

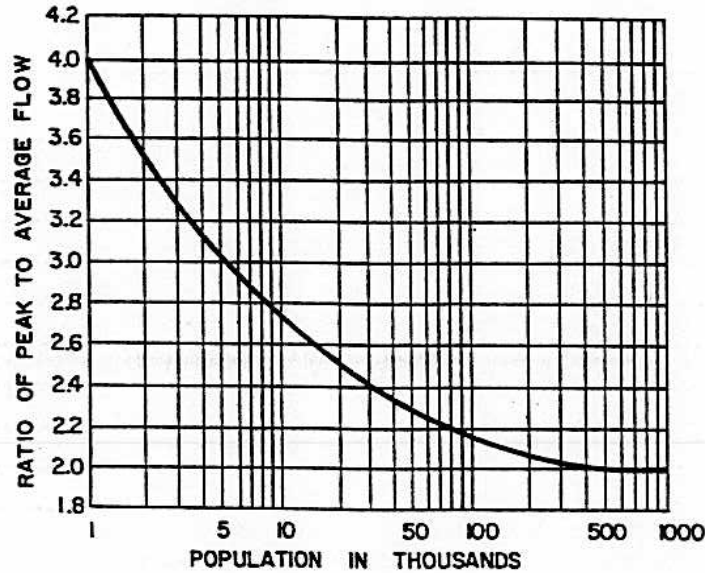
PIPE SIZE	"n"	MIN. SLOPE
6" DIAM.	0.013	.0040 FT./FT.
8" DIAM.	0.013	.0034 FT./FT.
10" DIAM.	0.013	.0025 FT./FT.
12" DIAM.	0.013	.0020 FT./FT.
15" DIAM.	0.013	.0015 FT./FT.
18" DIAM.	0.013	.0012 FT./FT.

**NOTES:**

1. THE MINIMUM PIPE SIZE SHALL BE 6 INCHES IN DIAMETER.
2. A MANHOLE SHALL BE INSTALLED AT ALL INTERSECTING LINES AND CHANGES OF GRADE, ALIGNMENT, PIPE SIZES OR MATERIALS.
3. ALL SERVICE CONNECTIONS TO SANITARY SEWERS SHALL BE MADE AT WYES OR BY CUTTING A HOLE AND INSTALLING A COLLAR WYE SADDLE. NO CONNECTIONS WILL BE PERMITTED IN LINES OVER 15 INCHES IN DIAMETER EXCEPT AT MANHOLES.
4. THE MANNING "n" SHALL BE NOT LESS THAN 0.013 FOR ALL PIPES.
5. A SLOPE OF 0.006 FT./FT. MINIMUM ON ENDS OF RUNS UP TO 15 CONNECTIONS. MORE THAN 15 CONNECTIONS, SLOPE SHALL BE AS PER THE ABOVE SCHEDULE.
6. PROVIDE A MINIMUM COVER OF 2.5 FEET TO TOP OF PIPE. WHERE MINIMUM COVER CANNOT BE OBTAINED, DUCTILE IRON CEMENT LINED PIPE SHALL BE USED WHEN APPROVED BY THE CITY ENGINEER.
7. THE CITY ENGINEER WILL REQUIRE DEWATERING FOR ALL CONSTRUCTION BELOW EXISTING WATER TABLE.
8. MINIMUM SEWER LINE SLOPE SHALL BE SUFFICIENT TO MAINTAIN AN EFFLUENT VELOCITY OF 2 FEET PER SECOND OR GREATER.
9. REFER TO SECTION NO. 71 OF THE STANDARD SPECIFICATION FOR ADDITIONAL DESIGN GUIDE CRITERIA.
10. TEMPORARY MANHOLE PUMPING STATION DETAILS SHALL BE SUBMITTED WITH THE IMPROVEMENT PLANS FOR APPROVAL.

<b>NO.</b>	<b>REVISED</b>	<b>BY</b>	<b>SANITARY SEWER PROFILE DATA</b>	<b>APPROVED BY:</b> 
<b>DRAWN BY: J. HULSEY</b>				<b>DIRECTOR OF PUBLIC WORKS</b>
<b>CHECKED BY: J. PODESTA</b>				<b>DRAWING NO. S-1</b>
<b>SCALE: NONE</b>			<b>CITY OF MANTECA</b> DEPARTMENT OF PUBLIC WORKS	<b>DATE: JAN. 1988</b>

## RESIDENTIAL PEAKS



WASTEWATER SEWER SYSTEM DESIGN SHALL BE IN CONFORMANCE WITH THE CITY OF MANTECA'S CURRENT WASTEWATER SEWER SYSTEM MASTER PLAN.

ASSUME SINGLE FAMILY RESIDENCE AVERAGE OF 4.5 LOTS PER ACRE AND 3.3 PERSONS PER LOT OR 14.8 PERSONS PER ACRE.

## VOLUME

### RESIDENTIAL:

AVERAGE FLOW 100 GAL./PERSON/DAY

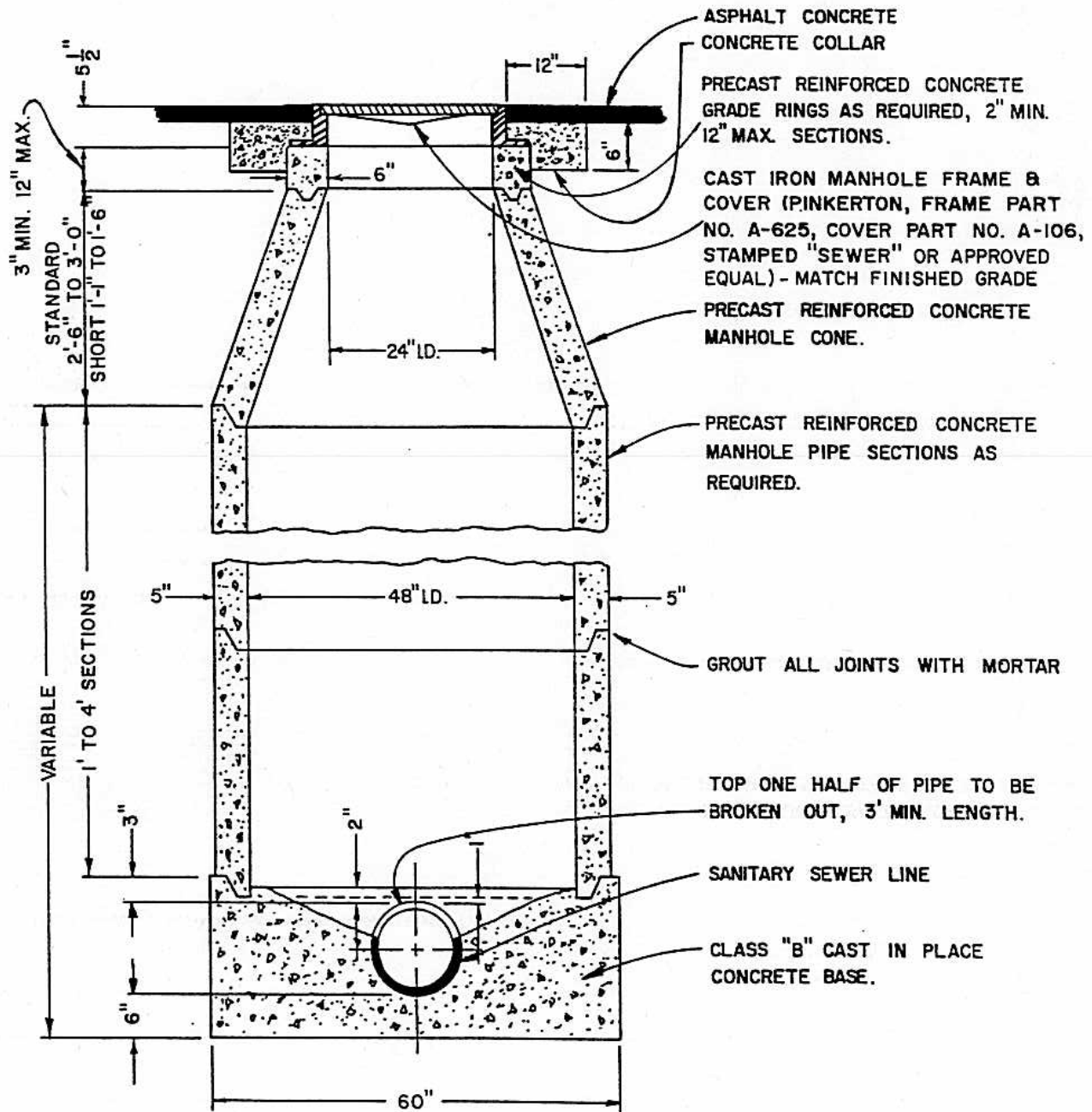
### COMMERCIAL:

AVERAGE FLOW 3,400 GAL./ACRE/DAY  
 PEAK FLOW 10,000 GAL./ACRE/DAY

### INDUSTRIAL AND INSTITUTIONAL (NON-SEASONAL):

AVERAGE FLOW 4,700 GAL./ACRE/DAY  
 PEAK FLOW 13,500 GAL./ACRE/DAY

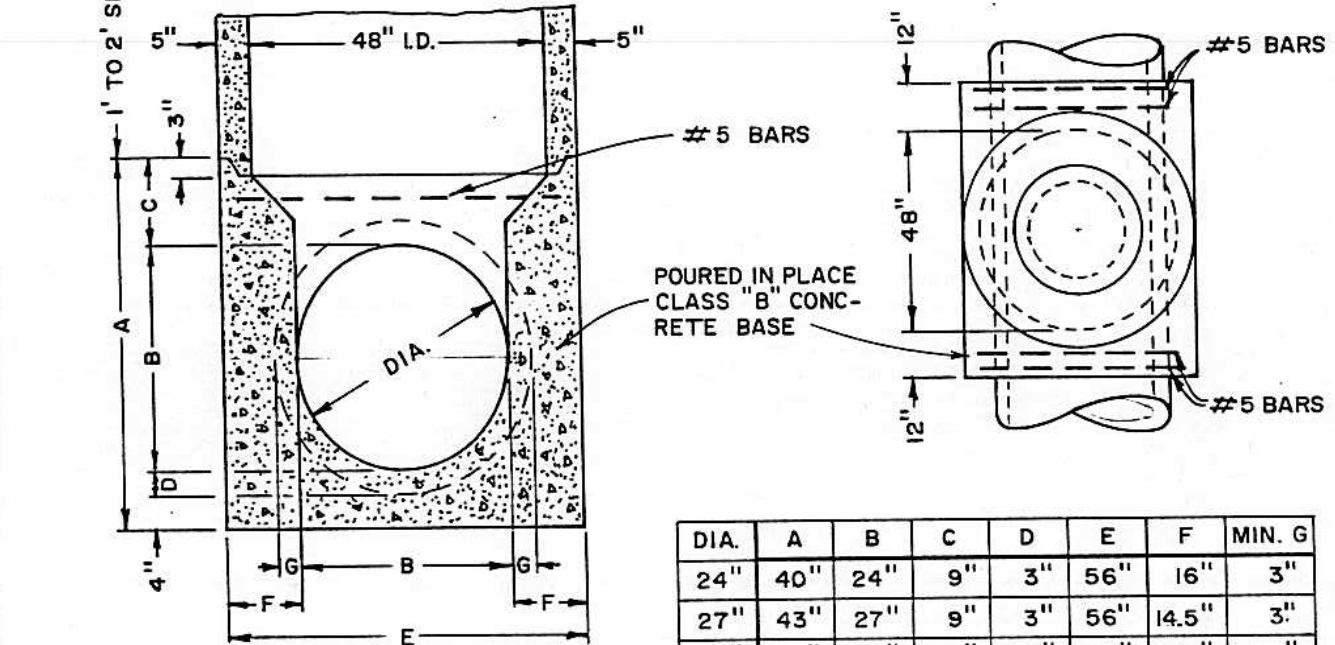
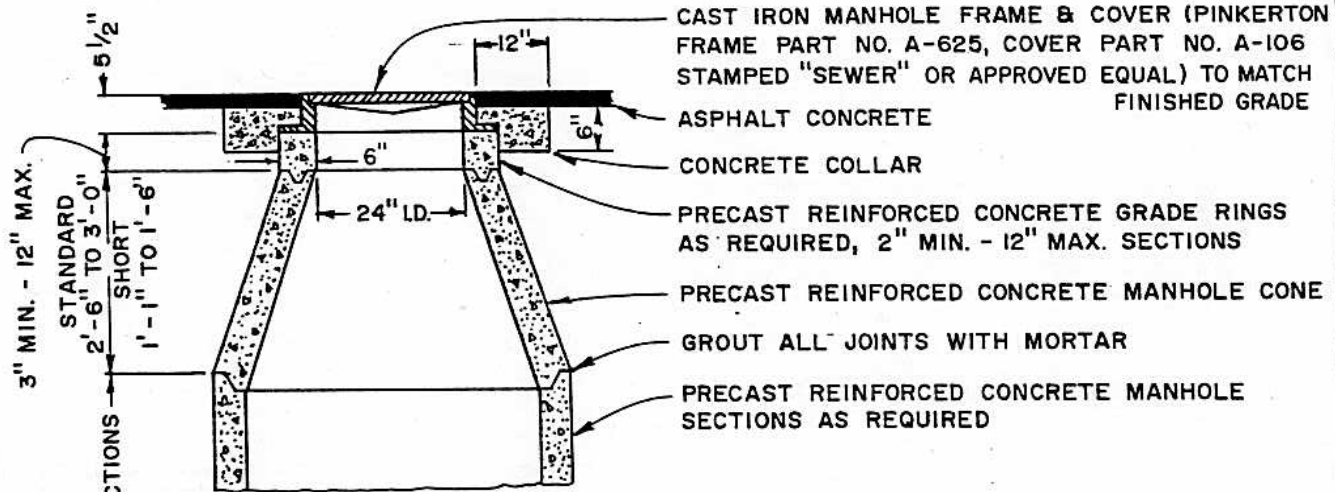
NO.	REVISED	BY	<b>SANITARY SEWER DESIGN DATA</b>	APPROVED BY:	<i>M. Buntor</i>
				DIRECTOR OF PUBLIC WORKS	
DRAWN BY: C. SABERTON			<b>CITY OF MANTECA DEPARTMENT OF PUBLIC WORKS</b>	DRAWING NO.	<b>S-2</b>
CHECKED BY: J. PODESTA				DATE: JAN. 1988	
SCALE: NONE					



**NOTES:**

1. PRECAST REINFORCED CONCRETE MANHOLE UNIT SHALL CONFORM TO A.S.T.M. C-478.
2. PIPE JOINT SHALL BE WITHIN 6 INCHES OF OUTER WALLS OF MANHOLE.
3. MANHOLE BASE TO BE TROWELED SMOOTH INSIDE.
4. MANHOLE SHALL BE CLEANED IN ACCORDANCE WITH CITY OF MANTECA SPECIFICATIONS.
5. SHORT CONE TO BE USED ONLY WHEN MANHOLE DEPTH JUSTIFIES.
6. COLLAR SHALL BE CLASS "B" CONCRETE AND CONSTRUCTED 2 1/2 INCHES BELOW FINISHED GRADE.

NO.	REVISED	BY	<b>SANITARY SEWER MANHOLE 6" THRU 33" DIA. PIPES</b>	APPROVED BY: <i>M. Brinton</i> DIRECTOR OF PUBLIC WORKS
DRAWN BY: C. SABERTON				DRAWING NO. <b>S-3</b>
CHECKED BY: J. PODESTA			CITY OF MANTECA DEPARTMENT OF PUBLIC WORKS	DATE: JAN 1988
SCALE: NONE				

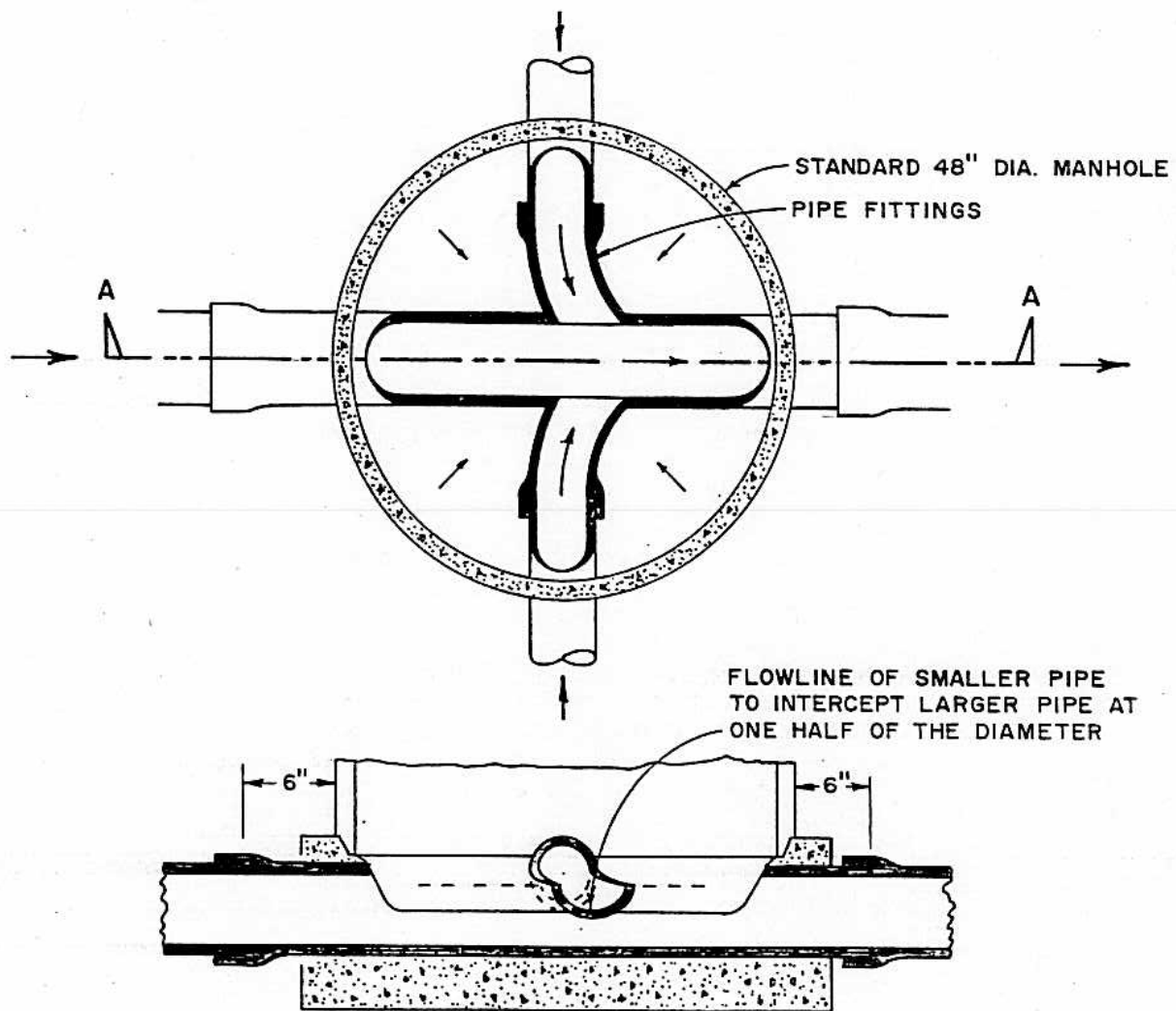


DIA.	A	B	C	D	E	F	MIN. G
24"	40"	24"	9"	3"	56"	16"	3"
27"	43"	27"	9"	3"	56"	14.5"	3"
30"	46"	30"	9"	3"	56"	13"	3"
36"	53"	36"	9.5"	3.5"	56"	10"	3.5"
42"	60"	42"	10"	4"	60"	9"	4"

**NOTES:**

1. PRECAST REINFORCED CONCRETE MANHOLE UNIT SHALL CONFORM TO A.S.T.M. C-478.
2. PIPE JOINT SHALL BE WITHIN 6 INCHES OF OUTER WALLS OF MANHOLE.
3. MANHOLE BASE TO BE TROWELED SMOOTH INSIDE.
4. MANHOLE SHALL BE CLEANED IN ACCORDANCE WITH CITY OF MANTECA SPECIFICATIONS.
5. SHORT CONE TO BE USED ONLY WHEN MANHOLE DEPTH JUSTIFIES.
6. COLLAR SHALL BE CLASS "B" CONCRETE AND CONSTRUCTED 2 1/2 INCHES BELOW FINISHED GRADE.

<b>NO.</b>	<b>REVISED</b>	<b>BY</b>	<b>SANITARY SEWER MANHOLE 36" THRU 42" DIA. PIPES</b>	<b>APPROVED BY:</b> <i>M. Brinton</i>
<b>DRAWN BY:</b>	J. HULSEY			<b>DIRECTOR OF PUBLIC WORKS</b>
<b>CHECKED BY:</b>	J. PODESTA		<b>CITY OF MANTECA DEPARTMENT OF PUBLIC WORKS</b>	<b>DRAWING NO.</b> <b>S-4</b>
<b>SCALE:</b>	NONE			<b>DATE:</b> JAN. 1988



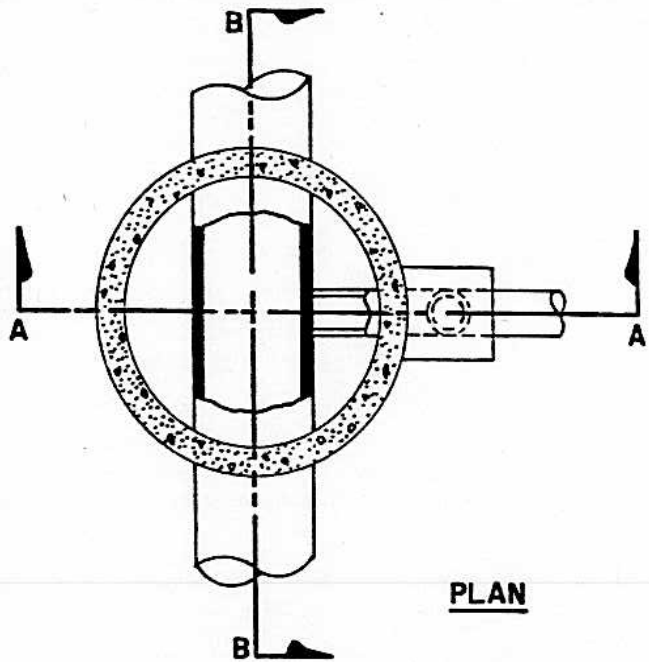
SECTION A-A

**NOTES:**

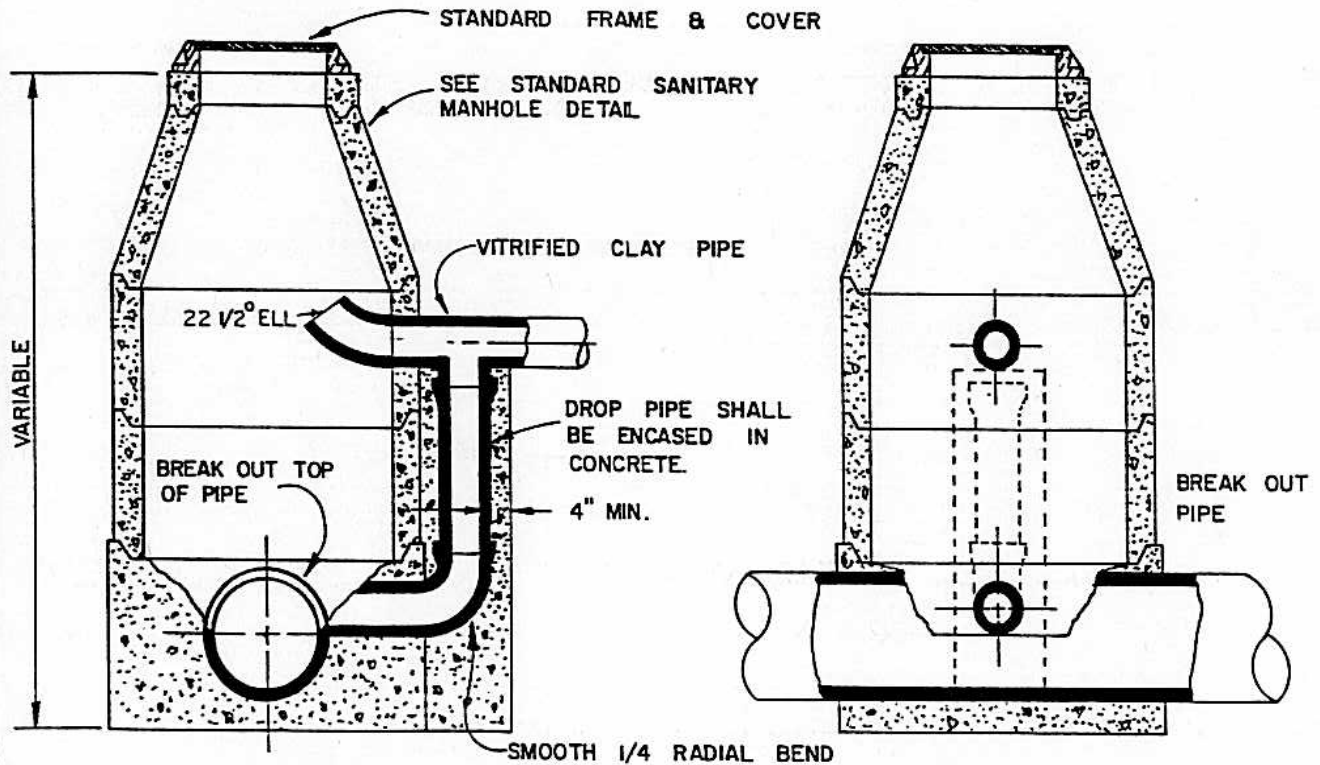
1. CLAY PIPE FITTINGS WITH TOP HALF BROKEN OUT IS REQUIRED FOR TROUGH.
2. TROUGHS WITHIN MANHOLE SHALL BE FULLY ACCESSIBLE.
3. MANHOLE SHALL BE CLEANED OF ALL EXCESS MATERIALS.
4. CONCRETE TROUGH CONSTRUCTED INTO BASE OF MANHOLE MAY BE USED WITH THE APPROVAL OF THE CITY ENGINEER.
5. ALL OTHER MANHOLE REQUIREMENTS AS PER STANDARD SANITARY SEWER MANHOLE DETAIL.

NO.	REVISED	BY	<b>INTERSECTION FOR 24" DIA. PIPE &amp; SMALLER</b>	APPROVED BY:
				<i>M. Brinton</i> DIRECTOR OF PUBLIC WORKS
DRAWN BY: J. HULSEY			<b>CITY OF MANTECA</b> DEPARTMENT OF PUBLIC WORKS	DRAWING NO.
CHECKED BY: J. PODESTA				DATE: JAN. 1988
SCALE: NONE				<b>S-5</b>





**PLAN**



**SECTION A-A**

**SECTION B-B**

**NOTES:**

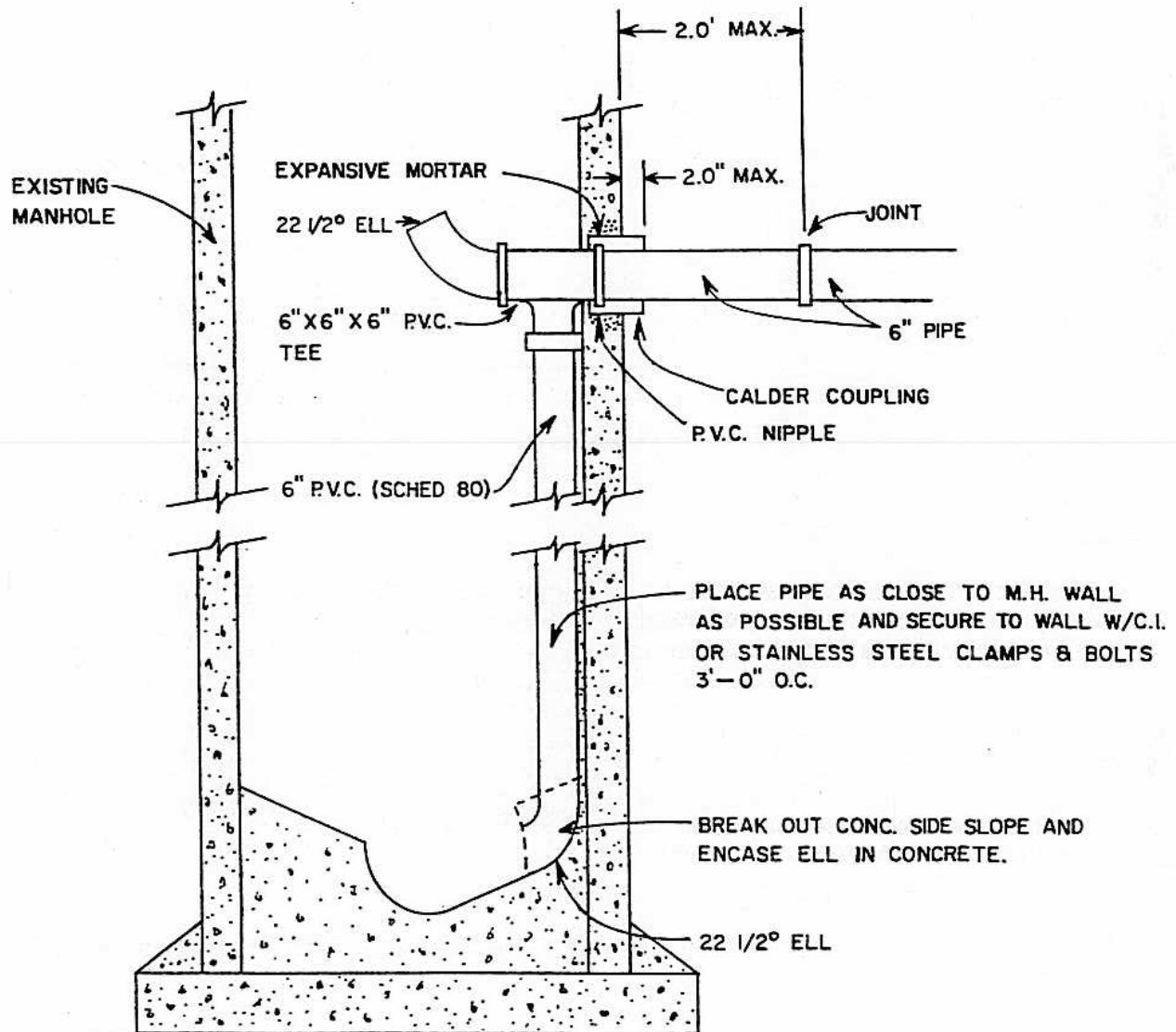
1. THIS TYPE OF MANHOLE SHALL BE USED WHEN THE DIFFERENCE IN ELEVATIONS OF THE FLOW LINE OF UPPER LINE AND CROWN OF LOWER LINE EXCEEDS 24 INCHES.
2. ALL OTHER CONDITIONS AS NOTED ON STANDARD SANITARY SEWER MANHOLE DETAIL SHALL APPLY.

NO.	REVISED	BY
DRAWN BY: C. SABERTON		
CHECKED BY: J. PODESTA		
SCALE: NONE		

**OUTSIDE SEWER  
DROP MANHOLE**

**CITY OF MANTECA**  
DEPARTMENT OF PUBLIC WORKS

APPROVED BY:
<i>M. Brister</i>
DIRECTOR OF PUBLIC WORKS
DRAWING NO. <b>S-6</b>
DATE: JAN. 1988



**NOTES:**

1. THIS TYPE OF MANHOLE SHALL BE USED ONLY WHEN TIEING INTO AN EXISTING MANHOLE.
2. THIS TYPE OF MANHOLE SHALL BE USED WHEN THE DIFFERENCE IN ELEVATION OF THE FLOW LINE OF THE UPPER LINE AND THE CROWN OF THE LOWER LINE EXCEEDS 24 INCHES.
3. ALL OTHER CONDITIONS AS NOTED ON STANDARD SANITARY SEWER MANHOLE DETAIL SHALL APPLY.

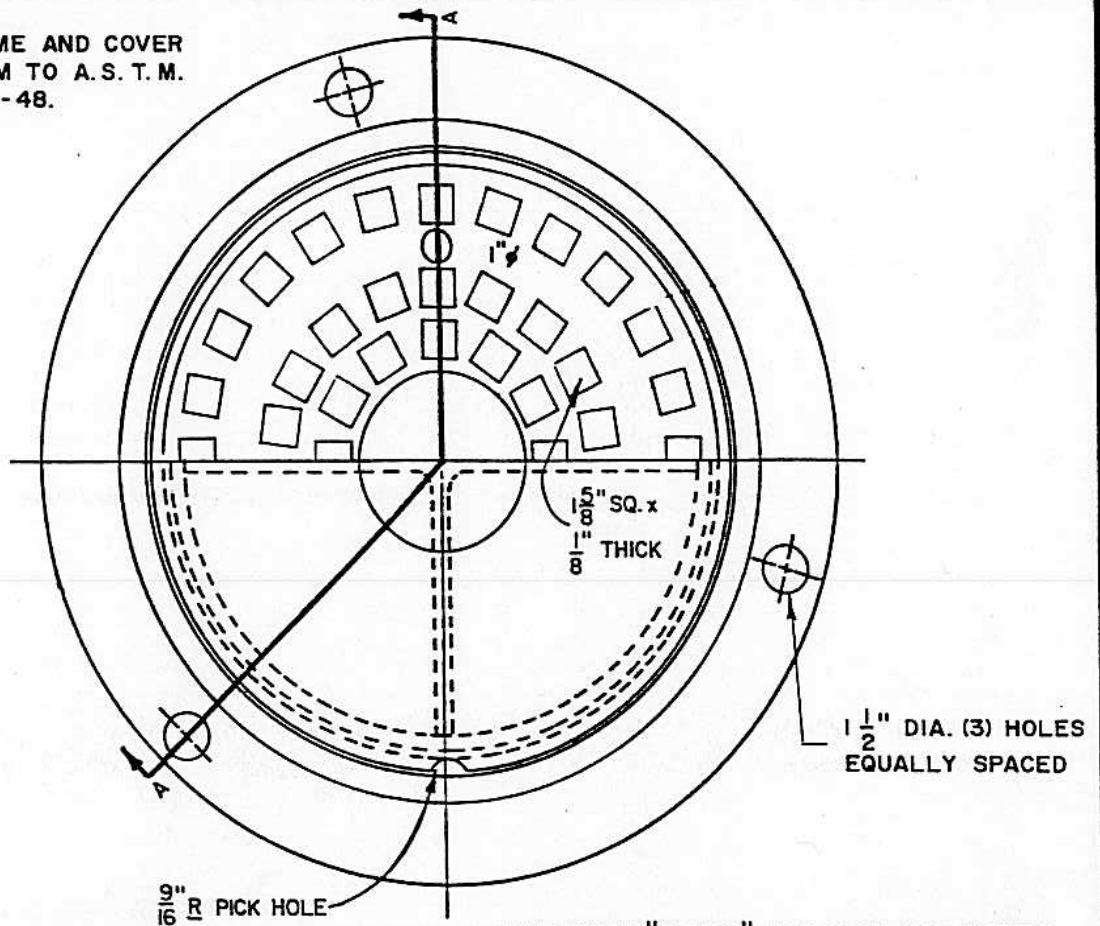
NO.	REVISED	BY
DRAWN BY: A. MENOR		
CHECKED BY: J. PODESTA		
SCALE: NONE		

**INSIDE SEWER  
DROP MANHOLE**

**CITY OF MANTECA**  
DEPARTMENT OF PUBLIC WORKS

APPROVED BY:	<i>M. B. Burt</i>
DIRECTOR OF PUBLIC WORKS	
DRAWING NO.	<b>S-7</b>
DATE: JAN. 1988	

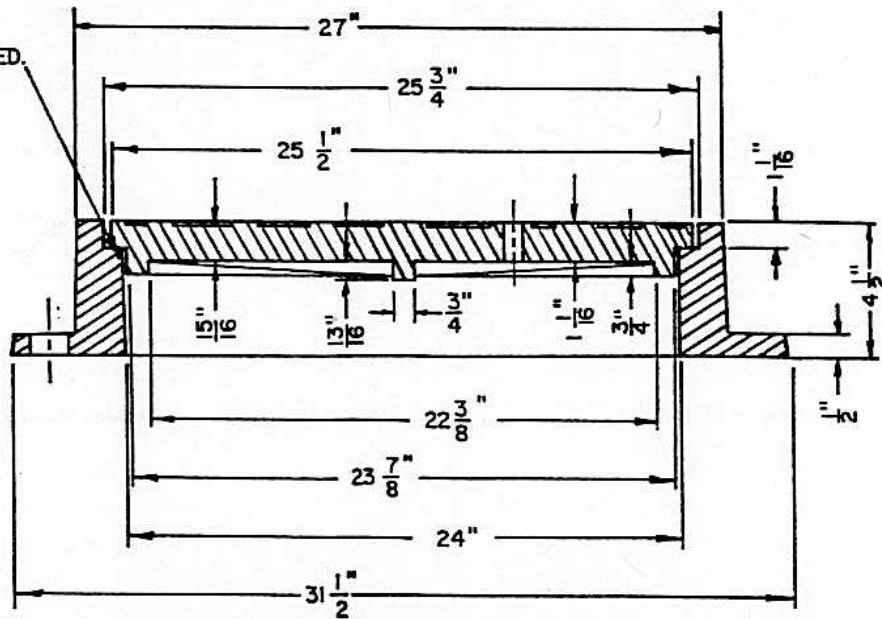
CAST IRON FRAME AND COVER  
SHALL CONFORM TO A. S. T. M.  
DESIGNATION A-48.



PINKERTON  
FRAME PART NO. A-625 APPROX. WT. 140 LBS.  
COVER PART NO. A-106 APPROX. WT. 163 LBS.  
OR APPROVED EQUAL FRAME AND COVER

THE WORD "SEWER" FOR SANITARY SEWER  
OR THE WORD "STORM" FOR STORM DRAIN  
AS APPROPRIATE SHALL BE EMBOSSED ON  
CENTER DISC.

MATING SURFACES OF  
FRAME & COVER MACHINED.



SECTION A-A

NO.	REVISED	BY
1	MANHOLE FRAME	DRK
DRAWN BY: C. SABERTON		
CHECKED BY: J. PODESTA		
SCALE: NONE		

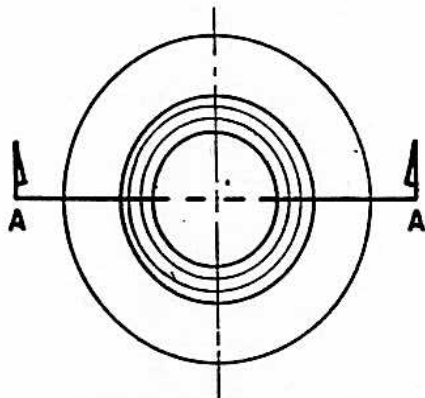
# MANHOLE FRAME AND COVER ASSEMBLY

CITY OF MANTECA  
DEPARTMENT OF PUBLIC WORKS

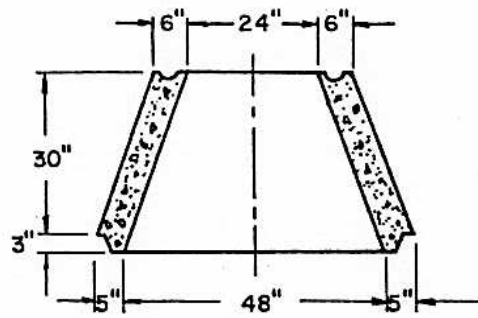
APPROVED BY:  
*M. Brinton*  
DIRECTOR OF PUBLIC WORKS

DRAWING NO. **S-8**  
DATE: JAN 1988

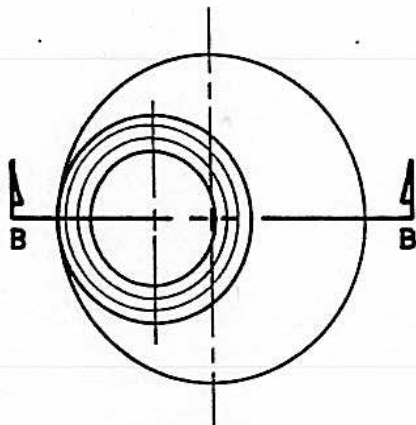




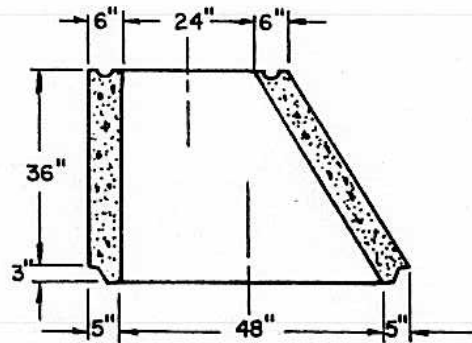
CONCENTRIC CONE



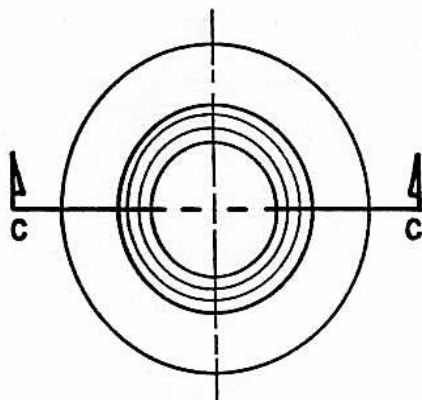
SECTION A-A



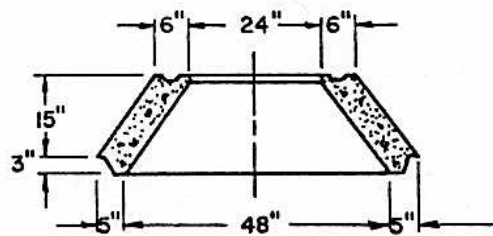
ECCENTRIC CONE



SECTION B-B



CONCENTRIC SHORT CONE



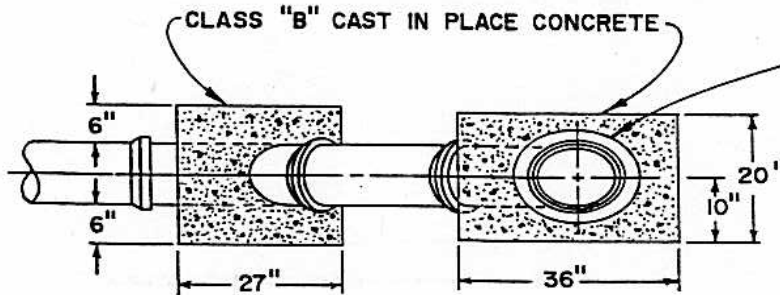
SECTION C-C

**NOTES:**

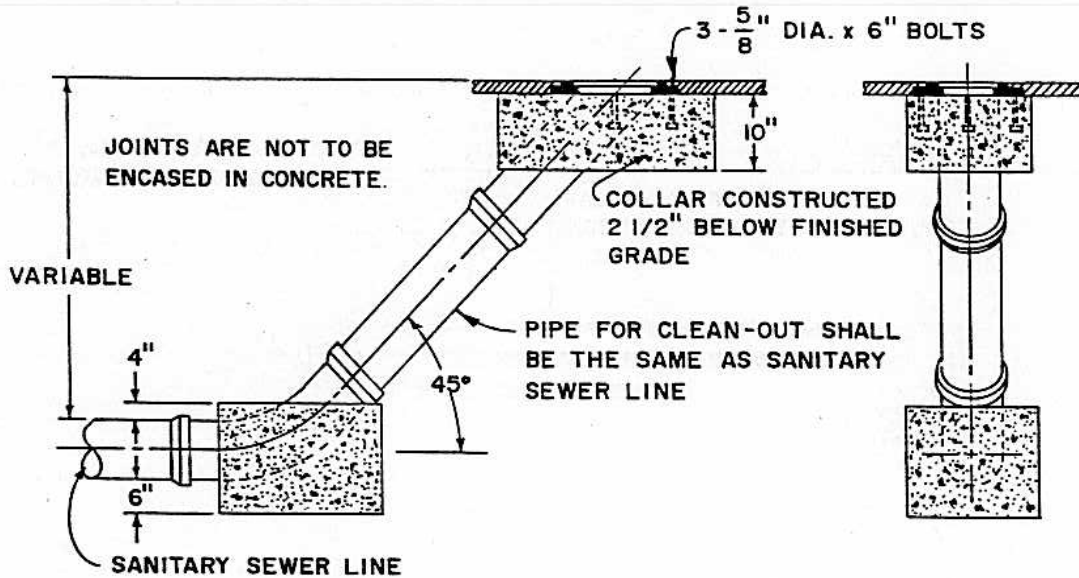
1. PRECAST REINFORCED CONCRETE MANHOLE CONE SHALL CONFORM TO A.S.T.M. C-478.
2. ECCENTRIC CONE TO BE USED ONLY WITH THE APPROVAL OF THE CITY ENGINEER.

NO.	REVISED	BY	<b>PRECAST REINFORCED CONCRETE MANHOLE CONE</b>	APPROVED BY: <i>M. Brinton</i>
DRAWN BY: C. SABERTON				DIRECTOR OF PUBLIC WORKS
CHECKED BY: J. PODESTA				DRAWING NO. <b>S-9</b>
SCALE: NONE			CITY OF MANTECA DEPARTMENT OF PUBLIC WORKS	DATE: JAN. 1988

CAST IRON CLEAN-OUT FRAME & COVER ASSEMBLY  
(PINKERTON A-142 OR EQUAL) TO MATCH FINISH GRADE



TOP



ELEVATION

END VIEW

NO.	REVISED	BY
DRAWN BY: B. CANTU		
CHECKED BY: J. PODESTA		
SCALE: NONE		

**MAIN LINE CLEAN-OUT**

CITY OF MANTECA  
DEPARTMENT OF PUBLIC WORKS

APPROVED BY:  
*[Signature]*  
DIRECTOR OF PUBLIC WORKS

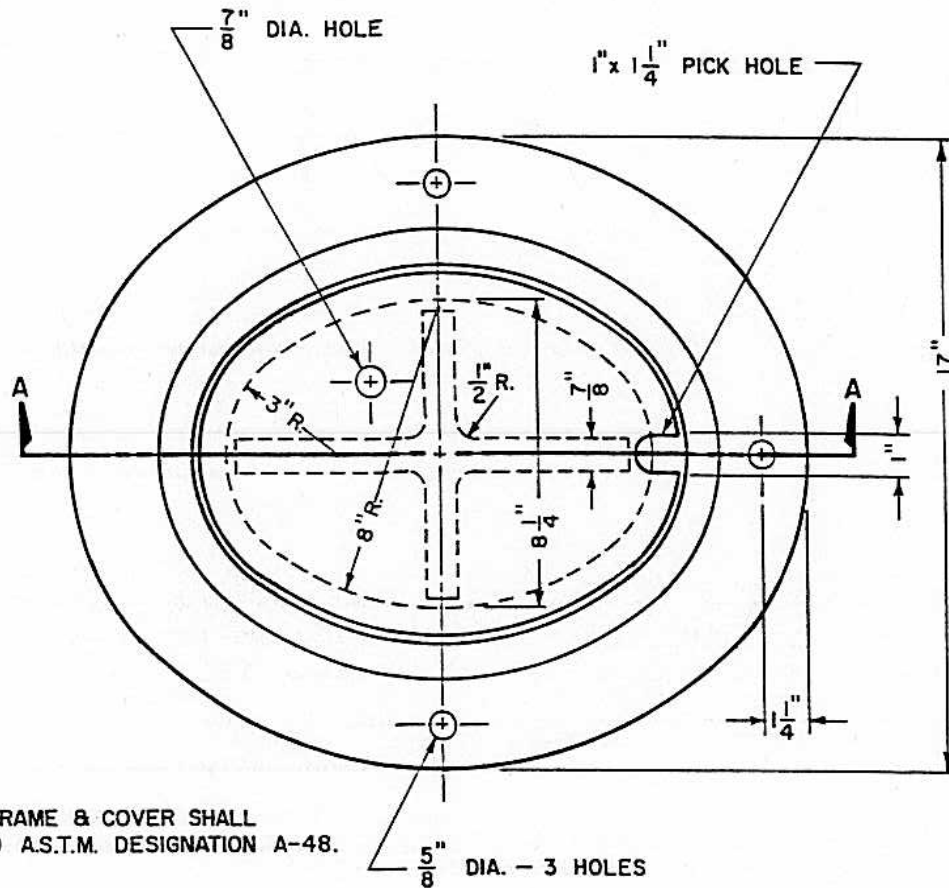
DRAWING NO. **S-10**  
DATE: JAN. 1988

PINKERTON:

FRAME PART NO. A-144 APPROX. WT. 45 LBS.

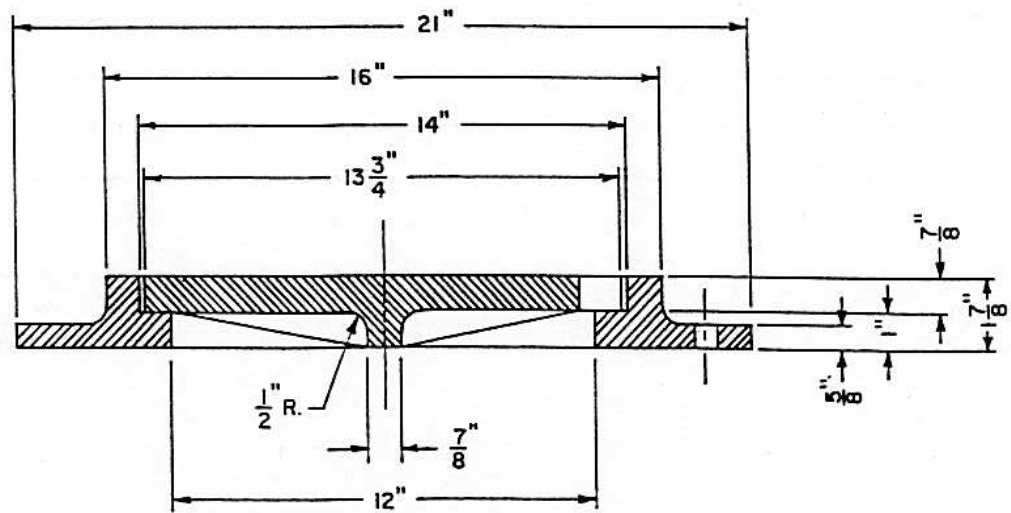
COVER PART NO. A-144 APPROX. WT. 25 LBS.

OR APPROVED EQUAL



CAST IRON FRAME & COVER SHALL CONFORM TO A.S.T.M. DESIGNATION A-48.

5/8" DIA. - 3 HOLES



SECTION A-A

NO.	REVISED	BY
DRAWN BY: B. CANTU		
CHECKED BY: J. PODESTA		
SCALE: NONE		

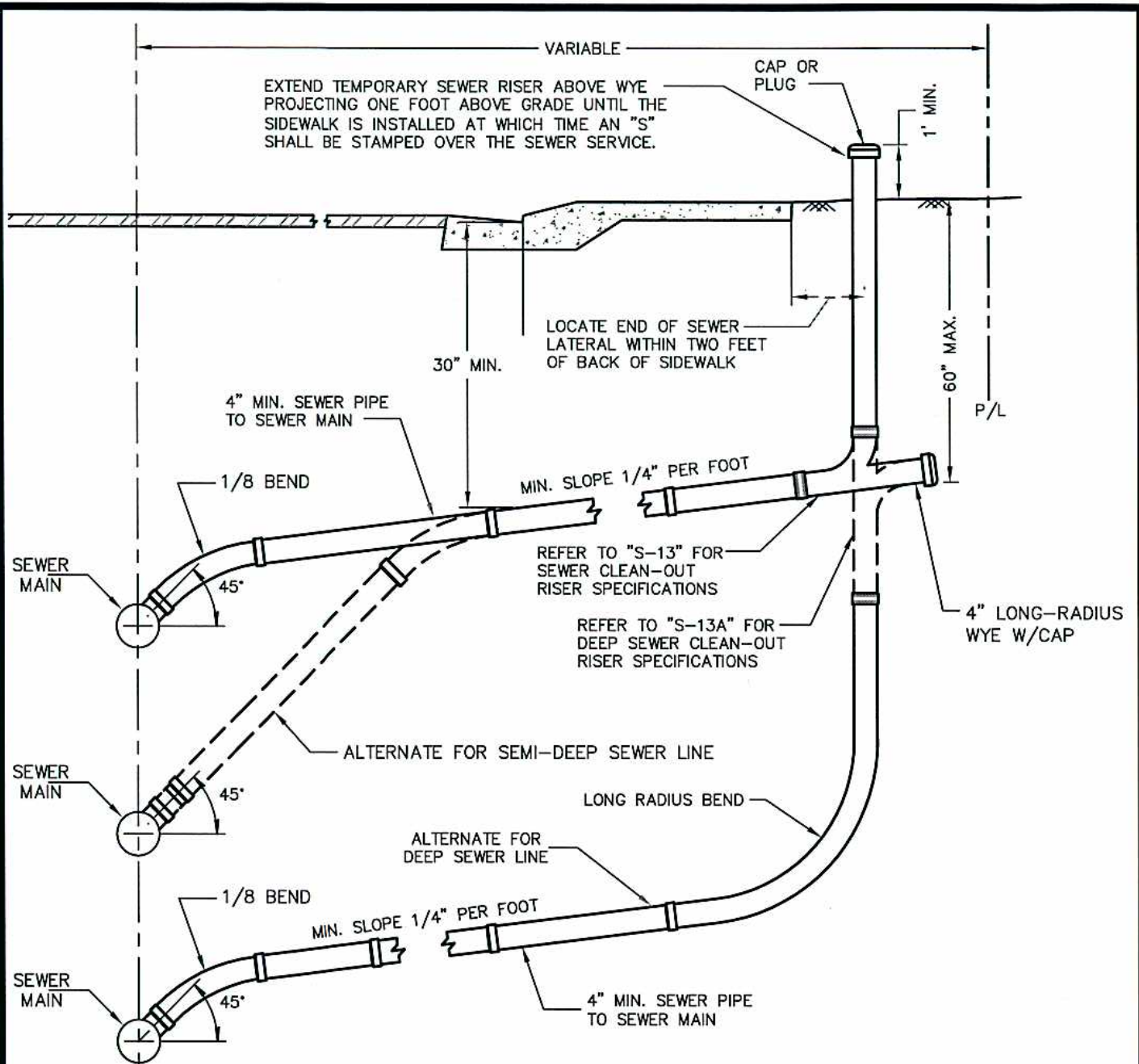
# MAIN CLEAN-OUT FRAME AND COVER ASSEMBLY

CITY OF MANTECA  
DEPARTMENT OF PUBLIC WORKS

APPROVED BY:  
*M. Brunton*  
DIRECTOR OF PUBLIC WORKS

DRAWING NO.  
DATE: JAN 1988

**S-11**



EXTEND TEMPORARY SEWER RISER ABOVE WYE PROJECTING ONE FOOT ABOVE GRADE UNTIL THE SIDEWALK IS INSTALLED AT WHICH TIME AN "S" SHALL BE STAMPED OVER THE SEWER SERVICE.

VARIABLE

CAP OR PLUG

1' MIN.

LOCATE END OF SEWER LATERAL WITHIN TWO FEET OF BACK OF SIDEWALK

30" MIN.

4" MIN. SEWER PIPE TO SEWER MAIN

1/8 BEND

MIN. SLOPE 1/4" PER FOOT

60" MAX. P/L

REFER TO "S-13" FOR SEWER CLEAN-OUT RISER SPECIFICATIONS

REFER TO "S-13A" FOR DEEP SEWER CLEAN-OUT RISER SPECIFICATIONS

4" LONG-RADIUS WYE W/CAP

ALTERNATE FOR SEMI-DEEP SEWER LINE

LONG RADIUS BEND

ALTERNATE FOR DEEP SEWER LINE

1/8 BEND

MIN. SLOPE 1/4" PER FOOT

4" MIN. SEWER PIPE TO SEWER MAIN

NOTES

1. ANY SANITARY SEWER LATERAL THAT CROSSES A WATER MAIN SHALL BE DUCTILE IRON CEMENT-LINED OR P.V.C. (C-900) FOR TEN FEET IN EACH DIRECTION FROM THE CROSSING, UNLESS THE WATER MAIN IS ONE FOOT OR GREATER ABOVE THE SANITARY SEWER LATERAL.
2. FITTINGS, WYE BRANCH, RISER AND LATERALS SHALL BE OF THE SAME DIAMETER.
3. CLEAN-OUT MAY BE CAST IRON, PLASTIC, OR VITRIFIED CLAY PIPE.
4. SEWER LATERALS WITH COVER LESS THAN 30 INCHES SHALL BE DUCTILE IRON CEMENT-LINED PIPE.
5. 4" LONG RADIUS WYE WITH CAP AND TEMPORARY 4" CLEAN-OUT RISER WITH CAP TO BE CONSTRUCTED & TESTED WITH SEWER LATERAL.
6. PERMANENT CLEANOUT RISER SHALL BE ADJUSTED TO FINAL GRADE WITH INSTALLATION OF THREADED CLEAN-OUT PLUG & BOX BY BUILDING CONTRACTOR. REFER TO CITY STANDARD S-13 AND S-13A FOR CLEAN-OUT RISER SPECIFICATIONS.

NO.	REVISED	BY
2	NOV. 2006	J.R.
DRAWN BY: J. ROSS		
CHECKED BY: J. PODESTA		
SCALE: NONE		

SEWER LATERAL

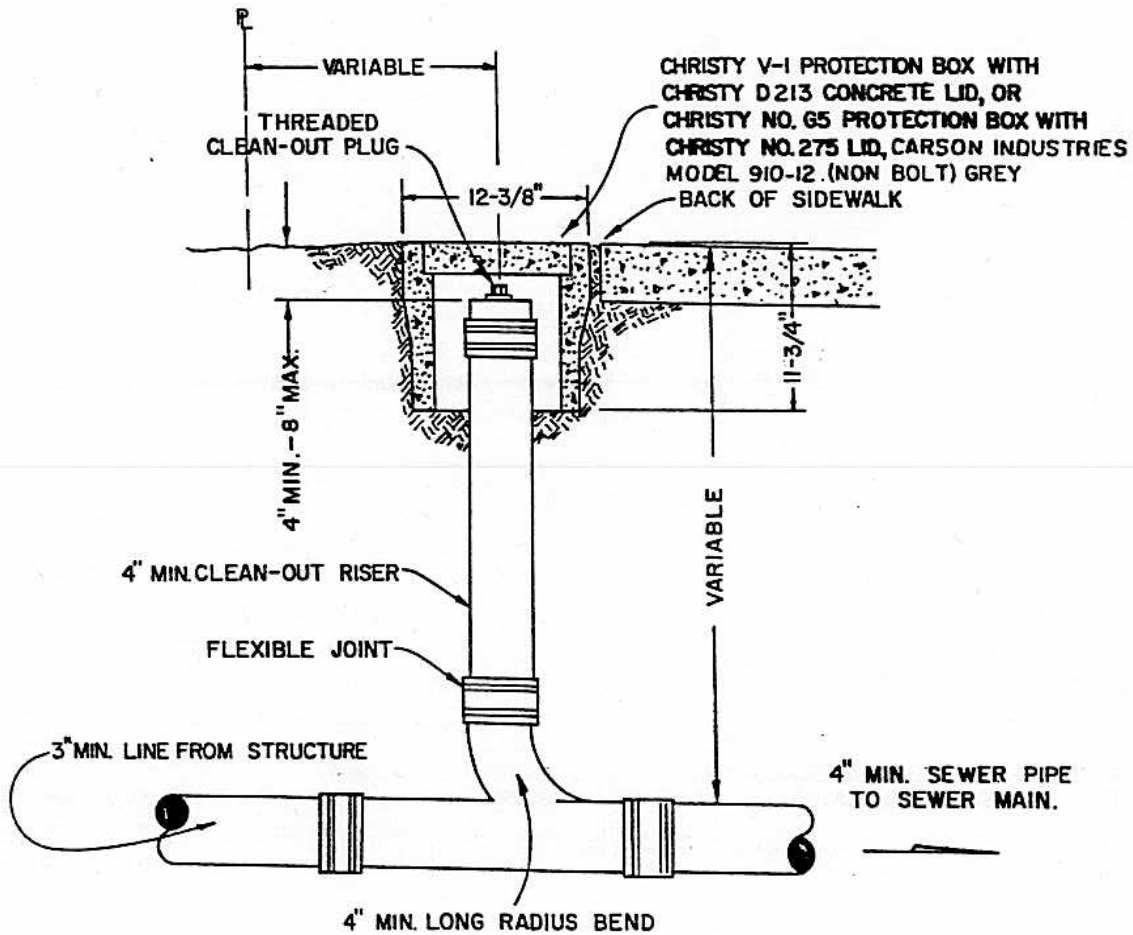
CITY OF MANTECA  
DEPARTMENT OF PUBLIC WORKS

APPROVED BY:  
*Michael J. Brantner*  
DIRECTOR OF PUBLIC WORKS

DRAWING NO.  
DATE: JAN. 1988

S-12





**NOTES:**

1. CLEAN-OUT RISER SHALL BE THE SAME SIZE AS THE SEWER LATERAL.
2. CLEAN-OUT SHALL BE LOCATED AT BACK OF SIDEWALK.
3. ANY DEVIATION FROM THIS STANDARD MUST HAVE THE APPROVAL OF THE CITY ENGINEER.
4. CLEAN-OUT RISER COMBINATION MAY BE CAST IRON, PLASTIC, OR VITRIFIED CLAY PIPE.

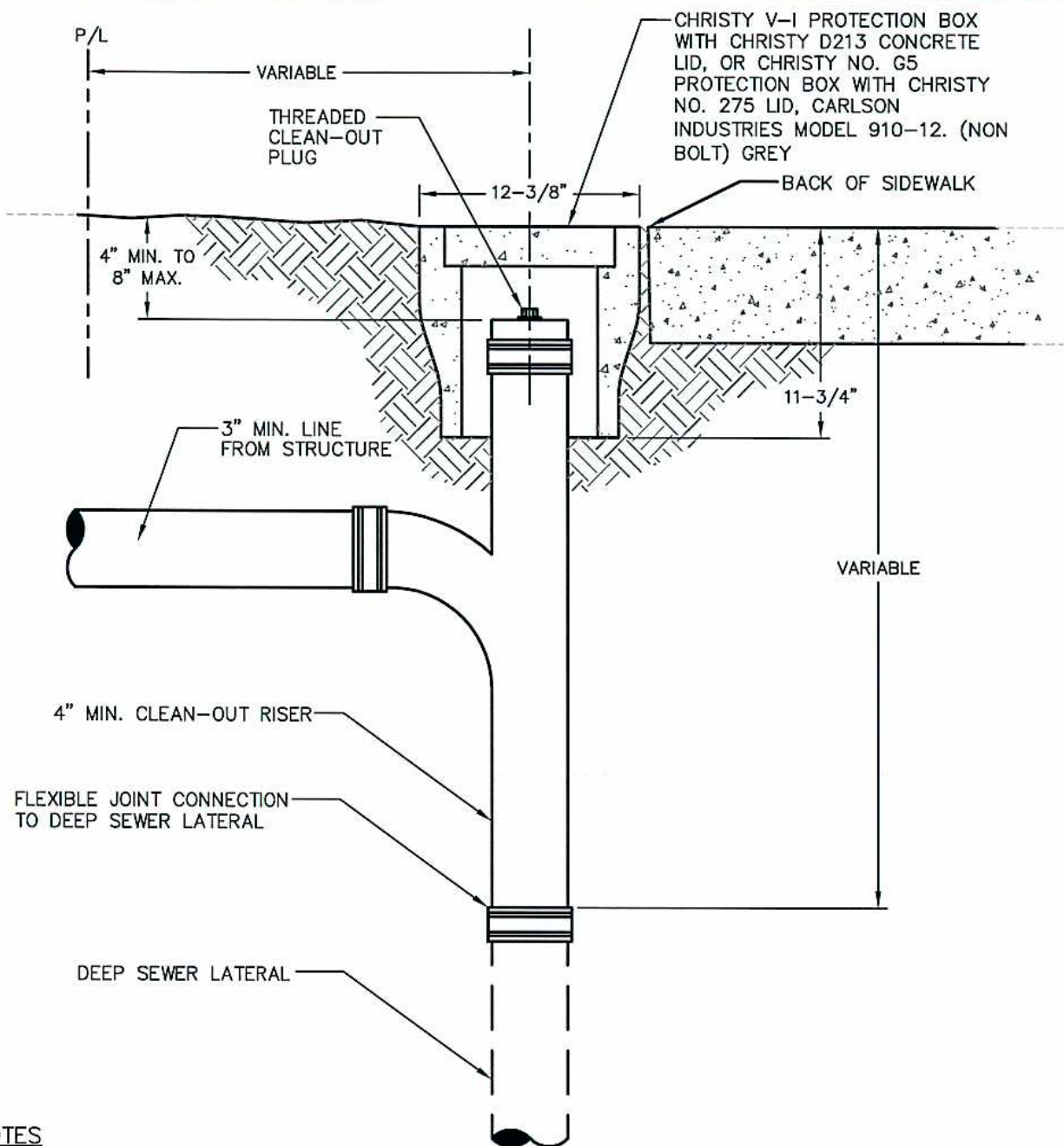
NO.	REVISED	BY
DRAWN BY: C. SABERTON		
CHECKED BY: J. PODESTA		
SCALE: NONE		

**CLEAN-OUT RISER**

**CITY OF MANTECA**  
DEPARTMENT OF PUBLIC WORKS

APPROVED BY: <i>M. Brinton</i> DIRECTOR OF PUBLIC WORKS
DRAWING NO. <b>S-13</b>
DATE: JAN. 1988





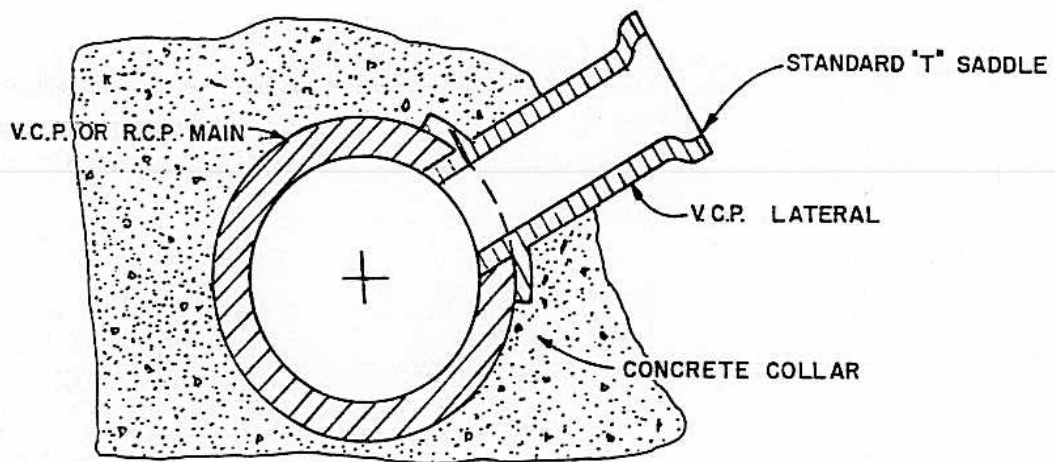
**NOTES**

1. CLEAN-OUT RISER SHALL BE THE SAME SIZE AS THE SEWER LATERAL.
2. CLEAN-OUT SHALL NOT BE LOCATED MORE THAN 24" FROM THE BACK OF SIDEWALK.
3. CLEAN-OUT RISER MAY BE DUCTILE IRON, A.B.S. (S.D.R. 35) SOLID WALL PIPE, P.V.C. (S.D.R. 23.5), OR VITRIFIED CLAY PIPE.
4. PRIOR TO INSTALLATION, INSTALLER MUST OBTAIN AN ENCROACHMENT PERMIT FROM THE CITY OF MANTECA PUBLIC WORKS DEPARTMENT.
5. CLEAN-OUTS WITHIN THE STREET RIGHT OF WAY MUST BE INSTALLED BY A LICENSED CONTRACTOR.
6. THE CITY MAINTAINS SEWER LATERALS DOWNSTREAM FROM CLEAN-OUTS LOCATED WITHIN 24" FROM THE BACK OF SIDEWALK. PROPERTY OWNERS MUST MAINTAIN SEWER LATERALS UPSTREAM FROM THE CLEAN-OUT. SEWER LATERALS WITHOUT CLEAN-OUTS, OR WITH CLEAN-OUTS LOCATED GREATER THAN 24" FROM THE BACK OF SIDEWALK MUST BE MAINTAINED THEIR FULL LENGTH BY THE PROPERTY OWNER.

NO.	REVISED	BY
DRAWN BY:	J. ROSS	
CHECKED BY:	J. PODESTA	
SCALE:	NONE	

**CLEAN-OUT RISER  
 FOR DEEP SEWER LATERAL**  
**CITY OF MANTECA**  
 DEPARTMENT OF PUBLIC WORKS

APPROVED BY:	<i>Michael Britton</i>
DIRECTOR OF PUBLIC WORKS	
DRAWING NO.	<b>S-13A</b>
DATE:	AUG. 1999



**SANITARY SEWER**

**NOTES:**

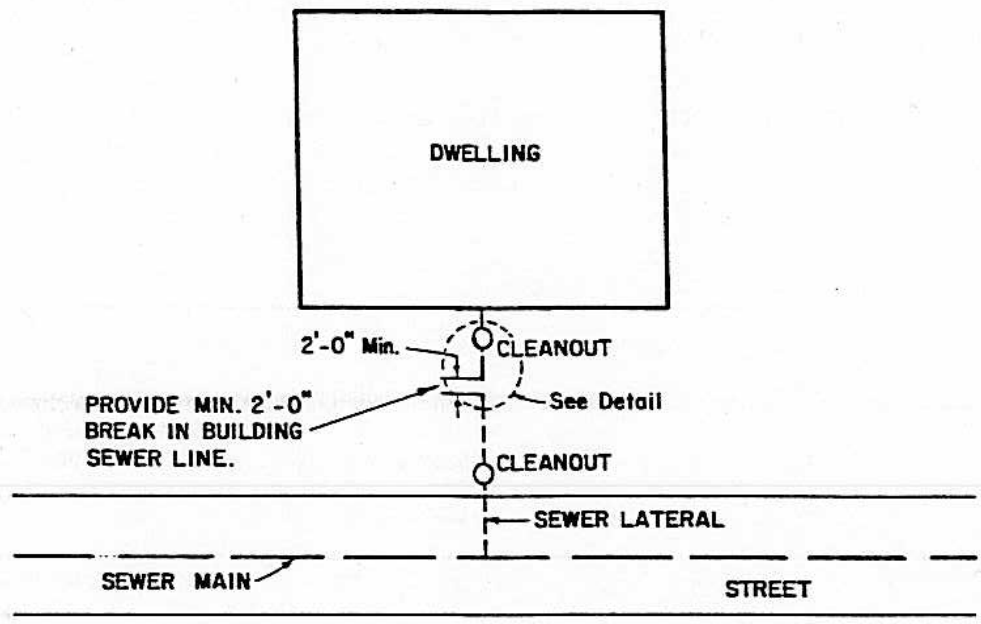
1. BREAK OUT PORTION OF MAIN TO FIT LATERAL.

NO.	REVISED	BY
DRAWN BY: C. SABERTON		
CHECKED BY: J. PODESTA		
SCALE: NONE		

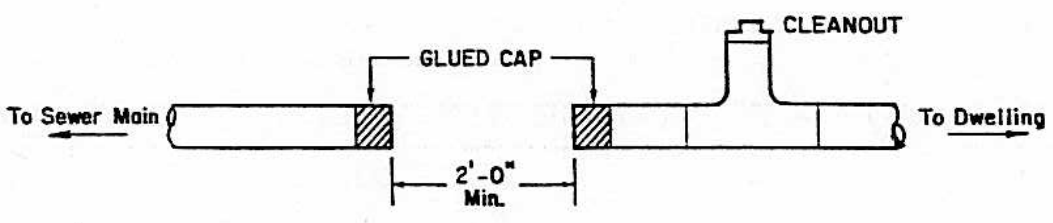
**TAPPING FOR  
SEWER MAINS**

**CITY OF MANTECA  
DEPARTMENT OF PUBLIC WORKS**

APPROVED BY: <i>M. Brinton</i> DIRECTOR OF PUBLIC WORKS
DRAWING NO. <b>S-14</b>
DATE: JAN. 1988



**PLAN**  
N.T.S.



**SEWER LINE DETAIL**  
N.T.S.

**NOTES:**

1. TWO FOOT BREAK IN BUILDING SEWER LINE SHALL BE LEFT UNCOVERED UNTIL SEWER ALLOCATION IS GRANTED.
2. FINAL CONNECTION SHALL NOT BE MADE UNTIL SEWER ALLOCATION IS GRANTED. A FINAL INSPECTION WILL BE PERFORMED AT THAT TIME.

NO.	REVISED	BY	<b>SEWER CONNECTION</b>	APPROVED BY:
				<i>M. Briston</i>
DRAWN BY: J. KOESTER				DIRECTOR OF PUBLIC WORKS
CHECKED BY: J. PODESTA			<b>CITY OF MANTECA</b> DEPARTMENT OF PUBLIC WORKS	DRAWING NO. <b>S-15</b>
SCALE: NONE				DATE: JAN. 1988