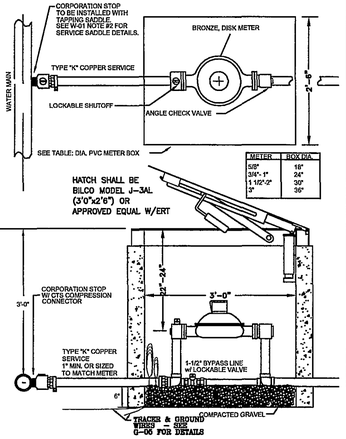
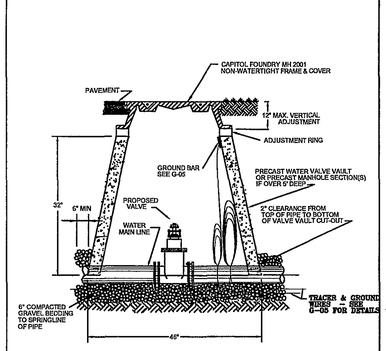
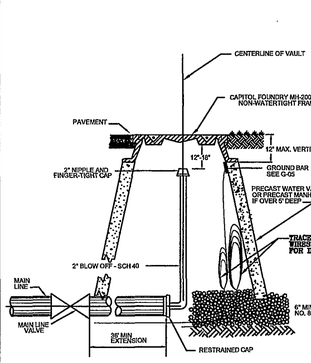
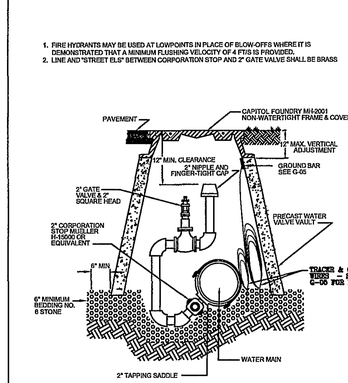
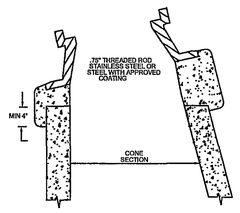






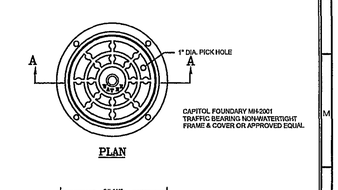
1. FIRE HYDRANTS MAY BE USED AT LOWPOINTS IN PLACE OF BLOW-OFFS WHERE IT IS DEMONSTRATED THAT A MINIMUM FLUSHING VELOCITY OF 4 FT/S IS PROVIDED.
2. LINE AND "STREET ELS" BETWEEN CORPORATION STOP AND 2" GATE VALVE SHALL BE BRASS





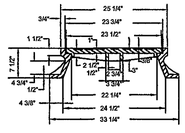
SECTION

NOTE:
1. USE MODERATELY STIFF MIX OF NON-SHRINK CEMENT, NON-CHLORIDE ACCELERATED GRAVEL MIX, 28 DAYS, STRENGTH AT 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. MAX. OF 4 BRICK OR CONCRETE BLOCKS TO BE USED FOR ADJUSTMENT.
4. CURB BOX AND ROLL AROUND FRAME AND COVER, FOR 48 HOURS AFTER CON. IS PLACED. THE USE OF HIGHEARLY STRENGTH CONCRETE WOULD REDUCE TIME TO (24HRS).
5. RESTRICT TRAFFIC LOAD FOR MIN. 24 HOURS.



CAPITOL FOUNDARY MH-2001 TRAFFIC BEARING NON-WATERTIGHT FRAME & COVER OR APPROVED EQUAL.

PLAN



COMMONWEALTH OF VIRGINIA
ROGER STURGILL
Lic. No. 033058
12/10/08
PROFESSIONAL ENGINEER

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ROANOKE ORAL SURGERY

W.V.W.A. DETAILS

HOLLINS DISTRICT
ROANOKE COUNTY, VIRGINIA

DRAWN BY: CPB
DESIGNED BY: CPB
CHECKED BY: SMH
DATE: 10-14-2008
REVISIONS:
11-19-2008
12-10-2008

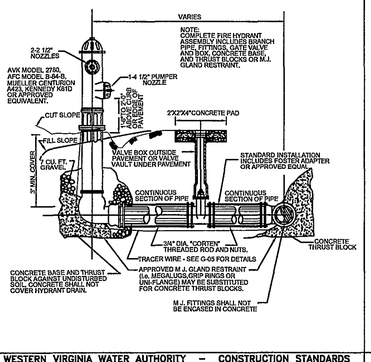
SCALE: N/A
SHEET NO.
C-9
JOB NO.
R0800339.00

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

REVISION	DATE
	07/01/04
	03/01/06

COMMERICAL WATER SERVICE — W-05

NOTES.
1. PUBLIC HYDRANTS SHALL BE PAINTED SILVER WITH AN OIL-BASED PAINT AND PRIVATE HYDRANTS SHALL BE PAINTED WHITE WITH AN OIL-BASED PAINT.
2. FIRE HYDRANT SHALL BE INSTALLED 2' MIN. AND 4' MAX. FROM BACK OF CURB OR R/W, AND 12' MAX. WHEN CURB IS NOT PRESENT. FIRE HYDRANT TO BE INSTALLED WITH RIGHT-OF-WAY OR EASEMENT LINE.
3. AREA AROUND HYDRANT AT A RADIUS OF 4' TO BE LEVEL AND UNOBSTRUCTED.
4. WATERPROOF BAGS SHALL BE PLACED OVER ALL NEWLY INSTALLED FIRE HYDRANTS.
5. HIGH PRESSURE (OVER 120 PSI) REQUIRED THE USE ALL 3 RESTRAINTS.



WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

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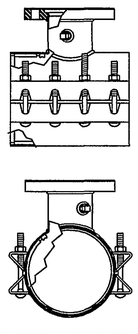
WATER LINE VALVE INSTALLATION — W-08



1. TAPPING SLEEVE SHALL BE POWERSEAL MODEL 3490 TYPE 304 STAINLESS STEEL WITH CARBON STEEL FLANGE, ROMAC'S MODEL SST III, FORD MODEL FTSS WITH CARBON STEEL FLANGE OR APPROVED EQUIVALENT. SLEEVE SHALL BE RATED AT 250 PSI AND MUST HAVE A TEST PLUG.
2. TAPPING VALVE SHALL BE AVK RESILIENT SEATED GATE VALVE SERIES 25 MJ/FL OR MUELLER T-2360 RESILIENT WEDGE TAPPING VALVE WITH MJ/FL. VALVE SHALL BE RATED AT 250 PSI.
3. TAPPING SLEEVE AND VALVE SHALL BE FULL PORT TO ACCEPT FULL SIZE SHELL CUTTER.
4. STEEL FLANGE SHALL MEET AWWA C207.

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

REVISION	DATE
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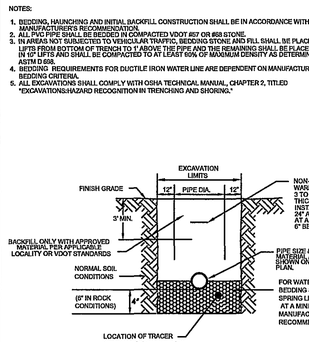
BLOW-OFF ASSEMBLY FOR MAIN LINE TEMPORARY TERMINATION — W-10

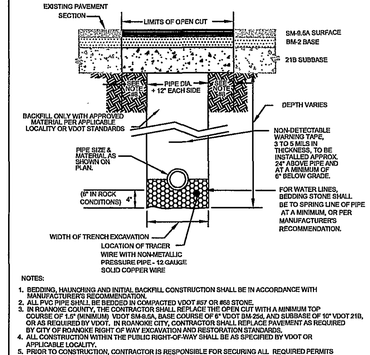
NOTES:
1. BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
2. ALL PVC PIPE SHALL BE BEDDED IN COMPACTED VDOT #57 OR #68 STONE.
3. IN AREAS NOT SUBJECTED TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN 6" LIFTS FROM BOTTOM OF TRENCH TO 1' ABOVE THE PIPE AND THE REMAINING SHALL BE PLACED IN 12" LIFTS AND SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
4. BEDDING REQUIREMENTS FOR DUCTILE IRON WATER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.
5. ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 7, TITLED "EXCAVATIONS:HAZARD RECOGNITION IN TRENCHING AND SHORING."



WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

REVISION	DATE
	07/01/04
	03/01/06

IN-LINE BLOW-OFF ASSEMBLY — W-11



NOTES:
1. BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATION.
2. ALL PVC PIPE SHALL BE BEDDED IN COMPACTED VDOT #57 OR #68 STONE.
3. IN ROANOKE COUNTY, THE CONTRACTOR SHALL REPLACE THE OPEN CUT WITH A MINIMUM TOP COURSE OF 1.5" (MINIMUM VDOT SM-9.5A, BASE COURSE OF 4" VDOT BM-25A, AND SUBBASE OF 10" VDOT 21B, OR AS REQUIRED BY VDOT. IN ROANOKE CITY, CONTRACTOR SHALL REPLACE PAVEMENT AS REQUIRED BY CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.
4. ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE AS SPECIFIED BY VDOT OR APPLICABLE LOCALITY.
5. PRIOR TO CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR SECURING ALL REQUIRED PERMITS FROM VDOT AND/OR APPLICABLE LOCALITY.
6. IN AREAS SUBJECTED TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN 6" LIFTS AND SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
7. BEDDING REQUIREMENTS FOR DUCTILE WATER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.
8. BENCH CUT ON EACH SIDE OF PAVEMENT. CITY OF ROANOKE EQUALS 12"; VDOT RIGHT-OF-WAY EQUALS 6".
9. ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 2, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN TRENCHING AND SHORING."

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

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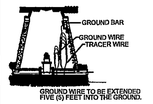
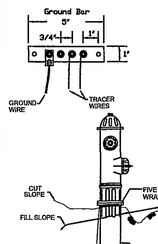
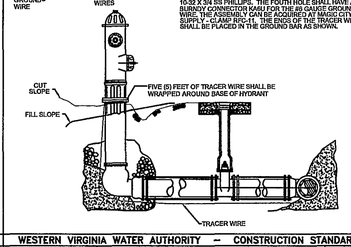
INSTALLATION DETAIL FOR ALL FRAMES AND COVERS — W-16







1. TRACER WIRES SHALL BE INSTALLED USING MANHOLES, VALVE BOXES OR VAULTS, WATER METERS AND FIRE HYDRANTS AS ACCESS POINTS
2. TRACER WIRE SHALL BE A 12 GAUGE SOLID COPPER WIRE WITH POLYETHYLENE INSULATION OF 30 MIL THICKNESS.
3. SPLICES SHALL BE MADE USING A 3M DIRECT BURY SPLICE KIT (DBY) OR EQUIVALENT.
4. TRACER WIRE SHALL BE LONG ENOUGH TO EXTEND A DISTANCE OF FIVE (5) FEET BEYOND THE STRUCTURE.
5. ASBUILTS SHALL SHOW TRACER WIRE(S) LOCATION AND ACCESS POINT(S).
6. THE TRACER WIRE SHALL BE PLACED ALONG THE LOWER QUADRANT OF NON-METALLIC 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.
7. WHERE LINES ARE GREATER THAN 20(6) FEET IN DEPTH, WIRE SHALL BE BROUGHT TO THE SURFACE EVERY ONE-HUNDRED (100) FEET AND PLACED IN A WATER METER BOX OR APPROVED JUNCTION BOX.
8. THE TRACER WILL BE TESTED BY THE AUTHORITY AS PART OF THE PROJECT'S FINAL ACCEPTANCE.
9. THE GROUND WIRE SHALL BE #6 GAUGE COPPER WIRE AND INSTALLED TO EXTEND A DISTANCE OF FIVE (5)FEET INTO THE GROUND. GROUND WIRE SHALL BE CONNECTED TO TRACER WIRE AT THE TOP OF EACH STRUCTURE AND TIE END TO GROUND. GROUND WIRE SHALL BE PLACED INTO THE KAMI CONNECTOR.
10. THE GROUND BAR SHALL BE STAINLESS STEEL AND SHALL BE ATTACHED USING SS 1/4"X 1 1/4" SS HEX TAPCON. THE FOLLOWING SHALL BE INSTALLED IN 4 (FOUR) CENTER HOLES: 10-32 SS NUTS, #10 SS WASHERS AND 10-32 X 3/4 SS PHILLIPS. THE FOUTH HOLE SHALL HAVE A BUNNY CONNECTOR KAMI FOR THE #6 GAUGE GROUND WIRE. THE ASSEMBLY CAN BE ACQUIRED AT MAGIC CUT SUPPLY - CLAMP RPC-14. THE ENDS OF THE TRACER WIRES SHALL BE PLACED IN THE GROUND BAR AS SHOWN.

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

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MANHOLE FRAME AND COVER — W-17

GENERAL NOTES:
1. TRAFFIC BEARING BOX REQUIRED IN TRAFFIC AREAS.
2. ALL PIPE AND FITTINGS SHALL BE OF SIMILAR MATERIAL.
3. ALL PIPE SHALL BE OF SAME SIZE.
4. NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEANOUT STACK WYE. (EXCEPT AS NOTED)
5. ALL MAINLINE TAPS ON ACTIVE MAINS WILL BE PERFORMED BY WESTERN VIRGINIA WATER AUTHORITY.
6. PIPING BEHIND CLEANOUT TO BE INSTALLED PER BOCA CODE.
7. MINIMUM LATERAL SIZE:
   4" FOR RESIDENTIAL SERVICE
   6" FOR NON-RESIDENTIAL SERVICE
8. MINIMUM COVER FOR ALL SEWER LATERALS SHALL BE THREE(3) FEET.
9. PROPERTY OWNER RESPONSIBLE FOR INSTALLING CLEANOUT ON PROPERTY LINE WHEN MAINTENANCE OCCURS, IN ACCORDANCE WITH THIS STANDARD.
10. FLOWLINE AT CLEANOUT WYE SHALL BE A MINIMUM OF THREE FEET (3') BELOW LOWEST SERVED FINISHED FLOOR.

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FIRE HYDRANT ASSEMBLY — W-18

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REVISION	DATE
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	03/01/06

BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS — W-24

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

REVISION	DATE
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	03/01/06

BEDDING AND BACKFILL UNDER PAVEMENT AND RIGHT-OF-WAY — W-25

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

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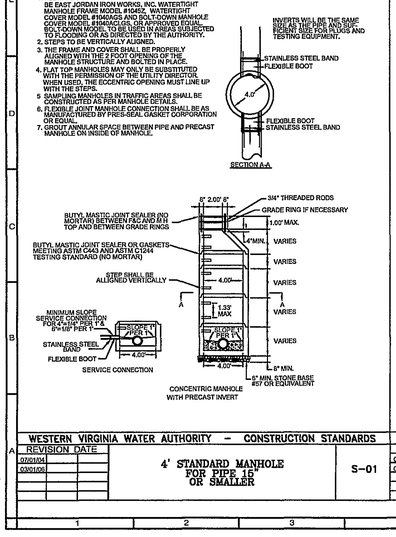
	03/01/06

TRACER WIRE FOR NON-METALLIC PRESSURE PIPE — G-05

NOTES:
1. ALL MANHOLE FRAMES AND COVERS SHALL BE EAST JORDAN IRON WORKS, INC. WATERTIGHT MANHOLE FRAME MODEL #1045Z, WATERTIGHT COVER MODEL #1040AGS AND BOLT-DOWN MANHOLE COVER MODEL #1040AGS OR APPROVED EQUAL. BOLT-DOWN MODEL TO BE USED IN AREAS SUBJECTED TO FLOODING OR AS DIRECTED BY THE AUTHORITY.
2. STEPS TO BE VERTICALLY ALIGNED.
3. THE FRAME AND COVER SHALL BE PROPERLY ALIGNED WITH THE 2 FOOT OPENING OF THE MANHOLE STRUCTURE AND BOLTED IN PLACE.
4. PLAT TOP MANHOLES MAY ONLY BE SUBSTITUTED WITH THE PERMISSION OF THE UTILITY DIRECTOR, WHEN USED, THE ECCENTRIC OPENING MUST LINE UP WITH THE STEPS.
5. SAMPLING MANHOLES IN TRAFFIC AREAS SHALL BE CONSTRUCTED AS PER MANHOLE DETAILS.
6. FLEXIBLE JOINT MANHOLE CONNECTION SHALL BE AS MANUFACTURED BY PRES-SEAL GASKET CORPORATION OR EQUAL.
7. GROUT ANNULAR SPACE BETWEEN PIPE AND PRECAST MANHOLE ON INSIDE OF MANHOLE.



WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

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	07/01/04
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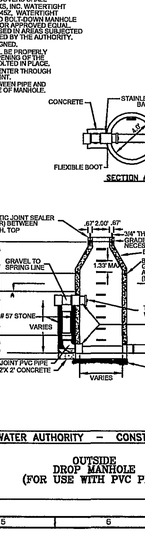
4' STANDARD MANHOLE FOR PIPE 16" OR SMALLER — S-01

NOTES:
1. ALL MANHOLE FRAMES AND COVERS SHALL BE EAST JORDAN IRON WORKS, INC. WATERTIGHT MANHOLE FRAME MODEL #1045Z, WATERTIGHT COVER MODEL #1040AGS AND BOLT-DOWN MANHOLE COVER MODEL #1040AGS OR APPROVED EQUAL. BOLT-DOWN MODEL TO BE USED IN AREAS SUBJECTED TO FLOODING OR AS DIRECTED BY THE AUTHORITY.
2. STEPS TO BE VERTICALLY ALIGNED.
3. THE FRAME AND COVER SHALL BE PROPERLY ALIGNED WITH THE 2 FOOT OPENING OF THE MANHOLE STRUCTURE AND BOLTED IN PLACE.
4. TOP INVERT LINE SHALL NOT ENTER THROUGH RISER (CONE) SECTION OR JOINT.
5. GROUT ANNULAR SPACE BETWEEN PIPE AND PRECAST MANHOLE ON INSIDE OF MANHOLE.



WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

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OUTSIDE DROP MANHOLE (FOR USE WITH PVC PIPE) — S-03

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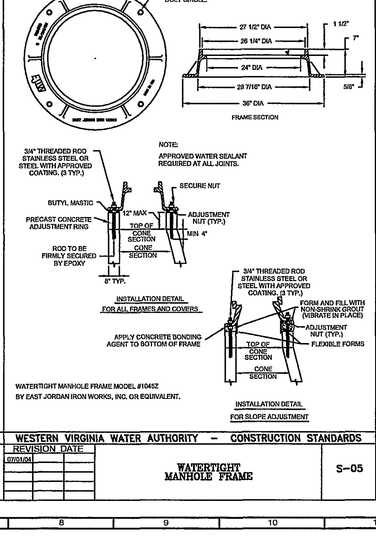
WATERTIGHT MANHOLE FRAME — S-05



WATERTIGHT MANHOLE FRAME MODEL #1045Z
BY EAST JORDAN IRON WORKS, INC. OR EQUIVALENT.

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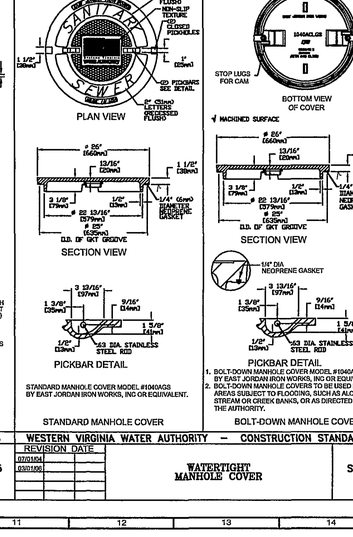
WATERTIGHT MANHOLE COVER — S-06



STANDARD MANHOLE COVER MODEL #1040AGS
BY EAST JORDAN IRON WORKS, INC OR EQUIVALENT.

STANDARD MANHOLE COVER

1. BOLT-DOWN MANHOLE COVER MODEL #1040ACLGS BY EAST JORDAN IRON WORKS, INC OR EQUIVALENT.
2. BOLT-DOWN MANHOLE COVERS TO BE USED IN AREAS SUBJECT TO FLOODING, SUCH AS ALONG STREAM OR CREEK BANKS, OR AS DIRECTED BY THE AUTHORITY.

BOLT-DOWN MANHOLE COVER

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

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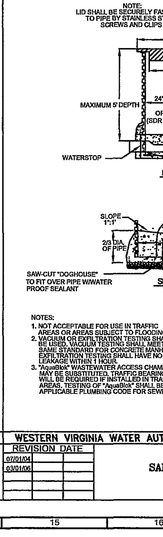
SAMPLING STRUCTURE DETAIL — S-07



NOTES:
1. NOT ACCEPTABLE FOR USE IN TRAFFIC AREAS OR AREAS SUBJECT TO FLOODING.
2. VACUUM OR EXFILTRATION TESTING SHALL BE PERFORMED ON ALL MANHOLES. MANHOLES SHALL MEET THE REQUIREMENTS FOR EITHER VACUUM OR EXFILTRATION TESTING SHALL HAVE NO LEAKAGE WITHIN 1 HOUR.
3. "AquaShak" WASTEWATER ACCESS CHAMBERS MAY BE SUBSTITUTED. TRAFFIC BEARING BOXES WILL BE REQUIRED IF INSTALLED IN TRAFFIC AREAS. TESTING OF "AquaShak" SHALL BE BY APPLICABLE PLUMBING CODE FOR SEWER LATERALS.
4. 2' DIA. CONCRETE WELL CASING 3000 PSI MAY BE SUBSTITUTED FOR 12 TRA-RIB PIPE, ANY VERT. JOINTS IN THE CASING PIPE MUST BE SEALED W/ BUTYL MASTIC FOR CONNECTION WITH MASTIC.
5. INVERT SHAPING/CHANNEL SHALL BE 180 DEGREES THROUGH SAMPLE MANHOLE. NO ANGLES, RADIUS, ETC ARE ALLOWED IN SAMPLE MANHOLES.

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS

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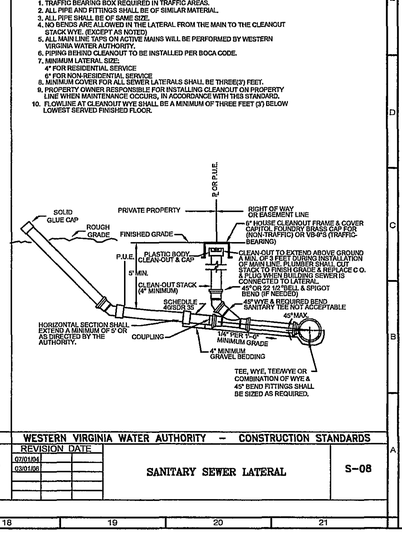
	03/01/06

SANITARY SEWER LATERAL — S-08