



## NOTIFICACIÓN A LOS RESIDENTES DE (Varios Lugares)

San Bernardino County Department of Public Works, a contratado con (Company name) para (type of work) la calle llamada (name of road) en la ciudad de (city). La construcción va a incluir (detailed description of work).

Este trabajo será hecho entre la fecha de (start date) y (end date). Las horas elegidas para hacer este trabajo serán entre las \_\_\_\_\_ de la mañana y \_\_\_\_\_ de la tarde de lunes a viernes.

Habrá letreros indicando que “No Habrá Estacionamiento” en la calle y especificando el horario cuando el trabajo será hecho. Durante el tiempo que estaremos trabajando en la calle, la entrada para el público será limitada y por esta razón pedimos lo siguiente:

1. No estacionen sus vehículos en la calle.
2. No permita que corre el agua hacia la calle.
3. No permita que los niños jueguen en la calle.
4. No ponga los botes de basura o cualquier otra basura en la calle.

Lamentamos la inconveniencia que causara este trabajo y les agradecemos por su cooperación y asistencia en el mejoramiento de su calle.

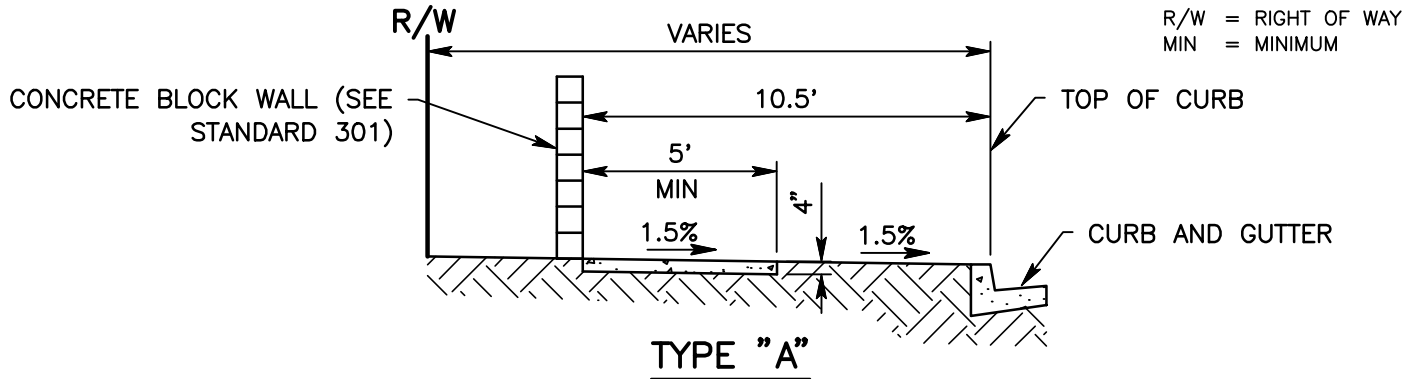
**Muchas Gracias.**

**(Company name)**

**(Company contact name)**

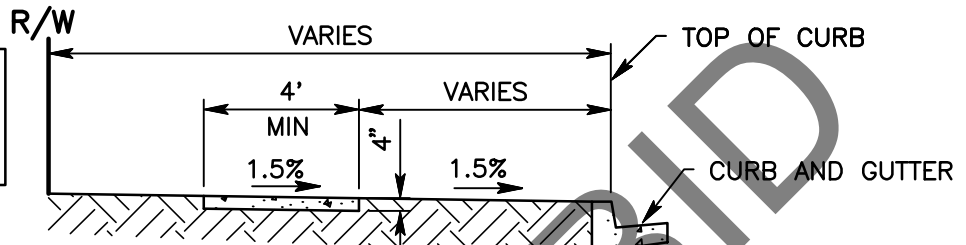
**(Company phone number)**

**Si necesita asistencia favor de hablar al Public Works, (909) 387-7920.**

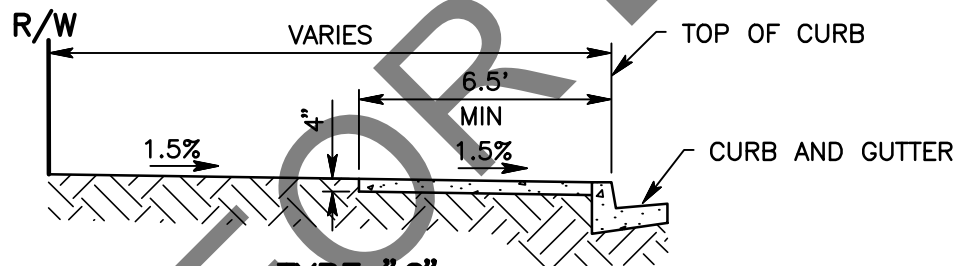


**TYPE "A"**

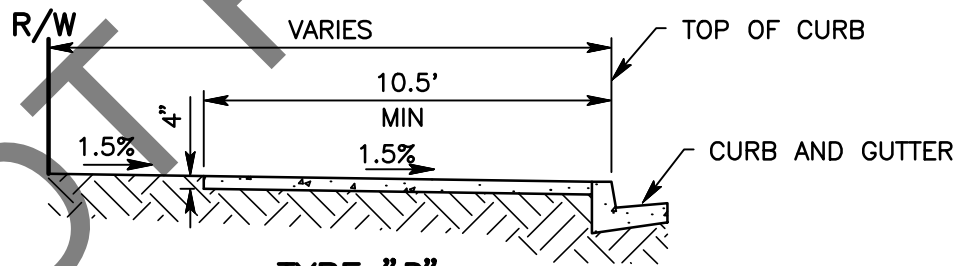
FOR 4' SIDEWALK, PLACE 5'x5' PAD FOR PASSING AT EVERY 200' DISTANCE MAXIMUM.



**TYPE "B"**



**TYPE "C"**



**TYPE "D"**

**NOTES:**

1. TYPE "C" SIDEWALKS ADJACENT TO CURB SHALL ONLY BE USED ON LOCAL AND COLLECTOR STREETS AND ONLY UPON APPROVAL OF THE TRANSPORTATION DEPARTMENT.
2. SIDEWALK SHALL BE CONSTRUCTED OF 4" THICK MINOR CONCRETE.
3. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED ON TEN FEET (10') SPACING.
4. SCORING SIDEWALK WILL BE PERMITTED.
5. IN EXPANSIVE SOIL AREAS, REFER TO SECTION 73 OF THE CALTRANS STANDARD SPECIFICATIONS.



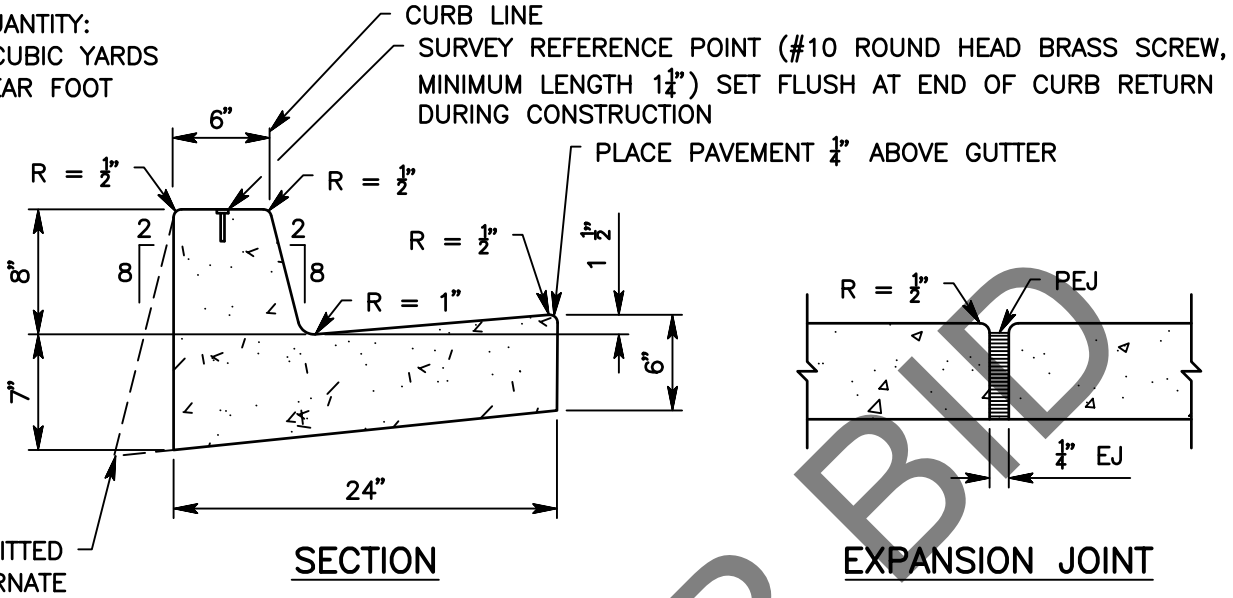
**SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS**

**SIDEWALK**

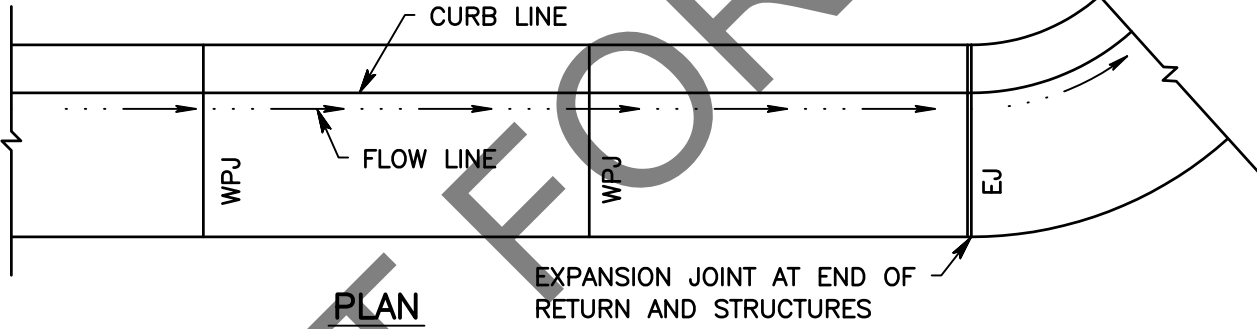
BRENDON P. BIGGS, PE  
DIRECTOR OF PUBLIC  
WORKS/ROAD  
COMMISSIONER

R = RADIUS  
 EJ = EXPANSION JOINT  
 WPJ = WEAKENED PLANE JOINT  
 PEJ = PREFORMED EXPANSION JOINT FILLER ASTM D 1751

CURB QUANTITY:  
 0.0535 CUBIC YARDS  
 PER LINEAR FOOT



PERMITTED ALTERNATE



NOTES:

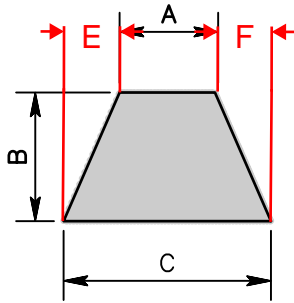
1. CURB AND GUTTER SHALL BE CONSTRUCTED MONOLITHICALLY OF MINOR CONCRETE.
2. WIDTHS OF STANDARD STREET SECTIONS SHOWN ON PLANS ARE TO CURB LINE UNLESS OTHERWISE INDICATED.
3. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT TEN FOOT (10') INTERVALS, EXCEPT THAT THE INTERVAL SHALL BE VARIED TO ALLOW MATCHING OF JOINTS IN ADJACENT EXISTING IMPROVEMENTS.
4. CURING COMPOUND SHALL BE SPRAYED UNIFORMLY ON EXPOSED SURFACES.
5. WHEN CURB AND GUTTER IS PLACED BY AN EXTRUSION MACHINE, MINOR FINISHING MAY BE DONE TO PROVIDE AN ACCEPTABLE FINISH AND THE WEAKENED PLANE JOINTS MAY BE SAWCUT.
6. PEJ FILLER SHALL BE APPLIED IN THE WHOLE CROSS SECTION OF THE CURB AND GUTTER.
7. WHEN IN FRONT OF A CURB RAMP, USE GUTTER PAN TRANSITION ON THE CURRENT CALTRANS STANDARD PLAN A88A.



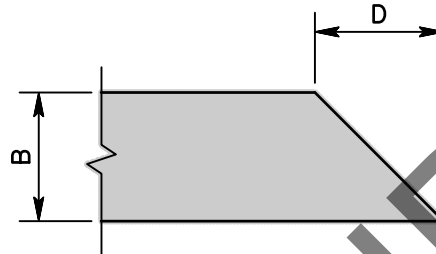
SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS

8" CURB AND GUTTER

BRENDON P. BIGGS, PE  
 DIRECTOR OF PUBLIC WORKS/ROAD COMMISSIONER



SECTION



END CUT OFF

	A	B	C	D	E	F
6" ASPHALT DIKE	0.5'	0.5'	1.08'	0.5'	0.29'	0.29'
8" ASPHALT DIKE	0.5'	0.67'	1.08'	0.67'	0.29'	0.29'
12" ASPHALT DIKE	0.65'	1'	1.08'	1'	0.43'	0'

NOTES:

1. DIKE SHALL BE CONSTRUCTED OF TYPE A ASPHALT CONCRETE.
2. PAINT BINDER SHALL BE PLACED ON EXISTING ASPHALT CONCRETE PAVEMENT PRIOR TO THE INSTALLATION OF THE DIKE.



SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS

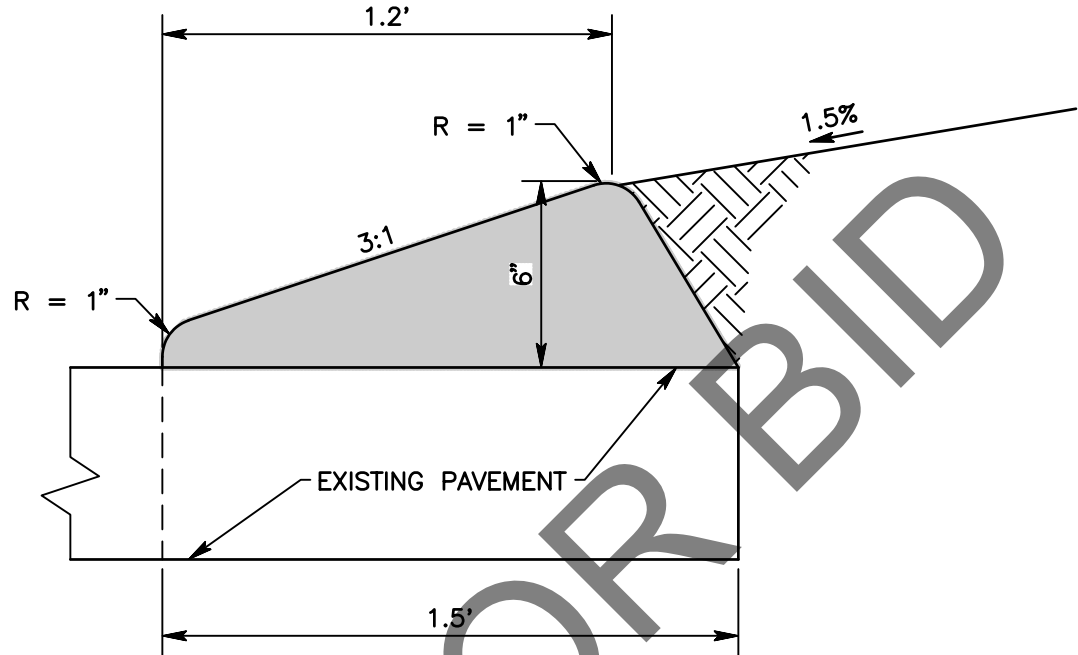
**ASPHALT CONCRETE DIKE**

BRENDON P. BIGGS, PE  
DIRECTOR OF PUBLIC  
WORKS/ROAD  
COMMISSIONER

117

(MODIFIED)

R = RADIUS



TYPICAL SECTION

NOTES:

- 1. DIKE SHALL BE CONSTRUCTED OF TYPE A ASPHALT CONCRETE.
- 2. PAINT BINDER SHALL BE PLACED ON EXISTING ASPHALT CONCRETE PAVEMENT PRIOR TO THE INSTALLATION OF THE DIKE.



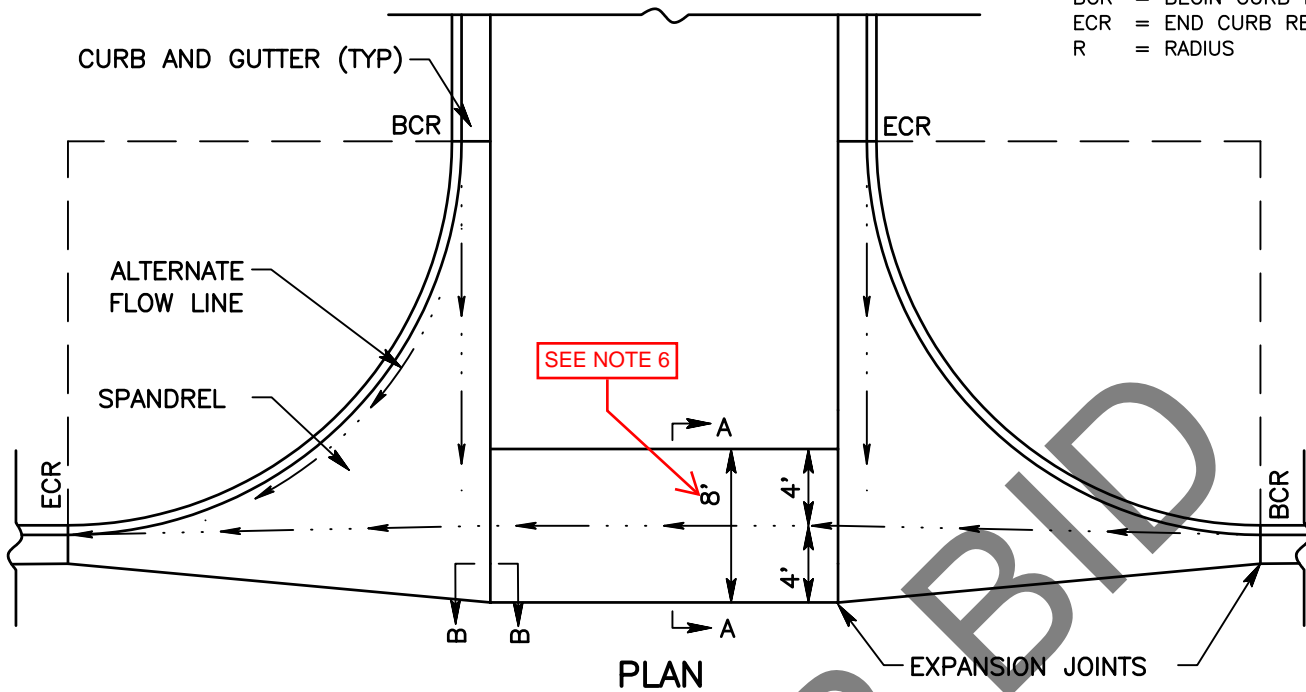
SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS

**TRAVERSABLE DIKE**

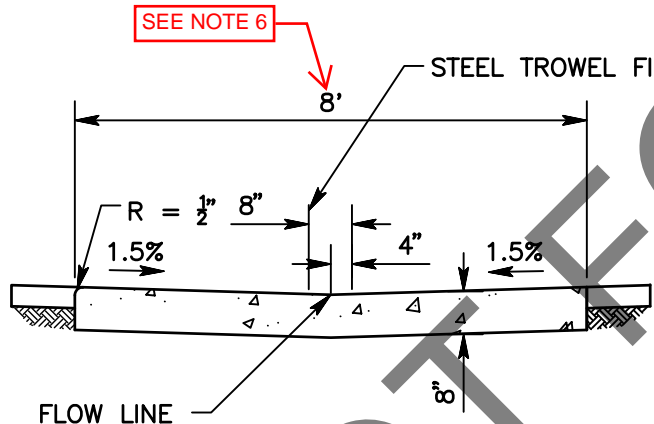
BRENDON P. BIGGS, PE  
DIRECTOR OF PUBLIC  
WORKS/ROAD  
COMMISSIONER

117A

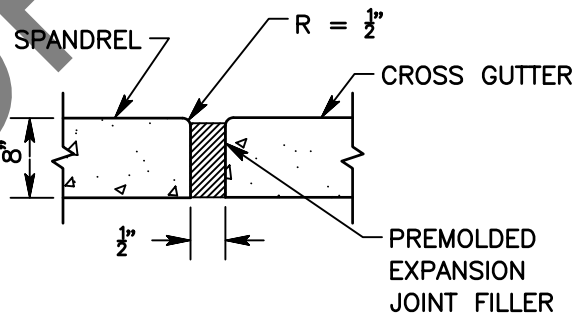
BCR = BEGIN CURB RETURN  
 ECR = END CURB RETURN  
 R = RADIUS



PLAN



SECTION A-A



SECTION B-B

NOTES:

1. CROSS GUTTER SHALL BE CONSTRUCTED OF MINOR CONCRETE.
2. THE STRAIGHT GRADE BETWEEN BCR'S MAY BE ALTERED ON AN EXCESSIVE GRADE.
3. A 0.3' MINIMUM FALL IS REQUIRED BETWEEN BCR AND ECR, AND CROSS GUTTER FLOW LINE.
4. SPANDREL SHALL BE 8" THICKNESS MINOR CONCRETE.
5. VARIABLE CURB FACE ALLOWED FOR DRAINAGE PURPOSES
6. WITH THE EXCEPTION AS SHOWN ON SHEET 16 THE WIDTH OF THE CROSS GUTTER SHALL BE 10'+/-.

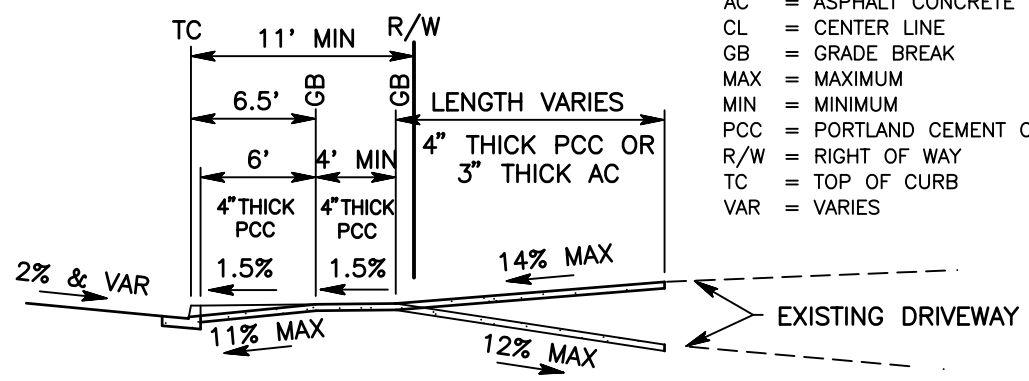


SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS

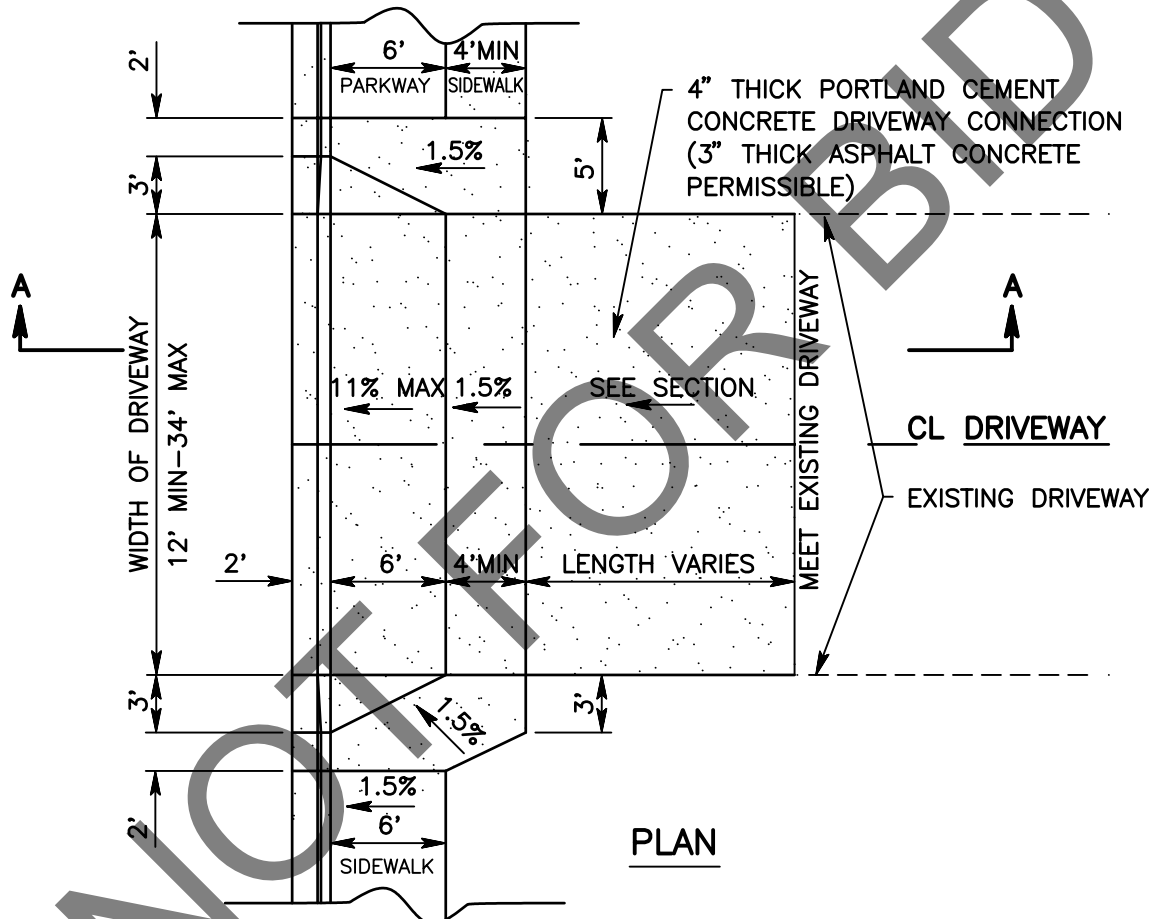
CROSS GUTTER

BRENDON P. BIGGS, PE  
 DIRECTOR OF PUBLIC  
 WORKS/ROAD  
 COMMISSIONER

AC = ASPHALT CONCRETE  
 CL = CENTER LINE  
 GB = GRADE BREAK  
 MAX = MAXIMUM  
 MIN = MINIMUM  
 PCC = PORTLAND CEMENT CONCRETE  
 R/W = RIGHT OF WAY  
 TC = TOP OF CURB  
 VAR = VARIES



**SECTION A-A**



**NOTES:**

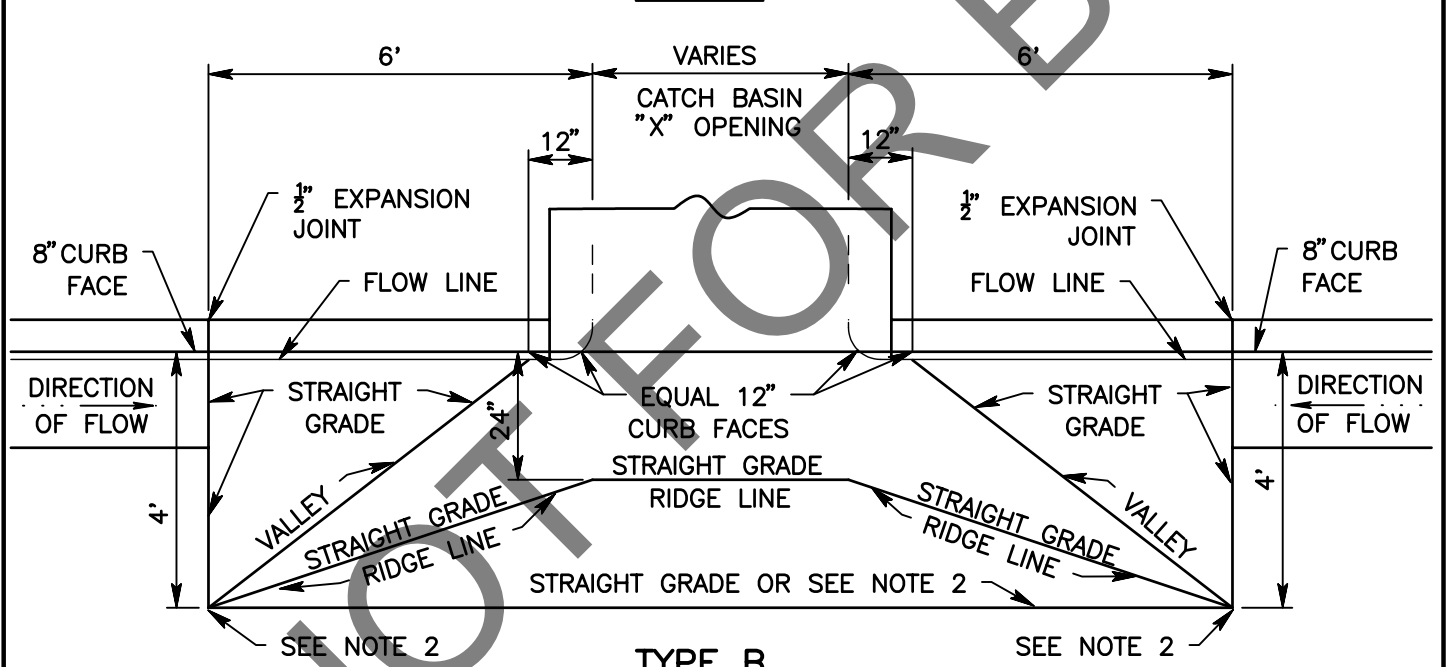
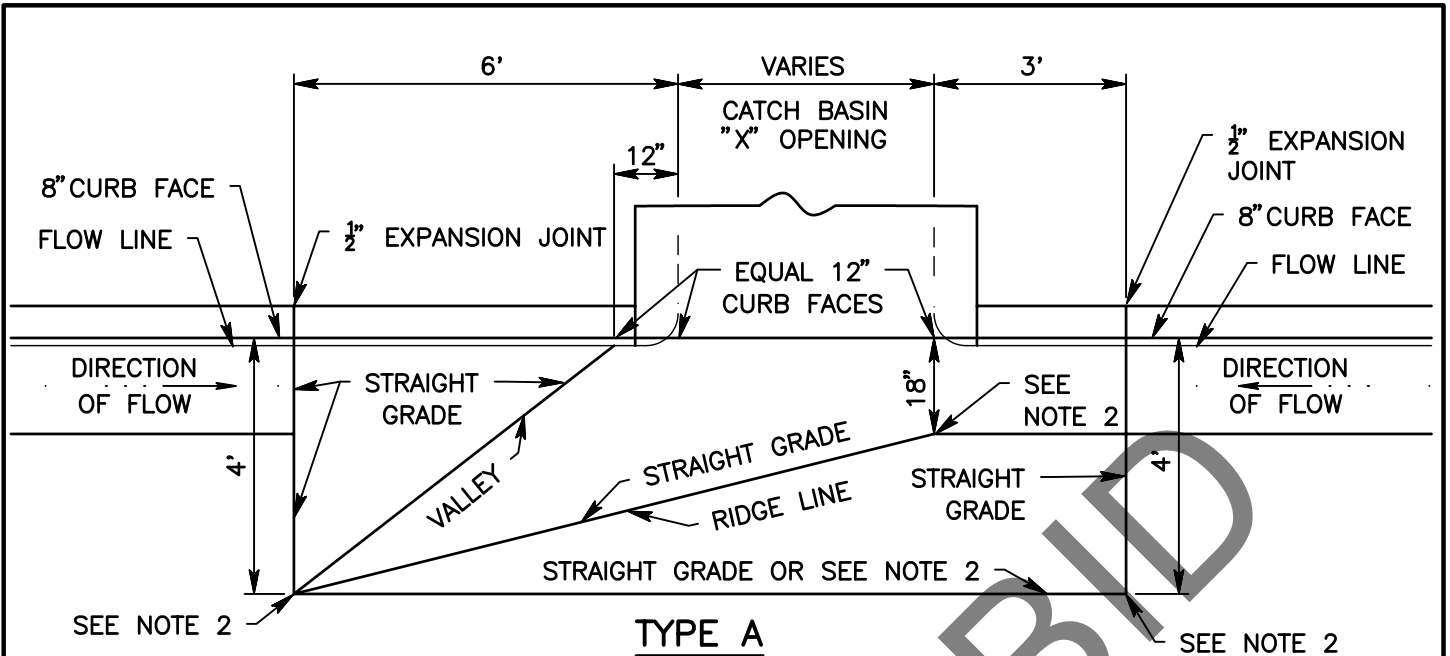
1. FOR APPLICABLE NOTES AND DRIVEWAY REQUIREMENTS SEE STANDARD 130.
2. TO CONSTRUCT A DEPRESSION IN EXISTING CURB AND GUTTER:
  - A) SAWCUT AND REMOVE FOR THE NECESSARY WIDTH.
  - B) REMOVE AND RECONSTRUCT TO THE NEAREST JOINT.
3. A DRIVEWAY APPROACH MUST BE CONSTRUCTED WITH EACH CURB DEPRESSION.
4. SURFACING SHALL BE PORTLAND CEMENT CONCRETE (MINOR CONCRETE) 4" THICK AND HAVE A BROOM FINISH.



**SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS**

**RESIDENTIAL DRIVEWAY APPROACH WITH CURB**

BRENDON P. BIGGS, PE  
 DIRECTOR OF PUBLIC WORKS/ROAD COMMISSIONER



NOTES:

1. LOCAL DEPRESSION SHALL BE CONSTRUCTED OF 8" THICK MINOR CONCRETE.
2. ELEVATIONS SHALL BE SHOWN ON CONSTRUCTION PLANS. THE OUTER EDGE OF THE LOCAL DEPRESSION SHALL CONFORM TO FINISHED STREET SURFACE.
3. SPECIAL DETAILS GOVERNING THE CONSTRUCTION ON A VERTICAL CURVE SHALL BE SHOWN ON CONSTRUCTION PLANS.
4. CURB AND GUTTER SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTING TOP OF CATCH BASIN AND CURB TRANSITIONS.



SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS

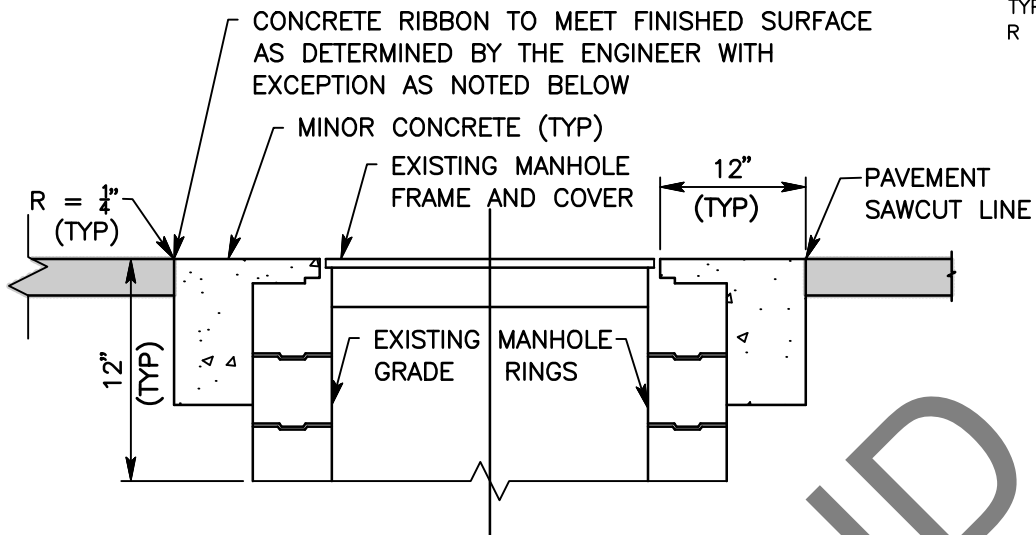
LOCAL DEPRESSION

BRENDON P. BIGGS, PE  
DIRECTOR OF PUBLIC  
WORKS/ROAD  
COMMISSIONER

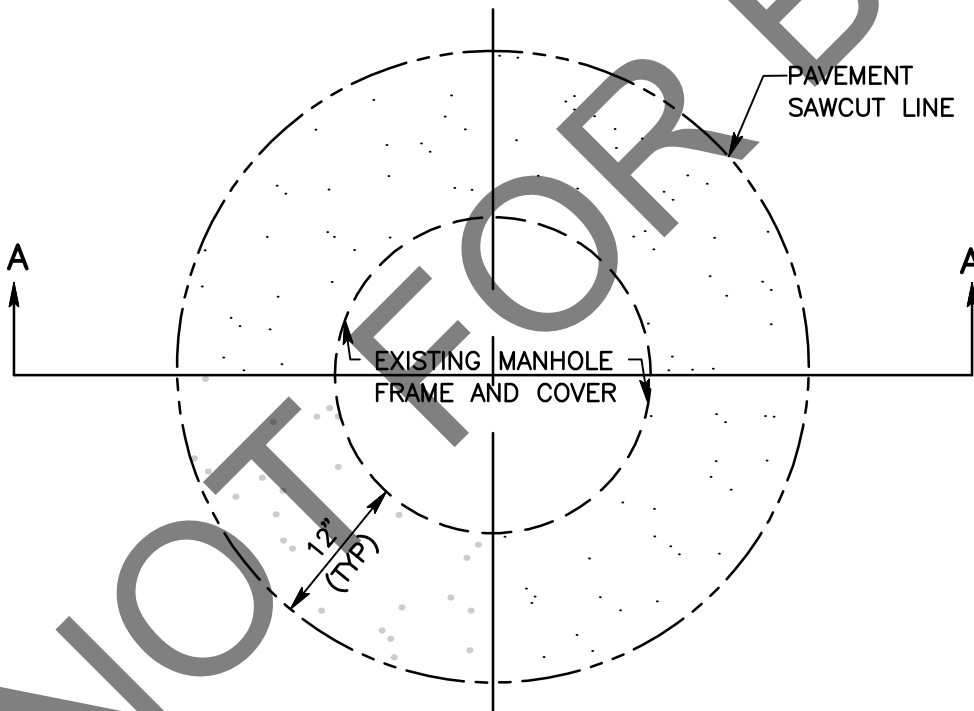
203B



TYP = TYPICAL  
R = RADIUS



**SECTION A-A**



**PLAN**

**NOTES:**

1. IN MOUNTAIN AREAS, RECESS FRAME 1/2" BELOW STREET SURFACE OR GRADE FOR SNOW PLOW OPERATION IN COMPLIANCE WITH SECTION 6.11 "MANHOLE RECONSTRUCTION" OF THE LATEST EDITION OF GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS.



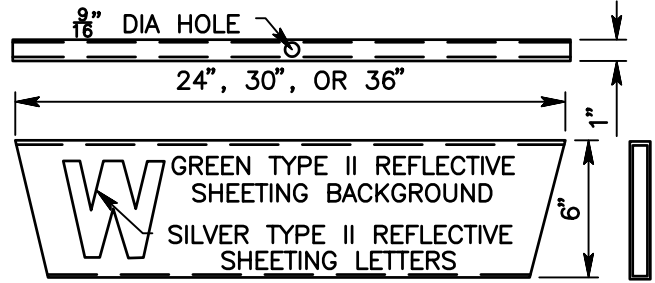
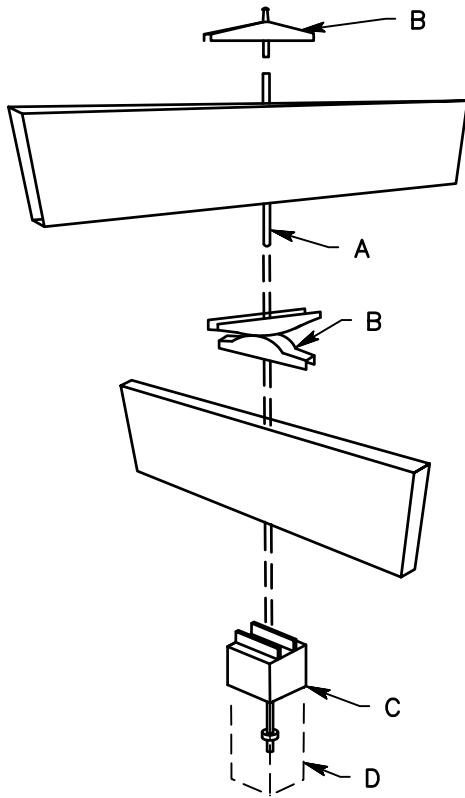
**SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS**

**MANHOLE (CONCRETE RIBBON)**

BRENDON P. BIGGS, PE  
DIRECTOR OF PUBLIC  
WORKS/ROAD  
COMMISSIONER

**205B**

DIA = DIAMETER  
 FHWA = FEDERAL HIGHWAY  
 ADMINISTRATION



**ASSEMBLY**

- A  $\frac{5}{8}$ " x 15" CADMIUM PLATED CARRIAGE BOLT.
- B ORNAMENTAL TOP SHALL BE 14 GAGE ANODIZED ALUMINUM. CENTER CROSS SADDLE SHALL BE ONE PIECE CAST ANODIZED ALUMINUM.
- C ONE PIECE 2" CAST ANODIZED ALUMINUM POST CAP WITH FOUR  $\frac{3}{8}$ " STAINLESS STEEL ALLEN HEAD SET SCREWS.
- D 2" SQUARE STEEL POST 8'-12' LONG INSTALLED WITH A DRIVEN 2  $\frac{1}{2}$ " SQUARE STEEL BREAKAWAY BASE 3' LONG AS PER STANDARD 303B.

DESIGN: EACH FOUR-WAY UNTIL SHALL CONSIST OF TWO DOUBLE FACE SIGNS WITH STREET NAMES MOUNTED AT RIGHT ANGLES WITH CENTER ROD ASSEMBLY.

BRACKET ASSEMBLY: THE POST CAP, ORNAMENT, AND CENTER ROD ASSEMBLY SHALL BE MADE TO MOUNT ON 2" SQUARE GALVANIZED POST. THE CENTER ROD SHALL BE A  $\frac{5}{8}$ " CADMIUM PLATED CARRIAGE BOLT. HEAD OF BOLT SHALL FORM TOP OF ORNAMENT. BOLT SHALL EXTEND THROUGH SIGNS AND FASTEN WITH NUT INSIDE OF POST CAP. POST CAP SHALL BE DEEPLY GROOVED TO SECURELY HOLD SIGN FROM TWISTING AND SHALL BE SECURED TO THE PIPE WITH THREE  $\frac{3}{8}$ " STAINLESS STEEL ALLEN HEAD SET SCREWS.

MATERIAL: SIGN SHALL BE GREEN ANODIZED ALUMINUM EXTRUSION OF 6063T - 4 ALLOY MATERIAL. ALL ANODIZING SHALL CONFORM WITH ALUMILITE SPECIFICATIONS #215 - R1.

FINISH: SIGN FACES SHALL BE FHWA TYPE II REFLECTIVE SHEETING. THE TRANSPARENT SCREEN PROCESS COLOR SHALL BE AS RECOMMENDED BY THE REFLECTIVE SHEETING MANUFACTURER. APPLICATION OF THE REFLECTIVE SHEETING TO THE SIGN SHALL BE BY METHODS AS APPROVED BY THE REFLECTIVE SHEETING MANUFACTURER.

LETTERING: STREET NAMES SHALL BE 4" HIGH. EACH NAME SHALL BE INDIVIDUALLY LAID OUT TO FIT EITHER THE 24" OR 30" SPACE. THE LETTERS SHALL BE OF THE ROUNDED TYPE STYLE CONFORMING WITH THE STANDARD ALPHABET FOR HIGHWAY SIGNS DESIGNED BY THE U.S. PUBLIC ROADS ADMINISTRATION. LETTERS SHALL BE FHWA TYPE II REFLECTIVE SHEETING.



**SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS**

**STREET MARKER**

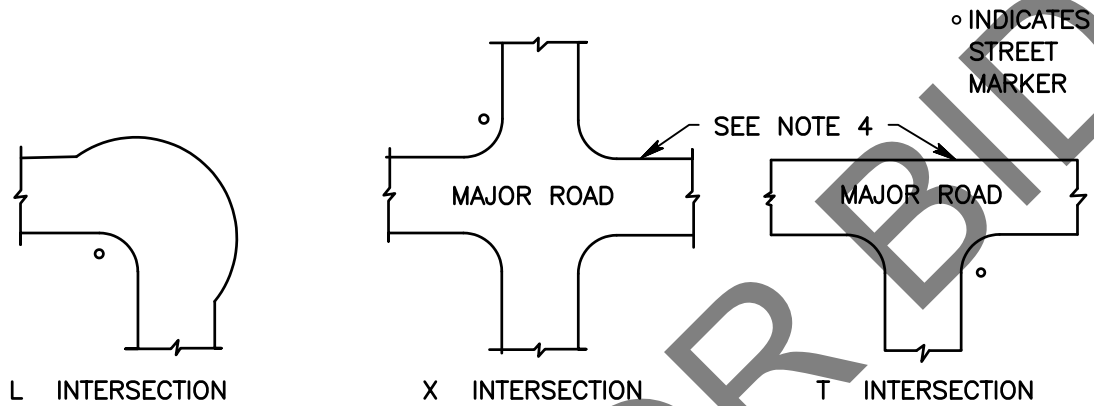
BRENDON P. BIGGS, PE  
 DIRECTOR OF PUBLIC  
 WORKS/ROAD  
 COMMISSIONER

**303**

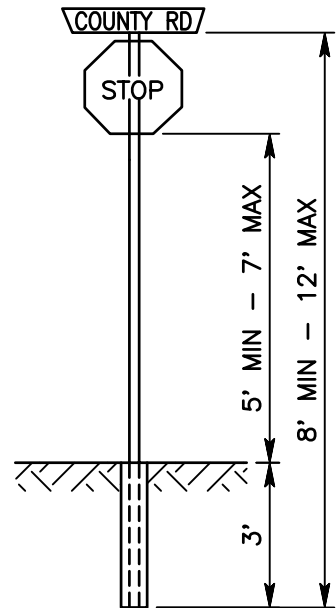
R/W = RIGHT OF WAY  
 MAX = MAXIMUM  
 MIN = MINIMUM



PLAN



TYPICAL LOCATION



ELEVATION

NOTES:

1. MARKER TO BE SET ON COUNTY RIGHT OF WAY.
2. LOCATION OF MARKER SHOWN IS APPROXIMATE.
3. MARKERS TO BE VISIBLE FOR A DISTANCE OF 150 FEET.
4. IF EITHER ROAD IS DIVIDED INTO 4 LANES OR MORE (MAJOR ROAD), ADDITIONAL MARKERS WILL BE REQUIRED.
5. STREET MARKERS LOCATED AT MAJOR ROADS WILL BE MOUNTED ON 12 FOOT POSTS TO ACCOMMODATE A STOP SIGN.

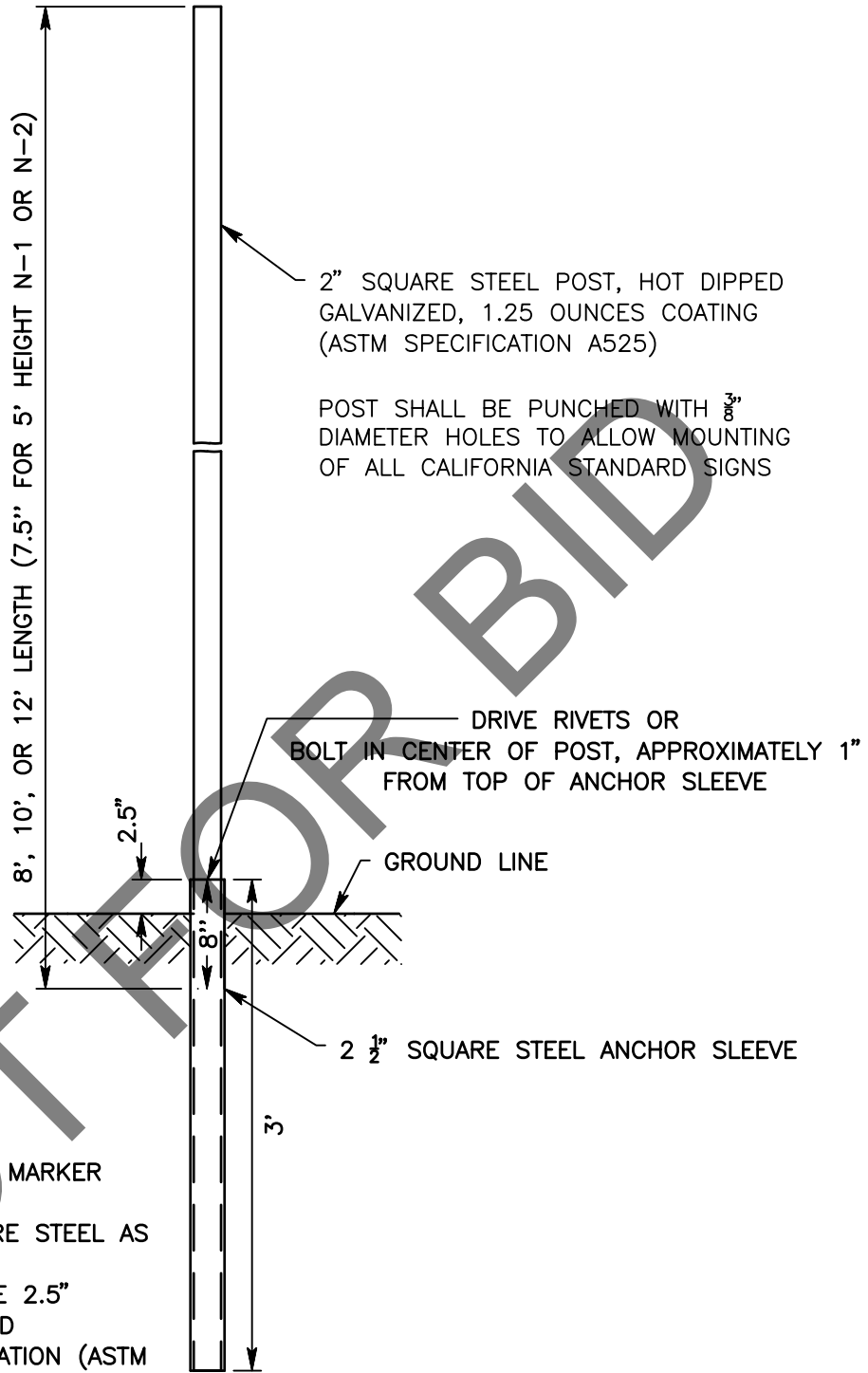


SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS

**STREET MARKER  
 (TYPICAL LOCATION)**

BRENDON P. BIGGS, PE  
 DIRECTOR OF PUBLIC  
 WORKS/ROAD  
 COMMISSIONER

303A



NOTES:

1. SEE STANDARD 303A FOR MARKER LOCATIONS.
2. POST SHALL BE 2" SQUARE STEEL AS SHOWN AND STATED.
3. ANCHOR SLEEVE SHALL BE 2.5" SQUARE STEEL HOT DIPPED GALVANIZED AFTER FABRICATION (ASTM SPECIFICATION A-123).
4. SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 303.

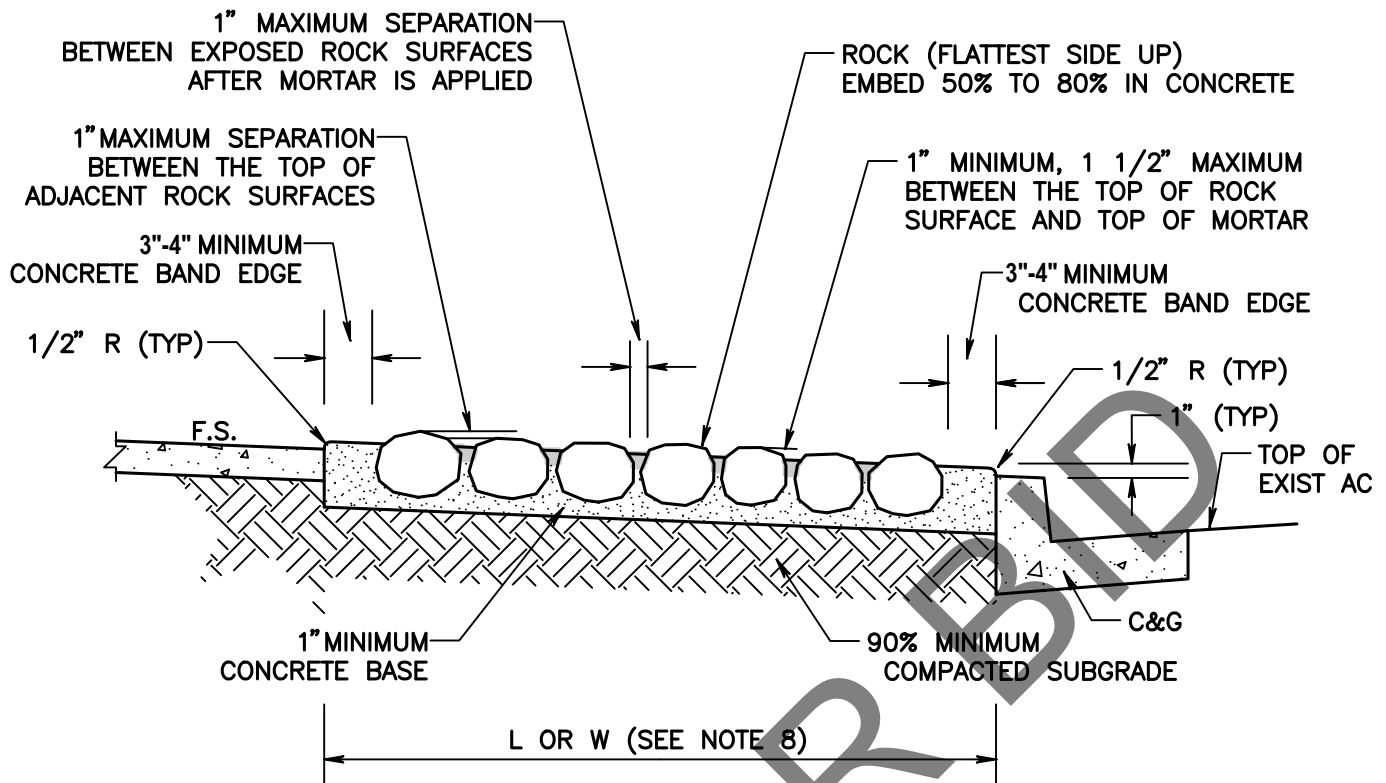


SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS

STREET MARKER INSTALLATION

BRENDON P. BIGGS, PE  
DIRECTOR OF PUBLIC WORKS/ROAD COMMISSIONER

303B



## ROCK BLANKET DETAIL (TYP)

NTS

1. ROCK SIZES UNLESS OTHERWISE SPECIFIED SHALL BE: COBBLESTONES MAX 8" TO MIN 6" DIAMETER.
2. FINAL RESTING POSITION OF ALL ROCKS SHALL BE APPROVED BY THE ENGINEER.
3. ROCKS SHALL BE SMOOTH, ROUNDED, FREE OF OBJECTABLE DISFIGURATIONS AND IRON CONTENT AS APPROVED BY THE ENGINEER.
4. CONCRETE SHALL BE MINOR CONCRETE.
5. WIRE BRUSH ALL JOINTS AFTER THE INSTALLATION OF THE ROCKS. AFTER CONCRETE HAS SET, CLEAN THE RESIDUE FROM SURFACES OF ROCKS.
6. NO JOINTS GREATER THAN 1" BETWEEN ROCKS WILL BE ACCEPTABLE. 4" FILLER ROCKS WILL BE ACCEPTED TO MAINTAIN THE 1" JOINT.
7. WHERE ROCK BORDERS TURF AREA, PLACE 1" CONCRETE EDGE BETWEEN BACK OF ROCK AND TURF.
8. FOR LENGTH (L) AND WIDTH (W) DIMENSIONS REFER TO THE CONSTRUCTION PLAN.

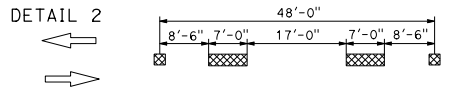
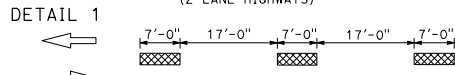
SAN BERNARDINO COUNTY TRANS. DEPT.

DESIGN DIVISION

**GROUTED ROCK  
TREATMENT**

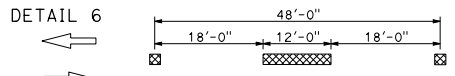
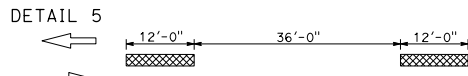
SPEC  
DWG  
I

### CENTERLINES (2 LANE HIGHWAYS)



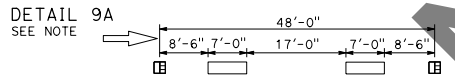
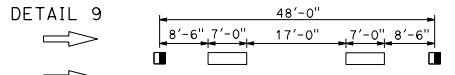
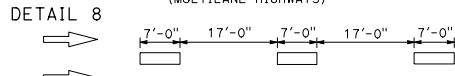
~~DETAIL 3~~      DETAIL 3 DELETED

~~DETAIL 4~~      DETAIL 4 DELETED

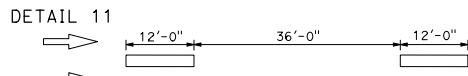


~~DETAIL 7~~      DETAIL 7 DELETED

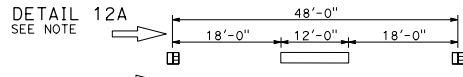
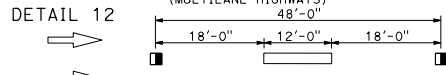
### LANELINES (MULTILANE HIGHWAYS)



~~DETAIL 10~~      DETAIL 10 DELETED



### LANELINES (Cont) (MULTILANE HIGHWAYS)

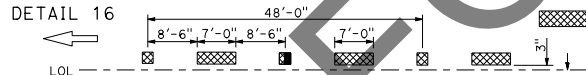
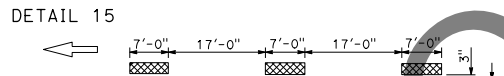


~~DETAIL 13~~      DETAIL 13 DELETED

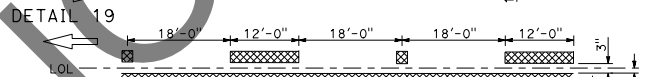
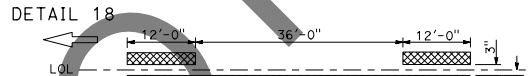
~~DETAIL 14~~      DETAIL 14 DELETED

~~DETAIL 14A~~      DETAIL 14A DELETED

### NO PASSING ZONES-ONE DIRECTION

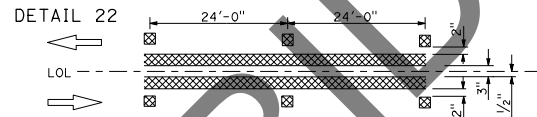
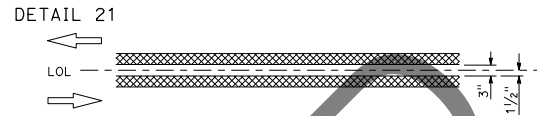


~~DETAIL 17~~      DETAIL 17 DELETED



~~DETAIL 20~~      DETAIL 20 DELETED

### NO PASSING ZONES-TWO DIRECTION



~~DETAIL 23~~      DETAIL 23 DELETED

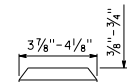
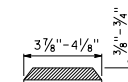
#### LEGEND

##### MARKERS

- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE D TWO-WAY YELLOW RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- TYPE H ONE-WAY YELLOW RETROREFLECTIVE

##### LINES

- 6" WHITE
- 6" YELLOW



TYPE C AND TYPE D

TYPE G AND TYPE H

RETROREFLECTIVE FACE

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKERS  
AND TRAFFIC LINES  
TYPICAL DETAILS**

NO SCALE

**A20A**

NOTE:  
FOR FREEWAY APPLICATION ONLY

D18+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Atifa Ferouz  
REGISTERED CIVIL ENGINEER

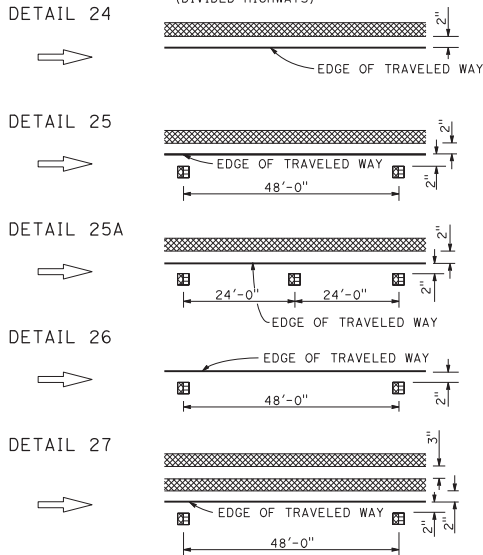
May 31, 2018  
PLANS APPROVAL DATE

Atifa Ferouz  
No. C80402  
EXP. 3-31-19  
CIVIL  
STATE OF CALIFORNIA

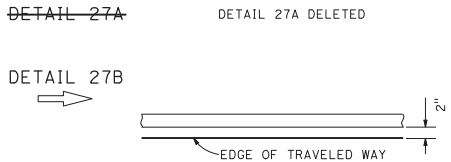
THE STATE OF CALIFORNIA OR ITS OFFICERS  
OR AGENTS SHALL NOT BE RESPONSIBLE FOR  
THE ACCURACY OR COMPLETENESS OF SCANNED  
COPIES OF THIS PLAN SHEET.

### LEFT EDGELINES

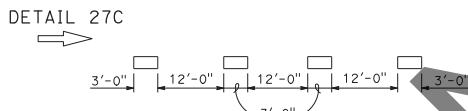
(DIVIDED HIGHWAYS)



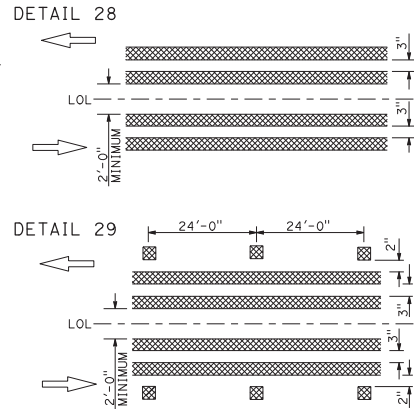
### RIGHT EDGELINES



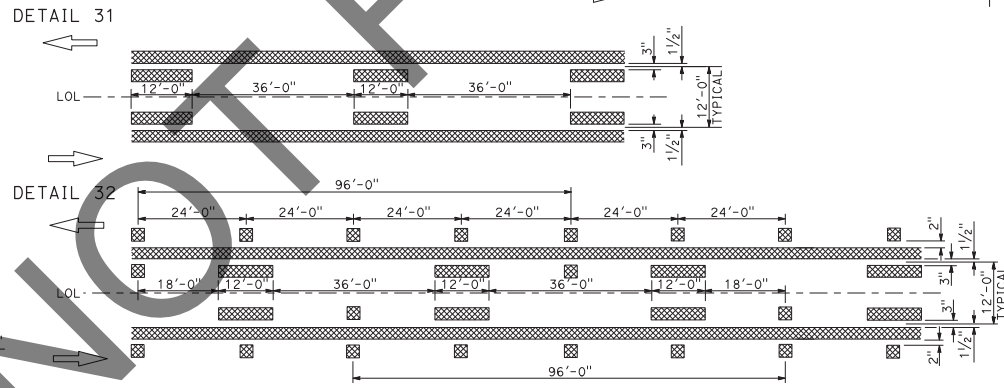
### RIGHT EDGELINE EXTENSION THROUGH INTERSECTIONS



### MEDIAN ISLANDS



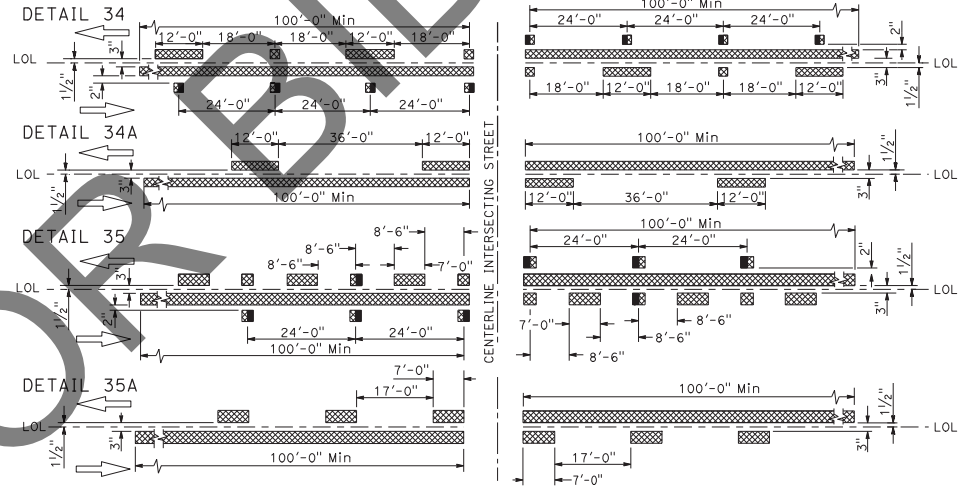
### TWO-WAY LEFT TURN LANES



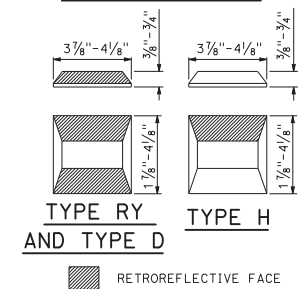
### LEGEND

- MARKERS**
- TYPE D: TWO-WAY YELLOW RETROREFLECTIVE
  - TYPE H: ONE-WAY YELLOW RETROREFLECTIVE
  - TYPE RY: RED-YELLOW RETROREFLECTIVE
- LINES**
- 6" WHITE
  - 6" YELLOW

### INTERSECTION TREATMENTS



### MARKER DETAILS



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

A20B

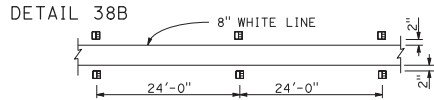
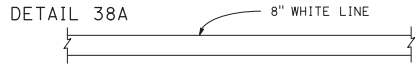
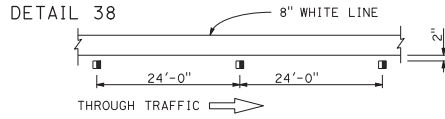
D18+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
------	--------	-------	--------------------------	-----------	--------------

Atifa Ferouz  
REGISTERED CIVIL ENGINEER  
No. C80402  
EXP. 3-31-19  
CIVIL

PLANS APPROVAL DATE  
May 31, 2018

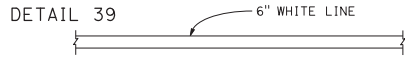
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

### CHANNELIZING LINE

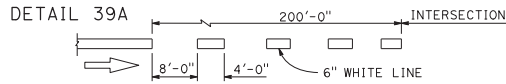


DETAIL 38C DELETED

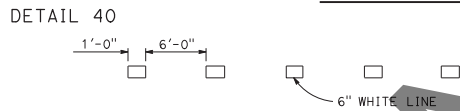
### BIKE LANE LINE



### INTERSECTION LINE BIKE LANE

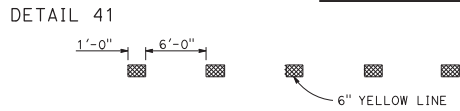


### LANE LINE EXTENSIONS THROUGH INTERSECTIONS



DETAIL 40A DELETED

### CENTER LINE EXTENSIONS THROUGH INTERSECTIONS



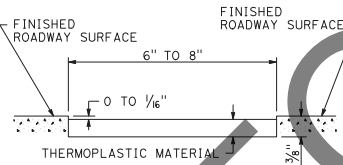
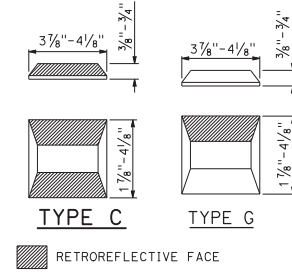
DETAIL 41A DELETED

### LEGEND

#### MARKERS

- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- 6" YELLOW LINE

### MARKER DETAILS

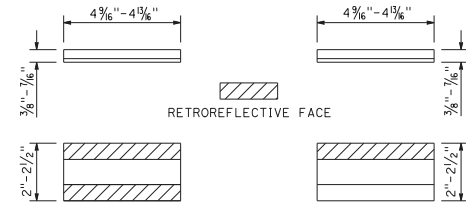
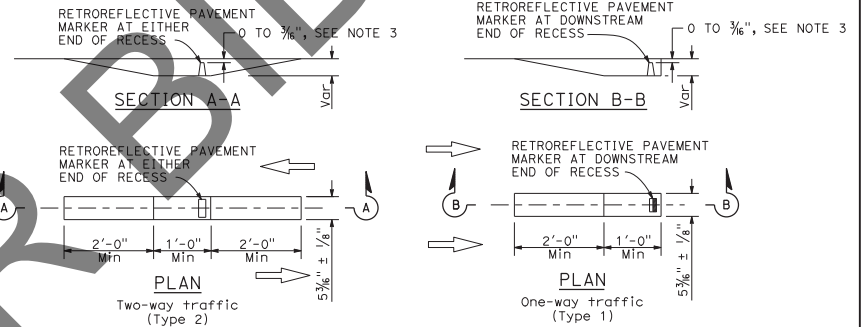


### DETAIL FOR RECESSED THERMOPLASTIC TRAFFIC STRIPE

#### RECESSED THERMOPLASTIC NOTES

- A. See typical traffic line details for pavement marking patterns.
- B. The top of the thermoplastic installed in recessed pavement shall be 0 to 1/16" below the pavement surface.

### RECESS DETAIL FOR RETROREFLECTIVE PAVEMENT MARKER



#### RECESSED MARKER NOTES:

- 1. See typical traffic line details for marker patterns to be used with recessed pavement markers. Detail 14A requires a Type 2 recess.
- 2. The retroreflective pavement markers shown for recessed installations are not to be used for non-recessed installations.
- 3. The top of pavement markers installed in recesses shall be 0 to 3/16" below the pavement surface.

TYPE C AND TYPE D TYPE G AND TYPE H See Notes 1 and 2.

### RETROREFLECTIVE PAVEMENT MARKER FOR RECESSED INSTALLATION

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKERS AND TRAFFIC LINES  
TYPICAL DETAILS**

NO SCALE

**A20D**

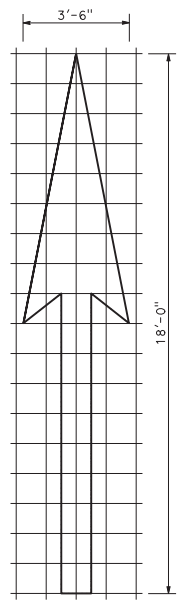
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Atifa Ferouz  
REGISTERED CIVIL ENGINEER  
No. C80402  
EXP. 3-31-19  
CIVIL  
STATE OF CALIFORNIA

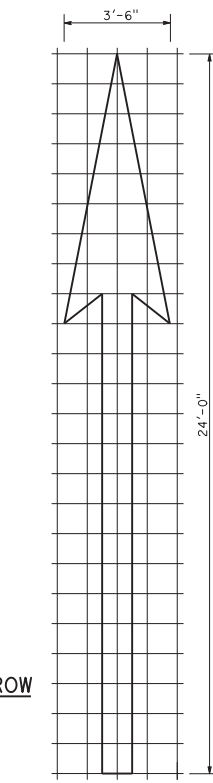
May 31, 2018  
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

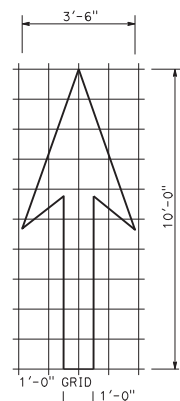




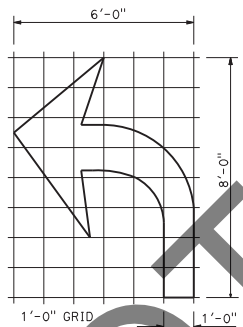
**TYPE I 18'-0" ARROW**



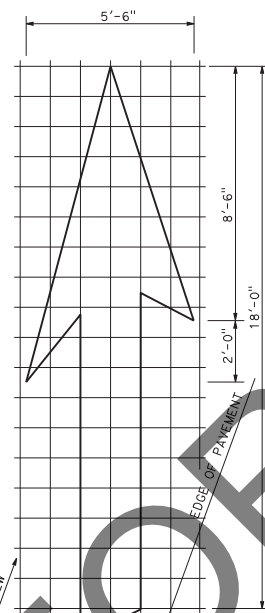
**TYPE I 24'-0" ARROW**



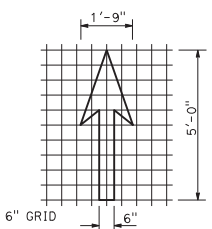
**TYPE I 10'-0" ARROW**



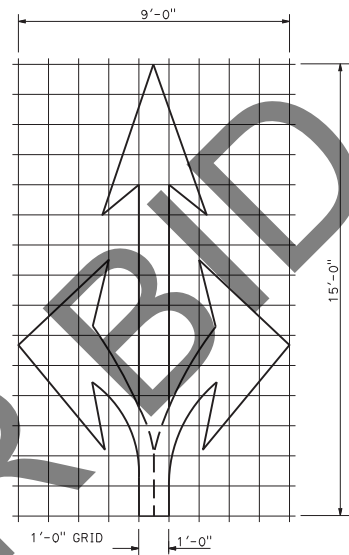
**TYPE IV (L) ARROW**  
(For Type IV (R) arrow, use mirror image)



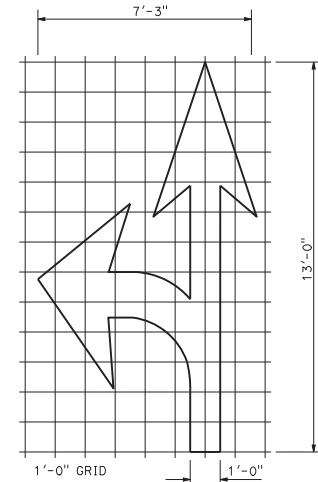
**TYPE VI ARROW**  
Right lane drop arrow  
(For left lane, use mirror image)



**BIKE LANE ARROW**



**TYPE VIII ARROW**



**TYPE VII (L) ARROW**  
(For Type VII (R) arrow, use mirror image)

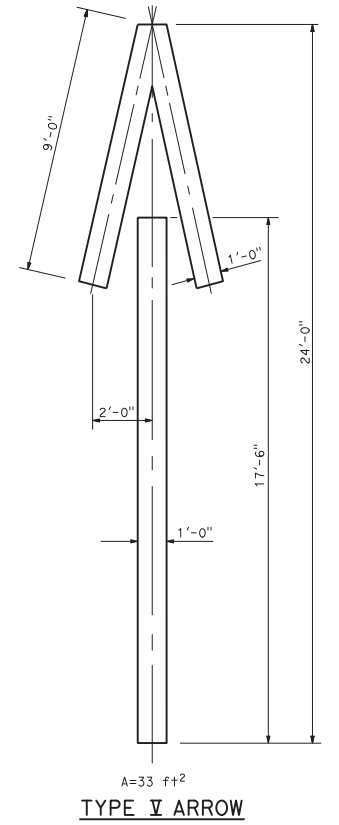
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Atifa Ferouz  
REGISTERED CIVIL ENGINEER

May 31, 2018  
PLANS APPROVAL DATE

Atifa Ferouz  
REGISTERED PROFESSIONAL ENGINEER  
No. C80402  
Exp. 3-31-19  
CIVIL  
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



**TYPE V ARROW**

**NOTE:**  
Minor variations in dimensions may be accepted by the Engineer.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
ARROWS**  
NO SCALE

**A 24A**

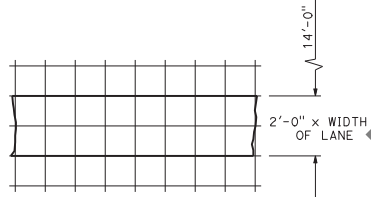
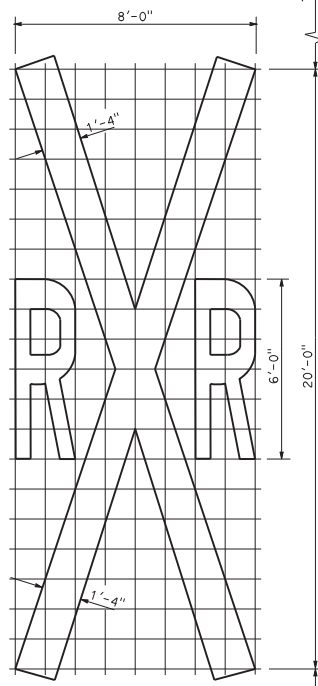
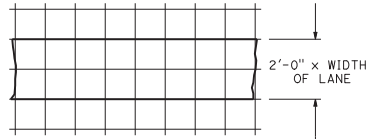
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Atifa Ferouz  
REGISTERED CIVIL ENGINEER

May 31, 2018  
PLANS APPROVAL DATE

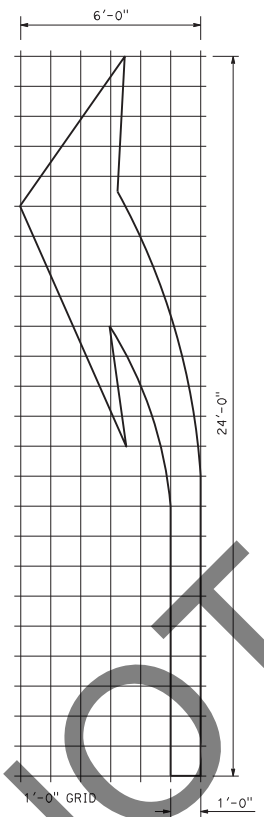
Atifa Ferouz  
No. C80402  
Exp. 3-31-19  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL  
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

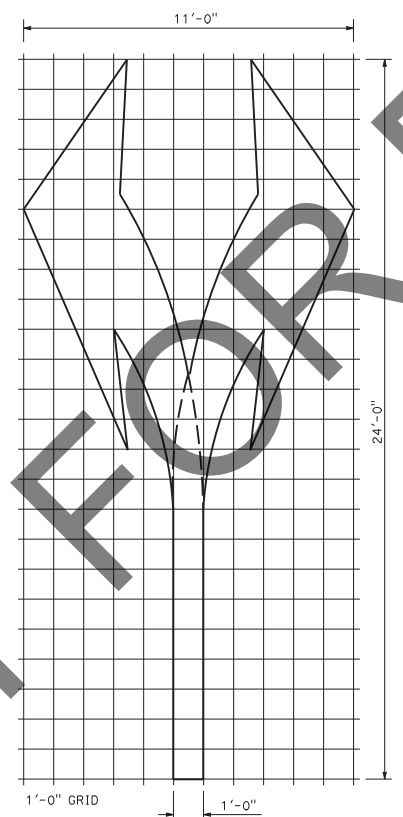


**RAILROAD CROSSING SYMBOL**

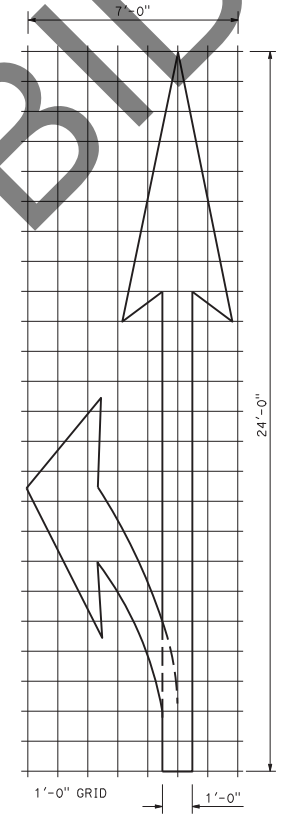
\* 70 ft<sup>2</sup> does not include the 2'-0" x variable width transverse lines.



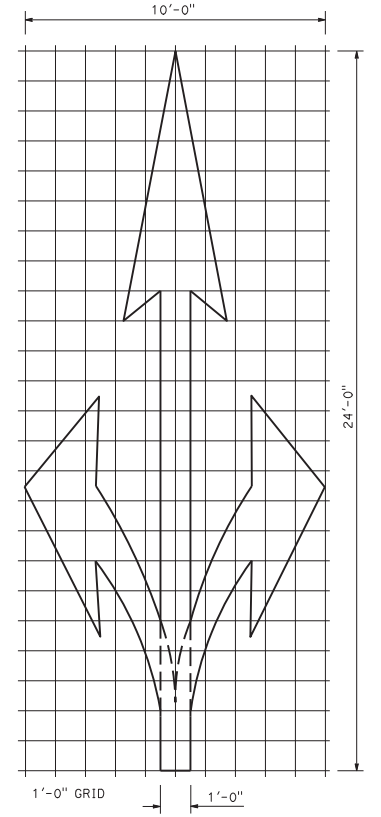
A=42 ft<sup>2</sup>  
**TYPE III (L) ARROW**  
(For Type III (R) use mirror image)



A=73 ft<sup>2</sup>  
**TYPE III (B) ARROW**



A=45 ft<sup>2</sup>  
**TYPE II (L) ARROW**  
(For Type II (R) use mirror image)

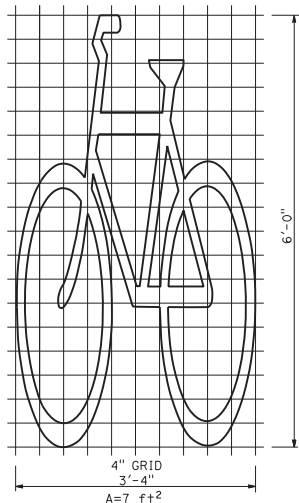


A=59 ft<sup>2</sup>  
**TYPE II (B) ARROW**

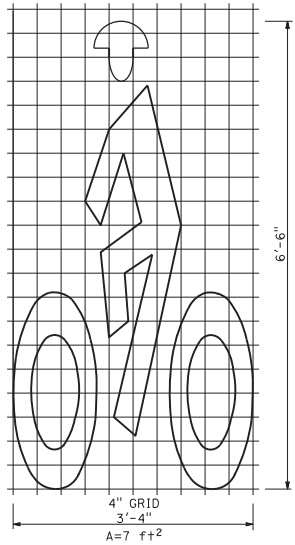
**NOTE:**  
Minor variations in dimensions may be accepted by the Engineer.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
ARROWS AND SYMBOLS**  
NO SCALE

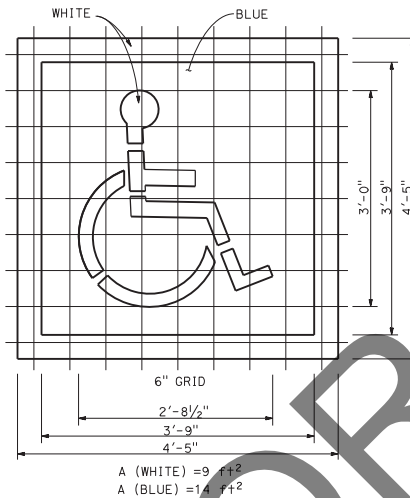
**A 24B**



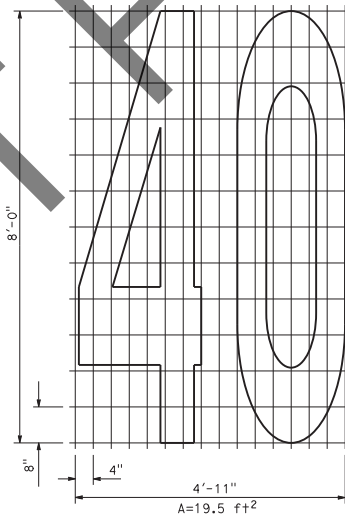
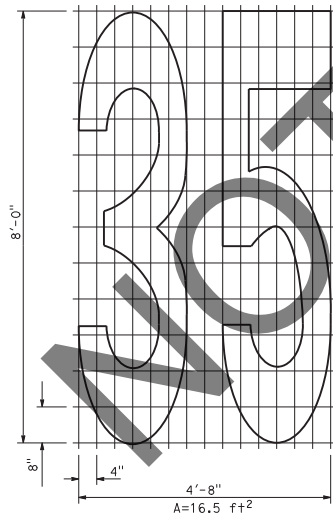
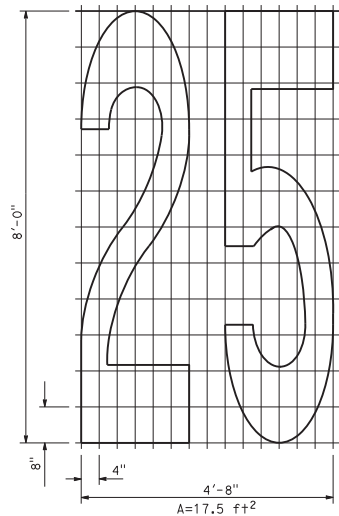
**BIKE LANE SYMBOL  
WITHOUT PERSON**



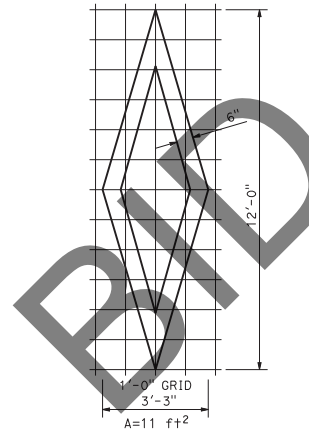
**BIKE LANE SYMBOL  
WITH PERSON**



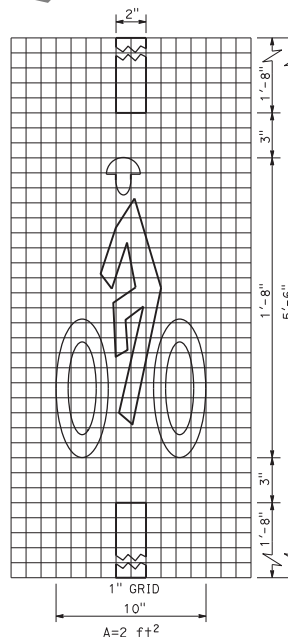
**INTERNATIONAL SYMBOL  
OF ACCESSIBILITY (ISA) MARKING**



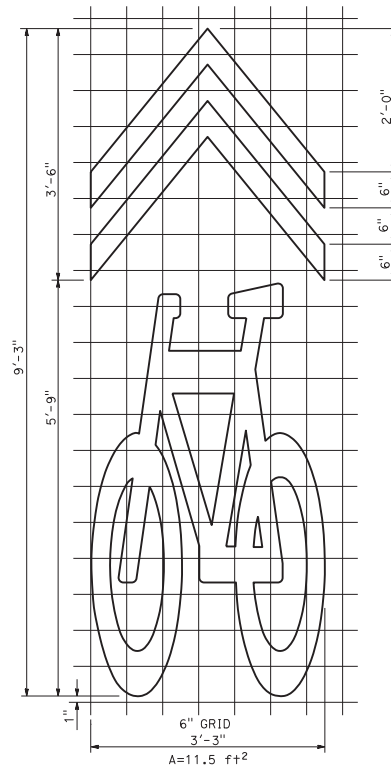
**NUMERALS**



**DIAMOND SYMBOL**



**BIKE LOOP  
DETECTOR SYMBOL**



**SHARED ROADWAY BICYCLE MARKING**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
SYMBOLS AND NUMERALS**

NO SCALE

**A 24C**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Atifa Ferouz  
REGISTERED CIVIL ENGINEER

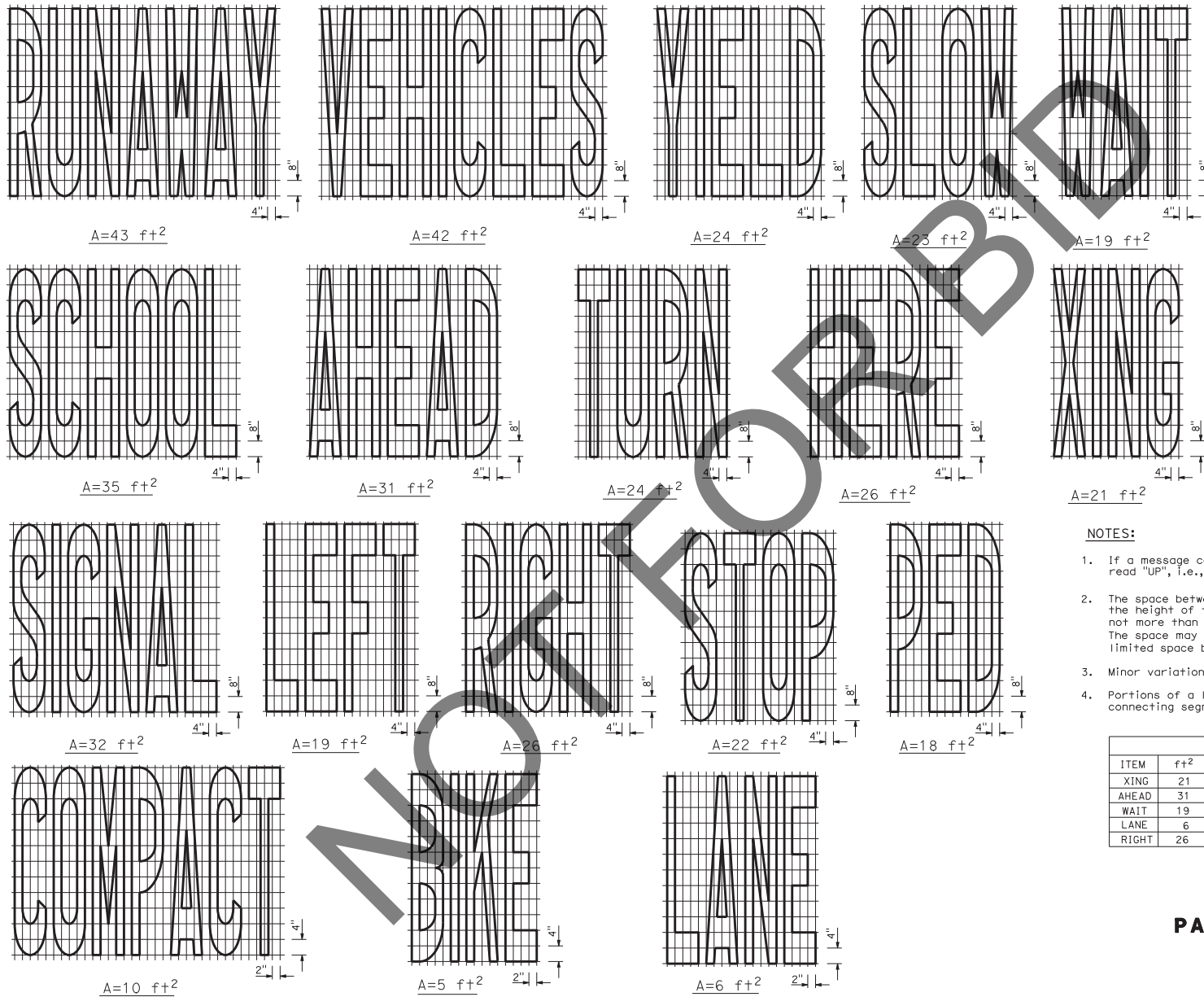
May 31, 2018  
PLANS APPROVAL DATE

Atifa Ferouz  
No. C80402  
Exp. 3-31-19  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL  
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTE:**

Minor variations in dimensions may be accepted by the Engineer.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Atifa Ferouz  
REGISTERED CIVIL ENGINEER

May 31, 2018  
PLANS APPROVAL DATE

Atifa Ferouz  
No. C80402  
Exp. 3-31-19  
CIVIL  
REGISTERED PROFESSIONAL ENGINEER  
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTES:**

1. If a message consists of more than one word, it must read "UP", i.e., the first word must be nearest the driver.
2. The space between words must be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.

WORD MARKINGS					
ITEM	f+2	ITEM	f+2	ITEM	f+2
XING	21	YIELD	24	BIKE	5
AHEAD	31	SCHOOL	35	SLOW	23
WAIT	19	SIGNAL	32	STOP	22
LANE	6	TURN	24	LEFT	19
RIGHT	26	HERE	26	VEHICLES	42

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
WORDS**

NO SCALE

**A 24D**

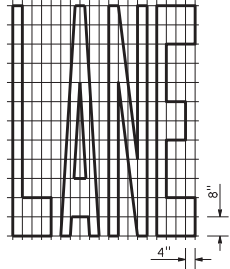
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Atifa Ferouz  
REGISTERED CIVIL ENGINEER

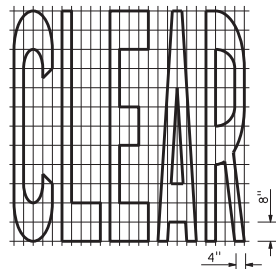
May 31, 2018  
PLANS APPROVAL DATE

Atifa Ferouz  
No. C80402  
Exp. 3-31-19  
CIVIL  
REGISTERED PROFESSIONAL ENGINEER  
STATE OF CALIFORNIA

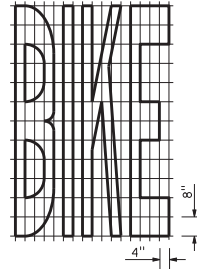
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



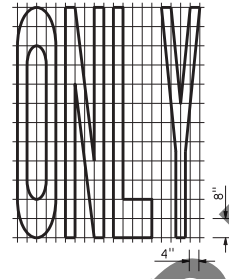
A=24 f+2



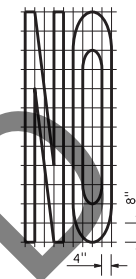
A=27 f+2



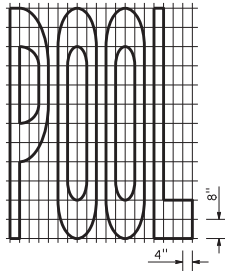
A=21 f+2



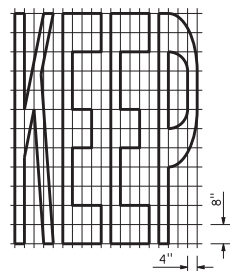
A=22 f+2



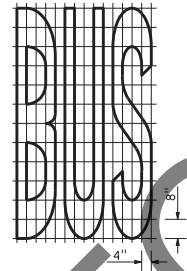
A=14 f+2



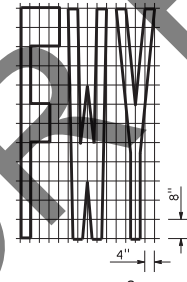
A=23 f+2



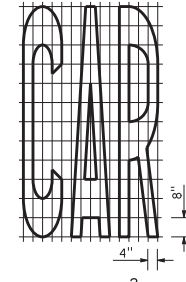
A=24 f+2



A=20 f+2



A=16 f+2

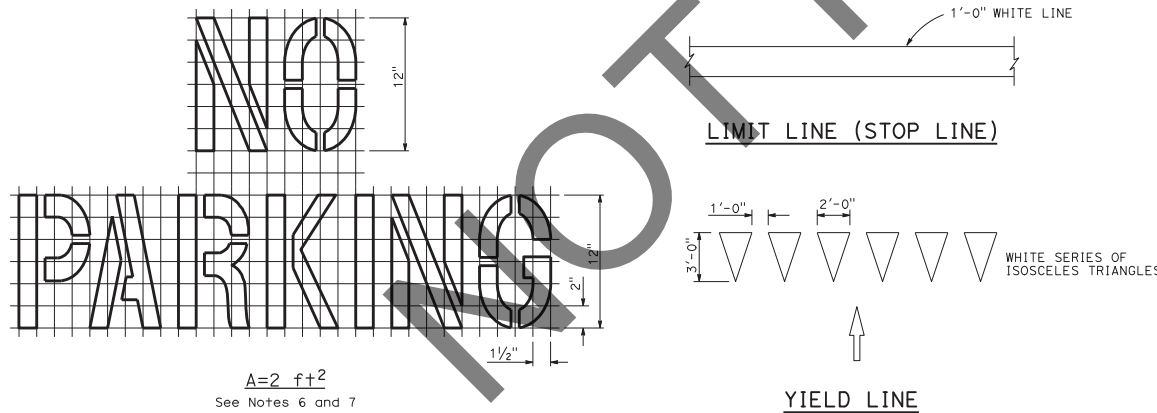


A=17 f+2

WORD MARKINGS			
ITEM	f+2	ITEM	f+2
LANE	24	NO	14
POOL	23	BIKE	21
CAR	17	BUS	20
CLEAR	27	ONLY	22
KEEP	24	FWY	16

**NOTES:**

1. If a message consists of more than one word, it must read "UP", i.e., the first word must be nearest the driver.
2. The space between words must be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.
5. The words "NO PARKING" pavement marking is to be used for parking facilities. For typical locations of markings, see Standard Plans A90A and A90B.
6. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials.

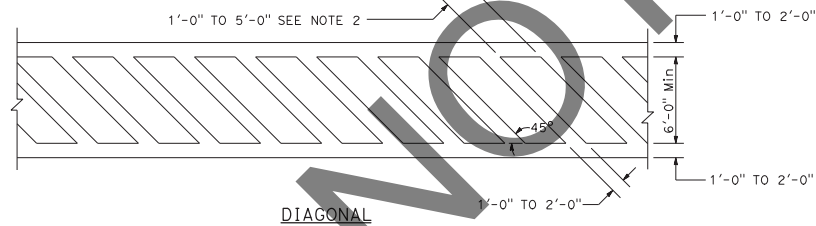
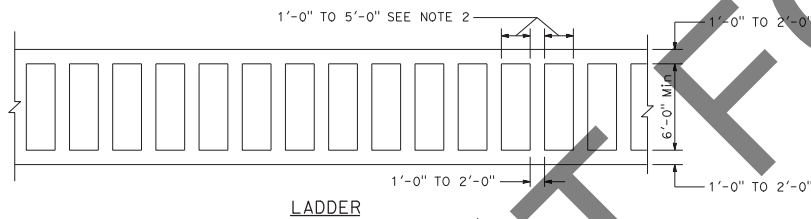
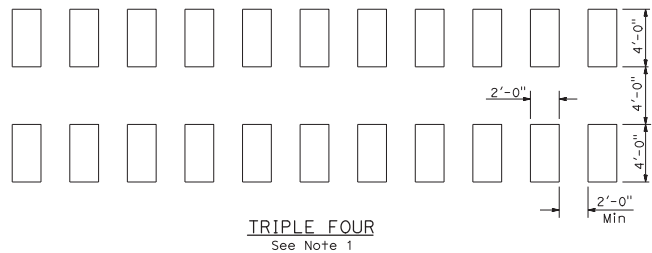
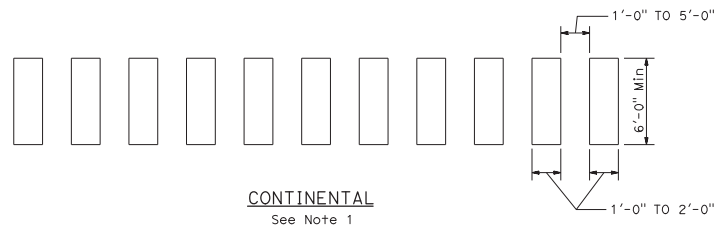


A=2 f+2  
See Notes 6 and 7

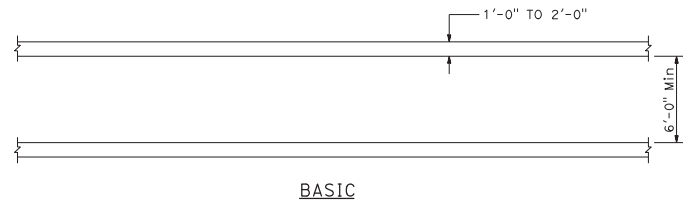
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
WORDS, LIMIT AND YIELD LINES**

NO SCALE

**A 24E**



**HIGHER VISIBILITY CROSSWALKS**



**NOTES:**

1. Spaces between markings must be placed in wheel tracks of each lane.
2. Spacings not to exceed 2.5 times width of longitudinal line.
3. All crosswalk markings must be white except those near schools must be yellow.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Atifa Ferouzi  
REGISTERED CIVIL ENGINEER

May 31, 2018  
PLANS APPROVAL DATE

Atifa Ferouzi  
REGISTERED PROFESSIONAL ENGINEER  
No. C80402  
Exp. 3-31-19  
CIVIL  
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

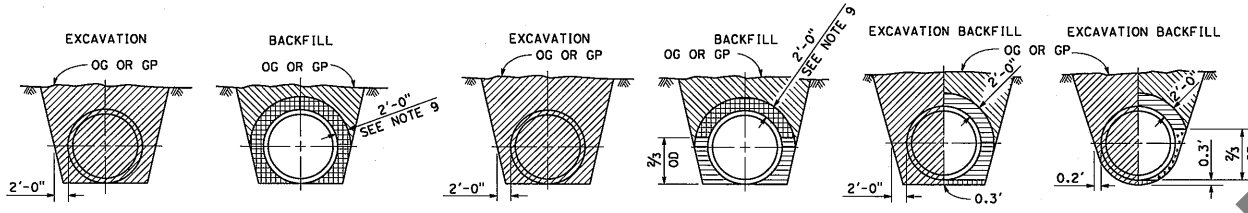
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKINGS  
CROSSWALKS**

NO SCALE

**A24F**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

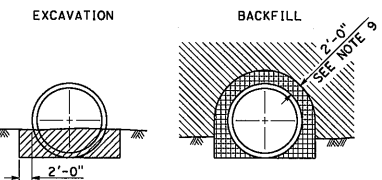
REGISTERED CIVIL ENGINEER  
 October 15, 2021  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



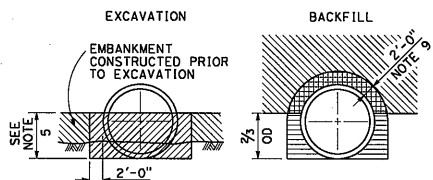
**IN TRENCH**

**IN TRENCH**

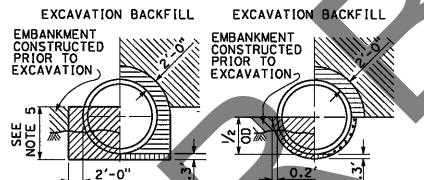
**SAND BEDDING SOIL CEMENT BEDDING IN TRENCH**



**IN EMBANKMENT**



**IN EMBANKMENT**



**SAND BEDDING SOIL CEMENT BEDDING IN EMBANKMENT**

- NOTES:**
- Unless otherwise shown on the plans or specified in the special provisions, the Contractor shall have the option of selecting the class of RCP and the method of backfill to be used, provided the height of cover does not exceed the value shown for the RCP selected.  
 Example:  
 2'-0" RCP culvert with maximum cover of 19'-0" the options are:  
 a) Class I Special or stronger with Method 1.  
 b) Class III or stronger with Method 2.  
 c) Class II or stronger with Method 3.  
 Cover is defined as the maximum vertical distance from top of pipe to finished grade within the length of any given culvert.
  - The class of RCP, method of backfill and bedding selected shall be the same throughout the length of any given culvert.
  - The "length of any culvert" is defined as the culvert between:  
 a) Successive drainage structures (inlets, junction boxes, headwalls, etc.).  
 b) A drainage structure and the inlet or outlet end of the culvert.  
 c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
  - Slope or shore excavation sides as necessary.
  - Embankment height prior to excavation for installation of all classes of RCP under Methods 2 and 3A shall be as follows:  
 Pipe sizes 1'-0" to 3'-6", ID = 2'-6"  
 Pipe sizes 4'-0" to 7'-0", ID = 3/4 OD  
 Pipe sizes larger than 7'-0", ID = 5'-0"
  - The maximum size for all classes of RCP placed under Method 1 is 6'-6" ID.
  - Non-reinforced precast pipe sizes 1'-0" or smaller may also be placed under Methods 1, 2 or 3.
  - Oval or arch shaped RCP shall be placed under Method 2 only.
  - Embankment compaction requirements govern over the 90% relative compaction backfill requirement within 2'-6" of finished grade.
  - Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimums.
  - Where the precast non-reinforced concrete pipe is used as a substitute for the cast-in-place pipe, both the wall thickness and the concrete strength shall be at least as great as that specified for the cast-in-place pipe. The fill height allowed shall not exceed that shown for the cast-in-place pipe.

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 1

COVER	MINIMUM CLASS AND D-LOAD
5.9'	CLASS II 1000D
6.0' - 7.9'	CLASS III 1350D
8.0' - 9.9'	CLASS III SPECIAL 1700D
10.0' - 11.9'	CLASS IV 2000D
12.0' - 13.9'	CLASS IV SPECIAL 2500D
14.0' - 16.9'	CLASS V 3000D
17.0' - 20.0'	CLASS V SPECIAL 3600D

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 2

COVER	MINIMUM CLASS AND D-LOAD
15.9'	CLASS II 1000D
16.0' - 19.9'	CLASS III 1350D
20.0' - 24.9'	CLASS III SPECIAL 1700D
25.0' - 27.9'	CLASS IV 2000D
28.0' - 34.9'	CLASS IV SPECIAL 2500D
35.0' - 41.9'	CLASS V 3000D
42.0' - 50.0'	CLASS V SPECIAL 3600D

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 3

COVER	MINIMUM CLASS AND D-LOAD
25.9'	Class II 1000D
26.0' - 31.9'	Class III 1350D
32.0' - 37.9'	Class III Special 1700D
38.0' - 44.9'	Class IV 2000D
45.0' - 55.9'	Class IV Special 2500D
56.0' - 67.9'	Class V 3000D
68.0' - 80.0'	Class V Special 3600D

See Notes 6 and 9

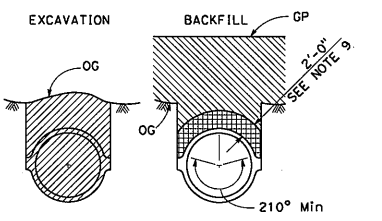
See Notes 8 and 9

**METHOD 1**

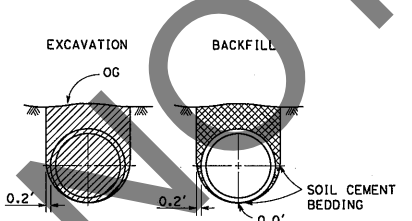
**METHOD 2**

**METHOD 3**

**REINFORCED CONCRETE PIPE**  
See Notes 1, 2, 7 and 10



**IN TRENCH ONLY  
CAST-IN-PLACE**



**IN TRENCH ONLY  
PRECAST**

See Notes 7 and 11

**NON-REINFORCED CONCRETE PIPE**

**LEGEND**

- STRUCTURE EXCAVATION (CULVERT)
  - STRUCTURE BACKFILL (CULVERT) 95% RELATIVE COMPACTION
  - STRUCTURE BACKFILL (CULVERT) 90% RELATIVE COMPACTION
  - LOOSE BACKFILL
  - SAND BEDDING
  - SOIL CEMENT BEDDING
  - ROADWAY EMBANKMENT
- OD = OUTSIDE DIAMETER FOR CIRCULAR PIPES AND MAXIMUM VERTICAL DIMENSION FOR OTHER SHAPES  
 ID = INSIDE DIAMETER FOR CIRCULAR PIPES AND MINIMUM VERTICAL DIMENSION FOR OTHER SHAPES

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**EXCAVATION AND BACKFILL  
CONCRETE PIPE CULVERTS**  
NO SCALE

RSP A62D DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN A62D  
DATED MAY 31, 2018 - PAGE 31 OF THE STANDARD PLANS BOOK DATED 2018.  
**REVISED STANDARD PLAN RSP A62D**

2018 REVISED STANDARD PLAN RSP A62D

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER  
 October 15, 2021  
 PLANS APPROVAL DATE  
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**DESIGN NOTES:**

Design: AASHTO LRFD Bridge Design Specifications, 8th edition with California Amendments. INDIRECT DESIGN METHOD

Soil: w Fe = 162 pcf Installation Type 1  
w Fe = 168 pcf Installation Types 2 & 3  
w = Unit weight of soil (pcf)  
Fe = Soil-structure interaction factor

**INSTALLATION TYPE 1:**

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 30 and the maximum percentage passing the No. 200 sieve size shall be 12.

**INSTALLATION TYPE 2:**

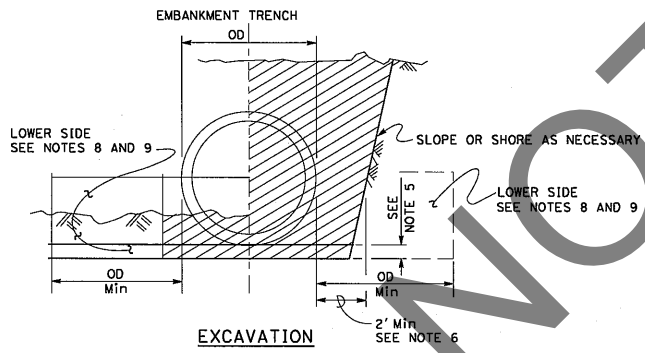
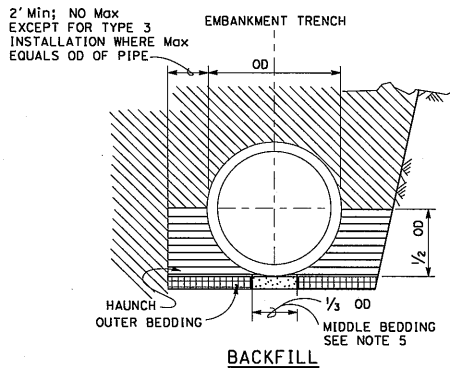
The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 25.

**INSTALLATION TYPE 3:**

The haunch and outer bedding shall be compacted to a minimum 85 percent relative compaction. 90 percent relative compaction will be required where the fill over the pipe is less than 4'-0" or 1/2 OD. In addition, the minimum sand equivalent in these areas shall be 25.

**LEGEND:**

- ROADWAY EMBANKMENT
- STRUCTURE BACKFILL (CULVERT) FOR HAUNCH SEE NOTE 6
- STRUCTURE BACKFILL (CULVERT) FOR OUTER BEDDING SEE NOTE 6
- LOOSE BACKFILL
- STRUCTURE EXCAVATION (CULVERT)



**NOTES:**

- Unless otherwise shown on the plans or specified in the special provisions, the Contractor shall have the option of selecting the class of RCP and the type of installation to be used, provided the height of cover does not exceed the value shown for the RCP selected.  
 Examples: 24" RCP culvert with maximum cover of 24'-0" the options are:  
 a) Class III Special or stronger with Installation Type 1.  
 b) Class IV or stronger with Installation Type 2.  
 c) Class V Special or stronger with Installation Type 3.  
 Cover is defined as the maximum vertical distance from top of the pipe to finished grade within the length of any given culvert.
- The class of RCP and Installation Type selected shall be the same throughout the length of any given culvert.
- The "length of any culvert" is defined as the culvert between:  
 a) Successive drainage structure (inlets, junction boxes, headwalls, etc.).  
 b) A drainage structure and the inlet or outlet end of the culvert.  
 c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
- Oval and arch shaped RCP shall not be used.
- Bedding depth: 1/4 OD Min, not less than 3" for soil foundation; 1/2 OD Min, not less than 6" for rock foundation.
- Slurry cement backfill may be substituted for backfill in the outer bedding and haunch areas. If slurry is used, the outer and middle beddings shall be omitted. Prior to installation, the soil under the middle 1/3 of the outside diameter of the pipe shall be softened by scarifying or other means to a minimum depth of 1/4 OD, but not less than 3". Where slurry cement backfill is used, clear distance to trench wall may be reduced as set forth in the Standard Specifications.
- Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimum.
- Lower side shall meet the requirement of AASHTO-CA BDS for Standard Installations. Otherwise it shall be considered unsuitable as set forth in of the Standard Specifications. See Note 9.
- Where the pipe is placed in a trench, if the trench walls are sloped at 5 vertical to 1 horizontal or steeper for at least 90 percent of the trench height or up to not less than 12' from the grading plane, the firmness of the soil in the lower side need not be considered.

**INSTALLATION TYPE 1**

MINIMUM CLASS AND D-LOAD	COVER	
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max
CLASS II 1000D	14.9'	12.9'
CLASS III 1350D	15.0' - 21.3'	13.0' - 18.9'
CLASS III SPECIAL 1700D	22.0' - 26.8'	19.0' - 24.9'
CLASS IV 2000D	28.0' - 31.5'	25.0' - 29.9'
CLASS IV SPECIAL 2500D	33.0' - 37.8'	30.0' - 38.9'
CLASS V 3000D	42.0' - 47.5'	39.0' - 46.9'
CLASS V SPECIAL 3600D	50.0' - 57.3'	47.0' - 58.0'

**INSTALLATION TYPE 2**

MINIMUM CLASS AND D-LOAD	COVER	
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max
CLASS II 1000D	11.9'	9.9'
CLASS III 1350D	12.0' - 15.9'	10.0' - 14.9'
CLASS III SPECIAL 1700D	16.0' - 20.5'	15.0' - 19.9'
CLASS IV 2000D	21.0' - 24.3'	20.0' - 23.9'
CLASS IV SPECIAL 2500D	25.0' - 30.3'	24.0' - 30.9'
CLASS V 3000D	32.0' - 36.3'	31.0' - 37.9'
CLASS V SPECIAL 3600D	38.0' - 43.8'	38.0' - 46.0'

**INSTALLATION TYPE 3**

MINIMUM CLASS AND D-LOAD	COVER	
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max
CLASS II 1000D	8.9'	5.9'
CLASS III 1350D	9.0' - 11.9'	6.0' - 10.9'
CLASS III SPECIAL 1700D	12.0' - 15.9'	11.0' - 13.9'
CLASS IV 2000D	16.0' - 18.9'	14.0' - 17.9'
CLASS IV SPECIAL 2500D	19.0' - 23.3'	18.0' - 22.9'
CLASS V 3000D	25.0' - 28.3'	23.0' - 28.9'
CLASS V SPECIAL 3600D	30.0' - 34.3'	29.0' - 35.0'

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**EXCAVATION AND BACKFILL  
CONCRETE PIPE CULVERTS  
INDIRECT DESIGN METHOD**

NO SCALE

RSP A620A DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN A620A DATED MAY 31, 2018 - PAGE 32 OF THE STANDARD PLANS BOOK DATED 2018.

**REVISED STANDARD PLAN RSP A620A**

2018 REVISED STANDARD PLAN RSP A620A



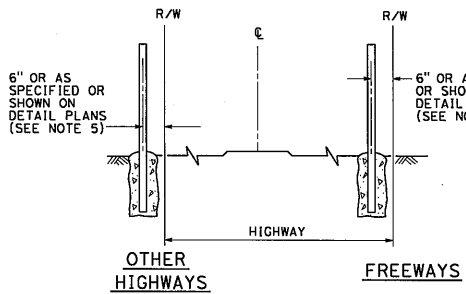
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

**R. Roberts**  
REGISTERED CIVIL ENGINEER

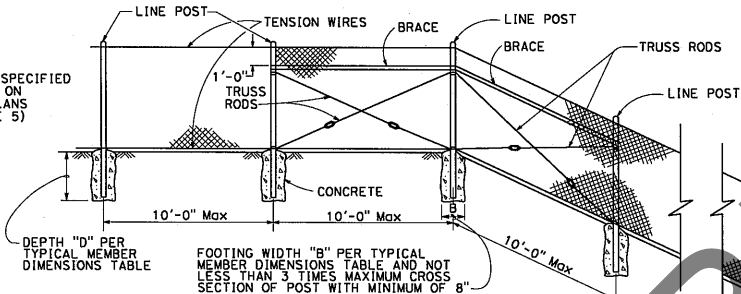
October 19, 2018  
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

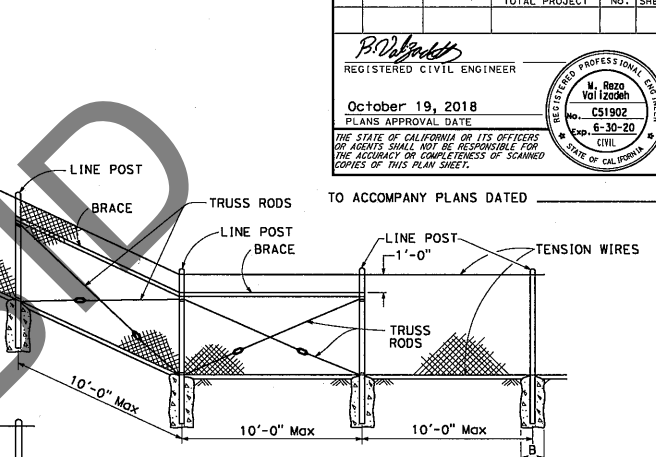
REGISTERED PROFESSIONAL ENGINEER  
M. Razo  
Valizadeh  
No. CS1902  
Exp. 6-30-20  
CIVIL  
STATE OF CALIFORNIA



**FENCE LOCATION**



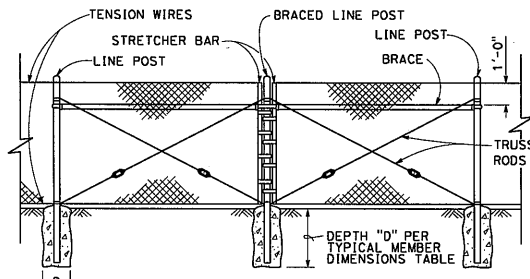
**CHAIN LINK FENCE ON SHARP BREAK IN GRADE**



**GATE POST**

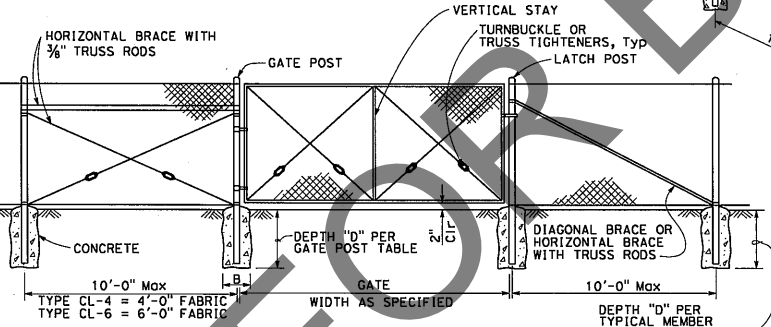
FENCE HEIGHT (Max)	SLATTED	B (in)	D (ft)	ROUND PIPE		
				ROUND OD PIPE	GROUP 1A WEIGHT (lb/ft)	GROUP 1C WEIGHT (lb/ft)
5'-0"	NO	12"	2'-6"	3.50"	7.58	5.71
6'-0"	NO	12"	2'-6"	3.50"	7.58	5.71
8'-0"	NO	12"	3'-0"	3.50"	7.58	5.71
10'-0"	NO	14"	3'-6"	3.50"	7.58	5.71
5'-0"	YES	12"	3'-0"	4.00"	9.12	6.56
6'-0"	YES	14"	3'-6"	4.50"	10.80	-
8'-0"	YES	18"	3'-6"	5.56"	14.60	-
10'-0"	YES	20"	4'-0"	6.63"	19.00	-

Above post dimensions and weights are minimums. Larger sizes may be used upon approval.



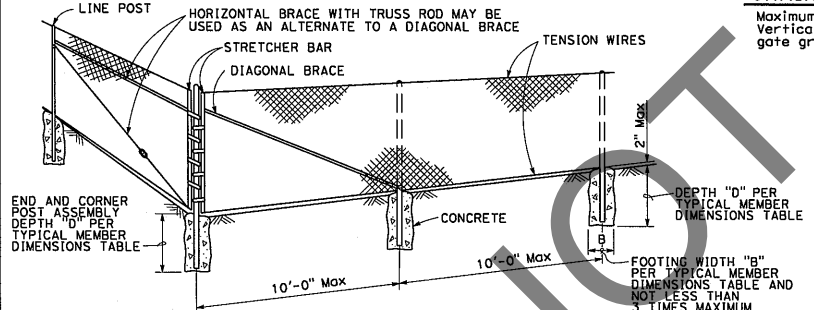
**BRACED LINE POST INSTALLATION**

Braced line post at intervals not exceeding 1000'



**CHAIN LINK GATE INSTALLATION**

Maximum Gate Width is 12'-0"  
Vertical Stay is required in middle of gate greater than 8'-0" in width.



**CORNER POST**

- NOTES:**
- The table to the right shows minimum sized posts and braces complying with the specifications. Larger or heavier post and brace sizes may be used upon approval.
  - Sections shown in the tables must also comply with the strength requirements and other provisions of the Specifications.
  - Other sections which comply with the strength requirements and other provisions of the Specifications may be used upon approval.
  - Options exercised shall be uniform on any one project.
  - 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'-0" long.
  - See Standard Plan A85B for Brace, Stretcher Bar, and Truss Tightener Details.

**TYPICAL MEMBER DIMENSIONS (See Notes)**

FENCE HEIGHT (Max)	SLATTED	B (in)	D (ft)	LINE POSTS						BRACES			
				ROUND PIPE			ROLL FORMED			ROUND PIPE		ROLL FORMED	
				ROUND OD PIPE	GROUP 1A WEIGHT (lb/ft)	GROUP 1C WEIGHT (lb/ft)	SECTION	WEIGHT (lb/ft)	ROUND OD PIPE	GROUP 1A WEIGHT (lb/ft)	GROUP 1C WEIGHT (lb/ft)	SECTION	WEIGHT (lb/ft)
5'-0"	NO	8"	2'-6"	1.90"	2.72	2.28	1.875" x 1.625"	1.85	1.90"	2.72	2.28	1.625" x 1.250"	1.35
6'-0"	NO	10"	2'-6"	2.38"	3.66	3.12	1.875" x 1.625"	2.40	2.38"	3.66	3.12	1.625" x 1.250"	1.35
8'-0"	NO	12"	3'-0"	2.88"	5.80	4.64	3.250" x 2.500"	4.50	2.38"	3.66	3.12	1.625" x 1.250"	1.35
10'-0"	NO	14"	3'-6"	3.50"	7.58	5.71	3.250" x 2.500"	4.50	2.88"	5.80	4.64	1.625" x 1.250"	1.35
5'-0"	YES	12"	3'-0"	4.00"	9.12	6.56	N/A	-	2.38"	3.66	3.12	N/A	-
6'-0"	YES	14"	3'-0"	4.50"	10.80	-	N/A	-	2.38"	3.66	3.12	N/A	-
8'-0"	YES	18"	3'-6"	5.56"	14.60	-	N/A	-	2.38"	3.66	3.12	N/A	-
10'-0"	YES	20"	4'-0"	6.63"	19.00	-	N/A	-	2.88"	5.80	4.64	N/A	-

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**CHAIN LINK FENCE**  
NO SCALE

RSP A85 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN A85  
DATED MAY 31, 2018 - PAGE 140 OF THE STANDARD PLANS BOOK DATED 2018.

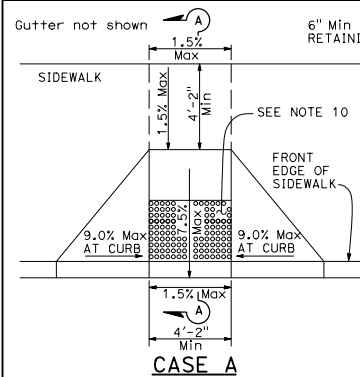
**REVISED STANDARD PLAN RSP A85**

2018 REVISED STANDARD PLAN RSP A85

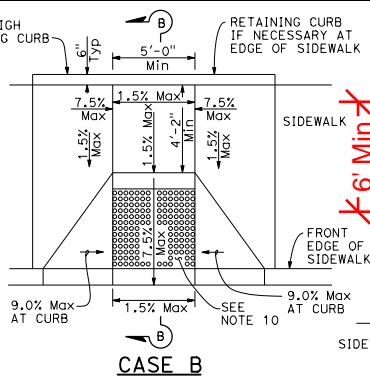
Radial or Non-radial

Concentric or Non-Concentric

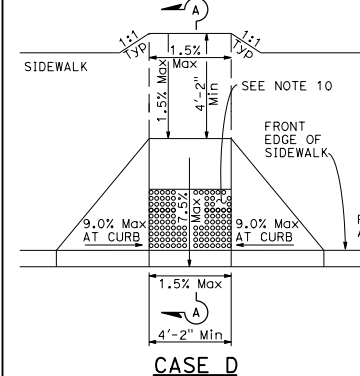
Radial or Non-radial



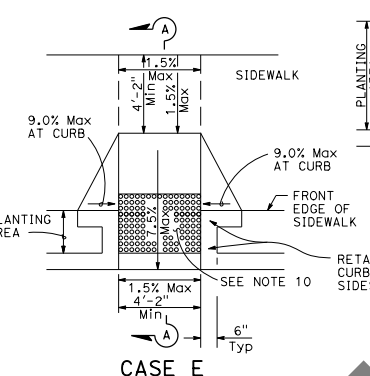
CASE A



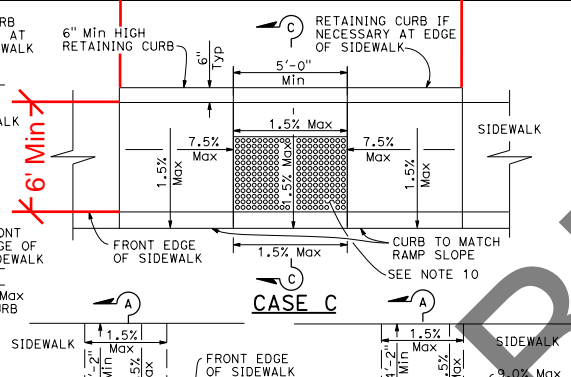
CASE B



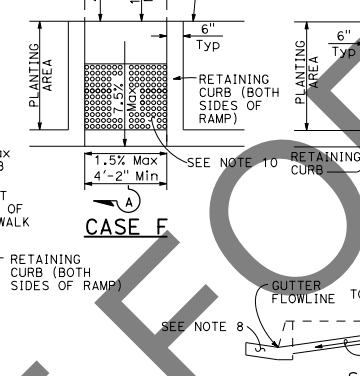
CASE D



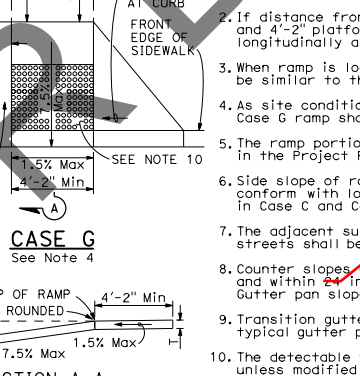
CASE E



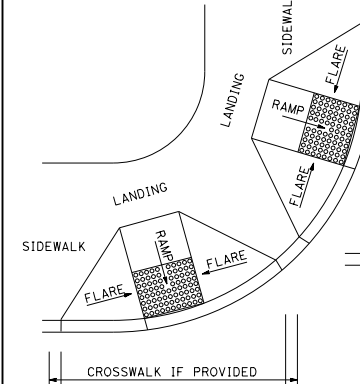
CASE C



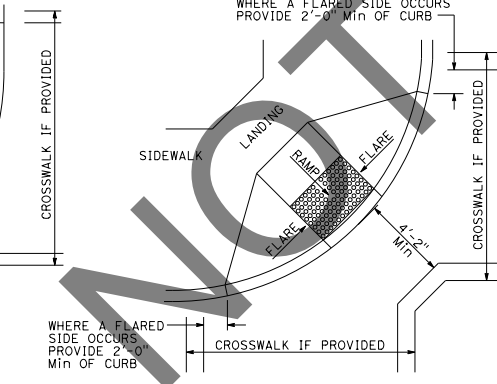
CASE F



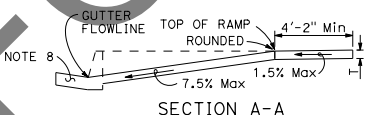
CASE G



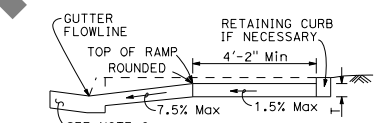
DETAIL A  
TYPICAL TWO-RAMP  
CORNER INSTALLATION  
See Note 1



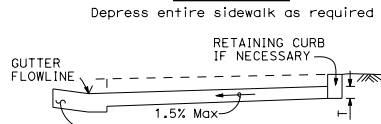
DETAIL B  
TYPICAL ONE-RAMP  
CORNER INSTALLATION  
See Notes 1 and 3



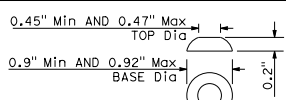
SECTION A-A



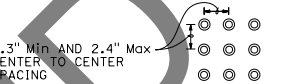
SECTION B-B



SECTION C-C



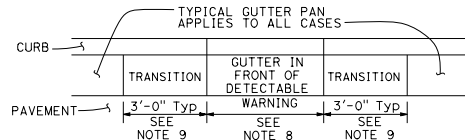
RAISED TRUNCATED DOME



RAISED TRUNCATED DOME PATTERN (IN-LINE)  
DETECTABLE WARNING SURFACE

NOTES: See Note 10

1. As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid-block locations, as site conditions dictate. For specific site condition configuration, including the conform to existing sidewalk, see Project Plans.
2. If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B or C or may be widened as in Case D.
3. When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
4. As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
5. The ramp portion of the curb ramp is a typical rectangle, unless modified in the Project Plans.
6. Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
7. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be of the same level.
8. Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1V:20H (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
9. Transition gutter pan slope from 1" of depth for each 2'-0" of width to match typical gutter pan slope per Standard Plan A87A.
10. The detectable warning surface will be a rectangle as shown at back of curb, unless modified in the Project Plans. Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable warning surfaces shall extend the full width of the ramp except a maximum gap of 1 inch is allowed on each side of the ramp. Detectable warning surfaces shall conform to the requirements in the Standard Specifications.
11. Sidewalk and ramp thickness, "T", shall be 4" minimum.
12. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
13. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining detectable warning width and depth.



GUTTER PAN TRANSITION

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**CURB RAMP DETAILS**  
NO SCALE

A88A

Return to Table of Contents  
(MODIFIED)

2018 STANDARD PLAN A88A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

REGISTERED CIVIL ENGINEER  
Rebecca Lynn Moory  
No. C54415  
Exp. 12-31-19  
CIVIL

May 31, 2018  
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

150

**ANNOTATION**

SYMBOL	DESCRIPTION
AB	ABANDON. IF APPLIED TO CONDUIT, REMOVE CONDUCTORS
BC	INSTALL PULL BOX IN EXISTING CONDUIT RUN
BP	PEDESTRIAN BARRICADE, TYPE AS INDICATED ON PLAN
CB	INSTALL CONDUIT INTO EXISTING PULL BOX
CC	CONNECT NEW AND EXISTING CONDUIT. REMOVE EXISTING CONDUCTORS AND INSTALL CONDUCTORS AS INDICATED
CF	CONDUIT TO REMAIN FOR FUTURE USE. REMOVE CONDUCTORS. INSTALL PULL TAPE
DH	DETECTOR HANDHOLE
FA	FOUNDATION TO BE ABANDONED
IS	INSTALL SIGN ON SIGNAL MAST ARM
NS	NO SLIP BASE ON STANDARD
PEC	PHOTOELECTRIC CONTROL
PEU	PHOTOELECTRIC UNIT
RC	EQUIPMENT OR MATERIAL TO BE REMOVED AND BECOME THE PROPERTY OF THE CONTRACTOR
RL	RELOCATE EQUIPMENT
RR	REMOVE AND REUSE EQUIPMENT
RS	REMOVE AND SALVAGE EQUIPMENT
SC	SPLICE NEW TO EXISTING CONDUCTORS
SD	SERVICE DISCONNECT
TSF	TELEPHONE SERVICE POINT

**SOFFIT AND WALL-MOUNTED LUMINAIRES**

SYMBOL	DESCRIPTION
	PENDANT SOFFIT LUMINAIRE
	FLUSH-MOUNTED SOFFIT LUMINAIRE
	WALL-MOUNTED LUMINAIRE
	EXISTING SOFFIT OR WALL-MOUNTED LUMINAIRE TO REMAIN UNMODIFIED
	EXISTING SOFFIT OR WALL-MOUNTED LUMINAIRE TO BE MODIFIED AS SPECIFIED

**NOTE:**  
Arrow indicates "street side" of luminaire.

**STANDARD**

NEW	EXISTING	TYPE
		15
		15D
		15 STRUCTURE
		15D STRUCTURE
		21
		21D
		21 STRUCTURE
		21D STRUCTURE
		30
		31
		32

**MISCELLANEOUS ELECTROLIERS**

NEW	EXISTING	DESCRIPTION
		LUMINAIRE ON WOOD POLE
		NON-STANDARD ELECTROLIER (SEE PROJECT LEGEND)
		CITY ELECTROLIER
		ELECTROLIER FOUNDATION (FUTURE INSTALLATION)

**NOTE:**

1. Luminaires shall be Roadway 2 when installed on Type 21, 21D, 30, 31 and 32 Standards, unless otherwise specified. Luminaires shall be Roadway 1 when installed on other type standards or poles, unless otherwise specified.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED ELECTRICAL ENGINEER  
 PLANS APPROVAL DATE: October 15, 2021  
 No. E17490  
 Exp. 6-30-23  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED \_\_\_\_\_

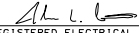
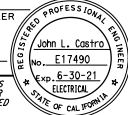
2018 REVISED STANDARD PLAN RSP ES-1A

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS (LEGEND)**



NO SCALE

RSP ES-1A DATED OCTOBER 15, 2021 SUPERSEDES RSP ES-1A DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-1 DATED MAY 31, 2018 - PAGE 475 OF THE STANDARD PLANS BOOK DATED 2018.











**REVISED STANDARD PLAN RSP ES-1A**

DT16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
 REGISTERED ELECTRICAL ENGINEER No. E17490 April 17, 2020 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
TO ACCOMPANY PLANS DATED _____					


**CONDUIT**

NEW	EXISTING	DESCRIPTION
---	---	LIGHTING CONDUIT, UNLESS OTHERWISE INDICATED OR NOTED
---	---	TRAFFIC SIGNAL CONDUIT
---C---	---c---	COMMUNICATION CONDUIT
---T---	---t---	TELEPHONE CONDUIT
---F---	---f---	FIRE ALARM CONDUIT
---FO---	---fo---	FIBER OPTIC CONDUIT
---	---	CONDUIT TERMINATION
		CONDUIT RISER ATTACHED TO THE STRUCTURE OR SERVICE POLE







**SERVICE EQUIPMENT**

NEW	EXISTING	DESCRIPTION
---OH---	---oh---	OVERHEAD LINES
		WOOD POLE, "U" INDICATES UTILITY OWNED
		POLE GUY WITH ANCHOR
		UTILITY TRANSFORMER - GROUND MOUNTED
		SERVICE EQUIPMENT ENCLOSURE TYPE. DOOR INDICATES FRONT OF ENCLOSURE
		TELEPHONE DEMARCATION CABINET





























**POLE-MOUNTED SERVICE DESIGNATION**

SYMBOL	DESCRIPTION
	TYPE H SERVICE, 28'-10" TYPE OF INSTALLATION AND POLE HEIGHT ABOVE GRADE















**FLASHING BEACON**

NEW	EXISTING	DESCRIPTION
		FLASHING BEACON (ONE VEHICLE SIGNAL HEAD WITH BACKPLATE AND VISOR) "R" INDICATES RED INDICATION "Y" INDICATES YELLOW INDICATION
		FLASHING BEACON WITH TYPE 15-FBS STANDARD AND A SIGN.
		FLASHING BEACON WITH TYPES 9, 9A OR 9B SIGN UNLESS OTHERWISE SPECIFIED OR INDICATED

**SIGNAL EQUIPMENT**

NEW	EXISTING	DESCRIPTION
		PEDESTRIAN SIGNAL HEAD
		PUSH BUTTON ASSEMBLY POST
		PEDESTRIAN BARRICADE
		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW, AND GREEN SECTIONS
		VEHICLE SIGNAL HEAD WITH ANGLE VISOR
		MODIFICATIONS OF BASIC SYMBOL: "L" INDICATES ALL NON-ARROW SECTIONS LOUVERED "LG" INDICATES LOUVERED GREEN SECTION ONLY "PV" INDICATES ALL 12" SECTIONS PROGRAMMED VISIBILITY "g" INDICATES ALL 8" SECTIONS (ONLY WHEN SPECIFIED) "PHBF" INDICATES TYPE MAS-3A FOR PEDESTRIAN HYBRID BEACON FACE
		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW, AND GREEN LEFT ARROW SECTIONS
		VEHICLE SIGNAL HEAD CONSISTING OF RED AND YELLOW SECTIONS WITH AN UP GREEN ARROW SECTION
		VEHICLE SIGNAL HEAD (5 SECTION) CONSISTING OF RED, YELLOW, AND GREEN SECTIONS WITH YELLOW AND GREEN RIGHT ARROW SECTIONS
		TYPE 15TS STANDARD WITH VEHICLE SIGNAL HEAD, PEDESTRIAN SIGNAL HEAD, AND LUMINAIRE
		TYPE 21TS STANDARD WITH VEHICLE SIGNAL HEAD, PEDESTRIAN SIGNAL HEAD, AND LUMINAIRE
		STANDARD WITH LUMINAIRE AND SIGNAL MAST ARMS AND ATTACHED VEHICLE SIGNAL HEADS
		TYPE 1 STANDARD WITH ATTACHED VEHICLE SIGNAL HEADS
		STANDARD WITH A SIGNAL MAST ARM, ATTACHED VEHICLE SIGNAL HEADS AND STREET NAME SIGN

**OVERHEAD SIGN**

NEW	EXISTING	DESCRIPTION
		SINGLE POST, SINGLE SIGN, BALANCED BUTTERFLY
		SINGLE POST, DOUBLE SIGN, BALANCED BUTTERFLY
		SINGLE POST, SINGLE SIGN, FULL CANTILEVER
		DOUBLE POST, SINGLE SIGN
		SINGLE SIGN MOUNTED ON STRUCTURE
		SINGLE POST, SINGLE SIGN, FULL CANTILEVER WITH ELECTROLIER
		DOUBLE POST, SINGLE SIGN WITH ELECTROLIER

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
(LEGEND)**

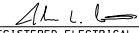
NO SCALE

RSP ES-1B DATED APRIL 17, 2020 SUPERSEDES RSP ES-1B DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-1B DATED MAY 31, 2018 - PAGE 476 OF THE STANDARD PLANS BOOK DATED 2018.

**REVISED STANDARD PLAN RSP ES-1B**

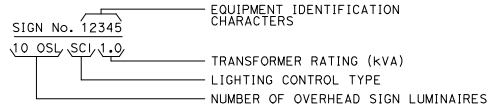
2018 REVISED STANDARD PLAN RSP ES-1B

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

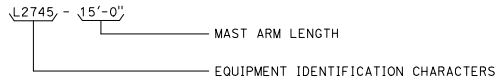
  
 REGISTERED ELECTRICAL ENGINEER  
 No. E17490  
 April 17, 2020  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS  
 OR AGENTS SHALL NOT BE RESPONSIBLE FOR  
 THE ACCURACY OR COMPLETENESS OF SCANNED  
 COPIES OF THIS PLAN SHEET.

### EQUIPMENT DESIGNATION

#### SIGN:



#### LIGHTING STANDARD, SIGNAL AND LIGHTING STANDARD:



#### SOFFIT:

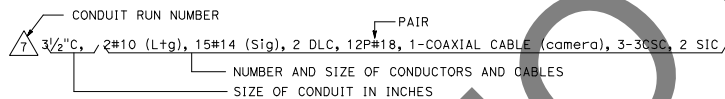


**NOTE:**  
EXISTING EQUIPMENT IDENTIFICATION CHARACTERS ARE SHOWN IN PARENTHESIS

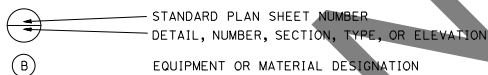
### MISCELLANEOUS EQUIPMENT

NEW	EXISTING	DESCRIPTION
		CHANGEABLE MESSAGE SIGN
		CAMERA
		HIGHWAY ADVISORY RADIO POLE AND ANTENNA
		EXTINGUISHABLE MESSAGE SIGN
		DETECTION DEVICE
		M = MICROWAVE SENSOR V = VIDEO IMAGE SENSOR
		RADAR SPEED FEEDBACK SIGN

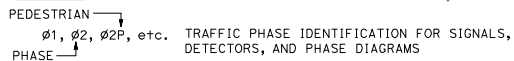
### CONDUIT AND CONDUCTORS



### DETAILS



### PHASE



### WIRING COMPONENTS

SYMBOL	DESCRIPTION
	EXTERNAL CONDUCTOR
	CONDUCTOR OR BUS
	TIE POINT
	CONTACTOR COIL
	CONTACTOR, NO CONTACT
	CONTACTOR, NC CONTACT
	ENCLOSURE BOND
	GROUNDING ELECTRODE
	CIRCUIT BREAKER
	RECEPTACLE

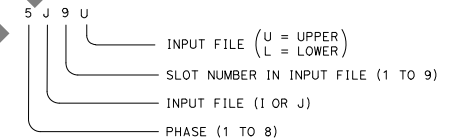
### HANDHOLES, PULL BOXES, AND VAULTS

NEW	EXISTING	DESCRIPTION
		DETECTOR HANDHOLE
		PULL BOX, No. 5 UNLESS OTHERWISE INDICATED
		VAULT

DESIGNATIONS:  
 3 No. 3 PULL BOX  
 5 No. 5 PULL BOX  
 6 No. 6 PULL BOX  
 7 No. 7 PULL BOX (CEILING)  
 8 No. 8 PULL BOX  
 9 No. 9 PULL BOX (STRUCTURE)  
 9A No. 9A PULL BOX (STRUCTURE)

TYPE:  
 (E) EXTENDED PULL BOX  
 (T) TRAFFIC PULL BOX  
 (TR) TAMPER-RESISTANT PULL BOX

### VEHICLE DETECTOR DESIGNATION



### DETECTORS

NEW	EXISTING	DESCRIPTION
		TYPE A LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE B LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE C LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE D LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE E LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE F LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE G LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		MICROWAVE OR VIDEO DETECTION ZONE

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (LEGEND)

NO SCALE

RSP ES-1C DATED APRIL 17, 2020 SUPERSEDES RSP ES-1C DATED OCTOBER 18, 2019  
AND RSP ES-1C DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-1C  
DATED MAY 31, 2018 - PAGE 477 OF THE STANDARD PLANS BOOK DATED 2018.

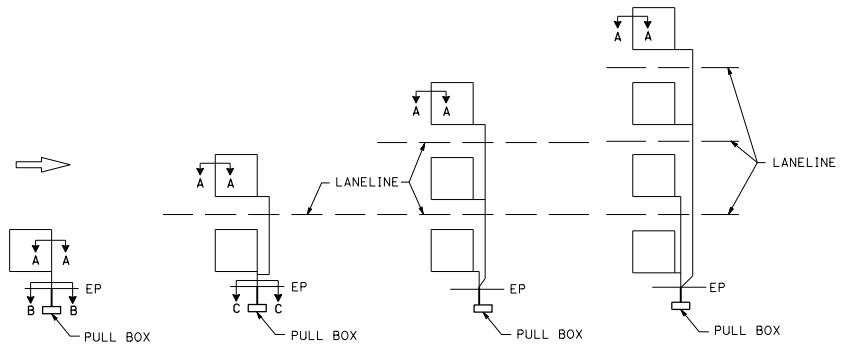
**REVISED STANDARD PLAN RSP ES-1C**

2018 REVISED STANDARD PLAN RSP ES-1C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

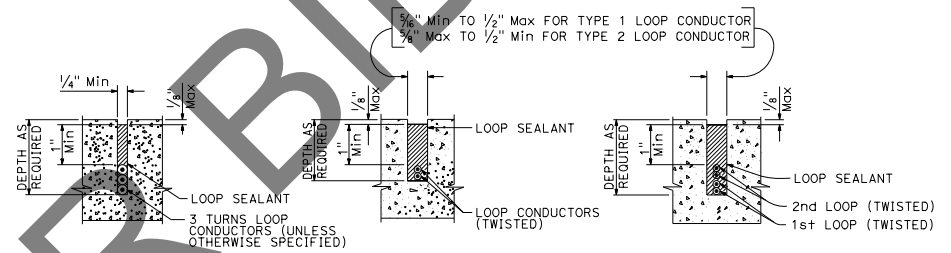
H.R.F.  
 REGISTERED ELECTRICAL ENGINEER  
 May 31, 2018  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
 Hamid Zolfaghari  
 No. E15636  
 Exp. 12-31-19  
 ELECTRICAL  
 STATE OF CALIFORNIA



**SAW CUT DETAILS**

Type A loop detector configurations illustrated

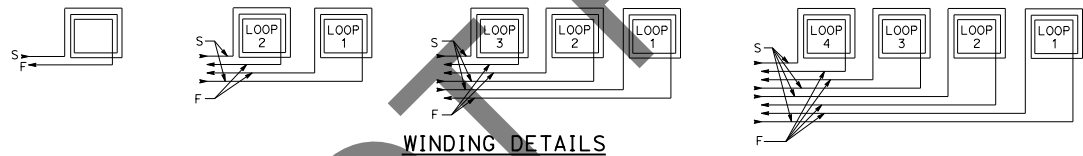


**SECTION A-A**

**SECTION B-B**

**SECTION C-C**

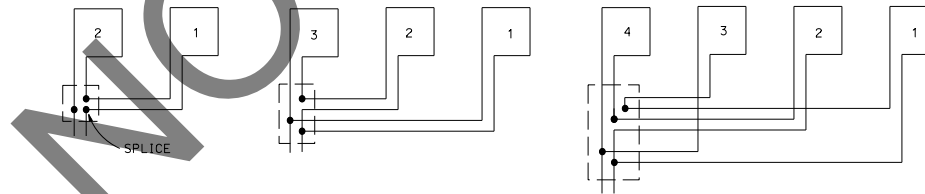
**SLOT DETAILS - TYPE 1 AND TYPE 2 LOOP CONDUCTOR**



**WINDING DETAILS**

**ABBREVIATIONS:**

- S - START
- F - FINISH




**TYPICAL LOOP CONNECTIONS**

Dashed lines represent the pull box

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
 (LOOP DETECTORS)**

NO SCALE

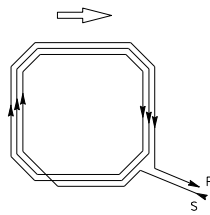
**ES-5A**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
					
REGISTERED ELECTRICAL ENGINEER October 19, 2018 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

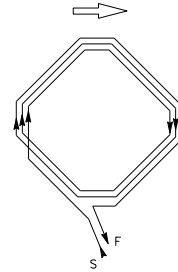
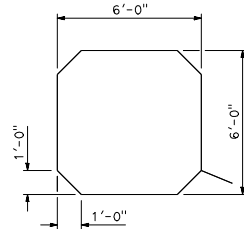
TO ACCOMPANY PLANS DATED \_\_\_\_\_

**NOTES:**

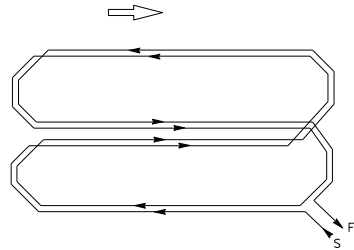
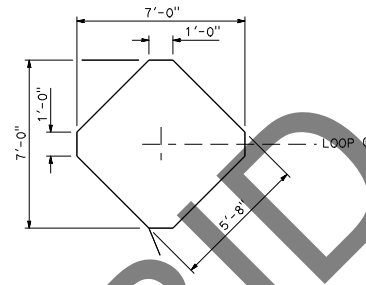
1. Round corners of acute angle saw cuts to prevent damage to conductors.
2. Typical distance separating loops from edge is 10' for Type A, B, D, E, and F installation in single lane.
3. Use Type D and F loops for limit line detection and bicycle lanes.



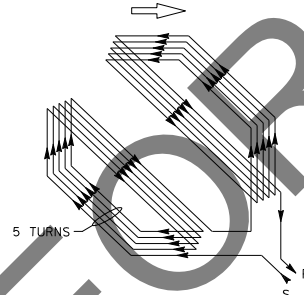
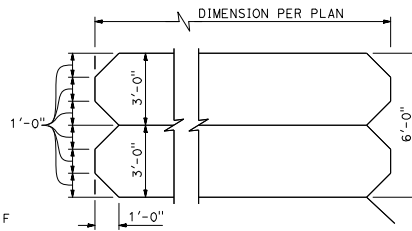
WINDING DETAIL  
TYPE A LOOP DETECTOR CONFIGURATION



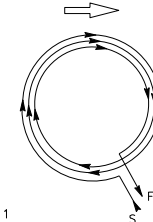
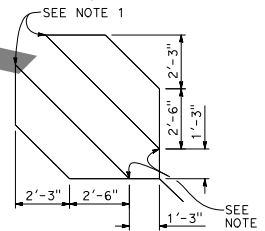
WINDING DETAIL  
TYPE B LOOP DETECTOR CONFIGURATION



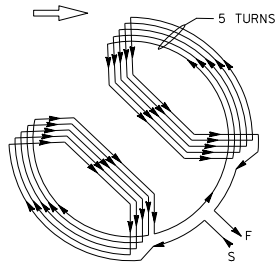
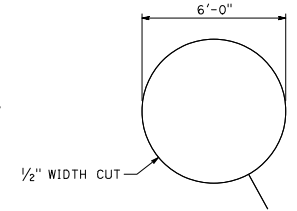
WINDING DETAIL  
TYPE C LOOP DETECTOR CONFIGURATION



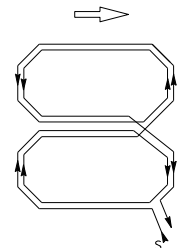
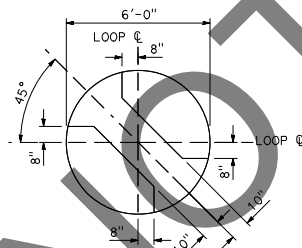
WINDING DETAIL  
TYPE D LOOP DETECTOR CONFIGURATION



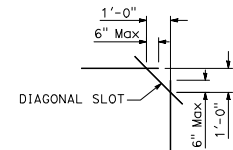
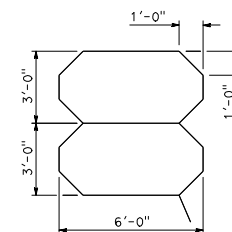
WINDING DETAIL  
TYPE E LOOP DETECTOR CONFIGURATION



WINDING DETAIL  
TYPE F LOOP DETECTOR CONFIGURATION



WINDING DETAIL  
TYPE Q LOOP DETECTOR CONFIGURATION



PLAN VIEW OF  
DIAGONAL SLOT  
AT CORNERS

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS**  
**(DETECTORS)**

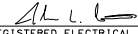
NO SCALE

RSP ES-5B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-5B  
DATED MAY 31, 2018- PAGE 505 OF THE STANDARD PLANS BOOK DATED 2018.

**REVISED STANDARD PLAN RSP ES-5B**

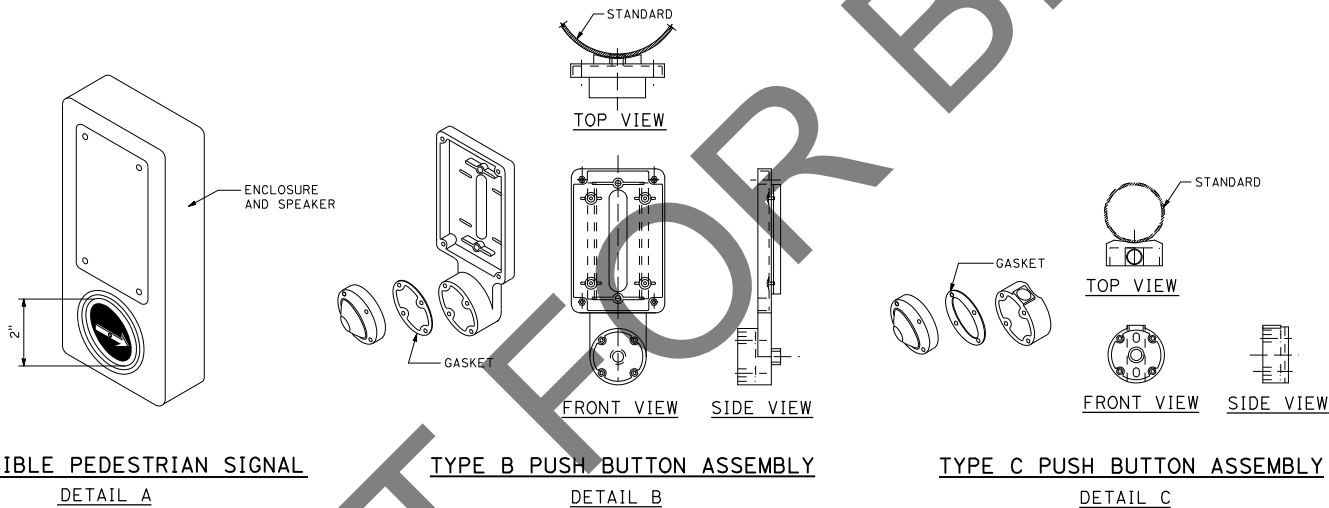
2018 REVISED STANDARD PLAN RSP ES-5B

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

  
 REGISTERED ELECTRICAL ENGINEER  
 October 15, 2021  
 PLANS APPROVAL DATE  
 No. E17490  
 Exp. 6-30-23  
 REGISTERED PROFESSIONAL ENGINEER  
 ELECTRICAL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED \_\_\_\_\_



NOT FOR BID

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS  
(ACCESSIBLE PEDESTRIAN SIGNAL  
AND PUSH BUTTON ASSEMBLIES)**

NO SCALE

RSP ES-5C DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN ES-5C  
DATED MAY 31, 2018 - PAGE 506 OF THE STANDARD PLANS BOOK DATED 2018.

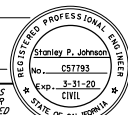
**REVISED STANDARD PLAN RSP ES-5C**

2018 REVISED STANDARD PLAN RSP ES-5C

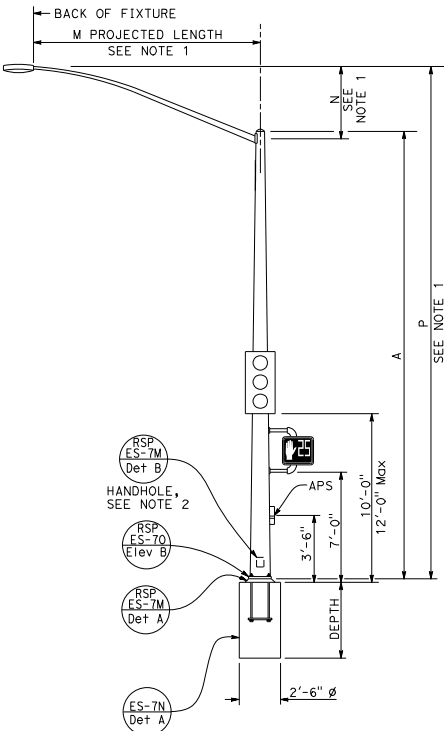


**NOTES:**

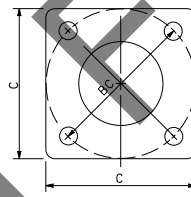
1. For additional notes, details and data for Type 15TS and Type 21TS Standards, see Standard Plan ES-6A.
2. Handhole shall be located on the downstream side of traffic.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
					
REGISTERED CIVIL ENGINEER Stanley P. Johnson No. CS1793 October 19, 2018 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OR ITS OFFICERS OF AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

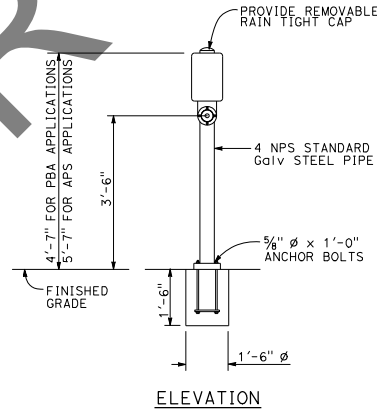
TO ACCOMPANY PLANS DATED \_\_\_\_\_



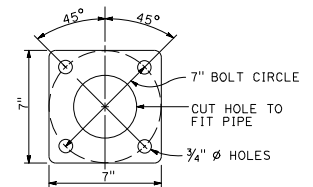
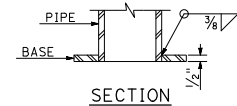
**TYPE 15TS AND 21TS STANDARD**  
ELEVATION A  
(See Note 1)



**BASE PLATE**  
TYPE 15TS AND 21TS  
DETAIL A



**PUSH BUTTON ASSEMBLY POST**  
DETAIL B



**BASE PLATE**  
PBA POST

POLE TYPE	POLE DATA			WALL THICKNESS	BASE PLATE DATA			ANCHOR BOLT SIZE	DEPTH
	A HEIGHT	Min OD BASE	TOP		C	BC = BOLT CIRCLE	THICKNESS		
15TS	30'-0"	8"	3 1/8"	0.1793"	1'-1 1/2"	1'-0"	2"	1 1/2" $\phi$ x 42"	7'-6"
21TS	35'-0"	9 3/8"	3 3/8"	0.1793"	1'-3"	1'-2"	2"	1 1/2" $\phi$ x 42"	8'-6"

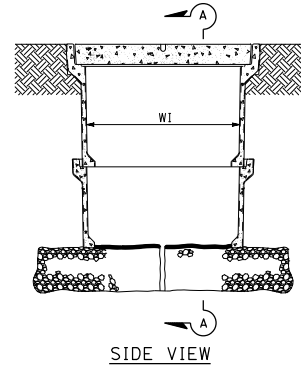
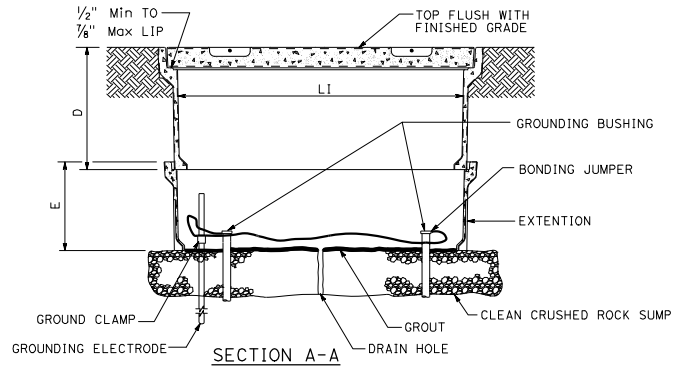
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS**  
**(SIGNAL AND LIGHTING STANDARD, TYPE TS, AND PUSH BUTTON ASSEMBLY POST)**

NO SCALE

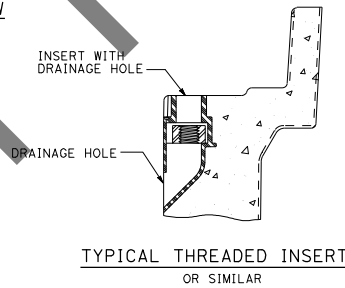
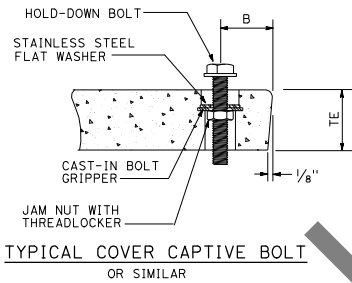
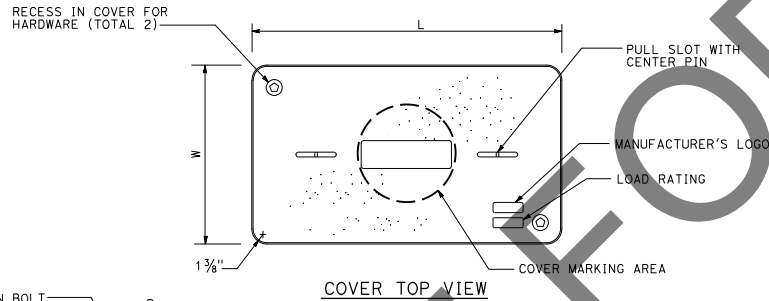
RSP ES-7A DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-7A DATED MAY 31, 2018 - PAGE 515 OF THE STANDARD PLANS BOOK DATED 2018.

**REVISED STANDARD PLAN RSP ES-7A**

2018 REVISED STANDARD PLAN RSP ES-7A



**INSTALLATION DETAILS**  
DETAIL A



**NOMINAL DIMENSIONS TABLE**

PULL BOX TYPE	PULL BOX				COVER					
	MINIMUM DEPTH BOX (D)	MINIMUM DEPTH EXTENSION (E)	MAXIMUM WEIGHT	LI Min	WI Min	TE	B	L	W	MAXIMUM WEIGHT
No. 3/2	12"	N/A	40 lb	1' - 2 3/8"	9"	1 5/8" - 1 3/4"	1 3/4"	1' - 3 1/4" - 1' - 3 3/8"	10" - 10 1/8"	30 lb
No. 5	12"	10"	65 lb	1' - 8"	11"	2"	1 3/4"	1' - 11 1/4"	1' - 1 3/4"	60 lb
No. 6	12"	10"	70 lb	2' - 4 1/4"	1' - 3 1/4"	2"	2"	2' - 6 1/2"	1' - 5 1/2"	95 lb

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

H.R.F.  
 REGISTERED ELECTRICAL ENGINEER  
 October 18, 2019  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Hamid Zolfaghari  
 No. E15636  
 Exp. 12-31-19  
 REGISTERED PROFESSIONAL ENGINEER  
 ELECTRICAL  
 STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED \_\_\_\_\_

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS**  
**(NON-TRAFFIC PULL BOX)**  
NO SCALE

RSP ES-8A DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN ES-8A  
DATED MAY 31, 2018 - PAGE 532 OF THE STANDARD PLANS BOOK DATED 2018.

**REVISED STANDARD PLAN RSP ES-8A**

2018 REVISED STANDARD PLAN RSP ES-8A

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

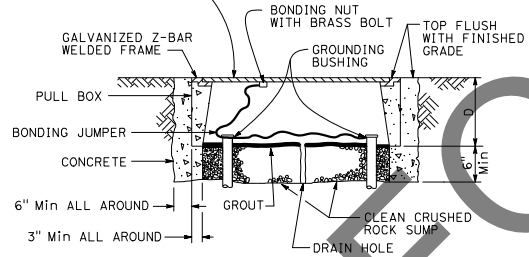
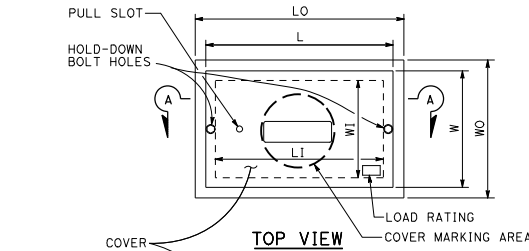
H.R.F.  
REGISTERED ELECTRICAL ENGINEER

October 18, 2019  
PLANS APPROVAL DATE

Hamid Zolfaghari  
No. E15636  
Exp. 12-31-19  
ELECTRICAL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED \_\_\_\_\_



SECTION A-A  
No. 3½(T), No. 5(T), AND No. 6(T)  
TRAFFIC PULL BOX

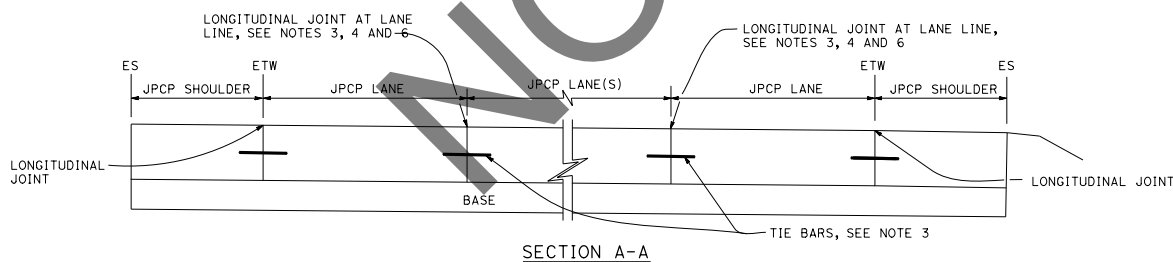
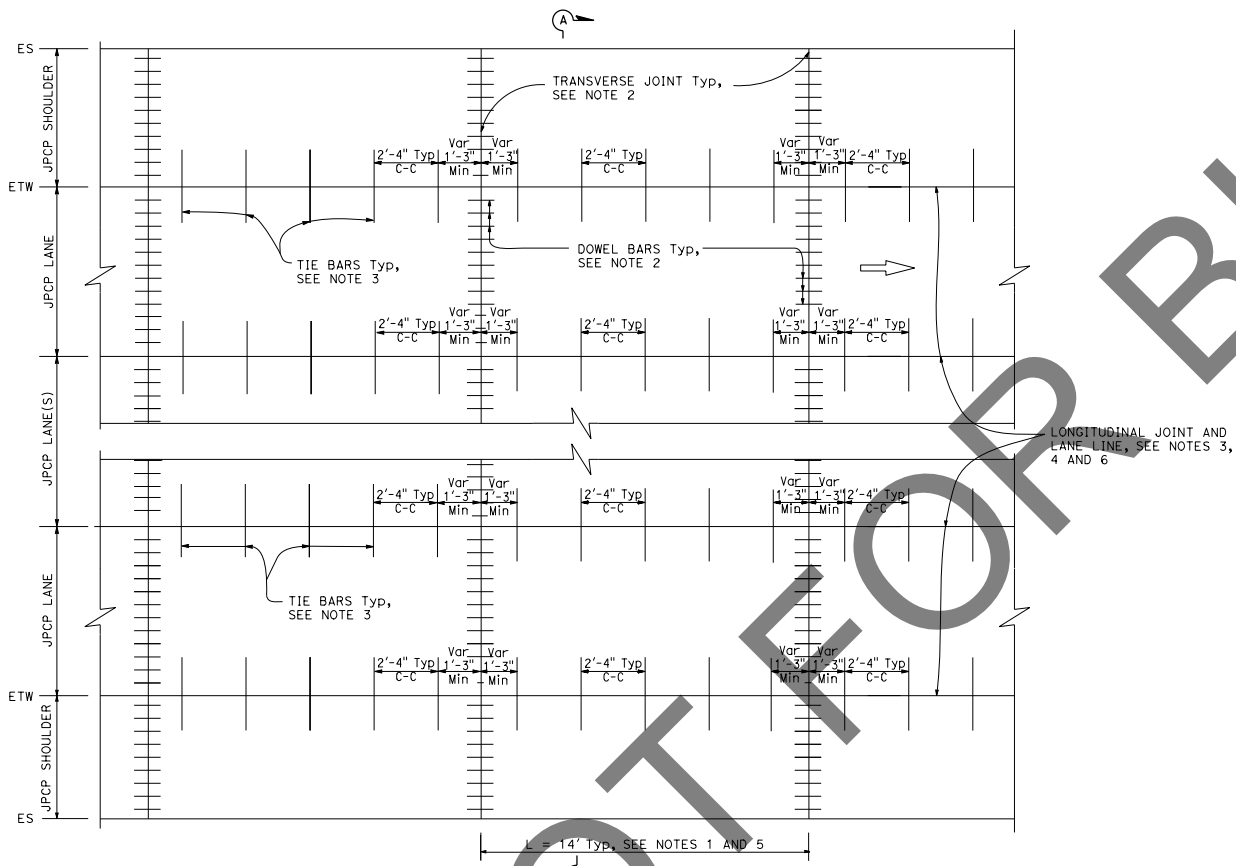
NOMINAL DIMENSIONS TABLE									
	PULL BOX						COVER		
PULL BOX TYPE	MINIMUM THICKNESS	MINIMUM DEPTH D	LO	LI	WO	WI	L	W	
No. 3½(T)	1½"	1'-0"	1'-10" - 1'-11"	1'-5" - 1'-6½"	1'-3" - 1'-4"	10" - 1'-0"	1'-8" - 1'-8½"	1'-1" - 1'-2"	
No. 5(T)	1¾"	1'-0"	2'-5" - 2'-6"	2'-0" - 2'-1"	1'-6" - 1'-7"	1'-1" - 1'-2"	2'-3" - 2'-3½"	1'-4" - 1'-4½"	
No. 6(T)	2"	1'-0"	2'-11" - 3'-1"	2'-6" - 2'-7"	1'-10" - 2'-0"	1'-5" - 1'-6"	2'-9" - 2'-9½"	1'-8" - 1'-8½"	

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
(TRAFFIC PULL BOX)**  
NO SCALE

RSP ES-8B DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN ES-8B  
DATED MAY 31, 2018 - PAGE 533 OF THE STANDARD PLANS BOOK DATED 2018.  
**REVISED STANDARD PLAN RSP ES-8B**

2018 REVISED STANDARD PLAN RSP ES-8B

154



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

*Dulce Rufino Feldman*  
 REGISTERED CIVIL ENGINEER

May 31, 2018  
 PLANS APPROVAL DATE

Dulce Rufino Feldman  
 No. CB1459  
 Exp. 9-30-19  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

1. Transverse joint spacing may be adjusted to no less than 10' and no more than 14' to conform to bridges, change in pavement type, and hardened concrete pavement.
2. For transverse joint and dowel bar details not shown, see Standard Plan P10.
3. For longitudinal joint and tie bar details not shown, see Standard Plan P15.
4. For additional longitudinal joint layout details, see Standard Plan P18.
5. For joint layout at intersections, see Project Plans.
6. For dowel bars at longitudinal joint, see Standard Plan P18.

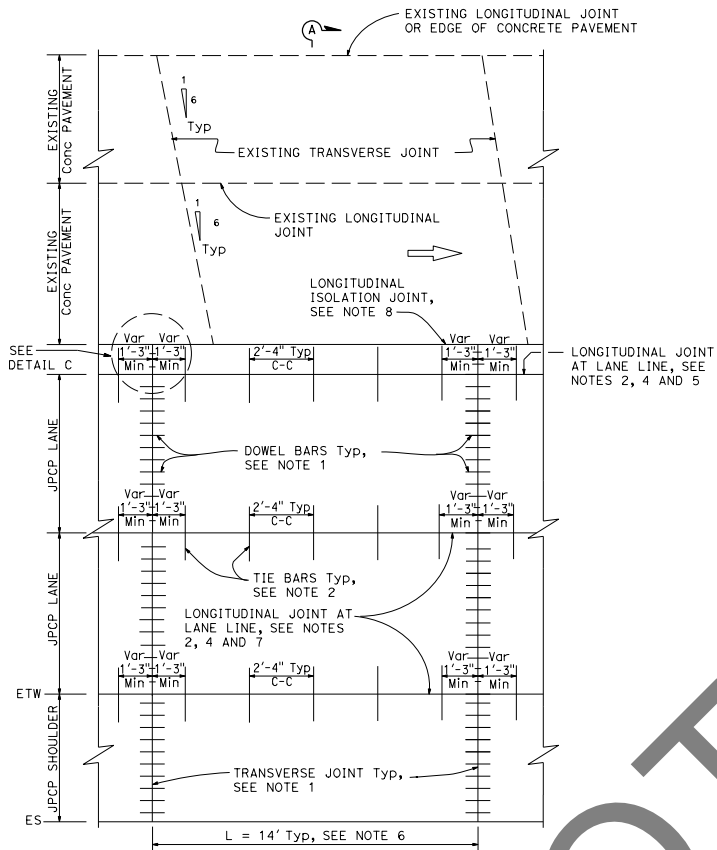
STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**JOINTED PLAIN  
 CONCRETE PAVEMENT  
 NEW CONSTRUCTION**

NO SCALE

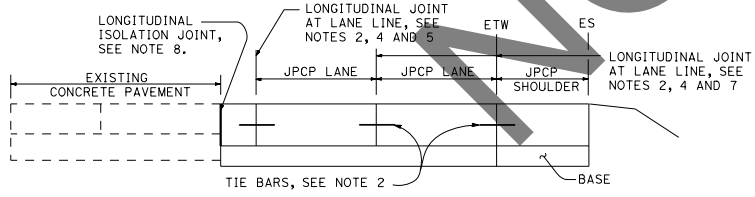
**P1**

2018 STANDARD PLAN P1

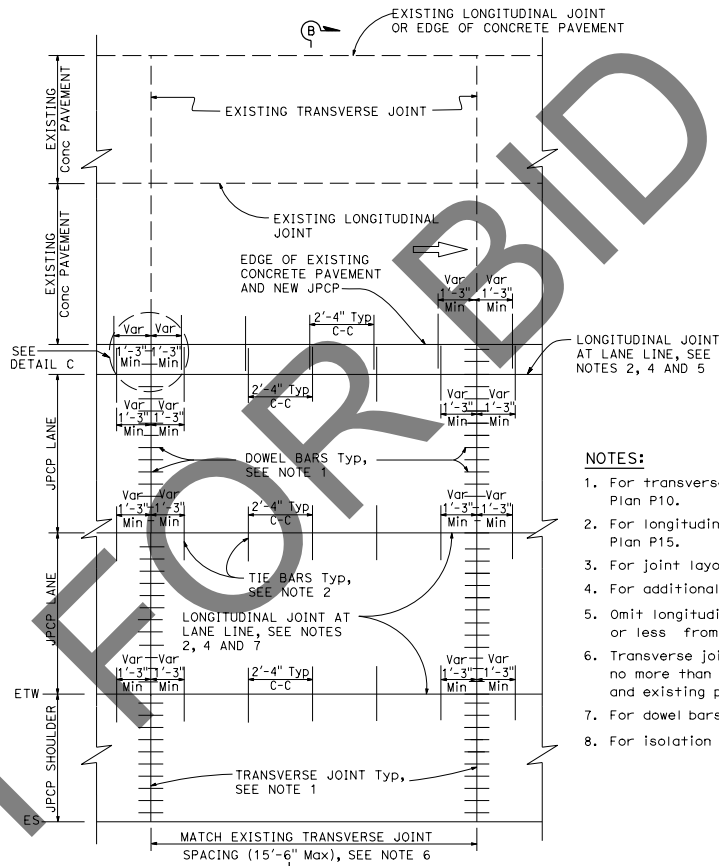
*Return to Table of Contents*



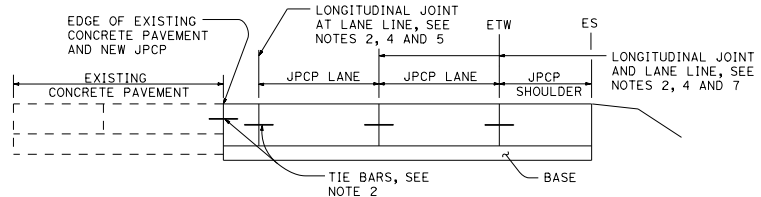
**PLAN ISOLATED**  
See Note 3



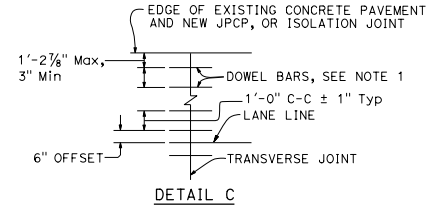
**SECTION A-A**



**PLAN TIED**  
See Note 3



**SECTION B-B**



**NOTES:**

1. For transverse joint and dowel bar details not shown, see Standard Plan P10.
2. For longitudinal joint and tie bar details not shown, see Standard Plan P15.
3. For joint layout at intersections, see Project Plans.
4. For additional longitudinal joint details, see Standard Plan P18.
5. Omit longitudinal joint when edge of new concrete pavement is 3'-3" or less from JPCP lane line.
6. Transverse joint spacing may be adjusted to no less than 10' and no more than 15'-6" to conform to bridges, change in pavement type and existing pavement.
7. For dowel bars at longitudinal joint. see Standard Plan P18.
8. For isolation joints, see Detail A on Standard Plan P18.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

*Dulce Rufino Feldman*  
REGISTERED CIVIL ENGINEER

May 31, 2018  
PLANS APPROVAL DATE

No. C81459  
Exp. 9-30-19  
CIVIL

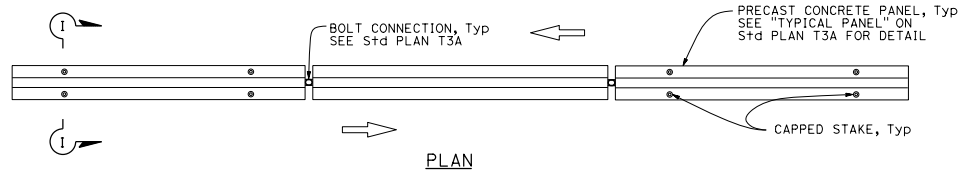
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

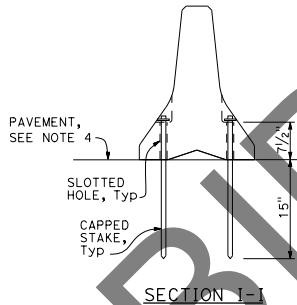
**JOINED PLAIN CONCRETE PAVEMENT LANE AND SHOULDER ADDITION OR REPLACEMENT**

NO SCALE **P3A**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
May 31, 2018 PLANS APPROVAL DATE					
No. C60200 Exp. 6-30-19 CIVIL					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

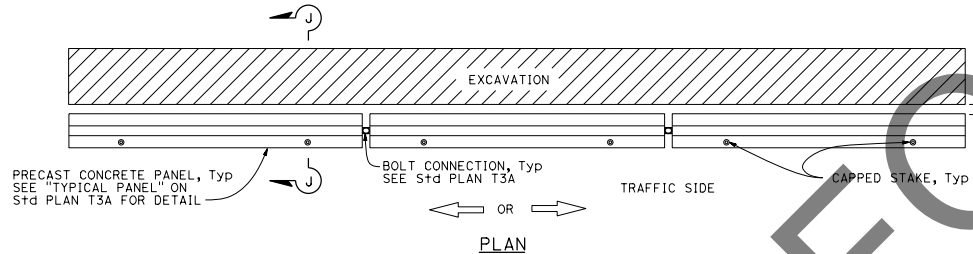


**RAILING STAKING CONFIGURATION FOR TWO-WAY TRAFFIC**  
See Note 2

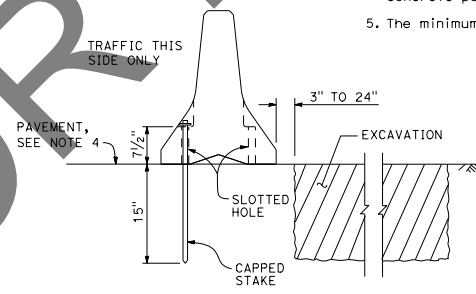


**SECTION I-I**

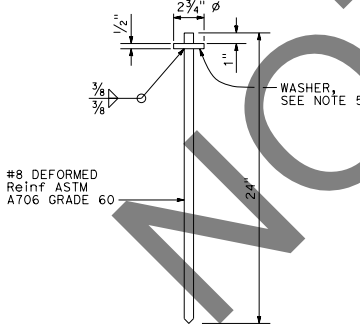
- NOTES:**
1. Where Type K Temporary Railing is placed on curves and radii that are too severe to connect panels with bolted joints, the railing must be backed continuously with earth fill. See Section F-F.
  2. Where Type K Temporary Railing is placed as a temporary or long term barrier in two-way traffic on highways with less than 24" from the edge of traveled way, use four capped stakes per every other panel with end panels staked.
  3. Where Type K Temporary Railing is placed 3" to 24" from the edge of an excavation on highways, use two capped stakes per panel along the traffic side.
  4. Staked Type K Temporary Railing must be supported by at least 4" thick concrete, hot mix asphalt or existing asphalt concrete pavement.
  5. The minimum yield strength for the washer must be 60,000 psi.



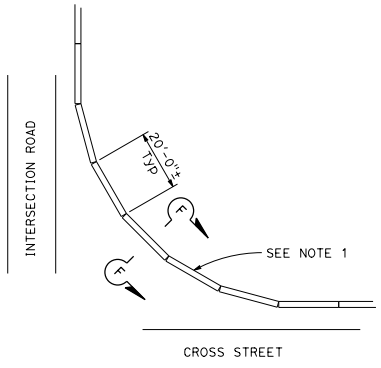
**RAILING STAKING CONFIGURATION ADJACENT TO AN EXCAVATION**  
See Note 3



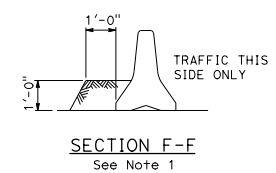
**SECTION J-J**



**CAPPED STAKE DETAIL**



**CURVED LAYOUT**



**SECTION F-F**  
See Note 1

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY RAILING (TYPE K)**  
NO SCALE

**T3B**

2018 STANDARD PLAN T3B

282

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

*Atifa Ferouz*  
REGISTERED CIVIL ENGINEER

May 31, 2018  
PLANS APPROVAL DATE

Atifa Ferouz  
No. C80402  
EXP. 3-31-19  
CIVIL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TABLE 1

SPEED (S)	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)				MAXIMUM CHANNELIZING DEVICE SPACING		
	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	X	Y	Z **
					TAPER	TANGENT	CONFLICT
mph	ft	ft	ft	ft	ft	ft	ft
20	160	80	40	27	20	40	10
25	250	125	63	42	25	50	12
30	360	180	90	60	30	60	15
35	490	245	123	82	35	70	17
40	640	320	160	107	40	80	20
45	1080	540	270	180	45	90	22
50	1200	600	300	200	50	100	25
55	1320	660	330	220	50	100	25
60	1440	720	360	240	50	100	25
65	1560	780	390	260	50	100	25
70	1680	840	420	280	50	100	25
75	1800	900	450	300	50	100	25

\* - For other offsets, use the following merging taper length formula for L:  
For speed of 40 mph or less,  $L = WS^2/60$   
For speed of 45 mph or more,  $L = WS$

Where: L = Taper length in feet  
W = Width of offset in feet

S = Posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

\*\* - Use for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers (CA).

TABLE 2

SPEED *	Min D **	DOWNGRADE Min D ***		
		-3%	-6%	-9%
		ft	ft	ft
mph	ft	ft	ft	ft
20	115	116	120	126
25	155	158	165	173
30	200	205	215	227
35	250	257	271	287
40	305	315	333	354
45	360	378	400	427
50	425	446	474	507
55	495	520	553	593
60	570	598	638	686
65	645	682	728	785
70	730	771	825	891
75	820	866	927	1003

\* - Speed is posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

\*\* - Longitudinal buffer space or flagger station spacing

\*\*\* - Use on sustained downgrade steeper than -3 percent and longer than 1 mile.

TABLE 3

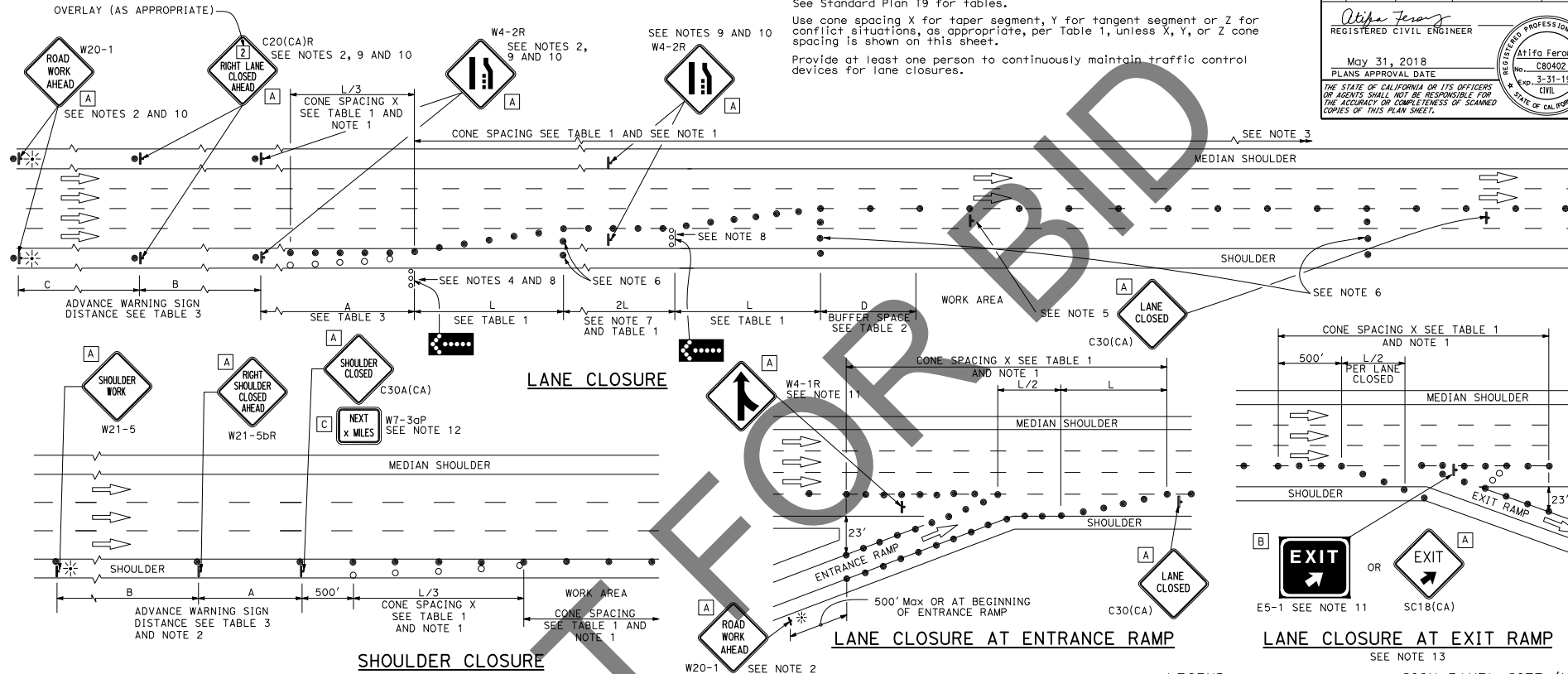
ROAD TYPE	DISTANCE BETWEEN SIGNS *		
	A	B	C
	ft	ft	ft
URBAN - 25 mph OR LESS	100	100	100
URBAN - MORE THAN 25 mph TO 40 mph	250	250	250
URBAN - MORE THAN 40 mph	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1500	2640

\* - The distances are approximate, are intended for guidance purposes only, and should be applied with engineering judgment. These distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommended distances.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL SYSTEM TABLES  
FOR LANE AND RAMP CLOSURES**

NO SCALE



- NOTES:**
1. Portable delineators placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.
  2. Each advance warning sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
  3. A C20-2 "END ROAD WORK" sign, with minimum size of 48" x 24" as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious or ends within the larger project's limits.
  4. A minimum 1500' sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at the top of crest vertical curve or on a horizontal curve.

5. Place a C30(CA) sign every 1000' throughout length of lane closure.
6. A minimum of 3 cones shall be placed transversely across each closed lane and shoulder at each location where a taper across a traffic lane ends and every 1000' as shown on the "Lane Closure" detail. Two type II barricades may be used instead of the 3 cones. The transverse alignment of the cones or barricades on the closed shoulder may be shifted from the transverse alignment to provide access to the work.
7. The 2L tangent shown along lane lines shall be used between the L tapers required for each closed traffic lane.
8. Use one flashing arrow sign for each lane closed. The flashing arrow sign shall be Type I.
9. Median lane closures shall conform to the details as shown except that C20(CA)L and W4-2L signs shall be used.

10. Duplicate sign installations are not required:
  - a) On opposite shoulder if at least one-half of the available lanes remain open to traffic.
  - b) In the median if the width of the median shoulder is less than 8' and the outside lanes are to be closed.
11. The E5-1 or SC18(CA) and W4-1 signs shall be used as shown.
12. A W7-3aP "NEXT --- MILES" plaque must be used if the shoulder closure extends beyond the distance that can be perceived by road users.
13. For the warning sign requirements at the Exit Ramp, when work is proposed on the local street, see CA MUTCD Figure 6H-22 to 6H-27.

**NOTES:**

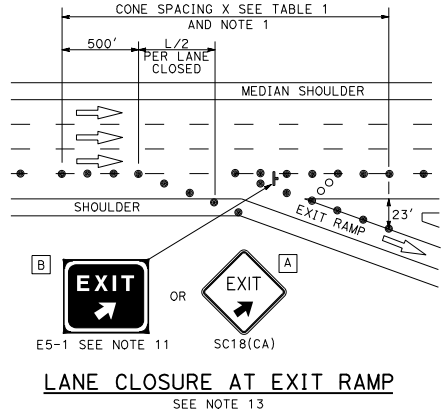
See Standard Plan T9 for tables.  
 Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.  
 Provide at least one person to continuously maintain traffic control devices for lane closures.

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL No. SHEETS

Atifa Ferouz  
 REGISTERED CIVIL ENGINEER  
 No. C80402  
 Exp. 3-31-19  
 CIVIL

May 31, 2018  
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



**LEGEND**

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- ⊥ TEMPORARY TRAFFIC CONTROL SIGN
- ⬇ FLASHING ARROW SIGN (FAS)
- ⇄ FAS SUPPORT OR TRAILER
- ⚡ PORTABLE FLASHING BEACON

**SIGN PANEL SIZE (Min)**

- A 48" x 48"
- B 72" x 60"
- C 36" x 30"

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL SYSTEM  
 FOR LANE CLOSURE ON  
 FREEWAYS AND EXPRESSWAYS**

NO SCALE

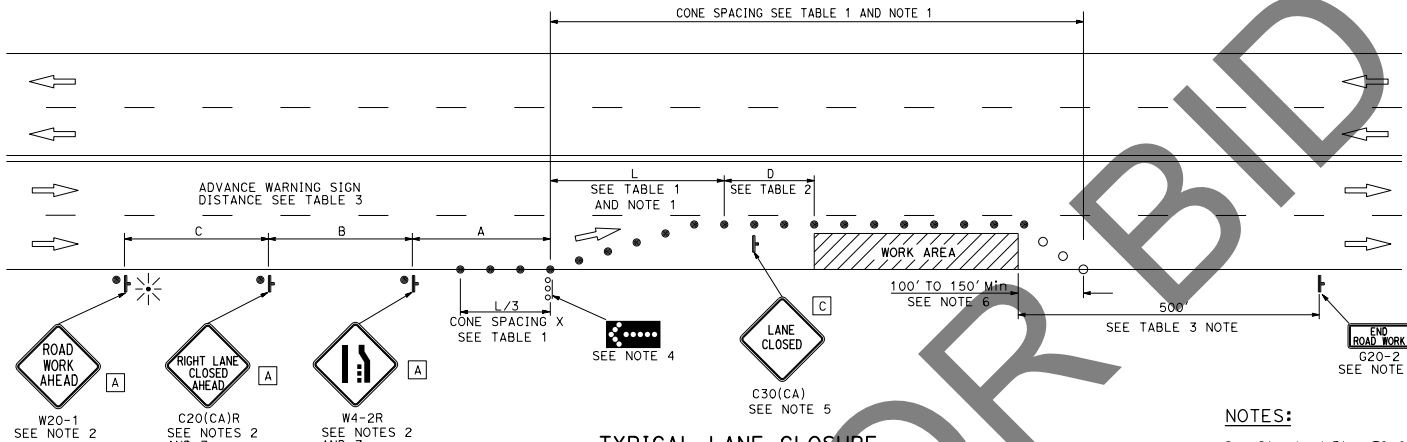
**T10**



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

*Atifa Ferouz*  
 REGISTERED CIVIL ENGINEER  
 PLANS APPROVAL DATE: May 31, 2018  
 No. C80402  
 EXP. 3-31-19  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



TYPICAL LANE CLOSURE

**NOTES:**

- See Standard Plan T9 for tables.
- Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.
- Provide at least one person to continuously maintain traffic control devices for lane closures.

**LEGEND**

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- † TEMPORARY TRAFFIC CONTROL SIGN
- ⬢ FLASHING ARROW SIGN (FAS)
- ▬ FAS SUPPORT OR TRAILER
- ☀ PORTABLE FLASHING BEACON

**SIGN PANEL SIZE (Min)**

- A 48" x 48"
- B 36" x 18"
- C 30" x 30"

**NOTES:**

- Portable delineators placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.
- Each advance warning sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
- A G20-2 "END ROAD WORK" sign shall be placed at the end of the lane closure unless the end of work area is obvious or ends within the larger project's limits.
- A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at the top of crest vertical curve or on a horizontal curve.
- Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals throughout extended work area.
- Length may be reduced by the Engineer to address site conditions.
- Median lane closures shall conform to the details shown except that C20(CA)L and W4-2L signs shall be used.
- For approach speeds over 50 MPH, use the "Traffic Control System for Lane Closure on Freeways and Expressways" plan for lane closure details and requirements.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**TRAFFIC CONTROL SYSTEM  
 FOR LANE CLOSURE ON  
 MULTILANE CONVENTIONAL  
 HIGHWAYS**  
 NO SCALE

**T11**

2018 STANDARD PLAN T11

**NOTES:**

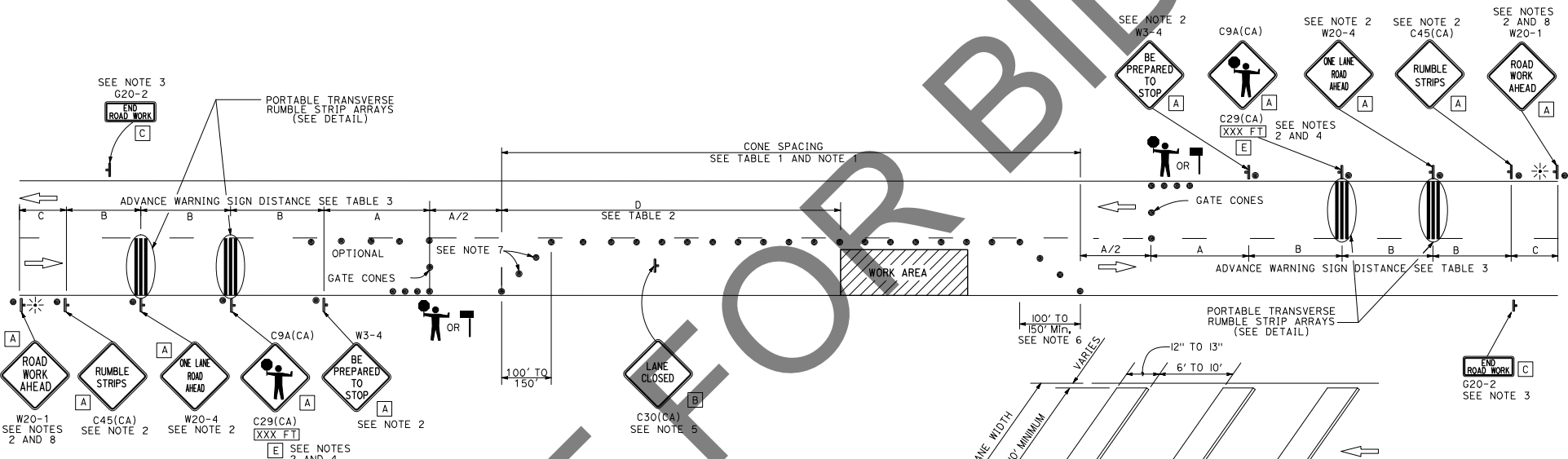
See Standard Plan T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Provide at least one person to continuously maintain traffic control devices for lane closures.

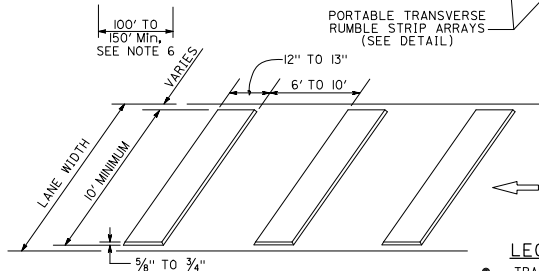
D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

*Atifa Ferouz*  
 REGISTERED CIVIL ENGINEER  
 April 16, 2021  
 PLANS APPROVAL DATE  
 No. C80402  
 EXP. 3-31-23  
 CIVIL  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



**NOTES:**

- Portable delineators placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.
- Sign must be equipped with at least two flags for daytime closures. Flags must be orange in color and at least 16 inches by 16 inches in size. Place flashing beacons as shown for closures during hours of darkness.
- A G20-2 "END ROAD WORK" sign, shall be placed at the end of the lane closure unless the end of work area is obvious or ends within the larger project's limits.
- An optional C29(CA) sign may be placed below the C9A(CA) sign.
- Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals throughout extended work area. They are optional if the work area is visible from the flagger station.
- Length may be reduced by the Engineer to address site conditions.
- Either traffic cones or barricades shall be placed on the taper. Barricades shall be Type I, II, or III.
- If C45(CA) is not used, measure distance C from W20-4.



**LEGEND**

- TRAFFIC CONE
- ⚡ TEMPORARY TRAFFIC CONTROL SIGN
- ⚡ PORTABLE FLASHING BEACON
- 🚧 FLAGGER
- 🚧 AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)

**SIGN PANEL SIZE (Min)**

A	48" x 48"
B	30" x 30"
C	36" x 18"
D	36" x 42"
E	20" x 7"

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TRAFFIC CONTROL SYSTEM  
WITH REVERSIBLE CONTROL ON  
TWO LANE CONVENTIONAL  
HIGHWAYS**  
NO SCALE

RSP T13 DATED APRIL 16, 2021 SUPERSEDES RSP T13 DATED OCTOBER 18, 2019 AND STANDARD PLAN T13 DATED MAY 31, 2018 - PAGE 291 OF THE STANDARD PLANS BOOK DATED 2018.

**REVISED STANDARD PLAN RSP T13**

2018 REVISED STANDARD PLAN RSP T13

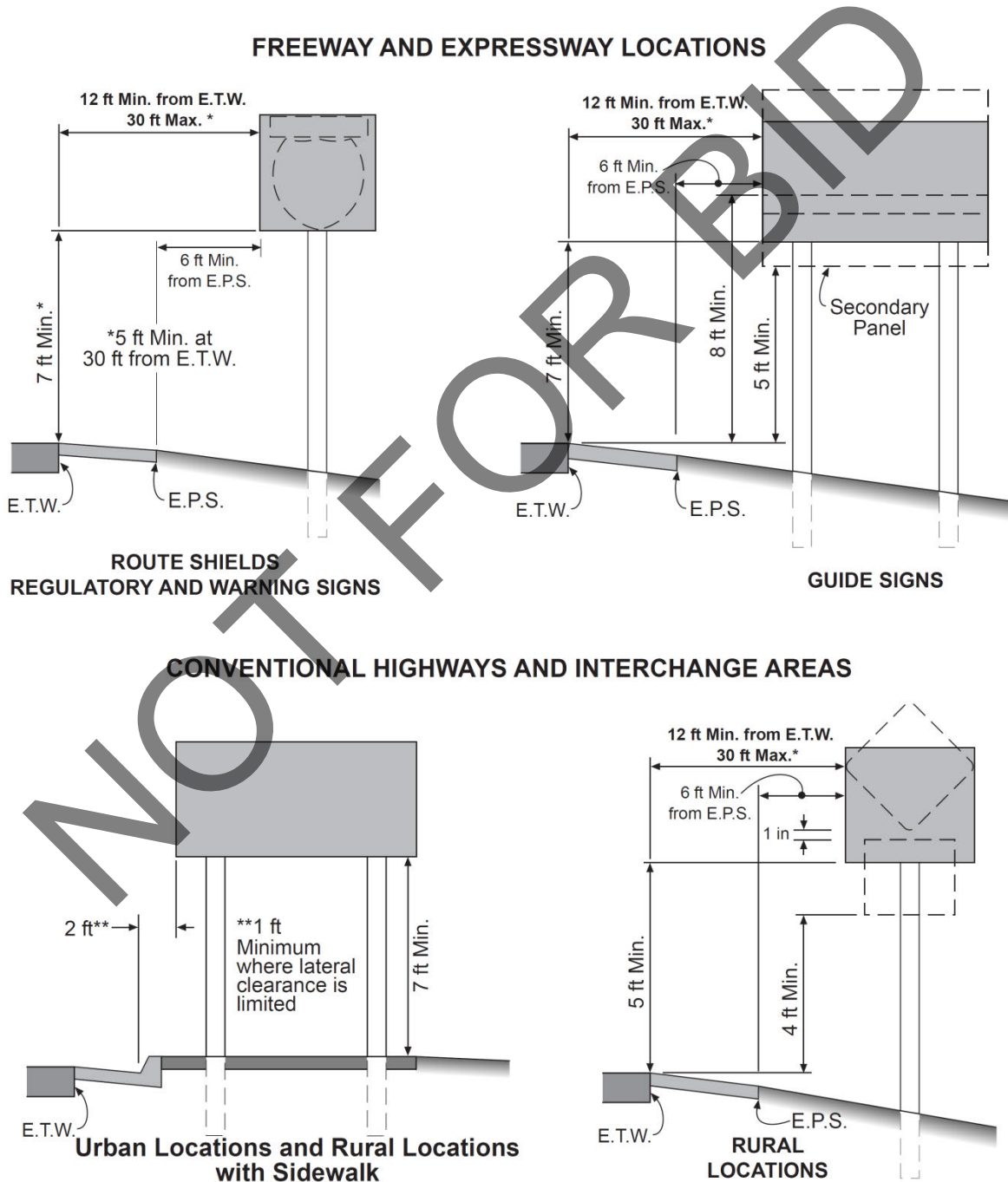
**Figure 2A-2 (CA). Examples of Heights and Lateral Locations of Sign Installations**

**NOTES:**

These sign positions are typical and should be considered a standard. When physical conditions require deviation from these typicals, they should be documented. When clear roadside recovery areas are provided, signs shall be placed as far from the traveled way as possible, up to 30 ft. When possible, they should be placed in protected locations.

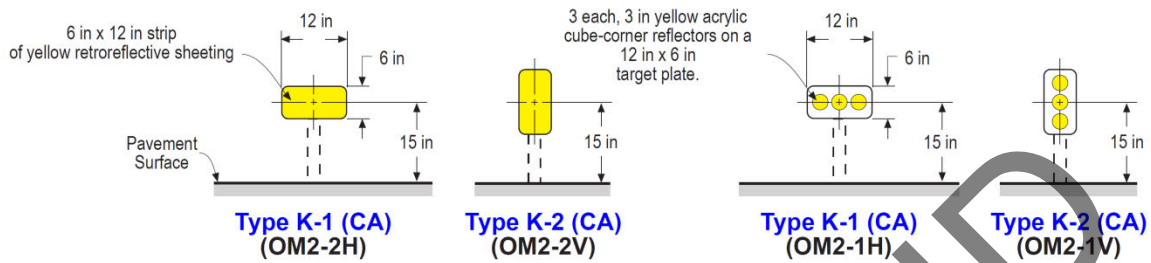
Signs in medians shall be placed at midpoint of median, and should not be closer than 6 ft from the edge of a paved shoulder, or if none, 12 ft from the edge of the traveled way. When appropriate, signs for opposing directions shall be placed back to back.

E.T.W. = Edge of Traveled Way  
 E.P.S. = Edge of Paved Shoulder

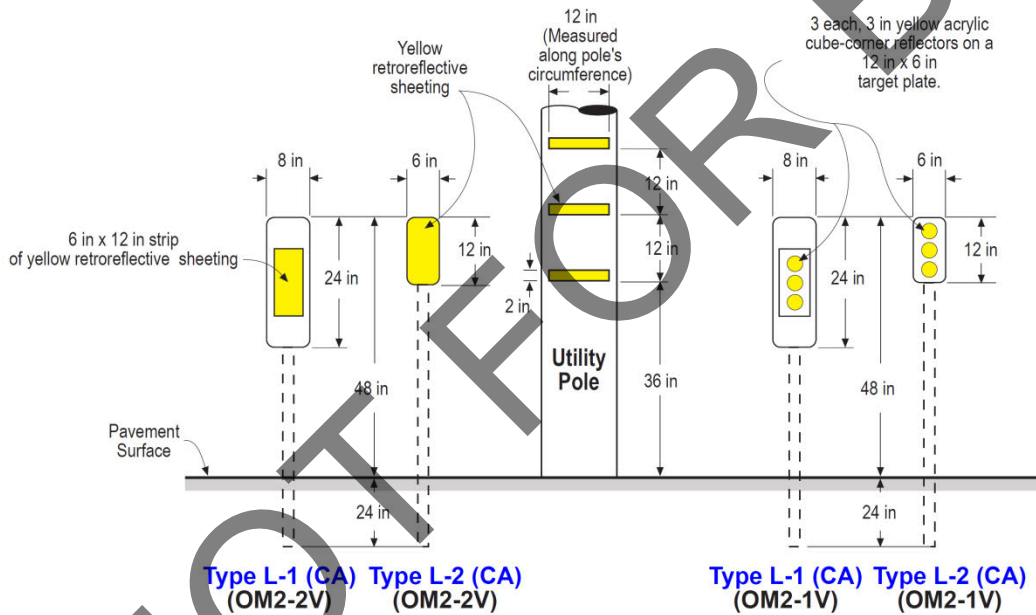


**Figure 2C-13 (CA). California Object Markers (Sheet 1 of 2)**

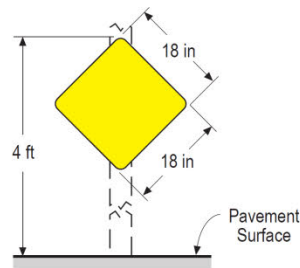
**Type K (CA) Object Marker (Type 2)  
 (obstructions adjacent to the roadway)**



**Type L (CA) Object Marker (Type 2)  
 (obstructions adjacent to the roadway)**



**Type N (CA) Object Marker (Type 1 or Type 4)  
 (obstructions within the roadway or end of roadway)**

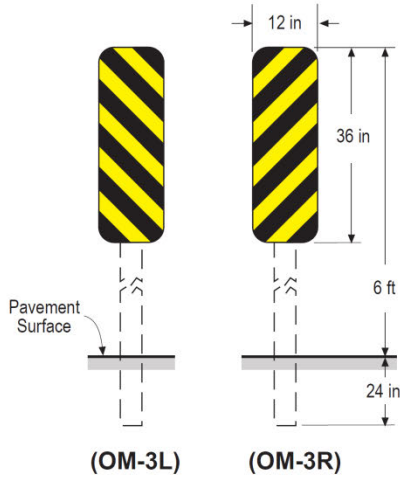


**Type N-1 (CA) (OM1-3), Type N-2 (CA) (OM4-3)**

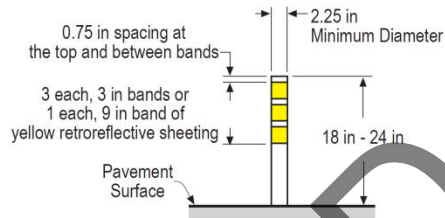
NOT TO SCALE

**Figure 2C-13 (CA). California Object Markers (Sheet 2 of 2)**

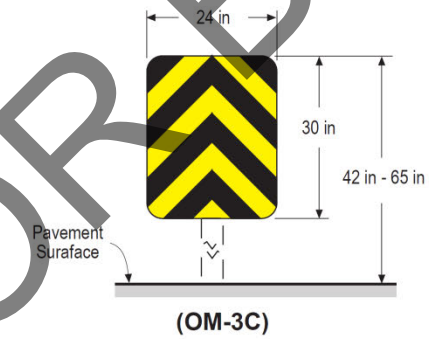
**Type P (CA) Object Marker (Type 3)  
(obstructions adjacent to the roadway)**



**Type Q (CA) Object Marker (Type 1)  
(obstructions within the roadway)**



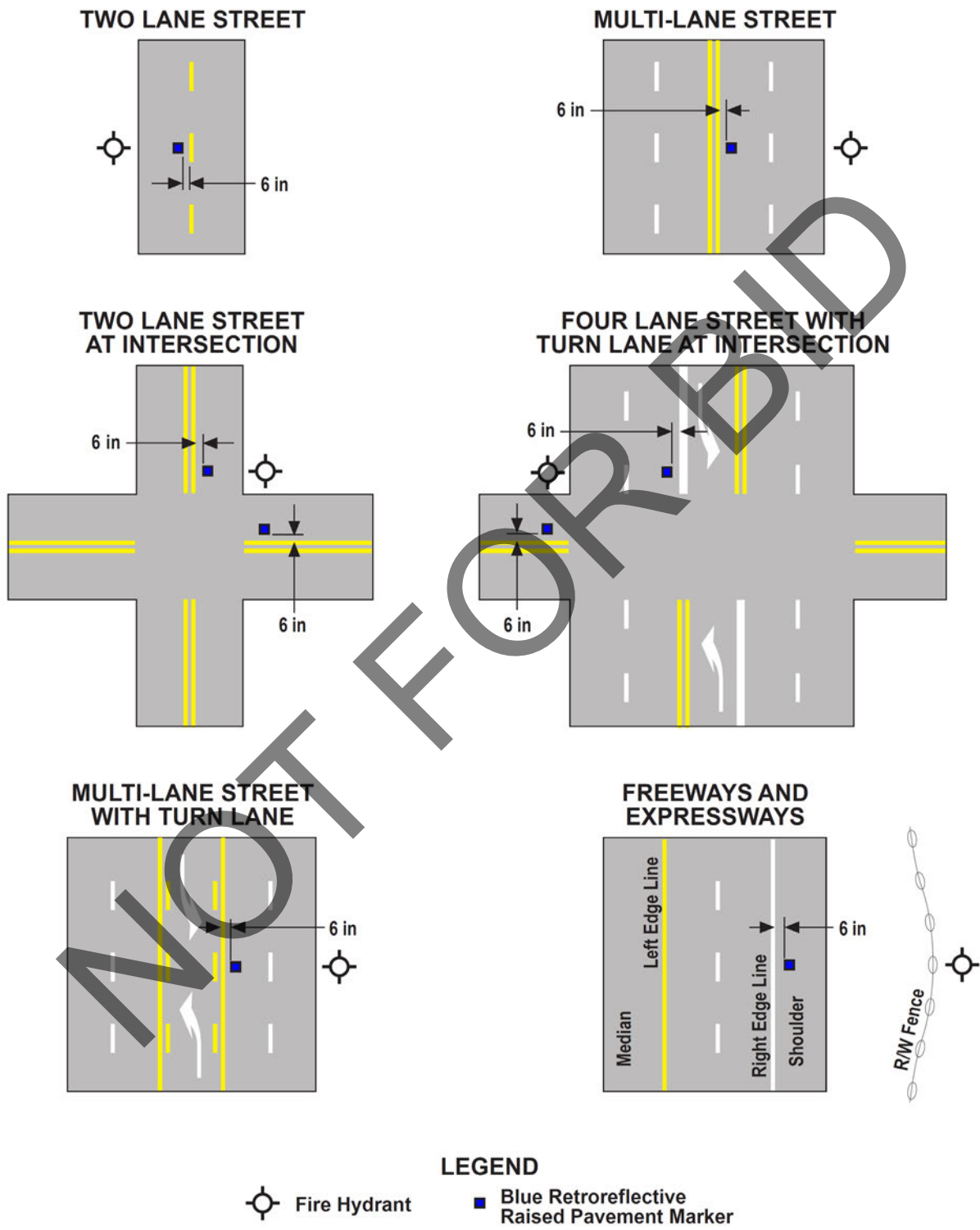
**Type R (CA) Object Marker (Type 1)  
(obstructions within the roadway)**



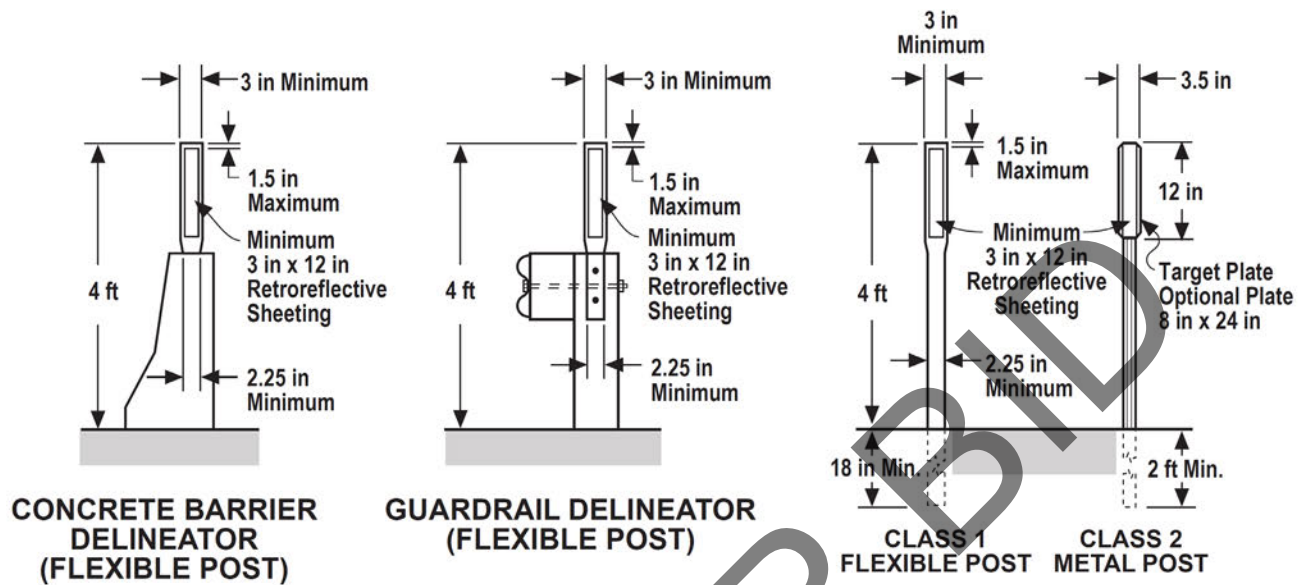
NOT TO SCALE

NOT FOR BIDDING

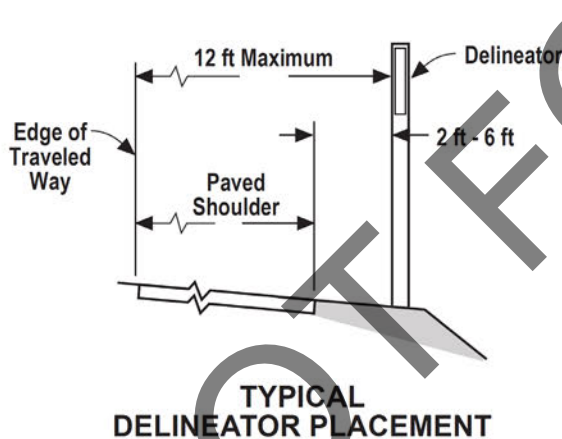
**Figure 3B-102 (CA). Examples of Fire Hydrant Location Pavement Markers**



**Figure 3F-101 (CA). Examples of Delineators**



NOT TO SCALE



**TYPES OF DELINEATORS**

TYPE	RETROREFLECTOR COLOR	
	FRONT	BACK*
E	WHITE	WHITE
F	WHITE	NONE
G	YELLOW	NONE
J	RED	NONE

\*Back Retroreflector:  
 Class 1 Delineator - 3 in ± square of retroreflective sheeting.  
 Class 2 Delineator - 3 in ± acrylic cube-corner retroreflective element.

**Notes:**

1. Class 1 (Flexible Post) Delineators are standard on State highways, except for certain locations, e.g., snow or protected areas behind guardrail, etc. The color of the post is white.
2. Class 1 (Flexible Post) Delineators used in construction or maintenance zones shall be orange with white retroreflective sheeting. However, if the delineators are to remain in place as a permanent roadway feature after the construction or maintenance period, the color of the post shall be white with the appropriate color of retroreflective sheeting as specified in Section 3F.03.
3. The Type of Retroreflective Element and Class of Post is designated as E-1, F-2, etc.

Support:

14 Since channelizers require closer spacing, their post size requirements differ from those of delineators.

15 There are two basic types of channelizers: one attaches to the pavement and the other attaches to an anchoring device imbedded in the pavement. Both the base and anchor systems are designed to permit replacement of the channelizer post. See Figure 3H-101(CA).

Guidance:

16 Channelizers should be placed a minimum of 2 feet from the traffic line, away from traffic, to allow for future maintenance of the line.

Option:

17 Space limitations may dictate exceptions to this criterion. At certain locations, placement directly on the traffic line may be required.

Support:

18 Spacing of the channelizers depends on the type of facility where they are to be used, the speed and volume of traffic, and the alignment to be channelized. Spacing which results in a visual fence/barrier effect is a key factor in channelizer installation.

Guidance:

19 The maximum post spacing should be 100 feet on carpool lanes where channelizers are used primarily to delineate the separation between the carpool lane and the main facility.

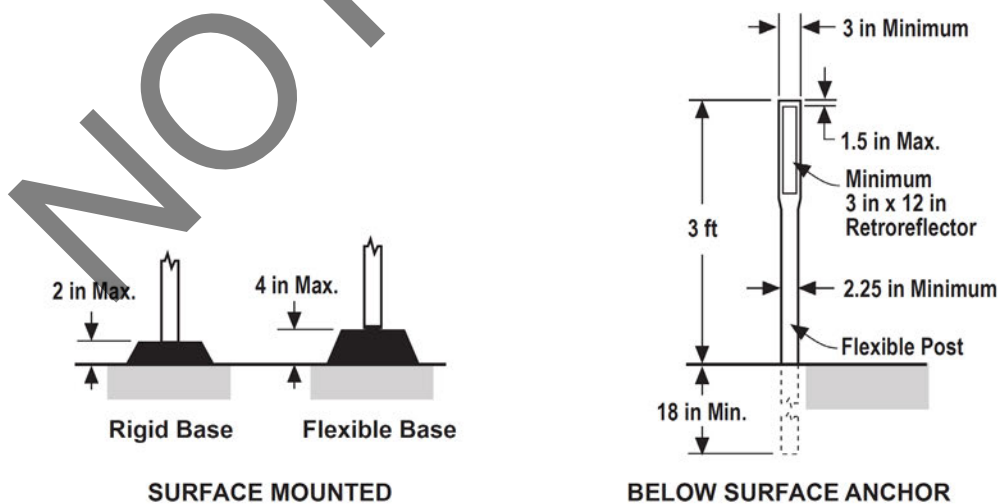
20 In locations where a relatively high number of violations occur, the post spacing should be 25 feet.

Option:

21 Where barrier violations are relatively minimal, a post spacing of 50 feet may be adequate. However, spacing in excess of 50 feet is of negligible value as a deterrent to intentional barrier violations.

22 Post spacing closer than 25 feet may be considered on lower speed roads, urban streets and at specific locations such as traffic islands.

Figure 3H-101 (CA). Example of Channelizers



NOT TO SCALE



### Notes for Figure 6H-28—Typical Application 28 Sidewalk Detour or Diversion

**Standard:**

- 1. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.**

*Guidance:*

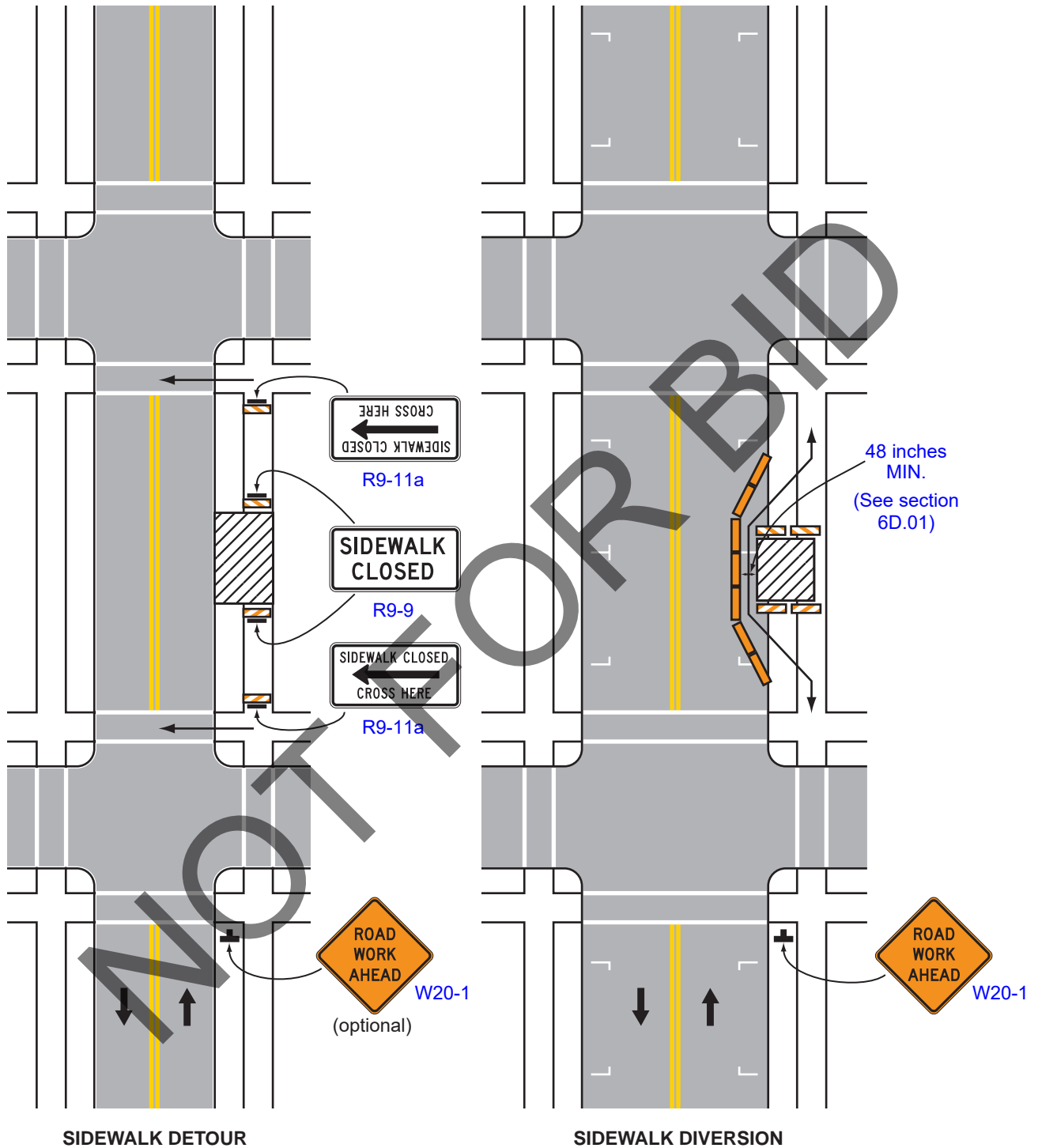
- 2. Where high speeds are anticipated, a temporary traffic barrier and, if necessary, a crash cushion should be used to separate the temporary sidewalks from vehicular traffic.*
- 3. Audible information devices should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities.*

*Option:*

4. Street lighting may be considered.
5. Only the TTC devices related to pedestrians are shown. Other devices, such as lane closure signing or ROAD NARROWS signs, may be used to control vehicular traffic.
6. For nighttime closures, Type A Flashing warning lights may be used on barricades that support signs and close sidewalks.
7. Type C Steady-Burn or Type D 360-degree Steady-Burn warning lights may be used on channelizing devices separating the temporary sidewalks from vehicular traffic flow.
8. Signs, such as KEEP RIGHT (LEFT), may be placed along a temporary sidewalk to guide or direct pedestrians.

NOT FOR BID

**Figure 6H-28. Sidewalk Detour or Diversion (TA-28)**



**Typical Application 28**

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

### Notes for Figure 6H-29—Typical Application 29 Crosswalk Closures and Pedestrian Detours

**Standard:**

- 1. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.**
- ~~**2. Curb parking shall be prohibited for at least 50 feet in advance of the midblock crosswalk.**~~

*Guidance:*

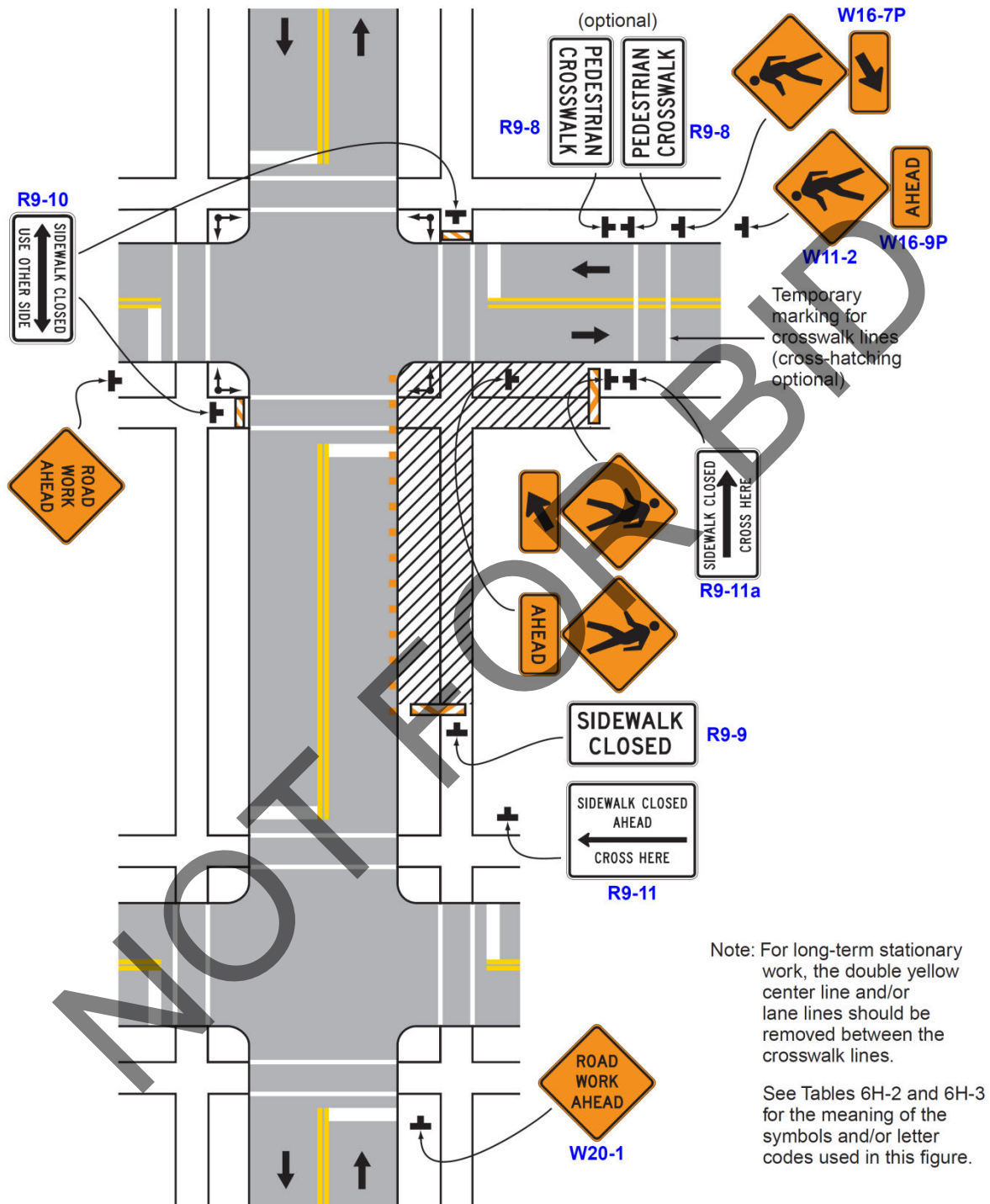
- 2. Parking should be prohibited in advance of mid-block crosswalks. Mid-block crosswalks should be avoided, when possible. See Section 3B.18.*
- 3. Audible information devices should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities.*
- 4. Pedestrian traffic signal displays controlling closed crosswalks should be covered or deactivated.*

*Option:*

5. Street lighting may be considered.
6. Only the TTC devices related to pedestrians are shown. Other devices, such as lane closure signing or ROAD NARROWS signs, may be used to control vehicular traffic.
7. For nighttime closures, Type A Flashing warning lights may be used on barricades supporting signs and closing sidewalks.
8. Type C Steady-Burn or Type D 360-degree Steady-Burn warning lights may be used on channelizing devices separating the work space from vehicular traffic.
9. In order to maintain the systematic use of the fluorescent yellow-green background for pedestrian, bicycle, and school warning signs in a jurisdiction, the fluorescent yellow-green background for pedestrian, bicycle, and school warning signs may be used in TTC zones.

NOT FOR BIDDING

**Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)**



Note: For long-term stationary work, the double yellow center line and/or lane lines should be removed between the crosswalk lines.

See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

**Typical Application 29**

## CHAPTER 6D. PEDESTRIAN AND WORKER SAFETY

### Section 6D.01 Pedestrian Considerations

#### Support:

<sup>01</sup> A wide range of pedestrians might be affected by TTC zones, including the young, elderly, and people with disabilities such as hearing, visual, or mobility. These pedestrians need a clearly delineated and usable travel path. Considerations for pedestrians with disabilities are addressed in Section 6D.02.

#### Standard:

<sup>02</sup> **The various TTC provisions for pedestrian and worker safety set forth in Part 6 shall be applied by knowledgeable (for example, trained and/or certified) persons after appropriate evaluation and engineering judgment.**

<sup>03</sup> **Advance notification of sidewalk closures shall be provided by the maintaining agency.**

<sup>04</sup> **If the TTC zone affects the movement of pedestrians, adequate pedestrian access and walkways shall be provided. If the TTC zone affects an accessible and detectable pedestrian facility, the accessibility and detectability shall be maintained along the alternate pedestrian route.**

#### Option:

<sup>05</sup> If establishing or maintaining an alternate pedestrian route is not feasible during the project, an alternate means of providing for pedestrians may be used, such as adding free bus service around the project or assigning someone the responsibility to assist pedestrians with disabilities through the project limits.

#### Support:

<sup>06</sup> It must be recognized that pedestrians are reluctant to retrace their steps to a prior intersection for a crossing or to add distance or out-of-the-way travel to a destination.

#### Guidance:

<sup>07</sup> *The following three items should be considered when planning for pedestrians in TTC zones:*

*A. Pedestrians should not be led into conflicts with vehicles, equipment, and operations.*

*B. Pedestrians should not be led into conflicts with vehicles moving through or around the worksite.*

*C. Pedestrians should be provided with a convenient and accessible path that replicates as nearly as practical the most desirable characteristics of the existing sidewalk(s) or footpath(s).*

<sup>08</sup> *A pedestrian route should not be severed and/or moved for non-construction activities such as parking for vehicles and equipment.*

<sup>09</sup> *Consideration should be made to separate pedestrian movements from both worksite activity and vehicular traffic. Unless an acceptable route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock worksites that will induce them to attempt skirting the worksite or making a midblock crossing.*

#### Support:

<sup>10</sup> Figures 6H-28 and 6H-29 show typical TTC device usage and techniques for pedestrian movement through work zones.

#### Guidance:

<sup>11</sup> *To accommodate the needs of pedestrians, including those with disabilities, the following considerations should be addressed when temporary pedestrian pathways in TTC zones are designed or modified:*

*A. Provisions for continuity of accessible paths for pedestrians should be incorporated into the TTC plan.*

*B. Access to transit stops should be maintained.*

*C. A smooth, continuous hard surface should be provided throughout the entire length of the temporary pedestrian facility. There should be no curbs or abrupt changes in grade or terrain that could cause tripping or be a barrier to wheelchair use. The geometry and alignment of the facility should meet the applicable requirements of the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see Section 1A.11).*

*D. The width of the existing pedestrian facility should be provided for the temporary facility if practical. Traffic control devices and other construction materials and features should not intrude into the usable width of the*

*sidewalk, temporary pathway, or other pedestrian facility. When it is not possible to maintain a minimum width of 60 inches throughout the entire length of the pedestrian pathway, a 60 x 60-inch passing space should be provided at least every 200 feet to allow individuals in wheelchairs to pass.*

*E. Blocked routes, alternate crossings, and sign and signal information should be communicated to pedestrians with visual disabilities by providing devices such as audible information devices, accessible pedestrian signals, or barriers and channelizing devices that are detectable to the pedestrians traveling with the aid of a long cane or who have low vision. Where pedestrian traffic is detoured to a TTC signal, engineering judgment should be used to determine if pedestrian signals or accessible pedestrian signals should be considered for crossings along an alternate route.*

*F. When channelization is used to delineate a pedestrian pathway, a continuous detectable edging should be provided throughout the length of the facility such that pedestrians using a long cane can follow it. These detectable edgings should comply with the provisions of Section 6F.74.*

*G. Signs and other devices mounted lower than 7 feet above the temporary pedestrian pathway should not project more than 4 inches into accessible pedestrian facilities.*

**Option:**

*12 Whenever it is feasible, closing off the worksite from pedestrian intrusion may be preferable to channelizing pedestrian traffic along the site with TTC devices.*

**Guidance:**

*13 Fencing should not create sight distance restrictions for road users. Fences should not be constructed of materials that would be hazardous if impacted by vehicles. Wooden railing, fencing, and similar systems placed immediately adjacent to motor vehicle traffic should not be used as substitutes for crashworthy temporary traffic barriers.*

*14 Ballast for TTC devices should be kept to the minimum amount needed and should be mounted low to prevent penetration of the vehicle windshield.*

*15 Movement by work vehicles and equipment across designated pedestrian paths should be minimized and, when necessary, should be controlled by flaggers or TTC. Staging or stopping of work vehicles or equipment along the side of pedestrian paths should be avoided, since it encourages movement of workers, equipment, and materials across the pedestrian path.*

*16 Access to the work space by workers and equipment across pedestrian walkways should be minimized because the access often creates unacceptable changes in grade, and rough or muddy terrain, and pedestrians will tend to avoid these areas by attempting non-intersection crossings where no curb ramps are available.*

**Option:**

*17 A canopied walkway may be used to protect pedestrians from falling debris, and to provide a covered passage for pedestrians.*

**Guidance:**

*18 Covered walkways should be sturdily constructed and adequately lighted for nighttime use.*

*19 When pedestrian and vehicle paths are rerouted to a closer proximity to each other, consideration should be given to separating them by a temporary traffic barrier.*

*20 If a temporary traffic barrier is used to shield pedestrians, it should be designed to accommodate site conditions.*

**Support:**

*21 Depending on the possible vehicular speed and angle of impact, temporary traffic barriers might deflect upon impact by an errant vehicle. Guidance for locating and designing temporary traffic barriers can be found in Chapter 9 of AASHTO's "Roadside Design Guide" (see Section 1A.11).*

**Standard:**

**22 Short intermittent segments of temporary traffic barrier shall not be used because they nullify the containment and redirective capabilities of the temporary traffic barrier, increase the potential for serious injury both to vehicle occupants and pedestrians, and encourage the presence of blunt, leading ends. All upstream leading ends that are present shall be appropriately flared or protected with properly installed and maintained crashworthy cushions. Adjacent temporary traffic barrier segments shall be properly connected in order to provide the overall strength required for the temporary traffic barrier to perform properly.**

**23 Normal vertical curbing shall not be used as a substitute for temporary traffic barriers when temporary traffic barriers are needed.**

**Option:**

24 Temporary traffic barriers or longitudinal channelizing devices may be used to discourage pedestrians from unauthorized movements into the work space. They may also be used to inhibit conflicts with vehicular traffic by minimizing the possibility of midblock crossings.

**Support:**

25 A major concern for pedestrians is urban and suburban building construction encroaching onto the contiguous sidewalks, which forces pedestrians off the curb into direct conflict with moving vehicles.

**Guidance:**

26 *If a significant potential exists for vehicle incursions into the pedestrian path, pedestrians should be rerouted or temporary traffic barriers should be installed.*

**Support:**

27 TTC devices, jersey barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.

**Guidance:**

28 *Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see Section 1A.11), and should not be used as a control for pedestrian movements.*

29 *In general, pedestrian routes should be preserved in urban and commercial suburban areas. Alternative routing should be discouraged.*

30 *The highway agency in charge of the TTC zone should regularly inspect the activity area so that effective pedestrian TTC is maintained.*

**Support:**

31 Other laws and requirements are unique to California and need to be followed when providing pedestrian access through or around TTC zones.

32 Additional information on this topic can be found in publication titled "Pedestrian Considerations for California Temporary Traffic Control Zones on Caltrans' following web link:

<http://dot.ca.gov/hq/traffops/engineering/control-devices/pdf/PedBrochure.pdf>

## **Section 6D.02 Accessibility Considerations**

**Support:**

01 Additional information on the design and construction of accessible temporary facilities is found in publications listed in Section 1A.11 (see Publications 12, 38, 39, and 42).

**Guidance:**

02 *The extent of pedestrian needs should be determined through engineering judgment or by the individual responsible for each TTC zone situation. Adequate provisions should be made for pedestrians with disabilities.*

**Standard:**

03 **When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Where pedestrians with visual disabilities normally use the closed sidewalk, a barrier that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.**

**Support:**

04 Maintaining a detectable, channelized pedestrian route is much more useful to pedestrians who have visual disabilities than closing a walkway and providing audible directions to an alternate route involving additional crossings and a return to the original route. Braille is not useful in conveying such information because it is difficult to find. Audible instructions might be provided, but the extra distance and additional street crossings might add complexity to a trip.

**Guidance:**

05 *Because printed signs and surface delineation are not usable by pedestrians with visual disabilities, blocked routes, alternate crossings, and sign and signal information should be communicated to pedestrians with visual*

*disabilities by providing audible information devices, accessible pedestrian signals, and barriers and channelizing devices that are detectable to pedestrians traveling with the aid of a long cane or who have low vision.*

Support:

<sup>06</sup> The most desirable way to provide information to pedestrians with visual disabilities that is equivalent to visual signing for notification of sidewalk closures is a speech message provided by an audible information device. Devices that provide speech messages in response to passive pedestrian actuation are the most desirable. Other devices that continuously emit a message, or that emit a message in response to use of a pushbutton, are also acceptable. Signing information can also be transmitted to personal receivers, but currently such receivers are not likely to be carried or used by pedestrians with visual disabilities in TTC zones. Audible information devices might not be needed if detectable channelizing devices make an alternate route of travel evident to pedestrians with visual disabilities.

Guidance:

<sup>07</sup> *If a pushbutton is used to provide equivalent TTC information to pedestrians with visual disabilities, the pushbutton should be equipped with a locator tone to notify pedestrians with visual disabilities that a special accommodation is available, and to help them locate the pushbutton.*

### **Section 6D.03 Worker Safety Considerations**

Support:

<sup>01</sup> Equally as important as the safety of road users traveling through the TTC zone is the safety of workers. TTC zones present temporary and constantly changing conditions that are unexpected by the road user. This creates an even higher degree of vulnerability for workers on or near the roadway.

<sup>02</sup> Maintaining TTC zones with road user flow inhibited as little as possible, and using TTC devices that get the road user's attention and provide positive direction are of particular importance. Likewise, equipment and vehicles moving within the activity area create a risk to workers on foot. When possible, the separation of moving equipment and construction vehicles from workers on foot provides the operator of these vehicles with a greater separation clearance and improved sight lines to minimize exposure to the hazards of moving vehicles and equipment.

Guidance:

<sup>03</sup> *The following are the key elements of worker safety and TTC management that should be considered to improve worker safety:*

- A. Training—all workers should be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability. Workers having specific TTC responsibilities should be trained in TTC techniques, device usage, and placement.*
- B. Temporary Traffic Barriers—temporary traffic barriers should be placed along the work space depending on factors such as lateral clearance of workers from adjacent traffic, speed of traffic, duration and type of operations, time of day, and volume of traffic.*
- C. Speed Reduction—reducing the speed of vehicular traffic, mainly through regulatory speed zoning, funneling, lane reduction, or the use of uniformed law enforcement officers or flaggers, should be considered. [The use of regulatory speed zone signing tends to be more effective when law enforcement is present. Refer to Section 6C.01.](#)*
- D. Activity Area—planning the internal work activity area to minimize backing-up maneuvers of construction vehicles should be considered to minimize the exposure to risk.*
- E. Worker Safety Planning—a trained person designated by the employer should conduct a basic hazard assessment for the worksite and job classifications required in the activity area. This safety professional should determine whether engineering, administrative, or personal protection measures should be implemented. This plan should be in accordance with the Occupational Safety and Health Act of 1970, as amended, “General Duty Clause” Section 5(a)(1) - Public Law 91-596, 84 Stat. 1590, December 29, 1970, as amended, and with the requirement to assess worker risk exposures for each job site and job classification, as per 29 CFR 1926.20 (b)(2) of “Occupational Safety and Health Administration Regulations, General Safety and Health Provisions” (see Section 1A.11).*





**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" (25 mm) 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%, 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'-2" (970 mm)
  - V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET = 4.5' (1.35 m).
  - V<sub>U</sub> = 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" (300 mm).
  - V<sub>I</sub> = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET, NOTED ON THE PLANS.
  - H = NOTED ON THE PLANS.
  - W = NOTED ON THE 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 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" (80 mm) PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3" (75 mm) 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° OR GREATER THAN 110°, 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. STEPS SHALL BE LOCATED AS SHOWN. IF THE CONNECTOR PIPE INTERFERES WITH THE STEPS, THEY SHALL BE LOCATED AT THE CENTERLINE OF THE DOWNSTREAM END WALL. STEPS SHALL BE SPACED 12" (300 mm) APART. THE TOP STEP SHALL BE 7" (175 mm) BELOW THE TOP OF THE MANHOLE AND PROJECT 2-1/2" (65 mm). ALL OTHER STEPS SHALL PROJECT 5" (130 mm).
7. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7' (2 m) ON CENTER (MAXIMUM) ALONG THE BACKWALL.
8. THE FOLLOWING SPPWC ARE INCORPORATED HEREIN:
  - 308 MONOLITHIC CATCH BASIN CONNECTION
  - 309 CATCH BASIN REINFORCEMENT
  - 310 CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
  - 312 CATCH BASIN MANHOLE FRAME AND COVER
  - 635 STEEL STEP
  - 636 POLYPROPYLENE PLASTIC STEP

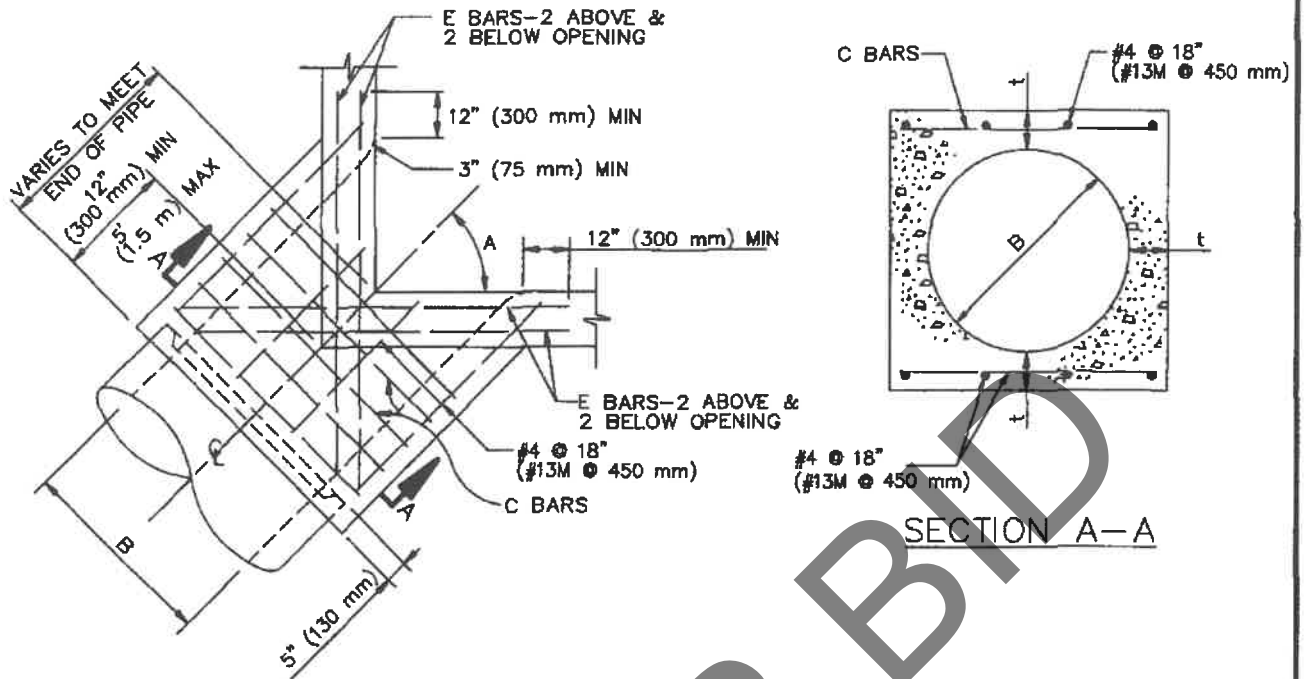
STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

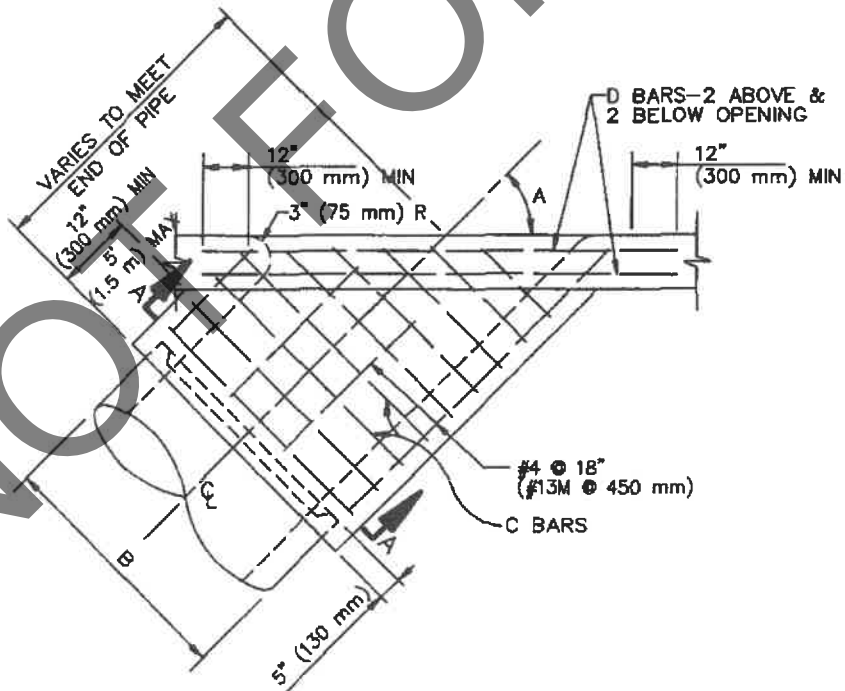
**CURB OPENING CATCH BASIN**

**300-3**

SHEET 2 OF 2



PLAN  
CORNER CONNECTION



PLAN  
SIDE CONNECTION

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE  
PUBLIC WORKS STANDARDS, INC.,  
GREENBOOK COMMITTEE  
1984  
REV. 1986, 2009

**MONOLITHIC CATCH BASIN CONNECTION**

STANDARD PLAN  
**308-2**

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

SHEET 1 OF 2

STRUCTURAL DATA											
B	t	C BARS	D&E BARS	B	t	C BARS	D&E BARS				
12" (300 mm)	4" (115 mm)	#4 @ 6" (#13M @ 150 mm)	#5 (#16M)	42" (1050 mm)	7 1/2" (190 mm)	#5 @ 6" (#16M @ 150 mm)	#6 (#19M)				
15" (375 mm)	4-1/4" (115 mm)			45" (1125 mm)	7 3/4" (190 mm)						
18" (450 mm)	4-1/2" (115 mm)			48" (1200 mm)	8" (215 mm)						
21" (525 mm)	5" (140 mm)			51" (1275 mm)	8 1/2" (215 mm)						
24" (600 mm)	5 1/4" (140 mm)			54" (1350 mm)	9" (240 mm)						
27" (675 mm)	5 1/2" (140 mm)			57" (1425 mm)	9 1/4" (240 mm)						
30" (750 mm)	6" (165 mm)			60" (1500 mm)	9 1/2" (240 mm)						
33" (825 mm)	6 1/4" (165 mm)			63" (1575 mm)	10" (260 mm)						
36" (900 mm)	6 1/2" (165 mm)			66" (1650 mm)	10 1/4" (260 mm)						
39" (975 mm)	7" (190 mm)			69" (1725 mm)	10 3/4" (280 mm)						
				72" (1800 mm)	11" (280 mm)						
FOR B GREATER THAN 72" (1800 mm) SEE PLANS											

NOTES

1. REINFORCING STEEL SHALL BE 1-1/2" (40 mm) 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" (50 mm) 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" (75 mm).
4. CONNECTIONS SHALL BE CONSTRUCTED WHEN:
  - (A) PIPES INLET OR OUTLET THROUGH CORNER OF CATCH BASIN
  - (B) ANGLE A FOR PIPES THROUGH 30" (750 mm) IN DIAMETER IS LESS THAN 70° OR GREATER THAN 110°.

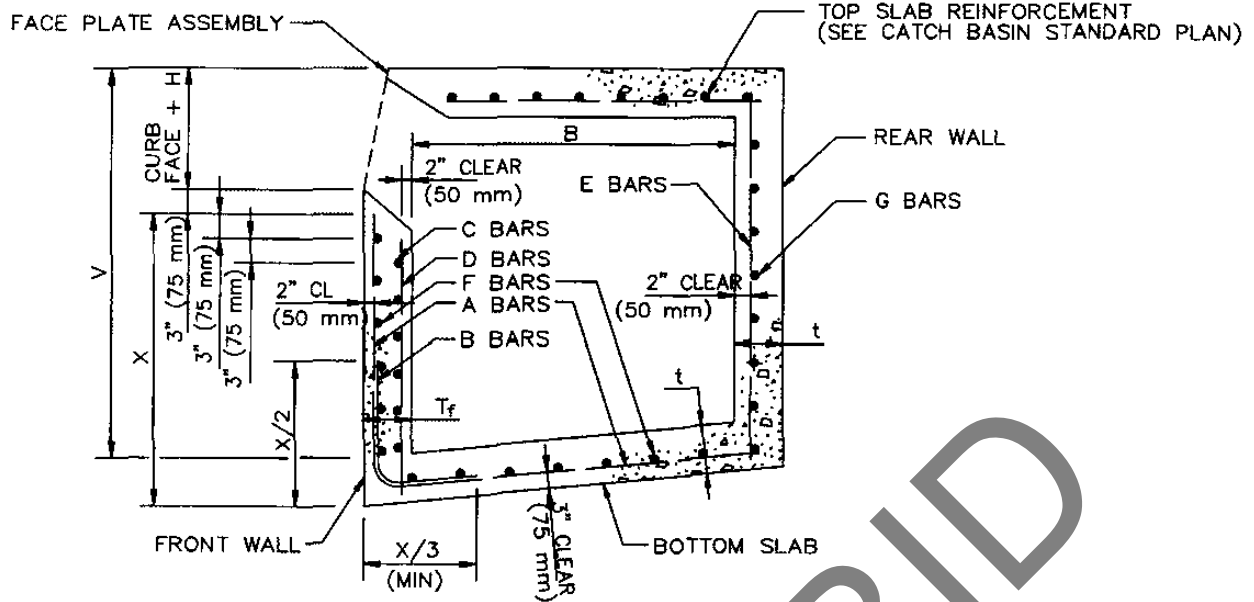
STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

**MONOLITHIC CATCH BASIN CONNECTION**

**308-2**

SHEET 2 OF 2



TYPICAL REINFORCEMENT DETAILS

MAX. W	MAX. V	t	tf	A & B BARS	C BARS	D BARS	E BARS	F BARS	G BARS
3.5' (1 m)	8' (2.4m)	6" (150 mm)	6" (150 mm)	—	—	—	—	—	—
3.5' (1 m)	12' (3.5m)	8" (200 mm)	8" (200 mm)	—	—	—	—	—	—
7' (2 m)	6' (1.8m)	6" (150 mm)	6" (150 mm)	—	—	—	—	—	—
7' (2 m)	12' (3.5m)	8" (200 mm)	8" (200 mm)	—	—	—	—	—	—
14' (4 m)	4' (1.2m)	6" (150 mm)	6" (150 mm)	—	#4 @ 12" (13M @ 300 mm)	#4 @ 18" (13M @ 450 mm)	—	—	—
14' (4 m)	8' (2.4m)	6" (150 mm)	8" (200 mm)	—	#4 @ 12" (13M @ 300 mm)	#4 @ 18" (13M @ 450 mm)	—	—	—
14' (4 m)	12' (3.5 m)	8" (200 mm)	10" (250 mm)	—	#4 @ 6" (13M @ 150 mm)	#4 @ 18" (13M @ 450 mm)	—	—	—
28' (9 m)	4' (1.2m)	6" (150 mm)	6" (150 mm)	#4 @ 24" (13M @ 600 mm)	—	—	—	#4 @ 18" (13M @ 450 mm)	—
28' (9 m)	5' (1.5m)	6" (150 mm)	8" (200 mm)	#4 @ 24" (13M @ 600 mm)	—	—	—	#4 @ 18" (13M @ 450 mm)	—
28' (9 m)	6' (1.8m)	6" (150 mm)	8" (200 mm)	#4 @ 18" (13M @ 450 mm)	—	—	—	#4 @ 18" (13M @ 450 mm)	—
28' (9 m)	7' (2.1m)	8" (200 mm)	8" (200 mm)	#4 @ 17" (13M @ 425 mm)	—	—	—	#4 @ 18" (13M @ 450 mm)	—
28' (9 m)	8' (2.4m)	8" (200 mm)	8" (200 mm)	#4 @ 13" (13M @ 325 mm)	—	—	—	#4 @ 18" (13M @ 450 mm)	—
28' (9 m)	9' (2.7m)	8" (200 mm)	10" (250 mm)	#4 @ 15" (13M @ 375 mm)	—	—	—	#4 @ 18" (13M @ 450 mm)	—
28' (9 m)	10' (3.0m)	8" (200 mm)	10" (250 mm)	#4 @ 12" (13M @ 300 mm)	—	—	—	#4 @ 18" (13M @ 450 mm)	—
28' (9 m)	11' (3.3m)	8" (200 mm)	10" (250 mm)	#5 @ 15" (16M @ 375 mm)	—	—	#4 @ 10" (13M @ 250 mm)	#4 @ 18" (13M @ 450 mm)	#4 @ 18" (13M @ 450 mm)
28' (9 m)	12' (3.5m)	8" (200 mm)	10" (250 mm)	#4 @ 18" (13M @ 450 mm)	—	—	#4 @ 10" (13M @ 250 mm)	#4 @ 18" (13M @ 450 mm)	#4 @ 18" (13M @ 450 mm)

FOR W > 28' (9 m) OR B > 4' (1200 mm) SEE PLANS

CURB OPENING CATCH BASIN REINFORCEMENT

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE  
PUBLIC WORKS STANDARDS, INC.,  
GREENBOOK COMMITTEE  
1984  
REV. 1996, 2009

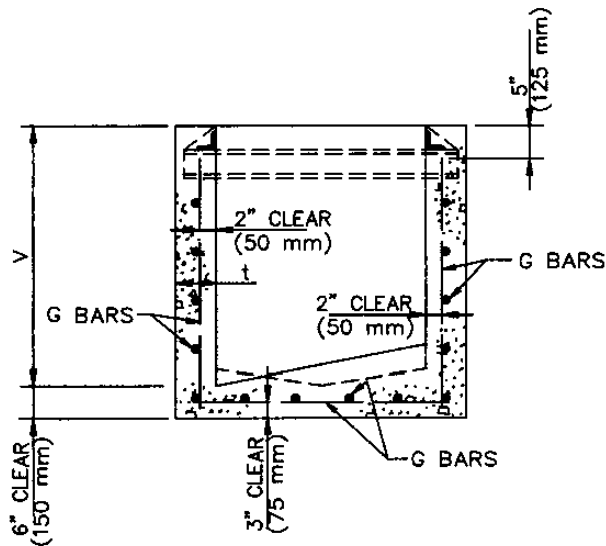
CATCH BASIN REINFORCEMENT

STANDARD PLAN

309-2

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

SHEET 1 OF 2



TYPICAL REINFORCEMENT DETAILS

V MAX	t	SIDE AND END WALL STEEL
		G BARS
4' (1.2 m)	6" (150 mm)	#4 @ 10" (#13M @ 250 mm)
8' (2.4 m)	8" (200 mm)	#4 @ 6" (#13M @ 150 mm)
12' (3.5 m)	10" (250 mm)	#5 @ 6" (#16M @ 150 mm)
FOR V > 12' (3.5 m) SEE PLANS		

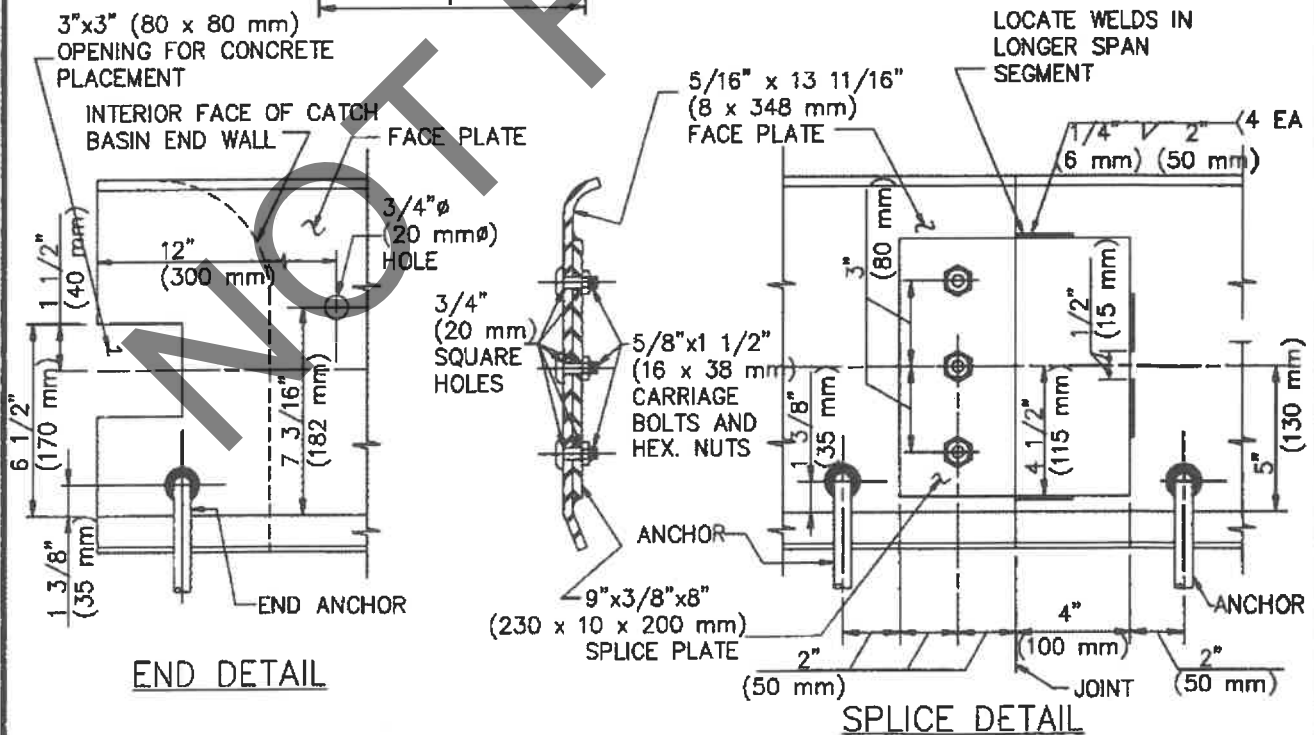
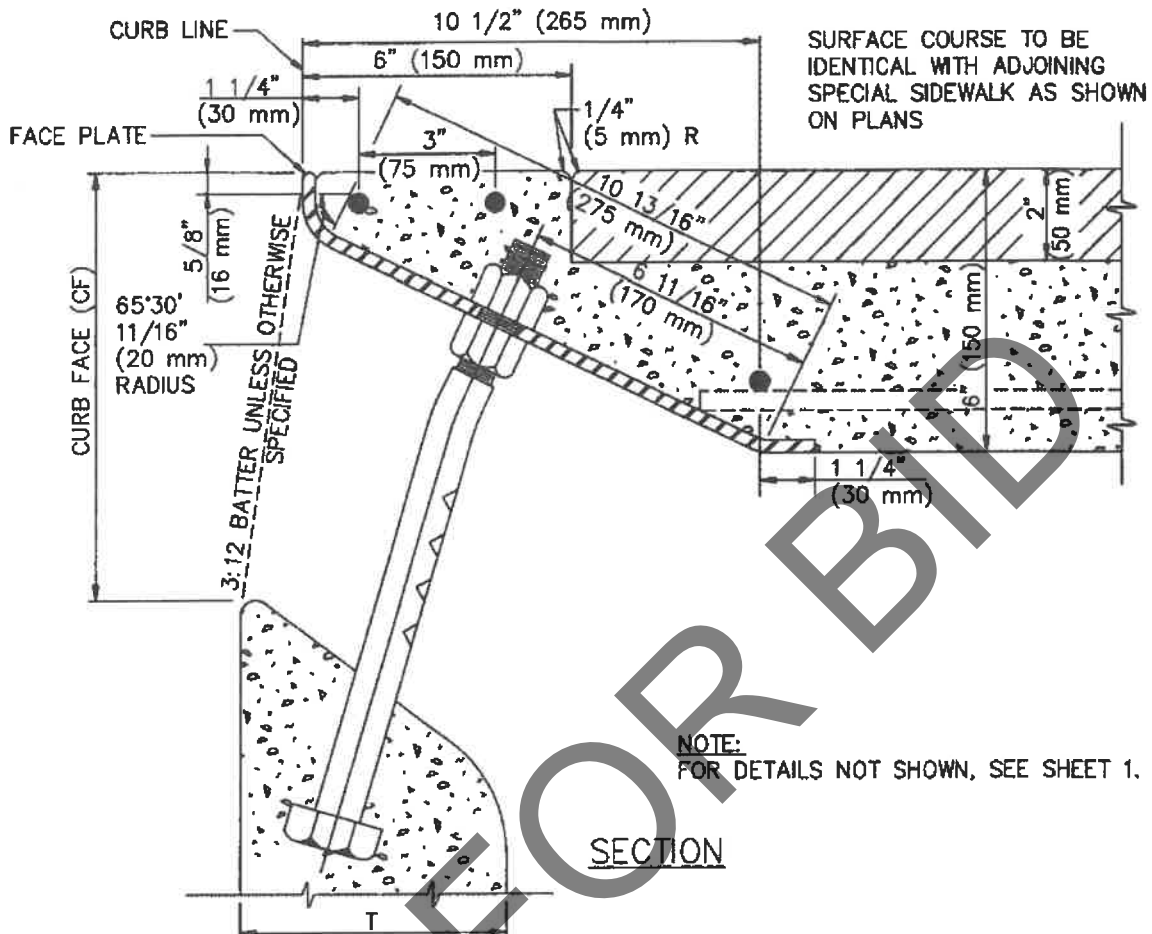
GRATING CATCH BASIN REINFORCEMENT

NOTE

UNLESS OTHERWISE SPECIFIED, REINFORCEMENT FOR CURB OPENINGS AND GRATING CATCH BASINS SHALL TERMINATE 2" (50 mm) FROM FACE OF CONCRETE.

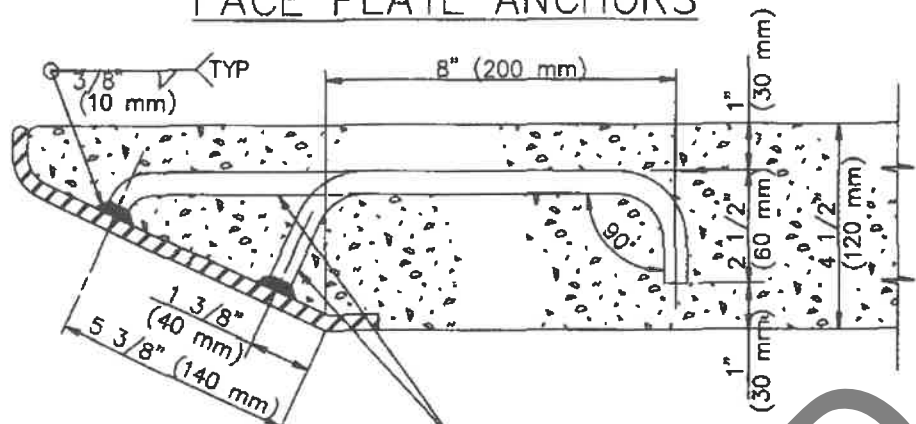


# SUPPORT BOLT AND FACE PLATE 150 mm (6") TOP SLAB



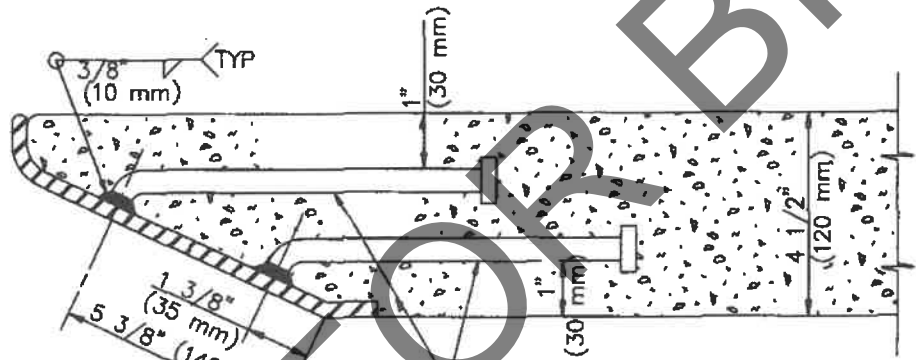


# FACE PLATE ANCHORS



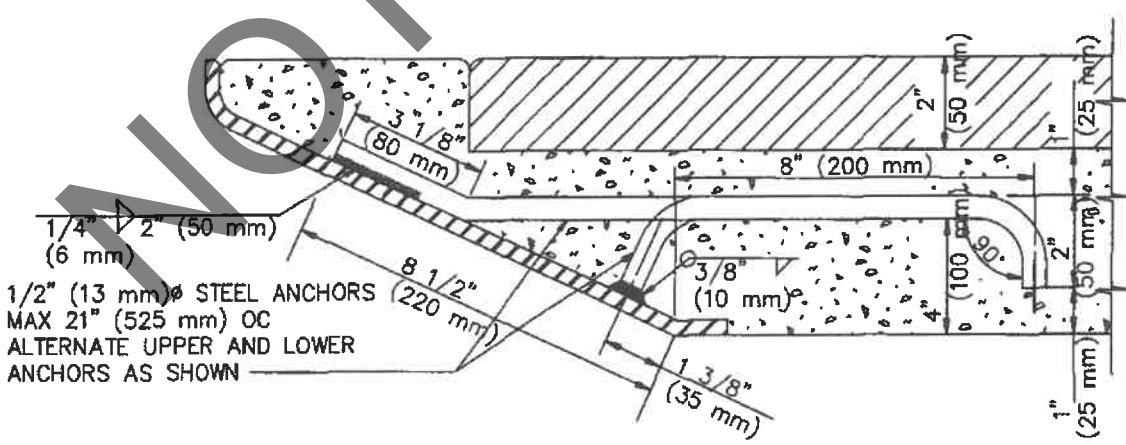
1/2" (13 mm)  $\phi$  STEEL ANCHORS,  
MAX 21" (525 mm) OC  
ALTERNATE UPPER AND LOWER ANCHORS AS SHOWN

## HOOK ANCHOR - 4 1/2" (120 mm) TOP SLAB



1/2" (13 mm)  $\phi$  x 8" (200 mm) STEEL ANCHORS  
MAX 15" (375 mm) OC  
ALTERNATE UPPER AND LOWER ANCHORS AS SHOWN

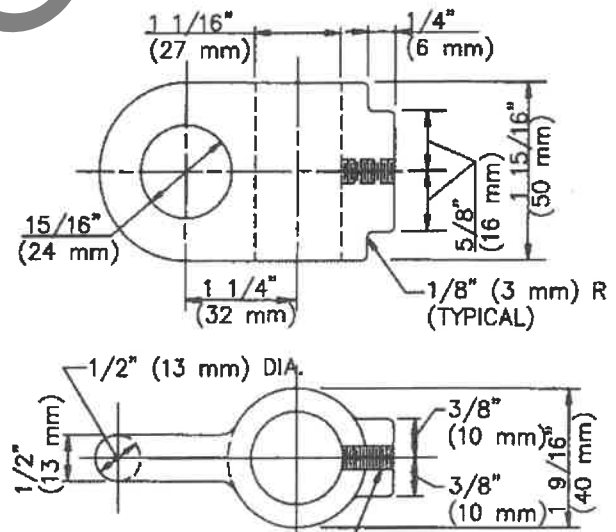
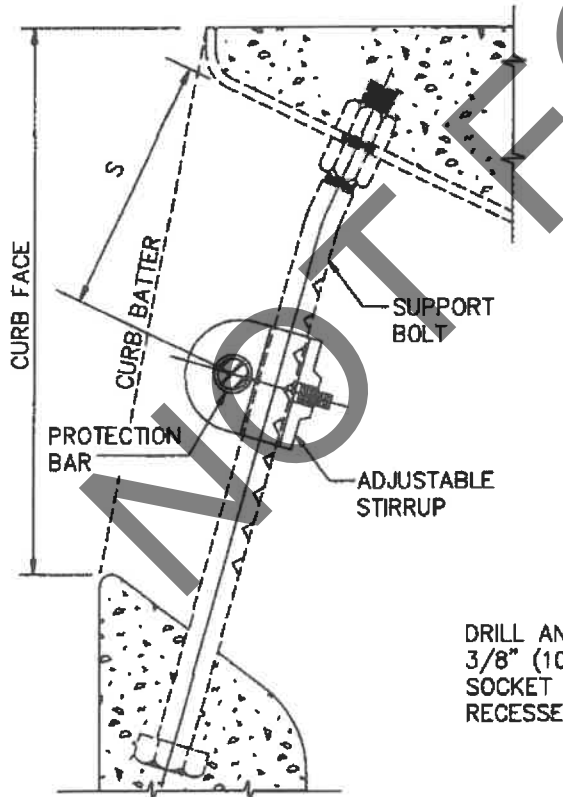
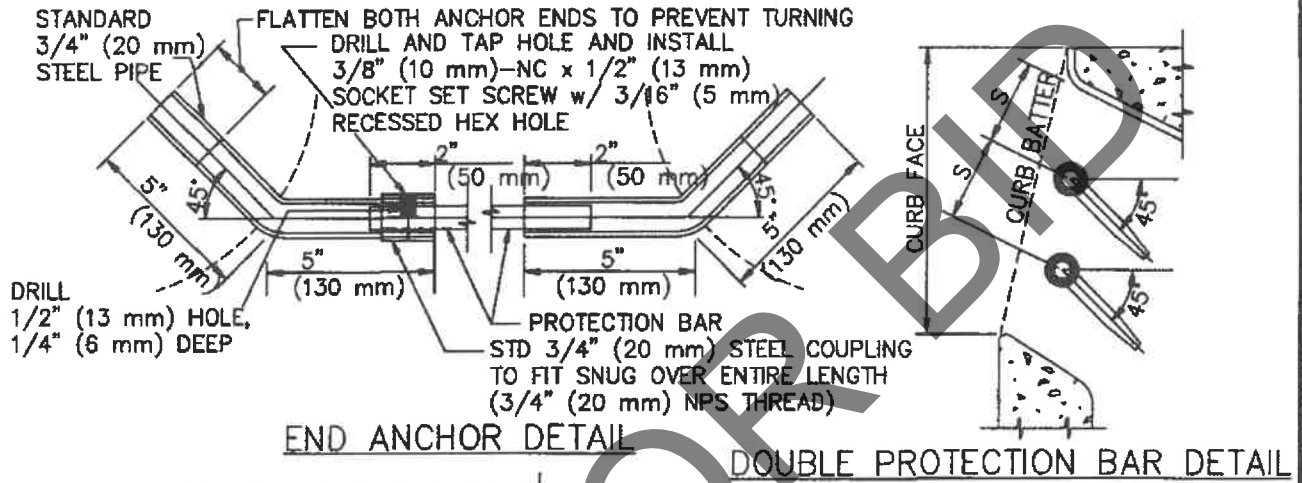
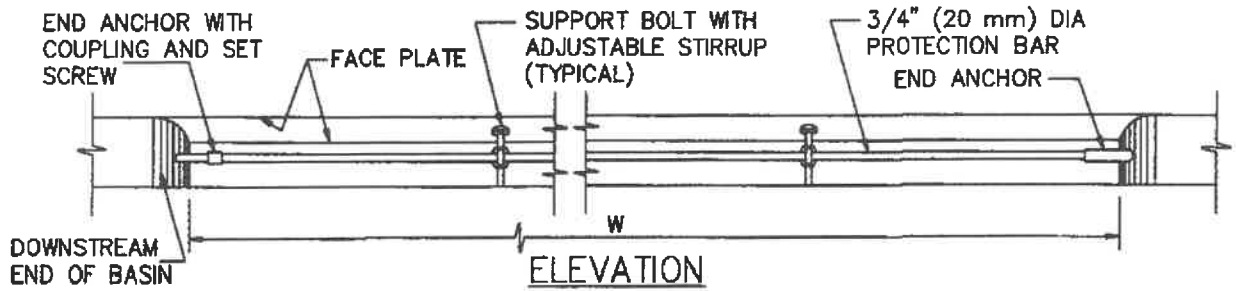
## ROUND HEAD ANCHOR - 4 1/2" (120 mm) TOP SLAB



1/2" (13 mm)  $\phi$  STEEL ANCHORS  
MAX 21" (525 mm) OC  
ALTERNATE UPPER AND LOWER  
ANCHORS AS SHOWN

## HOOK ANCHOR - 6" (150 mm) TOP SLAB

# PROTECTION BAR AND SUPPORT BOLT(S) WITH ADJUSTABLE STIRRUP(S) - (TYPE A)



DRILL AND TAP HOLE AND INSTALL 3/8" (10 mm)-NC x 1/2" (13 mm) SOCKET SET SCREW WITH 3/16" (5 mm) RECESSED HEX HOLE

STIRRUP DETAIL

PROTECTION BAR & STIRRUP LOCATION

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

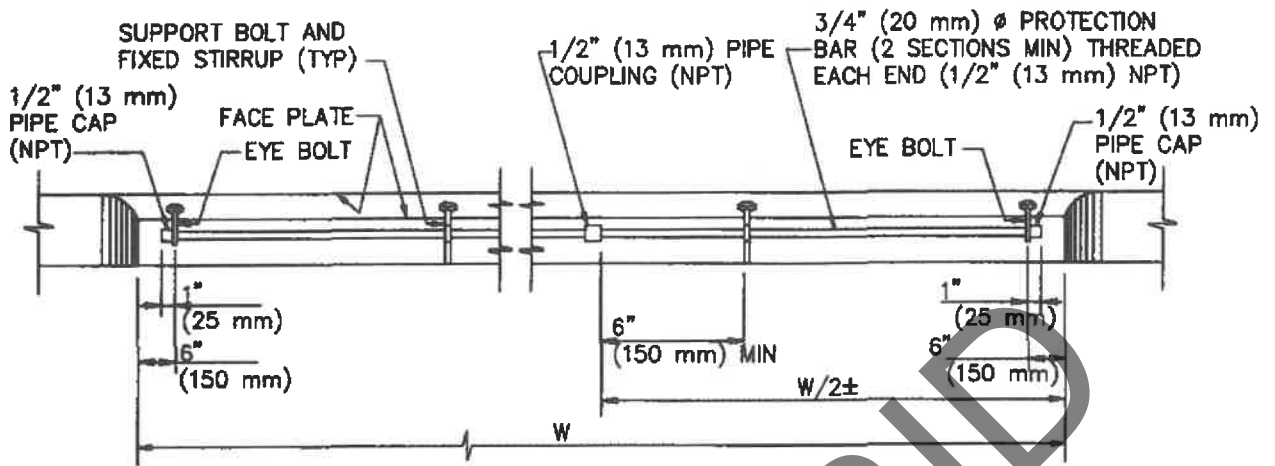
**CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR**

STANDARD PLAN

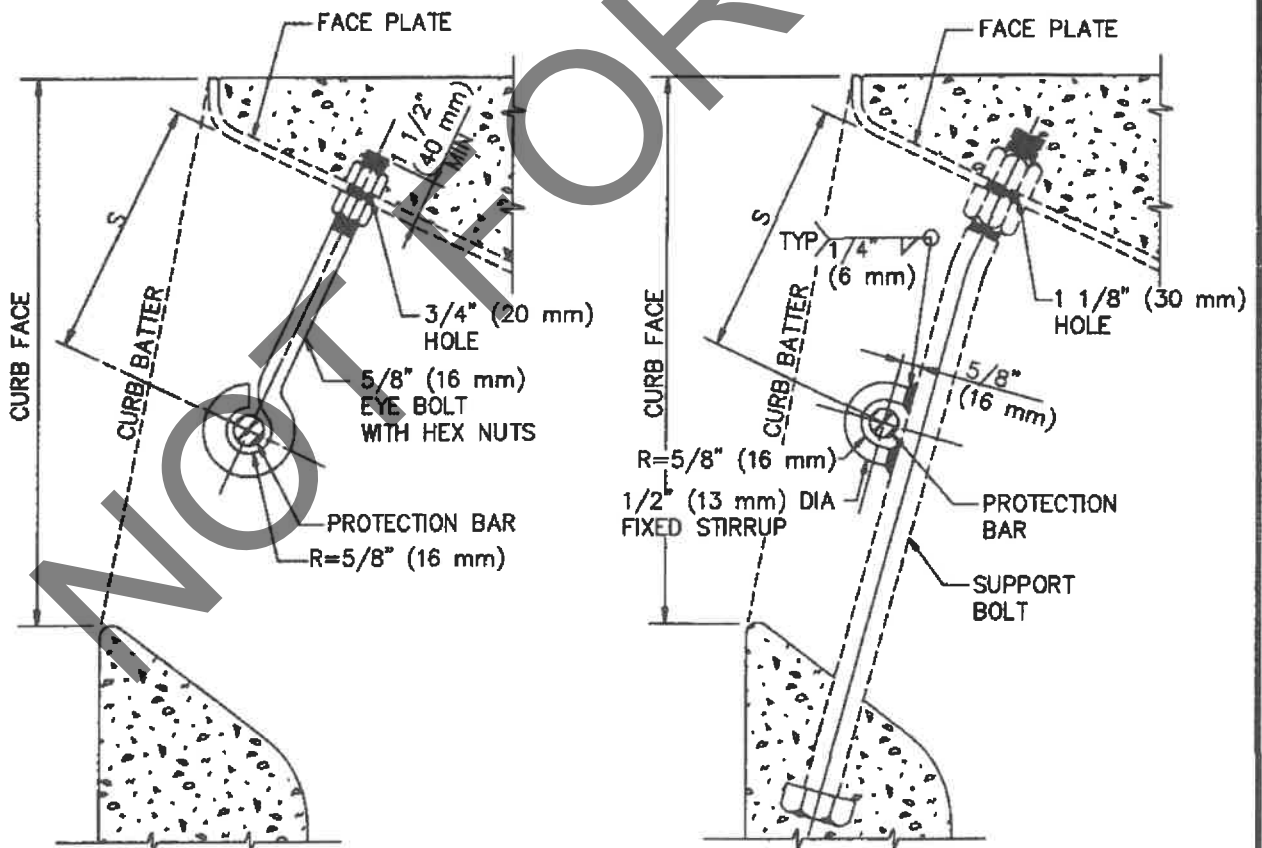
**310-3**

SHEET 4 OF 6

# PROTECTION BAR AND SUPPORT BOLT(S) WITH FIXED STIRRUP(S) - (TYPE B)



ELEVATION



EYE BOLT DETAIL

STIRRUP DETAIL

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

**CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR**

STANDARD PLAN

**310-3**

SHEET 5 OF 6

**NOTES:**

**GENERAL**

1. ALL PARTS SHALL BE STEEL, EXCEPT SET SCREWS, WHICH SHALL BE STAINLESS STEEL OR BRASS.
2. EXCLUDING SET SCREWS, ALL EXPOSED METAL PARTS SHALL BE GALVANIZED AFTER FABRICATION.
3. CURB FACE SHALL BE AS NOTED ON THE PLANS.
4. CURB BATTER SHALL BE 3:12 UNLESS OTHERWISE SPECIFIED.

**FACE PLATE**

5. FACE PLATE LENGTHS SHALL BE CATCH BASIN W PLUS 12" (300 mm) EXCEPT AS MODIFIED FOR "A" CURB OPENING CATCH BASIN AT DRIVEWAY.
6. WHEN THE LENGTH OF THE FACE PLATE IS BETWEEN 22' (6.5 m) AND 43' (13 m), TWO SECTIONS MAY BE USED. WHEN THE LENGTH EXCEEDS 43' (13 m), THREE SECTIONS MAY BE USED. SECTIONS SHALL BE SPLICED ACCORDING TO THE APPLICABLE SPLICE DETAIL. SPLICE SHALL BE PLACED 1' (300 mm) FROM A SUPPORT BOLT.
7. WHERE CATCH BASINS ARE TO BE CONSTRUCTED ON CURVES, THE MAXIMUM CHORD LENGTH FOR THE FACE PLATE SHALL BE SUCH THAT THE MAXIMUM PERPENDICULAR DISTANCE TO THE TRUE CURVE SHALL NOT EXCEED 1" (25 mm). WHERE MORE THAN ONE CHORD IS REQUIRED, CHORD LENGTHS SHALL BE EQUAL. CHORD SECTIONS SHALL BE SPLICED ACCORDING TO THE APPLICABLE SPLICE DETAIL (MODIFIED TO FIT THE CHORD DEFLECTION) AND A SUPPORT BOLT SHALL BE PLACED 1' (300 mm) FROM THE SPLICE.
8. ROUND HEAD ANCHORS FOR THE FACE PLATE SHALL BE NELSON H-4F SHEAR CONNECTOR, KSN WELDING SYSTEMS DIVISION SHEAR CONNECTOR OR EQUAL.

**SUPPORT BOLT**

9. SUPPORT BOLTS ARE REQUIRED WHEN THE LENGTH OF THE CATCH BASIN OPENING IS 7' (2 m) OR GREATER, AND SHALL BE EVENLY SPACED ACROSS THE OPENING. SPACING SHALL NOT BE LESS THAN 3'-6" (1 m) ON CENTER NOR GREATER THAN 5' (1.5 m) ON CENTER.

**STIRRUP**

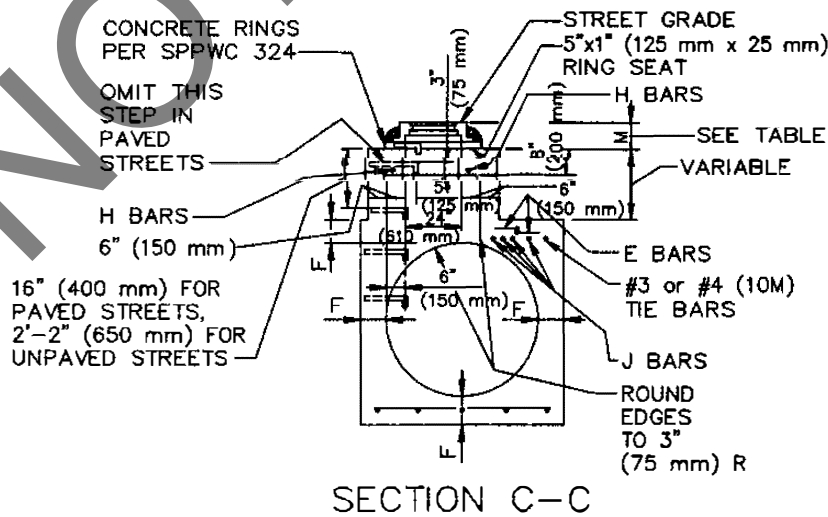
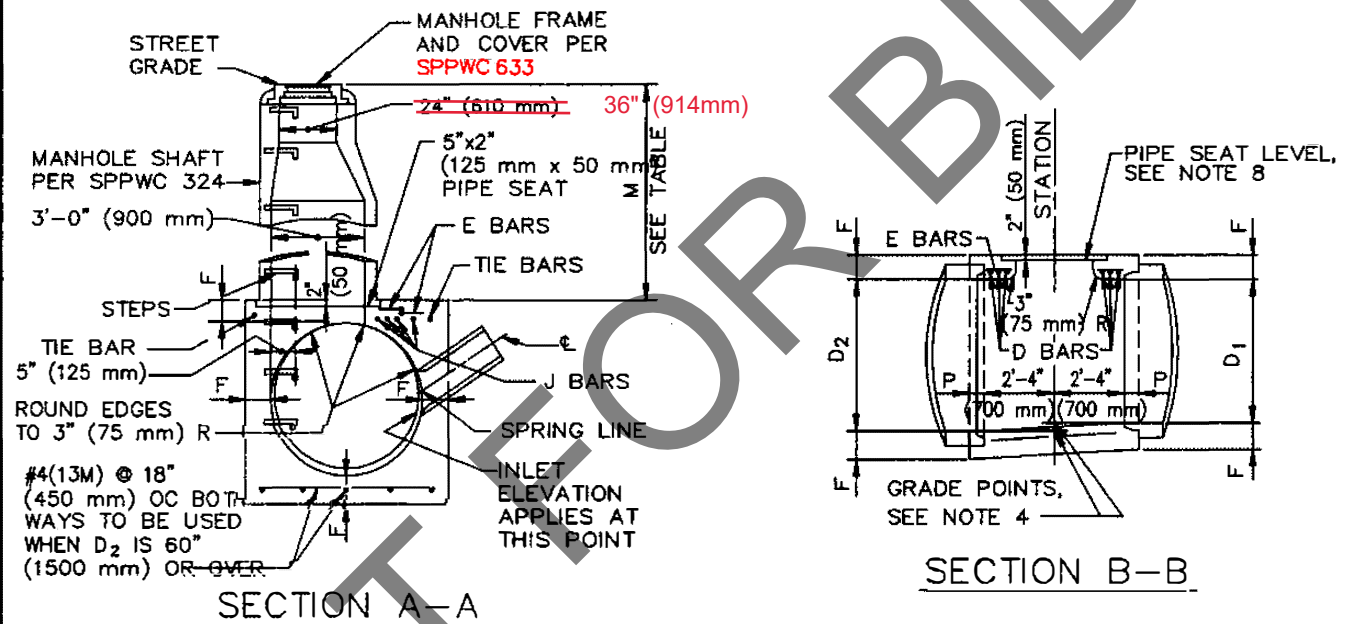
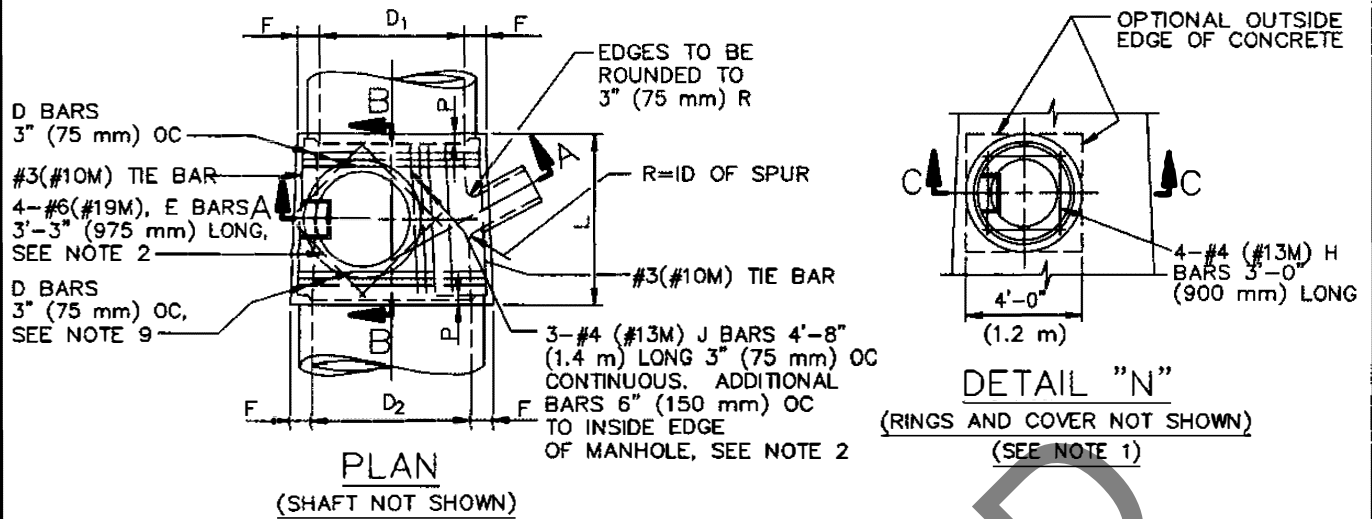
10. FOR TYPE A, MATERIAL SHALL BE CAST STEEL.

**PROTECTION BAR**

11. TYPE A SHALL BE USED UNLESS OTHERWISE SPECIFIED.
12. FOR TYPE A, THE BAR SHALL BE CUT TO FIT IN THE FIELD. WHEN "W" IS OVER 21' (6 m), THE PROTECTION BAR SHALL CONSIST OF 2 OR MORE SECTIONS. A SPECIAL CONNECTOR BETWEEN THE PROTECTION BAR PIECES SHALL CONSIST OF A 5" (125 mm) LENGTH OF STANDARD 3/4" (20 mm) PIPE WITH STANDARD COUPLINGS FULLY THREADED ONTO EACH END DRILLED AND TAPPED FOR A SOCKET SET SCREW AS DETAILED FOR THE DOWNSTREAM END ANCHOR.
13. FOR TYPE B, THE BAR SHALL BE TWO PIECES. TWO EYE BOLTS AND A WELDED STIRRUP ON EACH SUPPORT BOLT ARE REQUIRED.
14. NUMBER OF PROTECTION BARS AND LOCATIONS ARE AS FOLLOWS:

		MAXIMUM CURB FACE, INCHES (mm)												S DIMENSION	
		6" (150)	7" (175)	8" (200)	9" (225)	10" (250)	11" (275)	12" (300)	13" (325)	14" (350)	15" (375)	16" (400)	17" (425)		18" (450)
CURB BATTER	0:12	0	0	3.5" (90)	3.5" (90)	4.5" (115)	4.5" (115)	4.5" (115)	5.5" (140)	3.5" (90)	3.5" (90)	4.5" (115)	4.5" (115)	4.5" (115)	
	1:12	0	0	3.5" (90)	3.5" (90)	4.5" (115)	4.5" (115)	4.5" (115)	5.5" (140)	3.5" (90)	3.5" (90)	4.5" (115)	4.5" (115)	5.5" (140)	
	2:12	0	0	3.5" (90)	3.5" (90)	4.5" (115)	4.5" (115)	5.5" (140)	3.5" (90)	4.5" (115)	4.5" (115)	5.5" (140)	5.5" (140)	5.5" (140)	
	3:12	0	0	3.5" (90)	3.5" (90)	4.5" (115)	4.5" (115)	5.5" (140)	3.5" (90)	4.5" (115)	4.5" (115)	5.5" (140)	5.5" (140)	4.5" (115)	
	4:12	0	3.5" (90)	3.5" (90)	4.5" (115)	4.5" (115)	5.5" (140)	3.5" (90)	3.5" (90)	4.5" (115)	4.5" (115)	5.5" (140)	4.5" (115)	4.5" (115)	
		0		1				2*				3*			
		NUMBER OF PROTECTION BARS													

FOR OTHER CURB FACE OR BATTER SEE PLANS  
 \* TYPE A PROTECTION BAR ONLY



STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE  
PUBLIC WORKS STANDARDS INC.  
GREENBOOK COMMITTEE  
1992  
REV. 1990, 2009

**MANHOLE PIPE-TO-PIPE**  
**MAIN LINE ID=36" (900 mm) OR LARGER**

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

**320-2**

SHEET 1 OF 4

(Modified)

TABLE OF VALUES FOR F	
D <sub>2</sub>	F
36" (900 mm)	6 1/2" (165 mm)
39" (975 mm)	7" (180 mm)
42" (1050 mm)	7 1/2" (190 mm)
45" (1125 mm)	7 3/4" (195 mm)
48" (1200 mm)	8" (205 mm)
51" (1275 mm)	8 1/2" (215 mm)
54" (1350 mm)	9" (230 mm)
57" (1425 mm)	9 1/4" (235 mm)
60" (1500 mm)	9 1/2" (240 mm)
63" (1575 mm)	10" (255 mm)
66" (1650 mm)	10 1/4" (260 mm)
69" (1725 mm)	10 3/4" (275 mm)
72" (1800 mm)	11" (280 mm)
78" (1950 mm)	11 3/4" (300 mm)
84" (2100 mm)	12 1/2" (320 mm)
90" (2250 mm)	13 1/4" (335 mm)
96" (2400 mm)	14" (355 mm)
102" (2550 mm)	15 1/2" (395 mm)
108" (2700 mm)	16" (405 mm)
114" (2850 mm)	16 1/2" (420 mm)
120" (3000 mm)	17" (430 mm)
126" (3150 mm)	17" (430 mm)
132" (3300 mm)	17 1/2" (445 mm)
138" (3450 mm)	17 1/2" (445 mm)
144" (3600 mm)	18" (455 mm)

TABLE OF VALUES FOR M (SEE NOTE 1)				
SECTION	PAVED STREET		UNPAVED STREET	
	MAX	MIN	MAX	MIN
A-A		2'-10 1/2" (867 mm)		3'-6" (1060 mm)
C-C	11" (282 mm)	8 1/2" (217 mm)	16" (410 mm)	15" (380 mm)

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION	STANDARD PLAN
<b>MANHOLE PIPE-TO-PIPE</b>	<b>320-2</b>
<b>MAIN LINE ID = 36" (900 mm) OR LARGER</b>	SHEET 2 OF 4

(Modified)

## NOTES

1. WHEN DEPTH M FROM STREET GRADE TO THE TOP OF THE BOX IS LESS THAN 2'-10 1/2" (867 mm) FOR PAVED STREETS OR 3'-6" (1060 mm) FOR UNPAVED STREETS, CONSTRUCT MONOLITHIC SHAFT PER SECTION C-C AND DETAIL "N". SHAFT FOR ANY DEPTH OF MANHOLE MAY BE CONSTRUCTED PER SECTION C-C. WHEN DIAMETER  $D_1$  IS 48" (1200 mm) OR LESS, CENTER OF SHAFT MAY BE LOCATED PER NOTE 2.
2. CENTER OF MANHOLE SHAFT SHALL BE LOCATED OVER CENTER LINE OF STORM DRAIN WHEN DIAMETER  $D_1$  IS 48" (1200 mm) OR LESS, IN WHICH CASE PLACE E BARS SYMMETRICALLY AROUND SHAFT AT 45° WITH CENTERLINE AND OMIT J BARS.
3. L AND P SHALL HAVE THE FOLLOWING VALUES UNLESS OTHERWISE SHOWN ON THE PROJECT DRAWINGS:
  - A.  $D_2=96"$  (2400 mm) OR LESS,  $L=5'-6"$  (1.7 m),  $P=5"$  (130 mm)
  - B.  $D_2$  OVER 96" (2400 mm),  $L=6'-0"$  (1.8 m),  $P=8"$  (210 mm)L MAY BE INCREASED OR LOCATION OF MANHOLE SHIFTED TO MEET PIPE ENDS. WHEN L GREATER THAN THAT SHOWN ABOVE IS SPECIFIED, D BARS SHALL BE CONTINUED 6" (150 mm) OC.
4. STATIONS OF MANHOLES SHOWN ON PLANS APPLY AT CENTERLINE OF SHAFT. ELEVATIONS ARE SHOWN AT CENTERLINE OF SHAFT AND REFER TO THE PROLONGED INVERT GRADE LINES.
5. REINFORCEMENT SHALL CONFORM TO ASTM A 615M, GRADE 300 (ASTM A 615, GRADE 40), AND SHALL TERMINATE 1 1/2" (40 mm) CLEAR OF CONCRETE SURFACES UNLESS OTHERWISE SHOWN.
6. FLOOR OF MANHOLE SHALL BE STEEL TROWELED TO SPRING LINE.
7. BODY OF MANHOLE SHALL BE POURED IN ONE CONTINUOUS OPERATION EXCEPT THAT A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY MAY BE PLACED AT SPRING LINE.
8. THICKNESS OF THE DECK SHALL VARY WHEN NECESSARY TO PROVIDE A LEVEL SEAT BUT SHALL NOT BE LESS THAN THE TABULAR VALUES FOR F SHOWN ON SHEET 2.
9. D BARS SHALL BE #4 (#13M) FOR  $D_2=39"$  (975 mm) OR LESS, #5 (#16M) FOR  $D_2=42"$  (1050 mm) TO 84" (2100 mm) INCLUSIVE AND #6 (#19M) FOR  $D_2=90"$  (2250 mm) OR OVER.
10. CENTERLINE OF INLET PIPE SHALL INTERSECT INSIDE FACE OF CONE AT SPRING LINE UNLESS OTHERWISE SHOWN.
11. STEPS SHALL CONFORM TO SPPWC 635 OR 636. UNLESS OTHERWISE SHOWN, STEPS SHALL BE UNIFORMLY SPACED 14" (350 mm) TO 15" (375 mm) OC. THE LOWEST STEP SHALL NOT BE MORE THAN 24" (600 mm) ABOVE THE INVERT.
12. THE FOLLOWING CRITERIA SHALL BE USED FOR THIS MANHOLE:
  - A. MAIN LINE = 36" (900 mm) INSIDE DIAMETER OR LARGER. EXCEPT IF THE MAIN LINE RCP DOWNSTREAM OF MANHOLE IS 36" (900 mm) TO 42" (1050 mm) INSIDE DIAMETER AND THE MAIN LINE RCP UPSTREAM IS 33" (825 mm) OR LESS SPPWC 321 SHALL BE USED.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

**MANHOLE PIPE-TO-PIPE**  
**MAIN LINE ID = 36" (900 mm) OR LARGER**

**320-2**

SHEET 3 OF 4

(Modified)