CITY
OF
LIVERMORE

STANDARD DETAILS

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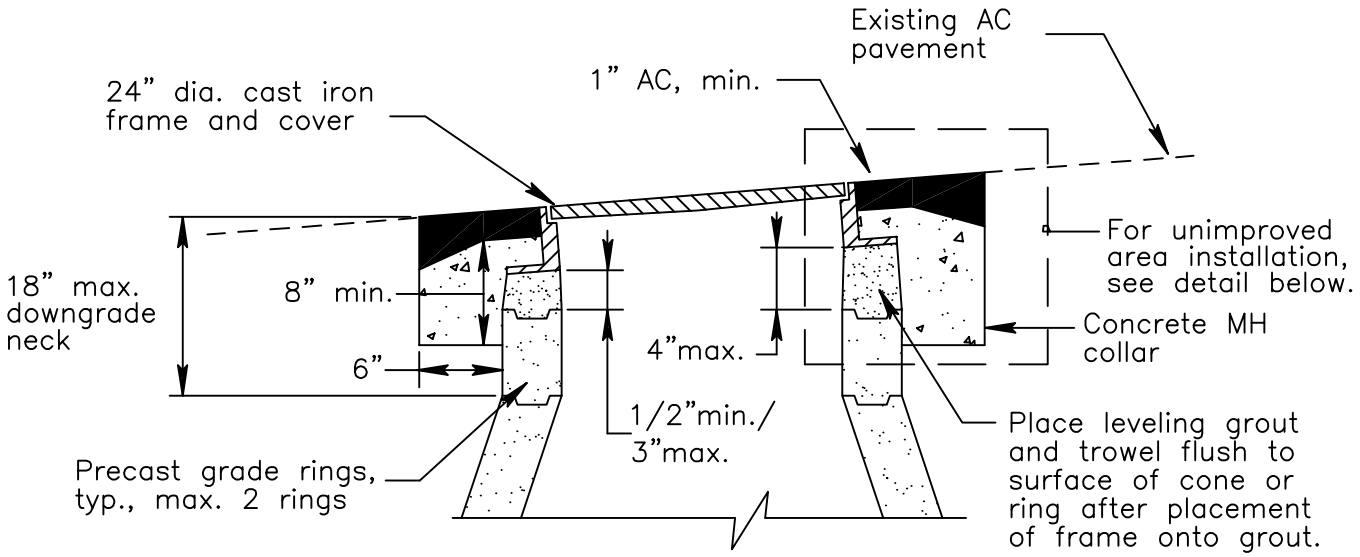
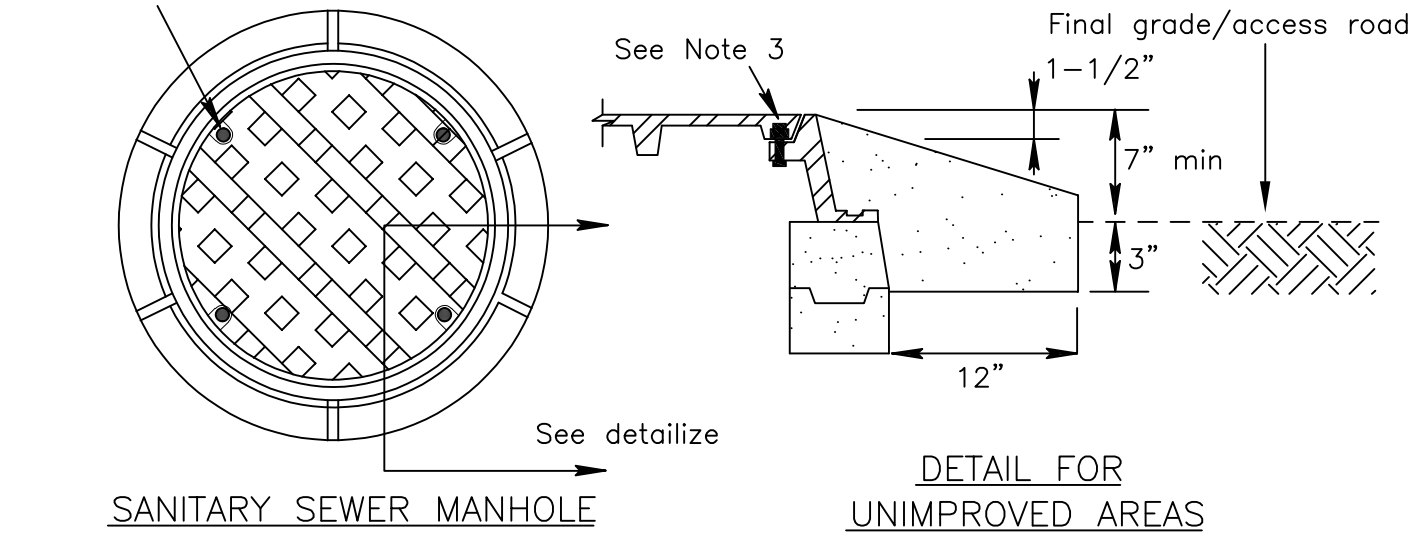
SANITARY SEWER AND STORM DRAIN - S



STREET PROFILE SECTION



SANITARY SEWER MANHOLE

DETAIL FOR UNIMPROVED AREAS

Notes:

1. For Type I and Type II maintenance hole structures see S–2 or S–3.
2. Maintenance hole frame and cover to match road grade and cross slope within 0" TO + 1/8".
3. Bolt down frame and cover with four 1/2" x 2–1/2" stainless steel, hex head, recessed cap screws. Secure cover with screws, washers, and rubber gasket seals. Remove bolts upon completion of paving.

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

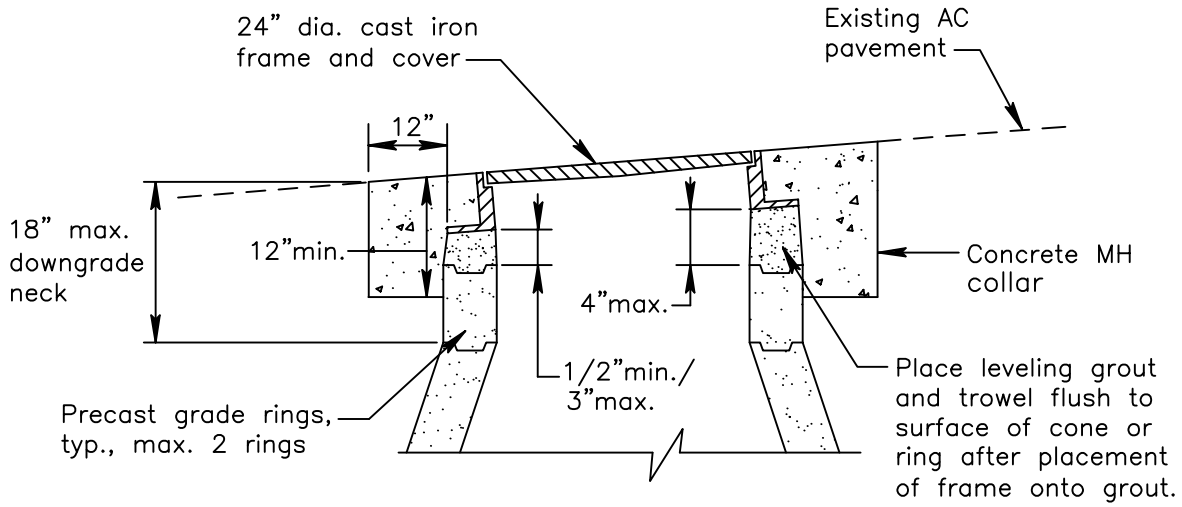
S01.DWG

MAINTENANCE HOLE FRAME AND COVER

CITY OF LIVERMORE
STANDARD DETAIL

Dwn: M/W/HI	Date: Sept–22	No.
Ckd: Spec. Committee	Scale: None	S–1A

City Engineer



STREET PROFILE SECTION

Notes:

1. For Type I and Type II maintenance hole structures see S–2 or S–3.
2. Frame and cover shall be installed flush with finish grade +1/8" in paved areas. Frame on other streets and outside crossing zones shall be reset to grade when the the vertical offset is equal to or greater than 3/4".
3. Concrete shall be 7 sack, 1" max aggregate, 4000 psi with 6lbs of lampblack and 1.5lbs of engineered reinforcing fibers (fibermesh or equal) per cubic yard. Concrete shall be poured before 12 noon. Concrete shall be protected with steel trench plates until it can support traffic without damage, 3 days min.
4. When multiple structures are being set to grade work shall be phased so that vehicle traffic doesn't have to weave between obstruction. Coordinate work locations with the City Engineer.
5. Structures lowered for paving operations shall be referenced to points outside the work area so that they can be located accurately after paving. Said structures shall be lowered so that no portion is in conflict with the slowest grading plane. False bottoms shall be installed in all storm and sewage structures prior to lowering and shall be removed immediately after the frame and cover is reinstalled.
6. See Standard Detail G–1E for Arterials and Collectors Location Map

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

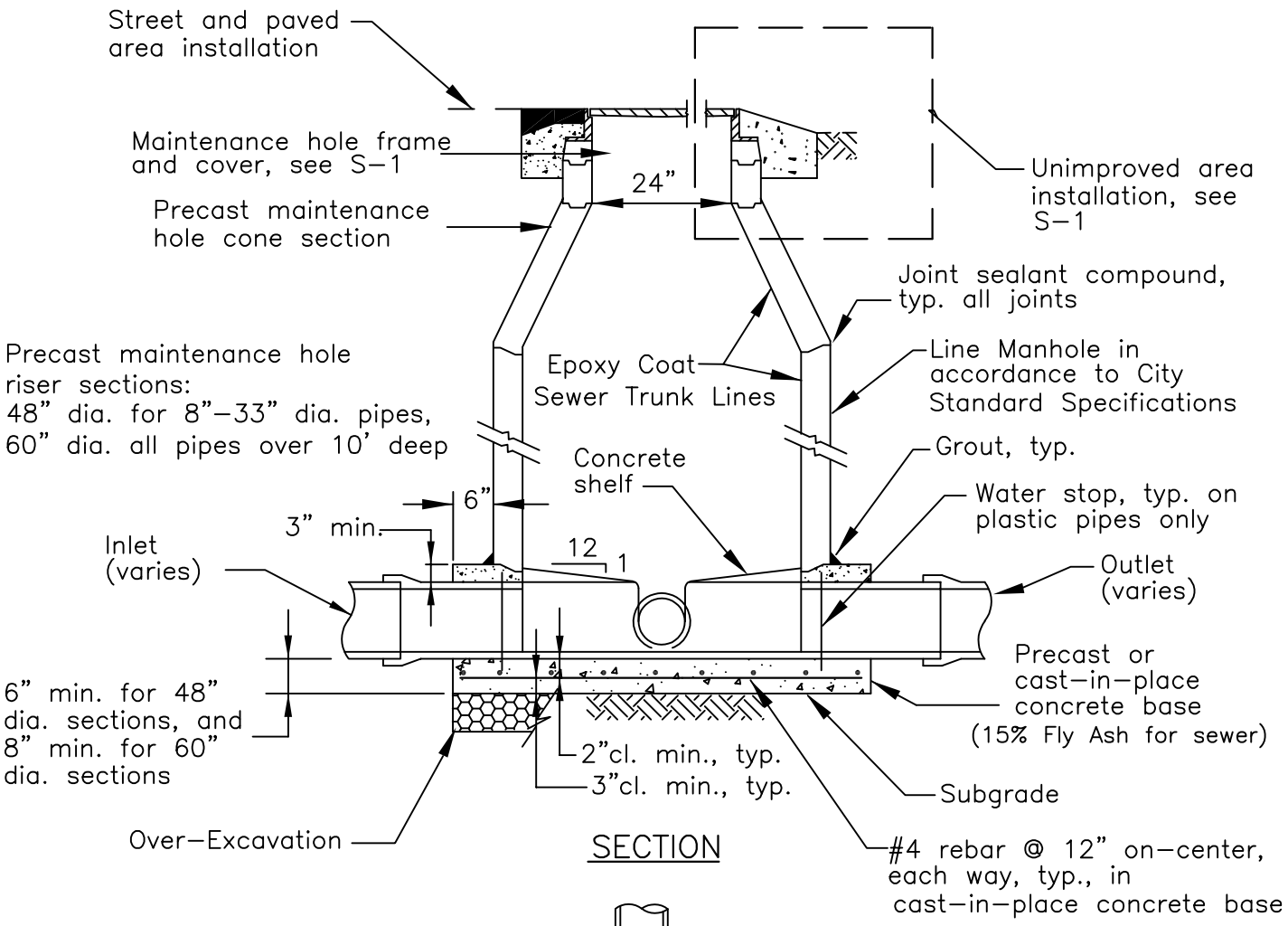
UTILITY FRAME AND COVER ADJUSTMENT FOR ARTERIALS AND COLLECTORS

CITY OF LIVERMORE
STANDARD DETAIL

Dwn: M/W/HI	Date: May–23	No.
Ckd: Spec. Committee	Scale: None	S–1B

City Engineer

S–1B.DWG



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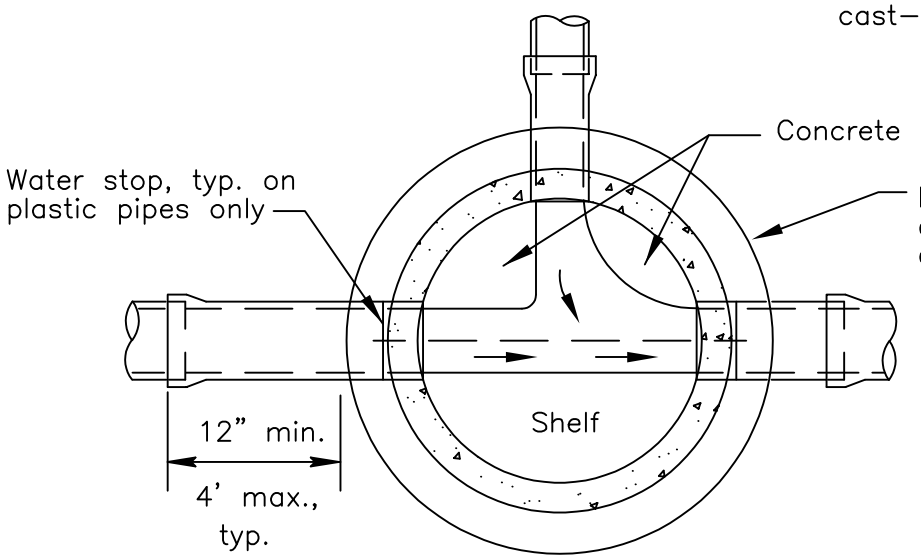


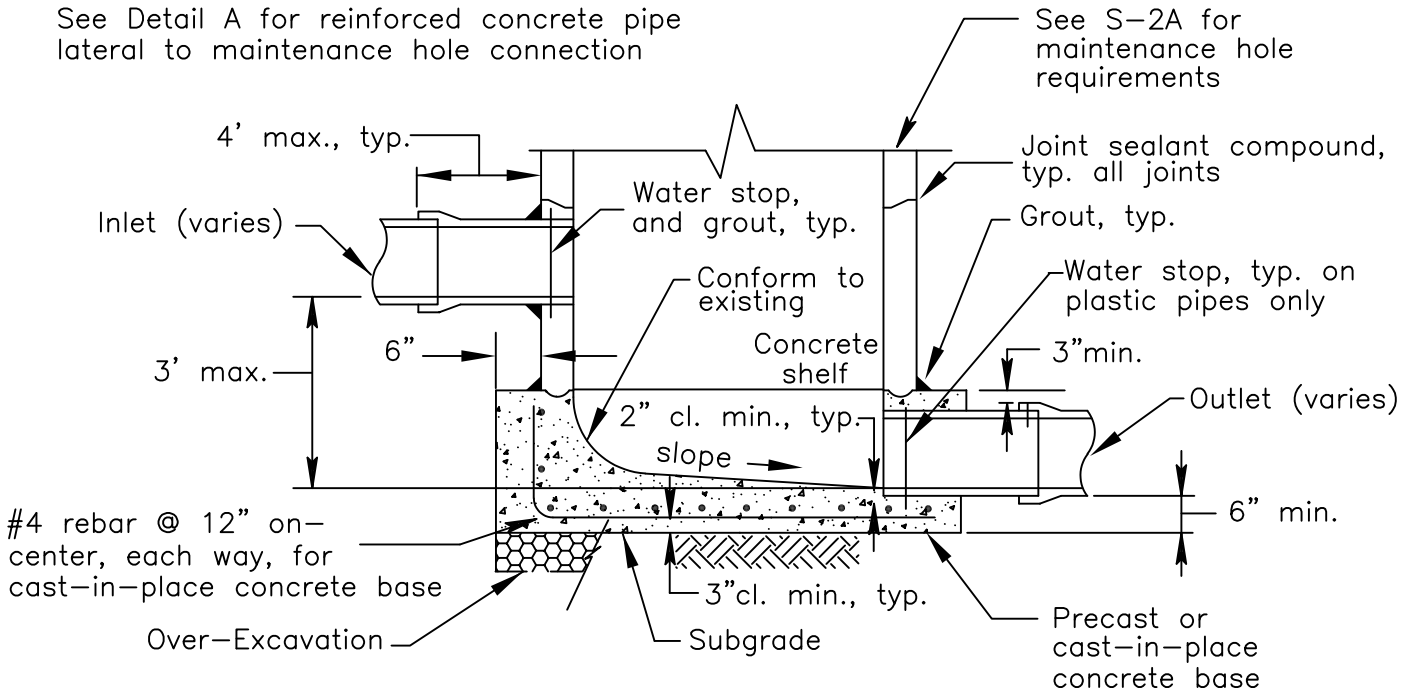
PLAN

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

See S-2B for allowable drop in maintenance hole.

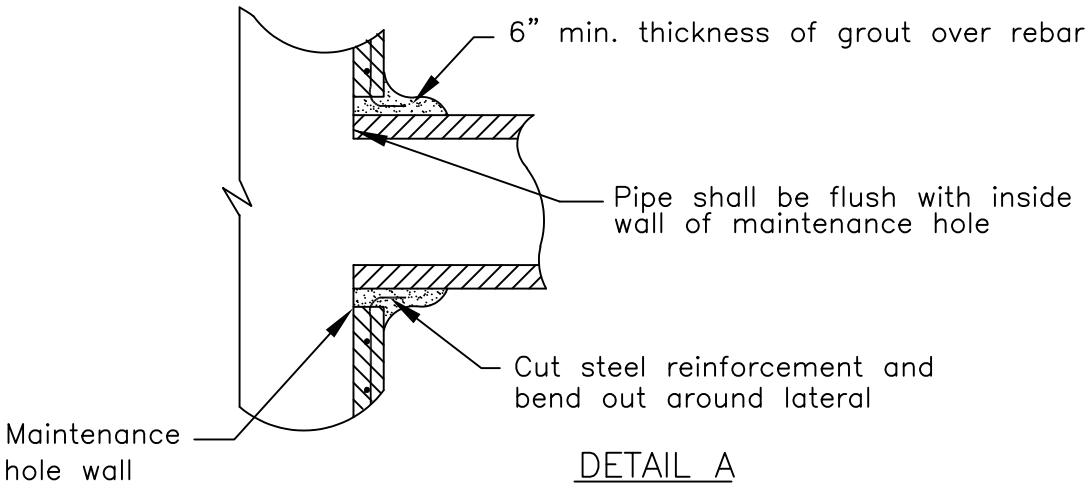
			CITY OF LIVERMORE STANDARD DETAIL	
			Dwn: FY/HI	Date: May-23
			Ckd: Spec. Committee	Scale: None
			City Engineer	
Date:	By:	Rev:	TYPE I MAINTENANCE HOLE 8" TO 33" DIA. PIPES	No. S-2A

S02A.DWG



SECTION

ALLOWABLE DROP IN MAINTENANCE HOLE



DETAIL A

RCP LATERAL TO MAINTENANCE HOLE WALL

Notes:

1. Drop in main line outside of maintenance hole is not allowed.

User note:

These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

TYPE I MAINTENANCE HOLE 8" TO 33" DIA. PIPES

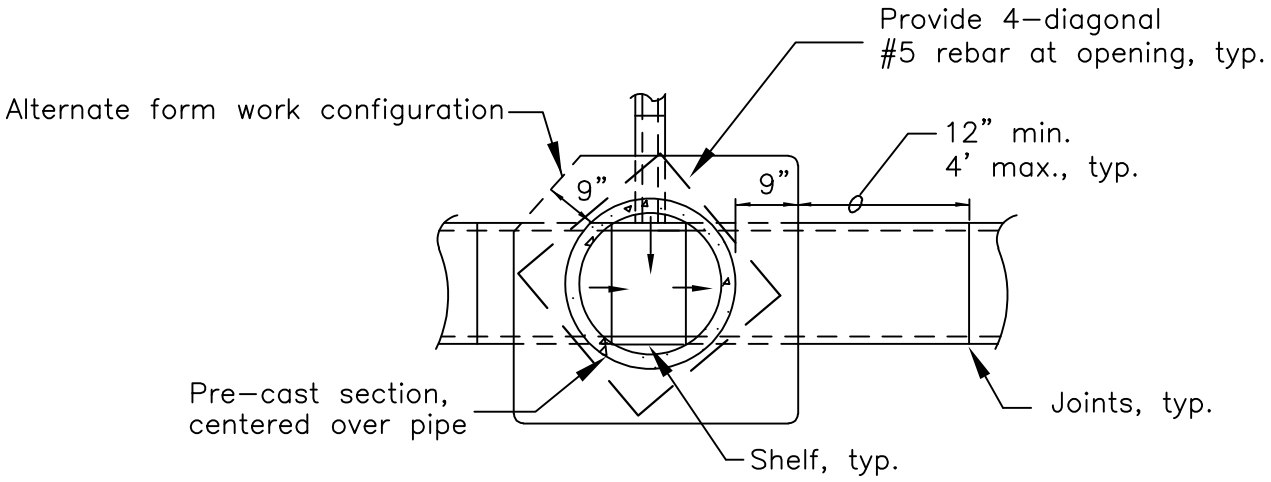
CITY OF LIVERMORE

STANDARD DETAIL

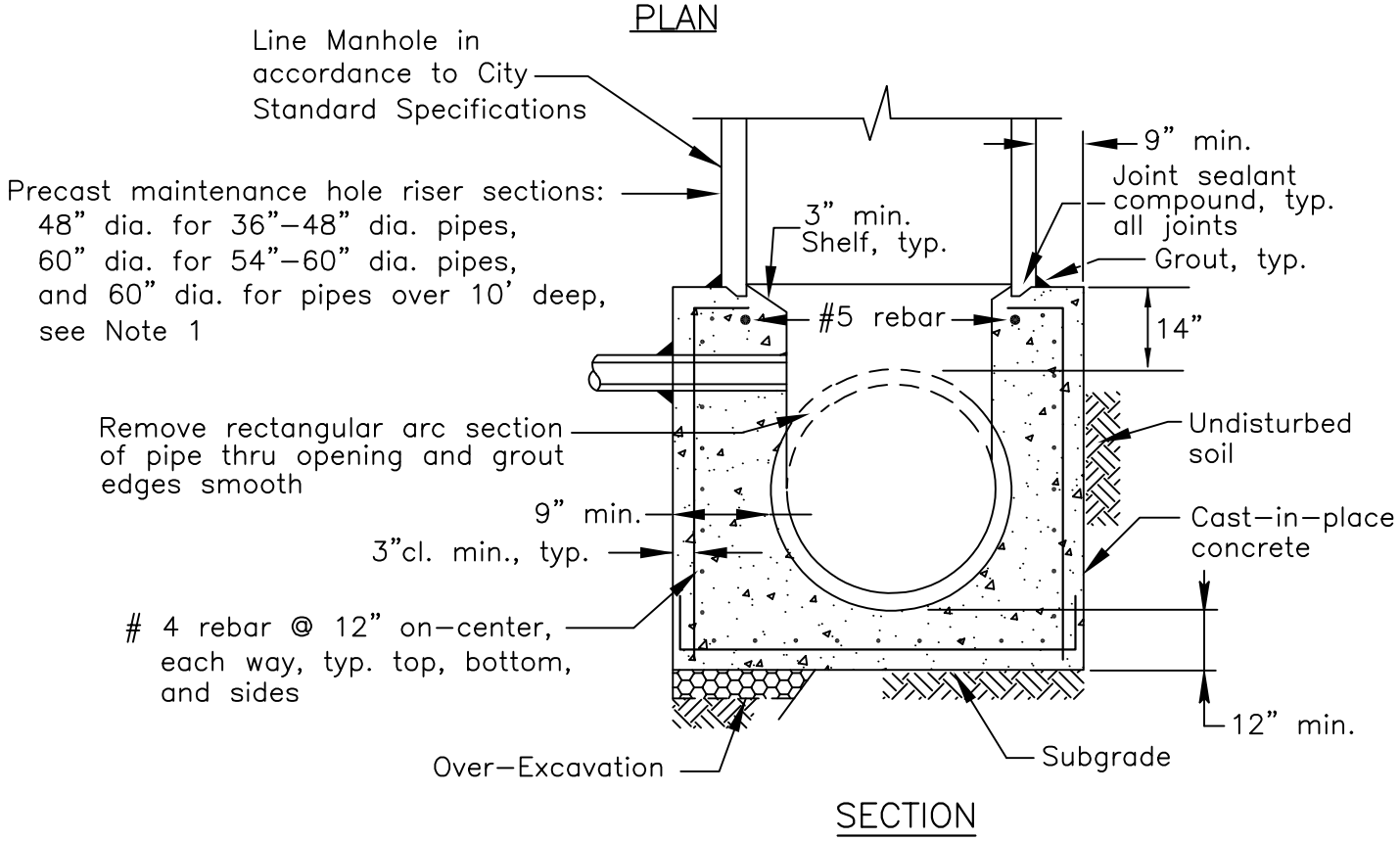
Dwn: FY	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–2B

City Engineer

S02B.DWG



PLAN



SECTION

Notes:

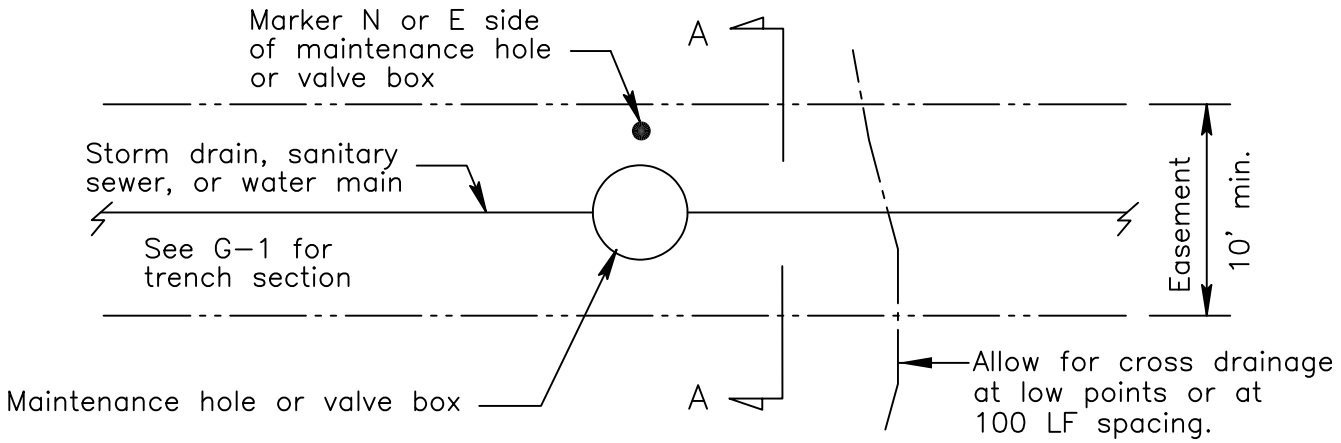
1. See S–2 for Type I maintenance hole requirements and notes.
2. For depths of cover greater than 20 feet or pipes larger than 60" diameter provide special engineered design prepared by licensed Civil Engineer.

User note:

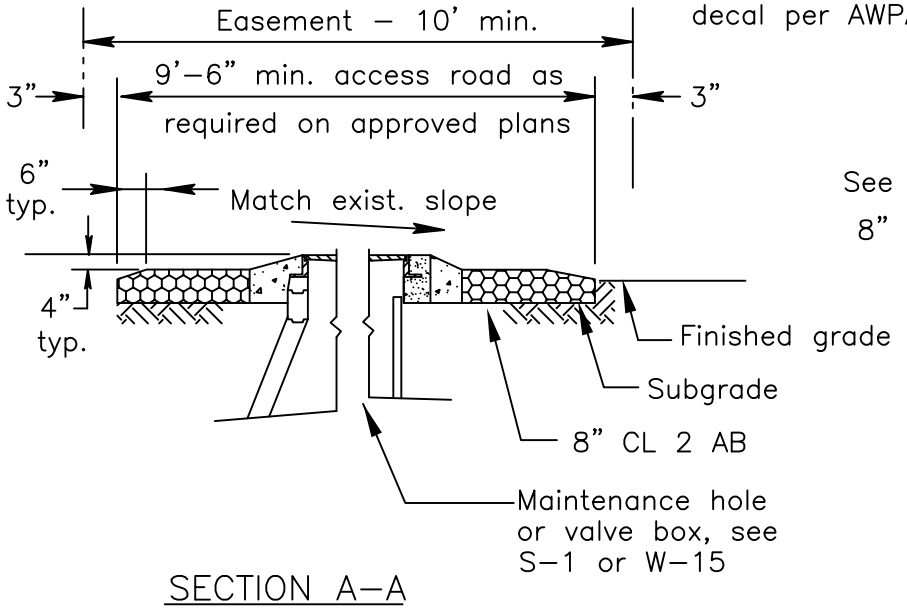
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

			TYPE II MAINTENANCE HOLE 36" TO 60" DIA. PIPES	CITY OF LIVERMORE STANDARD DETAIL	
				Dwn: FY/HI	Date: May–23
				Ckd: Spec. Committee	Scale: None
				City Engineer	No. S–3
Date:	By:	Rev:			

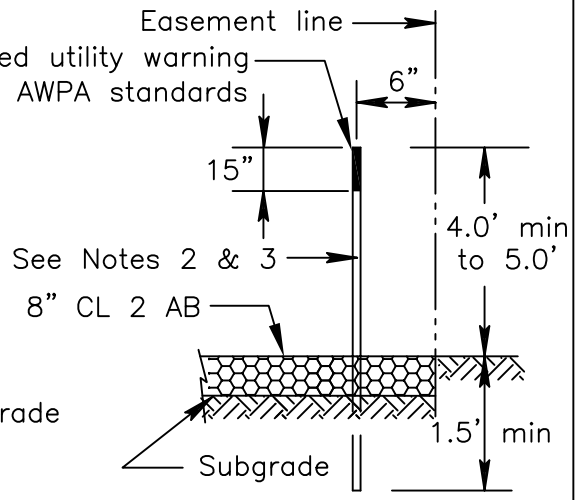
S03.DWG



PLAN



SECTION A–A



MARKER POST

Notes:

1. Provide locking MH frame and cover with curved, blind pick hole in all unimproved areas.
2. 4" wide 3 rail fiberglass marker post with UV protection coating. marker post to bend over when hit and snap back to normal upright position. Post shall be installed directly into soil and shall be colored per AWPA utility marking colors.
3. Provide Potable and Reclaim Water valve decals on marker post as follows to identify the type of valve: BV (butterfly valve), GV (gate valve), etc., approximately 12" down from the utility warning decal. Letters shall be 3" tall. and match color of the post. The decal background shall be white matching the utility warning label above.
4. Compaction of AB and subgrade shall be to 90% compaction in accordance with ASTM D1557.

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

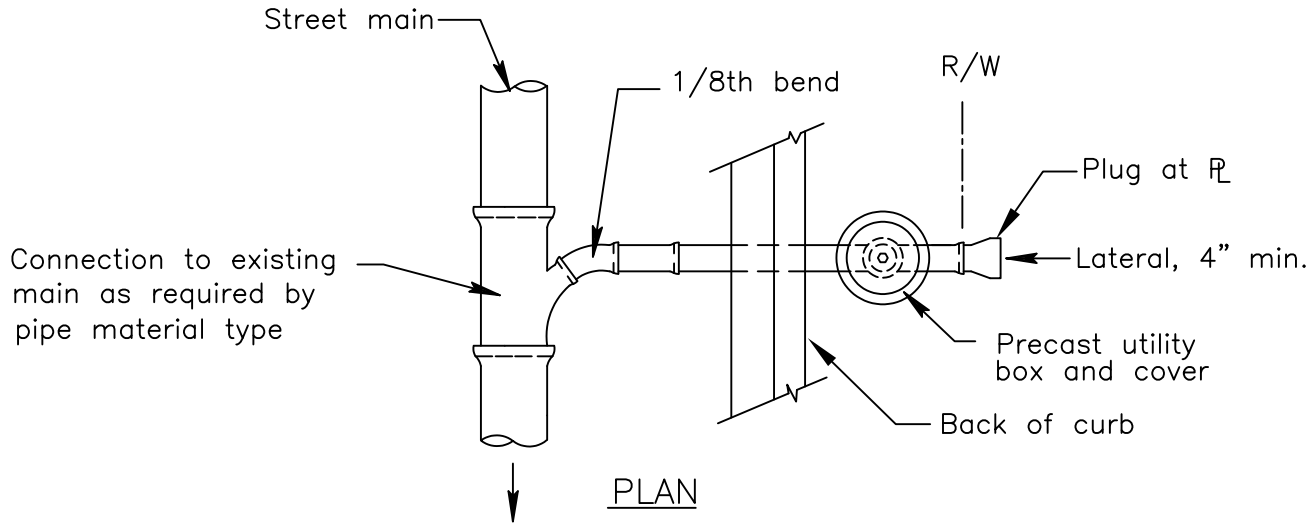
S04.DWG

UNIMPROVED AREA UTILITY CONSTRUCTION

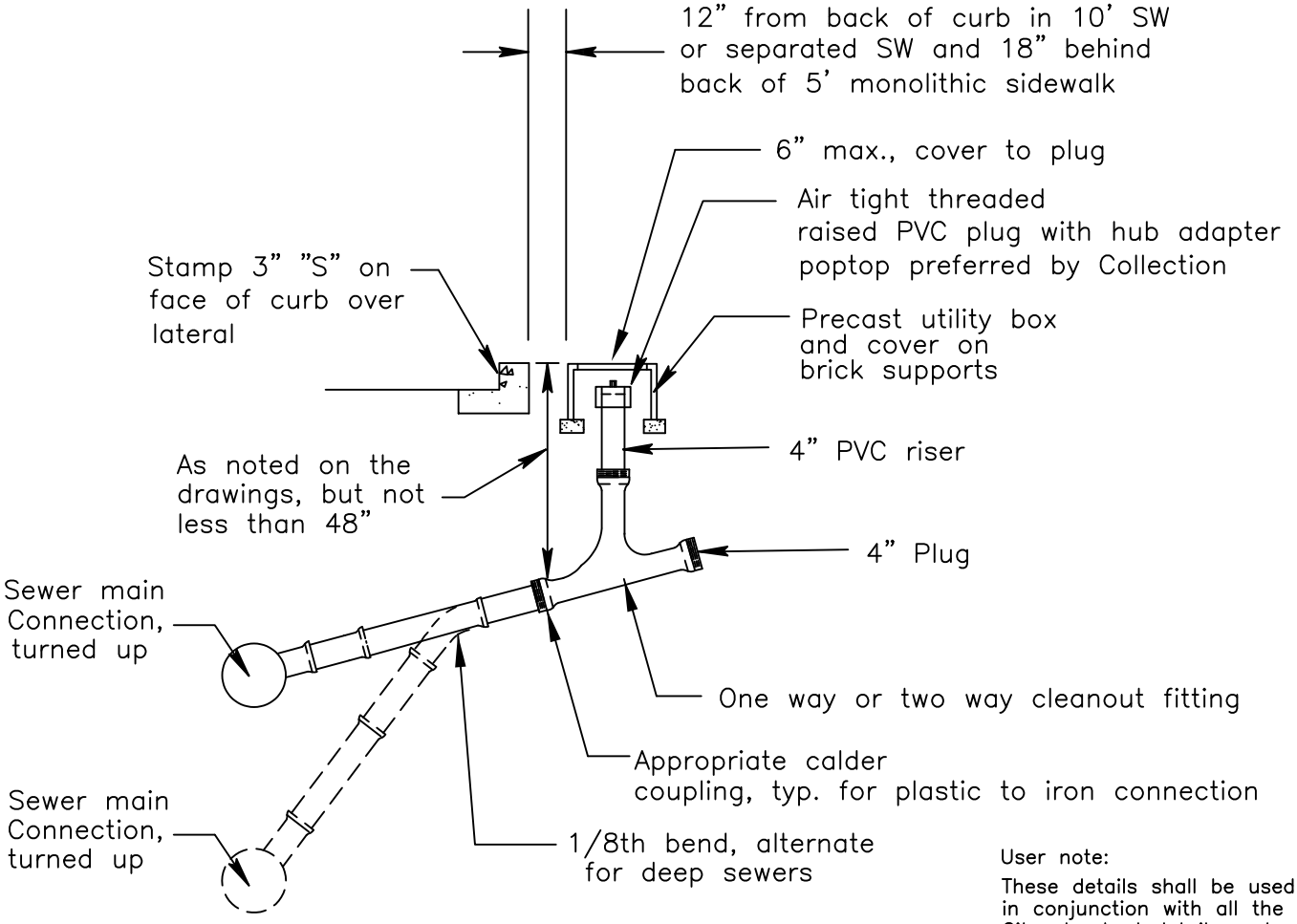
CITY OF LIVERMORE
STANDARD DETAIL

Dwn: W–HI	Date: Dec–22	No.
Ckd: Spec. Committee	Scale: None	S–4

City Engineer



PLAN



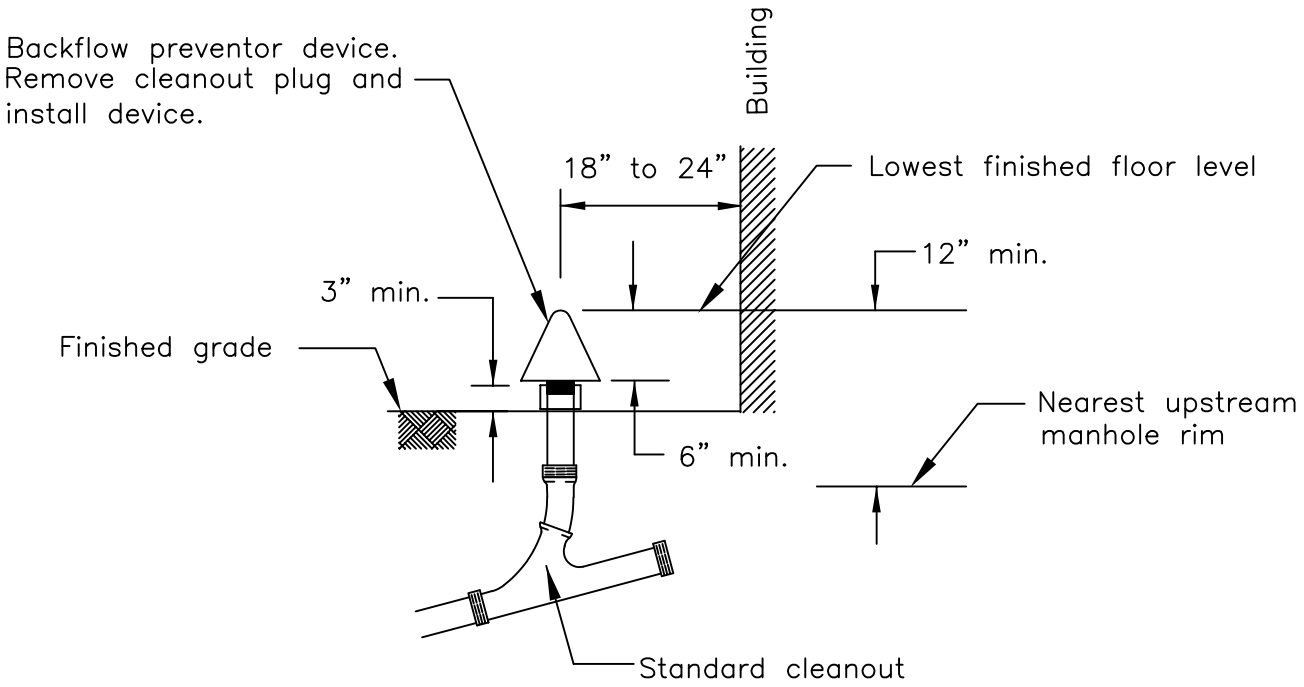
PROFILE

User note:

These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

			SANITARY SEWER LATERAL	CITY OF LIVERMORE STANDARD DETAIL
				Dwn: FY/HI | Date: Dec-22 | No. S-5A
				Ckd: Spec. Committee | Scale: None
				City Engineer
Date:	By:	Rev:		

S05A.DWG



SANITARY SEWER BACKFLOW PREVENTOR

(See Note 5 for when installation is required)

Notes:

1. On laterals 6" and larger use 45° combination wye and 1/8th bend.
2. Riser material and size to be the same as lateral.
3. The minimum lateral slope shall be 1/4" per foot for 4" dia. pipe and 1/8" per foot for 6" dia. pipe.
4. All lateral piping and fittings shall be the same diameter.
5. Install sanitary sewer backflow preventor when the pad elevation is less than 12" above the nearest upstream sewer manhole rim or the finished floor (if known) is less than 12" above the nearest upstream sewer manhole rim.

User note:

These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

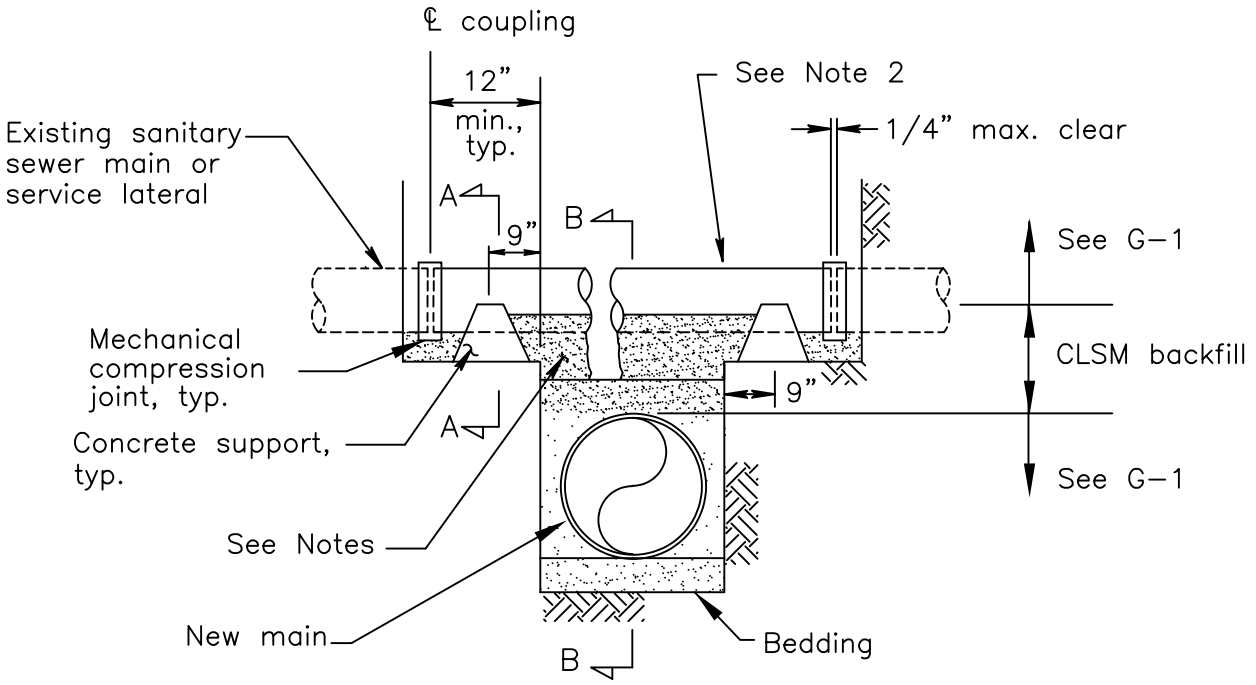
S05B.DWG

SANITARY SEWER LATERAL
(NOTES AND BACKFLOW PREVENTOR)

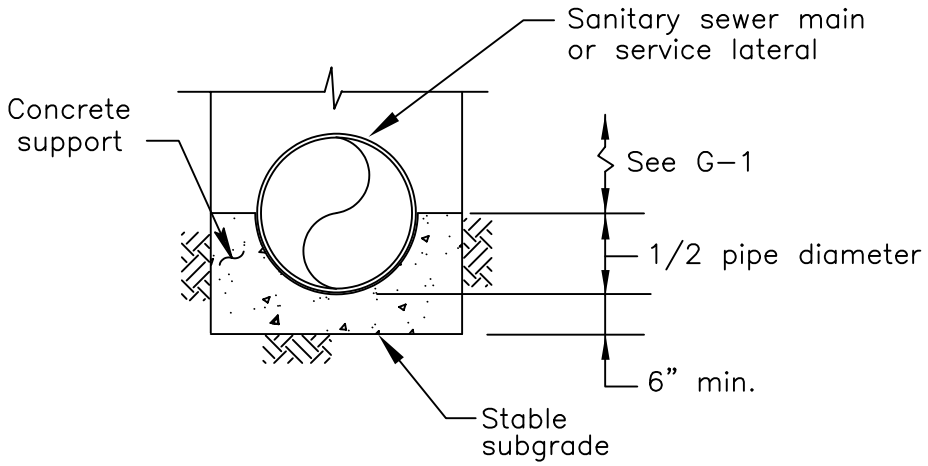
CITY OF LIVERMORE
STANDARD DETAIL

Dwn: FY	Date: May-13	No.
Ckd: Spec. Committee	Scale: None	S-5B

City Engineer



MAIN LINE SECTION



SECTION A–A
CONCRETE SUPPORT

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

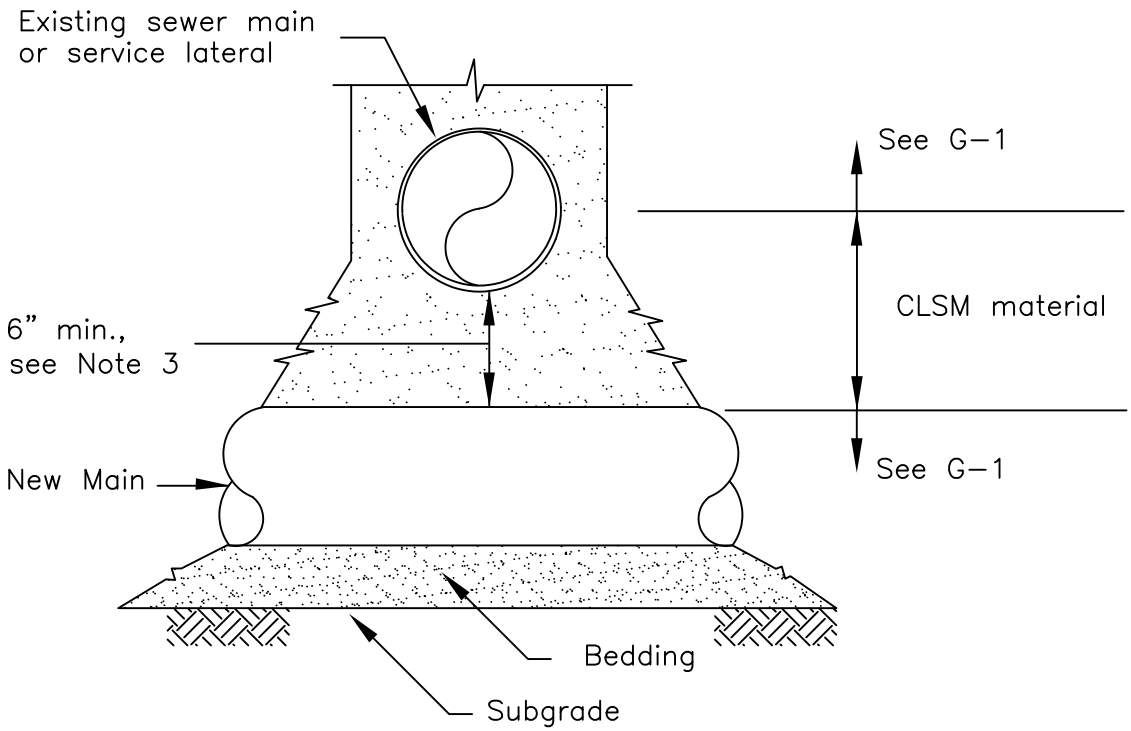
SANITARY SEWER CROSSING REPLACEMENT

CITY OF LIVERMORE
STANDARD DETAIL

Dwn: M–W	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–6A

City Engineer

S06A.DWG



SECTION B – B

Notes:

1. If New Main is vitrified clay pipe, install banded rubber couplings on New Main at the limits of the Controlled Low Strength Material (CLSM) backfill.
2. Sanitary sewer crossing replacement to be used when: 1) New Water Main is being installed under existing sanitary sewer main or lateral; or 2) Existing sanitary sewer main or lateral is damaged; or 3) When directed by the ENGINEER.
3. Less than 6" clearance must be approved by the ENGINEER.
4. For New Mains (EXCEPT water) crossing under an existing sanitary sewer pipe and the existing sanitary sewer pipe is damaged, use pipe of the same material to replaced the damaged existing sanitary sewer pipe.
5. For New Water Main crossing under an existing sanitary sewer pipe, the sanitary sewer main or lateral and/or the New Water Main must comply with this detail and G–2.

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

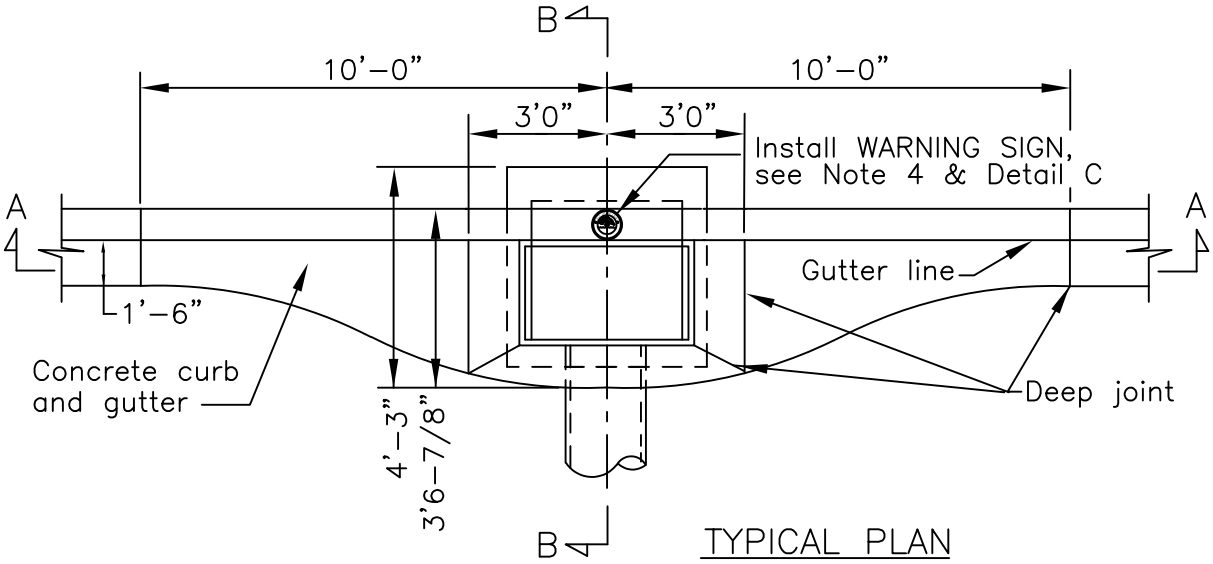
SANITARY SEWER CROSSING REPLACEMENT

CITY OF LIVERMORE
STANDARD DETAIL

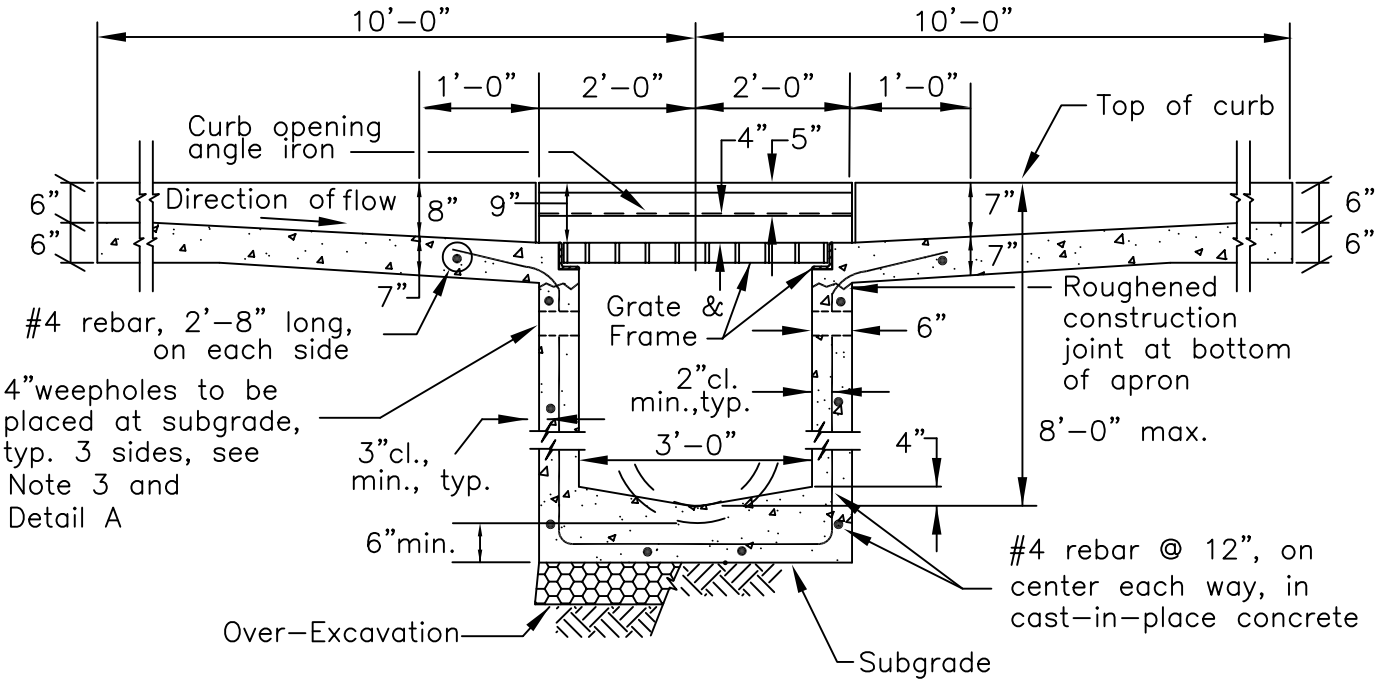
Dwn: M–W	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–6B

City Engineer

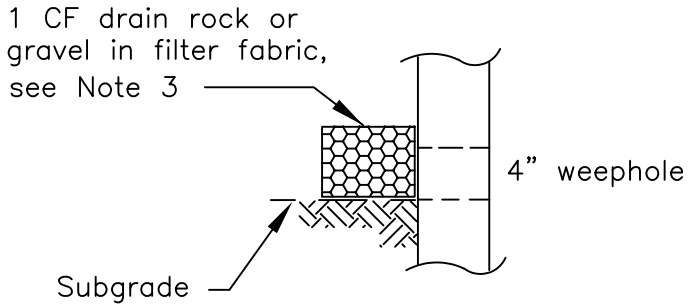
S06B.DWG



TYPICAL PLAN



SECTION A–A



DETAIL A

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

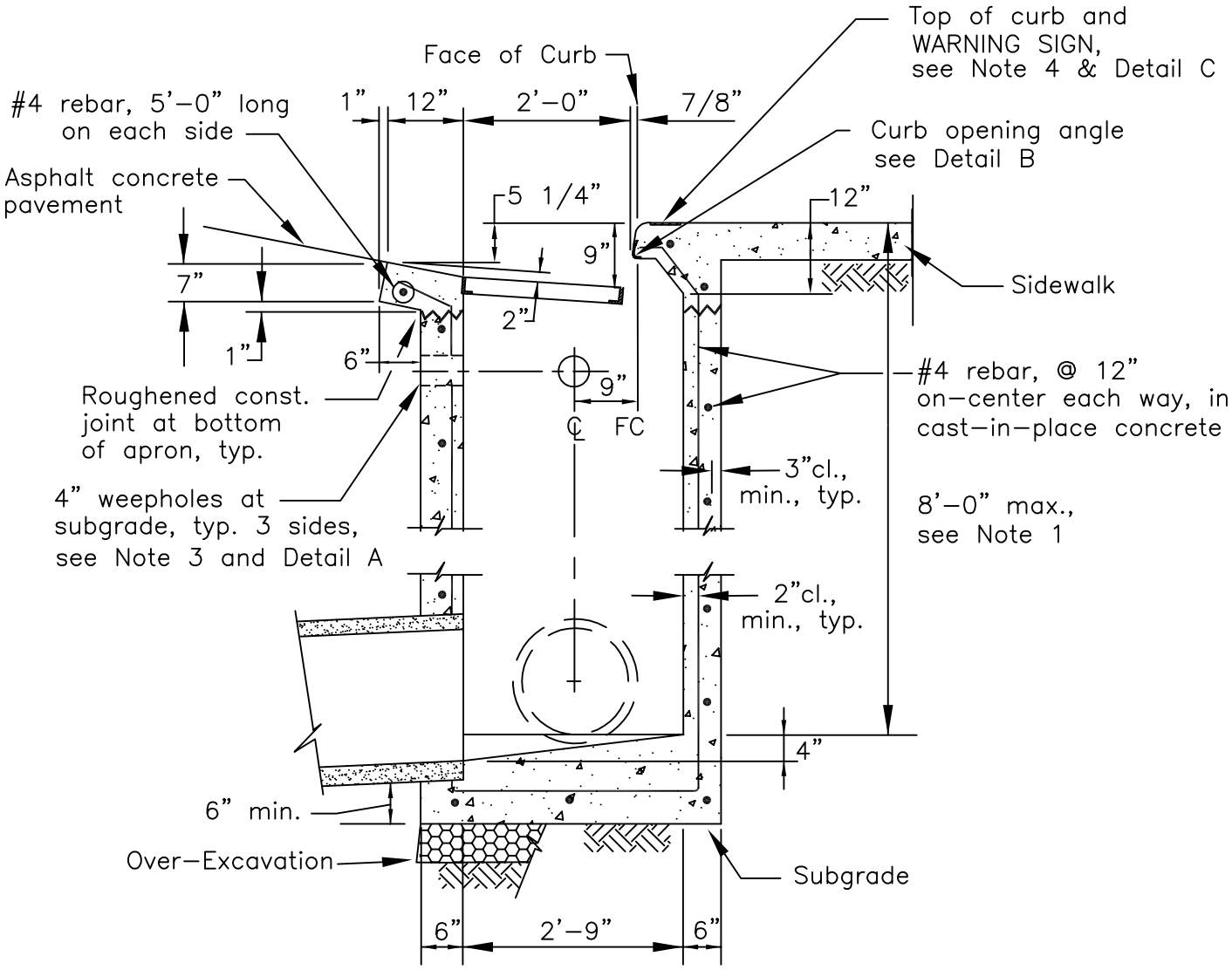
STORM WATER CURB INLET TYPE I 12" TO 30" DIA. PIPES

CITY OF LIVERMORE
STANDARD DETAIL

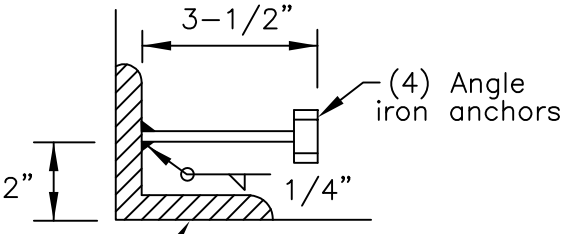
Dwn: M–W	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–7A

City Engineer

S07A.DWG



SECTION B–B



3–1/2" x 3–1/2" x 1/2" x 4'
Curb opening angle iron
Galvanized hot dipped

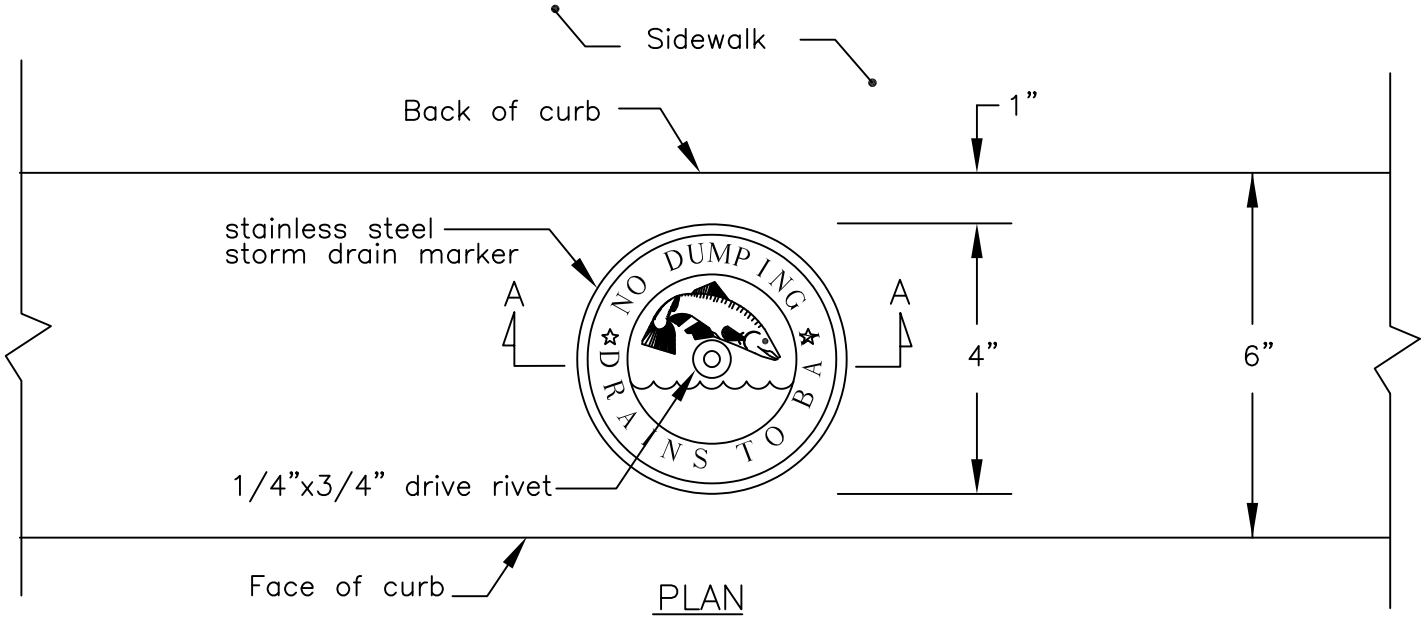
DETAIL B

User note:

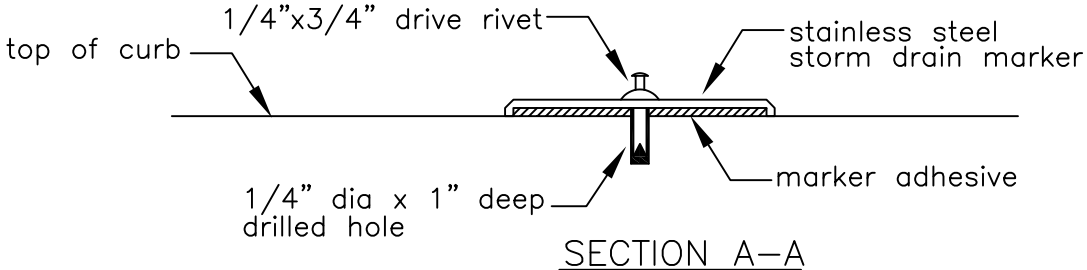
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

			STORM WATER CURB INLET TYPE I 12" TO 30" DIA. PIPES	CITY OF LIVERMORE STANDARD DETAIL
				Dwn: M–W–HI | Date: May 23 | No. S–7B
				Ckd: Spec. Committee | Scale: None
Date:	By:	Rev:		City Engineer

S07B.DWG



PLAN



SECTION A–A

DETAIL "C" – STORM DRAIN MARKER

Notes:

1. For storm water inlets from 8'–0" to 10'–0" deep use Type II maintenance hole base, see S–3.
2. For field drop inlet installation, see S–9.
3. Weepholes on three sides. Place one cubic foot of drain rock in filter fabric behind each weephole.
4. Install 4" Dia Storm Drain Marker at each inlet. The stainless steel marker may be purchased from the City's Water Resources Division:

   101 West Jack London Blvd
   Livermore, CA 94550
   Phone: 925–960–8100

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

S07C.DWG

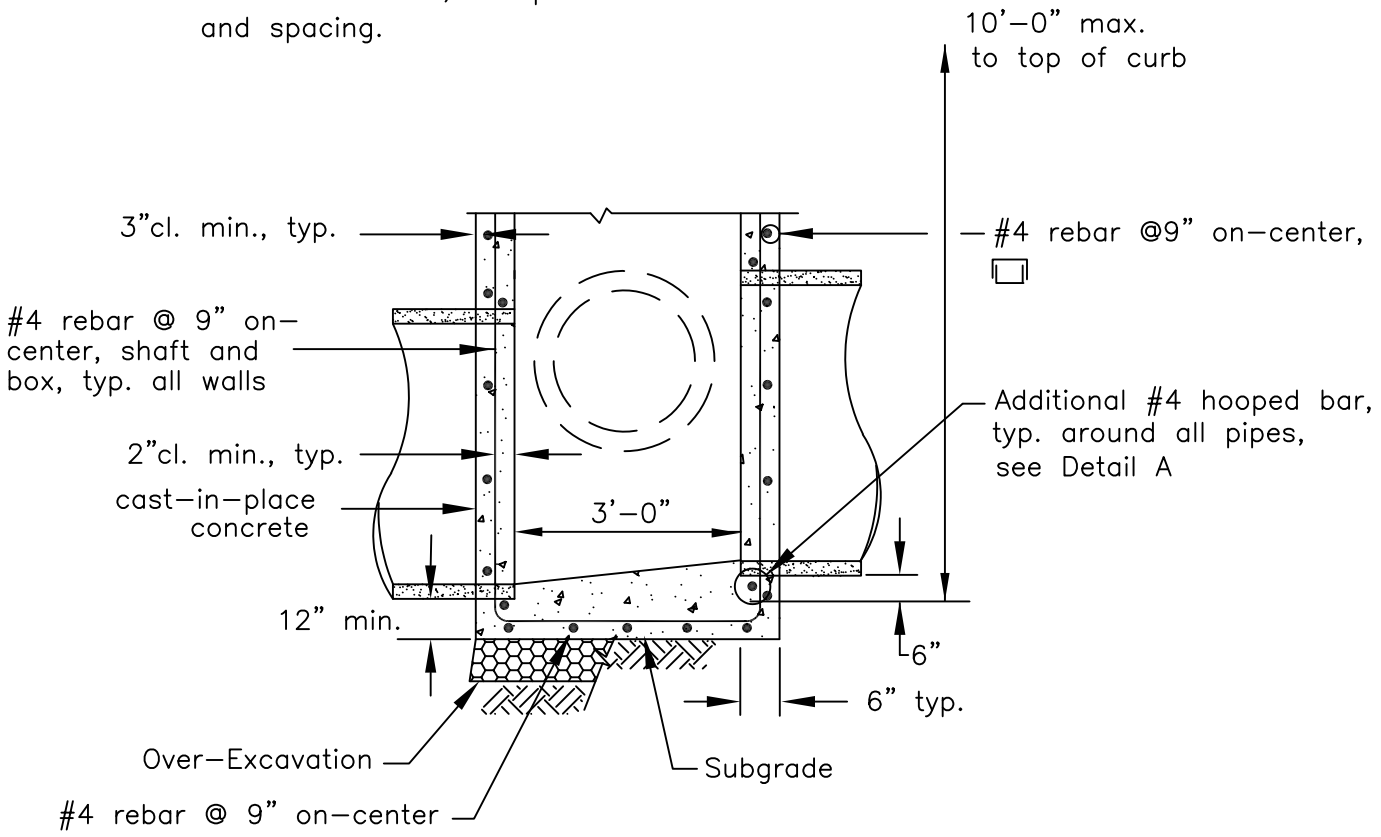
STORM WATER CURB INLET TYPE I NOTES

CITY OF LIVERMORE
STANDARD DETAIL

Dwn: FY	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–7C

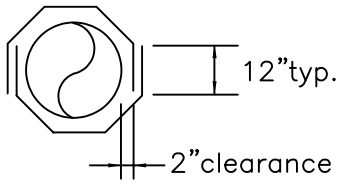
City Engineer

Construction of top of Curb Inlet per S–7A and S–7B, except for bar size and spacing.



SECTION A–A

see S–7A



HOOPED BAR

DETAIL A

User note:

These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

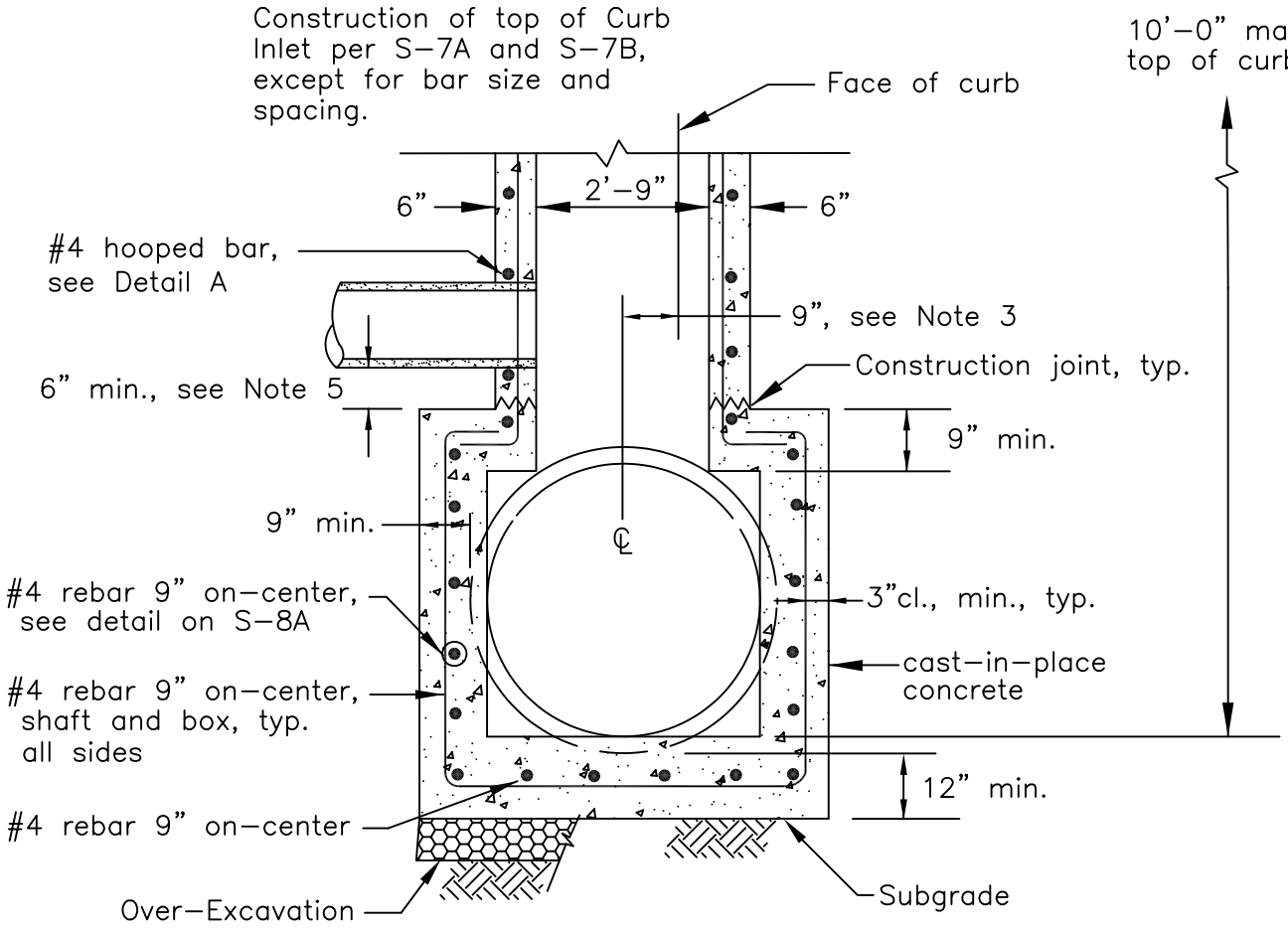
S08A.DWG

STORM WATER CURB INLET TYPE II 33" TO 60" DIA. PIPES

CITY OF LIVERMORE
STANDARD DETAIL

Dwn: M–W	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–8A

City Engineer



SECTION B–B

see S–7A

Notes:

1. For storm water curb inlets deeper than 10'–0" or for pipes larger than 60", provide special engineered design prepared by licensed Civil Engineer.
2. For field drop inlet installation, see S–9.
3. The 9" dimension from face of curb to storm drain main centerline is the standard offset for construction.
4. For top of Curb Inlet construction, see S–7A and S–7B.
5. For main/lateral connections other than as shown, provide special engineered design prepared by licensed Civil Engineer.

User note:

These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

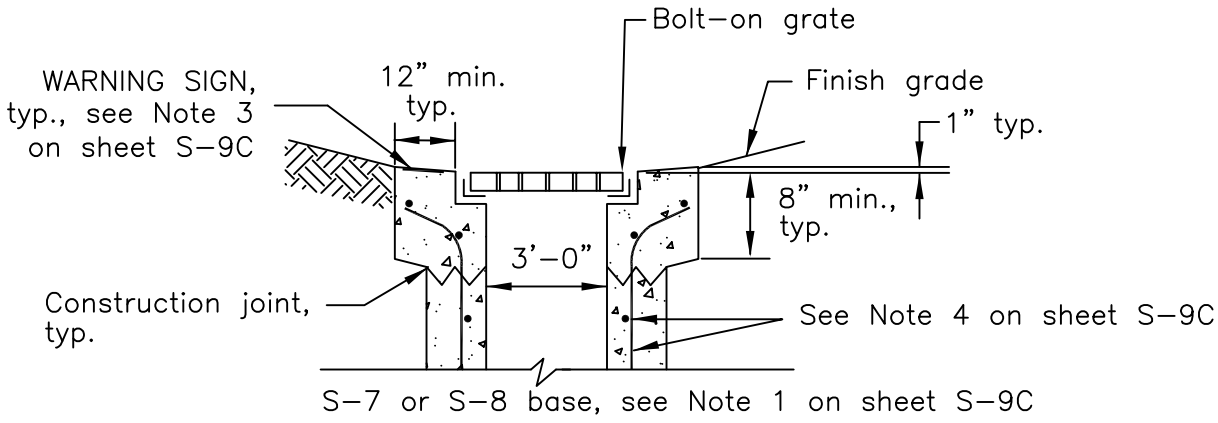
S08B.DWG

STORM WATER CURB INLET TYPE II 33" TO 60" DIA. PIPES

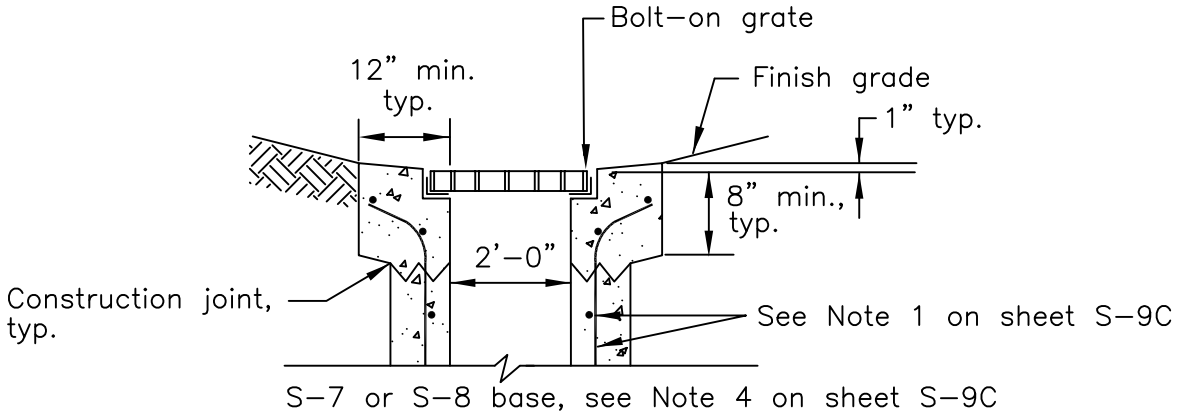
CITY OF LIVERMORE
STANDARD DETAIL

Dwn: M–W	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–8B

City Engineer



SECTION A–A



SECTION B–B

CAST–IN–PLACE CONCRETE

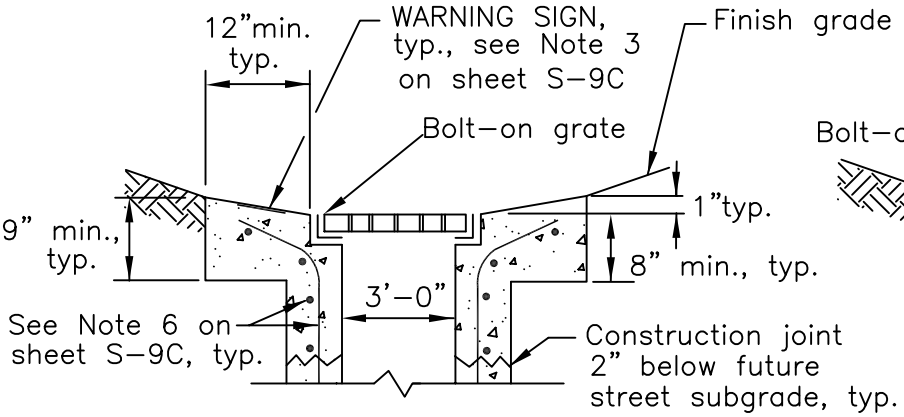
See S–9B for Plan View

User note:

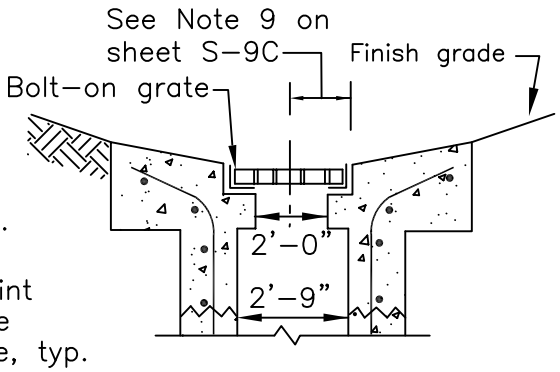
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

			STORM WATER FIELD DROP INLET UNIMPROVED/LANDSCAPED AREAS	CITY OF LIVERMORE STANDARD DETAIL	
				Dwn: FY	Date: May–13
				Ckd: Spec. Committee	Scale: None
				City Engineer	
Date:	By:	Rev:			No. S–9A

S09A.DWG



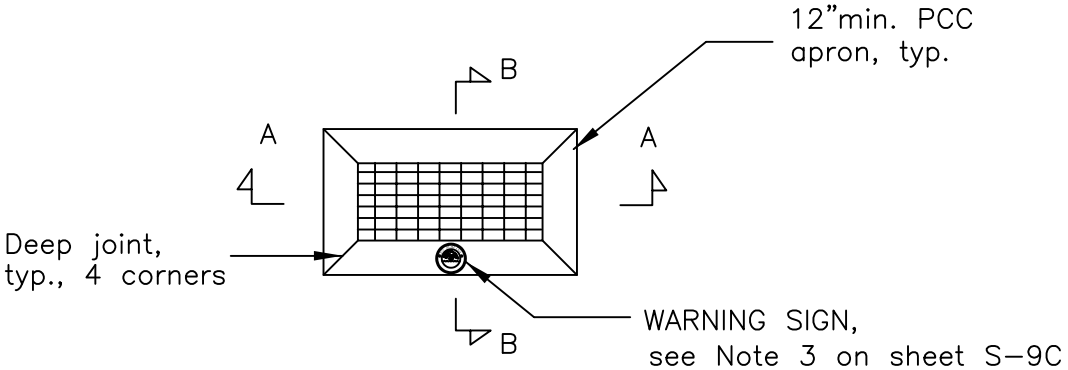
SECTION A–A



SECTION B–B

S–7 or S–8 base, see Note 6

CAST–IN–PLACE CONCRETE
(pre–cast not allowed)



PLAN VIEW

CAST–IN–PLACE CONCRETE

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

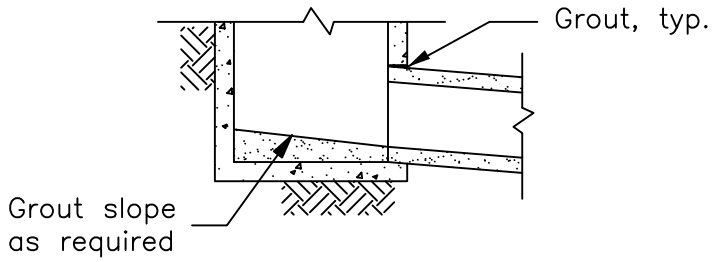
S09B.DWG

STORM WATER FIELD DROP INLET FUTURE STREET AREAS

CITY OF LIVERMORE
STANDARD DETAIL

Dwn: FY	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–9B

City Engineer



PRE–CAST CONCRETE

Notes:

1. Reinforcing bar per S–7 of S–8.
2. Frames and grates to be standard duty, except frame and grate in vehicle access areas to be heavy duty, HS–20 traffic loading. All frames and grates shall be boltable.
3. For WARNING SIGN installation see S–7C.

For construction in Unimproved or Landscaped Areas:

4. For C–I–P inlet base construction see:
   S–7 for Type I MH, 12" to 30" dia. pipes, or
   S–8 for Type II MH, 33" to 60" dia. pipes,
   with the following exceptions:
   1: ID = 2'–0" x 3'–0", and
   2: construction joints and weepholes are not required.
5. Pre–cast catch basin with bottom is allowed for 12" to 30" dia. pipes, less than 8'–0" deep in Unimproved or Landscape Areas.

For construction in Future Street Areas:

6. For C–I–P inlet base construction see:
   S–7 for Type I MH, 12" to 30" dia. pipes, or
   S–8 for Type II MH, 33" to 60" dia. pipes.
7. For modification of Field Drop Inlet to Curb Inlet remove concrete above weakened plane joint, tie–in rebar, construct new curb inlet per S–7.
8. Do not install weepholes in Field Drop Inlet in Future Street Area.
9. 9" from centerline of pipe to future face of curb.

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

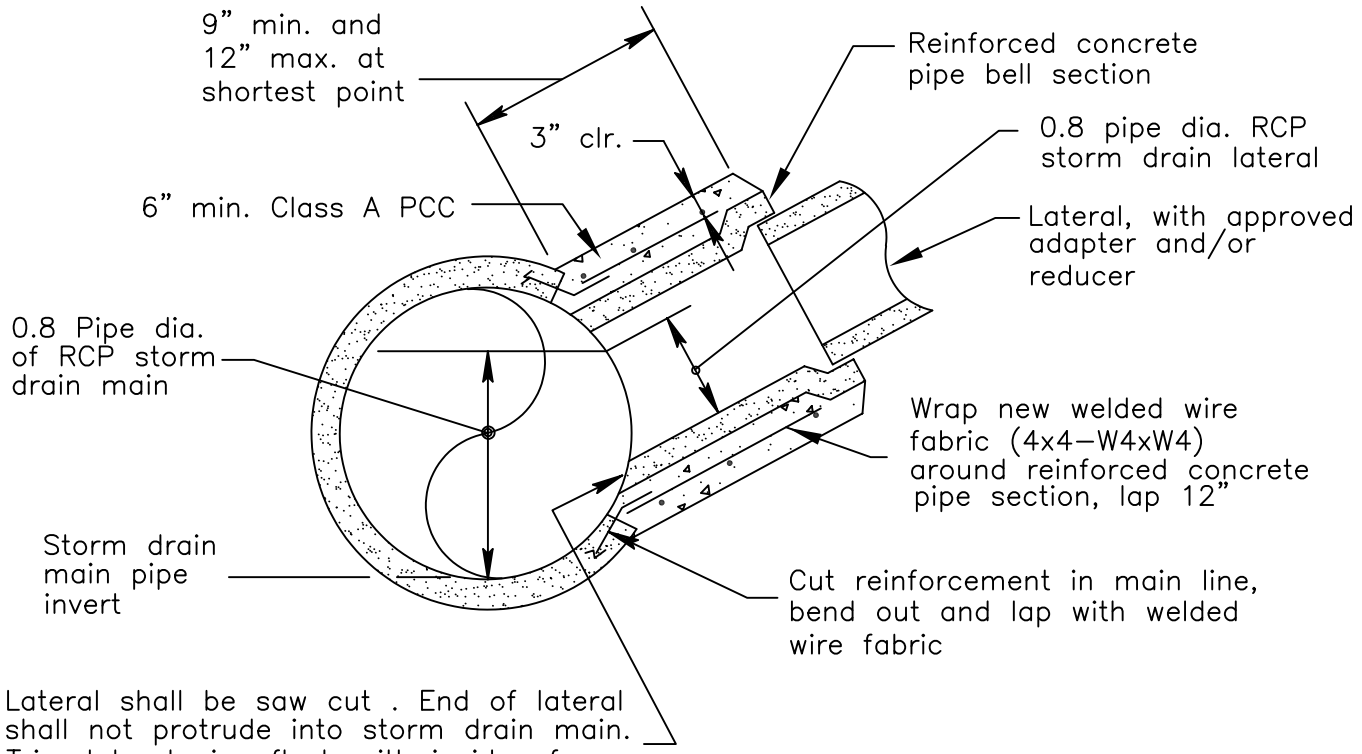
S09C.DWG

STORM WATER FIELD DROP INLET NOTES

CITY OF LIVERMORE
STANDARD DETAIL

Dwn: M–W	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–9C

City Engineer



SECTION

Notes:

1. Maximum lateral size shall be 12".
2. Minimum existing reinforced concrete pipe storm drain main shall be 24".
3. Storm drain lateral connection to existing reinforced concrete pipe storm drain main subject to T.V. inspection by the City.
4. For storm lateral to maintenance hole, see S–2B.
5. Permitted for "on–site" lateral connections only.
6. Connection not allowed within 20' of maintenance hole or storm water inlet.
7. Minimum 12" clearance to adjacent storm drain joints.

User note:

These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

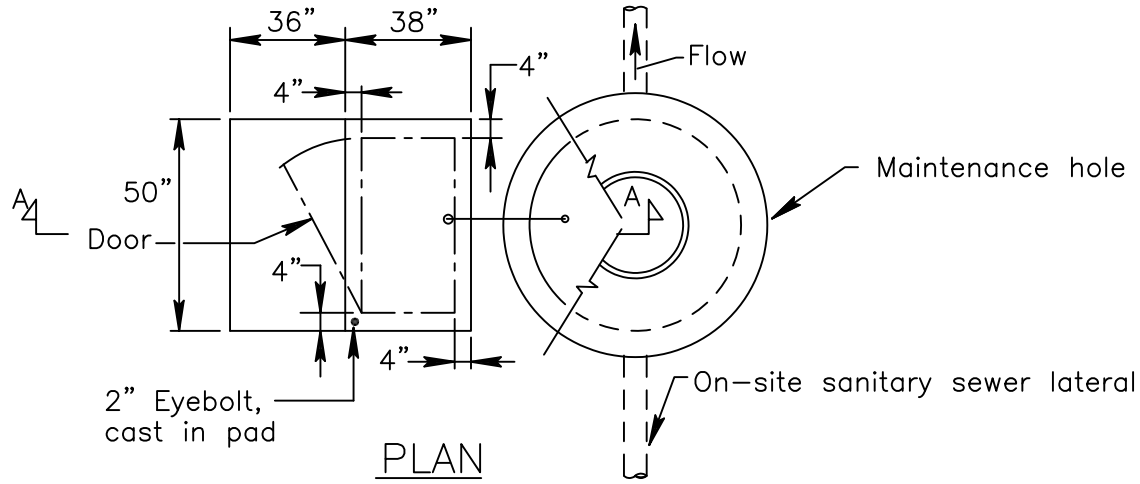
S10.DWG

STORM DRAIN LATERAL CONNECTION TO EXISTING REINFORCED CONCRETE PIPE STORM DRAIN MAIN

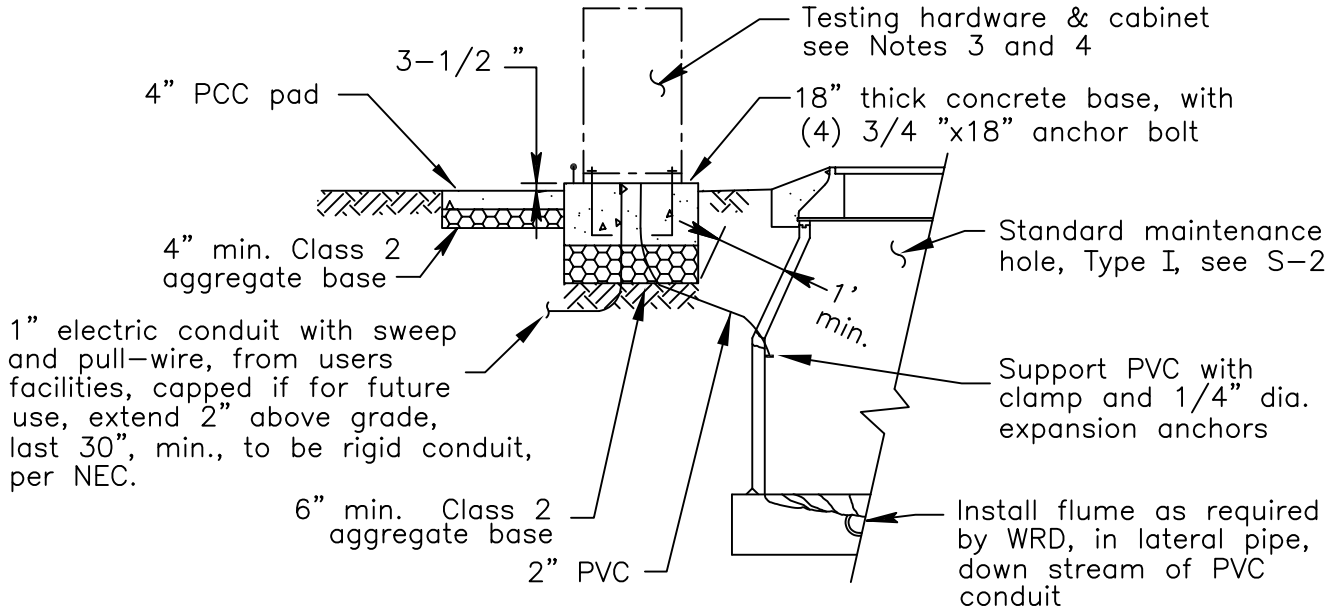
CITY OF LIVERMORE
STANDARD DETAIL

Dwn: M–W	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–10

City Engineer



PLAN



SECTION A–A

Notes:

1. Detail applies to all industrial users and large commercial users, as determined by the Water Resources Division.
2. Install sampling station at location approved by Water Resources Division.
3. Testing hardware and cabinet (CAL–TRANS Type P) to be installed only when required by Water Resources Division Discharge Permit.
4. Testing hardware to be approved by the Water Resources Division.

User note:

These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

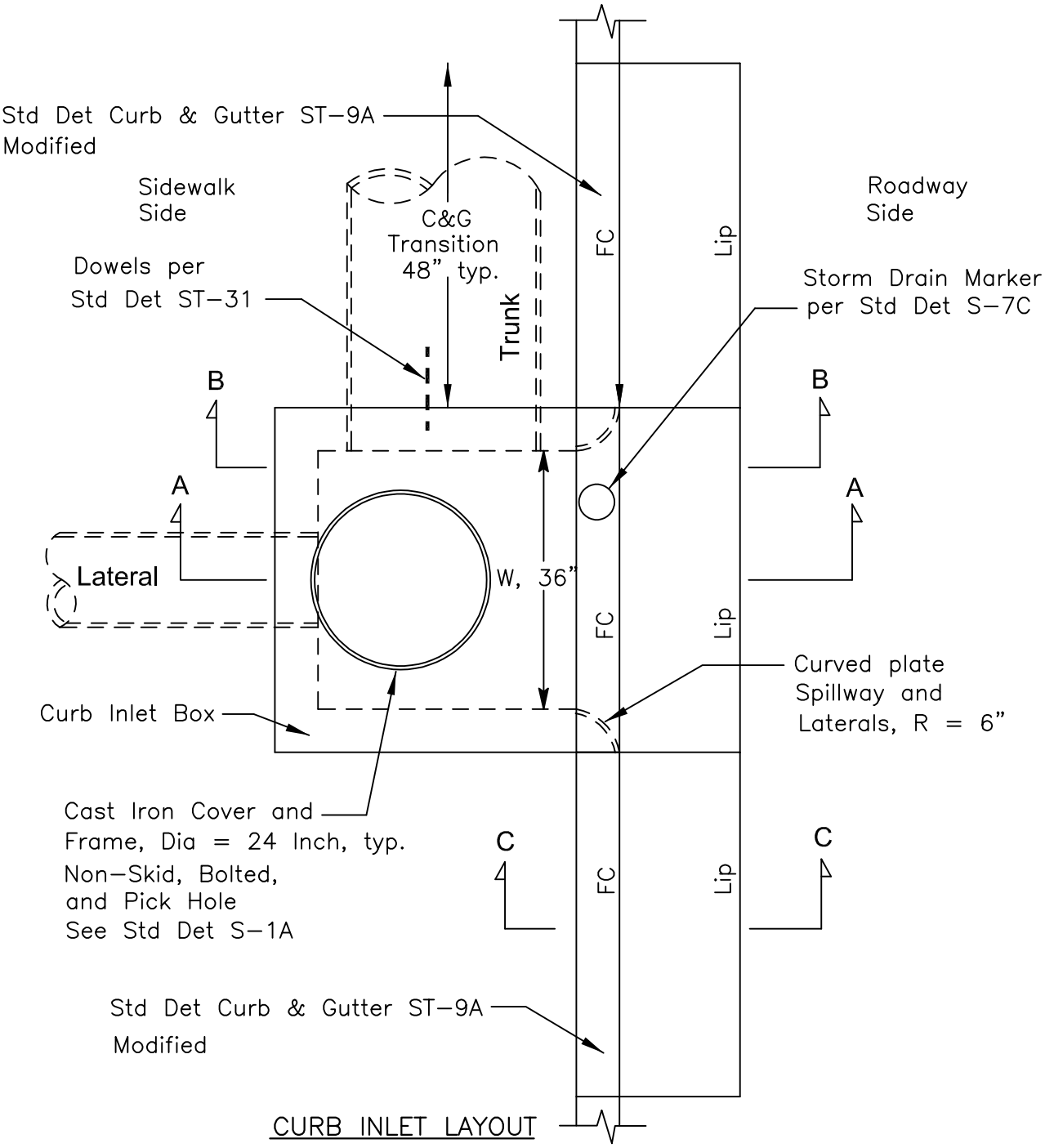
S11.DWG

SEWAGE SAMPLING STATION

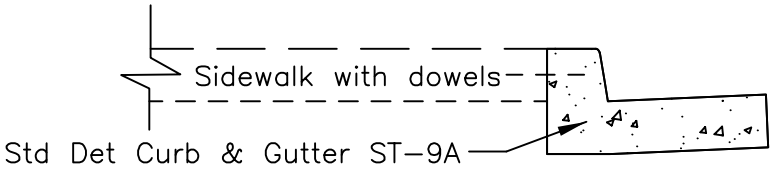
CITY OF LIVERMORE
STANDARD DETAIL

Dwn: M–W	Date: May–13	No.
Ckd: Spec. Committee	Scale: None	S–11

City Engineer



CURB INLET LAYOUT



CURB INLET SECTION C-C

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

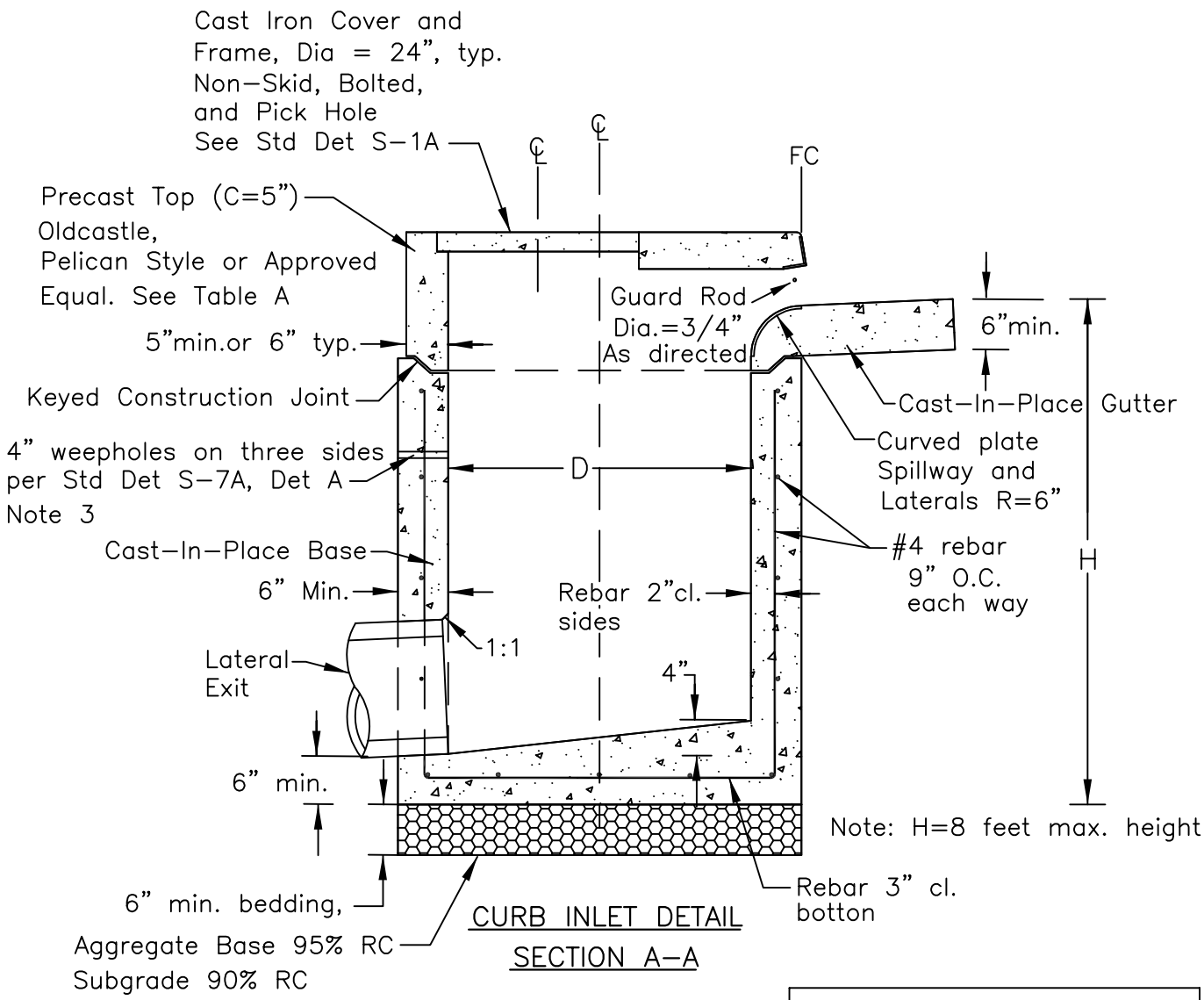
STORM WATER DROP INLET
PREFABRICATED INLET TOP
TYPE III
12" TO 36" DIA. PIPES

CITY OF LIVERMORE
STANDARD DETAIL

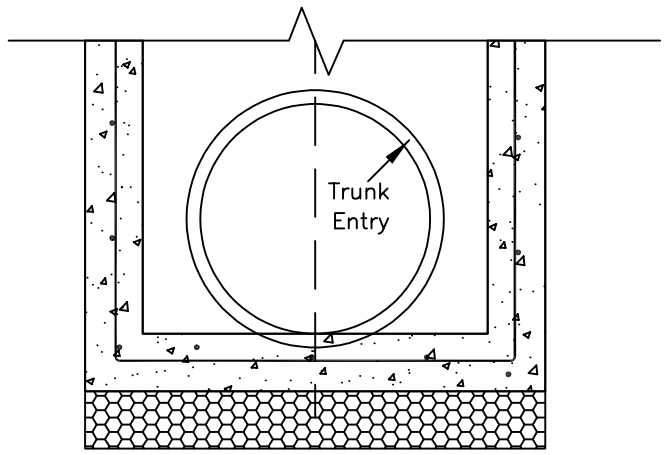
Dwn: HI	Date: May 23	No.
Ckd: Spec. Committee	Scale: None	S-12A

City Engineer

S-12a.DWG



CURB INLET DETAIL
SECTION A-A



CURB INLET DETAIL

TABLE A			
Precast Inlet Top Model or Equal	Wide (W)	Depth (D)	Thick (C)
3AC	36"	36"	6"
4AC	48"	36"	5"

User note:
These details shall be used in conjunction with all the City standard details and specifications. Refer to the City standard specifications for the materials, installation, testing, protective coatings, and other requirements.

Date:	By:	Rev:

STORM WATER DROP INLET
PREFABRICATED INLET TOP
TYPE III
12" TO 36" DIA. PIPES

CITY OF LIVERMORE
STANDARD DETAIL

Dwn: HI	Date: May 23	No.
Ckd: Spec. Committee	Scale: None	S-12B

City Engineer

S-12b.DWG