

# INDEX

DWG NO.

DESCRIPTION

100	INDEX AND GENERAL NOTES
101	UTILITY LOCATION DETAIL
102	CONDUIT LOCATION FOR UNDERGROUND UTILITIES COMBINATION SEWER EASE
103	ALLOWABLE TRENCH WIDTHS WATER MAINS
104	REINFORCED PLASTIC STEP
105	STRUCTURE ADJUSTMENT
106	MANDREL DETAIL FOR PVC PIPE INSTALLATION
107	ROADWAY CROSSING BORE AND CASE DETAIL
108	TRENCH TERMINOLOGY
109	PAVEMENT CUT REPAIRS TYPE A, B, & C
110	CONCRETE ENCASEMENT
111	BRICK MANHOLE DETAIL AND MANHOLE FRAME AND COVER
112	SAFETY PLATFORM FOR DEEP PRECAST MANHOLES
113	MANHOLES PRECAST DETAILS
114	STANDARD SEWER MANHOLES PRECAST MANHOLES
115	STANDARD SEWER MANHOLES PRECAST CONCRETE
116	AIR AND VACUUM RELEASE VALVE ASSEMBLY
117	PIPE SEWER DATA PVC PIPE INSTALLATION
118	PIPE SEWER DATA
119	TYPICAL PIPE HANGER AND SUPPORT DETAILS
120	MAXIMUM PERMISSIBLE JOINT DEFLECTIONS
121	MECHANICAL JOINT BOLT USAGE CHART
122	TAPPING SLEEVE AND VALVE INSTALLATION DETAILS
123	TAPPING SLEEVE LENGTH
124	STUB OUT DETAIL
125	THRUST RESTRAINT CONCRETE COLLAR
126	THRUST RESTRAINT: TIE ROD CHART
127	THRUST RESTRAINT: TIE ROD INSTALLATION
128	THRUST RESTRAINTS STRAP AND ROD DETAILS
129	CASING/PIPE SUPPORT INSTALLATION
130	PIPE JOINING: USE OF SOLID SLEEVE
131	DRIVEWAY CUT REPAIRS CONCRETE, GRAVEL & ASPHALT
132	STANDARD THRUST BLOCKS FOR WATER
133	MAIN EXTENSION BLOCKING DETAILS SUBDIVISION INTERSECTION-VALVE MAIN
134	SIDEWALK, CURB AND GUTTER REPAIRS

# GENERAL NOTES

FULTON COUNTY STANDARD DETAIL  
INDEX AND GENERAL NOTES

DATE	REVISIONS	DATE	REVISIONS

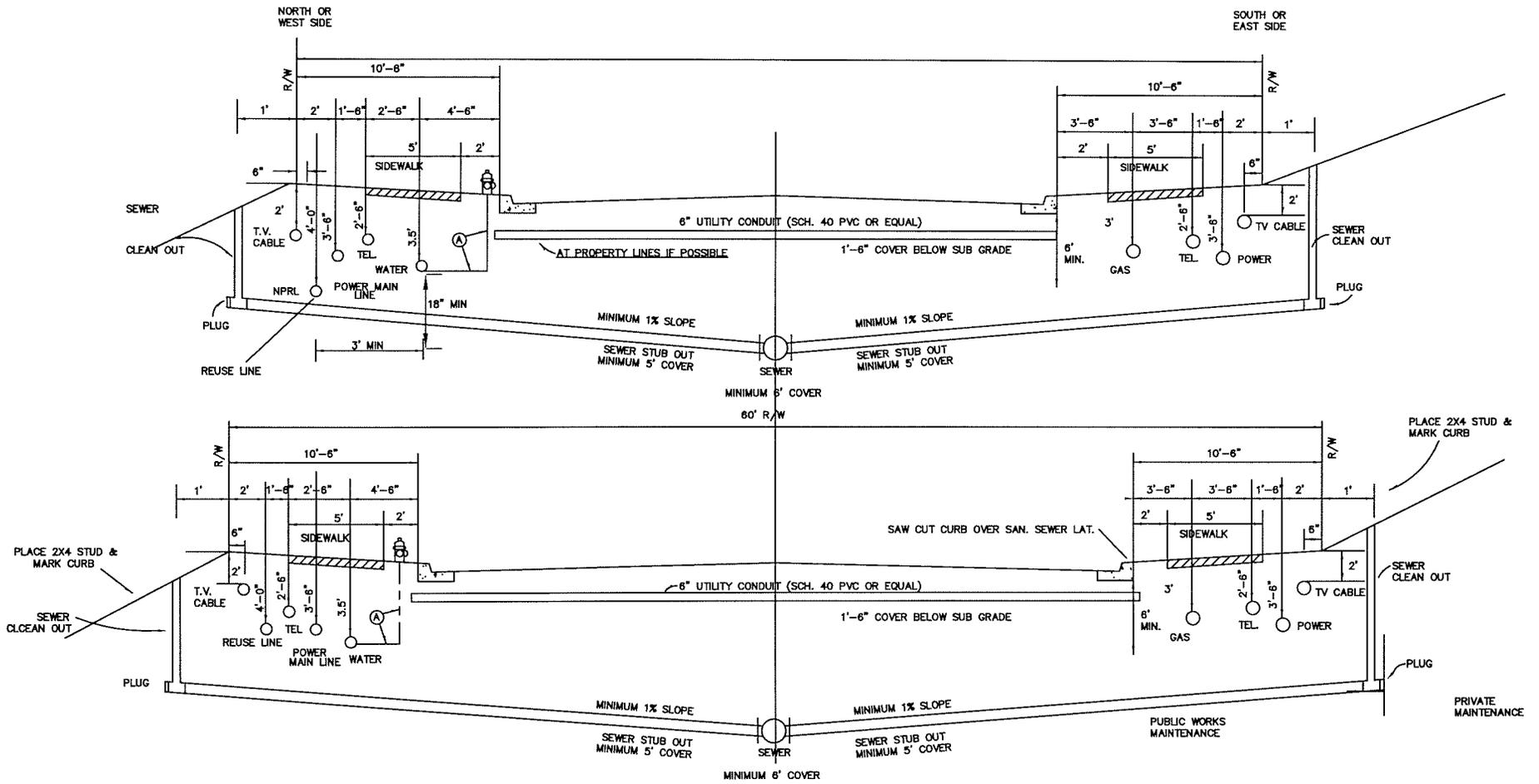
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FULTON COUNTY STANDARD DETAIL 101  
 UTILITY LOCATION  
 UNDERGROUND UTILITY WITH REUSE  
 TYPICAL CROSS SECTION

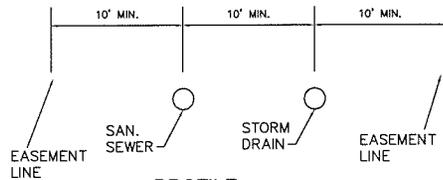
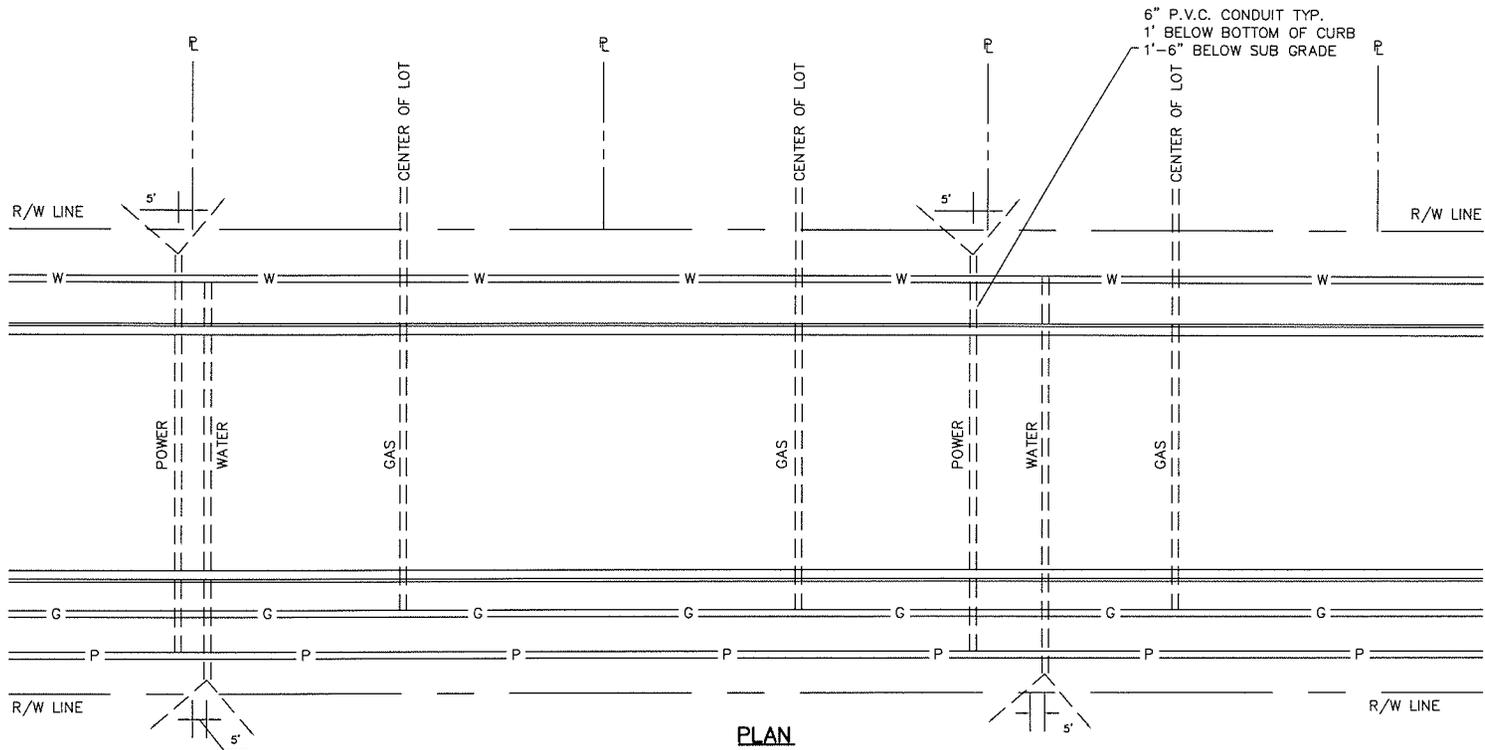
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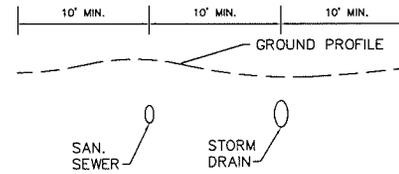
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 101



**PROFILE**  
N.T.S.

TYPICAL COMBINATION SAN. SEWER  
AND STORM DRAIN PERMANENT EASEMENT



**PROFILE VIEW**  
N.T.S.

FULTON COUNTY STANDARD DETAIL 102  
CONDUIT LOCATION FOR  
UNDERGROUND UTILITIES  
COMBINATION SEWER EASEMENT

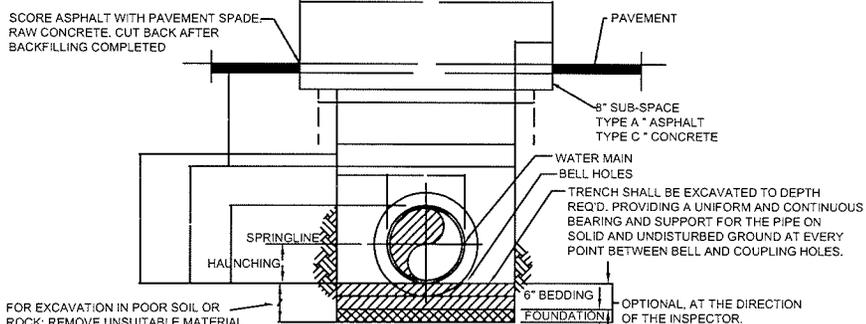
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FOR EXCAVATION IN POOR SOIL OR ROCK, REMOVE UNSUITABLE MATERIAL TO WIDTH AND DEPTH DIRECTED. BEFORE PIPE IS LAID, THE SUBGRADE SHALL BE BACKFILLED WITH AN APPROVED MATERIAL IN 3" LAYERS. EACH LAYER SHALL BE THOROUGHLY TAMPED TO 95% COMPACTION.

- NOTES:**
1. COMPACTION: BACKFILLS SHALL BE BUILT-UP IN LAYERS AND EACH LAYER SHALL BE THOROUGHLY COMPACTED BEFORE BEGINNING ANOTHER LAYER. LAYERS SHALL BE NO MORE THAN 6" IN DEPTH. PUDDLING WILL NOT BE PERMITTED, NOR WILL FROZEN OR WET MATERIAL BE PLACED IN TRENCHES.
  2. COMPACTION STANDARDS: ALL BACKFILL MATERIALS USED SHALL CONTAIN A SUFFICIENT AMOUNT OF MOISTURE FOR PROPER COMPACTION AND THESE MATERIALS SHALL BE COMPACTED AT NOT LESS THAN 95% OF THEIR OPTIMUM COMPACTION FOR ANY SPECIFIC SOIL CLASSIFICATION AS DETERMINED BY THE MODIFIED PROCTOR TEST A STM. D698
  3. COMPACTION TESTS: COMPACTION TESTS MAY BE REQUIRED IN EXISTING OR PROPOSED STREETS, SIDEWALKS, DRIVES AND OTHER EXISTING OR PROPOSED PAVED AREAS AT VARYING DEPTHS AND AT INTERVALS AS DETERMINED BY THE ENGINEER WITH A MINIMUM OF ONE TEST PER JOB, AND A MAXIMUM OF ONE REQUIRED TEST FOR EACH 400' OR LESS OF WATER MAIN CONSTRUCTION, UNLESS SOIL CONDITIONS OR CONSTRUCTION PRACTICES, IN THE OPINION OF THE ENGINEER, WARRANT THE NEED FOR ADDITIONAL TESTS.
  4. NO BOULDERS OR LOOSE ROCKS PERMITTED IN THE BACKFILL AT THE BOTTOM OF PIPE TRENCH TO 2'-0" ABOVE PIPE.
  5. ALL DESIGNS BASED ON FULLY COMPACTED BACKFILL AND UNIFORMLY SUPPORTED PIPE.
  7. FOR PAVEMENT CUT REPAIRS SEE DRAWING 109.

**ALLOWABLE TRENCH WIDTHS**

PIPE SIZE (NOM)	A SIDE CLEARANCE INCH		B DITCH WIDTH INCH				C SHORING WIDTH (ADDITIONAL-INCH)	D CUT REPAIR WIDTH FEET			
	SOIL	ROCK	SOIL		ROCK			SOIL		ROCK	
			MJ	SJ	MJ	SJ		MJ	SJ	MJ	SJ
3/4"-2"	2	6	NA	8	NA	14	AS APPROVED	NA	3.00	NA	3.17
4"	9	12	25	23	27	23	AS APPROVED	4.08	3.92	4.25	4.06
6"	9	12	28	28	30	30	AS APPROVED	4.33	4.33	4.50	4.50
8"	9	12	32	30	34	32	AS APPROVED	4.67	4.50	4.63	4.67
10"	9	12	34	32	36	34	AS APPROVED	4.83	4.67	5.00	4.83
12"	9	12	36	34	38	36	AS APPROVED	5.00	4.83	5.17	5.00
14"	9	14	39	36	41	38	AS APPROVED	5.23	5.00	5.42	5.17
16"	9	14	42	38	44	40	AS APPROVED	5.50	5.17	5.57	5.33
20"	9	14	45	44	47	46	AS APPROVED	5.75	5.67	5.92	5.63
24"	9	14	50	48	52	50	AS APPROVED	6.17	6.00	6.33	6.17
30"	9	18	58	54	60	56	AS APPROVED	6.83	6.50	7.00	6.67
36"	9	18	64	61	66	63	AS APPROVED	7.33	7.08	7.50	7.25
42"	9	18	72	64	74	66	AS APPROVED	8.00	7.33	8.17	7.50
48"	9	18	78	73	80	76	AS APPROVED	8.50	8.08	9.34	8.25

FULTON COUNTY STANDARD DETAIL 103  
ALLOWABLE TRENCH WIDTHS

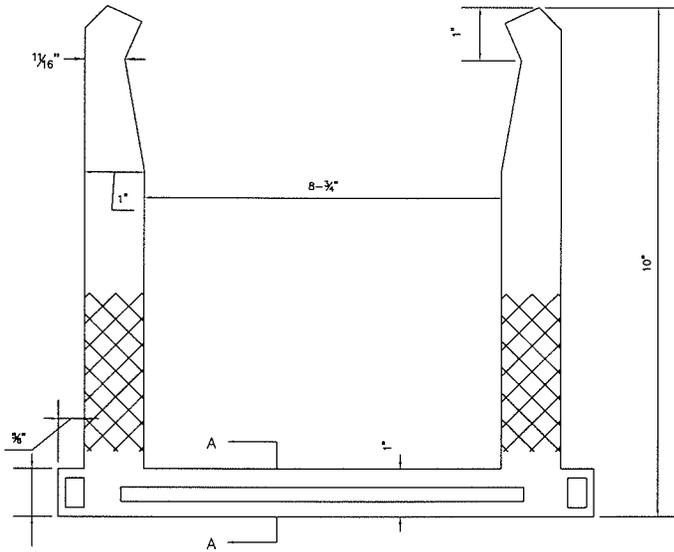
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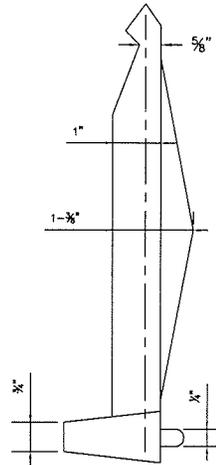


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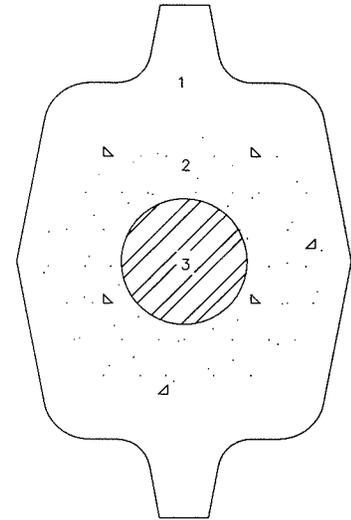
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103



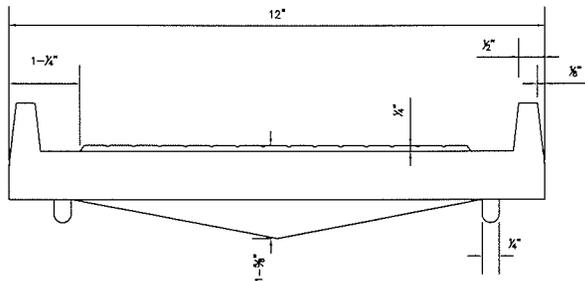
**PLAN VIEW**  
N.T.S.



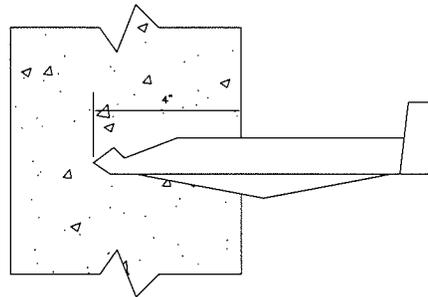
**SIDE VIEW**  
N.T.S.



**SECTION A-A**  
N.T.S.



**FRONT VIEW**  
N.T.S.



- MATERIAL**
1. POLYPROPYLENE PLASTIC SOLID OUTER SHELL
  2. POLYPROPYLENE PLASTIC POROUS MASS
  3. 3/8" STEEL REINFORCING ROD, GRADE 60 MEETING ASTM A-615

FULTON COUNTY STANDARD DETAIL 104  
REINFORCED PLASTIC STEP

DATE	REVISIONS	DATE	REVISIONS

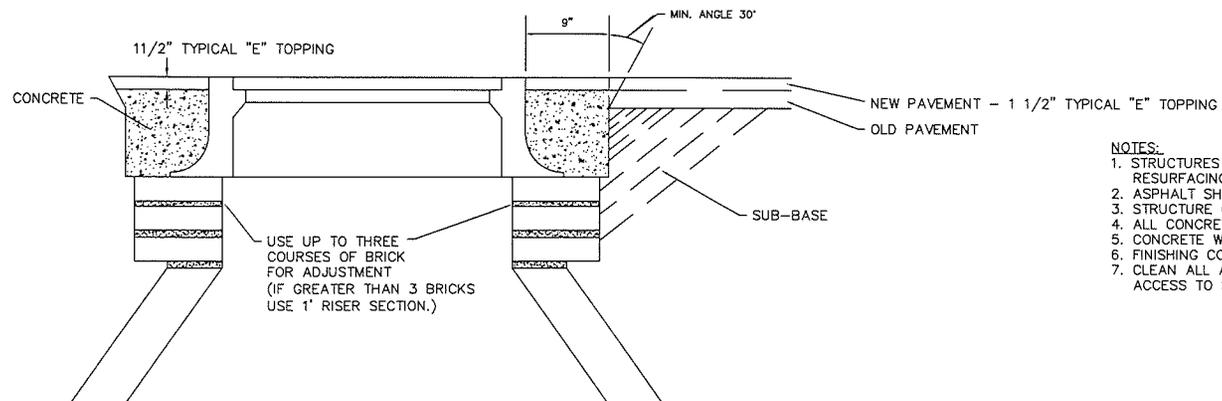
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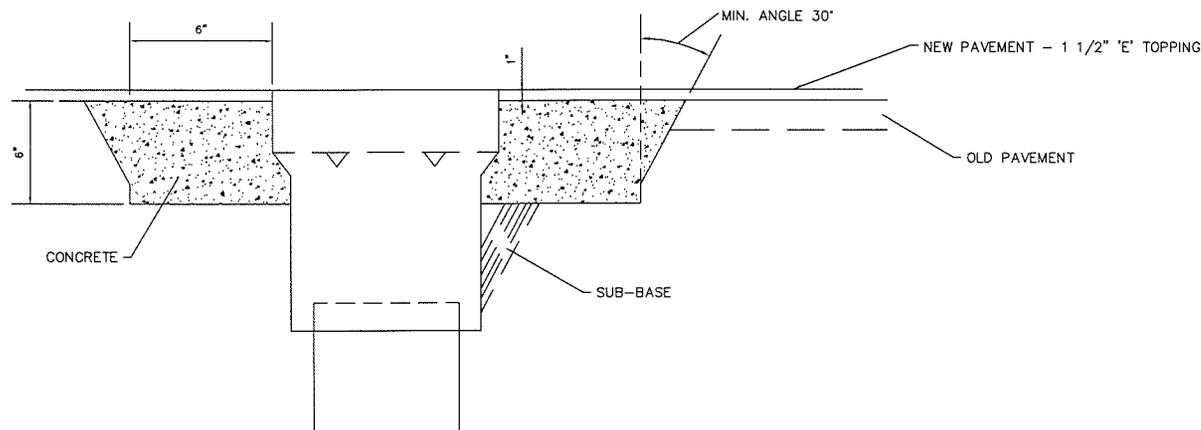
104



**MANHOLE**  
N.T.S.

**NOTES:**

1. STRUCTURES SHALL NOT BE ADJUSTED FOR A PERIOD OF 24 HOURS AFTER RESURFACING IS COMPLETED IN THAT AREA.
2. ASPHALT SHALL BE SAWCUT TO MAKE A SMOOTH, EVEN EDGE.
3. STRUCTURE COVER SHALL BE ADJUSTED TO FIT FLUSH WITH STREET SURFACE.
4. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI.
5. CONCRETE WILL BE USED TO BACKFILL THE ENTIRE WORKING AREA.
6. FINISHING CONCRETE SHALL BE DONE BY USE OF A TROWEL OR FLOAT.
7. CLEAN ALL ASPHALT OFF SEWER MANHOLES AT TIME OF PAVING TO ALLOW ACCESS TO SYSTEM AT ALL TIMES.



**VALVE**  
N.T.S.

FULTON COUNTY STANDARD DETAIL 105  
STRUCTURE ADJUSTMENT

DATE	REVISIONS	DATE	REVISIONS

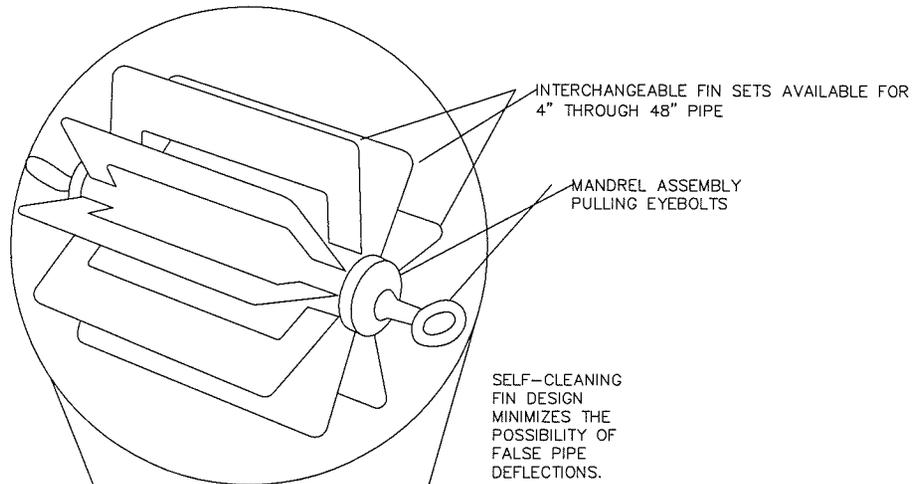
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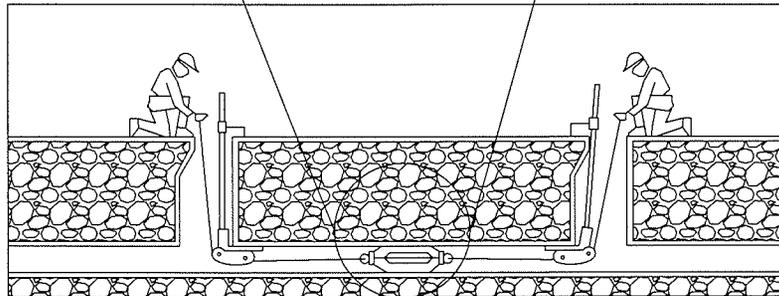
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DRAWING NO.

105



SELF-CLEANING FIN DESIGN MINIMIZES THE POSSIBILITY OF FALSE PIPE DEFLECTIONS.



THE DEFLECTION TEST GAUGE CAN BE PULLED EASILY THROUGH THE PIPELINE.

**NOTES:**

1. AFTER INSTALLATION A DEFLECTION TEST IS REQUIRED NO SOONER THAN 24 HOURS OF TRENCH BACKFILLING. INITIAL DEFLECTION SHALL BE LIMITED TO 3% OF THE UNDEFLECTED DIAMETER.
2. PIPE SHALL BE ASTM D-3034, SDR 35 IN 12.5 FOOT LAYING LENGTHS WITH ELASTOMERIC SEALED JOINTS IN ACCORDANCE WITH ASTM D-3212.
3. MANDREL TO BE MADE FROM AIRCRAFT-QUALITY ALUMINUM OR APPROVED EQUAL.
4. EACH FIN SET IS TO BE STAMPED WITH THE PIPE DIAMETER AND PERCENT DEFLECTION.
5. MANDREL LENGTH TO BE 10 INCHES, MANDREL WEIGHT TO BE 4 LBS.
6. MANDREL TO BE PROVIDED BY CONTRACTOR IT MUST BE MEASURED AND APPROVED FIRST BY FULTON COUNTY INSPECTOR.
7. A SECOND DEFLECTION TEST MAY BE REQUIRED AT THE END OF THE MAINTENANCE PERIOD. THE FULTON COUNTY INSPECTOR MAY REQUIRE A 5% DEFLECTION TEST AT THIS TIME PRIOR TO THE RELEASE OF THE MAINTENANCE BONDS AND THE FINAL ACCEPTANCE OF THE IMPROVEMENTS INTO COUNTY MAINTENANCE.

BASE INSIDE DIAMETER AND 3%, 5%, 7.5% MANDREL DIMENSIONS

NORMAL SIZE INCHES	AVERAGE SIZE DIAMETER	BASE INSIDE DIAMETER	3% DEFLECTION	5% DEFLECTION	7.5% DEFLECTION
6	5.893	5.742	5.569	5.454	5.31
8	7.891	7.665	7.435	7.281	7.09
10	9.864	9.563	9.276	9.084	8.84
12	11.737	11.361	11.020	10.792	10.51
15	14.374	13.898	13.481	13.203	12.86

FULTON COUNTY STANDARD DETAIL 106  
MANDREL DETAIL FOR  
PVC PIPE INSTALLATION

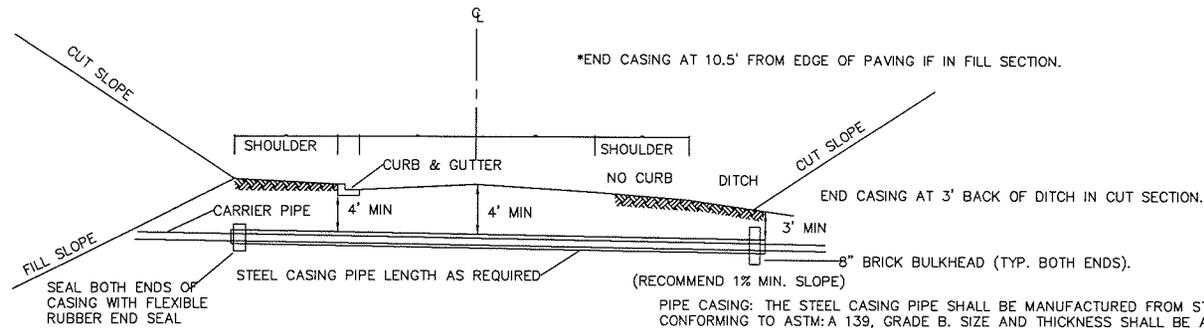
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106



**BORING NOTES:**

CASING TO BE STEEL PIPE (ROUND) WITH 45° BEVELED EDGES.  
 ALL CUTS TO BE SQUARED TO END.  
 JOIN ALL PIPE WITH DOUBLE BEAD BUTT WELDS.  
 AUGER HEAD DIAMETER CANNOT EXCEED DIAMETER OF CASING BY MORE THAN 2".  
 BORING AND CASING SHALL BE INSTALLED SIMULTANEOUSLY.  
 ANYTHING 6" OR LARGER REQUIRES BORE AND CASE.  
 CASING PIPE SHALL HAVE A PROTECTIVE COATING CONSISTING OF A COAL-TAR PRIMER COAT AND AN APPLICATION OF HOT COAL-TAR ENAMEL 1/32" (±1/32") THICK PLUS A BONDED 15 LB. ASBESTOS WRAP.  
 PIT TO BE NO CLOSER THAN 4' BEHIND CURB OR EDGE OF PAVEMENT.  
 TYPICAL PIT IS 32' LONG BY 10' WIDE.  
 CASING SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM: A 139, GRADE B.  
 2 STAINLESS STEEL CASING SPACERS REQUIRED PER JOINT.  
 ALL BORING MUST BE APPROVED AND A PERMIT OBTAINED FROM PUBLIC WORKS (404) 730-7400.  
 CARRIER PIPE SHALL BE DUCTILE IRON.

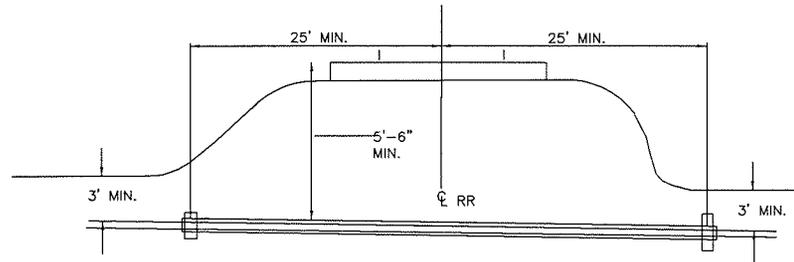
**SECTION**  
N.T.S.

PIPE CASING: THE STEEL CASING PIPE SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM: A 139, GRADE B. SIZE AND THICKNESS SHALL BE AS FOLLOWS:

**UNDER RAILROADS**

PIPE DIAMETER INCHES (I.D.)	CASING DIAMETER INCHES (I.D.) MIN.	WALL THICKNESS INCHES
6	14	0.250
8	18	0.375
10	20	0.375
12	22	0.375
14	24	0.375
16	30	0.406
18	30	0.406
20	32	0.469
24	36	0.469
30	42	0.500

**RR SECTION**



**UNDER HIGHWAYS**

PIPE DIAMETER INCHES (I.D.)	CASING DIAMETER INCHES (I.D.) MIN.	WALL THICKNESS INCHES
6	12	0.250
8	16	0.250
10	18	0.250
12	20	0.375
16	24	0.375
18	30	0.375
20	30	0.375
24	36	0.375
30	42	0.375

FULTON COUNTY STANDARD DETAIL 107  
 ROADWAY CROSSING  
 BORE AND CASE DETAIL

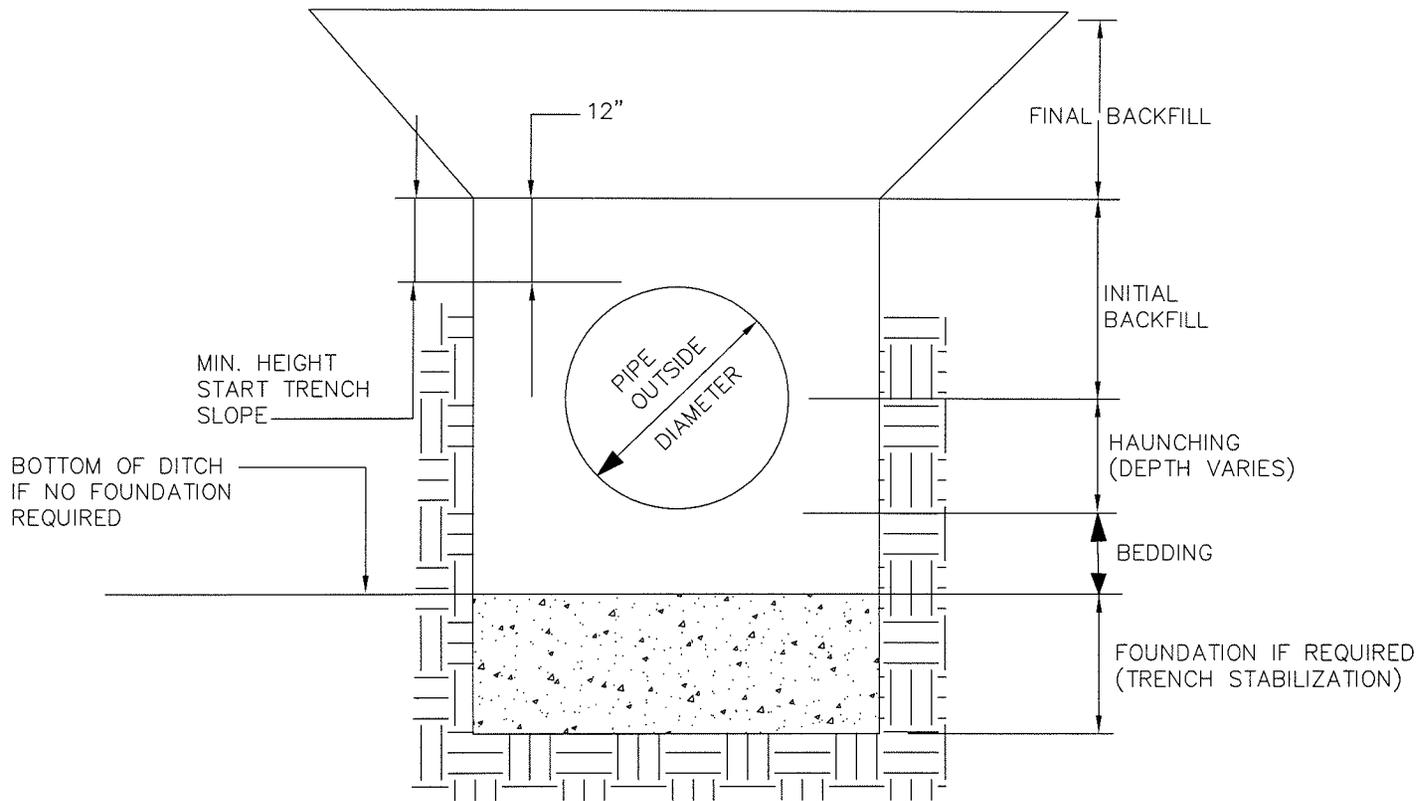
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NOTE: SEE DETAIL # 103 AND #109 FOR DIMENSIONS AND MATERIALS

FULTON COUNTY STANDARD DETAIL 108  
TRENCH TERMINOLOGY

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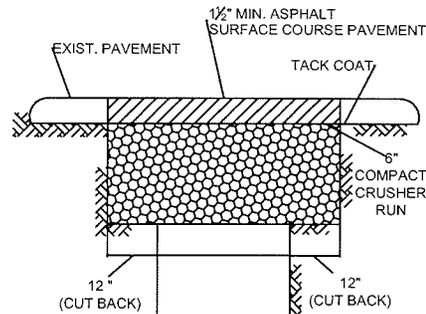
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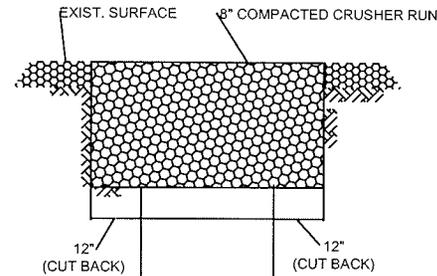
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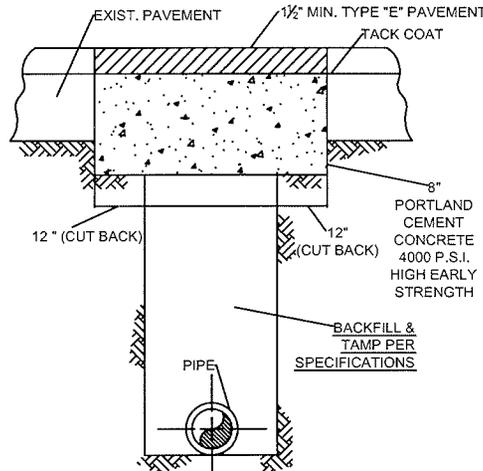
108



TYPE "A" CUT REPAIR DETAIL  
T & G OR ASPHALT RDS. (DRIVEWAYS, A-30)



TYPE "B" CUT REPAIR DETAIL  
DIRT OR GRAVEL RDS. (DRIVEWAYS, A-30)



TYPE "C" CUT REPAIR DETAIL  
GEORGIA D.O.T. AND FULTON CO.

**NOTES:**

1. ALL MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH THE GA. D.O.T.'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", 1983 EDITION OR LATEST REVISION THERETO.
2. FOR TYPE "C", THE CONTRACTOR SHALL COVER THE POURED CONCRETE WITH STEEL PLATES A MINIMUM OF 24 HOURS TO ALLOW ADEQUATE SET-UP.
3. CONTRACTOR'S TRAFFIC CONTROL PLAN MUST BE APPROVED BY THE AUTHORITY HAVING JURISDICTION BEFORE WORK BEGINS.
4. FINAL APPROVAL OF CONTRACTOR'S PAVEMENT CUT REPAIRS RESIDES WITH THE AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL MEET ALL REQUIREMENTS OF SAID AUTHORITY.

FULTON COUNTY STANDARD DETAIL 109  
PAVEMENT CUT REPAIRS  
TYPE A, B & C

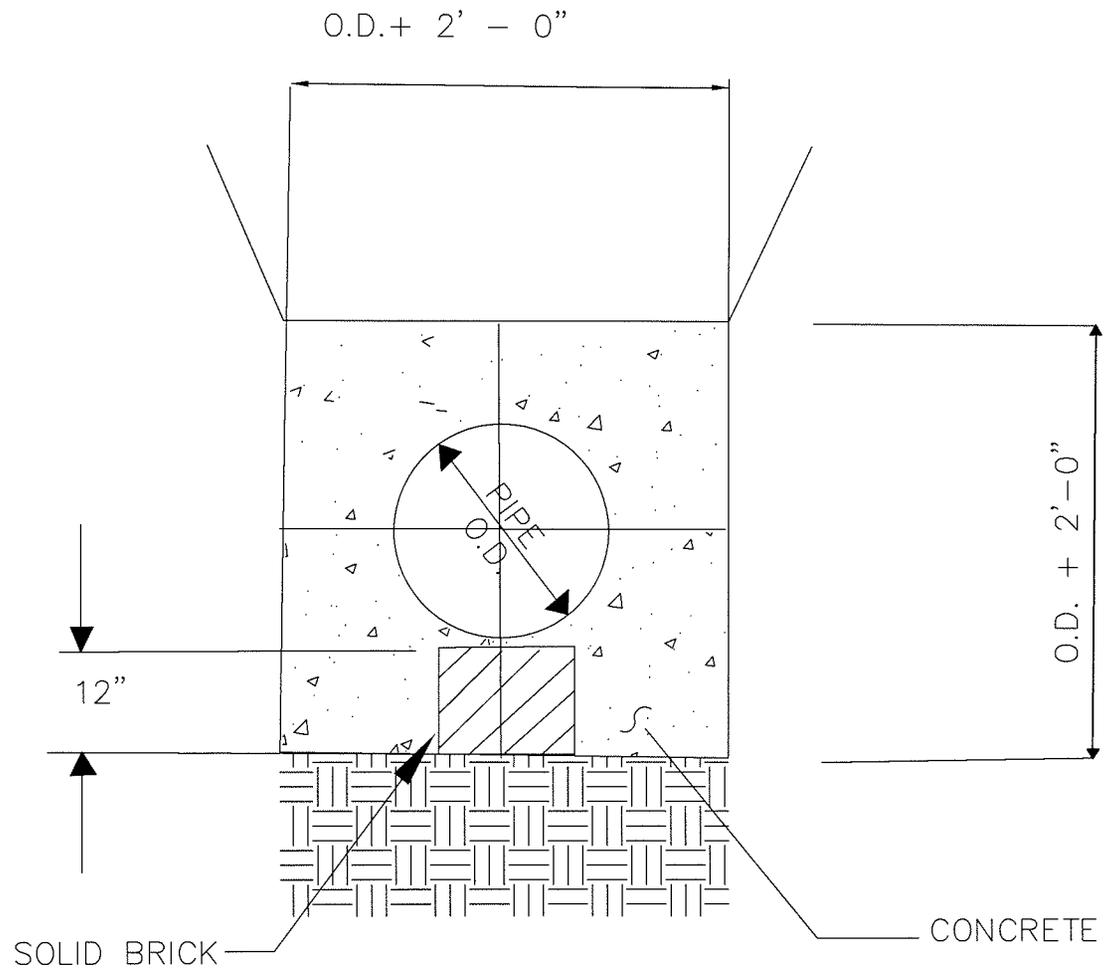
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FULTON COUNTY STANDARD DETAIL 110  
CONCRETE ENCASEMENT

DATE	REVISIONS	DATE	REVISIONS

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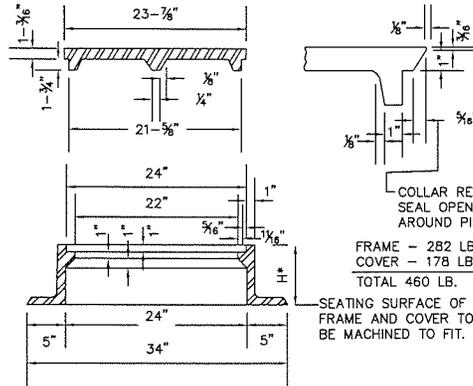
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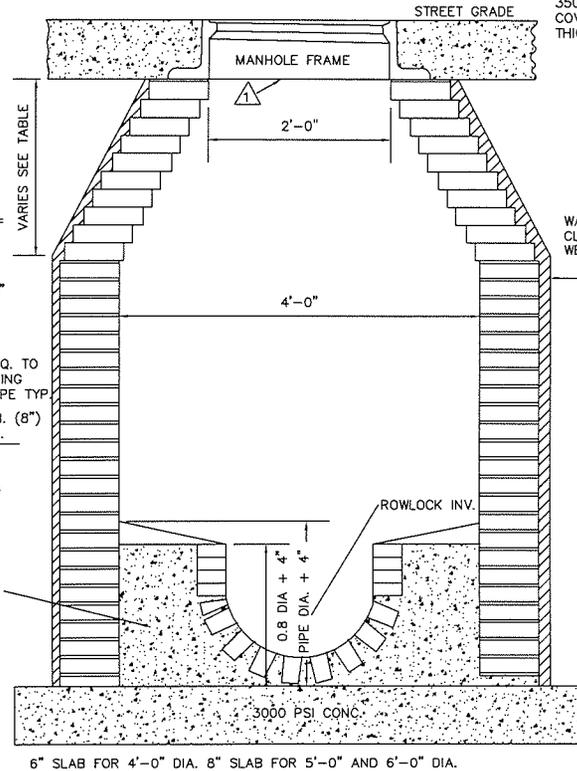
NOTE REQUIRED:  
CONCRETE STRENGTH TEST MAY BE REQUIRED  
FOR ALL POURED IN PLACE CONCRETE.

**WATERTIGHT C.I. MANHOLE FRAME AND COVER**  
CORRUGATION AND 2 PICK HOLE IN COVER, NO PERFORATIONS.  
N.T.S.



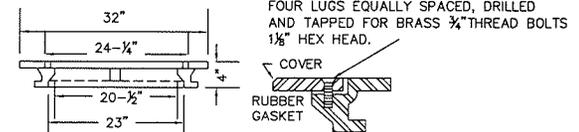
**460# M.H. FRAME AND COVER**  
FOR USE IN STREETS AND ROADS  
N.T.S.

NOTE:  
BRICK MANHOLES SHOULD ONLY  
BE USED IN SPECIAL  
CIRCUMSTANCES  
WHERE THE USE OF PRECAST  
SECTORS MAY BE AFFECTED BY  
OBSTACLES.



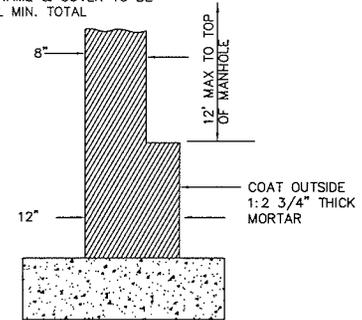
ELEVATION AT @ MANHOLE  
SEAL M.H. RING TO STRUCTURE WITH TWO CONCENTRIC RINGS OF ASPHALTIC MASTIC.

NOTE:  
ALL M.H. COVERS ON OUTFALL MH'S OUTSIDE OF ROADWAY R/W  
TO BE CAST IN PLACE IN CONE SECTIONS OF MHS.  
350# FRAMES & COVERS MAY BE USED OUTSIDE OF STREETS AND ROADS.  
COVER TO BE SIMILAR TO 460# FRAME TO BE REDUCED IN HEIGHT AND  
THICKNESS. MANHOLES OUTSIDE R/W SHALL BE 24" ABOVE GRADE.



WATERTIGHT MANHOLE FRAME & COVER TO BE  
CLOW F-3370 OR EQUAL MIN. TOTAL  
WEIGHT 270 LBS.

PLASTER 1:2  
MORTAR 3/4"  
THICK ON OUTSIDE



WALL DETAIL FOR DEPTH  
OVER 12'-20'

NOTE:  
FOR DEPTH OVER 20' INCREASE  
WALL THICKNESS TO 16"

FULTON COUNTY STANDARD DETAIL 111  
BRICK MANHOLE DETAIL AND  
MANHOLE FRAME AND COVER

DATE	REVISIONS	DATE	REVISIONS

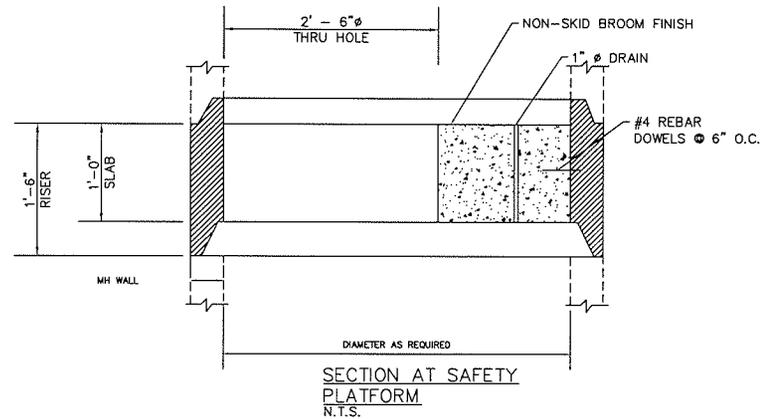
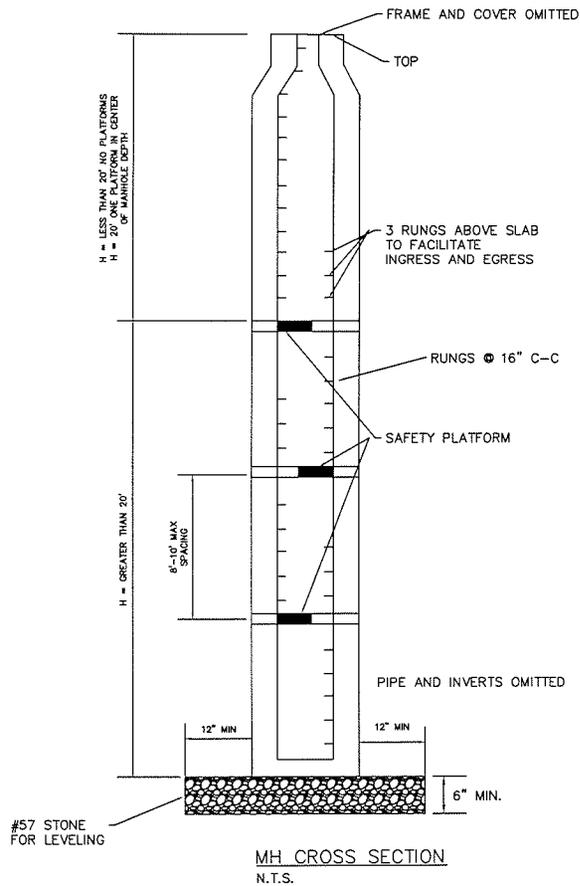
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DRAWING NO.

111



NOTES:

1. A DEEP MANHOLE IS CONSIDERED TO BE GREATER THAN 24'.
  2. SAFETY PLATFORMS ARE REQUIRED ON ALL MANHOLES EQUAL TO OR GREATER THAN 20' IN DEPTH.
  3. SAFETY PLATFORMS ARE TO BE PLACED A MAX. DISTANCE OF 8'-10' APART.
  4. PLATFORMS ARE TO BE DESIGNED TO OBTAIN A STRENGTH OF 4000 PSI IN 28 DAYS.
  5. MANHOLE AND PLATFORM DESIGN SHALL CONFORM TO A.S.T.M. SPECS. C478 LATEST EDITION.
  6. REINFORCING STEEL HAS A MIN. YIELD STRENGTH OF 60,000 PSI.
  7. SAFETY PLATFORM SLAB IS DESIGNED FOR A CONCENTRATED LOAD (P) AS FOLLOWS:
- | MH DIAMETER (FT.) | P(LB.) |
|-------------------|--------|
| 4                 | 12,000 |
| 5                 | 16,000 |
| 6                 | 20,000 |
8. SAFETY PLATFORM IS TO BE PLACED BETWEEN RISERS.
  9. SAFETY PLATFORM IS TO BE PLACED AT MIDPOINT OF A MANHOLE OVER 20' IN DEPTH.
  10. TWO PLATFORMS TO BE PLACED EQUAL DISTANCE AT A MANHOLE DEPTH OF 24'.
  11. SAFETY PLATFORM IS TO BE PRECAST CONCRETE OR APPROVED EQUAL.
  12. ALTERNATE OPENINGS IN SAFETY PLATFORMS AS INDIVIDUAL DESCENDS.
  13. MANHOLES IN EXCESS OF 24' IN DEPTH SHALL BE PRE-APPROVED BY PUBLIC WORKS AND HAVE SAFETY PLATFORMS WITH 8'-10' SPACING.

FULTON COUNTY STANDARD DETAIL 112  
SAFETY PLATFORM FOR DEEP  
PRECAST MANHOLES

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: REB  
APPROVED: REW  
DATE: 12-2-05

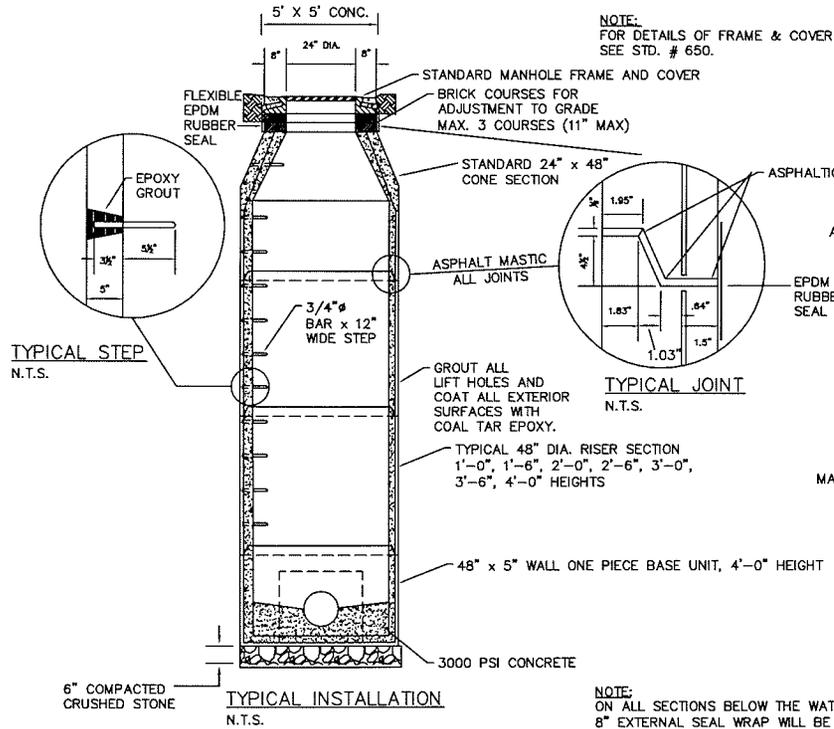


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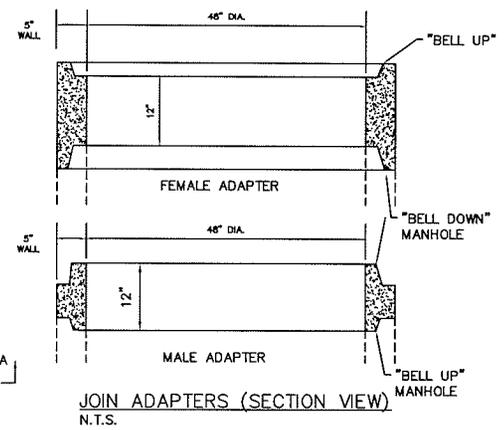
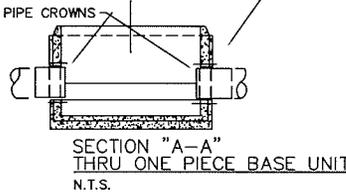
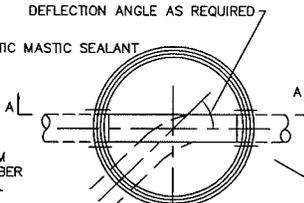
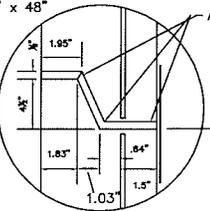
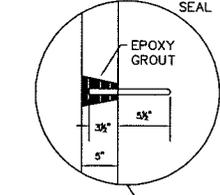
DRAWING NO.

112

- NOTES:**
1. ALL HOLES MUST BE PRECAST.
  2. MAXIMUM HOLE SIZE = PIPE O.D. + 4"
  3. USE CONCENTRIC CONIC SECTIONS IN RIGHT-OF-WAY.
  4. OUTFALL MANHOLES MUST HAVE CAST IN PLACE RINGS.
  5. SEE STANDARD NO. 112 FOR MANHOLE DEPTH GREATER THAN 20'.



**NOTE:**  
FOR DETAILS OF FRAME & COVER  
SEE STD. # 650.



MANHOLE MUST BE CORED  
RUBBER BOOT IS REQUIRED

**NOTE:**  
ON ALL SECTIONS BELOW THE WATER TABLE  
8\"/>

FULTON COUNTY STANDARD DETAIL 113  
MANHOLES  
PRECAST DETAILS

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: REB  
APPROVED: REW  
DATE: 12-2-05



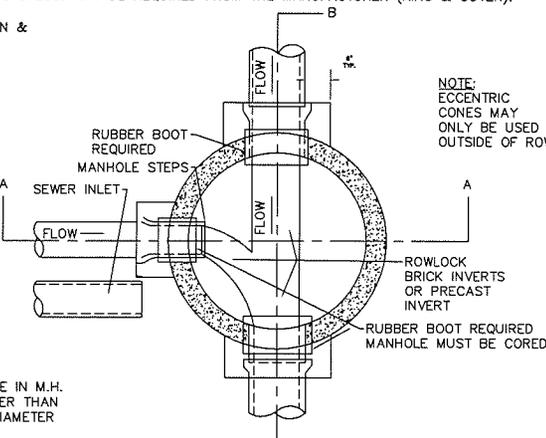
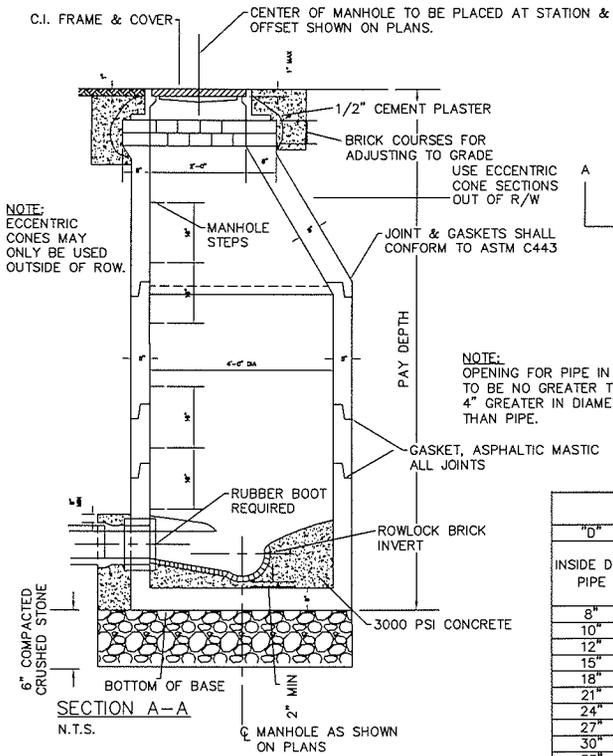
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DRAWING NO.  
113

NOTE:  
SEWER STAFF IS OF THE VIEW  
THAT ECCENTRIC MANHOLES  
SHOULD NOT BE USED. DIFFICULTY  
WITH ACCESS.

NOTE:  
FOR OUTFALL LINES, MANHOLE TOP TO BE 18" TO 24" ABOVE SURROUNDING GROUND  
SURFACE.

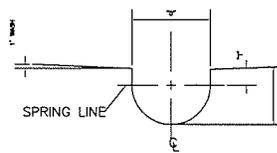
ALL MANHOLES WITHIN TEN FEET OF PUBLIC RIGHT OF WAY SHALL BE TOPPED WITH A  
HEAVY DUTY TRAFFIC BEARING RING & COVER MOUNTED FLUSH TO EXISTING GRADE.  
LOADING SPECS. MAY BE REQUIRED FROM THE MANUFACTURER (RING & COVER).\*\*



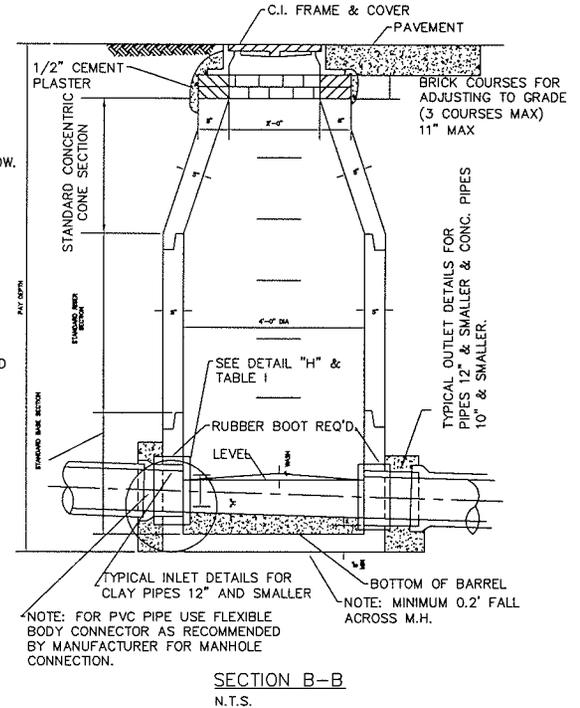
NOTE:  
OPENING FOR PIPE IN M.H.  
TO BE NO GREATER THAN  
4" GREATER IN DIAMETER  
THAN PIPE.

SECTIONAL PLAN  
STANDARD PRECAST 4'-0" DIAMETER MANHOLE  
N.T.S.

TABLE I		
"D"	"T"	"H"
INSIDE DIA. OF PIPE	VERTICAL TANGENT	HEIGHT OF WATER TABLE
8"	2 1/2"	6 1/2"
10"	3"	8"
12"	3 1/2"	9 1/2"
15"	4 1/2"	12"
18"	5 1/2"	14 1/2"
21"	6 1/2"	17"
24"	7 1/2"	19 1/2"
27"	8"	21 1/2"
30"	9"	24"
33"	10"	26 1/2"
36"	11"	29"



DETAIL "H"  
NOTE: "H" & "T" DIMENSIONS APPLY ONLY AT  
THE UPSTREAM, INSIDE EDGE OF M.H.  
N.T.S.



SECTION B-B  
N.T.S.

FULTON COUNTY STANDARD DETAIL 114  
STANDARD SEWER MANHOLES  
PRECAST CONCRETE

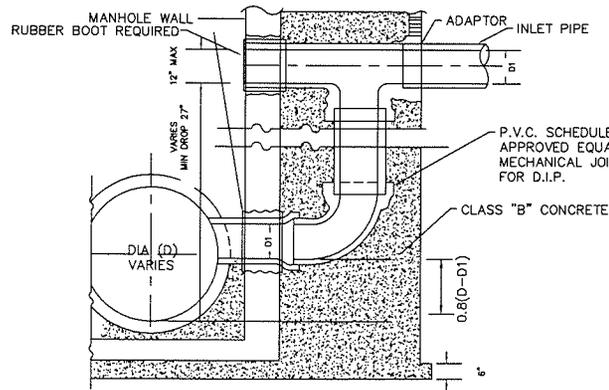
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: REB  
APPROVED: REW  
DATE: 12-2-05

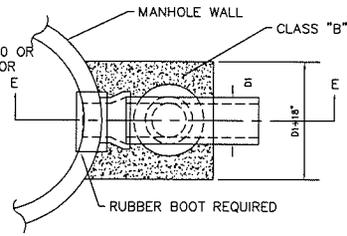


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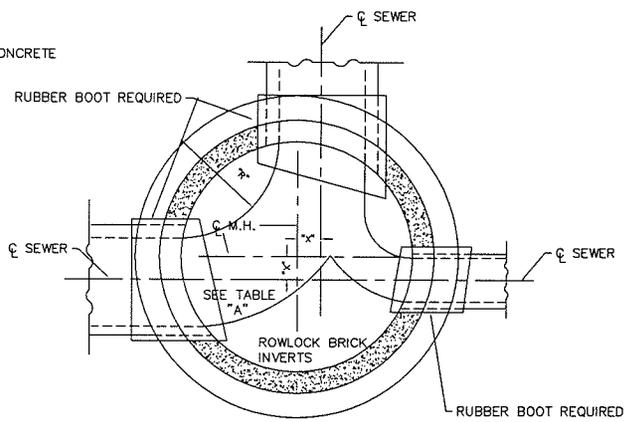
DRAWING NO.  
114



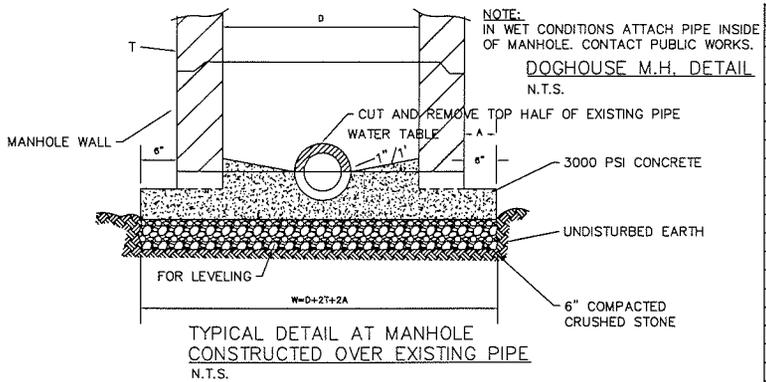
SECTION E-E  
N.T.S. TYPICAL VERTICAL DROP INLET AT MANHOLE (OUTSIDE DROP)



PART PLAN



SECTIONAL PLAN  
N.T.S.



NOTE:  
IN WET CONDITIONS ATTACH PIPE INSIDE  
OF MANHOLE. CONTACT PUBLIC WORKS.  
N.T.S.

DOGHOUSE M.H. DETAIL  
N.T.S.

TYPICAL DETAIL AT MANHOLE  
CONSTRUCTED OVER EXISTING PIPE  
N.T.S.

TABLE "A"

STANDARD PRECAST MANHOLES SCHEDULE OF GOVERNING DIMENSIONS				
PIPE SIZE	ANGLE	M.H. DIAMETER	"R"	"X"
8" thru 12"	0° to 90°	4'	1'-0"	0"
15"	0° to 60°	4'	1'-3"	0"
15"	60° to 90°	4'	1'-3"	6"
18"	0° to 60°	4'	1'-6"	0"
18"	60° to 90°	4'	1'-4"	8"
21"	0° to 60°	4'	1'-9"	0"
21"	60° to 90°	5'	1'-9"	9"
24"	0° to 60°	4'	2'-0"	0"
24"	60° to 90°	5'	1'-6"	9"
27"	0° to 60°	5'	2'-3"	0"
27"	60° to 90°	6'	2'-0"	1'-0"
30"	0° to 60°	5'	2'-6"	0"
30"	60° to 90°	6'	1'-9"	8"
36"	0° to 90°	PRE-BED PIPE, M.H. BASE & ELBOW UNIT		

FULTON COUNTY STANDARD DETAIL 115  
STANDARD SEWER MANHOLES  
PRECAST CONCRETE

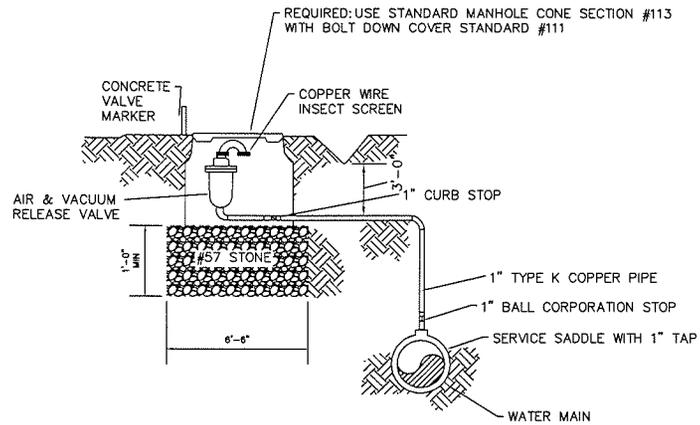
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: REB  
APPROVED: REW  
DATE: 12-2-05



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DRAWING NO.  
115

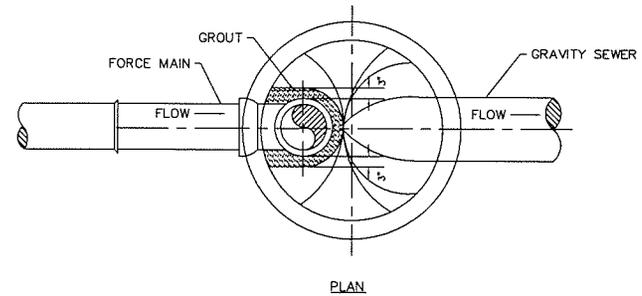


AIR & VACUUM RELEASE VALVE ASSEMBLY  
N.T.S.

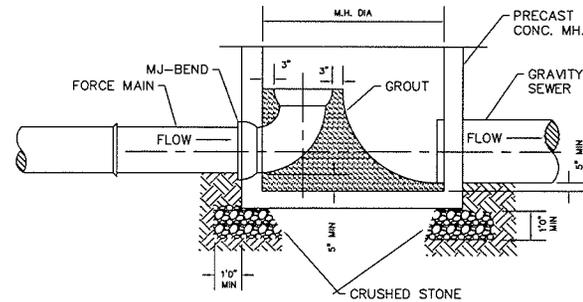
**NOTES:**

ALL FORCE MAINS SHALL BE 12" DIA. DIP, CLASS 50 PUSH-ON JOINTS EXCEPT AT CREEK CROSSINGS, BORINGS, AND FITTINGS. ALL CONSTRUCTION METHODS AND MATERIALS AND MAJOR GLANDS TO BE USED IN FULTON COUNTY MUST BE MADE OF DUCTILE IRON AND COMPLY TO THE ANSI/AWWA A21.111/C111-85 STANDARD SPECIFICATIONS. GLANDS THAT DO NOT MEET THE SPECIFICATIONS WILL NOT BE ACCEPTED. THRUST BLOCKING WILL BE USED ON ALL TEES AND BENDS. INSPECTOR MUST BE NOTIFIED 24 HOURS BEFORE CONSTRUCTION.

FOR COMMERCIAL USE ONLY



PLAN



SECTION

(END OF LINE CONNECTION)

FORCE MAIN DISCHARGE MANHOLE DETAIL  
N.T.S.

FULTON COUNTY STANDARD DETAIL 116  
FORCE MAIN DETAILS  
AIR & VACUUM RELEASE VALVE  
ASSEMBLY

DATE	REVISIONS	DATE	REVISIONS

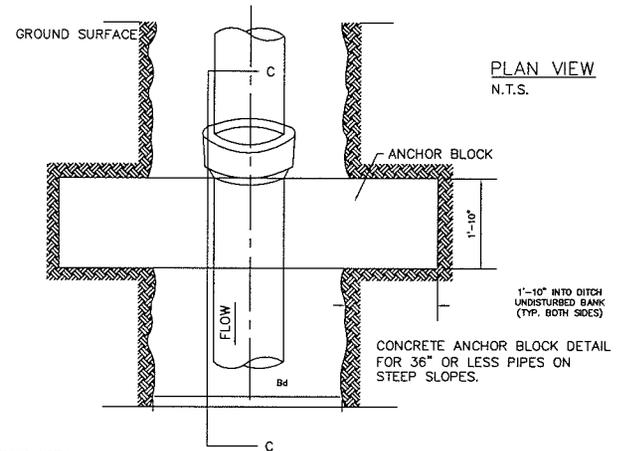
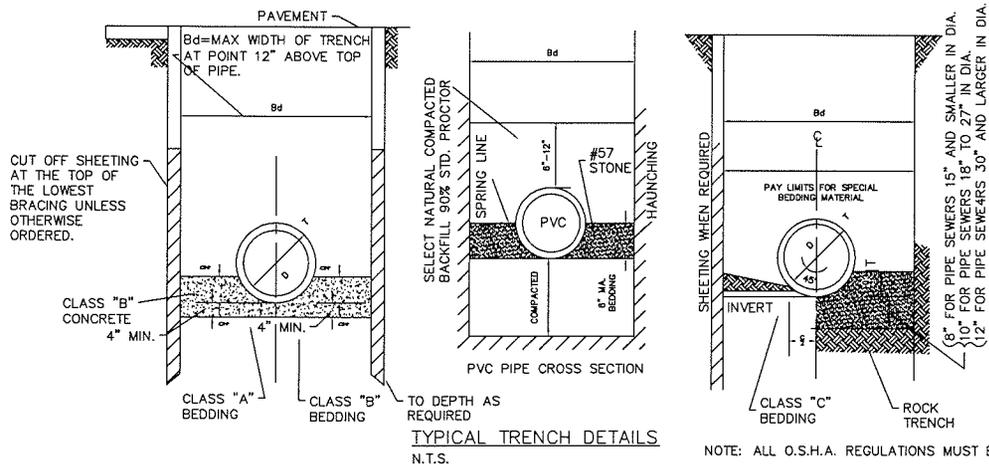
DGS/DRN/CHKD: REB  
APPROVED: REW  
DATE: 12-2-05



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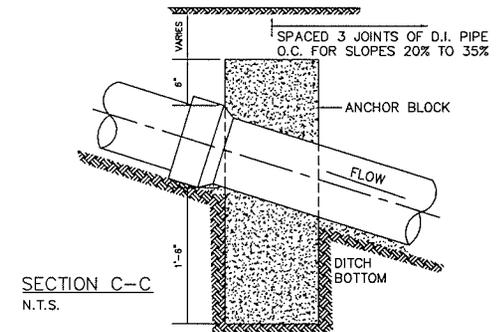
DRAWING NO.

116



A.S.T.M. A746 DUCTILE IRON PIPE					A.S.T.M. C76-- REINF. CONC. PIPE				A.S.T.M. C14-- EX. STR. CONC. SEWER PIPE				A.S.T.M.-3034 SDR 35 P.V.C. PIPE			
D. IN	T. IN	Bd FT	C FT	*CRADLE	T. IN	Bd FT	C FT	*CRADLE	T. IN	Bd FT	C FT	*CRADLE	T. IN	Bd FT	C FT	*CRADLE
6	0.38	2	0.41	0.034					7 / 8	2.15	0.6	0.041	0.18	2.52		
8	0.42	2.09	0.53	0.036					1	2.33	0.7	0.047	0.3	2.88		
10	0.48	2.26	0.65	0.043					1-3/8	2.56	0.87	0.055	0.36	3.04		
12	0.52	2.43	0.78	0.049					1-5/8	2.85	1.08	0.066	0.437	3.28		
15					2	2.67	0.95	0.06								
18	0.73	2.96	1.15	0.072	2-1/4	3	1.15	0.073	2	3.17	1.3	0.086				
21					2-1/2	3.25	1.35	0.088	2-1/4	3.46	1.5	0.105				
24	0.85	3.48	1.52	0.18	1-3/4	3.54	1.55	0.109	2-5/8	3.77	1.72	0.128				
27					3	3.83	1.75	0.131								
30	0.99	4	1.88	0.149	3	4.08	1.95	0.153								
33					3-1/2	4.42	2.2	0.184								
36	1.19	4.5	2.27	0.198	3-3/4	4.75	2.4	0.215								
42	1.32	5	2.63	0.253	4	5.67	2.6	0.288								
48	1.44	5.5	3	0.314	4-1/2	6.25	3	0.36								
54					5	6.83	3.5	0.44								
60					5-1/2	7.42	3.75	0.54								
66					5	8	4.25	0.63								
72					6-1/2	8.58	4.65	0.74								
					7	9.17	5.07	0.86								

NOTE: PAYMENT QUANTITY IN CU. YDS./LIN./FT. OF TRENCH FOR CLASS "B" CONC. IN CASE OF CLASS "A" BEDDING & FOR CRUSHED STONE BEDDING MATERIAL IN CASE OF CLASS "B" BEDDING. ADJUST QUANTITY OF CRADLE MATERIAL BASED ON Bd WIDTH IF DEPTH OF CRADLE EXCEEDS D/4.



PVC BEDDING DETAIL  
COMPACTION--  
THE BACKFILL OF ALL TRENCHES TO BE COMPACTED TO A DENSITY OF 90% STANDARD PROCTOR. BACKFILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, OR OTHER FOREIGN DEBRIS AND SHALL BE PLACED AT OR NEAR OPTIMUM MOISTURE.

FULTON COUNTY STANDARD DETAIL 117  
PIPE SEWER DATA  
PVC PIPE INSTALLATION

DATE	REVISIONS	DATE	REVISIONS

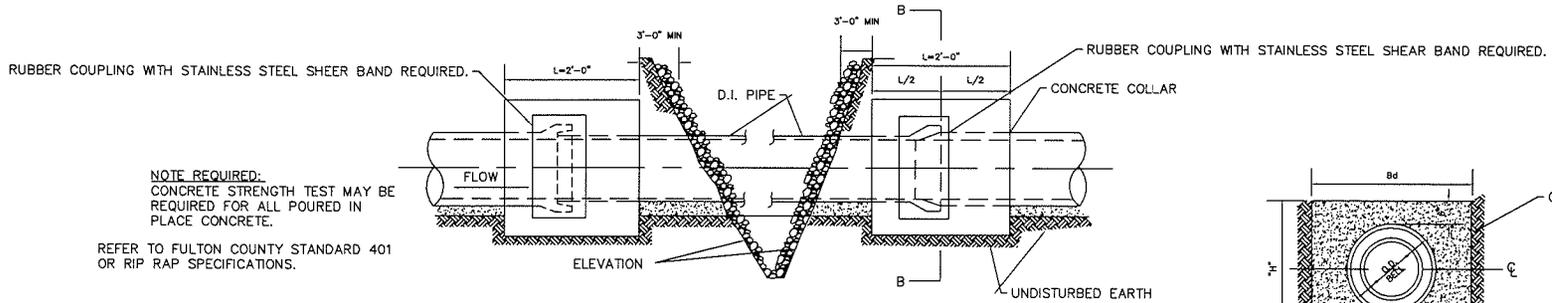
DGS/DRN/CHKD: REB  
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DRAWING NO.

117



NOTE REQUIRED:  
CONCRETE STRENGTH TEST MAY BE  
REQUIRED FOR ALL POURED IN  
PLACE CONCRETE.

REFER TO FULTON COUNTY STANDARD 401  
OR RIP RAP SPECIFICATIONS.

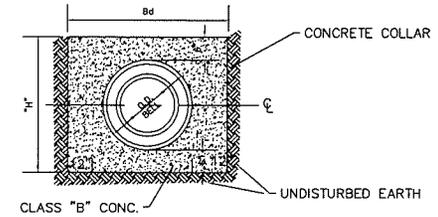
**NOTES:**

WHERE SEWER PIPES RUN PARALLEL WITH CREEKS OR  
STREAMS, RIP RAP IS REQUIRED WITHIN 10 FEET SEWER  
EASEMENT. ALL SEWER OUTFALLS MUST BE LEFT ACCESSIBLE  
TO COUNTY SERVICE TRUCKS.

GATES (12 FEET) WILL BE REQUIRED ON FENCES ACROSS  
OUTFALLS HAVING A DIAMETER OF 12" OR LARGER.

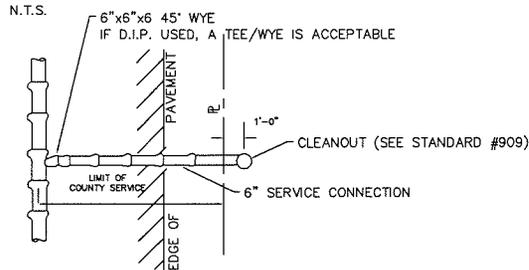
STEEL PIPE COATED INSIDE AND COATED AND WRAPPED OUTSIDE MAY BE USED.

NOTE:  
THE UNION OF UNLIKE PIPE (D.I.P., CLAY, P.V.C. OR  
CONCRETE) SHALL BE JOINED TOGETHER WITH A  
CONCRETE COLLAR AS SHOWN ABOVE AND  
FLEXIBLE NEOPRENE COUPLING WITH STAINLESS  
STEEL BANDS AND SHEAR RING.

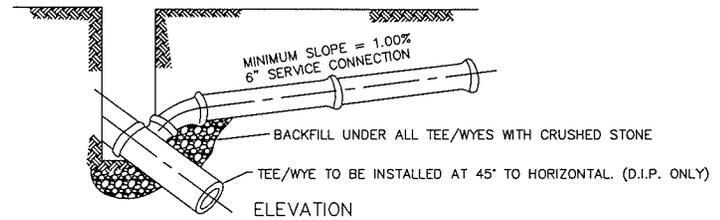


**SECTION B-B**  
N.T.S.

**PLAN VIEW**



NOTE:  
WHERE SERVICE LINE CROSSES STATE HWY. R/W, PIPE AND FITTINGS SHALL  
BE MECHANICAL JOINT D.I. PIPE, AS SPECIFIED UNDER ITEM NO. 7 D.I. PIPE  
AND TRENCH SHALL BE BACKFILLED WITH CRUSHED STONE.



**TYPICAL SERVICE CONNECTION**  
N.T.S.

FULTON COUNTY STANDARD DETAIL 118  
PIPE SEWER DATA

DATE	REVISIONS	DATE	REVISIONS

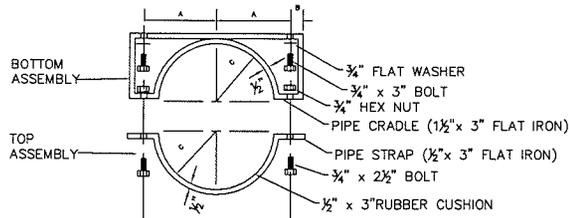
DGS/DRN/CHKD: REB  
APPROVED: REW  
DATE: 12-2-05



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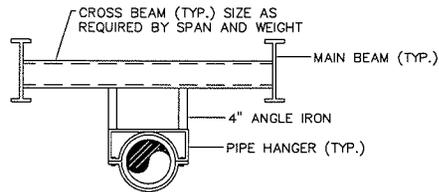
DRAWING NO.

118



DIMENSION IN INCHES FOR PIPE HANGERS

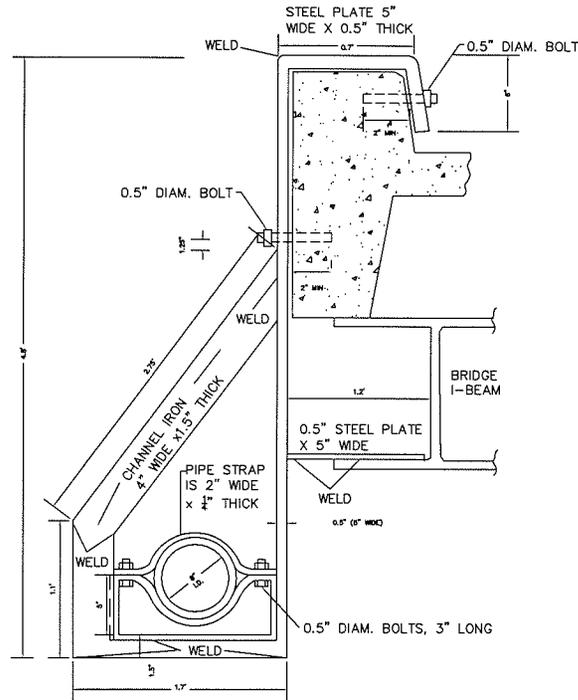
PIPE SIZE	A	B	C (RADIUS)
8	6.53	2.00	4.53
12	8.60	2.00	6.60
16	10.70	2.00	6.70



TYPICAL WATER MAIN SUPPORT DETAILS  
N.T.S.

NOTES:

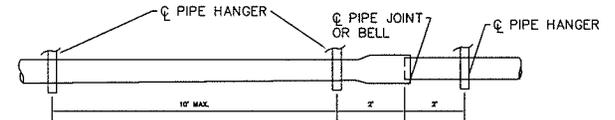
1. PRIMER SHALL BE NO. 1-8 ORANGE PRIMER AND CONFORM TO GEORGIA D.O.T. ARTICLE 670.02 PRIMER SHALL BE APPLIED TO A MINIMUM THICKNESS OF 4 MILS.
2. PAINT SHALL BE NO. 3-A GREEN, BRUSHING, ROLLER, AIRLESS TYPE AND CONFORM TO GEORGIA D.O.T. ARTICLE 870.02. PAINT SHALL BE APPLIED TO A MINIMUM THICKNESS OF 10 MILS.
3. TWO BOTTOM ASSEMBLIES USED TOGETHER MAY BE REQUIRED FOR SOME INSTALLATIONS.
4. PROVIDE TWO SUPPORTS PER JOINT, TWO FEET FROM JOINT.
5. DESIGN SUPPORTS DETAILS FOR WATER MAIN LARGER THAN 16".
6. STEEL SHALL BE A-36.
7. WELDING SHALL BE E-70XX.



PIPE HANGER SECTION  
(FOR 8" DIAMETER PIPE)  
N.T.S.

NOTES:

1. PROVIDE TWO SUPPORTS PER JOINT, TWO FEET FROM JOINT.
2. ENGINEER SHALL DESIGN SUPPORT DETAILS FOR WATER MAINS LARGER THAN 8" IN DIAMETER.
3. STEEL SHALL BE A-36
4. WELDING SHALL BE E-70XX.
5. ALTERNATE DESIGN MAY BE SUBMITTED BY THE ENGINEER FOR APPROVAL BY FULTON COUNTY PUBLIC WORKS DEPT.
6. RESTRAINED JOINTS EQUAL TO GRIP TIGHT OR APPROVED EQUAL SHALL BE USED TWO JOINTS EITHER SIDE OF THE SUSPENDED PIPE.



PLAN FOR PIPE HANGER SPACING  
N.T.S.

FULTON COUNTY STANDARD DETAIL 119  
TYPICAL PIPE HANGER AND SUPPORT DETAILS

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



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141 PRYOR ST. ATLANTA, GA. 30303  
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DRAWING NO.

119

**MAXIMUM  
PERMISSIBLE DEFLECTIONS**

SIZE (NOM)	PUSH-ON JOINT (18 FT. JOINTS)		MECHANICAL JOINT (18 FT. JOINTS)	
	DEGREE	MAX. OFFSET	DEGREE	MAX. OFFSET
3"	4.0	15"	4.5	17"
4"	4.0	15"	4.5	17"
6"	4.0	15"	4.5	17"
8"	4.0	15"	4.5	17"
10"	4.0	15"	4.5	17"
12"	4.0	15"	4.5	17"
14"	2.5	9.4"	3.0	11"
16"	2.0	7.5"	3.0	11"
20"	2.0	7.5"	2.0	7.5"
24"	2.0	7.5"	2.0	7.5"
30"	1.5	5.5"	2.0	7.5"
36"	1.5	5.5"	2.0	7.5"
42"	1.5	5.5"	1.5	5.5"
48"	1.5	5.5"	1.5	5.5"

**NOTES:**

1. WHEN A PIPE IS DEFLECTED, THE PIPE SHALL FIRST BE ASSEMBLED IN A STRAIGHT LINE, BOTH HORIZONTALLY AND VERTICALLY BEFORE THE DEFLECTION IS MADE.
2. FOR MECHANICAL JOINT PIPE, THE BOLTS SHALL BE PARTIALLY TIGHTENED BEFORE THE LENGTH OF PIPE IS DEFLECTED. ANY SUPPORTED PIPE, SHALL BE SO SUPPORTED THAT THERE IS ZERO DEFLECTION EXCEPT WHERE EITHER A HORIZONTAL OR VERTICAL CURVE ON A BRIDGE OR OTHER STRUCTURE IS INVOLVED.
3. THRUST RESTRAINTS MAY BE REQUIRED ON THE DEFLECTED JOINTS.

<p align="center">FULTON COUNTY STANDARD DETAIL 120 MAXIMUM PERMISSIBLE JOINT DEFLECTIONS</p>	DATE	REVISIONS	DATE	REVISIONS	<p>DGS/DRN/CHKD: CMS APPROVED: REW DATE: 12-2-05</p>	 <b>FULTON COUNTY</b>	<p align="center">FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-730-7400 FAX: 404-224-0498</p>	<p align="right">DRAWING NO. 120</p>

NOM. PIPE DIA.	BELL DEPTH	BOLTS				JOINT ACCESSORY WEIGHT-Lbs.
		DIAMETER	LENGTH	NUMBER PER JOINT	REC. TORQUE Ft.-Lbs.	
4	2 1/2"	3/4"	3 1/2"	4	75-90	10
6	2 1/2"	3/4"	3 1/2"	6	75-90	16
8	2 1/2"	3/4"	4"	6	75-90	25
10	2 1/2"	3/4"	4"	8	75-90	30
12	2 1/2"	3/4"	4"	8	75-90	40
14	3 1/2"	3/4"	4 1/2"	10	75-90	45
16	3 1/2"	3/4"	4 1/2"	12	75-90	55
18	3 1/2"	3/4"	4 1/2"	12	75-90	65
20	3 1/2"	3/4"	4 1/2"	14	75-90	85
24	3 1/2"	3/4"	5"	16	75-90	105
30	4"	1"	6"	20	100-120	220
36	4"	1"	6"	24	100-120	285
42	4"	1 1/4"	6"	28	120-150	400
48	4"	1 1/4"	6"	32	120-150	475

FULTON COUNTY STANDARD DETAIL 121  
MECHANICAL JOINT BOLT USAGE CHART

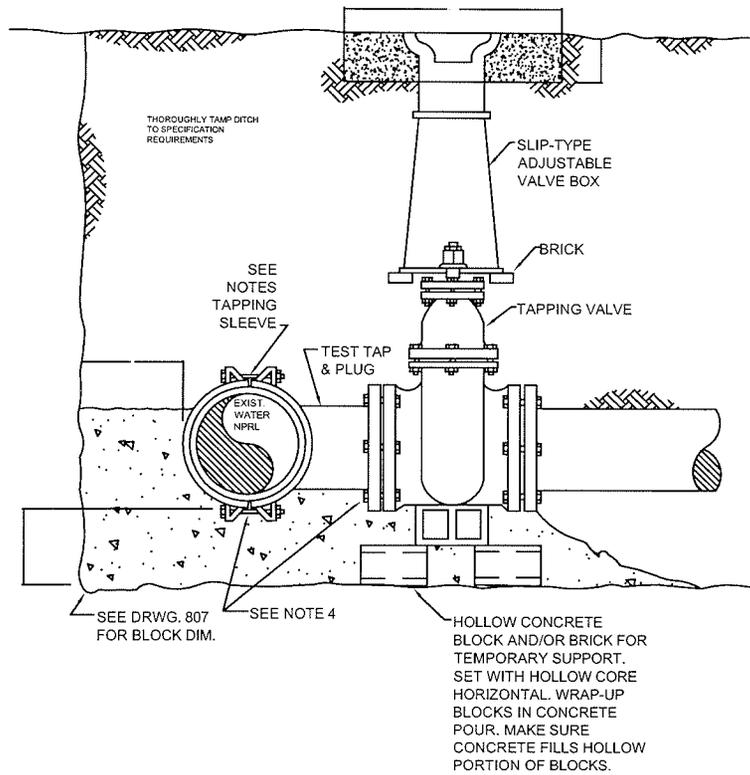
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



FULTON COUNTY PUBLIC WORKS  
141 PRYOR ST. ATLANTA, GA. 30303  
404-730-7400 FAX: 404-224-0498

DRAWING NO.  
121



**NOTES:**

1. TEMPORARILY SUPPORT TAPPING SADDLE AND VALVE AND APPLY STANDARD HYDROSTATIC TEST.
2. IF NO LEAKS, POUR INDICATED PERMANENT CONCRETE BLOCK AND SUPPORT PAD.
3. MAKE TAP, LINE EXTENSION AND BACKFILL.
4. COVER GLANDS AND BOLTS WITH HEAVY POLYETHYLENE SHEETING TO KEEP CONCRETE FROM BONDING. TYPICAL WHENEVER BOLTS OR GLANDS MAY BE "WRAPPED-UP" IN CONCRETE.
5. COAT TAPPING SLEEVE AND BOLTS WITH AN APPROVED BITUMASTIC COATING BEFORE POURING CONCRETE. TYPICAL FOR ALL STEEL INCLUDING RODS, COUPLINGS, STRAPS, AND OTHER BURIED STEEL. SEE NOTE 3, DRWG. 127 FOR COATING.

FULTON COUNTY STANDARD DETAIL 122  
TAPPING SLEEVE AND VALVE INSTALLATION DETAILS

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



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DRAWING NO.

122

## MAXIMUM TAPPING SLEEVE LENGTH

MAIN & TAP (IN. NOMINAL)	LENGTH (ALONG RUN)
6x6, 6x3, 6x4, 6x2	18"
8x2, 8x3, 8x4, 8x6	19"
8x8	21"
10x2, 10x3, 10x4, 10x6	19"
10x8, 10x10	23"
12x2, 12x3, 12x5, 12x6	19"
12x8	21"
12x10, 12x12	25"

**NOTES:**

1. ALL TAPPING SLEEVES AND VALVES SHALL BE HYDROSTATICALLY TESTED BEFORE TAP IS MADE. SEE DRWG. 123 FOR TYPICAL INSTALLATION AND NOTES.
2. WORKMEN INSTALLING TAPPING SLEEVE AND VALVE SHALL FOLLOW MANUFACTURER'S INSTALLATION PROCEDURES AND THE REQUIRMENTS OF FULTON COUNTY ENGINEER'S OFFICE.

FULTON COUNTY STANDARD DETAIL 123  
TAPPING SLEEVE LENGTH

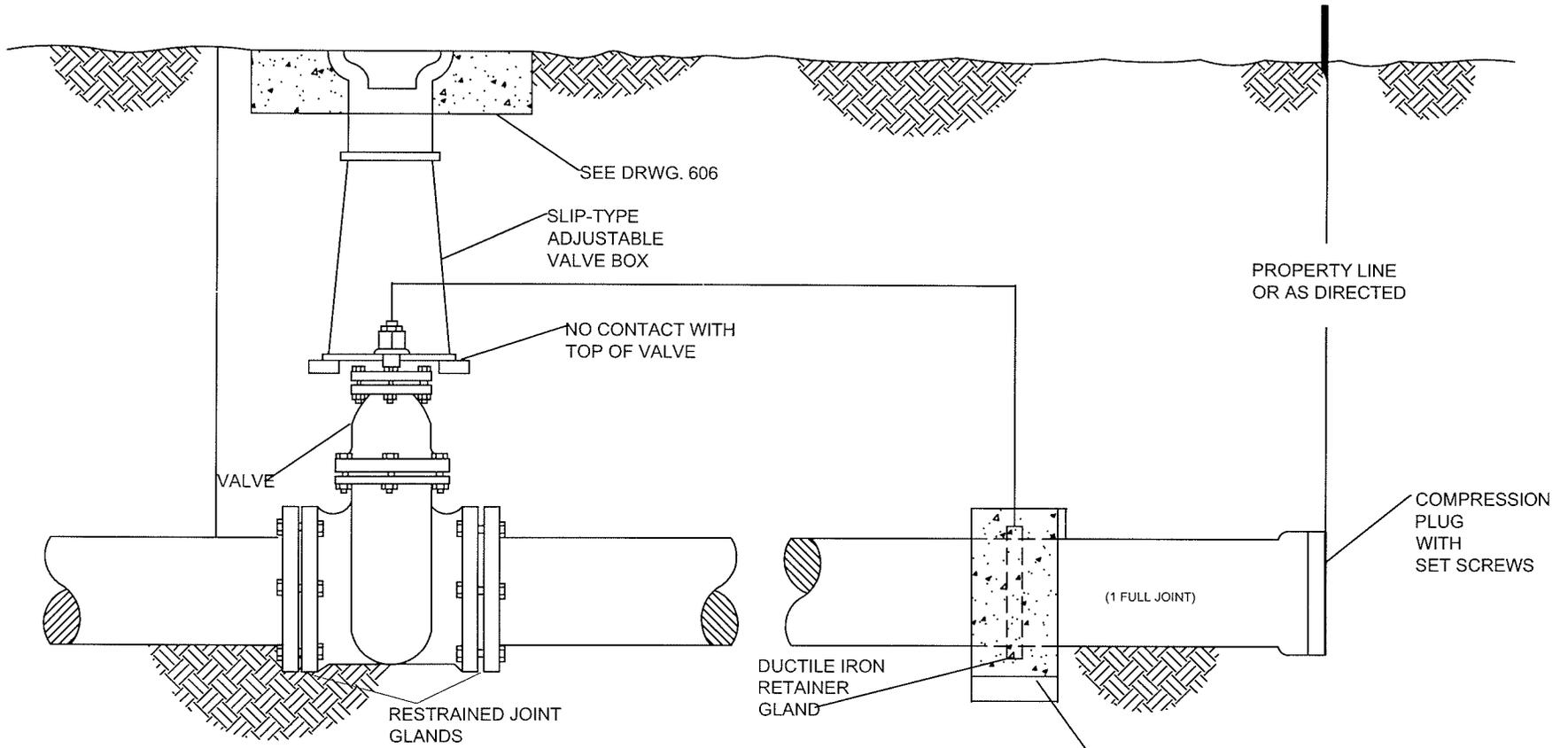
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



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DRAWING NO.  
123



- NOTES:**
1. STUB OUT MUST BE HYDROSTATICALLY TESTED WITH REST OF WATER MAIN.
  2. IN LIEU OF SLIP-JOINT AND COMPRESSION PLUG, AN M.J. JOINT MAY BE USED WITH AN M.J. PLUG.

FULTON COUNTY STANDARD DETAIL 124  
STUB OUT DETAIL

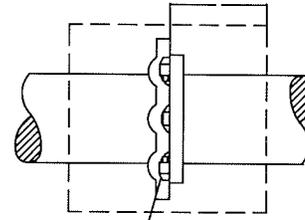
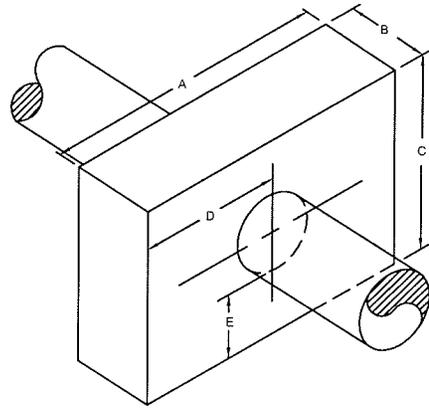
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



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DRAWING NO.  
124



TORQUE SET SCREWS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSPECTOR MUST WITNESS INSTALLATION.

MINIMUM DIMENSIONS IN FEET FOR CONCRETE COLLAR ON DUCTILE IRON PIPE TO BE USED WITH EMBEDDED DUCTILE IRON RETAINER GLAND

PIPE SIZE	A	B	C	D	E	VOLUME CU. YDS.	CONC. WT.	THRUST
4"	3'-6"	3'-0"	1'-5"	1'-6"	1'-0"	0.55	2230	3150
6"	4'-0"	3'-0"	2'-7"	2'-0"	1'-0"	1.15	4650	7070
8"	4'-6"	3'-0"	3'-0"	2'-3"	1'-3"	1.50	6075	12,570
10"	5'-2"	3'-0"	3'-2"	2'-7"	1'-3"	1.81	7330	19,635
12"	5'-9"	3'-0"	3'-8"	2'-10½"	1'-8"	2.34	9475	28,775
14"	6'-6"	3'-0"	4'-0"	3'-3"	1'-9"	2.89	11,700	38,490
16"	6'-9"	3'-0"	4'-9"	3'-3"	2'-3"	3.56	14,410	50,270

NOTES:

- ALL MAINS GREATER THAN 13" I.D. SHALL BE INDIVIDUALLY CALCULATED BY THE FULTON COUNTY ENGINEERING DEPARTMENT.
- SOIL CONDITIONS SHALL BE VERIFIED BY THE ENGINEER BEFORE THRUST RESTRAINT DESIGN IS IMPLEMENTED.
- PIPE MUST BE DUCTILE IRON.

DESIGN DATA:

- DIMENSION OF THRUST RESTRAINT IN FEET BASED ON 2000 POUNDS PER SQUARE FOOT SOIL BEARING PRESSURE AND 230 PER SQUARE INCH TEST PRESSURE. ACTUAL INSIDE DIAMETER OF DUCTILE IRON PIPE, CLASS 31, USED AS STANDARD.
- CONCRETE SHALL BE CLASS A, 3000 P.S.I.
- UNDER ADVERSE CONTRUCTION CONDITIONS, CONCRETE SHALL BE "HIGH EARLY" TYPE.

FULTON COUNTY STANDARD DETAIL 125  
THRUST RESTRAINT CONCRETE COLLAR

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



FULTON COUNTY PUBLIC WORKS  
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DRAWING NO.  
125

	PIPE SIZE	ROD DIA.	NO. RODS	TOTAL THRUST (Lbs)
TEES, PLUGS & VALVES	6"	3/4"	2/3	5,655
	8"	3/4"	2/3	10,055
	10"	3/4"	3	15,710
	12"	3/4"	4	22,620
	14"	3/4"	6	30,800
	16"	3/4"	4	40,215
	20"	3/4"	6	62,835
	24"	3/4"	8	90,480
	30"	1"	6	141,375
	36"	1"	6	203,595
11 1/2° B	6"	3/4"	2	1,110
	8"	3/4"	2	1,970
	10"	3/4"	2	3,080
	12"	3/4"	2	4,435
	14"	3/4"	2	6,035
	16"	3/4"	2	7,885
	20"	3/4"	2	12,320
	24"	3/4"	2	17,740
	30"	1"	2	27,720
	36"	1"	2	39,910
22 1/2° B	6"	3/4"	2	2,210
	8"	3/4"	2	3,925
	10"	3/4"	2	6,130
	12"	3/4"	2	8,825
	14"	3/4"	2	12,015
	16"	3/4"	2	15,690
	20"	3/4"	2	24,515
	24"	3/4"	2	35,305
	30"	1"	2	55,160
	36"	1"	2	79,435
45° B	6"	3/4"	2/3	4,430
	8"	3/4"	2/3	7,700
	10"	3/4"	2	12,025
	12"	3/4"	4	17,312
	14"	3/4"	4	23,565
	16"	3/4"	4	30,780
	20"	3/4"	4	48,090
	24"	3/4"	6	69,250
	30"	1"	4	108,205
	36"	1"	6	155,810
90° B	6"	3/4"	2/3	8,000
	8"	3/4"	3	14,220
	10"	3/4"	4	22,214
	12"	3/4"	6	32,000
	14"	3/4"	6	43,540
	16"	3/4"	4	56,870
	20"	3/4"	6	88,860
	24"	3/4"	8	127,960
	30"	1"	6	199,930
	36"	1"	6	287,900

**NOTES:**

- ON PIPE SIZES 6"-14" ROD AND NUT WILL HAVE MIN. YIELD STRENGTH OF 50,000 PSI. ON PIPE SIZES 16"-24" ROD AND NUT WILL HAVE MIN. YIELD STRENGTH OF 100,000 PSI.
- RODS HAVE 6" OF THREAD ON EACH END.
- ALL METAL TO BE CLEANED AND COATED WITH AN APPROVED PROTECTIVE COATING FOLLOWING INSTALLATION AND PRIOR TO BACKFILLING. SEE NOTE 3, DRWG. 127.

FULTON COUNTY STANDARD DETAIL 126  
THRUST RESTRAINTS: TIE ROD CHART

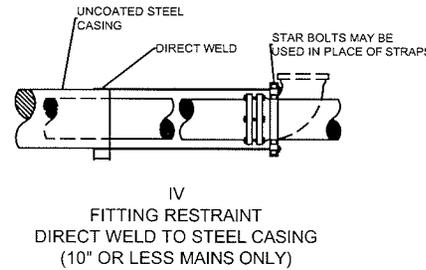
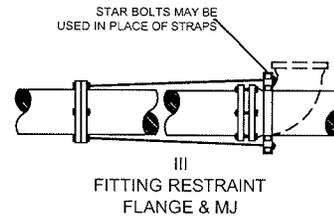
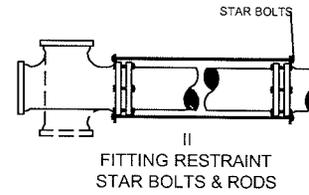
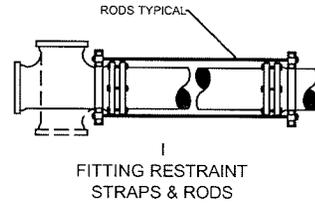
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



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DRAWING NO.  
126



NOTES:

1. SEE DWG. 126 FOR NUMBER AND DIAMETER OF RODS REQUIRED.
2. NO FLANGES ARE TO BE BURIED.
3. AFTER INSTALLATION, TIE-RODS AND CLAMP ASSEMBLIES SHALL BE CLEANED AND THOROUGHLY COATED WITH ROYSTON LABORATORIES, INC. ROSKOTE PLASTIC NO. A 939 OR KOPPERS CO., INC. BITUMASTIC SUPERSERVICE BLACK OR APPROVED EQUIVALENT.
4. WHEN RESTRAINING FITTINGS TO STEEL CASING PIPE, THE TIE-RODS MUST BE DIRECT WELDED TO THE CASING - USE OF STAR BOLTS PROHIBITED. CASING MUST BE FULLY WELDED THROUGHOUT ITS LENGTH AND BE A MINIMUM OF 30' IN LENGTH. AREA TO BE WELDED MUST BE COMPLETELY BARE AND FREE OF ANY COATING MATERIAL.

FULTON COUNTY STANDARD DETAIL 127  
THRUST RESTRAINTS: TIE-ROD INSTALLATION

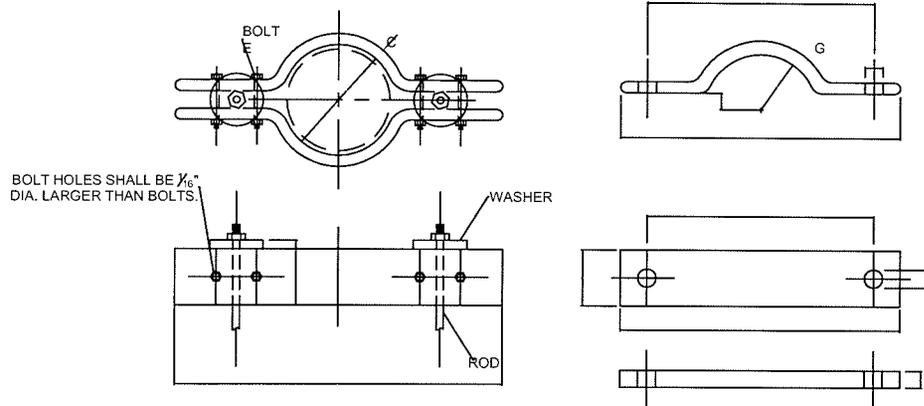
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



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DRAWING NO.  
127



STEEL SOCKET CLAMP DIMENSIONS (INCHES)							
SIZE	A	B	C	D	E	T	ROD & C WASH SIZE
4	5	14 5/8	1/2	2	5/6 x 3 1/2	5/8	3/4
6	7 1/8	18 7/8	1/2	2	5/6 x 3 1/2	5/8	3/4
8	9 5/16	19 1/8	5/8	2 1/2	5/6 x 3 3/4	5/8	3/4
10	11 1/2	21 3/8	5/8	2 1/2	5/6 x 3 3/4	3/4	3/4
12	13 1/2	25 1/6	5/8	3	5/6 x 3 3/4	3/4	3/4
14	13 3/4	28 1/4	3/4	3	7/8 x 4 1/2	7/8	3/4
16	17 7/8	31 3/8	3/4	4	7/8 x 4 1/2	7/8	3/4
20	22 1/8	37 3/4	3/4	4 1/2	1 1/4 x 5	1 1/8	3/4
24	26 3/8	44 1/4	3/4	5	1 1/2 x 5 1/2	1 1/4	3/4

ABOVE ANCHOR STRAP DIMENSIONS (INCHES)						
SIZE	B	G	H	L	R	S
4	10 1/8	5/8 X 2 1/2	13/16	12 1/2	2 1/2	3/4
6	12 1/8	5/8 X 2 1/2	13/16	14 1/2	3 9/16	3/4
8	14 3/8	5/8 X 2 1/2	13/16	16 3/4	4 21/32	3/4
10	16 11/16	5/8 X 2 1/2	1 1/16	19 1/16	5 3/4	3/4
12	19 3/16	5/8 X 3	1 1/16	22 5/16	6 3/4	7/8

**NOTES:**

1. INSTALLATION OF, AND MATERIALS FOR RODS, CLAMPS, STRAPS, BOLTS AND WASHERS SHALL CONFORM TO THE NATIONAL FIRE CODES - NFFA NO. 24 LATEST REVISION.
2. YOKES AND ANCHOR STRAPS FOR FITTINGS LARGER THAN 12" SHALL BE DESIGNED AND APPROVED FOR SPECIFIC INSTALLATION.
3. RODS TO BE HIGH TENSILE, NOT ROLLED STEEL WITH TENSILE STRENGTH OF 110,000 P.S.I. AND A MIN. OF 95,000 YIELD STRENGTH.
4. NUTS TO HAVE HEAVY DUTY SEMI-FINISH WITH NATIONAL COURSE THREADS.
5. AFTER INSTALLATION TIE RODS AND CLAMP ASSEMBLY SHALL BE THOROUGHLY COVERED WITH ROYSTON LABORATORIES, INC. ROSKOTE MASTIC ND A939 OR KOPPERS CO., INC. BITUMASTIC SUPERSERVICE BLACK OR APPROVED EQUIVALENT.

FULTON COUNTY STANDARD DETAIL 128  
THRUST RESTRAINTS STRAP AND ROD DETAILS

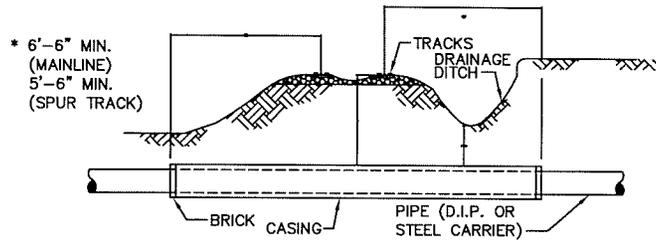
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05

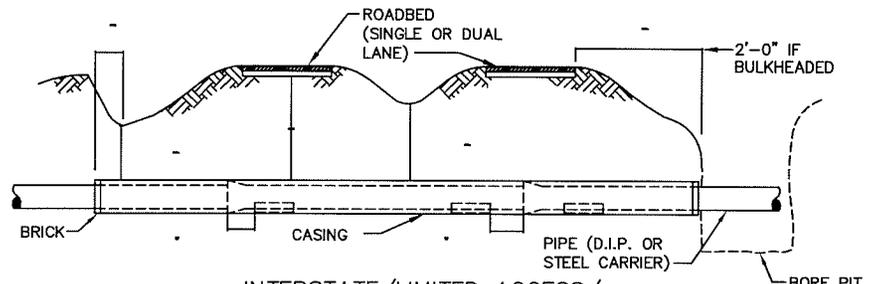


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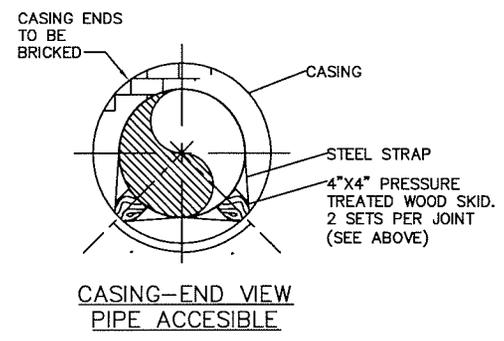
DRAWING NO.  
128



RAIL ROADS



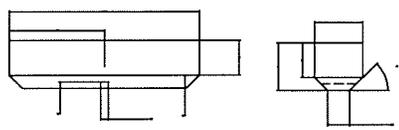
INTERSTATE/LIMITED ACCESS/  
STATE ROADS



CASING-END VIEW  
PIPE ACCESIBLE

BORED CASINGS			
PIPE SIZE	PIPE O.D.	CASING SIZE	CASING I.D.
6"	6.90"	12"	11.376"
8"	9.05"	16"	14.314"
12"	13.20"	20"	17.938"
16"	17.40"	24"	21.564"
20"	21.60"	28"	27.0"
24"	25.80"	36"	35.0"

NOTE: IF CASING UNDER RAILROAD IS NOT COATED OR CATHODICALLY PROTECTED, INCREASE THICKNESS .062"



WOOD SKID DETAIL

FULTON COUNTY STANDARD DETAIL 129  
CASING/PIPE SUPPORT INSTALLATION

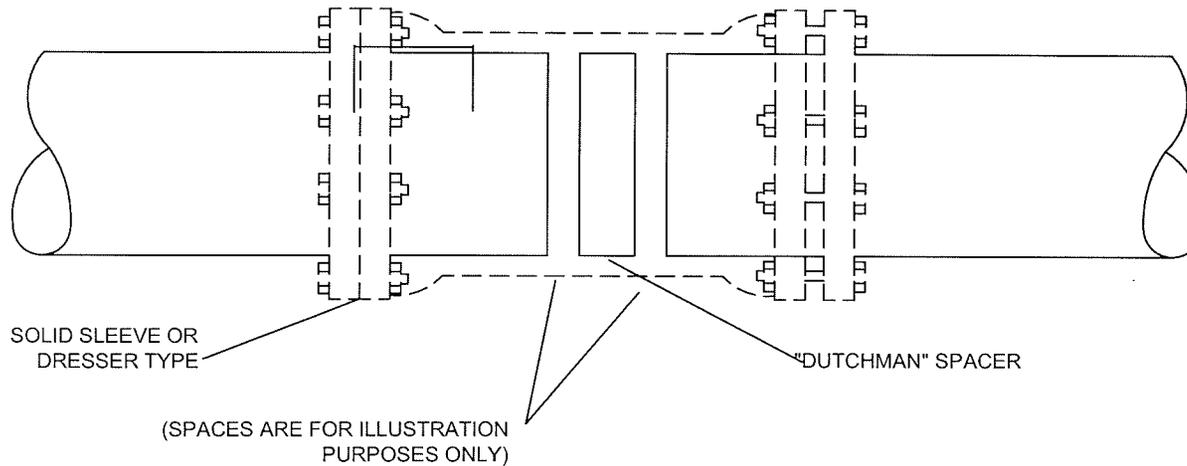
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



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DRAWING NO.  
129



NOTES:

1. IF "G" IS GREATER THAN  $\frac{1}{2}$ " AT IT'S NARROWEST POINT, THEN A FULL CIRCLE SPACER OR "DUTCHMAN" MUST BE CUT AND PLACED IN THE GAP BEFORE THE SLEEVE IS USED TO CLOSE THE JOINT.
2. THE "DUTCHMAN" SPACER SHALL BE CUT TO A WIDTH NO LESS THAN  $\frac{1}{4}$ " LESS THAN THE NARROWEST WIDTH OF "G".
3. EACH PIPE SPIGOT SHALL BE MARKED TO INDICATE THE POINT WHERE THE SLEEVE WILL BE PROPERLY CENTERED OVER THE POINT.
4. "FULL-CIRCLE" REPAIR CLAMPS ARE NOT APPROVED FOR JOINING PIPE. SUCH CLAMPS ARE SPECIFICALLY DESIGNED FOR REPAIRS ONLY.
5. IF "STEEL" SLEEVE IS USED, PROPERLY COAT BEFORE BACKFILLING.

FULTON COUNTY STANDARD DETAIL 130  
PIPE JOINING: USE OF SOLID SLEEVE

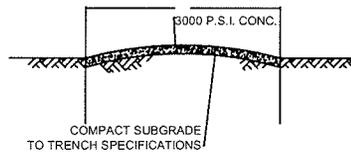
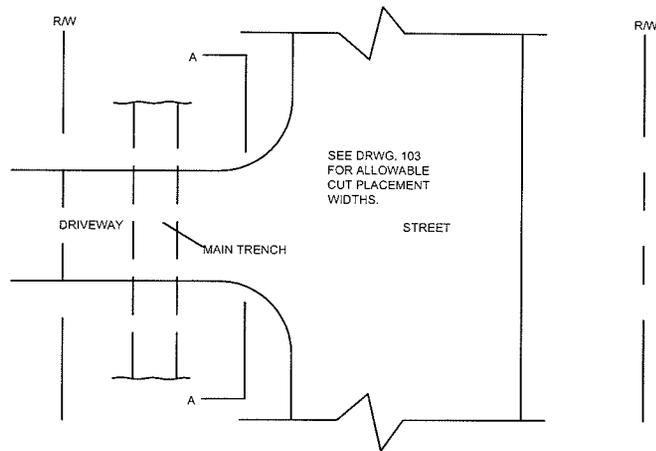
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05

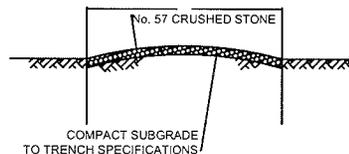


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DRAWING NO.  
130

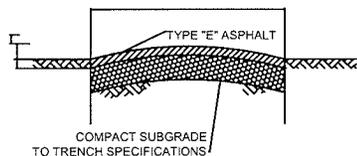


CONCRETE  
"A" - "A"



GRAVEL  
"A" - "A"

-- FINISH SURFACE OF REPAIRED AREA TO MATCH EXISTING SURFACE. EDGES OF CUT TO BE SAWN VERTICAL. EXPANSION MATERIAL TO BE USED AS DIRECTED.



ASPHALT  
"A" - "A"

NOTE:

1. FINISHED GRADE TO BE FLUSH WITH THE EDGE OF THE DRIVE - TYPICAL ALL DRIVES.

(SEE DRWG. 110 FOR STREET CUT REPAIRS)

FULTON COUNTY STANDARD DETAIL 131  
DRIVEWAY CUT REPAIRS CONCRETE, GRAVEL & ASPHALT

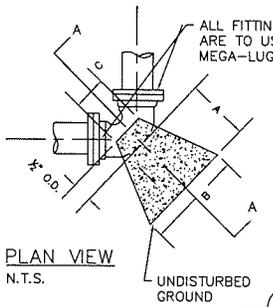
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
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DATE: 12-2-05



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DRAWING NO.  
131



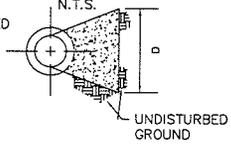
PLAN VIEW  
N.T.S.

HORIZONTAL  
THRUST DETAIL  
N.T.S. ①

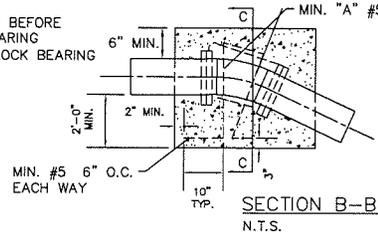
**GENERAL NOTES:**

1. THRUST BLOCK DIMENSIONS ARE BASED ON 2000 LB. PER SQ. FT. SOIL BEARING PRESSURE AND 250 LBS. PER SQ. IN. TEST PRESSURE. ACTUAL INSIDE DIAMETER OF DUCTILE IRON PIPE CLASS 52 USED AS STANDARD.
2. SOIL CONDITIONS SHALL BE VERIFIED BY ENGINEER BEFORE THRUST BLOCK IS CONSTRUCTED WHERE SOIL BEARING PRESSURE IS LESS THAN 2000 LB/FT. THRUST BLOCK BEARING AREA SHALL BE INCREASED APPROPRIATELY.
3. ALL CONCRETE SHALL BE CLASS A, 4000 P.S.I.

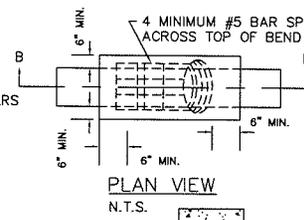
**SECTION A-A**



N.T.S.



SECTION B-B  
N.T.S.



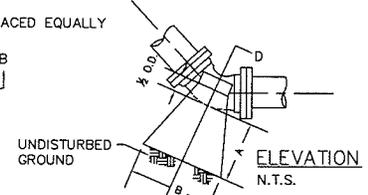
PLAN VIEW  
N.T.S.

UPWARD  
THRUST  
DETAIL ②  
N.T.S.



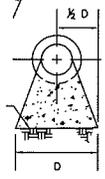
MIN. #5 BARS 12\"/>

SECTION C-C  
N.T.S.



ELEVATION  
N.T.S.

DOWNWARD  
THRUST  
DETAIL ③  
N.T.S.



UNDISTURBED  
GROUND

SECTION D-D  
N.T.S.

**DIMENSIONS FOR CONCRETE  
BLOCKING HORIZONTAL THRUST ①**

BEND	SIZE	A (FT)	B (FT)	C (IN)	D (FT)	VOLUME (CU. YD.)
11 1/4°	6"	1.0	2.0	7"	1.0	0.04
	8"	1.0	2.0	7"	1.0	0.05
	12"	1.0	2.0	11"	2.0	0.1
	16"	2.0	3.0	15"	2.0	0.3
22 1/2°	6"	1.0	2.0	7"	1.0	0.05
	8"	1.0	2.0	7"	2.0	0.1
	12"	2.0	3.0	11"	2.0	0.3
	16"	2.0	4.0	15"	3.0	0.6
45°	6"	1.5	2.0	7"	1.5	0.11
	8"	2.0	3.0	7"	2.0	0.3
	12"	2.0	4.0	11"	3.0	0.7
	16"	3.0	5.0	15"	4.0	1.4
90°	6"	1.75	2.5	7"	2.0	0.2
	8"	2.0	3.0	7"	3.0	0.4
	12"	4.0	6.0	11"	4.0	2.1
	16"	4.0	7.0	15"	5.0	3.1
TEE BRANCHES PLUGS & CAPS (FOR ALL CIRCUMSTANCES)	6"	1.5	2.0	7"	1.75	0.13
	8"	2.0	3.0	7"	2.0	0.3
	12"	2.0	4.0	11"	4.0	0.8
	16"	3.0	5.0	15"	5.0	1.5
	20"	4.0	7.0	19"	6.0	3.9

**CONCRETE REQUIRED TO RESIST  
UPWARD THRUST**

BEND	SIZE	VOLUME (CU. YD.)	"A" NO. OF VERT. BARS REQ'D.
11 1/4°	6"	0.3	2
	8"	0.5	2
	12"	1.4	2
	16"	2.4	3
22 1/2°	6"	0.7	2
	8"	1.2	2
	12"	2.7	2
	16"	4.8	3
45°	6"	1.2	2
	8"	2.2	2
	12"	4.9	2
	16"	8.8	3
90°	6"	1.8	2
	8"	3.1	2
	12"	7.0	3
	16"	12.4	3
	20"	19.4	4

FULTON COUNTY STANDARD DETAIL 132  
STANDARD THRUST BLOCKS FOR WATER

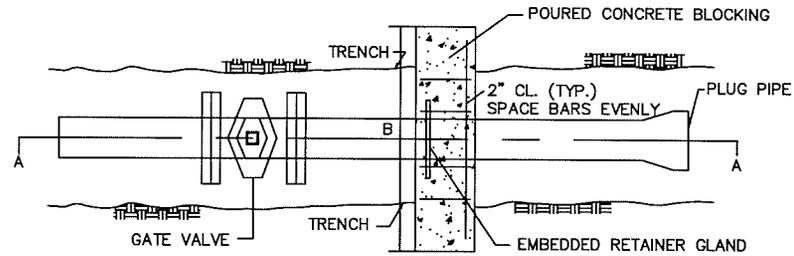
DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: REB  
APPROVED: REW  
DATE: 12-2-05



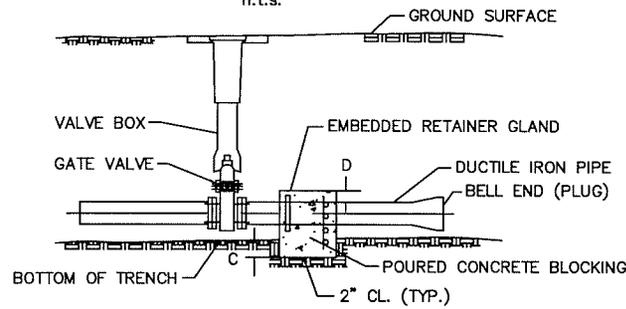
FULTON COUNTY PUBLIC WORKS  
141 PRYOR ST. ATLANTA, GA. 30303  
404-730-7400 FAX: 404-224-0498

DRAWING NO.  
132



PLAN VIEW

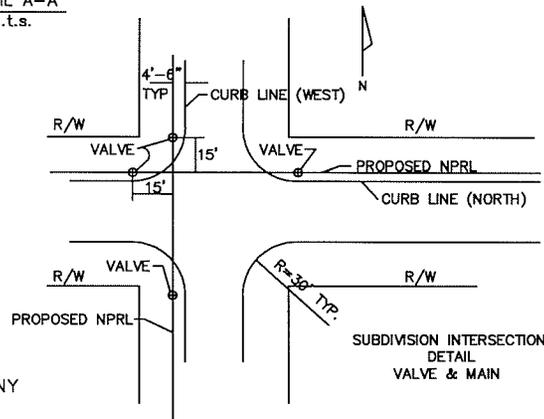
n.t.s.



DETAIL A-A

n.t.s.

BLOCKING DETAILS					
PIPE SIZE	A (IN.)	B (IN.)	C (IN.)	D (IN.)	REQD. STEEL (EACH WAY)
8"	10	32	12	8	4 - #4
10"	12	40	15	10	4 - #4
12"	14	54	24	12	4 - #4
16"	18	60	30	16	6 - #4



NOTES:

1. ANCHOR BLOCKING DETAIL TO BE USED AT THE END OF ANY COUNTY ROAD WHERE NPRL MAY BE EXTENDED AT A FUTURE DATE.
2. ALL CONCRETE TO BE 3000psi
3. ALL STEEL TO BE 60,000psi

FULTON COUNTY STANDARD DETAIL 133  
 MAIN EXTENSION BLOCKING DETAILS  
 SUBDIVISION INTERSECTION DETAIL VALVE MAIN

DATE	REVISIONS	DATE	REVISIONS

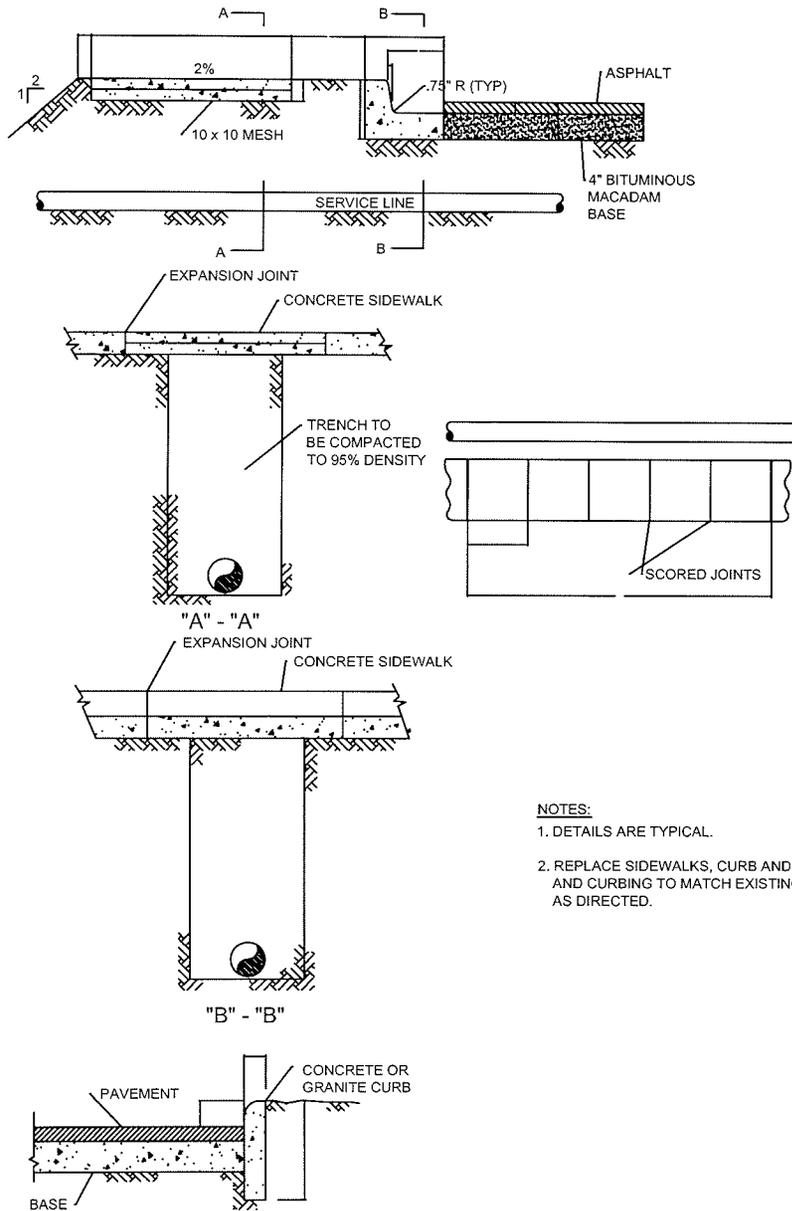
DGS/DRN/CHKD: REB  
 APPROVED: REW  
 DATE: 12-2-05



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 404-730-7400 FAX: 404-224-0498

DRAWING NO.

133



- NOTES:**
1. DETAILS ARE TYPICAL.
  2. REPLACE SIDEWALKS, CURB AND GUTTER AND CURBING TO MATCH EXISTING MATERIALS AS DIRECTED.

FULTON COUNTY STANDARD DETAIL 134  
SIDEWALK, CURB AND GUTTER REPAIRS

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: CMS  
APPROVED: REW  
DATE: 12-2-05



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DRAWING NO.  
134