

SANITARY SEWER

GENERAL

All Sanitary Sewers shall be constructed in accordance with the City of Morgan Hill Standard Details. Materials shall conform to the American Society for Testing and Materials (ASTM), and the American Water Works Association (AWWA), except as modified herein.

SEWER MAINS

Main sewer lines shall be PVC or ABS "composite wall" pipe, PVC solid wall pipe, ABS solid wall pipe, polyurethane lined D.I.P. or PVC C900. Polyurethane D.I.P. (or PVC C900 upon City Engineer approval) shall be used where pipe cover is less than 3 feet but at least 2 feet.

After all testing, backfill and pavement restoration has been completed, the contractor shall flush and clean all sewer lines 24 inches or less in diameter by the "Wayne Ball" method.

TYPES OF SEWER MAIN/LATERALS

POLY-VINYL CHLORIDE (PVC)

Poly-Vinyl Chloride (4" to 12") solid wall pipe, shall conform to ASTM D 3034 (SDR 26) with rubber gasket joints. PVC used for force or shallow mains shall conform to AWWA C900 and installation conform to ASTM D 2774.

ACRYLONITRILE-BUTADIENE-STYRENE (ABS)

Acrylonitrile-Butadiene-Styrene (4" to 12") solid wall pipe, shall conform to ASTM D 2751 (SDR 26).

COMPOSITE WALL PIPE

Double wall, truss type braced, and concrete filled, composite wall pipe, shall conform to ASTM D 2680, SDR 23.5.

DUCTILE IRON PIPE (Polyurethane Lined & Polyethylene Encased)

Polyurethane Lined D.I.P. for force mains or shallow mains, shall be "POLYTHANE Lined Ductile Iron Pipe and Fittings" as manufactured by U.S. Pipe or approved equal. Polyethylene Encasement shall be "GREENSHIELD Polyethylene Film" as manufactured by U.S. Pipe or approved equal, and conform to AWWA C105.

SEWER MAIN/LATERAL INSTALLATION

PVC/ABS solid wall pipe shall be installed per ASTM D2321 using sand as the embedment material. Sand shall conform to CALTRANS Section 19-3.025B.

LATERALS

The underground contractor shall keep an accurate record of all manholes and the distance between them and each wye branch lateral and their direction. Laterals shall be laid on a minimum of 2% grade. The end of the lateral shall be marked as shown in Detail S-2 prior to construction of the curb and gutter. The concrete contractor shall stamp an "S" on the face of curb directly above the lateral.



City of Morgan Hill
Public Works Department

Jin Oakcraft
CITY ENGINEER

4/1/96
DATE

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GENERAL NOTES

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NO.

S-I

TESTING

After backfill and compaction of the base rock, all sewer mains, laterals and manholes shall be required to pass an air or water leakage test. The contractor shall furnish all equipment, labor and materials needed to perform the test. A "Mandrel Test" may also be required by the City Engineer.

AIR TEST

The pneumatic test method or "air test" is the preferred test for leakage detection of new sewer lines. Contractor shall furnish all equipment, labor and materials necessary to perform the test. Length of line tested at one time shall be limited to the length between adjacent manholes.

Air test procedure shall be as follows: Pressurize the test section to 3.5 PSI, disconnect the compressor from the hose and time for not less than 5 minutes. If at the end of the test period the pressure is less than 3.0 PSI, the section of pipe has failed. If the new main is below ground water level, the Uni-Bell UNI-B-6 "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe" shall be used.

AIR TEST ON PRESSURE MAIN

Force mains shall hold air pressure that is 50% higher than the normal operating pressure for a period of 3 minutes with pressure drop not to exceed 0.5 psi.

WATER TEST

In lieu of the air test a water test may be performed upon approval of the inspector. Where grades are slight, two or more sections between manholes may be tested at the same time. Where grades are steep, the maximum head on any one section shall not exceed 12 feet. All lines and branches not under test shall be plugged to prohibit overflow.

A section of sewer line prepared as above shall be tested by filling the manhole with water to a height of four feet above the invert at midpoint of the test section, or one foot above the top of pipe in the upstream manhole, whichever is greater. Water should be introduced into the test section at least 6 hours in advance of the official test period to allow pipe and joint material to become saturated with water. All entrapped air shall be removed from the test section prior to performing the test. At the beginning of the test, the height of water in the upper manhole shall be carefully measured from a point on the manhole rim. After a period of 2 hours or less, with the approval of the inspector, the water height shall be measured from the same point on the manhole rim and loss of water during the test period calculated. Allowable leakage shall not exceed 4 gallons per hour per 1000 feet of line per inch of pipe diameter.

Sewer sections showing leakage in excess of the maximum shall be repaired or reconstructed as necessary to reduce leakage to the maximum specified above.

The contractor's attention is directed to the fact that the stipulated maximum leakage shall in no way relieve the contractor of his obligation to correct, stop or otherwise remedy individual leaks in the system due to defective workmanship or material even though such leakage might fall within the maximum.

MANDREL TEST

A Mandrel test may be required by the City Engineer. The Mandrel shall be 4% smaller than the inside diameter of the pipe tested.



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Public Works Department

Jean Oshcraft
CITY ENGINEER

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TELEVISION INSPECTION

After the leakage test, but prior to paving, a television inspection shall be performed at all locations of newly installed sewer mains throughout the project at contractor's expense. The television inspection shall be made in the presence of the inspector and contractor.

An electronic format & (Flash Drive) video shall be furnished by the contractor to the City at the initial inspection and upon the completion of any repairs. All LACP and/or MACP version 7.0 or later. A written Inspection Log for all video inspections shall accompany each DVD.

Logs shall accurately measure distances measured from center point of each manhole and shall clearly show the location in relation to the manhole of all points of significance in the sewer line. As a minimum, each Log shall include the location and left/right orientation of all service laterals, the location and depth of sags, offset pipes, or any other points of significance.

Additionally, each record shall accurately describe the above ground location of the manhole section including the street name, direction traveled (north, south, etc.), direction of flow, adjoining house numbers, and any other landmarks that will clearly and quickly identify the section. All defects and defeciciencies discovered in this inspection shall be corrected by the contractor to the satisfaction of the City Engineer and at the contractor's expense.

Measuring devices and depth tolerances for trapped water shall be as follows:

<u>Device</u>	<u>Depth Tolerance</u>
6"	0.08'
8"	0.11'
10"	0.13'
12"	0.16'
15"	0.20'
>15"	10% of pipe area

The Contractor shall follow the standards set in the National Association of Sewer Service, (NASSCO), "Pipeline Assessment Certification Program Condition Classification"(PACP) most current, to describe internal pipe conditions and/or defects.

If the City suspects any damage or breaks in the line, a television inspection may be required within the one year warranty period at the contractor's expense. All defects discovered in this inspection shall be corrected by the contractor at his expense.

MANHOLES

Manhole bases shall be cast in place. Precast bases may be used if approved by the City Engineer. Manholes shall be waterproofed by grouting and/or painting the interior with COLORED sodium silicate or other approved waterproofing.



City of Morgan Hill
Public Works Department

Jimi Oschcraft
CITY ENGINEER

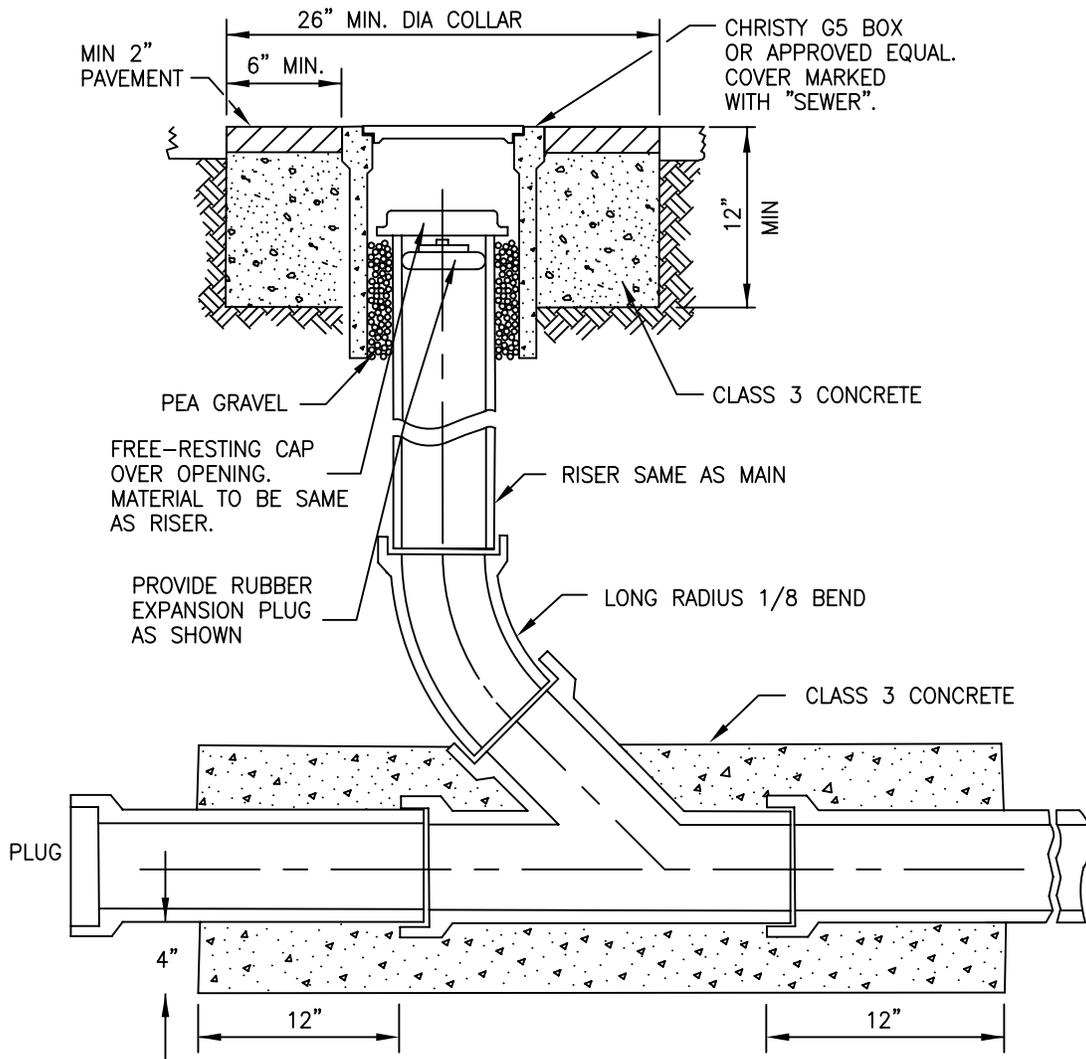
4/1/96
DATE

11/11/19
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GENERAL NOTES

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NO.

S-III



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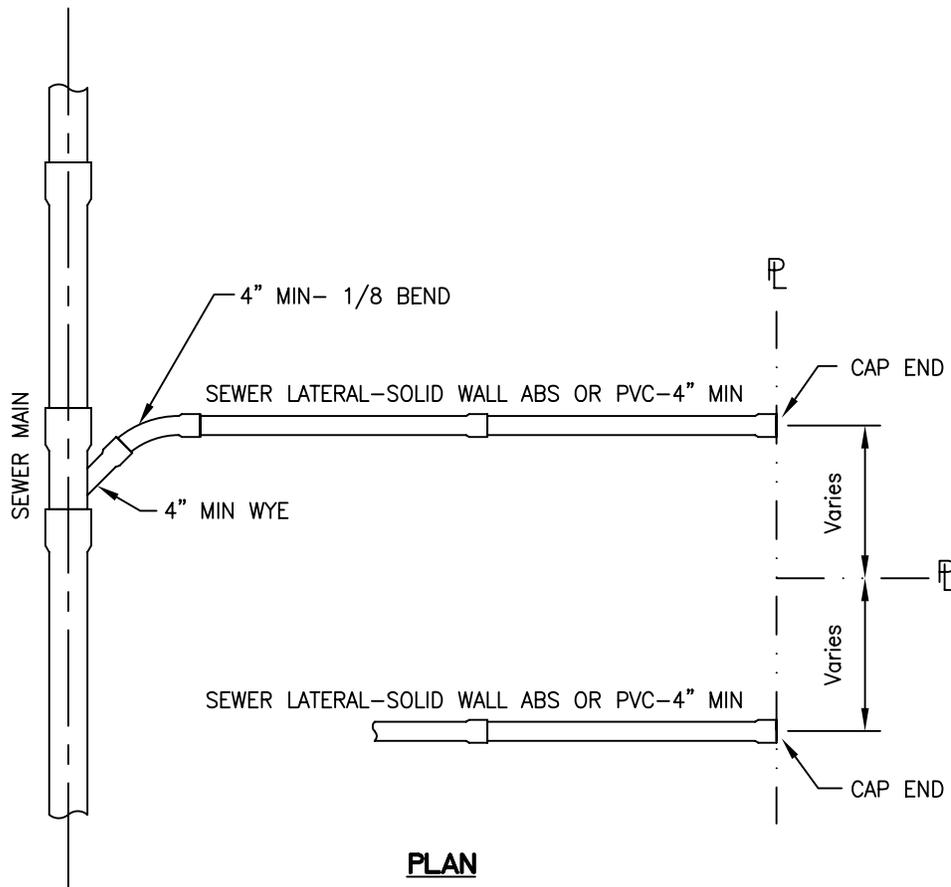
Jim Oshecraft
CITY ENGINEER

4/1/96
DATE

3/15/07
REVISED

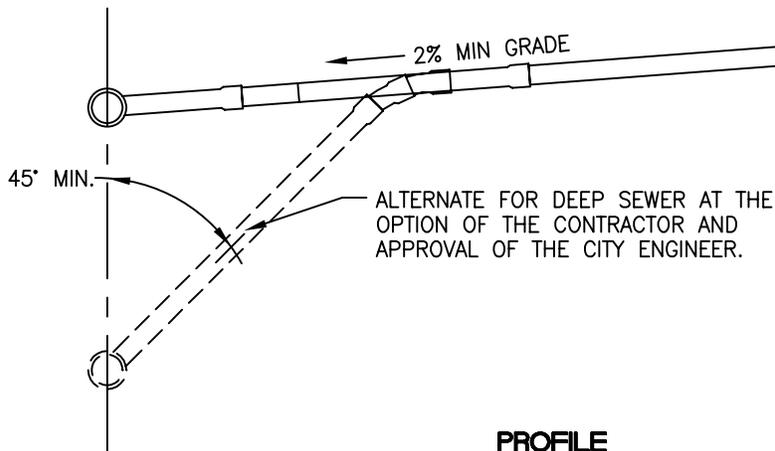
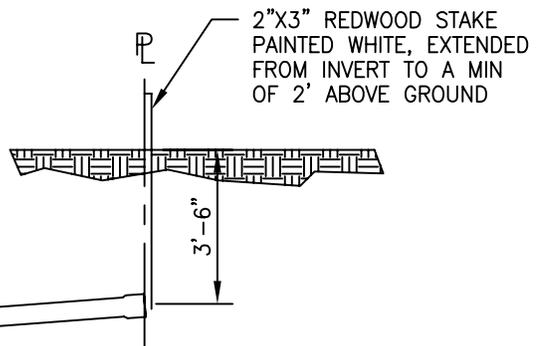
SEWER CLEANOUT

DRAWING NO.
S-1



PLAN

- NOTES:**
1. THE CONCRETE CONTRACTOR SHALL STAMP AN "S" ON THE FACE OF CURB DIRECTLY ABOVE THE LATERAL.
 2. FOR ALLOWABLE CONNECTIONS AND FITTINGS TO EX. MAINS, SEE STD. S-3
 3. ALL CONNECTIONS SHALL BE MADE ABOVE THE SPRING LINE OF THE SEWER MAIN



PROFILE



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Public Works Department

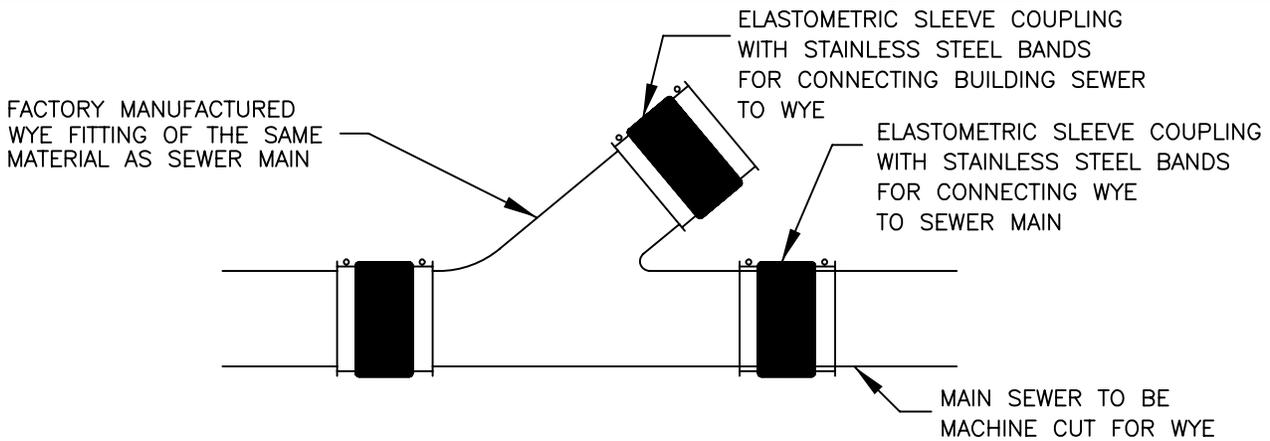
Juan Pacheco
CITY ENGINEER

4/1/96
DATE

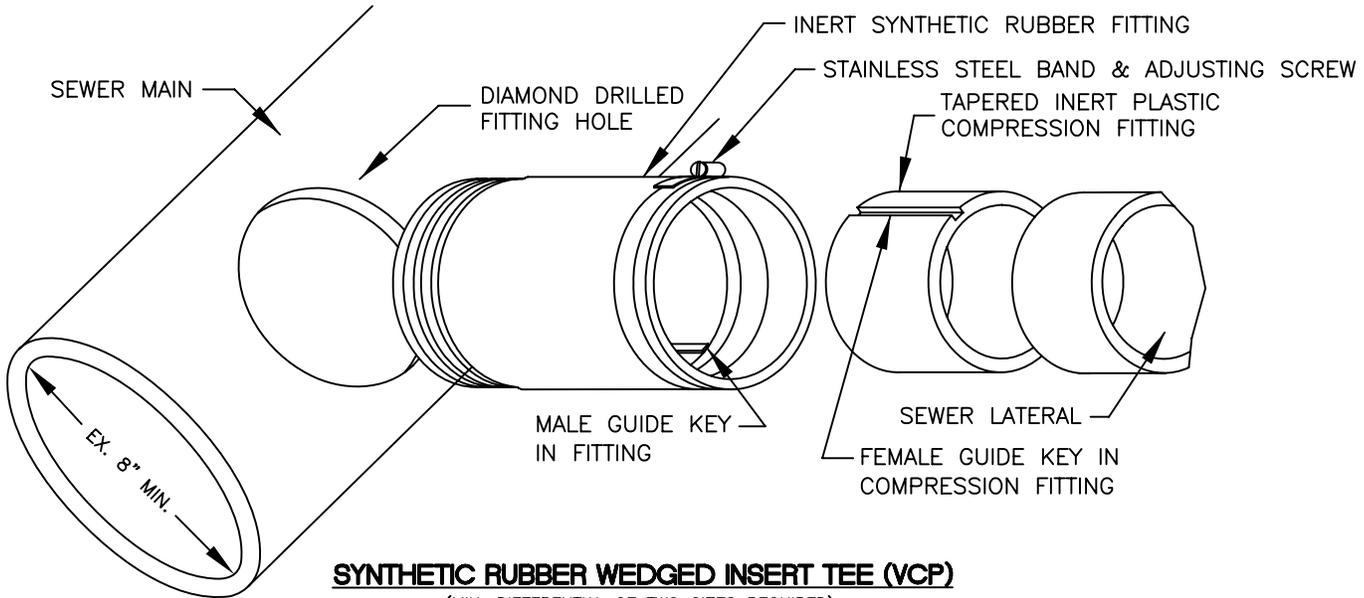
3/15/07
REVISED

SEWER LATERAL

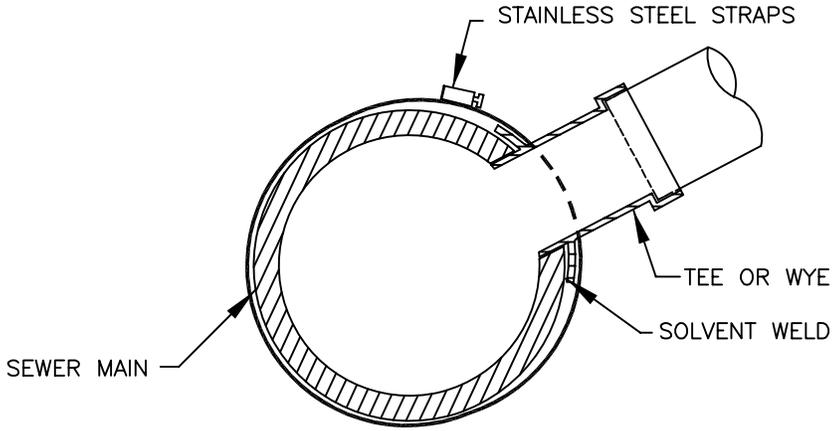
DRAWING NO.
S-2



INSERTION OF MANUFACTURED WYE (VCP)

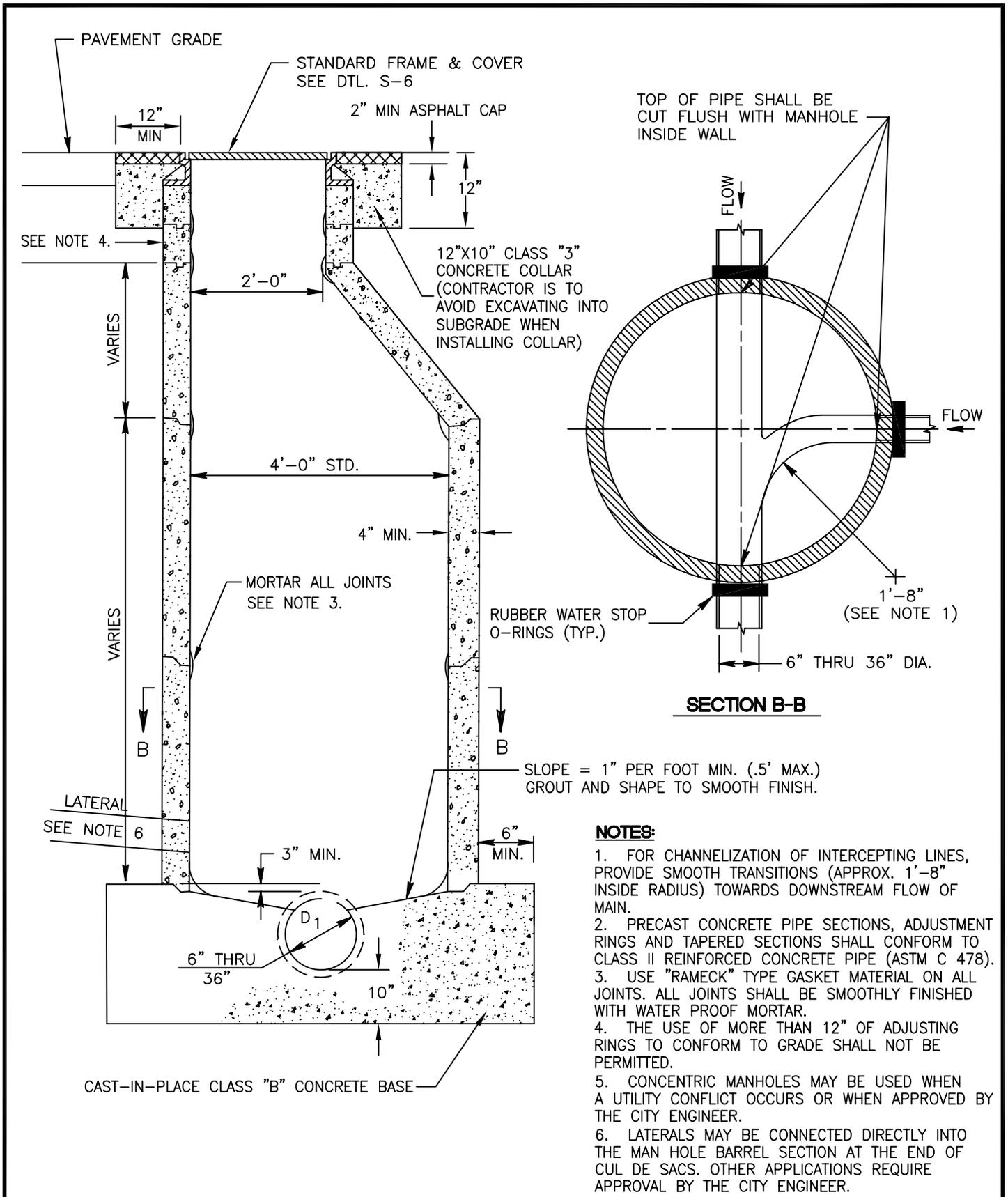


SYNTHETIC RUBBER WEDGED INSERT TEE (VCP)
(MIN. DIFFERENTIAL OF TWO SIZES REQUIRED)



TEE OR WYE TAP (PVC OR ABS)
(SOLVENT WELDED FITTINGS)

	<p>City of Morgan Hill Public Works Department</p>	<p>SEWER LATERAL CONNECTION OPTIONS</p>	<p>DRAWING NO.</p>
<p><i>Juan Pacheco</i> CITY ENGINEER</p>	<p>4/1/96 DATE</p> <p>_____ REVISED</p>		<p>S-3</p>



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Public Works Department

Jim Cochcraft
CITY ENGINEER

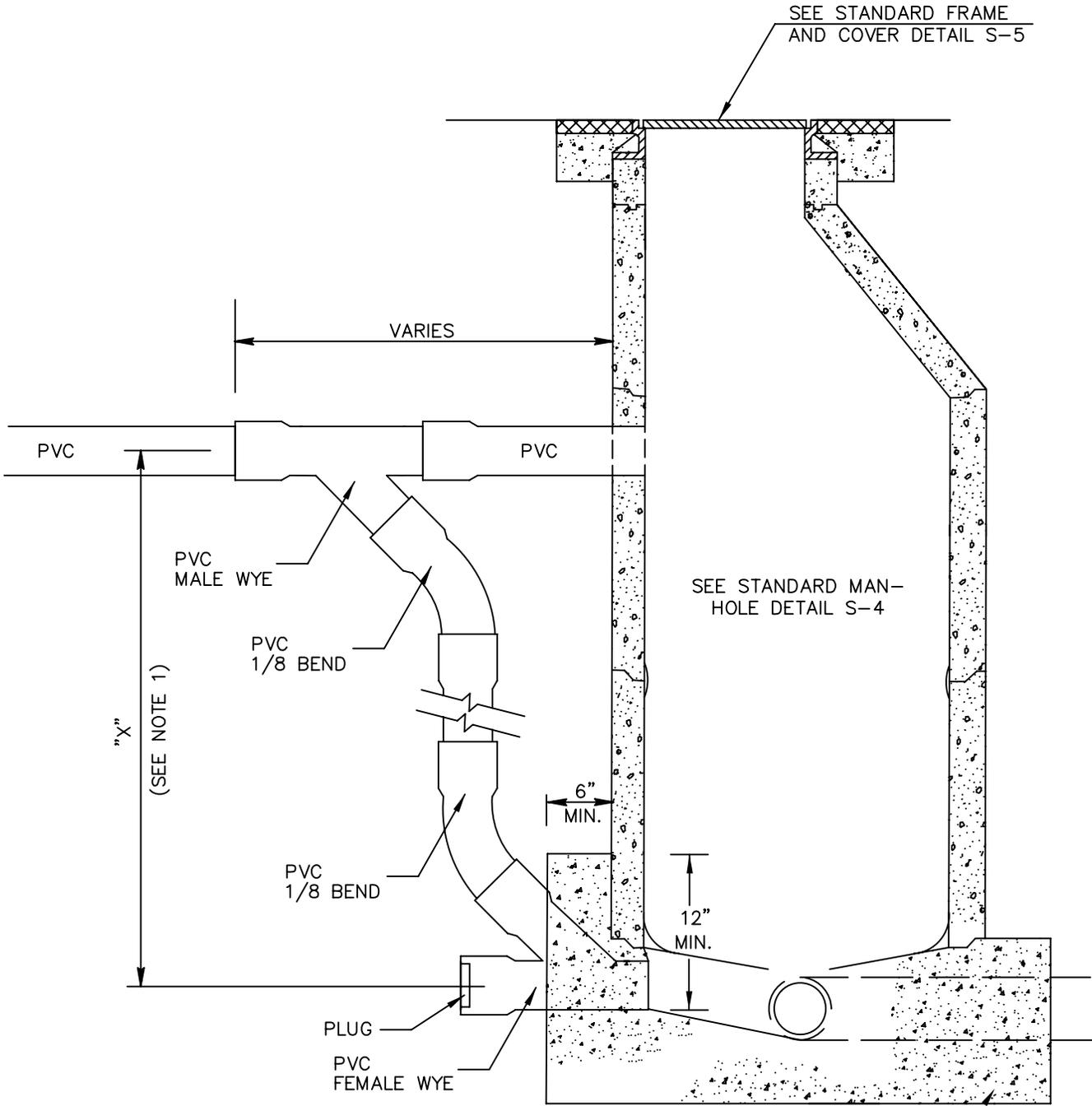
4/1/96
DATE

3/15/07
REVISED

**SANITARY SEWER MANHOLE
PIPE SIZES 6" TO 36"**

DRAWING
NO.

S-4



NOTES:

1. THIS DETAIL SHALL BE USED WHEN DISTANCE "X" IS GREATER THAN 2'-0" FROM INVERT OUT.
2. "OUTSIDE" DROP MANHOLE SHOWN. "INSIDE" MANHOLES MAY ONLY BE USED WITH WRITTEN PERMISSION OF THE CITY ENGINEER.
3. ALL PIPING SHALL BE SDR 26 PVC OR ABS.
4. CONNECTION TO PRE-CAST SECTION OF MANHOLE SHALL BE SEALED WITH "RAMNECK" TYPE GASKET MATERIAL AND SHALL BE MORTARED AS DESCRIBED IN NOTE 3 OF DETAIL S-4.



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Public Works Department

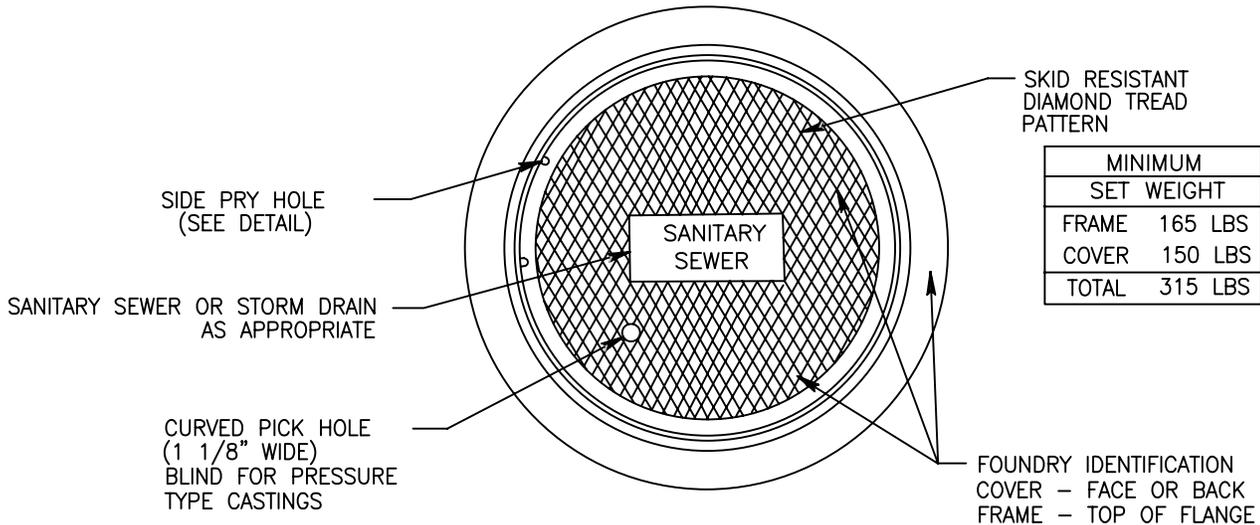
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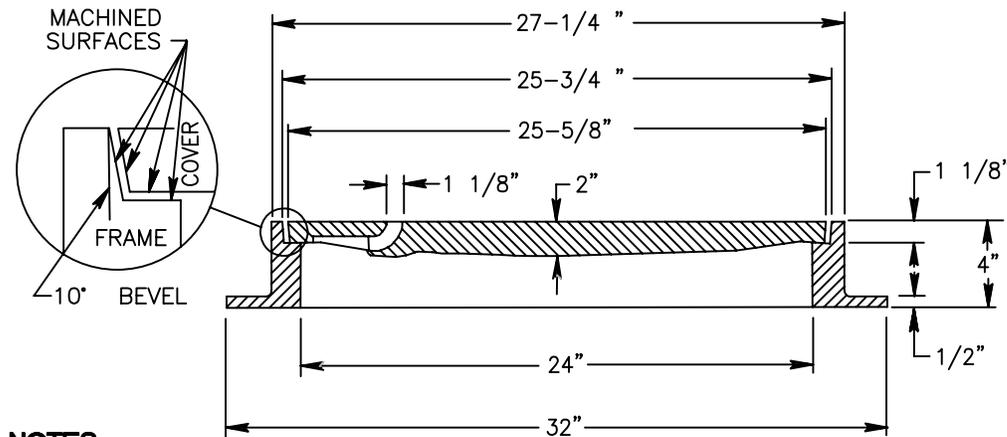
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DROP MANHOLE

DRAWING
NO.
S-5

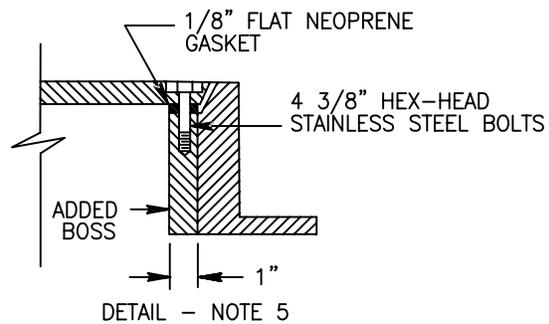
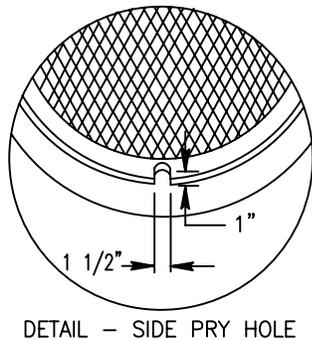


MINIMUM SET WEIGHT	
FRAME	165 LBS
COVER	150 LBS
TOTAL	315 LBS



NOTES:

1. MANHOLE FRAME AND COVER SHALL BE SOUTH BAY FOUNDRY SBF-1254 OR AN APPROVED EQUAL WHICH MEETS MINIMUM SET WEIGHT.
2. CASTING SHALL BE DIPPED IN ASPHALT PAINT.
3. MINIMUM WEIGHT OF SET 315 LBS.
4. CAST IRON SHALL CONFORM TO ASTM A 48 CLASS 35B.
5. WHERE BOLT DOWN COVERS ARE CALLED FOR ON THE PLANS, ADD BOSSES TO FRAME (4 EA. @ 90°), SEE DETAIL.
6. MANUFACTURER SHALL CERTIFY MATERIAL, WEIGHT AND DIMENSIONS.
7. MANUFACTURER TO CERTIFY THAT FRAME AND COVER MEET ALL LOAD REQUIREMENTS FOR H-20 HIGHWAY LOADING.



City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

3/15/07
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**STANDARD MANHOLE
FRAME & COVER**

DRAWING
NO.
S-6