CURB STOP BOX. THE "V" SHALL BE A MINIMUM OF 3 INCHES IN HEIGHT AND ⅛" DEEP.
2. SEE WS-8, WS-9 AND WS-10 FOR CURB STOP LOCATION FOR COMMERCIAL TAP AND SERVICE LINE DETAIL. SEE WS-10 FOR FIRE MAIN AND DOMESTIC WATER SERVICE INSTALLATION.
3. THE TAP REQUIREMENTS FOR THE IRRIGATION CONNECTION ARE THE SAME AS THE FIRE MAIN AND DOMESTIC WATER SERVICE INSTALLATION.

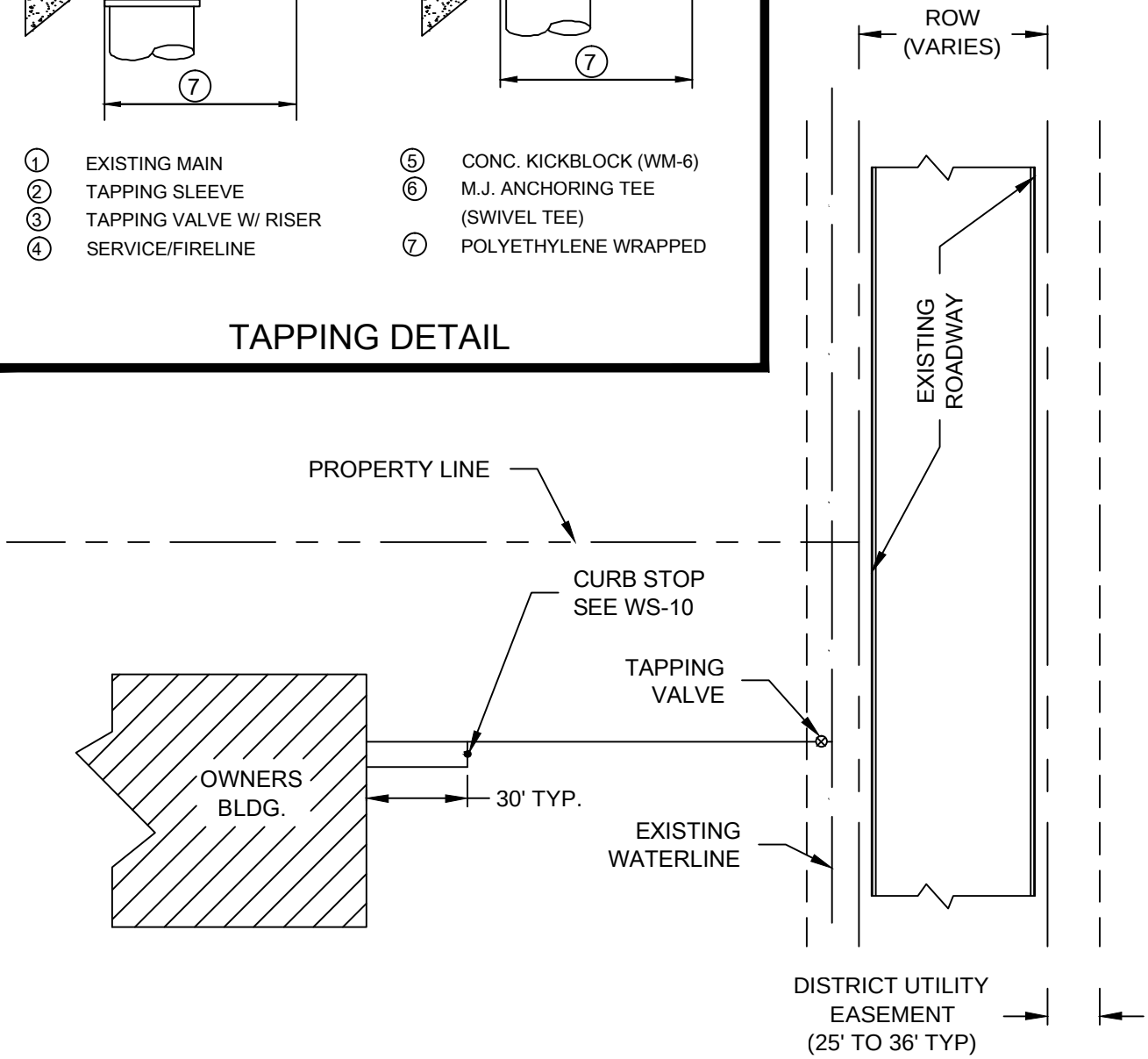
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-8
06/12	SERVICE CONNECTION TO EXISTING STUB UNDER STREET	





① EXISTING MAIN
② TAPPING SLEEVE
③ TAPPING VALVE W/ RISER
④ SERVICE/FIRELINE
⑤ CONC. KICKBLOCK (WM-6)
⑥ M.J. ANCHORING TEE (SWIVEL TEE)
⑦ POLYETHYLENE WRAPPED

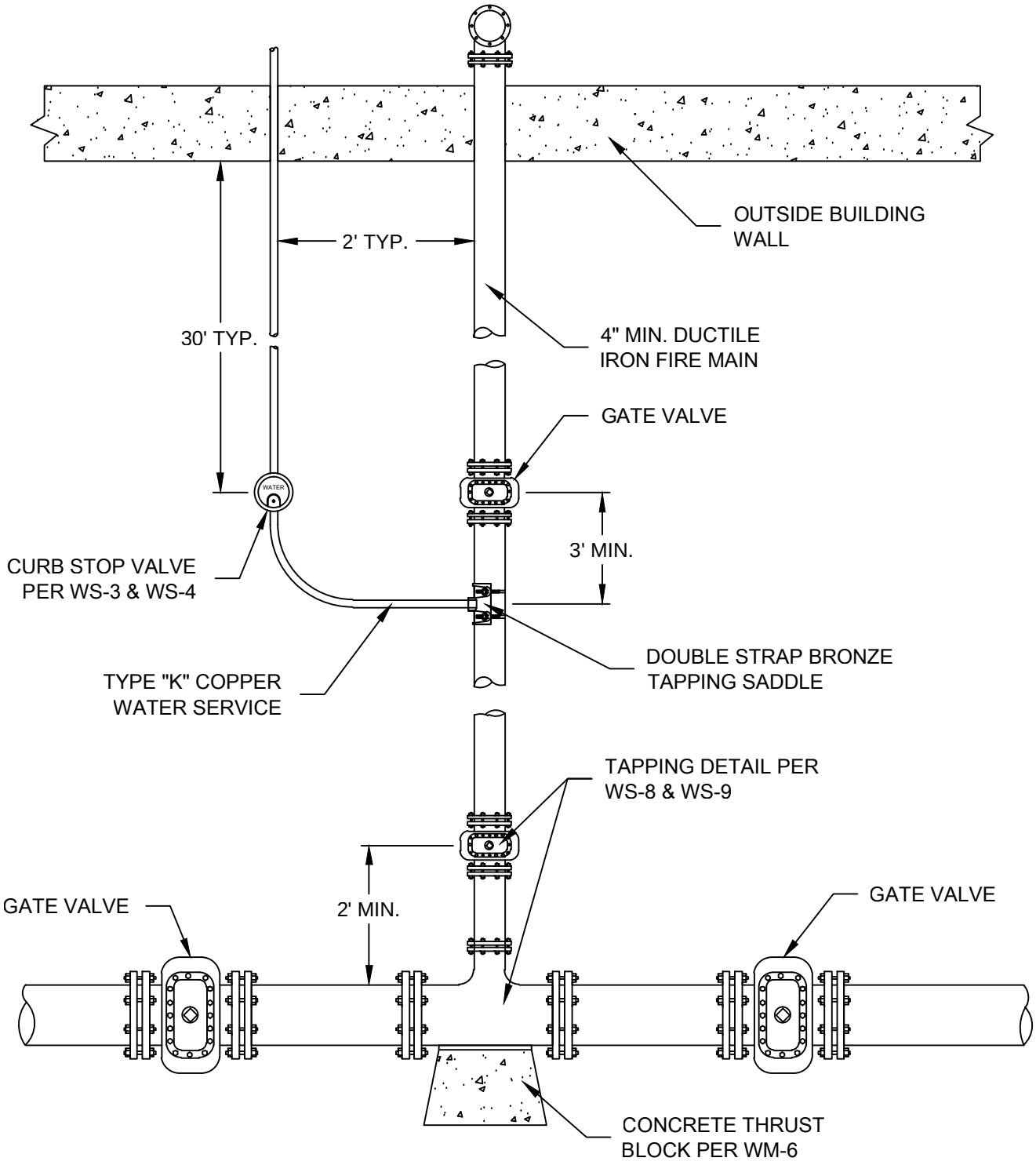
TAPPING DETAIL



NOTES:

1. A "V" SHALL BE CUT IN THE FACE OF THE CURB AND GUTTER BY THE BUILDER TO PERMANENTLY MARK THE LOCATION OF THE CURB STOP BOX. THE "V" SHALL BE A MINIMUM OF 3 INCHES IN HEIGHT AND ⅛" DEEP.
2. SEE WS-8, WS-9 AND WS-10 FOR CURB STOP LOCATION FOR COMMERCIAL TAP AND SERVICE LINE DETAIL. SEE WS-10 FOR FIRE MAIN AND DOMESTIC WATER SERVICE INSTALLATION.
3. THE TAP REQUIREMENTS FOR THE IRRIGATION CONNECTION ARE THE SAME AS THE FIRE MAIN AND DOMESTIC WATER SERVICE INSTALLATION.

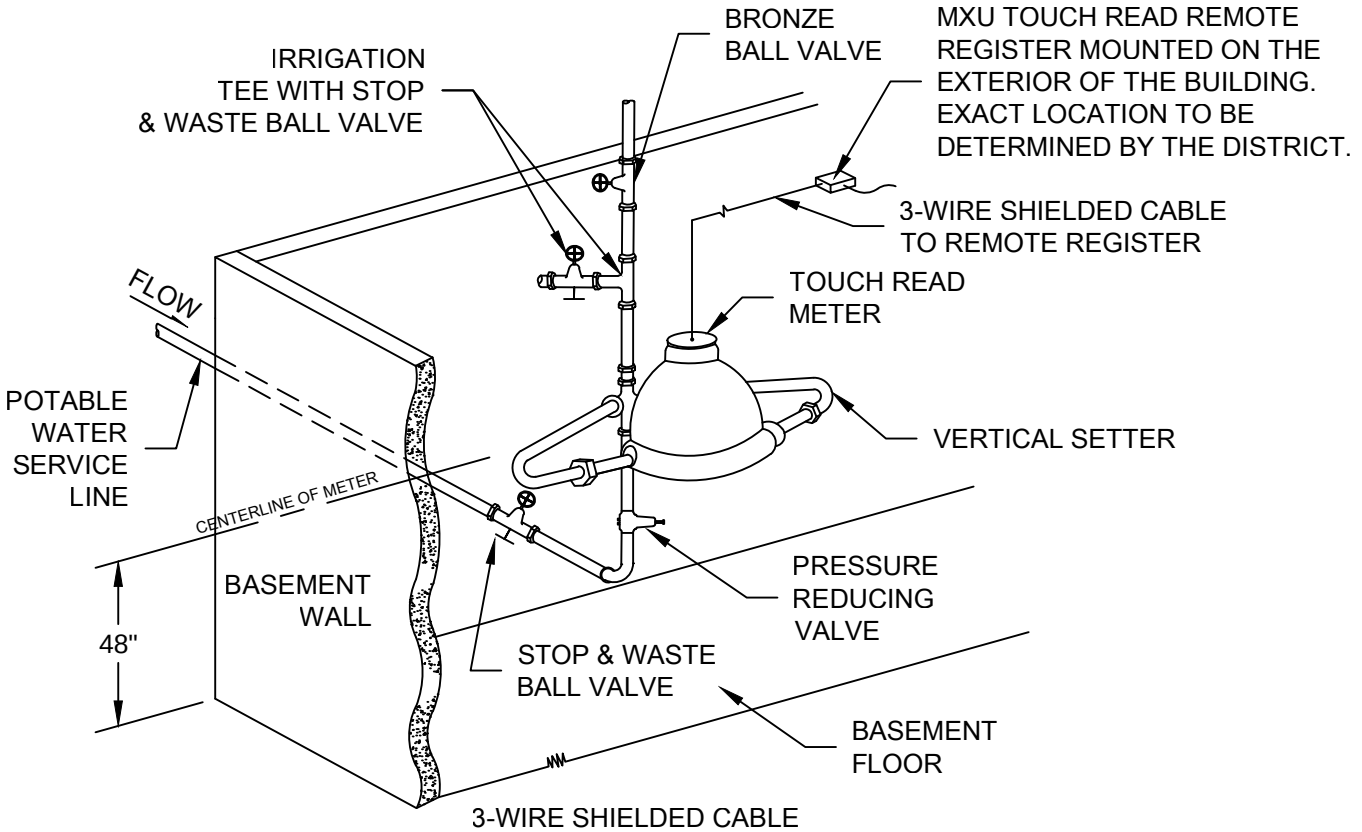
REV. DATE			
06/12		MERIDIAN METROPOLITAN DISTRICT	WS-9
		SERVICE/FIRE OR IRRIGATION CONNECTION TO MAIN	

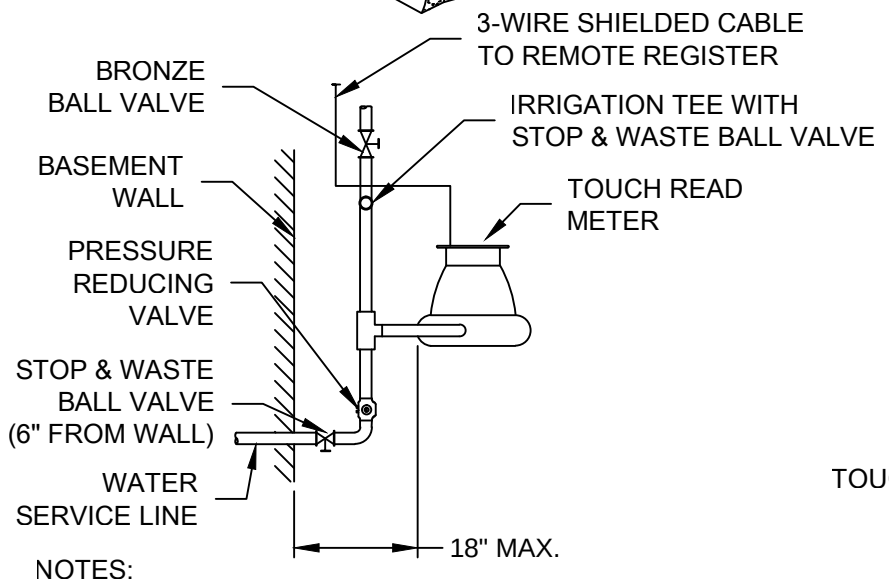


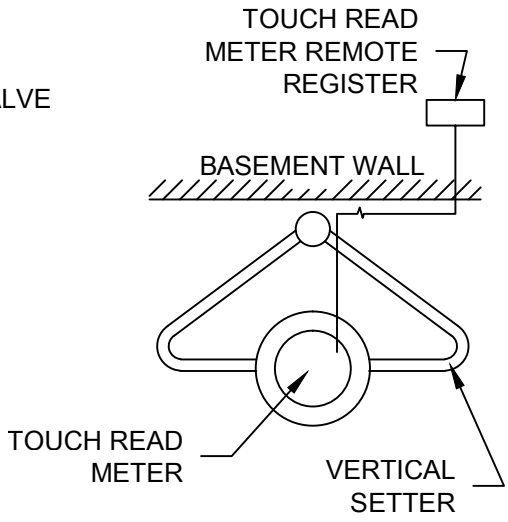
NOTES:

1. ALL DOMESTIC TAPS 2" AND SMALLER ON FIRE LINES 6" D.I.P. AND LARGER REQUIRE A DOUBLE STRAP BRONZE TAPPING SADDLE.
2. ON 4" FIRE MAINS FOR 2" TAP USE 4" M.J. X 2" THREADED TEE.
3. FOR $1\frac{1}{2}$" TAP USE 4" M.J. X 2" THREADED TEE WITH 1 $\frac{1}{2}$" BRASS BUSHING.
4. FOR $\frac{3}{4}$" AND 1" SERVICE LINES REQUIRE A DOUBLE STRAP BRONZE TAPPING SADDLE.
5. RESTRAIN MAIN AND FIRE MAIN PER WM-8.
6. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-10
06/12	FIRE MAIN AND DOMESTIC WATER SERVICE INSTALLATION	



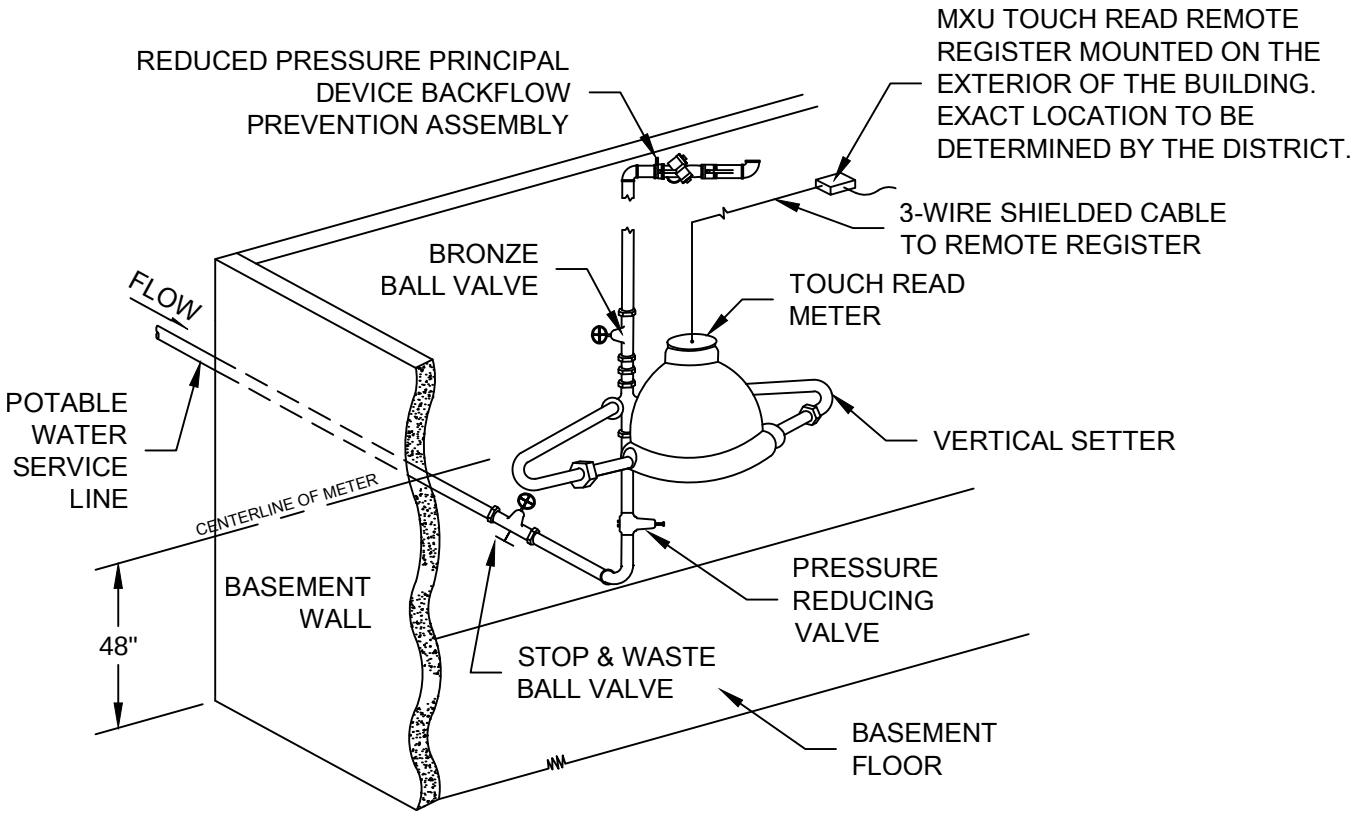


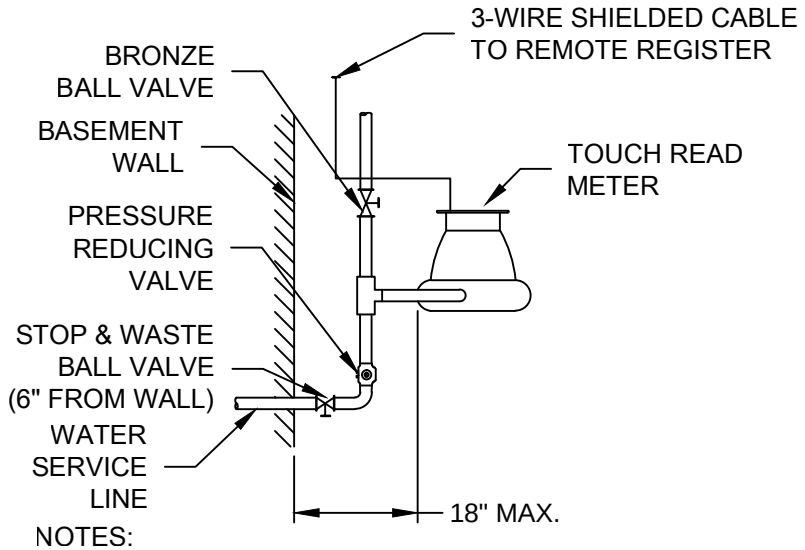


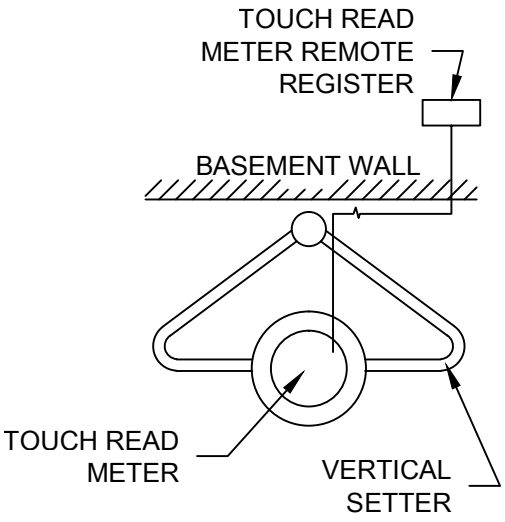
NOTES:

1. THE METER SHALL BE PROTECTED FROM FREEZING AND DAMAGE.
2. THE METER SHALL BE ANCHORED TO THE WALL ABOVE AND BELOW THE METER ASSEMBLY.
3. ALL METER LOCATIONS TO BE IN BASEMENTS AND NOT IN CRAWL SPACES.
4. WATER SERVICE LINE SHALL BE TYPE K COPPER.
5. NO BENDS, FITTINGS, CONNECTIONS, OR CHANGES IN THE PIPE SIZE ARE PERMITTED ON THE SERVICE LINE FROM THE CORPORATION STOP TO THE METER OUTLET VALVE EXCEPT AS SHOWN.
6. IF THE METER IS BOXED IN OR PLACED BEHIND A WALL, PROVIDE AN ACCESS OPENING 36" WIDE FROM ABOVE THE OUTLET VALVE TO THE FLOOR. VALVES MUST BE ACCESSIBLE FROM THE OPENING. METER TO BE CENTERED IN OPENING.
7. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-11
11/13	REMOTE READING $\frac{3}{4}$" & 1" METER TYPICAL INSIDE SETTING	



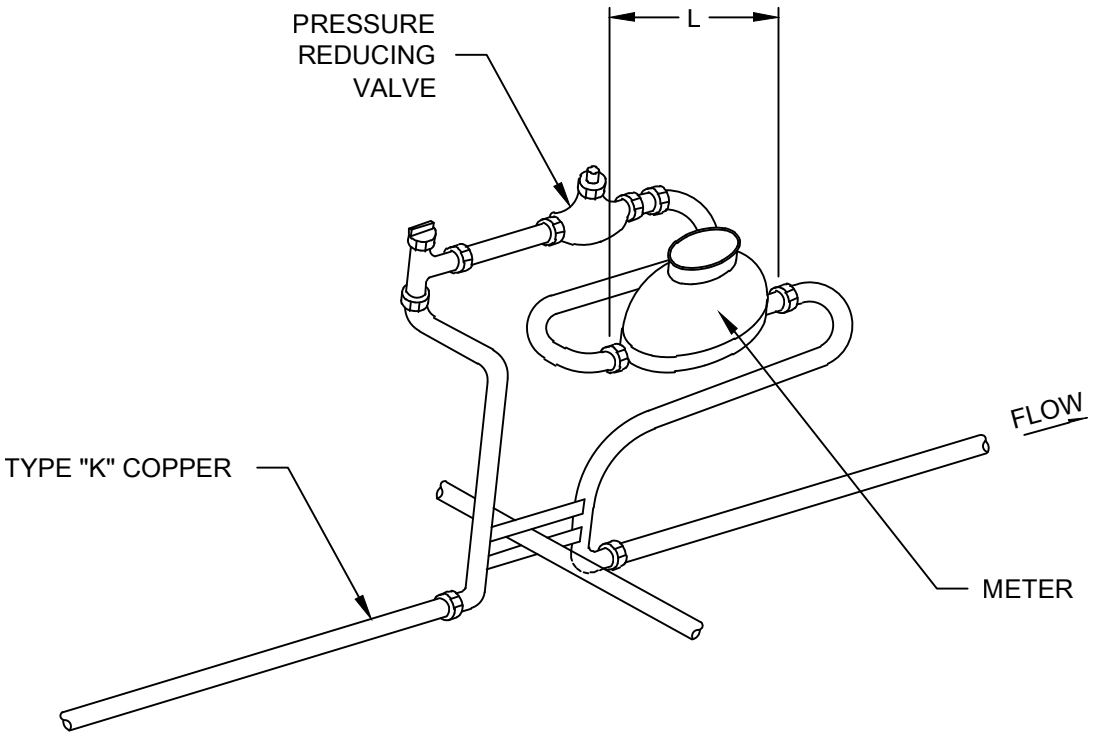




NOTES:

1. THE METER SHALL BE PROTECTED FROM FREEZING AND DAMAGE.
2. THE METER SHALL BE ANCHORED TO THE WALL ABOVE AND BELOW THE METER ASSEMBLY.
3. ALL METER LOCATIONS TO BE IN BASEMENTS AND NOT IN CRAWL SPACES.
4. WATER SERVICE LINE SHALL BE TYPE K COPPER.
5. NO BENDS, FITTINGS, CONNECTIONS, OR CHANGES IN THE PIPE SIZE ARE PERMITTED ON THE SERVICE LINE FROM THE CORPORATION STOP TO THE METER OUTLET VALVE EXCEPT AS SHOWN.
6. IF THE METER IS BOXED IN OR PLACED BEHIND A WALL, PROVIDE AN ACCESS OPENING 36" WIDE FROM ABOVE THE OUTLET VALVE TO THE FLOOR. VALVES MUST BE ACCESSIBLE FROM THE OPENING. METER TO BE CENTERED IN OPENING.
7. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

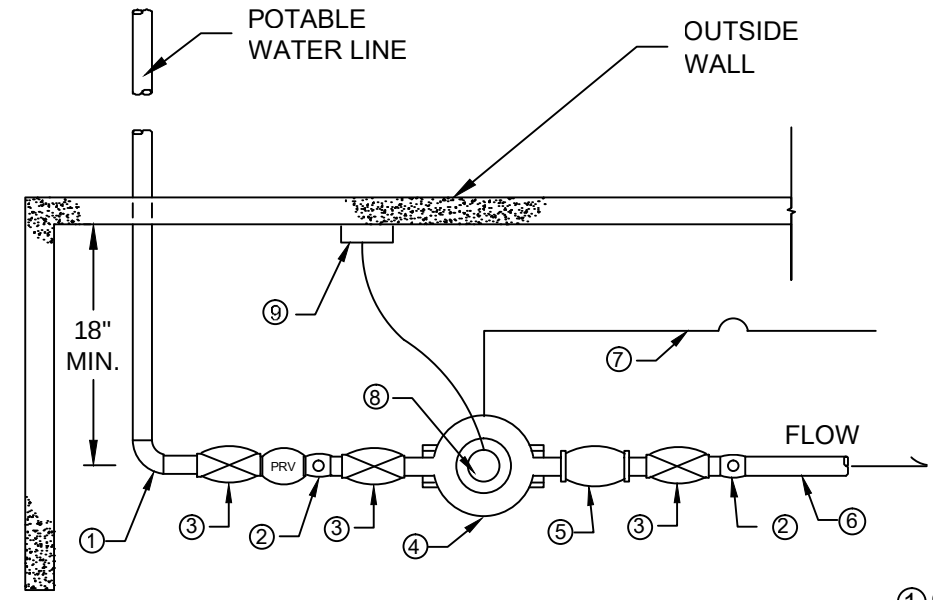
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-11A
11/13	REMOTE READING ¾" & 1" METER TYPICAL INSIDE SETTING (COMMERCIAL)	

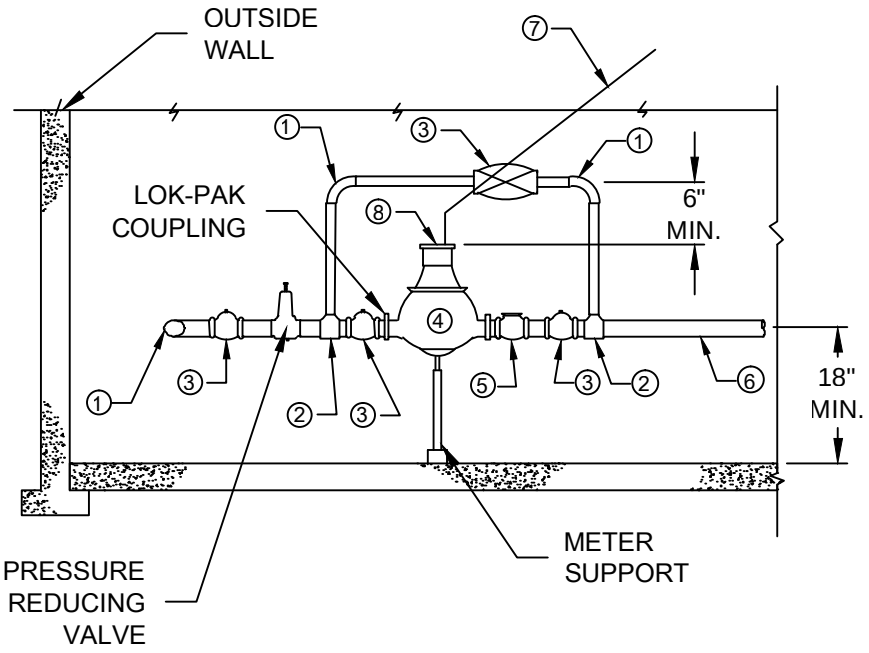


NOTES:

1. ALL METER PITS LOCATED IN CONCRETE, WHEN PERMITTED, SHALL HAVE A CAST IRON DOME & COVER.
2. METER SETTER SHALL BE FORD 70 SERIES TANDEM COPPER SETTER, MODEL TV 73-36W. FOR ¾" SERVICE WITH PADLOCK WINGS ON INLET VALVE & COMPRESSION END CONNECTIONS.
3. ALL METER PITS SHALL HAVE A 2" HOLE IN THE CENTER OF THE LID FOR THE PURPOSE OF INSTALLING A REMOTE SENSING UNIT.
4. THERE SHALL NOT BE LESS THAN 4.5' OF COVER OVER THE PIPE.
5. METER SETTER FOR 1" SERVICE SHALL BE FOR 70 SERIES TANDEM COPPER SETTER, MODEL TV 74-36W, WITH PADLOCK WINGS ON INLET VALVE & COMPRESSION END CONNECTIONS.
6. WHEN USED FOR AN IRRIGATION SYSTEM, AN APPROVED BACK FLOW PROTECTION DEVICE MUST BE INCLUDED, ALONG WITH A STOP AND WASTE VALVE ON THE CUSTOMERS SIDE OF THE PIT.
7. FOR ¾" METER SIZE L= 7 ½"; FOR 1" METER SIZE L=10 ¾".
8. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WS-11B
06/12		METER PIT FOR ¾" & 1" METER TANDEM SETTER	



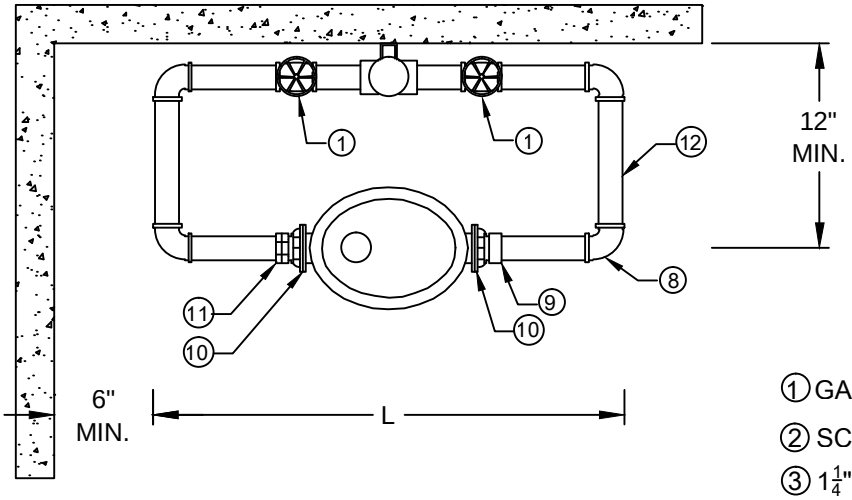


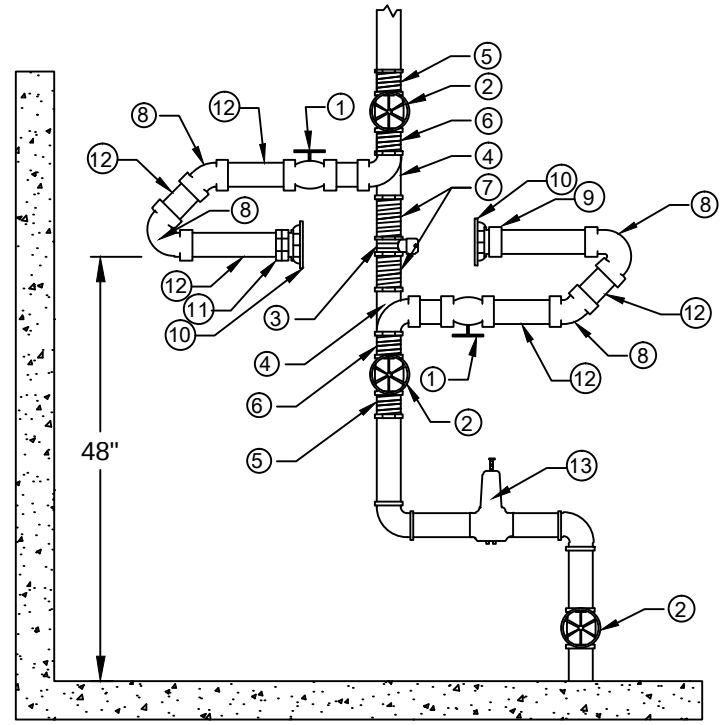
① 90° ELBOW
② TEE
③ LOCKABLE VALVE
④ METER UNIT
⑤ CHECK VALVE
⑥ TYPE K COPPER
⑦ WIRE SHIELDED CABLE TO TOUCH READ REGISTER
⑧ TOUCH READ METER
⑨ INSIDE MXLL RADIO READ UNIT

NOTES:

1. THE METER SHALL BE PROTECTED FROM FREEZING AND DAMAGE.
2. WATER SERVICE LINE SHALL BE TYPE K COPPER.
3. NO BENDS, FITTINGS, CONNECTIONS, OR CHANGES IN THE PIPE SIZE ARE PERMITTED ON THE SERVICE LINE FROM THE CORPORATION STOP TO THE METER OUTLET VALVE EXCEPT AS SHOWN.
4. PIPE JOINTS SHALL BE THREADED, FLANGED OR SOLDERED W/95-5 TIN-ANTIMONY SOLDER.
5. COMPANION FLANGES SHALL BE BRASS.
6. A FLOOR DRAIN SHALL BE PLACED NEAR THE METER INSTALLATION.
7. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE			
06/12	MERIDIAN METROPOLITAN DISTRICT		WS-12
	INSIDE SETTING FOR 1 $\frac{1}{2}$" AND LARGER WATER METER WITH BYPASS		



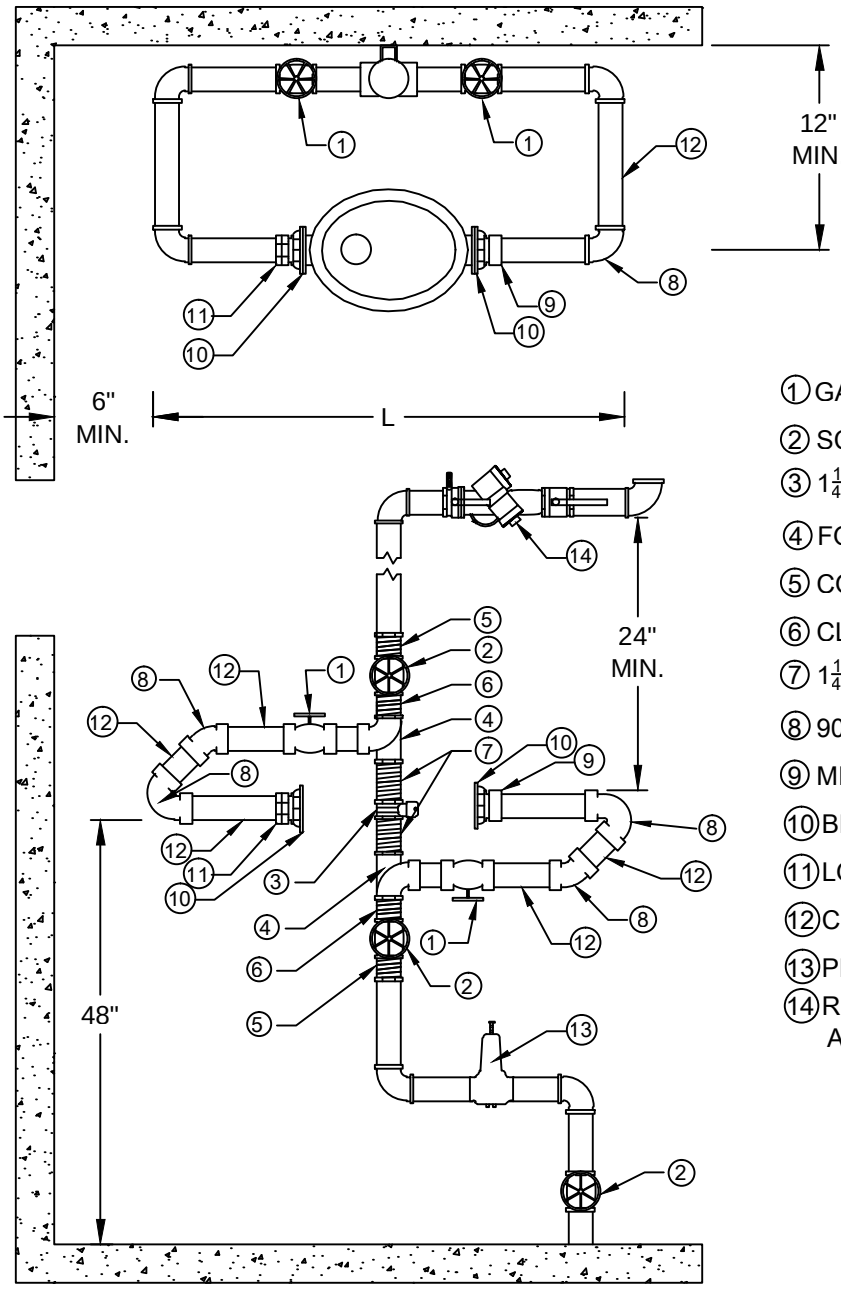


① GATE VALVE
② SCREW GATE VALVE
③ $1\frac{1}{4}$" BALL VALVE WITH LOCKING WING
④ FORD CUSTOM SETTER TEE
⑤ COMP. COPPER X MIPT ADAPTER
⑥ CLOSE BRASS NIPPLE
⑦ $1\frac{1}{4}$" X CLOSE BRASS NIPPLE
⑧ 90° BEND
⑨ MIPT X SWEAT ADAPTER
⑩ BRASS METER FLANGE
⑪ LOC-PAC COUPLING
⑫ CUT TYPE K - COPPER PIPE
⑬ PRESSURE REDUCING VALVE

NOTES:

1. THE METER SHALL BE PROTECTED FROM FREEZING AND DAMAGE.
2. WATER SERVICE LINE SHALL BE TYPE K COPPER.
3. NO BENDS, FITTINGS, CONNECTIONS, OR CHANGES IN THE PIPE SIZE ARE PERMITTED ON THE SERVICE LINE FROM THE CORPORATION STOP TO THE METER OUTLET VALVE EXCEPT AS SHOWN.
4. PIPE JOINTS SHALL BE THREADED, FLANGED OR SOLDERED W/95-5 TIN-ANTIMONY SOLDER.
5. METER YOKE LENGTH (L): 13" FOR 1 $\frac{1}{2}$" METER; 17" FOR 2" METER.
6. THE ASSEMBLY SHALL BE INSTALLED AT AN ELEVATION OF 48" ABOVE THE FINISHED FLOOR. THE ASSEMBLY SHALL BE PLACED 12" AWAY FROM THE ADJACENT WALL TO THE CENTER OF THE ASSEMBLY WITH A MINIMUM OF 24" CLEAR SPACE IN FRONT OF THE ASSEMBLY FROM FLOOR TO CEILING. IF THE WATER METER AND BACKFLOW PREVENTION ASSEMBLY ARE TO BE INSTALLED IN SERIES, THERE SHALL BE A MINIMUM OF 24" CLEARANCE BETWEEN THE ASSEMBLIES.
7. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-13
06/12	TYPICAL WATER METER ASSEMBLY FOR 1 $\frac{1}{2}$" AND 2" METERS	

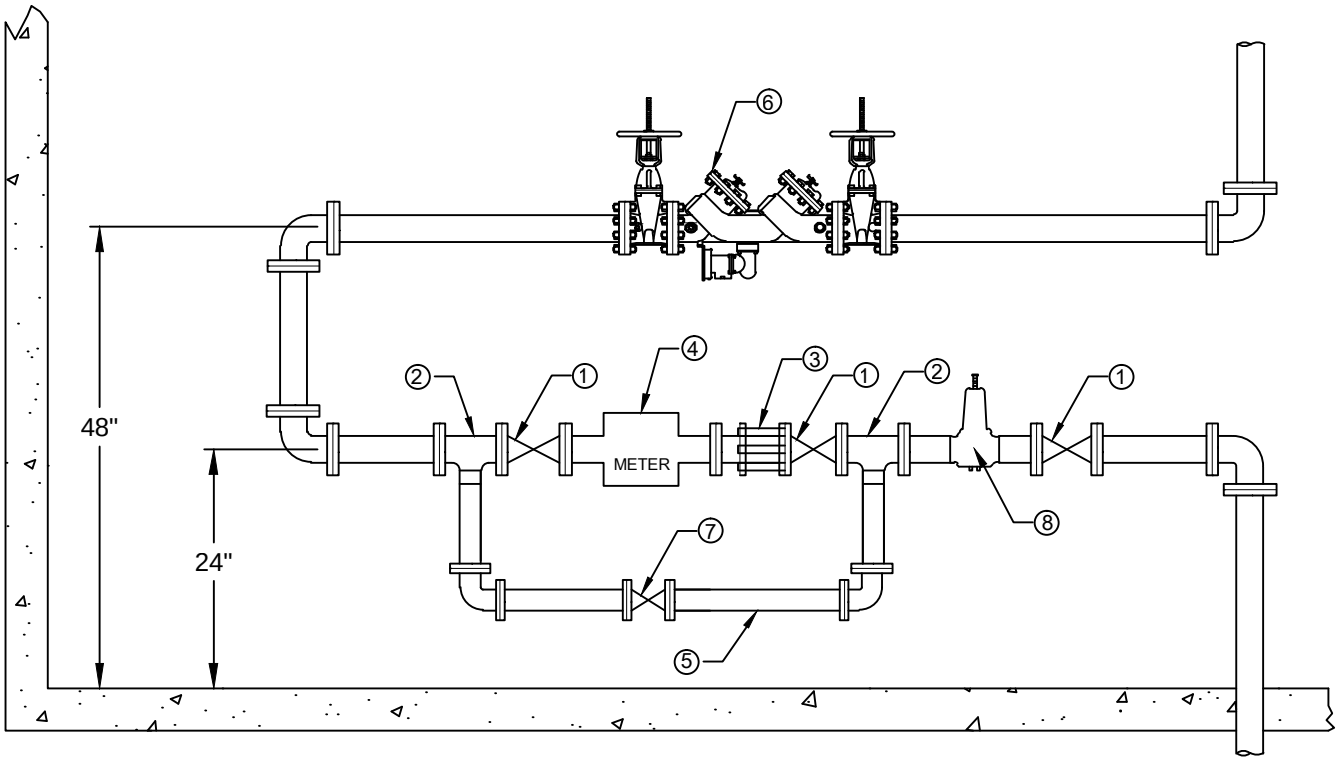


1. GATE VALVE
2. SCREW GATE VALVE
3. $1\frac{1}{4}$" BALL VALVE WITH LOCKING WING
4. FORD CUSTOM SETTER TEE
5. COMP. COPPER X MIPT ADAPTER
6. CLOSE BRASS NIPPLE
7. $1\frac{1}{4}$" X CLOSE BRASS NIPPLE
8. 90° BEND
9. MIPT X SWEAT ADAPTER
10. BRASS METER FLANGE
11. LOC-PAC COUPLING
12. CUT TYPE K - COPPER PIPE
13. PRESSURE REDUCING VALVE
14. REDUCED PRESSURE PRINCIPAL ASSEMBLY BACKFLOW PREVENTOR

NOTES:

1. THE METER SHALL BE PROTECTED FROM FREEZING AND DAMAGE.
2. WATER SERVICE LINE SHALL BE TYPE K COPPER.
3. NO BENDS, FITTINGS, CONNECTIONS, OR CHANGES IN THE PIPE SIZE ARE PERMITTED ON THE SERVICE LINE FROM THE CORPORATION STOP TO THE METER OUTLET VALVE EXCEPT AS SHOWN.
4. PIPE JOINTS SHALL BE THREADED, FLANGED OR SOLDERED W/95-5 TIN-ANTIMONY SOLDER.
5. METER YOKE LENGTH (L): 13" FOR 1 $\frac{1}{2}$" METER; 17" FOR 2" METER.
6. THE ASSEMBLY SHALL BE INSTALLED AT AN ELEVATION OF 48" ABOVE THE FINISHED FLOOR. THE ASSEMBLY SHALL BE PLACED 12" AWAY FROM THE ADJACENT WALL TO THE CENTER OF THE ASSEMBLY WITH A MINIMUM OF 24" CLEAR SPACE IN FRONT OF THE ASSEMBLY FROM FLOOR TO CEILING. IF THE WATER METER AND BACKFLOW PREVENTION ASSEMBLY ARE TO BE INSTALLED IN SERIES, THERE SHALL BE A MINIMUM OF 24" CLEARANCE BETWEEN THE ASSEMBLIES.
7. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WS-14
06/12		TYPICAL WATER METER AND BACKFLOW PREVENTOR ASSEMBLY	

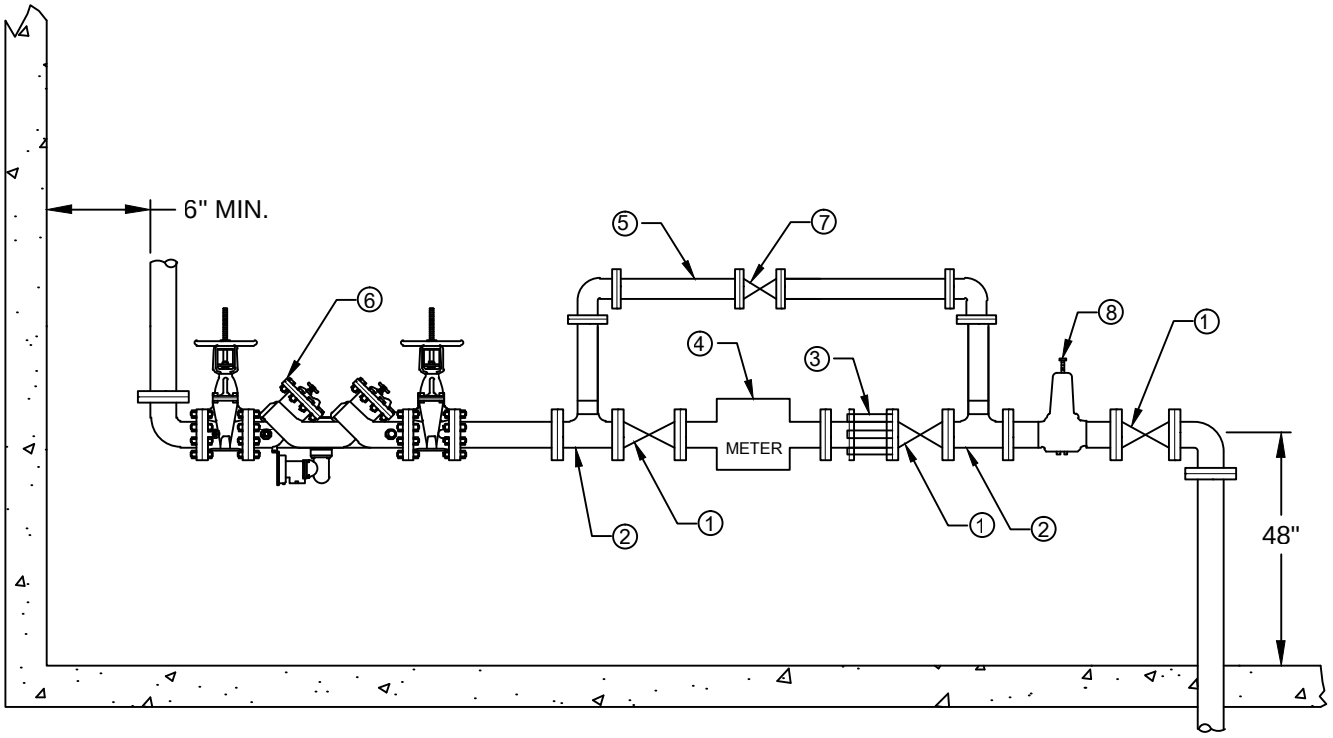


① GATE VALVE	⑤ BYPASS (MIN. OF 2" DIAMETER LINE)
② TEE	⑥ REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTOR ASSEMBLY
③ DRESSER COUPLING	⑦ LOCKABLE VALVE
④ METER	⑧ FLANGED PRESSURE REDUCING VALVE

NOTES:

1. THE METER SHALL BE PROTECTED FROM FREEZING AND DAMAGE.
2. WATER SERVICE LINE SHALL BE TYPE K COPPER.
3. NO BENDS, FITTINGS, CONNECTIONS, OR CHANGES IN THE PIPE SIZE ARE PERMITTED ON THE SERVICE LINE FROM THE CORPORATION STOP TO THE METER OUTLET VALVE EXCEPT AS SHOWN.
4. PIPE JOINTS SHALL BE THREADED, FLANGED OR SOLDERED W/95-5 TIN-ANTIMONY SOLDER.
5. THE ASSEMBLY SHALL BE INSTALLED AT AN ELEVATION OF 48" ABOVE THE FINISHED FLOOR. THE ASSEMBLY SHALL BE PLACED 12" AWAY FROM THE ADJACENT WALL TO THE CENTER OF THE ASSEMBLY WITH A MINIMUM OF 24" CLEAR SPACE IN FRONT OF THE ASSEMBLY FROM FLOOR TO CEILING. IF THE WATER METER AND BACKFLOW PREVENTION ASSEMBLY ARE TO BE INSTALLED IN SERIES, THERE SHALL BE A MINIMUM OF 24" CLEARANCE BETWEEN THE ASSEMBLIES.
6. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE			
06/12		MERIDIAN METROPOLITAN DISTRICT	WS-15
		DOMESTIC STANDARD 3" & 4" METER AND BACKFLOW ASSEMBLY DRAWING	

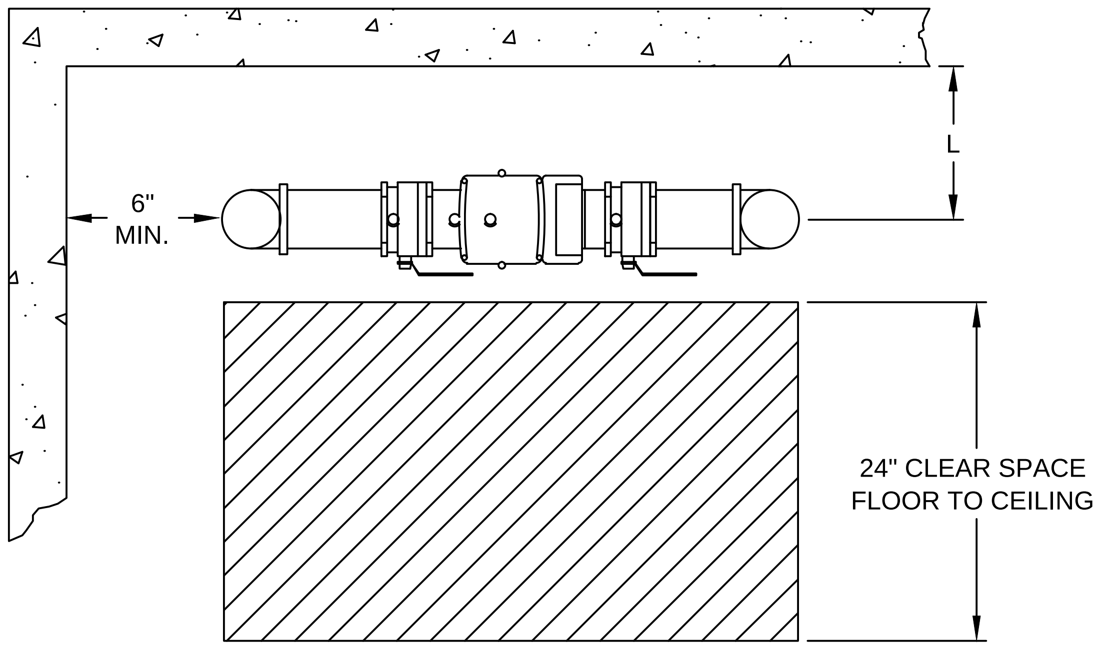


① GATE VALVE	⑤ BYPASS (MIN. OF 2" DIAMETER LINE)
② TEE	⑥ REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTOR ASSEMBLY
③ DRESSER COUPLING	⑦ LOCKABLE VALVE
④ METER	⑧ FLANGED PRESSURE REDUCING VALVE

NOTES:

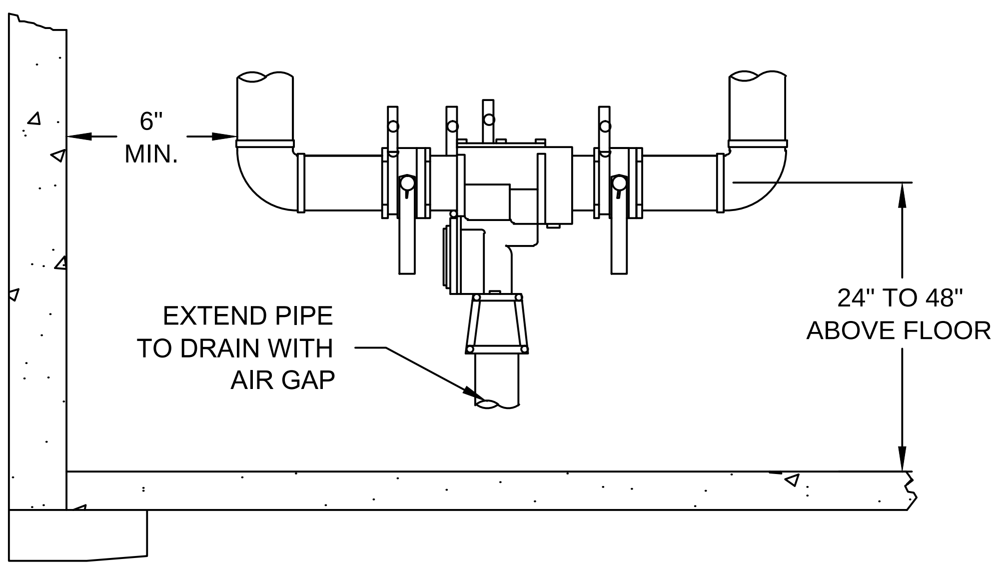
1. THE METER SHALL BE PROTECTED FROM FREEZING AND DAMAGE.
2. WATER SERVICE LINE SHALL BE TYPE K COPPER.
3. NO BENDS, FITTINGS, CONNECTIONS, OR CHANGES IN THE PIPE SIZE ARE PERMITTED ON THE SERVICE LINE FROM THE CORPORATION STOP TO THE METER OUTLET VALVE EXCEPT AS SHOWN.
4. PIPE JOINTS SHALL BE THREADED, FLANGED OR SOLDERED W/95-5 TIN-ANTIMONY SOLDER.
5. THE ASSEMBLY SHALL BE INSTALLED AT AN ELEVATION OF 48" ABOVE THE FINISHED FLOOR. THE ASSEMBLY SHALL BE PLACED 12" AWAY FROM THE ADJACENT WALL TO THE CENTER OF THE ASSEMBLY WITH A MINIMUM OF 24" CLEAR SPACE IN FRONT OF THE ASSEMBLY FROM FLOOR TO CEILING. IF THE WATER METER AND BACKFLOW PREVENTION ASSEMBLY ARE TO BE INSTALLED IN SERIES, THERE SHALL BE A MINIMUM OF 24" CLEARANCE BETWEEN THE ASSEMBLIES.
6. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE			
06/12		MERIDIAN METROPOLITAN DISTRICT	WS-16
		DOMESTIC STANDARD 3" & 4" METER AND BACKFLOW ASSEMBLY DRAWING	



NOTES:

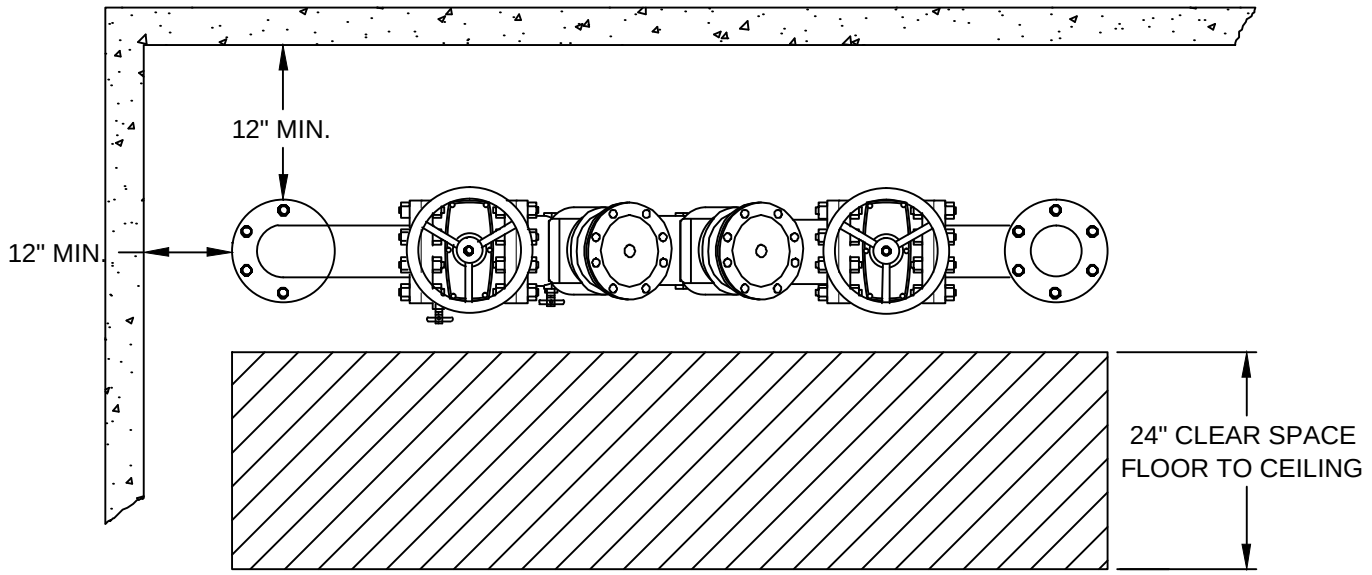
1. "L" = DISTANCE FROM THE WALL TO THE CENTER OF THE ASSEMBLY.
2. ASSEMBLY SIZES: FOR $\frac{1}{4}$" THRU $\frac{3}{4}$", L=3 INCHES; FOR 1" THRU 2", L=6 INCHES; AND 2 $\frac{1}{2}$" AND LARGER, L=12 INCHES.
3. THE OFFSET FROM THE WALL TO THE CENTER OF THE ASSEMBLY ONLY APPLIES WHEN THE TEST COCKS ARE POINTED UP OR AWAY FROM THE ADJACENT WALL. OTHERWISE THE ASSEMBLY SHALL BE PLACED 12 INCHES AWAY FROM THE ADJACENT WALL.

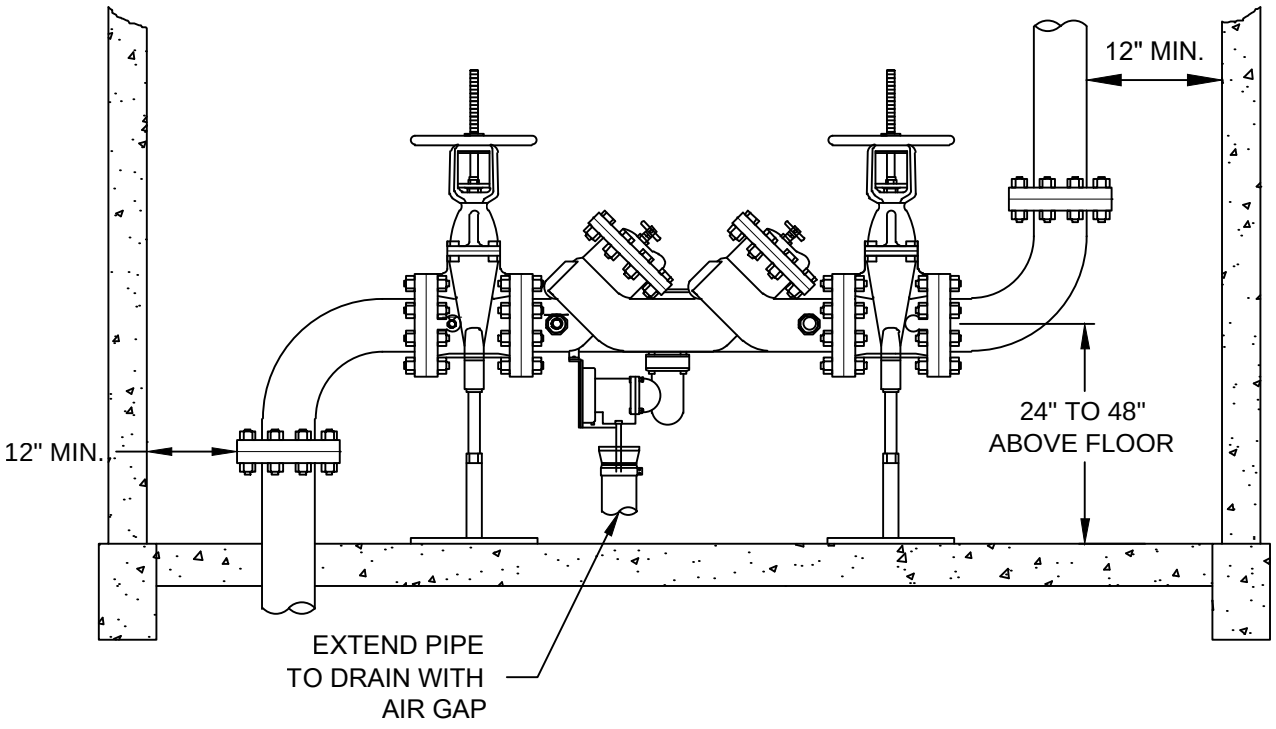


NOTES:

1. THE BACKFLOW PREVENTER IS REQUIRED TO BE DOWNSTREAM OF THE WATER METER ASSEMBLY.
2. THE DRAIN FROM THE BACKFLOW PREVENTER SHALL NOT EXTEND OUTSIDE THE STRUCTURE TO DAYLIGHT.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-17
06/12	TYPICAL LOCATION FOR REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTERS ASSEMBLY	

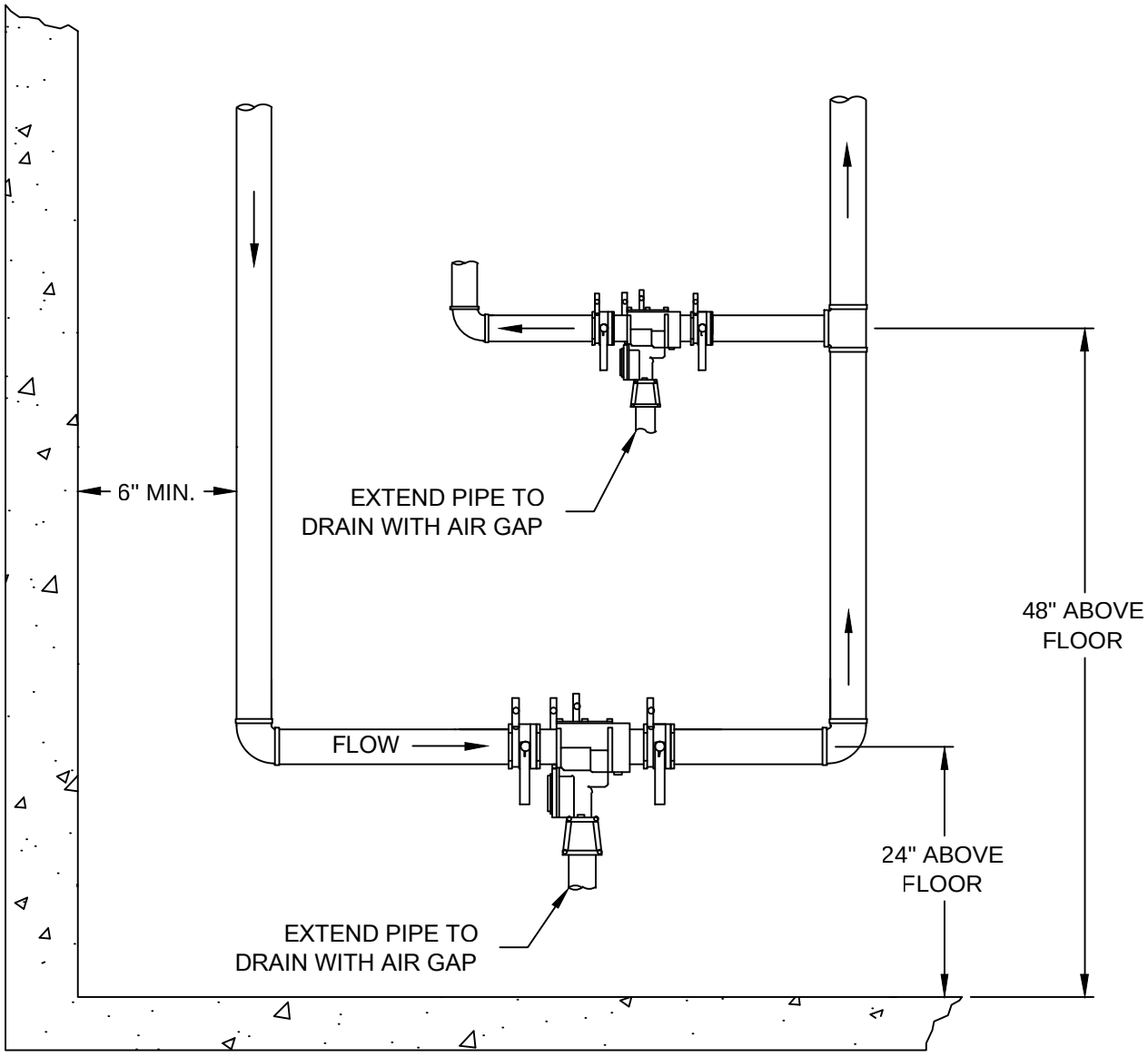




NOTES:

1. THE BACKFLOW PREVENTER IS REQUIRED TO BE DOWNSTREAM OF THE WATER METER ASSEMBLY.
2. THE DRAIN FROM THE BACKFLOW PREVENTER SHALL NOT EXTEND OUTSIDE THE STRUCTURE TO DAYLIGHT.

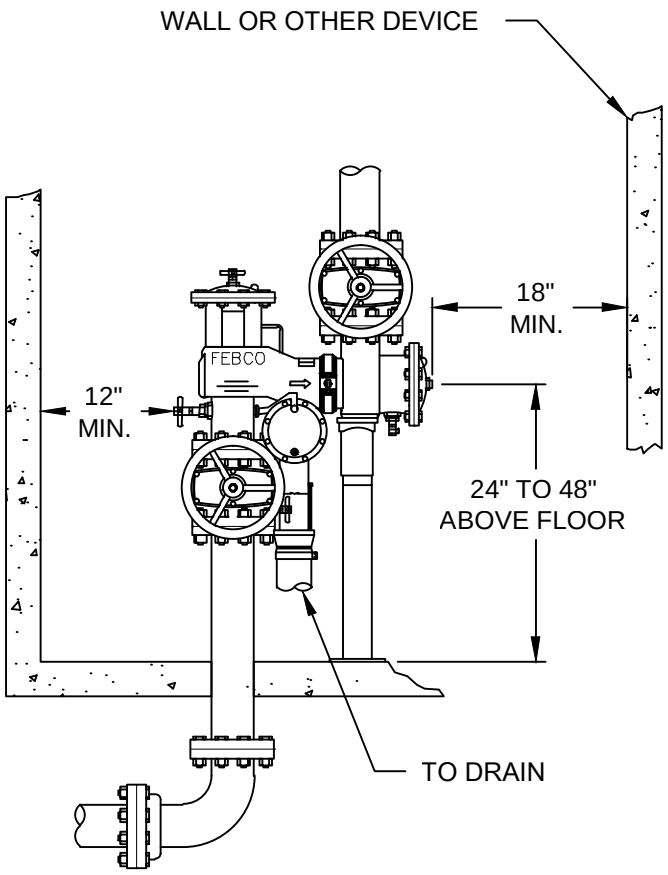
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WS-18
06/12		TYPICAL LOCATION FOR REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTER ASSEMBLY (2 $\frac{1}{2}$ & LARGER)	



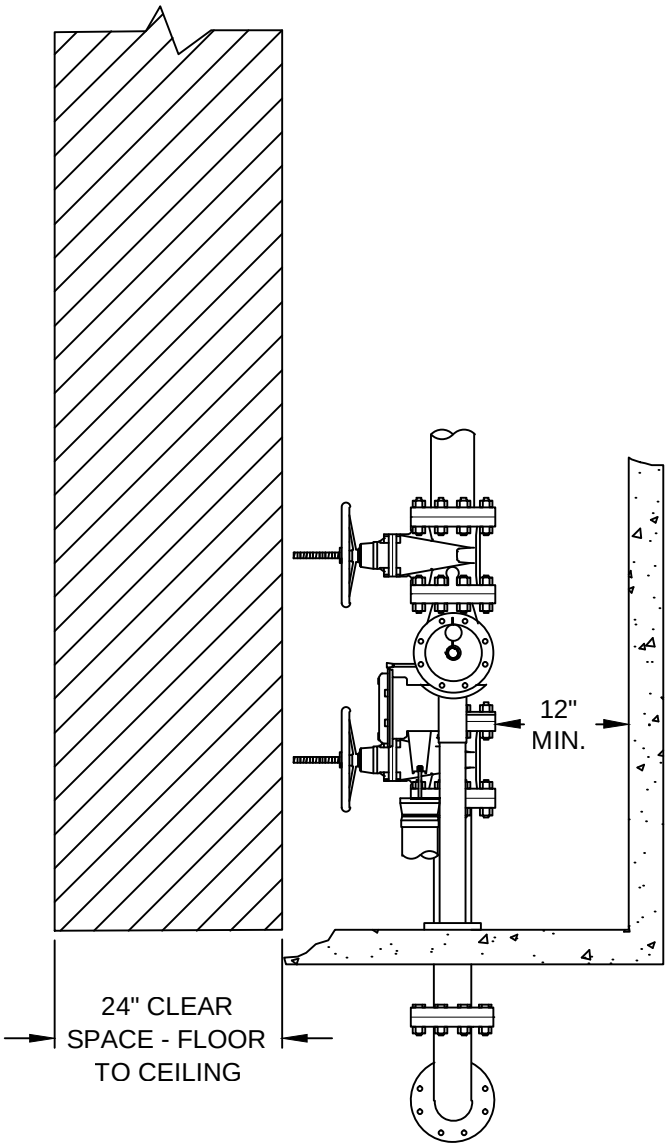
NOTES:

1. THE BACKFLOW PREVENTER IS REQUIRED TO BE DOWNSTREAM OF THE WATER METER ASSEMBLY.
2. THE DRAIN FROM THE BACKFLOW PREVENTER SHALL NOT EXTEND OUTSIDE THE STRUCTURE TO DAYLIGHT.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WS-19
06/12		TYPICAL INSTALLATION FOR REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTORS ASSEMBLY IN SERIES	



FRONT VIEW

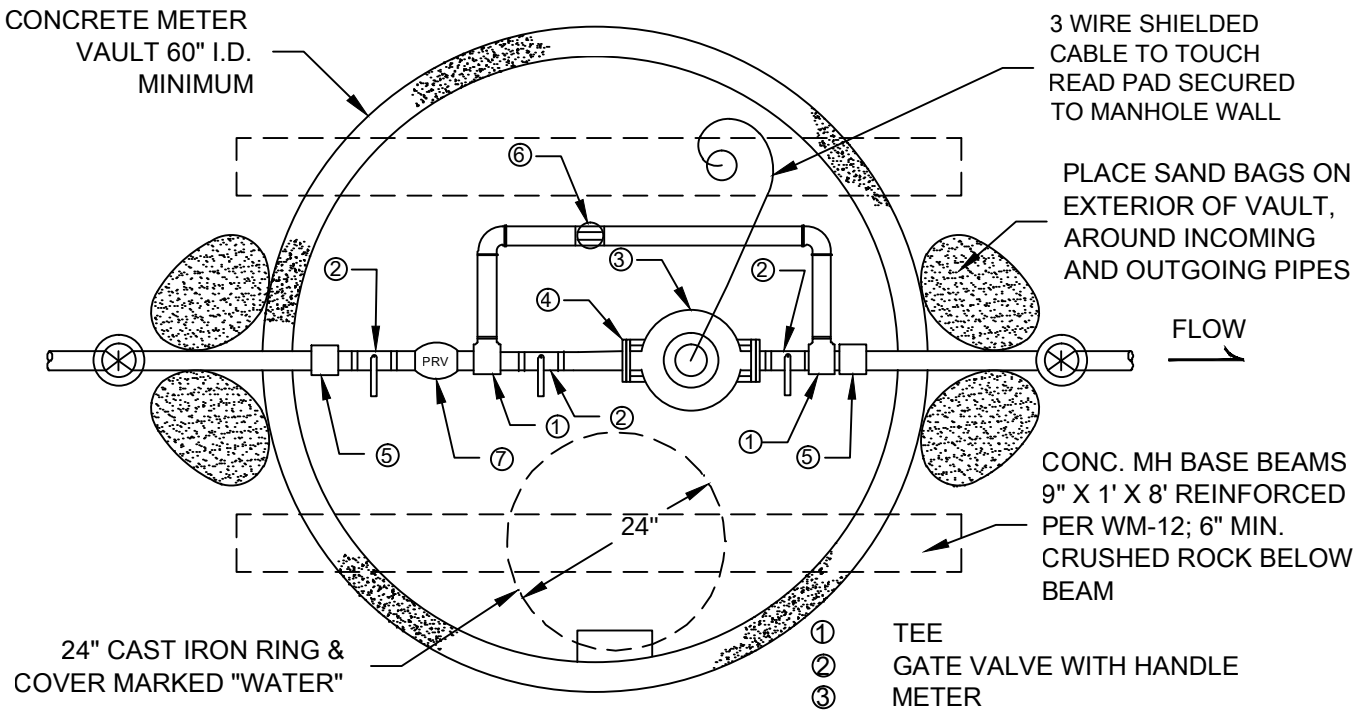


SIDE VIEW

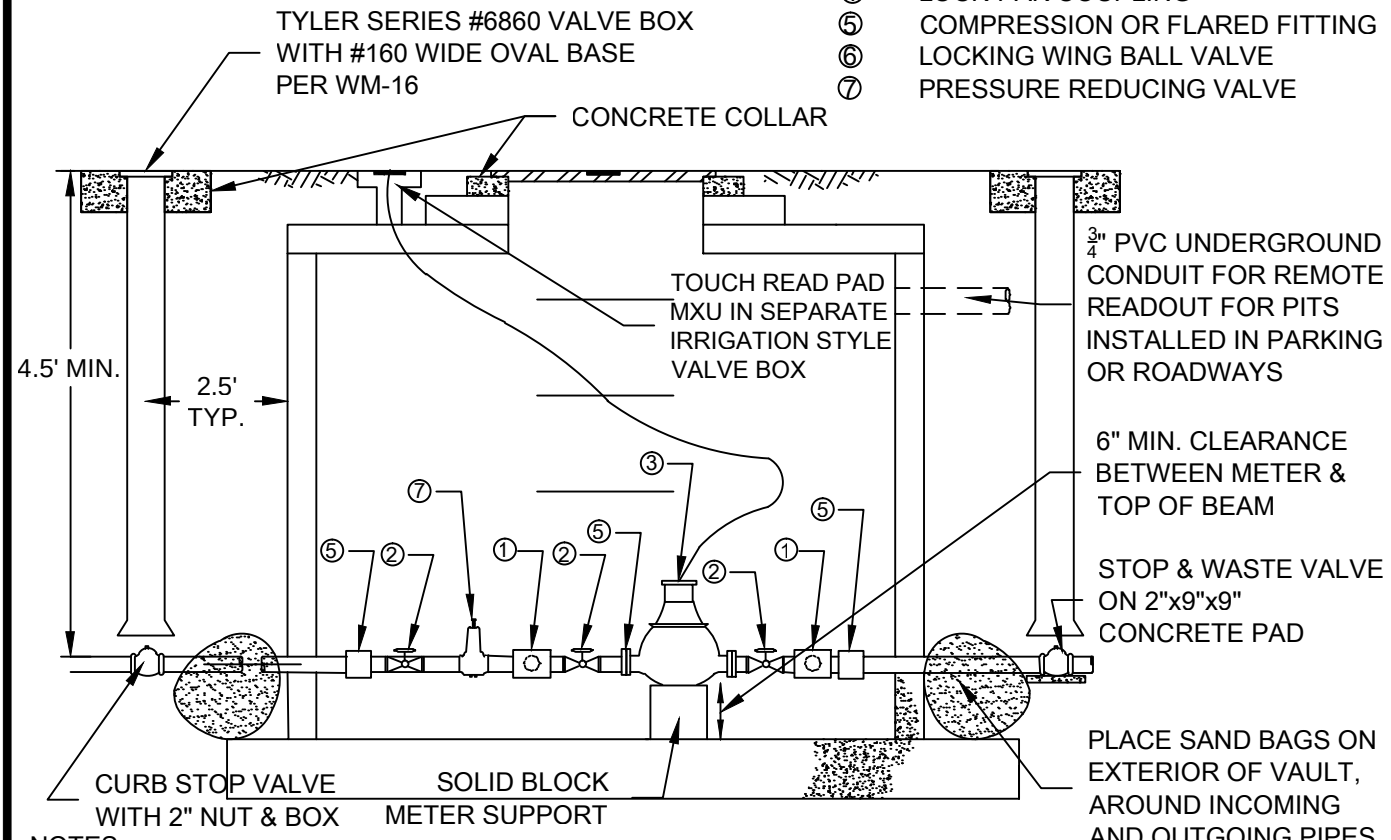
NOTES:

1. THE BACKFLOW PREVENTER IS REQUIRED TO BE DOWNSTREAM OF THE WATER METER ASSEMBLY.
2. THE DRAIN FROM THE BACKFLOW PREVENTER SHALL NOT EXTEND OUTSIDE THE STRUCTURE TO DAYLIGHT.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-20
06/12	TYPICAL VERTICAL BACKFLOW PREVENTER INSTALLATION	



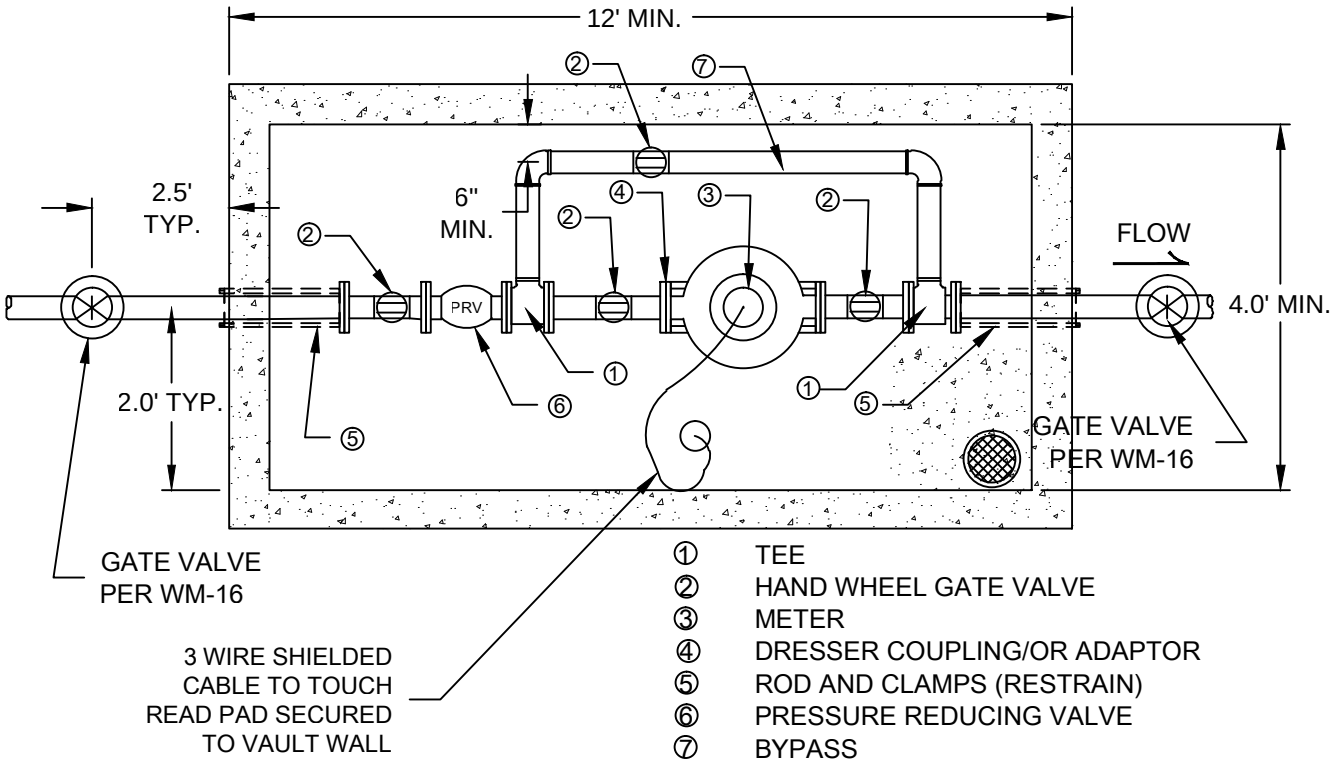
① TEE
② GATE VALVE WITH HANDLE
③ METER
④ LOCK-PAK COUPLING
⑤ COMPRESSION OR FLARED FITTING
⑥ LOCKING WING BALL VALVE
⑦ PRESSURE REDUCING VALVE



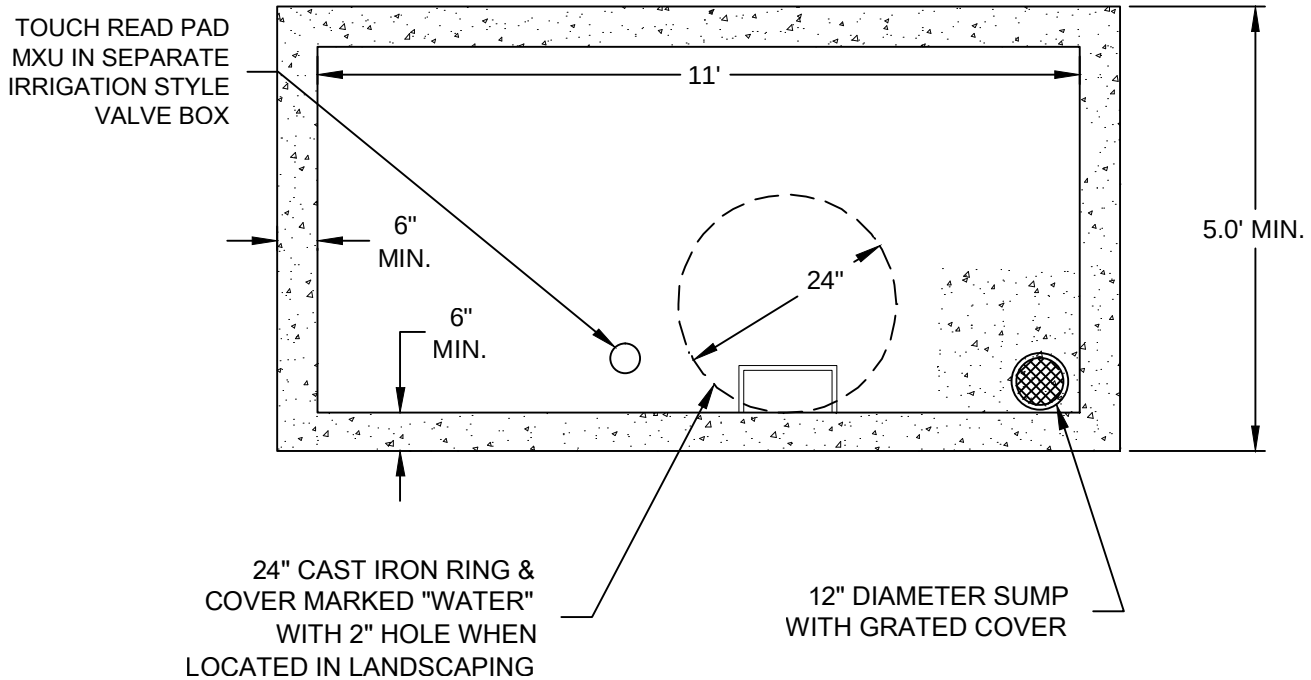
NOTES:

1. BACKFLOW PREVENTER MAY BE REQUIRED UPON RECOMMENDATION OF DISTRICT.
2. THE DISTANCE BETWEEN THE PRV AND METER SHALL BE AT LEAST 3 PIPE DIAMETERS SEPARATION.
3. WHEN METER VAULT AND/OR CURB STOP BOX IS LOCATED IN LANDSCAPED AREAS A 6" CONCRETE COLLAR IS REQUIRED AROUND THE MANHOLE AND STOP BOX.
4. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-21
06/12	STANDARD SETTING FOR 1 ½" & 2" DOMESTIC METER VAULT	



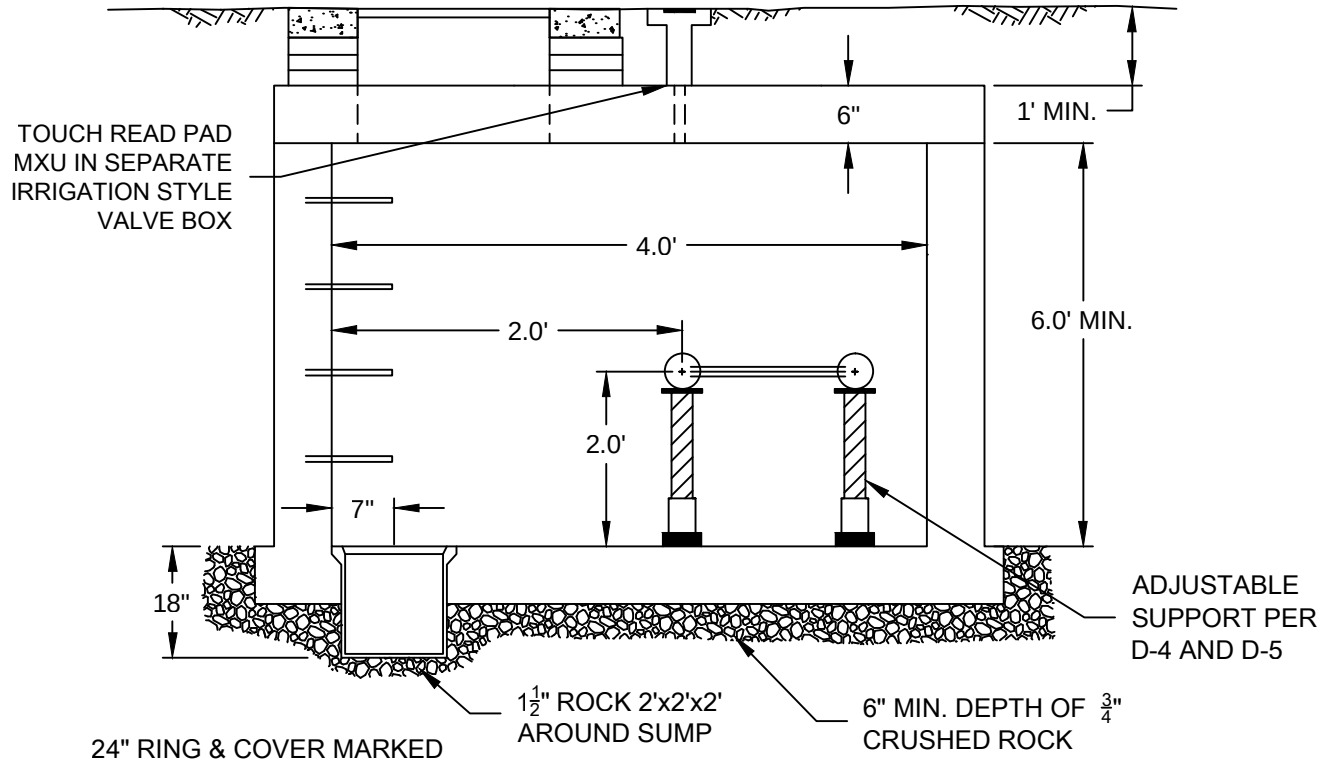
① TEE
② HAND WHEEL GATE VALVE
③ METER
④ DRESSER COUPLING/OR ADAPTOR
⑤ ROD AND CLAMPS (RESTRAIN)
⑥ PRESSURE REDUCING VALVE
⑦ BYPASS

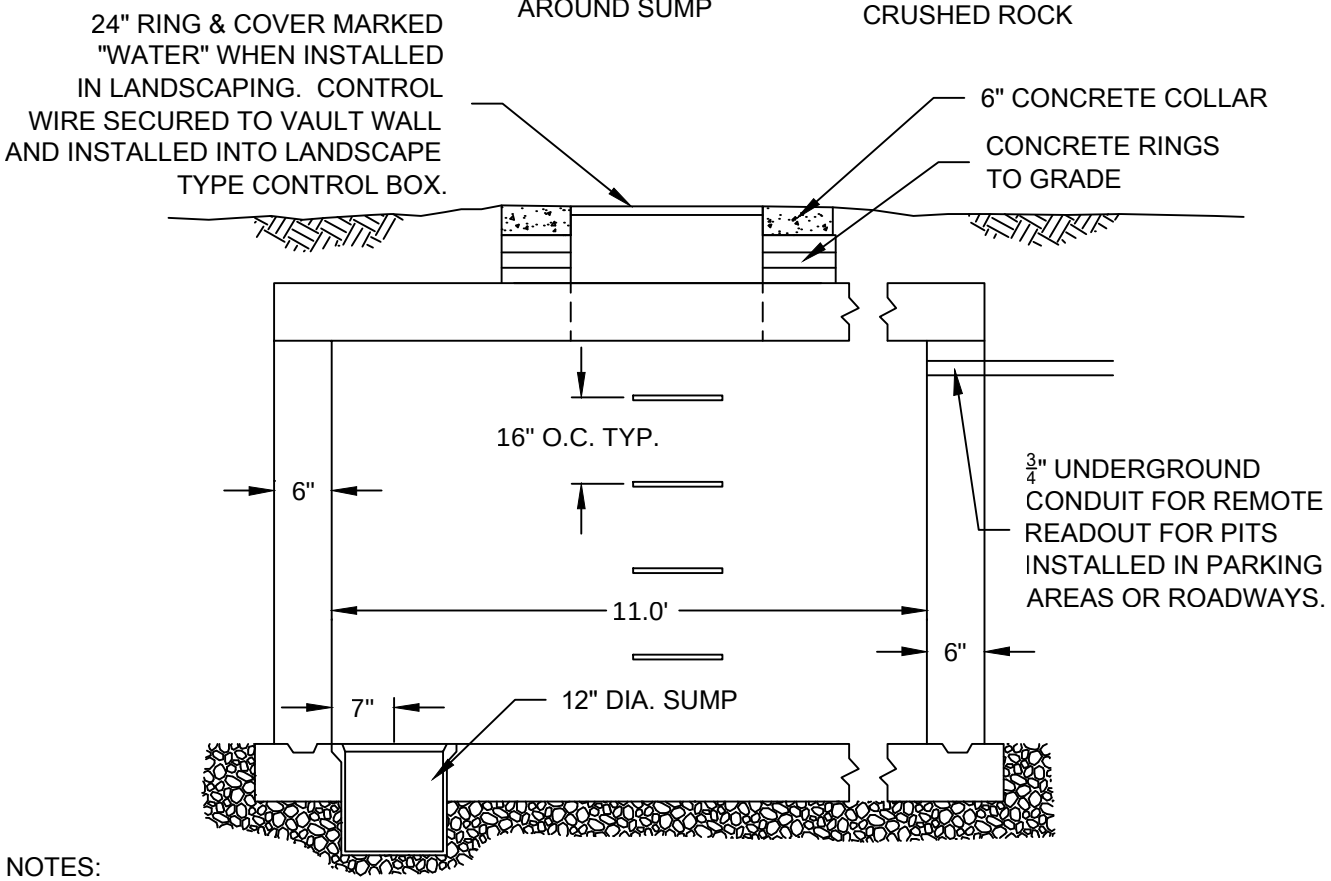


NOTES:

1. BACKFLOW PREVENTER MAY BE REQUIRED UPON RECOMMENDATION OF DISTRICT.
2. A MINIMUM OF 6" OF $\frac{3}{4}$" CRUSHED ROCK SHALL BE PLACED UNDER THE ENTIRE VAULT (SEE WS-23).
3. WHEN METER VAULT AND/OR CURB STOP BOX IS LOCATED IN LANDSCAPED AREAS A 6" CONCRETE COLLAR IS REQUIRED AROUND THE MANHOLE AND THE GATE VALVE.
4. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WS-22
06/12		STANDARD SETTING FOR 3" & 4" DOMESTIC METER VAULT	

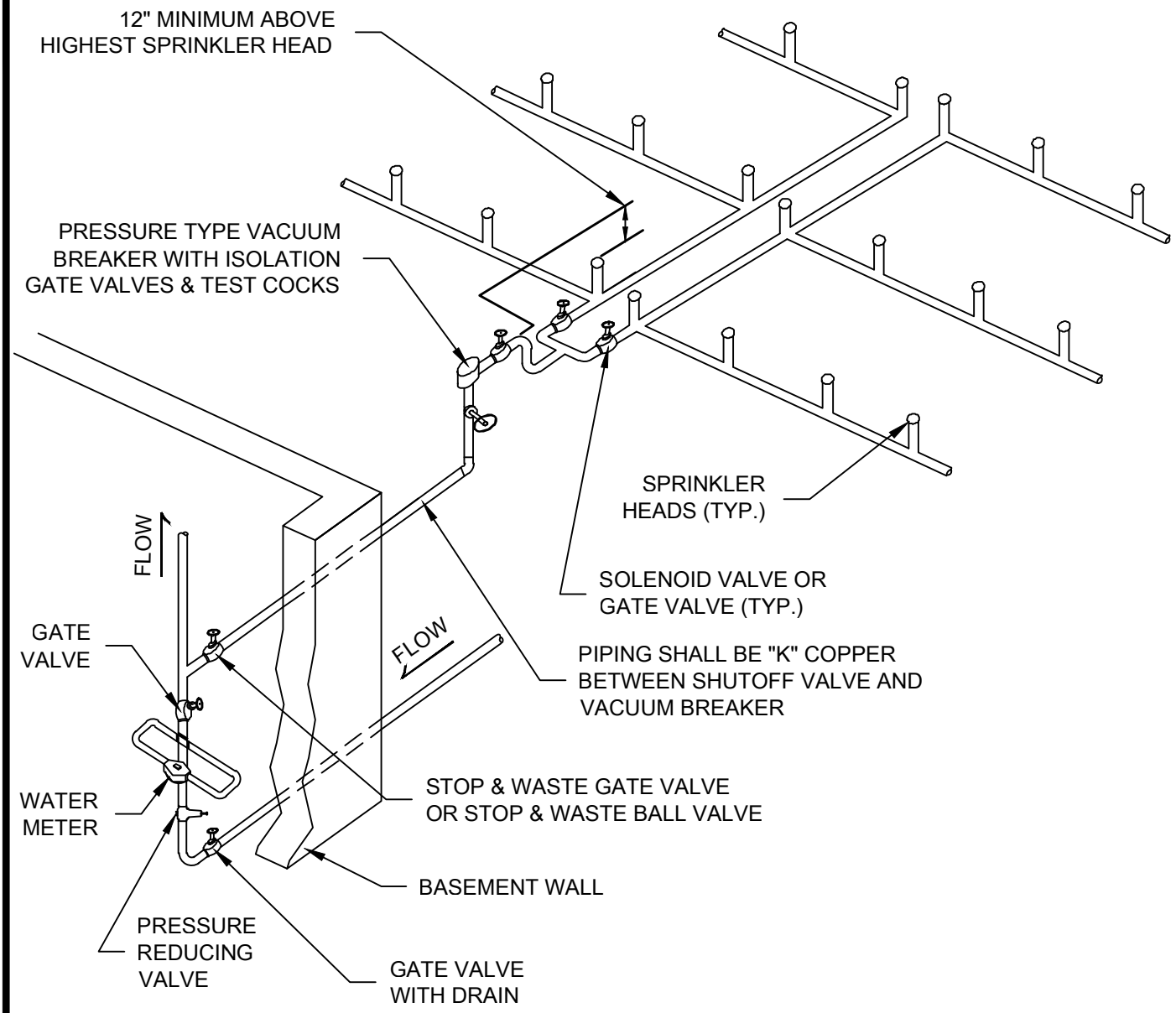




NOTES:

1. A MINIMUM OF 6" OF ¾" CRUSHED ROCK SHALL BE PLACED UNDER THE ENTIRE VAULT.
2. WHEN METER VAULT AND/OR CURB STOP BOX IS LOCATED IN LANDSCAPED AREAS A 6" CONCRETE COLLAR IS REQUIRED AROUND THE MANHOLE AND THE GATE VALVE (SEE WS-22 FOR ADDITIONAL DETAILS).
3. RAMNEK ALL EXTERIOR JOINTS.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-23
06/12	STANDARD FOR 3" & 4" DOMESTIC METER VAULT	



NOTES:

1. RESIDENTIAL METER SETTING PER WS-11.

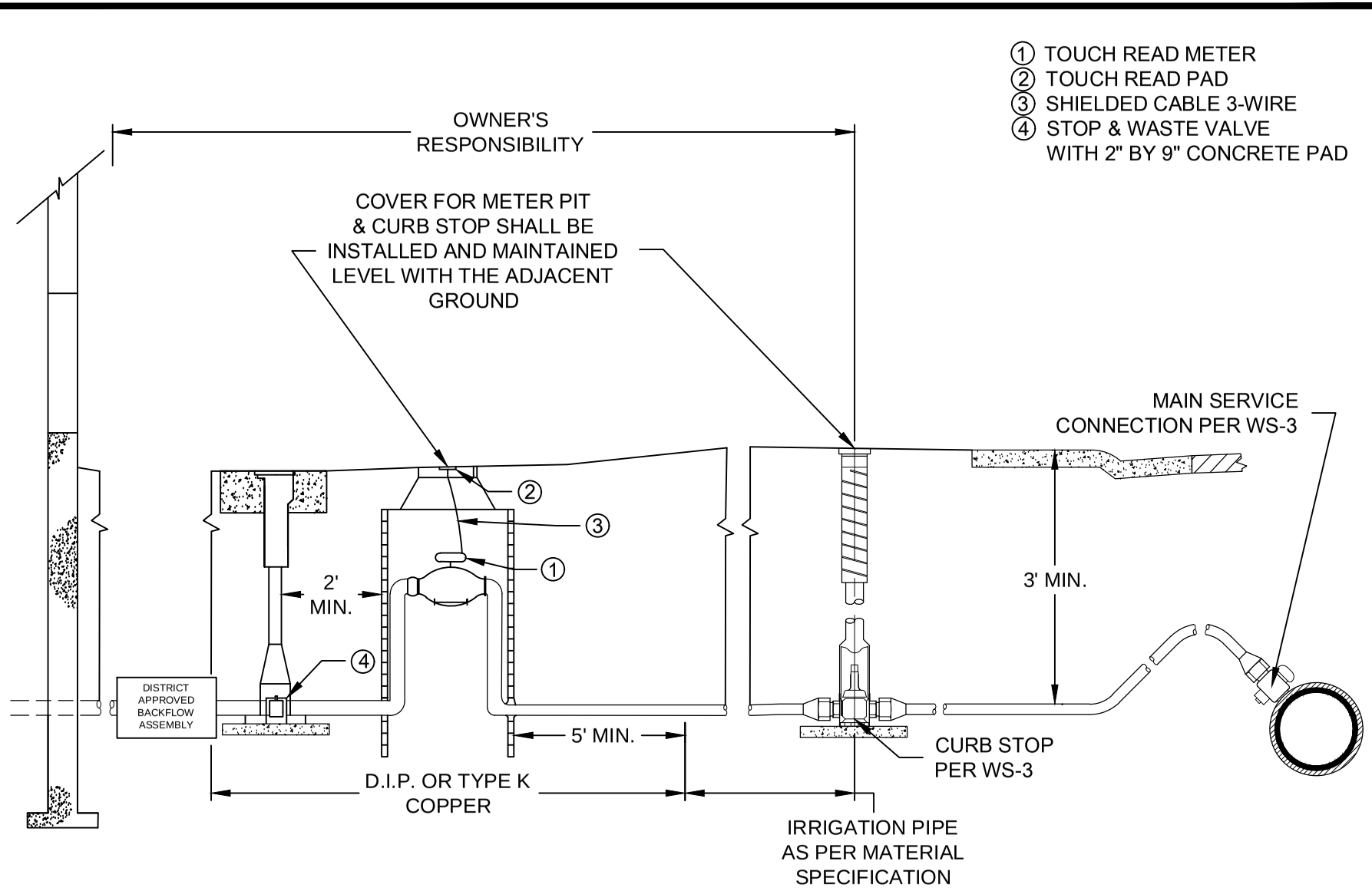
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WS-24
06/12		RESIDENTIAL IRRIGATION SYSTEM PRESSURE VACUUM BREAKER	

REV. DATE
06/12

MERIDIAN METROPOLITAN DISTRICT

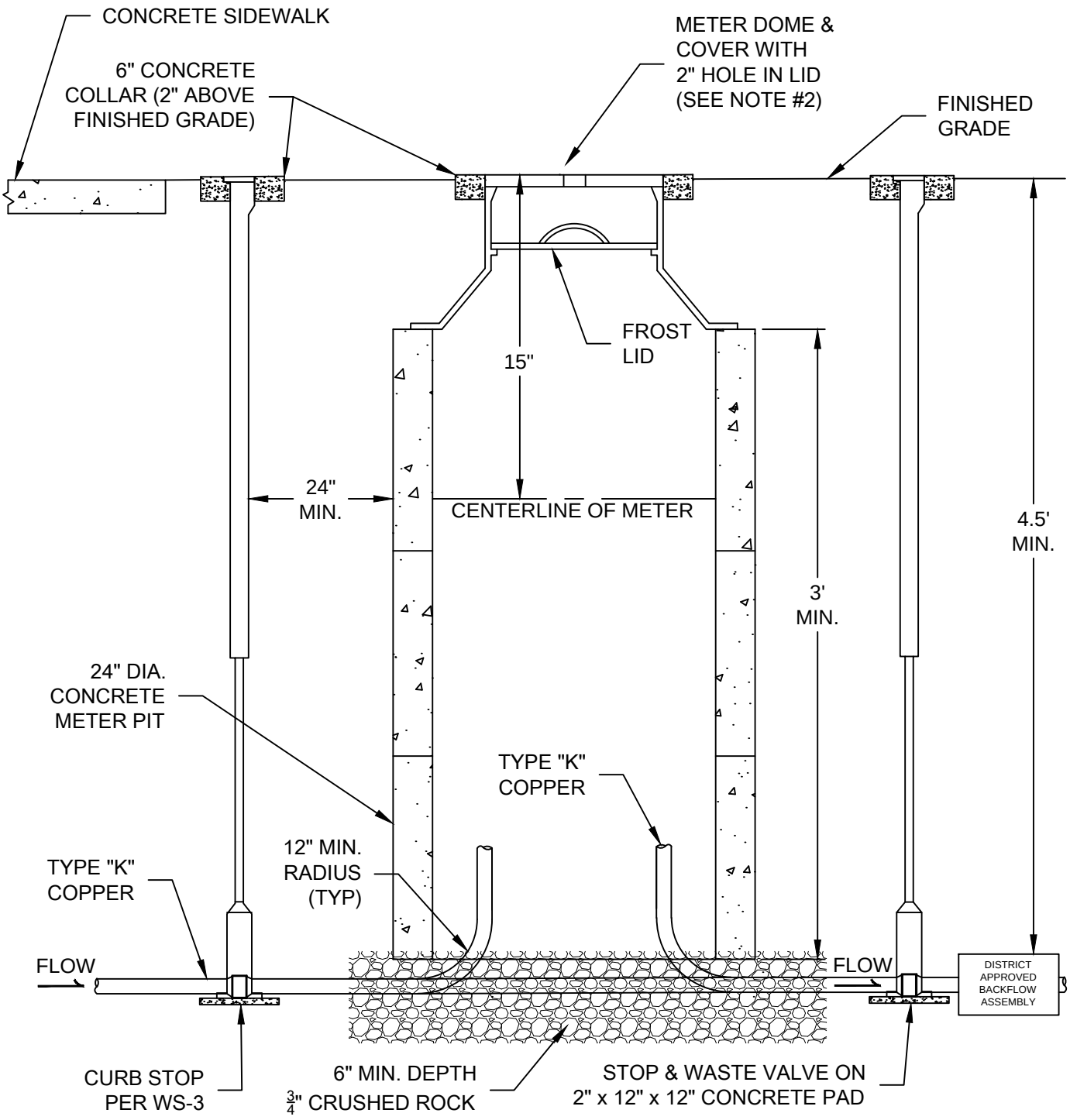
IRRIGATION LINE, STOP BOX AND OUTSIDE METER INSTALLATION FOR $\frac{3}{4}$" AND 1" SETS

WS-25



NOTES:

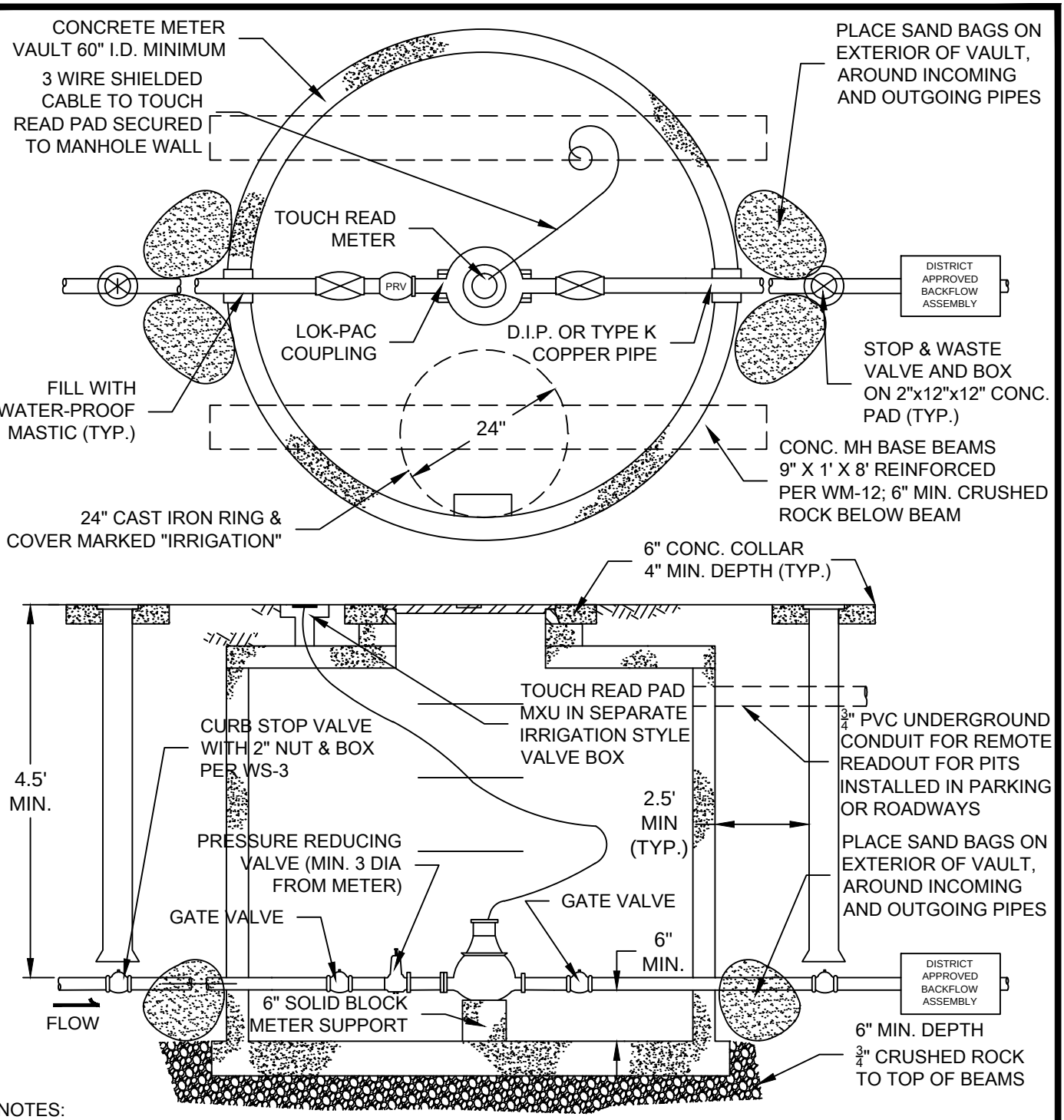
1. OWNER'S RESPONSIBILITY SHALL BE UP TO THE IRRIGATION SLEEVE OR TEE OR STUB.
2. THE DISTRICT'S RESPONSIBILITY SHALL BE THE IRRIGATION MAIN AND WHERE NEEDED THE SLEEVE OR TEE FOR TAPPING THE IRRIGATION MAIN.
3. IRRIGATION MAIN SHOWN ON PROPERTY OWNER'S SIDE OF STREET.
4. SHOULD ANY SITUATION ARISE OTHER THAN SHOWN, CONTACT THE DISTRICT REPRESENTATIVES.
5. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.



NOTES:

1. ALL METER PITS LOCATED IN CONCRETE, WHEN ALLOWED BY THE DISTRICT, SHALL HAVE A CAST IRON DOME AND COVER.
2. METERS INSTALLED IN PITS THAT ARE IN PARKING OR ROADWAYS, WILL REQUIRE THE INSTALLATION OF A REMOTE WIRE AND CONDUIT. METER PITS INSTALLED IN LANDSCAPED AREAS WILL REQUIRE THAT A 2" HOLE BE PROVIDED IN THE CENTER OF THE LID AT THE OWNERS EXPENSE FOR THE INSTALLATION OF A REMOTE SENSING UNIT.
3. SHOULD ANY SITUATION ARISE OTHER THAN SHOWN, CONTACT DISTRICT REPRESENTATIVES.

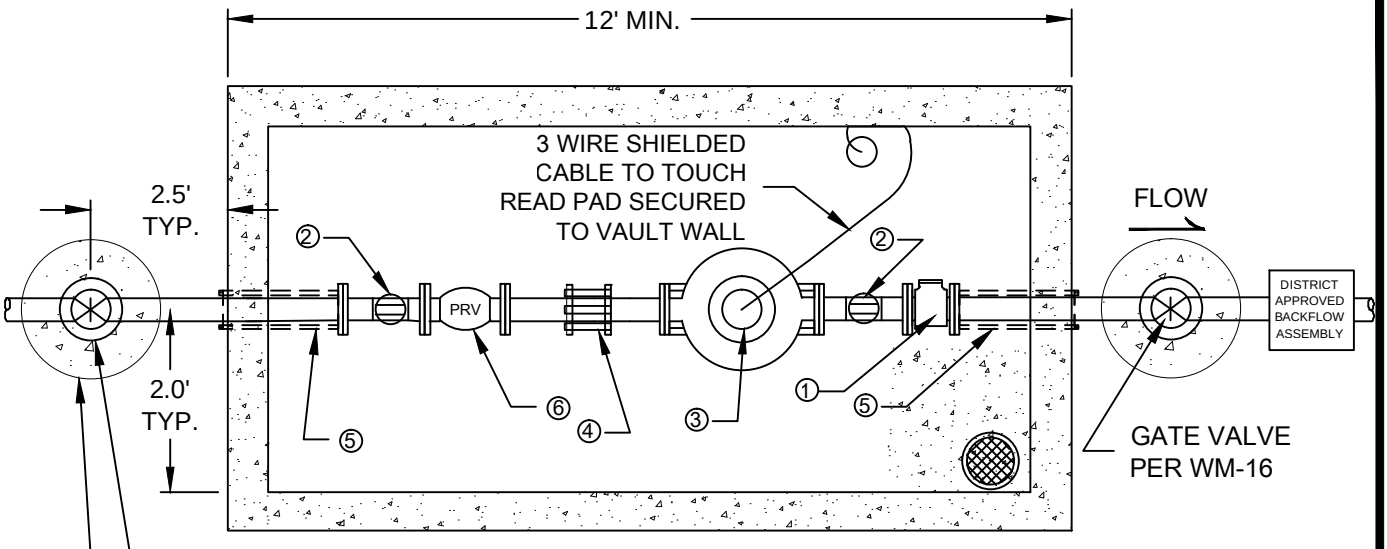
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WS-26
05/13		METER PIT FOR ¾" AND 1" METERS (TANDEM SETTER & IRRIGATION ONLY)	



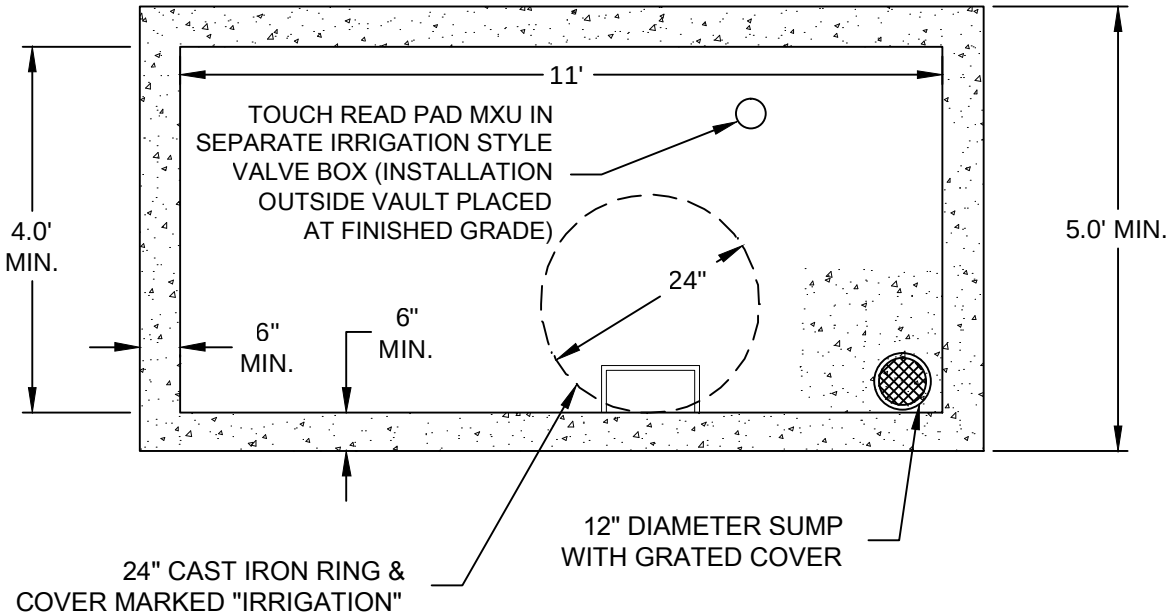
NOTES:

1. ALL METER PITS LOCATED IN CONCRETE, WHEN ALLOWED BY THE DISTRICT, SHALL HAVE A CAST IRON DOME & COVER.
2. METERS INSTALLED IN PITS THAT ARE IN PARKING OR ROADWAYS, WILL REQUIRE THE INSTALLATION OF A REMOTE WIRE AND CONDUIT. METER PITS INSTALLED IN LANDSCAPED AREAS WILL REQUIRE TO BE CONSTRUCTED AS SHOWN AT THE OWNERS EXPENSE FOR THE INSTALLATION OF A REMOTE SENSING UNIT.
3. JOINTS INSIDE METER VAULT AND CONNECTIONS TO VALVES SHALL BE THREADED OR FLANGED. METER SHALL BE FLANGED OR THREADED W/BRASS COMPANION FLANGES. DUCTILE IRON PIPE OR TYPE K COPPER PIPE SHALL BE USED 5' EITHER SIDE OF VAULT.
4. SHOULD ANY SITUATION ARISE OTHER THAN SHOWN, CONTACT DISTRICT REPRESENTATIVES.
5. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE			
05/13		MERIDIAN METROPOLITAN DISTRICT	WS-27
		OUTSIDE SETTING FOR 1 ½" AND 2" IRRIGATION METER IN MANHOLE	



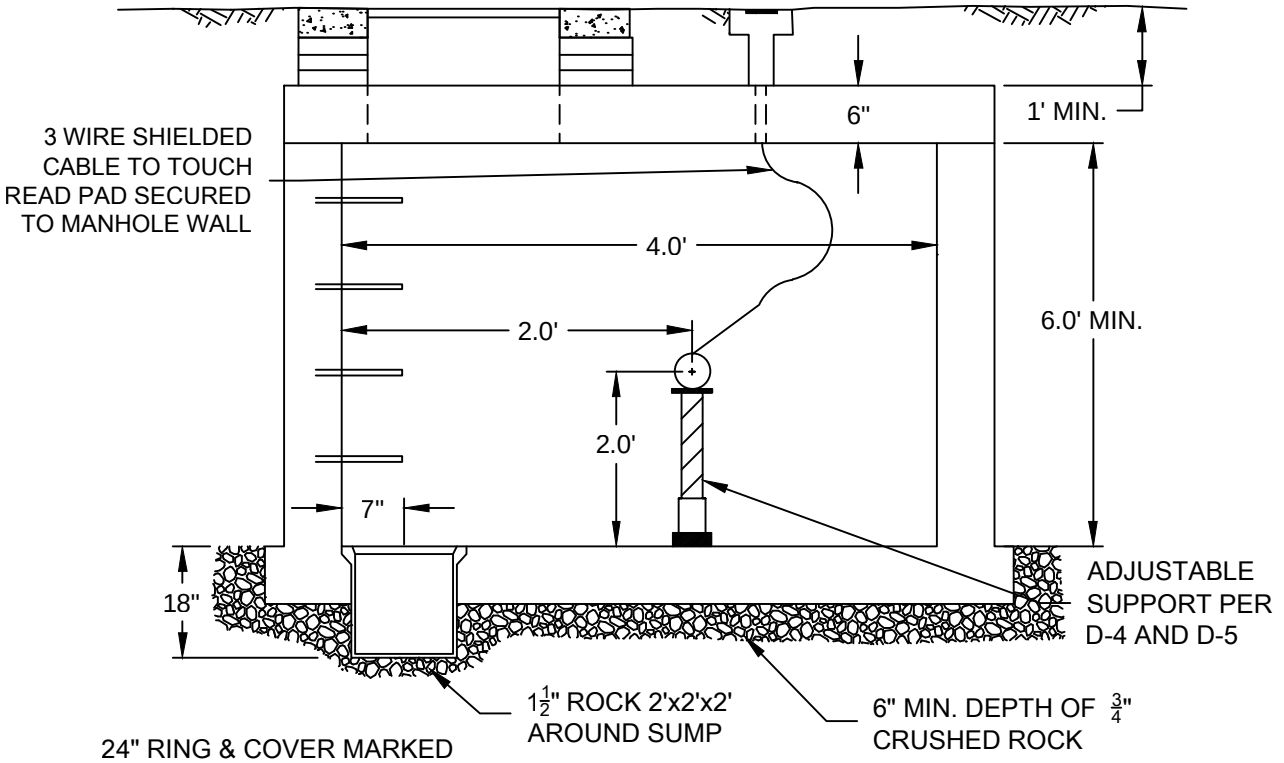
① DRAIN VALVE INVERTED CxCxC TEE WITH ¾" CxC ELBOW & ¾" BRONZE BALL VALVE
② HAND WHEEL GATE VALVE
③ METER
④ DRESSER COUPLING/OR ADAPTOR
⑤ ROD AND CLAMPS (RESTRAIN)
⑥ PRESSURE REDUCING VALVE

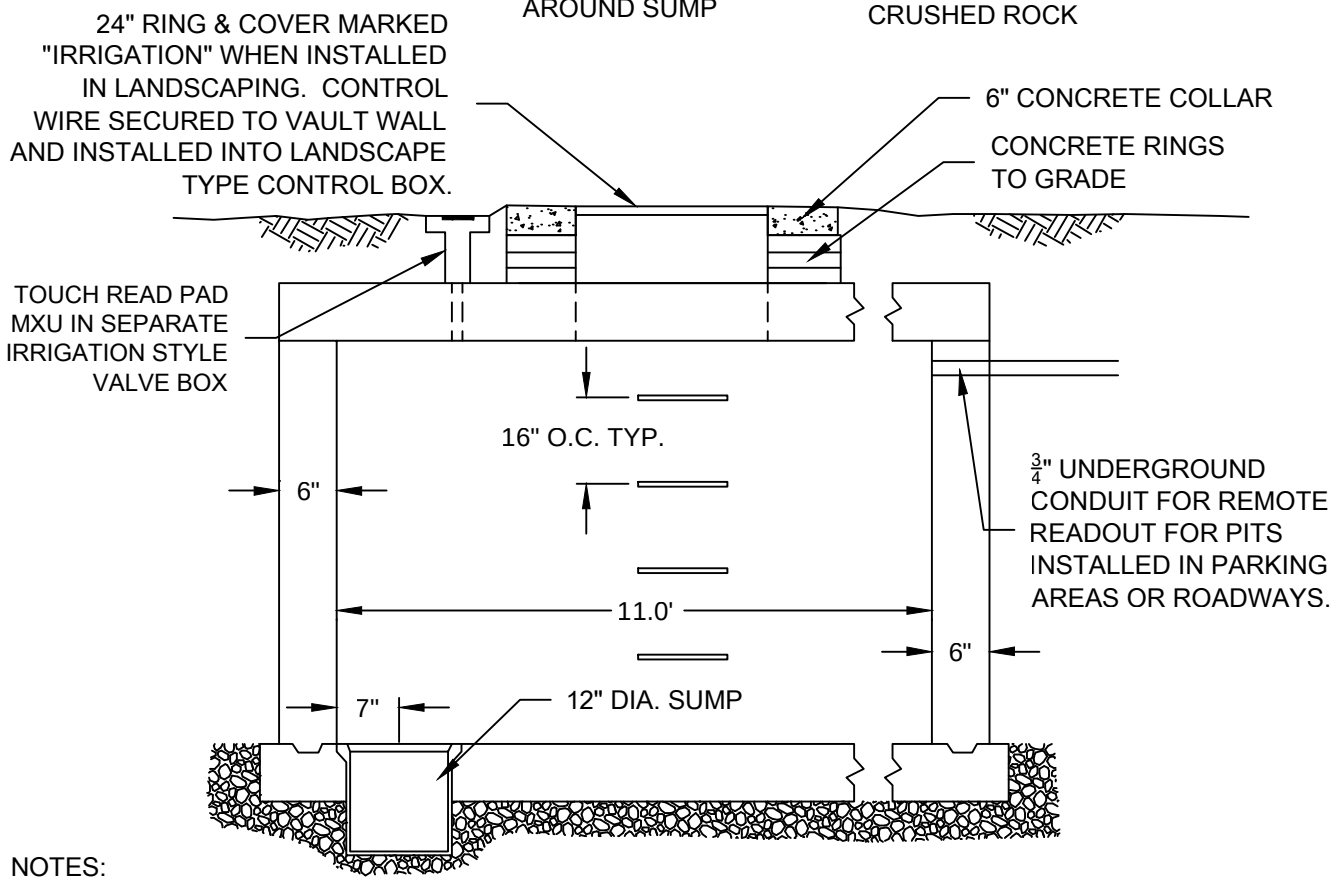


NOTES:

1. BACKFLOW PREVENTER MAY BE REQUIRED UPON RECOMMENDATION OF DISTRICT.
2. A MINIMUM OF 6" OF ¾" CRUSHED ROCK SHALL BE PLACED UNDER THE ENTIRE VAULT (SEE WS-29).
3. WHEN METER VAULT AND/OR CURB STOP BOX IS LOCATED IN LANDSCAPED AREAS A 6" CONCRETE COLLAR IS REQUIRED AROUND THE MANHOLE AND THE GATE VALVE.
4. VAULT MAY BE ROUND IF PRIOR APPROVAL FROM THE DISTRICT IS RECEIVED.
5. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-28
06/12	STANDARD SETTING FOR 3" & 4" IRRIGATION METER VAULT	

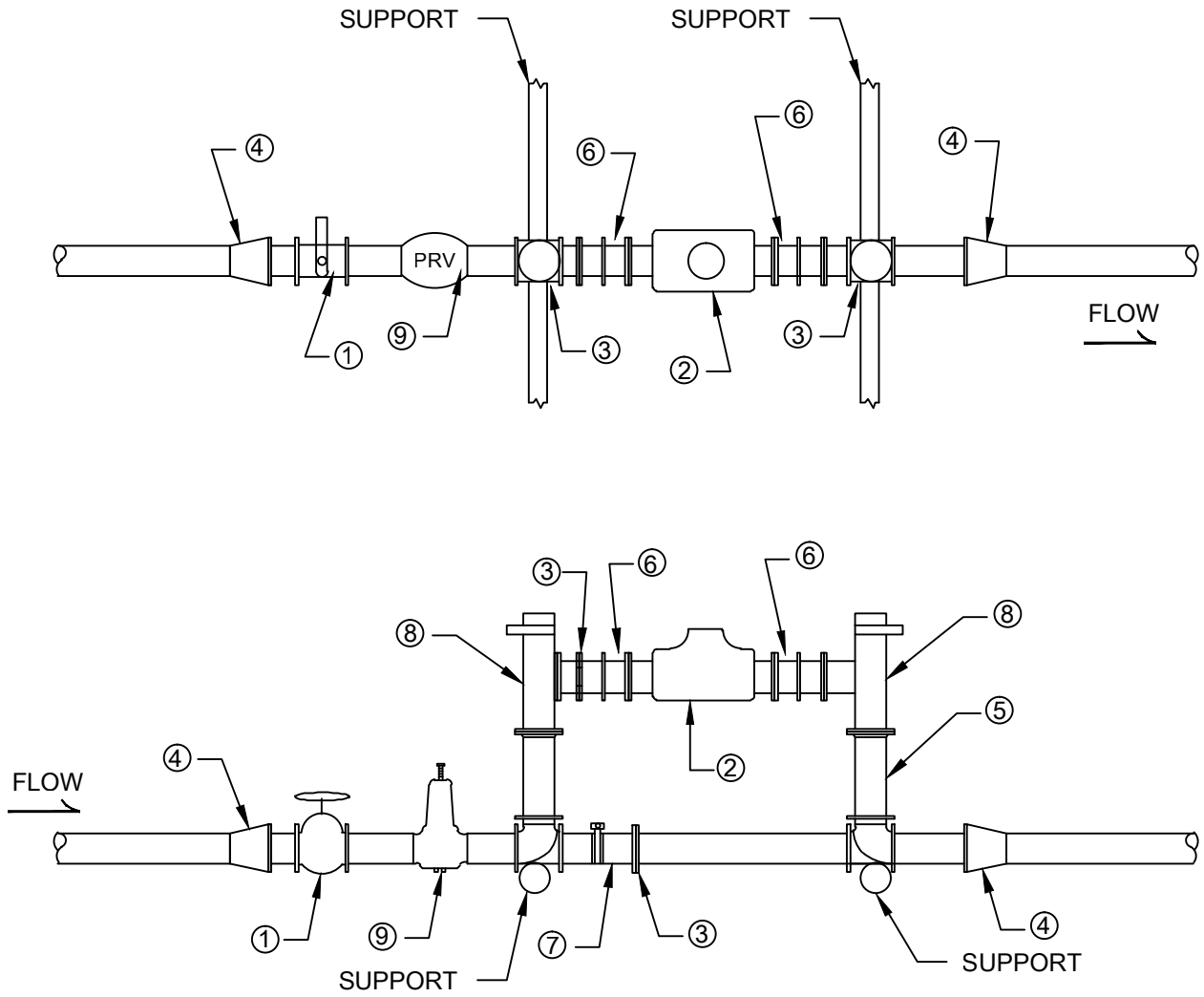




NOTES:

1. A MINIMUM OF 6" OF ¾" CRUSHED ROCK SHALL BE PLACED UNDER THE ENTIRE VAULT.
2. WHEN METER VAULT AND/OR CURB STOP BOX IS LOCATED IN LANDSCAPED AREAS A 6" CONCRETE COLLAR IS REQUIRED AROUND THE MANHOLE AND THE GATE VALVE (SEE WS-28 FOR ADDITIONAL DETAILS).
3. RAMNEK ALL EXTERIOR JOINTS.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-29
06/12	STANDARD FOR 3" & 4" IRRIGATION METER VAULT	

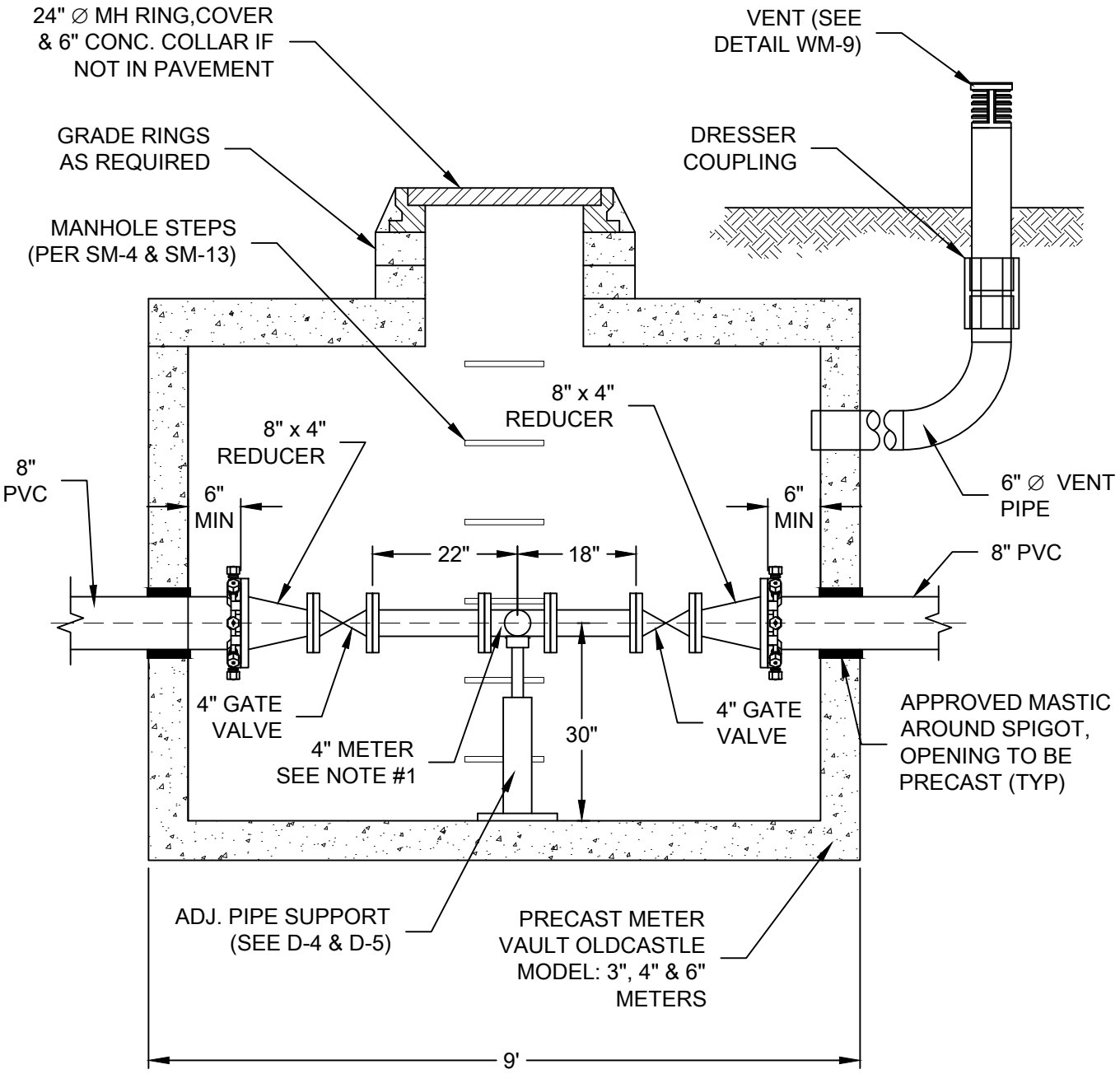


①	BALL VALVE WITH HANDLE	⑤	CUSTOM SETTER
②	METER	⑥	TWO BOLT ADAPTOR
③	LOK-PAK COUPLING	⑦	LOCKING WING VALVE
④	COMPRESSION OR FLARED FITTING	⑧	CUSTOM SETTER ANGLE VALVE
		⑨	PRESSURE REDUCING VALVE

NOTES:

1. METERS INSTALLED IN PITS THAT ARE IN PARKING OR ROADWAYS, WILL REQUIRE THE INSTALLATION OF A REMOTE WIRE AND CONDUIT. METERS PITS INSTALLED IN LANDSCAPED AREAS WILL REQUIRE THAT A 2" HOLE BE PROVIDED IN THE CENTER OF THE MANHOLE COVER AT THE OWNERS EXPENSE FOR THE INSTALLATION OF A REMOTE SENSING UNIT.
2. FOR AN INSIDE INSTALLATION, REFER TO DETAIL WS-12. WHEN USING CUSTOM SETTER FOR AN OUTSIDE INSTALLATION, REFER TO DETAIL WS-21 (DOMESTIC SERVICE).
3. FOR AN OUTSIDE IRRIGATION INSTALLATION, REFER TO DETAIL WS-31.
4. BACK FLOW PREVENTER MAY BE REQUIRED BY THE DISTRICT.
5. A PRESSURE REDUCING VALVE IS REQUIRED BEFORE THE METER IF STATIC PRESSURE IS GREATER THAN 95 PSI.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	WS-30
06/12		METER SETTING FOR INSIDE OR OUTSIDE INSTALLATION WITH CUSTOM SETTER (1 ½" OR 2")	



NOTES:

1. TYPE OF METER TO BE DETERMINED BY MERIDIAN METROPOLITAN DISTRICT.
2. READOUT IN GPM AND DAILY TOTALIZER.
3. REMOTE READ OUT LOCATION TO BE DETERMINED BY THE DISTRICT.
4. CONNECTION CABLES TO BE INSTALLED IN 3" SCH. 40 PVC WITH NO SPLICES BURIED WITH 3' MIN. COVER.
5. RADIO REMOTE READOUT-K SERIES 900 MHZ SERIAL READOUT (FIELD SIGNAL CONFIRMATION REQUIRED PRIOR TO EQUIPMENT ORDER).

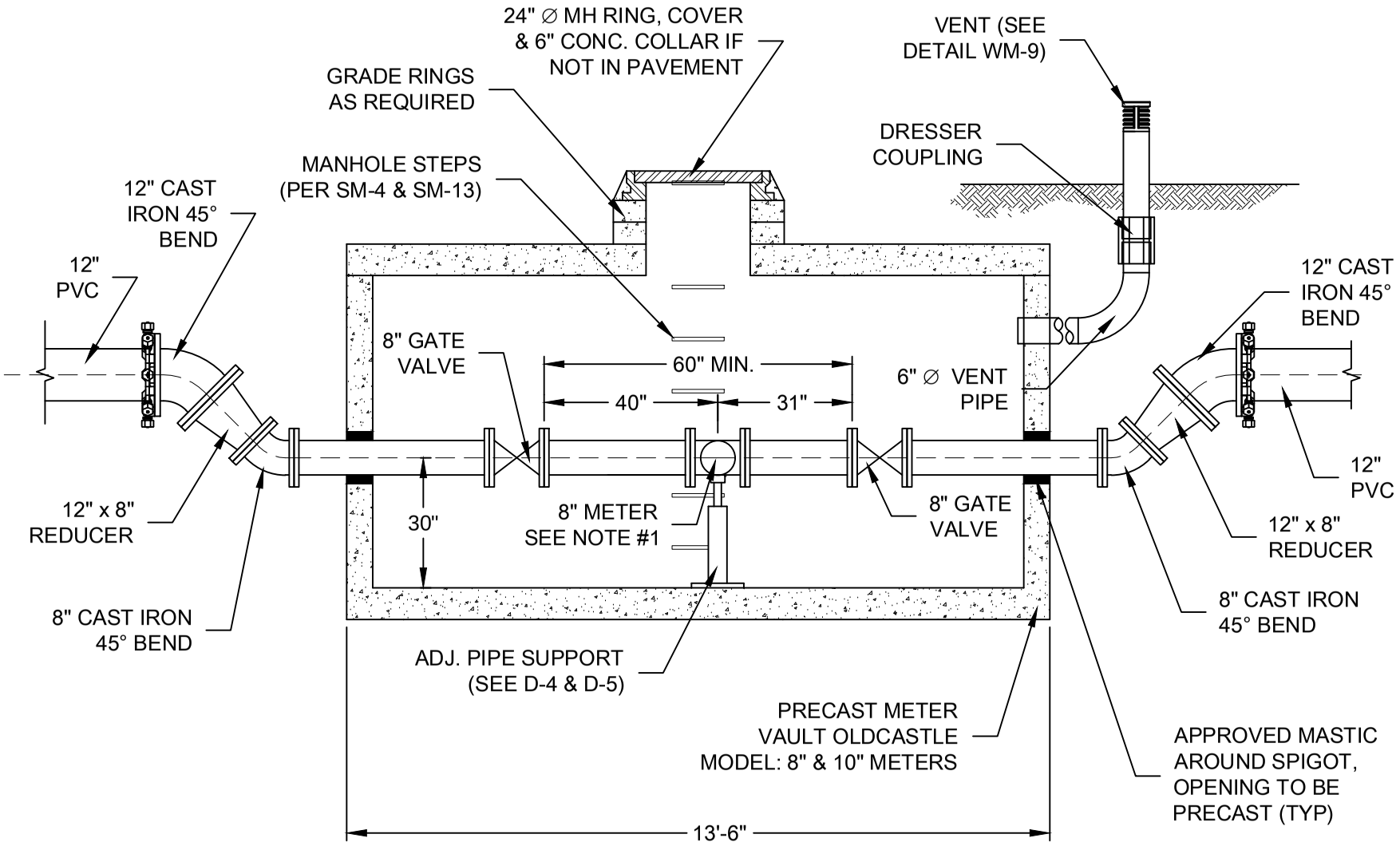
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	WS-31
05/13	4" METER VAULT	

REV. DATE 05/13

MERIDIAN METROPOLITAN DISTRICT

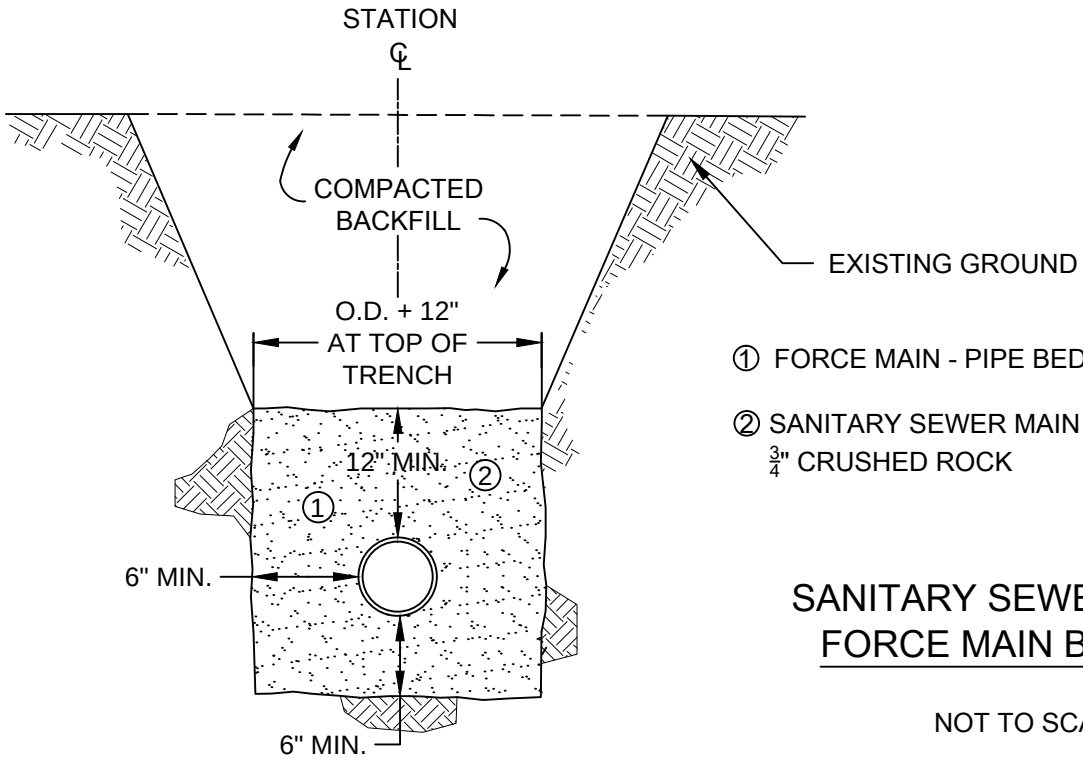
8" METER VAULT

WS-32



NOTES:

1. TYPE OF METER TO BE DETERMINED BY MERIDIAN METROPOLITAN DISTRICT.
2. REMOTE READ OUT LOCATION TO BE DETERMINED BY THE DISTRICT.
3. CONNECTION CABLES TO BE INSTALLED IN 3" SCH. 40 PVC WITH NO SPLICES BURIED WITH 3' MIN. COVER.
4. RADIO REMOTE READOUT-K SERIES 900 MHZ SERIAL READOUT (FIELD SIGNAL CONFIRMATION REQ. PRIOR TO EQUIPMENT ORDER).

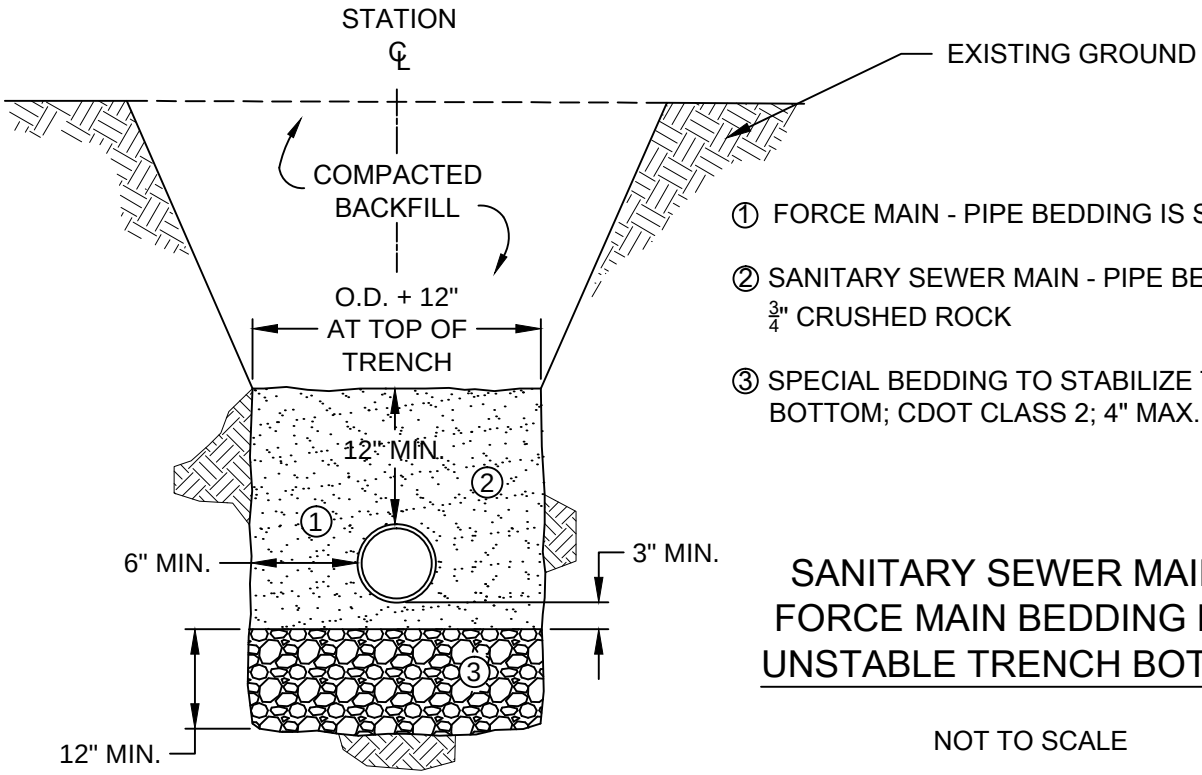


① FORCE MAIN - PIPE BEDDING IS SQUEEGEE

② SANITARY SEWER MAIN - PIPE BEDDING IS $\frac{3}{4}$" CRUSHED ROCK

SANITARY SEWER MAIN & FORCE MAIN BEDDING

NOT TO SCALE



① FORCE MAIN - PIPE BEDDING IS SQUEEGEE

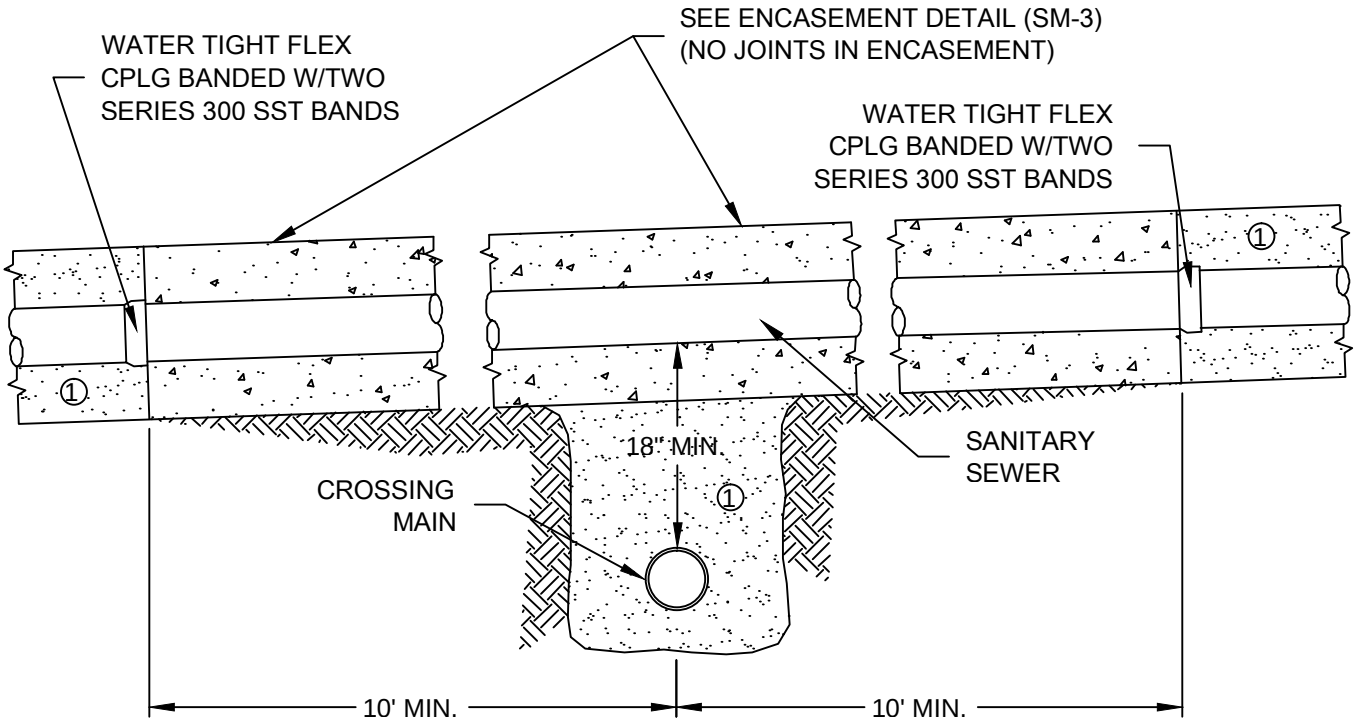
② SANITARY SEWER MAIN - PIPE BEDDING IS $\frac{3}{4}$" CRUSHED ROCK

③ SPECIAL BEDDING TO STABILIZE TRENCH BOTTOM; CDOT CLASS 2; 4" MAX. SIZE

SANITARY SEWER MAIN & FORCE MAIN BEDDING FOR UNSTABLE TRENCH BOTTOM

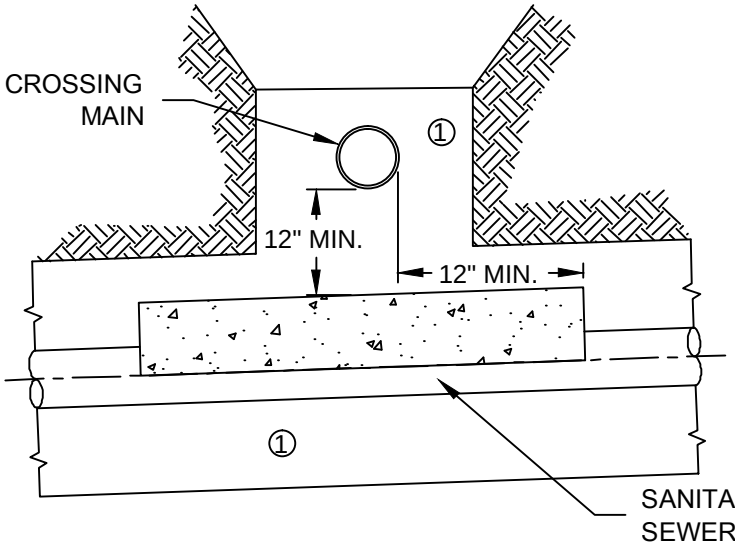
NOT TO SCALE

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-1
05/13	SANITARY SEWER MAIN BEDDING DETAIL	

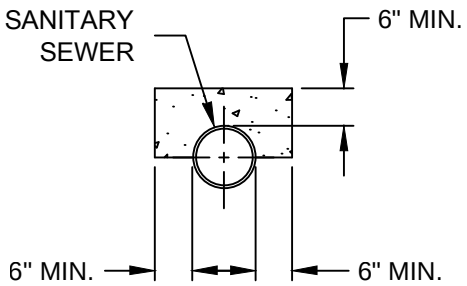


SANITARY SEWER MAIN
CROSSING OVER ANOTHER MAIN

NOT TO SCALE



① PIPE BEDDING -
SQUEEGEE OR $\frac{3}{4}$" ROCK



PIPE CROSS-SECTION

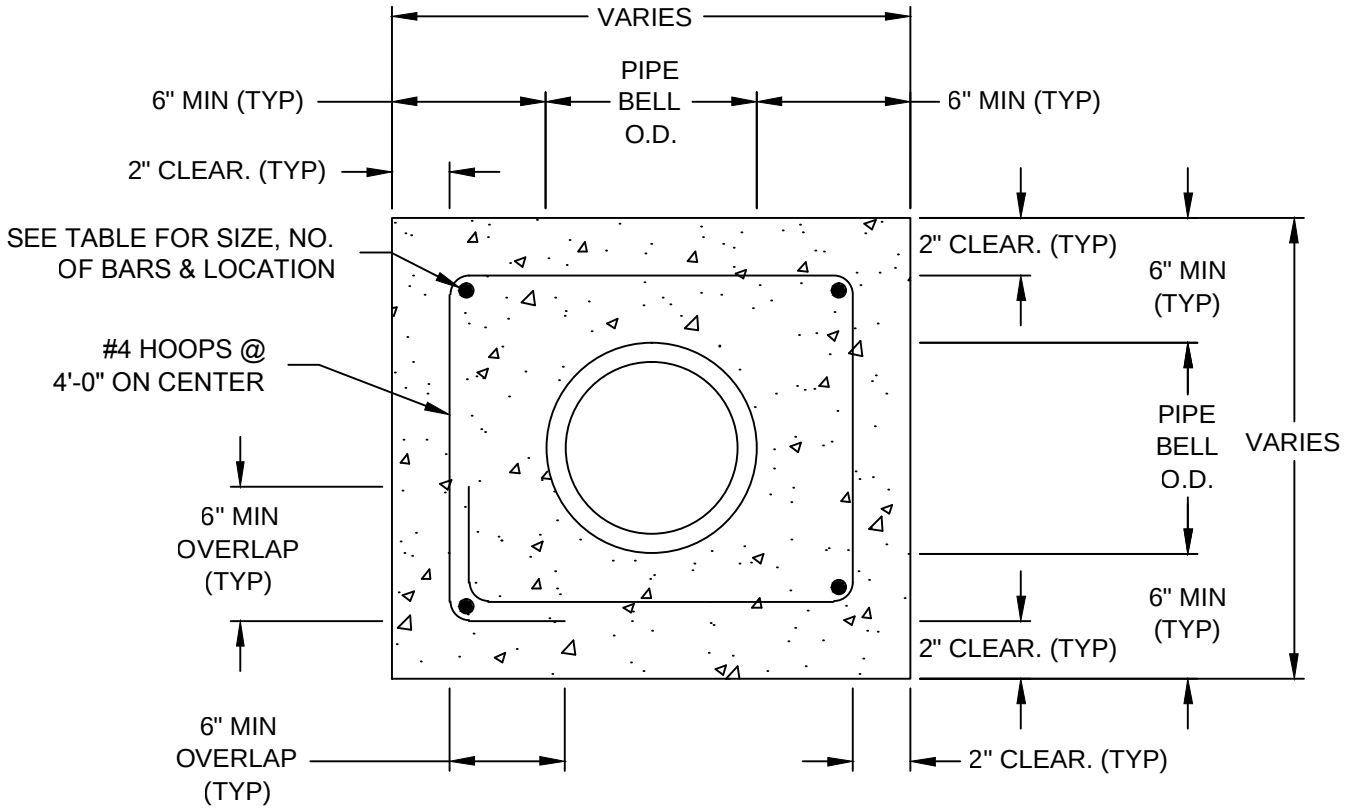
SANITARY SEWER MAIN
CROSSING UNDER ANOTHER MAIN

NOT TO SCALE

NOTES:

1. ENCASE PIPE PER DETAIL SM-3.
2. ANY EXISTING SEWER DAMAGED DURING INSTALLATION MUST BE REPLACE WITH PVC.
3. DISTRICT APPROVED FLEX COUPLING SHALL BE USED: FERNCO 5000 SERIES REPAIR COUPLING, MISSION FLEX-SEAL ADJUSTABLE REPAIR COUPLING, ONSET SHEAR GUARD.

REV. DATE			
06/12		MERIDIAN METROPOLITAN DISTRICT	SM-2
		SANITARY SEWER MAIN CROSSING DETAIL	

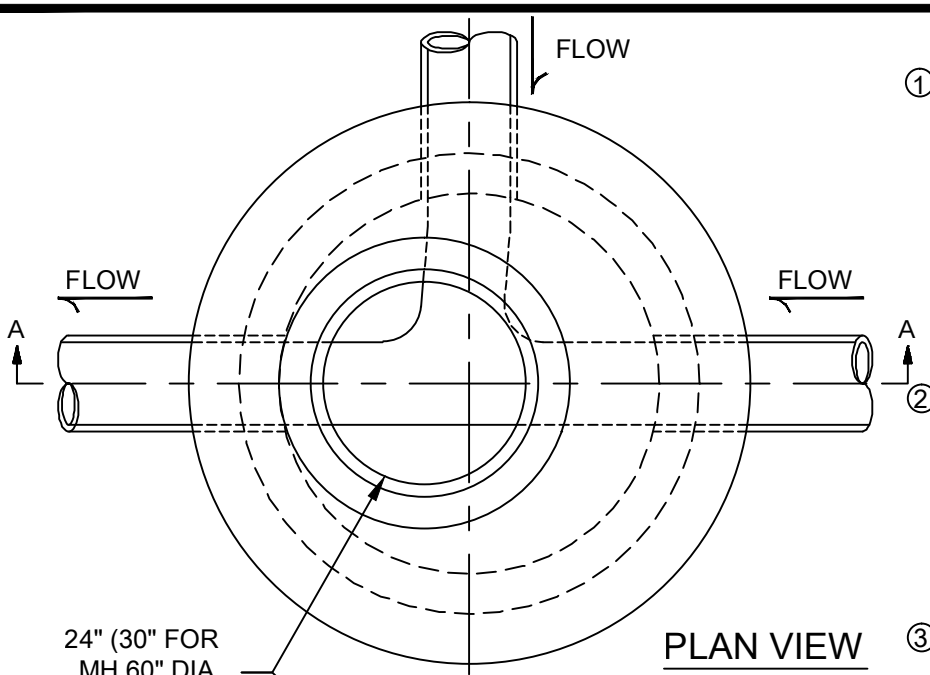


PIPE INSIDE DIAMETER	NUMBER OF LONGITUDINAL BARS & LOCATION
8"	4 - NO. 4 BARS; 2 EACH SIDE
10"	8 - NO. 4 BARS; 3 EACH SIDE
12"	8 - NO. 4 BARS; 3 EACH SIDE
15"	8 - NO. 4 BARS; 3 EACH SIDE
18"	8 - NO. 4 BARS; 3 EACH SIDE
21"	12 - NO. 4 BARS; 4 EACH SIDE
24"	12 - NO. 4 BARS; 4 EACH SIDE
27"	12 - NO. 4 BARS; 4 EACH SIDE
30"	12 - NO. 4 BARS; 4 EACH SIDE
33"	12 - NO. 4 BARS; 4 EACH SIDE
36"	12 - NO. 4 BARS; 4 EACH SIDE

NOTES:

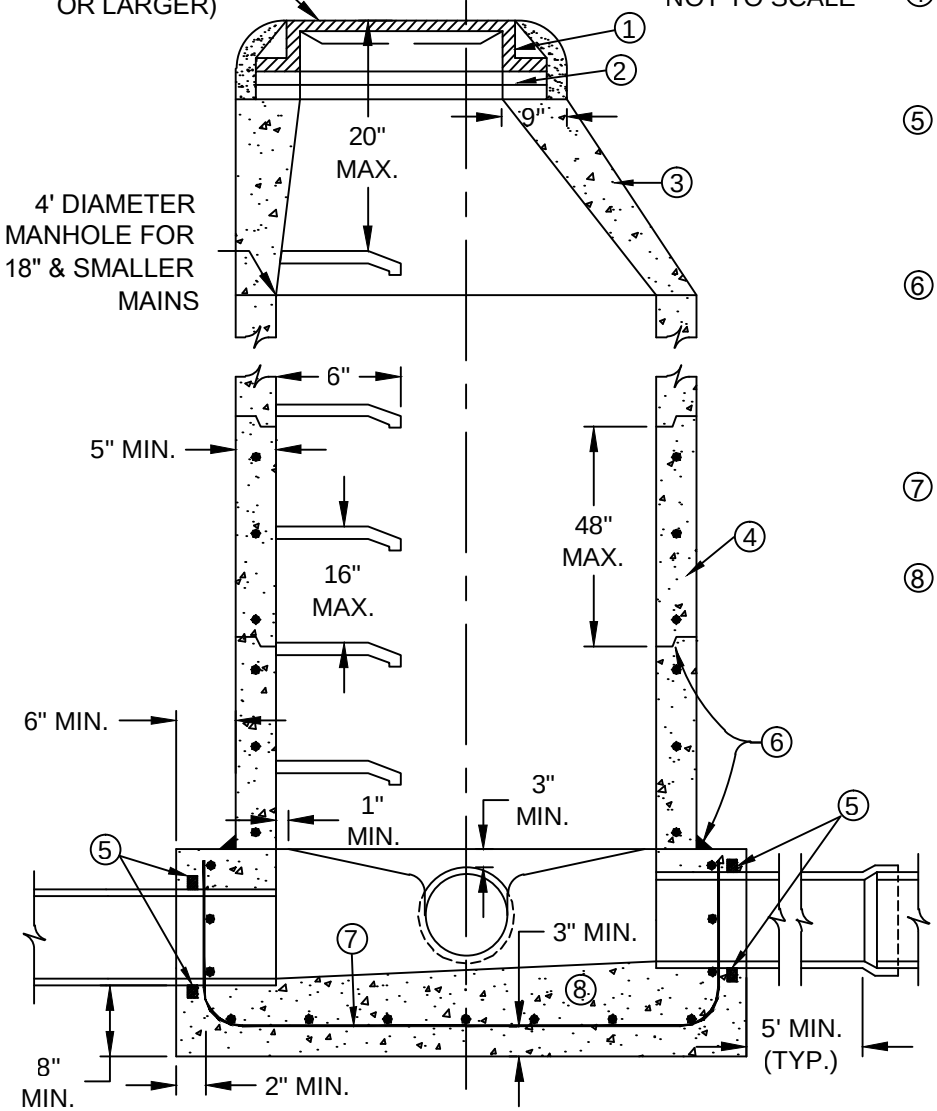
1. ALL CONCRETE SHALL DEVELOP 4000 PSI COMPRESSIVE STRENGTH AFTER 28 DAYS.
2. ANY EXISTING SEWER DAMAGED DURING INSTALLATION MUST BE REPLACE WITH PVC.
3. DISTRICT APPROVED FLEX COUPLING SHALL BE USED: FERNCO 5000 SERIES REPAIR COUPLING, MISSION FLEX-SEAL ADJUSTABLE REPAIR COUPLING, ONSET SHEAR GUARD.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-3
06/12	CONCRETE ENCASEMENT DETAIL	



PLAN VIEW

NOT TO SCALE



SECTION A - A

NOT TO SCALE

① RING AND COVER SET TO PARALLEL FINISHED SURFACE. MANHOLES PLACED IN THE "OPEN SPACE" AREAS SHALL BE INSTALLED WITH THE RING AND COVER AT AN ELEVATION THAT IS 6" ABOVE FINAL GRADE WITH A COLLAR OF CONCRETE.

② RING AND COVER GRADE ADJUSTMENT - PRECAST CONCRETE RINGS (18" MAXIMUM). HDPE RINGS MAY BE ALLOWED WITH PRIOR DISTRICT APPROVAL.

③ ECCENTRIC CONE.

④ MANHOLE BARREL RISER SECTION. REINFORCEMENT PER ASTM C 478.

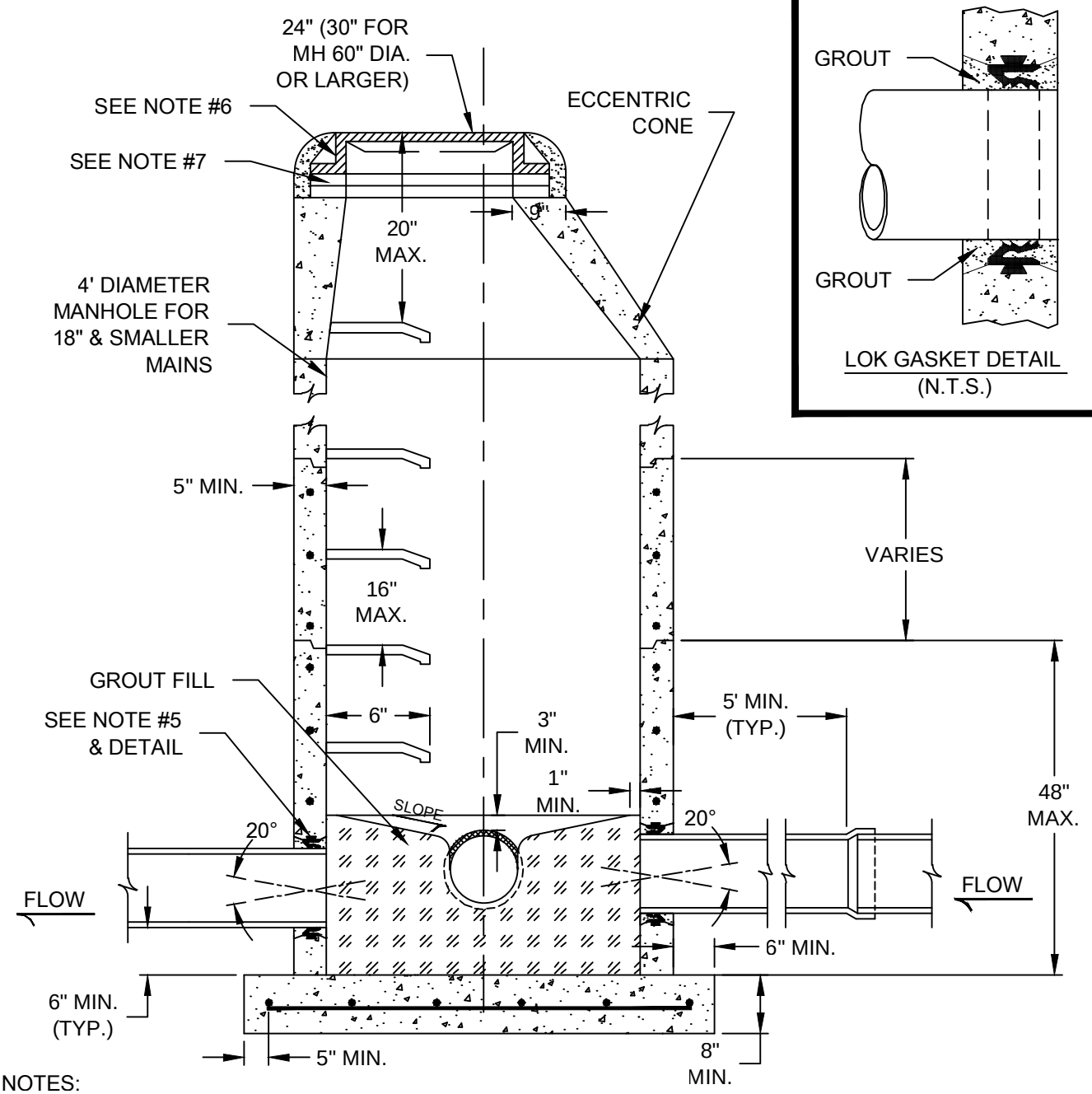
⑤ FOR PVC PIPE, USE A WATER STOP GASKET PER MANUFACTURER'S SPECIFICATION.

⑥ JOINT SEALANT - RAMNEK SEALING COMPOUND BOTH SIDES. COMPOUND TO EXTRUDE INTO MH AND BE TRIMMED OFF.

⑦ #4 REINFORCING BAR ON 12" CENTER - BOTH WAYS.

⑧ BASE IS CAST-IN-PLACE UNLESS PRIOR APPROVAL IS GRANTED BY THE DISTRICT. MINIMUM DROP ACROSS THE MANHOLE IS 0.2' FOR THROUGH MAINS AND 0.3' FOR 90° CONNECTIONS. MANHOLE I.D. IS 4' FOR 18" AND LESS PIPES; MANHOLE I.D. IS 5' FOR 20" - 30" PIPES; MANHOLE I.D. IS 6' FOR 33" AND UP PIPES.

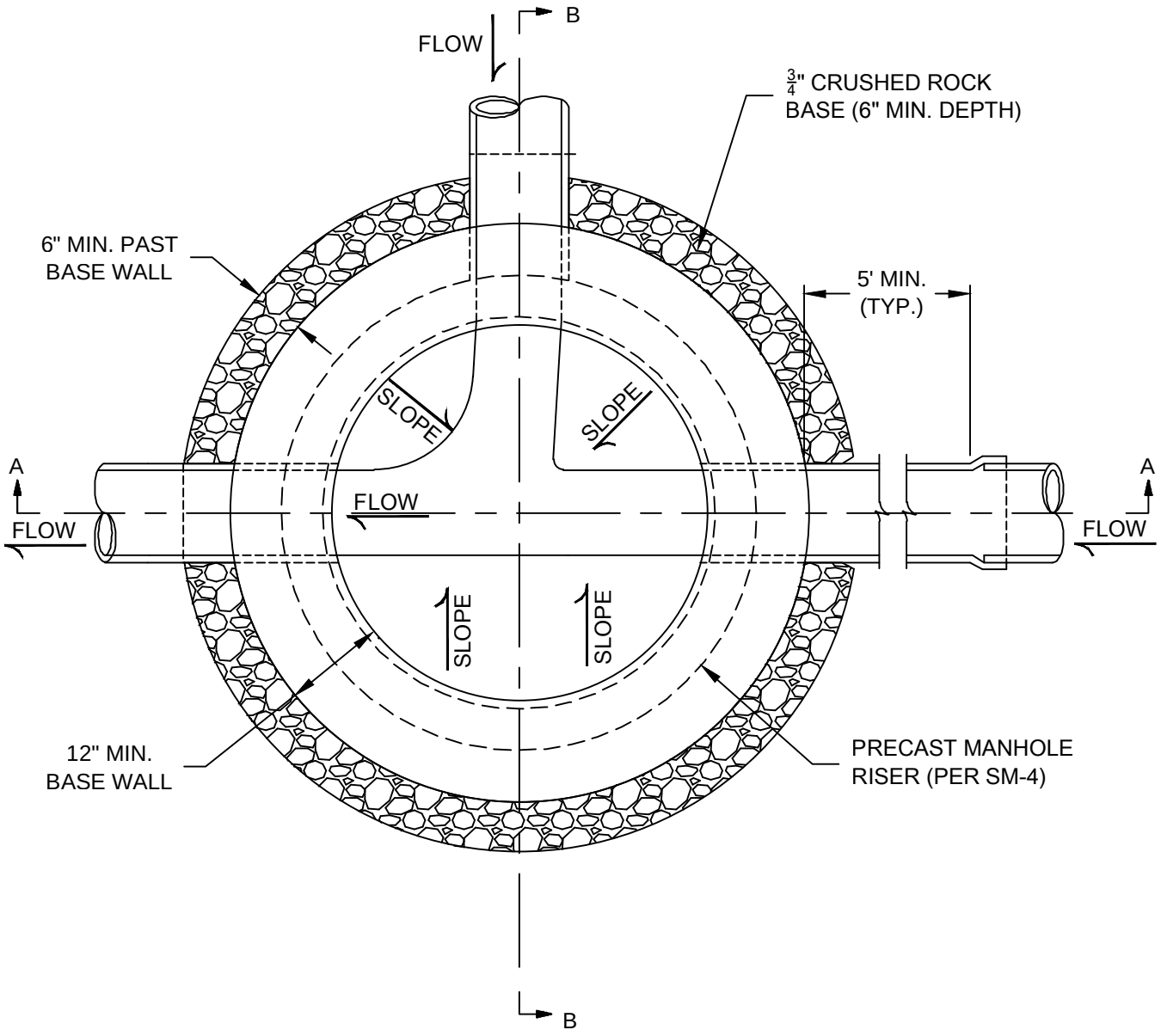
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-4
06/12	STANDARD MANHOLE DETAIL	



NOTES:

1. GROUT FILL IS USED TO SHAPE INVERTS. SIDE SLOPES SHALL BE 1"/FOOT WITH A 1" MINIMUM DROP.
2. MANHOLES BASES, RISERS, LIDS, ETC. TO BE REINFORCED PER SM-4. MANHOLE I.D. IS 4' FOR 18" & LESS PIPES; MANHOLE I.D. IS 5' FOR 20" - 30" PIPES; MANHOLE I.D. IS 6' FOR 33" AND UP PIPES.
3. MINIMUM DROP ACROSS THE MANHOLE IS 0.2' FOR THROUGH MAINS & 0.3' FOR 90° CONNECTIONS.
4. A LOK GASKET PER ASTM RUBBER GASKET SPECIFICATION C443, CAST INTEGRALLY IN MANHOLE WALL AND LOCATED AS REQUIRED. JOINT ALLOWS 10° DEFLECTION OR EQUIVALENT.
5. MUST HAVE PRIOR APPROVAL FROM THE DISTRICT BEFORE INSTALLATION. CAST-IN-PLACE BASE IS THE DISTRICT STANDARD. SEE SM-4 FOR ADDITIONAL DETAILS.
6. RING & COVER SET TO PARALLEL THE FINISHED SURFACE. MANHOLES PLACED IN THE "OPEN SPACE"AREAS SHALL BE INSTALLED WITH THE RING & COVER AT AN ELEVATION THAT IS 6" ABOVE FINAL GRADE WITH A CONCRETE COLLAR.
7. RING & COVER GRADE ADJUSTMENT - PRECAST CONCRETE RINGS (18" MAXIMUM). HDPE RINGS MAY BE ALLOWED WITH PRIOR DISTRICT APPROVAL.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	SM-5
06/12		STANDARD MANHOLE DETAIL - PRECAST BASE	



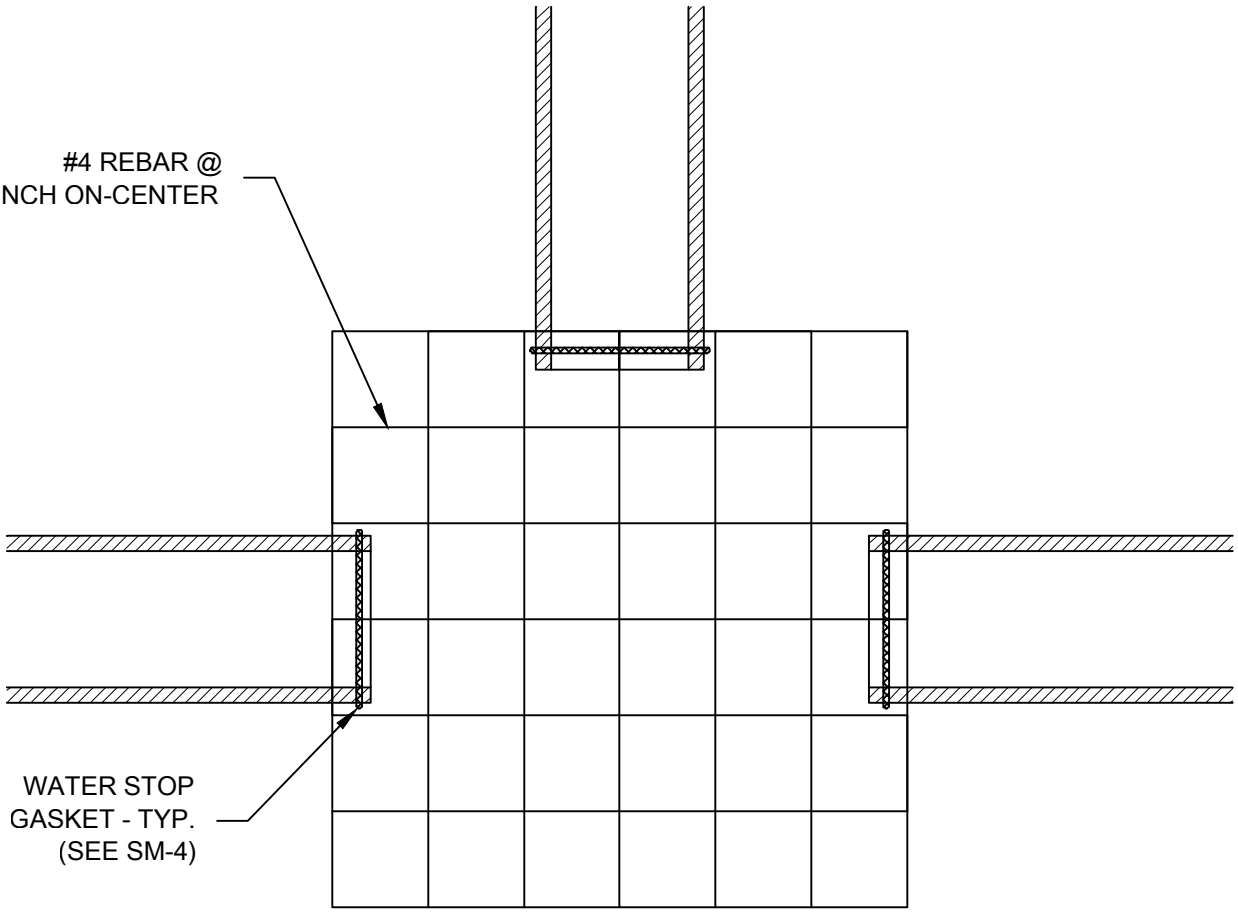
PLAN VIEW

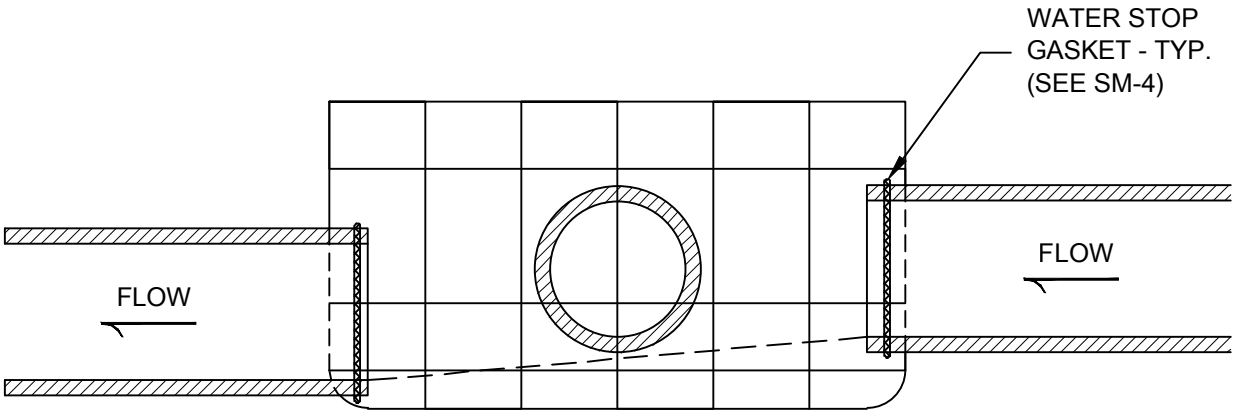
NOT TO SCALE

NOTES:

1. MANHOLE BASE TO HAVE SHAPED INVERTS. BASE TO BE A MONOLITHIC CONCRETE POUR.
2. MANHOLES BASES, RISERS, LIDS, ETC. TO BE REINFORCED PER SM-4.
3. SLOPES SHALL BE 1"/FOOT WITH A 1" MINIMUM DROP.
4. BASE IS CAST-IN-PLACE UNLESS PRIOR APPROVAL IS GRANTED BY THE DISTRICT. MINIMUM DROP ACROSS THE MANHOLE IS 0.2' FOR THROUGH MAINS AND 0.3' FOR 90° CONNECTIONS.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	SM-6
06/12		STANDARD MANHOLE BASE DETAIL	

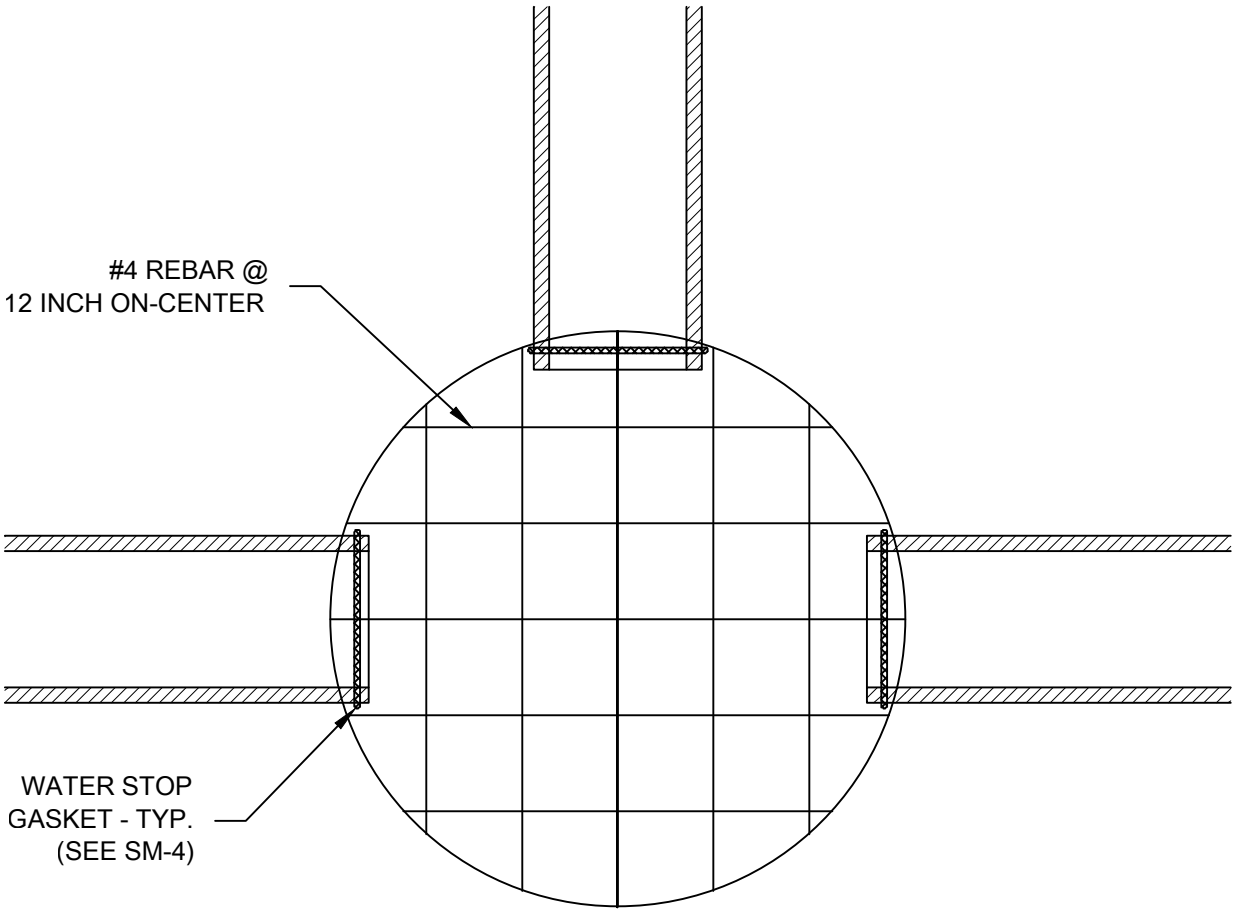


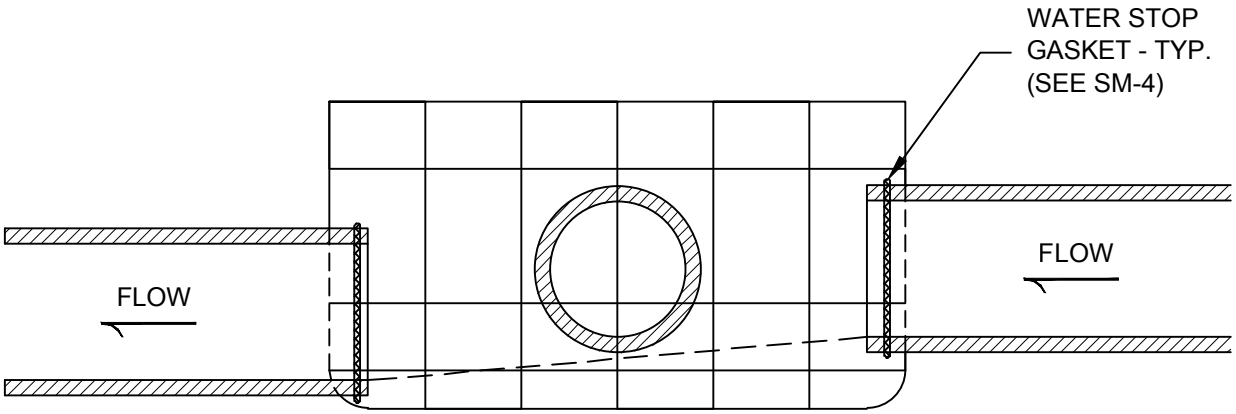


NOTES:

1. THE RE-BAR BASKET MAY BE EITHER ROUND OR SQUARE.
2. MANHOLE RISERS, LIDS, ETC. TO BE REINFORCED PER SM-4.
4. BASE IS CAST-IN-PLACE UNLESS PRIOR APPROVAL IS GRANTED BY THE DISTRICT. MINIMUM DROP ACROSS THE MANHOLE IS 0.2' FOR THROUGH MAINS AND 0.3' FOR 90° CONNECTIONS.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-7
06/12	STANDARD MANHOLE BASE REBAR BASKET	

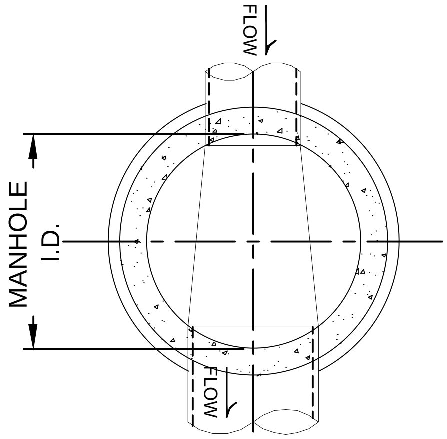




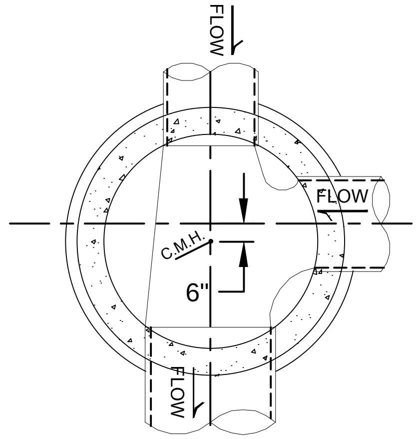
NOTES:

1. THE RE-BAR BASKET MAY BE EITHER ROUND OR SQUARE.
2. MANHOLE RISERS, LIDS, ETC. TO BE REINFORCED PER SM-4.
4. BASE IS CAST-IN-PLACE UNLESS PRIOR APPROVAL IS GRANTED BY THE DISTRICT. MINIMUM DROP ACROSS THE MANHOLE IS 0.2' FOR THROUGH MAINS AND 0.3' FOR 90° CONNECTIONS.

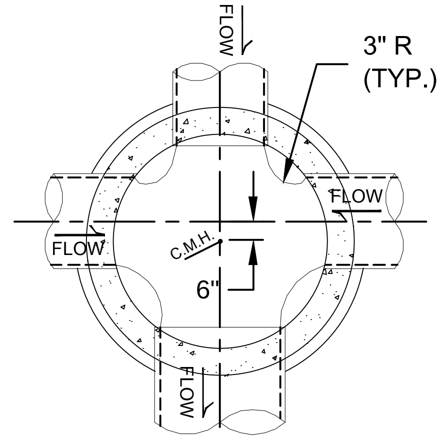
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-8
06/12	STANDARD MANHOLE BASE REBAR BASKET	



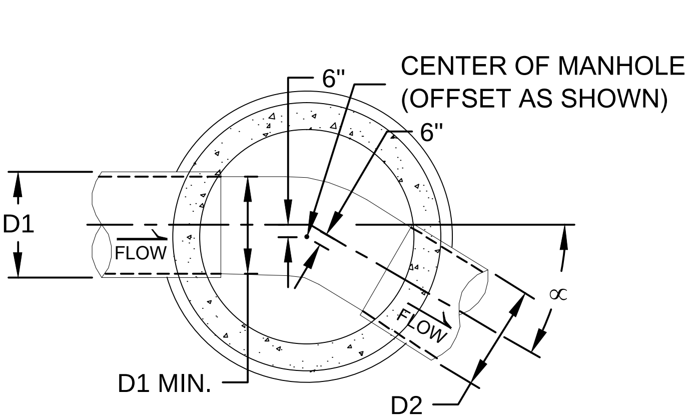
THROUGH PIPE



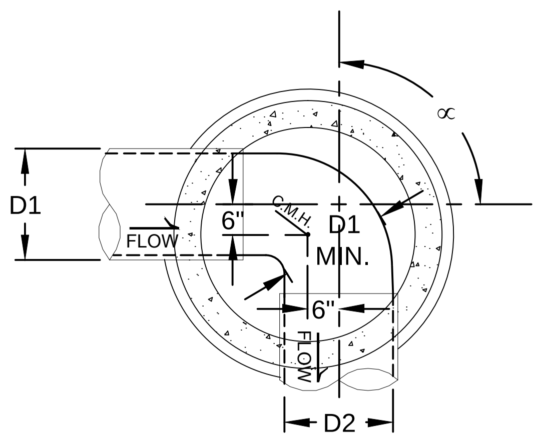
THROUGH PIPE
ONE COLLECTION LINE



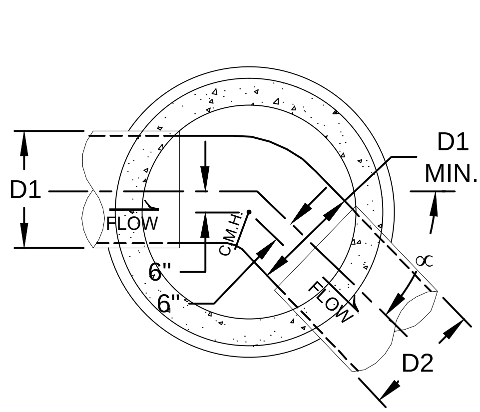
THROUGH PIPE
TWO COLLECTION LINE



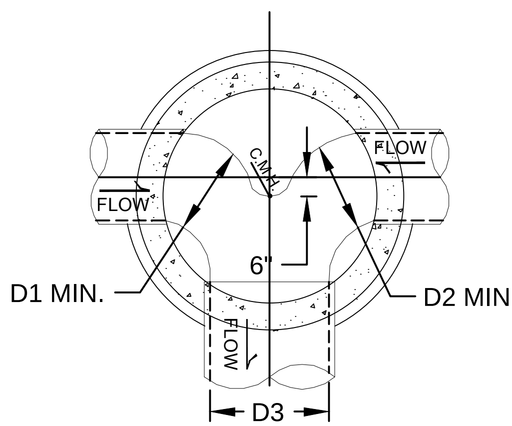
INTERMEDIATE ANGLE
∝ = 30°



SHARP ANGLE
∝ = 90°



INTERMEDIATE ANGLE
∝ = 45°

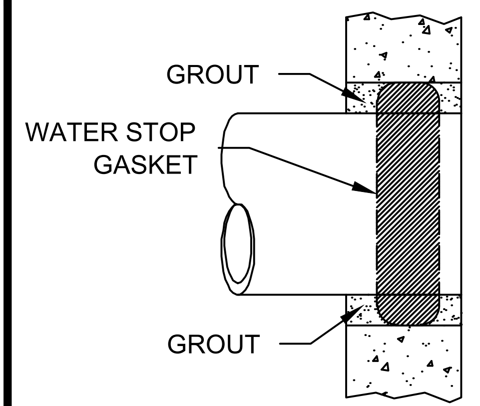


OPPOSED LATERALS

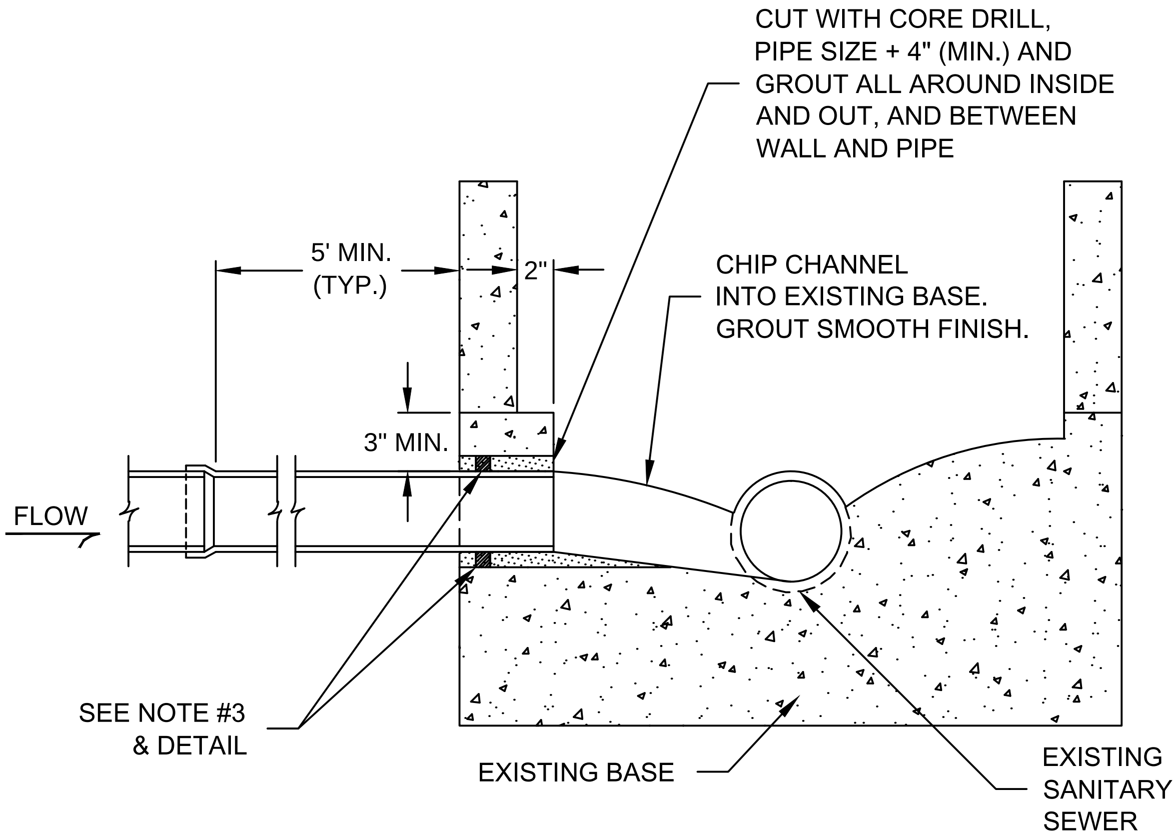
NOTES:

1. C.M.H. IS CENTER OF MANHOLE.
2. BASE IS CAST-IN-PLACE UNLESS PRIOR APPROVAL IS GRANTED BY THE DISTRICT. MINIMUM DROP ACROSS THE MANHOLE IS 0.2' FOR THROUGH MAINS AND INTERMEDIATE ANGLES; DROP ACROSS THE MANHOLE IS 0.3' FOR 90° (SHARP ANGLES AND OPPOSED LATERALS).

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-9
06/12	TYPICAL BASE AND DEFLECTOR DETAILS	



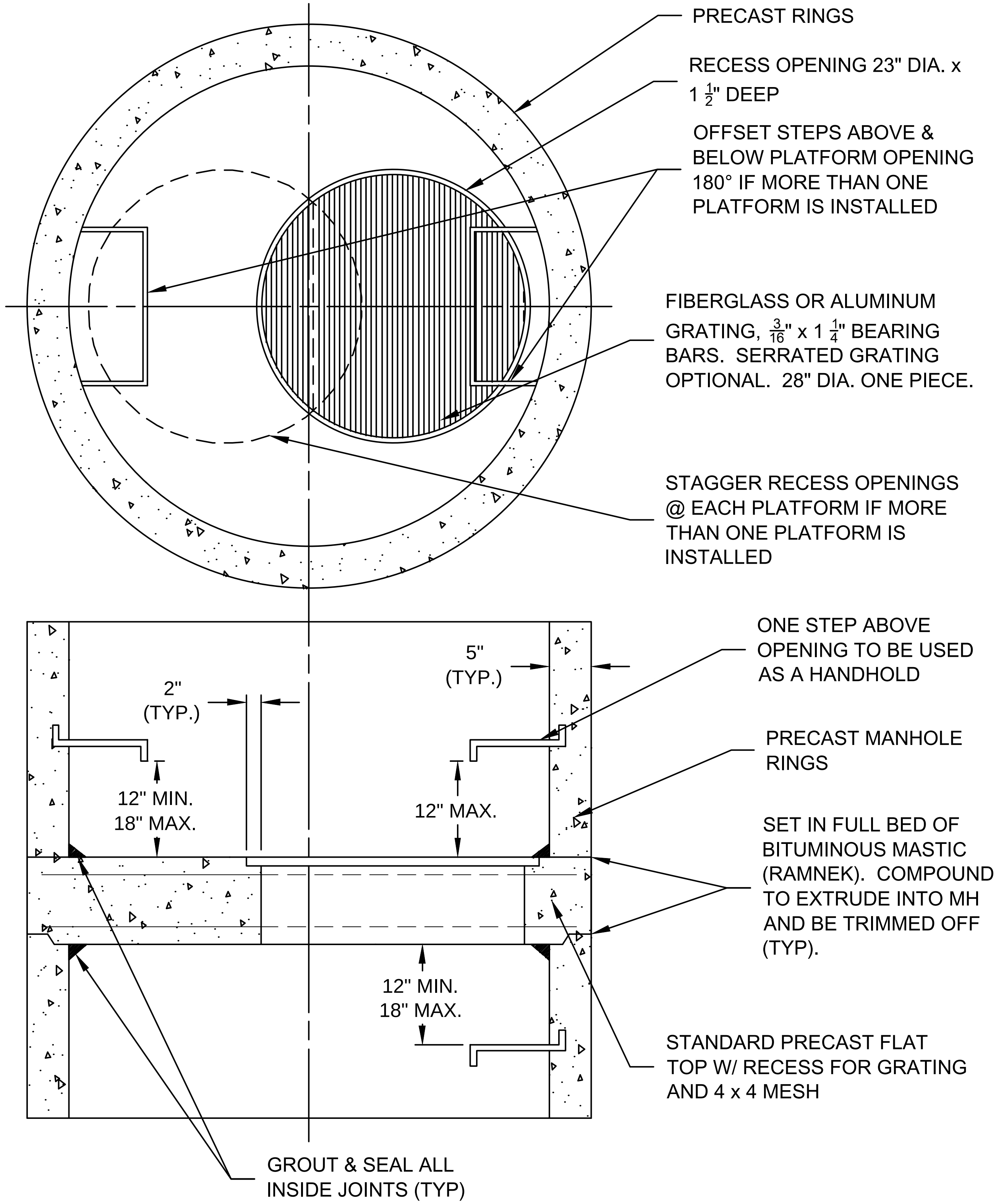
WATER STOP GASKET DETAIL
(N.T.S.)



NOTES:

1. TIE-INS SHALL ONLY BE PERMITTED THROUGH BASE WALL.
2. STEPS INSTALLED OVER DOWNSTREAM INVERT OF MANHOLE.
3. A WATER STOP GASKET SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
4. MINIMUM DROP ACROSS THE MANHOLE IS 0.2' FOR THROUGH MAINS & 0.3' FOR 90° CONNECTIONS.

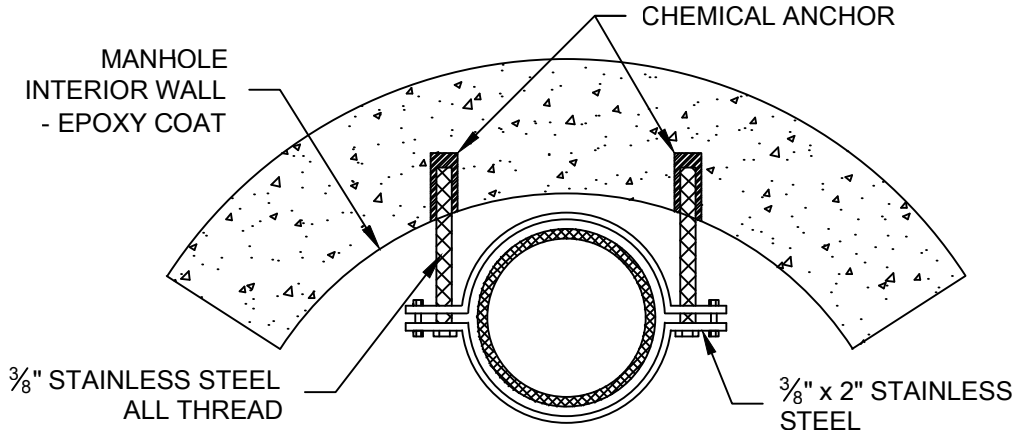
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-10
06/12	MANHOLE INVERT TIE IN DETAIL	



NOTES:

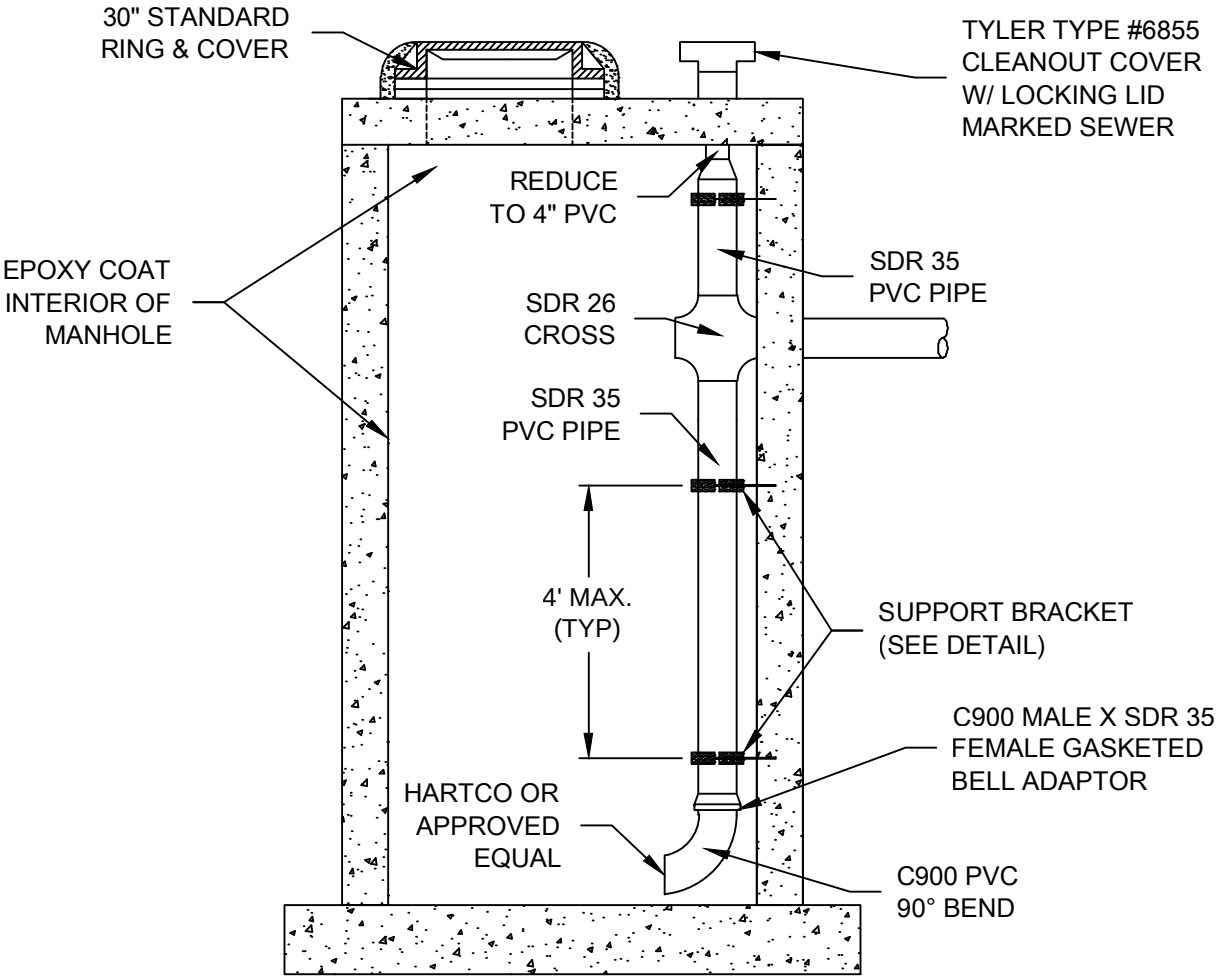
1. REQUIRED IN MANHOLES WHERE THE DEPTH MEASURED FROM THE RING AND COVERT TO THE INVERT EXCEEDS 20 FEET.
2. VERTICALLY CENTER FLATTOP PLATFORM BETWEEN RING AND COVER AND MANHOLE INVERT.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-11
06/12	MANHOLE PLATFORM DETAIL	



BRACKET DETAIL

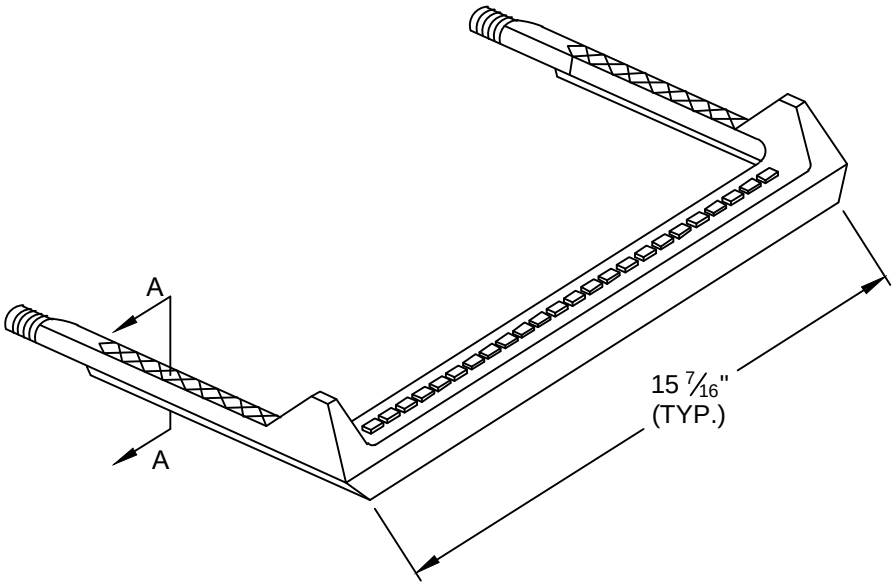
MANUFACTURE BRACKET FROM ⅜" STAINLESS STEEL
ALL BRACING MATERIALS SHALL BE CONSTRUCTED USING STAINLESS STEEL



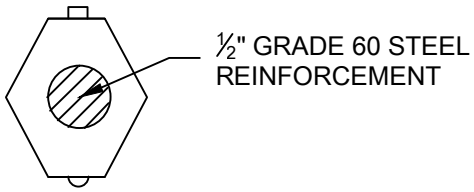
NOTES:

1. MANHOLE SIZE VARIES WITH SIZE OF THE MAINLINE: 8" - 10" MAINLINE = 5' DIA. MANHOLE;12" - 15" MAINLINE = 6' DIA. MANHOLE; MAINLINES LARGER THAN 15" = 7' DIA. MANHOLE. STEPS INSTALLED OVER DOWNSTREAM INVERT OF MANHOLE. EPOXY COAT INTERIOR OF MANHOLE.
2. CONCRETE COLLAR TO BE POURED AROUND BOTH RING AND LOCKING CLEANOUT.
3. AN ECCENTRIC CONE MAY BE USED WITH PRE-CONSTRUCTION APPROVAL BY THE MERIDIAN METROPOLITAN DISTRICT.

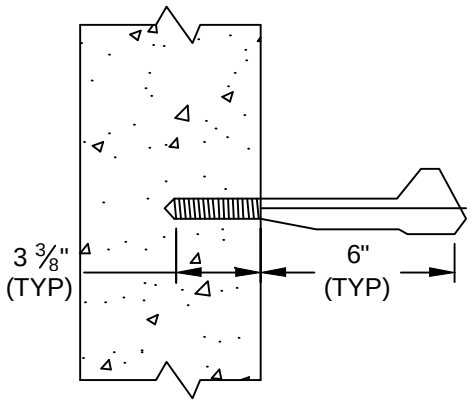
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	SM-12
06/12		INSIDE DROP MANHOLE CONSTRUCTION DETAIL	



DETAIL FOR M.A. INDUSTRIES STEP, OR APPROVED EQUAL



SECTION A-A

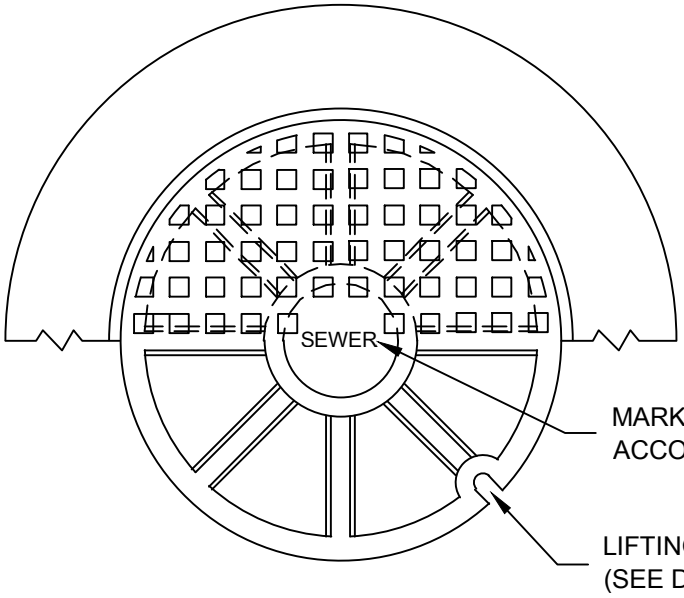


TYPICAL STEP INSTALLATION

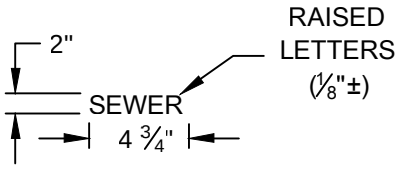
NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT.
2. CAST IRON STEPS WILL NOT BE PERMITTED.

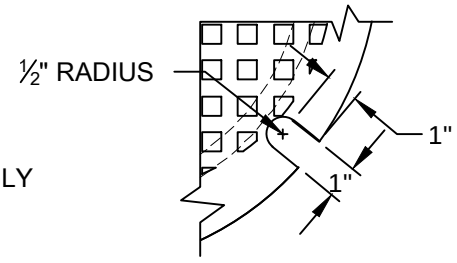
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-13
06/12	STANDARD STEP FOR MANHOLES	



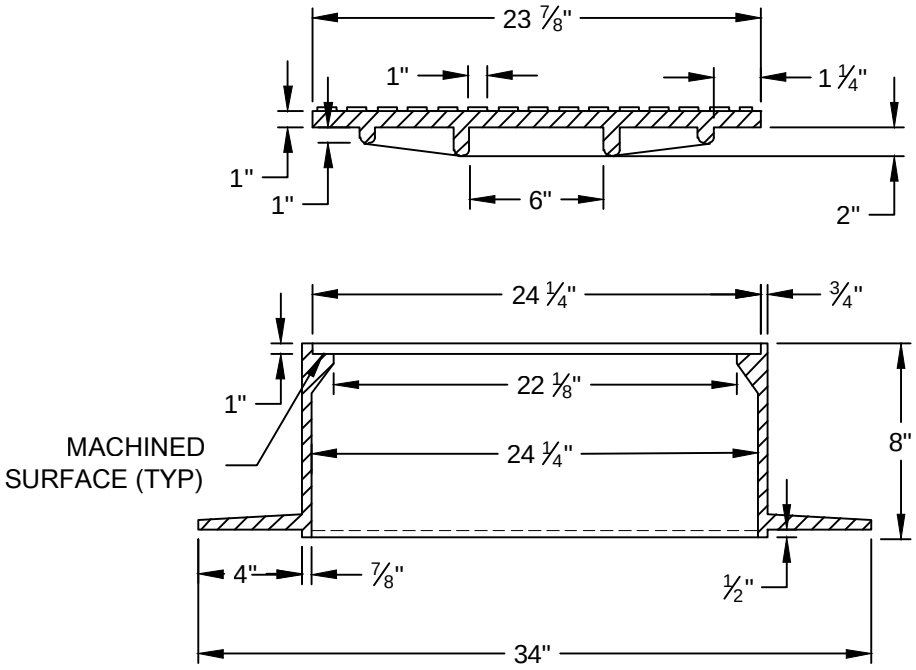
HALF PLAN



LETTERING DETAIL



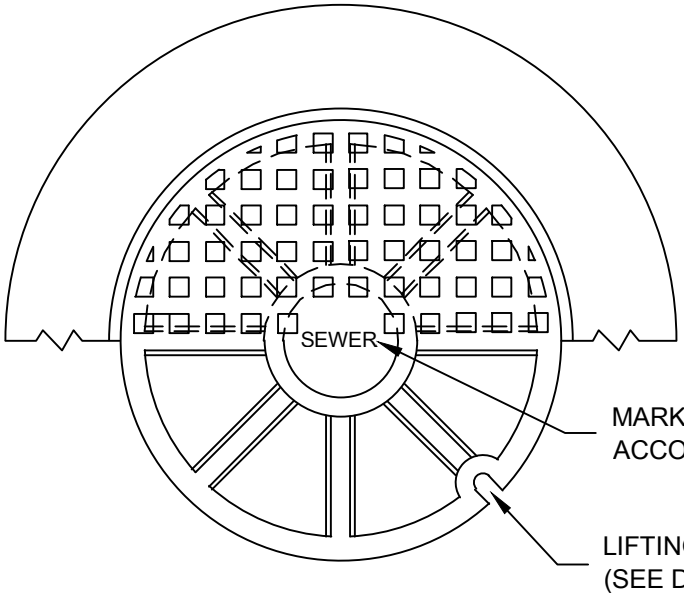
LIFTING NOTCH DETAIL



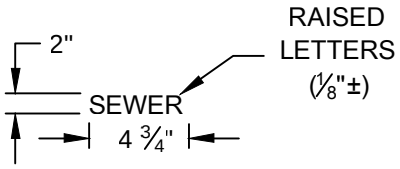
NOTES:

1. COVER SHALL BE THE DISTRICT STANDARD PATTERN. THE CASTING SHALL BE OF GRAY CAST IRON, ASTM DESIGNATION A48 CLASS 35B. CASTING SHALL NOT BE PAINTED OR DIPPED.
2. TOTAL WEIGHT SHALL BE A MINIMUM OF 400 LBS (LID WEIGHT OF 165 LBS MIN.), CAST IRON ONLY.
3. ALL BEARING SURFACES SHALL BE MACHINED.
4. CASTINGS SHALL BE CLEAN, FREE OF FUSED SAND & REASONABLY SMOOTH. THERE SHALL BE NO PROMINENT BLOW HOLES, NO CRACKS OR FISSURES, AND NO OBSERVED INCOMPLETE FILLING OF THE MOLD.

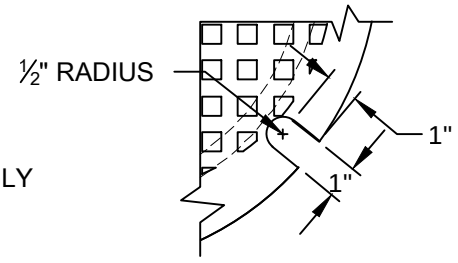
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	SM-14
06/12		24" MANHOLE COVER DETAIL	



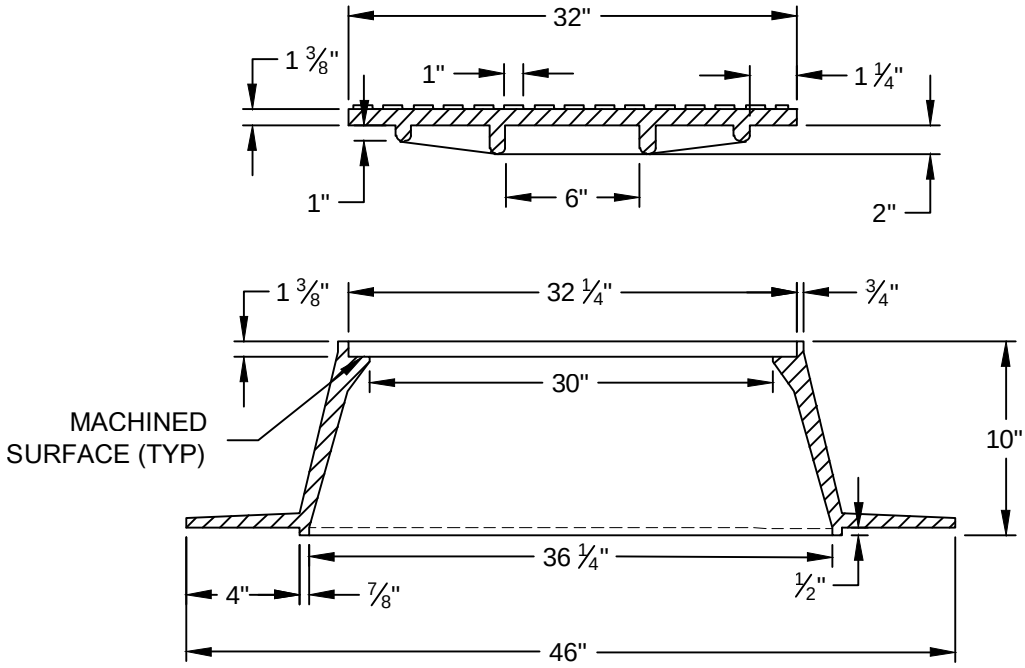
HALF PLAN



LETTERING DETAIL



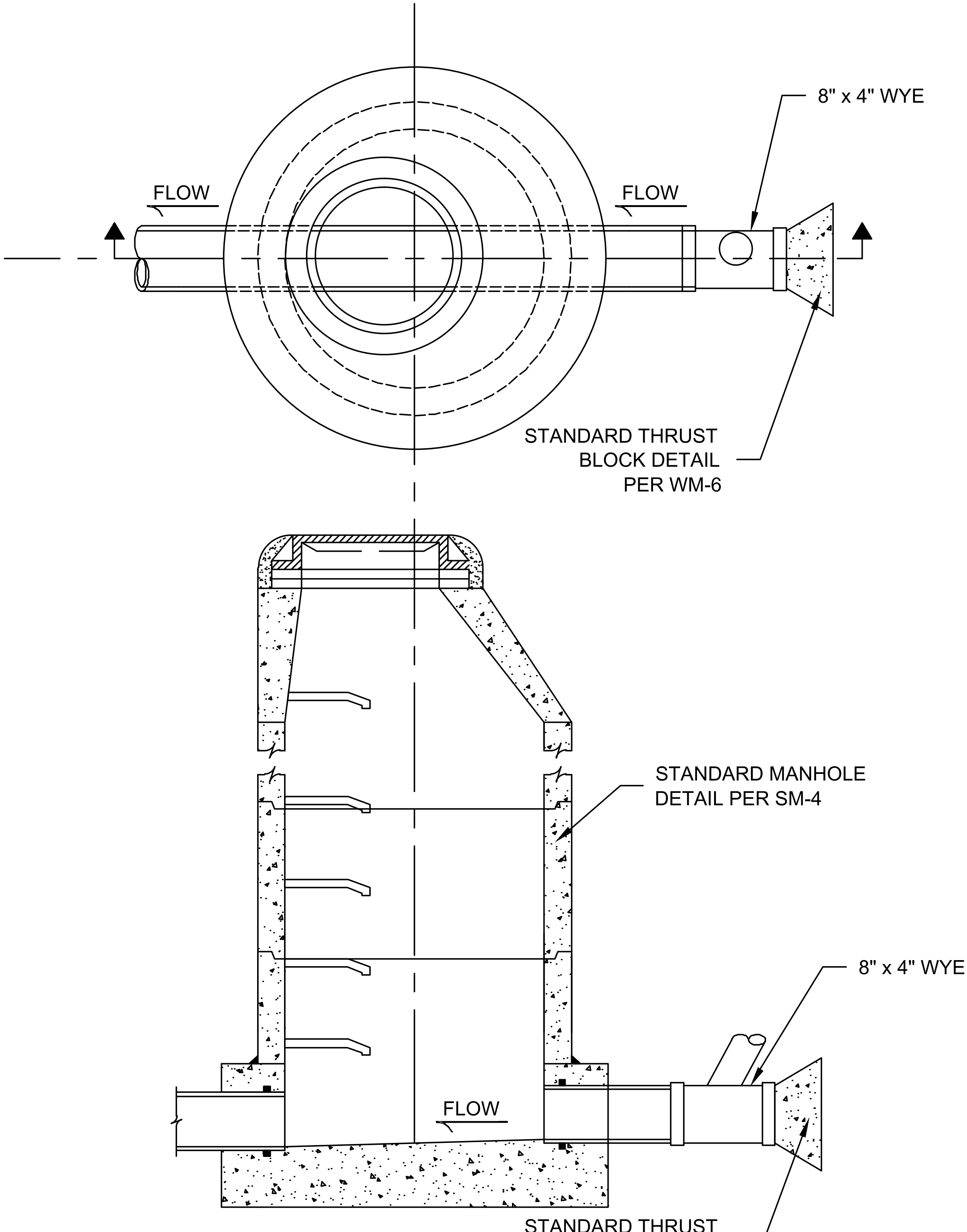
LIFTING NOTCH DETAIL



NOTES:

1. COVER SHALL BE THE DISTRICT STANDARD PATTERN. THE CASTING SHALL BE OF GRAY CAST IRON, ASTM DESIGNATION A48 CLASS 35B. CASTING SHALL NOT BE PAINTED OR DIPPED.
2. TOTAL WEIGHT SHALL BE A MINIMUM OF 400 LBS (LID WEIGHT OF 165 LBS MIN.), CAST IRON ONLY.
3. ALL BEARING SURFACES SHALL BE MACHINED.
4. CASTINGS SHALL BE CLEAN, FREE OF FUSED SAND & REASONABLY SMOOTH. THERE SHALL BE NO PROMINENT BLOW HOLES, NO CRACKS OR FISSURES, AND NO OBSERVED INCOMPLETE FILLING OF THE MOLD.

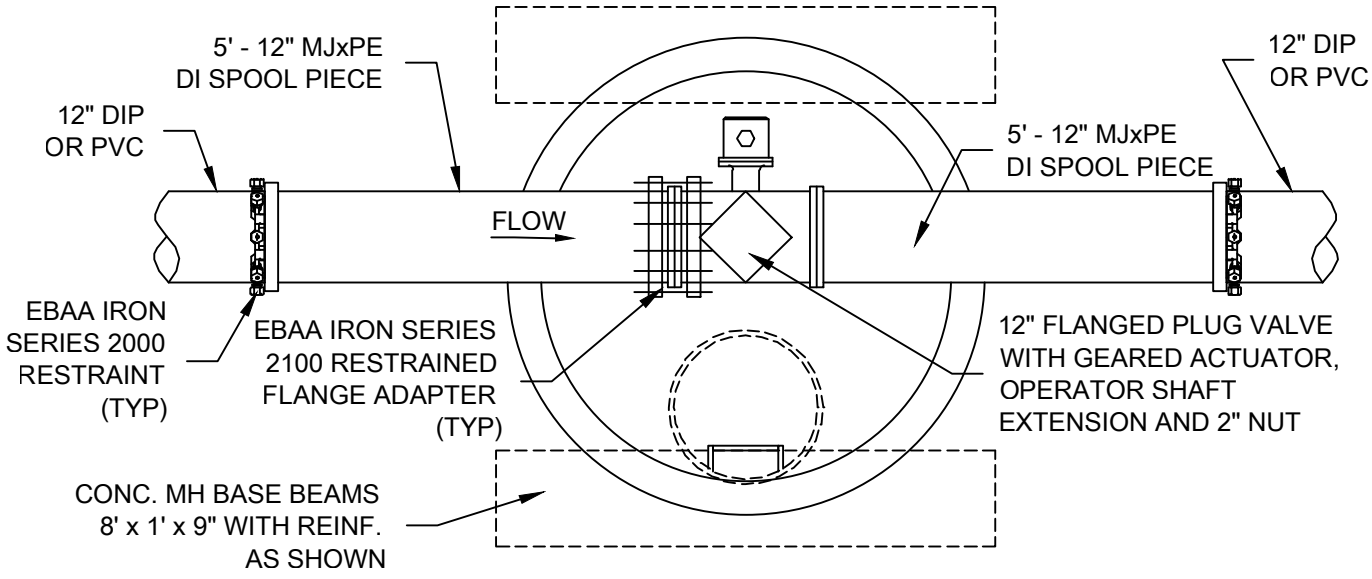
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	SM-15
06/12		30" MANHOLE COVER DETAIL	



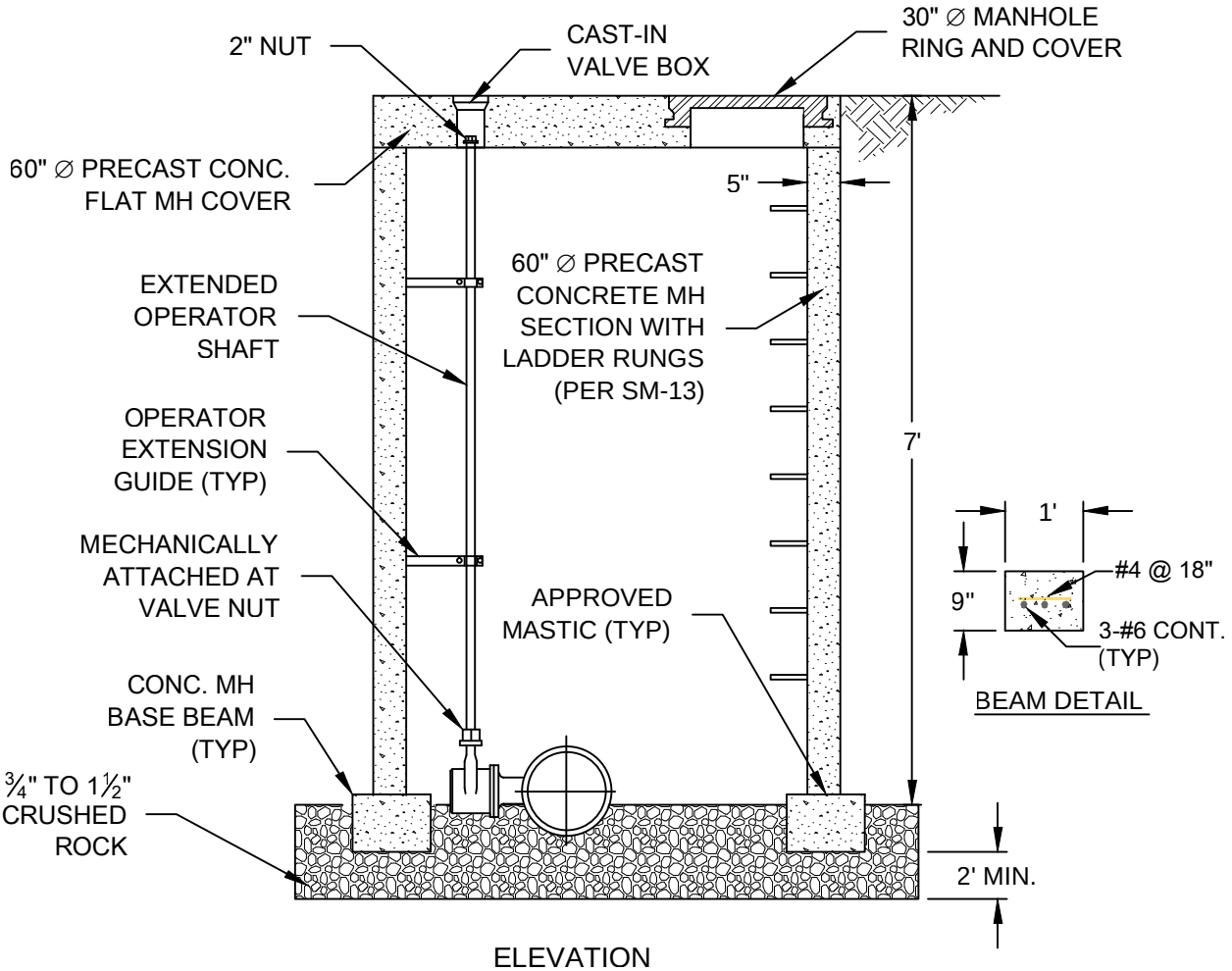
NOTES:

1. SEE SM-4 & SM-5 FOR MANHOLE DETAILS.
2. SEE WM-6 FOR THRUST BLOCK DETAILS.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-16
06/12	DEAD END MANHOLE SERVICE CONNECTION DETAIL	



PLAN

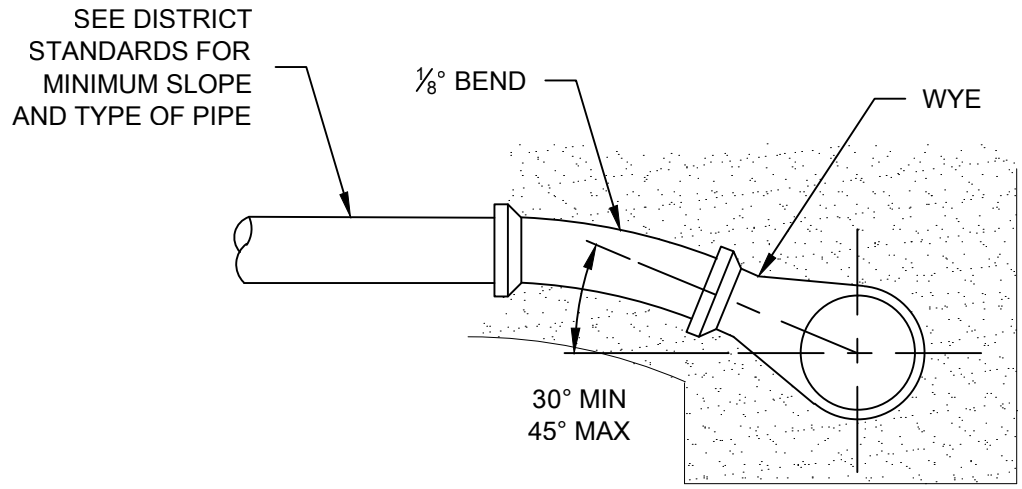


ELEVATION

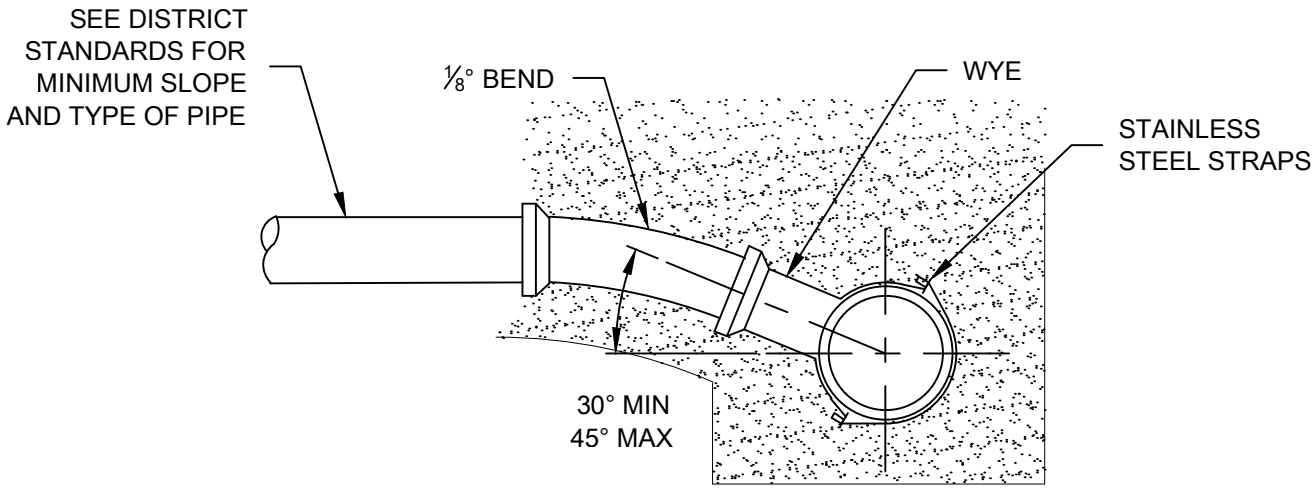
NOTES:

1. SEE WM-17 & WM-18 FOR OPERATOR SHAFT AND EXTENSION GUIDE DETAIL.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SM-17
06/12	FORCE MAIN PLUG VALVE MANHOLE DETAIL	



⅛° BEND CONNECTION TO WYE

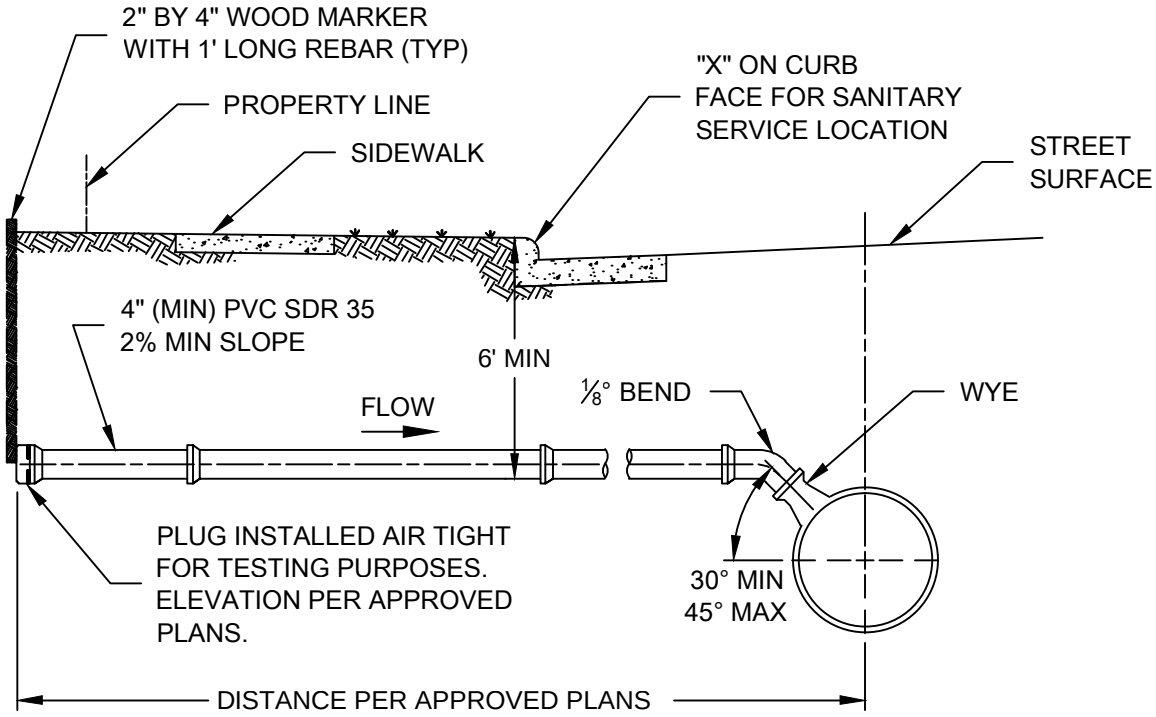


⅛° BEND CONNECTION TO A TAPPING SADDLE

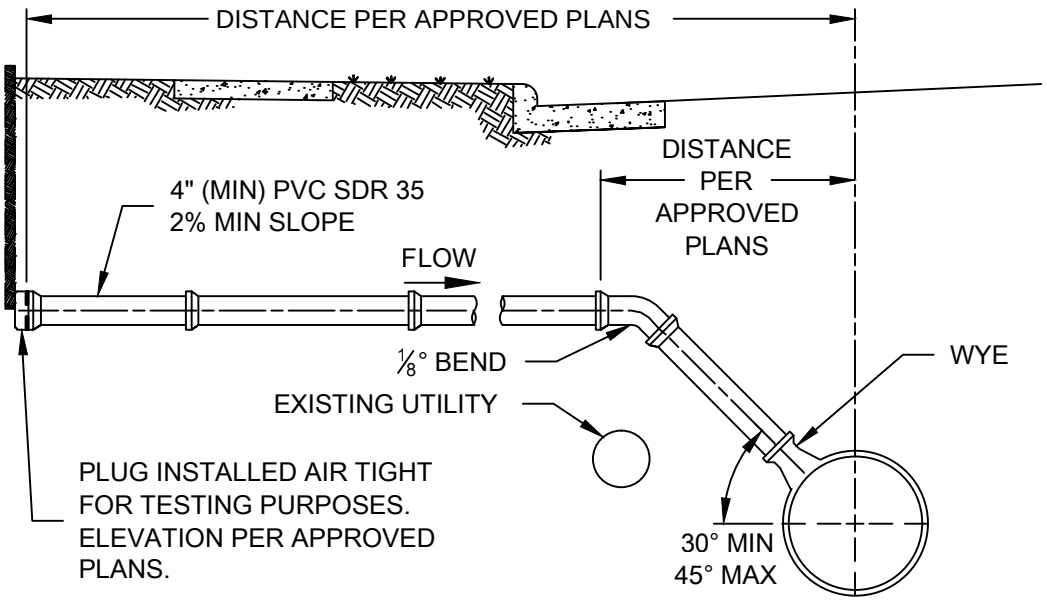
NOTES:

1. SANITARY SEWER MAIN - PIPE BEDDING IS EITHER SQUEEGEE OR ¾" CRUSHED ROCK.
2. SEE SM-1 FOR ADDITIONAL BEDDING DETAILS.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SS-1
06/12	SANITARY SEWER SERVICE TAPPING DETAIL	



TYPE A

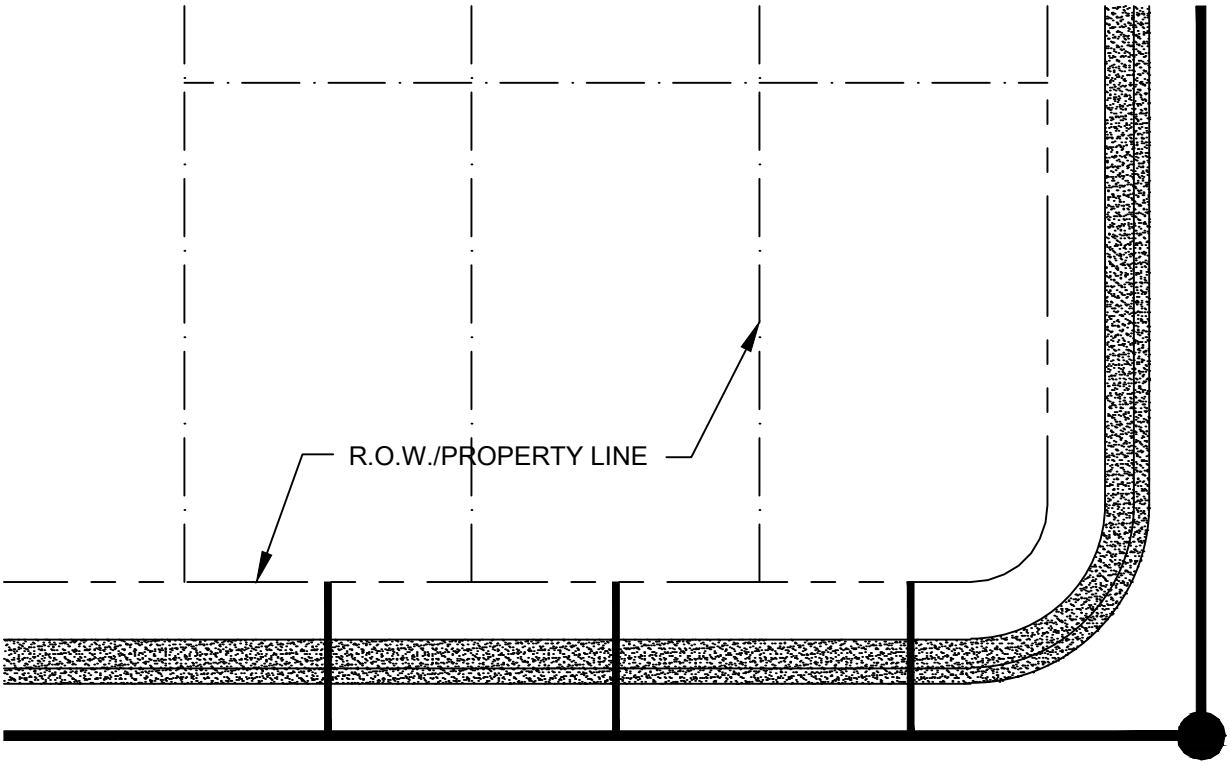


TYPE B

NOTES:

1. TYPE "A" ELEMENTS ARE TYPICAL FOR ALL TYPES UNLESS SPECIFICALLY NOTED OTHERWISE.
2. ALL LATERALS SHALL BE LOCATED 10' MINIMUM DISTANCE FROM DOWNHILL PROPERTY LINE OF THE SERVICE SIDE OF THE LOT, UNLESS OTHERWISE APPROVED BY THE DISTRICT PRIOR TO INSTALLATION.
3. ALL SEWER LATERAL CONNECTIONS SHALL BE TYPE "A" AND SHALL BE CONSTRUCTED ON A STRAIGHT LINE AND GRADE BETWEEN CONTROL POINTS EXCEPT AS OTHERWISE INDICATED ON THE APPROVED PROJECT PLANS.

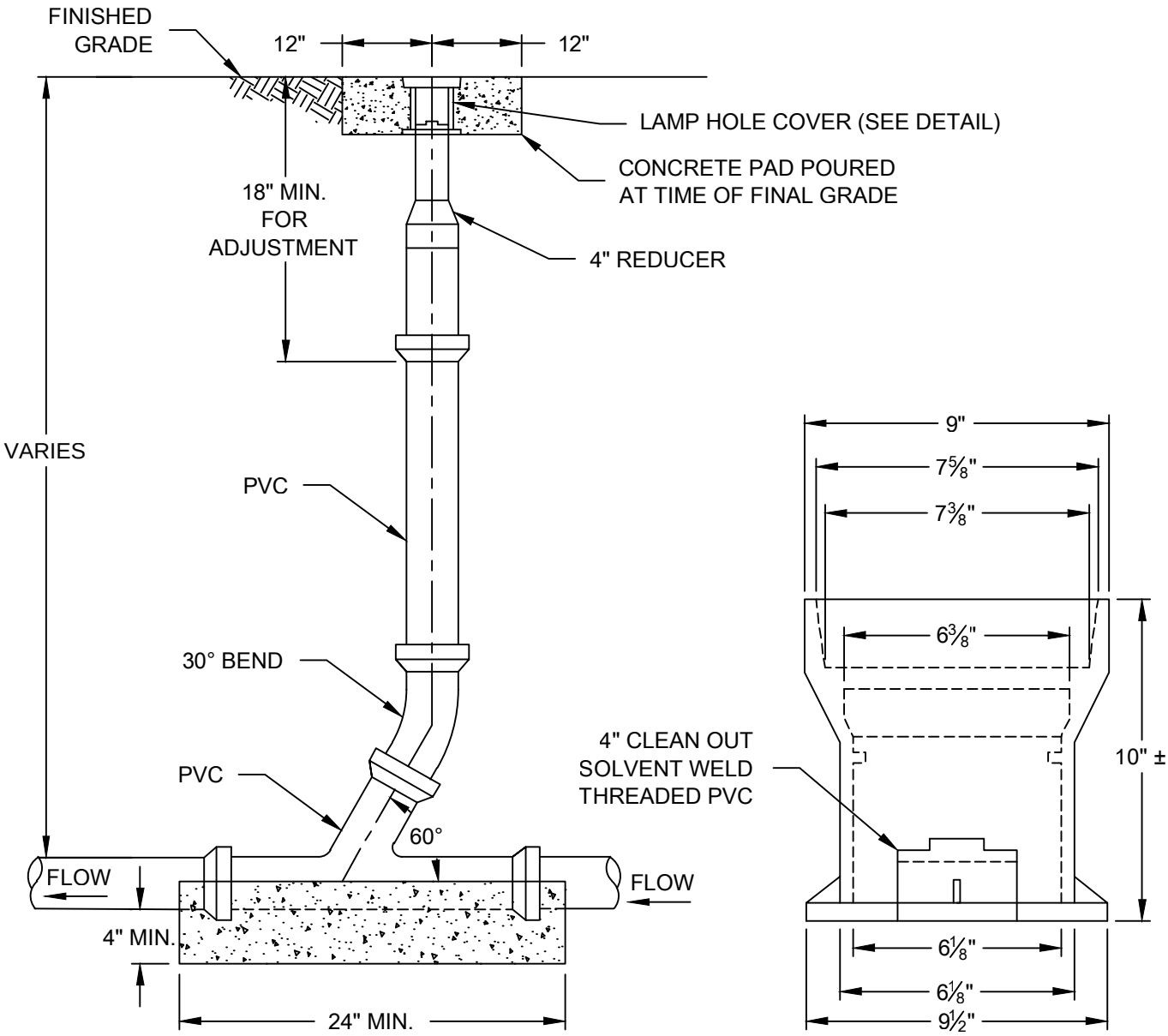
REV. DATE			
06/12	MERIDIAN METROPOLITAN DISTRICT		SS-2
	SANITARY SERVICE CONNECTION		



NOTES:

1. SEWER SERVICE LINES (INDIVIDUAL TRENCH) SHALL BE LOCATED A MAXIMUM OF 1.5' ON EITHER SIDE OF THE CENTER LINE OF THE LOT.
2. FOR JOINT TRENCH INSTALLATIONS, SEWER SERVICE LINES SHALL BE LOCATED IN ACCORDANCE WITH WS-1.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SS-3
06/12	SANITARY SEWER SERVICE LOCATION ONLY (CENTER LOT)	

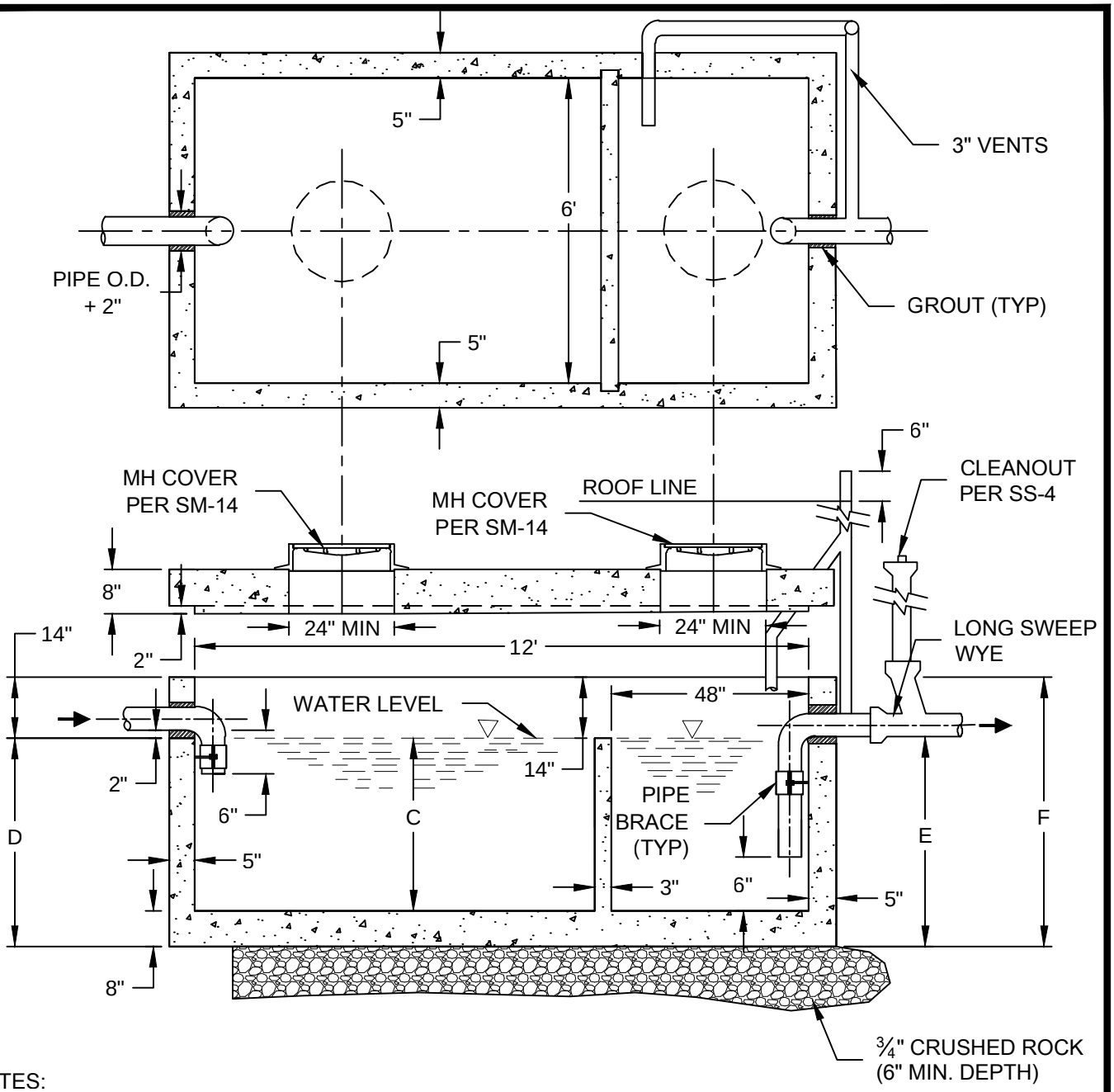


LAMP HOLE COVER DETAIL

NOTES:

1. COVER SHALL HAVE A LOCKING LID MARKED "SEWER".
2. TYLER SERIES 6855 SLIP TYPE TOP SECTION, D&L SUPPLY SERIES M8056 OR EQUAL.
3. INSIDE DIAMETER = 6 ⅛".

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SS-4
06/12	IN-LINE SANITARY SEWER CLEANOUT (4" & 6")	

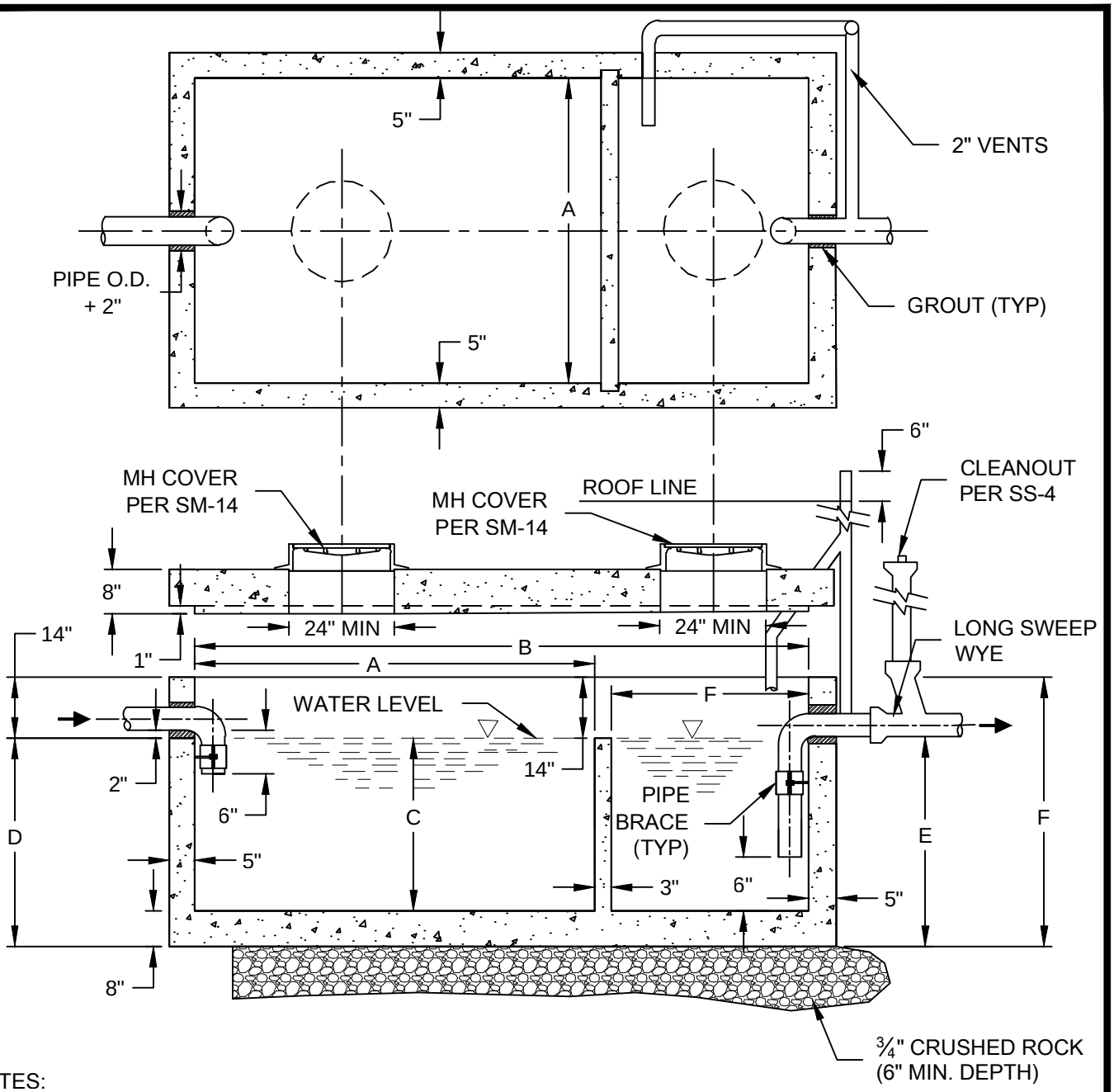


NOTES:

1. SECONDARY COMPARTMENT HAS VOLUME EQUAL TO ⅓ OF TOTAL CAPACITY.
2. ALL PIPE AND FITTINGS SHALL BE SOLVENT WELDED SCHEDULE 40 P.V.C. MIN. 3" DIA. WITHIN TRAP.
3. WALL AND BOTTOM REINFORCED THROUGHOUT WITH 2X16 $^{6}/_{10}$ REMESH.
4. COVERS TO BE REINFORCED LONGITUDINALLY WITH NO. 6 REBAR ON 6" CENTERS, NO. 4 REBAR ON 6" CENTERS WIDTHWISE, AND NO. 8 REBAR DIAGONALLY AROUND ACCESS HOLES.
5. CLEAN OUT SHALL BE PVC SCREW PLUG
6. VENT PIPE MAY BE CAST IRON OR PVC SCHEDULE 40, TO A POINT 6" ABOVE GROUND.
7. MANHOLE RING AND COVER SHALL BE 24" DENVER HEAVY OR EQUAL.
8. CHECK WITH SUPPLIER FOR EXACT DIMENSIONS.
9. NO BOLT TIE DOWN COVER ALLOWED WITHOUT PERMISSION FROM MERIDIAN METROPOLITAN DISTRICT.
10. CAPACITY RATED FOR LARGE COMPARTMENT ONLY.
11. ALL BRACING SHALL BE CONSTRUCTED WITH STAINLESS STEEL MATERIALS.

WATER CAPACITY APPROX. GALLONS	DIMENSIONS IN INCHES			
	C	D	E	F
1565	40	50	48	62
1800	46	56	54	68
2035	52	62	60	74
2505	64	74	72	86
2975	76	86	84	98
3210	82	92	90	104
3445	88	98	96	110

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SS-5
06/12	SAND AND OIL INTERCEPTOR	

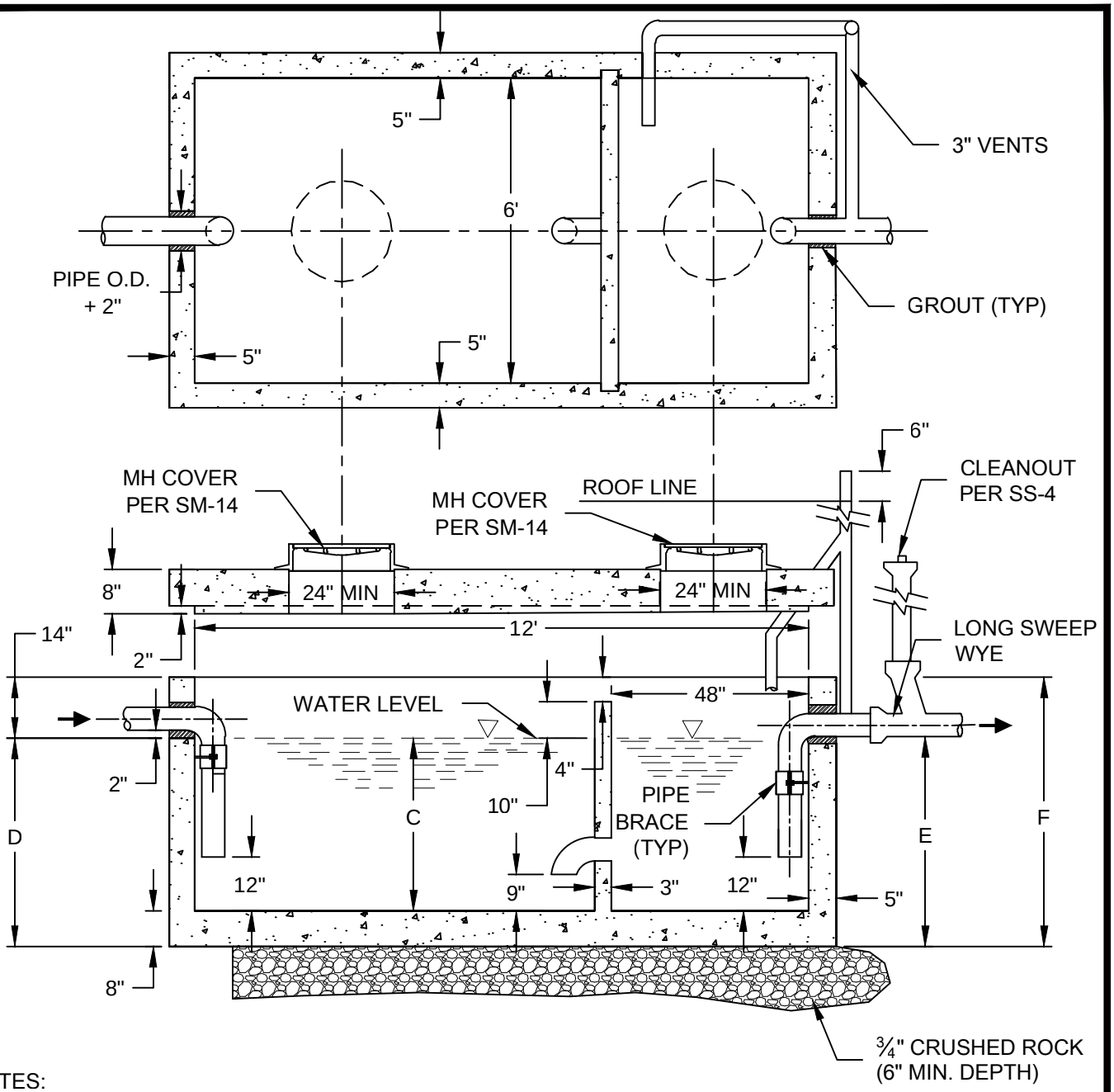


NOTES:

1. SECONDARY COMPARTMENT HAS VOLUME EQUAL TO ⅓ OF TOTAL CAPACITY.
2. ALL PIPE AND FITTINGS SHALL BE SOLVENT WELDED SCHEDULE 40 P.V.C. MIN. 3" DIA. WITHIN TRAP.
3. WALL AND BOTTOM REINFORCED THROUGHOUT WITH 2X16 $^{6}/_{10}$ REMESH.
4. COVERS TO BE REINFORCED LONGITUDINALLY WITH NO. 6 REBAR ON 6" CENTERS, NO. 4 REBAR ON 6" CENTERS WIDTHWISE, AND NO. 8 REBAR DIAGONALLY AROUND ACCESS HOLES.
5. CLEAN OUT SHALL BE PVC SCREW PLUG
6. VENT PIPE MAY BE CAST IRON OR PVC SCHEDULE 40, TO A POINT 6" ABOVE GROUND.
7. MANHOLE RING AND COVER SHALL BE 24" DENVER HEAVY OR EQUAL.
8. CHECK WITH SUPPLIER FOR EXACT DIMENSIONS.
9. NO BOLT TIE DOWN COVER ALLOWED WITHOUT PERMISSION FROM MERIDIAN METROPOLITAN DISTRICT.
10. CAPACITY RATED FOR LARGE COMPARTMENT ONLY.
11. ALL BRACING SHALL BE CONSTRUCTED WITH STAINLESS STEEL MATERIALS.

WATER CAPACITY APPROX. GALLONS	DIMENSIONS IN INCHES					
	A	B	C	D	E	F
320	48	72	22	30	44	24
500	48	72	36	46	44	24
780	48	96	40	48	62	32
1060	72	102	34	42	56	34

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SS-6
06/12	SAND AND OIL INTERCEPTOR	

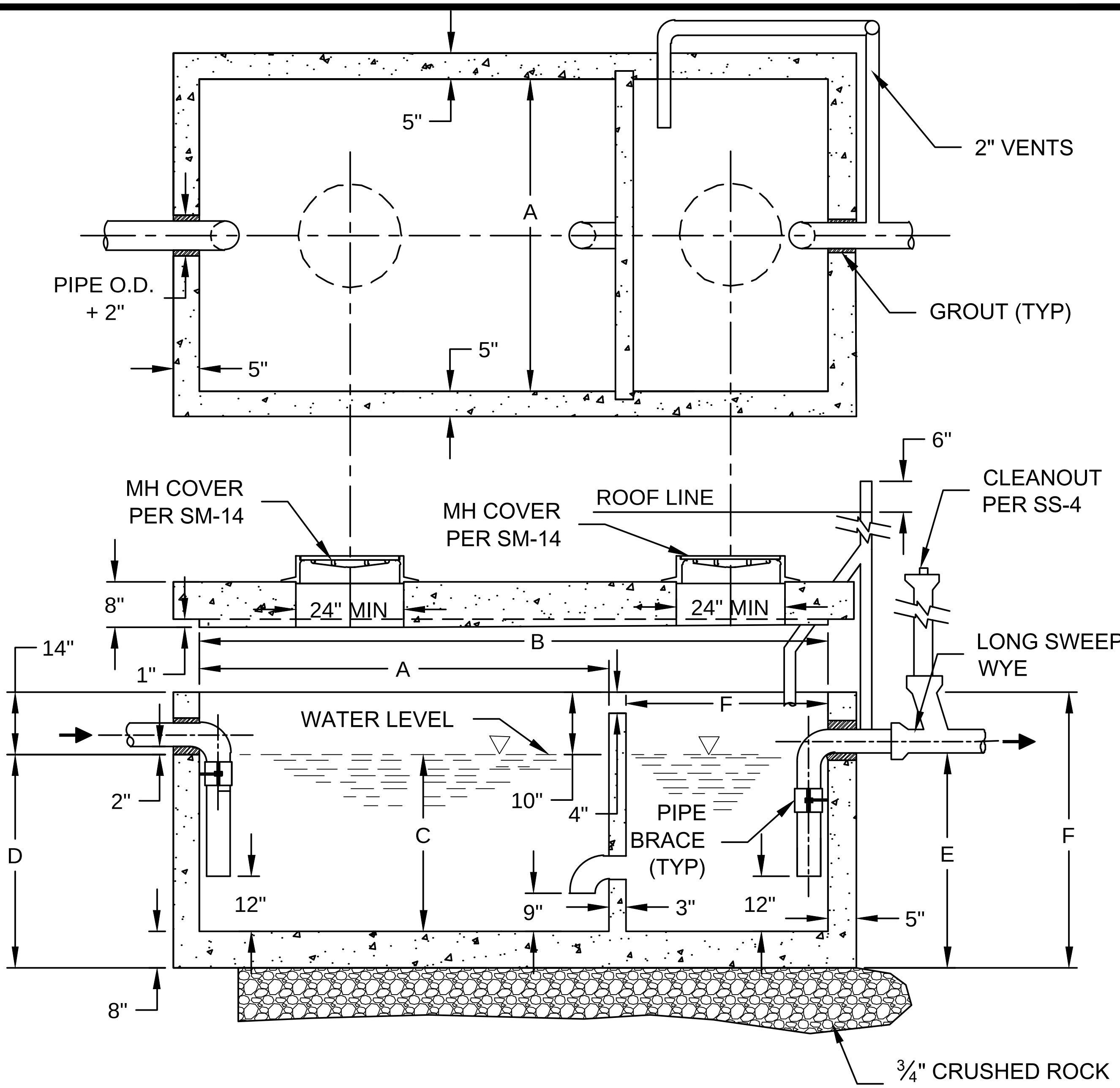


NOTES:

1. SECONDARY COMPARTMENT HAS VOLUME EQUAL TO ⅓ OF TOTAL CAPACITY.
2. ALL PIPE AND FITTINGS SHALL BE SOLVENT WELDED SCHEDULE 40 P.V.C. MIN. 3" DIA. WITHIN TRAP.
3. WALL AND BOTTOM REINFORCED THROUGHOUT WITH 2X16 6/10 REMESH.
4. COVERS TO BE REINFORCED LONGITUDINALLY WITH NO. 6 REBAR ON 6" CENTERS, NO. 4 REBAR ON 6" CENTERS WIDTHWISE, AND NO. 8 REBAR DIAGONALLY AROUND ACCESS HOLES.
5. CLEAN OUT SHALL BE PVC SCREW PLUG
6. VENT PIPE MAY BE CAST IRON OR PVC SCHEDULE 40, TO A POINT 6" ABOVE GROUND.
7. MANHOLE RING AND COVER SHALL BE 24" DENVER HEAVY OR EQUAL.
8. CHECK WITH SUPPLIER FOR EXACT DIMENSIONS.
9. NO BOLT TIE DOWN COVER ALLOWED WITHOUT PERMISSION FROM MERIDIAN METROPOLITAN DISTRICT.
10. CAPACITY RATED FOR LARGE COMPARTMENT ONLY.
11. ALL BRACING SHALL BE CONSTRUCTED WITH STAINLESS STEEL MATERIALS.

WATER CAPACITY APPROX. GALLONS	DIMENSIONS IN INCHES			
	C	D	E	F
1565	40	50	48	62
1800	46	56	54	68
2035	52	62	60	74
2505	64	74	72	86
2975	76	86	84	98
3210	82	92	90	104
3445	88	98	96	110

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SS-7
06/12	GREASE INTERCEPTOR	

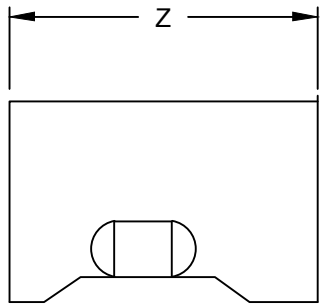


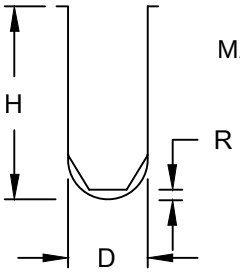
NOTES:

1. SECONDARY COMPARTMENT HAS VOLUME EQUAL TO ⅓ OF TOTAL CAPACITY.
2. ALL PIPE AND FITTINGS SHALL BE SOLVENT WELDED SCHEDULE 40 P.V.C. MIN. 3" DIA. WITHIN TRAP.
3. WALL AND BOTTOM REINFORCED THROUGHOUT WITH 2X16 6⁄10 REMESH.
4. COVERS TO BE REINFORCED LONGITUDINALLY WITH NO. 6 REBAR ON 6" CENTERS, NO. 4 REBAR ON 6" CENTERS WIDTHWISE, AND NO. 8 REBAR DIAGONALLY AROUND ACCESS HOLES.
5. CLEAN OUT SHALL BE PVC SCREW PLUG
6. VENT PIPE MAY BE CAST IRON OR PVC SCHEDULE 40, TO A POINT 6" ABOVE GROUND.
7. MANHOLE RING AND COVER SHALL BE 24" DENVER HEAVY OR EQUAL.
8. CHECK WITH SUPPLIER FOR EXACT DIMENSIONS.
9. NO BOLT TIE DOWN COVER ALLOWED WITHOUT PERMISSION FROM MERIDIAN METROPOLITAN DISTRICT.
10. CAPACITY RATED FOR LARGE COMPARTMENT ONLY.
11. ALL BRACING SHALL BE CONSTRUCTED WITH STAINLESS STEEL MATERIALS.

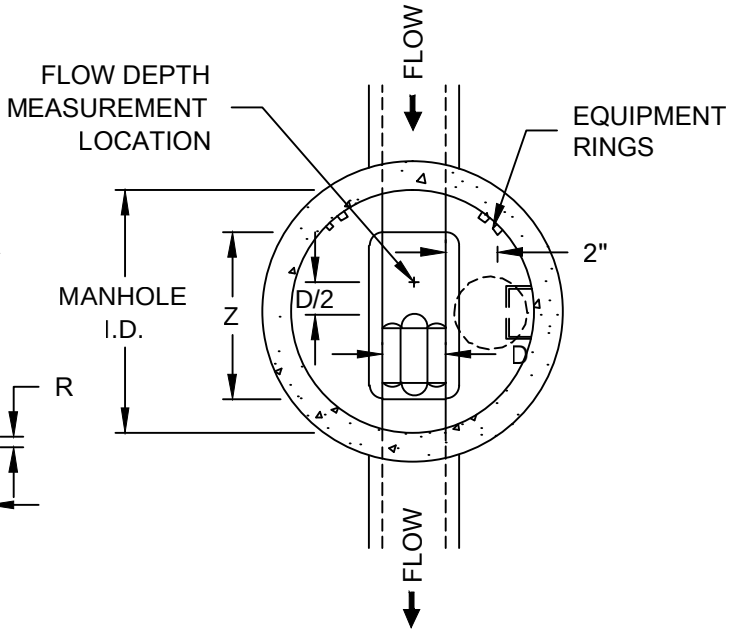
WATER CAPACITY APPROX. GALLONS	DIMENSIONS IN INCHES					
	A	B	C	D	E	F
320	48	72	22	30	44	24
500	48	72	36	46	44	24
780	48	96	40	48	62	32
1060	72	102	34	42	56	34

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	SS-8
06/12	GREASE INTERCEPTOR	

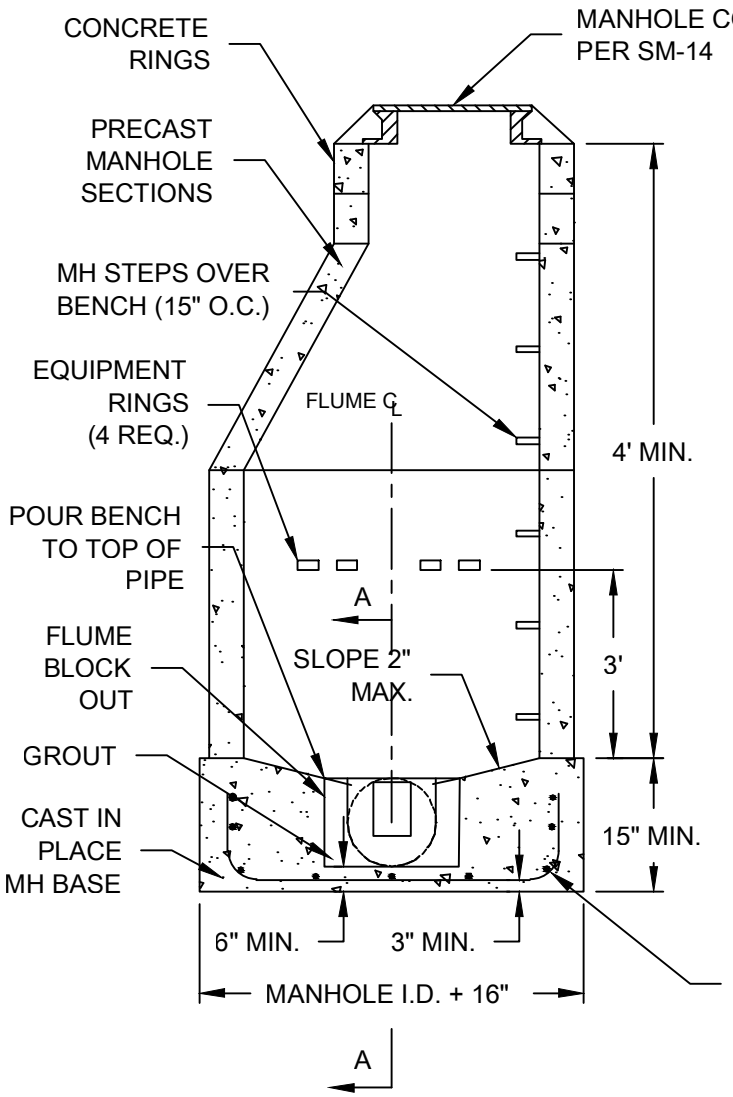


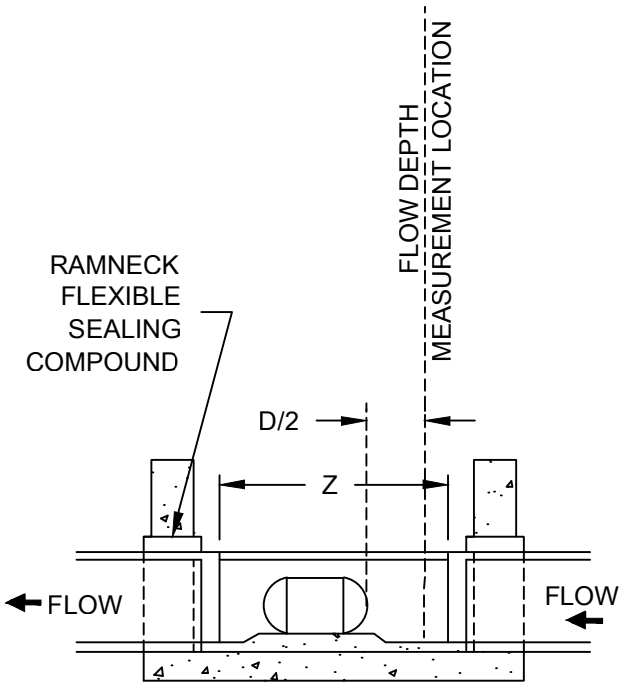


PALMER-BOWLUS FLUME



PLAN





SECTION A

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	SS-9
06/12		WASTE METERING MANHOLE	

FLUME DESIGN CRITERIA FOR WASTE METERING MANHOLE

FLUME										MANHOLE	SLOPE
MAXIMUM DISCHARGE			HEAD	MODEL	DIMENSIONS (INCHES)					SIZE ID	UPSTREAM
GPM	MGD	CFS	INCHES	-	D	D-2	R	H	Z	MINIMUM	MAXIMUM
52	0.075	0.116	2.90	PBF-4	4	2	0.67	6	17	6' Dia.	2.4
165	0.238	0.368	4.70	PBF-6	6	2	1.00	8	25	6' Dia.	2.2
343	0.495	0.765	6.30	PBF-8	8	3	1.33	10	33	6' Dia.	2.0
603	0.870	1.345	7.90	PBF-10	10	4	1.67	12	41	6' Dia.	1.8
936	1.350	2.088	9.40	PBF-12	12	6	2.00	14	49	6' Dia.	1.6
1648	2.377	3.676	11.80	PBF-15	15	7.5	2.50	17	61	6' Dia.	1.5
2614	3.770	5.831	14.20	PBF-18	18	9	3.00	20	73	7.5' Dia.	1.4

CONTROL MANHOLE NOTES

STRUCTURE:

1. SHAPE AND SMOOTH MANHOLE INVERTS BY FORMING OR SHAPING WITH CEMENT MORTAR.
2. ALL PRECAST MANHOLE SECTION, BASES, FLAT TOPS, BARRELS, REDUCERS, ETC., SHALL CONFORM TO ASTM, C-478, AND THESE STANDARD SPECIFICATIONS.
3. REINFORCING IN BASE REQUIRED FOR 6' & 7.5" DIAMETER MANHOLES. THE OWNER SHALL BE RESPONSIBLE FOR STRUCTURAL REQUIREMENTS UNDER THE SPECIFIC LOADING CONDITIONS, (DEAD LOAD PLUS LIVE LOAD OR H-20 FOR TRAFFIC).
4. MANHOLE RING, COVER AND LEVELING RINGS SHALL BE SET IN A FILL BED OF MORTAR.
5. ECCENTRIC CONE SECTIONS MAY BE USED IN LIEU OF FLAT TOP SECTIONS, PROVIDED COVER OVER TOP OF PIPE IS GREATER THAN 4.5 FEET.
6. FLEXIBLE PLASTIC SEALANT IS REQUIRED IN ALL JOINTS.
7. VENTILATOR MAY BE REQUIRED; DISTRICT ENGINEER SHALL DECIDE WHEN THIS IS NECESSARY, AND APPROVE METHOD OF PROVIDING VENTILATION.

FLUME:

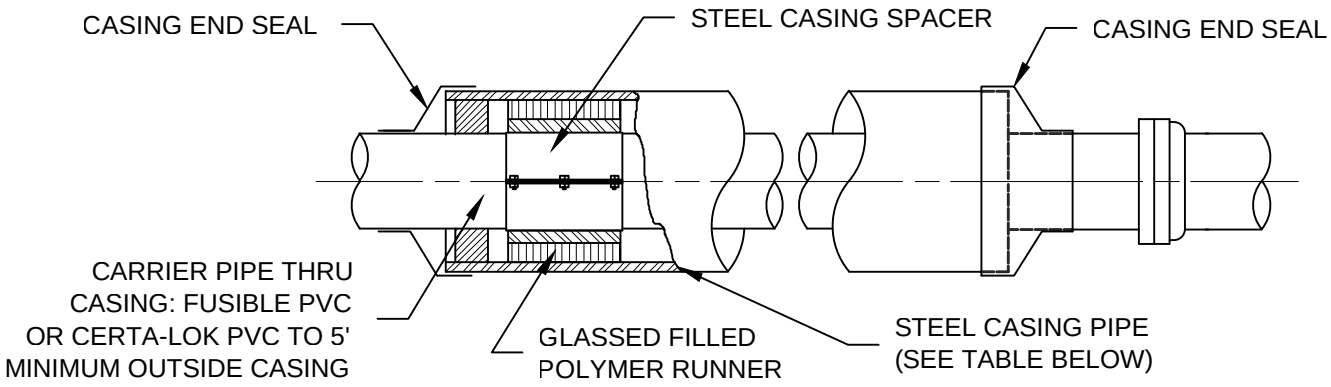
1. THE FLUME SHALL BE A PALMER-BOWLUS FLUME, WITH INTEGRAL APPROACH SECTION, OR APPROVED EQUAL.
2. IT IS SUGGESTED THAT THE OWNER PLACE CONCRETE FOR MANHOLE BENCH IN TWO POURS.
   (a) POUR BENCH, LEAVING ADEQUATE "BLOCK OUT" AREA TO FIT FLUME.
   (b) GROUT FLUME INTO "BLOCK OUT" AT EXISTING OR NEW SEWER LINE SLOPE.
3. CONSTRUCTION OF A BYPASS CHANNEL FOR FLUME SHALL BE AT THE OWNER'S OPTION, THIS CAN BE ACCOMPLISHED IN POUR (a). THIS TYPE OF CONSTRUCTION WILL REQUIRE A LARGER STRUCTURE. THE DESIGN OF ANY BYPASS CHANNEL SHALL BE SUCH AS TO INDUCE MINIMUM TURBULENCE IN NORMAL FLUME FLOW CHANNEL.
4. FLUME SELECTION SHALL BE BASED UPON THE FLOW TO BE MEASURED AND NOT UPON THE PIPE SIZE.
5. FLUME SELECTION CALCULATIONS WILL BE SUBMITTED TO DISTRICT ENGINEER FOR CONCURRENCE AS WILL FLUME CALIBRATION CURVES AND DATA.
6. A MOUNTING BRACKET SHALL BE PROVIDED TO SUPPORT THE DISTRICT'S FLOW RECORDING TRANSDUCER. THE BRACKET SHALL BE INSTALLED SO THAT THE TRANSDUCER FACE IS OVER THE CENTER OF THE CHANNEL.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	SS-9B
06/12		WASTE METERING MANHOLE NOTES	

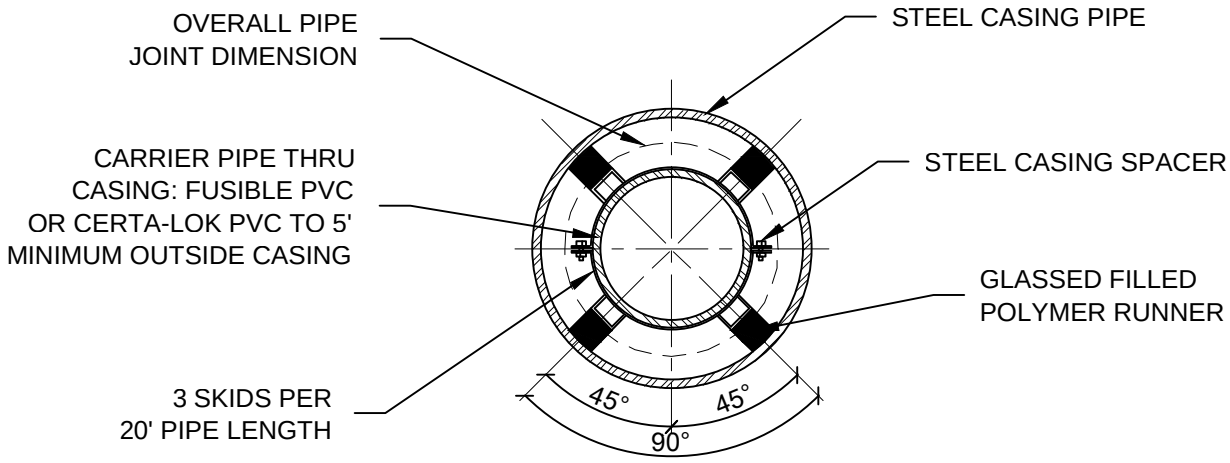
ELECTRIC CONTROL PANEL

1. SHALL BE A MILLTRONICS OCM III - NON-CONTRACTING ULTRASONIC FLOW METER, TWO-WAY COMMUNICATIONS - DATA LOG WITH 2 YEAR HISTORY.
2. CHART RECORDER - FOXBORO 740 SERIES, OR APPROVED EQUAL, WITH 100 PROPERLY SCALED CHARTS FOR THE SIZE OF FLUME UTILIZED.
3. THE TRANSDUCER MOUNTING HARDWARE SHALL BE FIBERGLASS UNISTRUT WITH STAINLESS STEEL ANCHORS & BOLTS. THE MOUNT SHOULD BE DESIGNED TO ALLOW LEVELING OF TRANSDUCER FACE AND OFFERING SOME LATERAL ADJUSTMENTS.
4. CONDUIT FROM MANHOLE PANEL SHALL BE PVC JACKETED GRC, (USING ONLY WIDE RADIUS BENDS).
   REQUIRED (1) ¾" FOR TRANSDUCER CABLE
   (1) 1" FOR ISCO SAMPLE LINE
   (1) ¾" SPARE
5. EQUIPMENT ENCLOSURE SHALL BE A NEMA 4, WITH DOUBLE DOOR ACCESS, MOUNTED ON A CONCRETE PAD.
   PANEL SHOULD INCLUDE THE FOLLOWING:
   - ELECTRICAL DISTRIBUTION BOX WITH (6) 20 AMP GFI CIRCUIT BREAKERS.
   - HEATER WITH THERMOSTAT
   - EXHAUST FAN WITH LOUVERS
   - LIGHT
   - UTILITY OUTLETS
   - SIZED ACCORDINGLY TO ACCOMMODATE AN ISCO SAMPLER, MODEL #3700
6. FLUME LENGTH FOR 8" PALMER-BOWLUS WITH APPROACH SECTION,
   (4 x DIAMETER) + 1" e.i. 32" + 1" = 33"

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	SS-9C
06/12		WASTE METERING MANHOLE NOTES	



SLED DETAIL



PIPE CASING DETAIL

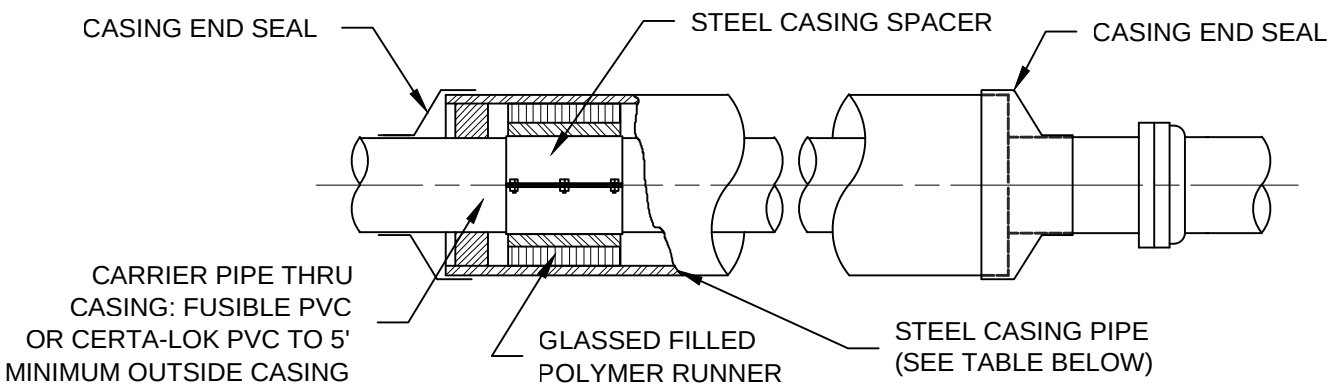
CARRIER PIPE NOMINAL ∅	CASING PIPE	
	MIN OD	MIN WALL THICKNESS
4"	12"	0.25"
6"	16"	0.3125"
8"	18"	0.3125"
12"	22"	0.375"
16"	28"	0.500"
20"	32"	0.500"

PIPE CASING TABLE

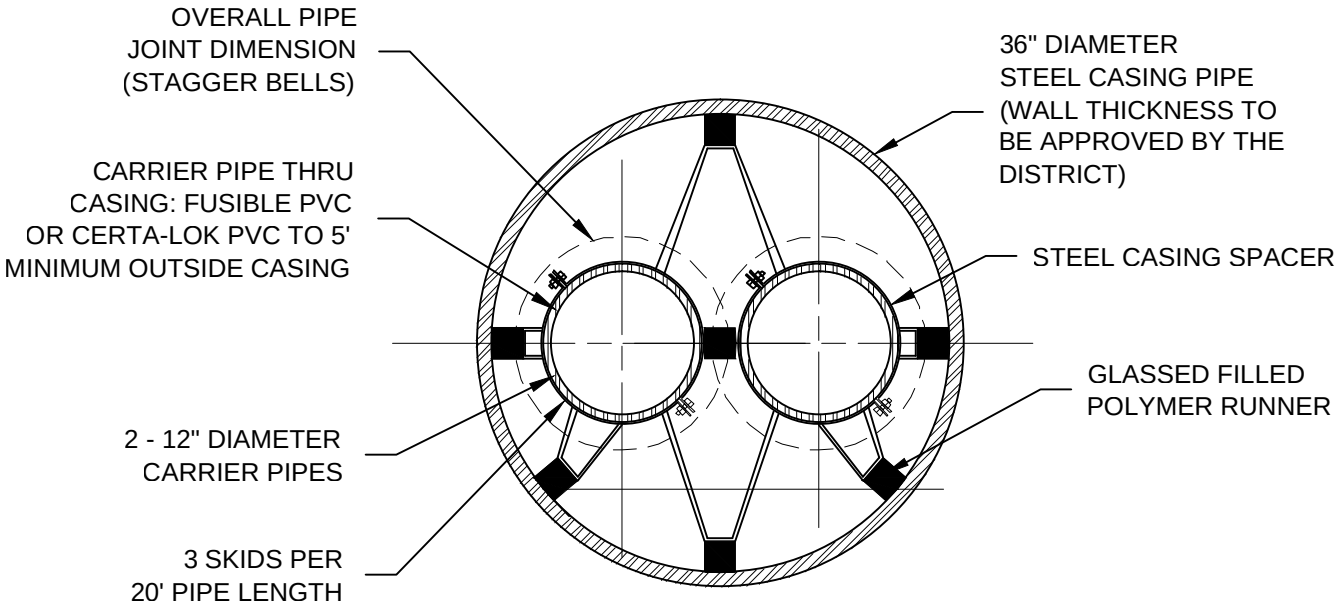
NOTES:

1. CASING LENGTH TO BE SHOWN CLEARLY ON THE APPROVED PLANS.
2. TRENCH LAID CASING SHALL BE DESIGNED AND INSTALLED PER PLANS.
3. BORING AND CASING METHOD AND MATERIALS SHALL BE APPROVED BY THE DISTRICT.
4. SOIL AT THE ENDS OF CASING SHALL BE STABLE AT ALL TIMES.
5. CASING PIPE SHALL BE STRAIGHT, ROUND AND OF NEW MATERIAL.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	D-1
August 2012		BORE CASING DETAIL	



SLED DETAIL

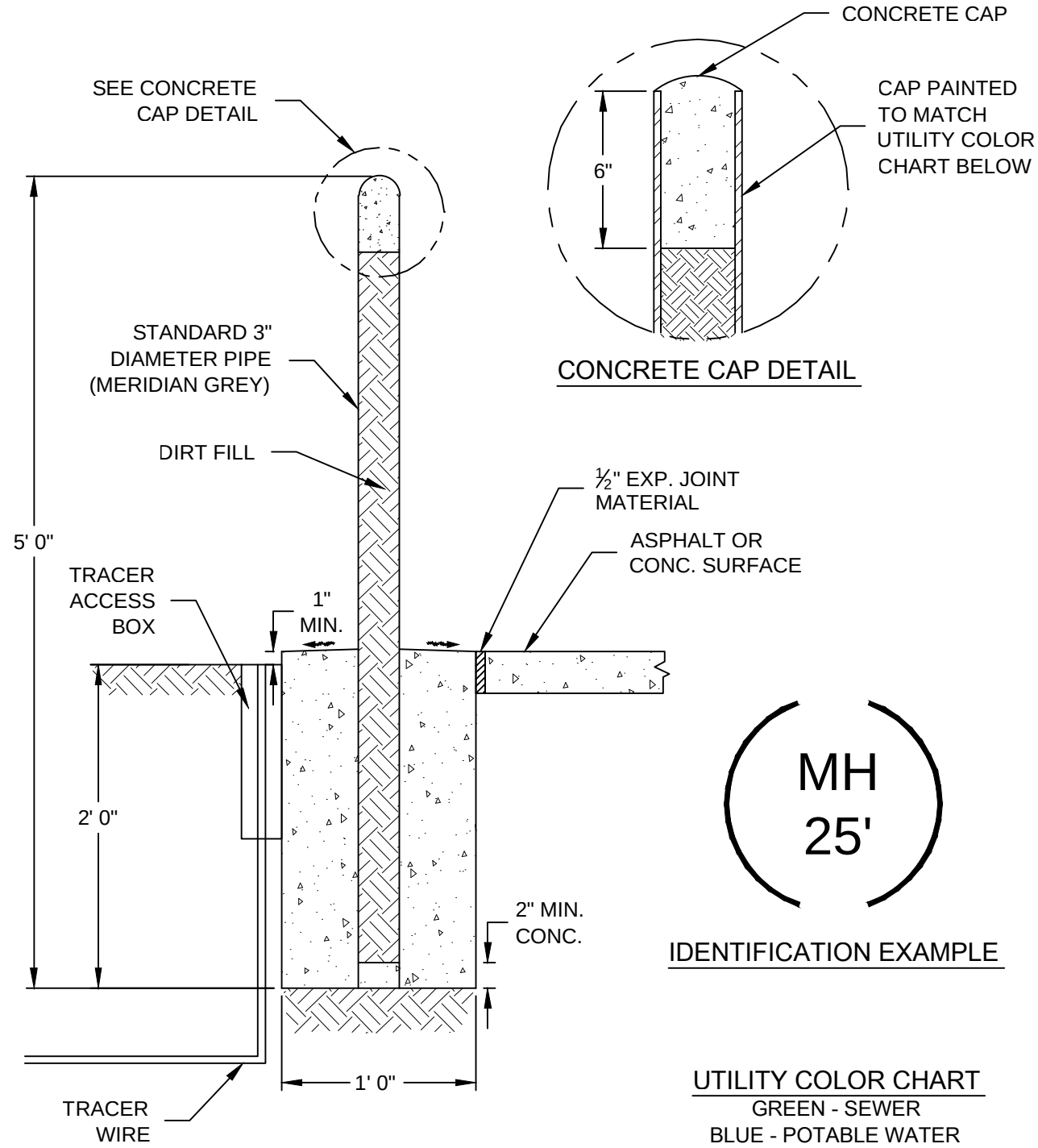


PIPE CASING DETAIL

NOTES:

1. CASING LENGTH TO BE SHOWN CLEARLY ON THE APPROVED PLANS.
2. TRENCH LAID CASING SHALL BE DESIGNED AND INSTALLED PER PLANS.
3. BORING AND CASING METHOD AND MATERIALS SHALL BE APPROVED BY THE DISTRICT.
4. SOIL AT THE ENDS OF CASING SHALL BE STABLE AT ALL TIMES.
5. CASING PIPE SHALL BE STRAIGHT, ROUND AND OF NEW MATERIAL.
6. MUST HAVE PRIOR APPROVAL FROM THE DISTRICT BEFORE CONSIDERING IN APPROVED PLANS.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	D-2
August 2012	DOUBLE BORE CASING DETAIL	



CONCRETE CAP DETAIL

IDENTIFICATION EXAMPLE

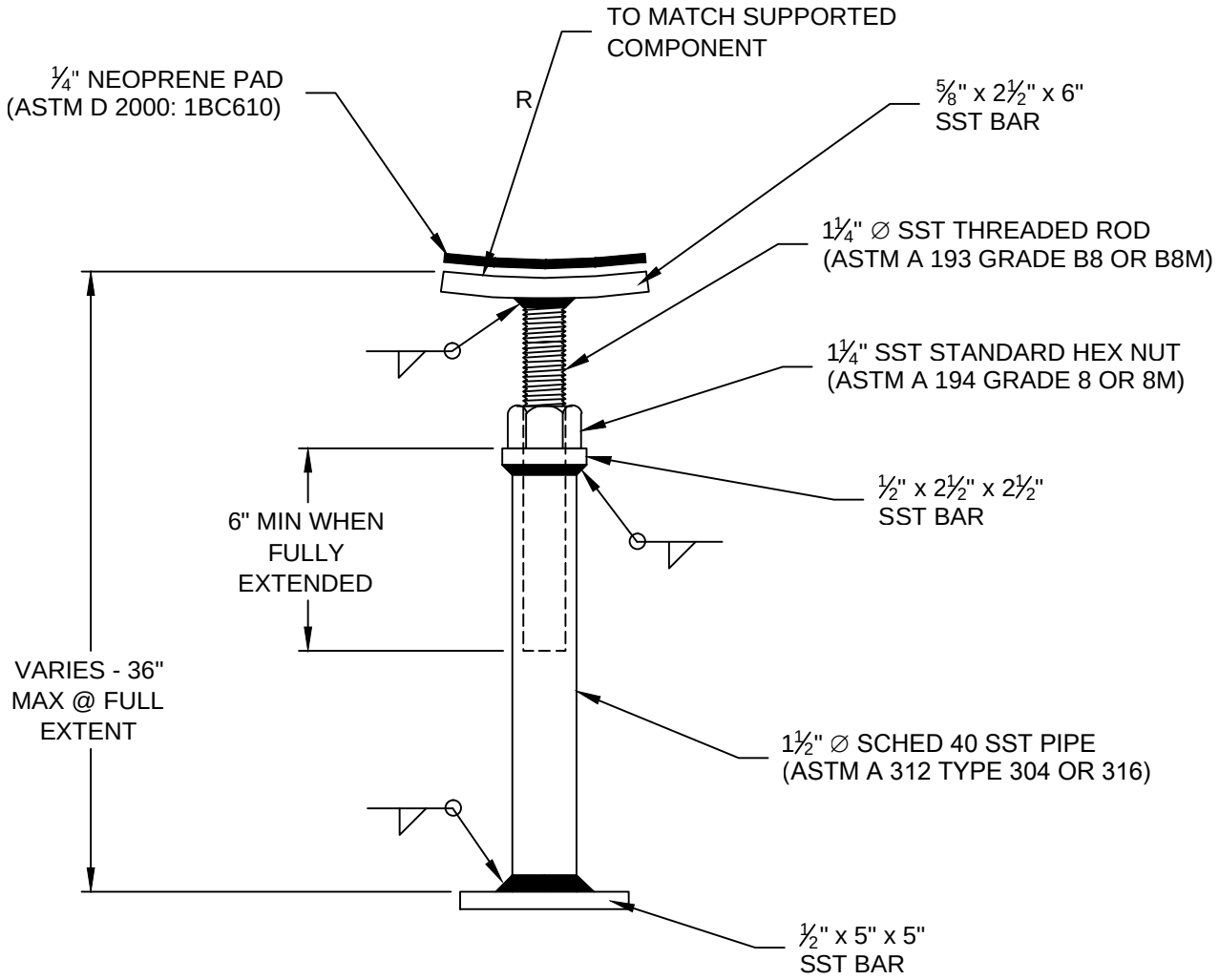
UTILITY COLOR CHART

GREEN - SEWER
BLUE - POTABLE WATER
WHITE/BLUE - SUPPLY
PURPLE - REUSE
BLACK - FORCE MAIN

NOTES:

1. LOCATIONS TO BE SHOWN CLEARLY ON THE APPROVED PLANS.
2. IDENTIFICATION MARKS ON POSTS SHALL BE 3"∅ CIRCLES BROKEN IN VERTICAL CENTER (SEE DETAIL) POINTING TO APPURTENANCE, WITH 1" STENCILS INSIDE CIRCLE INDICATING TYPE OF APPURTENANCE (MH, 12" GATE VALVE, ETC) AND THE DISTANCE IN FEET AND INCHES FROM POST.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	D-3
August 2012	REFERENCE POST DETAIL	

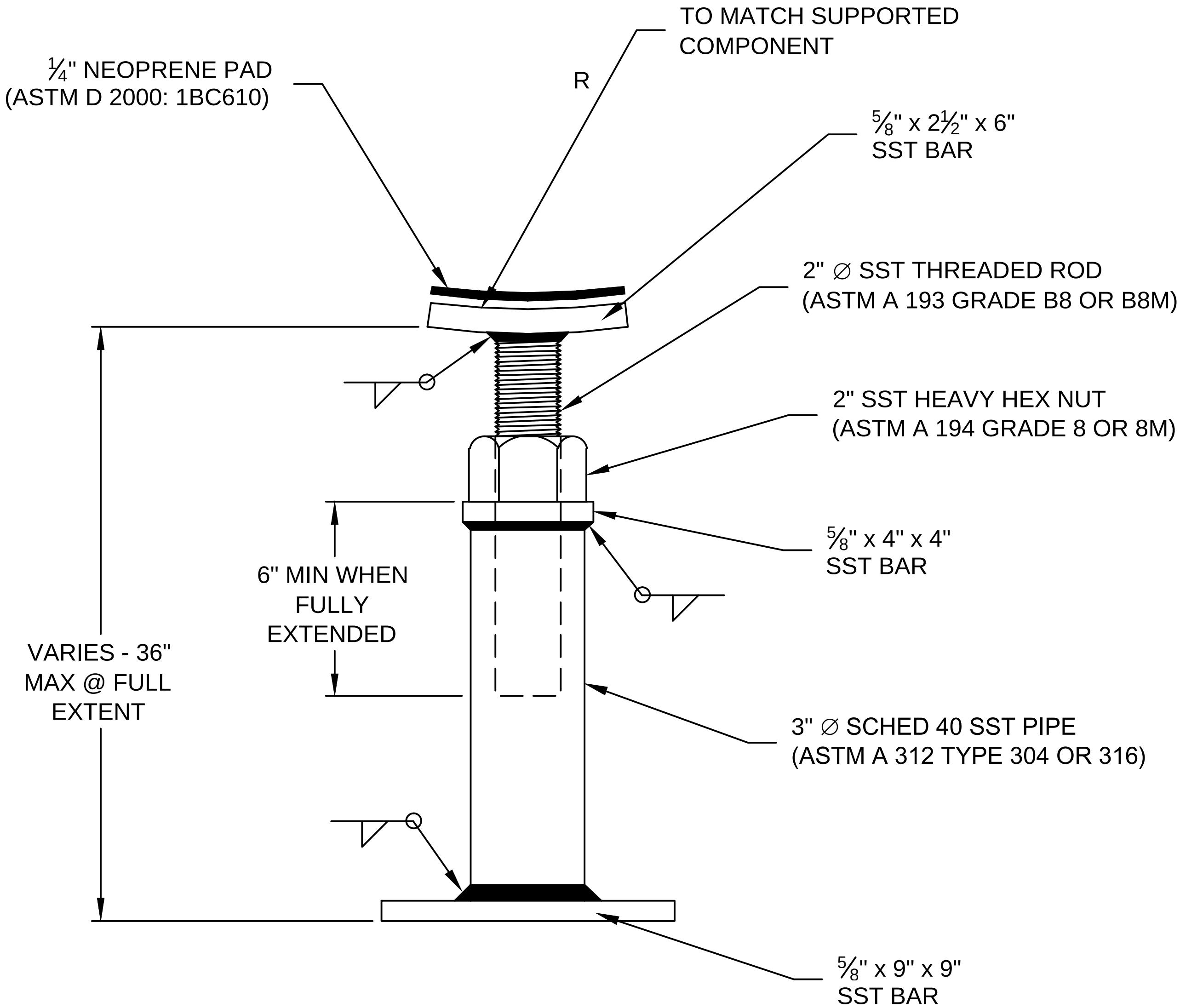


STANDARD

NOTE:

1. BAR MATERIAL TO BE ASTM A 240 TYPE 304 OR 316 (Fy = 30 KSI MINIMUM).

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	D-4
August 2012		ADJUSTABLE SUPPORT DETAIL (STANDARD)	

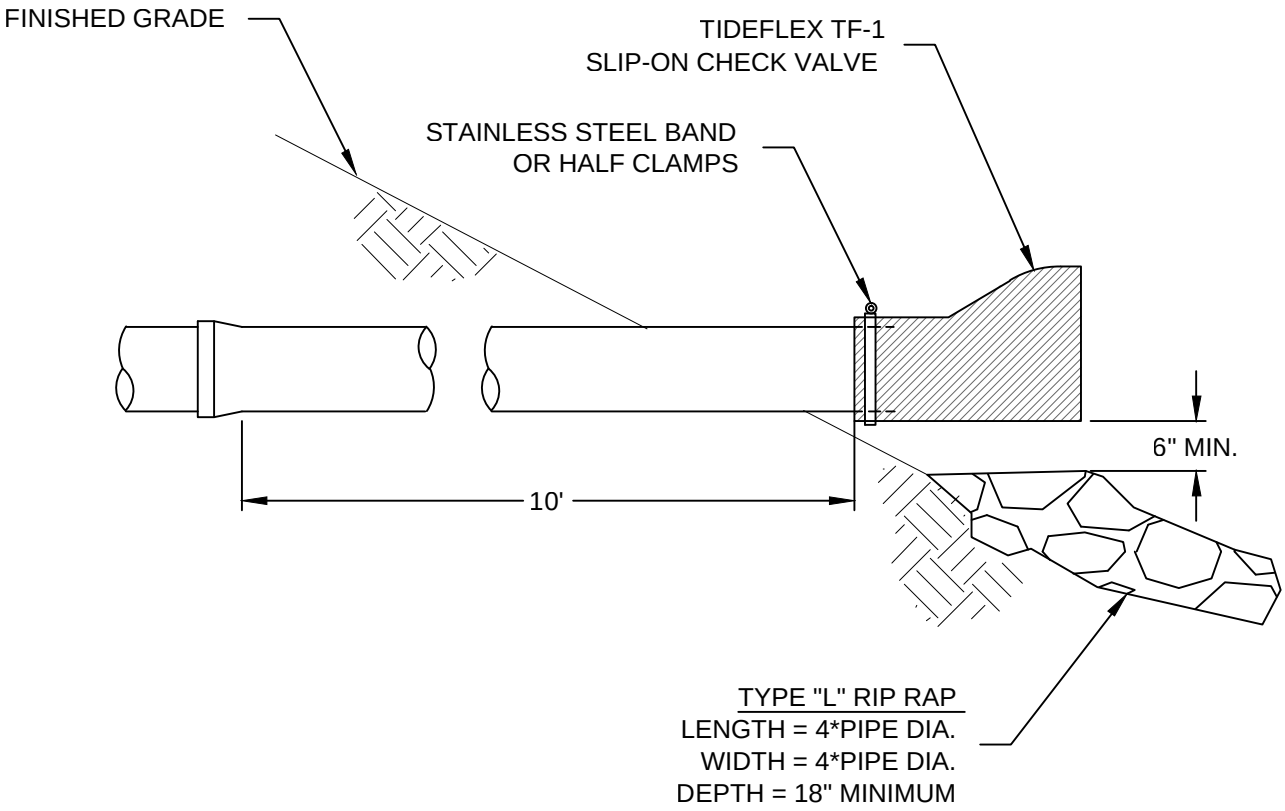


HEAVY DUTY

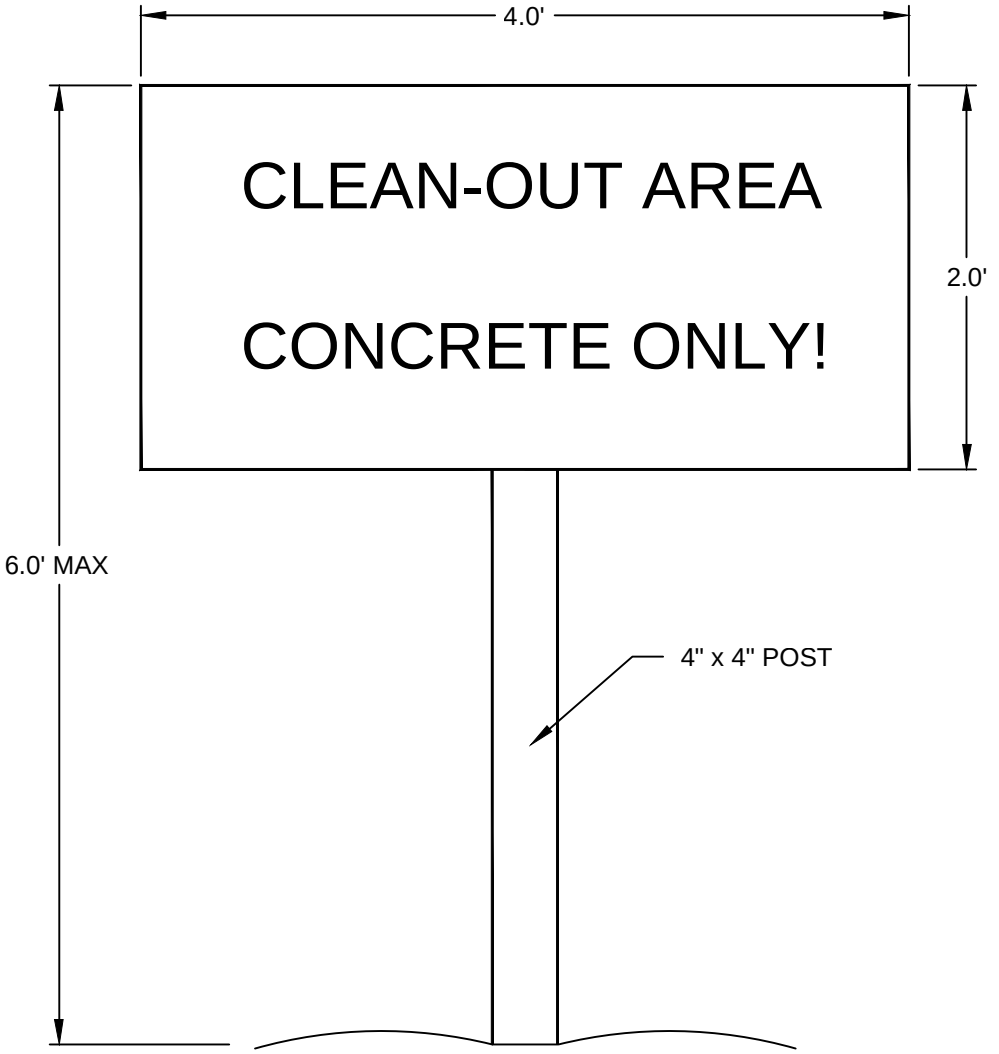
NOTE:

1. BAR MATERIAL TO BE ASTM A 240 TYPE 304 OR 316 (Fy = 30 KSI MINIMUM).

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	D-5
August 2012	ADJUSTABLE SUPPORT DETAIL (HEAVY DUTY)	



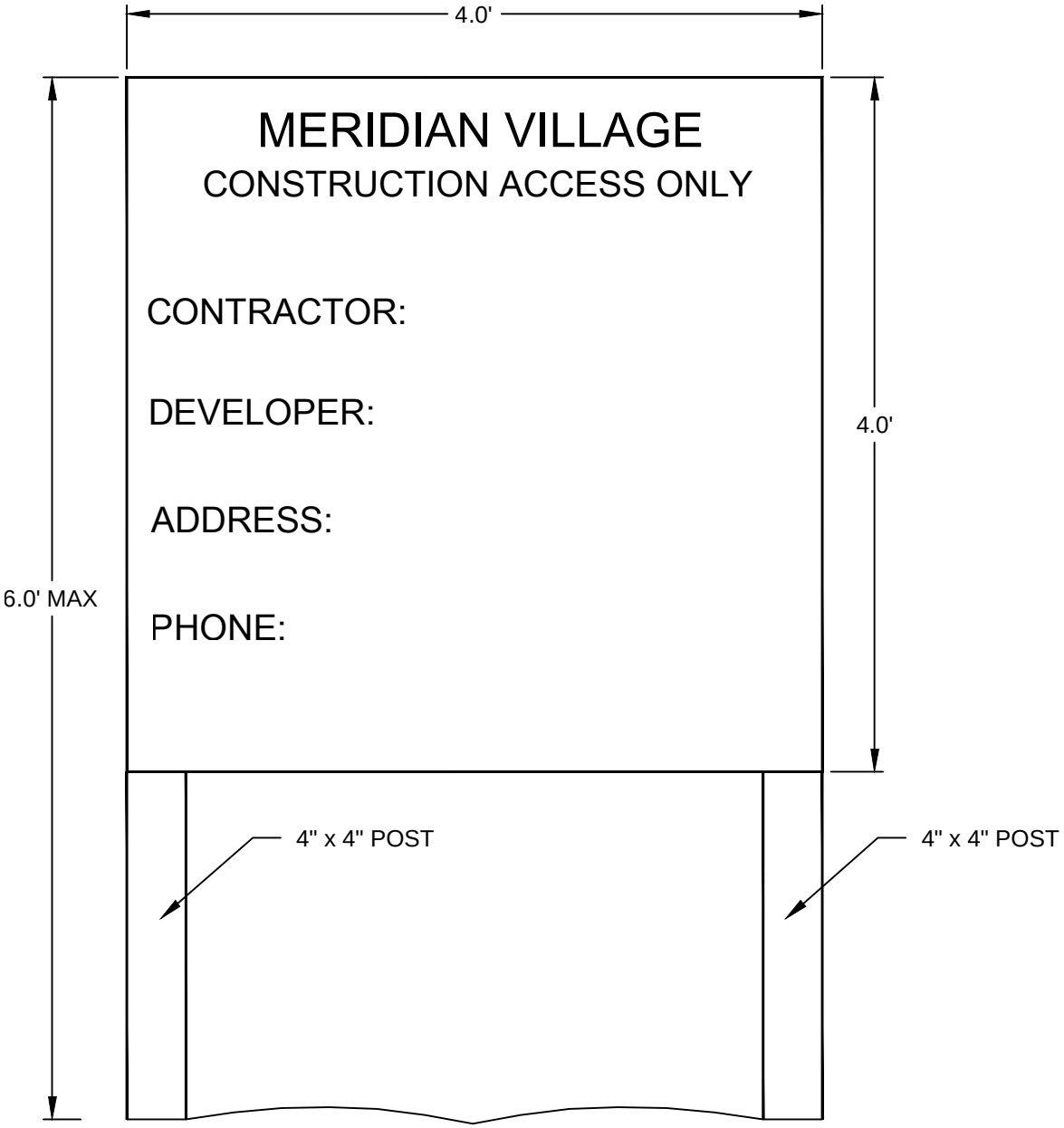
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	D-6
August 2012		TIDEFLEX CHECK VALVE DETAIL FOR DRAIN OUTLET	



TYPICAL SIGN FOR CONCRETE WASHOUT

NOTES:
1. SEE DOUGLAS COUNTY GESC MANUAL SECTION 3.13.5.
2. SIGN SHALL BE CONSTRUCTED OF WEATHER RESISTANT MATERIALS.

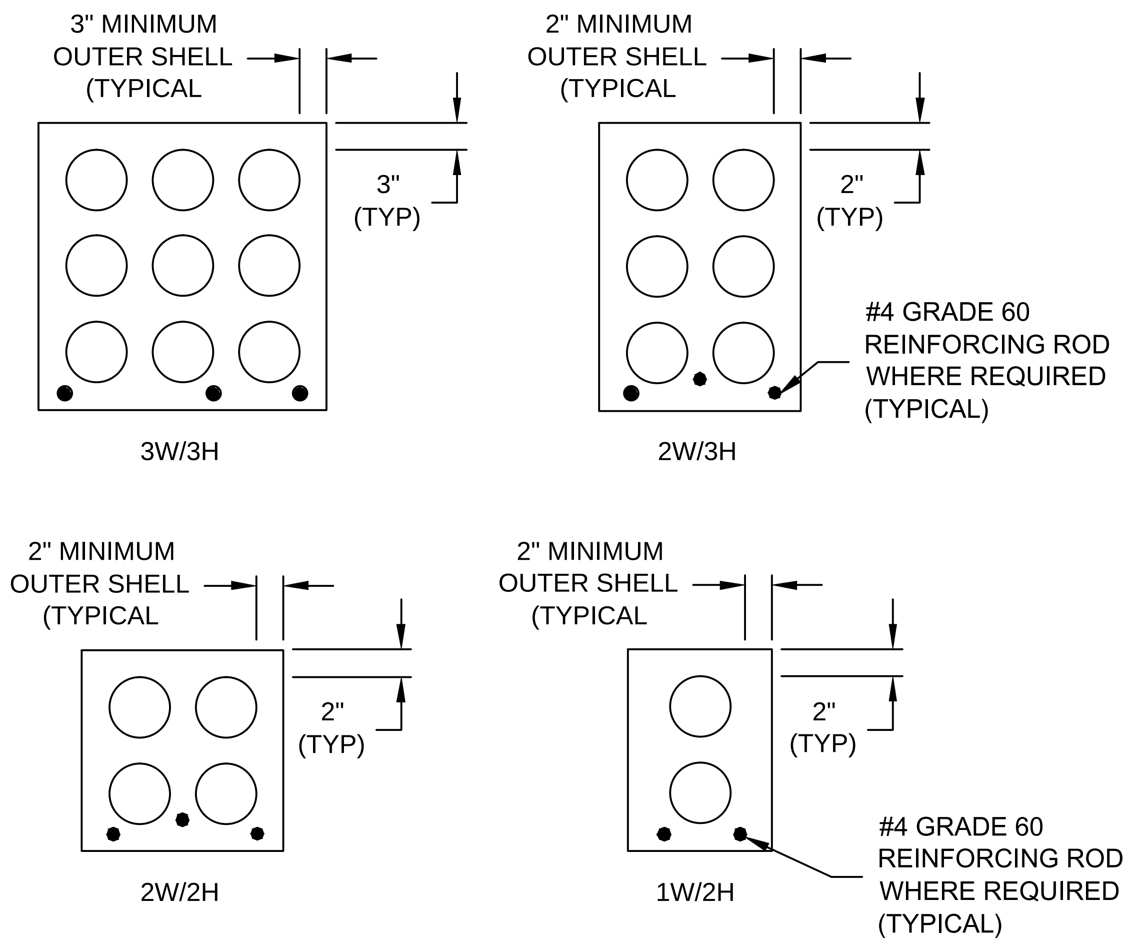
REV. DATE		MERIDIAN METROPOLITAN DISTRICT	D-7
August 2012		CONCRETE WASHOUT SIGN	



TYPICAL CONSTRUCTION ACCESS SIGN

NOTES:
1. SIGN PER EXHIBIT 9 OF THE MERIDIAN VILLAGE DESIGN CONTROL COMMITTEE MANUAL.
2. SIGN SHALL BE CONSTRUCTED OF WEATHER RESISTANT MATERIALS.

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	D-8
August 2012		CONSTRUCTION ACCESS SIGN	



DETAIL - ENCASEMENT,

ENCASED DUCT BANK SECTIONS

REINFORCING OF DUCT BANK

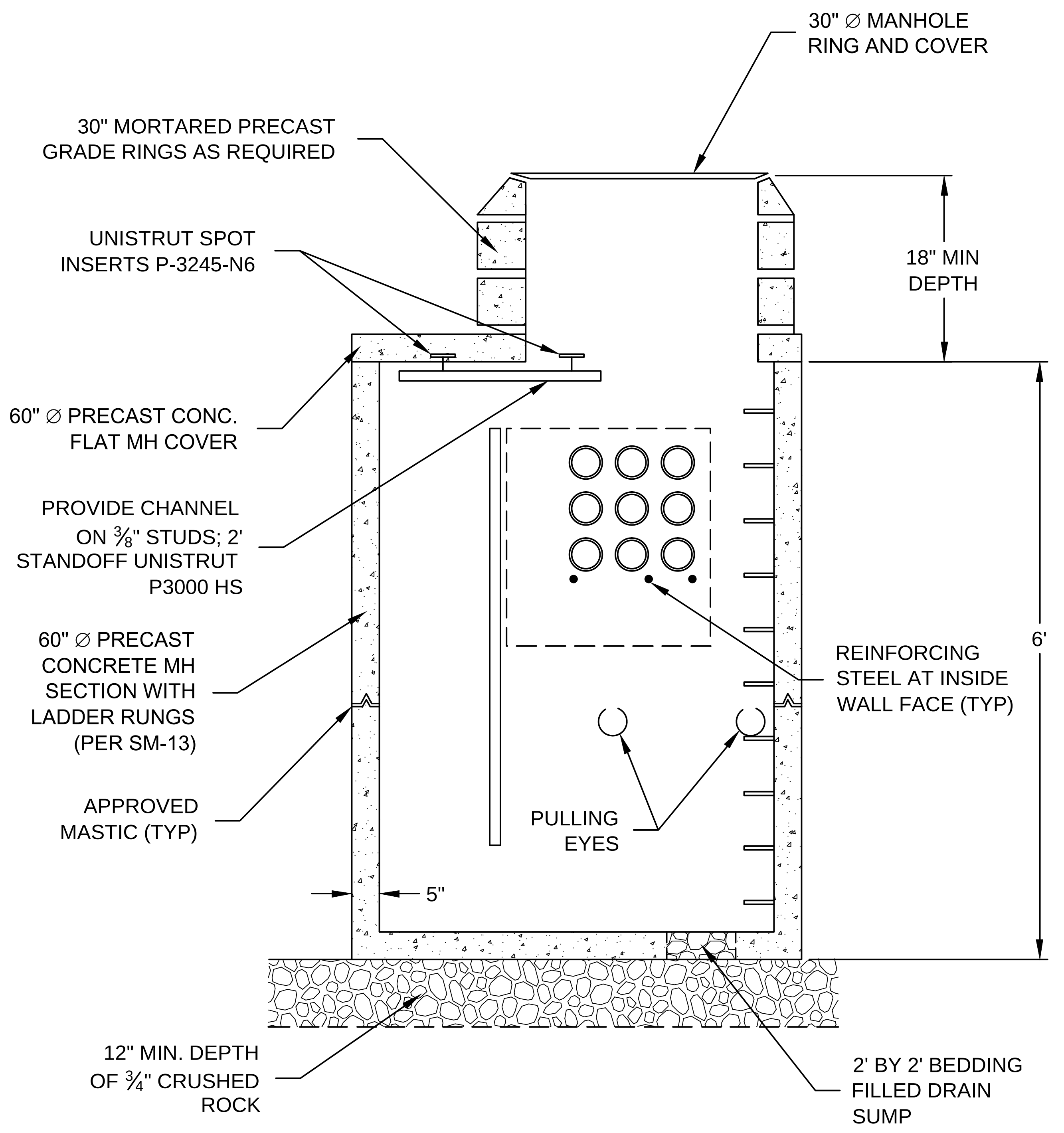
PROVIDE REINFORCING STEEL AT THE FOLLOWING LOCATIONS:

1. CROSSING OF ALL ROADS BETWEEN OUTSIDE EASEMENT LINES.
2. CROSSING OF ALL EXISTING AND PLANNED PIPELINES AND DUCTS, TO 10'-0" OF EITHER SIDE.
3. WITHIN 10'-0" OF WATER VALVES, MANHOLES AND VAULTS.
4. AS DETERMINED IN THE FIELD WHERE DAMAGE BY SETTLING MAY OCCUR.
5. REINFORCING STEEL SHALL BE GR-60.

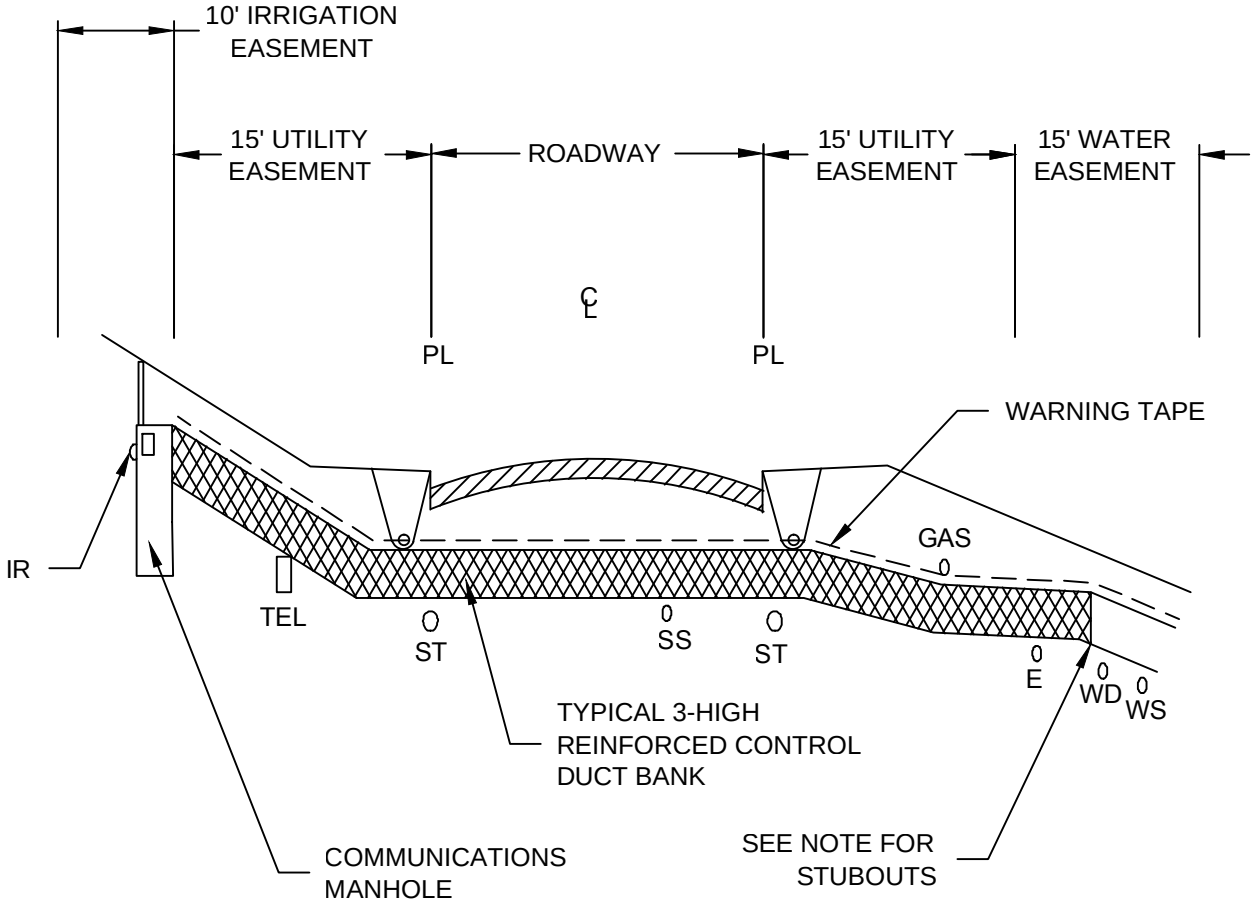
NOTES:

1. CONDUIT SPACING SHALL BE MAINTAINED BY FACTORY MADE DUCT-BANK SPACERS.
2. ALL CONDUIT JOINTS SHALL BE CEMENTED WATERTIGHT.
3. REINFORCING ROD SHALL BE SUPPORTED AWAY FROM EARTH FOR COMPLETE ENCASEMENT.
4. CHANGES IN CONFIGURATION SHALL HAVE ADDITIONAL REINFORCEMENT AND BE APPROVED BY THE MERIDIAN METROPOLITAN DISTRICT PRIOR TO ENCASEMENT.

REV. DATE	MERIDIAN METROPOLITAN DISTRICT	DAS-1
06/12	DUCT ENCASEMENT SECTIONS	



REV. DATE	MERIDIAN METROPOLITAN DISTRICT	DAS-2
06/12	TYPICAL CONTROL CONDUIT MANHOLE	

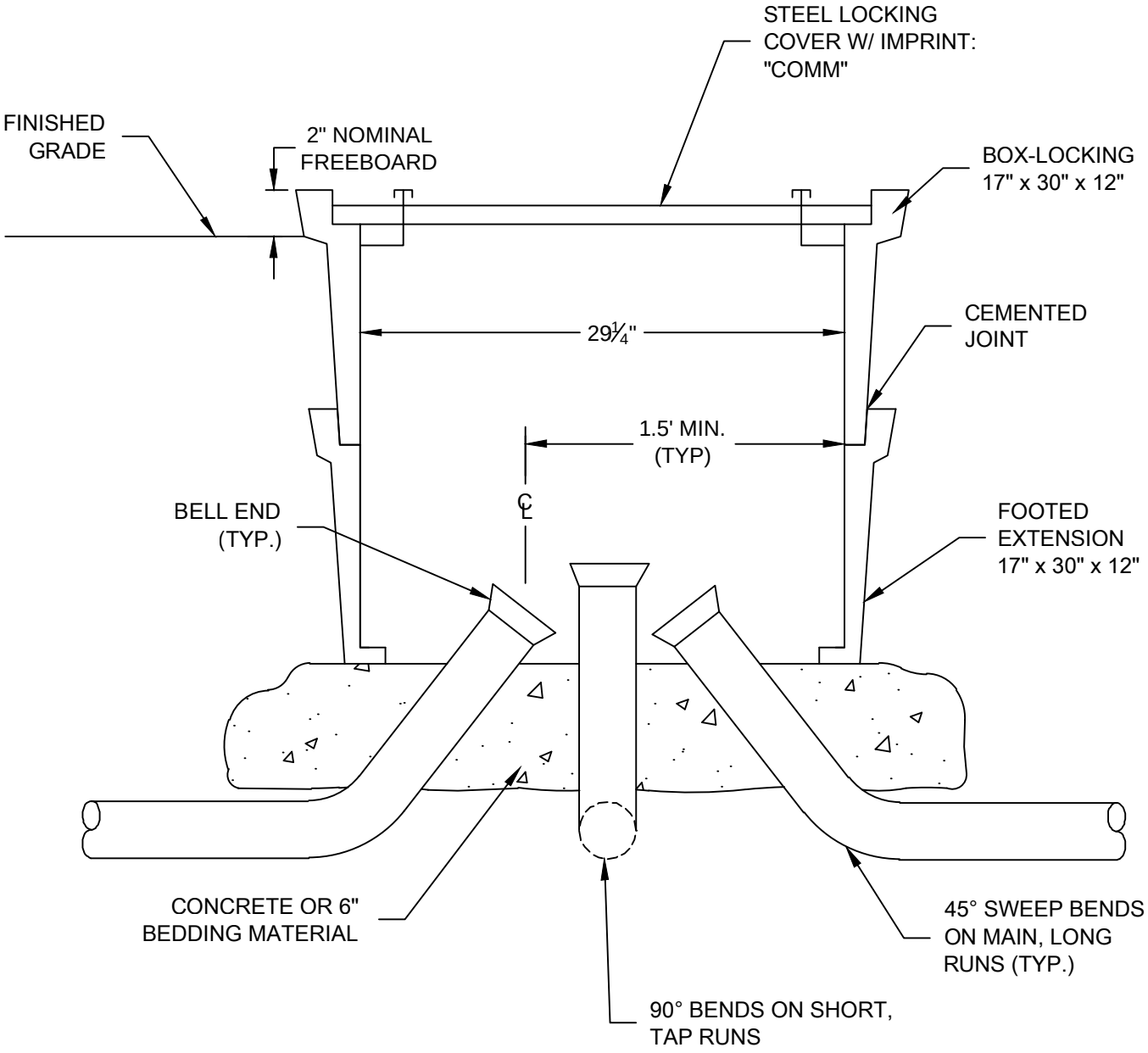


DETAIL - TYPICAL STREET CROSSING SECTION

NOTES:

1. END CONCRETE OF CROSSING STUBS AT WATER EASEMENT AND LEAD WARNING TAPE TO GRADE. EXTEND CONDUIT AND REBAR 1-3 FEET BEYOND CONCRETE.

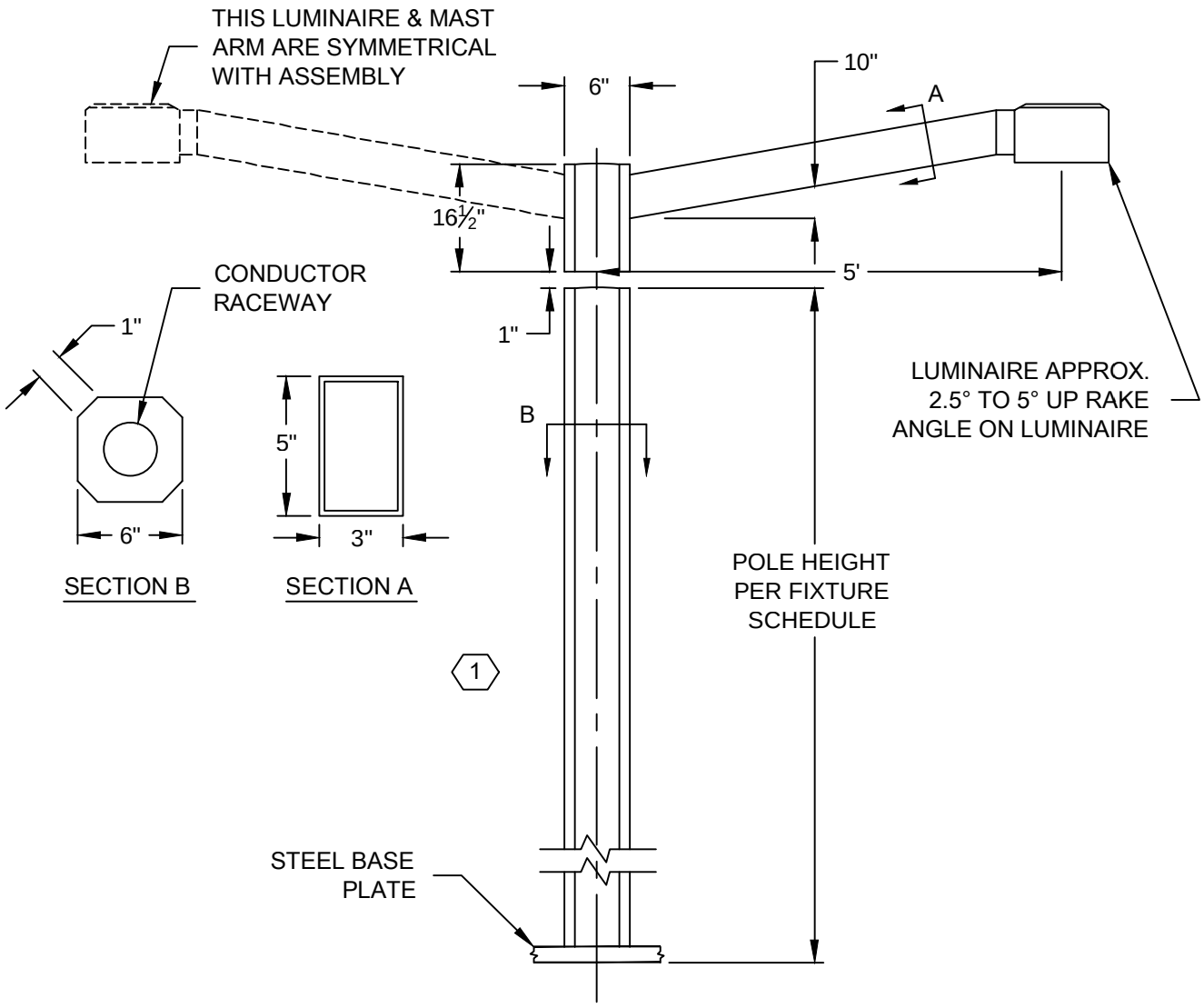
REV. DATE	MERIDIAN METROPOLITAN DISTRICT	DAS-3
06/12	CONTROL CONDUIT TYPICAL STREET CROSSING	



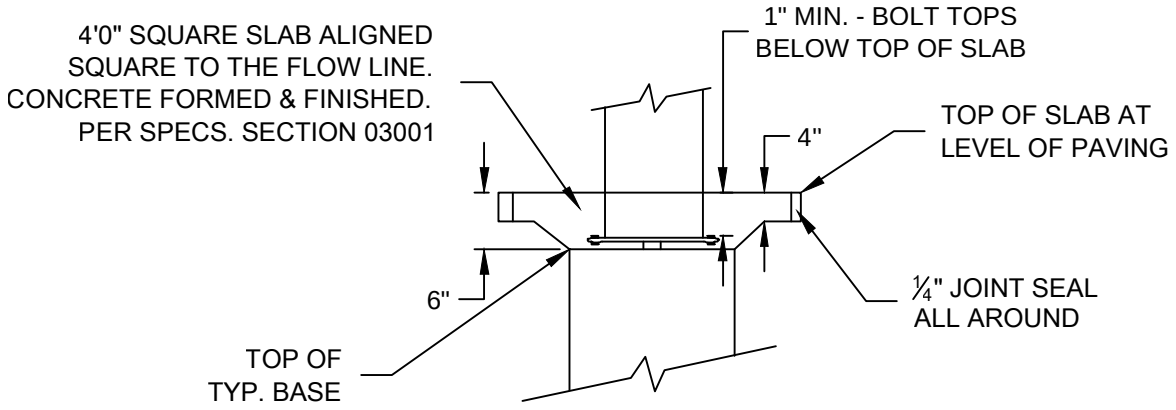
NOTES:

1. ASSEMBLY SHALL BE RATED FOR AASHTO H-10 LOADING. BOX OF REINFORCED PLASTIC MORTAR, CARLON "COM, SOLITE" OR EQUAL.

REV. DATE			
06/12		MERIDIAN METROPOLITAN DISTRICT	DAS-4
		CONTROL CONDUIT PULL BOX ARRANGEMENT	



DETAIL OF LUMINAIRE AND SUPPORT
N.T.S.



SECTION: SLAB FOR BASE
(TYPICAL - FOR PAVED AREAS ONLY)

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	STL-1
06/12		STREET LIGHTING	

CONSTRUCTION NOTES: FOR STREET LIGHT ASSEMBLY ONLY

① THE POLE DIMENSIONS SHOWN ARE FOR A CENTRECOM 25 FOOT POLE. THE ACTUAL POLE DIMENSIONS WILL VARY TO STANDARD POLE DIMENSIONS OF SPECIFIED MANUFACTURER.

② PROVIDE 3 TIES @ 3" ON CENTER @ TOP OF PIER.

③ PRECAST CONCRETE POLE UP TO 30 FT. REFERENCE POLE MANUFACTURER FOR BOLT SIZE, LENGTH, AND LOCATION.

④ PROVIDE 36" - 3 PIER WITH 12 #6 VERTICAL AND #4 TIES @ 18" ON CENTER.

⑤ PROVIDE GROUT CAP TO COVER ALL EXPOSED METAL PARTS .

AESTHETIC SPECIFICATION:

CONCRETE POLES:

- STRENGTH: REFER TO SPECS FOR CALCULATIONS TO BE SUBMITTED.
- MATERIAL: REINFORCED CONCRETE WITH INTERNAL RACEWAY.
- FORM: SQUARE TAPERED WITH 1" BEVELED CORNERS
- MOUNTING: TENON ON TOP OF POLE.
- FINISH: EXPOSED AGGREGATE: PEBBLE TEXTURE, SAND BLASTED OR ACID ETCHED.
- COLOR: AGGREGATE - SONORA GOLD; CONCRETE - BUFF/SAND BEIGE (REF. CENTRECOM 333)
- PROTECTIVE COATING: URETHANE

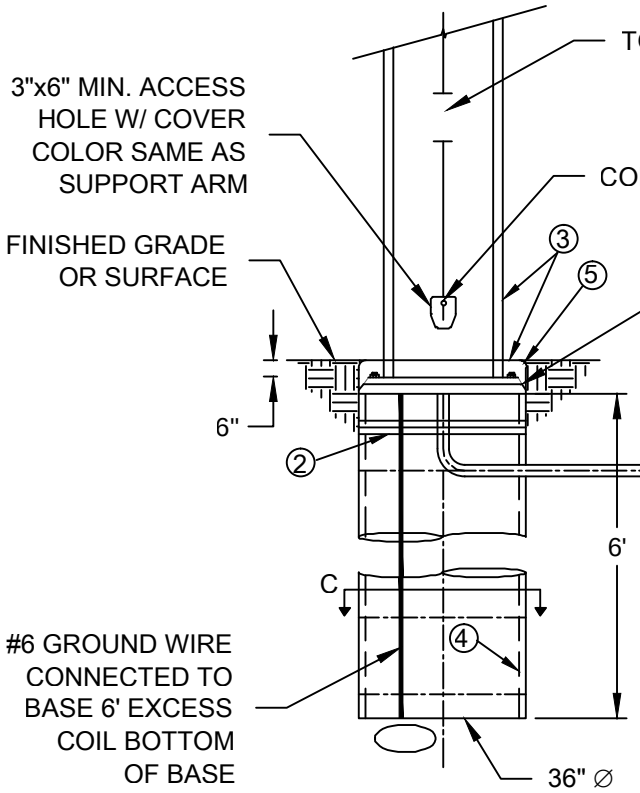
NOTE: ALSO APPLICABLE TO LANDSCAPE POLES FURNISHED.

LUMINAIRE SUPPORT ARM:

- STEEL OR ALUMINUM (RECTANGULAR)
- PRIME PAINTED FINISH: BAKED ON ENAMEL FINISH OR DURANOTIC FINISH.
- COLOR: (LIGHT AMBER BRONZE) SPEC. REF. KAISER ALUMINUM - KAZCOLOR CHART.
- PROTECTIVE FINISH: URETHANE (PAINTED ONLY)

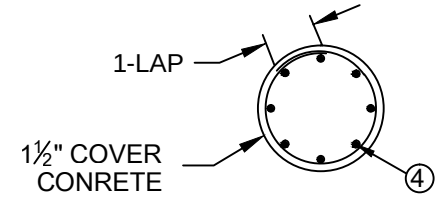
LUMINAIRE:

- SEE FIXTURE SCHEDULE.



POLE BASE (TYPICAL)

2 #10 PLUS GROUND TO UG TAP CONNECTIONS



SECTION C (BASE)

REV. DATE		MERIDIAN METROPOLITAN DISTRICT	STL-2
06/12		STREET LIGHTING	