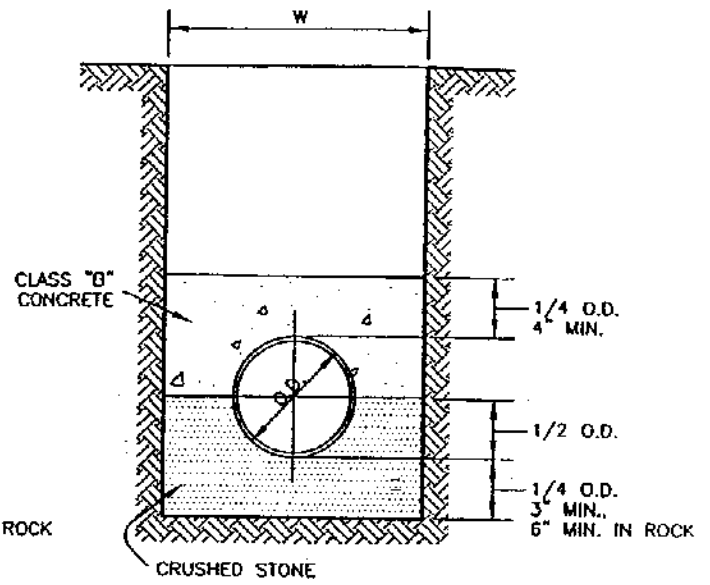
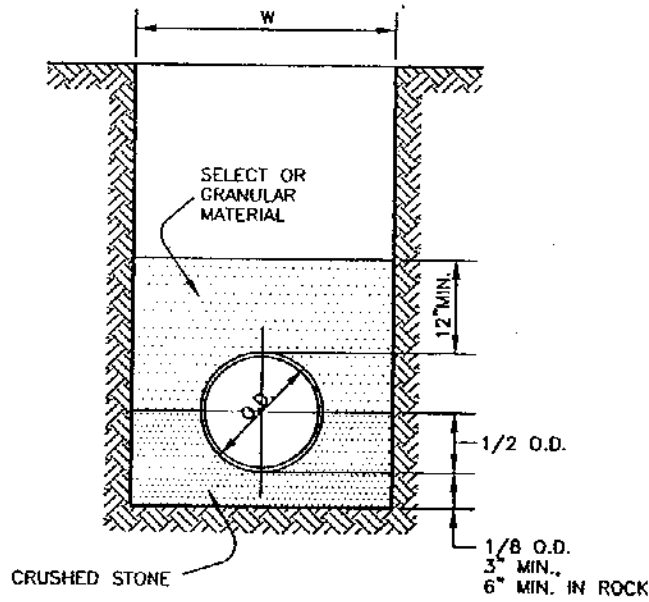


CLASS A  
EMBEDMENT  
CONCRETE CRADLE  
NTS



CLASS A-1  
EMBEDMENT  
CONCRETE CAP  
NTS



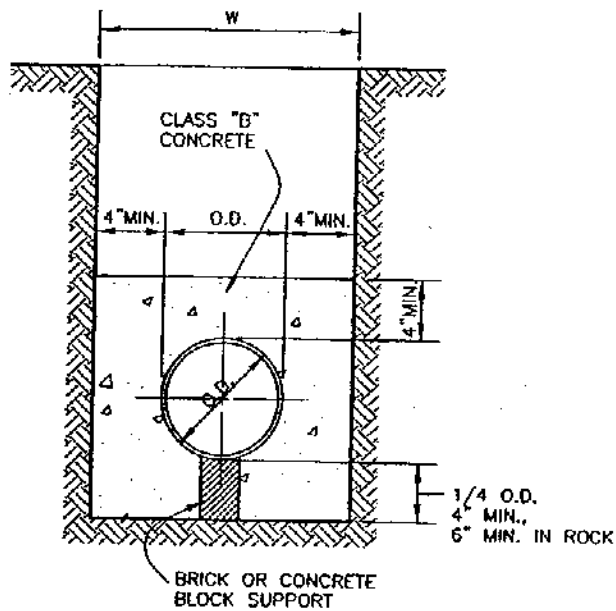
CLASS B+  
EMBEDMENT  
NTS

EMBEDMENT DETAILS

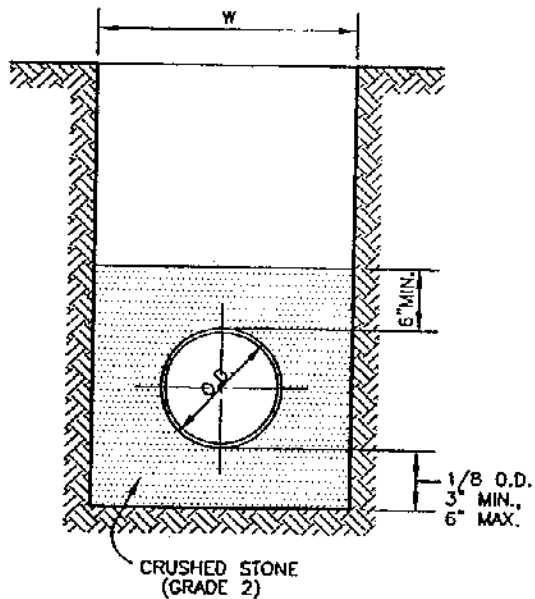
STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

DATE:  
1999

SHEET:  
SD-SS02



**CLASS B  
EMBEDMENT**  
CONCRETE ENCASEMENT  
NTS



**CLASS H  
EMBEDMENT**  
P.V.C. PIPE ONLY  
STD. P.V.C. SEWER INSTALLATION  
NTS

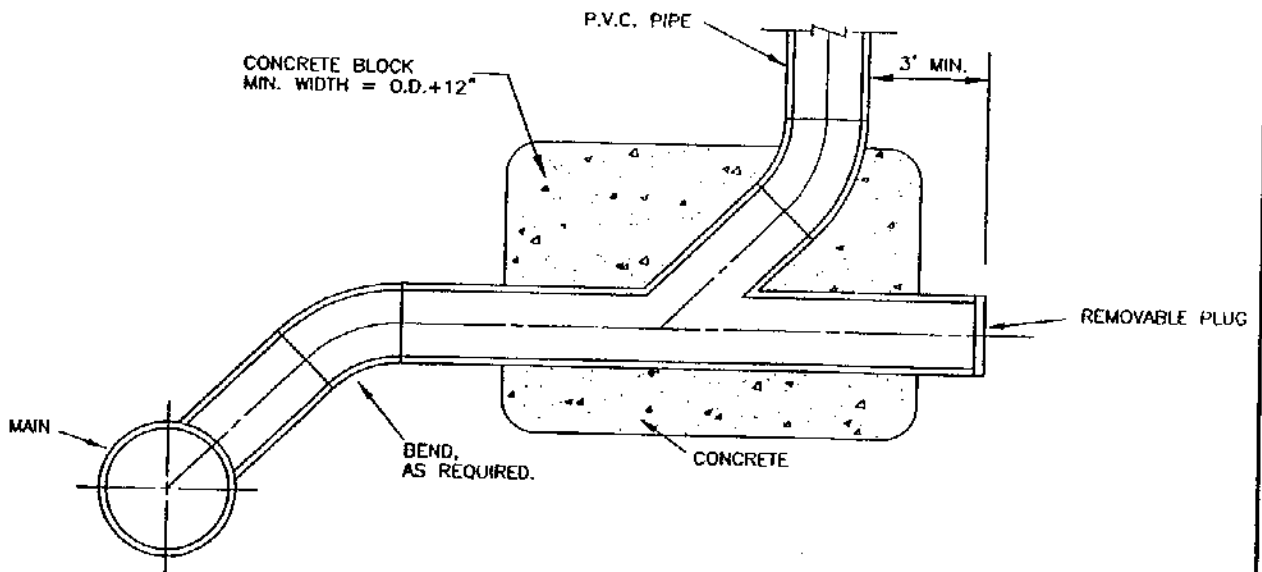
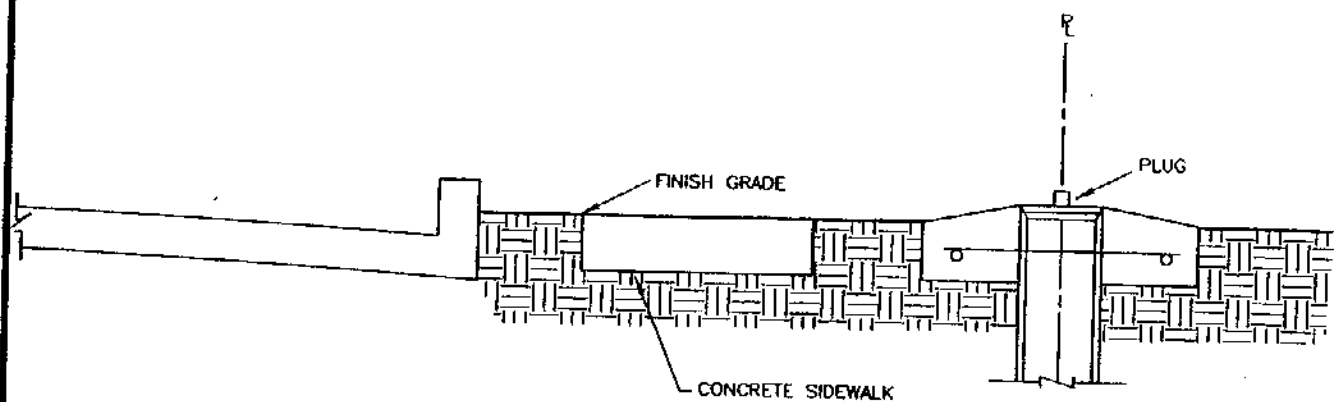
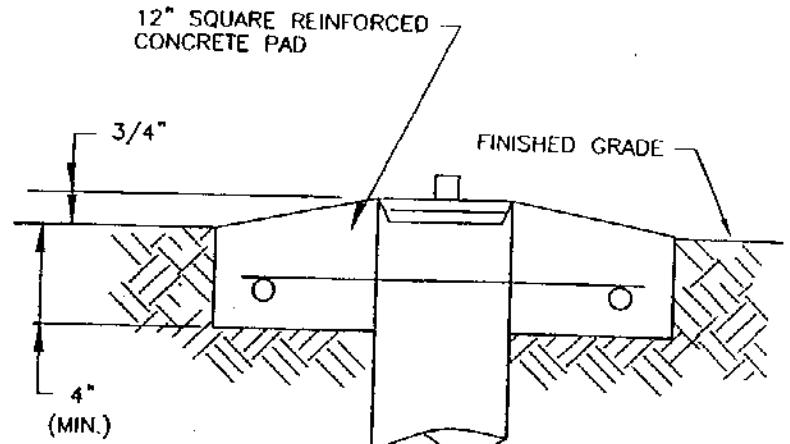
**NOTES:**

1. TYPE OF EMBEDMENT OR ENCASEMENT SHALL BE SHOWN IN THE PROFILES FOR ALL LINES.
2. WIDTH OF TRENCH SHALL BE 24 INCHES PLUS O.D.  
 $W = 24" + O.D.$
3. DEPTH OF TRENCH BELOW PIPE SHALL BE AS FOLLOWS:  
3" (MIN.) FOR 27" PIPE AND SMALLER  
4" (MIN.) FOR 30" TO 60" PIPE  
6" (MIN.) FOR 66" PIPE AND LARGER
4. DENSITY SHALL BE 95% UNDER PAVING, 90% ELSEWHERE.

	EMBEDMENT DETAILS	STANDARD CONSTRUCTION DETAILS SANITARY SEWER	
		DATE: 1999	SHEET: SD--SS03

**NOTES:**

1. SEE SD-W25 FOR SANITARY SEWER SERVICE CURB MARKINGS.
2. SERVICE LINE COMPACTION TO BE TESTED 12' BEHIND BACK OF CURB.
3. SERVICE LINE COMPACTION TO PROPERTY LINE TO BE TESTED BY CITY TESTING FACILITY.
4. CLEAN-OUT TO HAVE A CAST IRON BOLT DOWN LID AS MANUFACTURED BY AB&I OR APPROVED EQUAL.



**ONE-WAY CLEANOUT AT PROPERTY LINE**

NTS

**NOTE:**

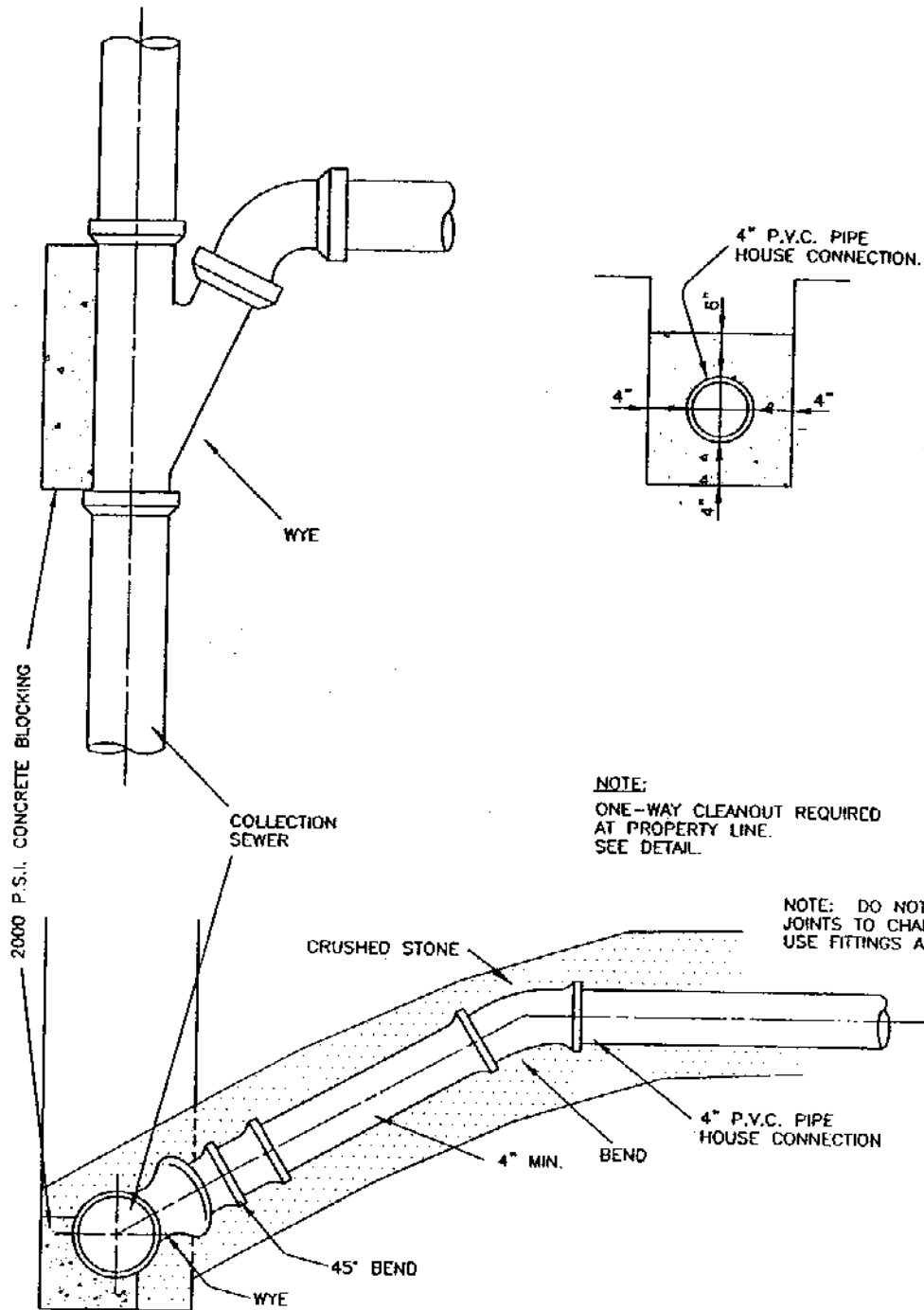
LOCATION OF CLEAN OUT RISER STACK MUST BE LOCATED IN AREA BETWEEN SIDEWALK AND PROPERTY LINE. NO RISERS WILL BE ACCEPTED IN THE SIDEWALK OR DRIVEWAY.

ONE-WAY CLEANOUT

STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

DATE:  
1999

SHEET:  
SD-SS04



**TYPICAL SEWER  
HOUSE SERVICE CONNECTION**  
NTS

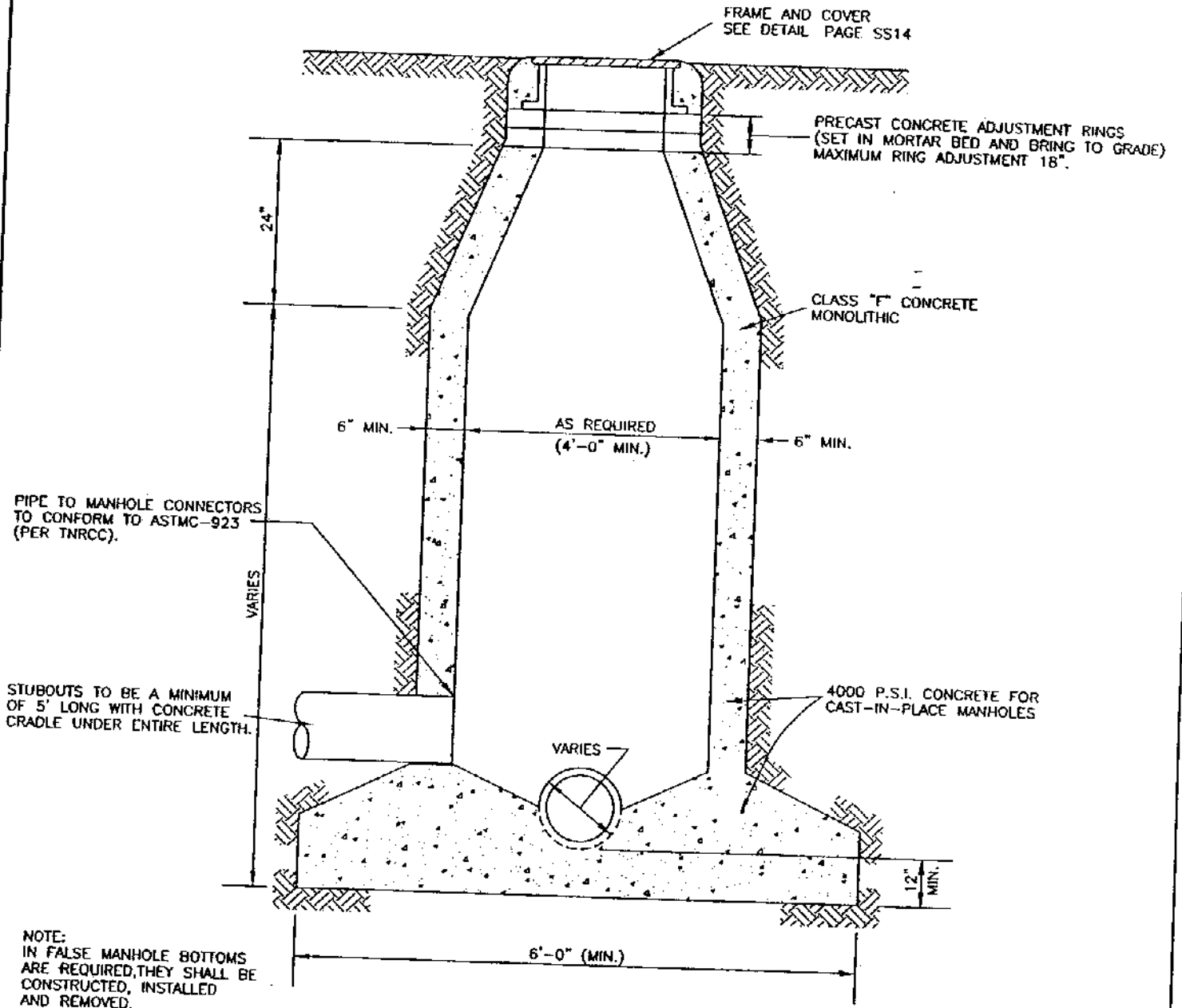
TYPICAL SEWER  
HOUSE SERVICE CONNECTION

STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

DATE:  
1999

SHEET:  
SD-SS05





CAST-IN-PLACE NOTES:

1. KEYWAYS REQUIRED FOR ALL CONSTRUCTION JOINTS.
2. P.V.C. WATER STOP REQUIRED FOR ALL JOINTS IN LOWER 4'-0" OF MANHOLES
3. CONCRETE SHALL BE CLASS "F" P.S.I.

STANDARD CAST-IN-PLACE MANHOLE  
NTS

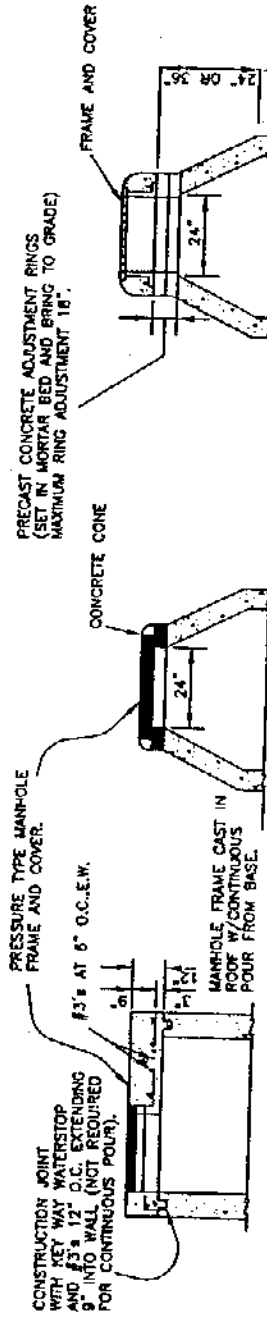
CAST-IN-PLACE MANHOLE

STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

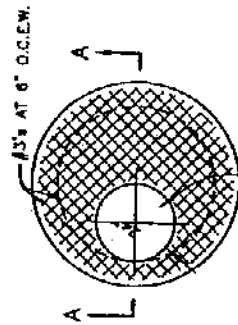
DATE:  
1999

SHEET:  
SD-SS07

**ROOF OPTIONS**



**SECTION A-A**

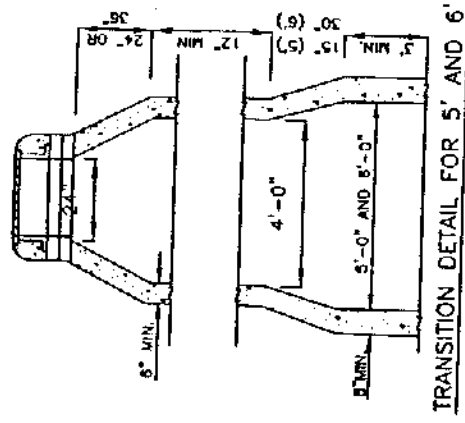


MANHOLE LID SHOULD BE IN LINE WITH UPSTREAM PIPE WHERE POSSIBLE.

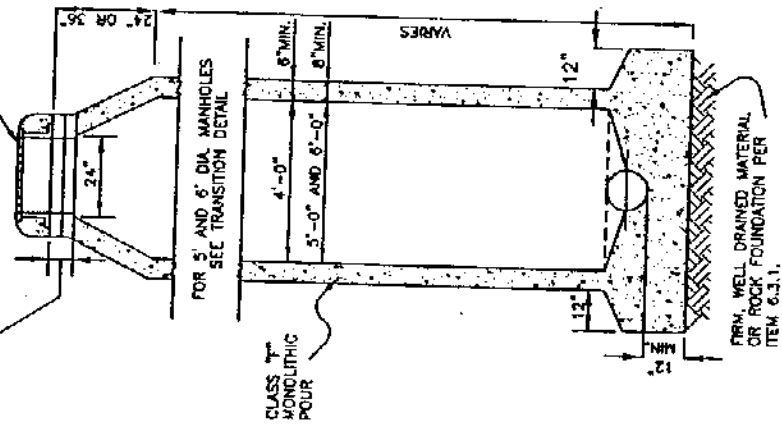
PIPE TO MANHOLE CONNECTORS SHALL CONFORM TO ASTM C-923 (PER THRCO).

STUBOUT TO BE FITTED W/ STOPPER OR CAP.

STUBOUTS TO BE A MIN. OF 5' LONG W/ CONCRETE CHADOLE (FROM SAME POUR AS BASE), UNDER ENTIRE LENGTH. ITEM 5.72.0 (2) (B).



TRANSITION DETAIL FOR 5' AND 6'



**TYPE "S" MANHOLE  
(CAST IN PLACE)**  
NTS

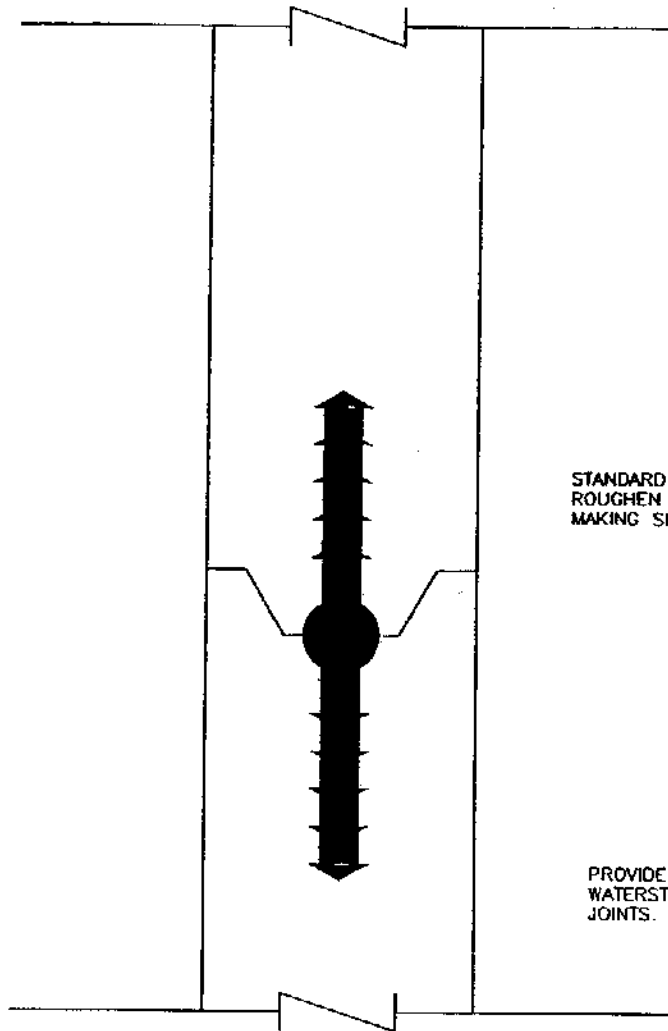
TYPE "S" MANHOLE  
CAST IN PLACE

STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

DATE:  
1999

SHEET:  
SD-SS08





STANDARD 2 x 4 KEYWAY  
 ROUGHEN EDGES PRIOR TO  
 MAKING SECOND POUR.

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

KEYWAY WITH WATERSTOP  
 NTS

KEYWAY WITH WATERSTOP

STANDARD CONSTRUCTION DETAILS  
 SANITARY SEWER

DATE:  
 1999

SHEET:  
 SD-SS9

8" X 24" DIA. PRECAST REINFORCED CONCRETE GRADE RINGS (SET IN MORTAR BED AND BRING TO GRADE) RINGS 18" MAX.

CAST IRON MANHOLE FRAME AND COVER SUITABLE FOR HEAVY TRAFFIC (SEE DETAIL) PAGE SS14

CONCENTRIC MANHOLE CONE. SEE NOTE FOR LARGER THAN 48" DIA.

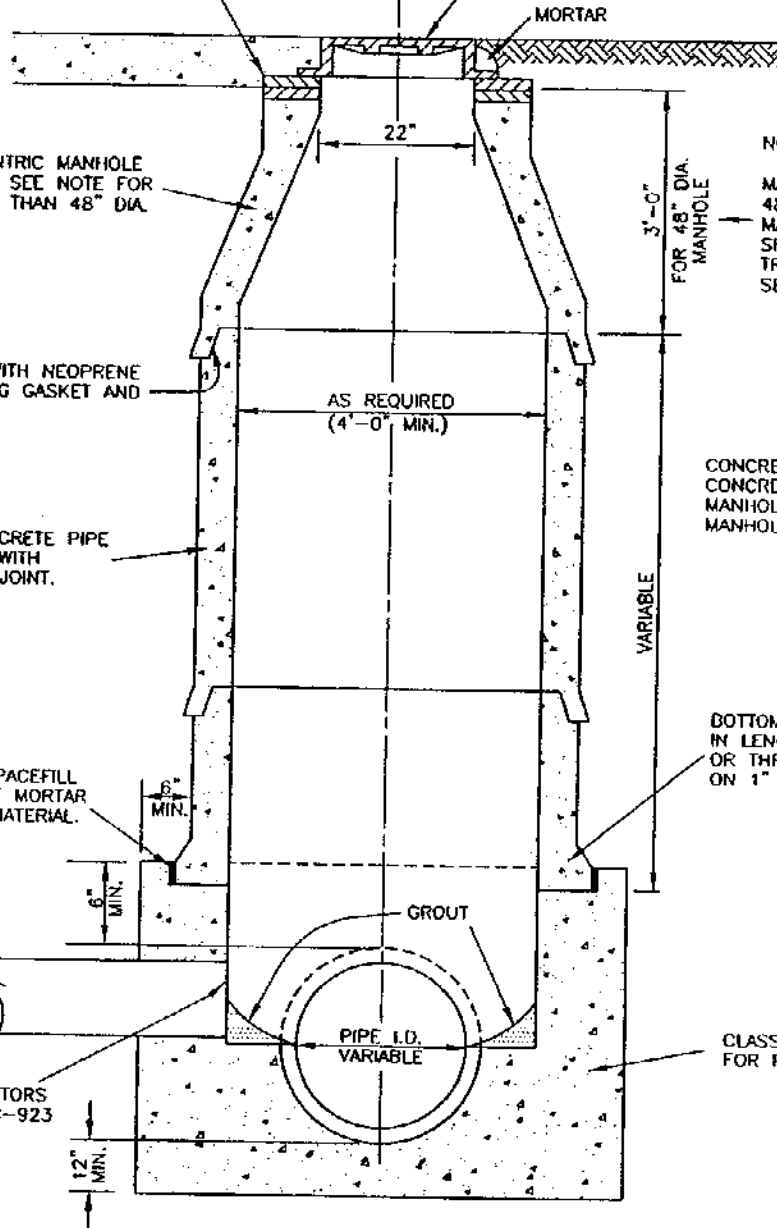
JOINT WITH NEOPRENE "O" RING GASKET AND MASTIC.

REINFORCED CONCRETE PIPE C-76, CLASS III WITH RUBBER GASKET JOINT.

1" GROUT SPACEFILL WITH CEMENT MORTAR OR MASTIC MATERIAL.

STUB OUTS TO R OR ESMT (MIN. 5' LONG) WITH CONCRETE CRADLE UNDER ENTIRE LENGTH.

PIPE TO MANHOLE CONNECTORS SHALL CONFORM TO ASTM C-923 (PER TNRCC)



NOTE A:

MANHOLE DIAMETER LARGER THAN 48" I.D. PRE-CAST FLAT TOP MANHOLE COVER AS PER ASTM C478 SHALL BE INSTALLED. FOR HEAVY TRAFFIC SPECIAL DESIGN REQUIRED. SEE DETAIL.

CONCRETE CLASS ITEM 7.4.5  
CONCRETE PIPE MATERIAL ITEM 2.12.4  
MANHOLE MATERIAL ITEM 2.19  
MANHOLE CONST. ITEM 6.7.2. (1) (1) (3)

BOTTOM SECTION OF MANHOLE IN LENGTHS OF ONE (1), TWO (2), OR THREE (3) FEET. TO BE SET ON 1" OF LEVEL GROUT

CLASS "F" CONCRETE BASE FOR PRECAST MANHOLE.

## PRECAST CONCRETE PIPE MANHOLE ALTERNATE "A"

NTS

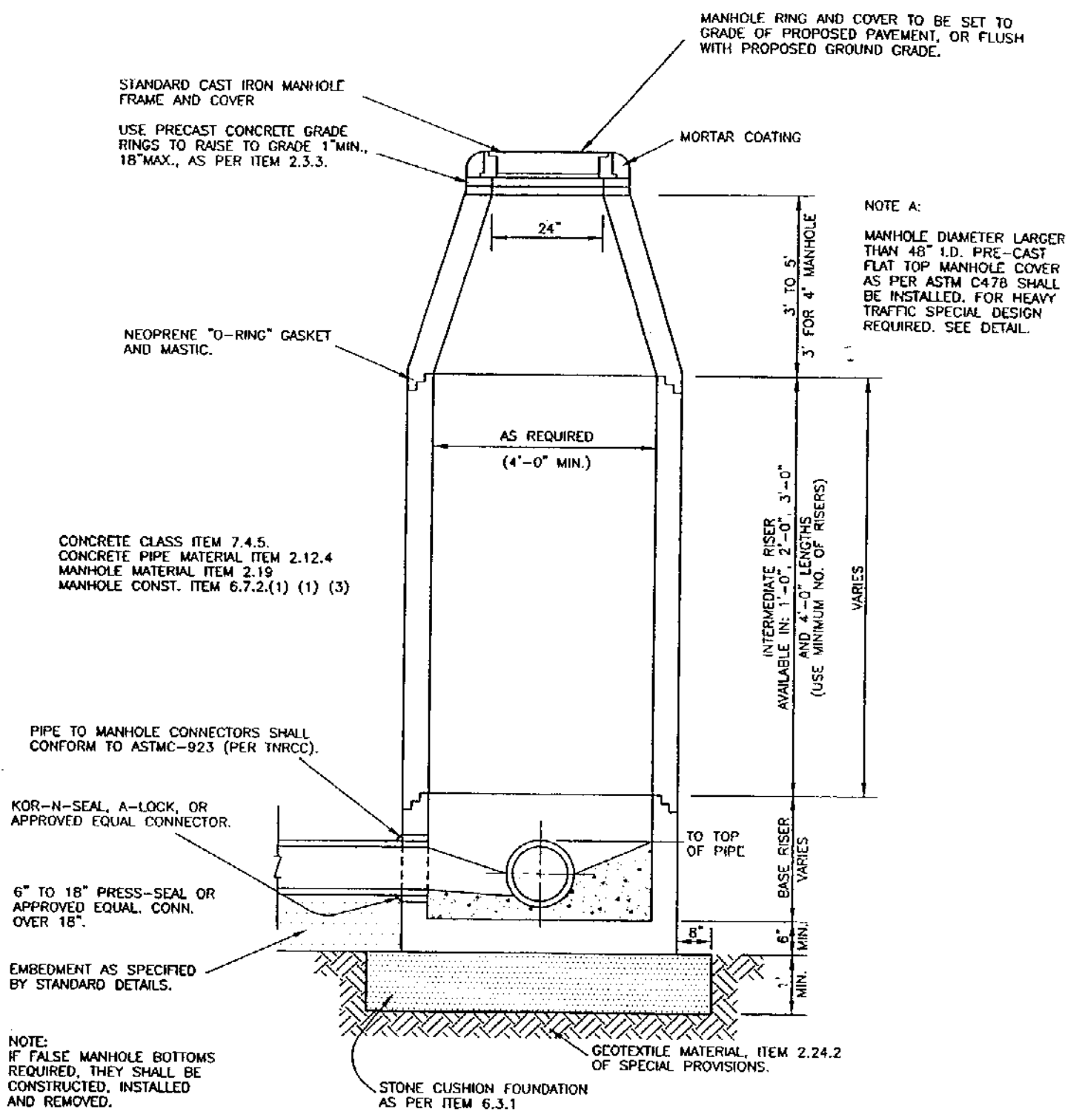
NOTE:  
IN FALSE MANHOLE BOTTOMS REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED.

PRECAST CONCRETE  
PIPE MANHOLE  
ALTERNATE "A"

STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

DATE:  
1999

SHEET:  
SD-SS10



NOTE A:  
 MANHOLE DIAMETER LARGER THAN 48" I.D. PRE-CAST FLAT TOP MANHOLE COVER AS PER ASTM C478 SHALL BE INSTALLED. FOR HEAVY TRAFFIC SPECIAL DESIGN REQUIRED. SEE DETAIL.

NOTE:  
 IF FALSE MANHOLE BOTTOMS REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED.

**PRECAST CONCRETE MANHOLE  
 ALTERNATE "B"**  
 NTS

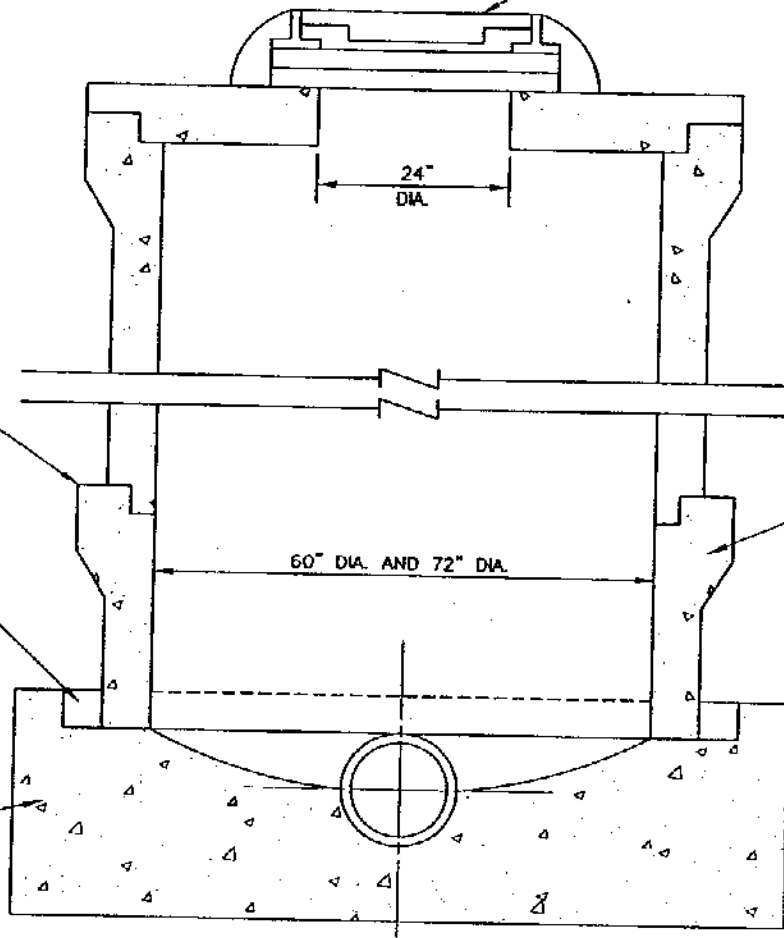
PRECAST CONCRETE PIPE MANHOLE ALTERNATE "B"	STANDARD CONSTRUCTION DETAILS SANITARY SEWER	
	DATE: 1999	SHEET: SD-SS11

CAST IRON FRAME AND COVER FOR MANHOLE SHALL BE SUITABLE FOR HEAVY TRAFFIC. SEE PAGE SS14 FOR DETAIL.

BOTTOM SECTION OF RISER PIPE BUTT AND BELL.

GROUT SPACE TO BE FILLED WITH CEMENT MORTAR OR MASTIC MATERIAL.

CLASS "F" CONCRETE BASE FOR PRECAST MANHOLE.



REINFORCED CONCRETE PIPE, C-76, CLASS III WITH RUBBER GASKET JOINT.

PRECAST CONCRETE  
FLAT TOP MANHOLE

NTS

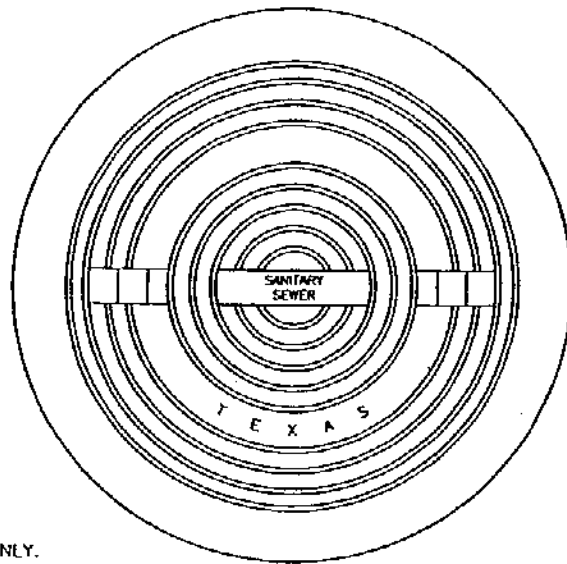
NOTE:  
IN FALSE MANHOLE BOTTOMS  
REQUIRED, THEY SHALL BE  
CONSTRUCTED, INSTALLED  
AND REMOVED.

PRECAST CONCRETE  
FLAT TOP MANHOLE

STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

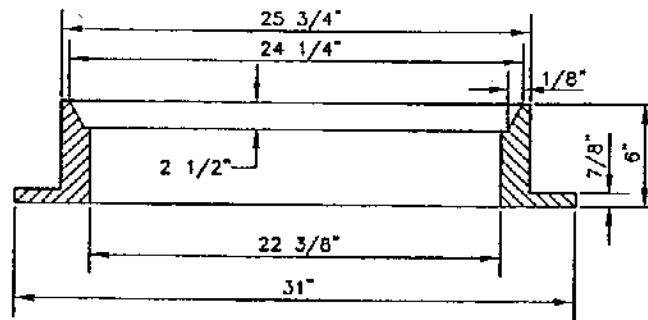
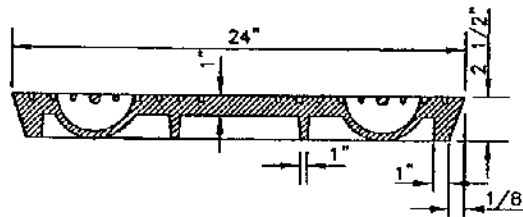
DATE:  
1999

SHEET:  
SD-SS12



APPROXIMATE WEIGHT  
RING AND COVER: 400 LBS.

PROVIDE WITH PICK SLOTS ONLY.



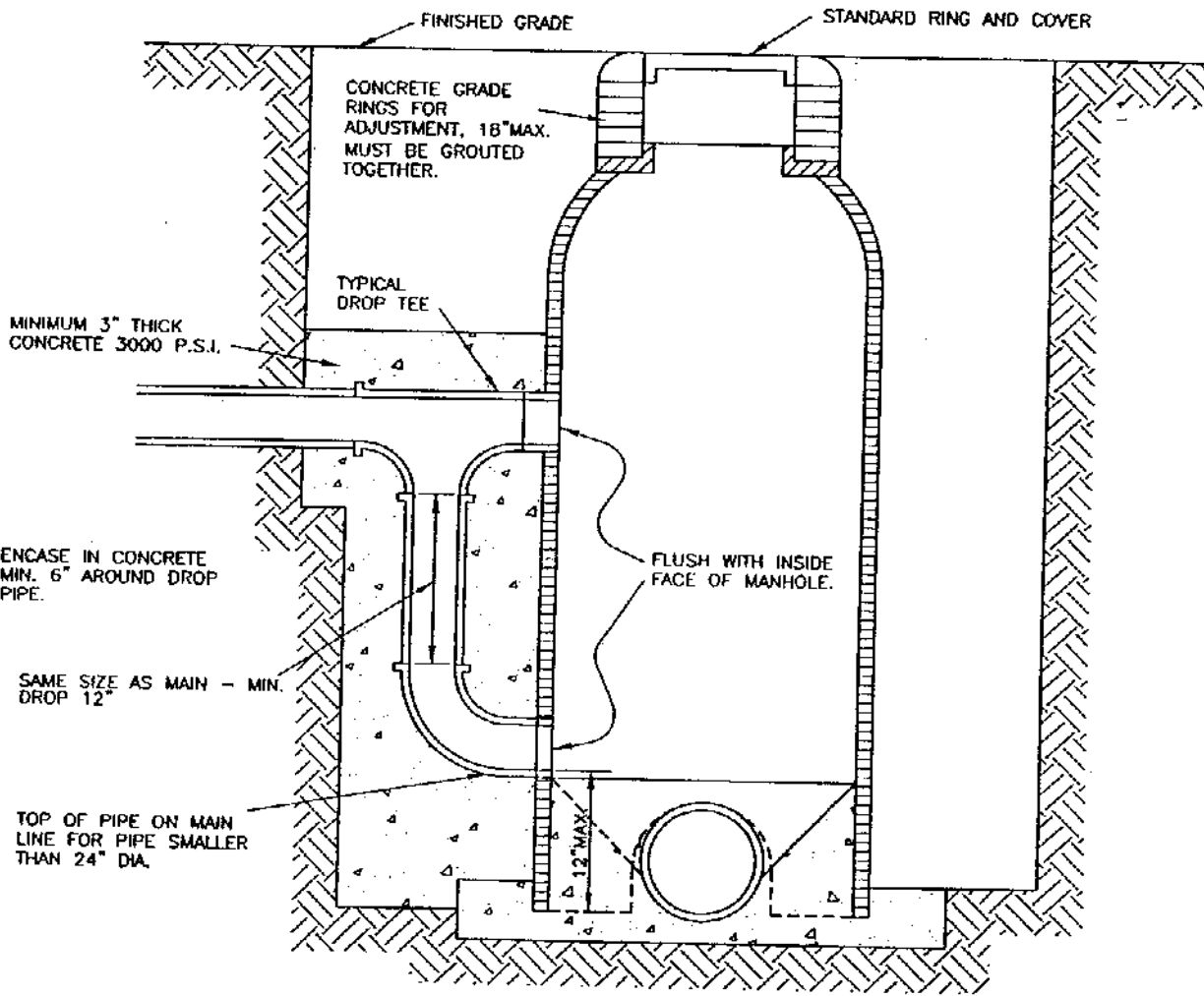
CAST IRON GRATE AND FRAME DETAIL  
NTS

CAST IRON GRATE AND FRAME

STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

DATE:  
1999

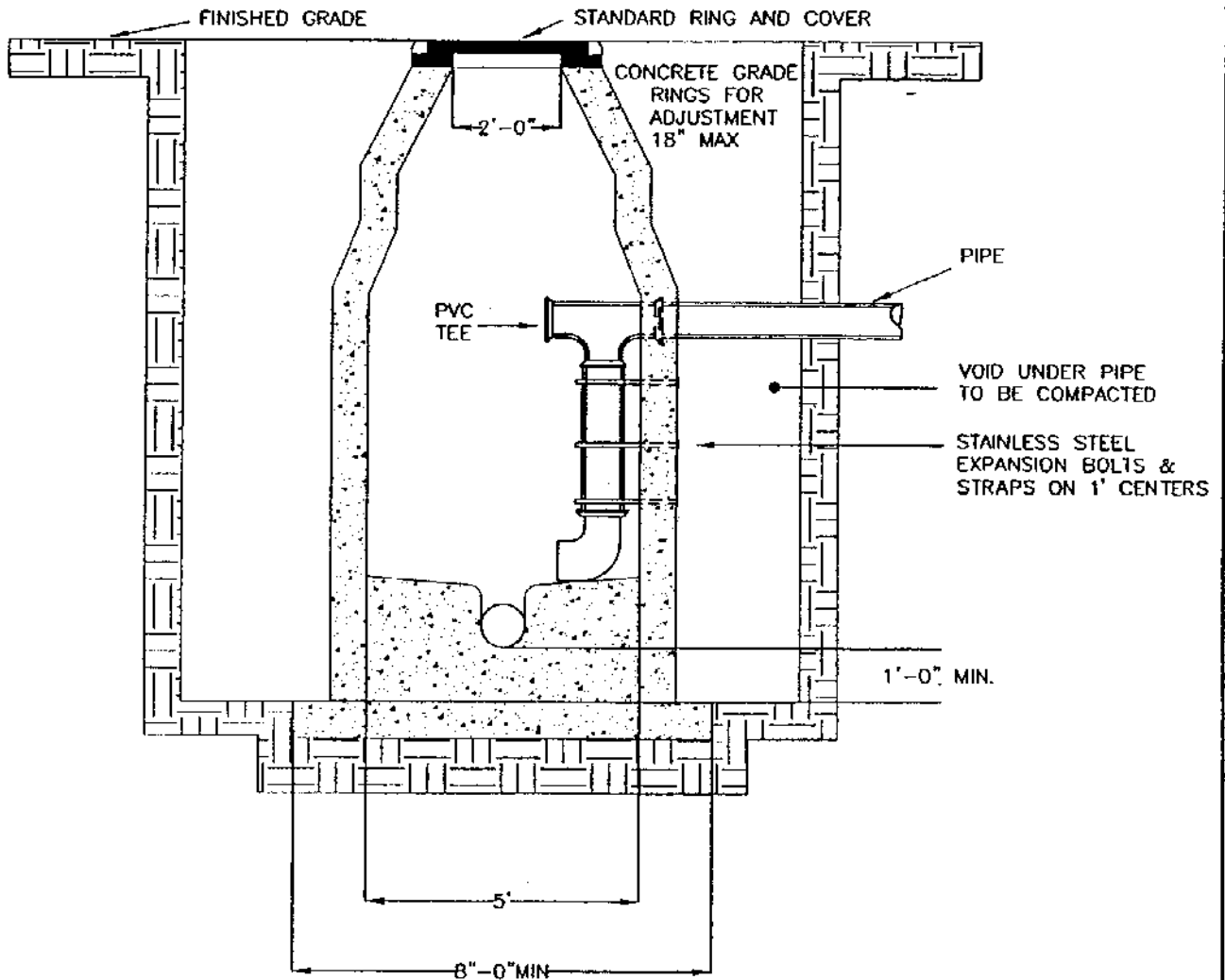
SHEET:  
SD-SS13



**MANHOLE DROP CONNECTION**  
NTS

NOTE: BACKFILL AND INVERT  
TO CITY SPECIFICATIONS.

	MANHOLE DROP CONNECTION	STANDARD CONSTRUCTION DETAILS SANITARY SEWER	
		DATE: 1999	SHEET: SD-SS14



**INTERIOR DROP MANHOLE DETAIL**

NOT TO SCALE

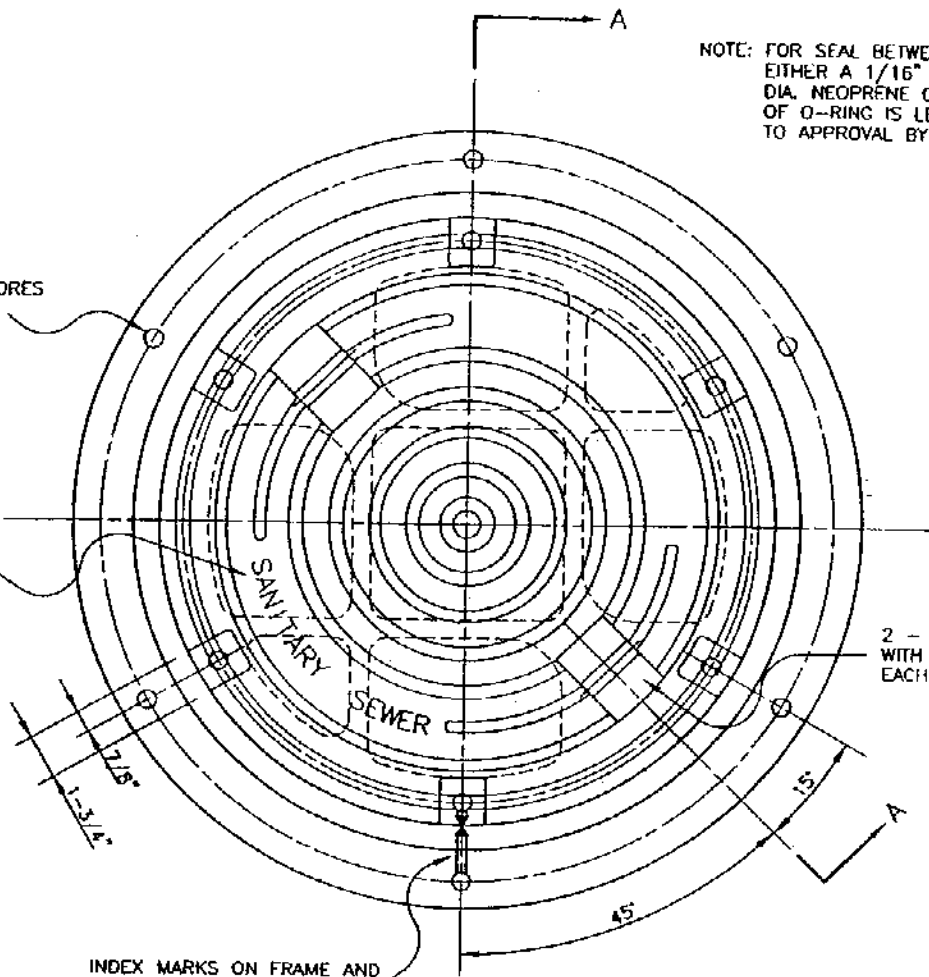
**NOTE:**  
BY APPROVAL OF CITY ONLY.

	<p>INTERIOR DROP MANHOLE DETAIL</p>	<p>STANDARD CONSTRUCTION DETAILS SANITARY SEWER</p>	
		<p>DATE: 1999</p>	<p>SHEET: SD-SS15</p>

NOTE: FOR SEAL BETWEEN FRAME AND COVER USE EITHER A 1/16" COPPER GASKET OR A 1/4" DIA. NEOPRENE O-RING GASKET. (LOCATION OF O-RING IS LEFT TO MFR., BUT SUBJECT TO APPROVAL BY CONST. ENGINEER).

6-5/8" DIA. CORES AS SHOWN.

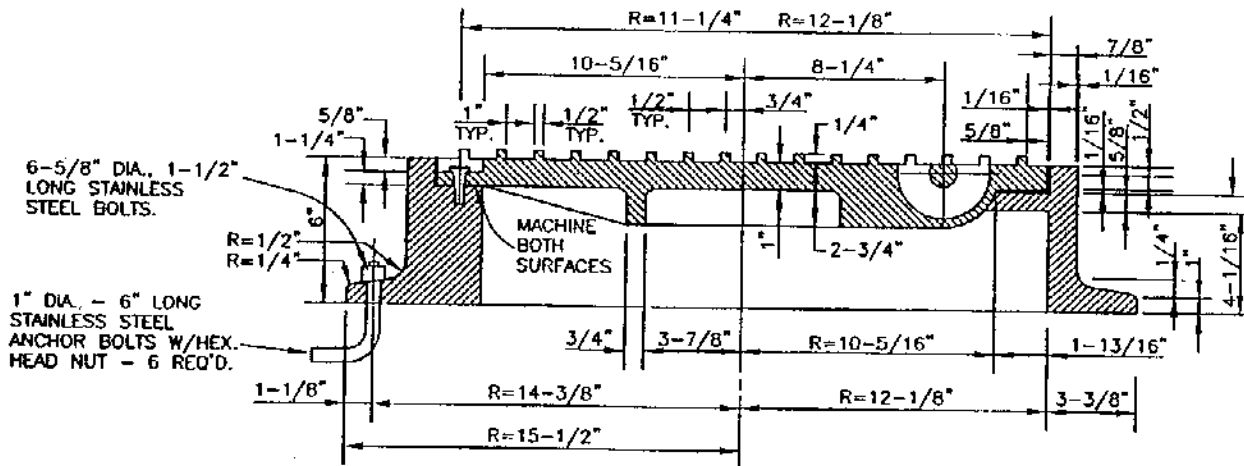
1" LETTERS, RAISED 1/4".



2 - 3-3/4" X 2" PICK SLOTS WITH 1 - 1" DIA. STEEL ROD EACH.

INDEX MARKS ON FRAME AND COVER ENGRAVED INTO CASTING 1/8" DEEP.

1" DIA. STEEL ROD MATERIAL PER ITEM 2.11.5(b) (2)  
RING AND COVER MATERIAL PER ITEM 2.11.5(c)



SECTION A-A

PRESSURE TYPE MANHOLE FRAME AND COVER

MIS

PRESSURE TYPE MANHOLE  
FRAME AND COVER

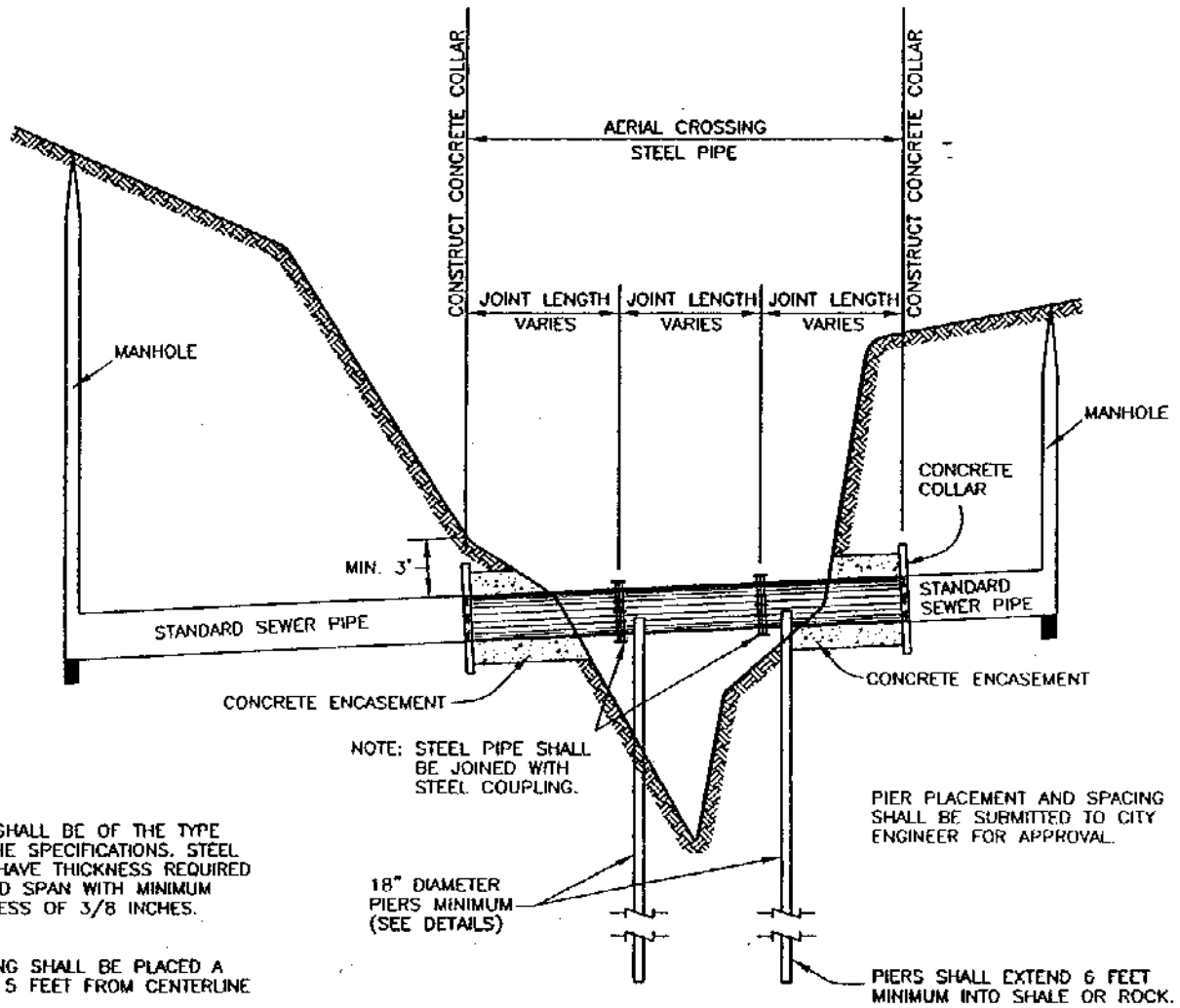
STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

DATE:  
1999

SHEET:  
SD-SS16



ENGINEERING DESIGN SHALL BE SUBMITTED FOR EACH CROSSING. PIERS SHALL BE PLACED AT MAXIMUM SPAN DISTANCE AS DICTATED BY DESIGN.



STEEL PIPE SHALL BE OF THE TYPE SHOWN IN THE SPECIFICATIONS. STEEL PIPE SHALL HAVE THICKNESS REQUIRED FOR SIZE AND SPAN WITH MINIMUM WALL THICKNESS OF 3/8 INCHES.

PIPE COUPLING SHALL BE PLACED A MAXIMUM OF 5 FEET FROM CENTERLINE OF PIERS.

MATERIALS SHALL CONFORM TO THE SPECIAL PROVISIONS AND/OR THE STANDARD SPECIFICATIONS.

NOTE: STEEL PIPE SHALL BE JOINED WITH STEEL COUPLING.

18" DIAMETER PIERS MINIMUM (SEE DETAILS)

PIER PLACEMENT AND SPACING SHALL BE SUBMITTED TO CITY ENGINEER FOR APPROVAL.

PIERS SHALL EXTEND 6 FEET MINIMUM INTO SHALE OR ROCK.

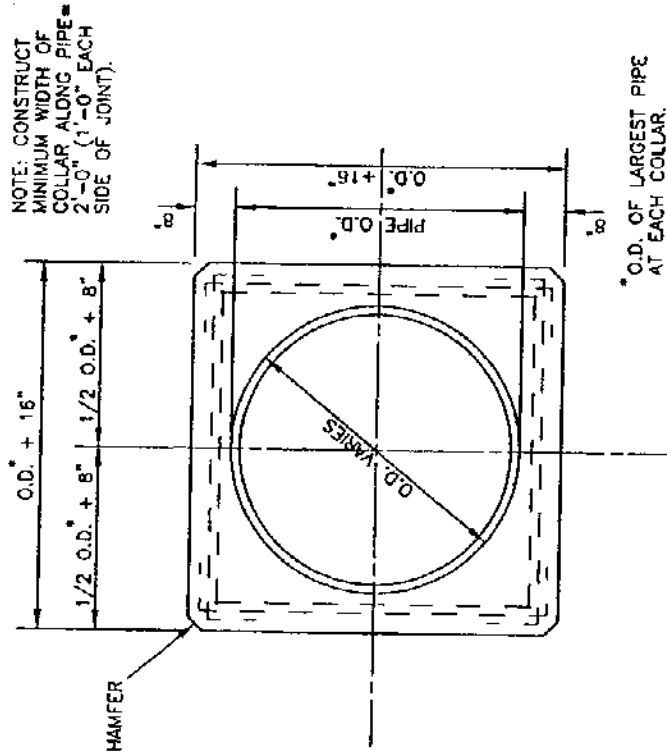
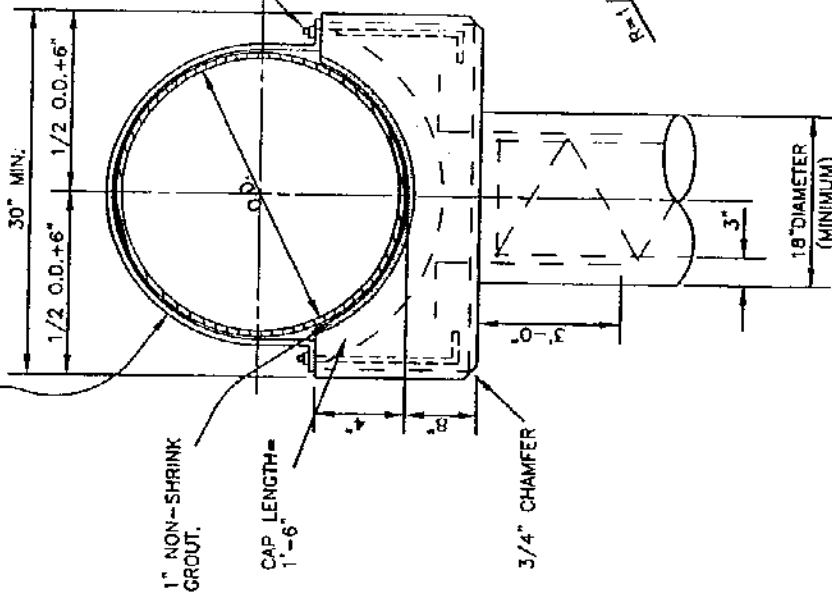
### AERIAL CROSSING DETAIL

NTS

	AERIAL CROSSING	STANDARD CONSTRUCTION DETAILS SANITARY SEWER	
		DATE: 1999	SHEET: SD-SS17

2-2 1/2" x 1/4" R STRAPS  
HOT DIPPED GALVANIZED AFTER  
FABRICATION.

MATERIALS SHALL CONFORM TO THE SPECIAL  
PROVISIONS AND/OR THE STANDARD SPECIFICATIONS.



AERIAL CROSSING  
PIER CAP DETAIL  
NTS

AERIAL CROSSING  
CONCRETE COLLAR DETAIL  
NTS

PIER CAP & CONCRETE COLLAR

STANDARD CONSTRUCTION DETAILS  
SANITARY SEWER

DATE:  
1999

SHEET:  
SD-SS18

## GENERAL NOTES

1. ALL MATERIALS AND PRACTICES SHALL BE AS SPECIFIED IN THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (WITH MOST RECENT AMENDMENTS).
2. ALL SANITARY SEWER PIPE UP TO 18" SHALL BE P.V.C. SDR-35 PIPE. ALTERNATE PIPE MATERIALS AND MATERIALS FOR ALL LARGER PIPE SHALL BE APPROVED BY THE CITY.
3. SANITARY SEWER LATERALS SHALL INCLUDE 4" TEE WYE BEND, PIPE AND ONE-WAY CLEANOUT AS PER DETAIL INSTALLED 10 FEET DOWNSTREAM FROM THE WATER MAIN SERVICE ON EACH LOT, UNLESS OTHERWISE INDICATED ON THE PLANS. 6" LATERALS REQUIRE MANHOLE AT MAIN SEWER PIPE.
4. SANITARY SEWER PIPE JOINTS SHALL CONFORM TO ASTM DESIGNATIONS FOR P.V.C. PIPE.
5. DROP MANHOLE REQUIRED FOR GRADE DIFFERENCES OF 18" OR GREATER.
6. ADHERE TO MOST RECENT VERSION OF TNRCC REQUIREMENTS REGARDING WATER/SEWER SEPARATION. THESE INCLUDE REQUIREMENTS PERTAINING TO NEW PIPE BEING INSTALLED NEAR EXISTING PIPE.
7. NO WET BORES WILL BE ALLOWED.
8. MINIMUM SEWER SIZE SHALL BE 8".

	GENERAL NOTES:  SANITARY SEWER	STANDARD CONSTRUCTION DETAILS SANITARY SEWER	
		DATE: 1999	SHEET: SD-SS01