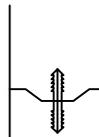


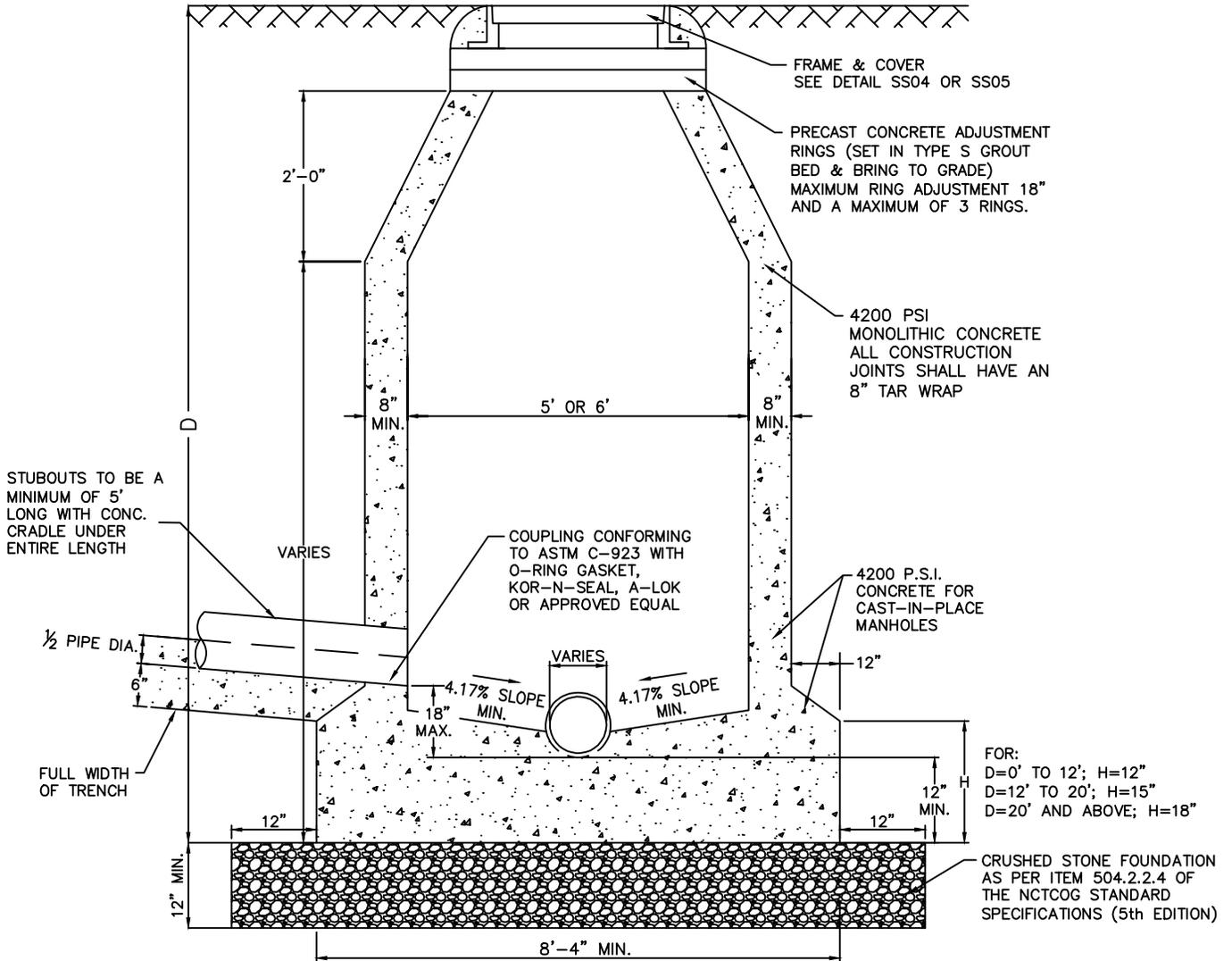
STANDARD 2X4 KEYWAY
ROUGHEN EDGES PRIOR
TO MAKING SECOND POUR



PROVIDE 4" HEAVY DUTY
P.V.C. WATERSTOP AT ALL
CONSTRUCTION JOINTS

KEYWAY WITH
WATERSTOP

M.H. RING & COVER TO BE SET TO
GRADE OF PROPOSED PAVEMENT, OR
FLUSH WITH PROPOSED GROUND GRADE.



CAST-IN-PLACE NOTES:

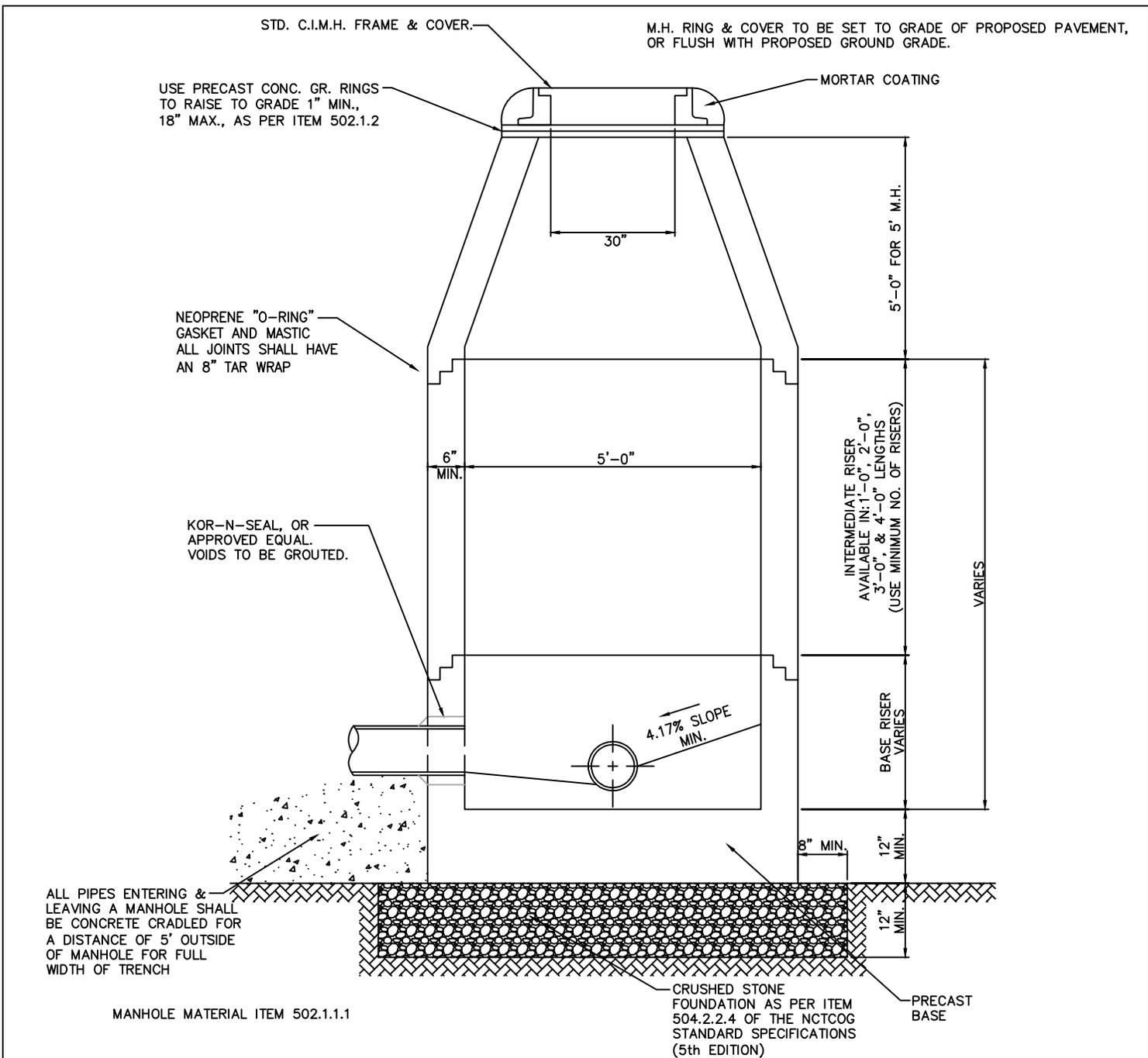
1. KEYWAYS REQUIRED FOR ALL CONSTRUCTION JOINTS.
2. CONCRETE SHALL BE 4200 P.S.I.
3. IF GREATER THAN 6" DIFFERENCE IN ELEVATION OF INCOMING PIPE TO OUTFALL, BUT LESS THAN 18" IN ELEVATION DROP, PLACE GROUT TO CREATE A FILLETED INVERT FROM INCOMING FLOWLINE TO TOP OF CHANNEL OF EXISTING PIPE TO PREVENT SOLIDS DEPOSITION.
4. ALL MANHOLES SHALL BE LINED WITH FUQUAY SPRAYWALL, WARREN ENVIRONMENTAL SYSTEM 301-14, A.W. CHESTERTON ARC S1HB OR APPROVED EQUAL.
5. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.
6. DROP MANHOLE (EXTERNAL DROP CONNECTION) REQUIRED FOR CONNECTION OF 18" DROP OR GREATER.
7. ALL MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH THE NCTCOG SPECIFICATIONS EXCEPT EACH MANHOLE SHALL BE TESTED FOR TWO MINUTES AND MUST NOT DROP THE VACUUM BY MORE THAN 1" OF MERCURY.
8. ALL PIPES ENTERING & LEAVING A MANHOLE SHALL BE CRADLED FOR A DISTANCE OF 5 FEET OUTSIDE OF M.H. FOR FULL WIDTH OF TRENCH.
9. PROVIDE A U-SHAPED CHANNEL THROUGH ALL MANHOLES:
 - A. FOR PIPES LESS THAN 15 INCHES DIAMETER, CHANNEL DEPTH MUST BE AT LEAST ONE-HALF THE PIPE DIAMETER;
 - B. FOR PIPES MORE THAN 15 INCHES BUT LESS THAN 24" DIAMETER, CHANNEL DEPTH MUST BE AT LEAST 3/4 THE PIPE DIAMETER.
 - C. FOR PIPES GREATER THAN 24 INCHES DIAMETER, CHANNEL DEPTH MUST BE AT LEAST EQUAL TO THE PIPE DIAMETER.
10. ALL MANHOLE BENCH AREAS SHALL HAVE A SLOPE OF AT LEAST 0.5 INCHES PER FOOT.
11. ALL JOINTS AND SEAMS ON SANITARY SEWER MANHOLES SHALL BE WRAPPED WITH WRAPIDSEAL OR APPROVED EQUAL.



STANDARD CONSTRUCTION DETAIL
STANDARD
CAST-IN-PLACE MANHOLE

REVISED:

SS01



PRECAST NOTES:

1. ALL MANHOLES SHALL BE LINED WITH FUQUAY SPRAYWALL, WARREN ENVIRONMENTAL SYSTEM 301-14, A.W. CHESTERTON ARC S1HB OR APPROVED EQUAL.
2. IF FALSE MANHOLE BOTTOMS REQUIRED. THEY SHALL BE CONSTRUCTED, INSTALLED, AND REMOVED.
3. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.
4. DROP MANHOLE REQUIRED FOR CONNECTION OF 18" OR GREATER.
5. ALL MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH THE NCTCOG SPECIFICATIONS EXCEPT EACH MANHOLE SHALL BE TESTED FOR TWO MINUTES AND MUST NOT DROP THE VACCUM BY MORE THAN 1" OF MERCURY.
6. ALL PIPES ENTERING & LEAVING A MANHOLE SHALL BE CRADLED FOR A DISTANCE OF 5 FEET OUTSIDE OF M.H. FOR FULL WIDTH OF TRENCH.
7. WHERE SEWER LINES ENTER A MANHOLE BETWEEN 6" AND 18" INCHES ABOVE THE INVERT, THE INVERT SHALL BE FILLETED TO PREVENT SOLIDS DEPOSITION.
8. PROVIDE A U-SHAPED CHANNEL THROUGH ALL MANHOLES:
 - A. FOR PIPES LESS THAN 15 INCHES DIAMETER, CHANNEL DEPTH MUST BE AT LEAST ONE-HALF THE PIPE DIAMETER;
 - B. FOR PIPES MORE THAN 15 INCHES BUT LESS THAN 24" DIAMETER, CHANNEL DEPTH MUST BE AT LEAST 3/4 THE PIPE DIAMETER.
 - C. FOR PIPES GREATER THAN 24 INCHES DIAMETER, CHANNEL DEPTH MUST BE AT LEAST EQUAL TO THE PIPE DIAMETER.
9. ALL MANHOLE BENCH AREAS SHALL HAVE A SLOPE OF AT LEAST 0.5 INCHES PER FOOT.
10. ALL JOINTS AND SEAMS ON SANITARY SEWER MANHOLES SHALL BE WRAPPED WITH WRAPIDSEAL OR APPROVED EQUAL.

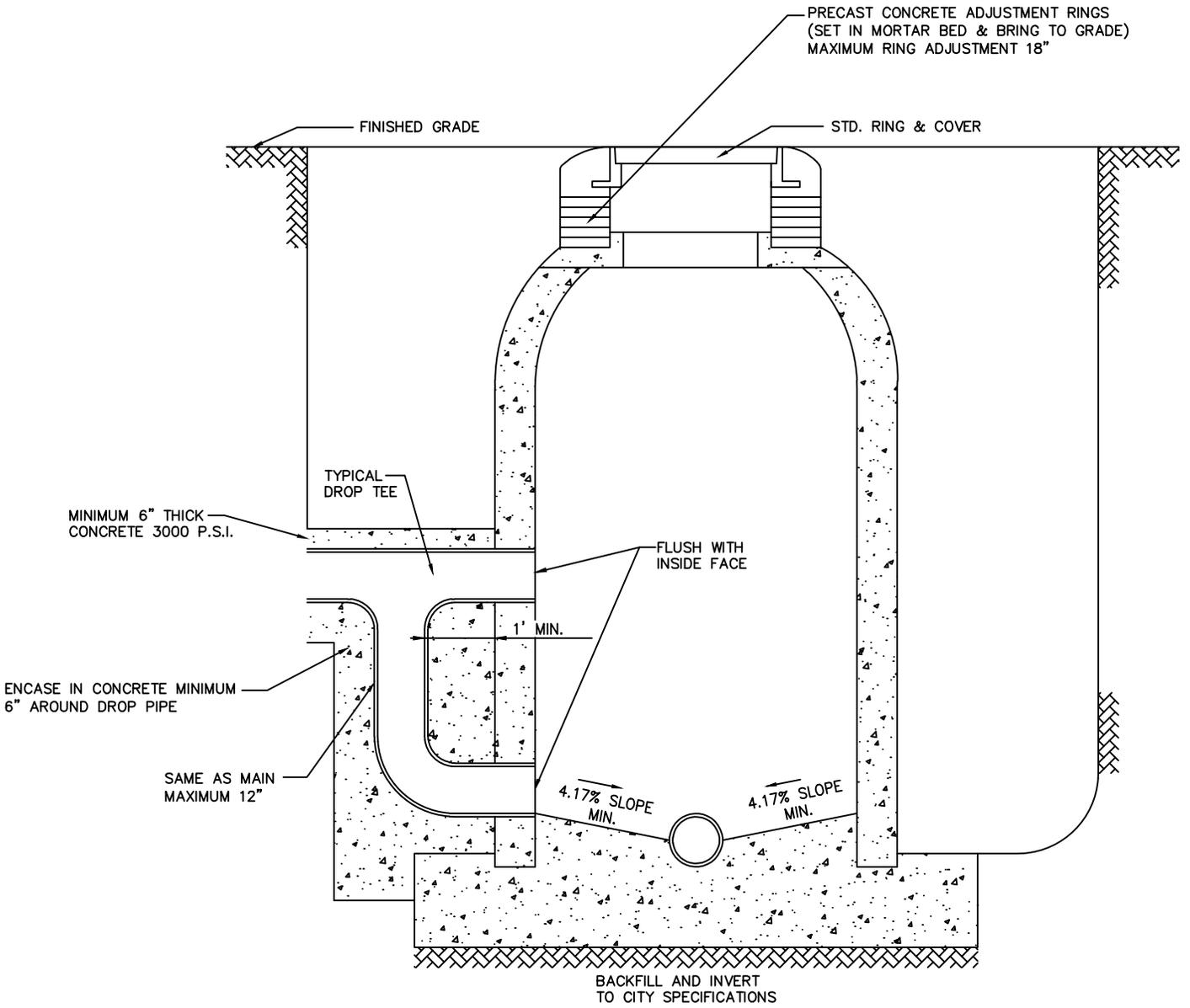


STANDARD CONSTRUCTION DETAIL

PRECAST CONCRETE MANHOLE

REVISED:

SS02



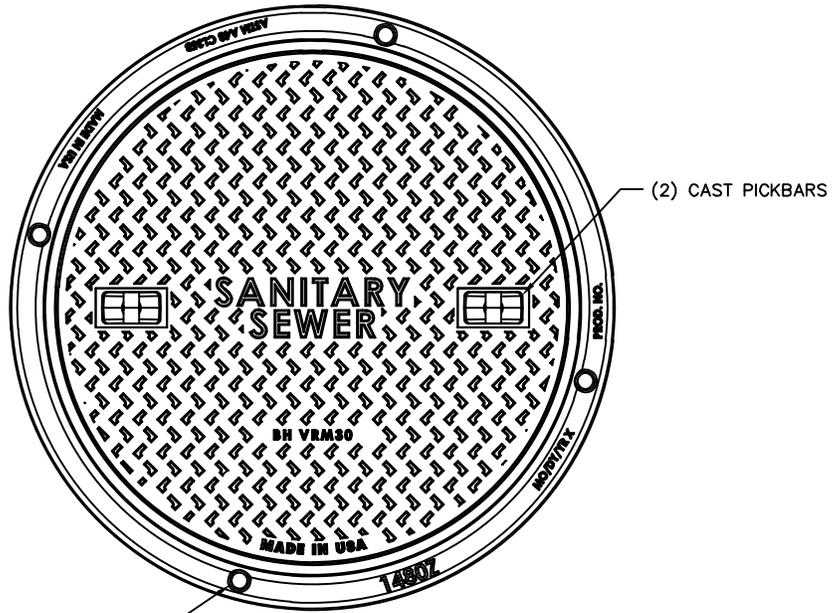
NOTES:

1. SEE DETAILS SS01, SS02, SS03, SS04, SS05, SS06 AND SS07 AS NEEDED.
2. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.
3. DROP MANHOLE REQUIRED FOR CONNECTION OF 18" OR GREATER.
4. ALL MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH THE NCTCOG SPECIFICATIONS EXCEPT EACH MANHOLE SHALL BE TESTED FOR TWO MINUTES AND MUST NOT DROP THE VACUUM BY MORE THAN 1" OF MERCURY.
5. ALL PIPES ENTERING & LEAVING A MANHOLE SHALL BE CRADLED FOR A DISTANCE OF 5 FEET OUTSIDE OF M.H. FOR FULL WIDTH OF TRENCH.
6. WHERE SEWER LINES ENTER A MANHOLE BETWEEN 6" AND 18" INCHES ABOVE THE INVERT, THE INVERT SHALL BE FILLETED TO PREVENT SOLIDS DEPOSITION.
7. PROVIDE A U-SHAPED CHANNEL THROUGH ALL MANHOLES:
 - A. FOR PIPES LESS THAN 15 INCHES DIAMETER, CHANNEL DEPTH MUST BE AT LEAST ONE-HALF THE PIPE DIAMETER;
 - B. FOR PIPES MORE THAN 15 INCHES BUT LESS THAN 24" DIAMETER, CHANNEL DEPTH MUST BE AT LEAST 3/4 THE PIPE DIAMETER.
 - C. FOR PIPES GREATER THAN 24 INCHES DIAMETER, CHANNEL DEPTH MUST BE AT LEAST EQUAL TO THE PIPE DIAMETER.
8. ALL MANHOLE BENCH AREAS SHALL HAVE A SLOPE OF AT LEAST 0.5 INCHES PER FOOT.
9. ALL JOINTS AND SEAMS ON SANITARY SEWER MANHOLES SHALL BE WRAPPED WITH WRAPIDSEAL OR APPROVED EQUAL.

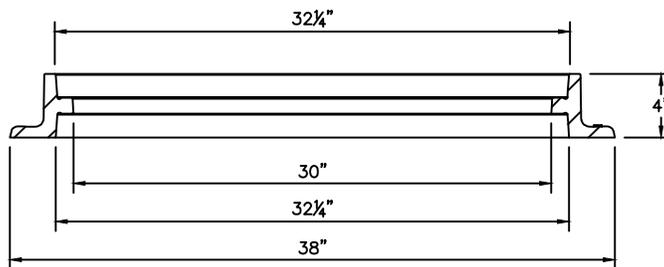
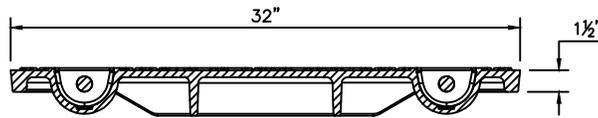


STANDARD CONSTRUCTION DETAIL
 MANHOLE DROP CONNECTION

REVISED:
 SS03

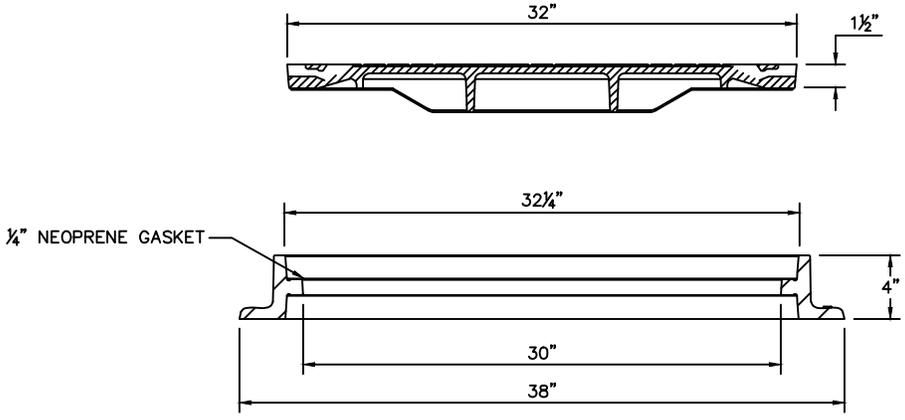
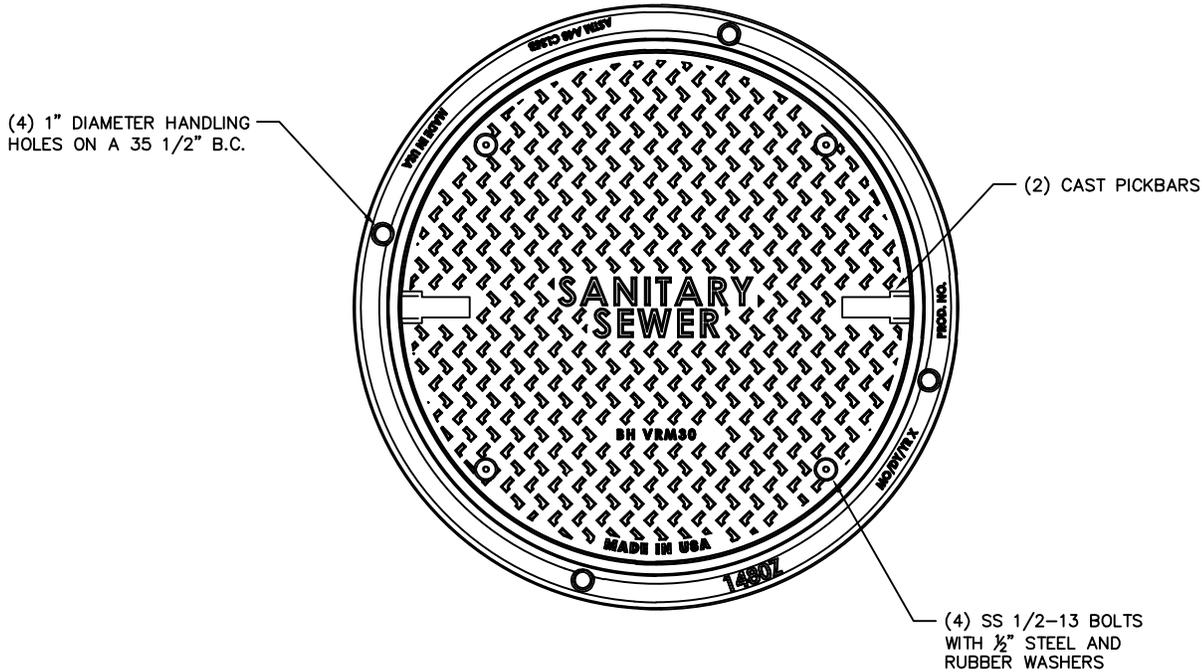


(4) 1" DIAMETER HANDLING HOLES ON A 35 1/2" B.C.



NOTE:

1. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.

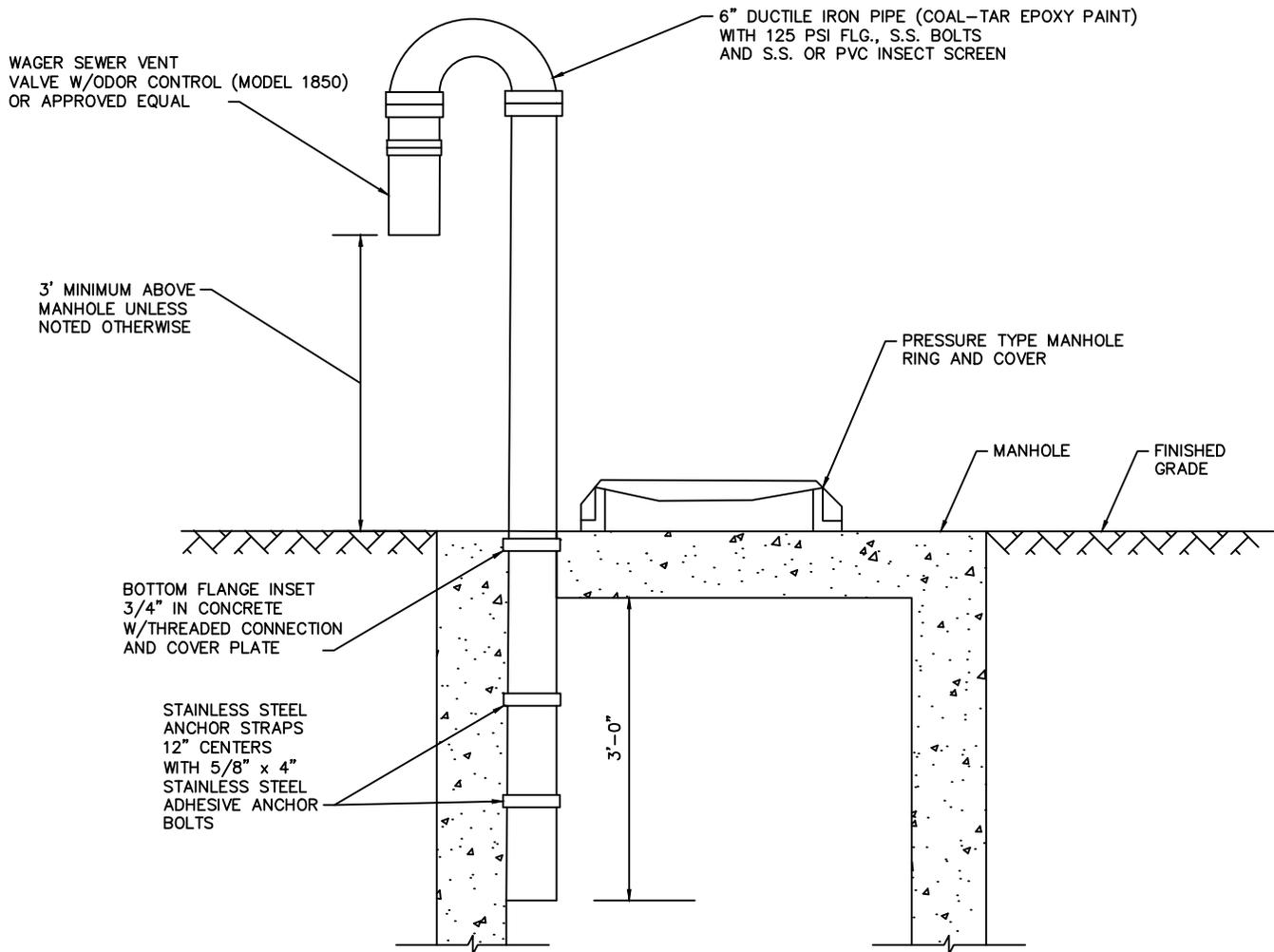


- NOTES:**
1. FOR USE IN FLOOD PRONE AREAS OR AS DIRECTED BY THE CITY.
 2. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.



STANDARD CONSTRUCTION DETAIL
PRESSURE TYPE MANHOLE
MANHOLE RING AND COVER

REVISED:
SS05



NOTES:

1. ALL VENTED MANHOLES SHALL BE PROVIDED WITH FLAT TOP SLAB.
2. MANHOLE RING AND COVER SHALL BE EAST JORDAN IRON WORKS, INC. OR APPROVED EQUAL.
3. CLEAR OPENING OF MANHOLE RINGS AND COVER SHALL BE 30" MIN.
4. VENTED MANHOLE TO BE USED AS DIRECTED BY THE CITY.
5. SEE DETAILS SS01, SS02, SS03, SS04, SS05 AND SS07 AS NEEDED.
6. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.



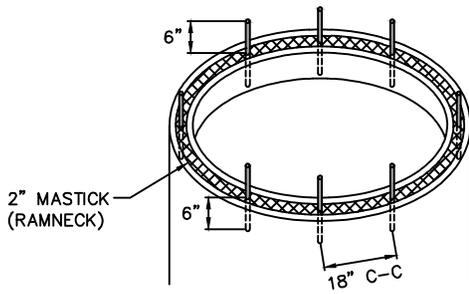
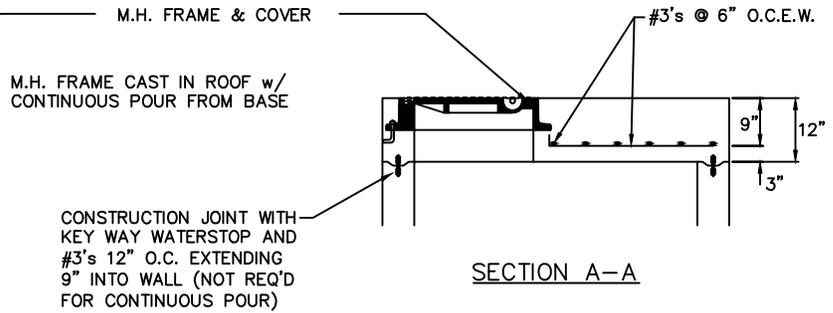
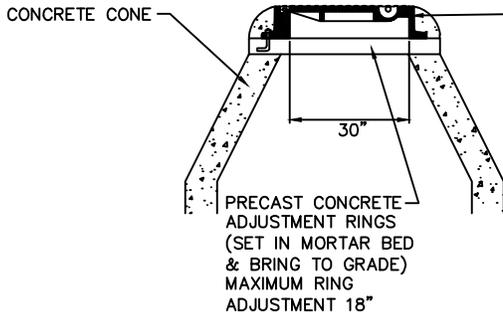
STANDARD CONSTRUCTION DETAIL

VENTED MANHOLE

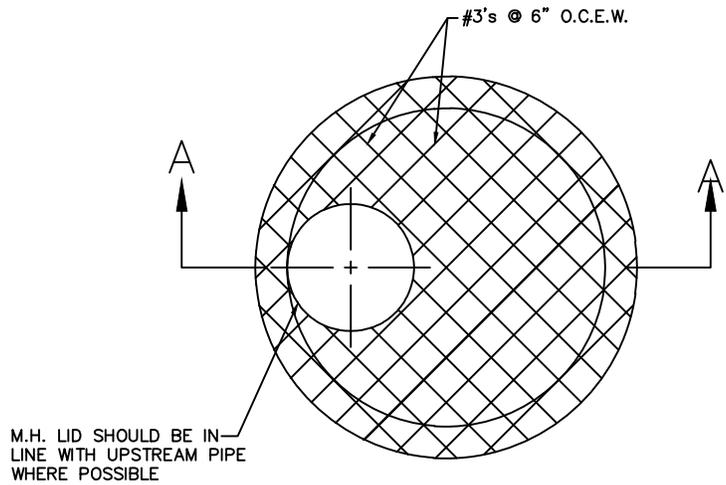
REVISED:

SS06

M.H. RING & COVER TO BE SET TO GRADE OF PROPOSED PAVEMENT, OR FLUSH WITH PROPOSED GROUND GRADE.

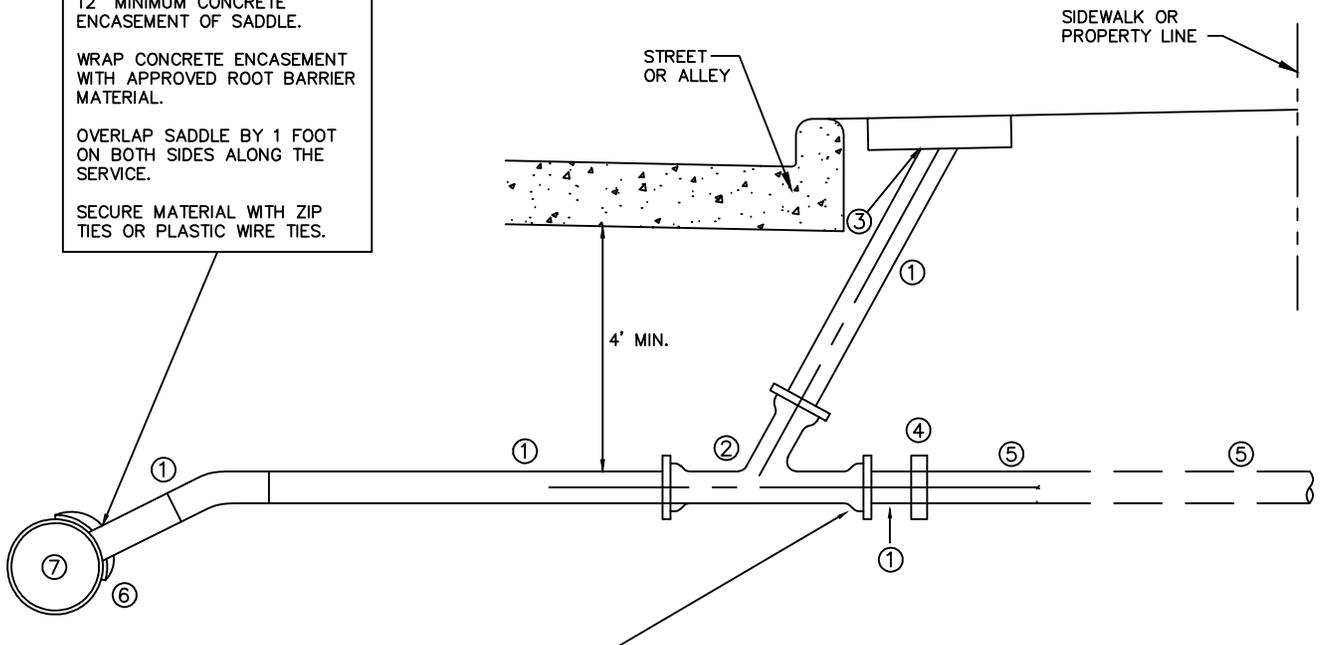


ADJUSTMENT OF CAST IN PLACE CONES



- NOTES:
1. CLEANLY SAWCUT EXISTING CONE AS DIRECTED. DOWEL & EPOXY INTO EXISTING MANHOLE WITH 12" #3 DEFORMED BARS ON 18" CENTERS. INSTALL 2" OF WATER STOP BETWEEN DOWELS PRIOR TO POURING NEW CONE. WRAP OUTSIDE JOINT WITH APPROVED SEAL PRIOR TO BACKFILLING AND WIPE INSIDE WITH APPROVED GROUT.
 2. SEE DETAILS SS01, SS02, SS03, SS04, SS05 AND SS06 AS NEEDED.
 3. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.

12" MINIMUM CONCRETE ENCASEMENT OF SADDLE.
 WRAP CONCRETE ENCASEMENT WITH APPROVED ROOT BARRIER MATERIAL.
 OVERLAP SADDLE BY 1 FOOT ON BOTH SIDES ALONG THE SERVICE.
 SECURE MATERIAL WITH ZIP TIES OR PLASTIC WIRE TIES.



WRAP PIPES WITH APPROVED ROOT BARRIER MATERIAL.
 OVERLAP WYE BY 1 FOOT ON ALL THREE LEGS SIDES ALONG THE SERVICE AND CLEAN OUT.
 SECURE MATERIAL WITH ZIP TIES OR PLASTIC WIRE TIES.

NOTES:

1. IF THE SIDEWALK IS LOCATED AT THE BACK OF THE CURB, THEN CLEANOUT IS TO BE PLACED ONE FOOT OFF THE BACK OF THE SIDEWALK. IF SIDEWALK IS LOCATED AT THE ROW PLACE CLEANOUT BETWEEN CURB AND SIDEWALK.
2. SERVICE LINE REQUIRED TO HAVE MINIMUM SLOPE PER PIPE SIZE BASED ON INTERNATIONAL BUILDING CODE REQUIREMENTS.
3. SANITARY SEWER PIPE SHALL BE P.V.C. ASTM D3034 SDR 26 FOR 4" TO 15". ALL OTHER PIPES SHALL BE SUBJECT TO APPROVAL BY THE CITY.
4. ALL SANITARY SEWER LATERALS SHALL INCLUDE 4" TEE WYE BEND, PIPE AND STOPPER INSTALLED 10 FEET DOWNSTREAM FROM THE WATER MAIN SERVICE ON EACH LOT, UNLESS OTHERWISE INDICATED ON THE PLANS. 6" LATERALS REQUIRE M.H. AT MAIN SEWER PIPE.
5. ALL PIPES ENTERING & LEAVING A MANHOLE SHALL BE CRADLED FOR A DISTANCE OF 5 FEET OUTSIDE OF M.H. FOR FULL WIDTH OF TRENCH.
6. SEE DETAIL SS10 FOR HOUSE SERVICE CONNECTION.

- ① - 4" PVC (VARIOUS LENGTHS)
- ② - 4"x45" WYE
- ③ - 4" MODEL 404 LATERAL CLEAN OUT LID w/ GASKET PVC OR ABS IN DIRT
- ④ - FERNCO FLEX-SEAL STANDARD COUPLING OR APPROVED EQUAL
- ⑤ - 4" PVC OR OTHER EXISTING PIPE
- ⑥ - APPROVED SADDLE
- ⑦ - SEWER MAIN



STANDARD CONSTRUCTION DETAIL
 SANITARY SEWER SERVICE
 CONNECTION TO PROPOSED SEWER

REVISED: JULY 2025

SS08

12" MINIMUM CONCRETE ENCASEMENT OF SADDLE.

WRAP CONCRETE ENCASEMENT WITH APPROVED ROOT BARRIER MATERIAL.

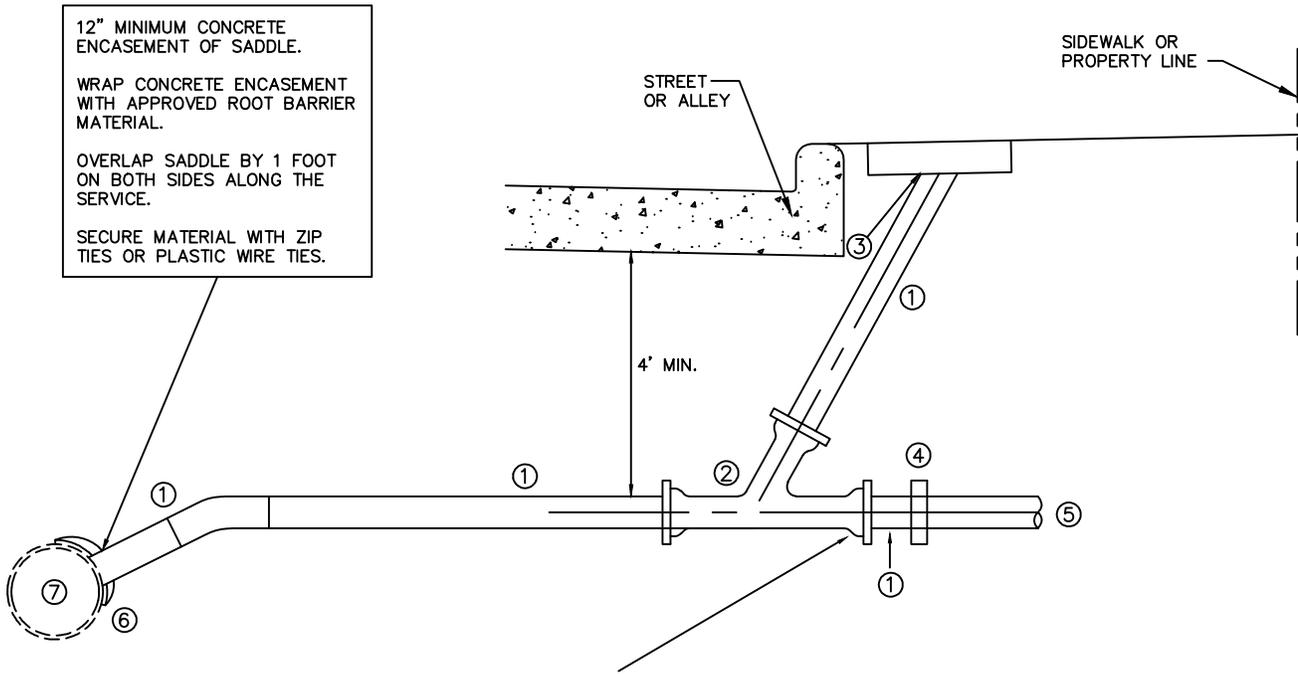
OVERLAP SADDLE BY 1 FOOT ON BOTH SIDES ALONG THE SERVICE.

SECURE MATERIAL WITH ZIP TIES OR PLASTIC WIRE TIES.

SIDEWALK OR PROPERTY LINE

STREET OR ALLEY

4' MIN.



WRAP PIPES WITH APPROVED ROOT BARRIER MATERIAL.

OVERLAP WYE BY 1 FOOT ON ALL THREE LEGS SIDES ALONG THE SERVICE AND CLEAN OUT.

SECURE MATERIAL WITH ZIP TIES OR PLASTIC WIRE TIES.

NOTES:

1. IF THE SIDEWALK IS LOCATED AT THE BACK OF THE CURB, THEN CLEANOUT IS TO BE PLACED ONE FOOT OFF THE BACK OF THE SIDEWALK. IF SIDEWALK IS LOCATED AT THE ROW PLACE CLEANOUT BETWEEN CURB AND SIDEWALK.
2. SERVICE LINE REQUIRED TO HAVE MINIMUM SLOPE PER PIPE SIZE BASED ON INTERNATIONAL BUILDING CODE REQUIREMENTS.
3. SANITARY SEWER PIPE SHALL BE P.V.C. ASTM D3034 SDR 26 FOR 4" TO 15". ALL OTHER PIPES SHALL BE SUBJECT TO APPROVAL BY THE CITY.
4. ALL SANITARY SEWER LATERALS SHALL INCLUDE 4" TEE WYE BEND, PIPE AND STOPPER INSTALLED 10 FEET DOWNSTREAM FROM THE WATER MAIN SERVICE ON EACH LOT, UNLESS OTHERWISE INDICATED ON THE PLANS. 6" LATERALS REQUIRE M.H. AT MAIN SEWER PIPE.
5. ALL PIPES ENTERING & LEAVING A MANHOLE SHALL BE CRADLED FOR A DISTANCE OF 5 FEET OUTSIDE OF M.H. FOR FULL WIDTH OF TRENCH.
6. SEE DETAIL SS10 FOR HOUSE SERVICE CONNECTION.

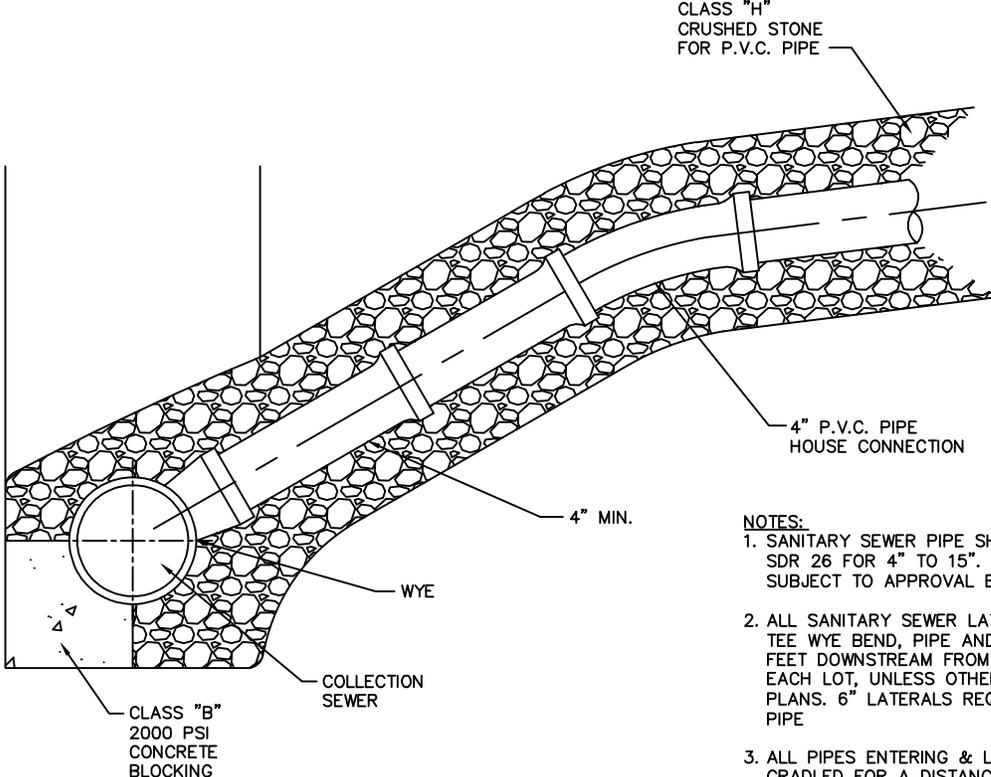
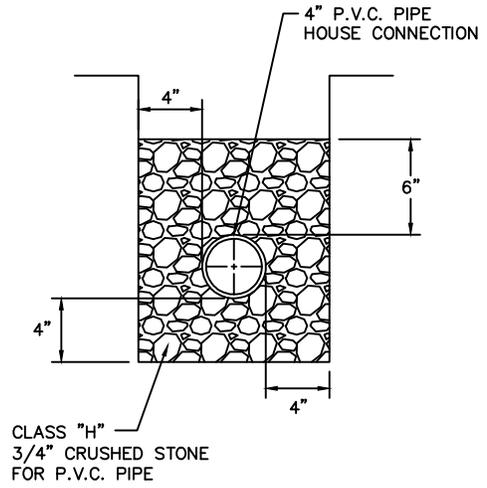
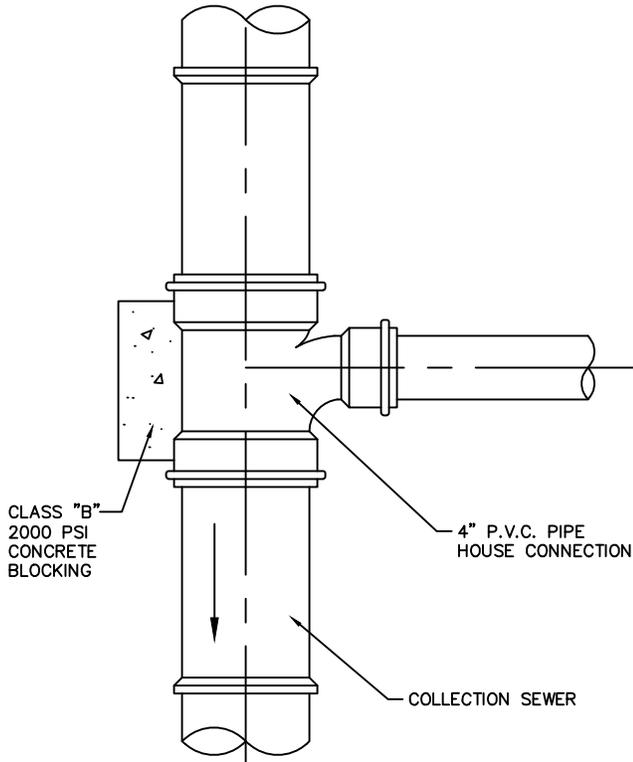
- ① - 4" PVC (VARIOUS LENGTHS)
- ② - 4"x45" WYE
- ③ - 4" MODEL 404 LATERAL CLEAN OUT LID w/ GASKET PVC OR ABS IN DIRT
- ④ - FERNCO FLEX-SEAL STANDARD COUPLING OR APPROVED EQUAL
- ⑤ - 4" PVC OR OTHER EXISTING PIPE
- ⑥ - APPROVED SADDLE
- ⑦ - EXISTING SEWER MAIN



STANDARD CONSTRUCTION DETAIL
 SANITARY SEWER SERVICE
 CONNECTION TO EXISTING SEWER

REVISED: JULY 2025

SS09



- NOTES:**
1. SANITARY SEWER PIPE SHALL BE P.V.C. ASTM D3034 SDR 26 FOR 4" TO 15". ALL OTHER PIPES SHALL BE SUBJECT TO APPROVAL BY THE CITY.
 2. ALL SANITARY SEWER LATERALS SHALL INCLUDE 4" TEE WYE BEND, PIPE AND STOPPER INSTALLED 10 FEET DOWNSTREAM FROM THE WATER MAIN SERVICE ON EACH LOT, UNLESS OTHERWISE INDICATED ON THE PLANS. 6" LATERALS REQUIRE M.H. AT MAIN SEWER PIPE
 3. ALL PIPES ENTERING & LEAVING A MANHOLE SHALL BE CRADLED FOR A DISTANCE OF 5 FEET OUTSIDE OF M.H. FOR FULL WIDTH OF TRENCH.
 4. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.



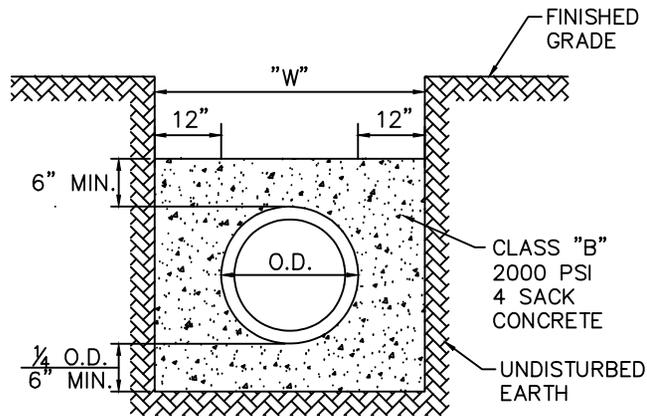
STANDARD CONSTRUCTION DETAIL
 TYPICAL SEWER
 HOUSE SERVICE CONNECTION

REVISED: JULY 2025

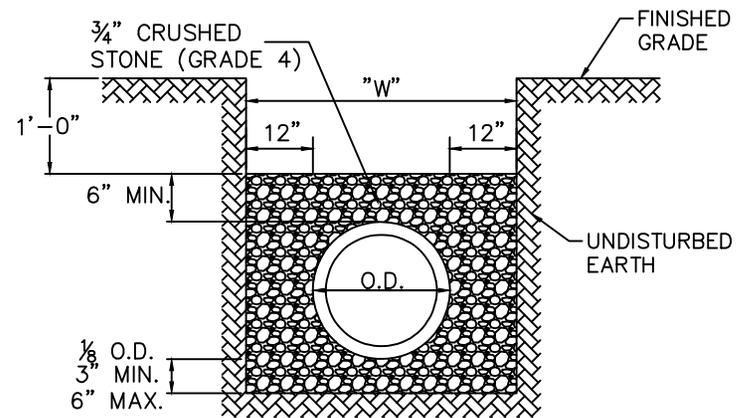
SS10

NOTES:

1. ALL COMPACTION SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND/OR SPECIAL PROVISIONS. ALL TRENCH LINES SHALL BE COMPACTED TO STANDARD DENSITY: 98% UNDER ALL PAVED AREAS AND 95% IN ALL OTHER AREAS.
2. $W = 24"$ PLUS PIPE O.D.
3. TRACER WIRE SHALL BE INSTALLED ABOVE ALL SEWER LINES.
4. GREEN SEWER TAPE SHALL BE LAID THE ENTIRE LENGTH OF THE TRENCH AND BURIED TO A DEPTH OF 18".
5. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.
6. BACKFILL TYPE "B" (TYPE "A" OR ALTERNATE ALLOWABLE TYPE "A" ARE ACCEPTABLE) FLOWABLE OR STABILIZED, MODIFIED FLOWABLE, OR FAST SET FLOWABLE ALSO ACCEPTABLE.
7. SANITARY SEWER PIPE SHALL BE P.V.C. ASTM D3034 SDR 26 FOR 4" TO 15". ALL OTHER PIPES SHALL BE SUBJECT TO APPROVAL BY THE CITY.
8. ALL SANITARY SEWER LATERALS SHALL INCLUDE 4" TEE WYE BEND, PIPE AND STOPPER INSTALLED 10 FEET DOWNSTREAM FROM THE WATER MAIN SERVICE ON EACH LOT, UNLESS OTHERWISE INDICATED ON THE PLANS. 6" LATERALS REQUIRE M.H. AT MAIN SEWER PIPE.
9. ALL PIPES ENTERING & LEAVING A MANHOLE SHALL BE CRADLED FOR A DISTANCE OF 5 FEET OUTSIDE OF M.H. FOR FULL WIDTH OF TRENCH.



CONCRETE ENCASEMENT
CLASS "G"



STANDARD EMBEDMENT
CLASS "H"

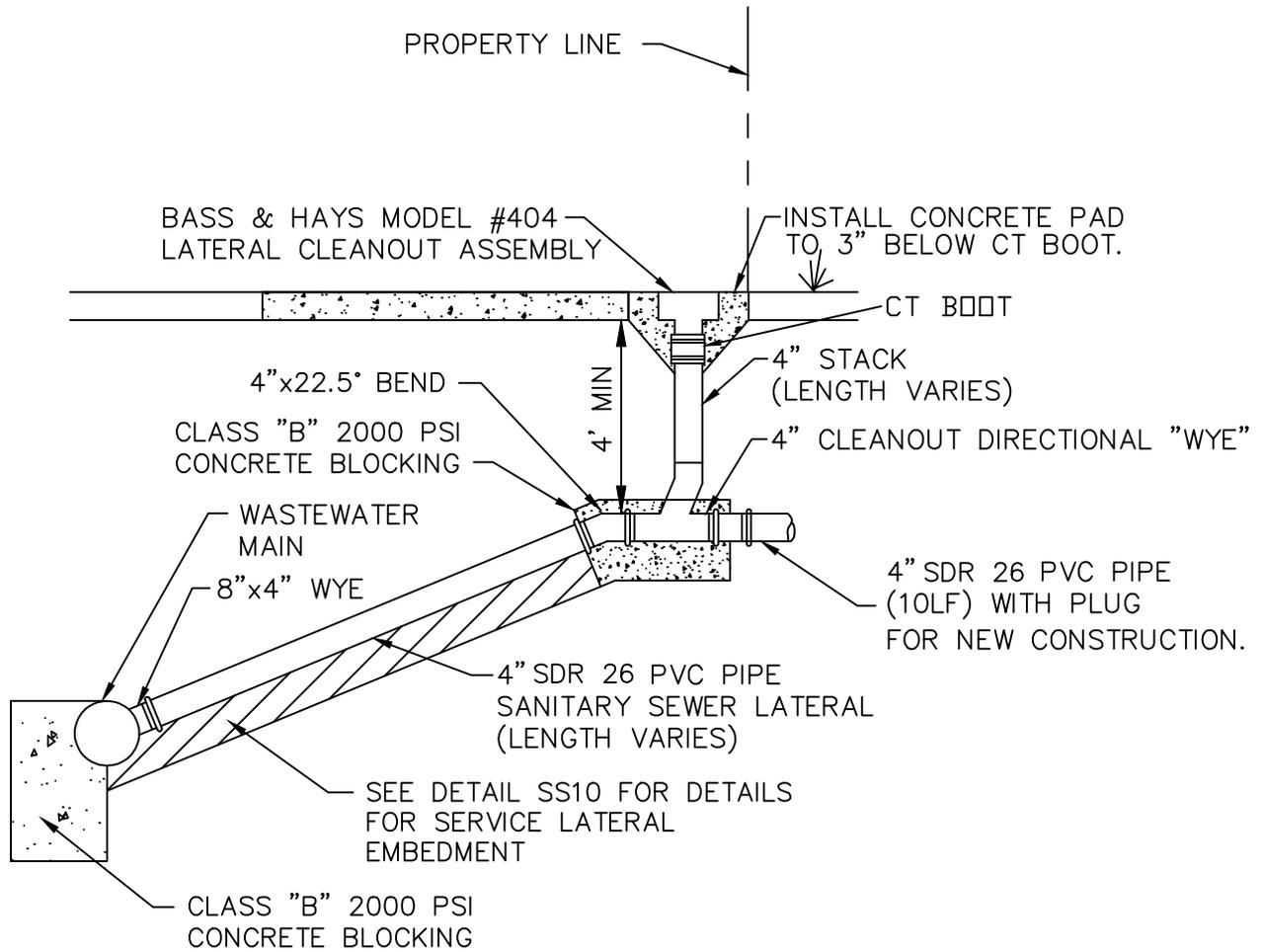
STANDARD CONSTRUCTION DETAIL

PIPE EMBEDMENT DETAILS (SEWER)

REVISED: JULY 2025



SS11



NOTES

1. WASTEWATER CLEANOUT SHALL BE BASS & HAYES #404
2. WASTEWATER LATERAL SHALL BE CONNECTED TO BUILDING LATERAL AND CONSTRUCTED IN SUCH MANNER AS TO CLEAR EXISTING UTILITIES AND PROPOSED FACILITIES SUCH AS STORM SEWER MAINS, PAVING, SIDEWALKS, RETAINING WALLS, ETC. VERTICAL BENDS (22.5° MAX) MAY BE USED IF APPROVED BY CITY.
3. THE CLEANOUT STACK & CASTING MAY BE PLACED IN THE PARKWAY, VEHICLE TRAFFIC AREAS, OR SIDEWALK AS APPROVED BY THE CITY.
4. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.