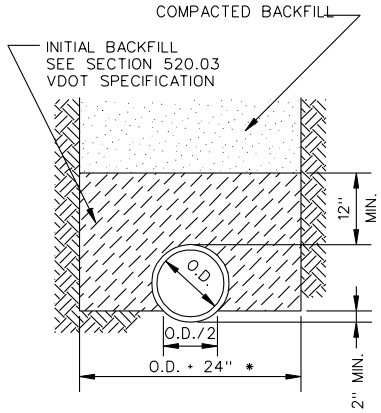

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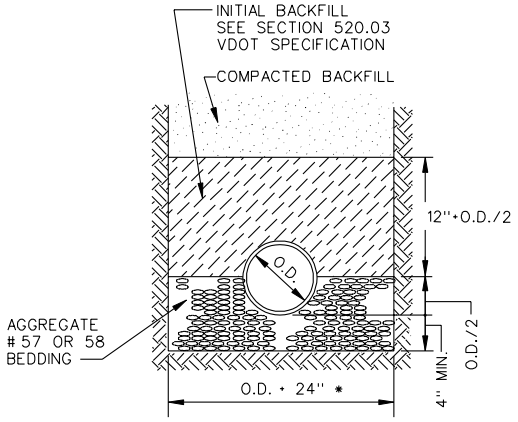

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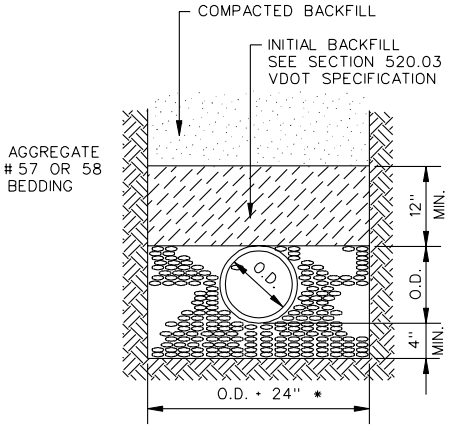

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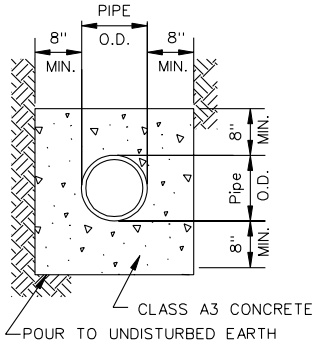
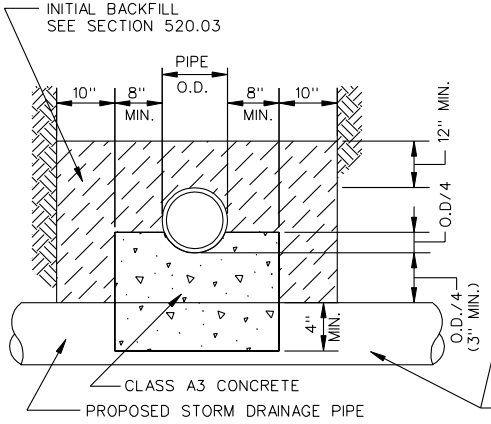
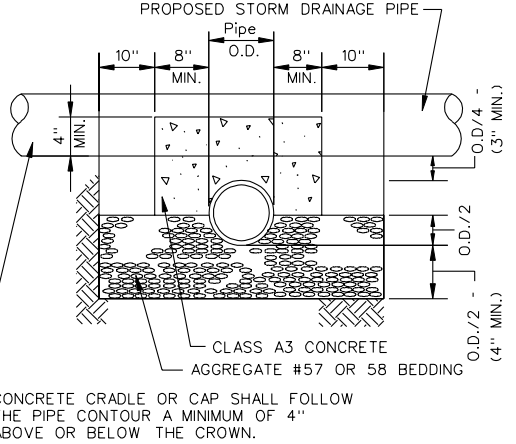


CONCRETE ENCASEMENT



CONCRETE CRADLE



CONCRETE CAP

NOTES:

1. WHERE THE TRENCH BOTTOM IS IN ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED WITH BEDDING MATERIAL.
2. WHERE PIPE FOUNDATIONS ARE YIELDING, PIPE SHALL BE BEDDED ON A MINIMUM OF 8" BEDDING MATERIAL.

* FOR PIPE LESS THAN 12" THE TRENCH WIDTH MAY BE 36" MAXIMUM.

UTILITY BEDDING AND PROTECTION
WATER AND SANITARY SEWER FACILITIES

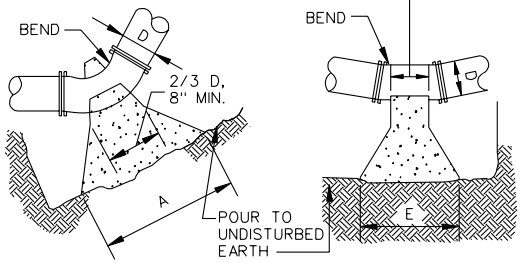
VIRGINIA DEPARTMENT OF TRANSPORTATION

RB-1

NOTE:

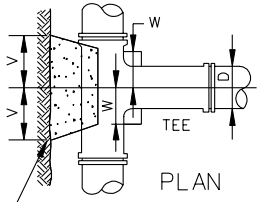
PAINT ALL EXPOSED STEEL WITH TWO COATS OF A WATERPROOF BITUMASTIC COMPOUND.

ALL CONCRETE SHALL BE CLASS A3.

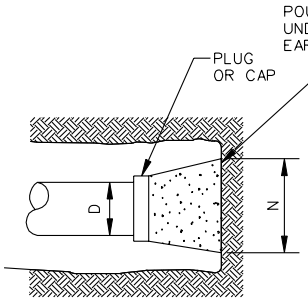


PLAN

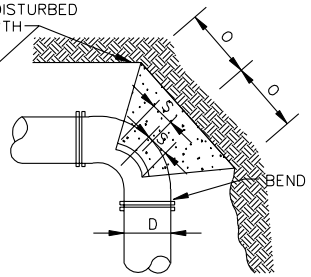
SIDE VIEW



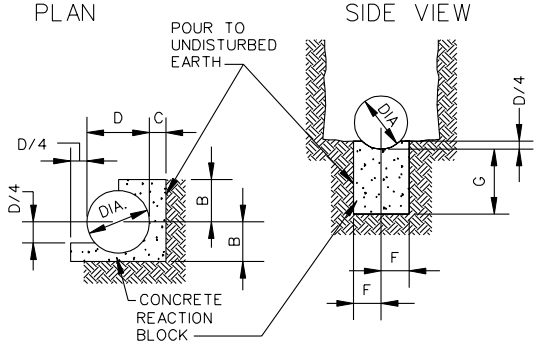
PLAN



PLAN

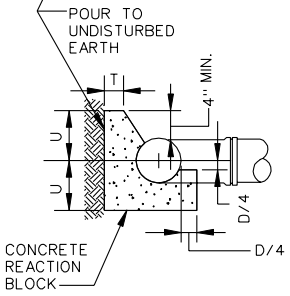


PLAN



SECTION

SECTION



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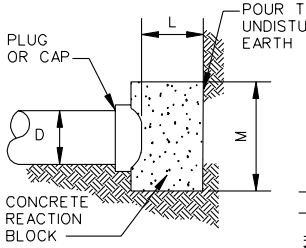

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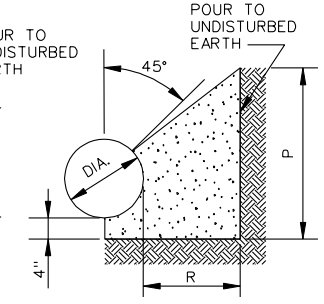


SECTION

HORIZONTAL BENDS 11 1/4° -45°

UPPER VERTICAL BENDS

TEES

PLUGS

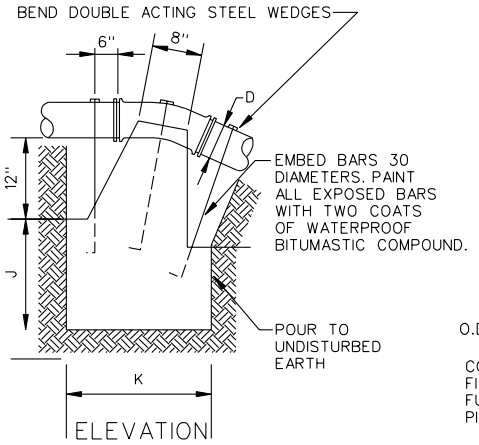
HORIZONTAL BENDS 90

	HORIZONTAL BENDS									UPPER VERTICAL BENDS									PLUGS			HORIZONTAL BENDS				TEE			
DIA.	11 1/4°			22 1/2°			45°			11 1/4°			22 1/2°			45°						90°				BRANCH			
	A	B	C	A	B	C	A	B	C	E	F	G	E	F	G	E	F	G	L	M	N	O	P	R	S	T	U	V	W
4"	.50	.58	.75	.75	.58	.75	1.25	.58	.75	.50	.58	.58	.75	.58	.58	1.25	.58	.58	.50	1.17	1.50	1.17	1.17	1.67	.42	.75	.67	.75	.50
6"	.50	.58	.75	.75	.58	.75	1.25	.58	.75	.50	.58	.58	.75	.58	.58	1.25	.58	.58	.50	1.17	1.50	1.17	1.17	1.67	.42	.75	.67	.75	.50
8"	.67	.67	.75	1.00	.67	.75	2.00	.67	.75	.67	.67	.58	1.00	.67	.67	2.08	.75	.83	.67	1.50	2.25	1.58	1.50	1.75	.50	.75	.83	1.00	.67
10"	.83	.75	.75	1.50	.75	.83	2.50	.75	.92	.83	.75	.67	1.50	.83	.67	2.08	.75	.83	.67	2.00	2.50	1.67	2.08	1.75	.50	.83	1.00	1.25	.67
12"	1.00	.83	.75	1.75	.92	.92	2.92	.92	1.17	1.00	.83	.67	1.75	.83	.67	2.50	.92	.92	.83	2.33	3.25	2.00	2.50	1.92	.58	1.00	1.25	1.42	.67
16"	1.33	1.00	.75	2.33	1.00	1.17	3.67	1.25	1.42	1.33	1.00	.75	2.25	.83	.75	3.33	1.25	1.25	1.00	2.92	4.17	2.08	3.00	2.17	.83	1.17	1.67	1.83	.83
20"	1.67	1.17	1.00	3.17	1.17	1.33	4.75	1.50	1.83	1.67	1.17	.83	3.00	1.17	1.00	4.17	1.50	1.50	1.33	3.75	5.17	3.50	3.83	2.83	1.00	1.33	2.08	2.25	1.17
24"	2.00	1.33	1.00	4.00	1.33	1.50	6.08	1.67	1.92	2.00	1.33	1.00	3.50	1.33	1.00	5.00	1.75	1.75	1.67	4.33	6.25	4.67	4.00	3.00	1.00	1.50	2.50	2.67	1.33
30"	2.50	1.50	1.08	5.00	1.58	1.75	7.95	2.00	3.08	2.50	1.58	1.08	4.17	1.58	1.08	6.25	2.25	2.25	2.00	5.42	7.42	5.75	5.00	3.83	1.17	1.75	3.08	3.92	1.83
36"	3.00	1.92	1.17	5.75	2.00	2.00	8.92	2.50	3.33	3.00	1.58	1.17	5.33	2.00	1.17	7.50	2.50	2.67	2.00	6.50	9.00	6.83	6.00	4.83	1.17	2.00	3.75	3.92	1.83

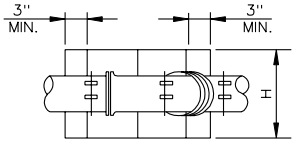
REACTION BLOCKING
WATER AND SANITARY SEWER FACILITIES

VIRGINIA DEPARTMENT OF TRANSPORTATION

1402.01

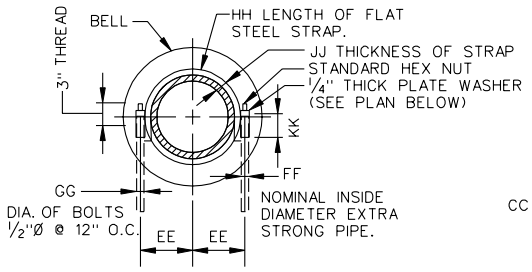


ELEVATION

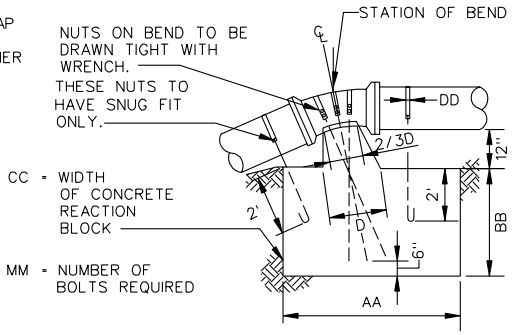


PLAN

LOWER VERTICAL BENDS
4" TO 12" MAINS



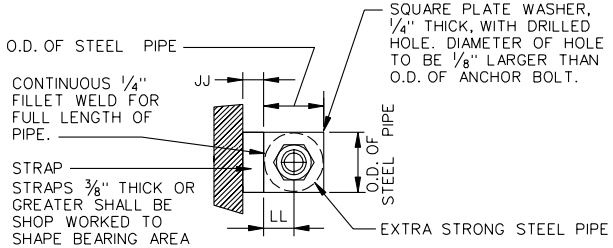
CROSS SECTION



ELEVATION

NOTES:

1. FOR 11 1/4° BENDS USE ONE STRAP ON BEND WITH ANCHOR BOLTS ON CENTER LINE OF BEND.
2. PAINT ALL EXPOSED STEEL WITH TWO COATS OF A WATERPROOF BITUMASTIC COMPOUND.



PLAN
STRAP CONNECTION

LOWER VERTICAL BENDS
16" AND LARGER MAINS

DIA.	LOWER VERTICAL BENDS																																			
	11 1/4°													22 1/2°												45°											
	H			J			K			H			J			K			H			J			K											
4"	1.50			1.25			2.00			2.00			1.83			2.50			2.50			2.50			3.00											
6"	1.50			1.25			2.00			2.00			1.83			2.50			2.50			3.00			3.00											
8"	1.50			1.75			3.33			3.33			2.25			3.25			3.25			3.25			4.50											
10"	1.50			1.25			3.67			3.67			2.50			4.00			4.00			3.67			4.75											
12"	3.00			2.00			4.00			4.00			2.50			4.50			4.50			3.67			5.00											

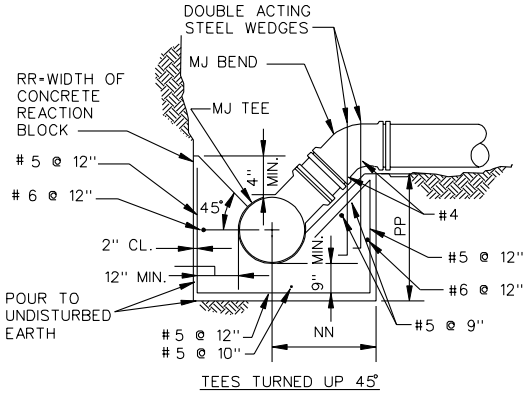
DIA.	LOWER VERTICAL BENDS																																					
	LOWER VERTICAL BENDS REINFORCING BARS			11 1/4°												22 1/2°												45°											
	11 1/4	22 1/2	45	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM
4"	3-#4	3-#4	3-#4																																			
6"	3-#4	3-#4	3-#4																																			
8"	3-#4	3-#4	3-#4																																			
10"	3-#4	3-#4	3-#5																																			
12"	3-#4	3-#4	3-#5																																			
16"				4.00	2.00	3.50	.17	.81	.08	.06	2.83	.02	.19	.06	6	5.75	2.5	4.50	.17	.81	.08	.06	2.83	.02	.19	.06	10	6.67	4.00	5.50	.17	.81	.08	.06	2.83	.02	.19	.06	10
20"				5.00	2.50	4.00	.17	.99	.08	.06	3.53	.03	.19	.06	6	7.50	3.00	4.75	.17	.99	.08	.06	3.58	.03	.19	.06	10	8.25	4.75	6.00	.17	.99	.08	.06	3.58	.03	.19	.06	10
24"				5.75	2.50	4.25	.17	1.17	.10	.07	4.42	.03	.42	.08	6	8.50	3.67	5.00	.21	1.18	.12	.08	4.52	.03	.42	.08	10	9.50	5.50	6.50	.21	1.18	.12	.08	4.42	.03	.42	.11	10
30"				6.50	2.67	5.50	.21	1.44	.12	.08	5.67	.04	.50	.08	6	9.00	4.50	5.75	.21	1.44	.12	.09	5.67	.04	.50	.08	10	11.25	6.25	7.00	.21	1.44	.12	.09	5.67	.04	.50	.08	10
36"				7.00	4.00	5.00	.21	1.71	.17	.10	7.50	.04	.54	.07	6	10.00	5.50	6.17	.21	1.71	.17	.11	7.50	.04	.54	.07	10	12.00	7.00	8.50	.21	1.71	.17	.09	7.50	.04	.54	.07	10

REACTION BLOCKING
WATER AND SANITARY SEWER FACILITIES

VIRGINIA DEPARTMENT OF TRANSPORTATION

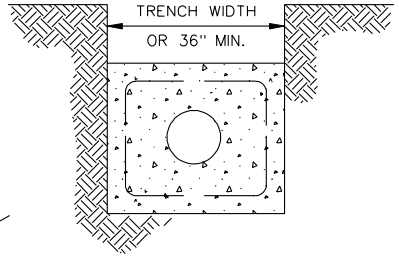
RB-1

TEES TURNED UP				
BRANCH SIZE				
D	NN	NN	PP	RR
DIA.	11 1/4° 22 1/2°	45°	11 1/4° 22 1/2° 45°	11 1/4° 22 1/2° 45°
4"	3.00	2.50	2.50	2.50
6"	3.00	2.50	2.50	2.50
8"	3.00	2.50	2.50	2.50
10"	3.00	2.50	2.50	2.67
12"	4.00	3.00	2.50	2.83

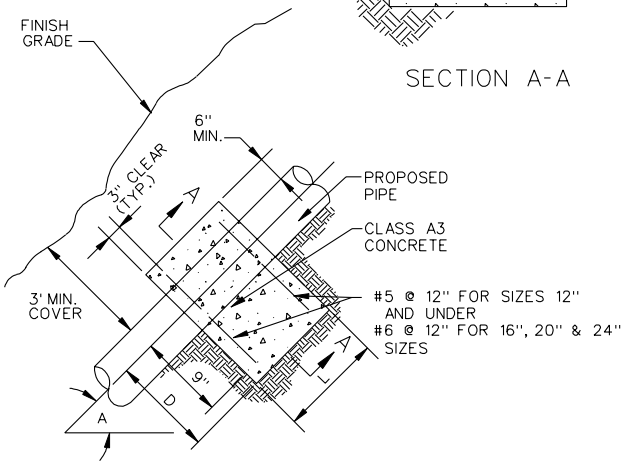


TEES TURNED UP 45°

STRAPPING DETAILS
FOR TEES TURNED UP



SECTION A-A



REACTION BLOCK - STRAIGHT SLOPING PIPE							
SIZE	4"	6"	8"	12"	16"	20"	24"
"D"	12"	15"	15"	18"	21"	24"	27"
"L"	18"	21"	24"	27"	30"	33"	36"

NOTE:

THE STRAIGHT RUN PIPE SHALL BE PROVIDED WITH ANCHOR BLOCKS SPACED THUS:

ANGLE "A"	
0° - 10°	ANCHOR BLOCKS NOT NEEDED
10° - 16°	SPACING @ 100'
16° - 20°	SPACING @ 60'

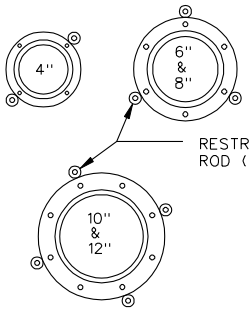
STRAIGHT PIPE
CONCRETE ANCHOR BLOCK

REACTION BLOCKING
WATER AND SANITARY SEWER FACILITIES

VIRGINIA DEPARTMENT OF TRANSPORTATION

SIZE (DIA. - INCHES)	4"	6"	8"	10"	12"	16"	18"	20"	24"
LENGTH ("L" - FEET)	12'	17'	22'	26'	31'	39'	43'	47'	55'

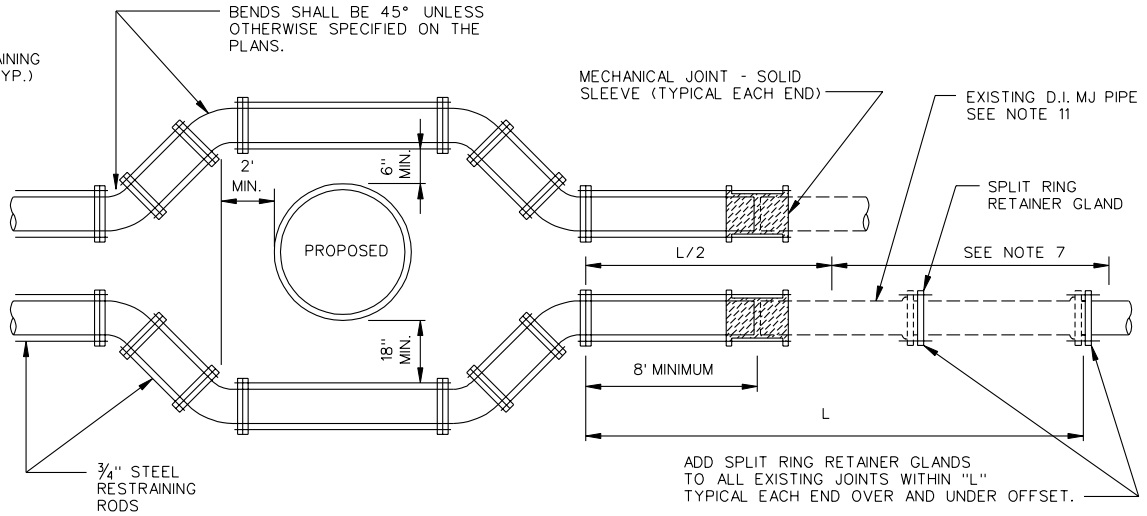
VO-1



SEE TABLE FOR 16" - 24"

TABLE		
PIPE SIZE	NUMBER OF BOLTS	NUMBER OF RODS
16"	12	6
18"	12	6
20"	14	6
24"	16	8

SEE NOTE 7 FOR REDUCTION IN NUMBER OF RODS REQUIRED.



DESIGN CONDITIONS

PRESSURE - 150 PSI
DEPTH OF COVER - 3 FEET
TYPE SOIL - SILT
ROD STRESS - 25,000 PSI

NOTES:

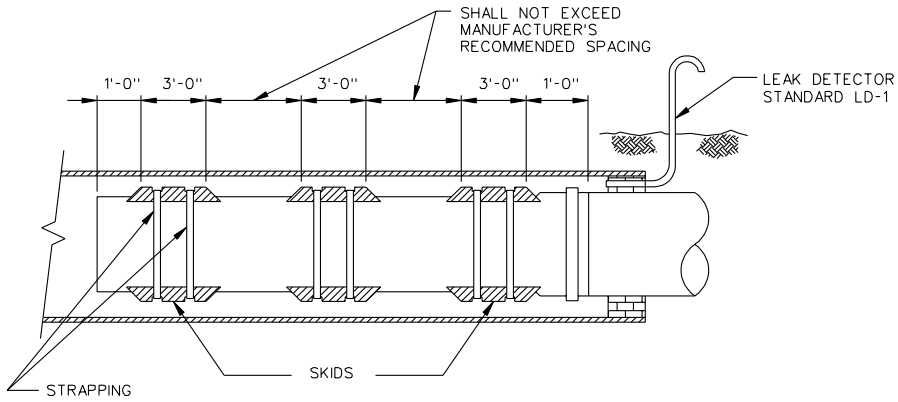
1. RETAINER GLANDS ARE REQUIRED AT EACH FITTING.
2. ALL PIPE AND FITTINGS SHALL BE DUCTILE IRON, MECHANICAL JOINT, CLASS 52 (MIN). WATER MAIN AND FITTINGS SHALL BE CEMENT MORTAR LINED.
3. FOR 12" AND SMALLER LINES, MECHANICAL JOINT OFFSET FITTINGS MAY BE USED IN LIEU OF THE 45° BENDS SHOWN SUBJECT TO THE APPROVAL OF THE ENGINEER. IF USED, THE OFFSETS MUST RESULT IN THE CLEARANCES SHOWN BEING MET OR EXCEEDED.
4. RODS MAY BE INSERTED THROUGH BOLT HOLES IN LIEU OF USING TIE-BOLTS. IF USED, KEEPER NUT & WASHER MUST BE INSTALLED BEHIND GLAND.
5. BOLT HOLES ARE SHOWN AS NORMALLY PROVIDED IN MECHANICAL JOINT FITTINGS, I.E. STRADDLING THE VERTICAL AXIS WHEN FITTING IS POSITIONED FOR A HORIZONTAL CHANGE OF DIRECTION. FITTINGS WITH BOLT HOLES OTHERWISE ORIENTED SHOULD NOT BE USED IN RODDED ASSEMBLIES.
6. TIE BOLTS AND THREADED RODS SHALL BE ¾" WITH A MINIMUM YIELD STRENGTH OF 7550 POUNDS EACH. SPACE SYMMETRICALLY AROUND PIPE.
7. NUMBER OF RODS MAY BE REDUCED TO 50% OF THE NUMBER INDICATED AT L/2 FROM THE BEND AND BEYOND. TWO RODS MINIMUM REQUIRED PER JOINT.
8. ALL RODS AND FASTENERS SHALL BE GIVEN TWO COATS OF ASPHALTIC PAINT AFTER ASSEMBLY.
9. EXISTING C.I. PIPE SHALL BE REPLACED WITH AN 8' MINIMUM LENGTH OF D.I. PIPE AT BOTH ENDS OF THE OFFSET AND RETAINER GLANDS INSTALLED.
10. THE EXISTING PIPING SHALL HAVE ALL JOINTS WITHIN THE LENGTH "L" RESTRAINED BY ADDING A SPLIT RING RETAINER GLAND ("MEG-A-LUG" OR EQUAL) WITH BOLTS TO THE M.J. BELL.
11. LENGTH "L" IN FEET SHALL CONFORM TO THE TABLE ABOVE.
12. SPLIT RING RETAINER GLANDS ARE FOR USE ON DUCTILE IRON MECHANICAL JOINT PIPE ONLY. IF EXISTING PIPE IS ANY OTHER MATERIAL, REMOVE AND REPLACE WITH D.I. MECHANICAL JOINT PIPE FOR THE LENGTH "L" SPECIFIED.

VERTICAL OFFSET
WATER AND SANITARY SEWER FACILITIES

VIRGINIA DEPARTMENT OF TRANSPORTATION

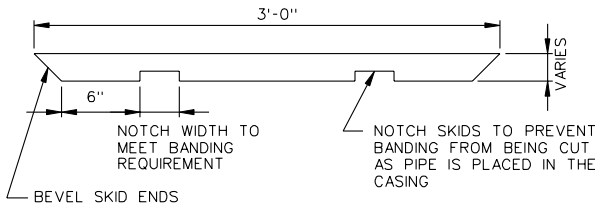
1403.01

EP-1

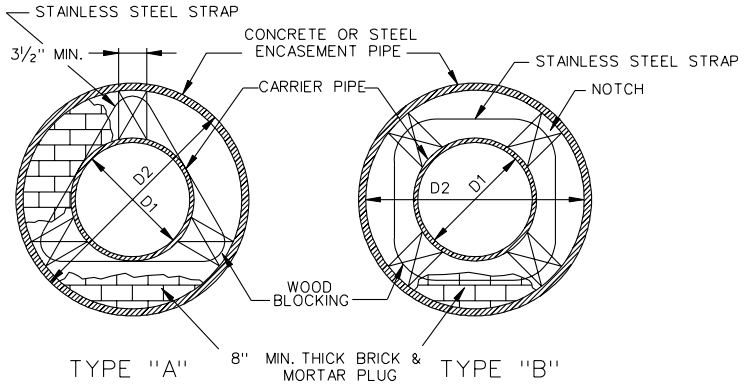


SECTION

ENCASEMENT PIPE WITH CARRIER PIPE



SKID



ENCASEMENT PIPE I.D. (IN.)	STEEL ENCASEMENT PIPE MINIMUM THICKNESS	
	COVER TO 15 FEET	COVER 15 FT. & OVER
12"	1/4"	↑
16"	1/4"	USE MIN. 5/16"
18"	1/4"	
24"	1/4"	↓
30"	3/8"	3/8"
36"	3/8"	3/8"
48"	7/16"	7/16"
54"	7/16"	7/16"
60"	7/16"	7/16"

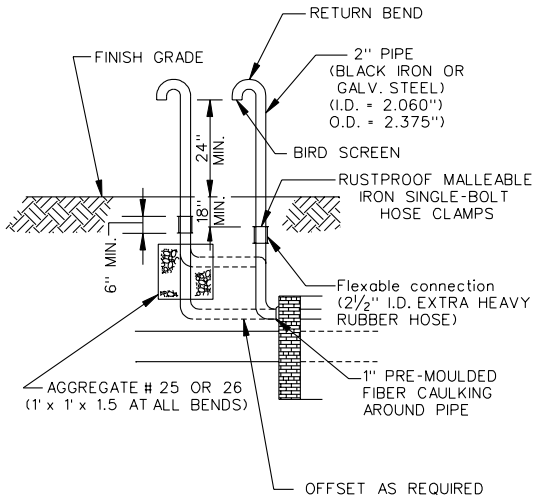
NOTES:

1. TIMBER SKIDS SHALL BE LOCUST, CYPRESS, PRESERVATIVE TREATED HARDWOOD, NEOPRENE, NYLON, PLASTIC OR OTHER MATERIAL OF HIGH ABRASION RESISTANCE AND A LOW FRICTION COEFFICIENT APPROVED BY THE ENGINEER. PRESERVATIVE FOR TIMBER SKIDS SHALL CONFORM TO SECTION 236 OF THE SPECIFICATIONS.
2. METAL STRAPS AND CLIPS HOLDING BLOCKING TO CARRIER PIPE SHALL BE STAINLESS STEEL WITH A MINIMUM CROSS SECTION OF 0.014 SQ. IN. STRAP SPACING SHALL BE A MINIMUM OF TWO (2) BANDS PER SKID LENGTH.
3. STEEL ENCASEMENT PIPE SHALL BE GRADE B AND SHALL CONFORM TO SECTION 232.02 (C)7 OF THE SPECIFICATIONS.
4. CARRIER PIPE SHALL BE PUSHED OR PULLED THROUGH THE ENCASEMENT PIPE SO THAT JOINTS ARE ALWAYS BEING COMPRESSED.
5. CARRIER PIPE SHALL BE WRAPPED WITH TAR PAPER AT MASONRY PLUG.
6. MASONRY PLUG SHALL BE WATERTIGHT.
7. CONCRETE PIPE FOR H-20 LIVE LOAD AS PER STANDARD PC-1.
8. ENCASEMENT PIPE SHALL BE BEDDED IN ACCORDANCE WITH STANDARD PB-1.

CONCRETE OR STEEL ENCASEMENT PIPE

VIRGINIA DEPARTMENT OF TRANSPORTATION

1404.01



Notes:

WRAP CONNECTION IN POLYETHELENE AND PLASTER WITH ROOFING CEMENT OR ASPHALTIC MATERIAL.

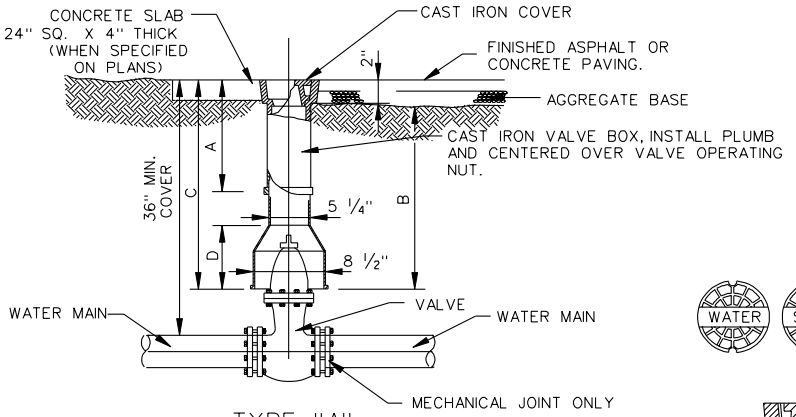
STANDARD LEAK DETECTOR

LD-1

LEAK DETECTOR

VIRGINIA DEPARTMENT OF TRANSPORTATION

VB-1

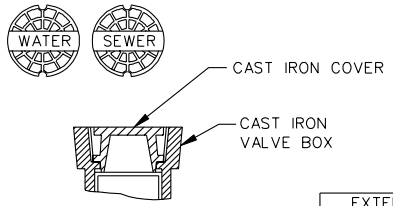


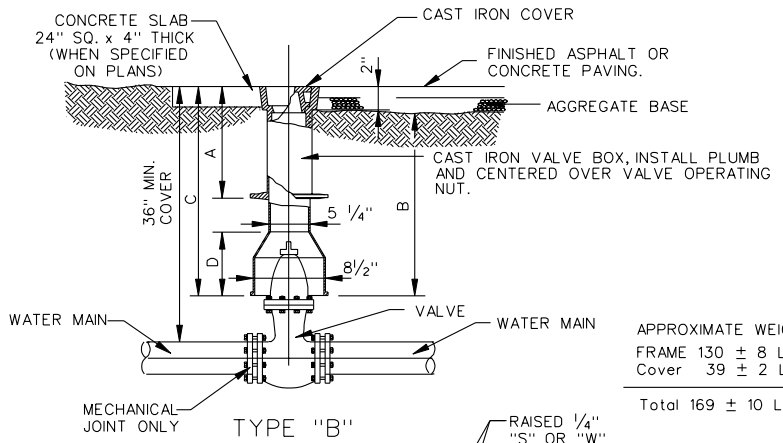
TYPE "A"
(SCREW TYPE)

TYPE "A"

EXTENSION RANGE - C	DIM. A	DIM. B	DIM. D
18"-24"	10.5"	14.5"	6.5"
24"-29"	15"	24"	6.5"
36"-48"	15"	36"	8.5"
36"-60"	26"	36"	8.5"

LONGER BOXES ARE MADE BY ADDING EXTENSIONS.





TYPE "B"
(SLIP TYPE)

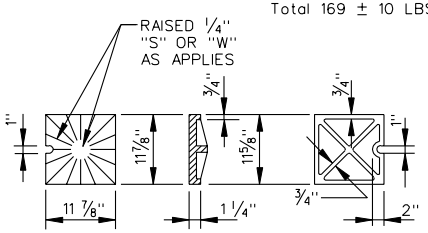
TYPE "B"

EXTENSION RANGE - C	DIM. A	DIM. B	DIM. D
18"-24"	10.5"	15"	6.5"
23"-29"	15.5"	15"	6.5"
24"-36"	15.5"	24.5"	6.5"
36"-48"	15.5"	26"	8.5"
38"-48"	26.5"	24.5"	6.5"
36"-60"	26.5"	36"	8.5"

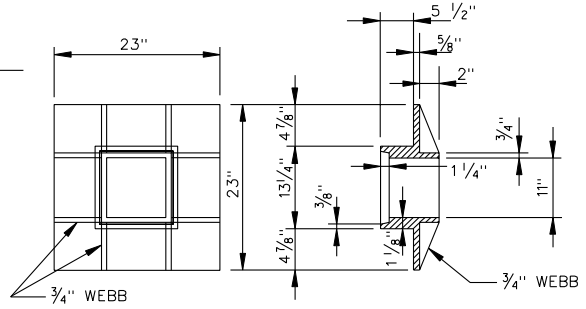
LONGER BOXES ARE MADE BY ADDING EXTENSIONS.

APPROXIMATE WEIGHTS
FRAME 130 ± 8 LBS.
Cover 39 ± 2 LBS.

Total 169 ± 10 LBS.



TYPE "C"



NOTE:

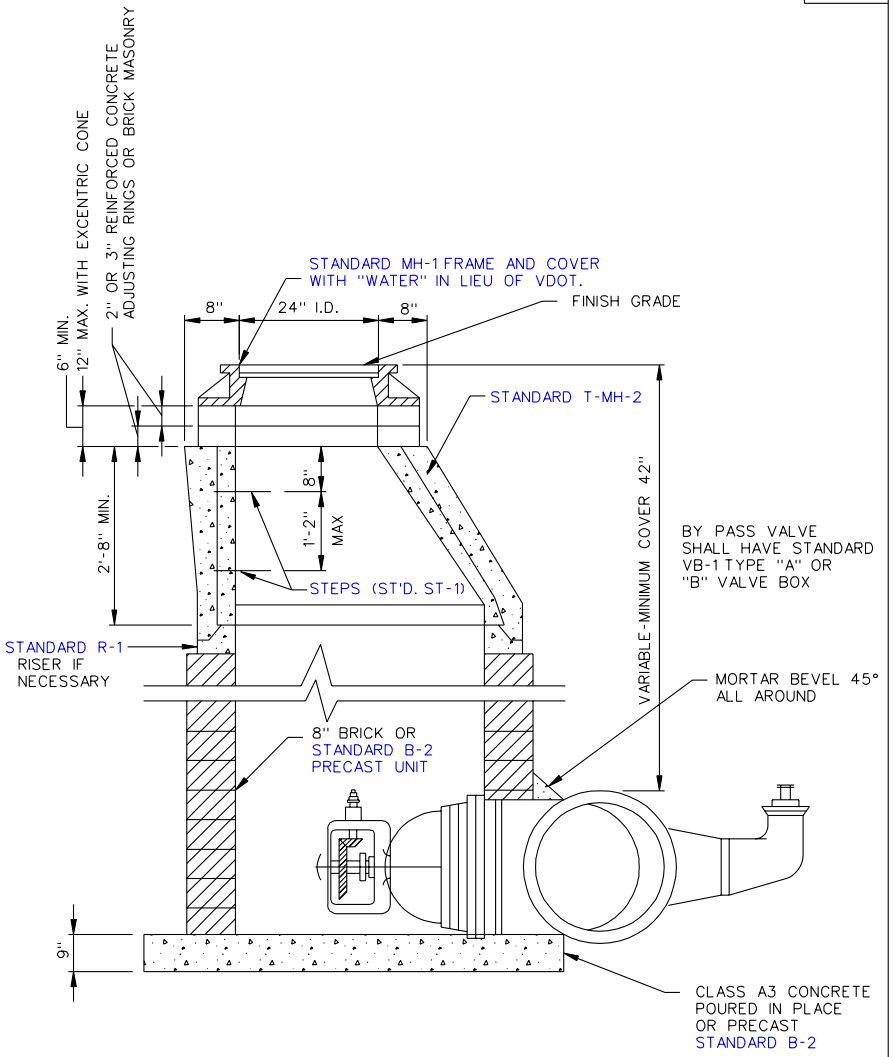
1. CAST IRON SHALL CONFORM TO ASTM A-48M CLASS 30S.

VALVE BOX AND VALVE MANHOLE
WATER AND SANITARY SEWER FACILITIES

1406.01

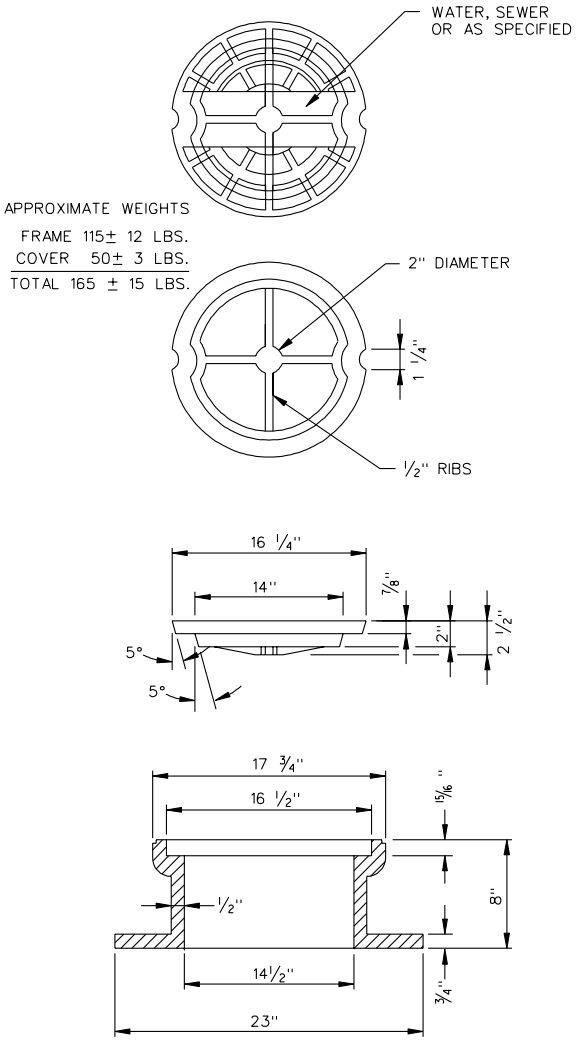
VIRGINIA DEPARTMENT OF TRANSPORTATION

VM-1



VALVE MANHOLE

VB-1



TYPE "D"
VALVE BOX

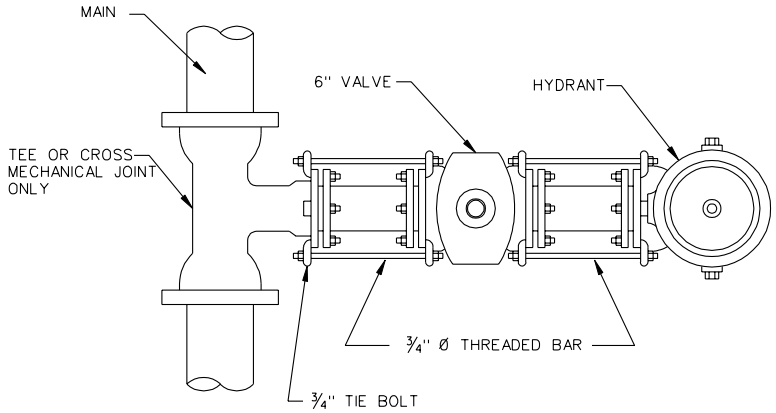
SHEET 2 OF 2

VALVE BOX AND VALVE MANHOLE
WATER AND SANITARY SEWER FACILITIES

VIRGINIA DEPARTMENT OF TRANSPORTATION

1406.02

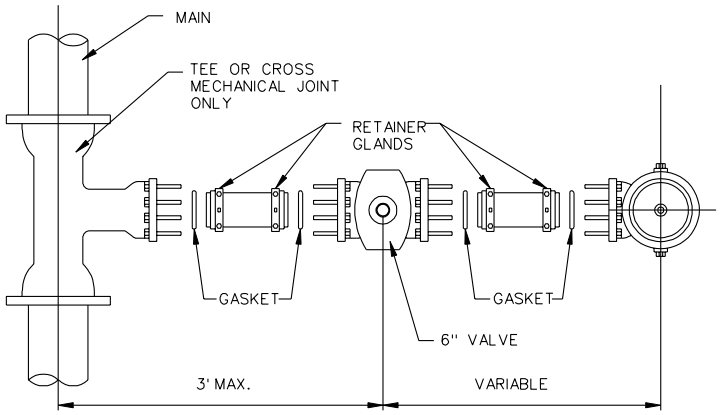
FH-1



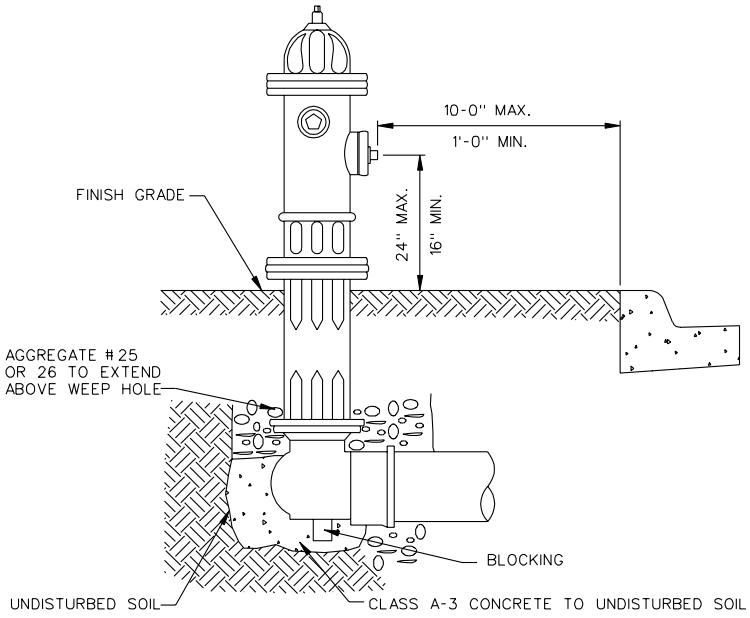
TYPE 1 RESTRAINT

NOTES:

RODS MAY BE INSERTED THROUGH BOLT HOLES IN LIEU OF USING TIE-BOLTS. IF USED, KEEPER NUT & WASHER MUST BE INSTALLED BEHIND GLAND.



TYPE 2 RESTRAINT



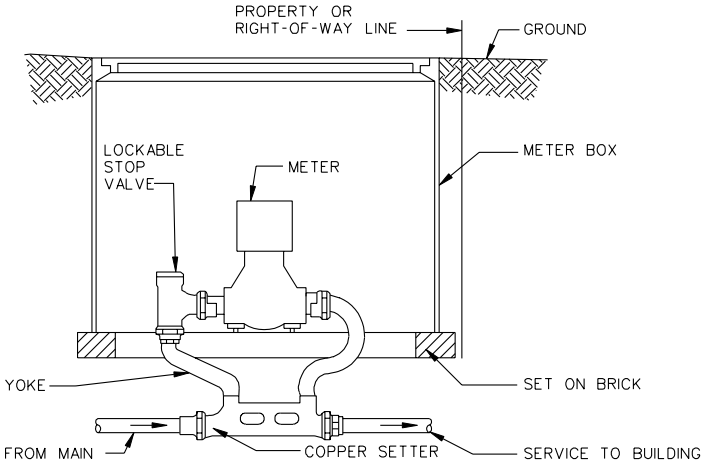
NOTES:

1. HYDRANTS TO BE SET WITH BURY LINE POSITIONED AT GRADE WITH NOZZLES SET AS INDICATED ABOVE.
2. WHEN SET BEHIND CURB THE HOSE NOZZLES ARE TO BE PARALLEL OR AT RIGHT ANGLES TO THE CURB, WITH THE PUMPER NOZZLE FACING THE CURB.
3. BOWL OF THE HYDRANT TO BE BLOCKED AGAINST UNDISTURBED EARTH WITH CLASS A3 CONCRETE OR AS DIRECTED BY THE ENGINEER.
4. FIRE HYDRANTS SHALL HAVE TWO 2 ½" HOSE NOZZLE AND THE SIZE OF THE PUMPER NOZZLE & TYPE OF OPERATING NUT SHALL BE AS SPECIFIED ON THE PLANS.

FIRE HYDRANT

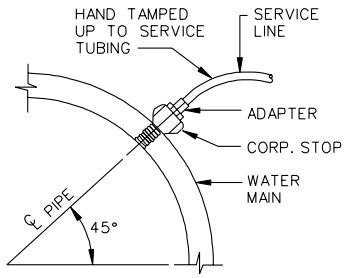
VIRGINIA DEPARTMENT OF TRANSPORTATION

1407.01

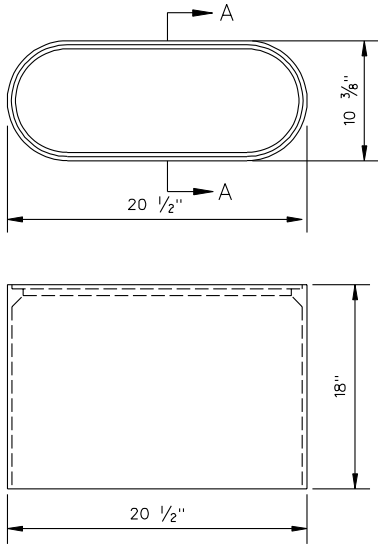


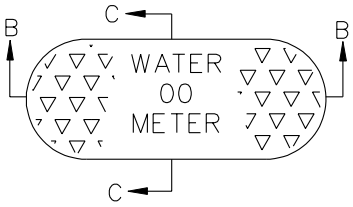
NOTE:

DETAIL IS FOR 5/8" THRU
1" DISC METERS

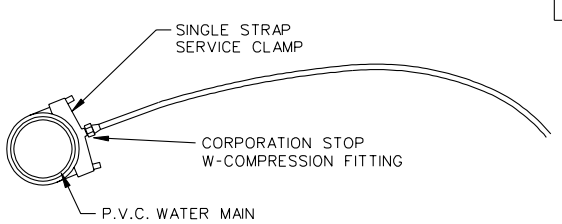


C.I./D.I. TAP INSTALLATION

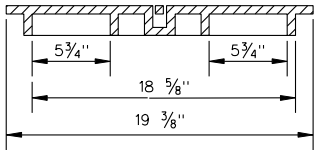




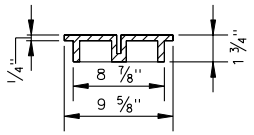
WATER METER BOX
FOR 5/8" THRU 1" METER



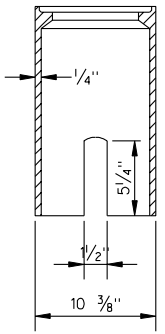
P.V.C. TAP INSTALLATION



SECTION BB



SECTION CC



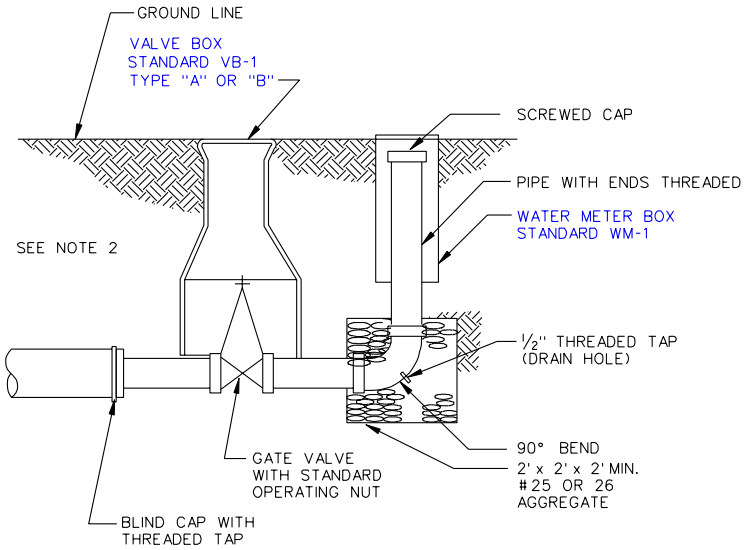
SECTION AA

CAST IRON SHALL CONFORM TO ASTM A-48 CLASS 30S
ALL COPPER FITTINGS SHALL BE FLARED TYPE

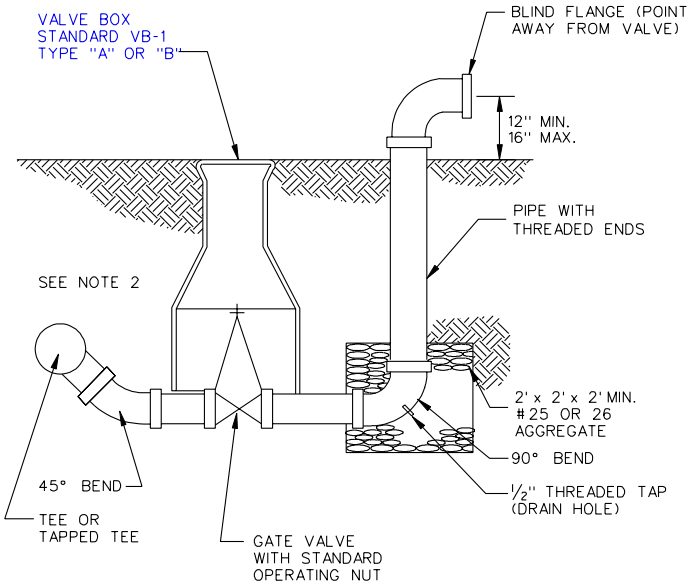
WATER METER AND BOX
WATER SERVICE LINES

VIRGINIA DEPARTMENT OF TRANSPORTATION

BOV-1



TYPE "A"



TYPE "B"

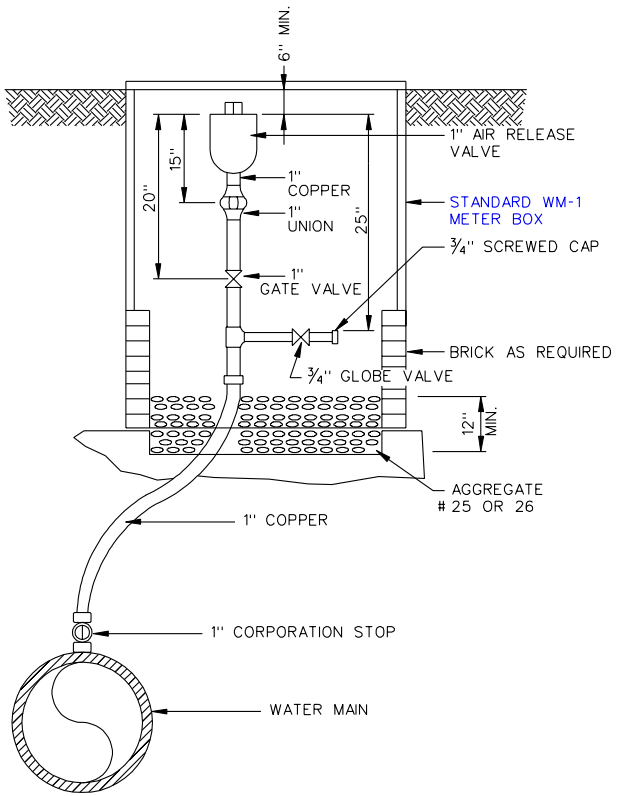
NOTES:

1. ALL BLOW-OFFS SHOULD BE PLACED IN A POSITION TO ASSURE NATURAL DRAINAGE.
2. EITHER TYPE "A" OR TYPE "B" BLOW-OFF MAY BE USED AT DEAD OR SAG SITUATION.
3. BLOW-OFF PIPE SHALL BE THREADED BLACK IRON OR GALVANIZED STEEL PIPE.
4. SIZE OF BLOW-OFF SHALL BE SPECIFIED ON THE PLANS.

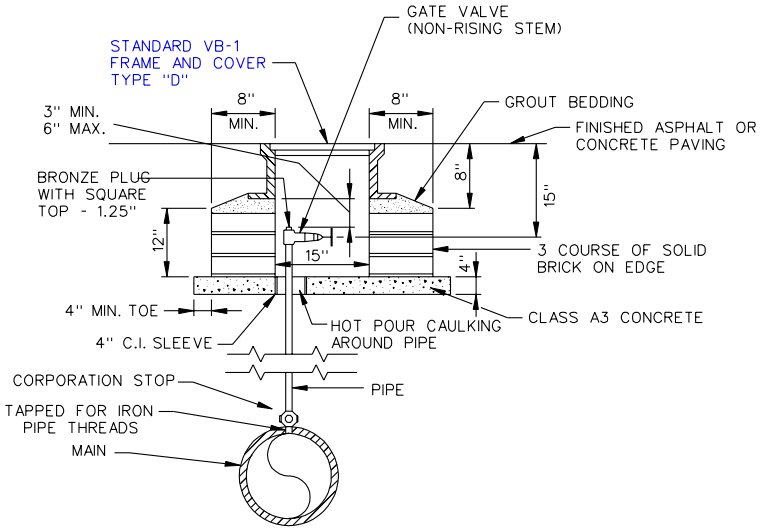
BLOW-OFF VALVE AND BOX
WATER AND SANITARY SEWER FACILITIES

VIRGINIA DEPARTMENT OF TRANSPORTATION

1409.01



TYPE "A"



TYPE "B"

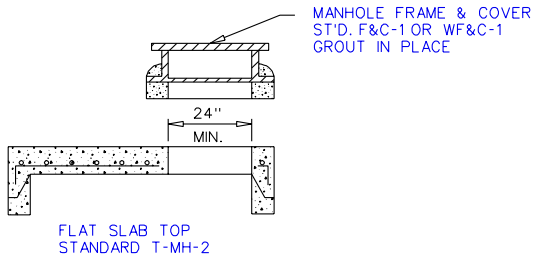
NOTES:

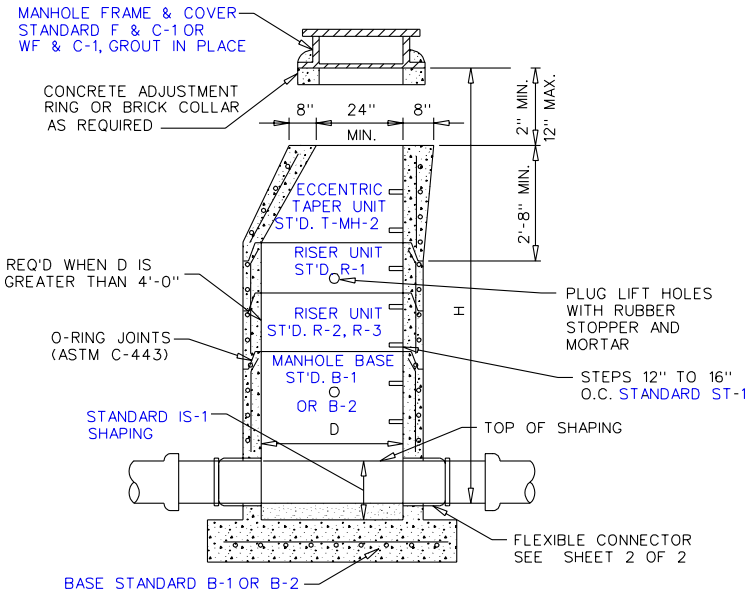
1. TAP FOR AIR RELEASE VALVE SHALL BE STANDARD THREADED TAP OR SADDLE TAP DEPENDING ON MANUFACTURER'S RECOMMENDATION FOR TYPE AND THICKNESS OF PIPE ENCOUNTERED.
2. GRAVEL BEDDED MAY BE USED IN PLACE OF CONCRETE IN NON-TRAFFIC AREAS AT DESCRETION OF ENGINEER.
3. PIPE SHALL BE BLACK IRON / GALVANIZED PIPE.
4. IF 4" OR 6" PVC PIPE IS USED, SADDLE IS REQUIRED FOR CORPORATION STOP.
5. ALL COPPER FITTINGS WILL BE FLARE TYPE.

AIR RELEASE VALVE AND BOX
WATER AND SANITARY SEWER FACILITIES

VIRGINIA DEPARTMENT OF TRANSPORTATION

SMH-1

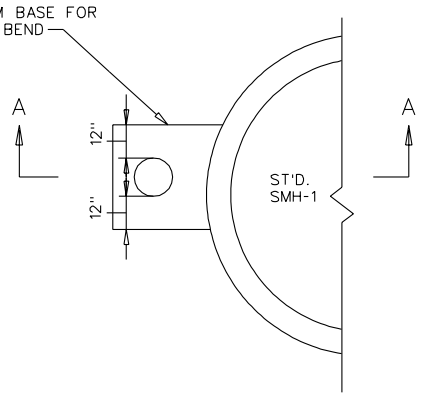




PRECAST CONCRETE MANHOLE

NOTES:

1. WHEN HEIGHT H EXCEEDS 12' A MINIMUM NOMINAL DIAMETER D OF THE BASE UNIT SHALL BE 5' WITH A SECTION HEIGHT OF 6' AND A STANDARD RISER UNIT R-2 OR R-3 SHALL BE REQUIRED.
2. FLAT SLAB TOP STANDARD T-MH-2 SHALL ONLY BE ALLOWED ON SHALLOW MANHOLES.
3. STEPS SHALL BE ENCASED IN CORROSION RESISTANT RUBBER OR OTHER MATERIAL APPROVED BY THE ENGINEER.
4. STEPS SHALL BE OMITTED WHEN SPECIFIED IN THE PLANS.
5. SEE STANDARD SHEET NUMBER 106.07, VOLUME I, FOR ADDITIONAL MANHOLE DETAILS.



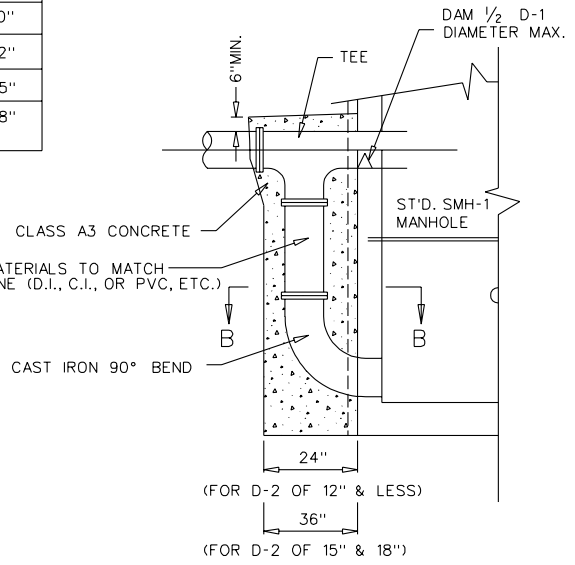
NOTES:

FOR DIMENSIONS NOT SHOWN SEE VDOT ST'D. B-1, B-2 & R-1

CONCRETE ENCASEMENT TO EXTEND TO LIMITS OF EXCAVATION

SECTION B-B

DIA. OF DROP PIPE	
D-1	D-2
8"	8"
10"	8"
12"	10"
15"	12"
18"	15"
24" & ABOVE	18"



SECTION A-A

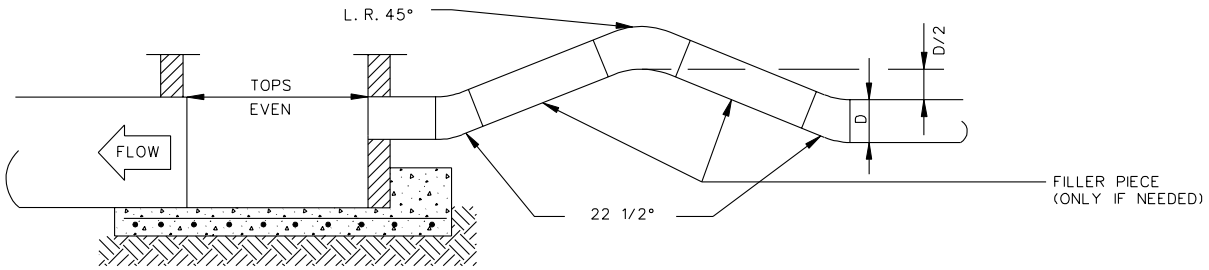
SANITARY DROP CONNECTION

SHEET 1 OF 2

SANITARY SEWER MANHOLE

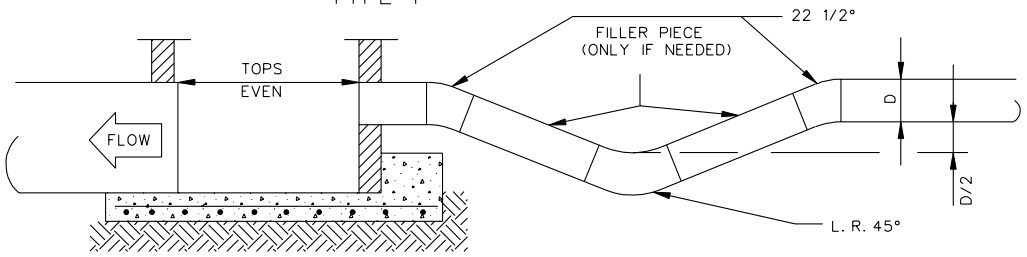
VIRGINIA DEPARTMENT OF TRANSPORTATION

1411.01



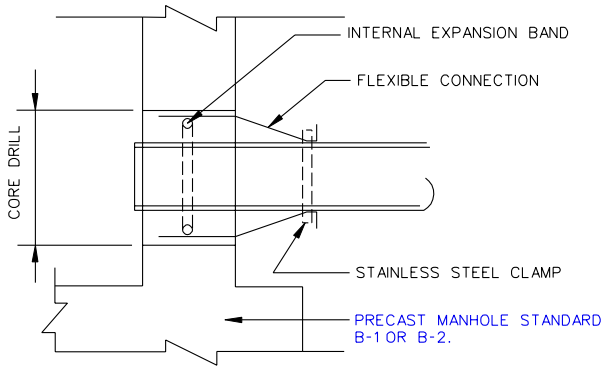
ALL JOINTS SHALL BE RESTRAINED BY
RETAINER GLANDS OR THREADED RODS (GALV.)

FORCE MAIN DISCHARGE
TYPE 1



ALL JOINTS SHALL BE RESTRAINED BY
RETAINER GLANDS OR THREADED RODS (GALV.)

FORCE MAIN DISCHARGE
TYPE 2



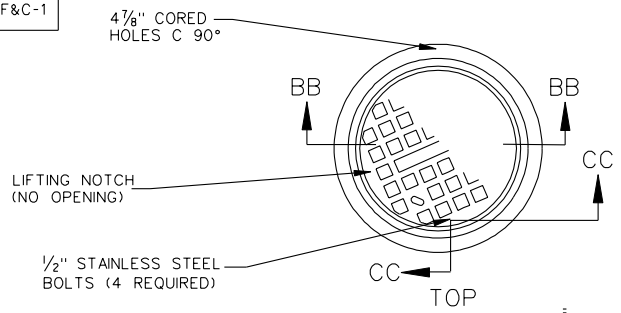
FLEXIBLE CONNECTION

PIPELINES CONNECTING DIRECTLY TO PRECAST MANHOLES SHALL BE MADE WITH A FLEXIBLE BOOT. THE BOOT SHALL MEET ASTM SPECIFICATION C-923M. BOOT SHALL BE MADE FROM NEOPRENE RUBBER AND HAVE A $\frac{3}{8}$" MINIMUM WALL THICKNESS THROUGHOUT. THE INTERNAL EXPANSION BAND TO SECURE THE BOOT IN PLACE SHALL CONFORM TO ALUMINUM MATERIAL SPECIFICATION 6061-T6. THE EXTERNAL BAND TO CLAMP AND SEAL THE BOOT TO THE PIPE SHALL BE STAINLESS STEEL - CORROSION RESISTANT CONFORMING TO ASTM SPECIFICATION A-167M. THE PORT TO RECEIVE THE BOOT SHALL BE CORE DRILLED AND IS TO BE MANUFACTURED AS TO ALLOW FOR LATERAL AND VERTICAL MOVEMENT, AS WELL AS ANGULAR ADJUSTMENT THRU 20 DEGREES. ALL FIELD INSTALLATION OF PIPE THRU MANHOLE SEAL SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS AND SPECIFICATIONS.

SANITARY SEWER MANHOLE
WATER AND SANITARY SEWER FACILITIES

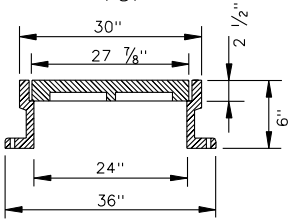
VIRGINIA DEPARTMENT OF TRANSPORTATION

WF&C-1

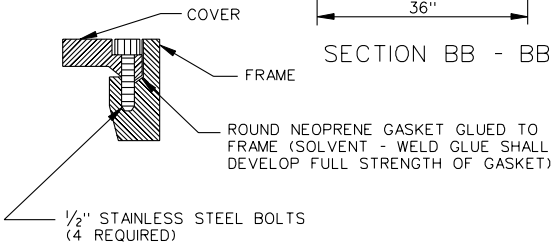


APPROXIMATE WEIGHTS

FRAME	220±	11 LBS.
COVER	260±	13LBS.
TOTAL	480±	24LBS.



SECTION BB - BB

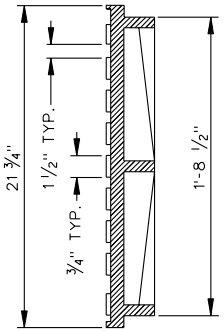


SECTION CC - CC

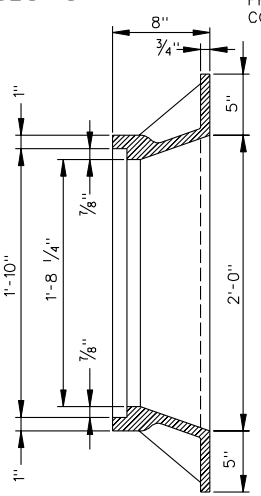
1. DETAILS NOT SHOWN ARE AS REQUIRED FOR ST'D F&C-1 M.H. FRAME AND COVER.
2. FRAME SHALL BE SET IN 1/4" BED OF NON-SAG JOINT SEALER & BOLTED TO THE MANHOLE CONE SECTION WITH 4 3/4" ANCHOR BOLTS.
3. CAST IRON SHALL CONFORM TO ASTM A-48, CLASS 30S.
4. SEATING SURFACES BETWEEN FRAME AND COVER SHALL BE MACHINED.
5. 1/4" x 1" CONTINUOUS NEOPRENE GASKET SHALL BE INSTALLED BETWEEN THE INNER COVER AND THE FRAME.
6. RECESSED PICK HOLE SHALL NOT EXTEND THRU THE COVER.

WATERTIGHT MANHOLE FRAME AND COVER

F&C-1



SECTION A-A



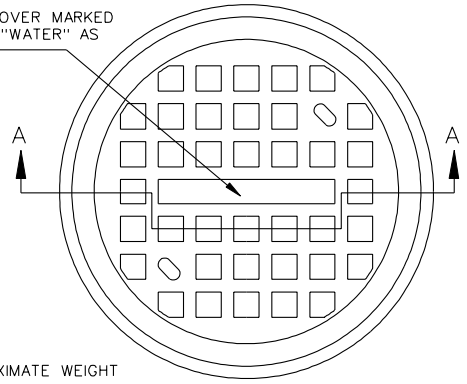
SECTION B-B

NOTES:

1. CAST IRON SHALL CONFORM TO ASTM A-48M, CLASS 30S.
2. CASTING AND FRAME ARE TO BE MACHINED TO ENSURE A FIRM TIGHT FIT.

. DIMENSIONS NOT SHOWN ARE THE SAME AS STANDARD MH-1 FRAME AND COVER.

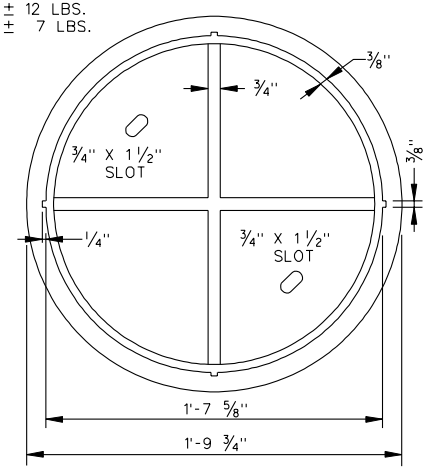
CAST IRON COVER MARKED "SEWER" OR "WATER" AS APPLIES.



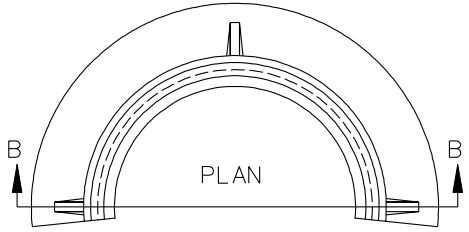
APPROXIMATE WEIGHT

CAST IRON
FRAME 239 ± 12 LBS.
COVER 137 ± 7 LBS.

TOP



BOTTOM

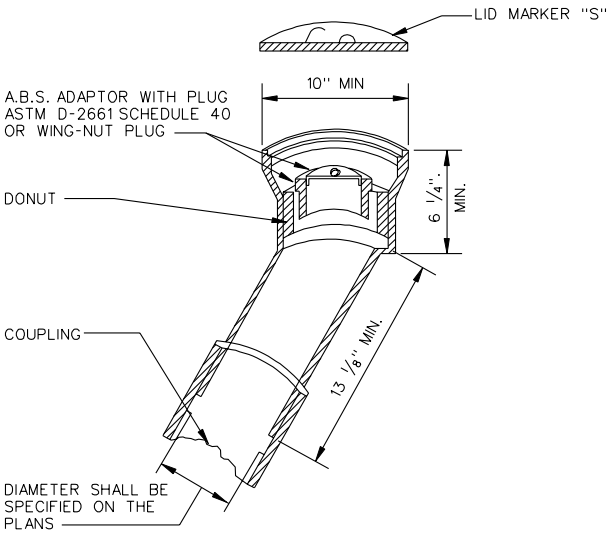


MANHOLE FRAME AND COVER

WATER AND SANITARY SEWER FACILITIES

VIRGINIA DEPARTMENT OF TRANSPORTATION

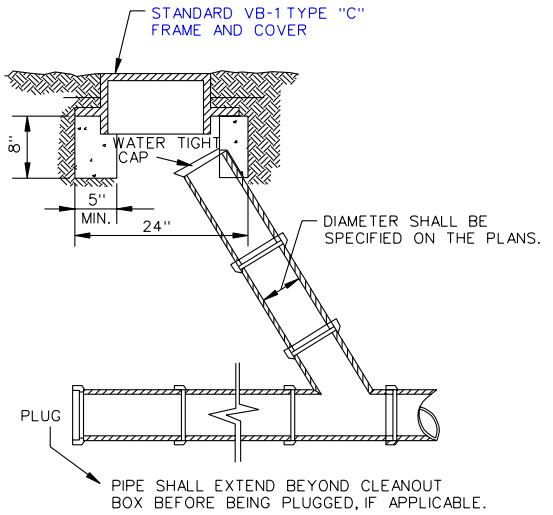
1412.01



NOTES:

1. CLEANOUT MAY ALSO BE INSTALLED WITH IRON BODY SCREW WITH BRASS PLUG AND ONE INCH OF LEAD POURED IN PLACE & CAULKED ON INSIDE & OUTSIDE EDGE.
2. CLEANOUT SHALL BE SUITABLY BRACED WITH 2" x 4" CROSS PIECE EXTENDED OVER & HAVING SOLID BEARING AT LEAST ONE FOOT ON EACH SIDE OF DITCH
3. CLEANOUT WYE AND RISER SHALL BE CONSTRUCTED OF THE SAME MATERIAL AS THE MAIN UNLESS OTHERWISE SPECIFIED.

TYPE "A"



NOTES:

1. CAST IRON FRAME AND COVER SHALL BE SUFFICIENTLY TRUE TO A PLANE SURFACE, SO THAT TOPS WILL NOT ROCK.
2. CLEANOUT WYE AND RISER SHALL BE CONSTRUCTED OF THE SAME MATERIALS AS THE MAIN UNLESS OTHERWISE SPECIFIED.

TYPE "B"

SEWER CLEANOUT

VIRGINIA DEPARTMENT OF TRANSPORTATION