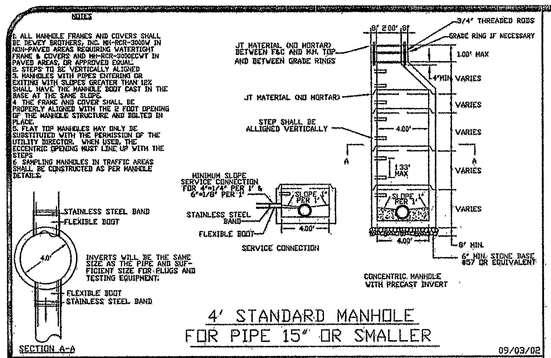
NOTES:

1. ALL MANHOLE FRAMES AND COVERS SHALL BE DEWEY BROTHERS, INC MH-RCR-3000V IN NON-PAVED AREAS REQUIRING WATERTIGHT FRAME & COVERS AND MH-RCR-3000EC-WT IN PAVED AREAS, OR APPROVED EQUAL.
2. STEPS TO BE VERTICALLY ALIGNED.
3. HANDLES, WITH PIPES ENTERING OR EXITING WITH SLOPES GREATER THAN 10% SHALL BE PROVIDED WITH ROOT CAST IN THE BASE AT THE PIPE SLOPE.
4. THE FRAME AND COVER SHALL BE PROPERLY ALIGNED WITH THE 2 FOOT OPENING OF THE MANHOLE STRUCTURE AND BOLTED IN PLACE.
5. 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
6. SAMPLING MANHOLES IN TRAFFIC AREAS SHALL BE CONSTRUCTED AS PER MANHOLE DETAILS.



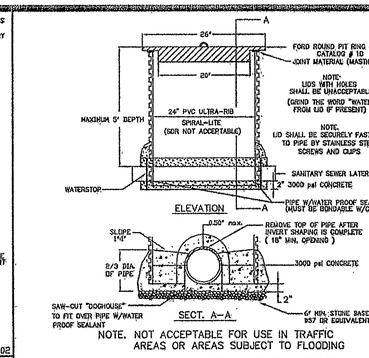
4' STANDARD MANHOLE FOR PIPE 15" OR SMALLER

09/03/02

Pipe Diameter (in.)	Min. Time (min: sec)	Length for Min. Time (ft)	Time for Longer Length (sec)	Specified Time for Length (L) Shown (min:sec)								
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
4	3:46	597	380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1 520 L	7:34	7:34	7:34	7:34	7:35	8:02	10:08	11:24
10	9:26	239	2 374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22.47	25:39
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35.35	40.04
18	17.00	133	7.692 L	17:00	19:13	25.38	32 03	38.27	44.52	51:16	57:41
21	19.50	114	10.470 L	19 50	26.10	34:34	43.37	52.21	61:00	69:48	78:31
24	22.40	99	13 674 L	22 47	34:11	45 34	56.58	68.22	79:46	91:10	102 33
27	25:30	88	17.306 L	28.51	43:16	57.41	72:07	86:32	100:57	115:22	129:48
30	28:20	80	21 369 L	35:37	53:25	71 13	89:02	106:50	124.38	142:26	160.15
33	31:10	72	25.852 L	43.05	64.38	85:10	107:43	129:16	150 43	172:21	193.53
36	34.00	66	30 768 L	51:17	76:55	102:34	128.12	153:50	179.29	205 07	230:46

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

09/20/95

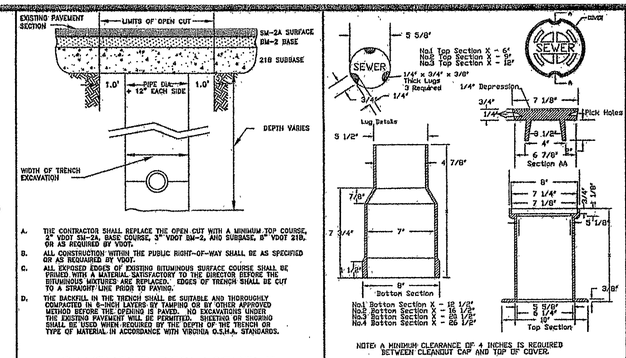


NOTE. NOT ACCEPTABLE FOR USE IN TRAFFIC AREAS OR AREAS SUBJECT TO FLOODING

SAMPLING STRUCTURE DETAIL

SEE COUNTY SPECIFICATIONS FOR ADDITIONAL INFORMATION

05/17/99



A. THE CONTRACTOR SHALL REPLACE THE OPEN-CUT WITH A MINIMUM TOP COURSE, 2" VDOT SM-2A, BASE COURSE, 3" VDOT BM-2, AND SUBBASE, 8" VDOT 21B, OR AS REQUIRED BY VDOT.
B. ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE AS SPECIFIED OR AS REQUIRED BY VDOT.
C. ALL EXPOSED EDGES OF EXISTING BITUMINOUS SURFACE COURSE SHALL BE PRIMED WITH A MATERIAL SATISFACTORY TO THE DIRECTOR BEFORE THE BITUMINOUS MIXTURES ARE REPLACED. EDGES OF TRENCH SHALL BE CUT TO A STRAIGHT LINE PRIOR TO PAVING.
D. THE BACKFILL IN THE TRENCH SHALL BE SUITABLE AND THOROUGHLY COMPACTED IN 6-INCH LAYERS BY TAMPING OR BY OTHER APPROVED METHOD BEFORE THE OPENING IS PAVED. NO EXCAVATIONS UNDER THE EXISTING PAVEMENT WILL BE PERMITTED. SHEETING OR SHORING SHALL BE USED WHEN REQUIRED BY THE DEPTH OF THE TRENCH OR TYPE OF MATERIAL IN ACCORDANCE WITH VIRGINIA O.S.H.A. STANDARDS.

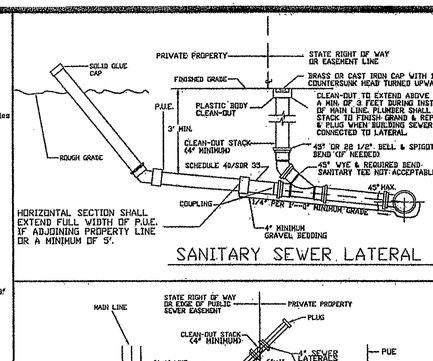
PAVEMENT REPLACEMENT OPEN CUT ROADWAY

09/20/95

NOTED A MINIMUM CLEARANCE OF 4 INCHES IS REQUIRED BETWEEN CLEANOUT CAP AND TOP OF COVER.

TRAFFIC BEARING CLEANOUT BOX

09/20/95

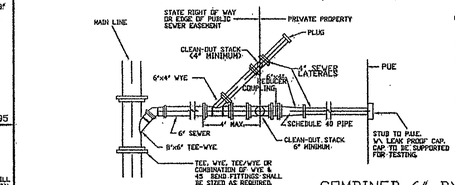


GENERAL NOTES:

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 CLEAN-OUT STACK WYE. (EXCEPT AS NOTED)
5. ALL MAIN LINE TAPS ON ACTIVE MAINS WILL BE PERFORMED BY ROANOKE COUNTY UTILITY DEPT.
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

SANITARY SEWER LATERAL

09/03/02

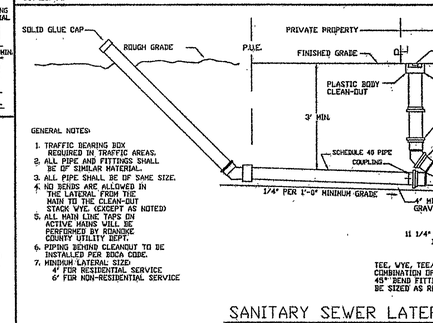


GENERAL NOTES:

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 ROANOKE COUNTY UTILITY DEPT.
6. PIPING BEHIND CLEANOUT TO BE INSTALLED PER BOCA CODE.
7. MINIMUM COVER FOR ALL SEWER LATERALS SHALL BE THREE (3') FEET

COMBINED 6" BY TWO 4" LATERALS

09/20/95



GENERAL NOTES:

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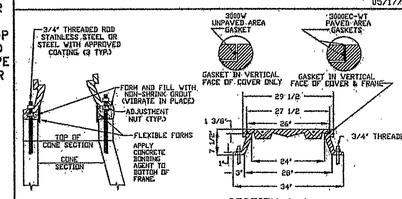
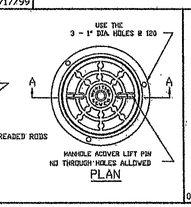
3. ALL PIPE SHALL BE OF SAME SIZE.
4. NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEAN-OUT STACK WYE. (EXCEPT AS NOTED)
5. ALL MAIN LINE TAPS ON ACTIVE MAINS WILL BE PERFORMED BY ROANOKE COUNTY UTILITY DEPT.
6. PIPING BEHIND CLEANOUT TO BE INSTALLED PER BOCA CODE.
7. MINIMUM LATERAL SIZE: 4" FOR RESIDENTIAL SERVICE 6" FOR NON-RESIDENTIAL SERVICE

SANITARY SEWER LATERAL FOR DEEP SEWER

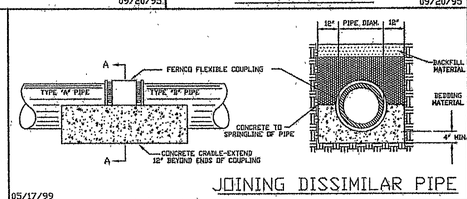
09/03/02



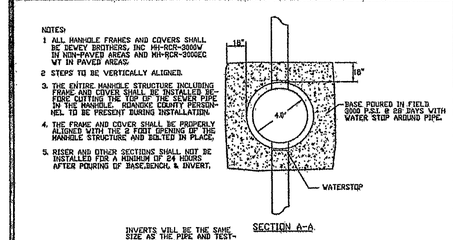
INSTALLATION DETAIL FOR SLOPE ADJUSTMENT



05/17/99

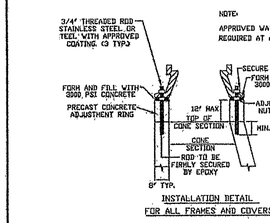


JOINING DISSIMILAR PIPE



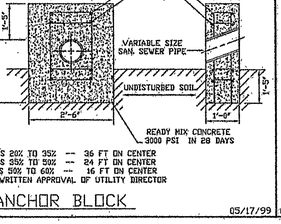
STRADDLE MANHOLE FOR PIPE 15" OR SMALLER

09/20/95



WATERTIGHT MANHOLE FRAME AND COVER

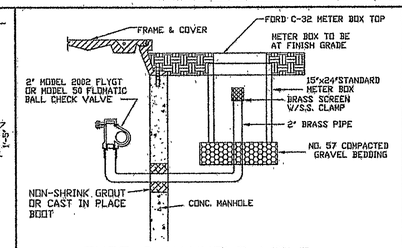
09/03/02



GRADES 20% TO 35% -- 36 FT ON CENTER
* GRADES 35% TO 50% -- 24 FT ON CENTER
* GRADES 50% TO 60% -- 16 FT ON CENTER
* WITH WRITTEN APPROVAL OF UTILITY DIRECTOR

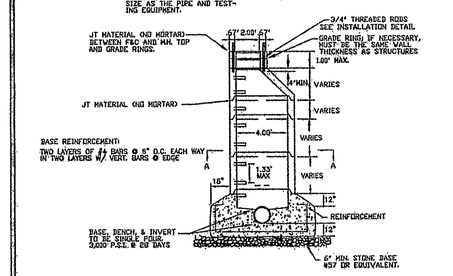
ANCHOR BLOCK

05/17/99



09/03/02

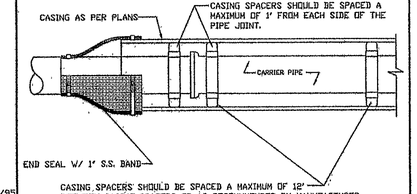
TYPE 2 MANHOLE VENT



NOTE: 6' DIAMETER MANHOLE REQUIRED FOR TWO INSIDE DROP CONNECTIONS (MAIN LINE OR LATERAL)

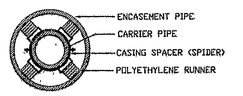
MAINLINE OR LATERAL DROP MANHOLE (FOR USE WITH PVC PIPE)

09/03/02



ALTERNATE PIPE SUPPORT IN CASING PIPE:
18" LONG TREATED TIMBER SKIDS OF APPROPRIATE WIDTH SO THAT BELLS OR FLANGES DO NOT REST ON CASING WITH MORE THAN 3/4" FREE PLAY. SKIDS TO BE PLACED AT 4'-0" O.C. AND SECURED WITH 2"x 1/4" GALV. STEEL STRAPS OR 1" S.S. BANDS. SOAP-BASED LUBRICANT MAY BE USED FOR SLIDING OF SKID WITH DUCTILE IRON PIPE AND FLAX-BASED LUBRICANT MAY BE USED FOR SLIDING OF SKID WITH PVC PIPE.

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

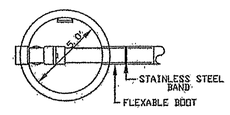


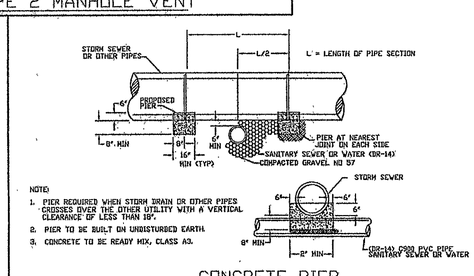
PIPE SUPPORT IN CASING PIPE

05/17/99

NOTES:

1. ALL MANHOLE FRAMES AND COVERS SHALL BE DEWEY BROTHERS, INC MH-RCR-3000V IN NON-PAVED AREAS REQUIRING WATERTIGHT FRAME & COVERS AND MH-RCR-3000EC-WT IN PAVED AREAS, OR APPROVED EQUAL.
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.

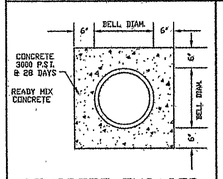




NOTE:
1. PIER REQUIRED WHEN STORM DRAIN OR OTHER PIPES CROSSES OVER THE OTHER UTILITY WITH A VERTICAL CLEARANCE OF LESS THAN 18".
2. PIER TO BE BUILT ON UNDISTURBED EARTH.
3. CONCRETE TO BE READY MIX, CLASS A3.

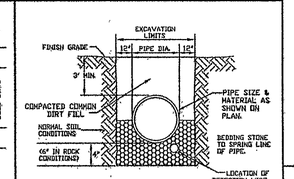
CONCRETE PIER

09/20/95



CONCRETE ENCASED PIPE

09/20/95



STONE BEDDING

09/20/95

NOTES:

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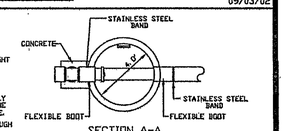
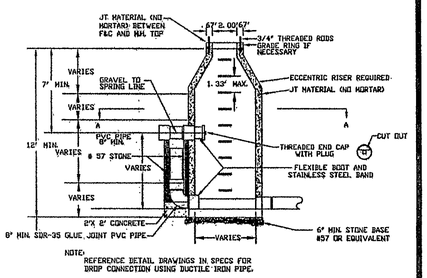
2. STEPS TO BE VERTICALLY ALIGNED.
3. THE FRAME AND COVER SHALL BE PROPERLY ALIGNED WITH THE 2 FOOT OPENING OF THE MANHOLE STRUCTURE AND BOLTED IN PLACE.
4. TOP INVERT LINE SHALL NOT ENTER THROUGH RISER (CONE) SECTION OR JOINT.





NOTE:
REFERENCE DETAIL DRAWINGS IN SPECS FOR DROP CONNECTION USING DUCTILE IRON PIPE.

OUTSIDE DROP MANHOLE (FOR USE WITH PVC PIPE)

09/20/95

FOR ADDITIONAL REFERENCE, SEE DETAIL DRAWINGS IN SEWER STANDARDS DATED SEPT. 2002

WVWA ID# 6HJPWY

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www.bgbt-design.com

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COMMONWEALTH OF VIRGINIA
GREGORY S. TAYLOR
No. 038009
11/05/04
PROFESSIONAL ENGINEER

The Cottages at Stonelyn Townhome Developement

Prepared for Stonelyn LLC

Hollins Magisterial District

Roanoke County, Virginia

REVISIONS:

VDOT, Rke County, & Client Comments August 9, 2004

DESIGNED BY:	SRB
DRAWN BY:	SRB
CHECKED BY:	GST
SCALE:	N/A
DATE:	MAY 28, 2004

SHEET TITLE:

Sewer Details

C12

12 OF 15

PROJECT NUMBER: S03060-02