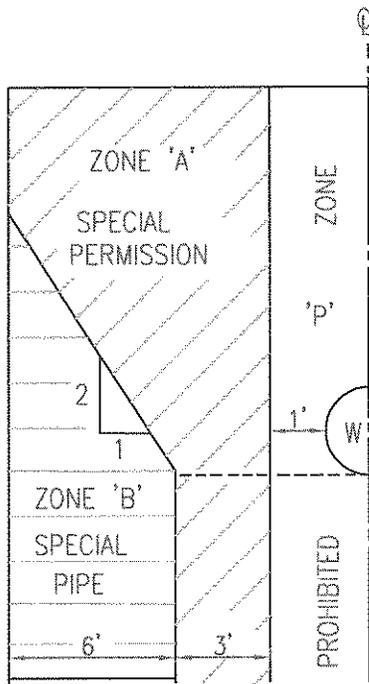
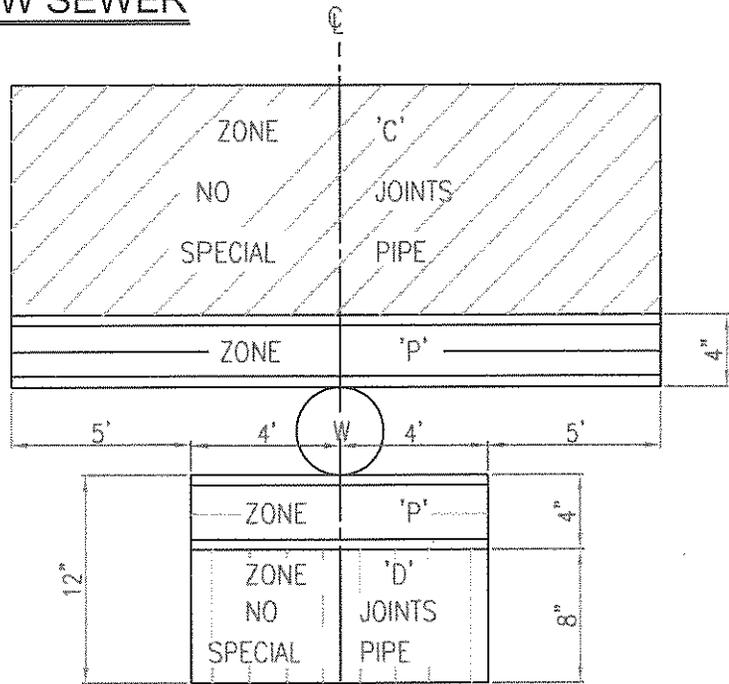


## NEW SEWER



PARALLEL

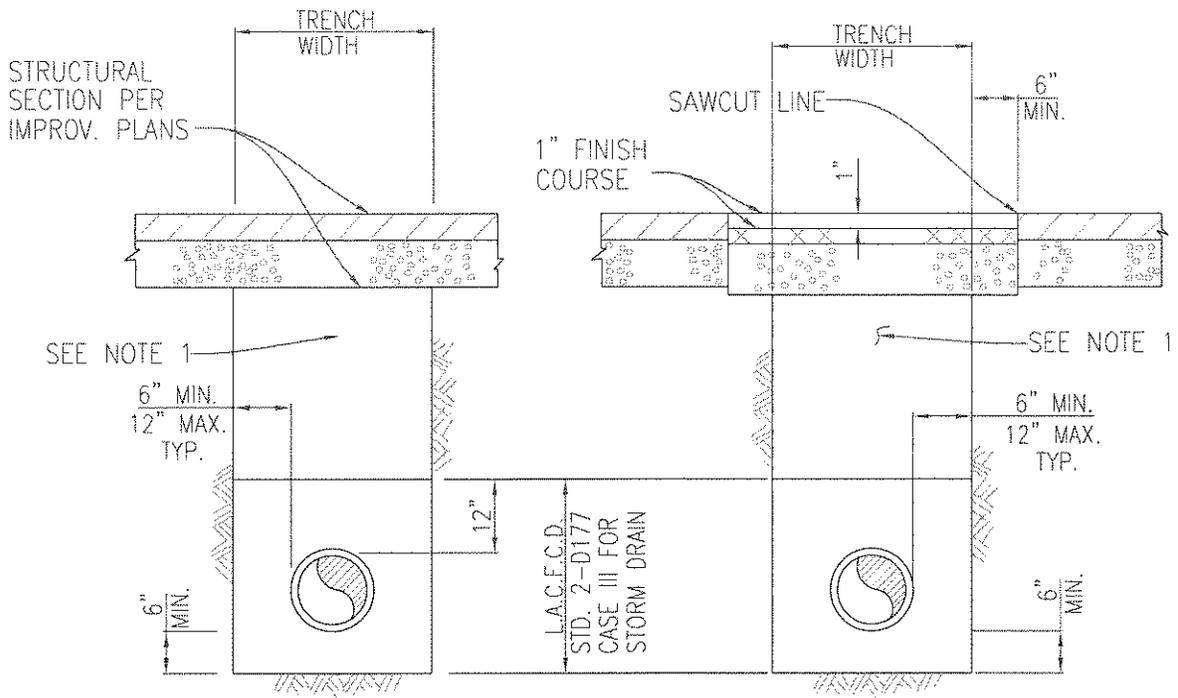


CROSSING PARALLEL

### NOTES:

1. ZONE 'P' IS A PROHIBITED ZONE PER SECTION 64630 (e) (2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22.
2. ZONE 'A' : NO CONSTRUCTION WITHOUT APPROVAL FROM RESPONSIBLE HEALTH AGENCY AND WATER SUPPLIER.
3. ZONE 'B': NEW SEWER WILL BE CONSTRUCTED OF:
  - A. EXTRA STRENGTH V.C.P. WITH COMPRESSION JOINTS.
  - B. DUCTILE IRON PIPE, CLASS 52, COAL-TAR EPOXY LINED WITH COMPRESSION JOINTS.
4. ZONE 'C': NEW SEWER WILL BE CONSTRUCTED OF DUCTILE IRON PIPE, CLASS 52, WITH HOT DIP BITUMINOUS COATING AND COAL-TAR EPOXY LINING.
5. ZONE 'D': NEW SEWER WILL BE CONSTRUCTED OF DUCTILE IRON PIPE, CLASS 52, WITH HOT DIP BITUMINOUS COATING AND COAL-TAR EPOXY LINING.
6. CRITERIA ALSO APPLIES TO HOUSE LATERALS THAT CROSS ABOVE A WATER MAIN BUT NOT THOSE THAT CROSS BELOW.
7. PIPE, COATING AND LINING SHALL BE PER A.W.W.A. STANDARD SPECIFICATIONS.
8. UNLESS APPROVED BY THE CITY ENGINEER, ALL NEW SEWER LINES SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 1 FOOT FROM ALL EXISTING UTILITY LINES.

REVISIONS	<b>CITY OF SIGNAL HILL - PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.
1	NOTE 8 ADDED 6/8/05 <i>DCM</i>	<b>SEWER DESIGN CRITERIA</b>
2		SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS
3		<b>300</b>
4		



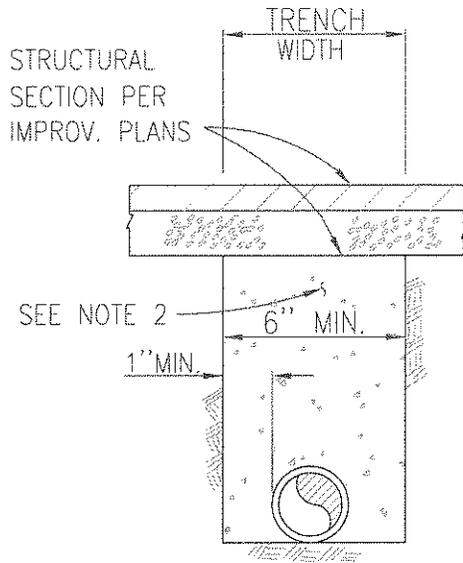
**TYPE A**  
**NEW PAVEMENT**

**TYPE B**  
**EXISTING PAVEMENT**

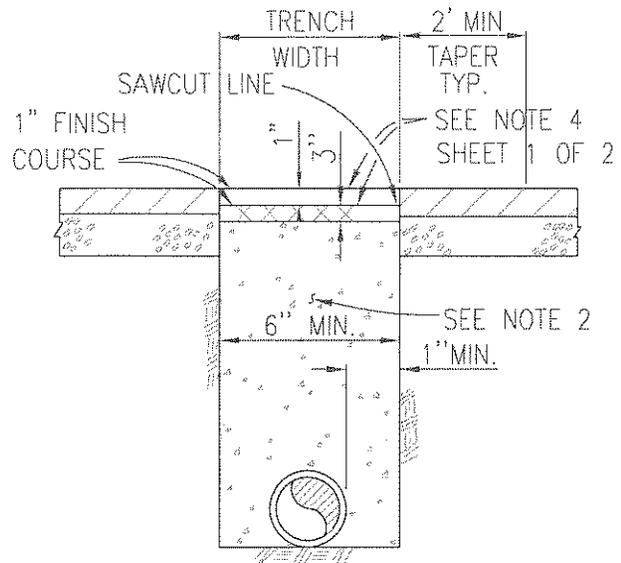
**NOTES:**

1. BACKFILL SHALL BE IMPORTED SAND WITH S.E. 60 (90% RELATIVE COMPACTION).
2. IN EXISTING PAVEMENT, THE REPLACEMENT SECTION SHALL BE THE EXISTING PLUS 1" A.C. THE CONTRACTOR HAS THE OPTION OF REPLACING CRUSHED AGGREGATE BASE WITH A.C. AT THE RATIO OF 1" A.C. FOR 2" C.A.B. P.C.C. PAVEMENT SHALL BE REPLACED IN KIND PLUS 1. WITH APPROVAL OF CITY ENGINEER
3. IF UNSUITABLE MATERIAL IS ENCOUNTERED ADDITIONAL BEDDING MAY BE REQUIRED BY THE CITY ENGINEER.
4. THE 1" FINISH COURSE, AS SHOWN ON TYPE B DETAIL, SHALL BE MACHINE LAID BY USE OF A SELF PROPELLED ASPHALT CONCRETE PAVING MACHINE.
5. MINIMUM DESIGN COVER SHALL BE 42" FOR WATER MAINS, 6" TO SANITARY SEWER INVERTS AND 36" FOR OTHER PIPELINES.
6. MINIMUM STRUCTURAL SECTION SHALL BE PER CITY STANDARDS 103 TO 109.

REVISIONS	<b>CITY OF SIGNAL HILL - PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.
①	<b>PIPE BACKFILL IN TRENCHES</b>	<b>301</b>
②		
③		
④		
	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	1 OF 2



**TYPE A**  
**NEW PAVEMENT**

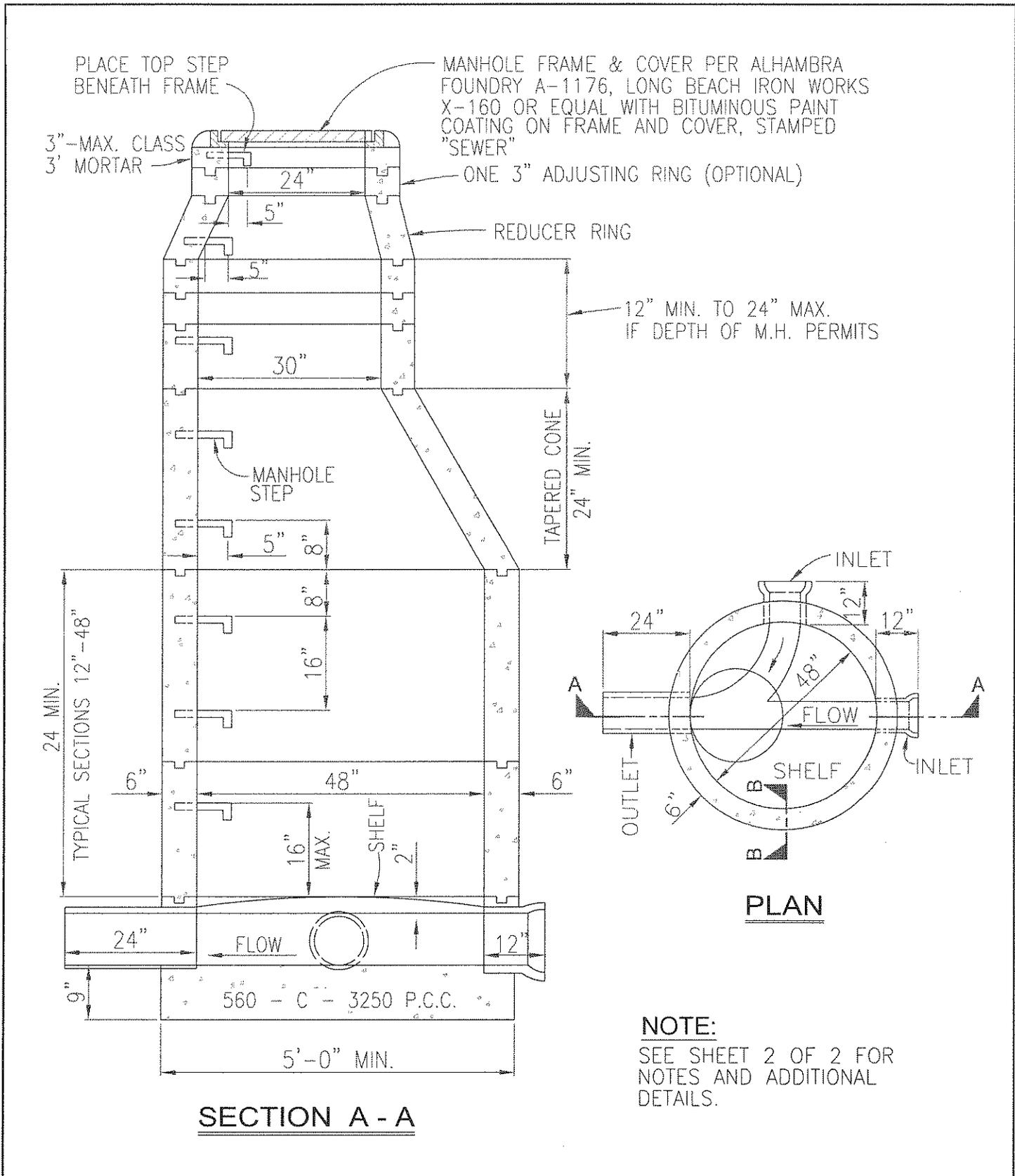


**TYPE B**  
**EXISTING PAVEMENT**

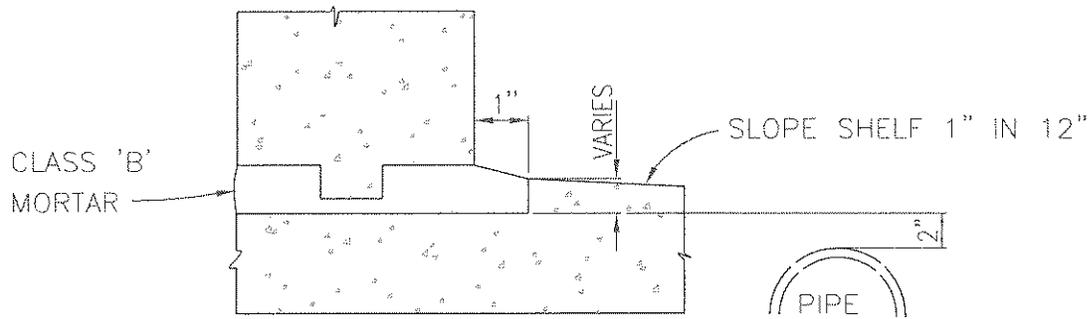
**NOTES:**

1. THE USE OF THIS DETAIL REQUIRES SPECIAL PRIOR APPROVAL OF CITY ENGINEER.
2. BACKFILL SHALL BE 2 SACK SAND CEMENT SLURRY.
3. MINIMUM DESIGN COVER SHALL BE : 42" FOR WATER MAINS, 6' TO SANITARY SEWER INVERTS AND 36" FOR OTHER PIPELINES. REDUCTION IN MINIMUM COVER MUST BE APPROVED BY THE CITY ENGINEER AND THE EFFECTED UTILITY OR PIPELINE FRANCHISE; IN NO CASE SHALL THE MINIMUM COVER BE LESS THAN 18", AND REQUIRES SLURRY BACKFILL.
4. INSIDE TAPER MAYBE ELIMINATED IF TRENCH IS ADJACENT TO GUTTER.
5. EXISTING SERVICES AND OTHER EXISTING PIPELINES SHALL NOT BE BACKFILLED WITH 2 SACK SAND CEMENT SLURRY WITHOUT PRIOR APPROVAL OF THE CITY ENGINEER AND THE AFFECTED UTILITY OR PIPELINE FRANCHISE. IF A CONFLICT CANNOT BE AVOIDED, THE CITY ENGINEER MAY AUTHORIZE THE USE OF 1 SACK SAND CEMENT SLURRY.

REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.							
<table border="1"> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> </table>	1			2		3		4	
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2									
3									
4									
	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	<b>301</b> 2 OF 2							



REVISIONS	CITY OF SIGNAL HILL PUBLIC WORKS DEPT.	STANDARD PLAN NO.
1	PRECAST CONCRETE MANHOLE	302
2		1 OF 2
3	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	
4		

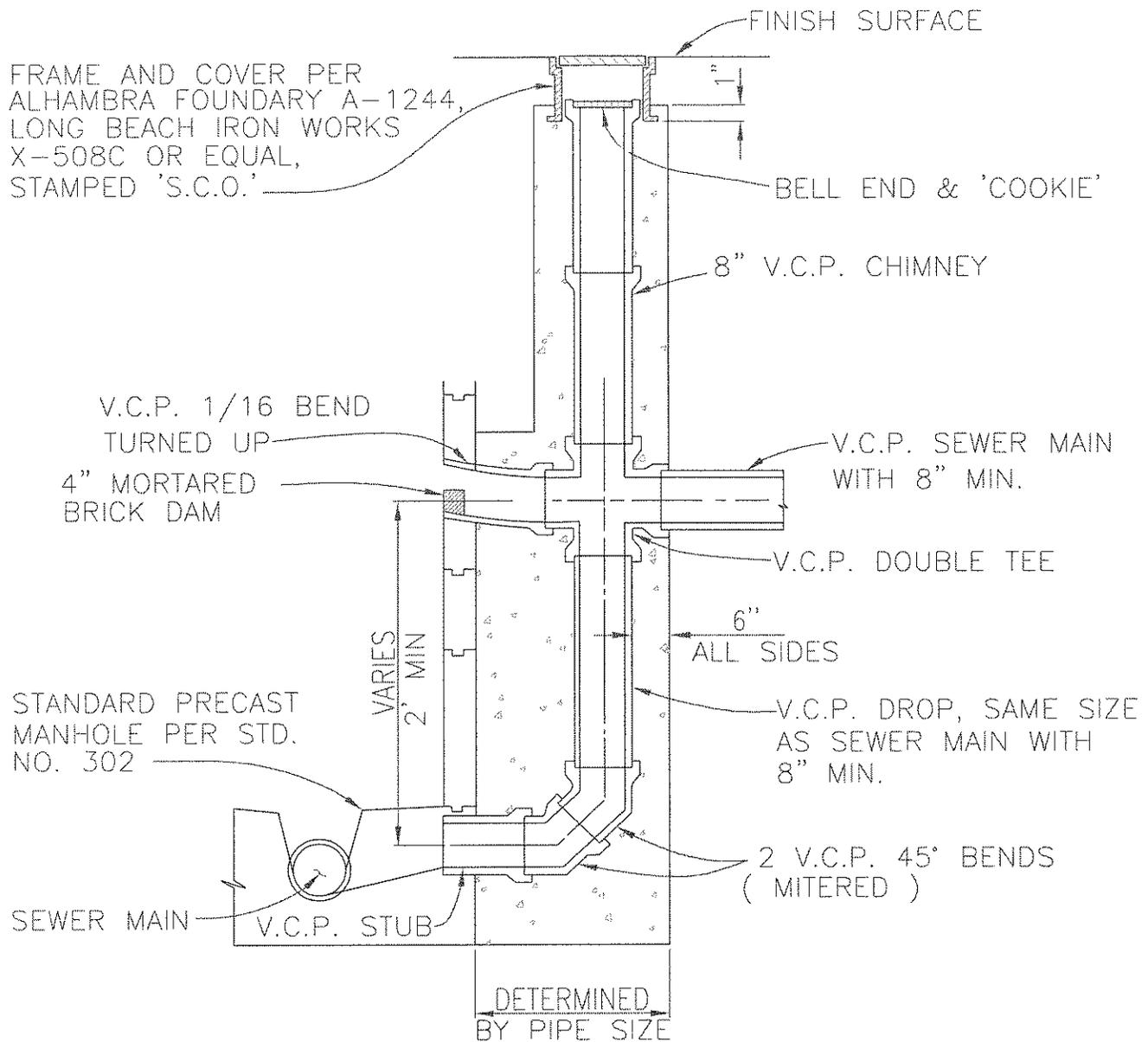


**SECTION B - B**

**NOTES:**

1. CONCRETE BASE AND STUB WALLS SHALL BE POURED IN ONE OPERATION TO A POINT 2" ABOVE INLET AND OUTLET PIPES. ALL PIPES SHALL BE RIGIDLY SUPPORTED BY TEMPORARY PIERS DURING THIS OPERATION. CONCRETE SHALL BE SET 24 HOURS BEFORE PLACING PRECAST UNITS.
2. CONCRETE FOR PRECAST UNITS SHALL BE COMPACTLY VIBRATED IN THE FORMS. IT SHALL BE CURED ACCORDING TO APPROVED PRACTICE EITHER BY STEAM, SPRINKLING, MEMBRANE SOLUTION, OR A COMBINATION OF THESE. IT SHALL DEVELOP 3250 P.S.I. OR GREATER IN 28 DAYS.
3. JOINTS MAY BE THE TYPE SHOWN OR TONGUE AND GROOVE AND SHALL CONFORM WITH ASTM C 478 SECTION 14.
4. STEPS SHALL BE CAST IN PLACE AT TIME OF FABRICATION OR PLACED BETWEEN RINGS WITH 16" MAXIMUM SPACING BETWEEN STEPS. FOR STEP DETAILS SEE STANDARD PLAN No. 304.
5. THE DEPTH OF CHANNEL SHALL EQUAL THE PIPE DIAMETER FOR ALL SIZES OF PIPE.
6. THE TOP OF THE MANHOLE AND THE STEPS SHALL BE PLACED DIRECTLY OVER THE OUTLET OF THE STRUCTURE EXCEPT WHEN NOTED ON THE PLANS.
7. 60" I.D. MANHOLE SHALL BE USED ON SEWERS WITH A DIAMETER OF 20" OR MORE OR WITH A DEPTH GREATER THAN 12' UNLESS OTHERWISE INDICATED ON THE PLANS.

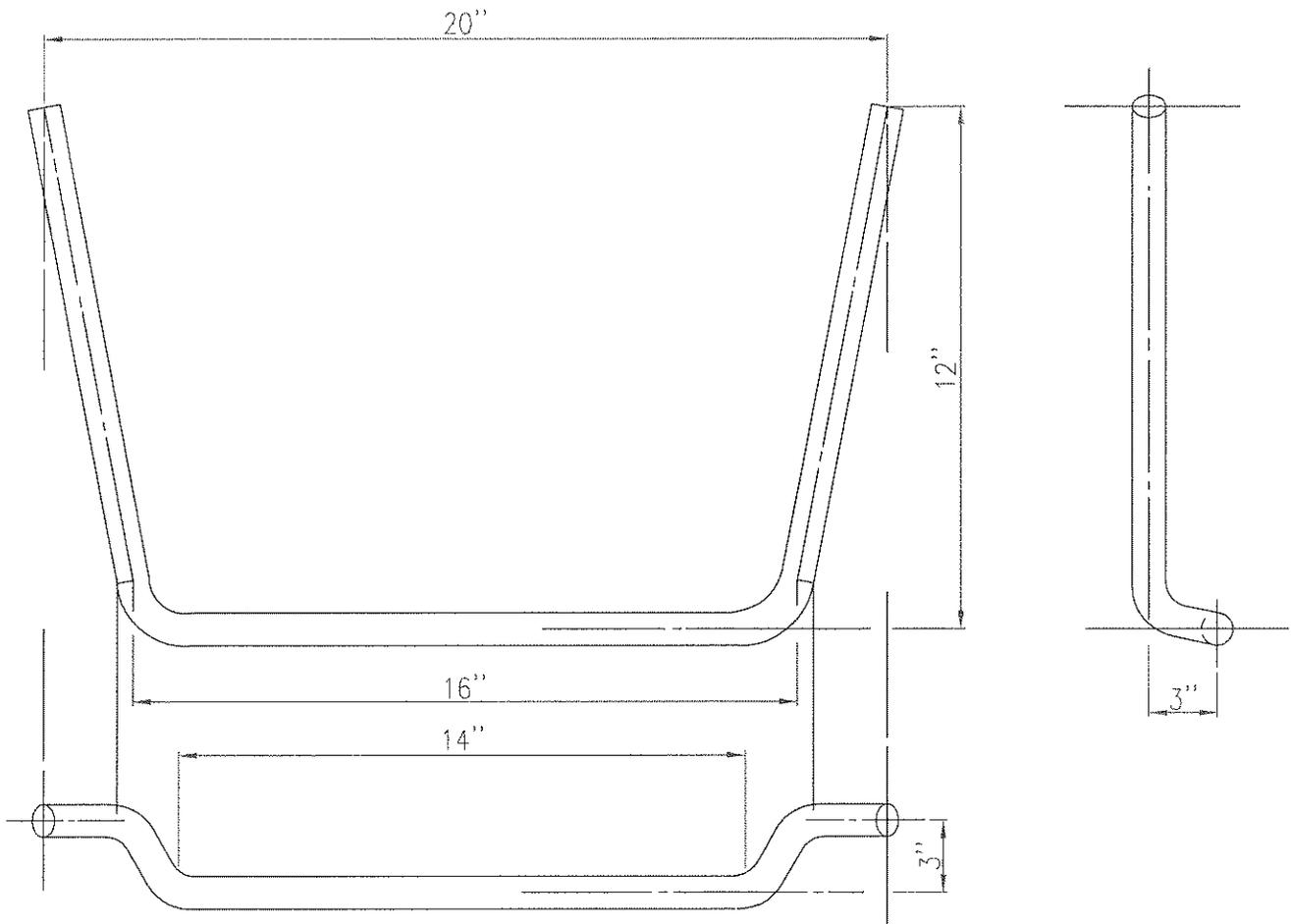
REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.							
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1									
2									
3									
4									
	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	<b>302</b> 2 OF 2							



**NOTES:**

1. DROP MANHOLE TO BE USED ONLY WITH PRIOR APPROVAL OF THE CITY ENGINEER.
2. DETAILS SHOWN HEREON ARE TO BE USED IN CONJUNCTION WITH PRECAST CONCRETE MANHOLE PER STANDARD NO. 302.
3. ENCASEMENT SHALL BE 560-C-3250 PORTLAND CEMENT CONCRETE.

REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.
1	<b>DROP MANHOLE</b>	<b>303</b>
2		
3		
4	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	

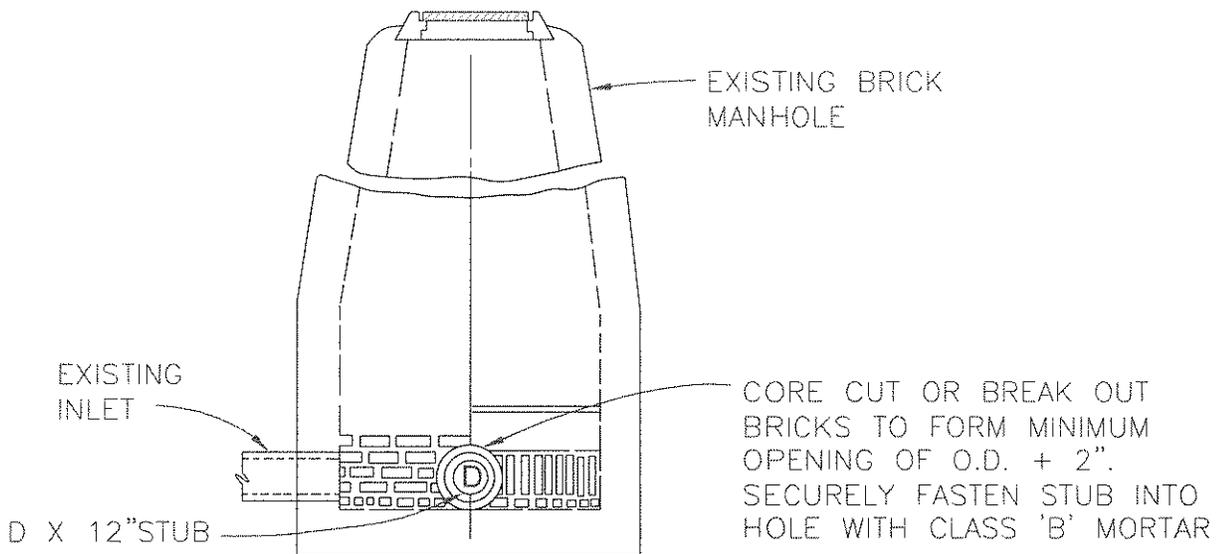


**NOTES:**

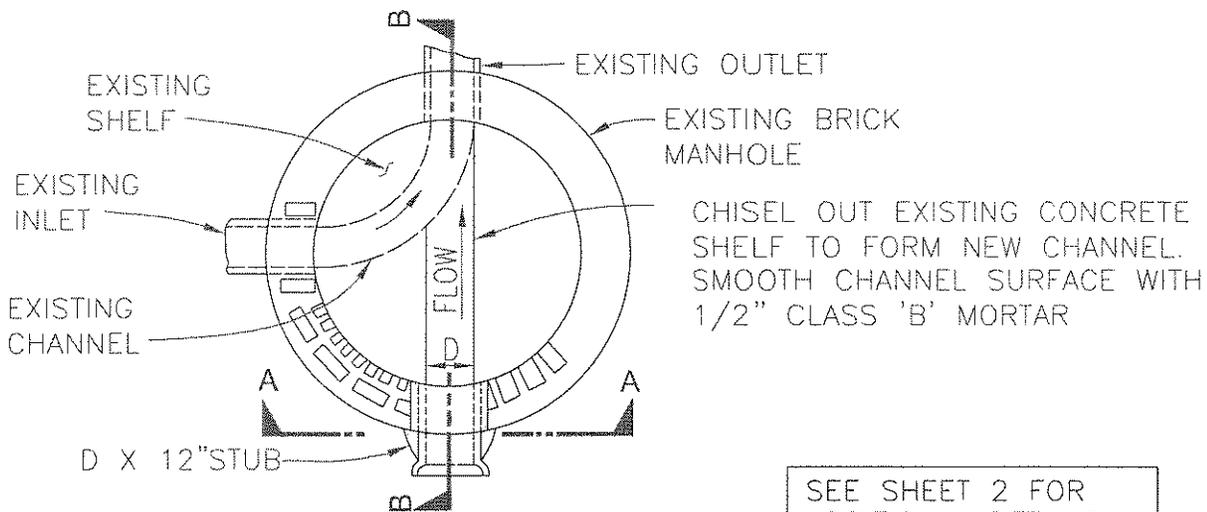
MATERIAL FOR MANHOLE STEP SHALL BE ONE OF THE FOLLOWING :

1. 3/4"  $\phi$  STEEL CONFORMING TO ASTM A15 OR A107. GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.
2. 3/4"  $\phi$  ALUMINUM ALLOY 6061-T6 CONFORMING TO ASTM B-211 OR B-221. THE PORTIONS OF THE ALUMINUM STEP TO BE EMBEDDED IN CONCRETE SHALL BE GIVEN ONE COAT OF ZINC CHROMATE PRIMER. PRIMER SHALL DRY COMPLETELY PRIOR TO EMBEDMENT.
3. 3/4"  $\phi$  OR 3/4" SQUARE OR EQUIVALENT CROSS SECTIONAL AREA WROUGHT IRON CONFORMING TO ASTM A-207.
4. ALL STEPS SHALL BE COATED WITH ASPHALTUM PAINT AFTER INSTALLATION, THICKNESS OF PAINT SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.							
<table border="1"> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> </table>	1			2		3		4	
1									
2									
3									
4									
	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	<b>304</b>							



**SECTION A - A**



SEE SHEET 2 FOR ADDITIONAL DETAILS

**PLAN**

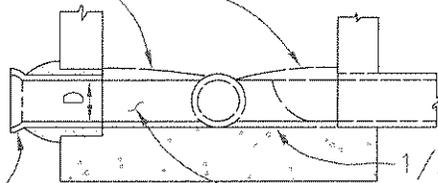
**NOTES:**

1. INVERT ELEVATION OF NEW STUB AT INSIDE FACE OF MANHOLE SHALL BE 0.10 FT. MINIMUM HIGHER THAN EXISTING OUTLET INVERT ELEVATION.
2. THE CORE CUT HOLE SHALL BE MADE BY EQUIPMENT SPECIFICALLY DESIGNED TO CUT A SMOOTH HOLE WITHOUT SPALLING OR DAMAGE TO THE STRUCTURE.

REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.
①	<b>BREAKING INTO MANHOLE</b>	
②		
③		
④	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	<b>305</b> 1 OF 2

EXISTING SHELF  
TO REMAIN

D x 12"  
STUB

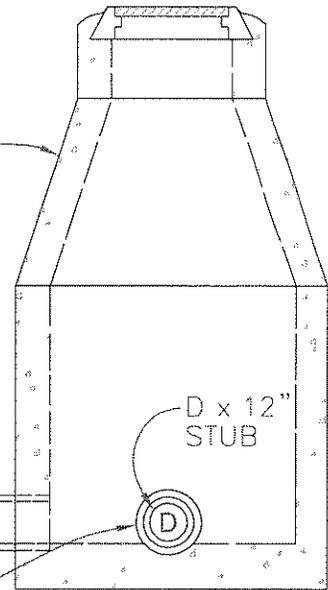


1/2" CLASS 'B' MORTAR  
NEW CHANNEL

**SECTION B - B**

EXISTING PRECAST  
CONCRETE MANHOLE

EXISTING INLET  
CORE CUT HOLE  
O.D. + 2" MAX



**SECTION C - C**

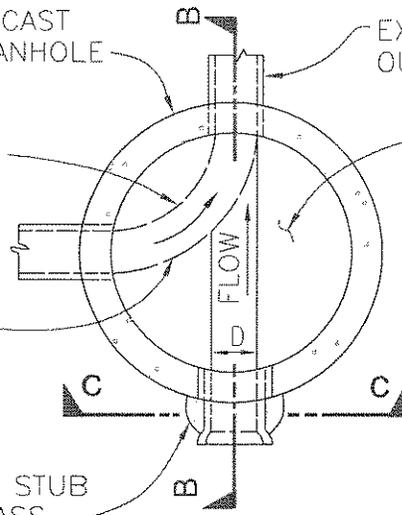
EXISTING PRECAST  
CONCRETE MANHOLE

EXISTING  
CHANNEL

EXISTING  
OUTLET

EXISTING  
SHELF

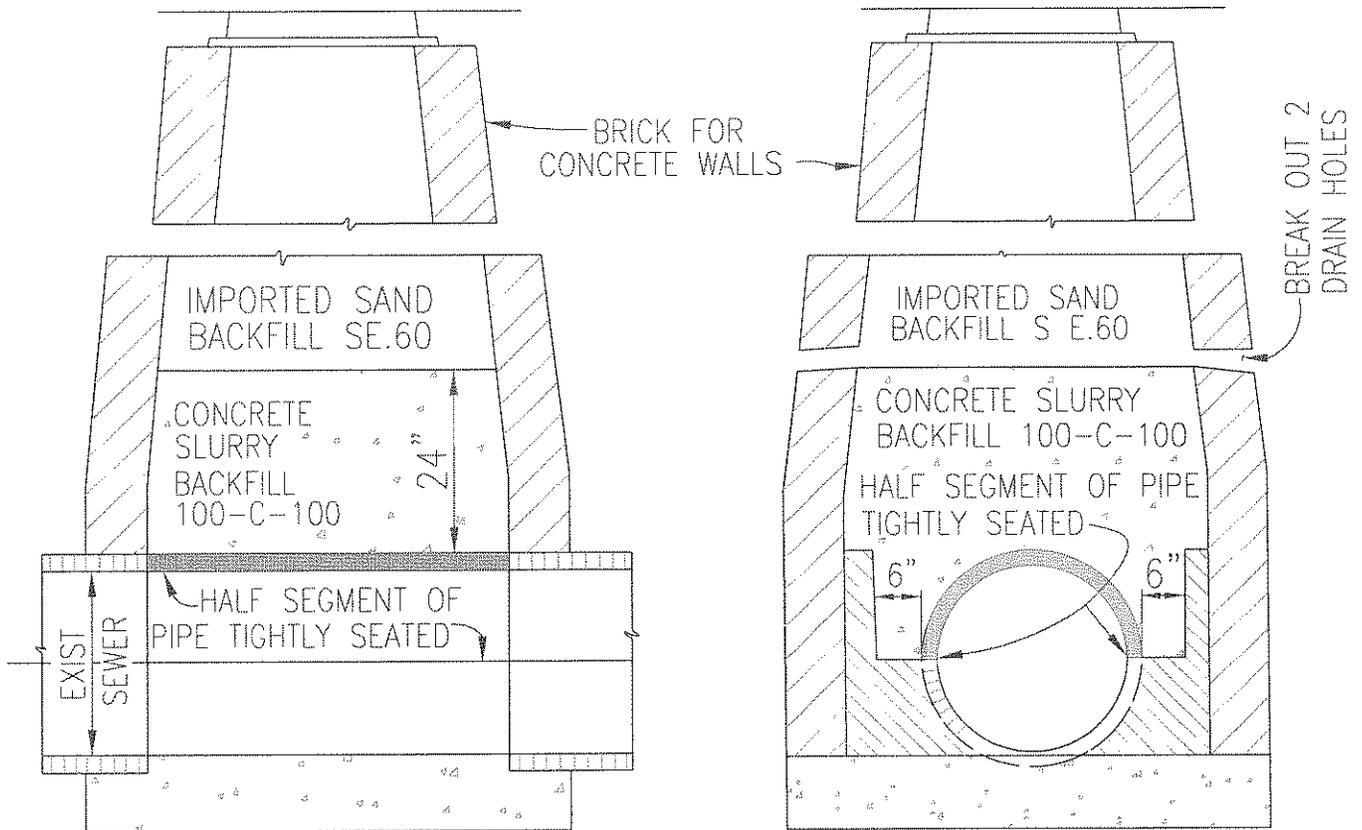
CHISEL OUT EXISTING CONCRETE  
SHELF TO FORM NEW CHANNEL.  
SMOOTH CHANNEL SURFACE WITH  
1/2" CLASS 'B' MORTAR.



SECURELY FASTEN D x 12" STUB  
INTO CORED HOLE WITH CLASS  
'B' MORTAR.

**PLAN**

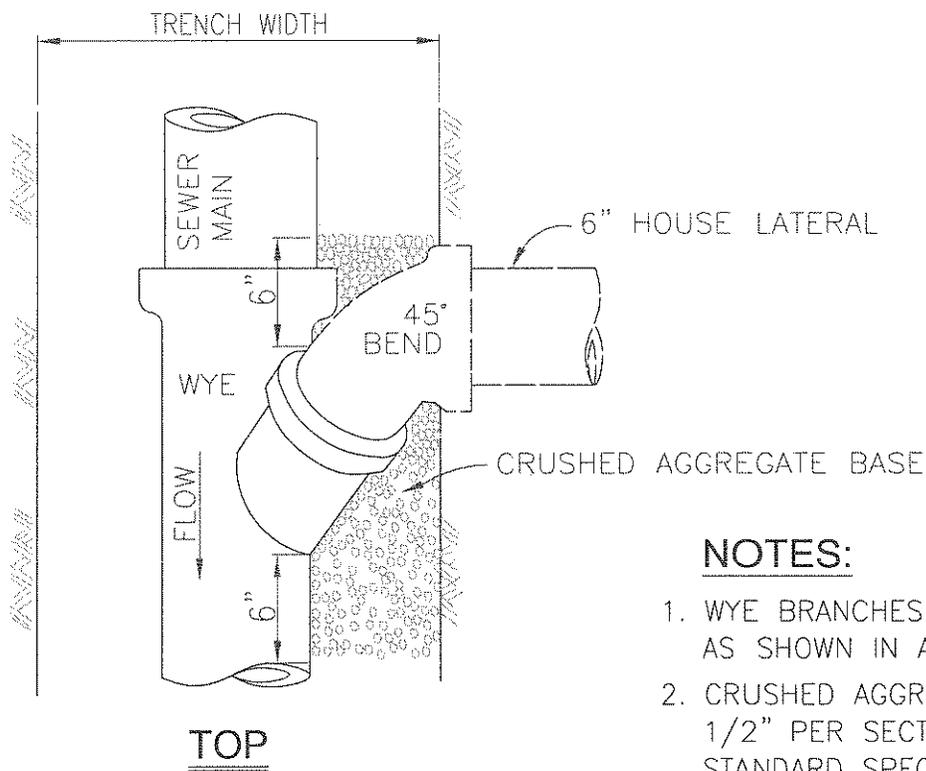
<p>REVISIONS</p>	<p>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</p>	<p>STANDARD PLAN NO.</p>
<p>1</p>	<p>BREAKING INTO MANHOLE</p>	<p>305</p>
<p>2</p>	<p>SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS</p>	<p>2 OF 2</p>
<p>3</p>		
<p>4</p>		



**NOTES:**

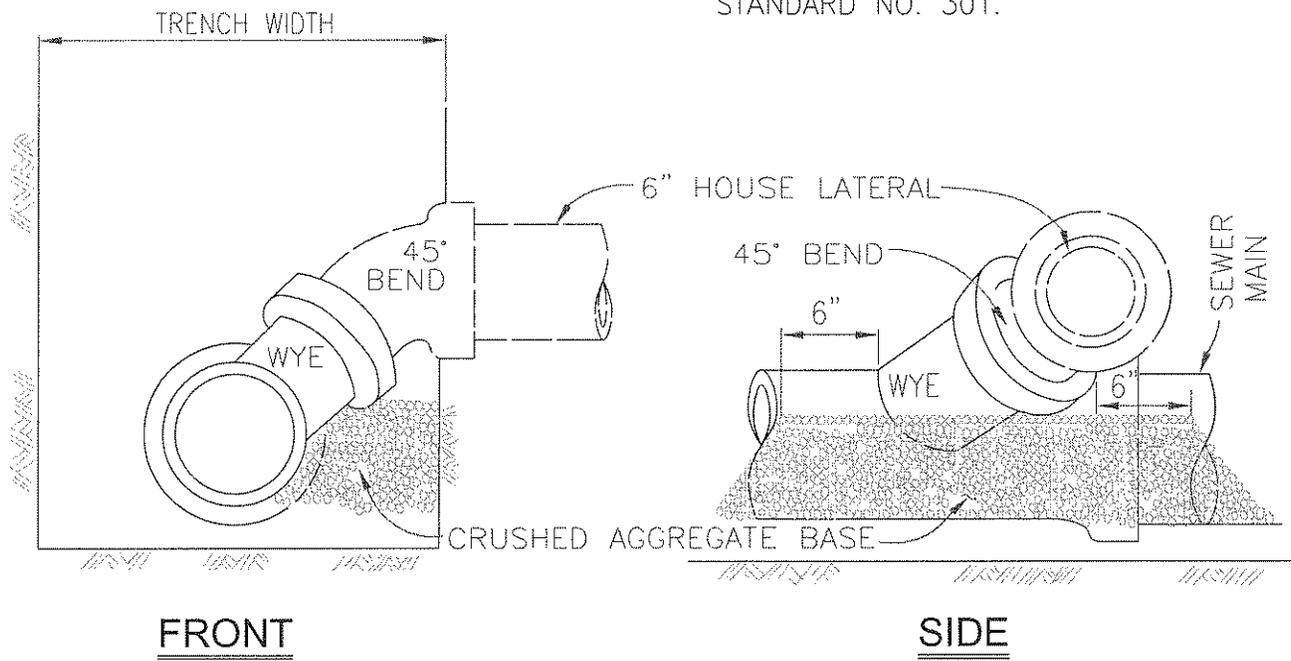
1. CONTRACTOR SHALL REMOVE A MINIMUM OF THREE FEET OF MANHOLE SHAFT AND DELIVER FRAME AND COVER TO CITY YARD.
2. THE TRENCH FOR MANHOLE SHAFT REMOVAL SHALL BE BACKFILLED IN ACCORDANCE WITH STANDARD NO. 301
3. IF MANHOLE BASE IS NOT AS SHOWN, THE CHANNEL SHALL BE REFORMED AS DIRECTED BY THE CITY ENGINEER.
4. IF SEWER MAIN IS TO BE ABANDONED ALONG WITH THE MANHOLE, THE HALF SEGMENT OF PIPE SHALL BE OMITTED AND THE SEWER MAIN SHALL BE PLUGGED IN ACCORDANCE WITH SECTION 306-5 OF THE STANDARD SPECIFICATIONS.
5. HALF SEGMENT OF PIPE SHALL BE VITRIFIED CLAY PIPE.

REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.
1	<b>ABANDONMENT OF MANHOLES</b>	<b>306</b>
2		
3	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	
4		



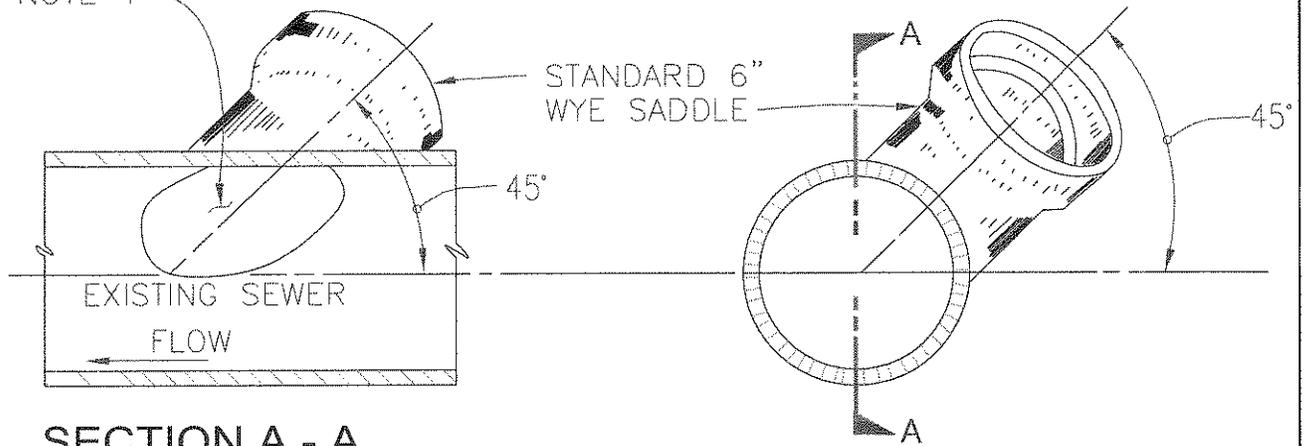
**NOTES:**

1. WYE BRANCHES SHALL BE SUPPORTED AS SHOWN IN ALL CASES.
2. CRUSHED AGGREGATE BASE SHALL BE 1/2" PER SECTION 200-1.2 OF THE STANDARD SPECIFICATIONS.
3. FOR NORMAL TRENCH BACKFILL SEE STANDARD NO. 301.



REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.
①	<b>WYE SUPPORT</b>	<b>307</b>
②		
③	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	
④		

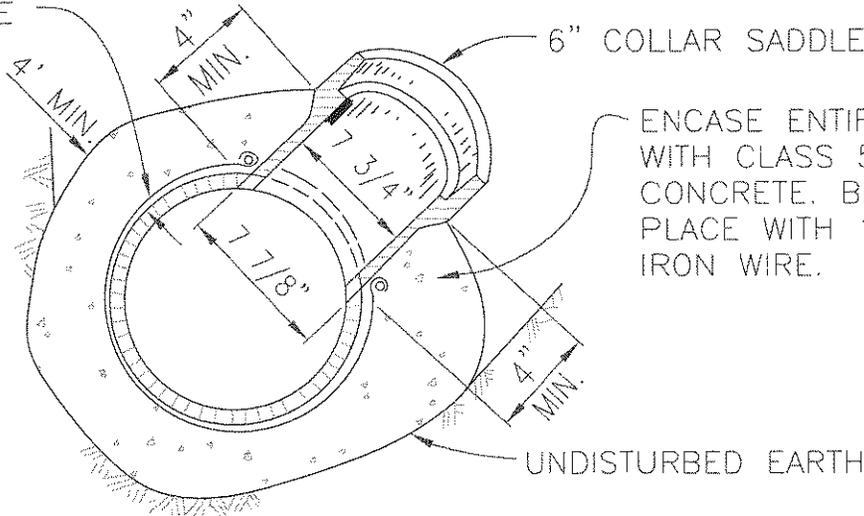
SEE NOTE 1



**SECTION A - A**

**END VIEW**

12 GAUGE GALV.  
IRON WIRE



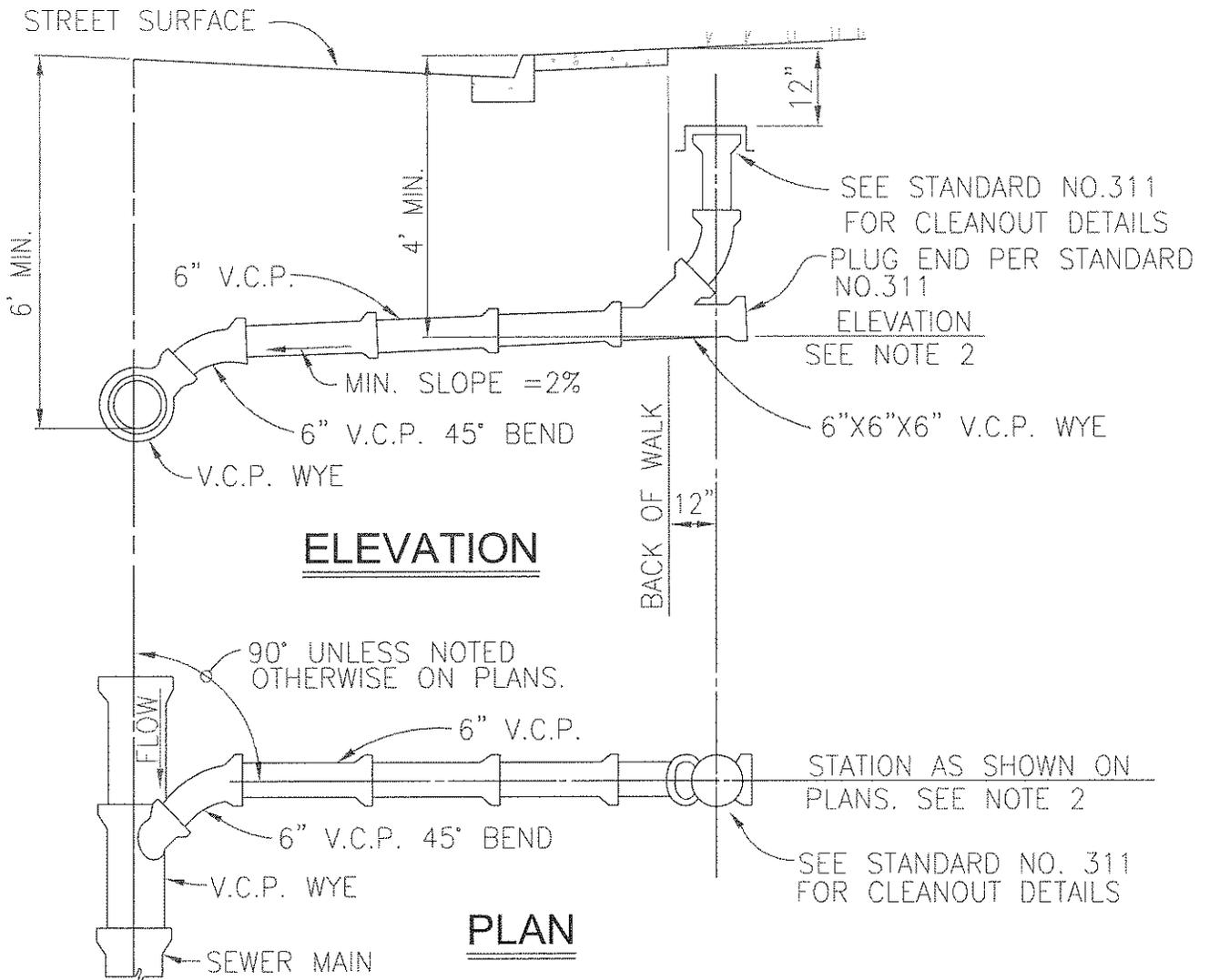
ENCASE ENTIRE SECTION OF PIPE  
WITH CLASS 560-C-3250  
CONCRETE. BIND SADDLE IN  
PLACE WITH 12 GAUGE GALVANIZED  
IRON WIRE.

**CEMENT COLLAR JOINT**

**NOTES:**

1. SADDLE SHALL BE INSTALLED BY CORE DRILLING A NEAT HOLE TO THE OUTSIDE DIAMETER PLUS 1/8" AS SHOWN ON CEMENT COLLAR JOINT DETAIL.
2. BROKEN PIECES FROM DRILLING OF THE EXISTING SEWER MAIN MUST BE CAREFULLY REMOVED PRIOR TO PLACEMENT OF THE SADDLE.
3. THE SADDLE SHALL BE CEMENTED INTO PLACE USING CLASS 'B' CEMENT MORTAR. THE SADDLE SHALL BE HELD SECURELY IN PLACE WHILE THE MORTAR SETS. THE INSIDE OF THE JOINT BETWEEN PIPE AND SADDLE SHALL BE FILLED WITH MORTAR AND NEATLY ROUNDED.

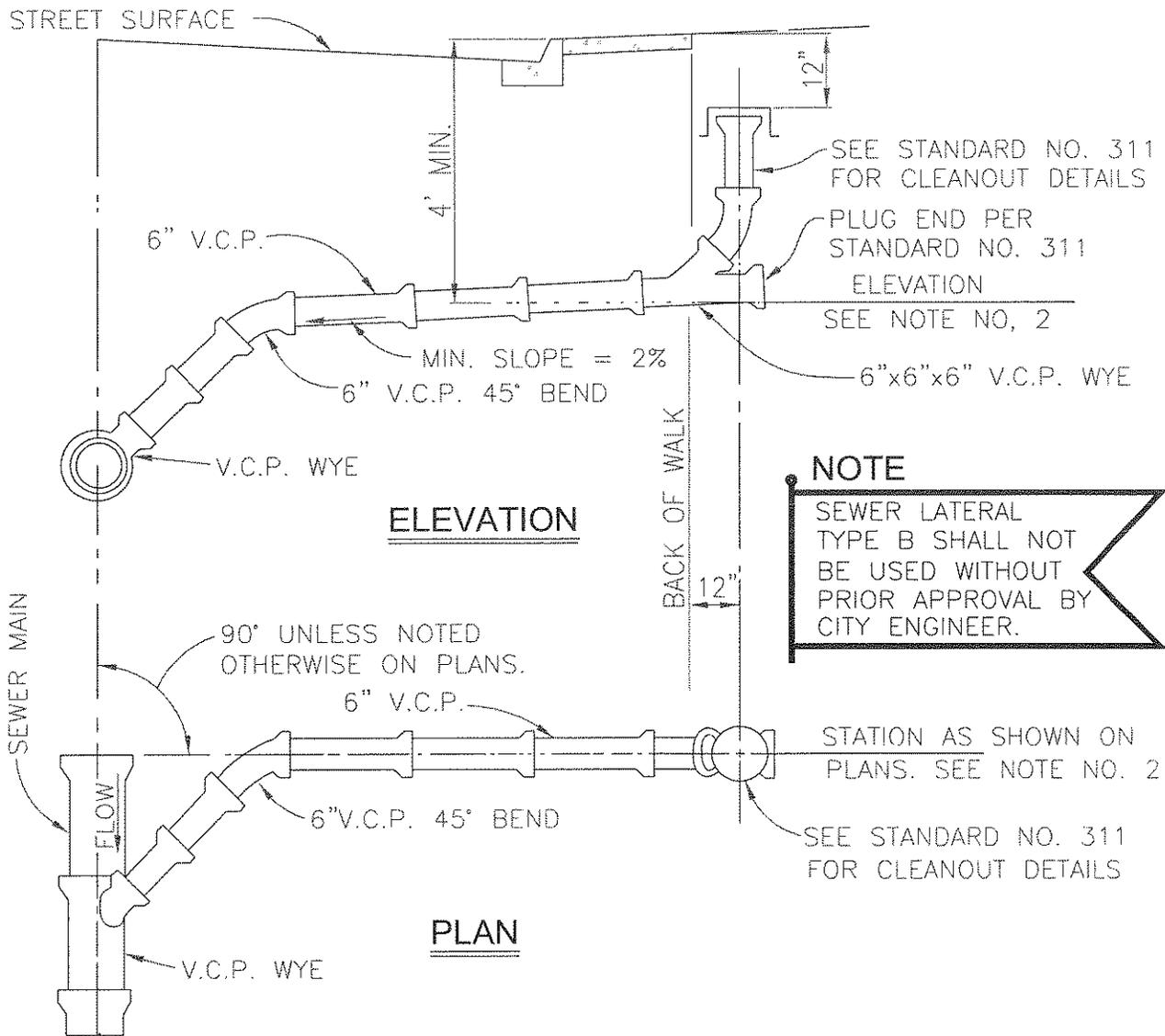
REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.
1	<b>SADDLE FOR SEWER LATERAL</b>	<b><u>308</u></b>
2		
3		
4	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	



**NOTES:**

1. SEE STANDARD NO. 301 FOR TRENCH BACKFILL.
2. CONTRACTOR SHALL INDICATE AS-BUILT ELEVATION AND STATION ON PLANS.
3. AN ADDITIONAL CLEANOUT, PER STANDARD 311, SHALL BE PLACED AT THE FACE OF THE BUILDING, FLUSH WITH FINISH SURFACE.
4. IF NO SIDEWALK EXISTS OR IS NOT BEING CONSTRUCTED, THE CLEANOUT SHALL BE CONSTRUCTED 12" BEYOND THE RIGHT-OF-WAY LINE.
5. THE CONTRACTOR SHALL PLACE NAIL & TAG, STAMPED 'S', IN TOP OF CURB OVER SEWER LATERAL.

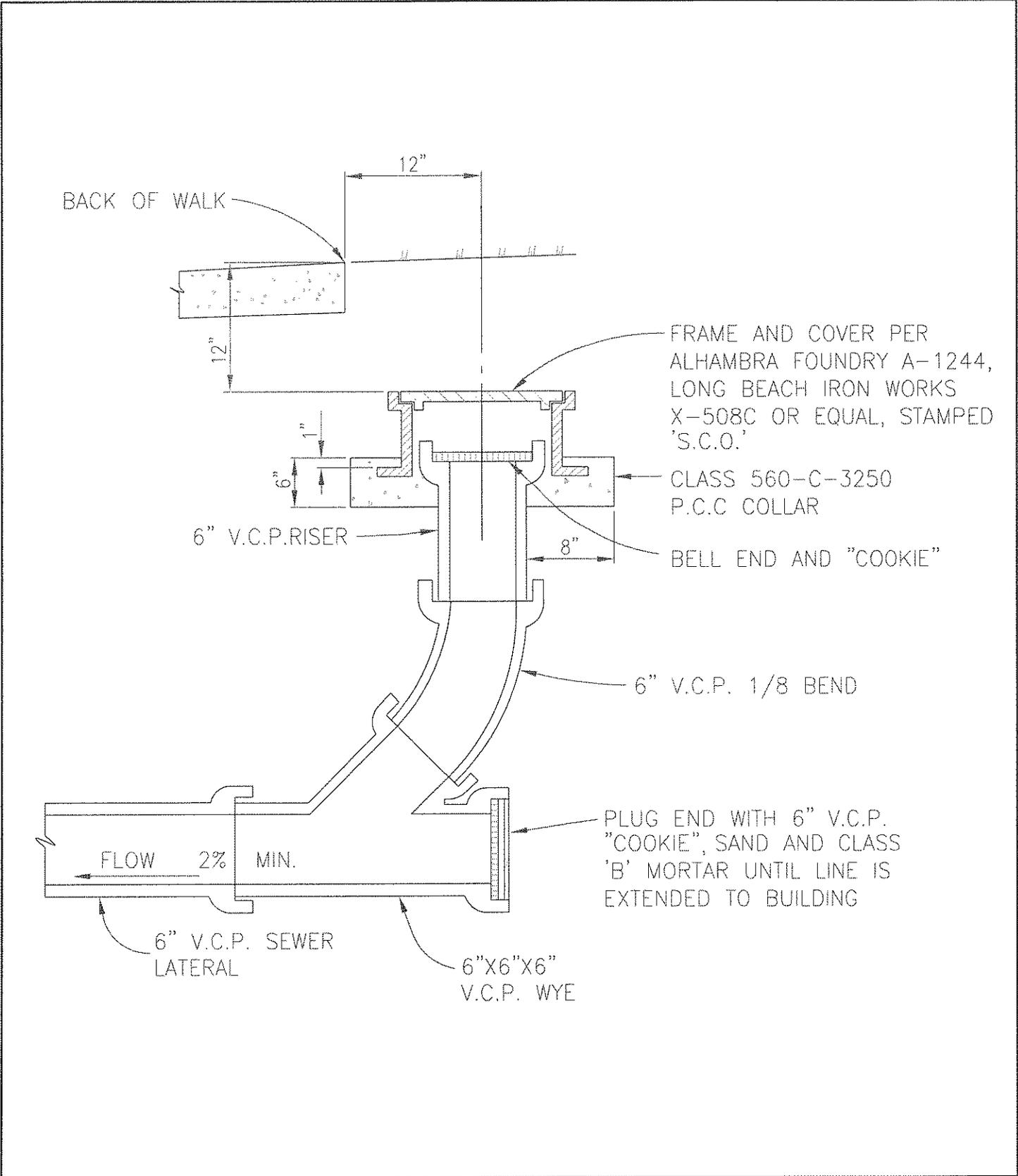
REVISIONS	CITY OF SIGNAL HILL PUBLIC WORKS DEPT.	STANDARD PLAN NO.
①	SEWER LATERAL TYPE A	309
②		
③	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	
④		



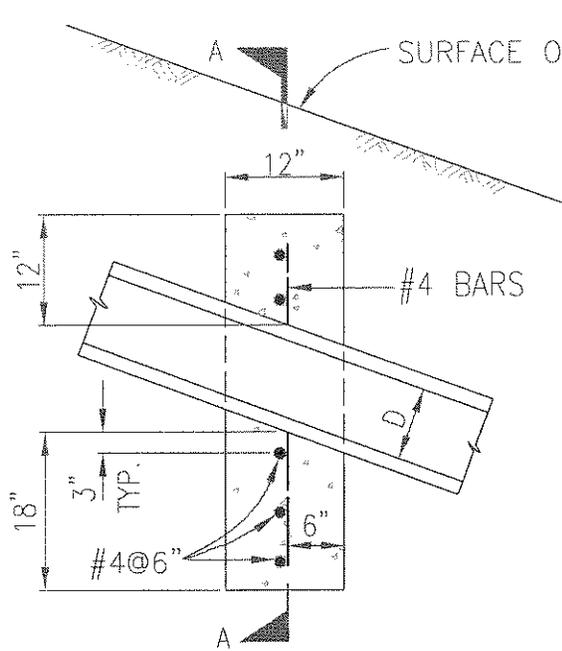
**NOTES:**

1. SEE STANDARD NO. 301 FOR TRENCH BACKFILL.
2. CONTRACTOR SHALL INDICATE AS-BUILT ELEVATION AND STATION ON PLANS.
3. AN ADDITIONAL CLEANOUT, PER STANDARD NO. 311, SHALL BE PLACED AT THE FACE OF THE BUILDING, FLUSH WITH FINISH SURFACE.
4. IF NO SIDEWALK EXISTS OR IS NOT BEING CONSTRUCTED, THE CLEANOUT SHALL BE CONSTRUCTED 12" BEYOND THE RIGHT-OF-WAY LINE.
5. THE CONTRACTOR SHALL PLACE NAIL & TAG STAMPED 'S' IN TOP OF CURB OVER SEWER LATERAL.

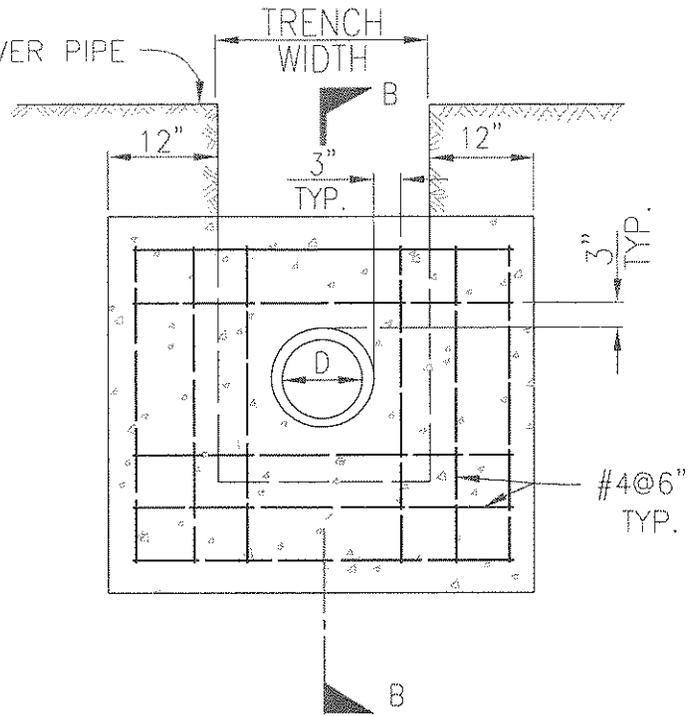
REVISIONS	CITY OF SIGNAL HILL PUBLIC WORKS DEPT.	STANDARD PLAN NO.
1	SEWER LATERAL TYPE B	310
2		
3		
4	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	



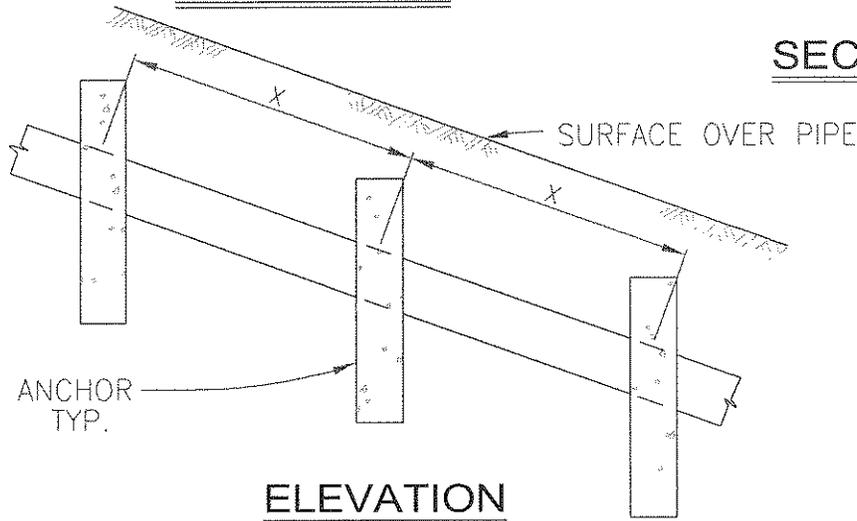
REVISIONS	CITY OF SIGNAL HILL PUBLIC WORKS DEPT.	STANDARD PLAN NO.
①	SEWER LATERAL CLEANOUT	311
②		
③	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	
④		



**SECTION B-B**



**SECTION A-A**



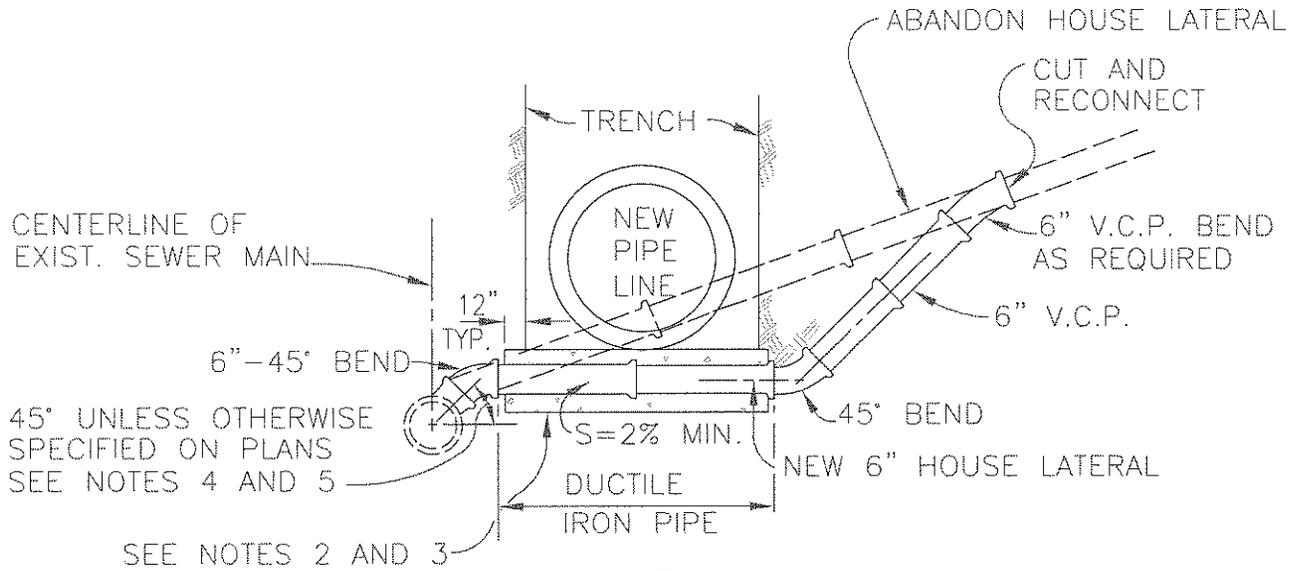
**ELEVATION**

PIPE SLOPE	X DISTANCE
1:1	12 FT.
1 1/2:1	14 FT.
2:1	16 FT.
2 1/2:1	18 FT.
3:1	20 FT.

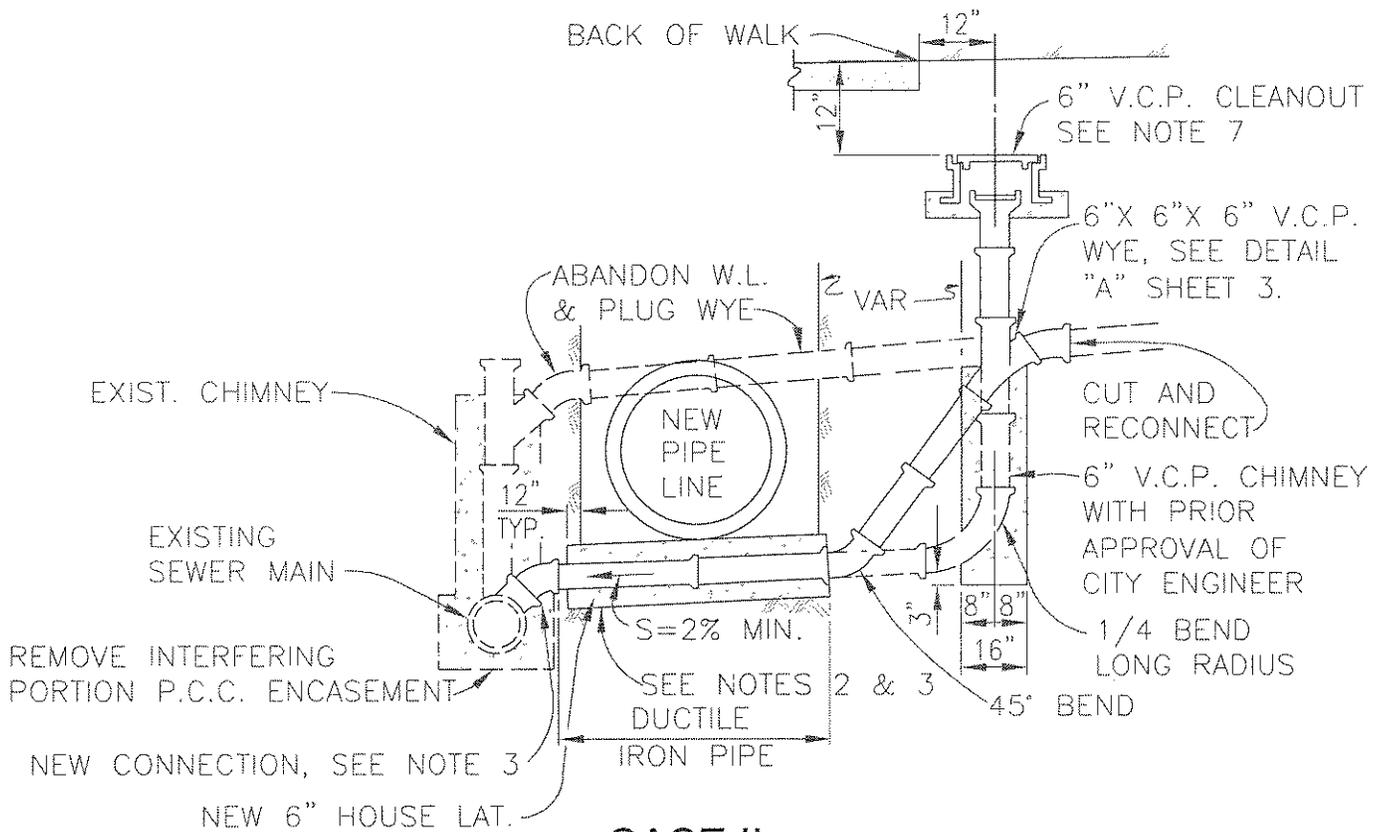
**NOTES:**

1. PIPE ANCHORS ARE REQUIRED ON ALL SLOPES OF 3:1 OR STEEPER.
2. PORTLAND CEMENT CONCRETE SHALL BE CLASS 560-C-3250.
3. ANCHORS FOR TRAPZOIDAL TRENCH SECTIONS SHALL CONFORM TO TRENCH CROSS SECTION AND EXTEND 12" INTO UNDISTURBED SOIL.
4. ON ALL SLOPES 3:1 OR STEEPER, THE PIPE SHALL HAVE A MINIMUM OF 1 ANCHOR EQUALLY SPACED, BETWEEN MANHOLES OR BENDS FOR WATER MAINS.

REVISIONS	CITY OF SIGNAL HILL PUBLIC WORKS DEPT.	STANDARD PLAN NO.
1	PIPE SLOPE ANCHOR	312
2		
3	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	
4		

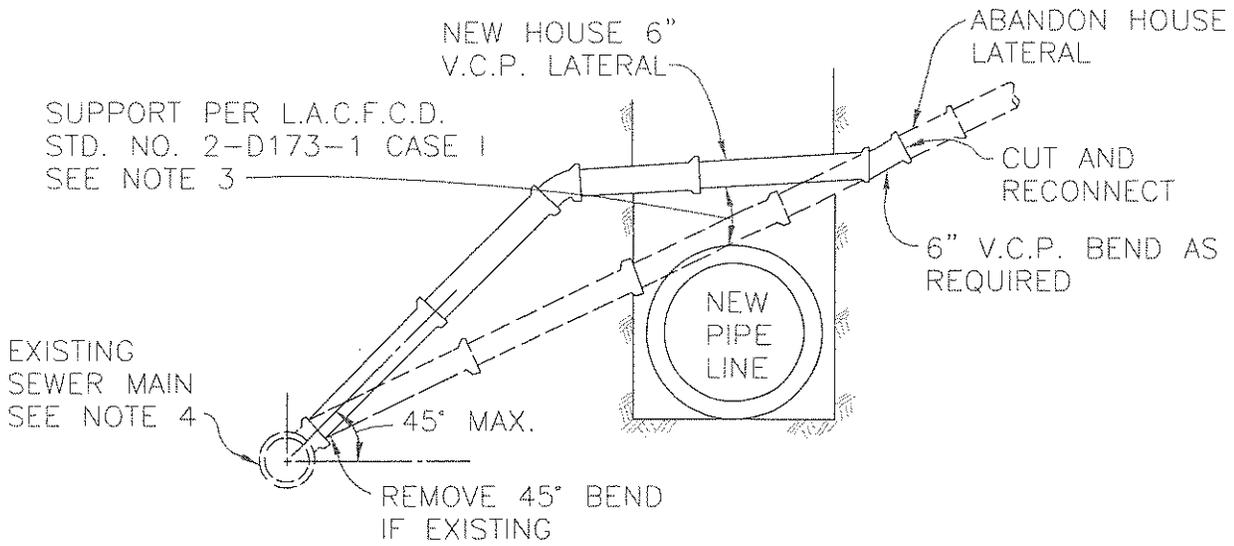


**CASE I**

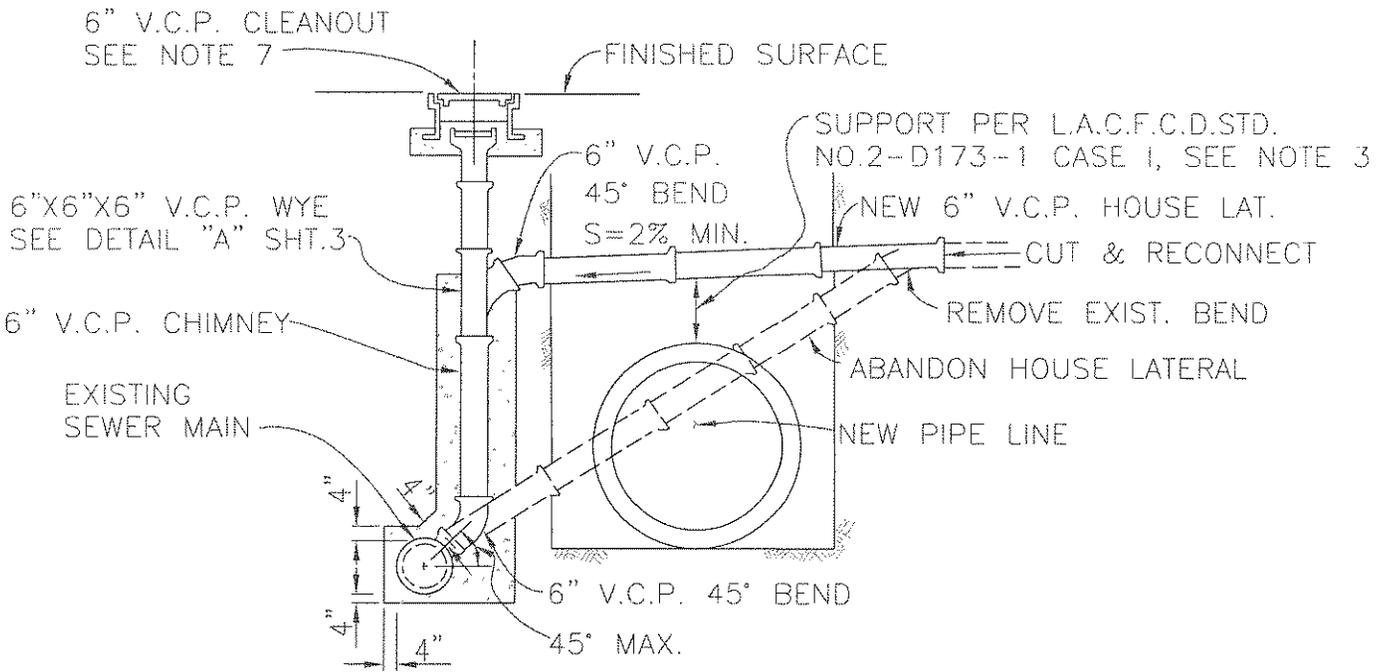


**CASE II**

REVISIONS	CITY OF SIGNAL HILL PUBLIC WORKS DEPT.	STANDARD PLAN NO.								
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1										
2										
3										
4										
	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	1 OF 3								

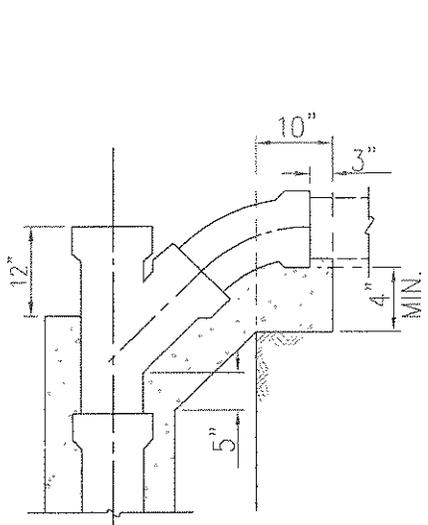


**CASE III**

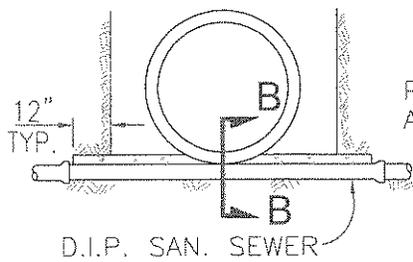


**CASE IV**

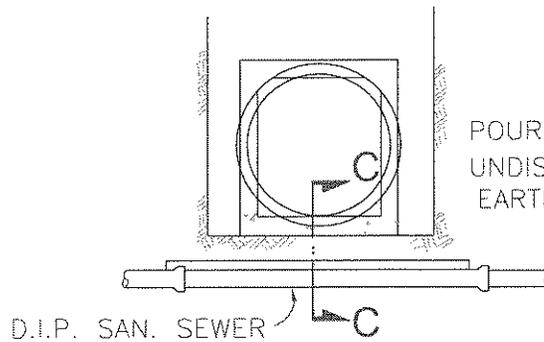
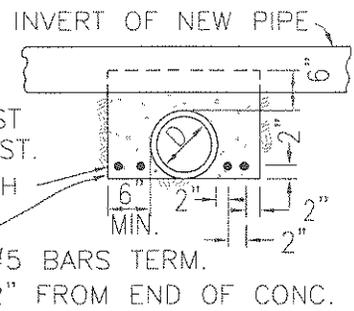
REVISIONS ① ② ③ ④	CITY OF SIGNAL HILL PUBLIC WORKS DEPT.	STANDARD PLAN NO.
	<b>REMODELING SEWER HOUSE LATERAL</b>	<b>313</b>
	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	2 OF 3



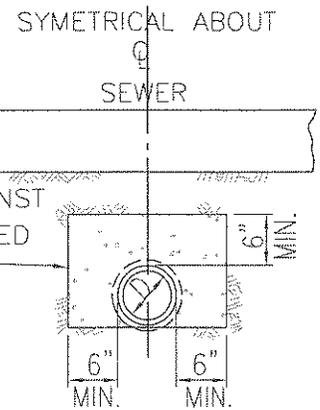
**DETAIL A**



**DETAIL B**



**DETAIL C**



**NOTES:**

1. NEW HOUSE LATERALS SHALL BE 6" VITRIFIED CLAY PIPE WITH MECHANICAL COMPRESSION JOINTS UNLESS OTHERWISE INDICATED ON THIS STANDARD.
2. FOR CASE I AND II, WHERE CLEARANCE BETWEEN NEW PIPE LINE AND NEW SEWER LATERAL IS LESS THAN 6", SEE DETAIL "B". WHERE CLEARANCE BETWEEN NEW PIPE LINE AND NEW SEWER LATERAL IS FROM 6" TO 18", SEE DETAIL "C". WHERE CLEARANCE IS GREATER THAN 18", ENCASEMENT IS NOT REQUIRED.
3. IF NEW PIPE LINE IS A WATER MAIN, SEE STANDARDS NO. 300 AND 400 FOR DESIGN CRITERIA.
4. IF NEW CONNECTION TO SEWER MAIN IS REQUIRED, SEE STANDARDS NO. 307 AND 308.
5. FOR CASES I AND II, WYE MAY BE LAID "FLAT" WITH PRIOR APPROVAL OF CITY ENGINEER.
6. PORTLAND CEMENT CONCRETE FOR CHIMNEY AND ENCASEMENT SHALL BE 560-C-3250.
7. SEE STANDARD NO. 311 FOR CLEANOUT DETAILS.
8. DUCTILE IRON PIPE SHALL BE CLASS 52 WITH HOT DIP BITUMINOUS COATING AND COAL-TAR EPOXY LINING.

REVISIONS	<b>CITY OF SIGNAL HILL PUBLIC WORKS DEPT.</b>	STANDARD PLAN NO.
1	<b>REMODELING SEWER HOUSE LATERAL</b>	<b>313</b>
2		3 OF 3
3	SEE LOS ANGELES COUNTY SANITATION DISTRICT STANDARDS	
4		