

TABLE II-1  
FINE AGGREGATE

Amounts Finer Than Each Laboratory Sieve (Square Openings *), Percentage by Weight						
Grading	3/8	No. 4	No. 8	No. 16	No. 30	No. 60
A	Min. 100	97+/-3	90+/-10	87+/-18	42+/-17	17+/-4
B	Min. 100	97+/-3				Max. 10
C		Min. 100	97+/-4			Max. 25

\* In inches, except where otherwise indicated. Numbered sieves are those of the U.S. Standard Sieve Series

BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	FINE AGGREGATE	REVISIONS	SS-25
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			

EQUIVALENT PSI	HEIGHT OF GROUND WATER ABOVE PIPE (IN V. F. T.)
0.63	1
0.87	2
1.25	3
1.75	4
2.17	5
2.63	6
3.05	7
3.50	8
3.96	9
4.44	10
4.94	11
5.46	12

For anything above 11.5 VF, allow maximum 5.0 PSI.

NOTES:

1. Table based on 1.0 v.f. of water = 0.4335 PSI.
2. The appropriate PSI allowance for average vertical foot of ground water shall be added to the base starting pressure of 4.0 PSI, but in no case shall the resulting pressure be more than 9.0 PSI.
3. Interpolate for fractions of a foot of water.

BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	AIR TESTING BACK PRESSURE EQUIVALENCY TABLE	REVISIONS	SS-26
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			

Specified Time for Length (L) Shown (minutes)									
Length (ft)	100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	500 ft
1	3.48	3.97	4.46	4.94	5.43	5.91	6.39	6.87	7.35
2	6.96	7.94	8.92	9.89	10.86	11.83	12.80	13.76	14.73
3	10.44	12.91	15.38	17.85	20.32	22.79	25.26	27.73	30.20
4	13.92	17.88	21.84	25.80	29.76	33.72	37.68	41.64	45.60
5	17.40	22.86	28.32	33.78	39.24	44.70	50.16	55.62	61.08
6	20.88	27.94	34.40	40.86	47.32	53.78	60.24	66.70	73.16
7	24.36	32.02	39.48	46.94	53.90	60.86	67.82	74.78	81.74
8	27.84	36.10	43.56	51.02	58.08	65.04	72.00	78.96	85.92
9	31.32	40.18	47.64	55.10	62.16	69.12	76.08	83.04	90.00
10	34.80	44.26	51.72	59.18	66.24	73.20	80.16	87.12	94.08
11	38.28	48.34	55.80	63.26	70.32	77.28	84.24	91.20	98.16
12	41.76	52.42	59.88	67.34	74.40	81.36	88.32	95.28	102.24
13	45.24	56.50	63.96	71.42	78.48	85.44	92.40	99.36	106.32
14	48.72	60.58	68.04	75.50	82.56	89.52	96.48	103.44	110.40
15	52.20	64.66	72.12	79.58	86.64	93.60	100.56	107.52	114.48
16	55.68	68.74	76.20	83.66	90.72	97.68	104.64	111.60	118.56
17	59.16	72.82	80.28	87.74	94.80	101.76	108.72	115.68	122.64
18	62.64	76.90	84.36	91.82	98.88	105.84	112.80	119.76	126.72
19	66.12	80.98	88.44	95.90	102.96	109.92	116.88	123.84	130.80
20	69.60	85.06	92.52	99.98	107.04	114.00	120.96	127.92	134.88

MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015

NOTES:

1. DUCTILE IRON PIPE - TEST SHALL BE IN ACCORDANCE WITH ASTM A216 AND A215.
2. PVC AND PE PIPE - TEST SHALL BE IN ACCORDANCE WITH ASTM F417 AND F417-02(2002).

BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	MINIMUM SPECIFIED TIME FOR A 1.0 PSIG PRESSURE DROP	REVISIONS	SS-27
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			

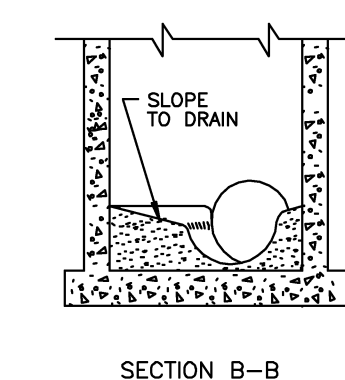
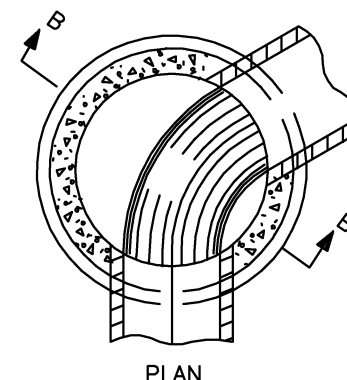
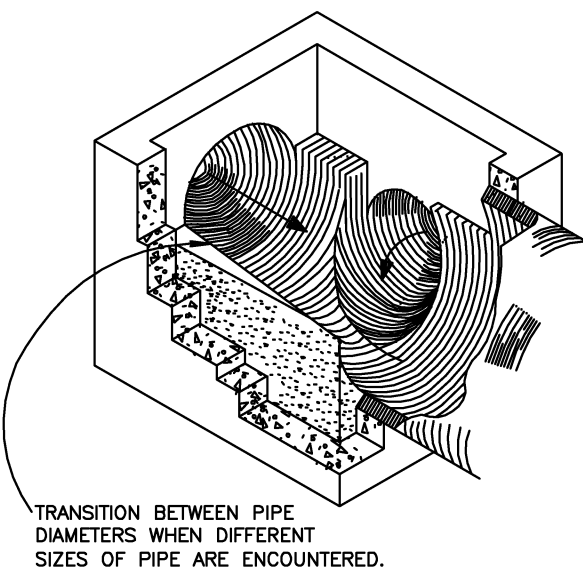
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Length (ft)	100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	500 ft
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3	10.44	12.91	15.38	17.85	20.32	22.79	25.26	27.73	30.20
4	13.92	17.88	21.84	25.80	29.76	33.72	37.68	41.64	45.60
5	17.40	22.86	28.32	33.78	39.24	44.70	50.16	55.62	61.08
6	20.88	27.94	34.40	40.86	47.32	53.78	60.24	66.70	73.16
7	24.36	32.02	39.48	46.94	53.90	60.86	67.82	74.78	81.74
8	27.84	36.10	43.56	51.02	58.08	65.04	72.00	78.96	85.92
9	31.32	40.18	47.64	55.10	62.16	69.12	76.08	83.04	90.00
10	34.80	44.26	51.72	59.18	66.24	73.20	80.16	87.12	94.08
11	38.28	48.34	55.80	63.26	70.32	77.28	84.24	91.20	98.16
12	41.76	52.42	59.88	67.34	74.40	81.36	88.32	95.28	102.24
13	45.24	56.50	63.96	71.42	78.48	85.44	92.40	99.36	106.32
14	48.72	60.58	68.04	75.50	82.56	89.52	96.48	103.44	110.40
15	52.20	64.66	72.12	79.58	86.64	93.60	100.56	107.52	114.48
16	55.68	68.74	76.20	83.66	90.72	97.68	104.64	111.60	118.56
17	59.16	72.82	80.28	87.74	94.80	101.76	108.72	115.68	122.64
18	62.64	76.90	84.36	91.82	98.88	105.84	112.80	119.76	126.72
19	66.12	80.98	88.44	95.90	102.96	109.92	116.88	123.84	130.80
20	69.60	85.06	92.52	99.98	107.04	114.00	120.96	127.92	134.88

MINIMUM SPECIFIED TIME REQUIRED FOR A 0.5 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015

NOTES:

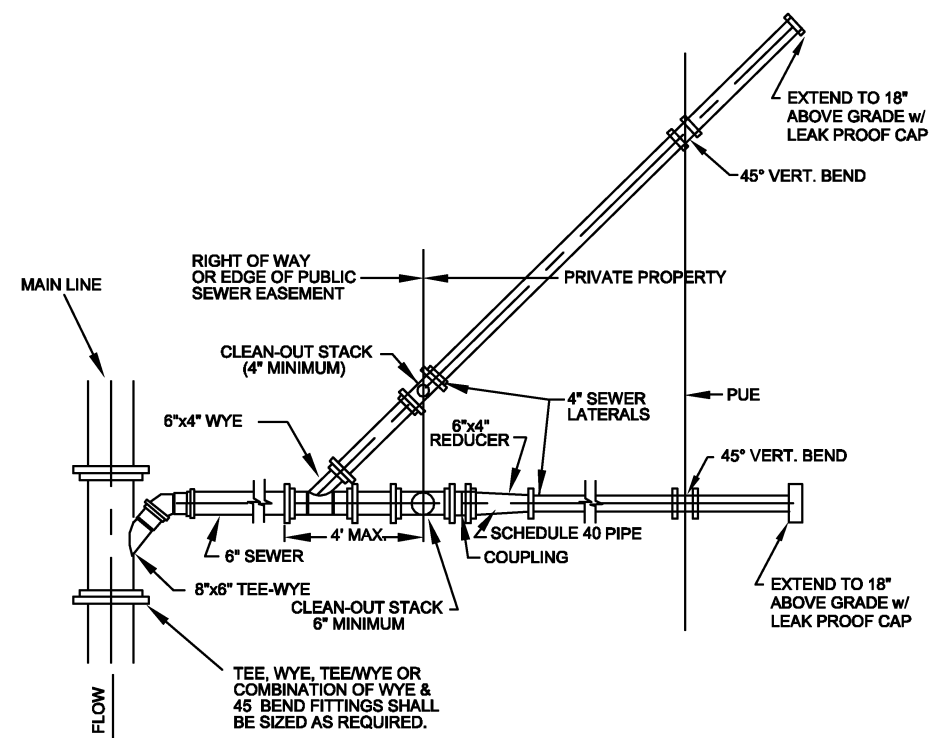
1. DUCTILE IRON PIPE - TEST SHALL BE IN ACCORDANCE WITH ASTM A216 AND A215.
2. PVC AND PE PIPE - TEST SHALL BE IN ACCORDANCE WITH ASTM F417 AND F417-02(2002).

BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	MINIMUM SPECIFIED TIME FOR A 0.5 PSIG PRESSURE DROP	REVISIONS	SS-28
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			



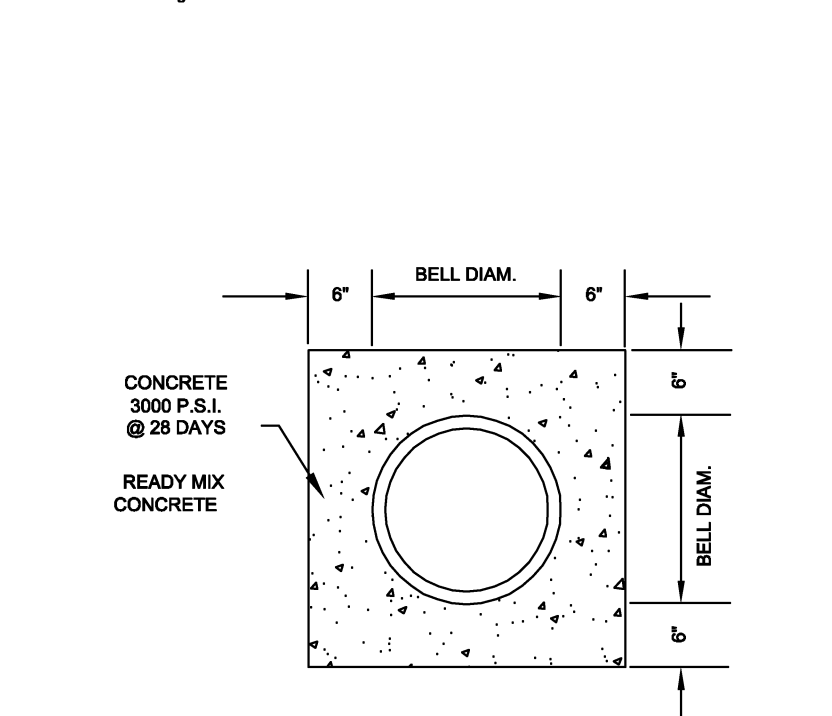
BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	MANHOLE INVERT SHAPING	REVISIONS	SS-31
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			

- 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.
  5. ALL MAIN LINE TAPS ON ACTIVE MAINS WILL BE PERFORMED BY CONTRACTOR AND INSPECTED BY THE COUNTY.
  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.

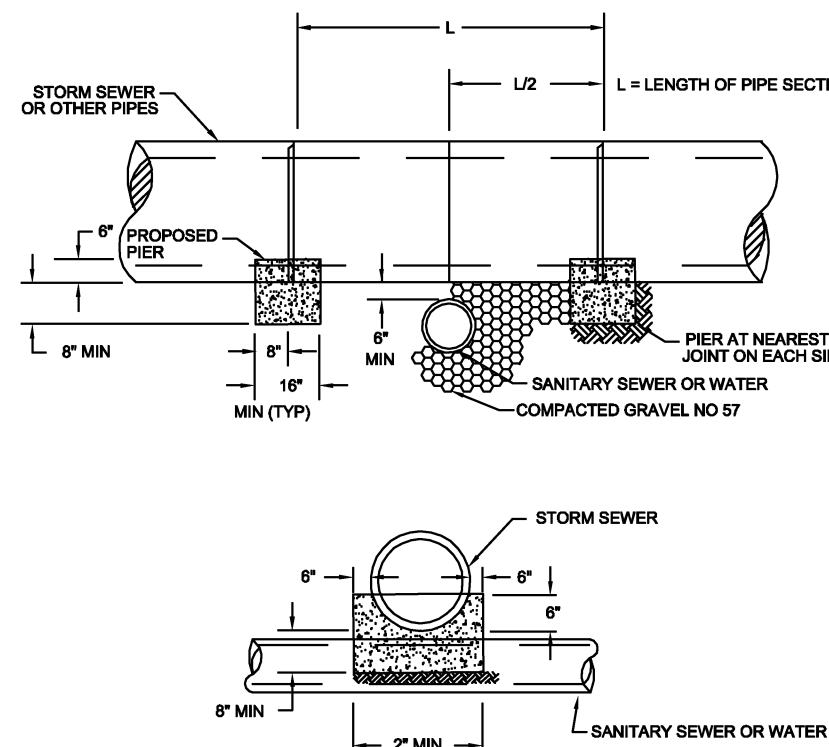


BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	COMBINED 6" BY TWO 4" SANITARY SEWER LATERALS	REVISIONS	SS-11
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			

- NOTES:
1. When water line is located below a sewer line, the sewer line to be encased along its length where it is within 12" of water line.
  2. Sewer line crossing streams must be concrete encased.

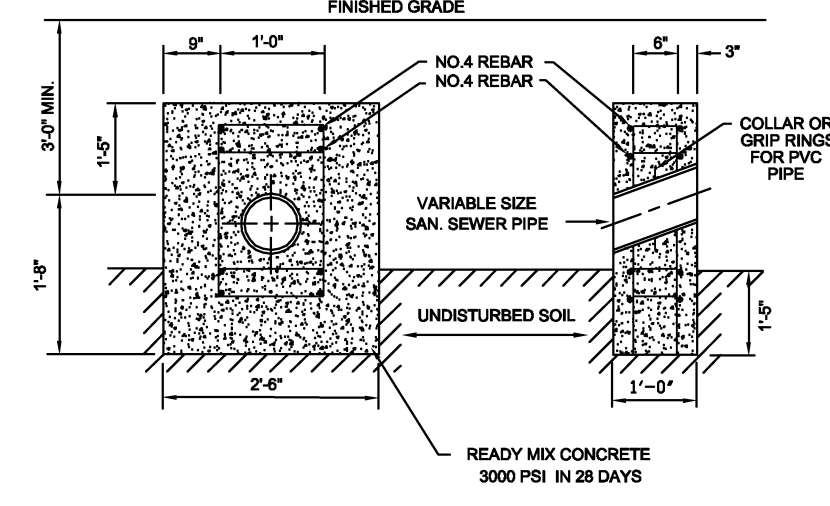


BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	CONCRETE ENCASED SEWER PIPE	REVISIONS	SS-15
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			



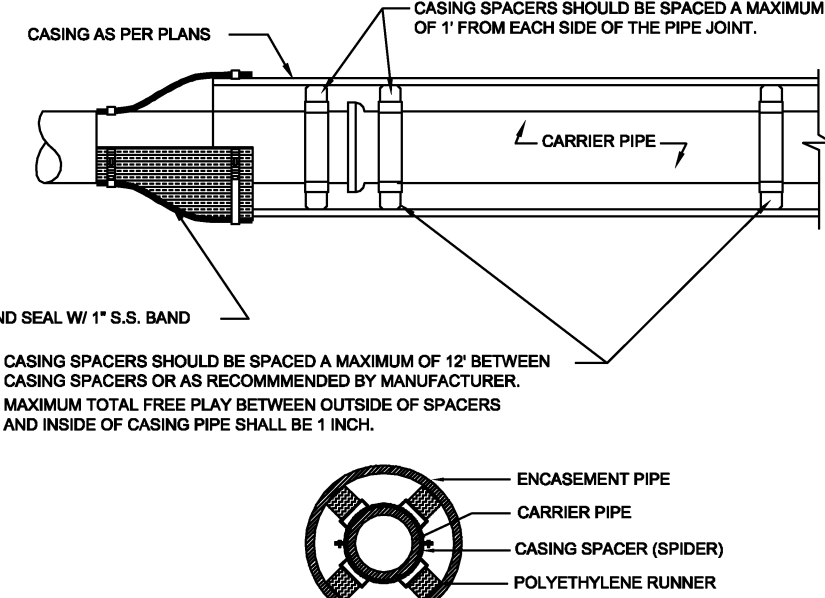
- NOTE:
1. PIER REQUIRED WHEN STORM DRAIN OR OTHER PIPES CROSS OVER THE OTHER UTILITY WITH A VERTICAL CLEARANCE OF LESS THAN 18".
  2. PIER TO BE BUILT ON UNDISTURBED EARTH.
  3. CONCRETE TO BE READY MIX, CLASS A3.

BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	CONCRETE PIER	REVISIONS	SS-17
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			



\* WITH WRITTEN APPROVAL OF ENGINEERING/UTILITY DEPARTMENT

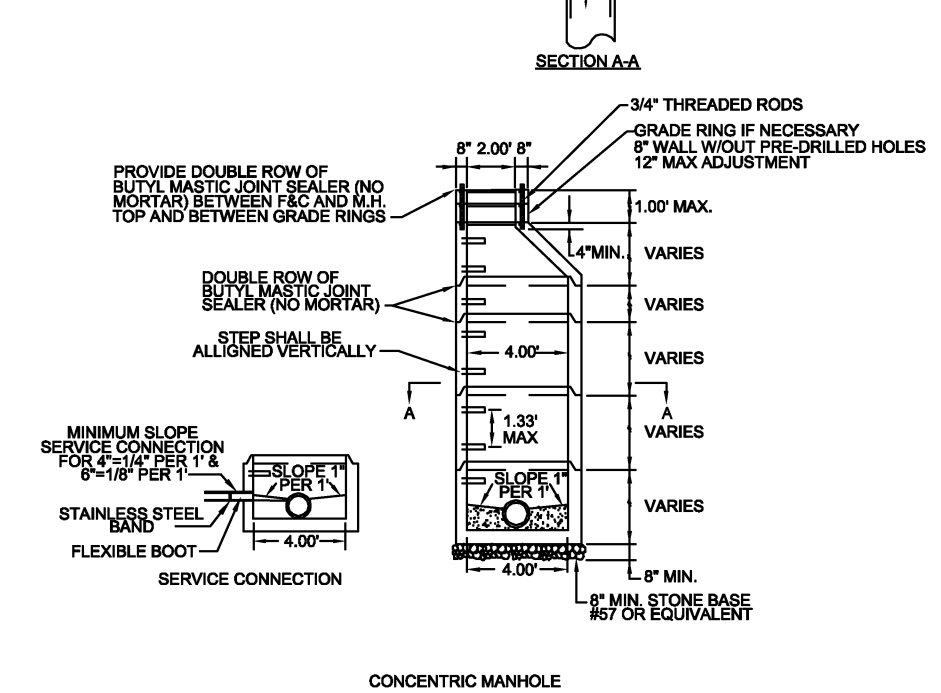
BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	ANCHOR BLOCK	REVISIONS	SS-18
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			



- NOTE: A 1" DRAIN WILL BE REQUIRED ON THE LOWER END OF THE CASING IF THE CASING ENDS ARE SEALED WITH MORTAR AND BRICK.

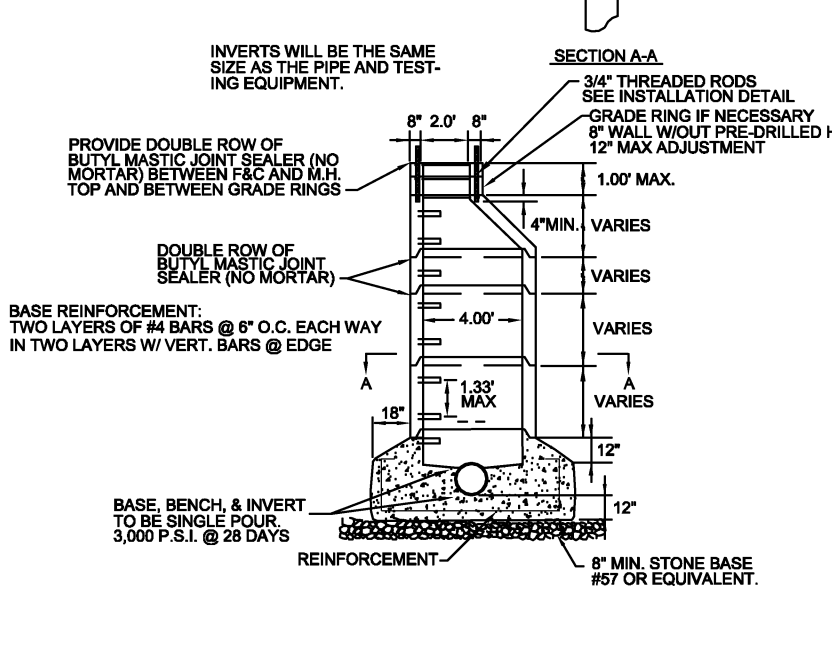
BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	ROAD CROSSING DETAIL PIPE SUPPORT IN CASING PIPE	REVISIONS	SS-19
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			

- NOTES:
1. ALL MANHOLE FRAMES AND COVERS SHALL BE EAST JORDAN IRON WORKS, INC. WATERIGHT MANHOLE FRAME MODEL #104GCL5E, WATERIGHT COVER MODEL #104GCL5E, AND BOLT-DOWN MANHOLE COVER MODEL #104GCL5E.
  2. STEPS TO BE VERTICALLY ALIGNED.
  3. THE FRAME AND COVER SHALL BE PROPERLY ALIGNED WITH THE FOOT OPENING OF THE MANHOLE STRUCTURE AND BOLTED IN PLACE.
  4. FLAT TOP MANHOLES MAY ONLY BE SUBSTITUTED WITH THE PERMISSION OF THE UTILITY DEPARTMENT. WHEN USED, THE ECCENTRIC OPENING MUST LINE UP WITH THE UTILITY.
  5. SAMPLING MANHOLES IN TRAFFIC AREAS SHALL BE CONSTRUCTED AS PER MANHOLE DETAILS.
  6. FLEXIBLE JOINT MANHOLE CONNECTION SHALL BE AS MANUFACTURED BY PRE-SEAL GASKET CORPORATION OR EQUAL.
  7. PRECAST MANHOLES SHALL BE FROM MANUFACTURER WITH A VDOT APPROVED QUALITY ASSURANCE PROGRAM.

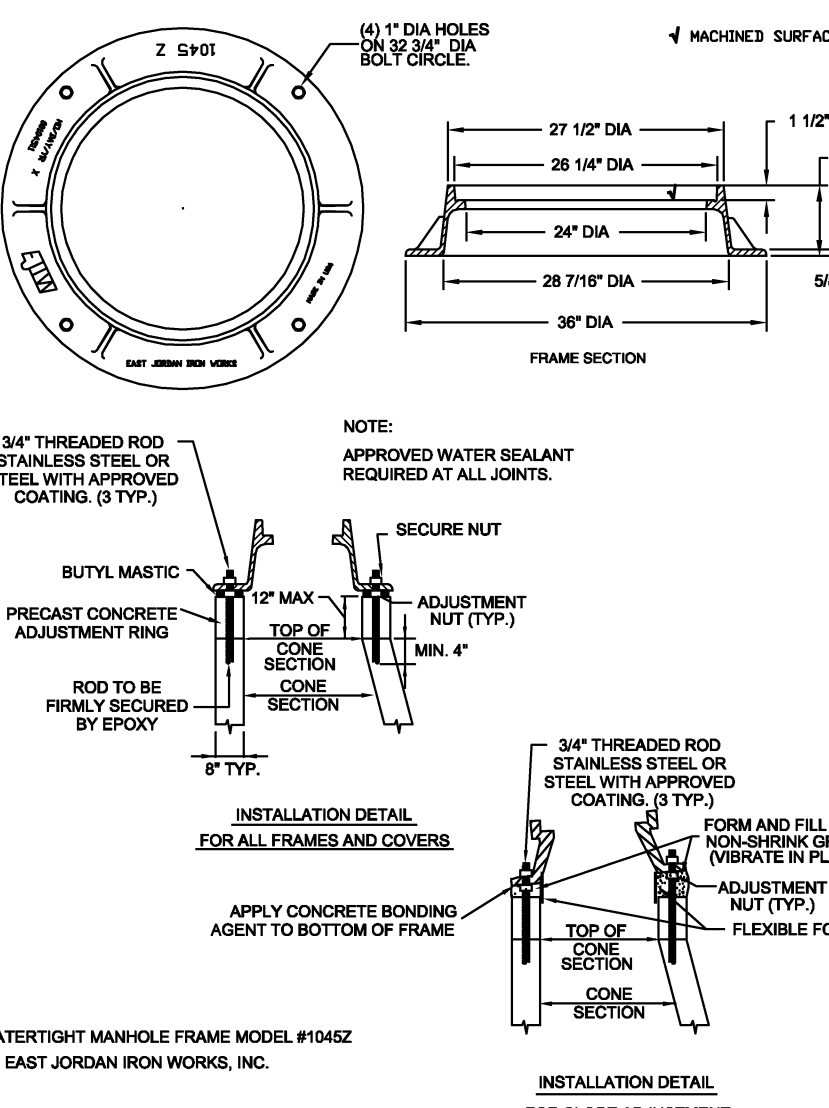


BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	4ft STANDARD MANHOLE FOR PIPES 15" AND SMALLER	REVISIONS	SS-01
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			

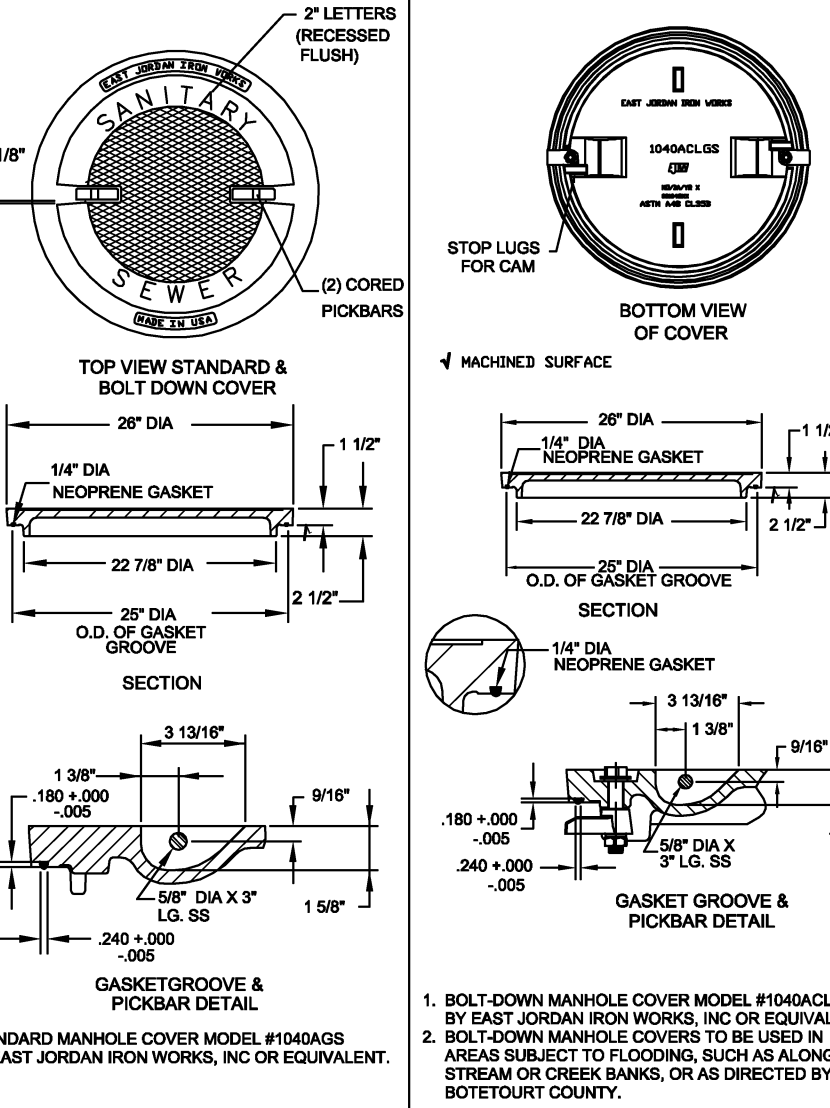
- NOTES:
1. ALL MANHOLE FRAMES AND COVERS SHALL BE EAST JORDAN IRON WORKS, INC. WATERIGHT MANHOLE FRAME MODEL #104GCL5E, WATERIGHT COVER MODEL #104GCL5E, AND BOLT-DOWN MANHOLE COVER MODEL #104GCL5E.
  2. STEPS TO BE VERTICALLY ALIGNED.
  3. THE ENTIRE MANHOLE STRUCTURE INCLUDING FRAME AND COVER SHALL BE INSTALLED BE FORE CUTTING THE TOP OF THE SEWER PIPE IN THE MANHOLE. BOTETOURT COUNTY INSPECTOR TO BE PRESENT DURING INSTALLATION.
  4. THE FRAME AND COVER SHALL BE PROPERLY ALIGNED WITH THE 3 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 REINFORC. & INVERT.
  6. PRECAST MANHOLES SHALL BE FROM MANUFACTURER WITH A VDOT APPROVED QUALITY ASSURANCE PROGRAM.



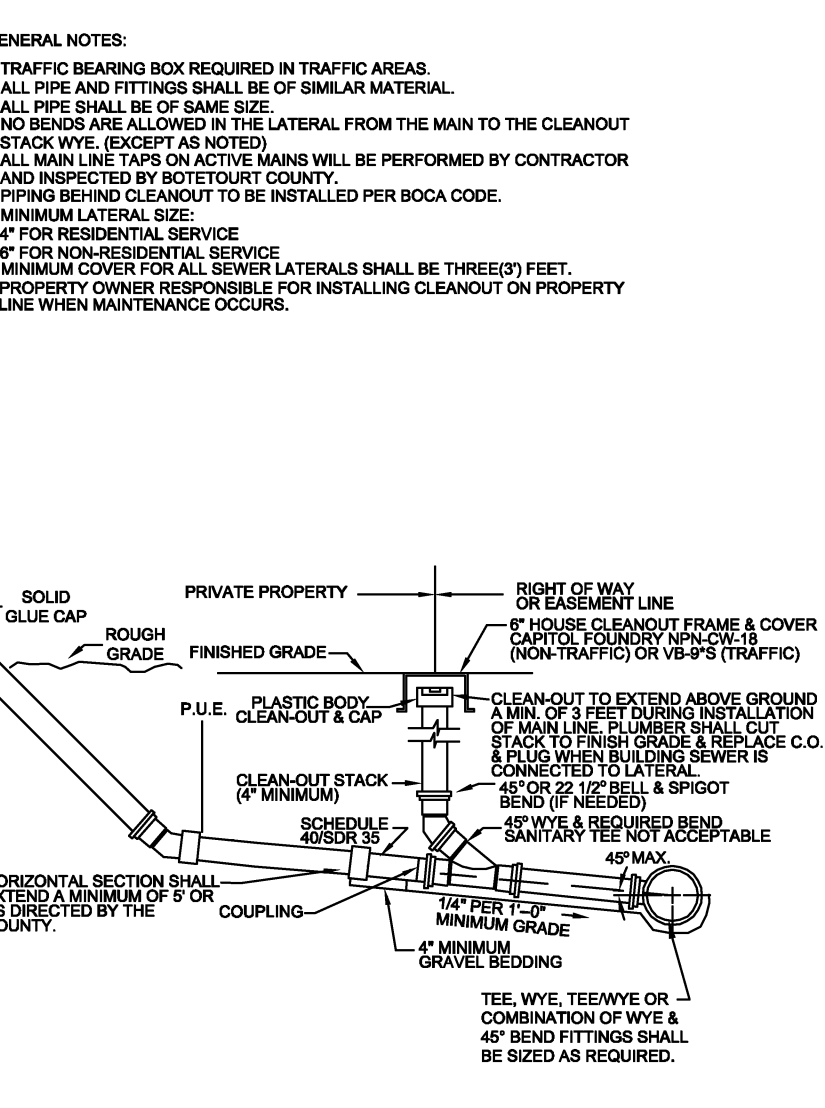
BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	STRADDLE MANHOLE FOR PIPES 15" AND SMALLER	REVISIONS	SS-02
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			



BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	WATERTIGHT MANHOLE FRAME	REVISIONS	SS-05
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			



BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	STANDARD MANHOLE COVER	REVISIONS	SS-06
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			



BOTETOURT COUNTY	CONSTRUCTION STANDARDS	DATE: MARCH 2003	BC #
PUBLIC FACILITIES & PROGRAMS	BOLT-DOWN MANHOLE COVER	REVISIONS	SS-08
IN WEST BACK STREET, SUITE 404 DALEVILLE, VA 24083 TEL: 540-475-0100 FAX: 540-475-0080			

DATE: MARCH 2012

REVISIONS

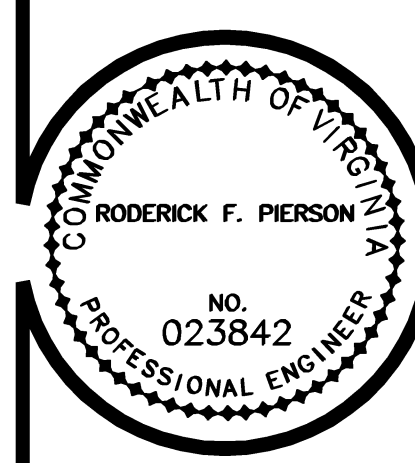
PIERSON  
ENGINEERING  
&  
SURVEYING

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DEVELOPMENT PLANS  
FOR  
SANTILLANE TOWNHOMES  
BOTETOURT COUNTY, VIRGINIA

SEWER DETAILS



SHEET  
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