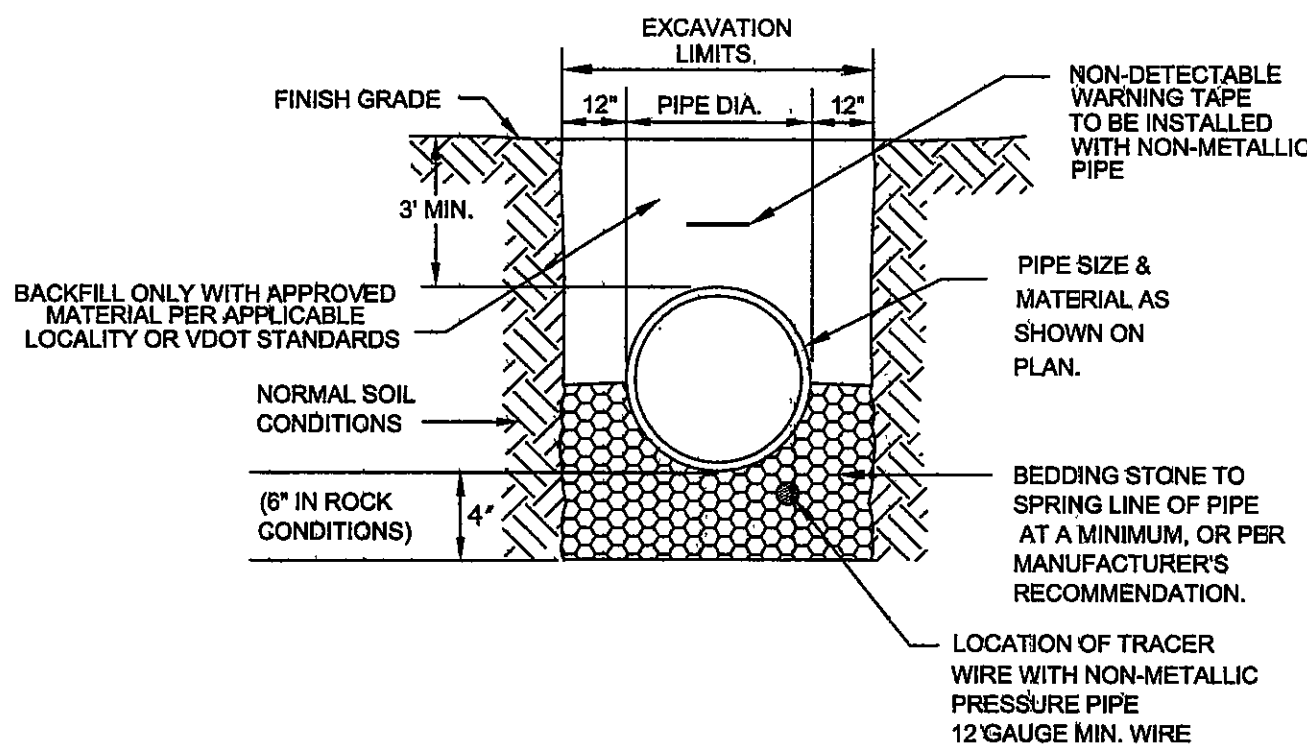
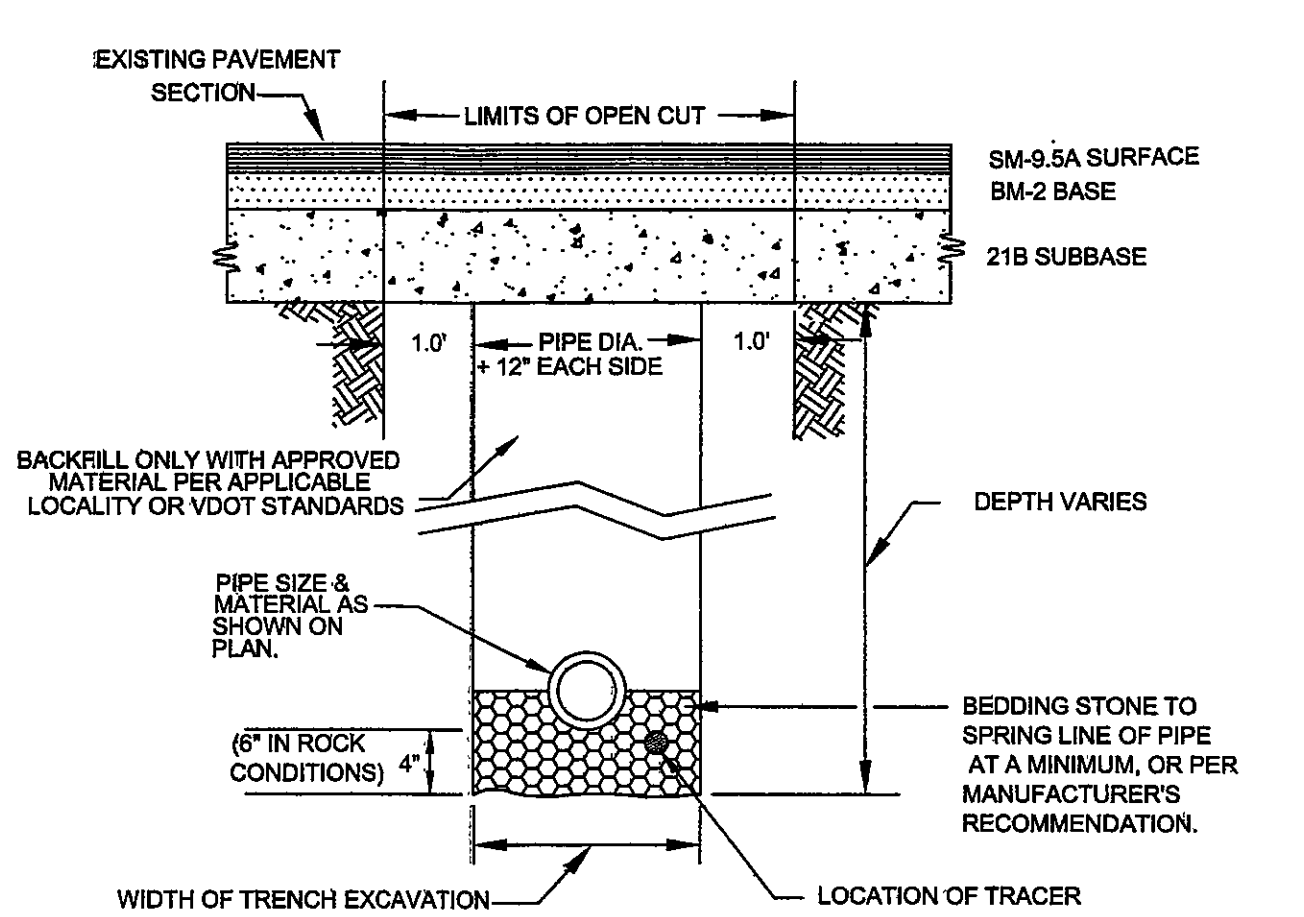


- NOTES:
1. BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
  2. WHEN INSTALLING NON-METALLIC PIPE, NON-DETECTABLE WARNING TAPE SHALL BE BURIED AT A MINIMUM 6" BELOW GRADE AND APPROXIMATELY 12" TO 18" ABOVE NON-METALLIC PIPE. IT SHALL BE 3 TO 5 MILS IN THICKNESS AND INSTALLED CONTINUOUSLY FROM VALVE BOX TO VALVE BOX OR MANHOLE TO MANHOLE.
  3. ALL PVC PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL WHICH SHALL BE CRUSHED STONE MEETING VDOT STANDARDS FOR GRADUATION 57 OR 68 STONE.
  4. IN AREAS NOT SUBJECT TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN 10" LIFTS AND SHALL BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
  5. ALL SEWER LINE PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL. BEDDING REQUIREMENTS FOR DUCTILE WATER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.

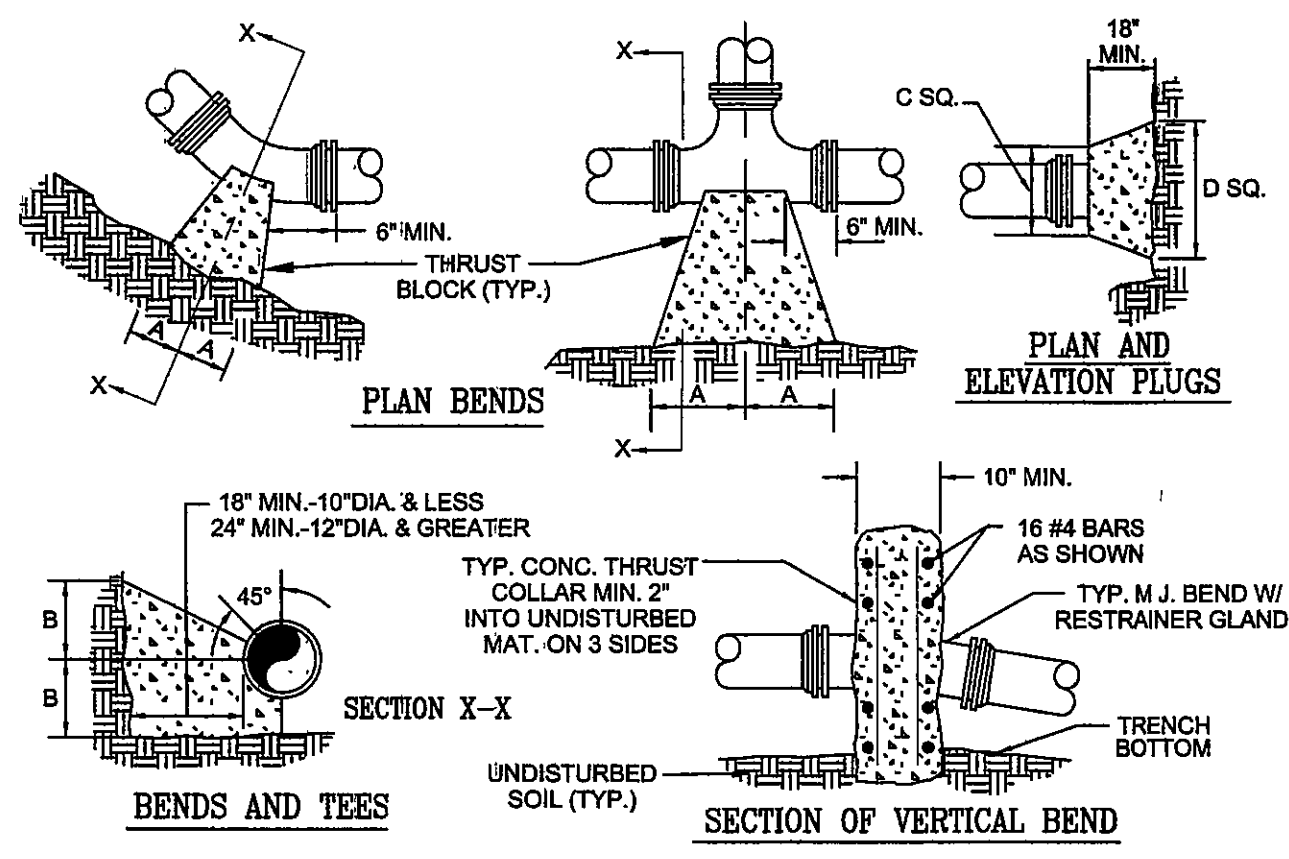


WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS	G-01	



- NOTES:
- A. IN ROANOKE COUNTY, THE CONTRACTOR SHALL REPLACE THE OPEN CUT WITH A MINIMUM TOP COURSE OF 2" VDOT SM-9.5A, BASE COURSE OF 3" VDOT BM-2, AND SUBBASE OF 8" VDOT 21B, OR AS REQUIRED BY VDOT. IN ROANOKE CITY, CONTRACTOR SHALL MATCH EXISTING PAVEMENT LAYERS OR AS REQUIRED BY CITY STANDARDS.
  - B. ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE AS SPECIFIED BY VDOT OR APPLICABLE LOCALITY.
  - C. PRIOR TO CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR SECURING ALL REQUIRED PERMITS FROM VDOT AND/OR APPLICABLE LOCALITY.
  - D. ALL WATER LINES BENEATH PAVEMENT SHALL BE DUCTILE IRON UNLESS INSTALLED IN CASING PIPE OR BY DIRECTIONAL BORING.
  - E. IN AREAS SUBJECT TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN 6" LIFTS AND SHALL BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
  - F. ALL SEWER LINE PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL. BEDDING REQUIREMENTS FOR DUCTILE WATER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.

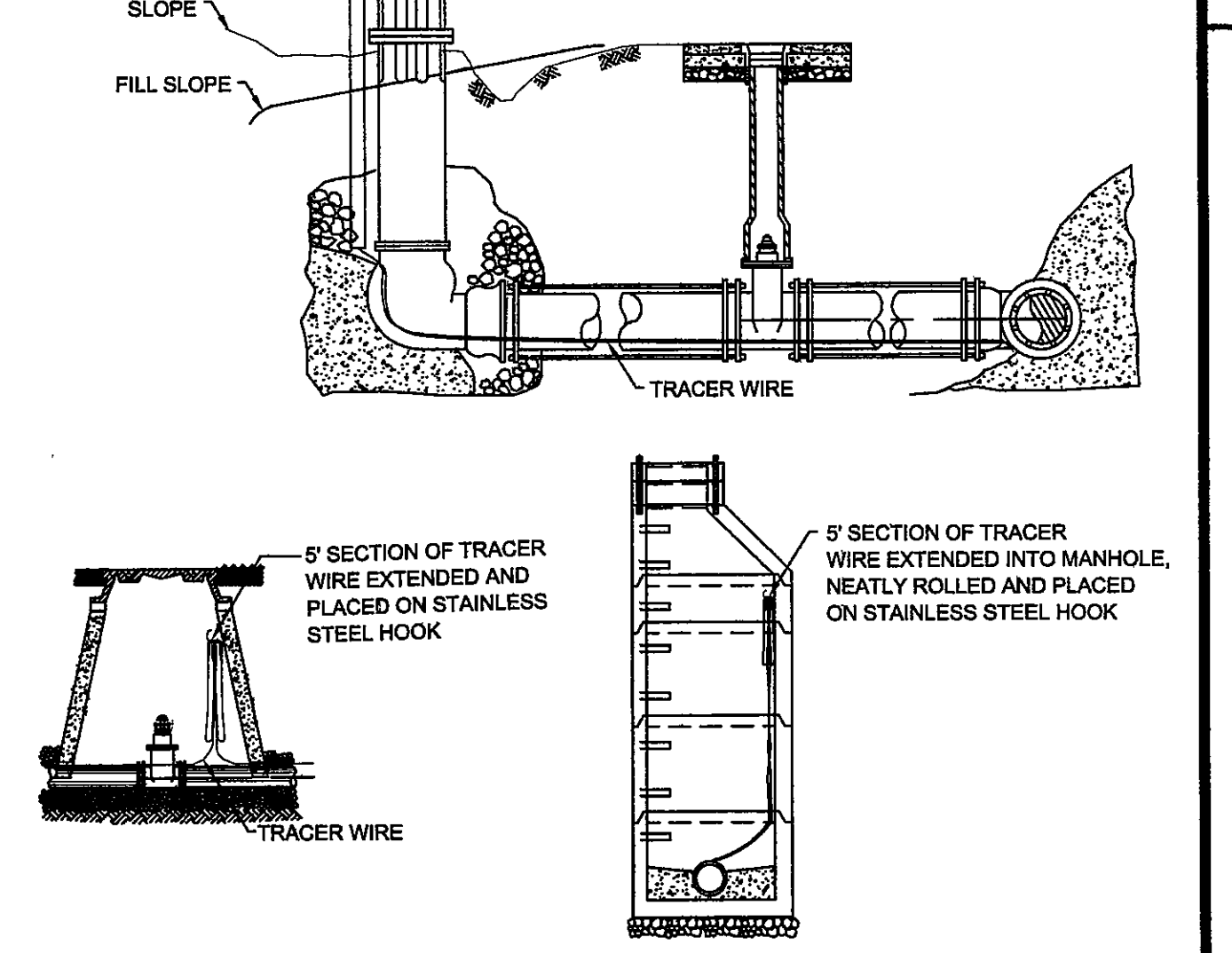
WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	BEDDING AND BACKFILL UNDER PAVEMENT	G-02	



PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE	PLUG
6" D.I.	28'	12'	6'	3'	38'	20'
8" D.I.	37'	15'	7'	4'	51'	21'
10" D.I.	45'	19'	9'	5'	61'	23'
12" D.I.	53'	22'	11'	6'	73'	25'
6" PVC	30'	12'	6'	3'	38'	20'
8" PVC	40'	16'	8'	4'	56'	23'
10" PVC	47'	20'	9'	5'	69'	25'
12" PVC	56'	23'	11'	6'	88'	27'

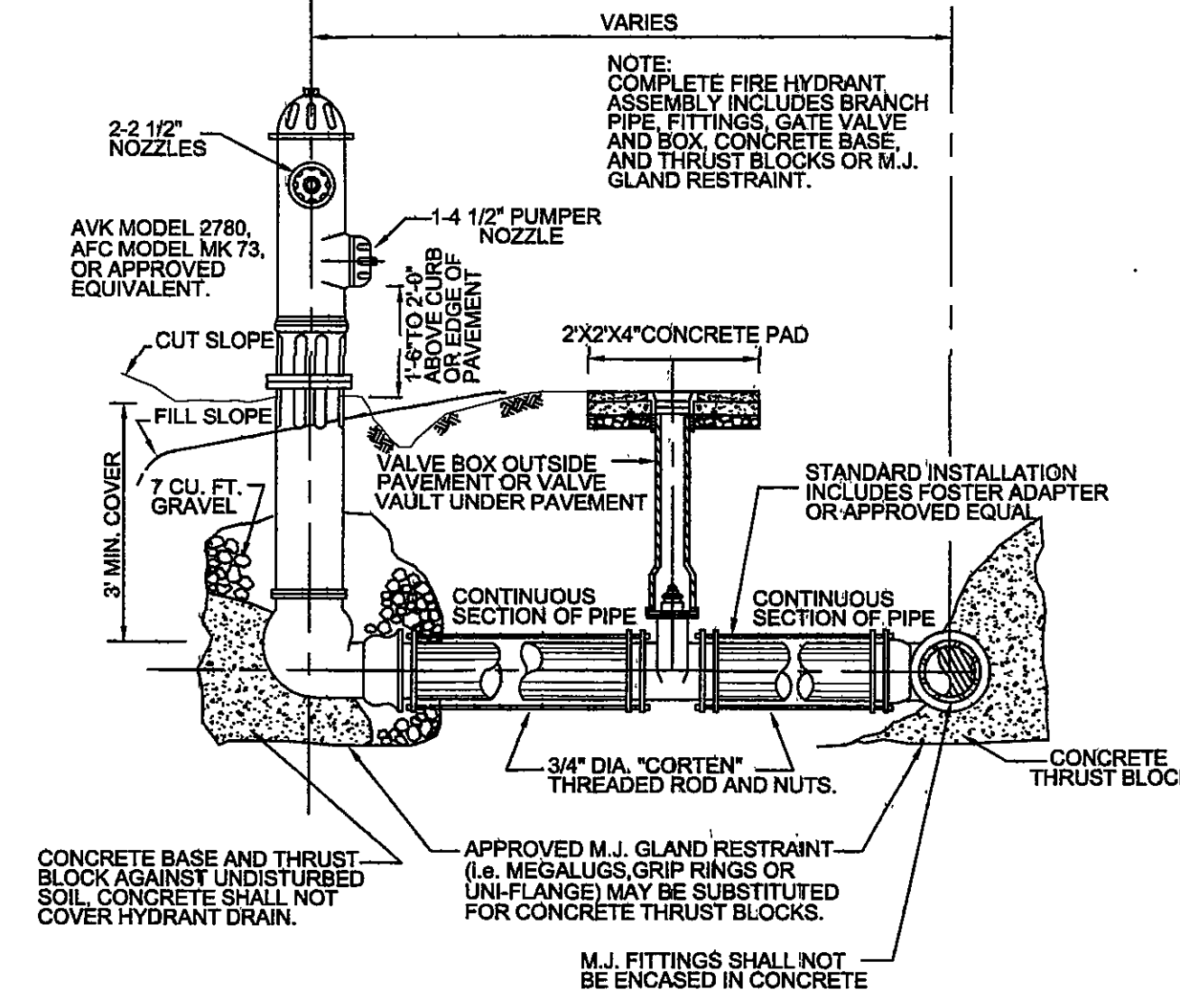
WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	THRUST BLOCK CONSTRUCTION	W-19	

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 (DBI) OR EQUIVALENT.
4. THE CONTINUOUS TRACER WIRE SHALL COVER A MAXIMUM LENGTH OF 500'.
5. ASBESTOS SHALL SHOW TRACER WIRE(S) LOCATION AND ACCESS POINT(S).
6. 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.
7. WHERE LINES ARE GREATER THAN SIX(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.



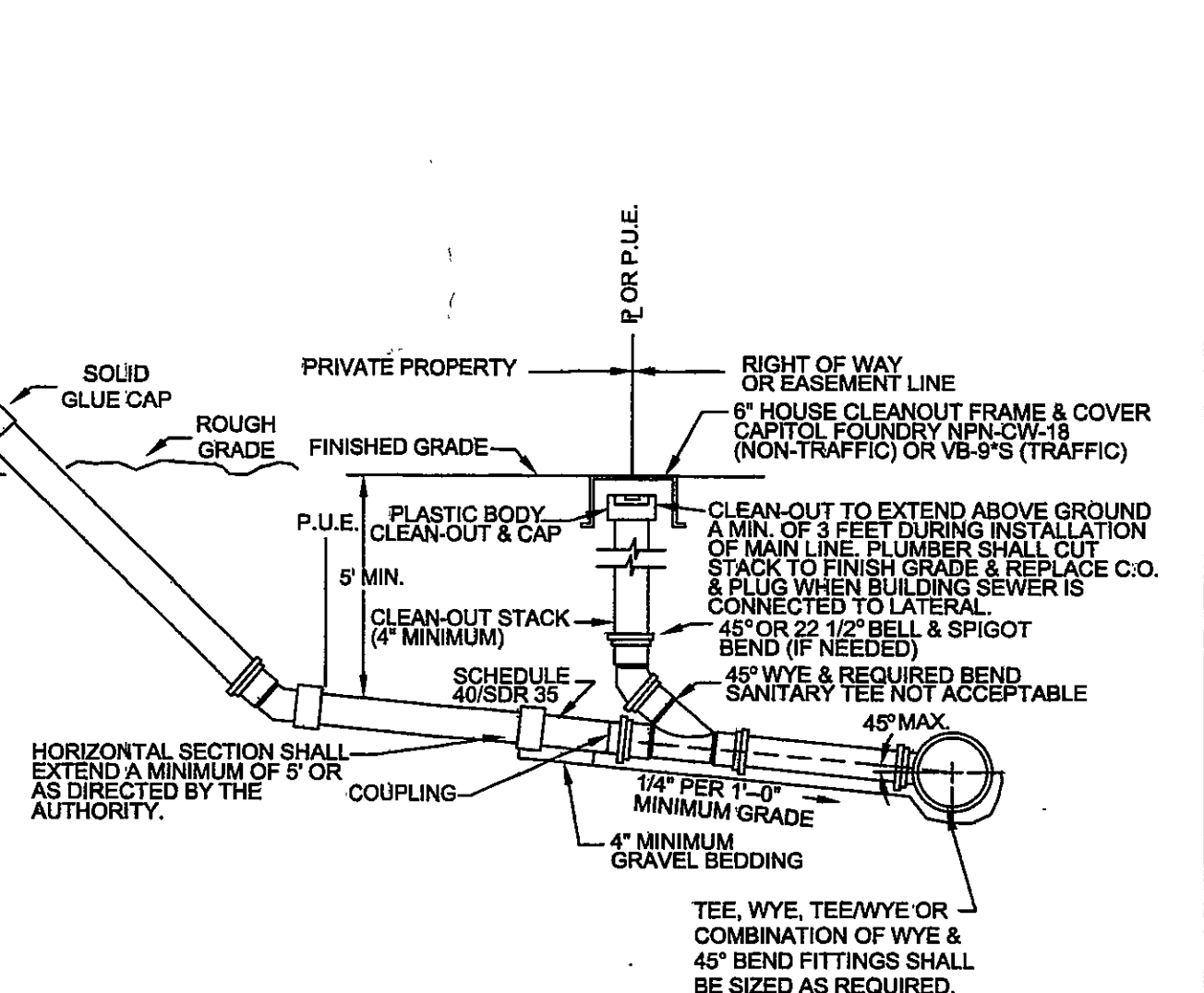
WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	TRACER WIRE FOR NON-METALLIC PRESSURE PIPE	G-05	

- NOTES:
1. MAIN BODY OF HYDRANT MUST BE PAINTED SILVER WITH RED REFLECTIVE CAPS AND BONNET.
  2. FIRE HYDRANT SHALL BE INSTALLED 2 MIN. AND 4 MAX. FROM BACK OF CURB OR 6 MIN. AND 12 MAX. 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 SHALL BE PLACED OVER ALL NEWLY INSTALLED FIRE HYDRANTS.
  5. HIGH PRESSURE (OVER 120 PSI) REQUIRES THE USE ALL 3 RESTRAINTS.



WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	FIRE HYDRANT ASSEMBLY	W-18	

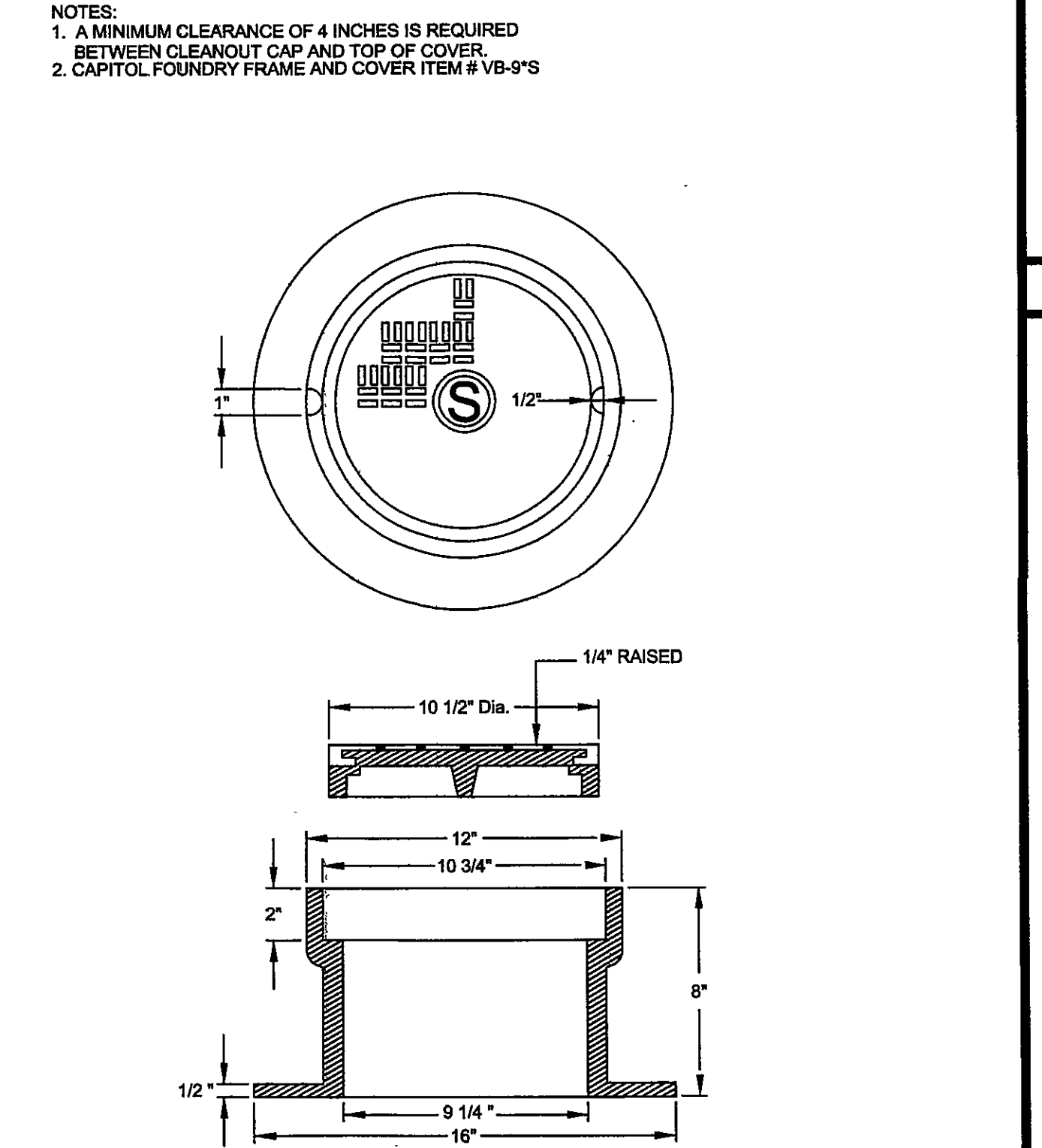
- GENERAL NOTES:
1. TRAFFIC BEARING BOX REQUIRED IN TRAFFIC AREAS.
  2. ALL PIPE AND FITTINGS SHALL BE OF SIMILAR MATERIAL.
  3. ALL PIPE SHALL BE OF SAME SIZE.
  4. NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEANOUT STACK WYE (EXCEPT AS NOTED).
  5. ALL MAIN LINE TAPS OR ACTIVE MAINS 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.



WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	SANITARY SEWER LATERAL	S-08	

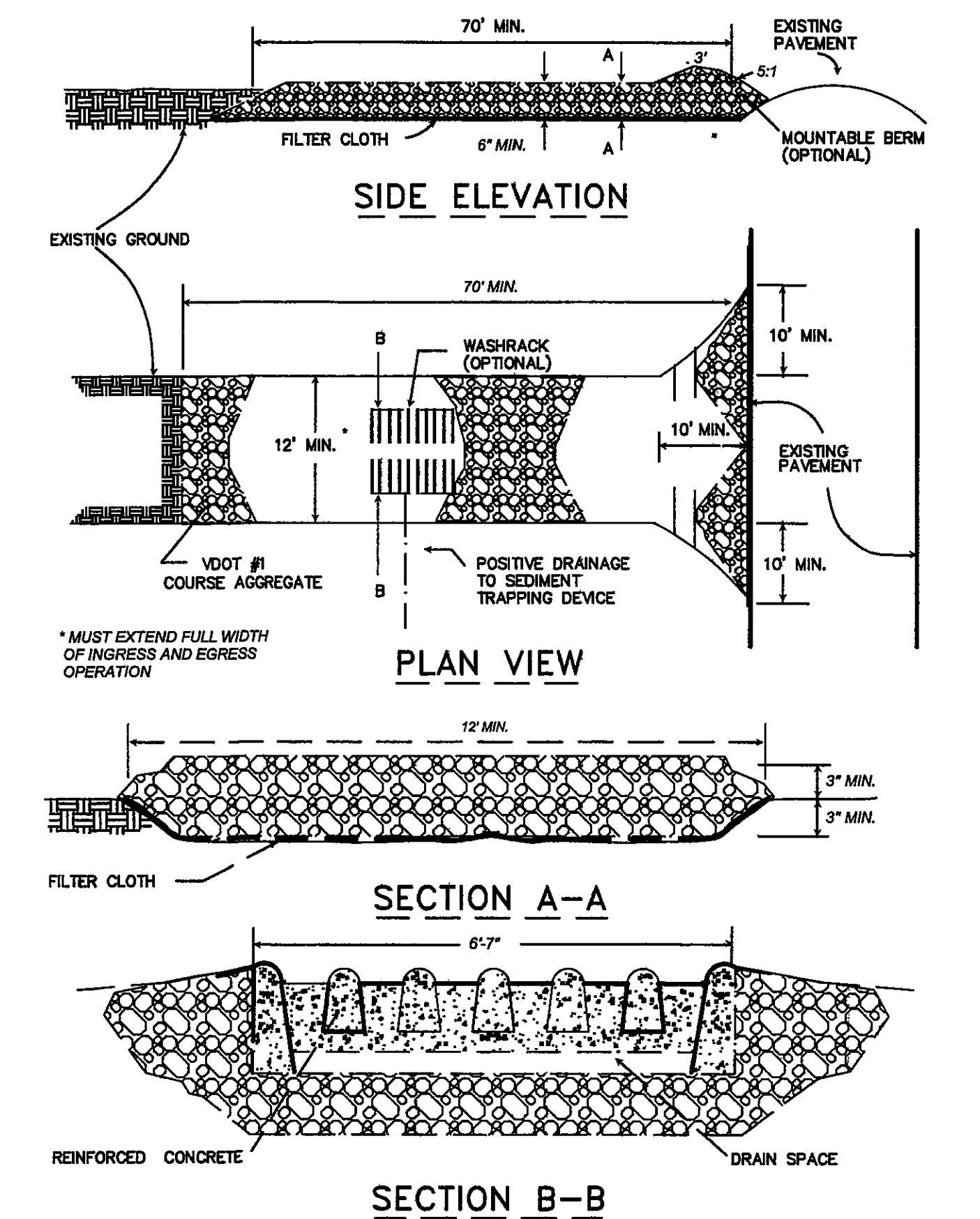
FACTOR OF SAFETY = 1.5													
PIPE SIZE	PIPE MATL.	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	VALVE / PLUG BRANCH	TEE	REDUCER	VERT. VERT.	VERT.	VERT.	VERT.	VERT.
6" D.I.	28'	12'	6'	3'	38'	34'	20'	23'	11'	5'			
8" D.I.	37'	15'	7'	4'	51'	47'	21'	30'	15'	7'			
10" D.I.	45'	19'	9'	5'	61'	57'	23'	37'	18'	9'			
12" D.I.	53'	22'	11'	6'	73'	69'	25'	43'	21'	10'			
6" PVC	30'	12'	6'	3'	38'	34'	20'	23'	11'	5'			
8" PVC	40'	16'	8'	4'	56'	52'	23'	37'	18'	9'			
10" PVC	47'	20'	9'	5'	69'	65'	25'	43'	21'	10'			
12" PVC	56'	23'	11'	6'	88'	84'	27'	56'	27'	13'			

1. ALL JOINTS SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING FOR THE LENGTH SHOWN UNLESS OTHERWISE INDICATED.
2. REDUCER IS ONE SIZE SMALLER THAN PIPE LISTED. RESTRAINED LENGTH IS UPSTREAM ON THE LARGE SIZE OF THE REDUCER.



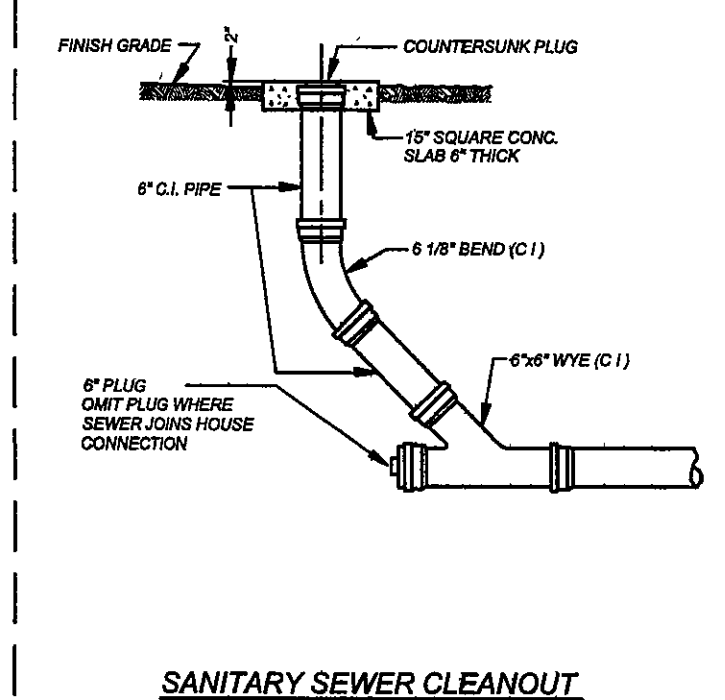
WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	TRAFFIC BEARING CLEANOUT BOX	S-14	

## STONE CONSTRUCTION ENTRANCE

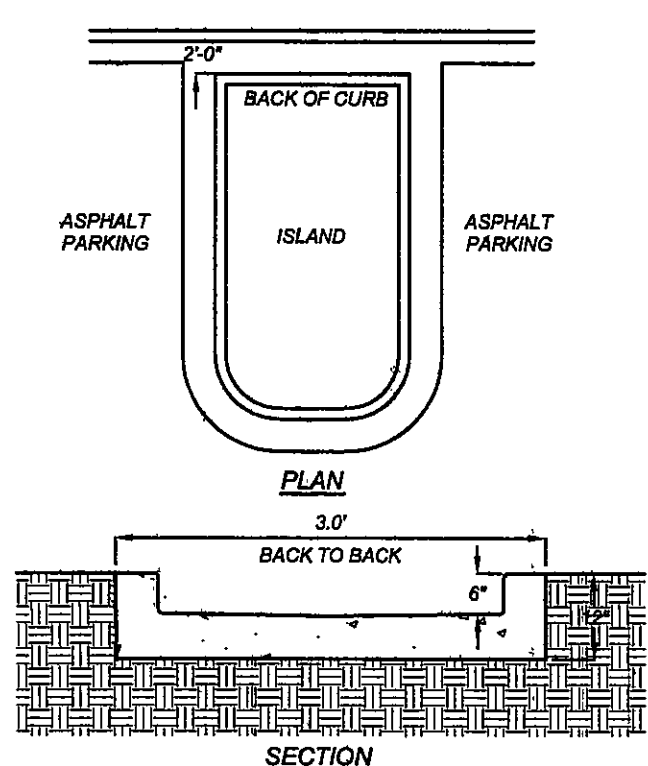


SOURCE: ADAPTED FROM 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC

Plate 3.02-1

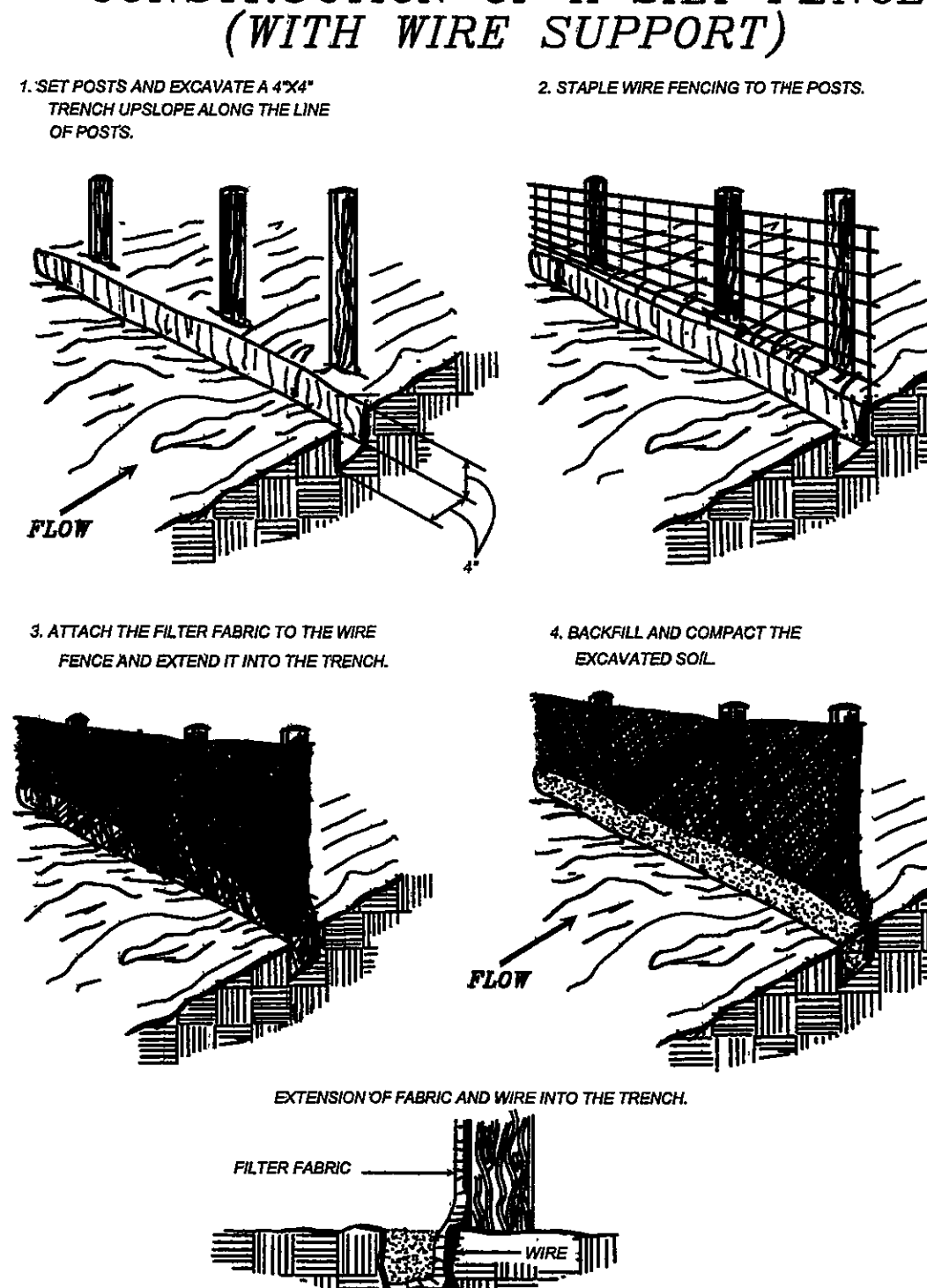


SANITARY SEWER CLEANOUT

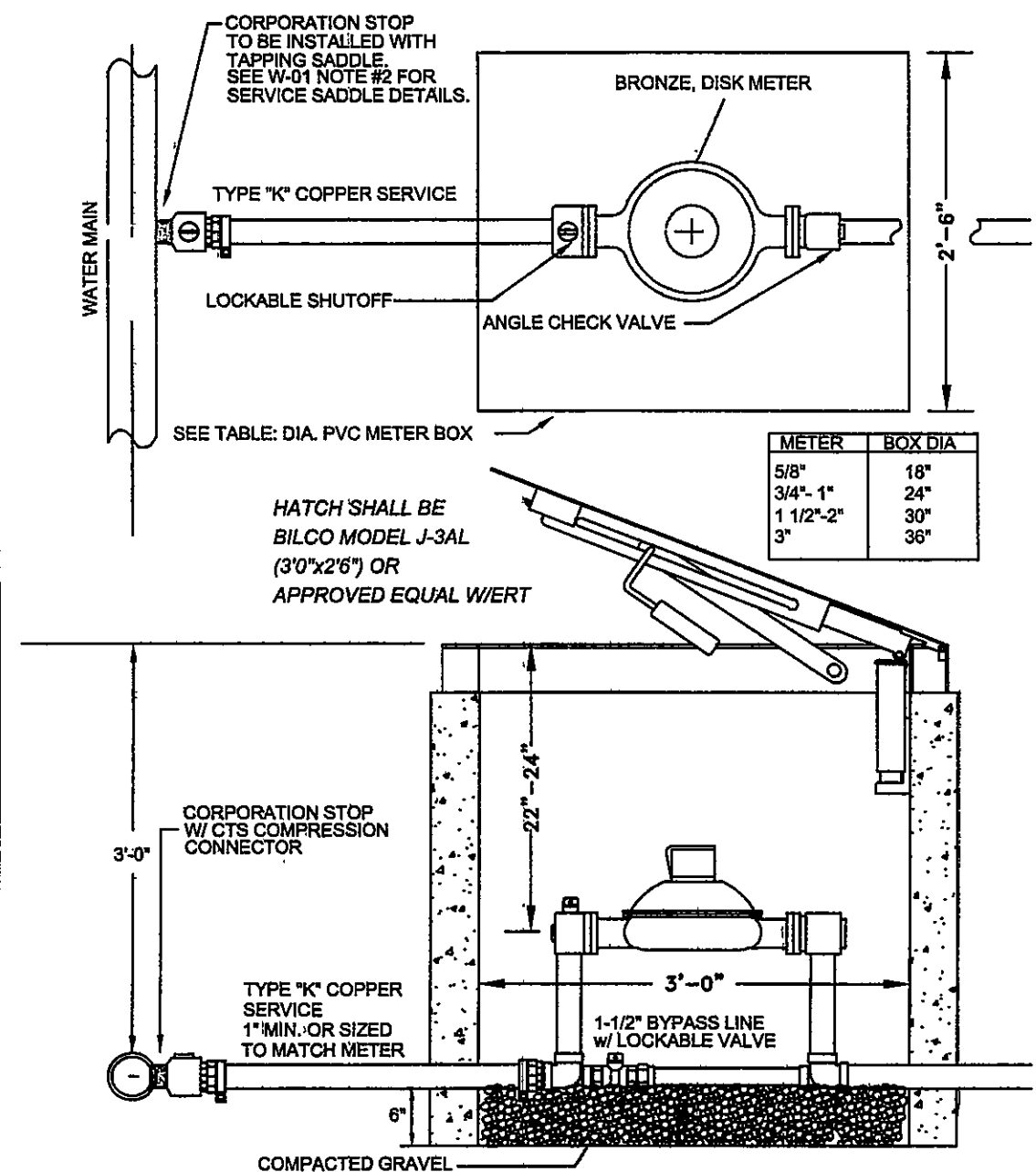


CONCRETE FLUME

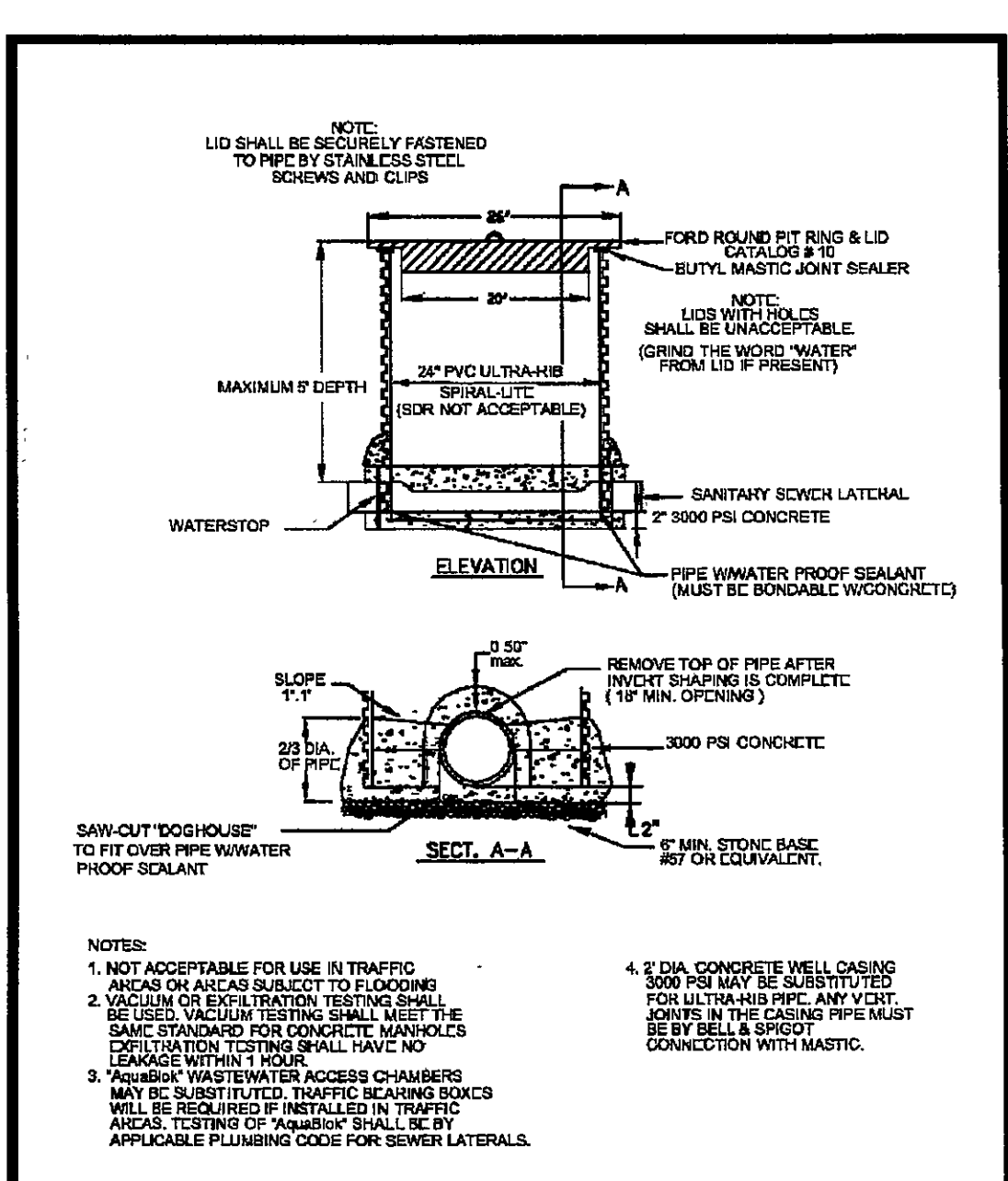
## CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)



SOURCE: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control. PLATE 3.05-1



WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	WATER SERVICE	W-05	



WESTERN VIRGINIA WATER AUTHORITY - CONSTRUCTION STANDARDS			
REVISION DATE	DESCRIPTION	BY	APP'D
07/20/04	SAMPLING STRUCTURE DETAIL	S-07	

William Brian Burdett  
No. 00865  
2/3/06  
REGISTERED PROFESSIONAL ENGINEER

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COMERCIAL SITE DESIGN  
ENGINEERING, SURVEYING, PLANNING  
LANDSCAPE ARCHITECTURE  
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Revisions  
1-30-08  
CITY COMMENTS #1

DRAWN BY: STH  
SCALE: NTS  
JOB NO.: RRB-0511  
SHEET NO.: C-6