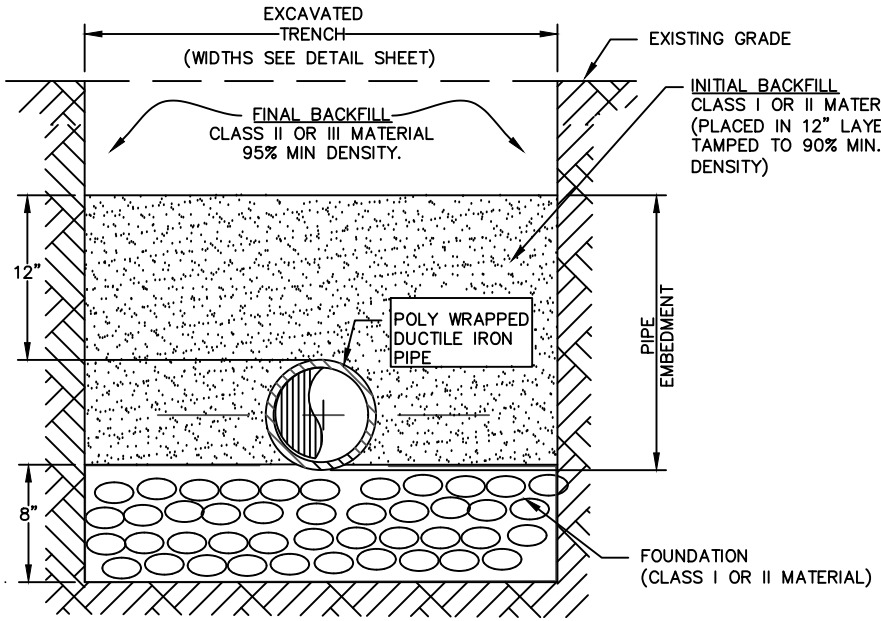
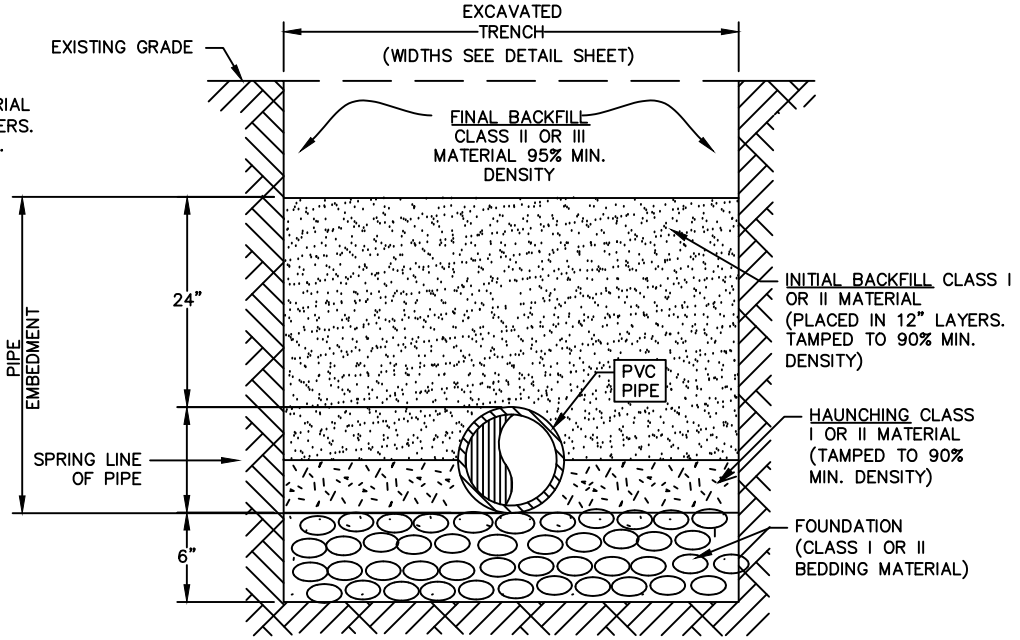
SANITARY SEWER STANDARD DETAIL DRAWINGS

INDEX TO DRAWINGS:



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

N.T.S.



EMBEDMENT DETAIL FOR PVC SEWER PIPE *

N.T.S.

*UNLESS OTHERWISE SPECIFIED BY GEOTECHNICAL REPORT

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.

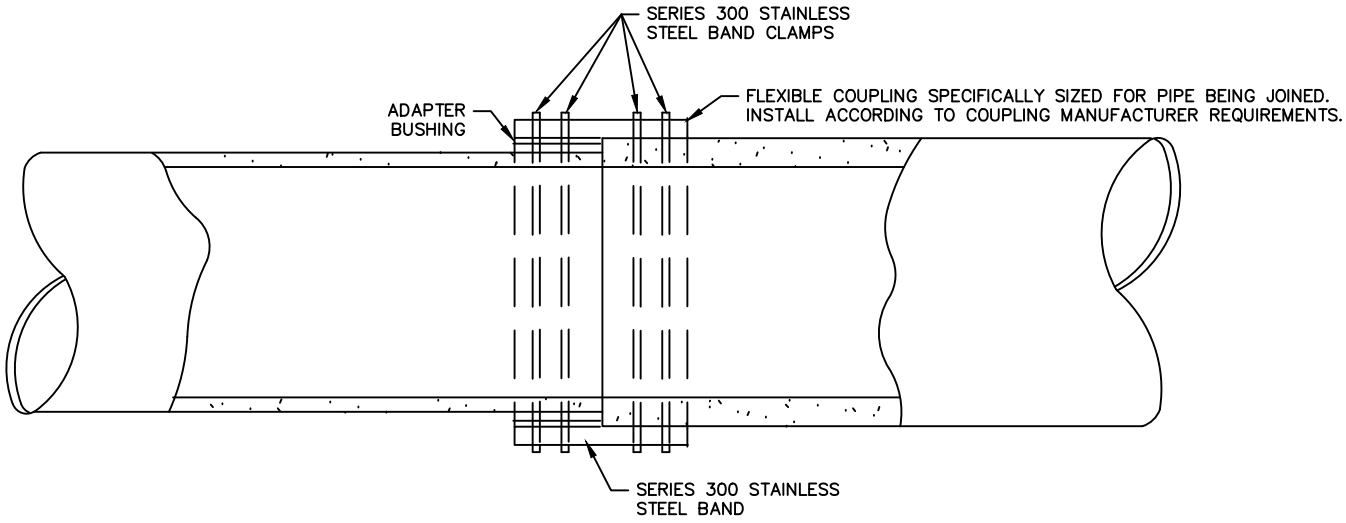
EMBEDMENT MATERIAL & CLASS DESCRIPTIONS:
(SEE SPECIFICATIONS FOR SIEVE ANALYSIS)

CLASS I – ANGULAR,GRADED STONE, OR ROCK, DENSE OR OPEN GRADED W/ LITTLE OR NO FINES (¼" INCH TO 1½" INCH IN SIZE) (ALDOT #57 STONE, B-BASE)

CLASS II – CLEAN COARSE GRAINED SANDS & GRAVELS (1½" INCH MAXIMUM SIZE)

CLASS III – COARSE GRAINED MATERIAL W/FINES. GRAVEL OR SAND MUST COMPRISE MORE THAN 50% OF CLASS III MATERIALS. (1½" INCHES MAX. SIZE)

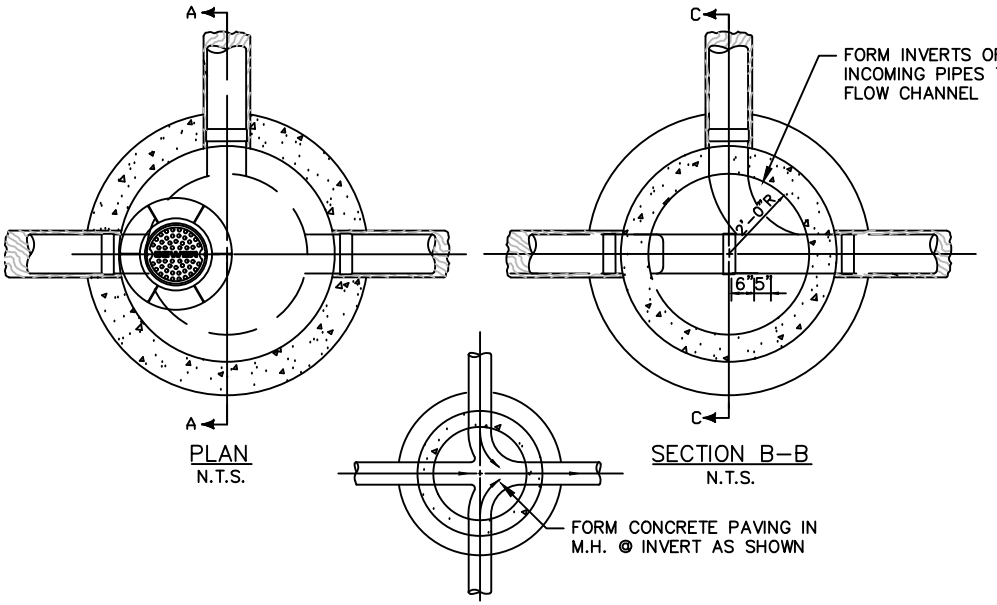
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		SEWER PIPE EMBEDMENT DETAILS	SCALE: N.T.S. DRAWING NO. SS-101



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

N.T.S.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		DISSIMILAR PIPE COUPLINGS DETAIL	SCALE: N.T.S. DRAWING NO. SS-102

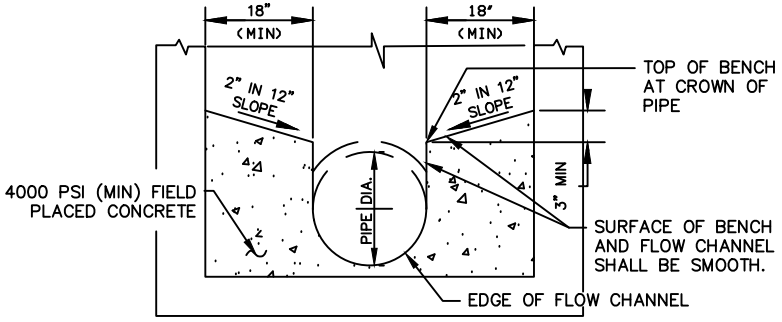


PLAN
N.T.S.

SECTION B–B
N.T.S.

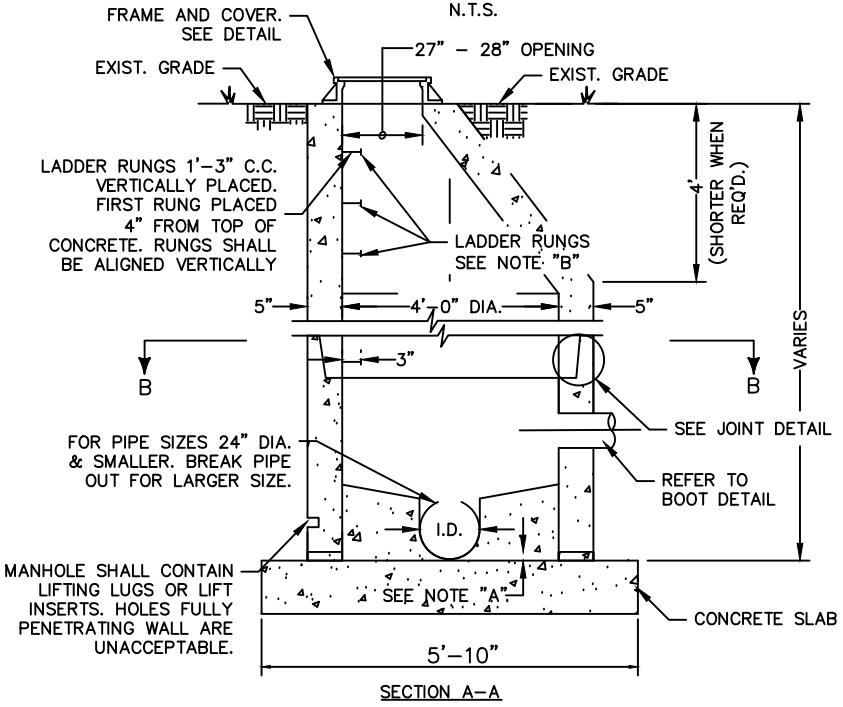
MANHOLE WITH THREE OR MORE PIPES AT INVERT
N.T.S.

GENERAL NOTE:
ALL NEW CONCRETE MANHOLES SHALL BE MADE USING CONSHIELD CONCRETE ADMIXTURE FOR THE PREVENTION OF CORROSION DUE TO HYDROGEN SULFIDE GASES.



TYPICAL SECTION

MANHOLE BENCH DETAIL
N.T.S.



SECTION A–A

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.

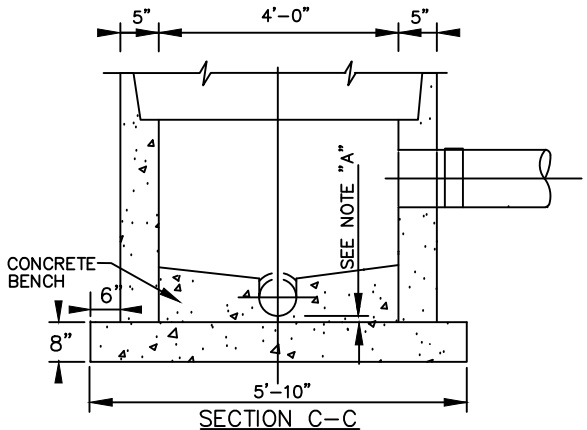
NOTE "C"

ALL PIPES IN OR OUT OF MANHOLE SHALL BE FLUSH WITH INSIDE WALL OF MANHOLE.

NOTE "D"

DEAD END MANHOLE:

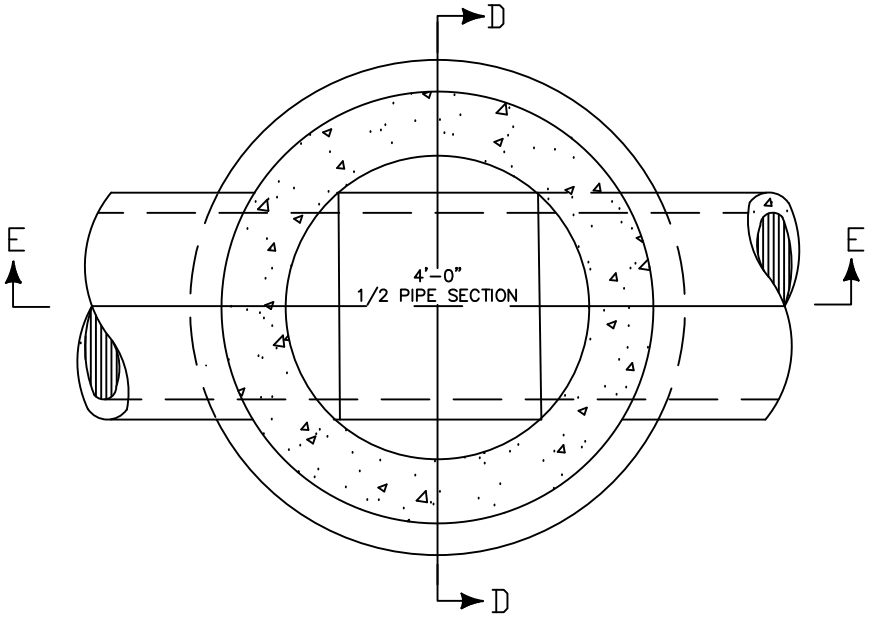
FOR DEAD END MANHOLES THE FLOW CHANNEL SHALL EXTEND THE WIDTH OF THE MANHOLE.



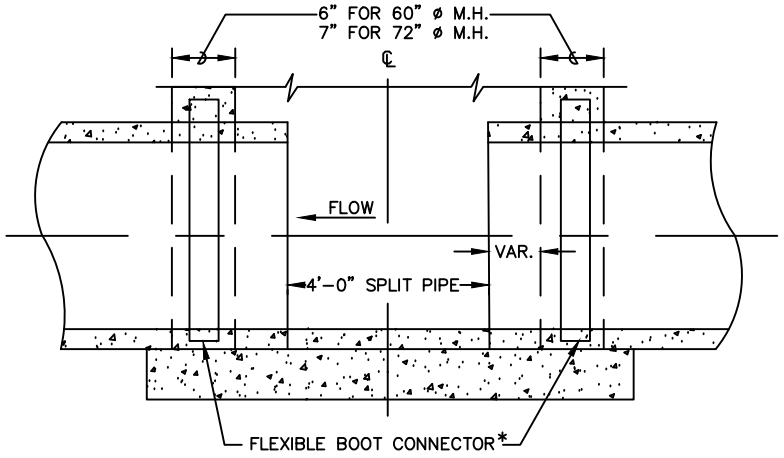
SECTION C–C
N.T.S.

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

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS PRECAST MANHOLE DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-103

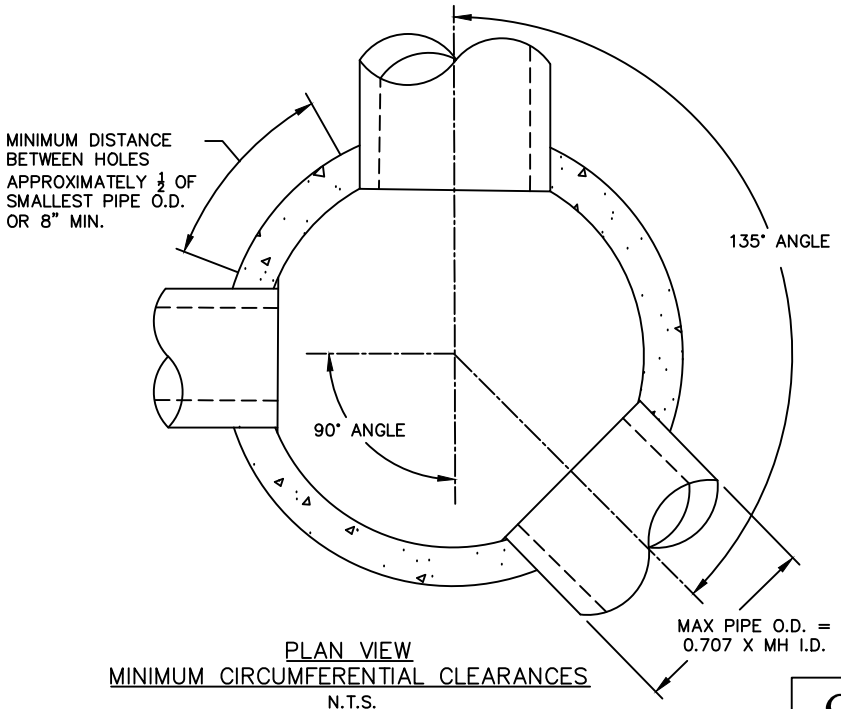


PLAN
N.T.S.

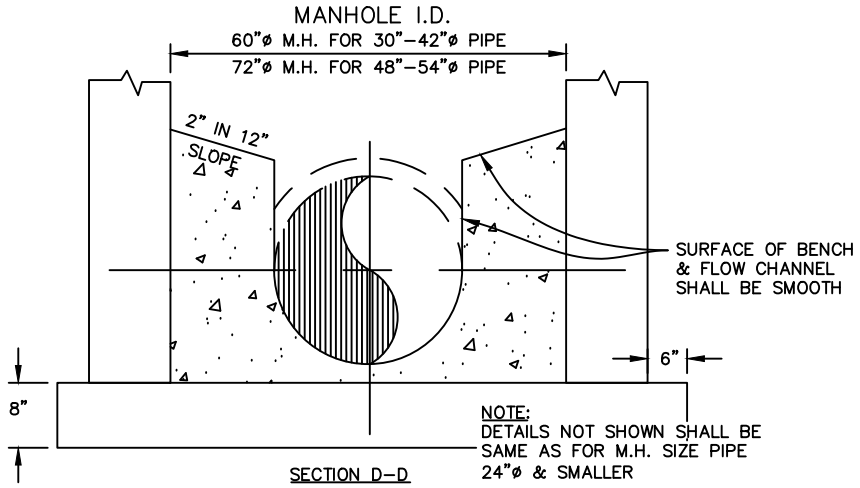


SECTION E–E
N.T.S.

* BOOT MAY BE PRECAST OR FIELD CORED TO MANHOLE.

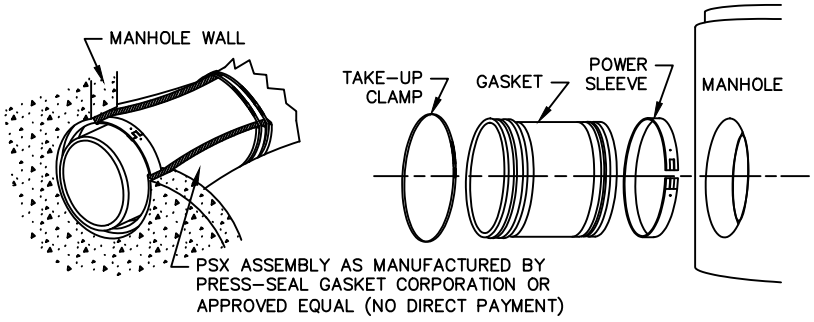


PLAN VIEW
MINIMUM CIRCUMFERENTIAL CLEARANCES
N.T.S.

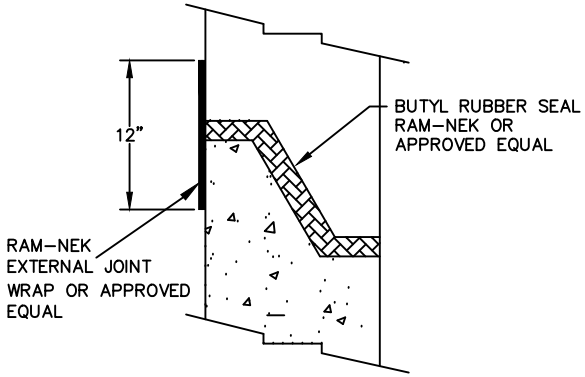


DETAIL OF MANHOLE FOR PIPE SIZES LARGER THAN 24" DIA.
N.T.S.

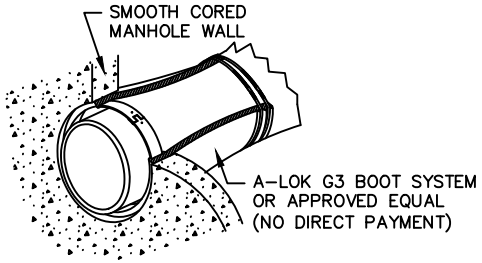
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS LARGE DIAMETER MANHOLE & MINIMUM CIRCUMFERENTIAL CLEARANCES	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-104



TYPICAL "BOOT" DETAIL
N.T.S.

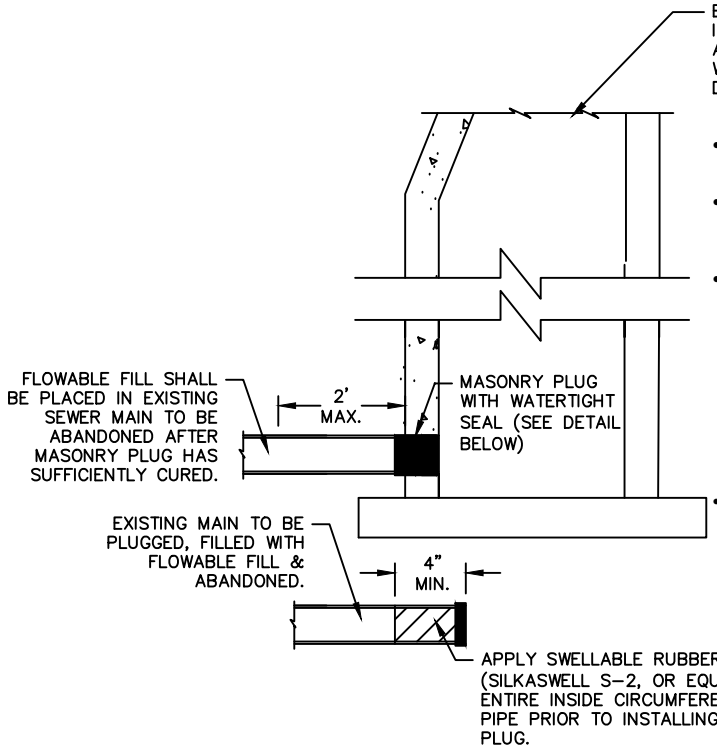


JOINT DETAIL
N.T.S.



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

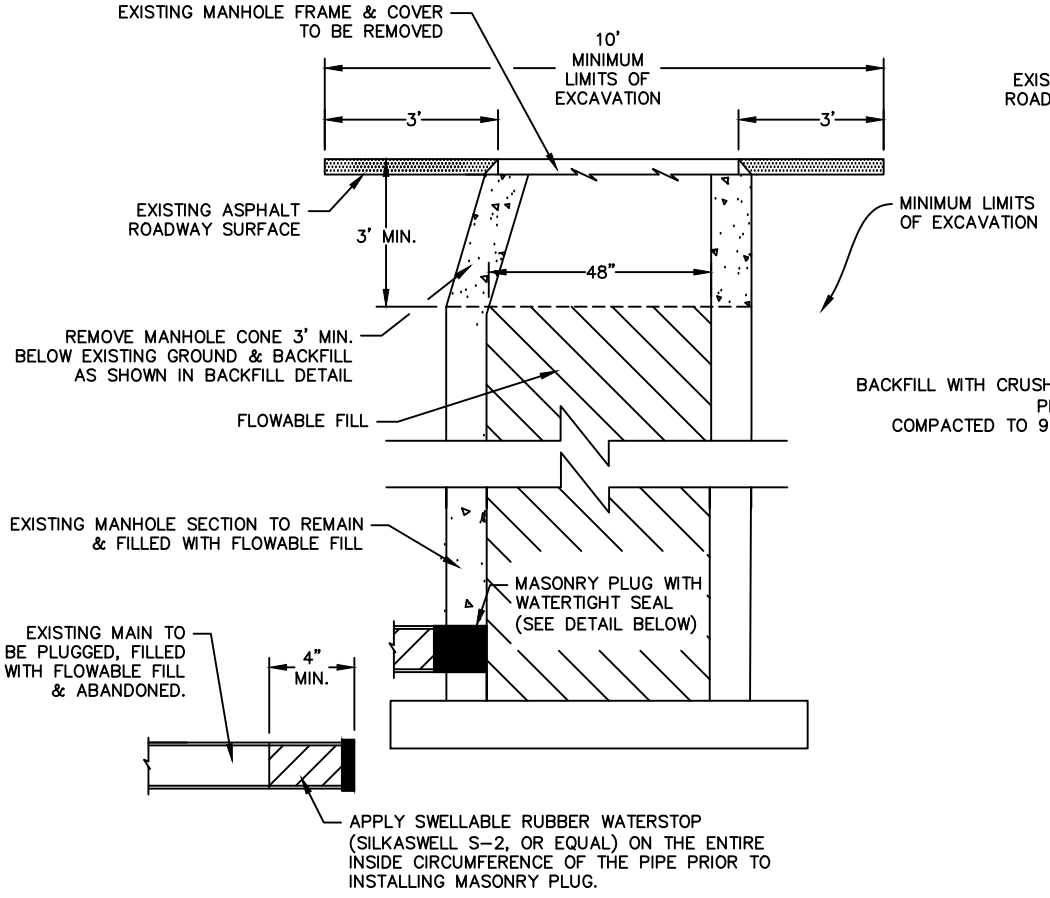
MANHOLE BOOT MAY BE PRECAST OR FIELD CORED TO MANHOLE



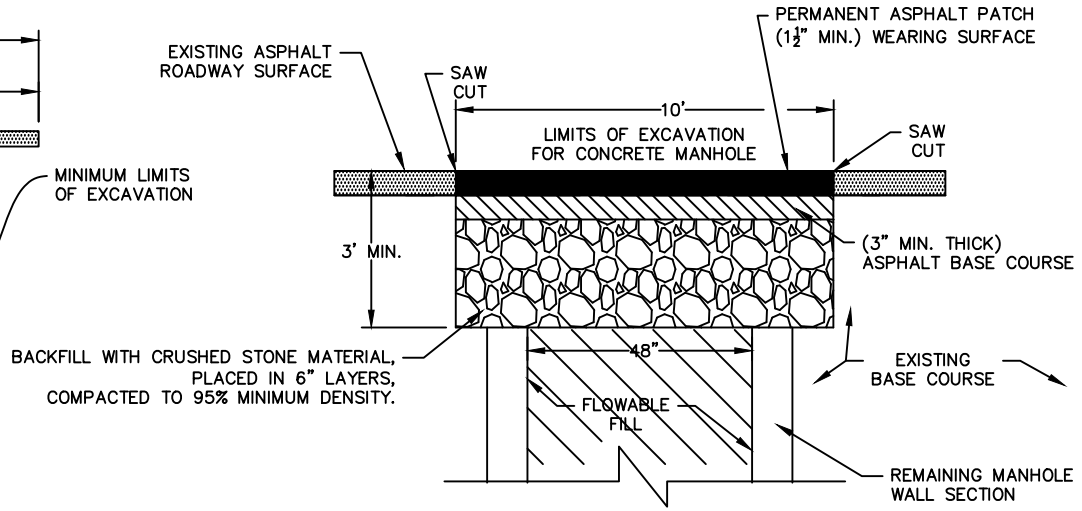
- MINIMUM PLUG WIDTH = 1/2 PIPE SIZE DIAMETER
- SIKASWELL S-2, OR EQUAL, WATERTIGHT SEAL BETWEEN PIPE WALL AND MASONRY PLUG SHALL BE PROVIDED.
- MANHOLES TO BE ABANDONED SHALL BE FILLED WITH FLOWABLE FILL TO THE TOP OF THE MANHOLE CONE AND CASTING SHALL BE REMOVED. AFTER CASTING IS REMOVED AND FLOWABLE 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 IN THE PAVING DETAIL SHEETS.

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

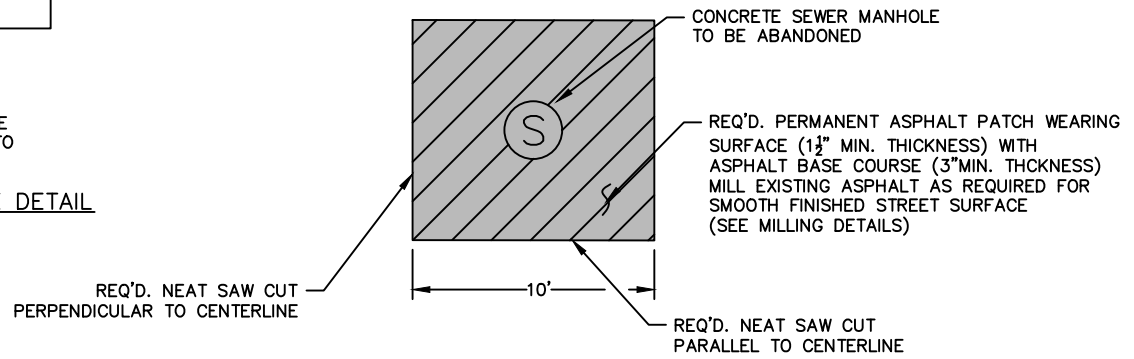
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS MANHOLE BOOT, MANHOLE JOINT AND PLUGGING ABANDONED SEWER MAIN AT MANHOLE	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-104A



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



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



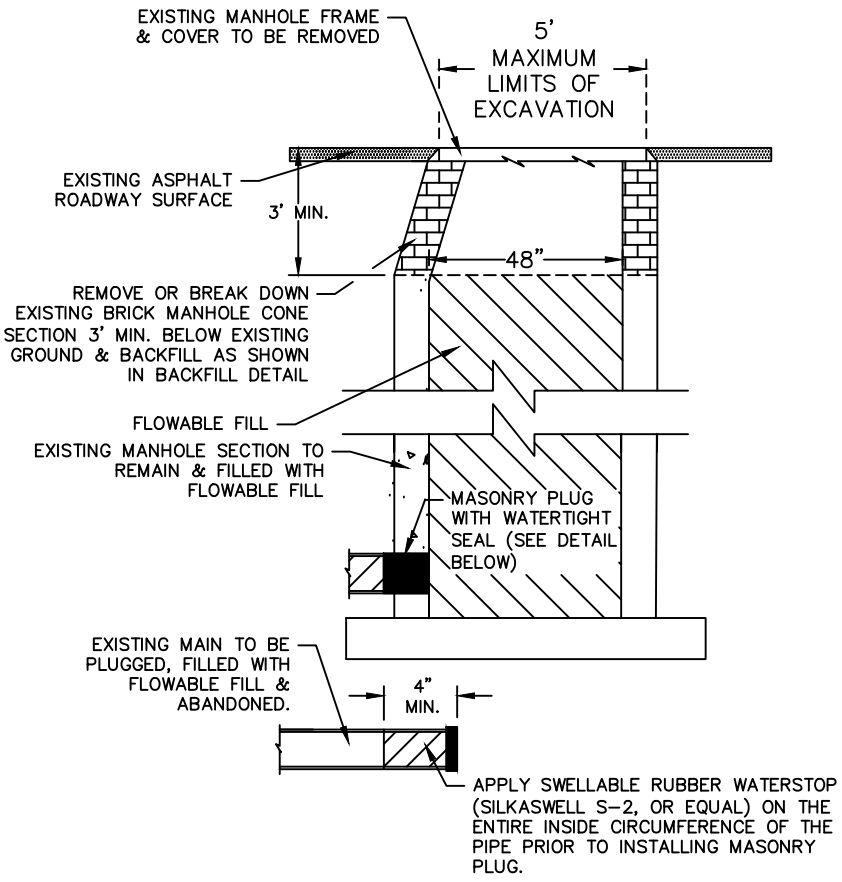
MANHOLE PERMANENT ASPHALT PATCH DETAIL FOR ABANDONED CONCRETE MANHOLE
N.T.S.

- 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.

NOTE:

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

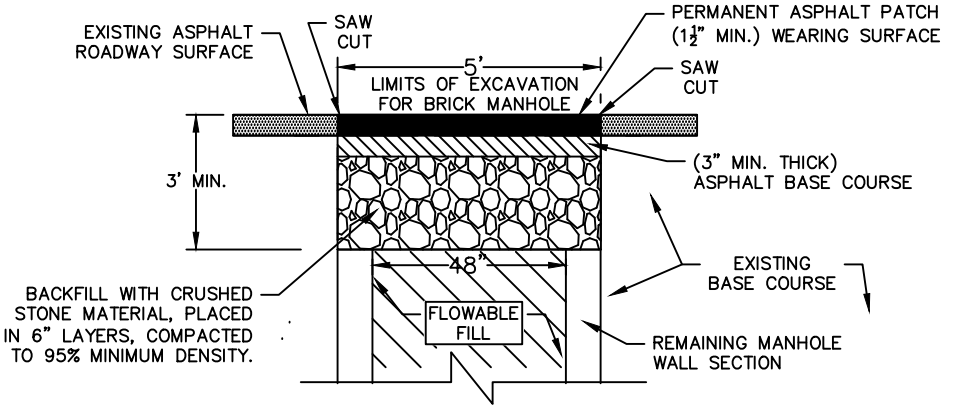
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		PLUG & ABANDON CONCRETE MANHOLE DETAILS (ASPHALT STREET)	SCALE: N.T.S. DRAWING NO. SS-104E



PLUG & ABANDON BRICK MANHOLE DETAIL (ASPHALT STREET)

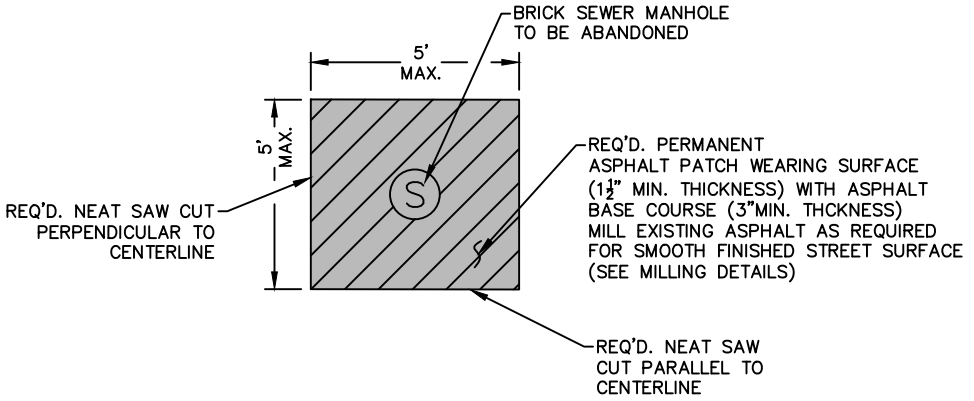
N.T.S.

- 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.

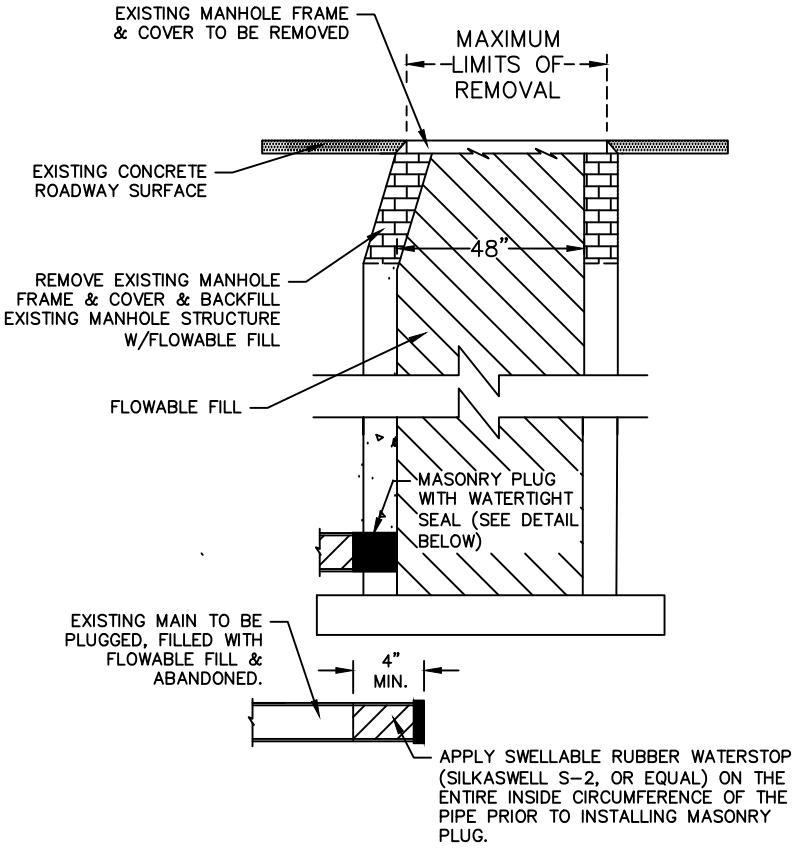


MANHOLE PERMANENT ASPHALT PATCH DETAIL FOR ABANDONED BRICK MANHOLE

NOTE:

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

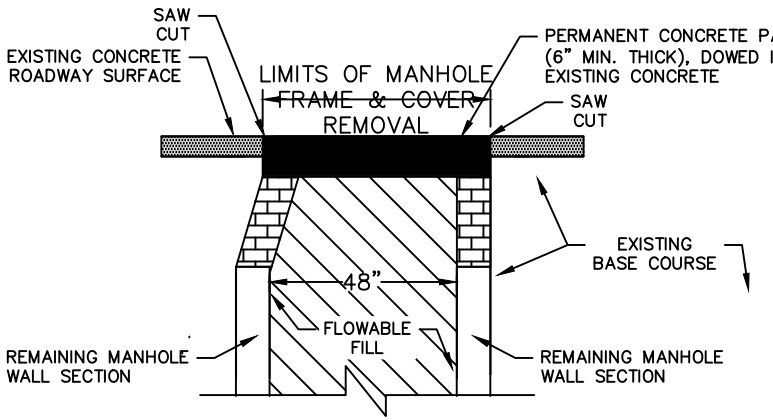
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS PLUG & ABANDON BRICK MANHOLE DETAILS (ASPHALT STREET)	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-104C



PLUG & ABANDON BRICK MANHOLE DETAIL (CONCRETE STREET)

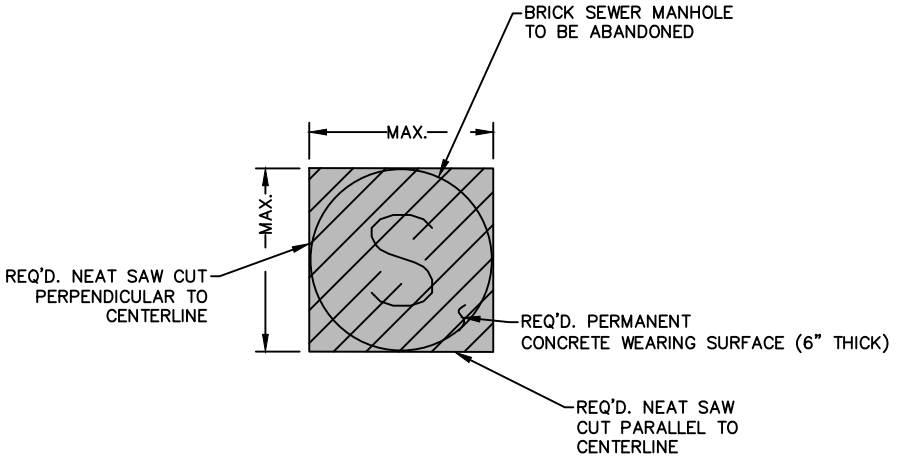
N.T.S.

- 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 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.



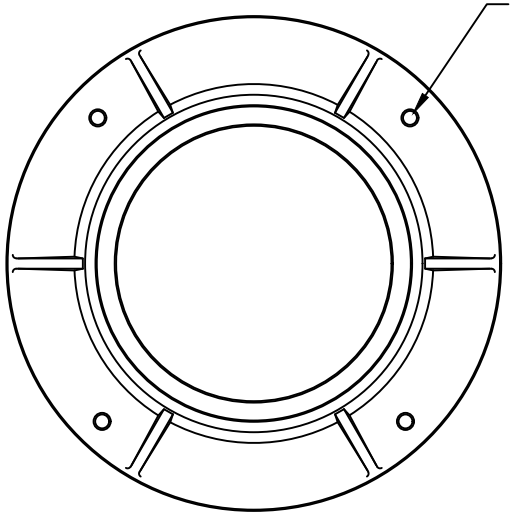
MANHOLE PERMANENT CONCRETE PATCH DETAIL FOR ABANDONED BRICK MANHOLE

N.T.S.

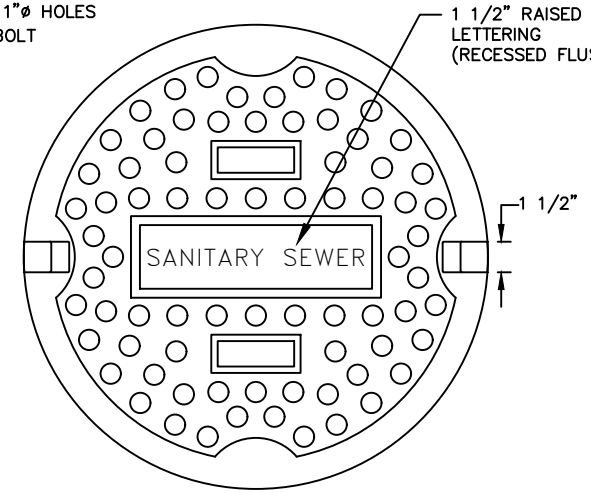
NOTE:

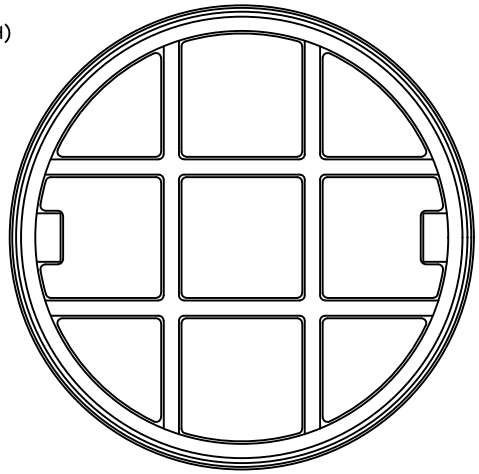
PAVING AND CONSTRUCTION WITHIN THE CITY RIGHT OF WAY SHALL MEET THE CITY STANDARDS.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS PLUG & ABANDON BRICK MANHOLE DETAILS (CONCRETE STREET)	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-104D

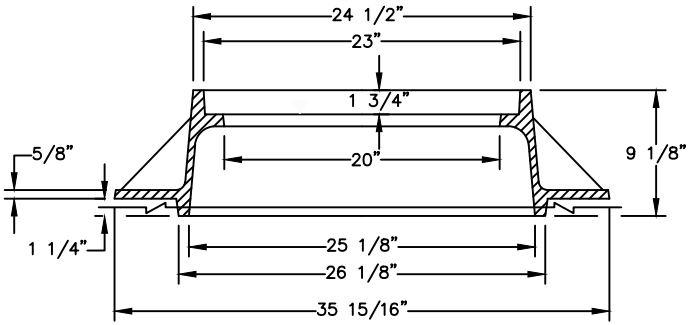


RING TOP VIEW

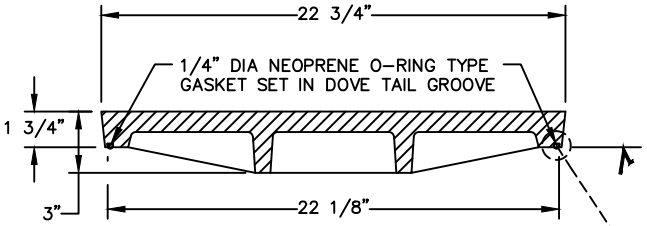




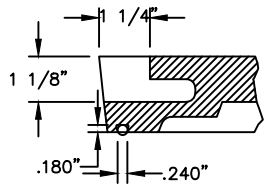
COVER BACK



RING SECTION
N.T.S.



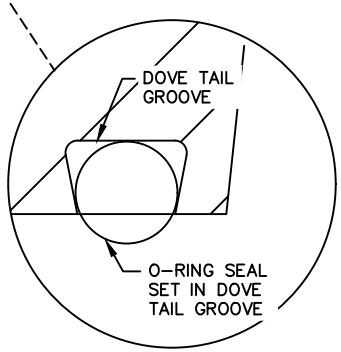
COVER SECTION
N.T.S.



(2) TYPE TWO NON-
PENETRATING PICKHOLES

DOVE TAIL GROOVE & PICKHOLE DETAIL
N.T.S.

STANDARD MANHOLE
FRAME & COVER

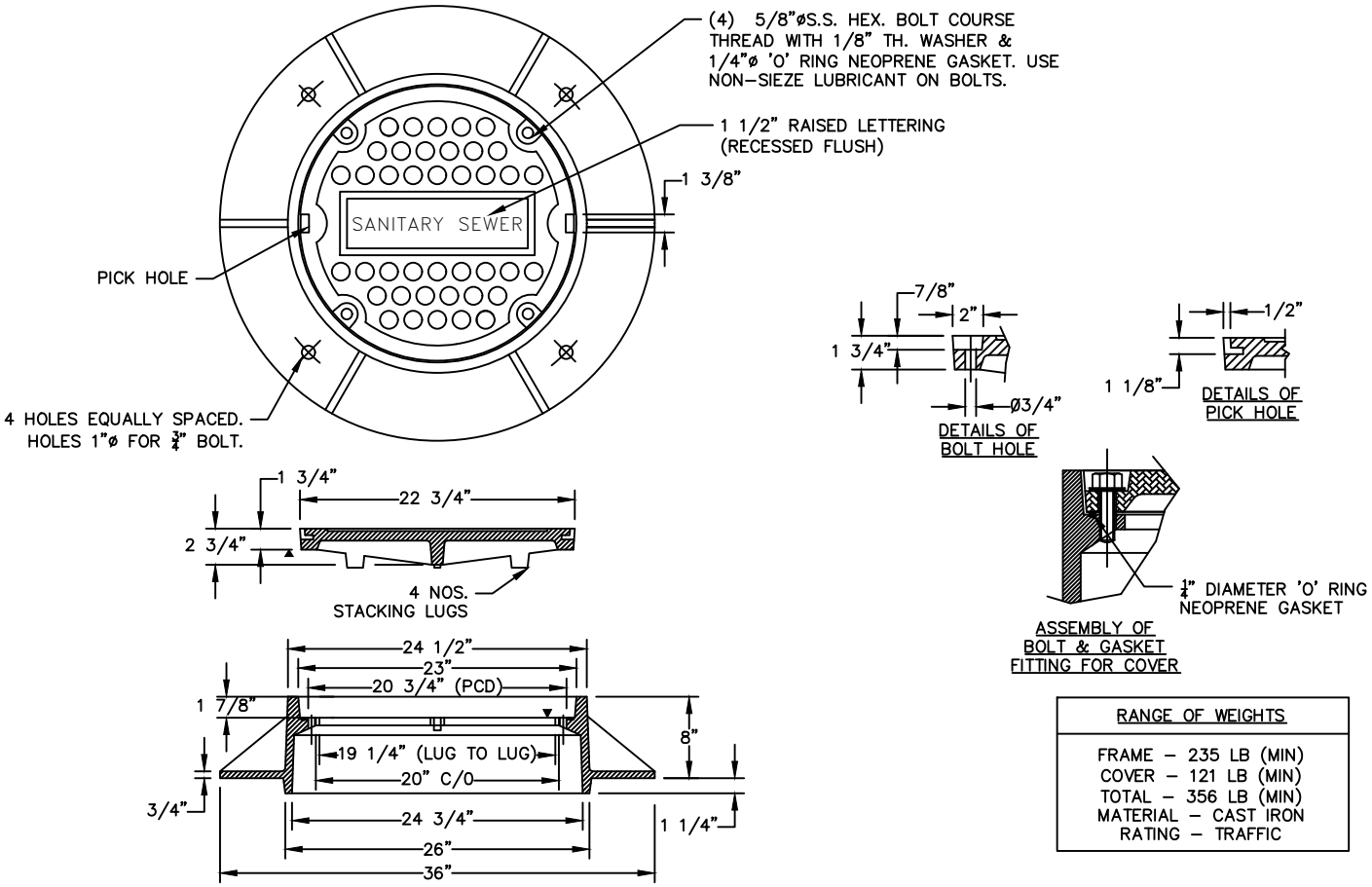


RANGE OF WEIGHTS
FRAME – 230 LB (MIN)–260 LB (MAX)
COVER – 120 LB (MIN)–130 LB (MAX)
TOTAL – 350 LB (MIN)–390 LB (MAX)
MATERIAL – GREY IRON ASTM A48CL35B
RATING – H20 FOR TRAFFIC

NOTE:

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

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS STANDARD MANHOLE FRAME & COVER	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-105



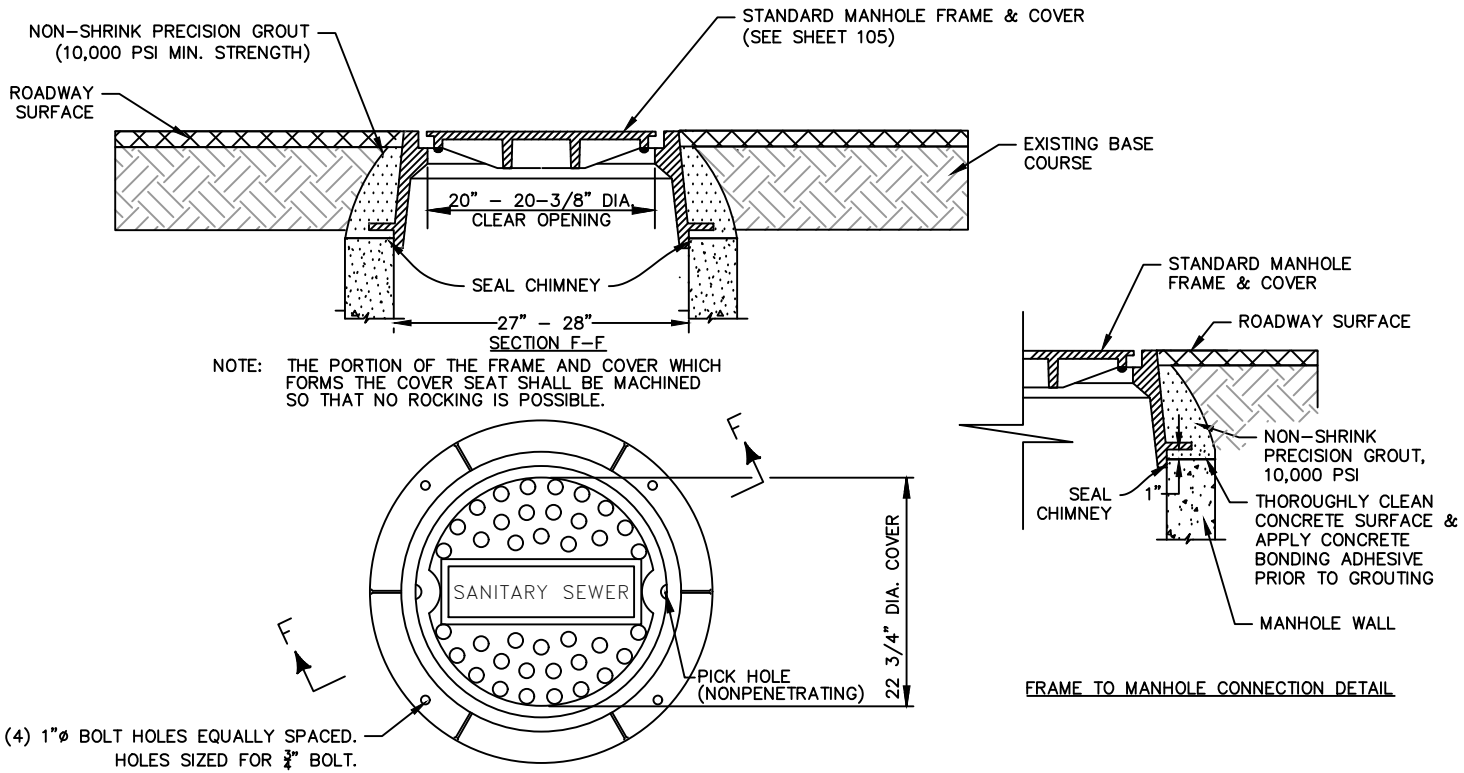
RANGE OF WEIGHTS
FRAME – 235 LB (MIN)
COVER – 121 LB (MIN)
TOTAL – 356 LB (MIN)
MATERIAL – CAST IRON
RATING – TRAFFIC

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.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS WATERTIGHT / BOLTDOWN MANHOLE FRAME & COVER	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-105A



STANDARD MANHOLE FRAME & COVER INSTALLATION IN ROADWAYS

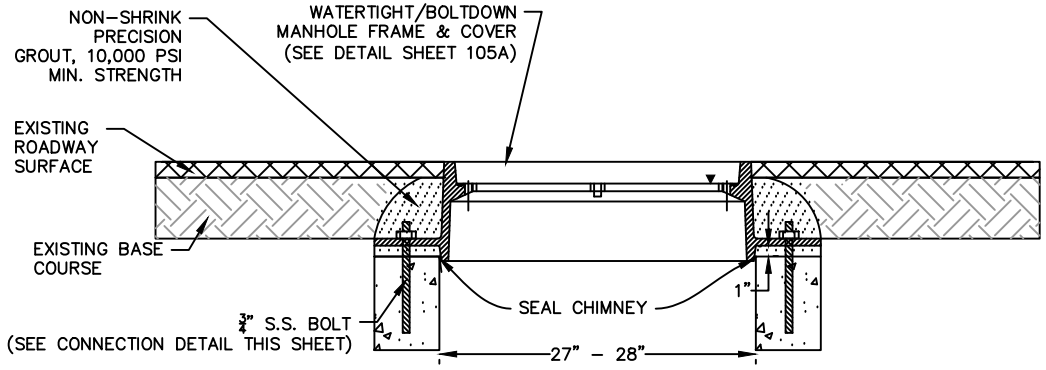
(FRAME GROUTED TO MANHOLE WALL)

N.T.S.

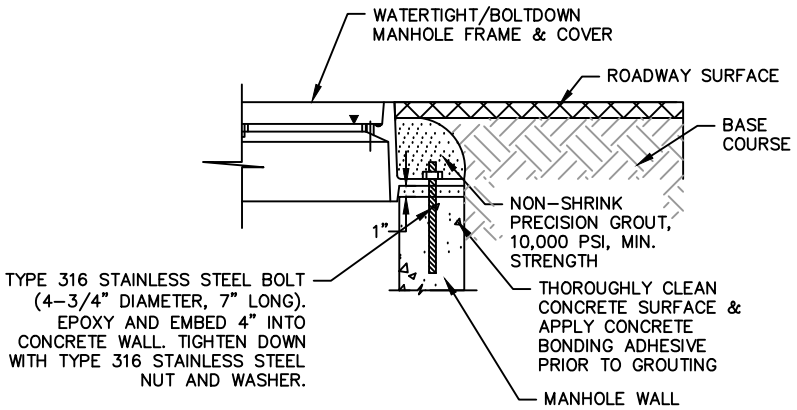
NOTES

1. INSTALLATION CAN ALSO BE USED IN NON–FLOODING EASEMENT LOCATIONS.
2. UNLESS DIRECTED OTHERWISE, BOLLARDS SHALL BE REQUIRED FOR PROTECTION OF MANHOLE FRAME & COVERS WITHIN EASEMENTS. (SEE TYP. BOLLARD DETAIL SHEET)
3. RUBBER RISER ADJUSTMENT RINGS ARE ALLOWED FOR HEIGHT ADJUSTMENT OF MANHOLES WITHIN EASEMENTS.

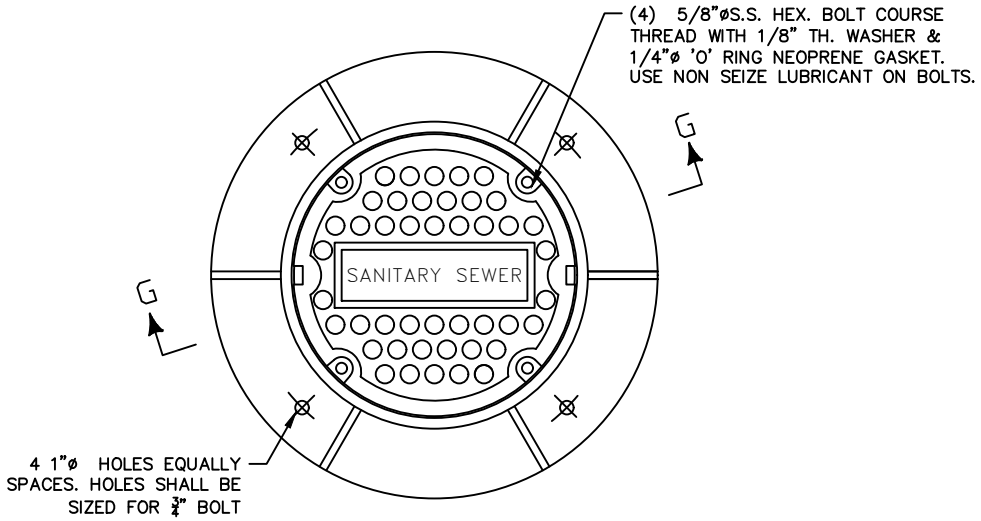
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS STANDARD MANHOLE INSTALLATION IN ROADWAYS AND NON-FLOODING EASEMENTS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-105E



SECTION G–G



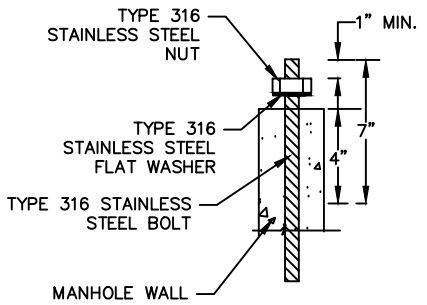
FRAME TO MANHOLE CONNECTION DETAIL



WATERTIGHT/BOLTDOWN FRAME & COVER
INSTALLATION IN ROADWAYS

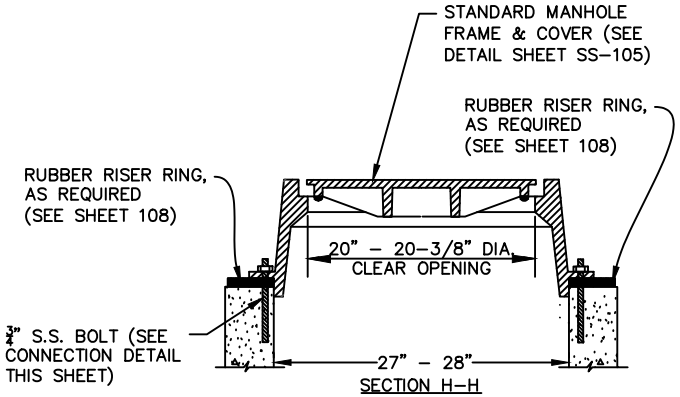
(FRAME GROUTED & ANCHORED TO MANHOLE WALL)

N.T.S.



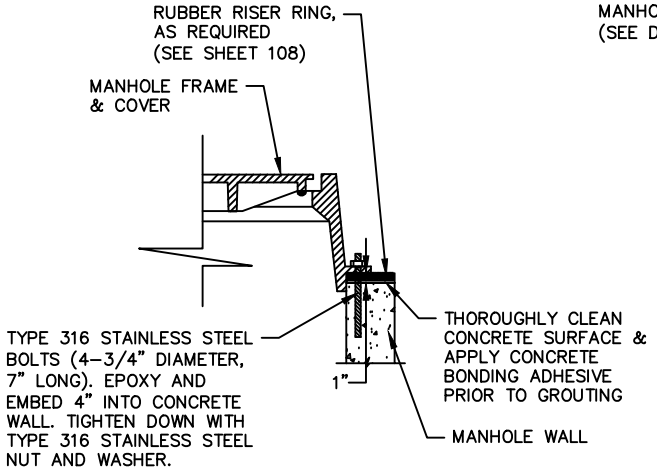
DETAIL OF STAINLESS STEEL BOLT ASSEMBLY
WITH NUT AND WASHER

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S.
		WATERTIGHT / BOLTDOWN FRAME & COVER INSTALLATION IN ROADWAYS	DRAWING NO. SS-105C

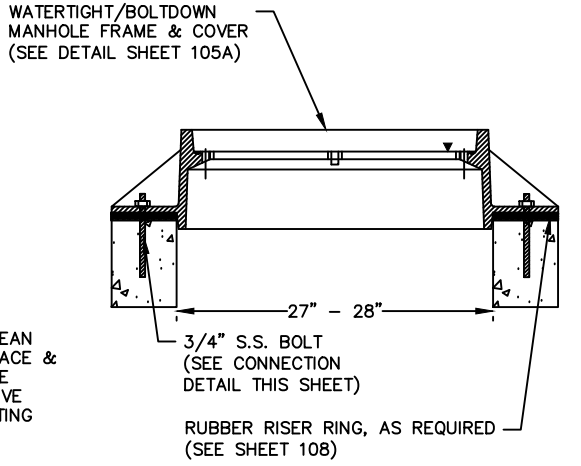


SECTION H–H

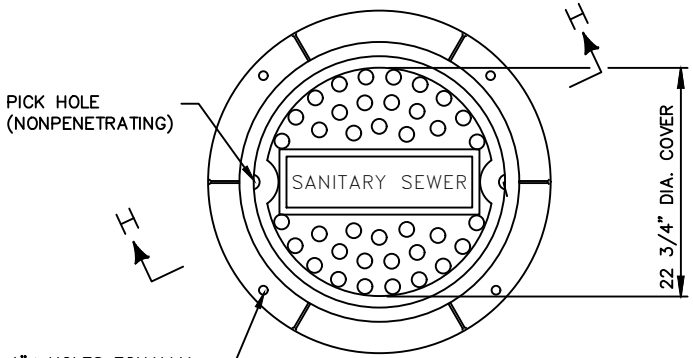
NOTE: THE PORTION OF THE FRAME AND COVER WHICH FORMS THE COVER SEAT SHALL BE MACHINED SO THAT NO ROCKING IS POSSIBLE.



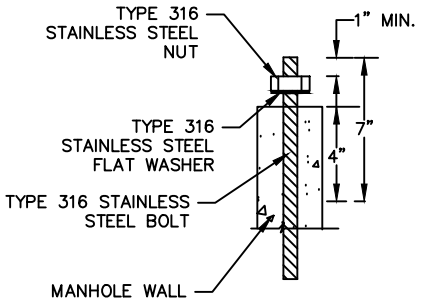
FRAME TO MANHOLE CONNECTION DETAIL



SECTION I–I



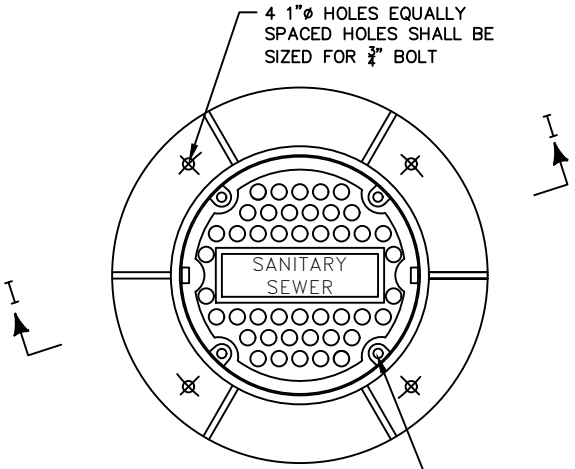
PLAN



DETAIL OF STAINLESS STEEL BOLT ASSEMBLY WITH NUT AND WASHER

NOTE:

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



INSTALLATION OF MANHOLE FRAME & COVER IN FLOOD PRONE EASEMENTS

(FRAME ANCHORED TO MANHOLE WALL)

N.T.S.

NOTES

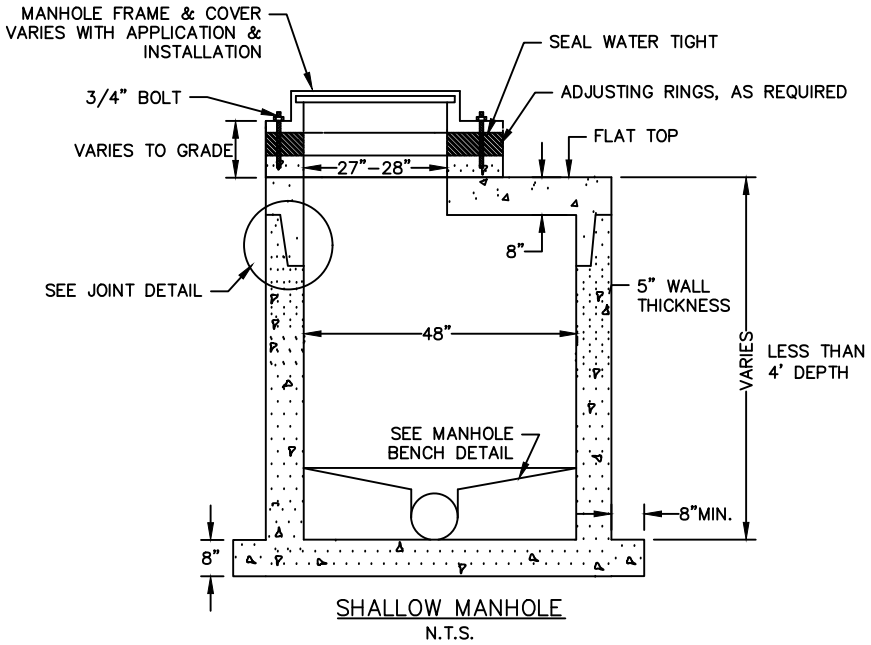
1. UNLESS DIRECTED OTHERWISE, BOLLARDS SHALL BE REQUIRED FOR PROTECTION OF MANHOLE FRAME & COVERS WITHIN EASEMENTS. (SEE TYP. BOLLARD DETAIL SHEET)
2. RUBBER RISER ADJUSTMENT RINGS ARE ALLOWED FOR HEIGHT ADJUSTMENT OF MANHOLES WITHIN EASEMENTS. (SEE DETAILS SHEET SS–108)

INSTALLATION OF WATERTIGHT/BOLTDOWN FRAME & COVER IN EASEMENTS

(FRAME ANCHORED TO MANHOLE WALL)

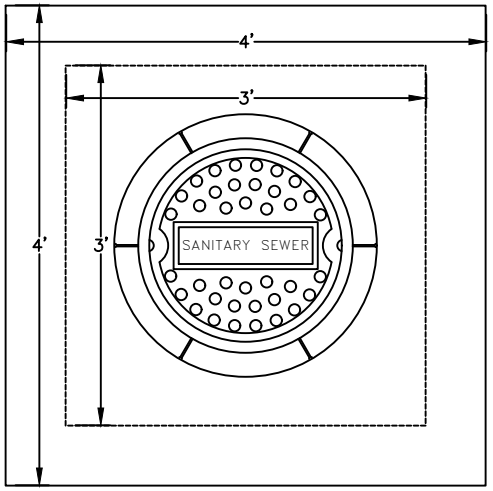
N.T.S.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS MANHOLE FRAME & COVER INSTALLATION IN EASEMENTS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-105D

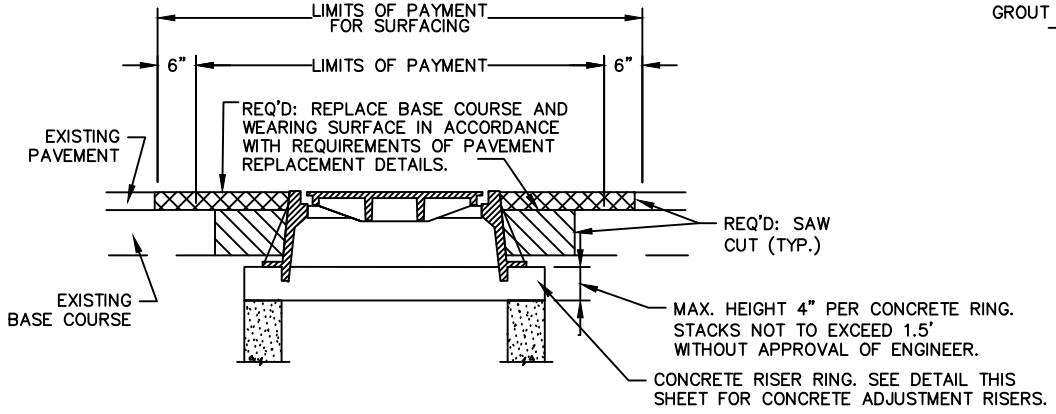


SHALLOW MANHOLE
N.T.S.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS SHALLOW MANHOLE	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-106

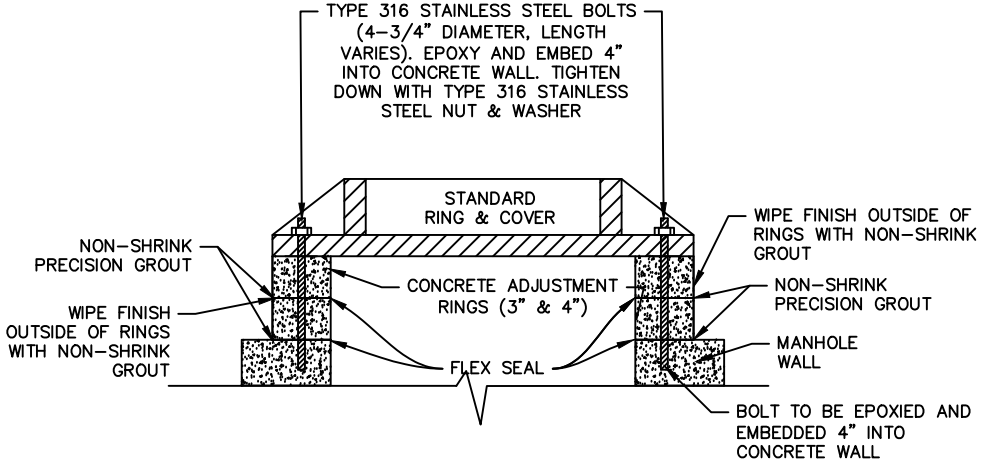


PLAN VIEW
N.T.S.



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 NECSSARY TO ACHIEVE THE DESIRED HEIGHT.

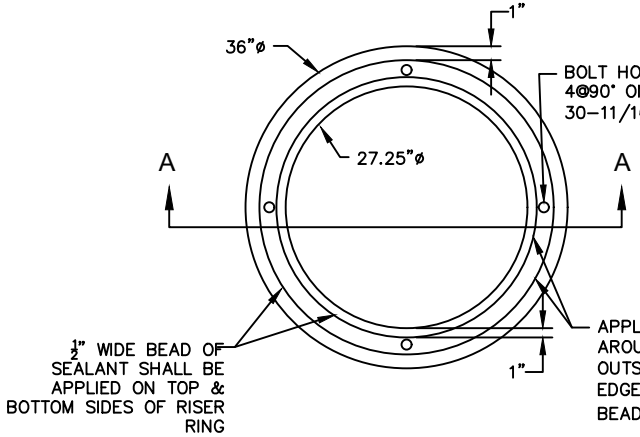
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS MANHOLE HEIGHT ADJUSTMENT WITH CONCRETE ADJUSTMENT RISER RING	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-107

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 10–5

NOTES:

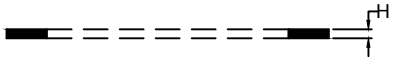
1. MAXIMUM HEIGHT OF RUBBER RINGS IS 3". STACKS SHALL NOT EXCEED TWO RINGS OR 6" IN TOTAL HEIGHT.
2. TWO BEADS OF POLYURETHANE SEALANT (½" WIDE) SHALL BE APPLIED ON BOTH SIDES OF RING WITH EACH BEAD AT A DISTANCE OF 1" FROM INNER & OUTER EDGES.
3. USE OF RUBBER RINGS FOR ADJUSTING MANHOLES IN ROADWAYS IS NOT PERMISSIBLE.



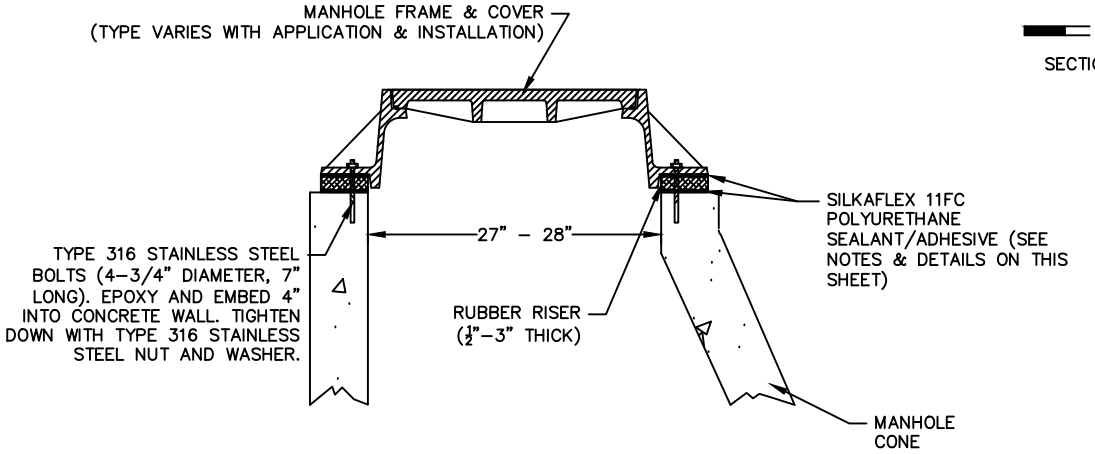
AVAILABLE SIZES:

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



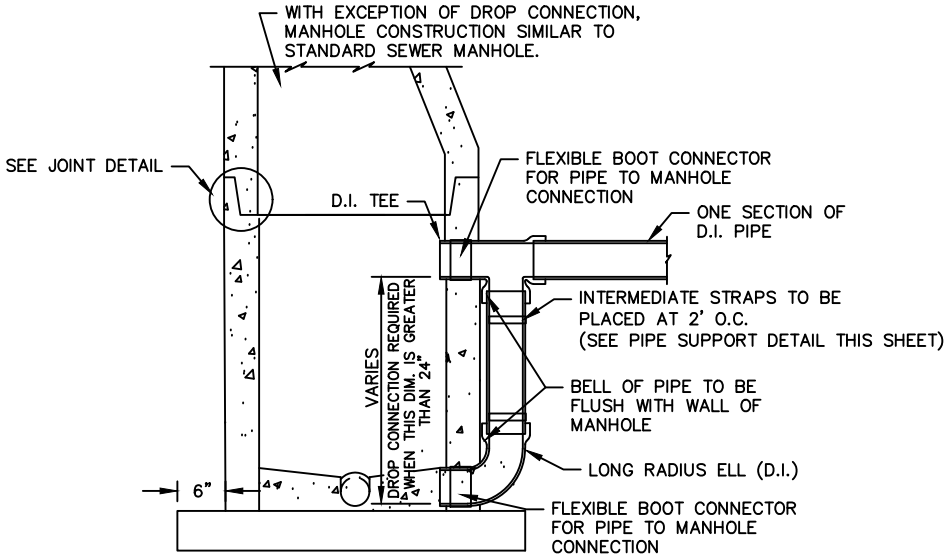
SECTION A–A FOR FLAT MODELS



RUBBER COMPOSITE ADJUSTMENT RING ASSEMBLY DETAIL

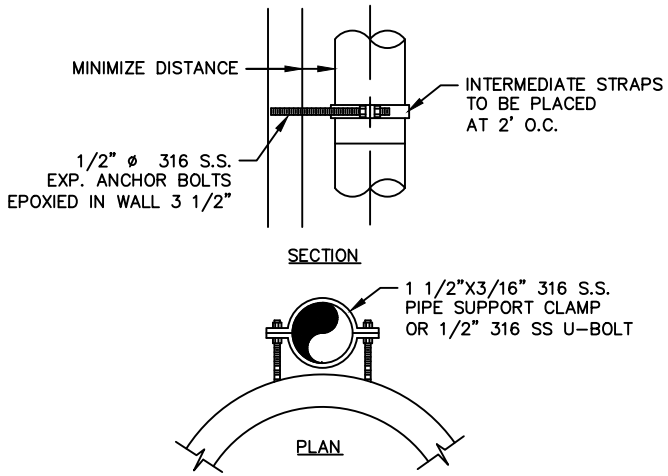
N.T.S.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS MANHOLE HEIGHT WITH RUBBER ADJUSTMENT RISER RING	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-108

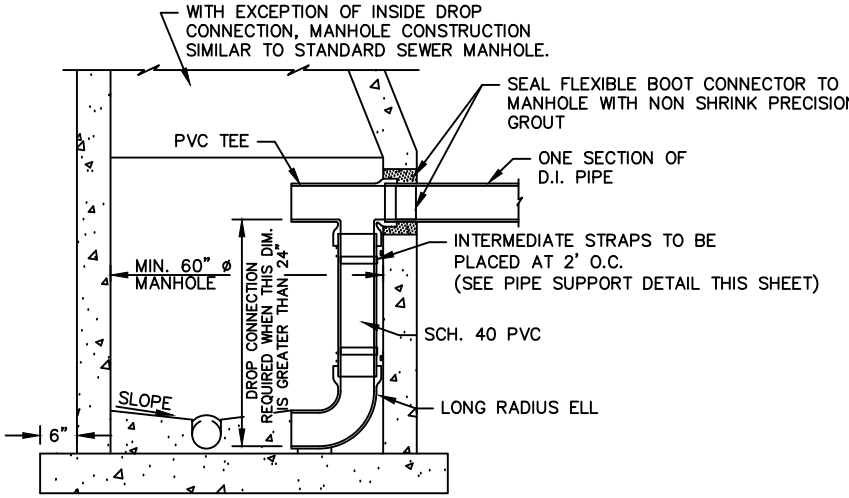


DETAIL OF DROP CONNECTION
OUTSIDE OF MANHOLE

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



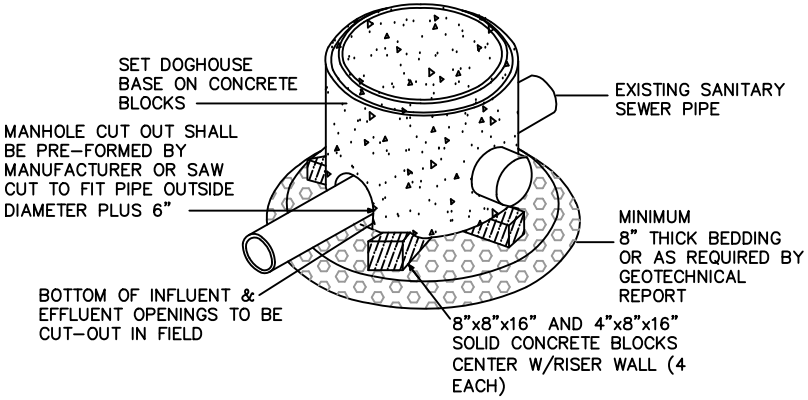
PIPE SUPPORT DETAILS
N.T.S.



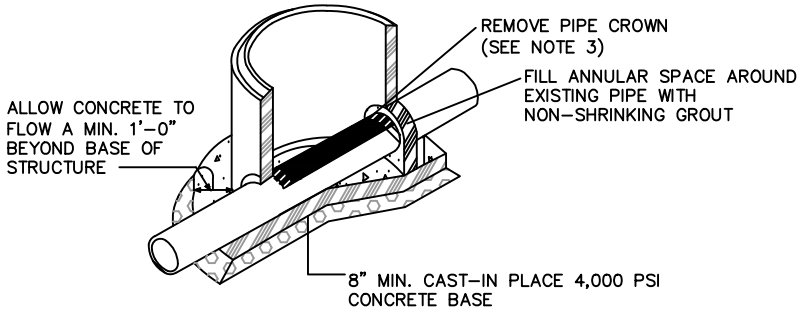
DETAIL OF DROP CONNECTION
INSIDE OF MANHOLE
N.T.S.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S.
		MANHOLE DROP CONNECTION	DRAWING NO. SS-109

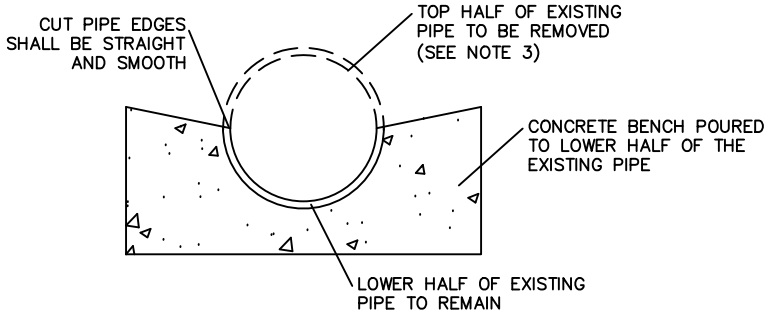
PRECAST CONCRETE MANHOLE BASES SHALL BE FABRICATED IN ACCORDANCE WITH THE BOARD'S STANDARD SPECIFICATIONS

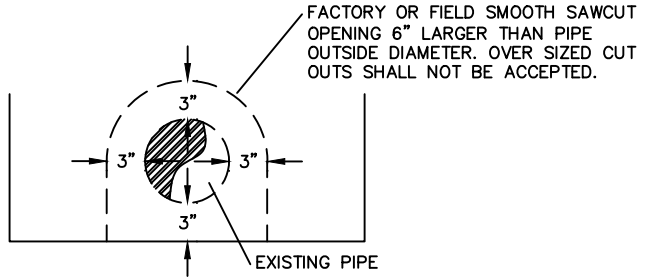


DOGHOUSE MANHOLE BASE
N.T.S.



FOUNDATION SECTION VIEW
N.T.S.





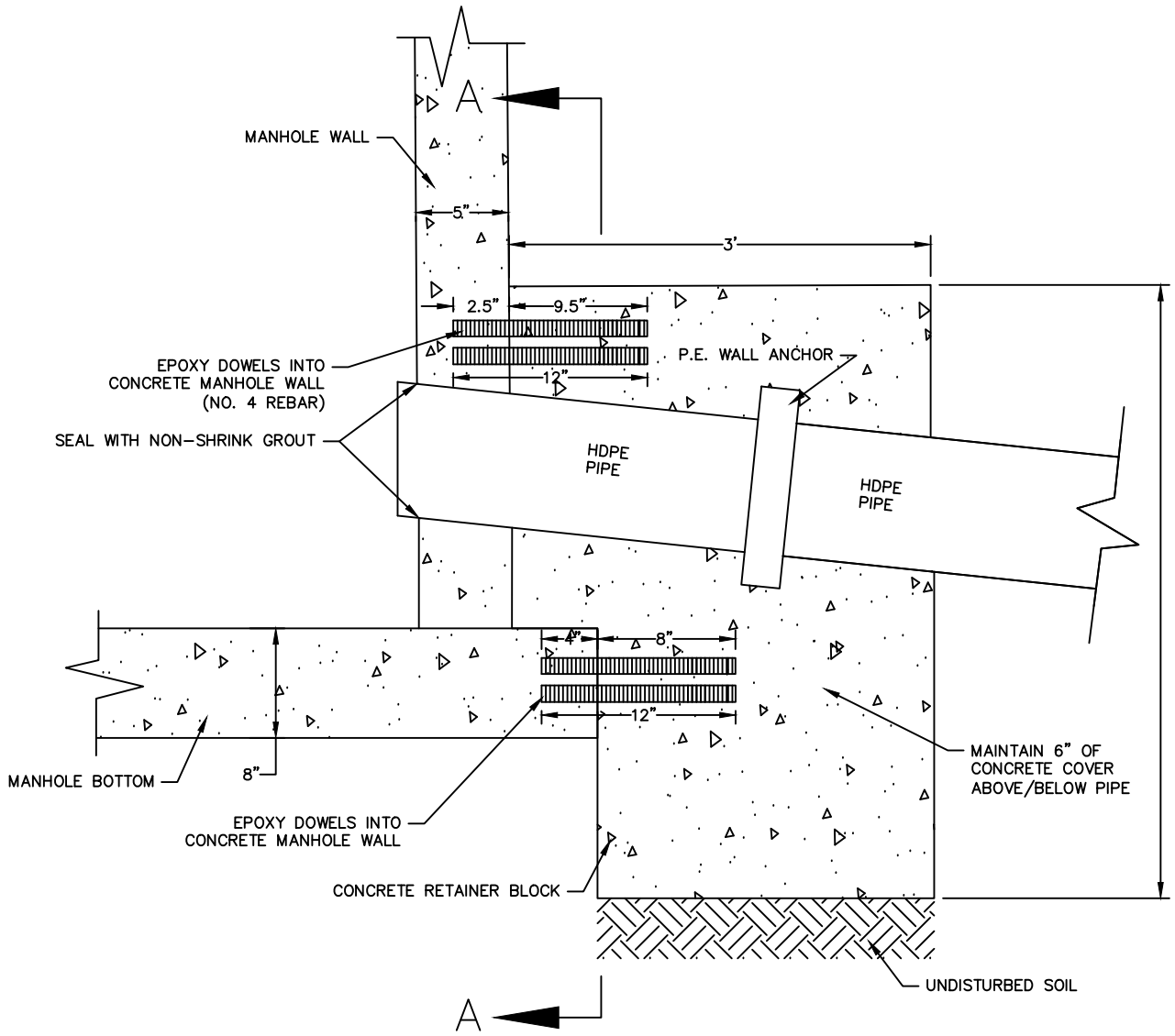
MANHOLE
CUT OUT DETAIL
N.T.S.

NOTES:

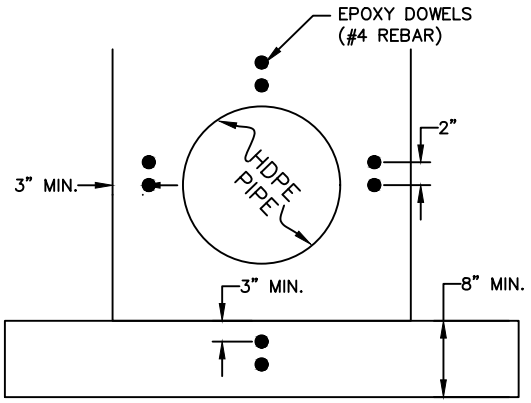
1. CONSTRUCT A FORMED INVERT FROM NEW SEWER LINE TO ALLOW FLOW TO THE EXISTING PIPE.
2. POUR A BENCH TO THE LOWER HALF OF THE EXISTING PIPE.
3. CUT AND REMOVE THE TOP HALF OF EXISTING PIPE TO WITHIN 6" OF THE MANHOLE WALLS AFTER THE INVERT AND BENCH HAVE BEEN FORMED AND THE MANHOLE HAS BEEN FULLY TESTED 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 BOARD'S STANDARD SPECIFICATIONS, UNLESS OTHERWISE DIRECTED BY THE OWNER OR ENGINEER.

TYPICAL MANHOLE BASE
SHOWING "DOGHOUSE" INSTALLATION

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS DOGHOUSE MANHOLE DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-110

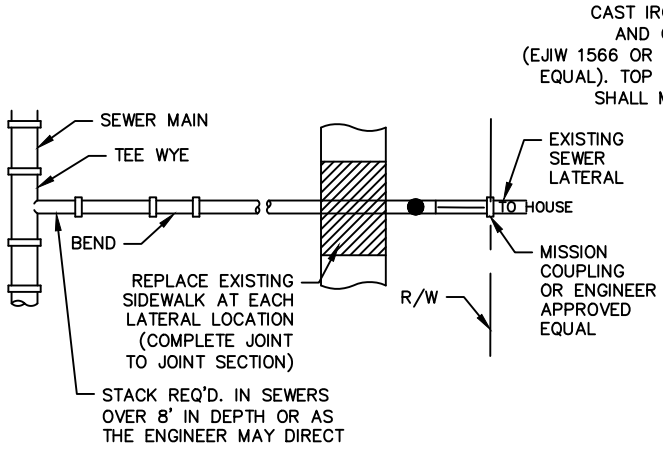


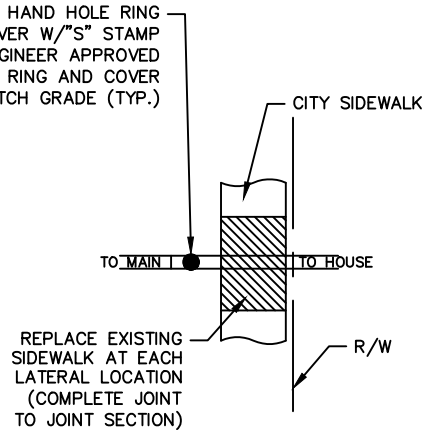
HDPE TO MANHOLE CONNECTION DETAIL
N.T.S.



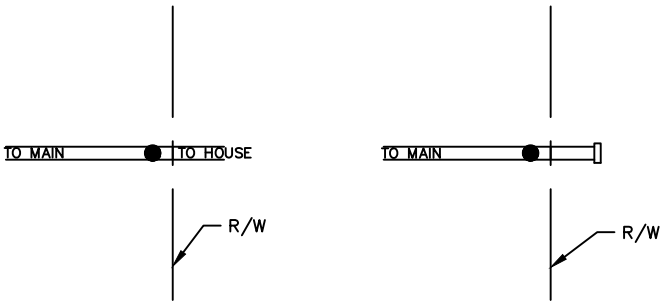
SECTION A–A
N.T.S.

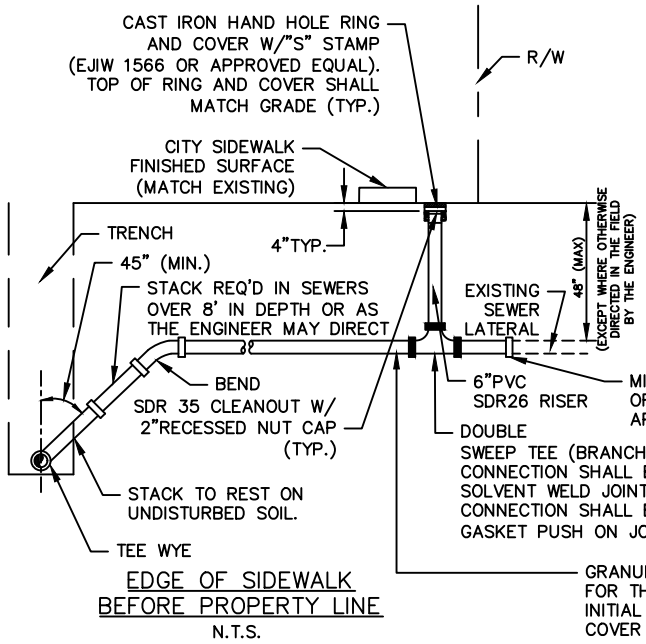
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		HDPE TO MANHOLE CONNECTION DETAILS	SCALE: N.T.S. DRAWING NO. SS-111



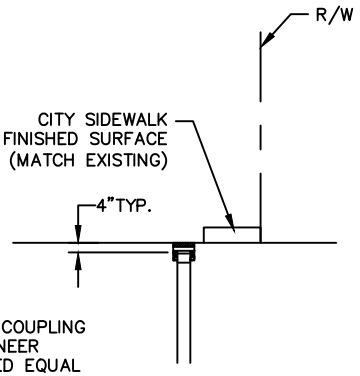


PLAN
N.T.S.

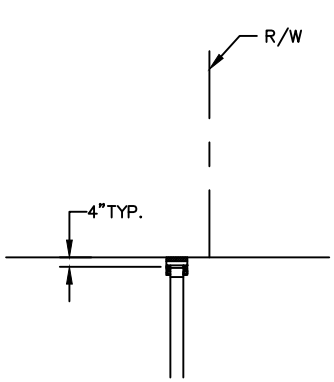




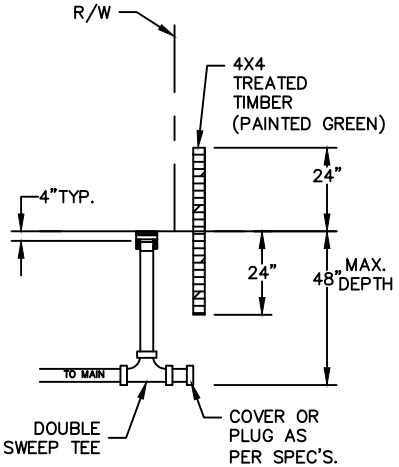
EDGE OF SIDEWALK
BEFORE PROPERTY LINE
N.T.S.



EDGE OF SIDEWALK
BEFORE PROPERTY LINE
N.T.S.



NO SIDEWALK
N.T.S.



NO EXISTING LATERAL
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.
- 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.

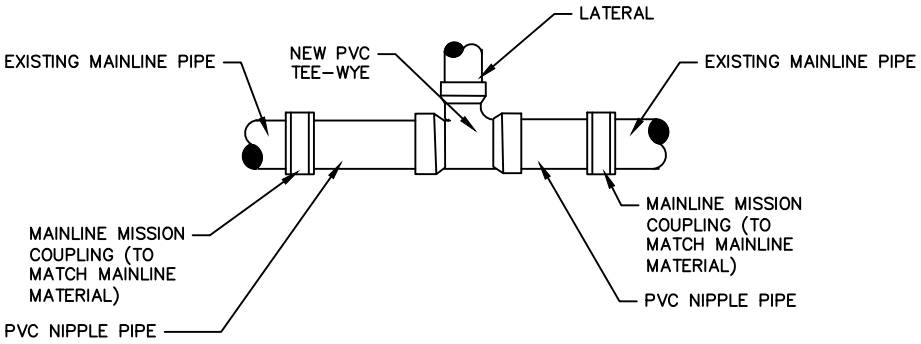
SAWSS
SARALAND AREA WATER & SEWER SYSTEM

Board of Water and Sewer Commissioners of The City of Saraland

TYPICAL SANITARY SEWER DETAILS

SANITARY SEWER LATERAL CONNECTION DETAILS

DATE ISSUED: 04/05/17
SCALE: N.T.S.
DRAWING NO. SS-112

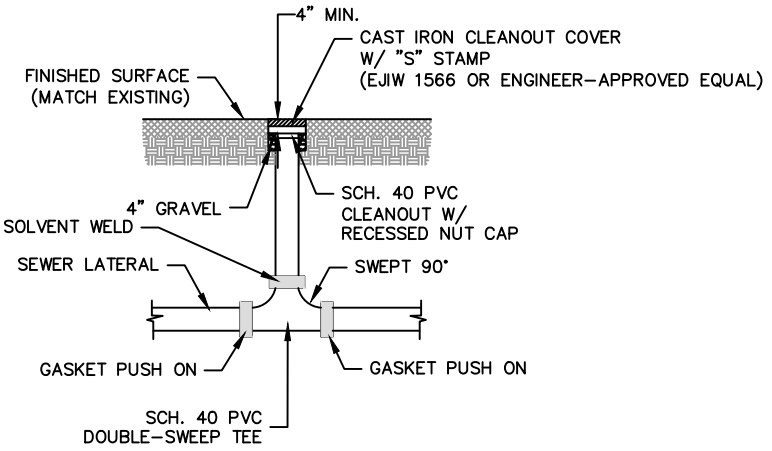


CUT – IN TEE

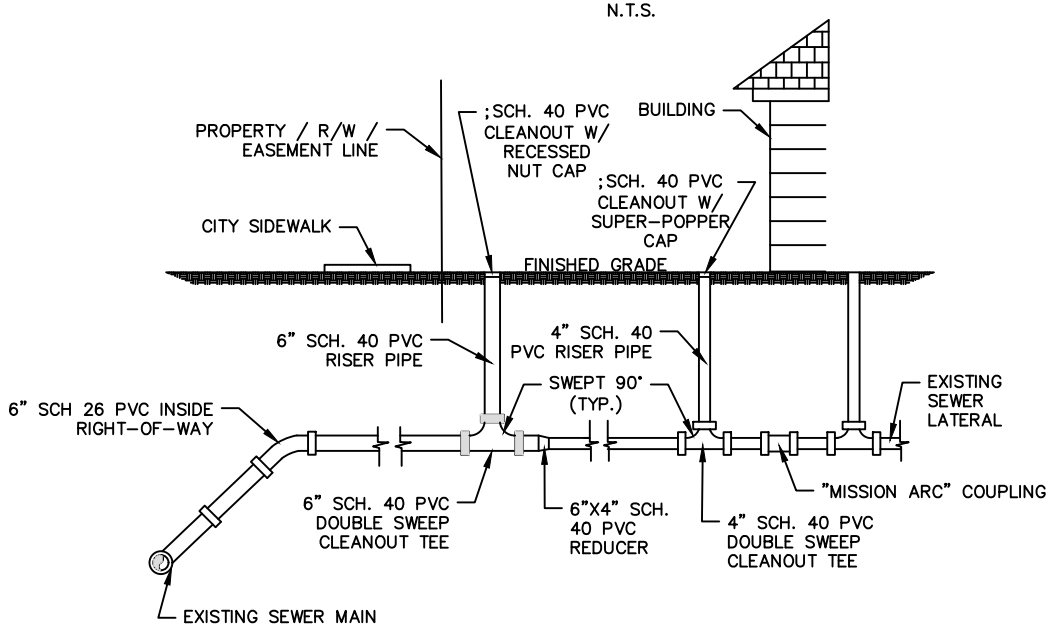
N.T.S.

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

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS SANITARY SEWER LATERAL CONNECTION DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-112A



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



PRIVATE SANITARY SEWER LATERAL DETAIL
N.T.S.

NOTES:

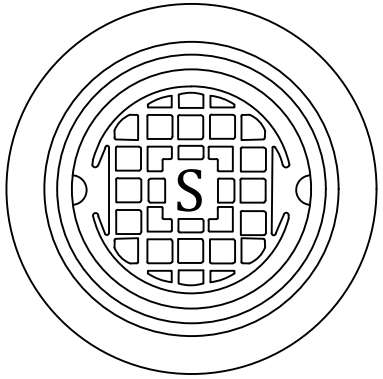
1. A CLEANOUT SHALL BE PLACED AT THE PROPERTY/ RIGHT–OF–WAY / EASEMENT LINE AND WITHIN 2' TO 5' OF BUILDING OR AS APPROVED BY THE ENGINEER. CLEANOUTS PLACED AT THE BUILDINGS SHALL HAVE DOUBLE–SWEEP TEES & SUPER–POPPER CAP PER CITY PLUMBING CODES.

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.

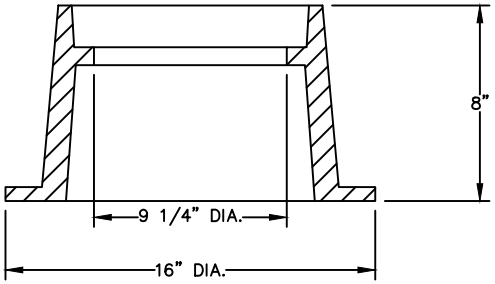
4. DOUBLE SWEEP TEE SHALL BE GASKET RUN JOINTS BY SOLVENT WELD BRANCH JOINTS.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS PRIVATE LATERAL CONNECTION DETAILS	DATE ISSUED: 04/05/17 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.

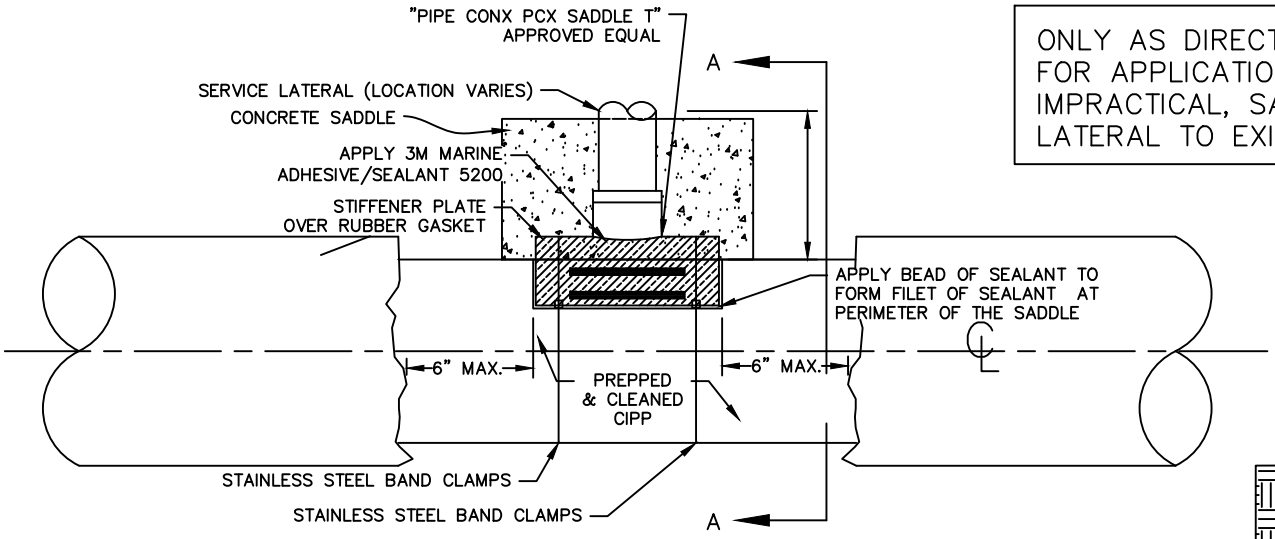
RING–40 LBS.
COVER–25 LBS.

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.

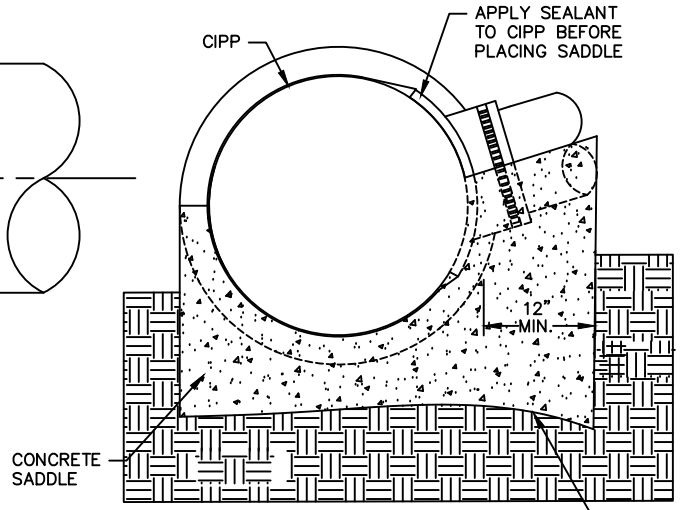
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S.
		SANITARY SEWER HANDHOLE RING AND COVER DETAILS	DRAWING NO. SS-114



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

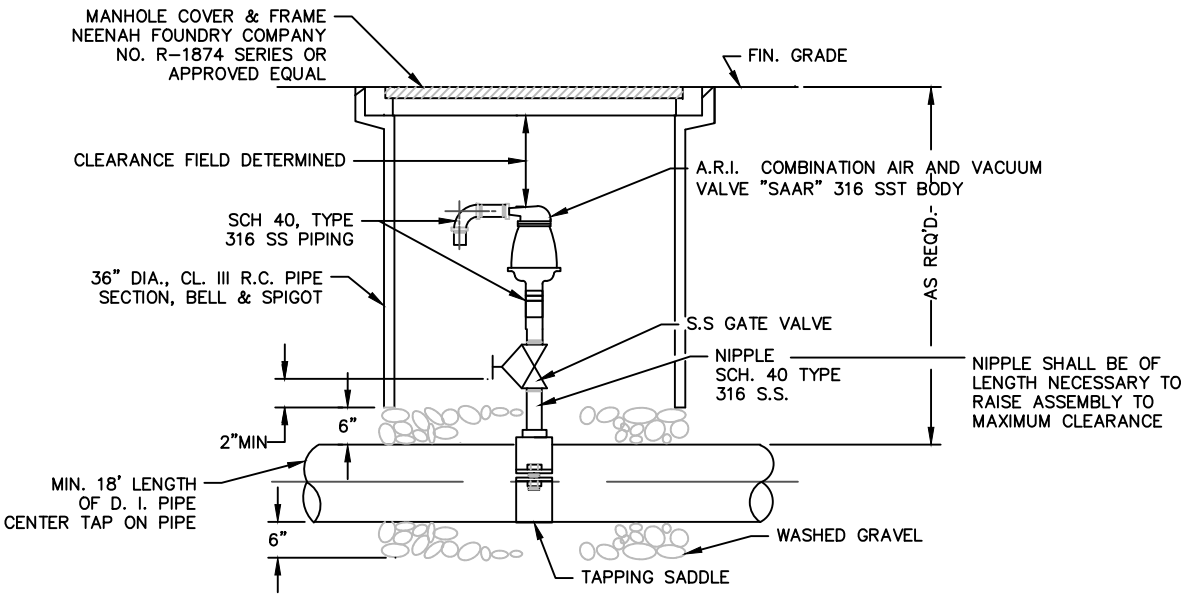
N.T.S.

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 EXTRANEOUS MATERIAL.

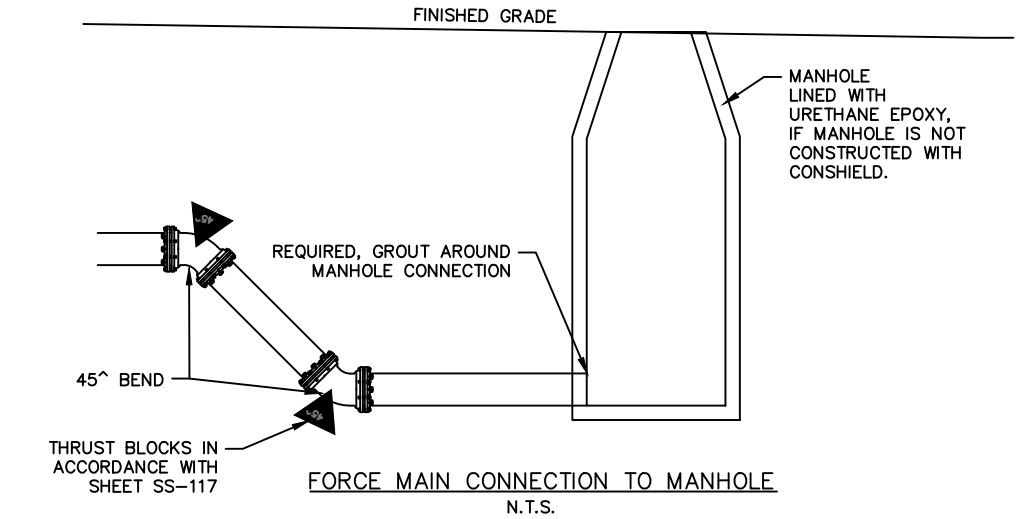
   IF THE EXISTING CUT–OUT IN THE CIPP IS FOR A WYE, IS OBLONG OR EXCEEDS 6.5" IN DIAMETER, A FITTING MUST BE CUT INTO THE CIPP FOR THE LATERAL INSTALLATION. DO NOT USE A SADDLE.
4. ALL SOIL, DEBRIS, OILS, LOOSE MATERIAL AND OTHER CONTAMINANTS SHALL BE REMOVED FROM THE CIPP LINER TO ENSURE PROPER ADHESION 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 ¼".
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.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS LATERAL CONNECTION TO CIPP SEWER MAIN DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-115



AIR AND VACUUM VALVE ASSEMBLY

N.T.S.



FORCE MAIN CONNECTION TO MANHOLE

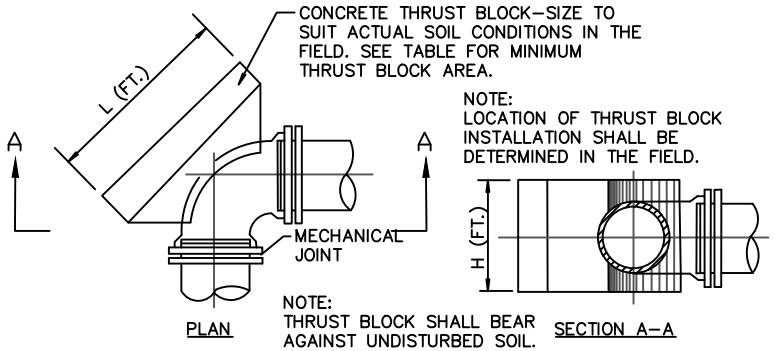
N.T.S.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS AIR AND VACUUM VALVE ASSEMBLY AND FORCE MAIN CONNECTION TO MANHOLE DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-116

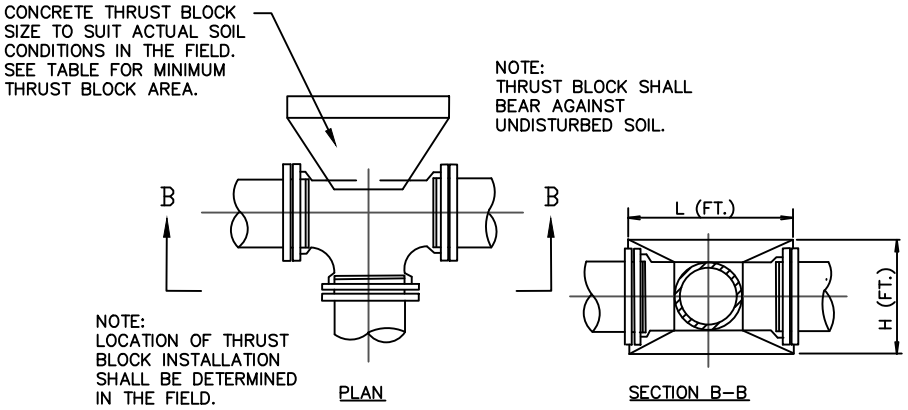
TYPICAL THRUST BLOCKS MINIMUM THRUST BLOCK AREA SQ. FT. L (FT.) X H (FT.)			
INSIDE DIA. PIPE LINE IN INCHES	90° BENDS	TEES, DEAD ENDS, OR 45° BENDS	22½° BENDS
6"	3.0	2.2	1.0
8"	5.5	4.0	1.5
10"	8.5	6.0	2.5
12"	12.0	9.0	3.5
16"	22.0	16.0	6.0
18"	27.0	20.0	8.0
20"	34.0	24.0	10.0
24"	48.0	34.0	14.0
30"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

NOTE:

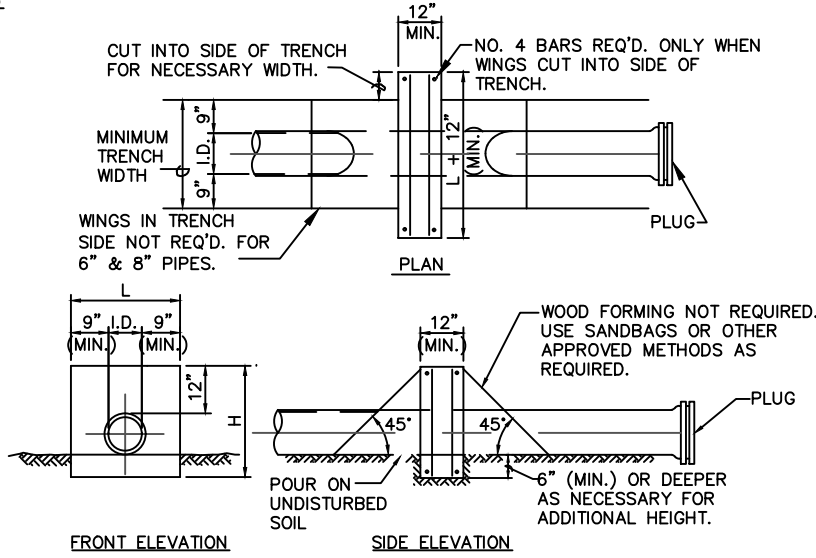
1. CONCRETE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH ≥3000PSI
2. CONCRETE SHALL BE THOROUGHLY MIXED WITH WATER PRIOR TO PLACEMENT
3. CONCRETE SHALL BE POURED AGAINST UNDISTURBED SOIL.



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

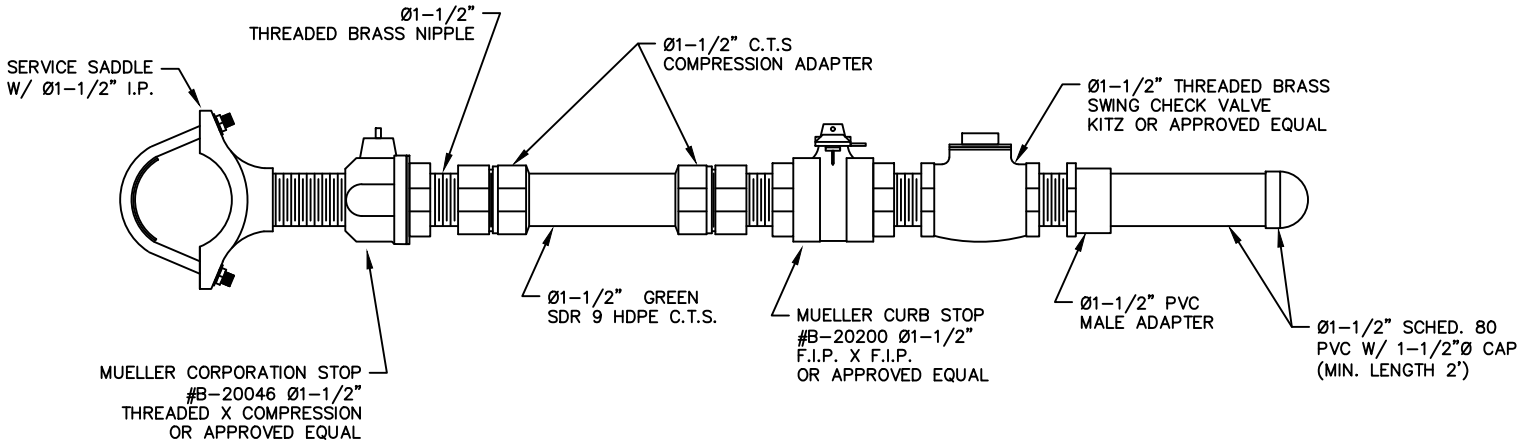


TYPICAL THRUST BLOCK DETAIL FOR TEES
N.T.S.



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

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		THRUST BLOCK & DEAD END ANCHOR BLOCKS	SCALE: N.T.S. DRAWING NO. SS-117



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

NOTE:

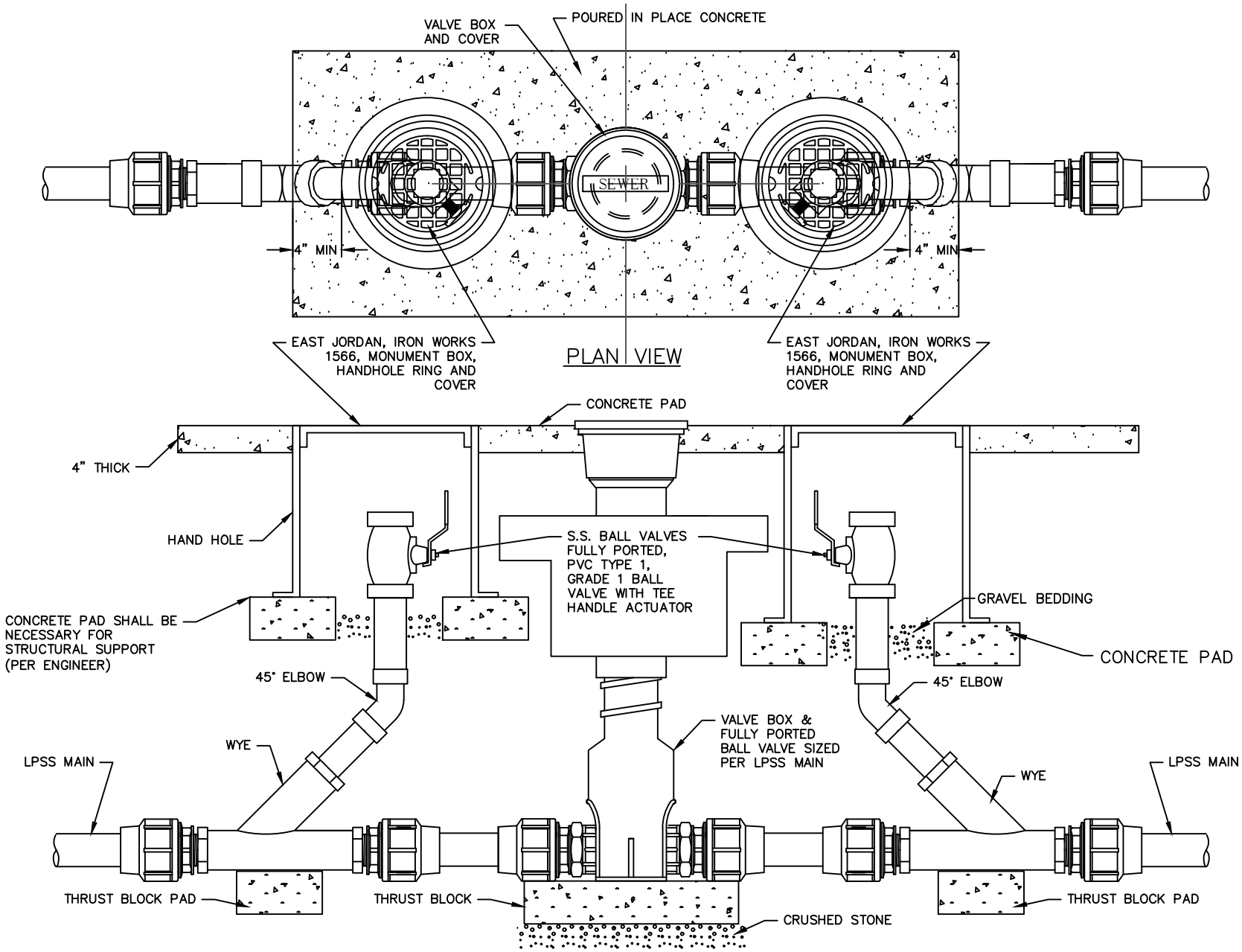
1. A TRACER WIRE (14 GAUGE COPPER WIRE) SHALL BE INSTALLED AT THE LATERAL LOCATION FROM FORCE MAIN CONNECTION TO TERMINATION AT PROPERTY LINE.

2. WIRE SHALL RUN FROM THE 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.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		LOW PRESSURE SEWER FORCE MAIN LATERAL	SCALE: N.T.S. DRAWING NO. SS-118



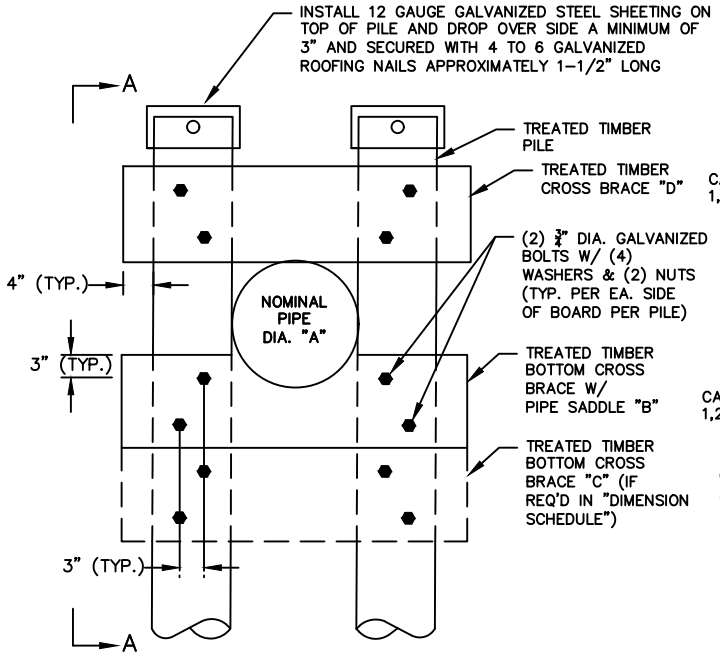
NOTE:

AT EACH CLEANOUT LOCATION A VALVE MARKER SHALL BE REQUIRED.

TYPICAL FLUSHING CONNECTION ON LPSS FORCE MAIN

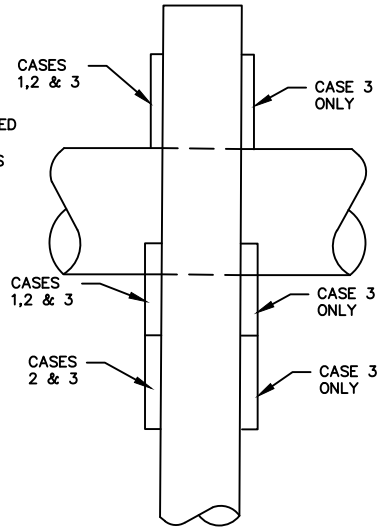
N.T.S.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS FLUSHING CONNECTION FOR LOW PRESSURE SEWER FORCE MAIN	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-119



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.

NOTES:

1. SUPPORT STRUCTURES SHALL BE PLACED AT EVERY JOINT, 18' TO 20' ON CENTER TYPICAL. DEPENDING ON LAYING LENGTH OF PIPE.

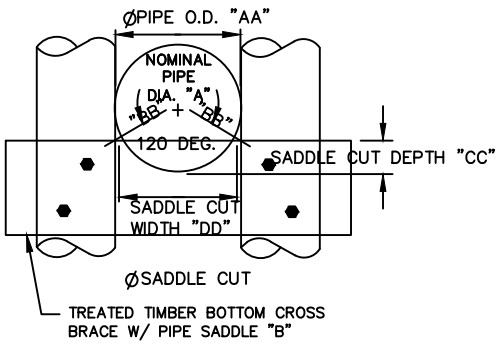
2. SEE STANDARD SPECIFICATIONS FOR MATERIAL SPECIFICATIONS.

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.



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.

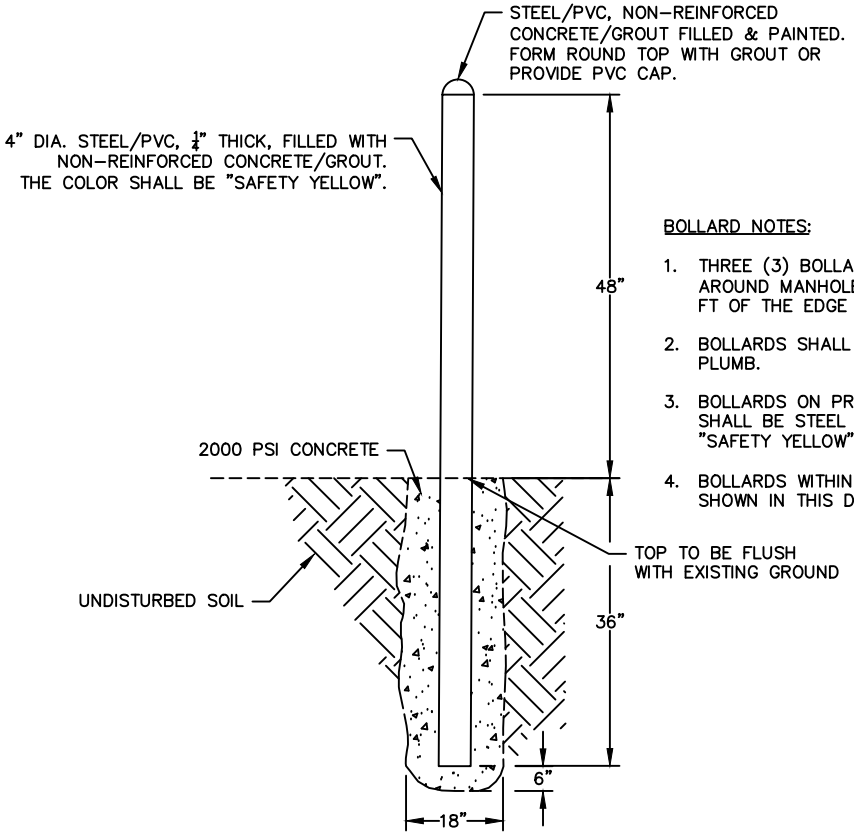
SAWSS
SARALAND AREA WATER & SEWER SYSTEM

Board of Water and Sewer Commissioners of The City of Saraland

TYPICAL SANITARY SEWER DETAILS

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

DATE ISSUED: 04/05/17
SCALE: N.T.S.
DRAWING NO. SS-120

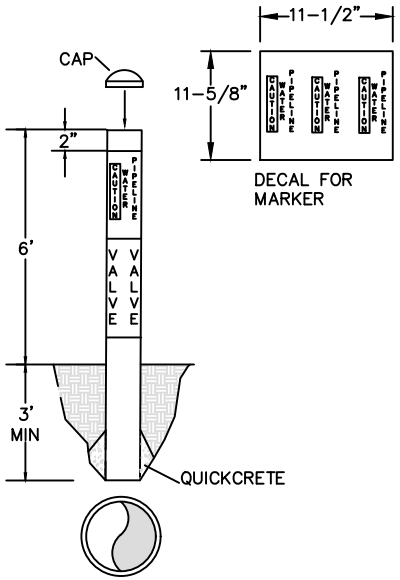


BOLLARD NOTES:

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.

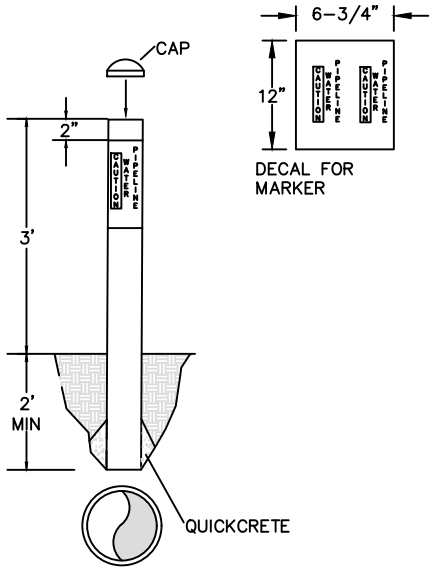
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		BOLLARD DETAIL	SCALE: N.T.S.
			DRAWING NO. SS-121



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

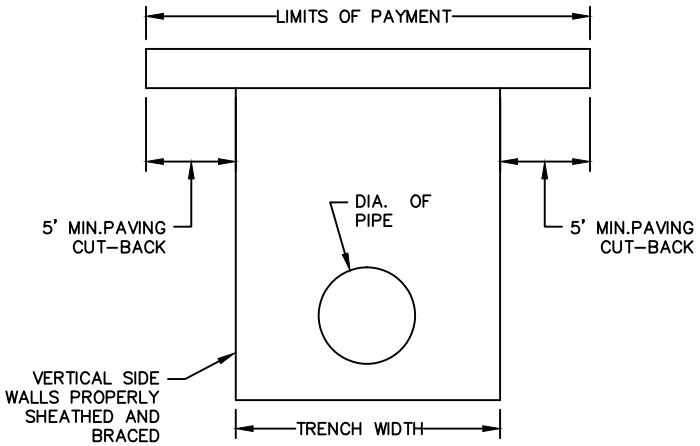


USE ON WATER & SEWER LINES RUNNING THROUGH NON-RESIDENTIAL AREAS.

- ½ – 40LB BAG OF QUICKCRETE(MIN)
- PLACE MARKER DIRECTLY OVER PIPELINE
- MARKER SHALL BE PLUMB
- FLARE BOTTOM OF HOLE FOR QUICKCRETE

GUIDE FOR INSTALLATION OF 1½" PVC WATER & SEWER PIPELINE MARKERS

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS PIPE LINE MARKER DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-122



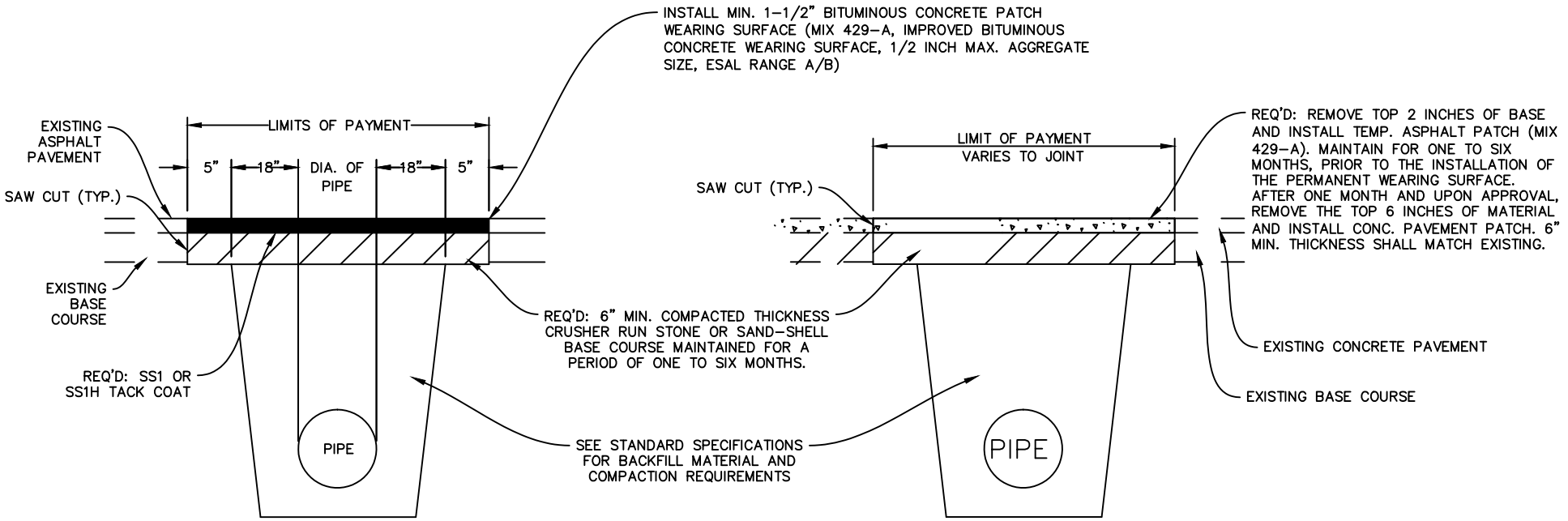
TRENCH WIDTHS & PAVING CUT– BACKS
LIMIT OF PAYMENT
N.T.S.

NOMINAL PIPE DIAMETER (INCHES)	TRENCH WIDTH (INCHES)
4	40
6	42
8	44
10	46
12	48
14	50
15	51
16	52
18	54
20	56
24	60
30	66
36	72
42	78
48	84

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 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.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		TRENCH WIDTHS AND PAVING CUT BACK	SCALE: N.T.S. DRAWING NO. SS-123



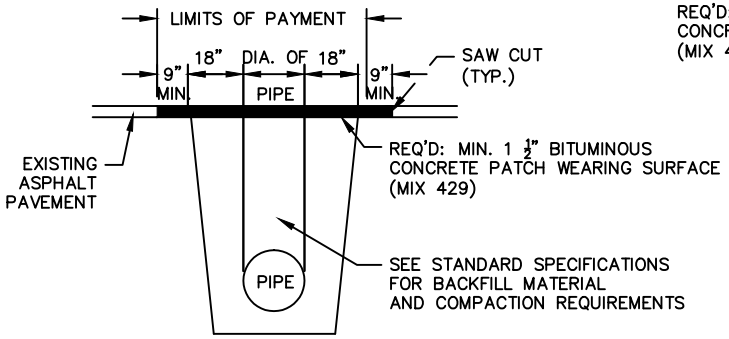
TEMPORARY ROADWAY PATCH WITHIN CITY R/W

N.T.S.

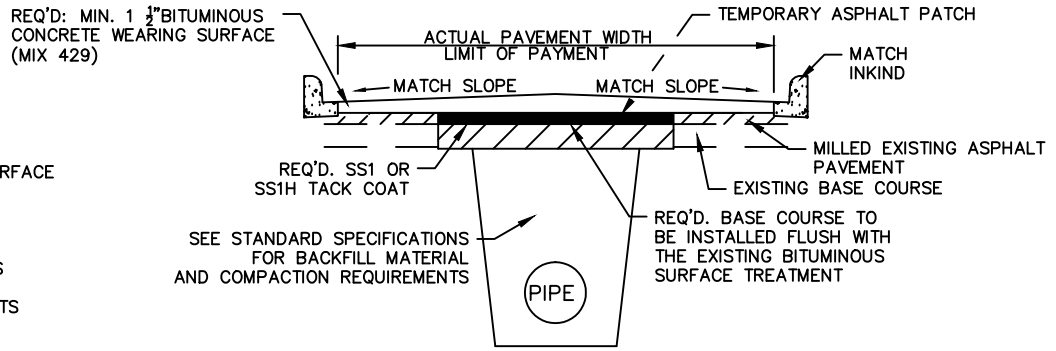
NOTE:

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

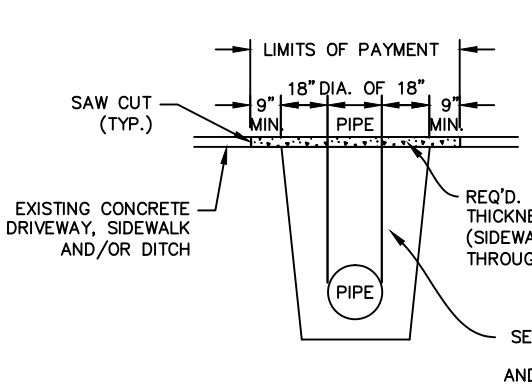
SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS TEMPORARY PAVEMENT DETAILS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-124



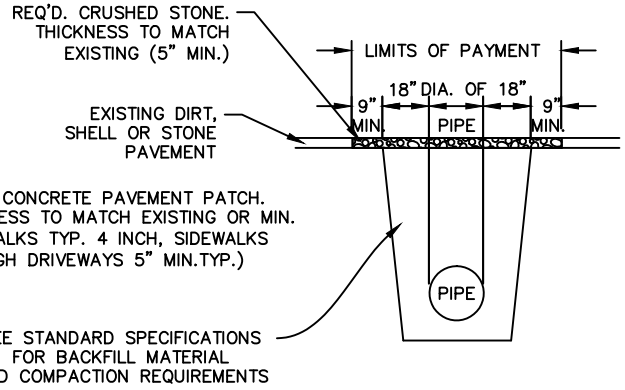
REMOVING & REPLACING ASPHALT DRIVEWAYS
N.T.S.



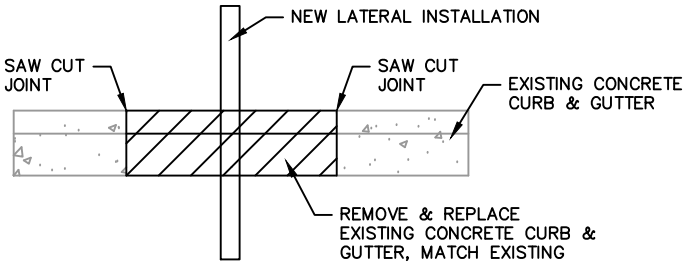
BITUMINOUS WEARING SURFACE FOR FULL WIDTH STREET SURFACING
N.T.S.



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



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

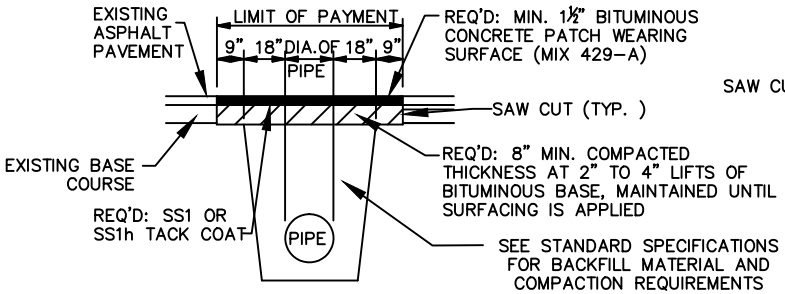


CURB REPLACEMENT
@ NEW LATERAL INSTALLATION
N.T.S.

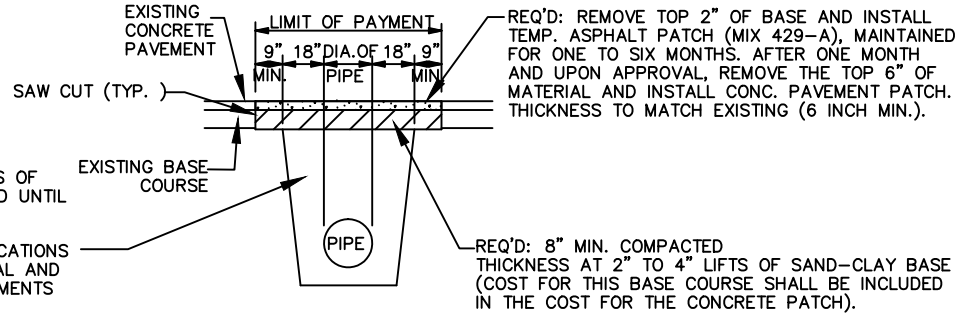
NOTE:

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

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		PAVEMENT REMOVAL & REPLACEMENT DETAILS	SCALE: N.T.S. DRAWING NO. SS-125



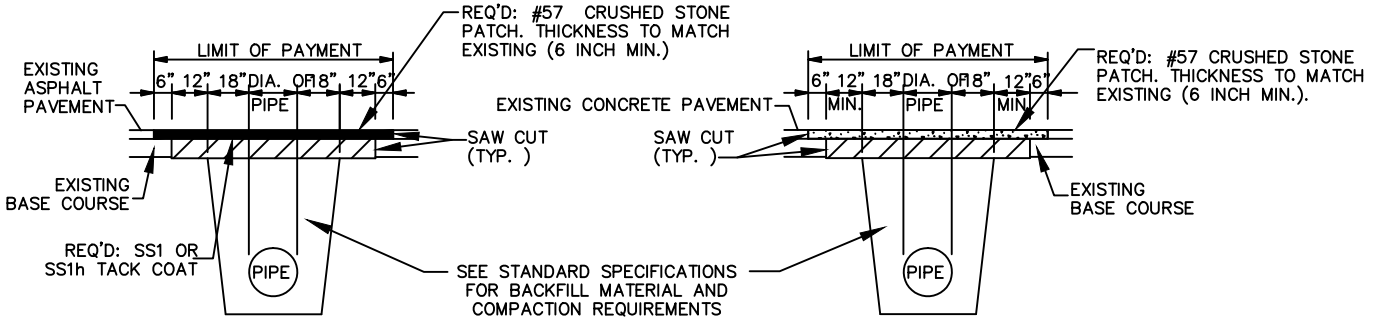
ASPHALT PAVEMENT



CONCRETE PAVEMENT

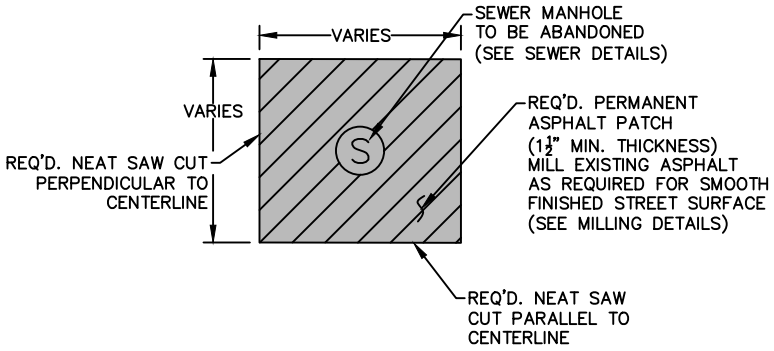
REMOVING & PREPARATION OF PAVEMENT WITHIN MOBILE COUNTY R/W

N.T.S.



REMOVING & PREPARATION OF PAVEMENT WITHIN STATE OF ALABAMA R/W

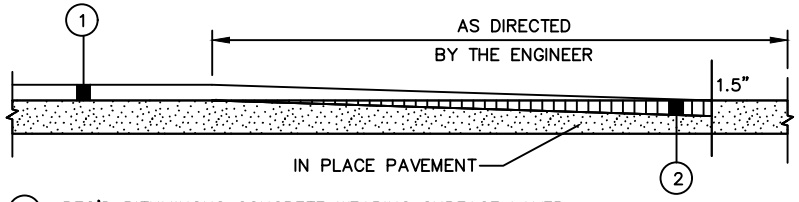
N.T.S.



MANHOLE PERMANENT ASPHALT PATCH DETAIL

NOTE:

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



(1) REQ'D BITUMINOUS CONCRETE WEARING SURFACE LAYER, 1-½" THICK MIX 429-A

(2) MILLING EXISTING PAVEMENT (APPROXIMATELY 1-1/4" THRU 1-3/4" THICK)

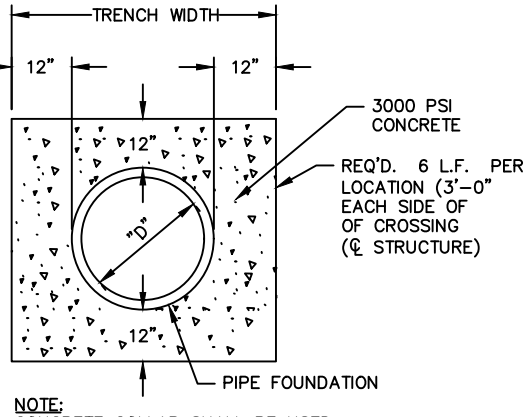
PAVEMENT TERMINATION (MILLING) DETAIL

N.T.S.

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 AS A SUBSIDIARY.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS PAVEMENT REMOVE & REPLACEMENT DETAILS	DATE ISSUED: 04/05/17 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.

SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS	DATE ISSUED: 04/05/17
		TYPICAL CONCRETE COLLAR	SCALE: N.T.S. DRAWING NO. SS-127

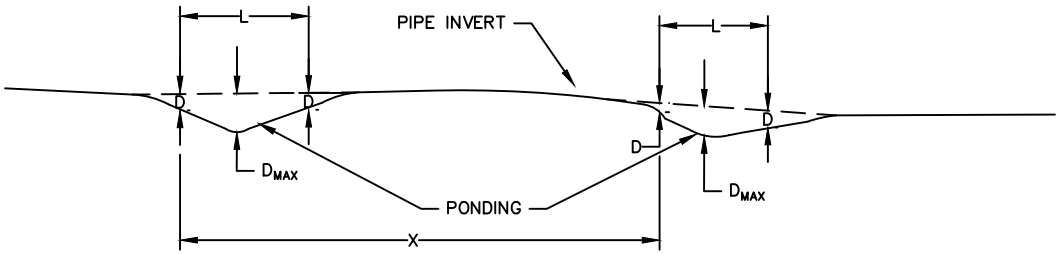
NOMINAL PIPE DIAMETER (INCHES)	MINIMUM GRADE (%)	ACCEPTABLE SAG DEPTH (D)* IN INCHES OF WATER				ABSOLUTE MAXIMUM DEPTH (D_{MAX} IN INCHES OF WATER		MAXIMUM SAG LENGTH (L)**	MINIMUM ALLOWABLE DISTANCE BETWEEN SAGS WITH 10% OR GREATER DEPTH (X)***
		EQUAL OR LESS THAN MINIMUM GRADE		GREATER THAN MINIMUM 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_{MAX} = ABSOLUTE MAXIMUM DEPTH. ANY SAG DEPTH GREATER THAN D_{MAX} 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_{MAX} 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

SAWSS
SARALAND AREA WATER & SEWER SYSTEM

Board of Water and Sewer Commissioners of The City of Saraland

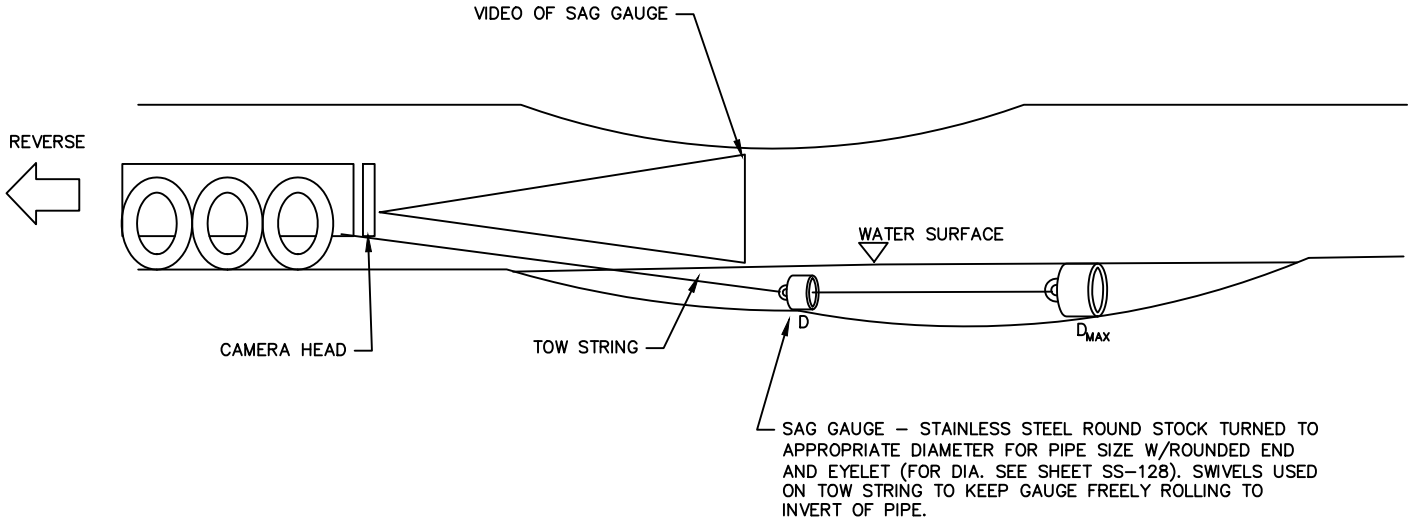
TYPICAL SANITARY SEWER DETAILS

GRADE TOLERANCE/ACCEPTABLE SAG LIMITS

DATE ISSUED: 04/05/17
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.



SAWSS SARALAND AREA WATER & SEWER SYSTEM	*Board of Water and Sewer Commissioners of The City of Saraland*	TYPICAL SANITARY SEWER DETAILS SAG PROOFING SEWER MAINS	DATE ISSUED: 04/05/17 SCALE: N.T.S. DRAWING NO. SS-129