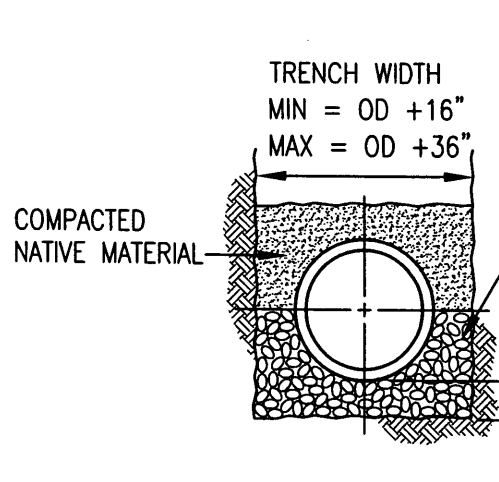


DRAWING NUMBER	TITLE
9-1	STORM DRAIN PIPE BEDDING AND INITIAL BACKFILL (4/03)
9-7A	STANDARD PRECAST CONCRETE DRAINAGE MANHOLE (12/02)
9-8A	TYPE A SADDLE MANHOLE
9-9	GREY CAST IRON STANDARD 24" MANHOLE FRAME & COVER (1/03)
9-10	GREY CAST IRON STANDARD 36" MANHOLE FRAME & COVER
9-11	GRATE TYPE MANHOLE COVER
9-13A	DROP INLET TYPE A (For reference only)
9-13B	DROP INLET TYPE B (04/03)
9-13C	DROP INLET TYPE C
9-13D	DROP INLET TYPE D (For reference only)
9-13E	DROP INLET TYPE E (For reference only)
9-13GD	GUTTER DRAIN (For reference only)
9-14	WELDED STEEL GRATE FRAME (04/03)
9-15	WELDED STEEL GRATE
9-16	CENTER SUPPORT ASSEMBLY FOR MULTIPLE GRATES
9-17	CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
9-18	DROP INLET TYPE F
9-19	DROP INLET TYPE G
9-20	DRAINAGE INLET TYPE H
9-21	CORRUGATED METAL PIPE DRAINAGE INLET TYPE I
9-22	CORRUGATED PIPE FITTINGS
9-23	PIPE CONNECTIONS (1/03)
9-24	LINED CHANNEL SECTION
9-26G	TRASH RACK 24"-36" PIPE (1/03)
9-26H	PIPE HEADWALL, ENDWALL WINGWALL STRUCTURE (1/03)
9-27	EROSION CONTROL DITCH DISCHARGE
9-28	BARBED WIRE AND WIRE MESH FENCES
9-29	CHAIN LINK FENCE
9-30	UTILITY STREAM CROSSING
9-31	FLEXIBLE CONNECTOR PIPE TO MANHOLE
9-32	CONSTRUCTION SITE SIGN
9-33	UTILITY CROSSING
9-34	CAST IRON 24" MANHOLE FRAME & COVER FOR TYPE G AND 300-1 INLET
300-1	CURB OPENING CATCH BASIN (12/02)
301-1	CURB OPENING CATCH BASIN (12/02)
308-0	MONOLITHIC CATCH BASIN CONNECTION (12/02)
309-0	CATCH BASIN REINFORCEMENT (12/02)

1/15/2004



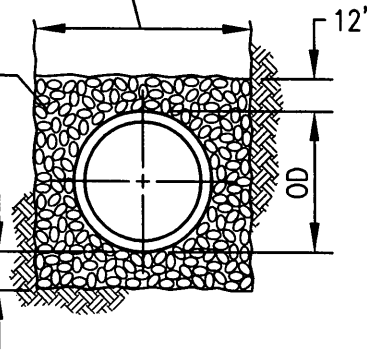
RIGID PIPE

REINFORCED CONCRETE
PIPE C-76

TRENCH WIDTH
MIN = OD + 20" FOR PIPES < 33"
MIN = OD + 36" FOR PIPES > 33"

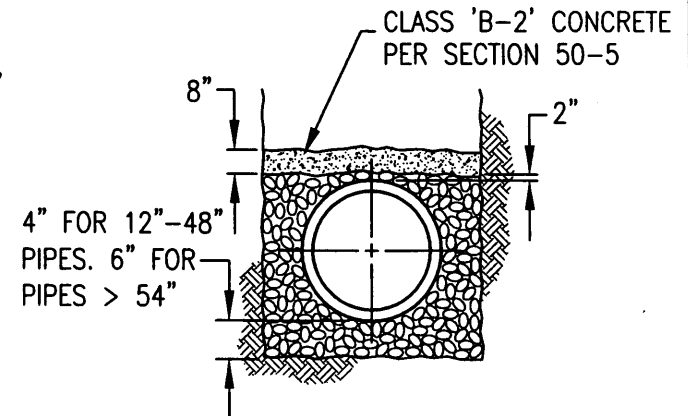
3/4" CRUSHED AGGREGATE
TYPE 'B' FOR 12" PIPES
OR LARGER. SEE NOTE 5

4" FOR 12"-48" PIPES
6" FOR PIPES > 54"



FLEXIBLE PIPE

PVC - C900, C905
CORRUGATED ALUMINUM AND STEEL,
RIBBED ALUMINUM AND STEEL,
HDPE

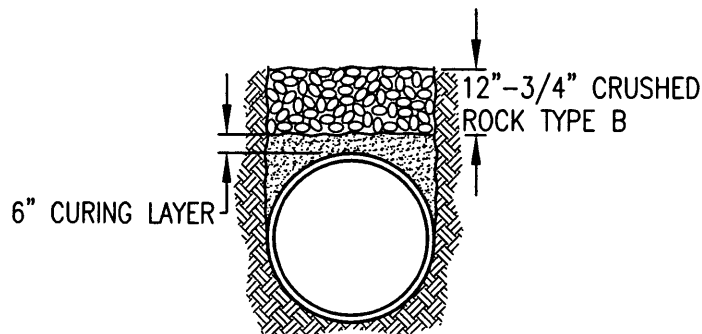


COVER LESS THAN 12"

SEE NOTE 6

GENERAL NOTES:

1. INITIAL BACKFILL MATERIAL SHALL BE THOROUGHLY COMPACTED AROUND PIPE BY SHOVEL SLICING OR TAMPING.
2. SEE SECTION 19 "TRENCH EXCAVATION BEDDING AND BACKFILL".
3. MINIMUM DEPTH OF BEDDING MATERIAL SHALL BE 1-1/2" BELOW THE PIPE BELL.
4. FOR ROCKY OR UNSTABLE BEDDING CONDITIONS, SECTION 19-1.07 OF THE STANDARD CONSTRUCTION SPECIFICATIONS SHALL APPLY.
5. IF MINIMUM TRENCH WIDTH CANNOT BE ACHIEVED CONTROL DENSITY FILL PER SECTION 50-15 SHALL BE USED IN LIEU OF 3/4" CRUSHED AGGREGATE AT NO EXTRA COST.
6. IF MINIMUM COVER OVER PIPE BELL IS LESS THAN TABLE 9-3, PROJECT SPECIALS SHALL APPLY.



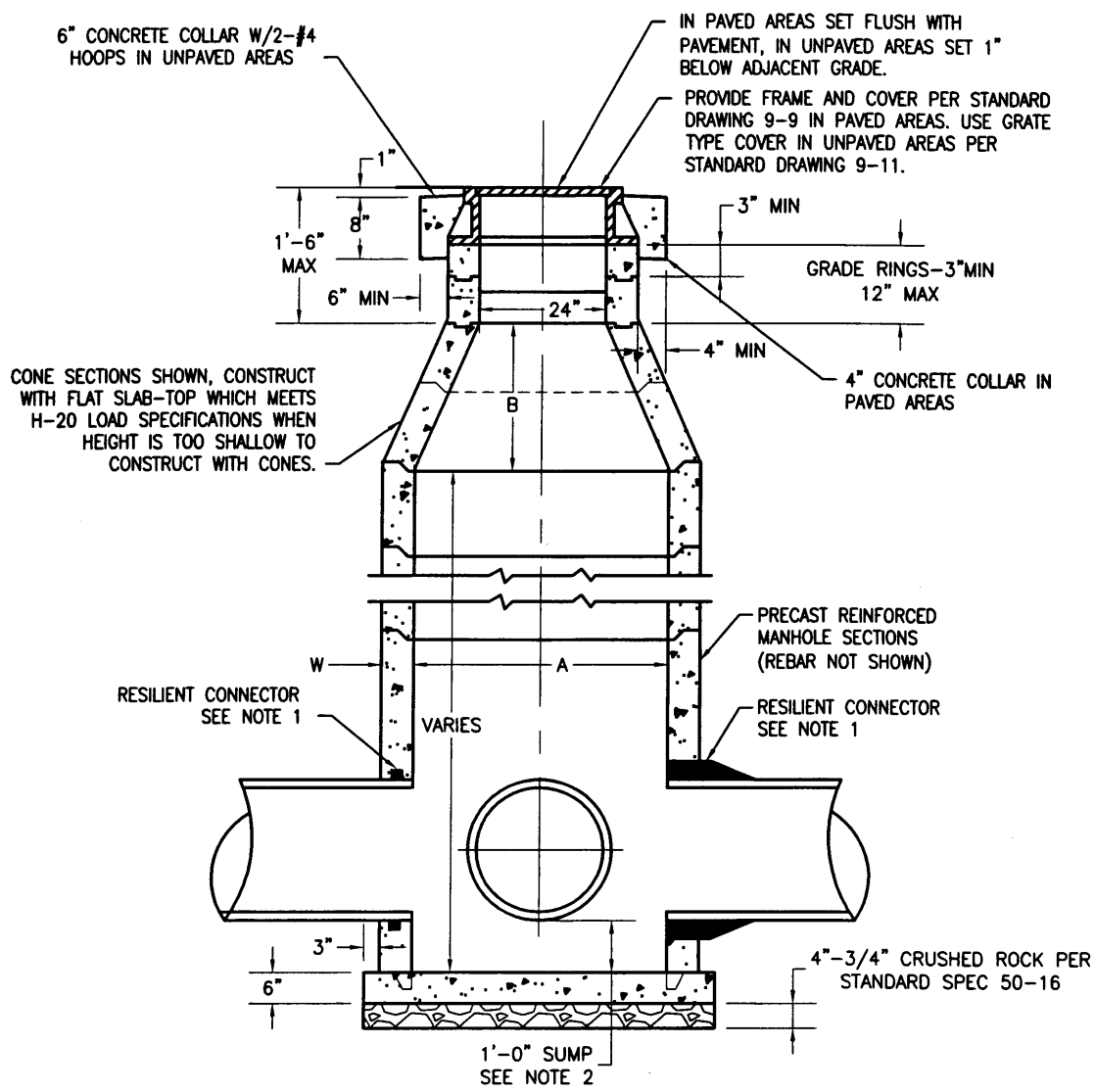
**CAST IN PLACE
CONCRETE PIPE (CIPCP)**

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

**STORM DRAIN PIPE
BEDDING AND
INITIAL BACKFILL**

DRAWN BY: G.O.
SCALE: NONE
DATE: 4/03

Drawings 9-2
through 9-6 are
for design purposes,
and are contained
in the latest version
of the County
Improvement
Standards.



CONE SECTIONS SHOWN, CONSTRUCT WITH FLAT SLAB-TOP WHICH MEETS H-20 LOAD SPECIFICATIONS WHEN HEIGHT IS TOO SHALLOW TO CONSTRUCT WITH CONES.

IN PAVED AREAS SET FLUSH WITH PAVEMENT, IN UNPAVED AREAS SET 1" BELOW ADJACENT GRADE.
 PROVIDE FRAME AND COVER PER STANDARD DRAWING 9-9 IN PAVED AREAS. USE GRATE TYPE COVER IN UNPAVED AREAS PER STANDARD DRAWING 9-11.

RESILIENT CONNECTOR SEE NOTE 1

PRECAST REINFORCED MANHOLE SECTIONS (REBAR NOT SHOWN)

RESILIENT CONNECTOR SEE NOTE 1

1'-0" SUMP SEE NOTE 2

4"-3/4" CRUSHED ROCK PER STANDARD SPEC 50-16

PROFILE

NOTES:

1. ON ALL PIPE UP TO 30" I.D. USE FLEXIBLE COMPRESSION GASKET OR BOOT CONNECTOR CONFORMING TO ASTM C-923. CONNECTION SHALL BE WATER AND SOIL TIGHT. FOR PIPES GREATER THAN 30" I.D., BASE MAY BE CAST-IN-PLACE AND A WATER STOP CONFORMING TO ASTM C-923 SHALL BE USED.
2. SUMP SHALL BE 1'-0" DEEP, MEASURED FROM INVERT OF OUTFALL PIPE. SUMP NOT REQUIRED IF OUTFALL PIPE IS 24" I.D. OR LARGER.
3. RISER SECTIONS, CONES, AND ADJUSTING RINGS SHALL CONFORM TO ASTM C-478.
4. ALL JOINTS SHALL BE MADE WITH PREFORMED PLASTIC JOINT SEALING COMPOUND. FOLLOWING INSTALLATION GROUT ALL INTERIOR AND EXTERIOR JOINTS.
5. CONCENTRIC COMPONENTS SHALL BE USED UNLESS OTHERWISE SPECIFIED ON THE PLANS.
6. PRECAST MANHOLES SHALL BE SIZED TO PROVIDE THE FOLLOWING: THE ANNULAR SPACE ON THE INSIDE OF THE MANHOLE BARREL BETWEEN CORED PIPE CONNECTION HOLES SHALL BE A MINIMUM OF 10-INCHES. IF THE CONNECTION HOLE IS CAST MONOLITHICALLY WITH THE MANHOLE BARREL THE MEASUREMENT SHALL BE TAKEN FROM THE FINISHED CONCRETE CONNECTION SURFACE.
7. SEE SECTION 39, "MANHOLES".

TABLE OF MINIMUM DIMENSIONS

M.H.	A	B	W
48"	48"	18"	4"
60"	60"	30"	6"
72"	72"	**	7"
84"	84"	54"	8"
96"	96"	---	9"

** - TRANSITION SLAB REDUCES THE INSIDE DIAMETER FROM 72" TO 60"

**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

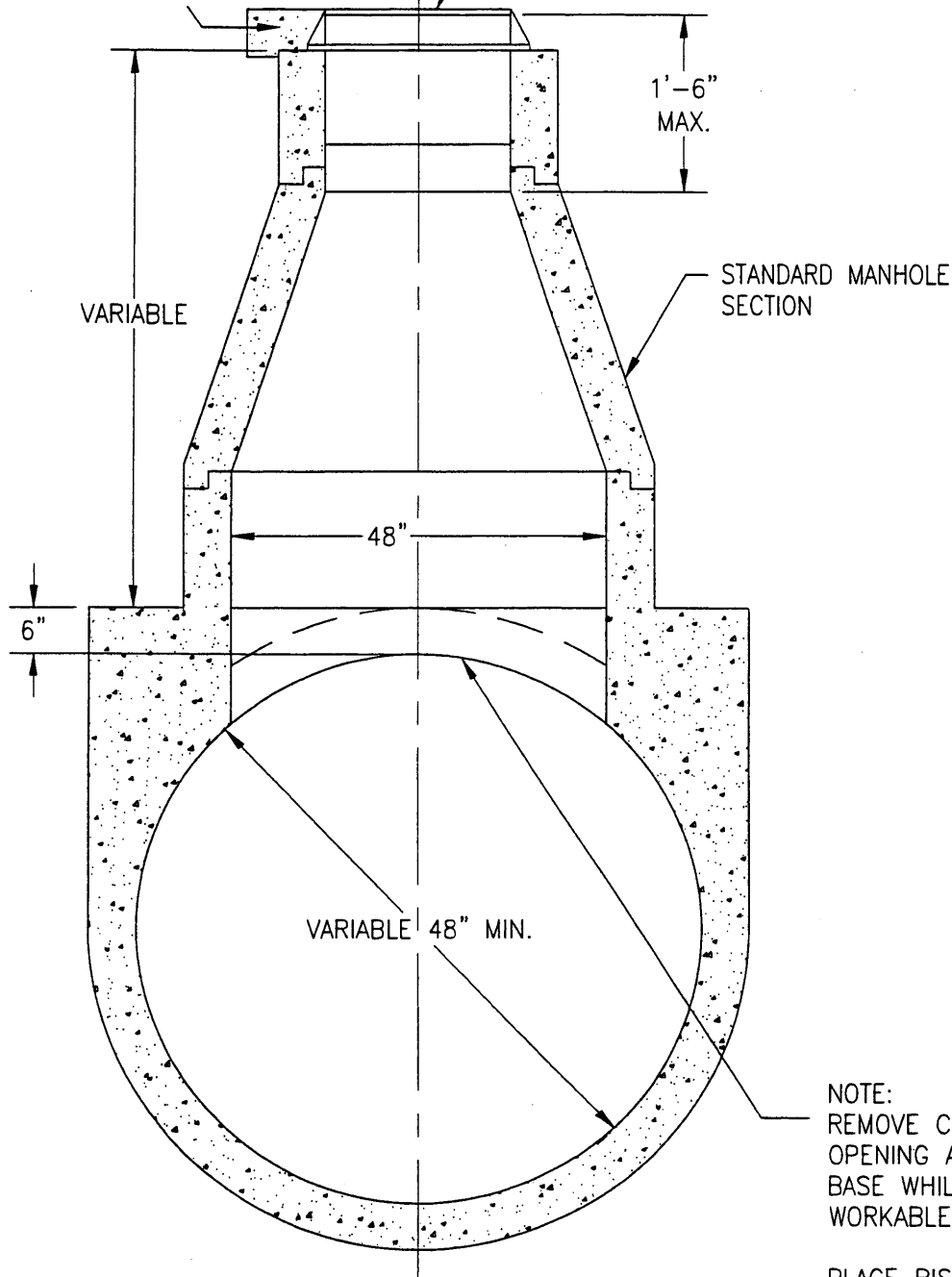
**STANDARD PRECAST CONCRETE
DRAINAGE MANHOLE**

DRAWN BY: M.FIELDS
SCALE: SCALE
DATE: 12/02

9-7A

CONCRETE COLLAR PER SHEET
1 OF STD. DWG. 9-7A.

STANDARD 24" FRAME AND COVER. SEE
NOTES ON SHEET 1 OF STD. DWG. 9-7A.



TYPE A
CAST-IN-PLACE PIPE ONLY

NOTE:
REMOVE CONCRETE IN MANHOLE
OPENING AND CONSTRUCT RISER
BASE WHILE CONCRETE IS STILL
WORKABLE.

PLACE RISER SECTION AFTER
CONCRETE HAS SET.

SEE SECTION 39, "MANHOLES,"
AND SECTION 36,
"CAST-IN-PLACE
CONCRETE PIPE.

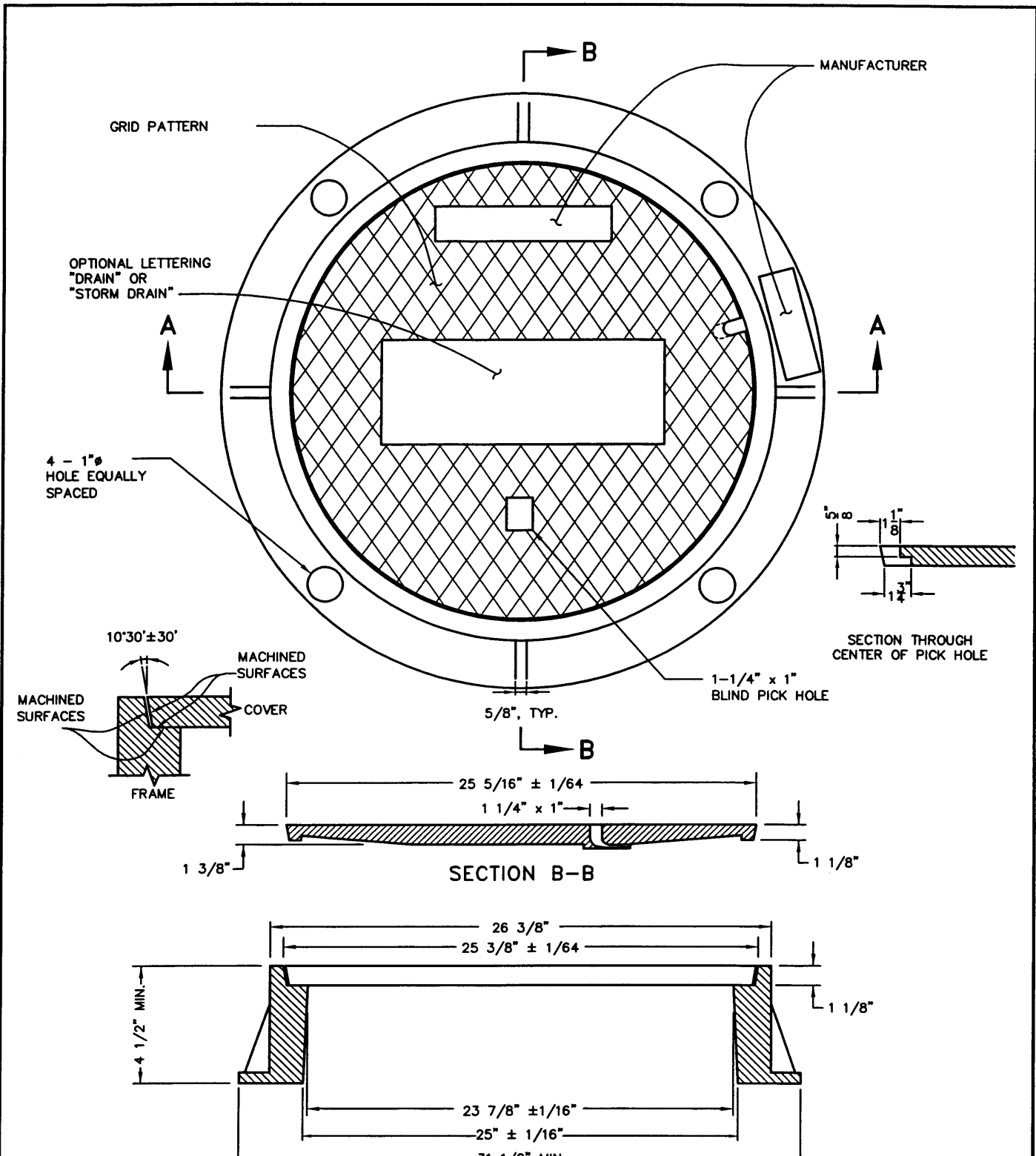
**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**TYPE A
SADDLE MANHOLE**

David DeWitt
DIRECTOR, DEPARTMENT OF WATER RESOURCES

DRAWN BY: M.FIELDS
SCALE: NONE
DATE: 11/98

9-8A



- NOTES:
1. ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B
 2. FRAME AND COVER TO MEET H-20 LOAD SPECIFICATIONS.
 3. MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES NOT TO EXCEED 1/64" TOLERANCE.
 4. FRAME AND COVER SHALL HAVE A COATING OF BLACK BITUMINOUS MATERIAL.
 5. LOCKING COVER TYPE FRAME AND COVERS SHALL BE USED IN EASEMENT AREAS UNLESS OTHERWISE APPROVED.

SET WEIGHT	
FRAME	140 LBS
COVER	130 LBS
TOTAL	270 LBS

**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**GREY CAST IRON
STANDARD 24" MANHOLE
FRAME & COVER**

DRAWN BY: MSF SCALE: NONE DATE: 1/03	9-9
--------------------------------------------	------------

DIRECTOR, DEPARTMENT OF WATER RESOURCES

P:\Shared Folders\Draw Design\Templates\Bid Docs\Special Provisions 2001\Drawings\9-09.dwg, 04/09/2003 11:11:01 AM

OPTIONAL LOCATION FOR
SHOWING COUNTRY OF
ORIGIN ON FRAME

2 LIFT POCKETS
OPPOSITE SIDES

60°

5/8" RIB @ 60°

4-5/8" HEX-HEAD
STAINLESS STEEL
BOLT @ 90°

COUNTRY OF ORIGIN

UPPER FACE OF COVER

LOWER FACE OF COVER

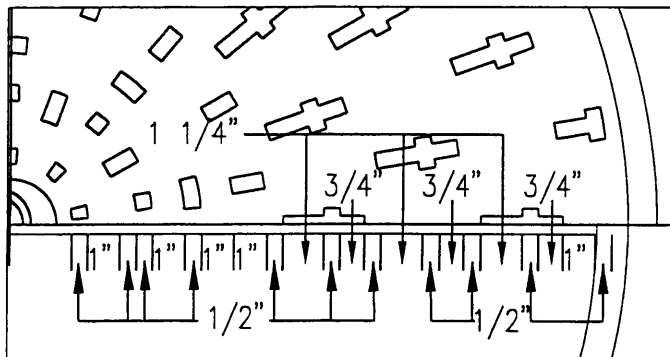
LETTER D
SEE DETAIL B

8 RIBS @ 45°

SET WEIGHT

FRAME	310 LBS
COVER	290 LBS
TOTAL	600 LBS

PLAN



MANUFACTURER

NOTES:

1. ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B.
2. FRAME AND COVER TO MEET H-20 LOAD SPECIFICATIONS.
3. MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES NOT TO EXCEED 1/64" TOLERANCE.
4. FRAME AND COVER SHALL HAVE A COATING OF BLACK BITUMINOUS PAINT.
5. LOCKING COVER TYPE FRAME AND COVERS SHALL BE USED WHEN SPECIFIED IN CONTRACT DOCUMENTS.
6. H2O RATED SLOTTED GRATE OR GRATE TYPE MANHOLE COVER MAY BE SUBSTITUTED FOR COVER WHEN SPECIFIED IN CONTRACT DOCUMENTS OR UPON APPROVAL OF DIRECTOR.

(4) 2"Ø
ANCHOR HOLES

36" MIN

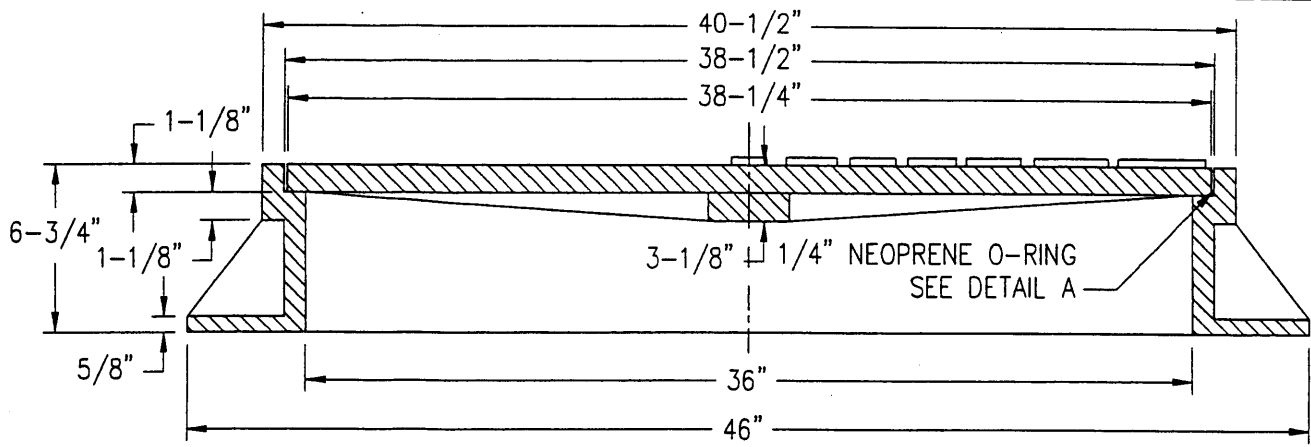
David Odine
DIRECTOR, DEPARTMENT OF WATER RESOURCES

**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

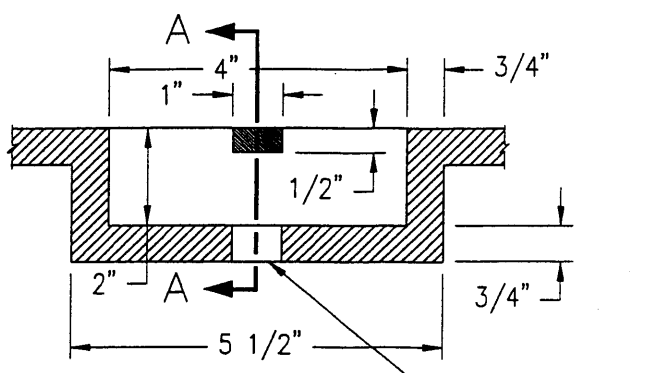
**GREY CAST IRON
STANDARD 36" MANHOLE
FRAME & COVER**

DRAWN BY: TRU PHAN
SCALE: NONE
DATE: 05/01

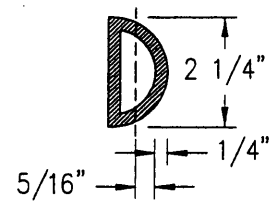
9-10
SHEET 1 OF 2



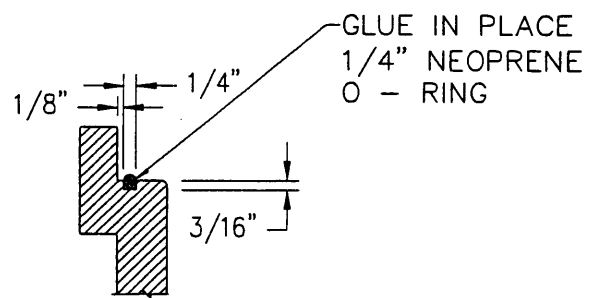
SECTION C-C



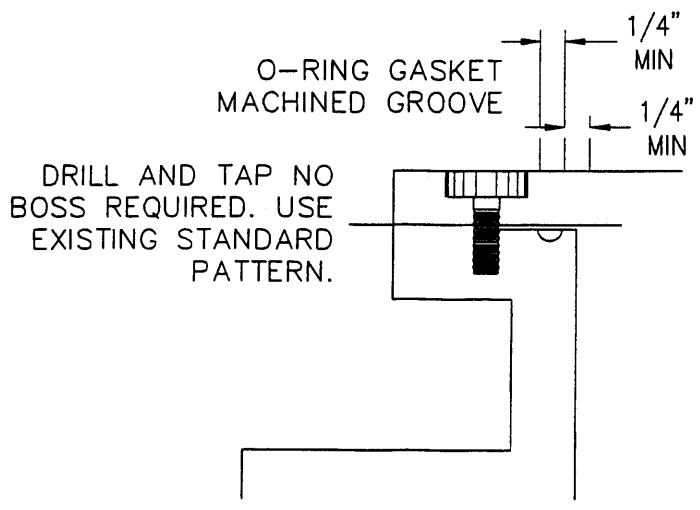
SECTION B-B
NTS.



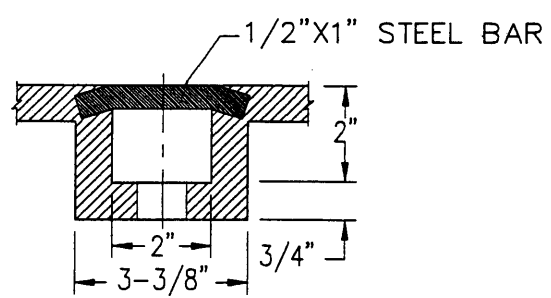
DETAIL B
NTS.



DETAIL A
NTS.



BOLT DOWN COVER DETAIL
NTS.



SECTION A-A
NTS.

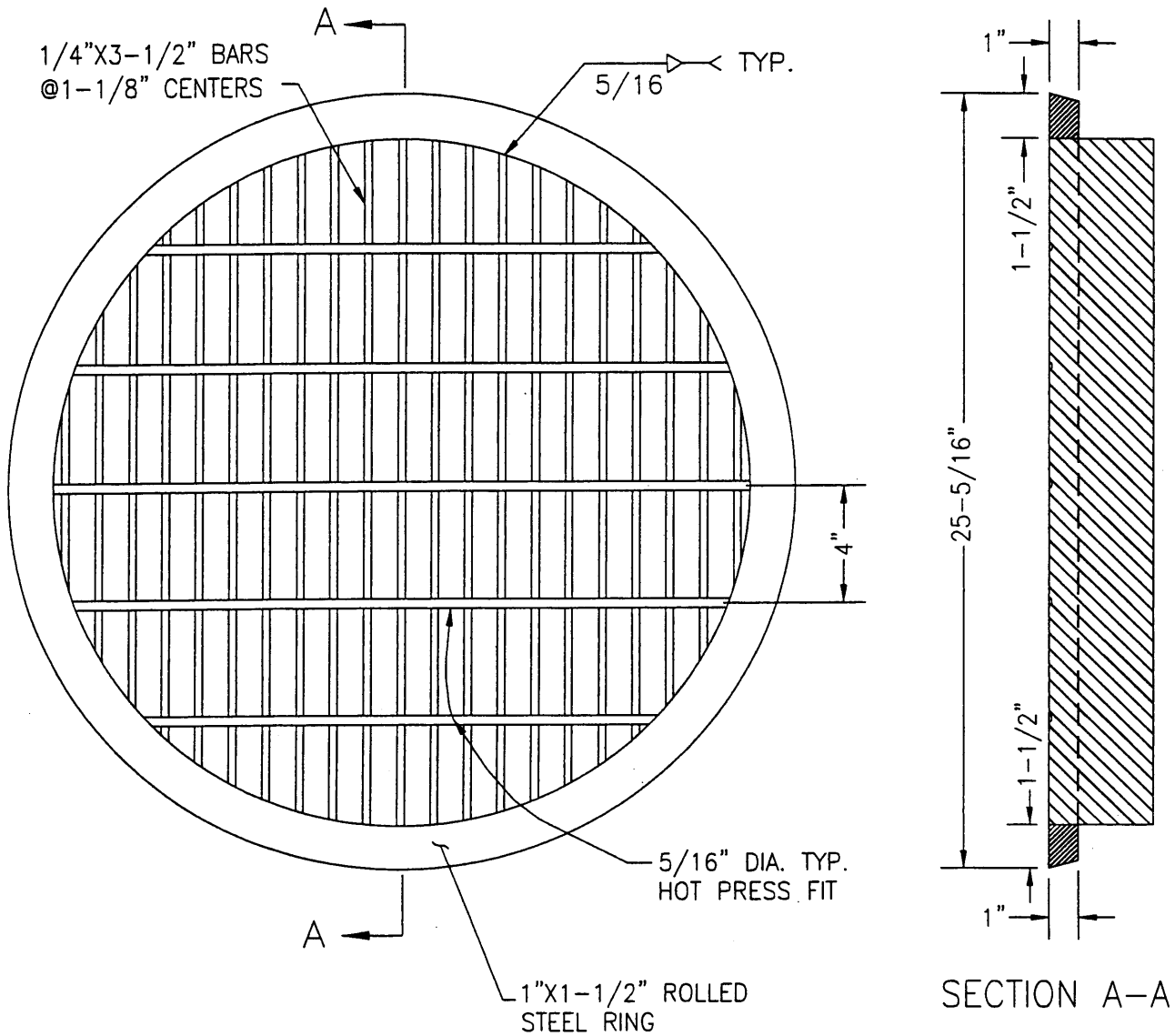
SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

**GREY CAST IRON
STANDARD 36" MANHOLE
FRAME & COVER**

DRAWN BY: TRU PHAN
SCALE: NONE
DATE: 12/99

9-10
SHEET 2 OF 2

Steve DeWan
DIRECTOR, DEPARTMENT OF WATER RESOURCES

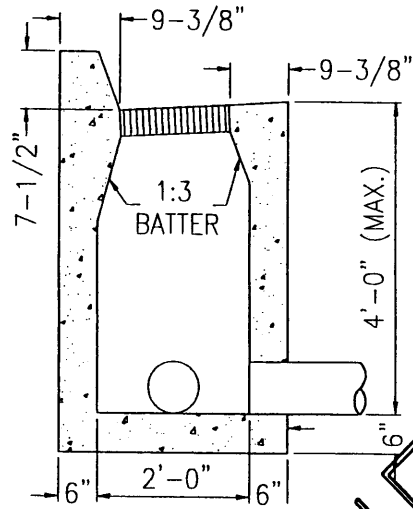
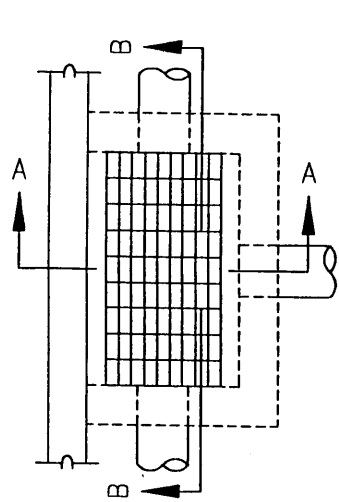


NOTES

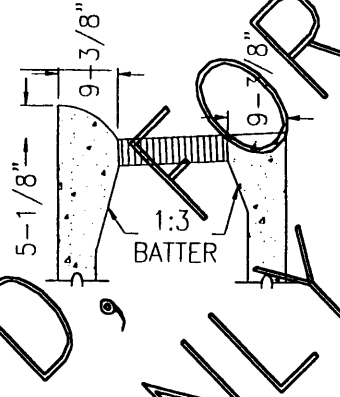
1. MANHOLE COVER SHALL FIT FRAME SHOWN ON DRAWING 9-9.
2. SEATING SURFACES SHALL BE MACHINED AS SHOWN IN DETAIL ON DRAWING 9-9.
3. THIS COVER MAY BE USED ONLY WITH APPROVAL OF DIRECTOR.
4. GALVANIZE AFTER FABRICATION

Mark Oeller
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
GRATE TYPE MANHOLE COVER	
DRAWN BY: M.FIELDS SCALE: SCALE DATE: 11/98	9-11

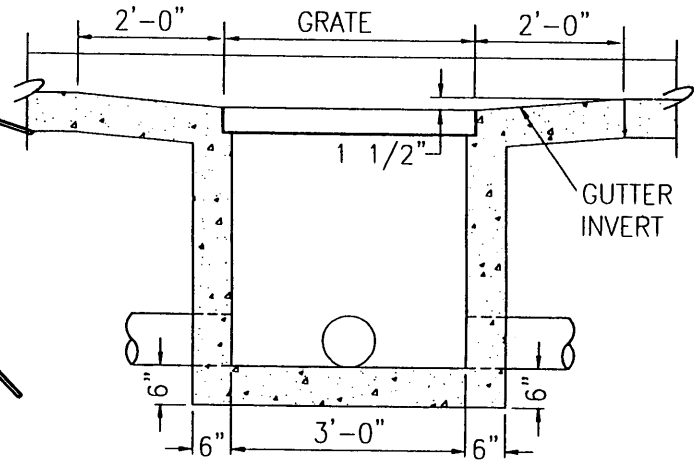


TYPE 2 CURB

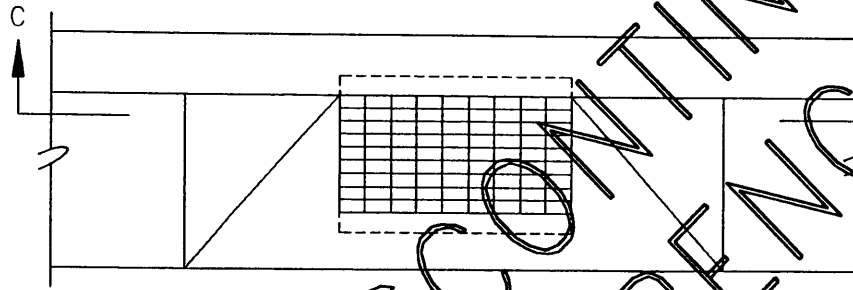


TYPE 1 OR 1A CURB

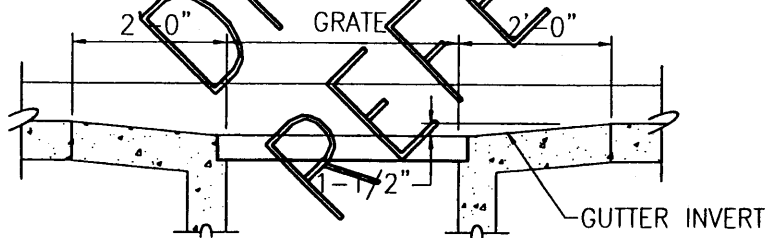
SECTION A-A



SECTION B-B



STANDARD DEPRESSION



SECTION C-C

- NOTES:
- 1 DEPRESSION IS STANDARD FOR ALL INLETS.
 - 2 SEE FRAME AND GRATE DETAIL. STANDARD DRAWINGS 9-14 AND 9-15.
 - 3 BOTTOM OF INLET SHALL BE PLACED PRIOR TO OR AT THE SAME TIME AS SIDE WALLS.

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

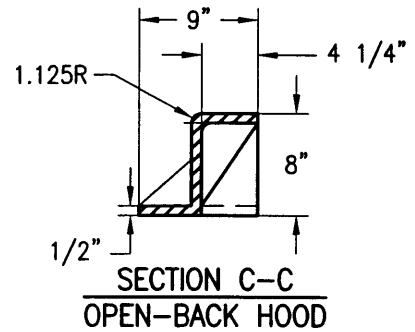
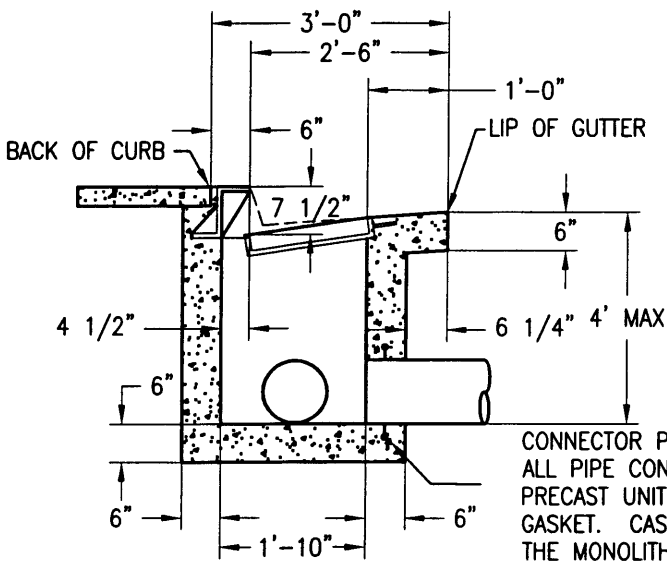
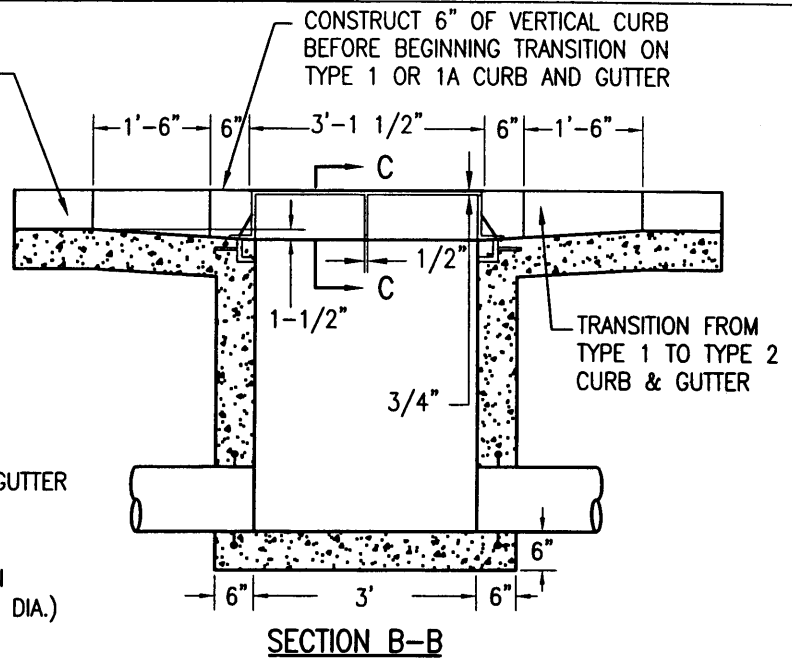
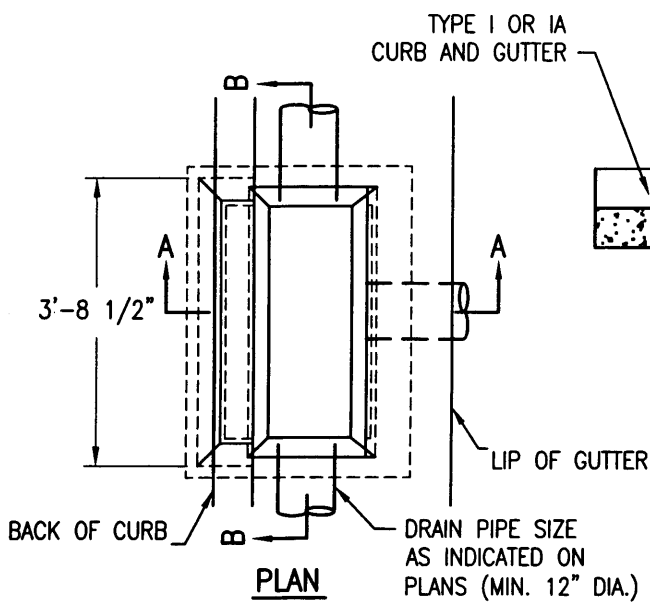
DROP INLET
TYPE A

SCALE: NONE
DATE: 9-00
DRAWN BY: G. OGREN

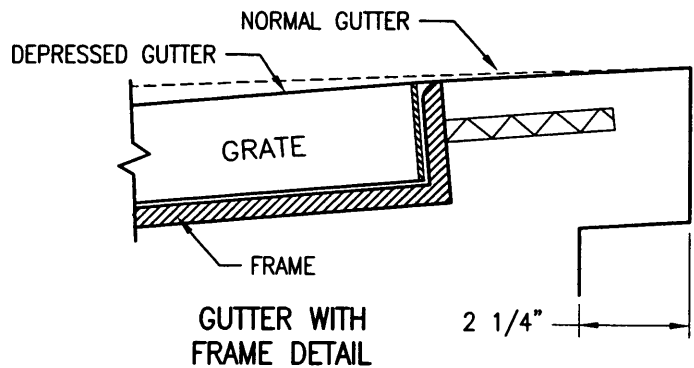
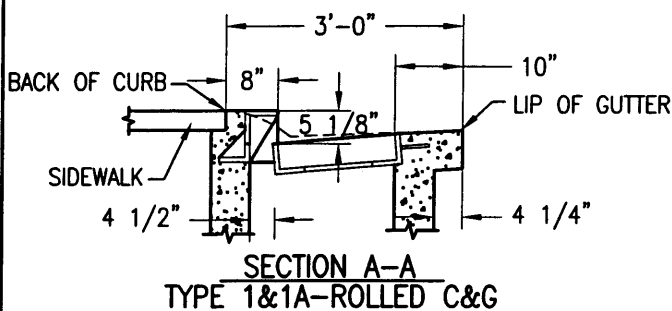
9-13A

Glenn DeWine

DIRECTOR, DEPARTMENT OF WATER RESOURCES



CONNECTOR PIPE OR MONOLITHIC CATCH BASIN CONNECTION. ALL PIPE CONNECTIONS SHALL CONFORM TO ASTM C-923. PRECAST UNITS SHALL BE BOOT TYPE OR INTEGRAL COMPRESSION GASKET. CAST IN PLACE UNITS SHALL INCLUDE A WATER STOP IF THE MONOLITHIC CATCH BASIN CONNECTOR IS NOT REQUIRED.



NOTES

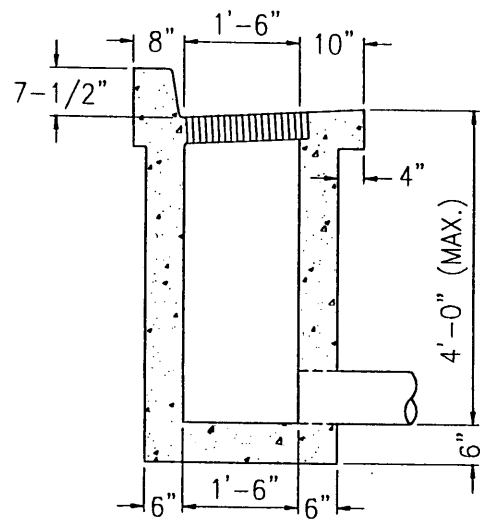
1. STANDARD DEPRESSION FOR INLET IS 1-1/2".
2. FRAME AND GRATE SHALL CONFORM TO DRAWINGS 9-14 AND 9-15.
3. OPEN-BACK HOOD SHALL BE H-20 RATED.
4. ALL EXPOSED EDGES SHALL HAVE A 1/8" R (MINIMUM).
5. AN EDGING TOOL SHALL BE USED ON ALL EDGES WHERE THE CONCRETE SIDEWALK AND CURB MEET THE TOP OF THE HOOD.
6. ALL EXPOSED PARTS TO HOT DIP GALVANIZED PER ASTM A123 AFTER FABRICATION.
7. CAST IRON HOODS SHALL BE 3/4" THICK, NO GALVANIZING REQUIRED.

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

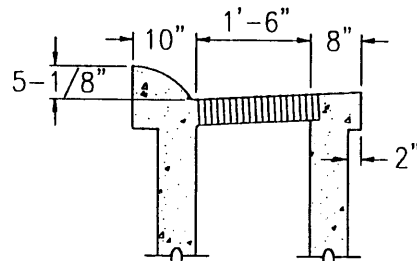
**DROP INLET
TYPE B**

DRAWN BY: STAFF
SCALE: NONE
DATE: 04/03

9-13B

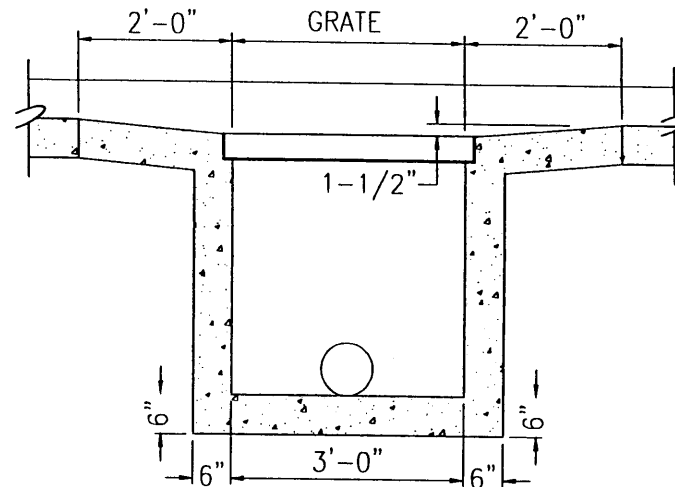
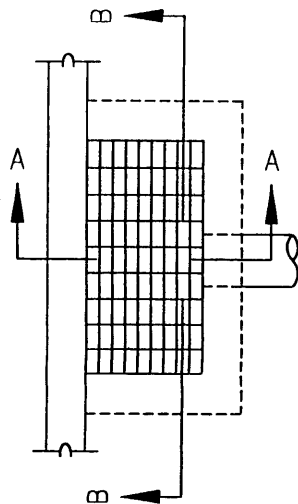


TYPE 2 CURB



TYPE 1 OR 1A CURB

SECTION A-A



SECTION B-B

NOTES:

- 1 SEE DRAWINGS 9-14 AND 9-15 FOR FRAME AND GRATE DETAILS.
- 2 BOTTOM OF INLET SHALL BE PLACED PRIOR TO OR AT THE SAME TIME AS SIDE WALLS.
- 3 SEE NOTE No. 1 OF DRAWING 9-13B FOR GUTTER DEPRESSION.

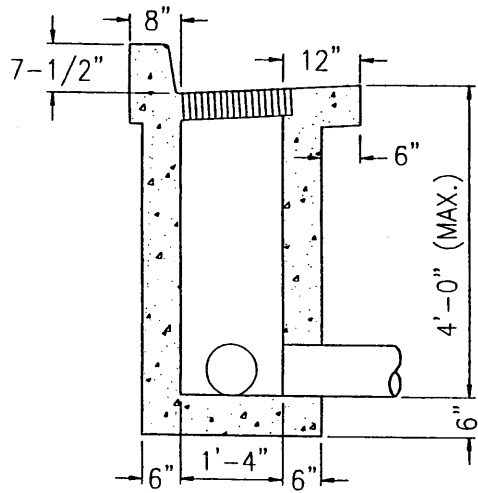
**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**DROP INLET
TYPE C**

Keith DeWine
DIRECTOR, DEPARTMENT OF PUBLIC WORKS

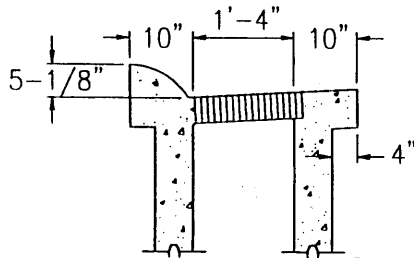
SCALE: NONE
DATE: 9-00
DRAWN BY: G. OGREN

9-13C

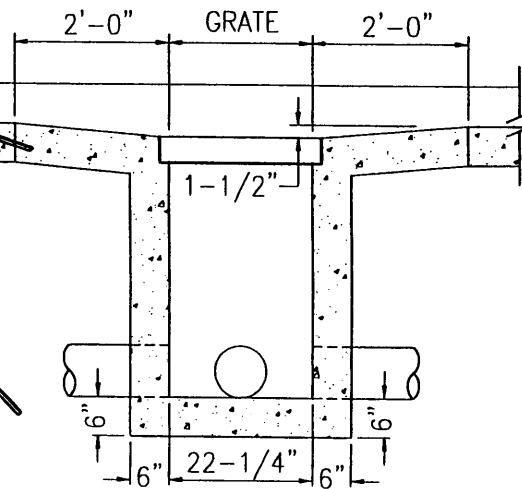


TYPE 2 CURB

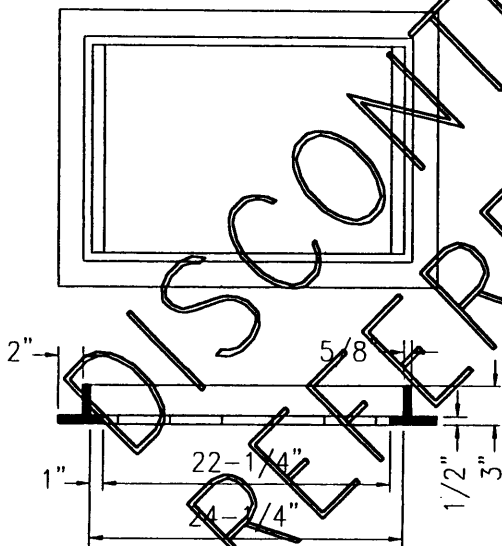
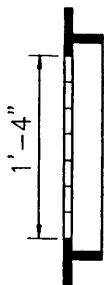
SECTION A-A



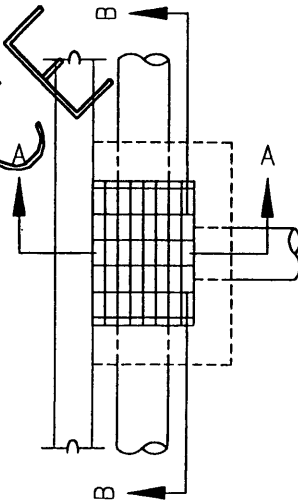
TYPE 1 OR 1A CURB



SECTION B-B



GRATE FRAME
FOR TYPE D DROP INLET



DISCONTINUED, FOR REFERENCE ONLY

- NOTES:**
- 1 SEE NOTE No. 1 OF DRAWING 9-13B FOR GUTTER DEPRESSION.
 - 2 SEE DRAWING 9-13E FOR GRATE DETAILS.
 - 3 BOTTOM OF INLET SHALL BE PLACED PRIOR TO OR AT THE SAME TIME AS SIDE WALLS.

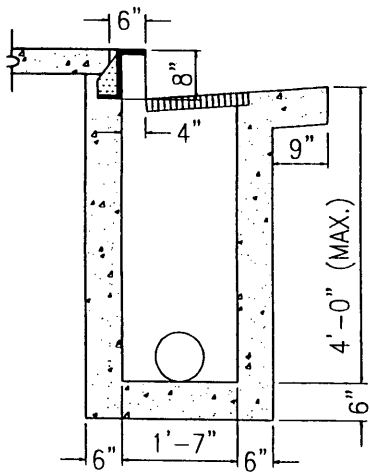
**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**DROP INLET
TYPE D**

Glenn DeWitt
DIRECTOR, DEPARTMENT OF PUBLIC WORKS

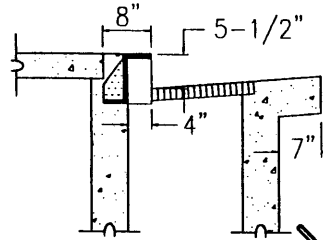
SCALE: NONE
DATE: 9-00
DRAWN BY: G. OGREN

9-13D

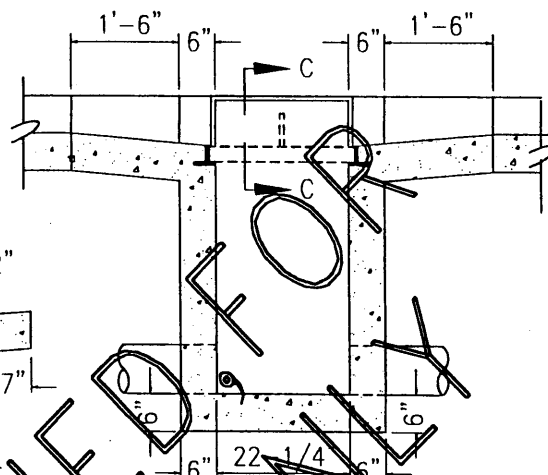


TYPE 2 CURB

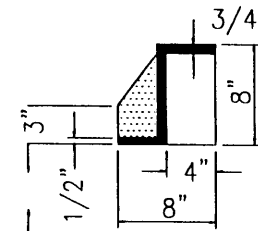
SECTION A-A



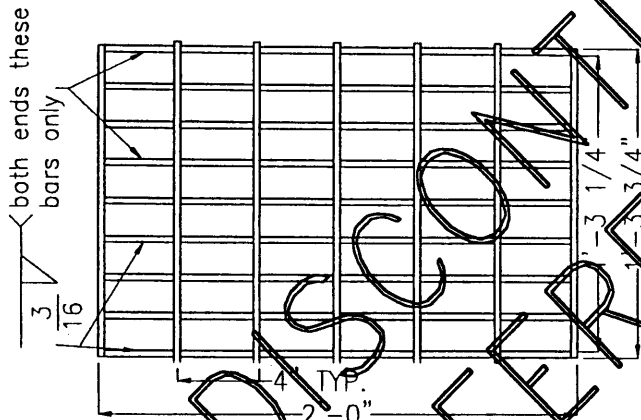
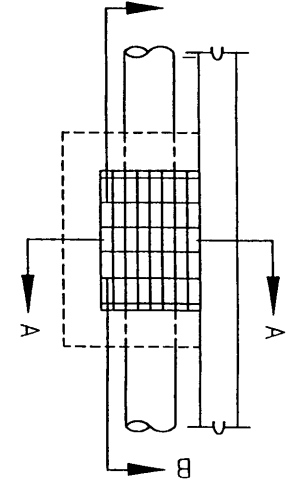
TYPE 1 OR 1A CURB



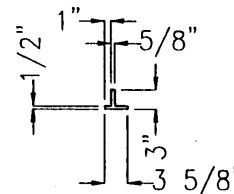
SECTION B-B



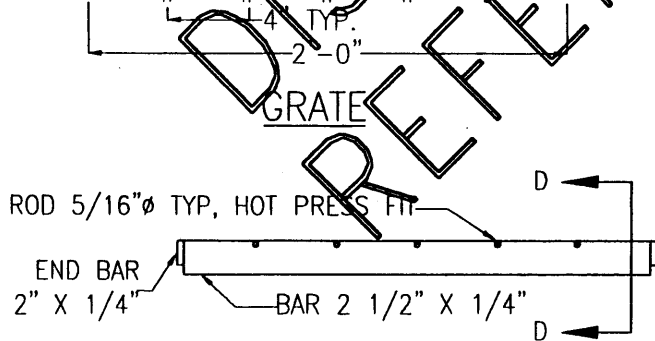
SECTION C-C



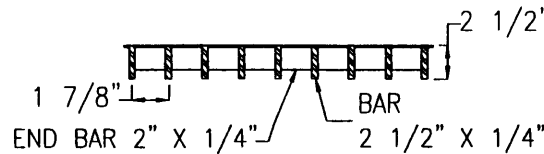
GRATE FRAME



SECTION E-E



GRATE PROFILE



SECTION D-D

NOTES:

1. SEE NOTES ON DRAWING 9-13B.
2. BOTTOM OF INLET SHALL BE PLACED PRIOR TO OR AT THE SAME TIME AS SIDE WALLS.
3. THIS STRUCTURE IS TO SERVE ONLY TO PICK UP GUTTER DRAINAGE OR AS A JUNCTION BOX FOR SMALL PIPES IN A LONGITUDINAL DIRECTION.
4. 12" LENGTH OF 1/4" GALVANIZED CHAIN TO BE PERMANENTLY AFFIXED TO THE GRATE AND ONE CORNER OF THE INLET FRAME ADJACENT TO THE CURB.
5. OPEN BACK HOOD AND GRATE FRAME SHALL BE CAST IRON OR WELDED STEEL.

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

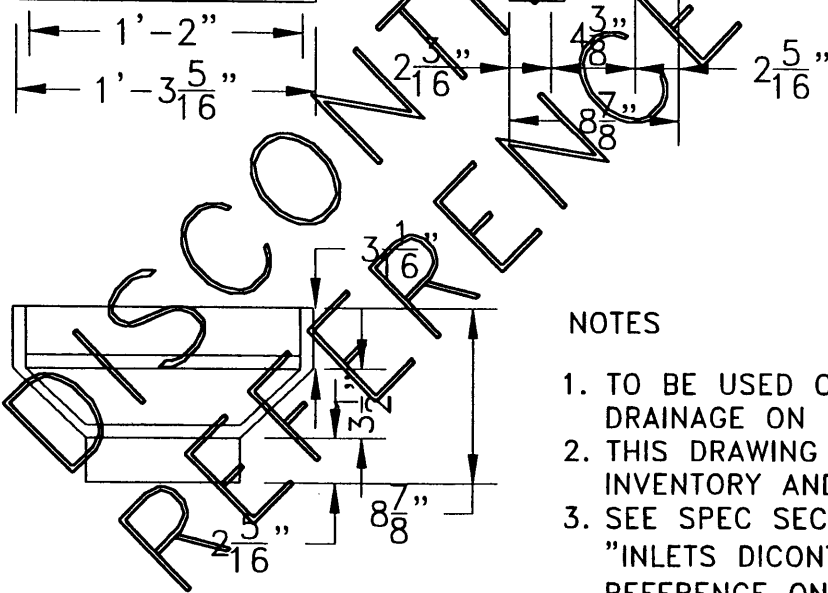
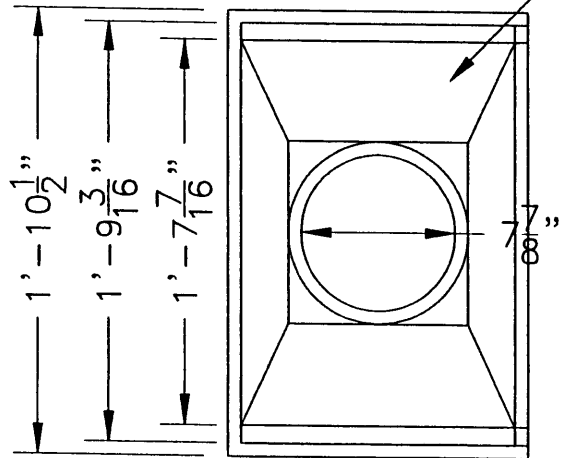
**DROP INLET
TYPE E**

SCALE: NONE
DATE: 10-00
DRAWN BY: L.PETERS

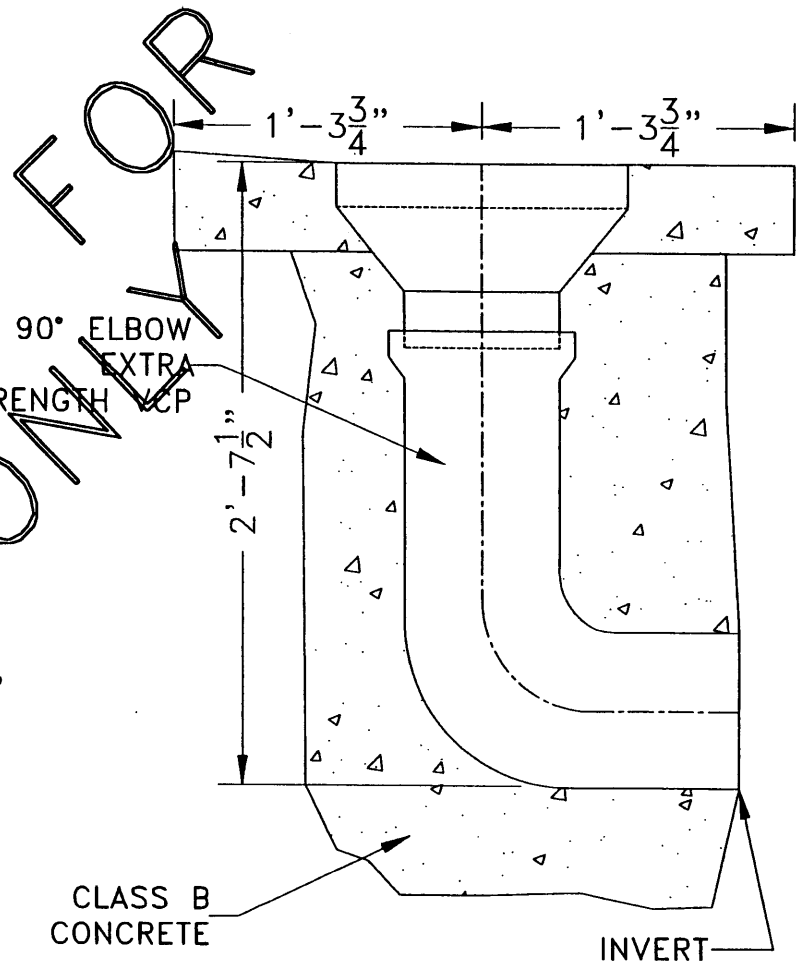
9-13E

Jack O'Brien
DIRECTOR, DEPARTMENT OF WATER RESOURCES

STANDARD GRATE AND FRAME FOR
TYPE D AND E DROP INLETS.
SEE 9-13D & 9-13E



90° ELBOW
EXTRA
STRENGTH VCP



NOTES

1. TO BE USED ONLY FOR ONSITE DRAINAGE ON PRIVATE PROPERTY.
2. THIS DRAWING FOR MAINTENANCE INVENTORY AND ANALYSIS.
3. SEE SPEC SECTION 27-11 "INLETS DISCONTINUED, FOR REFERENCE ONLY".

Keith DeVore

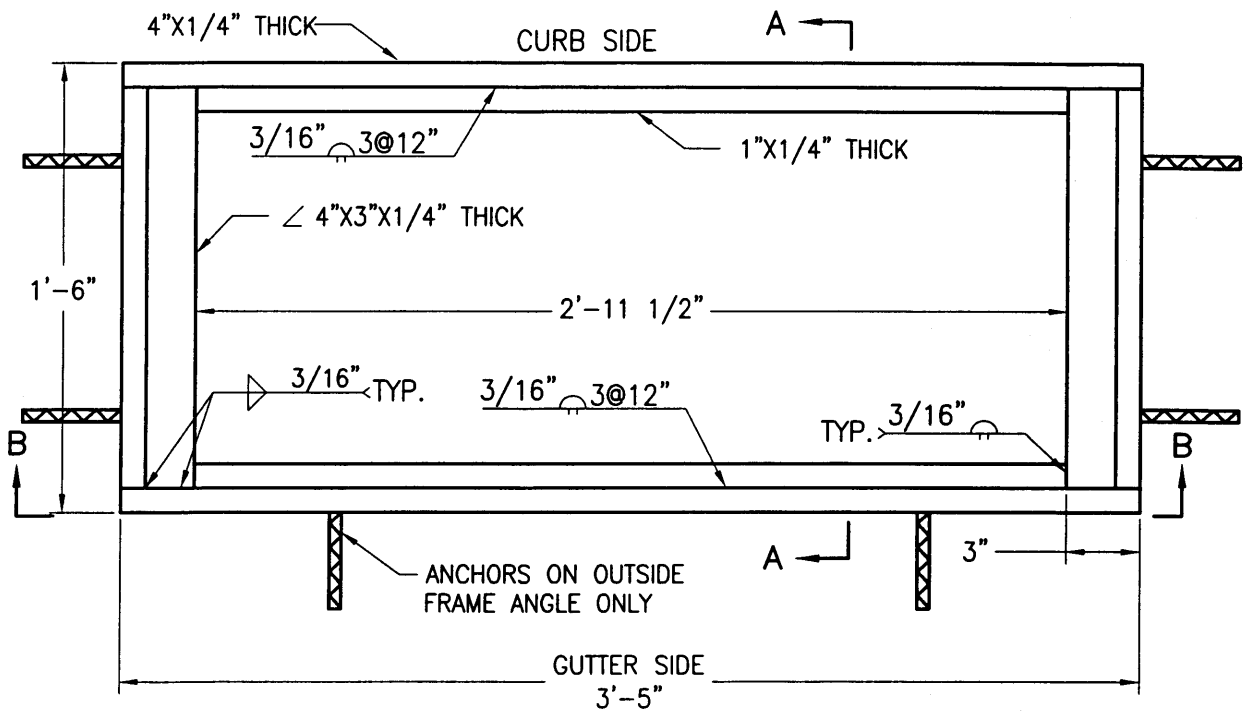
DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

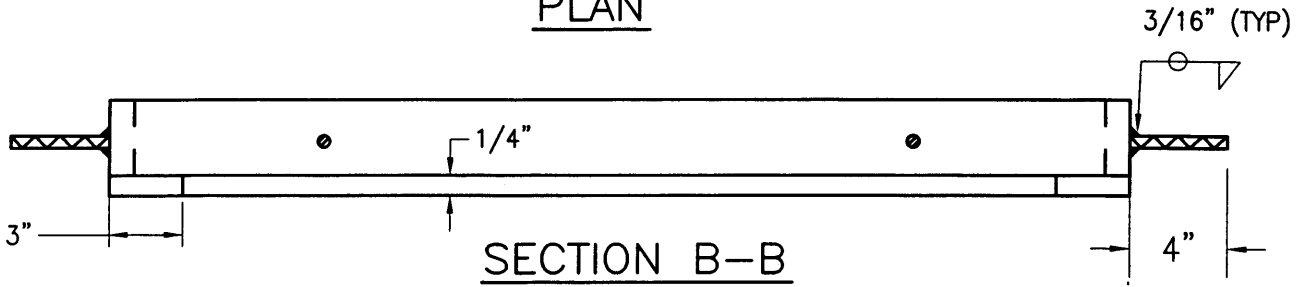
GUTTER DRAIN

DRAWN BY: L. PETERS
SCALE: NONE
DATE: 10/00

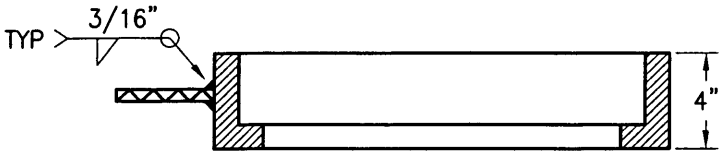
9-13GD



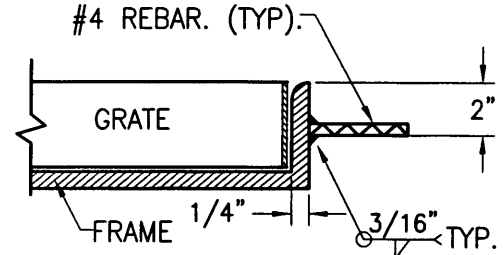
PLAN



SECTION B-B



SECTION A-A

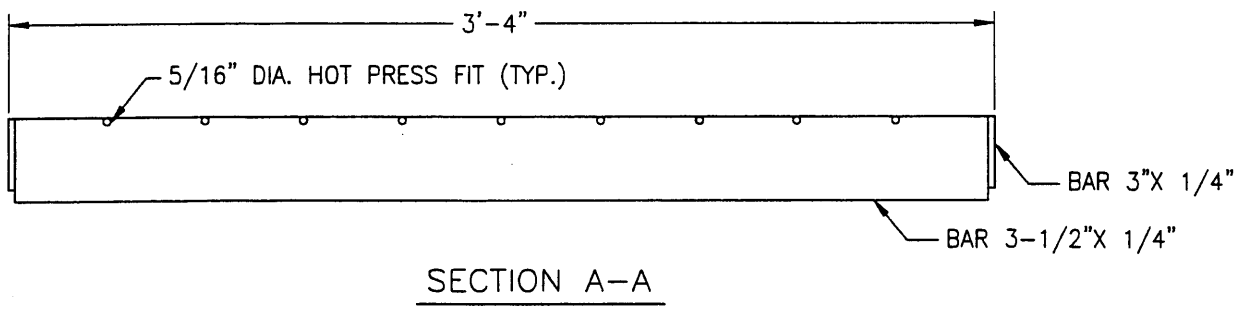
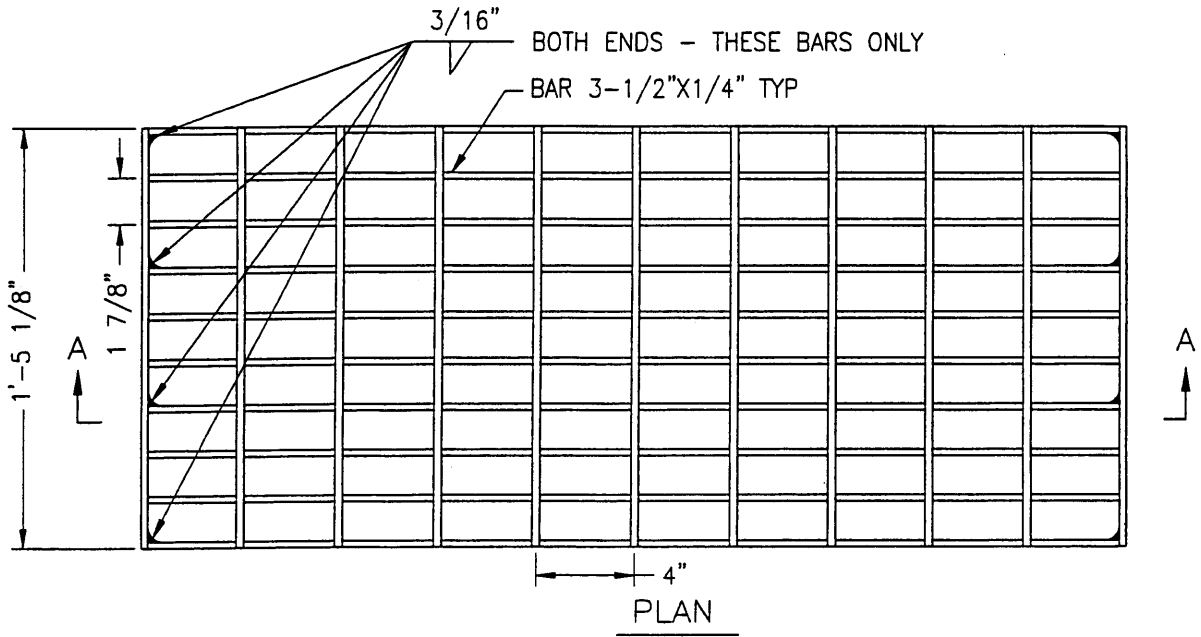


FRAME ANCHOR DETAIL

NOTES:

1. OMIT 1/2" FRAME ANCHORS OVER CENTER SUPPORT ASSEMBLY WHEN MULTIPLE FRAMES ARE USED.
2. MATERIAL: ASTM A36 MILD STEEL
3. SEE ARTICLE 50-28, "SEWER AND STORM DRAIN CASTINGS," OF SECTION 50.
4. ALL EXPOSED PARTS TO BE ASPHALT COATED, OR HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.

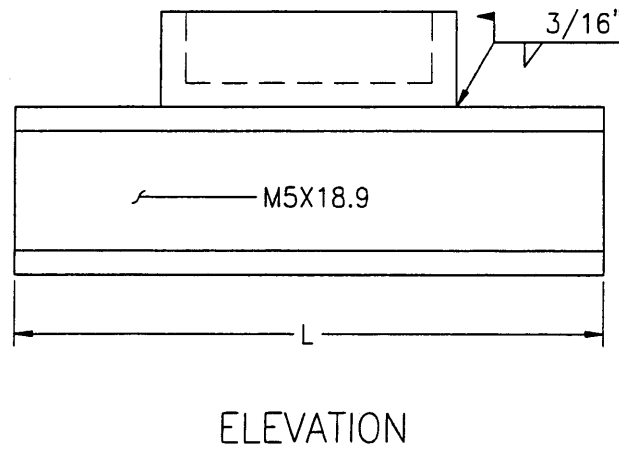
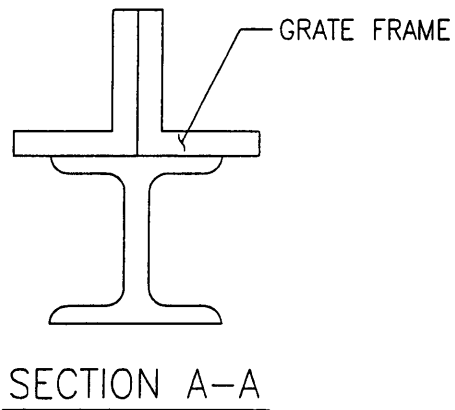
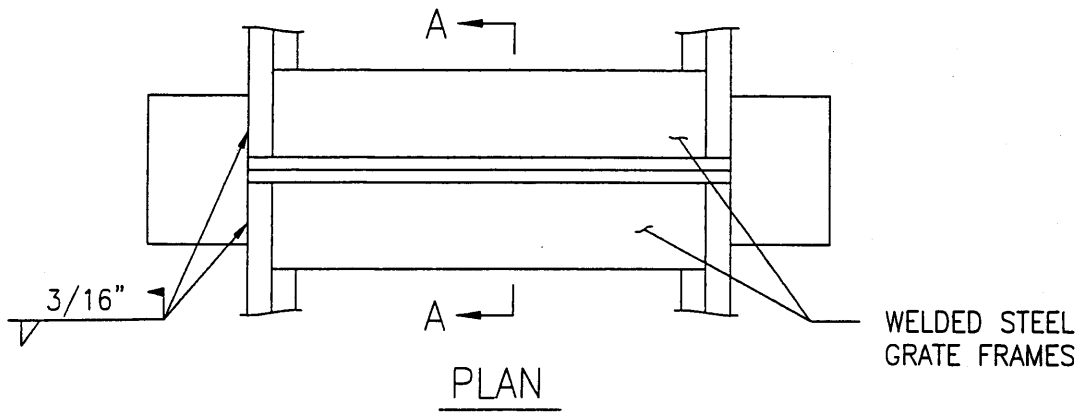
SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
WELDED STEEL GRATE FRAME	
DRAWN BY: L.PETERS SCALE: NONE DATE: 04/03	9-14



- NOTES:
1. DIMENSIONS TO CENTERLINE OF BARS UNLESS OTHERWISE NOTED.
 2. ALL EXPOSED PARTS TO BE ASPHALT COATED, OR HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.

David DeWitt
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
WELDED STEEL GRATE	
DRAWN BY: M.FIELDS SCALE: NONE DATE: 11/98	9-15



NOTES:

1. OMIT 1/2" FRAME ANCHORS OVER CENTER SUPPORT
2. L=57 INCHES FOR CURB OPENING CATCH BASIN WITH GRATING(S) AND DEBRIS SKIMMER (STANDARD PLAN 301).
3. ALL EXPOSED PARTS TO BE ASPHALT COATED, OR HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.

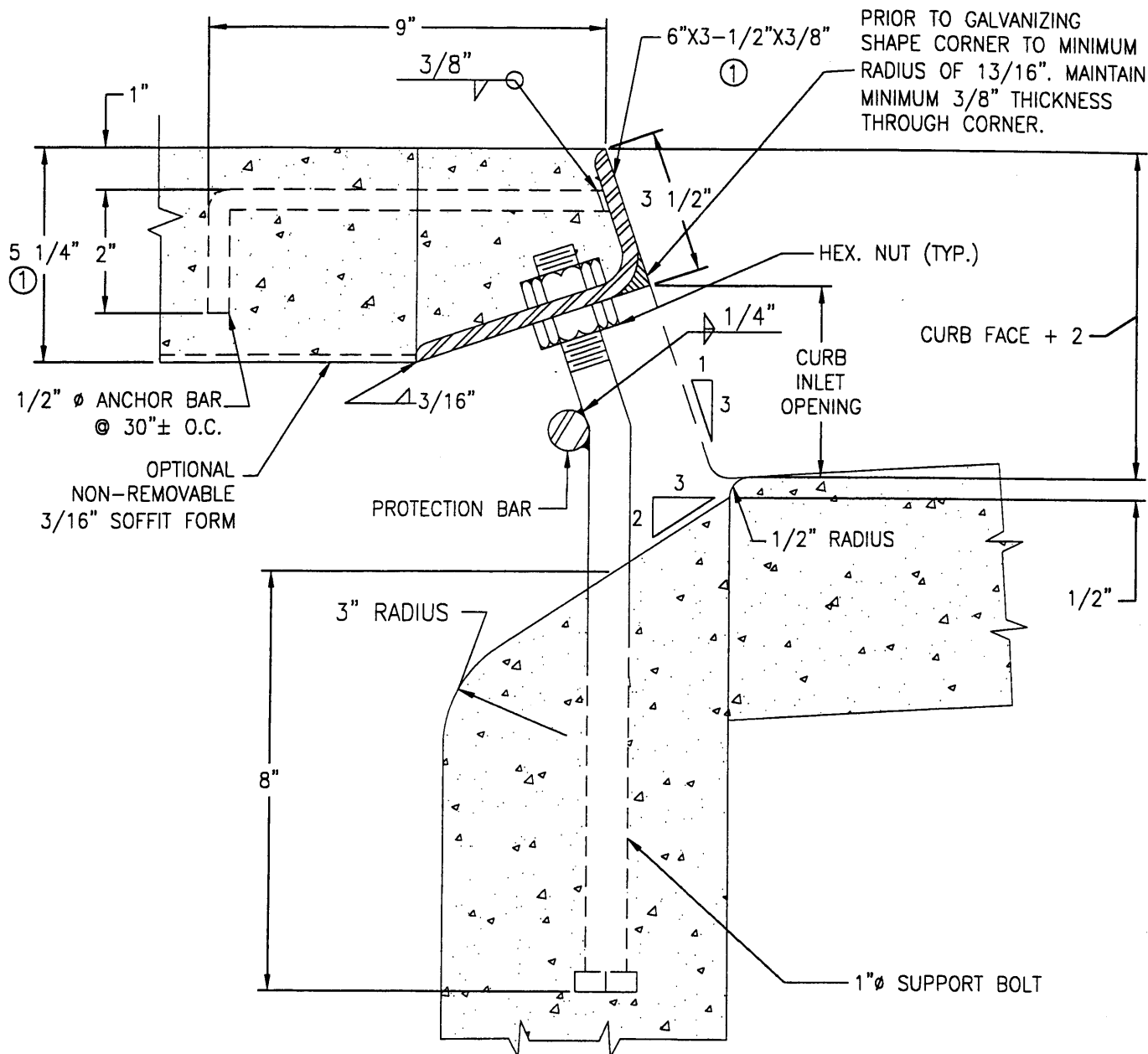
**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**CENTER SUPPORT ASSEMBLY
FOR MULTIPLE GRATES**

David DeVan
DIRECTOR, DEPARTMENT OF WATER RESOURCES

DRAWN BY: M.FIELDS
SCALE: NONE
DATE: 11/98

9-16



NOTES:

1. TO BE USED ONLY IN TYPE 2 CURB AND GUTTER WITH 2" DEPRESSION. USE IN TYPE 1 CURB AND GUTTER ONLY UPON APPROVAL OF THE DIRECTOR. SEE KEYNOTE ①.
2. FACE ANGLE SHALL BE CAST INTO STRUCTURE CONTINUOUS FOR THE FULL LENGTH "W".
3. ALL EXPOSED METAL PARTS TO BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
4. WHEN CURB INLET OPENING HEIGHT (H) EXCEEDS 6" INSTALL 1" Ø STEEL PROTECTION BAR.
5. INSTALL ADDITIONAL BARS AT 3-1/2" CLEAR SPACING ABOVE FIRST BAR WHEN OPENING EXCEEDS 13".
6. WHEN CURB INLET OPENING LENGTH EXCEEDS 8' INSTALL 1" Ø STEEL SUPPORT BOLTS, SPACED AT NOT MORE THAN 5' O.C.

KEYNOTES:

- ①. ALTERNATE ANGLE IRON SIZE, DEPRESSION DEPTH, AND SLAB THICKNESS MAY BE USED UPON APPROVAL OF THE DIRECTOR.

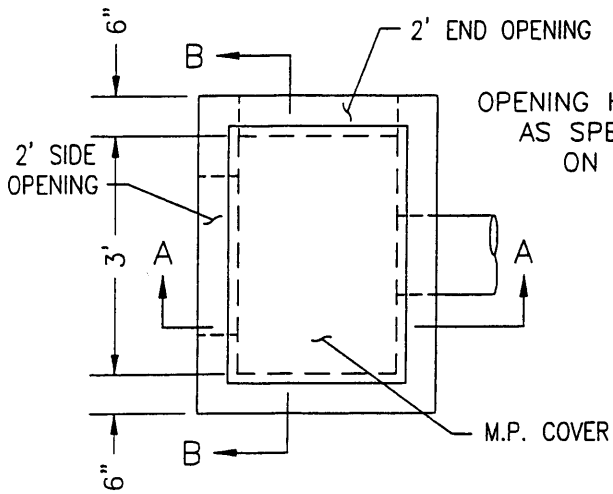
SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

CATCH BASIN FACE PLATE
ASSEMBLY AND PROTECTION BAR

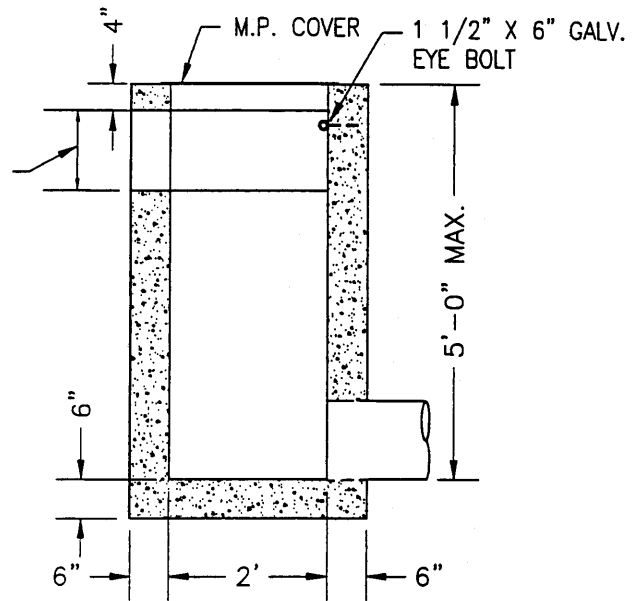
DRAWN BY: L.PETERS
SCALE: NONE
DATE: 12/00

9-17

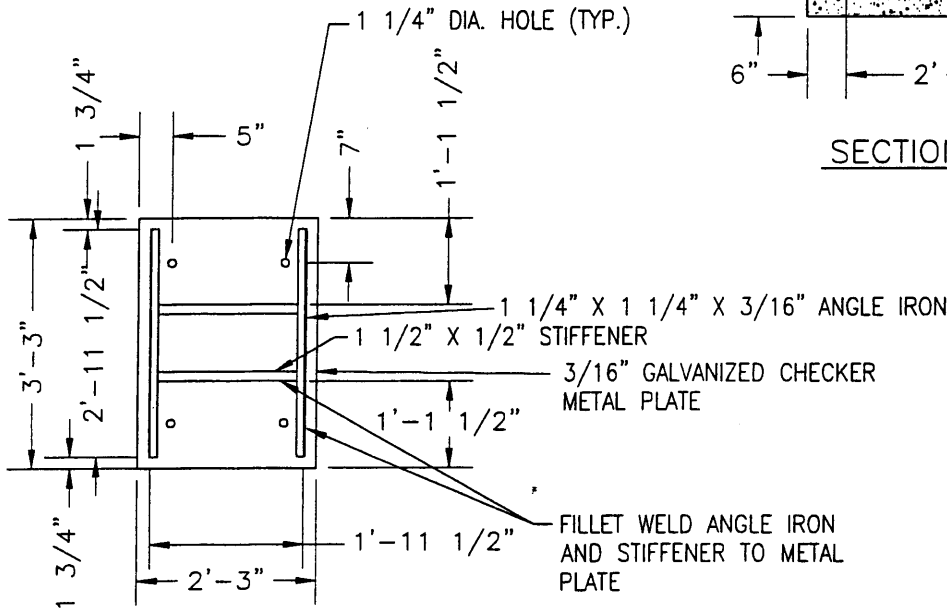
David Debra
DIRECTOR, DEPARTMENT OF WATER RESOURCES



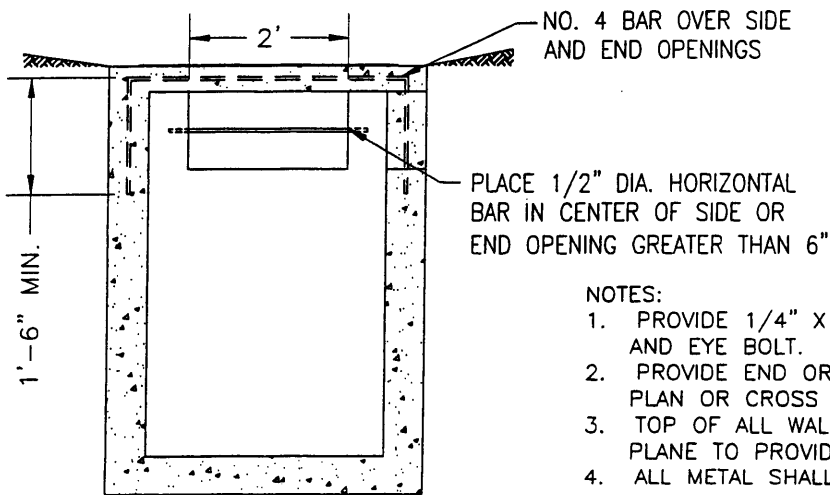
OPENING HEIGHT AS SPECIFIED ON PLANS



SECTION A-A



METAL COVER (UNDERSIDE)



SECTION B-B

NOTES:

1. PROVIDE 1/4" X 18" GALV. CHAIN WELD TO COVER AND EYE BOLT.
2. PROVIDE END OR SIDE OPENINGS AS SHOWN ON PLAN OR CROSS SECTION
3. TOP OF ALL WALLS TO BE FINISHED TO A FLAT PLANE TO PROVIDE EVEN BEARING FOR PLATE COVER.
4. ALL METAL SHALL BE GALVANIZED PER ASTM A123.

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

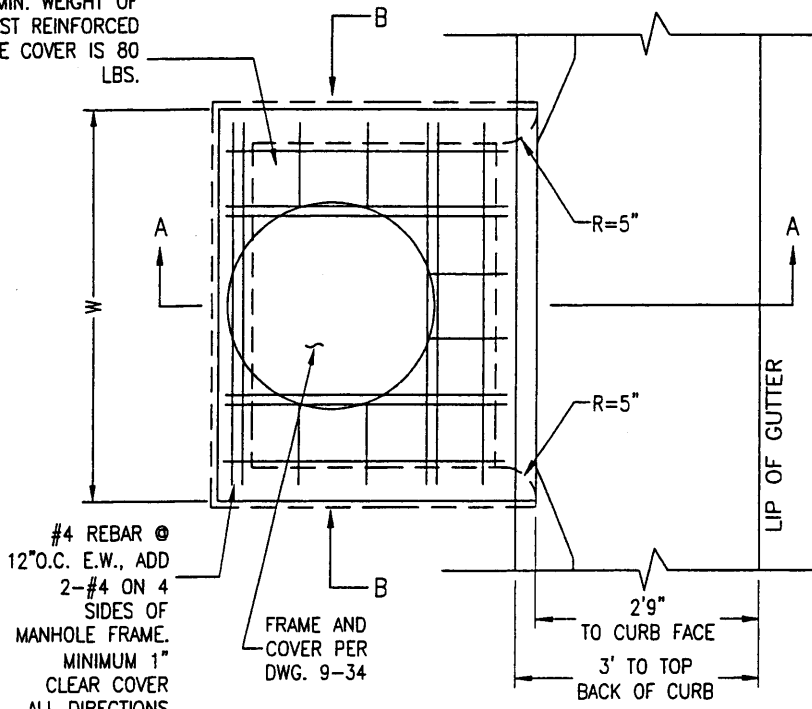
**DROP INLET
TYPE F**

John Delle
DIRECTOR, DEPARTMENT OF WATER RESOURCES

DRAWN BY: M.FIELDS
SCALE: NONE
DATE: 11/98

9-18

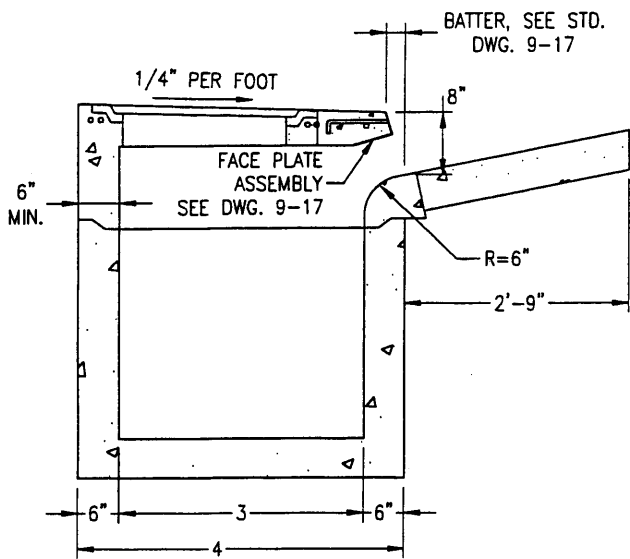
MIN. WEIGHT OF
PRECAST REINFORCED
CONCRETE COVER IS 80
LBS.



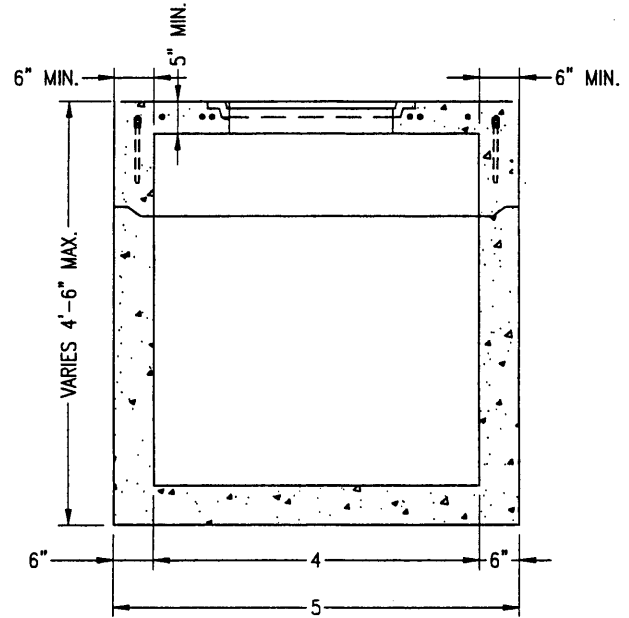
#4 REBAR @
12" O.C. E.W., ADD
2-#4 ON 4
SIDES OF
MANHOLE FRAME.
MINIMUM 1"
CLEAR COVER
ALL DIRECTIONS

FRAME AND
COVER PER
DWG. 9-34

PLAN



SECTION A-A



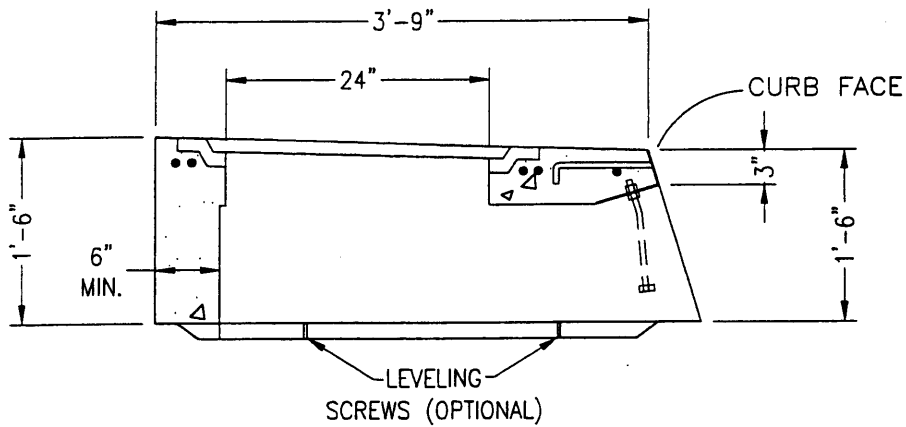
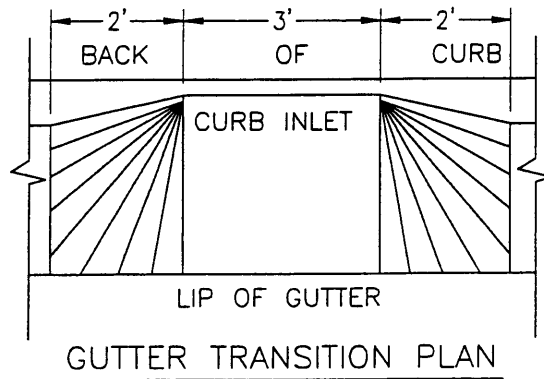
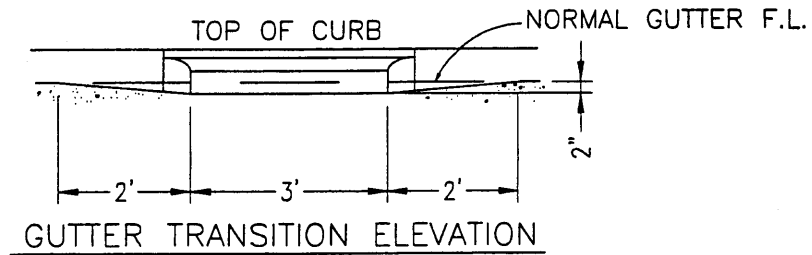
SECTION B-B

NOTES:

1. CURB INLET ASSEMBLY MAY BE PRECAST CONCRETE, OR FORMED AND CAST-IN-PLACE P.C.C.
2. ALL METAL SHALL BE HOT DIPPED GALVANIZED PER ASTM A123.
3. SEE STD. DWG. 9-17 FOR FACE PLATE ASSEMBLY.

David Della
DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
DROP INLET TYPE G	
Type 2 C & G Only	
DRAWN BY: L.PETERS SCALE: NONE DATE: 12/00	9-19 SHEET 1 OF 2



CURB INLET DETAIL

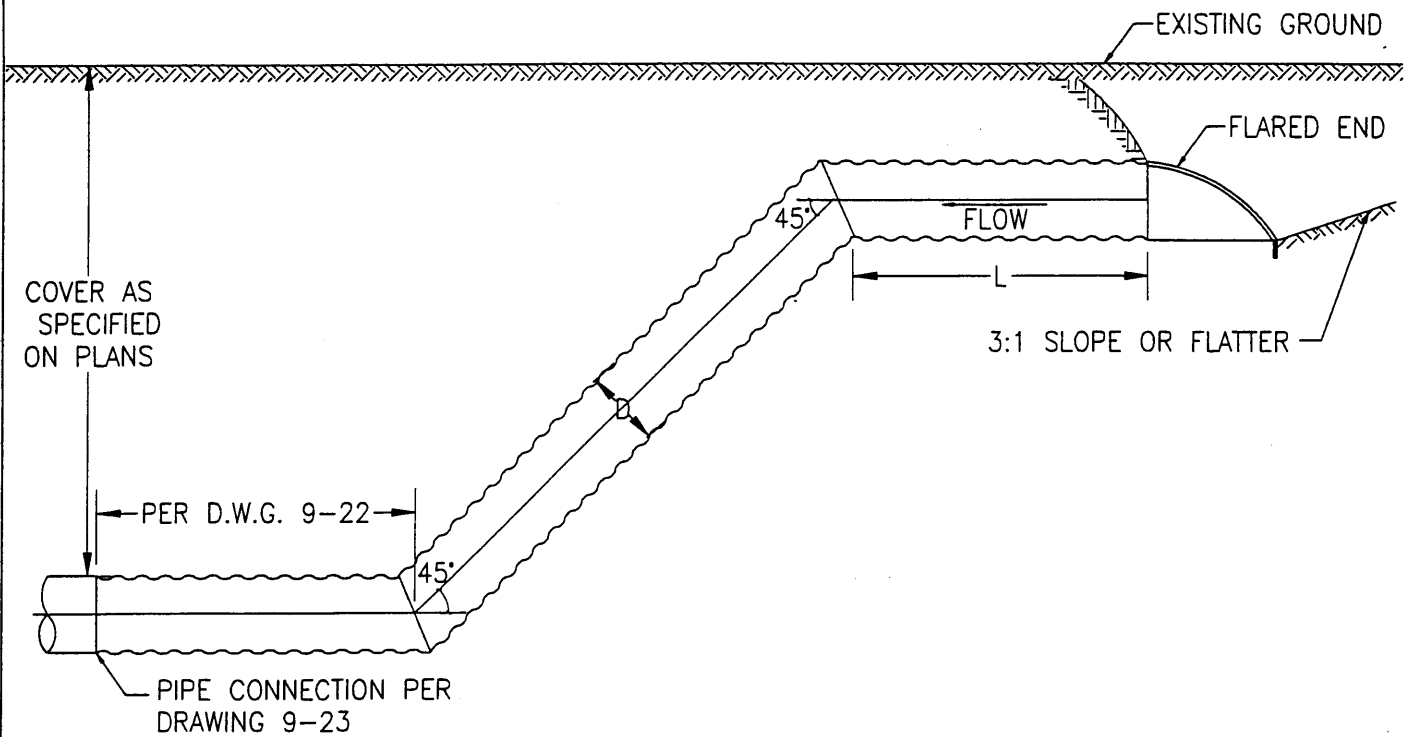
NOTES:

1. CURB INLET ASSEMBLY MAY BE PRECAST CONCRETE, OR FORMED AND CAST-IN-PLACE P.C.C.

2. ALL METAL SHALL BE HOT DIPPED GALVANIZED. ASTM A123

John Oelver
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
DROP INLET TYPE G Type 2 C & G Only	
DRAWN BY: L.PETERS SCALE: NONE DATE: 12/00	9-19 SHEET 2 OF 2



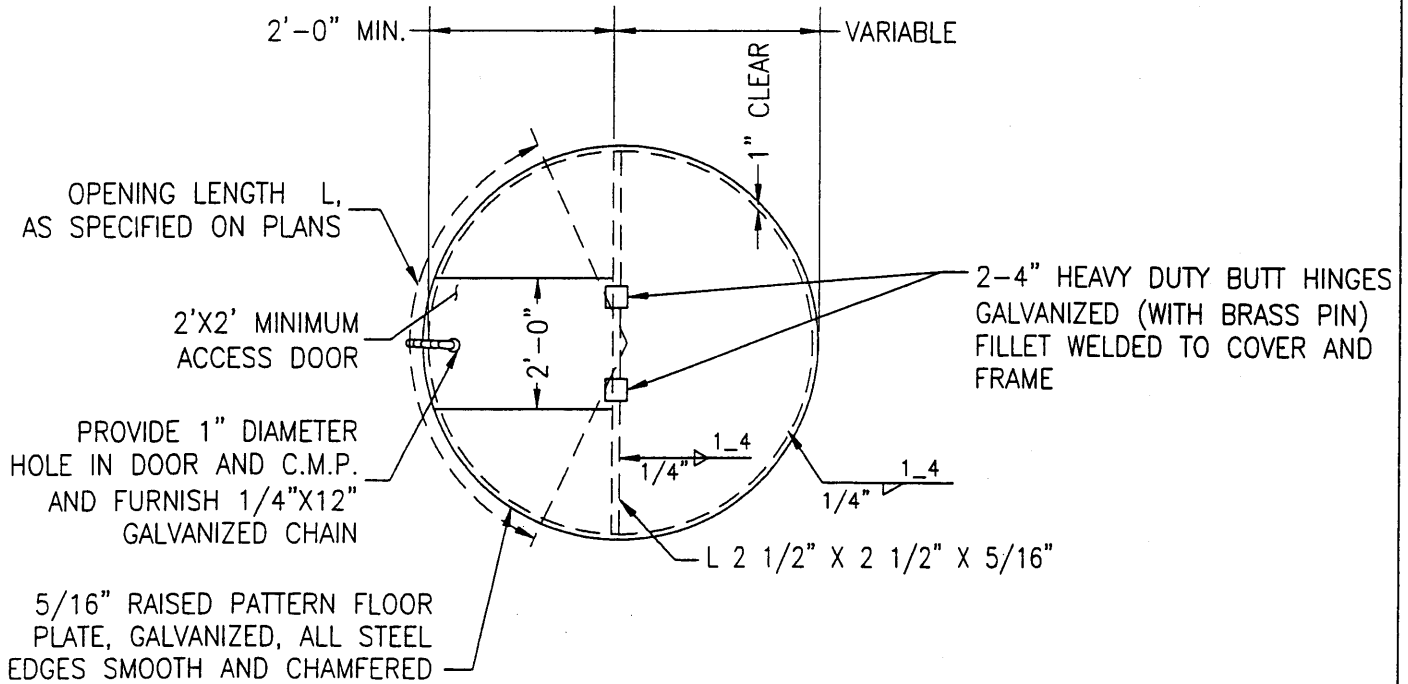
RISER DIAMETER, D	LENGTH OF HORIZONTAL PIPE, L
12"	1'-0"
15"	1'-0"
18"	1'-6"
21"	1'-6"
24"	1'-6"
30"	2'-0"
36"	3'-0"
42"	4'-0"
48"	4'-0"

NOTES

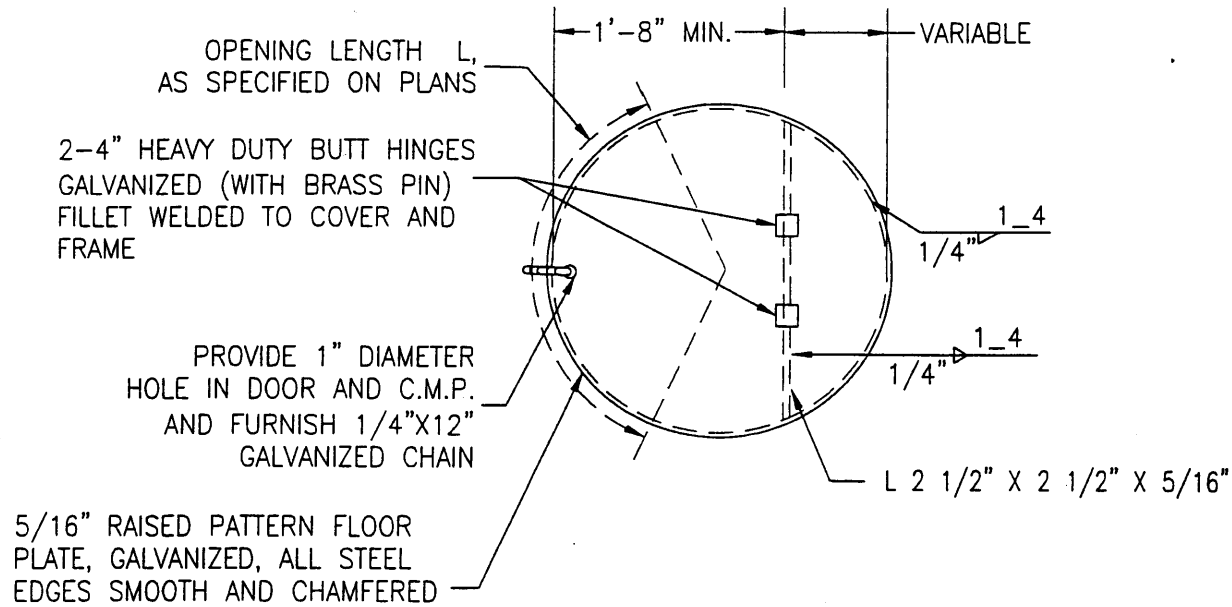
1. USE 2-PIECE ELBOW AT BOTH ENDS OF RISER. ELBOWS SHALL CONFORM TO DRAWING 9-22.
2. TO BE USED ONLY WITH THE SPECIFIC APPROVAL OF THE DIRECTOR.
3. PIPE MATERIAL TO BE CMP.

David Oehl
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
DRAINAGE INLET TYPE H	
DRAWN BY: M.FIELDS SCALE: NONE DATE: 11/98	9-20



PLAN
42" DIAMETER TO 72" DIAMETER
C.M.P. INLET



PLAN
24" DIAMETER TO 36" DIAMETER
C.M.P. INLET

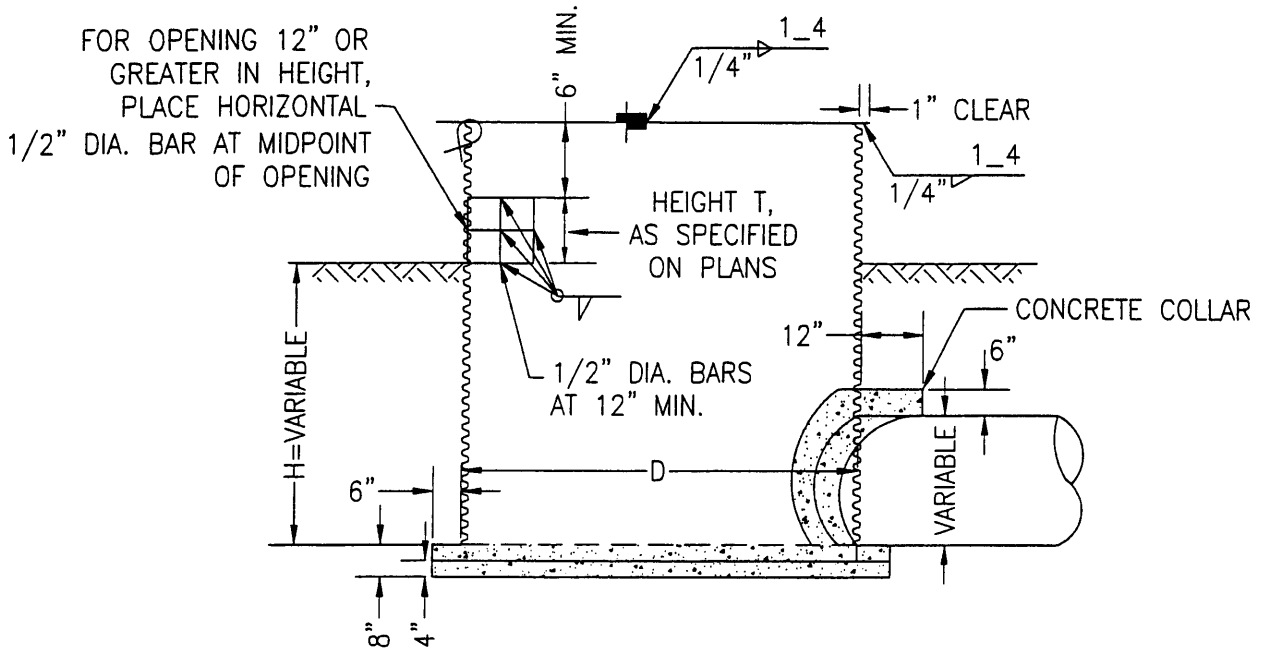
**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**CORRUGATED METAL PIPE
DRAINAGE INLET
TYPE I**

DRAWN BY: M.FIELDS
SCALE: NONE
DATE: 11/98

9-21
SHEET 1 OF 2

Mark DeWitt
DIRECTOR, DEPARTMENT OF WATER RESOURCES



SECTION
 24" DIAMETER TO 36" DIAMETER
 C.M.P. INLET

NOTES

1. LOCATIONS, HEIGHTS, AND LENGTH OF OPENINGS SHALL BE AS SHOW ON THE PLANS.
2. AREA OF OPENING SHALL NOT BE LESS THAN AREA OF OUTFALL PIPE.
3. OUTFALL PIPE TO BE CUT FLUSH WITH INSIDE OF RISER.
4. NOT TO BE USED AS A JUNCTION STRUCTURE.
5. DIAMETER OF RISER PIPE SHALL BE AT LEAST ONE SIZE LARGER THAN OUTFALL PIPE.
6. TO BE USED ONLY WITH THE SPECIFIC APPROVAL OF THE DIRECTOR.

RISER DIAMETER, D	H, MAX.	HEIGHT T, MAX.	GAGES (MINIMUM)
24"	4'	8"	0.079"
30"	4'	8"	0.079"
36"	5'	8"	0.109"
42"	8'	12"	0.109"
48"	8'	12"	0.109"
54"	10'	18"	0.109"
60"	10'	18"	0.109"
72"	10'	18"	0.109"

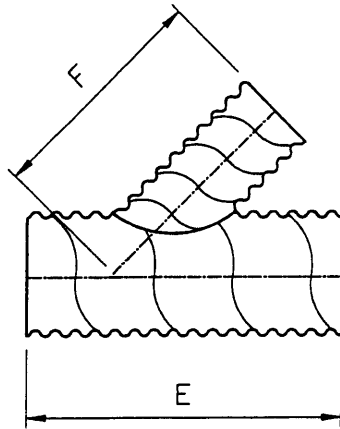
[Signature]
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

**SACRAMENTO COUNTY
 PUBLIC WORKS AGENCY**

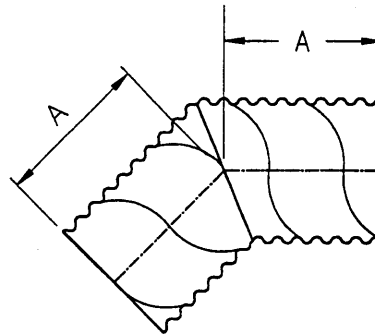
**CORRUGATED METAL PIPE
 DRAINAGE INLET
 TYPE I**

DRAWN BY: M.FILES
 SCALE: NONE
 DATE: 11/98

9-21
 SHEET 2 OF 2



WYE LATERAL



ELBOW
0° to 45°

FITTING SIZES

DIA (in)	A (ft)	E (ft)	F (ft)
12	1	4	2
15	1	4	4
18	1	4	4
21	2	6	4
24	2	6	4
30	2	6	4
36	2	8	6
42	2	8	6
48	2	10	8
54	3	10	8
60	3	12	10
66	3	12	10
72	3	14	10
78	3	14	10
84	3	16	12
90	3	16	12
96	3	16	12

NOTES

1. To use table, refer to diagram and select letter representing desired dimension, then enter table at correct pipe dimension and read dimension in column under appropriate letter heading.
2. Dimensions on table allow for use of standard 12 inch wide band coupler on sizes 12 inch through 54 inch and 24 inch wide band on 60 inch and larger sizes.
3. For pipe-arch fittings, choose pipe diameter equal to or greater than arch span. (Example: 35 inch x 24 inch pipe-arch; use dimensions for 36 inch pipe).
4. Structural reinforcement may be required on some larger sizes.

Handwritten signature

DIRECTOR, DEPARTMENT OF WATER RESOURCES

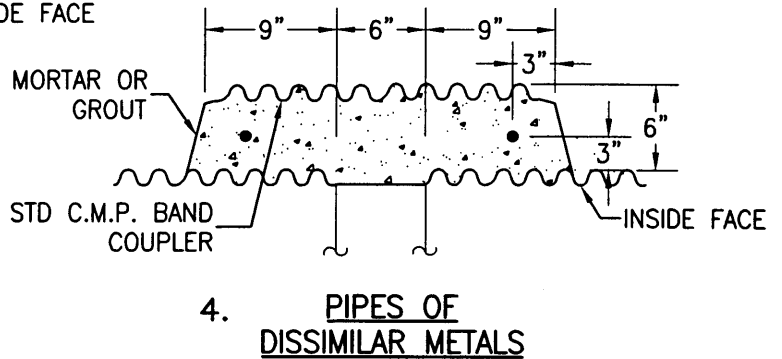
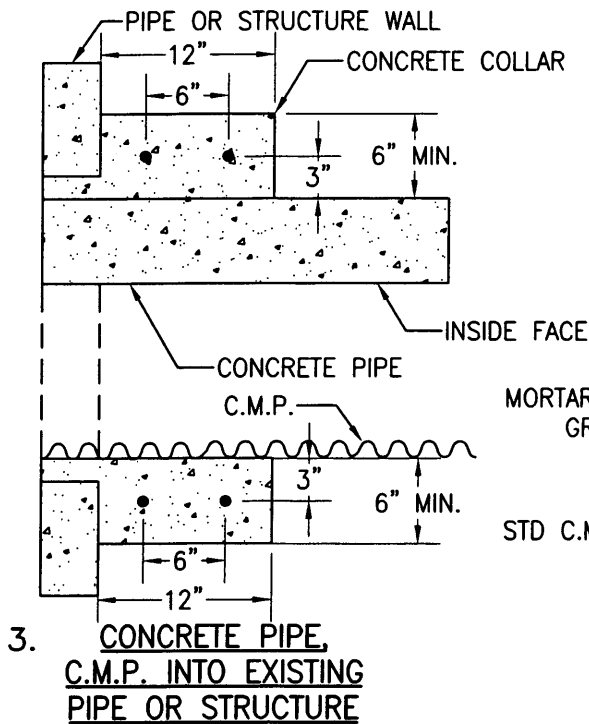
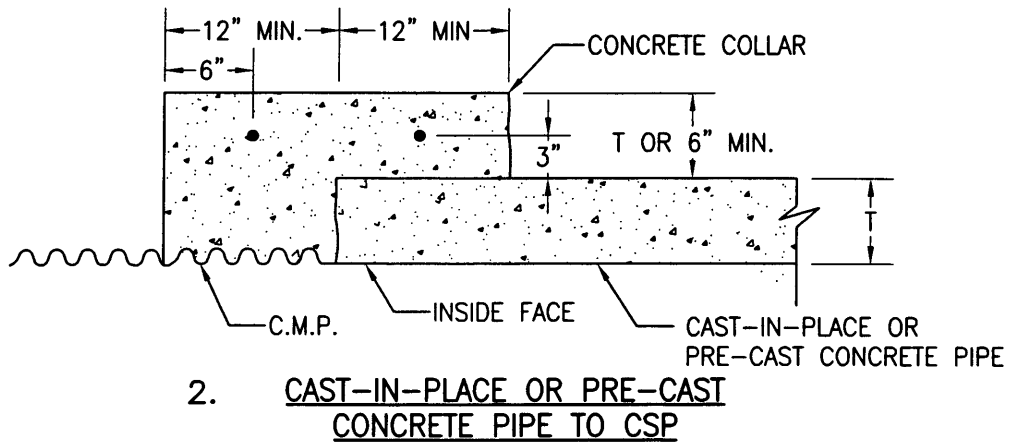
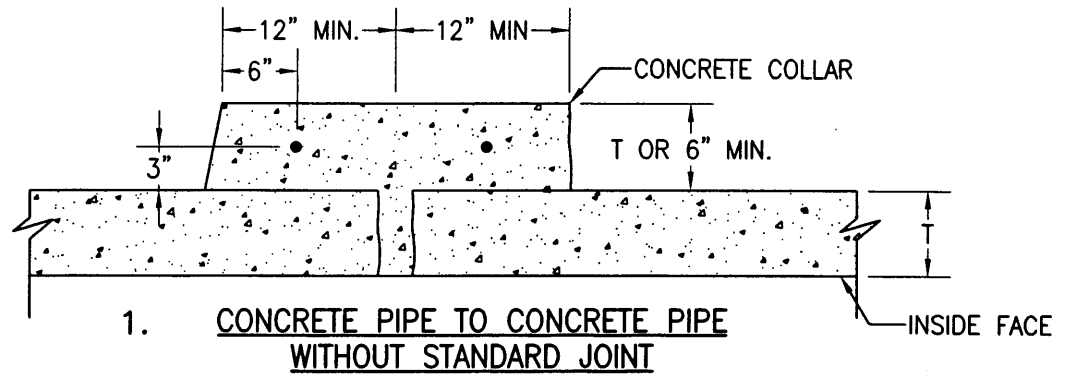
SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

CORRUGATED PIPE FITTINGS

DRAWN BY: C.SCHUMAKER
SCALE: NONE
DATE: 11/98

9-22

P:\Shared Folders\Drain Design\Templates\Bid Docs\Special Provisions 2001\Drawings\9-23.dwg, 04/09/2003 11:44:11 AM



NOTES:

1. TO CONNECT HDPE TYPE S OR D PIPE TO OTHER PIPES USE COLLAR SHOWN IN DETAIL 1 OR USE MANUFACTURERS STANDARD HDPE REPAIR COUPLING.
2. ALL REINFORCEMENT SHALL BE #3 REBAR.

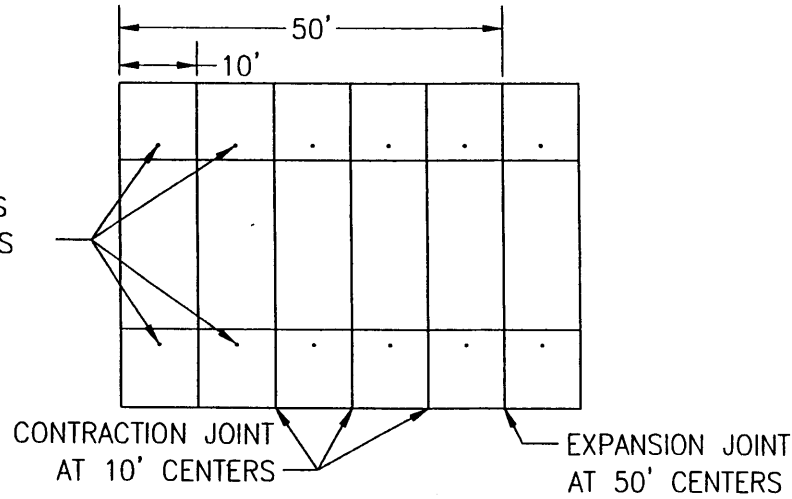
SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

PIPE CONNECTIONS

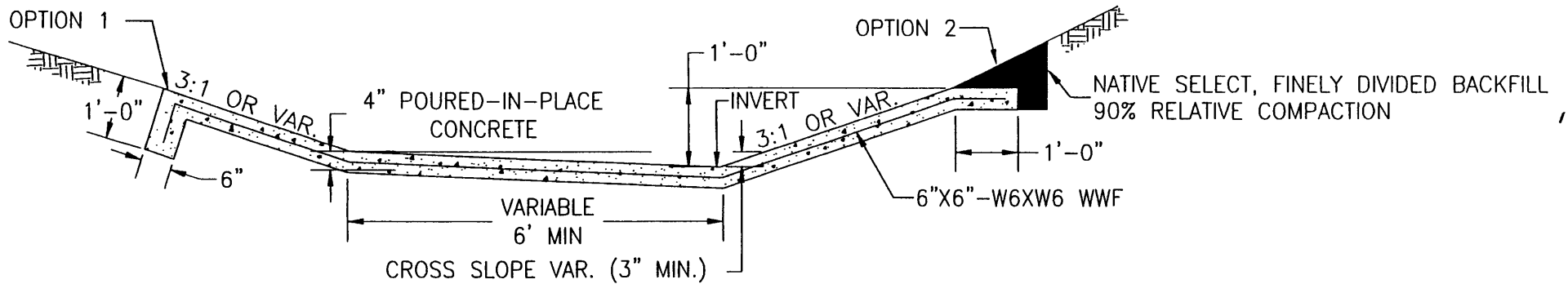
DRAWN BY: M.FIELDS
SCALE: NONE
DATE: 1/03

9-23

2" WEEP HOLES
AT 10' CENTERS



PLAN VIEW



TYPICAL BOTTOM LINING

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

LINED CHANNEL SECTION

David Decker
DIRECTOR, DEPARTMENT OF WATER RESOURCES

DRAWN BY: MYRA FIELDS
SCALE: NONE
DATE: 7/98

9-24
SHEET 1 OF 2

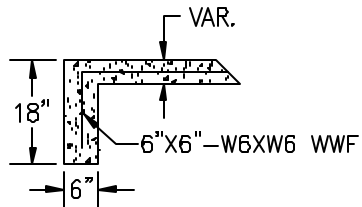
NATIVE SELECT, FINELY
DIVIDED BACKFILL 90%
RELATIVE COMPACTION

6"X6"-W6XW6 WWF

1:1 OR VAR.

WEEP HOLE SHALL BE CENTERED IN
A MINIMUM OF 1 C.F. OF 3/4"
CRUSHED ROCK CONFORMING TO
SECTION 50 "CLEAN CRUSHED
ROCK", TYPE B. ROCK SHALL BE
WRAPPED IN FABRIC CONFORMING
TO SECTION 50 "GEOTEXTILE
FABRIC". HOLE SHALL BE 2"
DIAMETER PIPE CUT TO FIT FLUSH
WITH CHANNEL FACE. (TYPICAL)

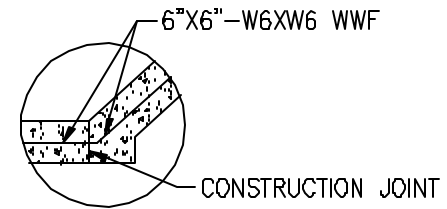
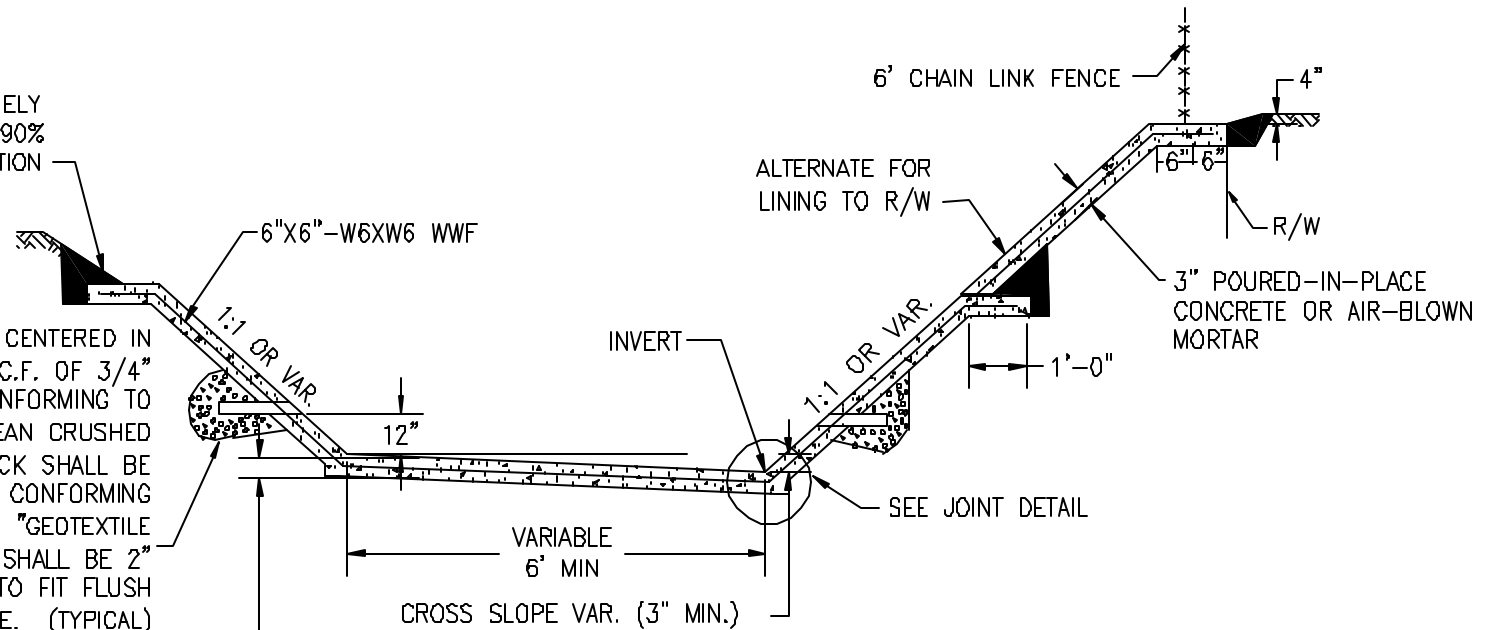
4" POURED-IN-PLACE
CONCRETE



CUTOFF WALL

TO BE PLACED ALONG ENTIRE END OF
LINED SECTION AT BEGINNING AND AT END
OF LINING

TYPICAL FULL LINING



JOINT DETAIL

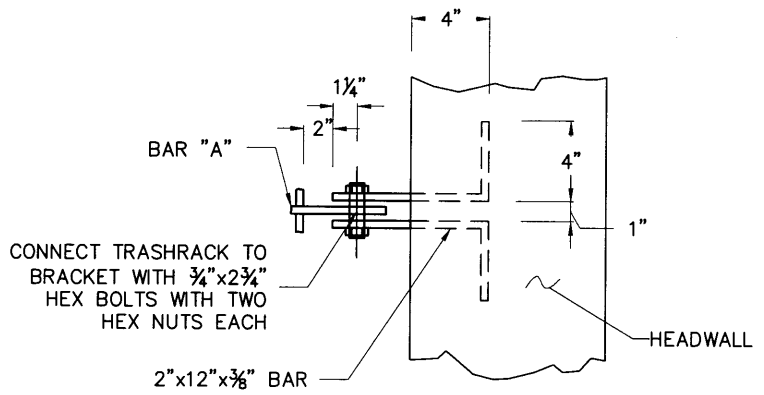
SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

LINED CHANNEL SECTION

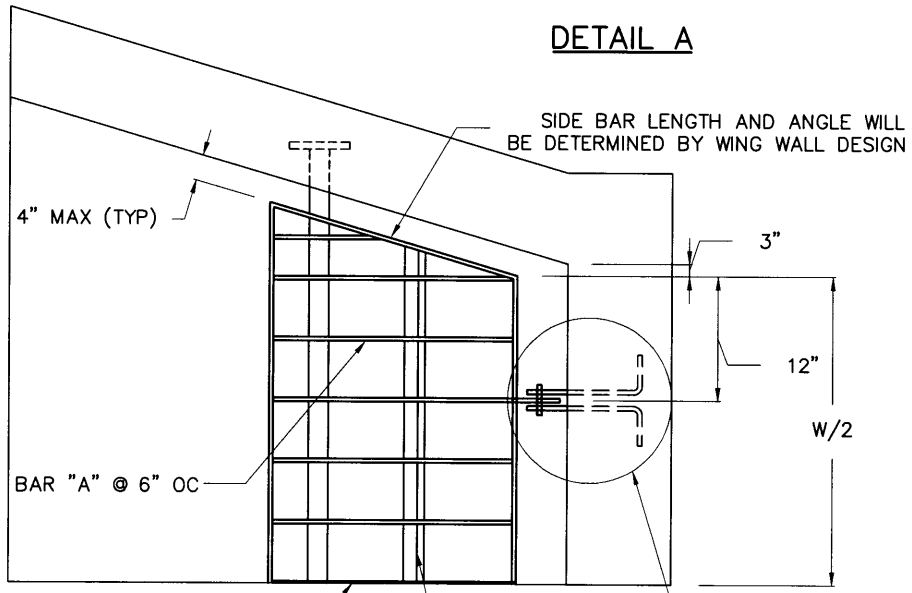
DIRECTOR, DEPARTMENT OF WATER RESOURCES

DRAWN BY: MYRA FIELDS
SCALE: NONE
DATE: 7/98

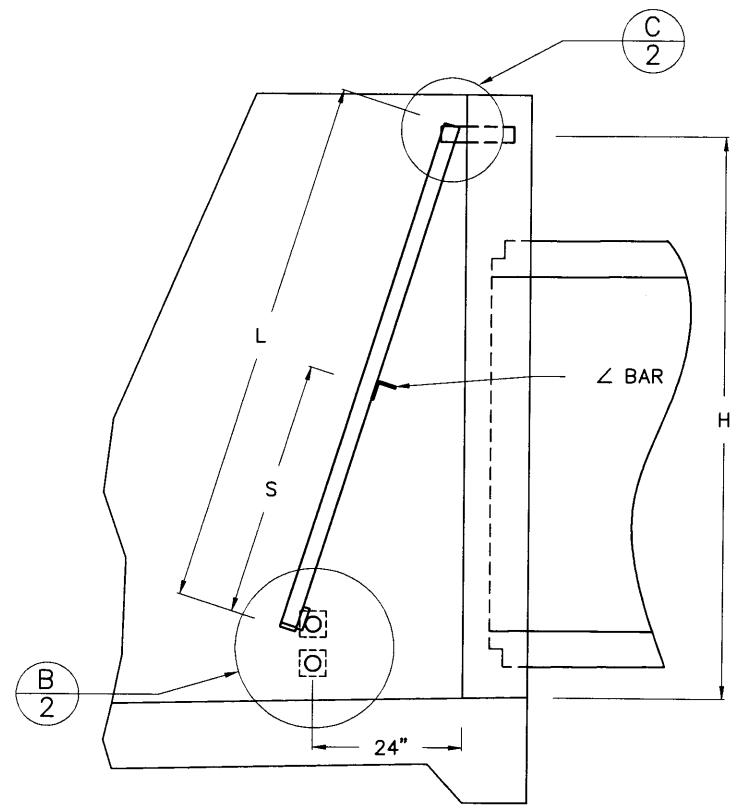
9-24
SHEET 2 OF 2



DETAIL A



TOP VIEW



SIDE VIEW

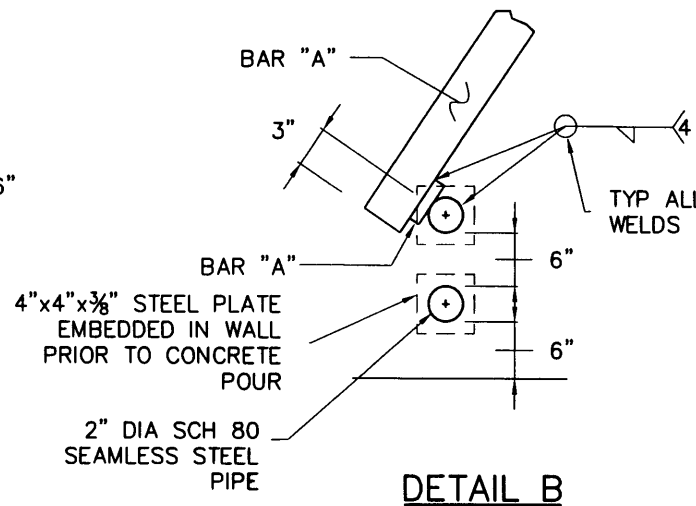
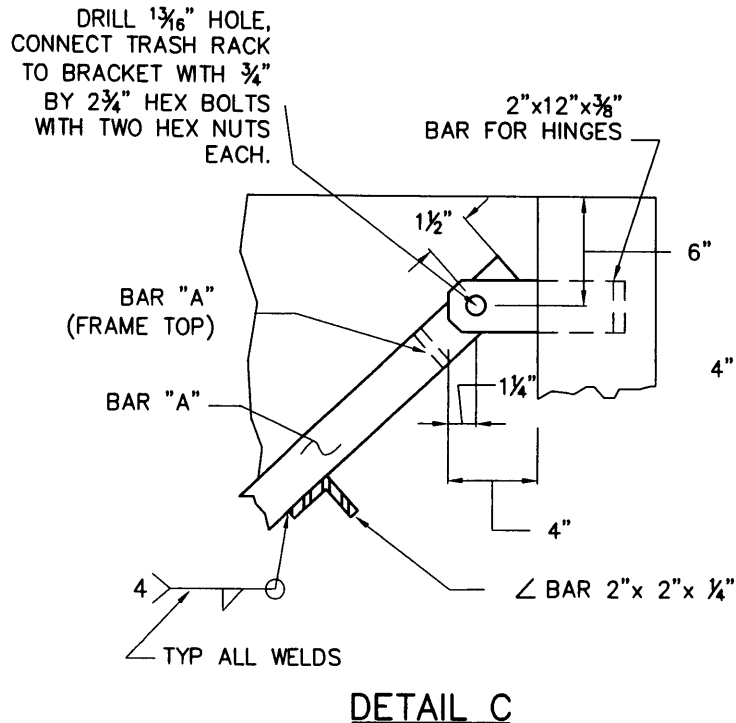
SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
TRASH RACK 24" - 36" PIPE	
DRAWN BY: J. ESLABON SCALE: NONE DATE: 1/03	9-26G SHEET 1 OF 4

DIRECTOR, DEPARTMENT OF WATER RESOURCES

TRASH RACK DIMENSIONS

PIPE DIA (IN)	PIPE OD (IN)	QUANTITY * BAR "A"	BAR "A" SIZE (IN)	H (IN)	W (IN)	L (IN)	S (IN)
24	30	11	3/8x2 ^{1/2}	46	48	40	18
27	33.5	11	3/8x2 ^{1/2}	50	48	42	19
30	37	11	3/8x2 ^{1/2}	53	48	46	21
33	40.5	11	3/8x2 ^{1/2}	57	48	52	24
36	44	13	3/8x2 ^{1/2}	60	60	52	24

**Includes outside frame*



NOTES:

- ① SEE FIGURE 9-26H FOR PIPE HEADWALL DETAILS.
- ② MATERIAL TO CONFORM TO ASTM DESIGNATION A-36. GALVANIZE ALL EXPOSED FERROUS PARTS AFTER FABRICATION.
- ③ ALL FILLET WELDS TO BE 3/16".
- ④ ALL STEEL SHALL CONFORM TO SECTION 75 OF THE STATE SPECIFICATIONS AND ASTM A36, A575 AND A576.

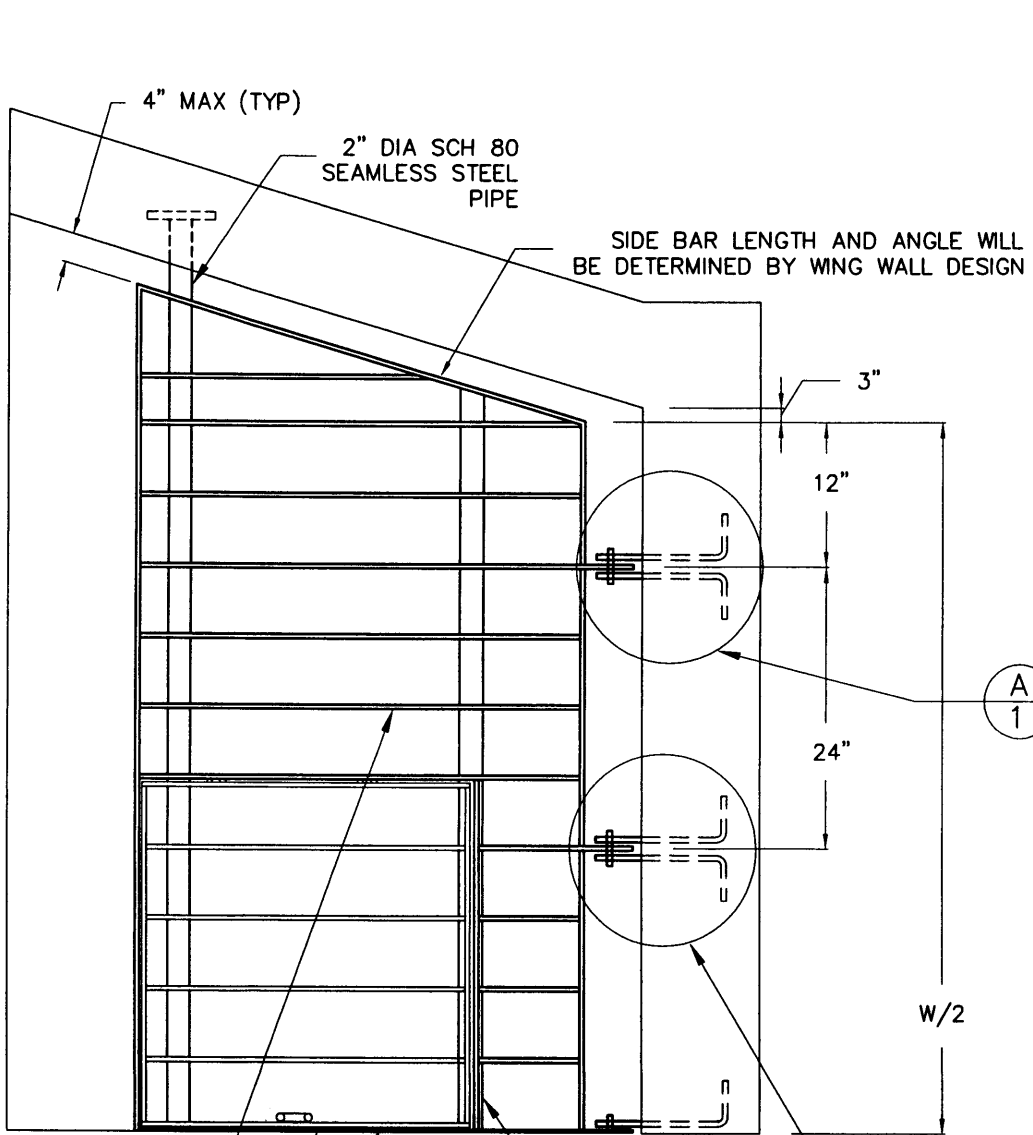
**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**TRASH RACK
24" - 36" PIPE**

DRAWN BY: J. ESLABON
SCALE: NONE
DATE: 1/03

9-26G
SHEET 2 OF 4

DIRECTOR, DEPARTMENT OF WATER RESOURCES



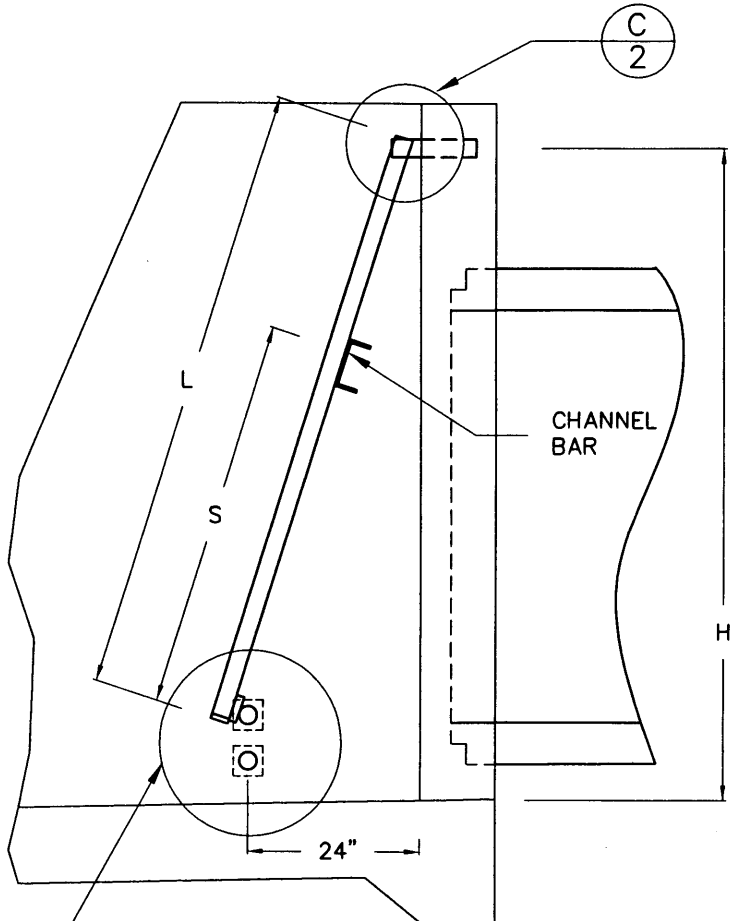
BAR "A" @ 6" OC
 SYMMETRICAL ABOUT CENTER LINE

ACCESS GATE
 SEE DETAIL SHEET 4

3" x 1 1/2" x 1/4" C10 CHANNEL BAR

ADDITIONAL HINGE REQUIRED ON TRASH RACK FOR 60" AND 72" PIPE

TOP VIEW



SIDE VIEW

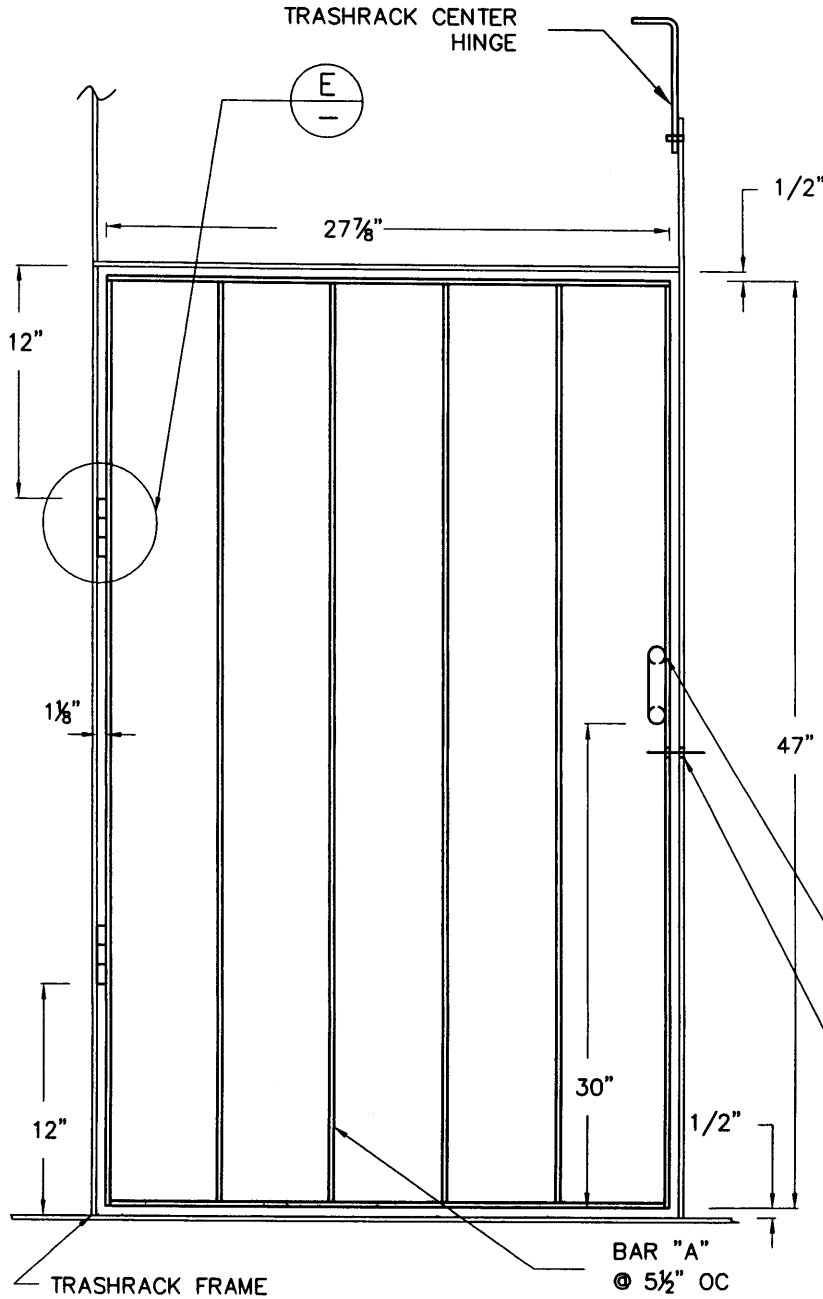
SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
TRASH RACK 42" PIPE AND LARGER	
DRAWN BY: J. ESLABON SCALE: NONE DATE: 1/03	9-26G SHEET 3 OF 4

DIRECTOR, DEPARTMENT OF WATER RESOURCES

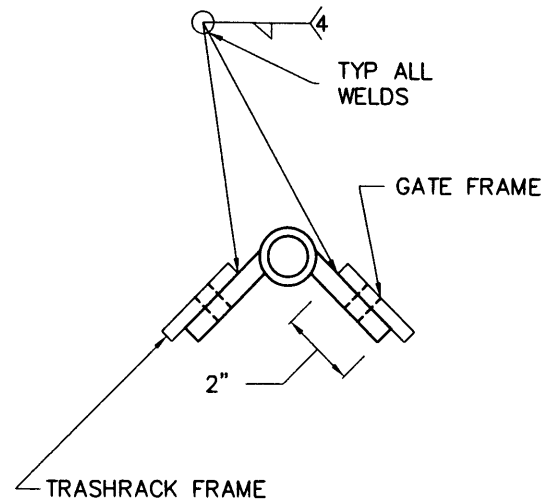
TRASH RACK DIMENSIONS

PIPE DIA (IN)	PIPE OD (IN)	QUANTITY* BAR "A"	BAR "A" SIZE (IN)	H (IN)	W (IN)	L (IN)	S (IN)
42	51	15	3/8 x 2-1/2	67	72	60	47-3/4
48	58	17	3/8 x 2-1/2	74	84	70	47-3/4
54	65	21	3/8 x 2-1/2	81	108	72	47-3/4
60	72	23	3/8 x 2-1/2	88	120	80	47-3/4
72	86	27	3/8 x 2-1/2	102	144	96	47-3/4

*Includes outside frame



ACCESS GATE DETAIL



DETAIL E

1/2" ROLLED STEEL HANDLE
WELDED TO GATE FRAME

DRILL 1/2" DIA HOLE
FOR HEAVY DUTY PAD LOCK

NOTES:

- ① SEE FIGURE 9-26H FOR PIPE HEADWALL DETAILS.
- ② MATERIAL TO CONFORM TO ASTM DESIGNATION A-36. GALVANIZE ALL EXPOSED FERROUS PARTS AFTER FABRICATION.
- ③ ALL FILLET WELDS TO BE 3/16".
- ④ ALL STEEL SHALL CONFORM TO SECTION 75 OF THE STATE SPECIFICATIONS AND ASTM A36, A575 AND A576.
- ⑤ GATE HINGES TO BE COATED TO RESIST CORROSION.

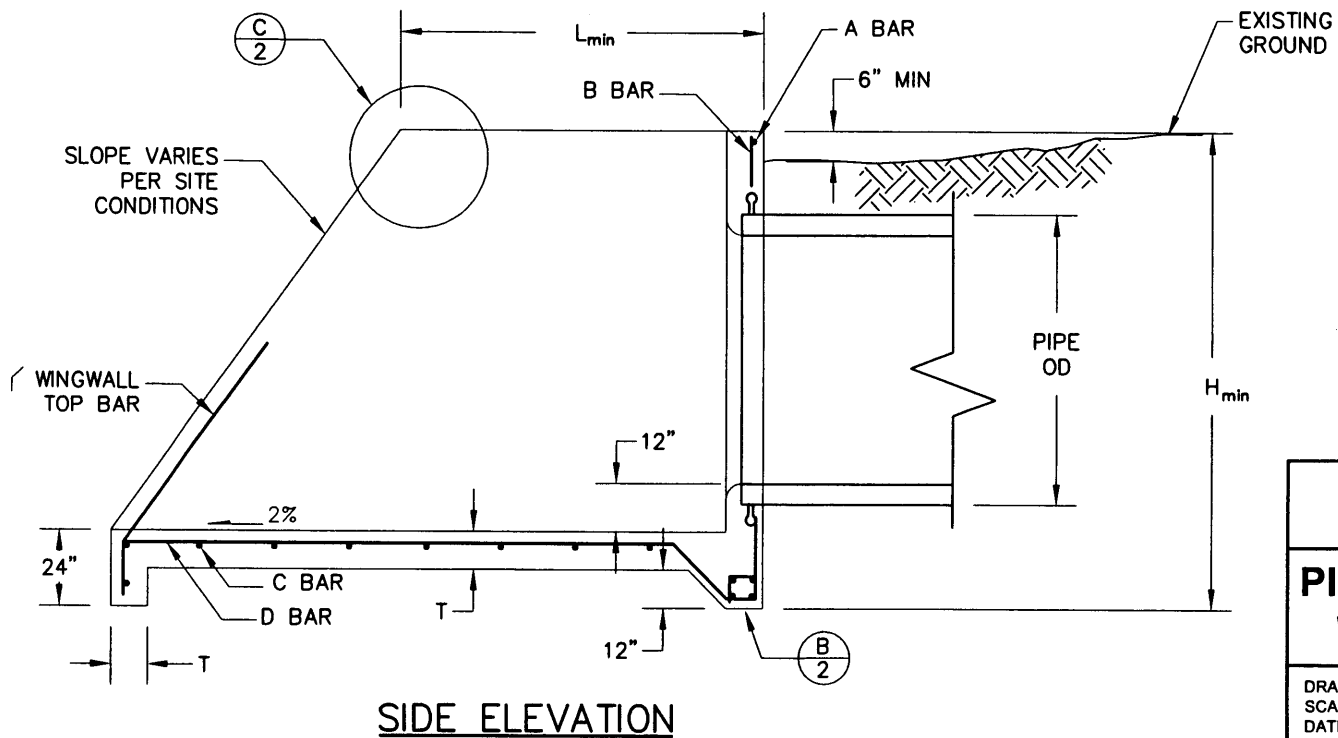
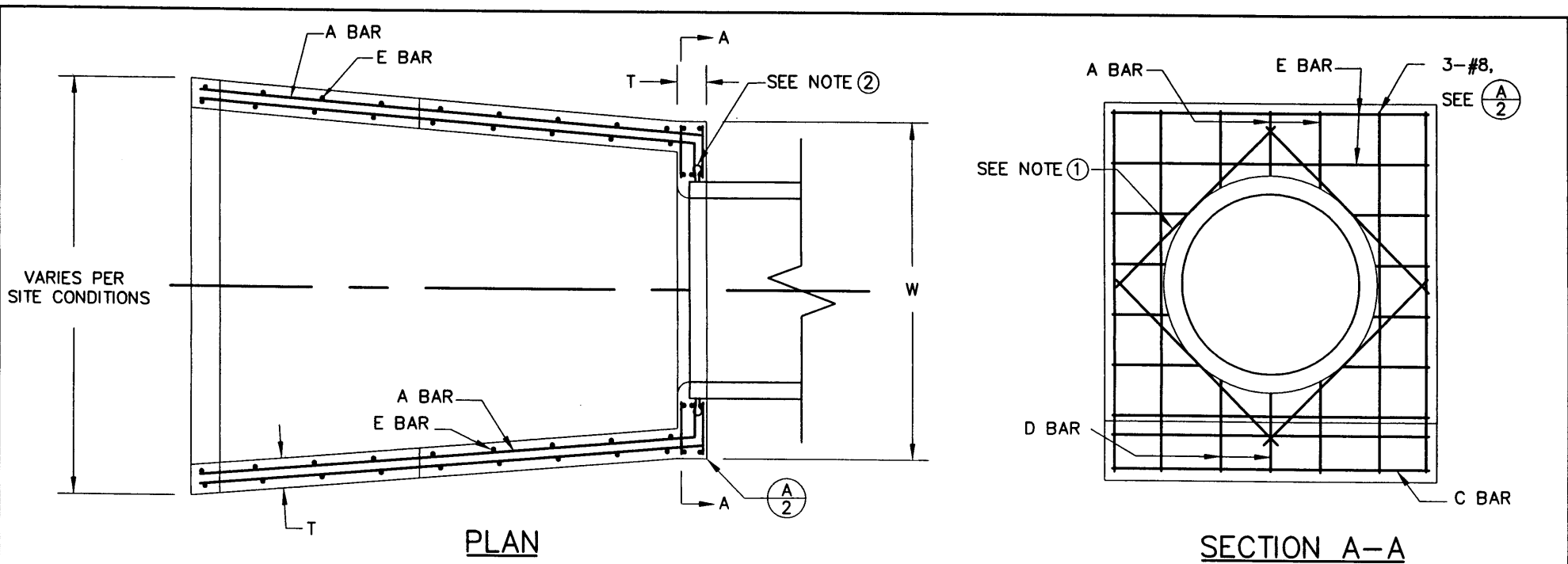
SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

**TRASH RACK
42" PIPE AND LARGER**

DRAWN BY: J. ESLABON
SCALE: NONE
DATE: 1/03

9-26G
SHEET 4 OF 4

DIRECTOR, DEPARTMENT OF WATER RESOURCES



NOTE

SEE DWG 9-26G FOR EMBEDMENT OF TRASH RACK COMPONENTS PRIOR TO POURING CONCRETE

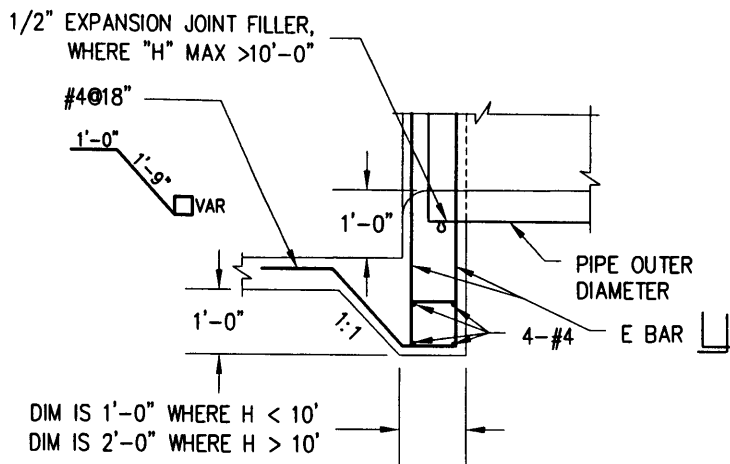
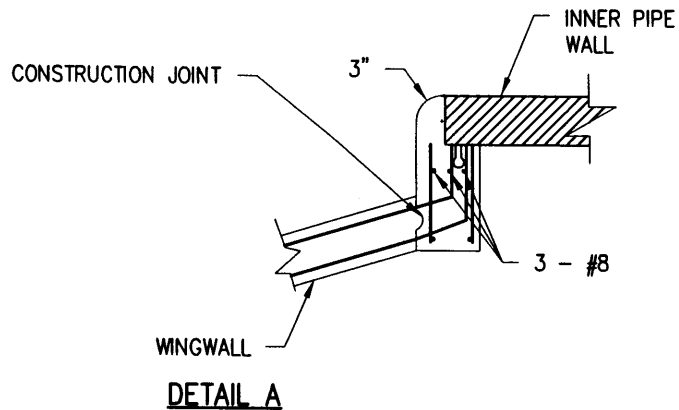
SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

**PIPE HEADWALL, ENDWALL
WINGWALL STRUCTURE**

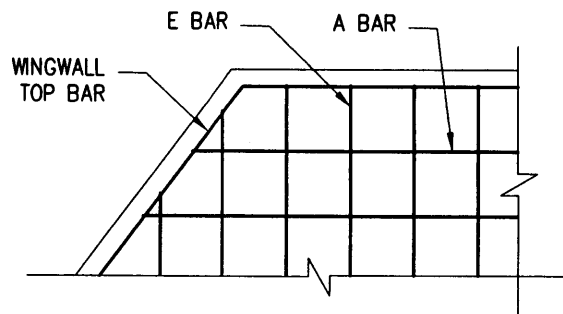
DRAWN BY: J. ESLABON
SCALE: NONE
DATE: 01/03

9-26H

SHEET 1 OF 2



DETAIL B



DETAIL C

NOTES

- ① PLACE #5 REBAR ON DIAGONALS @ 4" FROM PIPE OD.
- ② PIPE CONNECTIONS SHALL CONFORM TO ASTM C-923. UNITS SHALL INCLUDE A WATER STOP.
- ③ CHAMFER ALL EXPOSED EDGES 3/4".
- ④ ALL STEEL MINIMUM 2" FROM CONCRETE EDGES.
- ⑤ ALL LAP SPLICES MINIMUM 12".

HEADWALL DIMENSIONS

PIPE DIA	PIPE OD	W	H _{min}	T	L _{min}
24"	30"	4'-6"	4'-8"	8"	2'-9"
27"	33.5"	4'-6"	4'-10"	8"	3'-0"
30"	37"	4'-6"	5'-3"	8"	3'-3"
33"	40.5"	4'-6"	5'-9"	8"	3'-6"
36"	44"	5'-6"	5'-9"	8"	3'-9"
42"	51"	6'-6"	6'-6"	8"	4'-3"
48"	58"	7'-6"	7'-5"	10"	5'-3"
54"	65"	9'-6"	7'-7"	10"	5'-9"
60"	72"	10'-6"	8'-3"	10"	6'-0"
72"	86"	12'-6"	9'-8"	10"	7'-3"

REINFORCING STEEL DIMENSIONS AND DATA

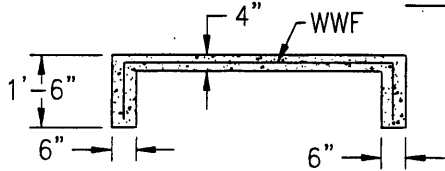
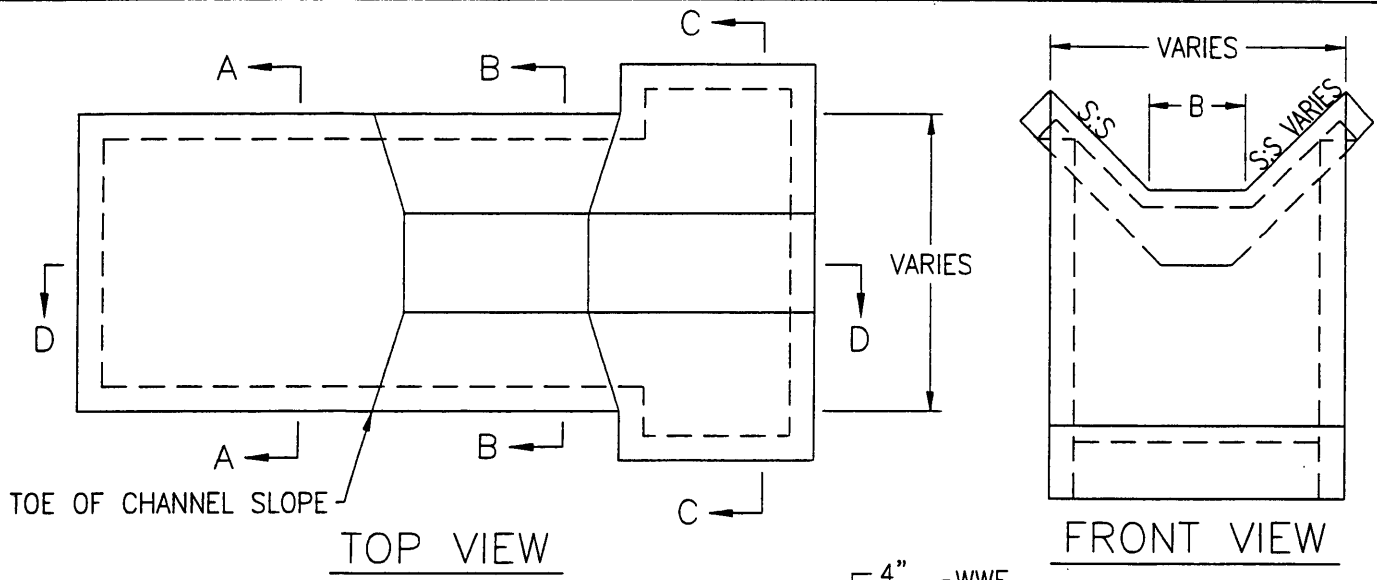
	A BAR	B BAR	C BAR	D BAR	E BAR	WINGWALL TOP BAR
H ≤ 7'	#4 @ 12" OC	#4 @ 12" OC	#4 @ 12" OC	#4 @ 12" OC	#4 @ 12" OC	#4
7' < H ≤ 8'	#4 @ 12" OC EF	#4 @ 12" OC EF	#4 @ 12" OC EF	#4 @ 12" OC EF	#4 @ 12" OC EF	#4
8' < H ≤ 10'	#5 @ 12" OC EF	#5 @ 12" OC EF	#5 @ 12" OC EF	#5 @ 12" OC EF	#5 @ 12" OC EF	#5

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

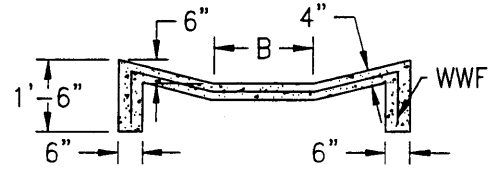
PIPE HEADWALL, ENDWALL
WINGWALL STRUCTURE

DRAWN BY: J. ESLABON
SCALE: NONE
DATE: 01/03

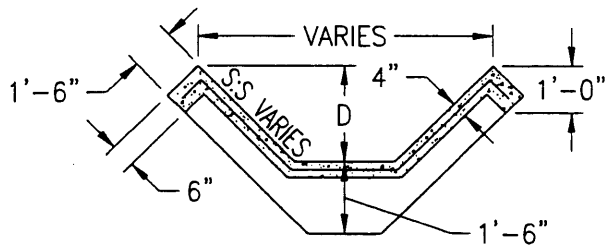
9-26H



SECTION A-A

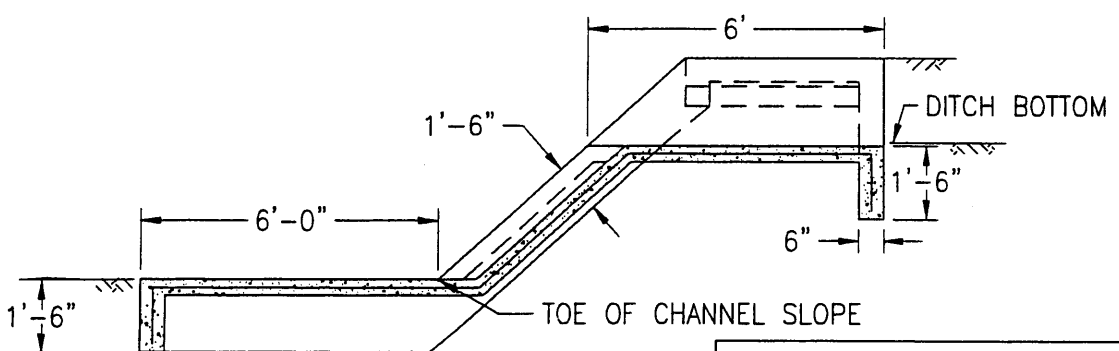


SECTION B-B



SECTION C-C

- NOTES**
1. USE CLASS "B" CONCRETE OR GROUDED COBBLES AS SPECIFIED.
 2. 6"X6"-W6XW6 WWF THROUGHOUT CONCRETE
 3. ON LINED CHANNELS APRON SHALL CONNECT TO SIDE LINING.
 4. B=DITCH BOTTOM WIDTH OR AS SHOWN ON PLANS.
 5. D=DITCH WATER DEPTH PLUS ONE FOOT OF FREEBOARD.



SECTION D-D

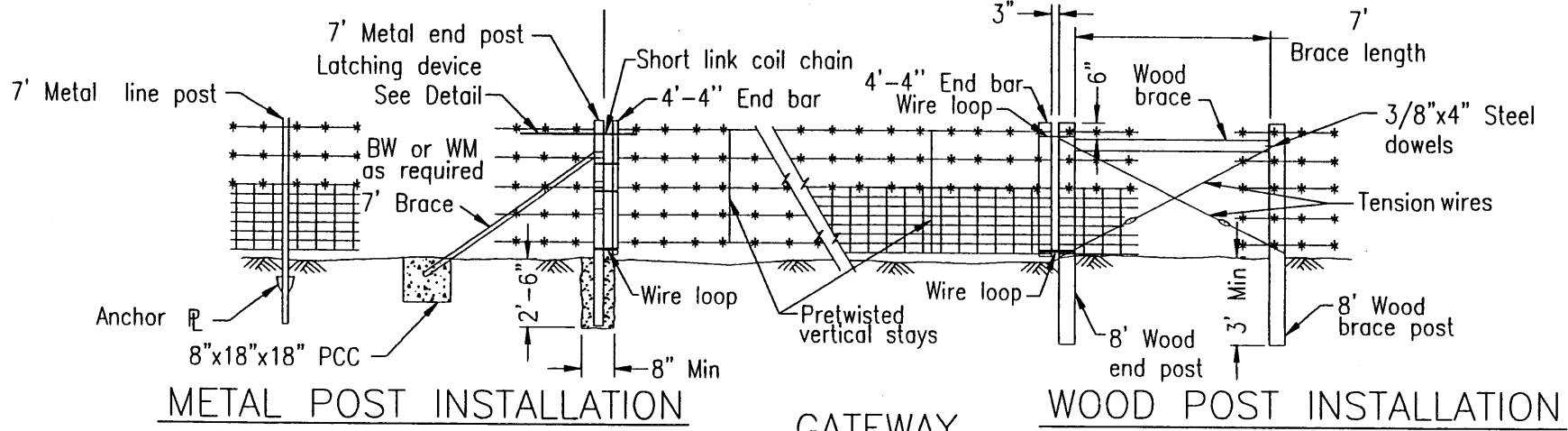
**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**EROSION CONTROL
DITCH DISCHARGE**

DRAWN BY: M.FIELDS
SCALE: NONE
DATE: 11/98

9-27

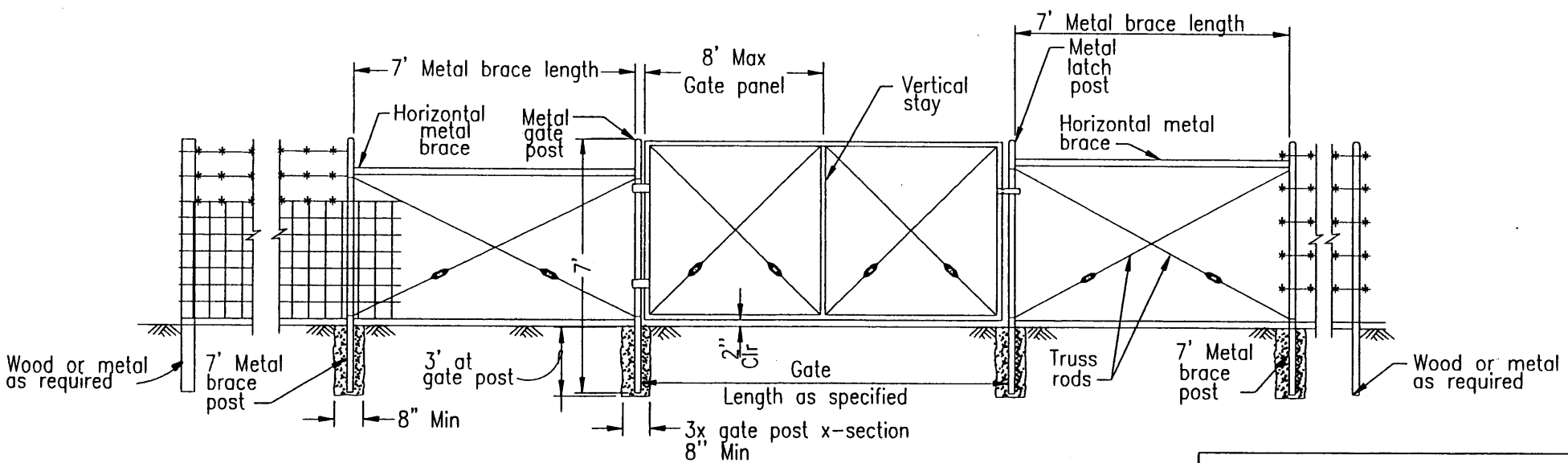
John DeW
DIRECTOR, DEPARTMENT OF WATER RESOURCES



METAL POST INSTALLATION

WOOD POST INSTALLATION

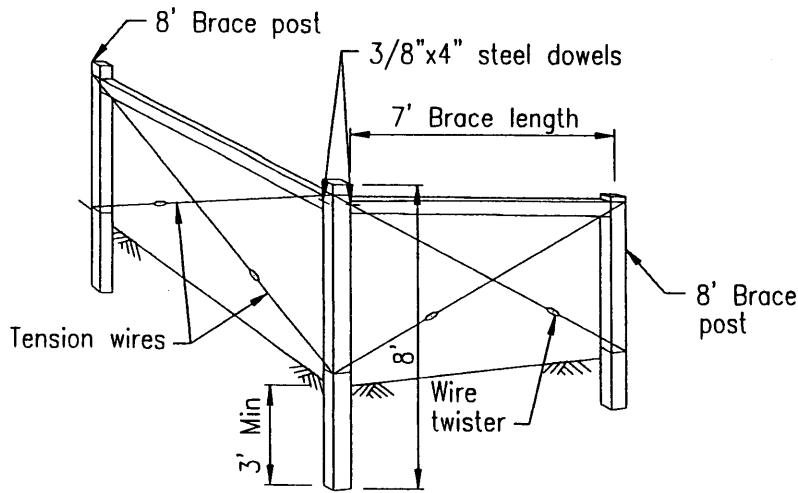
GATEWAY
See Note 3



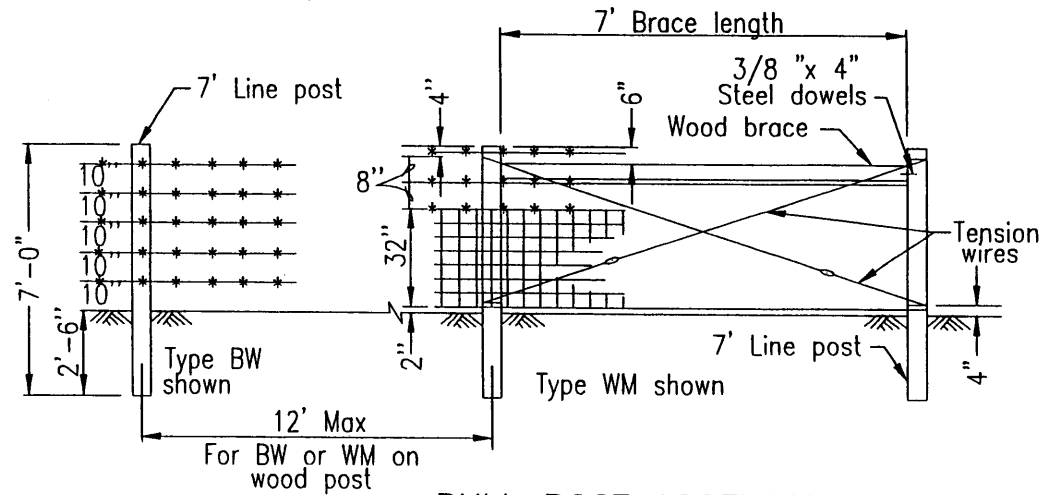
WIRE MESH GATE INSTALLATION FOR
EITHER WOOD OR METAL POST FENCES

David DeWitt
DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
BARBED WIRE AND WIRE MESH FENCES	
DRAWN BY: STAFF SCALE: NONE DATE: 11/98	9-28 SHEET 1 OF 3



END AND CORNER POST ASSEMBLY

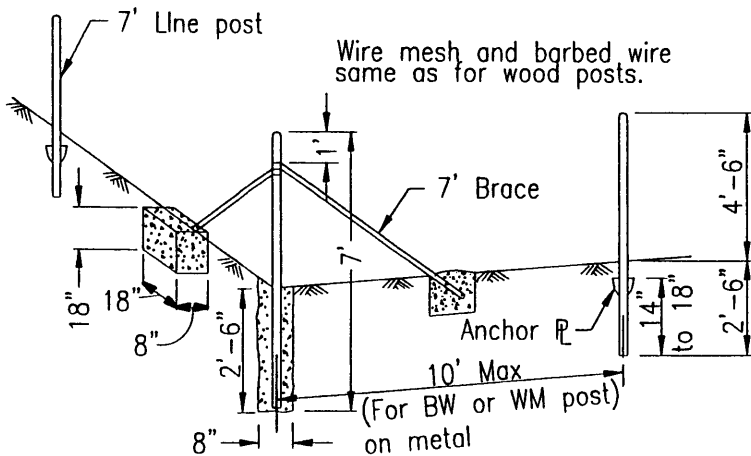


PULL POST ASSEMBLY

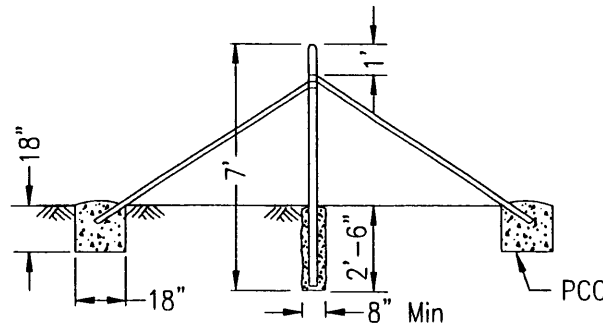
Type BW = 5 lines of barbed wire.
 Type WM = Wire mesh and 3 lines of barbed wire.

At 660' maximum intervals for WM fence.
 At 1320' maximum intervals for BW fence.

WOOD POST INSTALLATION



END AND CORNER POST ASSEMBLY



PULL POST ASSEMBLY

At 660' maximum intervals for WM fence.
 At 1320' maximum intervals for BW fence.

METAL POST INSTALLATION

**SACRAMENTO COUNTY
 PUBLIC WORKS AGENCY**

**BARBED WIRE AND
 WIRE MESH FENCES**

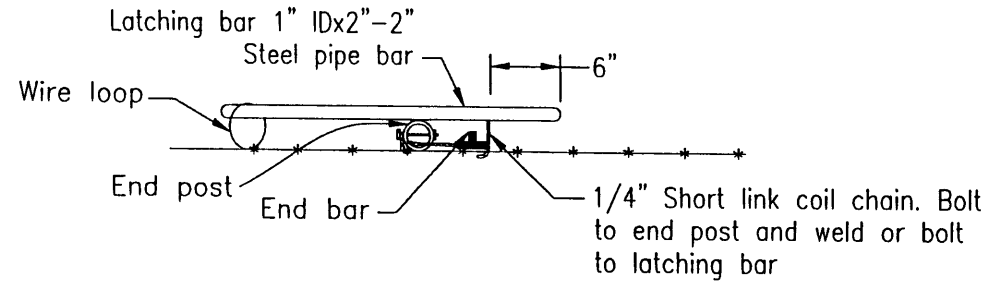
David DeWitt
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

DRAWN BY: CTA86
 SCALE: NONE
 DATE: 11/98

9-28
 SHEET 2 OF 3

WIRE MESH GATE POST
(See Note 4)

GATE WIDTHS	NOMINAL OD	WEIGHT PER FT
Up thru 6'	2-7/8"	5.79
Over 6' thru 12'	4"	9.11
Over 12' thru 18'	5 -9/16"	14.62
Over 18' to 24' Max	6-5/8"	18.97



**LATCHING DEVICE
FOR GATEWAYS**

See Note 1



Offset from right of way or property line to be 6" or as specified or shown on project plans. See Note 2.

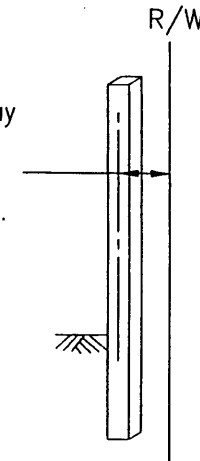


TABLE AND FENCE LOCATION DETAIL
NOTE MODIFIED.

FENCE LOCATION

NOTES

1. Metal end post and end bar shown. Use wood end post and end bar for wood post installation.
2. Offset to be 2' at monument locations, measured at right angles to R/W lines. Taper to achieve offset to be at least 20' long.
3. Gateway to be used when specified in the special provisions.
4. Post dimensions and weights are minimums. Larger sizes may be used on approval of Engineer.
5. Line post spacing for wood post equals 12' maximum. Line post spacing for metal post equals 10' maximum.

Keith Oelver

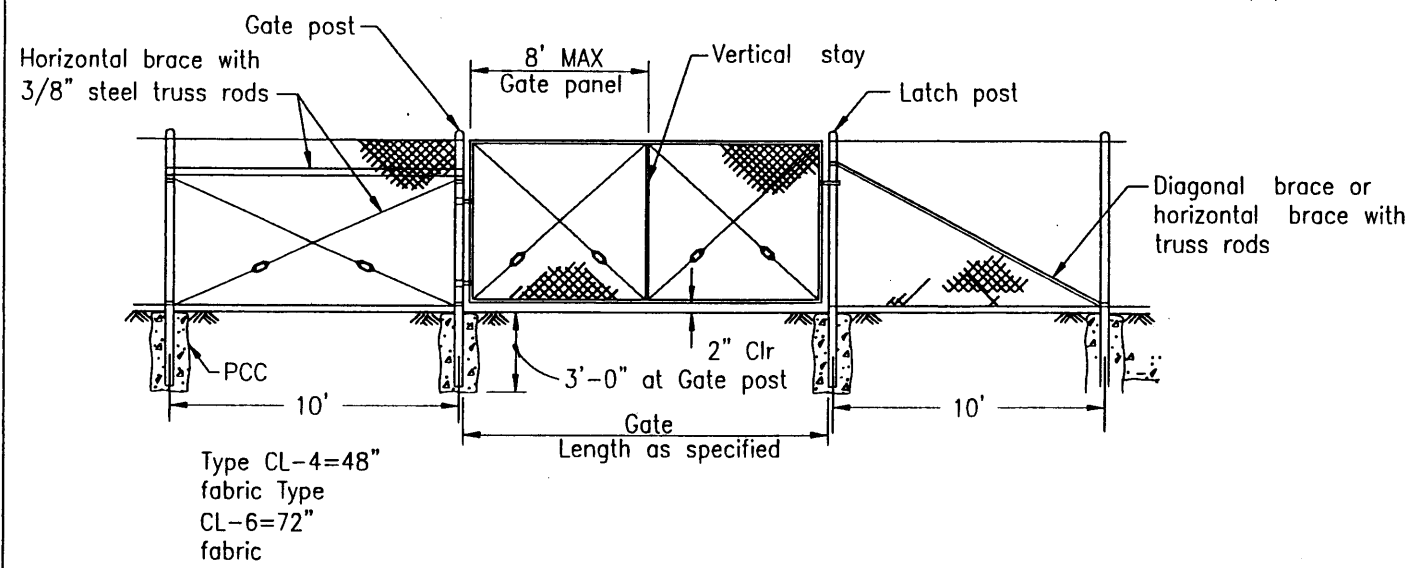
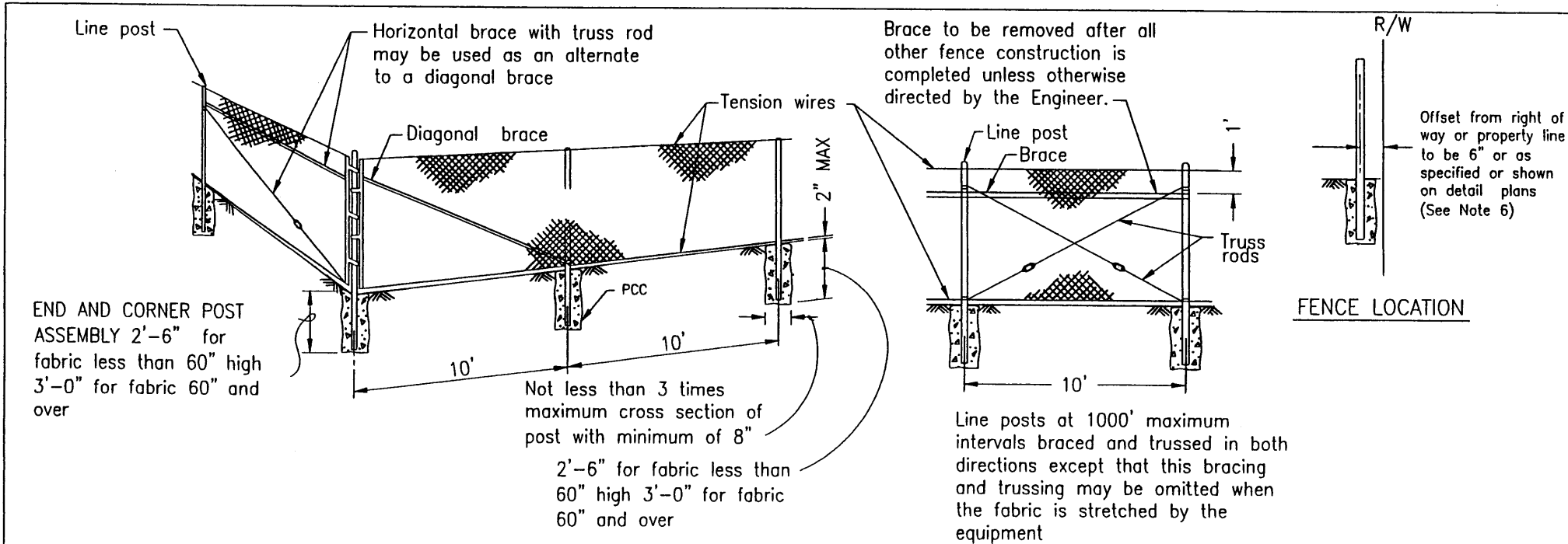
DIRECTOR, DEPARTMENT OF WATER RESOURCES

**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**BARBED WIRE AND
WIRE MESH FENCES**

DRAWN BY: STAFF
SCALE: NONE
DATE: 12/99

9-28
SHEET 3 OF 3



- Notes:
1. Chain link fabric shall be zinc coated steel manufactured in compliance with ASTM Standard A 392 with a 2 inch mesh of 9 gauge wire with knuckled selvage.
 2. Tension wire shall be 7 gauge.
 3. Where barbed wire is specified, it shall include 3 strands of galvanized 4 point wire attached with extension arms set at 45 degrees.

**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

CHAIN LINK FENCE

David Deller






DIRECTOR, DEPARTMENT OF WATER RESOURCES

DRAWN BY: STAFF
SCALE: NONE
DATE: 12/99

9-29
SHEET 1 OF 2

TYPICAL MEMBER DIMENSIONS


(See Notes)

FENCE HEIGHT	LINE POSTS			END, LATCH & CORNER POSTS			RAILS & BRACES			
	NOMINAL ROUND O.D. (NOTES 7 & 8)	H	ROLL FORMED	NOMINAL ROUND O.D. (NOTES 7 & 8)	ROLL FORMED		NOMINAL ROUND O.D. (NOTES 7 & 8)	H	ROLL FORMED	
						 				
6' & less	2-3/8"	1-7/8" x 1-5/8"	1-7/8" x 1-5/8"	2-7/8"	3-1/2" x 3-1/2"	2" x 1-3/4"	1-5/8"	1-1/2" x 1-5/16"	1-5/8" x 1-1/4"	1-3/4" x 1-1/4"
Over 6'	2-3/8"	2-1/4" x 2"	2" x 1-3/4"	2-7/8"	3-1/2" x 3-1/2"	2-1/2" x 2-1/2"	1-5/8"	1-1/2" x 1-5/16"	1-5/8" x 1-1/4"	1-3/4" x 1-1/4"

GATE POST (NOTE 7)			
FENCE HEIGHT	GATE WIDTHS	NOMINAL O.D.	WEIGHT PER FOOT
6'-0" and Less	Up thru 6'	2-7/8"	5.79
	Over 6' thru 12'	4-1/2"	10.79
	Over 12' thru 18'	5-11/16"	14.62
	Over 18' to 24' max	6-5/8"	18.97
Over 6'-0"	Up thru 6'	3-1/2"	7.58
	Over 6' thru 12'	5-11/16"	14.62
	Over 12' thru 18'	6-5/8"	18.97
	Over 18' to 24' max	8-5/8"	28.55

NOTES

- The above table shows examples of post and brace sections which may comply with the Standard Construction Specifications.
- Sections shown in the tables must also comply with the strength requirements and other provisions of the Standard Construction Specifications.
- Other sections which comply with the strength requirements and other provisions of the Standard Construction Specifications may be used on approval of the Engineer.
- Options exercised shall be uniform on any one project.
- Dimensions shown are nominal.
- Offset to be 2'-0" at monument locations, measured at right angles to R/W lines. Taper to achieve offset to be at least 20' long.
- Pipe sections for posts, rails, braces, and gates shall be schedule 40 galvanized pipe manufactured in conformance with ASTM F 1083.
- Weight per foot values for 1-5/8" O.D. pipe = 2.27 lbs/ft, 2-3/8" O.D. pipe = 3.65 lbs/ft, 2-7/8" O.D. pipe = 5.79 lbs/ft.
- Chain link gate frames shall be a minimum of 1-7/8" pipe weighing 2.72 lbs/ft.
- Galvanized gate holders of heavy cast construction with counterbalanced latches shall be provided for all gates. Gate holders shall be anchored with a minimum 24" length of 1-5/8" schedule 40 pipe set in 8" ϕ concrete base.
- Double gate assemblies shall also be fitted with heavy duty hinges and lift bar interlocking device with drop anchor at midspan that latches to embedded pipe.

 NOTES 7-11 WERE ADDED. NOMINAL DIAMETERS IN THE TABLES WERE CHANGED.

Above post dimensions and masses are minimums. Larger sizes may be used on approval of the Engineer.

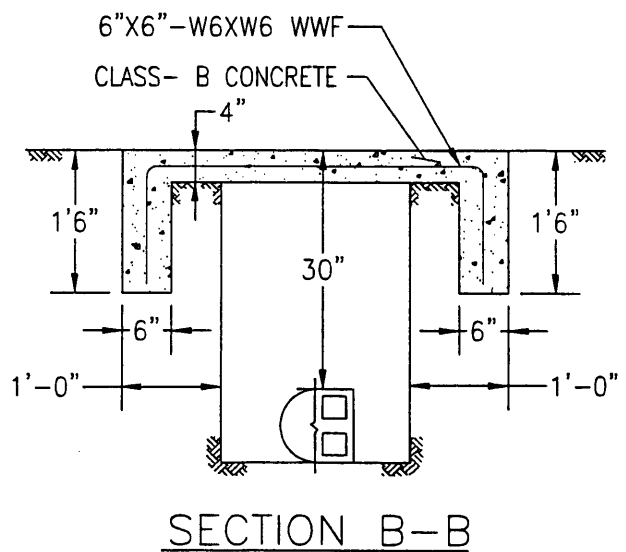
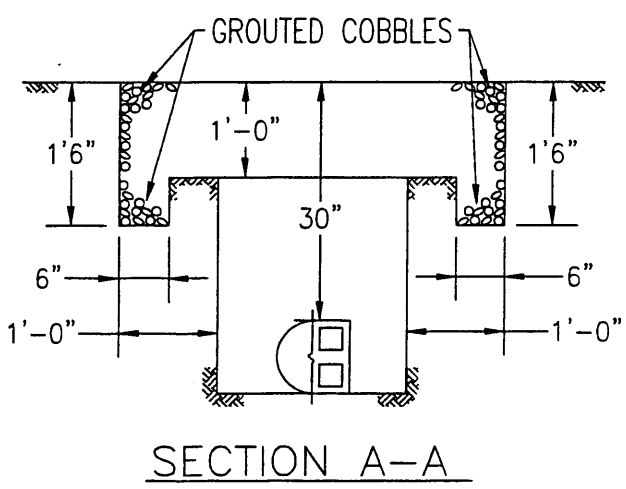
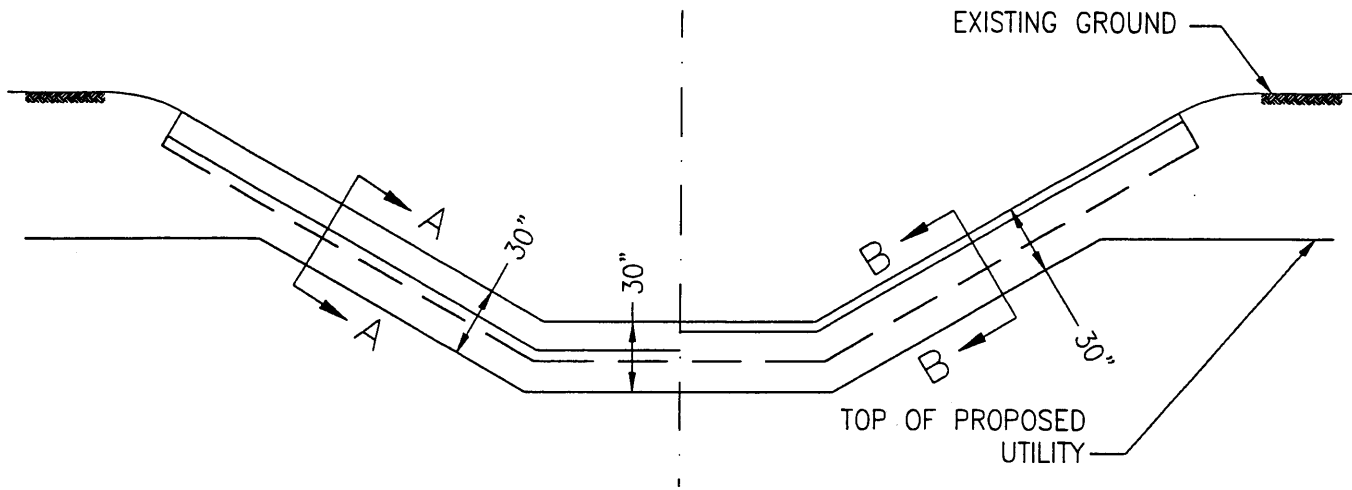

DIRECTOR, DEPARTMENT OF WATER RESOURCES

**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

CHAIN LINK FENCE

DRAWN BY: STAFF
SCALE: NONE
DATE: 12/99

9-29
SHEET 2 OF 2

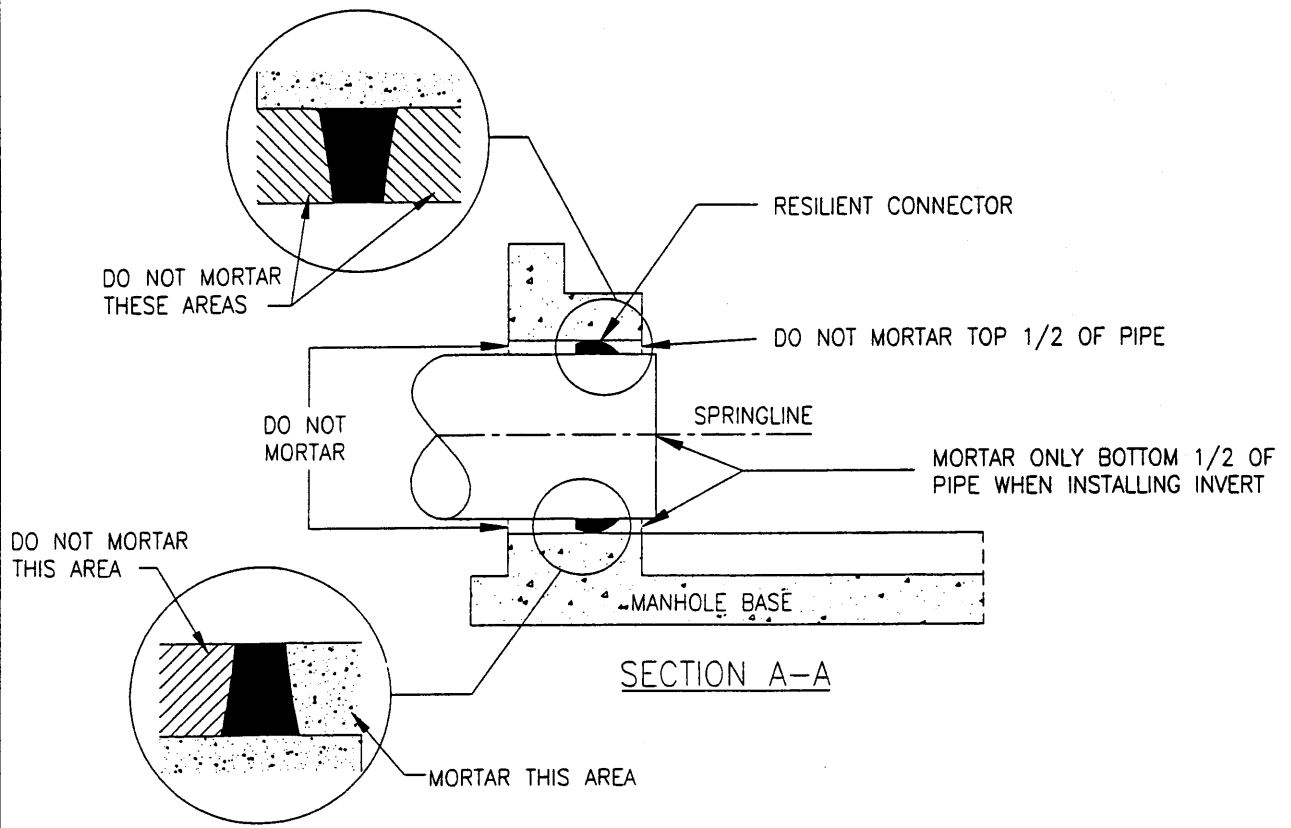


NOTES

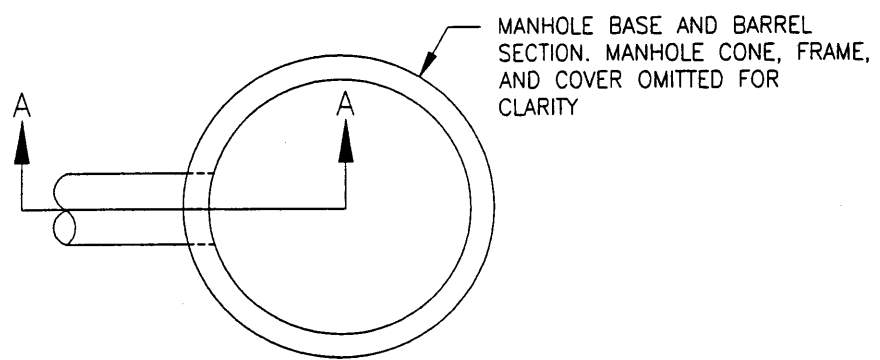
1. ALL UTILITY CROSSINGS OF EXISTING STREAMS SHALL BE AT LEAST 30" BELOW EXISTING CHANNEL SIDES AND BOTTOMS. DEEPER PLACEMENT MAY BE REQUIRED IF FUTURE CHANNEL IMPROVEMENTS ARE ANTICIPATED.
2. THE CUT SHALL BE SEALED AS SHOWN WITH GROUTED COBBLES OR CLASS B CONCRETE TO A WIDTH 1' EACH SIDE OF THE UTILITY TRENCH. ALL NATURAL STREAMS, AS SHOWN ON THE NATURAL STREAMS PLAN, SHALL UTILIZE GROUTED COBBLES.
3. CONSTRUCTION IS TO CONFORM TO SECTION 44 OF THE COUNTY CONSTRUCTION SPECIFICATIONS WITH CUT OFF WALLS CONFORMING TO STANDARD DRAWING 9-24.

Shirley DeWitt
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
UTILITY STREAM CROSSING	
DRAWN BY: M.FIELDS SCALE: NONE DATE: 11/98	9-30



SECTION A-A



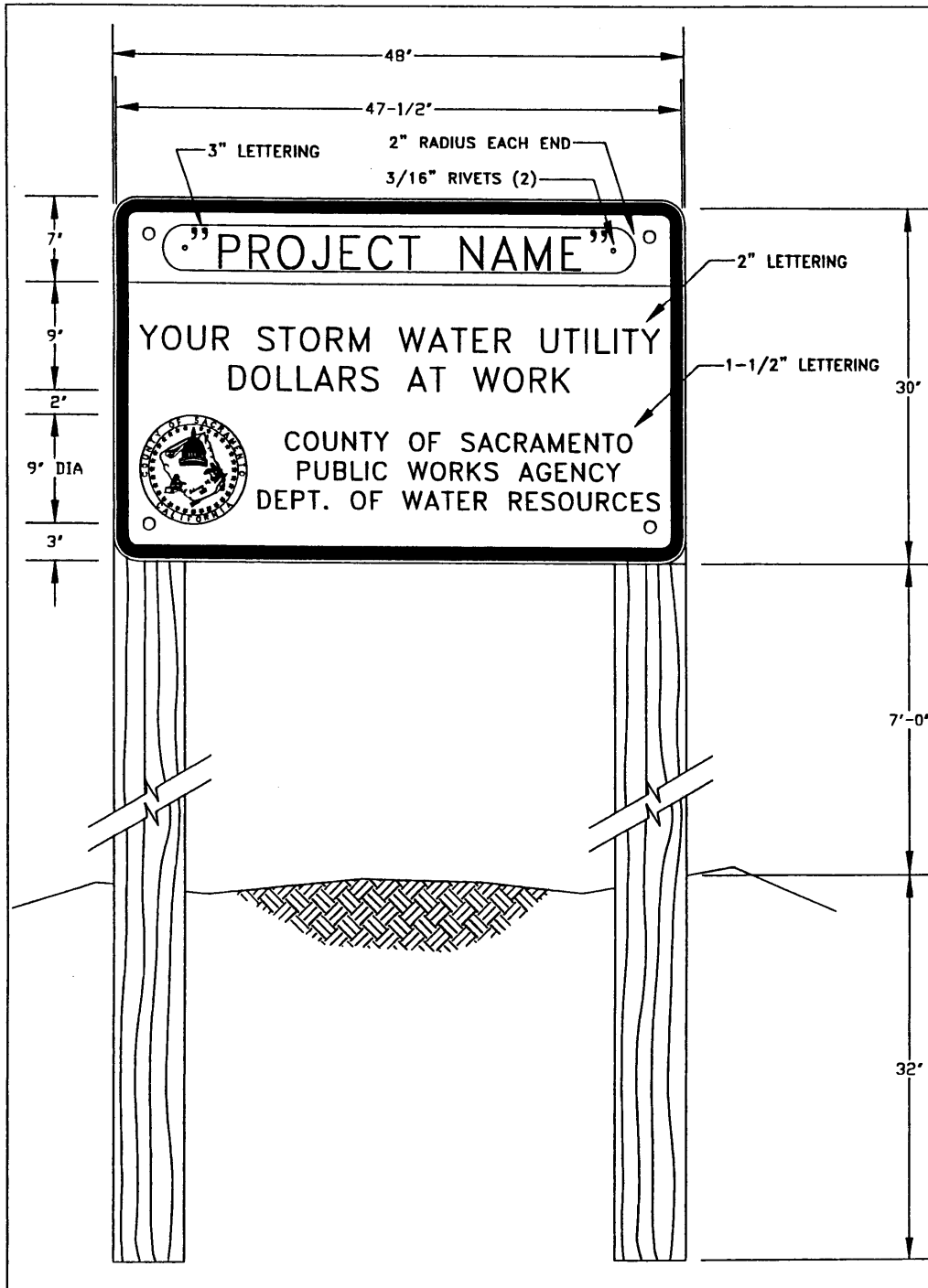
PLAN

NOTES:

1. TO HELP CREATE A FLEXIBLE, WATERTIGHT JOINT, DO NOT PLACE MORTAR AROUND THE CONNECTOR ON THE OUTSIDE OF THE STRUCTURE OR AROUND THE TOP HALF OF THE CONNECTOR ON THE INSIDE WHEN COMPLETING THE INVERT WORK.
2. RESILIENT CONNECTORS SHALL BE A FLEXIBLE COMPRESSION GASKET OR BOOT CONNECTOR PER SECTION 39 "PRECAST CONCRETE STORM DRAIN MANHOLES" OF THE COUNTY CONSTRUCTION SPECIFICATIONS.
3. BOOT CONNECTORS DO NOT REQUIRE GROUTING.
4. ALL CONNECTORS SHALL MEET OR EXCEED THE REQUIREMENTS OF A.S.T.M. C-923

David DeWitt
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
FLEXIBLE CONNECTOR PIPE TO MANHOLE	
DRAWN BY: M.FIELDS SCALE: NONE DATE: 11/98	9-31



CONSTRUCTION NOTES

1. Fabricate and install in conformance with Section 12-3.06A of the State Standard Specifications.
2. Sign panel shall conform to Type IIIA minimum reflective sheeting requirements of Section 12-3.06A of the State Standard Specifications.
3. Sign panel colors shall be black letters and border on a white background. Letter height and weight as follows:

Letter Height	Line Weight
1-1/2"	5/16"
2"	1/4"
3"	3/8"
4. The County Seal emblem shall be provided by the County and installed as shown by the Contractor.
5. 4x4 Wood post shall be installed in conformance with Section 12-3.06A of the State Standard Specifications.

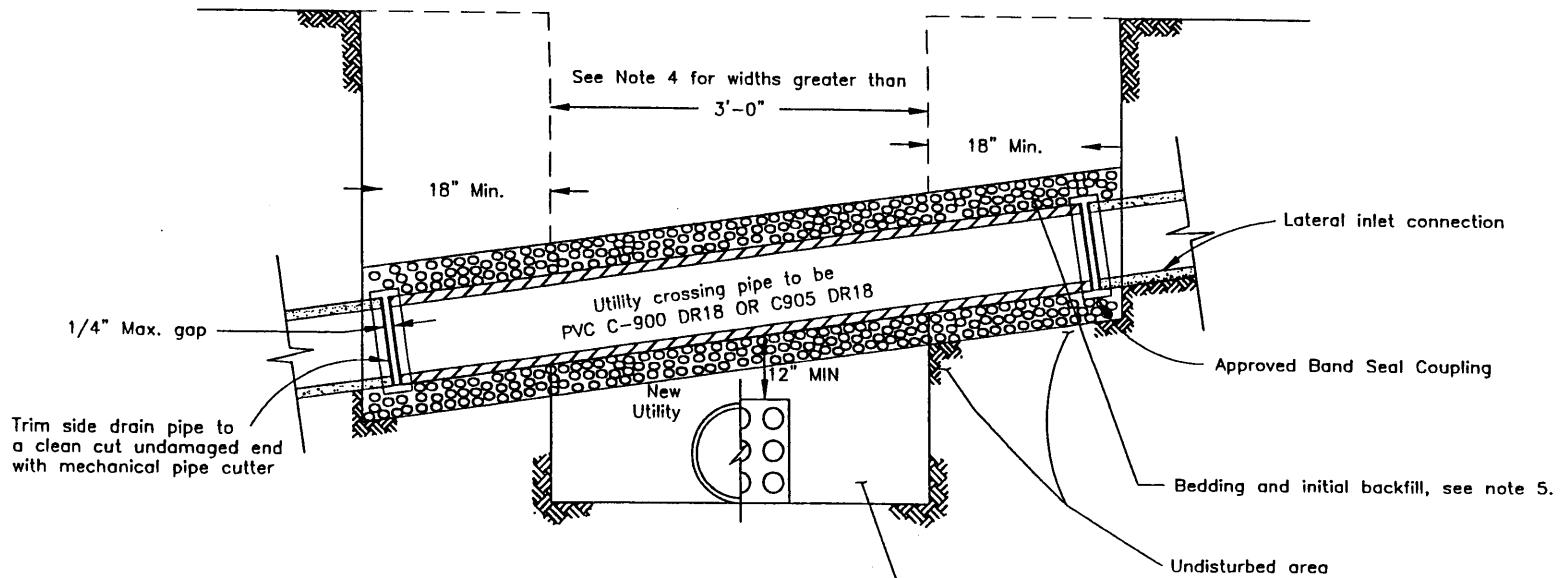

 DIRECTOR, DEPARTMENT OF WATER RESOURCES

**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**CONSTRUCTION
SITE SIGN**

SCALE: NONE
 DATE DRAWN: 3/21/01
 DRAWN BY: L. PETERS

9-32



Notes:

1. The nominal diameter of PVC pipe to be the same as the pipe to which it connects.
2. Use PVC pipe when the lateral connection is cut or damaged.
3. Alteration of pipe grades will be permitted only after written permission has been received from the engineer.
4. Whenever the span, whether caused by trench width or crossing angle of the PVC pipe, exceeds 3'-0". Replacement procedure and material shall be as directed by the engineer.
5. Bedding and initial backfill material shall be imported 3/4-inch crushed rock or gravel conforming to the requirements of Article 50-16, Type "B". For pipe 10" or less in diameter use 1/2-inch crushed rock or gravel conforming to Article 50-16, Type "A". Place per Standard Drawing 9-1A.
6. PVC pipe shall conform to section 50-26.04, "Polyvinyl Chloride Pipe (PVC) For Drainage", of the Standard Specifications.

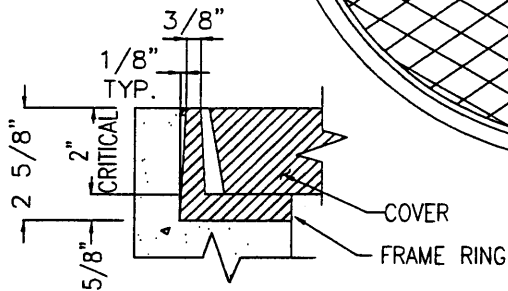
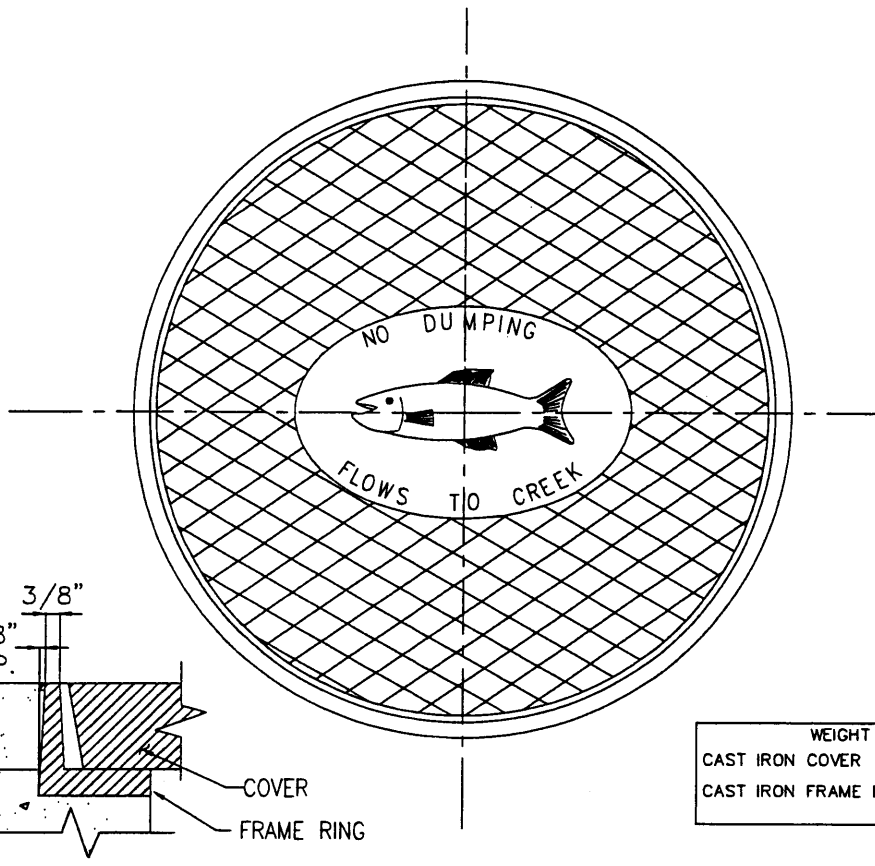
[Signature]
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

**SACRAMENTO COUNTY
 PUBLIC WORKS AGENCY**

UTILITY CROSSING

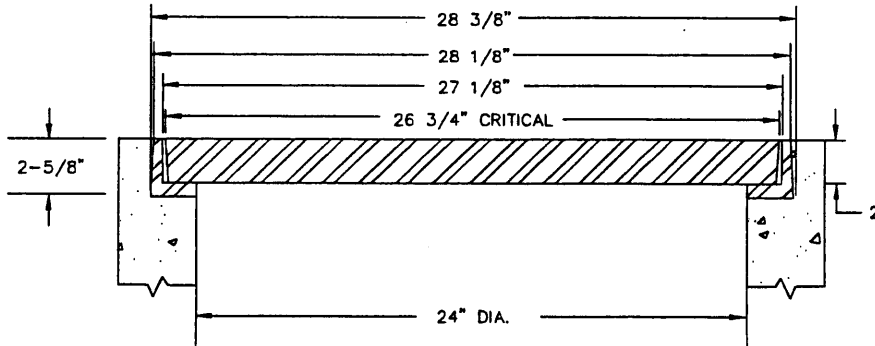
DRAWN BY: STAFF
 SCALE: NONE
 DATE: 4/97

9-33



WEIGHT	
CAST IRON COVER	91 LBS.
CAST IRON FRAME RING	52 LBS.

FRAME RING AND LID DETAIL

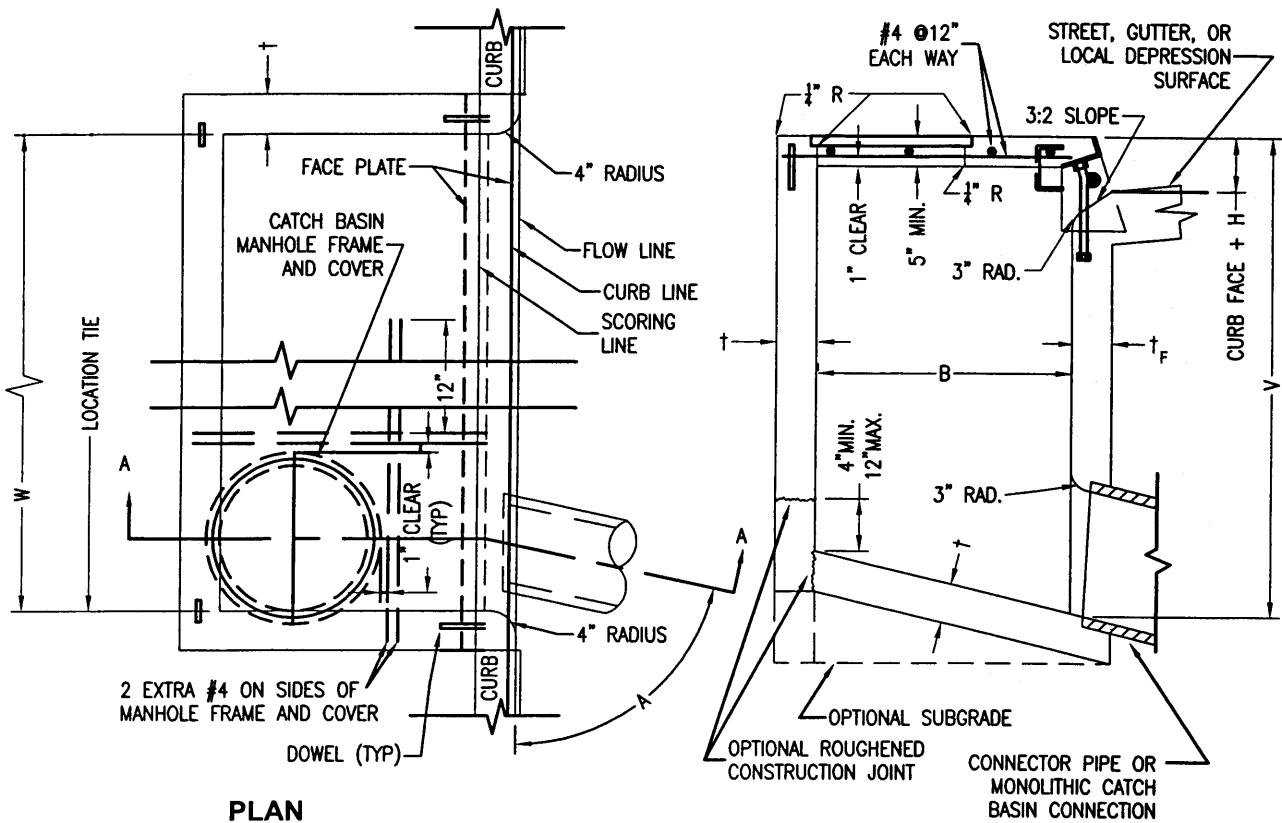


NOTES:

1. TO BE USED ONLY WITH TYPE G OR 300-1 INLET.
2. ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B
3. FRAME AND COVER TO MEET H-20 LOAD SPECIFICATIONS.
4. BEARING SURFACES ARE MACHINED BEVELED TO ASSURE A CLOSE, NON ROCKING SURFACE.
5. FRAME AND COVER SHALL HAVE A COATING OF BLACK BITUMINOUS MATERIAL CONFORMING TO ASTM 48-30.
6. SEE ARTICLE 50-34, "SEWER AND STORM DRAIN CASTINGS", OF SECTION 50.

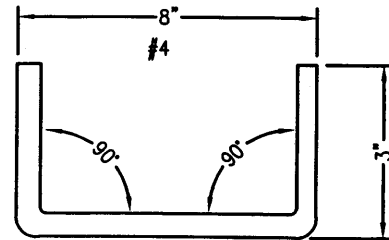
Steve O'Brien
 DIRECTOR, DEPARTMENT OF WATER RESOURCES

SACRAMENTO COUNTY PUBLIC WORKS AGENCY	
CAST IRON 24" MANHOLE FRAME & COVER FOR TYPE G AND 300-1 INLET	
DRAWN BY: L. PETERS SCALE: NONE DATE: 12/00	9-34



PLAN

SECTION A-A



DOWEL DETAIL

STRUCTURAL DATA											
WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS											
MAX W	MAX V	†	† _F	REINFORCEMENT REQUIRED IN							
				FRONT WALL	REAR WALL	BOTTOM SLAB	END WALL				
3.5'	8'	6"	6"	NO REINFORCEMENT REQUIRED							
3.5'	12'	6"	8"								
7'	6'	6"	6"								
7'	12'	8"	8"								
14'	4'	6"	6"					REINFORCEMENT REQUIRED			
14'	8'	6"	8"								
14'	12'	8"	10"								
21' AND 28'	4'	6"	6"								
	6'	6"	8"								
	8'	8"	8"								
	10'	8"	10"								
	12'	8"	10"								

FOR W > 28', V > 12', OR B > 4' SEE PROJECT PLANS

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

**CURB OPENING
CATCH BASIN**

DRAWN BY: L.PETERS
SCALE: NONE
DATE: 12/02

300-1
SHEET 1 OF 2

NOTES:

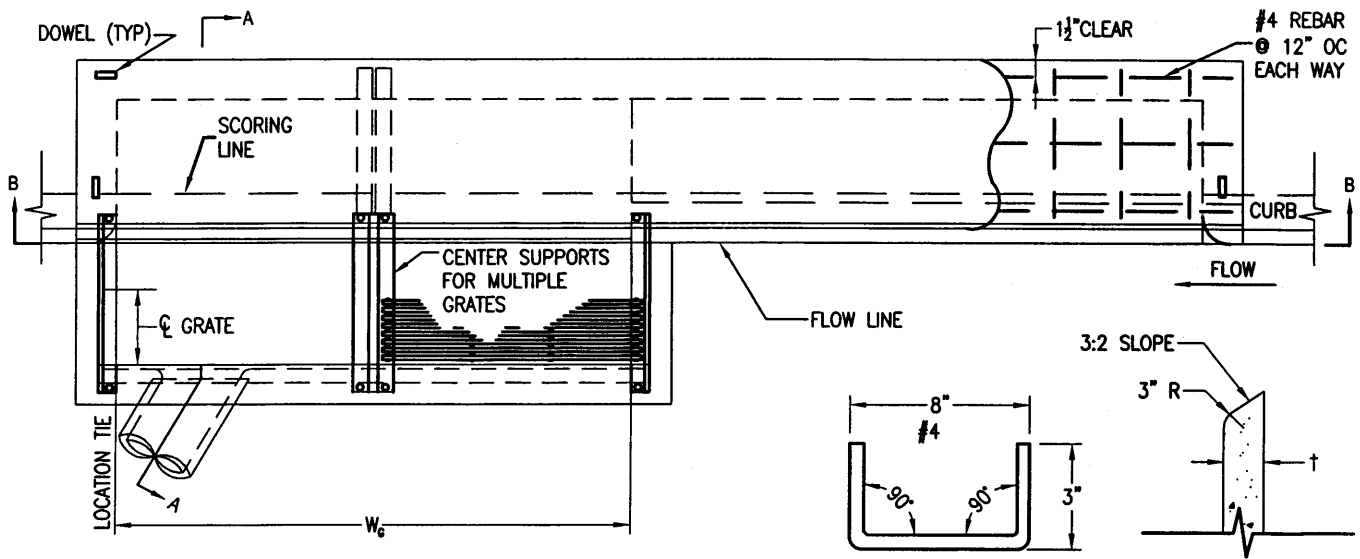
1. WHERE THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF EXISTING OR PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH SIDEWALK, THE TOP SLAB OF THE BASIN MAY BE POURED EITHER MONOLITHIC WITH THE SIDEWALK OR SEPARATELY, USING THE SAME CLASS OF CONCRETE AS IN THE BASIN. WHEN POURED MONOLITHICALLY, THE SIDEWALK SHALL BE PROVIDED WITH A WEAKENED PLANE OR A 1-INCH DEEP SAWCUT CONTINUOUSLY AROUND THE EXTERNAL PERIMETER OF THE CATCH BASIN WALLS, INCLUDING ACROSS THE FULL WIDTH OF THE SIDEWALK. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.
2. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
3. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1:12 MINIMUM AND 1:3 MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
4. DIMENSIONS:
 - B = 3 FEET 2 INCHES
 - V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET. NOTED ON THE PROJECT PLANS.
 - V_u = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT THE UPSTREAM END OF THE BASIN, AND SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 3, BUT SHALL NOT BE LESS THAN CURB FACE PLUS 12 INCHES.
 - V_i = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET. NOTED ON THE PROJECT PLANS.
 - H = NOTED ON THE PROJECT PLANS.
 - W = NOTED ON THE PROJECT PLANS.
 - A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.
5. PLACE CONNECTOR PIPES AS INDICATED ON THE PROJECT PLANS UNLESS OTHERWISE SPECIFIED. THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECESSARY TO INSURE MINIMUM 3-INCH PIPE EMBEDMENT ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3-INCH RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70 DEGREES OR GREATER THAN 110 DEGREES, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.
6. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7 FEET ON CENTER (MAXIMUM) ALONG THE BACKWALL.
7. THE FOLLOWING STANDARD PLANS ARE INCORPORATED HEREIN:
 - 308 MONOLITHIC CATCH BASIN CONNECTION
 - 309 CATCH BASIN REINFORCEMENT
 - 9-17 CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
 - 9-34 CATCH BASIN MANHOLE FRAME AND COVER

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

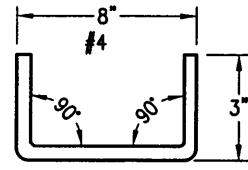
**CURB OPENING
CATCH BASIN**

DRAWN BY: L.PETERS
SCALE: NONE
DATE: 01/02

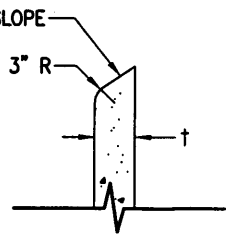
300-1
SHEET 2 OF 2



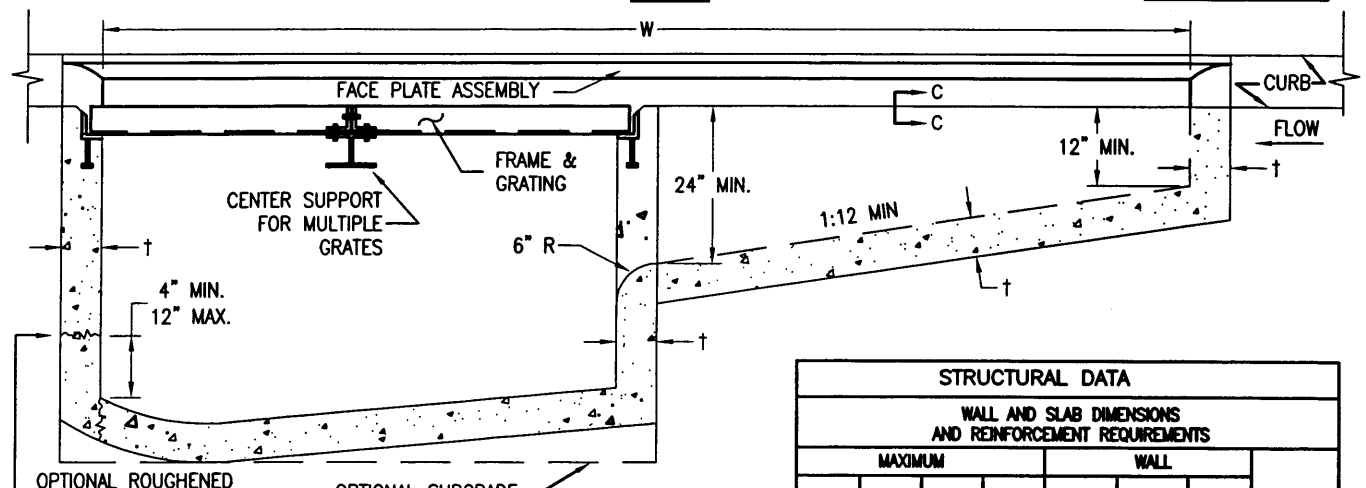
PLAN



DOWEL DETAIL



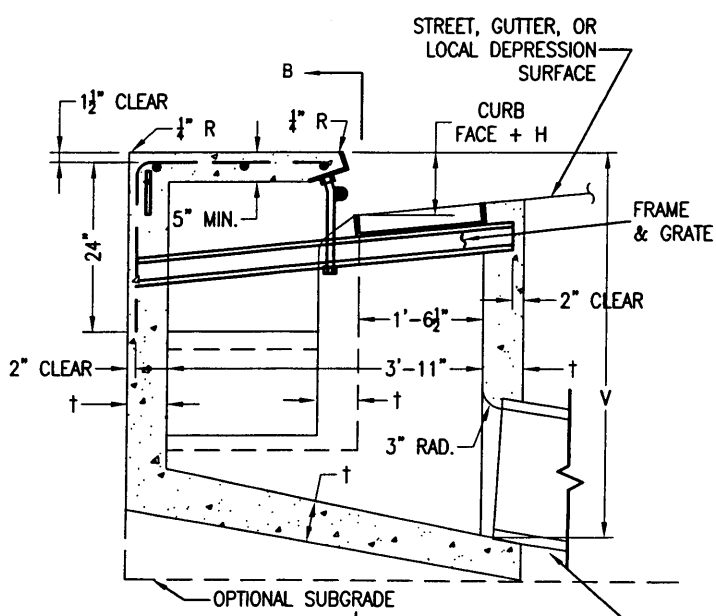
SECTION C-C



SECTION B-B

STRUCTURAL DATA										
WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS										
MAXIMUM				WALL			FLOOR			
W-FT.	GRATE	V-FT.	T-IN.	FRONT	REAR	END				
7	1	4	6	NO REINFORCEMENT REQUIRED						
7	1	8	8							
7	1	10	10							
14	3	4	6							
14	2	8	8							
14	2	10	10							
14	2	12	10							
28	6	4	6					REINFORCEMENT REQUIRED		
28	6	6	8							
28	7	4	6							
28	7	8	8							
28	7	10	10							
28	7	12	10							

FOR W > 28', V > 12', OR NO. OF GRATES > 7, SEE PROJECT PLANS



SECTION A-A

**SACRAMENTO COUNTY
PUBLIC WORKS AGENCY**

**CURB OPENING
CATCH BASIN**

DRAWN BY: L.PETERS
SCALE: NONE
DATE: 12/02

301-1
SHEET 1 OF 2

NOTES:

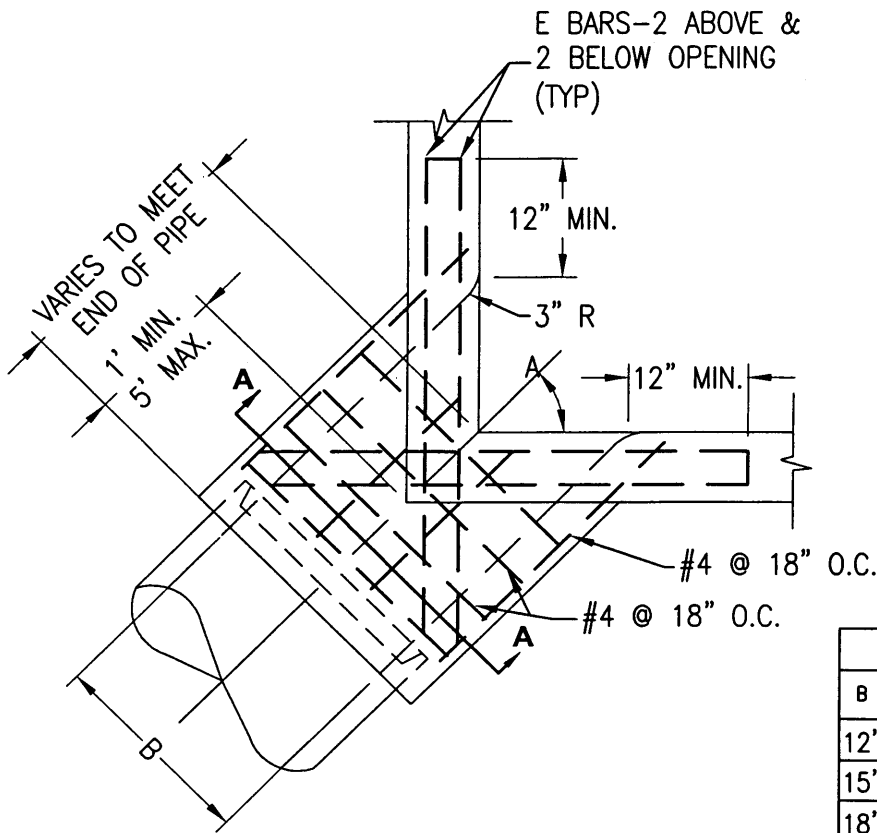
1. WHERE THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF EXISTING OR PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH SIDEWALK, THE TOP SLAB OF THE BASIN MAY BE POURED EITHER MONOLITHIC WITH THE SIDEWALK OR SEPARATELY, USING THE SAME CLASS OF CONCRETE AS IN THE BASIN. WHEN POURED MONOLITHICALLY, THE SIDEWALK SHALL BE PROVIDED WITH A WEAKENED PLANE OR A 1-INCH DEEP SAWCUT CONTINUOUSLY AROUND THE EXTERNAL PERIMETER OF THE CATCH BASIN WALLS, INCLUDING ACROSS THE FULL WIDTH OF THE SIDEWALK. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.
2. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
3. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH. FLOOR OF GRATING PORTION SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1:12 MINIMUM AND 1:3 MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
4. DIMENSIONS:
 - V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET. NOTED ON THE PROJECT PLANS.
 - V_t = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET. NOTED ON THE PROJECT PLANS.
 - H = NOTED ON THE PROJECT PLANS.
 - W = NOTED ON THE PROJECT PLANS.
 - W_g = 2 FEET 11-3/8 INCHES FOR ONE GRATING; ADD 3 FEET 5-3/8 INCHES FOR EACH ADDITIONAL GRATING. ONE GRATING IS REQUIRED UNLESS OTHERWISE SHOWN ON THE PROJECT PLANS.
 - A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.
5. PLACE CONNECTOR PIPES AS INDICATED ON THE PROJECT PLANS UNLESS OTHERWISE SPECIFIED. THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECESSARY TO INSURE MINIMUM 3-INCH PIPE EMBEDMENT ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3-INCH RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70 DEGREES OR GREATER THAN 110 DEGREES, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.
6. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7 FEET ON CENTER (MAXIMUM) ALONG THE BACKWALL.
7. THE FOLLOWING STANDARD PLANS ARE INCORPORATED HEREIN:
 - 308 MONOLITHIC CATCH BASIN CONNECTION
 - 309 CATCH BASIN REINFORCEMENT
 - 9-14,15 FRAME AND GRATING FOR CATCH BASINS
 - 9-16 CENTER SUPPORT ASSEMBLY FOR MULTIPLE GRATES
 - 9-17 CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

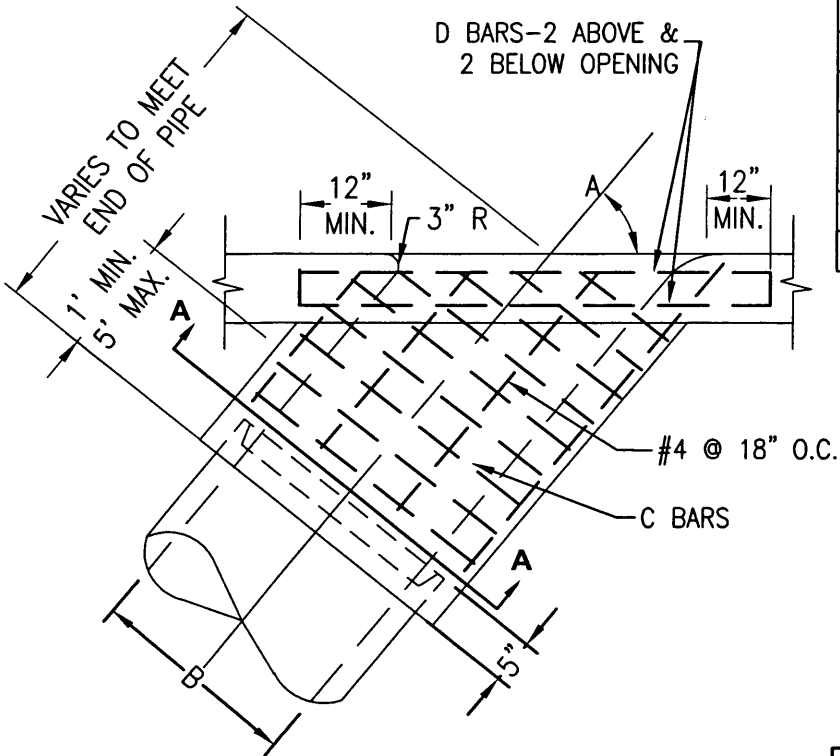
**CURB OPENING CATCH BASIN
WITH GRATING(S)
AND DEBRIS SKIMMER**

DRAWN BY: L.PETERS
SCALE: NONE
DATE: 01/02

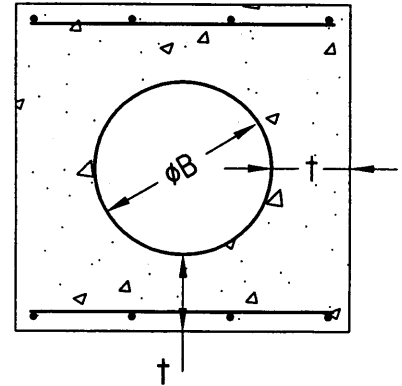
301-1
SHEET 2 OF 2



**PLAN
CORNER CONNECTION**



**PLAN
SIDE CONNECTION**



SECTION A-A

STRUCTURAL DATA							
B	t	C BARS	D&E BARS	B	t	C BARS	D&E BARS
12"	4"	#4 @ 6" O.C.	#5	42"	7 $\frac{1}{2}$ "	#5 @ 6" O.C.	#5
15"	4 $\frac{1}{4}$ "			45"	7 $\frac{3}{4}$ "		
18"	4 $\frac{1}{2}$ "			48"	8"		
21"	5"			51"	8 $\frac{1}{2}$ "		
24"	5 $\frac{1}{4}$ "			54"	9"		
27"	5 $\frac{1}{2}$ "			57"	9 $\frac{1}{4}$ "		
30"	6"			60"	9 $\frac{1}{2}$ "		
33"	6 $\frac{1}{4}$ "			63"	10"		
36"	6 $\frac{1}{2}$ "			66"	10 $\frac{1}{4}$ "		
39"	7"			69"	10 $\frac{3}{4}$ "		
				72"	11"		

FOR B GREATER THAN 72" SEE PROJECT PLAN

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

**MONOLITHIC CATCH
BASIN CONNECTION**

DRAWN BY: L.PETERS
SCALE: NONE
DATE: 12/02

308-0
SHEET 1 OF 2

NOTES:

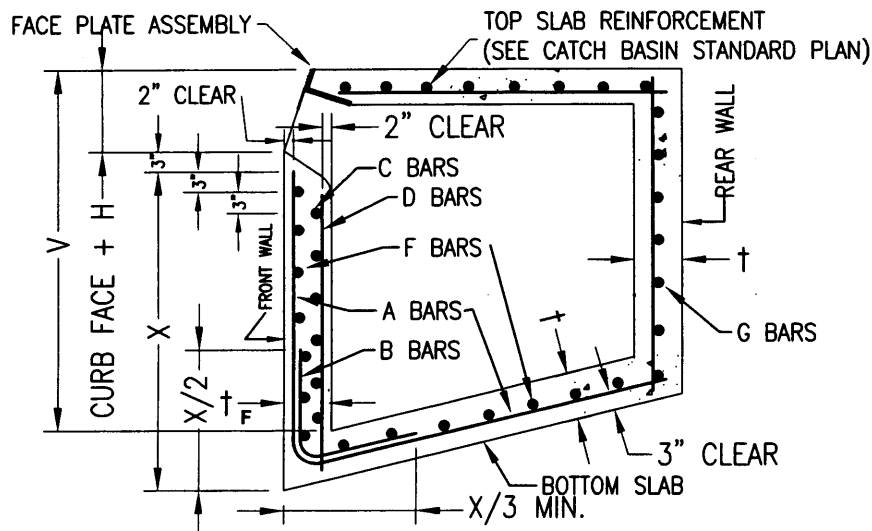
1. REINFORCING STEEL SHALL BE 1-1/2 INCHES CLEAR FROM FACE OF CONCRETE UNLESS OTHERWISE SHOWN.
2. REINFORCING STEEL FOR INSIDE FACE OF CATCH BASIN SHALL BE CUT AT CENTER OF OPENING AND BENT INTO WALLS OF MONOLITHIC CATCH BASIN CONNECTION. REINFORCING STEEL FOR OUTSIDE FACE OF CATCH BASIN SHALL BE CUT 2 INCHES CLEAR OF OPENING.
3. CONNECTION SHALL BE PLACED MONOLITHIC WITH CATCH BASIN. THE ROUNDED EDGE OF OUTLET SHALL BE CONSTRUCTED BY PLACING CONCRETE WITH THE SAME CLASS OF CONCRETE AS THE CATCH BASIN AGAINST A CURVED FORM WITH A RADIUS OF 3 INCHES.
4. CONNECTIONS SHALL BE CONSTRUCTED WHEN:
 - (A) PIPES INLET OR OUTLET THROUGH CORNER OF CATCH BASIN.
 - (B) ANGLE A FOR PIPES THROUGH 30 INCHES IN DIAMETER IS LESS THAN 70 DEGREES OR GREATER THAN 110 DEGREES.

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

**MONOLITHIC CATCH
BASIN CONNECTION**

DRAWN BY: L.PETERS
SCALE: NONE
DATE: 01/02

308-0
SHEET 2 OF 2

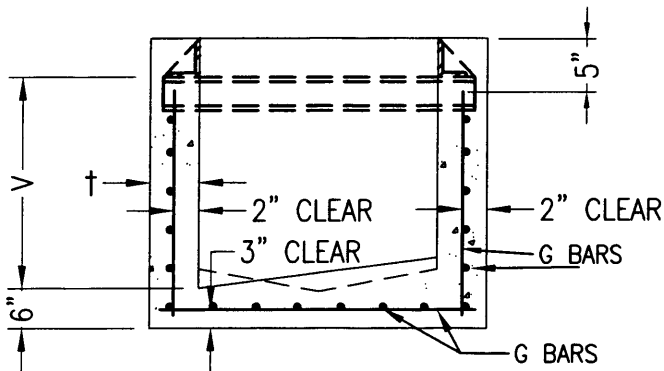


TYPICAL REINFORCEMENT DETAILS

MAX. W	MAX. V	†	† _F	A&B BARS	C BARS	D BARS	E BARS	F BARS	G BARS
3.5'	8'	6"	-	-	-	-	-	-	-
3.5'	12'	8"	8"	-	-	-	-	-	-
7'	6'	6"	6"	-	-	-	-	-	-
7'	12'	8"	8"	-	-	-	-	-	-
14'	4'	6"	6"	-	#4@12"	#4@18"	-	-	-
14'	8'	6"	8"	-	#4@12"	#4@18"	-	-	-
14'	12'	8"	10"	-	#4@6"	#4@18"	-	-	-
28'	4'	6"	6"	#4@24"	-	-	-	#4@18"	-
28'	5'	6"	8"	#4@24"	-	-	-	#4@18"	-
28'	6'	6"	8"	#4@18"	-	-	-	#4@18"	-
28'	7'	8"	8"	#4@17"	-	-	-	#4@18"	-
28'	8'	8"	8"	#4@13"	-	-	-	#4@18"	-
28'	9'	8"	10"	#4@15"	-	-	-	#4@18"	-
28'	10'	8"	10"	#4@12"	-	-	-	#4@18"	-
28'	11'	8"	10"	#5@15"	-	-	#4@10"	#4@18"	#4@18"
28'	12'	8"	10"	#6@18"	-	-	#4@9"	#4@18"	#4@18"

FOR W>28', V>12' OR B>4' SEE PROJECT PLANS

CURB OPENING CATCH BASIN REINFORCEMENT



TYPICAL REINFORCEMENT DETAILS

V(ft.)	†	SIDE AND END WALL STEEL
MAX. 4	6 (in.)	#4@10"
8	8	#4@6"
12	10	#5@6"

FOR V>12' SEE PROJECT PLANS

GRATING CATCH BASIN REINFORCEMENT

NOTE: UNLESS OTHERWISE SPECIFIED REINFORCEMENT FOR CURB OPENING AND GRATING CATCH BASIN SHALL TERMINATE 2 INCHES FROM FACE OF CONCRETE.

SACRAMENTO COUNTY
PUBLIC WORKS AGENCY

**CATCH BASIN
REINFORCEMENT**

DRAWN BY: L.PETERS
SCALE: NONE
DATE: 12/02

309-0
SHEET 1 OF 1