






















## **Standard Plate Drawings**

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# LEGEND FOR SANITARY SEWER PLANS AND DISTRICT MAPS

SANITARY SEWERS		SANITARY SEWER AND STRUCTURES TO BE CONSTRUCTED
		EXISTING SANITARY SEWERS AND STRUCTURES
		PROPOSED SANITARY SEWERS AND STRUCTURES, WHEN SHOWN ON ANOTHER VIEW OR SHEET
PIPE	VCP	VITRIFIED CLAY PIPE
	CIP	CAST IRON PIPE
	CP	CAST IRON SOIL PIPE
	PVC	POLY-VINYL CHLORIDE
HOUSE LATERALS	HL's	HOUSE LATERALS OF THE SAME MATERIAL AS THE SEWER THEY CONNECT TO, UNLESS OTHERWISE INDICATED ON THE PLANS
		HOUSE LATERAL TO BE CONSTRUCTED
		EXISTING HOUSE LATERAL
		PROPOSED HOUSE LATERAL, WHEN SHOWN ON ANOTHER VIEW
CHIMNEY PIPE		[6" CHIMNEY] (PROFILE) INDICATES STANDARD CHIMNEY PIPE
		[6" CHIMNEY BASE] (PLAN) INDICATES STANDARD CHIMNEY BASE
		[6" CHIMNEY] (PLAN) INDICATES A SINGLE AND DOUBLE "Y" BRANCH ON CHIMNEY PIPE
		
Y's T's		"Y" BRANCH SAME MAT'L AS SEWER TO WHICH IT CONNECTS
		"T" BRANCH
CONCRETE CRADLE AND ENCASEMENT		STD. CONC. CRADLE FOR SEWER PIPE (PROFILE) SEE S-4
		"ENCASE" (PROFILE) INDICATES CONCRETE REINFORCEMENT
		"ENCASE" (PLAN) FOR SEWER PIPES, SEE STD S-4
STRUCTURES	MH	MANHOLE, SEE STD S-7
	JC	JUNCTION CHAMBER MANHOLE S-7
	TMH	TRAP MANHOLE, SEE STD S-15, S-16
	DTMH	DOUBLE TRAP MANHOLE
	SMH	SHALLOW MANHOLE, SEE STD S-8
		MANHOLE
GENERAL		JUNCTION CHAMBER MANHOLE
		INDICATES BOUNDARY LINE OF DISTRICT
		INDICATES BOUNDARY LINE OF A CITY
		INDICATES EXISTING CURB
		INDICATES CURB LINE

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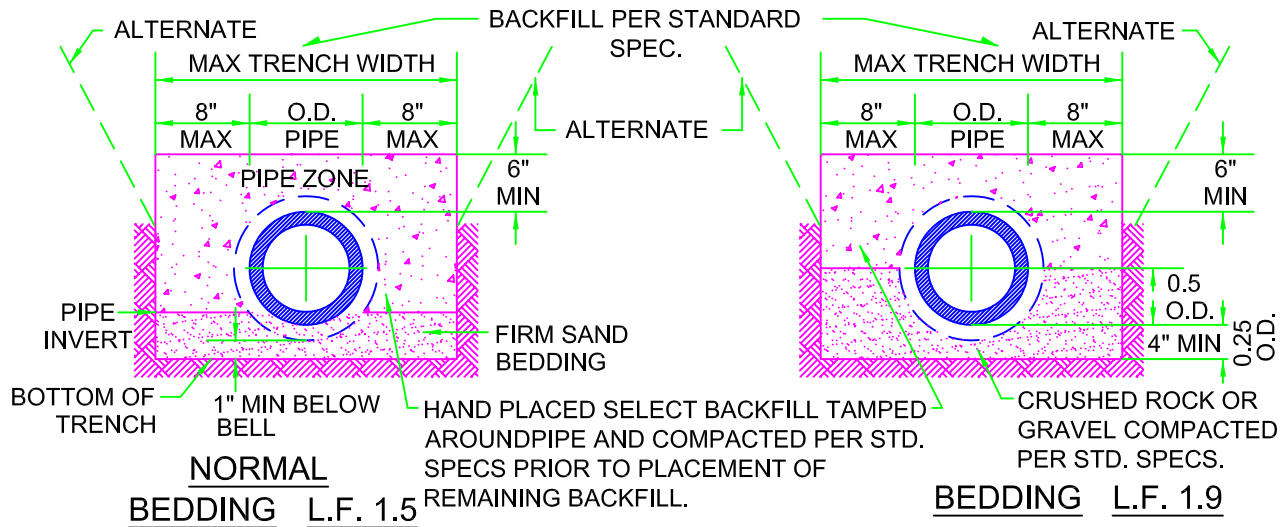


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STANDARD **S-1**

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# PIPE BEDDING AND LOAD FACTOR



MAXIMUM ALLOWABLE DEPTH INVERT (FEET)											
PIPE	MAX. TRENCH	V.C.P.		N.R.C.P.		R.C.P. L.F. 1.5				P.V.C. MAX DEFLECTION 7.5%	
DIAM. IN	WIDTH IN	L.F. 1.5	L.F. 1.9	L.F. 1.5	L.F. 1.9	CLASS II	CLASS III	CLASS IV	CLASS V	CLASS SDR35	CLASS SDR26
6	28	16	30+	16	30+	--	--	--	--	30+	30+
8	28	15	30+	15	30+	--	--	--	--	30+	30+
10	28	15	30+	15	30+	--	--	--	--	30+	30+
12	30	16	30+	15	30+	7	11	29	30+	30+	30+
14	33	--	--	--	--	--	--	--	--	30+	30+
15	34	16	30+	15	30+	8	11	30	30+	30+	30+
16	35	--	--	--	--	--	--	--	--	30+	30+
18	38	17	30+	17	30+	9	13	29	30+	30+	30+
20	41	--	--	--	--	--	--	--	--	30+	30+
21	42	17	29	17	29	9	13	27	30+	30+	30+
24	45	19	30+	16	24	10	14	28	30+	30+	30+
27	49	18	26	--	--	10	14	28	30+	30+	30+
30	52	17	25	--	--	11	15	28	30+	30+	30+
33	55	18	26	--	--	12	16	30	30+	30+	30+
36	58	19	27	--	--	13	17	30	30+	30+	30+

## NOTES:

- IF TRENCH AT ELEVATION OF TOP OF PIPE EXCEEDS MAXIMUM WIDTH SHOWN, A CONCRETE CRADLE PER CASE IV S-3, SHALL BE INSTALLED AT THE CONTRACTORS EXPENSE.
- TYPES OF PIPE:
  - V.C.P. - EXTRA STRENGTH VITRIFIED CLAY PIPE (A.S.T.M. C-200) SAFETY FACTOR IS 1.5
  - N.R.C.P. - EXTRA STRENGTH NON-REINFORCED CONCRETE PIPE (A.S.T.M. C-14) SAFETY FACTOR 1.5
  - R.C.P. - REINFORCED CONCRETE PIPE (A.S.T.M. C-76) SAFETY FACTOR 1.1 @ 0.01 CRACK
  - P.V.C. - POLYVINYL CHLORIDE SAFETY FACTOR 4:1, OR 6:1
- WHERE 30+ IS SHOWN, IT INDICATES PIPE IS GOOD FOR OVER 30 FEET, STRENGTH COMPUTATION MUST BE SUBMITTED FOR OVER 30 FEET
- TABLE BASED DRY CLAY BACKFILL AT 120 LBS PER CUBIC FEET
- LOAD FACTORS OTHER THAN SHOWN ABOVE SHALL BE APPROVED BY THE DISTRICT ENGINEER.

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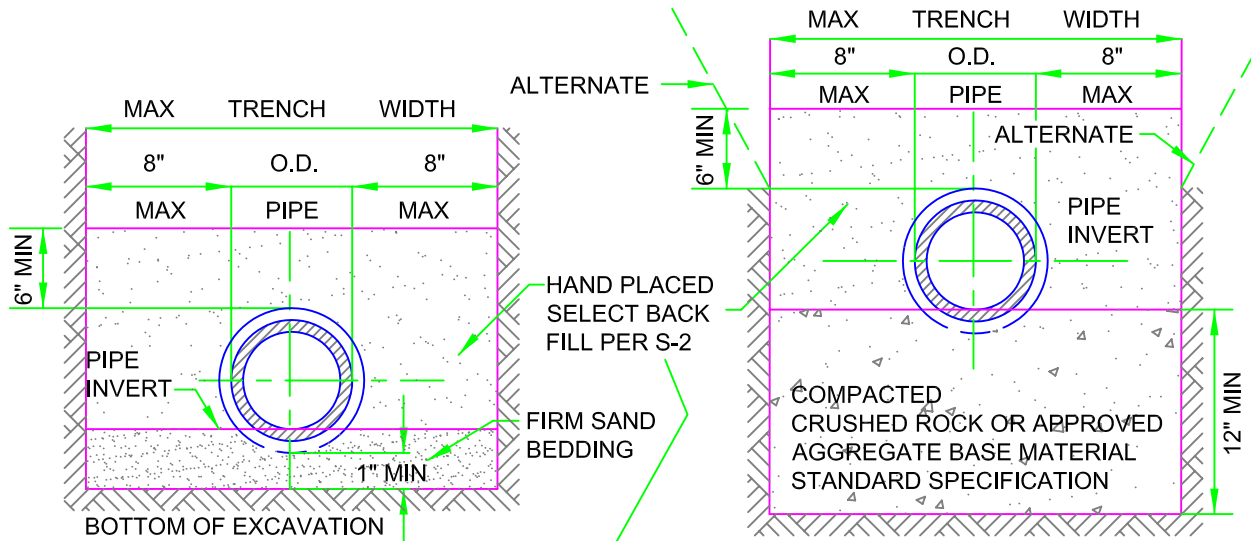


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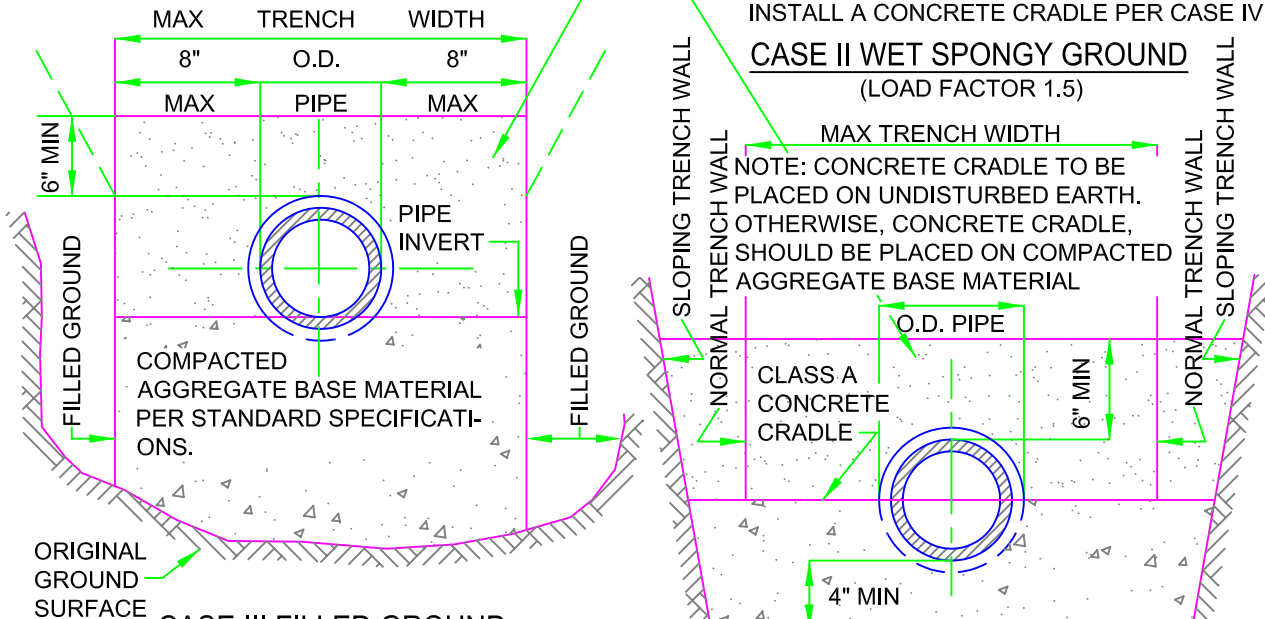
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# PIPE BEDDING AND LOAD FACTORS



**CASE I NORMAL TRENCH**  
(LOAD FACTOR 1.5)

NOTE: WHERE TRENCH WIDTH EXCEEDS MAX ALLOWABLE WIDTH DUE TO REQUIRED PLACEMENT OF BEDDING MATERIALS, THE CONTRACTOR AT HIS OWN EXPENSE SHALL INSTALL A CONCRETE CRADLE PER CASE IV S-3



**CASE II WET SPONGY GROUND**  
(LOAD FACTOR 1.5)

NOTE: CONCRETE CRADLE TO BE PLACED ON UNDISTURBED EARTH. OTHERWISE, CONCRETE CRADLE, SHOULD BE PLACED ON COMPACTED AGGREGATE BASE MATERIAL

**CASE III FILLED GROUND**  
(LESS THAN 90% COMPACTION)

NOTE: WHERE NATURAL GROUND IS AT AN EXCESSIVE DEPTH BELOW THE INVERT OF THE PIPE, CONSTRUCTION SHALL COMPLY WITH THE SPECIAL NOTE ON THE PLANS.  
(LOAD FACTOR 1.5)

**CASE IV: BOTTOM TRENCH WIDTH EXCEEDS THE WIDTH SPECIFIED IN STANDARD SPECIFICATIONS**  
(LOAD FACTOR 3.0)

WITH P.V.C. PIPE USE CONTRACTION JOINTS IN CONCRETE CRADLE PER S-4

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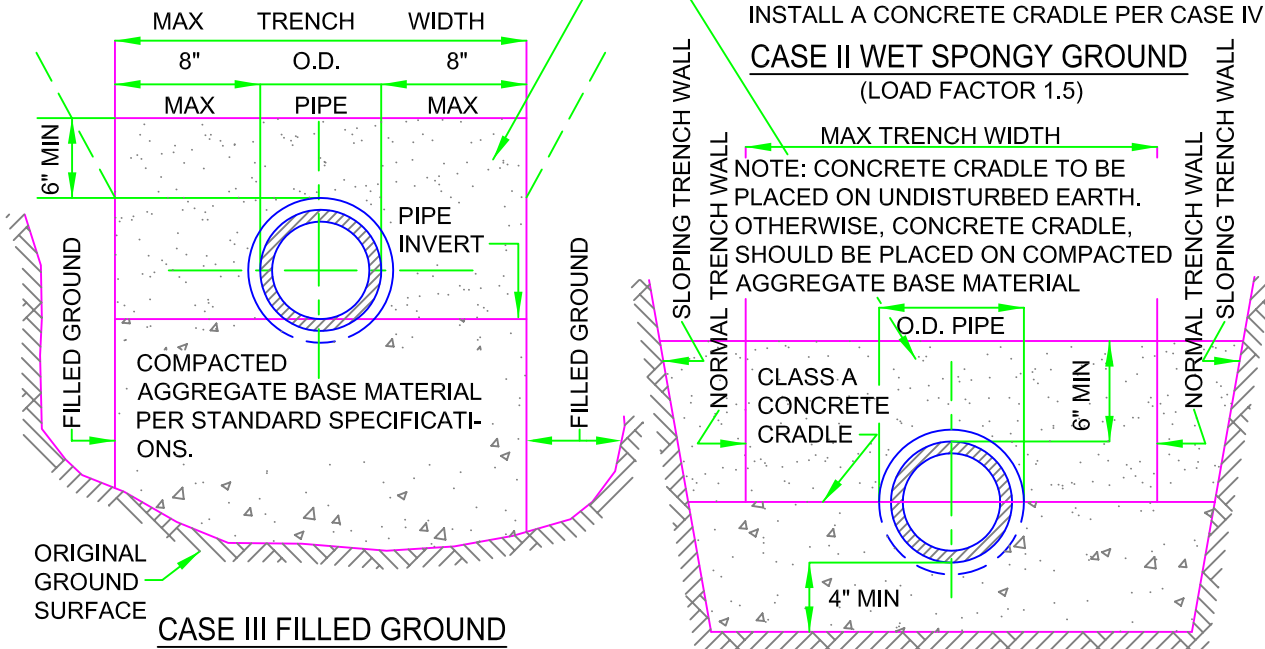
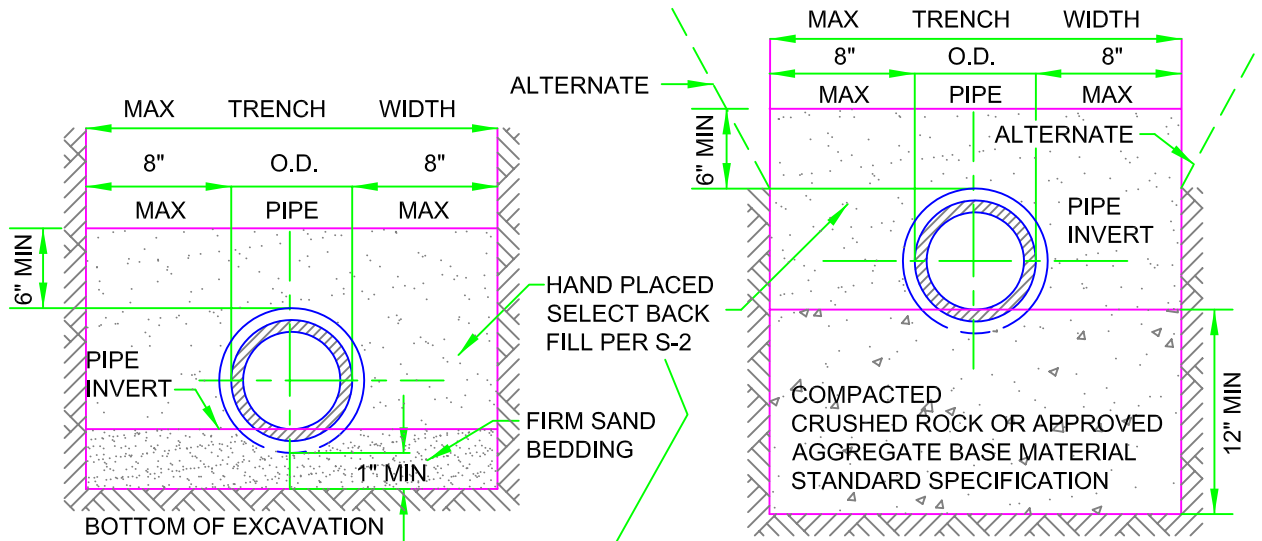
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# PIPE BEDDING AND LOAD FACTORS



NOTE: WHERE NATURAL GROUND IS AT AN EXCESSIVE DEPTH BELOW THE INVERT OF THE PIPE, CONSTRUCTION SHALL COMPLY WITH THE SPECIAL NOTE ON THE PLANS.  
(LOAD FACTOR 1.5)

## CASE IV: BOTTOM TRENCH WIDTH EXCEEDS THE WIDTH SPECIFIED

(LOAD FACTOR 3.0)  
WITH P.V.C. PIPE USE CONTRACTION JOINTS IN CONCRETE CRADLE PER S-4

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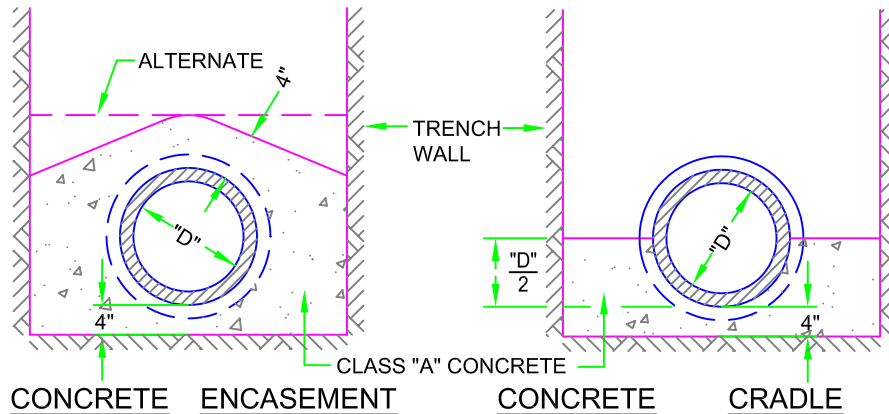


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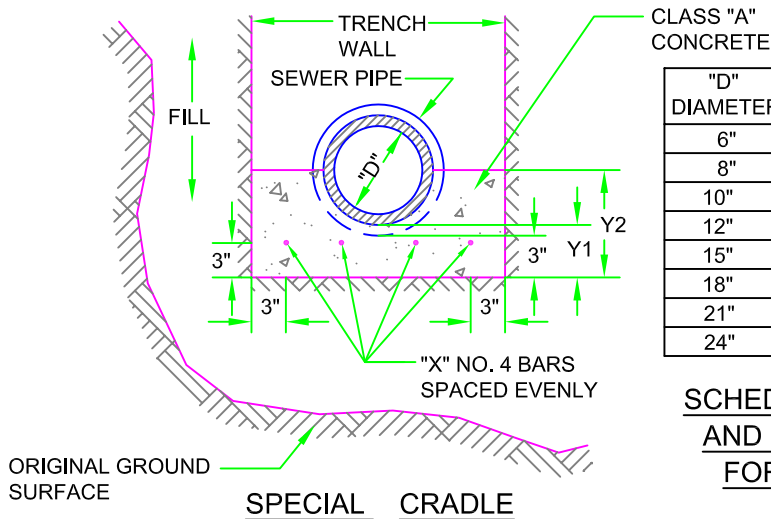
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# CRADLING AND ENCASEMENT



NOTE : P.V.C. PIPE IN ENCASEMENT OR CONC. CRADLE SHALL BE WRAPPED WITH ONE LAYER # 40 OR TWO LAYERS # 15 RFG. FELT

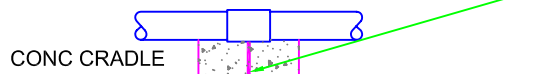


TO BE USED WHEN COMPACTED FILL IS LESS THAN 90% RELATIVELY DENSITY OR WHEN DESIGNATED ON THE DRAWING.

"D" DIAMETER	"X" # OF #4 BARS	THICKNESS	
		"Y1"	"Y1"
6"	2	4"	8"
8"	4	5"	10"
10"	4	6"	12"
12"	4	7"	15"
15"	5	9"	19"
18"	5	10"	22"
21"	6	12"	26"
24"	6	13"	28"

## SCHEDULE OF DIMENSIONS AND REINFORCING BARS FOR SPECIAL CRADLE

1/2" MIN. ASPH. COATED CELOTEX OR APPROVED EQUAL AT EACH PIPE JOINT



## CONTRACTION JOINTS (P.V.C. PIPE) IN CONC. CRADLE OR ENCASEMENT

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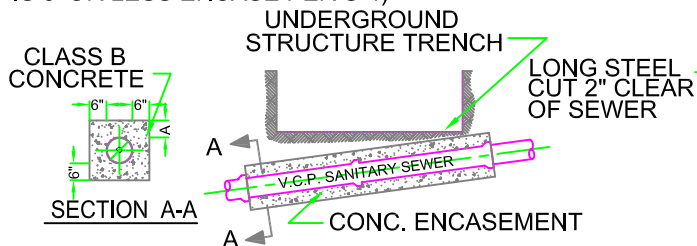
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# SPECIAL SUPPORT AND PROTECTION

## CASE I

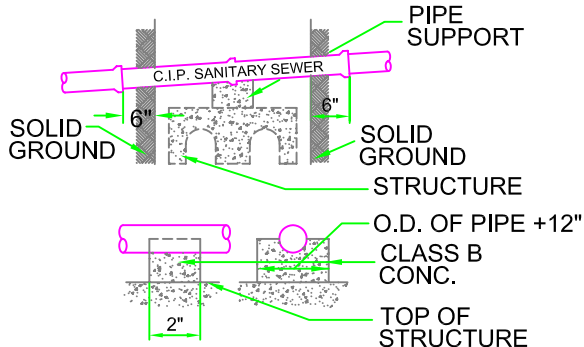
WHERE CLEARANCE BETWEEN BOTTOM OF UNDERGROUND STRUCTURE AND TOP OF SEWER IS 0.5 TO 1.5 FEET.  
(IF WIDTH OF UNDERGROUND STRUCTURE IS 5' OR LESS ENCASE PER S-4)



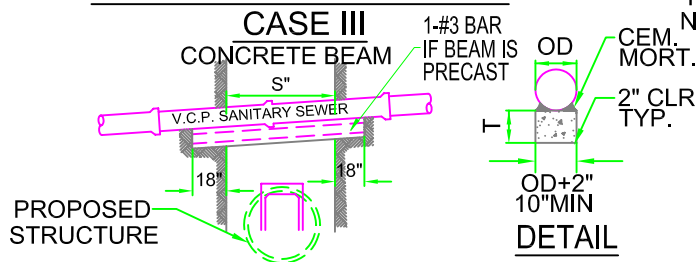
D	A
6" TO 12"	4"
15" & OVER	5"

## CASE III

WHERE UNDERGROUND STRUCTURE IS CONSTRUCTED UNDER C.I.P. THE SUPPORT SHALL BE CONSTRUCTED UNDER EACH JOINT IN PIPE.



### DETAIL OF PIPE SUPPORT

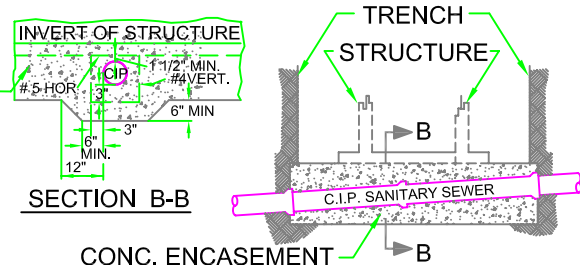


### GENERAL NOTES:

1. EXTEND BOTH ENDS OF ENCASEMENT TO FIRST PIPE JOINT AT OR BEYOND TRENCH EXCEPT AS NOTED CASE I & II
2. WHERE CLEARANCE BET. BOTTOM OF STRUCTURE AND TOP OF SEWER IS LESS THAN 0.5 FT. THE ENCASEMENT SHALL BE POURED MONOLITHIC WITH THE BASE OF UNDERGROUND STRUCTURE AS SHOWN CASE II
3. IF BEAMS OF CASE V ARE PRECAST, 18" AT ENDS OF BEAMS SHALL BE BEDDED IN CLASS B CONCRETE

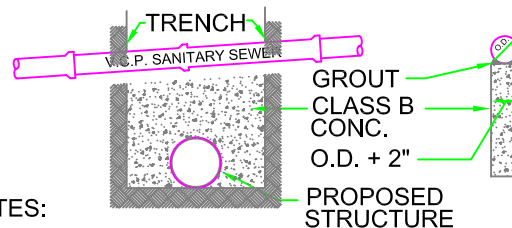
## CASE II

WHERE CLEARANCE BETWEEN BOTTOM OF UNDERGROUND STRUCTURE AND TOP OF SEWER IS LESS THAN 0.5 FEET.



## CASE IV

CONCRETE SUPPORT WALL



### NOTES:

1. SUPPORT WALL SHALL HAVE A FIRM BEARING ON THE SUBGRADE AND AGAINST THE SLOPE OF THE EXCAVATION.
2. WALL SHALL BE AT LEAST 2 INCHES FREE AND CLEAR OF ANY GAS OR WATER MAIN OR OTHER CONDUIT OR DUCT.
3. WHENEVER SO DIRECTED BY ENGINEER, THE CONTRACTOR SHALL PROVIDE SUITABLE OPENING IN THE WALL TO PREVENT UNEQUAL PRESSURE RESULTING FROM FLOODING THE BACKFILL, THE VOLUME OF THE PIERCED OPENING SHALL NOT EXCEED 1/5 THE VOL OF SUPPORTING WALL

### DIMENSION OF REINFORCED CONCRETE BEAM

S	T	BAR
FT.	IN.	NO.
4"	9	5
5"	9	5
6"	10 1/2	5
7"	11 1/2	6
8"	12 1/2	6
9"	13 1/2	7
10"	15	7

PROVIDE 2 BARS OF "SIZE" INDICATED FOR 10" WIDE BEAMS AND 1 ADDIT'L BAR FOR EACH 5" OR FRACTION THEREOF OF ADDIT'L WIDTH.

WHERE DEPTH FROM FIN GRADE TO INVERT OF SEWER EXCEEDS 12FT. USE CASE IV SUPPORT FOR SEWER

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# TABLE FOR COMPUTING NORMAL DROPS THROUGH MANHOLES

TABLE OF ADDED DROP THROUGH MANHOLES

DIAMETER OF INLET PIPE	DIAMETER OF OUTLET PIPE						
	24"	21"	18"	15"	12"	10"	8"
8"	1.00	.83	.67	.50	.33	.08	0
10"	.92	.75	.58	.42	.25	0	
12"	.67	.50	.33	.17	0		
15"	.50	.33	.17	0			
18"	.33	.17	0				
21"	.17	0					
24"	0						

NOTES:

1. ABOVE ARE MEASURED IN FEET.
2. GRADES IN SEWERS ADJACENT TO MANHOLES SHALL BE PRODUCED TO THE CENTERLINE OF THE MANHOLE SUCH THAT THE SLOPE THROUGH THE MANHOLE WILL BE THE AVERAGE OF THAT IN THE ADJOINING PIPE PLUS THE DROP INDICATED BELOW.
3. WHEN THE INCOMING SEWER MAKES AN ANGLE OF 45° TO 90° WITH THE OUTLET SEWER, ADD 0.10' TO THE ABOVE VALUES WITH THE EXCEPTION THAT THE MINIMUM DROP SHALL BE 0.20'. WHEN THE ANGLE IS 15° TO 45°, ADD 0.05 TO THE TABULATED VALUE WITH A MINIMUM DROP OF 0.10'.
4. THE SLOPES IN MANHOLE CHANNELS INDICATED ABOVE ARE MINIMUM VALUES AND MUST BE INCREASED WHERE REQUIRED BY HYDRAULIC CONSIDERATIONS WITHIN THE MANHOLE.
5. THE TABLE IS BASED ON 8" AND 10" PIPES FLOWING  $\frac{1}{2}$  FULL AND LARGER PIPES FLOWING  $\frac{2}{3}$  FULL.

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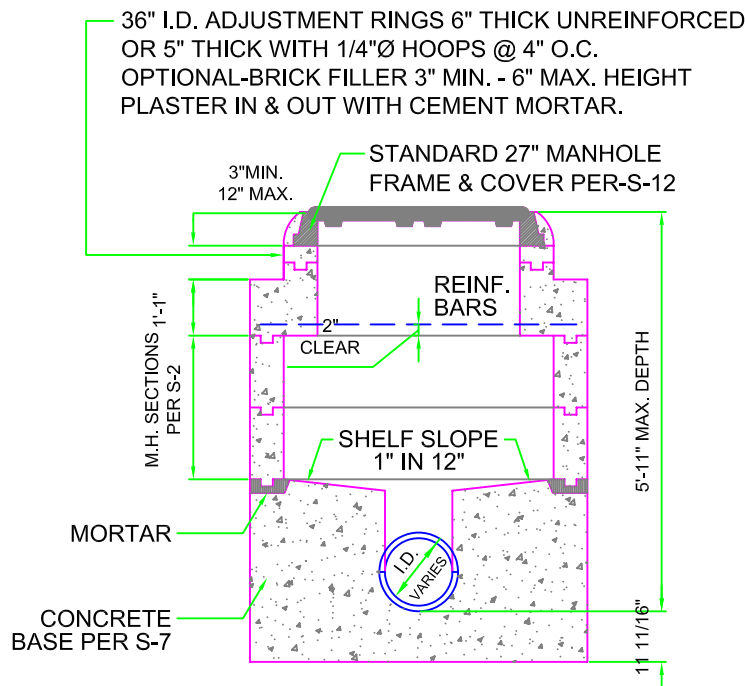
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STANDARD **S-6**

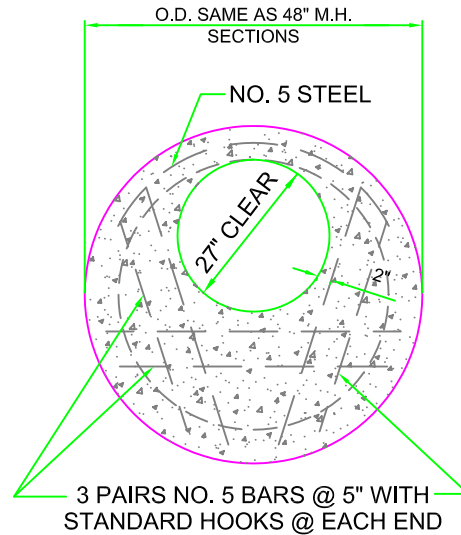
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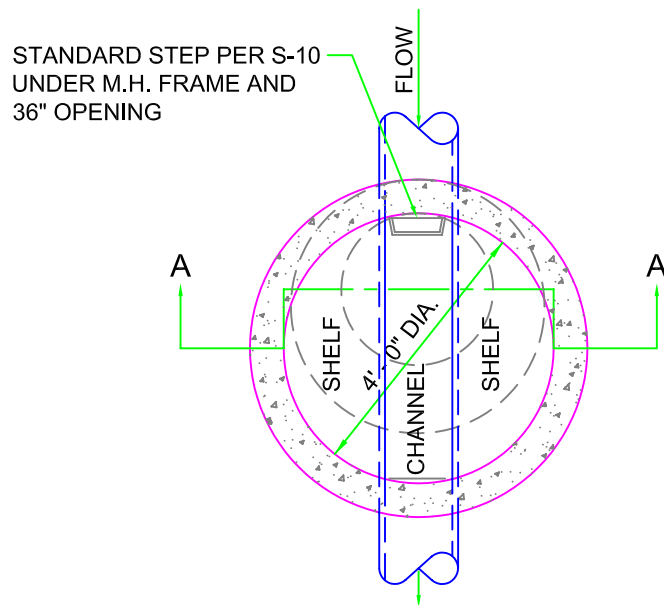
# SHALLOW PRECAST CONCRETE MANHOLE UNDER 6.0 FT. DEPTH



SECTION ELEVATION A-A



ROOF PLAN



SECTIONAL PLAN

## NOTES

1. FOR GENERAL NOTES SEE S-7

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CMS  
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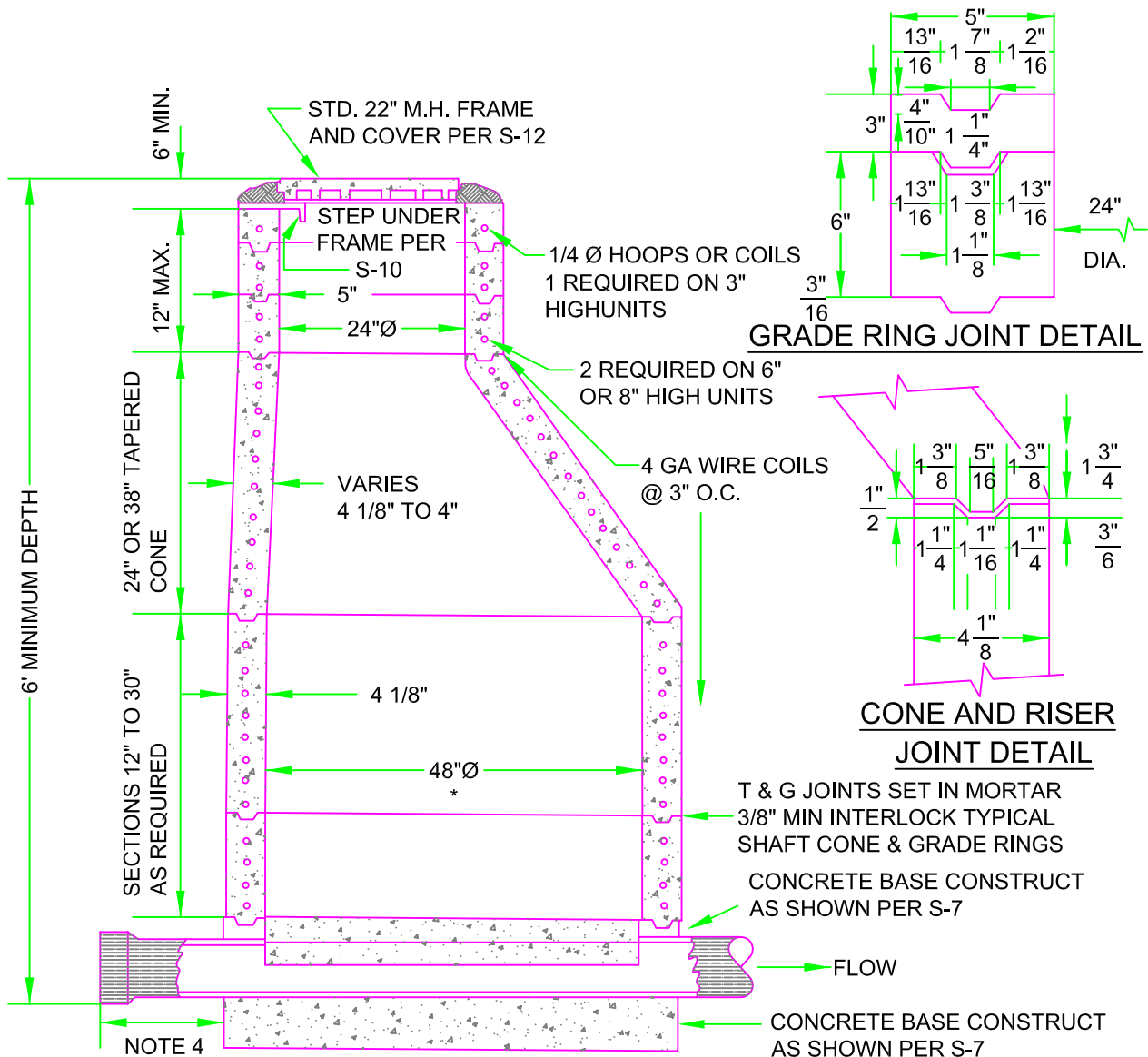


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# REINFORCED PRECAST CONCRETE MANHOLE FOR 8 INCH TO 21 INCH PIPE



## NOTE:

1. PRECAST REINFORCED CONCRETE MANHOLE SHALL BE MANUFACTURED TO MEET ASTM C-478 SPECIFICATION.
2. REINFORCEMENT: CONE AND RISER MINIMUM AREAS = 0.15 SQ. IN PER FT.
3. CONCRETE: MINIMUM COMPRESSIVE STRENGTH 4000 PSI AT 28 DAYS
4. 2 FT. MAXIMUM ON ALL OUTLETS.

\* 5' MANHOLES SHALL BE USED FOR PIPES SIZE 24" AND LARGER.

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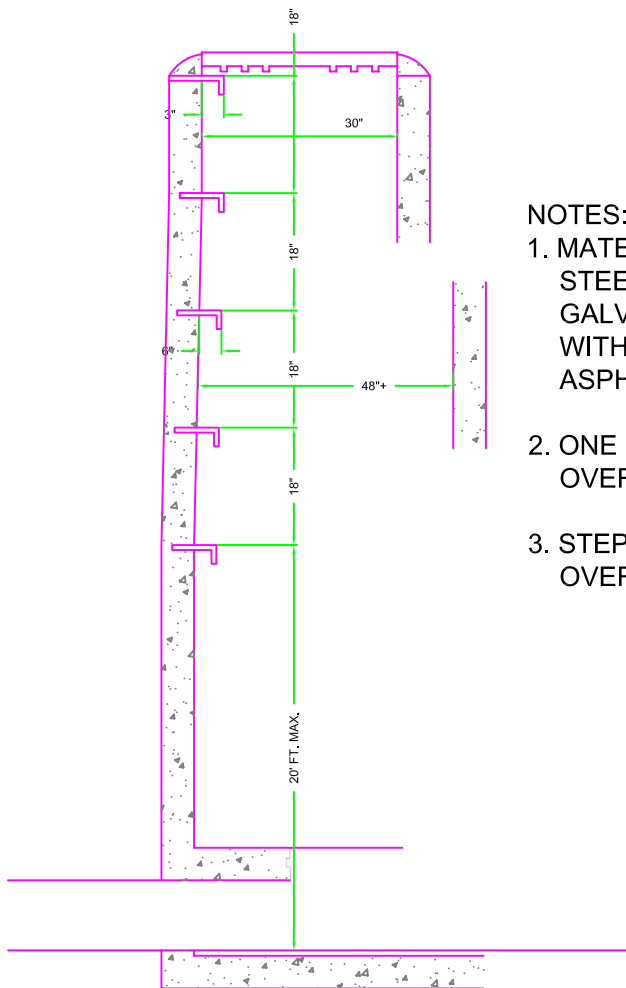
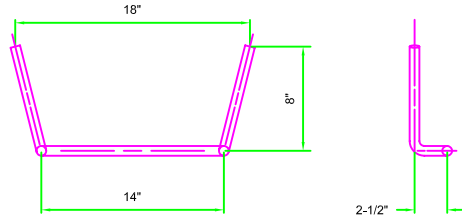


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# STANDARD MANHOLE STEP



## NOTES:

1. MATERIAL FOR STEP TO BE 3/4" Ø STAINLESS STEEL CONFORMING TO ASTM OR A107 GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND HEAVILY COATED WITH ASPHALTUM PAINT OR RUBBER.
2. ONE STEP AT TOP OF M.H. REQUIRED ON ALL M.H.'S OVER 6' AND UP TO 20'.
3. STEPS REQUIRED EVERY 18" IN ALL MAN HOLES OVER 20' TO WITHIN 20' OF INVERT.

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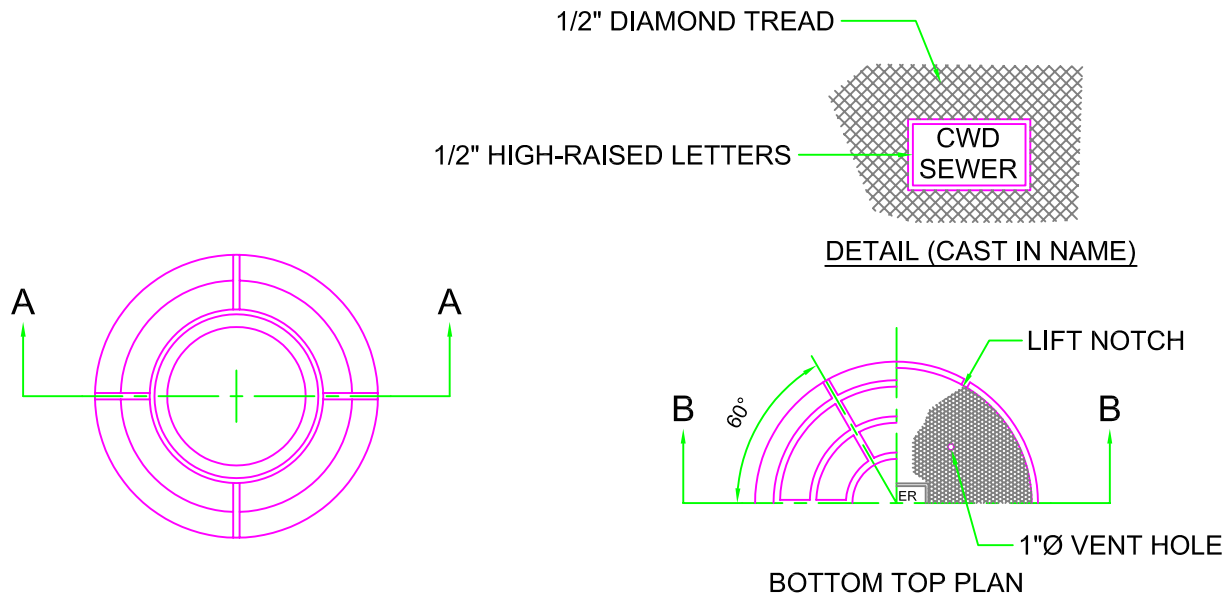
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# SHALLOW MANHOLE FRAME AND COVER

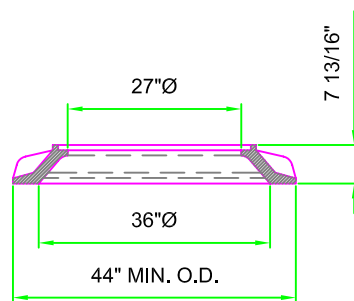


PLAN OF FRAME



ELEVATION B-B

COVER



ELEVATION A-A

NOTE:

FRAME AND COVER SHALL BE OF CAST IRON CONFORMING TO ASTM A 48 CLASS 30 OR BETTER. SEATS SHALL MACHINED AND ALL SURFACES SHALL BE COATED WITH ASPHALTIC VARNISH CONFORMING TO FED. SPEC. TT-V-519.

ALHAMBRA FOUNDARY NO. A1132  
MINIMUM WEIGHT 590 LBS.

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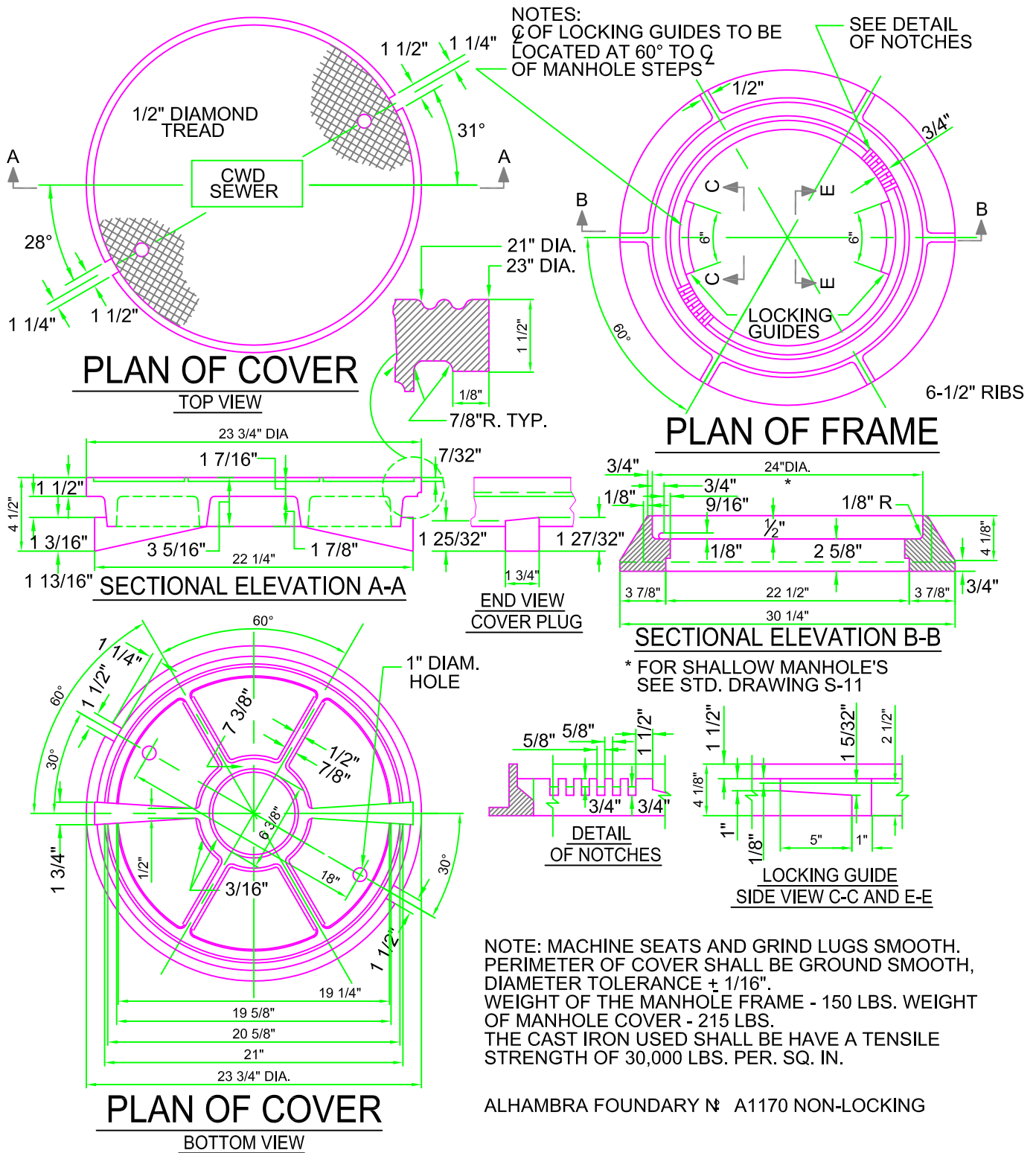


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# STD. MANHOLE FRAME AND COVER



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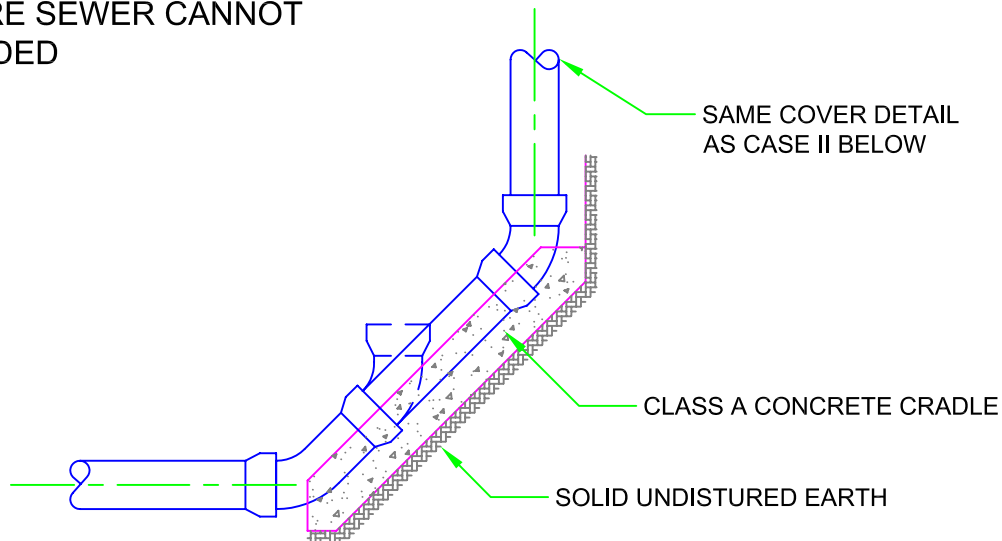
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# END-OF-MAIN CLEANOUTS

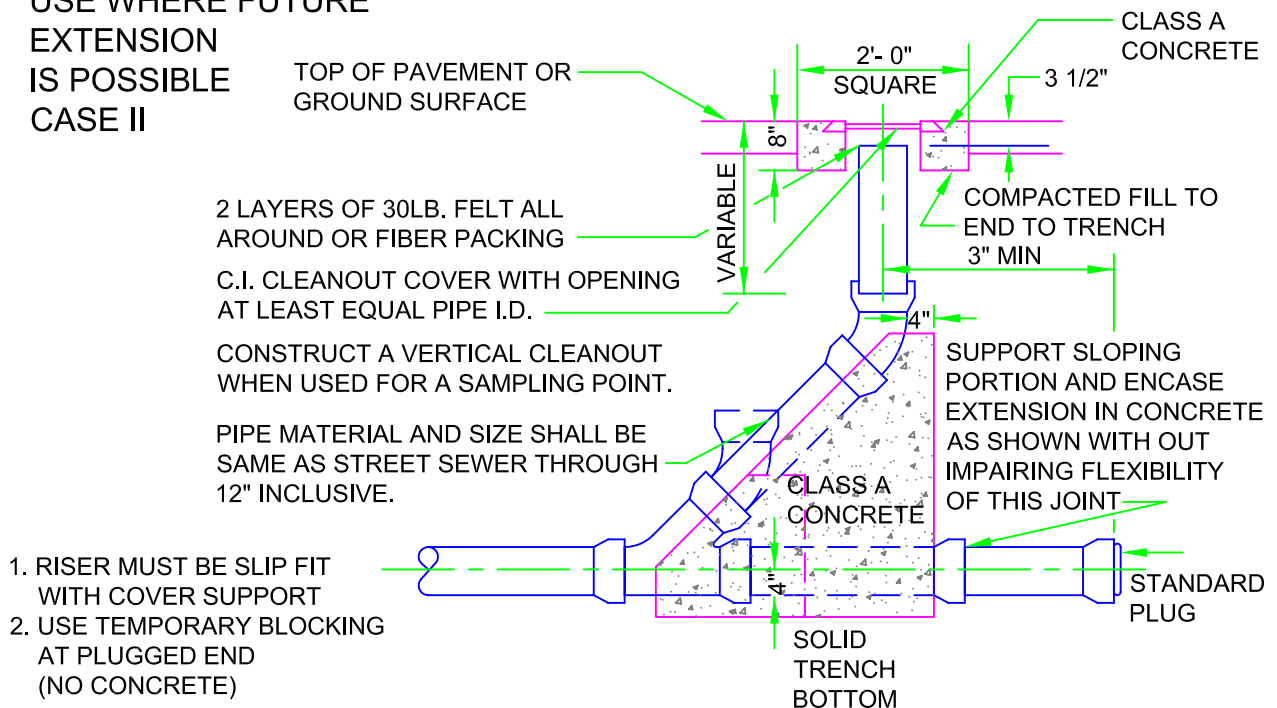
## STANDARD END-OF-MAIN CLEANOUT

USE WHERE SEWER CANNOT  
BE EXTENDED  
CASE I



## ALTERNATE END-OF-MAIN CLEANOUT

USE WHERE FUTURE  
EXTENSION  
IS POSSIBLE  
CASE II



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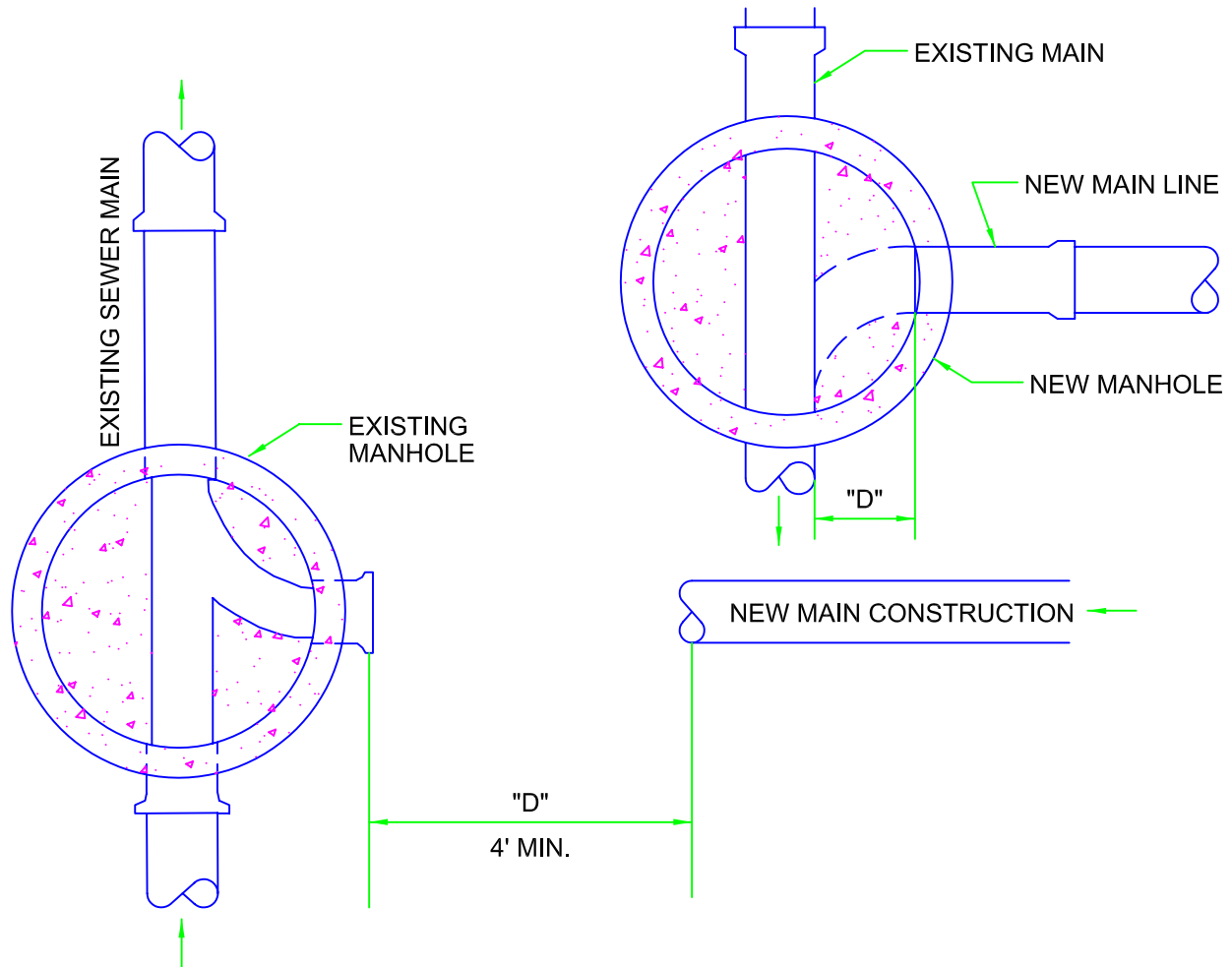


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# MAIN LINE CONNECTION TO EXISTING SEWER SYSTEM



TYPICAL CONNECTION'S PLAN

NOTE: FINAL CONNECTION "D" TO THE EXISTING DISTRICT SEWERAGE SYSTEM SHALL NOT BE PERMITTED UNTIL THE SYSTEM HAS BEEN ACCEPTED BY THE DISTRICT.

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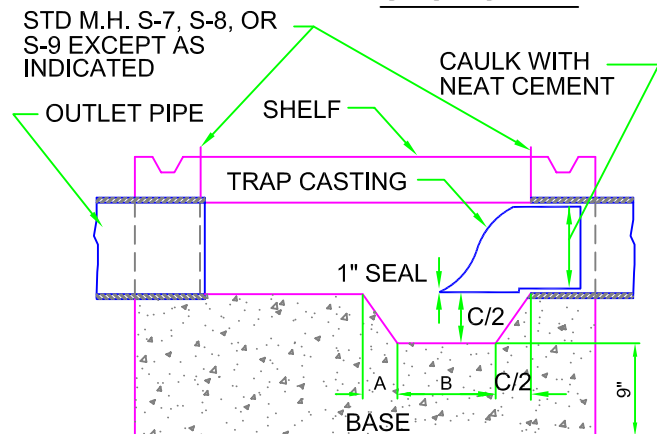
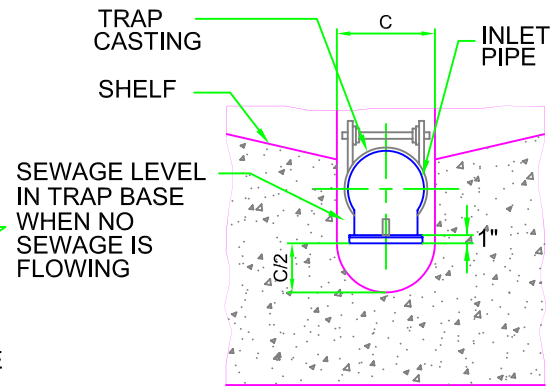
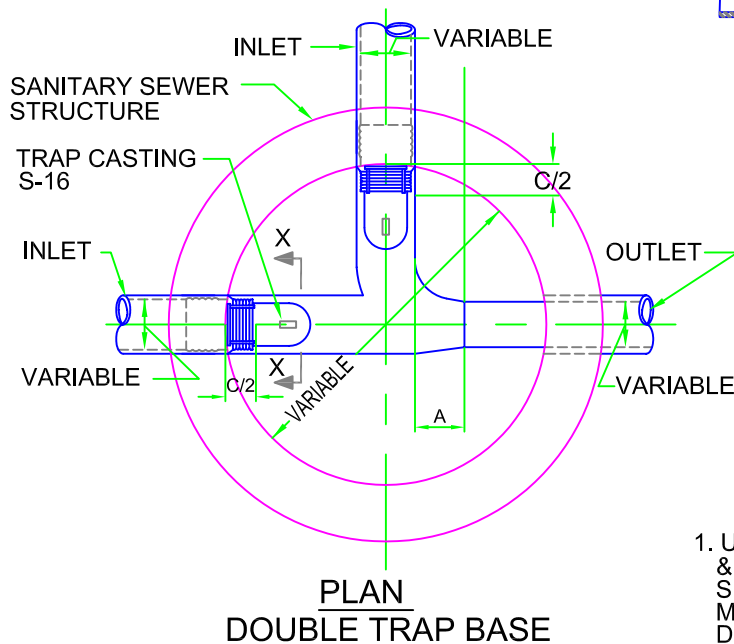
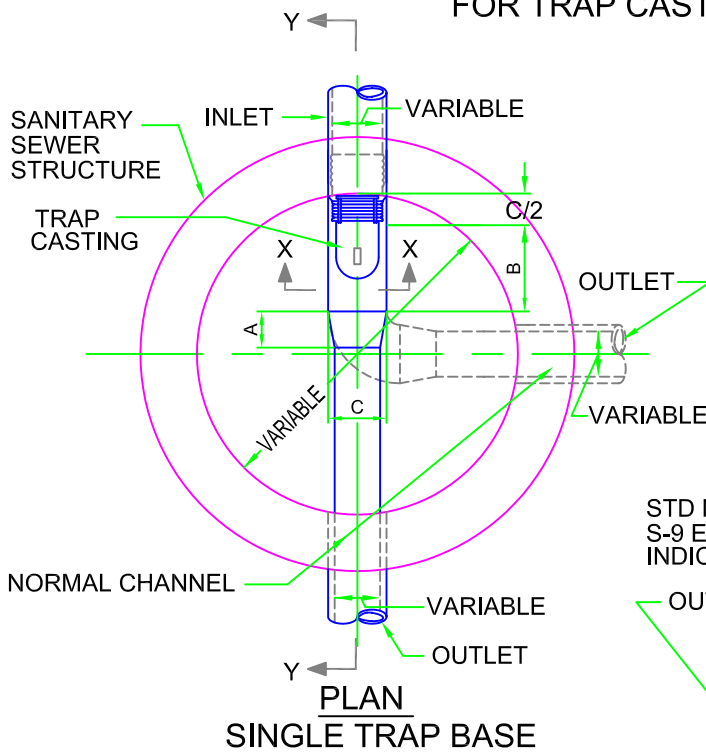
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DISTRICT  
STANDARD **S-14**

REVISED: March 1, 2007

# TRAP MANHOLE BASE

FOR TRAP CASTING SEE STD S-16



TRAP DIMENSIONS			
INLET DIAM.	A	B	C
8"	6 1/2"	11 1/2"	11"
10"	7 1/2"	14 1/2"	13"
12"	8 1/2"	16 1/2"	15"

## NOTES

1. USE 5'-0" I.D. MH'S FOR DLB . TRAP MH'S & SINGLE 12" TRAPS WHERE 90° BEND IN SEWER OCCURS. MH'S TO BE FLAT TOP SIMILAR TO S-7 MH DETAILS TO BE SUBMITTED TO DISTRICT FOR APPROVAL PRIOR TO CONSTRUCTION.

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CMS  
ENGINEER



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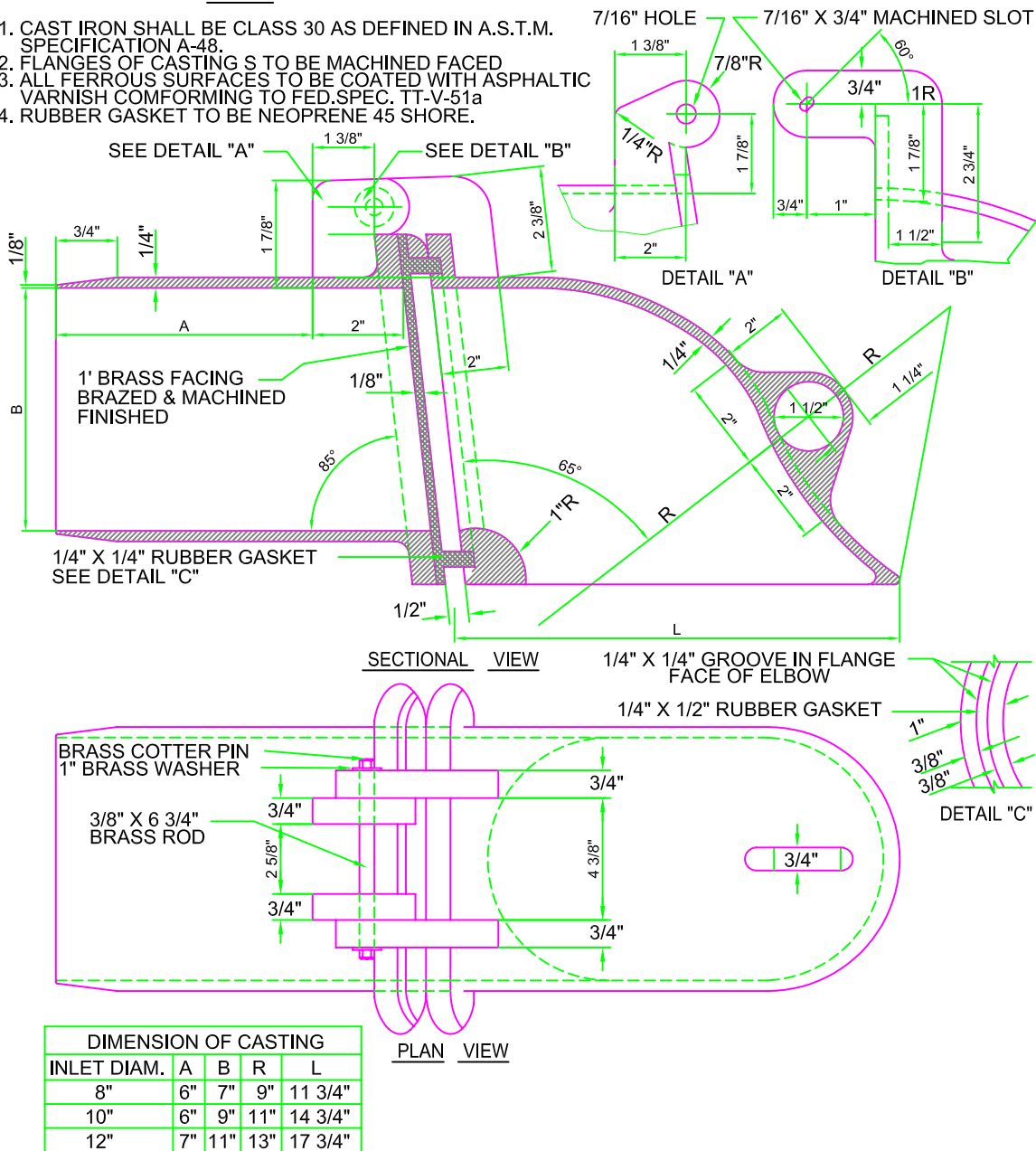
DISTRICT  
STANDARD **S-15**

REVISED: March 1, 2007

# TRAP MANHOLE CASTING

## NOTES

1. CAST IRON SHALL BE CLASS 30 AS DEFINED IN A.S.T.M. SPECIFICATION A-48.
2. FLANGES OF CASTING S TO BE MACHINED FACED
3. ALL FERROUS SURFACES TO BE COATED WITH ASPHALTIC VARNISH CONFORMING TO FED.SPEC. TT-V-51a
4. RUBBER GASKET TO BE NEOPRENE 45 SHORE.



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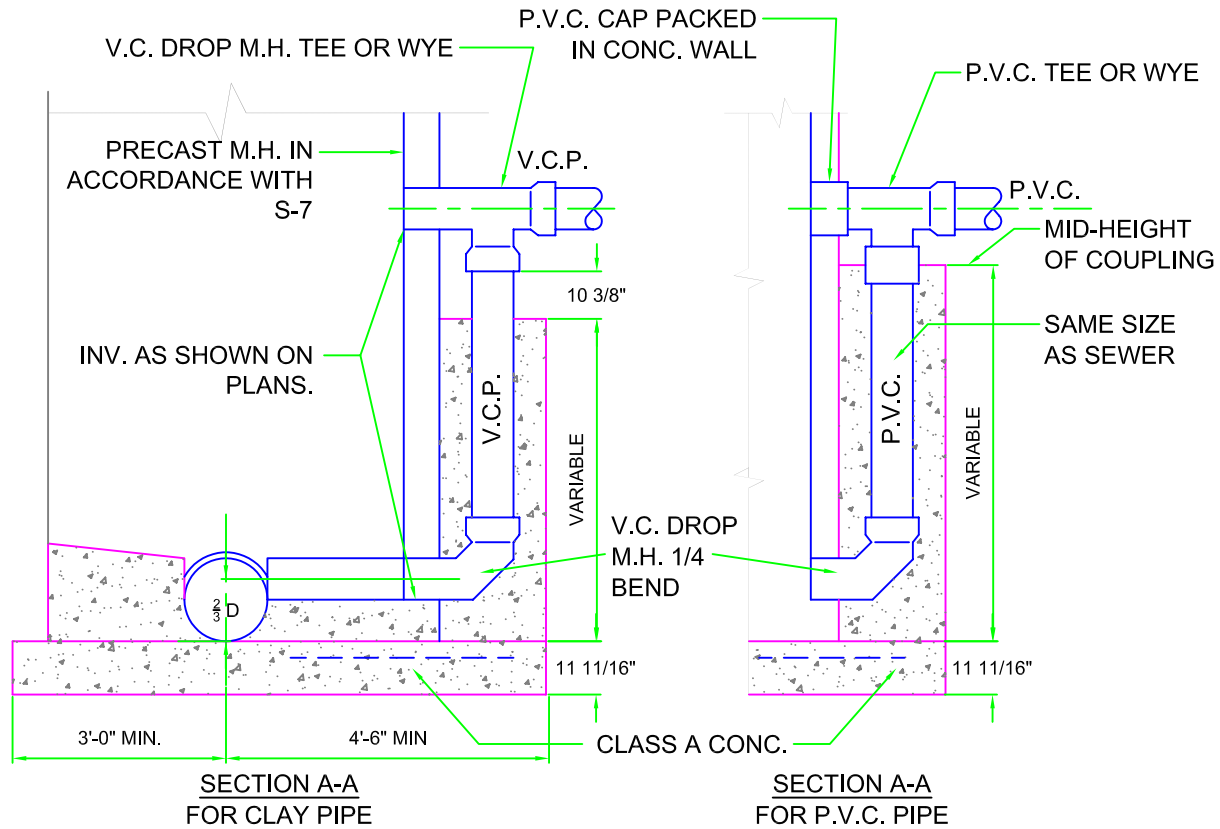


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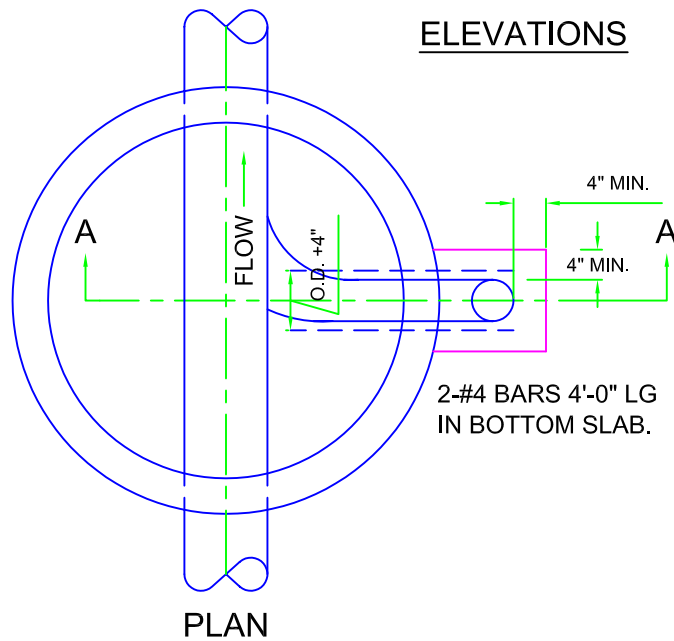
# DISTRICT STANDARD S-16

REVISÉD: March 1, 2007

# DROP MANHOLE



## ELEVATIONS



## NOTES

1. SET ALL JOINTS IN 1:2 MORTAR AND TRIM SMOOTH INSIDE.
2. PROVIDE FLEX JOINT WITHIN 4 FT. OF OUTSIDE FACE IN ALL DIRECTIONS.
3. FOUNDATION FOR DROP SECTION TO BE POURED INTEGRAL WITH M.H. BASE.

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STANDARD **S-17**

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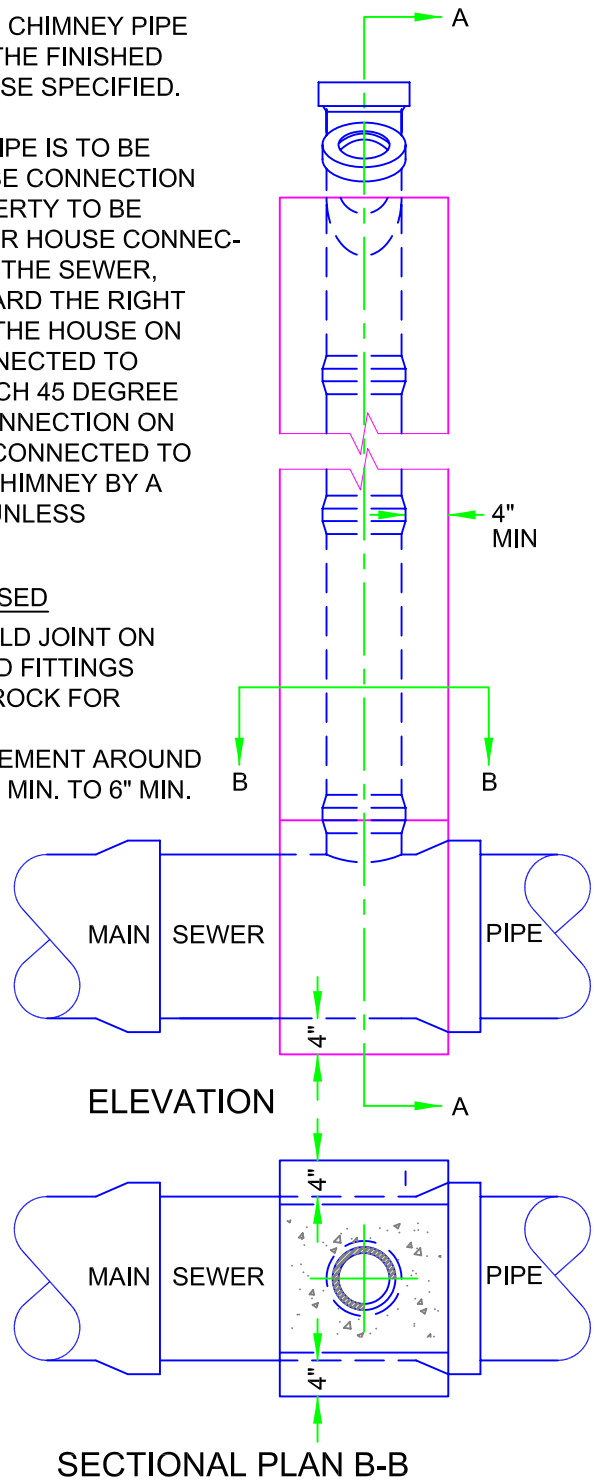
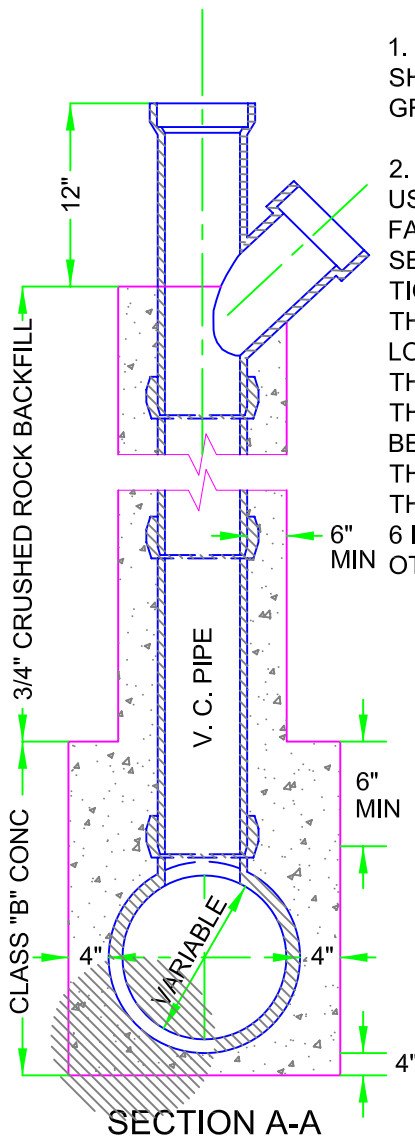
# STANDARD CHIMNEY PIPE

## NOTE:

1. THE UPPER END OF THE CHIMNEY PIPE SHALL BE 8 FEET BELOW THE FINISHED GRADE, UNLESS OTHERWISE SPECIFIED.
2. WHERE THE CHIMNEY PIPE IS TO BE USED FOR A SINGLE HOUSE CONNECTION FACE "Y" TOWARDS PROPERTY TO BE SERVED: WHERE USED FOR HOUSE CONNECTIONS ON BOTH SIDES OF THE SEWER, THE "Y" SHALL FACE TOWARD THE RIGHT LOOKING UP GRADE AND THE HOUSE ON THAT SIDE SHALL BE CONNECTED TO THE "Y" BRANCH BY A 6 INCH 45 DEGREE BEND AND THE HOUSE CONNECTION ON THE LEFT SIDE SHALL BE CONNECTED TO THE UPPER END OF THE CHIMNEY BY A 6 INCH 90 DEGREE BEND UNLESS OTHERWISE SPECIFIED.

## WHEN PVC OR ABS IS USED

- A. USE SOLVENT WELD JOINT ON CHIMNEY PIPE AND FITTINGS
- B. SUBSTITUTE 3/4" ROCK FOR CLASS "B" CONC.
- C. INCREASE ENCASEMENT AROUND CHIMNEY FROM 4" MIN. TO 6" MIN.



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DISTRICT STANDARD **S-18**

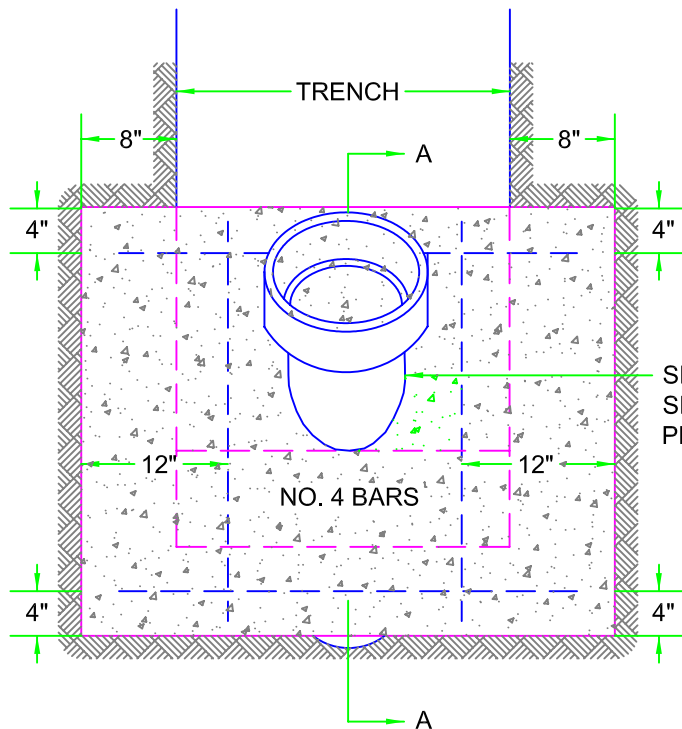
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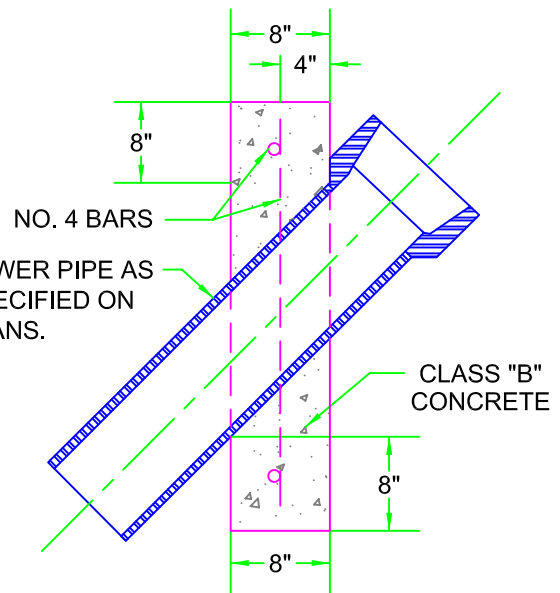
# ANCHOR BLOCK

TO BE USED WHEN SEWER GRADE IS GREATER THAN 30%  
OR WHEN DESIGNATED ON THE DRAWINGS.

THIS STANDARD APPLIES TO 8" THROUGH 12" PIPE SIZES.  
LARGER SIZE PIPES WILL REQUIRE A SPECIAL DESIGN.



ELEVATION



SECTION A - A

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CMS  
ENGINEER

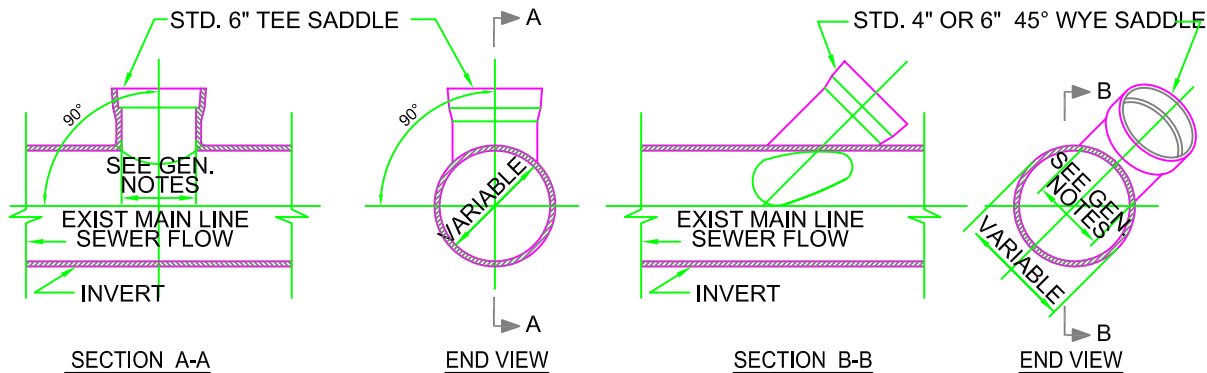


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STANDARD **S-19**

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# SADDLES

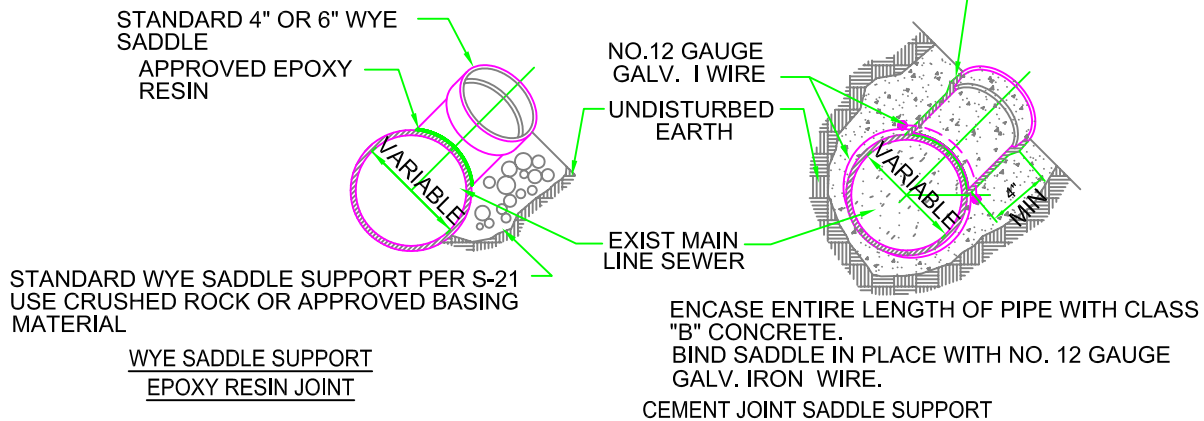


## TEE SADDLE INSTALLATION

TEE SADDLES SHALL BE USED ONLY FOR THE CONSTRUCTION OF CHIMNEY PIPES AND SHALL BE PLACED VERTICALLY ON THE MAIN LINE SEWER. AFTER THE SADDLES HAVE BEEN SECURED IN PLACE, THEY SHALL BE REINFORCED AS SHOWN ON THE DISTRICT STANDARD N° S-18 FOR CHIMNEY BASE.

## WYE SADDLE INSTALLATION

WYE SADDLE SHALL BE PLACED SO AS TO DIRECT THE SEWAGE FLOW FROM THE HOUSE LATERAL DOWNSTREAM.



## GENERAL NOTES

1. WYE AND TEE SADDLES SHALL BE INSTALLED BY CUTTING A NEAT HOLE TO CONFORM TO THE INSIDE DIAMETER OF THE SADDLE IN THE MAIN LINE SEWER FOR THE SADDLE WITHOUT COLLAR. FOR COLLAR SADDLES, THE DIAMETER OF THE HOLE CUT IN THE MAIN LINE SEWER SHALL BE EQUAL THE OUTSIDE DIAMETER OF THE SADDLE PLUS 1/8".
2. BROKEN PIECES FROM CUTTING OF THE MAIN LINE SEWER MUST BE EXTRACTED CAREFULLY SO THAT THEY DO NOT FALL INTO THE SEWER.
3. THE SADDLE SHALL BE CEMENTED INTO PLACE USING 1:2 PORTLAND CEMENT MORTAR OR EQUAL CEMENTING AGENT. APPROVED BY THE DISTRICT MANAGER. THE SADDLE SHALL BE HELD SECURELY IN PLACE WHILE THE CEMENT OR OTHER APPROVED CEMENTING AGENT SETS. THE INSIDE OF THE JOINT BET. THE PIPE AND THE SADDLE SHALL BE FILLED W/ CEMENTING MAT'L & NEATLY ROUNDED.
4. FACTORY MADE WYES SHALL BE INSTALLED IN NEW SEWER CONSRUCTION AND THE DETAILS SHOWN HEREON SHALL BE USED ONLY FOR THE ADDITION OF HOUSE LATERALS ON EXISTING SEWER.

RHH  
MANAGER

CMS  
ENGINEER

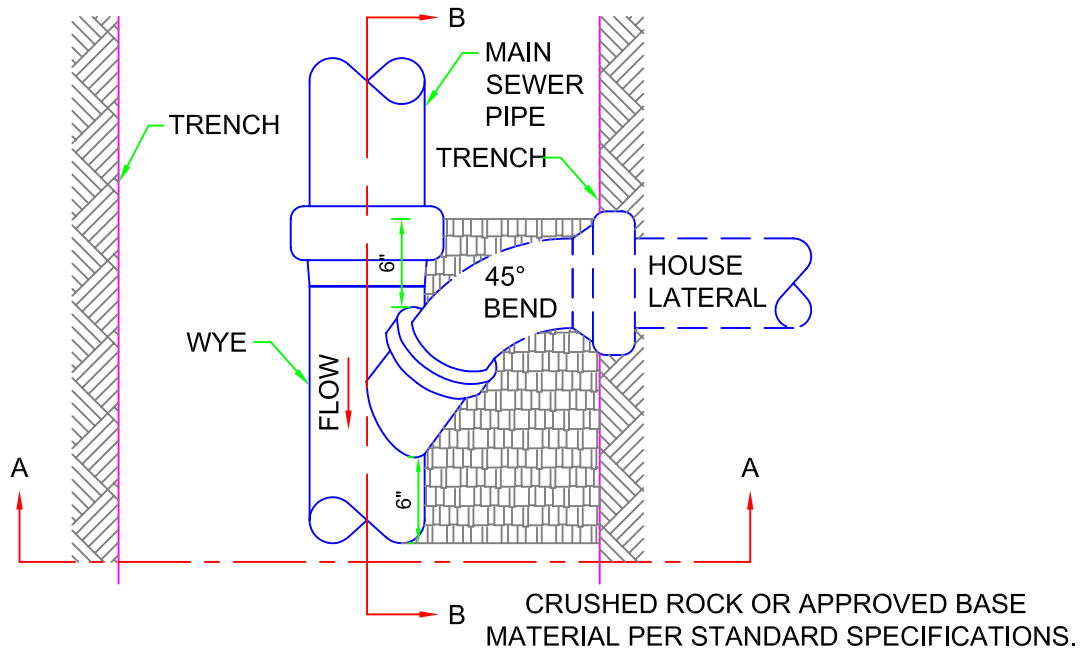


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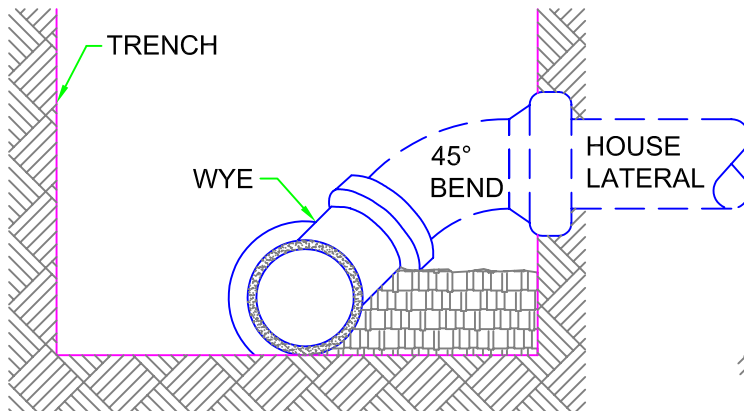
DISTRICT  
STANDARD **S-20**

REVISED: March 1, 2007

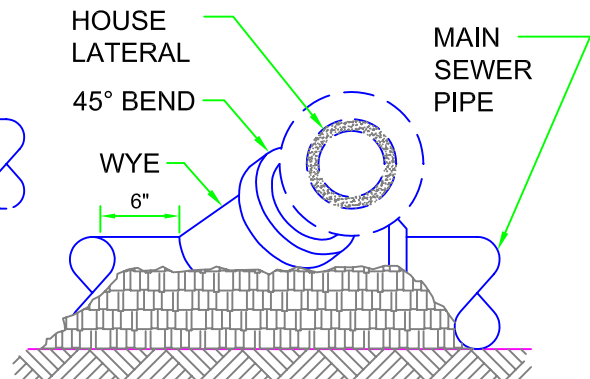
# WYE SUPPORT



PLAN



ELEVATION A-A



ELEVATION B-B

RHH  
MANAGER  
  
CMS  
ENGINEER

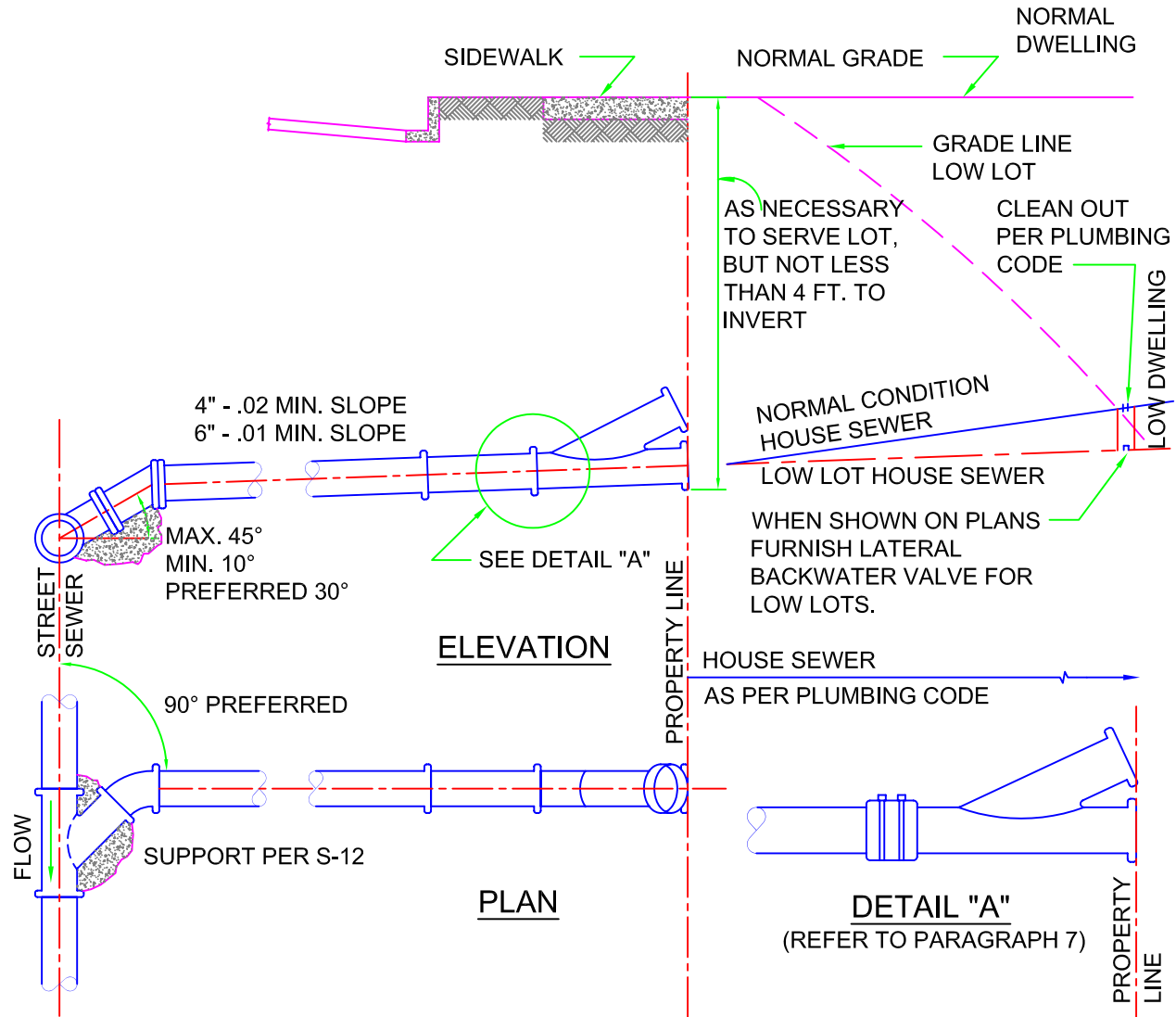


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DISTRICT STANDARD **S-21**

REVISED: March 1, 2007

# STANDARD SERVICE LATERAL



## NOTES:

1. IN NEW WORK USE STANDARD WYE.
2. ON AN EXISTING SEWER, INSTALL APPROVED STANDARD SADDLE IN INSPECTORS PRESENCE.
3. LOCATE IN ACCORDANCE WITH WATER SEWER SEPARATION ORDINANCE.
4. WHERE COVER ON STREET SEWER EXCEEDS 12FT. CHIMNEY PER STD. S-18 SHALL BE USED FOR SERVICE LATERAL CONNECTIONS.
5. WYE'S LOCATED AT PROPERTY LINE SHALL BE INSTALLED DURING CONSTRUCTION PHASE OF LATERAL.
6. WYE'S SHALL TERMINATE ON PROPERTY LINE AS SHOWN.
7. WHEN A FULL LENGTH OF PIPE CANNOT BE USED TO REACH THE TERMINAL DISTANCE TO PROPERTY LINE, THE SPIGOT END OF "Y" JOINT AND BELL ON PIPE JOINT SHALL BE REMOVED AND A MECHANICAL COUPLER USED.

RHH  
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ENGINEER

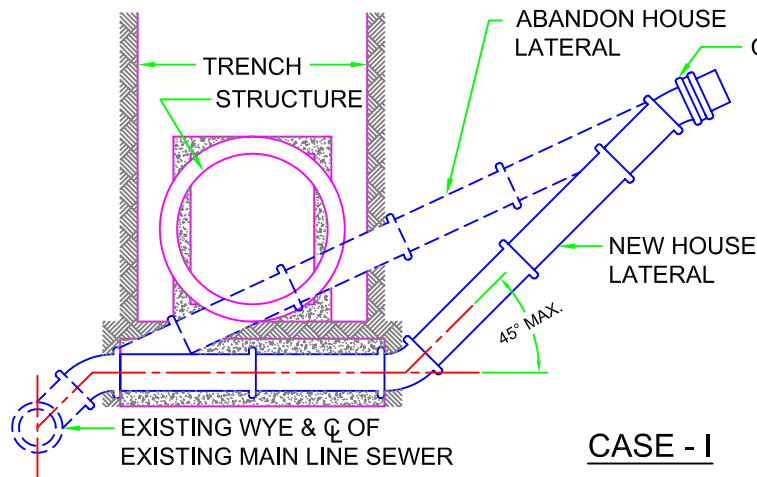


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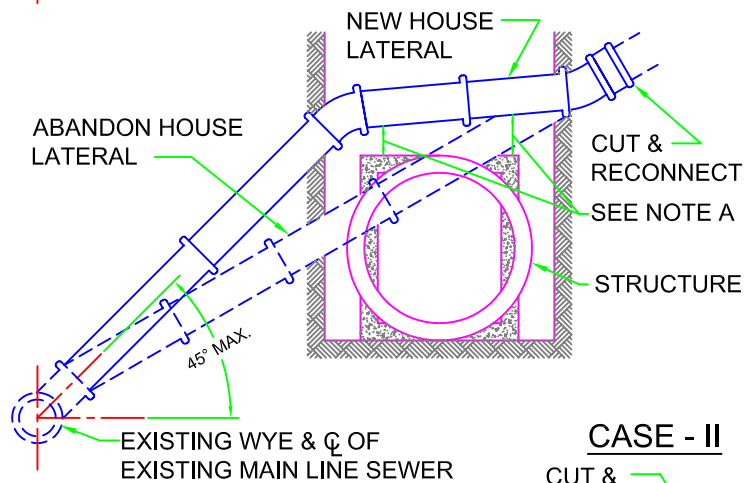
DISTRICT  
STANDARD **S-22**

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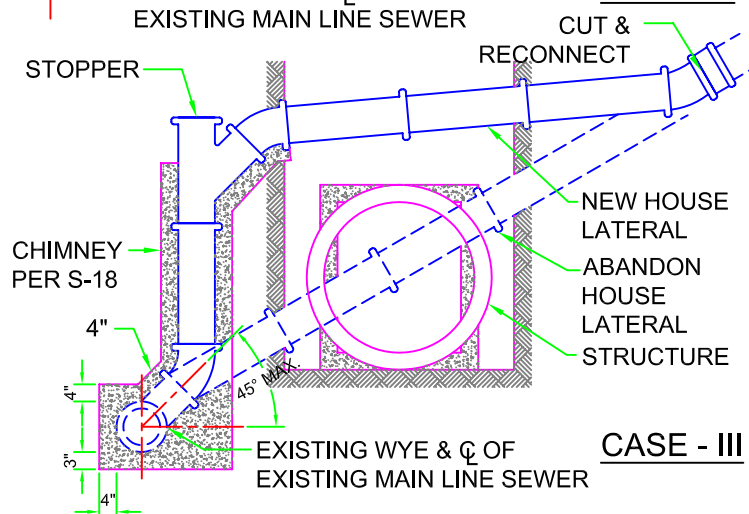
# RECONSTRUCTION OF SANITARY SEWER HOUSE LATERALS



**CASE - I**



**CASE - II**



**CASE - III**

## NOTES - A:

1. WHERE CLEARANCE "D" IS 0.5 TO 1.5 FT., USE V.C.P. AND ENCASE PER S-23, CASE - I
2. WHERE CLEARANCE "D" IS LESS THAN 0.5 FT., USE STANDARD CAST IRON SOIL PIPE AND ENCASE PER S-5, CASE - II

## GENERAL NOTES:

1. ALL HOUSE LATERALS SHALL BE RECONSTRUCTED OF VITRIFIED CLAY PIPE WITH MECHANICAL COMPRESSION JOINTS UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. THE MINIMUM SLOPE FOR HOUSE LATERALS SHALL BE 1/4" PER FOOT.
3. WYES MAY BE LAID "FLAT" UPON APPROVAL OF THE DISTRICT MANAGER.
4. WHERE ENCASEMENT IS SPECIFIED FOR AN EXISTING HOUSE LATERAL BUT FIELD INSPECTION DURING CONSTRUCTION REVEALS THAT THERE IS ACTUALLY LESS THAN TWO FEET OF CLEARANCE BETWEEN THE PROPOSED AGGREGATE BASE OF THE STREET AND THE TOP OF THE EXISTING HOUSE LATERAL, SUCH HOUSE LATERAL SHALL BE RECONSTRUCTED PER CASE - VI, S-24.
5. SADDLES MAY BE USED WHERE NECESSARY AND BE INSTALLED PER S-20.
6. ALL CEMENT CONCRETE USED FOR ENCASEMENT SHALL BE CLASS "B" OR BETTER.
7. ALIGNMENT CHANGES IN NEW CONSTRUCTION SHALL BE MADE WITH STD. FITTINGS EXCEPT A DEFLECTION NOT TO EXCEED 2 1/2" MAY BE MADE IN EACH JOINT.

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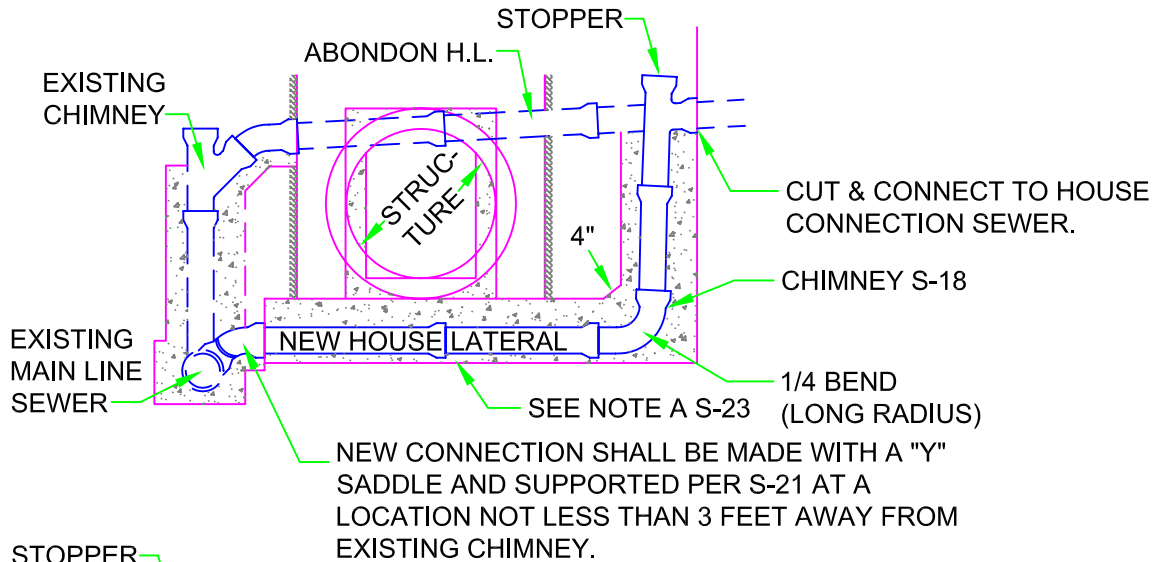


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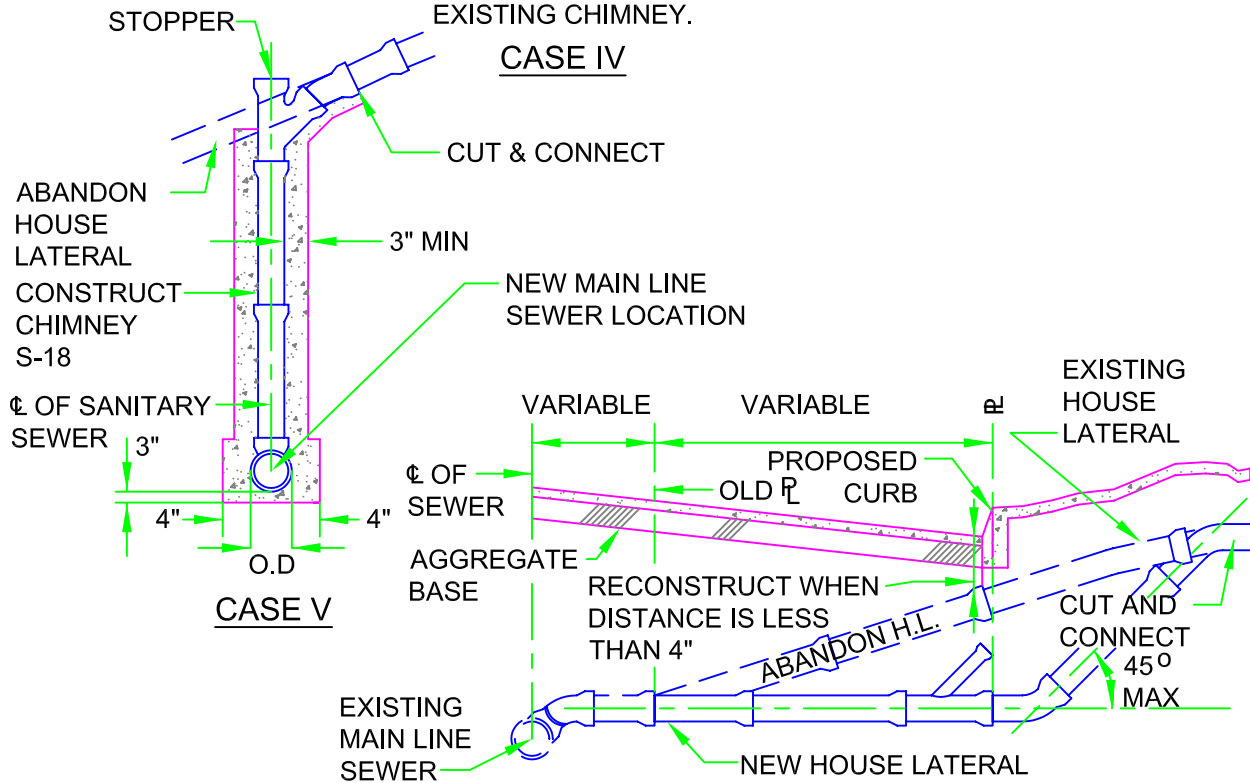
DISTRICT  
STANDARD **S-23**

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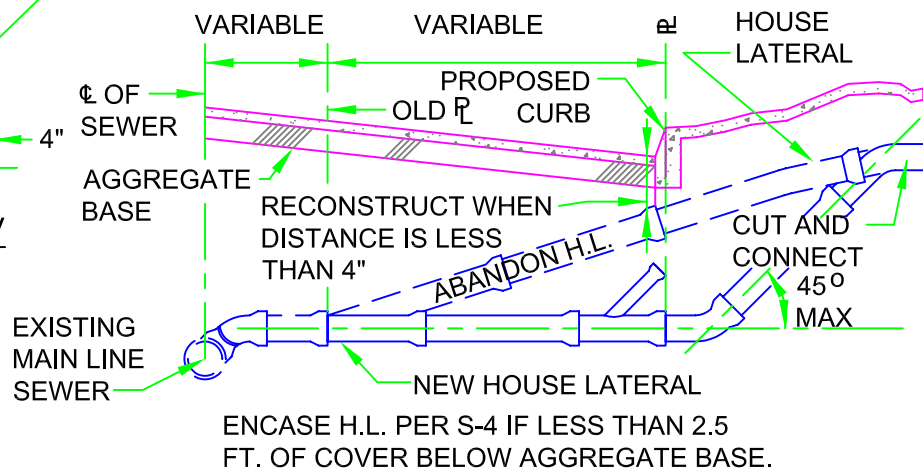
# RECONSTRUCTION OF SANITARY SEWER HOUSE LATERALS



## CASE IV



## CASE V



## CASE VI

ENCASE H.L. PER S-4 IF LESS THAN 2.5 FT. OF COVER BELOW AGGREGATE BASE.

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MANAGER  
CMS  
ENGINEER

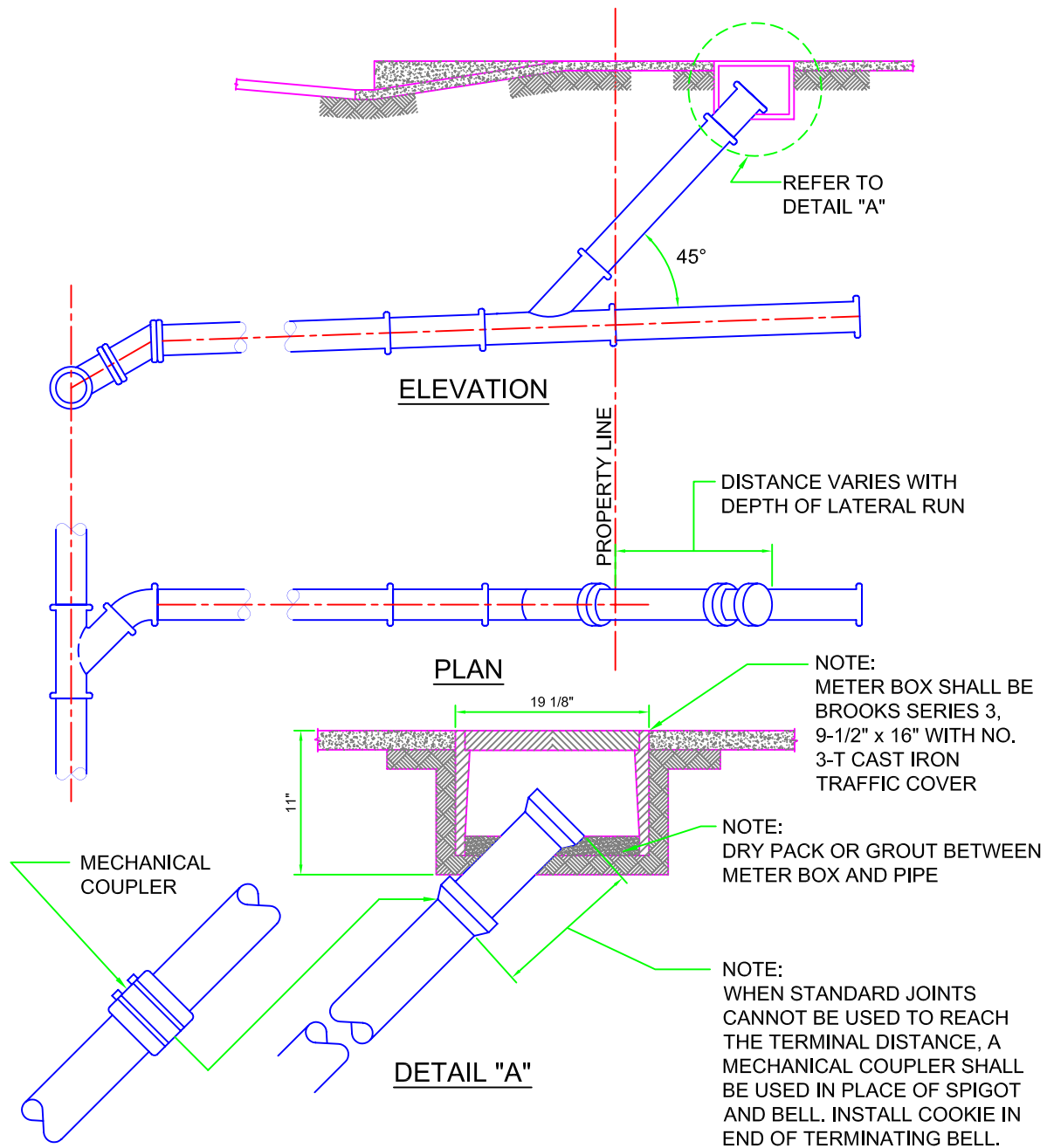


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DISTRICT STANDARD **S-24**

REVISED: March 1, 2007

# SEWER LATERAL CLEANOUT DETAIL UNDER PAVED SURFACE AT PROPERTY



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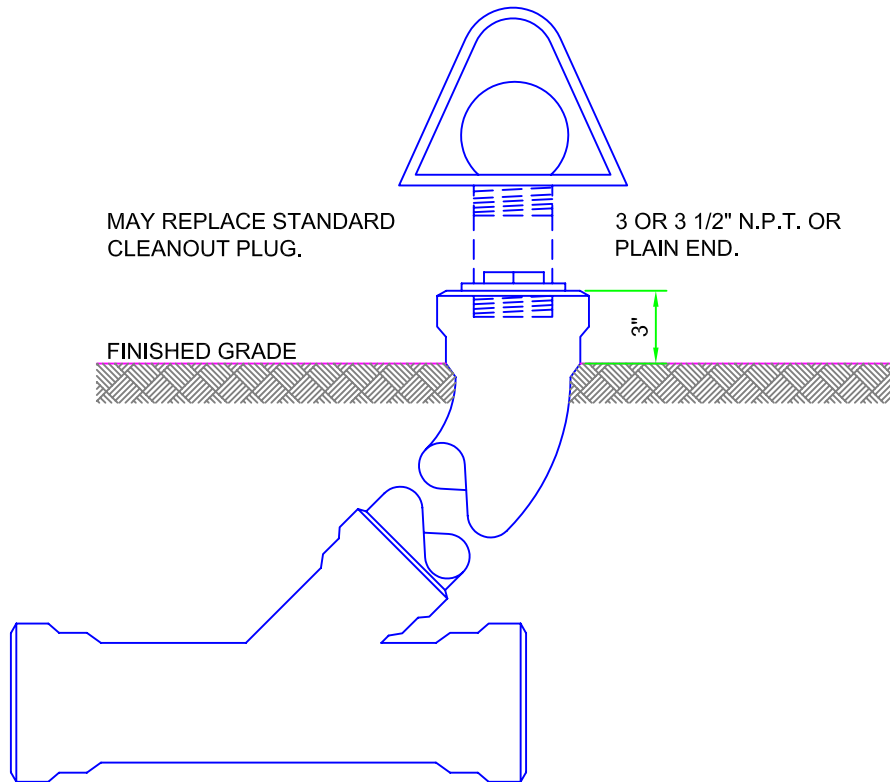
DISTRICT  
STANDARD **S-25**

REVISED: March 1, 2007

# SEWER BACKFLOW DEVICE

## NOTES:

1. OVERFLOW DEVICE SHALL BE INSTALLED IN THE SEWER SERVING ANY BUILDING WHERE THE LOWEST FLOOR ELEVATION (CONTAINING PLUMBING FIXTURES) WILL BE LESS THAN ONE FOOT ABOVE THE RIM OF THE UPSTREAM MANHOLE OR FLUSHING UNIT.
2. THE DISCHARGE OF THE DEVICE SHALL BE BELOW THE LOWEST PLUMBING OVERFLOW RIM.



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STANDARD **S-26**

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# SPECIFICATIONS FOR GREASE INTERCEPTOR

## GENERAL SPECIFICATIONS

1. WASTEWATER TEMPERATURE SHALL NOT EXCEED 140°F ENTERING THE INTERCEPTOR.
2. INTERCEPTOR GROSS LIQUID VOLUME, IN GALLONS, AT STATIC WATER LEVEL SHALL BE NO LESS THAN THE PEAK FLOW DISCHARGED TO THE INTERCEPTOR IN GALLONS PER MINUTE (GPM) MULTIPLIED BY THIRTY (30).
3. INTERCEPTOR SHALL CONTAIN TWO (2) INTERCONNECTED COMPARTMENTS. THE UPSTREAM COMPARTMENT WHICH INITIALLY RECEIVES THE WASTEWATER SHALL BE THE PRIMARY GREASE STORAGE COMPARTMENT. THE GROSS LIQUID VOLUME OF THIS COMPARTMENT SHALL BE A MINIMUM OF APPROXIMATELY TWO-THIRDS ( $\frac{2}{3}$ ) OF THE INTERCEPTOR GROSS LIQUID VOLUME. FOR RECTANGULAR SHAPED TANKS, THE LENGTH TO WIDTH RATIO AND THE LIQUID DEPTH TO WIDTH RATIO OF THE UPSTREAM COMPARTMENT SHALL BE APPROXIMATELY ONE-TO-ONE (1:1) OR GREATER FOR VERTICAL CYLINDRICAL TANKS, THE DIAMETER TO LIQUID DEPTH RATIO SHALL BE ONE-TO-ONE OR GREATER.  
  
THE DOWNSTREAM COMPARTMENT SHALL BE FOR OVERFLOW GREASE STORAGE AND INSPECTION.  
  
THE INFLUENT OR INLET PIPE SHALL ENTER THE UPSTREAM COMPARTMENT APPROXIMATELY 2-INCHES ABOVE THE STATIC WATER LEVEL AND SHALL BE SO ARRANGED THAT THE LIQUID WILL LEAVE THE UPSTREAM COMPARTMENT APPROXIMATELY 12 INCHES FROM THE BOTTOM AND OPPOSITE THE INLET; ENTER THE DOWNSTREAM COMPARTMENT BELOW THE STATIC WATER LEVEL AND LEAVE APPROXIMATELY 6-INCHES FROM THE BOTTOM AND OPPOSITE THE INLET. EFFECTIVE ALTERNATIVE FLOW PATTERNS SHALL BE CONSIDERED.
- PROVISIONS FOR CLEANING ALL PIPING, EXTERNAL AND INTERNAL, TO THE COMPARTMENT SHALL BE PROVIDED. WATER SEAL AND VENTING PROVISIONS SHALL CONFORM TO THE UNIFORM PLUMBING CODE, LATEST EDITION.
4. GAS TIGHT ACCESS COVER(S) SHALL BE PROVIDED FOR BOTH INSPECTION AND CLEANING OF EACH COMPARTMENT. ACCESS MAY BE BY REMOVABLE LIGHTWEIGHT CONCRETE COVER, HINGED STEEL OR ALUMINUM COVER, OR STANDARD MANHOLE FRAME AND COVER, OR A COMBINATION THEREOF.
5. THE INTERCEPTOR SHALL BE DESIGNED AND CONSTRUCTED OF APPROPRIATE MATERIAL SUITABLE TO MEET INSTALLATION REQUIREMENTS, INCLUDING CORROSION, AND ALL APPLICABLE LOCAL AGENCY CONSTRUCTION REQUIREMENTS.  
  
PLANS FOR THE INTERCEPTOR, JUDGED BY THE ENGINEER-MANAGER TO REQUIRE ENGINEERING DESIGN, SHALL BE PREPARED AND SIGNED BY AN ENGINEER OF SUITABLE DISCIPLINE LICENSED BY THE STATE OF CALIFORNIA.
6. THE INTERCEPTOR SHALL BE CLEANED AND MAINTAINED BY THE OWNER AS REQUIRED WHENEVER SUFFICIENT GREASE/OILS ACCUMULATE ON THE SURFACE OF THE DOWNSTREAM COMPARTMENT OR IT IS DETERMINED BY THE DISTRICT THAT SIGNIFICANT QUANTITIES OF GREASE/OILS ARE BEING DISCHARGED.
7. PLATE NOS. S-28 AND S-29 PRESENT TYPICAL SCHEMATICS OF VARIOUS GREASE INTERCEPTOR CONFIGURATIONS AS GUIDELINES. GREASE INTERCEPTOR STRUCTURES MAY BE CONSTRUCTED OF WATER TIGHT PRECAST CONCRETE UNITS.

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ENGINEER

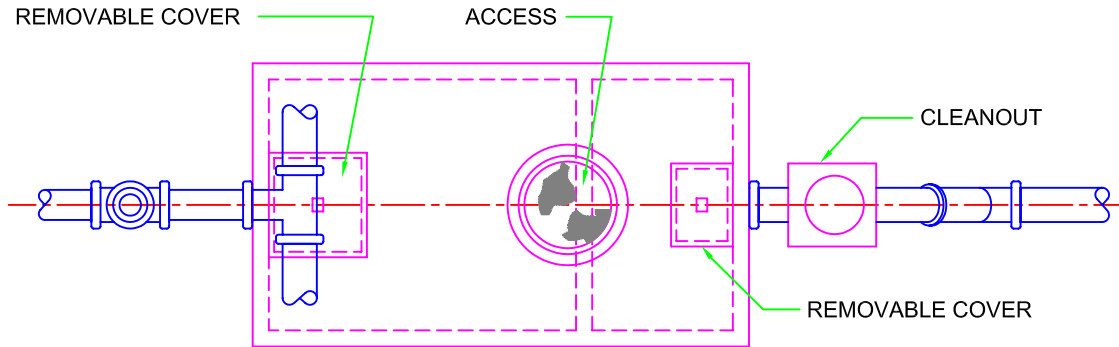


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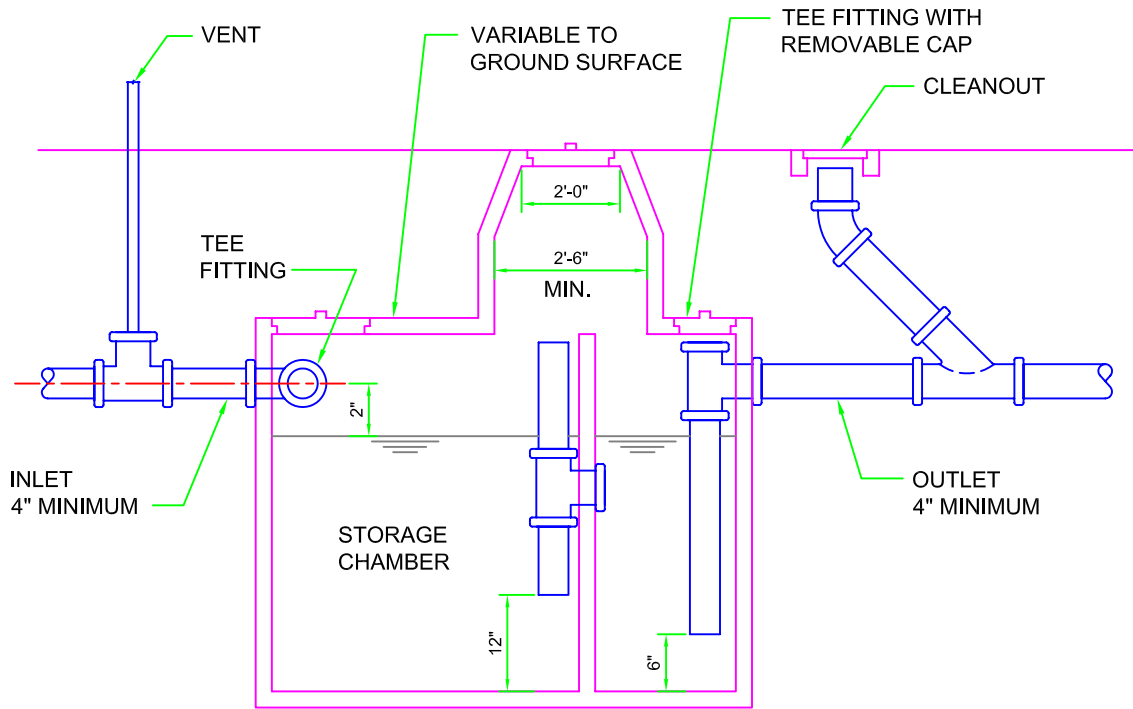
DISTRICT  
STANDARD **S-27**

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# GREASE INTERCEPTOR TYPE I



PLAN



LONGITUDINAL SECTION

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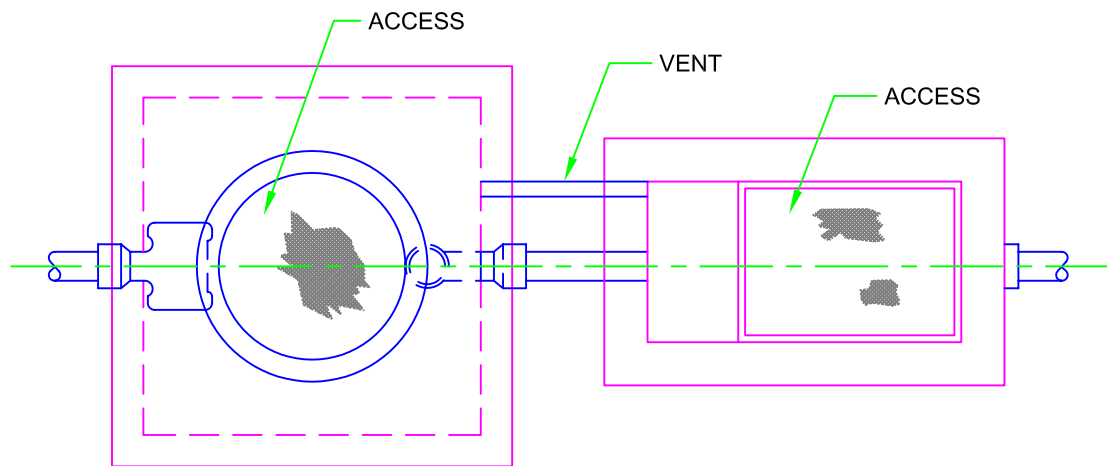


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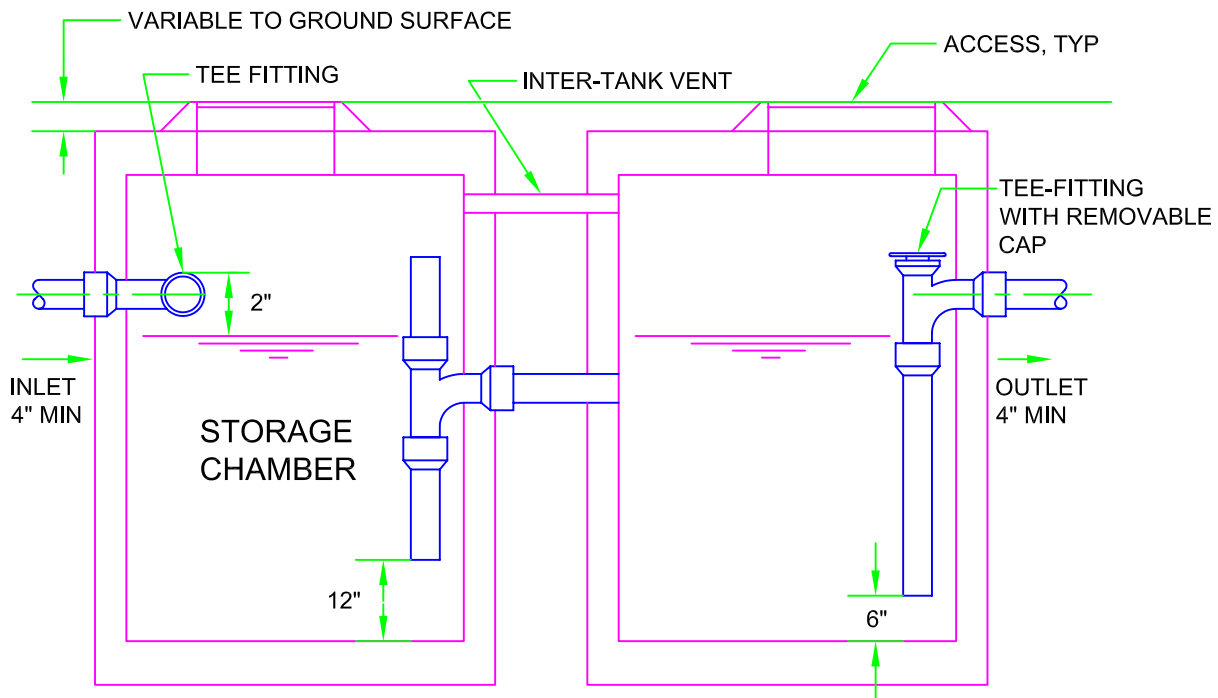
DISTRICT STANDARD **S-28**

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# GREASE INTERCEPTOR TYPE II



PLAN



LONGITUDINAL SECTION

NOTE: 1. INLET VENT AND OUTLET CLEANOUT NOT SHOWN.  
2. VERTICAL CYLINDRICAL TANKS MAY BE USED.

RHH  
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CMS  
ENGINEER

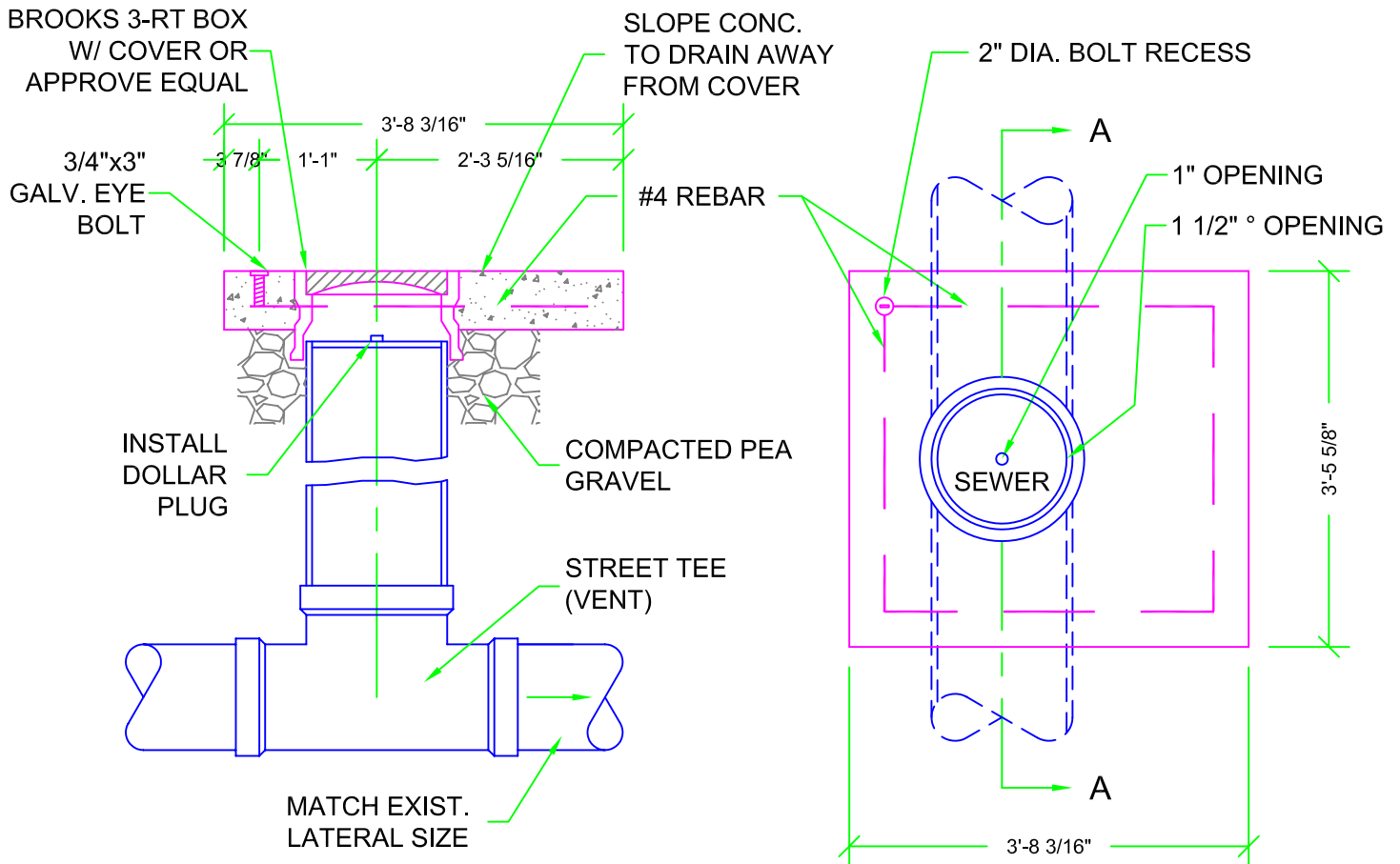


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# WASTEWATER SAMPLING WELL



## NOTES:

1. ON EXISTING SEWER, INSTALL APPROVED STANDARD "T" SADDLE USING A SEWER TAPPING MACHINE OR EQUAL. A PLAIN END OF SECTION OF PIPE WITH PRE-MOULDED "T" AND CALDER COUPLING MAY BE USED.
2. LOCATION OF SAMPLING WELL SHALL BE DESIGNATED BY CAMROSA WATER DISTRICT.

RHH  
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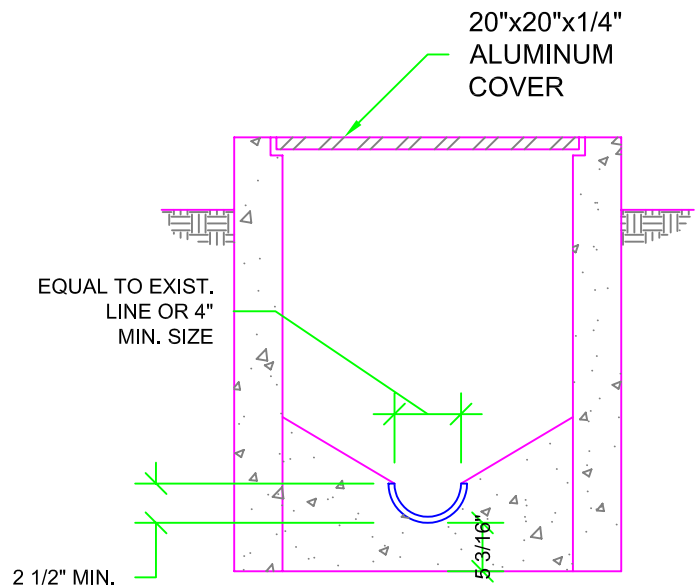
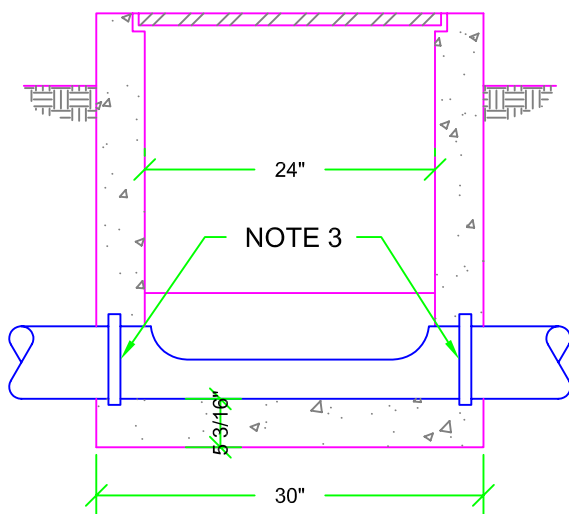
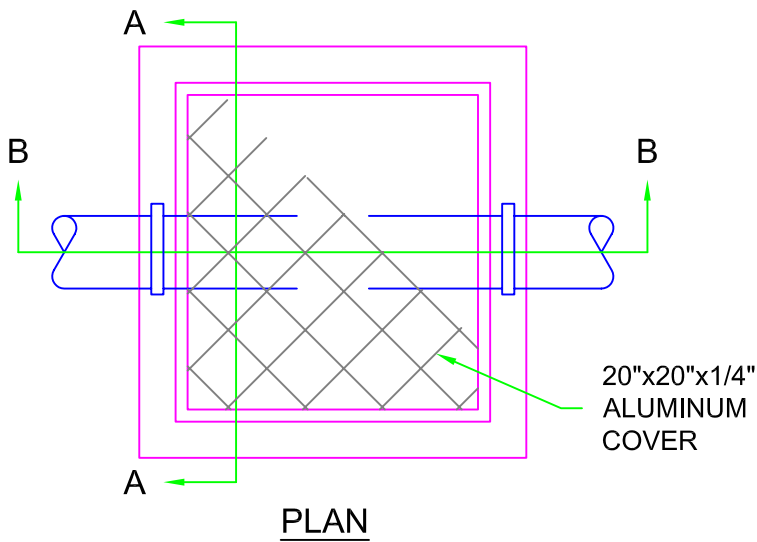


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# SAMPLING WELL



## NOTES:

1. APPROVAL FOR THE LOCATION OF THE SAMPLING WELL SHALL BE OBTAINED FROM THE DISTRICT PRIOR TO INSTALLATION.
2. BOX SHALL BE ASSOCIATED CONCRETE PRODUCTS MODEL DB 2424 OR EQUAL.
3. PLACE TIGHT FITTING RUBBER RING AROUND PIPE AT MIDPOINT WHERE IT PASSES THROUGH CONCRETE WALL.

RHH  
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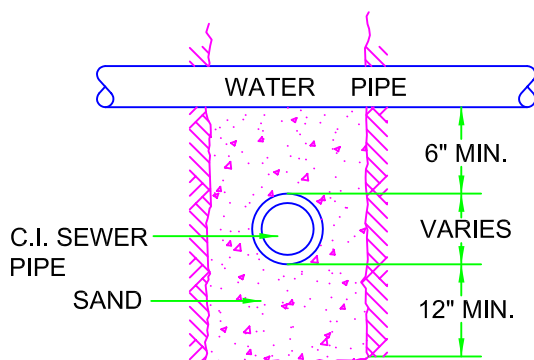
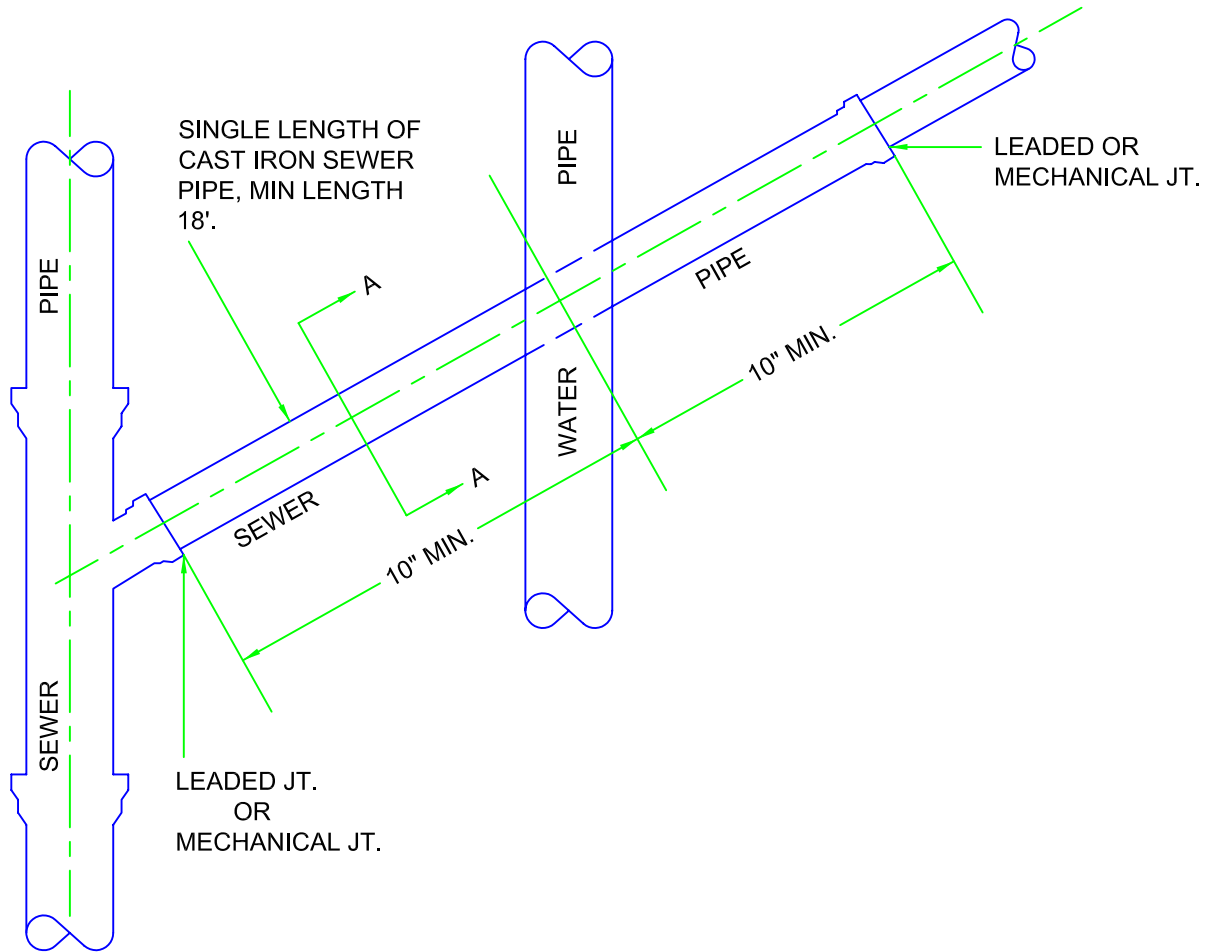


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STANDARD **S-31**

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# SANITARY PROTECTION FOR WATER MAINS CROSSING SEWERS



SECTION A-A

NOTE: THIS TYPE OF CONSTRUCTION IS PERMISSIBLE ONLY IF THE CONDITIONS SET FORTH IN THE VENTURA COUNTY WATER AND SEWER SEPERATION ORDINANCE CANNOT BE COMPLIED WITH.

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CMS  
ENGINEER

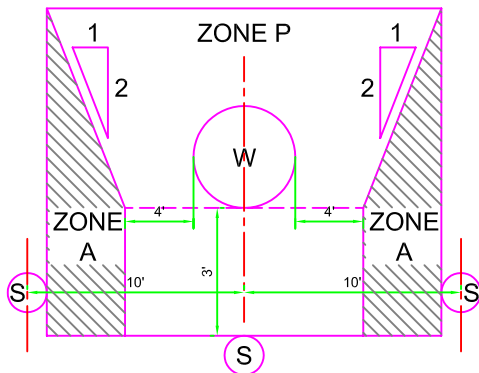


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DISTRICT  
STANDARD **S-32**

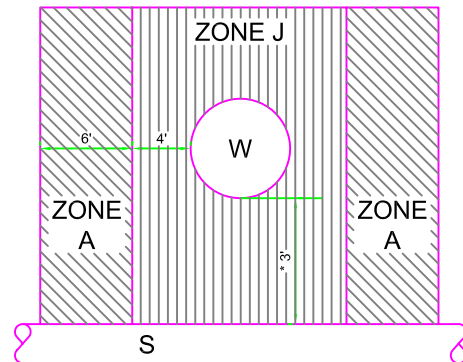
REVISED: March 1, 2007

# WATER AND SEWER SEPARATION REQUIREMENTS



## PARALLEL CONSTRUCTION

IF A SANITARY SEWER IS TO BE LOCATED WITHIN 10 FEET OF A WATER MAIN OR SERVICE LATERAL WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL SEWER CONSTRUCTION WILL BE REQUIRED AS SHOWN BELOW.



## PERPENDICULAR CONSTRUCTION

IF A SANITARY SEWER OR HOUSE SEWER LATERAL CROSSES A WATER MAIN OR SERVICE LATERAL WITHIN ANY OF THE INDICATED ZONES, SPECIAL CONSTRUCTION WILL BE REQUIRED AS SHOWN BELOW. \* 2' CLEAR FOR LATERALS.

ZONE	SEWER CONSTRUCTION REQUIREMENTS
A	VITRIFIED CLAY PIPE WITH MECH. COMP. JOINTS OR PVC PIPE WITH RUBBER RING JOINTS OR CAST IRON PIPE WITH MECHANICAL COMPRESSION JOINTS. (V.C.P. OR P.V.C. OR C.I.P.)
J	SAME MATERIAL AS ALLOWED IN ZONE "A" EXCEPT THAT NO JOINTS MAY FALL IN ZONE J. MINIMUM CLEARANCE BETWEEN OUTSIDES OF PIPE SHALL BE NOT LESS THAN 6".
P	DO NOT LOCATE ANY PARALLEL SEWER IN THIS AREA WITHOUT SPECIAL APPROVAL OF THE DISTRICT MANAGER.
W	INDICATES WATER MAIN AND SERVICE LATERALS. WHERE SERVICE LATERAL IS GALVANIZED IRON OR COPPER, WITHOUT JOINTS IN THE PROHIBITED AREA, NO SPECIAL CONSTRUCTION IS REQUIRED FOR CROSSING SEWER IN ANY ZONE.
S	INDICATES SEWER OR HOUSE LATERAL.

WATER AND SEWER LINES MAY BE CONSTRUCTED IN AREAS PROHIBITED BY SECTION 8602 OF THE VENTURA COUNTY CODE IF WATER LINES ARE INSTALLED IN WATER TIGHT STEEL CASINGS AND SEWER LINES ARE CONSTRUCTED OF ZONE "A" MATERIALS.

WATER LINES AND SERVICE LATERALS INSTALLED SO-AS TO PLACE A SEWER OR HOUSE LATERAL IN ANY OF THE RESTRICTED ZONES MUST BE PROTECTED IN A MANNER APPROVED BY THE DISTRICT MANAGER OR BY RECONSTRUCTION OF SEWER LINES IN THE RESTRICTED ZONES TO MEET REQUIREMENTS.

THIS STANDARD IS ISSUED IN COMPLIANCE WITH VENTURA COUNTY ORDINANCE NUMBER 1457, DIV. 8, CHAP. 6, SEC. 8603(b) OF ORDINANCE CODE.

RHH  
MANAGER  
  
CMS  
ENGINEER



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DISTRICT  
STANDARD **S-33**

REVISED: March 1, 2007