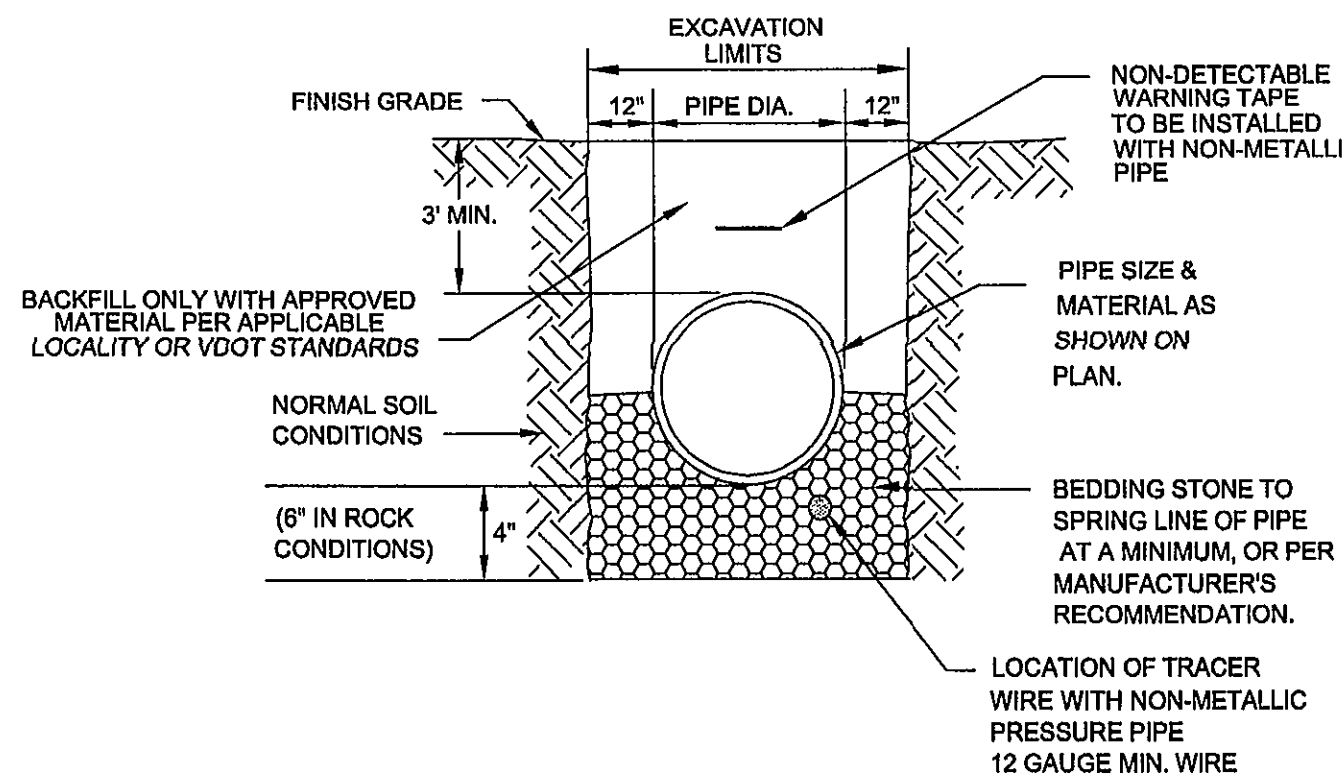


1. BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
2. WHEN INSTALLING NON-METALLIC PIPE, NON-DETECTABLE WARNING TAPE SHALL BE BURIED AT A MINIMUM 6" BELOW THE BOTTOM OF THE PIPE. APPROXIMATELY 12" TO 18" ABOVE NON-METALLIC PIPE, IT SHALL BE 3 TO 5 MILS IN THICKNESS AND INSTALLED CONTINUOUS FROM VALVE BOX TO VALVE BOX OR MANHOLE TO MANHOLE.
3. PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL WHICH SHALL BE WELL-GRADED, CRUSHED STONE MEETING VDOT STANDARDS FOR GRADUATION 57 OR 88 STONE.
4. IN AREAS NOT SUBJECTED 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 1556.
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.



EXISTING PAVEMENT SECTION

LIMITS OF OPEN CUT

SM-9.5A SURFACE
BM-2 BASE
21B SUBBASE

1.0' PIPE DIA. \pm 12" EACH SIDE 1.0'

BACKFILL ONLY WITH APPROVED MATERIAL PER APPLICABLE LOCALITY OR DOT STANDARDS

DEPTH VARIES

PIPE SIZE & MATERIAL AS SHOWN ON PLAN.

(6" IN ROCK CONDITIONS) 4"

WIDTH OF TRENCH EXCAVATION

LOCATION OF TRACER WIRE WITH NON-METALLIC PRESSURE PIPE 12 GAUGE MIN. WIRE

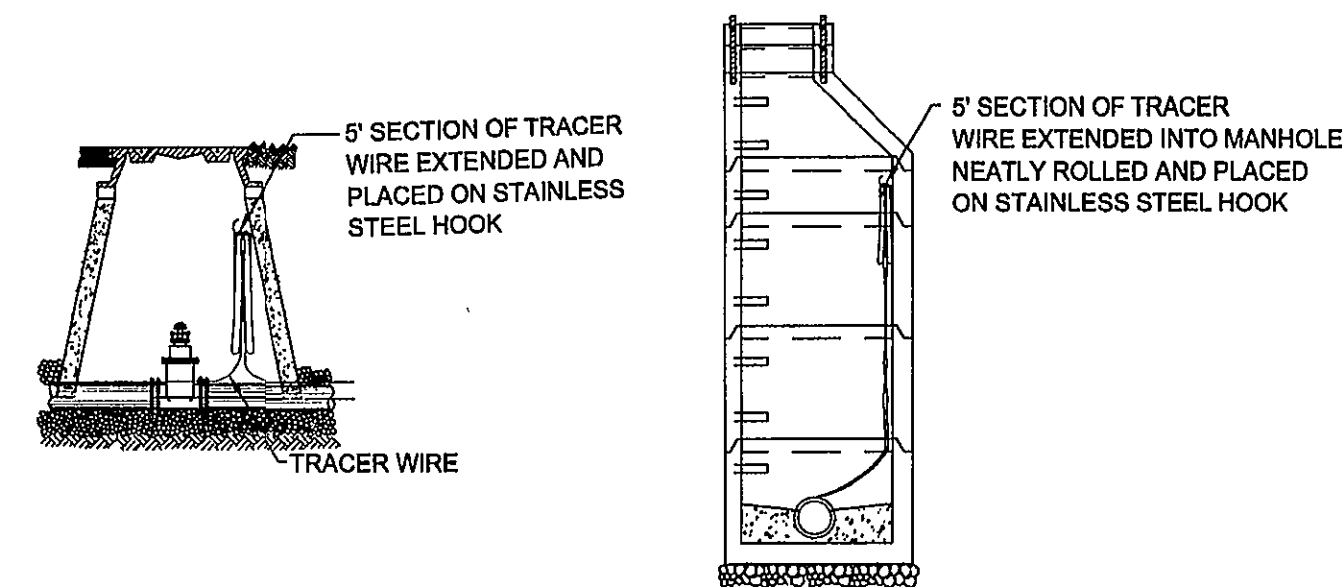
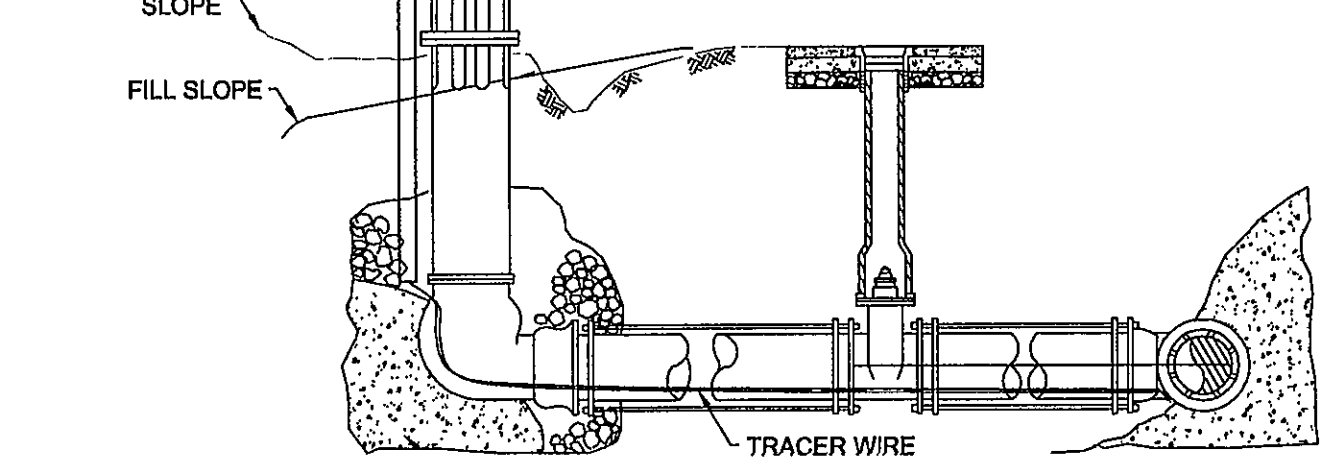
BEDDING STONE TO SPRING LINE OF PIPE AT A MINIMUM, OR PER MANUFACTURER'S RECOMMENDATION.

- 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 COUNTY, 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 LOCAL 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 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 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.

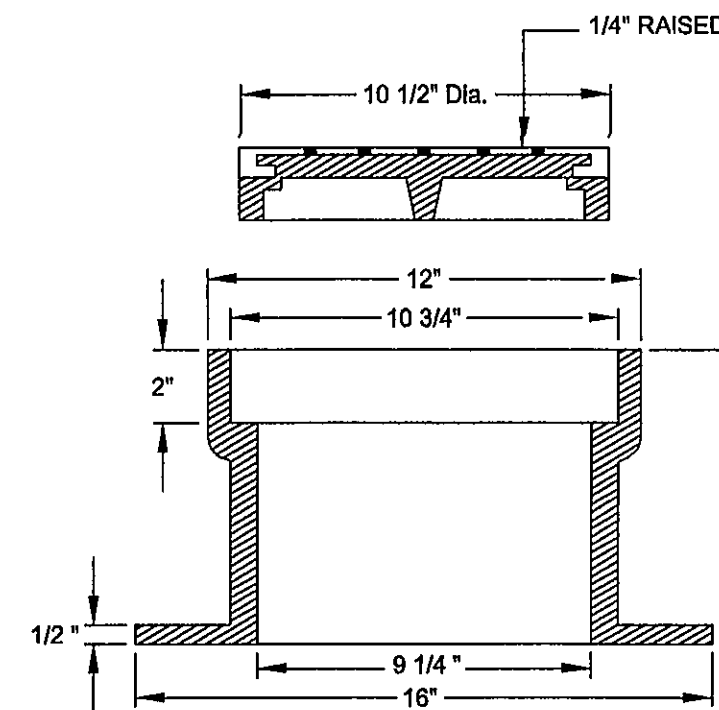
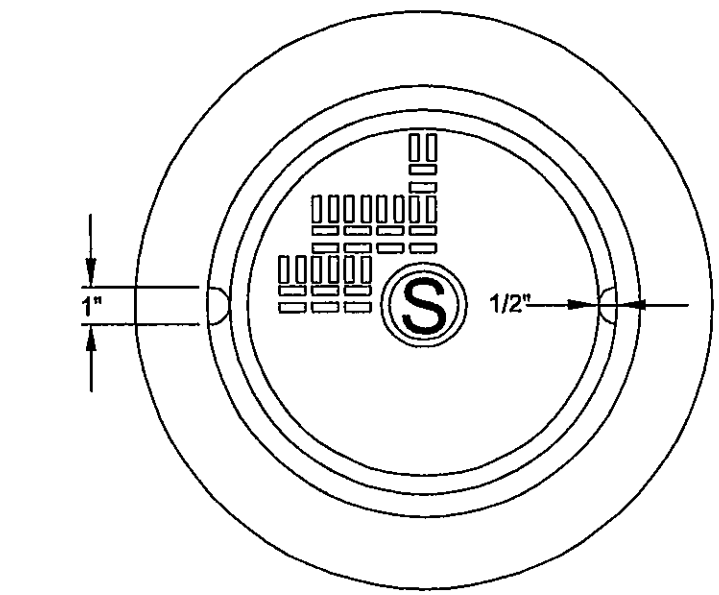
VULCAN H-41 LOCATOR
OPTION C OR EQUIVALENT.

CUT

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 SPLICER KIT (DBY) OR EQUIVALENT.
4. THE CONTINUOUS TRACER WIRE SHALL COVER A MAXIMUM LENGTH OF 500'.
5. ASBUILTS SHALL SHOW TRACER WIRE(S) LOCATION AND ACCESS POINT(S).
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 MAXIMUM OF 1" 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.



NOTES:
1. A MINIMUM CLEARANCE OF 4 INCHES IS REQUIRED
BETWEEN CLEANOUT CAP AND TOP OF COVER.
2. CAPITOL FOUNDRY FRAME AND COVER ITEM # VB-9'S

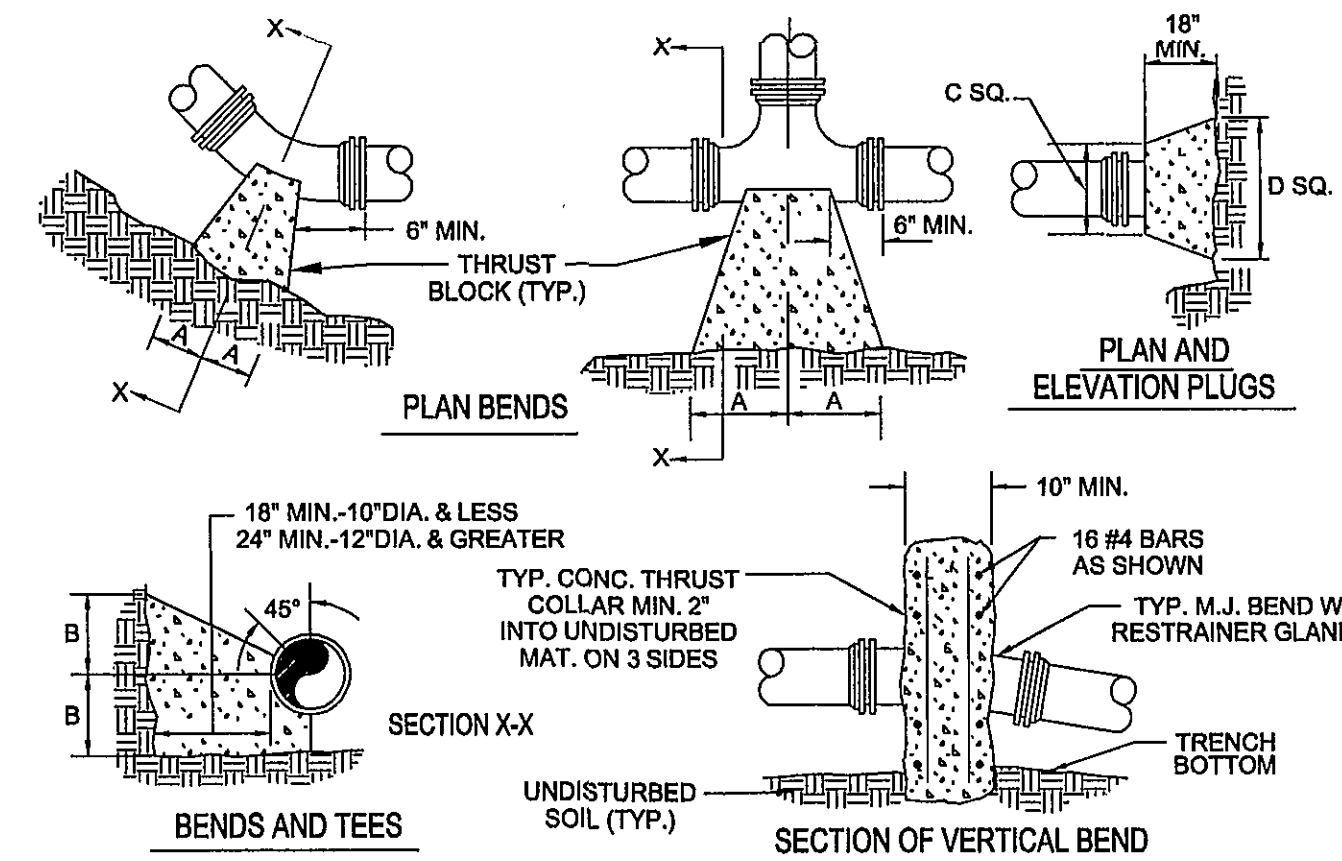
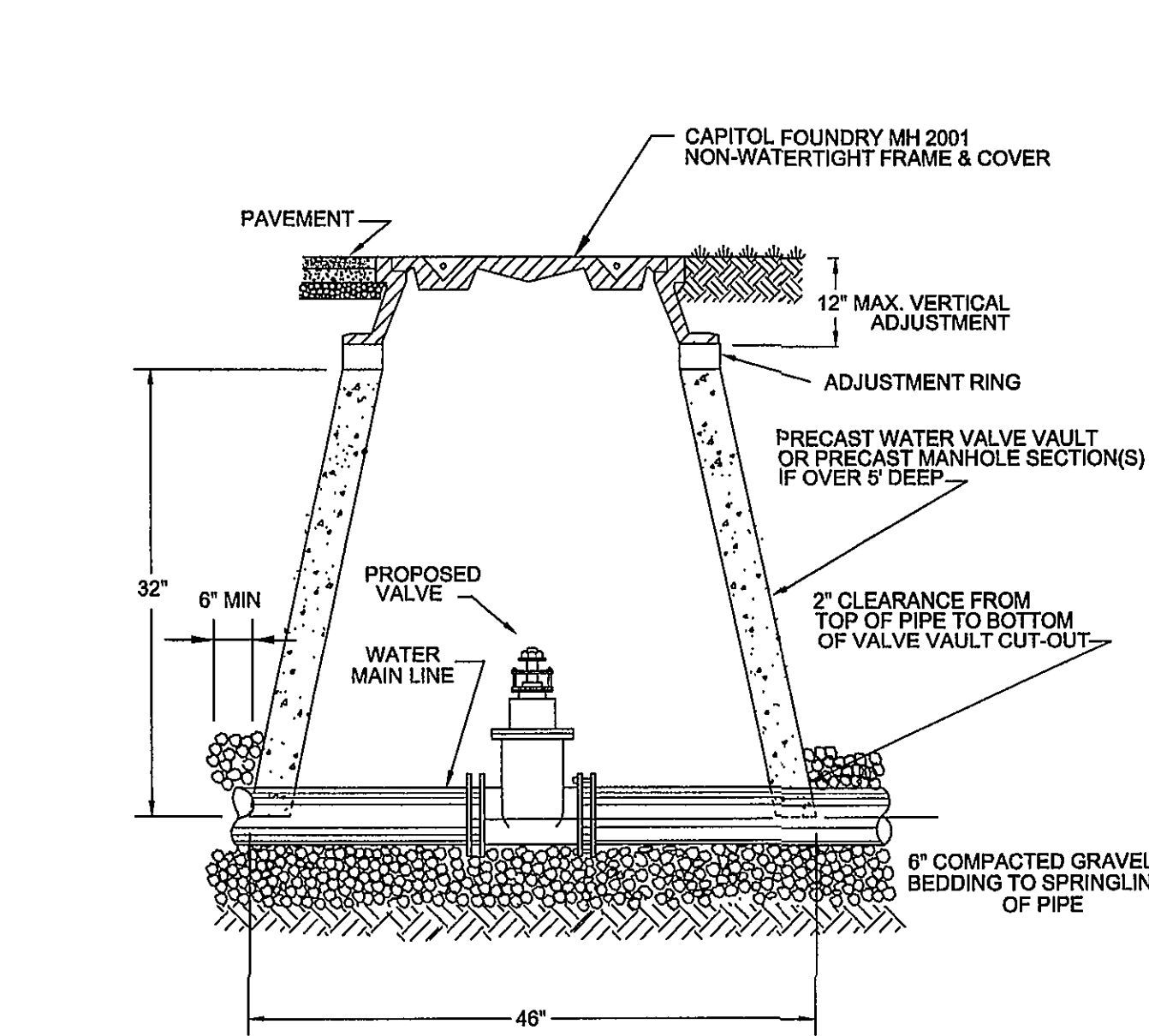


REVISION	DATE	BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS	G-0
07/01/04			

REVISION	DATE	<p align="center">BEDDING AND BACKFILL UNDER PAVEMENT</p>	<p align="center">G-02</p>
07/01/04			

[illegible]

REVISION	DATE	TRAFFIC BEARING CLEANOUT BOX	S-14
01/04			



1. FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
2. FOR VERT. BEND UPWARD, BLOCKING BE SIMILAR TO THAT FOR HORIZ. BEND.
3. GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.

4. ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.

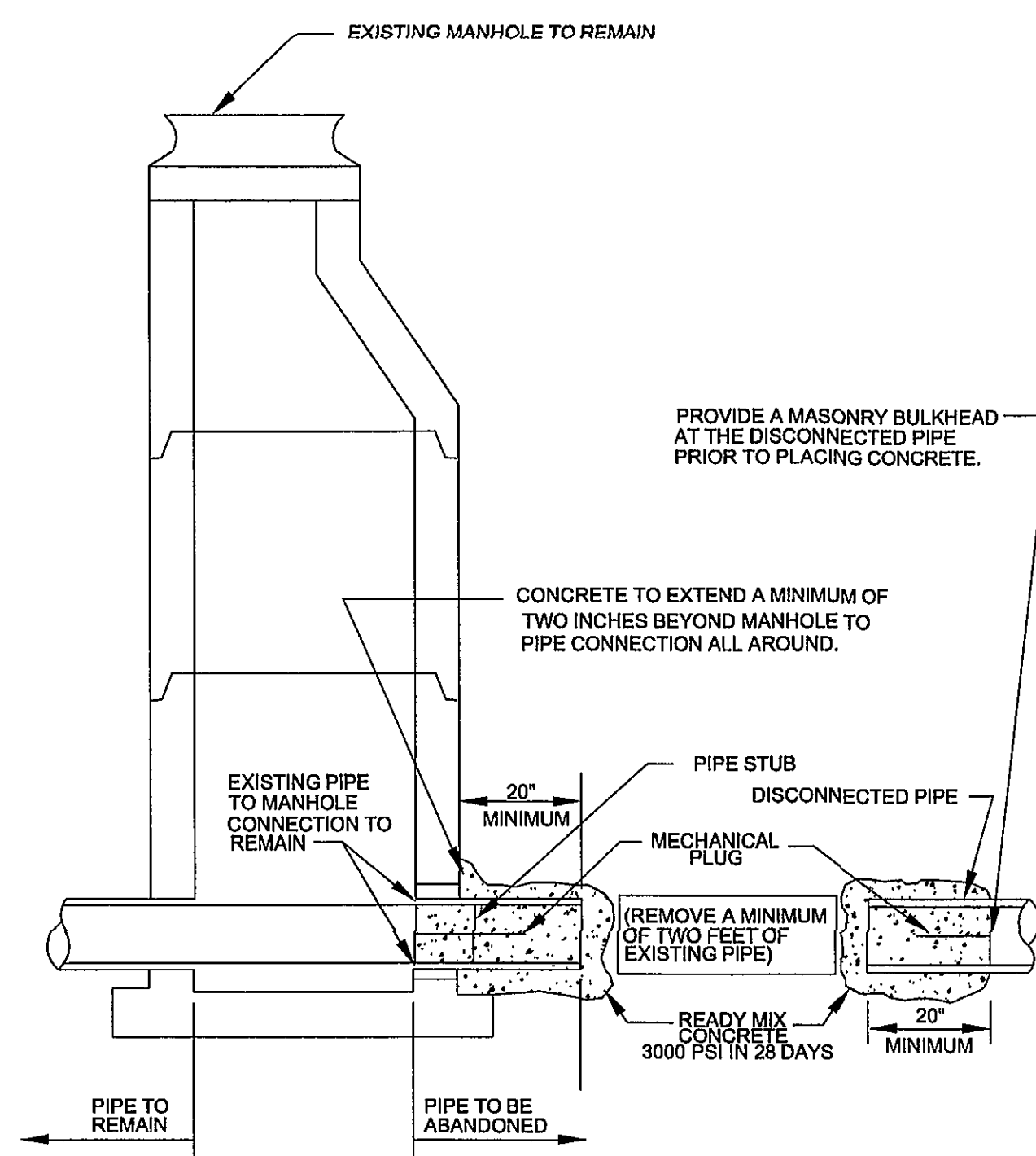
5. THRUST BLOCKS WITH "B" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER

PRESSURE = 200 psi
 BEARING = 2000 psf
 FACTOR OF SAFETY = 1.5

PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	6"	12"	8"	8"	6"	6"	6"	6"	11"	9"	10"	18"
6"	18"	12"	8"	10"	8"	8"	8"	8"	11"	9"	12"	18"
8"	18"	13"	10"	10"	8"	8"	8"	8"	11"	12"	12"	24"
10"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
12"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
16"	26"	20"	16"	18"	11"	13"	11"	13"	16"	20"	20"	36"
24"	82"	42"	62"	30"	44"	22"	22"	16"	82"	42"	82"	42"
30"	185"	42"	100"	42"	52"	24"	40"	30"	185"	42"	185"	42"

FACTOR OF SAFETY = 1.5												
PIPE SIZE	PIPE MAT'L	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	VALVE /PLUG	TEE BRANCH	REDUCER (NOTE 2)	VERT. 45°	VERT. 22 1/2°	VERT. 11 1/4°	
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'	4'	61'	57'	20'	37'	18'	9'	
12"	D.I.	53'	22'	11'	5'	73'	69'	38'	43'	21'	10'	
6"	PVC	30'	12'	6'	3'	56'	38'	29'	35'	17'	8'	
8"	PVC	40'	16'	8'	4'	74'	56'	31'	46'	22'	11'	
10"	PVC	47'	20'	9'	5'	89'	82'	30'	56'	27'	13'	
12"	PVC	56'	23'	11'	6'	106'	88'	56'	66'	32'	16'	

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 SIDE OF THE REDUCER.



REVISION	DATE	<p>WATER LINE VALVE</p> <p>INSTALLATION</p>	<p>W-03</p>
07/01/04			

REVISION	DATE	THRUST BLOCK CONSTRUCTION	W-15
07/01/04			

[illegible]

REVISION DATE	<p align="center">SANITARY SEWER PIPE ABANDONMENT AT A MANHOLE</p>	<p align="center">S-23</p>
01/04		

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and Associates, Inc.**

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FAX (804) 673-3980

A circular professional engineer seal for the Commonwealth of Virginia. The outer ring contains the text "COMMONWEALTH OF VIRGINIA" at the top and "PROFESSIONAL ENGINEER" at the bottom. The center of the seal features a signature, the name "KURT D. COOPER", the number "No. 025590", and the date "B.15.05".

CVS/
pharmacy
13,013 S.F. PROTOTYPE
STORE NUMBER: #394

INTERSECTION OF
BRANDON AVE & COLONIAL AVE.
ROANOKE, VIRGINIA

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REVISIONS:

LAYOUT COORD: COB

PLANNING MGR. COB

DRAWING BY: MRA

ATE: 05/09/05

JOB NUMBER: 113001048

TITLE: _____

UTILITIES DETAILS

SHEET NUMBER:

C9

COMMENTS:

ROANOKE, VA
CVS STORE 3949