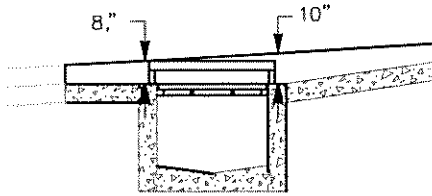
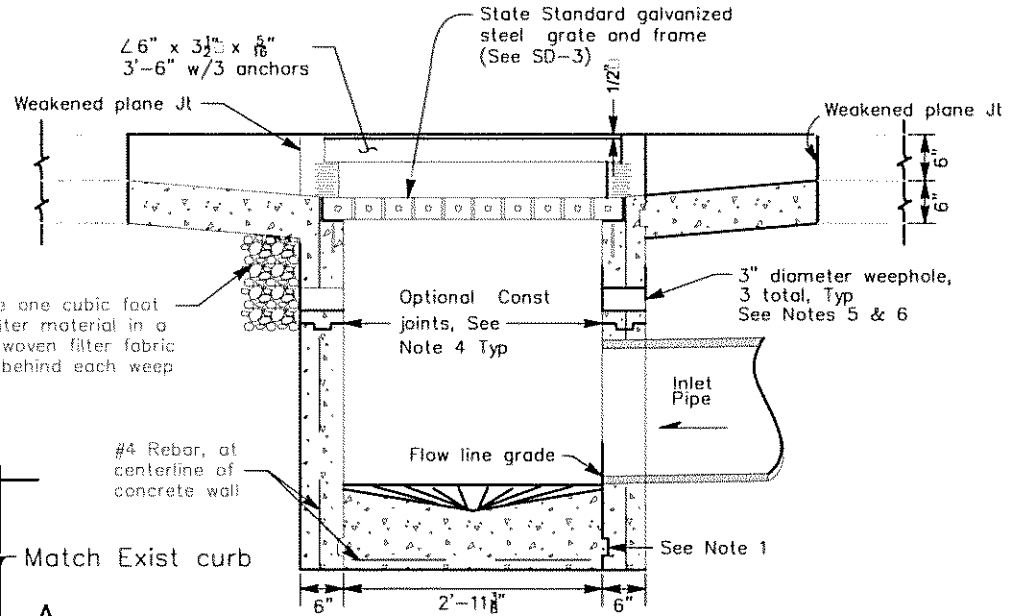


When curb grade upstream is 5% or greater depress upstream edge of grate to 10".



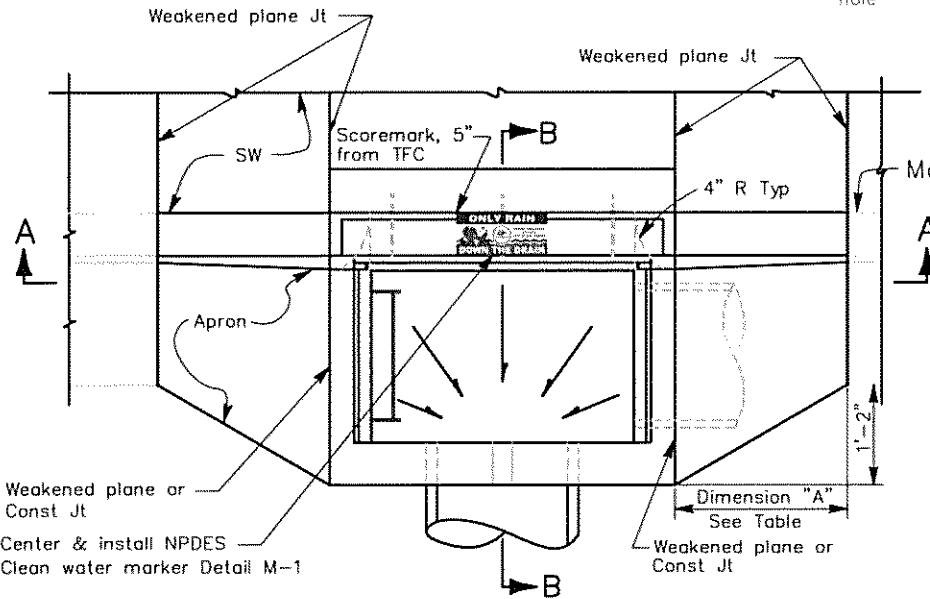
**DETAIL FOR STEEP CURB SLOPE**

N.T.S.



**SECTION A-A**

N.T.S.



**PLAN**

N.T.S.

GRATE NOT SHOWN

TABLE

DIMENSION "A" (in)

UPSTREAM CURB GRADE	"A" UPSTREAM	"A" DOWNSTREAM
2% and less	24	24
3%	36	24
4%	48	24
5%	60	24
6%	72	24
7%	84	12
8%	96	12
9%	108	12
10% and greater	120	12

See "DETAIL FOR STEEP CURB SLOPE"



CITY OF SAN RAMON

DETAIL SD-1a

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: December 2017

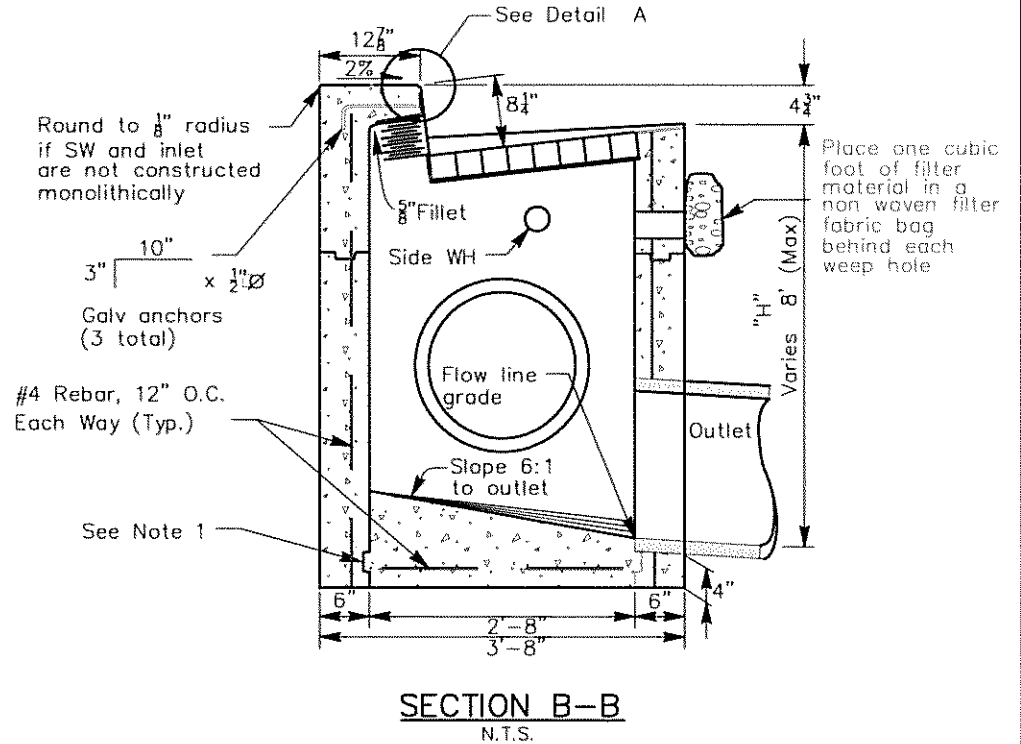
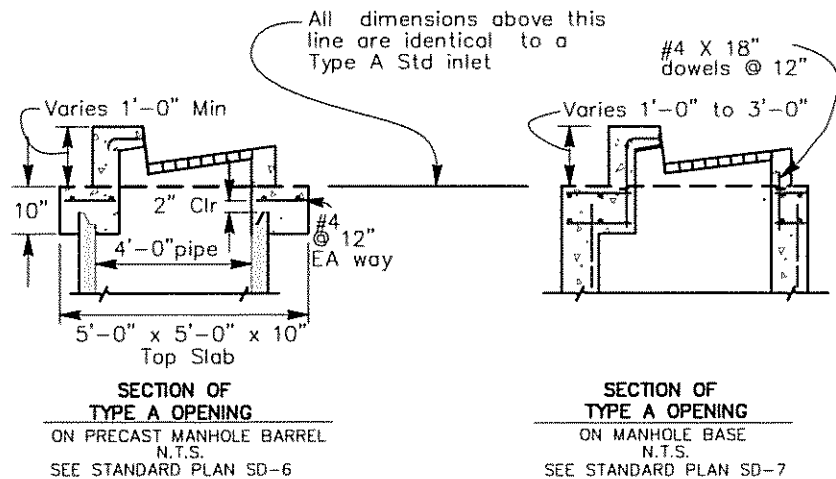
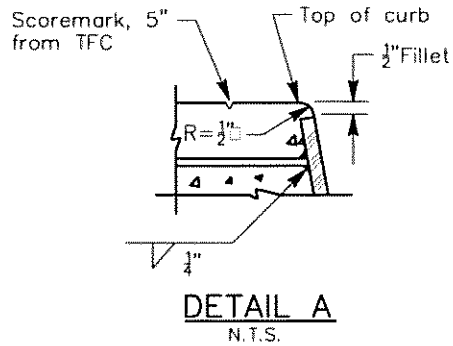
STANDARD DETAIL

TYPE "A" INLET CURB INLET

APPROVED BY: DATE: 12/22/17

*David R. Baerlein*  
CITY ENGINEER

SHT 1 of 2



NOTES:

- CONSTRUCTION JOINTS ARE OPTIONAL WHERE SHOWN; OTHER LOCATIONS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER. KEY DIMENSIONS - 3/4" x 2-1/2".
- WHEN DIMENSION "H" EXCEEDS 6', USE A MANHOLE WITH A TYPE "A" INLET OPENING ON TOP.
- INLET AND OUTLET PIPES SHALL NOT INTERCEPT A BOX THROUGH A CORNER. IF THE PIPE IS TOO LARGE OR THE SKEW ANGLE IS TOO GREAT TO PERMIT THE OPENING TO BE MADE IN A SINGLE WALL, USE A MANHOLE BASE WITH A TYPE "A" INLET OPENING ON TOP.
- SEE CALTRANS STANDARD PLAN D77A FOR INLET FRAME AND CALTRANS STANDARD PLAN FOR D77B FOR TYPE 24-10S INLET GRATE.
- CONSTRUCTION JOINTS SHOWN ARE PERMITTED WHEN TOP PORTION OF INLET IS TO BE CONSTRUCTED MONOLITHICALLY WITH CURB AND SIDEWALK, IN WHICH CASE THE FOLLOWING SHALL APPLY:
  - CONCRETE ABOVE & BELOW CONSTRUCTION JOINT SHALL BE CSR 6 SACK CONCRETE MIX.
  - CONSTRUCTION JOINT SHALL BE LOCATED AT PAVEMENT SUBGRADE.
- WHEN INLET IS CONSTRUCTED AS A SINGLE UNIT, ALL CONCRETE SHALL BE CSR 6 SACK CONCRETE MIX.
- CLEARANCE SHALL BE 1 1/2" FOR ALL REINFORCING STEEL.



CITY OF SAN RAMON

DETAIL SD-1b

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: December 2017

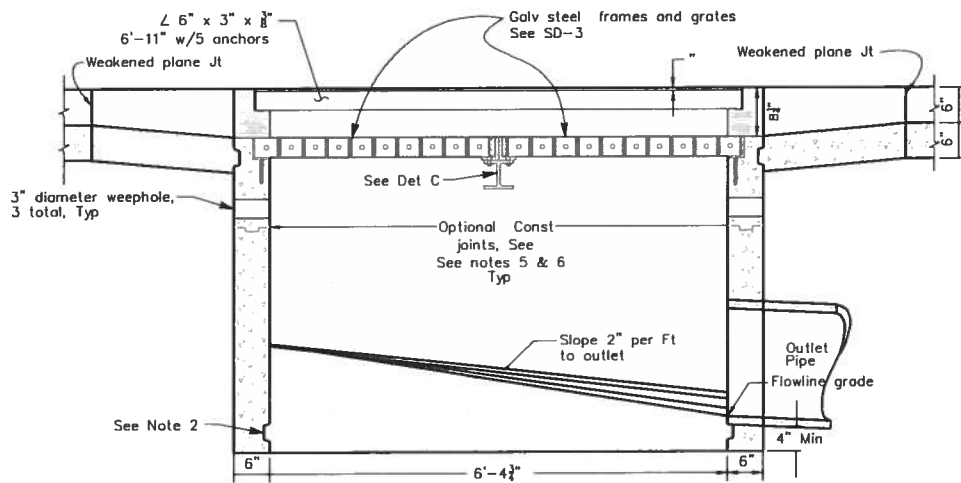
STANDARD DETAIL

TYPE "A" INLET  
CURB INLET

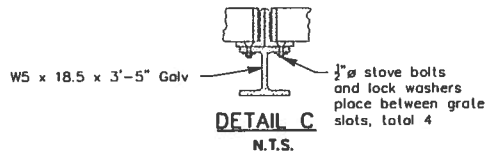
APPROVED BY: DATE: 12/22/17

*Bin R. Boudreau*  
CITY ENGINEER

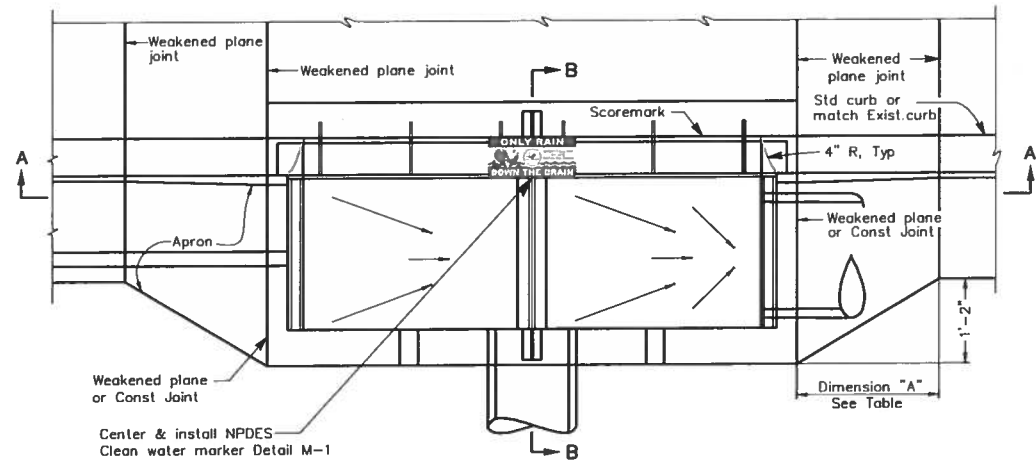
SHT 2 of 2



**SECTION A-A**  
N.T.S.



**DETAIL C**  
N.T.S.



**PLAN**  
GRATES NOT SHOWN  
N.T.S.

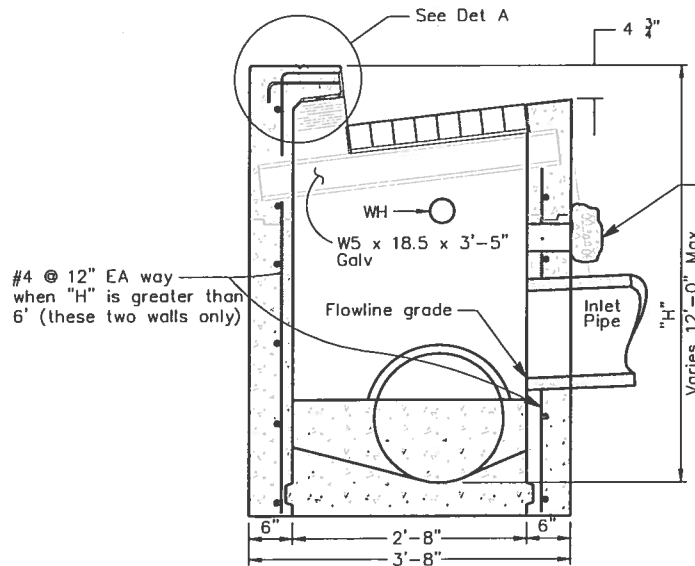


**CITY OF SAN RAMON**  
  
DETAIL SD-2a

DRAWN BY: ELR  
CHECKED BY: ENGINEERING  
DATE: June 2016

**STANDARD DETAIL**  
  
TYPE "B" INLET  
CURB INLET

APPROVED BY: DATE: 6-27-16  
*Brian R. Bounstein*  
CITY ENGINEER  
SHT 1 of 2

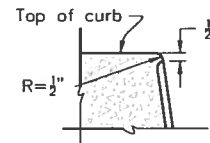


**SECTION B-B**  
N.T.S.

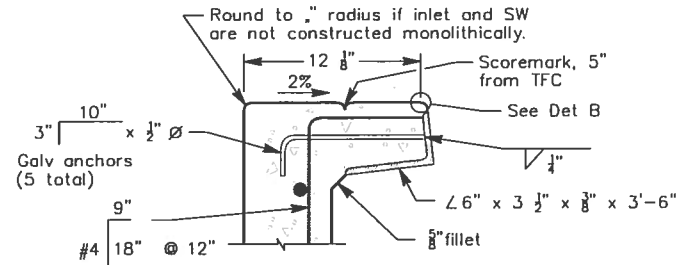
**TABLE**

DIMENSION "A" (in)			
UPSTREAM CURB GRADE	"A" UPSTREAM	"A" DOWNSTREAM	
2% and less	24	24	
3%	36	24	
4%	48	24	
5%	60	24	
6%	72	24	
7%	84	12	
8%	96	12	
9%	108	12	
10% and greater	120	12	

See "DETAIL FOR STEEP CURB SLOPE"

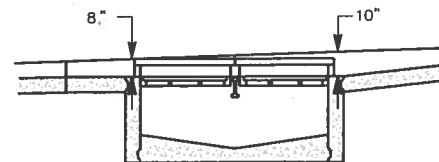


**DETAIL B**  
N.T.S.



**DETAIL A**  
N.T.S.

When curb grade upstream is 5% or greater. Depress upstream edge of grate frames to 10 inches.



**DETAIL FOR STEEP CURB SLOPE**  
N.T.S.

**NOTES:**

- CONSTRUCTION JOINTS ARE OPTIONAL WHERE SHOWN; OTHER LOCATIONS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER. KEY DIMENSIONS - 3/4" x 2-1/2".
- WHEN DIMENSION "H" EXCEEDS 6', USE A MANHOLE WITH A TYPE "A" INLET OPENING ON TOP.
- INLET AND OUTLET PIPES SHALL NOT INTERCEPT A BOX THROUGH A CORNER. IF THE PIPE IS TOO LARGE OR THE SKEW ANGLE IS TOO GREAT TO PERMIT THE OPENING TO BE MADE IN A SINGLE WALL, USE A MANHOLE BASE WITH A TYPE "A" INLET OPENING ON TOP.
- SEE CALTRANS STANDARD PLAN D77A FOR INLET FRAME AND CALTRANS STANDARD PLAN FOR D77B FOR TYPE 24-10S INLET GRATE.
- CONSTRUCTION JOINTS SHOWN ARE PERMITTED WHEN TOP PORTION OF INLET IS TO BE CONSTRUCTED MONOLITHICALLY WITH CURB AND SIDEWALK, IN WHICH CASE THE FOLLOWING SHALL APPLY:
  - CONCRETE ABOVE & BELOW CONSTRUCTION JOINT SHALL BE CSR 6 SACK CONCRETE MIX.
  - CONSTRUCTION JOINT SHALL BE LOCATED AT PAVEMENT SUBGRADE.
- WHEN INLET IS CONSTRUCTED AS A SINGLE UNIT, ALL CONCRETE SHALL BE CSR 6 SACK CONCRETE MIX.
- CLEARANCE SHALL BE 1 1/2" FOR ALL REINFORCING STEEL.



CITY OF SAN RAMON

DETAIL SD-2b

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: June 2016

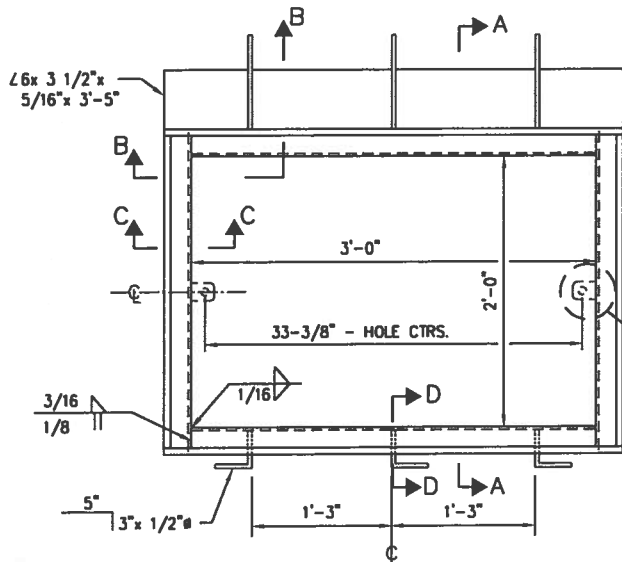
STANDARD DETAIL

TYPE "B" INLET  
CURB INLET

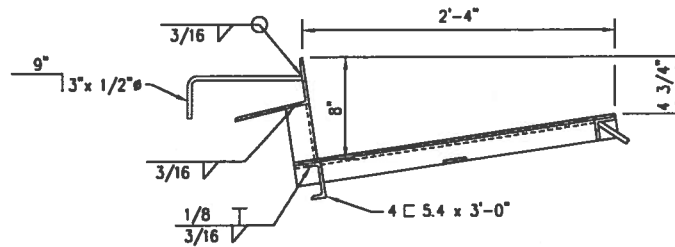
APPROVED BY: DATE: 6-27-16

*Ben R. Bernstein*  
CITY ENGINEER

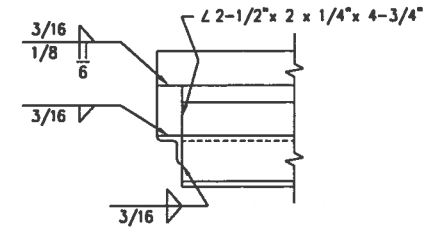
SHT 2 of 2



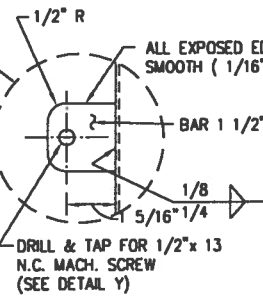
PLAN  
N.T.S.



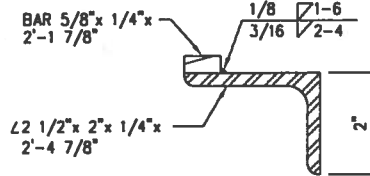
SECTION AA  
N.T.S.



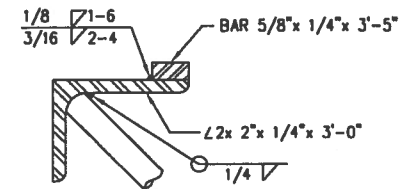
SECTION BB  
N.T.S.



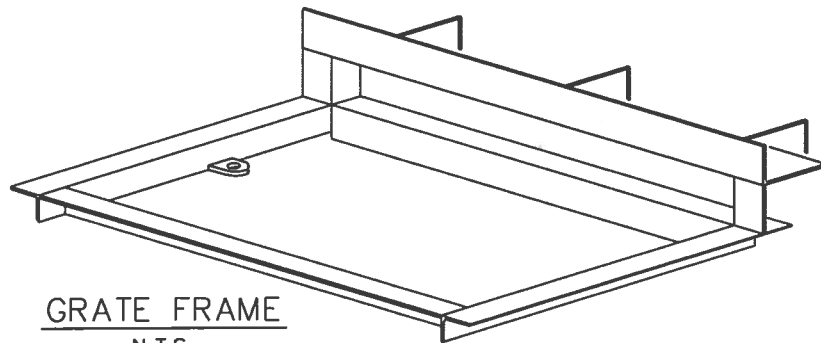
DETAIL Z  
N.T.S.



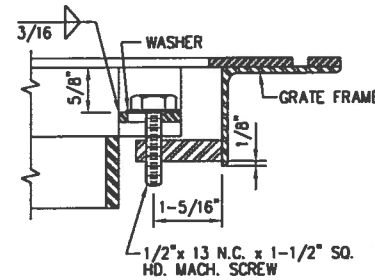
SECTION CC  
N.T.S.



SECTION DD  
N.T.S.



GRATE FRAME  
N.T.S.



DETAIL Y  
N.T.S.  
GRATE FASTENING LUG  
FOR INLET FRAME



CITY OF SAN RAMON

DETAIL SD-3a

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: June 2016

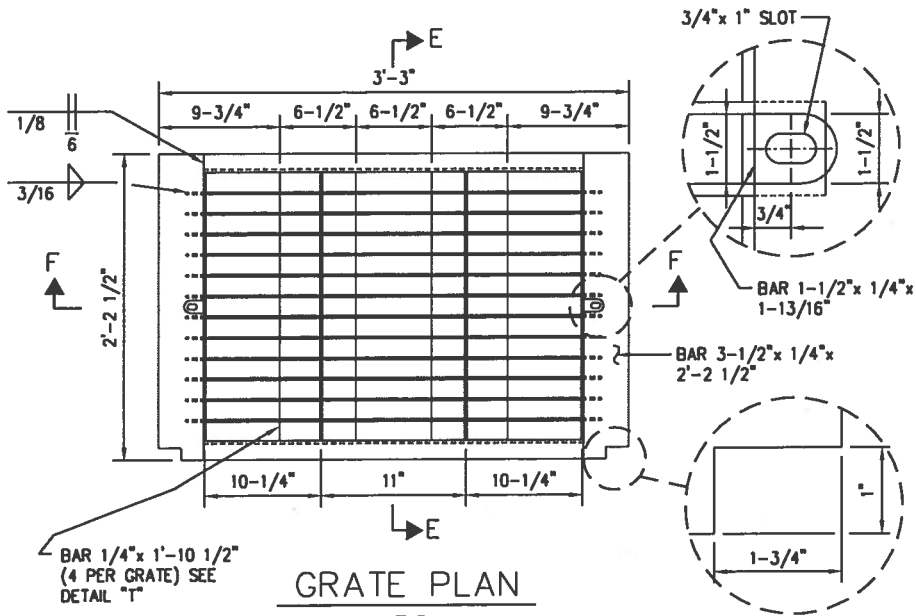
STANDARD DETAIL

CURB INLET  
FRAME AND GRATE

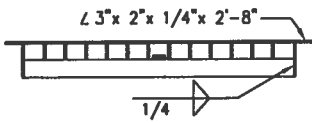
APPROVED BY: DATE: 6-27-16

*Walter R. Bonater*  
CITY ENGINEER

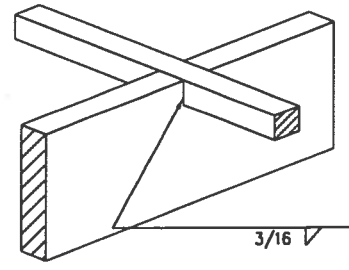
SHT 1 of 2



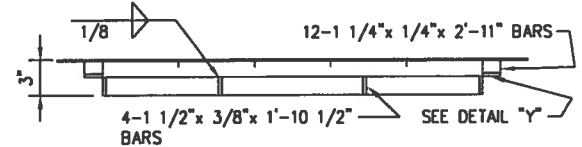
**GRATE PLAN**  
N.T.S.



**SECTION EE**  
N.T.S.



**DETAIL T**  
N.T.S.



**SECTION FF**  
N.T.S.

**NOTES:**

1. ALL MATERIALS, FABRICATION, GALVANIZING, AND SURFACE TREATMENT SHALL BE IN ACCORDANCE WITH SECTIONS 75 AND 96 OF THE CURRENT ISSUE OF THE STANDARD SPECIFICATIONS OF THE STATE OF CALIFORNIA, BUSINESS AND TRANSPORTATION AGENCY, DEPARTMENT OF TRANSPORTATION.
2. FRAMES AND COVERS SHALL FIT TOGETHER WITHOUT ROCKING.
3. FABRICATOR SHALL SUPPLY FASTENING SCREWS WITH FRAMES.
4. WEIGHTS: GRATE FRAME 88 lb., GRATE 94 lb.
5. 1/2" x 5 1/4" NELSON-TYPE HEADED STUDS MAY BE USED IN LIEU OF 1/2" x 5" x 3" ANCHORS.
6. IF THE GRATE IS IN THE BIKE LANE, A BIKE GRATE IS REQUIRED TO CURRENT CALTRANS STANDARD.
7. OLD TYPE A, B AND C INLETS HAVE BEEN REPLACED WITH THE CURRENT TYPE A, B AND C INLETS RESPECTIVELY. THESE DETAILS ARE TO BE USED FOR REPAIR AND MAINTENANCE OF EXISTING INLETS, NO NEW CONSTRUCTION.

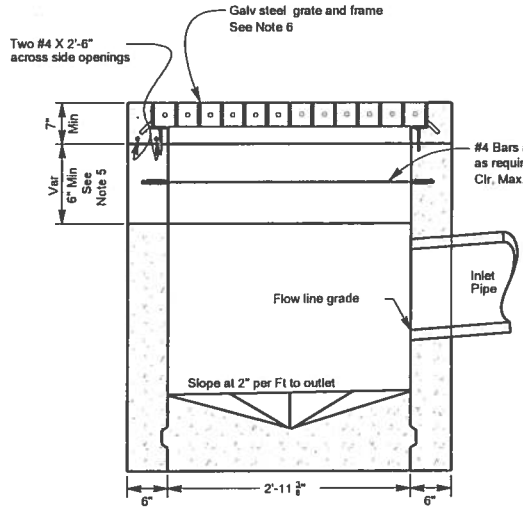


**CITY OF SAN RAMON**  
  
DETAIL SD-3a

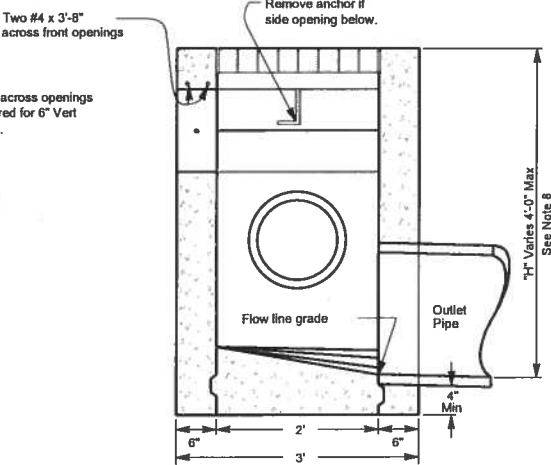
DRAWN BY: ELR  
CHECKED BY: ENGINEERING  
DATE: June 2016

**STANDARD DETAIL**  
  
CURB INLET  
FRAME AND GRATE

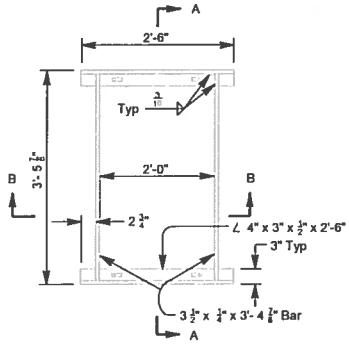
APPROVED BY: DATE: 6-27-16  
*Brian R. Bonster*  
CITY ENGINEER  
SHT 2 of 2



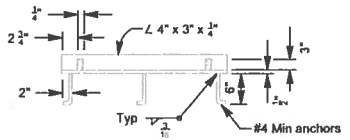
SECTION A-A  
NTS



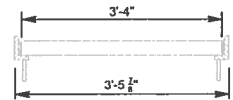
SECTION B-B  
NTS



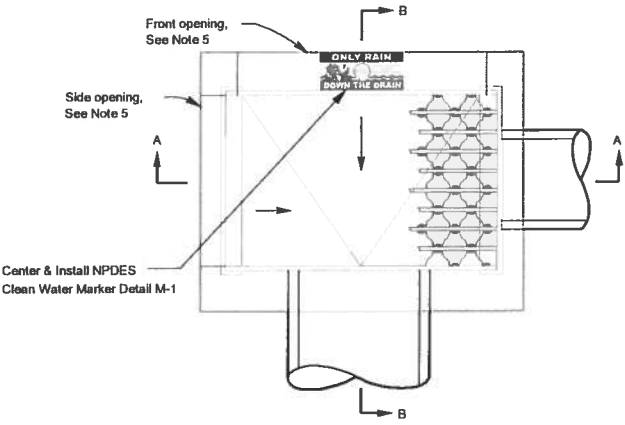
TYPE C INLET FRAME  
NTS



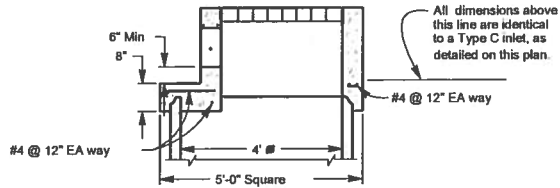
SECTION B-B  
(Thru frame)  
NTS



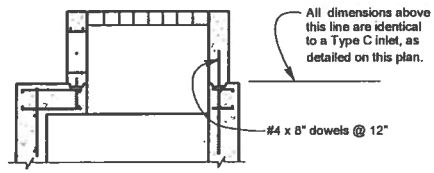
SECTION A-A  
(Thru frame and grate)  
NTS



PLAN  
NTS



TYPE "C" OPENING ON PRECAST MANHOLE BARREL  
NTS  
REFER TO STANDARD PLAN SD-6



TYPE "C" OPENING ON MANHOLE BASE  
NTS  
REFER TO STANDARD PLAN SD-7a & SD-7b

NOTES:

1. See Detail SD 1b, 2b and 3b for Inlet General Drainage Notes.
2. Type C inlets shall not be used in pedestrian areas.
3. Construction joints are optional where shown. Other locations are subject to the approval of the Public Works Department. Key Dimensions are 1/4" x 2 1/2".
4. Min clearance shall be 2" for all reinforcing steel.
5. Location, flowline elevation and size of side openings to be as shown on plans, or as directed by the Public Works Department.
6. All Inlets shall be constructed with Caltrans Type 24-10S gates, see Caltrans Standard Plan D77B, and Type C inlet frame shown on this plan.
7. No precast Type C inlets are allowed without prior approval of the Public Works Department.
8. Maximum depth for Type C inlet shall be 4'. For depths greater than 4' use a manhole base with a Type C top. The Type C inside wall with steps shall be flush with manhole base inside wall below.



CITY OF SAN RAMON

DETAIL SD-4

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: June 2016

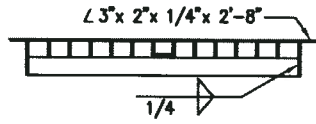
STANDARD DETAIL

TYPE "C" INLET  
(DROP INLET)

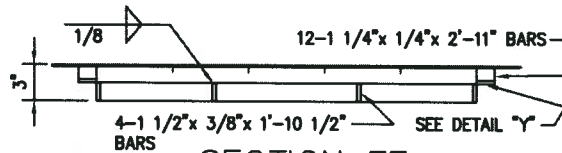
APPROVED BY: DATE: 6-27-16

*Brian R. Bernstein*  
CITY ENGINEER

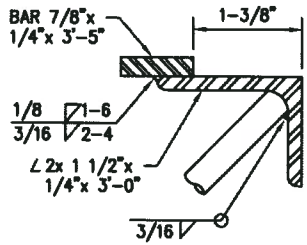
SHT 1 of 1



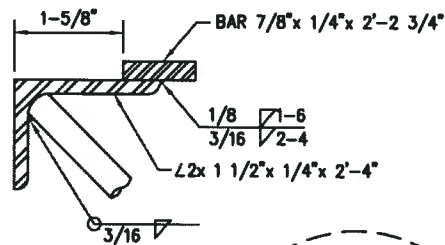
SECTION EE  
N.T.S.



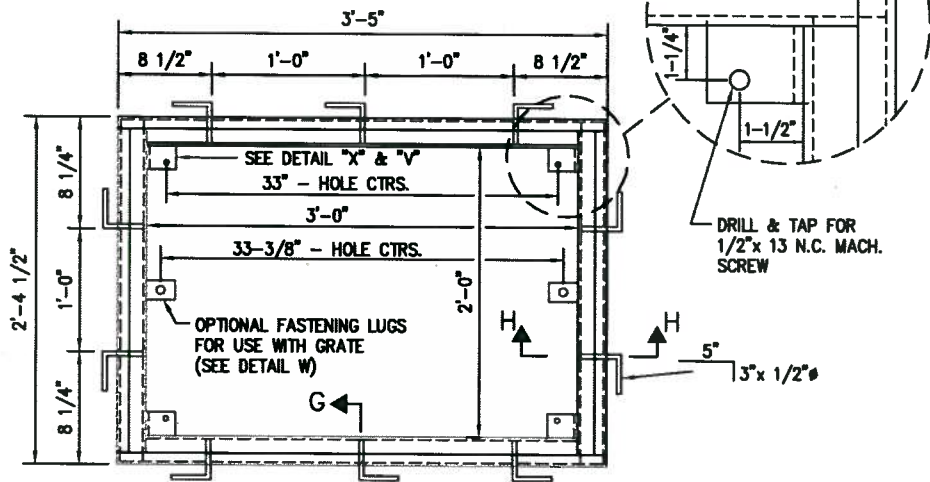
SECTION FF  
N.T.S.



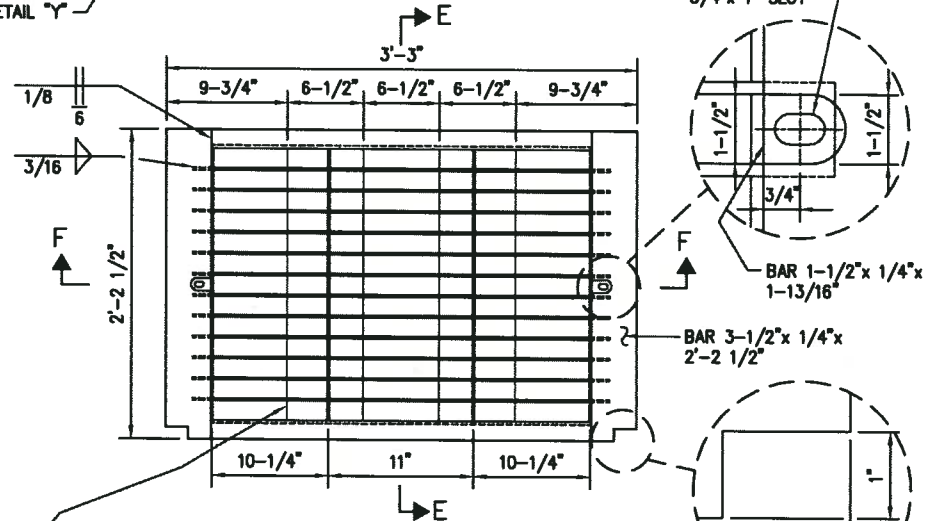
SECTION GG  
N.T.S.



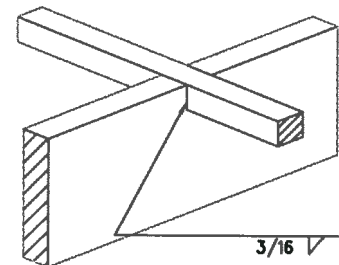
SECTION HH  
N.T.S.



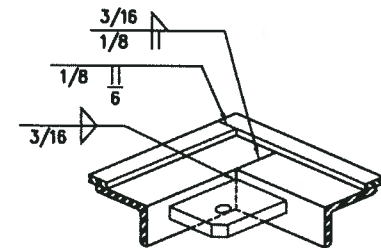
COVERPLATE FRAME  
N.T.S.



GRATE PLAN  
N.T.S.



DETAIL T  
N.T.S.



DETAIL X  
N.T.S.  
ALSO SEE DETAIL V



CITY OF SAN RAMON

DETAIL SD-5a

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: 05/20/11

STANDARD DETAIL

DROP INLET - FRAME &  
GRATE & COVER PLATE

APPROVED BY:

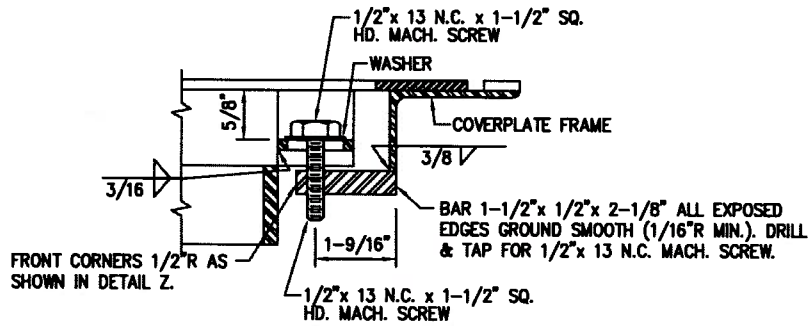
DATE: 6/1/11

*Brian L. Bountin*

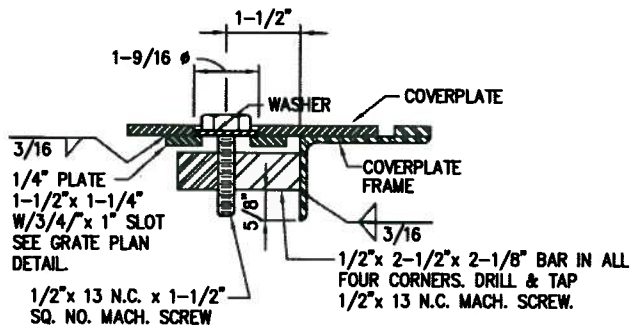
CITY ENGINEER

SHT 1 of 2

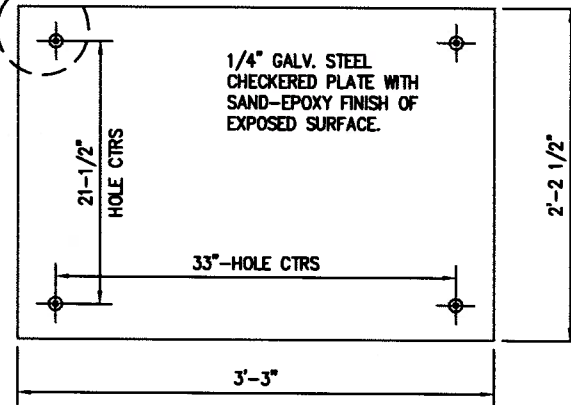
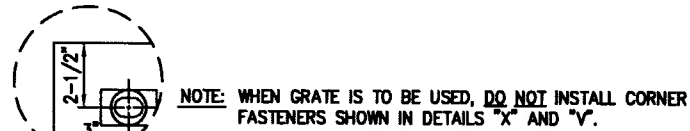




**DETAIL W** - GRATE FASTENING LUG  
FOR COVERPLATE FRAME  
N.T.S.



**DETAIL V**  
N.T.S.  
ALSO SEE DETAIL X  
COVERPLATE  
FASTENER



**COVERPLATE**  
N.T.S.

**COVERPLATE - SAND-EPOXY FINISH NOTES**

1. SURFACE TO BE COATED SHALL BE SAND BLASTED THE MINIMUM REQUIRED TO OBTAIN A DULL GREY FINISH.(SEE NOTE 1)
2. A 60 MIL. COAT OF BINDER (ADHESIVE), EPOXY RESIN BASE, AS PER SECTION 96-2.01 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO THE EXPOSED SURFACE OF THE COVER PLATE. BOLT HOLES SHALL NOT BE COATED. (SEE NOTE 1)
3. CLEAN, DRY, SILICA SAND SHALL BE APPLIED TO COMPLETELY COVER THE EPOXIED SURFACE.
4. THE SAND-EPOXY FINISH SHALL BE CURED FOR 6 HOURS AND EXCESS SAND SHALL BE REMOVED.

**NOTES:**

1. ALL MATERIALS, FABRICATION, GALVANIZING, AND SURFACE TREATMENT SHALL BE IN ACCORDANCE WITH SECTIONS 75 AND 96 OF THE CURRENT ISSUE OF THE STANDARD SPECIFICATIONS OF THE STATE OF CALIFORNIA, BUSINESS AND TRANSPORTATION AGENCY, DEPARTMENT OF TRANSPORTATION.
2. FRAMES AND COVERS SHALL FIT TOGETHER WITHOUT ROCKING.
3. FABRICATOR SHALL SUPPLY FASTENING SCREWS WITH FRAMES.
4. WEIGHTS: GRATE FRAME 88 lb., GRATE 94lb., COVERPLATE FRAME 45lb., COVERPLATE 74 lb.
5. 1/2" x 5 1/4" NELSON-TYPE HEADED STUDS MAY BE USED IN LIEU OF 1/2" x 5" x 3" ANCHORS.



CITY OF SAN RAMON

DETAIL SD-5b

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: 05/20/11

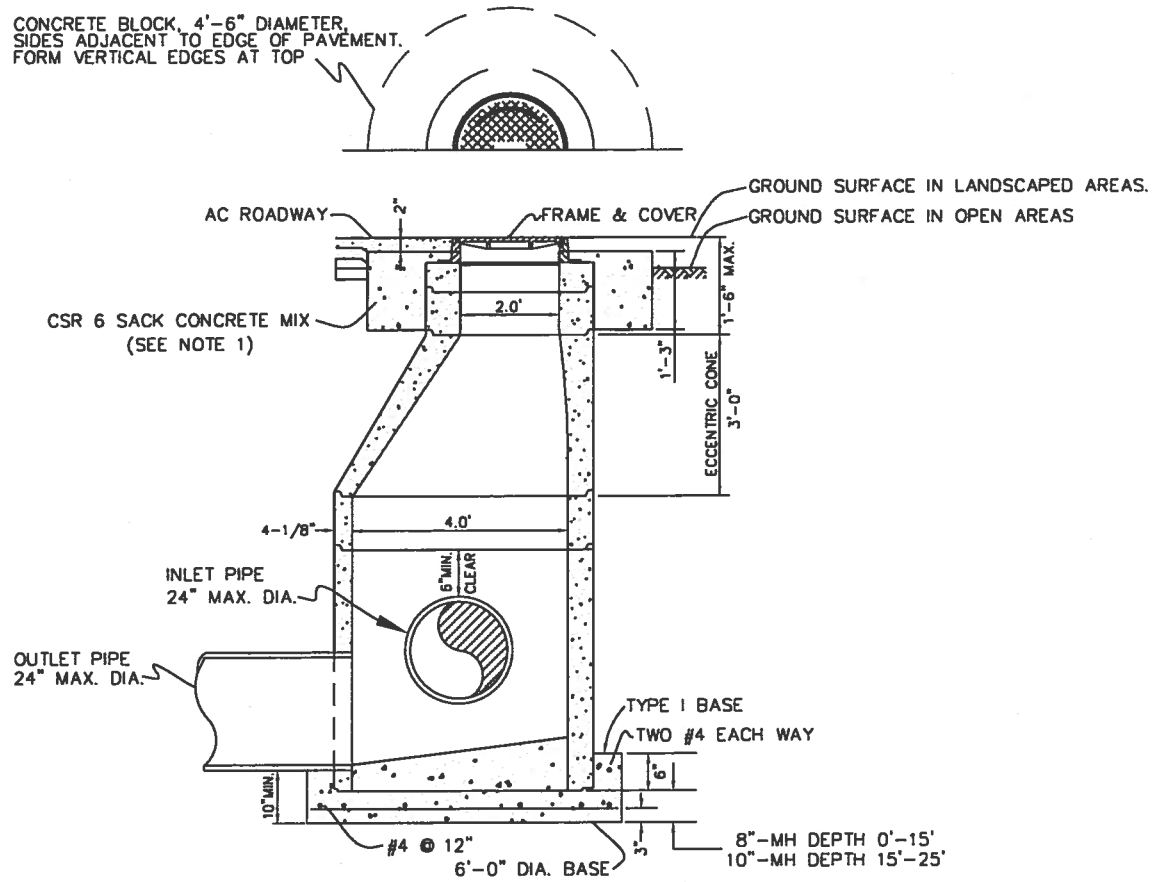
STANDARD DETAIL

DROP INLET - FRAME,  
GRATE AND COVER PLATE

APPROVED BY: DATE: 6/1/11  
*David R. Bernstein*  
CITY ENGINEER

SHT 2 of 2

CONCRETE BLOCK, 4'-6" DIAMETER,  
SIDES ADJACENT TO EDGE OF PAVEMENT.  
FORM VERTICAL EDGES AT TOP



NOTES:

1. ALL REINFORCED CONCRETE SHALL BE CSR 6 SACK CONCRETE MIX.
2. ALL CONCRETE JOINTS SHALL BE CLEANED, WETTED, AND MORTARED PRIOR TO SETTING NEXT SECTION. JOINTS SHALL THEN BE PATCHED, TROWELLED, AND BRUSHED SMOOTH.
3. TYPE "I" MANHOLE BASES ARE FOR USE WITH PIPES TO 24" IN DIAMETER AND WHERE THERE IS SUFFICIENT COVER TO USE MINIMUM LENGTH MANHOLE BARREL, ECCENTRIC CONE, AND COVER FRAME. TYPE "II" MANHOLE BASES (SD-7) ARE FOR USE WITH PIPES TO 42" IN DIAMETER. TYPE "III" MANHOLE BASES (SD-8) ARE FOR USE WITH PIPES TO 60" IN DIAMETER. MANHOLE BASES FOR PIPES LARGER THAN 60" IN DIAMETER SHALL REQUIRE A SPECIAL DESIGN.
4. USE OF THE EXTENSION RINGS IS LIMITED TO 18" MANHOLE THROAT LENGTH.
5. FRAME AND EXTENSION RINGS MUST BE SECURED BY CONCRETE RING.
6. MANHOLE COVER FRAME SHALL BE ADJUSTED TO CONFORM TO GRADE AND CROSS-SLOPE OF PAVEMENT.
7. FOR DETAILS OF MANHOLE FRAME AND COVER, SEE STANDARD DETAIL SD-9.
8. FOR MANHOLES EXCEEDING 25 FOOT DEPTH, STRUCTURAL CALCULATIONS ARE REQUIRED.



CITY OF SAN RAMON

DETAIL SD-6

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: June 2016

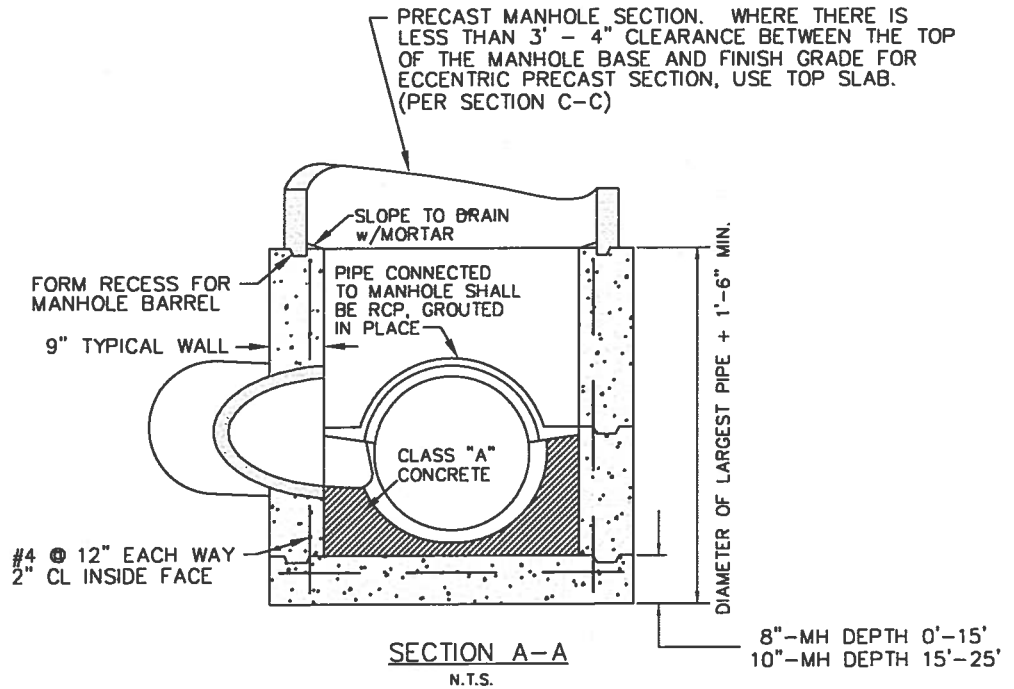
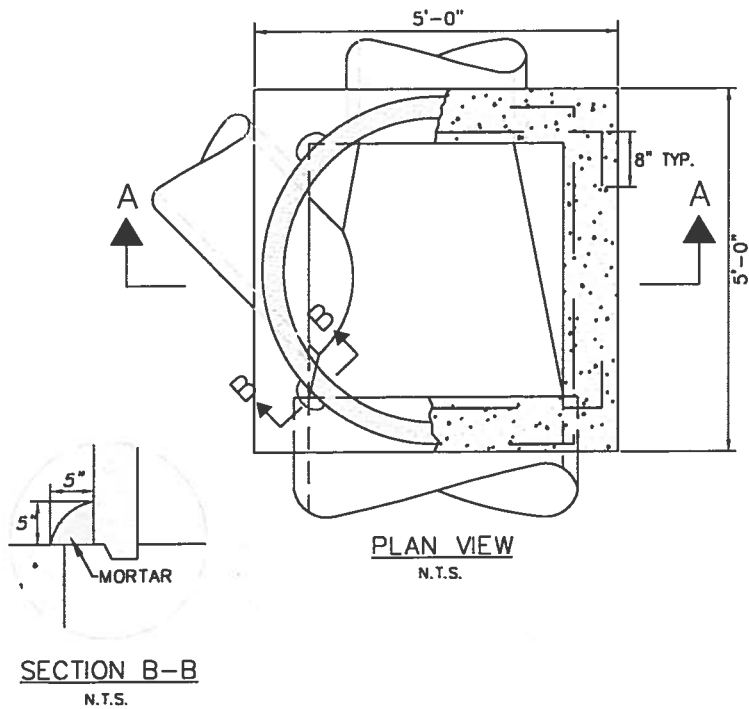
STANDARD DETAIL

PRECAST MANHOLE AND  
TYPE I BASE

APPROVED BY: DATE: 6-27-16

*Brian R. Borstein*  
CITY ENGINEER

SHT 1 of 1



NOTES:

1. ALL REINFORCED CONCRETE SHALL BE CSR 6 SACK CONCRETE MIX.
2. CONSTRUCTION JOINTS ARE OPTIONAL WHERE SHOWN; OTHER LOCATIONS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER. KEY DIMENSIONS ARE 1 1/2"x 3 1/2".
3. INLET AND OUTLET PIPES SHALL NOT INTERCEPT A MANHOLE BASE THROUGH A CORNER. IF THE SKEW ANGLE IS TOO GREAT TO PERMIT THE OPENING TO BE MADE IN A SINGLE WALL, USE A TYPE "III" MANHOLE BASE. (SEE SD-8)
4. TYPE "I" MANHOLE BASES (SD-6) ARE FOR USE WITH PIPES TO 24" IN DIAMETER AND WHERE THERE IS SUFFICIENT COVER TO USE A MINIMUM LENGTH MANHOLE BARREL,

5. FOR DETAILS OF PRECAST MANHOLE, SEE STANDARD DETAIL SD-6.
6. FOR DETAILS OF MANHOLE FRAME AND COVER, SEE STANDARD DETAIL SD-9.
7. FOR MANHOLES EXCEEDING 25 FOOT DEPTH, STRUCTURAL CALCULATIONS ARE REQUIRED.



CITY OF SAN RAMON

DETAIL SD-7a

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: June 2016

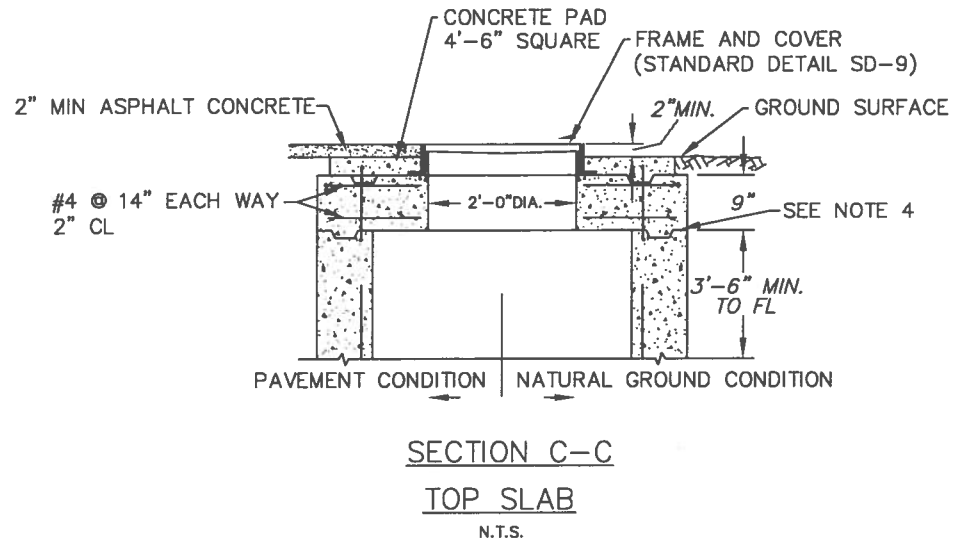
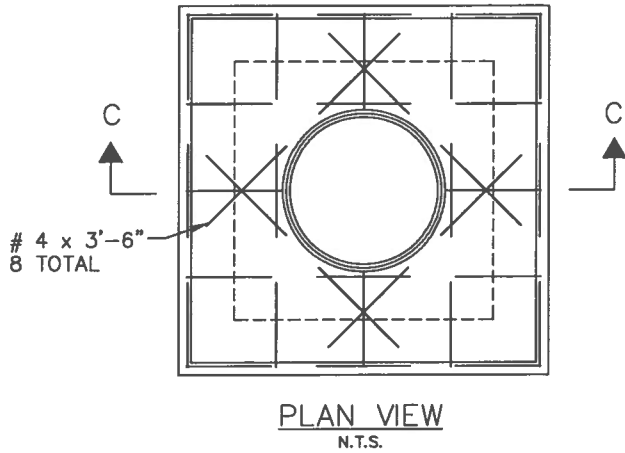
STANDARD DETAIL

TYPE II  
MANHOLE BASE

APPROVED BY: DATE: 6-27-16

*Brian R. Bernstein*  
CITY ENGINEER

SHT 1 of 2



NOTES:

1. USE WHERE THERE IS LESS THAN 3' - 4" CLEARANCE BETWEEN THE TOP OF THE MANHOLE BASE AND FINISH GRADE FOR A PRECAST SECTION AND MANHOLE COVER FRAME. ALL REINFORCED CONCRETE SHALL BE CLASS "A".
2. WHEN PLACING A TYPE "A" OR TYPE "C" INLET OPENING ON A TYPE "II" MANHOLE BASE, THE OPENING IN THE SLAB SHALL CONFORM TO THE INSIDE DIMENSIONS OF THE INLET TO BE USED.
3. ALL REINFORCED CONCRETE SHALL BE CSR 6 SACK CONCRETE MIX.
4. KEY DIMENSIONS ARE 1 1/2" x 3 1/2".
5. FOR DETAILS OF MANHOLE FRAME AND COVER, SEE STANDARD DETAIL SD-9.



CITY OF SAN RAMON

DETAIL SD-7b

DRAWN BY: ELR

CHECKED BY: ENGINEERING

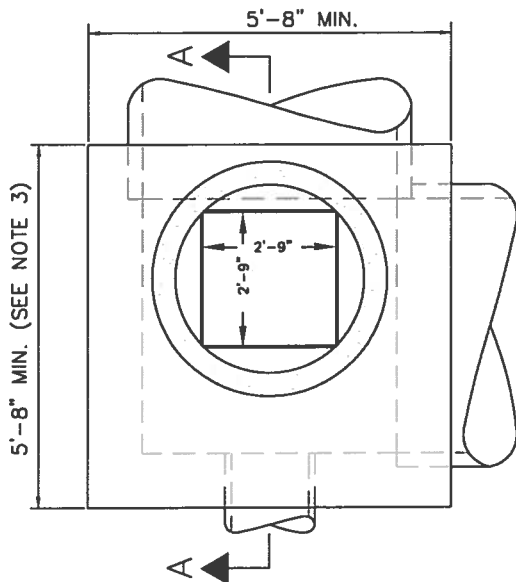
DATE: 12/17/15

STANDARD DETAIL

TYPE II  
MANHOLE BASE

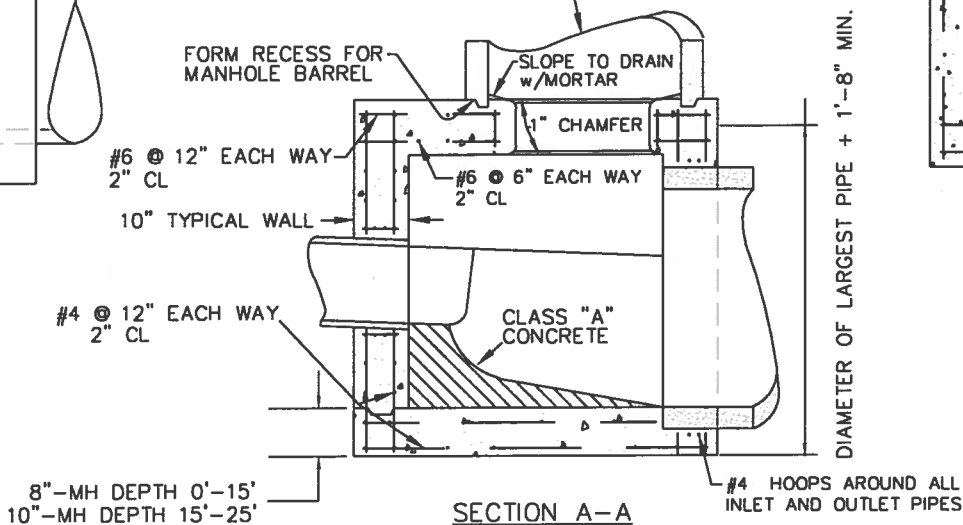
APPROVED BY: DATE: 1/25/16  
*Brian R. Bernstein*  
CITY ENGINEER

SHT 2 of 2

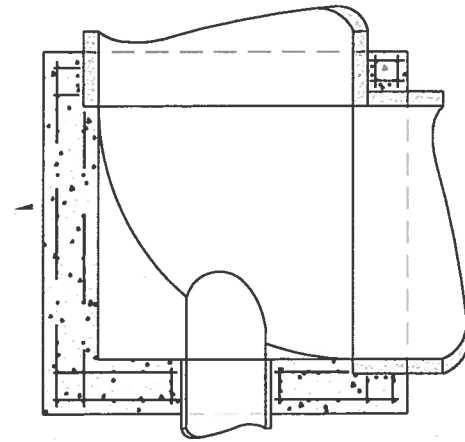


PLAN VIEW  
N.T.S.

PRECAST MANHOLE SECTION, WHERE THERE IS LESS THAN 3" - 4" CLEARANCE BETWEEN THE TOP OF THE MANHOLE BASE AND FINISH GRADE FOR PRECAST SECTION, USE TOP SLAB.



SECTION A-A  
N.T.S.



PLAN SECTION  
N.T.S.

NOTES:

1. ALL REINFORCED CONCRETE SHALL BE CSR 6 SACK CONCRETE MIX.
2. CONSTRUCTION JOINTS ARE OPTIONAL WHERE SHOWN; OTHER LOCATIONS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER. KEY DIMENSIONS ARE 1 1/2" x 3 1/2".
3. INLET AND OUTLET PIPES SHALL NOT INTERCEPT A MANHOLE BASE THROUGH A CORNER. IF THE SKEW ANGLE IS TOO GREAT TO PERMIT THE OPENING TO BE MADE IN A SINGLE WALL, THE WALL MAY BE LENGTHENED OR RELOCATED AS EXPLAINED ON SHEET 2 OF 2.
4. TYPE "I" MANHOLE BASES (SD-6) ARE FOR USE WITH PIPES TO 24" IN DIAMETER AND WHERE THERE IS SUFFICIENT COVER TO USE A MINIMUM LENGTH MANHOLE BARREL,
5. ECCENTRIC CONE, AND COVER FRAME. TYPE "II" MANHOLE BASES (SD-7) ARE FOR PIPES TO 42" DIAMETER. TYPE "III" MANHOLE BASES (SD-8) ARE FOR USE WITH PIPES TO 60" IN DIAMETER. MANHOLE BASES FOR PIPES LARGER THAN 60" IN DIAMETER SHALL REQUIRE A SPECIAL DESIGN.
6. FOR DETAILS OF PRECAST MANHOLE, SEE STANDARD DETAIL SD-6.
7. FOR DETAILS OF MANHOLE FRAME AND COVER, SEE STANDARD DETAIL SD-9.
8. FOR MANHOLES EXCEEDING 25 FOOT DEPTH, STRUCTURAL CALCULATIONS ARE REQUIRED.



CITY OF SAN RAMON

DETAIL SD-8a

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: June 2016

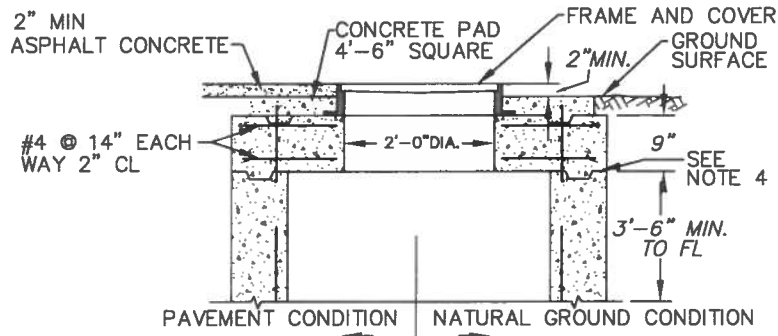
STANDARD DETAIL

TYPE III  
MANHOLE BASE

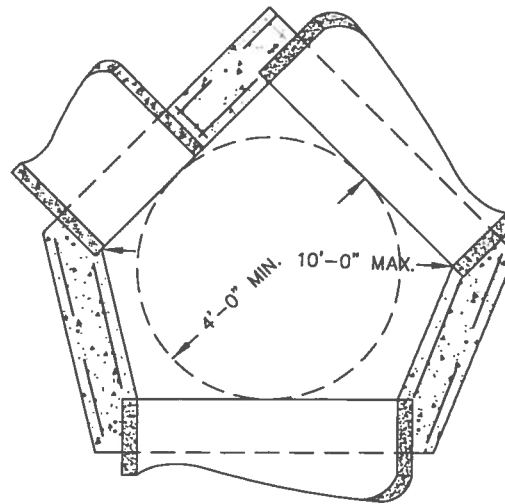
APPROVED BY: DATE: 6-27-16

*Brian R. Baerstein*  
CITY ENGINEER

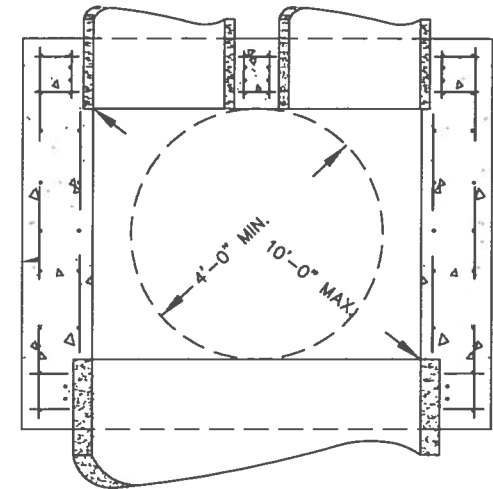
SHT 1 of 2



TOP SLAB  
N.T.S.



PLAN SECTION  
N.T.S.



PLAN SECTION  
N.T.S.

SPECIAL APPLICATIONS OF TYPE "III" MANHOLE BASES

TOP SLAB NOTES:

1. USE A TOP SLAB WHERE THERE IS LESS THAN 3' - 4" CLEARANCE BETWEEN THE TOP OF THE MANHOLE BASE AND FINISH GRADE FOR A PRECAST SECTION AND MANHOLE COVER FRAME.
2. ALSO USE A TOP SLAB WHEN PLACING A TYPE "A" OR TYPE "C" INLET OPENING ON A TYPE "III" MANHOLE BASE. THE OPENING IN THE SLAB SHALL CONFORM TO THE INSIDE DIMENSIONS OF THE INLET TO BE USED.
3. ALL REINFORCED CONCRETE SHALL BE CSR 6 SACK CONCRETE MIX.
4. CONSTRUCTION JOINTS ARE OPTIONAL WHERE SHOWN. OTHER LOCATIONS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER. KEY DIMENSIONS ARE 1 1/2" x 3 1/2".
5. FOR DETAILS OF MANHOLE FRAME AND COVER, SEE STANDARD DETAIL SD-9.

NOTE:

WHEN UNUSUAL CIRCUMSTANCES, SUCH AS EXCESSIVE SKEW OR PARALLEL PIPES PREVENT THE USE OF A NORMAL TYPE "III" MANHOLE BASE, THE WALLS MAY BE LENGTHENED OR RELOCATED TO ACCOMMODATE THE PIPES, PROVIDING THE FOLLOWING CRITERIA ARE MET:

1. THE INSIDE DIMENSIONS OF THE BASE SHALL BE SUCH THAT A FOUR FOOT DIAMETER CIRCLE WILL LAY FLAT ON THE FLOOR, AS SHOWN.
2. THE MAXIMUM DISTANCE BETWEEN ANY TWO INSIDE CORNERS SHALL BE 10'-0", AS SHOWN
3. REINFORCEMENT AND FLOOR, WALL, AND TOP THICKNESS SHALL REMAIN THE SAME AS FOR A NORMAL TYPE "III" MANHOLE BASE.
4. NO PIPE SHALL EXCEED 60" INSIDE DIAMETER.

IF ANY ONE OF THESE CRITERIA CANNOT BE MET, A SPECIAL DESIGN WILL BE REQUIRED.



CITY OF SAN RAMON

DETAIL SD-8b

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: 12/17/15

STANDARD DETAIL

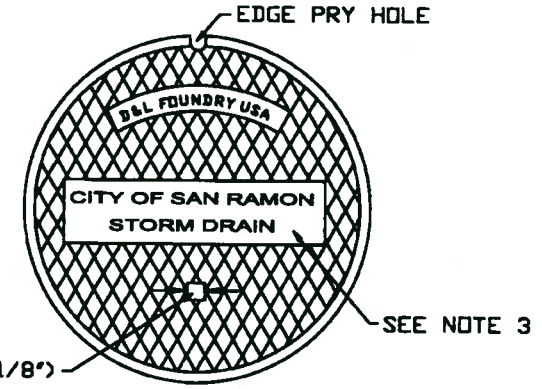
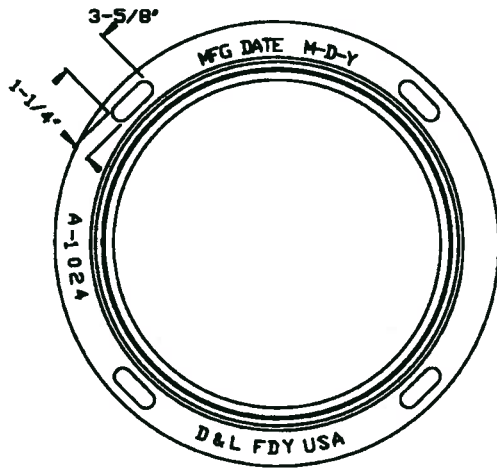
TYPE III  
MANHOLE BASE

APPROVED BY:

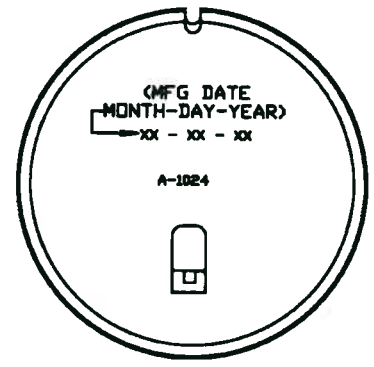
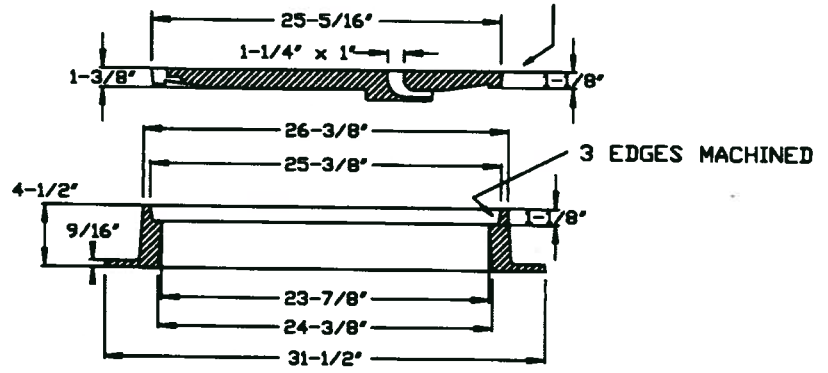
DATE: 1/25/16

*Brian R. Banstein*  
CITY ENGINEER

SHT 2 of 2





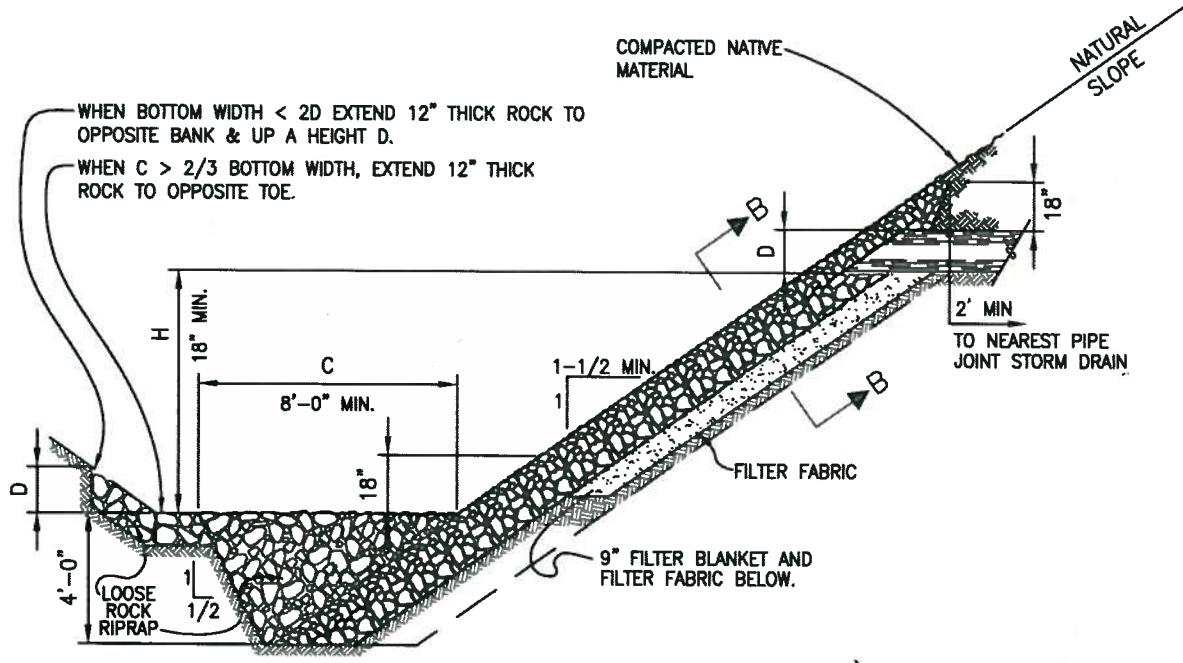
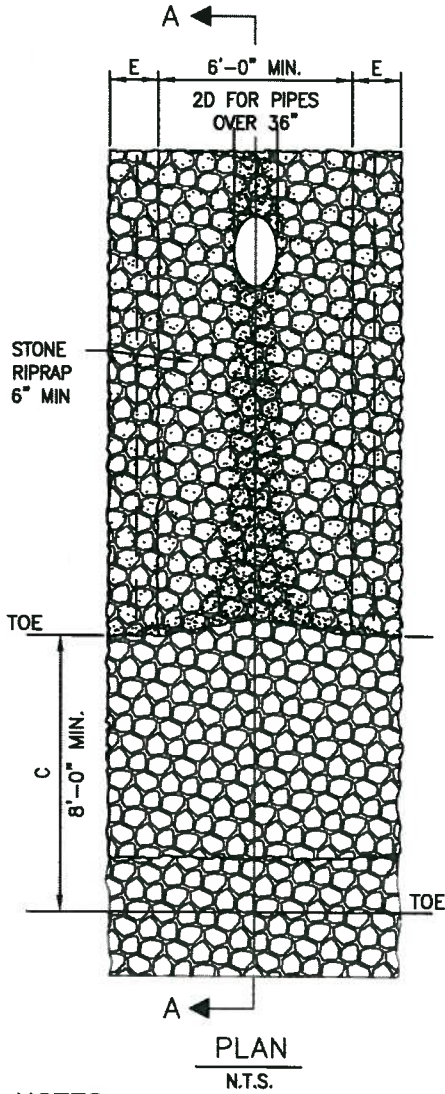
SIDE AND BOTTOM EDGES MACHINED



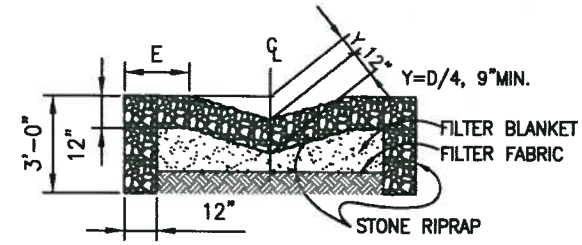
NOTES:

1. ALL MANHOLE COVER CONTACT AND BEARING SURFACES SHALL BE MACHINED TO FIT ACCURATELY SO THAT COVERS WILL NOT ROCK.
2. MANHOLE FRAME AND COVER SHALL BE D&L FOUNDRY MODEL A-1040 OR APPROVED EQUIVALENT.
3. PRIVATE STORM DRAINS MUST BE NOTED AS SUCH.

	CITY OF SAN RAMON	DRAWN BY: ELR	STANDARD DETAIL	APPROVED BY: DATE: <u>6/15/09</u>
		CHECKED BY: ENGINEERING		 CITY ENGINEER
DETAIL SD-9	DATE: 12/29/08	STORM MANHOLE FRAME & COVER		SHT 1 of 1



SECTION A-A  
N.T.S.



SECTION B-B  
N.T.S.

H	E
1'-6" TO 7'-0"	2'-0"
7'-0" TO 14'-0"	4'-0"
14'-0" TO 20'-0"	6'-0"
OVER 20'	8'-0"

NOTES:

1. GROUTED AND LOOSE ROCK RIPRAP SHALL CONFORM TO STATE OF CALIFORNIA STANDARD SPECIFICATIONS.
2. FOR PIPES WITH FLAPGATES SEE STANDARD DETAIL SD-11.
3. FILTER MATERIAL SHALL CONFORM TO STATE OF CALIFORNIA STANDARD SPECIFICATIONS.
4. USE OF THIS DETAIL SUBJECT TO APPROVAL OF CITY ENGINEER.



CITY OF SAN RAMON

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DETAIL SD-10

DATE: 05/20/11

STANDARD DETAIL

RIPRAP OUTFALL

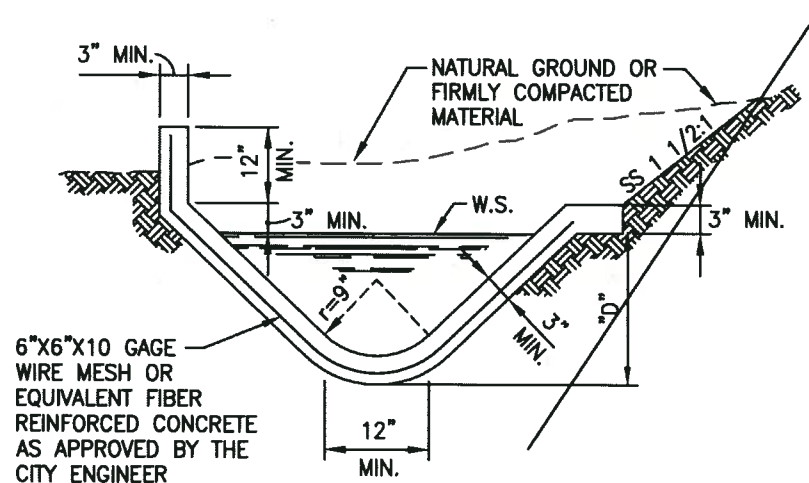
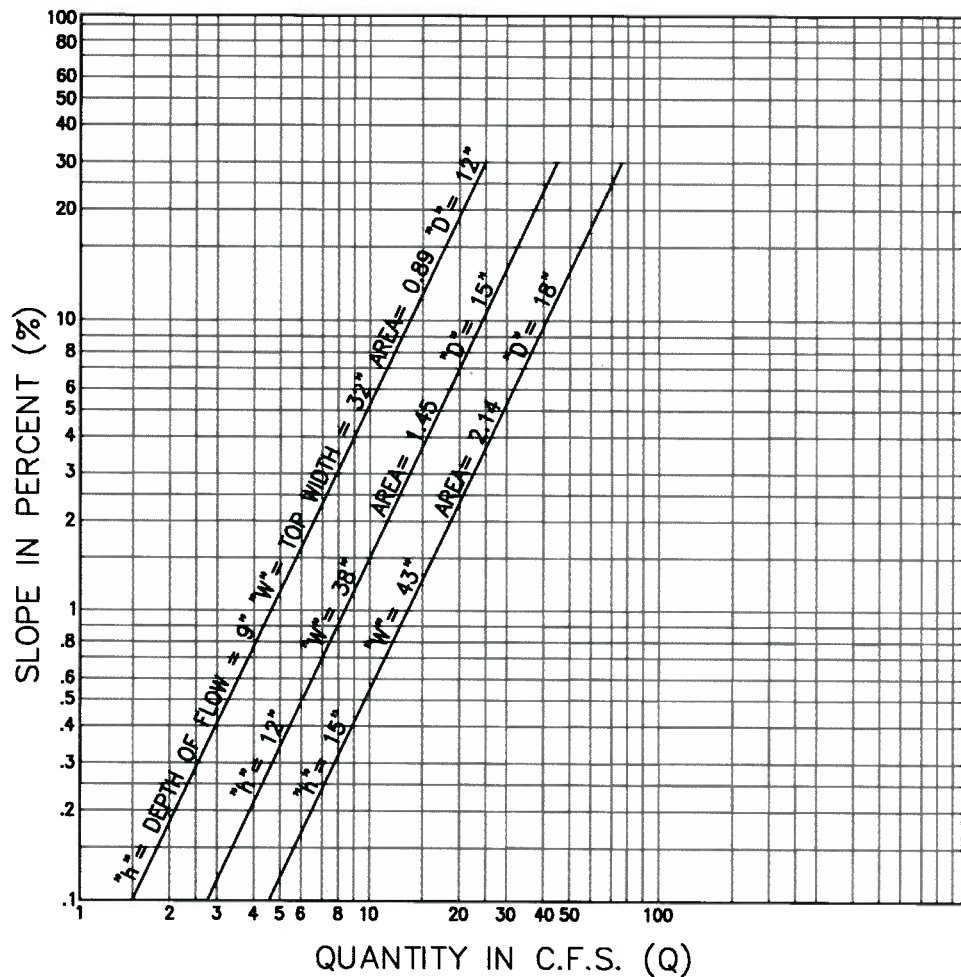
APPROVED BY: DATE: 6/1/11

*Brin K. Brinker*

CITY ENGINEER

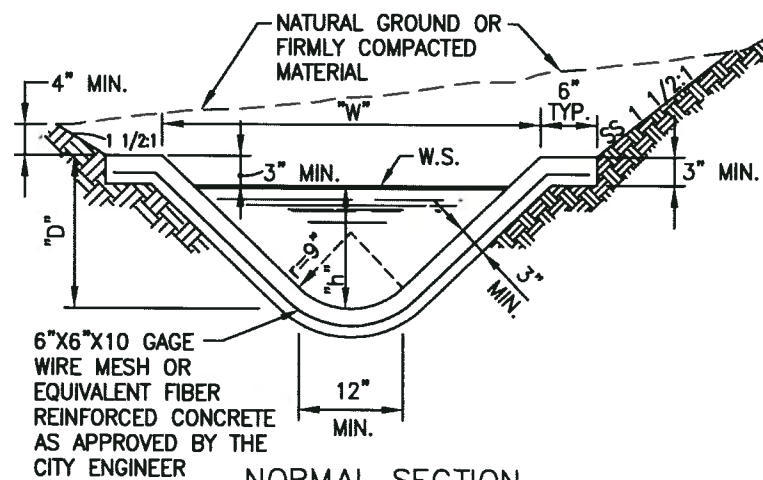
SHT 1 of 1





SUPERELEVATED SECTION

N.T.S.



NORMAL SECTION

N.T.S.



CITY OF SAN RAMON

DETAIL SD-11

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: 05/20/11

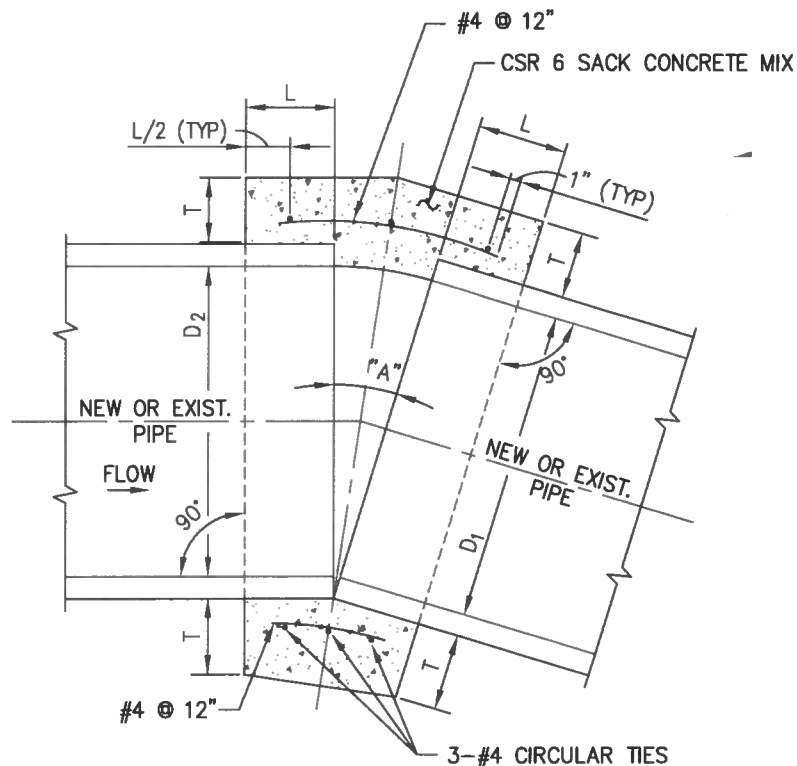
STANDARD DETAIL

PCC V-DITCH

APPROVED BY: DATE: 6/1/11  
*Brian H. Bawter*  
 CITY ENGINEER

SHT 1 of 1

D	L	T (MIN.)
12"	1.0'	4"
18"	1.0'	5"
24"	1.0'	6"
36"	1.5'	8"
48"	1.5'	10"
57"	1.5'	10"
60"	1.75'	11"
66"	1.75'	11"



NOTES:

1. TO BE USED ONLY WITH APPROVAL OF THE CITY ENGINEER.
2. WHERE PIPES OF DIFFERENT DIAMETERS ARE JOINED WITH A CONCRETE COLLAR, L AND T SHALL BE THOSE OF THE LARGER PIPE  $D=D_1$  OR  $D_2$ , WHICHEVER IS GREATER.
3. FOR PIPES LARGER THAN 66" A SPECIAL COLLAR DETAIL IS REQUIRED.
4. FOR PIPE SIZE NOT LISTED USE NEXT SIZE LARGER.
5. OMIT REINFORCING ON PIPES 24" AND LESS IN DIAMETER AND ON ALL PIPES WHERE ANGLE "A" IS LESS THAN 10°.
6. WHERE REINFORCING IS REQUIRED THE DIAMETER OF THE CIRCULAR TIES SHALL BE  $D + (2 \times \text{WALL THICKNESS}) + 8"$ .
7. WHEN  $D_1$  IS EQUAL TO OR LESS THAN  $D_2$ , JOIN INVERTS AND WHEN  $D_1$  IS GREATER THAN  $D_2$  JOIN SOFFITS.
8. PIPE MAY BE CORRUGATED METAL PIPE, CONCRETE PIPE, OR REINFORCED CONCRETE PIPE.



CITY OF SAN RAMON

DETAIL SD-12

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: 12/17/15

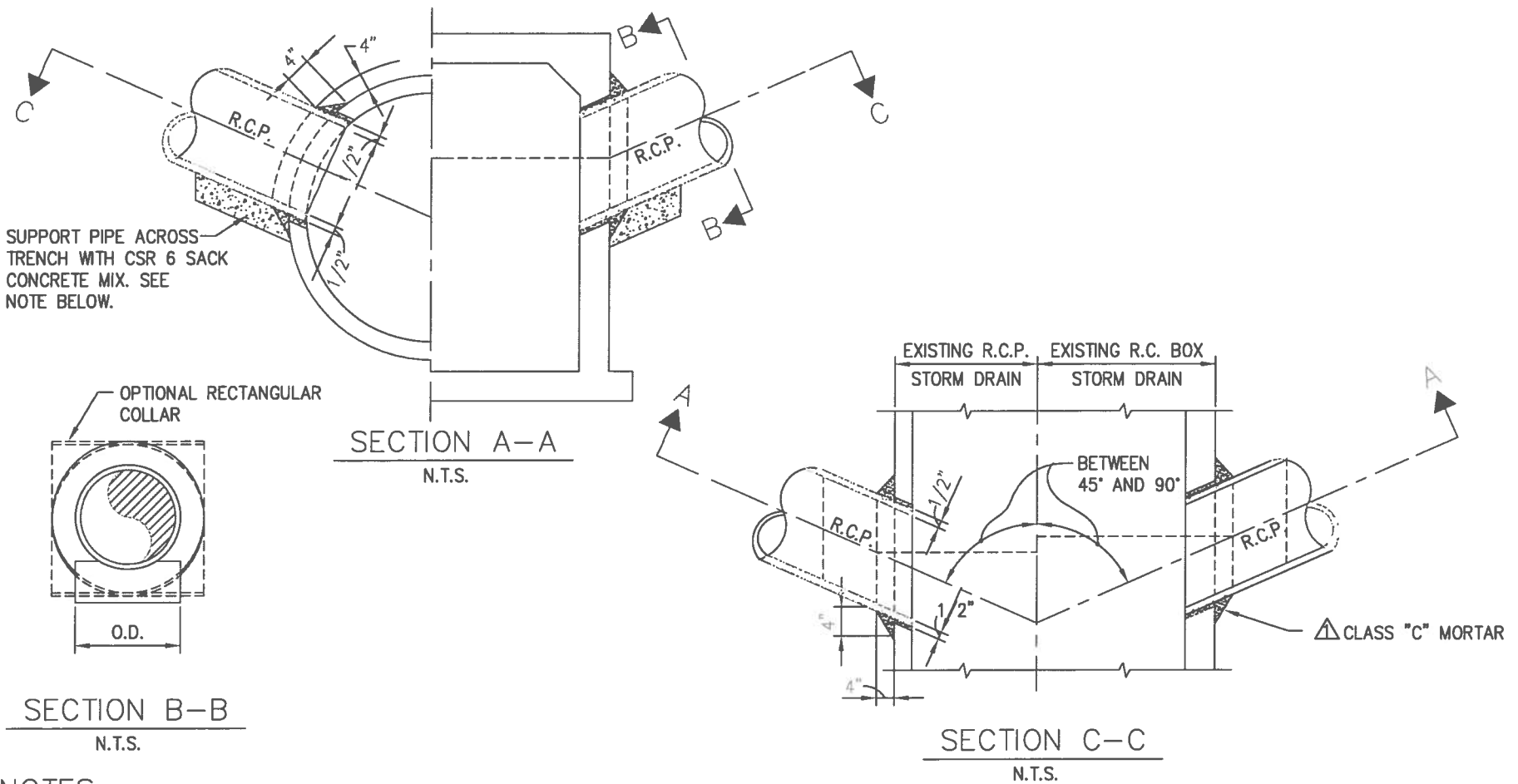
STANDARD DETAIL

CONCRETE COLLAR

APPROVED BY: DATE: 1/25/16

*Kevin R. Bornstein*  
CITY ENGINEER

SHT 1 of 1



NOTES :

1. TO BE USED ONLY WITH APPROVAL OF THE CITY ENGINEER.
2. O.D. OF CONNECTOR PIPE SHALL NOT BE LARGER THAN ONE-HALF ID OF MAIN R.C.P. STORM DRAIN.
3. THE MINIMUM OPENING INTO THE EXISTING STORM DRAIN SHALL BE THE OUTSIDE DIAMETER OF THE CONNECTING PIPE PLUS 1 INCH.
4. THE CONCRETE BACKFILL SUPPORTING THE CONNECTING PIPE MAY BE OMITTED IF THE PIPE IS LAID ON UNDISTURBED EARTH TO STORM DRAIN WALL.



CITY OF SAN RAMON

DETAIL SD-13

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: 12/17/15

STANDARD DETAIL

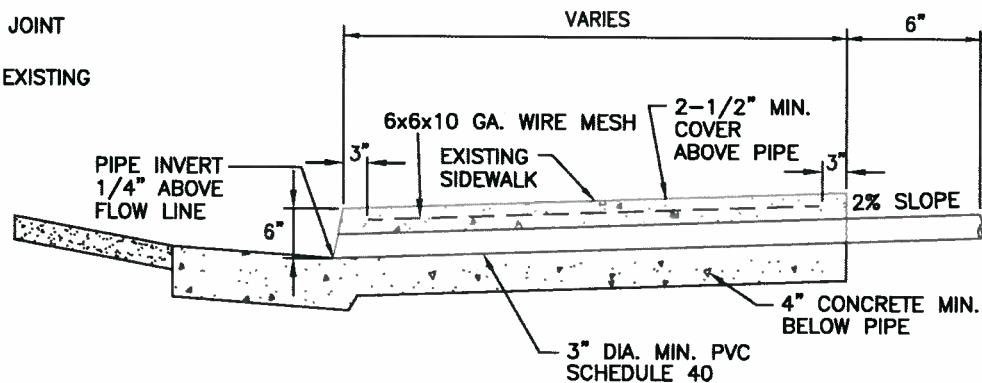
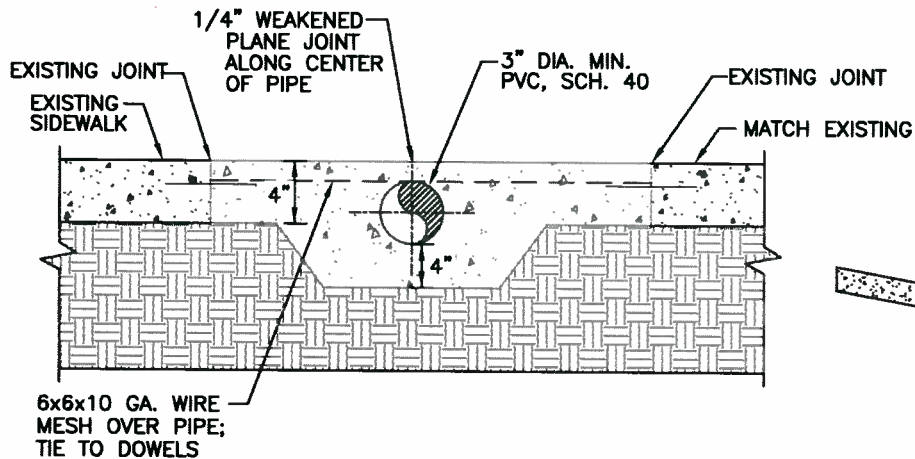
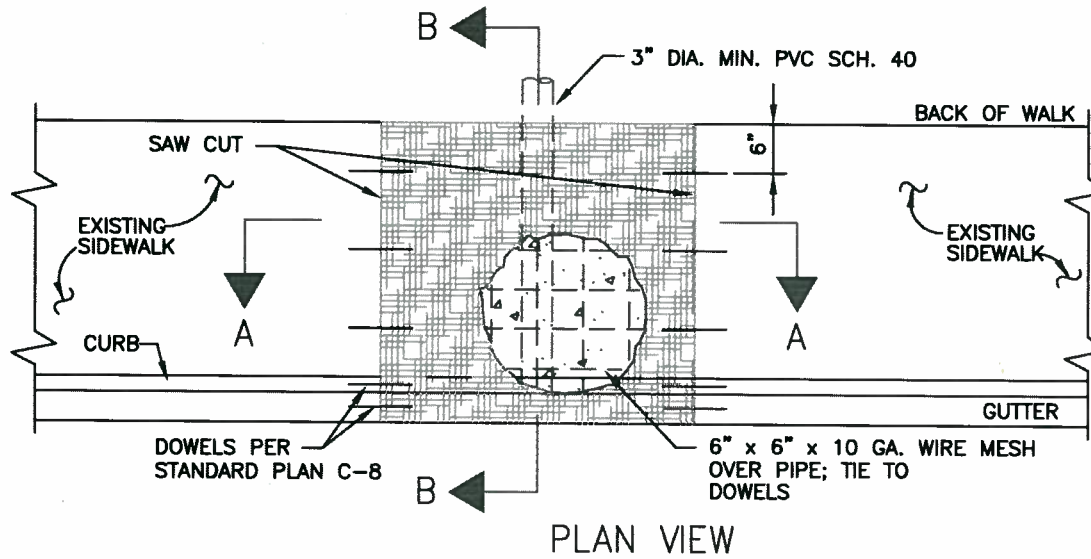
CONNECTION TO EXISTING STORM DRAIN

APPROVED BY:

DATE: 1/26/16

*Brian R. Bourstein*  
CITY ENGINEER

SHT 1 of 1



NOTES:

1. BROOM FINISH, UNLESS OTHERWISE DIRECTED
2. SAWCUT EXISTING SIDEWALK AT THE NEAREST WEAKENED PLANE JOINTS AND/OR SCORE LINES.
3. ADD WEAKENED PLANE JOINTS AND SCORE LINES PER STANDARD PLAN C-7.
4. USE OF CORING SUBJECT TO APPROVAL BY CITY ENGINEER.
5. PIPE MUST EXTEND TO FACE OF CURB.



CITY OF SAN RAMON

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DETAIL SD-14

DATE: 05/20/11

STANDARD DETAIL

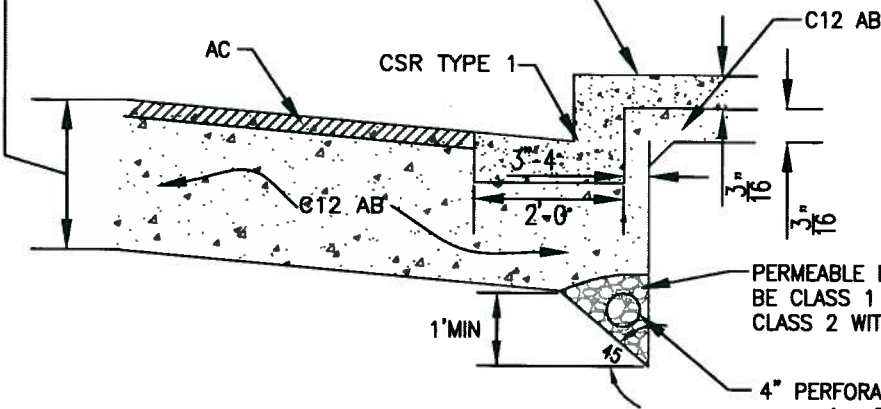
SIDEWALK  
CROSS - DRAIN

APPROVED BY: DATE: 6/1/11  
*Brian R. Bernstein*  
CITY ENGINEER

SHT 1 of 1

AS REQUIRED BY DESIGN

MONOLITHIC CURB, GUTTER, AND  
SIDEWALK OR AS SHOWN ON PLANS



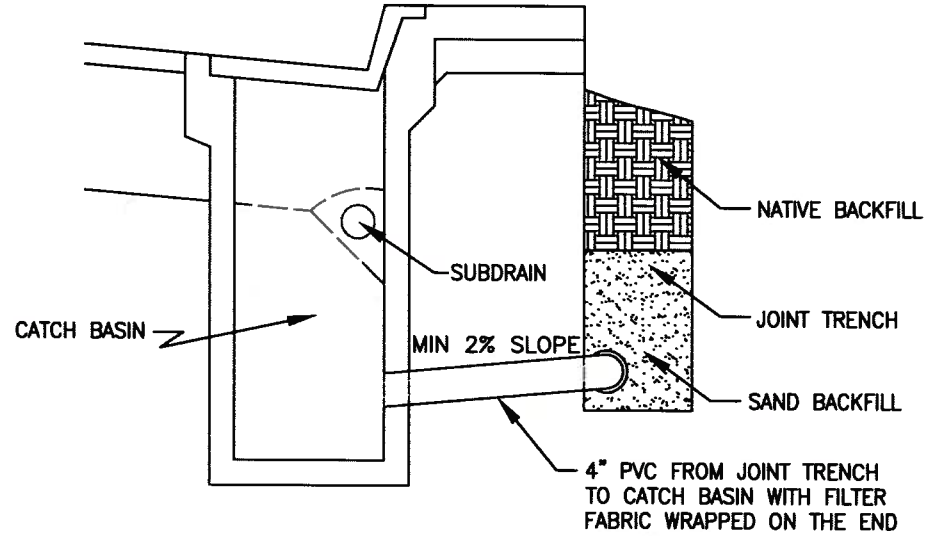
SUBDRAIN

N.T.S.

PERMEABLE MATERIAL SHALL EITHER  
BE CLASS 1 WITH FILTER FABRIC OR  
CLASS 2 WITHOUT FILTER FABRIC

4" PERFORATED PIPE WITH FABRIC WRAP

1. CONNECT TO EACH CATCH BASIN AS NECESSARY.
2. SUBDRAIN SHALL BE CONTINUOUS ALONG ENTIRE LENGTH OF STREETS.
3. SUBDRAIN FOR NEW DEVELOPMENT MAY REQUIRE SITE SPECIFIC DESIGN AND APPROVAL AS DIRECTED BY CITY ENGINEER



SUBDRAIN AT CATCH BASIN

N.T.S.



CITY OF SAN RAMON

DETAIL SD-15

DRAWN BY: ELR

CHECKED BY: ENGINEERING

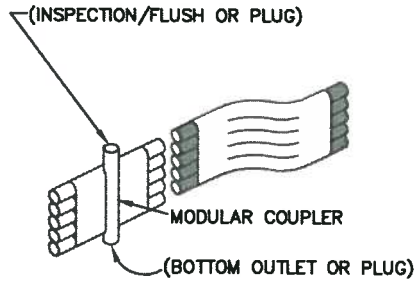
DATE: 05/20/11

STANDARD DETAIL

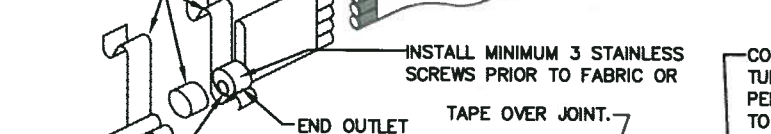
ROADWAY  
SUB-DRAIN DETAIL

APPROVED BY: DATE: 6/1/11  
*Brian R. Bernstein*  
CITY ENGINEER

SHT 1 of 1



INSTALL FILTER FABRIC AND TAPE WITH 2"-10 MIL HDPE TAPE TO MAKE CONNECTION EARTH TIGHT.

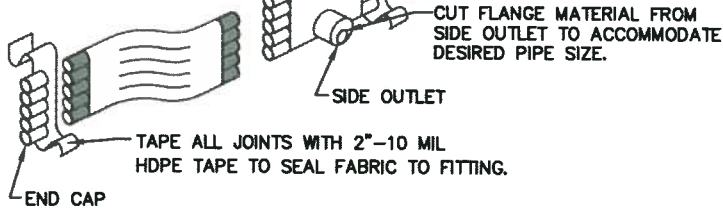


INSTALL MINIMUM 3 STAINLESS SCREWS PRIOR TO FABRIC OR

CONTINUOUS ROLL MULTI-FLOW TUBING (OUT LENGTH AS REQUIRED) PERMISSIBLE FOR THE FABRIC SEAM TO BE UP OR DOWN.

CUT FLANGE MATERIAL FROM SIDE OUTLET TO ACCOMMODATE DESIRED PIPE SIZE.

CONNECT 4" SOLID PVC DISCHARGE PIPE TO CATCH BASIN.



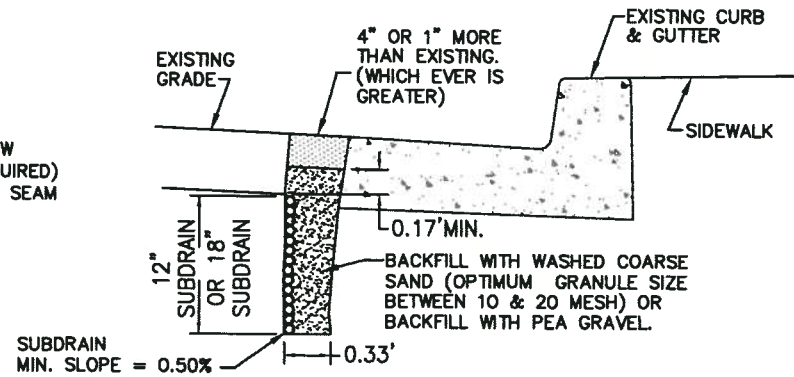
TAPE ALL JOINTS WITH 2"-10 MIL HDPE TAPE TO SEAL FABRIC TO FITTING.

SUBDRAIN ASSEMBLIES  
N.T.S.

**NOTE:**

PLACE CLOSED CORE STACKED TUBE GEOCOMPOSITE SUBDRAIN ON ROAD SIDE OF TRENCH AS SHOWN. CONNECT SUBDRAIN TO EXISTING CATCH BASINS WITH SOLID DISCHARGE PIPE.

SEE STANDARD DETAIL SD-15 FOR CONNECTION TO CATCH BASIN.



**NOTE:** BOTTOM OF SUBGRADE TO BE SET 3" BELOW PAVEMENT SUBGRADE.

SUBDRAIN AT LIP OF GUTTER  
N.T.S.

**NOTE:**

ON NEW STREET INSTALLATIONS, INSTALL SUBDRAIN PRIOR TO PAVING. AC THICKNESS SAME AS STREET.



CITY OF SAN RAMON

DETAIL SD-16

DRAWN BY: ELR

CHECKED BY: ENGINEERING

DATE: 05/20/11

STANDARD DETAIL

SUBDRAIN

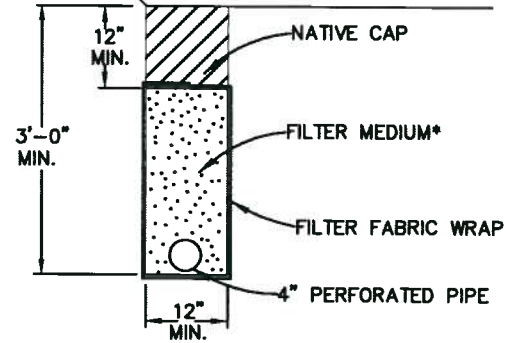
APPROVED BY: DATE: 6/1/11  
*Brian R. Bernstein*  
CITY ENGINEER

SHT 1 of 1



NOTES:

1. ALL PIPE JOINTS SHALL BE GLUED
2. ALL PERFORATED PIPE PLACED PERFORATIONS DOWN
3. 1% FALL (MINIMUM) ON ALL TRENCHES AND DRAIN LINES



\*FILTER MEDIUM

CLASS 2 PERMEABLE MATERIAL

MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADING REQUIREMENTS:

<u>SIEVE SIZE</u>	<u>% PASSING SIEVE</u>
1"	100
3/4"	90-100
3/8"	40-100
#4	25-40
#8	18-33
#30	5-15
#50	0-7
#200	0-3

NOT TO SCALE



CITY OF SAN RAMON

DRAWN BY; ELR

CHECKED BY: ENGINEERING

STANDARD DETAIL

APPROVED BY:

DATE: 6/1/11

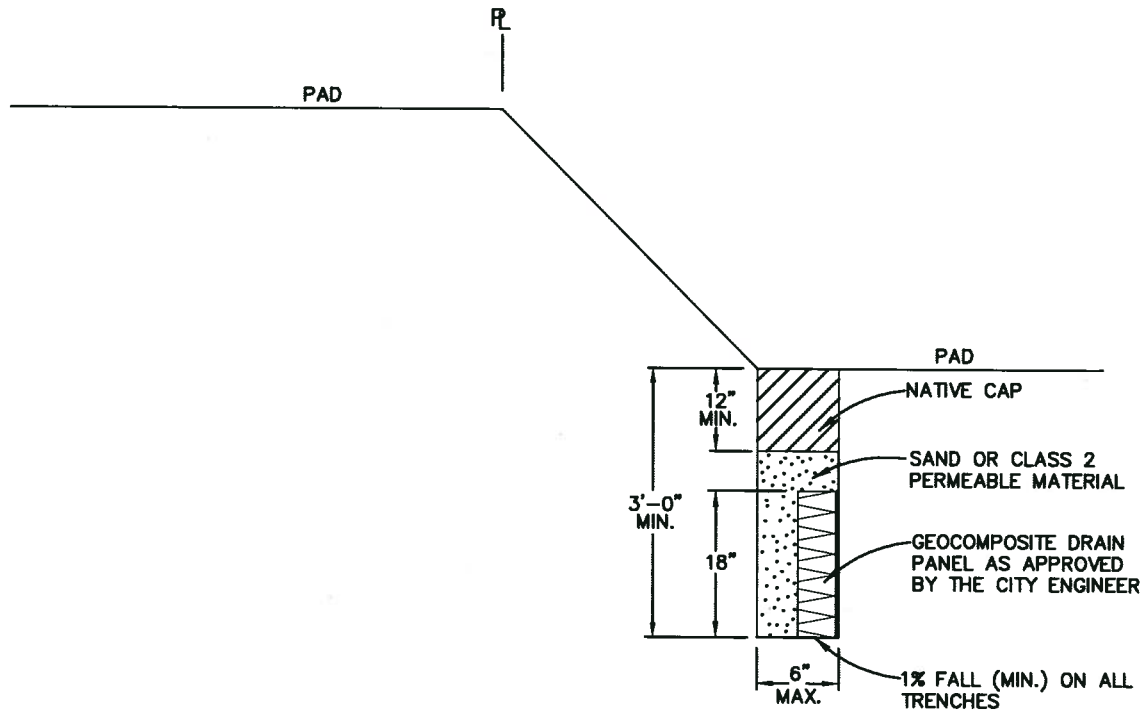
*Brian M. Brundage*  
CITY ENGINEER

DETAIL SD-17a

DATE: 05/20/11

TYPICAL TOE SUBDRAIN DETAIL-PIPE

SHT 1 of 3



CLASS 2 PERMEABLE MATERIAL

MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADING REQUIREMENTS:

<u>SIEVE SIZE</u>	<u>% PASSING SIEVE</u>
1"	100
3/4"	90-100
3/8"	40-100
#4	25-40
#8	18-33
#30	5-15
#50	0-7
#200	0-3

NOT TO SCALE



CITY OF SAN RAMON

DRAWN BY: ELR

CHECKED BY: ENGINEERING

STANDARD DETAIL

APPROVED BY:

DATE: 6/1/11

*Brian R. Bortstein*  
CITY ENGINEER

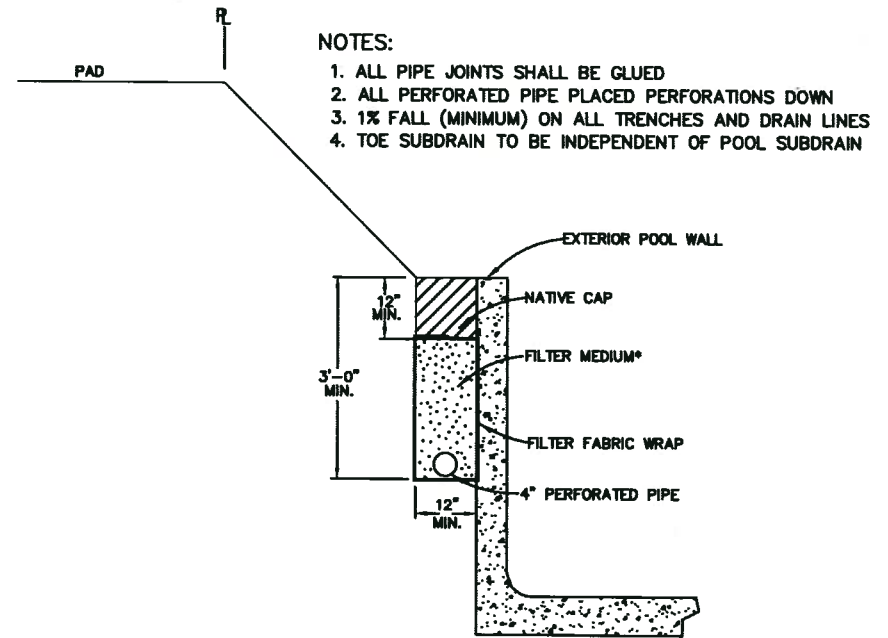
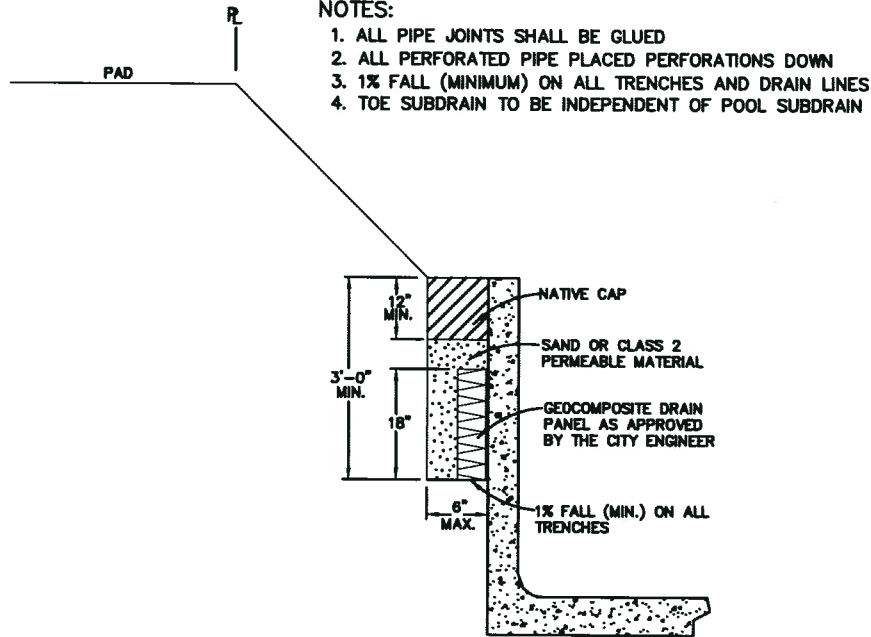
DETAIL SD-17b

DATE: 05/20/11

TYPICAL TOE SUBDRAIN DETAIL -  
DRAIN PANEL

SHT 2 of 3





FILTER MEDIUM SHALL CONFORM TO THE REQUIREMENT OF CALTRANS CLASS 2 PERMEABLE MATERIAL UNLESS OTHERWISE APPROVED.

MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADING REQUIREMENTS:

SIEVE SIZE	% PASSING SIEVE
1"	100
3/4"	90-100
3/8"	40-100
#4	25-40
#8	18-33
#30	5-15
#50	0-7
#200	0-3

NOT TO SCALE



CITY OF SAN RAMON

DRAWN BY: ELR

CHECKED BY: ENG'G., PS

STANDARD DETAIL

APPROVED BY:

DATE: 6/1/11

*Brian R. Boudreau*  
CITY ENGINEER

DETAIL SD-17c

DATE: 05/20/11

TYPICAL TOE SUBDRAIN DETAIL-POOL

SHT 3 of 3