

# CHAPTER 1 – CITY OF CARLSBAD STANDARD DRAWINGS

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### **DWG NO.**

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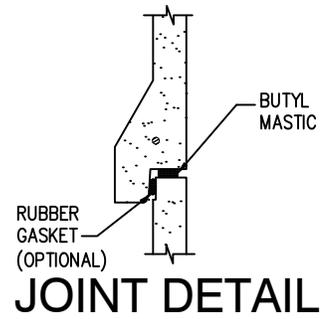
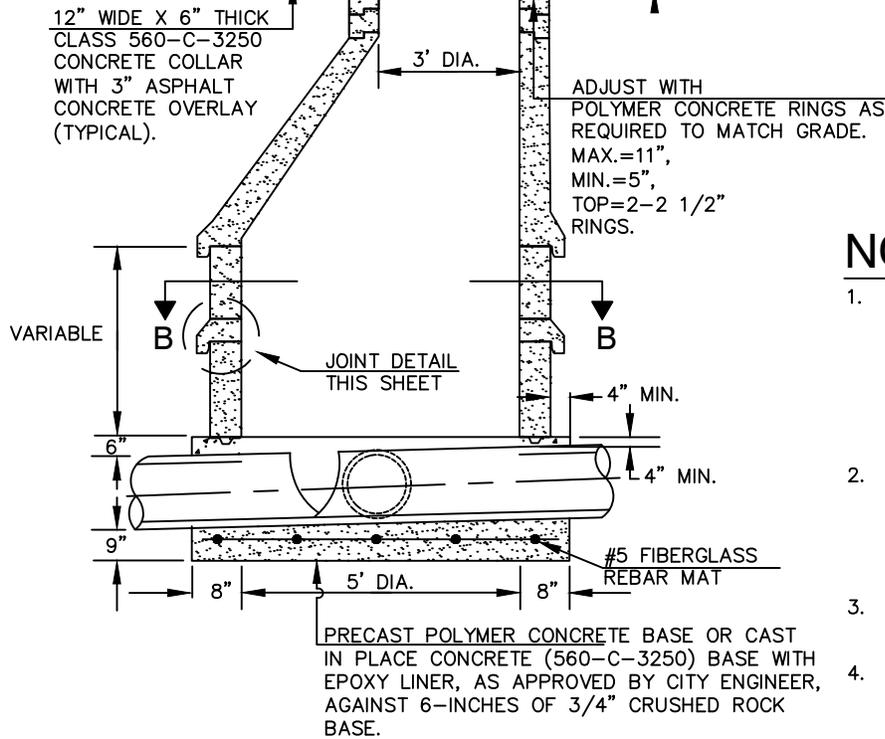
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STANDARD CAST IRON MANHOLE  
FRAME & COVER - SEE DWG. NO. S4.

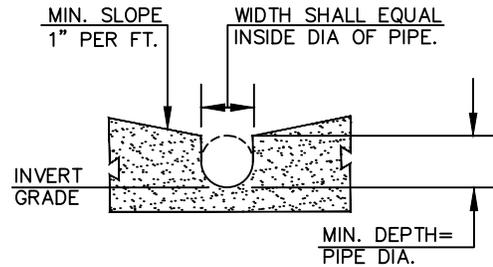
PAVEMENT OR  
FINISH GRADE.



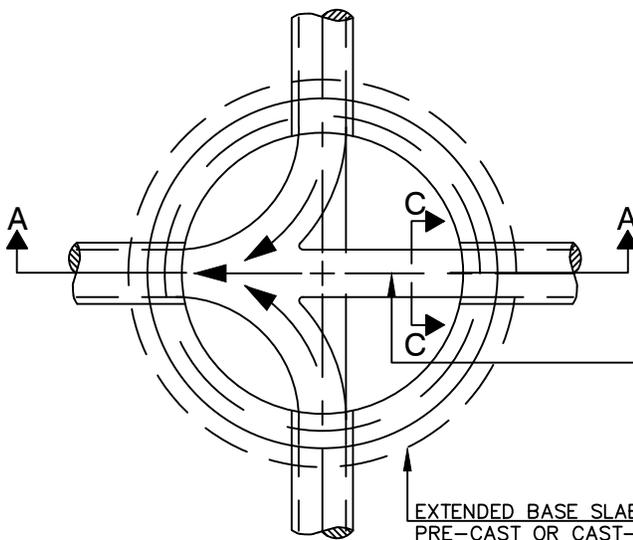
**NOTES:**

1. ALL PRE-CAST MANHOLE STRUCTURAL COMPONENTS SHALL BE POLYMER CONCRETE. MANHOLE BASE SHALL BE POLYMER CONCRETE OR CAST IN PLACE CONCRETE (560-C-3250) WITH EPOXY LINER, AS APPROVED BY THE CITY ENGINEER.
2. ALL PIPE IN MANHOLE SHALL BE PVC OR VITRIFIED CLAY PIPE AND SHALL BE INCLUDED AS PART OF MANHOLE, EXCEPT WHERE PRE-CAST BASE IS USED OR OTHERWISE APPROVED.
3. MANHOLE SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPLICABLE PROVISIONS OF ASTM C-478.
4. EACH SHAFT AND RISER JOINT SHALL BE SEALED PER JOINT DETAIL WITH BUTYL RUBBER SEALANT ROPE. SEE DETAIL THIS SHEET.
5. PROVIDE PIPE TO MANHOLE CONNECTORS WITH PRE-CAST POLYMER BASE.

**SECTION A-A**



**SECTION C-C**



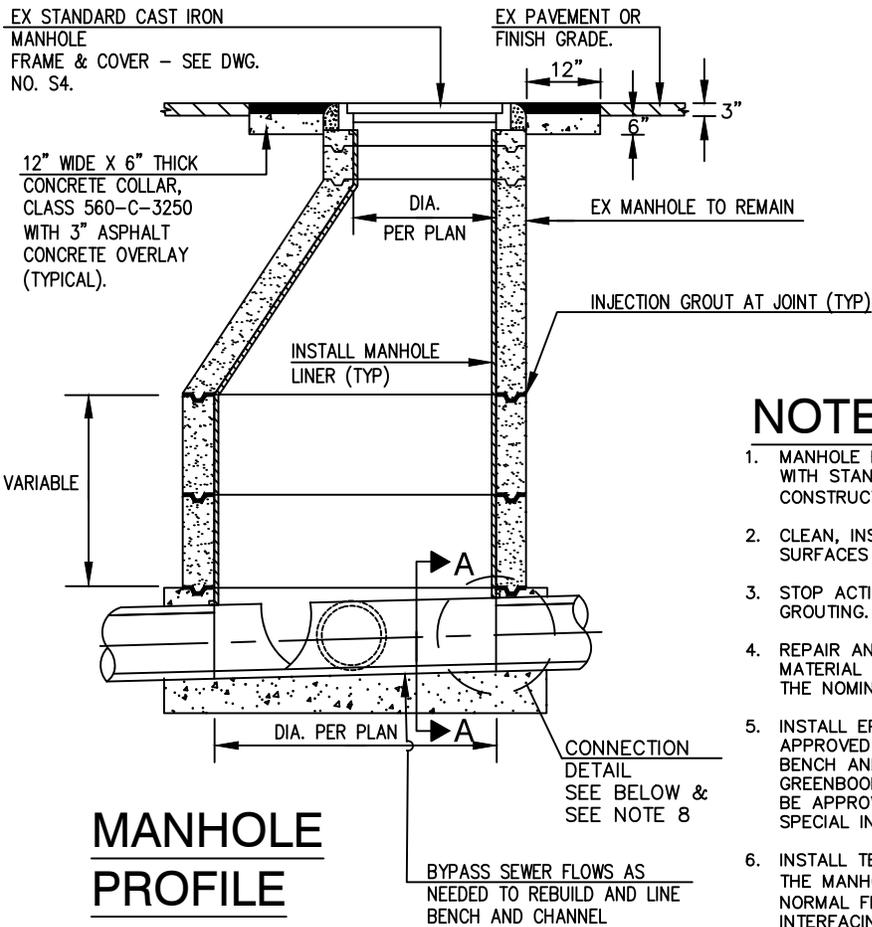
**PLAN B-B**

FOR JUNCTION MANHOLES AND CHANGE IN SEWER ALIGNMENT, FORM THE CHANNELS TO FACILITATE THE FLOW OF SEWAGE. INVERTS SHALL BE TRUE TO GRADE AND ALIGNMENT, FINISHED WITH SMOOTH SURFACE, AND MAINTAIN 0.2' DROP ACROSS THE MANHOLE.

EXTENDED BASE SLAB AS REQUIRED FOR PRE-CAST OR CAST-IN-PLACE BASE, TO BE APPROVED BY CITY ENGINEER

NOT TO SCALE

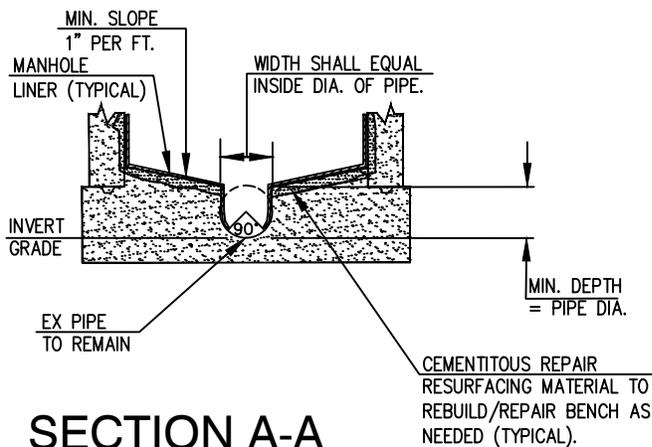
REV.	APPROVED	DATE	CITY OF CARLSBAD	
			STANDARD	
			SEWER MANHOLE	
				CITY ENGINEER
				DATE
			STANDARD DWG. NO.	S-1



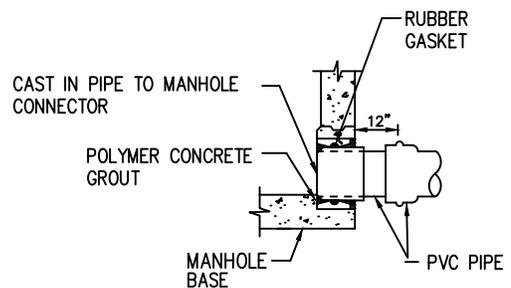
## MANHOLE PROFILE

## NOTES:

1. MANHOLE REHABILITATION SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) SECTION 502.
2. CLEAN, INSPECT, PRESSURE WASH ALL INTERIOR SURFACES OF MANHOLE.
3. STOP ACTIVE INFILTRATION INTO MANHOLE BY INJECTION GROUTING.
4. REPAIR AND RESURFACE INTERIOR WITH CEMENTITIOUS MATERIAL TO REBUILD TO WITHIN ONE-HALF INCH OF THE NOMINAL INSIDE DIAMETER OF MANHOLE.
5. INSTALL EPOXY LINING SYSTEM, RAVEN 405 OR APPROVED EQUAL, ON ALL INTERIOR SURFACE WALLS, BENCH AND CHANNEL IN ACCORDANCE WITH GREENBOOK SECTION 502-5.4. LINING SYSTEM SHALL BE APPROVED BY THE CITY ENGINEER AND SUBJECT TO SPECIAL INSPECTION.
6. INSTALL TERMINATION POINTS PER SPECIFICATIONS AT THE MANHOLE FRAME AND CHIMNEY JOINT, 1" BELOW NORMAL FLOW LEVELS AT THE BENCH, AND A MIN. 1" INTERFACING WITHIN EACH PIPE PENETRATION.
7. FIELD VERIFY EXISTING MANHOLE CONFIGURATION, MATERIAL, DIMENSIONS AND ELEVATIONS PRIOR TO ORDERING SUPPLIES FOR LINING OPERATION, AS APPROVED BY THE CITY ENGINEER.
8. DETAIL SHOWN IS FOR FUTURE BREAK-IN CONNECTION - APPROVAL REQ'D.



## SECTION A-A



## PIPE TO MANHOLE CONNECTION DETAIL

NOT TO SCALE

REV.	APPROVED	DATE	CITY OF CARLSBAD	
			EXISTING MANHOLE REHABILITATION	
			 4/29/22 CITY ENGINEER DATE	
			STANDARD DWG. NO. S-IA	

STANDARD CAST IRON MANHOLE  
FRAME & COVER -  
SEE DWG. NO. S4.

CLEANOUT COVER DETAIL  
SEE DWG S-6. MODIFIED  
WITH SBF 1243 VALVE BOX

MIN. SLOPE  
1/4" PER FT.

WIDTH SHALL EQUAL  
INSIDE DIA OF PIPE.

12" WIDE X 6" THICK  
CLASS 560-C-3250  
CONCRETE COLLAR  
WITH 3" ASPHALT  
CONCRETE OVERLAY  
(TYPICAL).

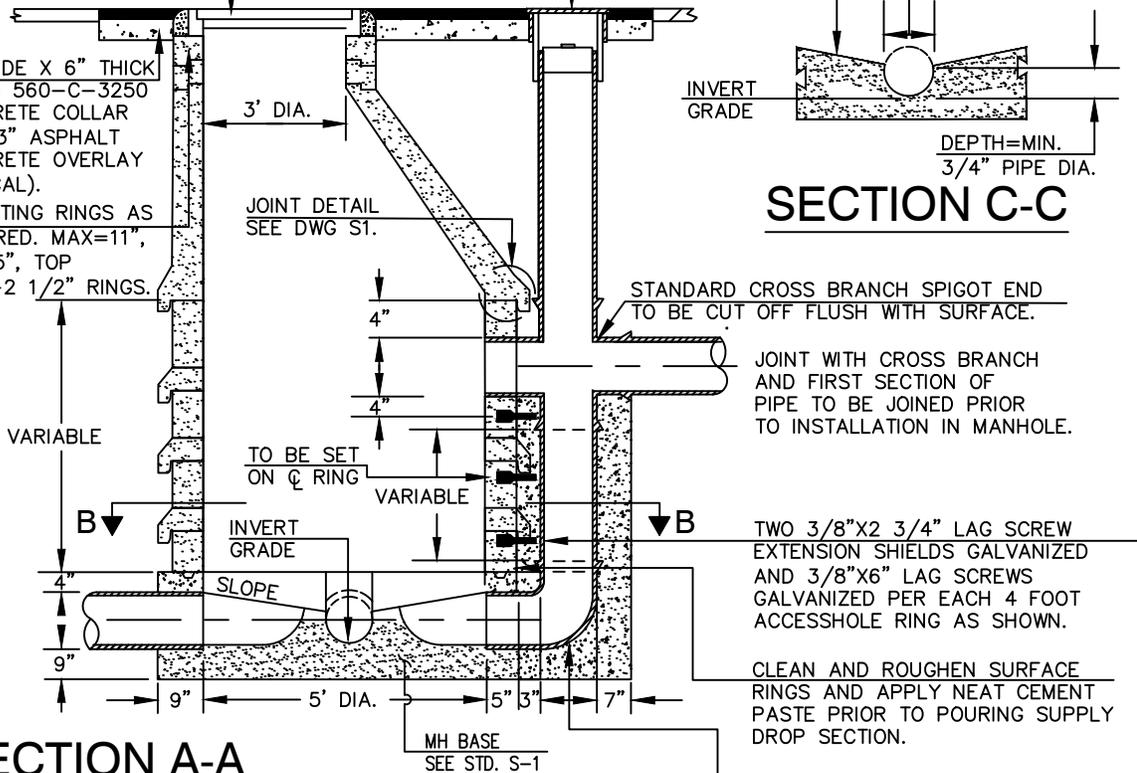
ADJUSTING RINGS AS  
REQUIRED. MAX=11",  
MIN.=5", TOP  
5"=2-2 1/2" RINGS.

JOINT DETAIL  
SEE DWG S1.

INVERT  
GRADE

DEPTH=MIN.  
3/4" PIPE DIA.

### SECTION C-C



### SECTION A-A

STANDARD CROSS BRANCH SPIGOT END  
TO BE CUT OFF FLUSH WITH SURFACE.

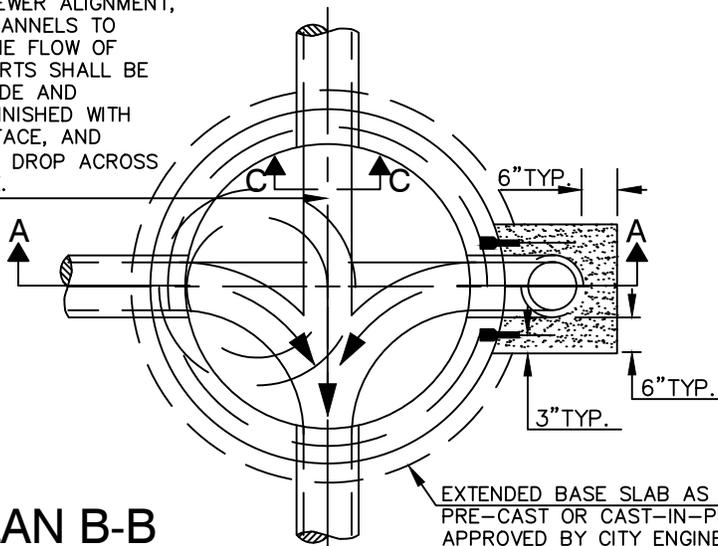
JOINT WITH CROSS BRANCH  
AND FIRST SECTION OF  
PIPE TO BE JOINED PRIOR  
TO INSTALLATION IN MANHOLE.

TWO 3/8"x2 3/4" LAG SCREW  
EXTENSION SHIELDS GALVANIZED  
AND 3/8"x6" LAG SCREWS  
GALVANIZED PER EACH 4 FOOT  
ACCESSHOLE RING AS SHOWN.

CLEAN AND ROUGHEN SURFACE  
RINGS AND APPLY NEAT CEMENT  
PASTE PRIOR TO POURING SUPPLY  
DROP SECTION.

90° PIPE SPIGOT END TO BE CUT  
OFF FLUSH WITH INSIDE SURFACE.

FOR JUNCTION MANHOLES AND  
CHANGE IN SEWER ALIGNMENT,  
FORM THE CHANNELS TO  
FACILITATE THE FLOW OF  
SEWAGE. INVERTS SHALL BE  
TRUE TO GRADE AND  
ALIGNMENT, FINISHED WITH  
SMOOTH SURFACE, AND  
MAINTAIN 0.2' DROP ACROSS  
THE MANHOLE.



### PLAN B-B

EXTENDED BASE SLAB AS REQUIRED FOR  
PRE-CAST OR CAST-IN-PLACE BASE, AS  
APPROVED BY CITY ENGINEER

### NOTES:

1. ALL PRE-CAST MANHOLE STRUCTURAL COMPONENTS SHALL BE POLYMER CONCRETE. MANHOLE BASE SHALL BE POLYMER CONCRETE OR CAST IN PLACE CONCRETE (560-C-3250) WITH EPOXY LINER, AS APPROVED BY THE CITY ENGINEER.
2. ALL PIPE IN MANHOLE SHALL BE PVC OR VITRIFIED CLAY PIPE AND SHALL BE INCLUDED AS PART OF MANHOLE, EXCEPT WHERE PRE-CAST BASE IS USED.
3. DOUBLE DROP MANHOLE IS CONSTRUCTED THE SAME AS DROP MANHOLE EXCEPT THAT IT HAS TWO DROP SECTIONS.

REV.	APPROVED	DATE	CITY OF CARLSBAD	
			DROP MANHOLE	
				4/29/22
				DATE
			STANDARD DWG. NO.	S-2

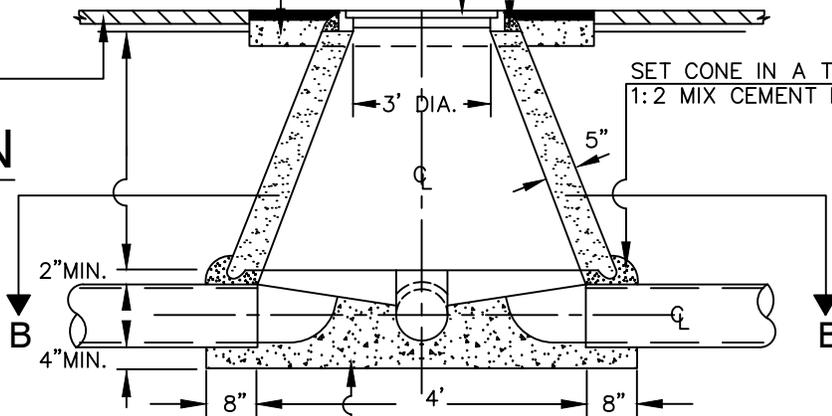
12" WIDE X 6" THICK CLASS 560-C-3250  
CONCRETE COLLAR WITH 3" ASPHALT  
CONCRETE OVERLAY (TYPICAL).

STANDARD CAST IRON MANHOLE  
FRAME & COVER - SEE DWG. NO. S4.  
CEMENT IN PLACE WITH 1:2 MIX  
CEMENT MORTAR (TYPICAL).

PAVEMENT OR  
FINISH GRADE.

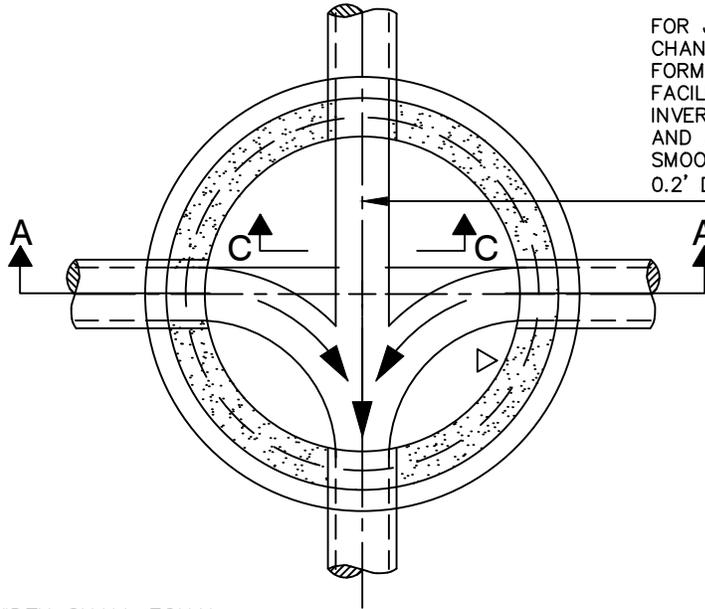
SET CONE IN A THICK BED OF  
1:2 MIX CEMENT MORTAR

# SECTION A-A



POUR BASE AGAINST  
6-INCHES OF 3/4" OF CRUSHED  
ROCK BASE.

# PLAN B-B

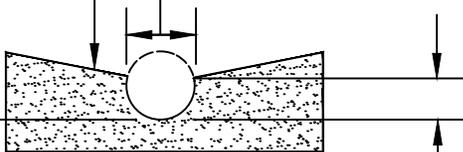


FOR JUNCTION MANHOLES AND  
CHANGE IN SEWER ALIGNMENT,  
FORM THE CHANNELS TO  
FACILITATE THE FLOW OF SEWAGE.  
INVERTS SHALL BE TRUE TO GRADE  
AND ALIGNMENT, FINISHED WITH  
SMOOTH SURFACE, AND MAINTAIN  
0.2' DROP ACROSS THE MANHOLE.

MIN. SLOPE  
1" PER FT.

WIDTH SHALL EQUAL  
INSIDE DIA OF PIPE.

INVERT  
GRADE



DEPTH=MIN.  
3/4" PIPE DIA.

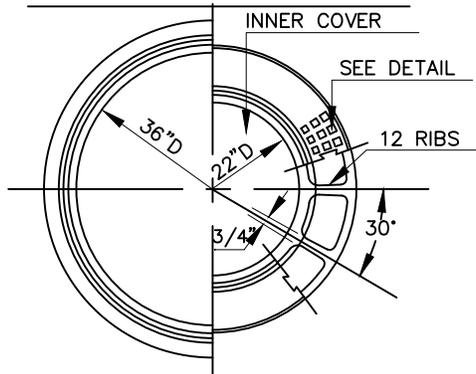
# SECTION C-C

## NOTES:

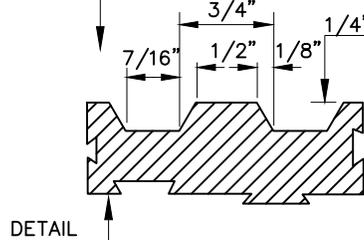
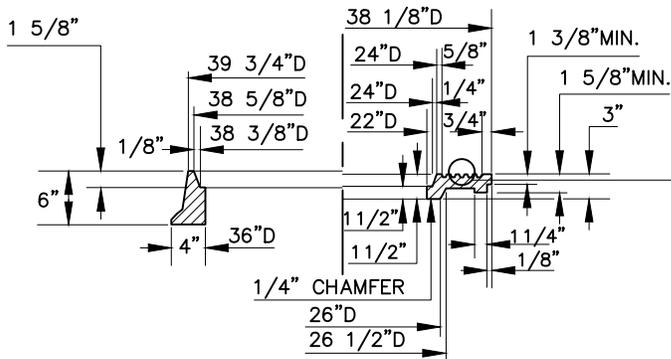
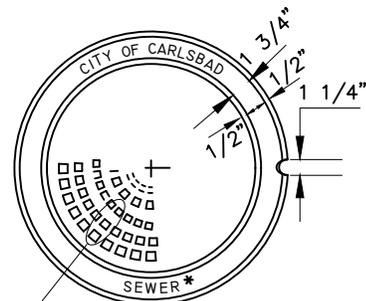
1. ALL PRE-CAST MANHOLE STRUCTURAL COMPONENTS SHALL BE POLYMER CONCRETE. MANHOLE BASE SHALL BE POLYMER CONCRETE OR CAST IN PLACE CONCRETE (560-C-3250) WITH EPOXY LINER, AS APPROVED BY THE CITY ENGINEER.
2. MANHOLE SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C-478.
3. STUB OUTS SHALL HAVE A MINIMUM LENGTH OF 3 FEET.

REV.	APPROVED	DATE	CITY OF CARLSBAD	
			SHALLOW MANHOLE	
			 4/29/22 CITY ENGINEER DATE	
			STANDARD DWG. NO. S-3	

## HALF PLAN FRAME & COVER

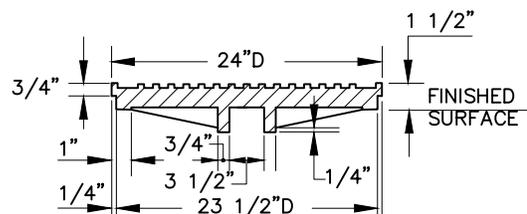
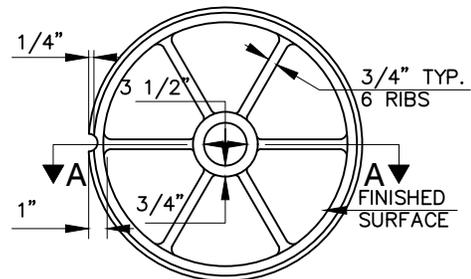


## INNER COVER TOP SIDE



## HALF SECTION FRAME & COVER

## BOTTOM SIDE



## NOTES:

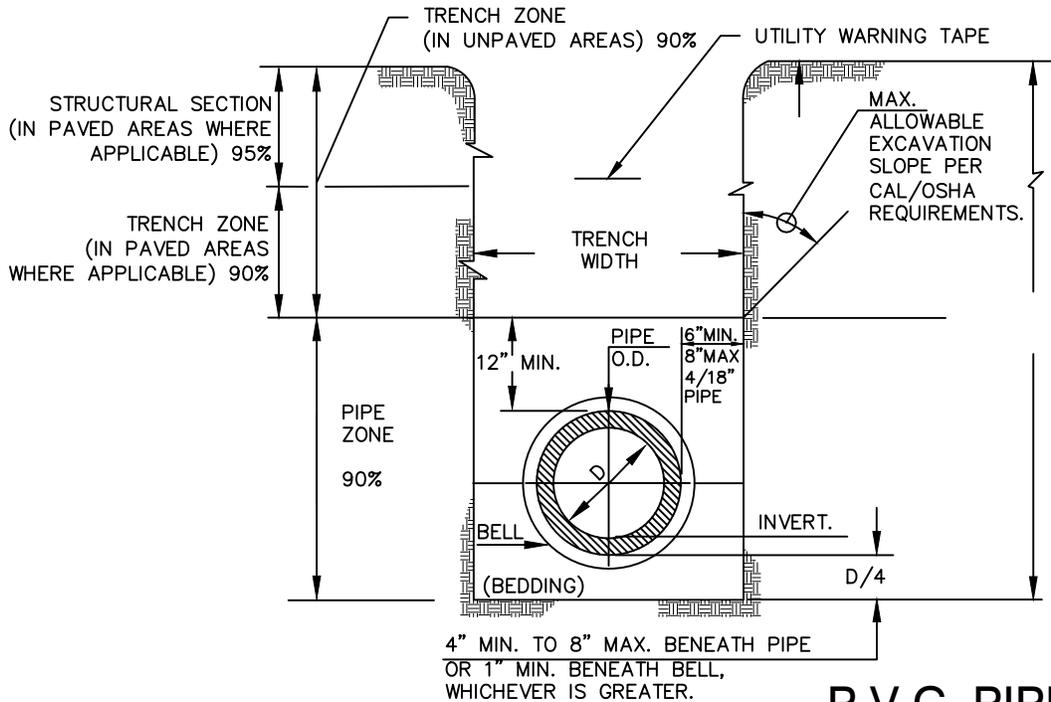
- WEIGHTS:  
INNER COVER = 155 LBS.  
OUTER COVER = 300 LBS.  
FRAME = 330 LBS.
- MATERIAL: CAST IRON.
- MACHINE SEATS TO PREVENT NOISE.
- FILLET RADII TO BE 12".
- IMPORTED COVERS AND FRAMES SHALL HAVE COUNTRY OF ORIGIN MARKING IN COMPLIANCE WITH FEDERAL REGULATIONS.
- COVERS AND FRAMES SHALL BE PROVIDED FROM THE SAME MANUFACTURER TO ENSURE ACCURATE FIT.
- CITY SHALL REJECT AND REQUIRE REMOVAL AND REPLACEMENT OF ALL FRAMES AND COVERS NOT MEETING MACHINING TOLERANCES AND THAT DO NOT PROPERLY SEAT.

## SECTION A-A

* FOR	MARK
SEWER PROJECTS	SEWER
STORM DRAIN PROJECTS	STORM DRAIN

REV.	APPROVED	DATE	CITY OF CARLSBAD	
			MANHOLE	
			FRAME AND COVER	
				CITY ENGINEER
				DATE
				STANDARD DWG. NO.
				S-4

# TYPICAL TRENCH SECTION WITH DIMENSIONS AND COMPACTION ZONES

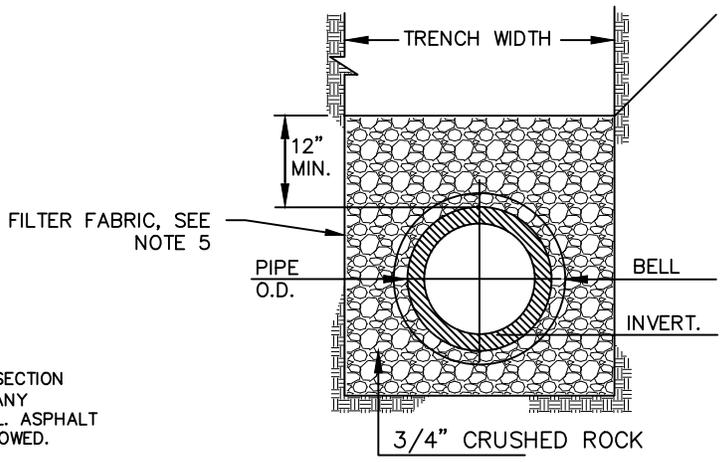


4" MIN. TO 8" MAX. BENEATH PIPE  
OR 1" MIN. BENEATH BELL,  
WHICHEVER IS GREATER.

## P.V.C. PIPE PIPE ZONE

### NOTES:

1. PERCENTAGES SHOWN EQUAL MINIMUM RELATIVE COMPACTION.
2. MINIMUM DEPTH OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR ALL SANITARY SEWER INSTALLATIONS SHALL BE 3 FEET. FOR COVER LESS THAN 3', SPECIAL DESIGN AND APPROVAL REQUIRED.
3. TRENCH ZONE BACKFILL SHALL BE PER SECTION 02223. NO ROCKS LARGER THAN 4" IN ANY DIMENSION WILL BE ALLOWED IN BACKFILL. ASPHALT OR CONCRETE CHUNKS WILL NOT BE ALLOWED.
4. CITY SHALL INSPECT TRENCH BOTTOMS PRIOR TO BACKFILL TO CONFIRM STABILITY OF TRENCH.
5. FILTER FABRIC (WRAP ALL AROUND) AS REQUIRED IN SECTION 02223 WITH A MINIMUM 12-INCH OVERLAP.



REV.	APPROVED	DATE	CITY OF CARLSBAD	
			PIPE BEDDING AND TRENCH BACKFILL FOR SEWERS	 CITY ENGINEER <span style="float: right;">4/29/22</span>
				DATE
				STANDARD DWG. NO. <b>S-5</b>



12" CAST IRON GATE CAP  
PER DETAIL HEREON.

SOUTH BAY FOUNDARY  
SBF 1240 LID  
MARKED SEWER #

SEWER CLEAN-OUT RISERS  
TO BE FITTED WITH MALE  
SCREW IN PLUG.

PVC FEMALE ADAPTER

GLUED

TOP OF PAVEMENT

18" MIN.

12"

SOUTH BAY FOUNDARY  
SBF 1240 FRAME

GLUED

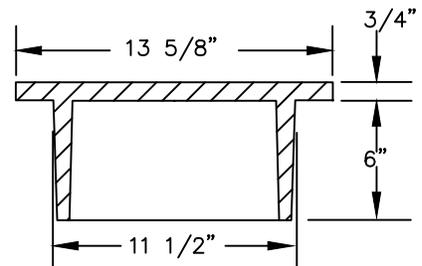
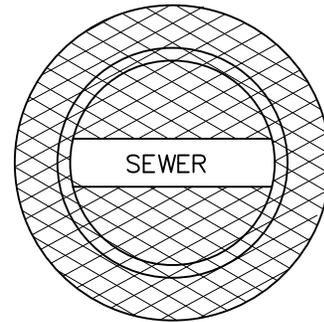
12" WIDE X 6" THICK  
CLASS 560-C-3250 CONCRETE  
COLLAR WITH 3" ASPHALT  
CONCRETE OVERLAY  
(TYPICAL).

CLOSED-CELL  
POLYETHYLENE WRAP  
BELOW FEMALE ADAPTER

2 EA. STD  
1/8 BEND

BACKFILL BEDDING  
TOP OF 1/8 BEND.  
SEE DWG. S8 FOR  
BEDDING DETAIL.

## GATE CAP (HEAVY DUTY)



### NOTES:

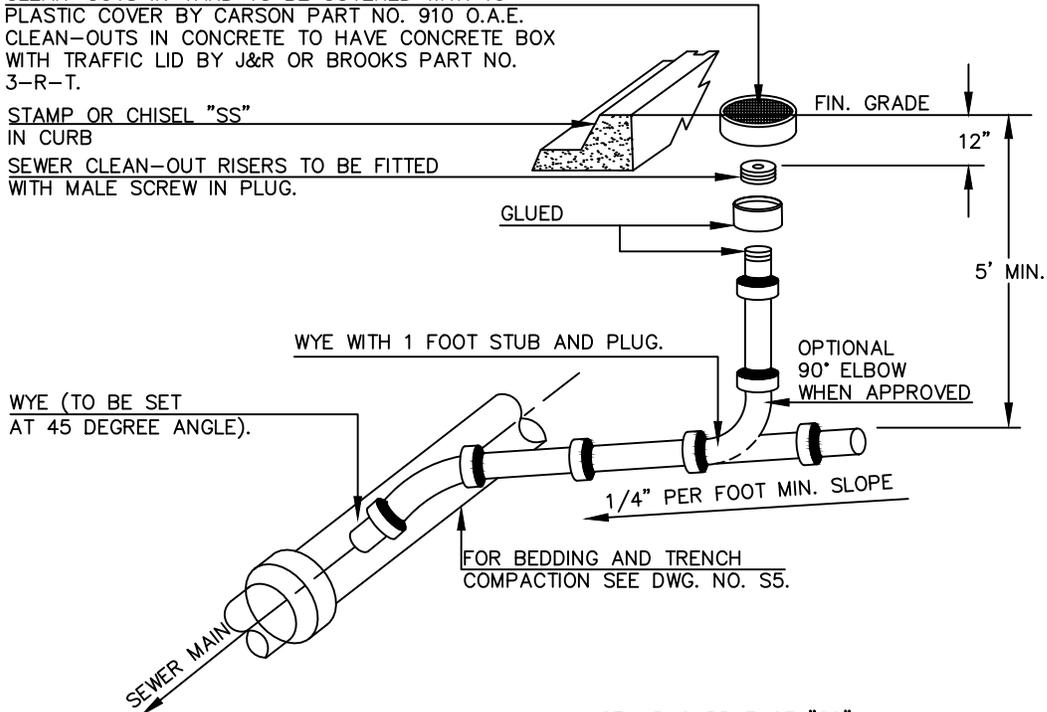
1. GATE CAP SHALL BE LABELED SEWER.
2. CLEANOUTS MAY BE USED WITH P.V.C. SEWER MAIN.
3. RISER SHALL BE SAME DIAMETER AS SEWER MAIN.

REV.	APPROVED	DATE	CITY OF CARLSBAD	
			SEWER MAIN	CITY ENGINEER
			CLEANOUT	DATE
				STANDARD DWG. NO. S-6

CLEAN-OUTS IN YARD TO BE COVERED WITH 10" PLASTIC COVER BY CARSON PART NO. 910 O.A.E. CLEAN-OUTS IN CONCRETE TO HAVE CONCRETE BOX WITH TRAFFIC LID BY J&R OR BROOKS PART NO. 3-R-T.

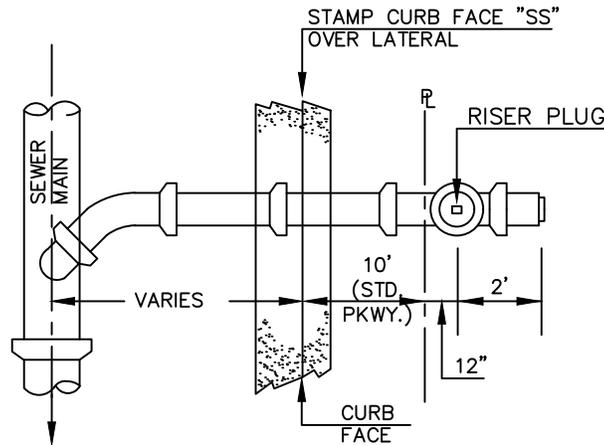
STAMP OR CHISEL "SS" IN CURB

SEWER CLEAN-OUT RISERS TO BE FITTED WITH MALE SCREW IN PLUG.



**SECTION**

**PLAN VIEW**

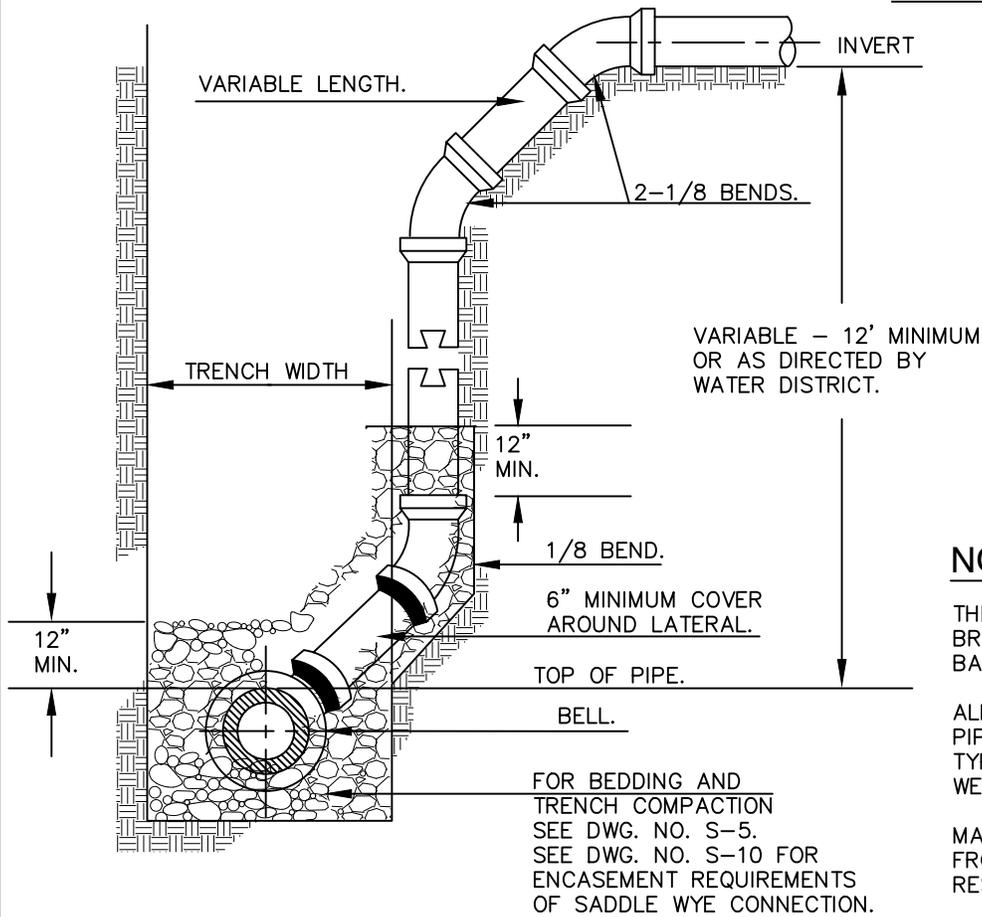


**NOTES:**

1. THE LATERAL SHALL BE BEDDED THE SAME AS THE MAIN LINE SEWER.
2. IN NO CASE SHALL A LATERAL CONNECT TO THE SEWER MAIN DIRECTLY ON TOP OF THE PIPE.
3. SEWER LATERALS SHALL HAVE A 2% MINIMUM SLOPE.
4. ALL JOINTS ON SEWER LATERAL PIPE SHALL BE COMPRESSION TYPE OR APPROVED SOLVENT WELD.
5. AS-BUILT SEWER LATERAL LOCATIONS SHALL BE FURNISHED TO THE CITY INSPECTOR ON FORMS PROVIDED PRIOR TO FINAL APPROVAL OF WORK.
6. ALL LATERAL TRENCHES TO PROPERTY LINE AND SEWER MAIN TRENCHES TO BE COMPACTED PER STD. SWG. S-5.
7. CLEAN-OUT TO BE ADJUSTED TO GRADE AFTER FINAL FINISH GRADING.
8. FOR BACKFILL AROUND CLEANOUT RISER SEE STD. DWG. S-5, NOTE 3.
9. MAINTENANCE OF THE SEWER LATERAL FROM THE SEWER MAIN TO THE BUILDING IS THE RESPONSIBILITY OF THE PROPERTY OWNER.
10. SEWER LATERALS SHALL BE EQUIPPED WITH AN APPROVED BACKWATER DEVICE AT ALL LOCATIONS WHERE DICTATED BY THE CURRENTLY ADOPTED EDITION OF THE CALIFORNIA PLUMBING CODE.

REV.	APPROVED	DATE	CITY OF CARLSBAD	
			SEWER LATERAL (WITH OPTIONAL WYE)	
			 4/29/22 CITY ENGINEER DATE	
			STANDARD DWG. NO. S-7	

# ELEVATION



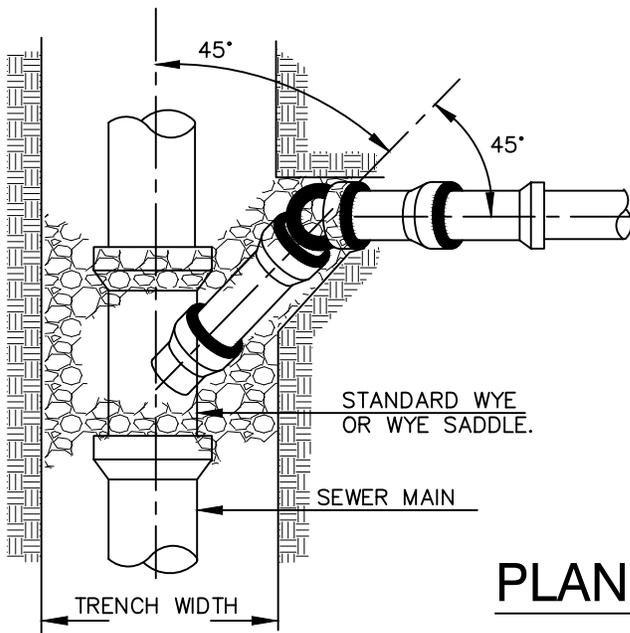
## NOTES:

THE VERTICAL PIPE SHALL BE BRACED WHILE TRENCH IS BEING BACKFILLED.

ALL JOINTS ON SEWER LATERAL PIPE SHALL BE COMPRESSION TYPE OR APPROVED SOLVENT WELD.

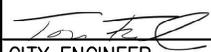
MAINTENANCE OF SEWER LATERAL FROM MAIN TO BUILDING IS THE RESPONSIBILITY OF THE OWNER.

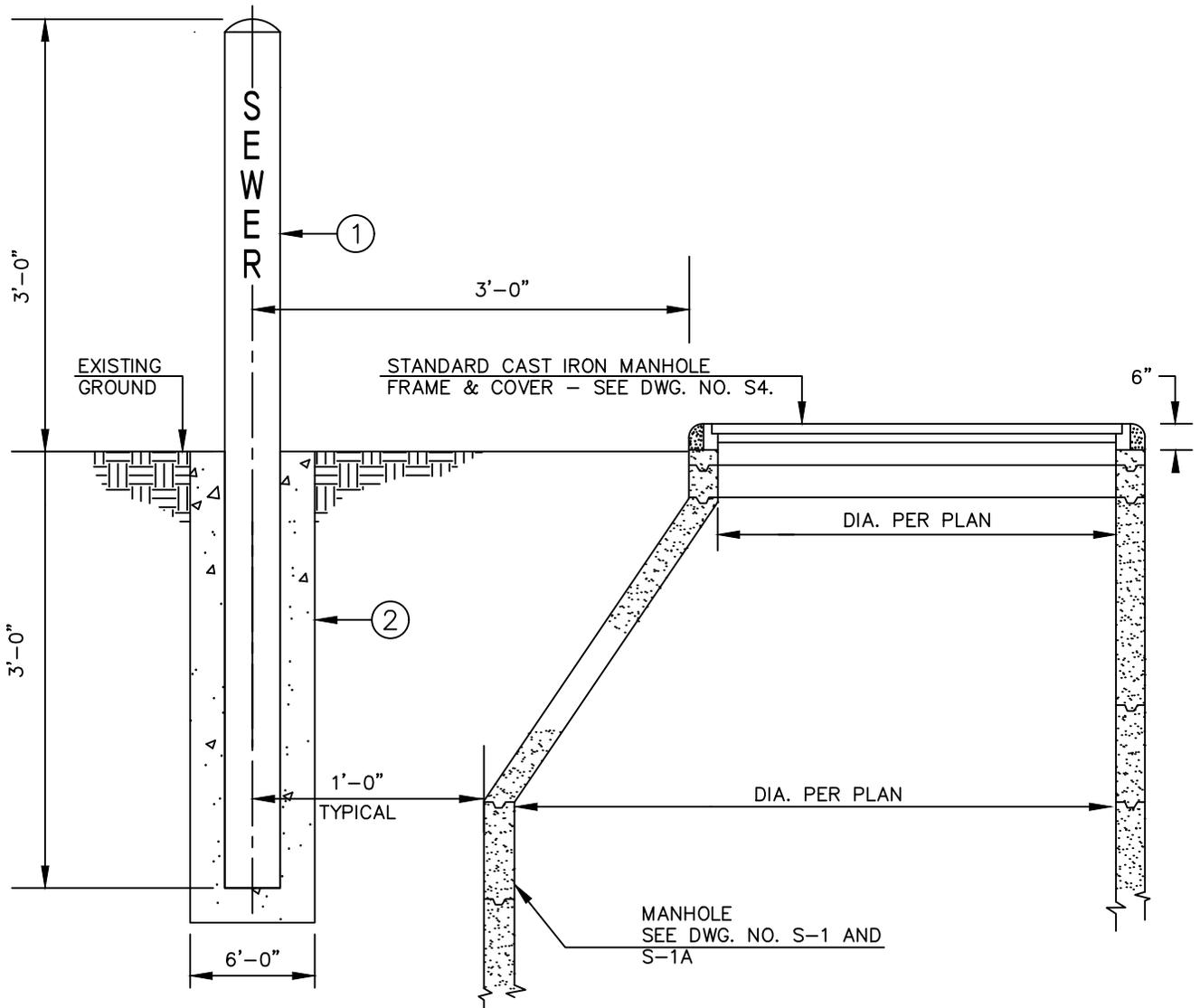
SEE DWG. NO. S-10 FOR CONCRETE ENCASEMENT REQUIREMENT OF SADDLE WYE CONNECTIONS AND REQUIREMENTS FOR CUT-IN-WYE CONNECTIONS.



SEE DWG. NO. S-7 FOR CONTINUATION OF SEWER LATERAL TO PROPERTY LINE.

# PLAN VIEW

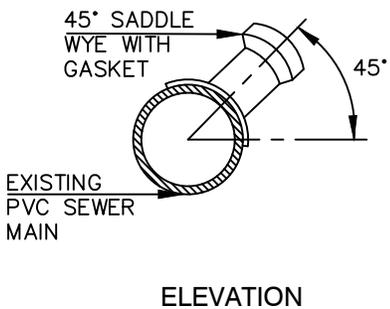
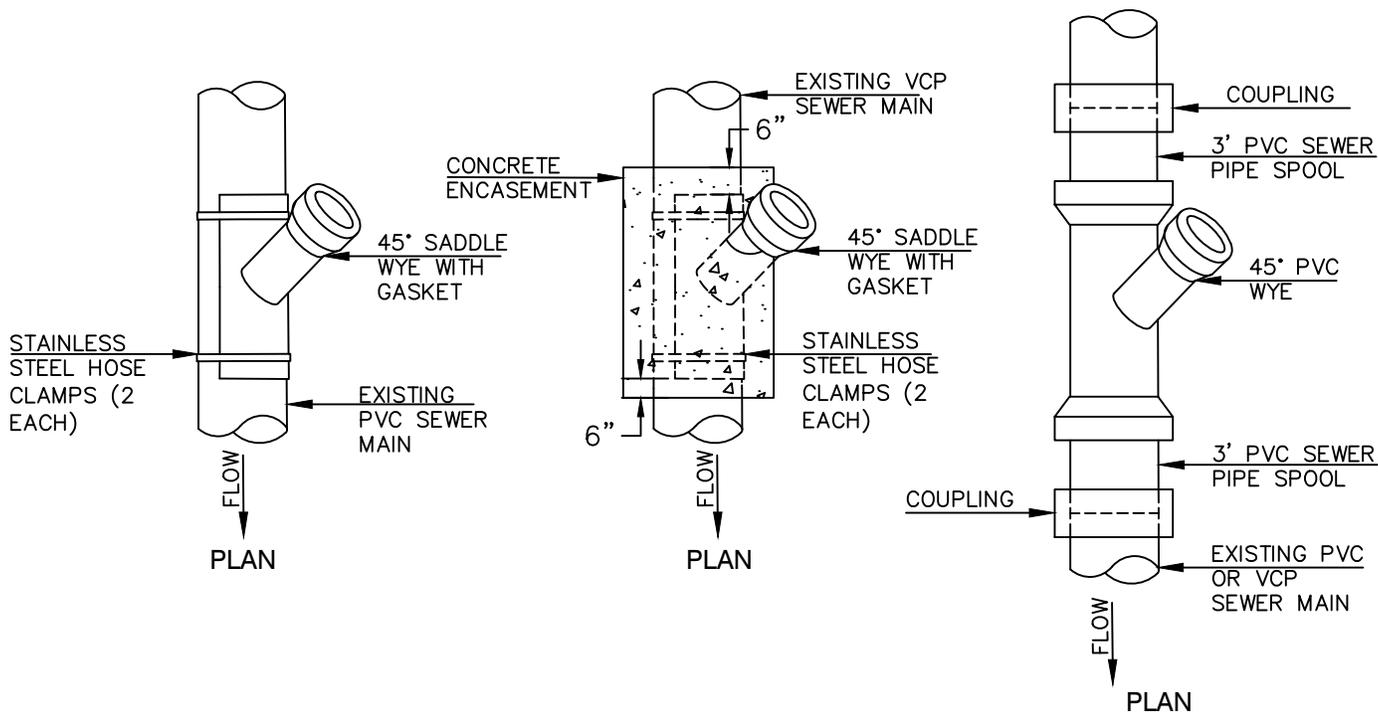
REV.	APPROVED	DATE	CITY OF CARLSBAD	
1		5/24	SEWER LATERAL (DEEP CUT)	
			 4/29/22 CITY ENGINEER DATE	
			STANDARD DWG. NO. S-8	



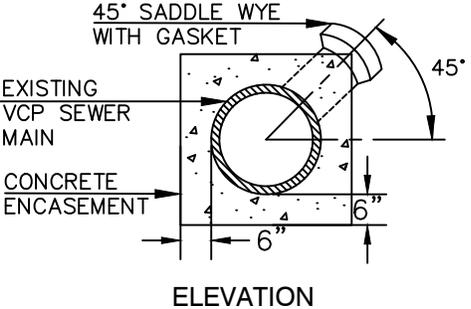
NOT TO SCALE

ITEM	DESCRIPTION	SPEC/DWG
1	PIPELINE MARKER POST	AML
2	CONTROLLED LOW STRENGTH MATERIAL	03000

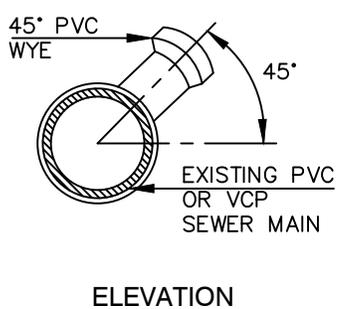
REV.	APPROVED	DATE	CITY OF CARLSBAD	
			MANHOLE	4/29/22
			MARKER POST	CITY ENGINEER
				DATE
				STANDARD DWG. NO. S-9



**TYPE A**  
**SADDLE WYE CONNECTION FOR**  
**EXISTING PVC PIPE**



**TYPE B**  
**SADDLE WYE CONNECTION FOR**  
**EXISTING VCP PIPE**



**TYPE C**  
**CUT-IN WYE CONNECTION FOR**  
**EXISTING VCP OR PVC PIPE**

**NOTES:**

1. REFER TO SECTION 15063 FOR SEWER PIPE AND FITTINGS.
2. IN NO CASE SHALL CONNECTION BE MADE DIRECTLY ON TOP OF SEWER MAIN
3. NO MORE THAN ONE CUT IN WYE WILL BE ALLOWED FOR EACH LENGTH OF EXISTING VCP SEWER MAIN.
4. FOR SEWER LATERAL INSTALLATION SEE S-7 AND S-8.
5. FOR TRENCH BACKFILL SEE S-5.
6. MATERIALS SHALL BE SELECTED FROM THE APPROVED MATERIALS LIST.
7. LATERAL SIZE SHOULD NOT EXCEED 75% OF SEWER MAIN SIZE.

REV.	APPROVED	DATE	CITY OF CARLSBAD	 5/30/24 CITY ENGINEER
				STANDARD DWG. NO. <b>S-10</b>

