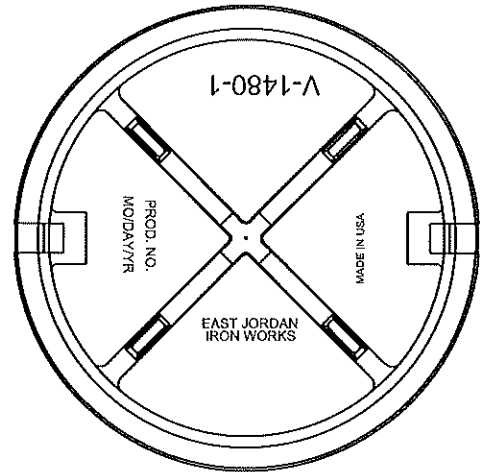
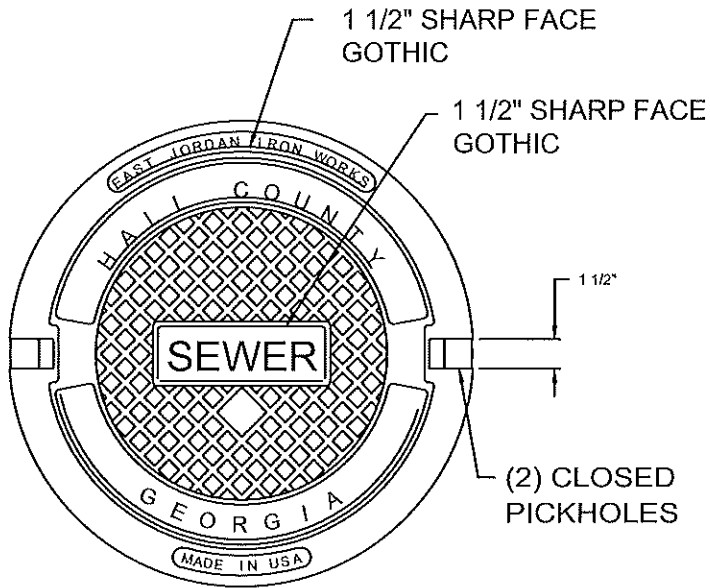
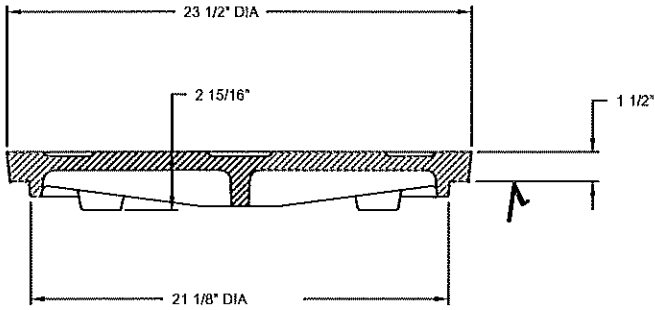


## INDEX OF DRAWINGS – GRAVITY SEWER SYSTEM

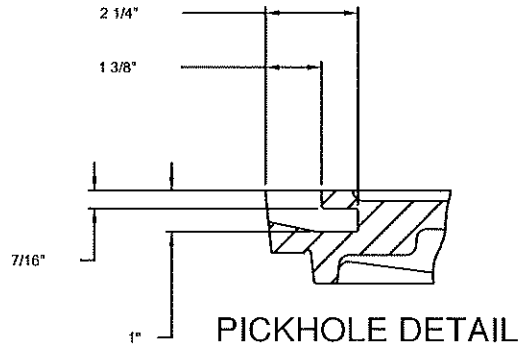
<b>Standard Number</b>	
GS – 1A	Manhole Cover Frame and Grate
GS – 1B	Hinged Manhole Cover
GS – 2	Gravity Sewer Manhole
GS – 3	Sewer Manhole Inverts
GS – 4	Outside Drip Manhole
GS – 5	House Lateral Connection
GS – 6	Gravity Sewer Cleanout
GS – 6A	Clean Out Box and Lid
GS – 7	Grease Trap
GS – 8	Dog House Manhole
GS – 9	Gravity Sewer General Notes
GS – 10	Inside Drop Service Line
GS – 11	Cleanout in Paved Areas
GS – 12	Pipe Bedding Detail
GS – 13	Jack & Bore Casing Detail
GS – 14	Stream Crossing



BOTTOM VIEW



SECTION



PICKHOLE DETAIL

**NOTES:**

1. MANHOLE COVER AND FRAME SHALL BE CONSTRUCTED OF CLASS 35B GRAY IRON IN ACCORDANCE WITH ASTM A48.
2. HEAVY DUTY DESIGN LOAD.
3. COATING: UNDIPPED
4.  $\blacktriangledown$  DESIGNATES MACHINED SURFACE.
5. COUNTRY OF ORIGIN: USA
6. FOR PAVED OR LEVEL GRASS AREA

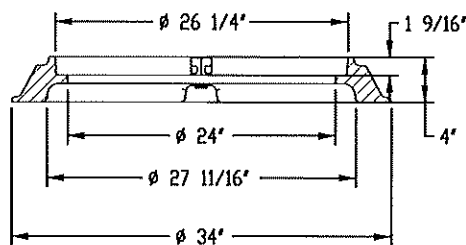
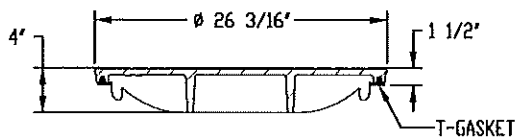
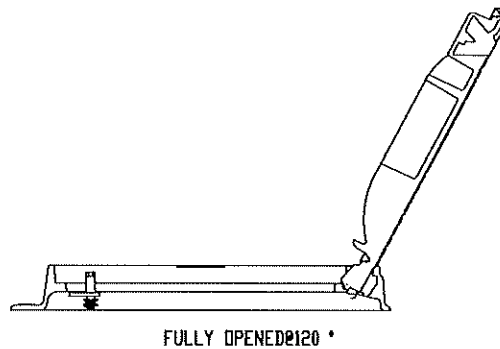
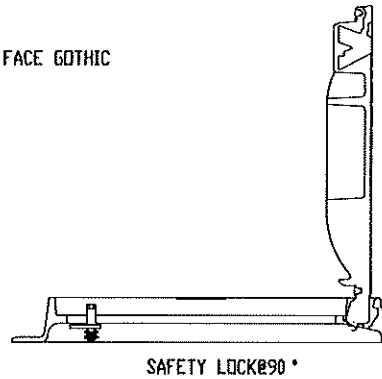
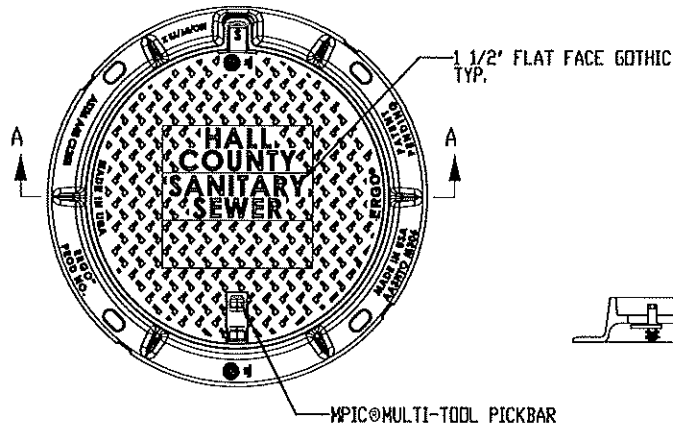
**GRAVITY SEWER MANHOLE COVER & FRAME  
IN PAVMENT**

REVISED:  
MAY 2013



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-1A



SECTION A-A

**NOTES:**

1. MANHOLE COVER SHALL BE CONSTRUCTED OF DUCTILE IRON (80-55-06).
2. FRAME SHALL BE CONSTRUCTED OF CLASS 35B GRAY IRON.
3. CERTIFICATIONS: ASTM A536 AND ASTM A48.
4. HEAVY DUTY DESIGN LOAD.
5. COATING: UNDIPPED.
6. COUNTRY OF ORIGIN: USA.
7. FOR OUTSIDE PAVEMENT AND OUTFALL LINES

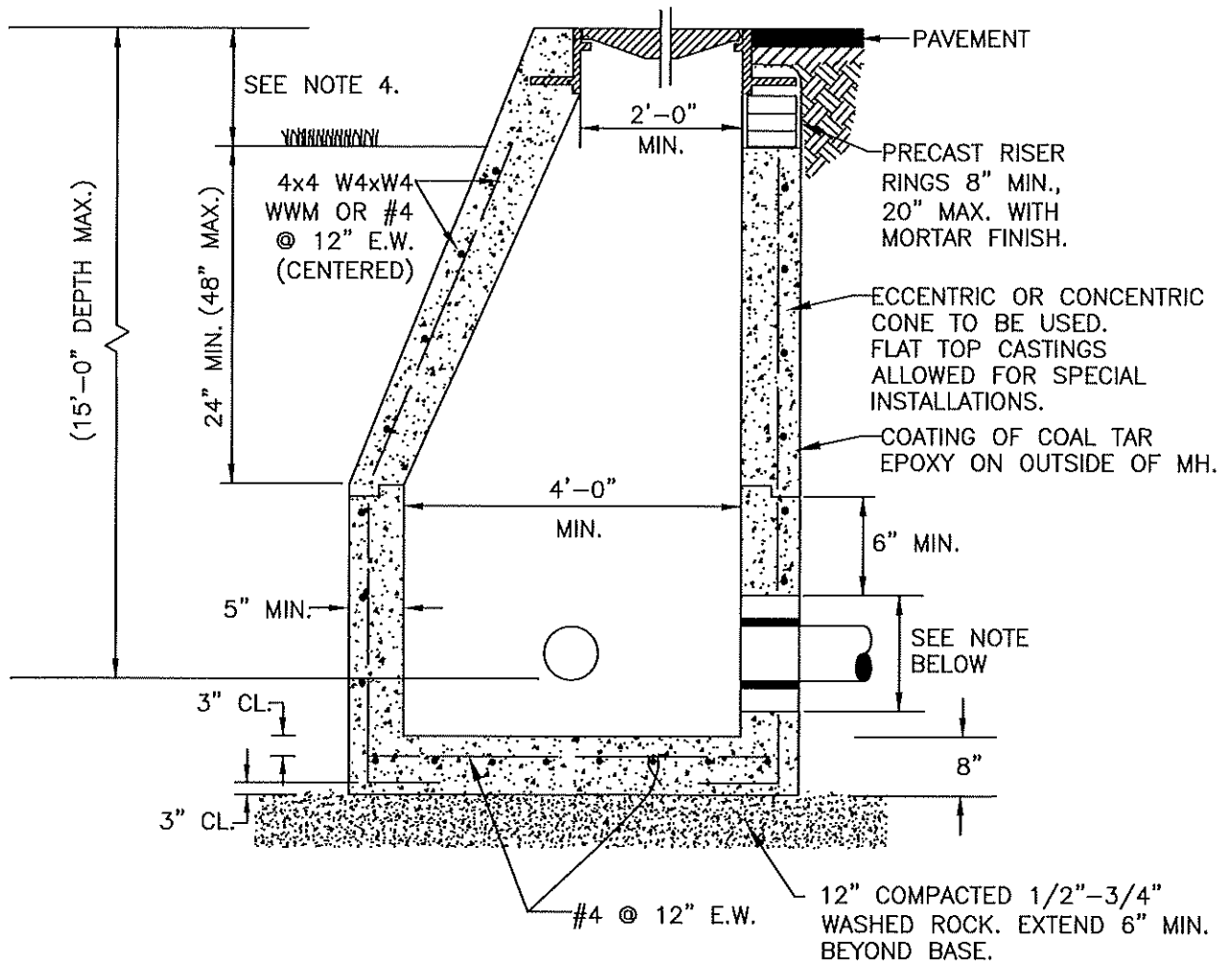
**GRAVITY SEWER HINGED MANHOLE COVER & FRAME  
IN EASEMENTS OFF PAVEMENT**

REVISED:  
MAY 2013



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-1B



NOTE:

1. ALL PIPE OPENINGS SHALL BE INSTALLED WITH "HARCO" PVC MANHOLE ADAPTERS OR APPROVED EQUAL. FOR PVC & DUCTILE IRON PIPE PENETRATIONS, ADAPTERS SHALL BE FIELD SEALED WITH NON-SHRINK WATERPROOF GROUT.
2. MIN. HOLE DIA. EQUALS OUTSIDE WALL OF PVC PIPE ADAPTER PLUS 4".
3. GRAVITY SEWER DEPTHS SHALL NOT EXCEED 15' EXCEPT BY SPECIFIC APPROVAL OF PUBLIC WORKS & UTILITIES DEPARTMENT. PIPE FOR SUCH INSTALLATION SHALL BE CLASS 50 DIP.
4. ALL MANHOLES IN GRASSED & UNPAVED AREAS SHALL BE INSTALLED 24" ABOVE THE EXISTING GRADE UNLESS OTHERWISE SHOWN ON PLANS.

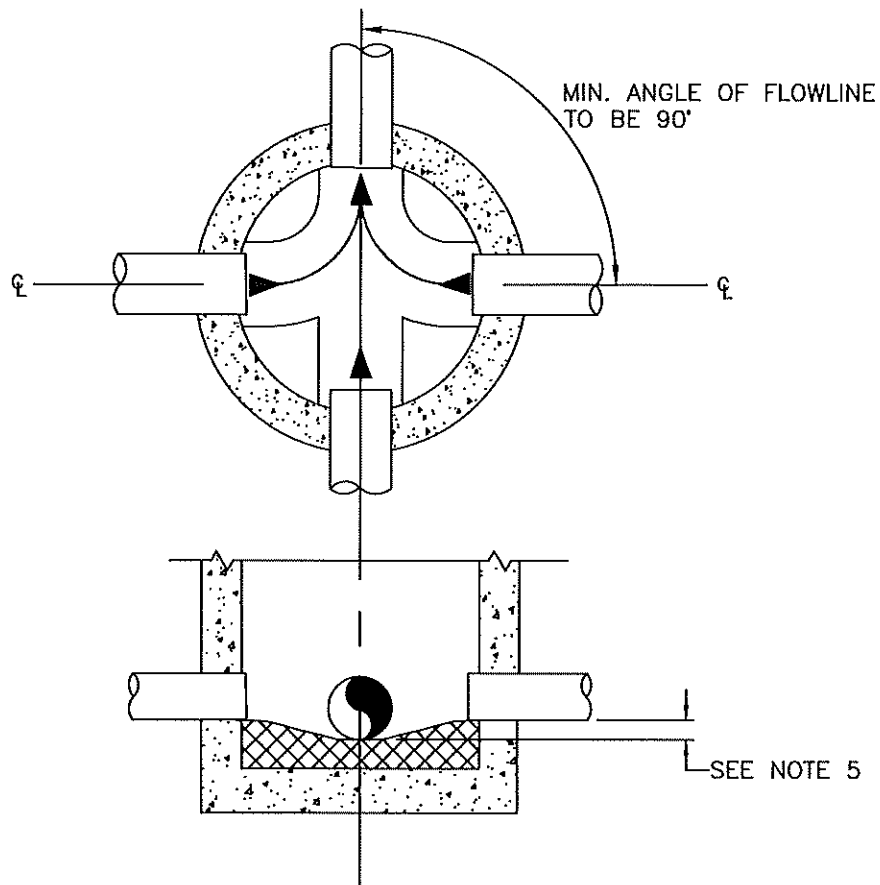
GRAVITY SEWER MANHOLE

REVISED:  
NOV-2021



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-2



**NOTES:**

1. PROPERLY SHAPED FLOW CHANNELS SHALL BE CONSTRUCTED BETWEEN PIPES SO AS TO PROVIDE FOR SMOOTH FLOW BETWEEN THE INFLUENT PIPE(S) AND THE EFFLUENT PIPE.
2. SERVICE LATERALS ENTERING MANHOLES, MUST BE APPROVED BY THE PUBLIC WORKS & UTILITIES DEPARTMENT. FLOW CHANNELS SHALL BE PROVIDED.
3. FLOW CHANNELS SHALL BE CONSTRUCTED WITH 6" BRICK RUBBLE, BEDDED AND COVERED WITH 2" MIN. TYPE II PORTLAND CEMENT GROUT.
4. SIDE WALLS OF FLOW CHANNEL(S) SHALL BEGIN AT SPRING LINE OF EACH PIPE, AND SHALL BE SLOPED TO MATCH FLOW LINE.
5. PROVIDE 0.1 FOOT MINIMUM DROP THROUGH MANHOLE BETWEEN HIGHEST INVERT AND LOWEST INVERT.
6. FORCE MAIN TO ENTER MANHOLE AT 180° ±10° FROM GRAVITY OUTFLOW.

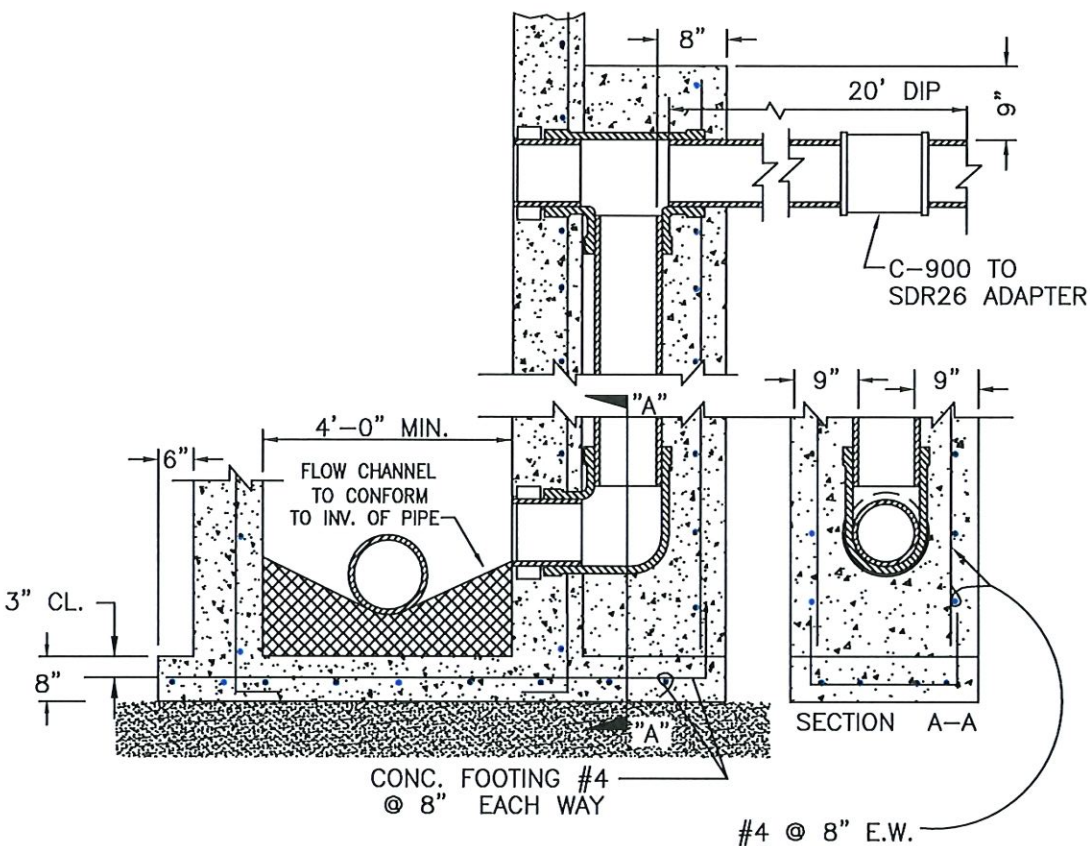
**GRAVITY SEWER  
SEWER FLOW CHANNELS**

REVISED:  
OCT-2019



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-3



**NOTES:**

1. DETAILS NOT SHOWN ARE TO BE SIMILAR TO THOSE SHOWN FOR "MANHOLE" AND "SEWER FLOW CHANNEL" STANDARDS.
2. DROP MANHOLE MUST BE USED WHEN DIFFERENCE BETWEEN INVERTS IS 2'-6" OR MORE. PROVIDE A TEE AT THE TOP AND 90° BEND AT THE BOTTOM AS SHOWN.
3. ALL PVC PIPE MATERIALS TO BE C900.
4. INSIDE DROPS MAY BE APPROVED ONLY FOR EXISTING MANHOLES, AFTER DESIGN SUBMITTAL TO THE PUBLIC WORKS AND UTILITIES DEPARTMENT.
5. STANDARD PRECAST DROP MANHOLE SECTION (4' DIA.) AND SLAB TO BE CAST MONOLITHICALLY.

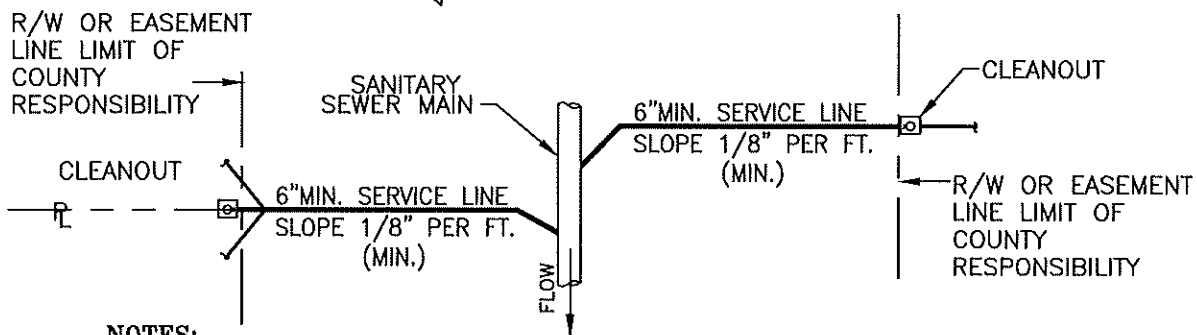
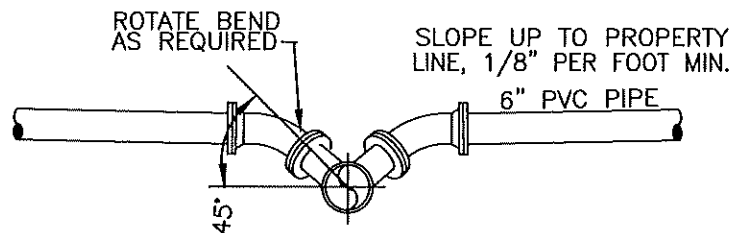
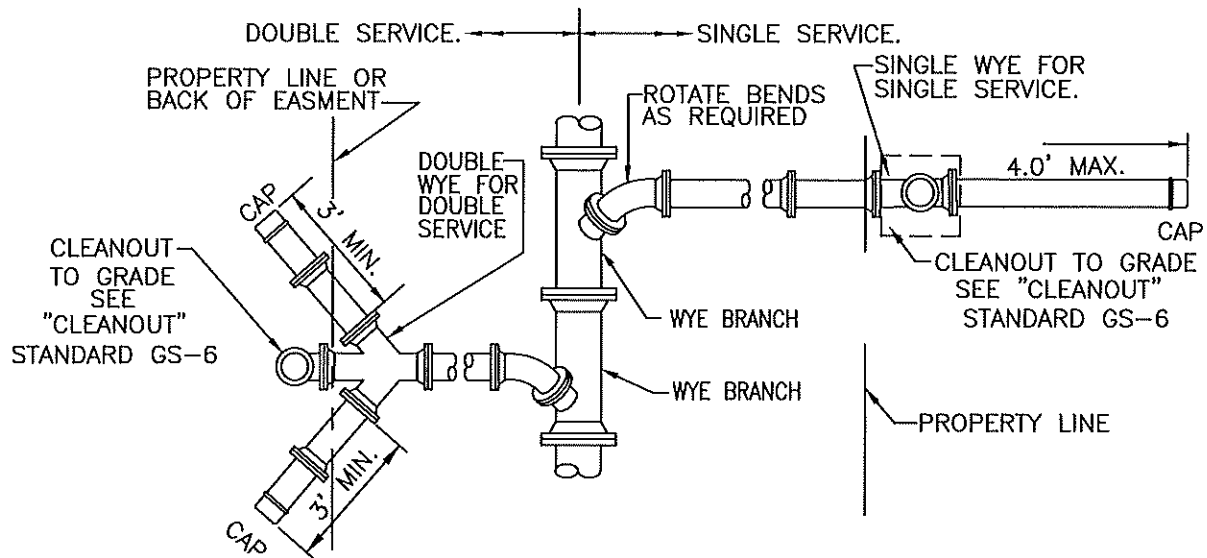
**GRAVITY SEWER  
DROP MANHOLE**

REVISED:  
DECEMBER 2014



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-4



**NOTES:**

1. SERVICE LATERALS SHALL TERMINATE INSIDE PROPERTY LINE AT A MINIMUM DEPTH OF 4 FEET. HOWEVER, WHERE LOT SIZE IS SUCH THAT ADDITIONAL COVER IS REQUIRED TO MAINTAIN PLUMBING CODE REQUIREMENT FOR EFFLUENT PIPE FALL, MINIMUM DEPTH SHALL BE INCREASED ACCORDINGLY.
2. CLEAN OUT CONNECTION TO BE RAISED TO FINISHED GRADE PRIOR TO WATER METER ACTIVATION.
3. ALL NON-METALLIC SANITARY SEWER PIPE SHALL HAVE LOCATOR WIRE IN ACCORDANCE WITH SECTION 3.12 OF THE HALL COUNTY STANDARD SEWER SPECIFICATIONS.

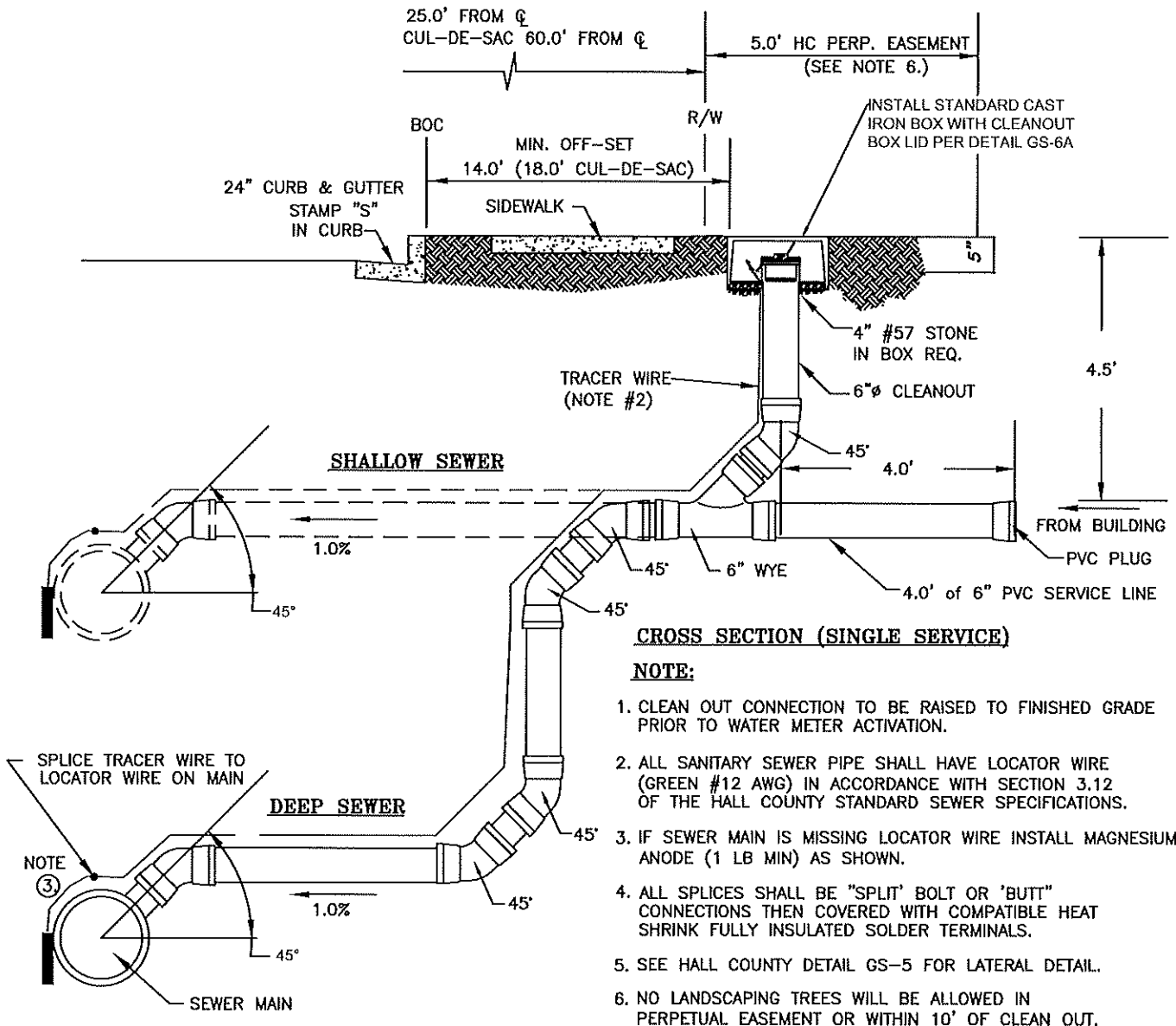
**HOUSE LATERAL CONNECTIONS**

REVISED:  
MAY-2019



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-5



### GRAVITY SEWER CLEAN-OUT

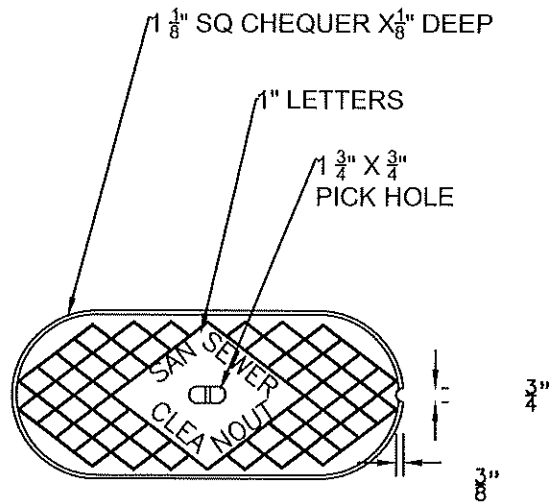
REVISED:  
MARCH 2021



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

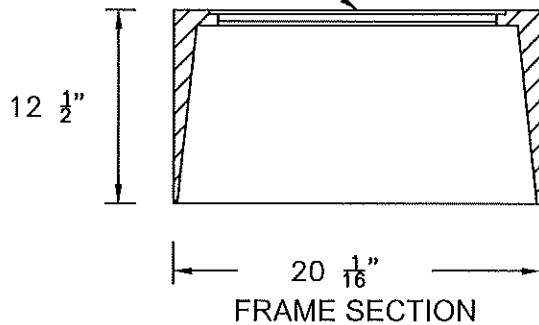
STANDARD  
GS-6



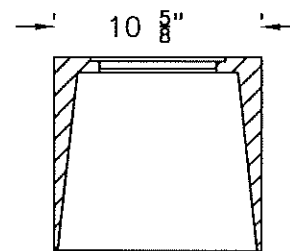


SANITARY SEWER CLEANOUT  
BOX LID

SIGMA SANITARY  
CLEANOUT  
BOX AND LID



FRAME SECTION



FRAME SECTION

**NOTE:**

1. CAST IRON SHALL CONFORM TO A.S.T.M. SPEC. 48 CLASS 30B.
2. CAST IRON BOX AND LID SHALL BE MANUFACTURED BY SIGMA CORPORATION OR EQUAL.

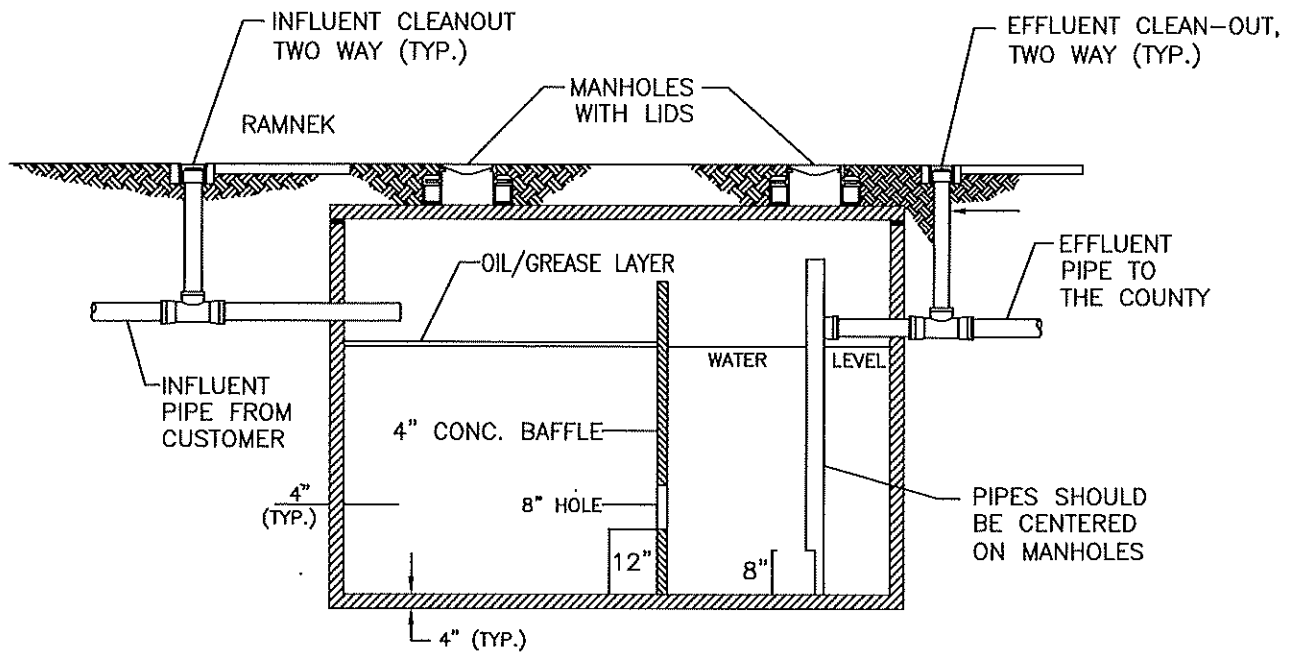
GRAVITY SEWER CLEAN-OUT BOX & LID

REVISED:  
MARCH 2021



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-6A

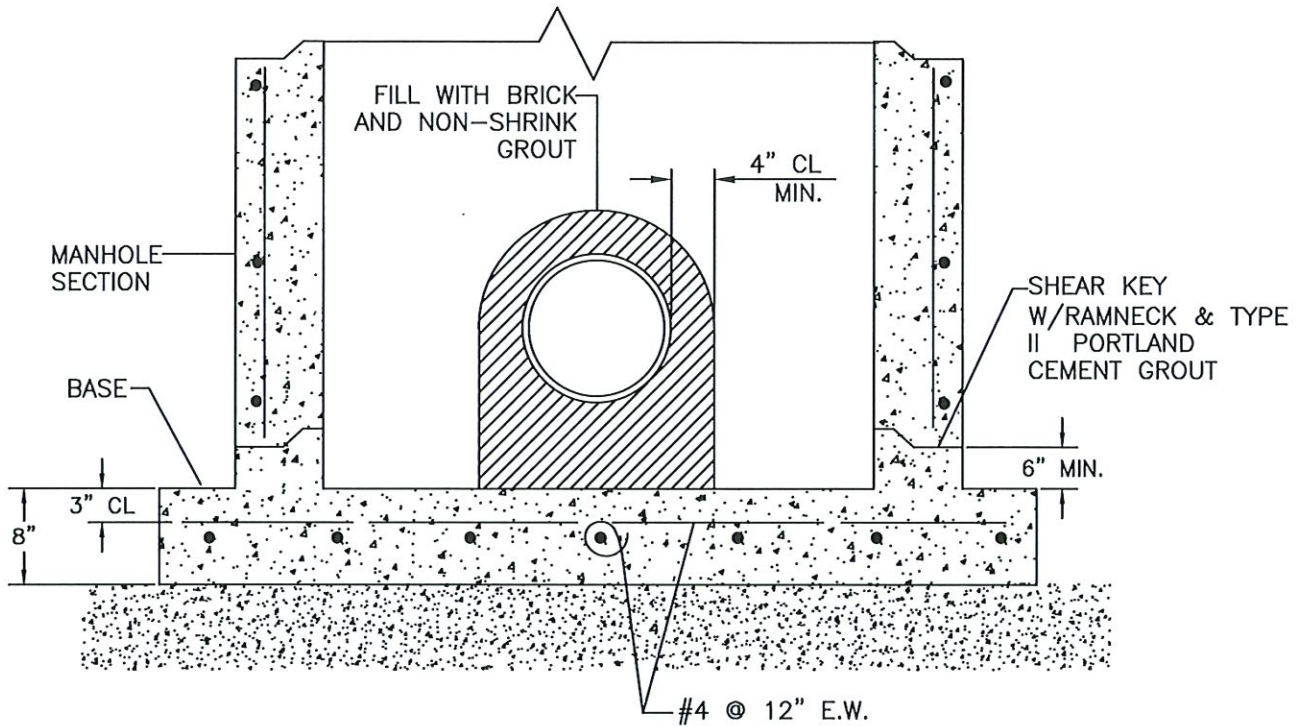


SIZING GUIDELINES FOR SEPARATORS	
WORK AREA	MINIMUM SIZE
1000 SQ. FT. OR LESS	50 GAL.
1001 - 2500 SQ. FT.	150 GAL.
2501 - 5000 SQ. FT.	300 GAL.
5001 - 9999 SQ. FT.	500 GAL.
10000 SQ. FT. or GREATER	750 GAL.

**NOTES:**

1. ALL NEW & EXISTING BUSINESSES OR INDUSTRIES THAT USE PETROLEUM BASED PRODUCTS IN THEIR DAY TO DAY ACTIVITIES WILL BE REQUIRED TO INSTALL AN OIL, GREASE/WATER SEPARATOR IF THEY CHOOSE TO OPERATE WITH OPEN FLOOR DRAINS.
2. NO DOMESTIC EFFLUENT SHALL BE ALLOWED TO DISCHARGE THROUGH THE OIL, GREASE/WATER SEPARATOR AS STATED IN HALL COUNTY ORDINANCE.
3. VARIOUS OIL, GREASE/WATER SEPARATOR MODELS MANUFACTURED BY COMPANIES SUCH AS ZARN, SMITH, RGF ENVIRONMENTAL SYSTEMS, INC. AND OTHERS MAY BE SUBSTITUTED FOR THE ABOVE DESIGN WITH HALL COUNTY PUBLIC WORKS AND UTILITIES' APPROVAL.
4. SEE STANDARD DETAILS: MANHOLE FRAME/COLLAR & COVER DETAIL, MANHOLE DETAIL, AND CLEAN-OUT DETAIL FOR CLARIFICATION.
5. FINAL PRODUCT MUST MEET HALL COUNTY PUBLIC WORKS AND UTILITIES' REQUIREMENTS.
6. SIZE OF SEPARATOR WILL VARY & SHALL BE BASED ON TYPE OF PRODUCT, USE AND APPLICABLE AREA OR SPACE PER THE PLUMBING CODE & THE INDUSTRIAL PRETREATMENT CODE.

**GRAVITY SEWER GREASE/WATER SEPARATOR**



**NOTES:**

1. TO CONSTRUCT NEW MANHOLE OVER EXISTING SEWER, SLIDE BASE UNDER PIPE AND SET MANHOLE SECTION ON TOP.
2. FOR ADDITIONAL DETAILS NOT SHOWN, SEE "GRAVITY SEWER MANHOLE" STANDARD GS-2.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPORT OF EXISTING SEWER DURING INSTALLATION OF MANHOLE.

**GRAVITY SEWER  
"DOG HOUSE" MANHOLE**

REVISED:  
SEPTEMBER 2010



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-8

1. ALL PIPE OPENINGS SHALL BE INSTALLED WITH "HARCO" PVC MANHOLE ADAPTERS OR APPROVED EQUAL FOR PVC PIPE PENETRATIONS. ADAPTERS SHALL BE FIELD SEALED WITH NON-SHRINK WATERPROOF GROUT.
2. MIN. HOLE DIA. EQUALS OUTSIDE WALL OF PVC PIPE ADAPTER PLUS 4"
3. LIFT HOLES ARE PERMITTED, BUT SHALL BE GROUTED WITH NON-SHRINK WATERPROOF GROUT.
4. ALL PENETRATIONS SHALL BE PRE-CAST OR CORE-DRILLED.
5. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH LATEST EDITION OF ASTM C-478.
6. ALL SANITARY SEWER PIPE SHALL HAVE LOCATOR WIRE IN ACCORDANCE WITH SECTION 3.12 OF THE HALL COUNTY STANDARD SEWER SPECIFICATIONS. SEE HALL COUNTY STANDARD DETAIL GS-6.
7. COATINGS ON EXTERIOR OF MANHOLES SHALL BE TWO COATS 4 MIL EACH COAL TAR EPOXY.
8. FIRST MANHOLE UPSTREAM FROM A WET WELL SHALL BE 4'-0" DIA. (MIN.) FOR FULL HEIGHT. PROVIDE DOUBLE LID MANHOLE COVER & FRAME EJ ERGO XL ASSEMBLY NO. 001480 53L01, OR APPROVED EQUAL, USED ON "A.R.V. MANHOLES. COVER TO BE MARKED AS SHOWN IN "MANHOLE INSTALLATION DETAILS".
9. GRAVITY SEWER DEPTHS SHALL NOT EXCEED 15' EXCEPT BY SPECIFIC APPROVAL OF HALL COUNTY PUBLIC WORKS & UTILITIES DEPARTMENT. PIPE FOR SUCH INSTALLATION SHALL BE CLASS 50 DIP EPOXY LINED.
10. ECCENTRIC CONES TO BE PLACED SO THAT RING & COVER ARE ON UPSTREAM SIDE OF MANHOLE.
11. WHEN A NEW LINE FLOW DROPS MORE THAN 2'-6", AT A MANHOLE, AN OUTSIDE DROP MANHOLE MUST BE USED. THIS SHALL ALSO APPLY TO LATERALS ENTERING MANHOLES.
12. NO INFILTRATION OR EXFILTRATION FOR NEW GRAVITY SEWERS SHALL BE ALLOWED. CHEMICAL REPAIR OF ANY LEAKS IS SPECIFICALLY NOT ALLOWED.
13. ALL MANHOLE FRAMES, AND COVERS ARE TO BE FLUSH WITH PROPOSED FINISHED GRADES OF WALKS, PAVINGS, SWALES, ETC. THEY SHALL HAVE CONCRETE COLLARS POURED IN ACCORDANCE WITH APPLICABLE STANDARDS.
14. FINISHED FLOOR ELEVATIONS OF NEW CONSTRUCTION OF ADJACENT BUILDINGS SHOULD BE A MINIMUM OF 6" ABOVE THE ELEVATION OF THE UPSTREAM SANITARY SEWER MANHOLE.
15. GRAVITY SEWER PIPE & LATERALS SHALL BE PVC PIPE WITH RING-TITE JOINTS (ASTM D-3034-SDR 26) OR APPROVED EQUAL.
16. FINAL VACUUMING, PRESSURE TESTING AND T.V. INSPECTION OF SANITARY GRAVITY SYSTEM TO BE MADE BY CONTRACTOR UPON COMPLETION OF SEWER SYSTEM. MANDREL SHALL BE PULLED THROUGH PIPE PRIOR TO T.V. INSPECTION. A COPY ON D.V.D. OF THE T.V. INSPECTION WITH VOICE OVER SHALL BE SUBMITTED WITH FINAL AS-BUILTS.
17. FINAL ACCEPTANCE OF WATER & SEWER INSTALLATION SHALL BE PREDICATED UPON RECEIPT OF FINAL AS-BUILTS, SIGNED & SEALED BY EITHER A LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER OF RECORD. AS-BUILTS SHALL CONSIST OF ONE PAPER COPY, & ONE DIGITAL COPY ON DISK, AUTOCAD RELEASE 2015 FORMAT, OR LATEST COMPATIBLE VERSION.
18. ALL AS BUILT MEASUREMENTS & ELEVATIONS TO BE MADE BY A LICENSED LAND SURVEYOR.
19. WARRANTY - ALL MATERIALS & EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR SHALL BE WARRANTED FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE THEREOF AGAINST DEFECTIVE MATERIALS, DESIGN AND WORKMANSHIP. UPON RECEIPT OF NOTICE FROM THE COUNTY OF FAILURE OF ANY PART OF THE WARRANTED EQUIPMENT OR MATERIALS DURING THE WARRANTY PERIOD, THE AFFECTED PART, PARTS OR MATERIALS SHALL BE PROMPTLY REPLACED BY THE CONTRACTOR WITH NEW PARTS OR MATERIALS BY THE CONTRACTOR AT NO EXPENSE TO THE COUNTY. IN THE EVENT THE CONTRACTOR FAILS TO MAKE THE NECESSARY REPLACEMENT OR REPAIRS IMMEDIATELY AFTER NOTIFICATION, THE COUNTY MAY ACCOMPLISH THE WORK AT THE EXPENSE OF THE CONTRACTOR UTILIZING PERFORMANCE AND PAYMENT BOND.

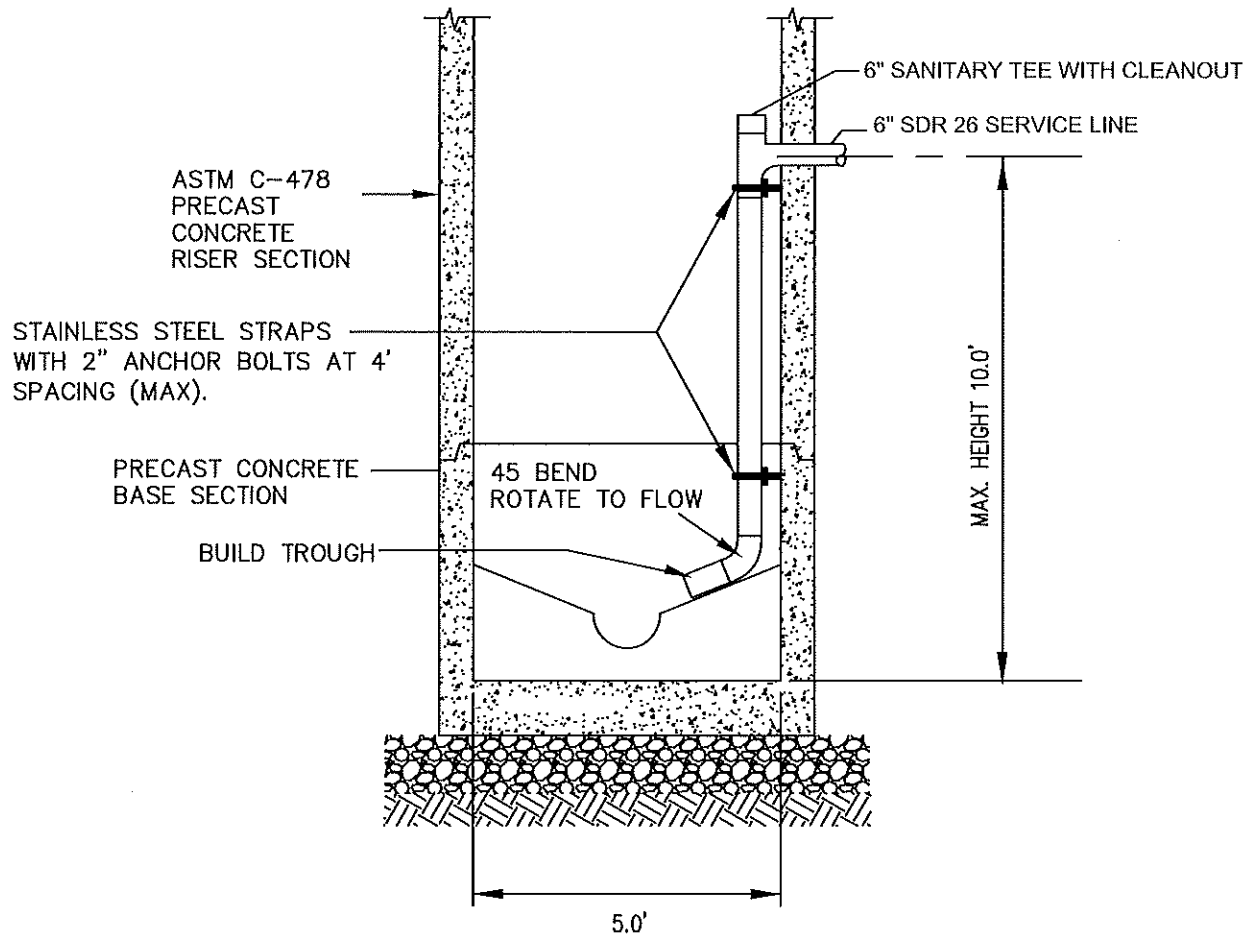
### GRAVITY SEWER GENERAL NOTES

**REVISED:**  
**DECEMBER 2018**



**HALL COUNTY PUBLIC WORKS & UTILITIES**  
**ENGINEERING DIVISION**

**STANDARD**  
**GS-9**



**NOTES:**

1. CORE MANHOLE AND INSTALL STANDARD MANHOLE BOOT OR LINK-SEAL TO FIT AND INSTALL WITH EXPANSION BOLTS ACCESSIBLE FROM INSIDE MH.
2. FOR ADDITIONAL DETAILS NOT SHOWN, SEE "GRAVITY SEWER MANHOLE" STANDARD GS-2.
3. CONTRACTOR SHALL POSITION THE DROP PIPE AS CLOSE TO THE MANHOLE WALL AS POSSIBLE.

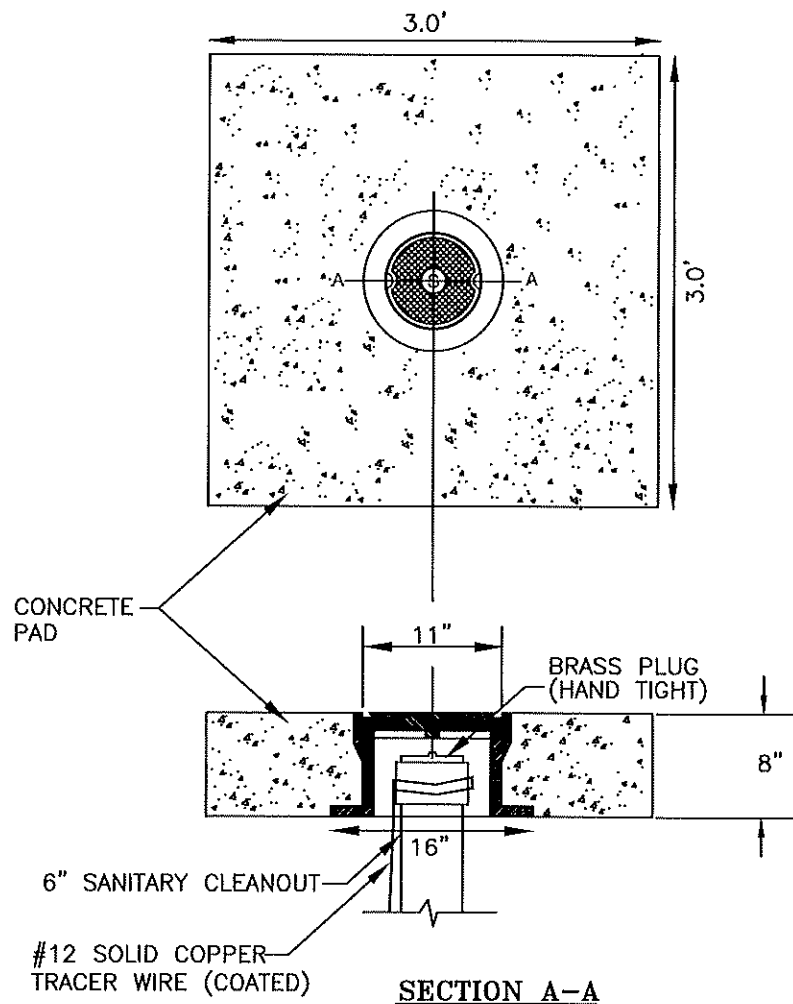
**GRAVITY SEWER INSIDE DROP**

REVISED:  
OCT. 2018



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-10



**NOTE:**

1. COVERS SHALL BE HEAVY DUTY RATED FOR AASHTO H 20 HIGHWAY LOADINGS AND SHALL BE DESIGNED, MANUFACTURED WITH AASHTO M306.
2. PRODUCT SHALL BE EAST JORDAN IRON WORKS 1565Z OR EQUAL.

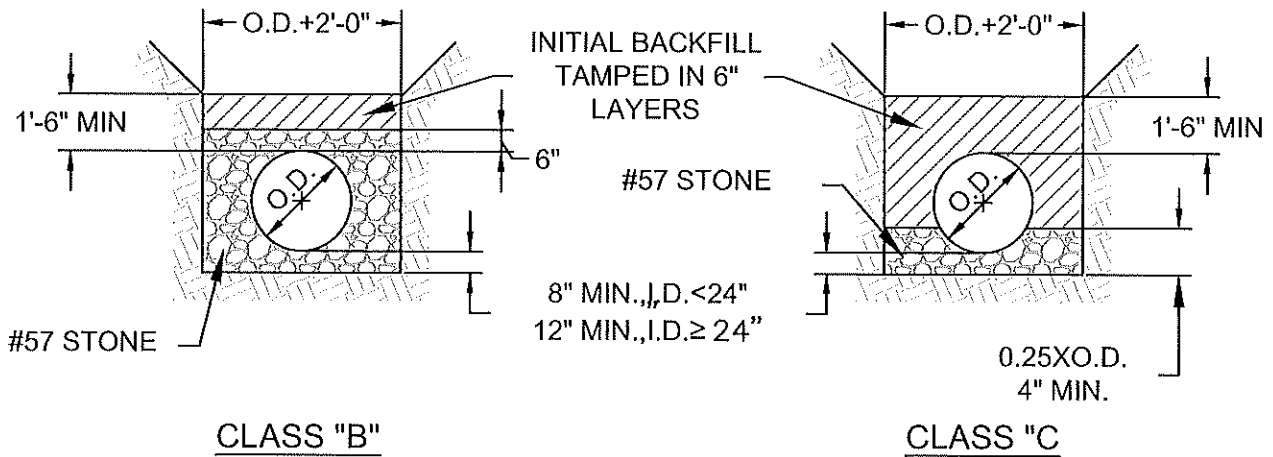
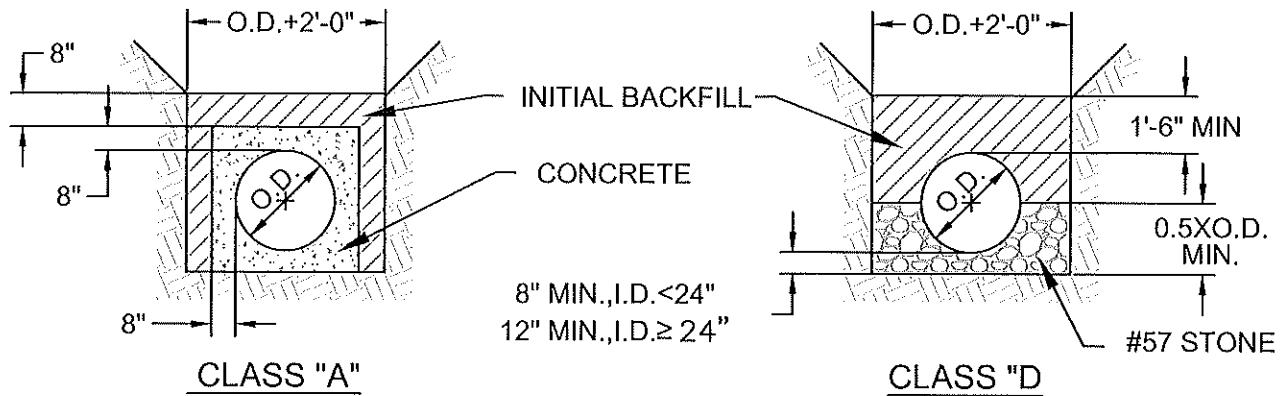
**CLEANOUT COVER IN PAVED AREAS**

REVISED:  
DEC- 2019



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-11



**NOTES:**

1. INITIAL BACKFILL SHALL BE FREE AND CLEAR OF ROCKS 2" IN DIAMETER OR LARGER.
2. ALL PVC SEWERS SHALL USE CLASS "B" BEDDING.
3. ALL DIP SEWERS WITH LESS THAN 24 FEET IN INVERT DEPTH SHALL USE CLASS "C" BEDDING.
4. ALL DIP SEWERS WITH GREATER THAN 24 FEET IN INVERT DEPTH SHALL USE CLASS "D" BEDDING.

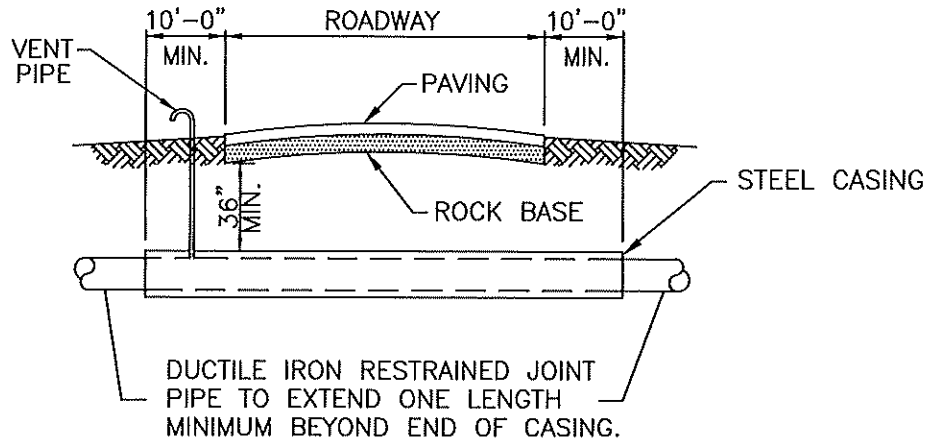
**PIPE BEDDING AND HAUNCHING DETAILS**

REVISED:  
FEB-2021

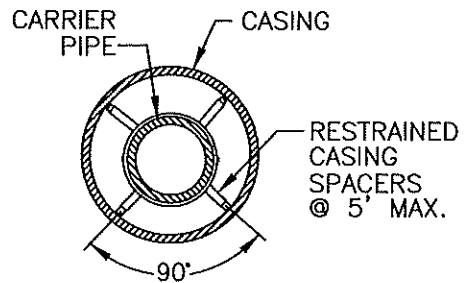


HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-12



CARRIER PIPE SIZE	STEEL CASING	MIN. WALL THICKNESS	VENT PIPE SIZE
4"	12"	.188	2"
6"	14"	.250	2"
8"	16"	.250	2"
10"	18"	.250	2"
12"	20"	.250	3"
14"	24"	.250	3"
16"	24"	.250	3"
18"	30"	.250	4"
20"	30"	.250	4"
24"	36"	.250	4"
30"	42"	.312	4"
36"	48"	.375	4"
42"	60"	.500	4"
48"	72"	.500	4"



**NOTES:**

1. PIPE CASING SHALL BE IN ACCORDANCE WITH CURRENT ASTM SPECIFICATION A139 AND BE PROTECTED BY A BLACK BITUMASTIC COATING FOR PROTECTION AGAINST CORROSION.
2. EXCEPT AS NOTED, WALL THICKNESS SHALL BE AS NOTED IN TABLE ABOVE, EXCEPT THAT LATEST G.D.O.T. STANDARDS, OR RAILROAD STANDARDS SHALL APPLY TO THOSE INSTALLATIONS.
3. PIPE THROUGH CONFLICT STORM AND SANITARY STRUCTURES MUST USE THIS DETAIL. THE END OF THE CASING MUST EXTEND A MINIMUM OF 12" OUTSIDE OF THE STRUCTURE.
4. ENDS SHALL BE SEALED WITH APPROVED PRESSURE RESISTANT FITTINGS, NO GROUT.

**PIPE CASING DETAIL**

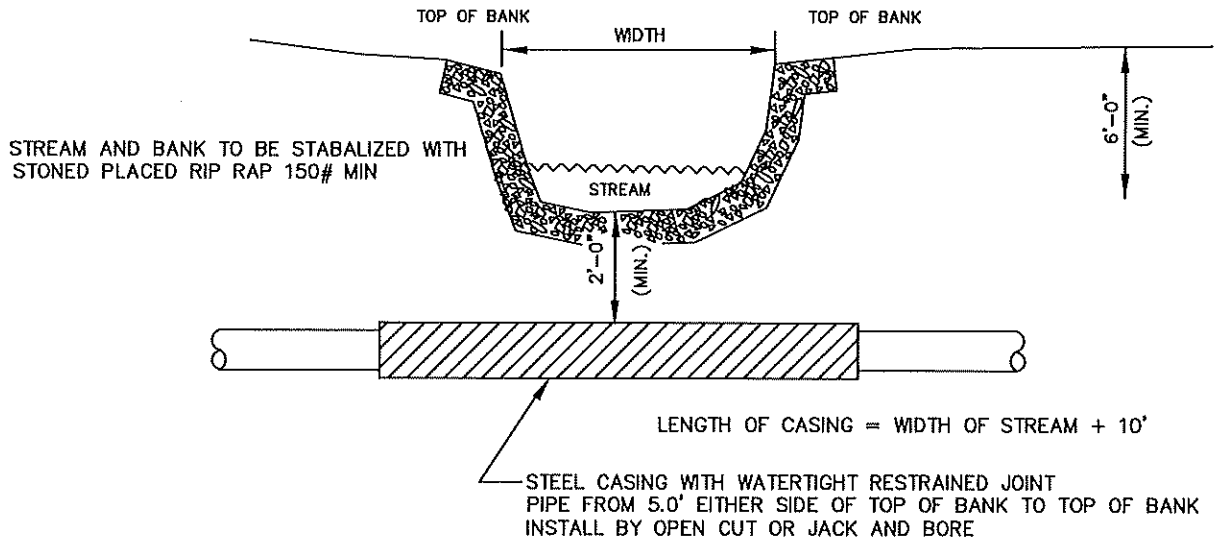
REVISED:  
FEB-2021



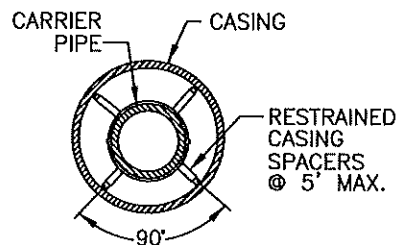
HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-13





CARRIER PIPE SIZE	STEEL CASING	MIN. WALL THICKNESS
4"	12"	.188
6"	14"	.250
8"	16"	.250
10"	18"	.250
12"	20"	.250
14"	24"	.250
16"	24"	.250
18"	30"	.250
20"	30"	.250
24"	36"	.250
30"	42"	.312
36"	48"	.375
42"	60"	.500
48"	72"	.500



**NOTES:**

1. PIPE CASING SHALL BE IN ACCORDANCE WITH CURRENT ASTM SPECIFICATION A139 AND BE PROTECTED BY A BLACK BITUMASTIC COATING FOR PROTECTION AGAINST CORROSION.
2. EXCEPT AS NOTED, WALL THICKNESS SHALL BE AS NOTED IN TABLE ABOVE, EXCEPT THAT LATEST G.D.O.T. STANDARDS, OR RAILROAD STANDARDS SHALL APPLY TO THOSE INSTALLATIONS.
3. ENDS SHALL BE SEALED WITH APPROVED PRESSURE RESISTANT FITTINGS, NO GROUT.
4. IF STATE WATERS ARE JACK AND BORED, BORE PITS MUST BE OUTSIDE OF THE STATE BUFFERS.

**STREAM CROSSING DETAIL**

REVISED:  
JUN-2021



HALL COUNTY PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

STANDARD  
GS-14