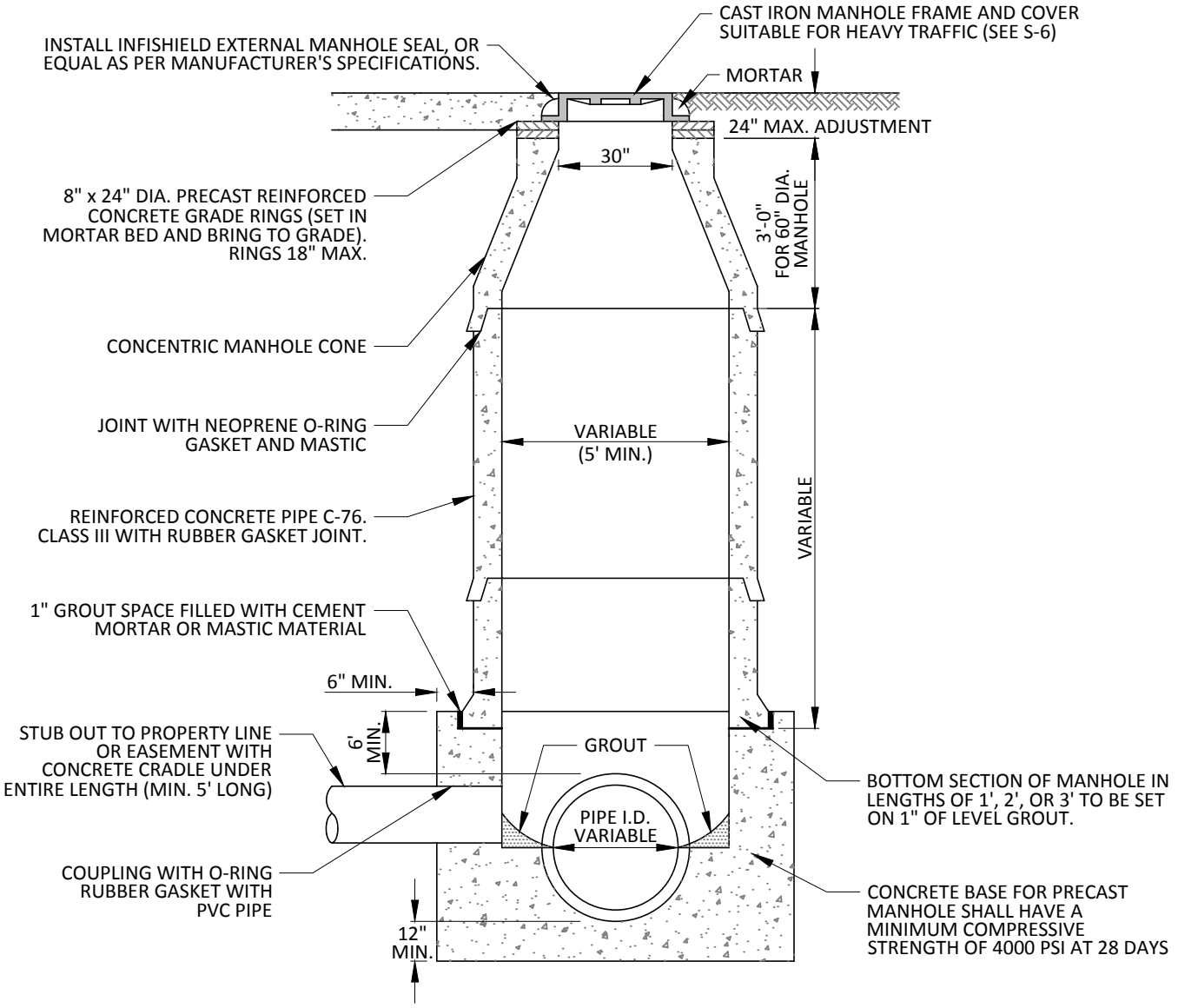
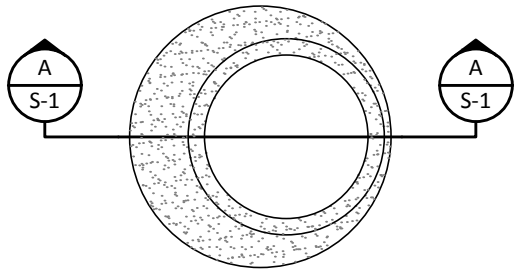
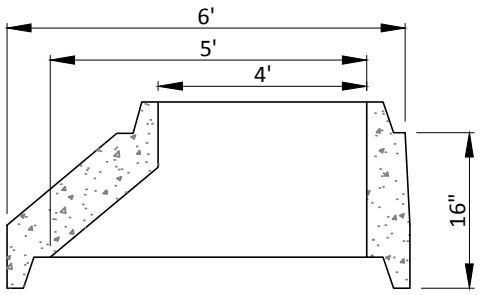




ALTERNATE CONE PLAN VIEW



ALTERNATE CONE SECTION A-A

NOTE:

FOR LINES 27" AND SMALLER, MANHOLE SHALL BE 5' DIA. FOR 30" AND 36" LINES, MANHOLE SHALL BE 6' DIA.

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 01/2004
SHEET 1 OF 1

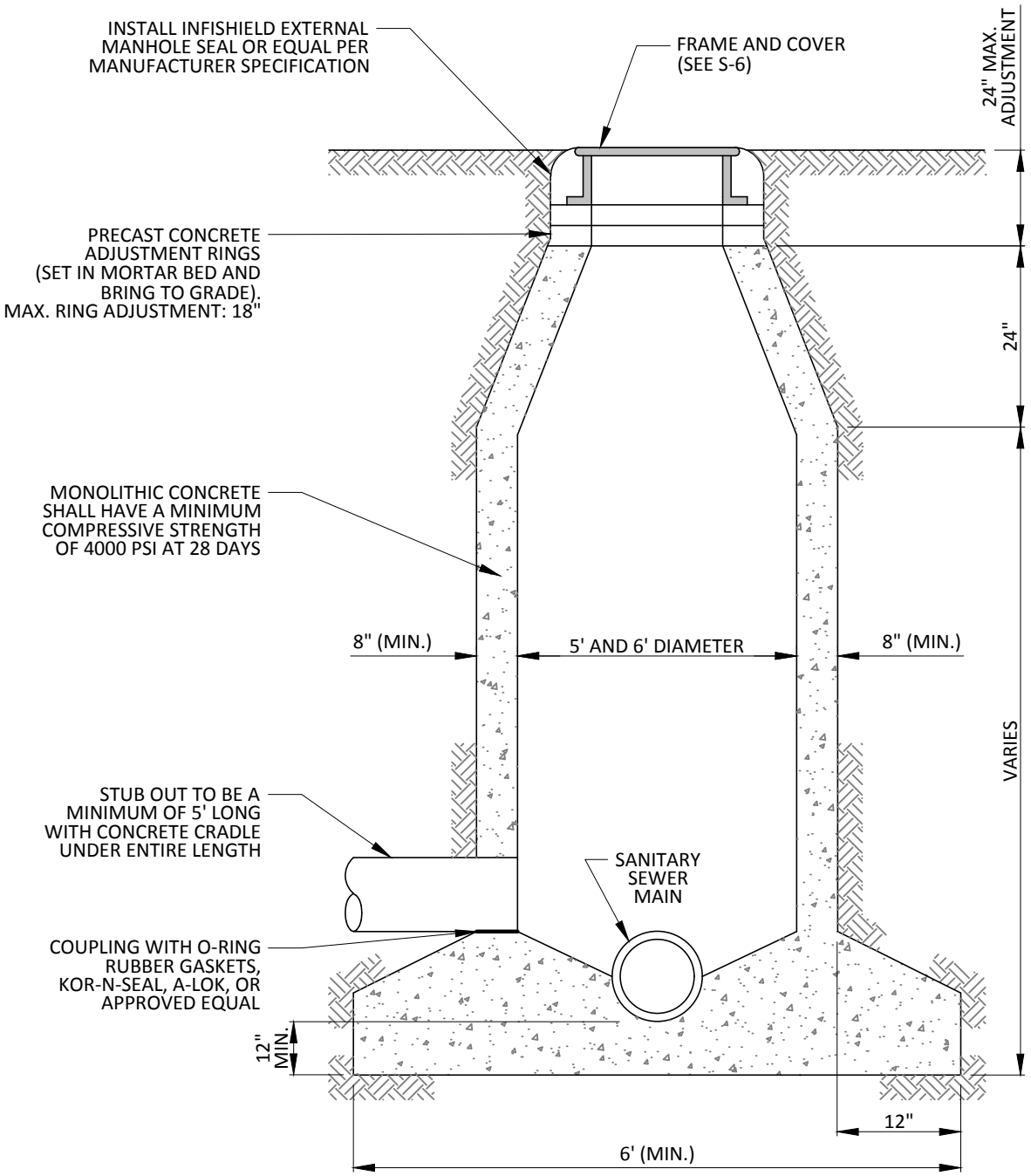
CARROLLTON TEXAS

PRECAST CONCRETE PIPE MANHOLE

S-1

ENGINEERING DEPARTMENT

FILENAME: S-1_1-1.DWG



NOTES:

1. CONCRETE SHALL BE A MONOLITHIC POUR.
2. FOR LINES 27" AND SMALLER, MANHOLE SHALL BE 5' DIA.
   FOR 30" AND 36" LINES, MANHOLE SHALL BE 6' DIA.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

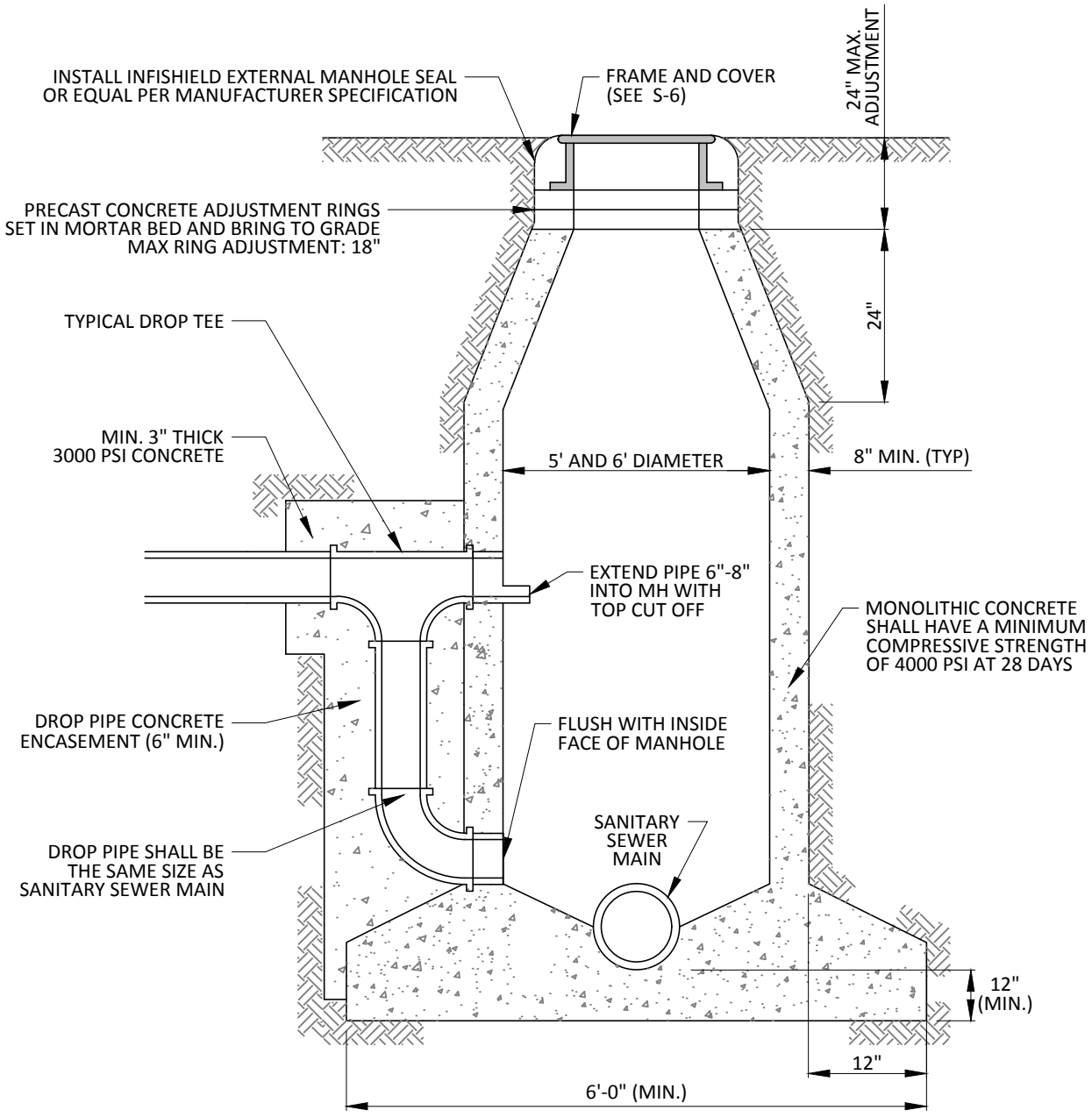
SCALE: NTS DATE: 01/2004
SHEET 1 OF 1

STANDARD CAST-IN-PLACE MANHOLE

S-2

ENGINEERING DEPARTMENT

FILENAME: S-2_1-1.DWG



EXTERNAL DROP CONNECTION

NOTES:

1. CONCRETE SHALL BE A MONOLITHIC POUR.
2. PIPE CONNECTIONS SHALL BE CORE DRILLED WITH SEALS, ETC.

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 01/2004
SHEET 1 OF 2

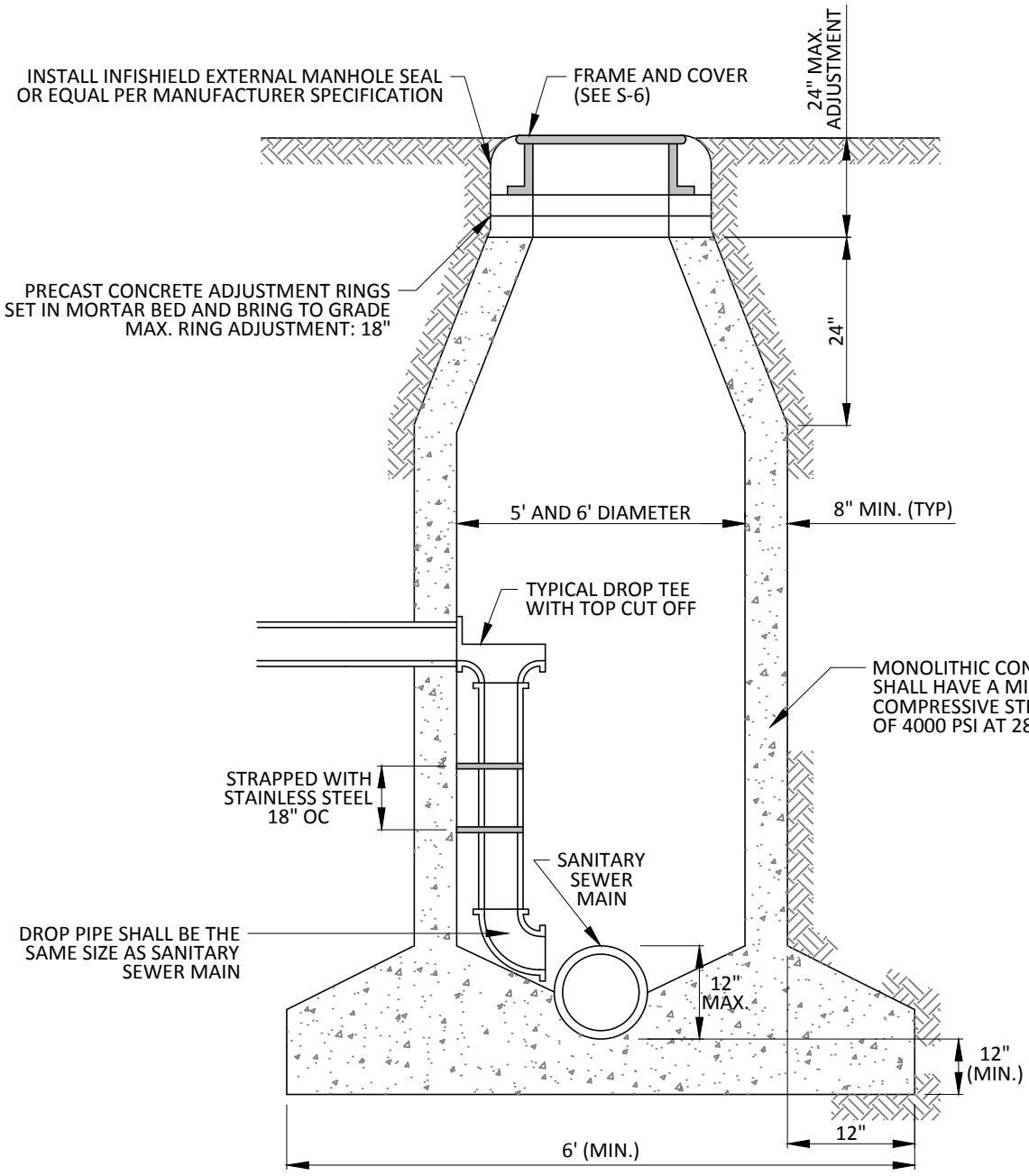
CARROLLTON TEXAS

EXTERNAL DROP MANHOLE

S-3

ENGINEERING DEPARTMENT

FILENAME: S-3_1-2.DWG



NOTES:

1. CONCRETE SHALL BE A MONOLITHIC POUR.
2. DROP MANHOLES SHALL BE INSTALLED WHEN THE INFLOW AND OUTFALL ELEVATIONS DIFFER BY 18" OR MORE.
3. PIPE CONNECTIONS SHALL BE CORE DRILLED WITH SEALS, ETC.
4. INTERNAL DROP MANHOLES MUST BE APPROVED BY THE DIRECTOR OF ENGINEERING.

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 01/2004
SHEET 2 OF 2

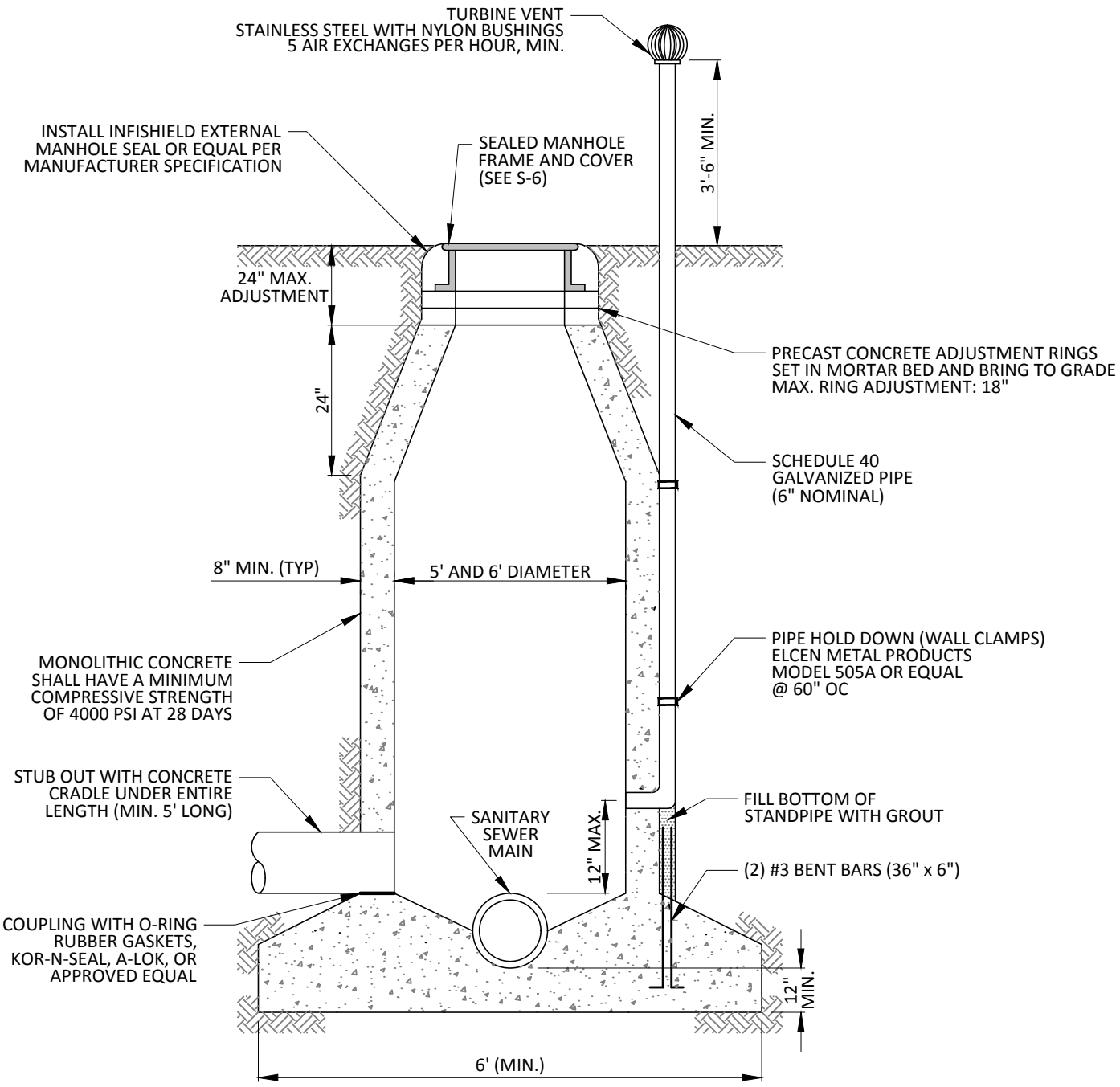
CARROLLTON TEXAS

INTERNAL DROP MANHOLE

S-3

ENGINEERING DEPARTMENT

FILENAME: S-3_2-2.DWG



NOTE:

CONCRETE SHALL BE A MONOLITHIC POUR.

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 01/2004
SHEET 1 OF 1

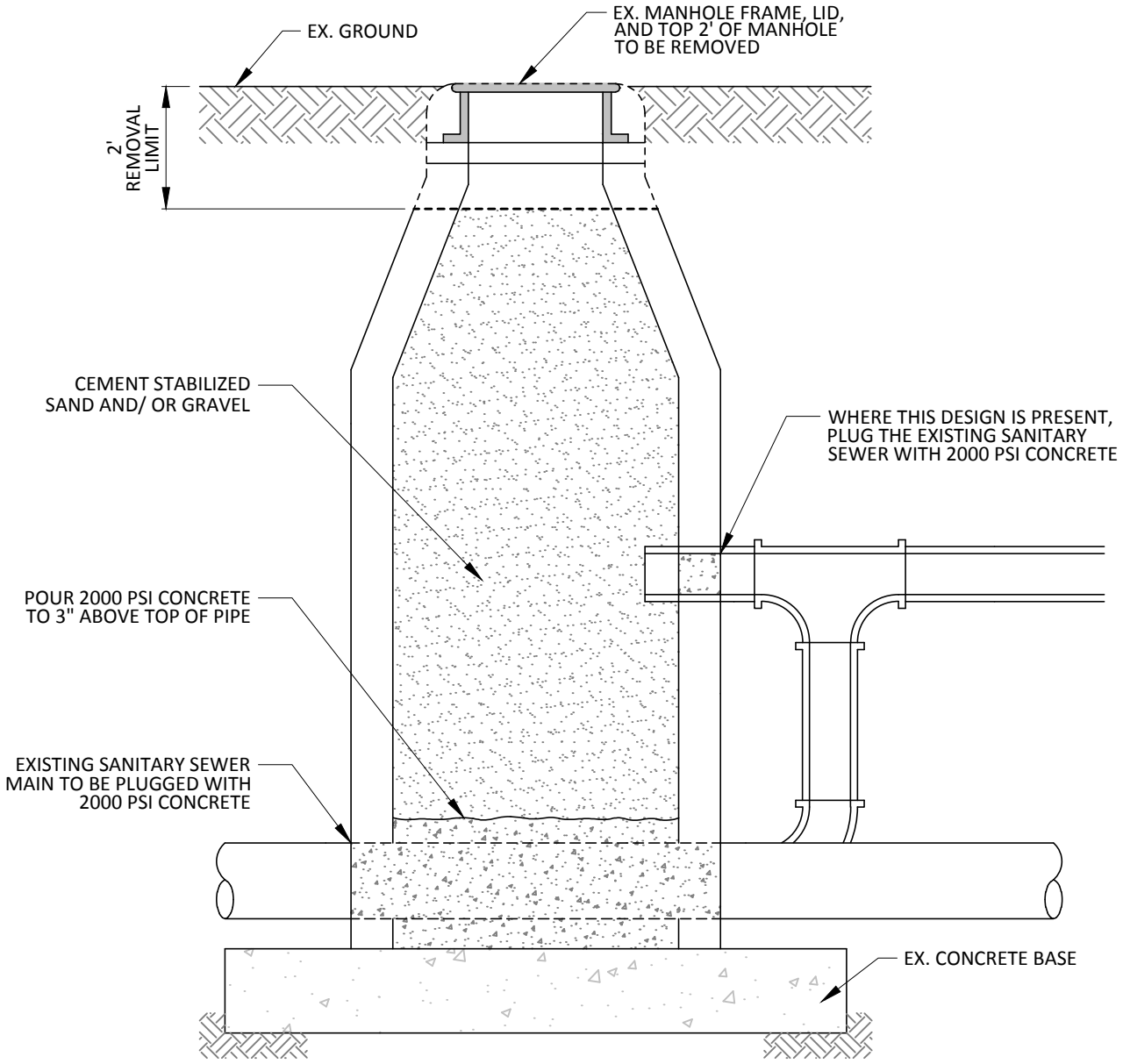
CARROLLTON TEXAS

VENTED MANHOLE DETAIL

S-4

ENGINEERING DEPARTMENT

FILENAME: S-4_1-1.DWG



NOTE:

WHEN A MANHOLE TO BE ABANDONED IS LOCATED IN A PAVED STREET, SAWCUT AND REPAIR ACCORDING TO U-4.

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 01/2006
SHEET 1 OF 1

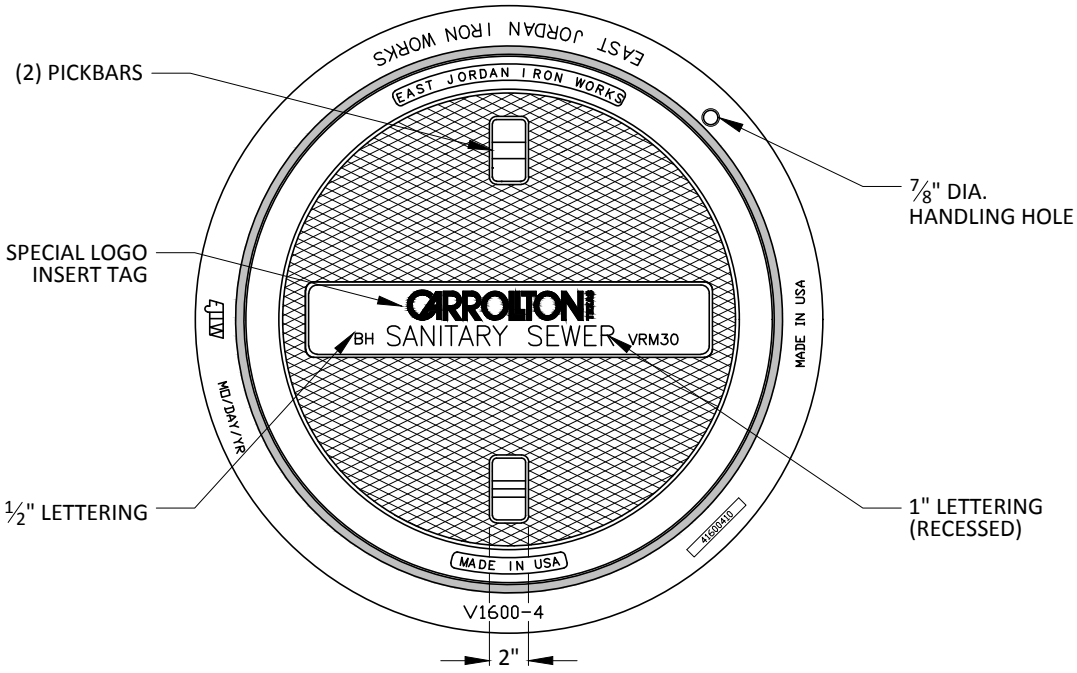
CARROLLTON TEXAS

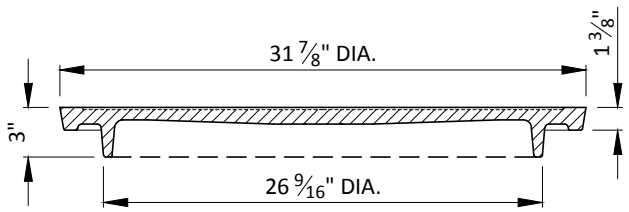
MANHOLE ABANDONMENT DETAIL

S-5

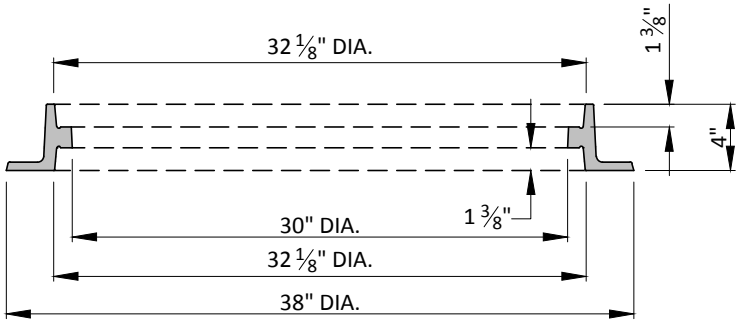
ENGINEERING DEPARTMENT

FILENAME: S-5_1-1.DWG





COVER SECTION



FRAME SECTION

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 01/2010
SHEET 1 OF 1

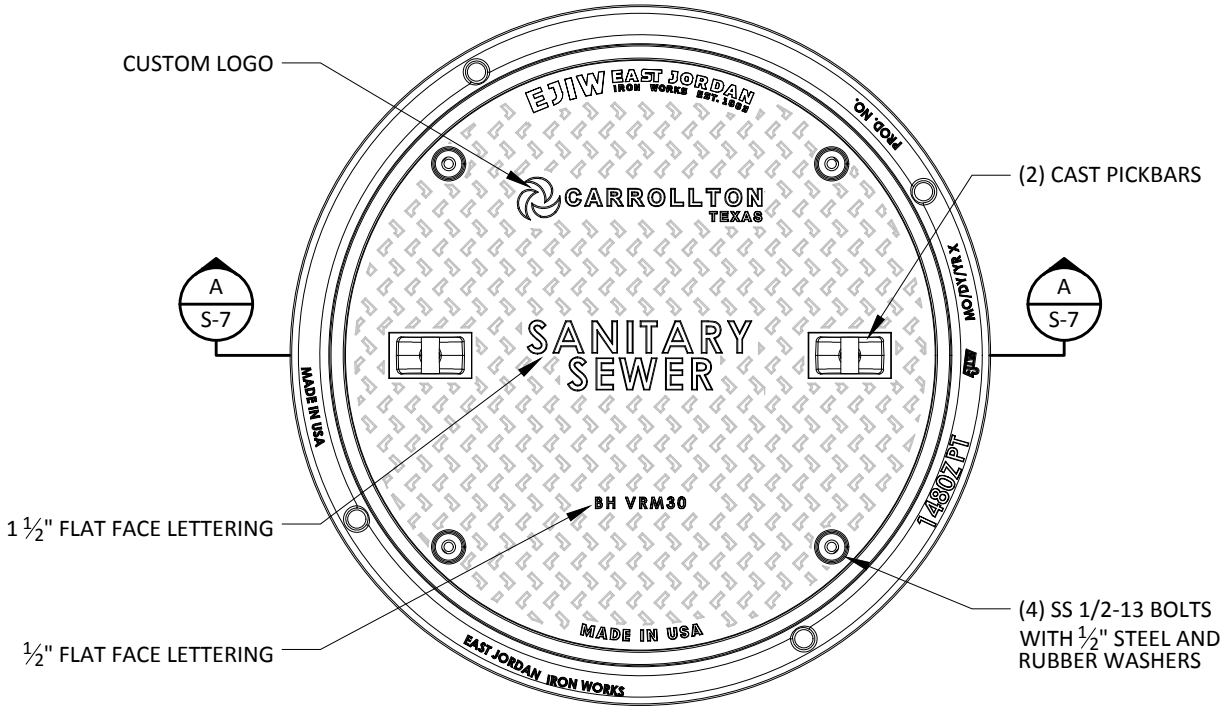
CARROLLTON TEXAS

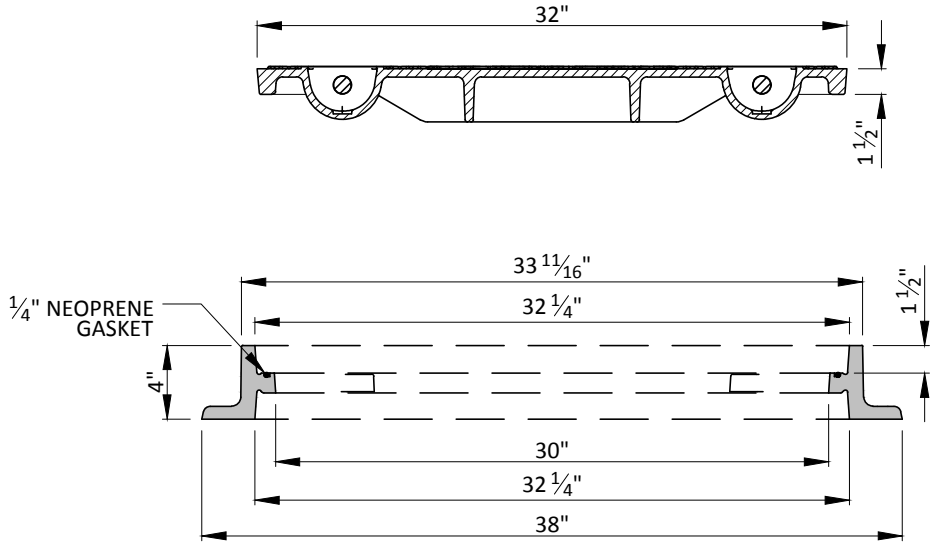
STANDARD MANHOLE LID AND FRAME

S-6

ENGINEERING DEPARTMENT

FILENAME: S-6_1-1.DWG





SECTION A - A

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 12/2008
SHEET 1 OF 1

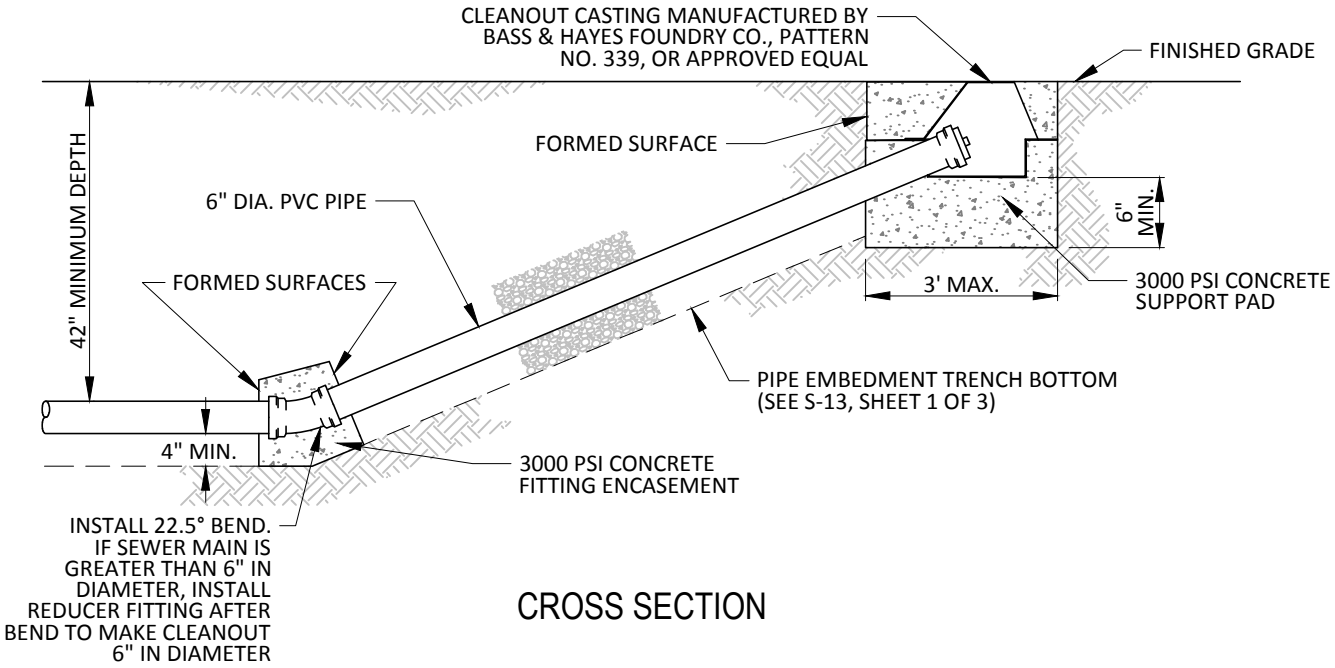
CARROLLTON TEXAS

PRESSURE TYPE MANHOLE
LID AND FRAME

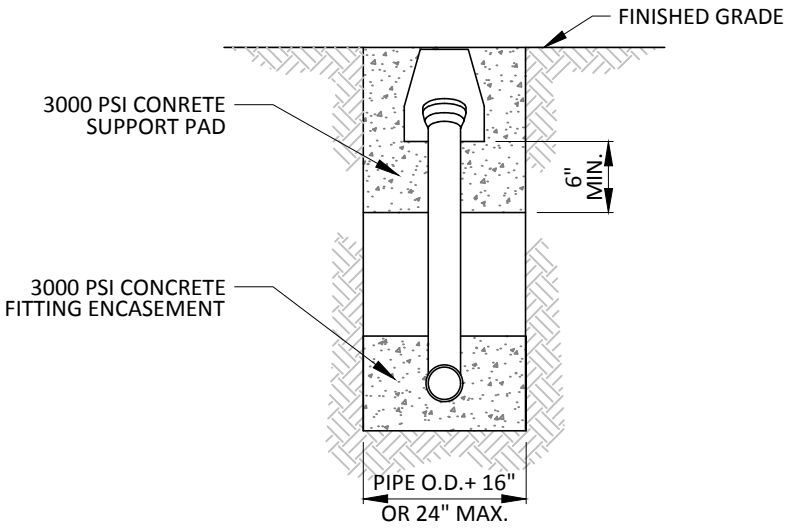
S-7

ENGINEERING DEPARTMENT

FILENAME: S-7_1-1.DWG



CROSS SECTION



SECTIONAL ELEVATION

NOTES:

1. CLEANOUT PIPE SHALL BE PVC PIPE SDR 35 (GREEN IN COLOR).

2. IF THE TRENCH IS IN:

   A. ROCK: USE EMBEDMENT CLASS "C".
   B. EARTH 8' OR LESS IN DEPTH: USE EMBEDMENT CLASS "B-1".
   C. EARTH OVER 8' IN DEPTH: USE EMBEDMENT CLASS "C".

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

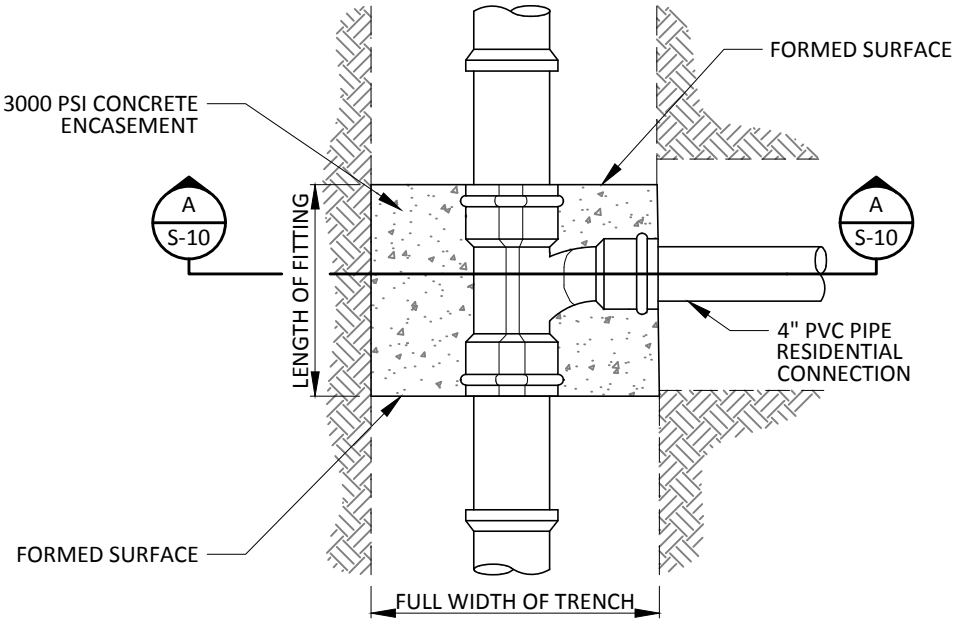
SCALE: NTS DATE: 01/2013
SHEET 1 OF 1

MAIN LINE SANITARY SEWER
CLEANOUT ASSEMBLY

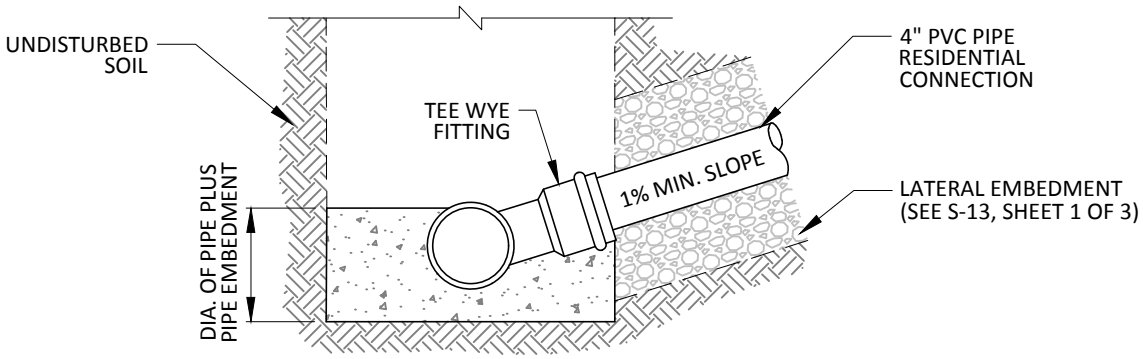
S-8

ENGINEERING DEPARTMENT

FILENAME: S-8_1-1.DWG



PLAN VIEW



SECTION A-A

NOTES:

1. A RESIDENTIAL CLEANOUT IS REQUIRED AT THE PROPERTY LINE.
2. SEWER SERVICE LATERAL SHALL BE PVC TYPE SDR 35, GREEN IN COLOR, AND MIN. 4" DIA.
3. CONCRETE ENCASEMENT IS TO BE POURED AGAINST UNDISTURBED SOIL, WITH THE OPEN ENDS TO BE FORMED.
4. EMBEDMENT OF LATERAL:

   A. IF LATERAL IS IN ROCK, USE EMBEDMENT CLASS "C".
   B. IF LATERAL IS IN EARTH 8' OR LESS IN DEPTH, USE EMBEDMENT CLASS "B-1".
   C. IF LATERAL IS IN EARTH OVER 8' IN DEPTH, USE EMBEDMENT CLASS "C".

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

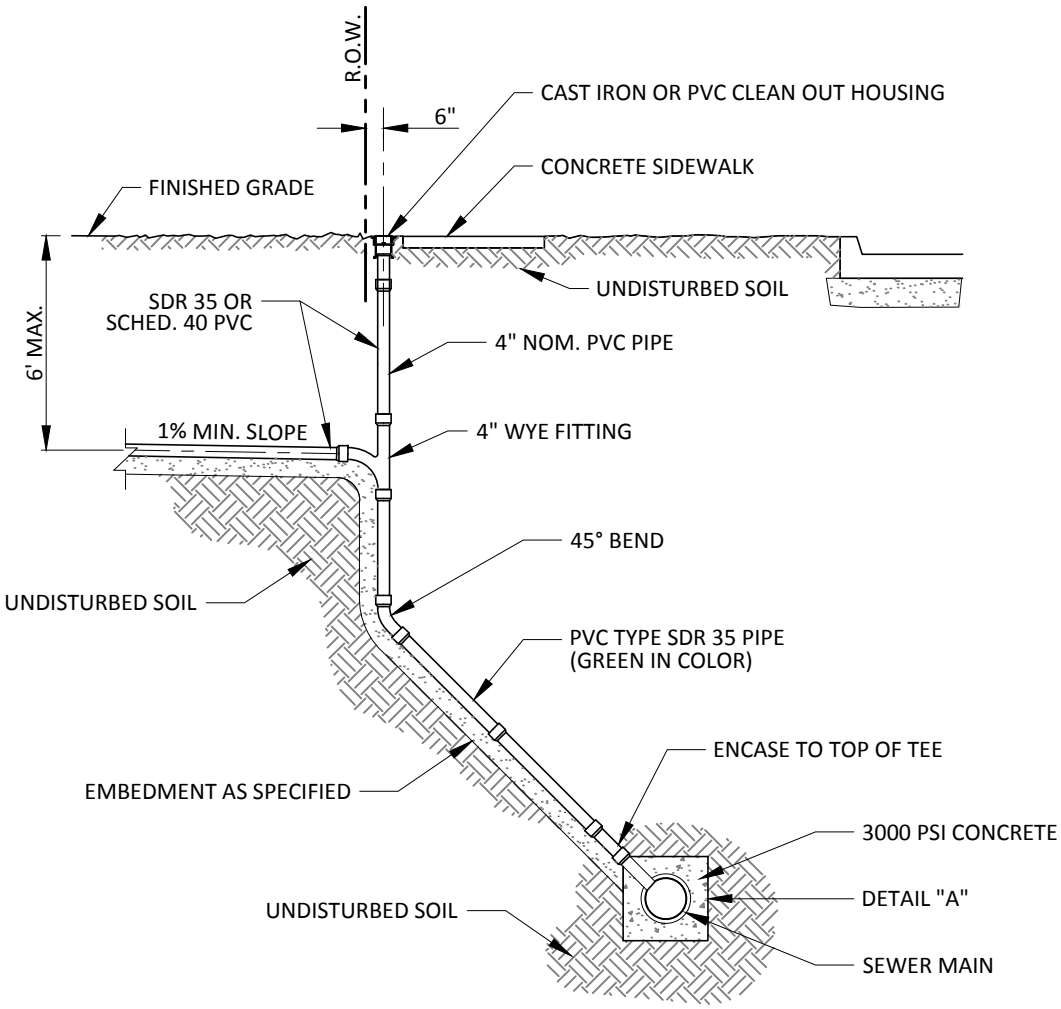
SCALE: NTS DATE: 01/2004
SHEET 1 OF 1

SANITARY SEWER SERVICE
RESIDENTIAL CONNECTION

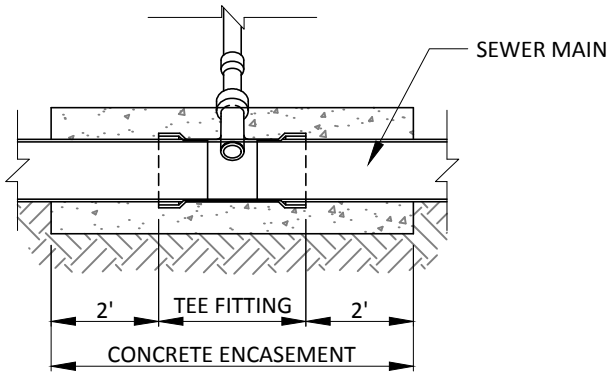
S-09

ENGINEERING DEPARTMENT

FILENAME: S-09_1-1.DWG



CLEANOUT RISER - SIDE ELEVATION



DETAIL "A" - FRONT ELEVATION

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 02/2006
SHEET 1 OF 1

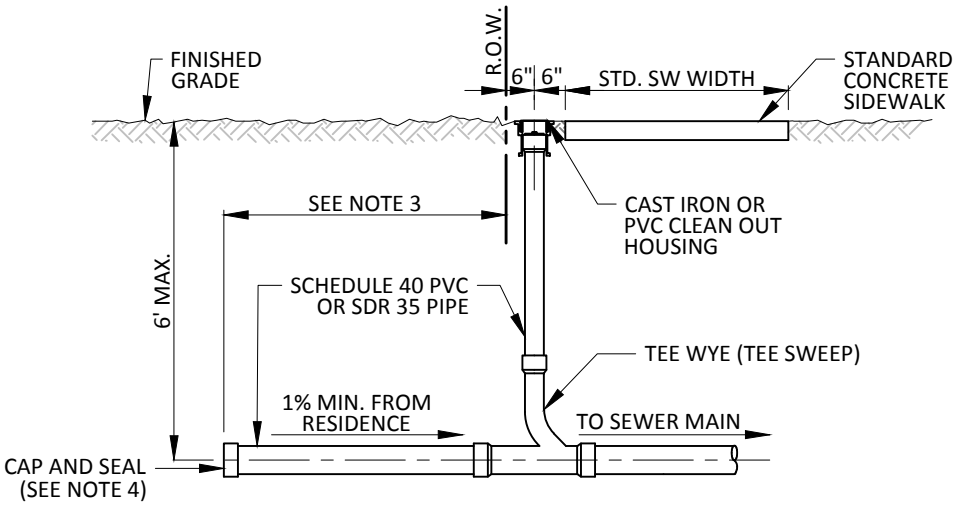
CARROLLTON
TEXAS

DEEP CUT SANITARY SEWER CONNECTION

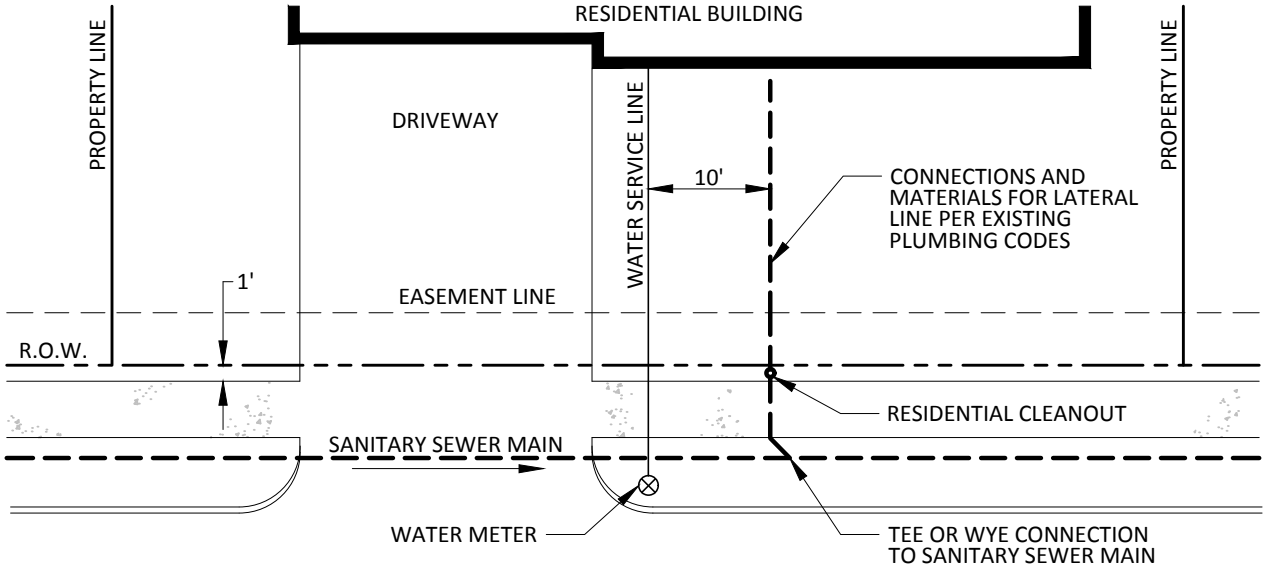
S-10

ENGINEERING
DEPARTMENT

FILENAME: S-10_1-1.DWG



ELEVATION



NOTES:

1. FOR SUBDIVISIONS, THE UTILITY CONTRACTOR SHALL LEAVE THE 4" VERTICAL PIPE 3' ABOVE THE GROUND. THE RESIDENTIAL BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING THE RESIDENTIAL CLEAN-OUT HOUSING AT THE FINAL GRADE.
2. SEWER SERVICE LATERAL SHALL BE LOCATED 10' DOWNSTREAM OF THE WATER SERVICE, WITH THE WATER SERVICE BEING LOCATED ON THE CENTERLINE OF THE LOT, UNLESS APPROVED BY THE ENGINEERING DEPARTMENT.
3. 5' OR EDGE OF EASEMENT (FOR RESIDENTIAL STREETS WITHOUT EASEMENT).
4. CAP AND SEAL ARE FOR AIR TESTING PURPOSES ONLY. AFTER COMPLETION AND APPROVAL OF AIR TEST, THE CONNECTION TO THE RESIDENCE MAY BE MADE.

GENERAL DESIGN STANDARDS
DRAINAGE DETAILS

SCALE: NTS DATE: 01/2013
SHEET 1 OF 1

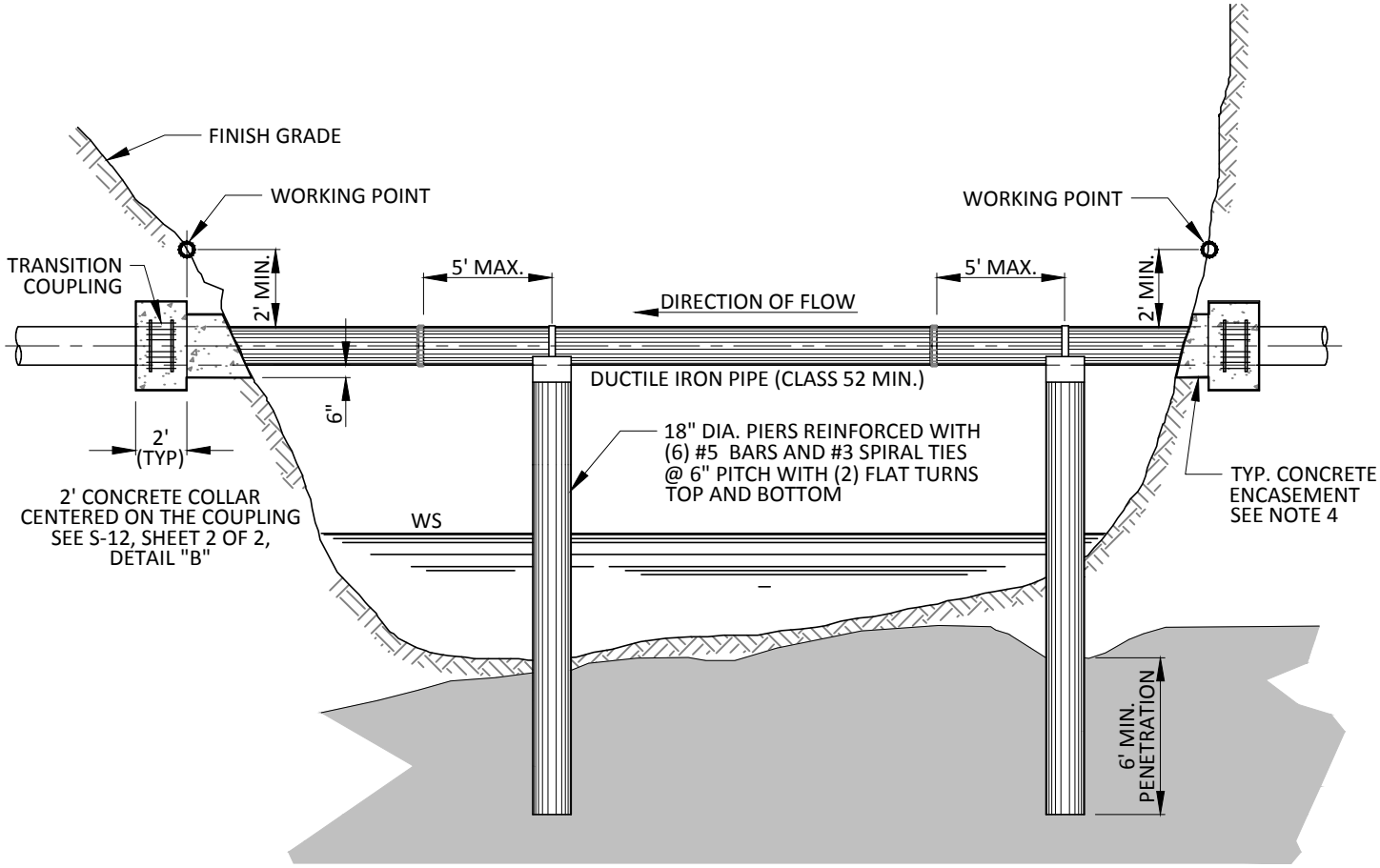
CARROLLTON TEXAS

RESIDENTIAL CLEANOUT DETAILS

S-11

ENGINEERING DEPARTMENT

FILENAME: S-11_1-1.DWG



NOTES:

1. DUCTILE IRON PIPE SHALL BE OF THE TYPE SHOWN IN THE SPECIFICATIONS AND SHALL HAVE THE WALL THICKNESS REQUIRED FOR THE SIZE AND SPAN AS DESIGNED.

2. PIER PLACEMENT AND SPACING ALONG WITH A GEOTECHNICAL/STRUCTURAL REPORT SHALL BE SUBMITTED TO THE CITY OF CARROLLTON ENGINEERING DEPARTMENT FOR APPROVAL. PIERS SHOWN ARE MINIMUM REQUIREMENTS.

3. PIERS SHALL PENETRATE A MINIMUM OF 6' FEET INTO ROCK OR BLUE SHALE. DESIGN SHALL INCLUDE AN ANALYSIS OF WATER VELOCITY FORCES IF THE CROSSING IS BELOW THE 100 YEAR DESIGN FLOOD ELEVATION.

4. LENGTH OF CONCRETE ENCASEMENT VARIES WITH SITE AND BANK SLOPE CONDITIONS- 8' MIN.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 01/2006
SHEET 1 OF 2

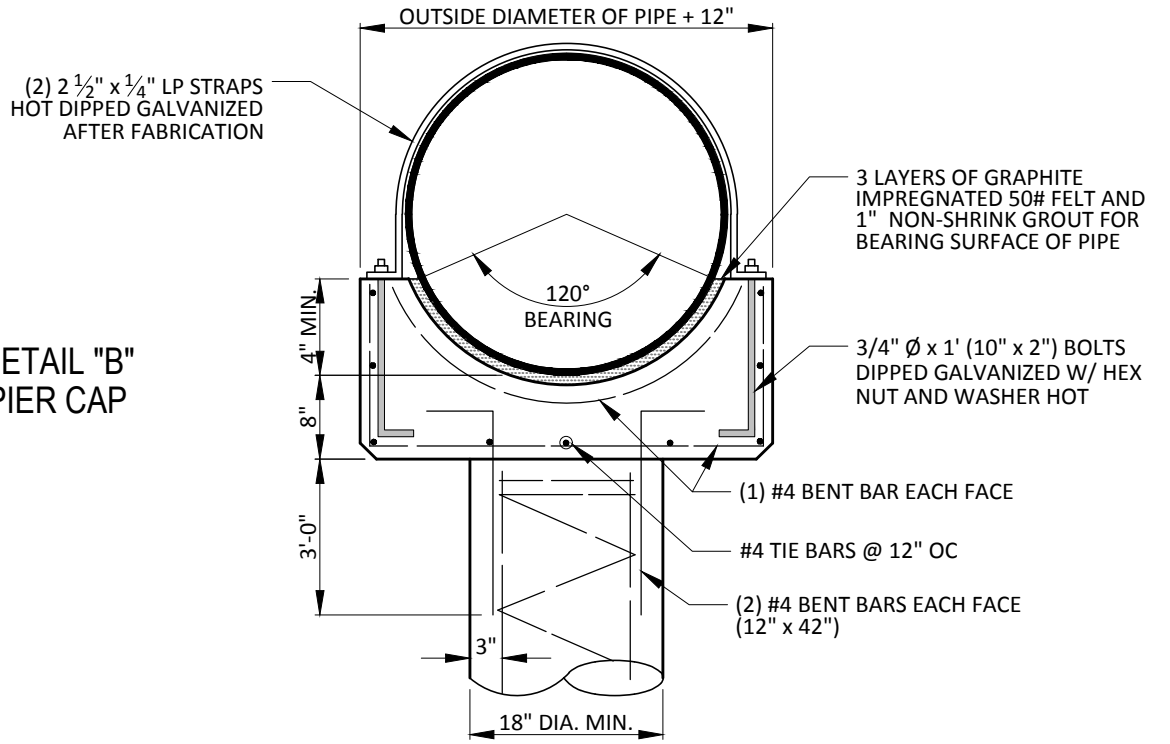
AERIAL CROSSING ELEVATION

S-12

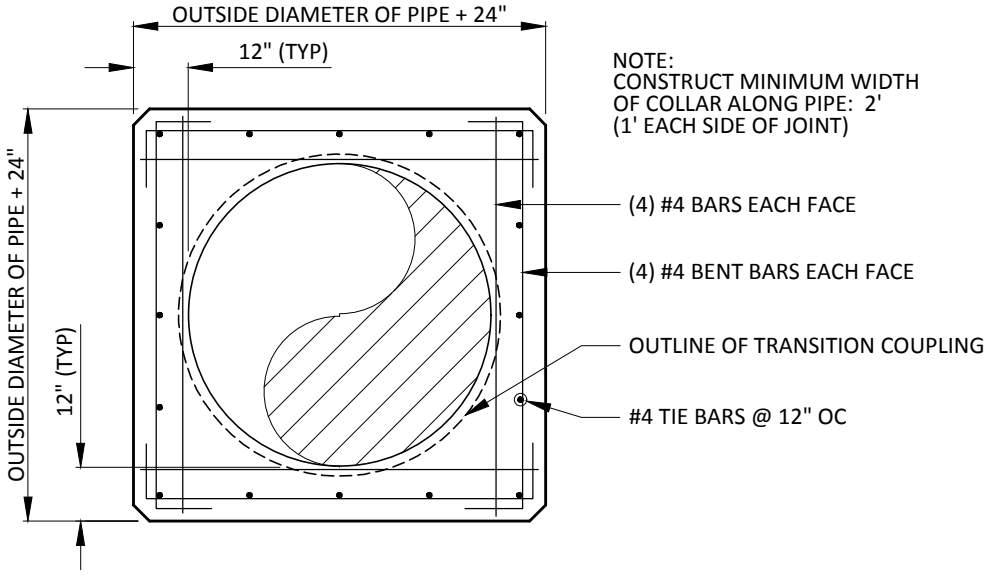
ENGINEERING DEPARTMENT

FILENAME: S-12_1-2.DWG

DETAIL "B" PIER CAP



DETAIL "A" CONCRETE COLLAR



NOTES:

1. ALL EXPOSED EDGES SHALL HAVE A 1" x 45° CHAMFER
2. MATERIALS SHALL CONFORM TO THE SPECIAL PROVISIONS AND/OR THE STANDARD SPECIFICATIONS.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

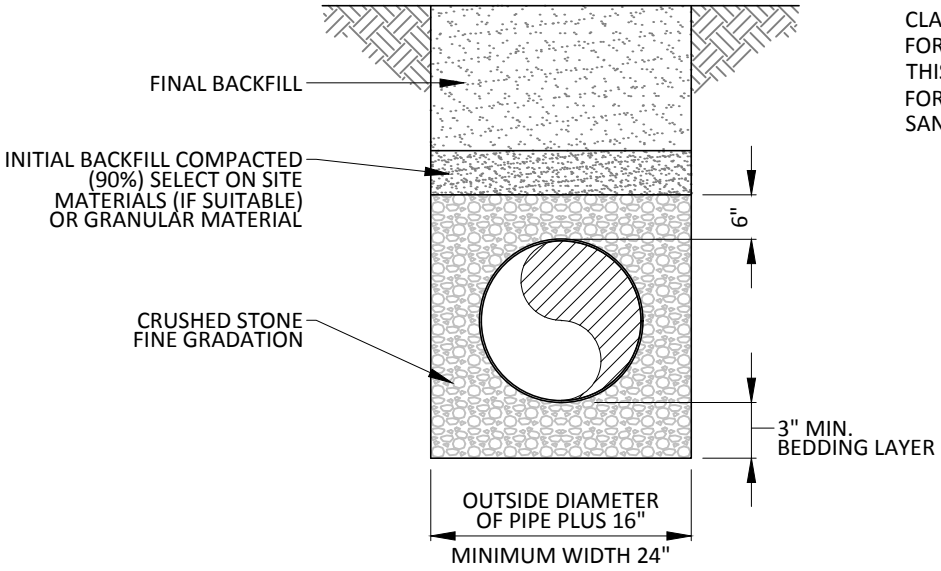
SCALE: NTS DATE: 01/2006
SHEET 2 OF 2

AERIAL CROSSING DETAIL
PIER CAP AND CONCRETE COLOOR

S-12

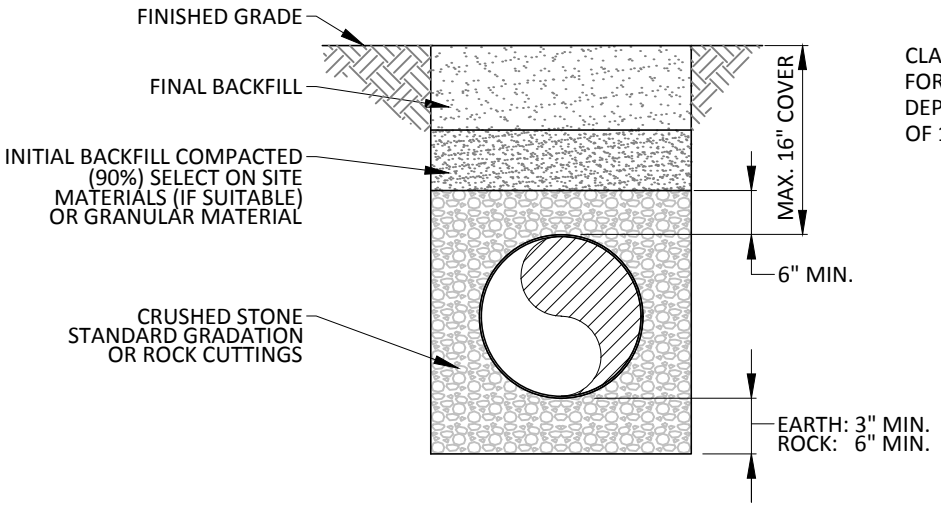
ENGINEERING DEPARTMENT

FILENAME: S-12_2-2.DWG



CLASS "B-1" EMBEDMENT NOTES:
FOR USE IN EARTH UP TO 8' COVER.
THIS IS THE MINIMUM REQUIREMENT FOR SDR 35 (GREEN IN COLOR) PVC SANITARY SEWER PIPE.

CLASS "B-1" EMBEDMENT



CLASS "C" EMBEDMENT NOTES:
FOR USE IN EARTH OVER 8' IN DEPTH UP TO A MAXIMUM DEPTH OF 16' OR IN ROCK EXCAVATION.

CLASS "C" EMBEDMENT

STANDARD CRUSHED STONE EMBEDMENT GRADATION	
RETAINED ON SIEVE	PERCENT BY WEIGHT
RETAINED ON 1 ½" SIEVE	0%
RETAINED ON 1" SIEVE	0 TO 5%
RETAINED ON ½" SIEVE	40 TO 75%
RETAINED ON #4 SIEVE	90 TO 100%
RETAINED ON #8 SIEVE	95 TO 100%

NOTES:

1. FOR THE DEFINITION OF THE BACKFILL MATERIAL TERMS SEE N.C.T.C.O.G. SPECIFICATIONS ITEM 504.4.
2. FINAL BACKFILL SHALL CONSIST OF AND BE PLACED IN ACCORDANCE WITH THE N.C.T.C.O.G. SPECIFICATIONS ITEM 504.6.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

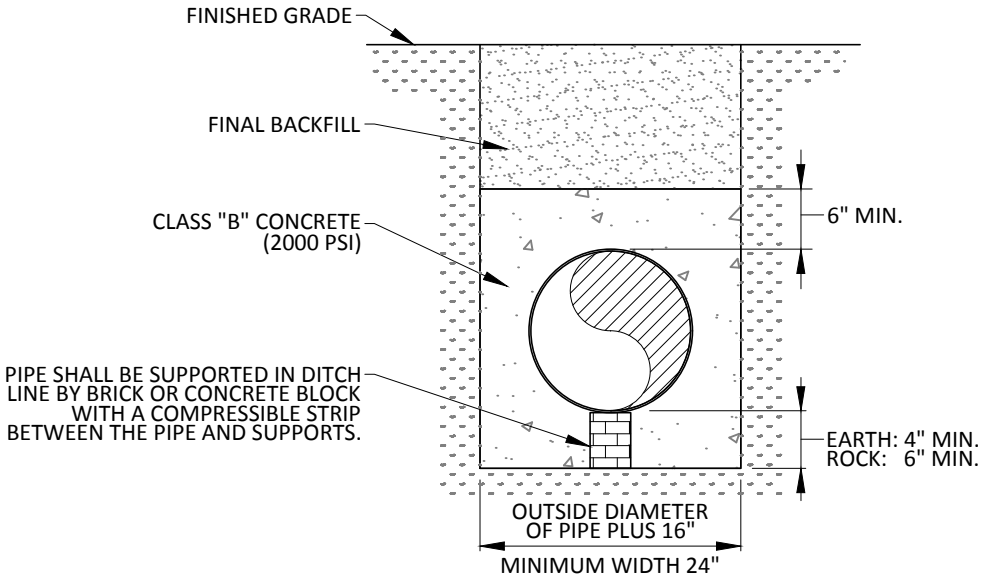
SCALE: NTS DATE: 01/2004
SHEET 1 OF 3

EMBEDMENT DETAILS
CLASS "B-1" & CLASS "C"

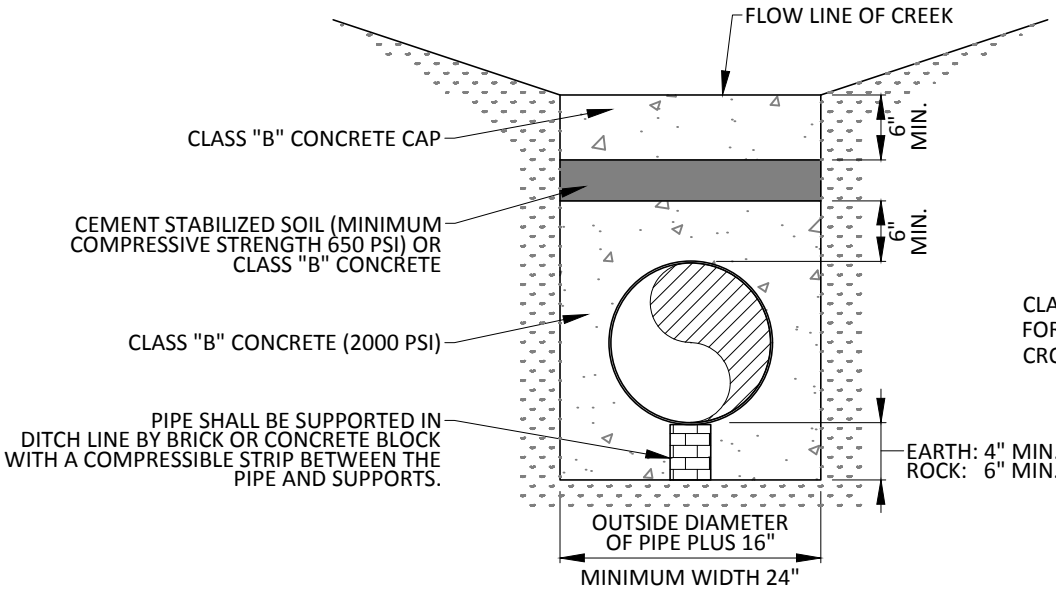
S-13

ENGINEERING DEPARTMENT

FILENAME: S-13_1-3.DWG



CLASS "G" EMBEDMENT



CLASS "G-1" EMBEDMENT NOTES:
FOR USE IN ROCK DITCHES WHEN CROSSING A CREEK BED.

CLASS "G-1" EMBEDMENT

NOTES:

1. FOR THE DEFINITION OF THE BACKFILL MATERIAL TERMS SEE N.C.T.C.O.G. SPECIFICATIONS ITEM 504.4.

2. FINAL BACKFILL SHALL CONSIST OF AND BE PLACED IN ACCORDANCE WITH THE N.C.T.C.O.G. SPECIFICATIONS ITEM 504.6.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

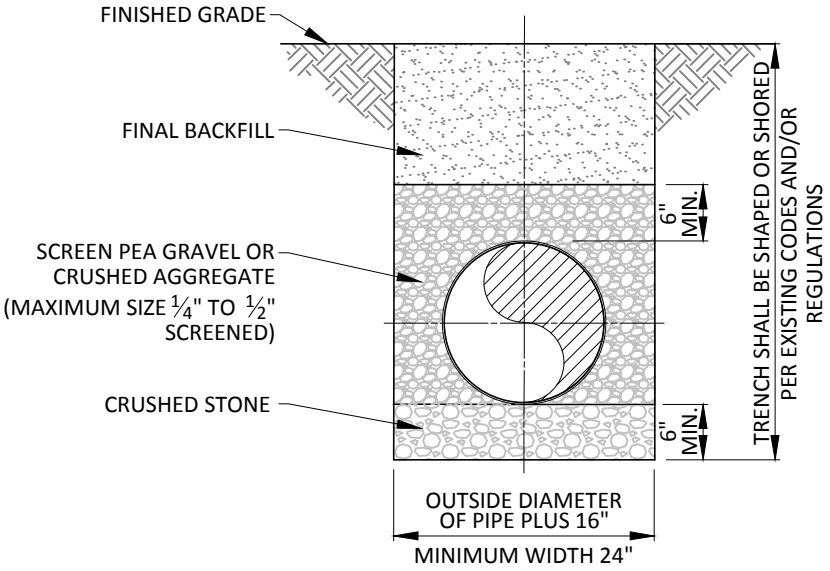
SCALE: NTS DATE: 01/2004
SHEET 2 OF 3

EMBEDMENT DETAILS
CLASS "G" & CLASS "G-1"

S-13

ENGINEERING DEPARTMENT

FILENAME: S-13_2-3.DWG



R.C.P. TYPE PIPE EMBEDMENT

NOTES:

1. FOR THE DEFINITION OF THE BACKFILL MATERIAL TERMS SEE N.C.T.C.O.G. SPECIFICATIONS ITEM 504.4.

2. FINAL BACKFILL SHALL CONSIST OF AND BE PLACED IN ACCORDANCE WITH THE N.C.T.C.O.G. SPECIFICATIONS ITEM 504.6.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

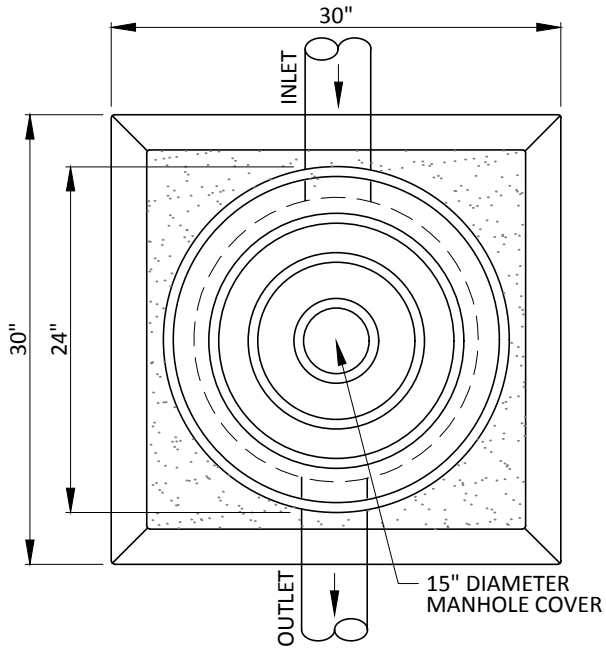
SCALE: NTS DATE: 01/2004
SHEET 3 OF 3

EMBEDMENT DETAILS
RCP TYPE PIPE

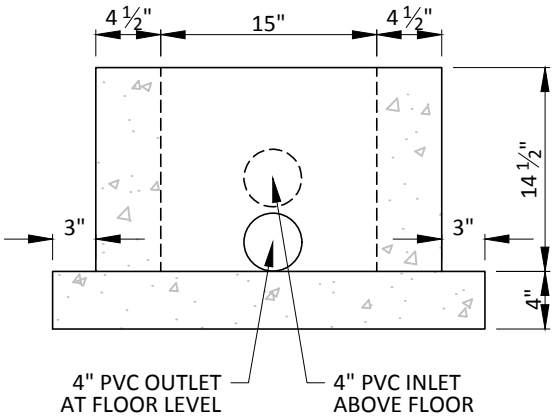
S-13

ENGINEERING
DEPARTMENT

FILENAME: S-13_3-3.DWG



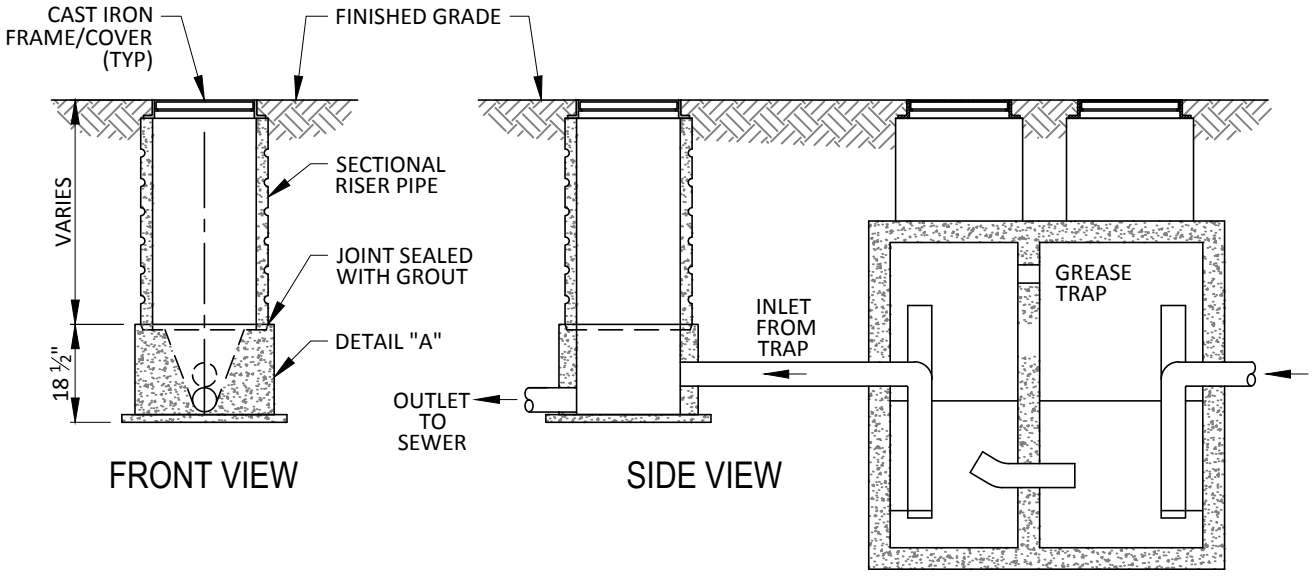
TOP VIEW



NOTE:

4500 PSI CONCRETE WITH GRADE 60 REINFORCEMENT

DETAIL "A"



FRONT VIEW

SIDE VIEW

TYPICAL SAMPLING WELL

NOTES:

1. IF SAMPLE PORT IS IN A DRIVEWAY, LID MUST BE WATERTIGHT AND ABLE TO TOLERATE THE WEIGHT OF VEHICLES.

2. AN ALTERNATE DESIGN MAY BE APPROVED BY ENVIRONMENTAL SERVICES.

CARROLLTON
TEXAS

GENERAL DESIGN STANDARDS
SEWER DETAILS

SCALE: NTS DATE: 02/2011
SHEET 1 OF 1

WASTEWATER
SAMPLE STATION DETAIL

S-14

ENGINEERING
DEPARTMENT

FILENAME: S-14_1-1.DWG