


Drawing name: G:\M5712\2243 section 1.2 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg Plotted on: Mar 26, 2012 - 3:59pm

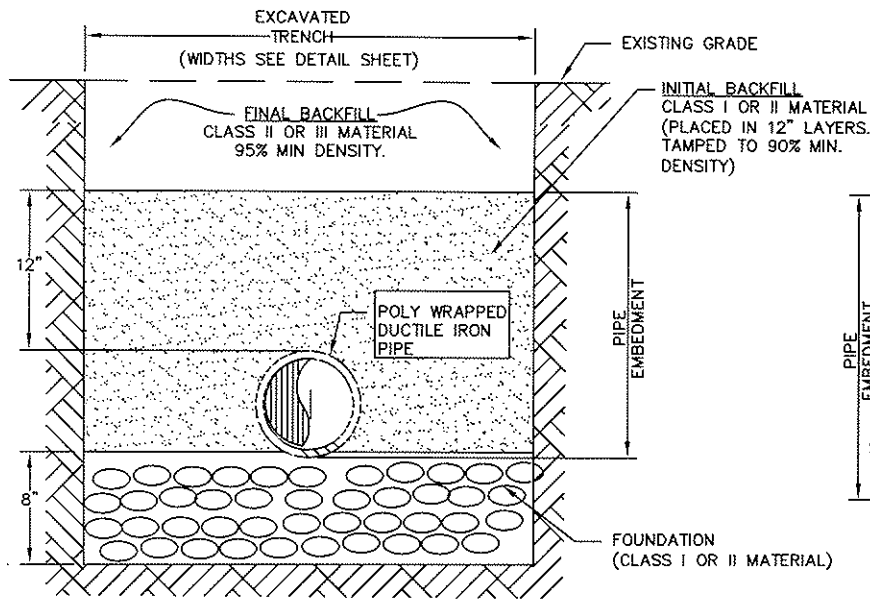
# SANITARY SEWER STANDARD DETAIL DRAWINGS

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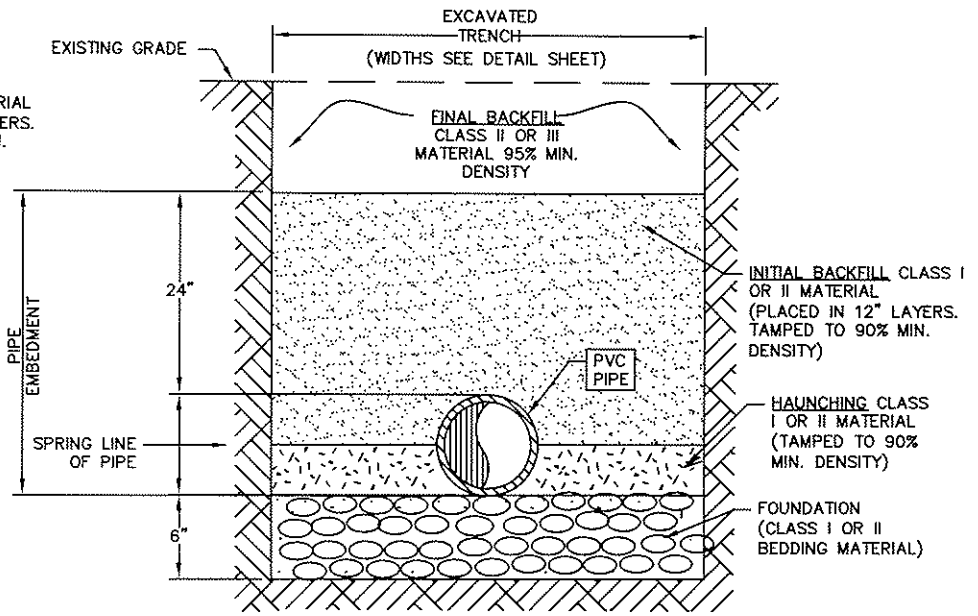
 <b>MAUSS</b> <small>MOBILE AREA WATER &amp; SEWER SYSTEM</small>	BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 01-11-10
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Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg  
 Plotted on: Mar. 26, 2012 - 3:59pm



**EMBEDMENT DETAIL FOR A D.I. GRAVITY SEWER PIPE \***

N.T.S.



**EMBEDMENT DETAIL FOR PVC SEWER PIPE \***

N.T.S.

**GENERAL NOTES FOR COMPACTION**

1. WHEN USING MECHANICAL COMPACTORS, AVOID CONTACT WITH PIPE. USE SMALL MECHANICAL COMPACTORS WHEN COMPACTING OVER PIPE CROWN AND MAINTAIN 6" MINIMUM COVER ABOVE PIPE. COMPACTION WITH BACK-HOE BUCKET, OR OTHER EQUIPMENT NOT INTENDED FOR COMPACTION USE, IS NOT ALLOWED.
2. MATERIAL SHALL BE INSTALLED AND COMPACTED IN 12" MAXIMUM LAYERS.
3. FINAL GRADE OF BEDDING SHALL BE LEVELED BY HAND.
4. HAUNCHING SHALL BE WORKED IN AROUND PIPE BY HAND & EVENLY TAMPED TO PROVIDE UNIFORM SUPPORT.
5. EMBEDMENT COMPACTION SHALL BE ACHIEVED BY PLACING AND WORKING IN BY HAND TO INSURE ALL EXCAVATED VOIDS AND HAUNCH AREAS ARE FILLED. HAND TAMP WITH VIBRATORY PLATE COMPACTORS. TO MINIMIZE COMPACTION EFFORT OF CLASS III MATERIAL, MOISTURE CONTENT SHALL BE MAINTAINED NEAR OPTIMUM.
6. LOCALIZED LOADINGS/DIFFERENTIAL SETTLEMENT SHALL BE MINIMIZED AT PIPE CROSSINGS.
7. PLACEMENT OF EMBEDMENT MATERIALS SHALL BE BY METHODS THAT WILL NOT DISTURB OR DAMAGE THE PIPE.
8. WORK IN AND TAMP THE HAUNCHING MATERIAL IN THE AREA BETWEEN THE BEDDING AND UNDERSIDE OF THE PIPE BEFORE PLACING AND COMPACTING THE REMAINDER OF THE EMBEDMENT IN THE PIPE ZONE.
9. USE COMPACTION EQUIPMENT AND TECHNIQUES THAT ARE COMPATIBLE WITH MATERIALS USED AND LOCATION IN THE TRENCH. (SEE NOTE 12)
10. HEAVY COMPACTION EQUIPMENT SHALL NOT BE USED FOR COMPACTION PURPOSES WITHIN THE PIPE EMBEDMENT AND FOUNDATION PIPE ZONES. BEFORE USING HEAVY COMPACTION OR CONSTRUCTION EQUIPMENT DIRECTLY OVER THE PIPE, PLACE SUFFICIENT BACKFILL TO PREVENT DAMAGE, EXCESSIVE DEFLECTIONS, OR OTHER DISTURBANCE OF THE PIPE. SUFFICIENT BACKFILL SHALL BE AS DETERMINED BY THE ENGINEER.

11. THE MINIMUM DEPTH OF COVER TO BE ESTABLISHED BY THE ENGINEER. IN THE ABSENCE OF AN ENGINEER REVIEW, THE FOLLOWING "DEFAULT" COVER RECOMMENDATIONS SHALL BE USED. FOR CLASS I, EMBEDMENT MATERIALS INSTALLED TO THE MINIMUM REQUIRED DENSITIES SHALL PROVIDE COVER OF AT LEAST 24" OR ONE PIPE DIAMETER (WHICHEVER IS GREATER). FOR CLASS II AND III, EMBEDMENT MATERIALS INSTALLED TO THE MINIMUM REQUIRED DENSITIES SHALL PROVIDE COVER OF AT LEAST 36" OR ONE PIPE DIAMETER (WHICHEVER IS GREATER). AT LEAST 48" COVER IS REQUIRED BEFORE USING HEAVY COMPACTION EQUIPMENT.

**12. COMPACTION METHODS:**

- a. COARSE GRAINED, CLEAN MATERIALS, SUCH AS CRUSHED STONE, GRAVELS AND SAND, ARE MORE READILY COMPACTED USING VIBRATORY EQUIPMENT. VIBRATORY PLATE TAMPERS WORK WELL FOR COARSE GRAINED MATERIALS (CLASS I AND CLASS II).
- b. FINE MATERIALS REQUIRE KNEADING AND IMPACT FORCE ALONG WITH CONTROLLED WATER CONTENT TO ACHIEVE ACCEPTABLE DENSITIES. HAND TAMPERS OR AIR DRIVEN HAND-HELD IMPACT RAMMERS ARE SUITABLE FOR THE FINE GRAINED MATERIALS (CLASS III AND CLASS IV).
- c. IN TRENCHES, SMALL HAND-HELD OR WALK BEHIND COMPACTORS ARE REQUIRED TO PRECLUDE DAMAGE TO THE PIPE AND TO INSURE THOROUGH COMPACTION IN THE CONFINED AREAS AROUND THE PIPE AND ALONG THE TRENCH WALL.

\* UNLESS OTHERWISE SPECIFIED BY GEOTECHNICAL REPORT

**EMBEDMENT MATERIAL & CLASS DESCRIPTIONS:**  
(SEE SPECIFICATIONS FOR SIEVE ANALYSIS)

- CLASS I** - ANGULAR, GRADED STONE, OR ROCK, DENSE OR OPEN GRADED W/ LITTLE OR NO FINES (1/2" INCH TO 1 1/2" INCH IN SIZE) (ALDOT #57 STONE, B-BASE)
- CLASS II** - CLEAN COARSE GRAINED SANDS & GRAVELS (1 1/2" INCH MAXIMUM SIZE)
- CLASS III** - COARSE GRAINED MATERIAL W/FINES. GRAVEL OR SAND MUST COMPRISE MORE THAN 50% OF CLASS III MATERIALS. (1 1/2" INCHES MAX. SIZE)

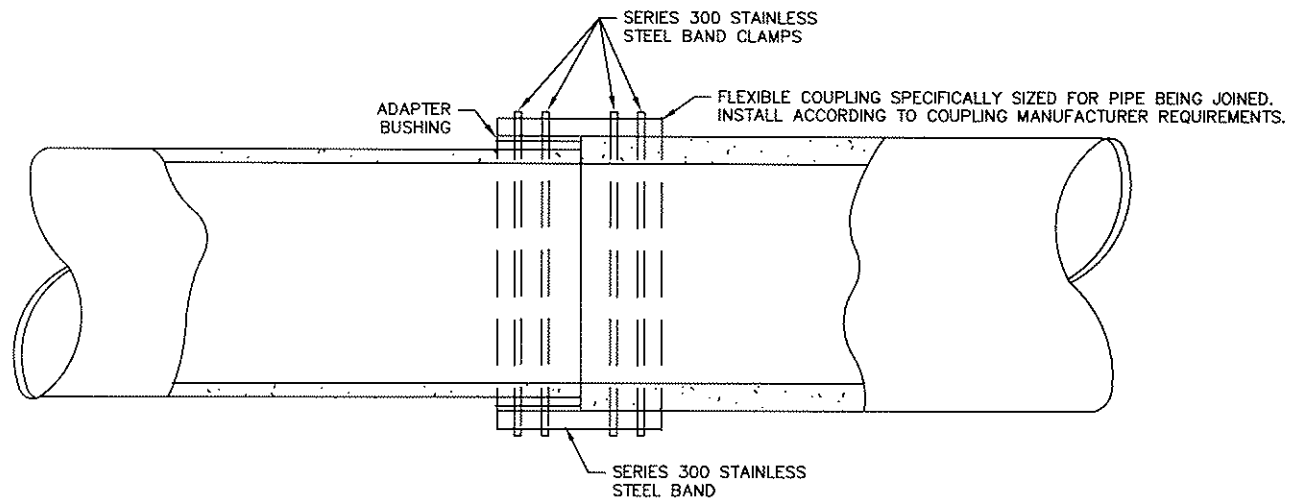


BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
SEWER PIPE EMBEDMENT DETAILS

DATE ISSUED: 01-11-10  
SCALE: N.T.S.  
DRAWING NO.: SS-101

Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg Plotted on: Mar 26, 2012 - 3:59pm



JOINT DETAIL FOR COUPLING OF PIPES OF DISSIMILAR O.D. UP TO 16"  
N.T.S.



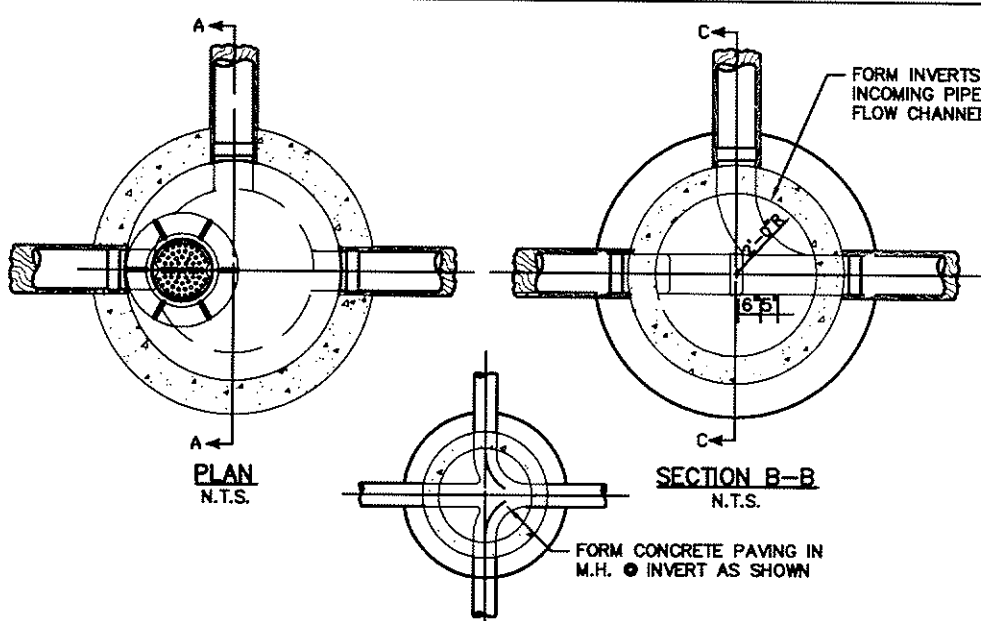
BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

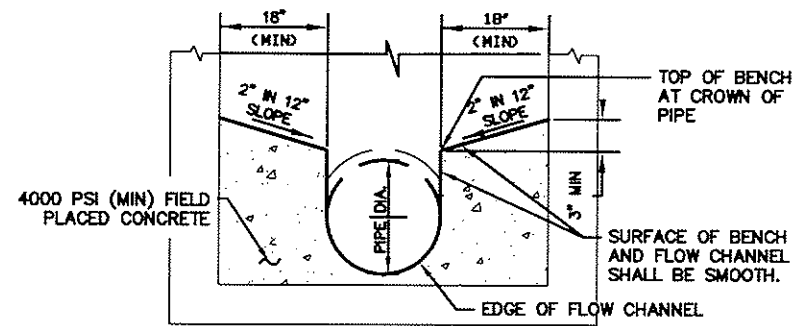
DISSIMILAR PIPE COUPLINGS DETAIL

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SCALE:	N.T.S.
DRAWING NO.:	SS-102

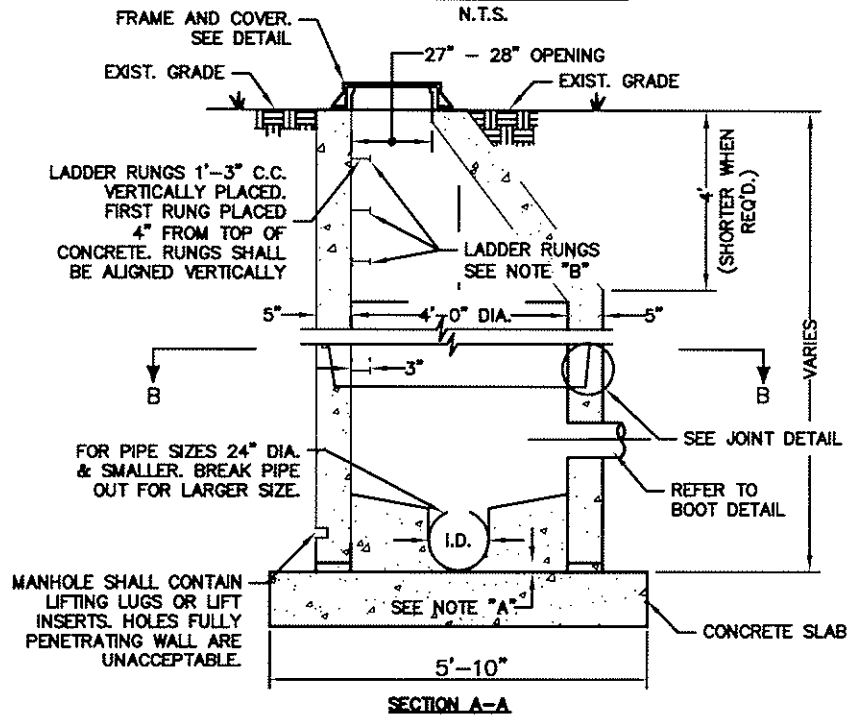
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 Plotted on: May 10, 2012



**MANHOLE WITH THREE OR MORE PIPES AT INVERT**  
N.T.S.



**TYPICAL SECTION**  
**MANHOLE BENCH DETAIL**  
N.T.S.



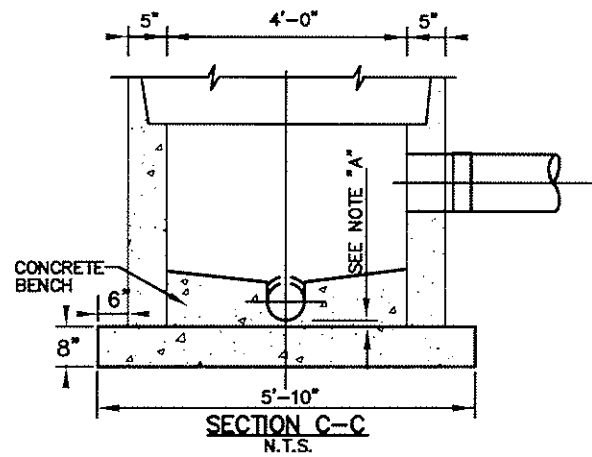
**DETAIL OF STANDARD 48" PRECAST MANHOLE**  
**FOR PIPE 24" DIA. & SMALLER**  
N.T.S.


**NOTE "A"**  
DISTANCE BETWEEN INVERT OF PIPE AND OUTSIDE OF BELL DETERMINES THE ELEVATION OF TOP OF 8" CONCRETE SLAB.

**NOTE "B"**  
MANHOLE STEPS SHALL BE STEEL RODS ENCASED IN POLYPROPYLENE PLASTIC AND SHALL BE TYPE "PS-1-B" AS MANUFACTURED BY M.A. INDUSTRIES, INC., OR AN APPROVED EQUAL.

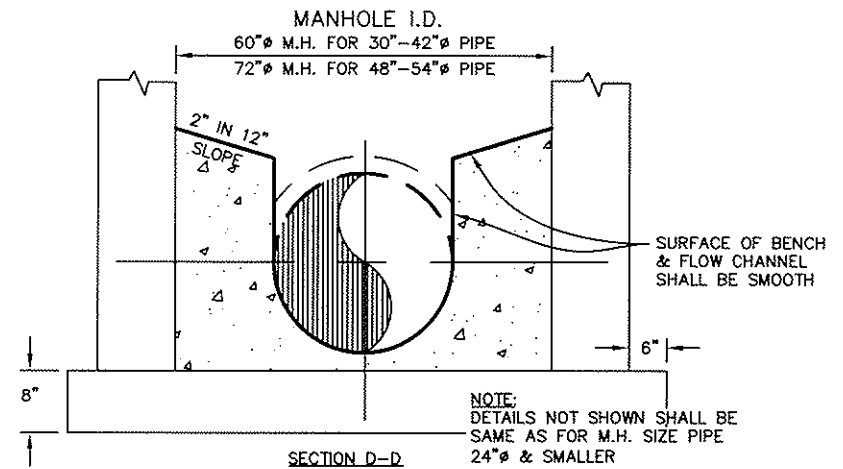
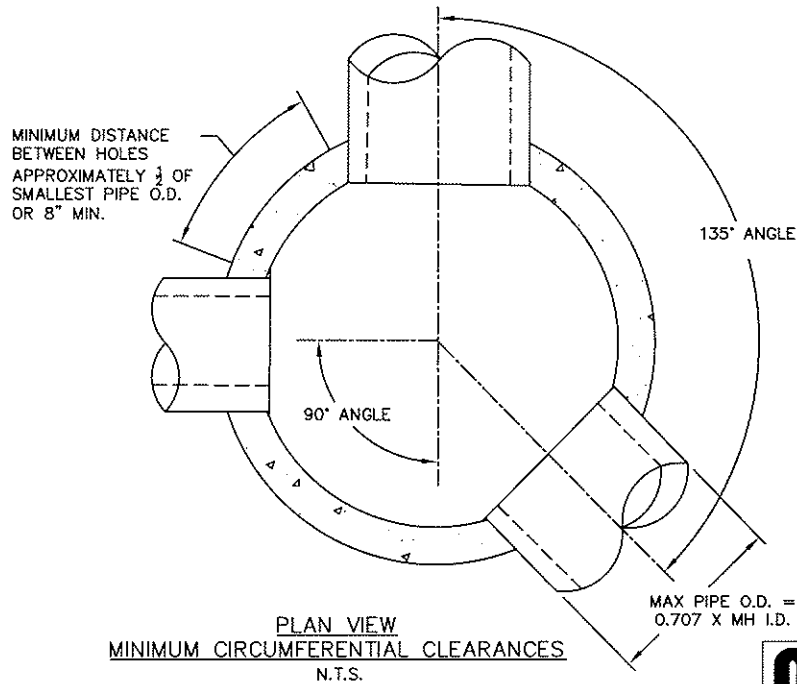
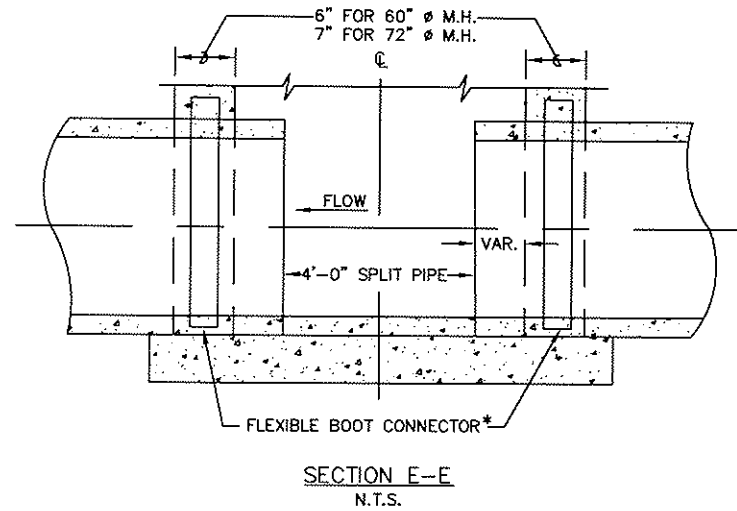
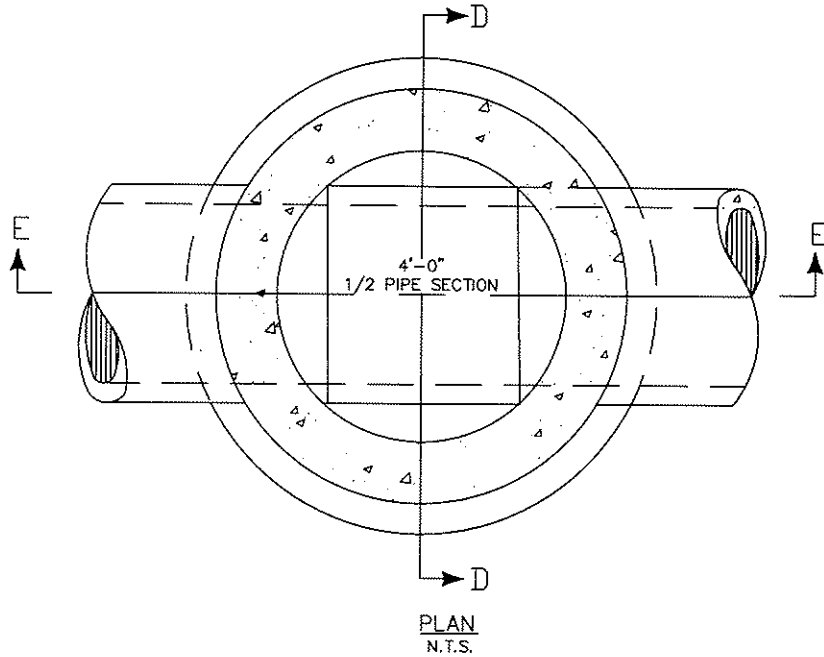
**NOTE "C"**  
ALL PIPES IN OR OUT OF MANHOLE SHALL BE FLUSH WITH INSIDE WALL OF MANHOLE.

**NOTE "D"**  
**DEAD END MANHOLE:**  
FOR DEAD END MANHOLES THE FLOW CHANNEL SHALL EXTEND THE WIDTH OF THE MANHOLE.



 MOBILE AREA WATER & SEWER SYSTEM	BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA	TYPICAL SANITARY SEWER DETAILS  PRECAST MANHOLE DETAILS	DATE ISSUED 01-11-10
			SCALE N.T.S. DRAWING NO. SS-103

Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\B.5\_TYP\_S.S.\_DETAILS\_2.dwg Plotted on: Mar 26, 2012 - 3:59pm



**DETAIL OF MANHOLE FOR PIPE SIZES  
LARGER THAN 24" DIA.**  
N.T.S.

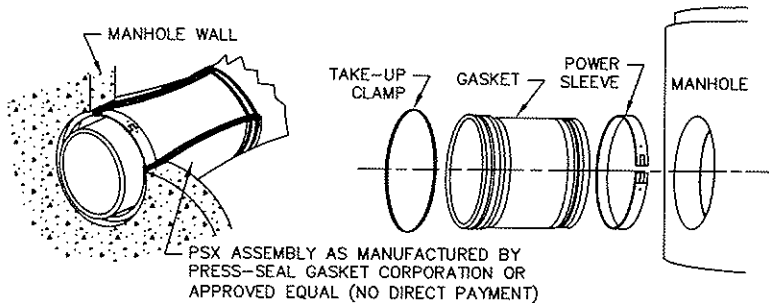


BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

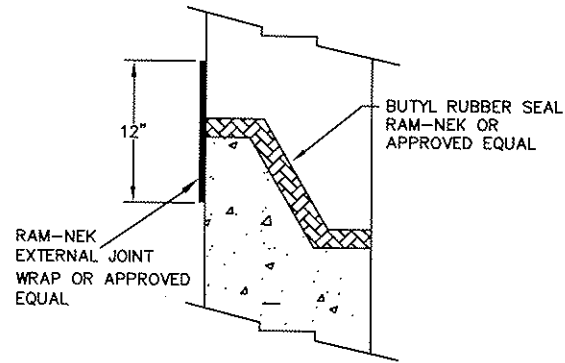
LARGE DIAMETER MANHOLE  
& MINIMUM CIRCUMFERENTIAL CLEARANCES

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-104

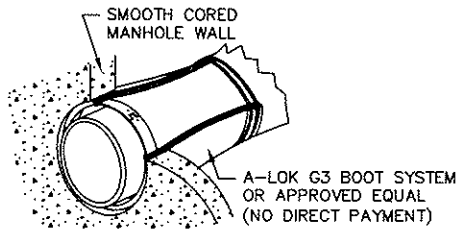


PSX ASSEMBLY AS MANUFACTURED BY PRESS-SEAL GASKET CORPORATION OR APPROVED EQUAL (NO DIRECT PAYMENT)

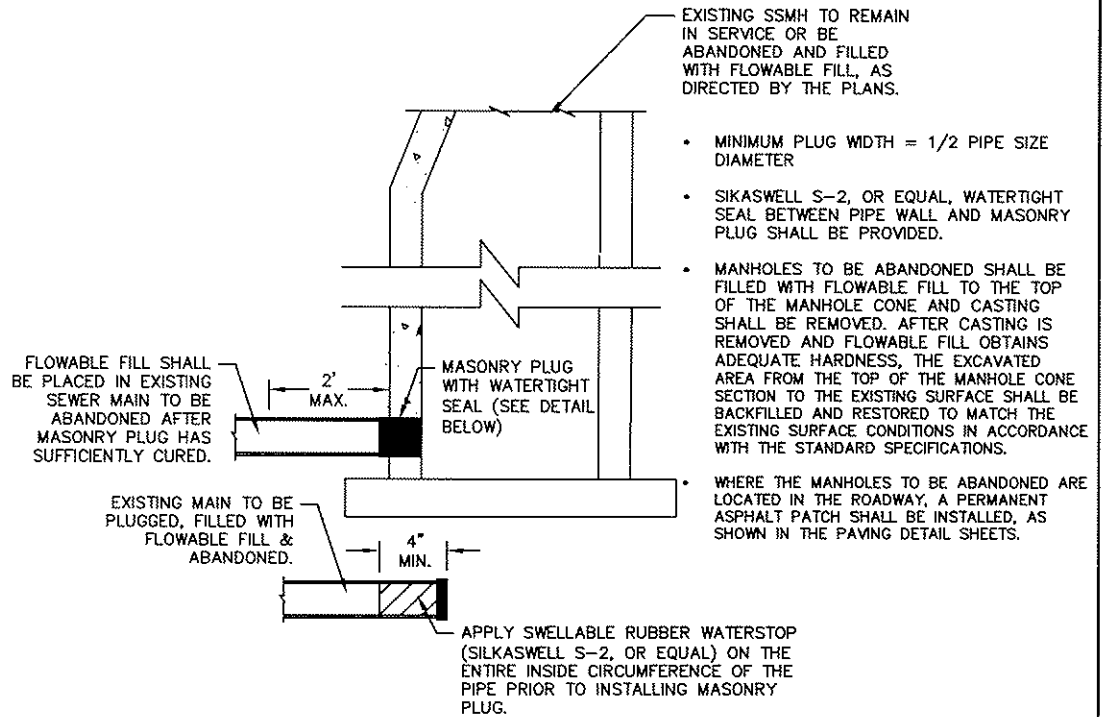
TYPICAL "BOOT" DETAIL  
N.T.S.



JOINT DETAIL  
N.T.S.



TYPICAL "CORE DRILLED"  
"BOOT" DETAIL  
N.T.S.



PLUGGING ABANDONED SEWER MAIN AT MANHOLE DETAIL  
N.T.S.

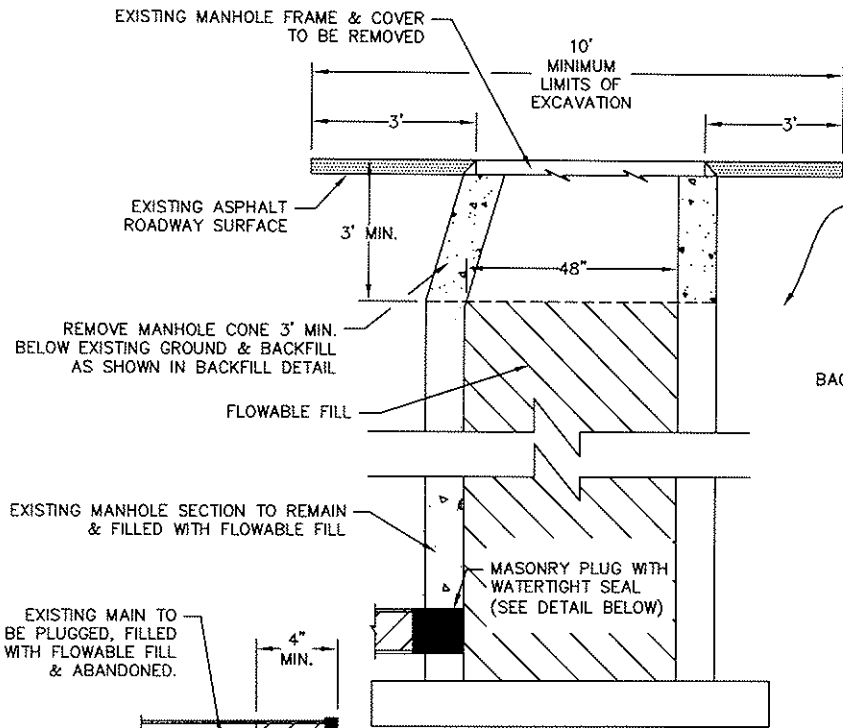
MANHOLE BOOT MAY BE PRECAST OR FIELD CORED TO MANHOLE



BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

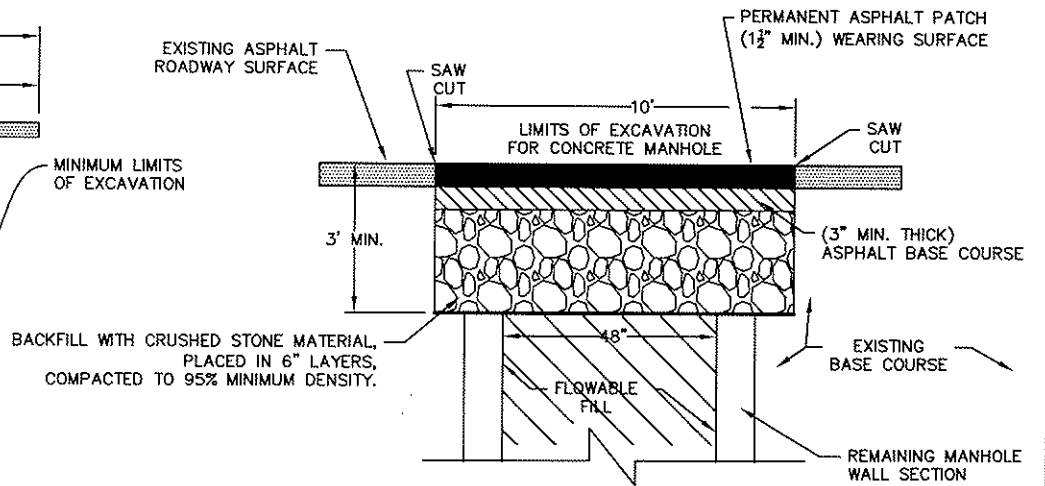
TYPICAL SANITARY SEWER DETAILS	DATE ISSUED	01-11-10
	SCALE	N.T.S.
	DRAWING NO.	SS-104A

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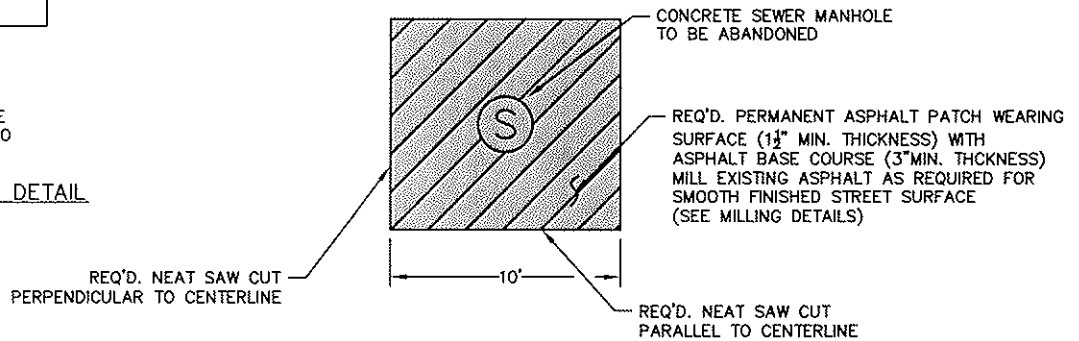


**PLUG & ABANDON CONCRETE MANHOLE DETAIL (ASPHALT STREET)**  
N.T.S.

- MINIMUM PLUG WIDTH = 1/2 PIPE SIZE DIAMETER
- SIKASWELL S-2, OR EQUAL, WATERTIGHT SEAL BETWEEN PIPE WALL AND MASONRY PLUG SHALL BE PROVIDED.
- THE MANHOLE FRAME, COVER, & TOP 3- FEET OF EXISTING MANHOLE SHALL BE REMOVED. REMAINING MANHOLE SECTION SHALL BE FILLED WITH FLOWABLE FILL.
- AFTER FLOWABLE FILL OBTAINS ADEQUATE HARDNESS, THE EXCAVATED AREA FROM THE TOP OF THE MANHOLE CONE SECTION TO THE EXISTING SURFACE SHALL BE BACKFILLED AND RESTORED TO MATCH THE EXISTING SURFACE CONDITIONS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- WHERE THE MANHOLES TO BE ABANDONED ARE LOCATED IN THE ROADWAY, A PERMANENT ASPHALT PATCH SHALL BE INSTALLED.



**BACKFILL AT ABANDON CONCRETE MANHOLE DETAIL**  
N.T.S.



**MANHOLE PERMANENT ASPHALT PATCH DETAIL FOR ABANDONED CONCRETE MANHOLE**  
N.T.S.

NOTE:

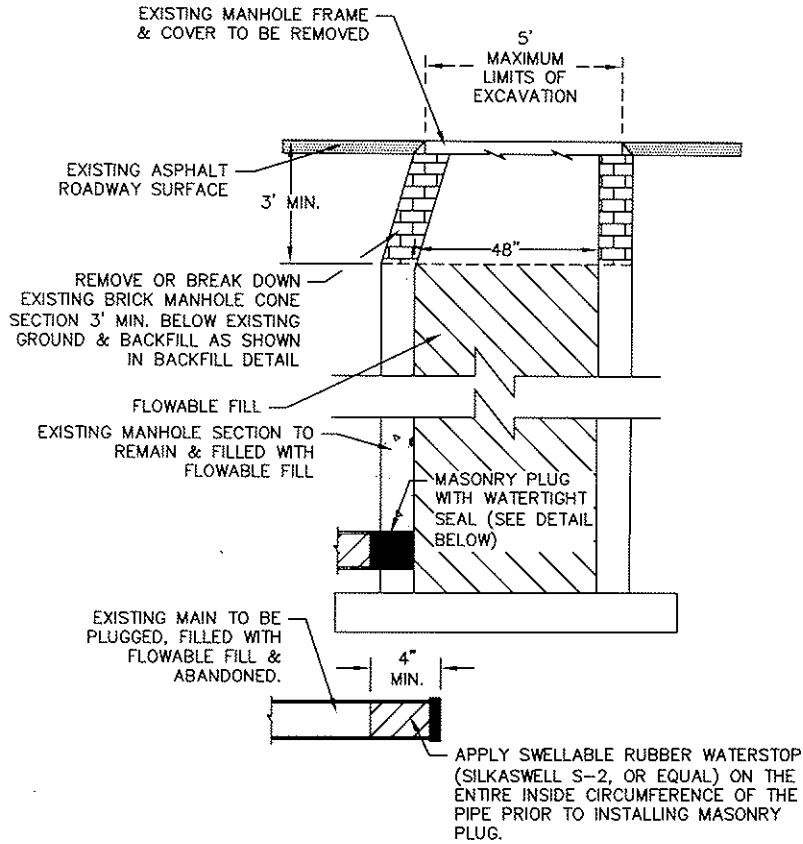
PAVING AND CONSTRUCTION WITHIN THE CITY OF MOBILE RIGHT OF WAY SHALL MEET THE CITY OF MOBILE'S STANDARDS.



BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS	DATE ISSUED 01-11-10
PLUG & ABANDON CONCRETE MANHOLE DETAILS (ASPHALT STREET)	SCALE N.T.S.
	DRAWING NO. SS-104B

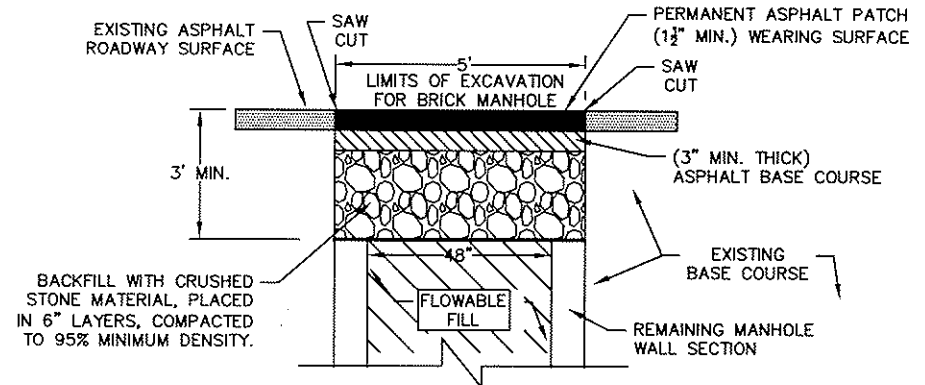
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**PLUG & ABANDON BRICK MANHOLE DETAIL  
(ASPHALT STREET)**

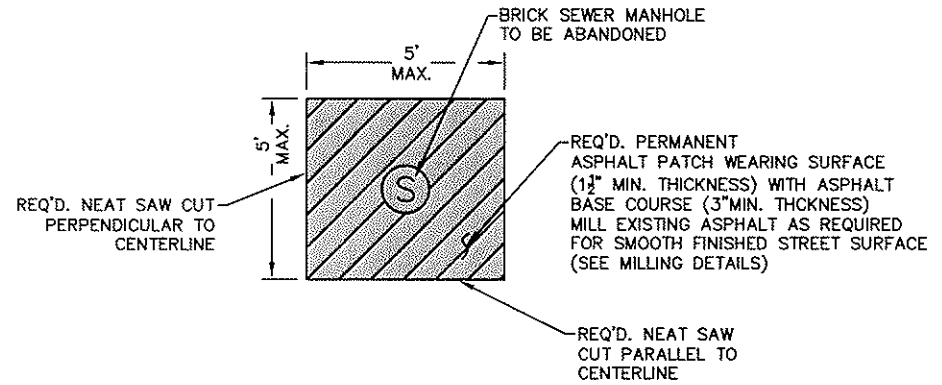
N.T.S.

- MINIMUM PLUG WIDTH = 1/2 PIPE SIZE DIAMETER
- SIKASWELL S-2, OR EQUAL, WATERTIGHT SEAL BETWEEN PIPE WALL AND MASONRY PLUG SHALL BE PROVIDED.
- THE MANHOLE FRAME & COVER SHALL BE REMOVED & TOP 3- FEET OF EXISTING BRICK MANHOLE CONNECTION SHALL BE REMOVED, OR BROKEN DOWN. REMAINING MANHOLE SECTION SHALL BE FILLED WITH FLOWABLE FILL.
- AFTER FLOWABLE FILL OBTAINS ADEQUATE HARDNESS, THE EXCAVATED AREA FROM THE TOP OF THE MANHOLE CONE SECTION TO THE EXISTING SURFACE SHALL BE BACKFILLED AND RESTORED TO MATCH THE EXISTING SURFACE CONDITIONS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- WHERE THE MANHOLES TO BE ABANDONED ARE LOCATED IN THE ROADWAY, A PERMANENT ASPHALT PATCH SHALL BE INSTALLED AS SHOWN.



**BACKFILL AT ABANDON BRICK MANHOLE DETAIL**

N.T.S.



**MANHOLE PERMANENT ASPHALT PATCH DETAIL FOR ABANDONED BRICK MANHOLE**

NOTE:

PAVING AND CONSTRUCTION WITHIN THE CITY OF MOBILE RIGHT OF WAY SHALL MEET THE CITY OF MOBILE'S STANDARDS.



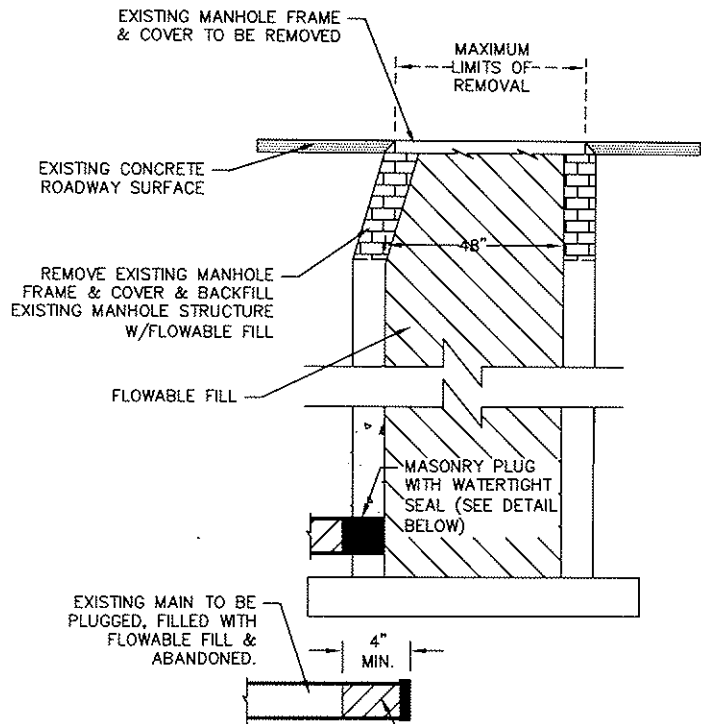
BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

PLUG & ABANDON BRICK MANHOLE DETAILS  
(ASPHALT STREET)

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-104C

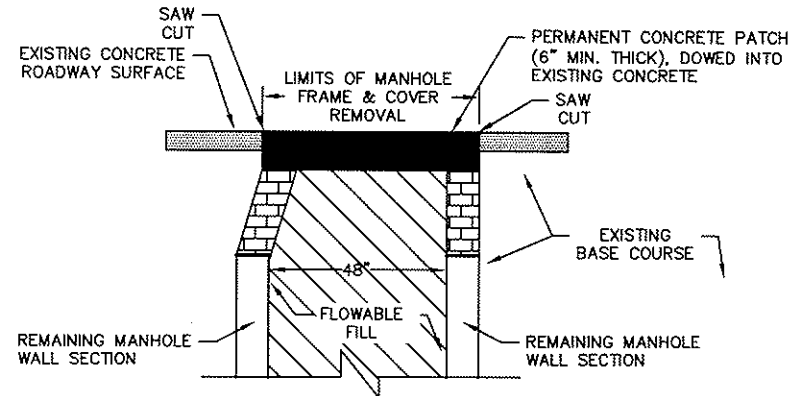
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**PLUG & ABANDON BRICK MANHOLE DETAIL (CONCRETE STREET)**

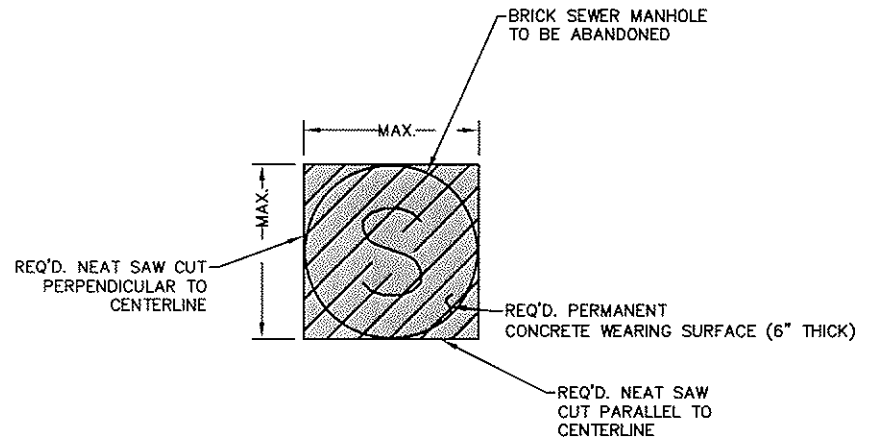
N.T.S.

- MINIMUM PLUG WIDTH = 1/2 PIPE SIZE DIAMETER
- SIKASWELL S-2, OR EQUAL, WATERTIGHT SEAL BETWEEN PIPE WALL AND MASONRY PLUG SHALL BE PROVIDED.
- THE MANHOLE FRAME & COVER SHALL BE REMOVED & EXISTING BRICK MANHOLE SHALL BE FILLED WITH FLOWABLE FILL, PRIOR TO PERMANENT CONCRETE PATCH.
- AFTER FLOWABLE FILL OBTAINS ADEQUATE HARDNESS, THE DISTURBED STREET SURFACE SHALL BE RESTORED TO MATCH THE EXISTING SURFACE CONDITIONS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- WHERE THE MANHOLES TO BE ABANDONED ARE LOCATED IN THE ROADWAY, A PERMANENT CONCRETE PATCH SHALL BE INSTALLED AS SHOWN.



**BACKFILL AT ABANDON BRICK MANHOLE DETAIL (CONCRETE STREET)**

N.T.S.



**MANHOLE PERMANENT CONCRETE PATCH DETAIL FOR ABANDONED BRICK MANHOLE**

N.T.S.

NOTE:

PAVING AND CONSTRUCTION WITHIN THE CITY OF MOBILE RIGHT OF WAY SHALL MEET THE CITY OF MOBILE'S STANDARDS.



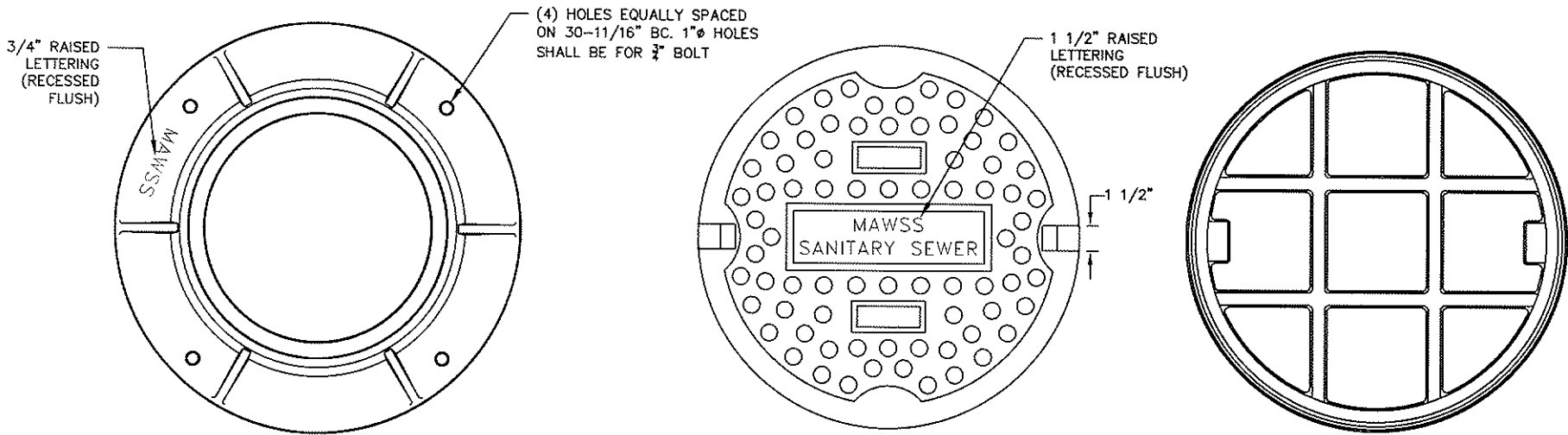
BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

PLUG & ABANDON BRICK MANHOLE DETAILS (CONCRETE STREET)

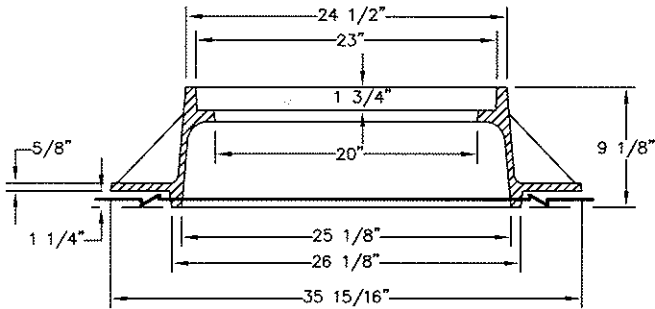
DATE ISSUED	01-11-10
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DRAWING NO.	SS-104D

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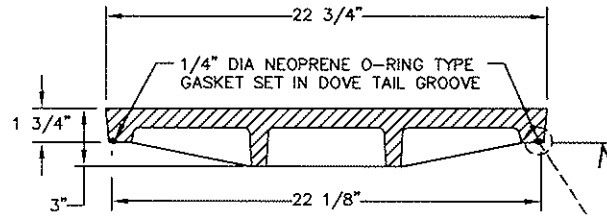


RING TOP VIEW

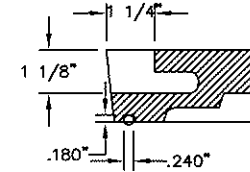
COVER BACK



RING SECTION  
N.T.S.



COVER SECTION  
N.T.S.



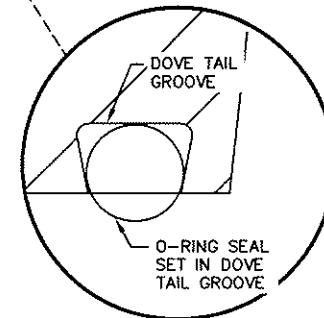
(2) TYPE TWO NON-PENETRATING PICKHOLES  
DOVE TAIL GROOVE & PICKHOLE DETAIL  
N.T.S.

**STANDARD MANHOLE  
FRAME & COVER**

RANGE OF WEIGHTS	
FRAME	230 LB (MIN)-260 LB (MAX)
COVER	120 LB (MIN)-130 LB (MAX)
TOTAL	350 LB (MIN)-390 LB (MAX)
MATERIAL	GREY IRON ASTM A48CL35B
RATING	H20 FOR TRAFFIC

NOTE:

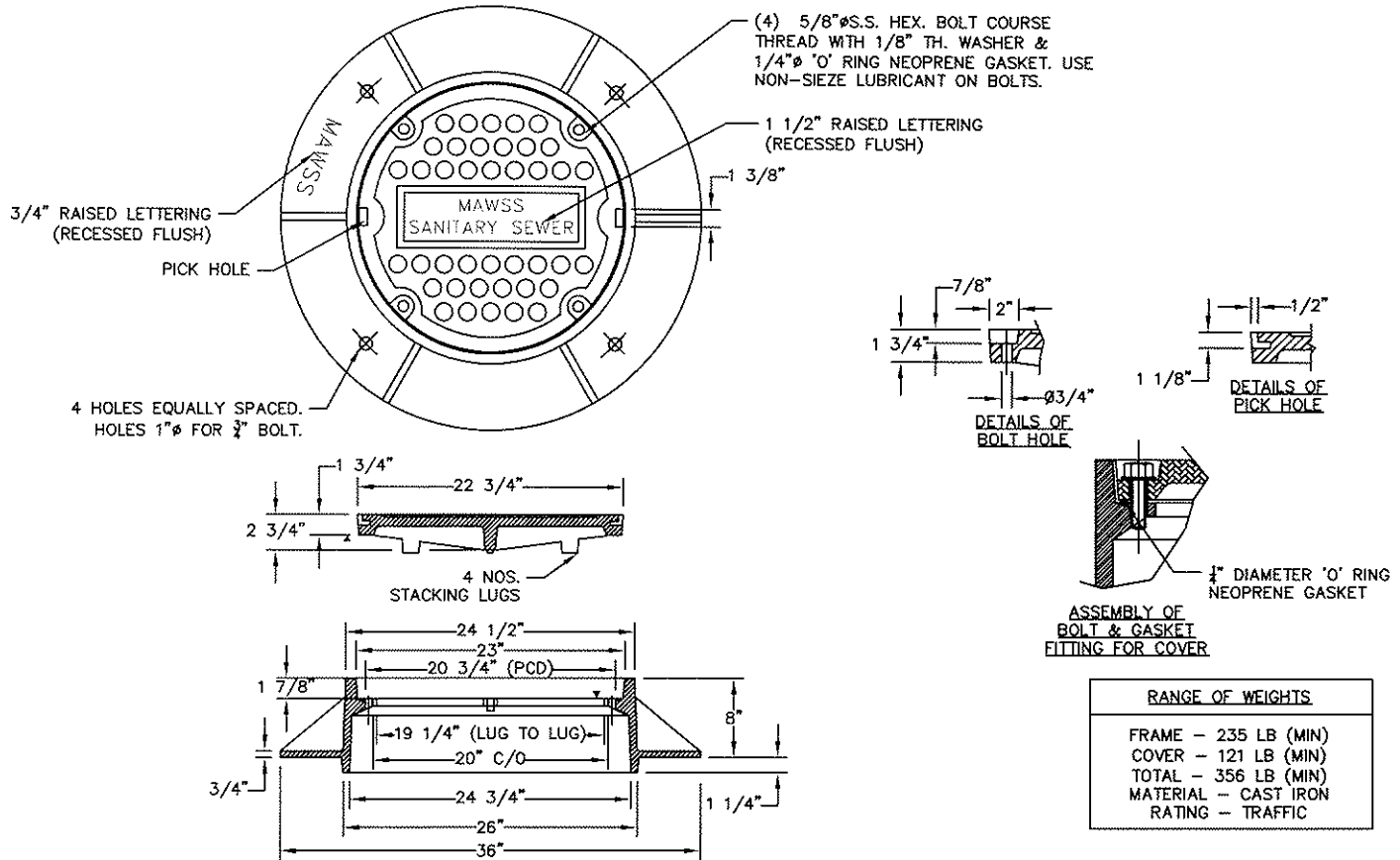
- MANHOLE FRAME AND COVER SHALL BE EAST JORDAN MODEL# V-1476 OR APPROVED EQUAL
- COVER SHALL HAVE O-RING SEAL IN DOVE TAIL GROOVE.



BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
STANDARD MANHOLE FRAME & COVER

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-105



**WATERTIGHT/BOLTDOWN FRAME & COVER**  
N.T.S.

NOTE:

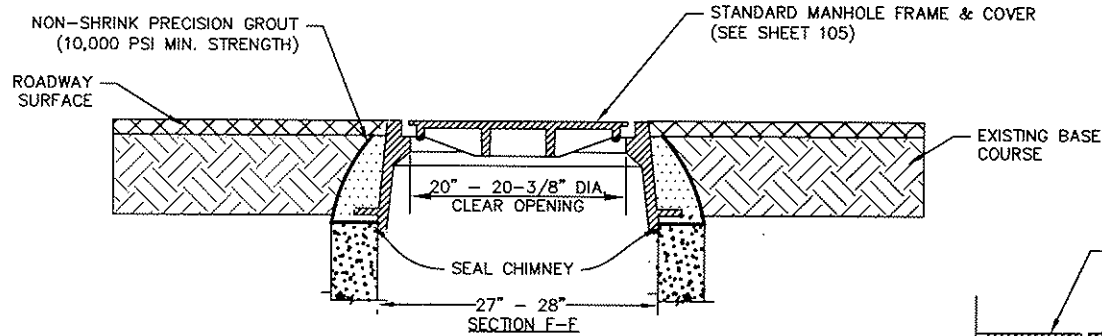
1. WATERTIGHT/BOLTDOWN FRAME & COVER SHALL BE EJIW V2480-1, OR APPROVED EQUAL.
2. COVER SHALL BOLT TO FRAME.



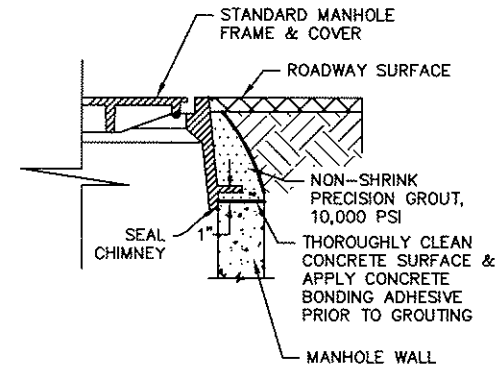
BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS	DATE ISSUED	01-11-10
	SCALE	N.T.S.
WATERTIGHT/BOLTDOWN MANHOLE FRAME & COVER	DRAWING NO.	SS-105A

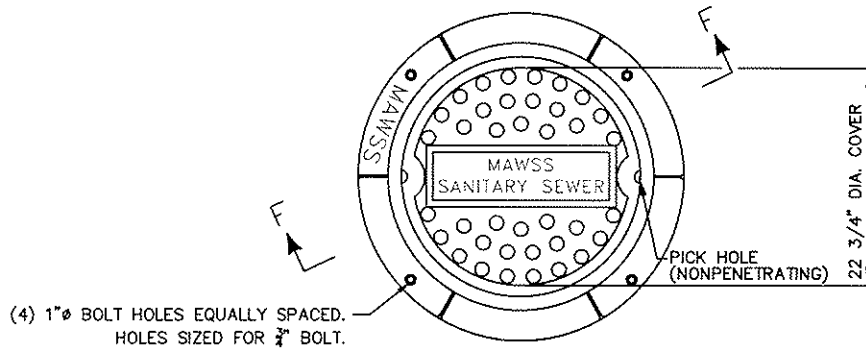
Drawing name: G:\MS712\2243 section 12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg  
 Plotted on: Mar 26, 2012 3:59pm



NOTE: THE PORTION OF THE FRAME AND COVER WHICH FORMS THE COVER SEAT SHALL BE MACHINED SO THAT NO ROCKING IS POSSIBLE.



FRAME TO MANHOLE CONNECTION DETAIL



(4) 1"Ø BOLT HOLES EQUALLY SPACED.  
HOLES SIZED FOR 3/4" BOLT.

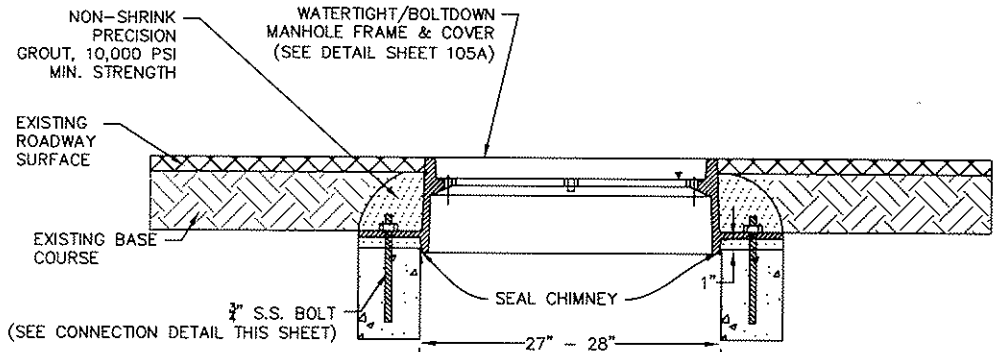
PLAN  
**TYPE I A STANDARD  
 MANHOLE FRAME & COVER  
 INSTALLATION IN ROADWAYS**  
**(FRAME GROUTED TO MANHOLE WALL)**  
 N.T.S.

MANHOLE FRAME & COVER INSTALLATION TYPES
TYPE I—INSTALLATION IN ROADWAYS IA: STANDARD FRAME & COVER (FRAME GROUTED TO MANHOLE) IB: WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME GROUTED & ANCHORED TO MANHOLE)
TYPE II—INSTALLATION IN EASEMENTS IIA— STANDARD FRAME & COVER IN NON-FLOODING EASEMENTS (FRAME GROUTED TO MANHOLE) IIB— STANDARD FRAME & COVER (FRAME ANCHORED TO MANHOLE) IIC— WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME ANCHORED TO MANHOLE)

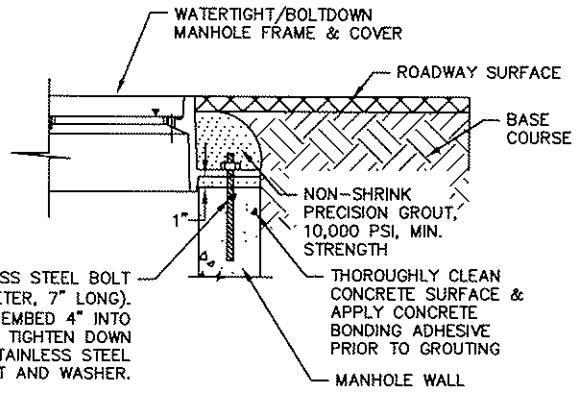


BOARD OF WATER AND SEWER  
 COMMISSIONERS OF THE CITY OF  
 MOBILE, ALABAMA

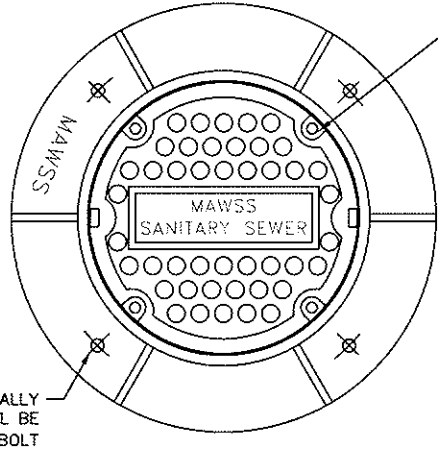
TYPICAL SANITARY SEWER DETAILS	
TYPE IA	DATE ISSUED 01-11-10
STANDARD MANHOLE INSTALLATION IN ROADWAYS	SCALE N.T.S.
	DRAWING NO. SS-105B



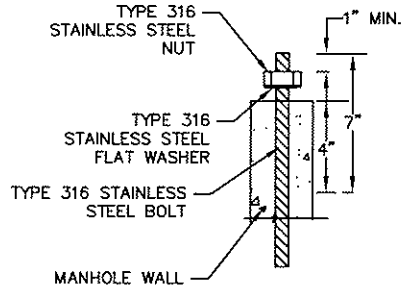
**TYPE I B**  
**WATERTIGHT/BOLTDOWN FRAME & COVER**  
**INSTALLATION IN ROADWAYS**  
 N.T.S.  
**(FRAME GROUTED & ANCHORED TO MANHOLE WALL)**



**FRAME TO MANHOLE CONNECTION DETAIL**



(4) 5/8" S.S. HEX. BOLT COURSE  
 THREAD WITH 1/8" TH. WASHER &  
 1/4" O' RING NEOPRENE GASKET.  
 USE NON SEIZE LUBRICANT ON BOLTS.



**DETAIL OF STAINLESS STEEL BOLT ASSEMBLY WITH NUT AND WASHER**

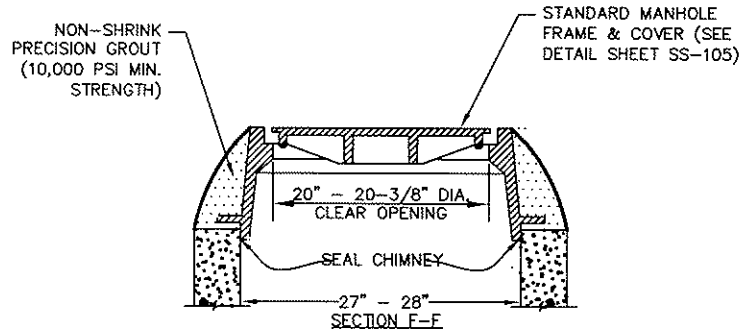
MANHOLE FRAME & COVER INSTALLATION TYPES	
TYPE I--INSTALLATION IN ROADWAYS	
IA--	STANDARD FRAME & COVER (FRAME GROUTED TO MANHOLE)
IB--	WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME GROUTED & ANCHORED TO MANHOLE)
TYPE II--INSTALLATION IN EASEMENTS	
IIA--	STANDARD FRAME & COVER IN NON-FLOODING EASEMENTS (FRAME GROUTED TO MANHOLE)
IIB--	STANDARD FRAME & COVER (FRAME ANCHORED TO MANHOLE)
IIC--	WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME ANCHORED TO MANHOLE)



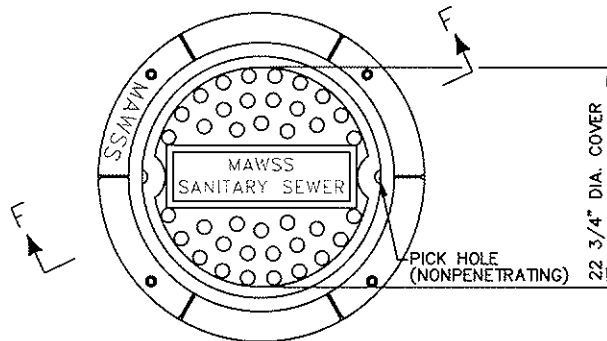
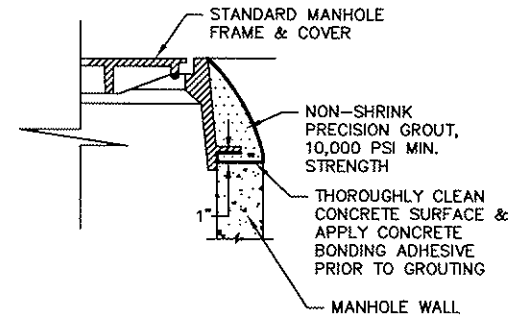
BOARD OF WATER AND SEWER  
 COMMISSIONERS OF THE CITY OF  
 MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
 TYPE I B  
 WATERTIGHT/BOLTDOWN FRAME & COVER  
 INSTALLATION IN ROADWAYS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-105C



NOTE: THE PORTION OF THE FRAME AND COVER WHICH FORMS THE COVER SEAT SHALL BE MACHINED SO THAT NO ROCKING IS POSSIBLE.



PLAN  
**TYPE II A**  
**INSTALLATION OF STANDARD**  
**MANHOLE FRAME & COVER IN NON-FLOODING EASEMENTS**  
**(FRAME GROUTED TO MANHOLE WALL)**  
N.T.S.

**NOTES**

1. UNLESS DIRECTED OTHERWISE, BOLLARDS SHALL BE REQUIRED FOR PROTECTION OF MANHOLE FRAME & COVERS WITHIN EASEMENTS. (SEE TYP. BOLLARD DETAIL SHEET)
2. RUBBER RISER ADJUSTMENT RINGS ARE ALLOWED FOR HEIGHT ADJUSTMENT OF MANHOLES WITHIN EASEMENTS. (SEE DETAILS SHEET SS-108)

**MANHOLE FRAME & COVER INSTALLATION TYPES**

- TYPE I - INSTALLATION IN ROADWAYS**
- IA - STANDARD FRAME & COVER (FRAME GROUTED TO MANHOLE)
  - IB - WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME GROUTED & ANCHORED TO MANHOLE)
- TYPE II - INSTALLATION IN EASEMENTS**
- IIA - STANDARD FRAME & COVER IN NON-FLOODING EASEMENTS (FRAME GROUTED TO MANHOLE)
  - IIB - STANDARD FRAME & COVER (FRAME ANCHORED TO MANHOLE)
  - IIC - WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME ANCHORED TO MANHOLE)

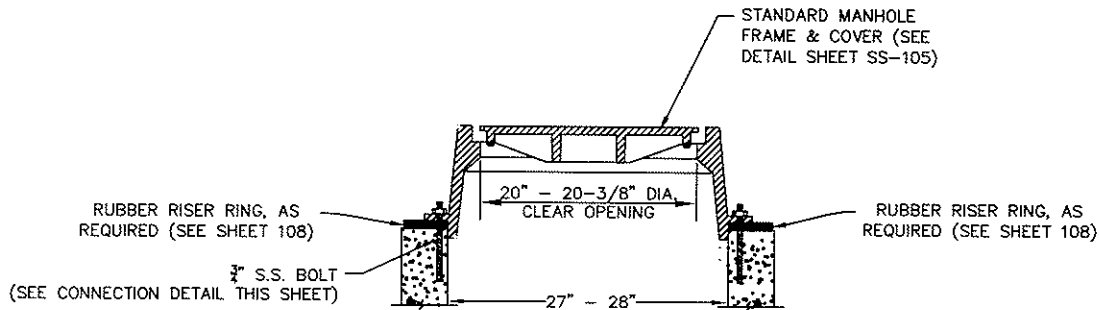


BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

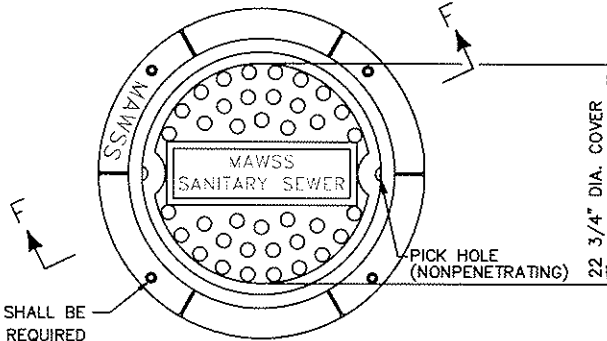
TYPICAL SANITARY SEWER DETAILS  
TYPE IIA  
STANDARD MANHOLE FRAME & COVER  
INSTALLATION IN NON-FLOODING EASEMENTS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-105D

Drawing name: C:\MS712\2243 section.12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg  
 Plotted on: Mar 26, 2012 3:59pm



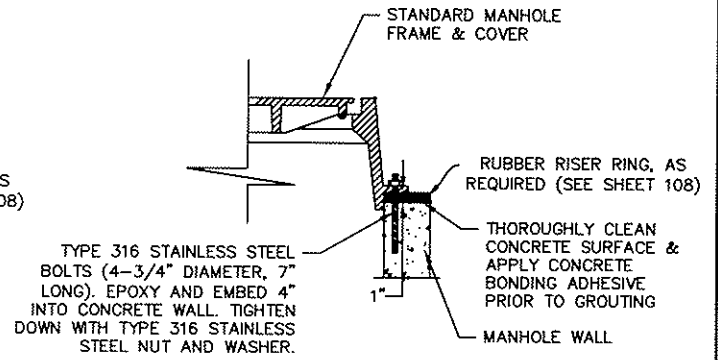
NOTE: THE PORTION OF THE FRAME AND COVER WHICH FORMS THE COVER SEAT SHALL BE MACHINED SO THAT NO ROCKING IS POSSIBLE.



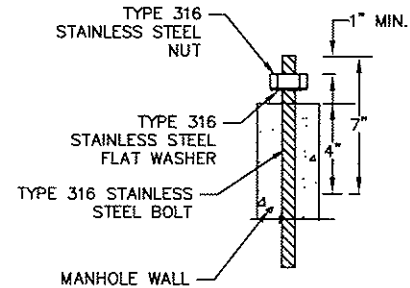
(4) 1"  $\phi$  HOLES EQUALLY SPACED. HOLES SHALL BE SIZED FOR  $\frac{3}{4}$ " BOLTS, AS REQUIRED

**PLAN**  
**TYPE II B INSTALLATION OF STANDARD**  
**MANHOLE FRAME & COVER IN FLOOD**  
**PRONE EASEMENTS**

**(FRAME ANCHORED TO MANHOLE WALL)**  
 N.T.S.



FRAME TO MANHOLE CONNECTION DETAIL



DETAIL OF STAINLESS STEEL BOLT ASSEMBLY WITH NUT AND WASHER

NOTE:  
 CHIMNEY SEAL REQ'D WHEN RUBBER RING ASSEMBLY IS NOT USED.

NOTES

- UNLESS DIRECTED OTHERWISE, BOLLARDS SHALL BE REQUIRED FOR PROTECTION OF MANHOLE FRAME & COVERS WITHIN EASEMENTS. (SEE TYP. BOLLARD DETAIL SHEET)
- RUBBER RISER ADJUSTMENT RINGS ARE ALLOWED FOR HEIGHT ADJUSTMENT OF MANHOLES WITHIN EASEMENTS. (SEE DETAILS SHEET SS-108)

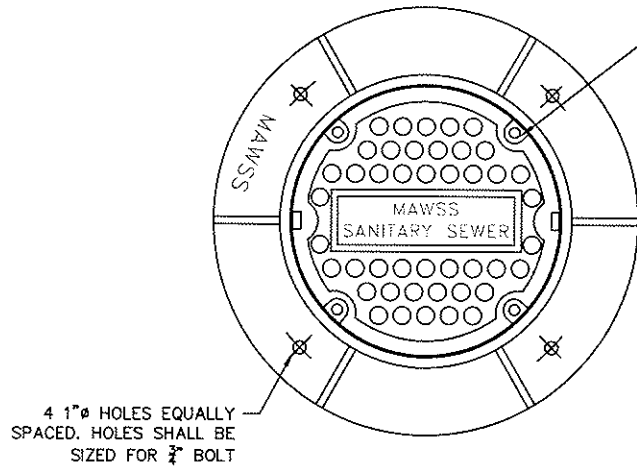
MANHOLE FRAME & COVER INSTALLATION TYPES
TYPE I—INSTALLATION IN ROADWAYS IA: STANDARD FRAME & COVER (FRAME GROUTED TO MANHOLE) IB: WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME GROUTED & ANCHORED TO MANHOLE)
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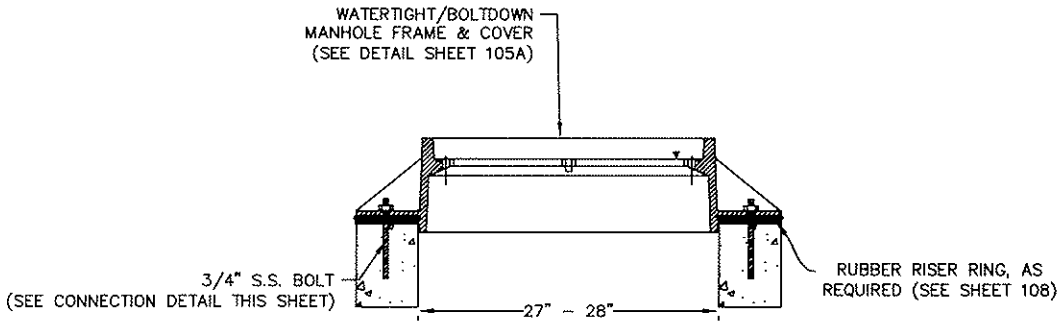
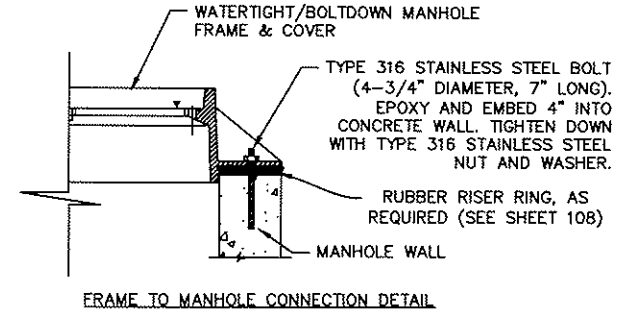
BOARD OF WATER AND SEWER  
 COMMISSIONERS OF THE CITY OF  
 MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
 TYPE IIB  
 STANDARD MANHOLE FRAME & COVER  
 INSTALLATION IN EASEMENTS PRONE TO FLOODING

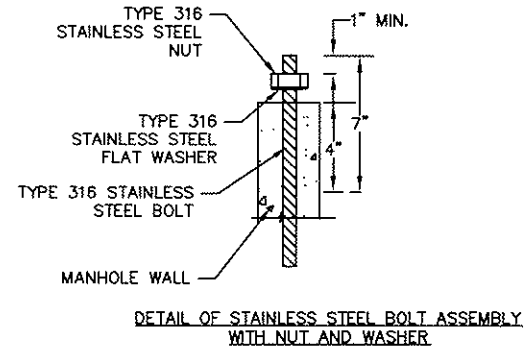
DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-105E



(4) 5/8"  $\phi$  S.S. HEX. BOLT COURSE THREAD WITH 1/8" TH. WASHER & 1/4"  $\phi$  'O' RING NEOPRENE GASKET. USE NON SEIZE LUBRICANT ON BOLTS.



**TYPE II C  
INSTALLATION OF WATERTIGHT/BOLTDOWN  
FRAME & COVER IN EASEMENTS  
N.T.S.  
(FRAME ANCHORED TO MANHOLE WALL)**



MANHOLE FRAME & COVER INSTALLATION TYPES
TYPE I - INSTALLATION IN ROADWAYS
IA - STANDARD FRAME & COVER (FRAME GROUTED TO MANHOLE)
IB - WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME GROUTED & ANCHORED TO MANHOLE)
TYPE II - INSTALLATION IN EASEMENTS
IIA - STANDARD FRAME & COVER IN NON-FLOODING EASEMENTS (FRAME GROUTED TO MANHOLE)
IIB - STANDARD FRAME & COVER (FRAME ANCHORED TO MANHOLE)
IIC - WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME ANCHORED TO MANHOLE)

**NOTES**

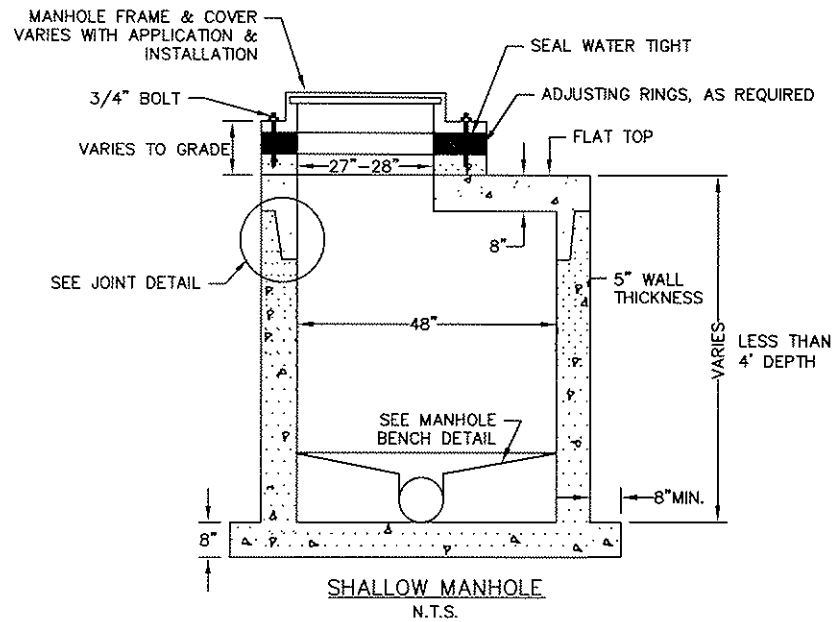
- UNLESS DIRECTED OTHERWISE, BOLLARDS SHALL BE REQUIRED FOR PROTECTION OF MANHOLE FRAME & COVERS WITHIN EASEMENTS. (SEE TYP. BOLLARD DETAIL SHEET)
- RUBBER RISER ADJUSTMENT RINGS ARE ALLOWED FOR HEIGHT ADJUSTMENT OF MANHOLES WITHIN EASEMENTS. (SEE DETAILS SHEET SS-108)



BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
TYPE IIC  
WATERTIGHT/BOLTDOWN FRAME & COVER  
INSTALLATION IN EASEMENTS

DATE ISSUED:	01-11-10
SCALE:	N.T.S.
DRAWING NO.:	SS-105F

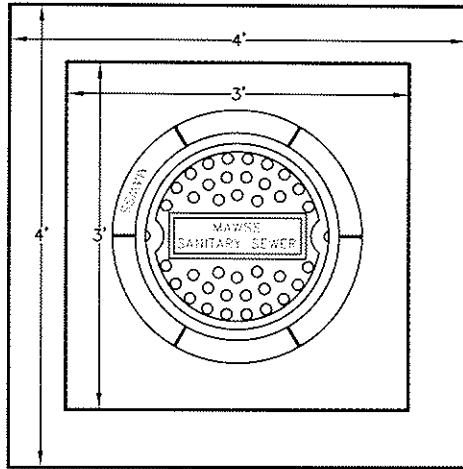


BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

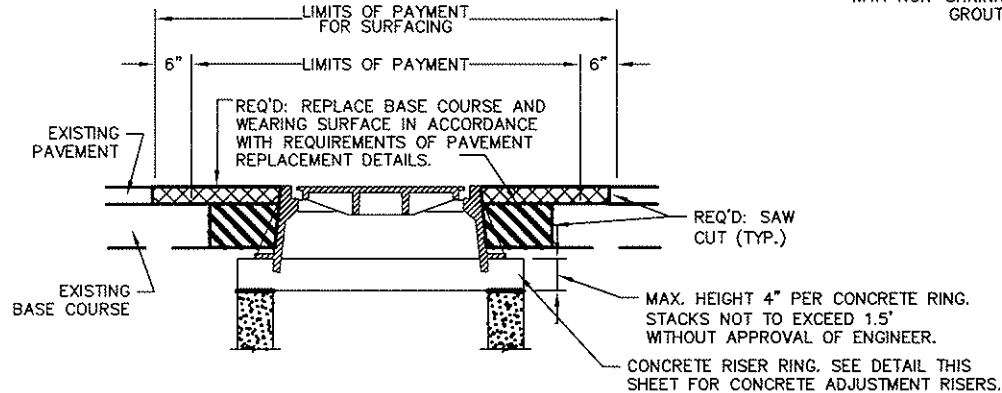
SHALLOW MANHOLE

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-106



**PLAN VIEW**

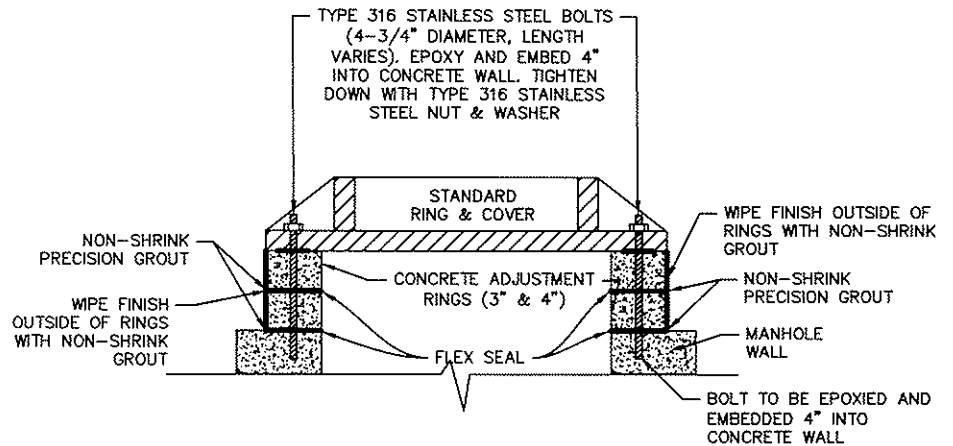
N.T.S.



**MANHOLE HEIGHT ADJUSTMENT DETAIL IN ROADWAY**

N.T.S.

1. ADJUST MANHOLE COVER TO BE FLUSH WITH EXISTING GRADE, UNLESS OTHERWISE NOTED.
2. ADJUST BY USING PRECAST CONCRETE ADJUSTING RING.
3. IF ONLY 1"–2" ADJUSTMENT IS NECESSARY, A CAST IRON MANHOLE ADJUSTMENT RING FOR USF MODEL NO. 2300 OR APPROVED EQUAL MAY BE USED.
4. STAINLESS STEEL BOLTS WILL NOT BE REQUIRED IN ROADWAY UNLESS NOTED BY ENGINEER OR IN PLANS. (BOLTS PERMISSIBLE FOR USE IN EASEMENT APPLICATIONS ONLY)



**CONCRETE ADJUSTMENT RISER RING DETAIL**

N.T.S.

**NOTES**

1. CONCRETE ADJUSTING RING SURFACES SHALL BE CLEANED PRIOR TO APPLYING GROUT.
2. LATEX BASED CONCRETE BONDING ADHESIVE SHALL BE APPLIED TO CONCRETE SURFACES TO BE JOINED WITH GROUT.
3. FRAME SHALL BE SET ON CONCRETE ADJUSTING RING IN A BED OF NON-SHRINK PRECISION GROUT.
4. NON-SHRINK PRECISION GROUT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 10,000 PSI.
5. CONCRETE RING SHALL BE CONCENTRICALLY PLACED ABOUT THE CENTER OF MANHOLE WITH VERTICAL SIDEWALLS.
6. WIPE FINISH EXTERIOR WALLS WITH NON-SHRINK GROUT.
7. APPLY FLEX SEAL TO INNER RISER RING SURFACE & FRAME.
8. CONTRACTOR SHALL USE THE FEWEST NUMBER OF RISER RINGS AS NECESSARY TO ACHIEVE THE DESIRED HEIGHT.



BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

MANHOLE HEIGHT ADJUSTMENT  
WITH CONCRETE ADJUSTMENT RISER RING

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-107

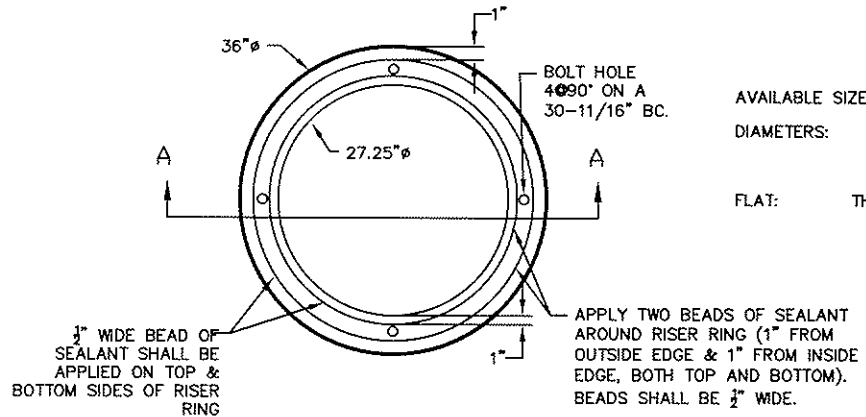
Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg Plotted on: Mar 26, 2012 -- 3:59pm

**INFRA-RISER PRODUCT SPECIFICATIONS:**

1. POLYURETHANE PREPOLYMER
2. COLOR: BLACK
3. SHORE HARDNESS 75A +/- 7 POINTS
4. TENSILE STRENGTH MINIMUM 1.0 MPa
5. INITIAL COMPRESSION DEFORMATION 2.9%
6. COMPRESSION SET 1.5%
7. BRITTLENESS AT LOW TEMPERATURE -40 C
8. COEFFICIENT OF THERMAL EXPANSION 12.95 X 10<sup>-5</sup>

**NOTES:**

1. MAXIMUM HEIGHT OF RUBBER RINGS IS 3". STACKS SHALL NOT EXCEED TWO RINGS OR 6" IN TOTAL HEIGHT.
2. TWO BEADS OF POLYURETHANE SEALANT ( $\frac{1}{2}$ " WIDE) SHALL BE APPLIED ON BOTH SIDES OF RING WITH EACH BEAD AT A DISTANCE OF 1" FROM INNER & OUTER EDGES.
3. USE OF RUBBER RINGS FOR ADJUSTING MANHOLES IN ROADWAYS IS NOT PERMISSIBLE.

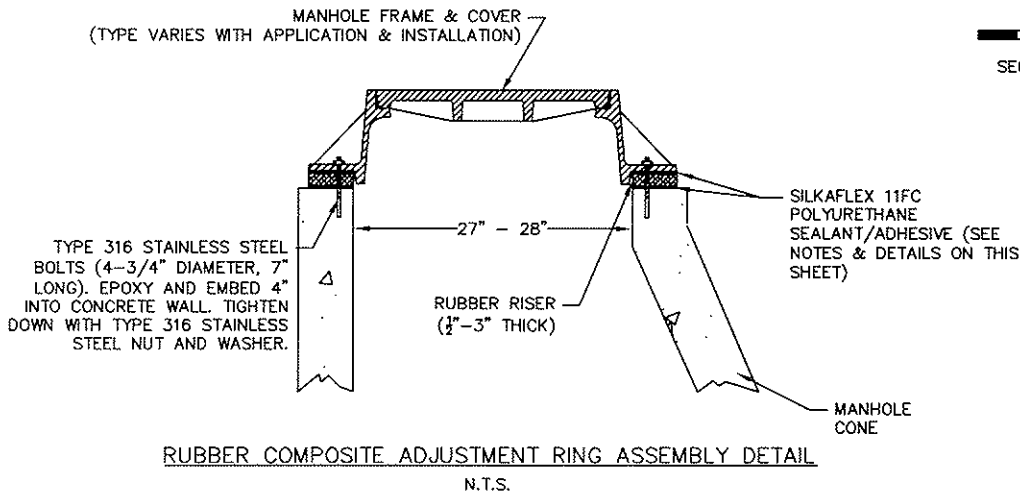
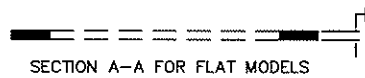


**AVAILABLE SIZES:**

DIAMETERS:	ID.	OD.
	27.25"	36.00"
FLAT:	THICKNESS	
	H= .050	
	H= 1.00	
	H= 1.50	
	H= 2.00	
	H= 2.50	
	H= 3.00	

$\frac{1}{2}$ " WIDE BEAD OF SEALANT SHALL BE APPLIED ON TOP & BOTTOM SIDES OF RISER RING

APPLY TWO BEADS OF SEALANT AROUND RISER RING (1" FROM OUTSIDE EDGE & 1" FROM INSIDE EDGE, BOTH TOP AND BOTTOM). BEADS SHALL BE  $\frac{1}{2}$ " WIDE.



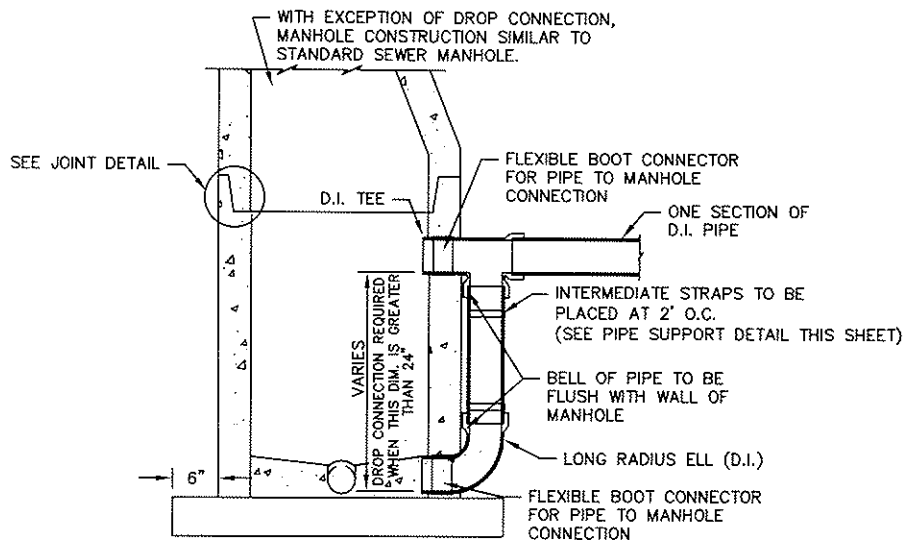
BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

MANHOLE HEIGHT WITH RUBBER  
ADJUSTMENT RISER RING

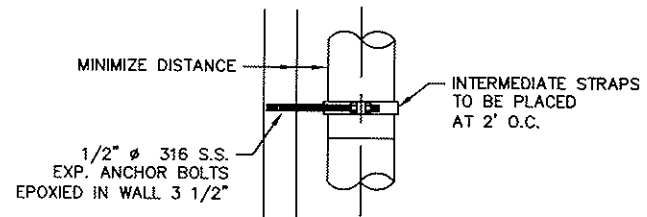
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DRAWING NO:	SS-108

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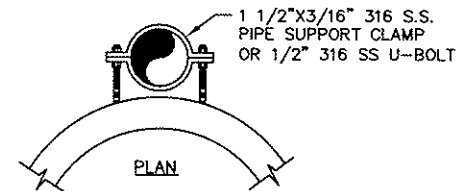


DETAIL OF DROP CONNECTION  
OUTSIDE OF MANHOLE

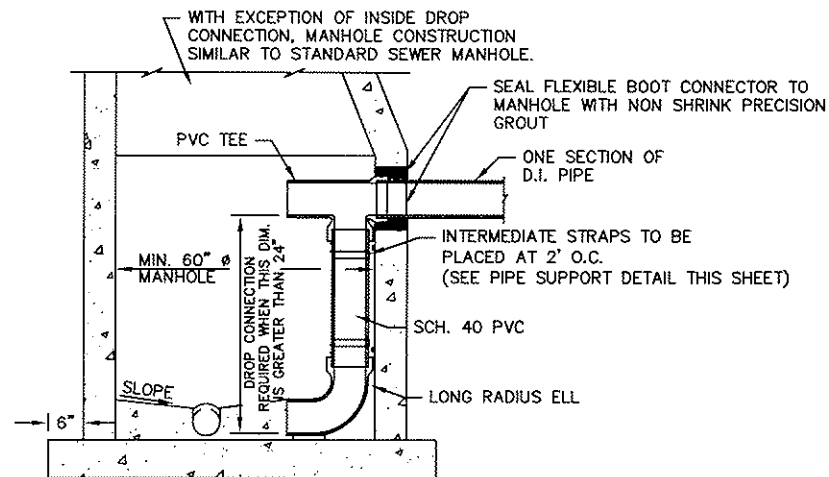
AN ACCEPTABLE ALTERNATE IS A  
PRE-CAST DROP MANHOLE  
WITH EXTERNAL DROP COLUMN, MANUFACTURED BY  
UNIVERSAL PRE-CAST, OR EQUAL  
N.T.S.



SECTION



PIPE SUPPORT DETAILS  
N.T.S.



DETAIL OF DROP CONNECTION  
INSIDE OF MANHOLE  
N.T.S.



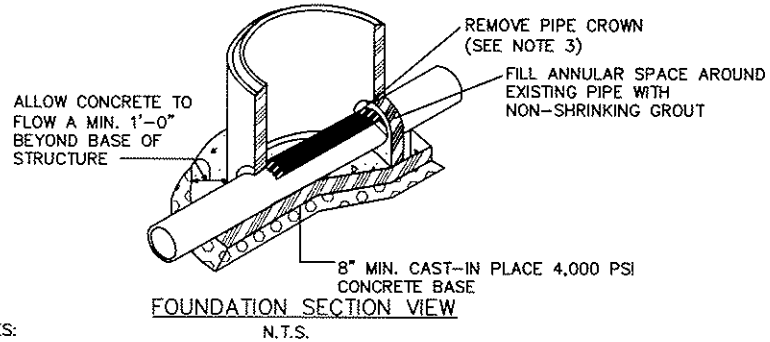
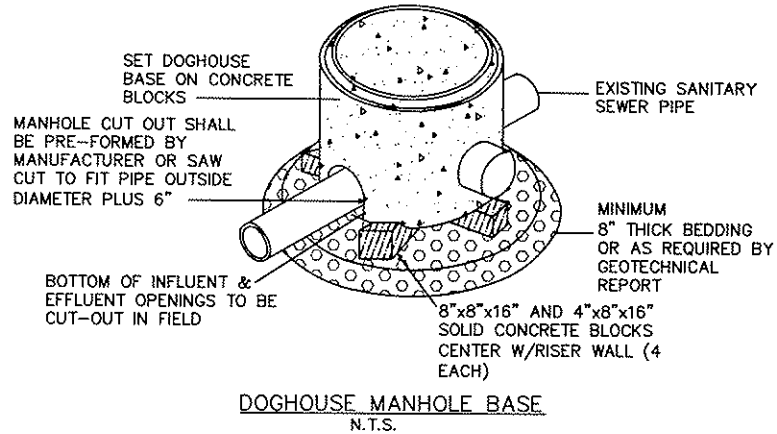
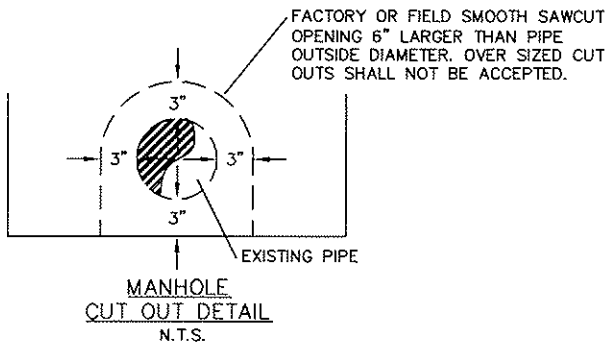
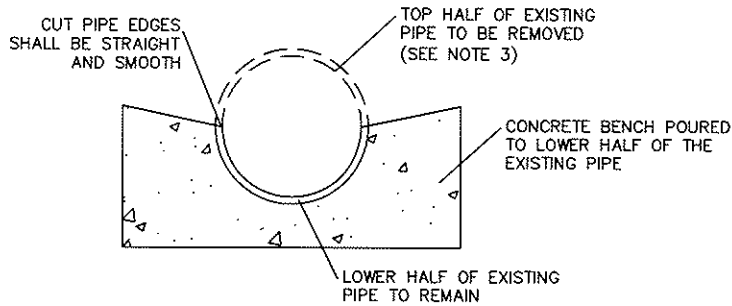
BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

MANHOLE DROP CONNECTION

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-109

PRECAST CONCRETE MANHOLE BASES SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 12.04 OF THESE SPECIFICATIONS



NOTES:

1. CONSTRUCT A FORMED INVERT FROM NEW SEWER LINE TO ALLOW FLOW TO THE EXISTING PIPE.
2. POUR A BENCH TO THE LOWER HALF OF THE EXISTING PIPE.
3. CUT AND REMOVE THE TOP HALF OF EXISTING PIPE TO WITHIN 6" OF THE MANHOLE WALLS AFTER THE INVERT AND BENCH HAVE BEEN FORMED AND THE MANHOLE HAS BEEN FULLY TESTED IN ACCORDANCE WITH THESE SPECIFICATIONS. PIPE CUTS AT FLOW CHANNEL SHALL BE STRAIGHT & SMOOTH. ALL JAGGED & IRREGULAR EDGES OF PIPE SHALL BE REMOVED.
4. FINAL INVERT SHALL CONFORM TO MANHOLE BENCH STANDARD DETAIL.
5. UPON COMPLETION OF MANHOLE INSTALLATION, THE INSIDE OF THE MANHOLE SHALL BE COATED WITH A CEMENTIOUS BASE MIX IN ACCORDANCE WITH THE REQUIREMENT OF STANDARD SPECIFICATION SECTION 19, UNLESS OTHERWISE DIRECTED BY THE OWNER OR ENGINEER.

TYPICAL MANHOLE BASE  
SHOWING "DOGHOUSE" INSTALLATION



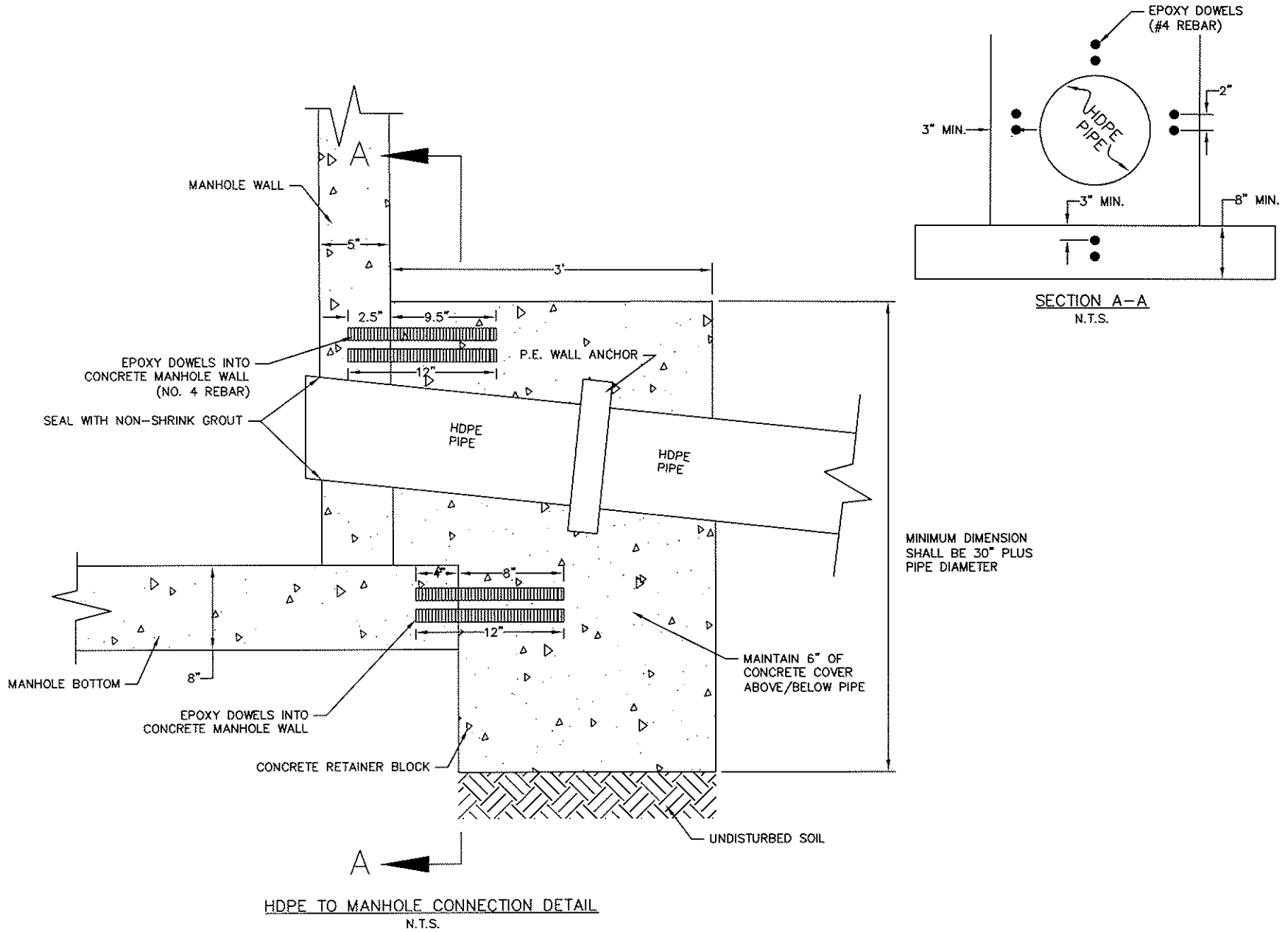
BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

DOGHOUSE MANHOLE DETAILS

DATE ISSUED  
01-11-10  
SCALE:  
N.T.S.  
DRAWING NO.  
SS-110

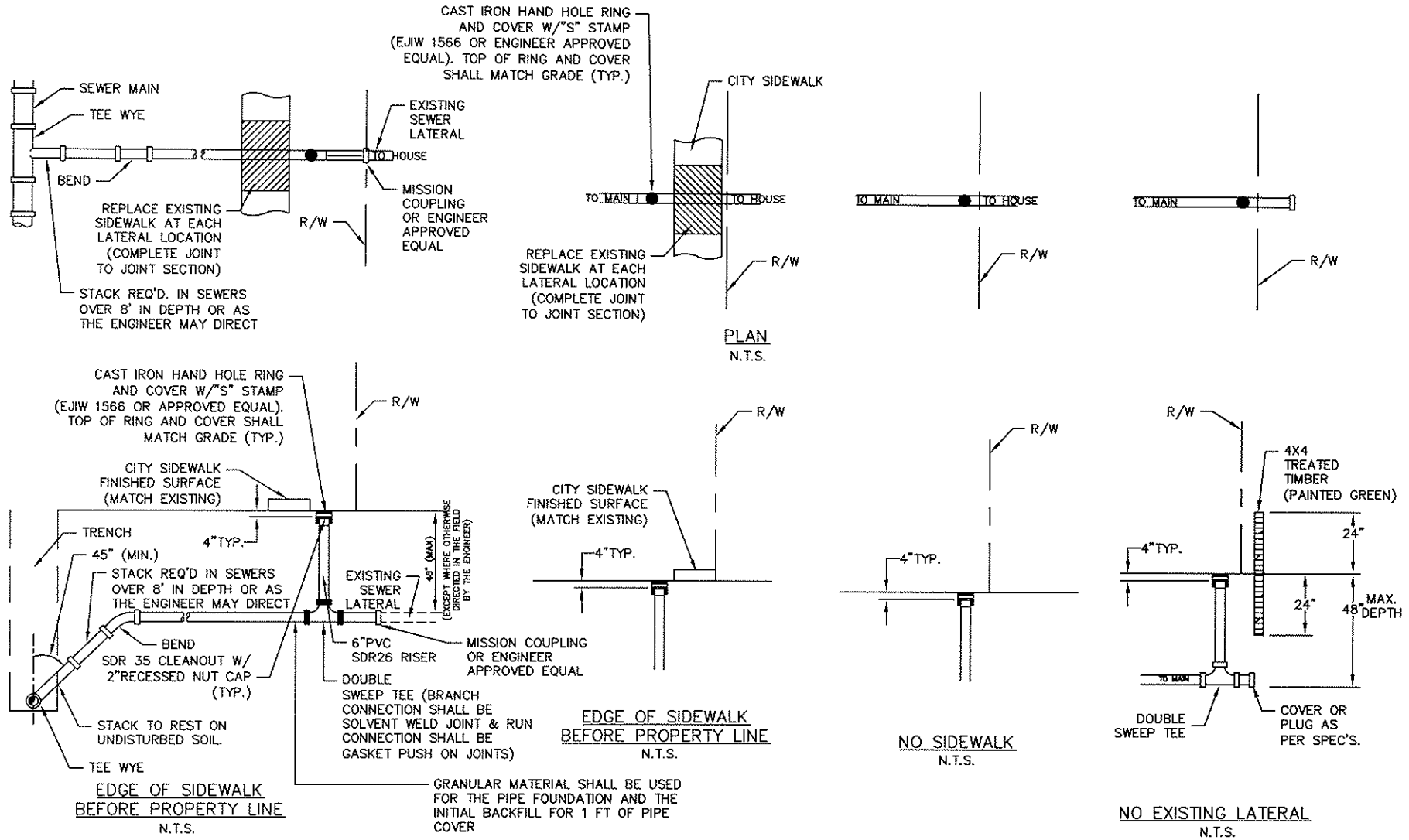
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BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
HDPE TO MANHOLE CONNECTION DETAILS

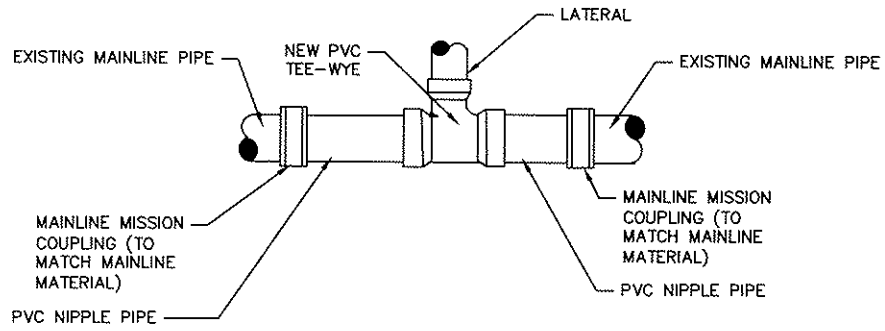
DATE ISSUED: 01-11-10
SCALE: N.T.S.
DRAWING NO. SS-111



- NOTE:
- GRAVITY LATERALS SHALL BE OF SDR 26 6" PVC PIPE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
  - DOUBLE SWEEP TEE SHALL BE GASKET RUN JOINTS BY SOLVENT WELD BRANCH JOINTS
  - NON SEIZE GREASE, SUITABLE FOR USE WITH PVC, SHALL BE APPLIED TO THE THREADS OF THE CLEANOUT CAP.
  - CONNECTION OF LATERALS TO EXISTING PIPE SHALL BE PROVIDED BY CUTTING IN TEES/TEE-WYES.
  - WHERE SEWER MAIN IS OF HEAVY WALL PVC C900, THE CONNECTION OF LATERALS TO THE EXISTING PIPE SHALL BE WITH GASKETED PVC C900 45° WYE.

ELEVATIONS  
TYPICAL TEE & LATERAL INSTALLATION  
N.T.S.

	BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED 01-11-10
		SANITARY SEWER LATERAL CONNECTION DETAILS	SCALE: N.T.S. DRAWING NO. SS-112



CUT - IN TEE  
N.T.S.

NOTE:  
 • LENGTH SHALL VARY TO MEET ACTUAL FIELD CONDITION.

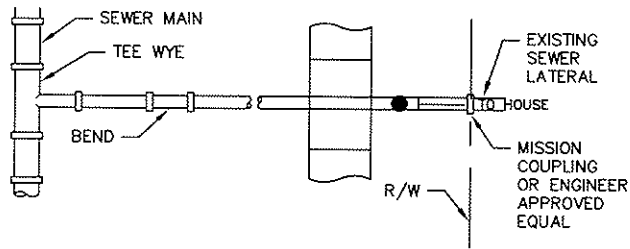


BOARD OF WATER AND SEWER  
 COMMISSIONERS OF THE CITY OF  
 MOBILE, ALABAMA

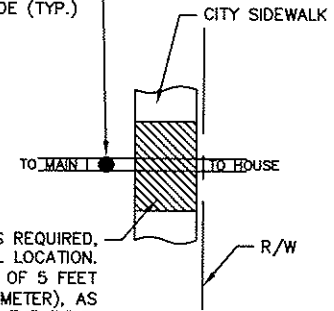
TYPICAL SANITARY SEWER DETAILS  
 SANITARY SEWER LATERAL CONNECTION DETAILS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-112A

Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg Plotted on: Mar 26, 2012 - 3:59pm

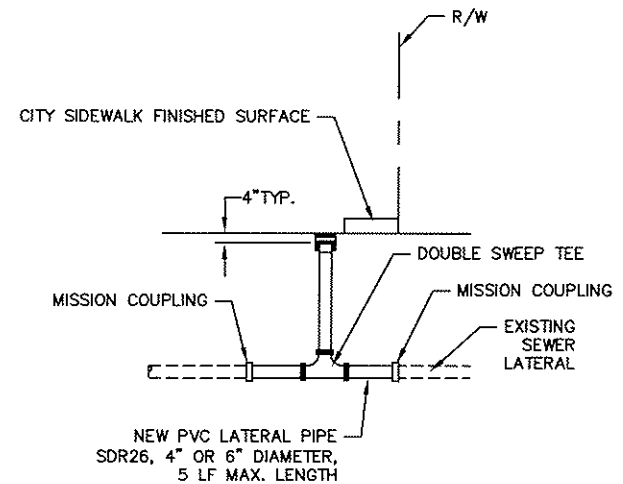
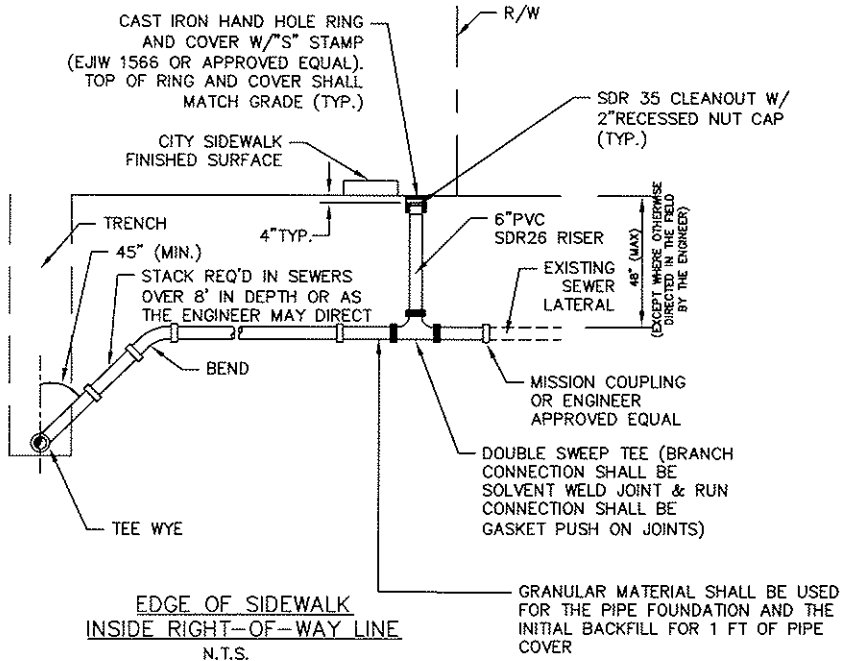


CAST IRON HAND HOLE RING AND COVER W/"S" STAMP (EJW 1566 OR ENGINEER APPROVED EQUAL). TOP OF RING AND COVER SHALL MATCH GRADE (TYP.)



REMOVE EXISTING SIDEWALK PANELS, AS REQUIRED, AT EACH LATERAL LOCATION. INSTALL 6" CLEANOUT AND A MAXIMUM OF 5 FEET OF LATERAL PIPE (4" OR 6" DIAMETER), AS REQUIRED IN THE FIELD. TEMPORARY ASPHALT TO BE INSTALLED BY THE CONTRACTOR, UPON COMPLETION. PERMANENT CONCRETE SIDEWALK TO BE REPLACED BY THE OWNER.

**PLAN**  
N.T.S.



**ELEVATIONS**  
TYPICAL TEE & LATERAL INSTALLATION  
N.T.S.

- NOTE:**
- GRAVITY LATERALS SHALL BE OF SDR 26 6" PVC PIPE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
  - DOUBLE SWEEP TEE SHALL BE GASKET RUN JOINTS BY SOLVENT WELD BRANCH JOINTS
  - NON SEIZE GREASE, SUITABLE FOR USE WITH PVC, SHALL BE APPLIED TO THE THREADS OF THE CLEANOUT CAP.
  - CONNECTION OF LATERALS TO EXISTING PIPE SHALL BE PROVIDED BY CUTTING IN TEES/TEE-WYES.
  - ALL LATERAL PIPE SHALL BE INSTALLED TO THE RIGHT-OF-WAY LINE.

**ELEVATIONS**  
TYPICAL TEE & LATERAL INSTALLATION  
N.T.S.



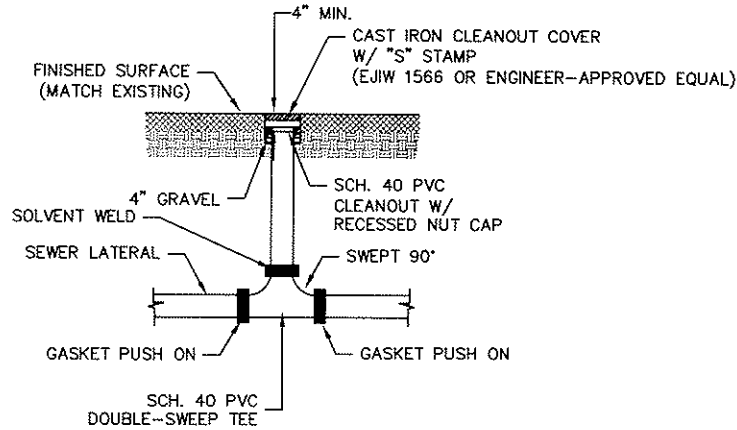
BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

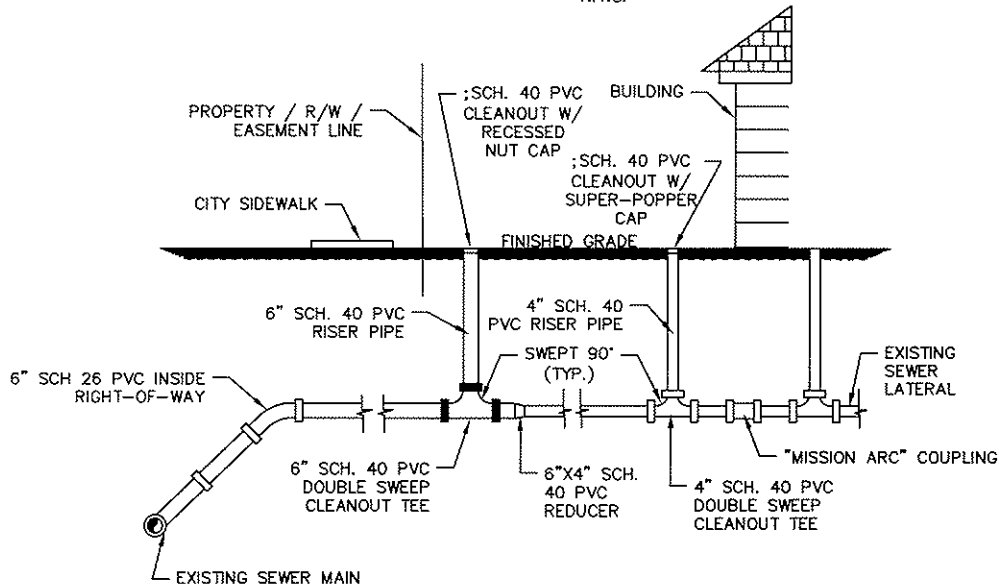
SANITARY SEWER CIPP LATERAL DETAILS

DATE ISSUED: 01-27-12  
SCALE: N.T.S.  
DRAWING NO: SS-112B

Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg Plotted on: Mar 26, 2012 3:59pm



TRAFFIC-BEARING SURFACE  
CLEANOUT DETAIL  
N.T.S.



PRIVATE SANITARY SEWER LATERAL DETAIL  
N.T.S.

**NOTES:**

1. A CLEANOUT SHALL BE PLACED AT THE PROPERTY / RIGHT-OF-WAY / EASEMENT LINE AND WITHIN 2' TO 5' OF BUILDING OR AS APPROVED BY THE ENGINEER. CLEANOUTS PLACED AT THE BUILDINGS SHALL HAVE DOUBLE-SWEEP TEES & SUPER-POPPER CAP PER CITY OF MOBILE PLUMBING CODES.
2. A CAST IRON CLEANOUT COVER AS SHOWN IN DETAIL ABOVE SHALL BE INSTALLED IN DRIVEWAYS AND OTHER TRAFFIC-BEARING SURFACES.
3. DETAILS SHOWN ABOVE ARE TYPICAL FOR AN EXISTING 4" LATERAL LINE SIZES AND ALL ASSOCIATED ITEMS INCLUDING FITTINGS AND TEES SHALL BE EITHER 4" OR 6", AS APPROPRIATE.
4. DOUBLE SWEEP TEE SHALL BE GASKET RUN JOINTS BY SOLVENT WELD BRANCH JOINTS.

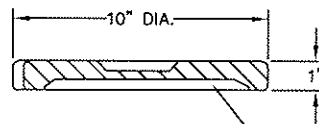
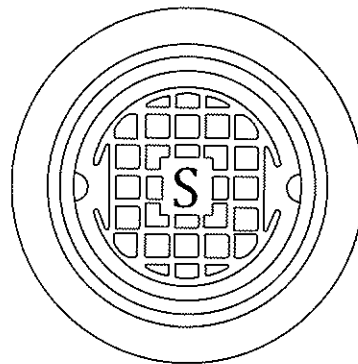


BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

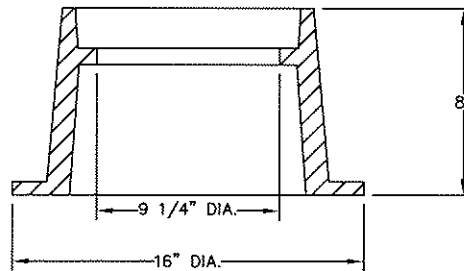
PRIVATE LATERAL CONNECTION DETAILS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-113



**COVER SECTION**  
N.T.S.

EAST JORDAN, IRON  
WORKS 1566, MONUMENT  
BOX, HANDHOLE RING  
AND COVER, OR EQUAL



**RING SECTION**  
N.T.S.

**RING—40 LBS.**  
**COVER—25 LBS.**

**HAND HOLE RING & COVER DETAIL FOR 6" CLEANOUT**  
N.T.S.

NOTE:

FOR 4" CLEANOUT U.S. FOUNDRY MODEL  
NO. 7610 OR EQUAL SHALL BE USED.

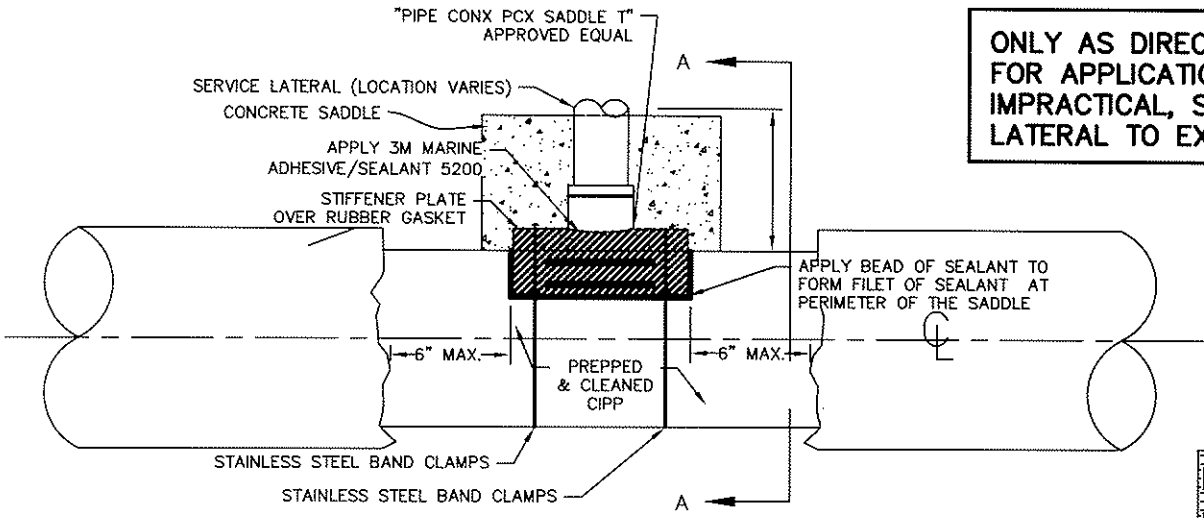


BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

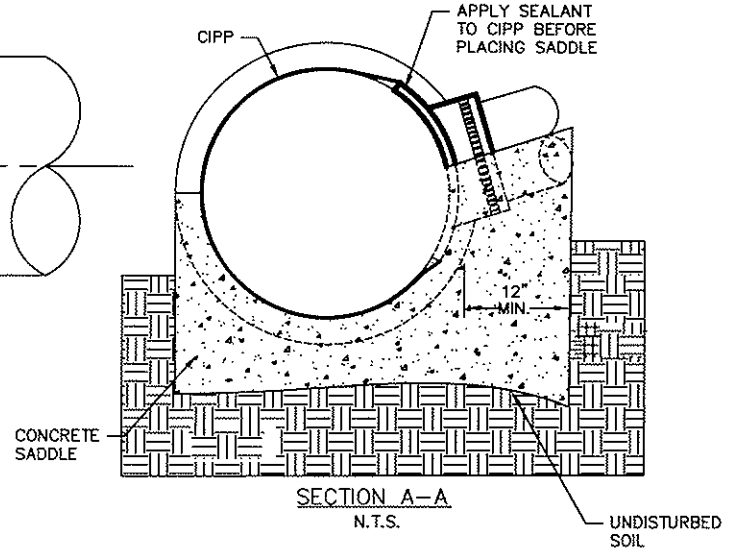
SANITARY SEWER  
HANDHOLE RING AND COVER DETAILS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-114



SERVICE CONNECTION TO CIPP LINED S.S. MAINS  
N.T.S.

ONLY AS DIRECTED/APPROVED BY THE OWNER & FOR APPLICATIONS WHERE THE USE OF TEE-WYE IS IMPRACTICAL, SADDLES MAYBE USED TO CONNECT LATERAL TO EXISTING CIPP MAINLINE.

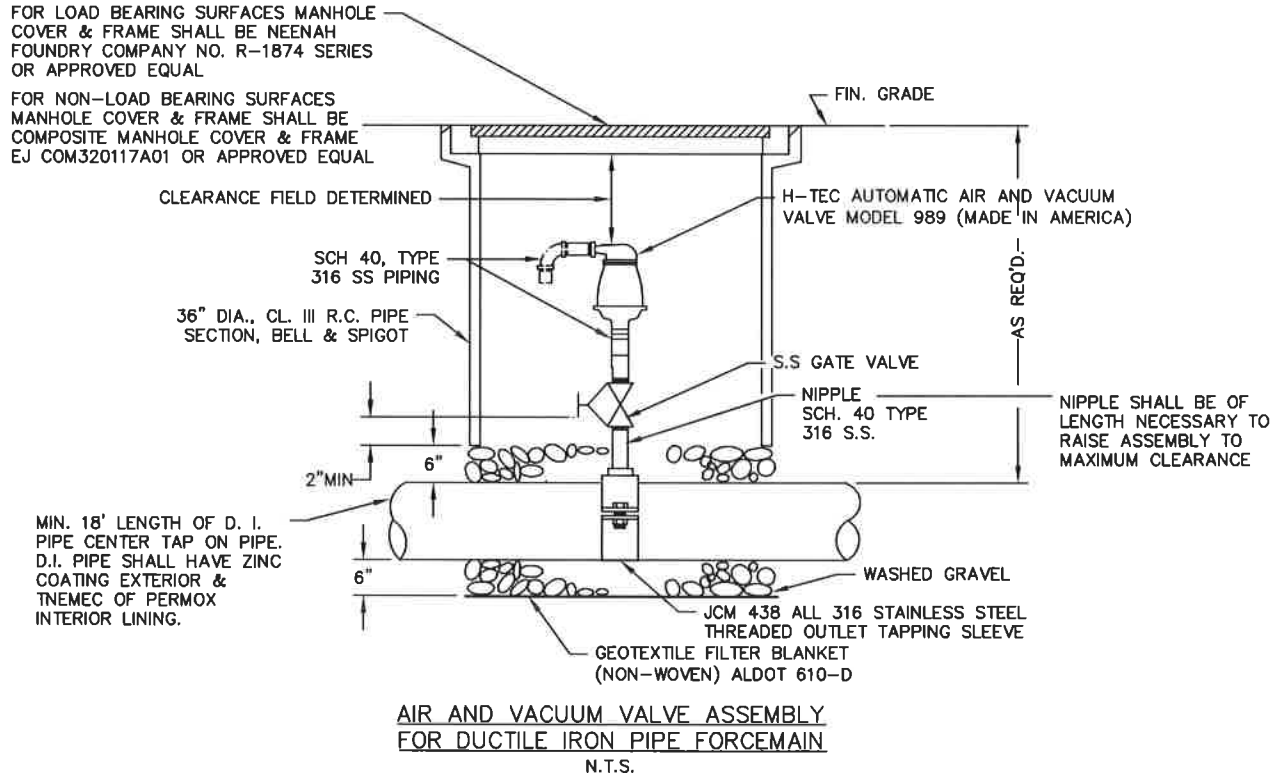


SECTION A-A  
N.T.S.

SERVICE CONNECTION NOTES:

1. REMOVE HOST PIPE FROM CIPP WITHOUT DAMAGING CIPP LINER.
2. THE LENGTH OF THE REMOVED HOST PIPE SHALL NOT EXCEED 6" BEYOND THE PERIMETER OF THE SADDLE. REMOVAL OF SOIL BENEATH THE PIPE SHALL BE MINIMAL.
3. FOR A NEW SERVICE INSTALLATION, A HOLE SAW OF PROPER DIAMETER FOR THE SADDLE SHALL BE USED TO CUT THE LINER. SEE SADDLE INSTALLATION DIRECTIONS FROM SADDLE MANUFACTURER TO IDENTIFY PROPER HOLE SIZE. IF THE LINER HAS AN EXISTING CUT-OUT BY THE CIPP INSTALLER, MAKE THE CUT-OUT AS CIRCULAR AS POSSIBLE. THE EDGES OF ANY CUT IN THE LINER SHALL NOT BE JAGGED AND SHALL BE SANDED FREE OF BURRS OR ANY OTHER EXTRANEIOUS MATERIAL.  
IF THE EXISTING CUT-OUT IN THE CIPP IS FOR A WYE, IS OBLONG OR EXCEEDS 6.5" IN DIAMETER, A FITTING MUST BE CUT INTO THE CIPP FOR THE LATERAL INSTALLATION. DO NOT USE A SADDLE.
4. ALL SOIL, DEBRIS, OILS, LOOSE MATERIAL AND OTHER CONTAMINANTS SHALL BE REMOVED FROM THE CIPP LINER TO ENSURE PROPER ADHESION OF SEALANT. THE CIPP SHALL BE DRY WHEN SEALANT IS APPLIED.
5. PLACE THE SADDLE ON THE CIPP WITH THE SADDLE OPENING PROPERLY POSITIONED OVER THE CUT-OUT IN THE CIPP. ENSURE THE SADDLE IS CLEAN OF SOIL, DEBRIS, OILS, LOOSE MATERIAL, ETC. THE PROTRUDING RIDGE AROUND THE INSIDE OF THE SADDLE HOLE SHALL BE PLACED WITHIN THE CIPP CUT-OUT. THE RIDGE SHALL BE BEARING AGAINST THE BOTTOM OF THE CUT-OUT TO HELP PREVENT THE SADDLE FROM SLIPPING DOWNWARD. ONCE THE SADDLE IS POSITIONED, MARK ON THE CIPP THE OUTER PERIMETER OF THE SADDLE. REMOVE THE SADDLE.
6. APPLY 3M MARINE ADHESIVE/SEALANT 5200 (OR ENGINEER APPROVED EQUAL) TO THE SURFACE OF THE CIPP WITHIN THE MARKED PERIMETER ON THE PIPE. USE A TROWEL OR SOME OTHER TOOL TO COVER THE ENTIRE SURFACE WITHIN THE MARKED PERIMETER WITH ADHESIVE/SEALANT TO A THICKNESS NOT EXCEEDING 1/4".
7. PLACE THE SADDLE ON THE CIPP IN THE LOCATION IDENTIFIED BY THE MARKED PERIMETER. INSTALL STIFFENER PLATE AND STAINLESS STEEL STRAPS. ENSURE STAINLESS STEEL STRAPS MEET TORQUE REQUIREMENTS OF SADDLE MANUFACTURER.
8. APPLY A BEAD OF ADHESIVE/SEALANT TO PERIMETER OF SADDLE TO FORM A FILLET AROUND THE PERIMETER OF THE SADDLE.
9. APPLY 3M MARINE ADHESIVE/SEALANT 5200 TO THE OUTSIDE OF THE SPICKET ENT OF THE LATERAL, THEN INSERT THE LATERAL INTO THE BELL OF THE TEE-SADDLE.
10. AFTER LATERAL PIPE IS CONNECTED TO SADDLE AND ON PROPER GRADE, POUR A CONCRETE SADDLE UNDER THE MAIN PIPE AND THE LATERAL CONNECTION AS SHOWN. CONCRETE SHALL BE THOROUGHLY MIXED WITH WATER BEFORE PLACEMENT. POURING DRY MIX INTO EXCAVATION AND WETTING WITH WATER AFTERWARD IS UNACCEPTABLE.
11. ALLOW ADEQUATE TIME, PER MANUFACTURER'S RECOMMENDATIONS, FOR SEALANT TO CURE AND CONCRETE SET BEFORE BACKFILLING EXCAVATION.

	BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED 01-11-10
	LATERAL CONNECTION TO CIPP SEWER MAIN DETAILS	SCALE: N.T.S.	DRAWING NO. SS-115

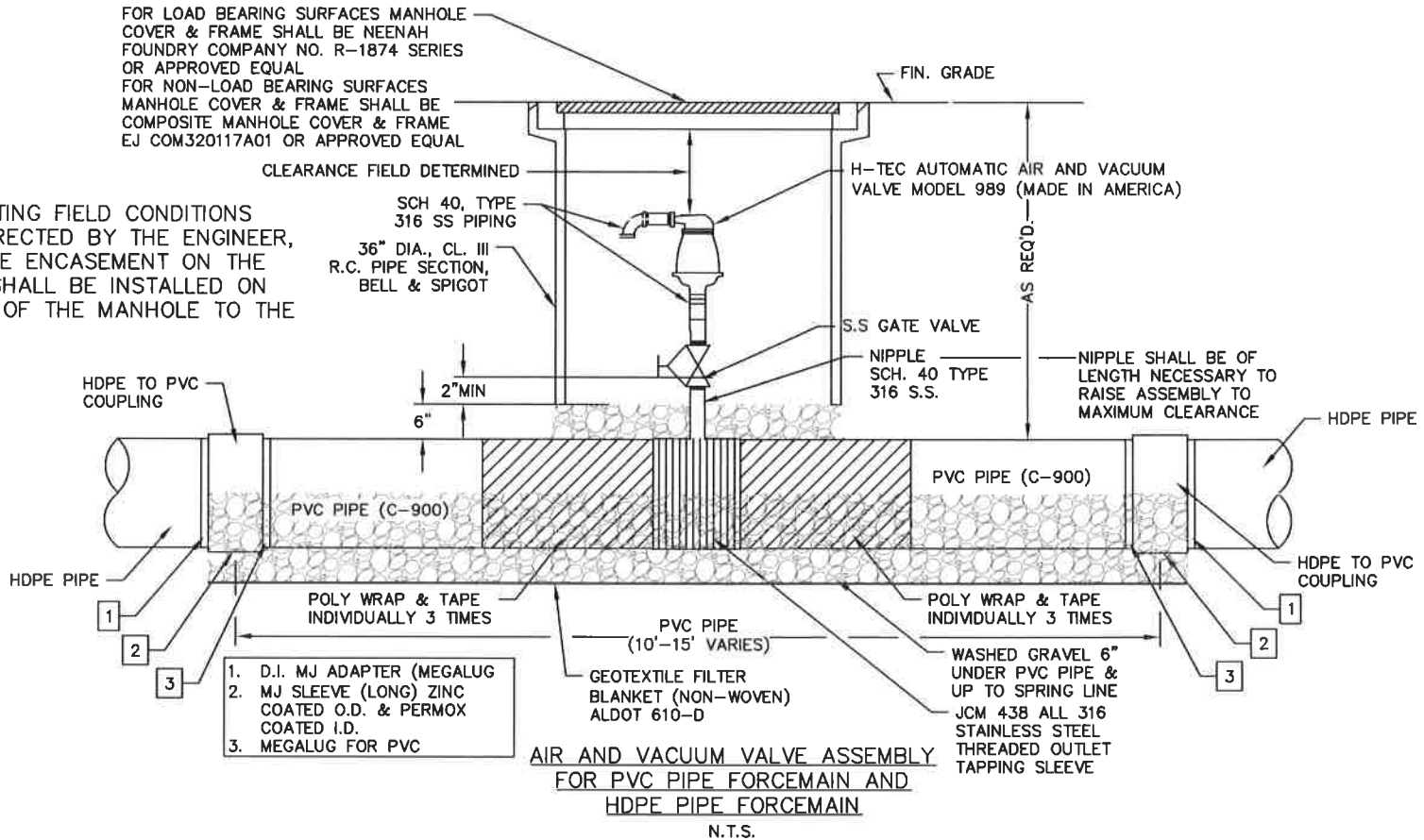


BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
AIR AND VACUUM VALVE ASSEMBLY AND FORCE MAIN CONNECTION TO MANHOLE DETAILS

REVISED ON	07-03-23
DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-116

NOTE:  
GIVEN EXISTING FIELD CONDITIONS  
AND AS DIRECTED BY THE ENGINEER,  
A CONCRETE ENCASEMENT ON THE  
PVC PIPE SHALL BE INSTALLED ON  
EACH SIDE OF THE MANHOLE TO THE  
COUPLINGS.



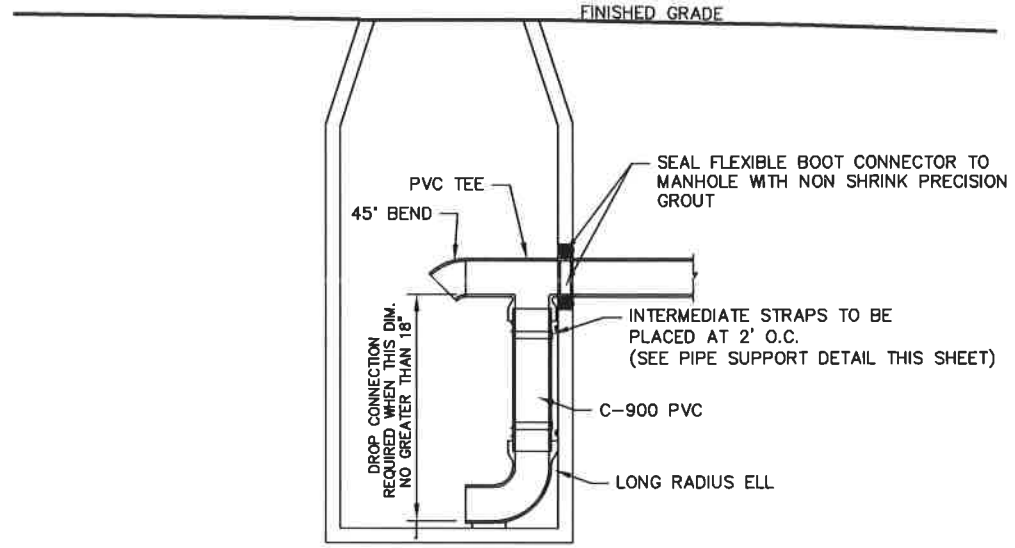
BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

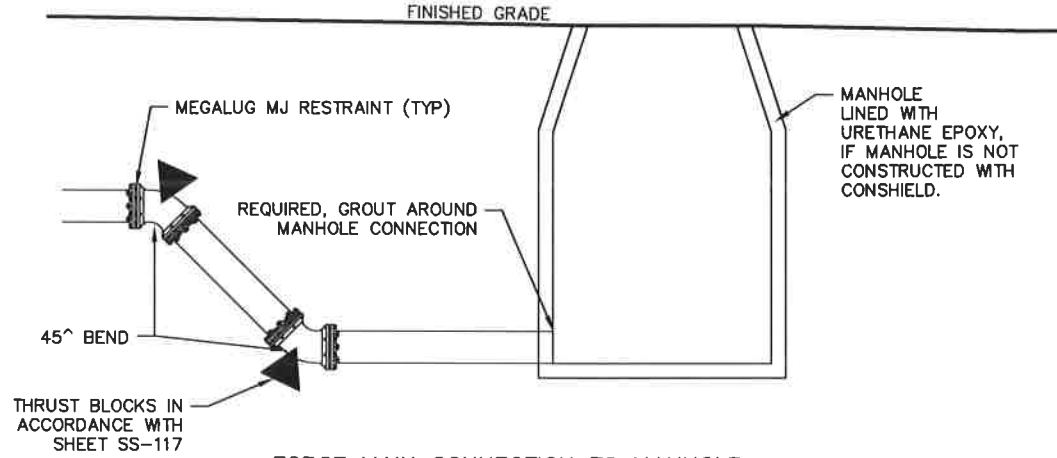
AIR AND VACUUM VALVE ASSEMBLY AND  
FORCE MAIN CONNECTION TO MANHOLE DETAILS

REVISED ON	07-03-23
DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-116A

Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_3.dwg Plotted on: Jun 26, 2023 - 1:00pm



FORCE MAIN CONNECTION TO MANHOLE  
4' DEEP OR GREATER  
 N.T.S.



FORCE MAIN CONNECTION TO MANHOLE  
4' DEEP OR LESS  
 N.T.S.



BOARD OF WATER AND SEWER  
 COMMISSIONERS OF THE CITY OF  
 MOBILE, ALABAMA

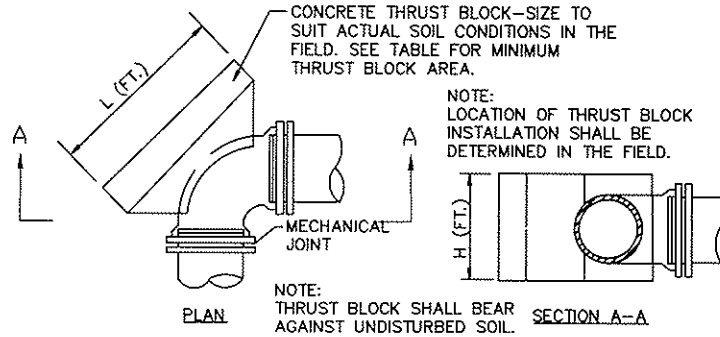
TYPICAL SANITARY SEWER DETAILS  
 FORCE MAIN CONNECTION TO MANHOLE DETAILS

REVISED ON	07-03-23
DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-116B

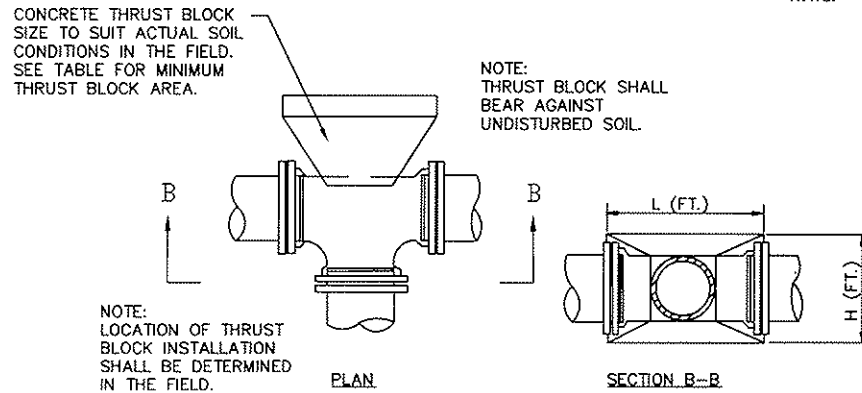
TYPICAL THRUST BLOCKS			
MINIMUM THRUST BLOCK AREA SQ. FT. L (FT.) X H (FT.)			
INSIDE DIA. PIPE LINE IN INCHES	90° BENDS	TEES, DEAD ENDS, OR 45° BENDS	22½° BENDS
6"	3.0	2.2	1.0
8"	5.5	4.0	1.5
10"	8.5	6.0	2.5
12"	12.0	9.0	3.5
16"	22.0	16.0	6.0
18"	27.0	20.0	8.0
20"	34.0	24.0	10.0
24"	48.0	34.0	14.0
30"	75.0	53.0	21.0

**NOTE:**

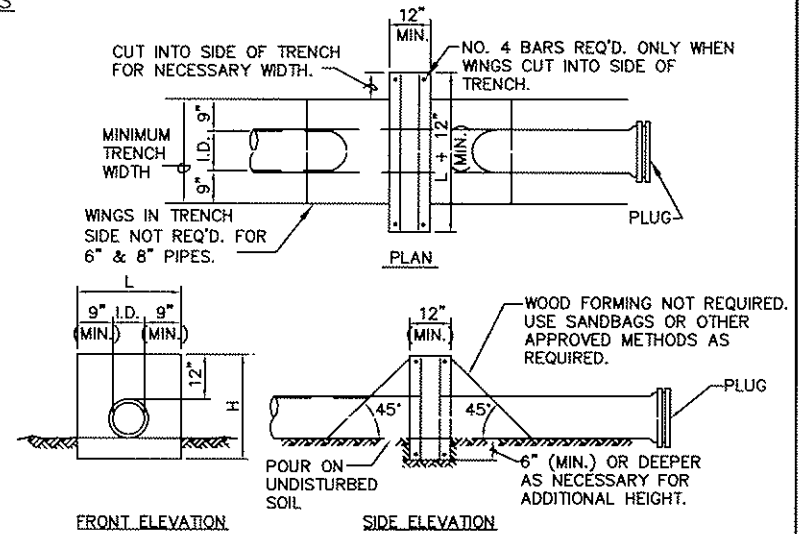
1. CONCRETE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH  $\geq 3000$ PSI
2. CONCRETE SHALL BE THOROUGHLY MIXED WITH WATER PRIOR TO PLACEMENT
3. CONCRETE SHALL BE POURED AGAINST UNDISTURBED SOIL.



**TYPICAL THRUST BLOCK DETAIL FOR BENDS**  
N.T.S.



**TYPICAL THRUST BLOCK DETAIL FOR TEES**  
N.T.S.



**CONCRETE DEAD END ANCHOR BLOCK DETAILS**  
N.T.S.

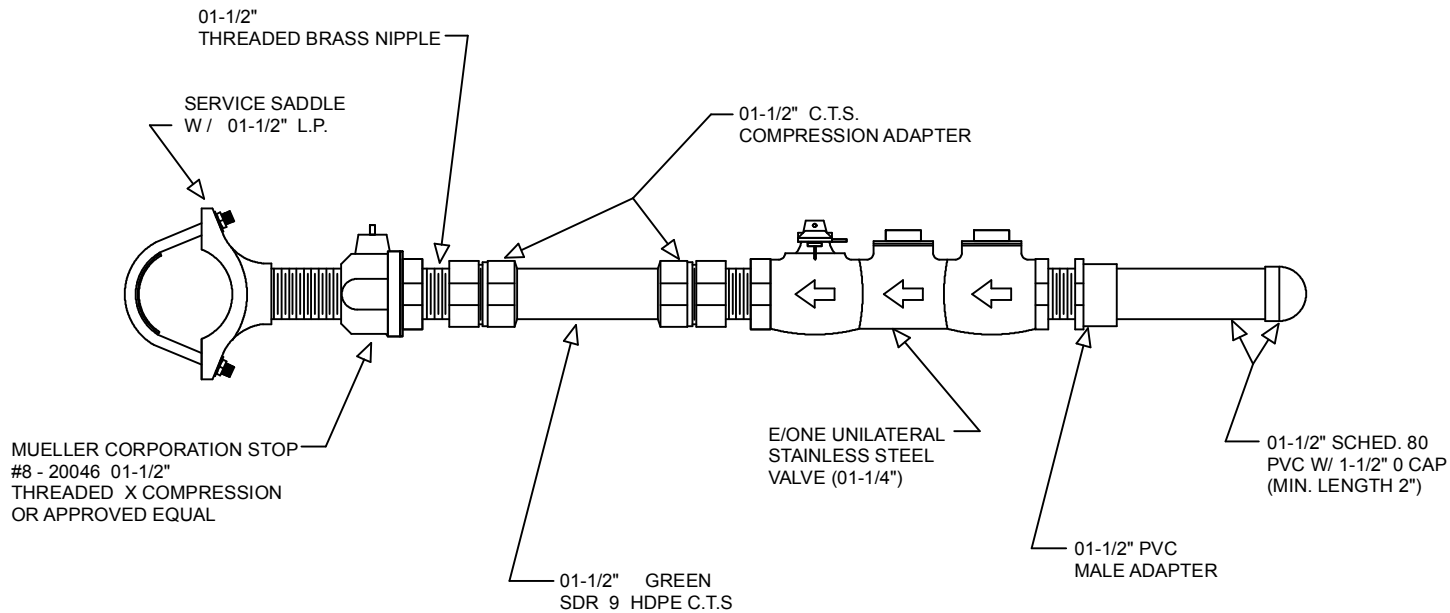


BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

THRUST BLOCK & DEAD END ANCHOR BLOCKS DETAILS

DATE ISSUED: 01-11-10  
SCALE: N.T.S.  
DRAWING NO: SS-117



LOW PRESSURE FORCEMAIN S.S. LATERAL DETAIL  
N.T.S

NOTE:

1. A TRACER WIRE (14 GAUGE COPPER WIRE) SHALL BE INSTALLED AT THE LATERAL LOCATION FROM FORCE MAIN CONNECTION TO TERMINATION AT PROPERTY LINE
2. WIRE SHALL RUN FROM MAIN TO TERMINATION POINT OF LATERAL
3. FOR NEW DEVELOPMENTS WITH CONCRETE CURBS, A 3" "S" SHALL BE STAMPED ON CURB AT THE LOCATION OF THE SERVICE
4. INSTALL ONE 4"X4"X4" TREATED TIMBER AT THE TERMINATION POINT OF THE LATERAL. TIMBER SHALL BE PAINTED GREEN & BE INSTALLED PLUMB.

REVISED: 02/10/2021

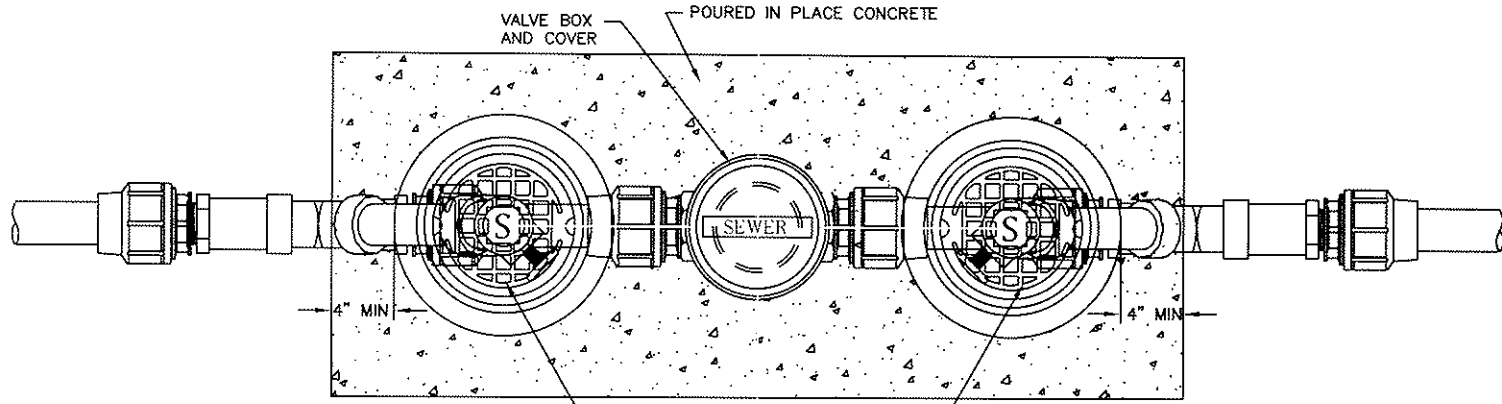


BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

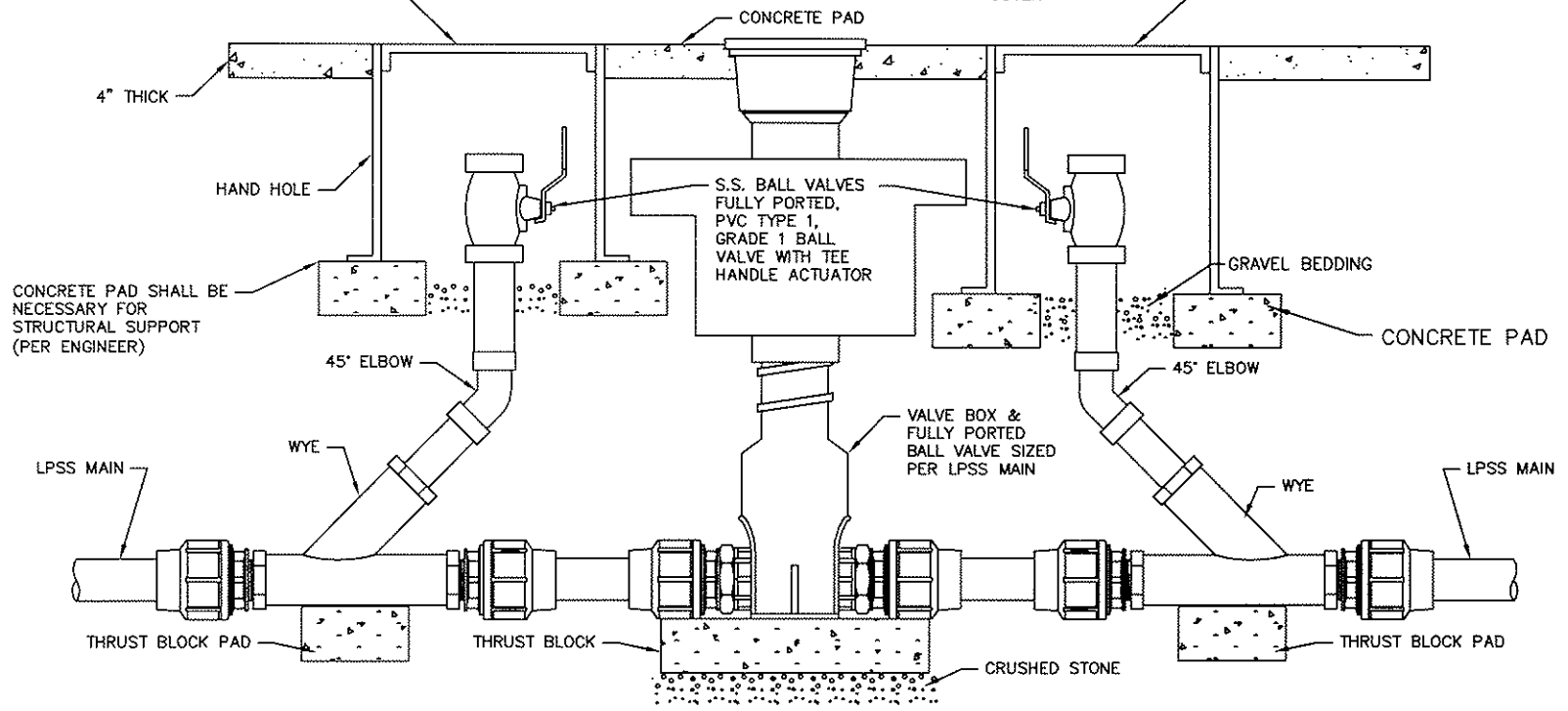
TYPICAL SANITARY SEWER DETAILS  
LOW PRESSURE SEWER FORCE MAIN LATERAL

DATE ISSUED	01-11-10
SCALE:	N.T.S
DRAWING NO:	SS-118

Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\8.5 TYP...S.S...DETAILS\_2.dwg Plotted on: Mar 26, 2012 - 3:59pm



PLAN VIEW  
 EAST JORDAN, IRON WORKS 1566, MONUMENT BOX, HANDHOLE RING AND COVER



CONCRETE PAD SHALL BE NECESSARY FOR STRUCTURAL SUPPORT (PER ENGINEER)

**NOTE:**

AT EACH CLEANOUT LOCATION A VALVE MARKER SHALL BE REQUIRED.

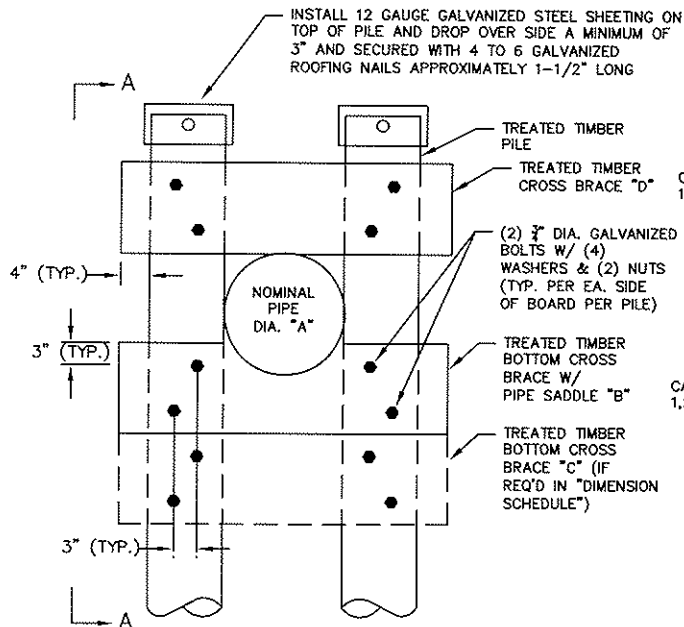
TYPICAL FLUSHING CONNECTION ON LPSS FORCE MAIN  
 N.T.S.



BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

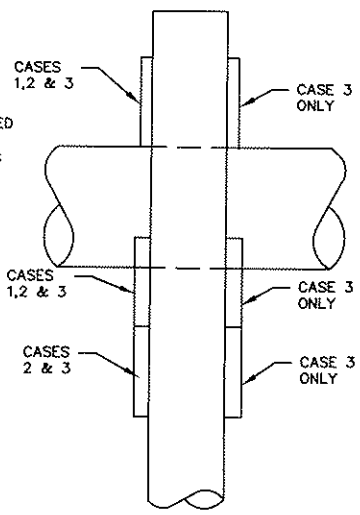
TYPICAL SANITARY SEWER DETAILS	DATE ISSUED 01-11-10
FLUSHING CONNECTION FOR LOW PRESSURE SEWER FORCE MAIN	SCALE N.T.S.
	DRAWING NO. SS-119

Drawing name: G:\M5712\2243 section 12 update\New CADD DWGs\8.5\_TYP\_S.S.\_DETAILS\_2.dwg Plotted on: Mar 26, 2012 - 3:59pm

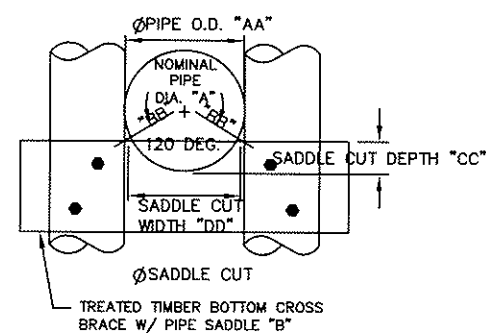


DIMENSION SCHEDULE				
CASE NO.	"A"	"B"	"C"	"D"
CASE 1	8"-16"	1 EA. 3X12	NOT REQ'D	1 EA. 2X12
CASE 2	18"-24"	1 EA. 3X12	1 EA. 3X12	1 EA. 2X12
CASE 3	30"-36"	2 EA. 3X12 (1 EACH SIDE OF PILE)	2 EA. 3X12 (1 EACH SIDE OF PILE)	2 EA. 2X12 (1 EACH SIDE OF PILE)

TIMBER PILE SUPPORT DETAIL  
N.T.S.



SECTION "A-A"  
N.T.S.



PIPE SADDLE DIMENSION SCHEDULE				
"A"	"AA"	"BB"	"CC"	"DD"
8"	9.05"	10.05"	2.51"	8.70"
10"	11.10"	12.10"	3.03"	10.48"
12"	13.20"	14.20"	3.55"	12.30"
14"	15.30"	16.30"	4.08"	14.12"
16"	17.40"	18.40"	4.60"	15.93"
18"	19.50"	20.50"	5.13"	17.75"
20"	21.60"	22.60"	5.65"	19.57"
24"	25.80"	26.80"	6.70"	23.21"
30"	32.00"	33.00"	8.25"	28.58"
36"	38.30"	39.30"	9.83"	34.03"

PIPE SADDLE DETAIL  
N.T.S.

- NOTES:
1. SUPPORT STRUCTURES SHALL BE PLACED AT EVERY JOINT, 18' TO 20' ON CENTER TYPICAL, DEPENDING ON LAYING LENGTH OF PIPE.
  2. SEE STANDARD SPECIFICATIONS FOR MATERIAL SPECIFICATIONS.
  3. TREATED TIMBER PILES SHALL HAVE A MINIMUM TIP DIAMETER OF 6" UNLESS DIRECTED OTHERWISE BY OWNER OR ENGINEER.
  4. LENGTH OF PILES TO BE DETERMINED BY ENGINEER, OR OWNER AS FIELD-CONDITIONS WARRANT.
  5. RESTRAINED JOINTS SHALL BE USED FOR AERIAL CROSSINGS.

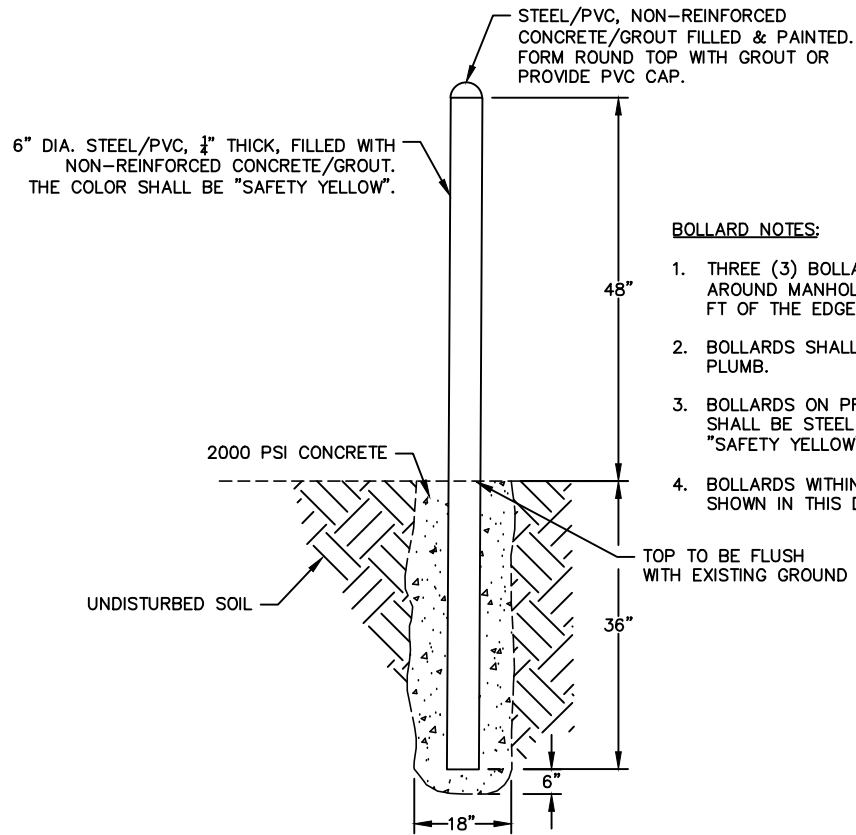
TIMBER PILE SUPPORTS FOR D.I. SANITARY SEWER PIPE  
N.T.S.



BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
  
TIMBER PILE SUPPORT DETAILS  
FOR D.I. SANITARY SEWER PIPES

DATE ISSUED  
01-11-10  
SCALE  
N.T.S.  
DRAWING NO.  
SS-120



**BOLLARD NOTES:**

1. THREE (3) BOLLARDS SHALL BE EVENLY SPACED AT 120' AROUND MANHOLE. INSTALL THE BOLLARD WITHIN 3 FT TO 4 FT OF THE EDGE OF THE MANHOLE RIM.
2. BOLLARDS SHALL BE AT SAME HEIGHT AND SHALL BE PLUMB.
3. BOLLARDS ON PRIVATE PROPERTY OR WITHIN EASEMENTS SHALL BE STEEL PIPE FILLED WITH CONCRETE & PAINTED "SAFETY YELLOW" WITH AN EXTERIOR ENAMEL BASE PAINT.
4. BOLLARDS WITHIN THE RIGHT-OF-WAY SHALL BE PVC AS SHOWN IN THIS DETAIL.

**BOLLARD DETAIL**  
N.T.S.

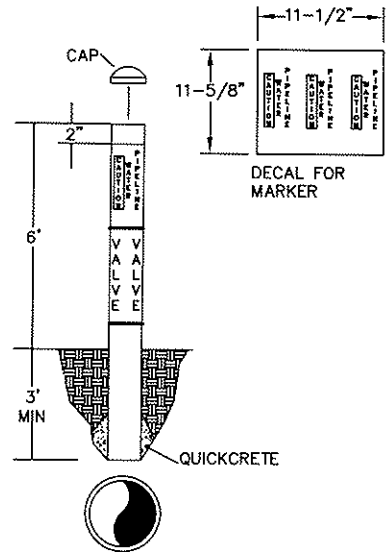


BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

BOLLARD DETAIL

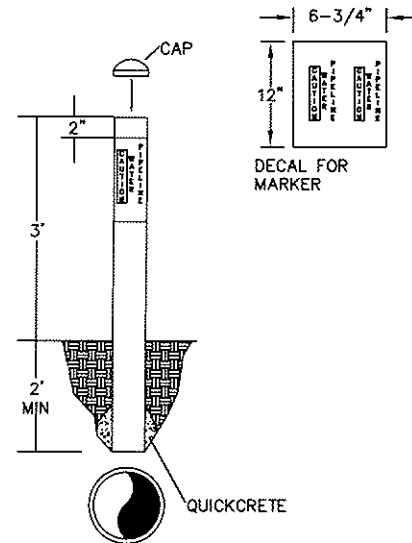
REVISED BY	07-08-26
DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-121



USE ON WATER & SEWER LINES RUNNING THROUGH NON-RESIDENTIAL AREAS.

- 1 - 40LB BAG OF QUICKCRETE(MIN)
- PLACE MARKER DIRECTLY OVER PIPELINE
- MARKER SHALL BE PLUMB
- FLARE BOTTOM OF HOLE FOR QUICKCRETE

GUIDE FOR INSTALLATION OF 3" PVC WATER & SEWER PIPELINE MARKERS



USE ON WATER & SEWER LINES RUNNING THROUGH NON-RESIDENTIAL AREAS.

- 1 - 40LB BAG OF QUICKCRETE(MIN)
- PLACE MARKER DIRECTLY OVER PIPELINE
- MARKER SHALL BE PLUMB
- FLARE BOTTOM OF HOLE FOR QUICKCRETE

GUIDE FOR INSTALLATION OF 1.5" PVC WATER & SEWER PIPELINE MARKERS

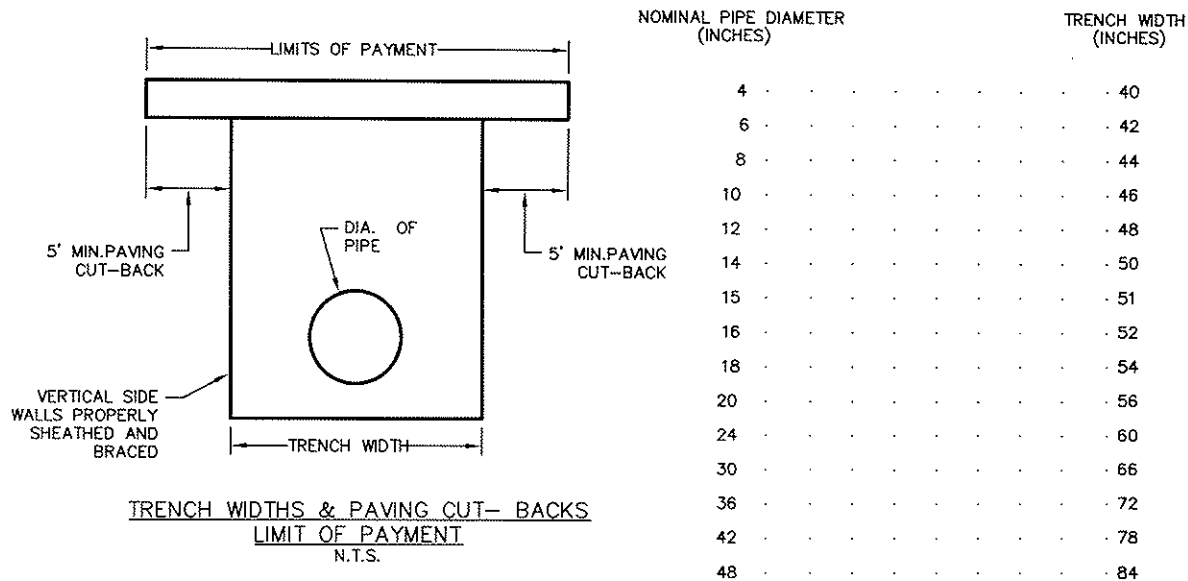


BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

PIPE LINE MARKER DETAILS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-122



**NOTES:**

1. THE LIMITS OF PAYMENT FOR PAVING OVER THE TRENCH SHALL BE THE TRENCH WIDTH SHOWN PLUS THE CUT- BACK ON EITHER SIDE OF THE TRENCH.
2. REPLACEMENT WORK BEYOND TRENCH WIDTH OR LIMITS OF PAYMENT FOR PAVING SHALL BE AT THE CONTRACTOR'S EXPENSE. NO EXTRA COMPENSATION WILL BE ALLOWED.
3. THE LIMITS OF PAYMENT FOR SELECT BACKFILL (ITEM BF- 1) SHALL BE THE APPLICABLE TRENCH WIDTH SHOWN MULTIPLIED BY THE AVERAGE DEPTH OF BACKFILL TO THE TOP OF PIPE.
4. THE JAGGED EDGES OF THE EXISTING PAVEMENT ALONG THE TRENCH CUT SHALL BE SQUARED AND CUT TO A NEAT LINE WITH AN APPROPRIATE SAW ALONG STRAIGHT LINES PARALLEL TO THE CENTER OF THE PAVEMENT CUT.



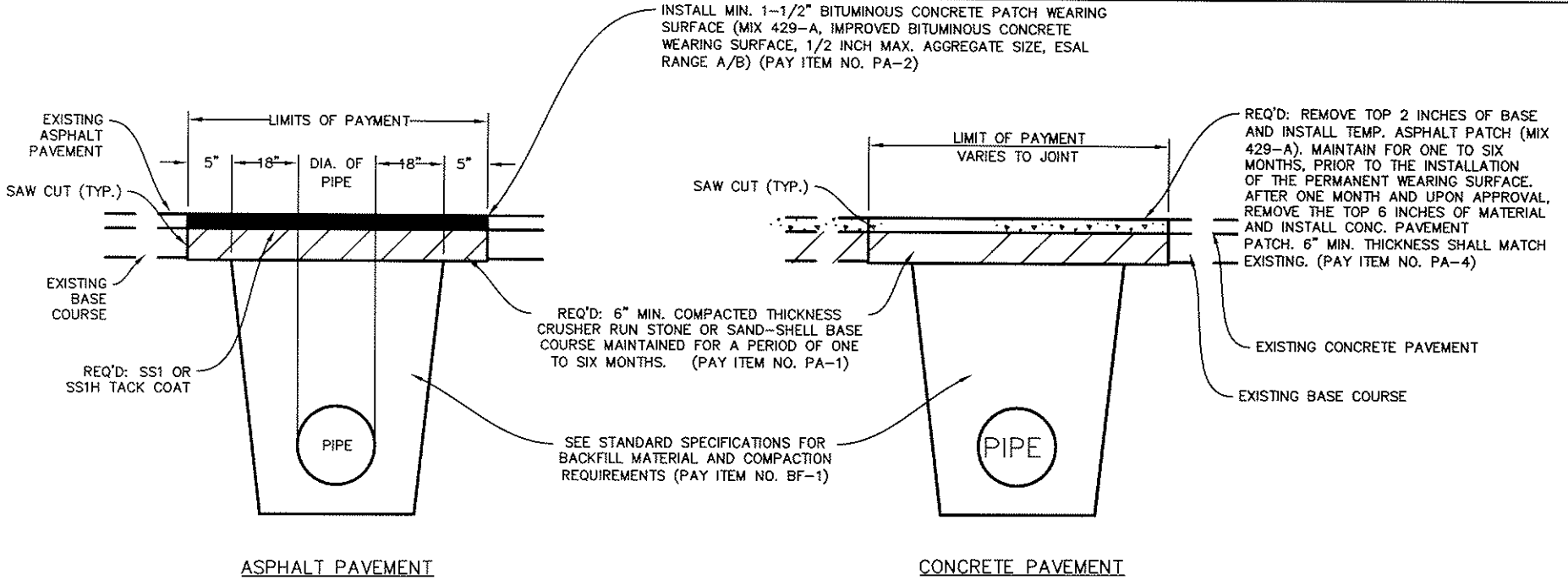
BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS


TRENCH WIDTHS AND PAVING CUT BACK

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-123

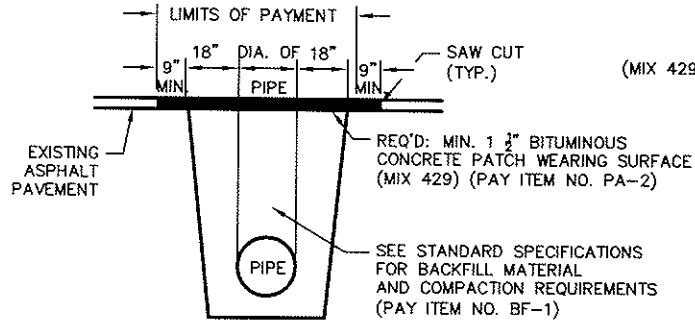
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 Plotted on: Mar 26, 2012 - 3:59pm



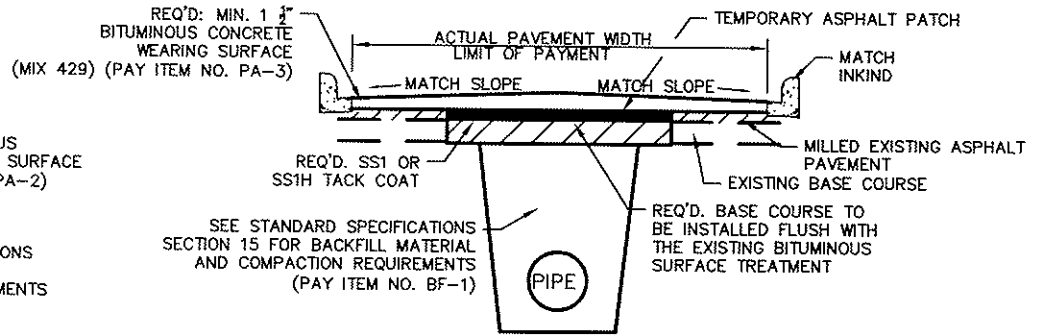
NOTE:  
 PAVING AND CONSTRUCTION WITHIN THE CITY OF MOBILE RIGHT OF WAY SHALL MEET THE CITY OF MOBILE'S STANDARDS.

 MOBILE AREA WATER & SEWER SYSTEM	BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED 01-11-10
		TEMPORARY PAVEMENT DETAILS	SCALE N.T.S. DRAWING NO. SS-124

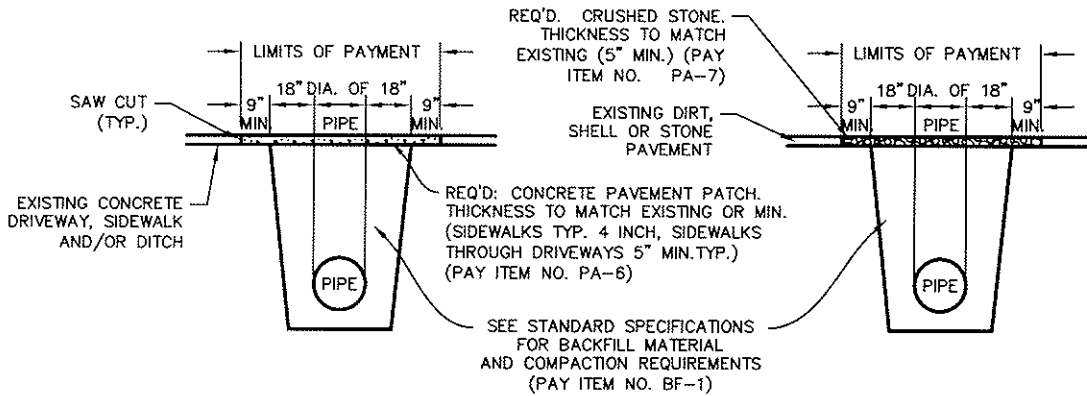
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**REMOVING & REPLACING ASPHALT DRIVEWAYS**  
N.T.S.

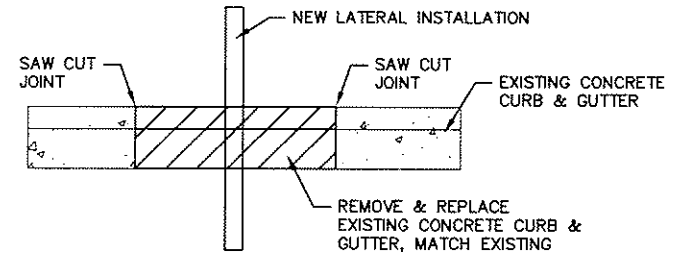


**BITUMINOUS WEARING SURFACE FOR FULL WIDTH STREET SURFACING**  
N.T.S.



**REMOVING & REPLACING CONCRETE DRIVEWAYS, SIDEWALKS & DITCHES**  
N.T.S.

**CRUSHED STONE FOR SURFACING (OUTSIDE DRIVEWAY APRON & SIDEWALK)**  
N.T.S.



**CURB REPLACEMENT @ NEW LATERAL INSTALLATION**  
N.T.S.

**NOTE:**

PAVING AND CONSTRUCTION WITHIN THE CITY OF MOBILE RIGHT OF WAY SHALL MEET THE CITY OF MOBILE'S STANDARDS.

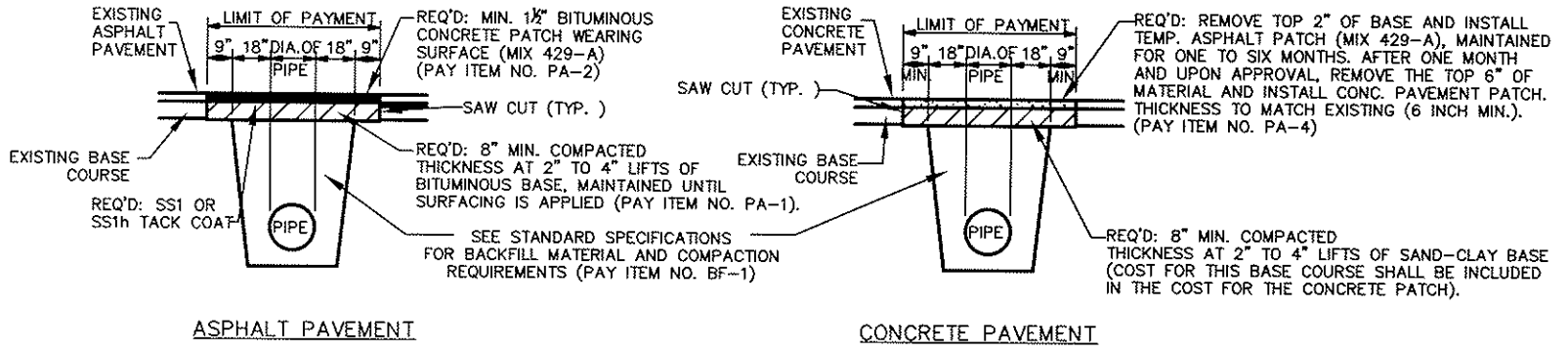


BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

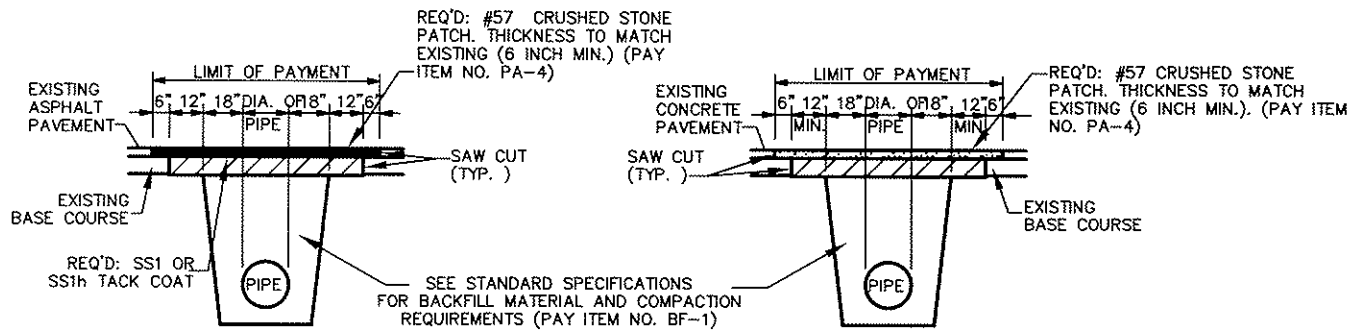
TYPICAL SANITARY SEWER DETAILS  
PAVEMENT REMOVAL & REPLACEMENT DETAILS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-125

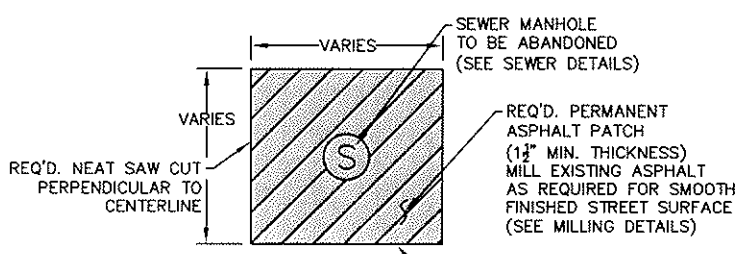
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REMOVING & PREPARATION OF PAVEMENT WITHIN MOBILE COUNTY R/W  
N.T.S.

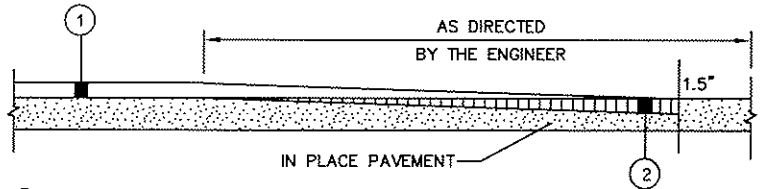


REMOVING & PREPARATION OF PAVEMENT WITHIN STATE OF ALABAMA R/W  
N.T.S.



MANHOLE PERMANENT ASPHALT PATCH DETAIL

NOTE:  
PAVING AND CONSTRUCTION WITHIN THE CITY OF MOBILE RIGHT OF WAY SHALL MEET THE CITY OF MOBILE'S STANDARDS.



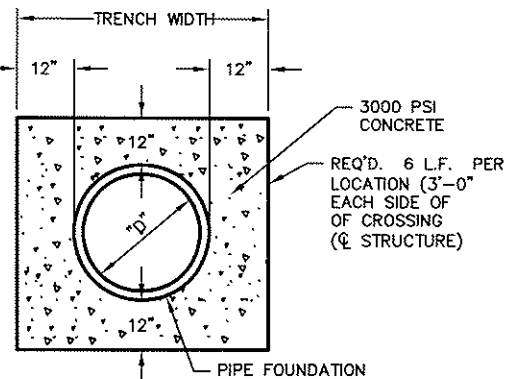
- ① REQ'D BITUMINOUS CONCRETE WEARING SURFACE LAYER, 1-1/2" THICK MIX 429-A
- ② MILLING EXISTING PAVEMENT (APPROXIMATELY 1-1/4" THRU 1-3/4" THICK)

NOTE:  
REMOVE EXISTING PAVEMENT SO AS TO CONSTRUCT A UNIFORM LAYER OF BITUMINOUS CONCRETE WEARING SURFACE. DEPTH OF REMOVAL WILL BE TO THE SATISFACTION OF THE ENGINEER. THE COST ASSOCIATED WITH THE REMOVAL & DISPOSAL OF THE IN PLACE PAVEMENT SHALL BE BID AND PAID FOR UNDER ITEM NO. PA-3A.

PAVEMENT TERMINATION DETAIL  
N.T.S.

	BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED 01-11-10
		PAVEMENT REMOVE & REPLACEMENT DETAILS	SCALE: N.T.S. DRAWING NO. SS-126

"D" (INCHES)	CU.YDS. OF CONC. PER LOCATION
10 OR LESS	0.60
15	0.84
18	1.02
24	1.44
30	1.80
36	2.28
42	2.76
48	3.60



NOTE:  
CONCRETE COLLAR SHALL BE USED  
WHEN MIN. VERTICAL CLEARANCE  
BETWEEN PIPES CANNOT BE  
MAINTAINED (1' OR LESS).

**CONCRETE COLLAR DETAIL**  
N.T.S.



BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS

TYPICAL  
CONCRETE COLLAR

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-127

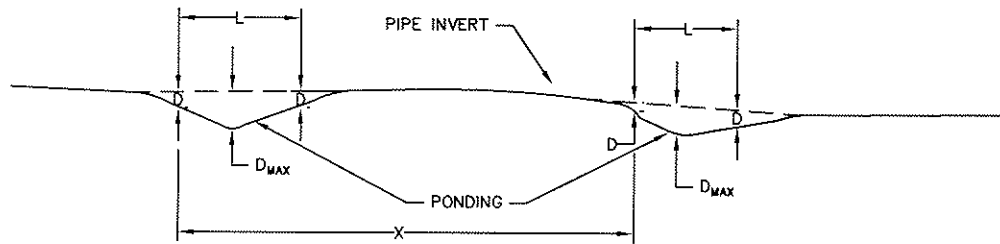
NOMINAL PIPE DIAMETER (INCHES)	MINIMUM GRADE (%)	ACCEPTABLE SAG DEPTH (D)* IN INCHES OF WATER				ABSOLUTE MAXIMUM DEPTH (D <sub>MAX</sub> ) IN INCHES OF WATER		MAXIMUM SAG LENGTH (L)**	MINIMUM ALLOWABLE DISTANCE BETWEEN SAGS WITH 10% OR GREATER DEPTH (X)***
		EQUAL OR LESS THAN MINIMUM GRADE		GREATER THAN MINIMUM GRADE		EQUAL OR LESS THAN MINIMUM GRADE	GREATER THAN MINIMUM GRADE		
		PVC PIPE	D. IRON PIPE	PVC PIPE	D. IRON PIPE				
8	0.400	0.8"	0.8"	1"	1"	1.2	1.5	6 FT	36 FT
10	0.280	1"	1"	1.1"	1.1"	1.5	1.65	6 FT	36 FT
12	0.220	1.1"	1.1"	1.2"	1.2"	1.65	1.8	9 FT	54 FT
15	0.150	1.5"	1.5"	1.5"	1.5"	2.25	2.25	9 FT	54 FT
16	0.140		1.5"		1.6"	2.25	2.4	9 FT	54 FT
18	0.120		1.5"		1.8"	2.25	2.7	9 FT	72 FT
21	0.100		1.5"		2"	2.25	3.0	9 FT	72 FT
24	0.080		1.5"		2.4"	2.25	3.6	9 FT	72 FT
27	0.067		2"		2.7"	3.0	4.0	9 FT	72 FT
30	0.058		2"		3"	3.0	4.5	9 FT	72 FT
36	0.046		2"		3"	3.0	4.5	9 FT	72 FT
42	0.037		2"		3"	3.0	4.5	9 FT	72 FT

\*D = ALLOWABLE SAG DEPTH = ALLOWABLE DEPTH OF POOLED WATER IN PIPE AS MEASURED FROM WATER SURFACE TO INVERT OF PIPE BY USE OF SAG GAUGE.

D<sub>MAX</sub> = ABSOLUTE MAXIMUM DEPTH. ANY SAG DEPTH GREATER THAN D<sub>MAX</sub> CONSTITUTES FAILURE

\*\*L = SAG LENGTH = LENGTH OF POOLED WATER SURFACE AS MEASURED FROM UPSTREAM EDGE OF POOLED WATER SURFACE TO DOWNSTREAM EDGE OF POOLED WATER SURFACE. (PROVIDED D<sub>MAX</sub> IS NOT EXCEEDED.)

\*\*\*X = DISTANCE BETWEEN SAGS, AS MEASURED FROM UPSTREAM EDGE OF POOLED WATER SURFACES BETWEEN CONSECUTIVE SAGS.



SEE SHEET SS-129 FOR SAG PROOFING DETAIL



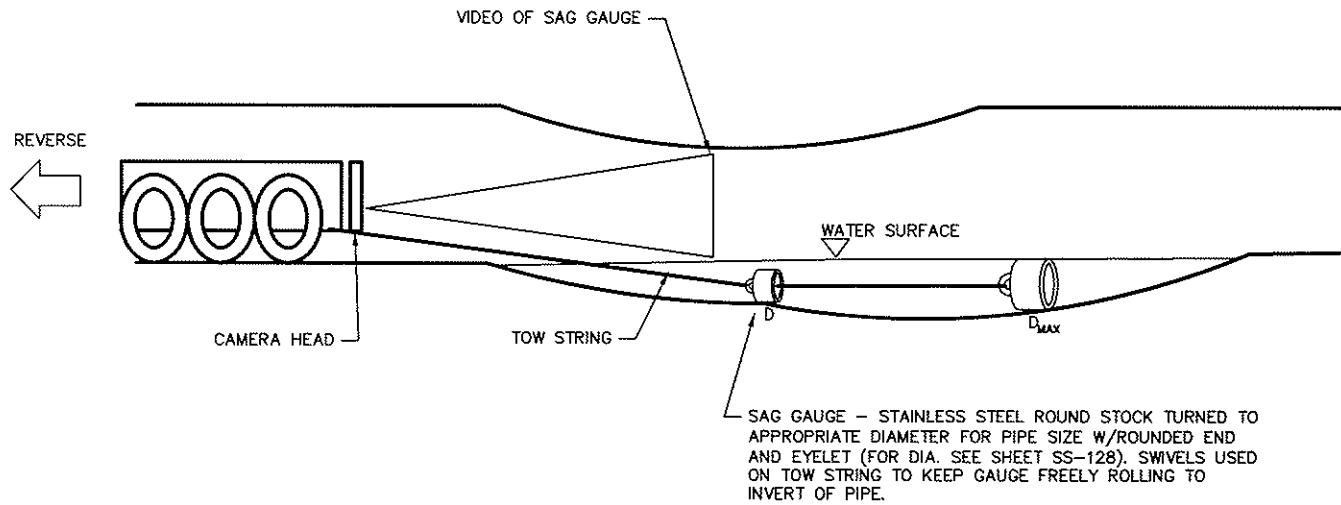
BOARD OF WATER AND SEWER COMMISSIONERS OF THE CITY OF MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
GRADE TOLERANCE/ACCEPTABLE SAG LIMITS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-128

### SAG PROOFING SEWER MAINS

- PIPE IS CLEANED, FLOODED AND ALLOWED TO DRAIN FREELY.
- CAMERA TRAVELS FORWARD TO MANHOLE VIDEO INSPECTING PIPE AS IT MOVES.
- TOW STRINGS AND SAG GAUGE ARE ATTACHED TO CAMERA.
- CAMERA VIDEOS SAG GAUGE AS CAMERA TRAVELS SLOWLY IN REVERSE.
- WHEN GAUGE IS IN SAG, CAMERA STOPS AND ALLOWS WATER TO CALM:
  - IF ANY PORTION OF THE GAUGE IS SEEN ABOVE WATER SURFACE, SAG IS ACCEPTABLE.
  - IF GAUGE IS SUBMERGED, EVEN SLIGHTLY, SAG IS REJECTED AND MUST BE REPAIRED.



BOARD OF WATER AND SEWER  
COMMISSIONERS OF THE CITY OF  
MOBILE, ALABAMA

TYPICAL SANITARY SEWER DETAILS  
SAG PROOFING SEWER MAINS

DATE ISSUED	01-11-10
SCALE	N.T.S.
DRAWING NO.	SS-129