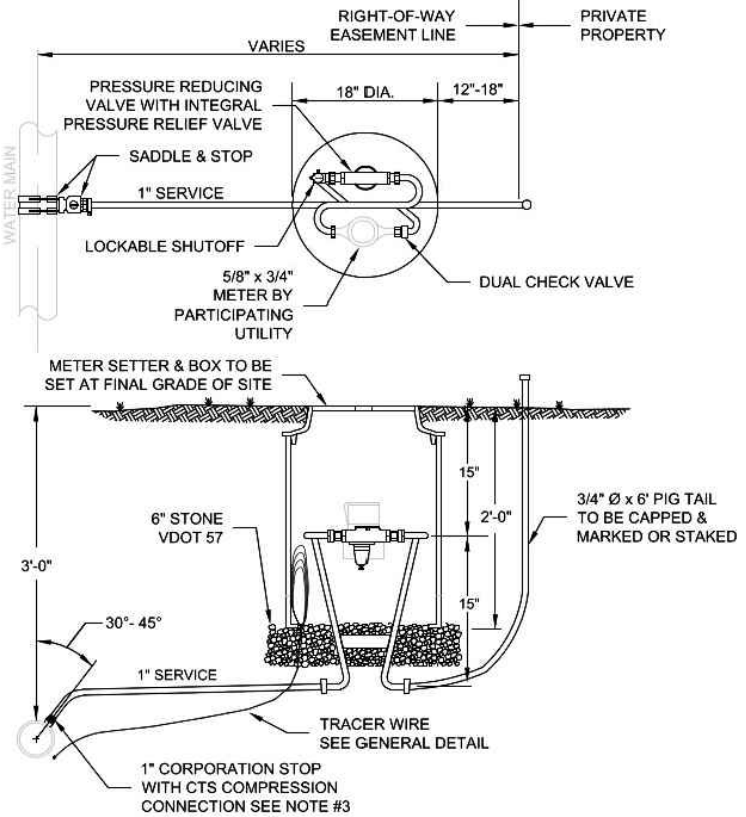


1. TANKER SETTERS TO BE A-Y, MAXIMUM 750-215000033, FORD T80H70-150-11-33 OR APPROVED EQUAL.
2. SADDLES MUST BE USED WITH ALL PLASTIC & DUCTILE IRON PIPE. SERVICE SADDLES SHALL BE USED IN ACCORDANCE WITH WATER DISTRIBUTION PRINCIPLES SPECIFICATION. SERVICE SADDLES FOR PLASTIC PIPE SHALL BE POWERBEL 3417 OR 3412AS, ROMAC 2025, OR 306, OR FORD F2022 OR F2030. FOR DUCTILE IRON PIPE USE THE ABOVE OR POWERBEL 3413, ROMAC 2030 OR FORD METER BOX.
3. CORPORATION STOP SHALL BE FORD FB1000-4-G-NL, MUELLER B-2008 OR APPROVED EQUAL.
4. METER BOX SHALL BE CARBONADO-STATES PLASTIC INC. PLASTIC BOX WITH FORD "A" DOMESTIC SERIES FRAME WITH A NIKOR DOMESTIC 12-25 CX LD WITH SENSUS RECESS AND WWA LOGO, ADA CORRUGATED HOPE BOX WITH FORD "A" DOMESTIC SERIES FRAME WITH A NIKOR DOMESTIC 12-25 CX LD WITH SENSUS RECESS AND WWA LOGO OR APPROVED EQUAL. METER BOX SHALL NOT BE PLACED IN AREAS SUBJECT TO VEHICULAR TRAFFIC. IF TRAFFIC BEARING BOX IS REQUIRED, DESIGN ENGINEER SHALL CONSULT WITH PARTICIPATING UTILITY TO DETERMINE SITE SPECIFIC REQUIREMENTS.
5. SERVICE SHALL BE "N" TYPE COPPER OR COPPER TUBE SIZE POLYETHYLENE (PE 471), 300R (200 psi).
6. PRESSURE REDUCING VALVE WITH INTEGRAL PRESSURE RELIEF VALVE SHALL BE WILKINS WILKEL OR APPROVED EQUAL. TO BE SUPPLIED AND INSTALLED BY CONTRACTOR UPSTREAM OF METER.
7. THIS CONFIGURATION IS REQUIRED WHEN THE WATER PRESSURE AT THE WATER MAIN EXCEEDS 120 PSI.
8. WHENEVER SIDEWALK EXISTS OR IS PROPOSED, MODIFY METER LOCATION AS DIRECTED.



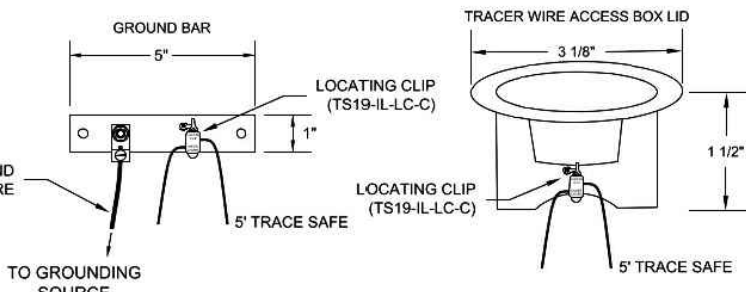
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

SINGLE RESIDENTIAL
WATER SERVICE FOR HIGH PRESSURE
(LINE PRESSURE OVER 120 PSI)

09/07/17

W-3

1. TRACER WIRES SHALL BE INSTALLED USING MANHOLES, TRACER WIRE ACCESS BOXES, VALVE BOXES OR VAULTS, WATER METERS AND FIRE HYDRANTS AS ACCESS POINTS.
2. FOR WATER AND SEWER INSTALLED BY OPEN TRENCHING, HORIZONTAL, DIRECTIONAL DRILLING, OR PIPE BURNING, TRACER WIRE SHALL BE WIPPED TRACER SAFE WATER BLOCKING CONNECTORS OR APPROVED EQUAL.
3. SPLICES SHALL ONLY BE MADE WITH GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH A WOVEN POLYESTER FIBER CORE (SUCH AS WIPPED TRACER SAFE WATER BLOCKING CONNECTORS OR APPROVED EQUAL). SPLICES SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. TRACER WIRE SHALL BE RESPONSIBLE FOR INSURING CONTINUITY AT ALL SPICE LOCATIONS.
4. WHENEVER PIPE IS INSTALLED WITHOUT STIFF, CANNED PIPE, SUCH AS AIRCRAFTALLY DRILLED CROSSINGS, AND CONNECTED TO DUCTILE IRON PIPE ON EACH END, TRACER WIRE SHALL BE INSTALLED ALONG FULL LENGTH OF PIPE WITH AN ACCESS POINT INSTALLED AT EACH HOPE/DUCTILE IRON TRANSITION. TRACER WIRE SHALL BE CONNECTED TO THE ACCESS POINT IN ACCORDANCE WITH THIS DETAIL. ANY TRANSITION FROM DUCTILE IRON MAIN TO NON-DUCTILE IRON MAIN SHALL HAVE AN ACCESS POINT TO BEGIN TRACER WIRE.
5. AS-BUILT SHALL SHOW TRACER WIRE LOCATION AND ACCESS POINTS, ALONG WITH BUTT SPICE LOCATIONS.
6. THE TRACER WIRE SHALL BE PLACED ALONG THE LOWER QUADRANT OF THE PIPE. THE WIRE SHALL NOT TOUCH THE PIPE, BUT SHALL BE A MINIMUM OF 1" FROM THE PIPE. NON-METALLIC SPACERS MAY BE USED TO MAINTAIN SET DISTANCE FROM THE PIPE.
7. WIRE SHALL BE BROUGHT TO THE SURFACE EVERY FIVE FEET AND PLACED IN A WATER METER BOX OR A DRAINAGE WATER SOLUTIONS, INC. OR APPROVED EQUAL ALL CAST IRON TRACER WIRE ACCESS BOX.
8. THE TRACER WIRE WILL BE TESTED BY THE PARTICIPATING UTILITY AS PART OF THE PROJECT'S FINAL ACCEPTANCE. CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING ALL CONTINUITY OF TRACER WIRE.
9. THE GROUND WIRE SHALL BE #16 AWG COPPER WIRE AND SHALL BE OF ADEQUATE LENGTH TO EXTEND A MINIMUM OF FIVE FEET BEYOND THE TOP OF THE STRUCTURE. THE END OF THE GROUND WIRE SHALL CONNECT TO THE GROUND BAR OR LD TERMINAL, USING A BURNED CABLE MECHANICAL TERMINAL LUG.
10. GROUND ROD SHALL BE INSTALLED AT EACH LOCATION WHERE GROUND WIRE SURFACES AND CONNECTS TO GROUND BAR. GROUND ROD SHALL BE COPPER COATED WITH A MINIMUM DIAMETER OF 5/8" AND SHALL BE BURIED A MINIMUM OF FOUR FEET INTO THE GROUND.
11. THE GROUND BAR SHALL BE STAINLESS STEEL AND SHALL BE ATTACHED USING 98 1/2" X 1/2" SS HEX TAPCON. THE FOLLOWING SHALL BE INSTALLED IN 16 FOUR CENTER HOLES 10/32 DIA. HOLE, 10/32 DIA. HOLE, AND 10/32 DIA. HOLE. THE FOURTH HOLE SHALL HAVE A BURNED CABLE MECHANICAL TERMINAL LUG FOR THE #16 AWG GROUND WIRE. THE ASSEMBLY CAN BE ACQUIRED AT RICH INDUSTRIAL SUPPLY, INC. (846-504-0001), CLAMP #C11, THE END OF THE TRACER WIRE SHALL BE PLACED IN THE GROUND BAR AS SHOWN BELOW.
12. IF USING TRACER WIRE ACCESS BOX AS ACCESS POINT, GROUND BAR WILL NOT BE REQUIRED. WIRES SHALL BE CONNECTED AS SHOWN BELOW. TRACER WIRE SHALL BE OF ADEQUATE LENGTH TO EXTEND FIVE (5) FEET ABOVE THE TOP OF ACCESS BOX.
13. TWO WIPES OF TRACER WIRE SHALL BE WIPPED TOGETHER AROUND BASE OF HYDRANT. WIRE SHALL NOT BE LEFT IN A WAY THAT WOULD INTERFERE WITH REMOVAL OF HYDRANT.
14. WHEN USING ALL DUCTILE IRON, TRACER WIRE FOR SERVICES SHALL BE 12 AWG COPPER TRACER WIRE. TRACER WIRE SHALL HAVE BARE WIRE CONTACT TO DUCTILE MAIN.



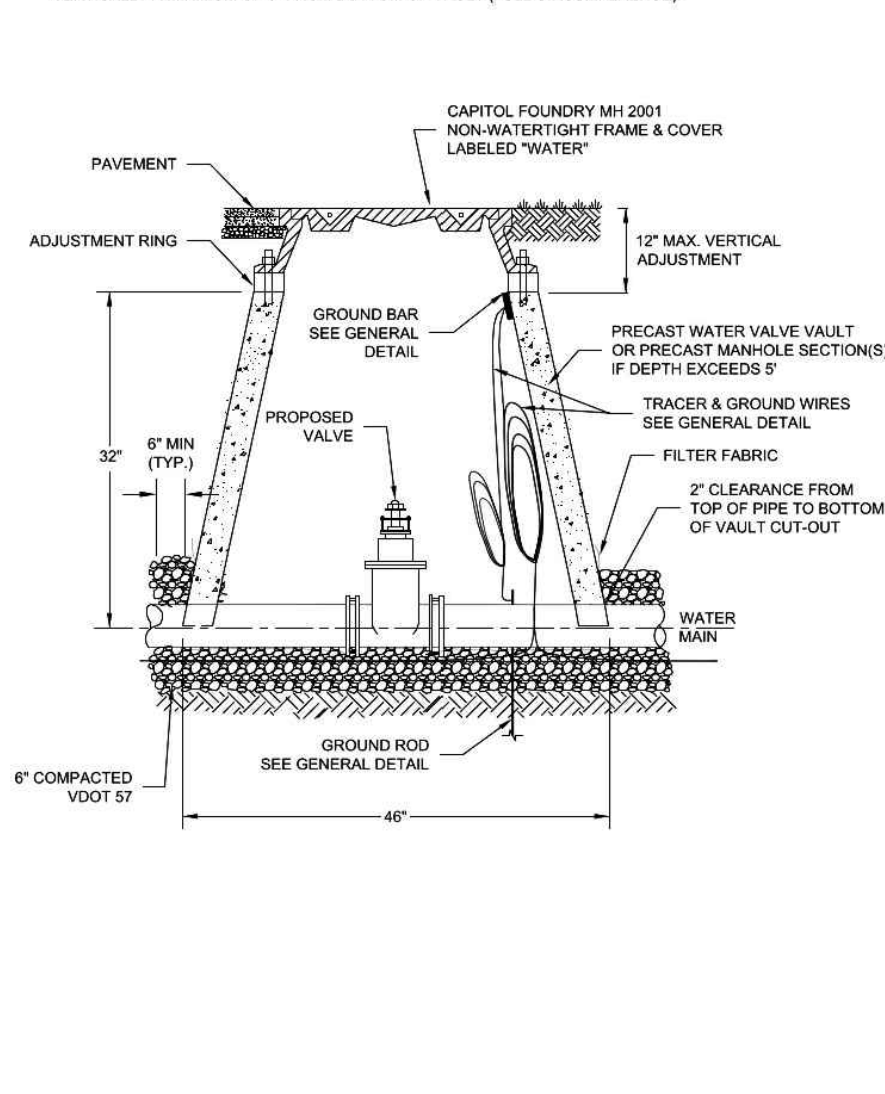
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

TRACER WIRE
FOR NON-METALLIC
PRESSURE PIPE

09/09/16

G-4

1. FILTER FABRIC TO BE INSTALLED BETWEEN BOTTOM OF PIPE AND STONE BEDDING. FABRIC TO EXTEND VERTICALLY A MINIMUM OF 6" FROM BOTTOM OF VAULT (FULL CIRCUMFERENCE).



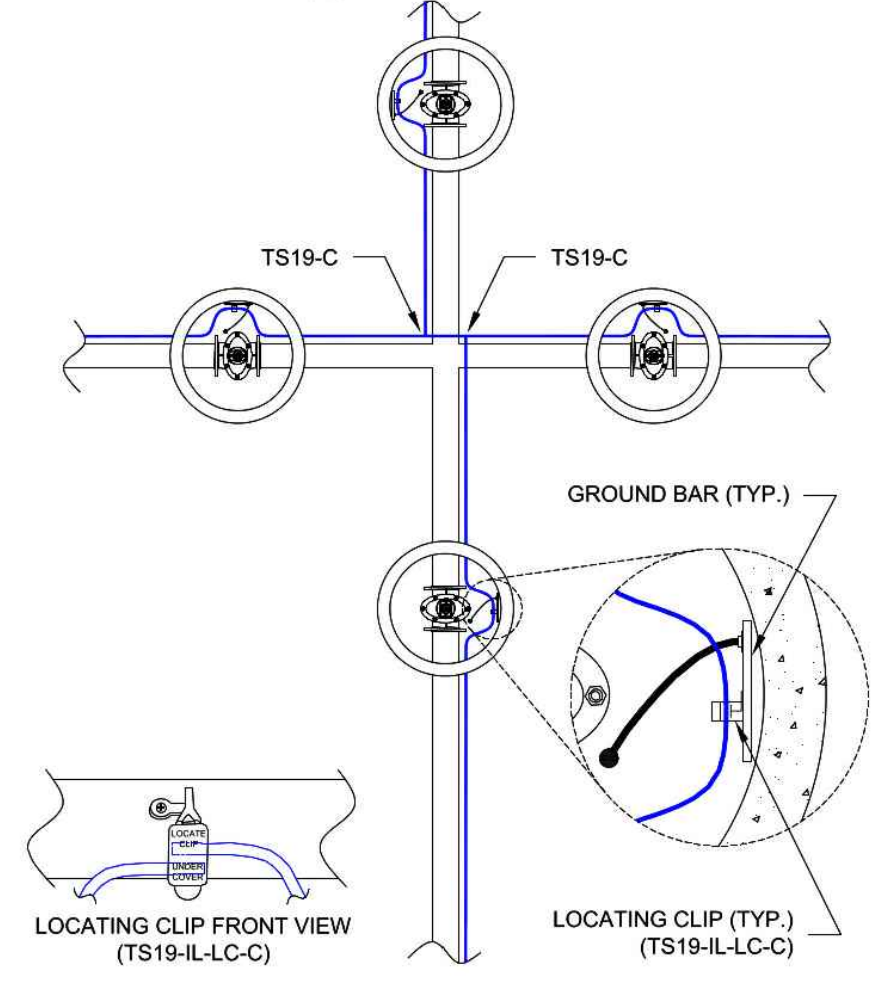
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

WATER LINE VALVE
& VAULT

01/01/14

W-9

- BLUE = TRACE SAFE TRACER WIRE
- BLACK = GROUND WIRE & GROUND BAR
- TS19-IL-LC-C = TRACER SAFE LOCATING CLIP AT GROUND BAR
- TS19-C = SERVICE LATERAL TRACE SAFE CONNECTOR
- GROUND WIRE = #6 AWG COPPER WIRE
- NOTE: LEAVE FIVE FEET (5') OF EXCESS TRACER WIRE COILED UP IN VAULT



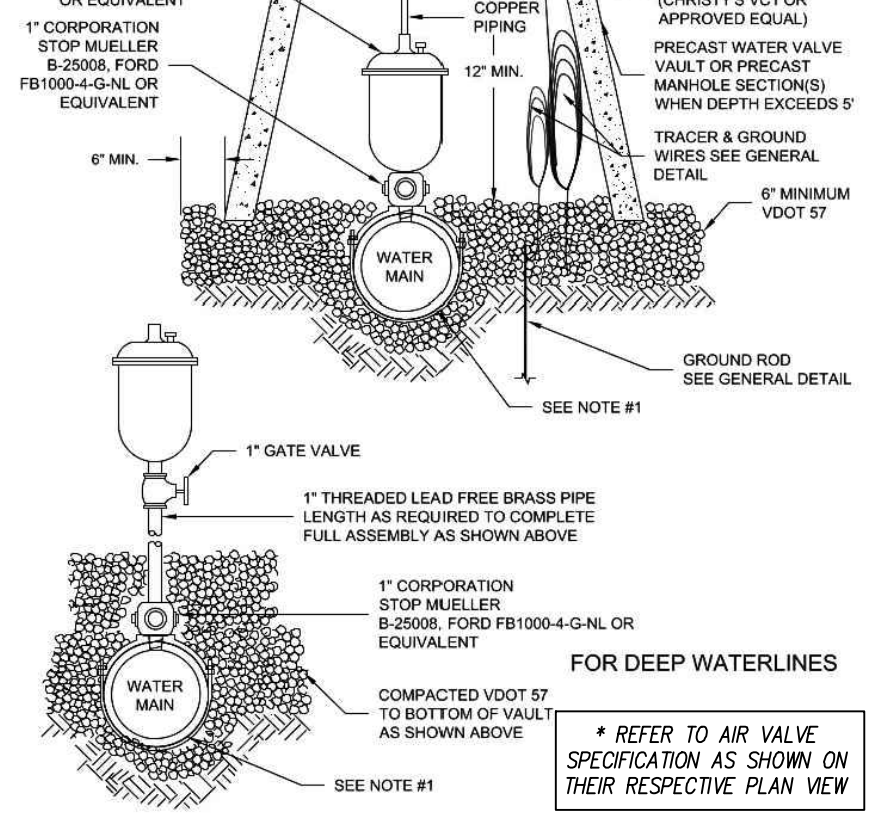
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

TRACER WIRE SAMPLE
TEE/CROSS INTERSECTION

09/09/16

G-4A

1. SEE RESIDENTIAL WATER SERVICE DETAIL FOR SADDLE REQUIREMENTS.
2. LARGER COMBINATION VALVE MAY BE REQUIRED DEPENDING ON APPLICATION.



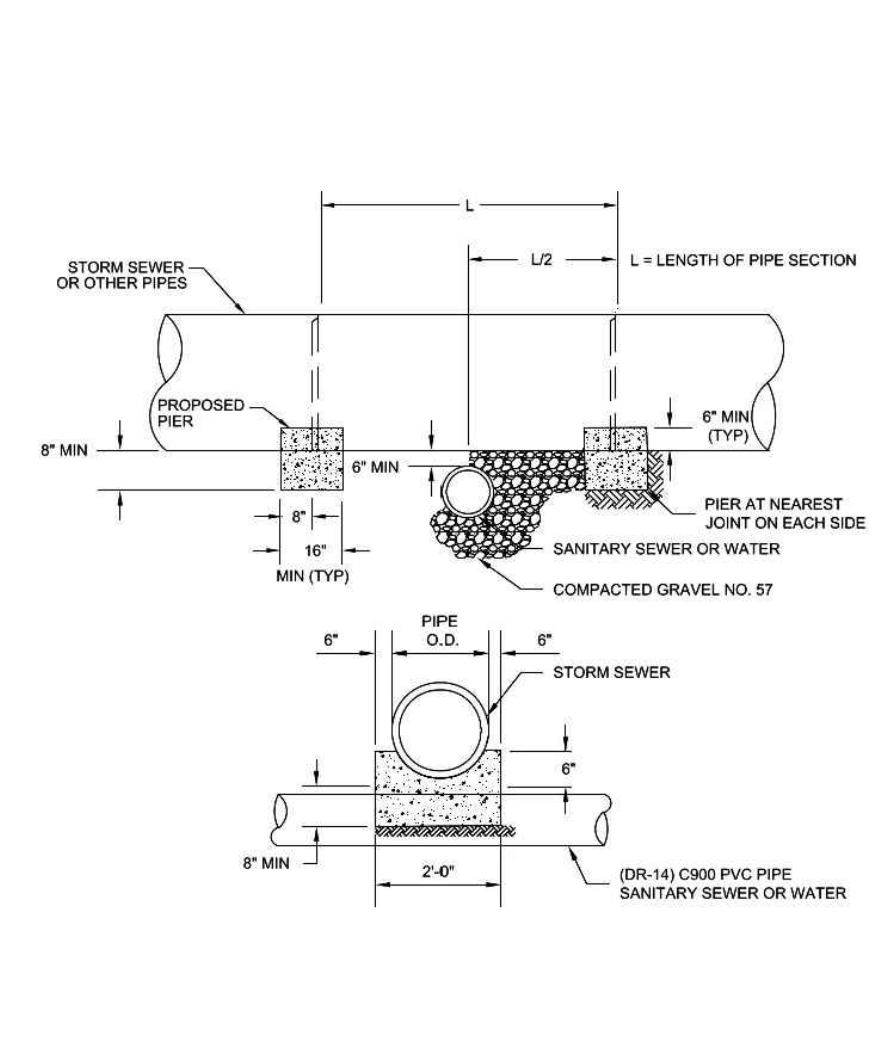
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

COMBINATION AIR VALVE ASSEMBLY

02/10/15

W-13

1. PIER REQUIRED WHEN STORM DRAIN OR OTHER PIPES CROSSES OVER THE OTHER UTILITY WITH A VERTICAL CLEARANCE OF LESS THAN 18".
2. PIER TO BE BUILT ON UNDISTURBED EARTH.
3. CONCRETE TO BE READY MIX, CLASS AA.



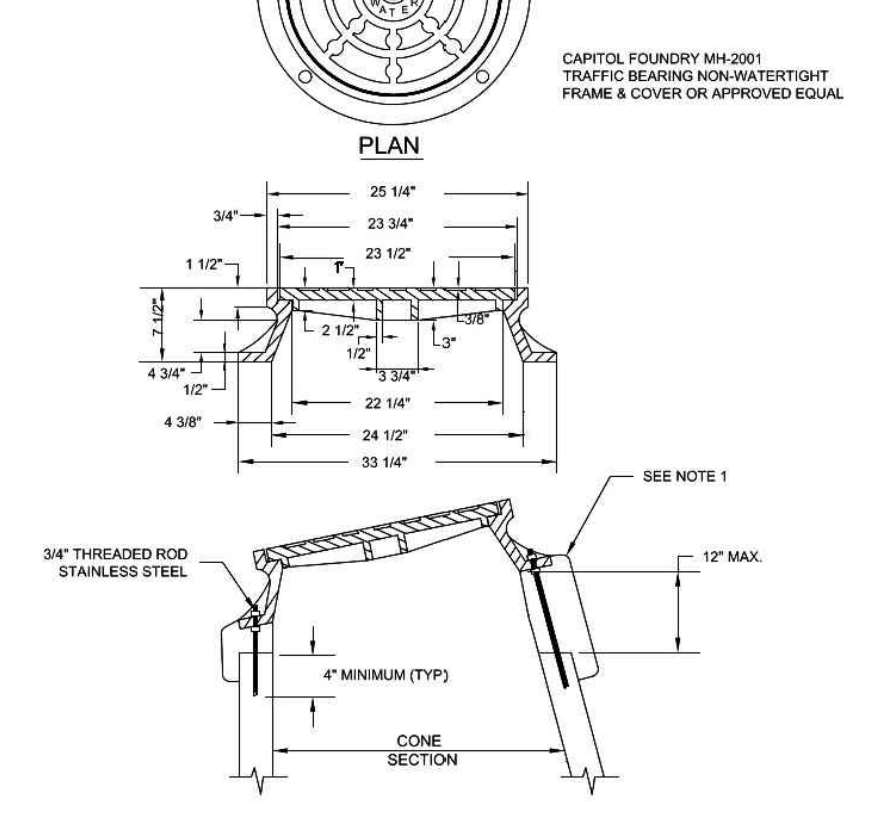
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

CONCRETE PIER

01/01/14

G-8

1. USE MODERATELY STIFF MIX OF NON SHRINK GROUT, SAND, AND 1/2" AND LESS DIAMETER GRAVEL WITH 28 DAYS STRENGTH AT MINIMUM 3,000 PSI.
2. MIX IS TO BE FORCED INTO ALL GROOVES AND UNDER FLANGE OF FRAME AND LEFT AT OR ABOVE TOP OF FLANGE.
3. DO NOT BACKFILL AROUND FRAME AND COVER FOR 48 HOURS AFTER CONCRETE IS PLACED. THE USE OF HIGH EARLY STRENGTH CEMENT WOULD REDUCE TIME TO 24 HRS.)
4. RESTRICT TRAFFIC LOAD FOR A MINIMUM OF 24 HOURS.



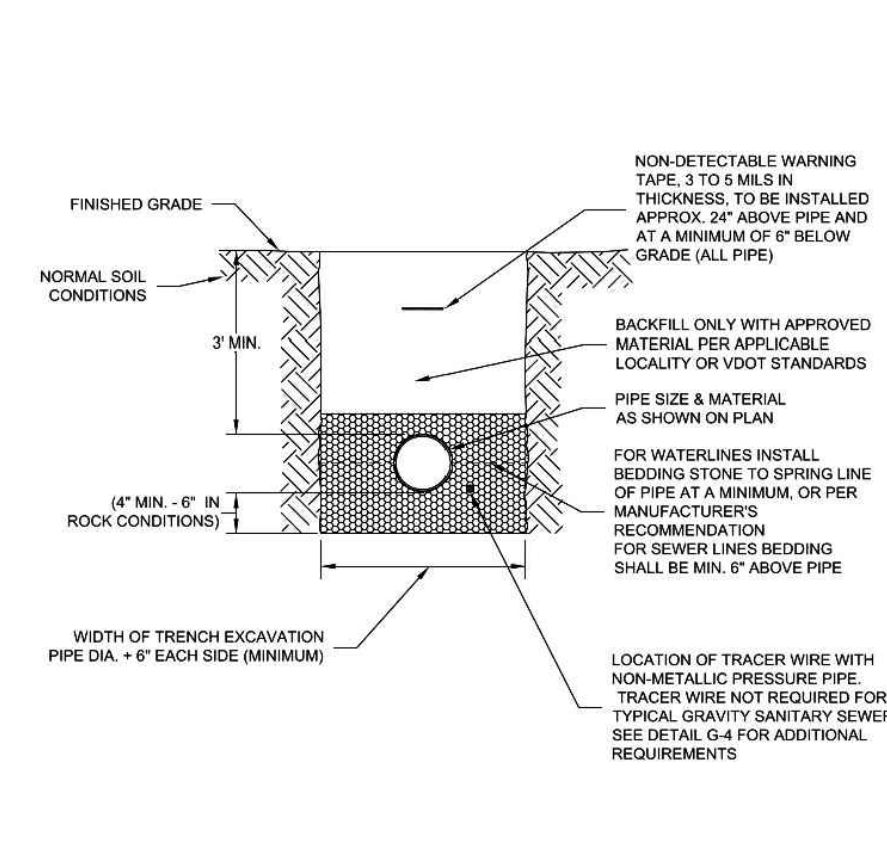
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

VAULT FRAME
AND COVER

01/01/14

W-16

1. BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THIS DETAIL AND MANUFACTURER'S RECOMMENDATION.
2. ALL PVC PIPE SHALL BE BEDDED IN COMPACTED VDOT #57 OR #68 STONE, OR CRUSHED RUN, IN AREAS SUBJECT TO VEHICULAR TRAFFIC. BEDDING STONE AND FILL SHALL BE PLACED IN 6" LIFTS FROM BOTTOM OF TRENCH TO 1" ABOVE THE PIPE AND THE REMAINING SHALL BE PLACED IN 10" LIFTS AND SHALL BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 1557.
3. BEDDING REQUIREMENTS FOR DUCTILE IRON WATER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.
4. ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 2, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN TRENCHING AND SHORING".
5. THE TRACER WIRE SHALL BE PLACED ALONG THE LOWER QUADRANT OF THE PIPE. THE WIRE SHALL NOT TOUCH THE PIPE, BUT SHALL BE A MAXIMUM OF 6" FROM THE PIPE. NON-METALLIC SPACERS MAY BE USED TO MAINTAIN A SET DISTANCE FROM THE UTILITY.



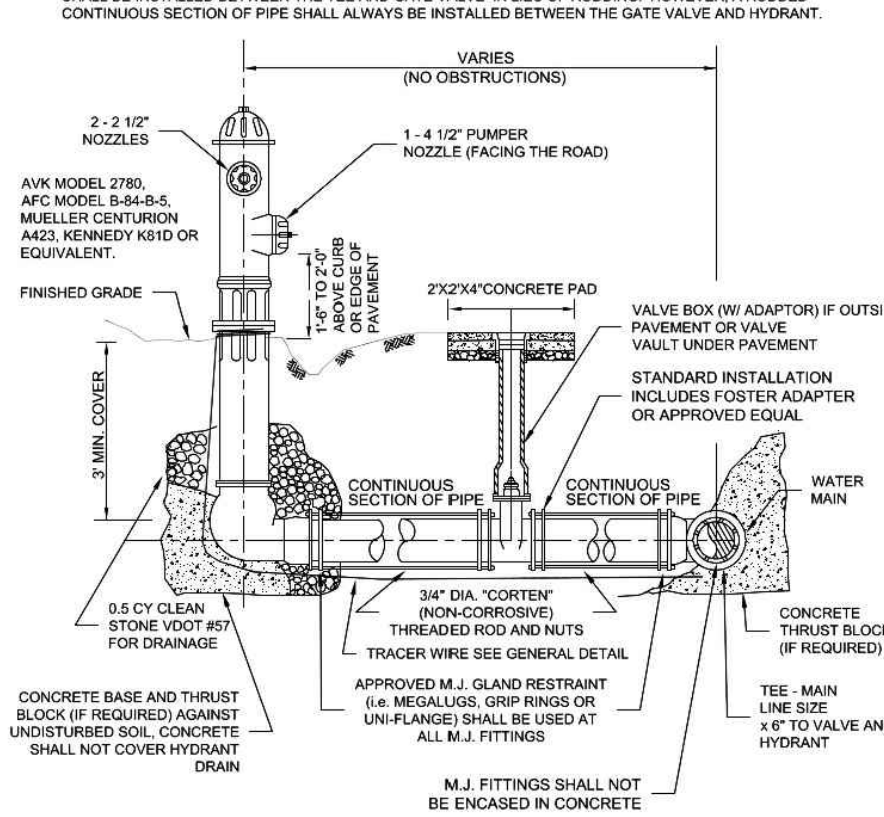
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

BEDDING AND BACKFILL
OUTSIDE OF PAVED AREAS

08/01/15

G-11

1. PUBLIC HYDRANTS SHALL BE PAINTED SILVER WITH AN OIL-BASED PAINT. PRIVATE HYDRANTS SHALL ALSO BE PAINTED SILVER WITH AN OIL-BASED PAINT UNLESS OTHERWISE SPECIFIED BY THE JURISDICTIONAL FIRE AGENCY.
2. FIRE HYDRANT SHALL BE INSTALLED 2 MIN. AND 4 MAX. FROM BACK OF CURB OR 8 MIN. AND 12 MAX. FROM EDGE OF PAVEMENT WHEN CURB IS NOT PRESENT. FIRE HYDRANT TO BE INSTALLED WITHIN RIGHT-OF-WAY OR EASEMENT LINE.
3. AREA AROUND HYDRANT AT A RADIUS OF 4' TO BE LEVEL AND UNOBSTRUCTED.
4. WATERPROOF BAGS OR OUT OF SERVICE RINGS SHALL BE PLACED OVER ALL NEWLY INSTALLED FIRE HYDRANTS.
5. HYDRANT ASSEMBLIES SHALL BE RODDED AND RESTRAINED WITH APPROVED M.J. GLAND RESTRAINTS. HIGH PRESSURE (OVER 150 PSI) ALSO REQUIRES CONCRETE THRUST BLOCKS AS SHOWN BELOW.
6. IF DURING CONSTRUCTION THE SEASONAL WATER LEVEL IS NOTED TO BE ABOVE THE DRAIN OUTLETS OF THE PROPOSED HYDRANT, THE PARTICIPATING UTILITY WILL BE NOTIFIED IMMEDIATELY SO THAT THE HYDRANT CAN BE RELOCATED TO A SATISFACTORY LOCATION, LIMITED, ON THE DRAIN HOLE FILLING.
7. TWO WIPES OF TRACER WIRE SHALL BE WIPPED AROUND BASE OF HYDRANT.
8. APPROVED MODELS - A/W MODEL 2760, A/C MODEL 8-84-S, MUELLER CENTERHON A62, KENNEDY K810 OR EQUIVALENT.
9. WHERE HYDRANT LATERAL(S) IS APPROVED BY THE PARTICIPATING UTILITY TO BE LONGER IN LENGTH, MAKING THE CONTINUOUS SECTION OF PIPE ON EACH SIDE OF THE GATE VALVE UNDESIRABLE. RESTRAINED PIPE JOINTS SHALL BE INSTALLED BETWEEN THE TEE AND GATE VALVE. IN LIEU OF BEDDING, TOWERS, A ROAD, CONTINUOUS SECTION OF PIPE SHALL ALWAYS BE INSTALLED BETWEEN THE GATE VALVE AND HYDRANT.

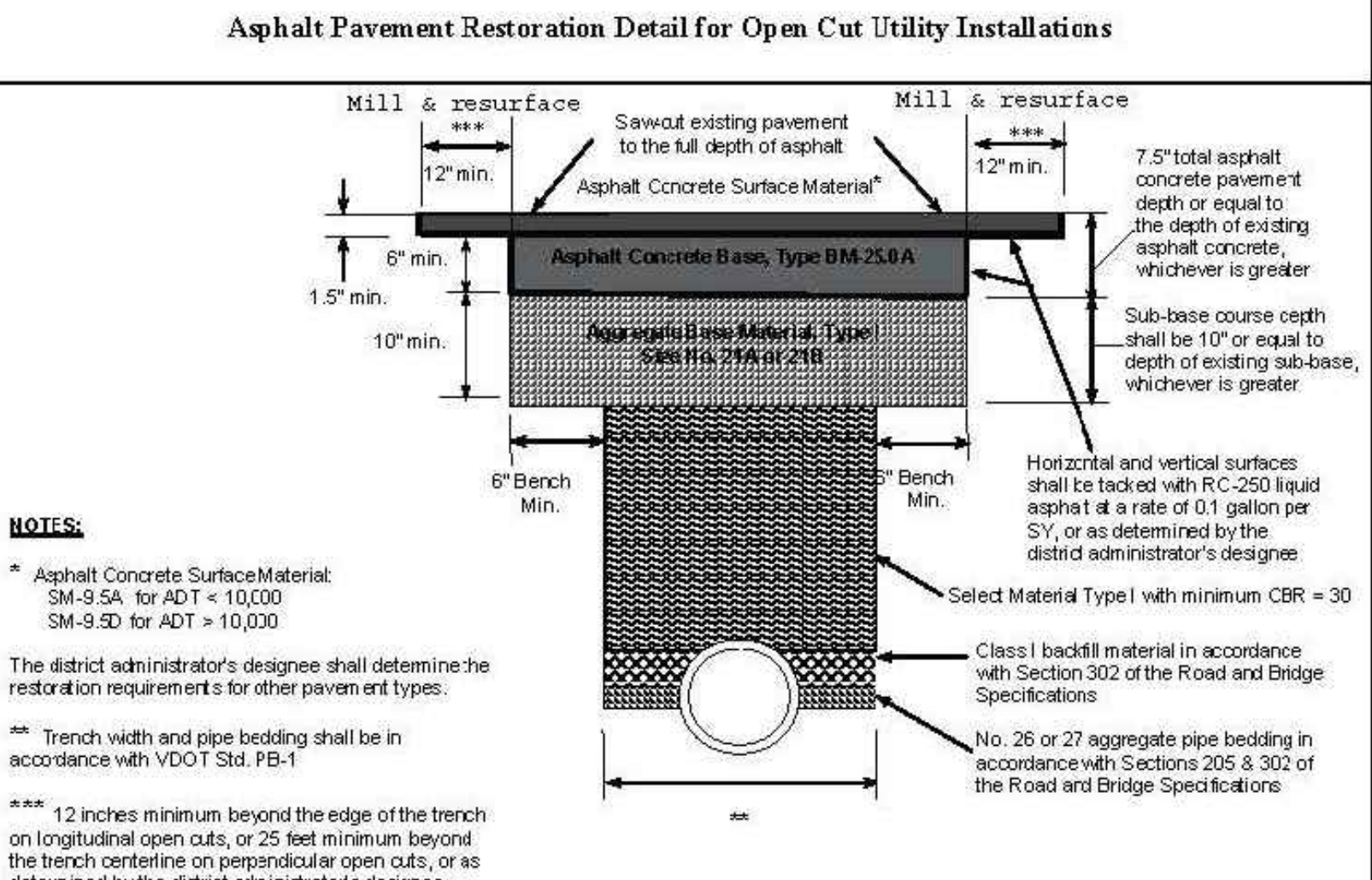


WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

FIRE HYDRANT
ASSEMBLY

02/10/15

W-17

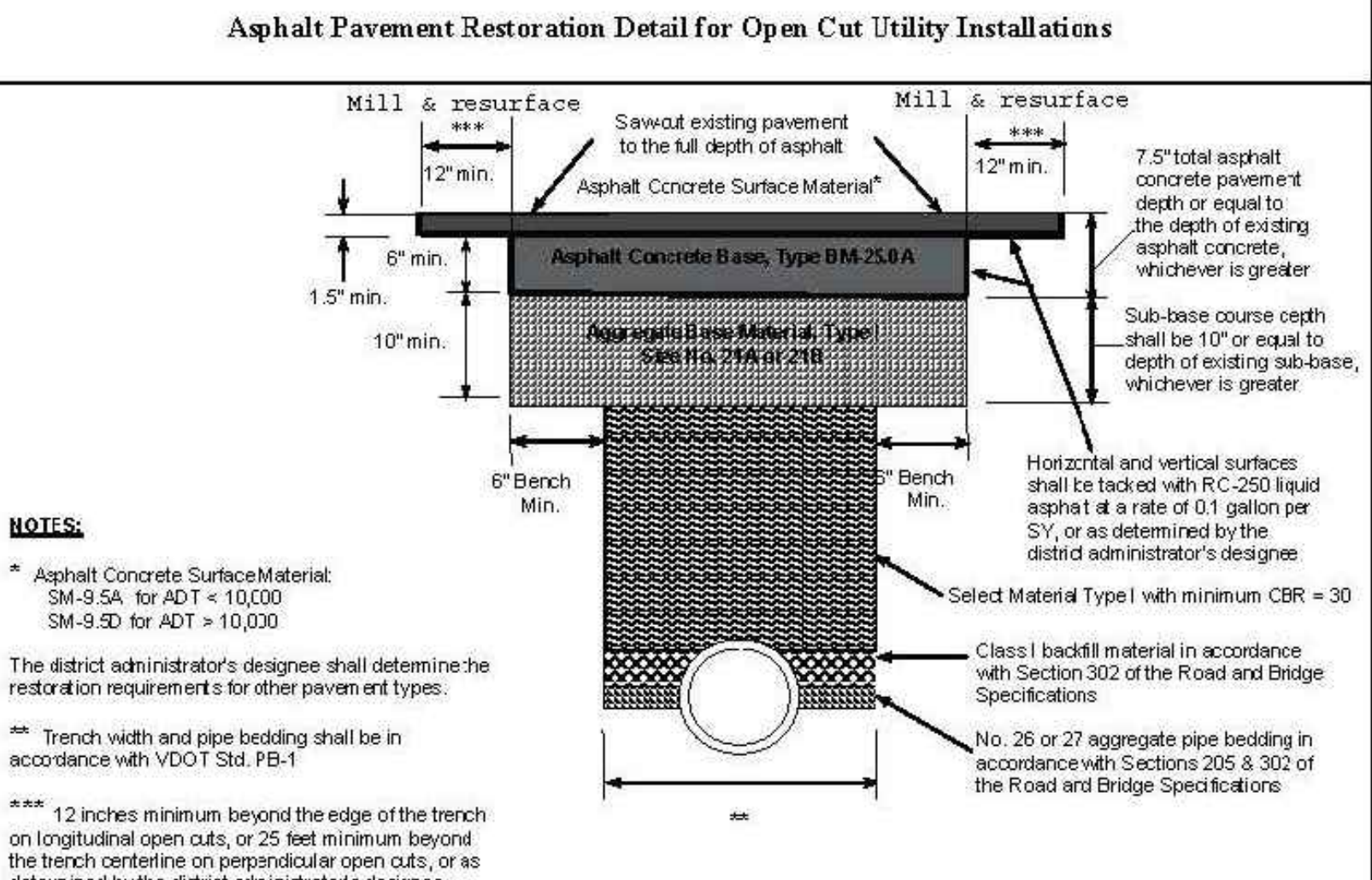
LUF-OC
Open-Cut Pavement Restoration Requirements

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

THRUST BLOCK
REQUIREMENTS

02/10/15

W-18



WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

THRUST BLOCK
REQUIREMENTS

02/10/15

W-18