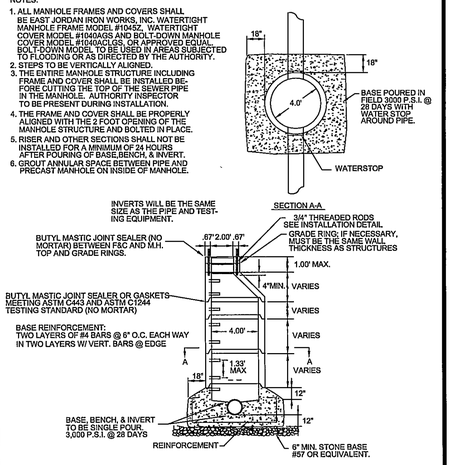
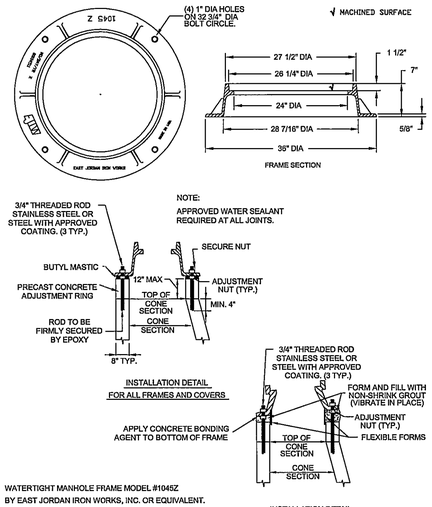
NOTES:
1. ALL MANHOLE FRAMES AND COVERS SHALL BE EAST JORDAN IRON WORKS, INC. WATERTIGHT MANHOLE FRAME MODEL #1045Z, WATERTIGHT COVER MODEL #1040AGS AND BOLT-DOWN MANHOLE COVER MODEL #1040ACLGS, OR APPROVED EQUAL. BOLT-DOWN MODEL TO BE USED IN AREAS SUBJECTED TO FLOODING OR AS DIRECTED BY THE AUTHORITY.
2. STEPS TO BE VERTICALLY ALIGNED.
3. THE ENTIRE MANHOLE STRUCTURE INCLUDING FRAME AND COVER SHALL BE INSTALLED BEFORE CUTTING THE TOP OF THE SEWER PIPE IN THE MANHOLE. AUTHORITY INSPECTOR TO BE PRESENT DURING INSTALLATION.
4. THE FRAME AND COVER SHALL BE PROPERLY ALIGNED WITH THE 2 FOOT OPENING OF THE MANHOLE STRUCTURE AND BOLTED IN PLACE.
5. RISER AND OTHER SECTIONS SHALL NOT BE INSTALLED FOR A MINIMUM OF 24 HOURS AFTER POURING OF BASE,BENCH, & INVERT.
6. GROUT ANNULAR SPACE BETWEEN PIPE AND PRECAST MANHOLE ON INSIDE OF MANHOLE.

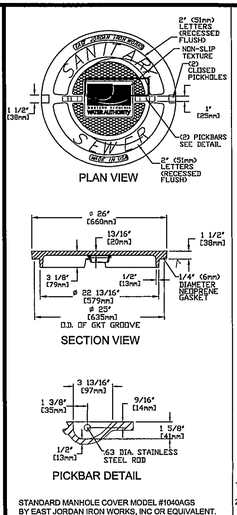


WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS		
REVISION DATE	STRADDLE MANHOLE FOR PIPE 15" OR SMALLER	S-02
07/01/04		
03/01/06		



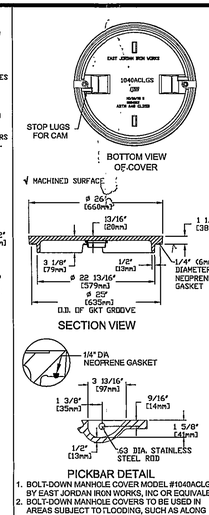
WATERTIGHT MANHOLE FRAME MODEL #1045Z
BY EAST JORDAN IRON WORKS, INC. OR EQUIVALENT.

WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS		
REVISION DATE	WATERTIGHT MANHOLE FRAME	S-05
07/01/04		



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

STANDARD MANHOLE COVER

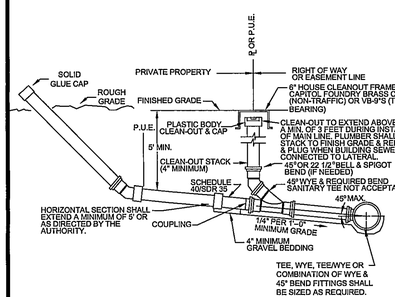


1. BOLT-DOWN MANHOLE COVER MODEL #1040ACLGS BY EAST JORDAN IRON WORKS, INC OR EQUIVALENT.
2. BOLT-DOWN MANHOLE COVERS TO BE USED IN AREAS SUBJECT TO FLOODING, SUCH AS ALONG STREAM OR CREEK BANKS, OR AS DIRECTED BY THE AUTHORITY.

BOLT-DOWN MANHOLE COVER

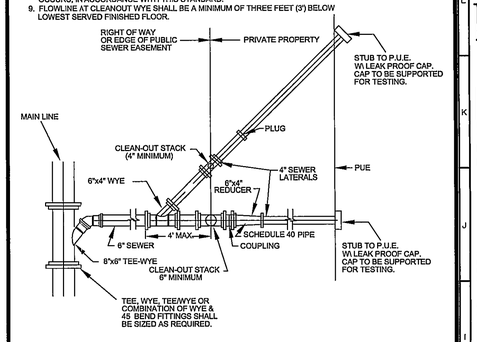
WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS		
REVISION DATE	WATERTIGHT MANHOLE COVER	S-06
07/01/04		
03/01/06		

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 MAIN LINE 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.



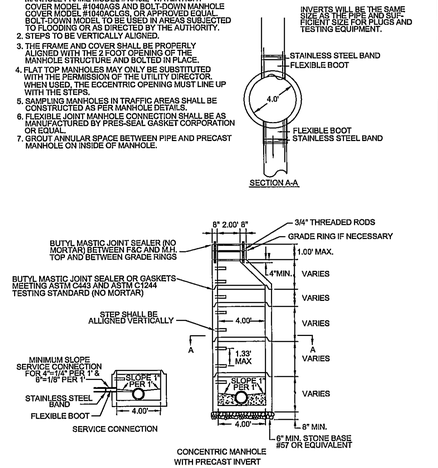
WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS		
REVISION DATE	SANITARY SEWER LATERAL	S-08
07/01/04		
03/01/06		

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 SIZE SHOWN.
4. NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEAN-OUT STACK WYE. (EXCEPT AS NOTED.)
5. ALL MAIN LINE TAPS ON ACTIVE MAINS WILL BE PERFORMED BY WESTERN VIRGINIA WATER AUTHORITY.
6. PIPING BEHIND CLEANOUT TO BE INSTALLED PER BOCA CODE.
7. MINIMUM COVER FOR ALL SEWER LATERALS SHALL BE THREE (3') FEET.
8. PROPERTY OWNER RESPONSIBLE FOR INSTALLING CLEANOUT ON PROPERTY LINE WHEN MAINTENANCE OCCURS, IN ACCORDANCE WITH THIS STANDARD.
9. FLOWLINE AT CLEANOUT WYE SHALL BE A MINIMUM OF THREE FEET (3') BELOW LOWEST SERVED FINISHED FLOOR.



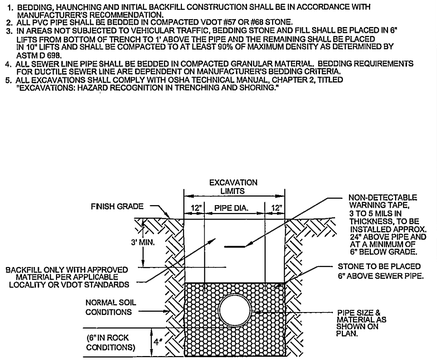
WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS		
REVISION DATE	COMBINED 6" BY TWO 4" LATERALS	S-11
07/01/04		
03/01/06		

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 #1040ACLGS, 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. FLAT 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.

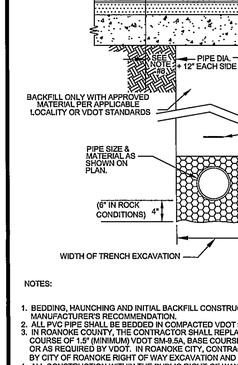


WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS		
REVISION DATE	4' STANDARD MANHOLE FOR PIPE 15" OR SMALLER	S-01
07/01/04		
03/01/06		

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 10" LIFTS AND SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
4. ALL SEWER LINE PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL. BEDDING REQUIREMENTS FOR DUCTILE SEWER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.
5. ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 2, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN TRENCHING AND SHORING."



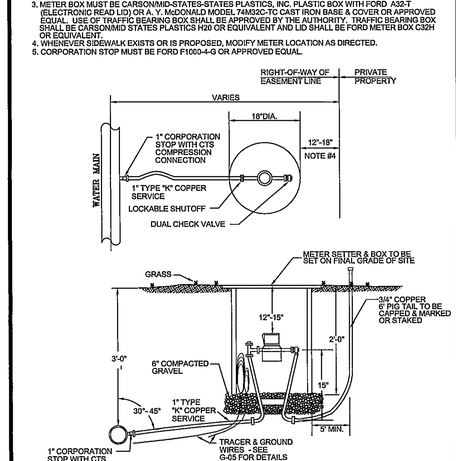
WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS		
REVISION DATE	BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS	S-30
07/01/04		
03/01/06		



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 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 6" VDOT BM-25S, 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. ALL SEWER LINE PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL. BEDDING REQUIREMENTS FOR DUCTILE SEWER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.
8. BENCHCUT 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		
REVISION DATE	BEDDING AND BACKFILL UNDER PAVEMENT AND RIGHT-OF-WAY	S-31
07/01/04		
03/01/06		

1. SETTER TO BE A.Y. McDONALD #20-215 WDDD33 , FORD VBHH72-15W-1133 OR APPROVED EQUAL.
2. SADDLES MUST BE USED WITH ALL PLASTIC & CLASS 50 DUCTILE IRON PIPE. SERVICE SADDLES SHALL BE USED IN ACCORDANCE WITH SECTION 2665 OF THE WATER STANDARDS. SERVICE SADDLES FOR PLASTIC PIPE SHALL BE: POWERSEAL 3417, OR 3412AS, ROMAC 202S, OR 305, OR FORD METER FS202 OR FS303. FOR DUCTILE IRON PIPE USE THE ABOVE OR POWERSEAL 3413, ROMAC 202 OR FORD METER F202.
3. METER BOX MUST BE CARSONMID-STATES-STATES PLASTICS, INC. PLASTIC BOX WITH FORD A52-7 (ELECTRONIC READ LID) OR A. Y. McDONALD MODEL 74M32C-TC CAST IRON BASE & COVER OR APPROVED EQUAL. USE OF TRAFFIC BEARING BOX SHALL BE APPROVED BY THE AUTHORITY. TRAFFIC BEARING BOX SHALL BE CARSONMID STATES PLASTICS H20 OR EQUIVALENT AND LID SHALL BE FORD METER BOX C52H OR EQUIVALENT.
4. WHENEVER SIDEWALK EXISTS OR IS PROPOSED, MODIFY METER LOCATION AS DIRECTED.
5. CORPORATION STOP MUST BE FORD F1000-4-G OR APPROVED EQUAL.



WESTERN VIRGINIA WATER AUTHORITY – CONSTRUCTION STANDARDS		
REVISION DATE	TYPE "A" SINGLE RESIDENTIAL WATER SERVICE (LINE PRESSURE UNDER 80 PSI)	W-01
07/01/04		
03/01/06		

COMMONWEALTH OF VIRGINIA
ROGER STURGILL
Lic. No. 033058
PROFESSIONAL ENGINEER

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FAX: 540/248-3221

HILLVIEW UTILITY EXTENSION
WWWA DETAILS
CITY OF ROANOKE, VIRGINIA

DRAWN BY: BTC
DESIGNED BY: BTC
CHECKED BY: SMH
DATE: 9-4-08
REVISIONS:
9-23-08

SCALE: AS SHOWN
SHEET NO.
C-3
JOB NO.
R0800332.00