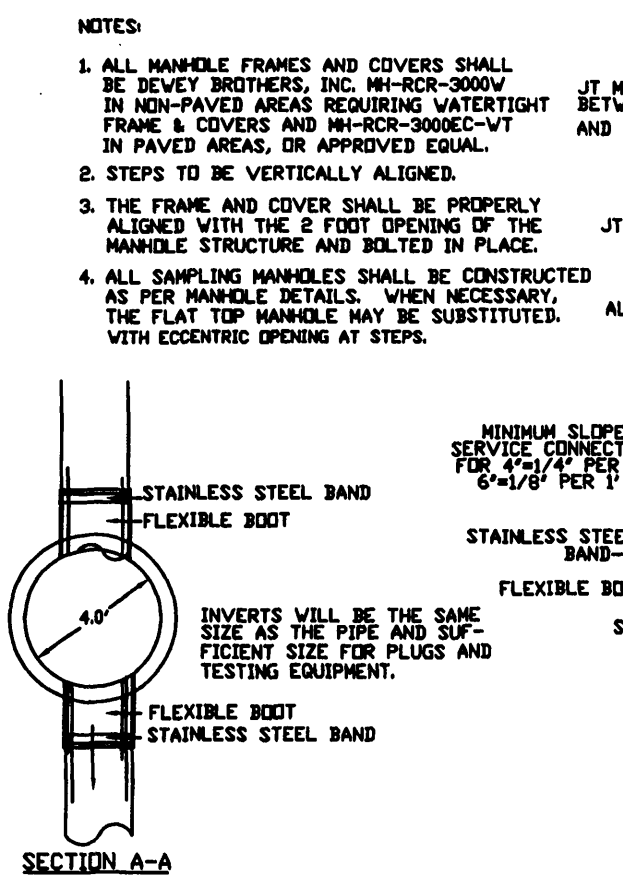
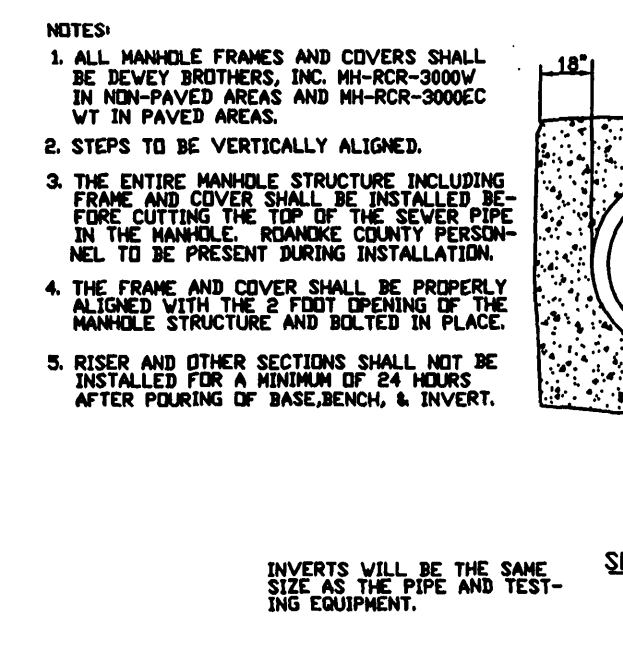




4' STANDARD MANHOLE
FOR PIPE 15" OR SMALLER

Pipe Diameter (in.)	Min. Time (min)	Length for Min. Time (ft)	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	3:48	597	3:48	3:48	3:48	3:48	3:48	3:48	3:48	3:48		
6	5:40	388	5:40	5:40	5:40	5:40	5:40	5:40	5:40	5:40		
8	7:34	288	7:34	7:34	7:34	7:34	7:34	7:34	7:34	7:34		
10	9:28	239	9:28	9:28	9:28	9:28	9:28	9:28	9:28	9:28		
12	11:20	199	11:20	11:20	11:20	11:20	11:20	11:20	11:20	11:20		
15	14:10	159	14:10	14:10	14:10	14:10	14:10	14:10	14:10	14:10		
18	17:00	133	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00		
21	19:50	114	19:50	19:50	19:50	19:50	19:50	19:50	19:50	19:50		
24	22:40	99	22:40	22:40	22:40	22:40	22:40	22:40	22:40	22:40		
27	25:30	88	25:30	25:30	25:30	25:30	25:30	25:30	25:30	25:30		
30	28:20	80	28:20	28:20	28:20	28:20	28:20	28:20	28:20	28:20		
33	31:10	72	31:10	31:10	31:10	31:10	31:10	31:10	31:10	31:10		
36	34:00	66	34:00	34:00	34:00	34:00	34:00	34:00	34:00	34:00		

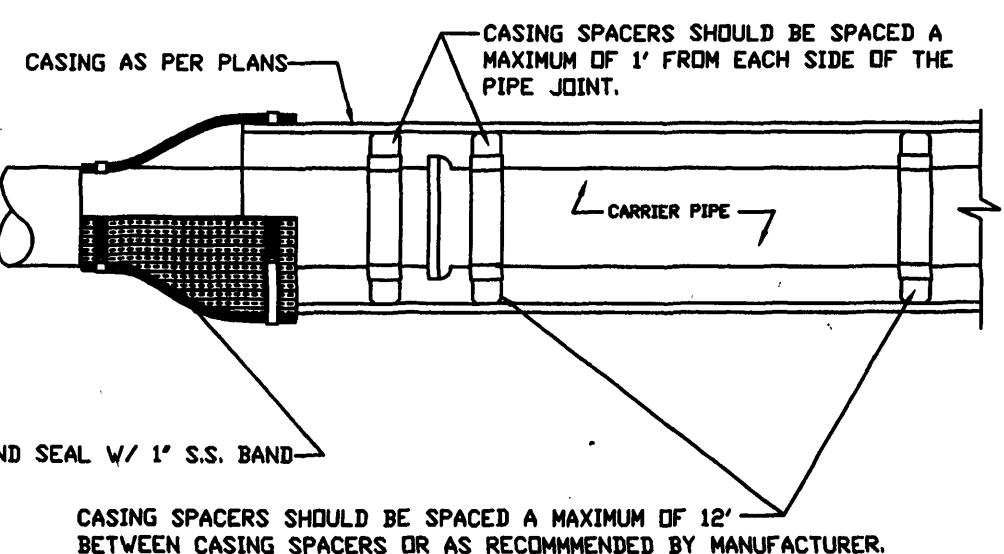
MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015



STRADDLE MANHOLE
FOR PIPE 15" OR SMALLER

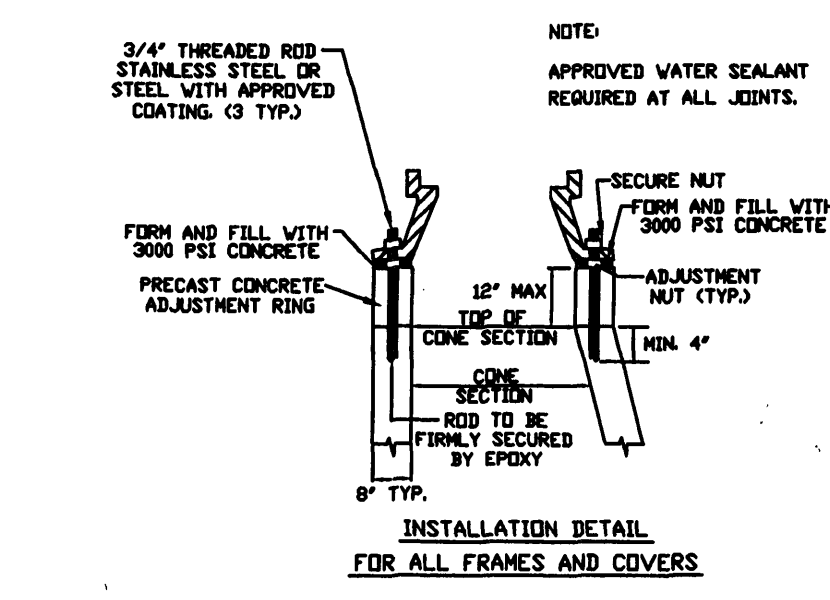
ALTERNATE PIPE SUPPORT IN CASING PIPE:
18" LONG TREATED TIMBER SKIDS OF APPROPRIATE WIDTH SO THAT BELLS OR FLANGES DO NOT REST ON CASING WITH MORE THAN 3/4" FREE PLAY. SKIDS TO BE PLACED AT 4'-0" O.C. AND SECURED WITH 2"x1/4" GALV. STEEL STRAPS OR 1" S.S. BANDS. SOAP-BASED LUBRICANT MAY BE USED FOR SLIDING 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 MORTAR AND BRICK.

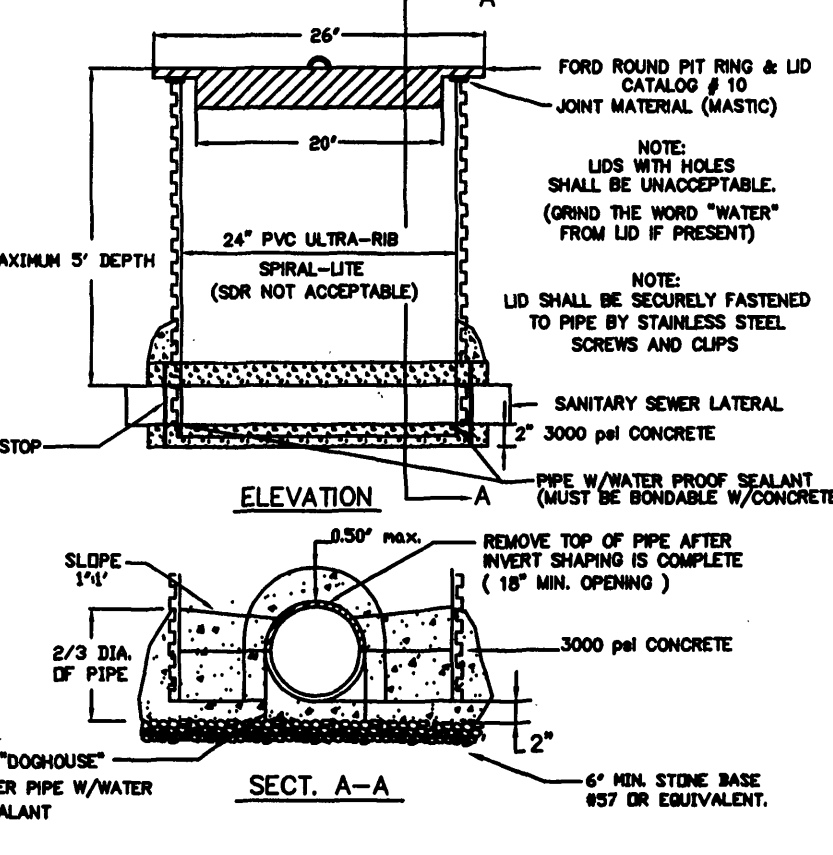


PIPE SUPPORT IN CASING PIPE

WATERTIGHT MANHOLE FRAME AND COVER

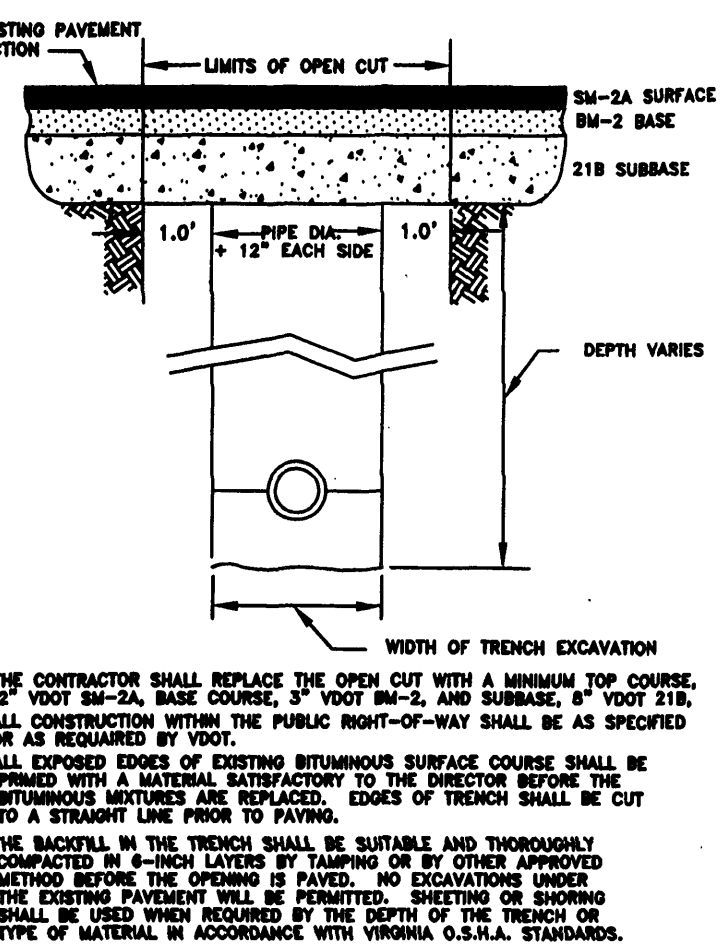


SAMPLING STRUCTURE DETAIL

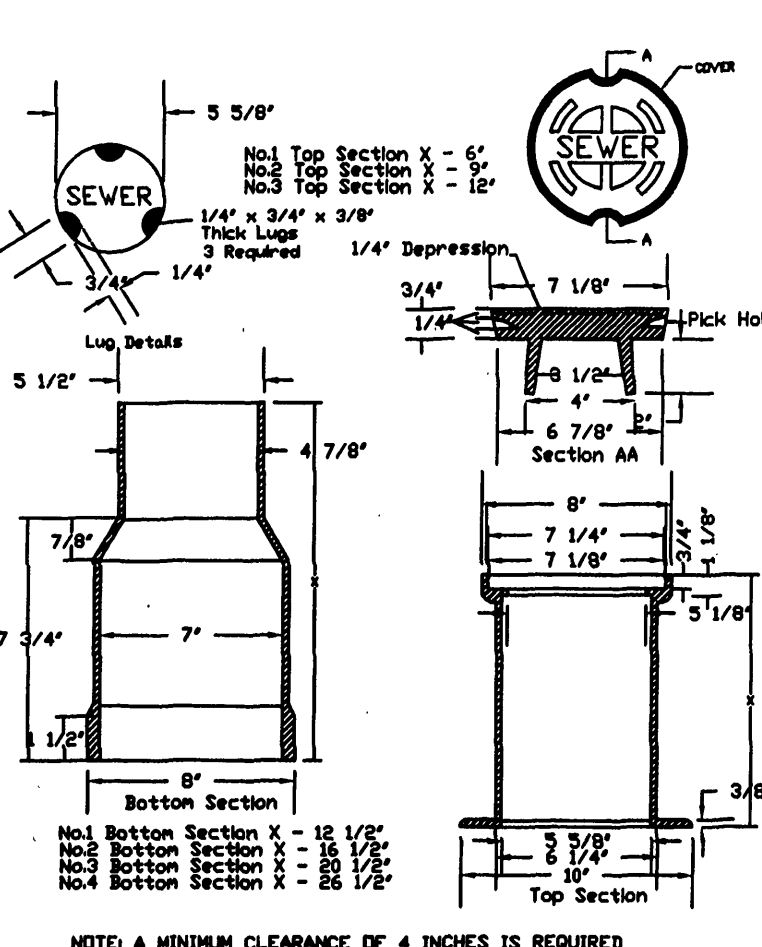


NOTE: NOT ACCEPTABLE FOR USE IN TRAFFIC AREAS OR AREAS SUBJECT TO FLOODING.

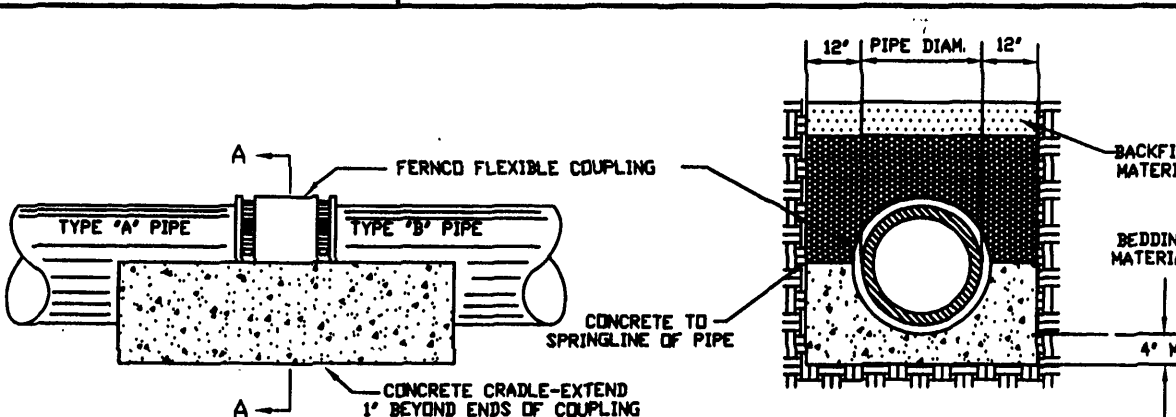
PAVEMENT REPLACEMENT
OPEN CUT ROADWAY



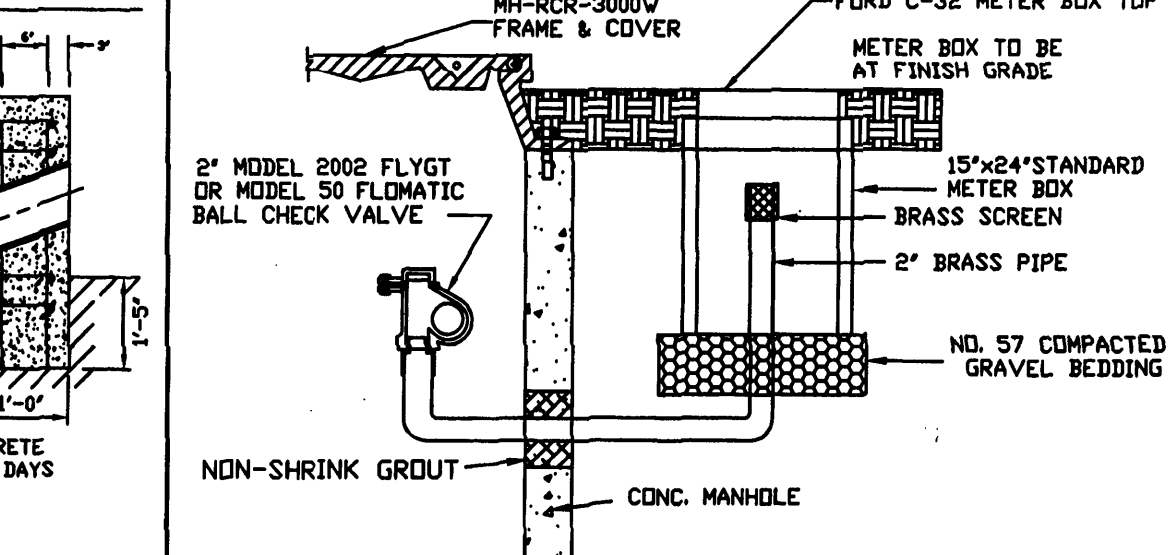
TRAFFIC BEARING
CLEANOUT BOX



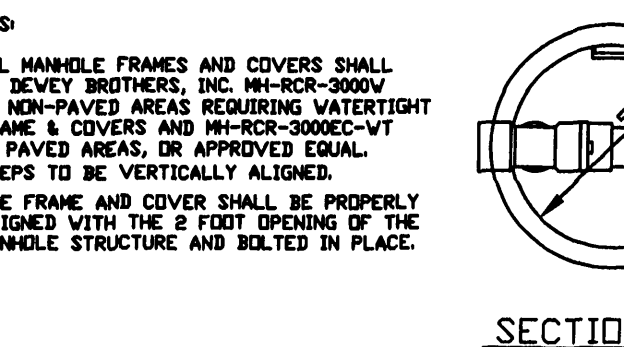
JOINING DISSIMILAR PIPE



TYPE 2 MANHOLE VENT

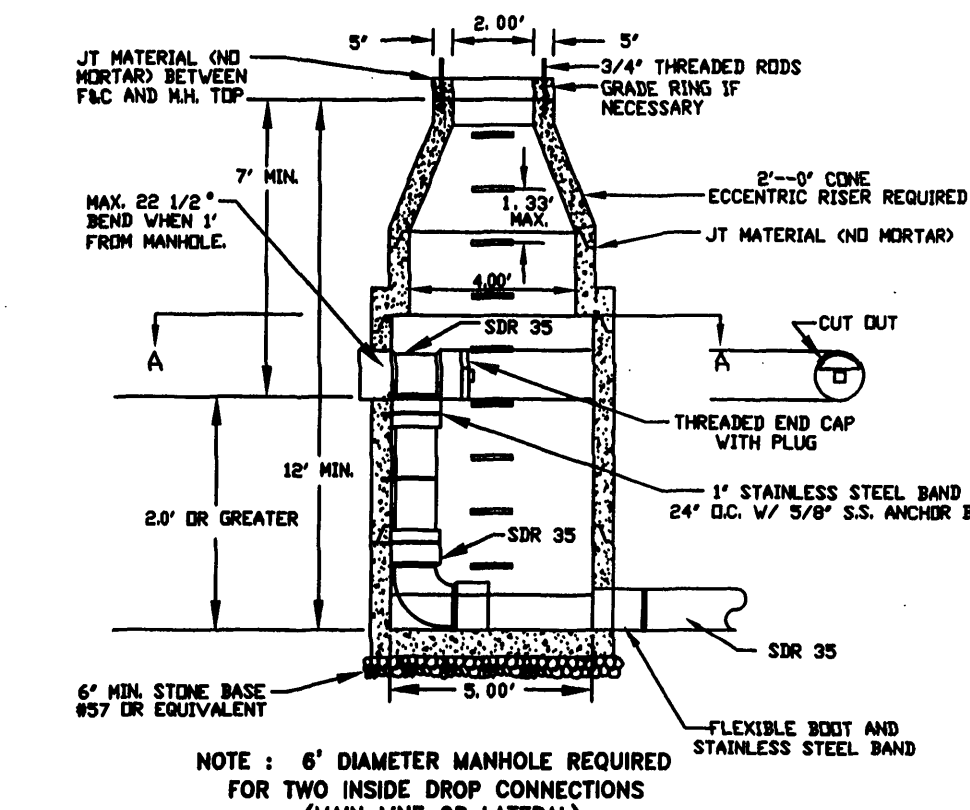


ANCHOR BLOCK

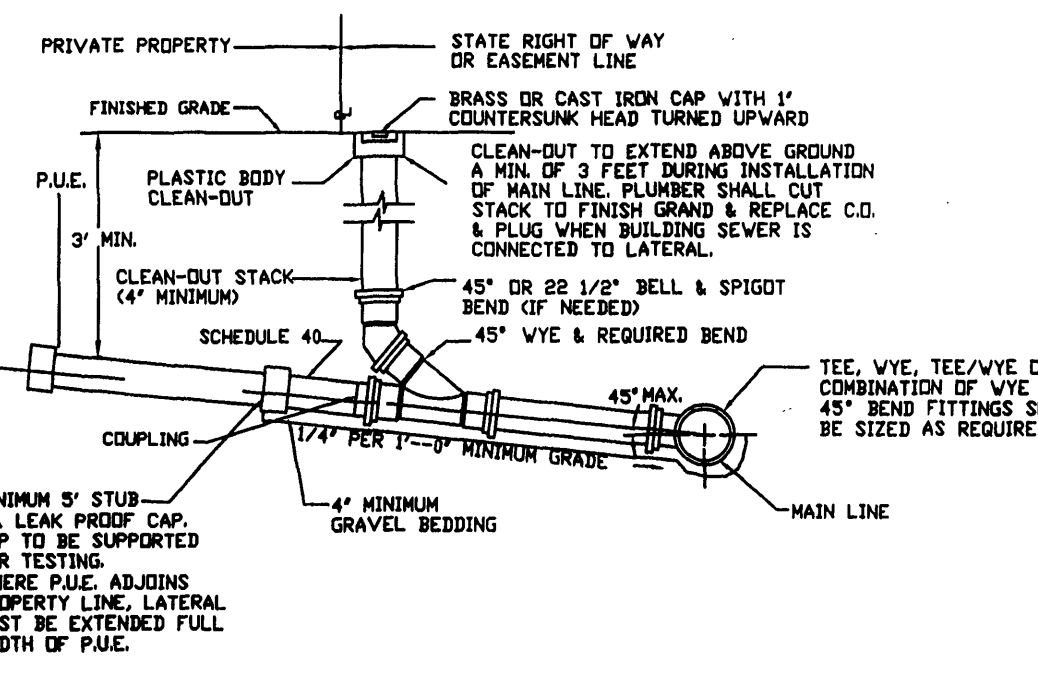


SECTION A-A

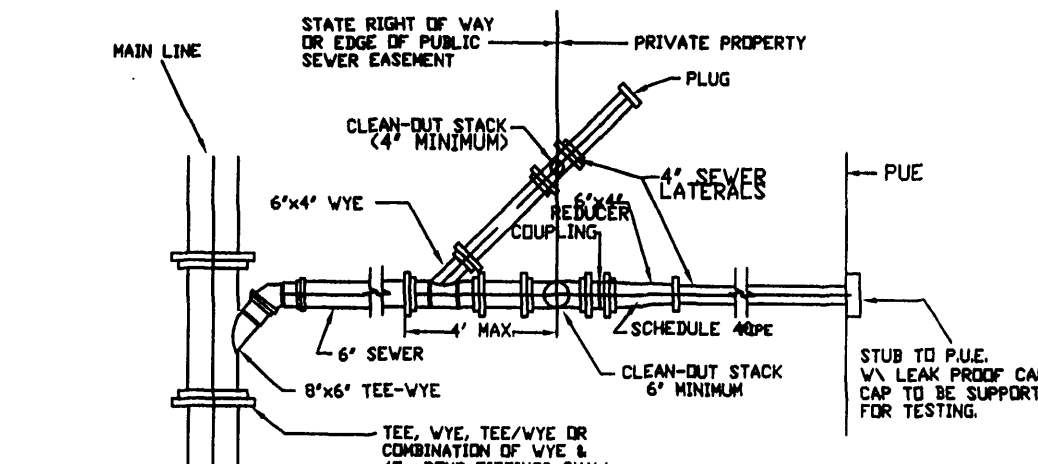
MAINLINE OR LATERAL DROP MANHOLE
(FOR USE WITH PVC PIPE)



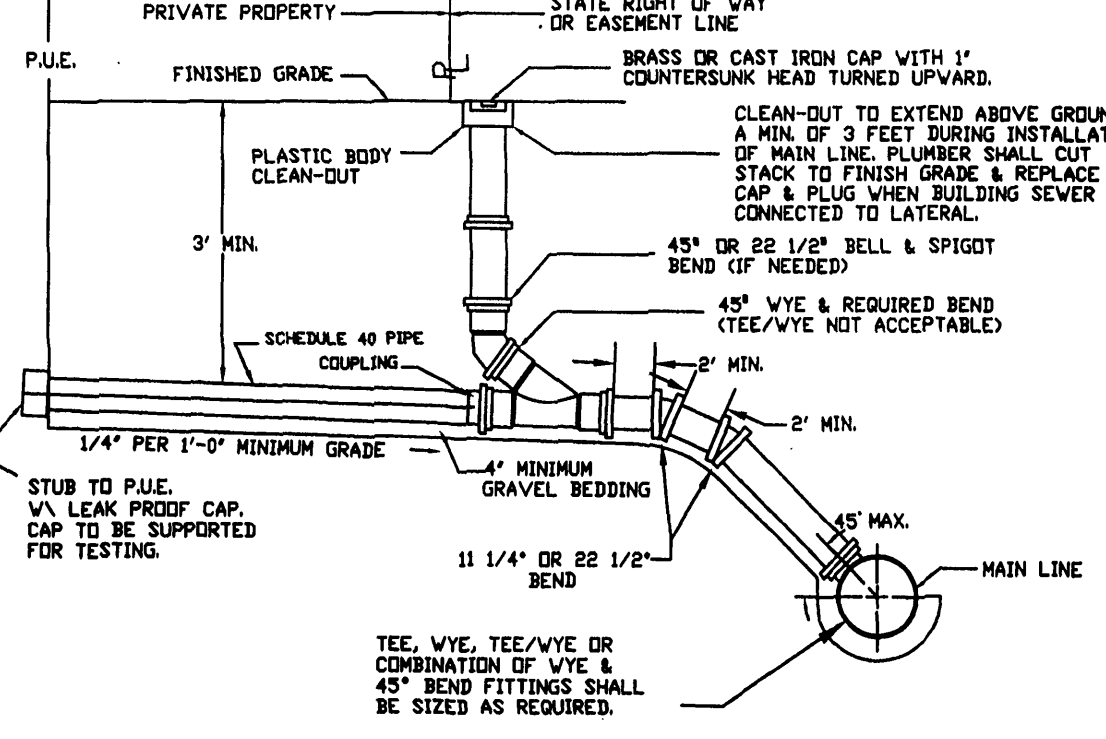
SANITARY SEWER LATERAL



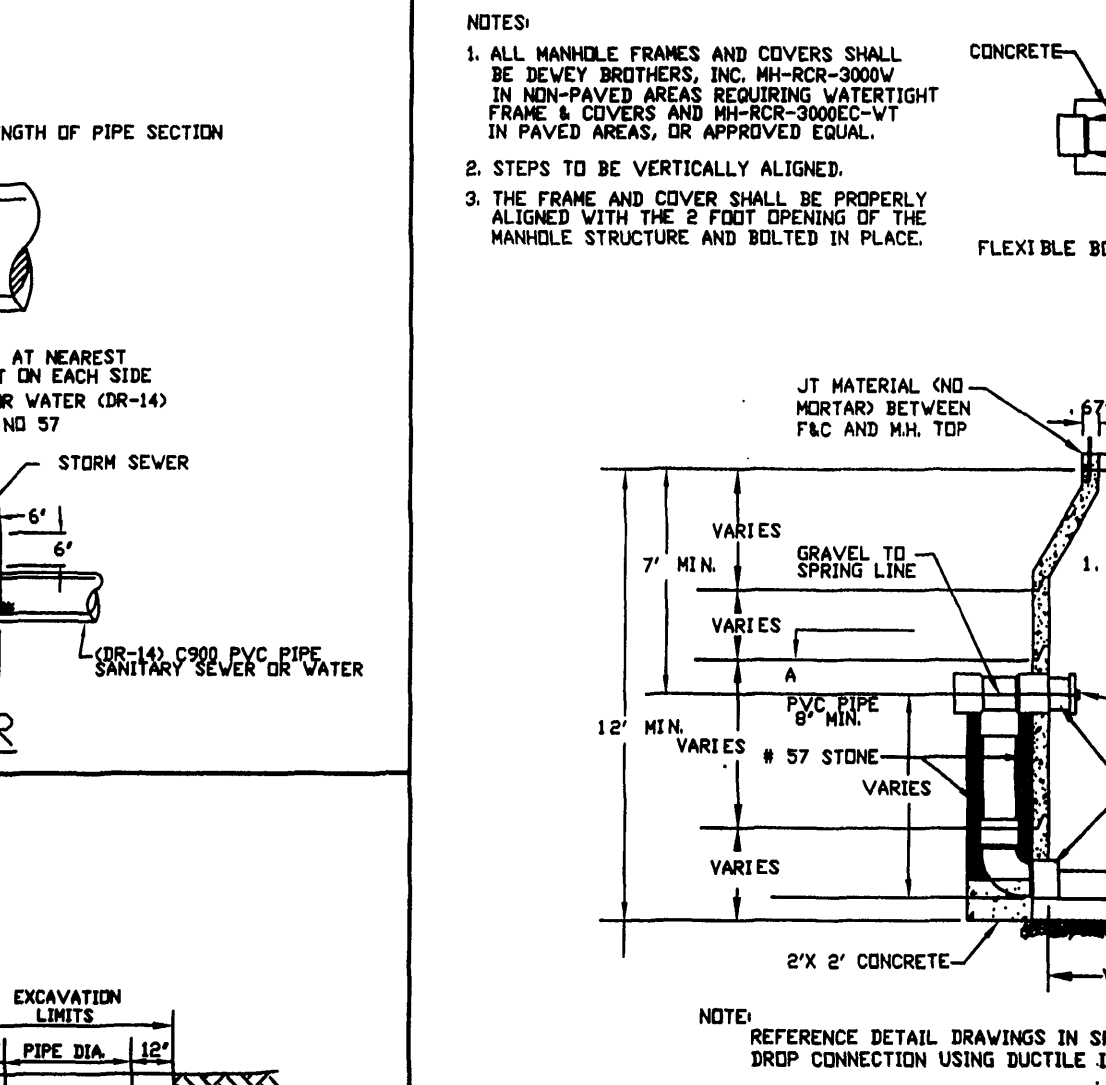
COMBINED 6" BY TWO 4" LATERALS



SANITARY SEWER LATERAL
FOR DEEP SEWER

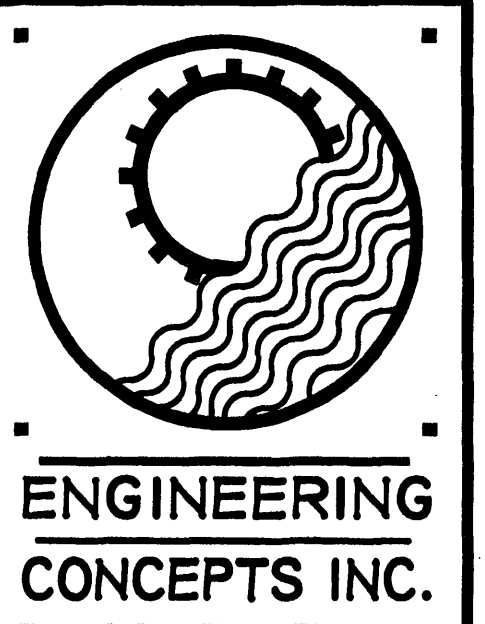
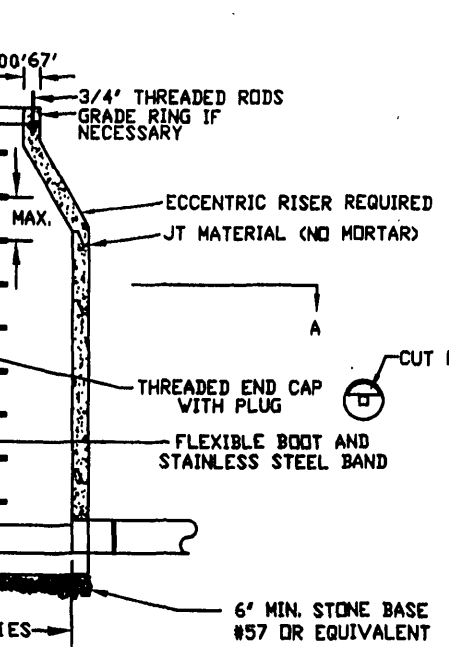
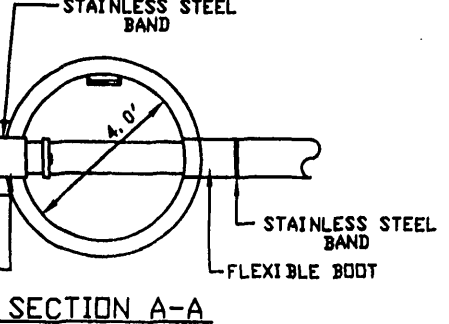


OUTSIDE DROP MANHOLE
(FOR USE WITH PVC PIPE)



- 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 VEE (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.

- 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 VEE (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.



DESIGNED _____

DRAWN _____

CHECKED JDE/LWW

APPROVED LWW

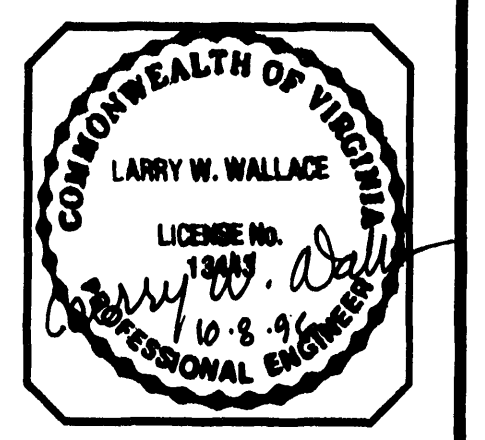
SCALE NO SCALE

DATE JUNE 1996

PROJECT 96048

REVISIONS		
NO.	DATE	BY

LOCUST GROVE
STANDARD SEWER DETAILS
ROANOKE, VIRGINIA



SHEET NO. 8

OF 11