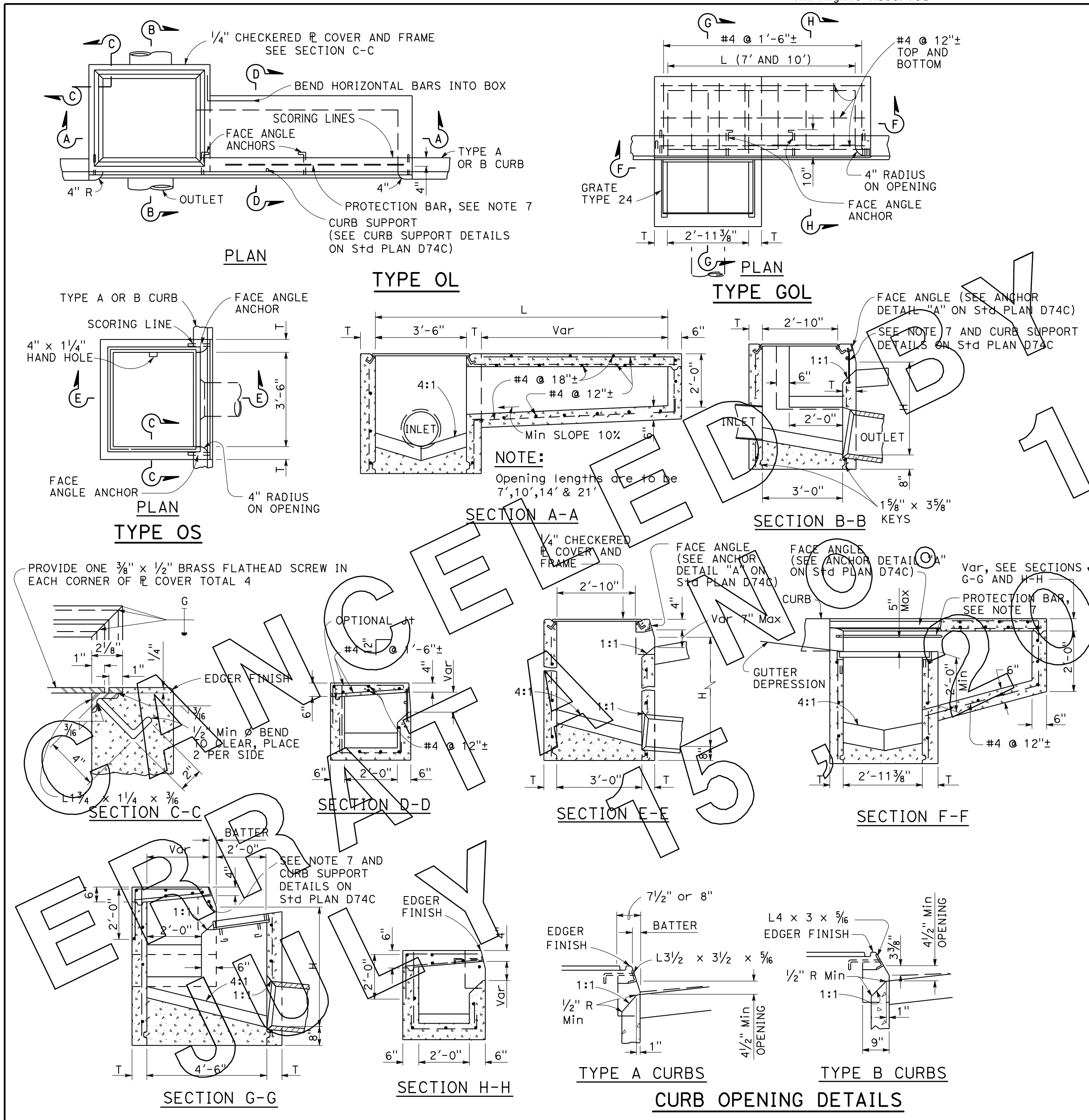
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

October 30, 2015
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
Carl M. Duan
No. C59976
Exp. 6-30-16
CIVIL
STATE OF CALIFORNIA



NOTES:

1. "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed at the curb face.
2. For "T" wall thickness, see Table A below.
3. Height of curb opening will vary with the type of curb and the depth of the local depression.
4. Wall reinforcing not required when "H" is 8'-0" or less and the unsupported width or length is 7'-0" or less. Walls exceeding these limits shall be reinforced with #4 bars @ 1'-6" ± centers placed 1 1/2" clear to inside of box unless otherwise shown.
5. Inlet bottom reinforcing not required. See Standard Plan D74C for alternative reinforced bottom.
6. Steps-None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below top of inlet. The distance between steps shall not exceed 1'-0" and be uniform throughout the length of the wall. Place steps in the wall without an opening. Step inserts may be substituted for the bar steps. Step inserts shall comply with State Industrial Safety requirements. See Standard Plan D74C for step details.
7. When shown on the project plans, place a 3/4" plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
8. Pipe(s) can be placed in any wall.
9. Curb section shall match adjacent curb.
10. Except for inlets used as junction boxes, basin floor shall have a minimum slope of 4:1 from all directions toward outlet pipe and shall have a wood trowel finish.
11. See Standard Plans D77A and D77B for grate and frame details and weights of miscellaneous iron and steel.
12. See Standard Plan D78A for gutter depression details.
13. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
14. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
15. Cast-in-place inlets to be formed around all pipes/stubs intersecting the inlet, and concrete poured in one continuous operation. Precast inlets shall have mortared connections conforming to details for Type GCP Inlet shown on Standard Plan D75B. See Standard Specifications for mortar composition.

TABLE A

CONCRETE QUANTITIES

TYPE	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
	H=3'-0" (CY)	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
OS	1.41	0.278	3.81	0.387
OL-7	1.92	0.278	4.29	0.387
OL-10	2.39	0.278	4.77	0.387
OL-14	3.06	0.278	5.45	0.387
OL-21	4.42 *	0.278	6.78	0.387
GOL-7	2.33	0.313	4.96	0.434
GOL-10	2.84	0.313	5.47	0.434

* Based on H=3.1'

Table based on 8" floor slab, 7" curb openings, and curb type giving highest quantity of concrete. No deductions or adjustments are to be made to these quantities because of pipe openings, different floor alternatives, different curb types or different height of curb openings.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLETS

NO SCALE

D72

2015 STANDARD PLAN D72

9-22-15

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

REGISTERED CIVIL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-16
CIVIL
STATE OF CALIFORNIA

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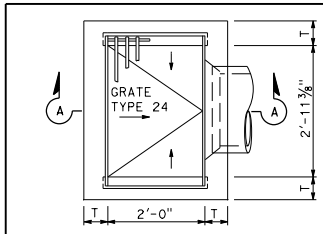
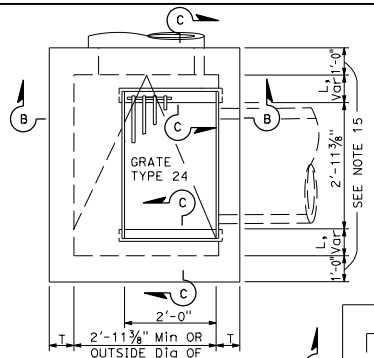
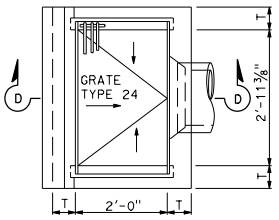


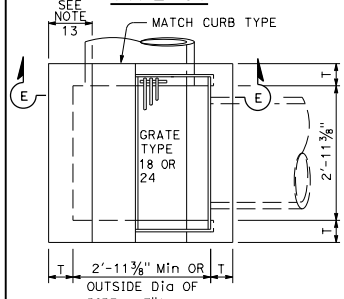
TYPE G1



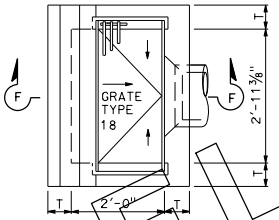
TYPE G2



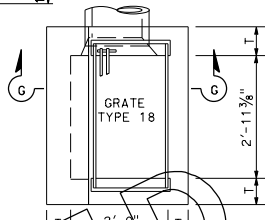
TYPE G3



TYPE G4



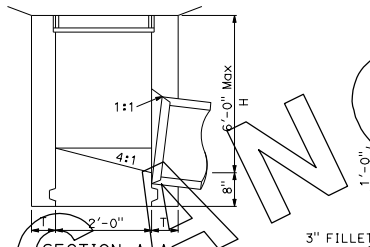
TYPE G5



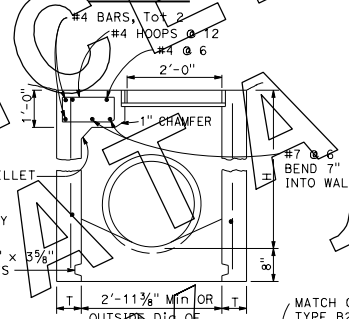
TYPE G6

NOTES:

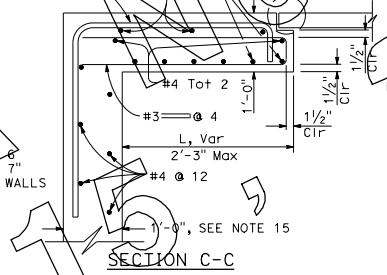
1. "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
2. For "T" wall thickness, see Table A below.
3. Wall reinforcing not required when "H" is 8'-0" or less and the unsupported width or length is 7'-0" or less. Walls exceeding these limits shall be reinforced with #4 bars @ 1'-6" ± centers placed 1½" clear to inside of box unless otherwise shown.
4. Inlet bottom reinforcing not required. See Standard Plan D74C for alternative reinforced bottom and alternative half round bottom.
5. Steps-None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below top of inlet. The distance between steps shall not exceed 1'-0" and shall be uniform throughout the length of the wall. Place steps in the wall without an opening. Step inserts may be substituted for the bar steps. Step inserts shall comply with State Industrial Safety requirements. See Standard Plan D74C for step details.
6. Details shown apply to both metal and concrete pipe.
7. Pipe(s) can be placed in any wall.
8. Curb section shall match adjacent curb.
9. Basin floors shall have wood trowel finish and a minimum slope of 4:1 from all directions toward outlet pipe.
10. Set inlet so that grate bars are parallel to direction of principal surface flow.
11. See Standard Plans D77A and D77B for grate and frame details and weights of miscellaneous iron and steel.
12. See Standard Plan D78A for gutter depression details.
13. This dimenison will vary with different grates, curbs types, box width and wall thickness.
14. Bar may be rotated as necessary to clear opening. Where "L" is 6" or less, bar may be omitted.
15. Where "L" is 6" or less, wall thickness shall be as shown in Table A.
16. Cast-in-place inlets to be formed around all pipes/stubs intersecting the inlet, and concrete poured in one continuous operation. Precast inlets shall have mortared connections conforming to details for Type GCP inlet shown on Standard Plan D75B. See Standard Specifications for mortar composition.



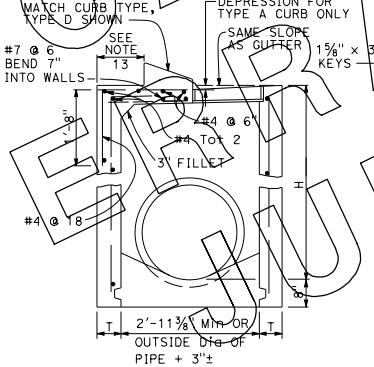
SECTION A-A



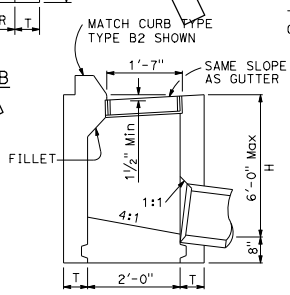
SECTION B-B



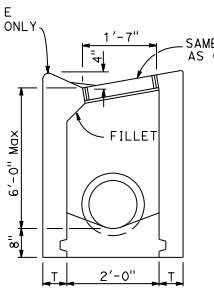
SECTION C-C



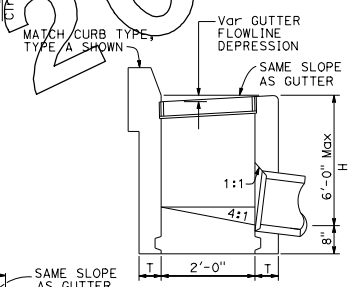
SECTION E-E



SECTION F-F



SECTION G-G



SECTION D-D

TABLE A

CONCRETE QUANTITIES				
TYPE	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
	H=3'-0" (CY)	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
G-1	0.95	0.220	**	**
G-2*	1.31	0.255	3.50	0.357
G-3	1.03	0.220	**	**
G-4* (TYPE 24)	1.27	0.255	3.48	0.357
G-4* (TYPE 18)	1.30	0.255	3.50	0.357
G-5	1.02	0.220	**	**
G-6	1.04	0.220	**	**

Table based on 8" floor slab. No deductions are to be made to these quantities because of pipe openings, different floor alternatives or different curb types.

* Quantities for Type G-2 and G-4 inlets based on the minimum interior dimensions.

** Maximum allowable height 6'-0".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLETS

NO SCALE

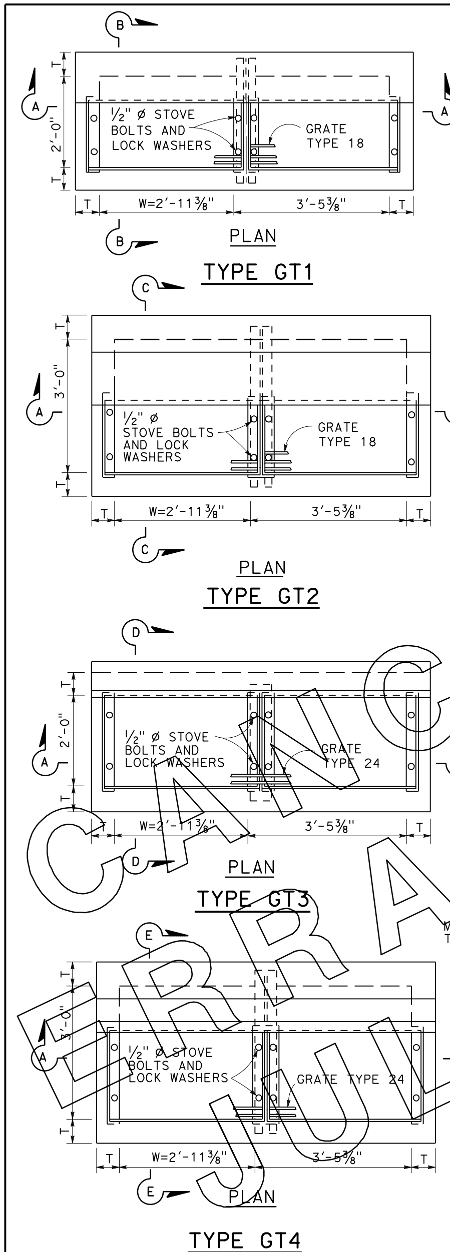
D73

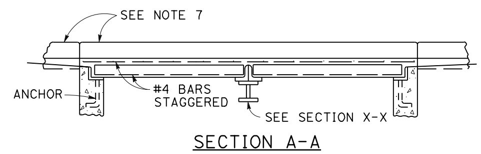
9-22-15

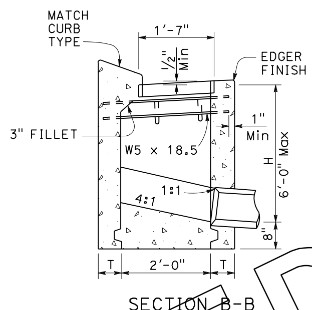
2015 STANDARD PLAN D73

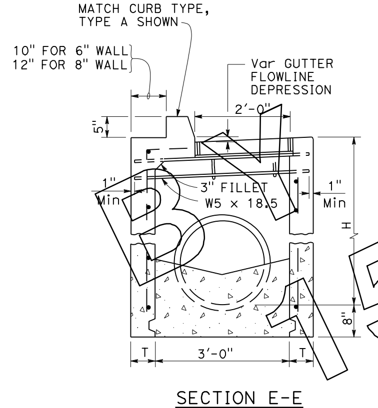
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

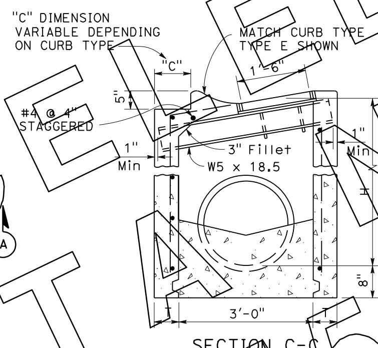
REGISTERED CIVIL ENGINEER
October 30, 2015
PLANS APPROVAL DATE
REGISTERED PROFESSIONAL ENGINEER
Carl M. Duan
No. C59976
Exp. 6-30-16
CIVIL
STATE OF CALIFORNIA

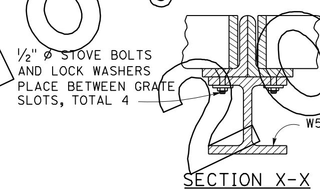


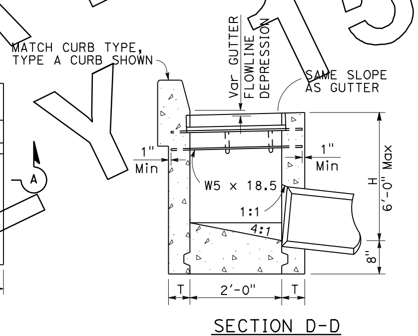












NOTES:

1. "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
2. For "T" wall thickness, see Table A below.
3. Wall reinforcing not required when "H" is 8'-0" or less and the unsupported width or length is 7'-0" or less. Walls exceeding these limits shall be reinforced with #4 bars @ 1'-6" ± centers placed 1½" clear to inside of box unless otherwise shown.
4. Inlet bottom reinforcing not required. See Standard Plan D74C for alternative reinforced bottom.
5. Steps - None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below top of inlet. The distance between steps shall not exceed 1'-0" and shall be uniform throughout the length of the wall. Place steps in the wall without an opening. Step inserts may be substituted for the bar steps. Step Inserts shall comply with State Industrial Safety requirement. See Standard Plan D74C for step details.
6. Pipe(s) can be placed in any wall.
7. Curb section shall match adjacent curb.
8. Basin floors shall have wood trowel finish and a minimum slope of 4:1 from all directions toward outlet pipe.
9. W = 2'-11⅜" for one grate. Add 3'-5⅜" for additional grates in tandem.
10. See Standard Plans D77A and D77B for grate and frame details and weights of miscellaneous iron and steel.
11. See Standard Plan D78A for gutter depression details.
12. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
13. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
14. Cast-in-place inlets to be formed around all pipes/stubs intersecting the inlet and concrete poured in one continuous operation. Precast inlets shall have mortared pipe connections conforming to details for Type GCP inlet on Standard Plan D75B. See Standard Specifications for mortar composition.

TABLE A

CONCRETE QUANTITIES				
	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
TYPE	H=3'-0" CY	ADDITIONAL PCC PER FOOT CY	H=8'-1"	ADDITIONAL PCC PER FOOT CY
GT1	1.74	0.348	*	*
GT2	2.11	0.385	5.40	0.530
GT3	1.73	0.348	*	*
GT4	2.18	0.385	5.41	0.530

Table based on 8" floor slab and curb type giving highest quantity of concrete. No deductions or adjustments are to be made to these quantities because of pipe openings, different floor alternatives or different curb type.

* Maximum allowable height = 6'-0".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLETS

NO SCALE

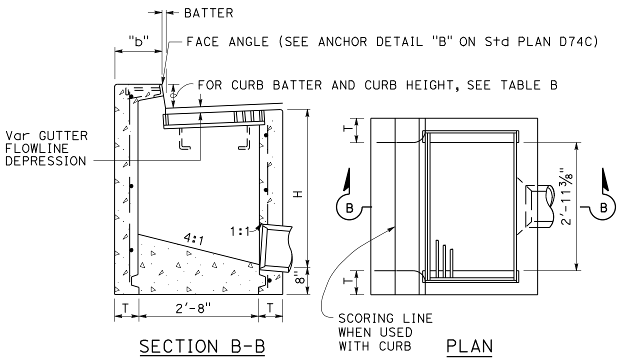
D74A

2015 STANDARD PLAN D74A

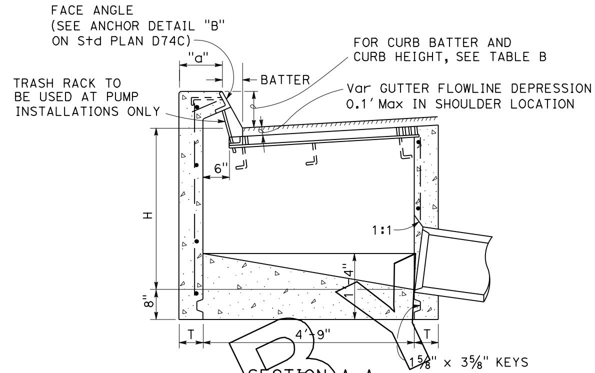
9-22-15

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

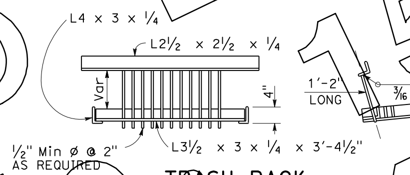
REGISTERED CIVIL ENGINEER
October 30, 2015
PLANS APPROVAL DATE
Carl M. Duan No. C59976 Exp. 6-30-16 CIVIL
REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA



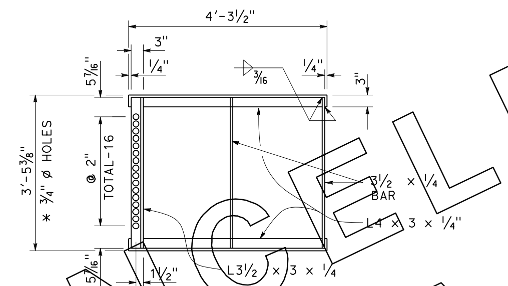
TYPE GO



SECTION A-A

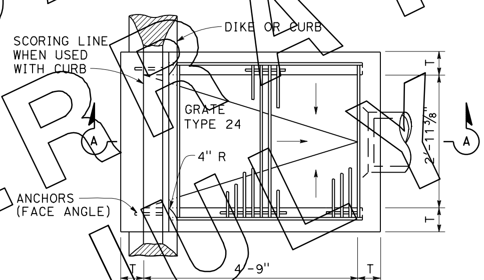


TRASH RACK
(For use with pump installation)



* ¾" ø Holes required only with trash rack

GRATE FRAME FOR TYPE GDO INLET



PLAN

TYPE GDO

TABLE A

CONCRETE QUANTITIES				
	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
TYPE	H=3'-0" (CY)	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
GO	1.24	0.245	3.39	0.346
GDO	1.62	0.322	4.36	0.446

Table based on 8" floor slab and curb type giving highest quantity of concrete. No deductions or adjustments are to be made to these quantities because of pipe openings, different floor alternatives or different curb type.

TABLE B

CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"a" DIMENSION	"b" DIMENSION
A1-6	6"	1½"	T+7½"	T+6½"
A1-8	8"	2"	T+7"	T+6"
B1-6	6"	4"	T+5"	T+4"
TYPE A DIKE	6"	3"	T+6"	T+5"

NOTES:

1. "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
2. For "T" wall thickness, see Table A below.
3. Wall reinforcing not required when "H" is 8'-0" or less and the unsupported width or length is 7'-0" or less. Walls exceeding these limits shall be reinforced with #4 @ 1'-6"± centers placed 1½" clear to inside of box unless otherwise shown.
4. Inlet bottom reinforcing not required. See Standard Plan D74C for alternative reinforced bottom.
5. Steps - None required where "H" is less than 2'-6" Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below top of inlet. The distance between steps shall not exceed 1'-0" and shall be uniform throughout the length of the wall. Place steps in the wall without an opening. Step inserts may be substituted for the bar steps. Step Inserts shall comply with State Industrial Safety requirements. See Standard Plan D74C for step details.
6. When shown on the project plans, place a ¾" plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
7. Pipe(s) can be placed in any wall.
8. Curb section shall match adjacent curb.
9. Basin floors shall have wood trowel finish and shall slope toward the outlet pipe as shown.
10. See Standard Plan D77A and D77B for grate and frame details and weights of miscellaneous iron and Steel.
11. See Standard Plan D78A for gutter depression details.
12. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
13. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
14. Cast-in-place inlets to be formed around all pipes/stubs intersecting the inlet and concrete poured in one continuous operation. Precast inlets shall have mortared pipe connections conforming to details for Type GCP inlets on Standard Plan D75B. See Standard Specifications for mortar composition.

2015 STANDARD PLAN D74B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLETS

NO SCALE

D74B

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

REGISTERED CIVIL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

Carl W. Dugn
No. C59976
Exp. 6-30-16
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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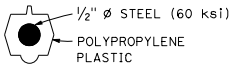
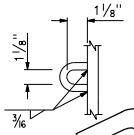
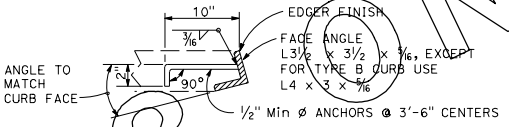


TYPICAL SECTION
(Step insert)

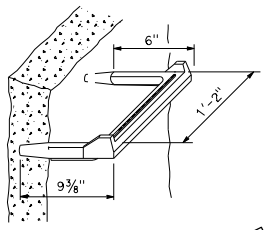


STIRRUP

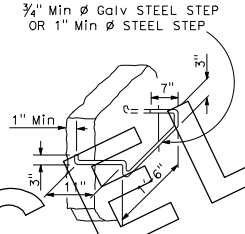


FACE ANGLE ANCHOR DETAIL "A"

FACE ANGLE DETAIL "A"	
LENGTH OF CURB OPENING	No. OF ANCHORS
3'-6" OR LESS	2
7'-0"	3
10'-0"	4
14'-0"	5
21'-0"	7

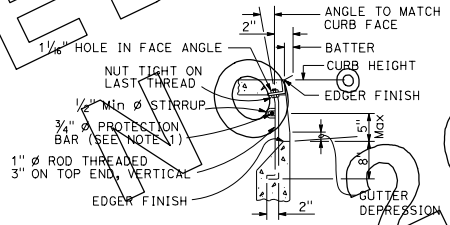


STEP INSERT

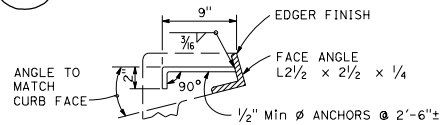


BAR STEP

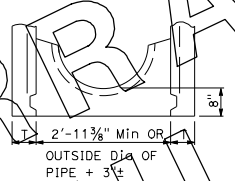
STEP DETAILS



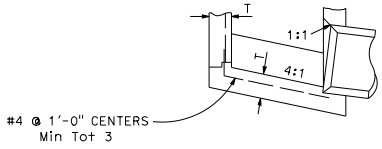
CURB SUPPORT DETAIL
See Note 2



FACE ANGLE ANCHOR DETAIL "B"



ALTERNATIVE
HALF ROUND BOTTOM



ALTERNATIVE
REINFORCED BOTTOM

NOTES:

1. When shown on the project plans, place a ¾" Ø plain round protection bar horizontally across length of the opening and bend back 4" into the inlet wall on each side.
2. Curb supports shall be evenly spaced and minimal in number such that maximum span of unsupported curb is 7'-0".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET DETAILS

NO SCALE

D74C

2015 STANDARD PLAN D74C

177

10-13-15

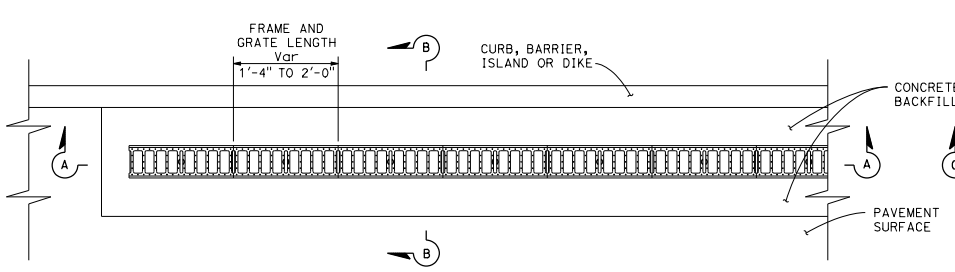
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

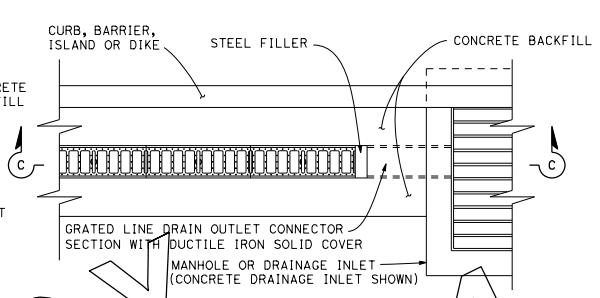
Paul R Davies
REGISTERED CIVIL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

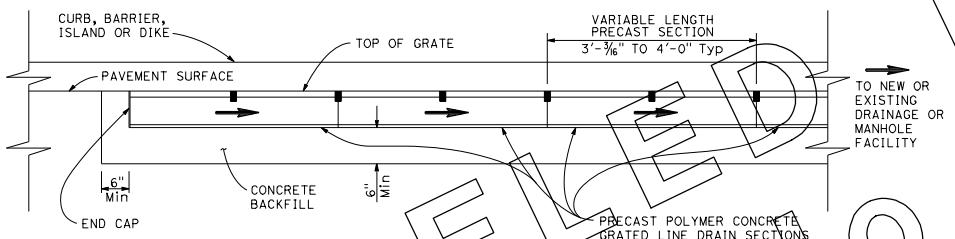
Paul R. Davies
No. C52193
Exp. 12-31-16
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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.

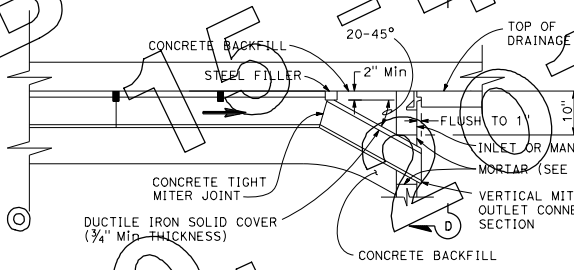




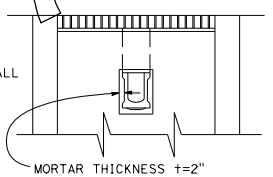
GRATED LINE DRAIN PLAN



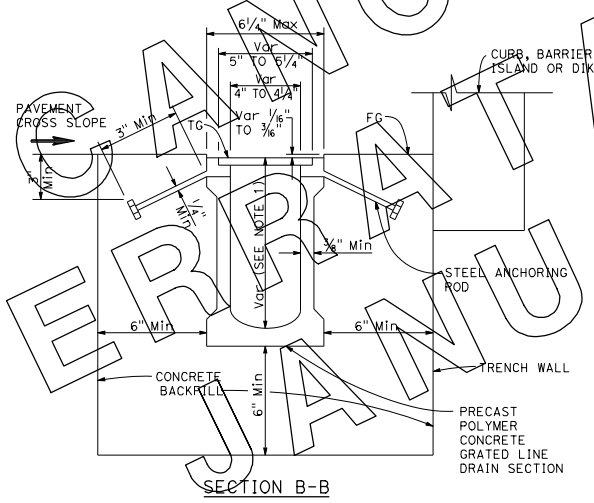
SECTION A-A
(See Note 1)



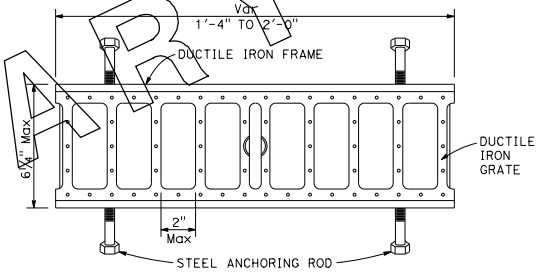
SECTION C-C



SECTION D-D



SECTION B-B
(Precast grated line drain with non-integral frame)
See Note 6



GRATED LINE DRAIN FRAME AND GRATE DETAIL
See Notes 4, 5, 6 and 7

NOTES:

1. See Project Plans for trench sections to be installed.
2. Nominal dimensions shown. Allowable tolerance ± 2% .
3. For GMP inlet connection, field joint sealed with a pliable mixture of sand, portland cement and emulsified asphalt (mixture of 1 part portland cement, 3-5 parts sand and 1½ part SSI emulsified asphalt).
4. Within designated pedestrian paths of travel, the maximum grate opening in the direction of pedestrian traffic shall be ½".
5. Grate patterns may vary from detail shown. See Special Provisions for requirements.
6. Steel anchoring rods not used when frame is integral with polymer concrete grated line drain section.
7. 3/8" maximum gap between adjacent gratings.

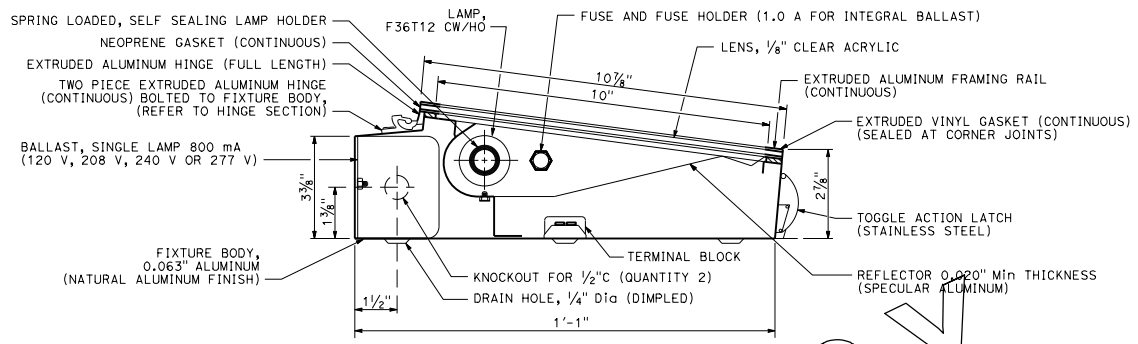
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GRATED LINE DRAIN DETAILS

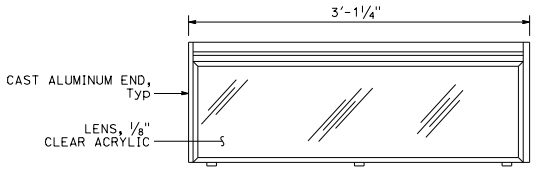
NO SCALE

D98C

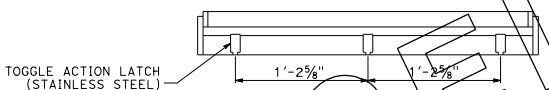
9-22-15



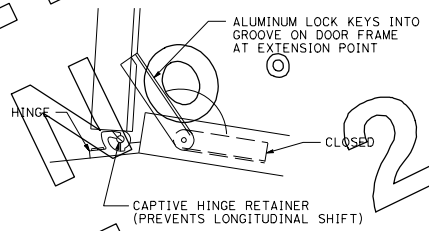
SECTION-LIGHTING FIXTURE



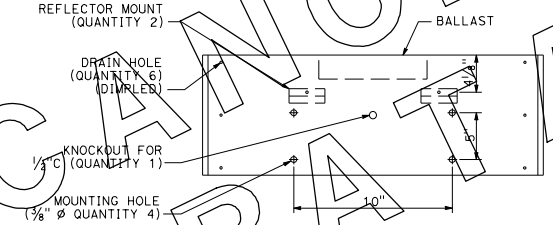
TOP VIEW



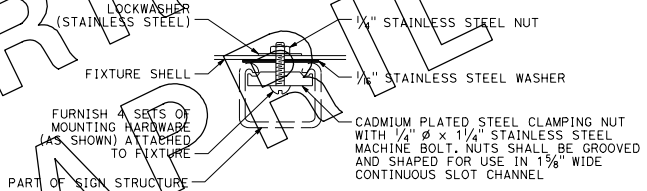
FRONT VIEW



HINGE SECTION



MOUNTING VIEW



FIXTURE MOUNTING
ON CONTINUOUS SLOT CHANNEL
DETAIL M

SIGN LOAD (WATTS) AND FUSING	
1 LAMP AND BALLAST - 75 W	1 A
2 LAMPS AND BALLAST - 150 W	2.5 A
3 LAMPS AND BALLAST - 225 W	3 A

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

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Theresa Aziz Gabriel
No. E15129
Exp. 6-30-16
ELECTRICAL
STATE OF CALIFORNIA

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NOTES:

1. Conduit shall be secured to nearest member using one-hole galvanized mallable iron or steel straps at 5'-0" maximum centers and brass machine screws tapped into the member.
2. Ballasts and terminal boards shall be marked with legible symbols. Conductors shall be tagged and their identification marked on the corresponding terminal on the terminal board as shown on the typical fixture wiring diagram. An alternative cover design shall be submitted for approval.
3. Ballast shall be one, two or three lamp types as required, rated at 800 mA.
4. Each ballast shall be fused with 1 1/4" x 1/4" slow-blow glass tube fuse.
5. Fuseholder shall be a panel mounted type.
6. The fixture shall have an integral ballast.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (36" FLUORESCENT SIGN ILLUMINATION EQUIPMENT)

NO SCALE

ES-15B

9-22-15

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

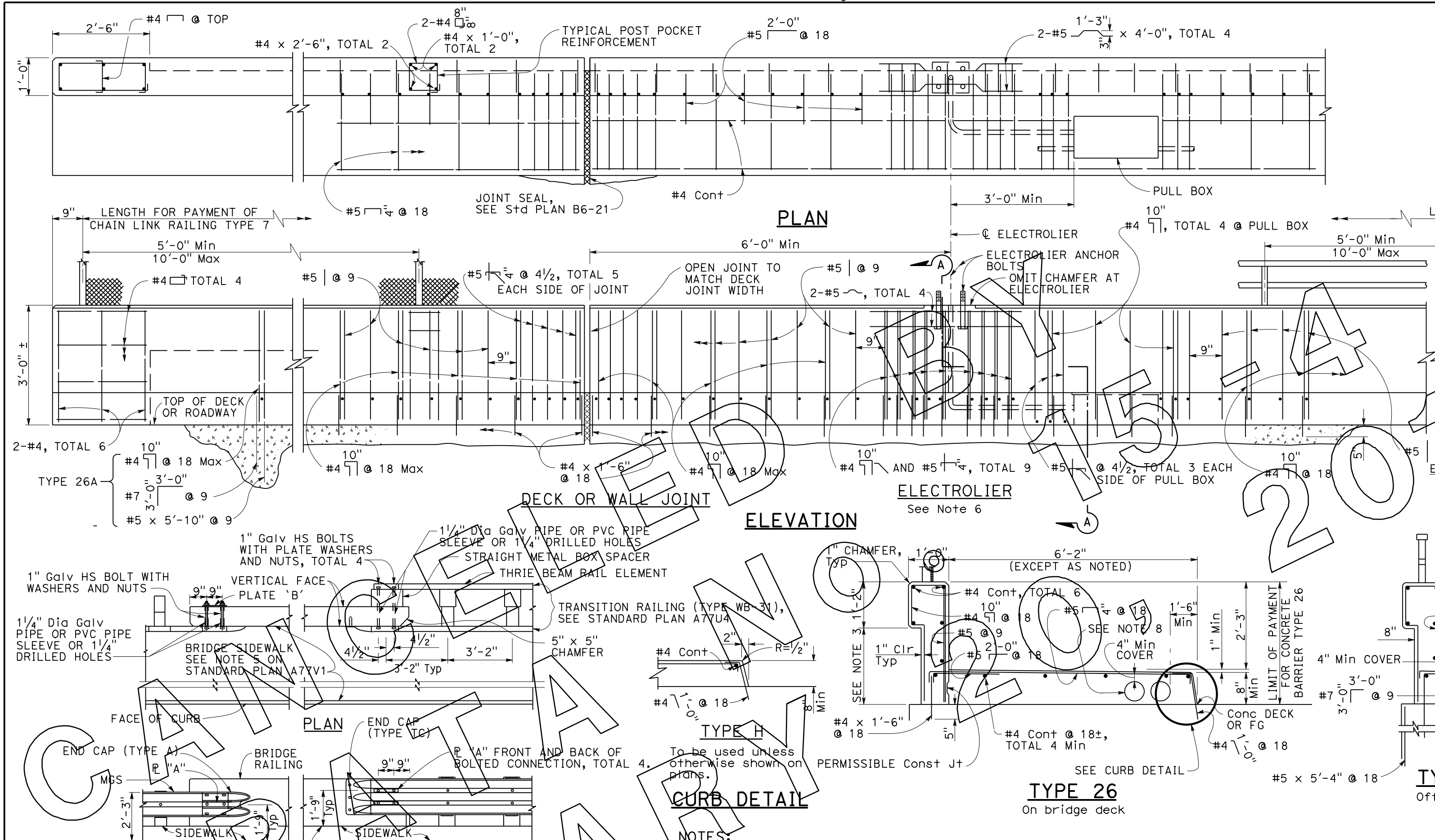
REGISTERED CIVIL ENGINEER

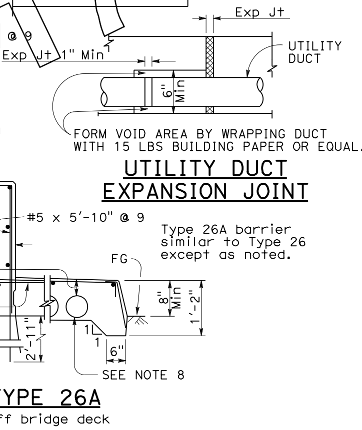
July 15, 2016
PLANS APPROVAL DATE

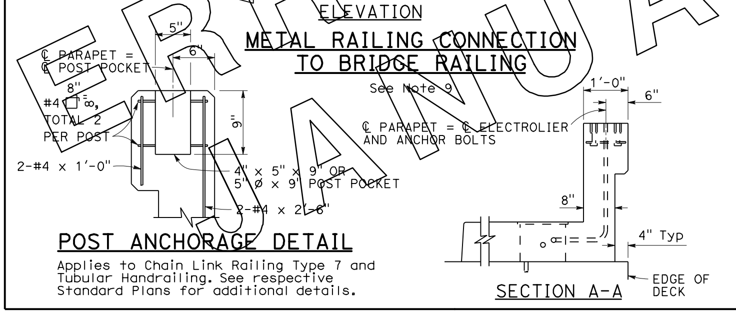
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — Tillat Satter — No. C42892 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED







NOTES:

1. For Chain Link Railing notes and details not shown, see Standard Plan B11-52.
2. For Handrailing notes and details not shown, see Revised Standard Plan RSP B11-51.
3. Dimensions will vary with cross slope and with certain thicknesses of surfacing. See Project Plans.
4. Walls are to be backfilled before railing is placed.
5. Clearance to reinforcing steel in curb and railing to be 1" except as noted. Longitudinal reinforcement to stop at all expansion joints.
6. See Project Plans for electrolier locations and pull box type.
7. For electrical details, see Standard Plans ES-9A, ES-9B, Revised Standard Plans RSP ES-9C, RSP ES-9D and RSP ES-9E.
8. A maximum of five - 4" and a minimum of two - 4" round openings for future utilities. Openings are to be sealed at ends and extended 8" minimum past end of sidewalk if not used. Duct forms are to be tied down. Minimum of 6" from face of rail to utility opening. See Standard Plan B14-3 for minimum spacing between conduit, and for details at joints.
9. For typical metal railing connection details not shown, see Standard Plans A77V1 and A77V2.
10. This barrier is to be used only for speeds of 45 MPH or less. For speeds greater than 45 MPH, pedestrians should be protected by a separation traffic barrier.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 26

NO SCALE

RSP B11-54 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B11-54 DATED OCTOBER 30, 2015 - PAGE 314 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-54

2015 REVISED STANDARD PLAN RSP B11-54

6-28-16

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

Jeffrey C. Kepley
REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

Jeff C. Kepley No. 53361 Exp. 6-30-19 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

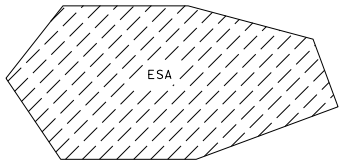
WATER POLLUTION CONTROL

- Temp HIGH-VISIBILITY FENCE (THVF)
- Temp SILT FENCE (TSF)
- Temp Reinf SILT FENCE (TRSF)
- Temp FIBER ROLL (TFR)
- Temp GRAVEL BAG BERM (TGBB)
- Temp STRAW BALE BARRIER (TSBB)
- Temp SLOPE DRAIN FLEX PIPE
- Temp EARTH BERM
- Temp DITCH/SWALE
- Temp CONCRETE WASHOUT (WASH)
- Temp DRAINAGE INLET PROTECTION
- Temp DRAINAGE OUTLET PROTECTION
- Temp CHECK DAM
- Temp CONSTRUCTION ENTRANCE
- Temp STOCKPILE (SP)

BOUNDARY LINE

- STATE OR COUNTRY
- COUNTY OR RESERVATION BOUNDARY
- CITY OR MILITARY BOUNDARY
- FOREST
- SUBDIVISION, SECTION, GRANT
- RANCHO

ENVIRONMENTALLY SENSITIVE AREA (ESA)



DRAINAGE

- DIRECTION FLOW OF WATER
- DRAINAGE SYSTEM SYMBOL
- DRAINAGE UNIT SYMBOL
- DRAINAGE INLET
- DITCH FLOW LINE

DRAFTING

- TILDE - DESIGNATES AN AREA
- NORTH ARROW
- ADDENDUM SHEET SYMBOL (ADDENDUM NUMBER IS INCLUDED INSIDE THE SYMBOL)
- MATCH LINE
- BREAK LINE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LEGEND
LINES AND SYMBOLS
(SHEET 2 OF 5)

NO SCALE

RSP A10B DATED JULY 21, 2017 SUPERSEDES RSP A10B DATED JANUARY 20, 2017 AND STANDARD PLAN A10B DATED OCTOBER 30, 2015 - PAGE 5 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A10B

2015 REVISED STANDARD PLAN RSP A10B

6-13-17

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

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

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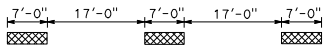
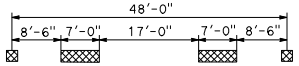
TO ACCOMPANY PLANS DATED _____

CENTERLINES
(2 LANE HIGHWAYS)

DETAIL 1



DETAIL 2

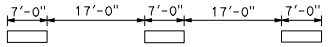


~~DETAIL 3~~ DETAIL 3 DELETED

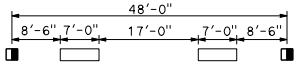
~~DETAIL 4~~ DETAIL 4 DELETED

LANELINES
(MULTILANE HIGHWAYS)

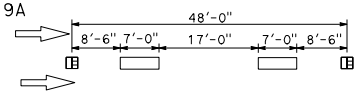
DETAIL 8



DETAIL 9



DETAIL 9A
SEE NOTE



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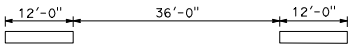
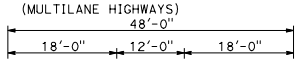
DETAIL 11

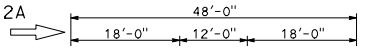


LANELINES (Cont)
(MULTILANE HIGHWAYS)

DETAIL 12



DETAIL 12A
SEE NOTE



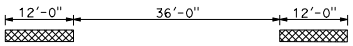
~~DETAIL 13~~ DETAIL 13 DELETED

~~DETAIL 14~~ DETAIL 14 DELETED

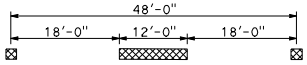
~~DETAIL 14A~~ DETAIL 14A DELETED

NO PASSING ZONES-ONE DIRECTION

DETAIL 5



DETAIL 6



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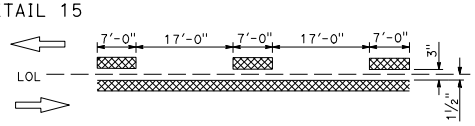
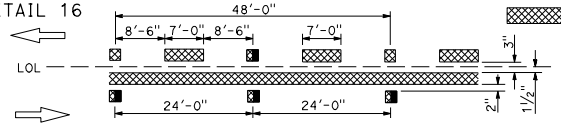
DETAIL 15



DETAIL 16



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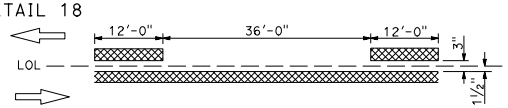
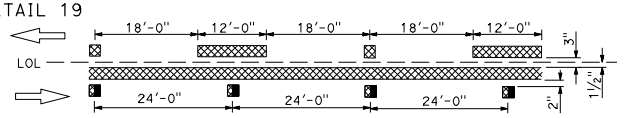
DETAIL 18



DETAIL 19

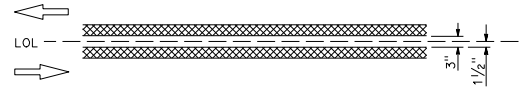


~~DETAIL 20~~ DETAIL 20 DELETED

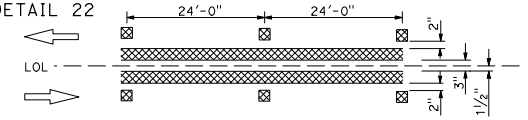
NOTE:
FOR FREEWAY APPLICATION ONLY

NO PASSING ZONES-TWO DIRECTION

DETAIL 21



DETAIL 22



~~DETAIL 23~~ DETAIL 23 DELETED

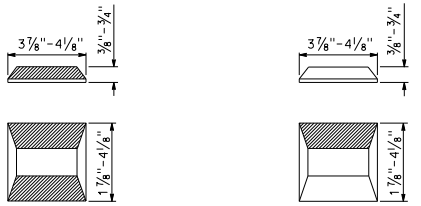
LEGEND

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

RSP A20A DATED APRIL 20, 2018 SUPERSEDES RSP A20A DATED JULY 21, 2017 AND STANDARD PLAN A20A DATED OCTOBER 30, 2015 - PAGE 12 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A20A

2015 REVISED STANDARD PLAN RSP A20A

11-14-17

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

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

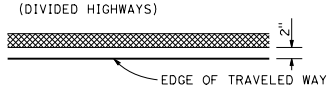
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

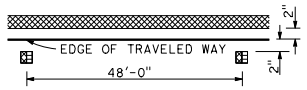
LEFT EDGELINES

(DIVIDED HIGHWAYS)

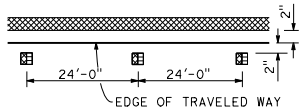
DETAIL 24



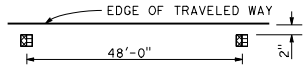
DETAIL 25



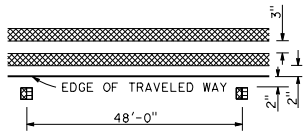
DETAIL 25A



DETAIL 26

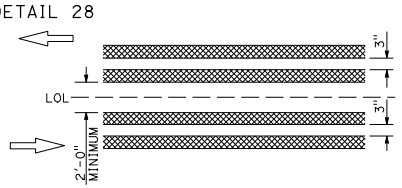


DETAIL 27

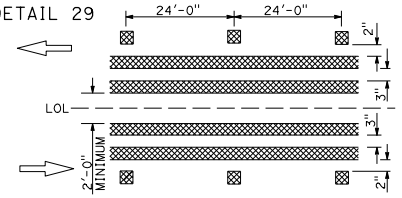


MEDIAN ISLANDS

DETAIL 28



DETAIL 29



~~DETAIL 30~~ DETAIL 30 DELETED

LEGEND

MARKERS

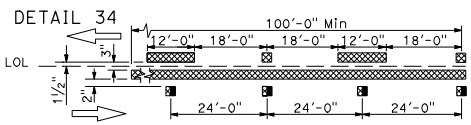
- TYPE D — TWO-WAY YELLOW RETROREFLECTIVE
- TYPE H — ONE-WAY YELLOW RETROREFLECTIVE
- TYPE RY — RED-YELLOW RETROREFLECTIVE

LINES

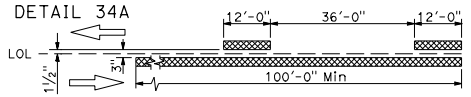
- 6" WHITE
- 6" YELLOW

INTERSECTION TREATMENTS

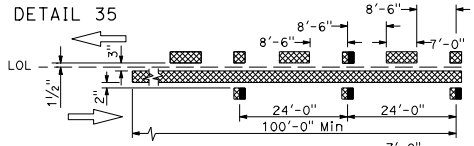
DETAIL 34



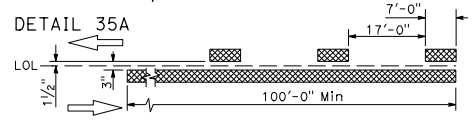
DETAIL 34A



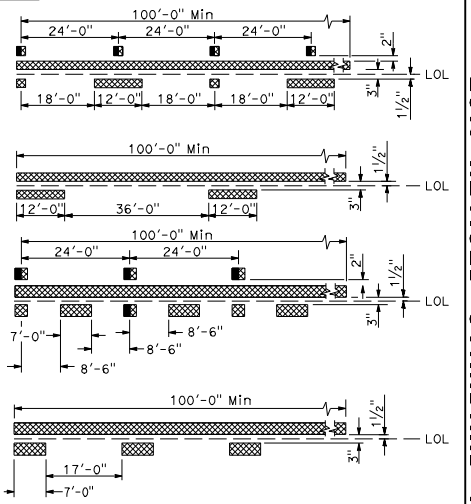
DETAIL 35



DETAIL 35A



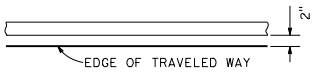
CENTERLINE INTERSECTING STREET



RIGHT EDGELINES

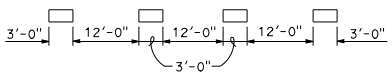
~~DETAIL 27A~~ DETAIL 27A DELETED

DETAIL 27B



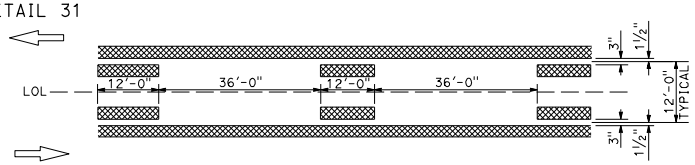
RIGHT EDGELINE EXTENSION THROUGH INTERSECTIONS

DETAIL 27C

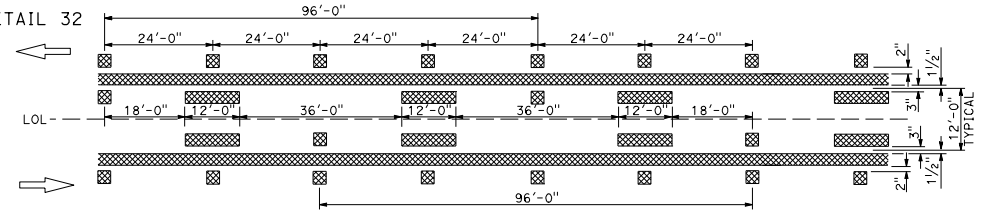


TWO-WAY LEFT TURN LANES

DETAIL 31

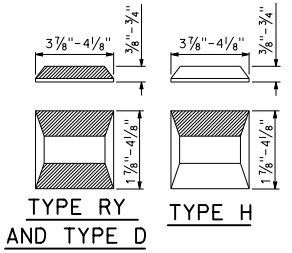


DETAIL 32



~~DETAIL 33~~ DETAIL 33 DELETED

MARKER DETAILS



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

RSP A20B DATED APRIL 20, 2018 SUPERSEDES RSP A20B DATED JULY 21, 2017 AND STANDARD PLAN A20B DATED OCTOBER 30, 2015 - PAGE 13 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A20B

2015 REVISED STANDARD PLAN RSP A20B

11-14-17

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

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

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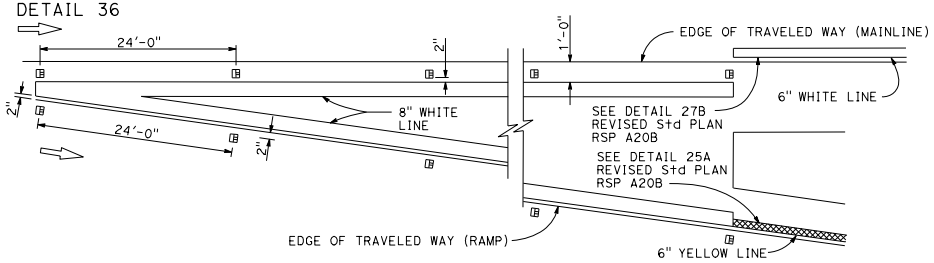
TO ACCOMPANY PLANS DATED _____

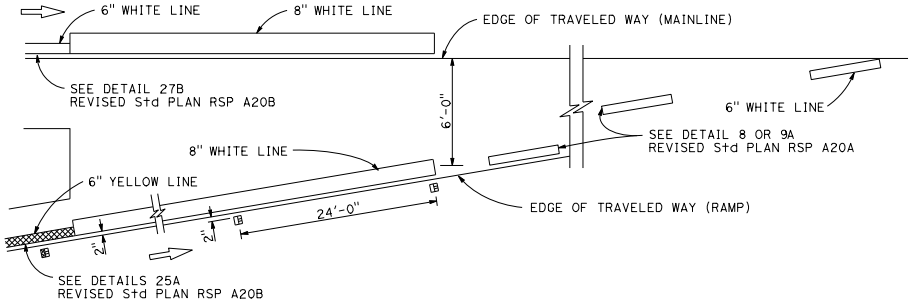
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT

DETAIL 36



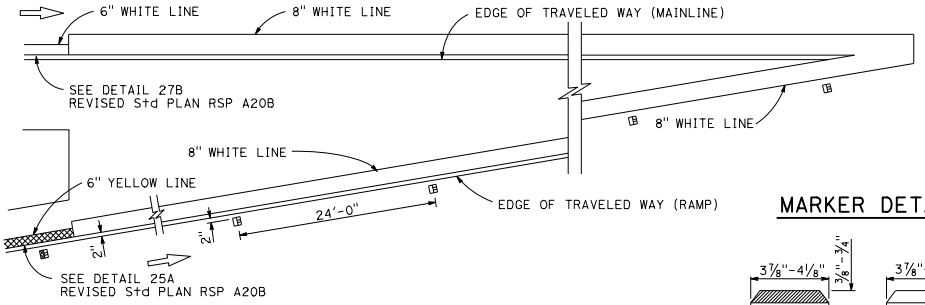
ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT

DETAIL 36A



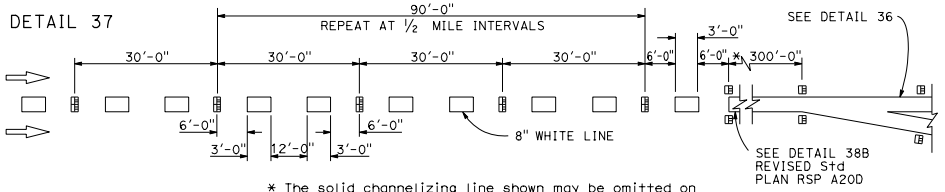
ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT

DETAIL 36B



LANE DROP AT EXIT RAMPS

DETAIL 37

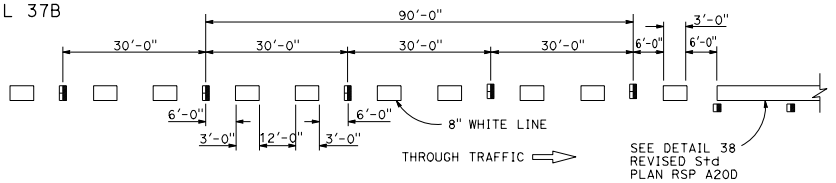


* The solid channelizing line shown may be omitted on short auxiliary lanes where weaving length is critical.

~~DETAIL 37A~~ DETAIL 37A DELETED

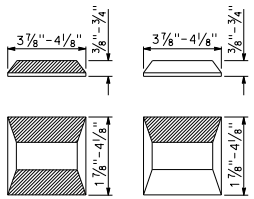
LANE DROP AT INTERSECTIONS

DETAIL 37B



~~DETAIL 37C~~ DETAIL 37C DELETED

MARKER DETAILS



TYPE C AND TYPE RY — TYPE G

RETROREFLECTIVE FACE

LEGEND:

MARKERS

- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- TYPE RY RED-YELLOW RETROREFLECTIVE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

RSP A20C DATED APRIL 20, 2018 SUPERSEDES RSP A20C DATED JULY 21, 2017 AND STANDARD PLAN A20C DATED OCTOBER 30, 2015 - PAGE 14 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A20C

2015 REVISED STANDARD PLAN RSP A20C

11-14-17

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

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

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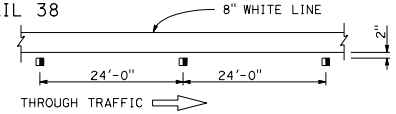
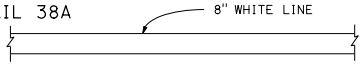
TO ACCOMPANY PLANS DATED _____

CHANNELIZING LINE

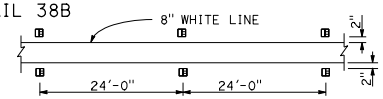
DETAIL 38



DETAIL 38A



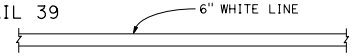
DETAIL 38B



~~DETAIL 38C~~ DETAIL 38C DELETED

BIKE LANE LINE

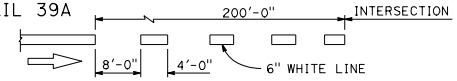
DETAIL 39



INTERSECTION LINE

BIKE LANE

DETAIL 39A



LANE LINE EXTENSIONS THROUGH INTERSECTIONS

DETAIL 40

~~DETAIL 40A~~ DETAIL 40A DELETED

CENTER LINE EXTENSIONS THROUGH INTERSECTIONS

DETAIL 41

~~DETAIL 41A~~ DETAIL 41A DELETED

LEGEND

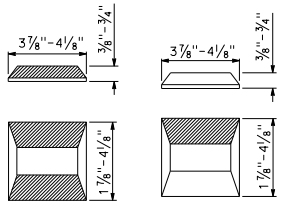
MARKERS

TYPE C RED-CLEAR RETROREFLECTIVE

TYPE G ONE-WAY CLEAR RETROREFLECTIVE

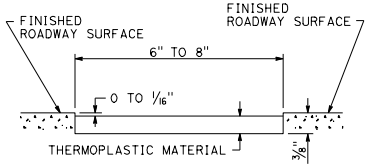
6" YELLOW LINE

MARKER DETAILS



TYPE C TYPE G

RETROREFLECTIVE FACE



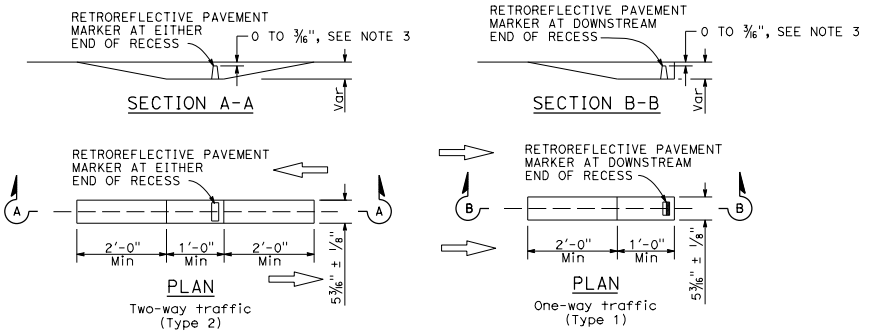
DETAIL FOR RECESSED THERMOPLASTIC TRAFFIC STRIPE

See Notes A and B.

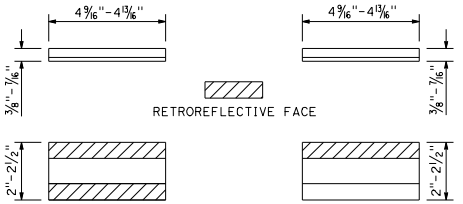
RECESSED THERMOPLASTIC NOTES

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



TYPE C AND TYPE D TYPE G AND TYPE H

See Notes 1 and 2.

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.

RETROREFLECTIVE PAVEMENT MARKER FOR RECESSED INSTALLATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

RSP A20D DATED APRIL 20, 2018 SUPERSEDES RSP A20D DATED JULY 21, 2017 AND STANDARD PLAN A20D DATED OCTOBER 30, 2015 - PAGE 15 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A20D

2015 REVISED STANDARD PLAN RSP A20D

11-14-17

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

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

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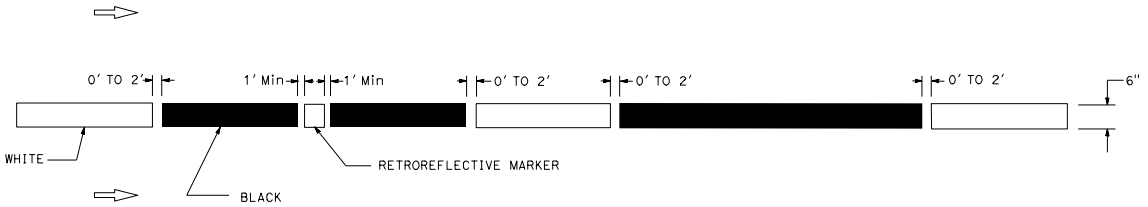
TO ACCOMPANY PLANS DATED _____

NOTES:

1. See Revised Standard Plans RSP A20A, RSP A20B, RSP A20C, and RSP A20D for pavement markers and traffic lines typical details.
2. Detail 9 traffic stripe shown, see project plans for traffic stripe details.



OPTION 2
TYPICAL LANE LINE CONTRAST DETAIL
See Note 2

OPTION 1
TYPICAL LANE LINE OR RIGHT EDGE LINE CONTRAST DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS FOR CONTRAST STRIPING

NO SCALE

RSP A20E DATED JULY 21, 2017 SUPERSEDES RSP A20E DATED JANUARY 20, 2017 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A20E

2015 REVISED STANDARD PLAN RSP A20E

4-4-17

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
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No. C80402
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STATE OF CALIFORNIA

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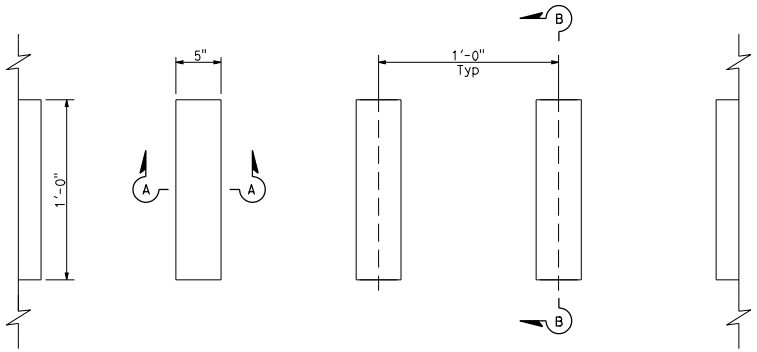
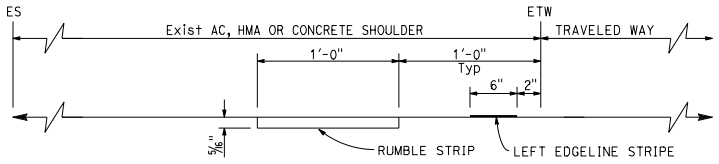
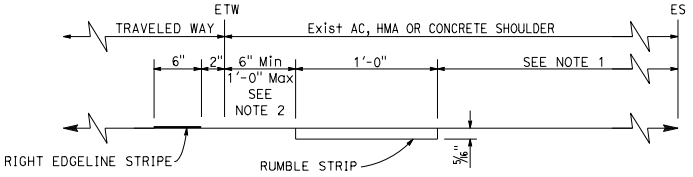
TO ACCOMPANY PLANS DATED _____



PLAN
GROUND-IN INDENTATIONS



RUMBLE STRIP PLACEMENT
LEFT OF DIRECTION OF TRAVEL



RUMBLE STRIP PLACEMENT
RIGHT OF DIRECTION OF TRAVEL

TYPICAL GROUND-IN RUMBLE STRIP SHOULDER PLACEMENT

NOTES:

1. Where bicycles are permitted, shoulder rumble strips should not be used right of direction of travel unless a minimum of 5'-0" of clear shoulder width for bicycle use is available between the rumble strip and the outer edge of the shoulder. Where bicycles are not permitted, a minimum of 4'-0" of distance is required between the rumble strip and the outer edge of the shoulder.
2. Unless otherwise shown on the plans or specified in the special provisions, the 6" offset from the edge of traveled way to the edge of the rumble strip shall be used for rumble strip placement right of the direction of travel.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SHOULDER RUMBLE STRIP DETAILS GROUND-IN INDENTATIONS

NO SCALE

RSP A40B DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN A40B
DATED OCTOBER 30, 2015 - PAGE 22 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A40B

2015 REVISED STANDARD PLAN RSP A40B

3-7-17

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

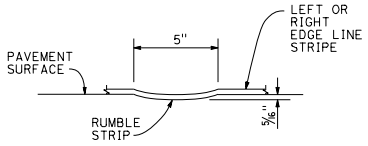
Atifa Ferouz
REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

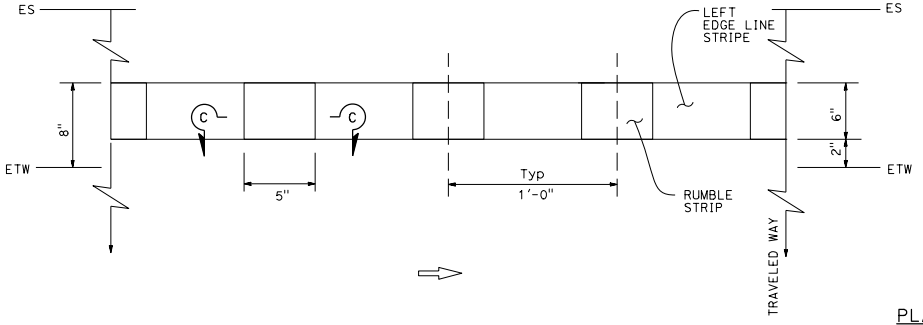
REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

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.

TO ACCOMPANY PLANS DATED _____

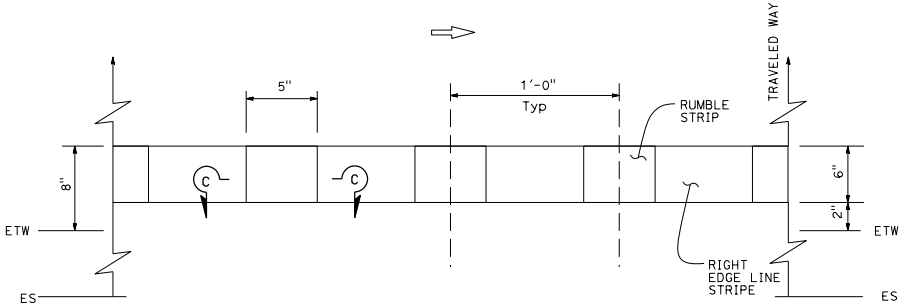


SECTION C-C



PLAN

EDGE LINE RUMBLE STRIP PLACEMENT
LEFT OF DIRECTION OF TRAVEL



EDGE LINE RUMBLE STRIP PLACEMENT
RIGHT OF DIRECTION OF TRAVEL

TYPICAL EDGE LINE RUMBLE STRIP PLACEMENT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EDGE LINE RUMBLE STRIP DETAILS GROUND-IN INDENTATIONS

NO SCALE

RSP A40C DATED JULY 21, 2017 SUPERSEDES RSP A40C DATED JULY 15, 2016 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A40C

2015 REVISED STANDARD PLAN RSP A40C

3-7-17

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

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

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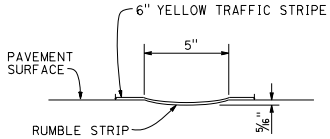
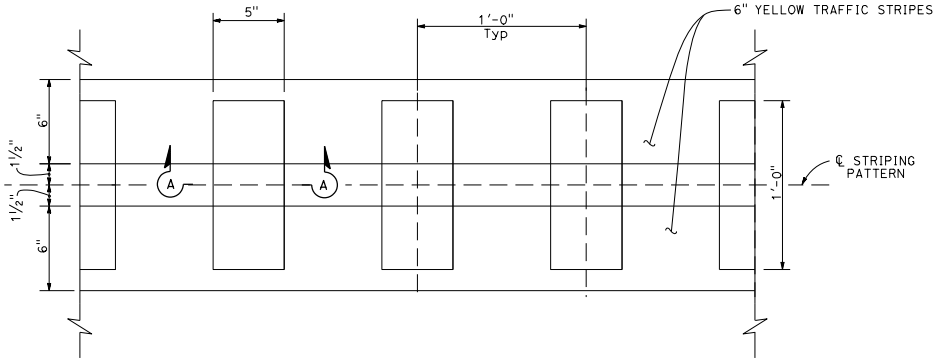
TO ACCOMPANY PLANS DATED _____

NOTE:

Detail 21 and Detail 5 traffic stripes shown, see project plans for traffic stripe details.

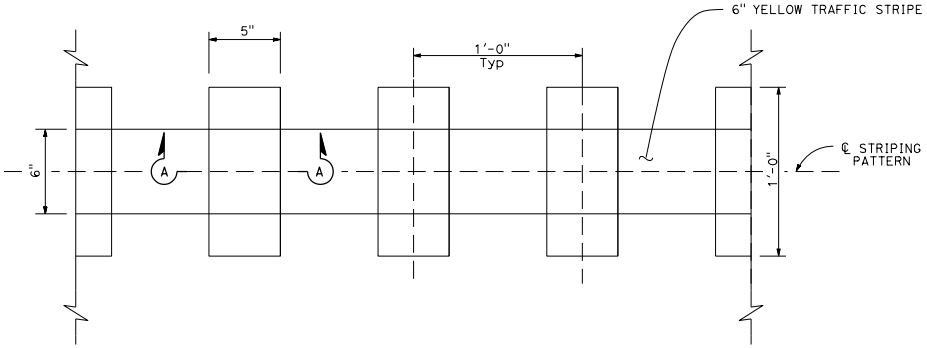


SECTION A-A



PLAN

RUMBLE STRIP PLACEMENT IN NO PASSING ZONE



RUMBLE STRIP PLACEMENT IN PASSING ZONE

TYPICAL CENTERLINE RUMBLE STRIP PLACEMENT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CENTERLINE RUMBLE STRIP DETAILS GROUND-IN INDENTATIONS

NO SCALE

RSP A40D DATED JULY 21, 2017 SUPERSEDES RSP A40D DATED JULY 15, 2016 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A40D

2015 REVISED STANDARD PLAN RSP A40D

3-7-17

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

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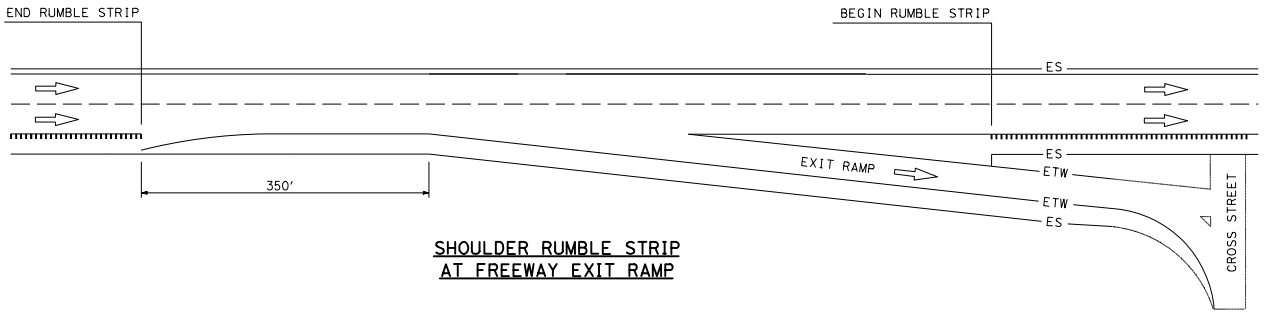
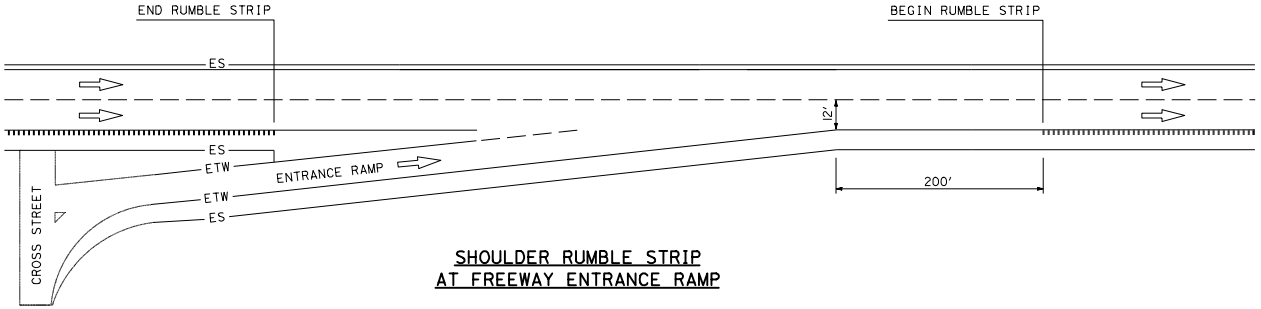
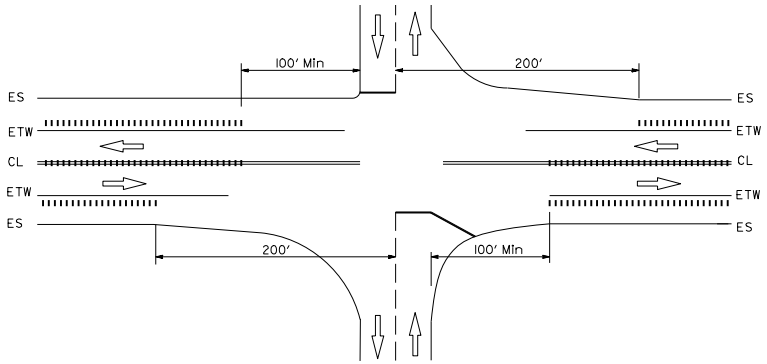


SHOULDER RUMBLE STRIP
AT FREEWAY EXIT RAMP



SHOULDER RUMBLE STRIP
AT FREEWAY ENTRANCE RAMP



CENTERLINE AND SHOULDER RUMBLE STRIP
AT GRADE INTERSECTION

LEGEND

RUMBLE STRIP (GROUND-IN)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RUMBLE STRIP PLACEMENT AT FREEWAY EXIT RAMPS, FREEWAY ENTRANCE RAMPS, AND INTERSECTIONS

NO SCALE

RSP A40E DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A40E

2015 REVISED STANDARD PLAN RSP A40E

5-23-16

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

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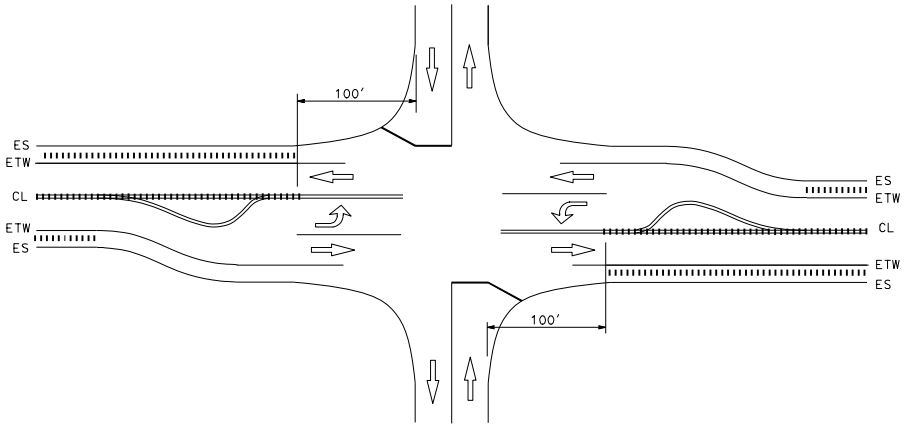
TO ACCOMPANY PLANS DATED _____

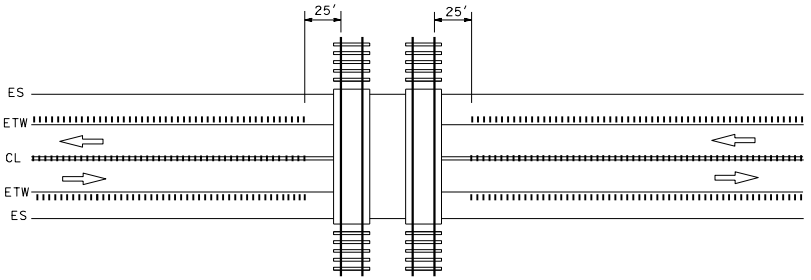


CENTERLINE AND SHOULDER RUMBLE STRIPS
AT INTERSECTION WITH LEFT TURN POCKETS

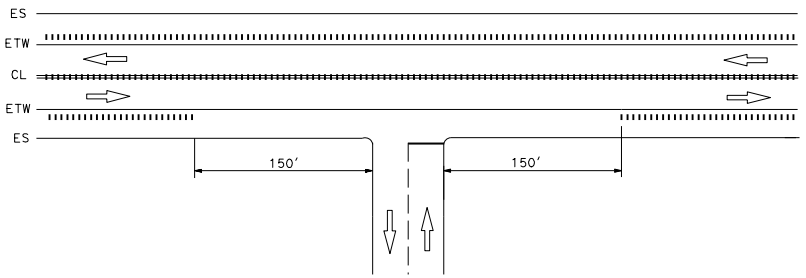
LEGEND

RUMBLE STRIPS (GROUND-IN)

RAILROAD TRACKS



CENTERLINE AND SHOULDER RUMBLE STRIPS
AT RAILROAD CROSSING



CENTERLINE AND SHOULDER RUMBLE STRIPS
AT DRIVEWAY/PRIVATE ROAD APPROACH

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RUMBLE STRIP PLACEMENT AT INTERSECTIONS WITH LEFT TURN POCKETS, RAILROAD CROSSINGS, PRIVATE ROADS, AND MAJOR DRIVEWAYS

NO SCALE

RSP A40F DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A40F

2015 REVISED STANDARD PLAN RSP A40F

5-23-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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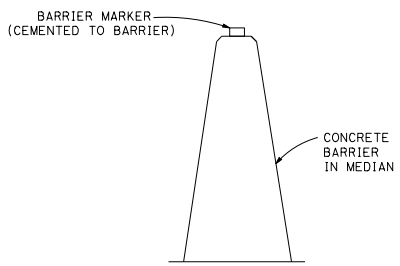
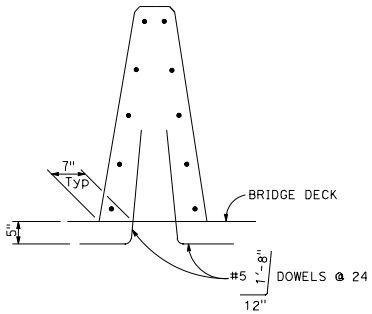
TO ACCOMPANY PLANS DATED _____



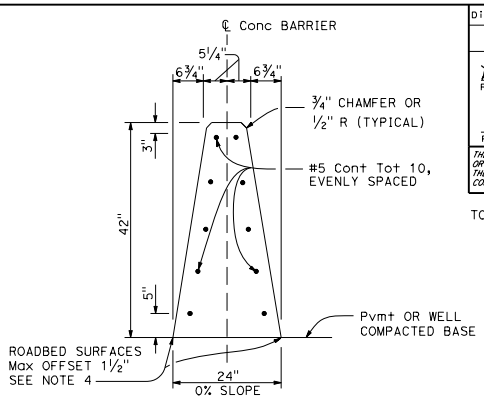
CONCRETE BARRIER TYPE 60M DELINEATION

See Note 5



CONCRETE BARRIER TYPE 60MA

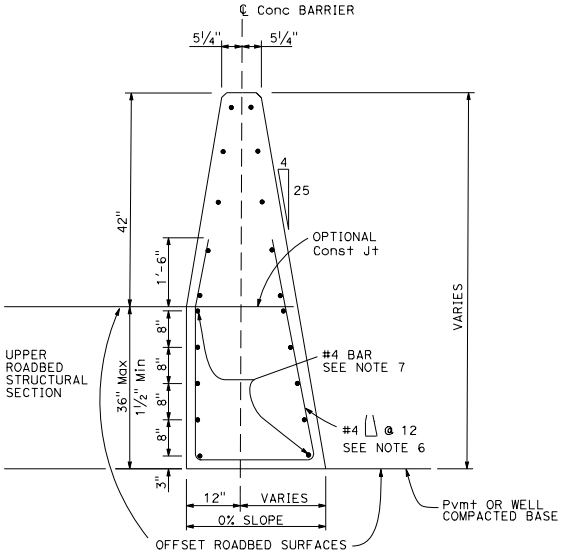
Details similar to Type 60M except as noted.



CONCRETE BARRIER TYPE 60M

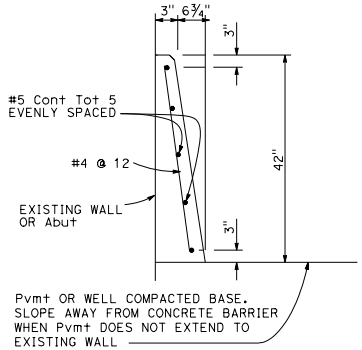
NOTES:

1. See Revised Standard Plan RSP A76B for details of Concrete Barrier Type 60M end anchors, connection to structures and transitions to Concrete Barrier Type 50 and Concrete Barrier Type 60MS.
2. See Revised Standard Plan RSP A76C for Concrete Barrier Type 60M transitions at bridge column and sign pedestals.
3. Where glare screen is required on Concrete Barrier Type 60M, use Concrete Barrier Type 60MG.
4. Where roadbed offset is greater than 1½", see Concrete Barrier Type 60MC.
5. See Project Plans for barrier delineation locations.
6. Reinforcing stirrup not required for roadbed offsets less than 1'-0".
7. For roadbed surfaces offset greater than 1½" and less than or equal to 3", no reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface. For roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.



CONCRETE BARRIER TYPE 60MC

Details similar to Type 60M except as noted.
Use concrete barrier end anchor when necessary.
36" roadbed surfaces offset shown.



CONCRETE BARRIER TYPE 60MD

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60M

NO SCALE

RSP A76A DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76A
DATED OCTOBER 30, 2015 - PAGE 37 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76A

2015 REVISED STANDARD PLAN RSP A76A

12-5-17

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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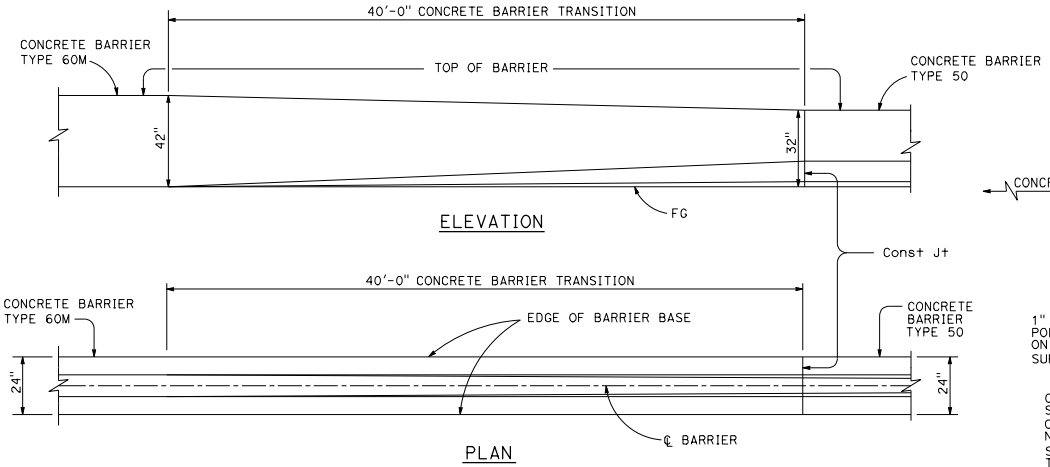
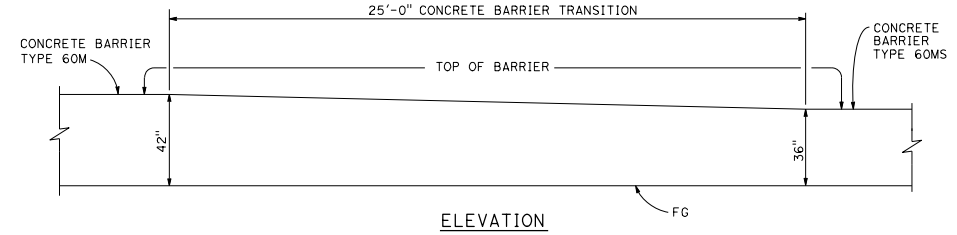
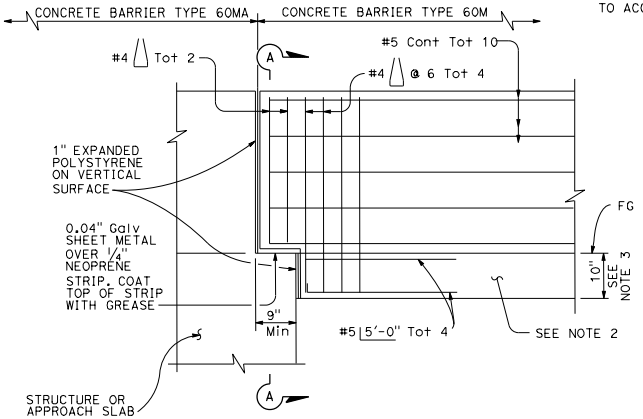
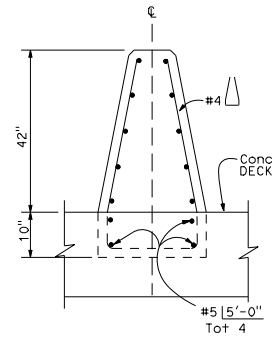


TRANSITION CONCRETE BARRIER TYPE 60M TO CONCRETE BARRIER TYPE 50



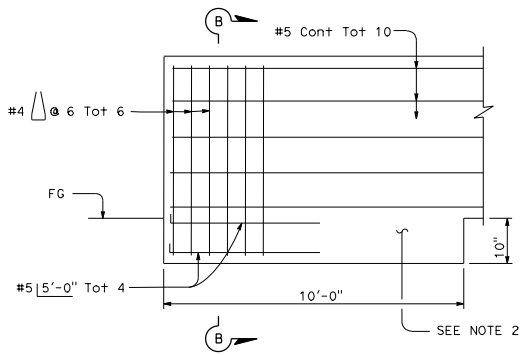
TRANSITION CONCRETE BARRIER TYPE 60M TO CONCRETE BARRIER TYPE 60MS

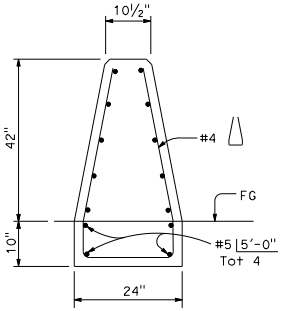




SECTION A-A

CONCRETE BARRIER TYPE 60M CONNECTION TO STRUCTURE





SECTION B-B

CONCRETE BARRIER TYPE 60M END ANCHORAGE

NOTES:

1. See Revised Standard Plan RSP A76A for Concrete Barrier Type 60M and Type 60MA.
2. Footing monolithic or doweled with 2-#8 x 8" @ 2'-0". The footing is required at concrete barrier ends and at interruptions in concrete barrier.
3. 10" concrete barrier footing extends 10' back from structure.
4. See Revised Standard Plan RSP A78I for transition to Thrie Beam Barrier.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60M

NO SCALE

RSP A76B DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76B
DATED OCTOBER 30, 2015 - PAGE 38 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76B

2015 REVISED STANDARD PLAN RSP A76B

11-7-17

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

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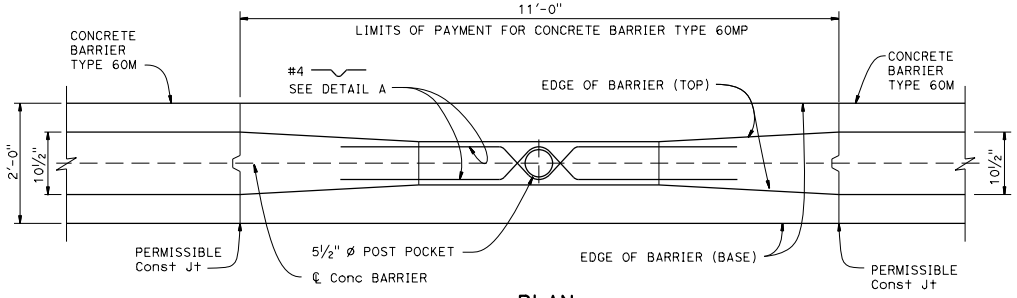
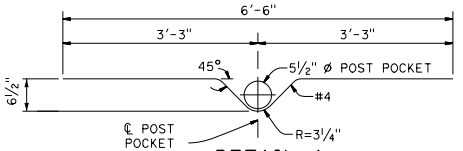
Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

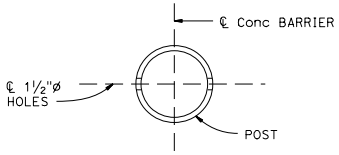
TO ACCOMPANY PLANS DATED _____



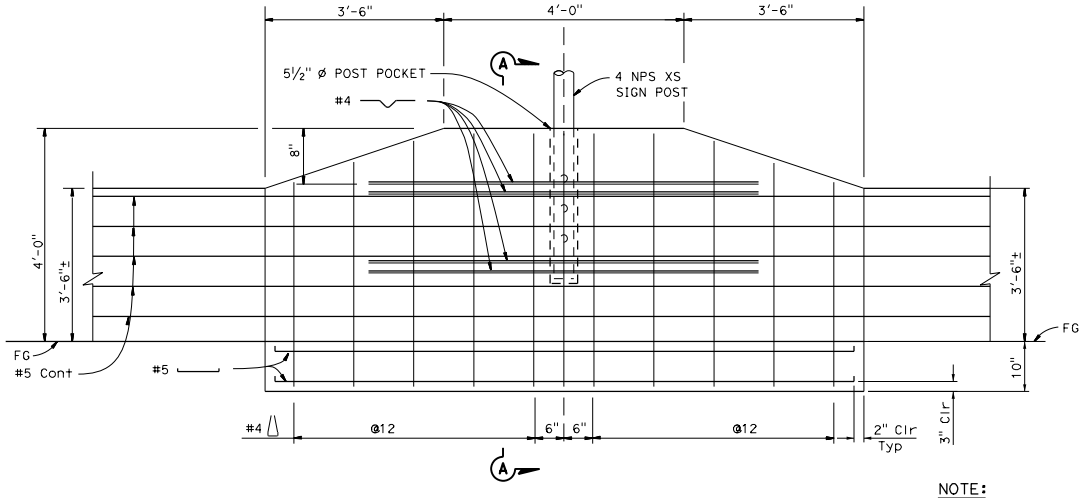
PLAN



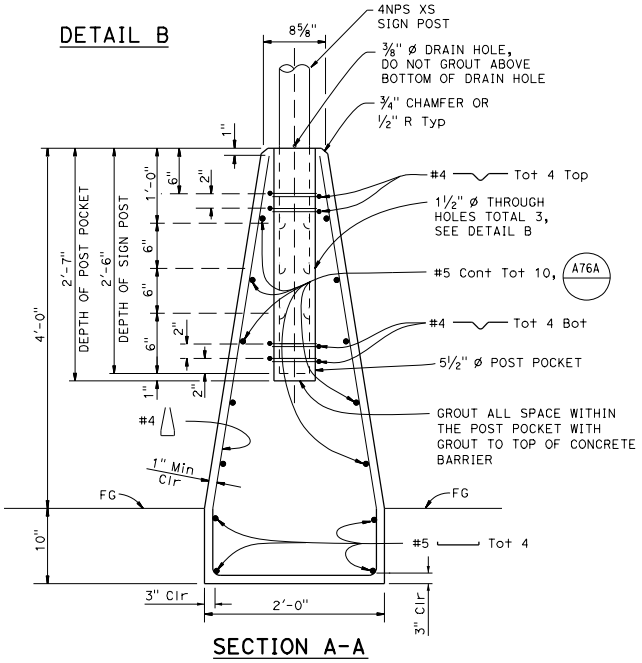
DETAIL A



DETAIL B



ELEVATION



SECTION A-A

NOTE:
For Type 60M Barrier cross section see Revised Standard Plan RSP A76A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MP

NO SCALE

RSP A76BA DATED APRIL 20, 2018 SUPERSEDES RSP A76BA
DATED JULY 15, 2016 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76BA

2015 REVISED STANDARD PLAN RSP A76BA

1-17-18

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 CIVIL — STATE OF CALIFORNIA

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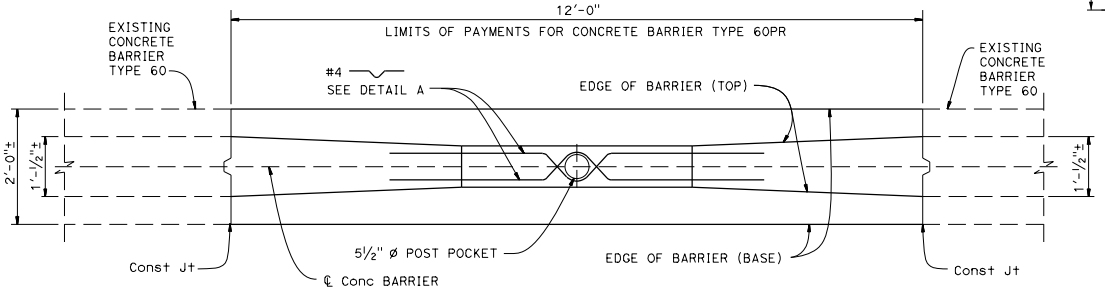
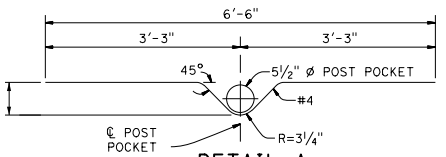
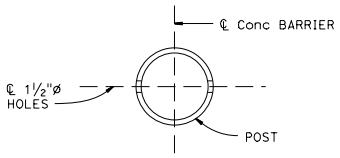


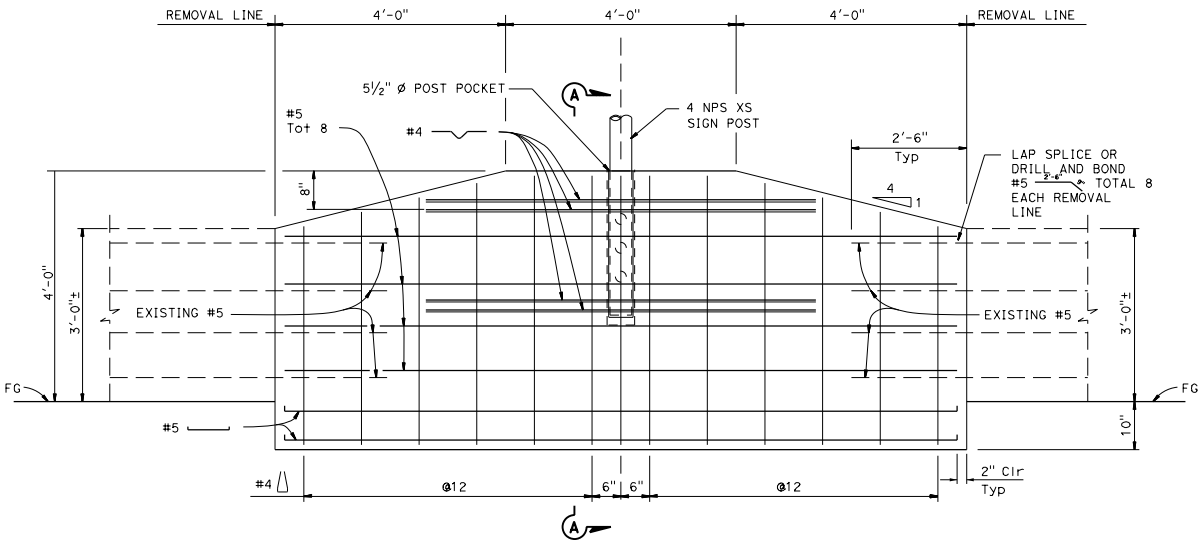
PLAN



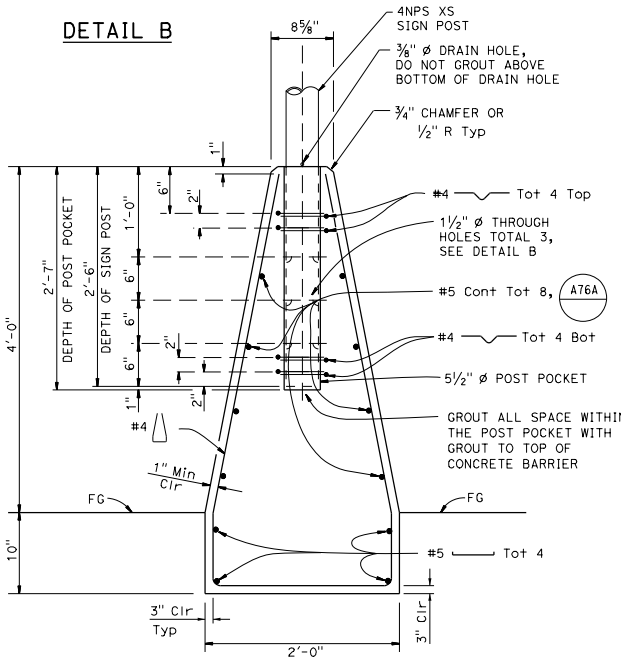
DETAIL A



DETAIL B



ELEVATION



SECTION A-A

NOTE:

THE CONTRACTOR MUST VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60PR

NO SCALE

RSP A76BB DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76BB

2015 REVISED STANDARD PLAN RSP A76BB

6-29-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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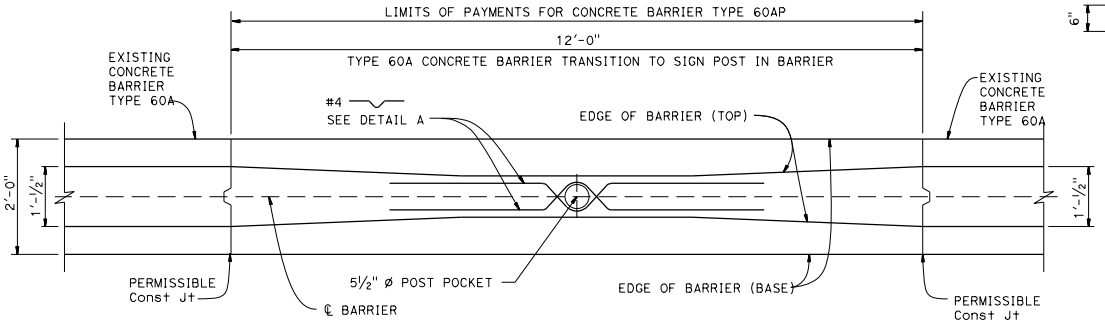
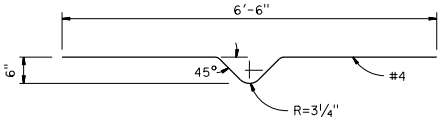
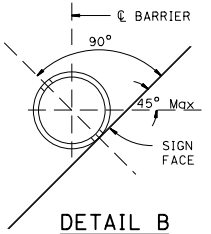


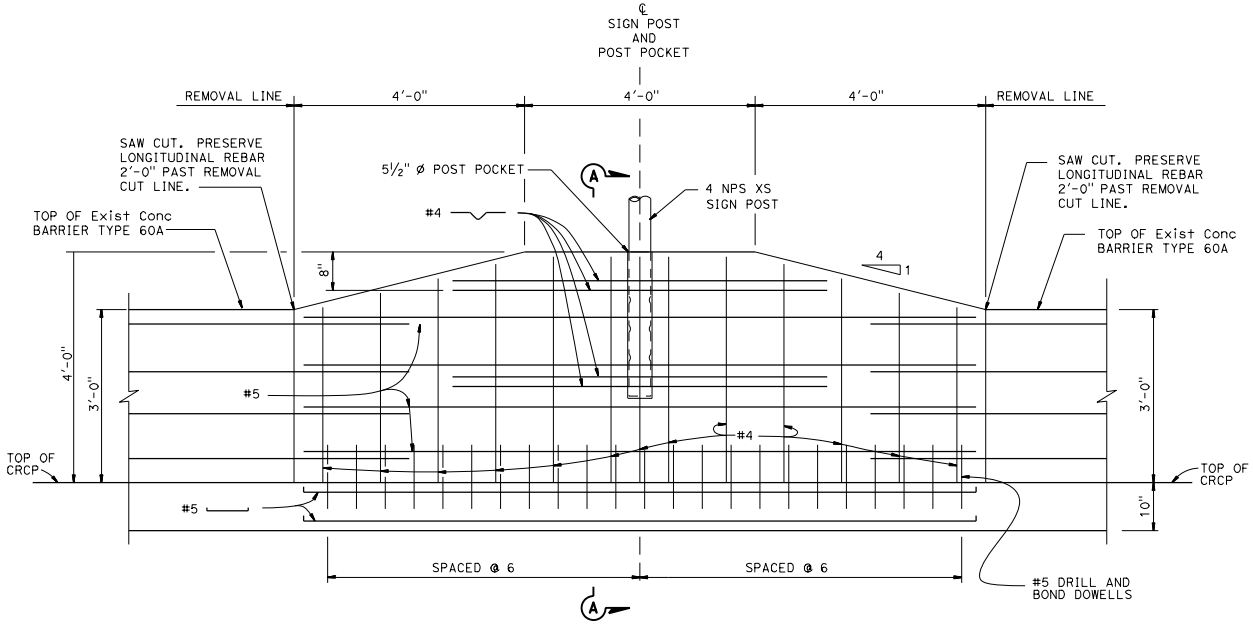
PLAN



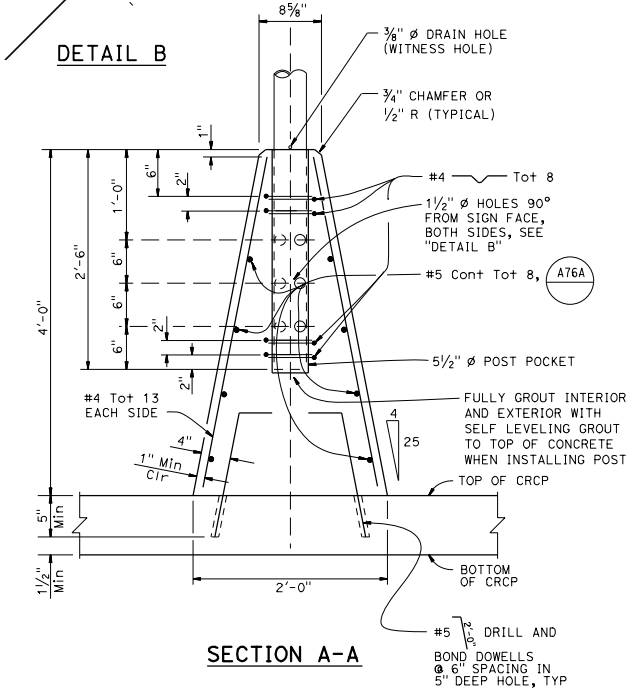
DETAIL A



DETAIL B



ELEVATION



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60AP

NO SCALE

RSP A76BC DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76BC

6-29-16

2015 REVISED STANDARD PLAN RSP A76BC

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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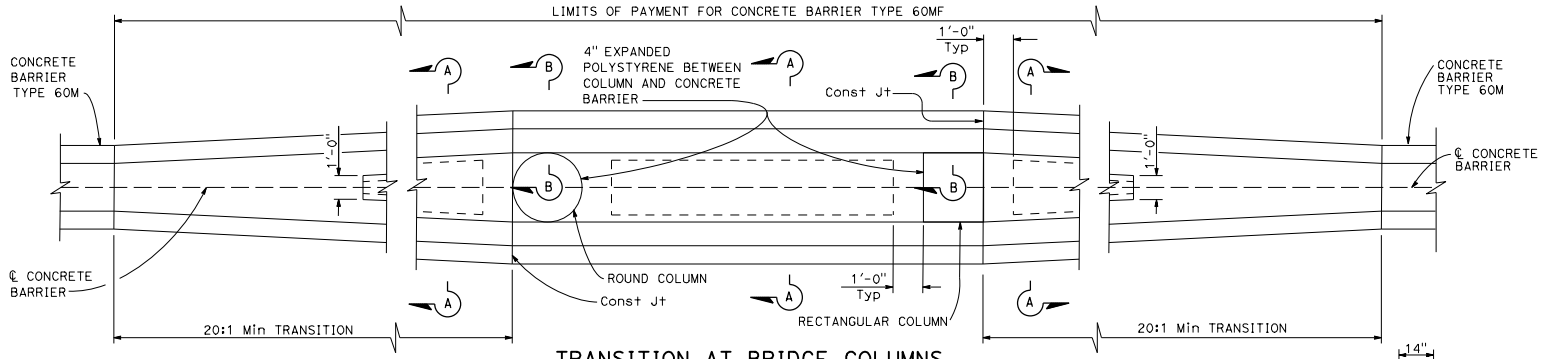
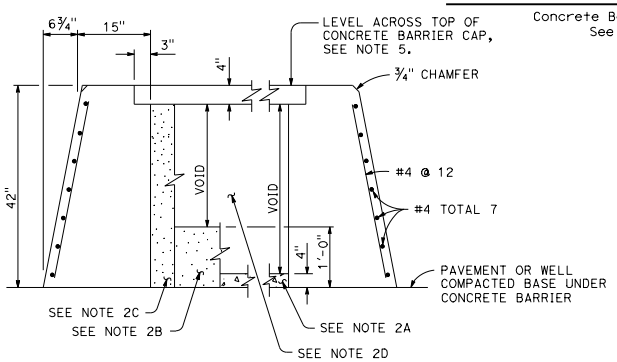
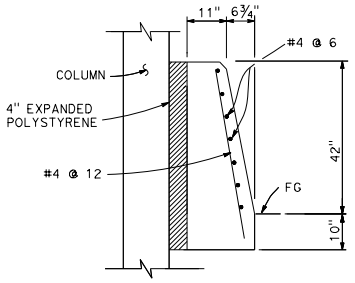


TRANSITION AT BRIDGE COLUMNS

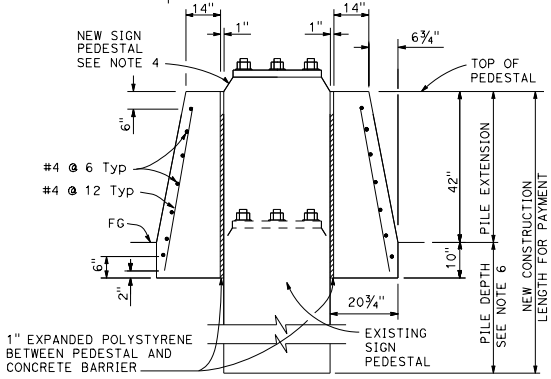
Concrete Barrier Type 60MF
See Note 7



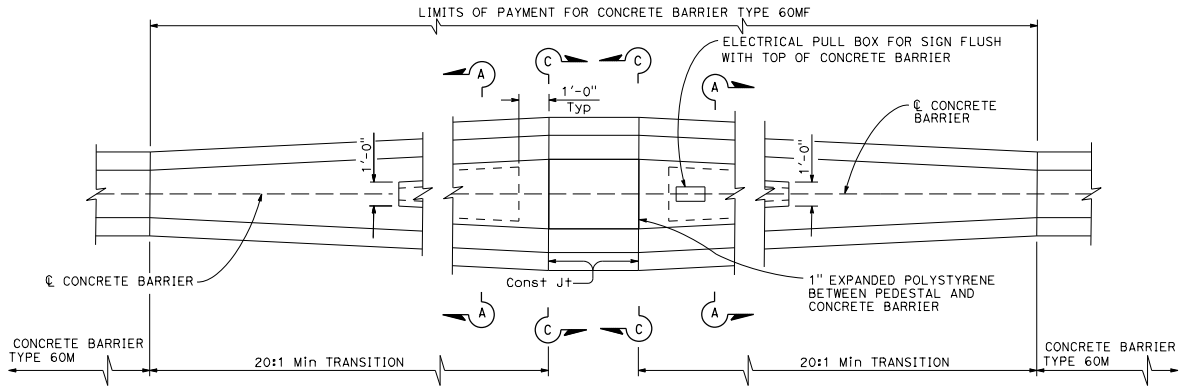
SECTION A-A



SECTION B-B



SECTION C-C



TRANSITION AT SIGN PEDESTAL

Concrete Barrier Type 60MF
See Note 7

NOTES:

1. See Revised Standard Plan RSP A76A for Concrete Barrier Type 60M.
2. Contractor options for fill between concrete barrier walls:
   A. Place 4" PCC at base between concrete barrier walls.
   B. Place 1'-0" of granular material at base between walls.
   C. Place granular material from base to bottom of 4" cap.
   D. Monolithic concrete with foam blockouts is not permitted.
3. Reinforcing steel shall extend continuous through construction joints.
4. See Overhead Sign plans for sign pedestal elevations on new construction.
5. Adjust height of concrete barrier wall on low side of offset or superelevated roadways to provide level grade across top of concrete barrier cap.
6. See Overhead Signs Standard Plan Pile Foundation Tables.
7. All locations with limited shoulder width available for barrier, see Revised Standard Plan RSP A76F for use of Concrette Barrier Type 60MGF.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MF

NO SCALE

RSP A76C DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76C
DATED OCTOBER 30, 2015 - PAGE 39 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76C

2015 REVISED STANDARD PLAN RSP A76C

12-1-17

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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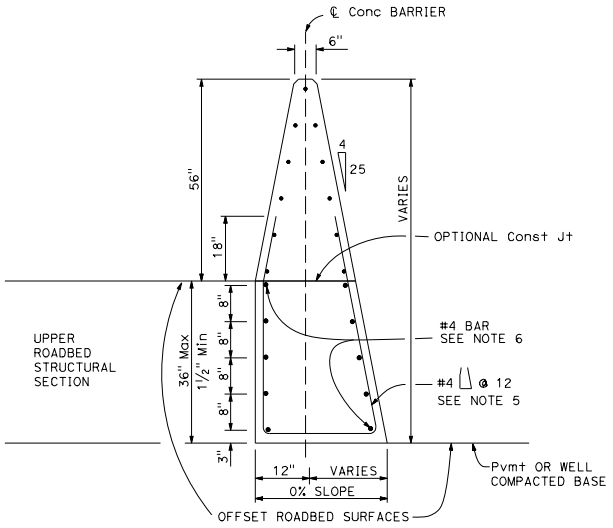
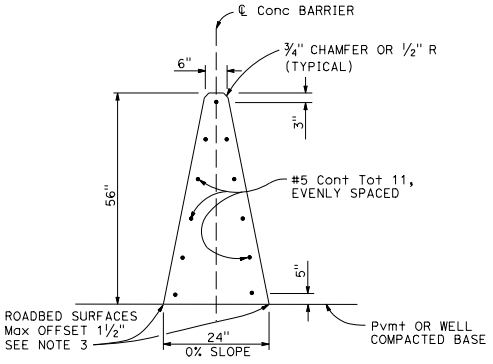


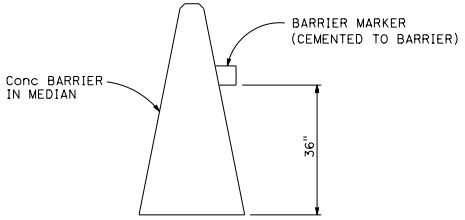
CONCRETE BARRIER TYPE 60MGC

Details similar to Type 60MG except as noted.
36" roadbed surfaces offset shown.



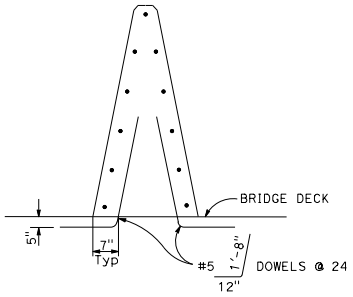
CONCRETE BARRIER TYPE 60MG

(Monolithic concrete
glare screen/barrier)



CONCRETE BARRIER TYPE 60MG DELINEATION

See Note 4



CONCRETE BARRIER TYPE 60MGA

Details similar to Type
60MG except as noted.

NOTES:

1. See Revised Standard Plan RSP A76E for details of Concrete Barrier Type 60MG end anchors, connection to structures and transitions to Concrete Barrier Type 60M.
2. See Revised Standard Plan RSP A76F for Concrete Barrier Type 60MG transitions at bridge column and sign pedestals.
3. Where roadbed offset is greater than 1½", see Concrete Barrier Type 60MGC.
4. Barrier delineation to be used when required by the Special Provisions.
5. Reinforcing stirrup not required for offsets less than 1'-0".
6. For roadbed surfaces offset greater than 1½" and less than or equal to 3", no reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface. For roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MG

NO SCALE

RSP A76D DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76D
DATED OCTOBER 30, 2015 - PAGE 40 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76D

2015 REVISED STANDARD PLAN RSP A76D

12-5-17

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

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

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Randall D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
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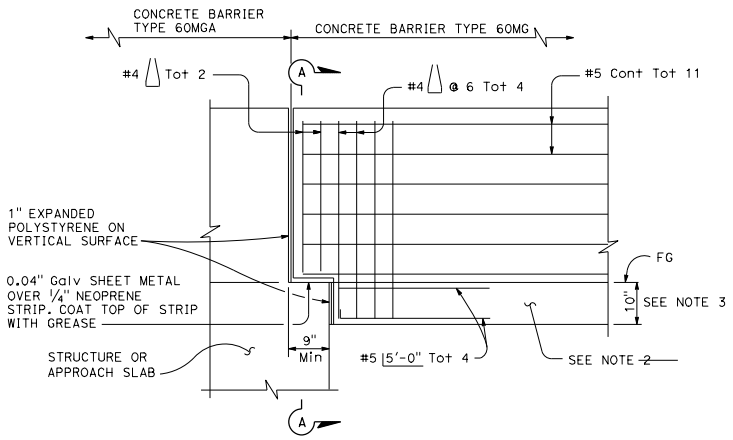
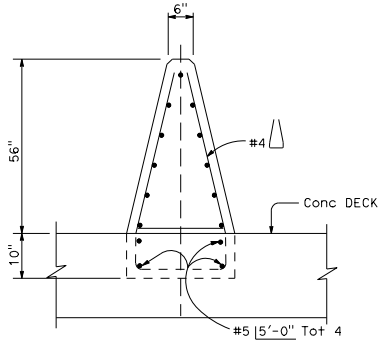


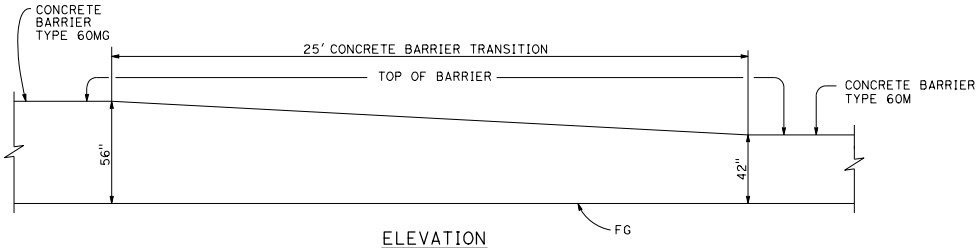


SECTION A-A

CONCRETE BARRIER TYPE 60MG CONNECTION TO STRUCTURE

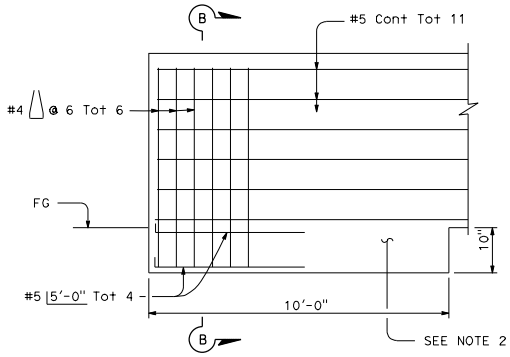
NOTES:

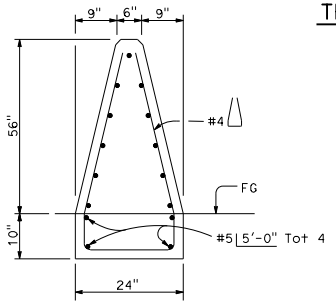
1. See Revised Standard Plan RSP A76D for Concrete Barrier Type 60MG and Type 60MGA.
2. Footing monolithic or doweled with 2-#8 x 8" @ 2'-0". The footing is required at concrete barrier ends and at interruptions in concrete barrier.
3. 10" concrete barrier footing extends 10' back from structure.
4. See Revised Standard Plan RSP A78I for transition to Thrie Beam Barrier.



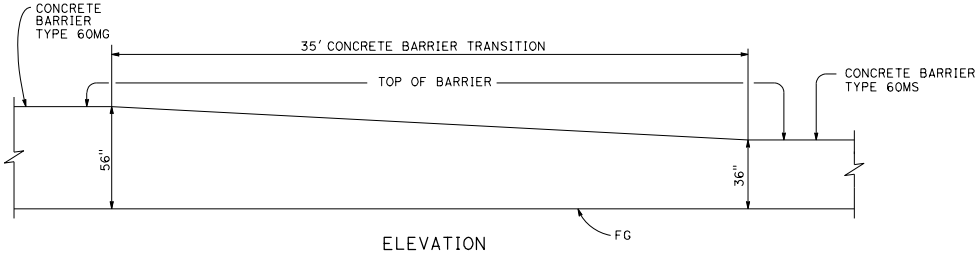
ELEVATION

TRANSITION CONCRETE BARRIER TYPE 60MG TO CONCRETE BARRIER TYPE 60M





SECTION B-B



ELEVATION

TRANSITION CONCRETE BARRIER TYPE 60MG TO CONCRETE BARRIER TYPE 60MS

CONCRETE BARRIER TYPE 60MG END ANCHORAGE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MG

NO SCALE

RSP A76E DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76E
DATED OCTOBER 30, 2015 - PAGE 41 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76E

2015 REVISED STANDARD PLAN RSP A76E

12-1-17

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

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REGISTERED CIVIL ENGINEER

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No. C50200
Exp. 6-30-19
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STATE OF CALIFORNIA

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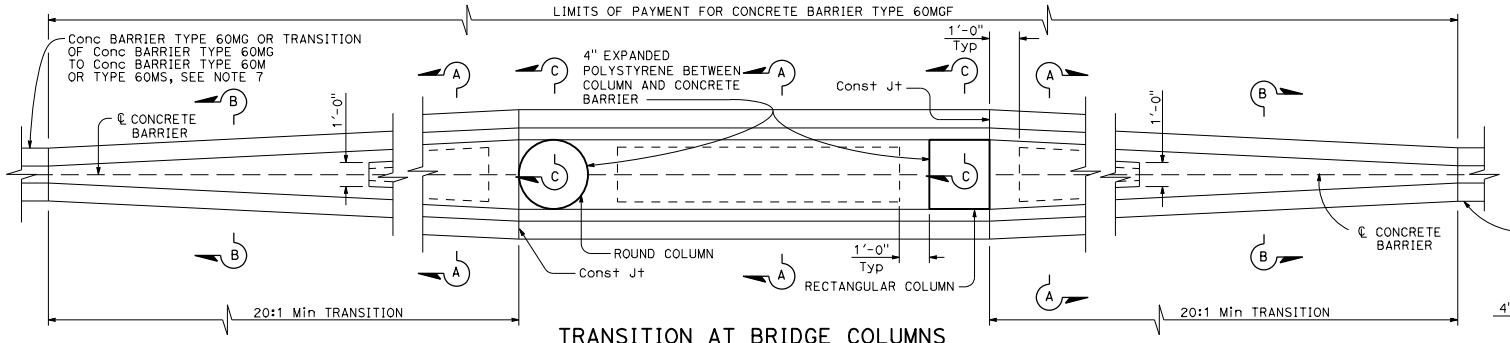
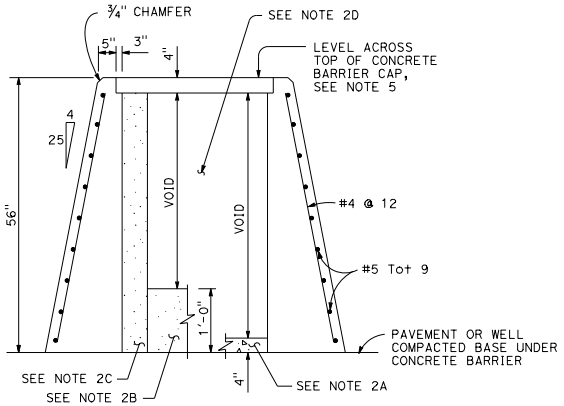
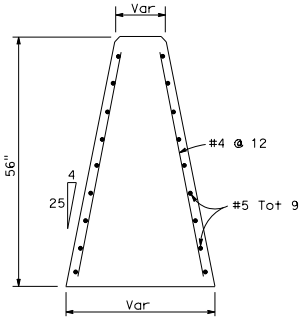


TRANSITION AT BRIDGE COLUMNS

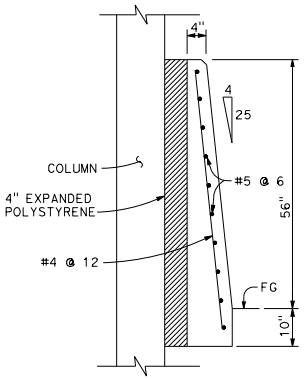
Concrete Barrier Type 60MGF



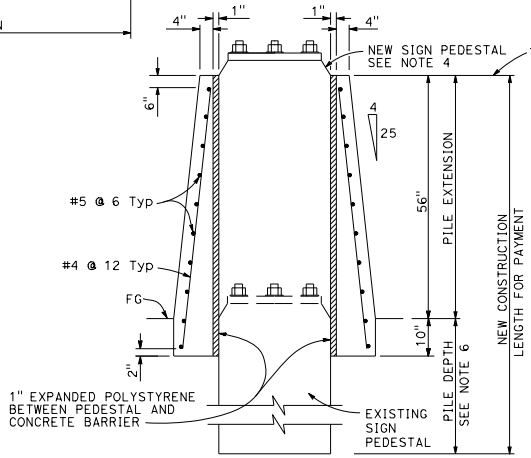
SECTION A-A



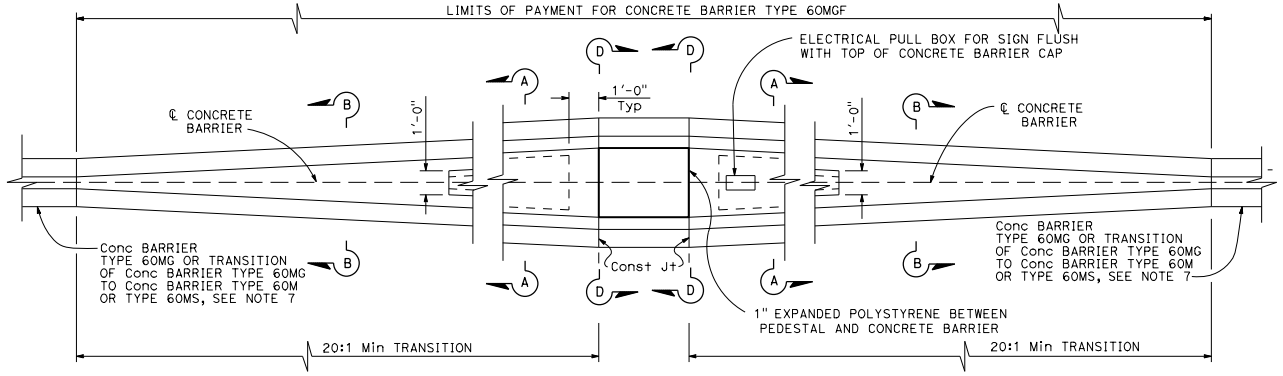
SECTION B-B



SECTION C-C



SECTION D-D



TRANSITION AT SIGN PEDESTAL

Concrete Barrier Type 60MGF

NOTES:

1. See Revised Standard Plan RSP A76D for Concrete Barrier Type 60MG.
2. Contractor options for fill between concrete barrier walls:
   A. Place 4" PCC at base between concrete barrier walls.
   B. Place 1'-0" of granular material at base between walls.
   C. Place granular material from base to bottom of 4" cap.
   D. Monolithic concrete with foam blockouts is not permitted.
3. Reinforcing steel shall extend continuous through construction joints.
4. See Overhead Sign plans for sign pedestal elevations on new construction.
5. Adjust height of concrete barrier wall on low side of offset or superelevated roadways to provide level grade across top of concrete barrier cap.
6. See Overhead Signs Standard Plan Pile Foundation Tables.
7. See Revised Standard Plan RSP A76E for concrete barrier transitions.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MGF

NO SCALE

RSP A76F DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76F
DATED OCTOBER 30, 2015 - PAGE 42 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76F

2015 REVISED STANDARD PLAN RSP A76F

12-1-17

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-19
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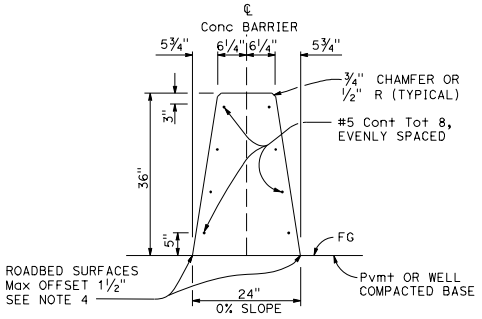
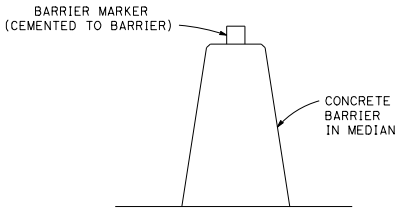
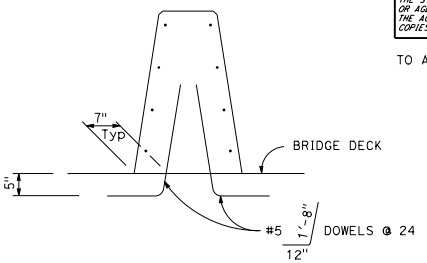


CONCRETE BARRIER TYPE 60MS



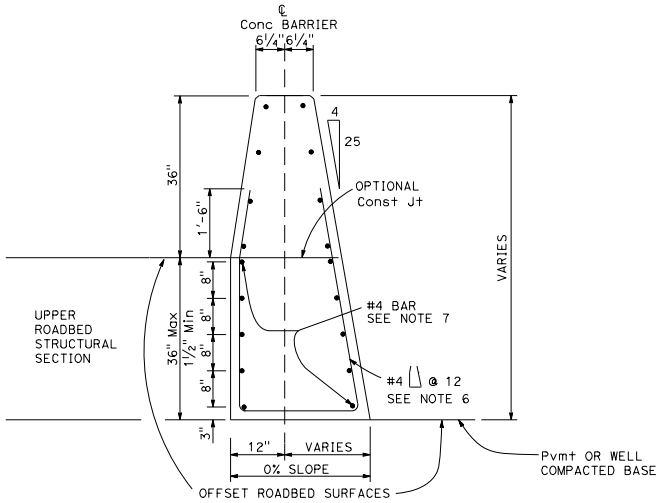
CONCRETE BARRIER TYPE 60MS DELINEATION

See Note 5



CONCRETE BARRIER TYPE 60MSA

Details similar to Type 60MS except as noted.



CONCRETE BARRIER TYPE 60MSC

Details similar to Type 60MS except as noted.
Use concrete barrier end anchor when necessary.
36" roadbed surfaces offset shown.

NOTES:

1. See Revised Standard Plan RSP A76H for details of Concrete Barrier Type 60MS end anchors, connection to structures and transitions to Concrete Barrier Type 50.
2. See Revised Standard Plan RSP A76I for Concrete Barrier Type 60MS transitions at bridge column and sign pedestals.
3. Where glare screen is required on top of concrete barrier, use Concrete Barrier Type 60MG.
4. Where roadbed offset is greater than 1½" see Concrete Barrier Type 60MSC.
5. Barrier delineation to be used when required by the Special Provisions.
6. Reinforcing stirrup not required for roadbed offsets less than 1'-0".
7. For roadbed surfaces offset greater than 1½" and less than or equal to 3", no reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface. For roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MS

NO SCALE

RSP A76G DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76G
DATED OCTOBER 30, 2015 - PAGE 43 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76G

2015 REVISED STANDARD PLAN RSP A76G

12-5-17

NOTES:

1. See Revised Standard Plan RSP A76G for Concrete Barrier Type 60MS and Type 60MSA.
2. Footing monolithic or doweled with 2-#8 x 8" @ 2'-0". The footing is
3. 10" concrete barrier footing extends 10' back from structure.
4. See Revised Standard Plan RSP A78I for transition to Thrie Beam Barrier.

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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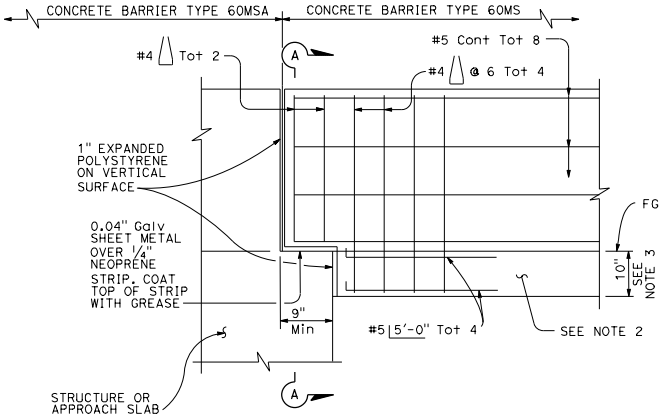
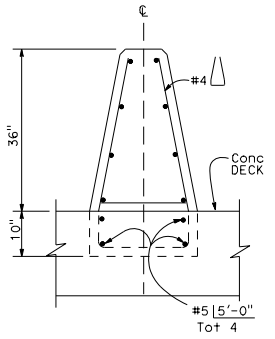
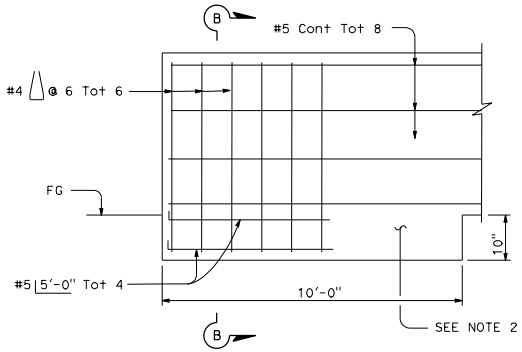


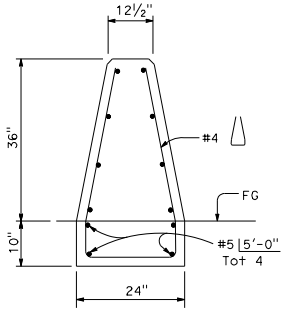
CONCRETE BARRIER TYPE 60MS
CONNECTION TO STRUCTURE



SECTION A-A



CONCRETE BARRIER TYPE 60MS
END ANCHORAGE



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MS

NO SCALE

RSP A76H DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76H
DATED OCTOBER 30, 2015 - PAGE 44 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76H

2015 REVISED STANDARD PLAN RSP A76H

11-8-17

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

Randell D. Hiatt
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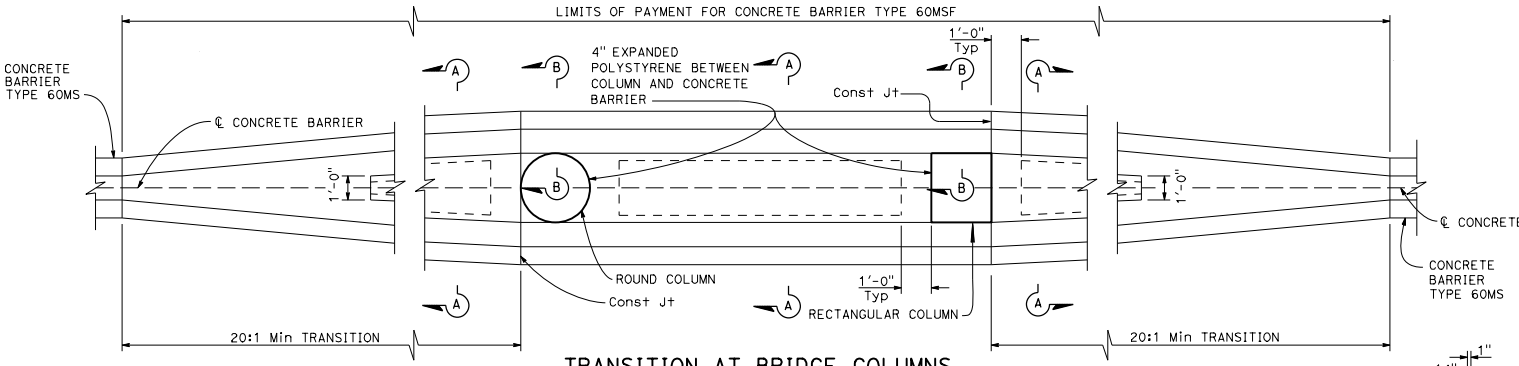
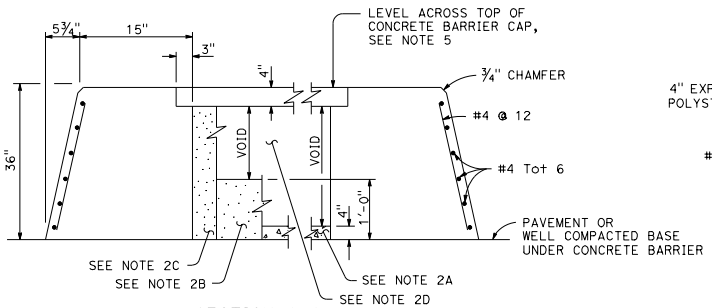
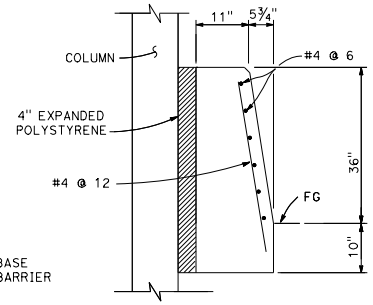


TRANSITION AT BRIDGE COLUMNS

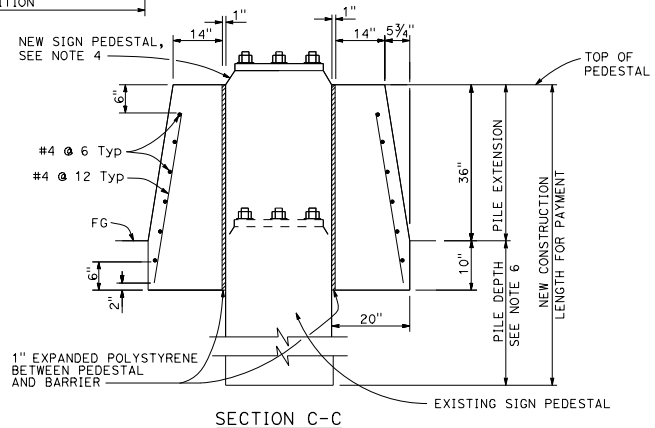
Concrete Barrier Type 60MSF
See Note 7



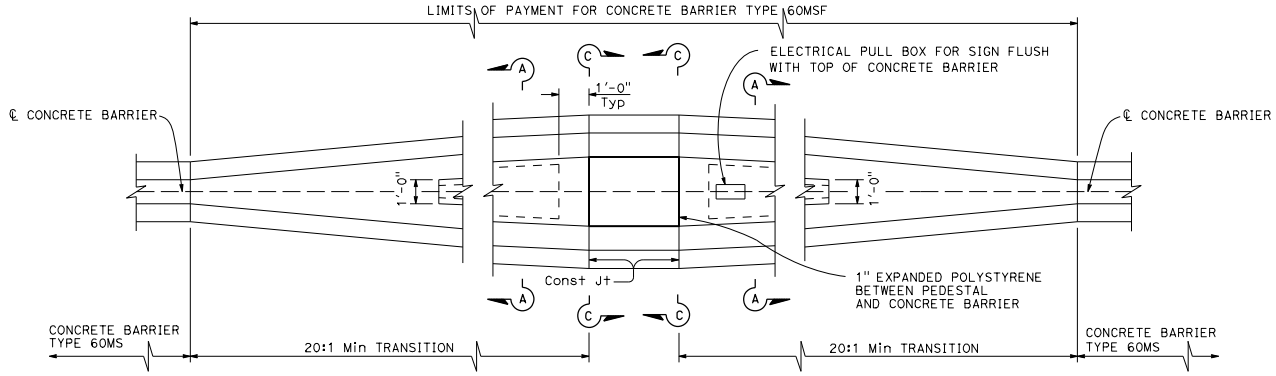
SECTION A-A



SECTION B-B



SECTION C-C



TRANSITION AT SIGN PEDESTAL

Concrete Barrier Type 60MSF
See Note 7

NOTES:

1. See Revised Standard Plan RSP A76G for Concrete Barrier Type 60MS.
2. Contractor options for fill between concrete barrier walls:
   A. Place 4" PCC at base between concrete barrier walls.
   B. Place 1'-0" of granular material at base between walls.
   C. Place granular material from base to bottom of 4" cap.
   D. Monolithic concrete with foam blockouts is not permitted.
3. Reinforcing steel shall extend continuous through construction joints.
4. See Overhead Sign plans for sign pedestal elevations on new construction.
5. Adjust height of concrete barrier wall on low side of offset or superelevated roadways to provide level grade across top of concrete barrier cap.
6. See Overhead Signs Standard Plan Pile Foundation Tables.
7. All locations with limited shoulder width available for barrier, see Revised Standard Plan RSP A76F for use of Concrette Barrier Type 60MGF.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MSF

NO SCALE

RSP A76I DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76I
DATED OCTOBER 30, 2015 - PAGE 45 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76I

2015 REVISED STANDARD PLAN RSP A76I

12-1-17

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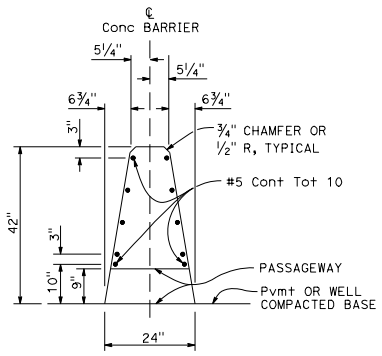
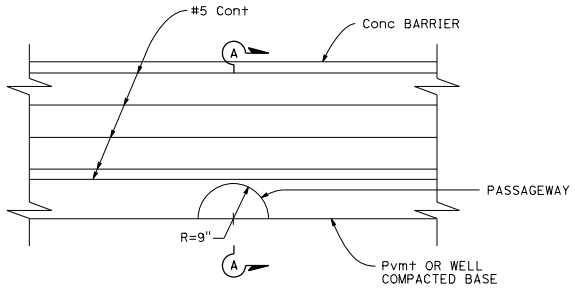


SECTION A-A
(Concrete Barrier Type 60M shown)



ELEVATION
See Notes 1 and 2

NOTES:

1. Type MS Passageway typically used for crossing of small size animals.
2. See Revised Standard Plan RSP A76A for typical details of Concrete Barrier Type 60M.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER WILDLIFE PASSAGEWAY (TYPE MS)

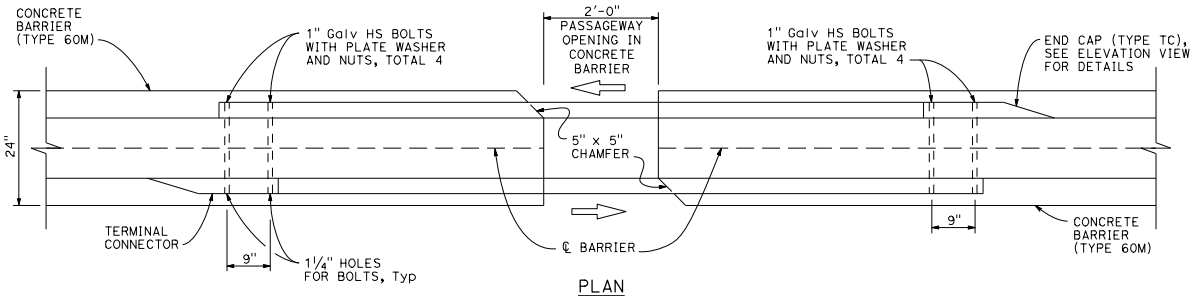
NO SCALE

RSP A76J DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76J
DATED OCTOBER 30, 2015 - PAGE 46 OF THE STANDARD PLANS BOOK DATED 2015.

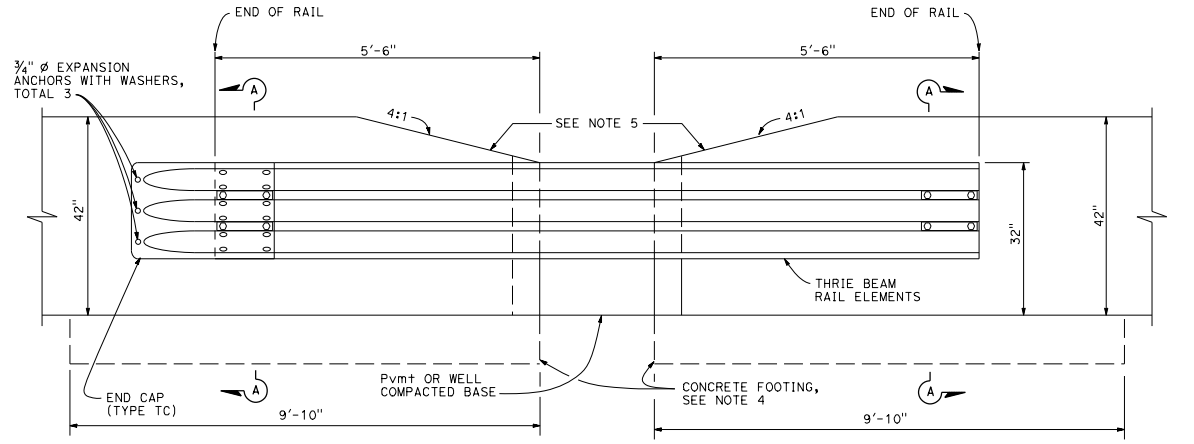
REVISED STANDARD PLAN RSP A76J

2015 REVISED STANDARD PLAN RSP A76J

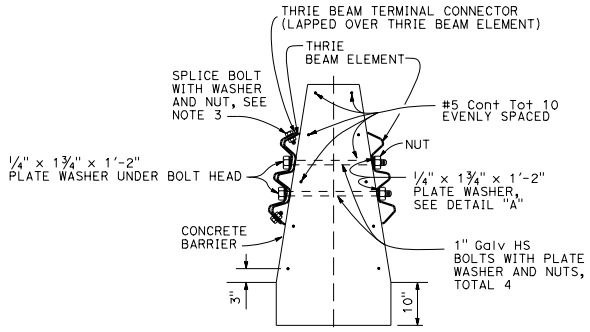
11-7-17



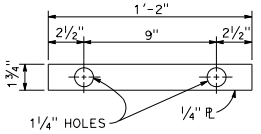
PLAN



ELEVATION



SECTION A-A
See Notes 4 and 6



DETAIL "A"
¼" PLATE WASHER

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. Type MM Passageway typically used for crossing of medium size animals.
2. For details of the thrie beam element and hardware, see the A78 series of the Standard Plans. For details of Concrete Barrier Type 60, see the A76 series of the Standard Plans.
3. The end cap, and the thrie beam element, may be spliced together prior to bolting the elements to the concrete barrier. All 8 splice bolts to connect the end cap to the rail element are not required. The 2 top and the 2 bottom splice bolts with washers and nuts shall be used.
4. Barrier end anchorage shall be constructed as shown in Section A-A of this plan or as shown on Standard Plan A76B.
5. Taper the top of the end of the concrete barrier at 4:1 to match the top elevation of the thrie beam rail element.
6. For details not shown, see Revised Standard Plan RSP A76A.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER WILDLIFE PASSAGEWAY (TYPE MM)

NO SCALE

RSP A76K DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76K
DATED OCTOBER 30, 2015 - PAGE 47 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A76K

2015 REVISED STANDARD PLAN RSP A76K

12-8-17

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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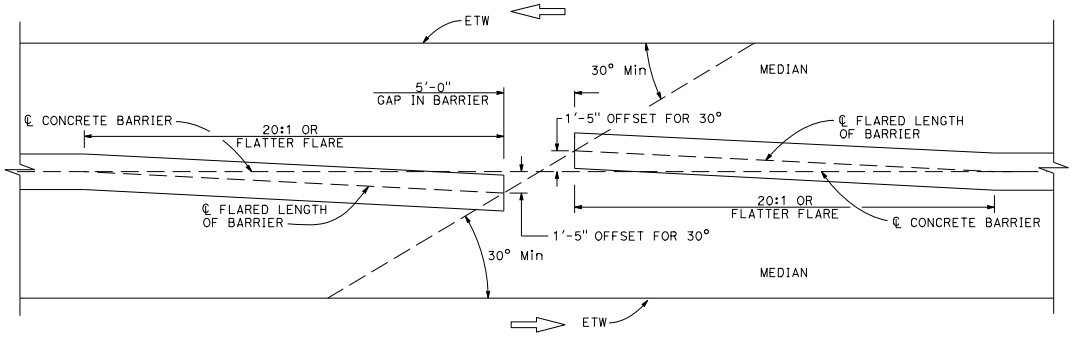
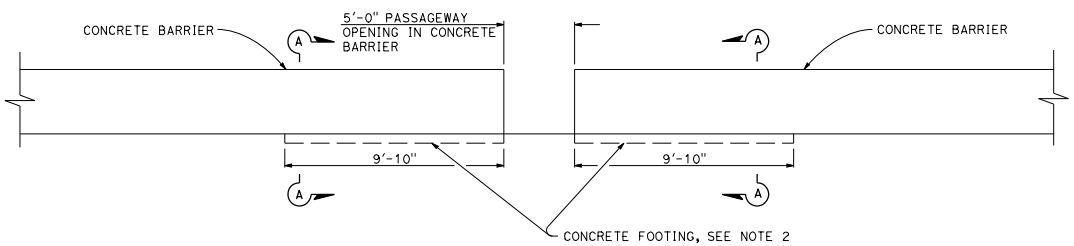
TO ACCOMPANY PLANS DATED _____



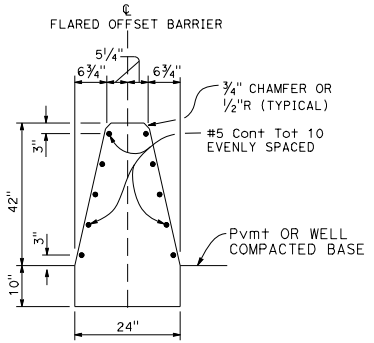
PLAN



ELEVATION

NOTES:

1. Type ML Passageway typically used for crossing of large size animals.
2. Barrier end anchorage shall be constructed as shown in Section A-A of this plan or as shown on Revised Standard Plan RSP A76B.



SECTION A-A
See Note 2

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER WILDLIFE PASSAGEWAY (TYPE ML)

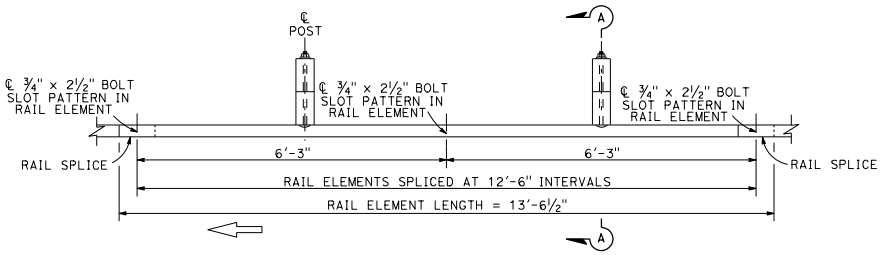
NO SCALE

RSP A76L DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A76L
DATED OCTOBER 30, 2015 - PAGE 48 OF THE STANDARD PLANS BOOK DATED 2015.

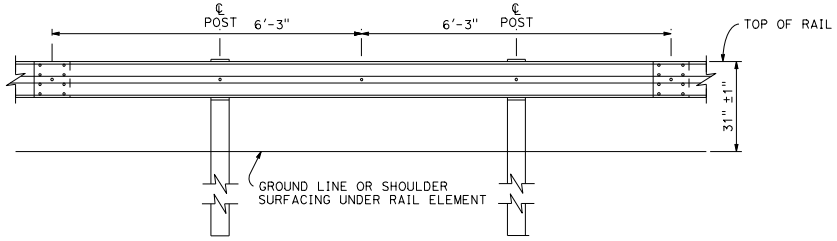
REVISED STANDARD PLAN RSP A76L

2015 REVISED STANDARD PLAN RSP A76L

12-1-17

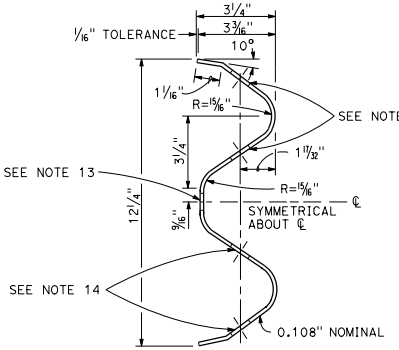


PLAN

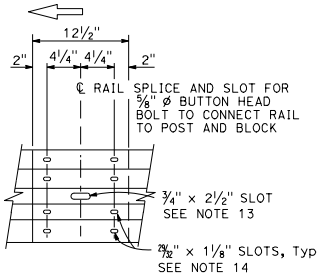


ELEVATION

MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS



SECTION THRU RAIL ELEMENT



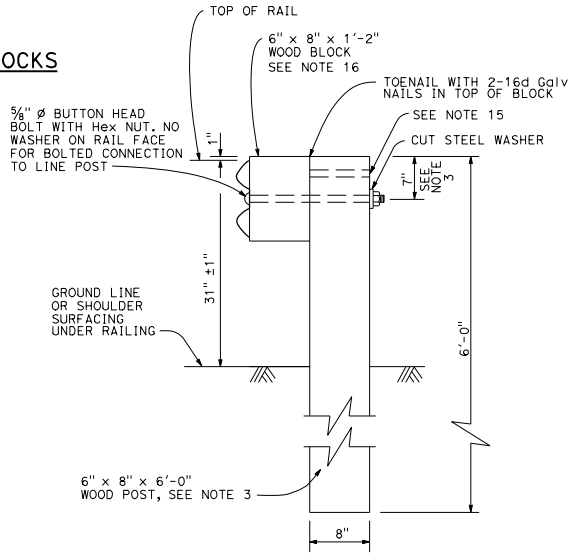
ELEVATION

RAIL ELEMENT SPLICE DETAIL

a) Connect the overlapped end of the rail elements with ⅝" ø x 1⅜" button head oval shoulder splice bolts inserted into the 29/32" x 1⅛" slots and bolted together with ⅝" ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.

b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).

c) Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



SECTION A-A

TYPICAL WOOD LINE POST INSTALLATION

See Note 4

NOTES:

1. For details of steel post installations, see Revised Standard Plan RSP A77L2.
2. For details of standard hardware used to construct MGS, see Standard Plan A77M1.
3. For details of wood posts and wood blocks used to construct MGS, see Revised Standard Plan RSP A77N1.
4. For additional installation details, see Standard Plan A77N3.
5. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
6. For MGS typical layouts, see the A77P, A77Q and A77R Series of Standard Plans.
7. If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
8. For MGS end anchor details, see Standard Plans A77S1 and A77T2.
9. For details of MGS transition to bridge railing, see Standard Plan A77U4.
10. For additional details of MSG connection to bridge railing, see Standard Plans A77U1, A77U2 and A77V1.
11. For MGS connection details to abutments and walls, see Standard Plan A77U3.
12. For typical MGS delineation and dike positioning details, see Standard Plan A77N4.
13. Slotted hole for bolted connection of rail element to block and post.
14. Slotted holes for splice bolts to overlap ends of rail element.
15. Additional hole in uppermost portion of line post is for potential future adjustments of railing height. See Revised Standard Plan RSP A77N1.
16. 6" x 12" x 1'-2" block must be used with 6" dike.

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 — CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STANDARD RAILING SECTION (WOOD POST WITH WOOD BLOCK)

NO SCALE

RSP A77L1 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77L1 DATED OCTOBER 30, 2015 - PAGE 49 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77L1

2015 REVISED STANDARD PLAN RSP A77L1

1-10-17

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
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REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 — CIVIL — STATE OF CALIFORNIA

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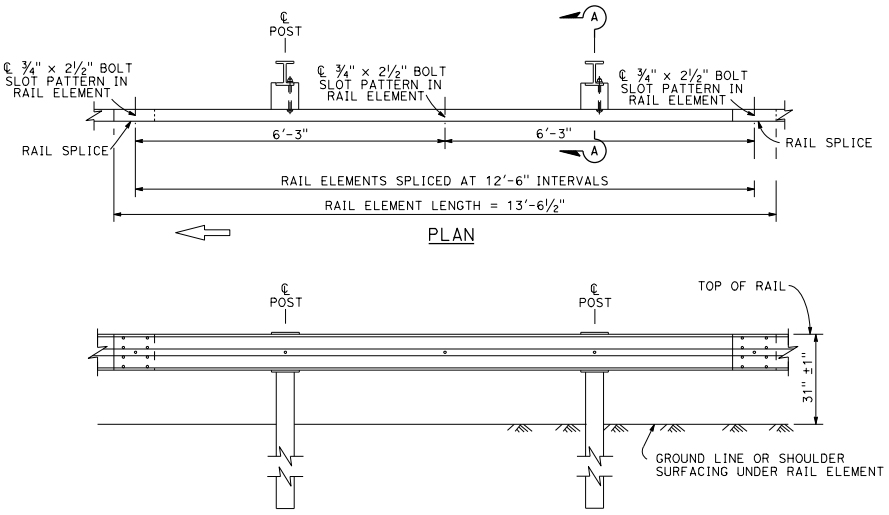
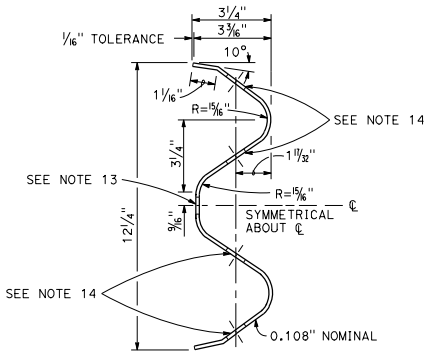
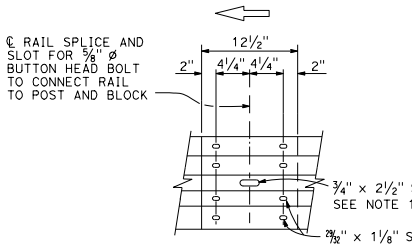


MIDWEST GUARDRAIL SYSTEM WITH STEEL POSTS AND NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCKS

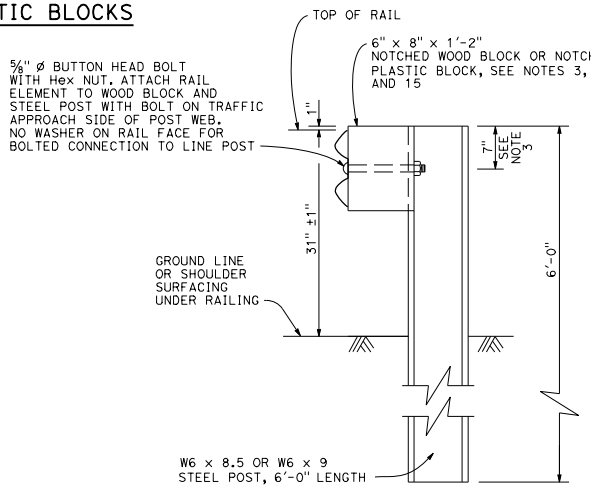




a) Connect the overlapped end of the rail elements with ⅝" ø x 1⅜" button head oval shoulder splice bolts inserted into the 29/32" x 1⅛" slots and bolted together with ⅝" ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.

b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).

c) Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



NOTES:

1. For details of wood post installations, see Revised Standard Plan RSP A77L1.
2. For details of standard hardware used to construct MGS, see Standard Plan A77M1.
3. For details of steel posts and notched wood blocks used to construct MGS, see Revised Standard Plan RSP A77N2.
4. For additional installation details, see Standard Plan A77N3.
5. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
6. For MGS typical layouts, see the A77P, A77Q and A77R Series of Standard Plans.
7. If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
8. For MGS end anchor details, see Standard Plans A77S1 and A77T2.
9. For details of MGS transition to bridge railing, see Standard Plan A77U4.
10. For additional details of MGS connection to bridge railings, see Standard Plans A77U1, A77U2 and A77V1.
11. For dike positioning and MGS delineation details, see Standard Plan A77N4.
12. Notched face of block faces steel post.
13. Slotted hole for bolted connection of rail element to block and post.
14. Slotted holes for splice bolts to overlap ends of rail element.
15. 6" x 12" x 1'-2" block must be used with 6" dike.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STANDARD RAILING SECTION (STEEL POST WITH NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCK)

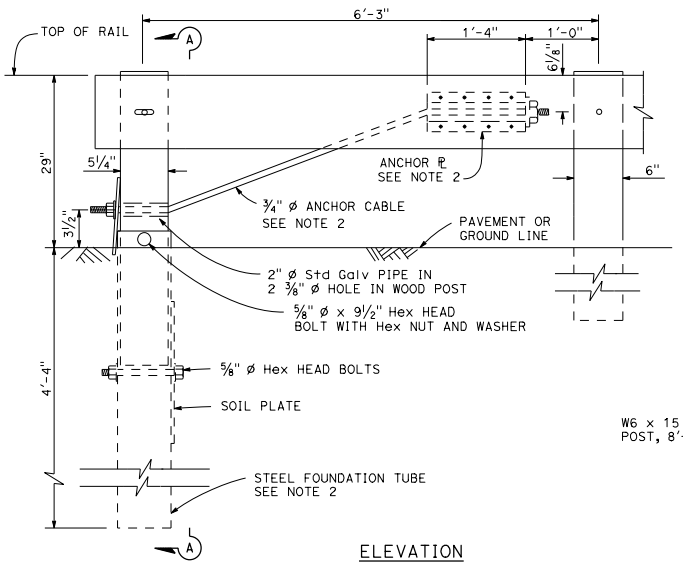
NO SCALE

RSP A77L2 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77L2 DATED OCTOBER 30, 2015 - PAGE 50 OF THE STANDARD PLANS BOOK DATED 2015.

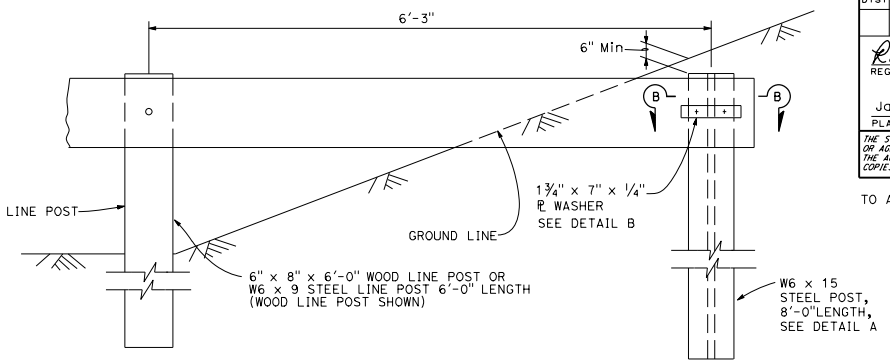
REVISED STANDARD PLAN RSP A77L2

2015 REVISED STANDARD PLAN RSP A77L2

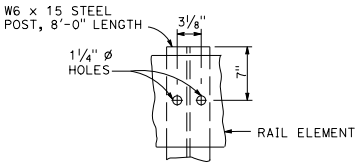
1-6-17



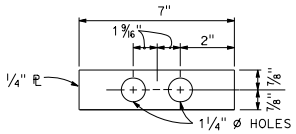
ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)



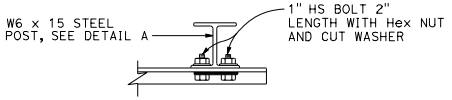
BURIED POST END ANCHOR



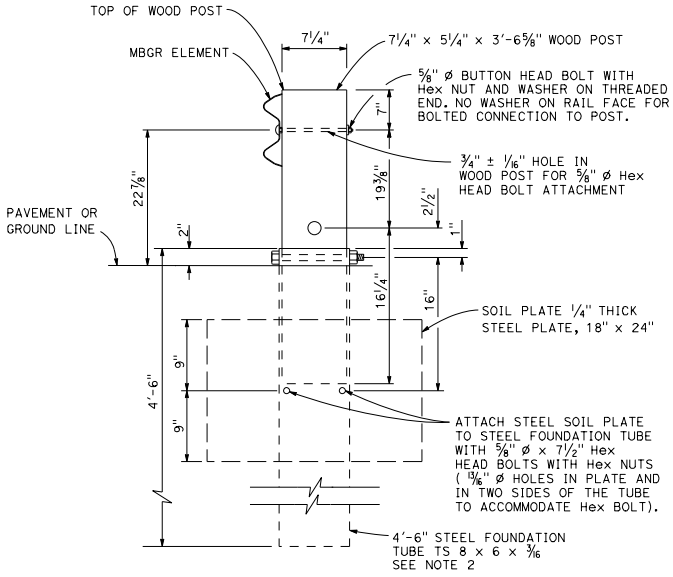
DETAIL A



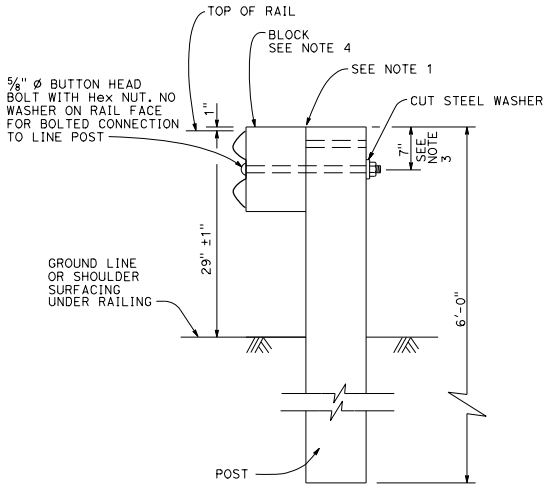
DETAIL B



SECTION B-B



SECTION A-A



TYPICAL LINE
POST INSTALLATION

NOTES:

1. For wood post and wood block, toenail with 2-16d Galv nails in top of block. For steel post and notched wood or plastic block, notched face of block faces steel post.
2. A 6'-0" Length steel foundation tube, TS 8 x 6 x 3/16, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown, Minimum embedment of the 6'-0" length tube shall be 5'-9". A ⅝" ø Hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
3. To connect railing to 27" terminal system end treatment, transition the top of railing height at a ratio of 120:1 to terminal system end treatment height plus one 12'-6" standard railing section at the transitioned height for a horizontal connection to the end treatment.
4. See Revised Standard Plans RSP A77N1 and RSP A77N2 for details.

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-17
CIVIL
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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING RECONSTRUCT INSTALLATION

NO SCALE

RSP A77L3 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77L3
DATED OCTOBER 30, 2015 - PAGE 51 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77L3

2015 REVISED STANDARD PLAN RSP A77L3

11-8-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-17
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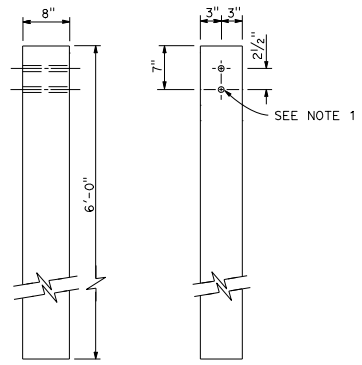
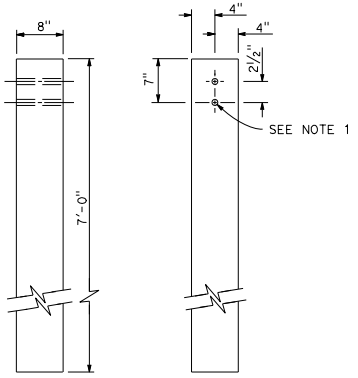
TO ACCOMPANY PLANS DATED _____



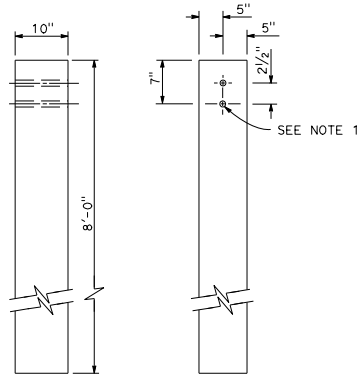
SIDE FRONT

6" x 8" WOOD POST
See Note 3



SIDE FRONT

8" x 8" WOOD POST
See Note 4

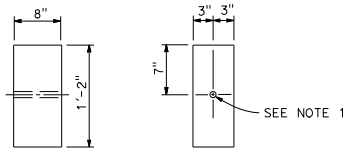


SIDE FRONT

10" x 10" WOOD POST
See Note 5

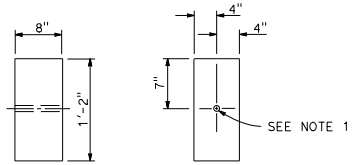
NOTES:

1. All holes in wood posts and blocks shall be ¾" Dia ± 1/16".
2. Dimensions shown for wood post are nominal.
3. This post and block combination used for standard line post sections of MGS.
4. This post and 8" x 12" block combination used for line post sections of MGS on narrow roadways.
5. This post and 8" x 12" block combination is typically used where strengthened line post sections of MGS are warranted to shield fixed objects.
6. See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" wood blocks.
7. To be used with 8" x 8" x 7'-0" wood post if installed with 6" height dike.
8. To be used with 6" x 8" x 6'-0" wood post if installed with 6" height dike.



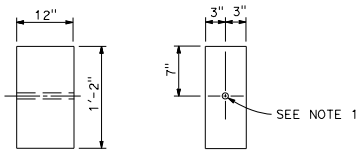
SIDE FRONT

6" x 8" WOOD BLOCK
See Note 6 and Note 3



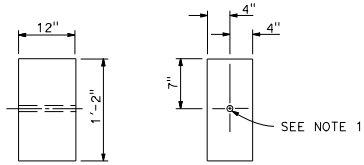
SIDE FRONT

8" x 8" WOOD BLOCK
See Note 6 and Note 4



SIDE FRONT

6" x 12" WOOD BLOCK
See Note 8



SIDE FRONT

8" x 12" WOOD BLOCK
See Note 7

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM WOOD POST AND WOOD BLOCK DETAILS

NO SCALE

RSP A77N1 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77N1
DATED OCTOBER 30, 2015 - PAGE 53 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N1

2015 REVISED STANDARD PLAN RSP A77N1

7-21-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 — CIVIL — STATE OF CALIFORNIA

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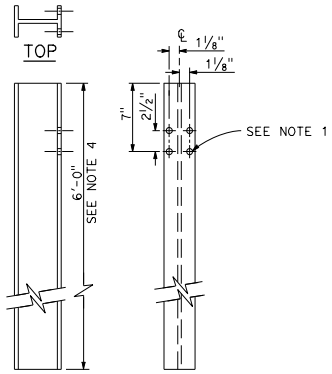
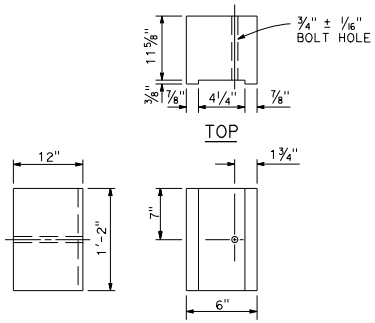
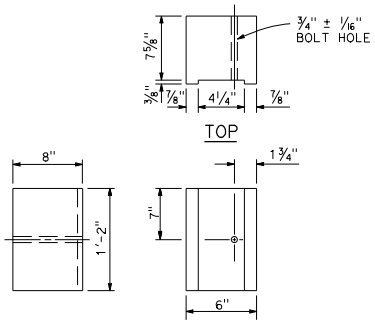
TO ACCOMPANY PLANS DATED _____



W6 x 9 OR W6 x 8.5
STEEL POST
See Note 4



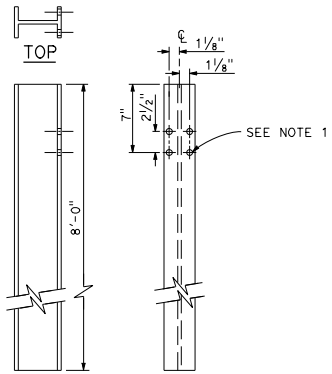
6" x 12"
NOTCHED WOOD BLOCK
See Notes 2, 3 and 7



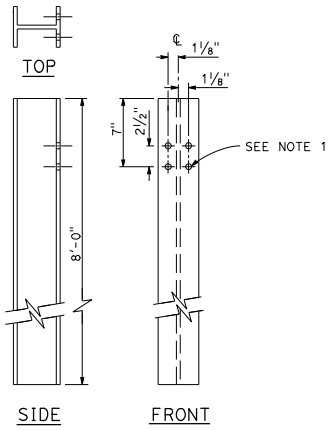
6" x 8"
NOTCHED WOOD BLOCK
Only for use with metal beam guard railing. See Note 5

NOTES:

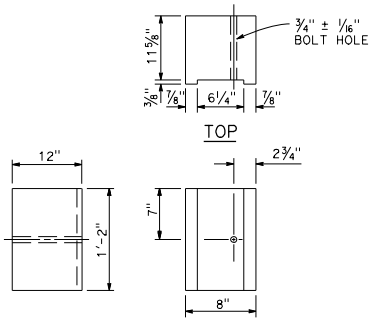
1. All holes in steel post shall be 13/16" Dia maximum.
2. Dimensions shown for wood block are nominal.
3. Notched face of block faces steel post.
4. 6'-0" length posts to be used for typical roadway installation. See Standard Plan A77N3.
5. See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" notched wood blocks.
6. This post and 8" x 12" block combination to be used for line post sections of MGS on narrow roadways and where strengthened line post sections of MGS are warranted to shield fixed objects.
7. 6" x 12" notched wood block and 8" x 12" notched wood block must be used with 6" dike.



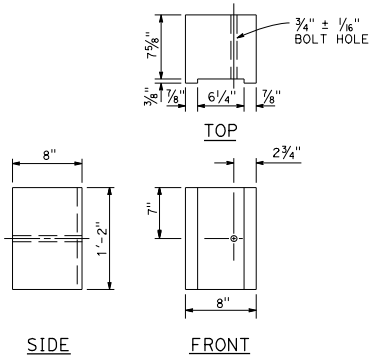
W6 x 9 OR W6 x 8.5
STEEL POST
See Note 6



W6 x 15
STEEL POST



8" x 12"
NOTCHED WOOD BLOCK
See Notes 2, 3 and 7



8" x 8"
NOTCHED WOOD BLOCK
Only for use with metal beam guard railing. See Note 5

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STEEL POST AND NOTCHED WOOD BLOCK DETAILS

NO SCALE

RSP A77N2 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77N2
DATED OCTOBER 30, 2015 - PAGE 54 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N2

2015 REVISED STANDARD PLAN RSP A77N2

11-8-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-17
CIVIL
STATE OF CALIFORNIA

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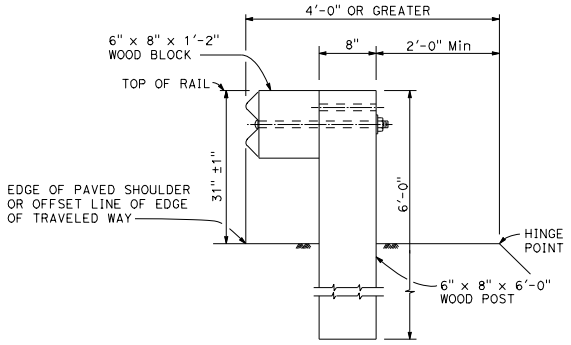
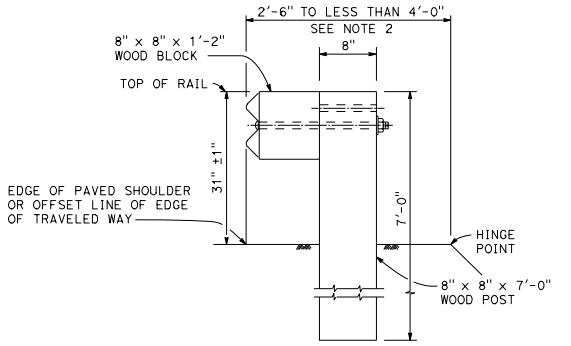
TO ACCOMPANY PLANS DATED _____



DETAIL A

TYPICAL ROADWAY INSTALLATION

See Note 1

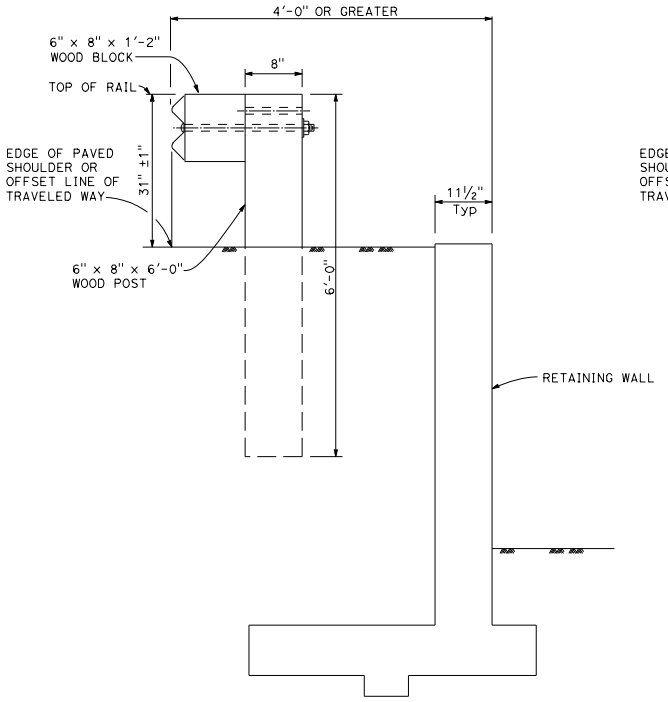


DETAIL B

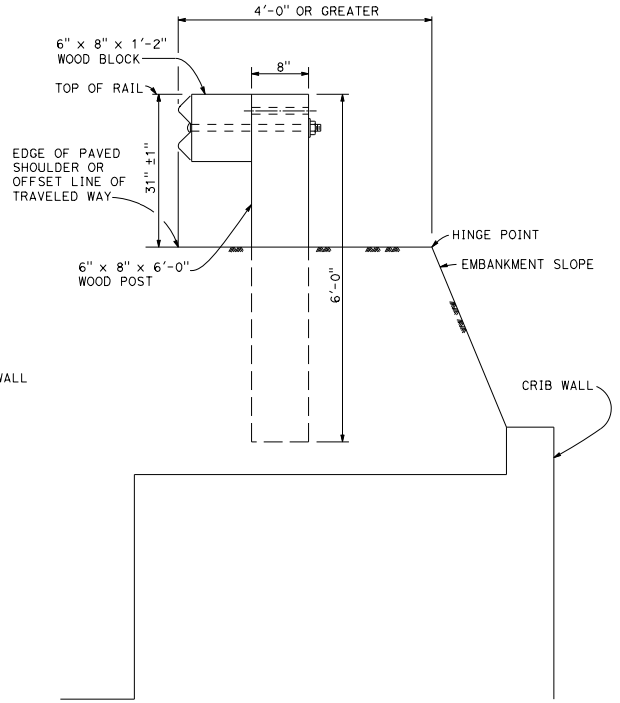
NARROW ROADWAY INSTALLATION

See Note 1

POST EMBEDMENT



DETAIL C



DETAIL D

INSTALLATION AT EARTH RETAINING WALLS

NOTES:

1. These installation details also applicable to steel line post installations. For Detail A, C, and D, where steel line post installations are constructed, W6 x 8.5 or W6 x 9 steel post, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For Detail B, where steel line post installations are constructed, W6 x 8.5 or W6 x 9 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For additional installation details, see Revised Standard Plans RSP A77L1 and RSP A77L2.
2. Where the distance between the face of the rail and the hinge point is less than 2'-6", see the Project Plans for special details.
3. For dike positioning with MGS installations, see Standard Plan A77N4.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LINE POST EMBEDMENT AND HINGE POINT OFFSET DETAILS

NO SCALE

RSP A77N3 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77N3 DATED OCTOBER 30, 2015 - PAGE 55 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N3

2015 REVISED STANDARD PLAN RSP A77N3

1-6-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Chi H. Wong — No. C054738 — Exp. 12-31-19 — CIVIL — STATE OF CALIFORNIA

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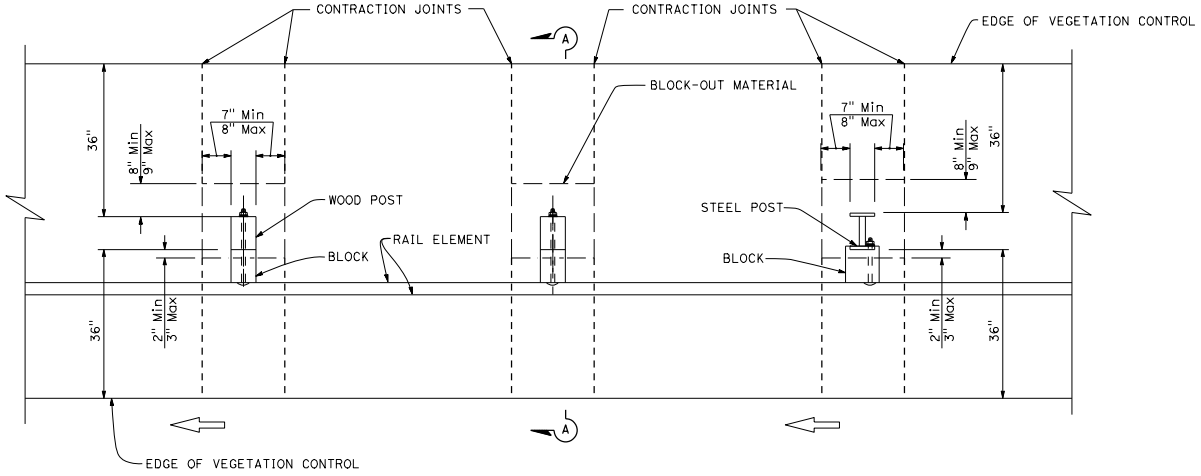
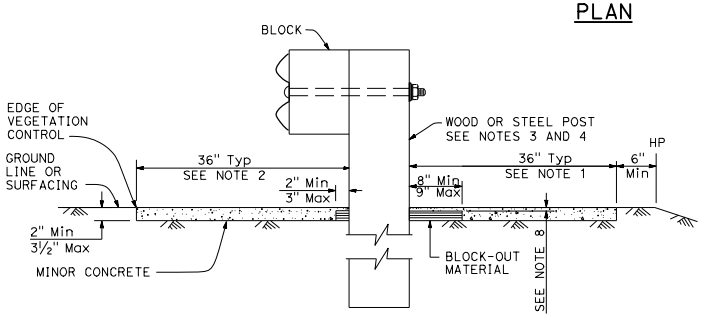
TO ACCOMPANY PLANS DATED _____



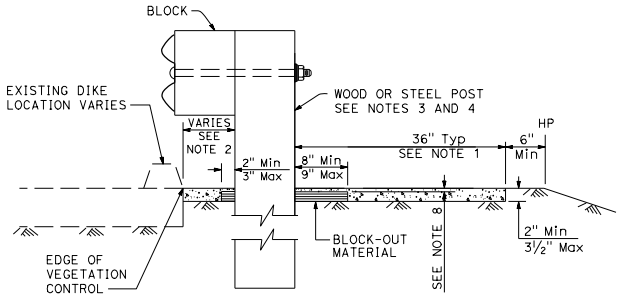
PLAN

NOTES:

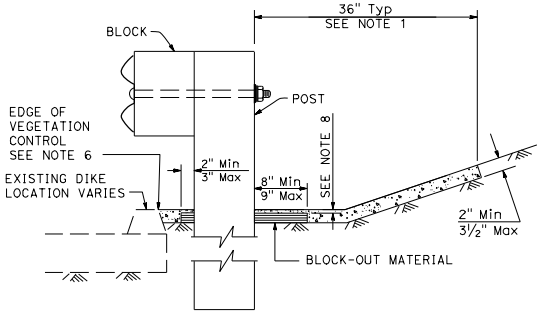
1. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post.
2. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. For wood post sizes, see Revised Standard Plan RSP A77N1.
4. For steel post sizes, see Revised Standard Plan RSP A77N2.
5. For details not shown, see Revised Standard Plans RSP A77L1 and RSP A77L2.
6. Where vegetation control is adjacent to a dike on a cut slope, construct vegetation control flush with the top edge of dike.
7. Vegetation control must slope to drain water.
8. Concrete over block-out material depth, construct ⅜" Min to ⅝" Max.
9. This plan for vegetation control installation only.



SECTION A-A
Without Existing Dike



SECTION A-A
With Existing Dike



SECTION A-A
With Existing Dike
on cut slope

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM

NO SCALE

RSP A77N5 DATED APRIL 20, 2018 SUPERSEDES RSP A77N5 DATED JULY 21, 2017 AND STANDARD PLAN A77N5 DATED OCTOBER 30, 2015 - PAGE 57 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N5

2015 REVISED STANDARD PLAN RSP A77N5

12-12-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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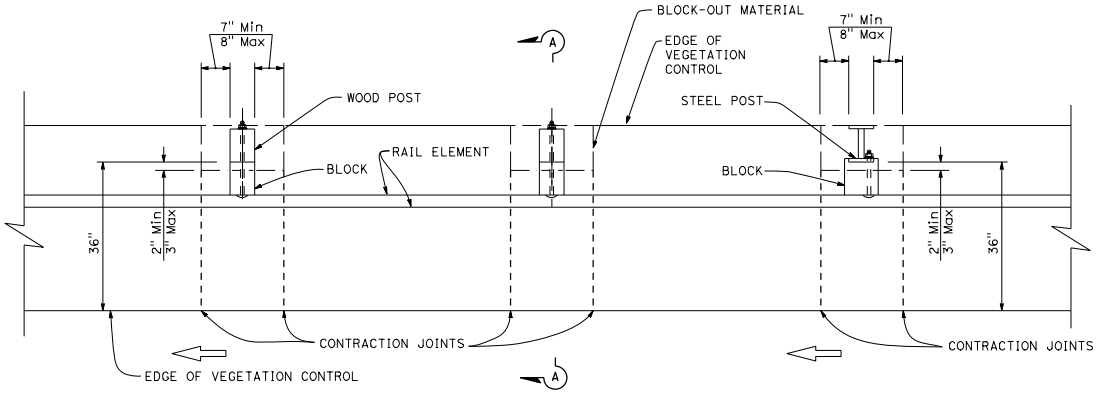
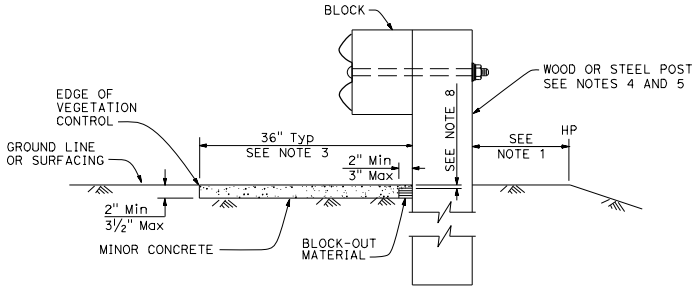
TO ACCOMPANY PLANS DATED _____



PLAN



SECTION A-A

Without Existing Dike

NOTES:

1. Use the details on this sheet when the length from the back of post to the hinge point is less than 18". Use the details on Revised Standard Plan RSP A77N5 when the length from the back of the post to the hinge point is greater than 18".
2. Construct vegetation control flush with the back edge of post.
3. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
4. For wood post sizes, see Revised Standard Plan RSP A77N1.
5. For steel post sizes, see Revised Standard Plan RSP A77N2.
6. For details not shown, see Revised Standard Plans RSP A77L1 and RSP A77L2.
7. Vegetation control must slope to drain water.
8. Concrete over block-out material depth, construct ⅜" Min to ⅝" Max.
9. This plan for vegetation control installation only.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM NARROW VEGETATION CONTROL INSTALLATION

NO SCALE

RSP A77N5A DATED APRIL 20, 2018 SUPERSEDES RSP A77N5A
DATED JULY 21, 2017 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N5A

2015 REVISED STANDARD PLAN RSP A77N5A

12-12-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
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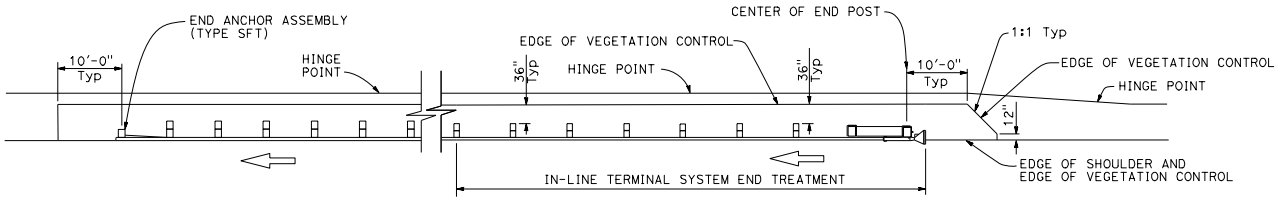
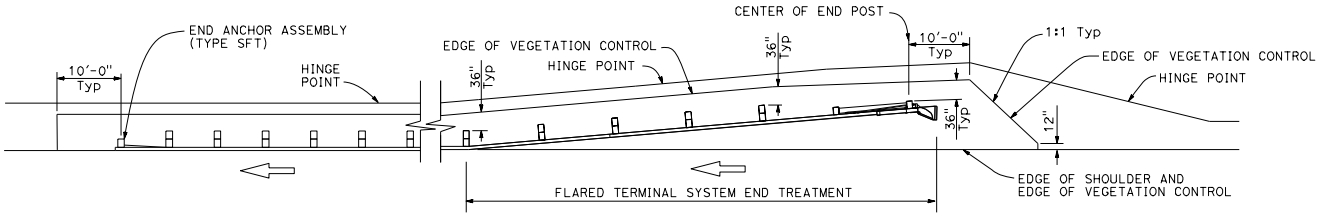


PLAN



PLAN

NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post.
3. Vegetation control must slope to drain water.
4. This plan for vegetation control installation only.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM FOR TERMINAL SYSTEM END TREATMENTS

NO SCALE

RSP A77N6 DATED APRIL 20, 2018 SUPERSEDES RSP A77N6 DATED JULY 21, 2017 AND RSP A77N6 DATED JANUARY 20, 2017 AND STANDARD PLAN A77N6 DATED OCTOBER 30, 2015 - PAGE 58 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N6

2015 REVISED STANDARD PLAN RSP A77N6

12-12-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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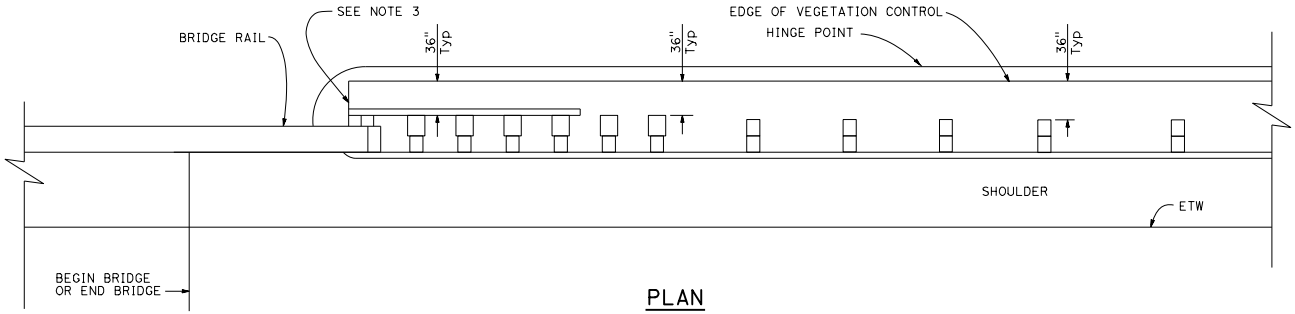
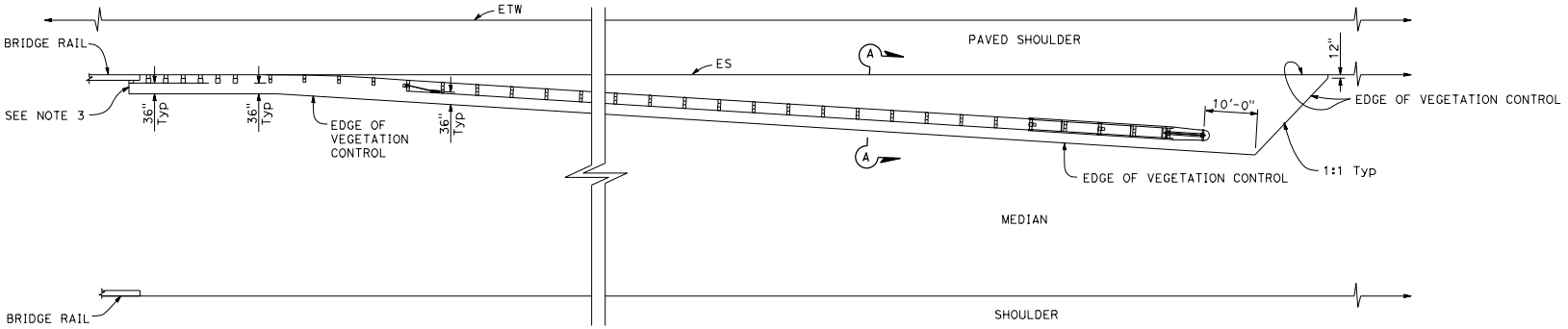
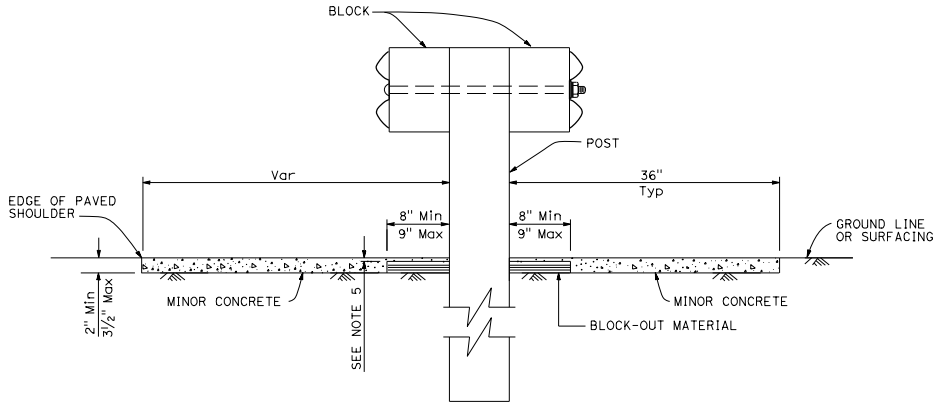
TO ACCOMPANY PLANS DATED _____



PLAN



PLAN



SECTION A-A

NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post.
3. End vegetation control at end of backside rail element.
4. Vegetation control must slope to drain water.
5. Concrete over block-out material depth, construct 3/8" Min to 5/8" Max.
6. This plan for vegetation control installation only.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM AT STRUCTURE APPROACH

NO SCALE

RSP A77N7 DATED APRIL 20, 2018 SUPERSEDES RSP A77N7
DATED JULY 21, 2017 AND STANDARD PLAN A77N7
DATED OCTOBER 30, 2015 - PAGE 59 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N7

2015 REVISED STANDARD PLAN RSP A77N7

12-12-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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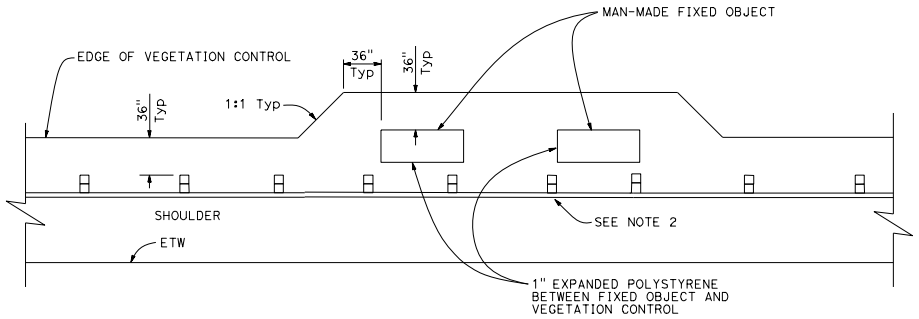
TO ACCOMPANY PLANS DATED _____

NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. Vegetation control must slope to drain water.
4. This plan for vegetation control installation only.



PLAN

Fixed object(s) on shoulder

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM AT FIXED OBJECT

NO SCALE

RSP A77N8 DATED APRIL 20, 2018 SUPERSEDES RSP A77N8 DATED JULY 21, 2017 AND STANDARD PLAN A77N8 DATED OCTOBER 30, 2015 - PAGE 60 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N8

2015 REVISED STANDARD PLAN RSP A77N8

12-12-17

NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. Vegetation control must slope to drain water.
4. Concrete over block-out material depth, construct 3/8" Min to 5/8" Max.
5. This plan for vegetation control installation only.

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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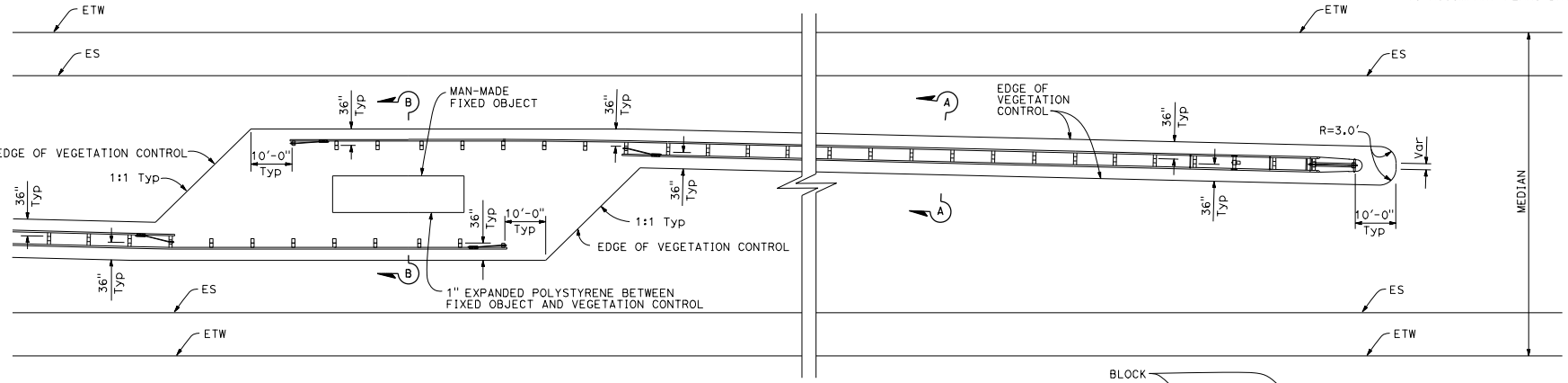
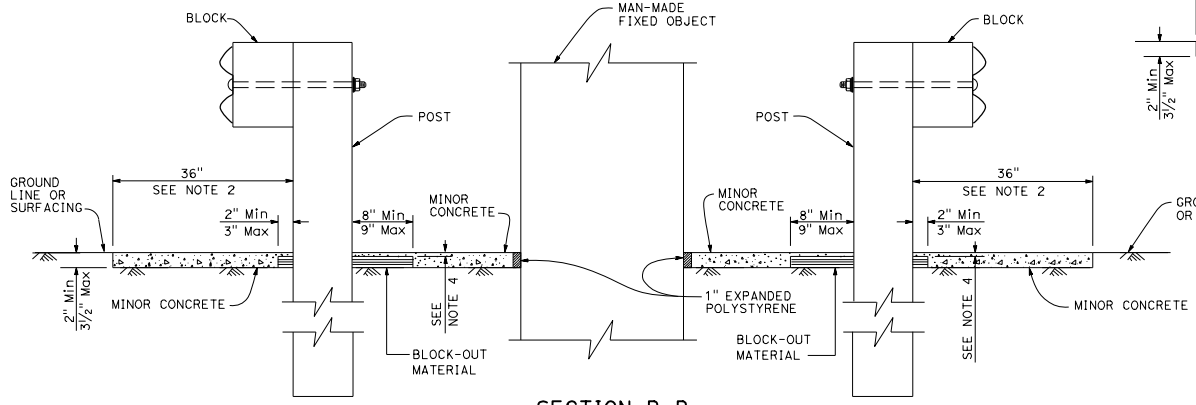
TO ACCOMPANY PLANS DATED _____

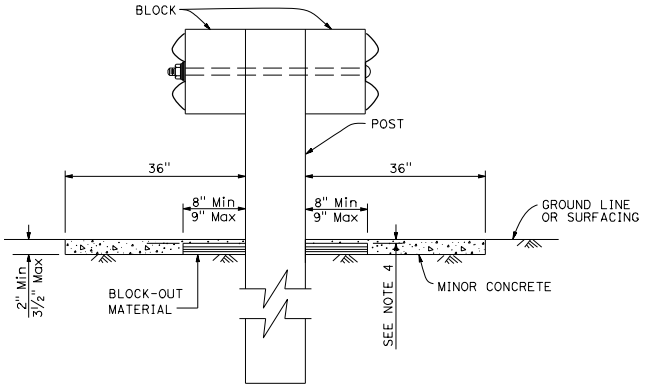


PLAN

Fixed object(s) in median



SECTION B-B



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM AT FIXED OBJECT

NO SCALE

RSP A77N9 DATED APRIL 20, 2018 SUPERSEDES RSP A77N9 DATED JULY 21, 2017 AND STANDARD PLAN A77N9 DATED OCTOBER 30, 2015 - PAGE 61 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N9

12-12-17

2015 REVISED STANDARD PLAN RSP A77N9

NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. Vegetation control must slope to drain water.
4. Concrete over block-out material depth, construct 3/8" Min to 5/8" Max.
5. This plan for vegetation control installation only.

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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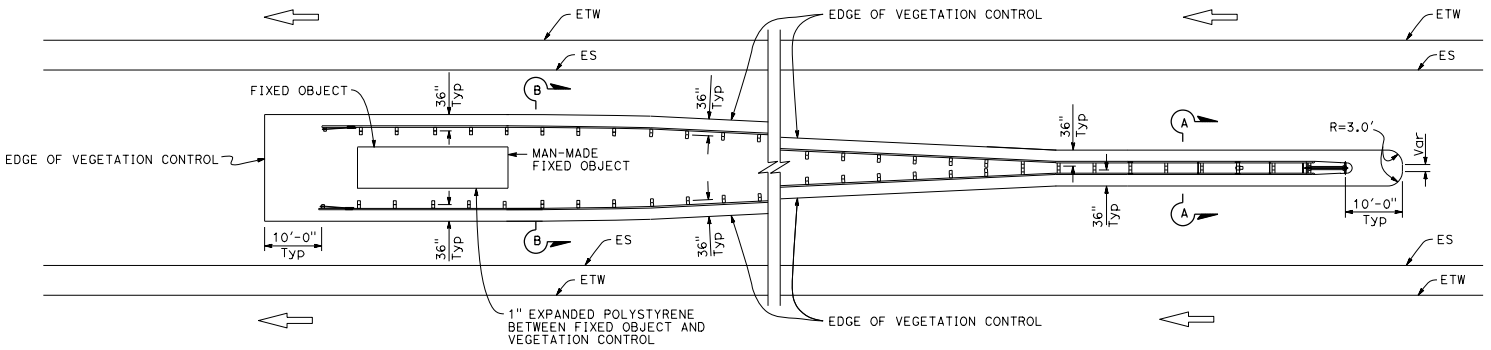
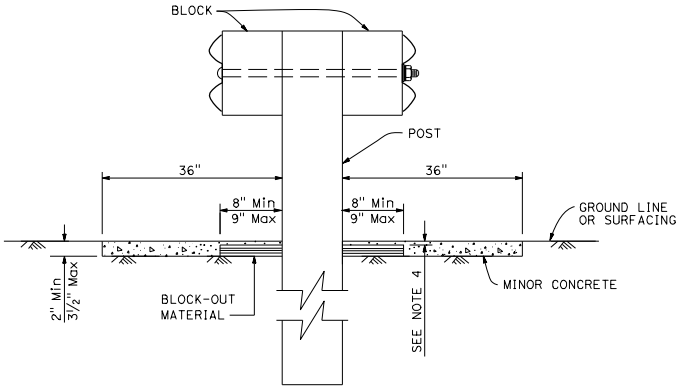
TO ACCOMPANY PLANS DATED _____

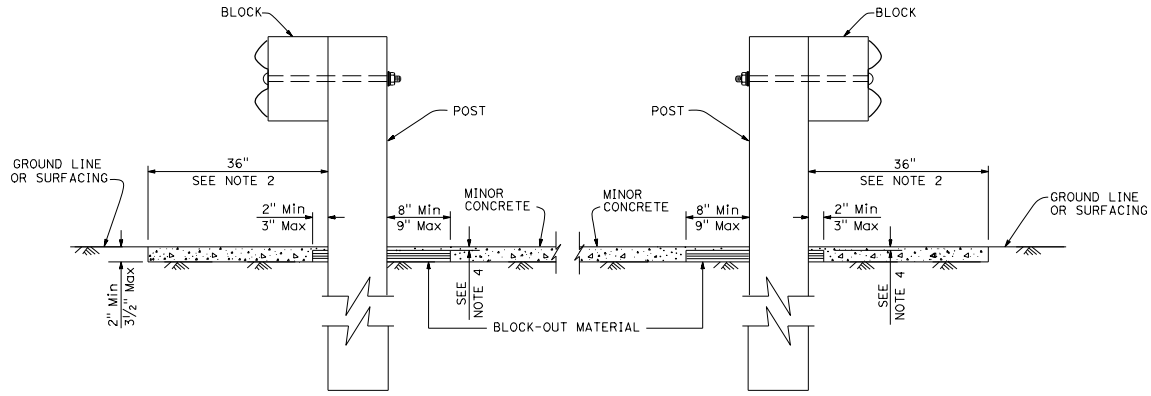


PLAN

Fixed object(s) between separate roadbeds
(One-Way Traffic)



SECTION A-A



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM AT FIXED OBJECT

NO SCALE

RSP A77N10 DATED APRIL 20, 2018 SUPERSEDES RSP A77N10 DATED JULY 21, 2017 AND STANDARD PLAN A77N10 DATED OCTOBER 30, 2015 - PAGE 62 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N10

12-12-17

2015 REVISED STANDARD PLAN RSP A77N10

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

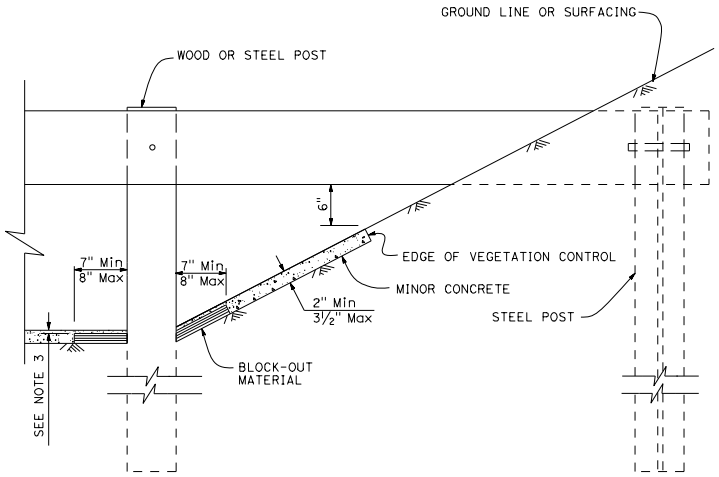
REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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.

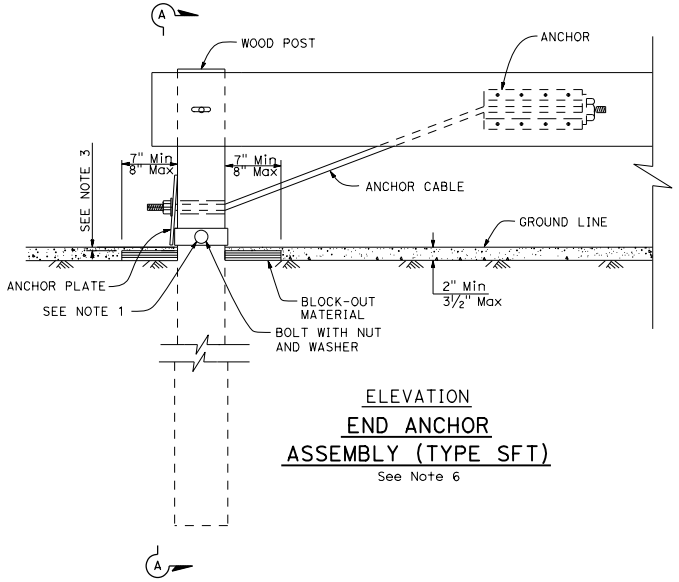
TO ACCOMPANY PLANS DATED _____

NOTES:

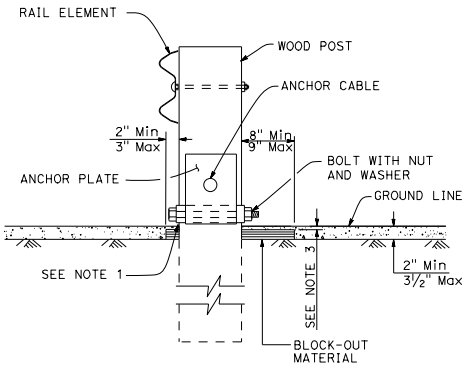
1. Minor concrete must be placed below anchor cable, bolt with nut and washer, or anchor plate.
2. Vegetation control must slope to drain water.
3. Concrete over block-out material depth, construct 3/8" Min to 5/8" Max.
4. This plan for vegetation control installation only.
5. For buried post end anchor, refer to Standard Plan A77T2.
6. For end anchor assembly, refer to Standard Plan A77S1.



BURIED POST END ANCHOR
See Note 5



ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)
See Note 6



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL
GUARDRAIL SYSTEM
MISCELLANEOUS DETAILS

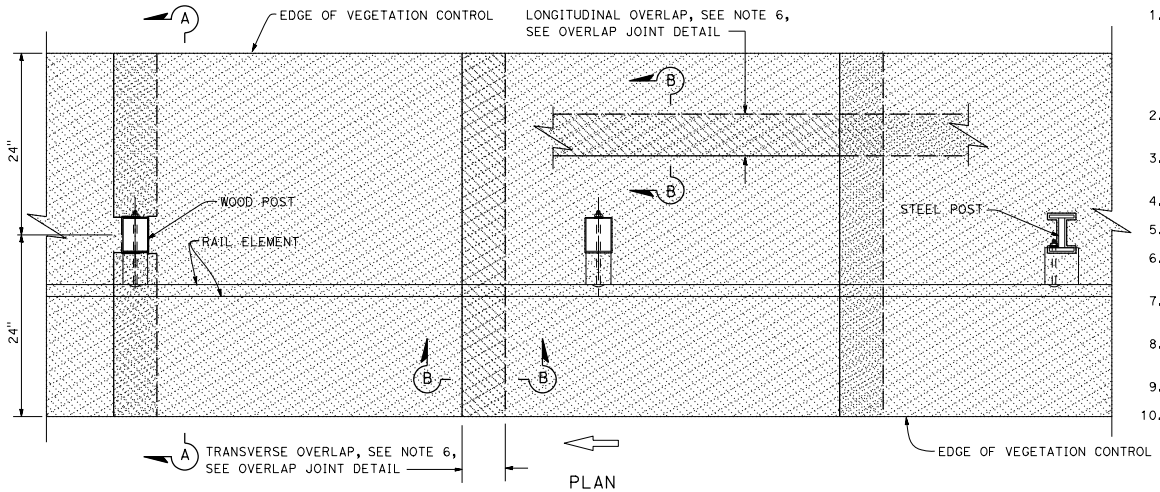
NO SCALE

RSP A77N11 DATED APRIL 20, 2018 SUPERSEDES RSP A77N11
DATED JULY 21, 2017 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N11

12-12-17

2015 REVISED STANDARD PLAN RSP A77N11



PLAN

NOTES:

1. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
2. For wood and steel post sizes, see Revised Standard Plans RSP A77N1 and RSP A77N2.
3. For details not shown, see Revised Standard Plans RSP A77L1 and RSP A77L2.
4. This plan for vegetation control installation only.
5. Vegetation control must slope in direction of water flow.
6. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable. No longitudinal overlap allowed in front of rail element on traffic side.
7. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
8. Where vegetation control is adjacent to a dike on a cut slope, construct vegetation control flush with the top edge of dike, and caulk.
9. For fiber mat, install post collar at all posts and caulk all edges.
10. Where the distance between center of post and hinge point is less than 30", construct vegetation control to 6" from the hinge point.

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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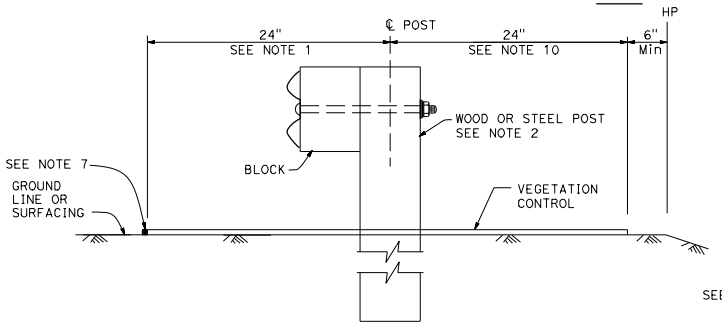
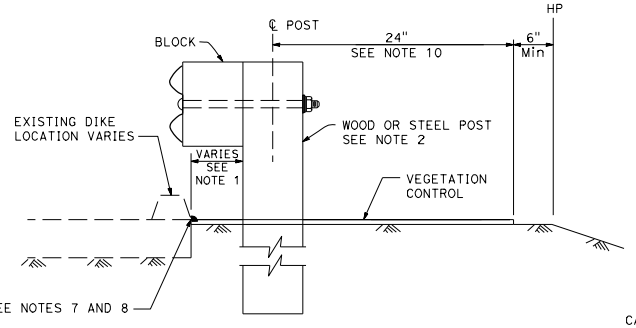
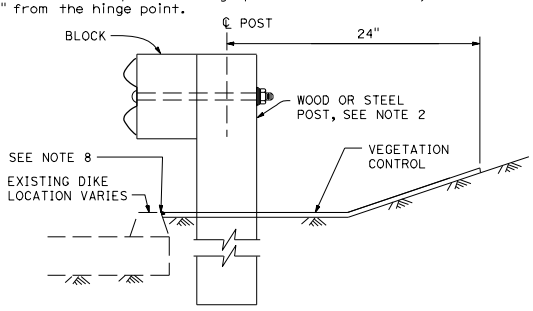
TO ACCOMPANY PLANS DATED _____



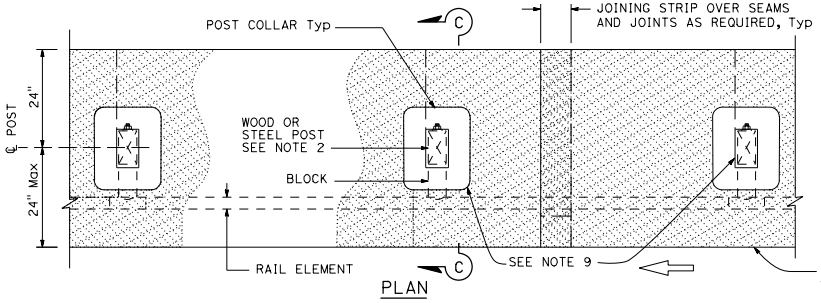
SECTION A-A
Without Existing Dike



SECTION A-A
With Existing Dike

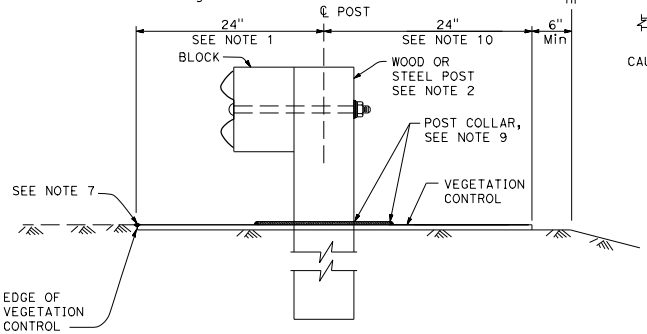


SECTION A-A
With Existing Dike on Cut Slope

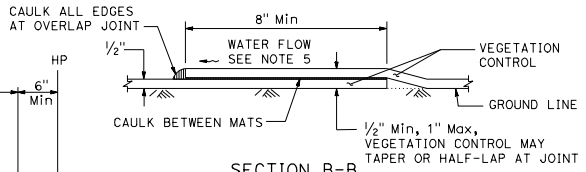


PLAN

FIBER VEGETATION CONTROL POST COLLAR DETAIL



SECTION C-C



SECTION B-B

OVERLAP JOINT DETAIL
See Note 6

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL GUARDRAIL SYSTEM

NO SCALE

RSP A77N12 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N12

2015 REVISED STANDARD PLAN RSP A77N12

1-11-18

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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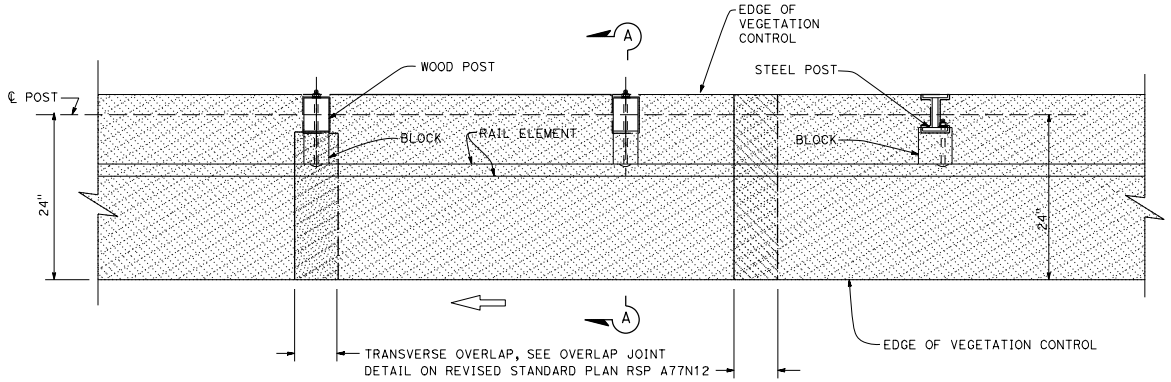
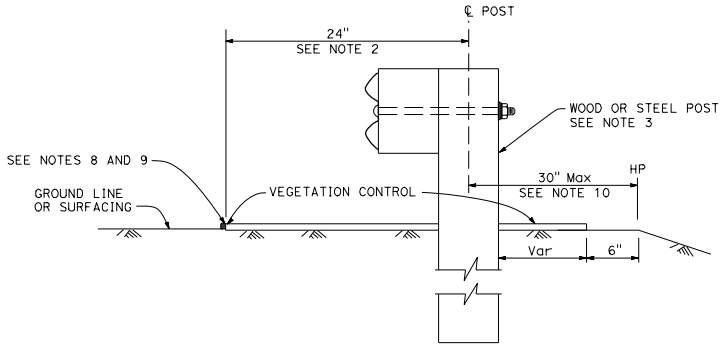
TO ACCOMPANY PLANS DATED _____



PLAN



SECTION A-A
Without Existing Dike

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Revised Standard Plans RSP A77N1 and RSP A77N2.
4. For details not shown, see Revised Standard Plans RSP A77L1 and RSP A77L2.
5. This plan for vegetation control installation only.
6. Vegetation control must slope in direction of water flow.
7. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
8. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
9. Where vegetation control is adjacent to a dike on a cut slope, construct vegetation control flush with the top edge of dike, and caulk. See Revised Standard Plan RSP A77N12.
10. Where the distance between center of post and hinge point is less than 30", construct vegetation control to 6" from the hinge point.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL GUARDRAIL SYSTEM NARROW VEGETATION CONTROL INSTALLATION

NO SCALE

RSP A77N13 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N13

2015 REVISED STANDARD PLAN RSP A77N13

1-10-18

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
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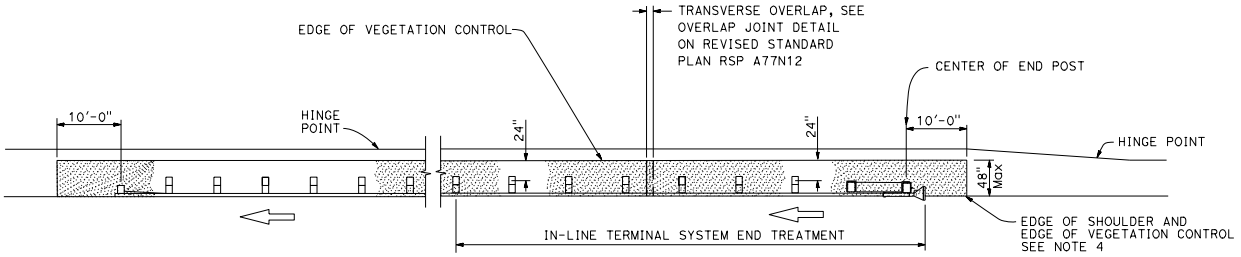
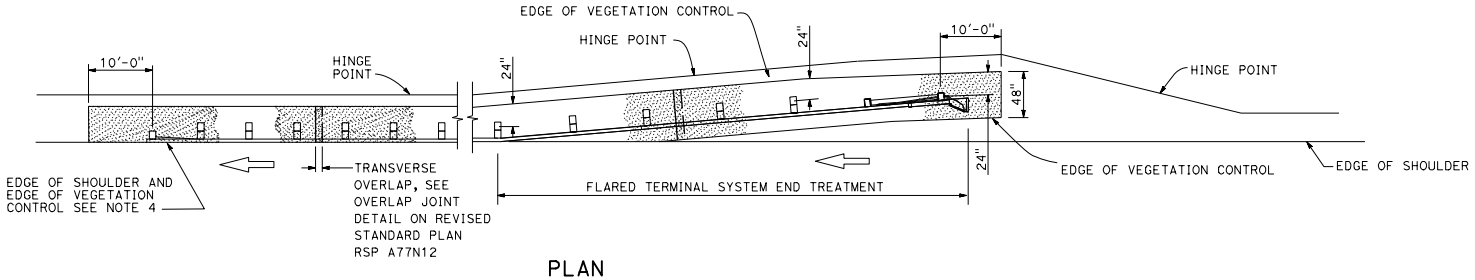
TO ACCOMPANY PLANS DATED _____



PLAN



PLAN

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Vegetation control must slope in direction of water flow.
3. This plan for vegetation control installation only.
4. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL GUARDRAIL SYSTEM FOR TERMINAL SYSTEM END TREATMENTS

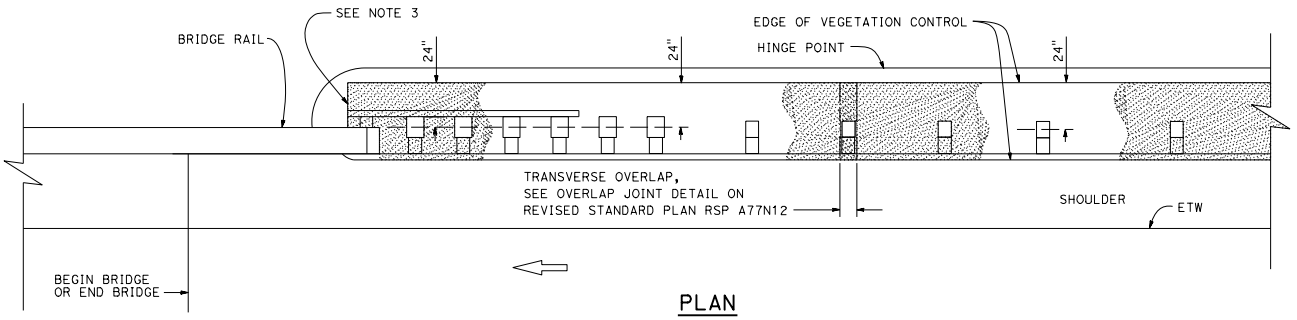
NO SCALE

RSP A77N14 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

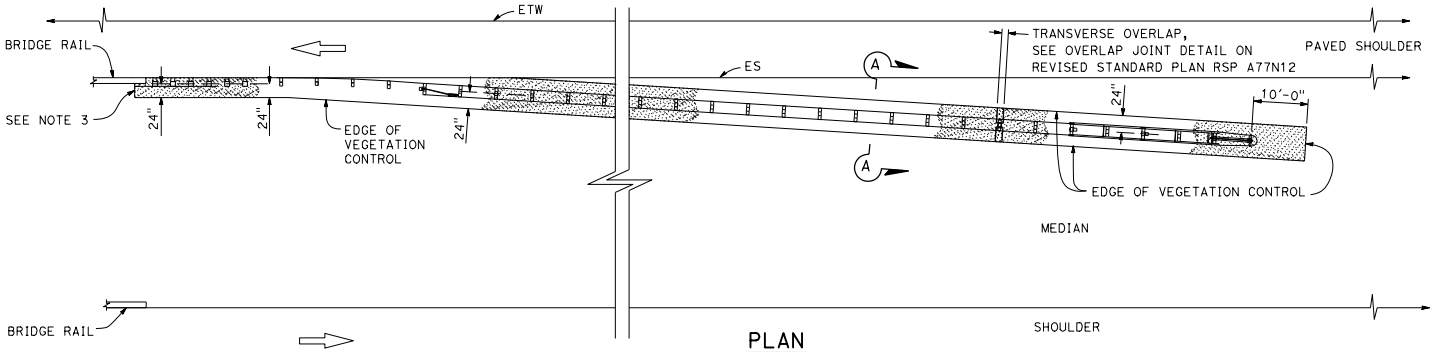
REVISED STANDARD PLAN RSP A77N14

2015 REVISED STANDARD PLAN RSP A77N14

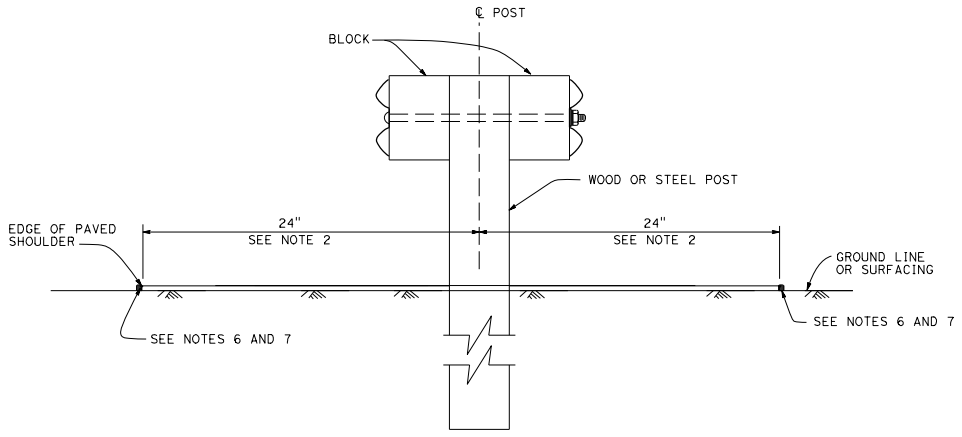
1-10-18



PLAN



PLAN



SECTION A-A

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. End vegetation control at end of backside rail element.
4. Vegetation control must slope in direction of water flow.
5. This plan for vegetation control installation only.
6. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
7. Where vegetation control is adjacent to a dike, see details on Revised Standard Plan RSP A77N12.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL GUARDRAIL SYSTEM AT STRUCTURE APPROACH

NO SCALE

RSP A77N15 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N15

2015 REVISED STANDARD PLAN RSP A77N15

1-12-18

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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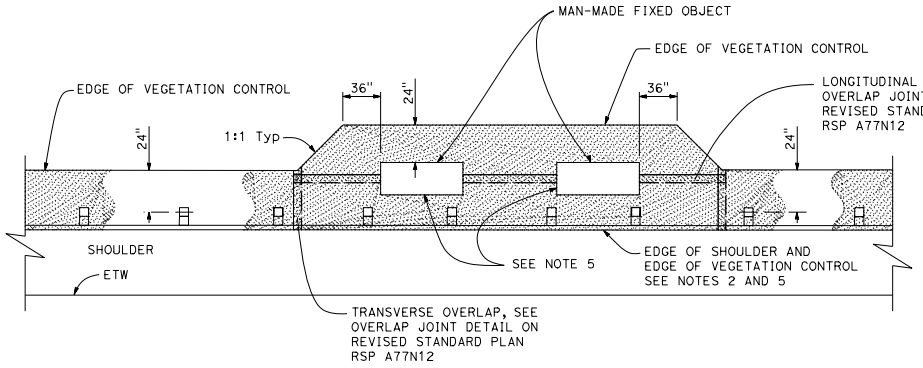
TO ACCOMPANY PLANS DATED _____



PLAN

Fixed object(s) on shoulder

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. Vegetation control must slope in direction of water flow.
4. This plan for vegetation control installation only.
5. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL GUARDRAIL SYSTEM AT FIXED OBJECT

NO SCALE

RSP A77N16 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N16

2015 REVISED STANDARD PLAN RSP A77N16

1-10-18

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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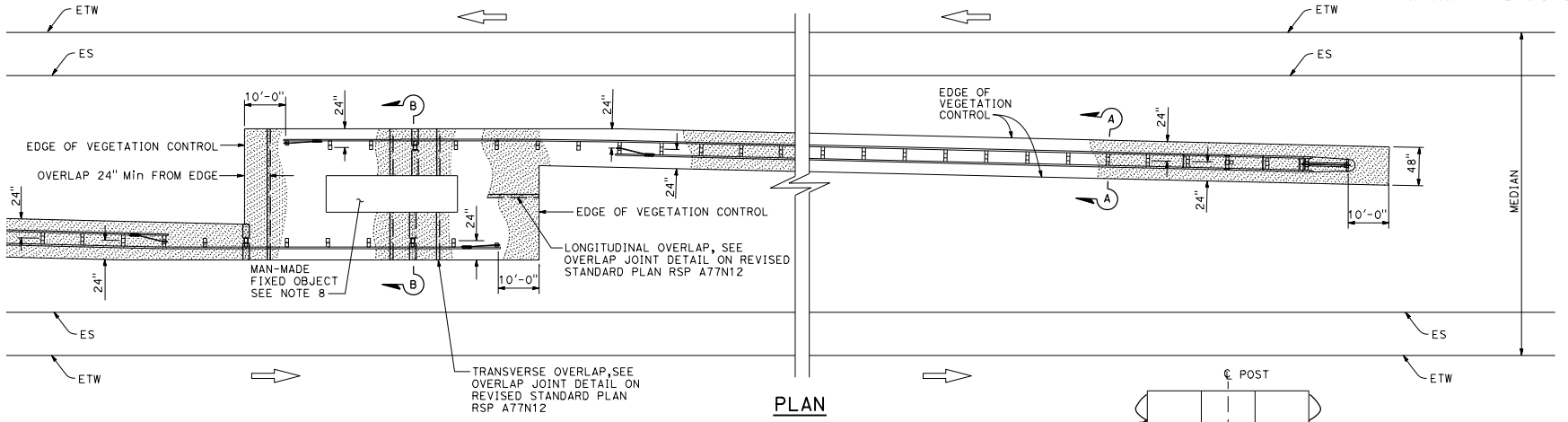
TO ACCOMPANY PLANS DATED _____

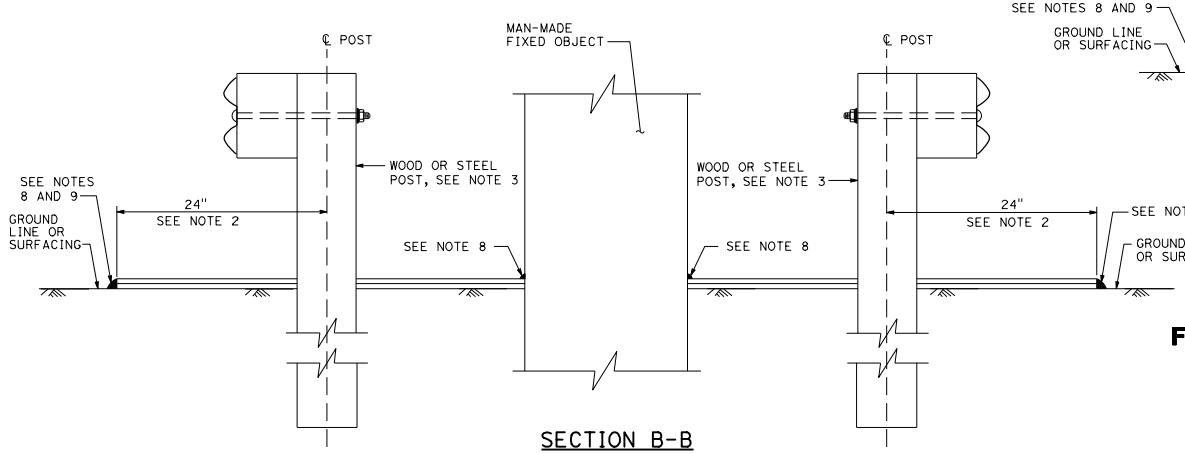
NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Revised Standard Plans RSP A77N1 and RSP A77N2.
4. For details not shown, see Revised Standard Plans RSP A77L1 and RSP A77L2.
5. This plan for vegetation control installation only.
6. Vegetation control must slope in direction of water flow.
7. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
8. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
9. Where vegetation control is adjacent to a dike, see details on Revised Standard Plan RSP A77N12.

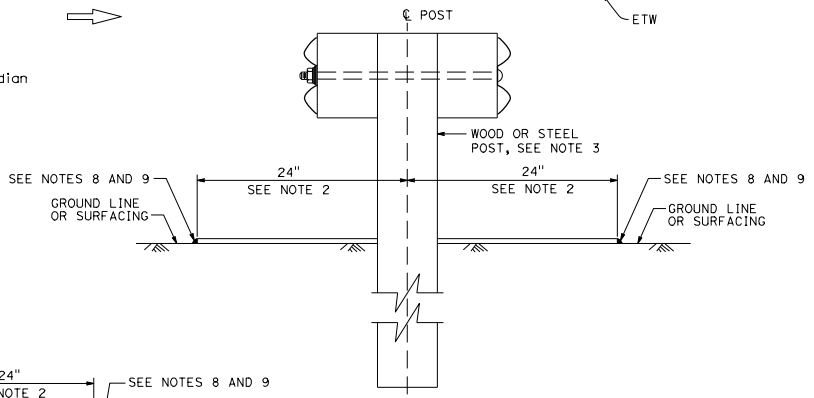


PLAN

Fixed object(s) in median



SECTION B-B



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL GUARDRAIL SYSTEM AT FIXED OBJECT

NO SCALE

RSP A77N17 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N17

2015 REVISED STANDARD PLAN RSP A77N17

1-10-18

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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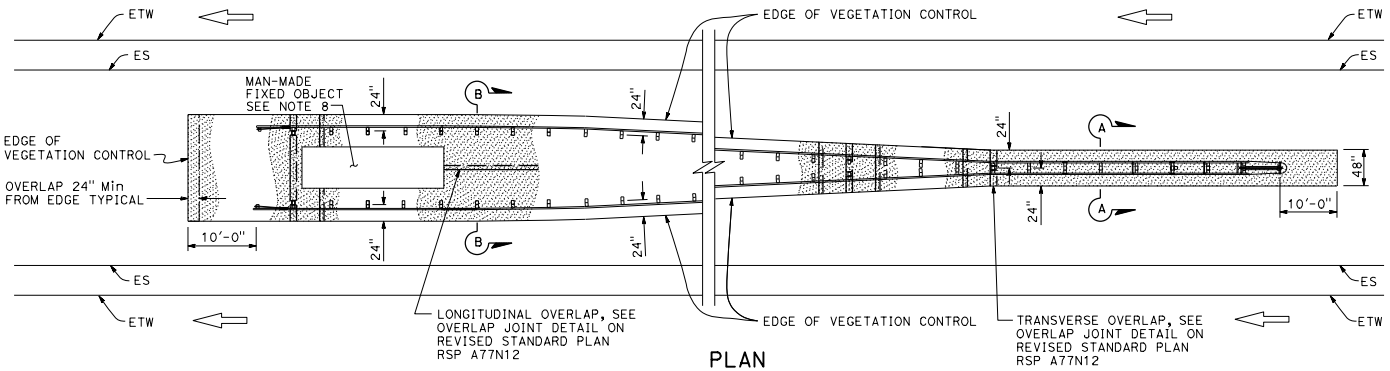
TO ACCOMPANY PLANS DATED _____

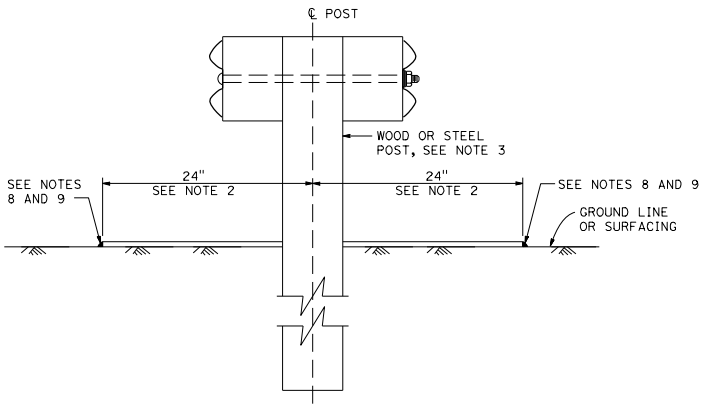


PLAN

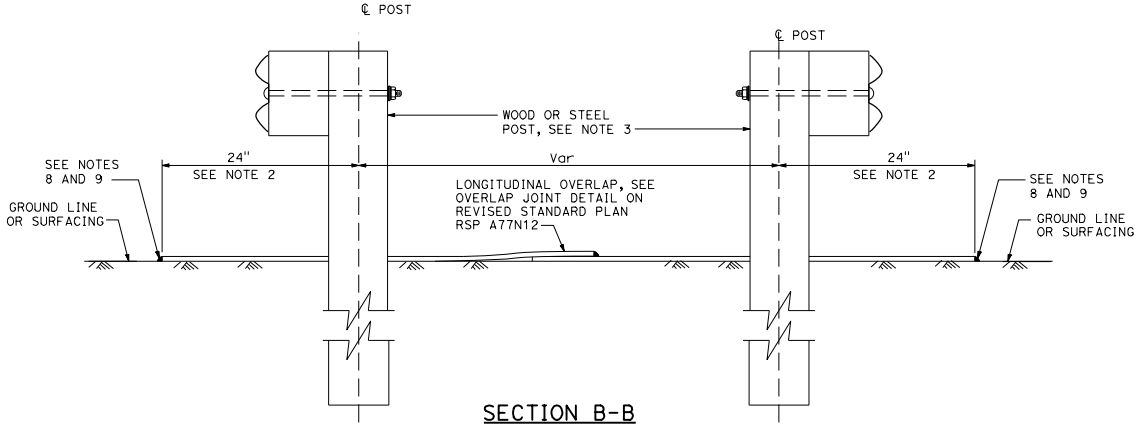
Fixed object(s) between separate roadbeds
(One-Way Traffic)

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Revised Standard Plans RSP A77N1 and RSP A77N2.
4. For details not shown, see Revised Standard Plans RSP A77L1 and RSP A77L2.
5. This plan for vegetation control installation only.
6. Vegetation control must slope in direction of water flow.
7. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
8. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
9. Where vegetation control is adjacent to a dike, See Revised Standard Plan RSP A77N12.



SECTION A-A



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL GUARDRAIL SYSTEM AT FIXED OBJECT

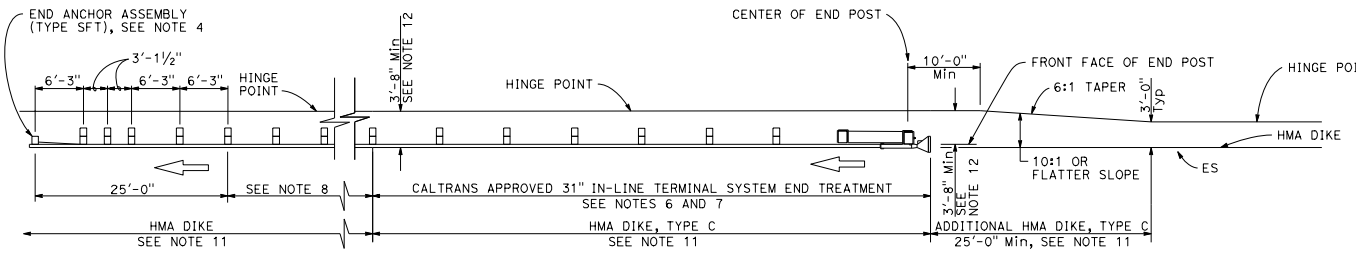
NO SCALE

RSP A77N18 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77N18

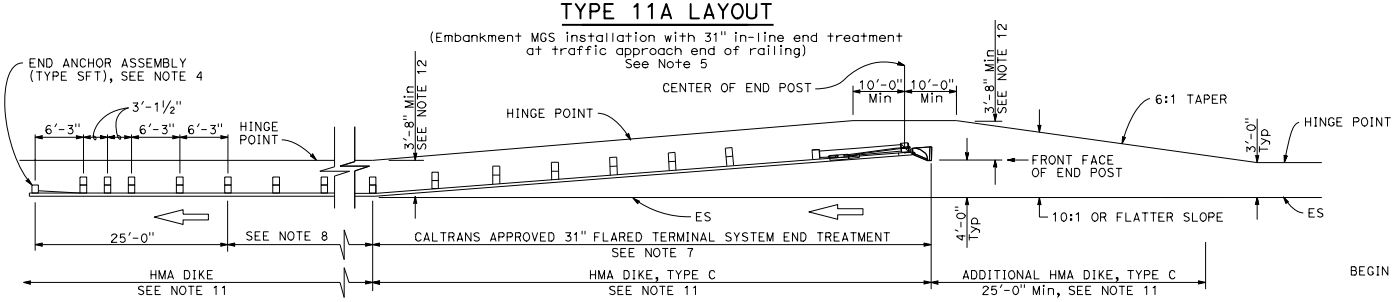
2015 REVISED STANDARD PLAN RSP A77N18

1-10-18



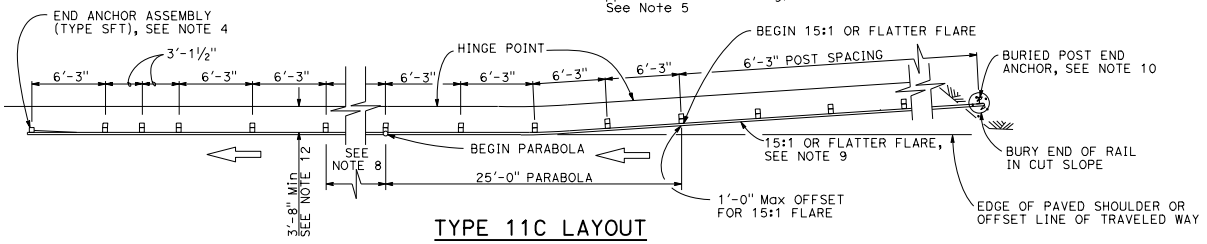
TYPE 11A LAYOUT

(Embankment MGS installation with 31" in-line end treatment at traffic approach end of railing)
See Note 5



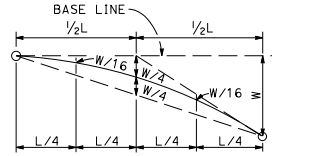
TYPE 11B LAYOUT

(Embankment MGS installation with 31" flared end treatment at traffic approach end of railing)
See Note 5

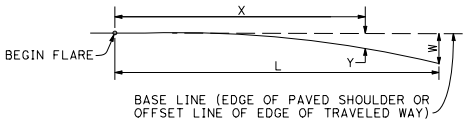


TYPE 11C LAYOUT

(Embankment MGS installation with buried end anchor treatment at traffic approach end of railing)
See Notes 5 and 11



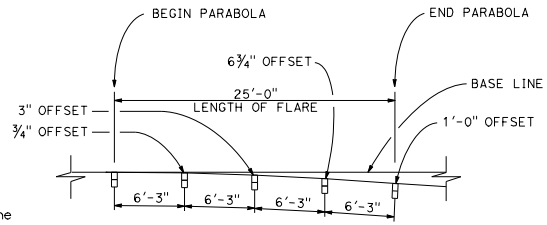
TYPICAL PARABOLIC LAYOUT



$Y = \frac{WX^2}{L^2}$

Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS FOR 1 FOOT Max END OFFSET

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or recycled plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. For End Anchor Assembly (Type SFT) details, see Standard Plan A77S1.
5. Layout Types 11A, 11B or 11C are typically used where MGS is recommended to shield embankment slopes and a crashworthy end treatment is required for only one direction of traffic.
6. 31" in-line terminal system end treatments are used where site conditions will not accommodate a flared end treatment.
7. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
8. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
9. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
10. For details of the buried post end anchor used with Type 11C Layout, see Standard Plan A77T2.
11. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
12. Use this offset for 8-inch block. For 12-inch block, use 4'-0" Min offset.

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-17
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P1 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77P1 DATED OCTOBER 30, 2015 - PAGE 63 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77P1

2015 REVISED STANDARD PLAN RSP A77P1

9-28-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
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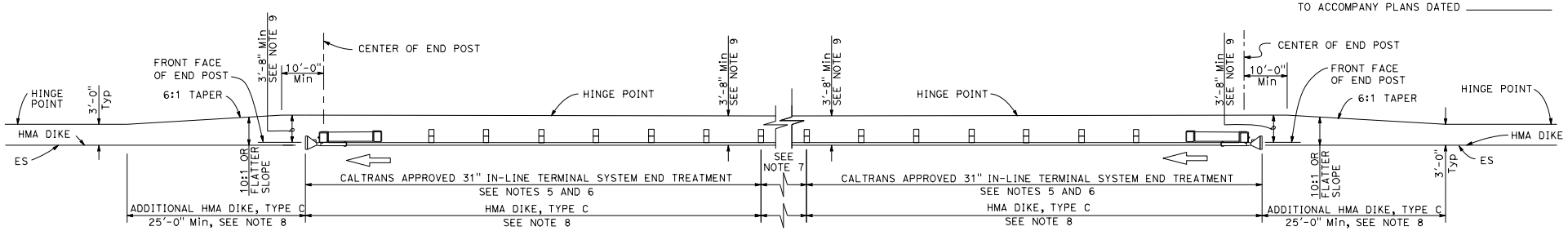
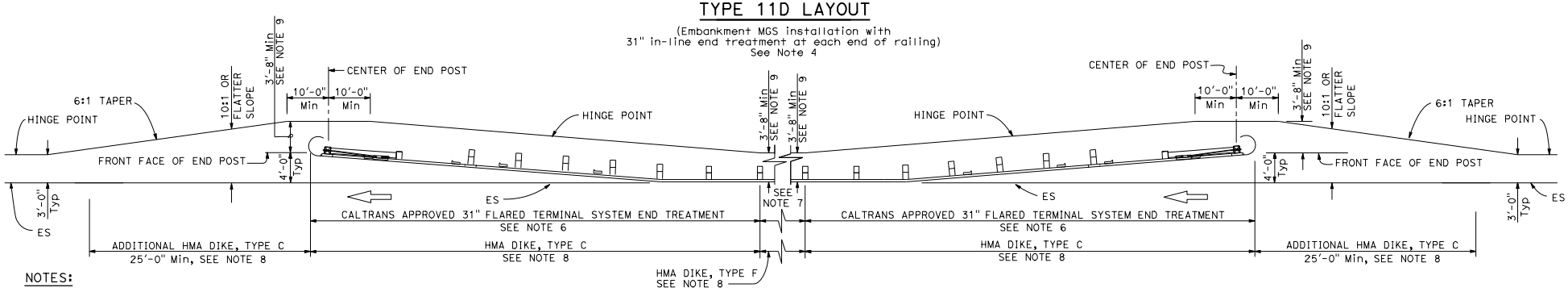
TO ACCOMPANY PLANS DATED _____



TYPE 11D LAYOUT

(Embankment MGS installation with
31" in-line end treatment at each end of railing)
See Note 4



TYPE 11E LAYOUT

(Embankment MGS installation with
31" flared end treatment at each end of railing)
See Note 4

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embankment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a flared end treatment.
6. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
8. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
9. Use this offset for 8-inch block. For 12-inch block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P2 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77P2
DATED OCTOBER 30, 2015 - PAGE 64 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77P2

2015 REVISED STANDARD PLAN RSP A77P2

10-7-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 — CIVIL — STATE OF CALIFORNIA

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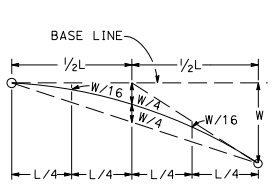
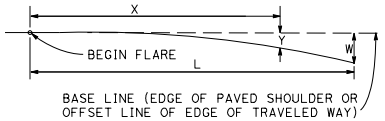
TO ACCOMPANY PLANS DATED _____



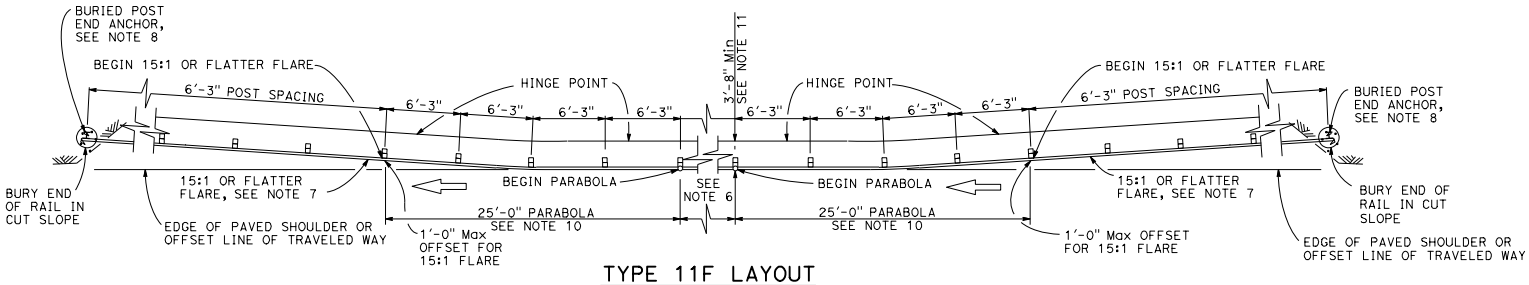
TYPICAL PARABOLIC LAYOUT



$$Y = \frac{WX^2}{L^2}$$

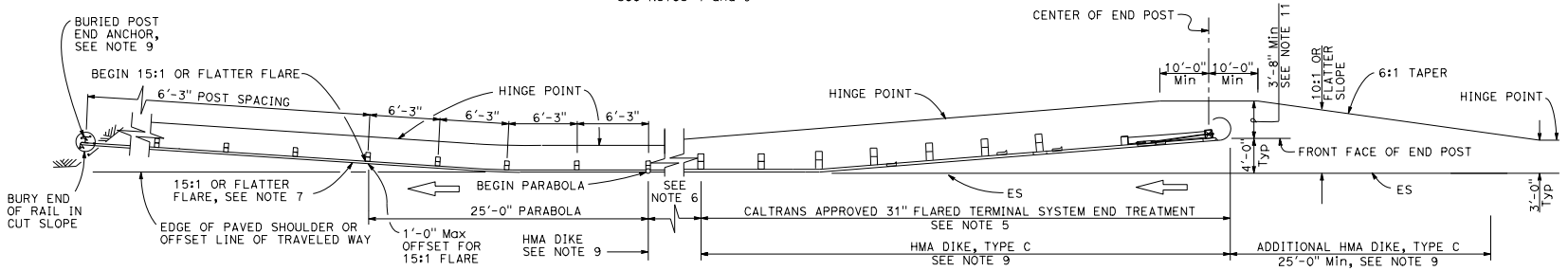
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPE 11F LAYOUT

(Embankment MGS installation with a buried end anchor treatment at each end of railing)
See Notes 4 and 9



TYPE 11G LAYOUT

(Embankment MGS installation with 31" flared end treatment and a buried end anchor treatment at the ends of railing)
See Notes 4 and 9

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embankment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
6. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
7. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
8. For details of the buried post end anchor used with Type 11F and 11G Layouts, see Standard Plan A77T2.
9. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
10. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
11. Use this offset for 8-inch block. For 12-inch block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P3 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77P3
DATED OCTOBER 30, 2015 - PAGE 65 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77P3

2015 REVISED STANDARD PLAN RSP A77P3

10-7-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-17
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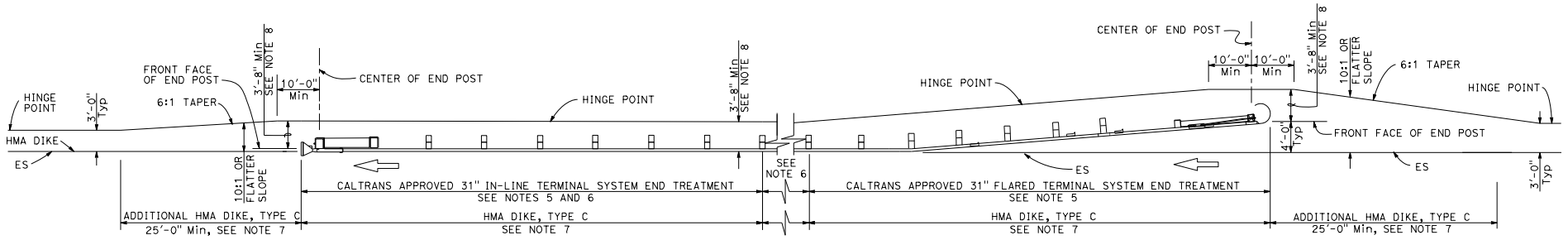
TO ACCOMPANY PLANS DATED _____



TYPE 11H LAYOUT

(Embankment MGS installation with 31" flared end treatment
and 31" in-line end treatment at the ends of railing)
See Notes 4 and 7

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embankment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
6. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
7. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
8. Use this offset for 8-inch block. For 12-inch block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P4 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77P4
DATED OCTOBER 30, 2015 - PAGE 66 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77P4

2015 REVISED STANDARD PLAN RSP A77P4

10-7-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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No. C50200
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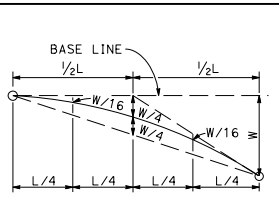
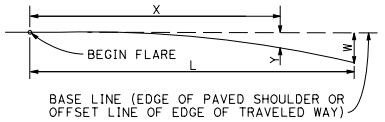


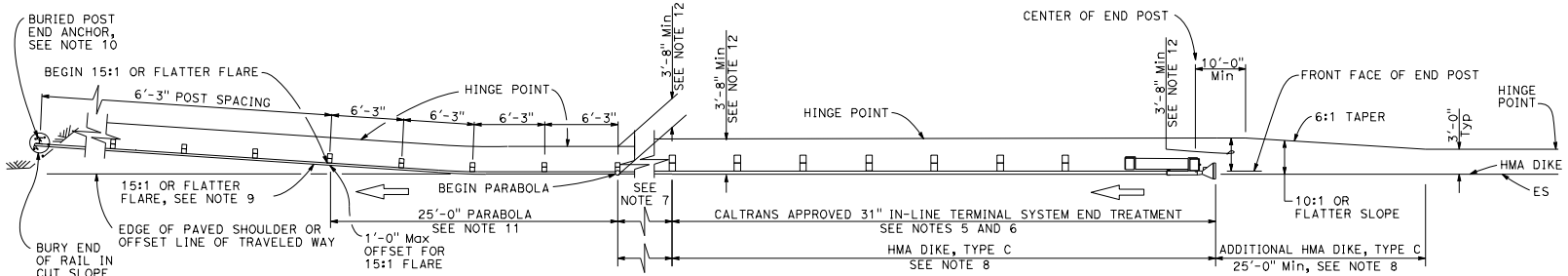
TYPICAL PARABOLIC LAYOUT



$Y = \frac{WX^2}{L^2}$

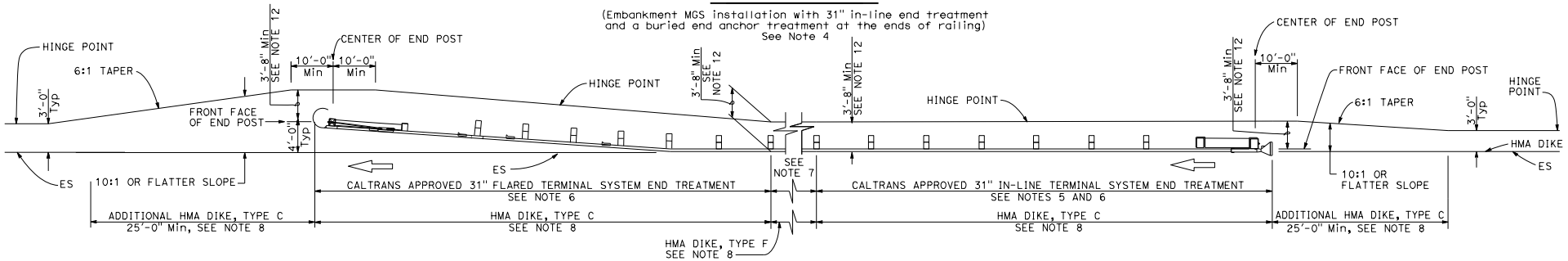
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPE 11I LAYOUT

(Embankment MGS installation with 31" in-line end treatment and a buried end anchor treatment at the ends of railing)
See Note 4



TYPE 11J LAYOUT

(Embankment MGS installation with 31" in-line end treatment and 31" flared end treatment at the ends of railing)
See Note 4

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embamkment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
8. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
9. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
10. For details of the buried post end anchor used with Type 11I Layout, see Standard Plan A77T2.
11. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
12. Use this offset for 8-inch block. For 12-inch block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P5 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77P5
DATED OCTOBER 30, 2015 - PAGE 67 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77P5

2015 REVISED STANDARD PLAN RSP A77P5

10-7-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-17
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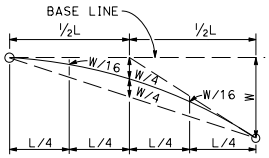
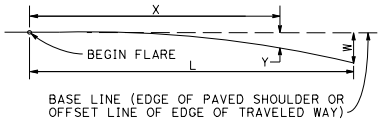


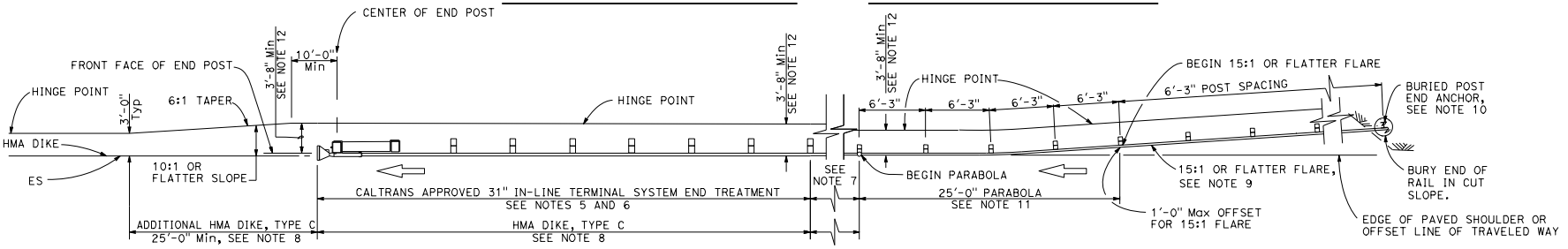
TYPICAL PARABOLIC LAYOUT



$$Y = \frac{WX^2}{L^2}$$

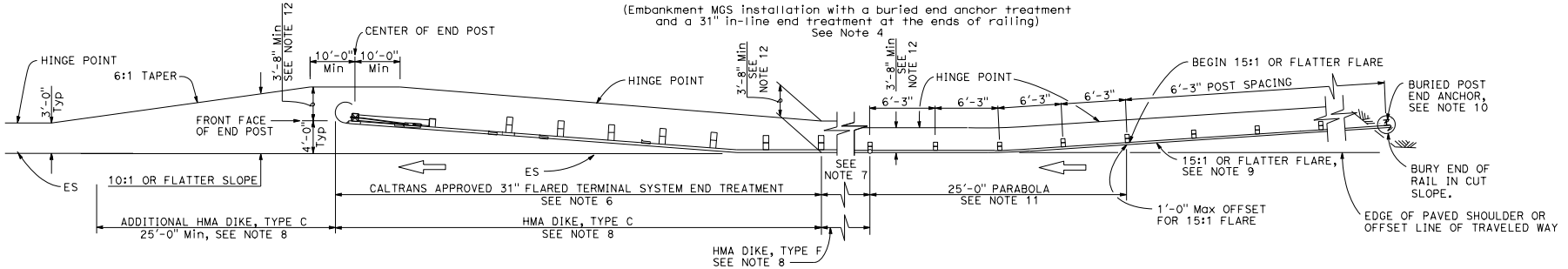
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPE 11K LAYOUT

(Embankment MGS installation with a buried end anchor treatment and a 31" in-line end treatment at the ends of railing)
See Note 4



TYPE 11L LAYOUT

(Embankment MGS installation with a buried end anchor treatment and a 31" flared end treatment at the ends of railing)
See Note 4

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embamkment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
8. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
9. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
10. For details of the buried post end anchor used with Type 11K and 11L Layouts, see Standard Plan A77T2.
11. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
12. Use this offset for 8" block. For 12" block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P6 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77P6
DATED OCTOBER 30, 2015 - PAGE 68 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77P6

2015 REVISED STANDARD PLAN RSP A77P6

10-7-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
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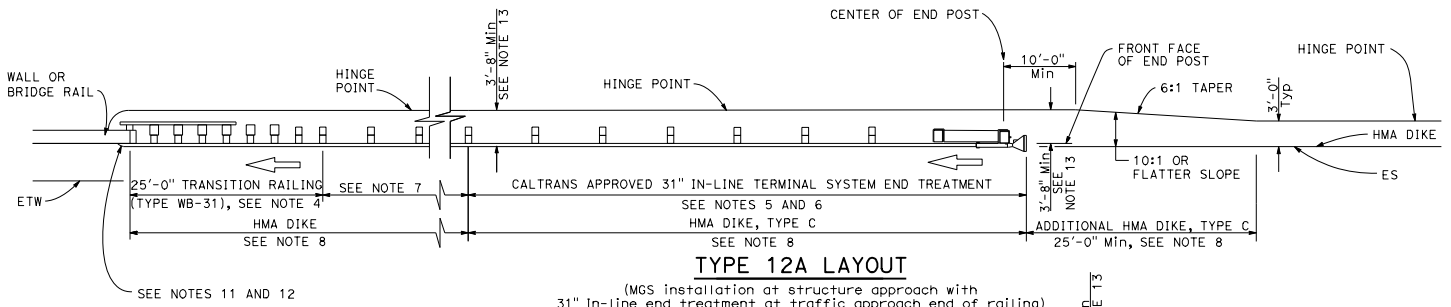
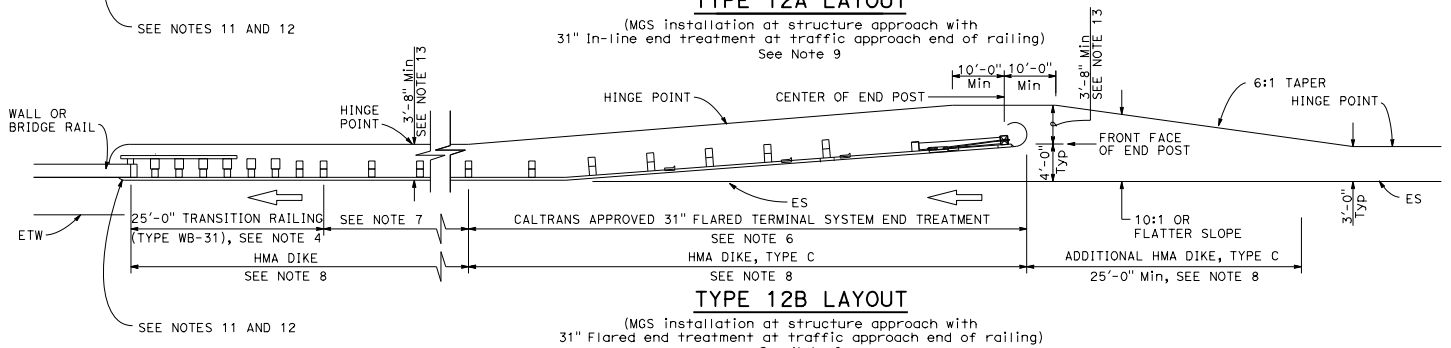


TYPE 12A LAYOUT

(MGS installation at structure approach with 31" In-line end treatment at traffic approach end of railing)
See Note 9



TYPE 12B LAYOUT

(MGS installation at structure approach with 31" Flared end treatment at traffic approach end of railing)
See Note 9

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. For Transition Railing (Type WB-31) details for Types 12A and 12B Layouts, see Standard Plan A77U4.
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height, side slopes, or other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatment. A 12.5 degree angle of departure can be drawn on the Project Plans from the edge of traveled way through the outer most point of the fixed object to determine the additional length of railing needed.
8. Where placement of dike is required with guard railing installations, see Standard Plan A77N4 for dike positioning details.
9. Type 12A or Type 12B Layouts are typically used:
   a. To the right of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
   b. To the left of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
   c. To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
   d. To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
10. See Revised Standard Plan RSP A77Q3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
11. For additional details of typical connections to bridge rail, see Connection Detail AA on Standard Plans A77U1 and A77U2 and Connection Detail FF on Standard Plans A77V1 and A77V2.
12. For additional details of a typical connection to walls or abutments, see Standard Plan A77U3.
13. Use this offset for 8" block. For 12" block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

RSP A77Q1 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77Q1 DATED OCTOBER 30, 2015 - PAGE 69 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77Q1

10-7-16

2015 REVISED STANDARD PLAN RSP A77Q1

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 — CIVIL — STATE OF CALIFORNIA

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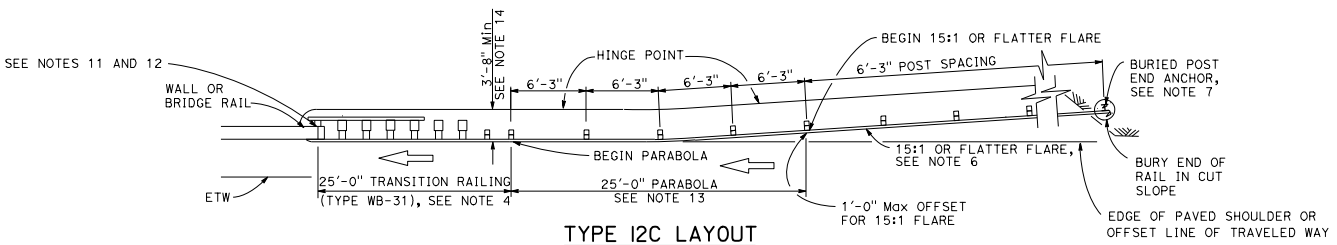
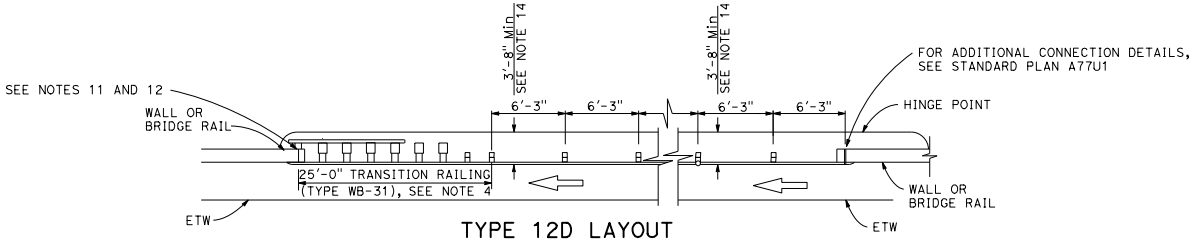


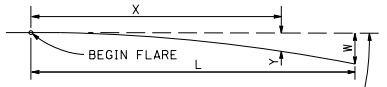
TYPE 12C LAYOUT

(MGS installation at structure approach with a
Buried end anchor treatment at traffic approach end of railing)
See Notes 8 and 9



TYPE 12D LAYOUT

(Continuous MGS installation between structures)
See Notes 5 and 9

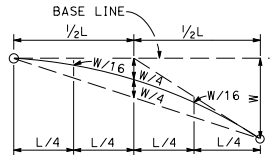


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

$Y = \frac{WX^2}{L^2}$

Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" m wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. For Transition Railing (Type WB-31) details for Types 12C and 12D Layouts, see Standard Plan A77U4.
5. Type 12D layout is typically used where continous MGS is recommended between structures.
6. The 15:1 or flatter flare for Type 12C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS with the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
7. For details of the buried post end anchor used with Type 12C Layout, see Standard Plan A77T2.
8. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
9. Type 12C Layout is typically used:
   a. To the right of approaching traffic, at the end of the structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
   b. To the left of approaching traffic, at each of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
   c. To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
   d. To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
10. See Revised Standard Plan RSP A77O3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
11. For additional details of typical connections to bridge rail, see Connection Detail AA on Standard Plans A77U1 and A77U2 and Connection Detail FF on Standard Plans A77V1 and A77V2.
12. For additional details of a typical connection to walls or abutments, see Standard Plan A77U3.
13. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
14. Use this offset for 8" block. For 12" block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH AND BETWEEN STRUCTURES

NO SCALE

RSP A77Q2 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77Q2
DATED OCTOBER 30, 2015 - PAGE 70 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77Q2

10-7-16

2015 REVISED STANDARD PLAN RSP A77Q2

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 — CIVIL — STATE OF CALIFORNIA

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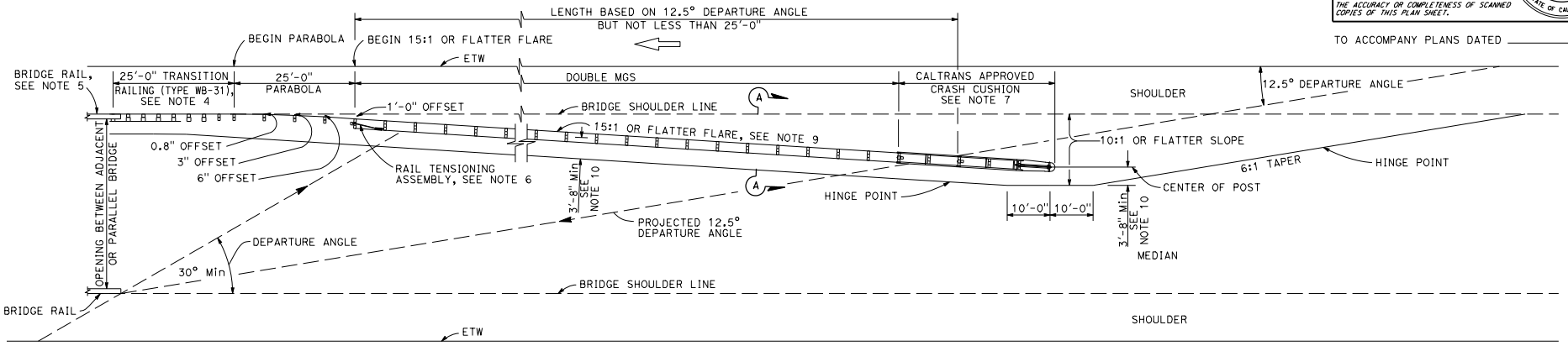
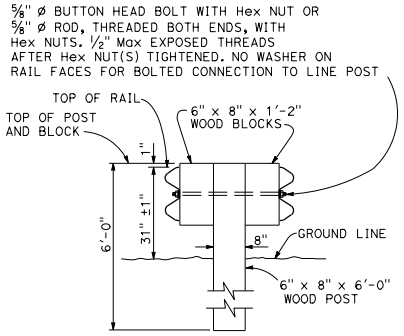


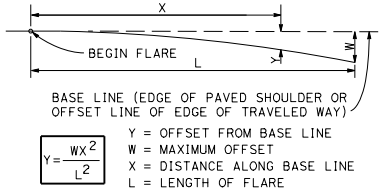
TYPE 12E LAYOUT

See Note 9



SECTION A-A

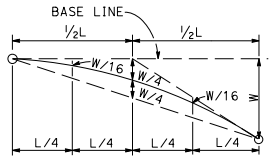
TYPICAL DOUBLE MIDWEST GUARDRAIL SYSTEM



$Y = \frac{WX^2}{L^2}$

Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2, and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. For Transition Railing (Type WB-31) details, see Standard Plan A77U4.
5. For additional details of a typical connection to bridge rail, see Connection Detail AA on Standard Plan A77U1.
6. For Rail Tensioning Assembly details, see Standard Plan A77S2.
7. The type of Crash Cushion to be used will be shown on the Project Plans.
8. Type 12E Layout is typically used left of approaching traffic at the end of each structure on multilane freeways or expressways where a median type barrier is not constructed between separated roadbeds.
9. The 15:1 or flatter flare is measured off of the edge of traveled way.
10. Use this offset for 8" block. For 12" block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

RSP A77Q3 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77Q3
DATED OCTOBER 30, 2015 - PAGE 71 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77Q3

11-8-16

2015 REVISED STANDARD PLAN RSP A77Q3

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-17
CIVIL
STATE OF CALIFORNIA

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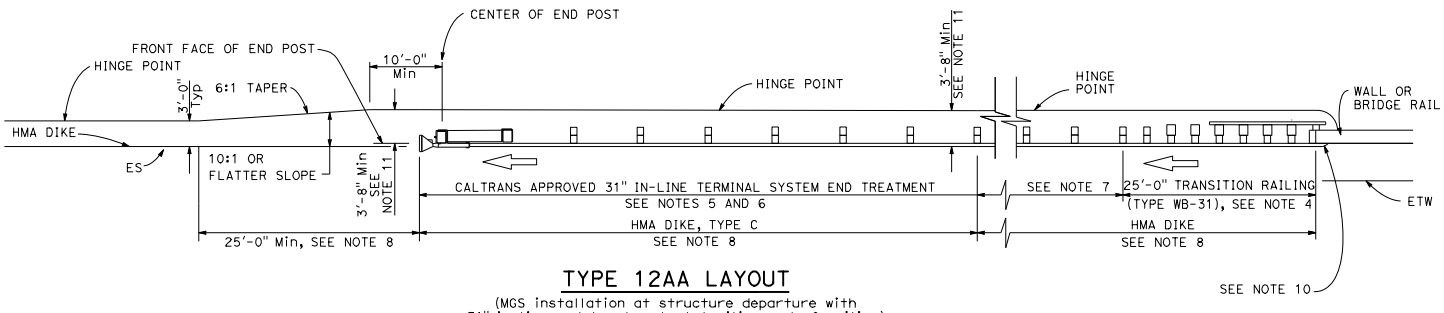
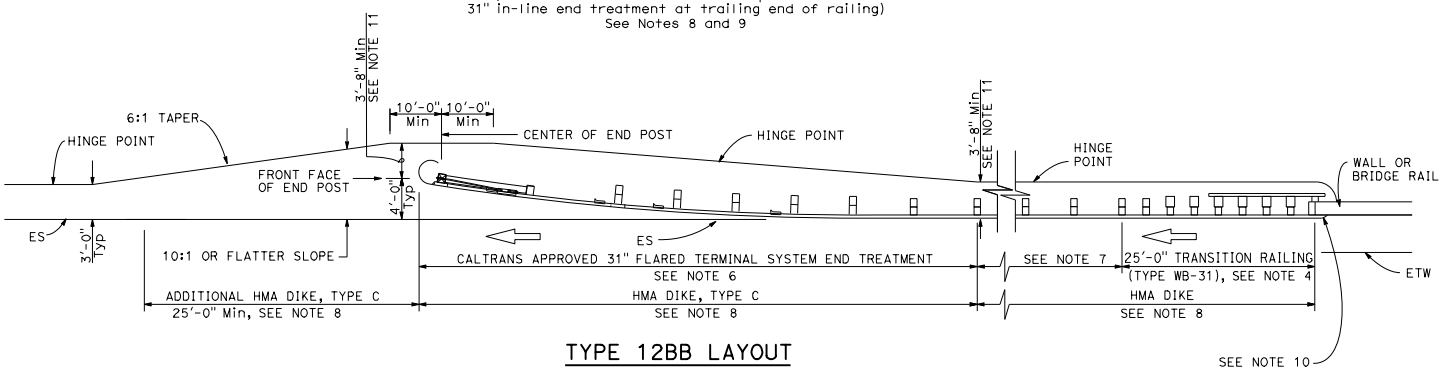


TYPE 12AA LAYOUT

(MGS installation at structure departure with
31" in-line end treatment at trailing end of railing)
See Notes 8 and 9



TYPE 12BB LAYOUT

(MGS installation at structure departure with
31" flared end treatment at trailing end of railing)
See Notes 8 and 9

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. For Transition Railing (Type WB-31) details for Types 12AA and 12BB Layouts, see Standard Plan A77U4.
5. 31" in-line terminal system treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system to be used will be shown on the Project Plans.
7. Dependent on site conditions (embankment height, side slopes, other fixed objects), it may be advisable to construct additional MGS (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and 31" end treatments.
8. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
9. Type 12AA or Type 12BB Layouts are typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
10. For additional details of typical connections to bridge rail, see Connection Detail CC on Standard Plan A77U2 and Connection Detail HH on Standard Plan A77V2.
11. Use this offset for 8" block. For 12" block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE DEPARTURE

NO SCALE

RSP A77Q4 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77Q4
DATED OCTOBER 30, 2015 - PAGE 72 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77Q4

10-7-16

2015 REVISED STANDARD PLAN RSP A77Q4

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

TO ACCOMPANY PLANS DATED _____

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

Randell D. Hiatt No. C50200 Exp. 6-30-17 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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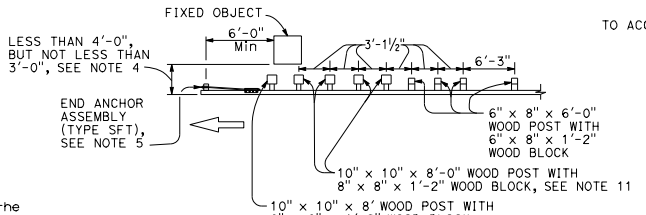
NOTES:

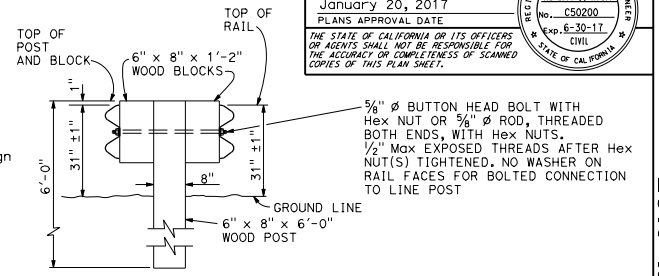
1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing of 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. For End Anchor Assembly (Type SFT) details, see Standard Plan A77S1.
6. For details of Rail Tensioning Assembly, see Standard Plan A77S2.
7. The type of crash cushion to be used will be shown on the Project Plans.
8. Type 14A layout is typically used on multilane freeways or expressways to shield fixed objects where a median type barrier is not constructed between the separated roadbeds.
9. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
10. The 15:1 or flatter flare is measured off of the edge of traveled way.
11. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic block may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".
12. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed objects.

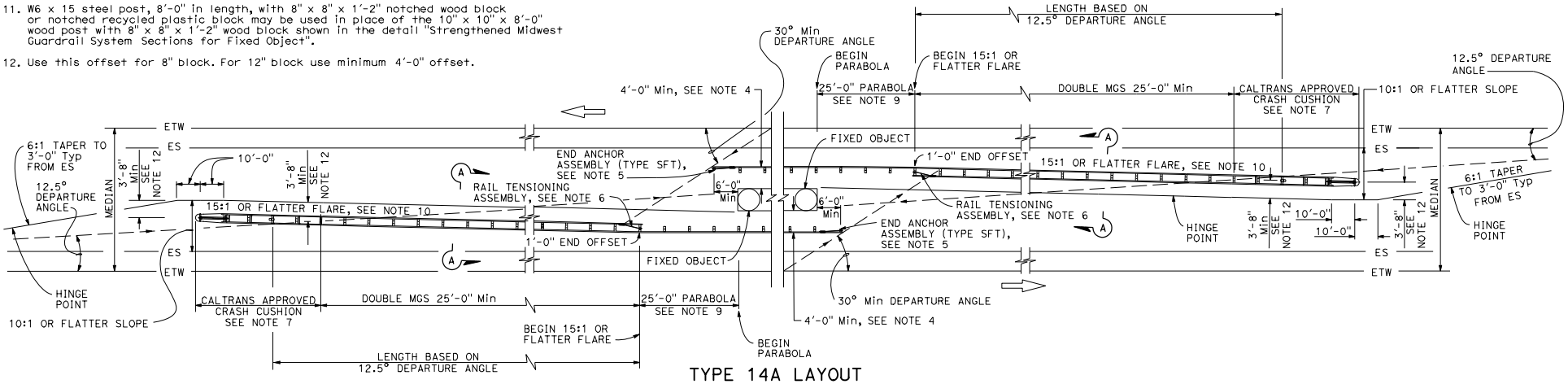
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with Type 14A layout where minimum clearance between the face of the railing and fixed object(s) is less than 4'-0", but not less than 3'-0", See Note 4.



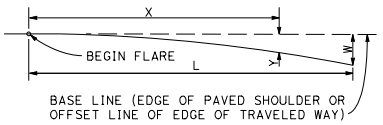
SECTION A-A

TYPICAL DOUBLE MIDWEST GUARDRAIL SYSTEM



TYPE 14A LAYOUT

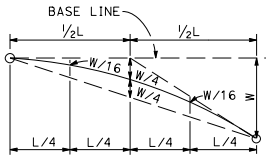
See Note 8



$Y = \frac{WX^2}{L^2}$

Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR FIXED OBJECTS BETWEEN SEPARATE ROADBEDS (TWO-WAY TRAFFIC)

NO SCALE

RSP A77R1 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77R1 DATED OCTOBER 30, 2015 - PAGE 74 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77R1

11-8-16

2015 REVISED STANDARD PLAN RSP A77R1

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 CIVIL — STATE OF CALIFORNIA

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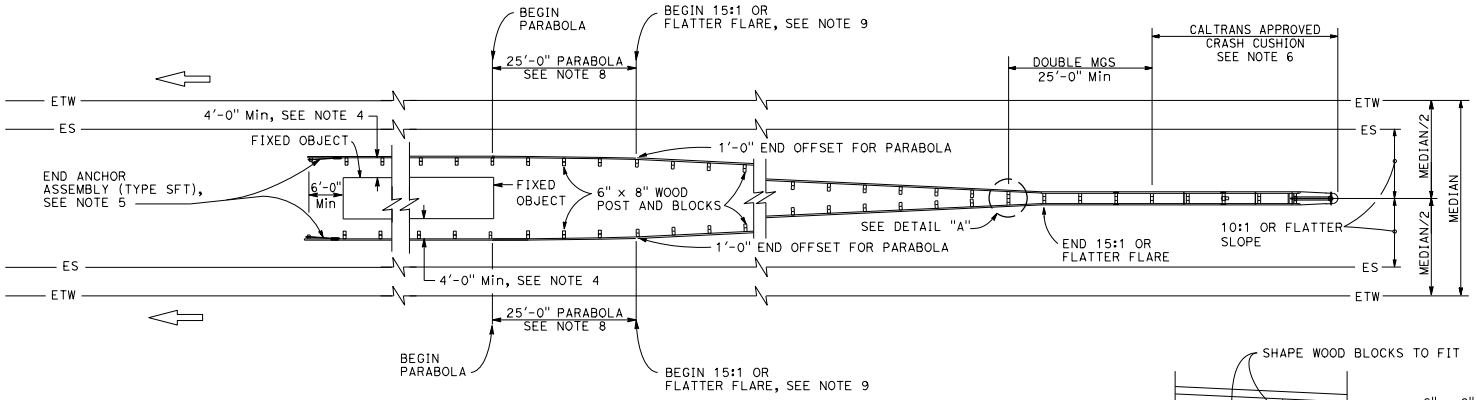
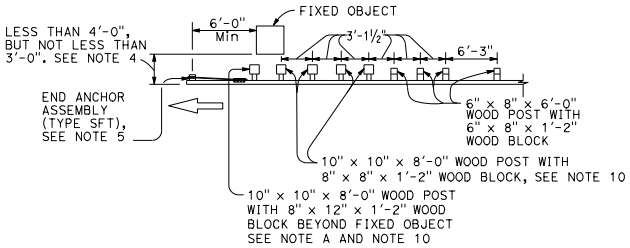
NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS section with post spacing of 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. For End Anchor Assembly (Type SFT) details, see Standard Plan A77S1.
6. Type of crash cushion to be used will be shown on the Project Plans.
7. Type 15A layout is typically used on multilane freeways or expressways to shield fixed objects in the area between separated one-way roadbeds.
8. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
9. The 15:1 or flatter flare is measured off of the edge of the traveled way.
10. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".



TYPE 15A LAYOUT

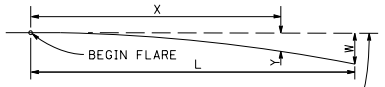
See Note 7



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed objects.

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

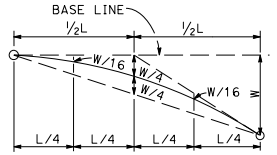
Use strengthened MGS sections with Type 15A layout where minimum clearance between the face of the MGS and the fixed object(s) is less than 4'-0", but not less than 3'-0". See Note 4.



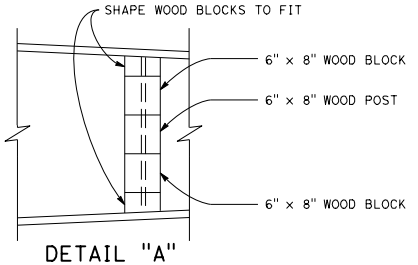
$$Y = \frac{WX^2}{L^2}$$

Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT



DETAIL "A"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR FIXED OBJECTS BETWEEN SEPARATE ROADBEDS (ONE-WAY TRAFFIC)

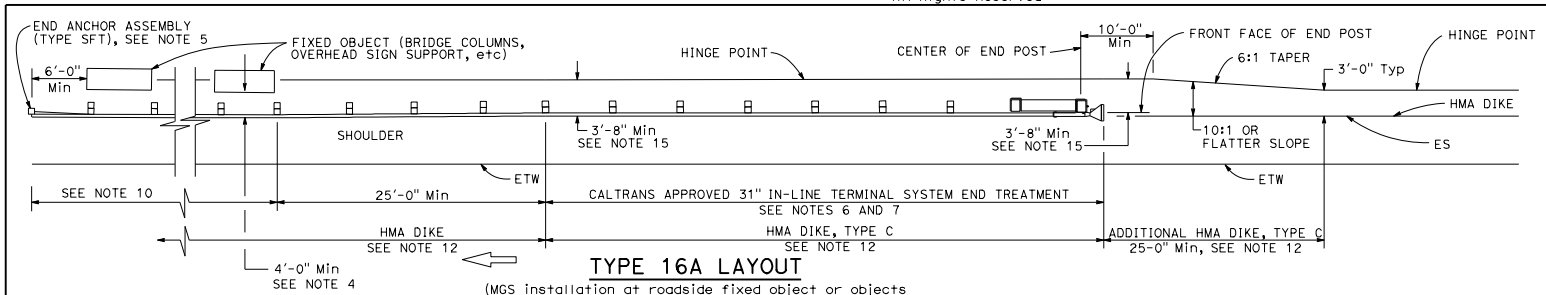
NO SCALE

RSP A77R2 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77R2 DATED OCTOBER 30, 2015 - PAGE 75 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77R2

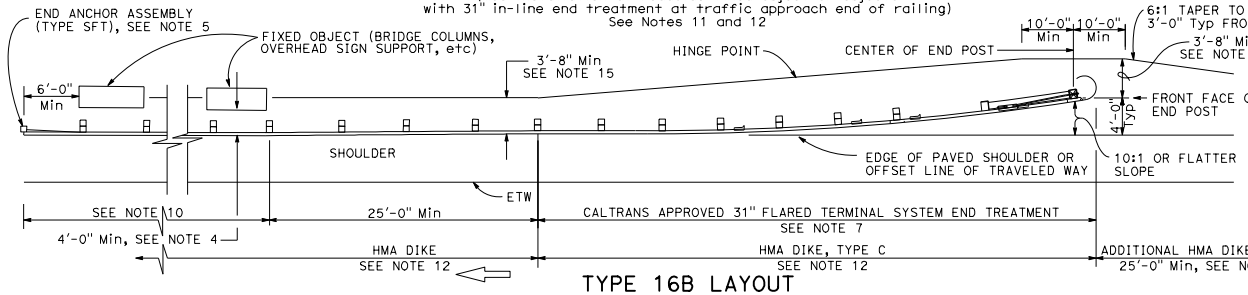
2015 REVISED STANDARD PLAN RSP A77R2

9-22-16



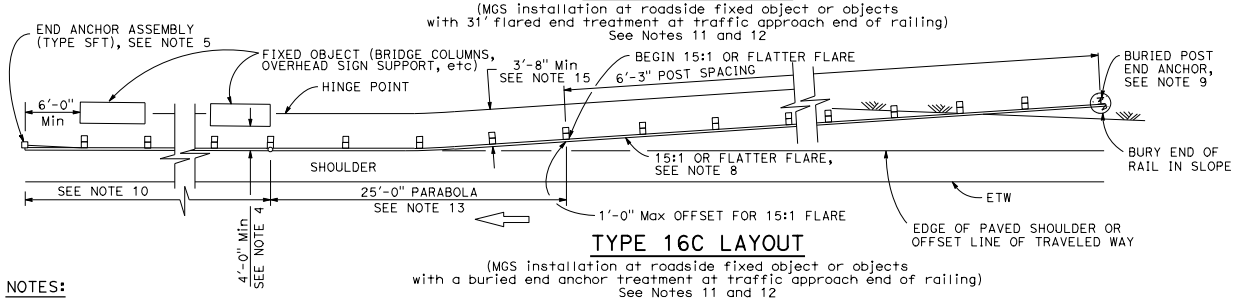
TYPE 16A LAYOUT

(MGS installation at roadside fixed object or objects with 31" in-line end treatment at traffic approach end of railing)
See Notes 11 and 12



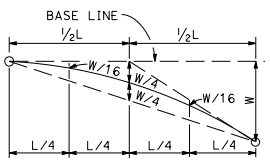
TYPE 16B LAYOUT

(MGS installation at roadside fixed object or objects with 31' flared end treatment at traffic approach end of railing)
See Notes 11 and 12

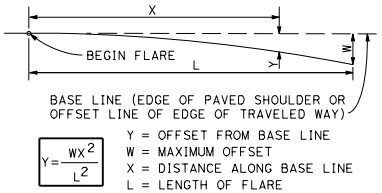


TYPE 16C LAYOUT

(MGS installation at roadside fixed object or objects with a buried end anchor treatment at traffic approach end of railing)
See Notes 11 and 12

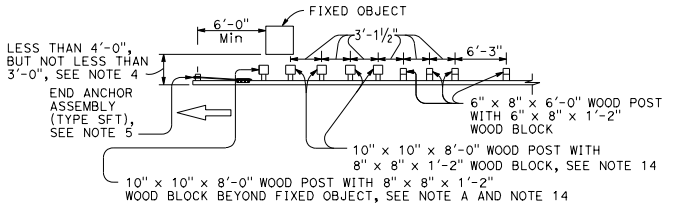


TYPICAL PARABOLIC LAYOUT



$$Y = \frac{WX^2}{L^2}$$

PARABOLIC FLARE OFFSETS



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed objects.

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with Types 16A, 16B or 16C layouts where minimum clearance between the face of the railing and fixed object(s) is less than 4'-0", but not less than 3'-0". See Note 4

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing of 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. For End Anchor Assembly (Type SFT) details, see Standard Plan A77S1.
6. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
7. The type of 31" terminal system to be used will be shown on the Project Plans.
8. The 15:1 or flatter flare used with Type 16C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
9. For details of the Buried Post End Anchor used with Type 16C Layout, see Standard Plan A77T2.
10. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
11. Layout Types 16A, 16B or 16C are typically used where MGS is recommended to shield roadside fixed object(s) and a crashworthy 31" end treatment is required for only one direction of traffic.
12. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.
13. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
14. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".
15. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R3 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77R3 DATED OCTOBER 30, 2015 - PAGE 76 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77R3

2015 REVISED STANDARD PLAN RSP A77R3

11-8-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-17 CIVIL — STATE OF CALIFORNIA

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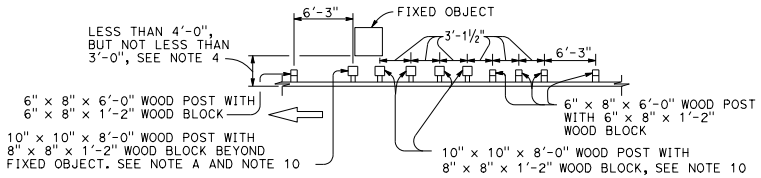
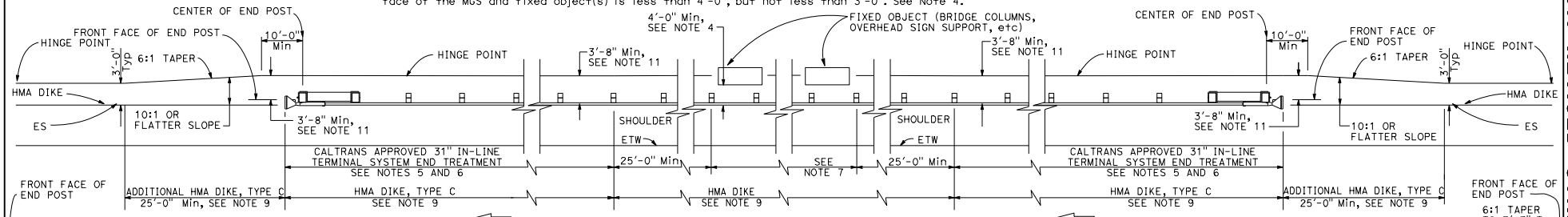
TO ACCOMPANY PLANS DATED _____



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed object(s).

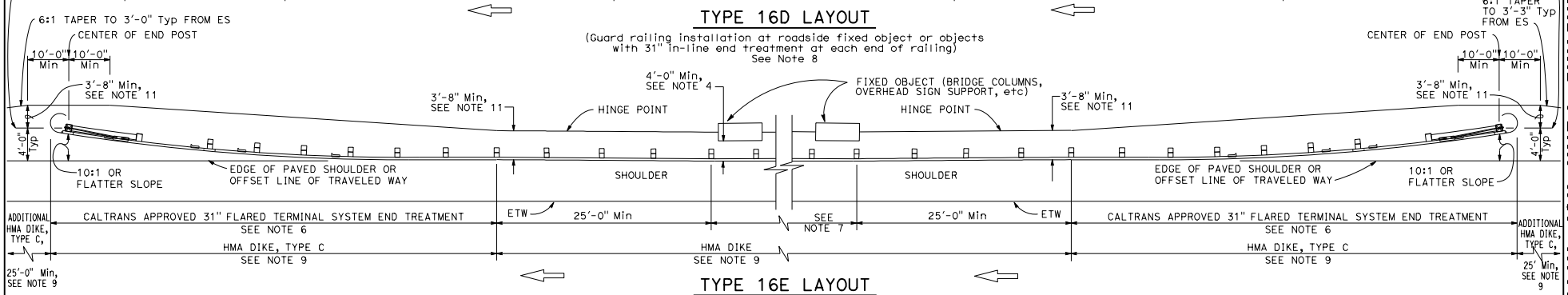
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with layout Types 16D or 16E where minimum clearance between the face of the MGS and fixed object(s) is less than 4'-0", but not less than 3'-0". See Note 4.



TYPE 16D LAYOUT

(Guard railing installation at roadside fixed object or objects with 31" in-line end treatment at each end of railing) See Note 8



TYPE 16E LAYOUT

(MGS installation at roadside fixed object or objects with 31" flared end treatment at each end of railing) See Note 8

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object". on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system to be used will be shown on the Project Plans.
7. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
8. Layout Types 16D through 16L, shown on the A77R Series of Standard Plans, are typically used where MGS is recommended to shield roadside fixed object(s) and a crashworthy 31" end treatment is required for both directions of traffic.
9. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.
10. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic block may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".
11. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R4 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77R4 DATED OCTOBER 30, 2015 - PAGE 77 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77R4

2015 REVISED STANDARD PLAN RSP A77R4

9-22-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-17
CIVIL
STATE OF CALIFORNIA

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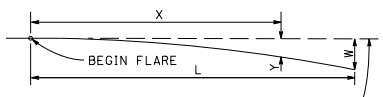
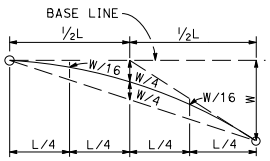
TO ACCOMPANY PLANS DATED _____



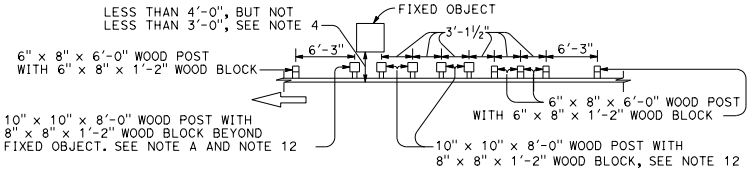
$Y = \frac{WX^2}{L^2}$

Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



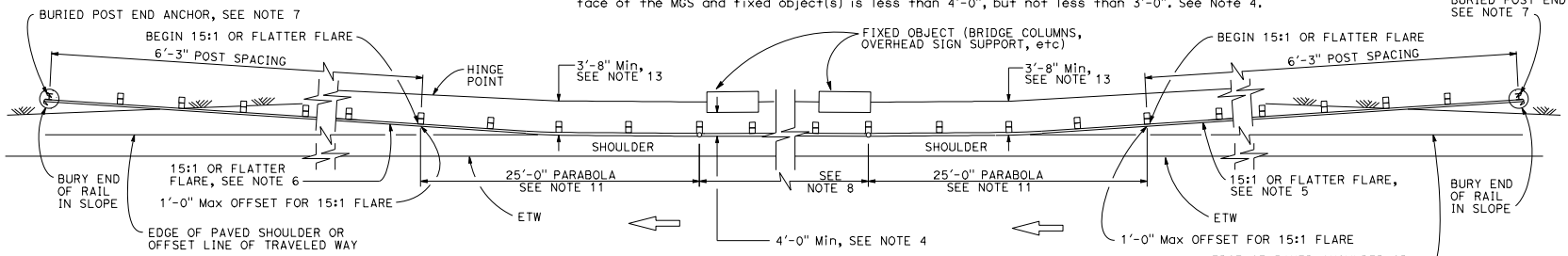
TYPICAL PARABOLIC LAYOUT



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed object(s).

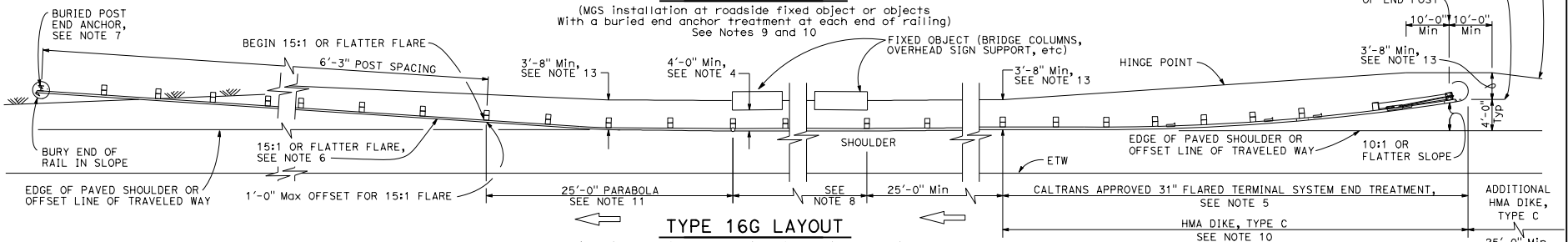
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with layout Types 16F or 16G where minimum clearance between the face of the MGS and fixed object(s) is less than 4'-0", but not less than 3'-0". See Note 4.



TYPE 16F LAYOUT

(MGS installation at roadside fixed object or objects With a buried end anchor treatment at each end of railing) See Notes 9 and 10



TYPE 16G LAYOUT

(MGS installation at roadside fixed object or objects with 31" flared end treatment and a buried end anchor treatment at the ends of railing) See Notes 9 and 10

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 8" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. The type of 31" terminal system to be used will be shown on the Project Plans.
6. The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
7. For details of the Buried Post End Anchor, see Standard Plan A77T2.
8. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
9. Layout Types 16D through 16L, shown on the A77R Series of Standard Plans, are typically used on highways where MGS is recommended to shield roadside fixed object(s) and a crashworthy 31" end treatment is required for both directions of traffic.
10. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.
11. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see RevisedStandard Plan RSP A77P1.
12. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".
13. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R5 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77R5 DATED OCTOBER 30, 2015 - PAGE 78 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77R5

2015 REVISED STANDARD PLAN RSP A77R5

9-22-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-17
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STATE OF CALIFORNIA

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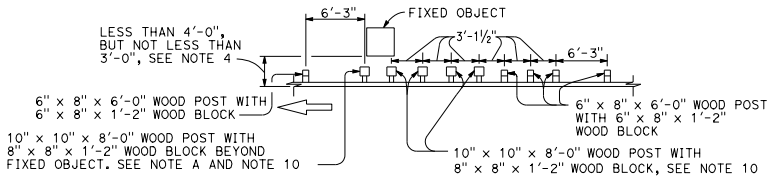
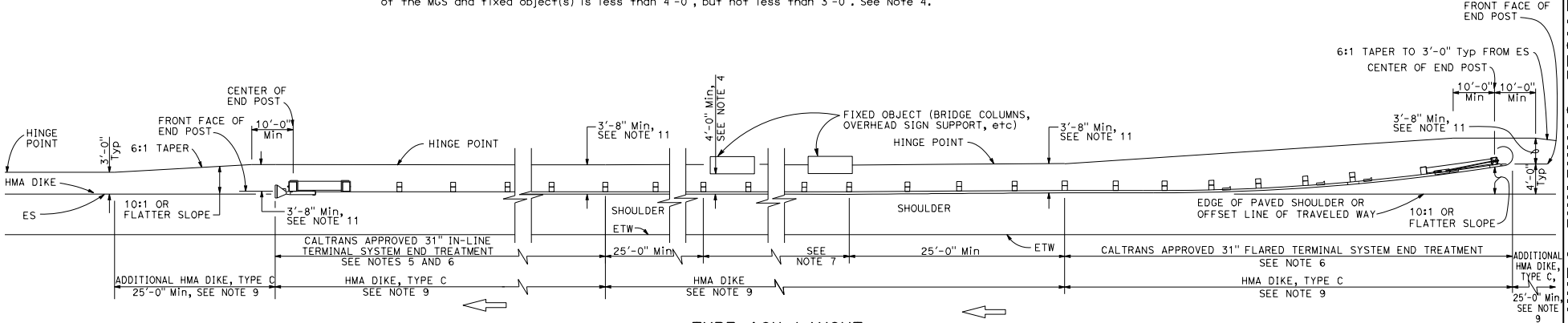


NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed object(s).

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with layout Type 16H where minimum clearance between the face of the MGS and fixed object(s) is less than 4'-0", but not less than 3'-0". See Note 4.



TYPE 16H LAYOUT

(MGS installation at roadside fixed object or objects with 31" flared end treatment and 31" in-line end treatment at the ends of railing) See Note 8

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system to be used will be shown on the Project Plans.
7. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
8. Layout Types 16D through 16L, shown on the A77R Series of Standard PLans, typically used where MGS is recommended to shield roadside fixed object(s) and a crashworthy 31" end treatment is required for both directions of traffic.
9. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.
10. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".
11. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R6 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77R6 DATED OCTOBER 30, 2015 - PAGE 79 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77R6

2015 REVISED STANDARD PLAN RSP A77R6

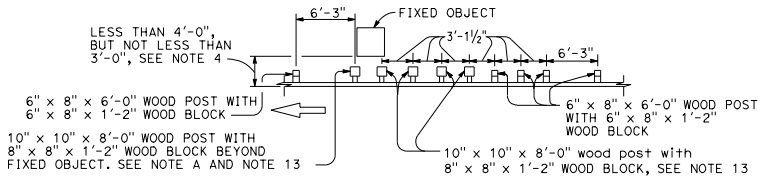
9-22-16

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER
January 20, 2017
PLANS APPROVAL DATE

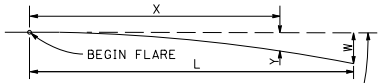
Randell D. Hiatt
No. C50200
Exp. 6-30-17
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed object(s).

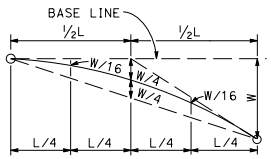
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT



$Y = \frac{WX^2}{L^2}$

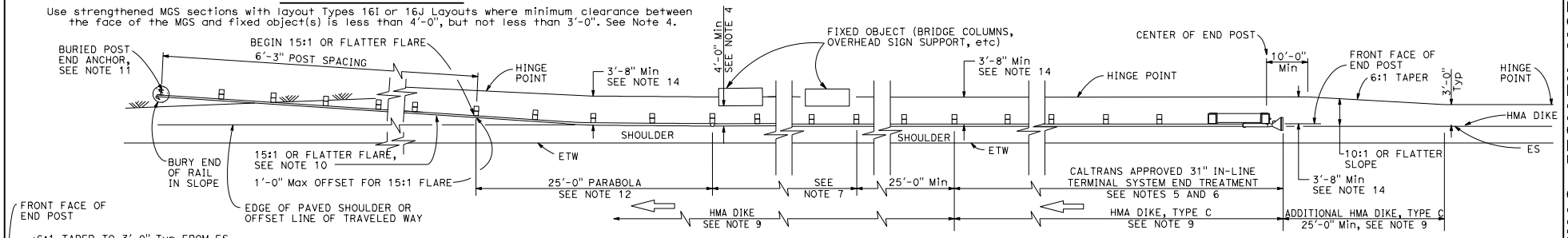
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



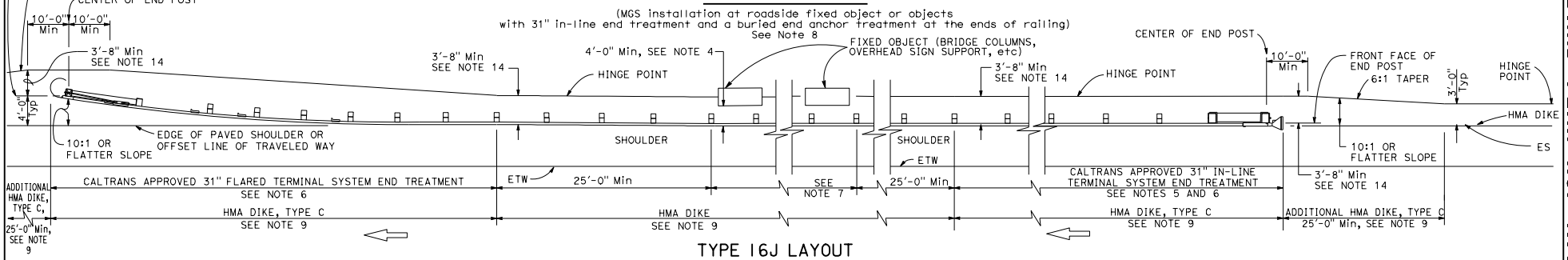
TYPICAL PARABOLIC LAYOUT

Use strengthened MGS sections with layout Types 16I or 16J Layouts where minimum clearance between the face of the MGS and fixed object(s) is less than 4'-0", but not less than 3'-0". See Note 4.



TYPE 16I LAYOUT

(MGS installation at roadside fixed object or objects with 31" in-line end treatment and a buried end anchor treatment at the ends of railing) See Note 8



TYPE 16J LAYOUT

(MGS installation at roadside fixed object or objects with a 31" in-line end treatment and a 31" flared end treatment at the ends of railing) See Note 8

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system to be used will be shown on the Project Plans.
7. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
8. Layout Types 16D through 16L, shown on the A77R Series of Standard Plans, are typically used where MGS is recommended to shield roadside fixed object(s) and a crashworthy 31" end treatment is required for both directions of traffic.
9. Where placement of dike is required with guard railing, see Standard Plan A77N4 for dike positioning details.
10. The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
11. For details of Buried Post End Anchor, see Standard Plan A77T2.
12. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
13. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".
14. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

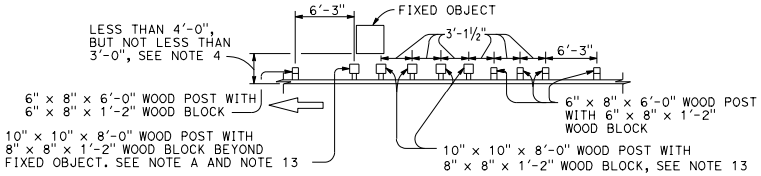
NO SCALE

RSP A77R7 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77R7 DATED OCTOBER 30, 2015 - PAGE 80 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77R7

2015 REVISED STANDARD PLAN RSP A77R7

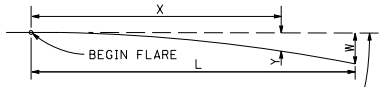
9-22-16



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1½" center to center spacing are to be used between fixed object(s).

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

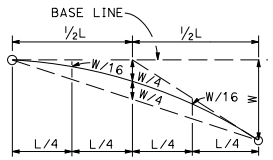
Use strengthened MGS sections with layout Types 16K or 16L layouts where minimum clearance between the face of the MGS and fixed object(s) is less than 4'-0", but not less than 3'-0". See Note 4.



$Y = \frac{WX^2}{L^2}$

Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-17
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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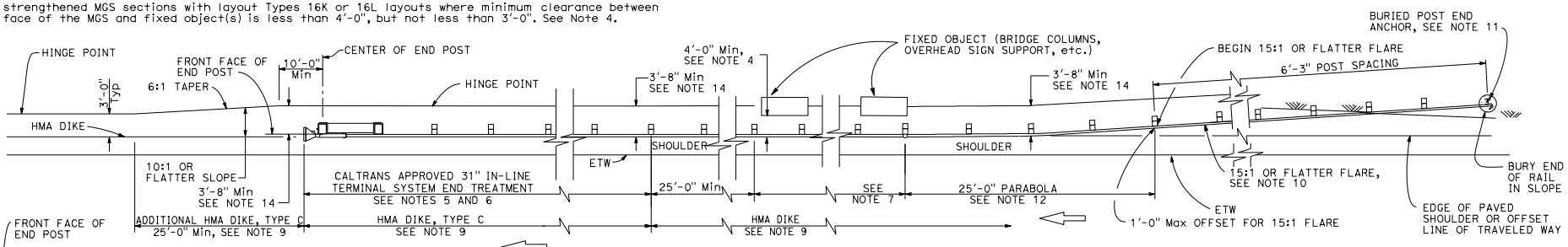
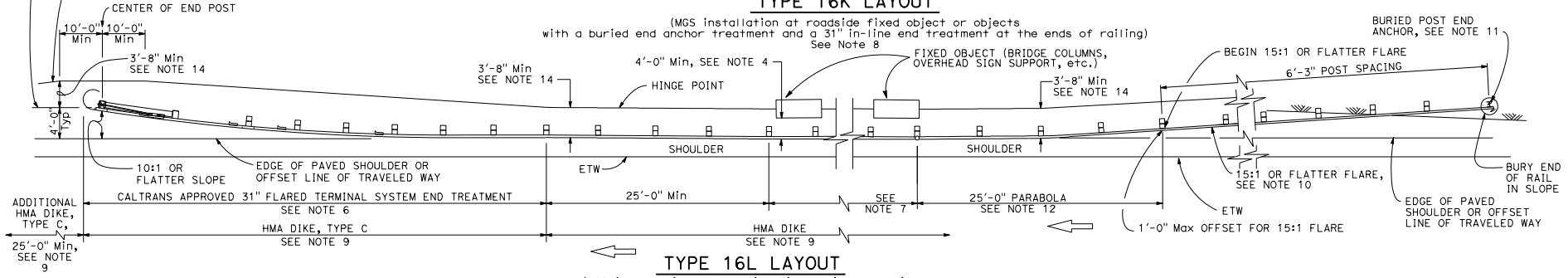
TO ACCOMPANY PLANS DATED _____



TYPE 16K LAYOUT

(MGS installation at roadside fixed object or objects with a buried end anchor treatment and a 31" in-line end treatment at the ends of railing) See Note 8



TYPE 16L LAYOUT

(MGS installation at roadside fixed object or objects with a buried end anchor treatment and a 31" flared end treatment at the ends of railing) See Note 8

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2 and Standard Plan A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
6. The type of 31" terminal system to be used will be shown on the Project Plans.
7. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
8. Layout Types 16D through 16L, shown on the A77R Series of Standard Plans are typically used where MGS is recommended to shield roadside fixed object(s) and a crashworthy 31" end treatment is required for both directions of traffic.
9. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.
10. The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
11. For details of Buried Post End Anchor, see Standard Plan A77T2.
12. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
13. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".
14. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R8 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77R8 DATED OCTOBER 30, 2015 - PAGE 81 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77R8

9-22-16

2015 REVISED STANDARD PLAN RSP A77R8

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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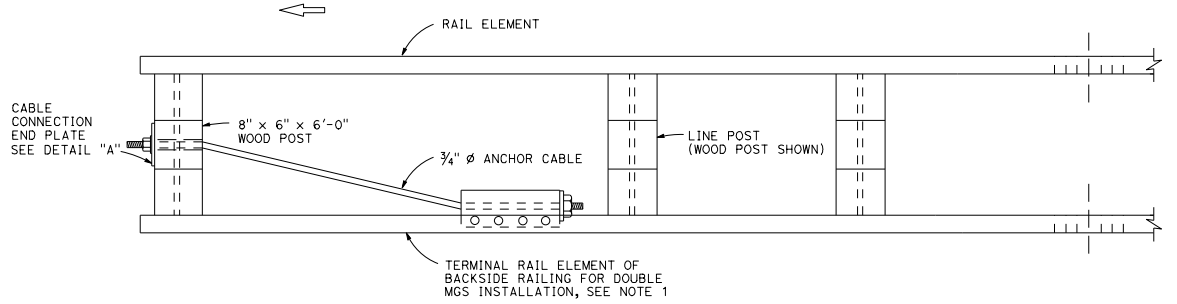
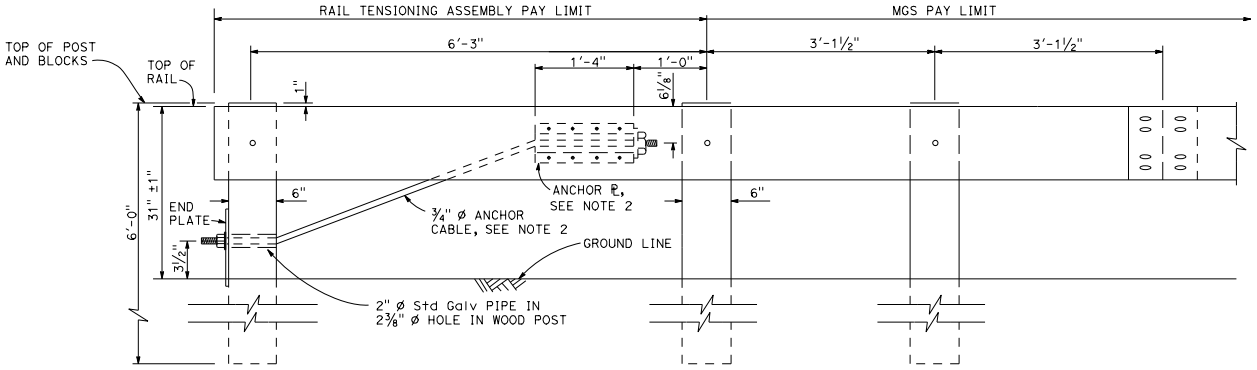


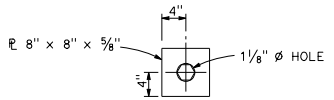
PLAN



ELEVATION
RAIL TENSIONING ASSEMBLY
See Note 1

NOTES:

1. See Standard Plans A77Q3 and A77R1 for typical use of rail tensioning assembly.
2. For details of the anchor plate and ¾" cable, see Standard Plan A77S3.



DETAIL "A"
CABLE CONNECTION END PLATE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
RAIL TENSIONING ASSEMBLY

NO SCALE

RSP A77S2 DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A77S2
DATED OCTOBER 30, 2015 - PAGE 83 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A77S2

2015 REVISED STANDARD PLAN RSP A77S2

1-17-18

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-17
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STATE OF CALIFORNIA

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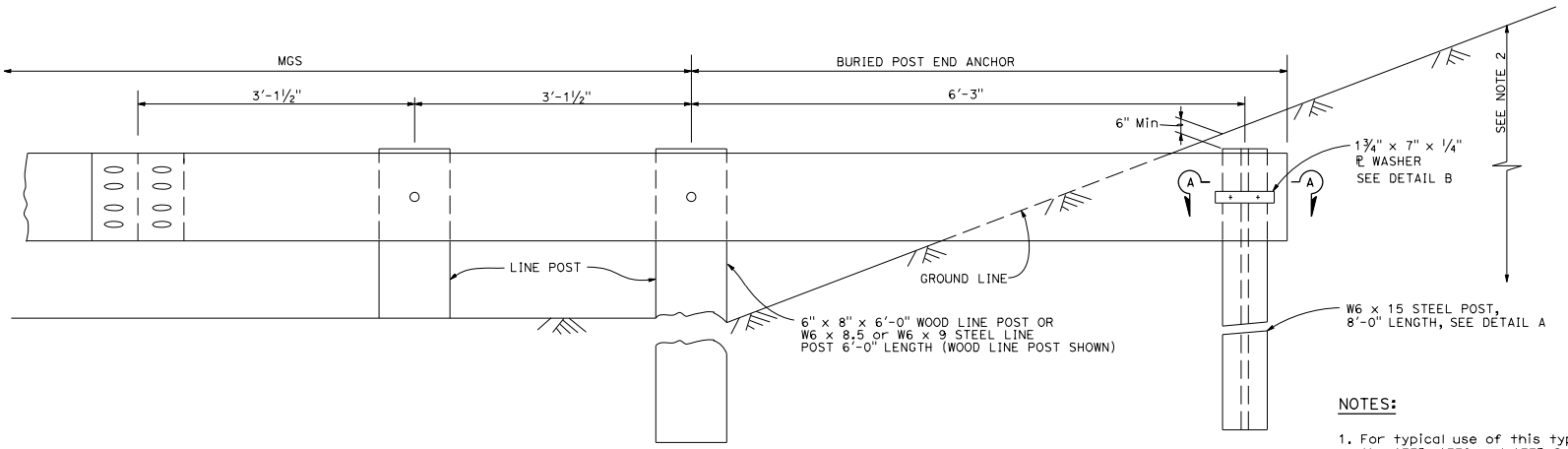
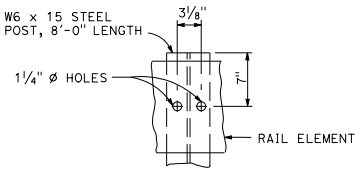


BURIED POST END ANCHOR

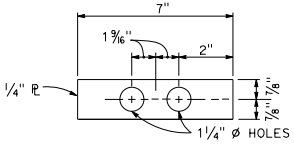
See Note 2

NOTES:

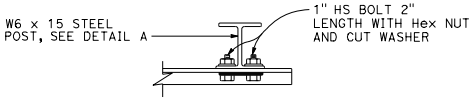
1. For typical use of this type of end anchor with MGS see the A77P, A77Q and A77R Series of the Standard Plans.
2. The buried post end anchor shall only be constructed at those locations where the slope perpendicular to the roadway is non-traversable.



DETAIL A



DETAIL B



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
BURIED POST END ANCHOR

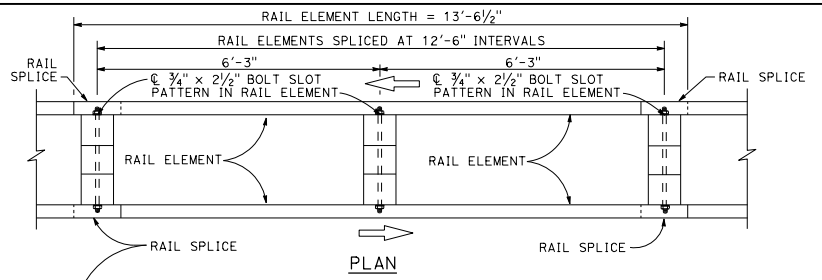
NO SCALE

RSP A77T2 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN A77T2
DATED OCTOBER 30, 2015 - PAGE 86 OF THE STANDARD PLANS BOOK DATED 2015.

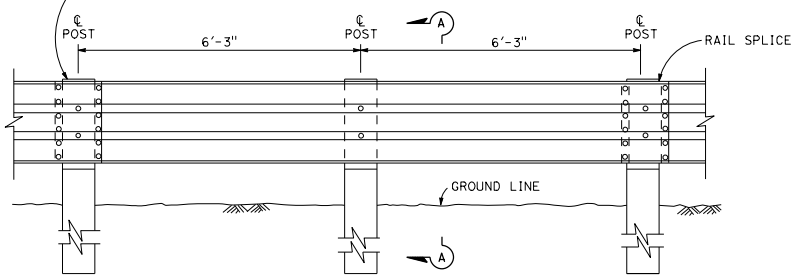
REVISED STANDARD PLAN RSP A77T2

2015 REVISED STANDARD PLAN RSP A77T2

11-17-16



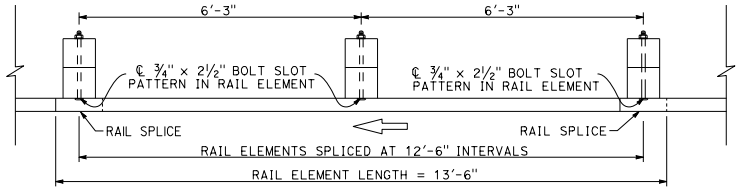
PLAN



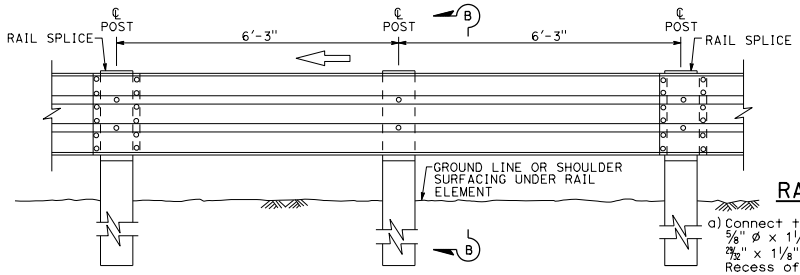
ELEVATION

DOUBLE THRIE BEAM BARRIER

(Wood post and blocks)
See Note 1



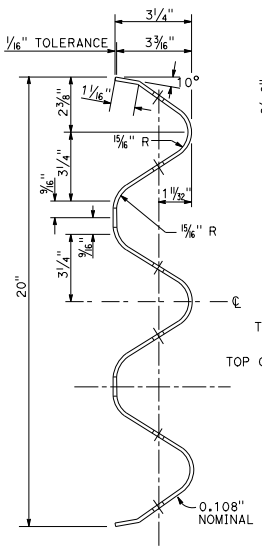
PLAN



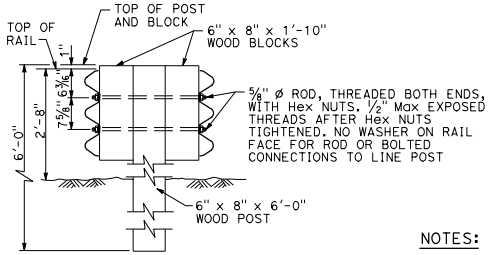
ELEVATION

SINGLE THRIE BEAM BARRIER

(Wood post and blocks)
See Note 1

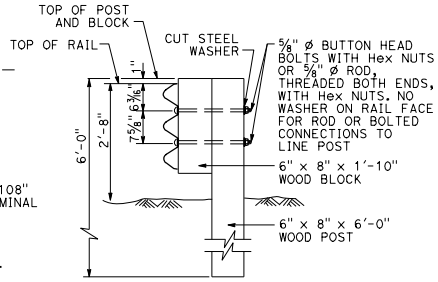


SECTION THRU
RAIL ELEMENT



SECTION A-A

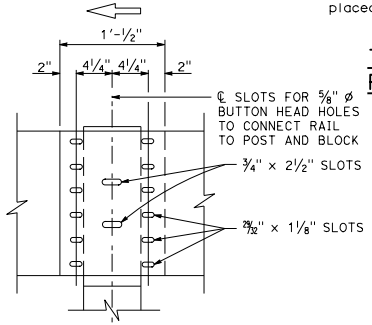
TYPICAL WOOD LINE POST INSTALLATION



Where bolts are used, install so that the threaded end of the bolts and nuts are placed away from traffic side of rail.

SECTION B-B

TYPICAL WOOD LINE POST INSTALLATION



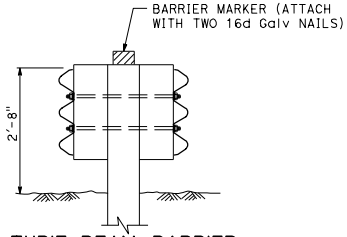
ELEVATION

RAIL ELEMENT SPLICE DETAIL

a) Connect the overlapped ends of the thrie beam rail elements with 5/8" ø x 1¼" button head oval shoulder bolts inserted into the 29/32" x 1⅛" slots and bolted together with 5/8" ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 12 bolts and nuts are to be used at each rail splice connection.

b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).

c) Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used. Where a return cap is to be attached to the ends of rail elements, a total of 8 of the above described splice bolts and nuts are to be used.



THRIE BEAM BARRIER DELINEATION

See Note 8

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. For details of steel post thrie beam barrier, see Standard Plan A78B.
2. For details of standard hardware, posts and blocks used to construct thrie beam barrier, see Standard Plan A78C1 and A78C2.
3. Thrie beam barrier post spacing to be 6'-3" center to center, except as otherwise noted.
4. Top of barrier rail to be 2'-8" above ground line or shoulder surfacing under the rail element.
5. For barrier end treatments and barrier connections, see Standard Plans A78E3 and A78G, and Standard Plans A78E1, A78E2, A77Q1, A77Q2 and A78H.
6. For connection to Concrete Barrier (Type 60M), see Revised Standard Plans RSP A78I.
7. For details of thrie beam barrier on bridge see Standard Plan A78D2. For details of thrie beam barrier at fixed object, see Standard Plan A78D1.
8. See Project Plans for barrier delineation locations.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

THRIE BEAM BARRIER STANDARD BARRIER RAILING SECTION (WOOD POST WITH WOOD BLOCK)

NO SCALE

RSP A78A DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A78A DATED OCTOBER 30, 2015 - PAGE 94 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78A

2015 REVISED STANDARD PLAN RSP A78A

11-7-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
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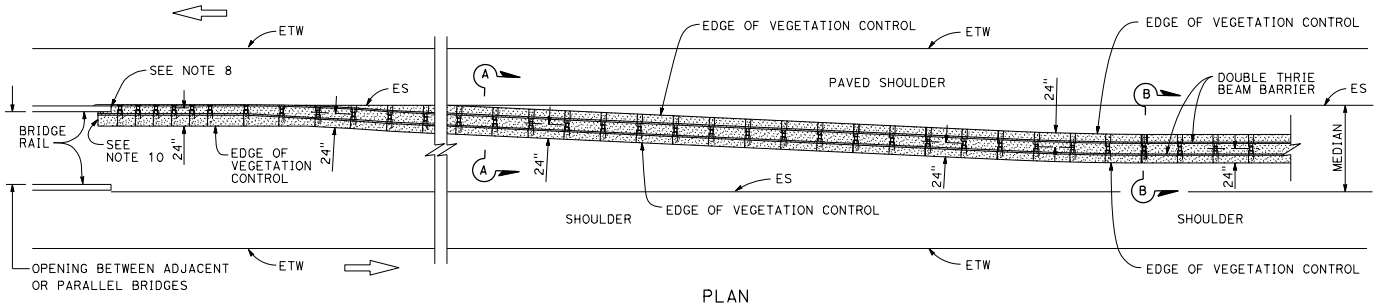
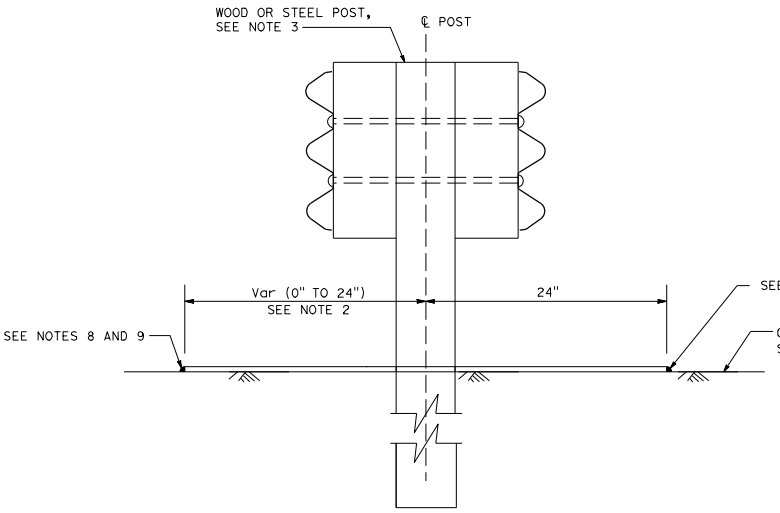
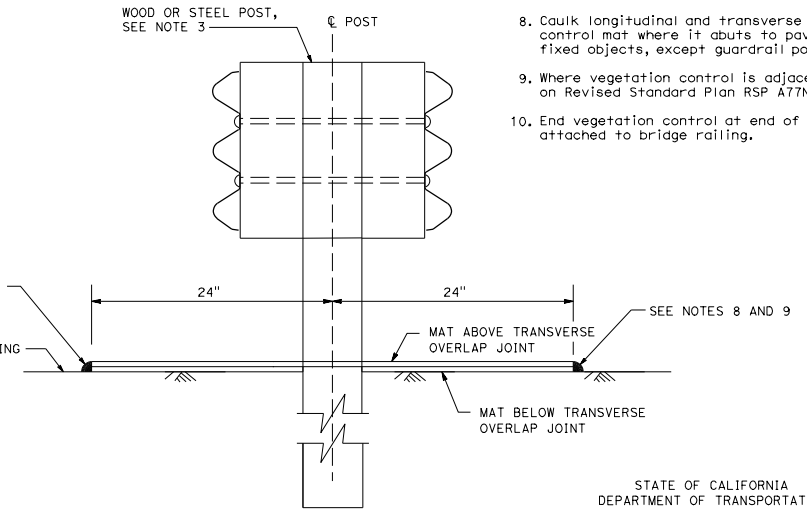


PLAN



SECTION A-A



SECTION B-B

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Standard Plan A78C2.
4. For details not shown, see Standard Plans A78A and A78B.
5. This plan for vegetation control installation only.
6. Vegetation control must slope in direction of water flow.
7. Place longitudinal and transverse overlap joint within the limits of vegetation control where applicable.
8. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
9. Where vegetation control is adjacent to a dike, see details on Revised Standard Plan RSP A77N12.
10. End vegetation control at end of backside rail element attached to bridge railing.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL THRIE BEAM BARRIER AT STRUCTURE APPROACH

NO SCALE

RSP A78C10 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78C10

2015 REVISED STANDARD PLAN RSP A78C10

1-11-18

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
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STATE OF CALIFORNIA

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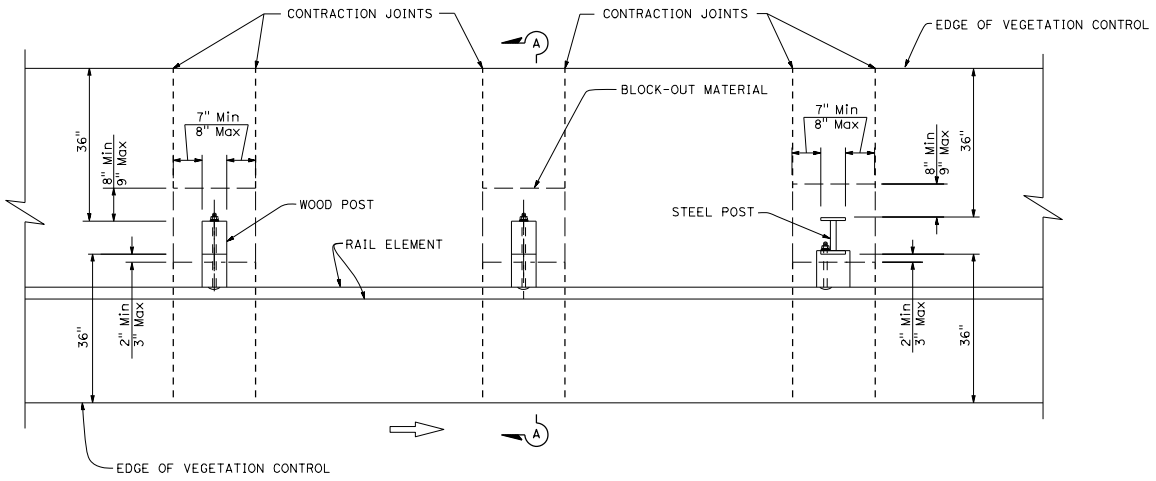
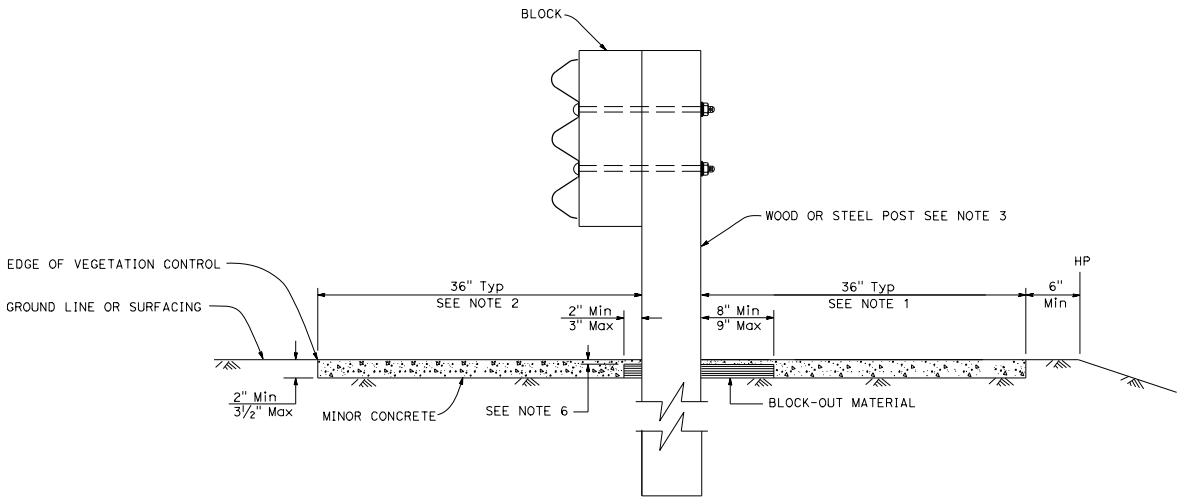


PLAN



SECTION A-A

NOTES:

1. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Standard Plan A78C2.
4. For details not shown, see Standard Plans A78A and A78B.
5. This plan for vegetation control installation only.
6. Concrete over block-out material depth, ⅜" Min to ⅝" Max.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL SINGLE THRIE BEAM BARRIER

NO SCALE

RSP A78C3 DATED JULY 20, 2018 SUPERSEDES RSP A78C3 DATED JULY 21, 2017 AND STANDARD PLAN A78C3 DATED OCTOBER 30, 2015 - PAGE 98 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78C3

2015 REVISED STANDARD PLAN RSP A78C3

12-12-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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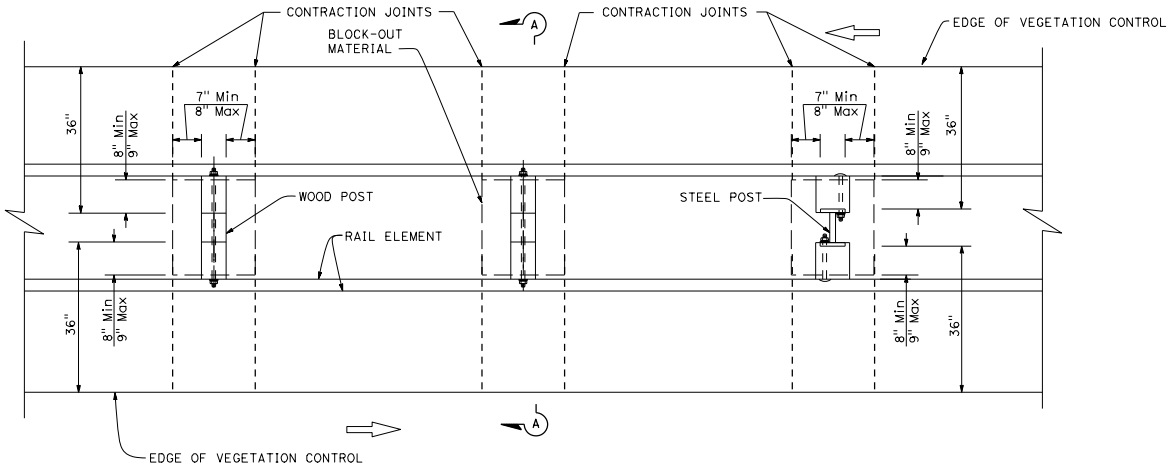
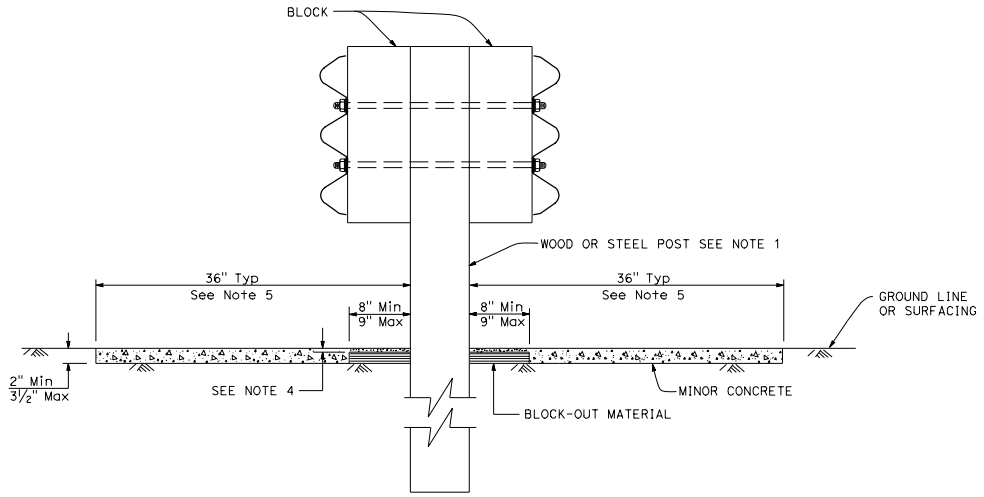


PLAN



SECTION A-A

NOTES:

1. For wood and steel post sizes, see Standard Plan A78C2.
2. For details not shown, see Standard Plans A78A and A78B.
3. This plan for vegetation control installation only.
4. Concrete over block-out material depth, ⅜" Min to ⅝" Max.
5. Vegetation control must not conflict with drainage facilities.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL DOUBLE THRIE BEAM BARRIER

NO SCALE

RSP A78C4 DATED APRIL 20, 2018 SUPERSEDES RSP A78C4 DATED JULY 21, 2017 AND STANDARD PLAN A78C4 DATED OCTOBER 30, 2015 - PAGE 99 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78C4

2015 REVISED STANDARD PLAN RSP A78C4

12-12-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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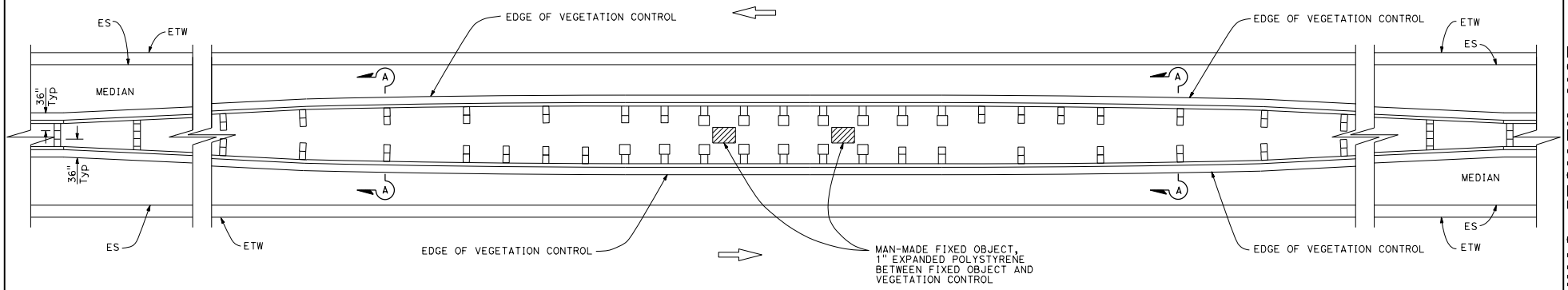
TO ACCOMPANY PLANS DATED _____



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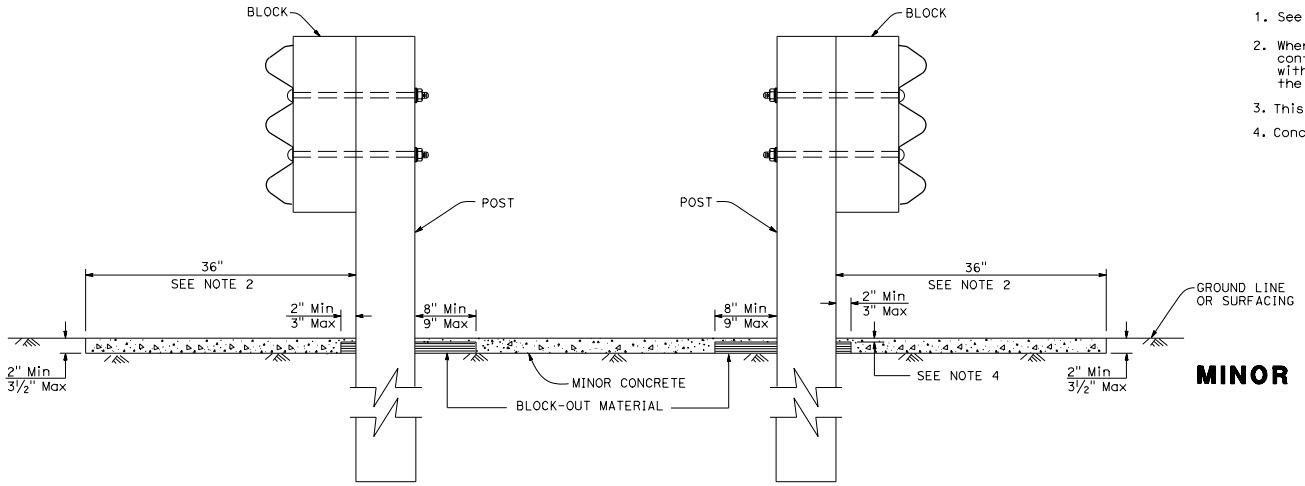

SECTION A-A

NOTES:

1. See Revised Standard Plan RSP A78C3 for additional vegetation control.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. This plan for vegetation control installation only.
4. Concrete over block-out material depth, ⅜" Min to ⅝" Max.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL THRIE BEAM BARRIER AT FIXED OBJECTS IN MEDIAN

NO SCALE

RSP A78C5 DATED APRIL 20, 2018 SUPERSEDES RSP A78C5 DATED JULY 21, 2017 AND STANDARD PLAN A78C5 DATED OCTOBER 30, 2015 - PAGE 100 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78C5

2015 REVISED STANDARD PLAN RSP A78C5

12-12-17

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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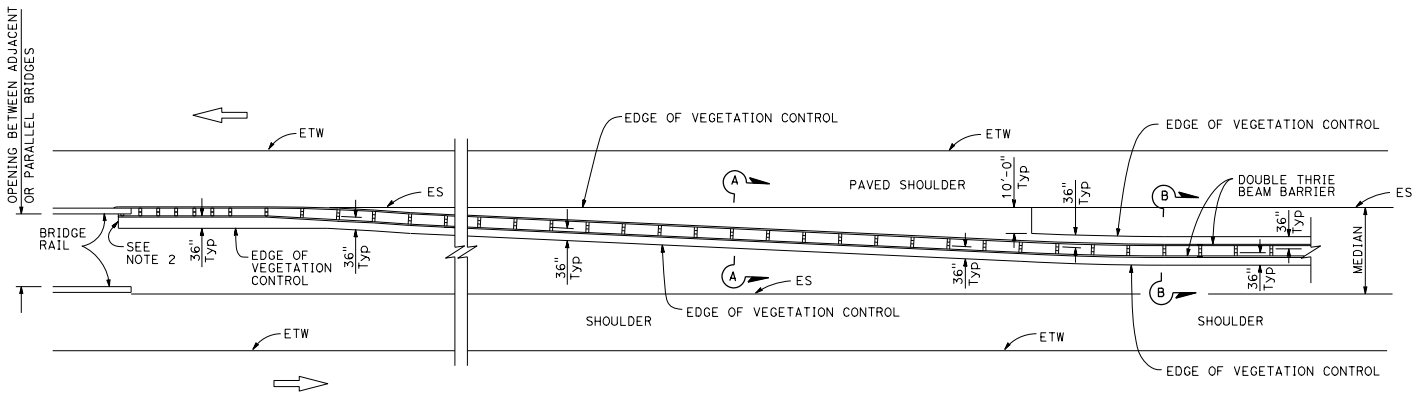
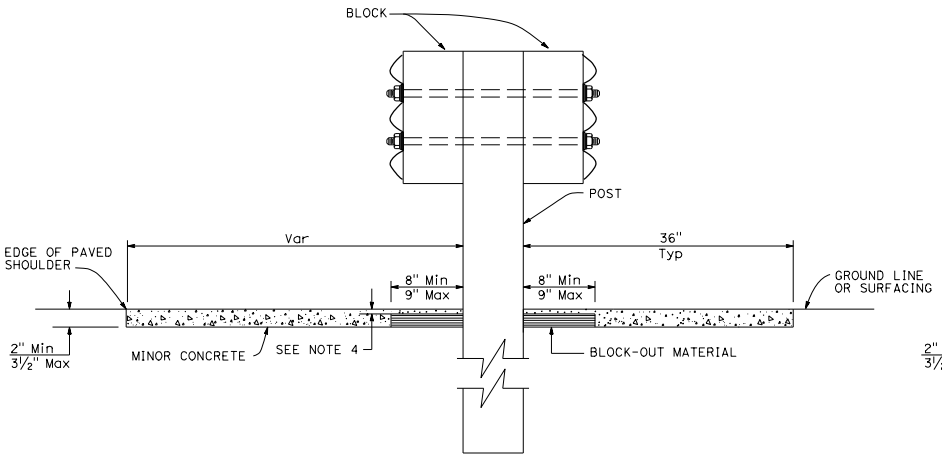


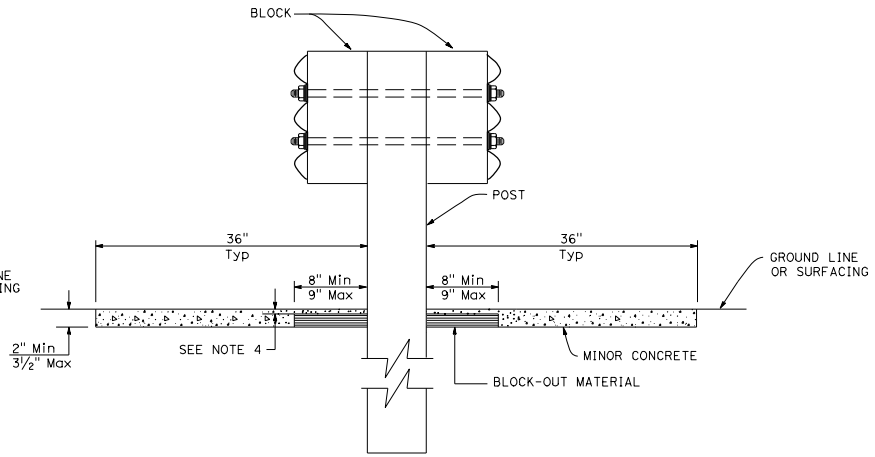
PLAN

NOTES:

1. See Revised Standard Plan RSP A78C4 for additional vegetation control details.
2. End vegetation control at end of backside rail element attached to bridge railing.
3. This plan for vegetation control installation only.
4. Concrete over block-out material depth, 3/8" Min to 5/8" Max.



SECTION A-A



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL THRIE BEAM BARRIER AT STRUCTURE APPROACH

NO SCALE

RSP A78C6 DATED APRIL 20, 2018 SUPERSEDES RSP A78C6 DATED JULY 21, 2017 AND STANDARD PLAN A78C6 DATED OCTOBER 30, 2015 - PAGE 101 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78C6

12-12-17

2015 REVISED STANDARD PLAN RSP A78C6

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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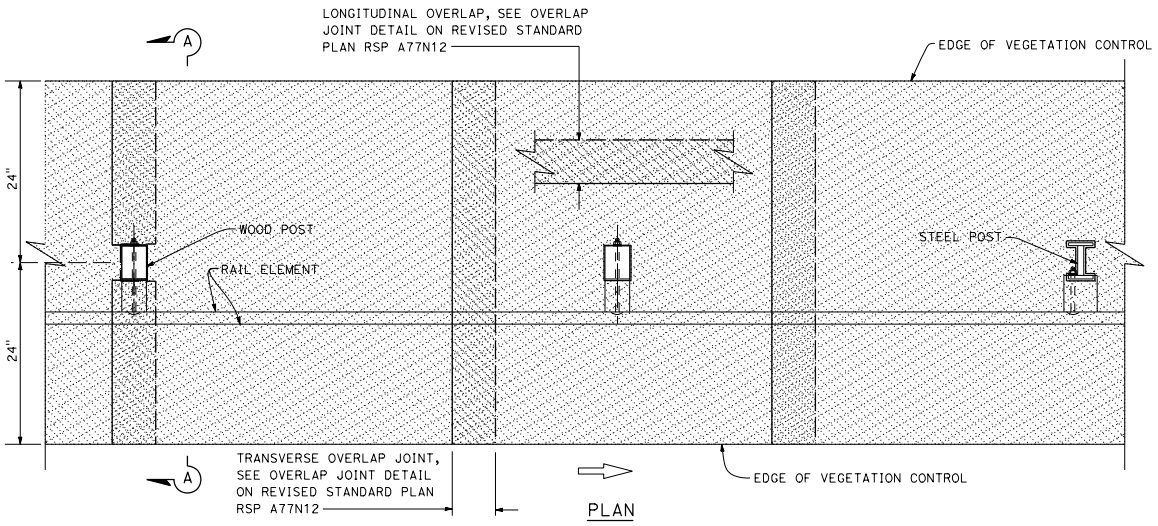
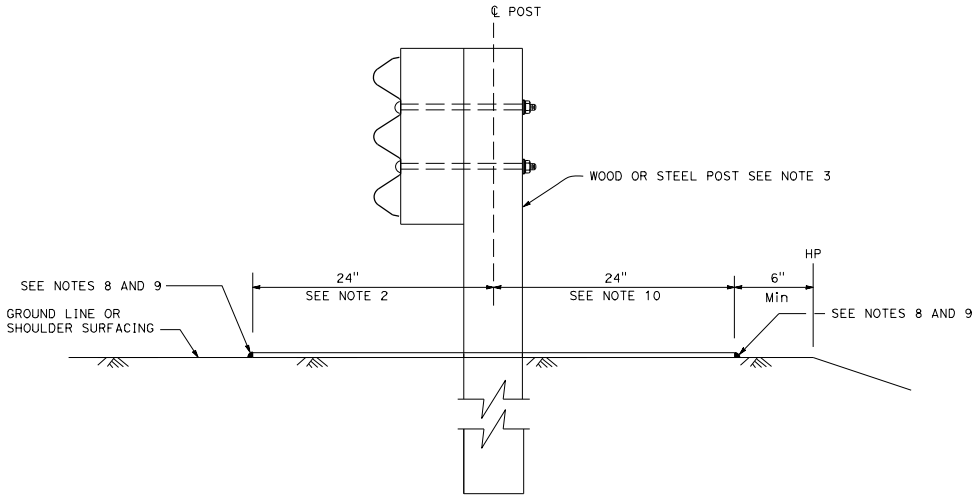


PLAN



SECTION A-A

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Standard Plan A78C2.
4. For details not shown, see Revised Standard Plan RSP A78A and Standard Plan A78B.
5. This plan for vegetation control installation only.
6. Vegetation control must slope in direction of water flow.
7. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
8. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
9. Where vegetation control is adjacent to a dike, see details on Revised Standard Plan RSP A77N12.
10. Where the distance between center of post and hinge point is less than 30", construct vegetation control to 6" from the hinge point. For narrow installation, see Revised Standard Plan RSP A77N13.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL SINGLE THRIE BEAM BARRIER

NO SCALE

RSP A78C7 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78C7

2015 REVISED STANDARD PLAN RSP A78C7

1-11-18

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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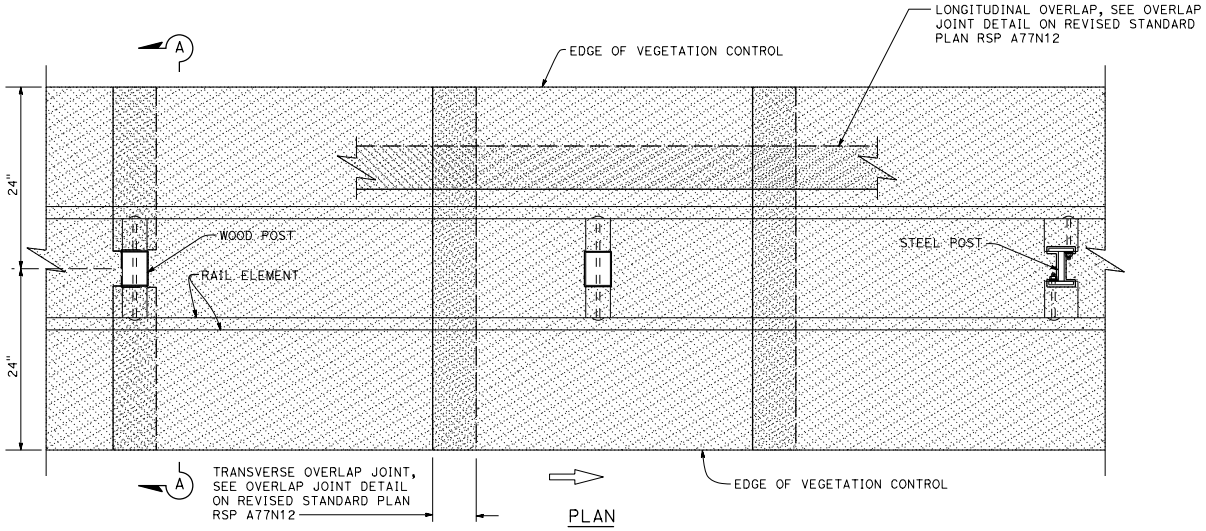
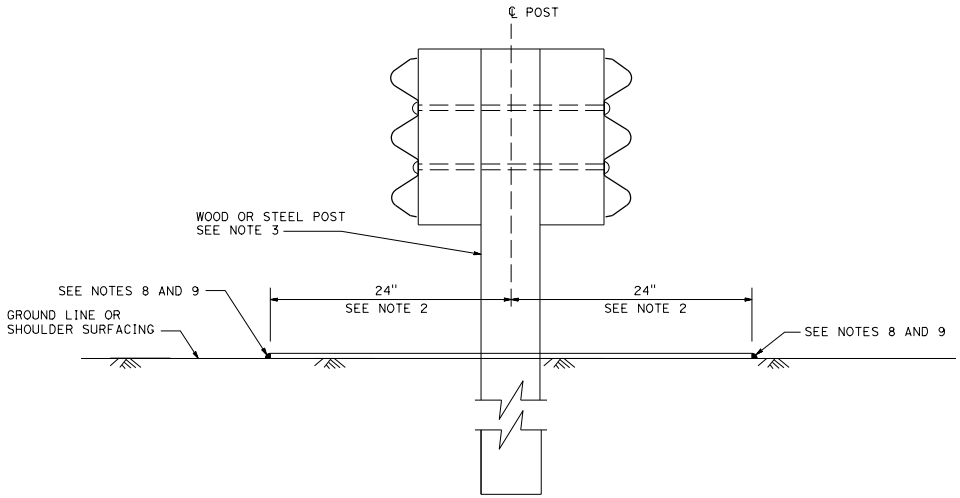


PLAN



SECTION A-A

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Standard Plan A78C2.
4. For details not shown, see Revised Standard Plan RSP A78A and Standard Plan A78B.
5. This plan for vegetation control installation only.
6. Vegetation control must slope in direction of water flow.
7. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
8. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
9. Where vegetation control is adjacent to a dike, see details on Revised Standard Plan RSP A77N12.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL DOUBLE THRIE BEAM BARRIER

NO SCALE

RSP A78C8 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78C8

2015 REVISED STANDARD PLAN RSP A78C8

1-10-18

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

Chi H. Wong
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Chi H. Wong
No. C054738
Exp. 12-31-19
CIVIL
STATE OF CALIFORNIA

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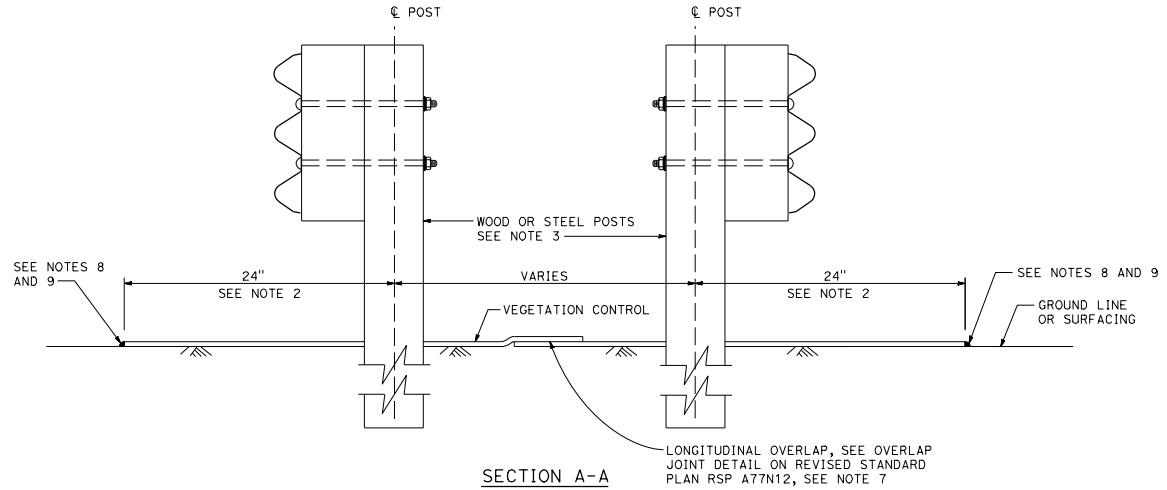
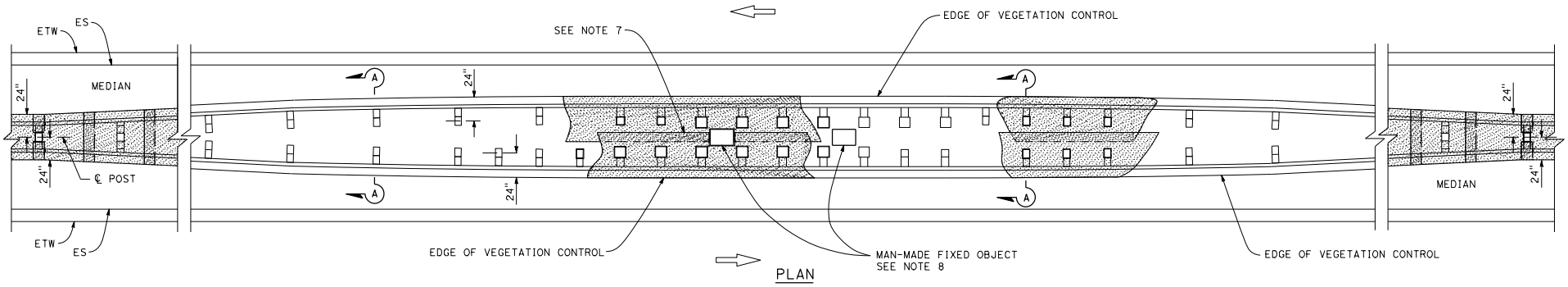


SECTION A-A

NOTES:

1. For additional vegetation control details, see Revised Standard Plan RSP A77N12.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Standard Plan A78C2.
4. For details not shown, see Revised Standard Plan RSP A78A and Standard Plan A78B.
5. This plan for vegetation control installation only.
6. Vegetation control must slope in direction of water flow.
7. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
8. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
9. Where vegetation control is adjacent to a dike, see details on Revised Standard Plan RSP A77N12.



PLAN

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL THRIE BEAM BARRIER AT FIXED OBJECTS IN MEDIAN

NO SCALE

RSP A78C9 DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A78C9

2015 REVISED STANDARD PLAN RSP A78C9

1-12-18

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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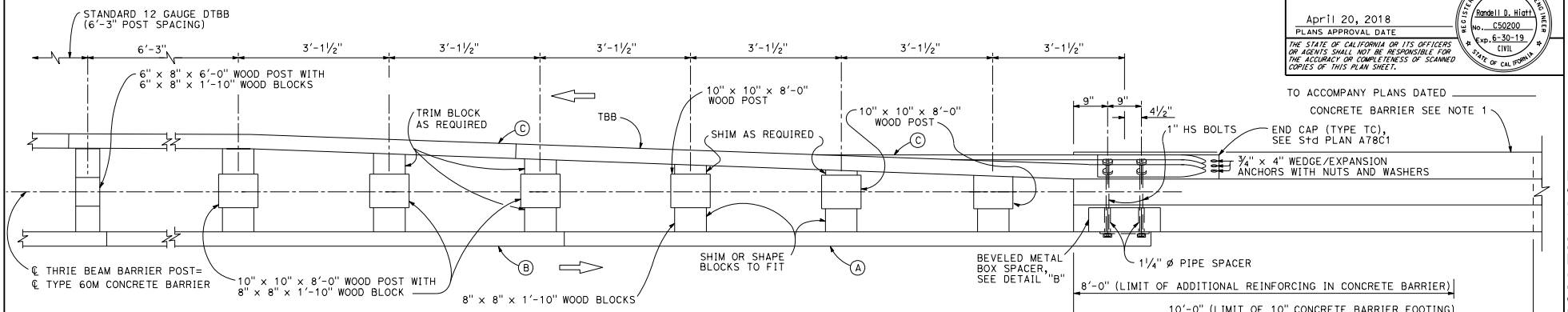
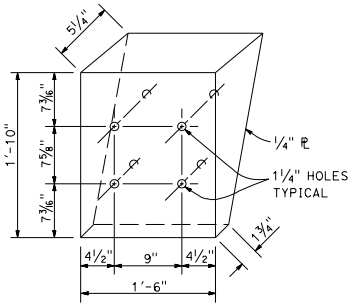
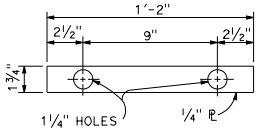


PLAN

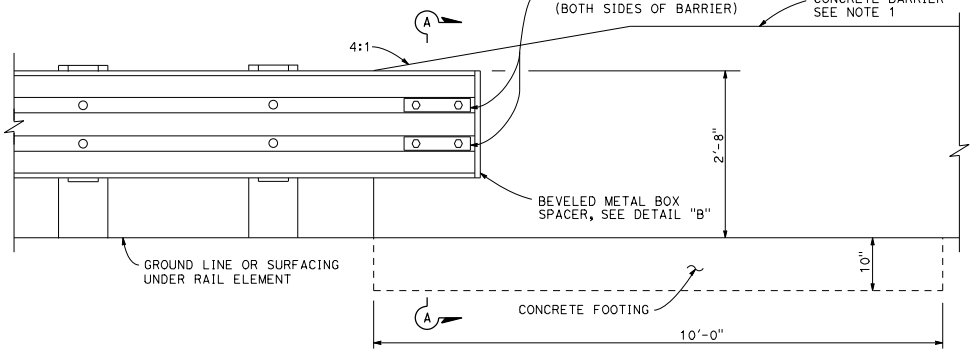


DETAIL "B"
Beveled metal box spacer
See Note 3

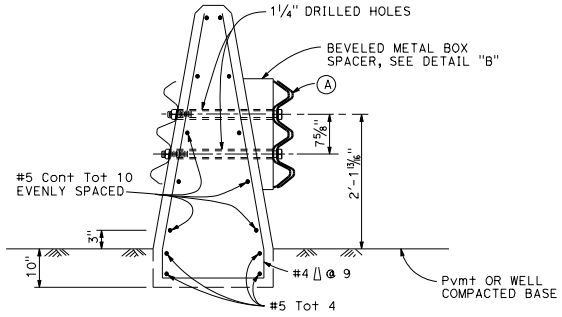


DETAIL "C"

PLATE 'A'



ELEVATION



SECTION A-A
(Type 60M Concrete Barrier shown)

LEGEND

(A) NESTED THRIE BEAM ELEMENTS (ONE 12 GAUGE ELEMENT NESTED OVER ONE 10 GAUGE ELEMENT).

(B) ONE 10 GAUGE THRIE BEAM ELEMENT.

(C) ONE 12 GAUGE THRIE BEAM ELEMENT.

10 GAUGE = 0.135" THICK

12 GAUGE = 0.108" THICK

NOTES:

1. For details of Concrete Barrier Type 60M, see Revised Standard Plan RSP A76A. Thrie beam barrier connections to Concrete Barrier Type 60MS and Type 60MG are similar to details shown on this plan.
2. For additional thrie beam barrier details, see Revised Standard Plan RSP A78A, Standard Plans A78B, A78C1, and A78C2.
3. Where beveled metal box spacer is installed, place 1¼" ø x 3¼" and 1¼" ø x 2" pipe spacers on 1" HS bolts passing through interior of box.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DOUBLE THRIE BEAM BARRIER CONNECTION TO CONCRETE BARRIER

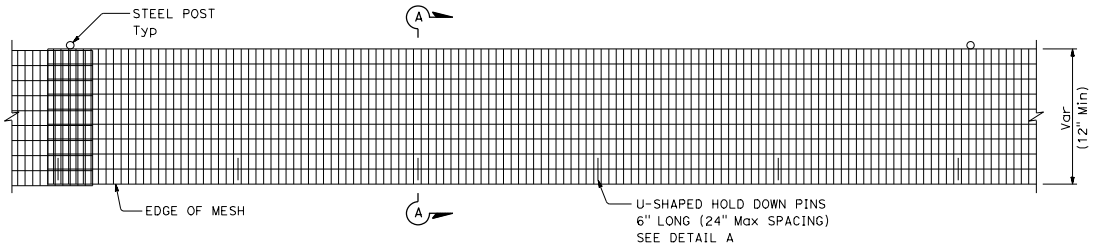
NO SCALE

RSP A78I DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN A78I
DATED OCTOBER 30, 2015 - PAGE 111 OF THE STANDARD PLANS BOOK DATED 2015.

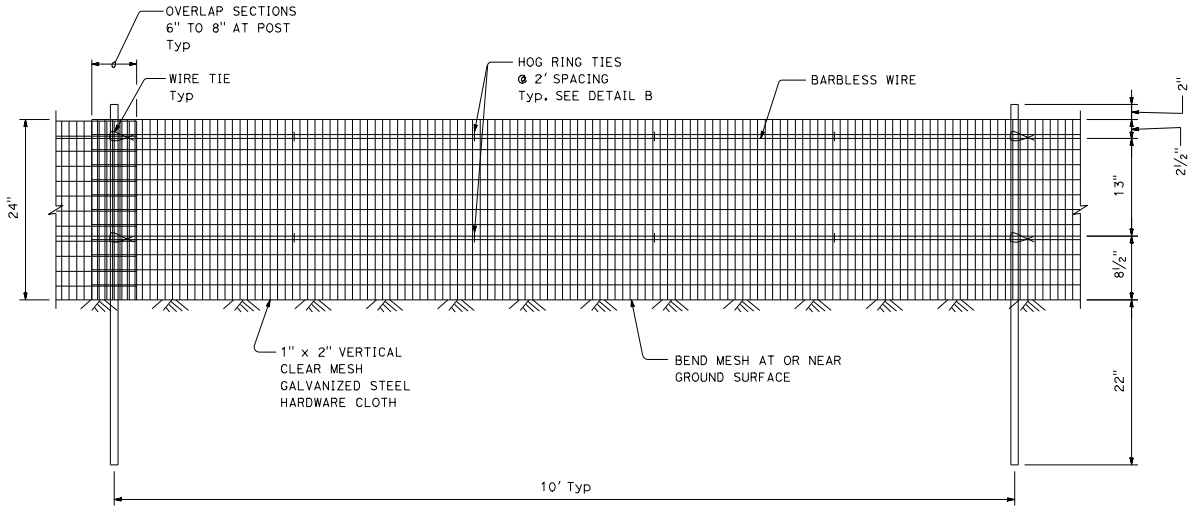
REVISED STANDARD PLAN RSP A78I

2015 REVISED STANDARD PLAN RSP A78I

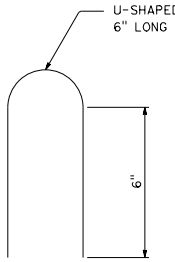
11-14-17



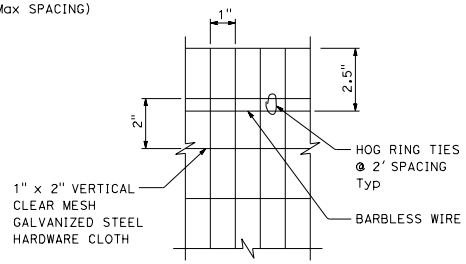
PLAN VIEW



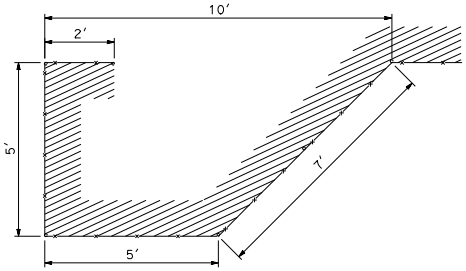
FRONT VIEW



DETAIL A



DETAIL B



REDIRECTIONAL CONFIGURATION PLAN VIEW

LEGEND:

Desert Tortoise Habitat

NOTES:

1. Exact locations for temporary desert tortoise fence are shown on the plans.
2. Horizontal portion of hardware cloth must be on habitat side of posts.

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

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Raymond Don Tsztoo
No. C37332
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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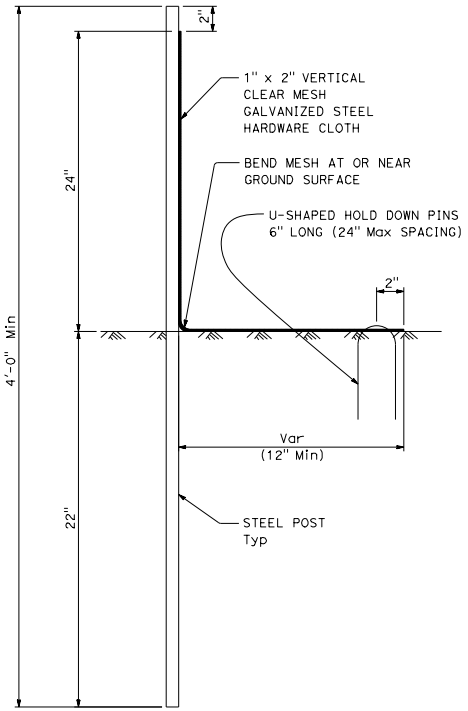

SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY DESERT TORTOISE FENCE

NO SCALE

RSP A84A DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A84A

2015 REVISED STANDARD PLAN RSP A84A

5-24-16

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

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

Raymond Don Tsztoo, No. C37332, Exp. 6-30-18, CIVIL, REGISTERED PROFESSIONAL ENGINEER, STATE OF CALIFORNIA

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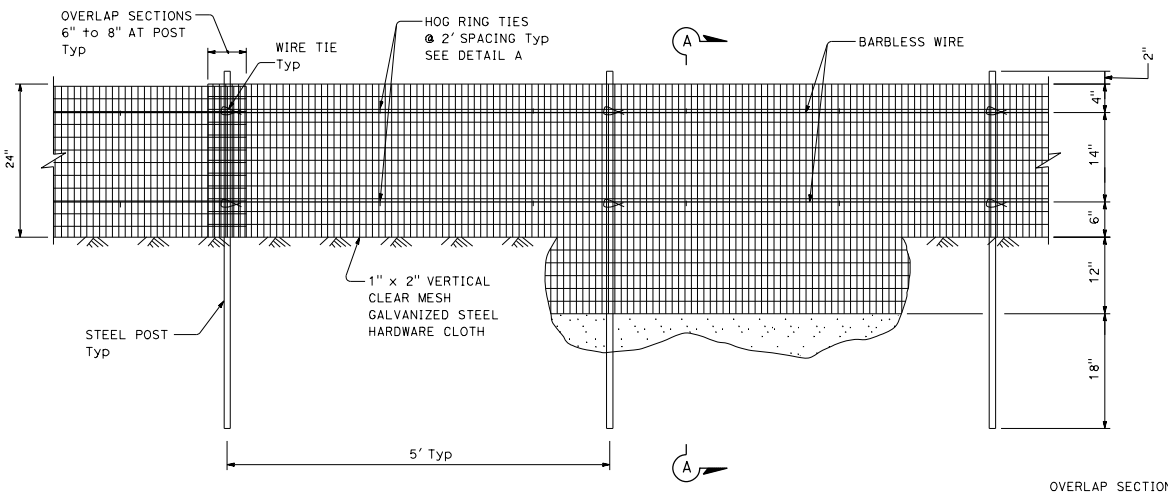


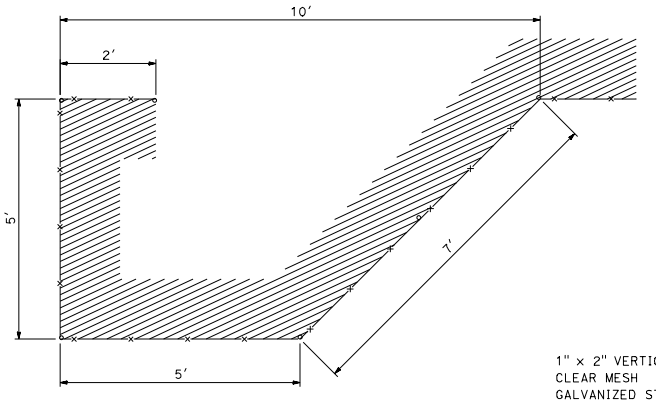
FRONT VIEW

LEGEND:

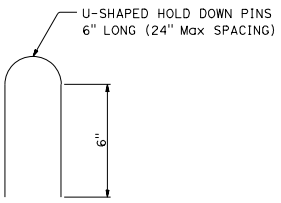
Desert Tortoise Habitat

NOTE:

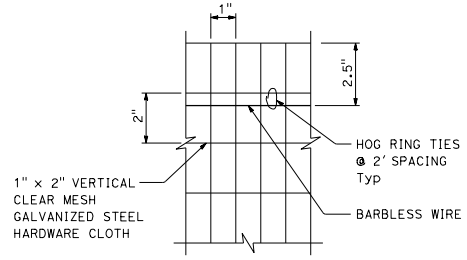
1. Exact locations for desert tortoise fence are shown on the plans.



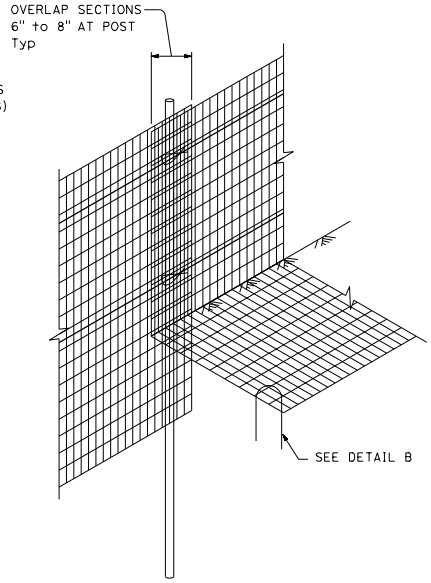
REDIRECTIONAL CONFIGURATION PLAN VIEW



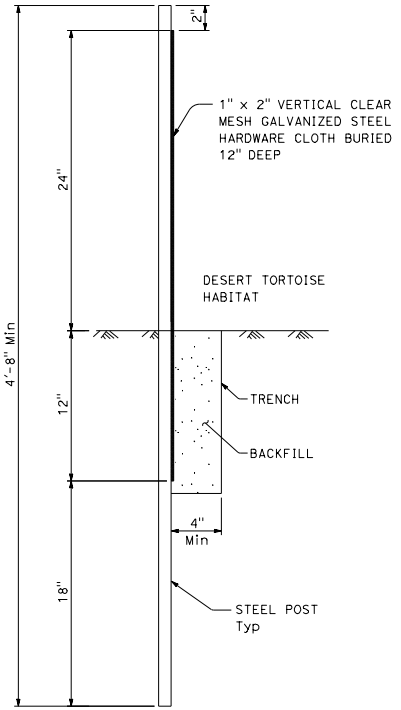
DETAIL B



DETAIL A



FENCE TRANSITION FOR
BEDROCK OR CALICHE SUBSTRATE



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DESERT TORTOISE FENCE

NO SCALE

RSP A84B DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A84B

6-22-16

2015 REVISED STANDARD PLAN RSP A84B

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

M. Reza Valizadeh
No. C51902
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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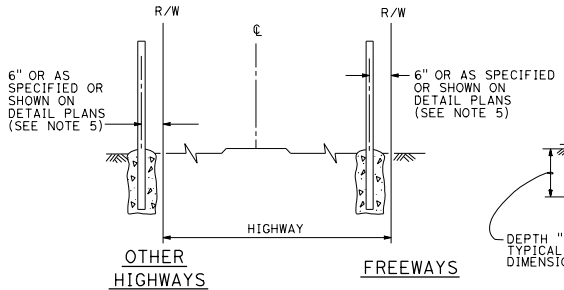
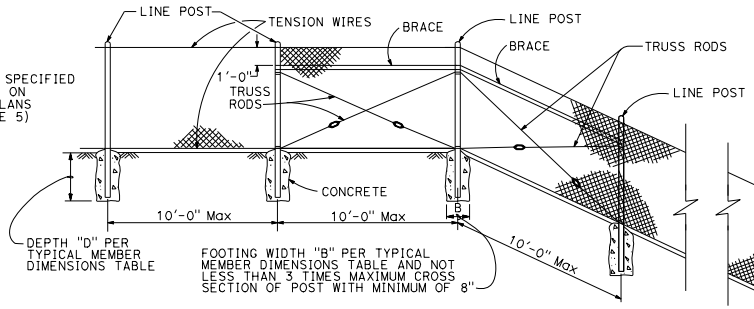
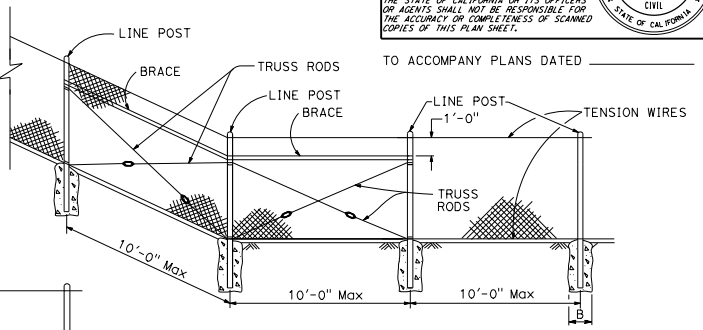
TO ACCOMPANY PLANS DATED _____

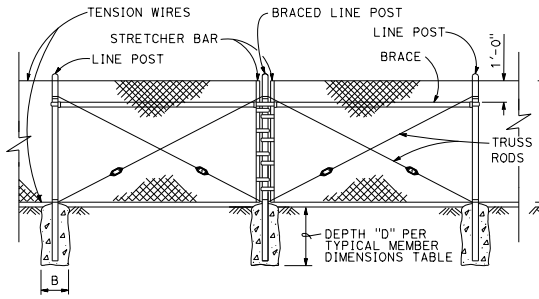


FENCE LOCATION



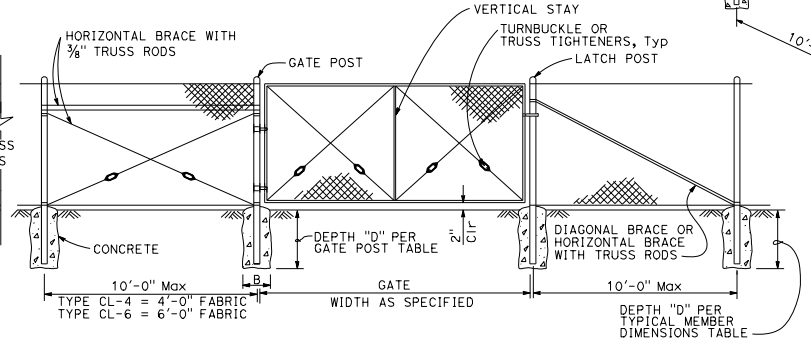
CHAIN LINK FENCE ON SHARP BREAK IN GRADE





BRACED LINE POST INSTALLATION

Braced line post at intervals not exceeding 1000'



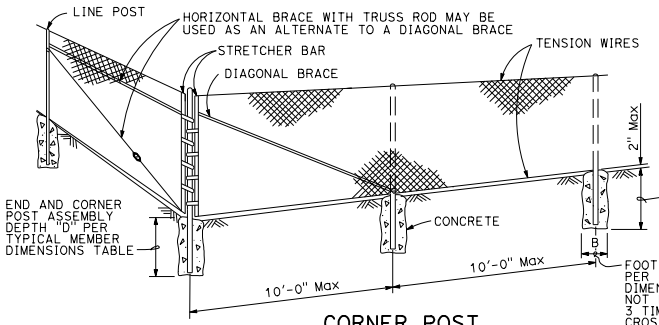
CHAIN LINK GATE INSTALLATION

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

GATE POST

FENCE HEIGHT (Max)	SLATTED	B (in)	D (ft)	ROUND PIPE		
				SECTION	ROUND OD PIPE	WEIGHT (lb/ft)
5'-0"	NO	12"	2'-6"	3 Std	3.50"	7.58
6'-0"	NO	12"	2'-6"	3 Std	3.50"	7.58
8'-0"	NO	12"	3'-0"	3 Std	3.50"	7.58
10'-0"	NO	14"	3'-6"	3 Std	3.50"	7.58
5'-0"	YES	12"	3'-0"	3½ Std	4.00"	9.12
6'-0"	YES	14"	3'-6"	4 Std	4.50"	10.80
8'-0"	YES	18"	3'-6"	5 Std	5.56"	14.60
10'-0"	YES	20"	4'-0"	6 Std	6.63"	19.00

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



CORNER POST

TYPICAL MEMBER DIMENSIONS (See Notes)

FENCE HEIGHT (Max)	SLATTED	B (in)	D (ft)	LINE POSTS					BRACES				
				ROUND PIPE			ROLL FORMED		ROUND PIPE			ROLL FORMED	
				SECTION	ROUND OD PIPE	WEIGHT (lb/ft)	SECTION	WEIGHT (lb/ft)	SECTION	ROUND OD PIPE	WEIGHT (lb/ft)	SECTION	WEIGHT (lb/ft)
5'-0"	NO	8"	2'-6"	1½ Std	1.90"	2.72	1.875" x 1.625"	1.85	1½" Std	1.90"	2.72	1.625" x 1.250"	1.35
6'-0"	NO	10"	2'-6"	2 Std	2.38"	3.66	1.875" x 1.625"	2.40	2 Std	2.38"	3.66	1.625" x 1.250"	1.35
8'-0"	NO	12"	3'-0"	2½ Std	2.88"	5.80	3.250" x 2.500"	4.50	2 Std	2.38"	3.66	1.625" x 1.250"	1.35
10'-0"	NO	14"	3'-6"	3 Std	3.50"	7.58	3.250" x 2.500"	4.50	2½ Std	2.88"	5.80	1.625" x 1.250"	1.35
5'-0"	YES	12"	3'-0"	3½ Std	4.00"	9.12	N/A	-	2 Std	2.38"	3.66	N/A	-
6'-0"	YES	14"	3'-0"	4 Std	4.50"	10.80	N/A	-	2 Std	2.38"	3.66	N/A	-
8'-0"	YES	18"	3'-6"	5 Std	5.56"	14.60	N/A	-	2 Std	2.38"	3.66	N/A	-
10'-0"	YES	20"	4'-0"	6 Std	6.63"	19.00	N/A	-	2½ Std	2.88"	5.80	N/A	-

NOTES:

1. 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.
2. Sections shown in the tables must also comply with the strength requirements and other provisions of the Specifications.
3. Other sections which comply with the strength requirements and other provisions of the Specifications may be used upon approval.
4. Options exercised shall be uniform on any one project.
5. 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.
6. See Standard Plan A85B for Brace, Stretcher Bar, and Truss Tightener Details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK FENCE

NO SCALE

RSP A85 DATED JULY 21, 2017 SUPERSEDES RSP A85 DATED JANUARY 20, 2017 AND RSP A85 DATED JULY 15, 2016 AND STANDARD PLAN A85 DATED OCTOBER 30, 2015 - PAGE 117 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A85

2015 REVISED STANDARD PLAN RSP A85

2-28-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

M. Reza Valizadeh
No. C51902
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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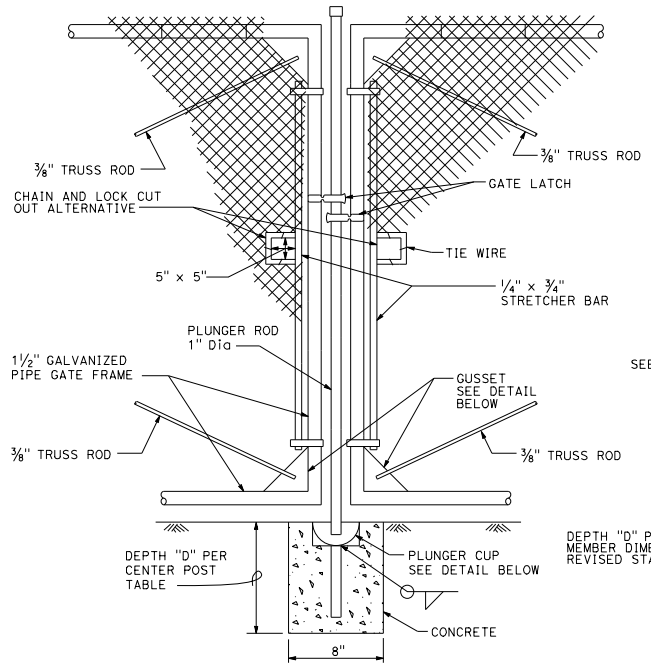
TO ACCOMPANY PLANS DATED _____



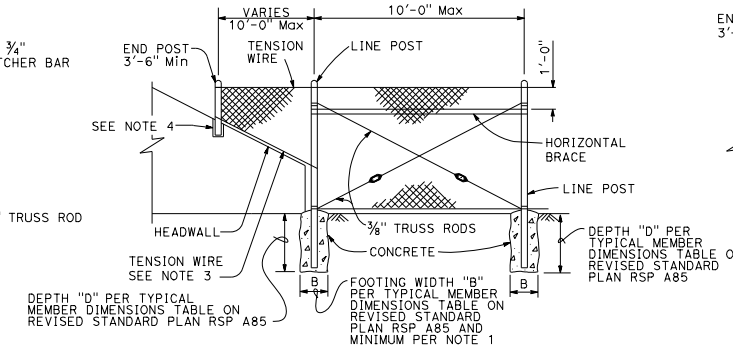
DOUBLE GATE REMOVABLE CENTER POST

Each gate maximum width is 12'-0"

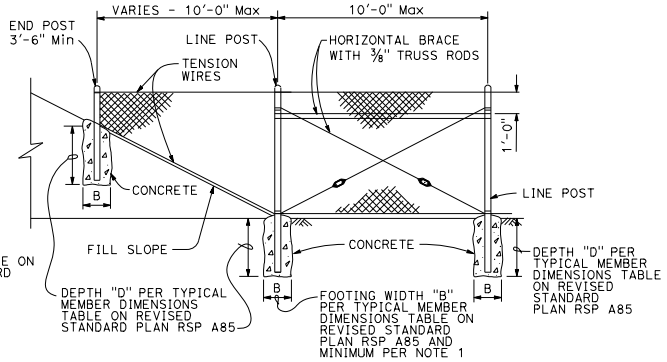
CENTER POST		
FENCE HEIGHT (Max)	SLATTED	D
ALL HEIGHTS	NO	1'-6"
5'-0"	YES	3'-0"
6'-0"	YES	3'-0"
8'-0"	YES	3'-6"
10'-0"	YES	4'-0"

NOTES:

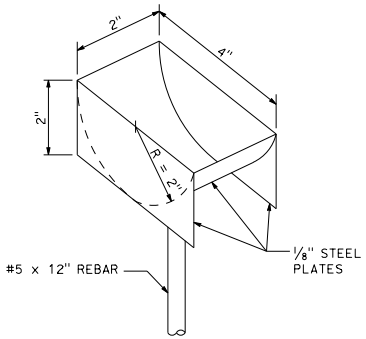
1. B is not less than 3 times maximum cross section of post with minimum of 8".
2. See Revised Standard Plan RSP A85 for Chain Link Fencing dimensions.
3. See Detail A on Standard Plan A86B for connection at headwall.
4. See Detail D on Standard Plan A86B for connection at headwall.



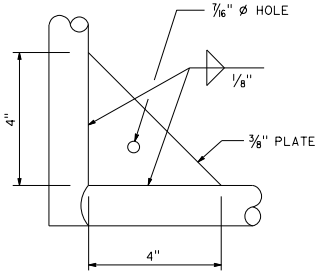
METHOD OF TYING FENCE TO HEADWALL



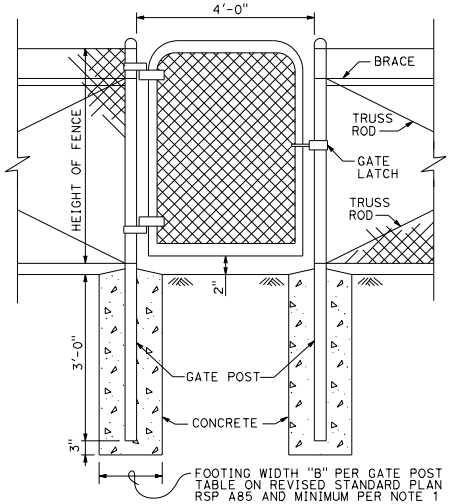
METHOD OF ERECTING FENCE FOR FILL SLOPE



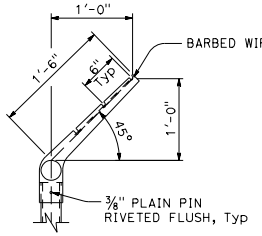
PLUNGER CUP DETAIL



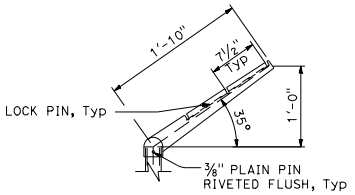
GUSSET DETAIL



WALK GATE



LINE POST



CORNER POST

BARBED WIRE POST TOP

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK FENCE DETAILS

NO SCALE

RSP A85A DATED JULY 21, 2017 SUPERSEDES RSP A85A DATED JANUARY 20, 2017 AND RSP A85A DATED JULY 15, 2016 AND STANDARD PLAN A85A DATED OCTOBER 30, 2015 - PAGE 118 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A85A

2015 REVISED STANDARD PLAN RSP A85A

5-5-17

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

REGISTERED CIVIL ENGINEER

January 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Michael Janzen
No. 44788
Exp. 3-31-16
CIVIL
STATE OF CALIFORNIA

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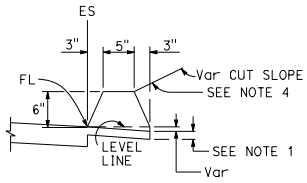
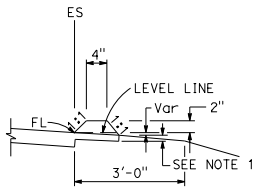
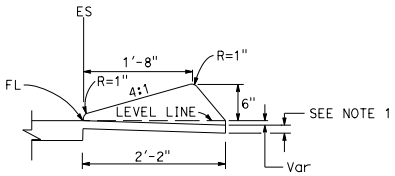
TO ACCOMPANY PLANS DATED _____



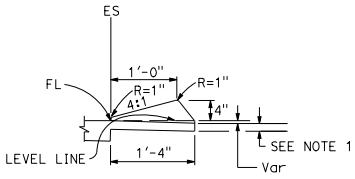
TYPE A
See Notes 3 and 5



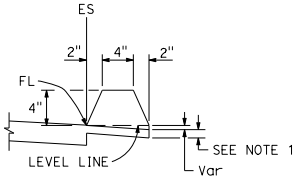
TYPE C



TYPE D

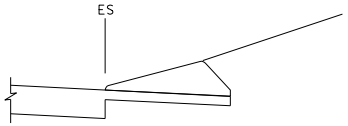


TYPE E

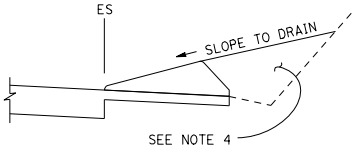


TYPE F
See Note 5

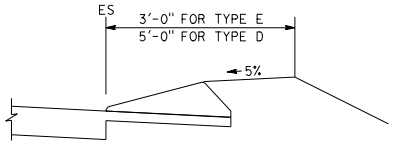
DIKES



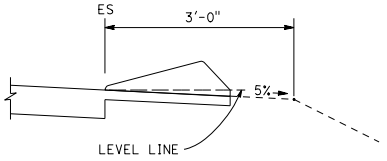
CASE C-1
Cut Slope



CASE C-2
Cut Slope



CASE F



CASE R
See Note 2

TYPE D AND E BACKFILL DETAILS

NOTES:

1. For HMA shoulders only, extend top layer of HMA placed on the shoulder under dike with no joint at the ES. For projects with OGFC shoulders, do not extend OGFC under dike. See project plans for modified dike detail.
2. Case R applies to retrofit only projects where restrictive conditions do not provide enough width for Case F backfill.
3. Type A dike only to be used where restrictive slope conditions do not provide enough width to use Type D or Type E dike.
4. Fill and compact with excavated material to top of dike.
5. Use Type A or F dike, where dike is required with guardrail installations. See Standard Plan A77N4 for dike positioning details. See Standard Plan A77N3 for hinge point offsets with guardrail.

DIKE QUANTITIES

TYPE	CUBIC YARDS PER LINEAR FOOT
A	0.0135
C	0.0038
D	0.0293
E	0.0130
F	0.0066

Quantities based on 5% cross slope.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

HOT MIX ASPHALT DIKES

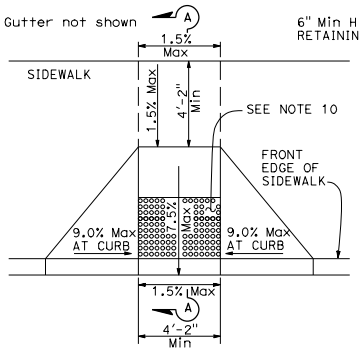
NO SCALE

RSP A87B DATED JANUARY 15, 2016 SUPERSEDES STANDARD PLAN A87B
DATED OCTOBER 30, 2015 - PAGE 126 OF THE STANDARD PLANS BOOK DATED 2015.

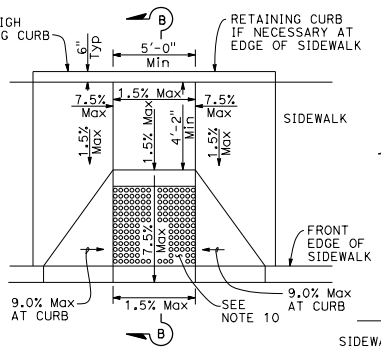
REVISED STANDARD PLAN RSP A87B

11-17-15

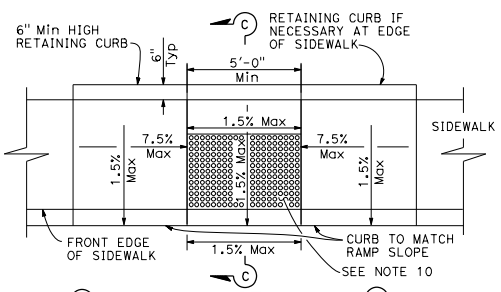
2015 REVISED STANDARD PLAN RSP A87B



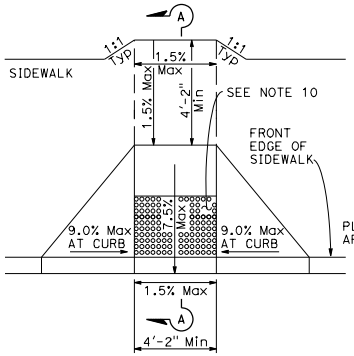
CASE A



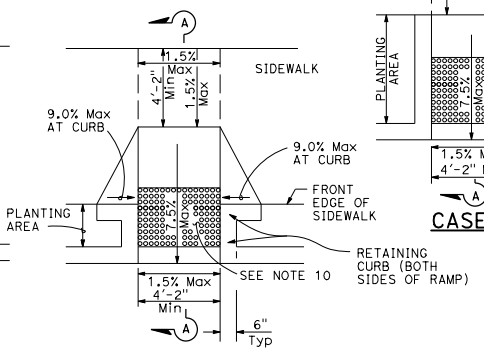
CASE B



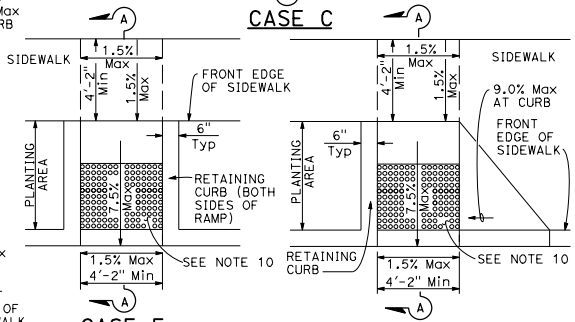
CASE C



CASE D

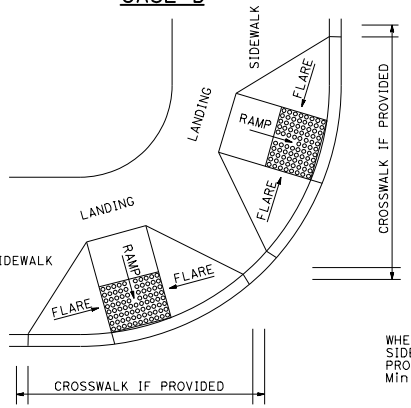


CASE E

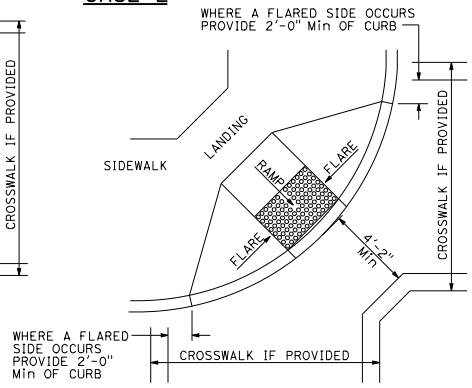


CASE F

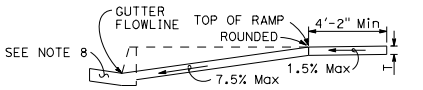
CASE G
See Note 4



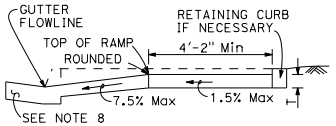
DETAIL A
TYPICAL TWO-RAMP CORNER INSTALLATION
See Note 1



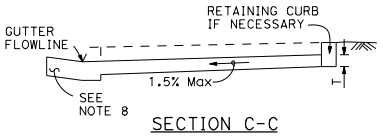
DETAIL B
TYPICAL ONE-RAMP CORNER INSTALLATION
See Notes 1 and 3



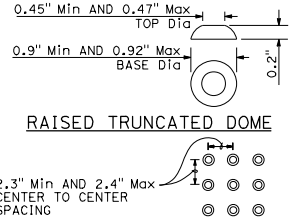
SECTION A-A



SECTION B-B
Depress entire sidewalk as required



SECTION C-C

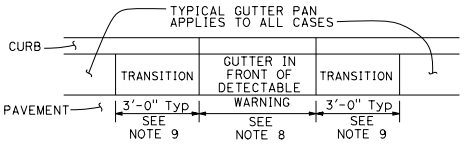


RAISED TRUNCATED DOME PATTERN (IN-LINE)

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 at 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 3½" 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

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Hector David Cordova — No. C41957 — Exp. 3-31-18 CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP DETAILS

NO SCALE

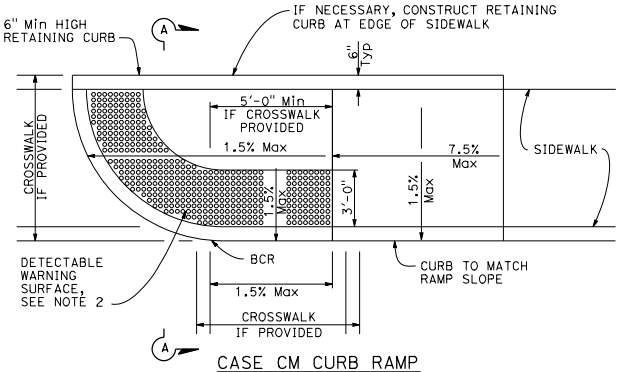
RSP A88A DATED JULY 21, 2017 SUPERSEDES RSP A88A DATED JULY 15, 2016 AND STANDARD PLAN A88A DATED OCTOBER 30, 2015 - PAGE 127 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A88A

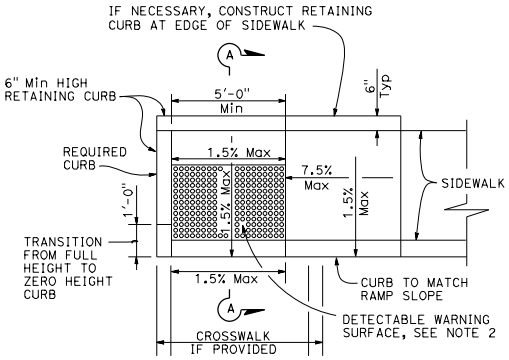
5-16-17

2015 REVISED STANDARD PLAN RSP A88A

Gutter not shown



CASE CM CURB RAMP



CASE CH CURB RAMP

NOTES:

1. Sidewalk, ramp and passageway thickness, "T", shall be 3½" minimum.
2. For details of detectable warning surfaces, see Revised Standard Plan RSP A88A.
3. Where an island passageway length is greater than or equal to 6'-0", but less than 8'-0", each detectable warning surface shall extend the full width and 2'-0" depth of the passageway length. Where an island passageway length is greater than or equal to 8'-0", each detectable warning surface shall extend the full width and 3'-0" depth of the passageway length. Detectable warning surfaces shall extend the full width of the island passageway except a maximum gap of 1 inch is allowed on each side of the passageway.
4. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.
5. 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.
6. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining detectable warning width and depth.
7. For additional curb ramp details, see Revised Standard Plan RSP A88A.
8. The detectable warning surface will be a rectangle as shown at the face of curb, unless modified in the Project Plans.

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Hector David Cordova — No. C41957 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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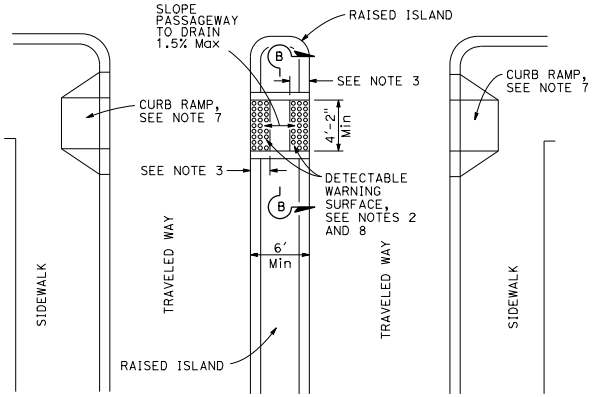
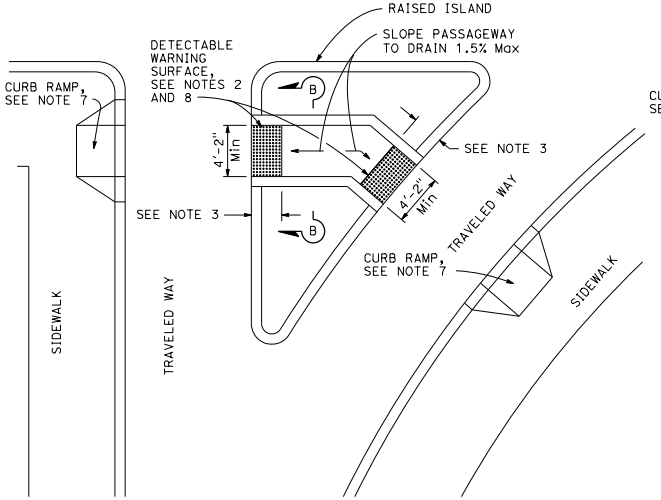
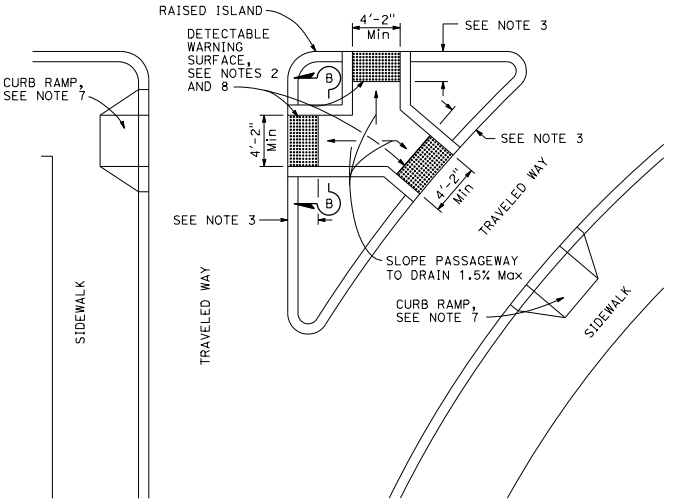
TO ACCOMPANY PLANS DATED _____



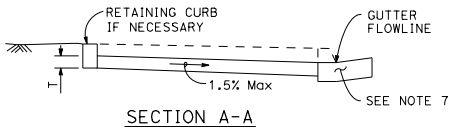
TYPE A PASSAGEWAY



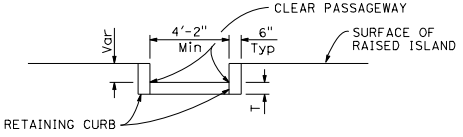
TYPE B PASSAGEWAY



TYPE C PASSAGEWAY



SECTION A-A



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP AND ISLAND PASSAGEWAY DETAILS

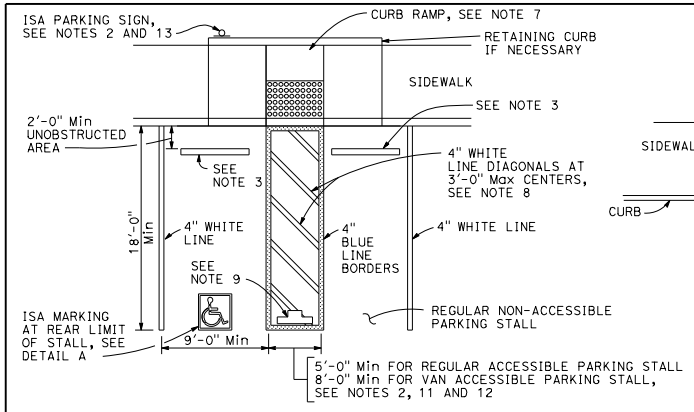
NO SCALE

RSP A88B DATED JULY 21, 2017 SUPERSEDES RSP A88B DATED JULY 15, 2016 AND STANDARD PLAN A88B DATED OCTOBER 30, 2015 - PAGE 128 OF THE STANDARD PLANS BOOK DATED 2015.

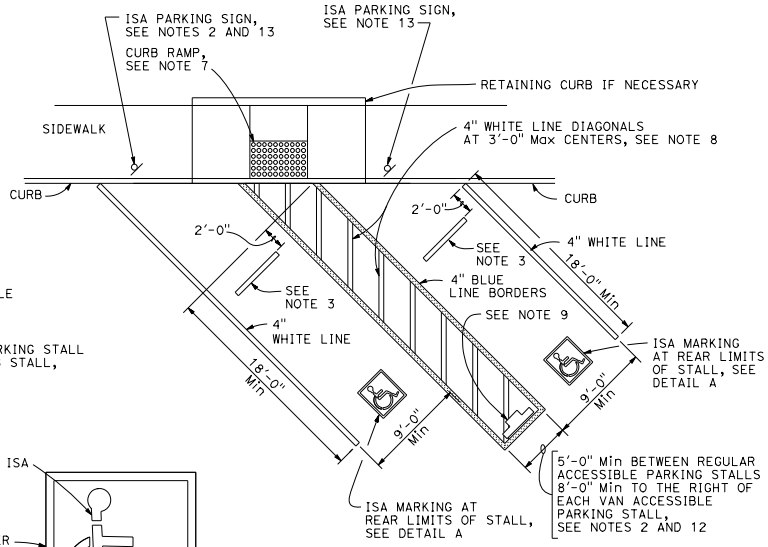
REVISED STANDARD PLAN RSP A88B

2015 REVISED STANDARD PLAN RSP A88B

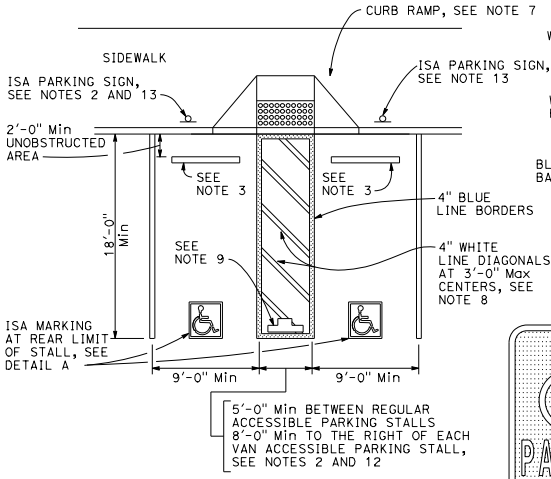
5-16-17



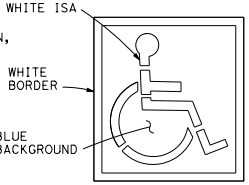
SINGLE PARKING STALL



DIAGONAL DOUBLE PARKING STALLS



DOUBLE PARKING STALL



ISA MARKING
See Standard Plan A24C

DETAIL A

TABLE A

TOTAL NUMBER OF PARKING SPACES PROVIDED IN PARKING FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1000	2 PERCENT OF TOTAL
1001 AND OVER	20 PLUS 1 FOR EACH 100 OR FRACTION THEREOF OVER 1000

SIGN R99 (CA)

PLAQUE R99B (CA)

SIGN R99 (CA) with PLAQUE R99B (CA)
See Note 6

SIGN R99C (CA)
See Note 6

SIGN R100B (CA)
See Note 10

SIGN R7-8b
See Notes 2 and 6

OFF-STREET PARKING SIGNS
(Parking lot or garage)
See Note 6

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Hector David Cordova — No. C41957 — Exp. 3-31-18 CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. Accessible parking spaces serving a particular building shall be located on the shortest accessible route of travel from adjacent parking to an accessible entrance. In parking facilities that do not serve a particular building, accessible parking shall be located on the shortest accessible route of travel to an accessible pedestrian entrance of the parking facility.
2. One in every six accessible off-street parking stalls, but not less than one, shall be served by an accessible aisle of 8'-0" minimum width and shall be signed van accessible. The R7-8b sign shall be mounted below the R99B (CA) plaque or the R99C (CA) sign.
3. In each parking stall, a curb or parking bumper shall be provided if required to prevent encroachment of vehicles over the required width of walkways. Parking stalls shall be so located that persons with disabilities are not compelled to wheel or walk behind parked vehicles other than their own. For more parking bumper requirements, see the Standard Specifications.
4. Parking spaces and access aisles shall be level with surface slopes not exceeding 1.5% in all directions.
5. Table A shall be used to determine the required number of accessible parking stalls in each parking lot or garage.
6. Where Plaque R99B (CA), Sign R99C (CA) or Sign R7-8b are installed, the bottom of the sign or plaque panel shall be a minimum of 7'-0" above the surrounding surface.
7. Curb ramps shall conform to the details shown on Revised Standard Plan RSP A88A.
8. Blue paint, instead of white may be used for marking accessibility aisles in areas where snow may cause white markings to not be visible.
9. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high and located so that it is visible to traffic enforcement officials. See Standard Plan A90B for details of the "NO PARKING" pavement marking.
10. A R100B (CA) sign shall be posted in a conspicuous place at each entrance to off-street parking facilities or immediately adjacent to and visible from each stall. The sign shall include the address where the towed vehicle may be reclaimed and the telephone number of the local traffic law enforcement agency.
11. Where a single (non-van) accessible parking space is provided, the loading and unloading access aisle shall be on the passenger side of the vehicle as the vehicle is going forward into the parking space.
12. Where a van accessible parking space is provided, the loading and unloading access aisle shall be 8'-0" wide minimum, and shall be on the passenger side of the vehicle as the vehicle is going forward into the parking space.
13. Accessible Parking Only Sign shall be Sign R99C (CA) or Sign R99 (CA) with Plaque R99B (CA).

LEGEND

ISA = International Symbol of Accessibility

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ACCESSIBLE PARKING OFF-STREET

NO SCALE

RSP A90A DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN A90A
DATED OCTOBER 30, 2015 - PAGE 129 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP A90A

2015 REVISED STANDARD PLAN RSP A90A

3-29-17

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

Gary Wong
REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gary Wong
No. C58298
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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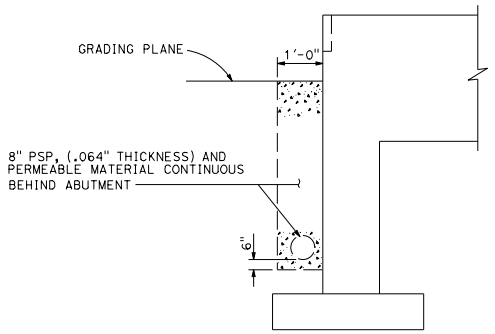
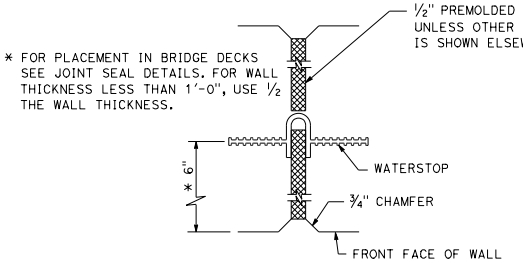
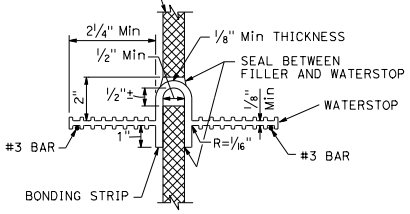
TO ACCOMPANY PLANS DATED _____



BRIDGE DETAIL 3-5
8" PSP AND PERMEABLE MATERIAL



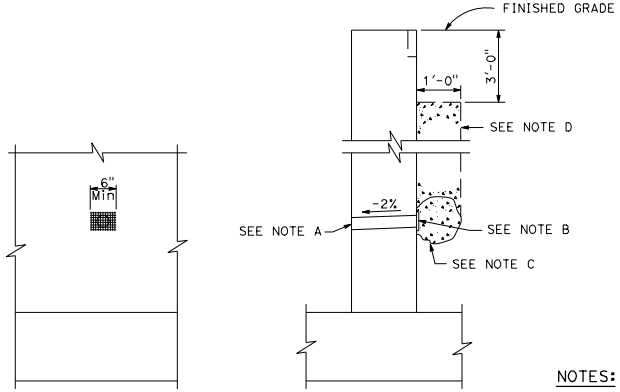
BRIDGE DETAIL 3-4
WALL EXPANSION JOINT



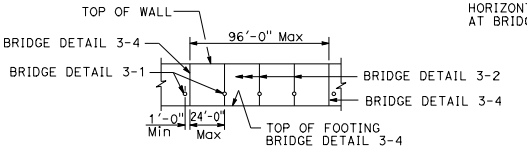
BRIDGE DETAIL 3-6
WATERSTOP

NOTES:

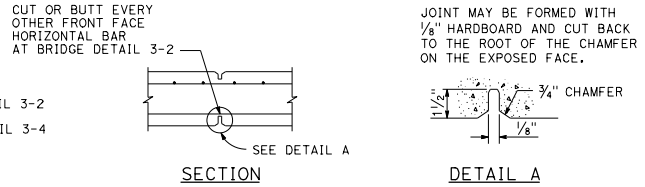
1. Holes will be permitted in the outer ½" of the web for wire, rings, etc. Tie web to #3 reinforcing bars @ 12 maximum intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the Engineer.
2. Waterstop to have 5 or more pairs of raised ribs to provide 0.1 square inch minimum rib cross-section area on each half of the waterstop.



BRIDGE DETAIL 3-1
WEEP HOLE AND PERVIOUS BACKFILL



BRIDGE DETAIL 3-3
WALL EXPANSION JOINTS AND WEAKENED PLANES



BRIDGE DETAIL 3-2
WEAKENED PLANES

NOTES:

A. 4" ø Drains @ 25'-0" maximum center to center. For walls adjacent to sidewalks or curbs, provide 4" plastic pipe under the sidewalk to discharge thru curb face. Exposed wall drains shall be located 3"± above finished grade.

B. 6" square aluminum or galvanized steel wire ¼" mesh hardware cloth, minimum wire diameter 0.025". Anchor firmly to backface.

C. One cubic foot pervious backfill material in a nonwoven filter fabric, securely tied.

D. Pervious backfill material continuous behind retaining wall or abutment.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BRIDGE DETAILS

NO SCALE

RSP B0-3 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN B0-3
DATED OCTOBER 30, 2015 - PAGE 277 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B0-3

2015 REVISED STANDARD PLAN RSP B0-3

5-22-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gary Wong — No. C58298 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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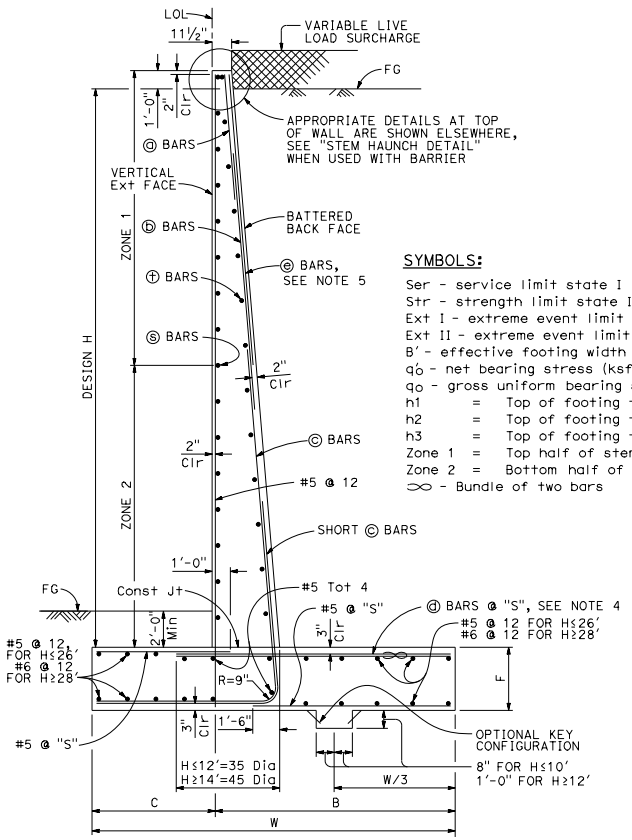
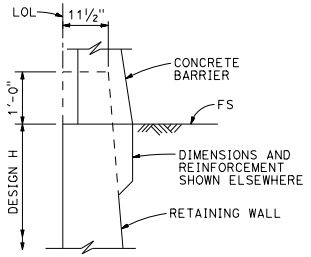


TYPICAL SECTION



STEM HAUNCH DETAIL

SYMBOLS:

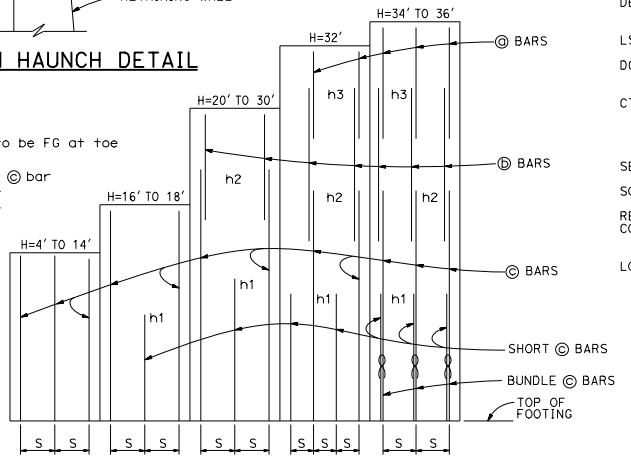
Ser - service limit state I
Str - strength limit state I
Ext I - extreme event limit state I
Ext II - extreme event limit state II
B' - effective footing width (ft)
q'_o - net bearing stress (ksf), OG assumed to be FG at toe
q_o - gross uniform bearing stress (ksf)
h1 = Top of footing to top of short ⓒ bar
h2 = Top of footing to top of ⓒ bar
h3 = Top of footing to top of ⓑ bar
Zone 1 = Top half of stem height
Zone 2 = Bottom half of stem height
⊃⊂ - Bundle of two bars

NOTES:

1. For details not shown and drainage notes see B3-5
2. For wall stem joint details see B0-3 / 3-3 and B0-3 / 3-4
3. At ⓒ bars:
   H ≤ 6', no splices are allowed within 1'-8" above the top of footing.
   H > 6', no splices are allowed within H/4 above the top of footing.
4. Bundle ⓓ bars for H = 34' & 36'.
5. Provide #6 @ 10" x 16'-0" ⓔ bars over a distance of 8'-0" measured from all expansion joints, begin wall and end wall locations. For H ≤ 14', hook ⓔ bar into footing and reduce bar length as needed to maintain Min Clr cover.

DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.



ELEVATION

DESIGN NOTES: TO ACCOMPANY PLANS DATED _____

DESIGN: AASHTO LRFD Bridge Design Specifications, 4th Edition with California Amendments

LS: Varied surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 6" of concrete (75 psf) considered

CT: 54 kip transverse force applied at He = 32", distributed over 10 feet at the top of wall and 1 : 1 distribution down and outward. Distribution below footing taken no less than 40'.

SEISMIC: k_h = 0.2, k_v = 0.0

SOIL: ø = 34°, γ = 120 pcf

REINFORCED CONCRETE: f'c = 3,600 psi, fy = 60,000 psi

LOAD COMBINATIONS AND LIMIT STATES:

Service I	Q = 1.00DC+1.00EV+1.00EH+1.00LS
Strength I	Q = αDC+βEV+ηEH+1.75LS
Extreme I	Q = 1.00DC+1.00EV+1.00EH+1.00EQD+1.00EQE
Extreme II	Q = 1.00DC+1.00EV+1.00EH+1.00CT

Where:

Q:	Force Effects
α:	1.25 or 0.90, Whichever Controls Design
β:	1.35 or 1.00, Whichever Controls Design
η:	1.50 or 0.90, Whichever Controls Design
DC:	Dead Load of Structure Components
EH:	Horizontal Earth Fill Pressure
EV:	Vertical Earth Pressure from Earth Fill Weight
LS:	Live Load Surcharge
EQE:	Seismic Earth Pressure
EQD:	Soil and Structural and Nonstructural Components Inertia
CT:	Vehicular Collision Force

TABLE OF REINFORCING STEEL, DIMENSIONS AND DATA

DESIGN H	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'	34'	36'
W	6'-10"	7'-0"	7'-3"	7'-7"	8'-4"	9'-7"	10'-9"	12'-0"	13'-3"	14'-6"	15'-9"	17'-1"	18'-5"	19'-10"	21'-2"	22'-7"	24'-0"
C	2'-2"	2'-3"	2'-3"	2'-4"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-5"	6'-0"	6'-6"	7'-2"	7'-8"	8'-2"	9'-0"
B	4'-8"	4'-9"	5'-0"	5'-3"	5'-10"	6'-7"	7'-3"	8'-0"	8'-9"	9'-6"	10'-4"	11'-1"	11'-11"	12'-8"	13'-6"	14'-5"	15'-0"
F	1'-4"	1'-4"	1'-4"	1'-4"	1'-6"	1'-8"	1'-8"	1'-9"	1'-9"	1'-11"	2'-2"	2'-5"	2'-10"	3'-3"	3'-6"	4'-0"	4'-3"
BATTER	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	⅝: 12	⅝: 12	¾: 12	⅞: 12	1 : 12	1 : 12	1 : 12
SPACING "S"	9"	9"	9"	9"	9"	7"	6"	5"	6"	6"	6"	6"	6"	6"	6"	10"	8"
ⓐ BARS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#7	#7	#6
ⓑ BARS	-	-	-	-	-	-	-	-	#7	#7	#7	#7	#7	#7	#9	#9	#8
ⓒ BARS	#6	#6	#6	#6	#6	#6	#7	#7	#8	#9	#9	#10	#10	#10	#11	#11	#11
ⓓ BARS	#5	#5	#6	#6	#6	#6	#7	#8	#8	#9	#9	#10	#10	#10	#11	#11	#11
h1	-	-	-	-	-	-	5'-9"	5'-10"	8'-0"	9'-0"	10'-1"	11'-0"	12'-1"	13'-0"	13'-0"	12'-7"	11'-6"
h2	-	-	-	-	-	-	-	-	10'-5"	13'-0"	14'-7"	17'-6"	19'-0"	20'-5"	19'-0"	18'-0"	20'-2"
h3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21'-2"	21'-10"	24'-0"
ZONE 1 Ⓢ BARS	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12
ZONE 2 Ⓢ BARS	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#6 @ 12	#6 @ 12	#6 @ 12	#7 @ 12	#7 @ 12
ZONE 1 Ⓕ BARS	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 12	#4 @ 12	#4 @ 18	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12
ZONE 2 Ⓕ BARS	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12
Ser: B', q'_o	6.8, 0.7	6.5, 1.0	6.2, 1.3	6.0, 1.6	6.3, 2.0	7.5, 2.1	8.6, 2.2	9.8, 2.3	11.0, 2.4	12.1, 2.5	13.2, 2.8	14.4, 2.9	15.5, 3.1	16.8, 3.3	18.0, 3.5	19.2, 3.7	20.6, 3.7
Str: B', q_o	6.6, 1.6	5.0, 1.8	3.6, 2.3	3.0, 3.3	3.2, 4.0	4.3, 3.8	5.3, 3.7	6.4, 3.7	7.4, 3.8	8.2, 4.1	9.0, 4.4	9.9, 4.6	10.7, 4.9	11.7, 5.2	12.6, 5.4	13.6, 5.8	14.6, 5.9
Ext I: B', q_o	5.2, 1.1	4.7, 1.5	3.9, 2.2	3.1, 3.4	2.8, 4.8	3.2, 5.3	3.6, 5.7	4.1, 6.1	4.6, 6.4	5.0, 6.9	5.3, 7.6	5.8, 8.1	6.1, 8.9	6.7, 9.4	7.1, 10.0	7.5, 10.7	8.2, 10.9
Ext II: B', q_o	2.6, 2.2	2.7, 2.6	2.8, 3.1	2.9, 3.6	3.7, 3.6	5.2, 3.3	6.7, 3.1	8.3, 3.0	9.8, 3.0	11.2, 3.1	12.5, 3.2	13.9, 3.4	15.2, 3.6	16.7, 3.8	18.0, 4.0	19.3, 4.2	20.8, 4.3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 1)

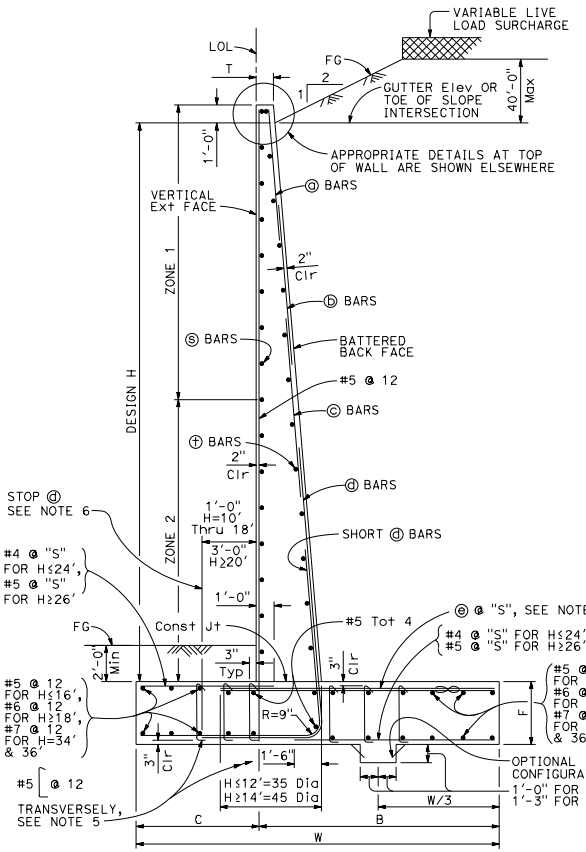
NO SCALE

RSP B3-1A DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN B3-1A
DATED OCTOBER 30, 2015 - PAGE 286 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B3-1A

2015 REVISED STANDARD PLAN RSP B3-1A

5-22-17



TYPICAL SECTION

DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

DESIGN NOTES:

DESIGN: AASHTO LRFD Bridge Design Specifications, 4th Edition with California Amendments

LS: Varied surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 6" of concrete (75 psf) considered

SEISMIC: $k_h = 0.2$, $k_v = 0.0$

SOIL: $\phi = 34°$, $\gamma = 120$ pcf

REINFORCED CONCRETE: $f'c = 3{,}600$ psi, $fy = 60{,}000$ psi

LOAD COMBINATIONS AND LIMIT STATES:

Service I	$Q = 1.00DC+1.00EV+1.00EH+1.00LS$
Strength I	$Q = \alpha DC+\beta EV+\eta EH+1.75LS$
Extreme I	$Q = 1.00DC+1.00EV+1.00EH+1.00EQD+1.00EQE$

Where:

Q:	Force Effects
α:	1.25 or 0.90, Whichever Controls Design
β:	1.35 or 1.00, Whichever Controls Design
η:	1.50 or 0.90, Whichever Controls Design
DC:	Dead Load of Structure Components
EH:	Horizontal Earth Fill Pressure
EV:	Vertical Earth Pressure from Earth Fill Weight
LS:	Live Load Surcharge
EQE:	Seismic Earth Pressure
EQD:	Soil and Structural and Nonstructural Components Inertia

SYMBOLS:

TO ACCOMPANY PLANS DATED _____

Ser - service limit state I
Str - strength limit state I
Ext - extreme event limit state I
B' - effective footing width (ft)
q'_o - net bearing stress (ksf), OG assumed to be FG at toe
q_o - gross uniform bearing stress (ksf)
h1 = Top of footing to top of short ⓓ bar
h2 = Top of footing to top of ⓓ bar
h3 = Top of footing to top of ⓒ bar
h4 = Top of footing to top of ⓑ bar
Zone 1 = Top half of stem height
Zone 2 = Bottom half of stem height
∞ - Bundle of two bars

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gary Wong — No. C58298 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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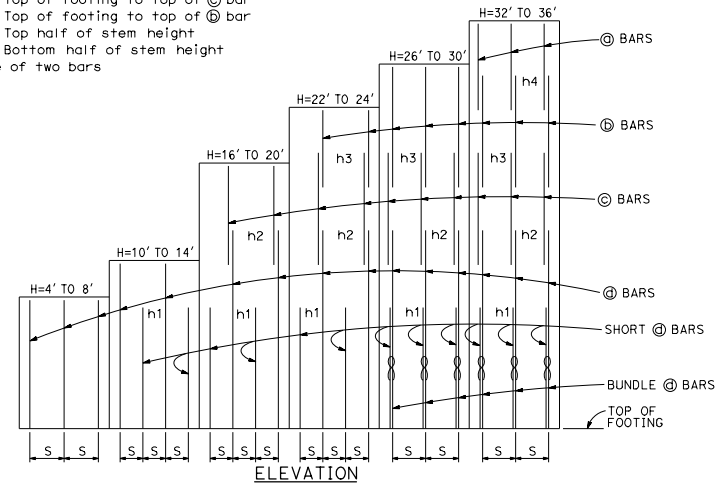


ELEVATION

NOTES:

1. For details not shown and drainage notes see B3-5
2. For wall stem joint details see B0-3 3-3 and B0-3 3-4
3. At ⓓ and short ⓓ bars:
   H ≤ 6', no splices are allowed within 1'-8" above the top of footing.
   H > 6', no splices are allowed within H/4 above the top of footing.
4. Bundle ⓔ bars for H ≥ 26'.
5. Hook stirrups around & space with alternating transverse reinforcement at 2 x "S". For required number of toe or heel stirrup rows, see table. The first stirrups are placed adjacent to the stem as shown.
6. Extend ⓓ bars to end of toe for H=4' to 8'.

TABLE OF REINFORCING STEEL, DIMENSIONS AND DATA

DESIGN H	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'	34'	36'
W	6'-0"	7'-6"	9'-6"	11'-0"	12'-6"	15'-6"	17'-3"	19'-6"	21'-9"	23'-6"	26'-0"	28'-1"	30'-3"	31'-6"	33'-0"	34'-8"	35'-11"
C	2'-0"	2'-6"	3'-3"	3'-6"	4'-3"	5'-0"	5'-3"	5'-9"	6'-9"	7'-3"	8'-3"	8'-9"	9'-0"	9'-6"	10'-0"	10'-10"	11'-3"
B	4'-0"	5'-0"	6'-3"	7'-6"	8'-3"	10'-6"	12'-0"	13'-9"	15'-0"	16'-3"	17'-9"	19'-4"	21'-3"	22'-0"	23'-0"	23'-10"	24'-8"
F	1'-6"	1'-6"	2'-0"	2'-3"	2'-6"	2'-8"	2'-10"	3'-0"	3'-4"	3'-6"	3'-6"	3'-7"	3'-7"	3'-9"	3'-9"	4'-0"	4'-4"
T	11½"	11½"	11½"	11½"	11½"	11½"	11½"	11½"	11½"	11½"	11½"	11½"	1'-2"	1'-5"	1'-10"	2'-3"	2'-9"
BATTER	½: 12	½: 12	½: 12	½: 12	½: 12	⅝: 12	⅝: 12	¾: 12	⅞: 12	1 : 12	1⅛: 12	1⅛: 12	1⅛: 12	1⅛: 12	1⅛: 12	1⅛: 12	1⅛: 12
SPACING "S"	16"	12"	10"	7"	7"	7"	7"	7"	7"	6"	6"	10"	8"	7"	7"	7"	7"
ⓐ BARS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#5	#5	#5
ⓑ BARS	-	-	-	-	-	-	-	-	-	#5	#5	#5	#5	#5	#7	#7	#7
ⓒ BARS	-	-	-	-	-	-	#6	#6	#6	#7	#8	#8	#8	#8	#9	#9	#9
ⓓ BARS	#5	#5	#6	#6	#7	#8	#9	#10	#10	#10	#11	#11	#11	#11	#11	#11	#11
ⓔ BARS	#5	#5	#6	#6	#7	#8	#9	#10	#10	#10	#11	#11	#11	#11	#11	#11	#11
h1	-	-	-	5'-3"	6'-4"	7'-6"	8'-9"	9'-9"	11'-0"	11'-3"	11'-6"	10'-3"	11'-9"	12'-3"	12'-6"	13'-3"	13'-8"
h2	-	-	-	-	-	-	12'-8"	15'-6"	17'-0"	16'-6"	17'-3"	18'-0"	17'-6"	17'-4"	14'-10"	15'-9"	16'-4"
h3	-	-	-	-	-	-	-	-	-	18'-9"	21'-3"	21'-3"	22'-4"	22'-8"	18'-0"	18'-6"	19'-6"
h4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26'-3"	27'-4"	28'-6"
No. of Toe Stirrups	0	0	0	0	0	0	0	0	0	0	0	5	5	6	7	8	9
No. of Heel Stirrups	0	0	0	0	0	0	0	0	4	6	7	8	10	10	11	11	11
ZONE 1 Ⓢ BARS	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#6 @ 12	#6 @ 12	#6 @ 10	#6 @ 10
ZONE 2 Ⓢ BARS	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#6 @ 12	#6 @ 12	#7 @ 12	#7 @ 12	#7 @ 12	#7 @ 12	#7 @ 10	#7 @ 10
ZONE 1 Ⓣ BARS	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12
ZONE 2 Ⓣ BARS	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#6 @ 12	#6 @ 12	#6 @ 12
Ser: B', q'_o	4.0, 0.9	5.5, 1.0	9.3, 1.0	10.9, 1.3	12.3, 1.5	14.8, 1.9	16.6, 2.1	18.7, 2.4	20.6, 2.7	22.3, 3.0	24.2, 3.3	26.1, 3.5	28.2, 3.9	29.6, 4.0	31.1, 4.2	32.7, 4.4	34.1, 4.6
Str: B', q_o	2.2, 2.2	3.5, 2.2	5.1, 2.3	6.3, 2.6	7.6, 2.7	12.9, 3.1	14.3, 3.6	16.5, 3.9	19.4, 4.5	20.7, 4.8	22.5, 5.2	24.3, 5.6	26.2, 6.0	27.5, 6.3	28.8, 6.6	30.3, 6.9	31.8, 7.2
Ext: B', q_o	2.3, 3.4	2.7, 4.4	3.6, 5.0	3.8, 6.5	4.5, 7.0	7.0, 6.1	7.6, 6.9	9.3, 7.0	11.0, 7.1	11.8, 7.6	14.1, 7.4	15.6, 7.7	17.1, 8.0	17.2, 8.7	18.1, 9.0	19.0, 9.4	19.4, 10.0

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 2)

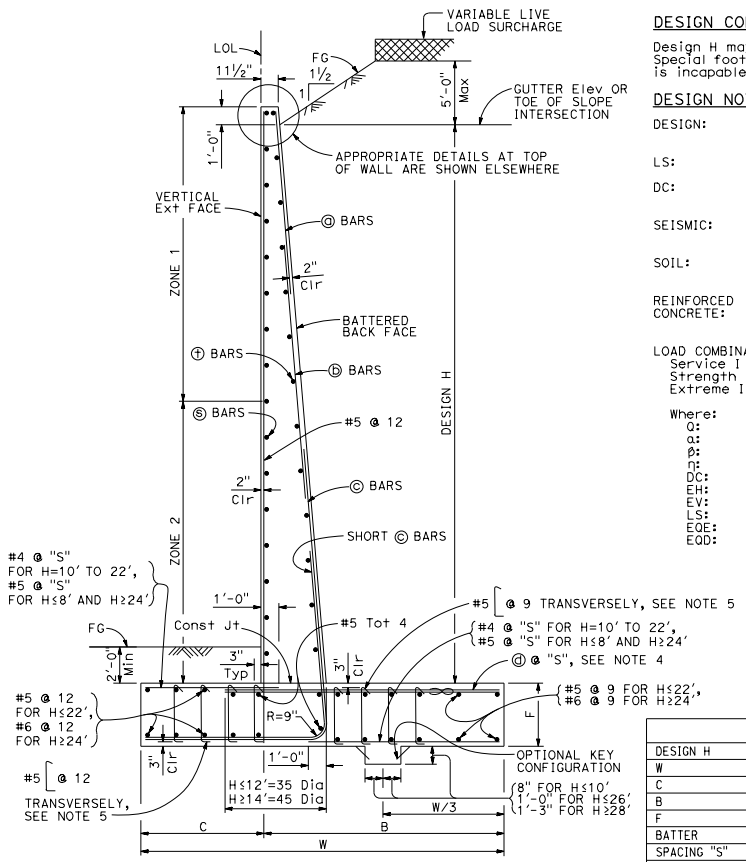
RSP B3-1B DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN B3-1B
DATED OCTOBER 30, 2015 - PAGE 287 OF THE STANDARD PLANS BOOK DATED 2015.

NO SCALE

REVISED STANDARD PLAN RSP B3-1B

2015 REVISED STANDARD PLAN RSP B3-1B

5-23-17



TYPICAL SECTION

DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

DESIGN NOTES:

DESIGN: AASHTO LRFD Bridge Design Specifications, 4th Edition with California Amendments

LS: Varied surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 6" of concrete (75 psf) considered

SEISMIC: $k_h = 0.2$, $k_v = 0.0$

SOIL: $\phi = 34°$, $\gamma = 120$ pcf

REINFORCED CONCRETE: $f'c = 3{,}600$ psi, $fy = 60{,}000$ psi

LOAD COMBINATIONS AND LIMIT STATES:

Service I	$Q = 1.00DC+1.00EV+1.00EH+1.00LS$
Strength I	$Q = \alpha DC+\beta EV+\eta EH+1.75LS$
Extreme I	$Q = 1.00DC+1.00EV+1.00EH+1.00EQD+1.00EQE$

Where:

Q:	Force Effects
α:	1.25 or 0.90, Whichever Controls Design
β:	1.35 or 1.00, Whichever Controls Design
η:	1.50 or 0.90, Whichever Controls Design
DC:	Dead Load of Structure Components
EH:	Horizontal Earth Fill Pressure
EV:	Vertical Earth Pressure from Earth Fill Weight
LS:	Live Load Surcharge
EQE:	Seismic Earth Pressure
EQD:	Soil and Structural and Nonstructural Components Inertia

SYMBOLS:

Ser - service limit state I
Str - strength limit state I
Ext - extreme event limit state I
B' - effective footing width (ft)
q'_o - net bearing stress (ksf), OG assumed to be FG at toe
q_o - gross uniform bearing stress (ksf)
h1 = Top of footing to top of short ⓒ bar
h2 = Top of footing to top of ⓒ bar
h3 = Top of footing to top of ⓑ bar
Zone 1 = Top half of stem height
Zone 2 = Bottom half of stem height
⊃⊂ - Bundle of two bars

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

Gary Wong
REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gary Wong — No. C58298 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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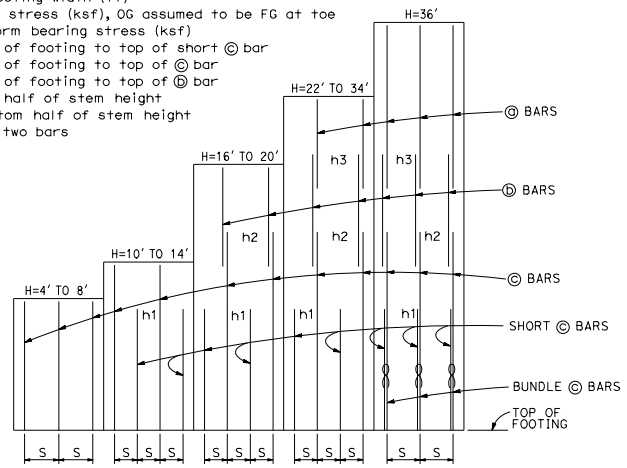
TO ACCOMPANY PLANS DATED _____



ELEVATION

NOTES:

1. For details not shown and drainage notes see B3-5
2. For wall stem joint details see B0-3 3-3 and B0-3 3-4
3. At ⓒ bars:
   H ≤ 6', no splices are allowed within 1'-8" above the top of footing.
   H > 6', no splices are allowed within H/4 above the top of footing.
4. Bundle ⓓ bars for H = 36'.
5. Hook stirrups around & space with alternating transverse reinforcement at 2 x "S". For required number of toe or heel stirrup rows, see table. The first stirrups are placed adjacent to the stem as shown.

TABLE OF REINFORCING STEEL, DIMENSIONS AND DATA

DESIGN H	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'	34'	36'
W	6'-5"	7'-3"	8'-3"	9'-3"	10'-8"	12'-6"	13'-9"	15'-1"	16'-6"	17'-10"	19'-3"	20'-4"	21'-5"	22'-8"	23'-11"	25'-1"	26'-4"
C	2'-2"	2'-6"	3'-0"	3'-6"	3'-8"	3'-11"	4'-0"	4'-7"	5'-3"	6'-0"	7'-0"	7'-9"	8'-3"	8'-8"	9'-0"	9'-6"	9'-10"
B	4'-3"	4'-9"	5'-3"	5'-9"	7'-0"	8'-7"	9'-9"	10'-6"	11'-3"	11'-10"	12'-3"	12'-7"	13'-2"	14'-0"	14'-11"	15'-7"	16'-6"
F	1'-4"	1'-4"	1'-4"	1'-6"	1'-6"	1'-6"	1'-8"	2'-0"	2'-4"	2'-9"	3'-2"	3'-0"	3'-0"	3'-0"	3'-3"	3'-3"	3'-3"
BATTER	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	½: 12	⅝: 12	¾: 12	1 : 12	1 : 12	1⅛: 12	1⅛: 12	1⅛: 12
SPACING "S"	16"	16"	16"	8"	8"	7"	7"	7"	6"	6"	7"	7"	7"	6"	6"	6"	8"
ⓐ BARS	-	-	-	-	-	-	-	-	-	#5	#5	#5	#5	#5	#5	#6	#6
ⓑ BARS	-	-	-	-	-	-	#5	#5	#5	#7	#7	#7	#8	#8	#8	#9	#9
ⓒ BARS	#5	#5	#6	#5	#6	#6	#7	#8	#8	#9	#10	#10	#10	#10	#10	#11	#11
ⓓ BARS	#5	#5	#6	#5	#6	#8	#9	#9	#9	#10	#11	#9	#9	#9	#10	#10	#9
h1	-	-	-	4'-2"	4'-7"	6'-2"	7'-3"	8'-6"	8'-8"	9'-8"	11'-0"	12'-2"	14'-0"	13'-0"	15'-10"	14'-6"	12'-0"
h2	-	-	-	-	-	-	10'-6"	12'-9"	14'-2"	13'-8"	17'-0"	18'-6"	17'-10"	18'-9"	20'-3"	21'-0"	17'-0"
h3	-	-	-	-	-	-	-	-	-	15'-6"	17'-9"	19'-6"	21'-8"	23'-0"	24'-8"	25'-6"	24'-8"
No. of Toe Stirrups	0	0	0	0	0	0	0	0	0	0	0	6	6	7	7	7	8
No. of Heel Stirrups	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	6
ZONE 1 Ⓢ BARS	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12
ZONE 2 Ⓢ BARS	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 18	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#6 @ 12	#6 @ 12	#6 @ 12	#7 @ 12	#7 @ 12	#7 @ 12
ZONE 1 Ⓣ BARS	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12
ZONE 2 Ⓣ BARS	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 18	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12
Ser: B', q_o	4.3, 0.8	4.9, 1.1	5.6, 1.3	7.1, 1.5	8.0, 1.8	9.3, 2.1	10.6, 2.3	11.9, 2.5	13.3, 2.6	14.6, 2.8	15.9, 2.9	17.0, 3.0	18.0, 3.1	19.3, 3.3	20.4, 3.5	21.5, 3.7	22.7, 3.9
Str: B', q_o	2.4, 2.2	2.4, 2.7	2.7, 3.2	3.0, 3.7	4.3, 3.8	5.9, 3.8	7.0, 4.1	7.9, 4.3	9.0, 4.5	9.9, 4.7	10.8, 4.9	11.6, 5.0	12.3, 5.2	13.3, 5.4	14.2, 5.7	15.0, 5.9	16.0, 6.1
Ext: B', q_o	4.1, 1.5	3.9, 2.1	3.8, 2.8	3.5, 3.9	3.6, 4.9	4.2, 5.5	4.6, 6.3	5.0, 7.0	5.6, 7.4	6.0, 8.0	6.5, 8.4	6.9, 8.6	7.2, 9.2	7.7, 9.6	8.1, 10.4	8.4, 10.9	8.9, 11.3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 3)

RSP B3-1C DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN B3-1C
DATED OCTOBER 30, 2015 - PAGE 288 OF THE STANDARD PLANS BOOK DATED 2015.

NO SCALE

REVISED STANDARD PLAN RSP B3-1C

2015 REVISED STANDARD PLAN RSP B3-1C

5-23-17

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

Peter W. Norboe
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Peter W. Norboe — No. C57519 — Exp. 12-31-17 — CIVIL — STATE OF CALIFORNIA

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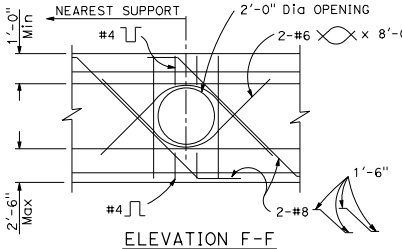
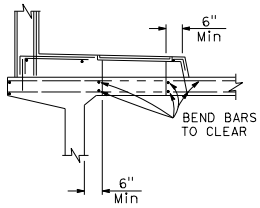
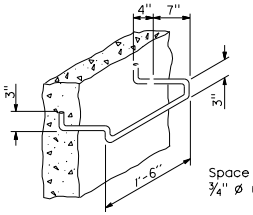
TO ACCOMPANY PLANS DATED _____



ELEVATION F-F



SECTION C-C

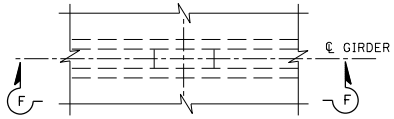


Space ladder rung @ 12
¾" Ø Galvanize after fabrication

BAR STEP

LADDER RUNG DETAILS

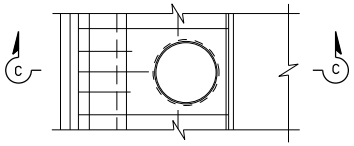
DETAIL U44



PART PLAN

GIRDER STEM ACCESS OPENING

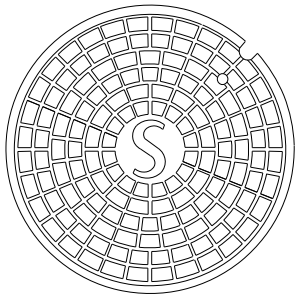
DETAIL U41



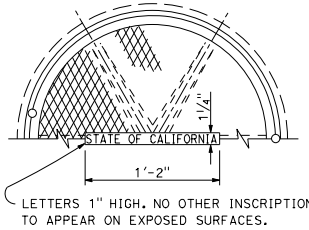
PART PLAN

SIDEWALK ACCESS OPENING

DETAIL U42



TOP OF MANHOLE COVER

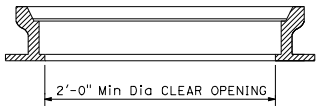


LETTERS 1" HIGH. NO OTHER INSCRIPTION TO APPEAR ON EXPOSED SURFACES.

TOP OF MANHOLE FRAME & COVER

NOTES:

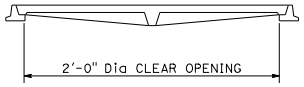
1. For exact location of openings see other sheets.
2. Location and size of manholes may be modified as directed by the Engineer, provided minimum dimensions are maintained.
3. All reinforcement detailed to be placed in addition to reinforcement shown on other sheets.



SECTION THROUGH FRAME

NON-ROCKING MANHOLE FRAME & COVER FOR DECKS

DETAIL U45



SECTION THROUGH FRAME & COVER

MANHOLE FRAME & COVER FOR SIDEWALKS

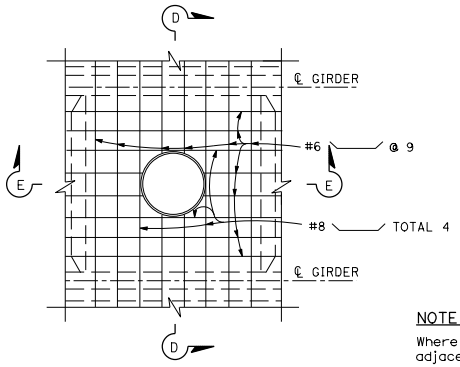
DETAIL U46

NOTES:

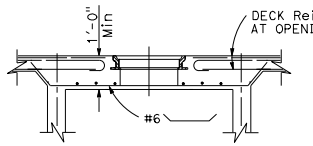
1. Step inserts may be substituted for the standard step detail. Step inserts shall comply with State Industrial Safety requirements.
2. Covers for use on sewer structures shall bear the letter "S"; on storm drain structures the letter "D"; on openings for utilities the letter "U".

NOTES:

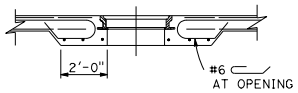
1. Frame and cover shall be cast iron.
2. Cover shall be supplied with bolt down or locking devices.



PART PLAN



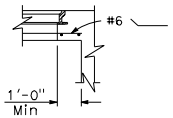
SECTION D-D



SECTION E-E

NOTE:

Where manhole is located adjacent to a diaphragm or abut, substitute half Section E-E on one side of Section E-E.



HALF SECTION E-E

DECK ACCESS OPENING

DETAIL U43

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

UTILITY DETAILS

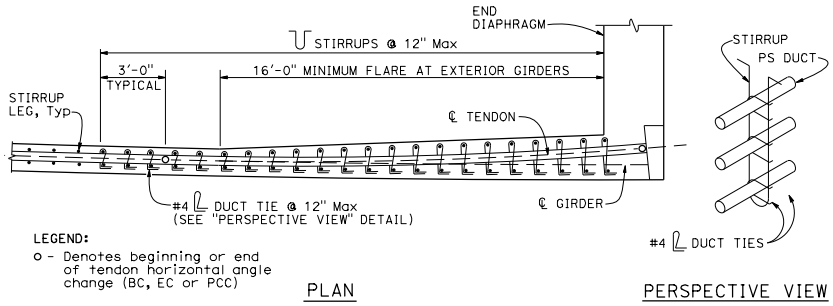
NO SCALE

RSP B7-11 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B7-11
DATED OCTOBER 30, 2015 - PAGE 308 OF THE STANDARD PLANS BOOK DATED 2015.

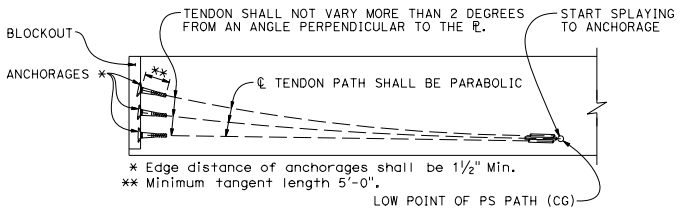
REVISED STANDARD PLAN RSP B7-11

2015 REVISED STANDARD PLAN RSP B7-11

6-16-16



DUCT TIES AT TENDON HORIZONTAL ANGLE CHANGES
DETAIL 5-1



ELEVATION - ANCHORAGES AND PRESTRESSING PATH
DETAIL 5-2

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

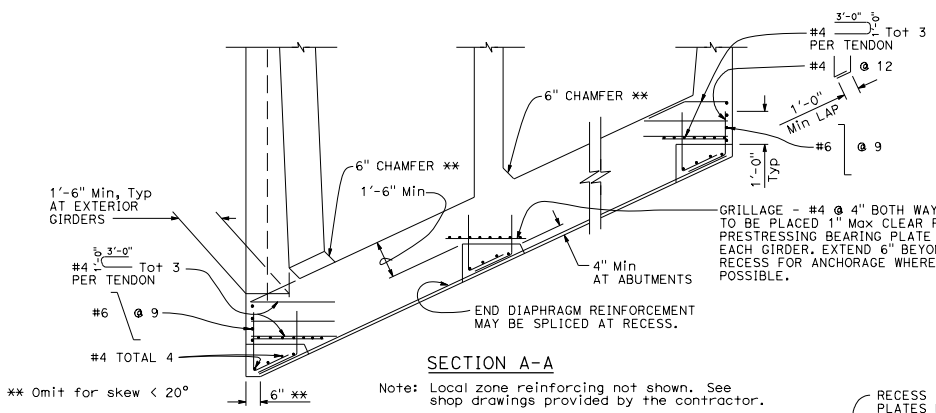
Marc Friedheim
No. C57968
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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.

TO ACCOMPANY PLANS DATED _____

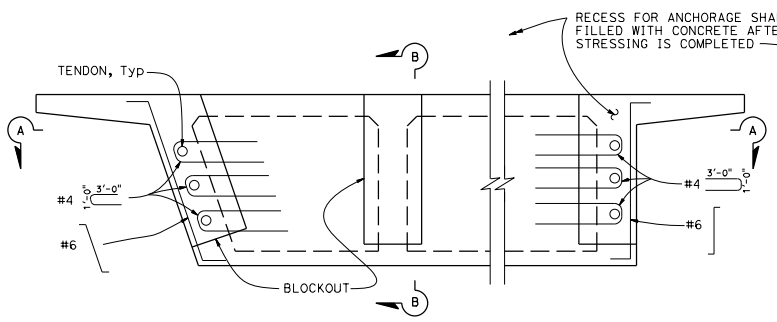
NOTES FOR DETAIL 5-1

1. Tendon horizontal angle change at end diaphragm shown. Duct tie placement similar for other locations where tendon horizontal angle changes occur. For curved girders place duct ties at tendon angle changes where ℄ tendon radius is smaller than ℄ girder radius.
2. Adjacent duct ties may be staggered vertically to facilitate placement if stirrup spacing is 6 inches or less.
3. Place closed end of duct ties toward inside of tendon curve.
4. Wrap duct ties around both stirrup legs.
5. Individual duct ties may only be used to anchor one duct.

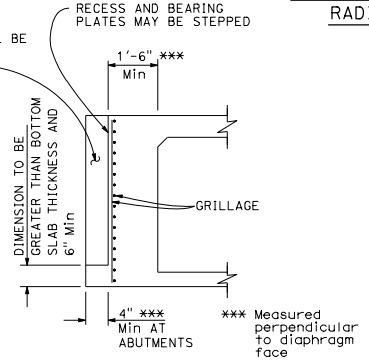


SECTION A-A

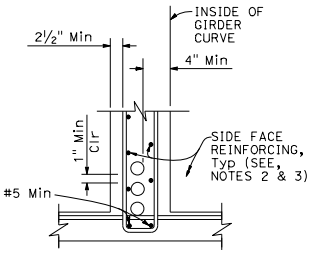
Note: Local zone reinforcing not shown. See shop drawings provided by the contractor.



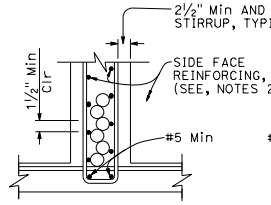
PRESTRESS ANCHORAGE DETAILS AT END DIAPHRAGMS
DETAIL 5-3



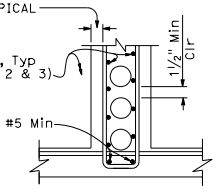
SECTION B-B



DUCTS 4½" OD AND LESS FOR HORIZONTAL CURVE RADIUS ≤ 2000'



DUCTS 4½" OD AND LESS



DUCTS OVER 4½" OD

CLEARANCE REQUIREMENTS FOR DUCTS
DETAIL 5-4

NOTES FOR DETAIL 5-4:

1. ⊔ Stirrups may also be used.
2. For additional details, see Standard Plan B7-1, and Project Plans.
3. Bar reinforcing which interferes with prestressing ducts may be adjusted as approved by the Engineer.
4. The detail for "DUCTS OVER 4½" OD" shall be used on tangent and horizontally curved alignments.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE POST-TENSIONED GIRDER DETAILS

NO SCALE

RSP B8-5 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN B8-5
DATED OCTOBER 30, 2015 - PAGE 309 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B8-5

2015 REVISED STANDARD PLAN RSP B8-5

10-31-16

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — C.J. Sims — No. C46471 — Exp. 6-30-19 CIVIL — STATE OF CALIFORNIA

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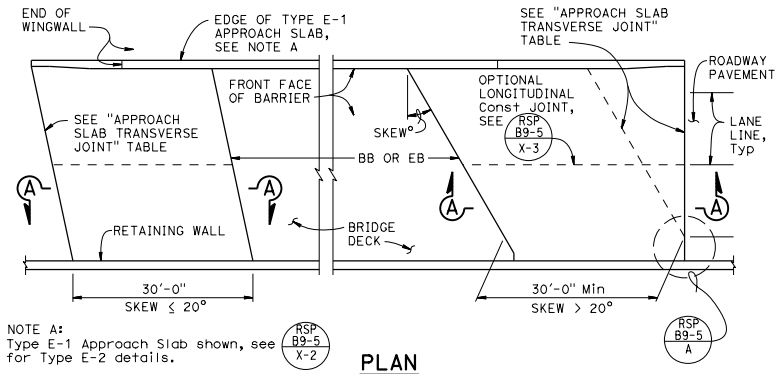
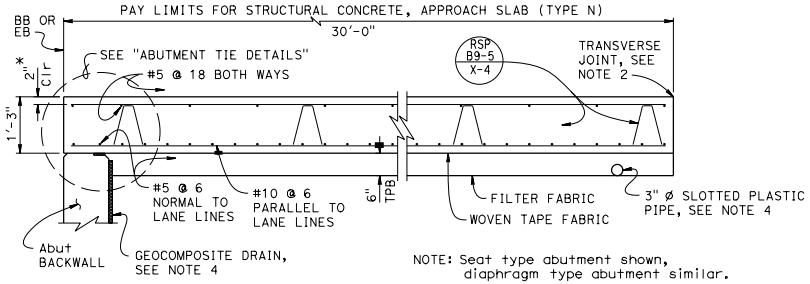
TO ACCOMPANY PLANS DATED _____

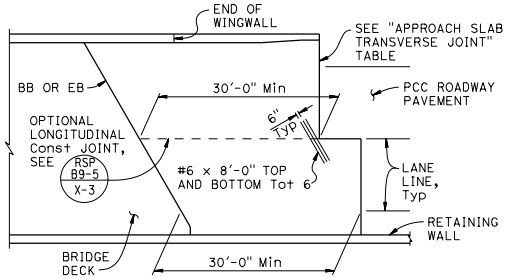


PLAN

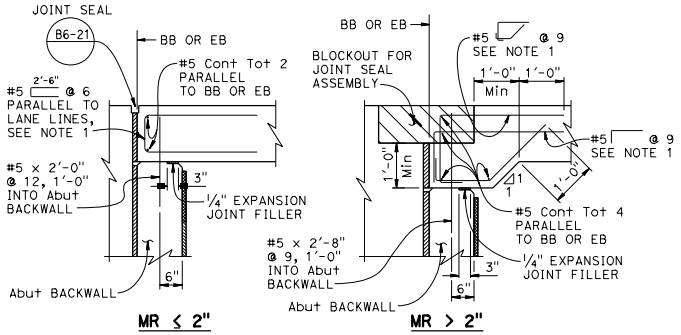
APPROACH SLAB TRANSVERSE JOINT		
APPROACH SKEW, x	WITH HMA ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
x < 20°	PARALLEL TO BB OR EB	PARALLEL TO BB OR EB
20° < x < 45°	PARALLEL TO BB OR EB (RSP B9-5 A)	STAGGER AT LANE LINES 24' TO 36' APART, SEE "END STAGGER DETAIL"
x > 45°	PARALLEL TO BB OR EB (RSP B9-5 A)	STAGGER AT EACH LANE LINE, SEE "END STAGGER DETAIL"



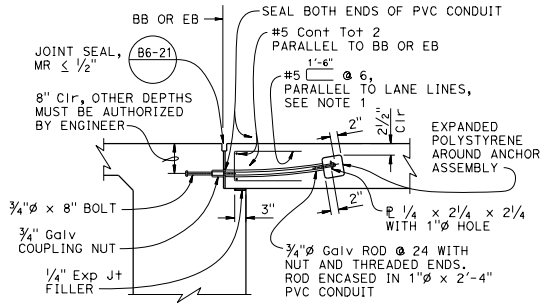
SECTION A-A



END STAGGER DETAIL



SEAT TYPE ABUTMENT (RSP B9-5 C)



DIAPHRAGM TYPE ABUTMENT

ABUTMENT TIE DETAILS

LEGEND:

* - All approach slab reinforcement shall be epoxy coated and minimum top mat cover 2½" in Freeze-Thaw Area.

NOTES:

1. For MR ≤ 2", adjust reinforcement to clear sawcut for sealed joint. For MR > 2", reinforcement must be normal to BB or EB and spaced to avoid joint seal assembly anchorage.
2. Transverse Joint must be a minimum of 5'-0" from an existing or constructed weakened plane joint in approach PCC roadway pavement. Refer to Standard Plans P10 and P14.
3. At the Contractor's option, approach slab transverse reinforcement may be placed parallel to BB or EB. Spacing of transverse reinforcement is measured along ℄ roadway.
4. For structure approach drainage details, refer to Revised Standard Plan RSP B9-6.
5. For details not shown, refer to Revised Standard Plan RSP B9-5.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE APPROACH TYPE N (30)

NO SCALE

RSP B9-1 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B9-1

5-26-17

2015 REVISED STANDARD PLAN RSP B9-1

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — C.J. Sims — No. C46471 — Exp. 6-30-19 CIVIL — STATE OF CALIFORNIA

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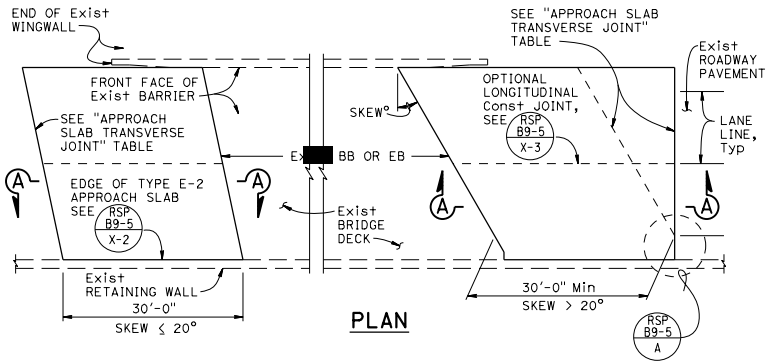
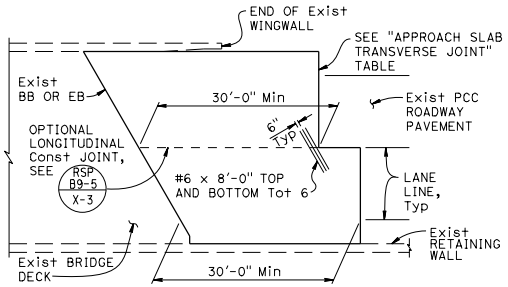
TO ACCOMPANY PLANS DATED _____

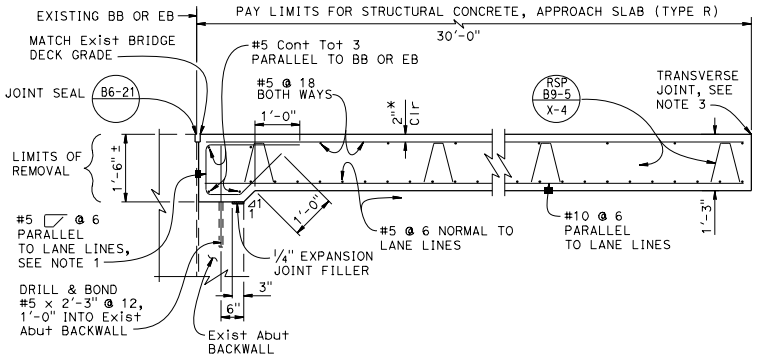


PLAN

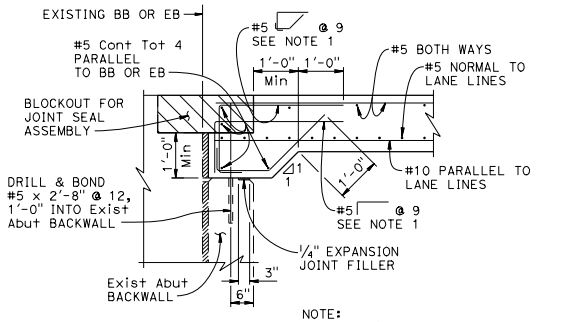


END STAGGER DETAIL

APPROACH SLAB TRANSVERSE JOINT		
APPROACH SKEW, x	WITH HMA ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
x < 20°	PARALLEL TO BB OR EB	PARALLEL TO BB OR EB
20° < x < 45°	PARALLEL TO BB OR EB (RSP B9-5 A)	STAGGER AT LANE LINES 24' TO 36' APART, SEE "END STAGGER DETAIL"
x > 45°	PARALLEL TO BB OR EB (RSP B9-5 A)	STAGGER AT EACH LANE LINE, SEE "END STAGGER DETAIL"

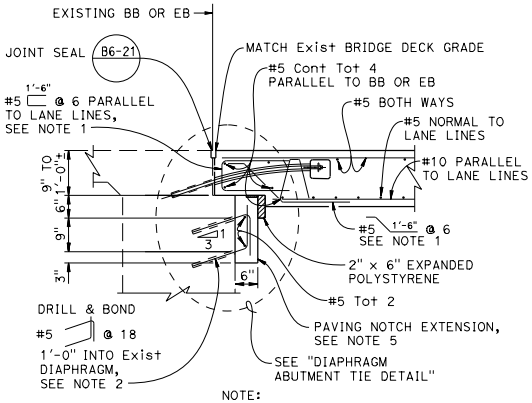


SEALED JOINT



NOTE:
For additional details not shown, see "SEALED JOINT"

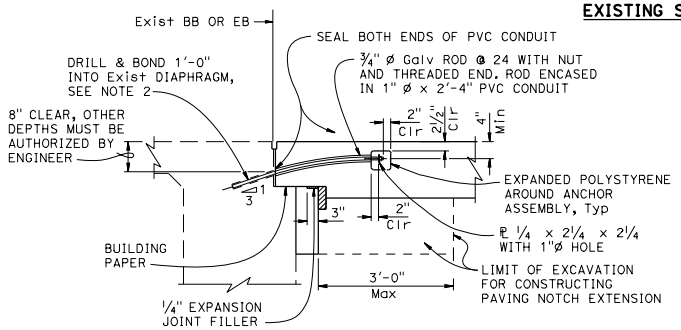
JOINT SEAL ASSEMBLY



NOTE:
For additional details not shown, see "EXISTING SEAT ABUTMENT"

EXISTING DIAPHRAGM ABUTMENT

EXISTING SEAT ABUTMENT



DIAPHRAGM ABUTMENT TIE DETAIL

SECTION A-A

NOTES:

1. For MR < 2", adjust reinforcement to clear sawcut for sealed joint. For MR > 2", reinforcement must be normal to BB or EB and spaced to avoid joint seal assembly anchorage.
2. Space reinforcement and abutment ties to avoid existing prestressing anchorages and other reinforcement in abutment, as needed.
3. Transverse Joint must be a minimum of 5'-0" from an existing or constructed weakened plane joint in approach PCC roadway pavement. Refer to Standard Plans P10 and P14.
4. At the Contractor's option, approach slab transverse reinforcement may be placed parallel to BB or EB. Spacing of transverse reinforcement is measured along ℄ roadway.
5. Paving notch extension is required if existing diaphragm paving notch is < 6".
6. For details not shown, refer to Revised Standard Plan RSP B9-5.

LEGEND:

— - Indicates Existing Structure

* - All approach slab reinforcement shall be epoxy coated and top mat cover 2½" clear in Freeze-Thaw Area.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE APPROACH TYPE R (30)

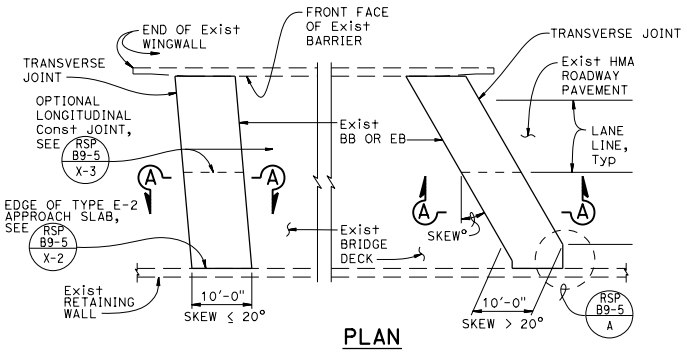
NO SCALE

RSP B9-2 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B9-2

2015 REVISED STANDARD PLAN RSP B9-2

5-26-17



PLAN

LEGEND:

— - Indicates Existing Structure

* - All approach slab reinforcement shall be epoxy coated and top mat cover 2½" clear in Freeze-Thaw Area.

NOTES:

1. For MR ≤ 2", adjust reinforcement to clear sawcut for sealed joint. For MR > 2", reinforcement must be normal to BB or EB and spaced to avoid joint seal assembly anchorage.
2. Space reinforcement and abutment ties to avoid existing prestressing anchorages and other reinforcement in abutment, as needed.
3. At the Contractor's option, approach slab transverse reinforcement may be placed parallel to BB or EB. Spacing of transverse reinforcement is measured along ℄ roadway.
4. Paving notch extension is required if existing diaphragm paving notch is < 6".
5. For details not shown, refer to Revised Standard Plan RSP B9-5.

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
C.J. Sims
No. C46471
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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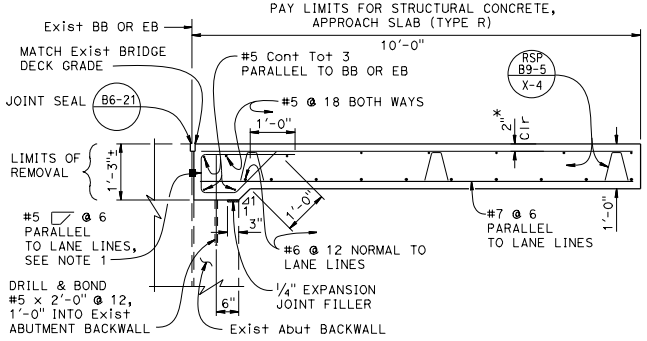
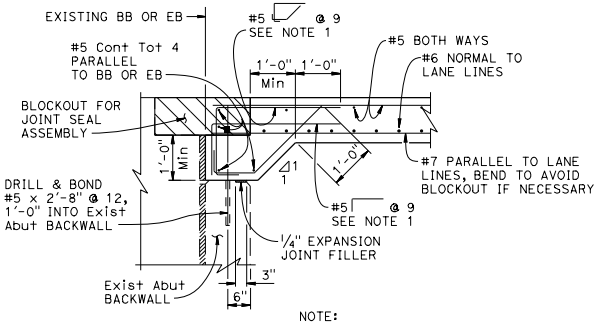
TO ACCOMPANY PLANS DATED _____

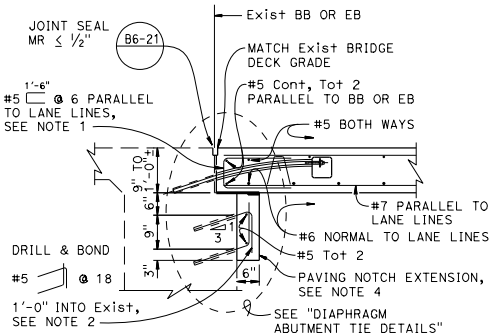


SEALED JOINT



NOTE:
For additional details not shown, see "SEALED JOINT"

JOINT SEAL ASSEMBLY

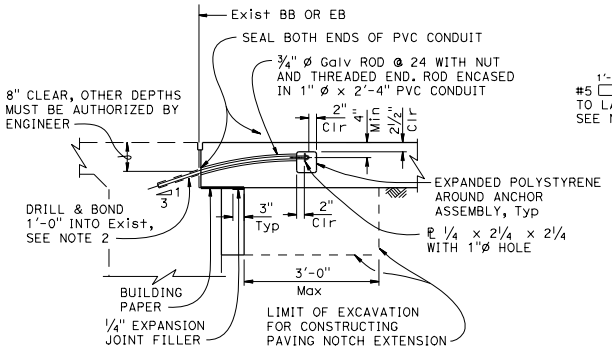


NOTE:
For additional details not shown, see "EXISTING SEAT ABUTMENT"

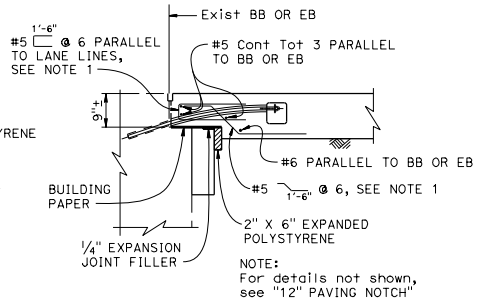
EXISTING DIAPHRAGM ABUTMENT

EXISTING SEAT ABUTMENT

SECTION A-A



12" PAVING NOTCH



NOTE:
For details not shown, see "12" PAVING NOTCH"

9" PAVING NOTCH

DIAPHRAGM ABUTMENT TIE DETAILS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE APPROACH TYPE R (10)

NO SCALE

RSP B9-3 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B9-3

2015 REVISED STANDARD PLAN RSP B9-3

5-26-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
C.J. Sims
No. C46471
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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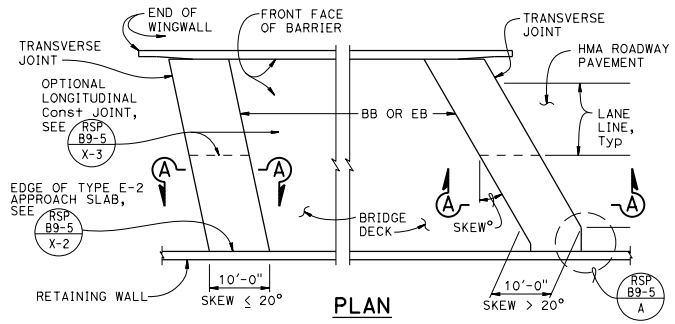
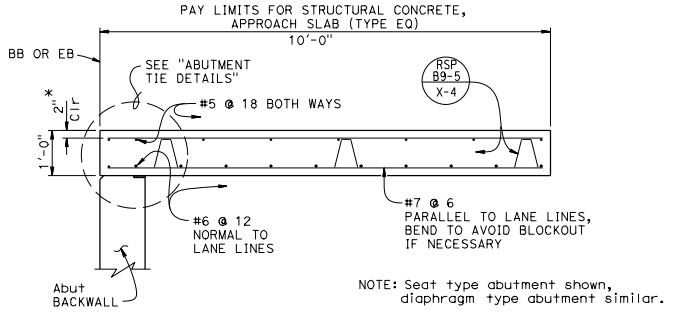
TO ACCOMPANY PLANS DATED _____

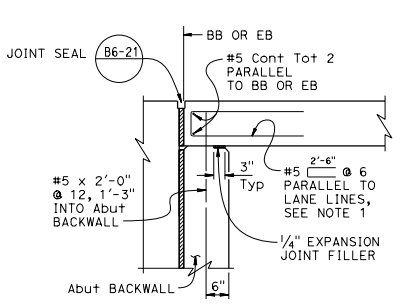


PLAN

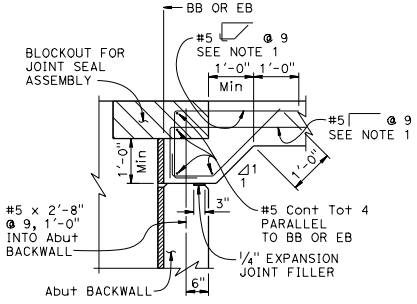


NOTE: Seat type abutment shown, diaphragm type abutment similar.

SECTION A-A

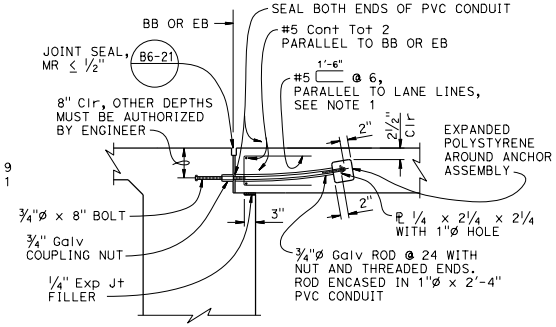


MR ≤ 2"



MR > 2"

SEAT TYPE ABUTMENT (RSP B9-5 C)



DIAPHRAGM TYPE ABUTMENT

ABUTMENT TIE DETAILS

LEGEND:

* - All approach slab reinforcement shall be epoxy coated and minimum top mat cover 2½" in Freeze-Thaw Area.

NOTES:

1. For MR ≤ 2", adjust reinforcement to clear sawcut for sealed joint. For MR > 2", reinforcement must be normal to BB or EB and spaced to avoid joint seal assembly anchorage.
2. At the Contractor's option, approach slab transverse reinforcement may be placed parallel to BB or EB. Spacing of transverse reinforcement is measured along ℄ roadway.
3. For details not shown, refer to Revised Standard Plan RSP B9-5.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE APPROACH TYPE EQ (10)

NO SCALE

RSP B9-4 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B9-4

2015 REVISED STANDARD PLAN RSP B9-4

5-26-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
C.J. Sims
No. C46471
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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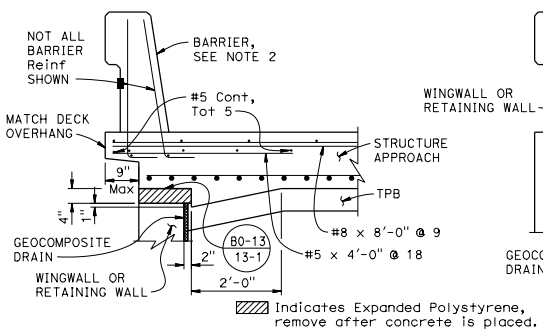
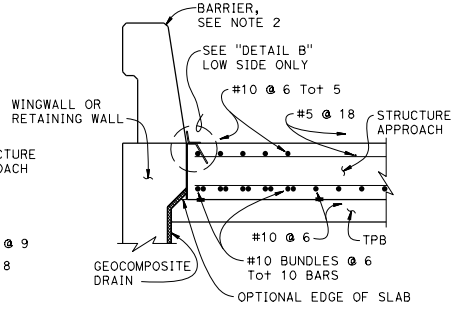
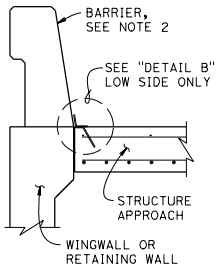
TO ACCOMPANY PLANS DATED _____



DETAIL X-1
TYPE E-1



DETAIL X-2
TYPE E-2



DETAIL X-2
TYPE R (10) & EQ

DESIGN NOTES

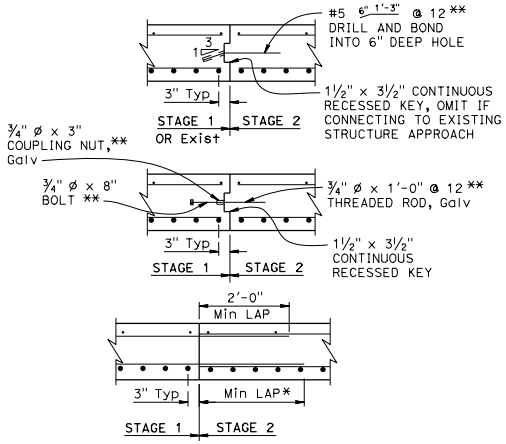
DESIGN: AASHTO LRFD Bridge Design Specifications, 2012 Edition with Caltrans Amendments, preface dated January 2014

LIMIT STATES: Service I, Strength I & II, Extreme II and Fatigue I (γ_{FAT} = 1.0)

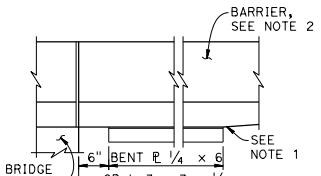
DEAD LOAD: Includes 35 psf for future wearing surface

LIVE LOAD: HL93 and permit design load
Equivalent strip width method: W_1 = 12 ft
Slab span: L_1 = 24.5 ft (30 ft Approach Slab)
Slab span: L_1 = 7.83 ft (10 ft Approach Slab)

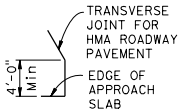
REINFORCED CONCRETE:
f_y = 60 ksi
f'_c = 3.6 ksi
n = 8



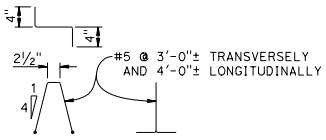
DETAIL X-3
LONGITUDINAL CONSTRUCTION JOINT ALTERNATIVES



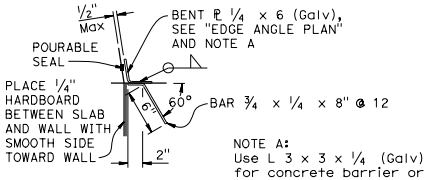
EDGE ANGLE PLAN



DETAIL A

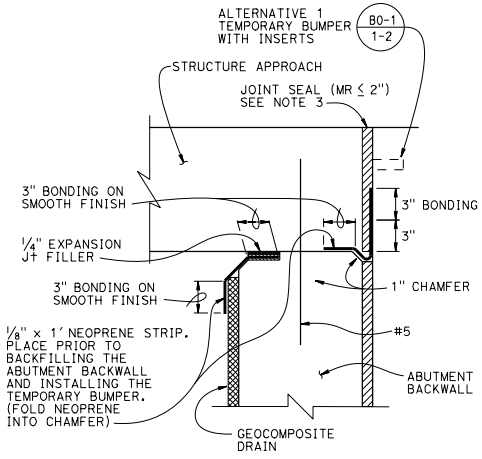


DETAIL X-4
BAR CHAIR DETAIL



DETAIL B

NOTE A:
Use L 3 x 3 x ¼ (Galv) for concrete barrier or curb with vertical face.



DETAIL C

LEGEND:

* Min lap splice for bottom Reinf in Freeze-Thaw Area shall be 3'-6".

** Threaded Rods and Dowels in Freeze-Thaw Area shall be stainless steel.

NOTES:

1. End the plate or edge angle at beginning of barrier transition, end of wingwall or end of structure approach as applicable.
2. Solid concrete barrier shown, details similar for all concrete and standard post-beam barriers.
3. Joint protection details shown for MR ≤ 2". Details similar when joint seal assembly is required.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE APPROACH SLAB DETAILS

NO SCALE

RSP B9-5 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B9-5

2015 REVISED STANDARD PLAN RSP B9-5

5-26-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
C.J. Sims
No. C46471
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

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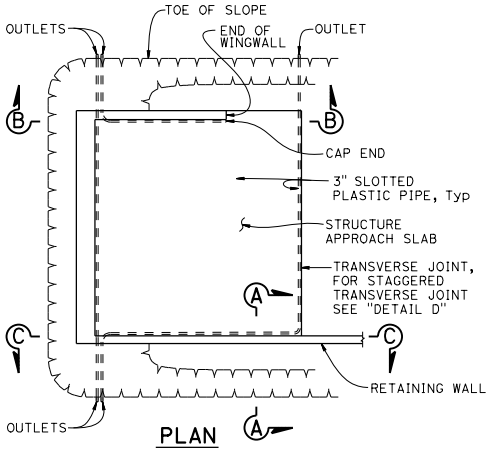
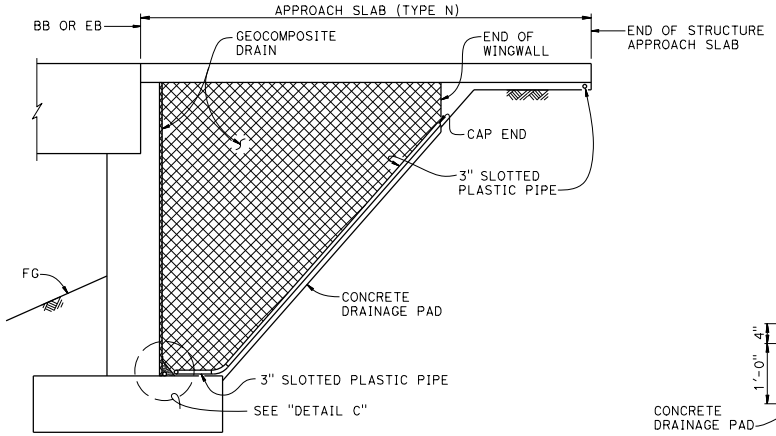
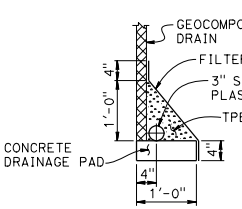
TO ACCOMPANY PLANS DATED _____



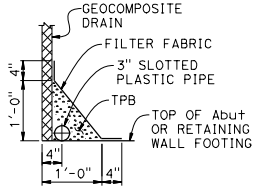
PLAN



SECTION B-B

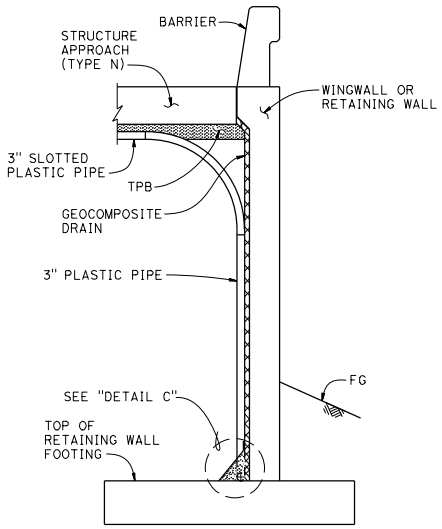


DRAINAGE PAD

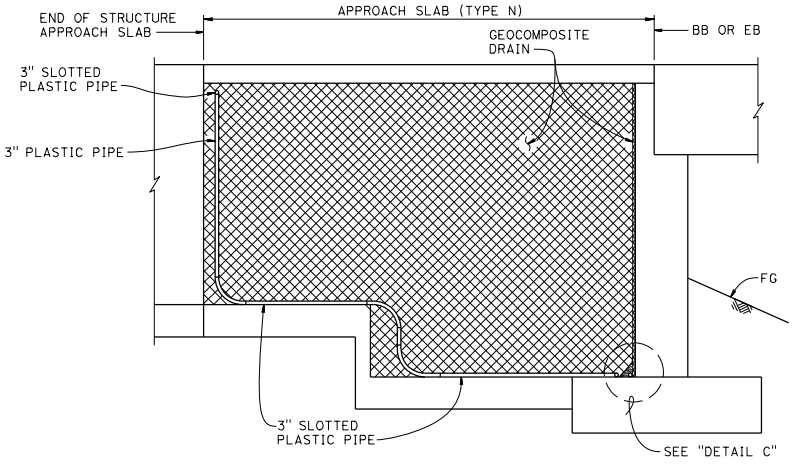


FOOTING

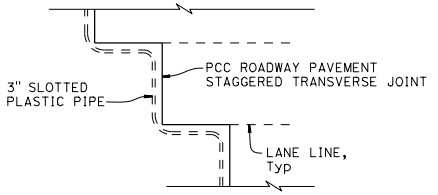
DETAIL C



SECTION A-A



SECTION C-C



DETAIL D

NOTES:

1. All bends in plastic pipe must have 3'-0" minimum radius. Plastic pipe used for bends is not required to be slotted.
2. For Approach Slab (Type N) details, refer to Revised Standard Plan RSP B9-1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE APPROACH DRAINAGE DETAILS

NO SCALE

RSP B9-6 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B9-6

2015 REVISED STANDARD PLAN RSP B9-6

5-26-17

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

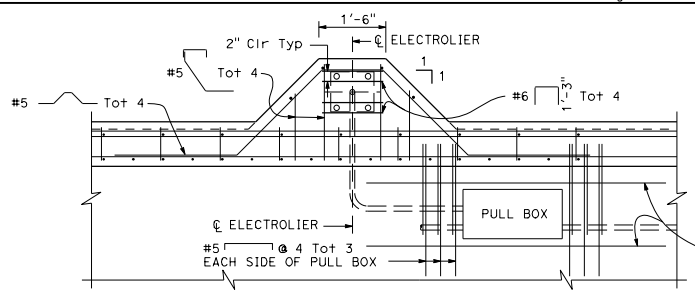
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

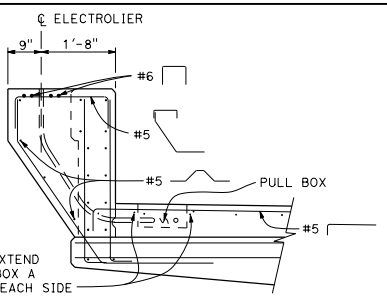
TO ACCOMPANY PLANS DATED _____

2015 REVISED STANDARD PLAN RSP B11-51

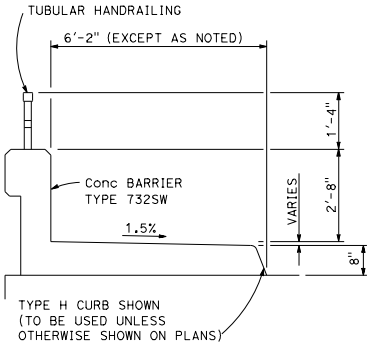
ELECTROLIER PEDESTAL DETAILS



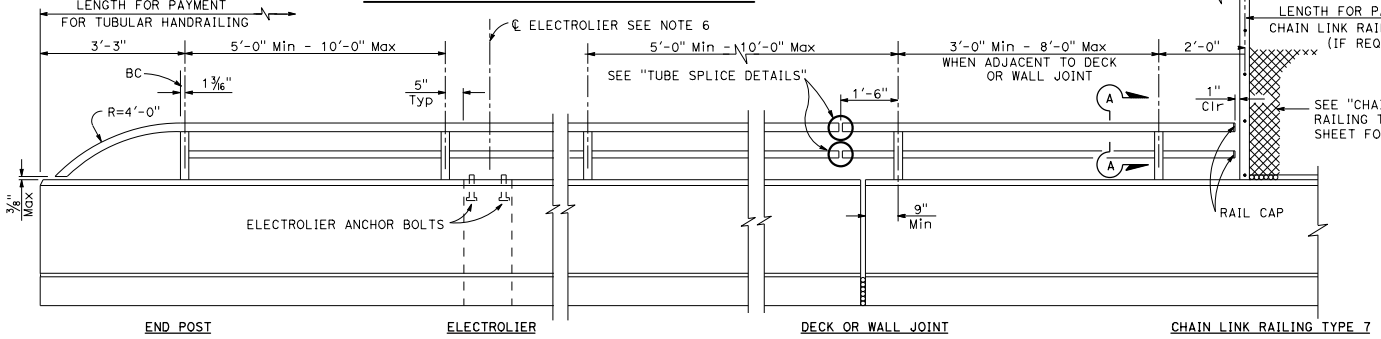
PLAN



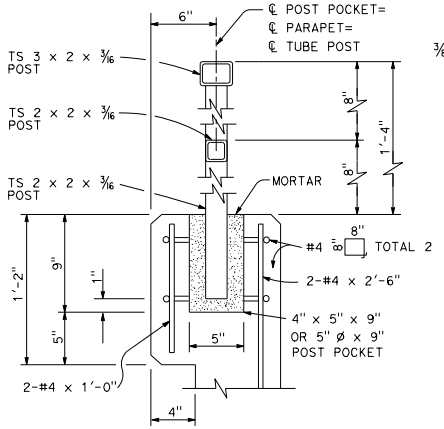
SECTION B-B



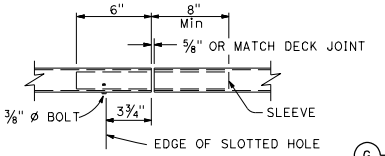
TYPICAL SECTION



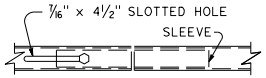
RAIL CAP
TS 3" x 2" x 0.1875" similar



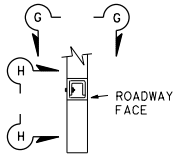
POST ANCHORAGE DETAILS



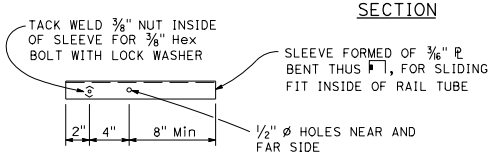
VIEW G-G



VIEW H-H



SECTION

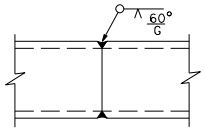


SLEEVE

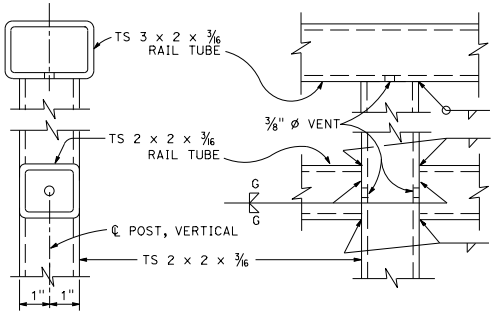
TUBE SPLICE DETAILS
TS 3 x 2 x 3⁄16 similar

NOTES:
3⁄8" Nut tack welded to sleeve may be replaced by drilled and tapped hole in sleeve.

ELEVATION



TUBE-WELDED SPLICE



SECTION A-A ELEVATION

RAIL CONNECTION DETAILS

NOTES:

1. Post shall be normal to railing.
2. Rail tubes shall be shop bent or fabricated to fit horizontal curve when radius is less than 950'.
3. Tube splices shall be located in the tubes spanning deck or wall joints. Increase joint width in tubes to match expansion joint width and increase sleeve length correspondingly.
4. Top rail tube shall be continuous over not less than two posts except a short post spacing is permitted near deck or wall joints, electroliers, or other rail discontinuities as noted.
5. For details and reinforcement not shown see Revised Standard Plan RSP B11-54.
6. For electrolier mounting details, see Revised Standard Plans RSP ES-6A and RSP ES-6B.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TUBULAR HANDRAILING

NO SCALE

RSP B11-51 DATED JANUARY 20, 2017 SUPERSEDES RSP B11-51 DATED JULY 15, 2016 AND STANDARD PLAN B11-51 DATED OCTOBER 30, 2015 - PAGE 312 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-51

11-22-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

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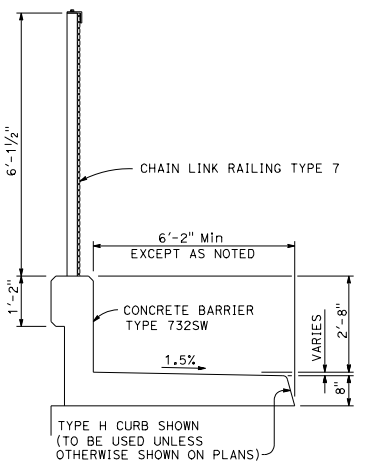
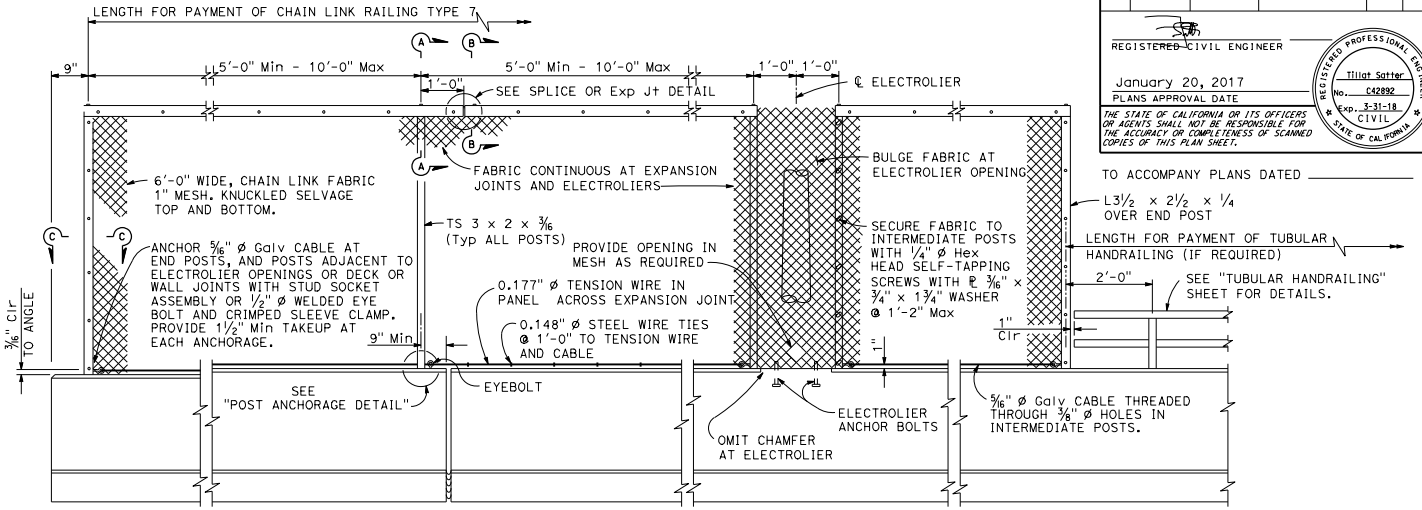
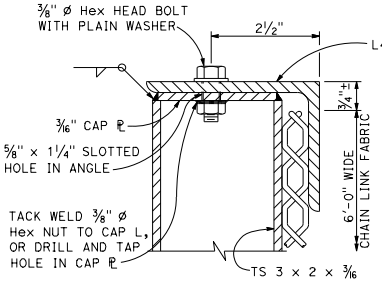
TO ACCOMPANY PLANS DATED _____



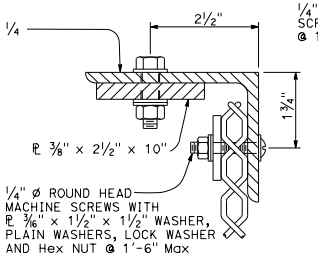
TYPICAL SECTION



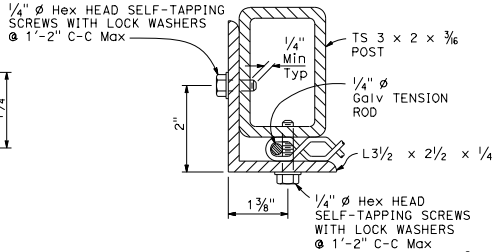
ELEVATION



SECTION A-A



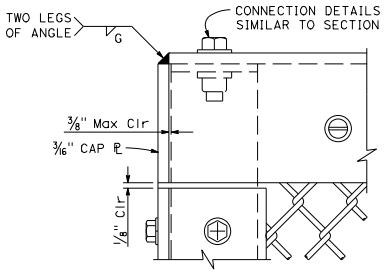
SECTION B-B



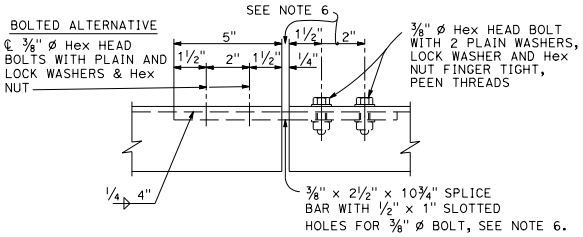
SECTION C-C

NOTES:

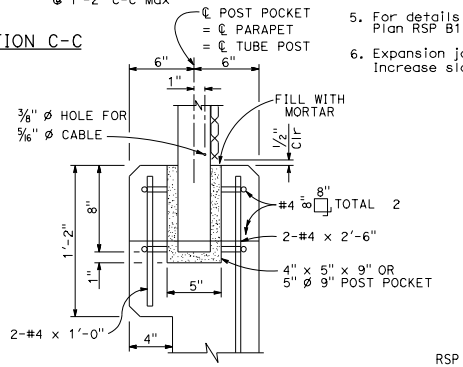
1. Posts shall be vertical.
2. Railing shall conform to horizontal and vertical alignment. When railing is placed on a curved horizontal alignment with radius of 148'-0" or less, thread the 5/16" Ø cable through 3/8" Ø welded eye rods embedded 4" into the top of the concrete parapet and equally spaced to limit the midordinate distance between the 5/16" Ø cable and the curve to 1" maximum. Horizontal angle shall be bent to conform to horizontal alignment if radius is 148'-0" or less and may be on 10'-0" chords if radius is over 148'-0"
3. Horizontal angle shall be continuous over not less than two intermediate posts, except that a shorter length is permitted at expansion joints, electroliers and other rail discontinuities.
4. When rail is on slope, place fabric parallel to slope.
5. For details and reinforcement not shown see Revised Standatd Plan RSP B11-54.
6. Expansion joint same dimension as expansion joint in deck or wall. Increase slotted hole length and splice bar length correspondingly.



END POST ELEVATION



SPLICE OR EXPANSION JOINT DETAIL



POST ANCHORAGE DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK RAILING TYPE 7

NO SCALE

RSP B11-52 DATED JANUARY 20, 2017 SUPERSEDES RSP B11-52
DATED OCTOBER 30, 2015 - PAGE 313 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-52

11-22-16

2015 REVISED STANDARD PLAN RSP B11-52

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

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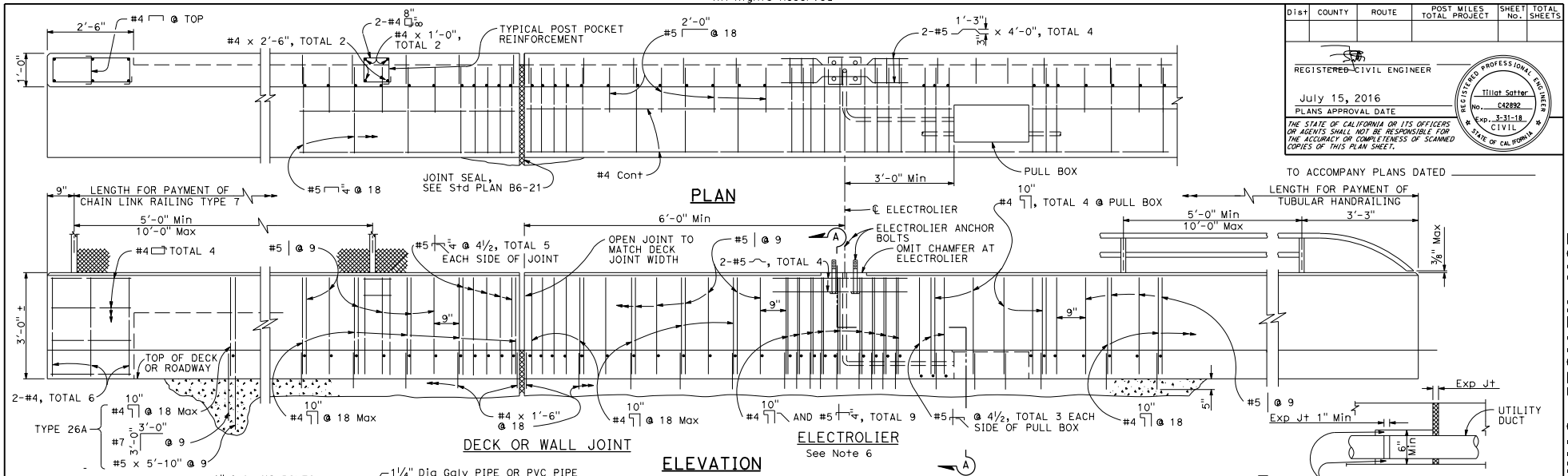
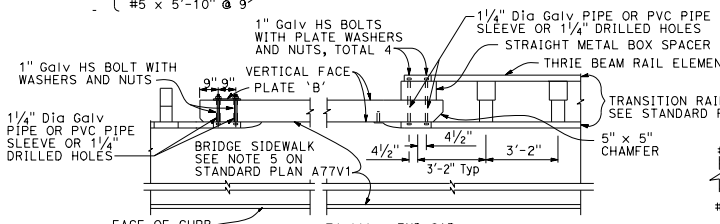
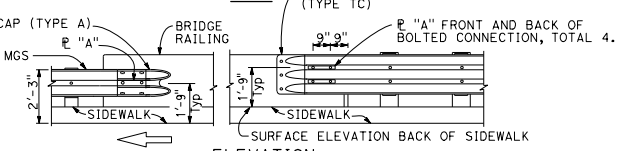
REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

2015 REVISED STANDARD PLAN RSP B11-54

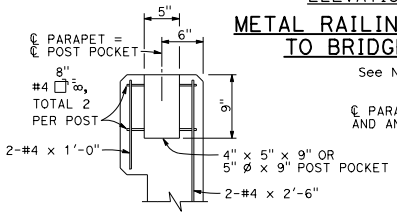






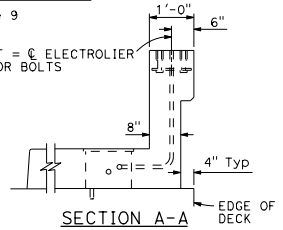
METAL RAILING CONNECTION TO BRIDGE RAILING

See Note 9

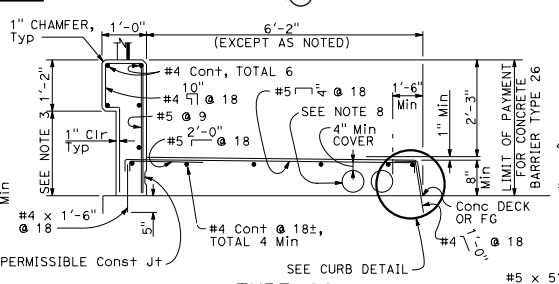


POST ANCHORAGE DETAIL

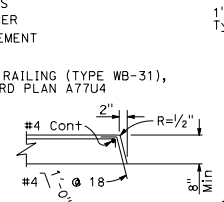
Applies to Chain Link Railing Type 7 and Tubular Handrailing. See respective Standard Plans for additional details.



SECTION A-A



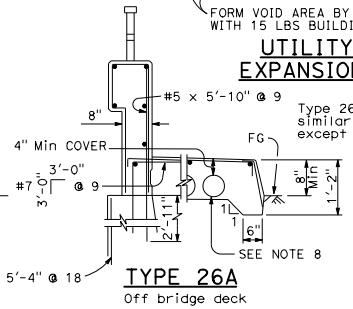
TYPE 26
On bridge deck



TYPE H

To be used unless otherwise shown on plans.

CURB DETAIL



TYPE 26A
Off bridge deck

UTILITY DUCT EXPANSION JOINT

NOTES:

1. For Chain Link Railing notes and details not shown, see Standard Plan B11-52.
2. For Handrailing notes and details not shown, see Revised Standard Plan RSP B11-51.
3. Dimensions will vary with cross slope and with certain thicknesses of surfacing. See Project Plans.
4. Walls are to be backfilled before railing is placed.
5. Clearance to reinforcing steel in curb and railing to be 1" except as noted. Longitudinal reinforcement to stop at all expansion joints.
6. See Project Plans for electrolier locations and pull box type.
7. For electrical details, see Standard Plans ES-9A, ES-9B, Revised Standard Plans RSP ES-9C, RSP ES-9D and RSP ES-9E.
8. A maximum of five - 4" and a minimum of two - 4" round openings for future utilities. Openings are to be sealed at ends and extended 8" minimum past end of sidewalk if not used. Duct forms are to be tied down. Minimum of 6" from face of rail to utility opening. See Standard Plan B14-3 for minimum spacing between conduit, and for details at joints.
9. For typical metal railing connection details not shown, see Standard Plans A77V1 and A77V2.
10. This barrier is to be used only for speeds of 45 MPH or less. For speeds greater than 45 MPH, pedestrians should be protected by a separation traffic barrier.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 26

NO SCALE

RSP B11-54 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B11-54 DATED OCTOBER 30, 2015 - PAGE 314 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-54

6-28-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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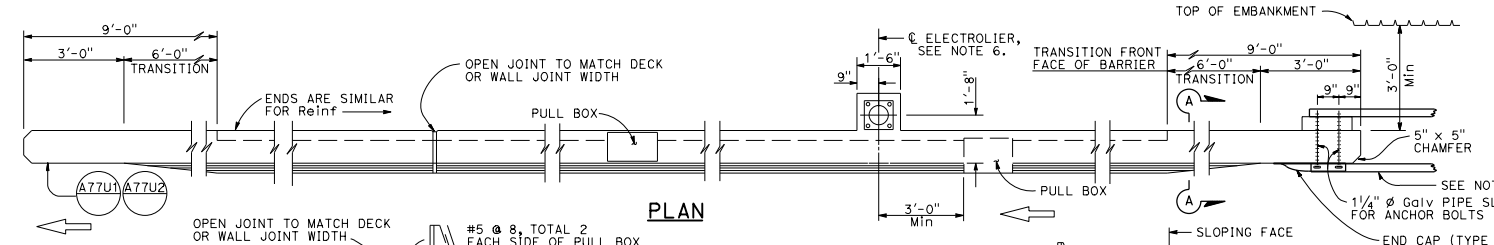
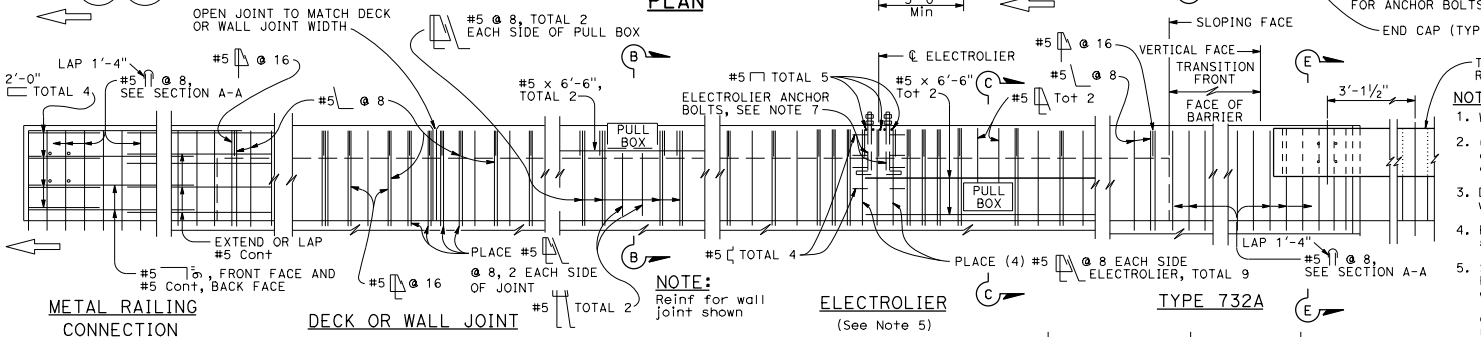
TO ACCOMPANY PLANS DATED _____

2015 REVISED STANDARD PLAN RSP B11-55



PLAN



METAL RAILING CONNECTION

DECK OR WALL JOINT

NOTE: Reinf for wall joint shown

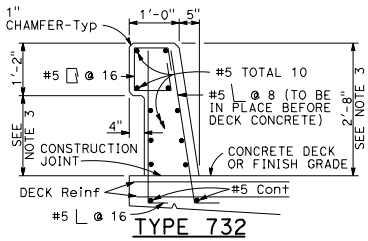
ELECTROLIER (See Note 5)

TYPE 732A

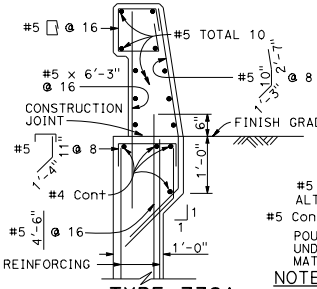
ELEVATION

NOTES:

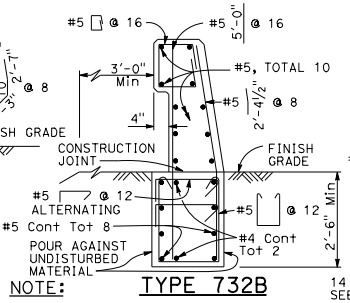
1. Walls are to be backfilled before barrier is placed.
2. Clearance to reinforcing steel in barrier to be 1", except as noted. Longitudinal reinforcement to stop at all expansion joints.
3. Dimensions may vary with roadway cross slope and with certain thickness of surfacing. See Project Plans.
4. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
5. See Standard Plans ES-9A, ES-9B, Revised Standard Plans RSP ES-9C, RSP ES-9D and RSP ES-9E for electrical details. The maximum number of conduits is limited to two 2" conduits along with one 3" conduit. When a 3" conduit is used, it is restricted to the base of the barrier.
6. For electrolier mounting details, See Revised Standard Plans RSP ES-6A and RSP ES-6B.
7. Minimum concrete edge distance, to the reinforcing shown, shall be maintained. Edge distance may be adjusted to accommodate increase in concrete cover for architectual treatment.



TYPE 732

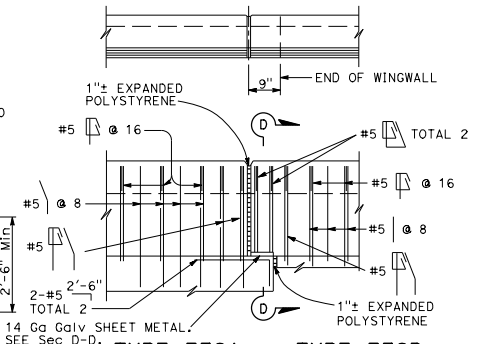


TYPE 732A

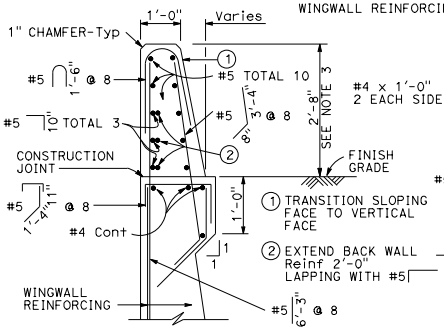


TYPE 732B

NOTE: Types 732A and 732B are similar to Type 732 except as noted.

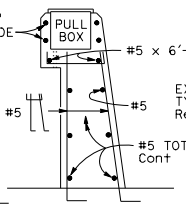


TYPE 732A TYPE 732B

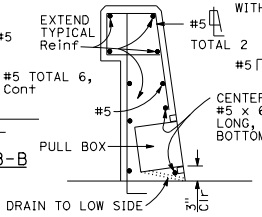


SECTION A-A

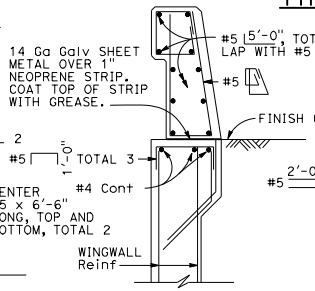
Details shown for barrier anchorage to Type 732A. Anchorage for barrier Types 732 and 732A are similar to their respective details.



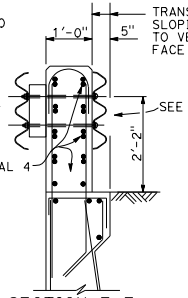
SECTION B-B



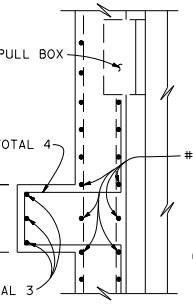
SECTION C-C
See Notes



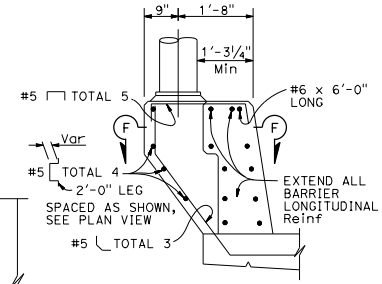
SECTION D-D



SECTION E-E
See Notes



SECTION F-F



PEDESTAL ELEVATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 732

NO SCALE

RSP B11-55 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B11-55 DATED OCTOBER 30, 2015 - PAGE 315 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-55

6-28-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

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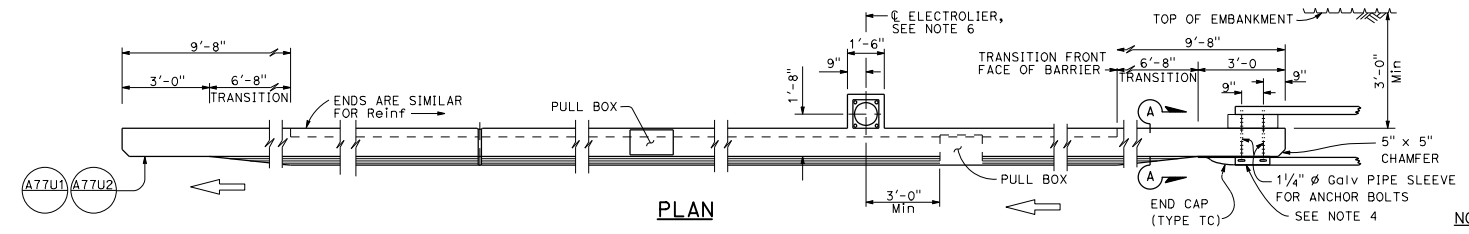
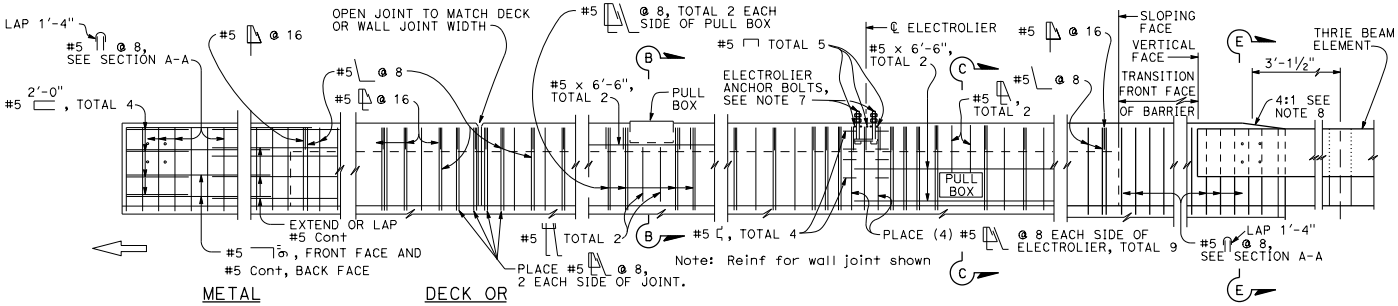
REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

2015 REVISED STANDARD PLAN RSP B11-56

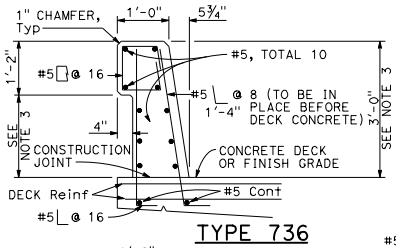


PLAN

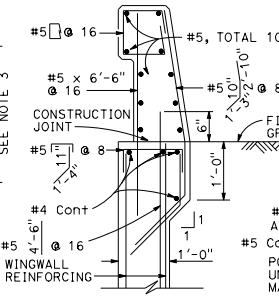


METAL RAILING CONNECTION | DECK OR WALL JOINT | ELECTROLIER (See Note F) | TYPE 736A

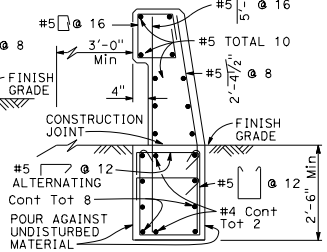
ELEVATION



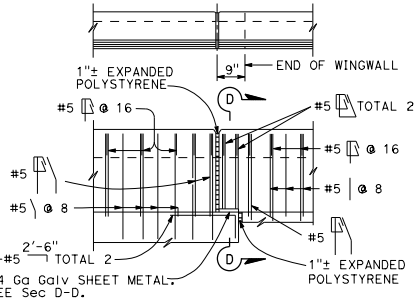
TYPE 736



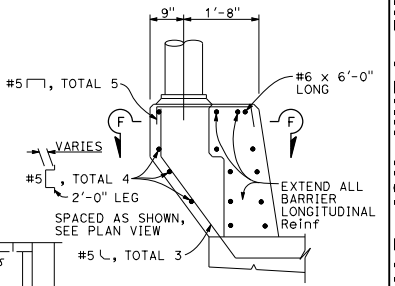
TYPE 736A



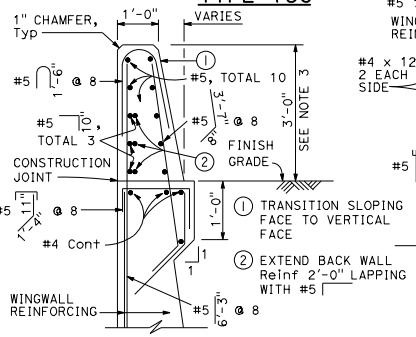
TYPE 736B



TYPE 736A TYPE 736B

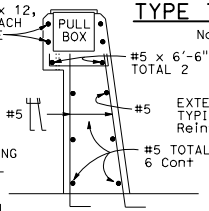


PEDESTAL ELEVATION



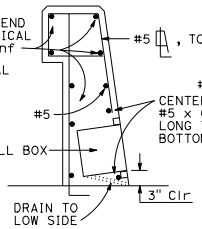
SECTION A-A

Details shown for barrier anchorage to Type 736A. Anchorgae for barrier Types 736 and 736B are similar to their respective details.

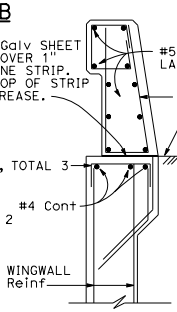


SECTION B-B

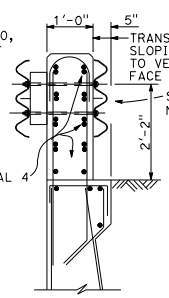
Note: Types 736A & 736B are similar to Type 736 except as noted



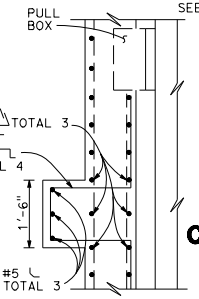
SECTION C-C
See Notes



SECTION D-D



SECTION E-E
See Notes



SECTION F-F

NOTES:

1. Walls are to be backfilled before barrier is placed.
2. Clearance to reinforcing steel in barrier to be 1", except as noted. Longitudinal reinforcement to stop at all expansion joints.
3. Dimensions may vary with roadway cross slope and with certain thickness of surfacing. See Project Plans.
4. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
5. See Standard Plans ES-9A, ES-9B, Revised Standard Plans RSP ES-9C, RSP ES-9D and RSP ES-9E for electrical details. The maximum number of conduits in the barrier is limited to two 2" conduits along with one 3" conduit. When a 3" conduit is used, it is restricted to the base of the barrier.
6. For electrolier mounting details, See Revised Standard Plans RSP ES-6A and RSP ES-6B.
7. Minimum concrete edge distance, to the reinforcing shown, shall be maintained. Edge distance may be adjusted to accommodate increase in concrete cover for architectual treatment.
8. Taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam rail element.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 736

NO SCALE

RSP B11-56 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B11-56 DATED OCTOBER 30, 2015 - PAGE 316 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-56

6-28-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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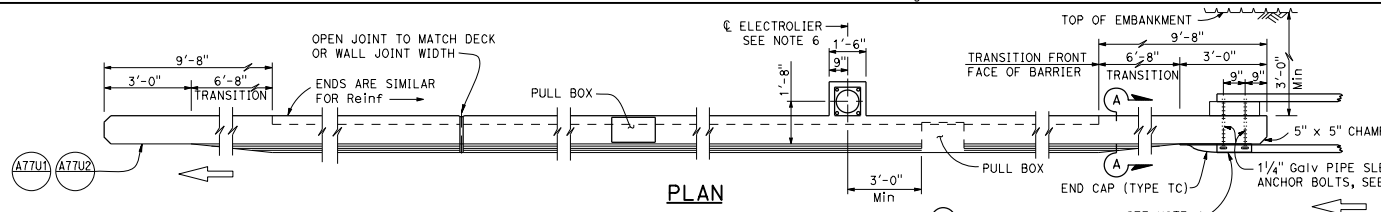
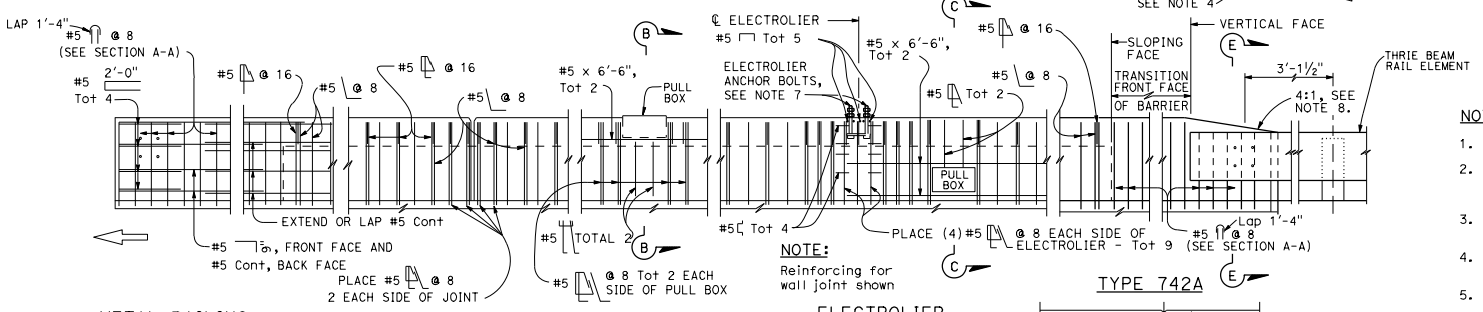
TO ACCOMPANY PLANS DATED _____

2015 REVISED STANDARD PLAN RSP B11-57

PLAN

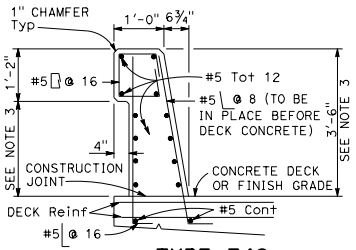


ELEVATION



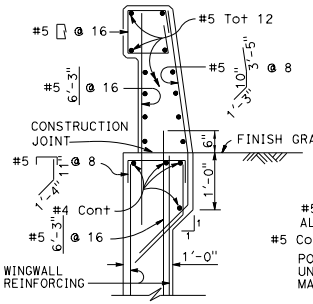
NOTE: Reinforcing for wall joint shown

METAL RAILING CONNECTION

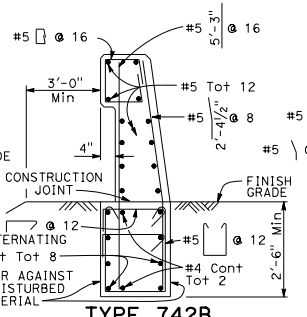


TYPE 742

DECK OR WALL JOINT



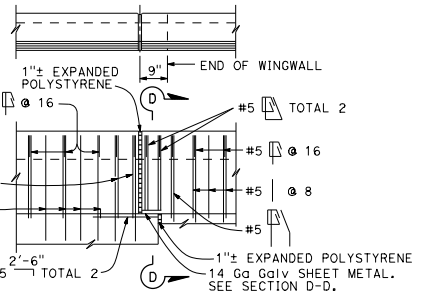
TYPE 742A



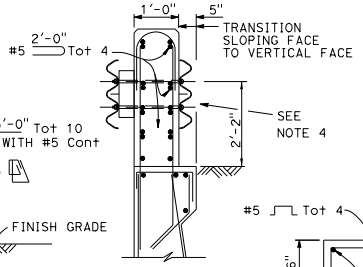
TYPE 742B

NOTE: Types 742A & 742B are similar to Type 742 except as noted

ELECTROLIER (See Note 5)

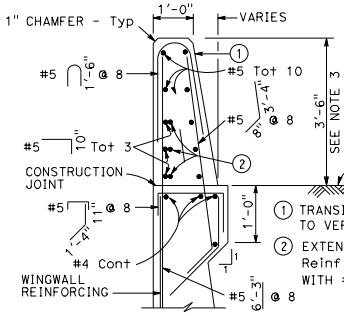


TYPE 742A TYPE 742B



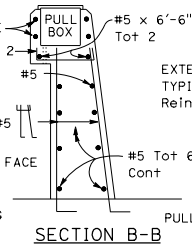
SECTION E-E

See Note 4

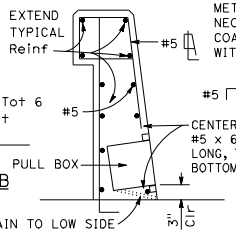


SECTION A-A

Details shown for barrier anchorage to Type 742A. Anchorage for barrier Types 742 and 742A are similar to their respective details.

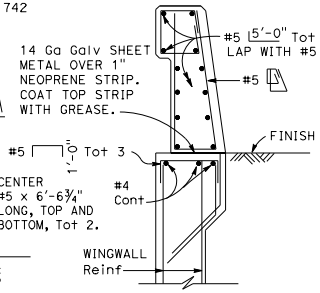


SECTION B-B

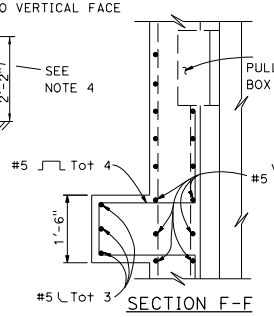


SECTION C-C

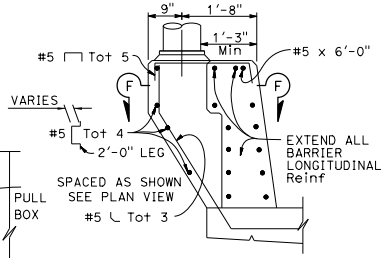
See Notes



SECTION D-D



SECTION F-F



PEDESTAL ELEVATION

NOTES:

1. Walls are to be backfilled before barrier is placed.
2. Clearance to reinforcing steel in barrier to be 1", except as noted. Longitudinal reinforcement to stop at all expansion joints.
3. Dimensions may vary with roadway cross slope and with certain thickness of surfacing. See Project Plans.
4. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
5. See Standard Plans ES-9A, ES-9B, Revised Standard Plans RSP ES-9C, RSP ES-9D and RSP ES-9E for electrical details. The maximum number of conduits in the barrier is limited to two 2" conduits along with one 3" conduit. When a 3" conduit is used, it is restricted to the base of the barrier.
6. For electrolier mounting details, See Revised Standard Plans RSP ES-6A and RSP ES-6B.
7. Minimum concrete edge distance, to the reinforcing shown, shall be maintained. Edge distance may be adjusted to accommodate increase in concrete cover for architectual treatment.
8. Taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam rail element.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 742

NO SCALE

RSP B11-57 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B11-57 DATED OCTOBER 30, 2015 - PAGE 317 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-57

6-28-16

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

REGISTERED CIVIL ENGINEER

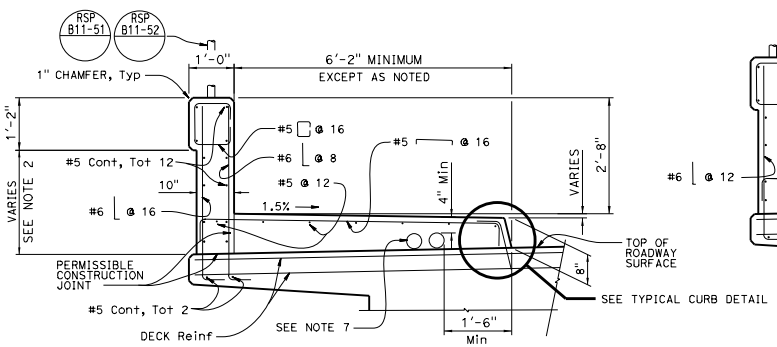
July 21, 2017

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.

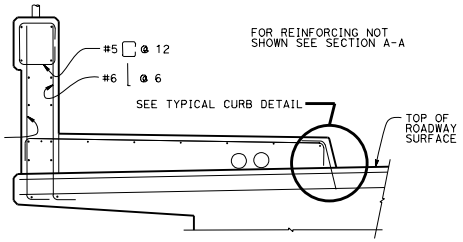
REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



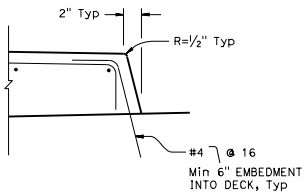
SECTION A-A

TYPICAL SECTION ON DECK

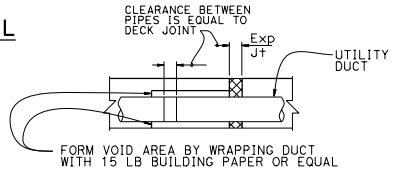


SECTION B-B

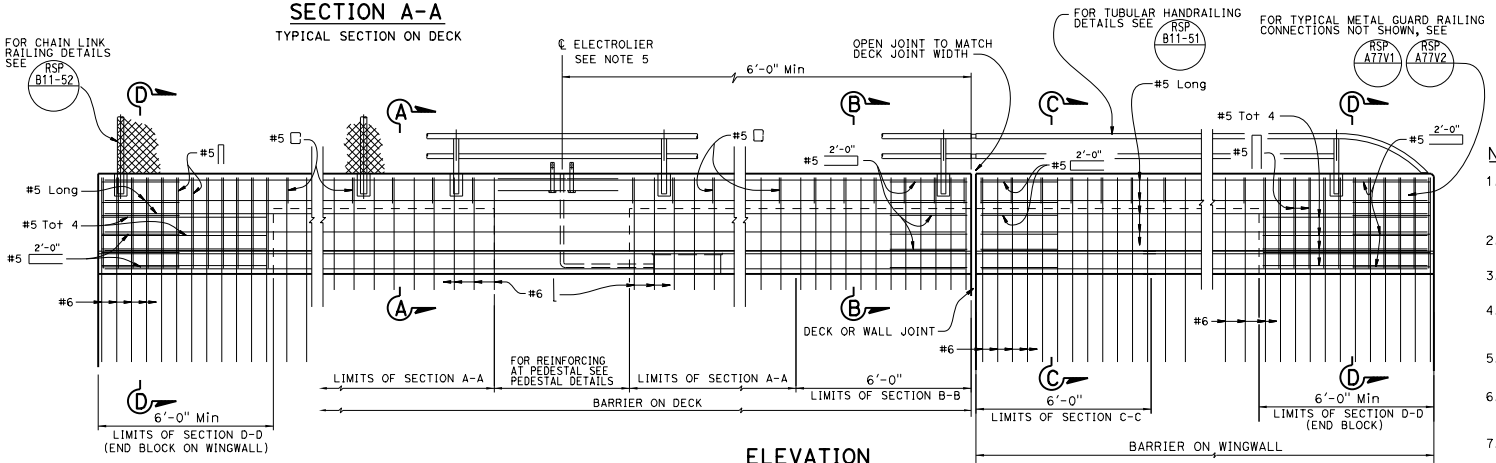
TYPICAL SECTION AT JOINTS



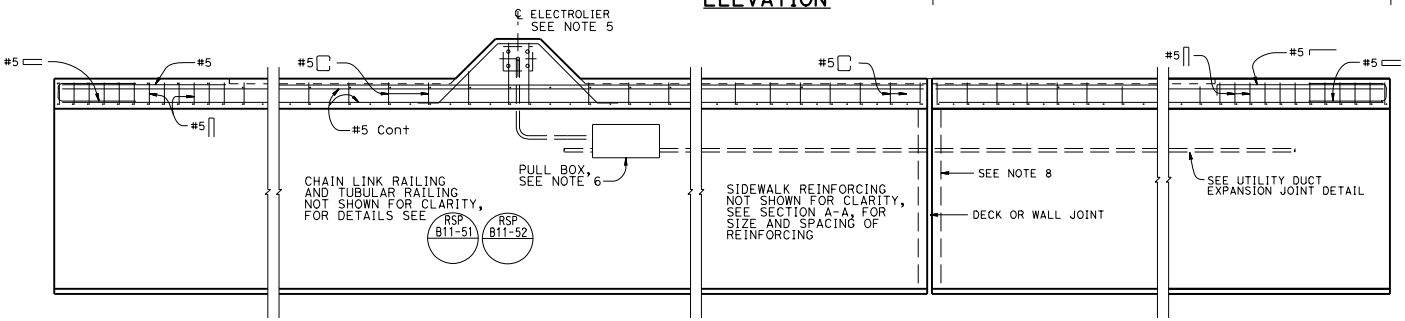
TYPICAL CURB DETAIL



UTILITY DUCT EXPANSION JOINT



ELEVATION



PLAN

NOTES:

1. This barrier is to be used only for posted speeds of 45 MPH or less. For speeds greater than 45 MPH, pedestrians must be protected by a separation traffic barrier.
2. Dimensions will vary with cross slope and surfacing thickness. See Project Plans.
3. Walls must be backfilled before curb and parapet is placed.
4. Clearance to reinforcing steel in curb and railing is 2" except as noted. Longitudinal reinforcement to stop at all expansion joints.
5. See Project Plans for electrolier locations and pull box type.
6. For electrical details, see Standard Plans ES-9A, ES-9B, Revised Standard Plans RSP ES-9C, RSP ES-9D, and RSP ES-9E.
7. A minimum of two - 4" round openings for future utilities, A maximum six - 4" round openings for a 6'-2" sidewalk. One - 4" round opening can be added for each additional 1'-0" of sidewalk width. Utility opening must be a minimum of 6" from face of barrier parapet. Openings are to be sealed at ends and extended 8" minimum past end of sidewalk if not used. Duct forms are to be tied down. For exact number and placement of utility openings see other details. Minimum 2" clear between conduits.
8. See Project Plans for "Joint Armor For Pedestrian Walkways" details.
9. Tubular hand railing and chain link railing continuous at pedestal.
10. For details and reinforcement not shown, see Revised Standard Plan RSP B11-59.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 732SW (SHEET 1 OF 2)

NO SCALE

RSP B11-58 DATED JULY 21, 2017 SUPERSEDES RSP B11-58 DATED JANUARY 20, 2017 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-58

6-1-17

2015 REVISED STANDARD PLAN RSP B11-58

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

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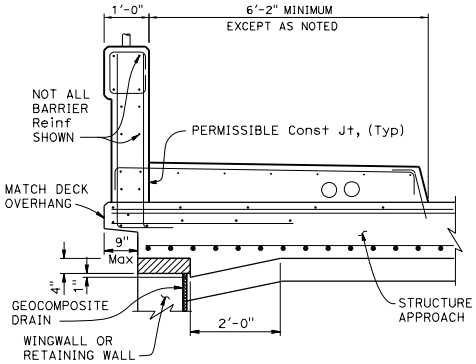
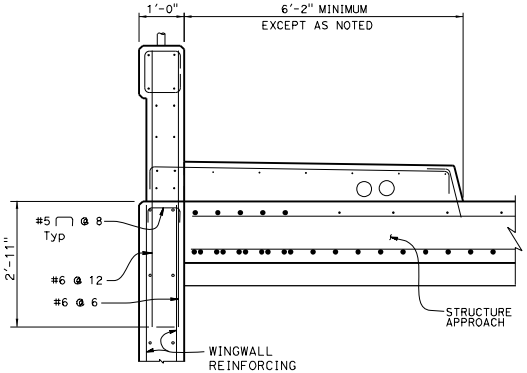
TO ACCOMPANY PLANS DATED _____

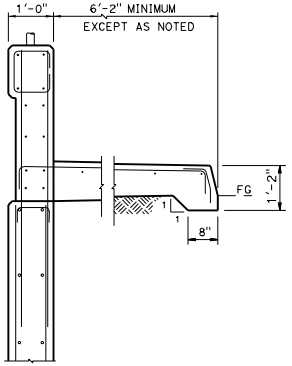


TYPE E-1 (RSP B9-5)



WITH STRUCTURE APPROACH

TYPE E-2 (RSP B9-5)



WITHOUT STRUCTURE APPROACH

LEGEND:

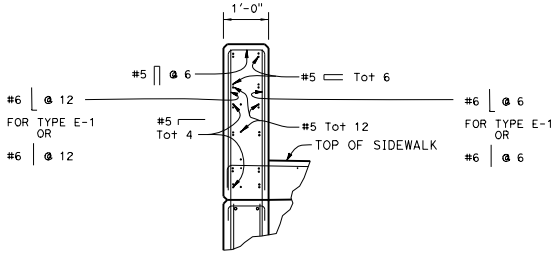
Indicates Expanded Polystyrene, remove after concrete is placed.

NOTE:

1. For details not shown, see Revised Standard Plan RSP B11-58.

SECTION C-C

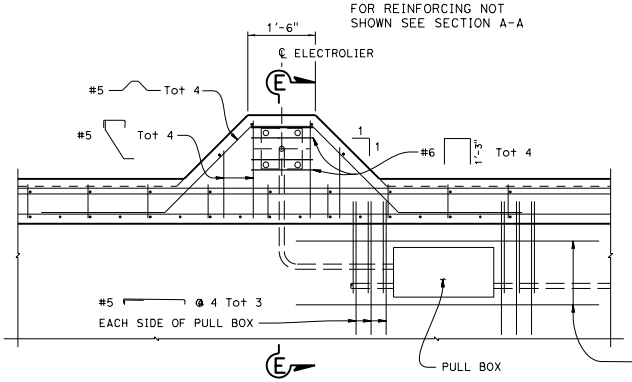
For details not shown see SECTION B-B



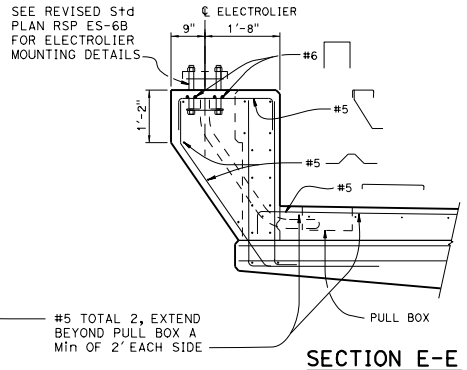
NOTE:
FOR SIDEWALK, STRUCTURE APPROACH, WINGWALL OR RETAINING WALL SEE SECTION C-C

SECTION D-D

END BLOCK



PEDESTAL PLAN



SECTION E-E

PEDESTAL DETAILS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 732SW (SHEET 2 OF 2)

NO SCALE

RSP B11-59 DATED JULY 21, 2017 SUPERSEDES RSP B11-59 DATED JANUARY 20, 2017 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-59

2015 REVISED STANDARD PLAN RSP B11-59

6-2-17

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
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STATE OF CALIFORNIA

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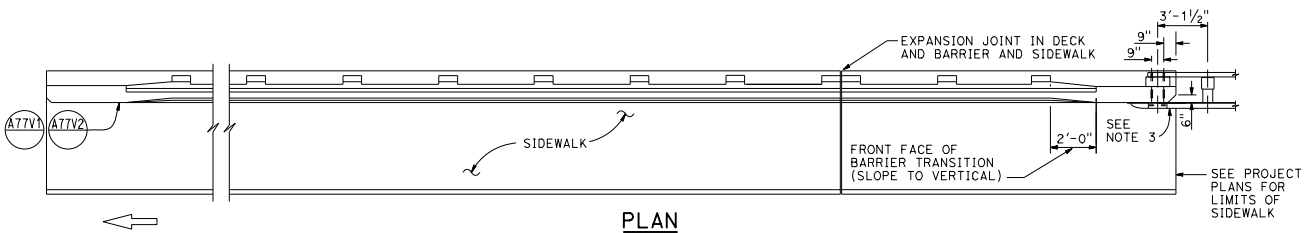
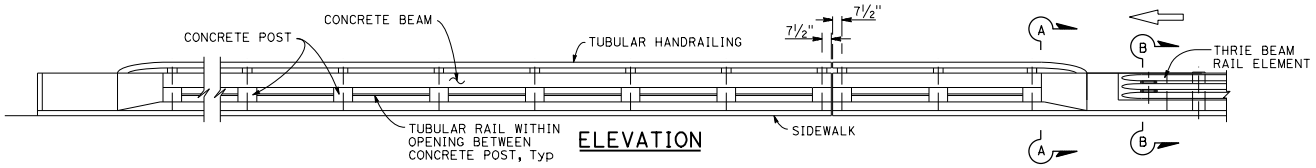
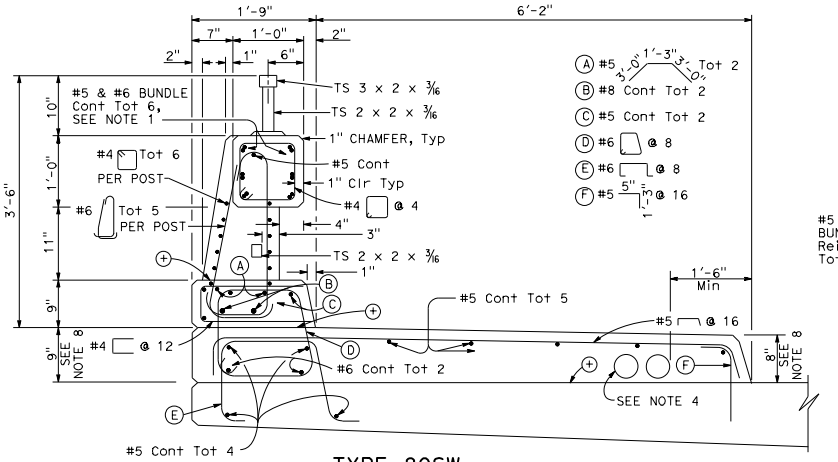
TO ACCOMPANY PLANS DATED _____



PLAN



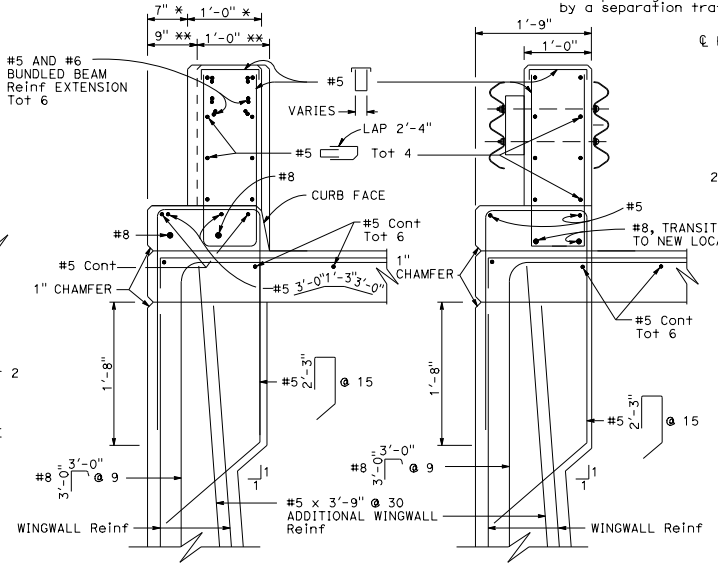
ELEVATION



TYPE 80SW

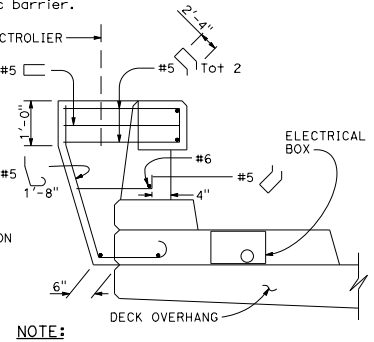
⊕ CONSTRUCTION JOINT

* BEGIN BARRIER TRANSITION
** END BARRIER TRANSITION

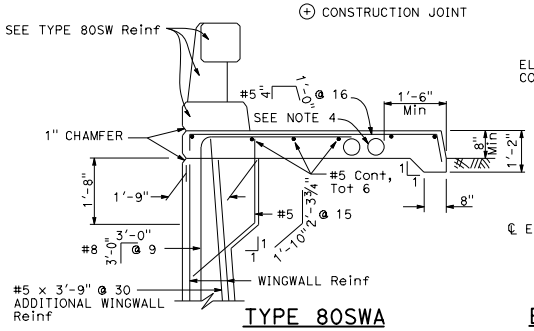


SECTION A-A
(Tubular handrailing not shown)

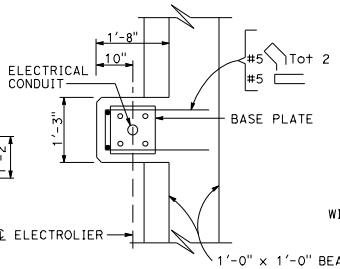
SECTION B-B



NOTE:
Pedestal design for 1'-0" base plate.



TYPE 80SWA



PLAN VIEW

ELECTROLIER PEDESTAL

NOTES:

1. No lap splicing allowed on the longitudinal rail reinforcing. Splicing shall be staggered.
2. For electrical details, see Standard Plans ES-9A, ES-9B, Revised Standard Plans RSP ES-9C, RSP ES-9D and RSP ES-9E. See Project Plans for electrical layout.
3. For typical metal railing connection details not shown, see Standard Plans A77V1 and A77V2.
4. A maximum of five - 4" and a minimum of two - 4" round openings for future utilities. Openings are to be sealed at ends and extended 8" minimum past end of sidewalk if not used. Duct forms are to be tied down. Minimum of 6" from face of rail to utility opening. See Standard Plan B14-3 for minimum spacing between conduits and for conduit details at joints.
5. Chain link railing is not allowed on Type 80SW Barrier.
6. Walls are to be backfilled before railing is placed.
7. Terminate all longitudinal curb, sidewalk, and deck reinforcement in standard 90° hooks.
8. Dimensions will vary with cross slope and with certain thickness of surfacing.
9. Expansion joint to match deck joint, see Standard Plan B11-63 for expansion joint details.
10. This barrier is to be used only for speeds of 45 MPH or less. For speeds greater than 45 MPH, pedestrians should be protected by a separation traffic barrier.

BARRIER MODIFICATION FOR ELECTROLIER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 80SW (SHEET 1 OF 3)

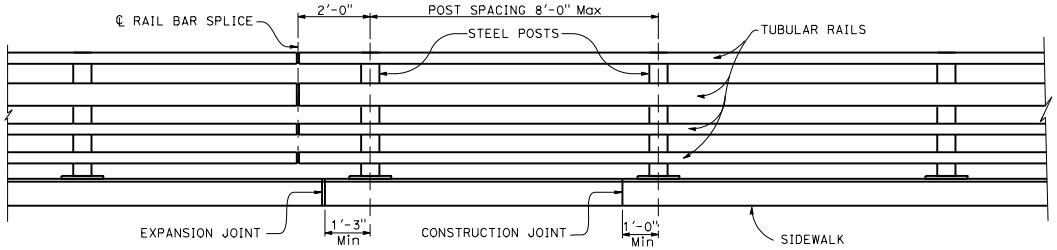
NO SCALE

RSP B11-62 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B11-62 DATED OCTOBER 30, 2015 - PAGE 320 OF THE STANDARD PLANS BOOK DATED 2015.

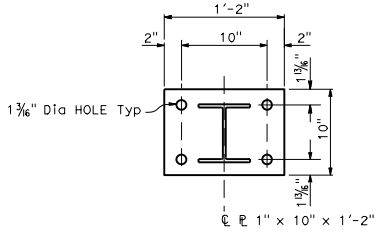
REVISED STANDARD PLAN RSP B11-62

2015 REVISED STANDARD PLAN RSP B11-62

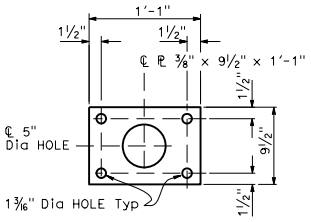
6-28-16



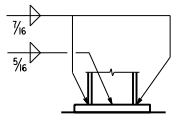
BRIDGE RAILING ELEVATION



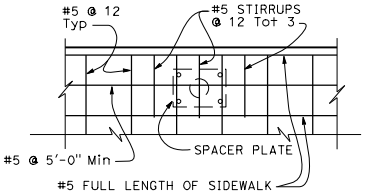
POST BASE PLATE PLAN



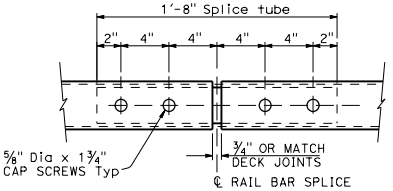
SPACER PLATE PLAN



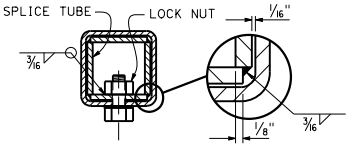
POST BASE WELD DETAIL



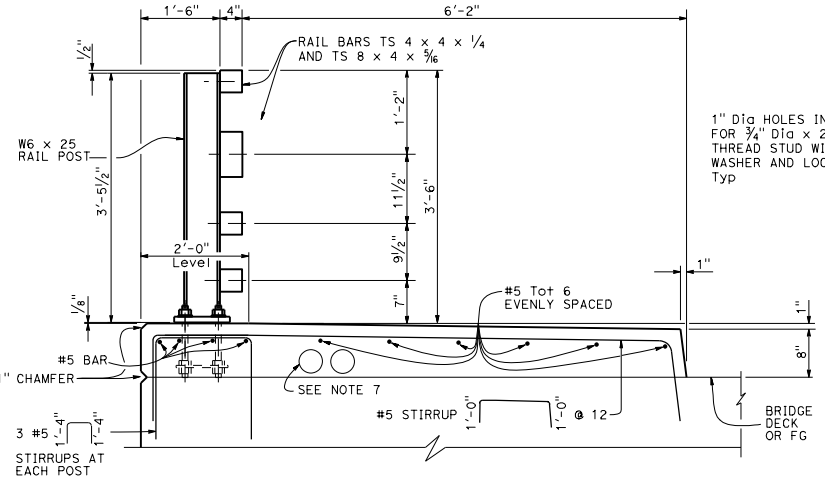
SIDEWALK REINFORCING PLAN



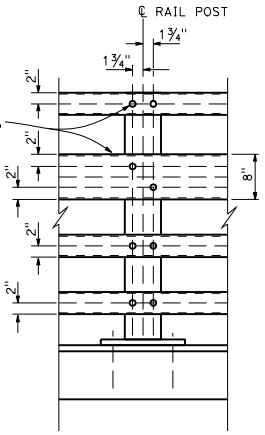
BOTTOM VIEW
RAIL BAR SPLICE DETAIL



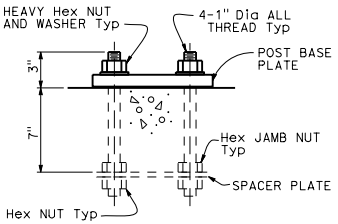
RAIL BAR
SPLICE SECTION



TYPICAL SECTION



ELEVATION



RAIL POST
ANCHORAGE

NOTES:

1. All exposed cuts or sheared edges shall be rounded and free of burrs.
2. Rail posts shall be set normal to grade.
3. Lengths of rail bar shall be attached to a minimun of two rail posts.
4. Rail post anchoring nuts shall be tightened to a snug fit and given additional 1/8 turn.
5. Holes in posts for rail bar attachment may be field drilled. Holes shall be coated with an approved zinc-rich paint prior to erection.
6. This barrier is to be used only for speeds of 45 mph or less. For speeds greater than 45 mph, pedestrians should be protected by a separation traffic barrier.
7. A maximum of six - 4" and a minimum of two - 4" round openings for future utilities. Openings are to be sealed at ends and extended 8" minimum past end of sidewalk if not used. Duct forms are to be tied down. Round openings are to be a minimum of 1'-6" from face of sidewalk curb and a minimum of 6" from face of rail. See Standard Plan B14-3 for minimum spaces between conduits and for conduit details at joints.

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-40 BRIDGE RAIL (SHEET 1 OF 2)

NO SCALE

RSP B11-66 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B11-66 DATED OCTOBER 30, 2015 - PAGE 324 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-66

2015 REVISED STANDARD PLAN RSP B11-66

6-28-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
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STATE OF CALIFORNIA

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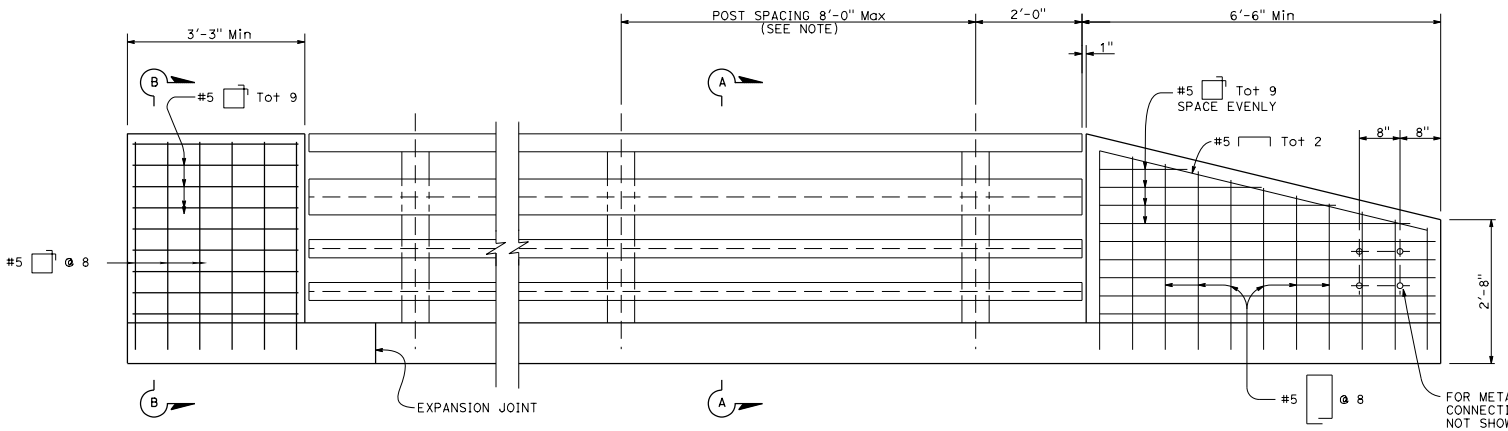
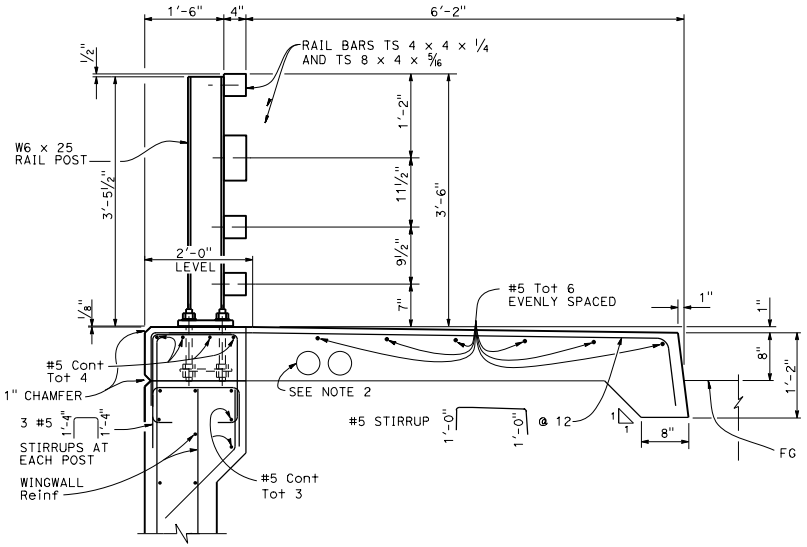
TO ACCOMPANY PLANS DATED _____

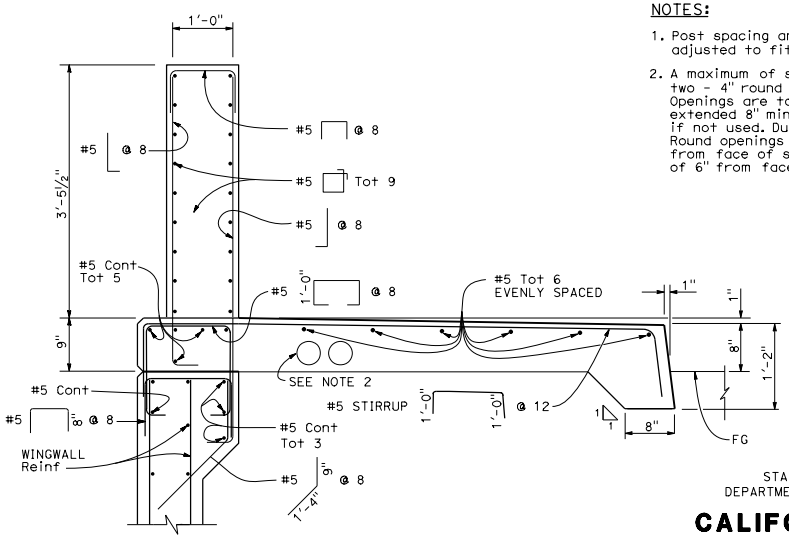


END OF RAILING ELEVATION



SECTION A-A

For details not shown,
see Typical Section



SECTION B-B

For details not shown,
see Typical Section

NOTES:

1. Post spacing and/or end block length to be adjusted to fit bridge length or wingwall length.
2. A maximum of six - 4" and a minimum of two - 4" round openings for future utilities. Openings are to be sealed at ends and extended 8" minimum past end of sidewalk if not used. Duct forms are to be tied down. Round openings are to be a minimum of 1'-6" from face of sidewalk curb and a minimum of 6" from face of rail.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-40 BRIDGE RAIL (SHEET 2 OF 2)

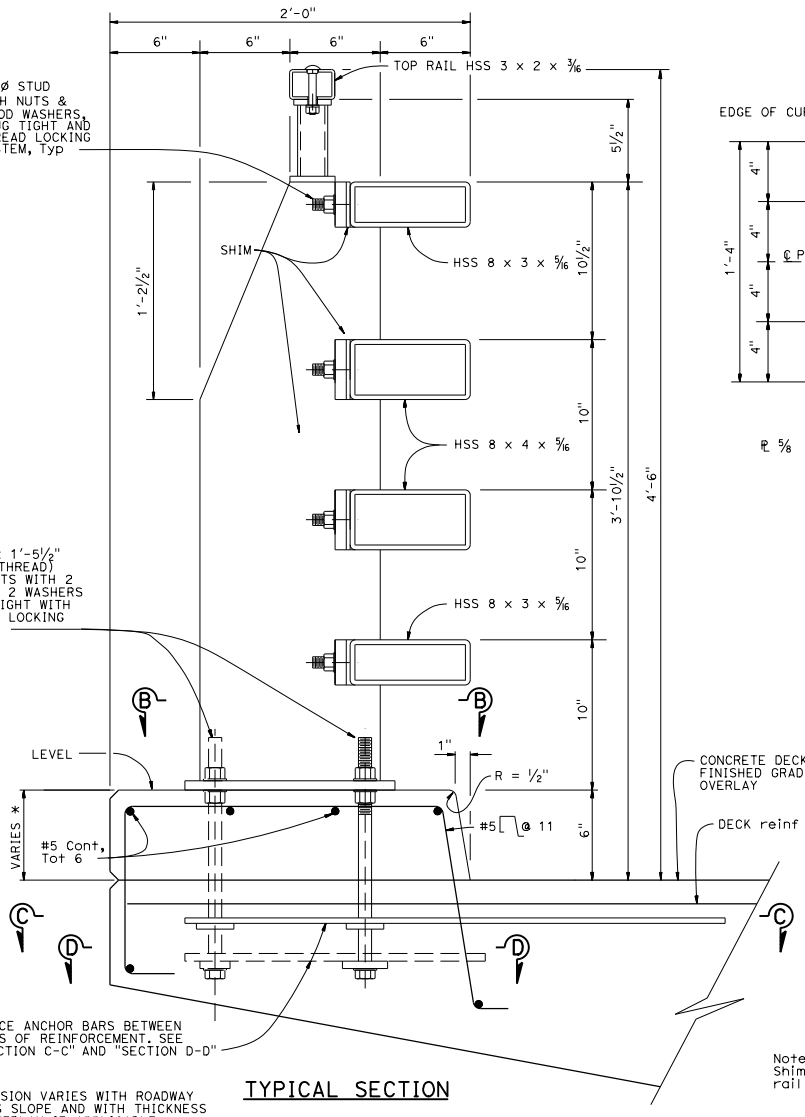
NO SCALE

RSP B11-67 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN B11-67
DATED OCTOBER 30, 2015 - PAGE 325 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-67

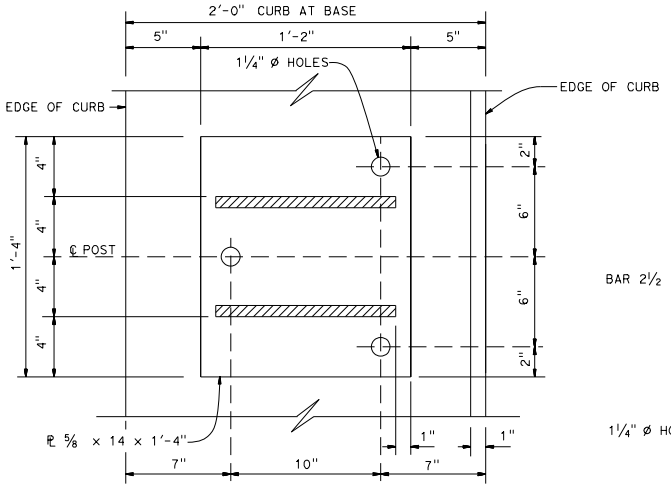
2015 REVISED STANDARD PLAN RSP B11-67

6-30-16

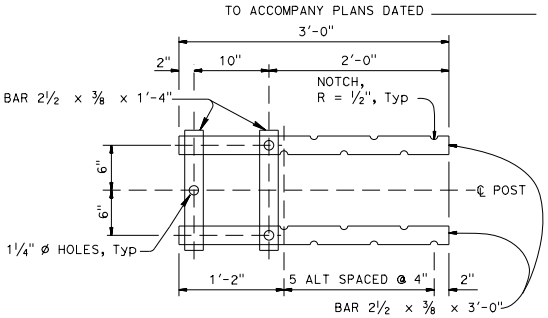


TYPICAL SECTION

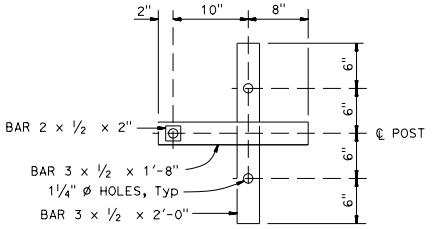
* DIMENSION VARIES WITH ROADWAY CROSS SLOPE AND WITH THICKNESS OF OVERLAY IF APPLICABLE.



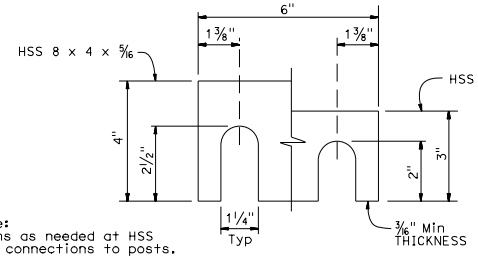
SECTION B-B



SECTION C-C

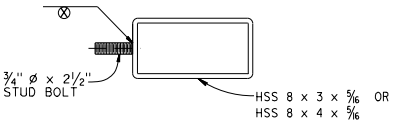


SECTION D-D



Note:
Shims as needed at HSS rail connections to posts.

SHIM DETAIL



RAIL SECTION AT POST

LEGEND:

⊗ INDICATES STUD WELD

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

Gregory J. Kaderabek
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gregory J. Kaderabek
No. C40814
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-20S BRIDGE RAIL (SHEET 1 OF 4)

NO SCALE

RSP B11-71 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-71

2015 REVISED STANDARD PLAN RSP B11-71

6-14-16

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

Gregory J. Kaderabek
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gregory J. Kaderabek
No. C40814
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

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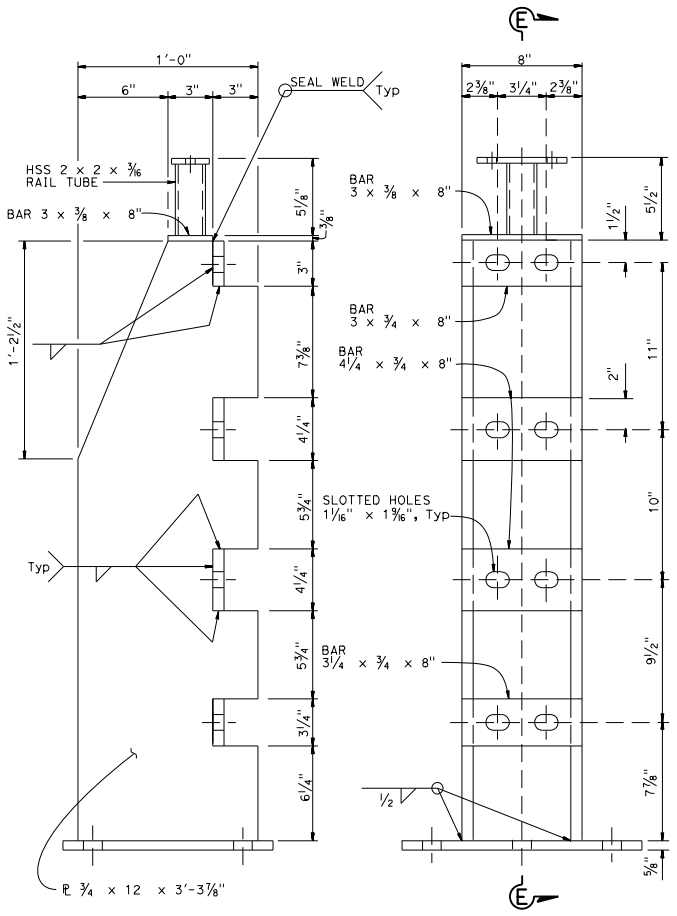
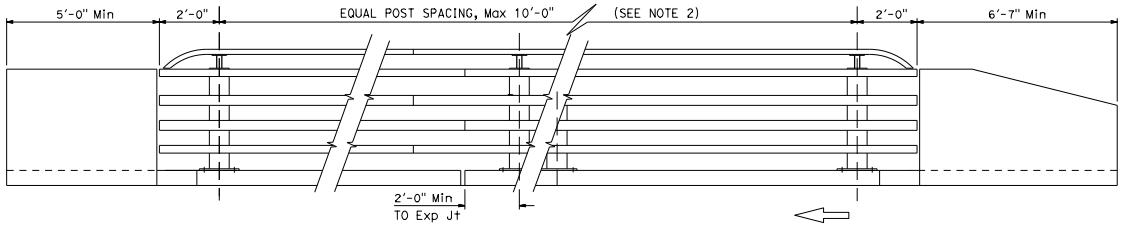
TO ACCOMPANY PLANS DATED _____



SECTION E-E

ELEVATION



ELEVATION

NOTES:

1. For approach and departure end details, see Revised Standard Plan RSP B11-73.
2. Post spacing and/or block length to be adjusted to fit bridge length or wingwall length.
3. All horizontal members are parallel to longitudinal profile grade of deck.
4. Posts are normal to profile grade of structure.
5. Posts are vertical to the transverse cross section.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-20S BRIDGE RAIL (SHEET 2 OF 4)

NO SCALE

RSP B11-72 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-72

2015 REVISED STANDARD PLAN RSP B11-72

6-14-16

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

Gregory J. Kaderabek
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gregory J. Kaderabek — No. C40814 — Exp. 3-31-17 CIVIL — STATE OF CALIFORNIA

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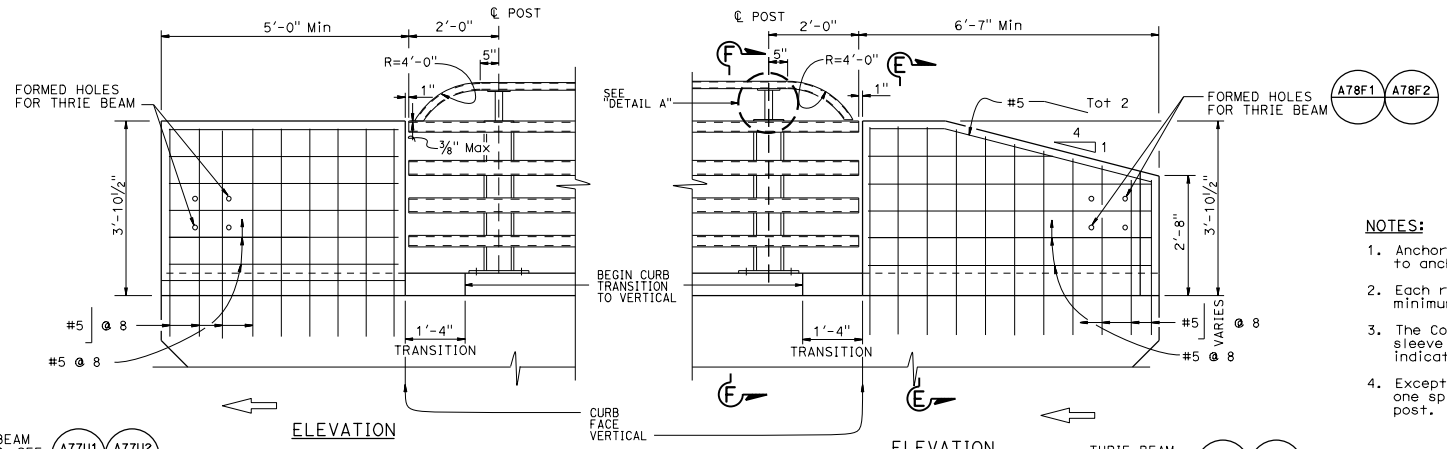
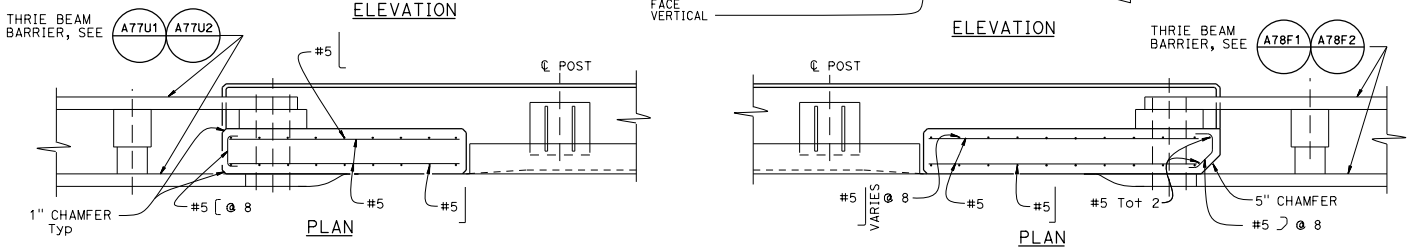
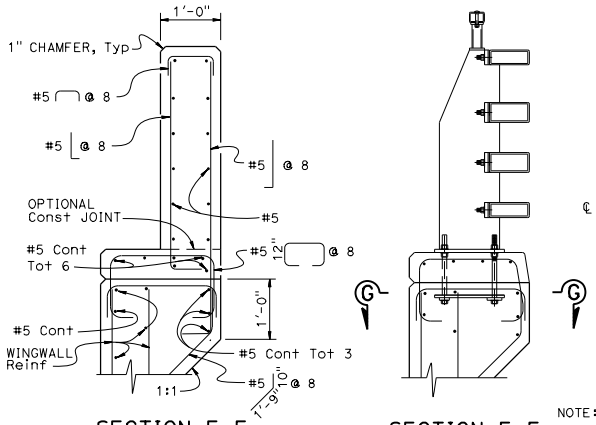
TO ACCOMPANY PLANS DATED _____



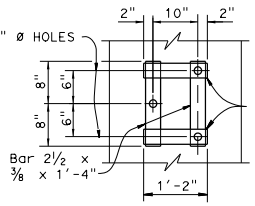


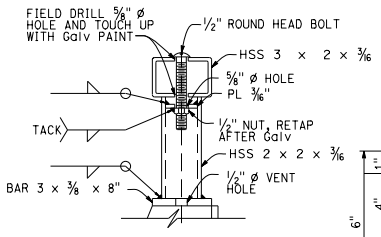
NOTES:

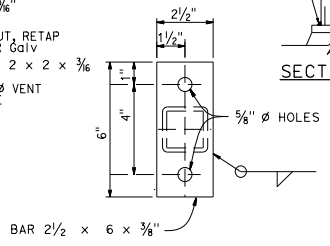
1. Anchor bolts may be tack welded (shop or field) to anchorage.
2. Each rail length must be continuous over a minimum of two posts.
3. The Contractor must check that the tubular sleeve splices conform to the dimensions indicated to assure proper clearance.
4. Except for expansion splices, not more than one splice permitted per same side of post.

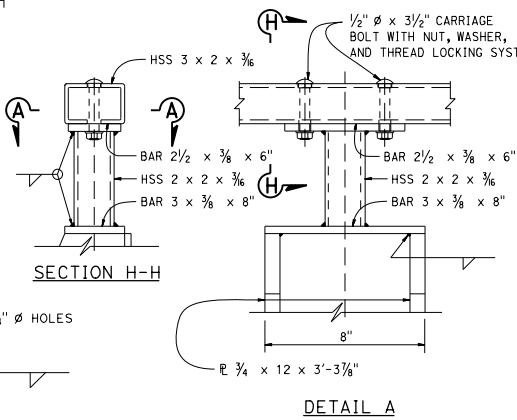


NOTE:
For details not shown, see "SECTION E-E"









RAIL CONNECTION DETAILS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-20S BRIDGE RAIL (SHEET 3 OF 4)

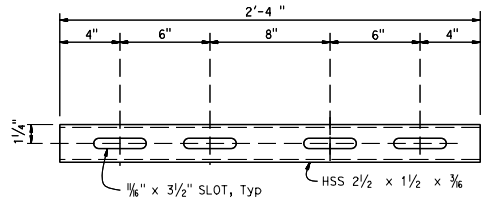
NO SCALE

RSP B11-73 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-73

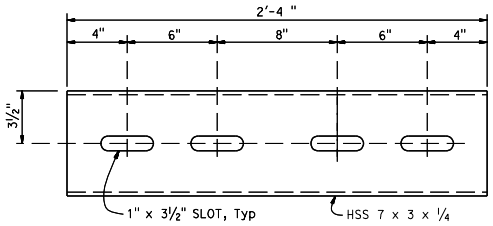
2015 REVISED STANDARD PLAN RSP B11-73

6-14-16



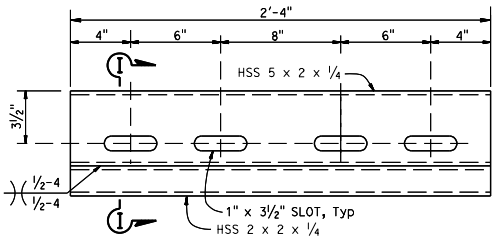
(FOR HSS 3 x 2 x 3/16 RAIL)

STANDARD SLEEVE DETAIL



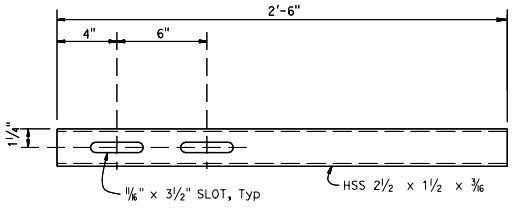
(FOR HSS 8 x 4 x 5/16 RAIL)

STANDARD SLEEVE DETAIL



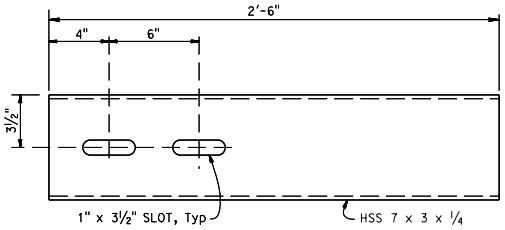
(FOR HSS 8 x 3 x 5/16 RAIL)

STANDARD SLEEVE DETAIL



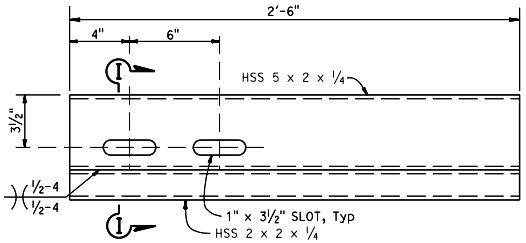
(FOR HSS 3 x 2 x 3/16 RAIL)

EXPANSION SLEEVE DETAIL



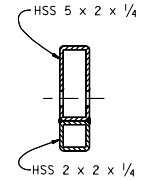
(FOR HSS 8 x 4 x 5/16 RAIL)

EXPANSION SLEEVE DETAIL

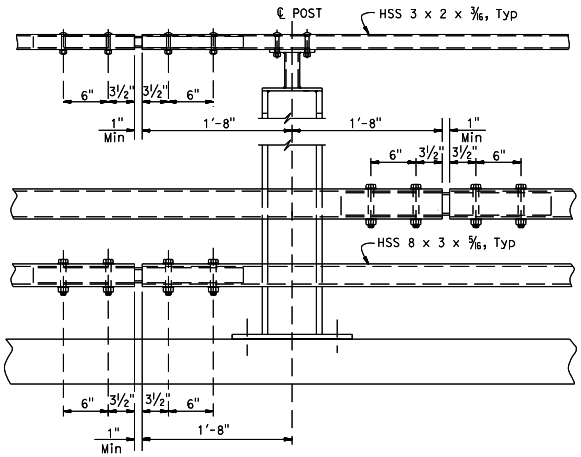


(FOR HSS 8 x 3 x 5/16 RAIL)

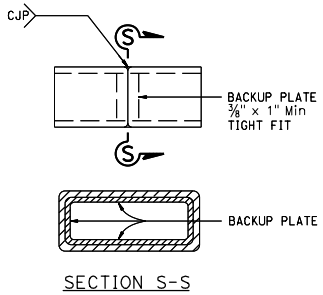
EXPANSION SLEEVE DETAIL



SECTION I-I

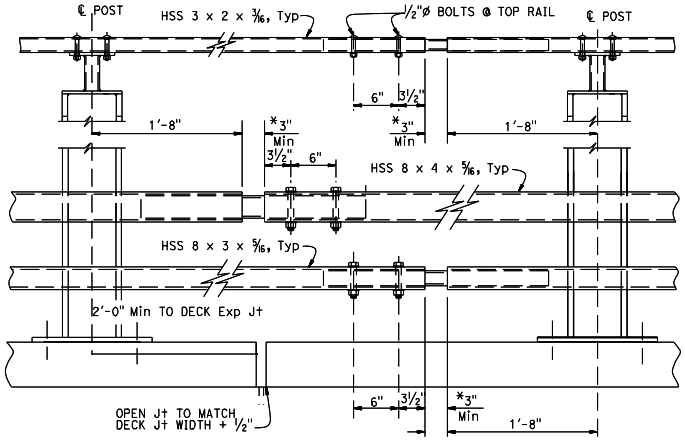


STANDARD SPLICE



SECTION S-S

ALTERNATE TUBE
WELDED SPLICE



EXPANSION SPLICE

* MATCH DECK OR WALL JOINT

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

Gregory J. Kaderabek
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gregory J. Kaderabek
No. C40814
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. HS bolts with nut and washers, snug tightened, and thread locking system.
2. Use ½"ø x 3⅝ (HSS 8 x 2 x 3/16)
   Use ¾"ø x 4⅝ (HSS 8 x 3 x 5/16)
   Use ¾"ø x 5⅝ (HSS 8 x 4 x 5/16)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-20S BRIDGE RAIL (SHEET 4 OF 4)

NO SCALE

RSP B11-74 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-74

2015 REVISED STANDARD PLAN RSP B11-74

6-14-16

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

Gregory J. Kaderabek
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gregory J. Kaderabek
No. C40814
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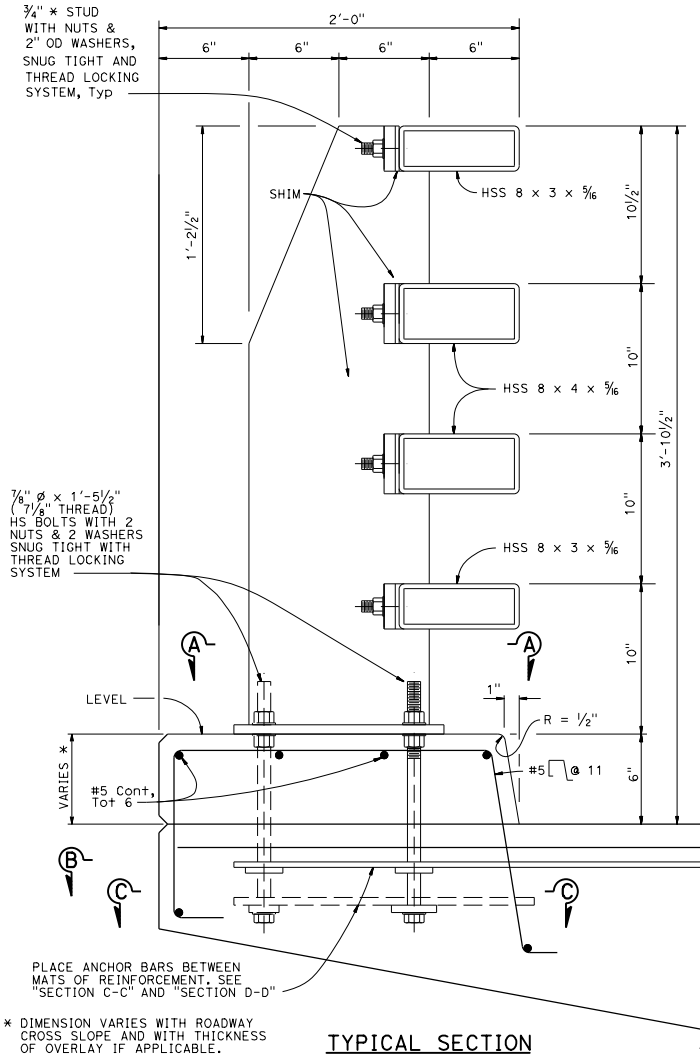
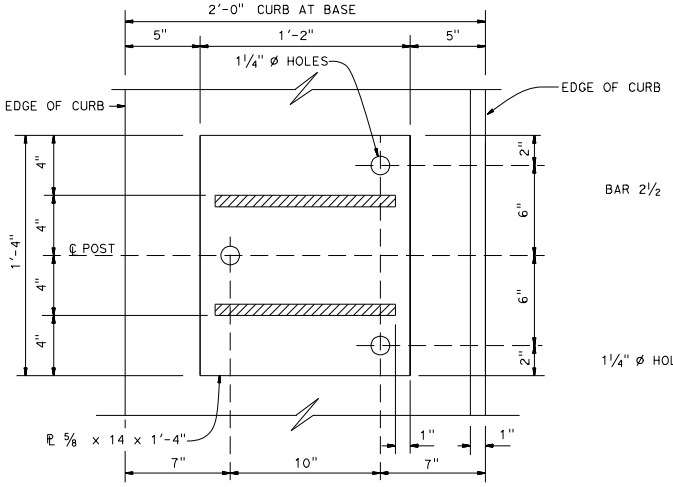
TO ACCOMPANY PLANS DATED _____

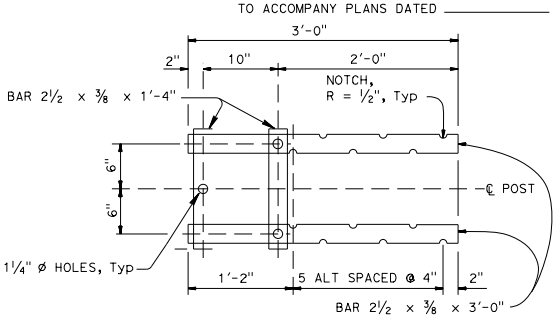


∗ DIMENSION VARIES WITH ROADWAY CROSS SLOPE AND WITH THICKNESS OF OVERLAY IF APPLICABLE.

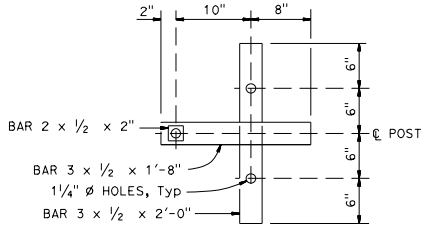
TYPICAL SECTION



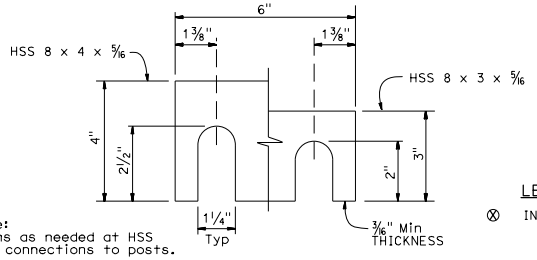
SECTION A-A



SECTION B-B

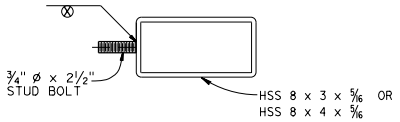


SECTION C-C



Note:
Shims as needed at HSS rail connections to posts.

SHIM DETAIL



SECTION AT POST

LEGEND:
⊗ INDICATES STUD WELD

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-70 BRIDGE RAIL (SHEET 1 OF 4)

NO SCALE

RSP B11-75 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-75

2015 REVISED STANDARD PLAN RSP B11-75

6-14-16

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

Gregory J. Kaderabek
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gregory J. Kaderabek
No. C40814
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

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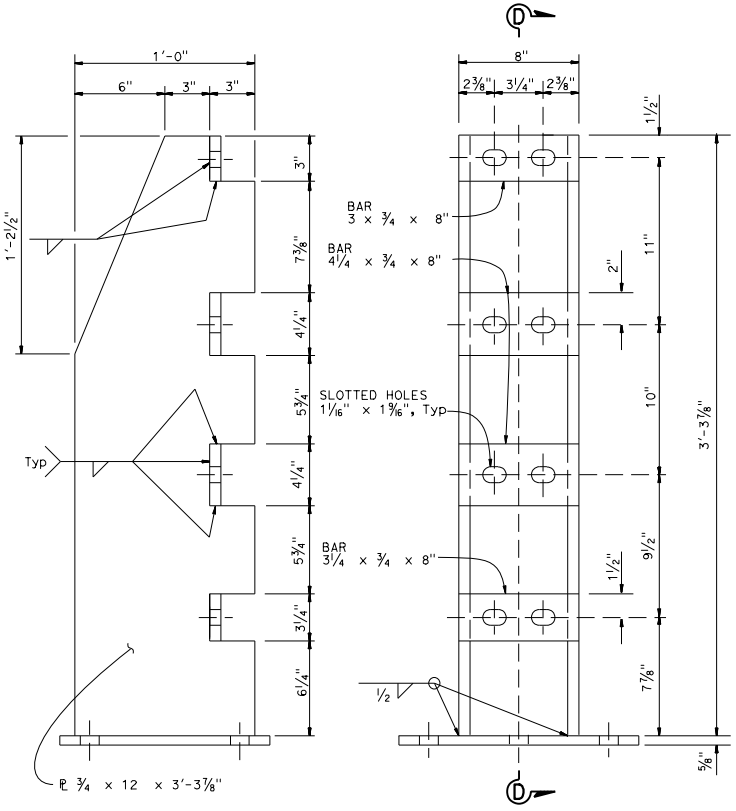
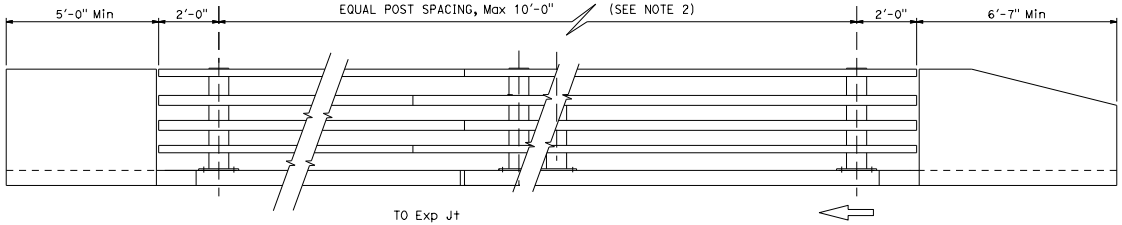
TO ACCOMPANY PLANS DATED _____



SECTION D-D

ELEVATION



ELEVATION

NOTES:

1. For approach and departure end details, see Revised Standard Plan RSP B11-77.
2. Post spacing and/or block length to be adjusted to fit bridge length or wingwall length.
3. All horizontal members are parallel to longitudinal profile grade of deck.
4. Posts are normal to profile grade of structure.
5. Posts are vertical to the transverse cross section.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-70 BRIDGE RAIL (SHEET 2 OF 4)

NO SCALE

RSP B11-76 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-76

2015 REVISED STANDARD PLAN RSP B11-76

6-14-16

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

Gregory J. Kaderabek
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gregory J. Kaderabek
No. C40814
Exp. 3-31-17
CIVIL
STATE OF CALIFORNIA

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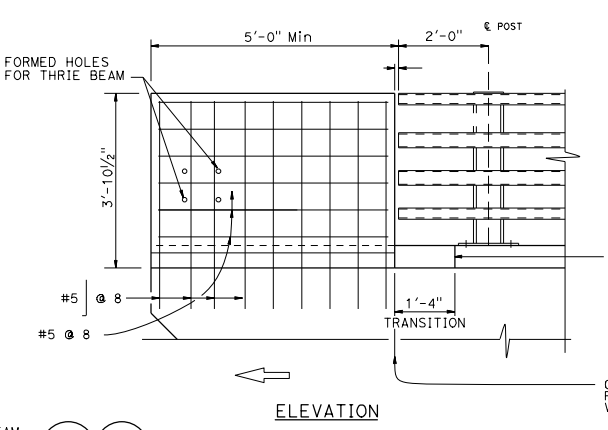
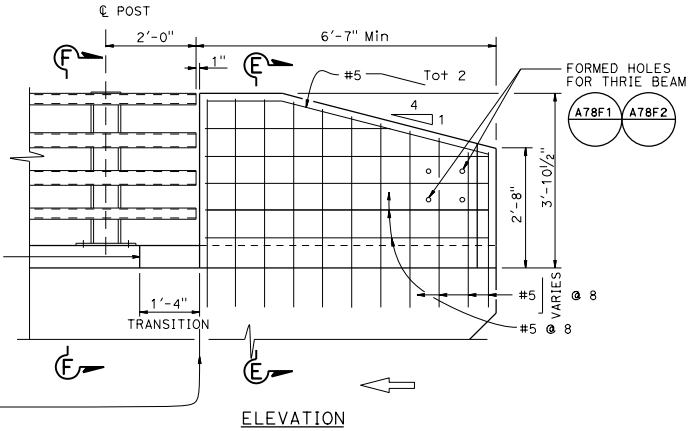
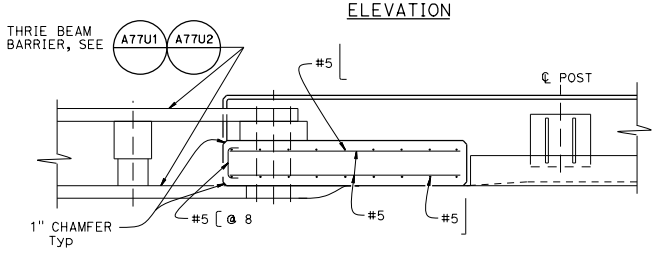
TO ACCOMPANY PLANS DATED _____



ELEVATION

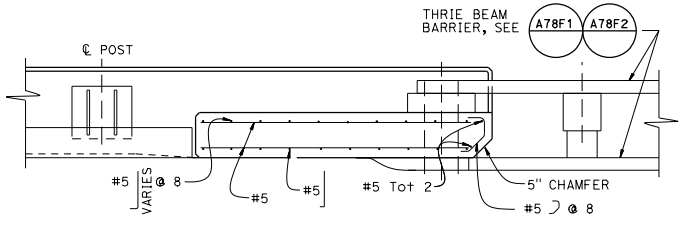


ELEVATION



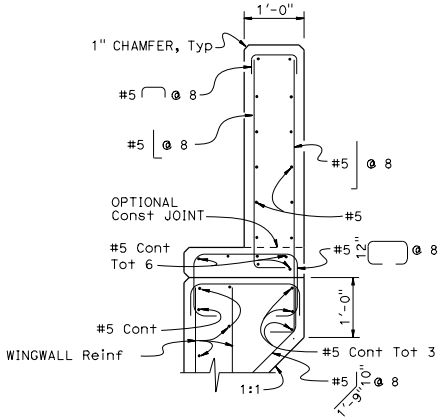
PLAN

END BLOCK DETAIL

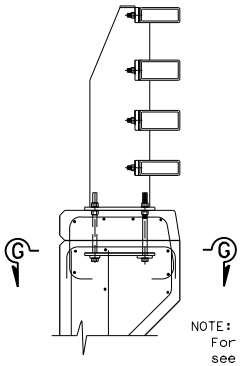


PLAN

TRANSITION BLOCK DETAIL

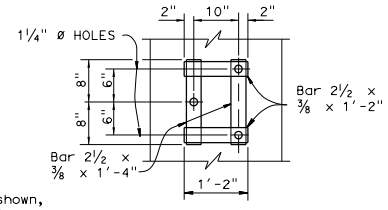


SECTION E-E



SECTION F-F

NOTE:
For details not shown, see "SECTION E-E"



VIEW G-G

NOTES:

1. Anchor bolts may be tack welded (shop or field) to anchorage.
2. Each rail length must be continuous over a minimum of two posts.
3. The Contractor must check that the tubular sleeve splices conform to the dimensions indicated to assure proper clearance.
4. Except for expansion splices, not more than one splice permitted per same side of post.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-70 BRIDGE RAIL (SHEET 3 OF 4)

NO SCALE

RSP B11-77 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP B11-77

2015 REVISED STANDARD PLAN RSP B11-77

6-14-16

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

Gregory J. Kaderabek
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gregory J. Kaderabek
No. C40814
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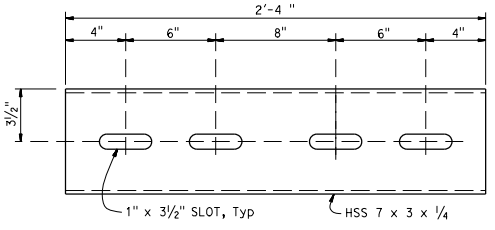
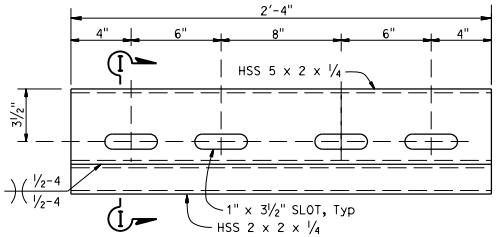
TO ACCOMPANY PLANS DATED _____



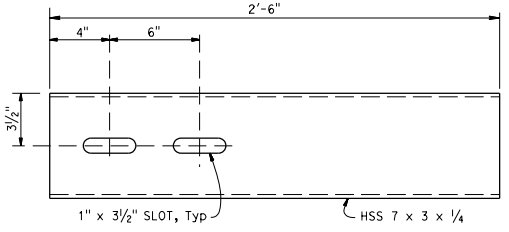
(FOR HSS 8 x 4 x 5/16 RAIL)

STANDARD SLEEVE DETAIL



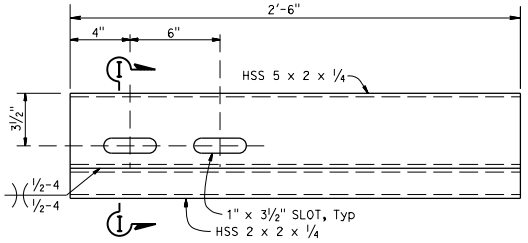
(FOR HSS 8 x 3 x 5/16 RAIL)

STANDARD SLEEVE DETAIL



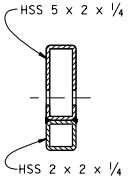
(FOR HSS 8 x 4 x 5/16 RAIL)

EXPANSION SLEEVE DETAIL



(FOR HSS 8 x 3 x 5/16 RAIL)

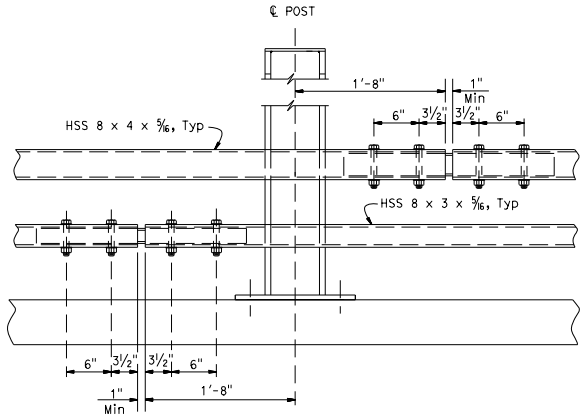
EXPANSION SLEEVE DETAIL



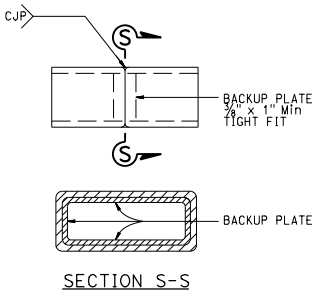
SECTION I-I

NOTES:

1. HS bolts with nut and washers, snug tightened, and thread locking system.
2. Use ¾"ø x 4 5/16 (HSS 8 x 3 x 5/16)
   Use ¾"ø x 5 5/16 (HSS 8 x 4 x 5/16)

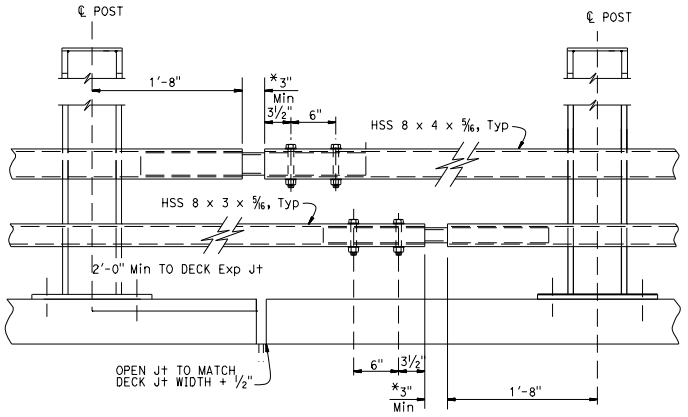


STANDARD SPLICE



SECTION S-S

ALTERNATE TUBE WELDED SPLICE



EXPANSION SPLICE

*MATCH DECK OR WALL JOINT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-70 BRIDGE RAIL (SHEET 4 OF 4)

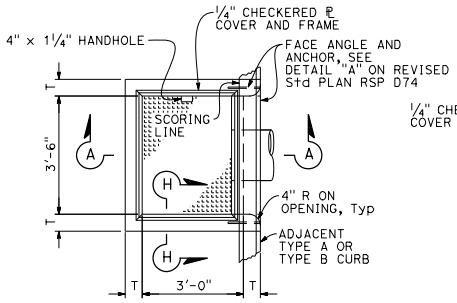
NO SCALE

RSP B11-78 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

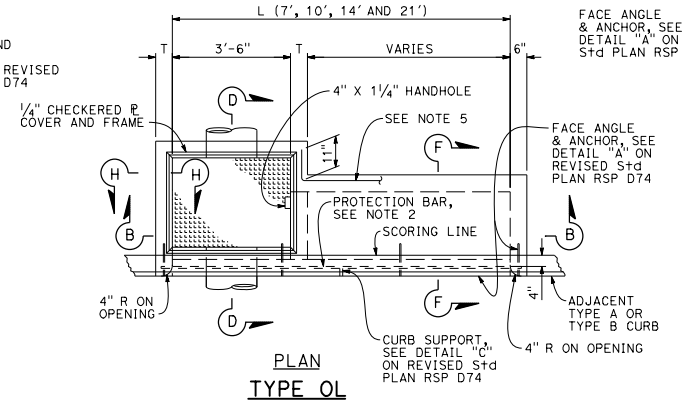
REVISED STANDARD PLAN RSP B11-78

6-14-16

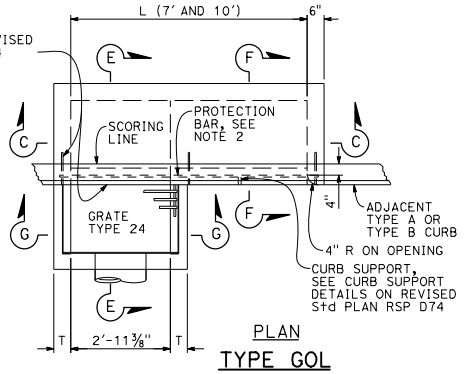
2015 REVISED STANDARD PLAN RSP B11-78



PLAN
TYPE OS



PLAN
TYPE OL



PLAN
TYPE GOL

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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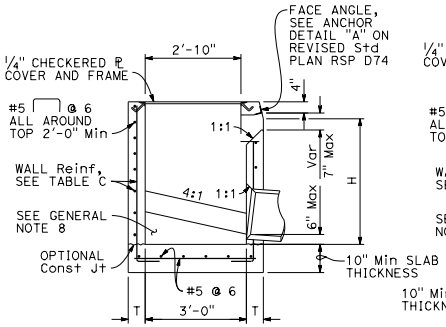
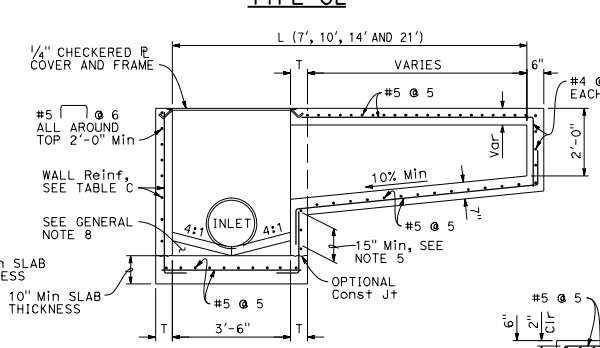
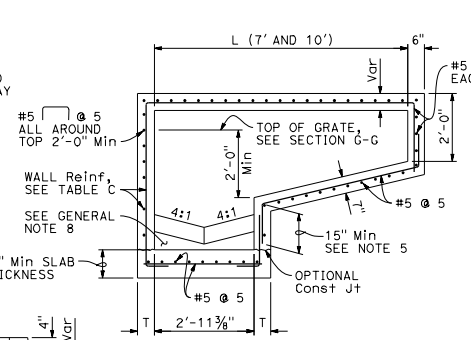
TO ACCOMPANY PLANS DATED _____



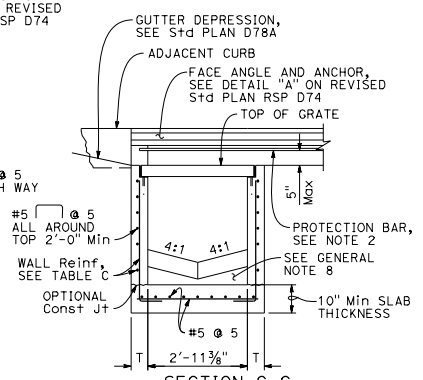
SECTION A-A



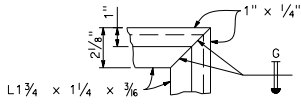
SECTION B-B



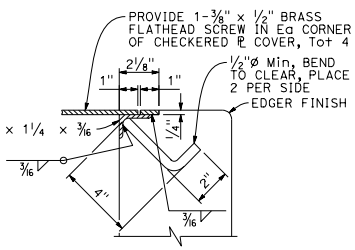
SECTION C-C



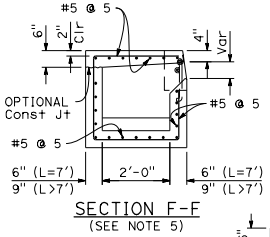
SECTION G-G



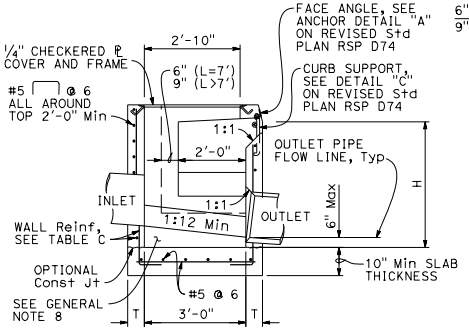
COVER FRAME
TYPICAL EACH CORNER
(CHECKERED ℄ COVER NOT SHOWN)



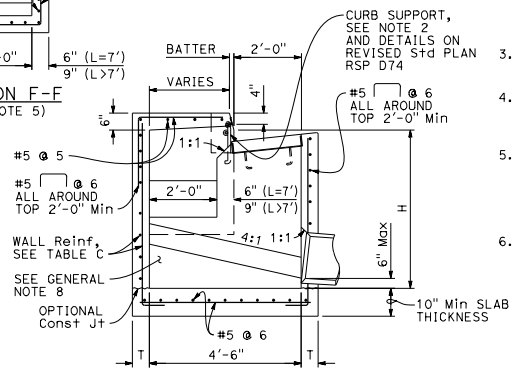
SECTION H-H



SECTION F-F
(SEE NOTE 5)



SECTION D-D



SECTION E-E

NOTES:

1. See Revised Standard Plan RSP D72F for General Notes and additional details. See Revised Standard Plan RSP D72G for tables, wall thickness "T" and quantities.
2. Where shown on the project plans, place a ¾"ø plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
3. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
4. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
5. Extend all horizontal bars from inlet extensions into adjacent concrete elements of main inlet box a minimum of 15". Where shown, bend horizontal bars into box. If necessary rotate bars to maintain 2" clear coverage.
6. Height of curb opening will vary with the type of curb and the depth of the local depression.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLETS TYPES OS, OL AND GOL

NO SCALE

RSP D72A DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D72A

2015 REVISED STANDARD PLAN RSP D72A

6-28-16

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

Carl M. Dugan
No. C59976
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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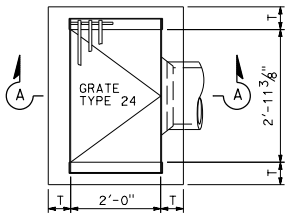
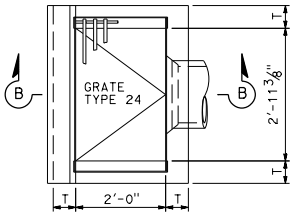
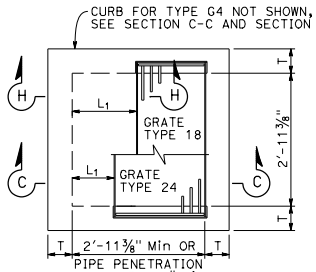
TO ACCOMPANY PLANS DATED _____



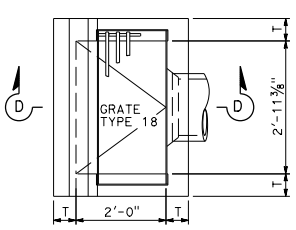
PLAN
TYPE G1



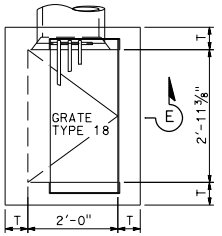
PLAN
TYPE G3



PLAN
STANDARD
TYPE G2 OR G4



PLAN
TYPE G5

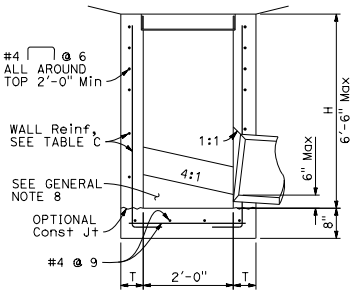


PLAN
TYPE G6

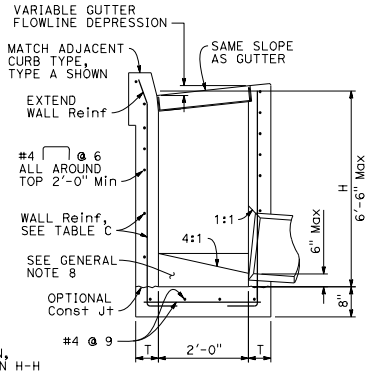
NOTES:

1. For notes and Table 2, See Revised Standard Plan RSP D72C.
2. For L_1 or L_2 greater than 2'-10", see Table 1 for wall thickness dimension and see Table C in Revised Standard Plan RSP D72G for reinforcement. Otherwise, see Table C in Revised Standard Plan RSP D72G for wall thickness and reinforcement.

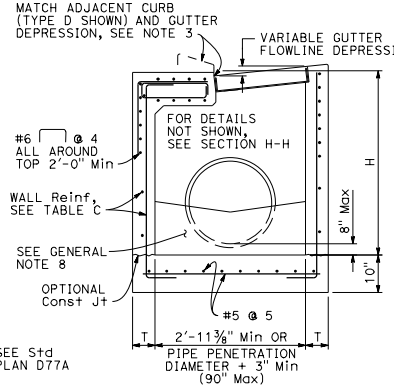
TABLE 1	
	T
L_1 OR L_2 > 2'-10"	12"



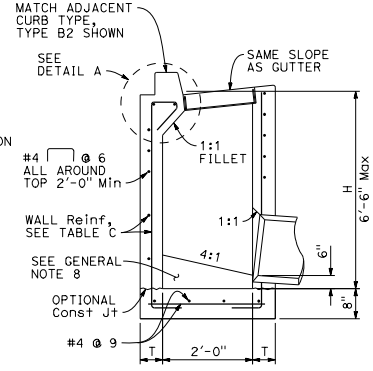
SECTION A-A



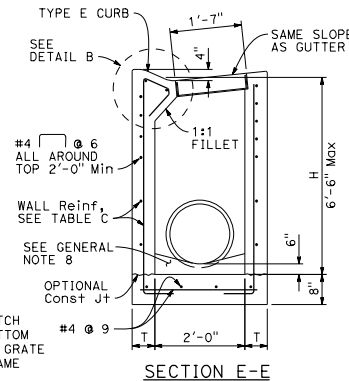
SECTION B-B



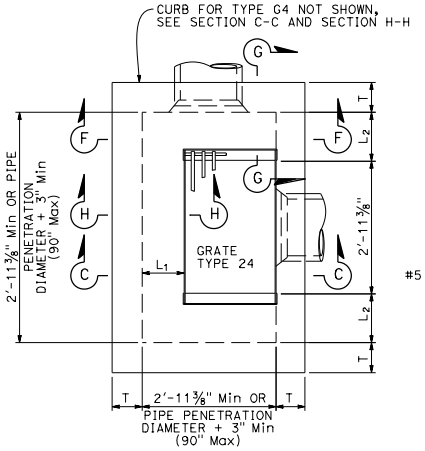
SECTION C-C



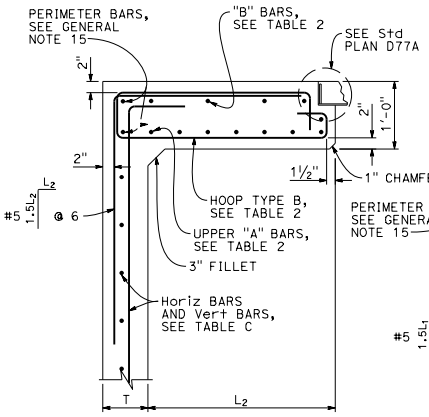
SECTION D-D



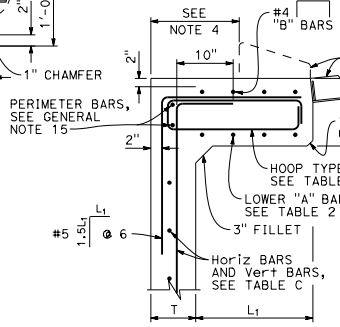
SECTION E-E



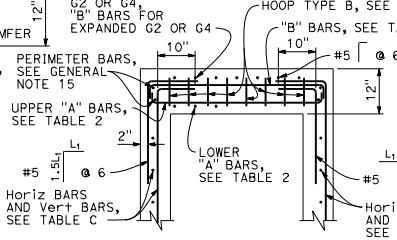
PLAN
EXPANDED
TYPE G2 OR G4



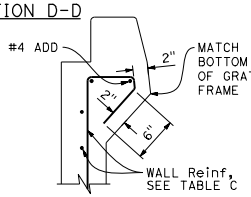
SECTION G-G



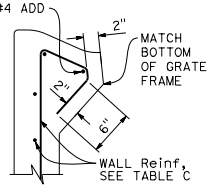
SECTION H-H



SECTION F-F



DETAIL A



DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLETS TYPES G1, G2, G3, G4, G5 AND G6

NO SCALE

RSP D72B DATED JULY 21, 2017 SUPERSEDES RSP D72B DATED JULY 15, 2016 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D72B

2015 REVISED STANDARD PLAN RSP D72B

5-26-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Carl W. Dugan
No. C59976
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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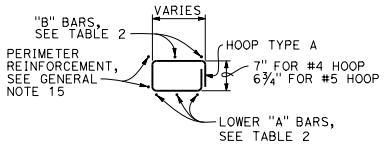
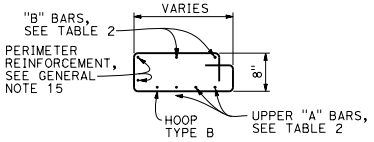
TO ACCOMPANY PLANS DATED _____



HOOP TYPE A

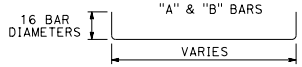


HOOP TYPE B

NOTES:

1. See Revised Standard Plan RSP D72F for General Notes and additional details. See Revised Standard Plan RSP D72G for tables and quantities.
2. Type G4 inlet can use Grate Type 18 or 24. Type G2 inlet uses Grate Type 24.
3. Type G4 inlet details are similar to Type G2 inlet details, except for the addition of a curb and sloped grate to match the adjacent curb and gutter depression.
4. Dimension will vary with different grates, curb types, box width and wall thickness.

TABLE 2 - TOP SLAB REINFORCEMENT



	W/ CURB	W/O CURB
"A" BARS	#4 @ 5 (2 BARS Min)	#5 @ 5 (3 BARS Min)
"B" BARS	#4 @ 10 (2 BARS Min)	#4 @ 12 (2 BARS Min)
HOOPS ("A" & "B")	#4 @ 5	#5 @ 5

ROTATE "A" AND "B" BARS SO HOOKED ENDS WILL MAINTAIN 2" CLEAR COVERAGE.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLETS TYPES G1, G2, G3, G4, G5 AND G6

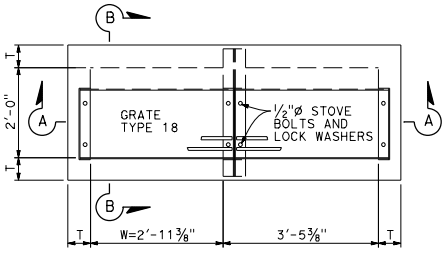
NO SCALE

RSP D72C DATED JULY 21, 2017 SUPERSEDES RSP D72C DATED JULY 15, 2016 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D72C

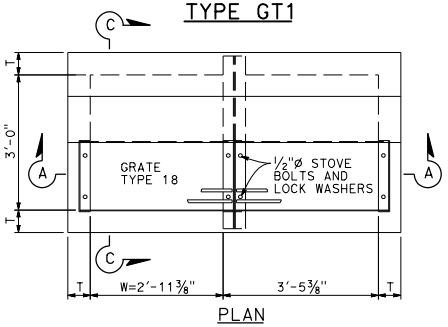
2015 REVISED STANDARD PLAN RSP D72C

5-16-17



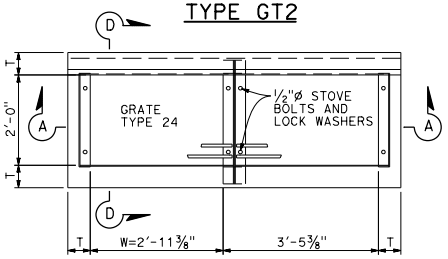
PLAN

TYPE GT1



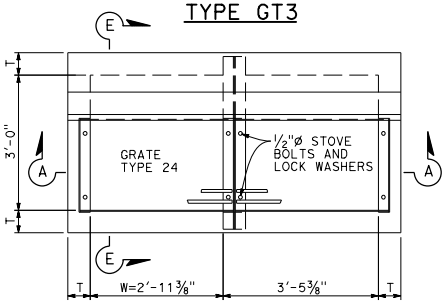
PLAN

TYPE GT2



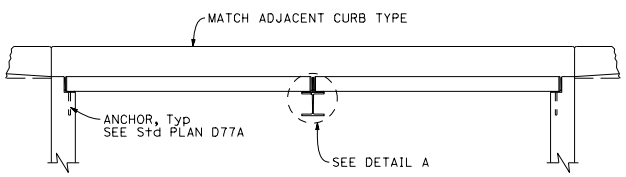
PLAN

TYPE GT3

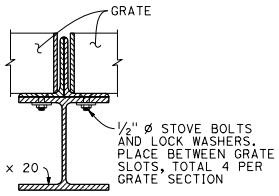


PLAN

TYPE GT4



SECTION A-A



DETAIL A

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

REGISTERED CIVIL ENGINEER

July 15, 2016

PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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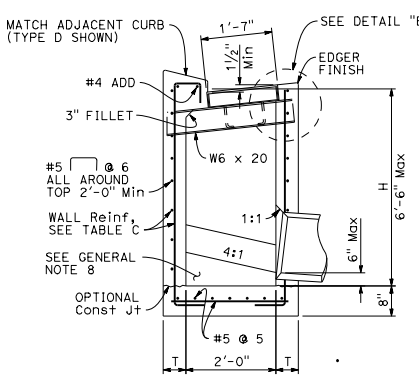
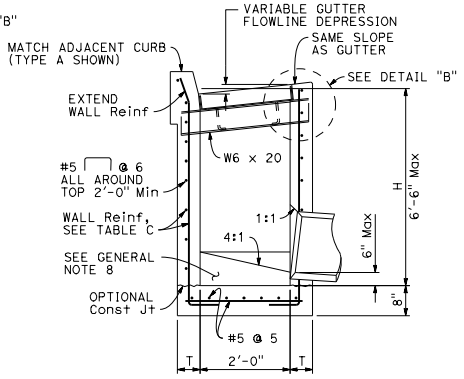
TO ACCOMPANY PLANS DATED _____



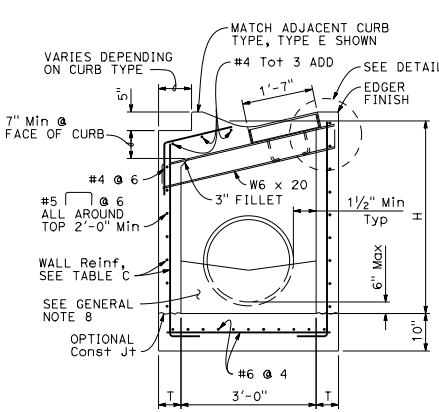
SECTION B-B



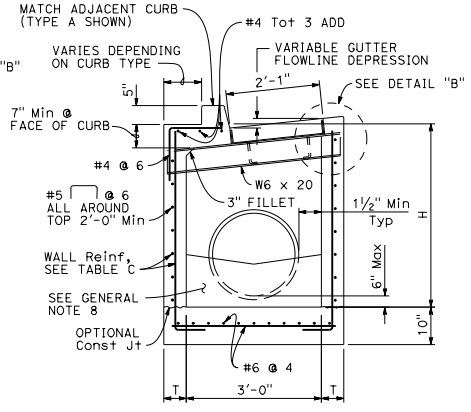
SECTION D-D

NOTES:

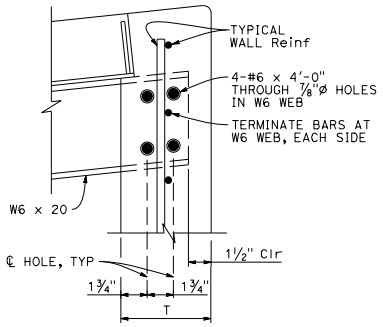
1. See Revised Standard Plan RSP D72F for General Notes and additional details. See Revised Standard Plan RSP D72G for tables, wall thickness "T" and quantities.
2. W=2'-11⅜" for one grate. Add 3'-5⅜" for additional grates in tandem.
3. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
4. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.



SECTION C-C



SECTION E-E



DETAIL "B"

(SIMILAR OPPOSITE END OF W6)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLETS TYPES GT1, GT2, GT3 AND GT4

NO SCALE

RSP D72D DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D72D

2015 REVISED STANDARD PLAN RSP D72D

6-20-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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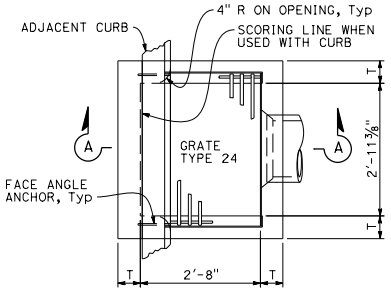
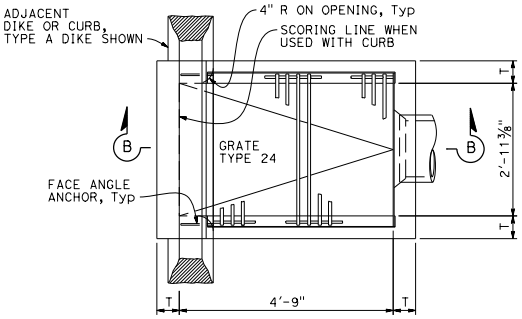
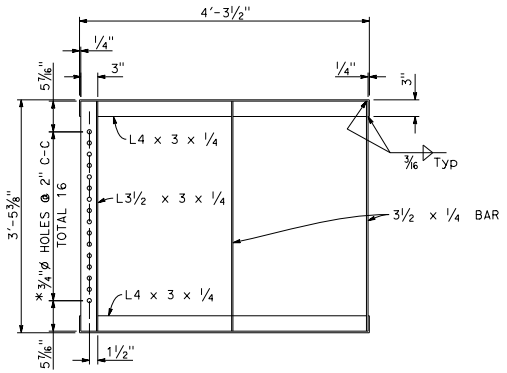
TO ACCOMPANY PLANS DATED _____



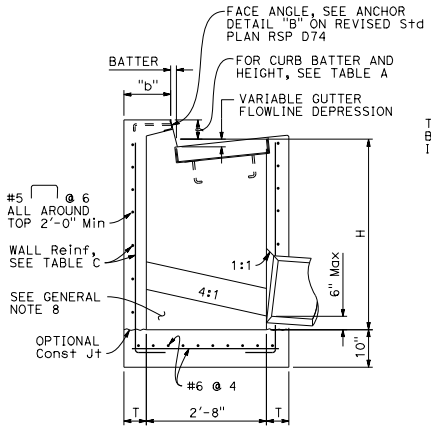
PLAN
TYPE GO



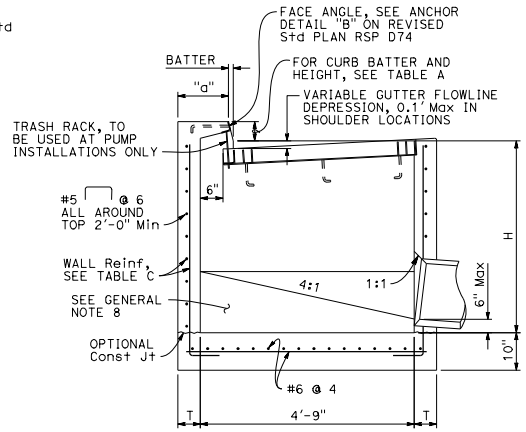
PLAN
TYPE GDO



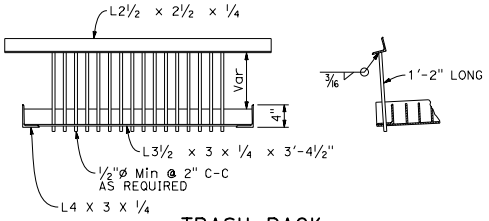
GRATE FRAME FOR TYPE GDO INLET
* HOLES REQUIRED ONLY WITH TRASH RACK



SECTION A-A



SECTION B-B



TRASH RACK
(FOR USE WITH PUMP INSTALLATION)

TABLE A				
CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"a" DIMENSION	"b" DIMENSION
A1-6	6"	1½"	T+7½"	T+6½"
A1-8	8"	2"	T+7"	T+6"
B1-6	6"	4"	T+5"	T+4"
TYPE A DIKE	6"	3"	T+6"	T+5"

Height of curb opening will vary with the type of curb and the depth of the local depression.

NOTES:

1. See Revised Standard Plan RSP D72F for General Notes and additional details. See Revised Standard Plan RSP D72G for tables, wall thickness "T" and quantities.
2. Where shown on the project plans, place a ¾"ø plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
3. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
4. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLETS TYPES GO AND GDO

NO SCALE

RSP D72E DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D72E

2015 REVISED STANDARD PLAN RSP D72E

6-20-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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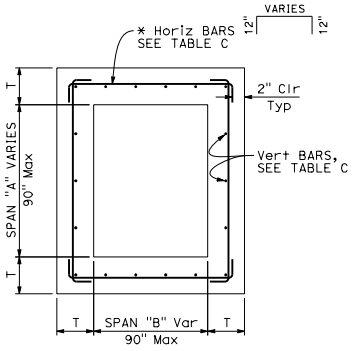
TO ACCOMPANY PLANS DATED _____

GENERAL NOTES:

1. "H" is measured from top of bottom slab to the normal gutter grade line undepressed at the curb face.
2. For "T" wall thickness and reinforcement, see Table C on Revised Standard Plan RSP D72G.
3. Wall reinforcement must be placed in the center of the wall thickness with horizontal bars placed on the exterior face. Bottom slab concrete cover must be 3" clear on the interior face unless otherwise noted. Top slab concrete cover must be 2" clear on the exterior face unless otherwise noted. Reinforcement spacing is in inches unless otherwise noted.
4. Steps - None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below bottom of lid. The distance between steps must not exceed 1'-0" and be uniform throughout the length of the wall. Place steps in the wall without an opening. Steps inserts may be substituted for the bar steps. Step inserts must comply with State Industrial Safety Requirements. See Revised Standard Plan RSP D74 for step details.
5. Pipe(s) can be placed in any wall. Adjacent to each side of the opening, place additional reinforcement equivalent to half the interupted main reinforcement. For larger pipes greater than or equal to 42" diameter, also add 4 diagonal bars, 1 bar each side. Bars must be the same size as the larger of the main vertical or horizontal bars. Extend bars one development length past the intersection with the adjacent diagonal bar, or where bars intersect mid thickness of adjacent wall bottom or top of non-continuous wall, bend ends as required into same plane.
6. Set inlet so that grate bars are parallel to direction of principal surface flow.
7. Curb section must match adjacent curb.
8. Except for inlets used as junction boxes, basin floors must have wood trowel finish and a minimum slope of 4:1, unless otherwise noted, from all directions toward outlet pipe by casting grout fill on top of the bottom slab. The additional volume to achieve the 4:1 slope may also be achieved by casting the bottom slab and fill as a composite concrete element.
9. See Standard Plans D77A and D77B for grate and frame details and weights of miscellaneous iron and steel.
10. See Standard Plans D78A and D78B for gutter depression details.
11. See Standard Plan A87A and Revised Standard Plan RSP A87B for curb and dike details.
12. Details shown apply to metal, concrete and plastic pipe(s).
13. The Contractor may use WWR instead of bar reinforcement. The ratio of bar reinforcement to WWR shall be based on the yield strength ratio.
14. Cast-in-place (CIP) inlets to be formed around all pipes/stubs intersecting the inlet, and concrete poured in one continuous operation.
15. Perimeter reinforcement must not be smaller than main bars and #4 and serves as a rigid frame to position and attach the required structural reinforcement and may be tack welded at outer corners when using ASTM A706 weldable bars.

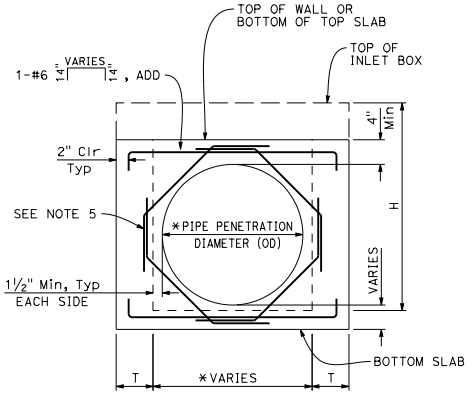
DESIGN NOTES:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 6th edition with 2012 Interims and Errata and CA Amendments.
2. Live Load (AASHTO LRFD 3.6.1.2):
   HL-93, consists of design truck or tandem, and design lane load.
   Dynamic Load Allowance, IM = 33%
   Multiple Presence Factor, m = 1.0
   Design lane load was excluded in Top Slab design.
   A wheel load of 8 kips without impact factor was used for top slabs that are above a curb.
3. Earth Load:
   Vertical pressure = 140 pcf
   Lateral pressure:
   = 100 pcf for walls with flat embankment
   = 140 pcf For walls with slope embankment, 1.5:1 Max
4. Downdrag: $\emptyset$ = 34°and γ_E = 120 pcf.
5. Buoyancy: γ_W = 62.4 pcf to finished grade
6. Reinforced Concrete: f'c = 3.6 ksi, fy = 60.0 ksi.
7. Soil pressures shown are factored per AASHTO LRFD and include self-weight, live load and downdrag.



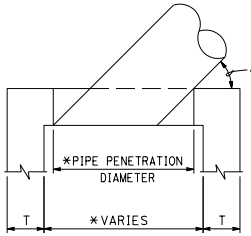
TYPICAL INLET PLAN

* ALTERNATIVE HORIZONTAL BARS



TYPICAL WALL W/ PIPE OPENING

* SEE "SKEWED PIPE PLAN"



SKEWED PIPE PLAN

* ADJUST PIPE PENETRATION AND BOX WIDTH FOR SKEWED PIPES.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLET NOTES

NO SCALE

RSP D72F DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D72F

6-20-16

2015 REVISED STANDARD PLAN RSP D72F

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Carl W. Duan
No. C59976
Exp. 6-30-18
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STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

TABLE A - CONCRETE QUANTITIES

TYPE	H=3'-0" TO 8'-0"		H=8'-1" TO 20'-0"	
	H=3'-0" (CY)	ADDITIONAL CONCRETE PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL CONCRETE PER FOOT (CY)
G1	0.95	0.220	SEE NOTE 2	SEE NOTE 2
G2*	2.00	0.411	5.11	0.525
G3	1.03	0.220	SEE NOTE 2	SEE NOTE 2
G4 (TYPE 18)*	2.02	0.411	5.14	0.525
G4 (TYPE 24)*	1.99	0.411	5.10	0.525
G5	1.02	0.220	SEE NOTE 2	SEE NOTE 2
G6	1.04	0.220	SEE NOTE 2	SEE NOTE 2
OS	1.53	0.278	5.08	0.504
OL7	2.06	0.278	6.17	0.566
OL10	2.85	0.278	6.85	0.566
OL14	3.81	0.278	7.78	0.566
OL21	5.71	0.278	9.62	0.566
GOL7	2.48	0.313	6.89	0.630
GOL10	3.41	0.313	7.85	0.630
GT1	1.72	0.248	SEE NOTE 2	SEE NOTE 2
GT2	2.93	0.530	7.73	0.762
GT3	1.74	0.348	SEE NOTE 2	SEE NOTE 2
GT4	2.83	0.530	7.62	0.762
GO	1.26	0.245	4.90	0.506
GDO	1.74	0.322	6.33	0.647

* Quantities are based on the minimum interior dimensions.

TABLE B - REINFORCEMENT QUANTITIES

TYPE	H=3'-0" TO 8'-0"		H=8'-1" TO 20'-0"	
	H=3'-0" (LB)	ADDITIONAL REINFORCEMENT PER FOOT (LB)	H=8'-1" (LB)	ADDITIONAL REINFORCEMENT PER FOOT (LB)
G1	118	22.20	SEE NOTE 2	SEE NOTE 2
G2*	729	86.48	1794	171.79
G3	118	22.20	SEE NOTE 2	SEE NOTE 2
G4 (TYPE 18)*	647	86.48	1675	171.79
G4 (TYPE 24)*	647	86.48	1675	171.79
G5	118	22.20	SEE NOTE 2	SEE NOTE 2
G6	118	22.20	SEE NOTE 2	SEE NOTE 2
OS	245	49.88	1057	120.77
OL7	458	50.53	1324	126.75
OL10	729	50.53	1595	126.75
OL14	982	50.53	1849	126.75
OL21	1453	50.53	2320	126.75
GOL7	644	83.57	1969	148.79
GOL10	883	83.57	2208	148.79
GT1	486	96.91	SEE NOTE 2	SEE NOTE 2
GT2	1040	117.08	2543	233.37
GT3	486	96.91	SEE NOTE 2	SEE NOTE 2
GT4	1001	117.08	2556	237.88
GO	308	32.44	1013	96.56
GDO	519	57.09	1654	165.66

* Quantities are based on the minimum interior dimensions.

TABLE D

INLET	CURB USED IN QUANTITIES
G1	-
G2	-
G3	A1-6
G4 (Type 18)	A1-6
G4 (Type 24)	A1-6
G5	B1-4
G6	1/2E
OS	-
OL7	-
OL10	-
OL14	-
OL21	-
GOL7	-
GOL10	-
GT1	D-6
GT2	E
GT3	A2-8
GT4	A2-8
GO	-
GDO	-

TABLE C - WALL REINFORCEMENT

TYPE	H≤8 (T=6",UON)		8<H≤20 (T=11",UON)	
	HORIZ	VERTICAL	HORIZ	VERTICAL
OS	#4 @ 8	#4 @ 6	#5 @ 6	#6 @ 4.5
OL	#4 @ 6	#4 @ 6	#5 @ 6	#6 @ 4.5
GOL	#5 @ 6	#5 @ 8	#6 @ 5	#6 @ 4.5
G1 (H≤6-6")	#3 @ 6	#3 @ 6	-	-
G2	T=9" #5 @ 5	#5 @ 5	T=11" #6 @ 4	#6 @ 4.5
G3 (H≤6-6")	#3 @ 6	#3 @ 6	-	-
G4	T=9" #5 @ 5	#5 @ 5	T=11" #6 @ 4	#6 @ 4.5
G5 (H≤6-6")	#3 @ 6	#3 @ 6	-	-
G6 (H≤6-6")	#3 @ 6	#3 @ 6	-	-
GT1 (H≤6-6")	#5 @ 6	#5 @ 6	-	-
GT2	T=8" #5 @ 6	#5 @ 6	#6 @ 4	#6 @ 4.5
GT3 (H≤6-6")	#5 @ 6	#5 @ 6	-	-
GT4	T=8" #5 @ 6	#5 @ 6	#6 @ 4	#6 @ 4.5
GO	#4 @ 9	#4 @ 6	#4 @ 6	#6 @ 4.5
GDO	#4 @ 6	#4 @ 6	#5 @ 4	#6 @ 4.5

TABLE E

SOIL PRESSURE BELOW BASE SLAB (ksf)		
TYPE	H=8'-0"	8'-0"< H ≤20'-0"
OS	2.93	5.56
OL*	2.93	5.56
GOL*	2.50	5.06
G1	3.67	-
G2	2.99	5.91
G3	3.67	-
G4	2.99	5.91
G5	3.67	-
G6	3.67	-
GT1	3.66	-
GT2	3.91	6.07
GT3	3.86	-
GT4	3.91	6.07
GO	3.42	6.11
GDO	2.52	6.95

* Main Box

NOTES:

1. No deduction or adjustment was made to the quantities of concrete and reinforcement for pipe openings, floor alternatives or curb type.
2. Maximum allowable height is 6'-6".
3. Quantities are approximate and for design purposes only.
4. Design is based on envelope of level and sloped ground.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLET TABLES

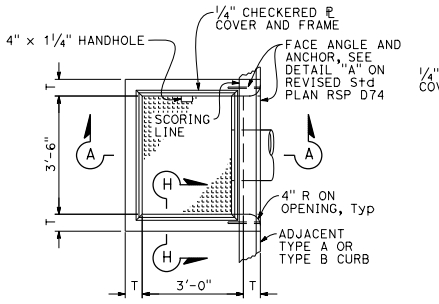
NO SCALE

RSP D72G DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D72G

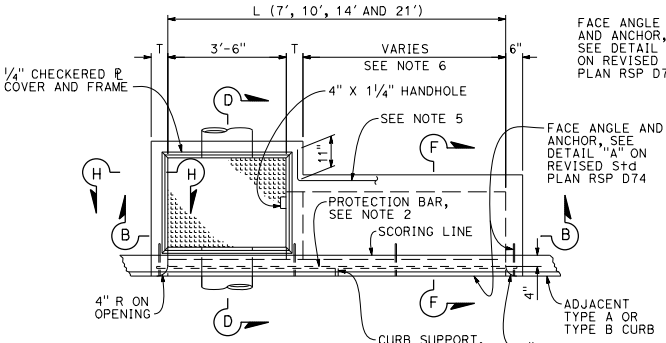
2015 REVISED STANDARD PLAN RSP D72G

6-20-16



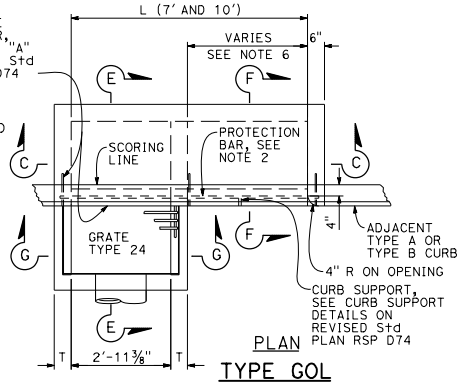
PLAN

TYPE OS



PLAN

TYPE OL



PLAN

TYPE GOL

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Carl M. Duan
No. C59976
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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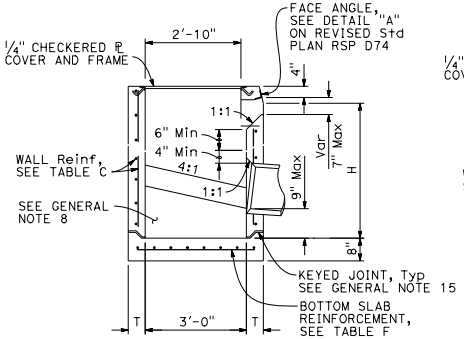
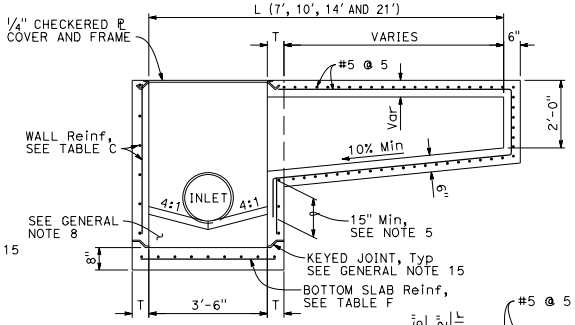
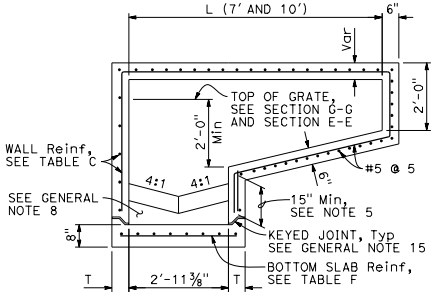
TO ACCOMPANY PLANS DATED _____



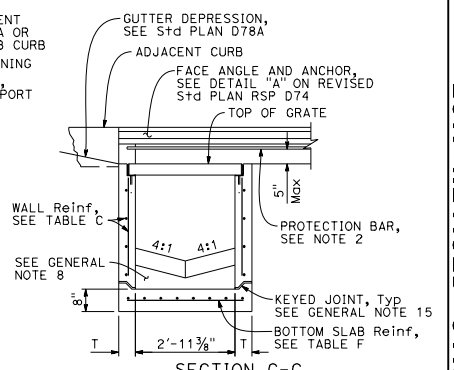
SECTION A-A



SECTION B-B



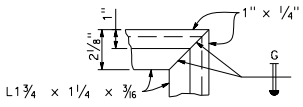
SECTION C-C



SECTION G-G

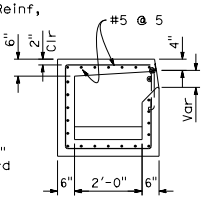
NOTES:

1. See Revised Standard Plan RSP D73F for General Notes and additional details. See Revised Standard Plan RSP D73G for tables, wall thickness "T" and quantities.
2. When shown on the project plans, place a ¾"ø plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
3. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
4. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
5. Extend all horizontal bars from inlet extensions into adjacent concrete elements of main inlet box a minimum of 15". Where shown, bend horizontal bars into box. If necessary rotate bars to maintain 2" clear coverage.
6. Height of curb opening will vary with the type of curb and the depth of the local depression.



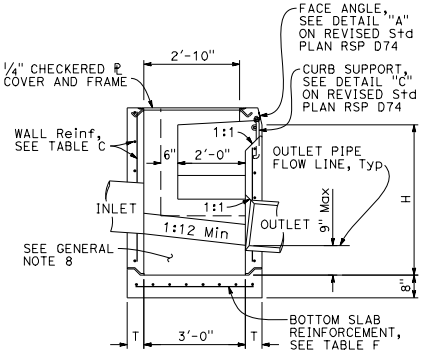
COVER FRAME

TYPICAL EACH CORNER
(CHECKERED ℄ COVER NOT SHOWN)

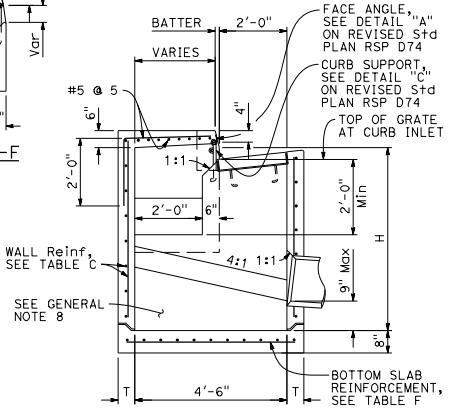


SECTION F-F

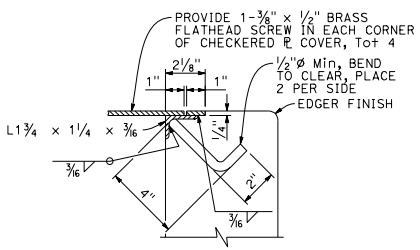
SEE NOTE 5



SECTION D-D



SECTION E-E



SECTION H-H

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLETS TYPES OS, OL AND GOL

NO SCALE

RSP D73A DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN D73A
DATED OCTOBER 30, 2015 - PAGE 174 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D73A

2015 REVISED STANDARD PLAN RSP D73A

6-28-16

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

Carl W. Dugan
No. C59976
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. For notes and Table 2, See Revised Standard Plan RSP D73C.
2. For L_1 or L_2 greater than 2'-10", see Table 1 for wall thickness dimension and see Table C in Revised Standard Plan RSP D73G for reinforcement. Otherwise, see Table C in Revised Standard Plan RSP D73G for wall thickness and reinforcement.

TABLE 1	
	T
L_1 OR L_2 > 2'-10"	12"

PLAN
TYPE G1

PLAN
TYPE G3

PLAN
TYPE G5

PLAN
TYPE G6

PLAN
STANDARD TYPE G2 OR G4
(INTEGRAL TOP ALTERNATIVE)
FOR "L" AND "T" VALUES, SEE TABLE 1

SECTION A-A

SECTION B-B

SECTION C-C
FOR "L_1", "L_2" AND "T_1" VALUES, SEE "TABLE 1"

SECTION D-D

SECTION E-E

DETAIL A

DETAIL B

PLAN
EXPANDED
TYPE G2 OR G4

SECTION G-G

SECTION H-H

SECTION F-F

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLETS TYPES G1, G2, G3, G4, G5 AND G6

NO SCALE

RSP D73B DATED JULY 21, 2017 SUPERSEDES RSP D73B DATED JULY 15, 2016 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D73B

2015 REVISED STANDARD PLAN RSP D73B

5-25-17

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

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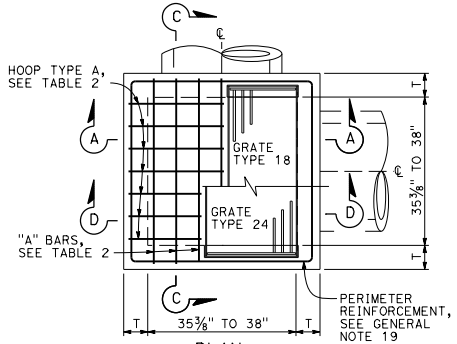
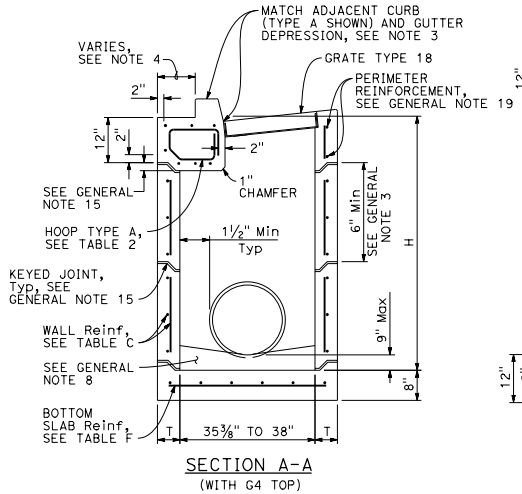
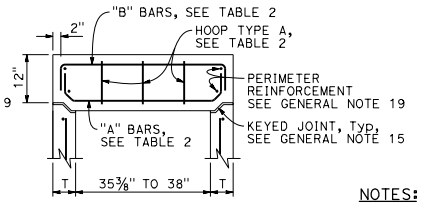


PLAN

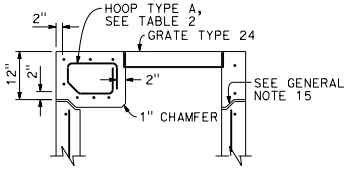
STANDARD TYPE G2 OR G4



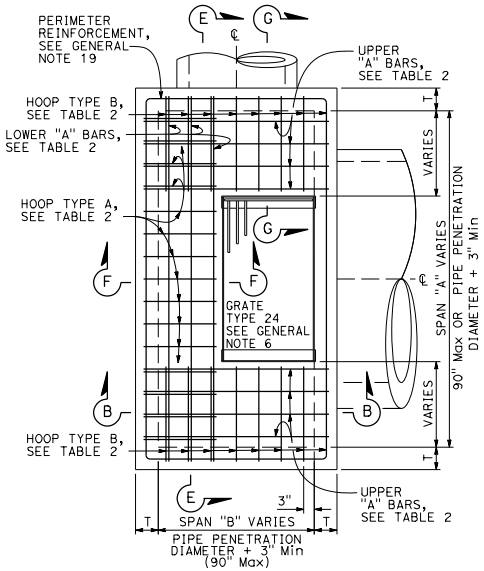
SECTION A-A
(WITH G4 TOP)



SECTION C-C



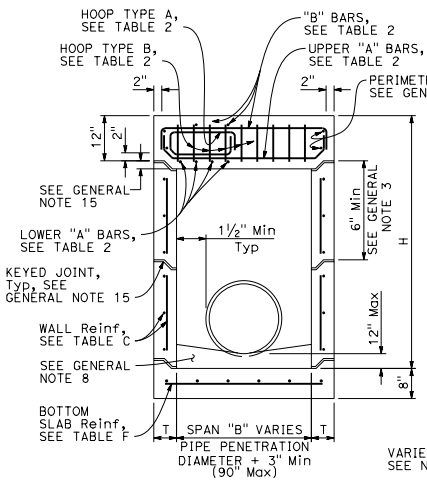
SECTION D-D
(WITH G2 TOP)



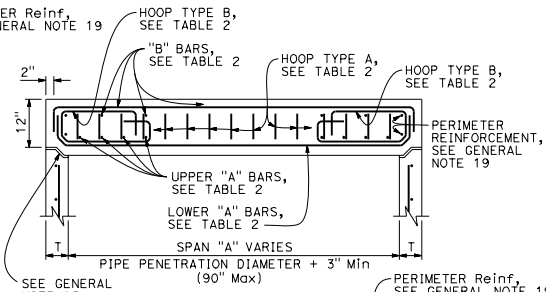
PLAN

EXPANDED TYPE G2 OR G4

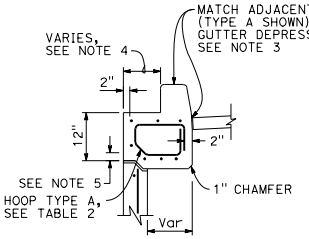
(TOP REBAR NOT SHOWN)



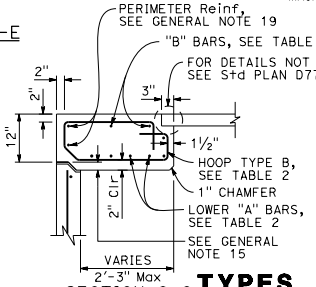
SECTION B-B
(WITH G2 TOP)



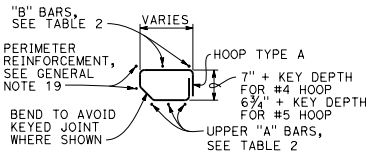
SECTION E-E



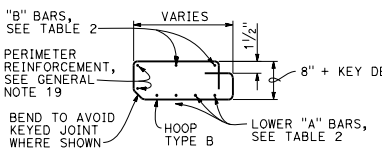
SECTION F-F
(WITH G4 TOP)



SECTION G-G



HOOP TYPE A

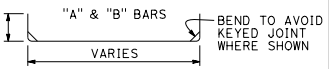


HOOP TYPE B

NOTES:

1. See Revised Standard Plan RSP D73F for General Notes and additional details. See Revised Standard Plan RSP D73G for additional tables, wall thickness "T" and quantities.
2. Type G4 inlet can use Grate Type 18 or 24. Type G2 inlet uses Grate Type 24.
3. G4 inlet details are the same as the G2 with the addition of a curb and sloped grate that matches the adjacent curb and gutter depression.
4. Dimension will vary with different grates, curb types, box width and wall thickness.
5. 2" unless inlet is expanded in the Span "A" direction, then clearance is 2" plus the diameter of the lower "A" bar.
6. See Revised Standard Plan RSP D73B for integral top slab alternative.
7. Interior dimension of lower sections of inlet for Types G2 and G4 may be 3'-0" provided top section conforms to the requirements for frame and grate types on Standard Plan D77A. The wall thickness of top sections may transition from "T" to "T"+5/16" to meet this requirement. Minimum height of thickened wall shall = "T".

TABLE 2 - TOP SLAB REINFORCEMENT



	W/ CURB	W/O CURB
"A" BARS	#4 @ 5 (2 BARS Min)	#5 @ 5 (3 BARS Min)
"B" BARS	#4 @ 10 (2 BARS Min)	#4 @ 10 (2 BARS Min)
HOOPS ("A" & "B")	#4 @ 5	#5 @ 5

ROTATE "A" AND "B" BARS SO HOOKED ENDS WILL MAINTAIN 2" CLEAR COVERAGE.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLETS TYPES G1, G2 G3, G4, G5 AND G6

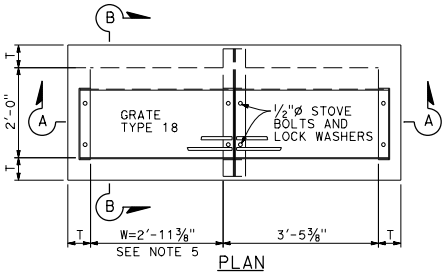
NO SCALE

RSP D73C DATED JULY 21, 2017 SUPERSEDES RSP D73C
DATED JULY 15, 2016 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D73C

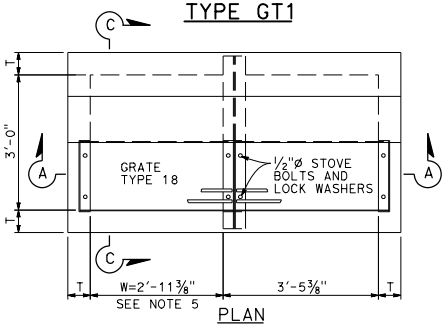
2015 REVISED STANDARD PLAN RSP D73C

5-24-17



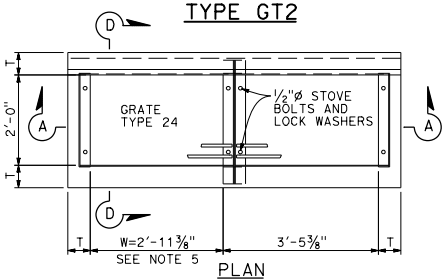
PLAN

TYPE GT1



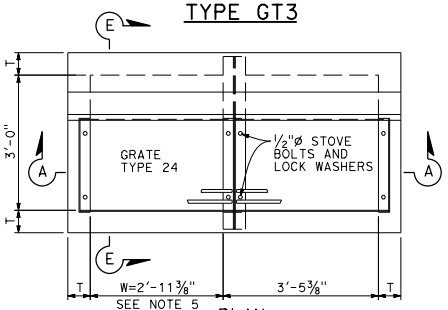
PLAN

TYPE GT2



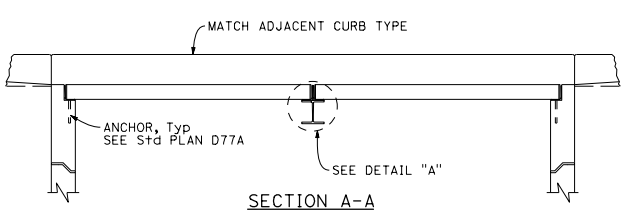
PLAN

TYPE GT3

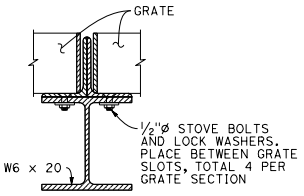


PLAN

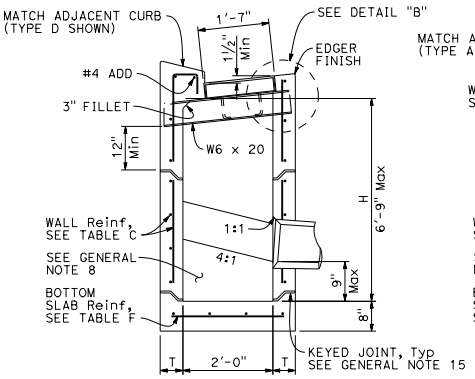
TYPE GT4



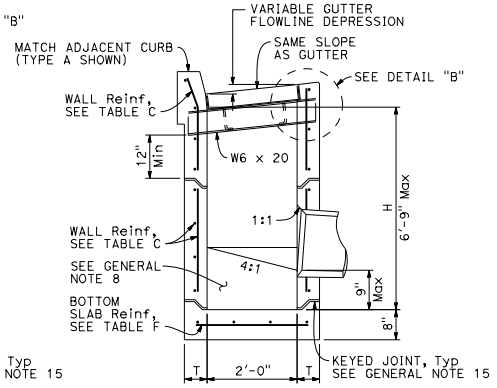
SECTION A-A



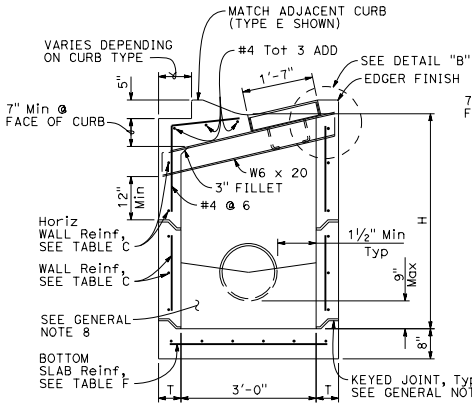
DETAIL "A"



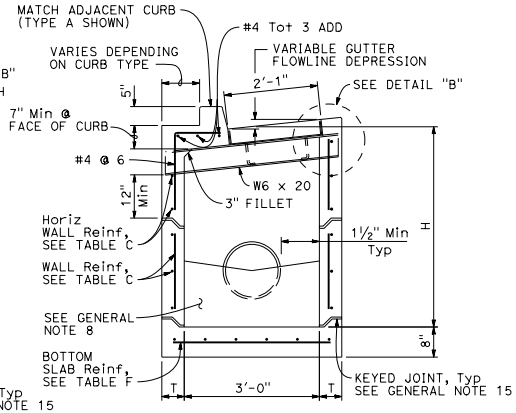
SECTION B-B



SECTION D-D



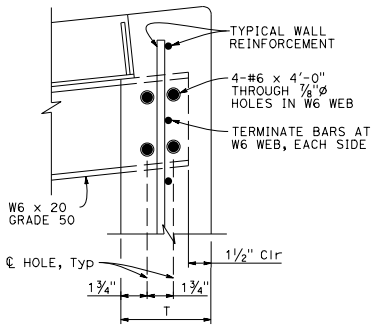
SECTION C-C



SECTION E-E

NOTES:

1. See Revised Standard Plan RSP D73F for General Notes and additional details. See Revised Standard Plan RSP D73G for tables, wall thickness "T" and quantities.
2. W=2'-11⅜" for one grate. Add 3'-5⅜" for additional grates in tandem.
3. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
4. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
5. Overall interior length of lower sections may be 6'-6" provided top section conforms to the requirements for frame and grate types on Standard Plan D77A. The wall thickness of top sections may transition from "T" to "T"+⅝" to meet this requirement. Minimum height of thickened wall shall = "T".



DETAIL "B"
(SIMILAR OPPOSITE END OF W6)

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLETS TYPES GT1, GT2, GT3 AND GT4

NO SCALE

RSP D73D DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D73D

2015 REVISED STANDARD PLAN RSP D73D

6-28-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-18
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STATE OF CALIFORNIA

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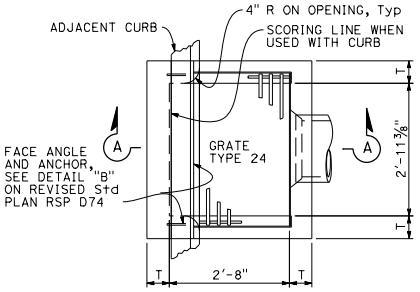
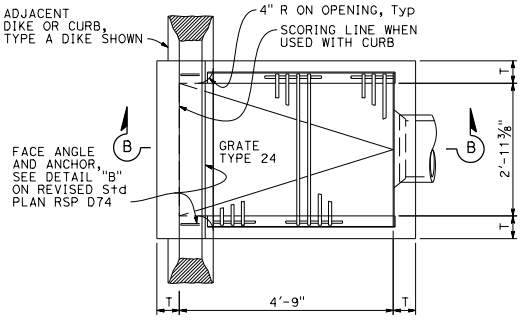
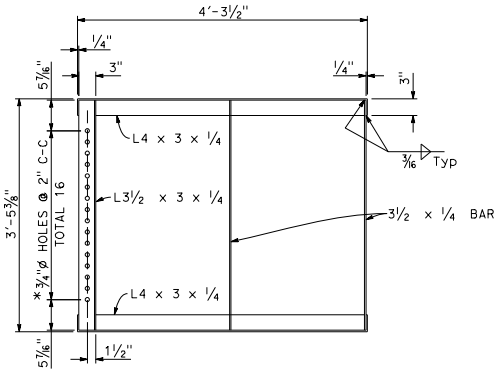
TO ACCOMPANY PLANS DATED _____



PLAN
TYPE GO

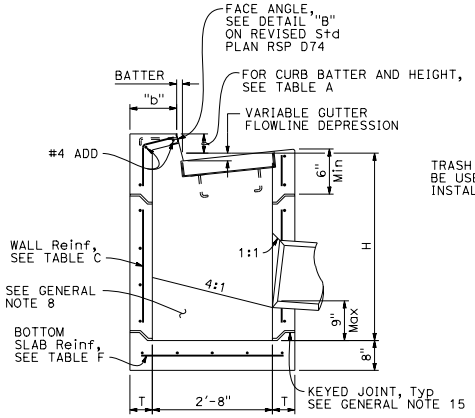


PLAN
TYPE GDO

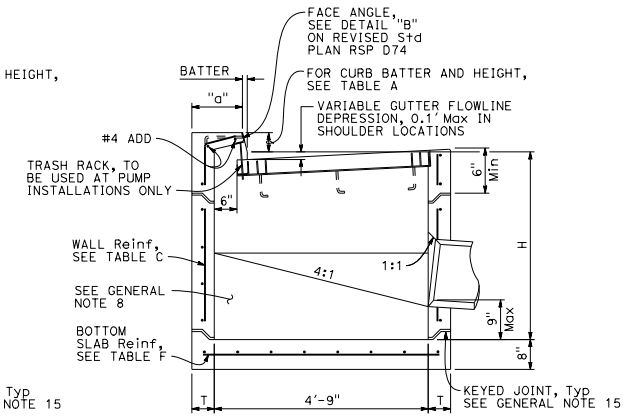


GRATE FRAME FOR TYPE GDO INLET

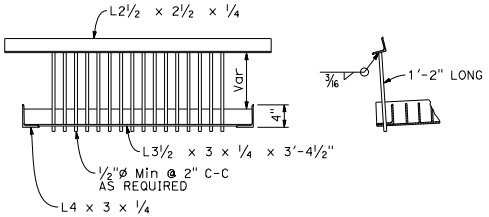
* HOLES REQUIRED ONLY WITH TRASH RACK



SECTION A-A



SECTION B-B



TRASH RACK
FOR USE WITH PUMP INSTALLATION

TABLE A				
CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"a" DIMENSION	"b" DIMENSION
A1-6	6"	1½"	T+7½"	T+6½"
A1-8	8"	2"	T+7"	T+6"
B1-6	6"	4"	T+5"	T+4"
TYPE A DIKE	6"	3"	T+6"	T+5"

Height of curb opening will vary with the type of curb and the depth of the local depression.

NOTES:

1. See Revised Standard Plan RSP D73F for General Notes and additional details. See Revised Standard Plan RSP D73G for tables, wall thickness "T" and quantities.
2. Where shown on the project plans, place a ¾"* plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
3. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
4. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLETS TYPES GO AND GDO

NO SCALE

RSP D73E DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D73E

2015 REVISED STANDARD PLAN RSP D73E

6-20-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
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 — Carl W. Dugan — No. C59976 — Exp. 6-30-18 CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

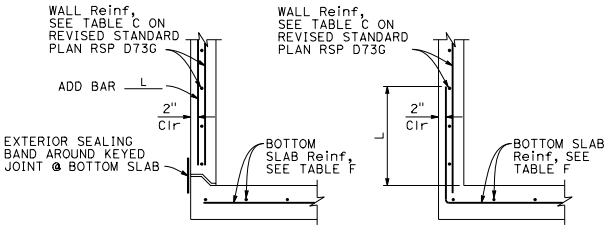
GENERAL NOTES:

1. "H" is measured from top of bottom slab to the normal gutter grade line undepressed at the curb face.
2. For "T" wall thickness and reinforcement, see Table C on Revised Standard Plan RSP D73G.
3. Wall reinforcement must be placed at the center of wall thickness with horizontal bars placed on the exterior face. Bottom slab concrete cover must be 3" clear on the interior side face unless otherwise noted. Top slab concrete cover must be 2" clear on the exterior face unless otherwise noted. Short independent wall sections or height adjustment rings 6" to 24" high must have a minimum of two #4 horizontal bars. Reinforcement spacing is in inches unless otherwise noted.
4. Steps - None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below bottom of lid. The distance between steps must not exceed 1'-0" and be uniform throughout the length of the wall. Place steps in the wall without an opening. Steps inserts may be substituted for the bar steps. Step inserts must comply with State Industrial Safety Requirements. See Revised Standard Plan RSP D74 for step details.
5. Pipe(s) can be placed in any wall. Adjacent to each side of the opening, place additional reinforcement equivalent to half the interupted main reinforcement. For larger pipes greater than or equal to 42" diameter, also add 4 diagonal bars, 1 bar each side. Bars must be the same size as the larger of the main vertical or horizontal bars. Extend bars one development length past the intersection with the adjacent diagonal bar, or where bars intersect mid thickness of adjacent wall bottom or top of non-continuous wall, bend ends as required into same plane.
6. Set inlet so that grate bars are parallel to direction of principal surface flow.
7. Curb section must match adjacent curb.
8. Except for inlets used as junction boxes, basin floors must have wood trowel finish and a minimum slope of 4:1, unless otherwise noted, from all directions toward outlet pipe by casting grout on top of the bottom slab. Grout must be placed prior to backfill.
9. See Standard Plans D77A and D77B for grate and frame details and weights of miscellaneous iron and steel.
10. See Standard Plans D78A and D78B for gutter depression details.
11. See Standard Plan A87A and Revised Standard Plan RSP A87B for curb and dike details.
12. Details shown apply to metal, concrete and plastic pipe(s).
13. The Contractor may use WWR instead of bar reinforcement. The ratio of bar reinforcement to WWR shall be based on the yield strength ratio.
14. Seal precast inlets connection openings between wall and pipe with non-shrink grout or resilient connectors as specified in the Special Provisions. Precast inlets shall have mortared connections conforming to details for Type GCP inlet shown on Standard Plan D75B. See Standard Specifications for mortar composition.
15. Where shown, provide precast inlets with separate top sections for final grade adjustment. Provide keyed joints with butyl rubber sealant between the top section and wall, multiple wall sections, and wall and bottom slab. Joint design may vary but must be 1" to 3" in depth. For tongue type joints, tongue down orientation is not allowed. For keyed joints, keyway up, keyway down or tongue up configurations are allowed. Only one key type is allowed for each drainage inlet.
16. Non-shrink grout can be used for upper most joint to facilitate final top grade adjustment.
17. Provide a level and firm sand bedding on which to place precast inlets. Extend sand bedding under all structure backfill.
18. For Integral Base, see Detail "A".
19. Perimeter reinforcement must not be smaller than main bars and #4 and serves as a rigid frame to position and attach the required structural reinforcement and may be tack welded at outer corners when using ASTM A706 weldable bars.
20. Inlet extensions may be cast in place after placement of main box and placement and compaction of backfill. Concrete strength must be 3.6 ksi minimum. All slab and wall thicknesses must be per Revised Standard Plan RSP D72A. All reinforcement shall extend a minimum of 24" from precast main inlet box.

DESIGN NOTES:

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 6th edition with 2012 Interims and Errata and CA Amendments.
2. Live Load (AASHTO LRFD 3.6.1.2):
   HL-93, consists of design truck or tandem, and design lane load.
   Dynamic Load Allowance, IM = 33%
   Multiple Presence Factor, m = 1.0
   Design lane load was excluded in Top Slab design.
   A wheel load of 8 kips without impact factor was used for top slabs that are above a curb.
3. Earth Load:
   Vertical pressure = 140 pcf
   Lateral pressure:
   = 100 pcf for walls with flat embankment
   = 140 pcf For walls with slope embankment, 1.5:1 Max
4. Downdrag: ϕ = 34°and γ_E = 120 pcf.
5. Buoyancy: γ_W = 62.4 pcf to finished grade.
6. Reinforced Concrete: f'c = 5.0 ksi, fy = 60.0 ksi.
7. Tables are based on the worst case from the level ground and sloped ground.
8. Soil pressures shown are factored per AASHTO LRFD and include self-weight, live load and downdrag.

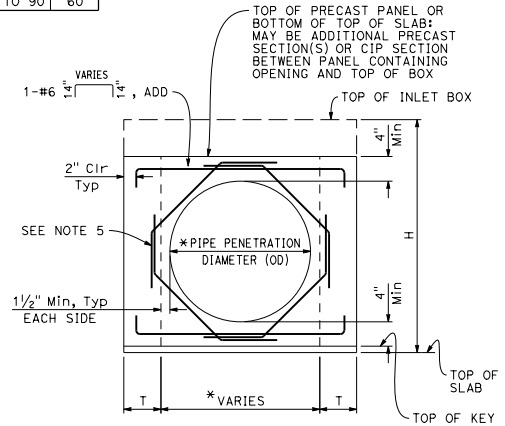
SPAN "A" OR "B" (IN)	L (IN)
<38	34
38 TO 50	40
51 TO 64	47
65 TO 76	53
77 TO 90	60



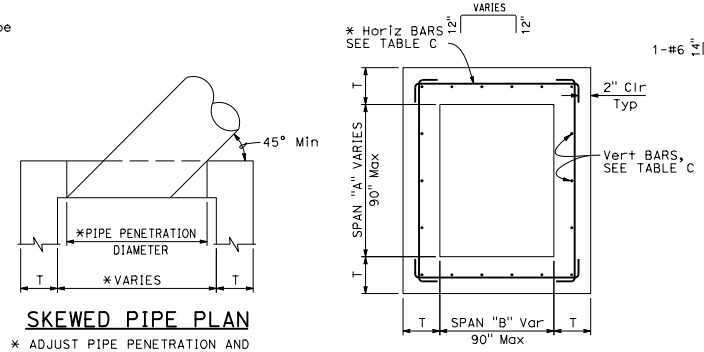
BASE WITH KEYED JOINT INTEGRAL BASE

DETAIL "A"

FOR INTEGRAL BASE, CLEARANCE BETWEEN PIPE PENETRATION AND BASE SLAB MAY BE AS SHOWN IN CIP ALTERNATIVE STANDARD PLAN SHEET.

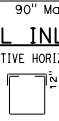


BASE WITH KEYED JOINT



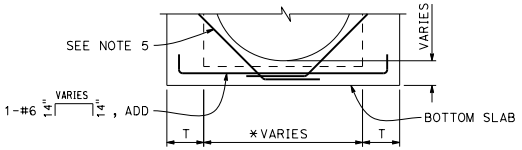
TYPICAL INLET PLAN

* ALTERNATIVE HORIZONTAL BARS



SKEWED PIPE PLAN

* ADJUST PIPE PENETRATION AND BOX WIDTH FOR SKEWED PIPES.



INTEGRAL BASE

FOR DETAILS NOT SHOWN, SEE "BASE WITH KEYED JOINT"

TYPICAL WALL W/ PIPE OPENING

* SEE "SKEWED PIPE PLAN"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLET NOTES

NO SCALE

RSP D73F DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D73F

2015 REVISED STANDARD PLAN RSP D73F

6-20-16

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Carl W. Duan — No. C59976 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

TABLE A - CONCRETE QUANTITIES

TYPE	H=3'-0" TO 8'-0"		H=8'-1" TO 20'-0"	
	H=3'-0" (CY)	ADDITIONAL CONCRETE PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL CONCRETE PER FOOT (CY)
G1	0.95	0.220	SEE NOTE 2	SEE NOTE 2
G2*	1.25	0.255	2.55	0.255
G3	1.06	0.220	SEE NOTE 2	SEE NOTE 2
G4 (TYPE 18)*	1.41	0.255	2.71	0.255
G4 (TYPE 24)*	1.36	0.255	2.65	0.255
G5	1.09	0.220	SEE NOTE 2	SEE NOTE 2
G6	1.14	0.220	SEE NOTE 2	SEE NOTE 2
OS	1.28	0.278	2.69	0.278
OL7	1.92	0.278	3.33	0.278
OL10	2.43	0.278	3.84	0.278
OL14	3.16	0.278	4.57	0.278
OL21	4.58	0.278	5.99	0.278
GOL7	2.36	0.313	4.04	0.434
GOL10	2.84	0.313	4.53	0.434
GT1	2.30	0.480	SEE NOTE 2	SEE NOTE 2
GT2	2.71	0.530	5.40	0.530
GT3	2.29	0.480	SEE NOTE 2	SEE NOTE 2
GT4	2.69	0.530	5.39	0.530
GO	1.25	0.245	2.37	0.245
GDO	1.64	0.322	3.37	0.446

* Quantities are based on the minimum interior dimensions.

TABLE B - REINFORCEMENT QUANTITIES

TYPE	H=3'-0" TO 8'-0"		H=8'-1" TO 20'-0"	
	H=3'-0" (LB)	ADDITIONAL REINFORCEMENT PER FOOT (LB)	H=8'-1" (LB)	ADDITIONAL REINFORCEMENT PER FOOT (LB)
G1	88.5	21.90	SEE NOTE 2	SEE NOTE 2
G2*	151.5	24.54	277.4	38.64
G3	92.9	21.90	SEE NOTE 2	SEE NOTE 2
G4 (TYPE 18)*	134.4	24.54	260.3	38.64
G4 (TYPE 24)*	125.1	24.54	251.0	38.64
G5	92.5	21.90	SEE NOTE 2	SEE NOTE 2
G6	92.5	21.90	SEE NOTE 2	SEE NOTE 2
OS	145.8	35.57	327.8	49.60
OL7	328.0	35.57	510.0	49.60
OL10	467.5	35.57	649.5	49.60
OL14	667.5	35.57	849.5	49.60
OL21	1056.1	35.57	1238.1	49.60
GOL7	474.7	45.17	706.8	74.02
GOL10	604.9	45.17	836.9	74.02
GT1	349.0	80.48	SEE NOTE 2	SEE NOTE 2
GT2	403.7	86.82	849.1	135.15
GT3	347.0	80.48	SEE NOTE 2	SEE NOTE 2
GT4	403.7	86.82	849.1	135.15
GO	99.8	23.75	221.7	37.46
GDO	208.8	46.22	446.2	75.61

* Quantities are based on the minimum interior dimensions.

TABLE D

INLET	CURB USED IN QUANTITIES
G1	-
G2	-
G3	A1-6
G4 (Type 18)	A1-6
G4 (Type 24)	A1-6
G5	B1-4
G6	½E
OS	-
OL7	-
OL10	-
OL14	-
OL21	-
GOL7	-
GOL10	-
GT1	D-6
GT2	E
GT3	A2-8
GT4	A2-8
GO	-
GDO	-

TABLE C - WALL REINFORCEMENT

TYPE	H ≤ 8'-0" (T=6", UON)			8'-0"< H ≤20'-0" (T=8", UON)		
	HORIZONTAL	VERTICAL	*ADD	HORIZONTAL	VERTICAL	*ADD
OS	#4@6	#3@8	#3@8	#4@4 (T=6")	#3@8	#3@8
OL	#4@6	#3@8	#3@8	#4@4 (T=6")	#3@8	#3@8
GOL	#4@5	#3@8	#3@8	#5@5	#3@6	#3@6
G1 (H ≤6'-9")	#4@9	#3@8	#3@8	-	-	-
G2 & G4 (a** ≤38")	#4@9	#3@8	#3@8	#4@5 (T=6")	#3@8	#3@8
G2 & G4 (38" < a** ≤50")	#4@6	#3@8	#3@8	#4@4 (T=6")	#3@8	#3@8
G2 & G4 (50" < a** ≤64")	#4@5	#3@8	#3@8	#5@5	#3@6	#3@6
G2 & G4 (64"< a** ≤76")	#5@7 (T=8")	#3@6	#3@6	#5@4	#3@6	#5@6
G2 & G4 (76" < a** ≤90")	#5@5 (T=8")	#3@6	#3@6	#5@3	#3@6	#5@6
G3 (H ≤6'-9")	#4@9	#3@8	#3@8	-	-	-
G5 (H ≤6'-9")	#4@9	#3@8	#3@8	-	-	-
G6 (H ≤6'-9")	#4@9	#3@8	#3@8	-	-	-
GT1 (H ≤6'-9")	#5@5 (T=8")	#3@6	#3@6	-	-	-
GT2	#5@5 (T=8")	#3@6	#3@6	#5@3	#3@6	#5@6
GT3 (H ≤6'-9")	#5@5 (T=8")	#3@6	#3@6	-	-	-
GT4	#5@5 (T=8")	#3@6	#3@6	#5@3	#3@6	#5@6
GO	#4@9	#3@8	#3@8	#4@5 (T=6")	#3@8	#3@8
GDO	#4@5	#3@8	#3@8	#5@5	#3@6	#3@6

* See Detail A on Revised Standard Plan RSP D73F for additional vertical bars at the base.
** a = Larger interior span

TABLE E

SOIL PRESSURE BELOW BASE SLAB (ksf)		
TYPE	H ≤8'-0"	8'-0"< H ≤20'-0"
OS	2.89	5.68
OL*	2.89	5.68
GOL*	2.36	4.93
G1 (H ≤6'-9")	3.51	-
G2 & G4 (a** ≤38")	2.96	5.79
G2 & G4 (38" < a** ≤50")	2.21	4.51
G2 & G4 (50" < a** ≤64")	3.19	4.89
G2 & G4 (64"< a** ≤76")	2.50	4.23
G2 & G4 (76" < a** ≤90")	2.04	3.56
G3 (H ≤6'-9")	3.51	-
G5 (H ≤6'-9")	3.51	-
G6 (H ≤6'-9")	3.51	-
GT1 (H ≤6'-9")	3.41	-
GT2	3.60	6.42
GT3 (H ≤6'-9")	3.41	-
GT4	3.60	6.42
GO	3.37	6.46
GDO	2.48	7.30

* Main Box
** a = Larger interior span

TABLE F

BASE SLAB REINFORCEMENT (T=8", UON)		
TYPE	H ≤8'-0"	8'-0"< H ≤20'-0"
OS	#4@8 (EW)	#4@5 (EW)
OL*	#4@8 (EW)	#4@5 (EW)
GOL*	#4@6 (EW)	#4@4 (EW)
G1 (H ≤6'-9")	#4@10 (EW)	-
G2 & G4 (a** ≤38")	#4@10 (EW)	#4@6 (EW)
G2 & G4 (38" < a** ≤50")	#4@8 (EW)	#4@5 (EW)
G2 & G4 (50" < a** ≤64")	#4@6 (EW)	#4@4 (EW)
G2 & G4 (64"< a** ≤76")	#4@5 (EW)	#4@3 (EW)
G2 & G4 (76" < a** ≤90")	#4@4 (EW)	#5@3 (EW)
G3 (H ≤6'-9")	#4@10 (EW)	-
G5 (H ≤6'-9")	#4@10 (EW)	-
G6 (H ≤6'-9")	#4@10 (EW)	-
GT1 (H ≤6'-9")	#4@4 (EW)	-
GT2	#4@4 (EW)	#5@3 (EW)
GT3 (H ≤6'-9")	#4@4 (EW)	-
GT4	#4@4 (EW)	#5@3 (EW)
GO	#4@10 (EW)	#4@6 (EW)
GDO	#4@6 (EW)	#4@4 (EW)

(EW) Each Way
* Main Box
** a = Larger interior span

NOTES:

1. No deduction or adjustment was made to the quantities of concrete and reinforcement for pipe openings, floor alternatives or curb type.
2. Maximum allowable height is 6'-9".
3. Quantities are approximate and for design purposes only.
4. Design is based on envelope of level and sloped ground.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLET TABLES

NO SCALE

RSP D73G DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D73G

2015 REVISED STANDARD PLAN RSP D73G

6-20-16

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

REGISTERED CIVIL ENGINEER

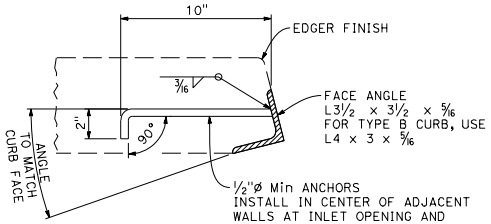
July 15, 2016
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

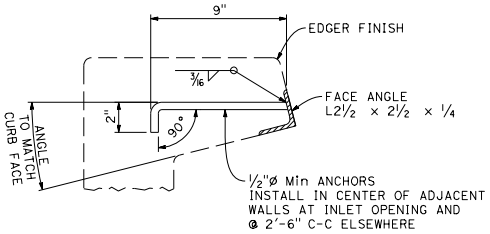
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

FACE ANGLE DETAIL "A"	
LENGTH OF CURB OPENING	No. OF ANCHORS
3'-6" OR LESS	2
7'-0"	3
10'-0"	4
14'-0"	5
21'-0"	7



DETAIL "A"

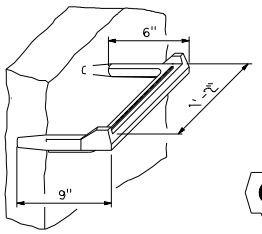


DETAIL "B"

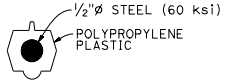
FACE ANGLE AND ANCHOR

NOTE:

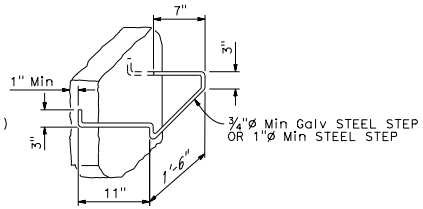
1. When shown on the project plans, place a ¾"ø plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.



STEP INSERT

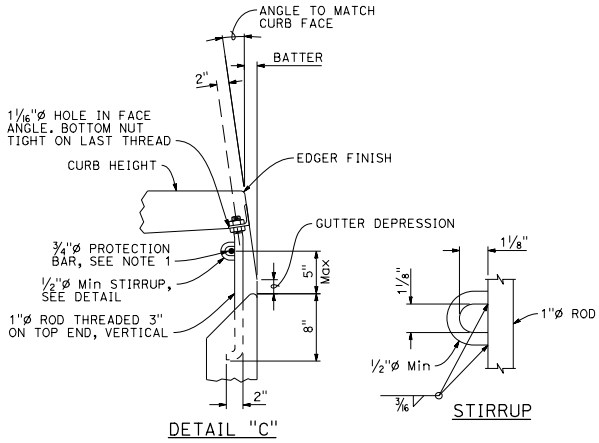


TYPICAL SECTION
(STEP INSERT)



BAR STEP

STEP DETAILS

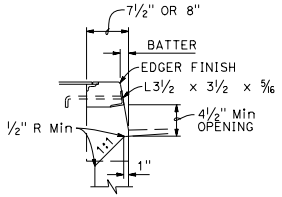


DETAIL "C"

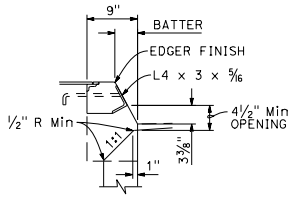
STIRRUP

CURB SUPPORT

CURB SUPPORTS SHALL BE EVENLY SPACED AND MINIMAL IN NUMBER SUCH THAT MAXIMUM SPAN OF UNSUPPORTED CURB IS 7'-0".



TYPE A CURBS



TYPE B CURBS

CURB OPENING DETAILS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET DETAILS

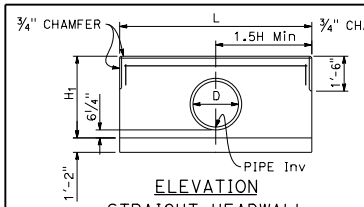
NO SCALE

RSP D74 DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

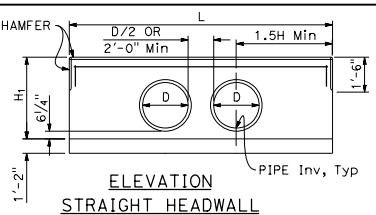
REVISED STANDARD PLAN RSP D74

2015 REVISED STANDARD PLAN RSP D74

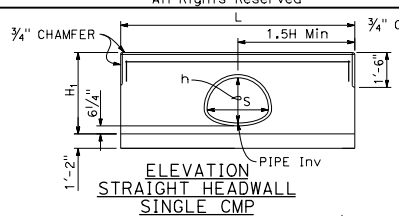
6-20-16



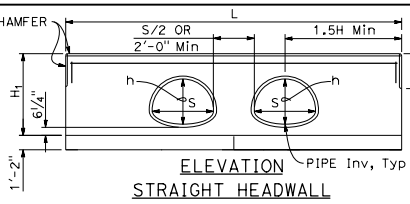
ELEVATION
STRAIGHT HEADWALL
SINGLE CIRCULAR PIPE



ELEVATION
STRAIGHT HEADWALL
DOUBLE CIRCULAR PIPE



ELEVATION
STRAIGHT HEADWALL
SINGLE CMP



ELEVATION
STRAIGHT HEADWALL
DOUBLE CMP

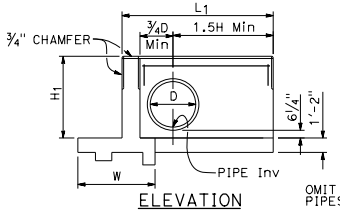
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

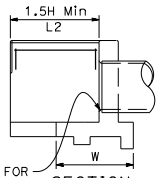
July 21, 2017
PLANS APPROVAL DATE

Carl W. Dugan
No. C59976
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



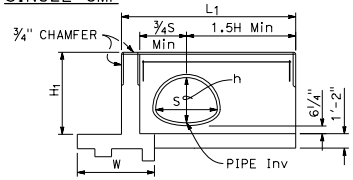
ELEVATION
"L" HEADWALL



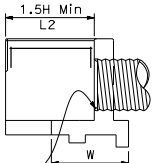
OMIT ROUNDING FOR PIPES < 48" Dia

SECTION
"L" HEADWALL

H	CIRCULAR PIPE SIZE D	CMP ARCH SIZE S x h
2'-8"	12"	-
2'-11"	15"	21" x 15"
3'-2"	18"	24" x 18"
3'-5"	21"	28" x 20"
3'-8"	24"	35" x 24"
3'-11"	27"	-
4'-2"	30"	42" x 29"
4'-5"	33"	49" x 33"
4'-8"	36"	-
4'-11"	39"	57" x 38"
5'-2"	42"	64" x 43"
5'-5"	45"	-
5'-8"	48"	71" x 47"
5'-11"	51"	-
6'-2"	54"	-



ELEVATION
"L" HEADWALL

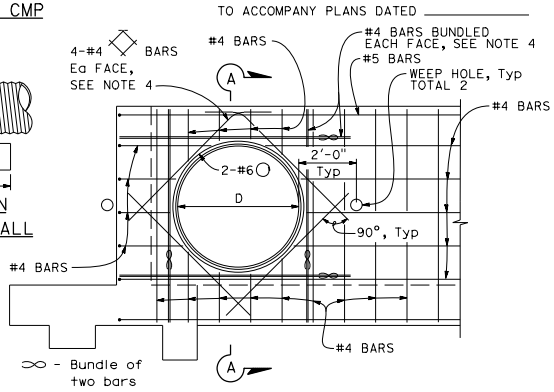


OMIT ROUNDING FOR PIPES < 48" Dia

SECTION
"L" HEADWALL

CMP ARCH CULVERT HEADWALLS

See Note 2

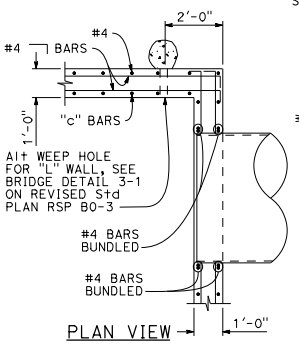


REINFORCEMENT MODIFICATION

"L" headwall shown. Straight headwall similar.
Circular pipe shown. CMP arch similar.

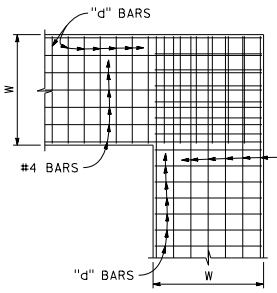
CIRCULAR PIPE CULVERT HEADWALLS

See Note 2



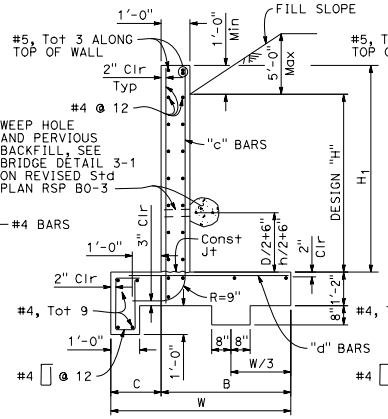
PLAN VIEW
STEM WALL

"L" headwall shown.
Straight headwall similar.

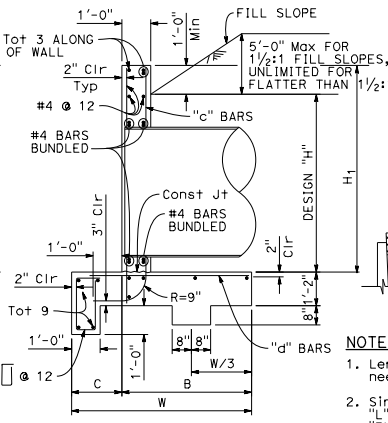


PLAN VIEW
FOOTING

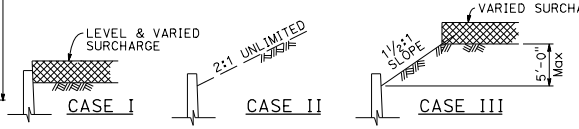
"L" headwall shown.
Straight headwall similar.



TYPICAL SECTION



SECTION A-A



DETAIL OF DESIGN LOADING CASES

NOTES:

1. Length of wall from ℄ pipe to end of wall is 1.5H Min. The ends of headwall need to be embedded into the slope by two feet.
2. Single circular pipe or single CMP shown for "L" headwall. For double pipe in "L" headwall, see "ELEVATION STRAIGHT HEADWALL DOUBLE CIRCULAR PIPE" or "ELEVATION STRAIGHT HEADWALL DOUBLE CMP" detail for additional information.
3. Cable railing to be installed on top of headwall when shown on Project Plans. See Standard Plan B11-47 for cable railing details.
4. Adjacent to each side of the opening, place additional reinforcement equivalent to half the interrupted main reinforcement. For pipes 42" diameter and greater, add 4 diagonals, 1 bar each side. Extend bars one development length past the intersection with the adjacent diagonal bar, or where bars intersect mid thickness of adjacent wall, bottom slab or at top of wall, bend ends as required into same plane.
5. Quantities are approximate and for design purposes only. No deduction is made for pipe or arch occupancy.

H		2'-8"	2'-11"	3'-2"	3'-5"	3'-8"	3'-11"	4'-2"	4'-5"	4'-8"	4'-11"	5'-2"	5'-5"	5'-8"	5'-11"	6'-2"
W		4'-7"	4'-9"	4'-10"	5'-0"	5'-1"	5'-2"	5'-3"	5'-5"	5'-6"	5'-7"	5'-8"	5'-9"	5'-11"	6'-0"	6'-3"
C		1'-2"	1'-2"	1'-2"	1'-3"	1'-3"	1'-3"	1'-3"	1'-4"	1'-4"	1'-4"	1'-5"	1'-5"	1'-6"	1'-6"	1'-9"
B		3'-5"	3'-7"	3'-8"	3'-9"	3'-10"	3'-11"	4'-0"	4'-1"	4'-2"	4'-3"	4'-3"	4'-4"	4'-5"	4'-6"	4'-6"
"c" BARS		#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12
"d" BARS		#4 @ 12	#4 @ 8	#4 @ 8	#4 @ 8	#4 @ 8	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 8	#5 @ 8	#5 @ 8	#5 @ 8	#6 @ 8	#6 @ 8
* Conc CY/LF		0.404	0.412	0.415	0.423	0.426	0.430	0.433	0.440	0.444	0.448	0.451	0.455	0.462	0.466	0.477
* Reinf LB/LF		23	24	24	25	25	26	27	27	28	28	29	29	30	31	32
**CASE I	Ser (q'o, B')	0.79, 4.66	0.83, 4.57	0.88, 4.58	0.89, 4.73	0.93, 4.74	0.93, 4.75	1.02, 4.75	1.02, 4.92	1.07, 4.93	1.11, 4.94	1.12, 4.98	1.16, 4.99	1.17, 5.16	1.21, 5.18	1.15, 5.53
	Str (q'o, B')	1.48, 1.75	1.53, 1.80	1.65, 1.76	1.64, 1.88	1.76, 1.85	1.89, 1.83	2.02, 1.80	1.97, 1.95	2.08, 1.94	2.20, 1.93	2.28, 1.92	2.39, 1.92	2.31, 2.08	2.41, 2.09	2.17, 2.41
	Extr (q'o, B')	0.65, 4.16	0.68, 4.27	0.72, 4.29	0.74, 4.44	0.78, 4.46	0.82, 4.47	0.86, 4.47	0.87, 4.63	0.92, 4.63	0.96, 4.64	0.98, 4.69	1.03, 4.69	1.04, 4.84	1.09, 4.84	1.05, 5.18
**CASE II	Ser (q'o, B')	0.41, 4.52	0.44, 4.67	0.48, 4.73	0.51, 4.90	0.55, 4.95	0.59, 5.00	0.63, 5.04	0.65, 5.21	0.70, 5.26	0.74, 5.30	0.77, 5.37	0.81, 5.40	0.83, 5.58	0.88, 5.61	0.86, 5.96
	Str (q'o, B')	1.05, 4.49	1.10, 4.64	1.15, 4.69	1.19, 4.86	1.24, 4.90	1.30, 4.94	1.36, 4.98	1.39, 5.15	1.46, 5.18	1.52, 5.22	1.56, 5.28	1.62, 5.31	1.62, 5.48	1.72, 5.51	1.69, 5.85
	Extr (q'o, B')	0.98, 3.90	1.03, 4.00	1.10, 4.01	1.13, 4.15	1.19, 4.15	1.26, 4.15	1.33, 4.14	1.37, 4.28	1.44, 4.27	1.52, 4.26	1.57, 4.29	1.65, 4.28	1.68, 4.41	1.77, 4.40	1.72, 4.71
**CASE III	Ser (q'o, B')	0.61, 4.53	0.64, 4.73	0.68, 4.76	0.70, 4.91	0.74, 4.91	0.79, 4.94	0.83, 4.93	0.85, 5.08	1.17, 4.03	1.23, 4.03	1.27, 4.06	1.34, 4.02	1.36, 4.15	1.43, 4.11	1.36, 4.45
	Str (q'o, B')	0.99, 4.28	1.04, 4.67	1.10, 4.69	1.13, 4.83	1.19, 4.82	1.25, 4.83	1.32, 4.82	1.35, 4.95	2.02, 2.66	2.16, 2.62	2.25, 2.59	2.44, 2.48	2.49, 2.54	2.70, 2.44	2.50, 2.72
	Extr (q'o, B')	0.90, 3.88	0.95, 3.93	1.01, 3.91	1.04, 4.02	1.11, 3.97	1.18, 3.92	1.25, 3.90	1.28, 4.00	1.35, 3.94	1.43, 3.92	1.11, 5.14	1.55, 3.87	1.58, 3.97	1.67, 3.91	1.60, 4.22

* Quantities include 1'-0" extension above the design "H" limit.
** q'o = net bearing stress (ksf), B' = effective footing width (ft)
Ser - service limit
Str - strength limit
Extr - extreme event

REINFORCED CONCRETE HEADWALL

Quantities do not include added diagonals and do not consider pipe occupancy.

NOTE: Reinforced Concrete: fy = 60,000 psi, f'c = 3,600 psi
Earth Density: 120 pcf
Equivalent Fluid Pressure: 36 pcf

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PIPE CULVERT HEADWALLS STRAIGHT AND "L"

NO SCALE

RSP D89 DATED JULY 21, 2017 SUPERSEDES RSP D89 DATED JULY 15, 2016 AND STANDARD PLAN D89 DATED OCTOBER 30, 2015 - PAGE 205 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D89

6-28-17

2015 REVISED STANDARD PLAN RSP D89

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

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Raymond Don Tsztoo
No. C37332
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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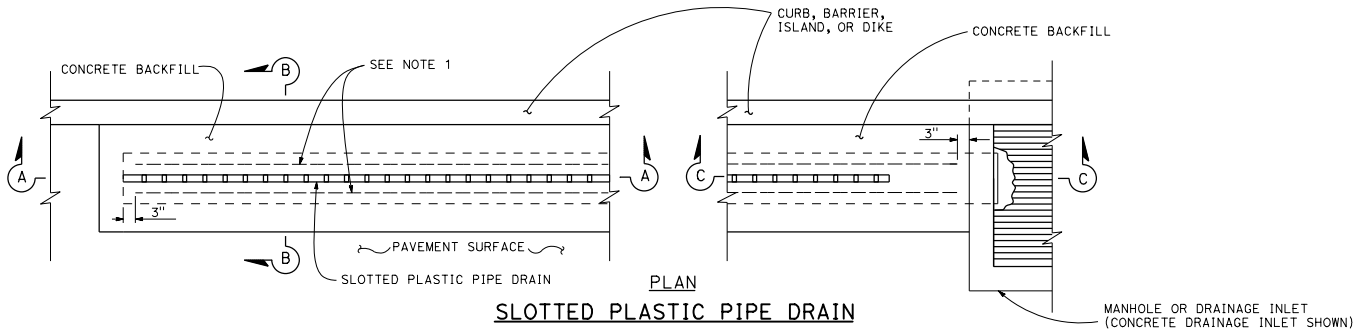
TO ACCOMPANY PLANS DATED _____

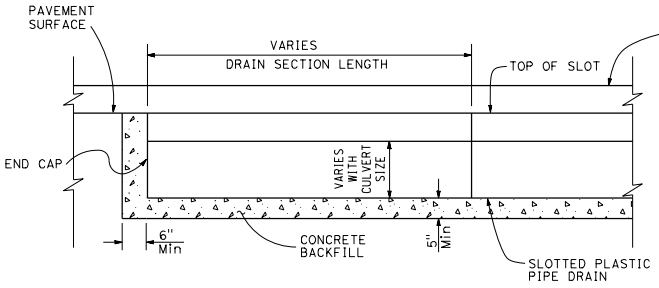


PLAN

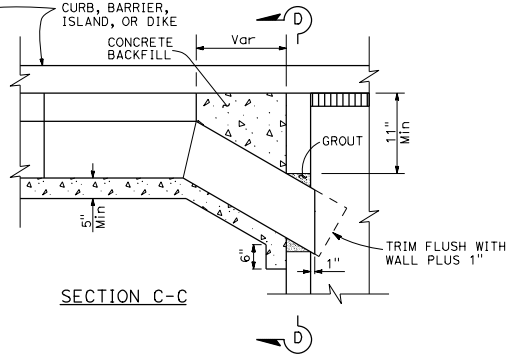
SLOTTED PLASTIC PIPE DRAIN

NOTES:

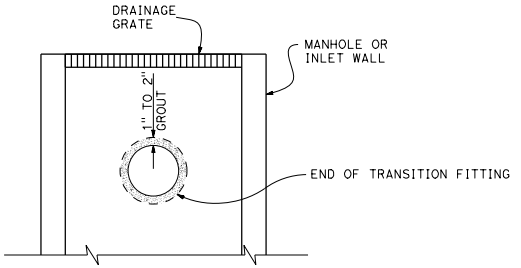
1. Lateral support, #4 bar, to be placed on both sides of slotted plastic pipe throat.
2. Slot plastic pipe cross section is a generic shape. Shape shall conform to allowable manufacturer's cross sections.



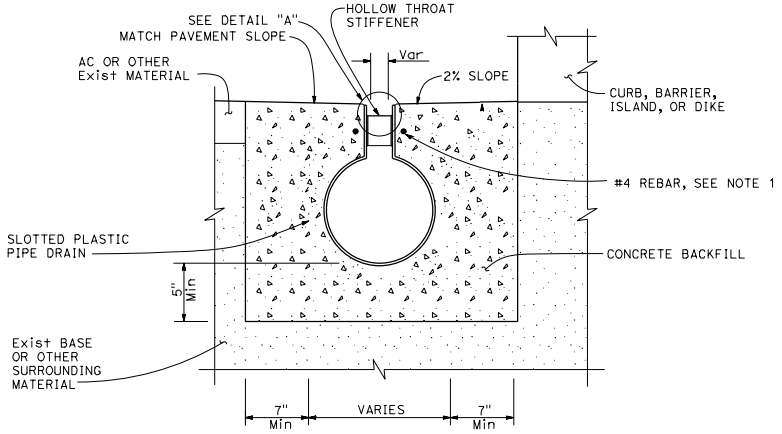
SECTION A-A



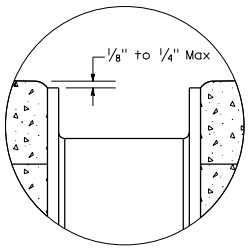
SECTION C-C



SECTION D-D



SECTION B-B



DETAIL A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SLOTTED PLASTIC PIPE DRAIN DETAILS

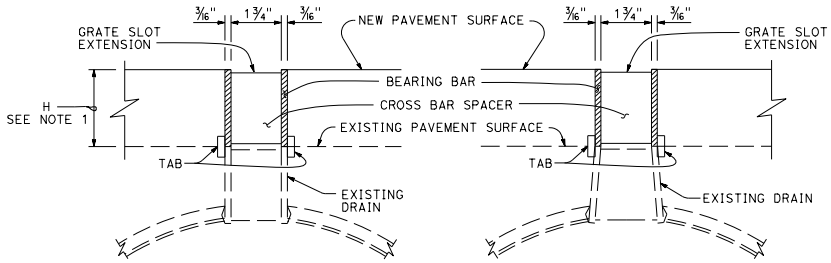
NO SCALE

RSP D98D DATED JULY 15, 2016 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D98D

2015 REVISED STANDARD PLAN RSP D98D

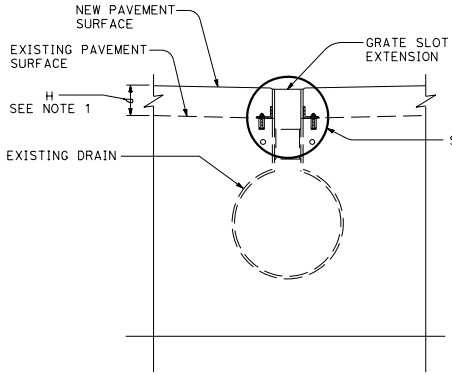
6-4-16



RECTANGULAR SPACER SECTION TAPERED SPACER

SLOTTED CORRUGATED STEEL PIPE

Grate slot extension



SECTION

SLOTTED PLASTIC PIPE

Grate slot extension

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

REGISTERED CIVIL ENGINEER

January 20, 2017

PLANS APPROVAL DATE

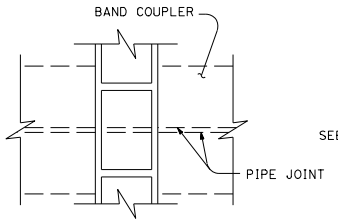
Raymond Don Tsztoo No. C37332 Exp. 6-30-18 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

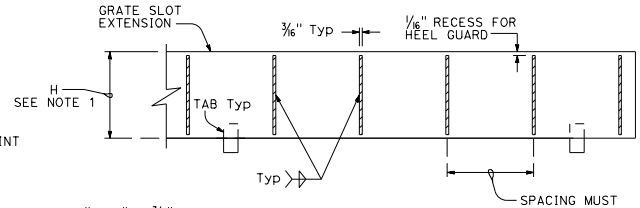
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

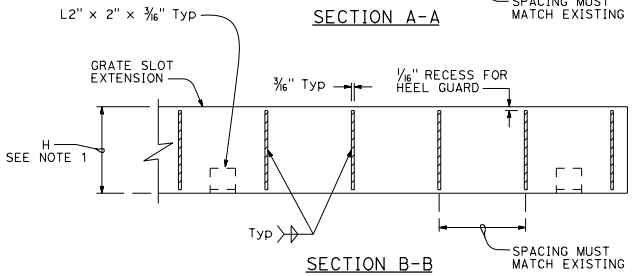
NOTES:

1. H must be a minimum of 2½", or otherwise shown on the plans.
2. For Slotted Plastic Pipe Drain Details, see Revised Standard Plan RSP D98D.
3. For Slotted Corrugated Steel Pipe Drain Details, see Standard Plans D98A and D98B.
4. Use heel guard when shown. See Standard Plan D98B for heel guard details.
5. Minimum grate slot extension length is 80".
6. The top corners of the grate slot extension's bearing bars must not vary from a straight line more than ½" in 20'-0".
7. Cross bar spacers must be welded to the grate slot extension's bearing bars to achieve a minimum tensile strength of 12,000 LB normal to the longitudinal axis of the bearing bars.

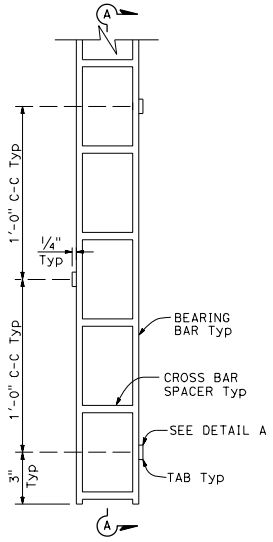




SECTION A-A



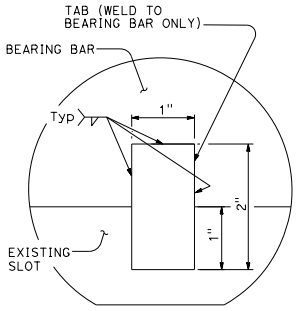
SECTION B-B



PLAN

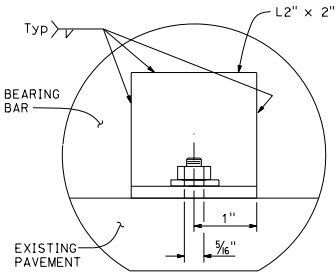
SLOTTED CORRUGATED STEEL PIPE

Grate slot extension



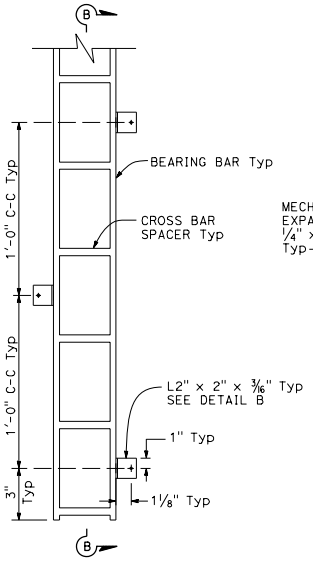
DETAIL A

Tab alignment



DETAIL B

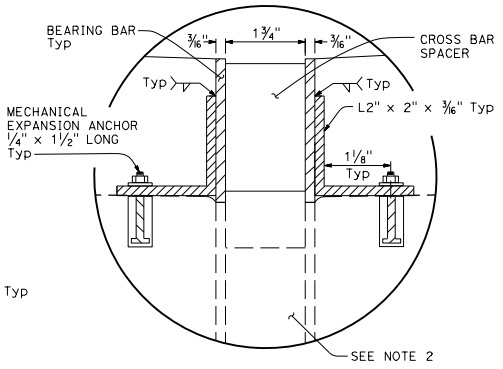
Angle alignment



PLAN

SLOTTED PLASTIC PIPE

Grate slot extension



DETAIL C

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SLOTTED PIPE GRATE EXTENSION DETAILS

NO SCALE

RSP D98F DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN D98F DATED OCTOBER 30, 2015 - PAGE 226 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D98F

2015 REVISED STANDARD PLAN RSP D98F

10-6-16

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

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Raymond Don Tsztoo
No. C37332
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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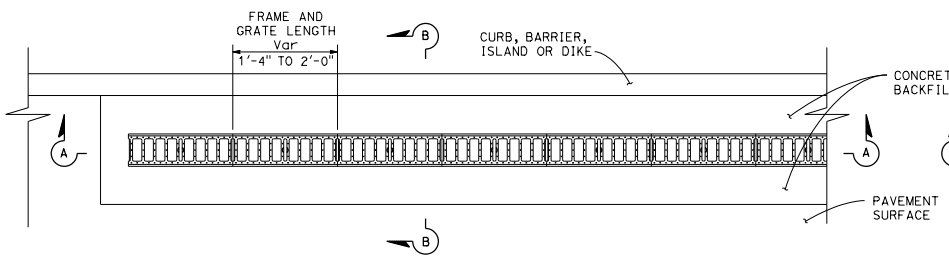
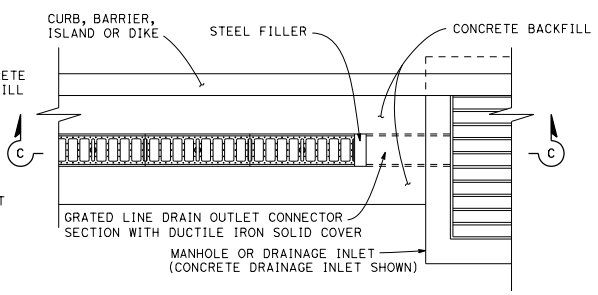
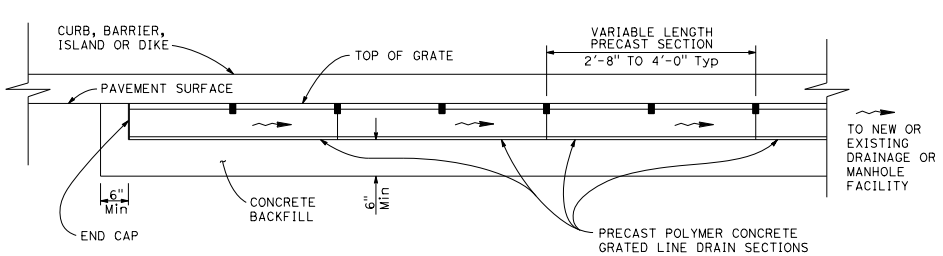
TO ACCOMPANY PLANS DATED _____

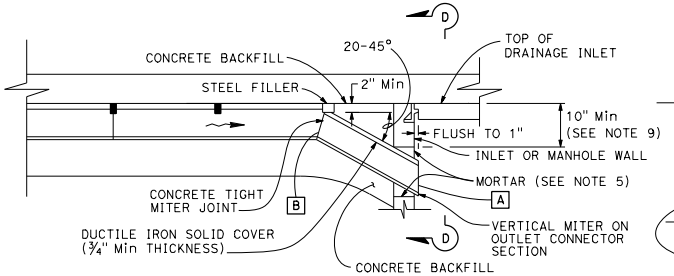




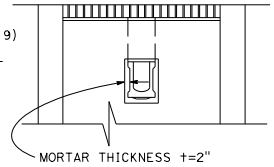
PLAN



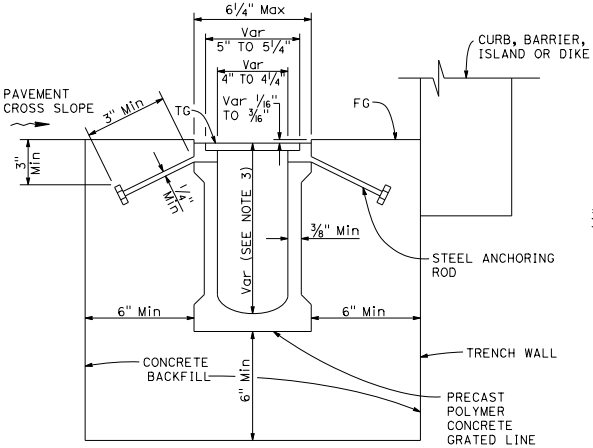
SECTION A-A



SECTION C-C

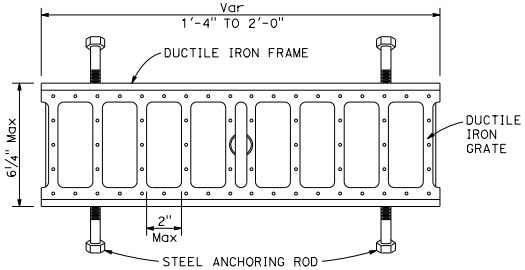


SECTION D-D



SECTION B-B

(Precast grated line drain with non-integral frame)



FRAME AND GRATE DETAIL

See Notes 6, 7 and 8

NOTES:

1. See Quanitiy Sheets for discharge capacity requirements.
2. Discharge capacity (cfs) at point A must be equivalent to maximum channel discharge capacity of grated line drain at point B.
3. Precast polymer concrete drain sections are available in non-sloped uniform depth sections 4⅞" to 12" or in 0.6 percent pre-sloped sections with graduated depths from 4⅞" to 12". See Project Plans for trench sections to be installed.
4. Nominal dimensions shown. Allowable tolerance ± 2% .
5. For GMP inlet connection, seal field joint with a pliable mixture of sand, portland cement and emulsified asphalt (mixture of 1 part portland cement, 3-5 parts sand and 1½ part SSI emulsified asphalt).
6. Within designated pedestrian paths of travel, the maximum grate opening in the direction of pedestrian traffic must not exceed ½".
7. Grate patterns may vary from detail shown. See Special Provisions.
8. ⅜" maximum gap between adjacent gratings.
9. Contractor to field verify minimum depth to avoid conflict with inlet top.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GRATED LINE DRAIN DETAILS No. 1 - POLYMER CONCRETE, 4" NOMINAL WIDTH

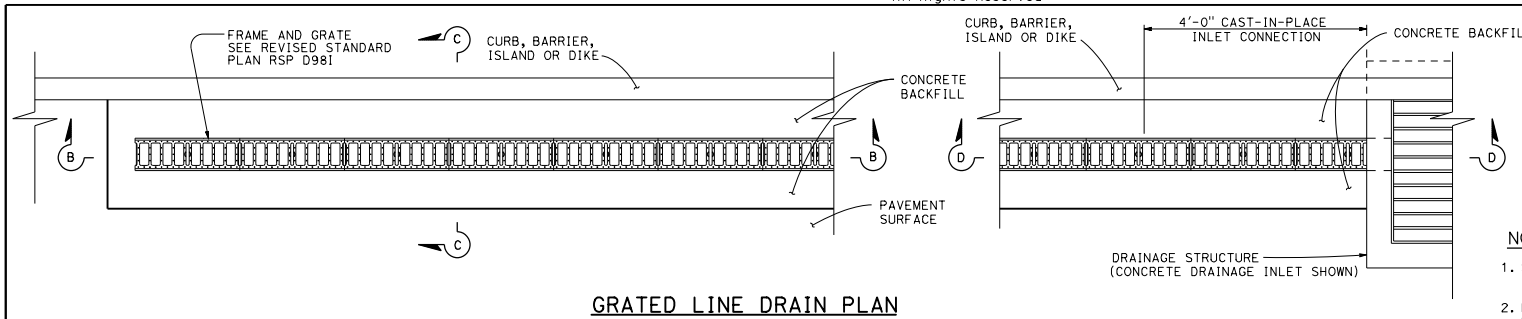
NO SCALE

RSP D98G DATED APRIL 20, 2018 SUPERSEDES RSP D98G
DATED JANUARY 20, 2017 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

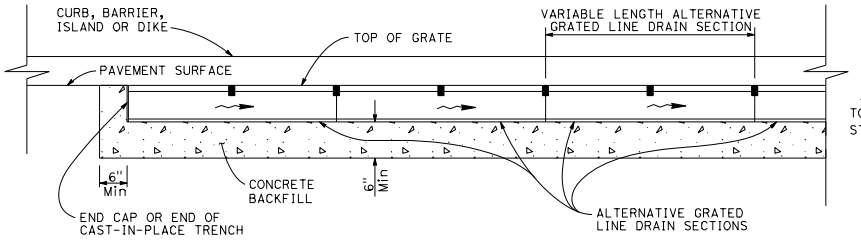
REVISED STANDARD PLAN RSP D98G

2015 REVISED STANDARD PLAN RSP D98G

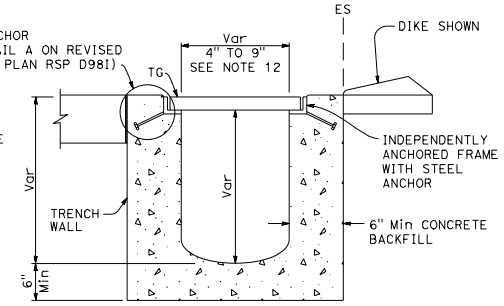
11-2-17



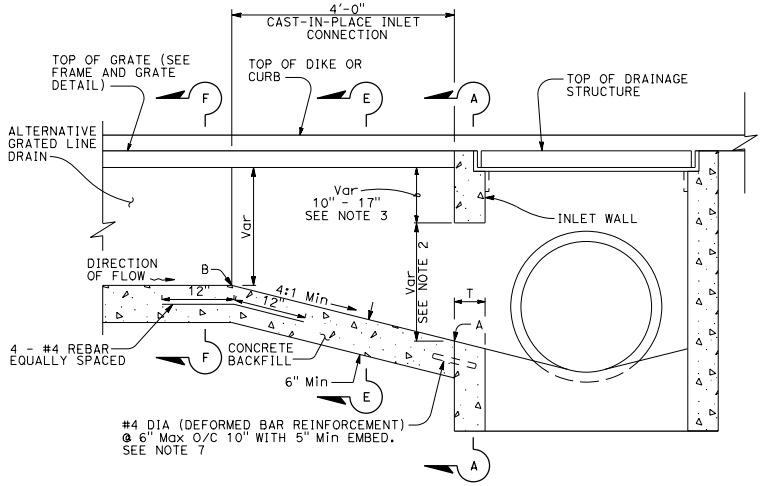
GRATED LINE DRAIN PLAN



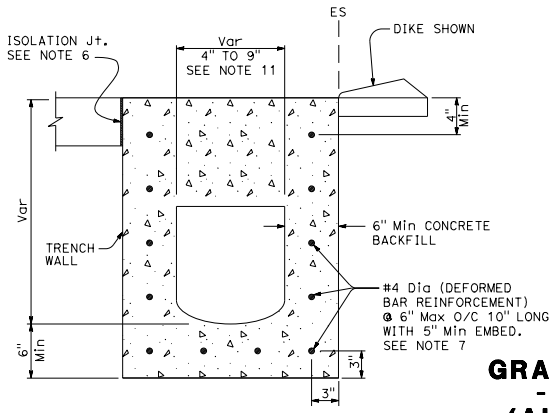
SECTION B-B



SECTION E-E



SECTION D-D



SECTION A-A

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

Raymond Don Tsztoo
No. C37332
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. See Quantity Sheets for discharge capacity requirements.
2. Discharge capacity (cfs) at point A must be equivalent to maximum channel discharge capacity of grated line drain at point B.
3. Contractor to field verify minimum depth to avoid conflict with inlet top.
4. Grate patterns may vary from details shown. See special provisions.
5. See Revised Standard Plan RSP D98G for 4" polymer concrete grated line details.
6. Within PCC pavement, a 0.5" isolation joint must be made between pavement and concrete backfill. See isolation joint details on Standard Plans P45 and P46.
7. Bottom row of dowels to match inlet connection slope with 2" Min clear to inside of box. Place other dowels normal to inlet wall with 1½" Min clear to inside of box. (When T = 6" use 4½" Min embed)
8. Channel section shape and frame and grate configuration may vary.
9. Nominal dimensions shown. Allowable tolerances ±2%.
10. 3/16" maximum gap between adjacent grates.
11. Minimum channel width must be equal or greater than maximum channel width of grated line drain section.
12. See Revised Standard Plan RSP D98I for Section C-C and Section F-F.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GRATED LINE DRAIN DETAILS No. 2 - INLET CONNECTION DETAILS (ALL TYPES EXCEPT 4" NOMINAL WIDTH POLYMER CONCRETE)

NO SCALE

RSP D98H DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D98H

2015 REVISED STANDARD PLAN RSP D98H

11-9-16

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

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Raymond Don Tsztoo
No. C37332
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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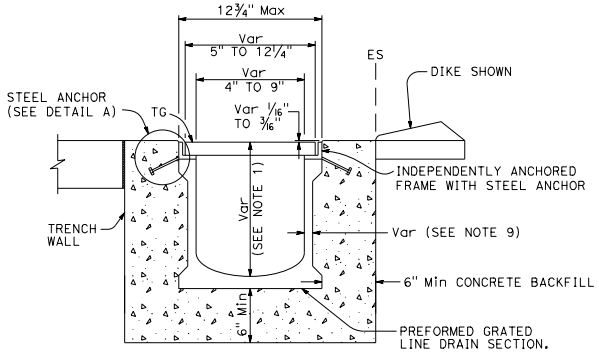
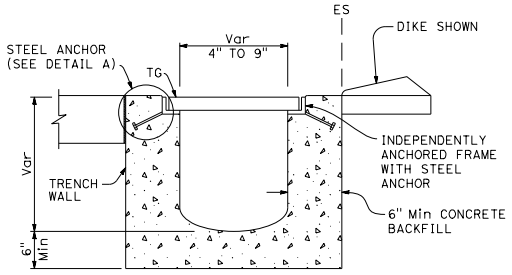
TO ACCOMPANY PLANS DATED _____

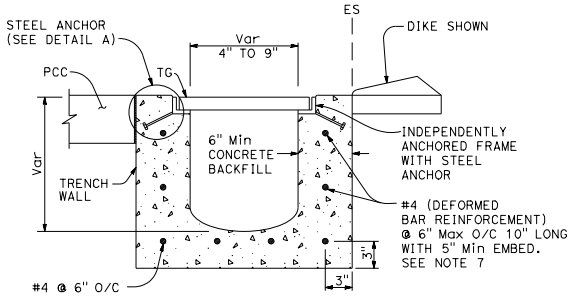


SECTION C-C
(See Note 1)

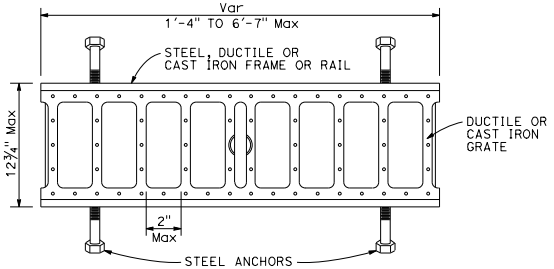


CAST-IN-PLACE ALTERNATIVE

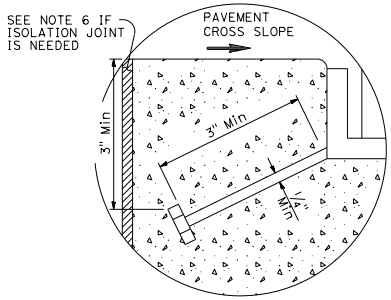
SECTION C-C
(See Note 1)



SECTION F-F
FOR CAST-IN-PLACE AND PRECAST INLETS
(See Note 1)



FRAME AND GRATE DETAIL
(See Note 1)



DETAIL A

NOTE:

1. See Revised Standard Plan RSP D98H for corresponding notes.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GRATED LINE DRAIN DETAILS No. 3 (ALL TYPES EXCEPT 4" NOMINAL WIDTH POLYMER CONCRETE)

NO SCALE

RSP D98I DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D98I

2015 REVISED STANDARD PLAN RSP D98I

11-9-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

Raymond Don Tsztoo
No. C37332
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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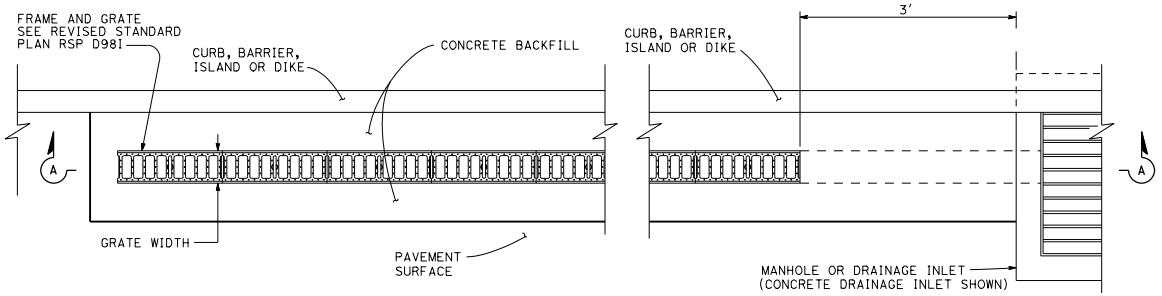
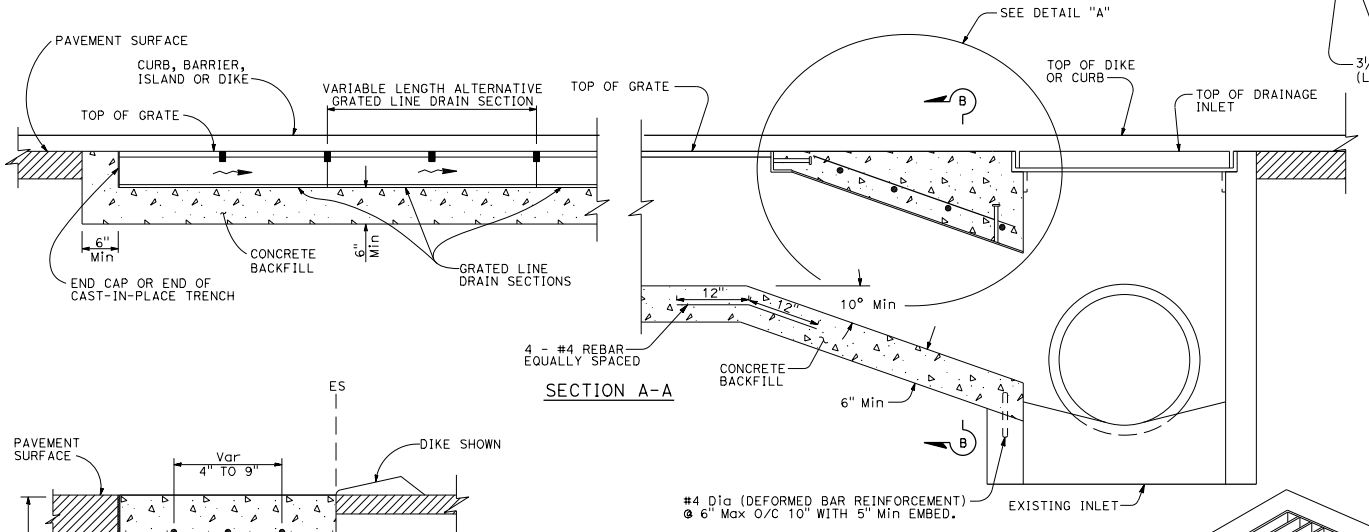
TO ACCOMPANY PLANS DATED

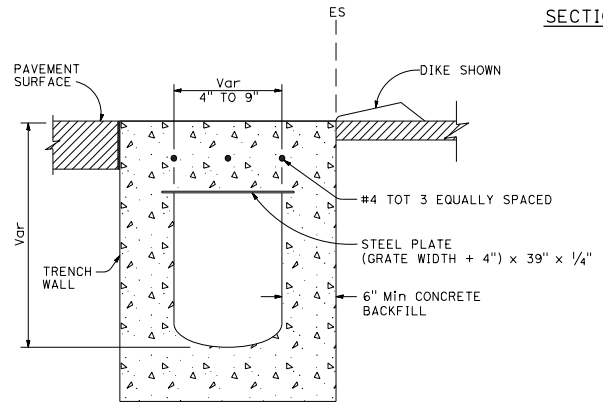
2015 REVISED STANDARD PLAN RSP D98J



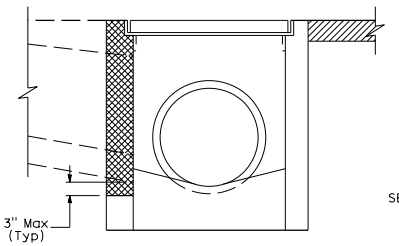
GRATED LINE DRAIN PLAN

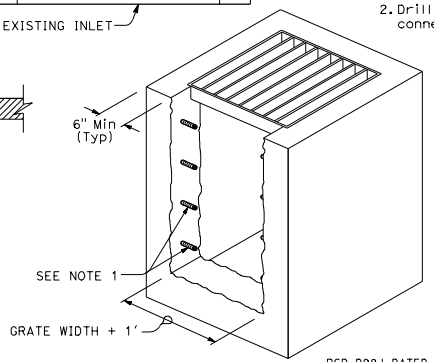


SECTION A-A

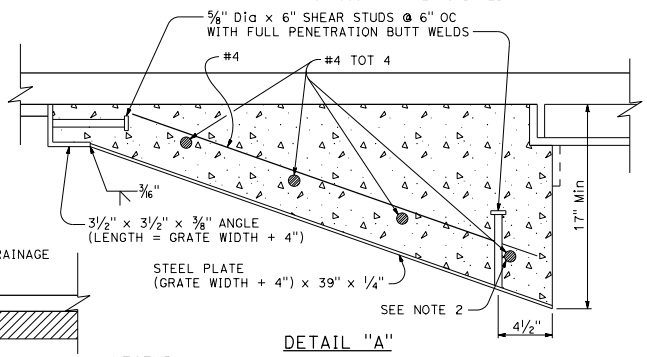


SECTION B-B





PARTIAL REMOVAL OF EXISTING DROP INLET



DETAIL "A"

LEGEND:

- Pavement
- Limits of Removal

NOTES:

1. Preserve existing rebar during removal of side wall to tie to trench drain reinforcement. Install additional rebar to facilitate connection to drop inlet and replace damaged existing rebar. Doweling perpindicular to side wall in lieu of connecting to existing rebar is not permitted.
2. Drill rebar ends 3" into existing concrete, overlap and connect with double barrel mechanical coupler.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GRATED LINE DRAIN DETAILS No. 4 - CONNECTION TO EXISTING DRAINAGE STRUCTURE

NO SCALE

RSP D98J DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP D98J

11-9-16

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

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

April 20, 2018
PLANS APPROVAL DATE

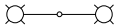
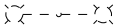
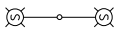
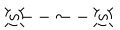
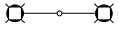
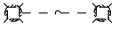
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

LEGEND:

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
RE	REMOVE ELECTROLIER, FUSES AND BALLAST. TAPE ENDS OF CONDUCTORS
RL	RELOCATE EQUIPMENT
RR	REMOVE AND REUSE EQUIPMENT
RS	REMOVE AND SALVAGE EQUIPMENT
SC	SPLICE NEW TO EXISTING CONDUCTORS
SD	SERVICE DISCONNECT
TSP	TELEPHONE SERVICE POINT

STANDARD ELECTROLIER

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

MISCELLANEOUS ELECTROLIERS

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

NOTES:

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

SOFFIT AND WALL-MOUNTED LUMINAIRES


PENDANT SOFFIT LUMINAIRE, 70 W HPS UNLESS OTHERWISE SPECIFIED


FLUSH-MOUNTED SOFFIT LUMINAIRE, 70 W HPS UNLESS OTHERWISE SPECIFIED


WALL-MOUNTED LUMINAIRE, 70 W HPS UNLESS OTHERWISE SPECIFIED


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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND)

NO SCALE

RSP ES-1A DATED APRIL 20, 2018 SUPERSEDES RSP ES-1A DATED JULY 21, 2017 AND STANDARD PLAN ES-1A DATED OCTOBER 30, 2015 - PAGE 418 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-1A

2015 REVISED STANDARD PLAN RSP ES-1A

11-15-17

CONDUIT

NEW	EXISTING	
		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
R	r	CONDUIT RISER ATTACHED TO THE STRUCTURE OR SERVICE POLE

SERVICE EQUIPMENT

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

POLE-MOUNTED SERVICE DESIGNATION

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

FLASHING BEACON

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

SIGNAL EQUIPMENT

NEW	EXISTING	
		PEDESTRIAN SIGNAL HEAD
		PUSH BUTTON ASSEMBLY POST
		PEDESTRIAN BARRICADE
		VEHICLE SIGNAL HEAD (WITH BACKPLATE)
		VEHICLE SIGNAL HEAD WITH ANGLE VISOR
PV	PV	MODIFICATIONS OF BASIC SYMBOL: "L" INDICATES ALL NON-ARROW SECTIONS LOUVERED "LG" INDICATES LOUVERED GREEN SECTION ONLY "PV" INDICATES ALL 12" SECTIONS PROGRAMMED VISIBILITY "8" INDICATES ALL 8" SECTIONS (ONLY WHEN SPECIFIED)
		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 AND LUMINAIRE
		TYPE 21TS STANDARD WITH VEHICLE 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 INTERNALLY ILLUMINATED STREET NAME SIGN
		CONTROLLER ASSEMBLY. DOOR INDICATES FRONT OF CABINET

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
STATE OF CALIFORNIA

July 21, 2017
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 _____

SIGNAL EQUIPMENT Cont

NEW	EXISTING	
		GUARD POST
		TYPE 1 STANDARD WITH RAMP METERING SIGN
		OPTICAL DETECTOR FOR THE EMERGENCY VEHICLE DETECTION

NOTES:

1. All signal sections shall be 12" unless shown otherwise.
2. Signal heads shall be provided with backplates unless shown otherwise.

ILLUMINATED OVERHEAD SIGN

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND)

NO SCALE

RSP ES-1B DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN ES-1B
DATED OCTOBER 30, 2015 - PAGE 419 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-1B

2015 REVISED STANDARD PLAN RSP ES-1B

5-23-17

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Hamid Zolfaghari — No. E15636 — Exp. 12-31-17 — ELECTRICAL — STATE OF CALIFORNIA

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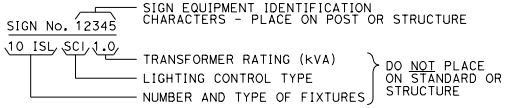
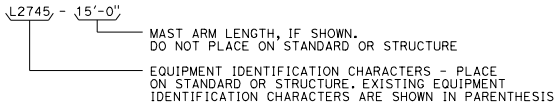
TO ACCOMPANY PLANS DATED _____

EQUIPMENT IDENTIFICATION

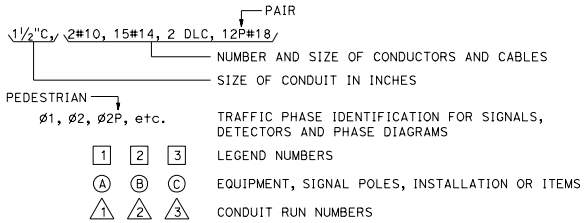
ILLUMINATED SIGN IDENTIFICATION:



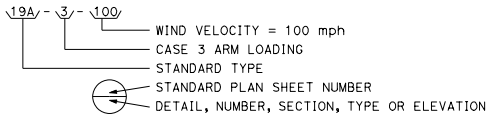
ELECTROLIER OR EQUIPMENT IDENTIFICATION:



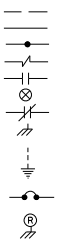
CONDUIT AND CONDUCTOR IDENTIFICATION:



SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):

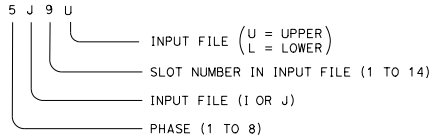


WIRING DIAGRAM LEGEND



- EXTERNAL CONDUCTOR
- CONDUCTOR OR BUS
- TIE POINT
- CONTACTOR COIL
- CONTACTOR, NO CONTACT
- TERMINAL BLOCKS
- CONTACTOR, NC CONTACT
- ENCLOSURE BOND
- GROUNDING ELECTRODE
- CIRCUIT BREAKER
- RECEPTACLE

VEHICLE DETECTOR DESIGNATION



PULL BOXES

NEW	EXISTING	
		PULL BOX, No. 5 UNLESS OTHERWISE INDICATED OR NOTED
3	9A(21)	PULL BOX, ADDITIONAL DESIGNATIONS OR DESCRIPTIONS

3 No. 3½ 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)

(C) COMMUNICATIONS PULL BOX
(E) PULL BOX WITH EXTENSION
(S) SPRINKLER CONTROL PULL BOX
(21) ANCHOR BOLTS AND CONDUIT FOR FUTURE INSTALLATION OF TYPE 21 STANDARD
(T) TRAFFIC PULL BOX
(TR) TAMPER-RESISTANT PULL BOX

MISCELLANEOUS EQUIPMENT

NEW	EXISTING	
CMS	cms	CHANGEABLE MESSAGE SIGN
		CLOSED CIRCUIT TELEVISION CAMERA
		HIGHWAY ADVISORY RADIO POLE AND ANTENNA
EMS	ems	LED EXTINGUISHABLE MESSAGE SIGN
M V	m v	DETECTION DEVICE M = MICROWAVE SENSOR V = VIDEO IMAGE SENSOR

NEW	EXISTING	
		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 Q LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
DH	dh	DETECTOR HANDHOLE
		MICROWAVE OR VIDEO DETECTION ZONE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

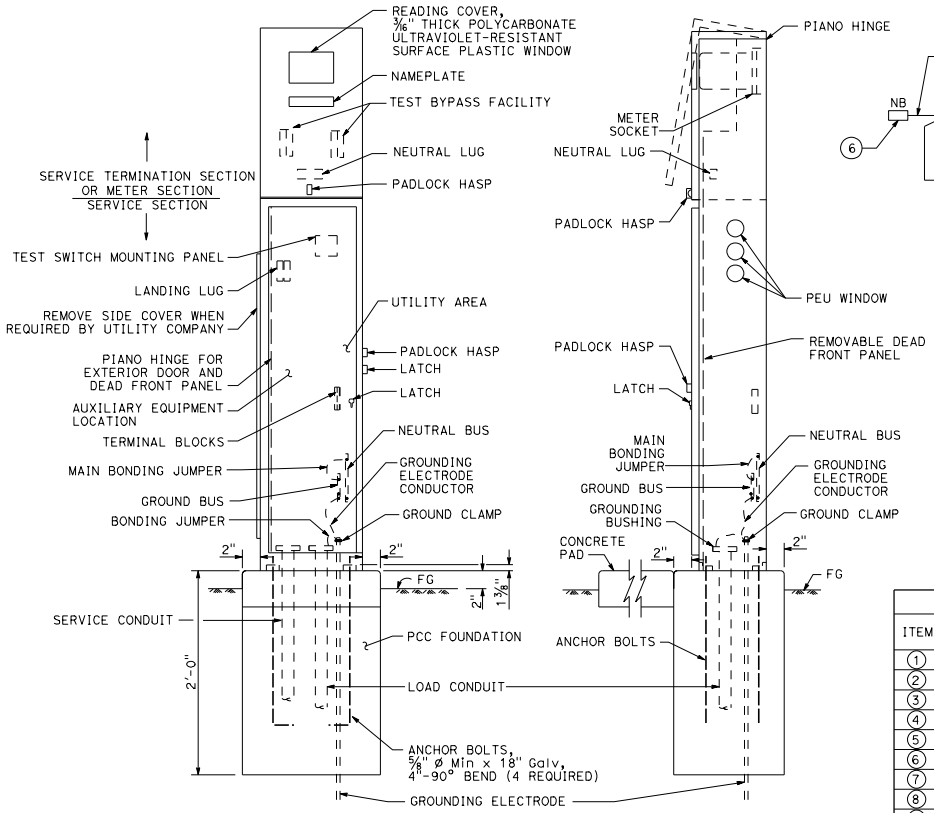
NO SCALE

RSP ES-1C DATED JULY 21, 2017 SUPERSEDES RSP ES-1C DATED APRIL 15, 2016 AND STANDARD PLAN ES-1C DATED OCTOBER 30, 2015 - PAGE 420 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-1C

2015 REVISED STANDARD PLAN RSP ES-1C

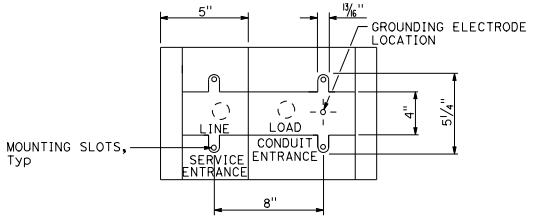
5-24-17



FRONT VIEW SIDE VIEW

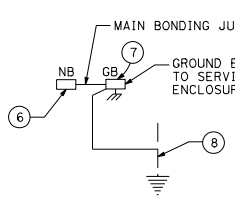
TYPE III-AF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

DETAIL A



BASE FOR TYPE III-A SERVICE EQUIPMENT ENCLOSURE

DETAIL B



DETAIL D

TO ACCOMPANY PLANS DATED

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

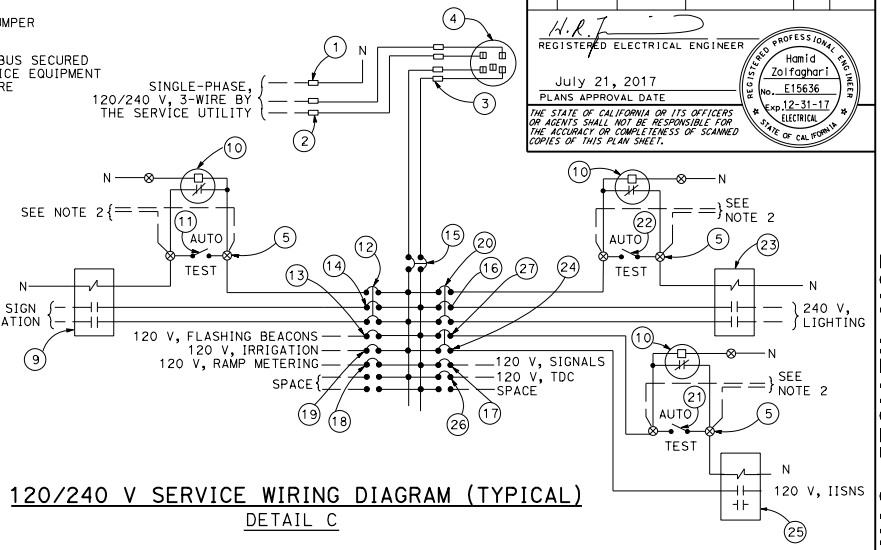
REGISTERED ELECTRICAL ENGINEER

July 21, 2017

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. 12-31-17 — ELECTRICAL — STATE OF CALIFORNIA



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C

TYPE III-A SERVICE EQUIPMENT ENCLOSURE LEGEND (120/240 V)

ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
1	NEUTRAL LUG		14	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
2	LANDING LUG		15	100 A, 240 V, 2P, CB	MAIN BREAKER
3	TEST BYPASS FACILITY		16	30 A, 240 V, 2P, CB	LIGHTING
4	METER SOCKET AND SUPPORT		17	50 A, 120 V, 1P, CB	SIGNALS
5	TERMINAL BLOCKS		18	30 A, 120 V, 1P, CB	RAMP METERING
6	NEUTRAL BUS		19	20 A, 120 V, 1P, CB	IRRIGATION
7	GROUND BUS		20	15 A, 120 V, 1P, CB	LIGHTING CONTROL
8	GROUNDING ELECTRODE		21	15 A, 1P, TEST SWITCH	IISNS TEST SWITCH
9	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	22	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
10	PHOTOELECTRIC UNIT (NOTE 4)	PEU	23	60 A, 2P, NO CONTACTOR	LIGHTING
11	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	24	15 A, 120 V, 1P, CB	IISNS
12	15 A, 120 V, 1P, CB	SIGN ILLUMINATION CONTROL	25	30 A, 2P, NO CONTACTOR	IISNS
13	15 A, 120 V, 1P, CB	FLASHING BEACON	26	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET
			27	15 A, 120 V, 1P, CB	IISNS CONTROL

NOTES:

1. Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
2. Connect to remote test switch mounted on lighting standards, sign post or structure when required.
3. Items (1) and (6) shall be isolated from the service equipment enclosure.
4. Type V photoelectric control shall be used unless otherwise indicated on the plans.
5. Item (12), (20) and (27) shall be ganged operated CB.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-A SERIES)

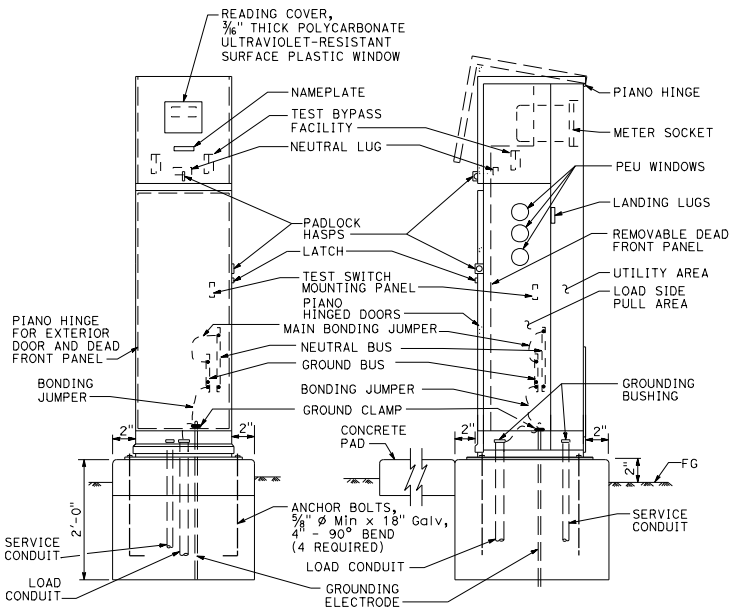
NO SCALE

RSP ES-2D DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN ES-2D
DATED OCTOBER 30, 2015 - PAGE 424 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-2D

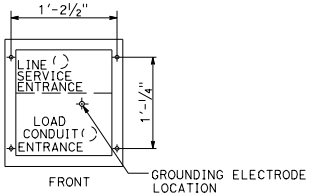
2015 REVISED STANDARD PLAN RSP ES-2D

4-25-17



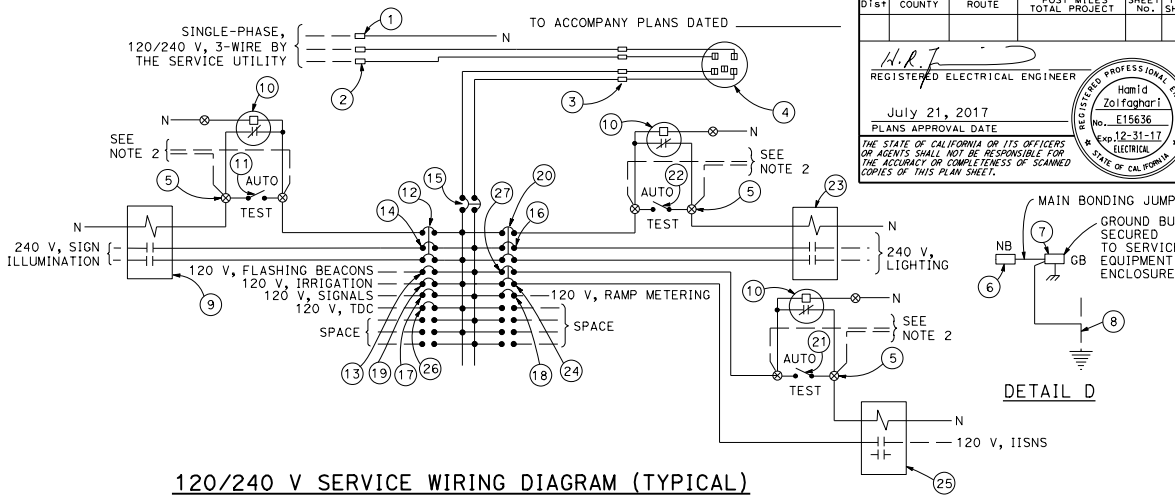
TYPE III-BF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

DETAIL A



BASE FOR TYPE III-B SERVICE EQUIPMENT ENCLOSURE

DETAIL B



DETAIL D

120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C

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

REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Hamid Zolfaghari — No. E15636 — Exp. 12-31-17 — ELECTRICAL — STATE OF CALIFORNIA

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TYPE III-B SERVICE EQUIPMENT ENCLOSURE LEGEND (120/240 V)

ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
(1)	NEUTRAL LUG		(14)	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
(2)	LANDING LUG		(15)	100 A, 240 V, 2P, CB	MAIN BREAKER
(3)	TEST BYPASS FACILITY		(16)	30 A, 240 V, 2P, CB	LIGHTING
(4)	METER SOCKET AND SUPPORT		(17)	50 A, 120 V, 1P, CB	SIGNALS
(5)	TERMINAL BLOCKS		(18)	30 A, 120 V, 1P, CB	RAMP METERING
(6)	NEUTRAL BUS		(19)	20 A, 120 V, 1P, CB	IRRIGATION
(7)	GROUND BUS		(20)	15 A, 120 V, 1P, CB	LIGHTING CONTROL
(8)	GROUNDING ELECTRODE		(21)	15 A, 1P, TEST SWITCH	IISNS TEST SWITCH
(9)	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	(22)	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
(10)	PHOTOELECTRIC UNIT (NOTE 4)	PEU	(23)	60 A, 2P, NO CONTACTOR	LIGHTING
(11)	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	(24)	15 A, 120 V, 1P, CB	IISNS
(12)	15 A, 120 V, 1P, CB	SIGN ILLUMINATION CONTROL	(25)	30 A, 2P, NO CONTACTOR	IISNS
(13)	15 A, 120 V, 1P, CB	FLASHING BEACON	(26)	20 A, 120 V, IP, CB	TELEPHONE DEMARCATION CABINET
			(27)	15 A, 120 V, 1P, CB	IISNS CONTROL

NOTES:

1. Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
2. Connect to remote test switch mounted on lighting standards, sign post or structure when required.
3. Items (1) and (6) shall be isolated from the service equipment enclosure.
4. Type V photoelectric control shall be used unless otherwise indicated on the plans.
5. Item (12), (20) and (27) shall be ganged operated CB.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-B SERIES)

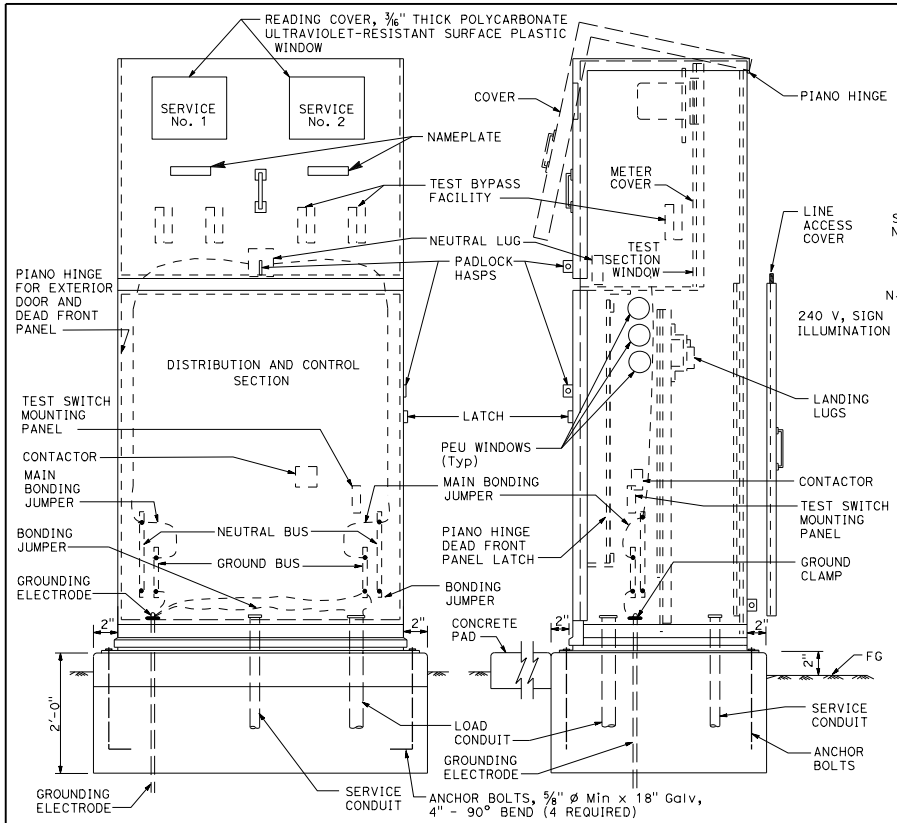
NO SCALE

RSP ES-2E DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN ES-2E
DATED OCTOBER 30, 2015 - PAGE 425 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-2E

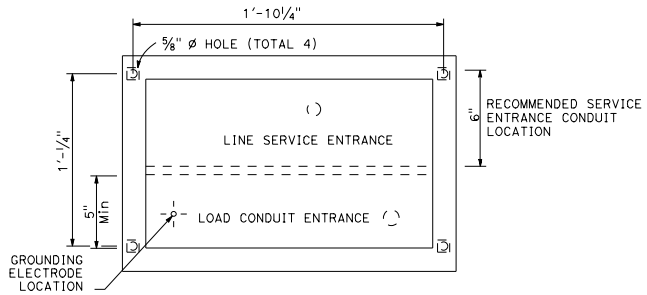
2015 REVISED STANDARD PLAN RSP ES-2E

4-25-17



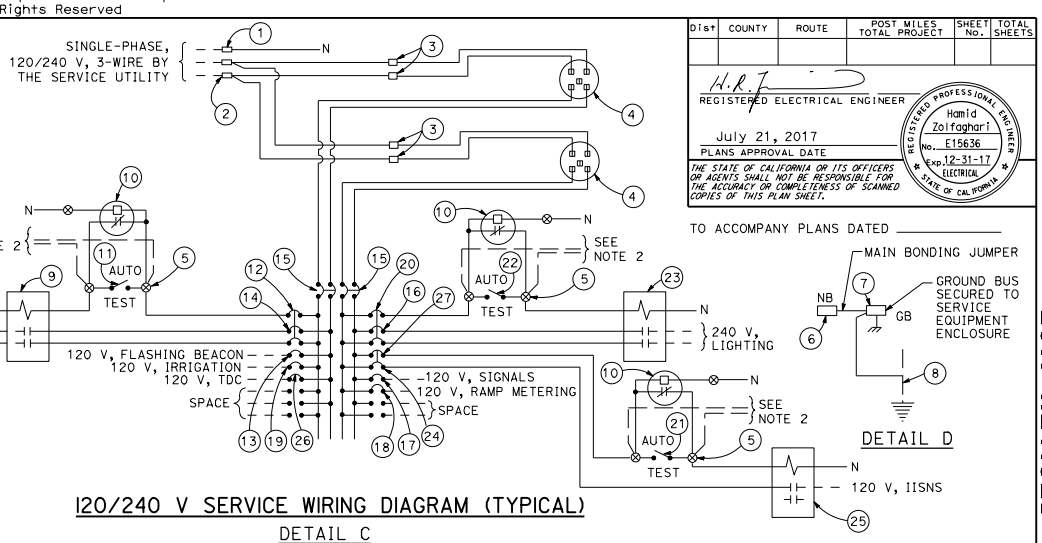
TYPE III-CF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

DETAIL A



BASE FOR TYPE III-C SERVICE EQUIPMENT ENCLOSURE

DETAIL B



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C

DETAIL D

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

REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
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.

TO ACCOMPANY PLANS DATED _____

TYPE III-C SERVICE EQUIPMENT ENCLOSURE LEGEND (120/240 V)

ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
(1)	NEUTRAL LUG		(14)	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
(2)	LANDING LUG		(15)	100 A, 240 V, 2P, CB	MAIN BREAKER
(3)	TEST BYPASS FACILITY		(16)	30 A, 240 V, 2P, CB	LIGHTING
(4)	METER SOCKET AND SUPPORT		(17)	50 A, 120 V, 1P, CB	SIGNALS
(5)	TERMINAL BLOCKS		(18)	30 A, 120 V, 1P, CB	RAMP METERING
(6)	NEUTRAL BUS		(19)	20 A, 120 V, 1P, CB	IRRIGATION
(7)	GROUND BUS		(20)	15 A, 120 V, 1P, CB	LIGHTING CONTROL
(8)	GROUNDING ELECTRODE		(21)	15 A, 1P, TEST SWITCH	IISNS TEST SWITCH
(9)	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	(22)	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
(10)	PHOTOELECTRIC UNIT (NOTE 4)	PEU	(23)	60 A, 2P, NO CONTACTOR	LIGHTING
(11)	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	(24)	15 A, 120 V, 1P, CB	IISNS
(12)	15 A, 120 V, 1P, CB	SIGN ILLUMINATION CONTROL	(25)	30 A, 2P, NO CONTACTOR	IISNS
(13)	15 A, 120 V, 1P, CB	FLASHING BEACON	(26)	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET
			(27)	15 A, 120 V, 1P, CB	IISNS CONTROL

NOTES:

1. Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
2. Connect to remote test switch mounted on lighting standards, sign post or structure when required.
3. Items (1) and (6) shall be isolated from the service equipment enclosure.
4. Type V photoelectric control shall be used unless otherwise indicated on the plans.
5. Item (12), (20) and (27) shall be ganged operated CB.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-C SERIES)

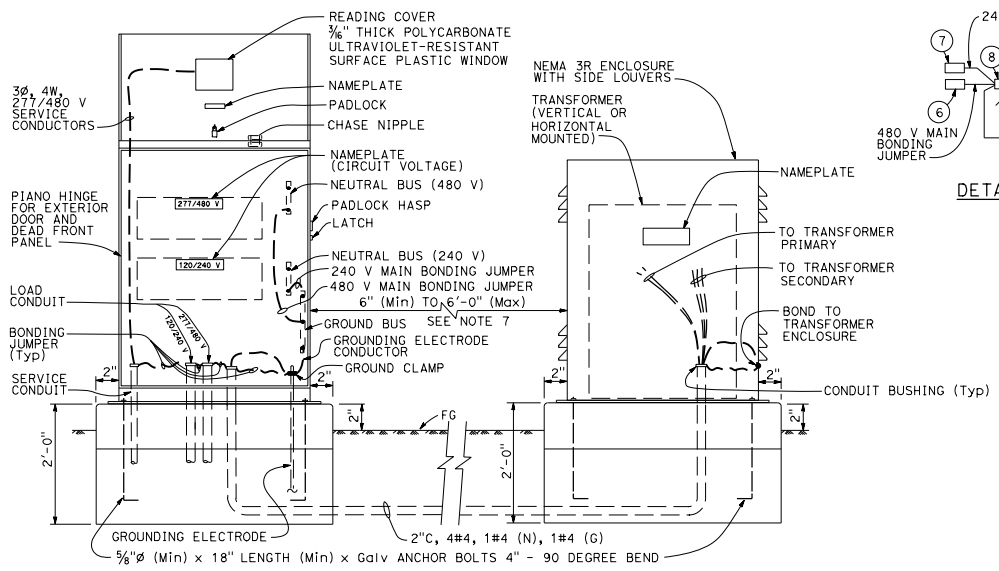
NO SCALE

RSP ES-2F DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN ES-2F
DATED OCTOBER 30, 2015 - PAGE 426 OF THE STANDARD PLANS BOOK DATED 2015.

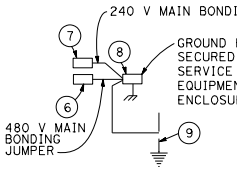
REVISED STANDARD PLAN RSP ES-2F

2015 REVISED STANDARD PLAN RSP ES-2F

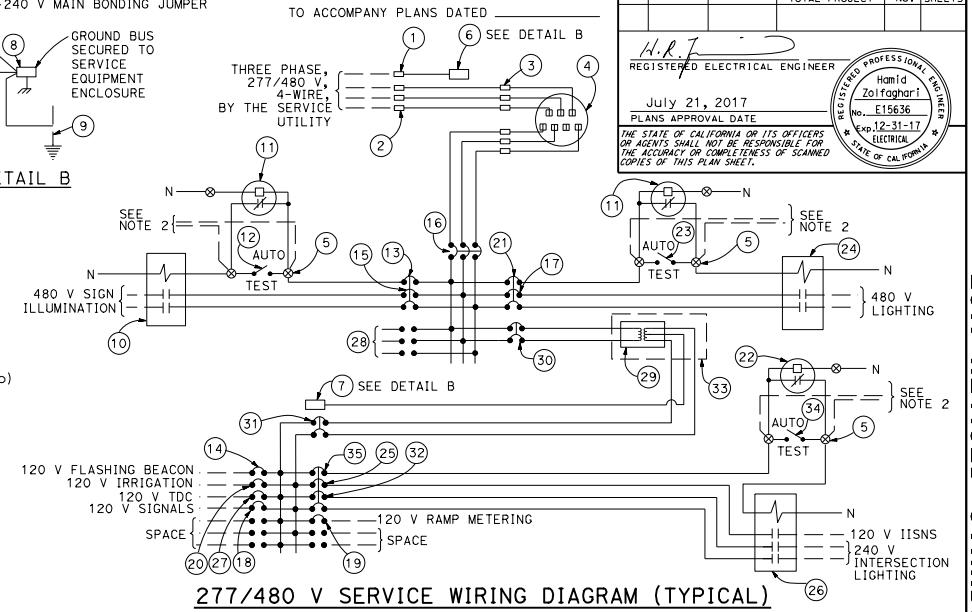
4-25-17



SIDE INSTALLATION OF TRANSFORMER

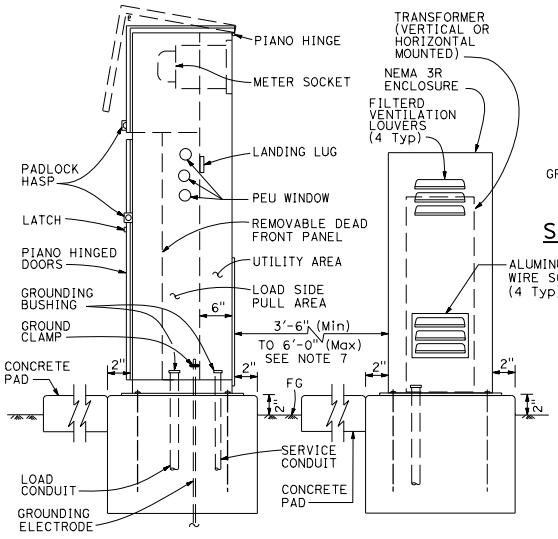


DETAIL B



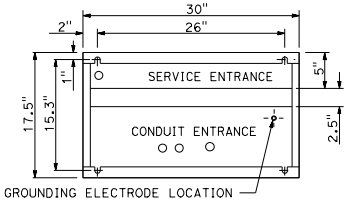
277/480 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C



REAR INSTALLATION OF TRANSFORMER

TYPE Ⅲ-DF SERVICE EQUIPMENT ENCLOSURE TYPICAL



BASE FOR TYPE Ⅲ-D SERVICE EQUIPMENT ENCLOSURE

DETAIL A

TYPE Ⅲ-D SERVICE (277/480 V) EQUIPMENT LEGEND

ITEM NO.	COMPONENT	NAMEPLATE DESCRIPTION	ITEM NO.	COMPONENT	NAMEPLATE DESCRIPTION
(1)	NEUTRAL LUG		(20)	20 A, 120 V, 1P, CB	IRRIGATION (120 V)
(2)	LANDING LUG		(21)	10 A, 277 V, 1P, CB	LIGHTING CONTROL (277 V)
(3)	TEST BYPASS FACILITY		(22)	PHOTOELECTRIC UNIT (NOTE 4)	PEU (120/240 V)
(4)	METER SOCKET AND SUPPORT		(23)	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH (277 V)
(5)	TERMINAL BLOCKS		(24)	30 A, 2P, NO CONTACTOR	LIGHTING (480 V)
(6)	NEUTRAL BUS	NEUTRAL BUS (480 V)	(25)	15 A, 120 V, 1P, CB	IISNS (120 V)
(7)	NEUTRAL BUS	NEUTRAL BUS (240 V)	(26)	30 A, 3P, NO CONTACTOR	INTERSECTION LIGHTING (120 V)
(8)	GROUND BUS		(27)	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET (120 V)
(9)	GROUNDING ELECTRODE		(28)	20 A, 480 V, 3P, CB	SPACE
(10)	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION (480 V)	(29)	15 kVA, 480-120/240 V TRANSFORMER	TRANSFORMER, 15 kVA, 480-240 V
(11)	PHOTOELECTRIC UNIT (NOTE 4)	PEU (277/480 V PEU)	(30)	40 A, 480 V, 2P, CB	TRANSFORMER PRIMARY (480 V)
(12)	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH (277 V)	(31)	80 A, 240 V, 2P, CB	TRANSFORMER SECONDARY (240 V)
(13)	10 A, 277 V, 1P, CB	SIGN ILLUMINATION CONTROL (277 V)	(32)	30 A, 240 V, 2P, CB	INTERSECTION LIGHTING (240 V)
(14)	15 A, 120 V, 1P, CB	FLASHING BEACON (120 V)	(33)	NEMA 3R ENCLOSURE WITH LOUVERS	TRANSFORMER, 15 kVA, 480-240 V
(15)	15 A, 480 V, 2P, CB	SIGN ILLUMINATION (480 V)	(34)	15 A, 1P, TEST SWITCH	IISNS AND INTERSECTION LIGHTING TEST SWITCH (120 V)
(16)	100 A, 480 V, 3P, CB	MAIN BREAKER (480 V)	(35)	10 A, 120 V, 1P, CB	IISNS AND INTERSECTION LIGHTING CONTROL (120 V)
(17)	15 A, 480 V, 2P, CB	LIGHTING (480 V)			
(18)	50 A, 120 V, 1P, CB	SIGNAL (120 V)			
(19)	30 A, 120 V, 1P, CB	RAMP METERING (120 V)			

NOTES:

1. Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
2. Connect to remote test switch mounted on lighting standards, sign post or structure when required.
3. Items No. (1), (6) and (7) shall be isolated from the service equipment enclosure.
4. Type Ⅴ photoelectric control shall be used unless otherwise indicated on the plans.
5. Color of insulation of the neutral shall be gray for the 277/480 V system and shall be white for the 120/240 V system.
6. Items (13), (21) and (35) shall be ganged operated CB.
7. The NEMA 3R enclosure shall be located to the side of the service equipment enclosure unless otherwise indicated on the plans.
8. The base dimension for the NEMA 3R enclosure for the transformer shall be as per manufacturer's design.

NO SCALE

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

H.R.J. -
REGISTERED ELECTRICAL ENGINEER
July 21, 2017
PLANS APPROVAL DATE
Hamid Zolfaghari No. E15636 Exp.12-31-17 ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE Ⅲ-D SERIES)

RSP ES-2G DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN ES-2G DATED OCTOBER 30, 2015 - PAGE 427 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-2G

2015 REVISED STANDARD PLAN RSP ES-2G

4-25-17

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

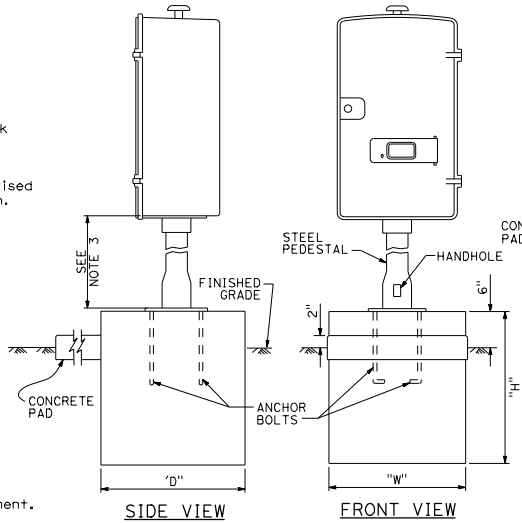
REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-19
ELECTRICAL
STATE OF CALIFORNIA

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 _____

NOTES:

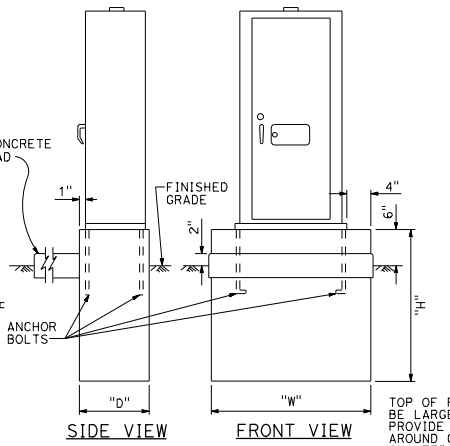
1. Type G, M, P, R, S and Model 336L cabinets shall be installed with the back toward the nearest lane of traffic.
2. In unpaved areas, a raised portland cement concrete pad shall be constructed in front of each controller cabinet. The pad shall be 3'-0" x 3'-0" x 4" for a Type G cabinet and shall be 3'-0" x 4" thick x width of foundation for Type M, P, R, S and Model 336L cabinets.
3. The steel pedestal, base plate, and bolt circle for Type G cabinet shall be the same as that shown for a Type 1-C Standard (see Revised Standard Plan RSP ES-7B). Pedestal shall be 2'-1" to 2'-6" in length. Anchor bolts shall be ¾" Ø x 1'-6" with a 2" - 90° bend. Four bolts required per cabinet.
4. Type G cabinet shall be provided with a slipfitter to permit mounting an 4½" outside diameter pedestal. Slipfitter shall be bolted to bottom of the cabinet.
5. A 1" drain shall be provided through the foundation of a Type M or Model 336L cabinet. Drain pipe shall be screened.
6. Cabinet shelves shall be adjustable for vertical spacing and shall be removable. Type M, P, R and S cabinets shall be provided with a minimum of two shelves.
7. Controller units, plug-mounted equipment, shelf-mounted equipment and wall-mounted equipment shall be located to permit safe and easy removal or replacement without removing any other piece of equipment.
8. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
9. Telephone interconnect conductors shall be enclosed in a ¾"C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in cabinets or pedestals.
10. Anchor bolts for Type M, P, R, S and Model 336L cabinets shall be ¾" Ø x 1'-6" with a 2" - 90° bend.



SIDE VIEW FRONT VIEW

FOUNDATION FOR TYPE G CABINET

DETAIL A

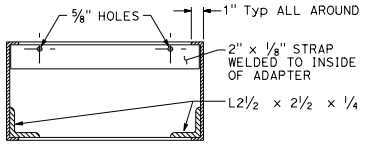


SIDE VIEW FRONT VIEW

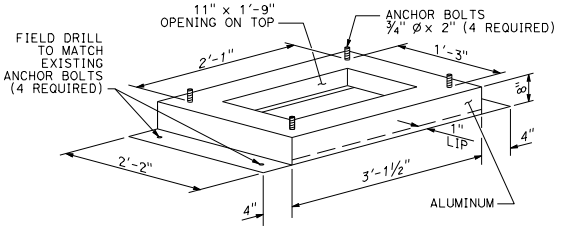
FOUNDATION FOR TYPE P, R AND S CABINETS

DETAIL B

CABINET TYPE	FOUNDATION		
	"W"	"H"	"D"
G	2'-0"	3'-6"	2'-0"
M	3'-2"	2'-6"	1'-6"
P	4'-4½"	1'-6"	2'-4"
R	4'-2"	1'-6"	2'-4"
S	5'-11½"	1'-6"	2'-4"

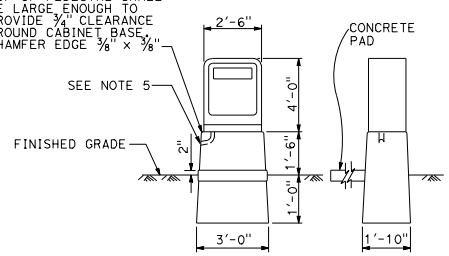


SECTION A-A



TYPE PR CABINET ADAPTER

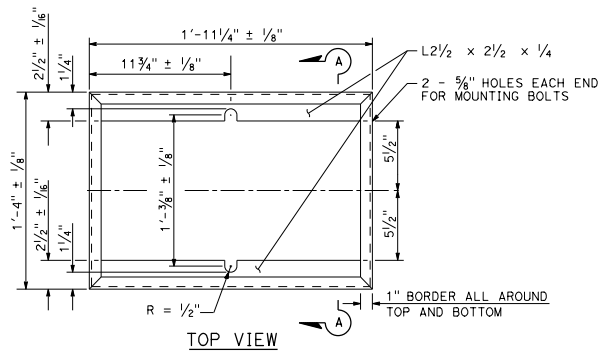
See Notes A and B



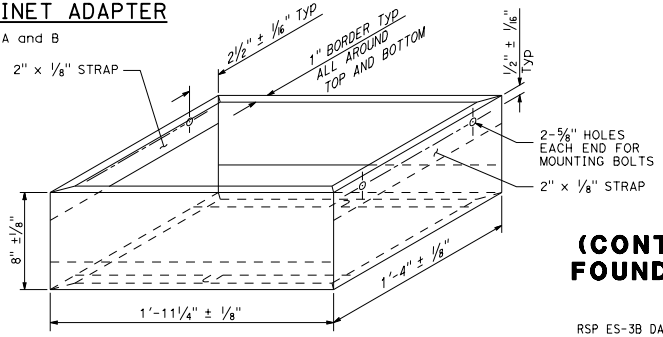
FRONT VIEW SIDE VIEW

PEDESTAL FOUNDATION FOR TYPE M OR MODEL 336L CABINET

DETAIL C



TOP VIEW



TYPE M CABINET ADAPTER

See Notes A, C, and D

NOTES:

A. Material: 0.188" thickness aluminum plate.
B. Adapter for Type P or Type R cabinet foundation.
C. Adapter for Type M cabinet foundation.
D. Mounting bolts shall be ⅜"ø minimum size.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CONTROLLER CABINET ADAPTER, FOUNDATIONS, AND PAD DETAILS)

NO SCALE

RSP ES-3B DATED APRIL 20, 2018 SUPERSEDES RSP ES-3B DATED JULY 21, 2017 AND RSP ES-3B DATED APRIL 15, 2016 AND STANDARD PLAN ES-3B DATED OCTOBER 30, 2015 - PAGE 429 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3B

2015 REVISED STANDARD PLAN RSP ES-3B

11-15-17

NOTES:

1. Controller units, plug-mounted equipment, shelf-mounted equipment and wall-mounted equipment shall be located to permit safe and easy removal or replacement without removing any other piece of equipment.
2. Cabinet fan may be installed at an alternate location near the top of the cabinet when approved by the Engineer.
3. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
4. Telephone interconnect conductors shall be enclosed in a ¾"C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in cabinets.

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

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Theresa Aziz Gabriel — No. E15129 — Exp. 6-30-16 — ELECTRICAL — STATE OF CALIFORNIA

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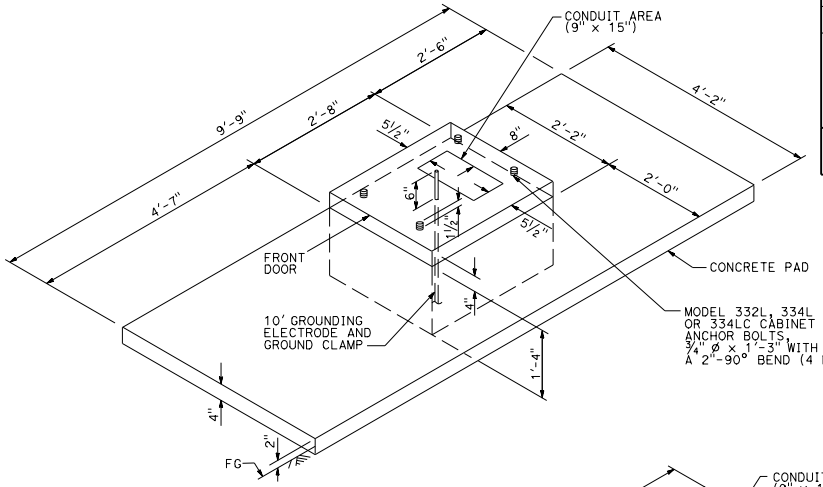
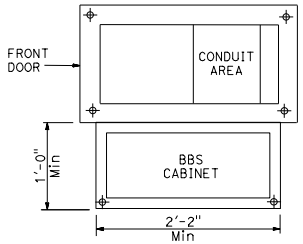
TO ACCOMPANY PLANS DATED _____



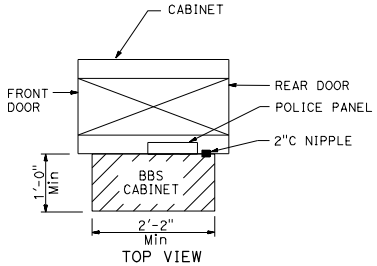
FOUNDATION AND PAD DETAIL

Model 332L, 334L and 334LC

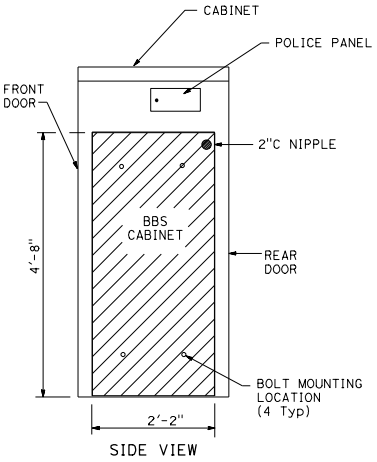


BASE PLAN FOR BBS MOUNTED TO THE MODEL 332L CABINET

(FOR DIMENSIONS AND DETAILS NOT SHOWN, SEE CABINET HOUSING DETAILS OF THE TRANSPORTATION ELECTRICAL EQUIPMENT SPECIFICATION (TEES))

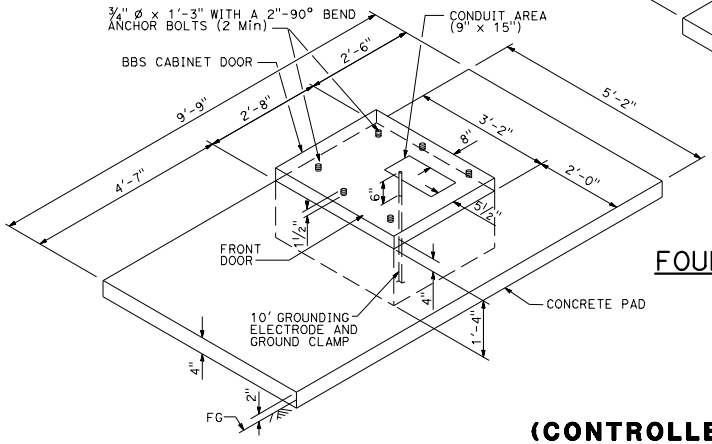


TOP VIEW



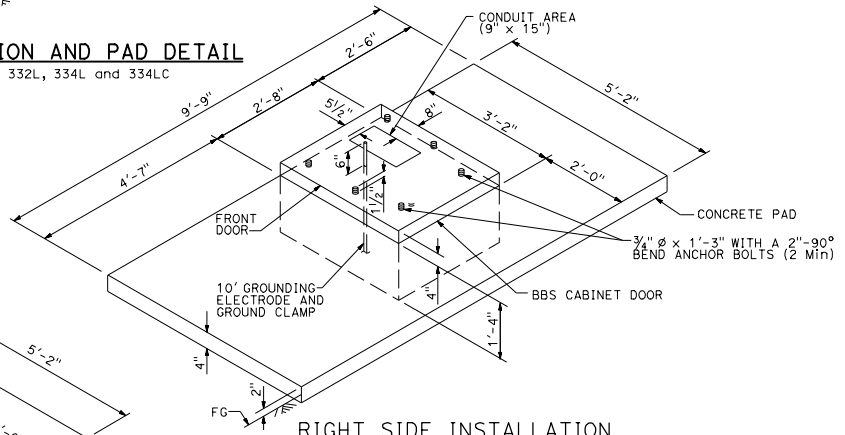
SIDE VIEW

BBS CABINET MOUNTED TO THE MODEL 332L CABINET



LEFT SIDE INSTALLATION

DETAIL A



RIGHT SIDE INSTALLATION

DETAIL B

MODIFIED MODEL 332L CABINET FOUNDATION DETAIL FOR BATTERY BACKUP SYSTEM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CONTROLLER CABINET FOUNDATION AND PAD DETAILS)

NO SCALE

RSP ES-3C DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-3C DATED OCTOBER 30, 2015 - PAGE 430 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3C

2015 REVISED STANDARD PLAN RSP ES-3C

1-12-16

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

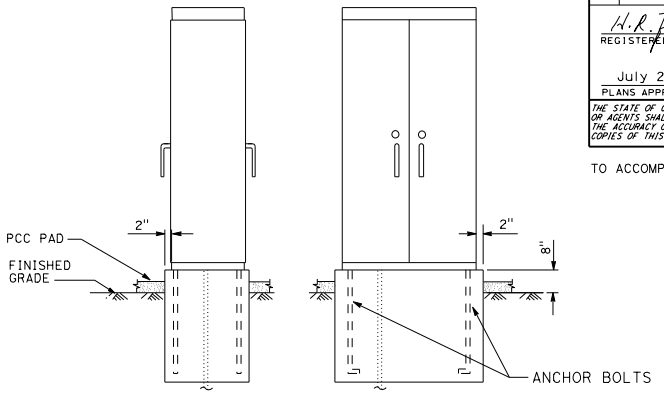
REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
STATE OF CALIFORNIA

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.

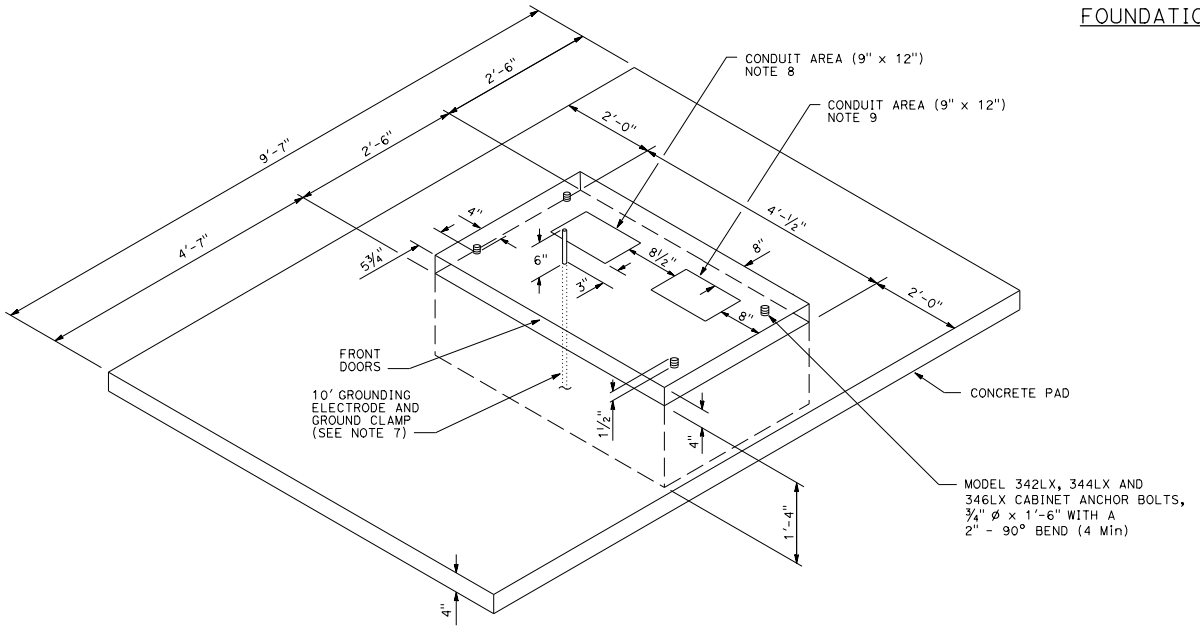
TO ACCOMPANY PLANS DATED _____

NOTES:

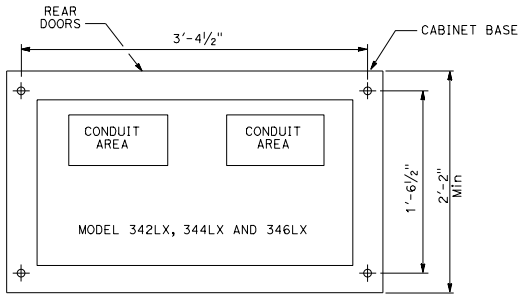
1. Controller units, plug-mounted equipment, shelf-mounted equipment and wall-mounted equipment shall be located to permit safe and easy removal or replacement without removing any other piece of equipment.
2. Cabinet fan may be installed at an alternate location near the top of the cabinet when approved by the Engineer.
3. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
4. Telephone interconnect conductors shall be enclosed in a ¾"C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in cabinets.
5. Dimensions are nominal.
6. For Model 342LX, 344LX and 346LX cabinets details, see "Transportation Electrical Equipment Specifications".
7. Grounding electrode shall be placed 3 inches in front of the service conduit area.
8. Conduit area, to 120 V Service.
9. Conduit area for the controller side of cabinet.



FOUNDATION FOR TYPE LX CABINET
DETAIL A



FOUNDATION AND PAD DETAIL
Model 342LX, 344LX and 346LX
DETAIL B



BASE PLAN FOR THE MODEL
342LX, 344LX AND 346LX CABINET

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(CONTROLLER CABINET FOUNDATION AND PAD DETAILS)

NO SCALE

RSP ES-3C1 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3C1

2015 REVISED STANDARD PLAN RSP ES-3C1

4-28-17

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

REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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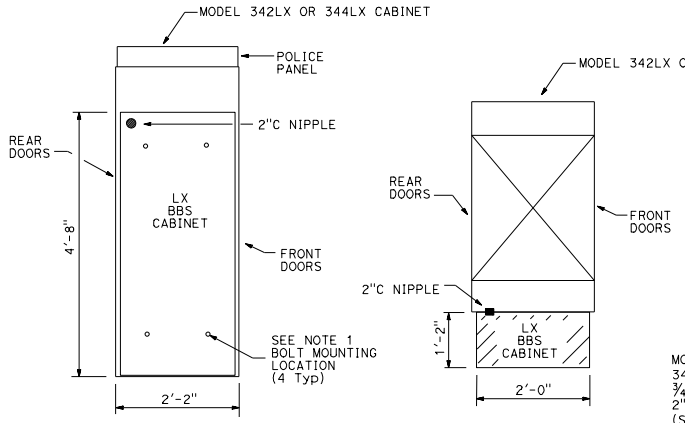
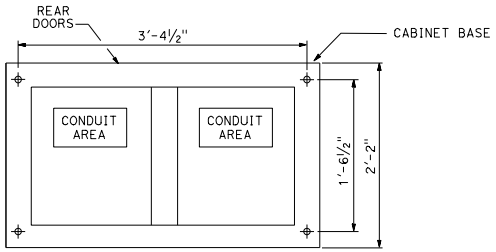
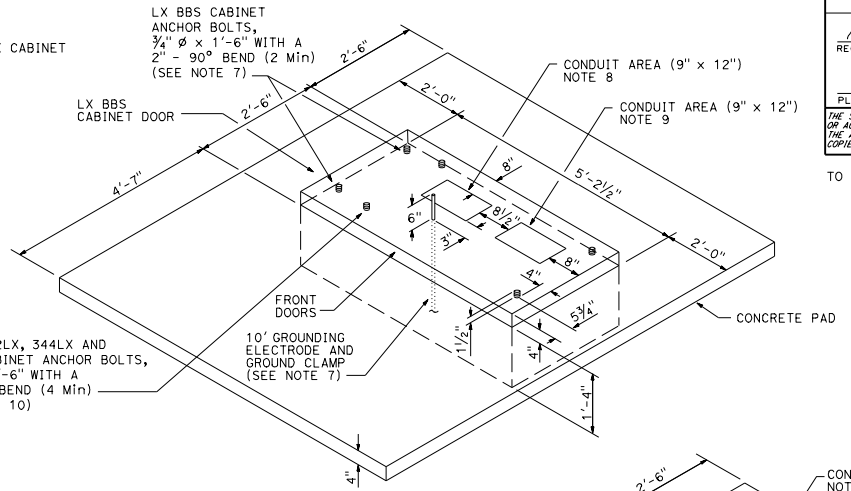
TO ACCOMPANY PLANS DATED _____



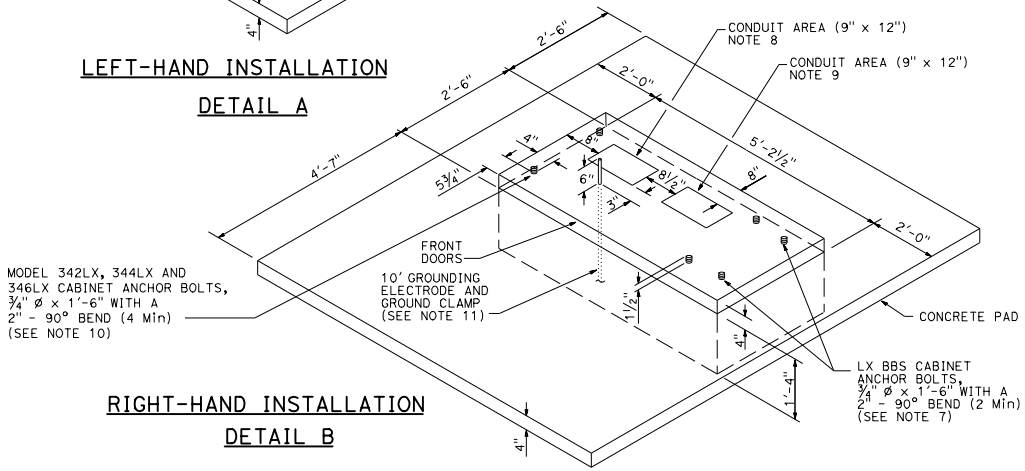
LX BBS CABINET MOUNTED TO THE MODEL 342LX OR 344LX CABINET



BASE PLAN FOR MODEL 342LX OR 344LX CABINET



LEFT-HAND INSTALLATION DETAIL A



RIGHT-HAND INSTALLATION DETAIL B

NOTES:

1. Controller units, plug-mounted equipment, shelf-mounted equipment and wall-mounted equipment shall be located to permit safe and easy removal or replacement without removing any other piece of equipment.
2. Cabinet fan may be installed at an alternate location near the top of the cabinet when approved by the Engineer.
3. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
4. Telephone interconnect conductors shall be enclosed in a ¾"C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in cabinets.
5. The LX BBS cabinet shall be mounted to the model 342LX or 344LX cabinet with four 18-8 stainless steel hex head, fully-threaded, ⅜"-16 x 1" bolts; two washers per bolt, designed for ⅜" bolts and are 18-8 stainless steel, 1" outside diameter, round, and flat; and one K-Lock nut per bolt that is 18-8 stainless steel and a hex-nut.
6. All dimensions are nominal.
7. The dimensions of the BBS cabinet shall be verified prior to constructing the foundation of the Std model 342LX or 344LX cabinet foundation.
8. Conduit area, to 120 V Service.
9. Conduit area for the controller side of cabinet.
10. For Type LX cabinets details, see "Transportation Electrical Equipment Specifications".
11. Grounding electrode shall be placed 3 inches in front of the service conduit area.

MODIFIED MODEL 342LX OR 344LX CABINET FOUNDATION DETAIL FOR BATTERY BACKUP SYSTEM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(CONTROLLER CABINET FOUNDATION DETAILS)

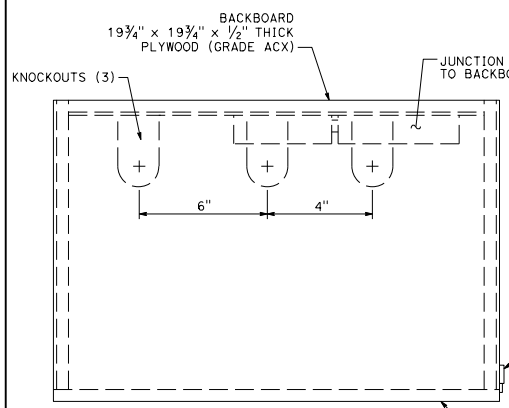
NO SCALE

RSP ES-3C2 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

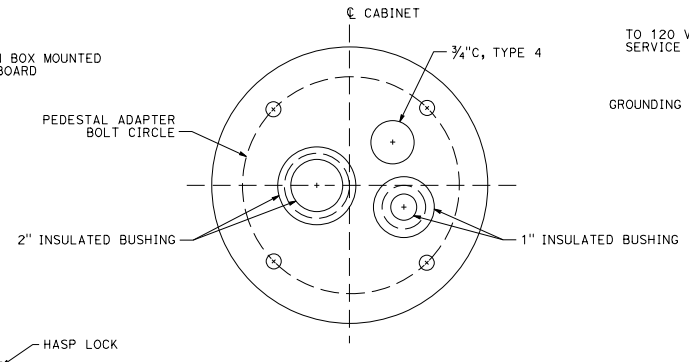
REVISED STANDARD PLAN RSP ES-3C2

2015 REVISED STANDARD PLAN RSP ES-3C2

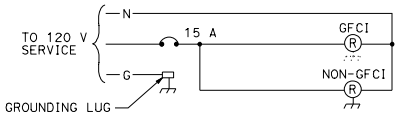
4-28-17



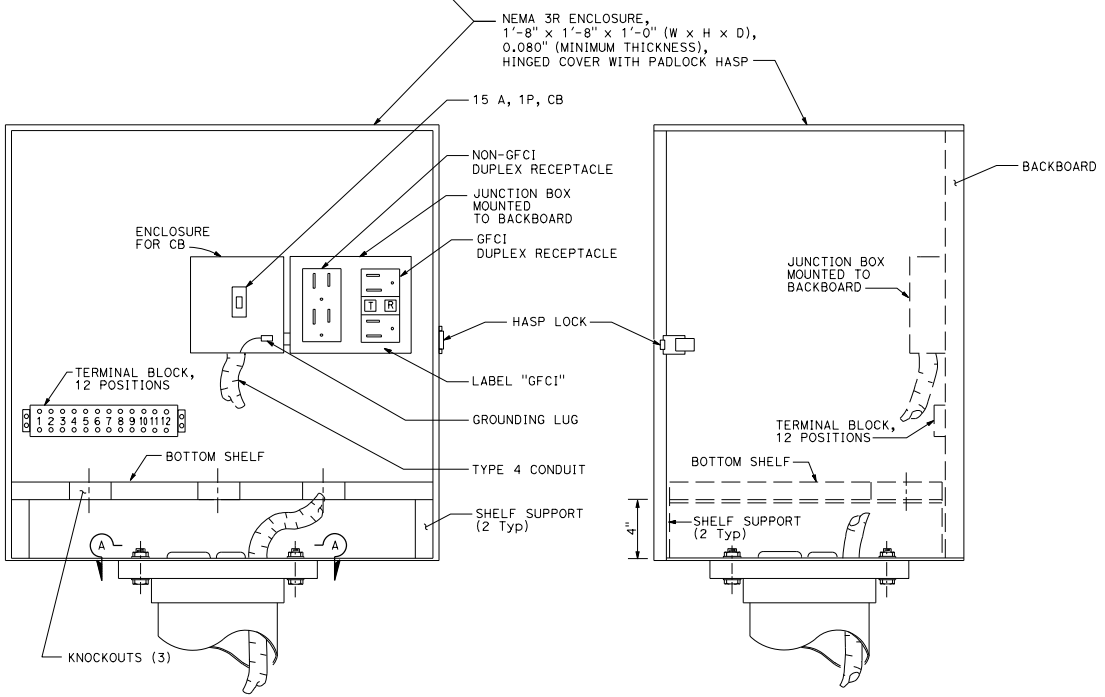
TOP
DETAIL C



SECTION A-A



WIRING DIAGRAM
DETAIL D



FRONT
DETAIL A

RIGHT SIDE
DETAIL B

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

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

Registered Professional Engineer — Theresa Aziz Gabriel — No. E15129 — Exp. 6-30-16 — Electrical — State of California

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. Dimensions are nominal.
2. The steel pedestal, base plate, and bolt circle for the telephone demarcation cabinet shall be the same as that shown for a Type 1-C Standard. The steel pedestal shall be 2'-1" to 2'-6" in length. Anchor bolts shall be ¾" ø x 1'-6" with a 2" - 90° bend. Four bolts required per cabinet.
3. Telephone interconnect conductors shall be enclosed in a ¾"C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in the cabinet and pedestal.
4. Mount cabinet on Type G cabinet pedestal and foundation (see RSP ES-3B).

FASTENER SCHEDULE

BACKBOARD	4 - ¾" (LENGTH) WOOD SCREWS
2 SHELF SUPPORTS	4 - ¾" (LENGTH) WOOD SCREWS
JUNCTION BOX	4 - ½" (LENGTH) WOOD SCREWS
TERMINAL BLOCK	4 - ¾" (LENGTH) WOOD SCREWS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TELEPHONE DEMARCATION CABINET, TYPE A)

NO SCALE

RSP ES-3D DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-3D
DATED OCTOBER 30, 2015 - PAGE 431 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3D

2015 REVISED STANDARD PLAN RSP ES-3D

1-12-16

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

July 21, 2017
PLANS APPROVAL DATE

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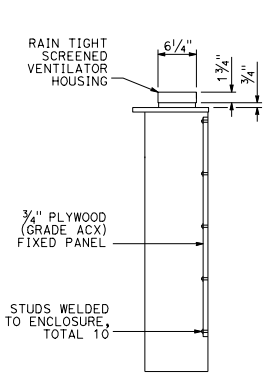
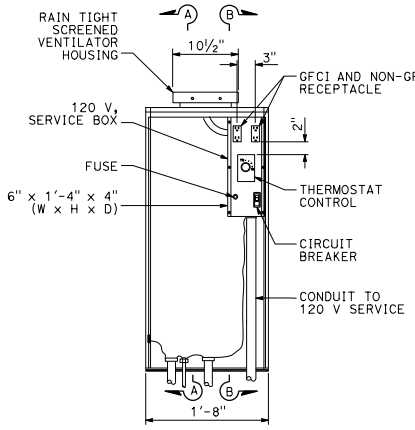
TO ACCOMPANY PLANS DATED _____

NOTE:

1. Dimensions are nominal.

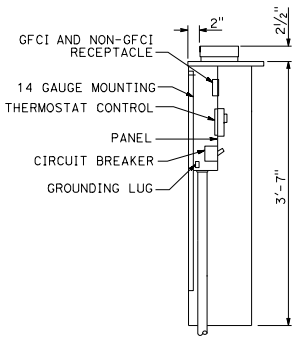


SECTION A-A

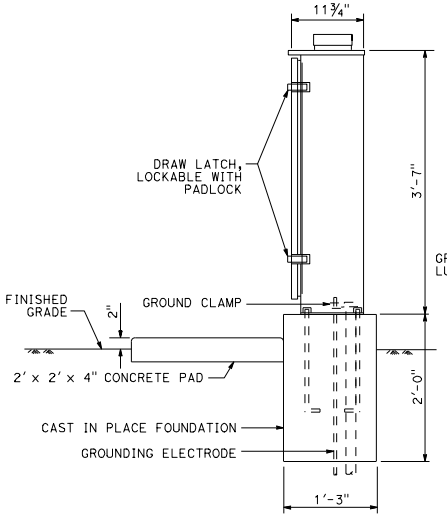


FRONT VIEW

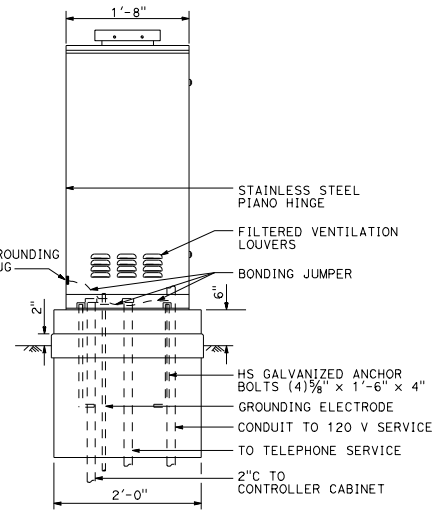
INTERIOR
DETAIL A



SECTION B-B

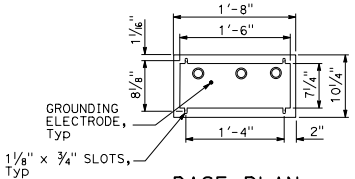


SIDE VIEW

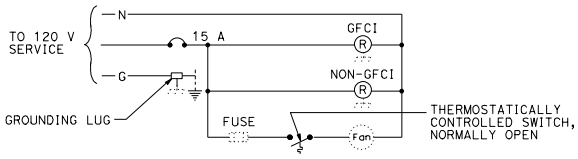


FRONT VIEW

EXTERIOR
DETAIL B



BASE PLAN
DETAIL C



WIRING DIAGRAM
DETAIL D

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TELEPHONE DEMARCATION CABINET, TYPE B)

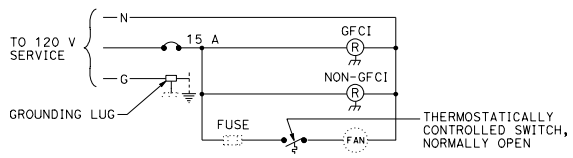
NO SCALE

RSP ES-3E DATED JULY 21, 2017 SUPERSEDES RSP ES-3E DATED APRIL 15, 2016 AND STANDARD PLAN ES-3E DATED OCTOBER 30, 2015 - PAGE 432 OF THE STANDARD PLANS BOOK DATED 2015.

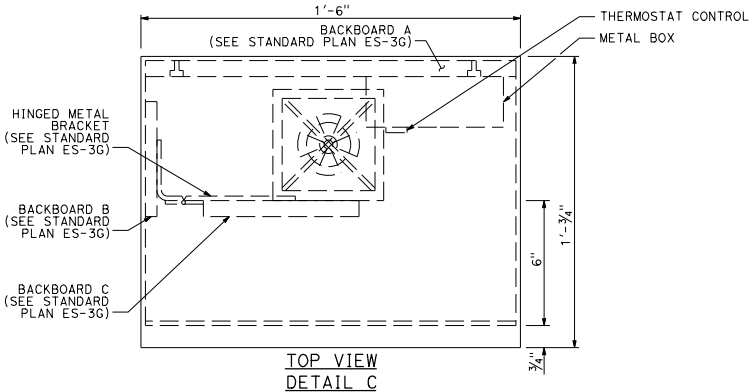
REVISED STANDARD PLAN RSP ES-3E

2015 REVISED STANDARD PLAN RSP ES-3E

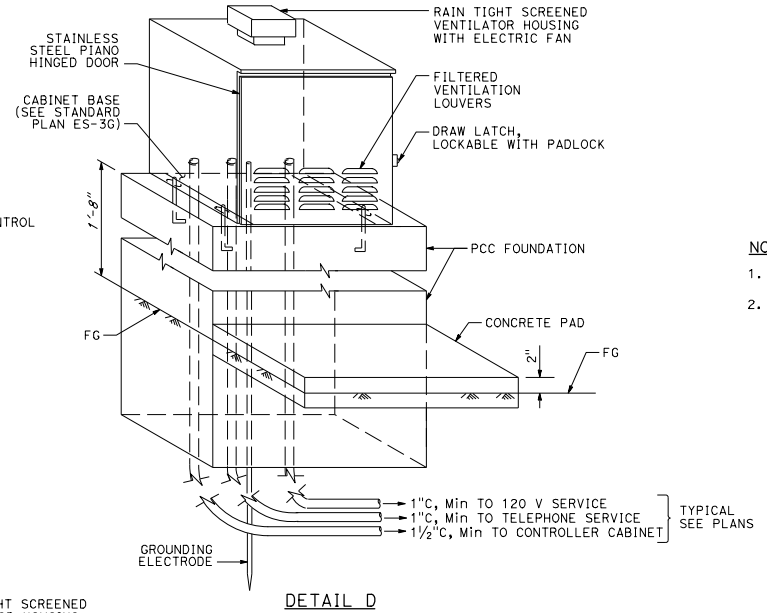
4-25-17



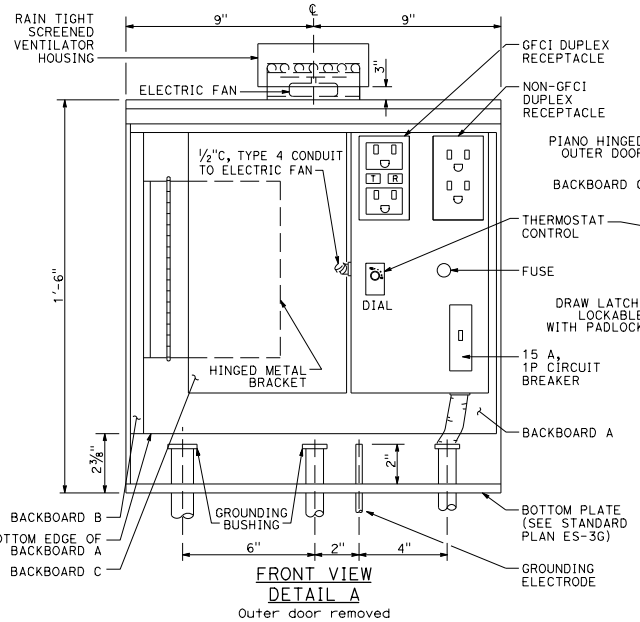
WIRING DIAGRAM
DETAIL F



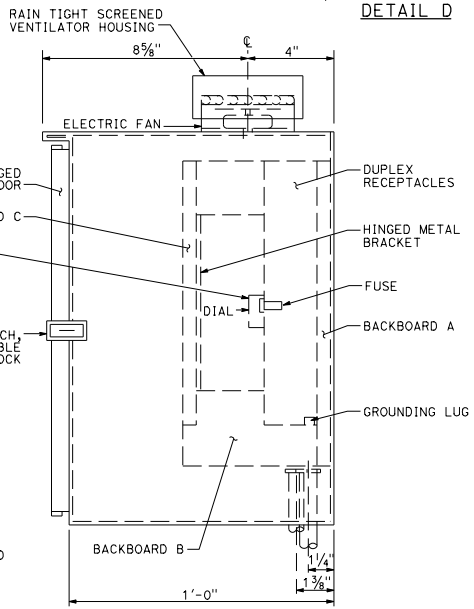
TOP VIEW
DETAIL C



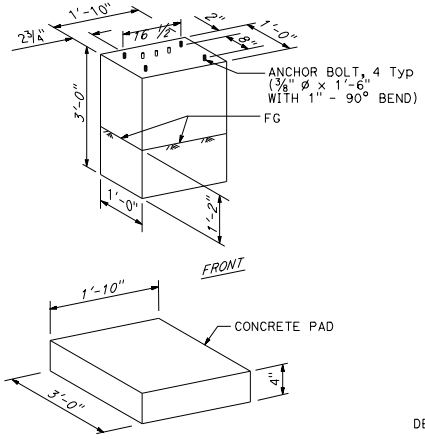
DETAIL D



FRONT VIEW
DETAIL A
Outer door removed



SIDE VIEW
DETAIL B



CONCRETE PAD
FOUNDATION AND PAD DETAILS
DETAIL E

NOTES:

1. Dimensions are nominal.
2. Hardware for fastening of mounting boards:
   a. Fasten backboard A and backboard B to telephone demarcation cabinet with ⅜" Ø x ¾" stainless steel carriage bolts (8 required).
   b. Fasten hinged metal bracket to backboard B and backboard C to hinged metal bracket with number No. 10 x ¾" wood screws (9 required).

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER
July 21, 2017
PLANS APPROVAL DATE
Hamid Zolfaghari No. E15636 Exp. 12-31-17 ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TELEPHONE DEMARCATION CABINET, TYPE C)

NO SCALE

RSP ES-3F DATED JULY 21, 2017 SUPERSEDES RSP ES-3F DATED APRIL 15, 2016 AND STANDARD PLAN ES-3F DATED OCTOBER 30, 2015 - PAGE 433 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3F

2015 REVISED STANDARD PLAN RSP ES-3F

4-25-17

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

July 21, 2017
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Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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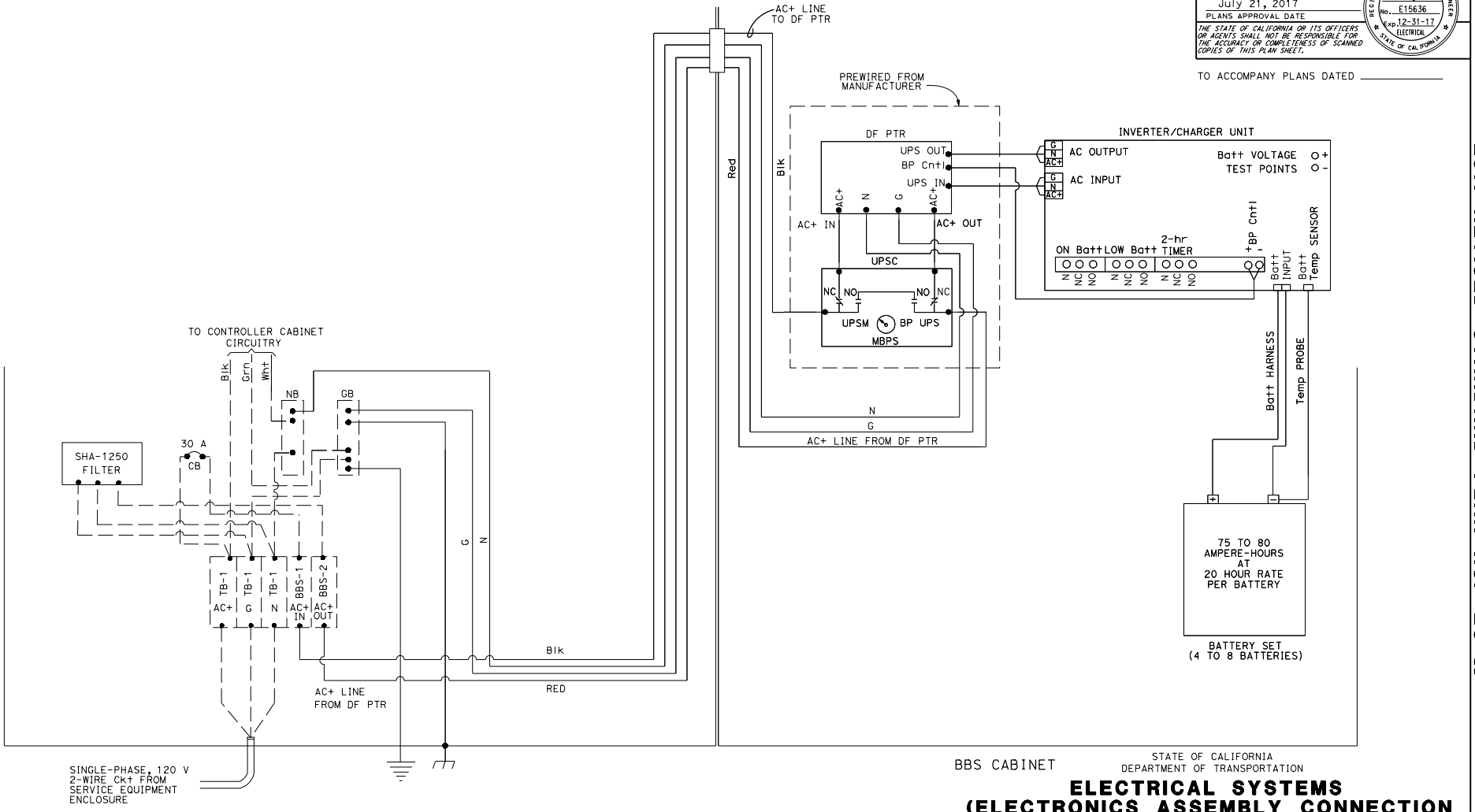
TO ACCOMPANY PLANS DATED _____



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRONICS ASSEMBLY CONNECTION DIAGRAM, WITH BYPASS CONTROL LINE)

NO SCALE

RSP ES-3I DATED JULY 21, 2017 SUPERSEDES RSP ES-3I DATED APRIL 15, 2016 AND STANDARD PLAN ES-3I DATED OCTOBER 30, 2015 - PAGE 436 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3I

2015 REVISED STANDARD PLAN RSP ES-3I

4-7-17

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

H.R.Z
REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
STATE OF CALIFORNIA

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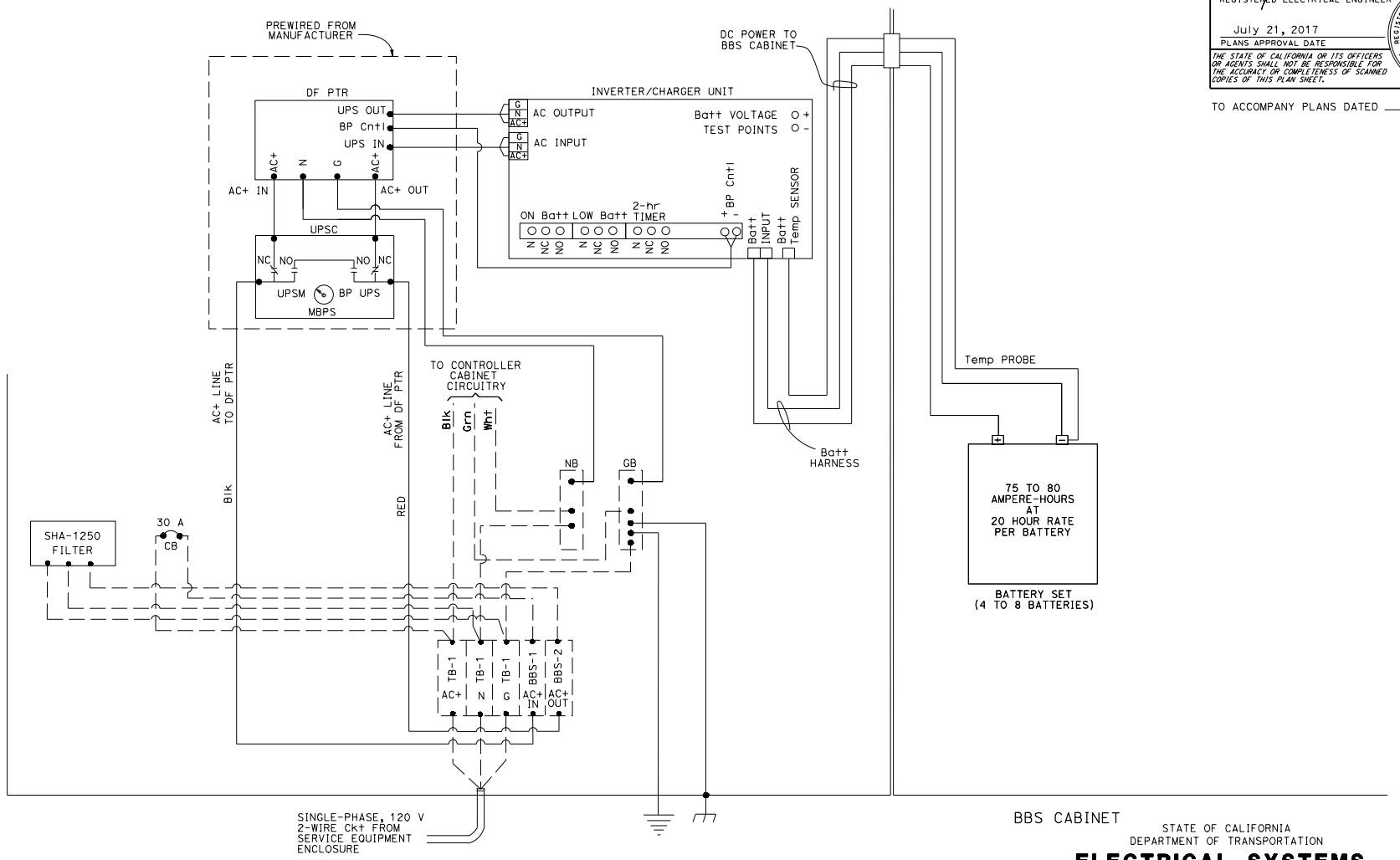
TO ACCOMPANY PLANS DATED _____



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRONICS ASSEMBLY CONNECTION DIAGRAM, WITH BYPASS CONTROL LINE)

NO SCALE

RSP ES-3J DATED JULY 21, 2017 SUPERSEDES RSP ES-3J DATED APRIL 15, 2016 AND STANDARD PLAN ES-3J DATED OCTOBER 30, 2015 - PAGE 437 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3J

2015 REVISED STANDARD PLAN RSP ES-3J

4-7-17

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

REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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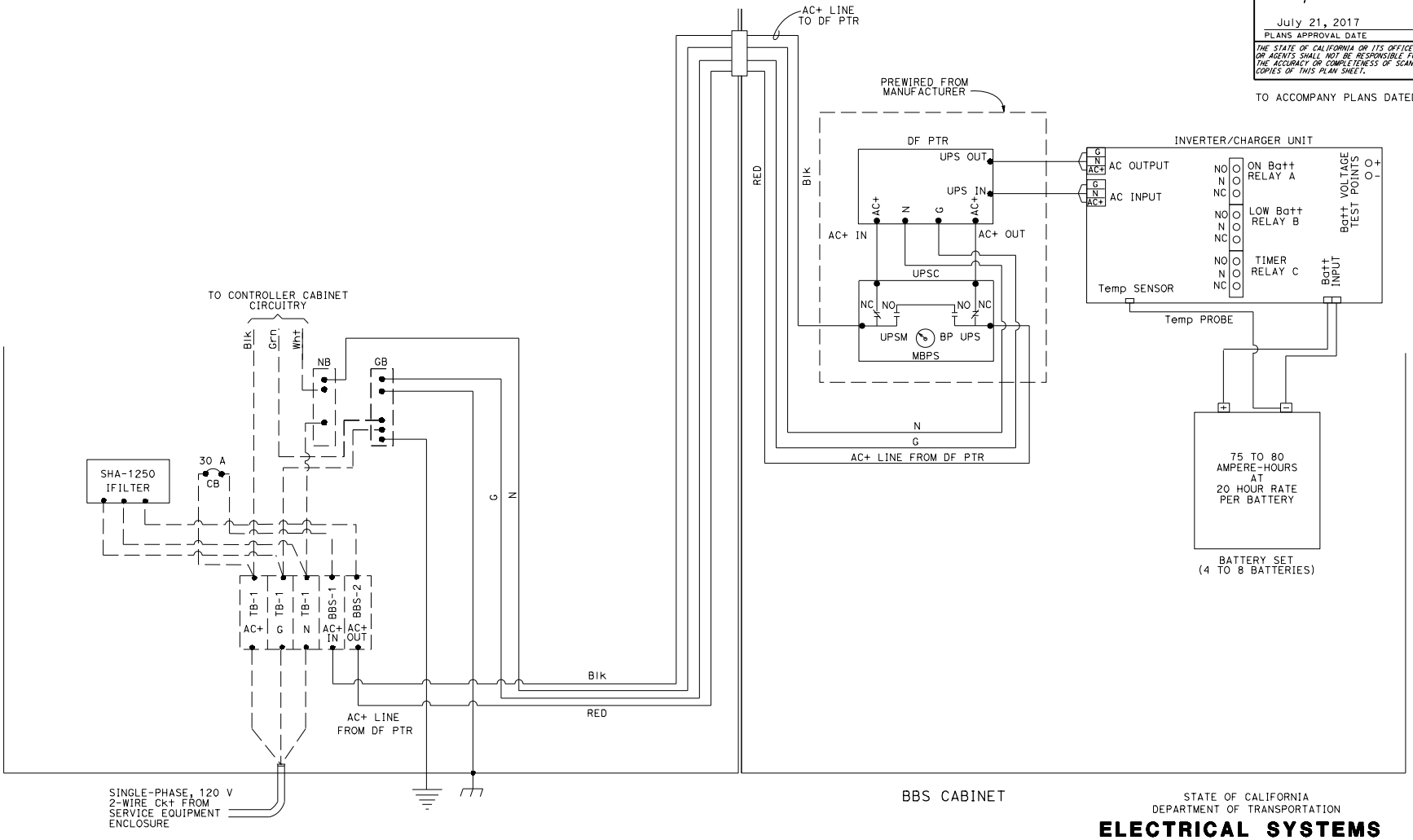
TO ACCOMPANY PLANS DATED _____



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRONICS ASSEMBLY CONNECTION DIAGRAM, WITHOUT BYPASS CONTROL LINE)

NO SCALE

RSP ES-3K DATED JULY 21, 2017 SUPERSEDES RSP ES-3K DATED APRIL 15, 2016 AND STANDARD PLAN ES-3K DATED OCTOBER 30, 2015 - PAGE 438 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3K

2015 REVISED STANDARD PLAN RSP ES-3K

4-7-17

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

REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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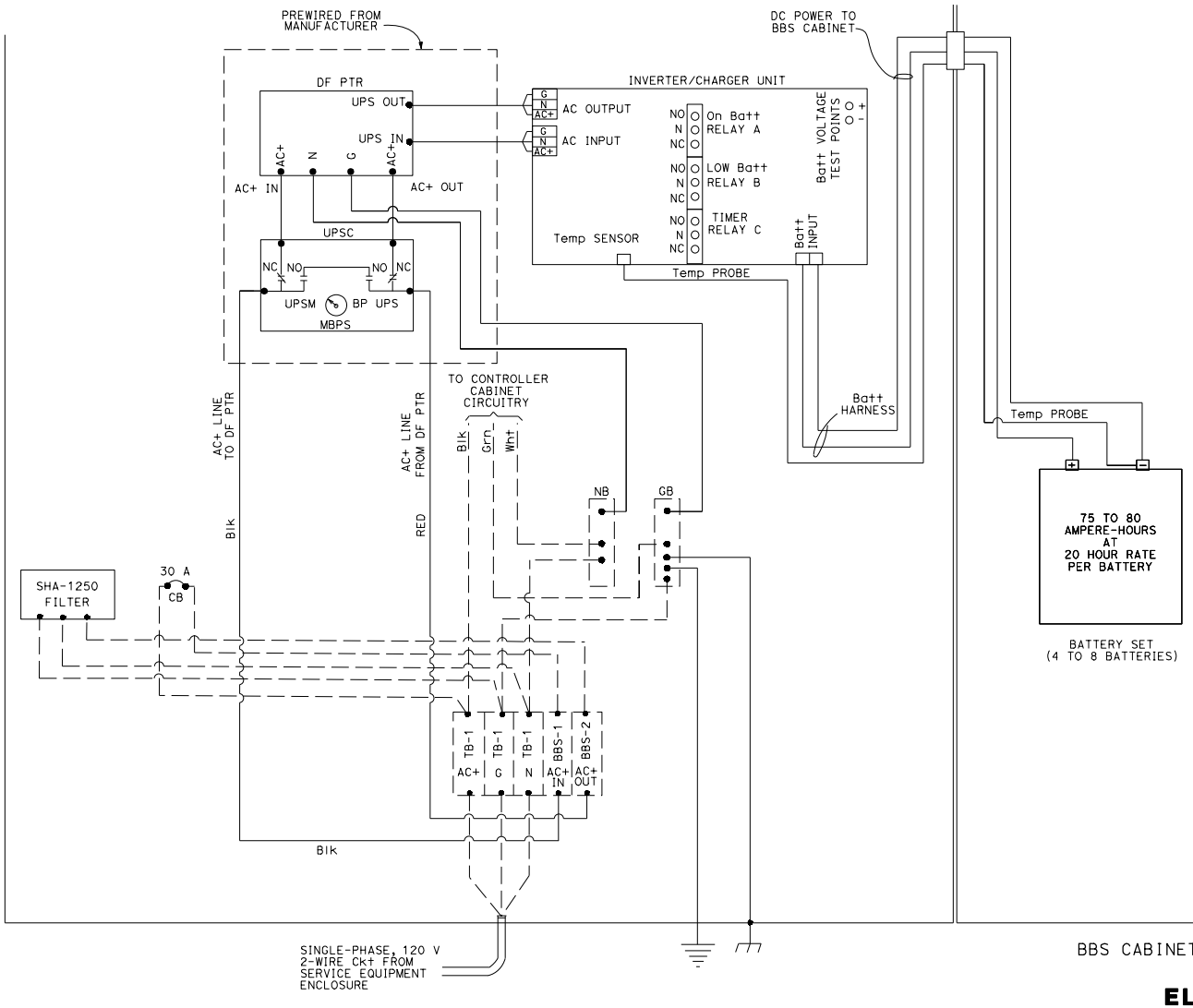
TO ACCOMPANY PLANS DATED _____



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRONICS ASSEMBLY CONNECTION DIAGRAM, WITHOUT BYPASS CONTROL LINE)

NO SCALE

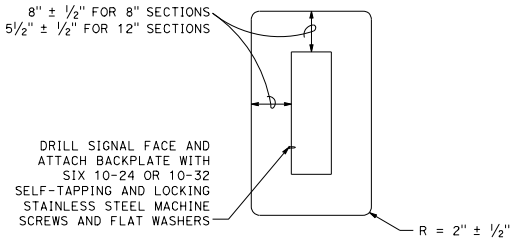
RSP ES-3L DATED JULY 21, 2017 SUPERSEDES RSP ES-3L DATED APRIL 15, 2016 AND STANDARD PLAN ES-3L DATED OCTOBER 30, 2015 - PAGE 439 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-3L

2015 REVISED STANDARD PLAN RSP ES-3L

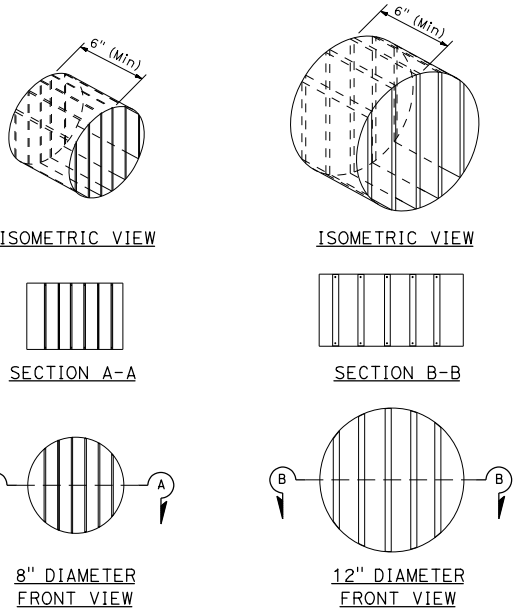
4-7-17

VISORS



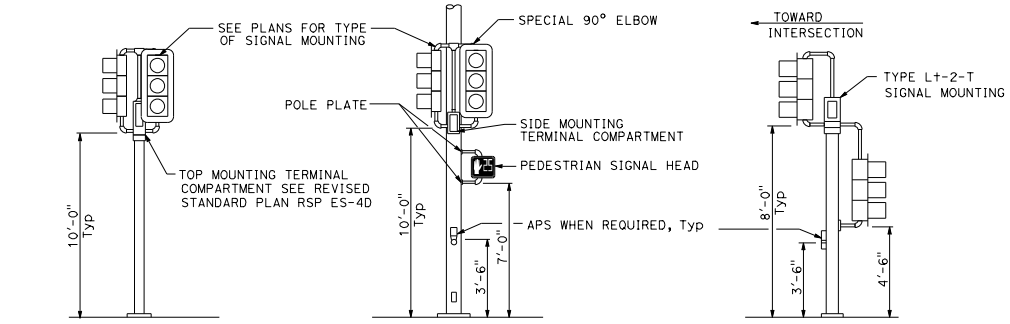
8" AND 12" SECTIONS

BACKPLATE



DIRECTIONAL LOUVER

Directional louvers shall be oriented and secured in place with one plated brass machine screw and nut.

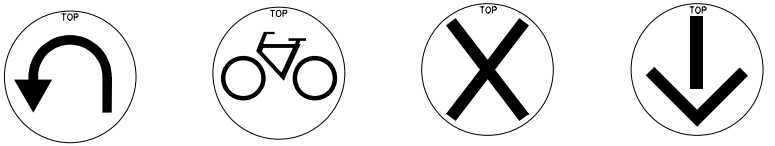


TOP MOUNTED SIGNALS (TV)
Type 1-A, 1-B, 1-C and 1-D standard as indicated on the plans

SIDE MOUNTED SIGNALS (SV AND SP)
Normally used on standards with luminaire or signal mast arm

LEFT TURN LANE SIGNAL
Type 1-A, 1-B, 1-C and 1-D standard as indicated on plans

TYPICAL SIGNAL HEAD INSTALLATIONS



U-TURN | BICYCLE | LANE CONTROL | LANE CONTROL

SIGNAL FACES

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

H.R.Z
REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
STATE OF CALIFORNIA

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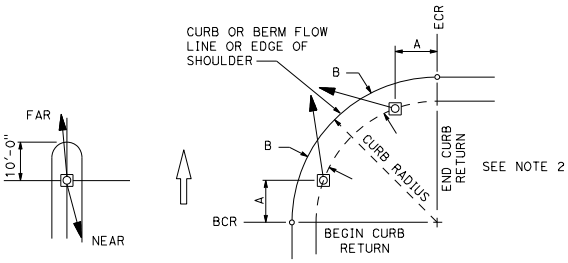
TO ACCOMPANY PLANS DATED _____



NOTES:

1. Typical signal pole placement unless dimensioned on plans.
2. For A and B dimensions, see Pole Schedule.

SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4C DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN ES-4C DATED OCTOBER 30, 2015 - PAGE 442 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-4C

2015 REVISED STANDARD PLAN RSP ES-4C

4-7-17

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
STATE OF CALIFORNIA

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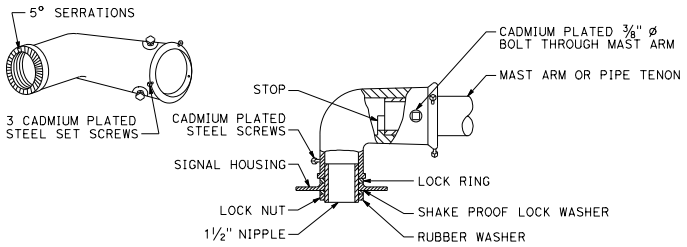
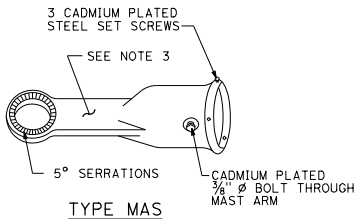
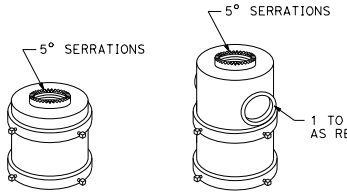
TO ACCOMPANY PLANS DATED _____



TYPE MAT
MAST ARM MOUNTING
For 2 NPS pipe, see Note 1.

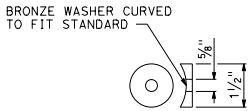


TYPE MAS
MAST ARM MOUNTING
For 2 NPS pipe, see Note 1.

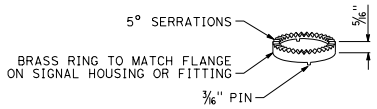


TOP MOUNTINGS
For 4 NPS pipe, see Note 2.

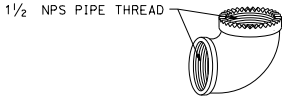
SIGNAL SLIP FITTERS



DETAIL C



LOCK RING
Use where locking ring is not integral With signal housing or fitting.

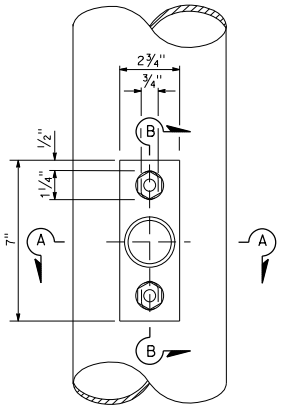


SPECIAL 90° ELBOW
One for each signal head, except those With special slip fitter mounting

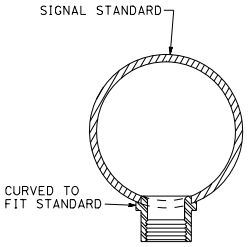
NOTES:

1. After mast arm signal has been plumbed and secured, drill 7/16" hole through mast arm tenon in line with slip fitter hole. Place a cadmium plated ⅜" Ø galvanized bolt with washer under bolt head through hole and secure with washer, nut, and locknut. Seal openings between mast arm mountings and mast arm with mastic.
2. Threaded top mounted slip fitter openings shall be 1½ NPS. Serrations in fittings shall match those on bottom of signal heads or in lock ring. Top opening shall be offset when backplate is used.
3. Wireway shall have a cross section area of 0.95 square inch minimum. Minimum width of ½".

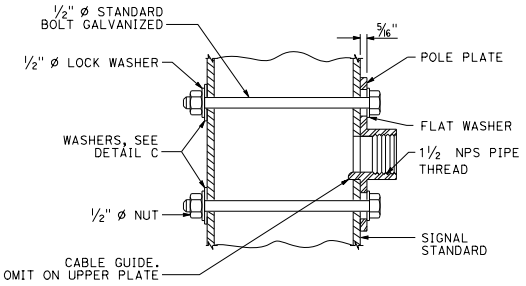
MISCELLANEOUS MOUNTING HARDWARE



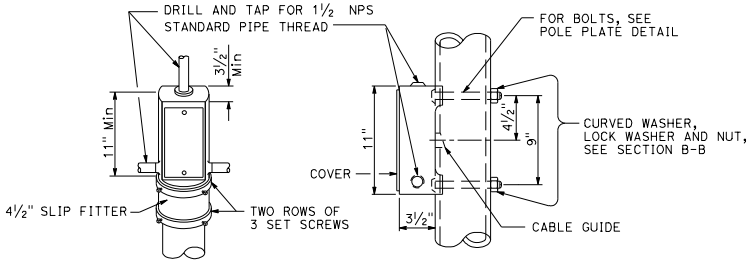
TOP VIEW



SECTION A-A



SECTION B-B



TOP MOUNTING SIDE MOUNTING

TERMINAL COMPARTMENT

POLE PLATE FOR SIDE MOUNTED SIGNAL HEAD WITHOUT TERMINAL COMPARTMENT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEAD MOUNTING)

NO SCALE

RSP ES-4D DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN ES-4D
DATED OCTOBER 30, 2015 - PAGE 443 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-4D

2015 REVISED STANDARD PLAN RSP ES-4D

4-28-17

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

REGISTERED ELECTRICAL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

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

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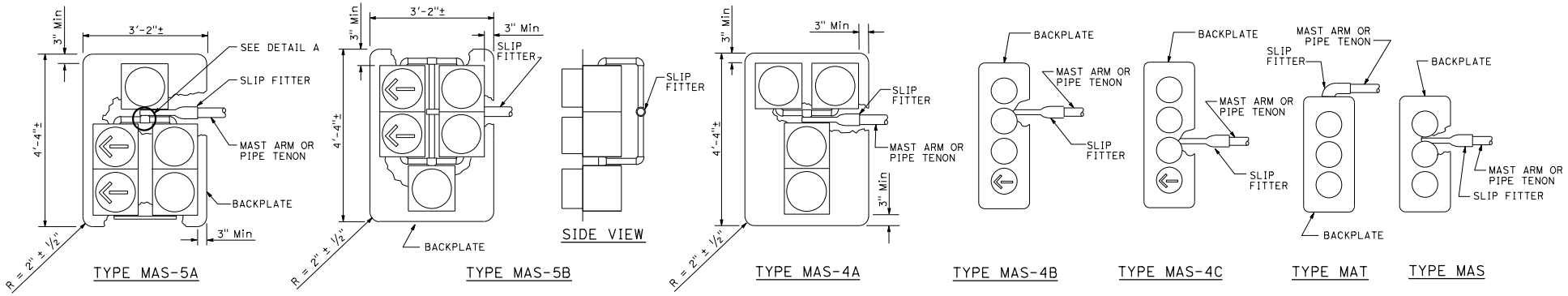
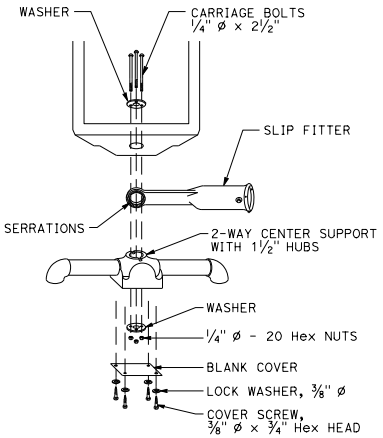
TO ACCOMPANY PLANS DATED _____

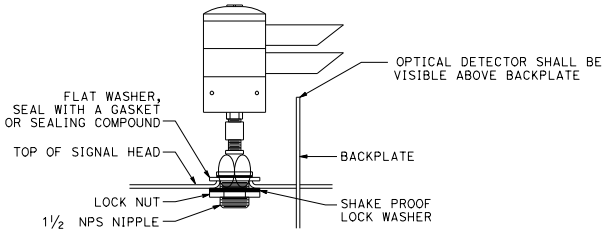


TYPE MAS-5A | TYPE MAS-5B | TYPE MAS-4A | TYPE MAS-4B | TYPE MAS-4C | TYPE MAT | TYPE MAS

MAST ARM MOUNTINGS

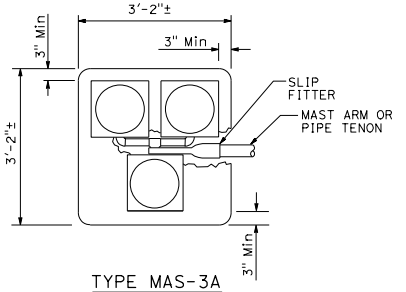


DETAIL A



OPTICAL DETECTOR MOUNTING FOR EMERGENCY VEHICLE DETECTION

DETAIL B



TYPE MAS-3A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND OPTICAL DETECTOR MOUNTING)

NO SCALE

RSP ES-4E DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN ES-4E
DATED OCTOBER 30, 2015 - PAGE 444 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-4E

2015 REVISED STANDARD PLAN RSP ES-4E

11-15-17

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

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

Theresa Aziz Gabriel
No. E15129
Exp. 6-30-16
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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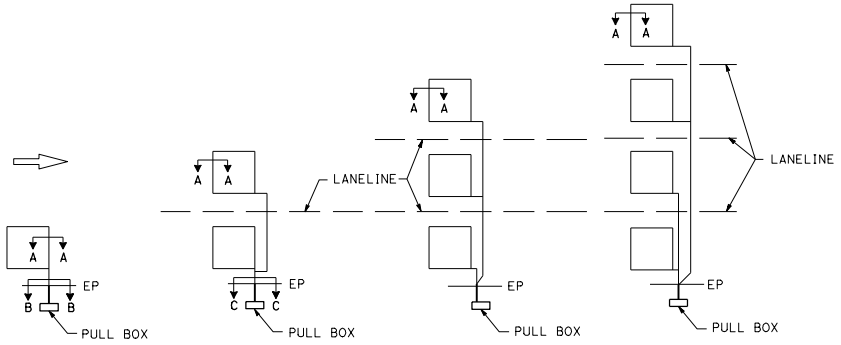
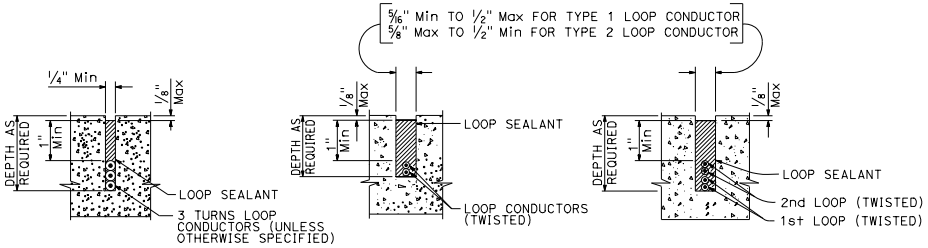
TO ACCOMPANY PLANS DATED _____



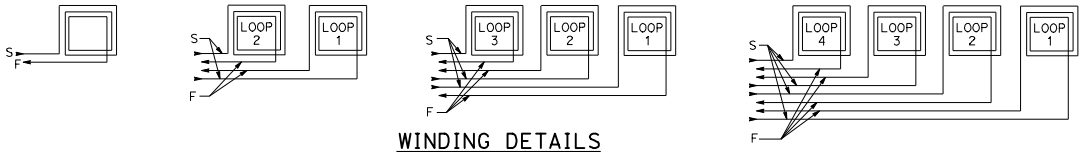
SAW CUT DETAILS

Type A loop detector configurations illustrated



SECTION A-A SECTION B-B SECTION C-C

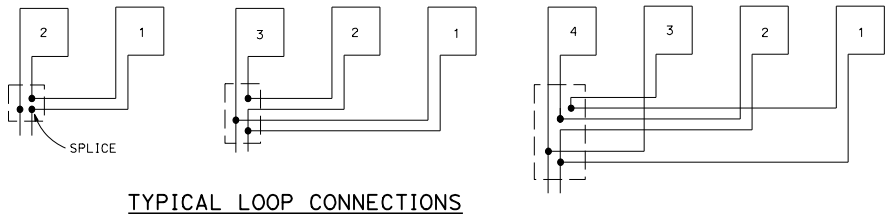
SLOT DETAILS - TYPE 1 AND TYPE 2 LOOP CONDUCTOR



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

RSP ES-5A DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-5A
DATED OCTOBER 30, 2015 - PAGE 445 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-5A

2015 REVISED STANDARD PLAN RSP ES-5A

1-12-16

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

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Theresa Aziz Gabriel
No. E15129
Exp. 6-30-16
ELECTRICAL
STATE OF CALIFORNIA

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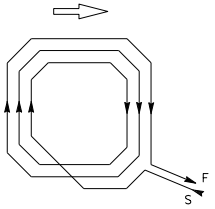
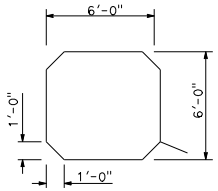
TO ACCOMPANY PLANS DATED _____

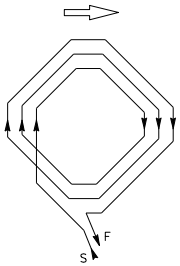


WINDING DETAIL

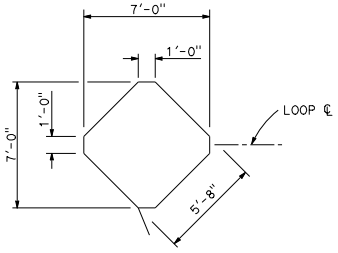


SAW CUT DETAIL

TYPE A LOOP DETECTOR CONFIGURATION

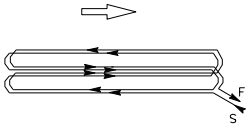


WINDING DETAIL

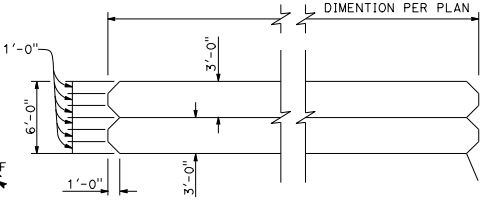


SAW CUT DETAIL

TYPE B LOOP DETECTOR CONFIGURATION

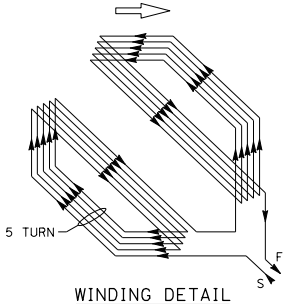


WINDING DETAIL

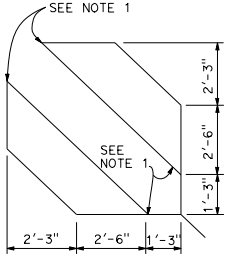


SAW CUT DETAIL

TYPE C LOOP DETECTOR CONFIGURATION

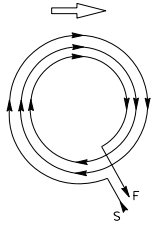


WINDING DETAIL

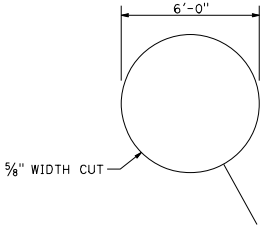


SAW CUT DETAIL

TYPE D LOOP DETECTOR CONFIGURATION

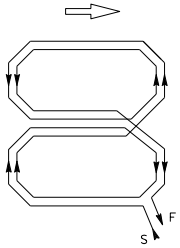


WINDING DETAIL

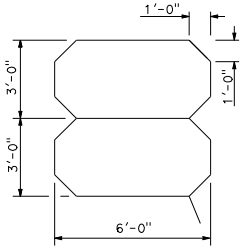


SAW CUT DETAIL

TYPE E LOOP DETECTOR CONFIGURATION

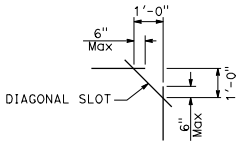


WINDING DETAIL



SAW CUT DETAIL

TYPE Q LOOP DETECTOR CONFIGURATION



PLAN VIEW OF DIAGONAL SLOT AT CORNERS

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (DETECTORS)

NO SCALE

RSP ES-5B DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-5B DATED OCTOBER 30, 2015 - PAGE 446 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-5B

2015 REVISED STANDARD PLAN RSP ES-5B

1-22-16

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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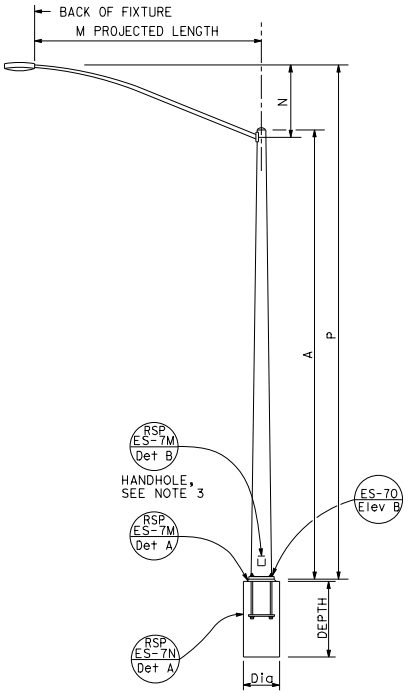
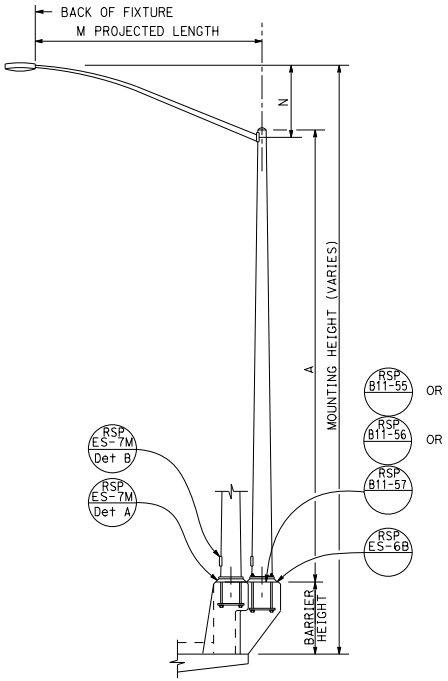
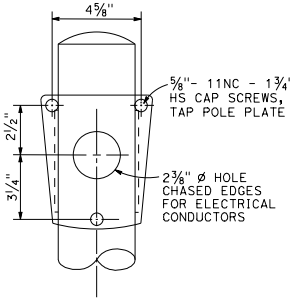
TO ACCOMPANY PLANS DATED _____

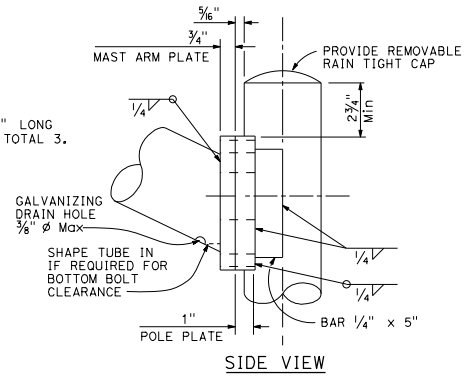


TYPE 15 AND TYPE 21
ELEVATION A

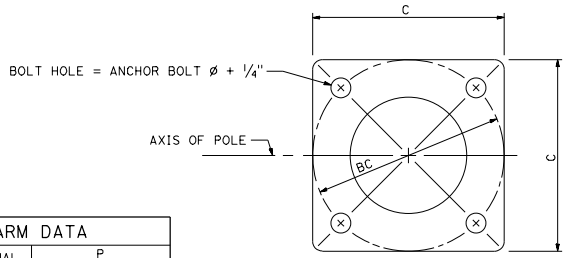


TYPE 15 AND TYPE 21 BARRIER RAIL MOUNTED
ELEVATION B





LUMINAIRE MAST ARM CONNECTION
DETAIL R



BASE PLATE
DETAIL A

POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH PILE FOUNDATION	
	A HEIGHT	Min OD BASE	Min OD TOP	WALL THICKNESS	C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	Dia	DEPTH
15	30'-0"	8"	3⅞"	0.1196"	1'-0"	1'-0"	1½"	1" ø x 36" *	2'-6"	6'-0"
21	35'-0"	8⅝"	3⅜"	0.1793"			2"	1¼" ø x 36" *		7'-0"

* FOR BARRIER RAIL BOLTS, SEE REVISED STANDARD PLAN RSP ES-6B.

LUMINAIRE MAST ARM DATA					
M PROJECTED LENGTH	N RISE	Min OD AT POLE	NOMINAL THICKNESS	P TYPE 15	P TYPE 21
6'-0"	2'-0"±	3¼"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3½"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3⅞"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4¼"		34'-3"±	39'-3"±

NOTES:

1. ☐ Indicates mast arm length to be used unless otherwise noted on the plans.
2. For Type 15-SB, use Type 15 standard with Type 30 slip base plate details, see Standard Plan ES-6F.
3. Handhole shall be located on the downstream side of traffic.
4. For additional notes and details, see Revised Standard Plans RSP ES-7M and RSP ES-7N.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD, TYPES 15 AND 21)

NO SCALE

RSP ES-6A DATED JULY 21, 2017 SUPERSEDES RSP ES-6A DATED JULY 15, 2016 AND STANDARD PLAN ES-6A DATED OCTOBER 30, 2015 - PAGE 449 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-6A

2015 REVISED STANDARD PLAN RSP ES-6A

4-25-17

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
EXP. 3-31-18
CIVIL
STATE OF CALIFORNIA

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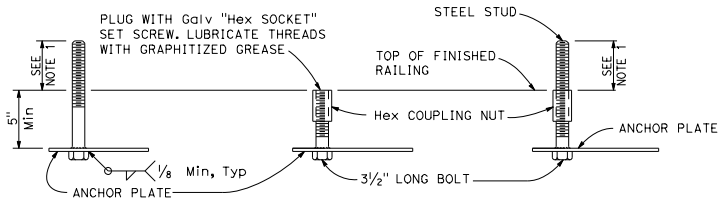
TO ACCOMPANY PLANS DATED _____



FOR IMMEDIATE INSTALLATION
DETAIL B-1

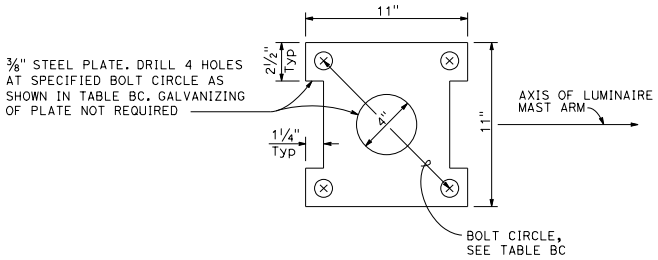
FOR FUTURE INSTALLATION WITH PLUG
DETAIL B-2

FOR INSTALLATION ON FUTURE ANCHORAGE WITH STUD
DETAIL B-3

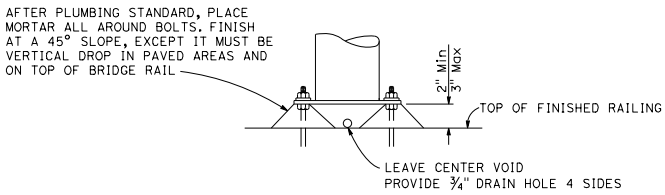
ELECTROLIER ANCHORAGES
DETAIL B

NOTES:

1. Anchor bolt or stud length shall be such that thread extends ½" maximum above nut on level base plate after grouting. See Detail N.
2. Electrolier anchor bolts shall be held in position for pouring by means of anchor plates and suitable templates. Deviation from the true position, vertical and height shall not exceed 1/16".
3. See railing sheets for reinforcement and structural details at electroliers and pull boxes.



ANCHOR PLATE
DETAIL A



GROUTING AT ELECTROLIER
DETAIL N

TABLE BC				
TYPE	BC = BOLT CIRCLE	ANCHOR BOLT DIAMETER	COUPLING NUT BASIC LENGTH	SET SCREW LENGTH DETAIL B-2
15	1'-0"	1"	3"	1½"
21		1¼"	3¾"	1⅞"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTROLIER ANCHORAGE AND GROUTING FOR TYPE 15 AND TYPE 21 BARRIER RAIL MOUNTED)

NO SCALE

RSP ES-6B DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN ES-6B DATED OCTOBER 30, 2015 - PAGE 450 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-6B

2015 REVISED STANDARD PLAN RSP ES-6B

4-15-16

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 — CIVIL — STATE OF CALIFORNIA

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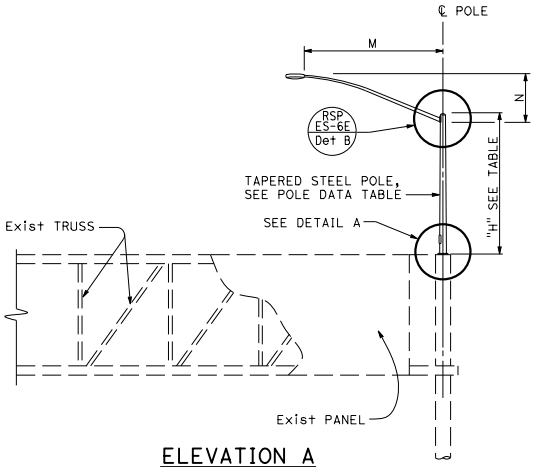
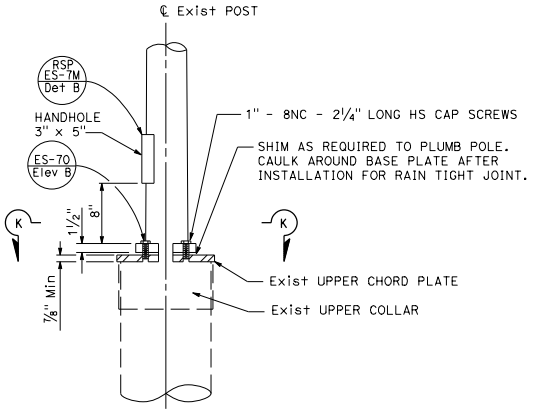
TO ACCOMPANY PLANS DATED _____

LUMINAIRE MAST ARM DATA			
M PROJECTED LENGTH	N RISE	Min OD AT POLE	NOMINAL THICKNESS
15'-0"	4'-9"±	4½"	0.1196"
20'-0"	2'-6"±	5"	0.1793"

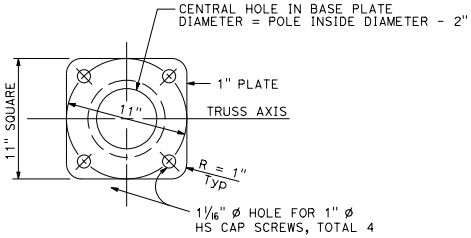
POLE DATA				
POLE EXTENSION TYPE	HEIGHT "H"	Min OD		THICKNESS
		BASE	TOP	
5	5'-0"	6½"	5 11/16"	0.1793"
10	10'-0"	7¼"		



ELEVATION A



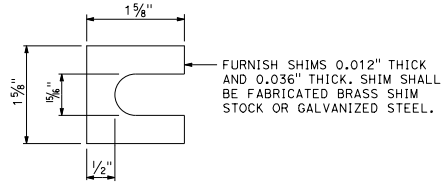
DETAIL A



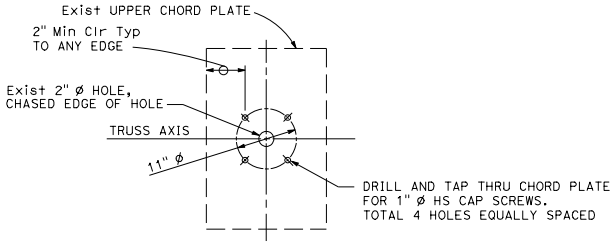
SECTION K-K

NOTES:

1. The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.
2. Bolt hole locations may vary at the discretion of the Engineer.
3. For Wind Loading see Revised Standard Plans RSP ES-7M.
4. See Std Plan S13.
5. Materials (Structural Steel):
   a. fy = 55,000 psi tapered steel tube (pole)
   b. fy = 50,000 psi unless otherwise noted



SHIM DETAIL
DETAIL B



UPPER CHORD PLATE
DETAIL C
See Note 4

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD, TYPES 5 AND 10, OVERHEAD SIGN MOUNTED)

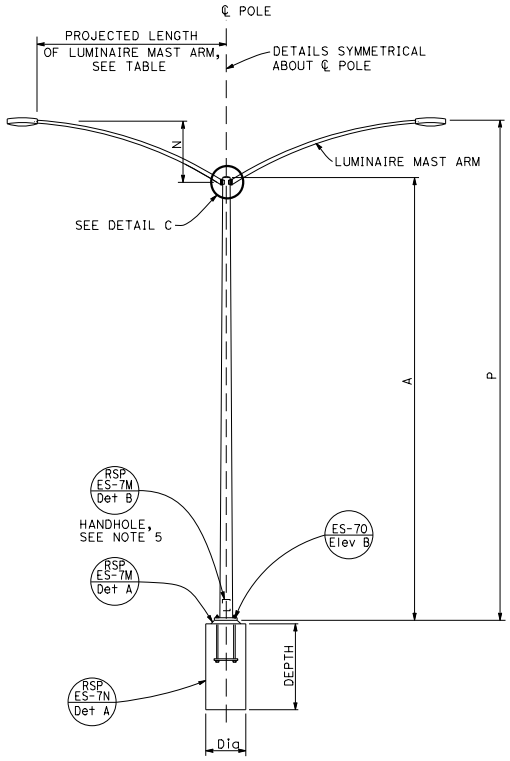
NO SCALE

RSP ES-6C DATED APRIL 20, 2018 SUPERSEDES RSP ES-6C DATED JULY 15, 2016 AND STANDARD PLAN ES-6C DATED OCTOBER 30, 2015 - PAGE 451 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-6C

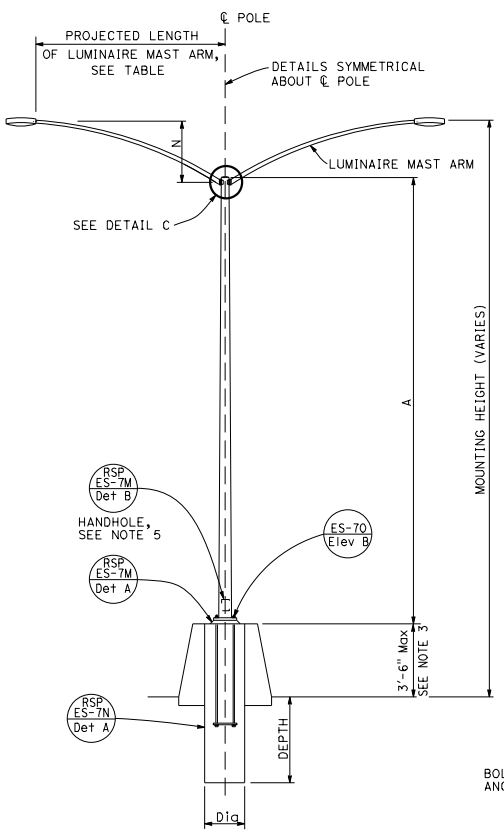
2015 REVISED STANDARD PLAN RSP ES-6C

11-15-17



TYPE 15D AND TYPE 21D

ELEVATION A



TYPE 15D AND TYPE 21D
MEDIAN BARRIER MOUNTED

ELEVATION B

NOTES:

1. [ ] Indicates mast arm length to be used unless otherwise noted on the plans.
2. For additional notes and details, see Revised Standard Plans RSP ES-7M and RSP ES-7N.
3. See Concrete Barrier Details Type 60MF and 60MSF.
4. For locations with one arm, plug unused cap screw holes and chased outlet with galvanized cap screws and knockout plug.
5. Handhole shall be located perpendicular to the luminaire mast arm and as directed by the Engineer.

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Registered Professional Engineer — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 — CIVIL — State of California

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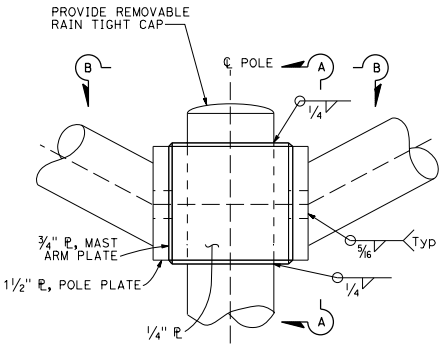
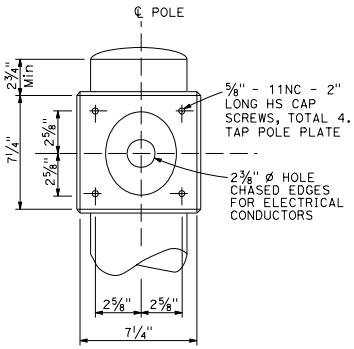
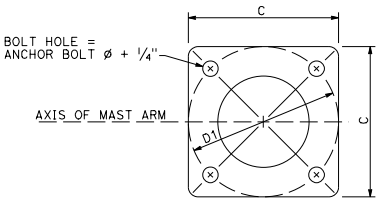
TO ACCOMPANY PLANS DATED _____



DETAIL C

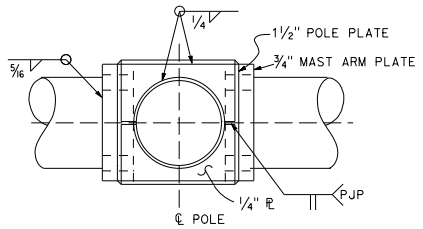


SECTION A-A



BASE PLATE

DETAIL B



SECTION B-B

POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH PILE FOUNDATION	
	A HEIGHT	Min OD BASE	Min OD TOP	Min THICKNESS	C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	Dia	DEPTH
15D	30'-0"	8"	3 11/16"	0.1793"	1'-0"	1'-0"	1 1/2"	1 1/4" ø x 42"	2'-6"	7'-0"
21D	35'-0"	8 5/8"								

LUMINAIRE MAST ARM DATA					
PROJECTED LENGTH	N RISE	Min OD AT POLE	NOMINAL THICKNESS	P TYPE 15D	P TYPE 21D
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 7/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD, TYPES 15D AND 21D, DOUBLE LUMINAIRE MAST ARM)

NO SCALE

RSP ES-6D DATED APRIL 20, 2018 SUPERSEDES RSP ES-6D DATED JULY 21, 2017 AND RSP ES-6D DATED JULY 15, 2016 AND STANDARD PLAN ES-6D DATED OCTOBER 30, 2015 - PAGE 452 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-6D

2015 REVISED STANDARD PLAN RSP ES-6D

12-1-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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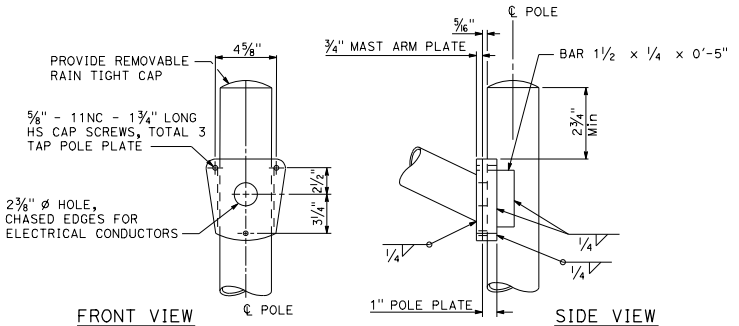
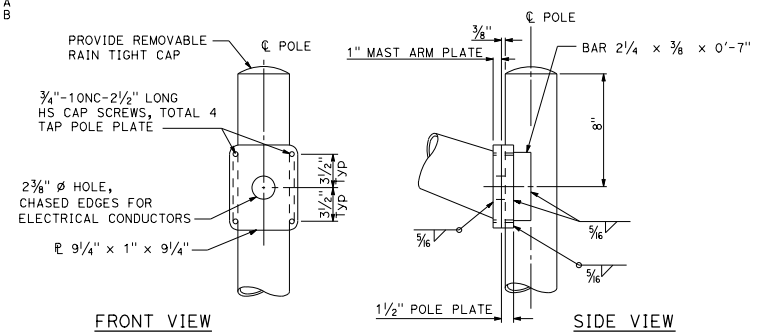
TO ACCOMPANY PLANS DATED _____

LUMINAIRE MAST ARM DATA			
PROJECTED LENGTH	THICKNESS	MINIMUM OD AT POLE	MOUNTING HEIGHT
* 6'-0"	0.1196"	3¼"	36'-9"±
* 8'-0"		3½"	37'-3"±
* 10'-0"		3⅞"	38'-0"±
* 12'-0"			39'-0"±
* 15'-0"		4¼"	39'-6"±
** 20'-0"	0.1793"	5"	37'-0"±

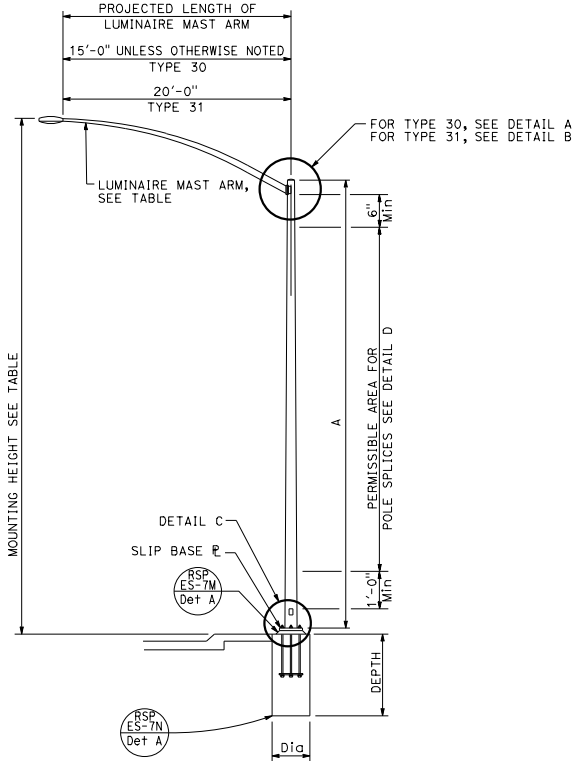
* TYPE 30
** TYPE 31



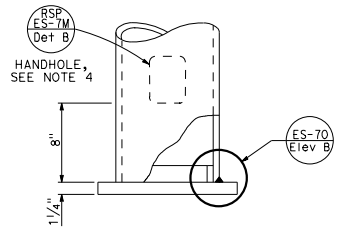
TYPE 30
DETAIL A



TYPE 31
DETAIL B



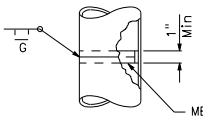
ELEVATION A



DETAIL C

NOTES:

1. For slip base plate details, see Standard Plan ES-6F.
2. For Type 30 fixed base use Type 15 base plate and foundation shown on Revised Standard Plan RSP ES-6A. Use 1¼" Dia x 3'-6" anchor bolts.
3. For Type 31 fixed base use Type 32 base plate, anchor bolts and foundation on Revised Standard Plan RSP ES-6G.
4. Handhole shall be located on the downstream side of traffic.
5. For additional notes and details, see Revised Standard Plans RSP ES-7M and RSP ES-7N.



POLE SPLICE
DETAIL D

POLE TYPE	POLE DATA				CIDH PILE FOUNDATION	
	A HEIGHT	Min OD BASE	Min OD TOP	Min THICKNESS	Dia	DEPTH
30	35'-0"	8¾"	3⅛"	0.1196"	2'-6"	7'-0"
31		10¾"	5⅛"	0.1793"	3'-0"	8'-0"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD, TYPES 30 AND 31)

NO SCALE

RSP ES-6E DATED JULY 21, 2017 SUPERSEDES RSP ES-6E DATED JULY 15, 2016 AND STANDARD PLAN ES-6E DATED OCTOBER 30, 2015 - PAGE 453 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-6E

2015 REVISED STANDARD PLAN RSP ES-6E

4-25-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

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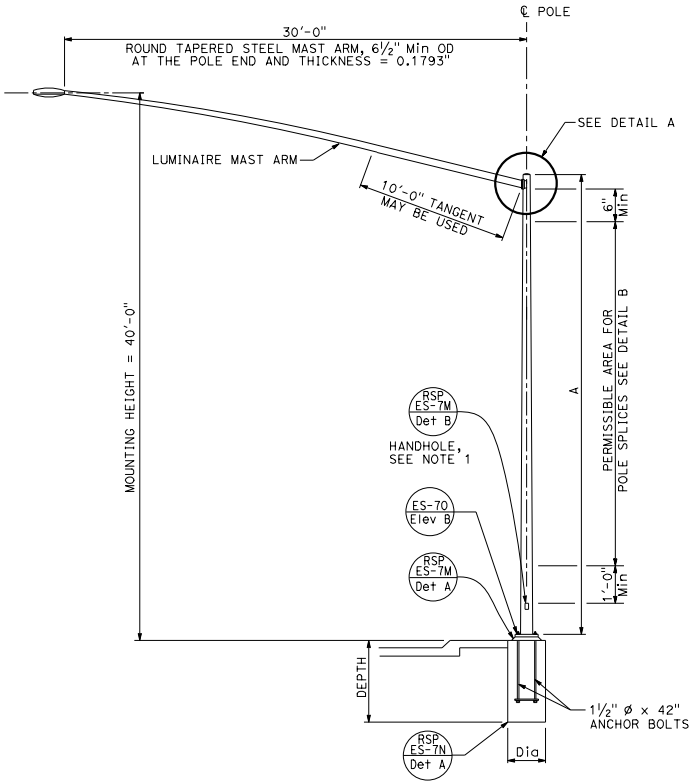
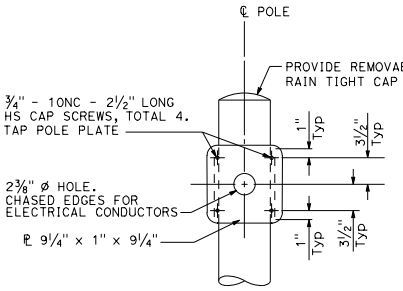
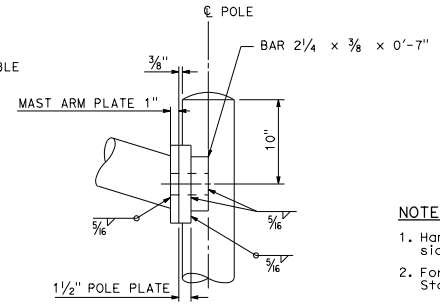
TO ACCOMPANY PLANS DATED _____



ELEVATION A



FRONT VIEW

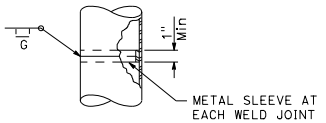


SIDE VIEW

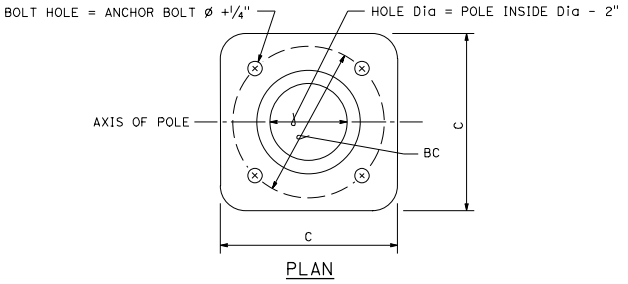
DETAIL A

NOTES:

1. Handhole shall be located on the downstream side of traffic.
2. For additional notes and details, see Revised Standard Plans RSP ES-7M and RSP ES-7N.



POLE SPLICE
DETAIL B



PLAN

BASE PLATE DETAIL
DETAIL C

POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH PILE FOUNDATION	
	A HEIGHT	Min OD BASE	Min OD TOP	Min THICKNESS	C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	Dia	DEPTH
32	35'-0"	10¾"	5 11/16"	0.1793"	1'-5"	1'-3"	2"	1½" ø x 42"	3'-0"	8'-0"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD, TYPE 32)

NO SCALE

RSP ES-6G DATED JULY 21, 2017 SUPERSEDES RSP ES-6G DATED JULY 15, 2016 AND STANDARD PLAN ES-6G DATED OCTOBER 30, 2015 - PAGE 455 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-6G

2015 REVISED STANDARD PLAN RSP ES-6G

4-28-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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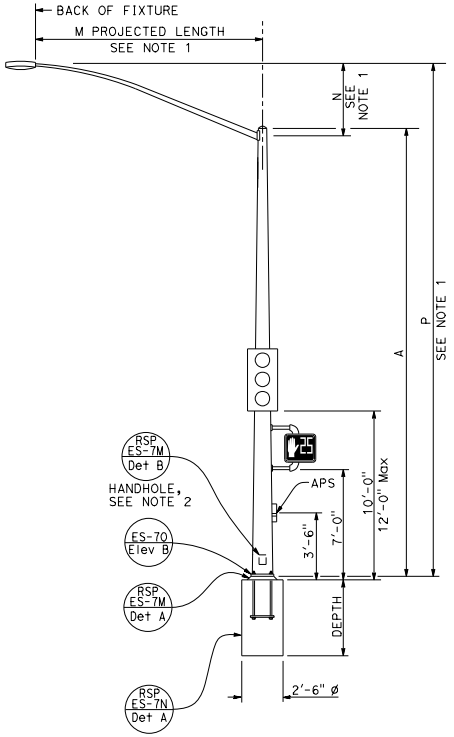
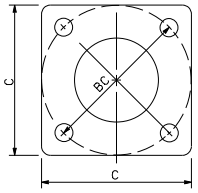
TO ACCOMPANY PLANS DATED _____

NOTES:

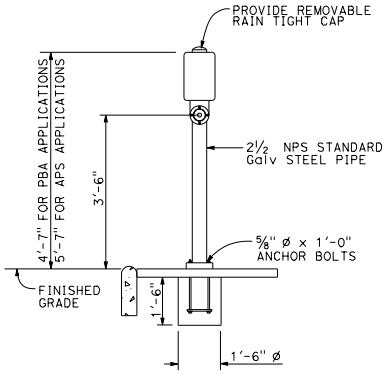
1. For additional notes, details and data for Type 15TS and Type 21TS Standards, see Revised Standard Plan RSP ES-6A.
2. Handhole shall be located on the downstream side of traffic.



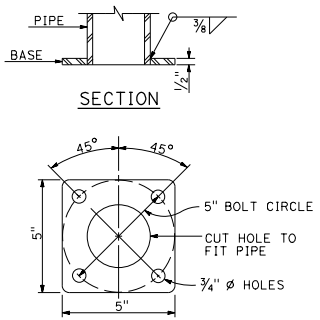
TYPE 15TS AND 21TS STANDARD
ELEVATION A
(See Note 1)



BASE PLATE
TYPE 15TS AND 21TS
DETAIL A

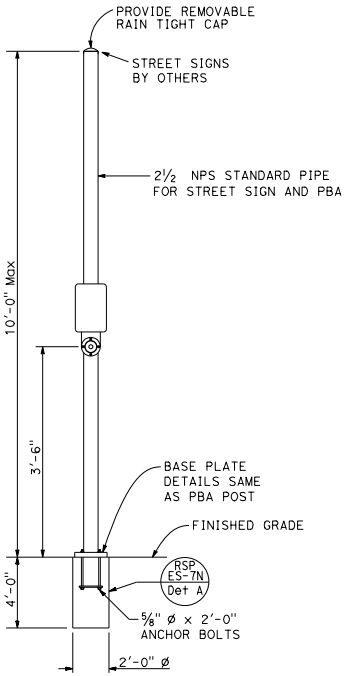


ELEVATION



BASE PLATE
PBA POST

PUSH BUTTON ASSEMBLY POST
DETAIL B



COMBINED STREET SIGN PUSH BUTTON ASSEMBLY POST
DETAIL C

POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH
	A HEIGHT	Min OD BASE	Min OD TOP	WALL THICKNESS	C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	DEPTH
15TS	30'-0"	8"	3⅛"	0.1793"	1'-1½"	1'-0"	2"	1½" ø x 42"	7'-6"
21TS	35'-0"	9⅜"	3⅜"		1'-3"	1'-2"			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 JULY 21, 2017 SUPERSEDES RSP ES-7A DATED JULY 15, 2016 AND STANDARD PLAN ES-7A DATED OCTOBER 30, 2015 - PAGE 456 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7A

2015 REVISED STANDARD PLAN RSP ES-7A

4-7-17

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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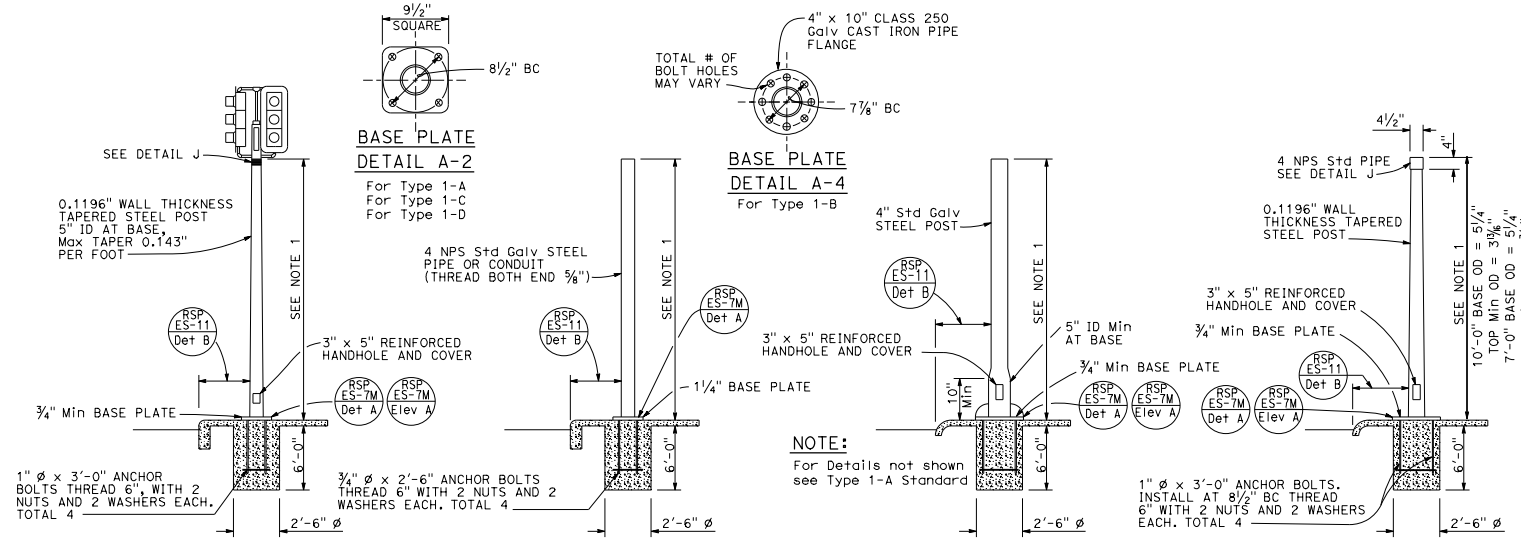
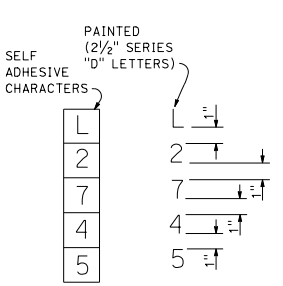
TO ACCOMPANY PLANS DATED _____



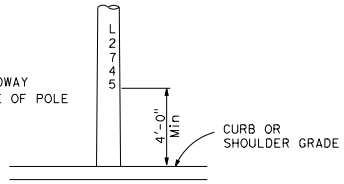
TYPE 1 SIGNAL STANDARDS
DETAIL A

NOTES:

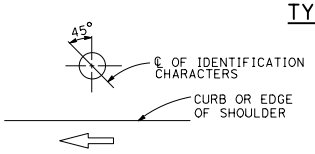
1. Standards shall be 10'-0" ± 2" for vehicle signals and 7'-0" ± 2" for pedestrian signals unless shorter pole is noted on project plans.
2. Top of standards shall be 4½" OD.
3. Conduits shall extend 2" maximum above finished surface of foundation and for Types 1-A, 1-C and 1-D shall be sloped toward handhole.
4. Anchor bolts shall be bonded to conduit or grounding conductor.
5. For additional notes and details, see Revised Standard Plans RSP ES-7M and RSP ES-7N.
6. Pour foundation concrete against undisturbed soil.
7. For standards with handhole, locate in the downstream side of traffic.
8. Coupling nuts to be used only when shown or specified on project plans.



IDENTIFICATION CHARACTER DETAIL
DETAIL B-1

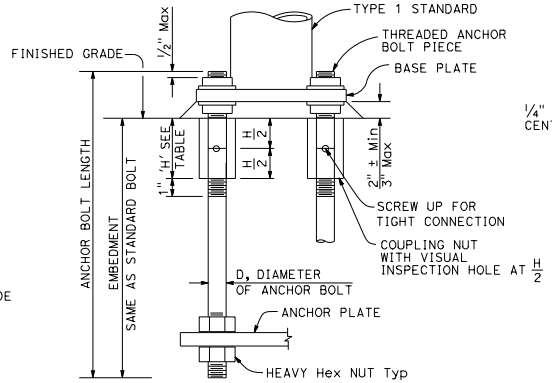


TYPICAL IDENTIFICATION CHARACTER FORMAT
DETAIL B-2

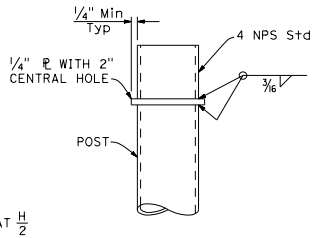


DETAIL B-3

LOCATION OF EQUIPMENT IDENTIFICATION CHARACTERS ON STANDARDS AND POSTS
DETAIL B



ANCHOR BOLTS WITH SLEEVE NUTS
DETAIL C
(See Note 8)



DETAIL J

COUPLING NUT TABLE	
BOLT DIAMETER	NUT TABLE THICKNESS 'H'
¾"	2¼"
1"	3"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, TYPE 1 AND EQUIPMENT IDENTIFICATION CHARACTERS)

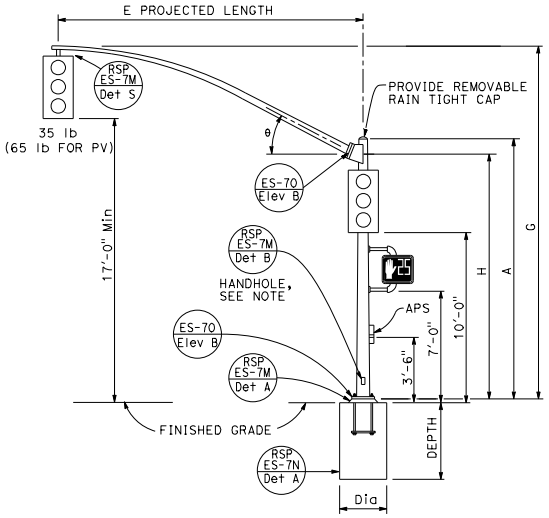
NO SCALE

RSP ES-7B DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN ES-7B DATED OCTOBER 30, 2015 - PAGE 457 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7B

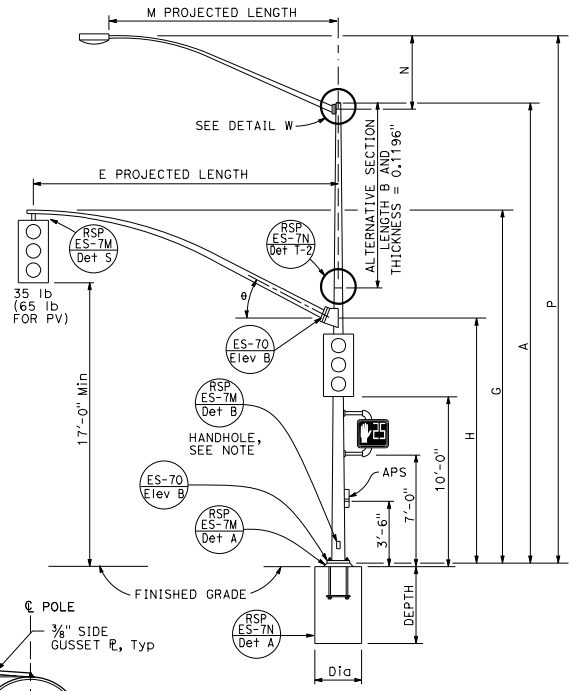
2015 REVISED STANDARD PLAN RSP ES-7B

6-20-16



TYPE 16-1-100, 18-1-100

ELEVATION A



TYPE 19-1-100, 19A-1-100

ELEVATION B

NOTES:

1. Handhole shall be located on the downstream side of traffic.
2. Δ = Luminaire mast arm skew -90° or +90° default 0°

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

REGISTERED CIVIL ENGINEER

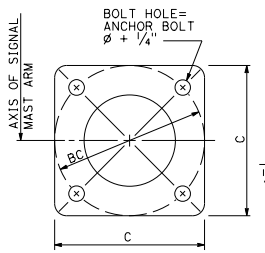
April 20, 2018

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 — CIVIL — STATE OF CALIFORNIA

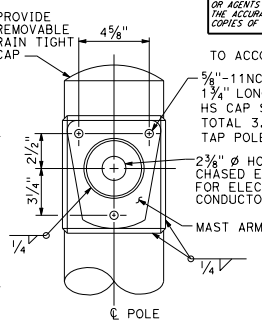
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

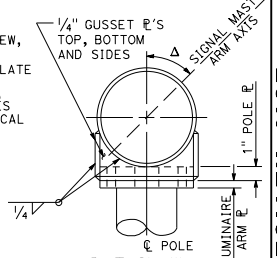


DETAIL D

BASE PLATE



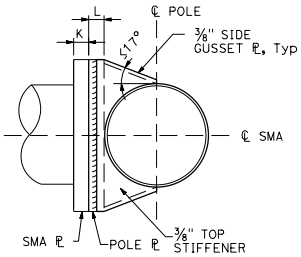
DETAIL W-1



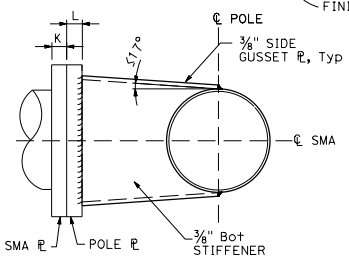
DETAIL W-2

LUMINAIRE MAST ARM CONNECTION

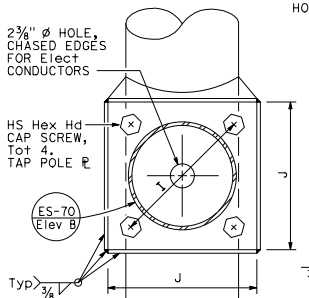
DETAIL W



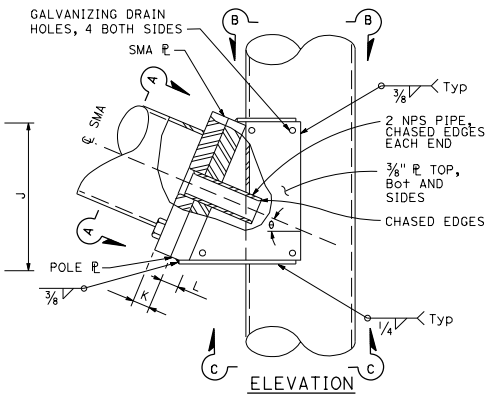
SECTION B-B



SECTION C-C



SECTION A-A



ELEVATION

SIGNAL MAST ARM CONNECTION

DETAIL A

SIGNAL MAST ARM DATA										
E PROJECTED LENGTH	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℄ THICKNESS	L POLE ℄ THICKNESS	θ
15'-0"	21'-8"±	17'-6"	7 7/8"	0.1793"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°
20'-0"			8"							
25'-0"	22'-8"±	16'-0"	9"				1'-1"			
30'-0"	23'-0"±		10"							

LUMINAIRE MAST ARM DATA						
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT	
				30'-0" POLE	35'-0" POLE
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 7/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA							BASE PLATE DATA				LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION	
			A HEIGHT	Min OD		THICKNESS	ALTERNATIVE SECTION			C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE			Dia	DEPTH
				BASE	TOP		B LENGTH	BOTTOM	TOP								
16-1-100	1	100	18'-6"	12"	9 3/8"	0.2391" OR 0.25"	None			1'-6"	1'-4"	2"	1 3/4"Ø x 42"	NONE	15'-0", 20'-0"	3'-0"	9'-0"
18-1-100			17'-0"				None							NONE			
19-1-100			30'-0"	14"	9 3/4"		10'-0"	1 1/8"	9 3/4"	1'-10"	1'-8"	2 1/2"	2"Ø x 42"	6'-15' 12'-0"	25'-0", 30'-0"	3'-6"	10'-0"
19A-1-100			35'-0"		9"		15'-0"							6'-15' 15'-0"			

INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 1 SIGNAL MAST ARM LOADING, WIND VELOCITY = 100 MPH AND SIGNAL MAST ARM LENGTHS 15' TO 30')

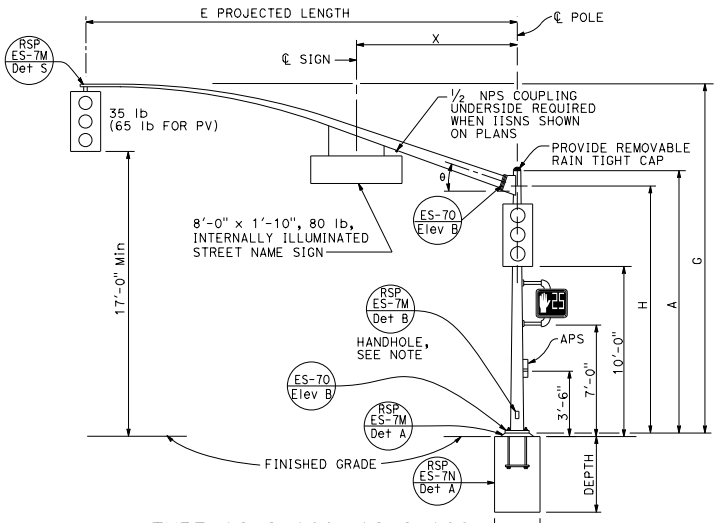
NO SCALE

RSP ES-7C DATED APRIL 20, 2018 SUPERSEDES RSP RSP ES-7C DATED JULY 21, 2017 AND RSP ES-7C DATED JULY 15, 2016 AND STANDARD PLAN ES-7C DATED OCTOBER 30, 2015 - PAGE 458 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7C

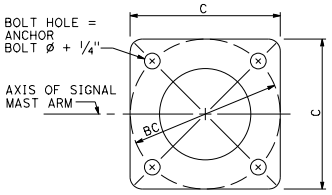
2015 REVISED STANDARD PLAN RSP ES-7C

11-15-17



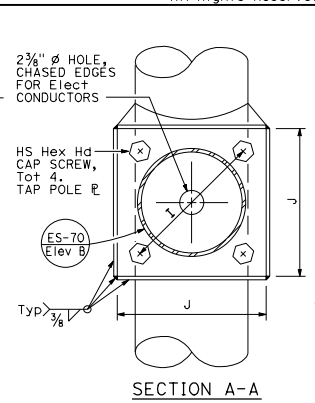
TYPE 16-2-100, 18-2-100

ELEVATION A

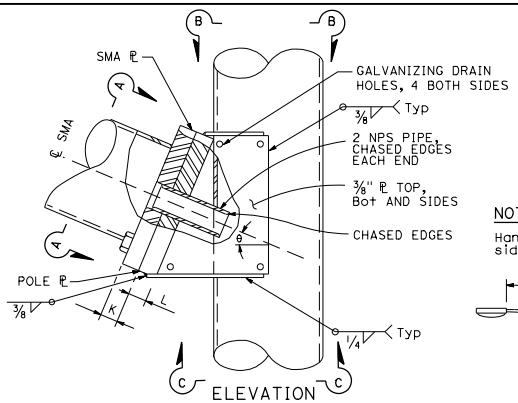


BASE PLATE

DETAIL B



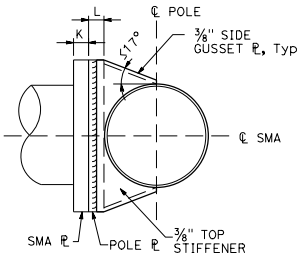
SECTION A-A



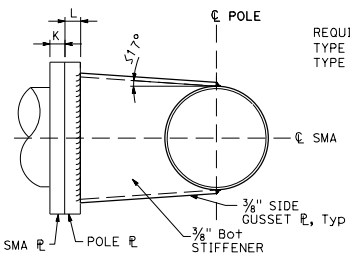
ELEVATION

SIGNAL MAST ARM CONNECTION

DETAIL A



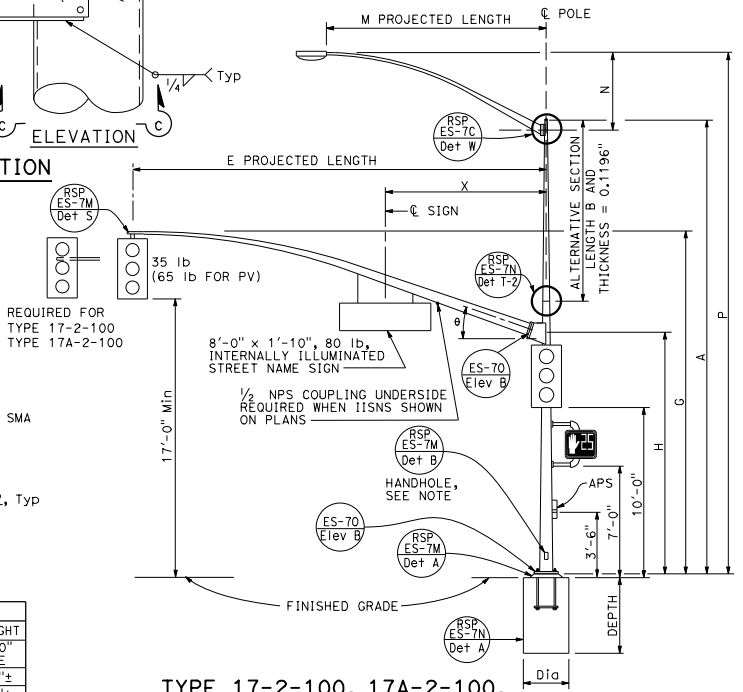
SECTION B-B



SECTION C-C

NOTE: TO ACCOMPANY PLANS DATED _____

Handhole shall be located on the downstream side of traffic.



TYPE 17-2-100, 17A-2-100, 19-2-100, 19A-2-100

ELEVATION B

SIGNAL MAST ARM DATA											
E PROJECTED LENGTH	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℄ THICKNESS	L POLE ℄ THICKNESS	θ	X Max
15'-0"	21'-8"±	17'-6"	7⅜"	0.1793"	12"	1¼"-7NC-3"	1'-1"	1¼"	1½"	23°	10'-6"
20'-0"	21'-8"±		8"								
25'-0"	22'-8"±	16'-0"	9"				1'-3"				
30'-0"	23'-0"±		10"	0.2391"							

LUMINAIRE MAST ARM DATA					
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT 30'-0" POLE	P MOUNTING HEIGHT 35'-0" POLE
6'-0"	2'-0"±	3¼"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3½"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3⅞"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4¼"		34'-3"±	39'-3"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA						BASE PLATE DATA				LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION	
			A HEIGHT	Min OD BASE	Min OD TOP	THICKNESS	ALTERNATIVE SECTION B LENGTH	ALTERNATIVE SECTION BOTTOM	ALTERNATIVE SECTION TOP	C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE			Dia	DEPTH
16-2-100	2	100	18'-6"	14"	11⅜"	0.2391" OR 0.25"				1'-10"	1'-8"	2½"	2"ø x 42"	NONE	15'-0", 20'-0"	3'-6"	10'-0"
17-2-100			30'-0"		9¾"		10'-0"	1⅛"	9¾"					6'-15' 12'-0"			
17A-2-100			35'-0"		9"		15'-0"		9"					6'-15' 15'-0"			
18-2-100			17'-0"		11⅝"									None	25'-0", 30'-0"		
19-2-100			30'-0"		9¾"		10'-0"	1⅛"	9¾"					6'-15' 12'-0"			
19A-2-100			35'-0"	16"	11"		15'-0"	1⅜"	11"	1'-11"	1'-9"	3"	2¼"ø x 42"	6'-15' 15'-0"			12'-0"

INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

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

REGISTERED CIVIL ENGINEER

July 21, 2017

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — 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

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 2 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 15' TO 30')

NO SCALE

RSP ES-7D DATED JULY 21, 2017 SUPERSEDES RSP ES-7D DATED JULY 15, 2016 STANDARD PLAN ES-7D DATED OCTOBER 30, 2015 - PAGE 459 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7D

2015 REVISED STANDARD PLAN RSP ES-7D

4-7-17

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

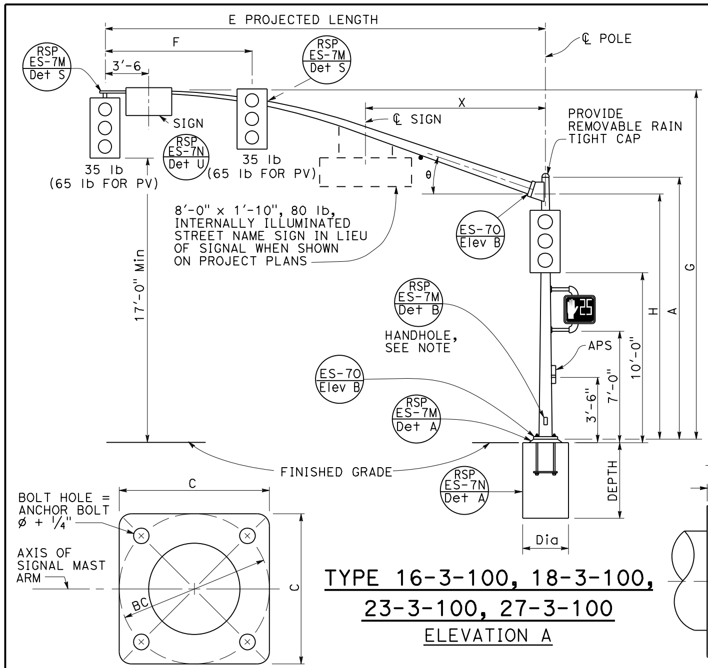
Stanley P. Johnson (signature)
REGISTERED CIVIL ENGINEER
July 21, 2017
PLANS APPROVAL DATE

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 — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED ______

NOTE:
Handhole shall be located on the downstream side of traffic.

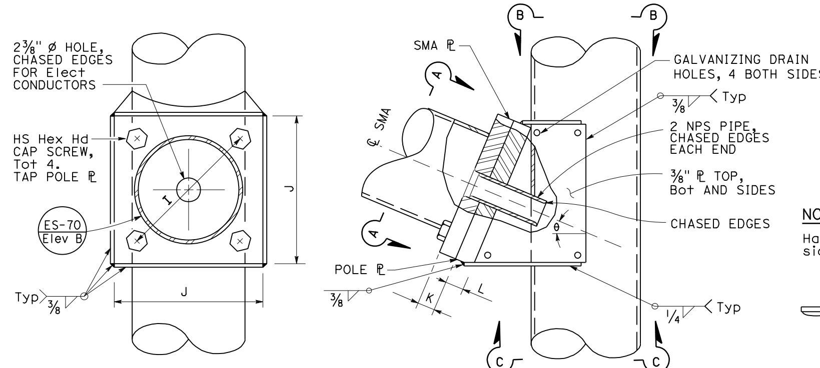


TYPE 16-3-100, 18-3-100, 23-3-100, 27-3-100

ELEVATION A

BASE PLATE

DETAIL B

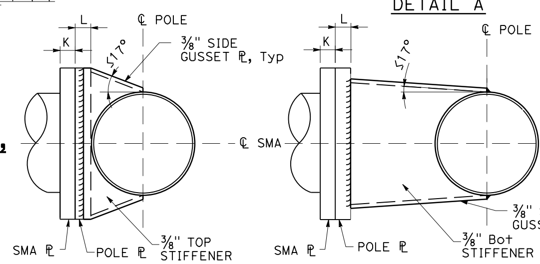


SECTION A-A

ELEVATION

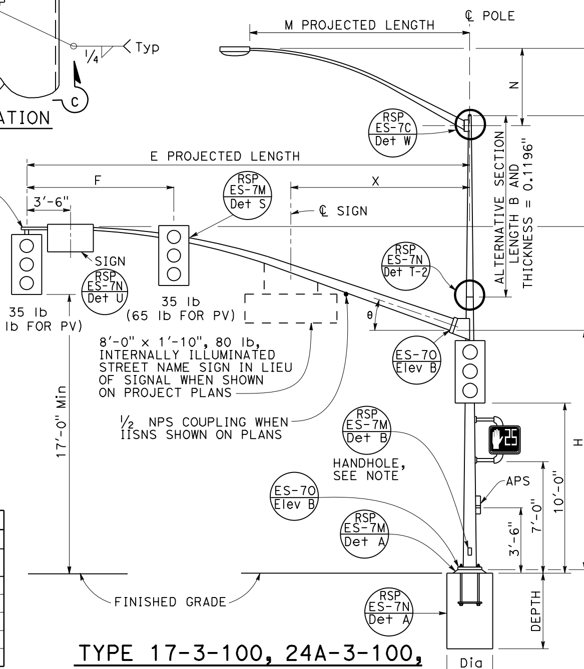
SIGNAL MAST ARM CONNECTION

DETAIL A



SECTION B-B

SECTION C-C



TYPE 17-3-100, 24A-3-100, 19-3-100, 26-3-100, 19A-3-100, 26A-3-100, 24-3-100

ELEVATION B

SIGNAL MAST ARM DATA

E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℙ THICKNESS	L POLE ℙ THICKNESS	θ	X Max
15'-0"	8'-0"	21'-8"±	17'-6"	7 3/8"	0.1793"	12"	1 1/4"-7NC-3"	1'-3"	1 1/4"	1 1/2"	23°	-
20'-0"		21'-8"±		7 3/8"								
25'-0"	12'-0"	22'-8"±	16'-0"	7 3/8"	0.2391"							10'-6"
30'-0"		23'-0"±		8"								
35'-0"	14'-0"			8 3/4"		13"			1 1/2"	1 3/4"	21°	
40'-0"	15'-0"			9 3/8"							15°	13'-0"
45'-0"		23'-8"±		10 1/16"				1'-5"				

LUMINAIRE MAST ARM DATA

M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT 30'-0" POLE	P MOUNTING HEIGHT 35'-0" POLE
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 7/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA: A HEIGHT	POLE DATA: Min OD BASE	POLE DATA: Min OD TOP	POLE DATA: THICKNESS	ALTERNATIVE SECTION: B LENGTH	ALTERNATIVE SECTION: BOTTOM	ALTERNATIVE SECTION: TOP	BASE PLATE DATA: C	BASE PLATE DATA: BC = BOLT CIRCLE	BASE PLATE DATA: THICKNESS	BASE PLATE DATA: ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION: Dia	CIDH PILE FOUNDATION: DEPTH
16-3-100	3	100	18'-6"	16"	13 3/8"	0.2391" OR 0.25"				1'-11"	1'-9"	3"	2 1/4" ø x 42"	NONE	15'-0", [20'-0"]	3'-6"	12'-0"
17-3-100			30'-0"		11 3/4"		10'-0"	13 1/8"	11 3/4"					6'-15' [12'-0"]			
18-3-100			17'-0"		13 5/8"									NONE	25'-0", [30'-0"]		
19-3-100			30'-0"		11 3/4"		10'-0"	13 1/8"	11 3/4"					6'-15' [12'-0"]			
19A-3-100			35'-0"		11"	0.3125"	15'-0"		11"					6'-15' [15'-0"]			
23-3-100			17'-0"		13 5/8"	0.2391" OR 0.25"								NONE	35'-0"		
24-3-100			30'-0"		11 3/4"	0.3125"	10'-0"	13 1/8"	11 3/4"					6'-15' [12'-0"]			
24A-3-100			35'-0"		11"		15'-0"		11"					6'-15' [15'-0"]			
26-3-100			30'-0"	18"	13 3/4"		10'-0"	15 1/8"	13 3/4"	2'-1"	1'-11"			6'-15' [12'-0"]	40'-0", [45'-0"]		13'-0"
26A-3-100			35'-0"		13"		15'-0"		13"					6'-15' [15'-0"]			
27-3-100			17'-0"		15 5/8"									NONE			

[ ] INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 3 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 15' TO 45')

NO SCALE

RSP ES-7E DATED JULY 21, 2017 SUPERSEDES RSP ES-7E DATED JULY 15, 2016 AND STANDARD PLAN ES-7E DATED OCTOBER 30, 2015 - PAGE 460 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7E

2015 REVISED STANDARD PLAN RSP ES-7E

4-7-17

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

REGISTERED CIVIL ENGINEER

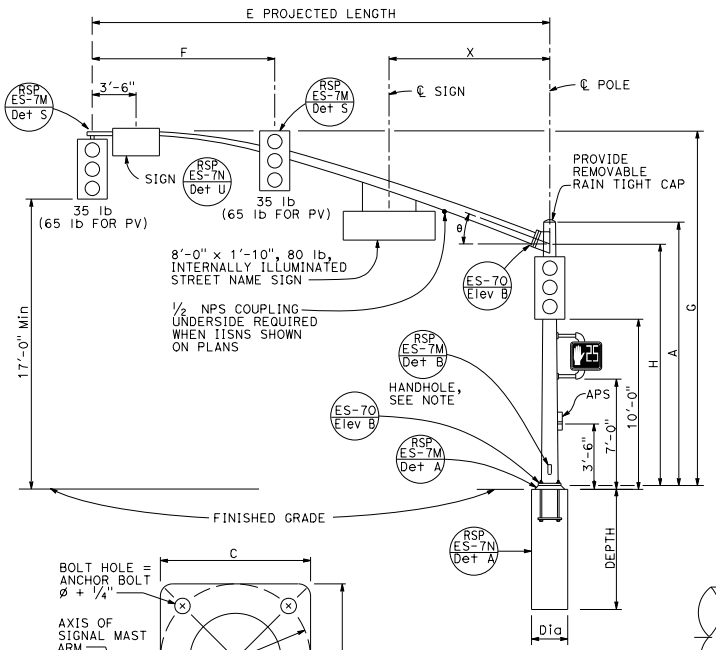
July 21, 2017
PLANS APPROVAL DATE

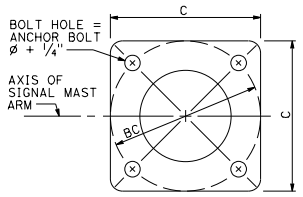
Registered Professional Engineer — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — State of California

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: TO ACCOMPANY PLANS DATED _____

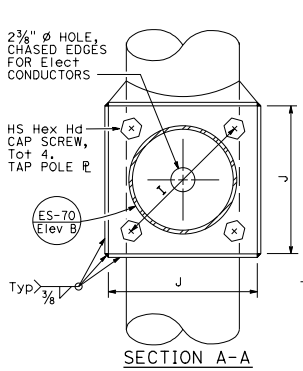
Handhole shall be located on the downstream side of traffic.



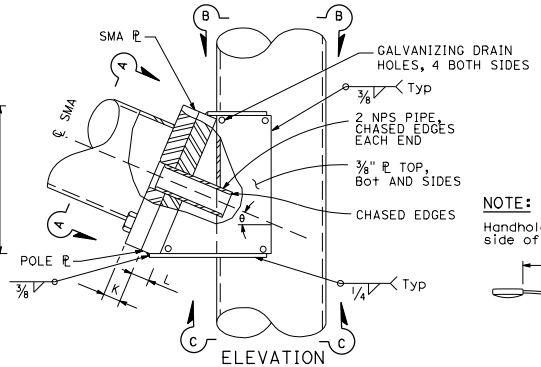


BASE PLATE
DETAIL B

TYPE 18-4-100, 23-4-100, 27-4-100
ELEVATION A

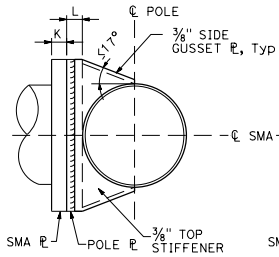


SECTION A-A

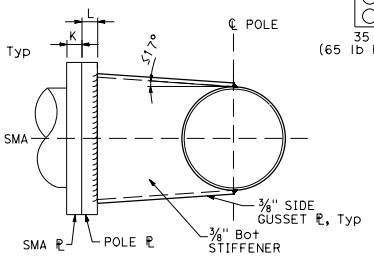


ELEVATION

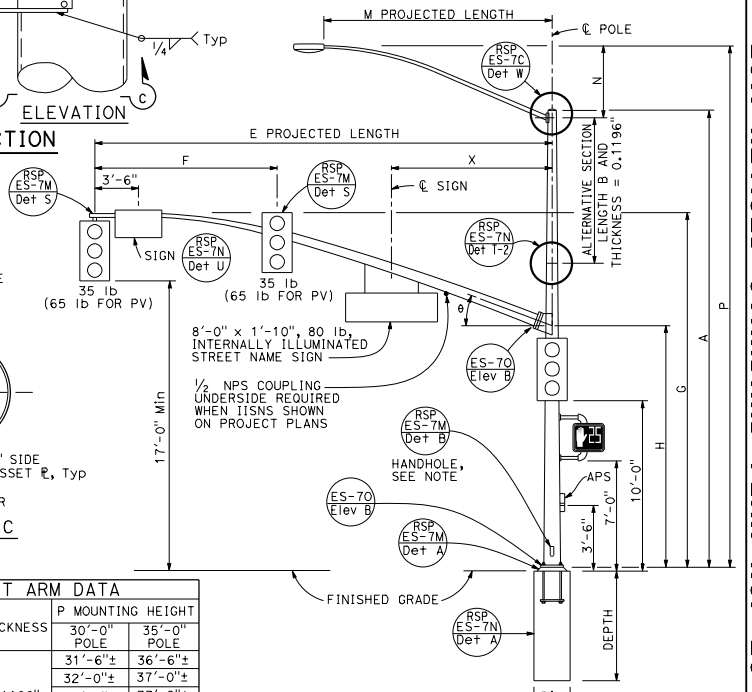
SIGNAL MAST ARM CONNECTION
DETAIL A



SECTION B-B



SECTION C-C



TYPE 19-4-100, 19A-4-100, 24-4-100, 24A-4-100, 26-4-100, 26A-4-100
ELEVATION B

NO SCALE

SIGNAL MAST ARM DATA											
E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℄ THICKNESS	L POLE ℄ THICKNESS	θ	X Max
25'-0"	10'-0"	22'-8"±	16'-0"	7⅜"	0.2391"	12"	1¼"-7NC-3"	1'-3"	1¼"	1½"	23°	10'-6"
30'-0"	12'-0"	23'-0"±		8"								
35'-0"	14'-0"			8⅛"		13½"			1½"	1¾"	21°	13'-0"
40'-0"	15'-0"			9⅜"				1'-5"			15°	
45'-0"		23'-8"±		10¼"								

LUMINAIRE MAST ARM DATA					
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT 30'-0" POLE	P MOUNTING HEIGHT 35'-0" POLE
6'-0"	2'-0"±	3¼"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3½"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3⅞"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4¼"		34'-3"±	39'-3"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA: A HEIGHT	Min OD BASE	Min OD TOP	THICKNESS	ALTERNATIVE SECTION B LENGTH	ALTERNATIVE SECTION BOTTOM	ALTERNATIVE SECTION TOP	BASE PLATE DATA: C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION: Dia	DEPTH
18-4-100	4	100	17'-0"	16"	13⅝"	0.2391" OR 0.25"				1'-11"	1'-9"	3"	2¼"ø x 42"	NONE	25'-0", 30'-0"	3'-6"	12'-0"
19-4-100			30'-0"		11¾"		10'-0"	13⅛"	11¾"					6'-15' 12'-0"			
19A-4-100			35'-0"		11"		15'-0'	13⅛"	11"					6'-15' 15'-0"			
23-4-100			17'-0"		13⅝"	0.3125"								NONE	35'-0"		
24-4-100			30'-0"		11¾"		10'-0"	15⅛"	13¾"					6'-15' 12'-0"			
24A-4-100			35'-0"		11"		15'-0"	13⅛"	11"					6'-15' 15'-0"			
26-4-100			30'-0"	18"	13¾"		10'-0"	15⅛"	13¾"	2'-1"	1'-11"			6'-15' 12'-0"	40'-0", 45'-0"		13'-0"
26A-4-100			35'-0"		13"		15'-0"	15⅛"	13"					6'-15' 15'-0"			
27-4-100			17'-0"		15⅝"									NONE			

INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

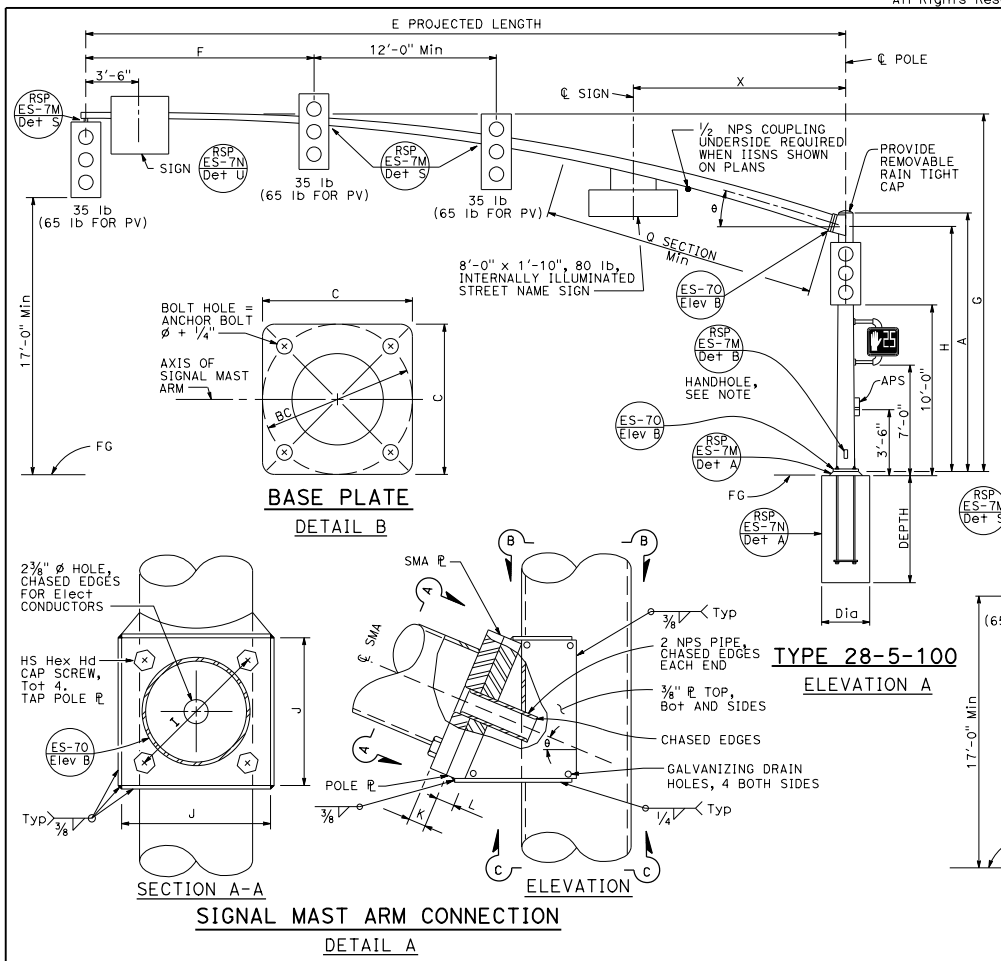
ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 4 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 25' TO 45')

RSP ES-7F DATED JULY 21, 2017 SUPERSEDES RSP ES-7F DATED JULY 15, 2016 AND STANDARD PLAN ES-7F DATED OCTOBER 30, 2015 - PAGE 461 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7F

2015 REVISED STANDARD PLAN RSP ES-7F

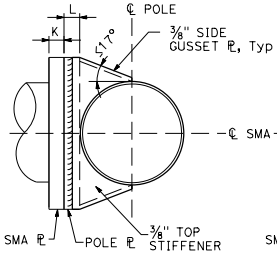
4-7-17



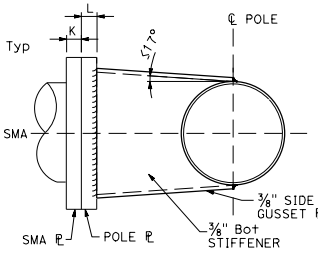
BASE PLATE
DETAIL B

SIGNAL MAST ARM CONNECTION
DETAIL A

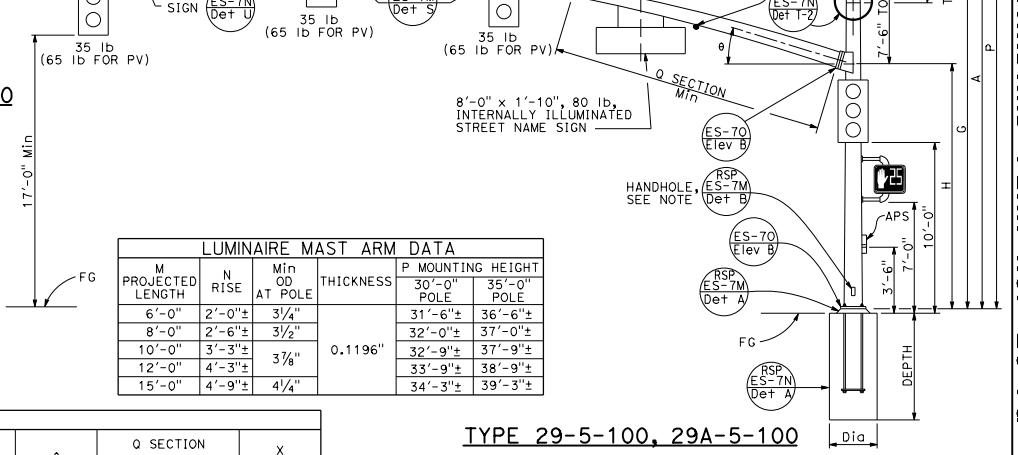
TYPE 28-5-100
ELEVATION A



SECTION B-B



SECTION C-C



TYPE 29-5-100, 29A-5-100
ELEVATION B

LUMINAIRE MAST ARM DATA					
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT 30'-0" POLE	P MOUNTING HEIGHT 35'-0" POLE
6'-0"	2'-0"±	3¼"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3½"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3⅞"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4¼"		34'-3"±	39'-3"±

SIGNAL MAST ARM DATA													
E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℄ THICKNESS	L POLE ℄ THICKNESS	θ	Q SECTION LENGTH	Q SECTION THICKNESS	X Max
50'-0"	15'-0"	23'-7"± TO 25'-7"±	16'-0"	11 7/16"	0.1793"	16"	1½"-6NC-3¼"	1'-9"	1¾"	1¾"	15°	18'-0"	0.2391"	14'-0"
55'-0"				1'-1¼"								23'-0"		

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA A HEIGHT	Min OD BASE	Min OD TOP	THICKNESS	ALTERNATIVE SECTION B LENGTH	ALTERNATIVE SECTION BOTTOM	ALTERNATIVE SECTION TOP	BASE PLATE DATA C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION Dia	CIDH PILE FOUNDATION DEPTH
28-5-100	5	100	17'-0"	22"	19 5/16"	0.375"				2'-6"	2'-4"	3"	2¼"Ø x 42"	NONE	50'-0", [55'-0"]	4'-0"	14'-0"
29-5-100			30'-0"		17¾"		10'-0"	19⅛"	17¾"					6'-15' [15'-0"]			
29A-5-100			35'-0"		17"		15'-0"		17"								

[ ] INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

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

REGISTERED CIVIL ENGINEER
July 21, 2017
PLANS APPROVAL DATE
REGISTERED PROFESSIONAL ENGINEER Stanley P. Johnson No. C57793 Exp. 3-31-18 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.

TO ACCOMPANY PLANS DATED _____

NOTE:
Handhole shall be located on the downstream side of traffic.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 5 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 50' TO 55')

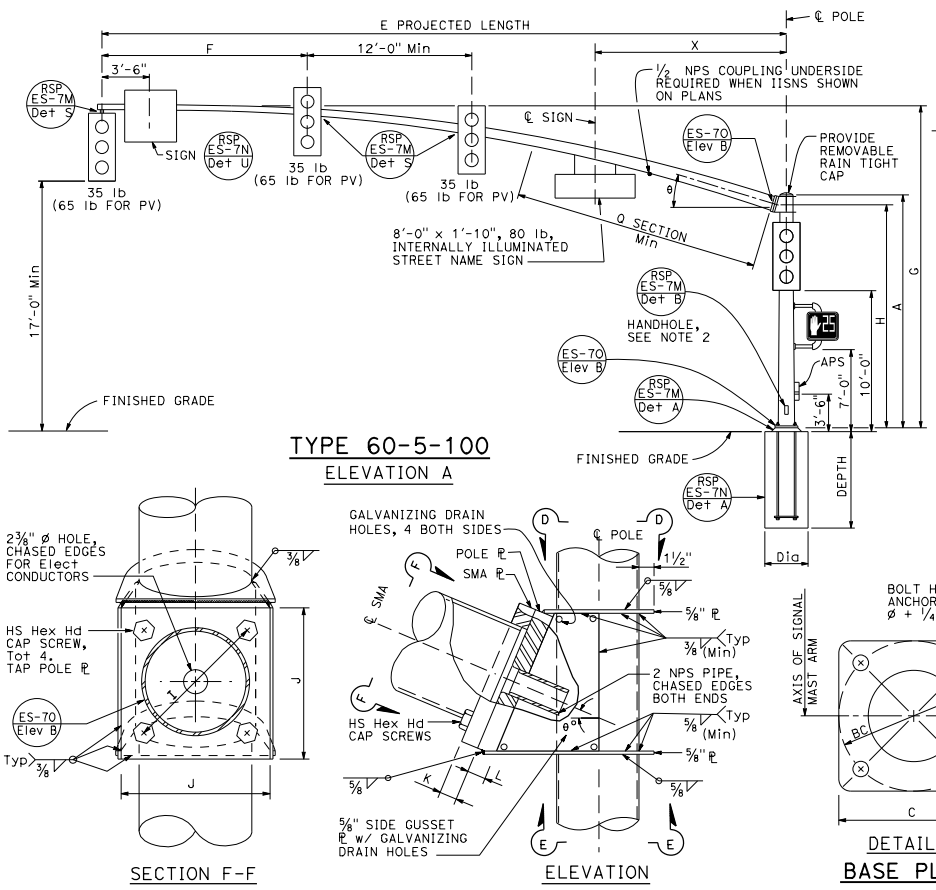
NO SCALE

RSP ES-7G DATED JULY 21, 2017 SUPERSEDES RSP ES-7G DATED JULY 15, 2016 AND STANDARD PLAN ES-7G DATED OCTOBER 30, 2015 - PAGE 462 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7G

2015 REVISED STANDARD PLAN RSP ES-7G

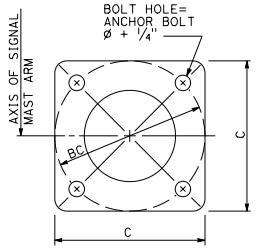
4-7-17



TYPE 60-5-100
ELEVATION A

SECTION F-F

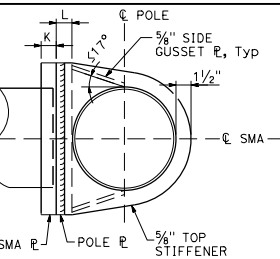
ELEVATION



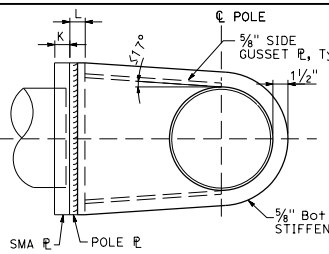
DETAIL B
BASE PLATE

SIGNAL MAST ARM CONNECTION
DETAIL B

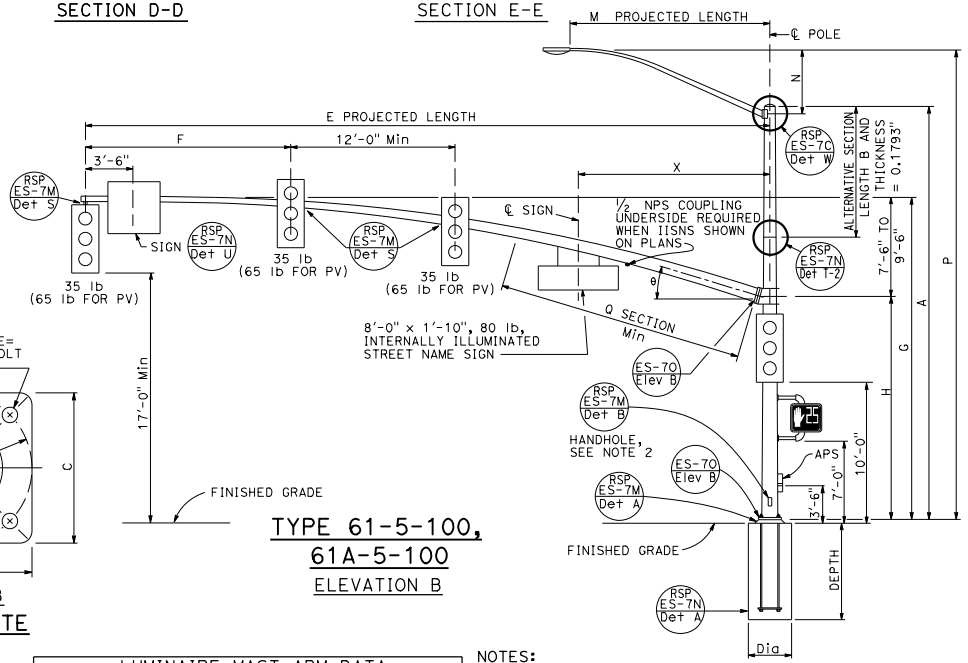
SIGNAL MAST ARM DATA														
E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℄ THICKNESS	L POLE ℄ THICKNESS	θ	Q SECTION LENGTH	Q SECTION THICKNESS	X Max
60'-0"	15'-0"	23'-7" TO 25'-7"	16'-0"	1'-1½"	0.1793"	20"	1½"-6NC-4"	2'-0"	2"	2"	15°	24'-0"	0.2391"	14'-0"
65'-0"					0.2391"							29'-0"	0.3125"	



SECTION D-D



SECTION E-E



TYPE 61-5-100,
61A-5-100
ELEVATION B

LUMINAIRE MAST ARM DATA						
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT 30'-0" POLE	P MOUNTING HEIGHT 35'-0" POLE
6'-0"	2'-0"±	3¼"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3½"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3⅞"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4¼"		34'-3"±	39'-3"±

NOTES:
1. The radial separation between the face of the pole and the adjacent insides of the top and bottom gusset plates shall not exceed 3/16". Fillet weld size to be increased by amount of gap.
2. Handhole shall be located on the downstream side of traffic.

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA A HEIGHT	POLE DATA Min OD BASE	POLE DATA Min OD TOP	POLE DATA THICKNESS	POLE DATA ALTERNATIVE SECTION B LENGTH	POLE DATA ALTERNATIVE SECTION BOTTOM	POLE DATA ALTERNATIVE SECTION TOP	BASE PLATE DATA C	BASE PLATE DATA BC = BOLT CIRCLE	BASE PLATE DATA THICKNESS	BASE PLATE DATA ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION Dia	CIDH PILE FOUNDATION DEPTH
60-5-100	5	100	17'-0"	22"	19⅝"	0.375"	10'-0"	22⅛"	20¾"	2'-6"	2'-4"	3"	2¼"ø x 42"	NONE	60'-0", 65'-0"	4'-0"	14'-0"
61-5-100			30'-0"	25"	20¾"					2'-11"	2'-9"		3"ø x 60"	6'-15' 15'-0"		4'-6"	15'-0"
61A-5-100			35'-0"		20"		15'-0"		20"								

INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

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

REGISTERED CIVIL ENGINEER
July 21, 2017
PLANS APPROVAL DATE
REGISTERED PROFESSIONAL ENGINEER Stanley P. Johnson No. C57793 Exp. 3-31-18 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.
TO ACCOMPANY PLANS DATED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 5 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 60' TO 65')

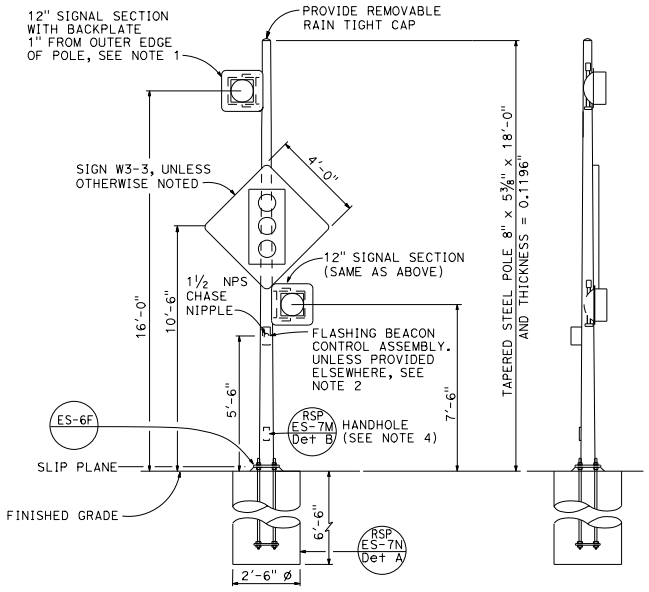
NO SCALE

RSP ES-7H DATED JULY 21, 2017 SUPERSEDES RSP ES-7H DATED JANUARY 20, 2017 AND RSP ES-7H DATED JULY 15, 2016 AND STANDARD PLAN ES-7H DATED OCTOBER 30, 2015 - PAGE 463 OF THE STANDARD PLANS BOOK DATED 2015.

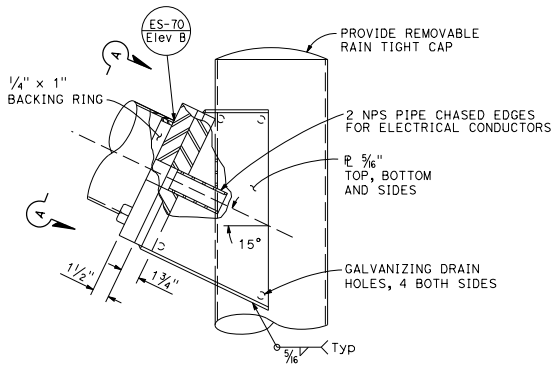
REVISED STANDARD PLAN RSP ES-7H

2015 REVISED STANDARD PLAN RSP ES-7H

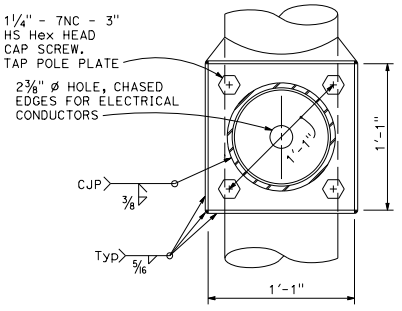
4-25-17



TYPE 15-FBS
FLASHING BEACON WITH SLIP BASE INSTALLATION
DETAIL A

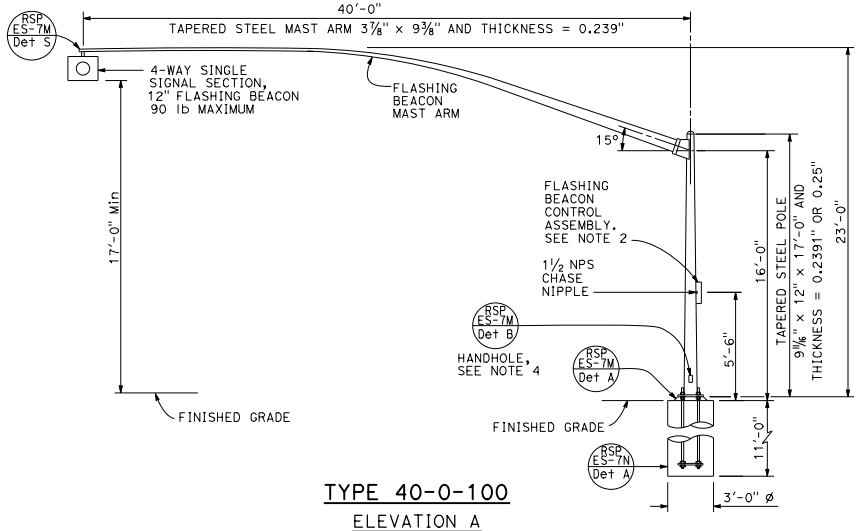


ELEVATION B

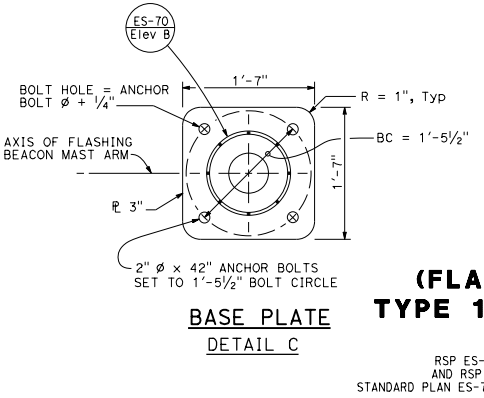


VIEW A-A

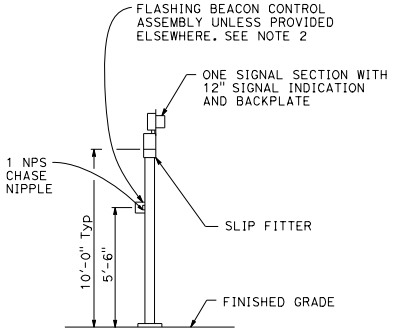
FLASHING BEACON MAST ARM CONNECTION DETAIL
DETAIL B



TYPE 40-0-100
ELEVATION A



BASE PLATE
DETAIL C



TYPE 1-A, 1-B, 1-C, AND 1-D
FLASHING BEACON INSTALLATION

DETAIL D
See Note 5

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 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.

TO ACCOMPANY PLANS DATED _____

NOTES:

1. See Standard Plans ES-4A and Revised Standard Plan RSP ES-4D for attachment fitting details.
2. For wiring diagram, see Revised Standard Plan RSP ES-14B.
3. For additional notes and details, see Revised Standard Plans RSP ES-7M and RSP ES-7N.
4. Handhole shall be located on the downstream side of traffic.
5. See project plans for type of standard to be installed.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(FLASHING BEACON ON A TYPE 1, TYPE 15-FBS, AND TYPE 40 STANDARD)

NO SCALE

RSP ES-7J DATED APRIL 20, 2018 SUPERSEDES RSP ES-7J DATED JULY 21, 2017 AND RSP ES-7J DATED JULY 15, 2016 AND RSP ES-7J DATED APRIL 15, 2016 AND STANDARD PLAN ES-7J DATED OCTOBER 30, 2015 - PAGE 464 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7J

2015 REVISED STANDARD PLAN RSP ES-7J

11-15-17

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

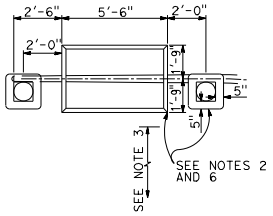
REGISTERED CIVIL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

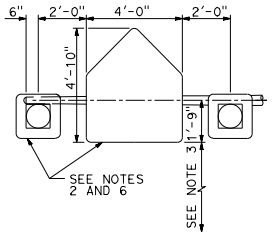
REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

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.

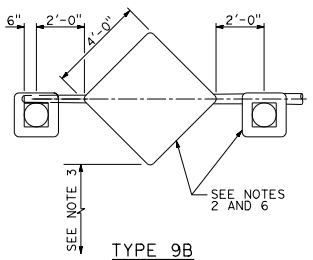
TO ACCOMPANY PLANS DATED _____



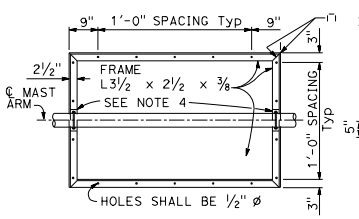
TYPE 9



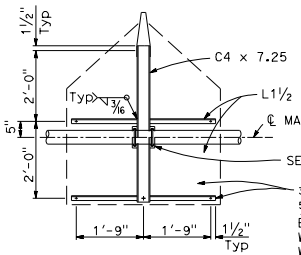
TYPE 9A



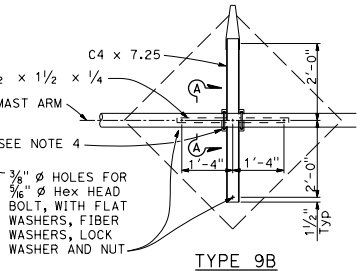
TYPE 9B



TYPE 9



TYPE 9A

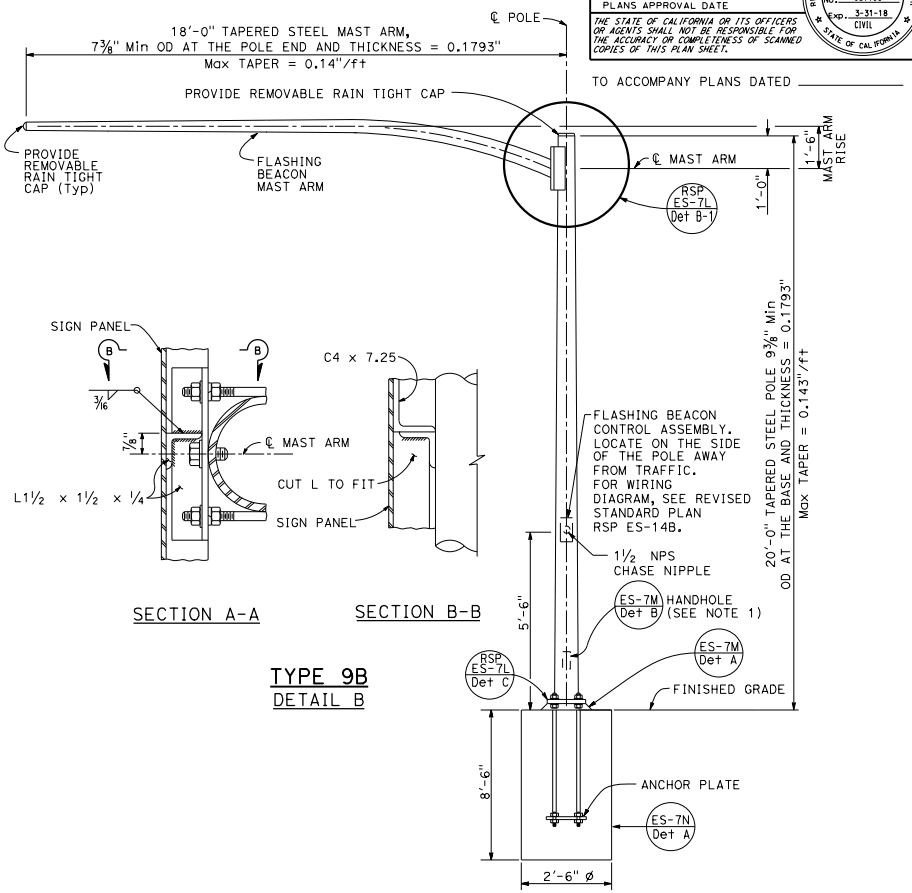


TYPE 9B

FRAME DETAILS
DETAIL A

SECTION A-A

SECTION B-B



TYPE 9B
DETAIL B

ELEVATION A

NOTES:

1. Handhole shall be located on the downstream side of traffic.
2. Install flashing beacons and sign frame. Flashing beacons shall be MAT mounted on pipe tenon (See Standard Plan ES-7M, Detail S).
3. Vertical clearance shall be 17'-0" minimum between roadway and bottom of signal panel.
4. See Revised Standard Plan RSP ES-7L, Detail B, for sign frame mounting details.
5. For additional notes and details, see Revised Standard Plan RSP ES-7L, Detail B-3.
6. 12" flashing beacon with signal indication, standard visor and 5" x 5" backplate (total 2).

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FLASHING BEACON WITH TYPE 9, 9A AND 9B SIGN)

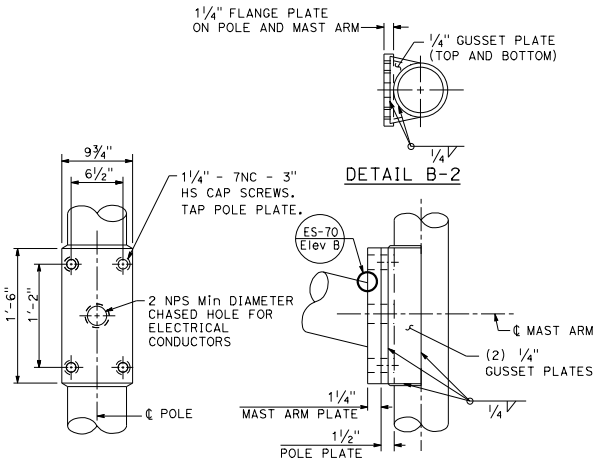
NO SCALE

RSP ES-7K DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-7K DATED OCTOBER 30, 2015 - PAGE 465 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7K

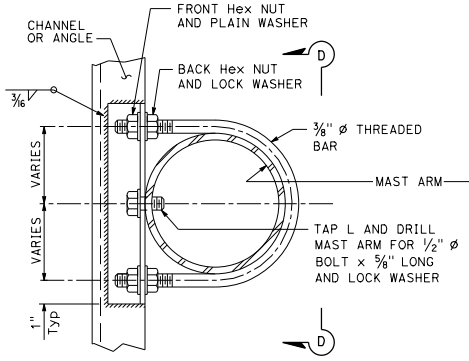
2015 REVISED STANDARD PLAN RSP ES-7K

4-12-16

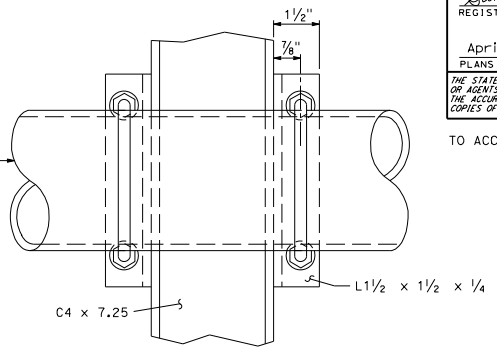


FLASHING BEACON MAST ARM CONNECTION DETAILS

DETAIL B-1



DETAIL B-3



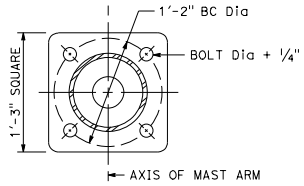
VIEW D-D

NOTE: Tighten front Hex nuts first, then tighten back Hex nuts.

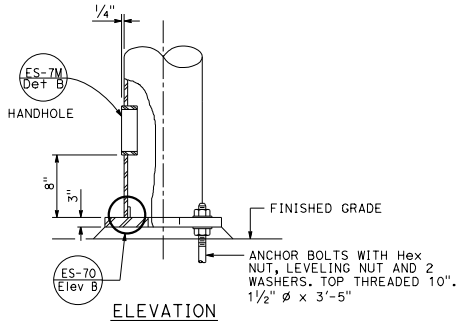
SIGN FRAME MOUNTING DETAILS

All types

DETAIL B



PLAN



ELEVATION

BASE PLATE AND ANCHORAGE DETAIL

DETAIL C

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

REGISTERED CIVIL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

2015 REVISED STANDARD PLAN RSP ES-7L

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FLASHING BEACON WITH TYPE 9, 9A AND 9B SIGN)

NO SCALE

RSP ES-7L DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-7L DATED OCTOBER 30, 2015 - PAGE 466 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7L

4-12-16

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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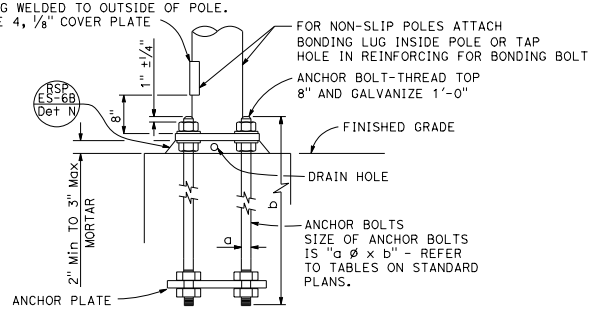
TO ACCOMPANY PLANS DATED _____

4" x 6½" ROUNDED RECTANGLE HANDHOLE REINFORCED WITH RING WELDED TO OUTSIDE OF POLE. SEE NOTE 4, ⅛" COVER PLATE



HANDHOLE AND ANCHORAGE
DETAIL A

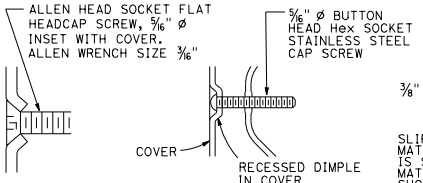
IDENTIFICATION NUMBER

1. Attach a stamped metal tag with pole's identification number above the handhole. ¼" high number, minimum.
2. Attach a stamped metal tag with mast arm's identification number to the bottom of the signal mast arm near the pole plate. ¼" high number, minimum.

Type — Load case (Use SL for special load case) — Design wind velocity (mph) — Signal mast arm length (ft) (Near handhole: Maximum signal mast arm length for pole type; Near pole plate: Installed signal mast arm length) — Standard plan year — Only for poles or mast arms using Detail F — Only for poles or mast arms using ES-7D

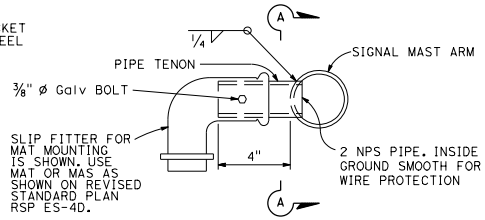
26A - 3 - 100 - 45 - 10 - F or FB

SAMPLE IDENTIFICATION NUMBER

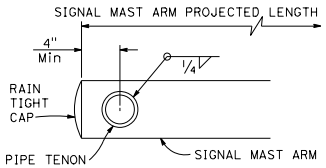


TYPICAL DETAIL
DETAIL B-1

ALTERNATIVE DETAIL
DETAIL B-2



SIDE TENON
DETAIL S-1

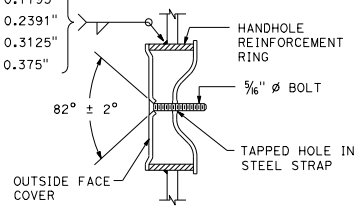


SECTION A-A

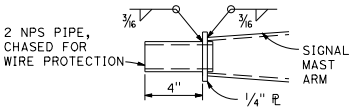
NOTES:

1. Provide a Hex nut, leveling nut and 2 washers for each bolt.
2. Luminaire mast arms shall be round, tapered steel tubes, taper of 0.1375" to 0.143-inch per foot with an end section 2⅜" OD for mounting hardware. Extensions of 2 NPS Standard pipe and 7" long may be used at the option of the manufacturer. When low pressure sodium luminaires are required, the extension shall be 1'-3".
3. Signal mast arms shall be round, tapered steel tubes, maximum taper 0.143-inch per foot.
4. Handhole reinforcement ring shall be ¼" x 2" for 0.1196" to 0.2391" thick poles, ⅜" x 2" for 0.3125" to 0.375" thick poles.
5. Handholes shall be located on the downstream side of traffic.
6. Detail F, fatigue resistant weld, is required at socket welded signal mast arm plate and pole base plate.
7. Cap screws shall be tightened by the turn-of-nut method ⅓ turn from a snug tight condition. No washer will be required.
8. Outside diameter, wall thickness, and corresponding section properties of poles and mast arms as shown in the Standard Plans are minimums. Unless otherwise specified, alternative sections shall require approval by the Engineer.
9. Design: AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaires, and Traffic Signals, 6th Edition. Basic Wind Speed = 100 mph (3 seconds gust). Yearly Mean Wind Velocity = 15.6 mph.
10. Materials (Structural steel):
    fy = 55,000 psi (tapered steel tube and anchor bolts)
    fy = 50,000 psi (unless otherwise noted)
11. Materials (Reinforced concrete):
    f'c = 3,625 psi
    fy = 60,000 psi

WELD SIZE	WALL THICKNESS
⅜"	0.1196"
¼"	0.1793"
5/16"	0.2391"
⅜"	0.3125"
7/16"	0.375"



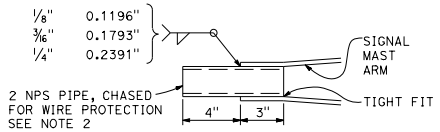
TAMPER RESISTANT HANDHOLE COVER
DETAIL B



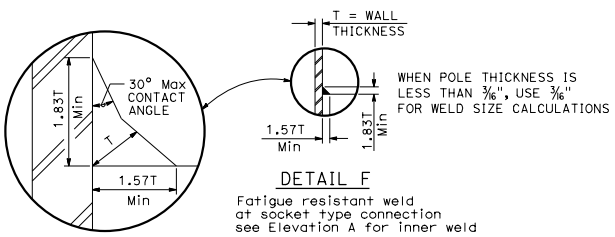
TIP TENON
DETAIL TL
This detail supersedes Detail S when so designated

PIPE TENONS
DETAIL S

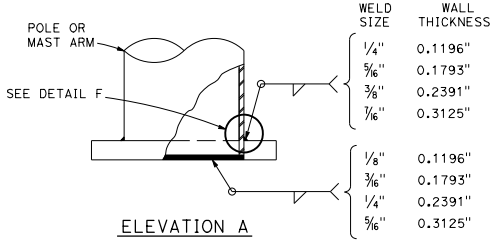
WELD SIZE	WALL THICKNESS
⅛"	0.1196"
⅜"	0.1793"
¼"	0.2391"



TIP TENON
DETAIL TS



DETAIL F
Fatigue resistant weld at socket type connection see Elevation A for inner weld



WELD SIZE	WALL THICKNESS
¼"	0.1196"
5/16"	0.1793"
⅜"	0.2391"
7/16"	0.3125"

WELD SIZE	WALL THICKNESS
⅛"	0.1196"
3/16"	0.1793"
¼"	0.2391"
5/16"	0.3125"

ELEVATION A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, DETAIL No. 1)

NO SCALE

RSP ES-7M DATED APRIL 20, 2018 SUPERSEDES RSP ES-7M DATED JULY 15, 2016 AND STANDARD PLAN ES-7M DATED OCTOBER 30, 2015 - PAGE 467 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7M

2015 REVISED STANDARD PLAN RSP ES-7M

11-15-17

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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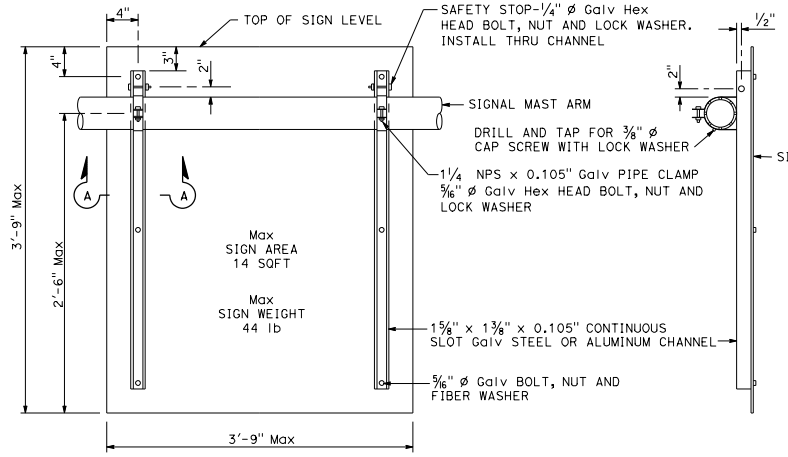
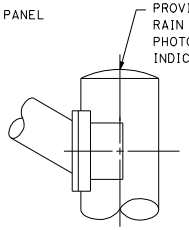
TO ACCOMPANY PLANS DATED _____



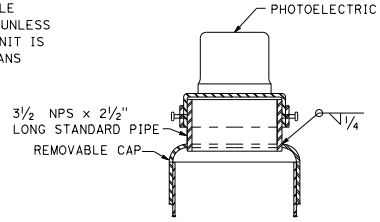
REAR VIEW

SIDE VIEW

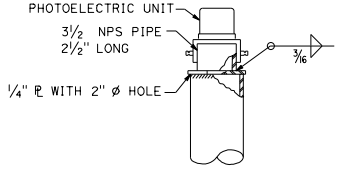
SIGN MOUNTING DETAILS
DETAIL U



STANDARD TOP
DETAIL B-1

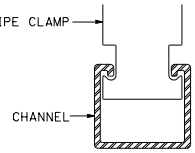


MOUNTING ADAPTER FOR PHOTOELECTRIC UNIT
DETAIL B-2

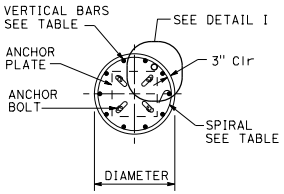


ALTERNATIVE MOUNTING ADAPTER
DETAIL B-3

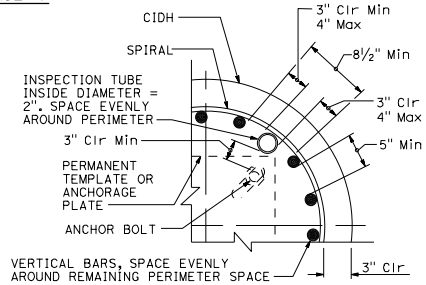
POLE TOP DETAILS
DETAIL B



SECTION A-A



SECTION B-B

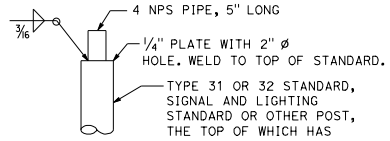


INSPECTION TUBE PLACEMENT
DETAIL I

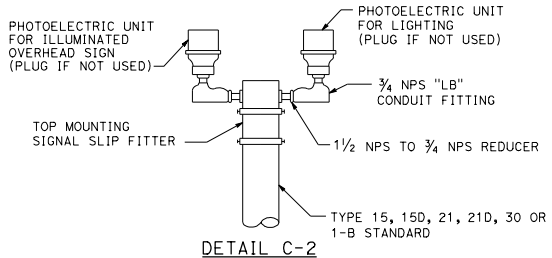
CIDH REINFORCING AND INSPECTION TUBE SCHEDULE

CIDH DIAMETER	VERTICAL BARS	SPIRAL	INSPECTION TUBE
2 ft	8-#5	#4 AT 6	2
2.5 ft	10-#6		4*
3 ft	12-#7	#5 AT 6	
3.5 ft	14-#8		4
4 ft	18-#9	2-#4 AT 7	5
4.5 ft	18-#9	2-#5 AT 7	5
5 ft	22-#10	2-#5 AT 7	6
6 ft	26-#11	2-#6 AT 7	7

* FOR SLIP BASE VERSIONS WITH 3 ANCHOR BOLTS USE 3 INSPECTION TUBES.

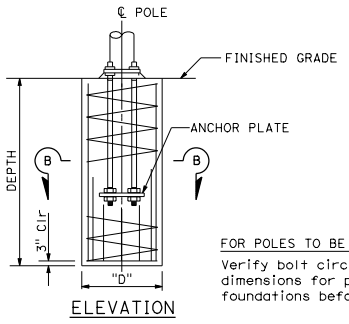


DETAIL C-1



DETAIL C-2

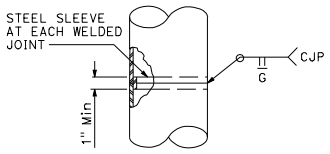
DUAL PHOTOELECTRIC UNIT MOUNTING DETAIL
DETAIL C



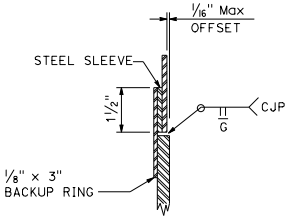
ELEVATION

FOR POLES TO BE INSTALLED ON EXISTING FOUNDATION:
Verify bolt circles, anchor bolt sizes and dependent dimensions for poles to be installed on existing foundations before fabricating the poles.

CAST-IN-DRILLED-HOLE PILE FOUNDATION, REINFORCED PILE
DETAIL A



FOR UNIFORM TUBE THICKNESS
DETAIL T-1



AT TUBE THICKNESS CHANGE
DETAIL T-2

POLE SPLICES
DETAIL T

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, DETAIL No. 2)

NO SCALE

RSP ES-7N DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN ES-7N DATED OCTOBER 30, 2015 - PAGE 468 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-7N

2015 REVISED STANDARD PLAN RSP ES-7N

6-20-16

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

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

Theresa Aziz Gabriel
No. E15129
Exp. 6-30-16
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

April 15, 2016
PLANS APPROVAL DATE

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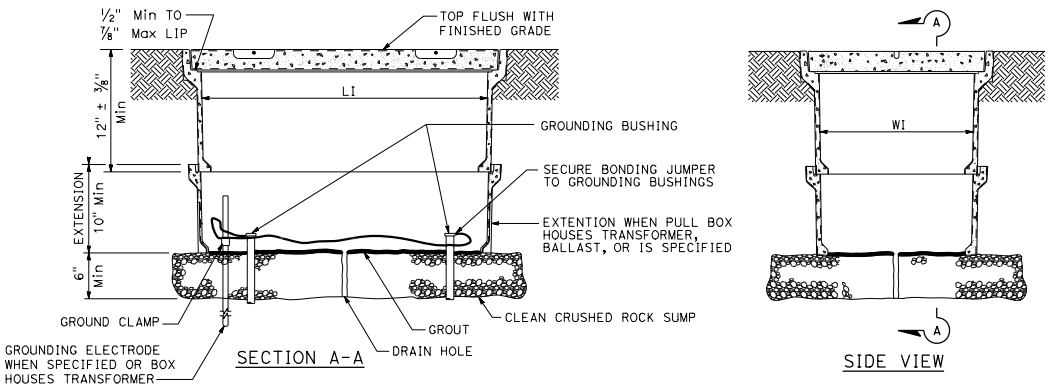
TO ACCOMPANY PLANS DATED _____

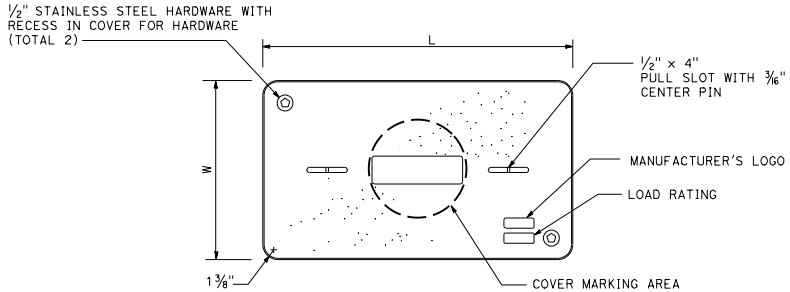


SECTION A-A

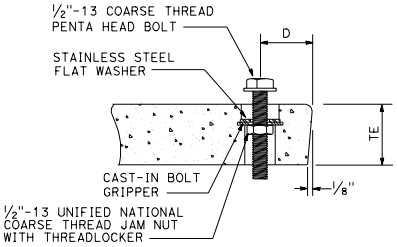
SIDE VIEW

INSTALLATION DETAILS

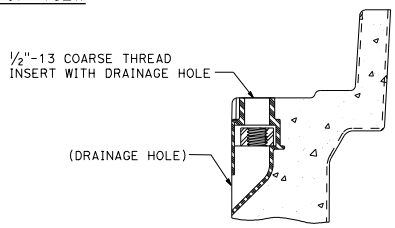
DETAIL A



COVER TOP VIEW



TYPICAL COVER CAPTIVE BOLT
OR SIMILAR



TYPICAL THREADED INSERT
OR SIMILAR

DIMENSION TABLE

PULL BOX	PULL BOX					COVER				
	MINIMUM DEPTH BOX	MINIMUM DEPTH EXTENSION	MINIMUM WEIGHT	LI Min	WI Min	TE	D	L	W	MINIMUM WEIGHT
No. 3½	12"	N/A	40 lb	1' - 3"	9"	1¾"	1¾"	1'-3¼" - 1'-3⅜"	10" - 10⅛"	30 lb
No. 5	12"	10"	55 lb	1' - 8"	11"	2"	1¾"	1'-11¼"	1'-1¾"	60 lb
No. 6	12"	10"	70 lb	2' - 4¼"	1' - 3¼"	2"	2"	2'-6½"	1'-5½"	85 lb

NOTES:

1. The nominal dimensions of the opening in which the cover sets shall be the same as the cover dimensions except the length and width dimensions shall be ⅛" greater.
2. Covers and boxes shall be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces shall be flush within ⅛". Top outside radius of covers and pull boxes shall have a ⅛" radius.
3. Dimensions for the cover for non-traffic pull box are nominal values.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (NON-TRAFFIC PULL BOX)

NO SCALE

RSP ES-8A DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-8A
DATED OCTOBER 30, 2015 - PAGE 473 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-8A

2015 REVISED STANDARD PLAN RSP ES-8A

1-22-16

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

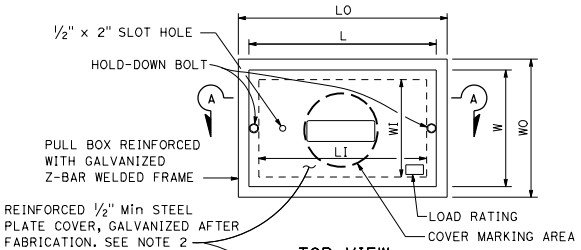
H.R.J.
REGISTERED ELECTRICAL ENGINEER

Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

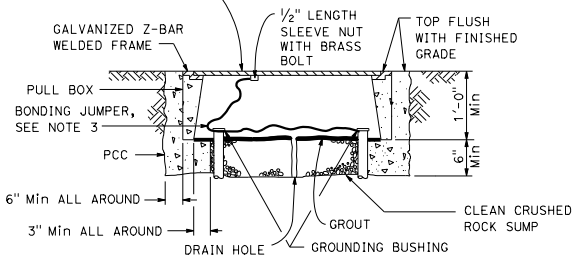
July 21, 2017
PLANS APPROVAL DATE

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 _____



TOP VIEW



SECTION A-A

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

NOTES:

1. Traffic pull box shall be provided with steel cover and special concrete footing. Steel cover shall have embossed non-skid pattern.
2. Steel reinforcing shall be as regularly used in the standard products of the respective manufacturer.
3. Bonding jumper for metal covers shall be 3' long, minimum.
4. The nominal dimensions of the opening in which the cover sets shall be the same as the cover dimensions except the length and width dimensions shall be ⅛" greater.
5. Covers and boxes shall be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces shall be flush within ⅛".

DIMENSION TABLE

PULL BOX	PULL BOX						COVER	
	MINIMUM * THICKNESS	MINIMUM DEPTH BOX AND EXTENSION	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"

* EXCLUDING CONDUIT WEB ** TOP DIMENSION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TRAFFIC PULL BOX)

NO SCALE

RSP ES-8B DATED JULY 21, 2017 SUPERSEDES RSP ES-8B DATED APRIL 15, 2016 AND STANDARD PLAN ES-8B DATED OCTOBER 30, 2015 - PAGE 474 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-8B

2015 REVISED STANDARD PLAN RSP ES-8B

4-25-17

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

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

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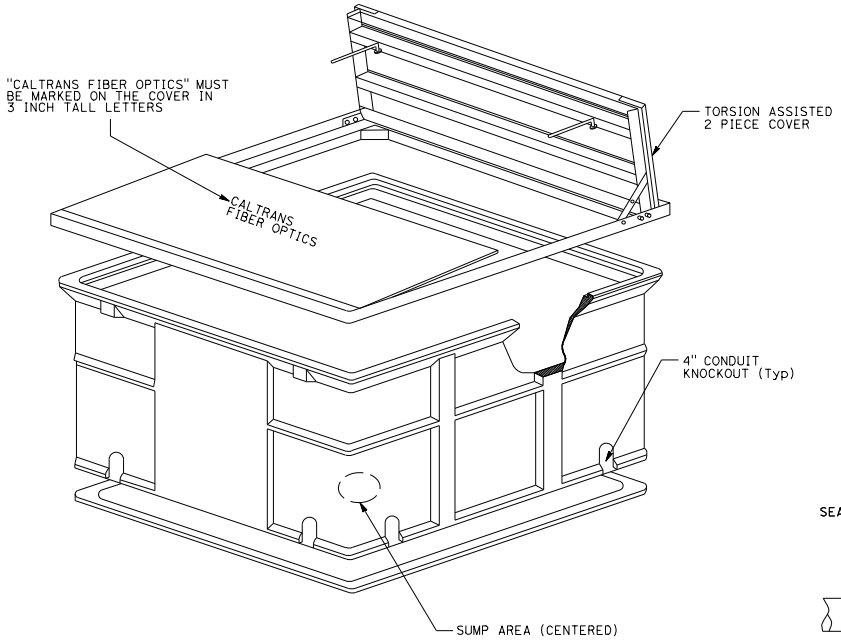
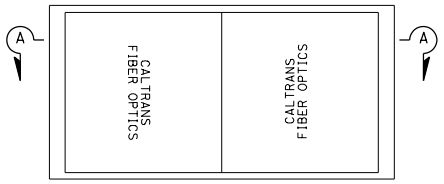
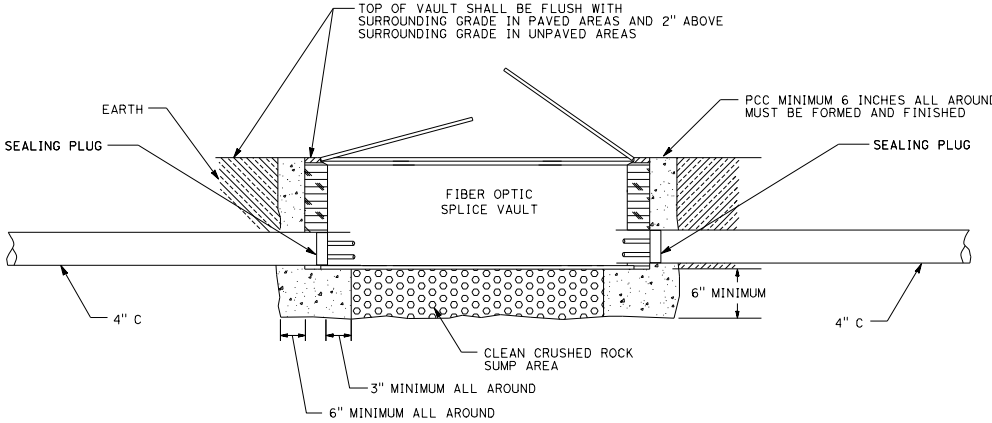
TO ACCOMPANY PLANS DATED _____



SPLICE VAULT-ISOMETRIC VIEW



TOP VIEW



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SPLICE VAULTS)

NO SCALE

RSP ES-8C DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-8C

2015 REVISED STANDARD PLAN RSP ES-8C

11-20-17

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

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

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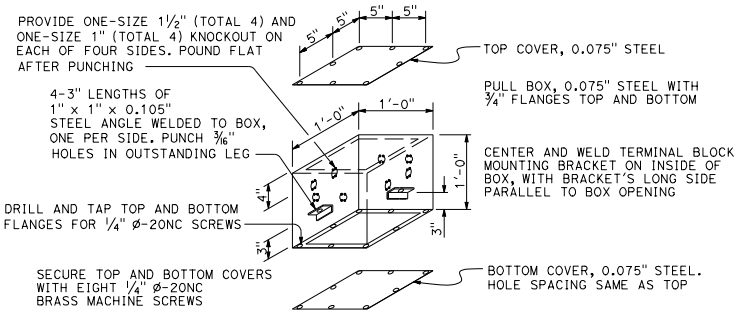
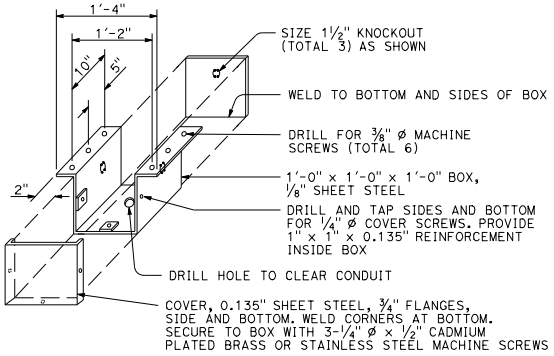
TO ACCOMPANY PLANS DATED _____



No. 7 PULL BOX (CEILING)

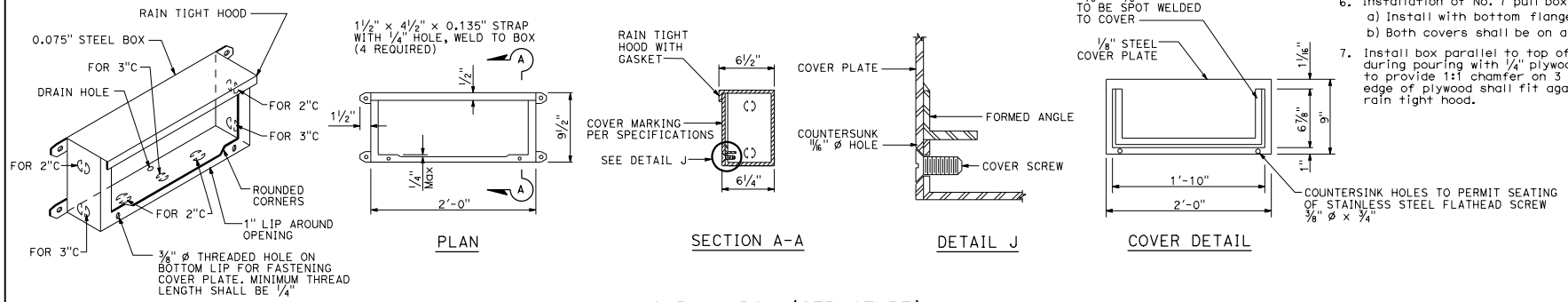
See Note 6



No. 8 PULL BOX

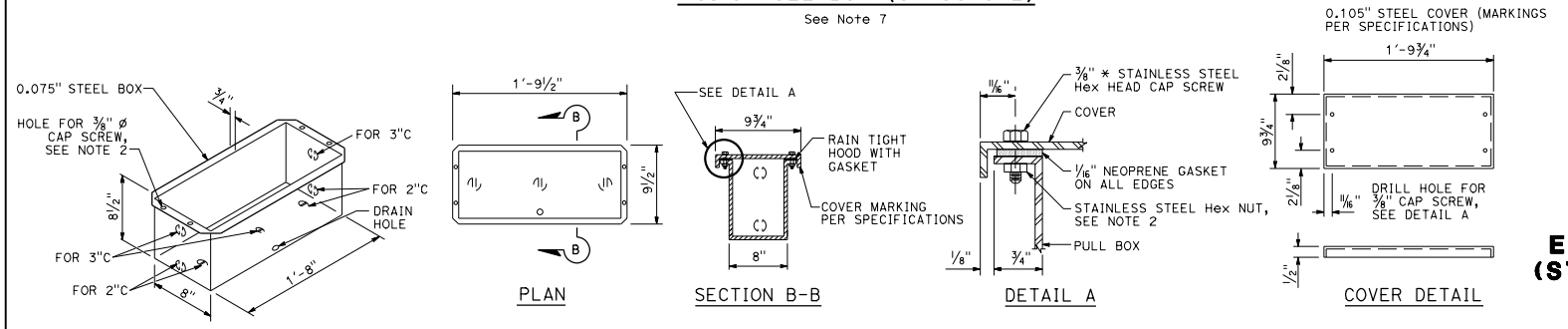
NOTES:

1. Corner joints shall be lapped and secured by spot welding or riveting.
2. Where cap screws are used to attach cover to box, either of the following methods of providing adequate threading may be used:
   a. Tack weld stainless steel Hex nut to bottom of flange (total 4)
   b. Tack weld a ¼" x ⅝" x 8" bar beneath flange (total 2)
3. Pound knockouts flat after punching.
4. Multiple size knockouts (concentric) shall not be permitted.
5. Pull box covers shall be marked as specified.
6. Installation of No. 7 pull box:
   a) Install with bottom flange flush with concrete.
   b) Both covers shall be on a box during pouring.
7. Install box parallel to top of railing. Cover box during pouring with ¼" plywood of sufficient size to provide 1:1 chamfer on 3 sides of cover. Upper edge of plywood shall fit against lower edge of rain tight hood.



No. 9 PULL BOX (STRUCTURE)

See Note 7



No. 9A PULL BOX (STRUCTURE)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (STRUCTURE PULL BOX)

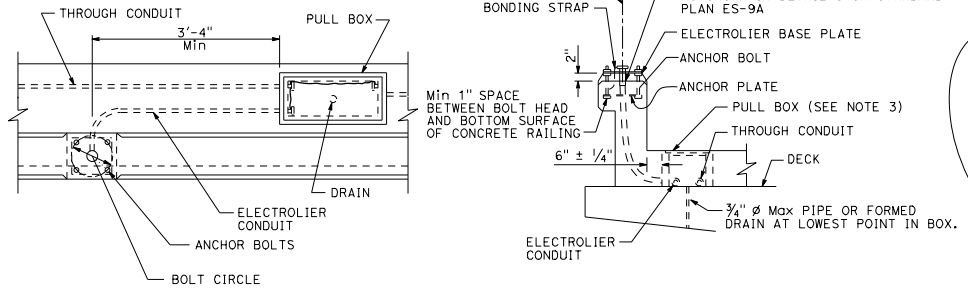
NO SCALE

RSP ES-9C DATED APRIL 20, 2018 SUPERSEDES RSP ES-9C DATED APRIL 15, 2016 AND STANDARD PLAN ES-9C DATED OCTOBER 30, 2015 - PAGE 477 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-9C

2015 REVISED STANDARD PLAN RSP ES-9C

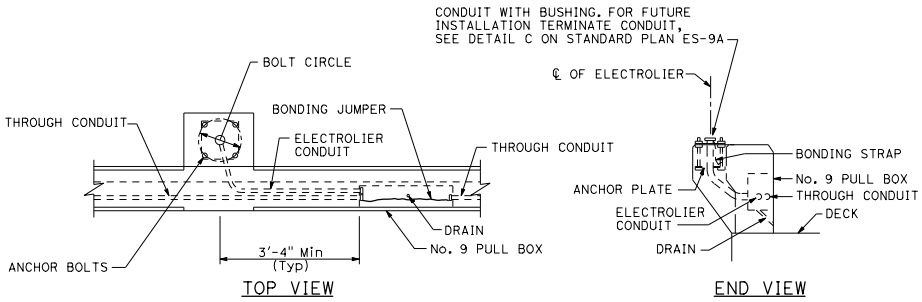
1-10-18



TOP VIEW END VIEW

No. 3½, 5, OR 6 PULL BOX INSTALLATION

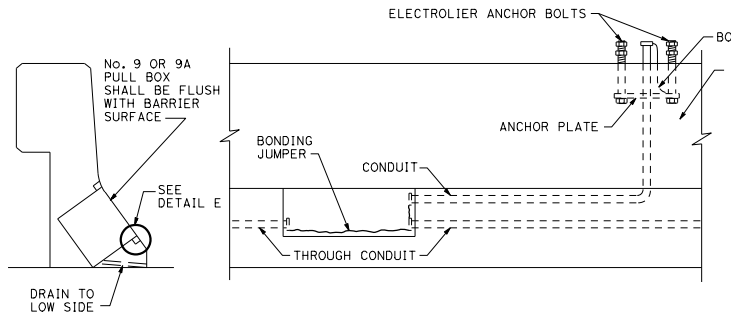
DETAIL A



TOP VIEW END VIEW

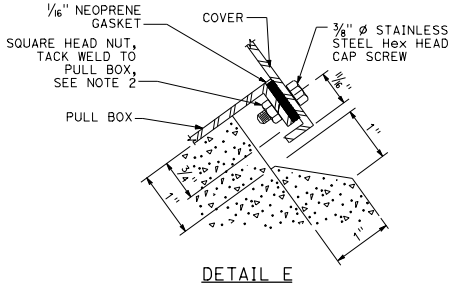
No. 9 PULL BOX INSTALLATION

DETAIL B

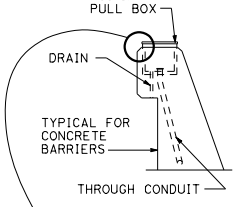


INSTALLATION IN SLOPING PARAPETS

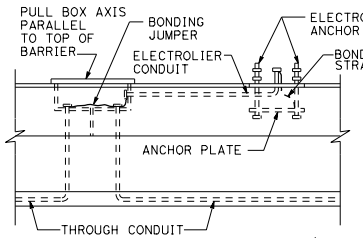
DETAIL D



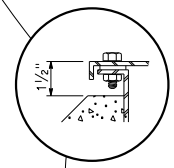
DETAIL E

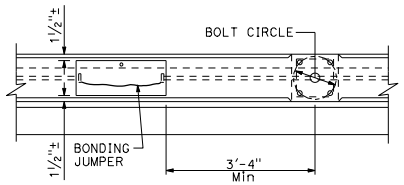


END VIEW

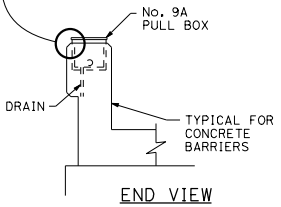


SIDE VIEW

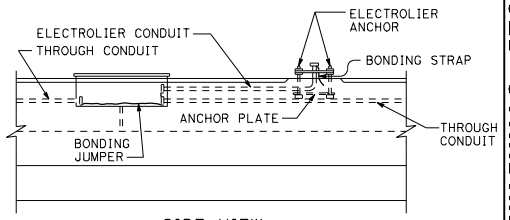




TOP VIEW



END VIEW



SIDE VIEW

No. 9A PULL BOX INSTALLATION

DETAIL C

NOTES:

1. Axis of pull box shall be parallel to top of barrier, sidewalk or railing.
2. See railing sheet for reinforcement and structural details at electroliers and pull boxes.
3. Top of pull boxes in sidewalk areas shall be flush with sidewalk. Modify base of pull box as required.
4. Boxes inside of vertical barrier or railing shall be closed during pouring of PCC with ¼" plywood of sufficient size to provide 1:1 chamfer on 3 sides of cover. Upper edge of plywood shall fit against lower edge of raintight hood.
5. Use drain in center if box is horizontal, or at low end if box is inclined. When box is mounted in sloping parapet ½" elongated drain hole inside at center or near end as required for drainage.
6. For electrolier anchorage bolts and grouting details, see Revised Standard Plan RSP ES-6B.
7. See Standard Plan B14-3 for conduit in concrete barrier.

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER
July 21, 2017
PLANS APPROVAL DATE
REGISTERED PROFESSIONAL ENGINEER Hamid Zolfaghari No. E15636 Exp. 12-31-17 ELECTRICAL STATE OF CALIFORNIA
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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (STRUCTURE PULL BOX INSTALLATIONS)

NO SCALE

RSP ES-9D DATED JULY 21, 2017 SUPERSEDES RSP ES-9D DATED APRIL 15, 2016 AND STANDARD PLAN ES-9D DATED OCTOBER 30, 2015 - PAGE 478 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-9D

2015 REVISED STANDARD PLAN RSP ES-9D

4-7-17

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

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

Registered Professional Engineer — Theresa Aziz Gabriel — No. E15129 — Exp. 6-30-16 — ELECTRICAL — State of California

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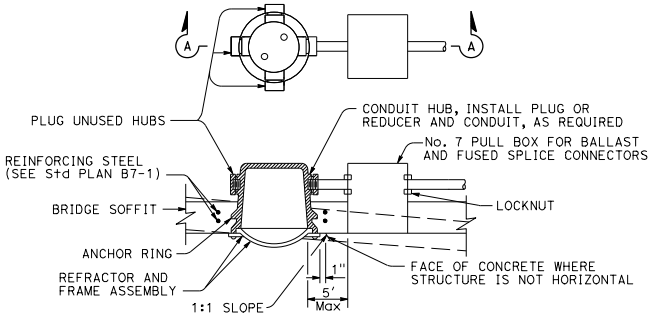
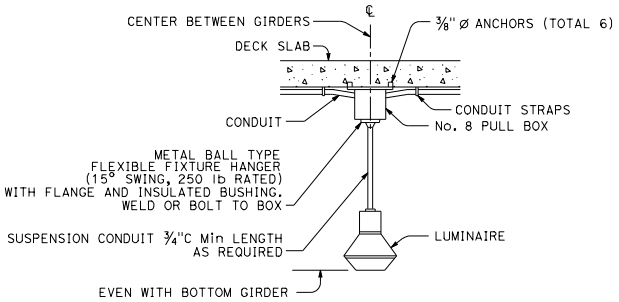
TO ACCOMPANY PLANS DATED _____



SECTION A-A

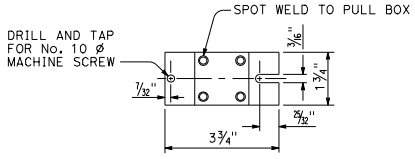
FLUSH-MOUNTED SOFFIT LUMINAIRE INSTALLATION

DETAIL F

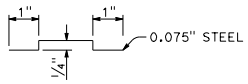


PENDANT SOFFIT LUMINAIRE INSTALLATION

DETAIL P



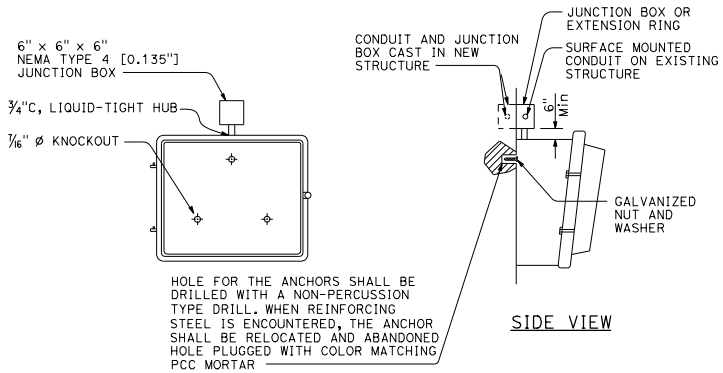
TOP VIEW



SIDE VIEW

TERMINAL BLOCK MOUNTING BRACKET

DETAIL T



SIDE VIEW

WALL-MOUNTED LUMINAIRE INSTALLATION

DETAIL W

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FLUSH-MOUNTED SOFFIT, PENDANT SOFFIT AND WALL-MOUNTED LUMINAIRE STRUCTURE INSTALLATIONS)

NO SCALE

RSP ES-9E DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-9E DATED DATED OCTOBER 30, 2015 - PAGE 479 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-9E

2015 REVISED STANDARD PLAN RSP ES-9E

1-12-16

NOTE:
Curves represent the minimum maintained illuminance (FC).

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

H.R.Z
REGISTERED ELECTRICAL ENGINEER

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

April 20, 2018
PLANS APPROVAL DATE

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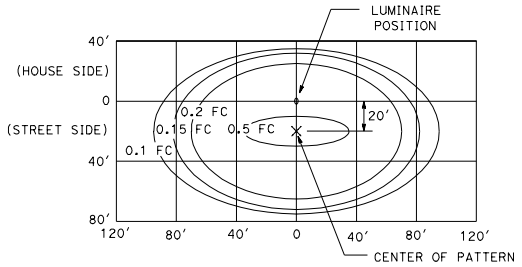
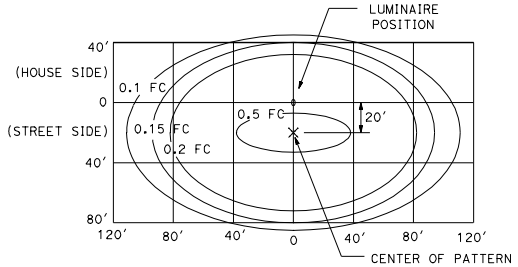
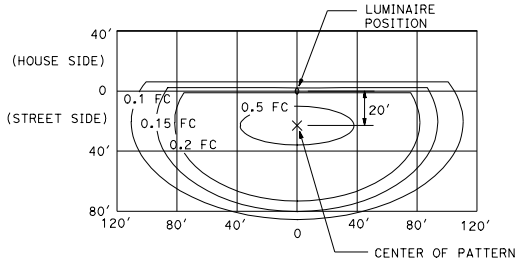
TO ACCOMPANY PLANS DATED _____



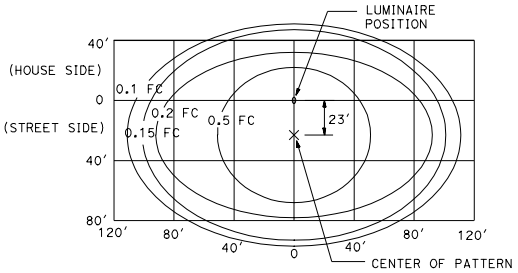
ROADWAY 1
34′ Mounting Height
165 W (Max)



ROADWAY 2
40′ Mounting Height
235 W (Max)



ROADWAY 3
40′ Mounting Height
with back side control
235 W (Max)



ROADWAY 4
40′ Mounting Height
300 W (Max)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ISOFOOTCANDLE CURVES)

NO SCALE

RSP ES-10A DATED APRIL 20, 2018 SUPERSEDES RSP ES-10A DATED JULY 21, 2017 AND STANDARD PLAN ES-10A DATED OCTOBER 30, 2015 - PAGE 481 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-10A

2015 REVISED STANDARD PLAN RSP ES-10A

11-15-17

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

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

April 20, 2018
PLANS APPROVAL DATE

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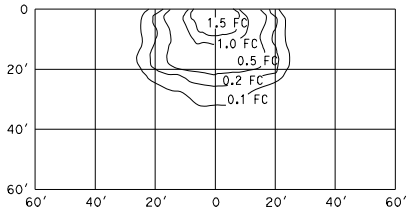
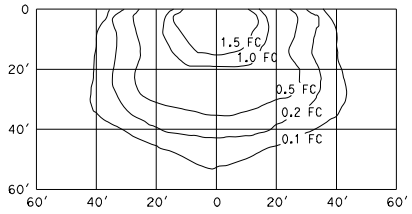
TO ACCOMPANY PLANS DATED _____

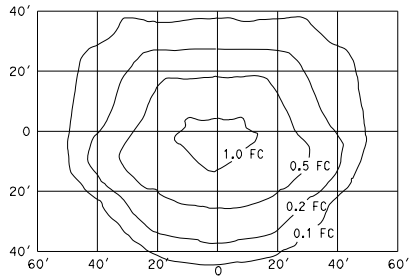
NOTE:
Curves represent the minimum maintained illuminance (FC).



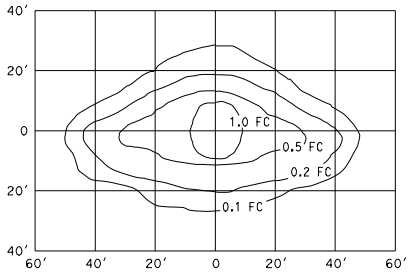
WALL-MOUNTED
15' Mounting Height
ANSI Designation S62
Lamp operated at 5,800 lm
70 W (Max)



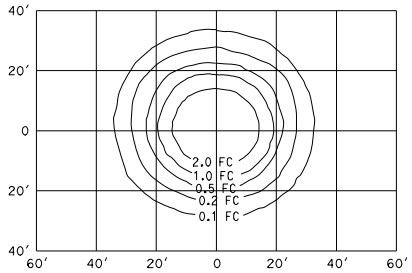
WALL-MOUNTED
15' Mounting Height
ANSI Designation S54
Lamp operated at 9,500 lm
100 W (Max)



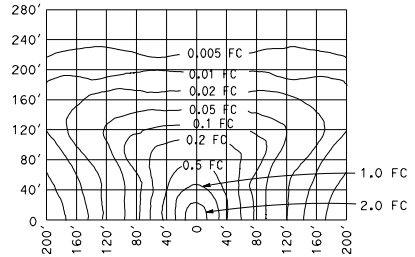
FLUSH-MOUNTED SOFFIT
17' Mounting Height
ANSI Designation S62
Lamp operated at 5,800 lm
70 W (Max)



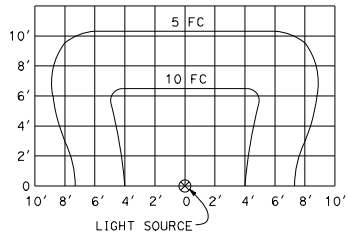
PENDANT SOFFIT
TYPE III SHORT
17' Mounting Height
ANSI Designation S62
Lamp operated at 5,800 lm
70 W (Max)



PENDANT SOFFIT
17' Mounting Height
ANSI Designation S62
Lamp operated at 5,800 lm
70 W (Max)



LOW-PRESSURE SODIUM
40' Mounting Height
Lamp operated at 33,000 lm
180 W (Max)



SIGN ILLUMINATION
85 W (Max)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ISOFOOTCANDLE CURVES)

NO SCALE

RSP ES-10B DATED APRIL 20, 2018 SUPERSEDES RSP ES-10B DATED JULY 21, 2017 AND STANDARD PLAN ES-10B DATED OCTOBER 30, 2015 - PAGE 482 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-10B

2015 REVISED STANDARD PLAN RSP ES-10B

12-13-17

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

REGISTERED CIVIL ENGINEER

July 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

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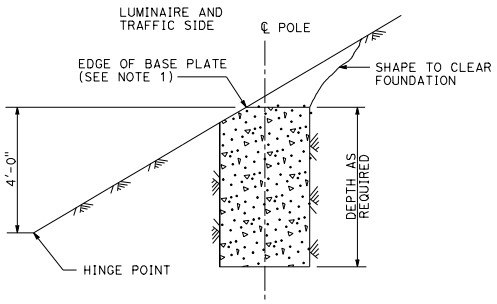
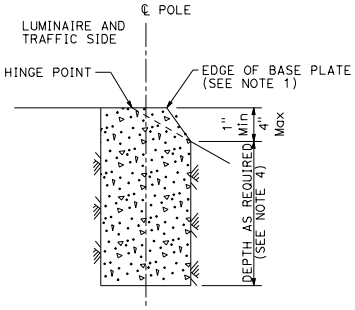
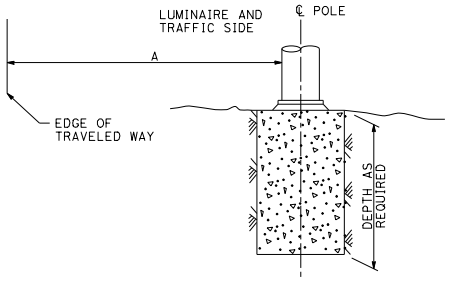
TO ACCOMPANY PLANS DATED _____



CUT SLOPES
STEEPER THAN 4:1,
LESS THAN 2:1
DETAIL A-1
See Note 2 and 3



FILL SLOPES
STEEPER THAN 4:1,
LESS THAN 2:1
DETAIL A-2
See Note 2 and 3



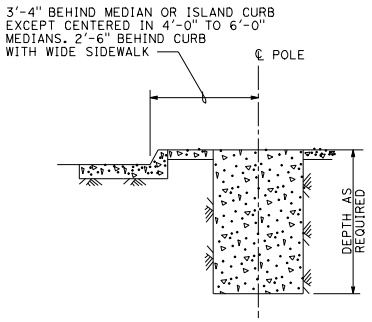
FLAT SECTIONS, CUT OR FILL SLOPES
4:1 OR FLATTER
DETAIL A-3
See Note 2

STANDARD TYPE	SETBACK (DIMENSION A)
32	30'-0" (Min)
31	20'-0" (Min)
15, 15D, 15-SB, 21, 21D, 30	ARM LENGTH (Min)

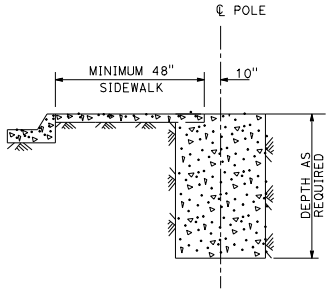
FOUNDATIONS ADJACENT TO ALL ROADWAYS EXCEPT IN SIDEWALK, MEDIAN AND ISLAND AREAS
DETAIL A

NOTES:

1. Where a portion of the foundation is above grade, the top edges shall have a 1" chamfer.
2. Slopes shall be horizontal to vertical ratio (Horizontal : Vertical).
3. Horizontal setbacks on cut and fill slopes steeper than 4:1 shall not exceed the distance shown for flat sections.
4. CIDH embedment depth shall be increased beyond standard depths by the diameter of the CIDH.



MEDIAN, ISLAND
OR WIDE SIDEWALK
DETAIL B-1
7' Wide and wider



NARROW SIDEWALK
DETAIL B-2
Less than 7' wide

FOUNDATIONS IN SIDEWALK, MEDIAN AND ISLAND AREAS
DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FOUNDATION INSTALLATIONS)

NO SCALE

RSP ES-11 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN ES-11 DATED DATED OCTOBER 30, 2015 - PAGE 483 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-11

2015 REVISED STANDARD PLAN RSP ES-11

6-20-16

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

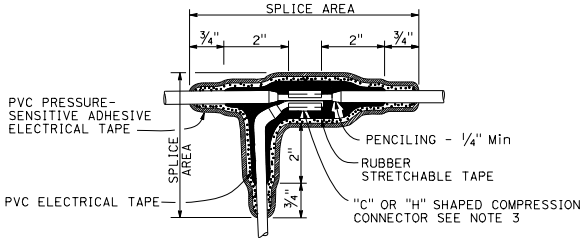
H.R.J.
REGISTERED ELECTRICAL ENGINEER

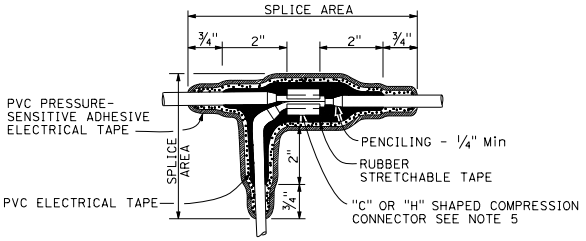
REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-17
ELECTRICAL
STATE OF CALIFORNIA

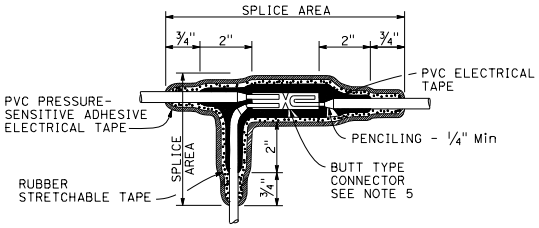
July 21, 2017
PLANS APPROVAL DATE

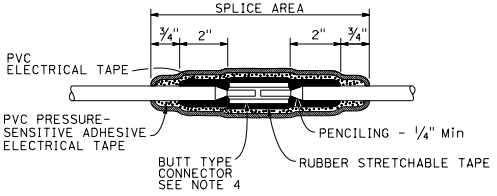
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____





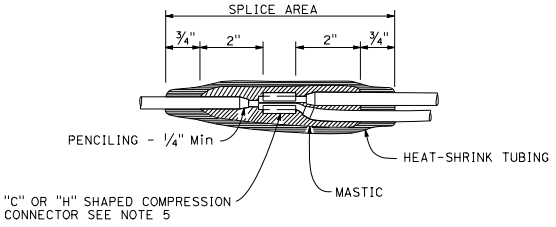


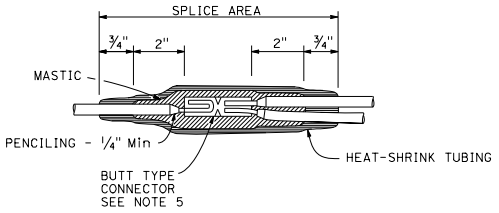


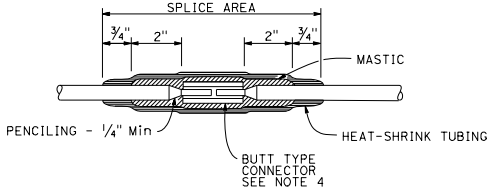
TYPICAL SPLICE INSULATION METHOD B

NOTES:

1. Dimensions are minimum.
2. Rubber tapes shall be rolled after application.
3. Between 1 free-end and 1 through conductor.
4. Between 2 free-end conductors.
5. Between 3 free-end conductors.







TYPICAL SPLICE INSULATION HEAT-SHRINK TUBING

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SPLICE INSULATION METHODS DETAILS)

NO SCALE

RSP ES-13A DATED JULY 21, 2017 SUPERSEDES RSP ES-13A DATED APRIL 15, 2016 AND STANDARD PLAN ES-13A DATED OCTOBER 30, 2015 - PAGE 484 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-13A

2015 REVISED STANDARD PLAN RSP ES-13A

4-7-17

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

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

Theresa Aziz Gabriel No. E15129 Exp. 6-30-16 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

April 15, 2016
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.

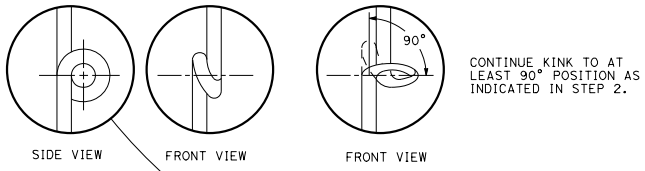
TO ACCOMPANY PLANS DATED _____

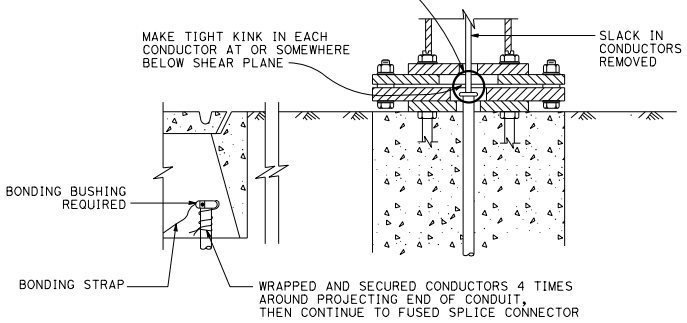
CIRCUIT VOLTAGE	FUSE VOLTAGE RATING	FUSE CURRENT RATING						
		HPS LAMP BALLAST		LOW PRESSURE SODIUM BALLAST	INDUCTION SIGN LIGHTING	SINGLE PHASE (TWO WIRE) TRANSFORMERS (PRIMARY SIDE)		
		70 W	100 W	180 W	85 W	1 kVA	2 kVA	3 kVA
120 V	250 V	5 A	5 A	5 A	5 A	10 A	20 A	30 A
240 V	250 V	5 A	5 A	5 A	5 A	6 A	10 A	20 A
480 V	500-600 V	5 A	5 A	3 A	1 A (SEE NOTE 2)	3 A	6 A	10 A

NOTES:

1. Primary lines of multiple ballasts shall be provided with fused connectors. Fuse ratings shall be as noted above.
2. See Standard Plan ES-15D, Type SC3 control.

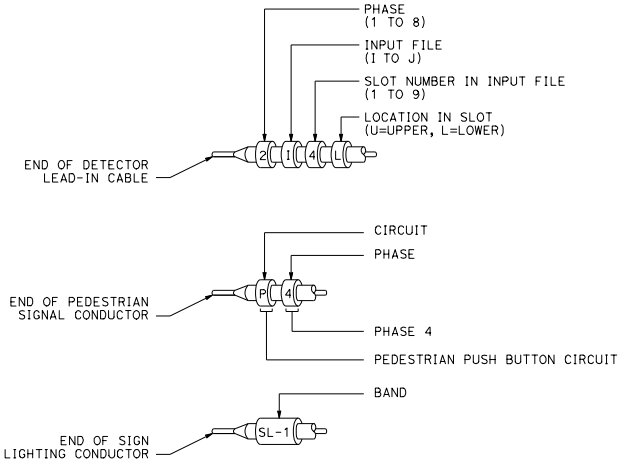
FUSE RATINGS FOR FUSED CONNECTORS





KINKING DETAIL FOR SLIP BASE STANDARDS

DETAIL A



TYPICAL BANDING DETAILS

DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FUSE RATING, KINKING AND BANDING DETAIL)

NO SCALE

RSP ES-13B DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-13B DATED OCTOBER 30, 2015 - PAGE 485 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-13B

2015 REVISED STANDARD PLAN RSP ES-13B

1-12-16

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

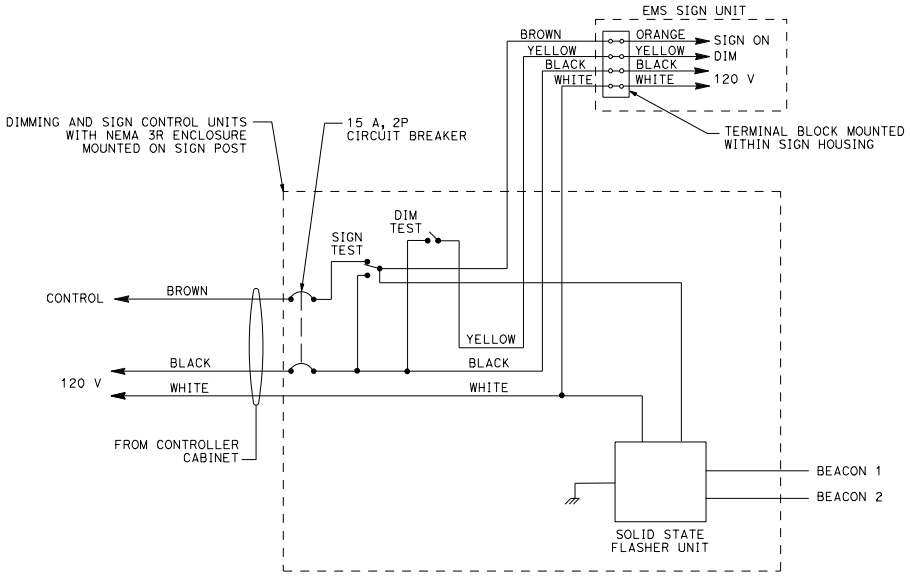
Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Theresa Aziz Gabriel
No. E15129
Exp. 6-30-16
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.

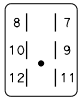
TO ACCOMPANY PLANS DATED _____



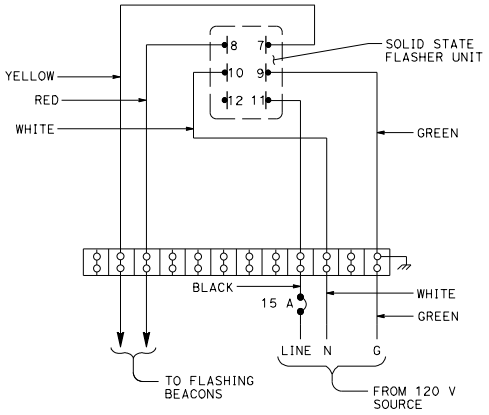
WIRING DIAGRAM
LED EXTINGUISHABLE MESSAGE SIGN
DETAIL A

THE FLASHER SHALL MATE WITH A CINCH-JONES SOCKET S-406-SB OR EQUAL AND CONNECTED AS FOLLOWS:

PIN	CIRCUIT	PIN	CIRCUIT
7	LOAD	10	NEUTRAL
8	LOAD	11	LINE
9	CHASSIS GROUND	12	NOT USED



CONNECTOR SOCKET
SOLID STATE FLASHER UNIT



WIRING DIAGRAM
FLASHING BEACON CONTROL ASSEMBLY
DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CONTROL ASSEMBLY WIRING DIAGRAMS)

NO SCALE

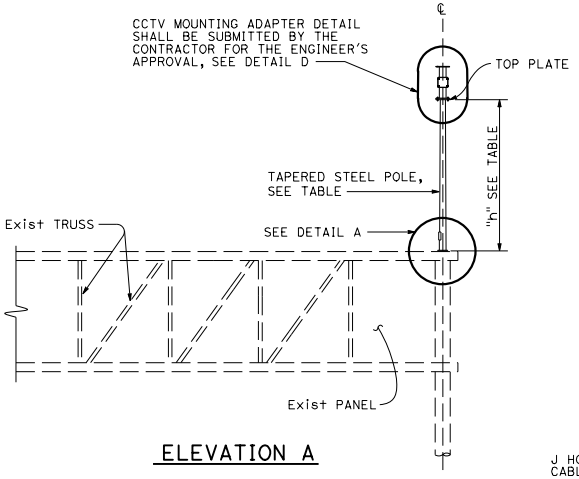
RSP ES-14B DATED APRIL 15, 2016 SUPERSEDES STANDARD PLAN ES-14B
DATED OCTOBER 30, 2015 - PAGE 487 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-14B

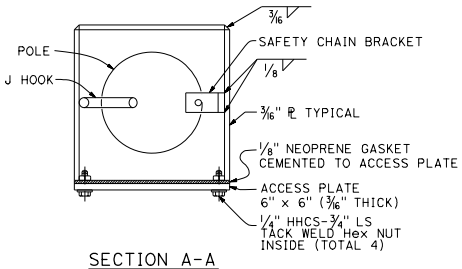
2015 REVISED STANDARD PLAN RSP ES-14B

1-22-16

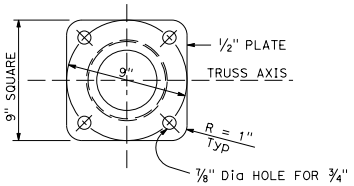
POLE EXTENSION TYPE	POLE DATA				HANDHOLE SIZE
	HEIGHT "h"	Min OD		THICKNESS	
		BASE	TOP		
CCTV 5	5′	4 3/16"	3 3/4"	0.1793"	3" x 5"
CCTV 10	10′	5 1/4"			
CCTV 15	15′	5 15/16"			



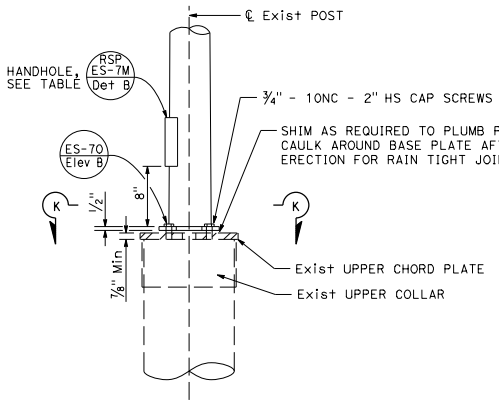
ELEVATION A



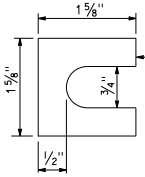
SECTION A-A



SECTION K-K



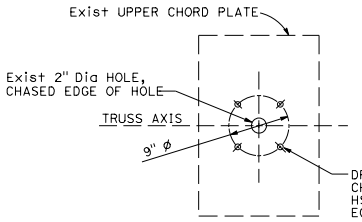
DETAIL A



FURNISH SHIMS 0.012" THICK AND 0.036" THICK. SHIM SHALL BE FABRICATED BRASS SHIM STOCK OR GALVANIZED STEEL

SHIM

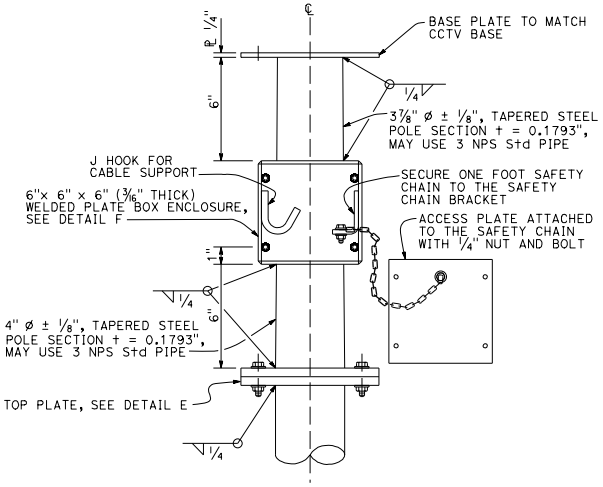
DETAIL B



UPPER CHORD PLATE

DETAIL C

See Note 3

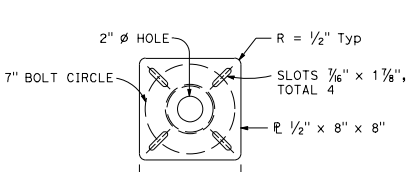


CLOSED CIRCUIT TELEVISION MOUNTING ADAPTER

DETAIL D

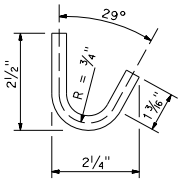
NOTES:

1. Verify controlling field dimensions before ordering or fabricating any material.
2. Bolt hole locations may vary at the discretion of the Engineer.
3. See Std Plan S13.
4. For wind loading see Revised Standard Plan RSP ES-7M.
5. Materials (Structural Steel):
   a. fy = 55,000 psi (tapered steel tube)
   b. fy = 50,000 psi (unless otherwise noted)



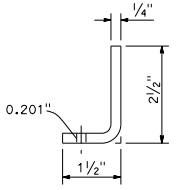
TOP PLATE

DETAIL E



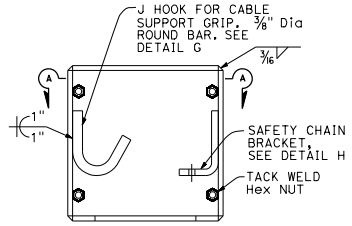
J HOOK

DETAIL G



SAFETY CHAIN BRACKET

DETAIL H



BOX ENCLOSURE

DETAIL F

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

REGISTERED CIVIL ENGINEER

April 20, 2018

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 — 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.

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CLOSED CIRCUIT TELEVISION, 5' TO 15' OVERHEAD SIGN MOUNTED POLE)

NO SCALE

RSP ES-16A DATED APRIL 20, 2018 SUPERSEDES RSP ES-16A DATED JULY 15, 2016 AND STANDARD PLAN ES-16A DATED OCTOBER 30, 2015 - PAGE 493 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-16A

2015 REVISED STANDARD PLAN RSP ES-16A

11-15-17

POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH	
	HEIGHT "h"	Min OD BASE	Min OD TOP	THICKNESS	"C"	THICKNESS	ANCHOR BOLT SIZE	BC = BOLT CIRCLE	Dia	"d"
CCTV 25	25′	7⅜"	3¾"	0.1793"	1′-1"	1"	1½" ø x 36"	11½"	2′-6"	7′-0"
CCTV 30	30′	8"			1′-1½"			1′-0"		7′-6"
CCTV 35	35′	8⅝"			1′-2"			1′-1"		8′-0"
CCTV 40	40′	9⅜"			1′-3"			1′-1½"		8′-6"
CCTV 45	45′	10"						1′-2"		

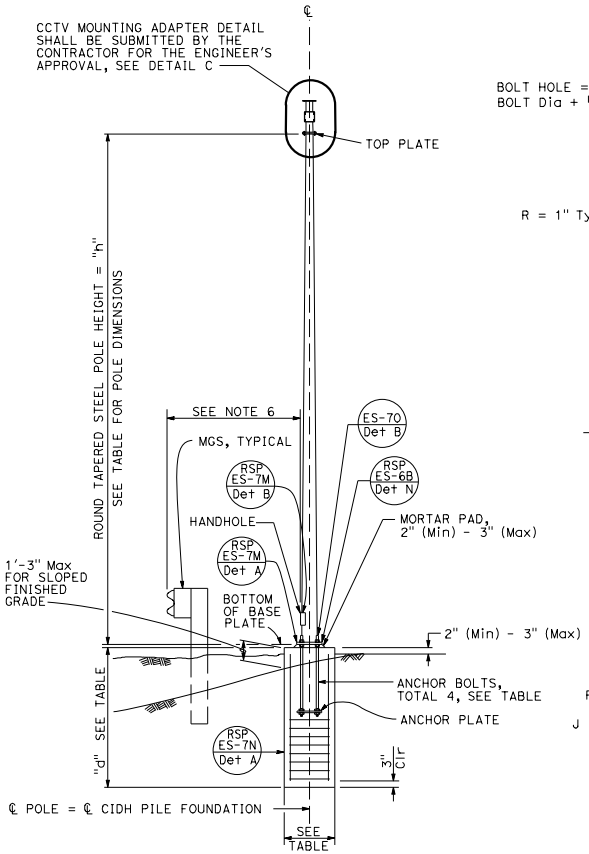
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — Stanley P. Johnson, No. C57793, Exp. 3-31-20, CIVIL, STATE OF CALIFORNIA

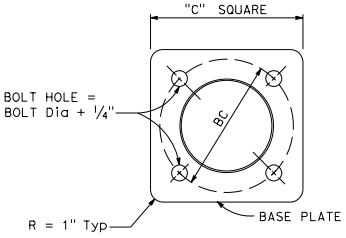
April 20, 2018
PLANS APPROVAL DATE

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.

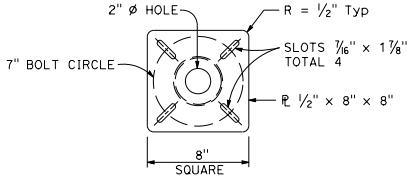
TO ACCOMPANY PLANS DATED _____



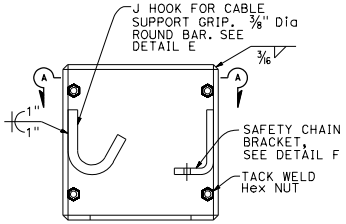
ELEVATION A



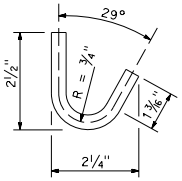
BASE PLATE
DETAIL A



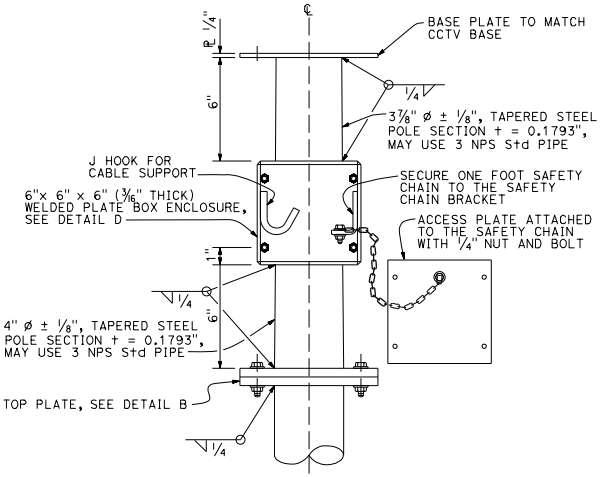
TOP PLATE
DETAIL B



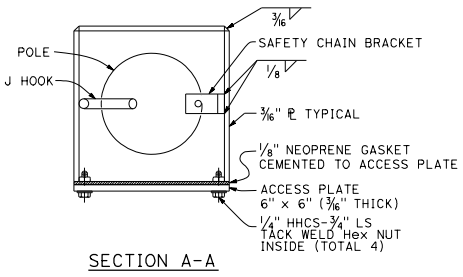
BOX ENCLOSURE
DETAIL D



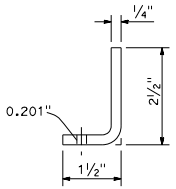
J HOOK
DETAIL E



CLOSED CIRCUIT TELEVISION MOUNTING ADAPTER
DETAIL C



SECTION A-A



SAFETY CHAIN BRACKET
DETAIL F

NOTES:

1. Verify controlling field dimensions before ordering or fabricating any material.
2. During pole installation, the post shall be raked as necessary with the use of leveling nuts to provide a plumb pole axis.
3. For wind loading see Revised Standard Plan RSP ES-7M.
4. Materials (Structural Steel):
   a. fy = 55,000 psi (tapered steel tube and anchor bolts)
   b. fy = 50,000 psi (unless otherwise noted)
5. Materials (Reinforced Concrete):
   a. f′c = 3,625 psi
   b. fy = 60,000 psi
6. See RSP A77R1 thru RSP A77R8

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CLOSED CIRCUIT TELEVISION, 25' TO 45' POLE)

NO SCALE

RSP ES-16B DATED APRIL 20, 2018 SUPERSEDES RSP ES-16B DATED JULY 15, 2016 AND STANDARD PLAN ES-16B DATED OCTOBER 30, 2015 - PAGE 494 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-16B

11-15-17

2015 REVISED STANDARD PLAN RSP ES-16B

POLE TYPE	POLE DATA					BASE PLATE DATA					CIDH PILE DATA	
	HEIGHT "h"	Min OD		THICKNESS BOTTOM SEGMENT (Min 25' LONG)	Min THICKNESS UPPER SEGMENT(S)	Dia	THICKNESS	ANCHOR BOLT SIZE		BC = BOLT CIRCLE	"D"	"L"
		BASE	TOP					TOTAL	"d"			
HM CCTV 50	50'	18"	10⅞"	0.3125"	0.1875"	25"	2"	12	2¼"	20"	3'-6"	13'-0"
HM CCTV 60	60'		9½"									
HM CCTV 70	70'	22"	12"			30"	3"			25"	4'-0"	14'-0"
HM CCTV 80	80'	22"	11⅝"	0.375"	0.25"	33"			3"	27"	4'-6"	
HM CCTV 90	90'	25"	17⅛"			42"				37"	6'-0"	15'-0"

REGISTERED CIVIL ENGINEER

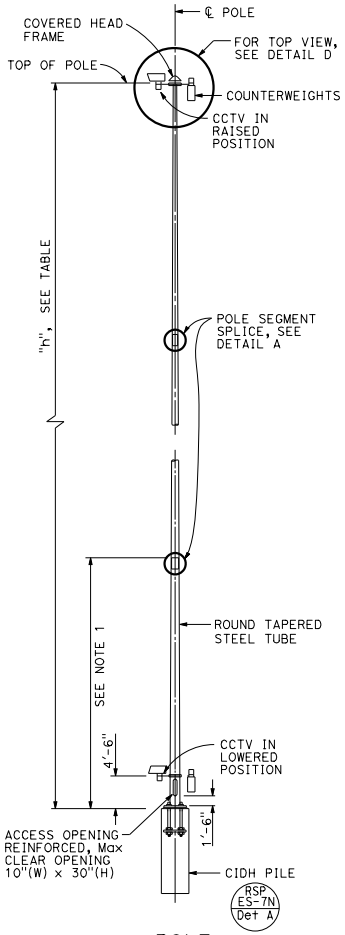
April 20, 2018
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

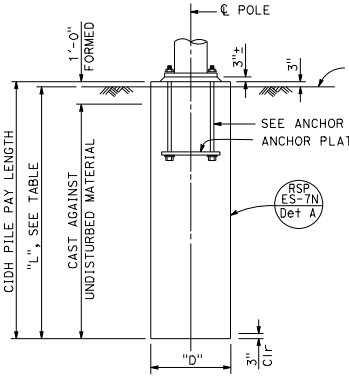
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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

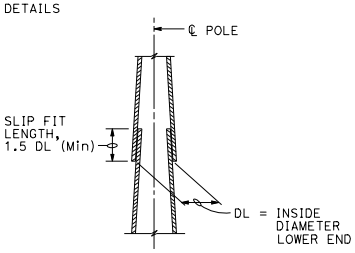
TO ACCOMPANY PLANS DATED _____



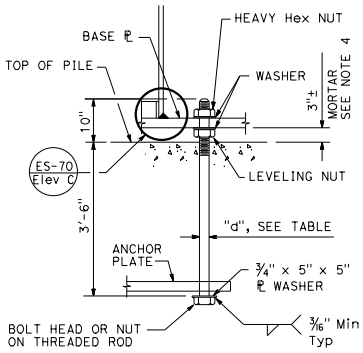
POLE
ELEVATION A



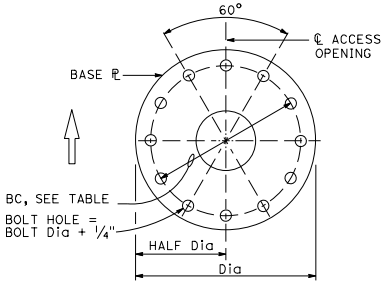
TYPICAL LOCATION
ELEVATION B



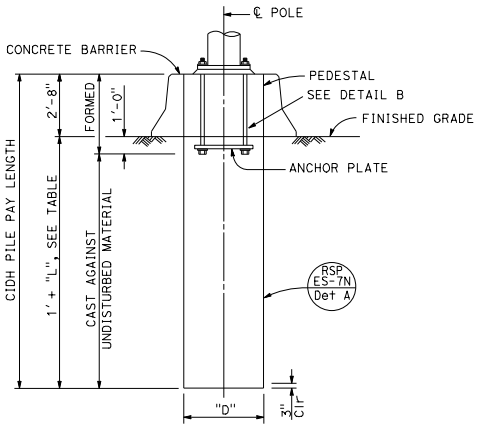
POLE SEGMENT SPLICE
DETAIL A



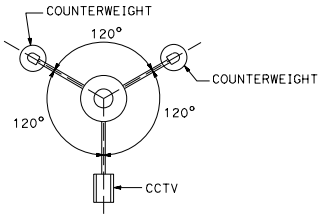
ANCHOR BOLT
DETAIL B



BASE PLATE
DETAIL C



MEDIAN LOCATION
ELEVATION C



TOP VIEW
DETAIL D

NOTES:

1. Pole details shall suit the lowering device and this foundation plan. Pole details shall be submitted to the Engineer for approval.
2. For closed circuit television details, see Electrical Plans.
3. Foundation design is based on a 3-second wind gust of 100 mph.
4. For central void and drain holes in mortar, see Revised Standard Plan RSP ES-6B detail N.
5. For wind loading see Revised Standard Plan RSP ES-7M.
6. Materials (Structural Steel):
   fy = 55,000 psi (tapered steel tube)
   fy = 50,000 psi (unless otherwise noted)
7. Access opening shall be located on the downstream side of traffic unless otherwise determined by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CLOSED CIRCUIT TELEVISION, 50' TO 90' HIGH MAST POLE)

NO SCALE

RSP ES-16C DATED APRIL 20, 2018 SUPERSEDES RSP ES-16C DATED JULY 15, 2016 AND STANDARD PLAN ES-16C DATED OCTOBER 30, 2015 - PAGE 495 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-16C

11-15-17

2015 REVISED STANDARD PLAN RSP ES-16C

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

REGISTERED CIVIL ENGINEER

April 20, 2018

PLANS APPROVAL DATE

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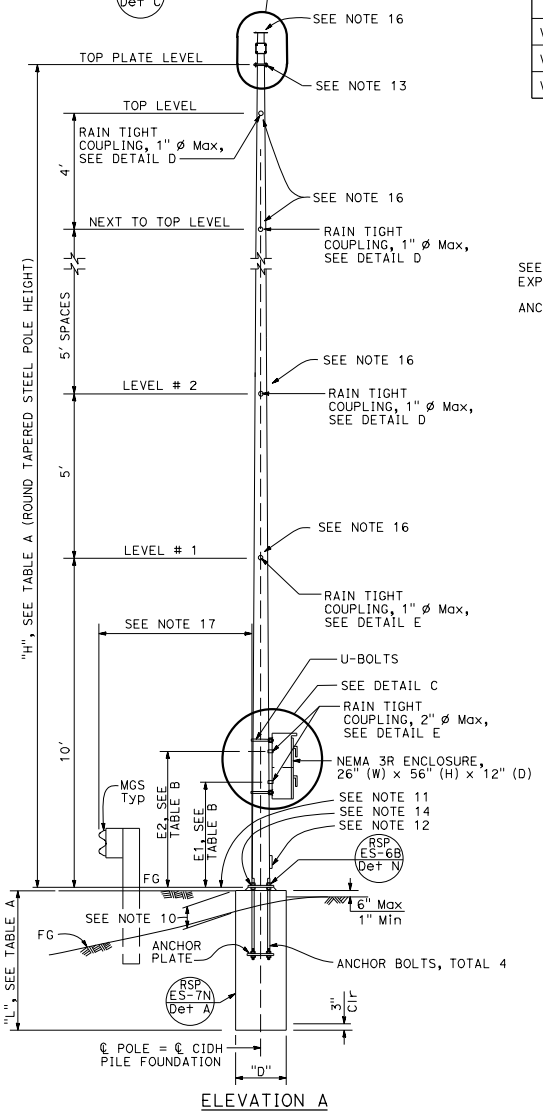
REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 — CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

WHEN CCTV IS REQUIRED, CCTV MOUNTING ADAPTER DETAIL SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE ENGINEER'S APPROVAL, SEE RSP ES-16B Det C

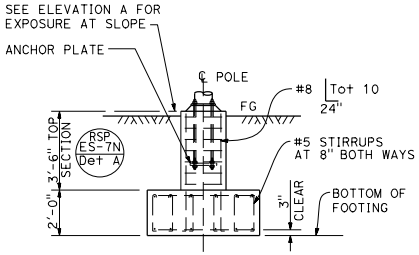


ELEVATION A

TABLE A											
POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH PILE DATA		
	HEIGHT "H"	Min OD		THICKNESS	"C"	THICKNESS	ANCHOR BOLTS SIZE	BC = BOLT CIRCLE	"D"	"L"	
		BASE	TOP							LEVEL GROUND	UP TO 2:1
VDS 30	30'	8"	3 7/8"	0.1793"	1'-1 1/2"	1 1/2"	1 1/2" ø x 3'-0"	1'-0"	2'-6"	6'-0"	8'-0"
VDS 35	35'	8 3/4"	3 11/16"	0.1196"		2"				7'-0"	9'-0"
VDS 40	40'	12"	8 7/8"	0.1793"	1'-6"			1'-4"	3'-0"	9'-0"	11'-0"

TABLE B		
POLE TYPE	COUPLING	
	E1(Max)	E2(Max)
VDS 30	3'-6"	4'-9"
VDS 35		
VDS 40		

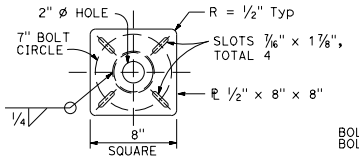
TABLE C		
SPREAD FOOTING		
GROUND	FOOTING SIZE (LENGTH x WIDTH x DEPTH)	REINFORCEMENT TOP & BOTTOM
LEVEL	8'-6" x 8'-6" x 2'-0"	12 - #5 EW
UP TO 2:1	10'-0" x 10'-0" x 2'-0"	15 - #5 EW



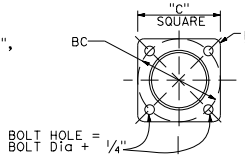
ALTERNATIVE FOOTING
ELEVATION B

TABLE D - LIMITATION ON ATTACHMENTS *		
LOCATION	MAXIMUM TOTAL EPA PER LEVEL (SQUARE FEET)	MAXIMUM TOTAL WEIGHT (lb)
LEVEL #1	14	200
LEVEL #2		
LEVEL #3	10 ***	
LEVEL #4 (VDS 35 AND VDS 40 ONLY)	2.5	50
LEVEL #5 (VDS 40 ONLY)		
NEXT TO TOP LEVEL		
TOP LEVEL		
ON TOP PLATE LEVEL **		

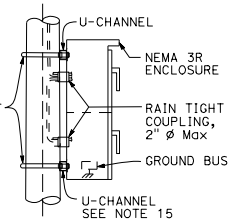
* MAXIMUM HORIZONTAL EXTENT BEYOND POLE FACE IS 4 FEET.
** MAXIMUM EXTENT ABOVE TOP PLATE IS 3 FEET.
*** 14 IF LEVEL #1 IS ZERO.



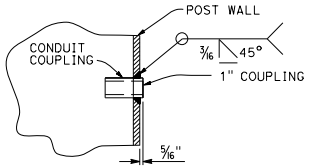
TOP PLATE
DETAIL A



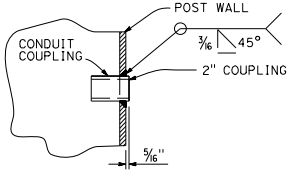
BASE PLATE
DETAIL B



DETAIL C



1" COUPLING
DETAIL D



2" COUPLING
DETAIL E

NOTES:

1. All steel shall be galvanized after fabrication.
2. The foundation shall be treated as level ground condition if the slope inclination is flatter than 4 : 1 (Horizontal : Vertical)
3. For devices mounted and mounting heights, see TABLE B.
4. For wind loading see Revised Standard Plan RSP ES-7M.
5. Materials (Structural Steel):
   a. fy = 55,000 psi (tapered steel tube)
   b. fy = 50,000 psi (unless otherwise noted)
6. Anchor bolts: fy = 55,000 psi
7. Materials (Reinforced Concrete):
   a. f'c = 3,600 psi
   b. fy = 60,000 psi
8. Verify all controlling field dimension before ordering of fabricating any material.
9. When no barriers are used, the NEMA 3R enclosure shall be located on the downstream side and perpendicular to the roadway.

   1'-3" (Max) for sloped finished grade.
11. Bottom of base plate.
12. Handhole. RSP ES-7M Det B, RSP ES-7M Det A
13. Top plate.
    Install a blank flange on the top plate when closed circuit television is not used.
14. ES-7O Elev B
15. U-channel with bracket.
16. Use the manufacturer's Effective Projected Area (EPA) for attachments. Assign attachments to nearest level and sum each level, see Table D for limitations.
17. See RSP A77R1 thru RSP A77R8

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CLOSED CIRCUIT TELEVISION WITH VEHICLE DETECTION SYSTEM, 30' TO 40' POLE)

NO SCALE

RSP ES-16D DATED APRIL 20, 2018 SUPERSEDES RSP ES-16D DATED JULY 15, 2016 AND STANDARD PLAN ES-16D DATED OCTOBER 30, 2015 - PAGE 496 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-16D

2015 REVISED STANDARD PLAN RSP ES-16D

11-15-17

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

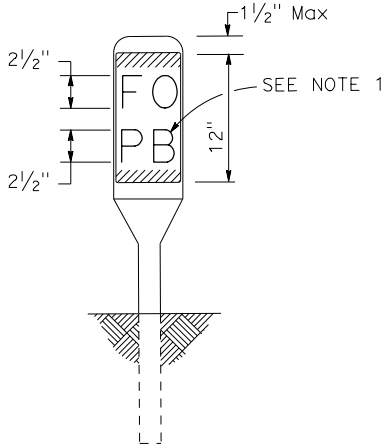
REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-19
ELECTRICAL
STATE OF CALIFORNIA

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.

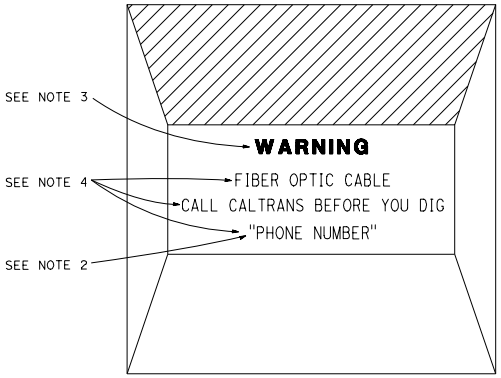
TO ACCOMPANY PLANS DATED _____

NOTES:

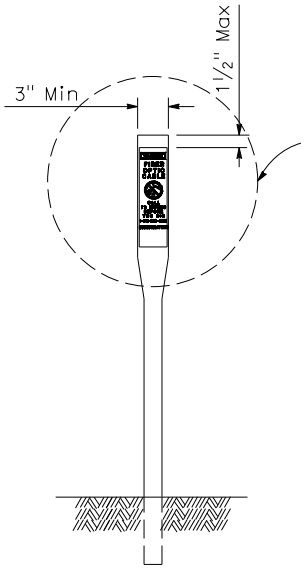
1. "PB" for Pull Box or "VT" for Vault.
2. Phone number as specified.
3. 3/8" black text.
4. 1/4" black text.
5. 1" black text.
6. 1/2" black text



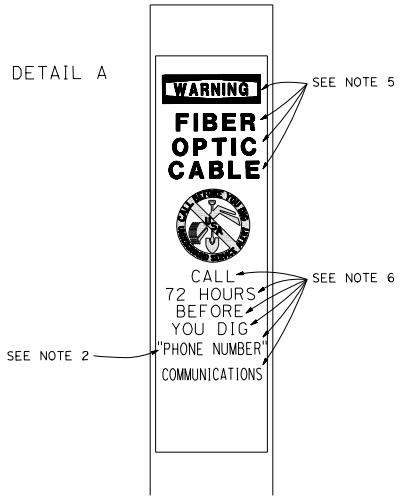
FIBER OPTIC MARKER
FOR VAULTS AND PULL BOXES



FIBER OPTIC MARKER
FOR PAVED AREAS



FIBER OPTIC MARKER
FOR UNPAVED AREAS



DETAIL A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(FIBER OPTIC MARKER DETAILS)

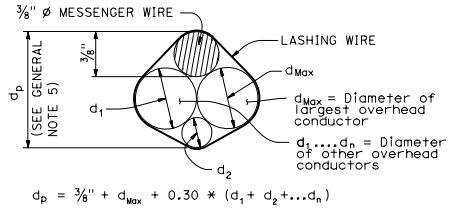
NO SCALE

RSP ES-17A DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-17A

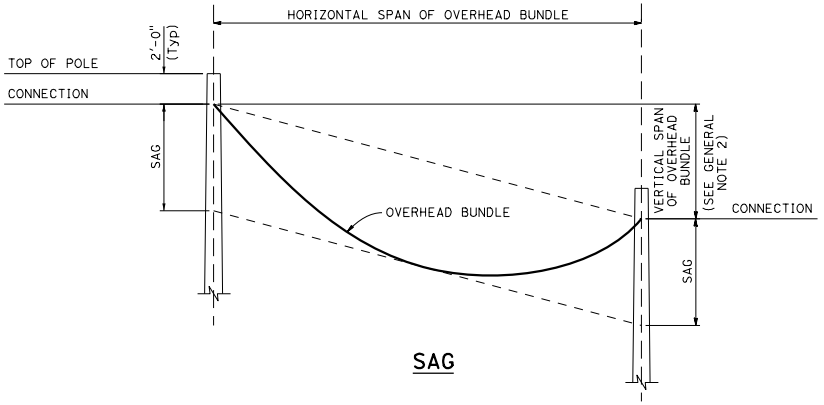
2015 REVISED STANDARD PLAN RSP ES-17A

11-20-17

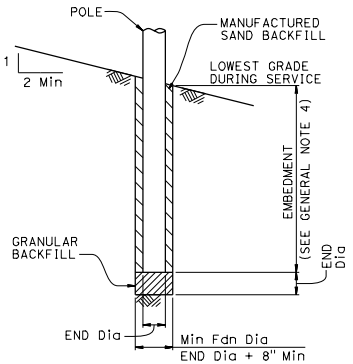


$$d_p = \tfrac{3}{8}" + d_{Max} + 0.30 * (d_1 + d_2 + \ldots d_n)$$

PROJECTED DEPTH OF OVERHEAD BUNDLE, (d_p)



SAG



POLE FOUNDATION

Design: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition (LTS-5).

GROUP LOAD COMBINATIONS:

I Dead Load
II Dead Load + Wind Load
III Dead Load + 0.5 (Wind Load) + Ice Load
IV Fatigue: Not used

LOADING:

Wind Loading: 100 mph (3-second gust)
Wind Recurrence Interval: 10 years
Combined height, exposure, and elevated terrain factor = 1.05 (Exposure C, structure is not located on or over the top half of a ridge, hill, or escarpment)

Ice Loading: 3.0 psf on surfaces, 0.60 in radial thickness of ice at a unit weight of 60 pcf on overhead bundles

BASIC DESIGN VALUES:

Timber Poles: Fb = 1850 psi
Fv = 110 psi
Fcp = 230 psi
Fc = 950 psi
E = 1500 x 10^3 psi

DESIGN WIRE BREAKING STRENGTHS:

ASTM A475, Utilities Grade, 7 strand modified by termination efficiency factor of 0.8

FOUNDATION DESIGN NOTES:

1. Pole embedment depth design is based on Broms' approximate procedure as described in Article 13.6 of AASHTO LTS-5.
2. Embedment depth is calculated based on following soil parameters,
   Cohesive Soil:
   Shear strength of soil c = 1500 psf.
   Cohesionless Soil:
   ø = 30 deg, γ = 120 pcf.
   Soil assumed to be unsaturated.
3. An overload factor of 2.0 and an undercapacity factor of 0.7 were used for safety factor of 2.86.
4. Allowable vertical bearing pressure at the end bearing of poles is 3000 psf at 6 feet or more embedment.
5. Guy wire anchor minimum allowable tension capacity, "Qa" = 8,900 lbs.

GENERAL NOTES:

1. The messenger wire and any combination of overhead conductors must not exceed either a self weight of 3.0 lb/ft or the maximum d in the pole selection tables.
2. The maximum vertical span is 10% of the horizontal span.
3. For poles with adjacent unbalanced horizontal spans, the shortest horizontal span must be at least 50% of the largest horizontal span.
4. Add 2'-0" for slopes above 1V:4H.
5. For a pole supporting multiple spans, calculate d_p for each span and use the largest value.
6. Do not exceed the attachments shown.

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

DIAMETERS AND SELF WEIGHT OF OVERHEAD CONDUCTORS

CONDUCTOR OR CABLE TYPE	DIAMETER d (in)	WEIGHT w (plf)
3 CONDUCTOR SIGNAL CABLE (3CSC)	0.400	0.0980
5 CONDUCTOR SIGNAL CABLE (5CSC)	0.500	0.1560
9 CONDUCTOR SIGNAL CABLE (9CSC)	0.650	0.2760
12 CONDUCTOR SIGNAL CABLE (12CSC)	0.800	0.3970
28 CONDUCTOR SIGNAL CABLE (28CSC)	0.900	0.6490
1-#14	0.166	0.0235
1-#12	0.185	0.0330
1-#10	0.210	0.0476
1-#8	0.271	0.0774
1-#6	0.310	0.1130
1-#4	0.359	0.1690
1-#3	0.388	0.2080
1-#2	0.420	0.2560
1-#1	0.498	0.3340
6-CONDUCTOR SIGNAL INTERCONNECT CABLE (SIC)	0.350	0.0860
12-CONDUCTOR SIGNAL INTERCONNECT CABLE (SIC)	0.500	0.1440
DETECTOR LEAD-IN CABLE (DLC)	0.310	0.0440
12 to 48-STRAND FIBER OPTIC CABLE (48FOC)	0.424	0.0600
72-STRAND FIBER OPTIC CABLE (72FOC)	0.484	0.0770
96-STRAND FIBER OPTIC CABLE (96FOC)	0.535	0.1050
144-STRAND FIBER OPTIC CABLE (144FOC)	0.670	0.1890
⅜" ø MESSENGER WIRE	0.375	0.2730

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES GENERAL NOTES

NO SCALE

RSP ES-18A DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-18A

2015 REVISED STANDARD PLAN RSP ES-18A

11-22-16

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

REGISTERED CIVIL ENGINEER

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TO ACCOMPANY PLANS DATED _____

POLE SELECTION TABLE

LEGEND

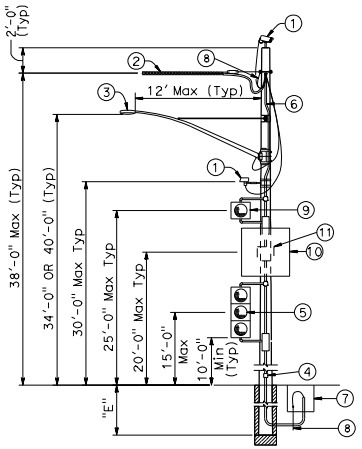
- Wood Pole No Attachments
- A Wood Pole with Attachments
- —OH— Overhead Bundle

OVERHEAD BUNDLE HORIZONTAL SPAN (Max)		CASE 1N: —OH— A				CASE 2N: —OH— 150° Min 180° Max —OH—				CASE 3N: —OH— A 90° Min 180° Max OH				CASE 4N: —OH— A 90° OH SEE NOTE 1 60° Min 120° Max				CASE 5N: A
	MAXIMUM d_p	1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1.0"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	N/A
50′	MINIMUM POLE CLASS	H-1	H-2	H-2	H-2	4	3	2	1	H-2	H-2	H-3	H-3	H-4	H-4	H-4	H-5	CLASS 1 E = 10′
	POLE EMBEDMENT (E)	11′				10′				11′				12′				
100′	MINIMUM POLE CLASS	H-2	H-3	H-4	H-5	1	H-1	H-2	H-3	H-4	H-5	H-5	H-6	H-5	H-5	H-6		
	POLE EMBEDMENT (E)	12′				11′				12′				12′				
150′	MINIMUM POLE CLASS	H-4	H-5	H-6		H-1	H-2	H-3	H-5	H-6				H-6				
	POLE EMBEDMENT (E)	12′				12′				12′				12′				
200′	MINIMUM POLE CLASS	H-5	H-6			H-2	H-3	H-5										
	POLE EMBEDMENT (E)	12′				12′												

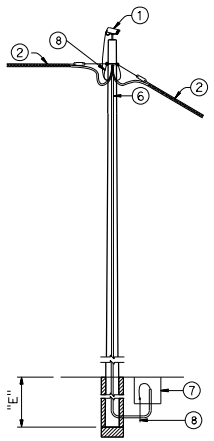
1. CCTV camera assembly or vehicle detection system
2. Overhead bundle consisting of a ⅜" ø messenger wire, overhead conductors, and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button assembly or accessible push button assembly
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with weather head as required
7. Pull box as required
8. Grounding as required
9. Single flashing beacon or single sheet sign panel (4 SQFT Max)
10. Single sheet sign panel (4′ x 4′ Max) or signal face with 3 indications
11. Flashing beacon control assembly
12. NEMA 3R enclosure, 26"(W) x 56"(H) x 12"(D) Max dimensions. Max weight including batteries, 450 lbs
13. 25′ SQFT Max total photovoltaic panels mounted as shown as required
14. 2-12" flashing beacons

NOTES:

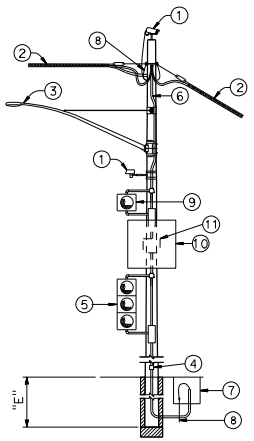
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100′.
2. Cases 1N, 3N and 4N may substitute the attachments shown in Case 5N if the photovoltaic panel is not included.
3. For Case 1N without an overhead bundle (item ②) use minimum pole class H-1 with E=11′.



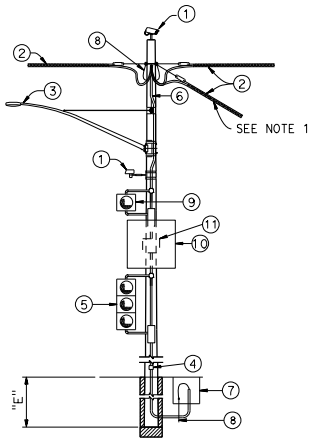
CASE 1N
POLE AT DEAD END WITH ATTACHMENTS
See Note 2



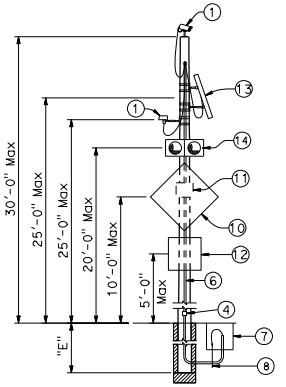
CASE 2N
POLE AT TANGENT WITHOUT ATTACHMENTS



CASE 3N
POLE AT TANGENT OR CORNER WITH ATTACHMENTS
See Note 2



CASE 4N
POLE AT JUNCTION WITH ATTACHMENTS
See Note 2



CASE 5N
POLE WITHOUT OVERHEAD BUNDLE WITH ATTACHMENTS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES NON-GUYED - NO SIGNALS ON SPANS

NO SCALE

RSP ES-18B DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-18B

2015 REVISED STANDARD PLAN RSP ES-18B

11-22-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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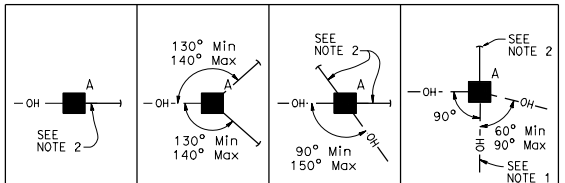
TO ACCOMPANY PLANS DATED _____

POLE SELECTION TABLE

LEGEND

- A — Wood Pole with Attachments
- —OH— Overhead Bundle
- Guy Anchor



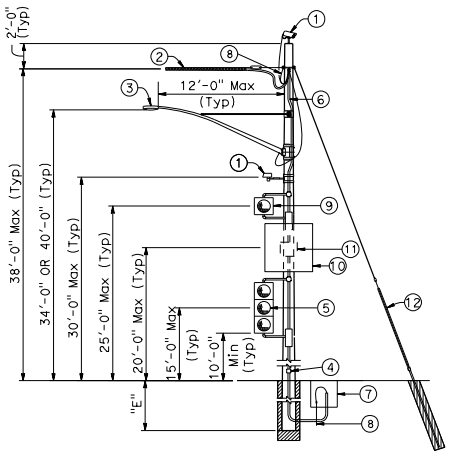
CASE 1G | CASE 2G | CASE 3G | CASE 4G

OVERHEAD BUNDLE HORIZONTAL SPAN (Max)		MAXIMUM d_p	CASE 1G 1"	1.5"	2.0"	2.5"	CASE 2G 1"	1.5"	2.0"	2.5"	CASE 3G 1"	1.5"	2.0"	2.5"	CASE 4G 1"	1.5"	2.0"	2.5"
50′		MINIMUM POLE CLASS	H-1	H-1	H-2	H-2	1	1	1	1	1	1	1	H-1	H-2	H-2	H-3	H-3
		POLE EMBEDMENT (E)	10′				9′				9′				11′			
100′		MINIMUM POLE CLASS	H-2	H-2	H-3	H-4	1	H-1	H-1	H-1	1	H-1	H-2	H-2	H-3	H-3	H-4	H-4
		POLE EMBEDMENT (E)	11′				9′				9′				12′			
150′		MINIMUM POLE CLASS	H-3	H-3	H-4	H-5	H-1	H-1	H-2	H-2	H-2	H-3	H-3	H-3	H-4	H-5	H-5	H-6
		POLE EMBEDMENT (E)	11′				9′				9′				12′			
200′		MINIMUM POLE CLASS	H-4	H-4	H-5	H-6	H-1	H-2	H-3	H-3	H-3	H-3	H-4	H-4	H-5	H-6		
		POLE EMBEDMENT (E)	11′				9′				9′				12′			

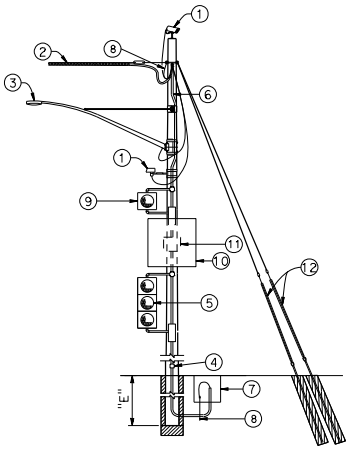
1. CCTV camera assembly or vehicle detection system
2. Overhead bundle consisting of a ⅜" ø messenger wire, overhead conductors, and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button assembly or accessible push button assembly
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with weather head as required
7. Pull box as required
8. Grounding as required
9. Single flashing beacon or single sheet sign panel (4 SQFT Max)
10. Single sheet sign panel (4′ x 4′ Max) or signal face with 3 indications
11. Flashing beacon control assembly
12. ½" ø guy wire with white guy marker and strain insulator (for anchorage see "TEMPORARY WOOD POLES-DETAILS No. 2" sheet)

NOTES:

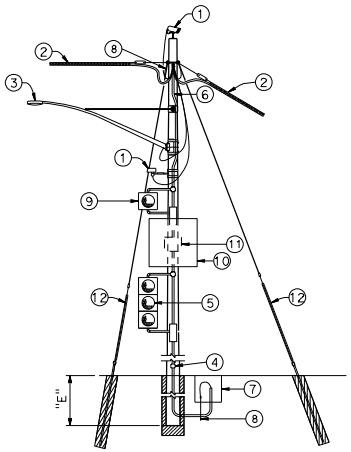
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100′.
2. Guy wire in line with opposing span ± 5°.



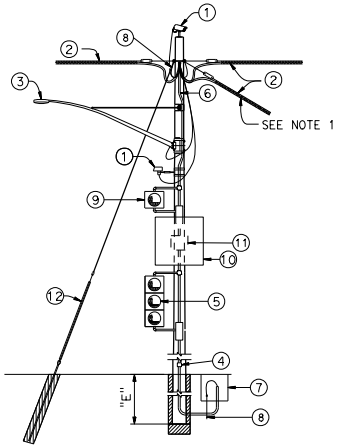
CASE 1G
POLE AT DEAD END
WITH ATTACHMENTS



CASE 2G
POLE AT DEAD END
WITH ATTACHMENTS



CASE 3G
POLE AT CORNER
WITH ATTACHMENTS



CASE 4G
POLE AT JUNCTION
WITH ATTACHMENTS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES GUYED - NO SIGNALS ON SPANS

NO SCALE

RSP ES-18C DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-18C

2015 REVISED STANDARD PLAN RSP ES-18C

11-22-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

LEGEND

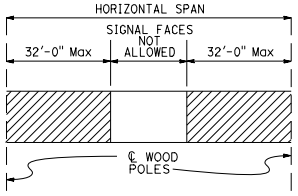
- A — Wood Pole with Attachments
- —TS— Overhead Bundle with Signal Faces (See Note 2)
- —OH— Overhead Bundle
- Guy Anchor

POLE SELECTION TABLE

OVERHEAD BUNDLE HORIZONTAL SPAN Max		CASE 1GT			CASE 2GT			CASE 3GT		
	MAXIMUM dp	1"	1.5"	2.0"	1"	1.5"	2.0"	1"	1.5"	2.0"
50'	MINIMUM POLE CLASS	H-2	H-3	H-3	H-2	H-2	H-2	H-3	H-4	H-4
	POLE EMBEDMENT (E)	10'			10'			11'		
100'	MINIMUM POLE CLASS	H-3	H-3	H-4	H-2	H-3	H-3	H-4	H-4	H-5
	POLE EMBEDMENT (E)	11'			10'			11'		
150'	MINIMUM POLE CLASS	H-3	H-4	H-4	H-2	H-3	H-4	H-4	H-5	H-5
	POLE EMBEDMENT (E)	11'			10'			11'		

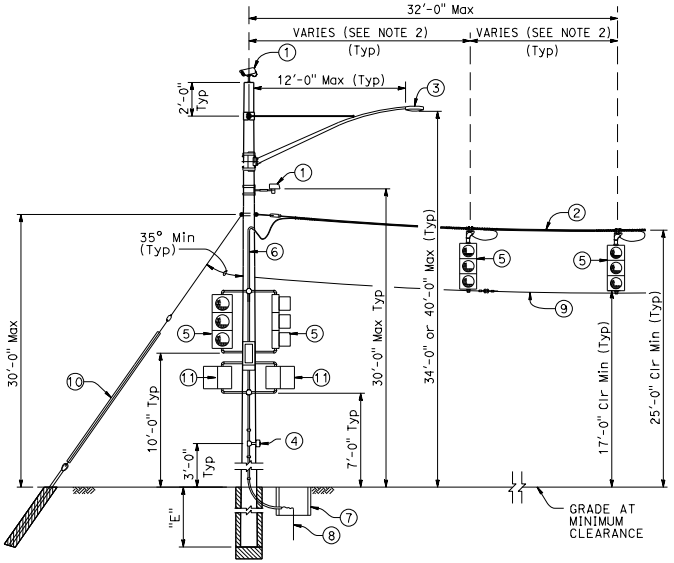
NOTES:

1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100'.
2. Maximum of 2 SIGNAL FACES per span within the hatched regions indicated by "LOCATION OF SIGNAL FACES".
3. Guy wire in line with opposing span ± 5°.

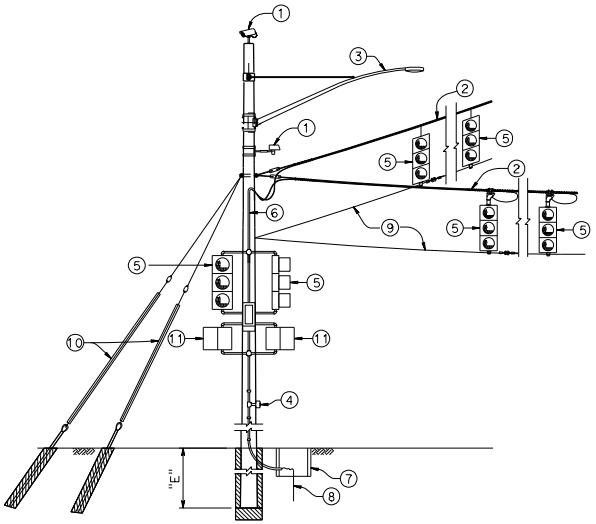


LOCATION OF SIGNAL FACES

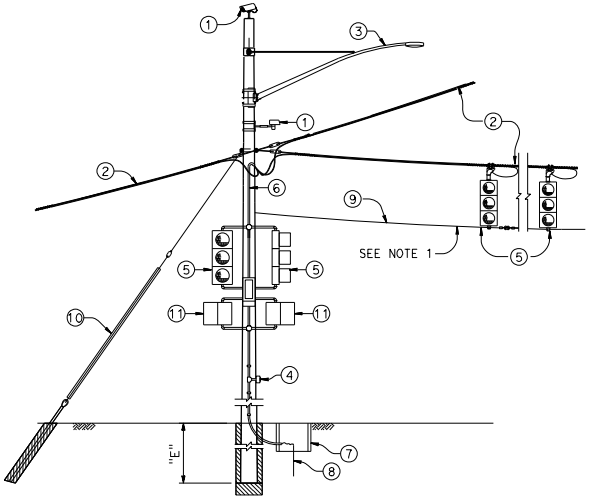
1. CCTV camera assembly or vehicle detection system
2. Overhead bundle consisting of ⅜" Ø messenger wire and overhead conductors and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button assembly or accessible push button assembly
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with weather head as required
7. Pull box as required
8. Grounding as required
9. ⅜" Ø tether wire
10. ½" Ø guy wire with white guy marker and strain insulator. For anchorage see "TEMPORARY WOOD POLES-DETAILS No. 2" sheet
11. Pedestrian signal head



CASE 1GT
POLE AT DEAD END WITH ATTACHMENTS



CASE 2GT
POLE AT CORNER WITH ATTACHMENTS



CASE 3GT
POLE AT JUNCTION WITH ATTACHMENTS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES GUYED - WITH SIGNAL FACES ON SPANS

NO SCALE

RSP ES-18D DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-18D

11-22-16

2015 REVISED STANDARD PLAN RSP ES-18D

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

LEGEND

A — Wood Pole with Attachments

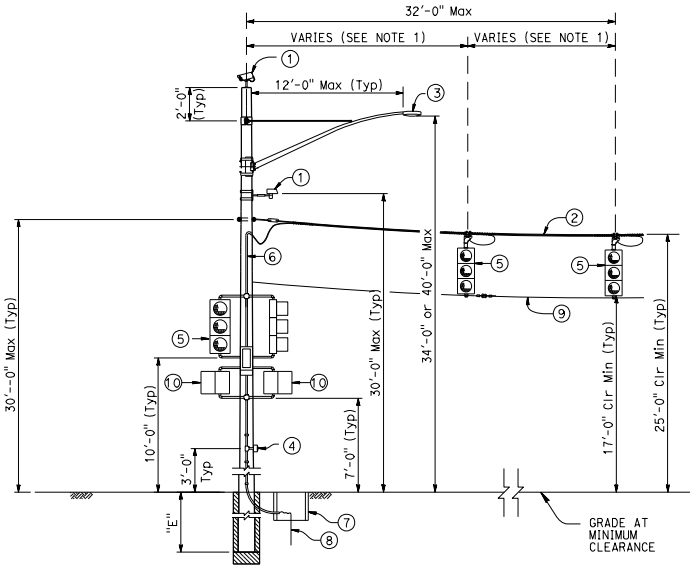
— TS — Overhead Bundle with Signal Faces (See Note 1)

POLE SELECTION TABLE

CASE 1NT

OVERHEAD BUNDLE HORIZONTAL SPAN (Max)					
75'	MAXIMUM d_p	1"	1.5"	2.0"
	MINIMUM POLE CLASS	H-5	H-6	H-6
	POLE EMBEDMENT (E)	13'		

1. CCTV camera assembly or vehicle detection system
2. Overhead bundle consisting of a ⅜" ø messenger wire and overhead conductors and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button assembly or accessible push button assembly
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with weather head as required
7. Pull box as required
8. Grounding as required
9. ⅜" ø tether wire
10. Pedestrian signal head

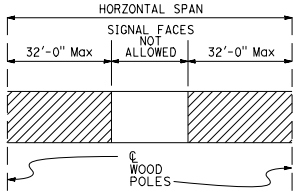


CASE 1NT

POLE AT DEAD END WITH ATTACHMENTS

NOTE:

1. Maximum of 2 SIGNAL FACES per span within the hatched regions indicated by "LOCATION OF SIGNAL FACES".



LOCATION OF SIGNAL FACES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES NON-GUYED-WITH SIGNAL FACES ON SPAN

NO SCALE

RSP ES-18E DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-18E

2015 REVISED STANDARD PLAN RSP ES-18E

11-22-16

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STATE OF CALIFORNIA

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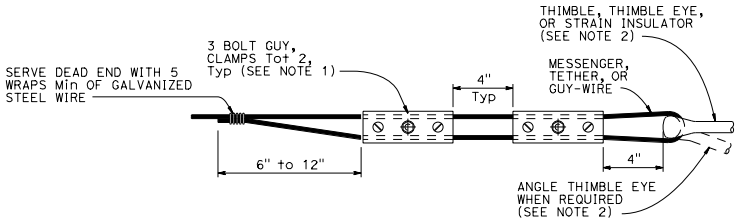
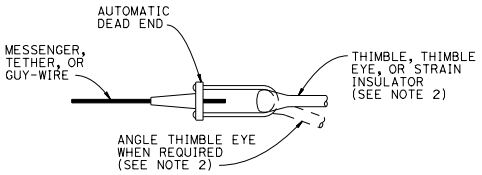
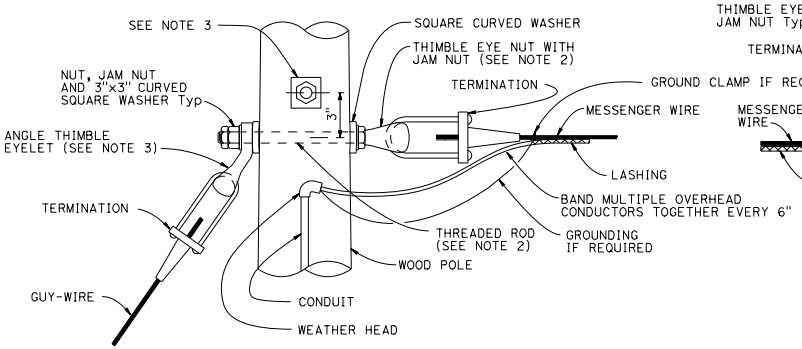
TO ACCOMPANY PLANS DATED _____



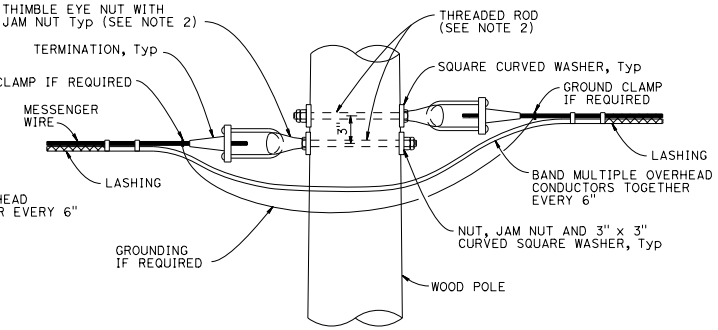
ALTERNATIVE TERMINATION OF MESSENGER WIRES USING GUY CLAMPS



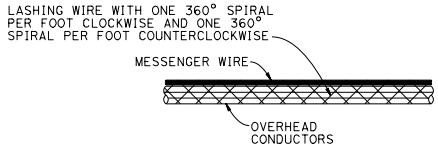
TERMINATION OF WIRES USING AUTOMATIC DEAD END



POLE AT DEAD END WITH GUY-WIRE CONNECTION

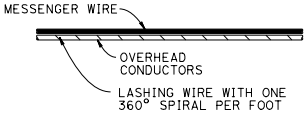


POLE AT TANGENT OR CORNER CONNECTION



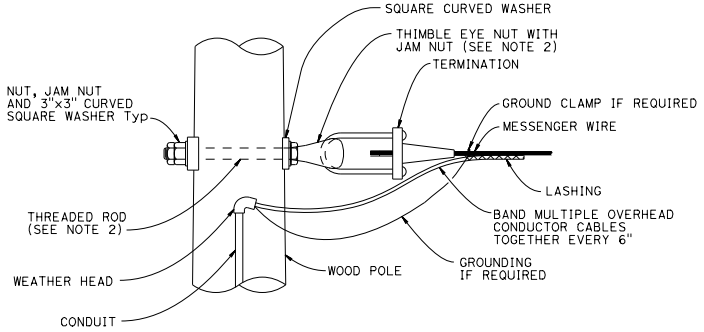
DOUBLE LASHING DETAIL

USE IF d_p IS GREATER THAN 1½"

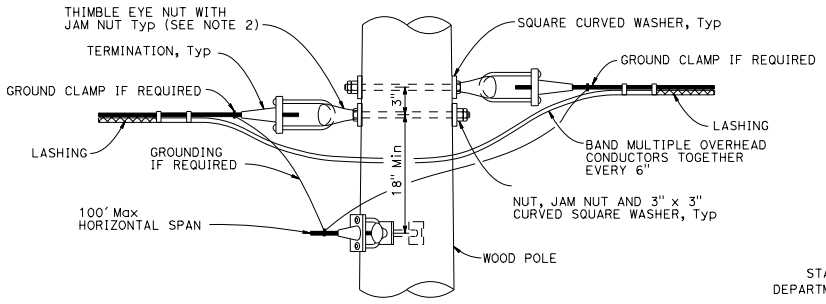


TYPICAL LASHING DETAIL

USE IF d_p IS 1½" OR LESS



POLE AT DEAD END CONNECTION



POLE AT JUNCTION CONNECTION

NOTES:

1. For guy wires use 3 clamps.
2. Use ⅝" ø except ¾" ø at guyed wires
3. Install additional angle thimble eyelet at poles with two guy wires.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES DETAILS No. 1

NO SCALE

RSP ES-19A DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-19A

2015 REVISED STANDARD PLAN RSP ES-19A

11-22-16

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REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-18
CIVIL
STATE OF CALIFORNIA

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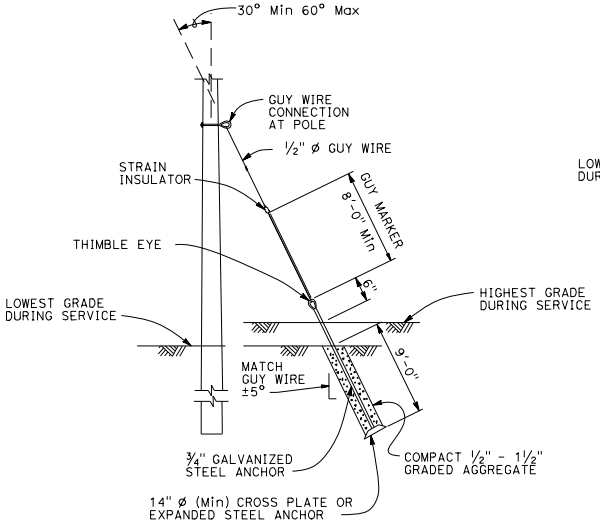
TO ACCOMPANY PLANS DATED _____

2015 REVISED STANDARD PLAN RSP ES-19B

NOTE:

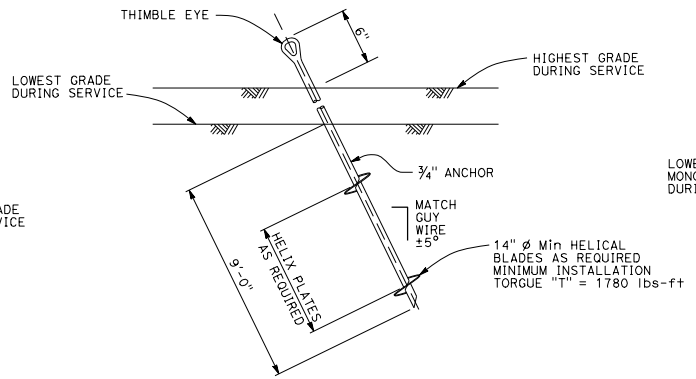
1. For minimum allowable tension capacity of anchors see "Temporary Wood Poles - General Notes" sheet.



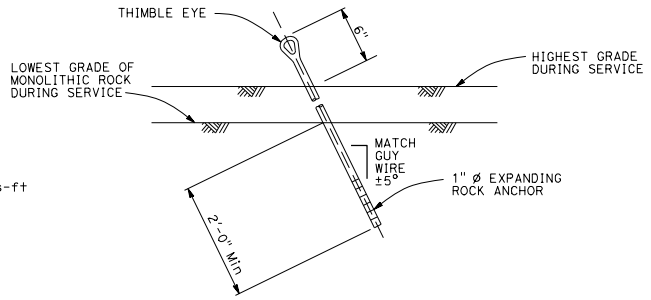
NOTE:

Helical anchor detail may be used in place of expanded steel anchors.

EXPANDED STEEL ANCHOR DETAIL



HELICAL ANCHOR DETAIL



EXPANDING ROCK ANCHOR DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES DETAILS No. 2

NO SCALE

RSP ES-19B DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-19B

11-22-16

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REGISTERED CIVIL ENGINEER — Stanley P. Johnson, No. C57793, Exp. 3-31-18, CIVIL, REGISTERED PROFESSIONAL ENGINEER, STATE OF CALIFORNIA

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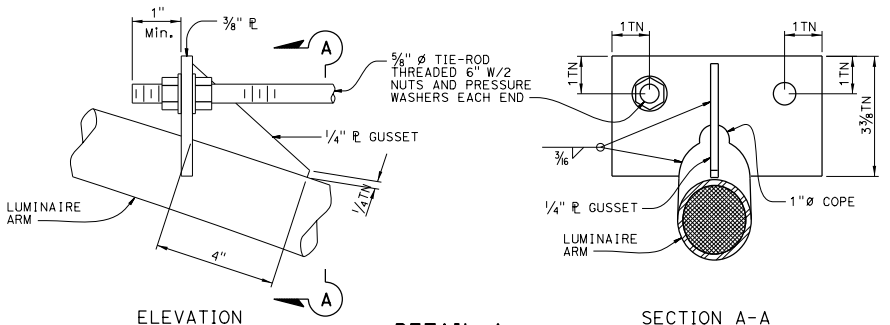
TO ACCOMPANY PLANS DATED _____

NOTES:

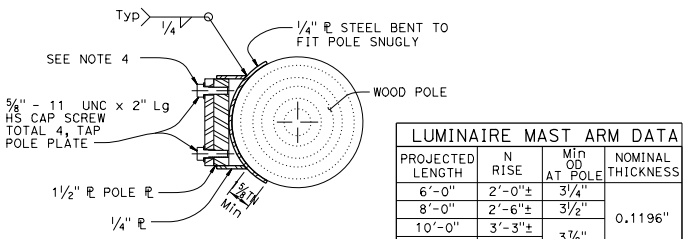
1. Luminaire mast arms must be in compliance with Standard Plan ES-6D with noted modifications.
2. Verify pole dimensions at tie-rod attachment height. Fabricate 8" flat bar with "L" Dimension to maintain an open gap between flanges in finished installation.
3. Not all screw heads and bolt heads are shown for clarity.
4. Mast arm not shown for clarity.

NOTE:
Not all screw and bolt heads shown for clarity.



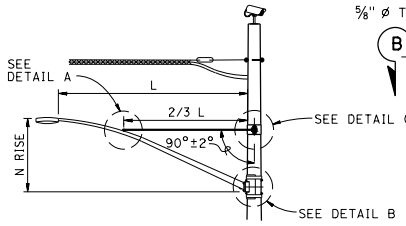
ELEVATION — SECTION A-A

DETAIL A
TIE-ROD AT LUMINAIRE ARM

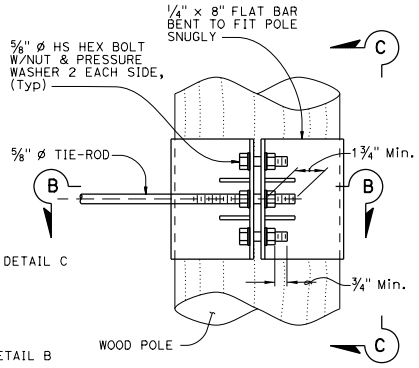


SECTION E-E

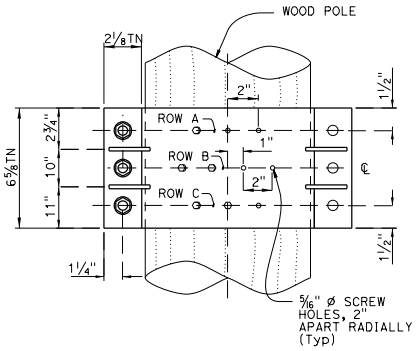
LUMINAIRE MAST ARM DATA			
PROJECTED LENGTH	N RISE	Min OD AT POLE	NOMINAL THICKNESS
6'-0"	2'-0"±	3 1/4"	0.1196"
8'-0"	2'-6"±	3 1/2"	
10'-0"	3'-3"±	3 7/8"	
12'-0"	4'-3"±		



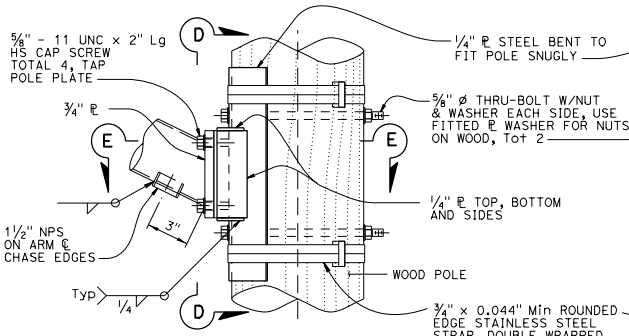
LUMINAIRE MAST ARM



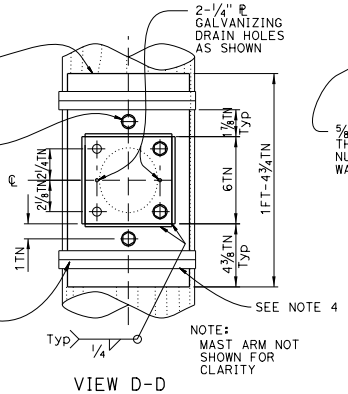
ELEVATION



VIEW C-C

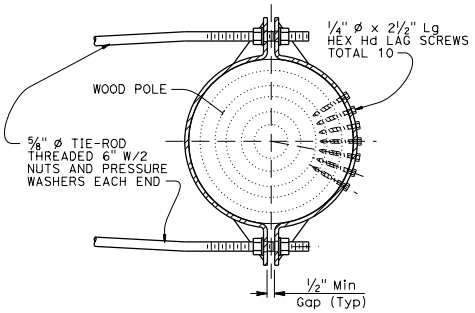


ELEVATION

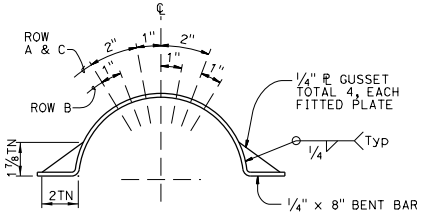


VIEW D-D

DETAIL B
ARM CONNECTION DETAILS



SECTION B-B



LAG SCREW AND GUSSET PLATE LAYOUT

DETAIL C
TIE-ROD AT POLE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES DETAILS No. 3

NO SCALE

RSP ES-19C DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-19C

2015 REVISED STANDARD PLAN RSP ES-19C

11-22-16

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STATE OF CALIFORNIA

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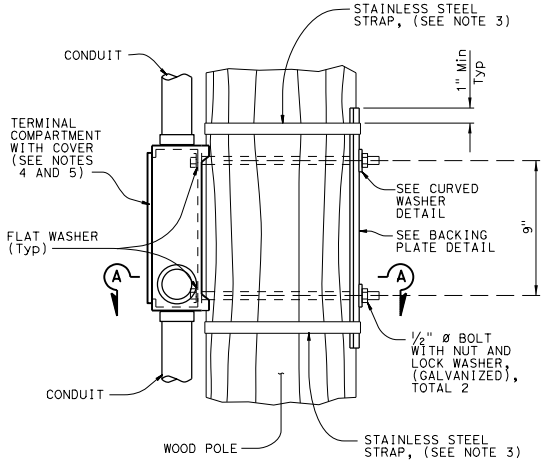
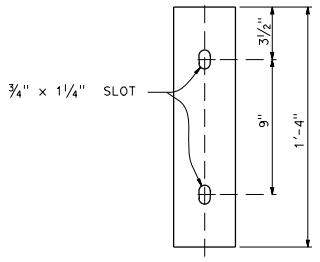
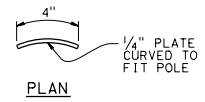
TO ACCOMPANY PLANS DATED _____



ELEVATION

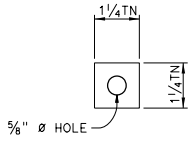


ELEVATION

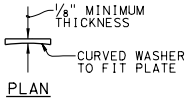


PLAN

BACKING PLATE DETAIL



ELEVATION

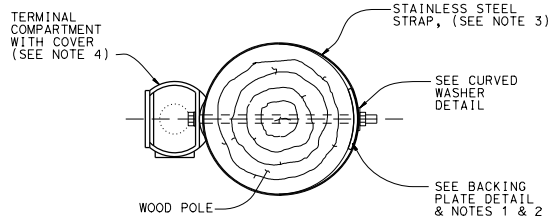


PLAN

CURVED WASHER DETAIL

NOTES:

1. Verify pole dimensions at terminal compartment for fabrication of backing plate and curved washer.
2. Backing plate to be galvanized after fabrication.
3. ¾" x 0.044" minimum, rounded edge stainless steel straps, double wrapped with 2" long bend under stainless steel strap buckle.
4. For miscellaneous details for signal mounting not shown see Standard Plan ES-4D.
5. If the terminal compartment has a cable entry guide on the rear face, remove the cable entry guide to a level that will not interfere with the wood post. Close any unused cable entry locations with raintight cap.



SECTION A-A

SIDE MOUNTING TERMINAL COMPARTMENT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES DETAILS No. 4

NO SCALE

RSP ES-19D DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-19D

11-22-16

2015 REVISED STANDARD PLAN RSP ES-19D

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-18 — CIVIL — STATE OF CALIFORNIA

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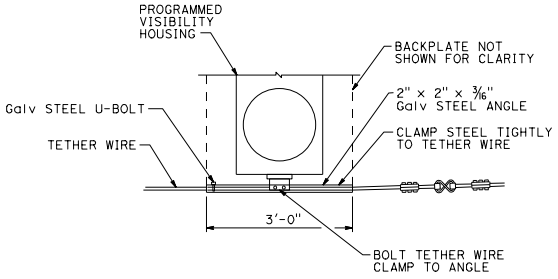
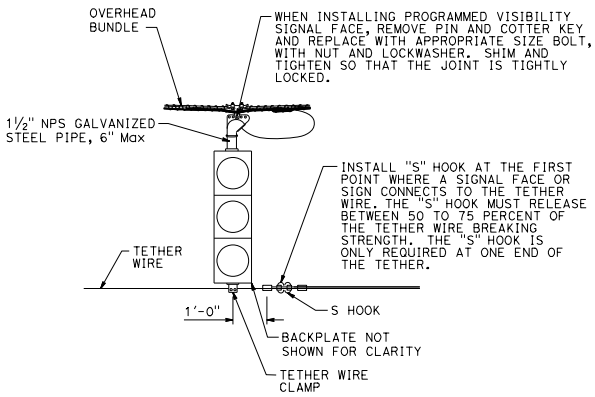
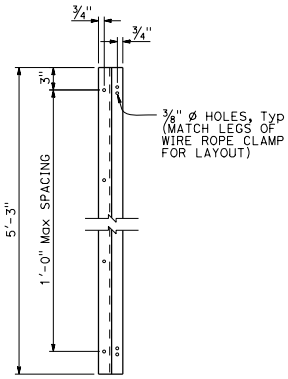
TO ACCOMPANY PLANS DATED _____



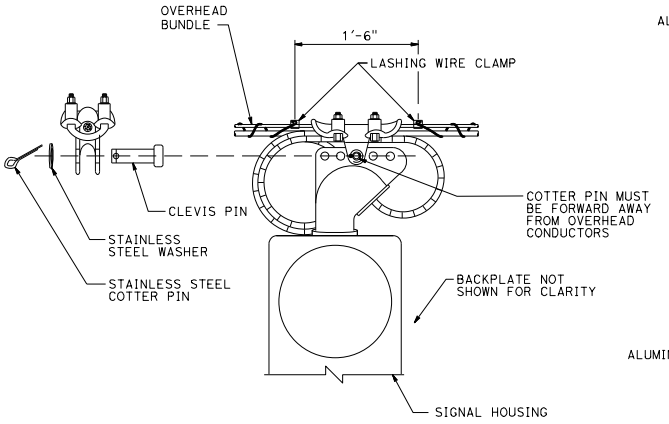
TETHER WIRE ATTACHMENT FOR PROGRAMMED VISIBILITY SIGNAL FACE



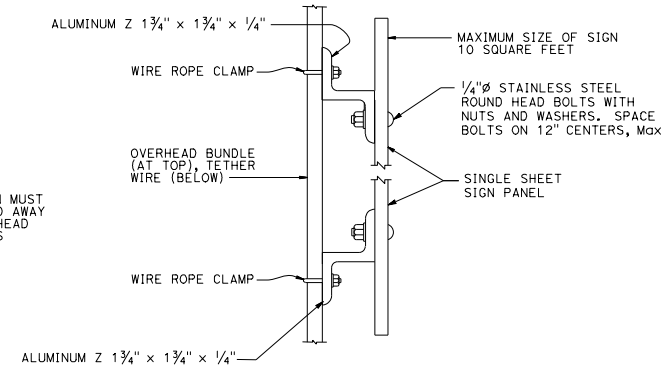
SIGNAL FACE SUPPORT



Z-BAR ELEVATION

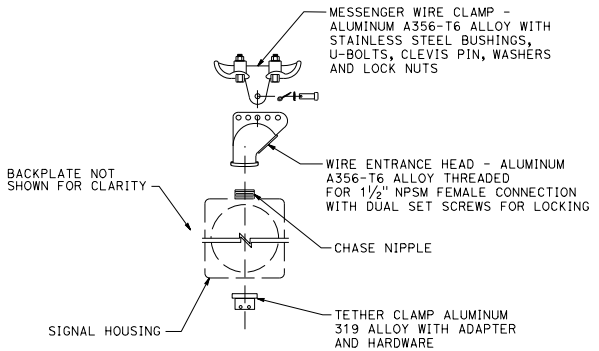


MESSENGER WIRE CLAMP COTTER PIN DETAIL



THE OVERLAPPED CONNECTION OF ADJUSTABLE HANGERS MUST USE A MINIMUM OF 2 BOLTS WITH A MINIMUM SPACING BETWEEN BOLTS OF 2"

SIGN MOUNTING DETAIL



SIGNAL FACE SUPPORT EXPLODED VIEW

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES DETAILS No. 5

NO SCALE

RSP ES-19E DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

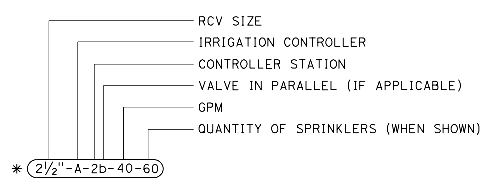
REVISED STANDARD PLAN RSP ES-19E

2015 REVISED STANDARD PLAN RSP ES-19E

11-22-16

EXISTING	NEW	ITEM DESCRIPTION
		WATER METER (WM)
		BACKFLOW PREVENTER ASSEMBLY (BPA)
		BACKFLOW PREVENTER ENCLOSURE (BPE)
		BOOSTER PUMP (BP)
		TRUCK LOADING STANDPIPE (TLS)
FS	FS	FLOW SENSOR (FS)
		MASTER IRRIGATION CONTROLLER (MIC)
		AUXILIARY IRRIGATION CONTROLLER (AIC)
		IRRIGATION CONTROLLER (IC) IRRIGATION CONTROLLER (IC) (BATTERY) IRRIGATION CONTROLLER (IC) (SOLAR) IRRIGATION CONTROLLER (IC) (TWO WIRE)
		IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET (ICC)
acc	ACC	ARMOR-CLAD CONDUCTORS (ACC)
		CONTROL AND NEUTRAL CONDUCTORS (CNC)
		IRRIGATION CONDUIT
		IRRIGATION SLEEVE
dip	DIP	DUCTILE IRON PIPE (SUPPLY LINE) (MAIN) (DIP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (MAIN) (GSP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (LATERAL) (GSP)
		PLASTIC PIPE (SUPPLY LINE) (MAIN)
		PLASTIC PIPE (SUPPLY LINE) (LATERAL)
cp	CP	COPPER PIPE (SUPPLY LINE)
dit	DIT	DRIP IRRIGATION TUBING
		REMOTE CONTROL VALVE (RCV) REMOTE CONTROL VALVE (MASTER) (RCVM) REMOTE CONTROL VALVE (MASTER) W/FLOW METER (RCVMF)
P	P	REMOTE CONTROL VALVE W/PRESSURE REGULATOR (RCVP)
		EXISTING MANUAL CONTROL VALVE (MCV)
		DRIP VALVE ASSEMBLY (DVA)
		WYE STRAINER ASSEMBLY (WSA)

EXISTING	NEW	ITEM DESCRIPTION
		GATE VALVE (GV)
		BALL VALVE (BV)
		QUICK COUPLING VALVE (QCV)
		CAM COUPLER ASSEMBLY (CCA)
		GARDEN VALVE ASSEMBLY (GARVA)
		PRESSURE REGULATING VALVE (PRV)
		PRESSURE RELIEF VALVE (PRLV)
		FLOW CONTROL VALVE (FCV)
		COMBINATION AIR RELEASE VALVE (CARV)
		CHECK VALVE (CV)
		FLUSH VALVE (FV)
		EXISTING NOZZLE LINE W/TURNING UNION
		EXISTING IRRIGATION SYSTEM
		EXISTING IRRIGATION SYSTEM TO BE REMOVED
		CHAIN LINK GATE
		QUICK COUPLING VALVE W/SPRINKLER PROTECTOR
3	3	SPRINKLER W/SPRINKLER PROTECTOR
		CONNECT TO EXISTING SYSTEM
		CAP
		CAP EXISTING
	\\\FR\\\	FIBER ROLL
	\\\CS\\\	COMPOST SOCK



VALVE CODE

✳ VALVE CODES FOR EXISTING VALVES ARE SHOWN IN A DASHED ENCLOSURE.

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

LICENSED LANDSCAPE ARCHITECT

July 15, 2016
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT · Michael V. Ferraro · 3959 · Signature · 9-30-17 · Renewal Date · Date · STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED ______________

2015 REVISED STANDARD PLAN RSP H1

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE AND EROSION CONTROL SYMBOLS

NO SCALE

RSP H1 DATED JULY 15, 2016 SUPERSEDES STANDARD PLAN H1 DATED OCTOBER 30, 2015 - PAGE 230 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H1

5-24-16

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

LICENSED LANDSCAPE ARCHITECT

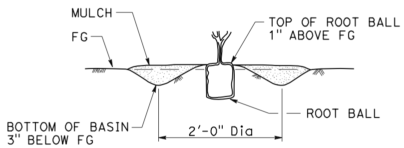
July 21, 2017
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT
Michael V. Ferraro 3898
Signature
9-30-17
Renewal Date
Date
STATE OF CALIFORNIA

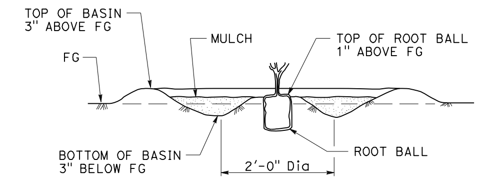
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED ____________

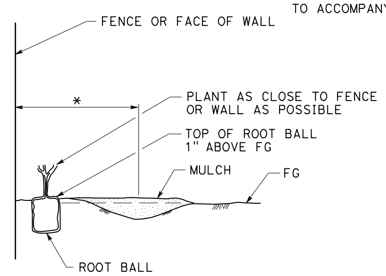
2015 REVISED STANDARD PLAN RSP H2



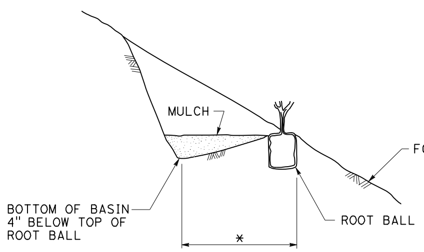
SECTION
(Flat Area)



SECTION
(Flat Area)

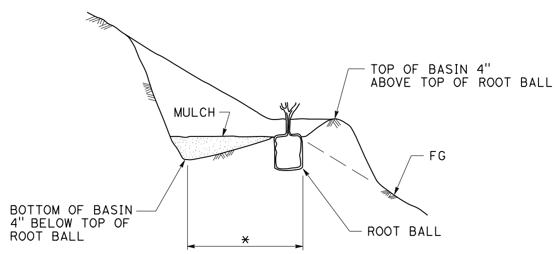


SECTION
(Flat Area)



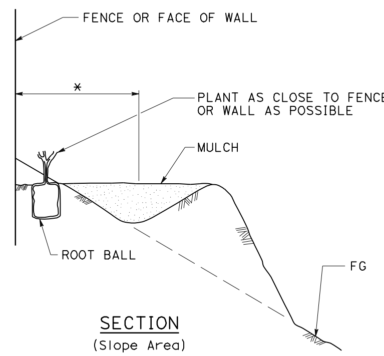
SECTION
(Slope Area)

BASIN TYPE I



SECTION
(Slope Area)

BASIN TYPE II



SECTION
(Slope Area)

BASIN TYPE III

* Basin area equivalent to 2'-0" Dia

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

RSP H2 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN H2 DATED OCTOBER 30, 2015 - PAGE 231 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H2

4-11-17

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

LICENSED LANDSCAPE ARCHITECT

July 21, 2017
PLANS APPROVAL DATE

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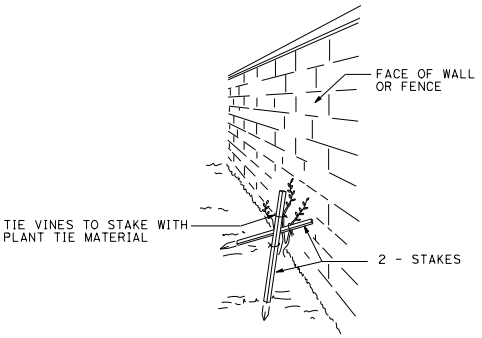
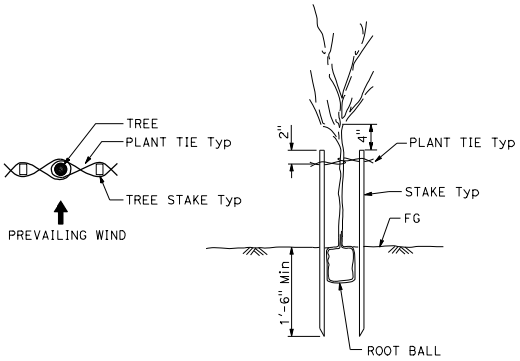
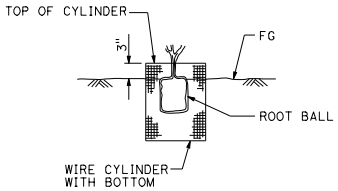
TO ACCOMPANY PLANS DATED _____



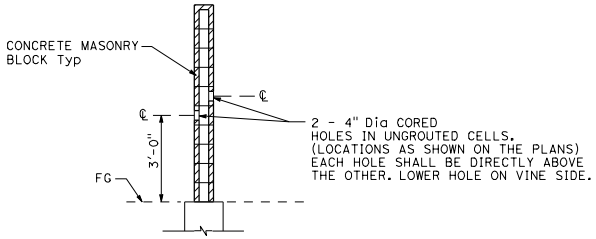
PERSPECTIVE
VINE STAKING



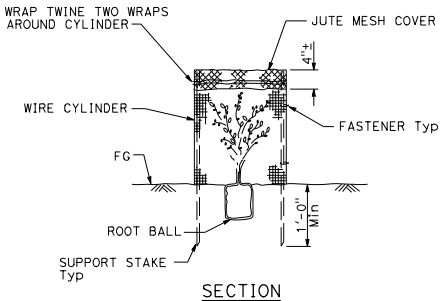
TREE STAKING



SECTION
ROOT PROTECTOR



SECTION
CORE HOLE (VINE)



SECTION
FOLIAGE PROTECTOR

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

RSP H3 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN H3 DATED OCTOBER 30, 2015 - PAGE 232 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H3

2015 REVISED STANDARD PLAN RSP H3

4-11-17

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

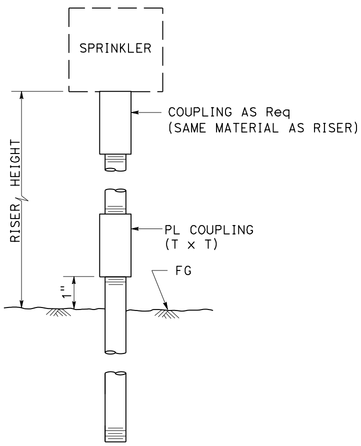
LICENSED LANDSCAPE ARCHITECT

July 21, 2017
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.

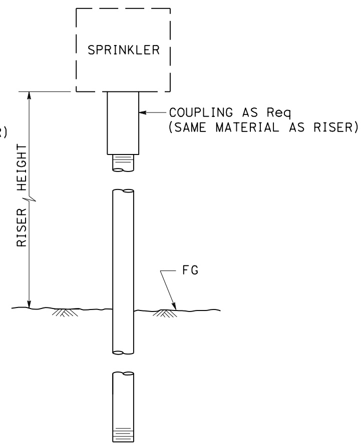
LICENSED LANDSCAPE ARCHITECT
Michael V. Ferraro
9-30-17
Renewal Date
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED ____________



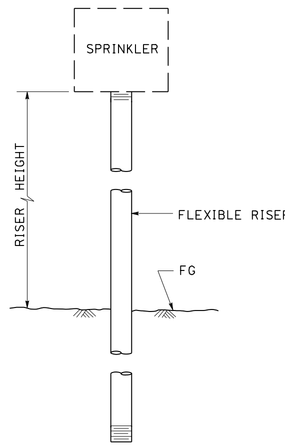
ELEVATION

RISER TYPE I



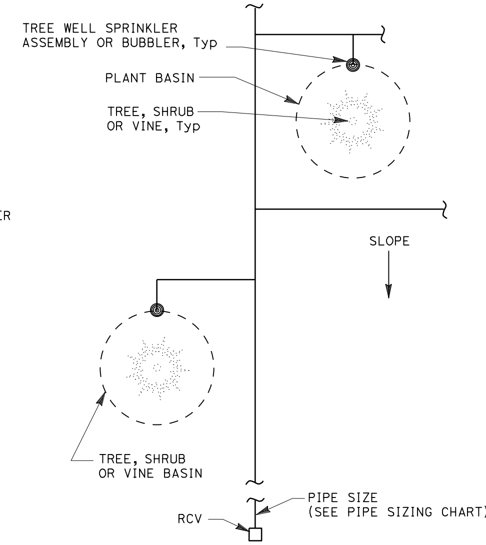
ELEVATION

RISER TYPE II



ELEVATION

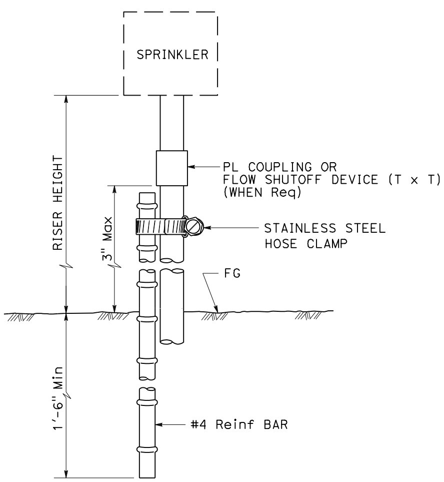
RISER TYPE III



PLAN

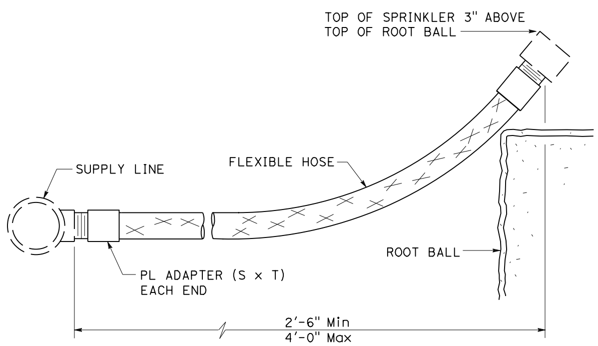
NOTES:

1. Install tree well sprinkler assembly on up-hill side of plant when on slope.
2. Install bubbler within basin.



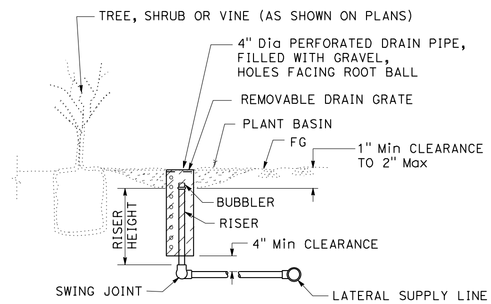
ELEVATION

RISER TYPE IV



ELEVATION

RISER TYPE V



SECTION

TREE WELL SPRINKLER ASSEMBLY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS (RISER SPRINKLER ASSEMBLY)

NO SCALE

RSP H4 DATED JULY 21, 2017 SUPERSEDES RSP H4 DATED JULY 15, 2016 AND STANDARD PLAN H4 DATED OCTOBER 30, 2015 - PAGE 233 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H4

2015 REVISED STANDARD PLAN RSP H4

4-28-17

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

LICENSED LANDSCAPE ARCHITECT

July 21, 2017
PLANS APPROVAL DATE

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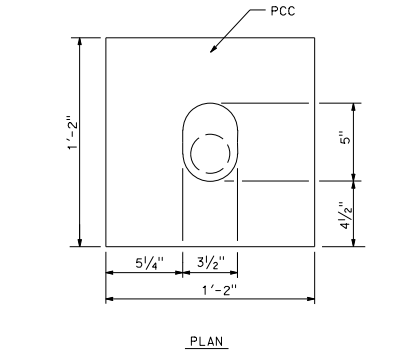
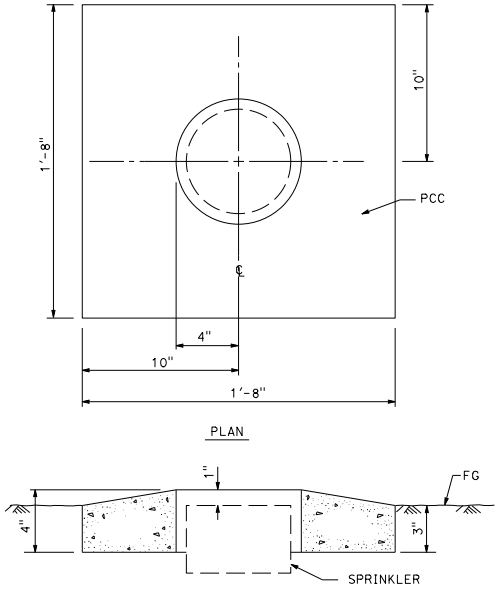
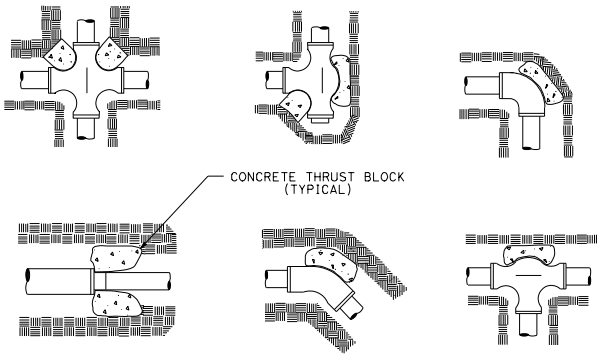
TO ACCOMPANY PLANS DATED _____



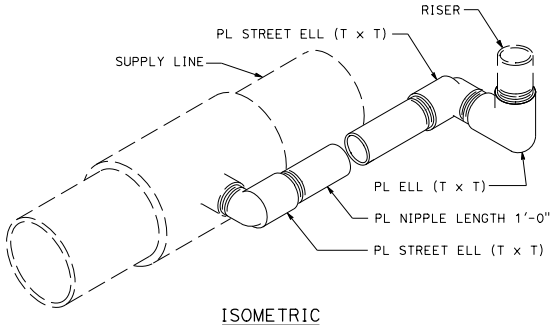
SECTION
SPRINKLER PROTECTOR TYPE I



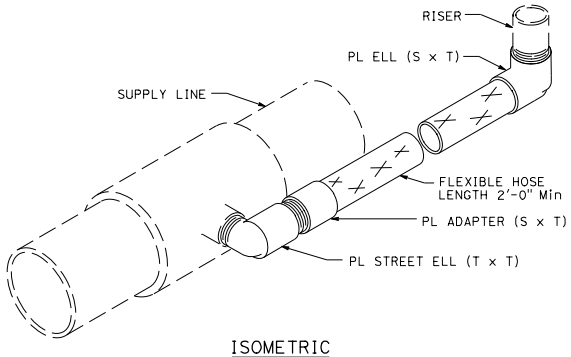
SECTION
SPRINKLER PROTECTOR TYPE II



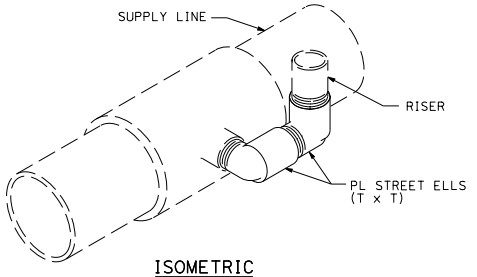
TYPICAL THRUST BLOCKS



ISOMETRIC
SWING JOINT TYPE I



ISOMETRIC
SWING JOINT TYPE II



ISOMETRIC
SWING JOINT TYPE III

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS (SWING JOINT AND PROTECTOR)

NO SCALE

RSP H5 DATED JULY 21, 2017 SUPERSEDES RSP H5 DATED JULY 15, 2016 AND STANDARD PLAN H5 DATED OCTOBER 30, 2015 - PAGE 234 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H5

2015 REVISED STANDARD PLAN RSP H5

4-11-17

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

LICENSED LANDSCAPE ARCHITECT

July 21, 2017
PLANS APPROVAL DATE

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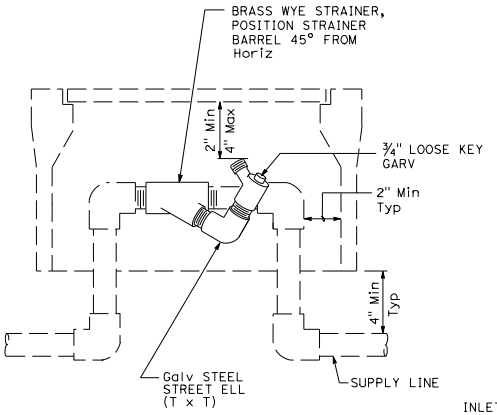
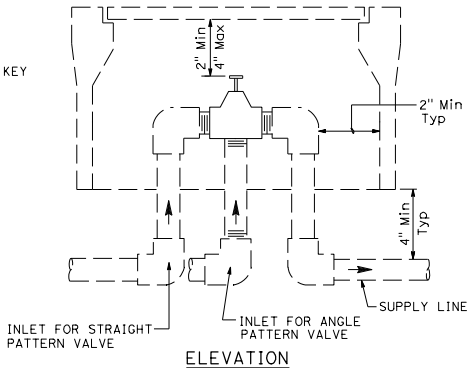
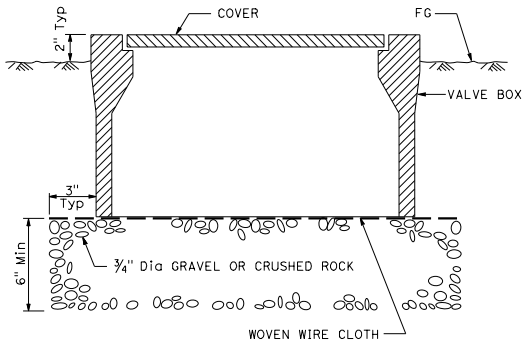
TO ACCOMPANY PLANS DATED _____



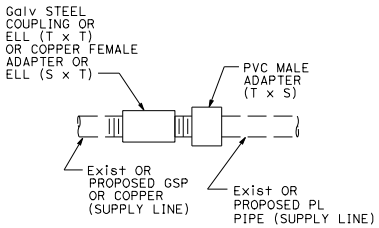
ELEVATION
WYE STRAINER ASSEMBLY



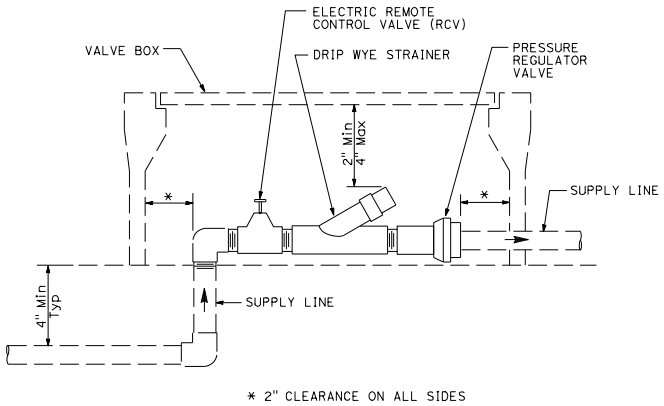
ELEVATION
VALVE



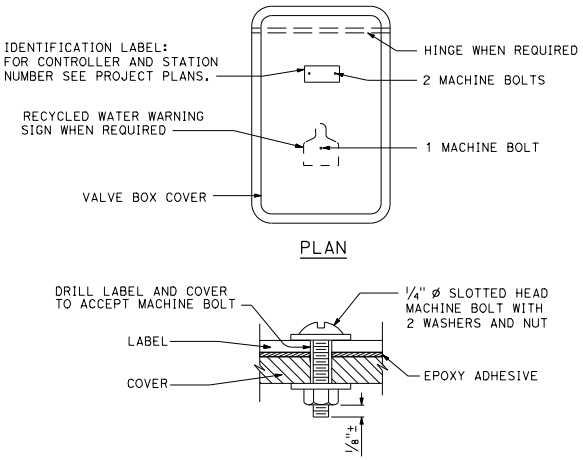
SECTION
VALVE BOX



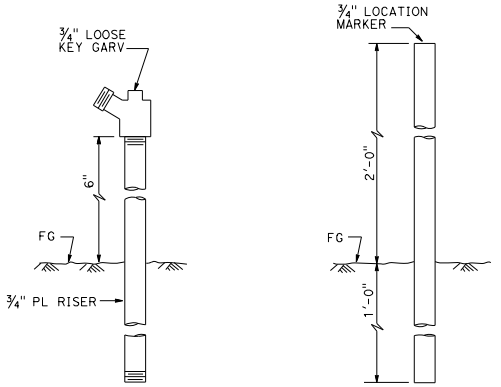
GALVANIZED OR COPPER PIPE CONNECTION TO PLASTIC PIPE



ELEVATION
DRIP VALVE ASSEMBLY



SECTION
VALVE BOX IDENTIFICATION



ELEVATION
GARDEN VALVE ASSEMBLY

ELEVATION
LOCATION MARKER

GARDEN VALVE ASSEMBLY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

RSP H6 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN H6 DATED OCTOBER 30, 2015 - PAGE 235 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H6

2015 REVISED STANDARD PLAN RSP H6

5-31-17

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

LICENSED LANDSCAPE ARCHITECT

July 21, 2017
PLANS APPROVAL DATE

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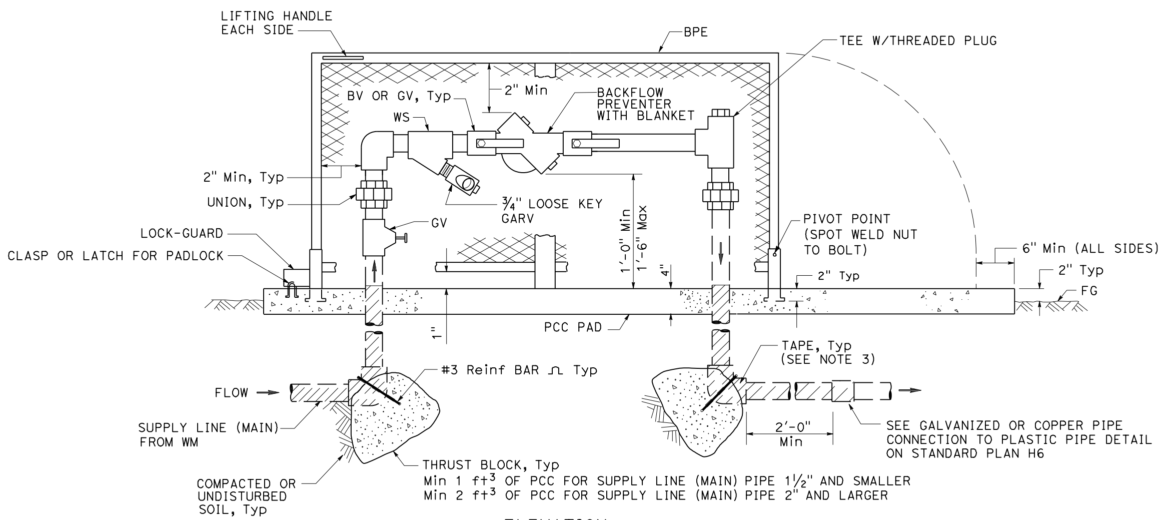
LICENSED LANDSCAPE ARCHITECT — Michael V. Ferrara 3858 — Signature — 9-30-17 Renewal Date — Date — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED ____________



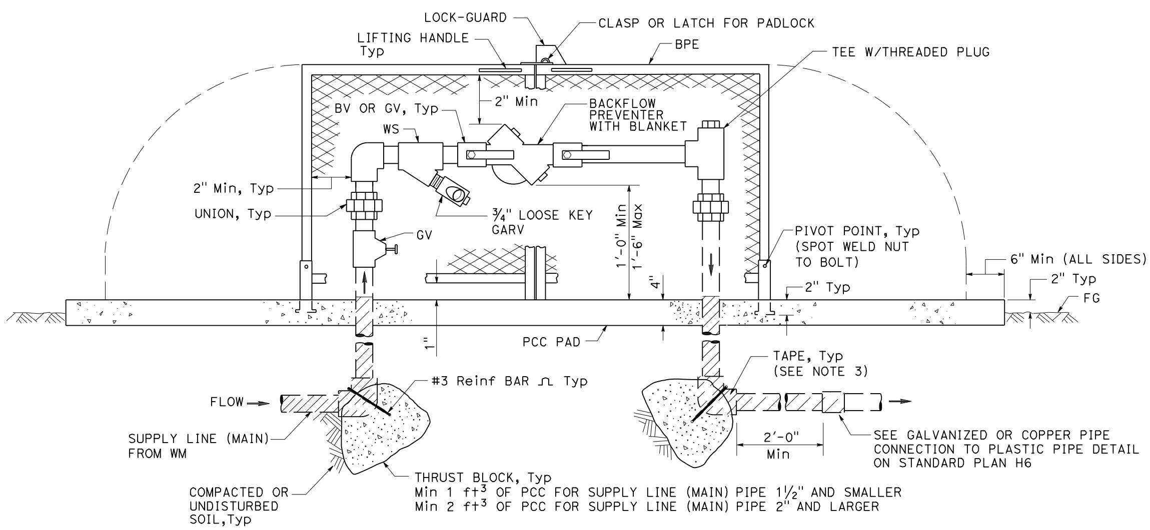
ELEVATION

BACKFLOW PREVENTER ASSEMBLY

IN ONE PIECE ENCLOSURE

NOTES:

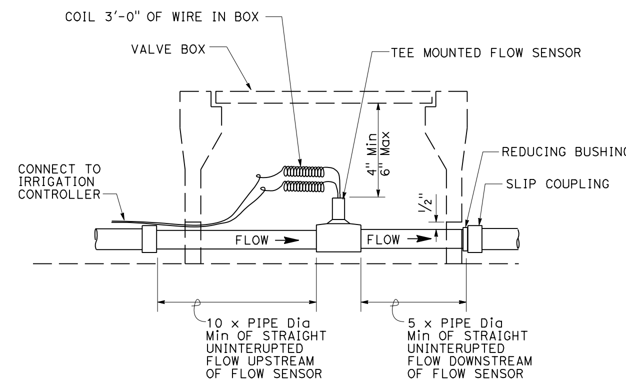
1. Wye strainer and fittings must be the same size as the backflow preventer shown on the plans.
2. Backflow preventer assembly manifold pipe must be the same pipe as the supply line (main) pipe to be installed from the water meter to the backflow preventer assembly.
3. All metal in contact with soil and Portland Cement Concrete must be wrapped with 2" wide plastic backed adhesive polyethylene tape 20 mil thick with ½" overlap.



ELEVATION

BACKFLOW PREVENTER ASSEMBLY

IN TWO PIECE ENCLOSURE



SECTION

FLOW SENSOR

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

RSP H7 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN H7 DATED OCTOBER 30, 2015 - PAGE 236 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H7

2015 REVISED STANDARD PLAN RSP H7

7-11-17

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

LICENSED LANDSCAPE ARCHITECT

July 21, 2017
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT Michael V. Ferraro 3589 Signature 9-30-17 Renewal Date STATE OF CALIFORNIA

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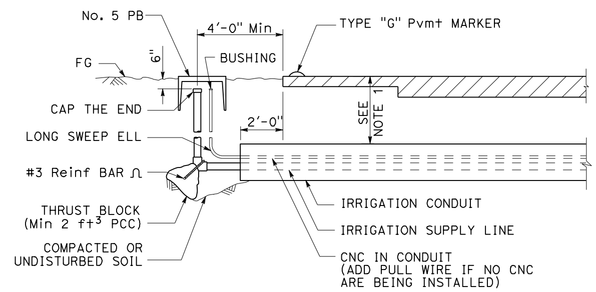
TO ACCOMPANY PLANS DATED ____________

2015 REVISED STANDARD PLAN RSP H8

NOTES:

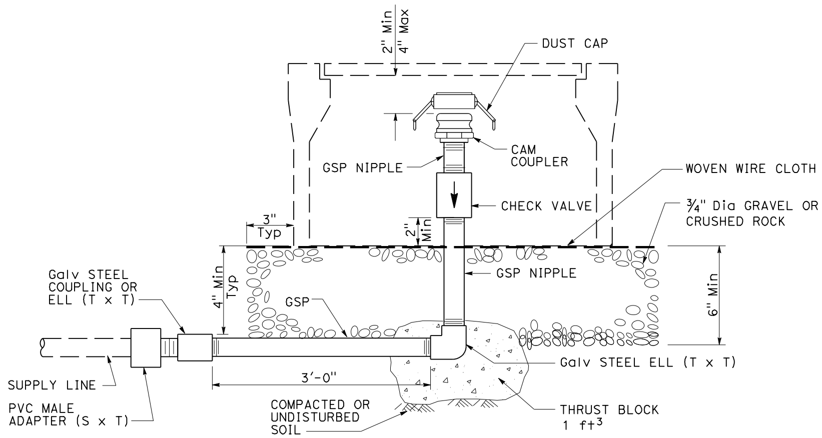
1. 40" - 50"
2. 12" downstream of RCV
   18" upstream of RCV



SECTION

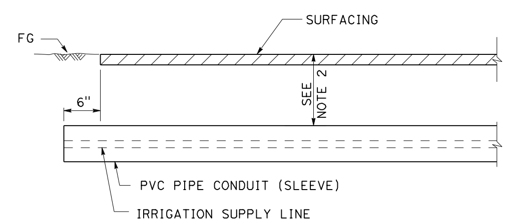
IRRIGATION CONDUIT

UNDER TRAVELED WAY



ELEVATION

CAM COUPLER ASSEMBLY



SECTION

PVC PIPE CONDUIT (SLEEVE)

UNDER SIDEWALKS, DRIVEWAYS PAVEMENT, SLOPE PAVING, PAVED DITCHES AND PATHS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

RSP H8 DATED JULY 21, 2017 SUPERSEDES RSP H8 DATED APRIL 15, 2016 AND STANDARD PLAN H8 DATED OCTOBER 30, 2015 - PAGE 237 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H8

6-22-17

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

LICENSED LANDSCAPE ARCHITECT

July 21, 2017
PLANS APPROVAL DATE

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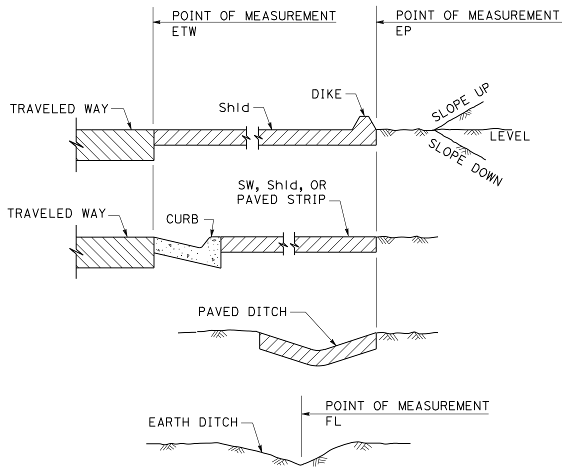
LICENSED LANDSCAPE ARCHITECT
Michael V. Ferrara
Signature
9-30-17
Renewal Date
Date
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED

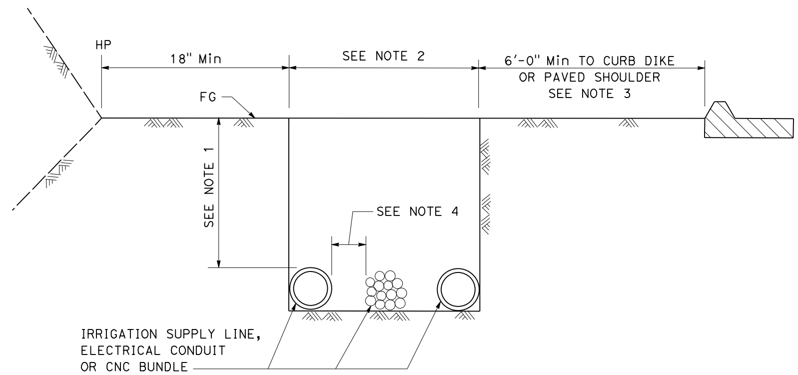
2015 REVISED STANDARD PLAN RSP H9



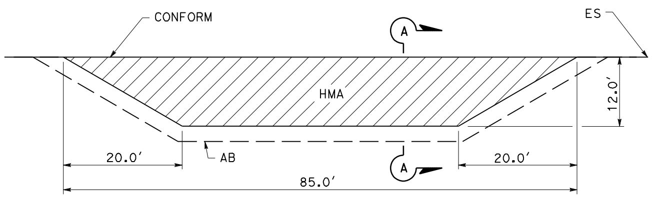
SECTION
POINTS OF MEASUREMENT

NOTES:

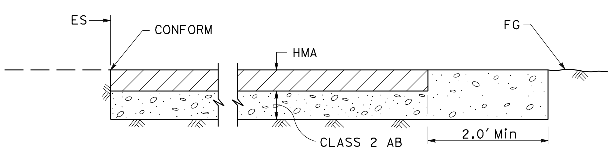
1. 12" downstream of RCV
   18" upstream of RCV
2. Width sufficent to allow snaking of pipe and CNC bundles without stacking.
3. 1 ft minimum to back of sidewalk.
4. 2" Min or Dia of largest pipe in trench.



SECTION
IRRIGATION TRENCH DETAIL



PLAN



SECTION A-A
MAINTENANCE VEHICLE PULLOUT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

RSP H9 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN H9
DATED OCTOBER 30, 2015 - PAGE 238 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H9

5-10-17

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

LICENSED LANDSCAPE ARCHITECT

July 21, 2017
PLANS APPROVAL DATE

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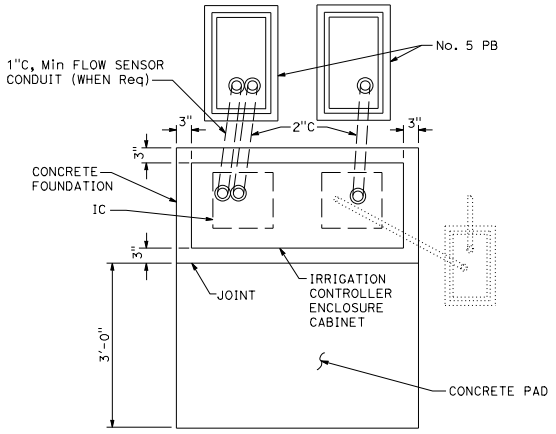
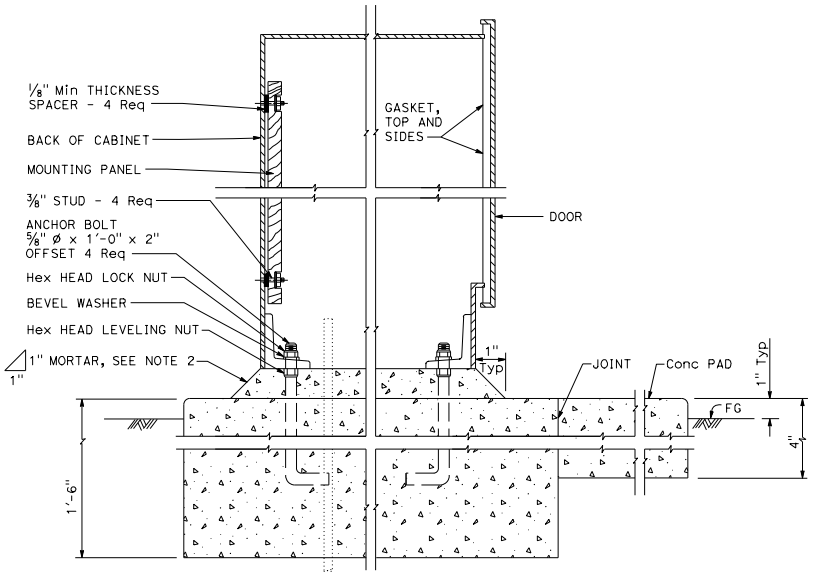
LICENSED LANDSCAPE ARCHITECT — Signature — 5-30-17 — Renewal Date — Date — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



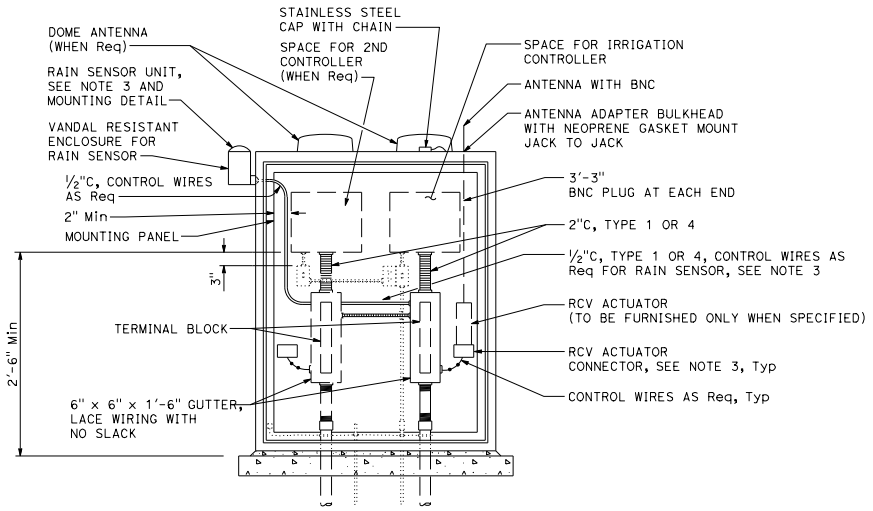
PLAN



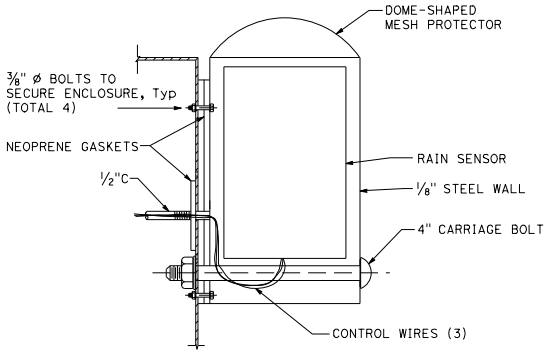
CABINET SECTION

NOTES:

1. All dimensions are nominal.
2. Mortar shall be 1-part cement, 2-parts plaster sand.
3. Rain sensor unit and remote control valve actuator connectors to be provided when specified.
4. See project plans for location and number of irrigation controllers for each cabinet. Install the cabinet with the back facing the direction of oncoming traffic in the nearest traffic lane.
5. The electrical items shown in dropout are not labeled. See Standard Plan ES-3H for electrical requirements.



ELEVATION



RAIN SENSOR UNIT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

IRRIGATION CONTROLLER ENCLOSURE CABINET

NO SCALE

RSP H10 DATED JULY 21, 2017 SUPERSEDES RSP H10 DATED JULY 15, 2016 AND STANDARD PLAN H10 DATED OCTOBER 30, 2015 - PAGE 239 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H10

2015 REVISED STANDARD PLAN RSP H10

4-11-17

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

LICENSED LANDSCAPE ARCHITECT

July 21, 2017
PLANS APPROVAL DATE

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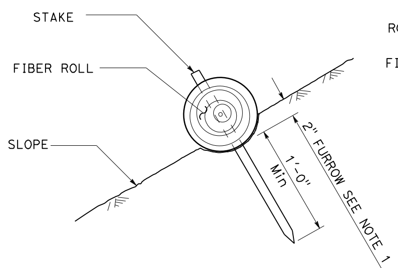
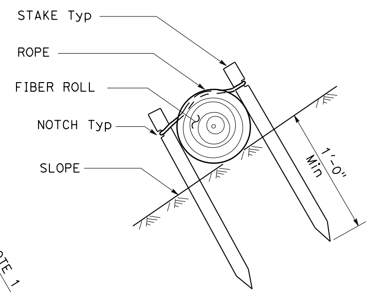
LICENSED LANDSCAPE ARCHITECT
Michael V. Ferrara 3858
Signature
9-30-17
Renewal Date
Date
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED

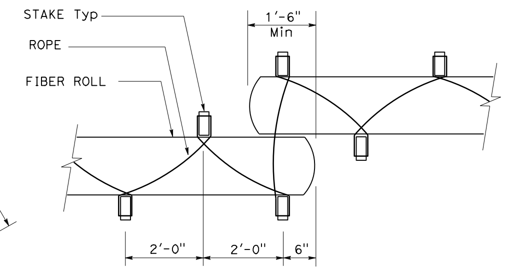


SECTION

FIBER ROLL (TYPE 1)

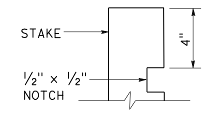


SECTION



PLAN

FIBER ROLL (TYPE 2)

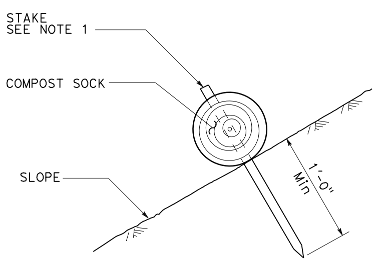


ELEVATION

STAKE NOTCH DETAIL

NOTE:

1. Installations shown in the perspectives are for slope inclination of 10:1 (Horiz:Vert) and steeper.

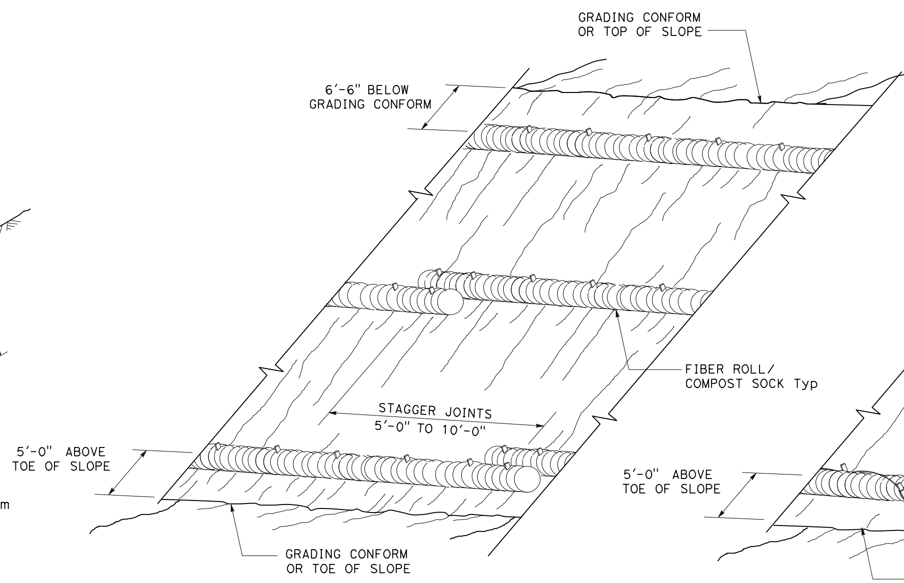


SECTION

COMPOST SOCK

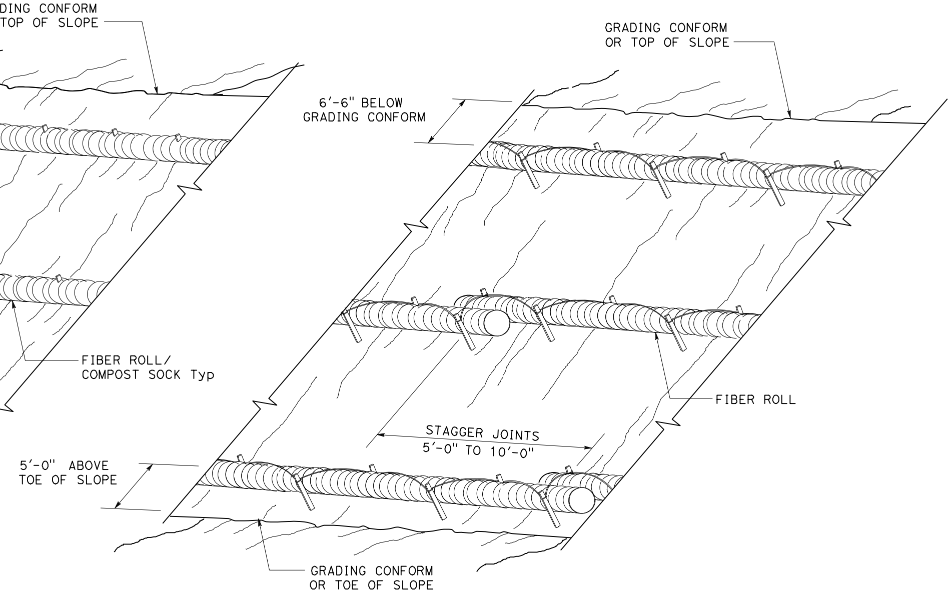
NOTE:

1. May install stake adjacent to bottom edge of compost sock.



PERSPECTIVE

FIBER ROLL (TYPE 1)
COMPOST SOCK



PERSPECTIVE

FIBER ROLL (TYPE 2)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EROSION CONTROL DETAILS
FIBER ROLL AND COMPOST SOCK

NO SCALE

RSP H51 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN H51 DATED OCTOBER 30, 2015 - PAGE 240 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP H51

2015 REVISED STANDARD PLAN RSP H51

5-25-17

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Florante E. Bautista — No. C54859 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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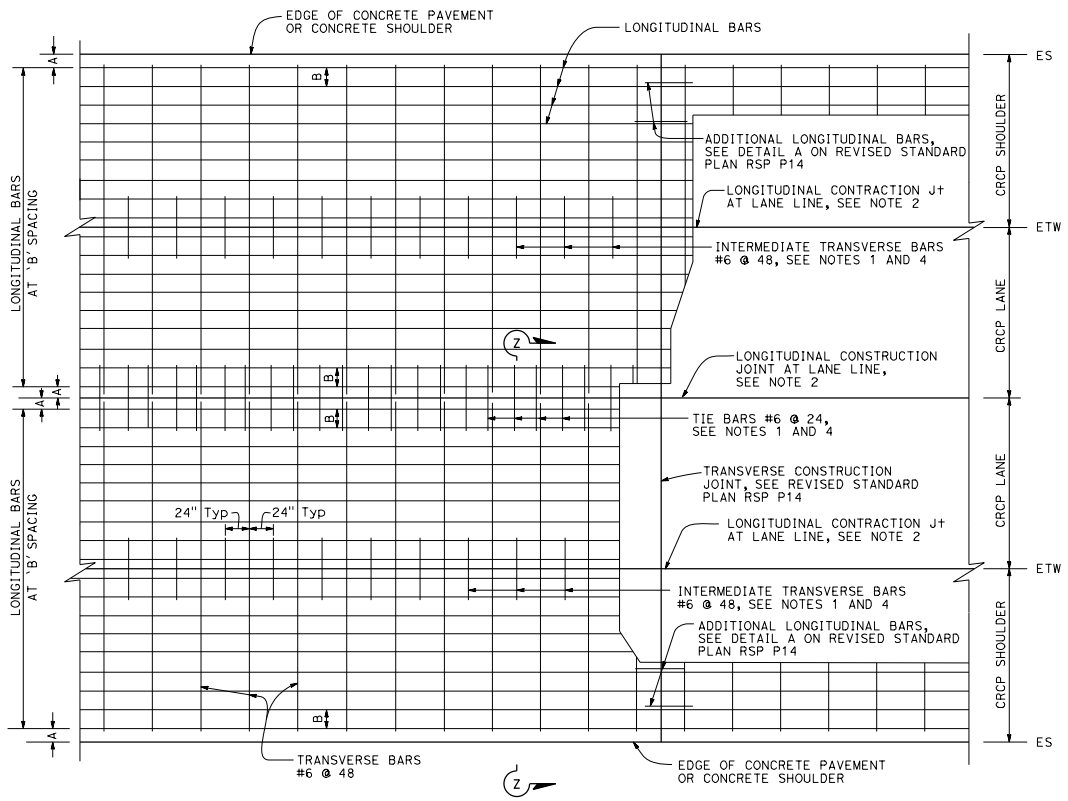
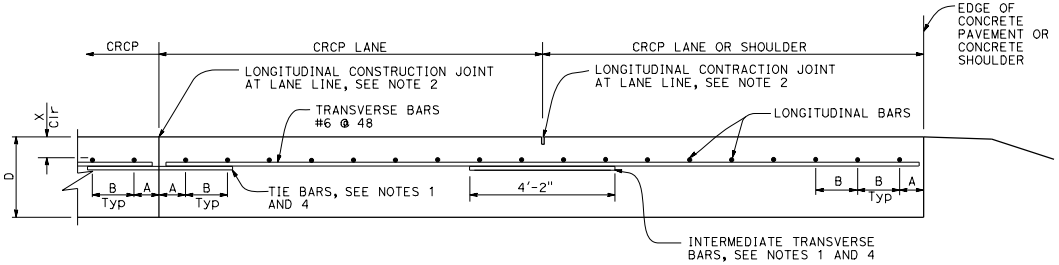


PLAN
See Note 3



SECTION Z-Z

TABLE No. 1 LONGITUDINAL BAR REINFORCEMENT					
SLAB THICKNESS AND BAR SIZE		FIRST SPACING AT EDGE OR JOINT	REGULAR BARS	ADDITIONAL BARS AT TRANSVERSE CONSTRUCTION JOINT	Clr
D	BAR SIZE	SPACING A	SPACING B	SPACING 2 x B	X
.75′	#6	3" TO 4"	8.0"	16"	4"
.80′	#6	3" TO 4"	7.5"	15"	4"
.85′	#6	3" TO 4"	7.0"	14"	4"
.90′	#6	3" TO 4"	6.5"	13"	4"
.95′	#6	3" TO 4"	6.25"	12.5"	4"
1.00′	#6	3" TO 4"	6.0"	12"	5"
1.05′	#6	3" TO 4"	5.75"	11.5"	5"
1.10′	#6	3" TO 4"	5.5"	11"	5.5"

NOTES:

1. Place tie bars and intermediate transvese bars parallel to and in the same plane as transverse bars.
2. For longitudinal contraction and construction joint details, see Revised Standard Plan RSP P16.
3. For curved lane layout see Revised Standard Plan RSP P16.
4. For tie bar and intermediate transverse bar details, see Revised Standard Plan RSP P16.

ABBREVIATION:

D = Thickness of CRCP

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

NO SCALE

RSP P4 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN P4
DATED OCTOBER 30, 2015 - PAGE 135 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P4

2015 REVISED STANDARD PLAN RSP P4

4-29-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Florante E. Bautista — No. C54859 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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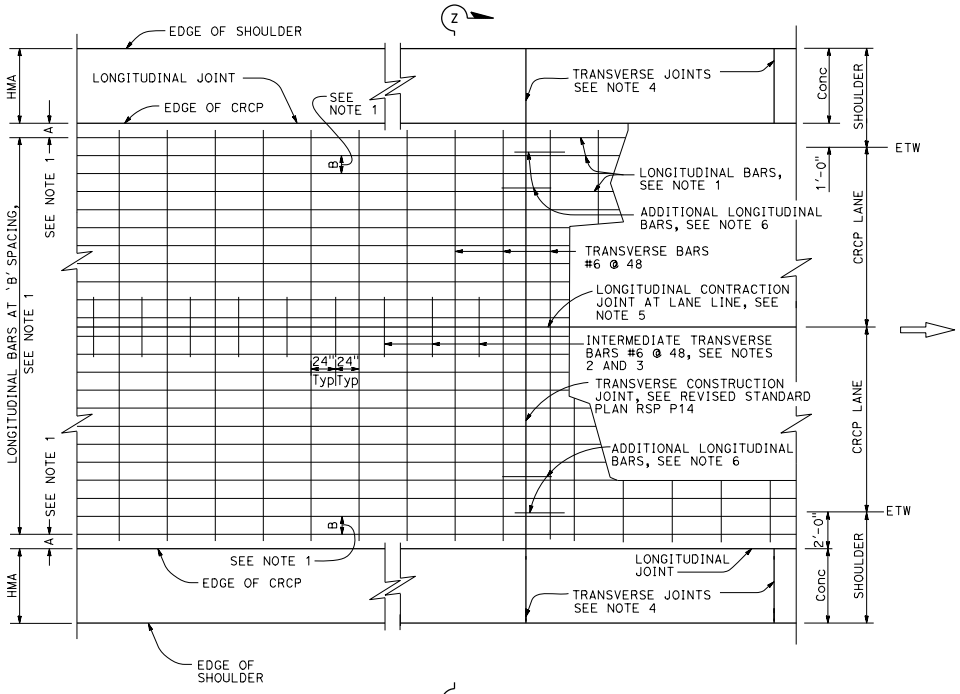
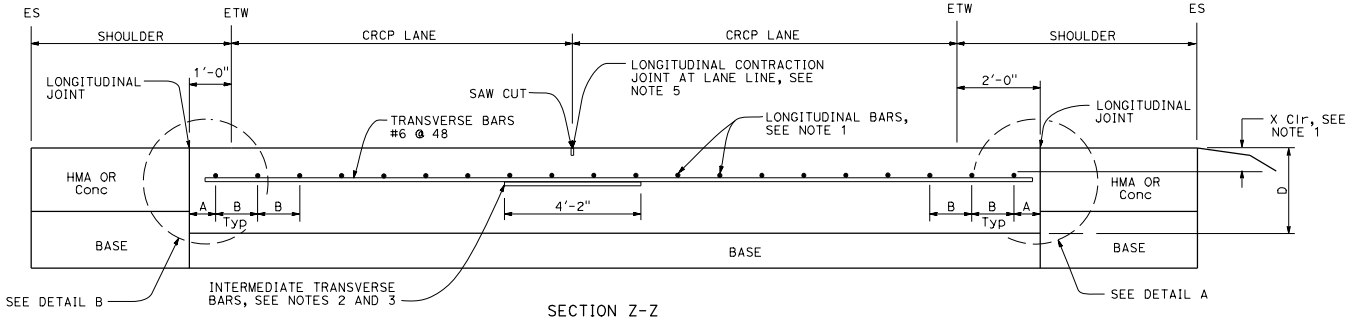


PLAN
See Note 7



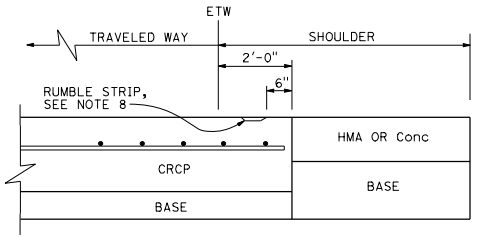
SECTION Z-Z

NOTES:

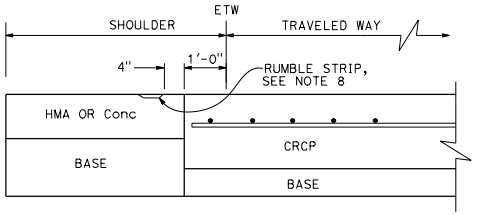
1. For longitudinal bar size, spacing and clearances, see Revised Standard Plan RSP P4.
2. For tie bar and intermediate transverse bar details, see Revised Standard Plan RSP P16.
3. Place Intermediate transverse bars parallel to and in the same plane as transverse bars.
4. Construct transverse joints at right angle to the longitudinal joints in adjacent CRCP. Space joints at no less than 10' intervals and no more than 14' intervals. Match location of JPCP transverse joint with CRCP transverse construction joint, expansion joint or wide flange beam. Omit dowel bars.
5. For longitudinal contraction joint details, see Revised Standard Plan RSP P16.
6. For additional longitudinal bars detail, see Detail A on Revised Standard Plan RSP P14.
7. For longitudinal construction joint plan layout not shown, see Revised Standard Plan RSP P4. For tie bar details at longitudinal construction joint, see Revised Standard Plan RSP P16.
8. For limits of rumble strips, see Project Plans.

ABBREVIATION:

D = Thickness of CRCP



DETAIL A



DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (WIDENED LANE)

NO SCALE

RSP P5A DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN P5A
DATED OCTOBER 30, 2015 - PAGE 136 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P5A

2015 REVISED STANDARD PLAN RSP P5A

4-29-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Florante E. Bautista — No. C54859 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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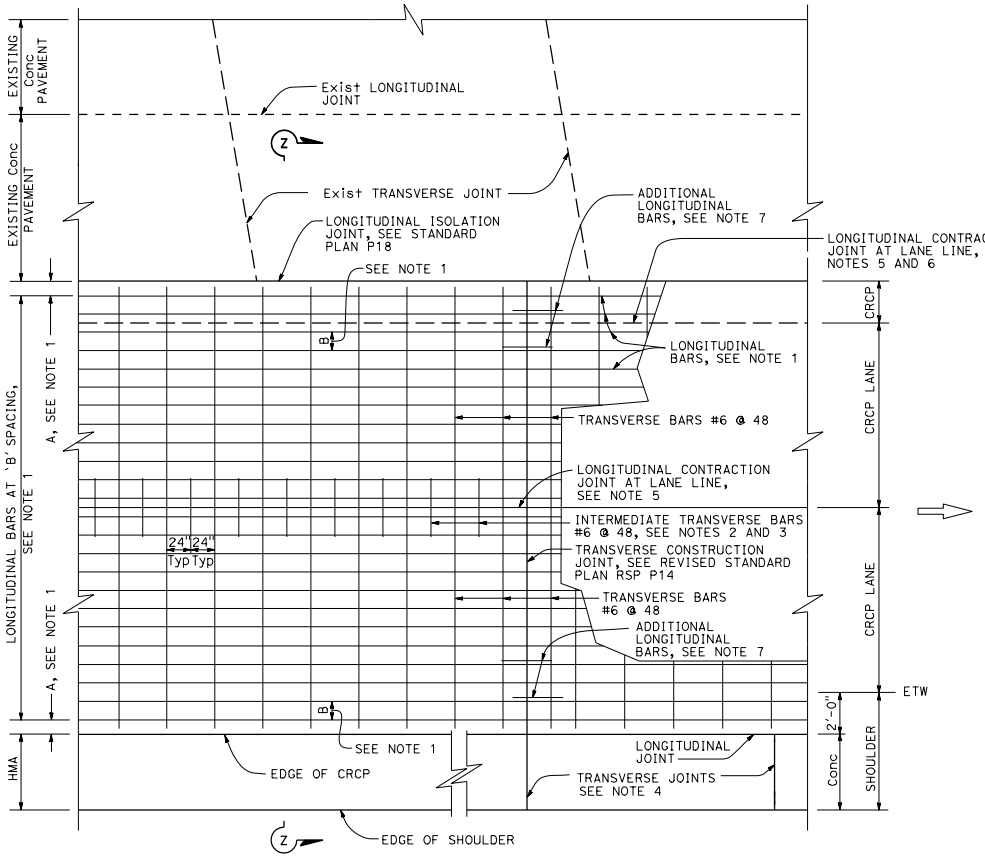
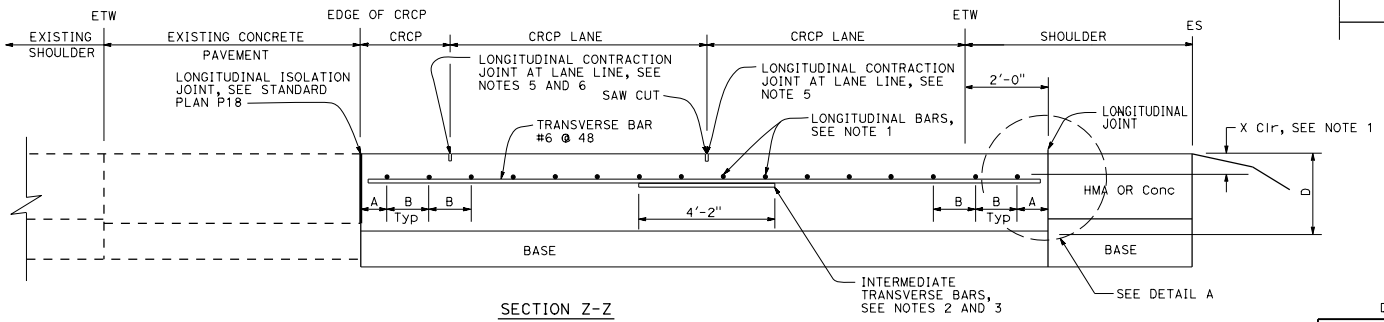
TO ACCOMPANY PLANS DATED _____



PLAN
See Note 8



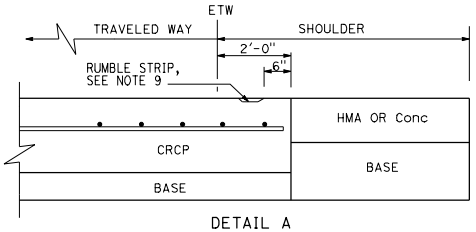
SECTION Z-Z

NOTES:

1. For longitudinal bar size, spacing and clearances, see Revised Standard Plan RSP P4.
2. For tie bar and intermediate transverse bar details, see Revised Standard Plan RSP P16.
3. Place Intermediate transverse bars parallel to and in the same plane as transverse bars.
4. Construct transverse joints at right angle to the longitudinal joints in adjacent CRCP. Space joints at no less than 10' intervals and no more than 14' intervals. Match location of JPCP transverse joint with CRCP transverse construction joint, expansion joint or wide flange beam. Omit dowel bars.
5. For longitudinal contraction joint details, see Revised Standard Plan RSP P16.
6. Do not construct longitudinal contraction joint when edge of new CRCP is less than 3'-3" from lane line.
7. For additional longitudinal bars detail, see Detail A on Revised Standard Plan RSP P14.
8. For longitudinal construction joint plan layout not shown, see Revised Standard Plan RSP P4. For tie bar details at longitudinal construction joint, see Revised Standard Plan RSP P16.
9. For limits of rumble strips, see Project Plans.

ABBREVIATION:

D = Thickness of CRCP



DETAIL A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (WIDENED LANE) LANE AND SHOULDER ADDITION OR REPLACEMENT

NO SCALE

RSP P5B DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN P5B
DATED OCTOBER 30, 2015 - PAGE 137 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P5B

2015 REVISED STANDARD PLAN RSP P5B

5-20-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Florante E. Bautista
No. C54859
Exp. 6-30-18
CIVIL
STATE OF CALIFORNIA

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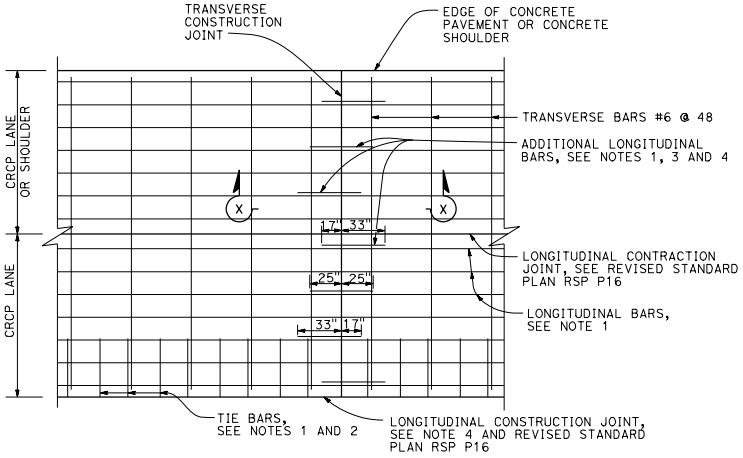
TO ACCOMPANY PLANS DATED _____

NOTES:

1. For longitudinal bar size, spacing and clearances, see Table 1 on Revised Standard Plan RSP P4.
2. For tie bars in longitudinal construction joint, see Revised Standard Plan RSP P16.
3. Place additional longitudinal bars parallel to and in the same plane as the longitudinal bars.
4. Place additional longitudinal bars symmetrically about longitudinal construction joint.

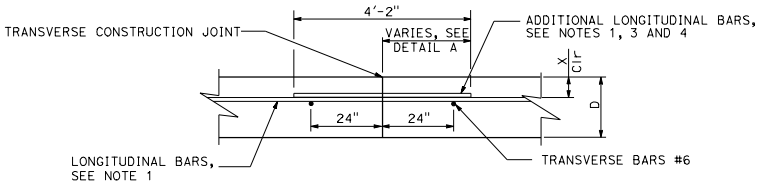
ABBREVIATION

D = Thickness of CRCP



DETAIL A

Additional longitudinal bars at transverse construction joint



SECTION X-X

TRANSVERSE CONSTRUCTION JOINT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT TRANSVERSE CONSTRUCTION JOINT

NO SCALE

RSP P14 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN P14 DATED OCTOBER 30, 2015 - PAGE 144 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P14

2015 REVISED STANDARD PLAN RSP P14

4-19-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

Florante E. Bautista
No. C54859
Exp. 6-30-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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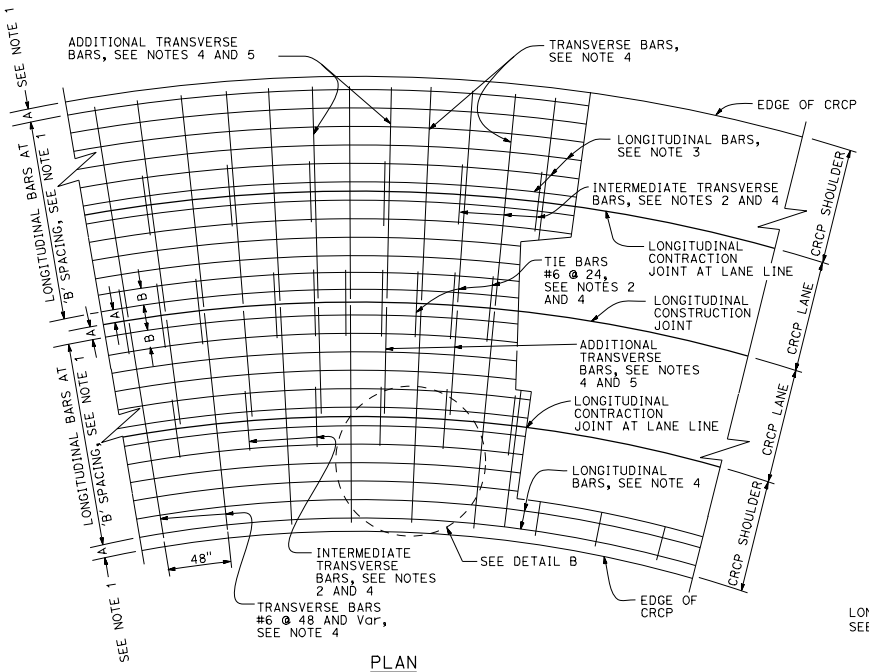
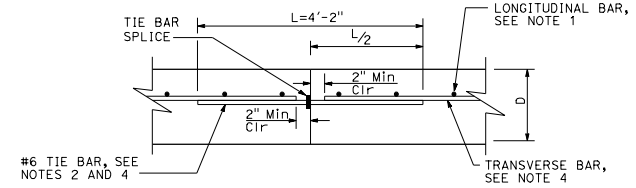
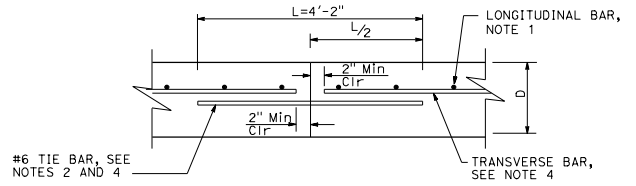
TO ACCOMPANY PLANS DATED _____



PLAN

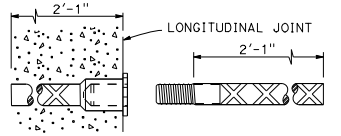
CURVED LANES



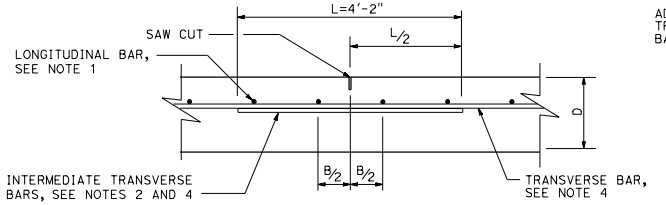


ALTERNATE

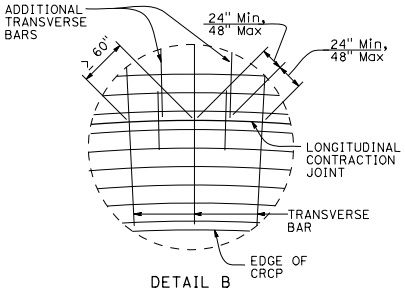
LONGITUDINAL CONSTRUCTION JOINT



TIE BAR SPLICE COUPLER DETAIL



LONGITUDINAL CONTRACTION JOINT



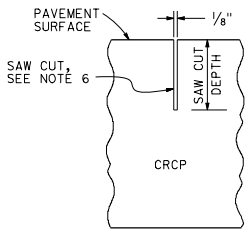
DETAIL B

NOTES:

1. For longitudinal bar spacing and clearances, see Table 1 on Revised Standard Plan RSP P4.
2. Place tie bars and intermediate transverse bars parallel to and in the same plane as the transverse bars.
3. Place longitudinal bars parallel to roadway curvature.
4. Place transverse bars, additional transverse bars, tie bars and intermediate transverse bars perpendicular to the pavement curvature.
5. Place additional transverse bars where required, see Detail B.
6. The bottom of the saw cut must be at least 0.5" clear of any dowel bar, tie bar and bar reinforcement.

ABBREVIATION:

D = Thickness of CRCP



CONTRACTION JOINT SAW CUT DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT TIE BARS AND JOINT DETAILS

NO SCALE

RSP P16 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN P16
DATED OCTOBER 30, 2015 - PAGE 146 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P16

2015 REVISED STANDARD PLAN RSP P16

4-29-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Florante E. Bautista — No. C54859 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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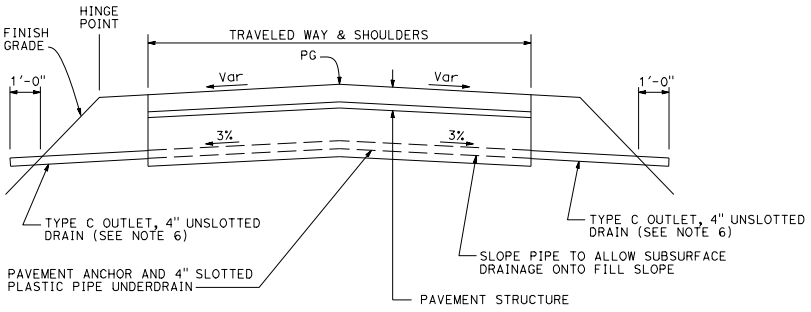
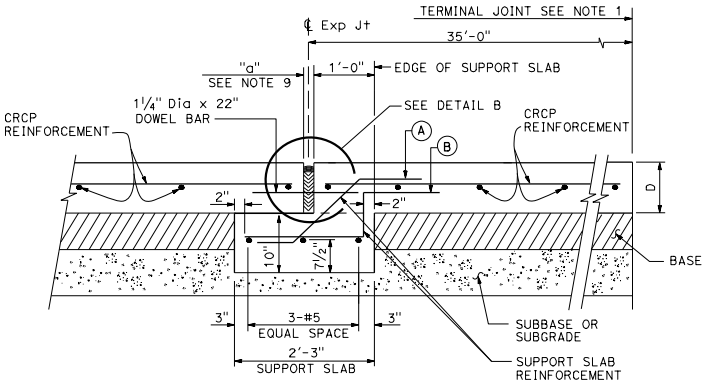
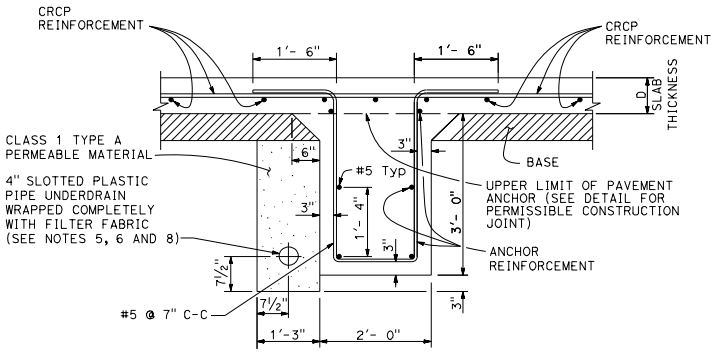
TO ACCOMPANY PLANS DATED _____



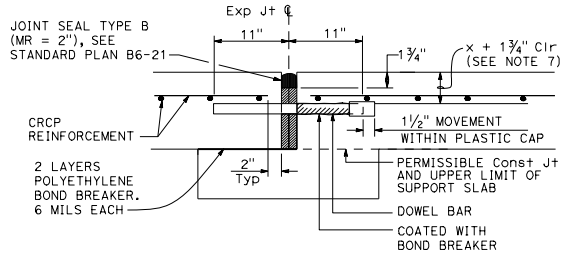
PAVEMENT ANCHOR PROFILE



EXPANSION JOINT TYPE AN

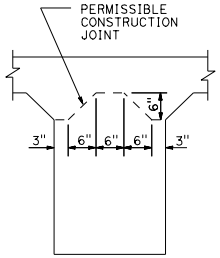


PAVEMENT ANCHOR

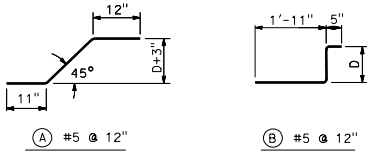


DETAIL B

(For layout, tolerances, and other details not shown, see Standard Plan P10.)



PAVEMENT ANCHOR DETAIL SHOWING PERMISSIBLE CONSTRUCTION JOINT



REINFORCEMENT DETAIL

NOTES:

1. For the locations of the terminal joints, expansion joints and pavement anchors, see project plans.
2. The CRCP shall continue across the pavement anchor and expansion joints as shown.
3. Details of reinforcement, tie bars, and longitudinal joints (and if necessary, transverse construction joints) are shown on Revised Standard Plans RSP P4 and RSP P16.
4. Transverse construction joints are not allowed within 20'-0" of the pavement anchor.
5. When placing pipe through concrete barrier, use 4" unslotted plastic pipe wrapped completely with 9/16" polystyrene.
6. See Standard Plan P51 for details not shown.
7. See Revised Standard Plans RSP P4 for "x".
8. Place the 4" Slotted Plastic Pipe on the high side of the longitudinal grade.
9. See Standard Plan B6-21 for "a".

ABBREVIATION:

D = Thickness of CRCP

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT- EXPANSION JOINT AND ANCHOR DETAILS

NO SCALE

RSP P31B DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN P31B DATED OCTOBER 30, 2015 - PAGE 152 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P31B

2015 REVISED STANDARD PLAN RSP P31B

4-29-16

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

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Florante E. Bautista — No. C54859 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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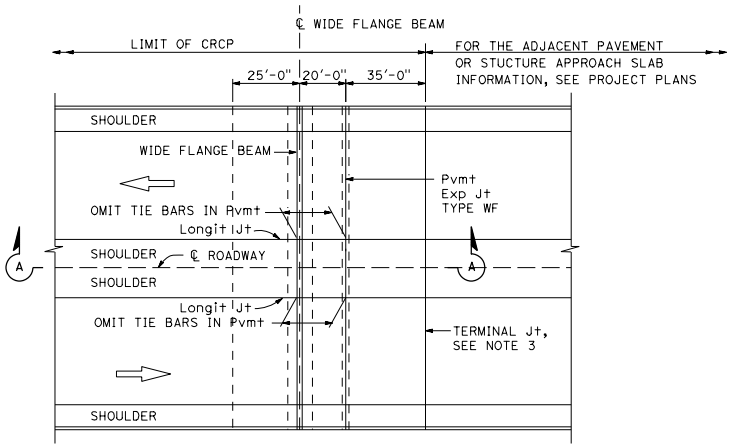
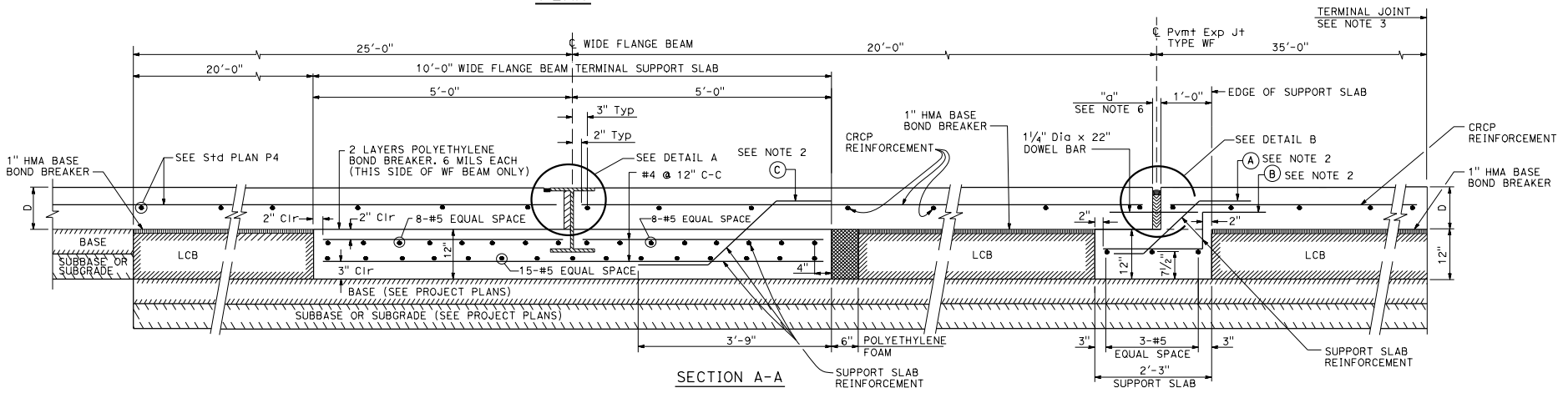
TO ACCOMPANY PLANS DATED _____



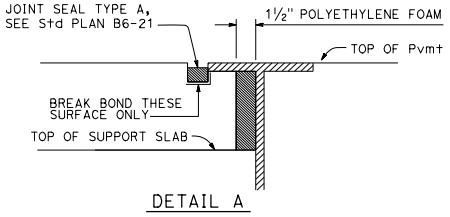
PLAN

NOTES:

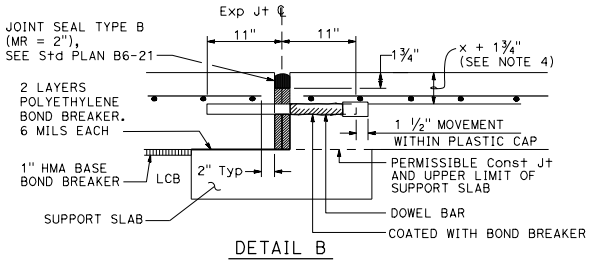
1. For additional details on reinforcement member quantities of the wide flange beam terminal and Pavement Expansion Joint Type WF, see Standard Plan P32B.
2. For reinforcement (A), (B), and (C) Details, see Standard Plan P32B.
3. For the Pavement Terminal Joint Details, see Standard Plan P31A. For Pavement Terminal Joint Type, see Project Plans.
4. See Revised Standard Plan RSP P4 for "x".
5. D = Thickness of CRCP
6. See Standard Plan B6-21 for "a".



SECTION A-A



DETAIL A



DETAIL B

For layout, tolerances, and other details not shown see Std Plan P10.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT - WIDE FLANGE BEAM TERMINALS

NO SCALE

RSP P32A DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN P32A DATED OCTOBER 30, 2015 - PAGE 153 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P32A

2015 REVISED STANDARD PLAN RSP P32A

4-29-16

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Florante E. Bautista — No. C54859 — Exp. 6-30-18 — CIVIL — STATE OF CALIFORNIA

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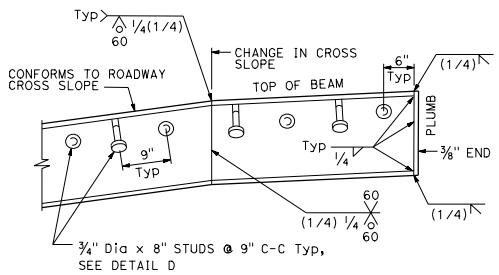
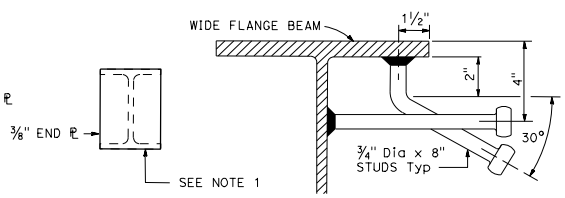
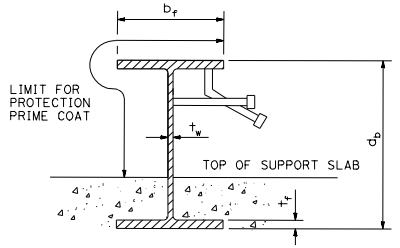
TO ACCOMPANY PLANS DATED _____



WIDE FLANGE DETAIL



DETAIL D



WIDE FLANGE PAINTING DETAIL

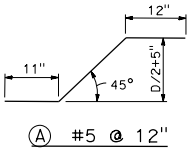
See "TABLE OF BEAM SIZES"

LEGEND:

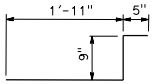
b_f - FLANGE WIDTH
t_f - FLANGE THICKNESS
t_w - WEB THICKNESS
d_b - BEAM DEPTH
D1, D2 - PAVEMENT THICKNESSES

NOTES:

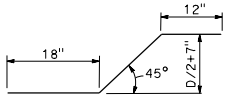
1. Weld 3/8" plate to each end of wide flange beam at pavement edges only. End plate covers the entire wide flange beam.
2. Extend polyethylene foam to the sides and edges of the front part of the plate.



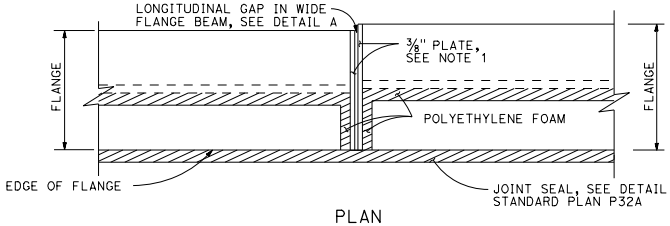
Ⓐ #5 @ 12"



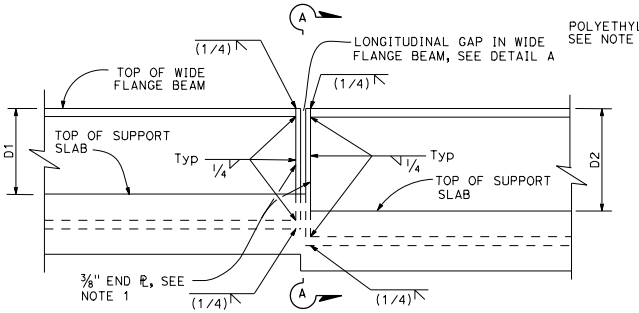
Ⓑ #5 @ 12"



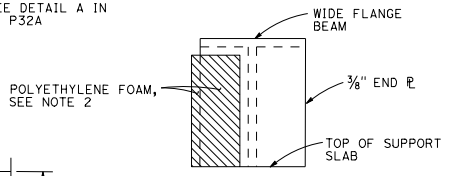
Ⓒ #4 @ 12"



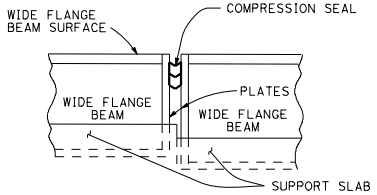
PLAN



ELEVATION



SECTION A-A



DETAIL A

TABLE OF BEAM SIZES					
PAVEMENT THICKNESS	WIDE FLANGE BEAM DESIGNATION	d_b	b_f	t_f	t_w
.75′	W14 x 43	13.70"	8.00"	0.53"	0.31"
.80′	W14 x 68	14.04"	10.04"	0.72"	0.42"
.85′	W16 x 89	16.75"	10.37"	0.88"	0.53"
.90′	W16 x 89	16.75"	10.37"	0.88"	0.53"
.95′	W18 x 97	18.59"	11.15"	0.87"	0.54"
1.00′	W18 x 97	18.59"	11.15"	0.87"	0.54"
1.05′	W18 x 97	18.59"	11.15"	0.87"	0.54"
1.10′	W18 x 97	18.59"	11.15"	0.87"	0.54"

CONCRETE AND STEEL QUANTITIES								
	ITEM	PAVEMENT THICKNESS							
		.75′	.80′	.85′	.90′	.95′	1.00′	1.05′	1.10′
WIDE FLANGE BEAM TERMINAL SLAB	CONCRETE	4.8 CY	4.8 CY	4.8 CY	4.8 CY	4.8 CY	4.8 CY	4.8 CY	4.8 CY
	REINFORCING STEEL	552.0 LBS	552.2 LBS	552.4 LBS	552.6 LBS	552.8 LBS	553.0 LBS	553.1 LBS	553.3 LBS
Exp JOINT TYPE WIDE FLANGE SUPPORT SLAB	CONCRETE	1.1 CY	1.1 CY	1.1 CY	1.1 CY	1.1 CY	1.1 CY	1.1 CY	1.1 CY
	REINFORCING STEEL	99.9 LBS	99.9 LBS	100.2 LBS	100.5 LBS	100.8 LBS	101.1 LBS	101.1 LBS	101.6 LBS
	STEEL BEAM (WEIGHT OF WIDE FLANGE BEAM AND STUDS)	43.0 LBS/LF +2 PLATES @ 14.9 LBS EA	69.51 LBS/LF +2 PLATES @ 14.9 LBS EA	90.51 LBS/LF +2 PLATES @ 18.5 LBS EA	90.51 LBS/LF +2 PLATES @ 18.5 LBS EA	98.51 LBS/LF +2 PLATES @ 22.0 LBS EA	98.51 LBS/LF +2 PLATES @ 22.0 LBS EA	98.51 LBS/LF +2 PLATES @ 22.0 LBS EA	98.51 LBS/LF +2 PLATES @ 22.0 LBS EA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT WIDE FLANGE BEAM TERMINALS

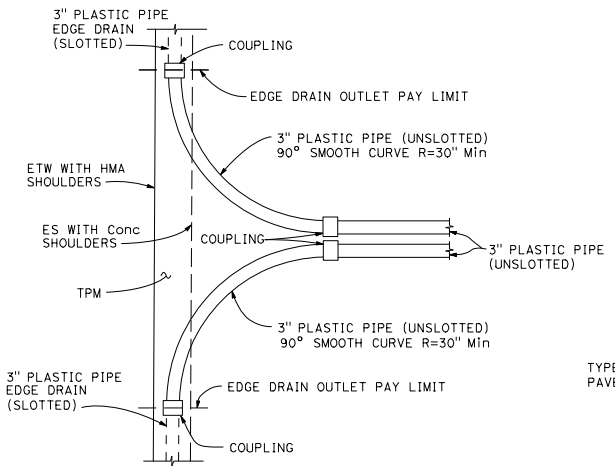
NO SCALE

RSP P32B DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN P32B DATED OCTOBER 30, 2015 - PAGE 154 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P32B

2015 REVISED STANDARD PLAN RSP P32B

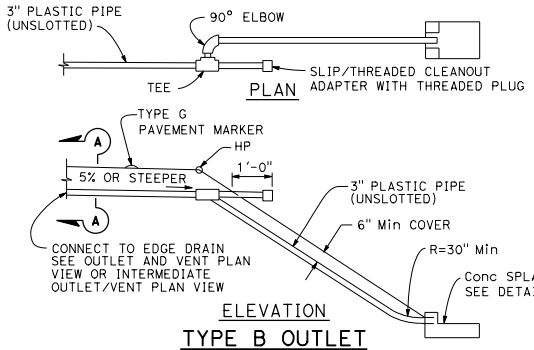
4-4-17



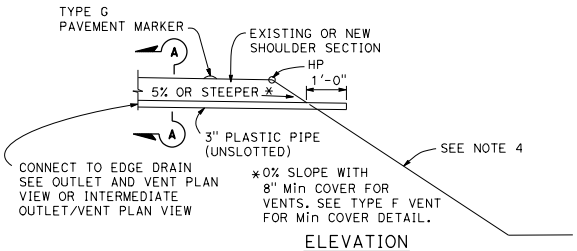
PLAN

DUAL OUTLET AND/OR VENT

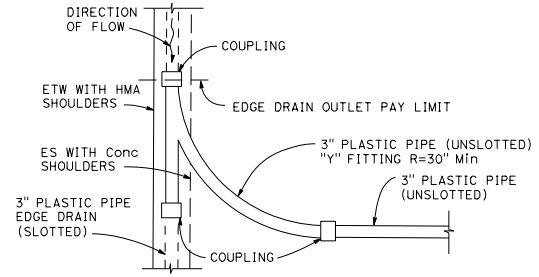
See Note 2



TYPE B OUTLET



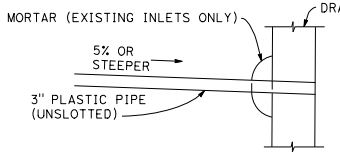
TYPE C OUTLET AND/OR VENT



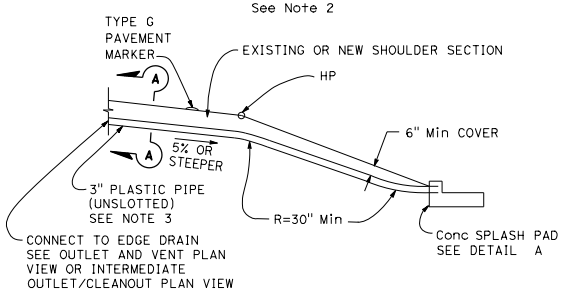
PLAN

INTERMEDIATE OUTLET

See Note 2

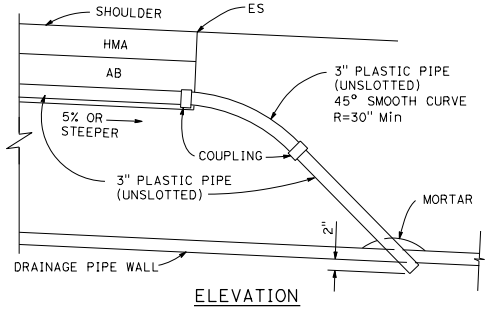


TYPE D OUTLET CONNECTION TO DRAINAGE INLET

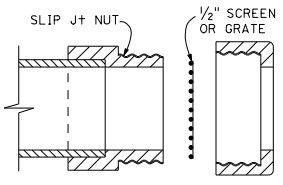


ELEVATION

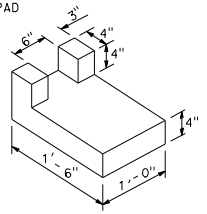
TYPE A OUTLET



TYPE E OUTLET CONNECTION TO DRAINAGE PIPE

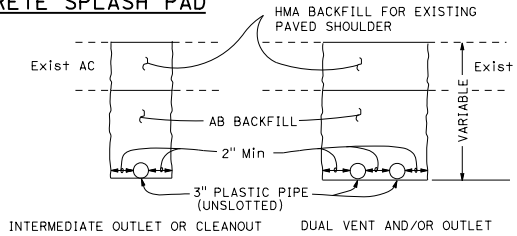


EDGE DRAIN OUTLET AND VENT COVER



DETAIL A

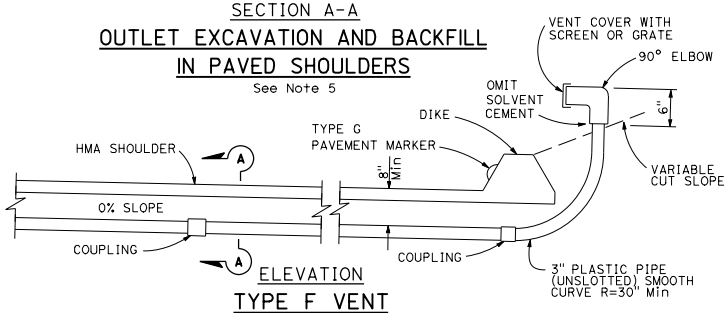
CONCRETE SPLASH PAD



SECTION A-A

OUTLET EXCAVATION AND BACKFILL IN PAVED SHOULDERS

See Note 5



TYPE F VENT

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Deepak R. Maskey — No. C70117 — Exp. 9-30-18 — 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.

TO ACCOMPANY PLANS DATED _____

NOTES:

1. See project plans for location and type of outlet and/or vent installations.
2. The position of slotted plastic pipe and limits of treated permeable material shown are for the Type 1 structural section drainage system shown on Standard Plan P50.
3. The maximum length of plastic pipe outlet shall be 50'-0" measured from the longitudinal centerline of the collector trench to the pipe outlet. For pipe lengths greater than 50'-0" use Type B outlets.
4. See project plans for slope protection details at Type C pipe outlets.
5. Backfill with aggregate base from outside edge paved shoulder to hinge point and backfill with native material in slope area.
6. See Revised Standard Plan RSP P52 for Type G vent detail used with concrete shoulders.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EDGE DRAIN OUTLET AND VENT DETAILS

NO SCALE

RSP P51 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN P51
DATED OCTOBER 30, 2015 - PAGE 161 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P51

2015 REVISED STANDARD PLAN RSP P51

5-10-17

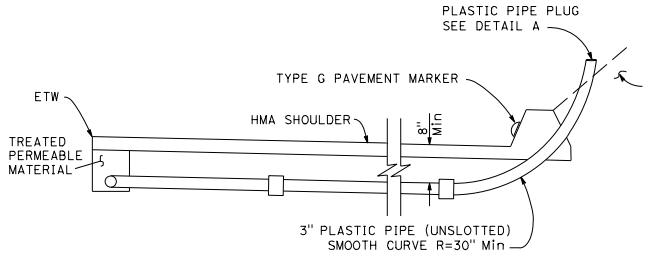
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

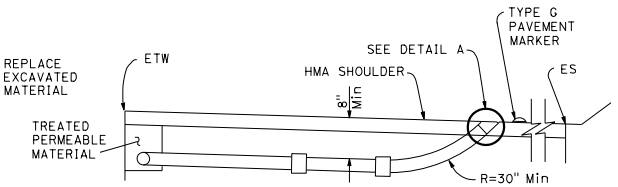
July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Deepak R. Maskey — No. C70117 — Exp. 9-30-18 — CIVIL — STATE OF CALIFORNIA

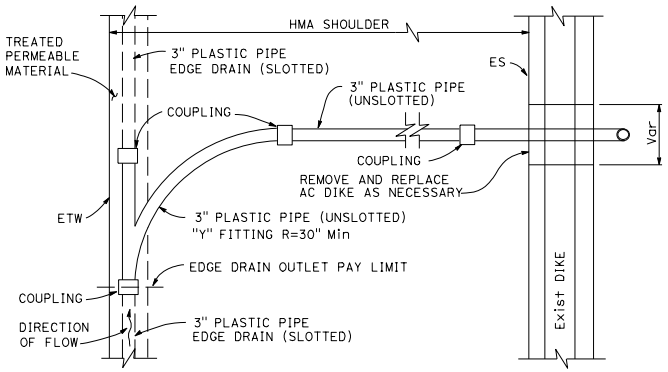
TO ACCOMPANY PLANS DATED _____



ELEVATION



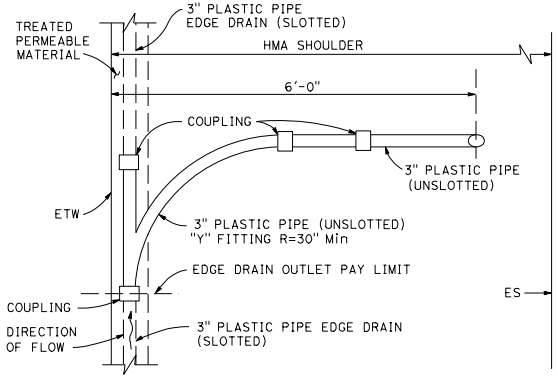
ELEVATION



PLAN

TYPE 1 CLEANOUT

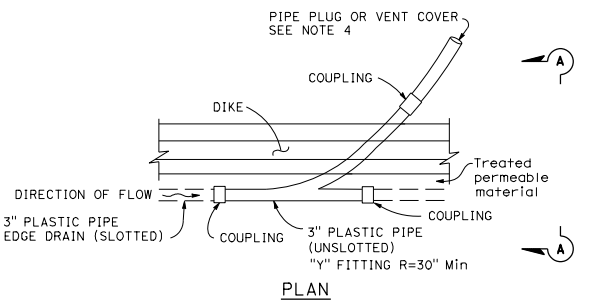
See Note 2



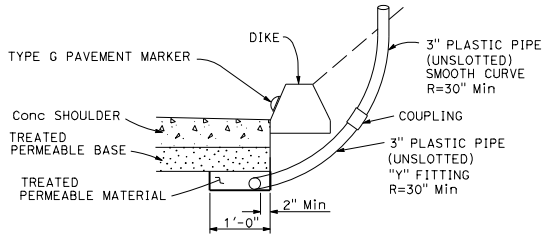
PLAN

TYPE 2 CLEANOUT

See Note 2



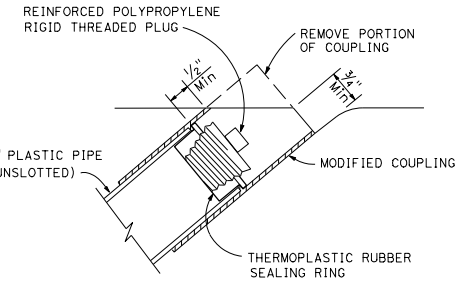
PLAN



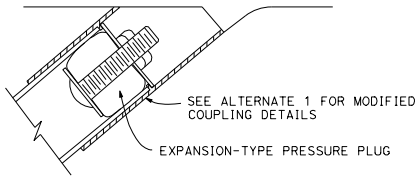
SECTION A-A

TYPE 3 CLEANOUT/TYPE G VENT

See Note 4



ALTERNATIVE 1



ALTERNATIVE 2

DETAIL A

PLASTIC PIPE PLUG

See Note 3

NOTES:

1. See project plans for location and type of cleanout or vent installations.
2. The position of slotted plastic pipe and limits of treated permeable material shown are for the Type 1 structural section drainage system shown on Standard Plan P50.
3. Other types of plugs may be substituted with the Engineer's approval.
4. The Type 3 cleanout and Type G vent is for use with concrete shoulders. The Type 6 structural section drainage system from Standard Plan P50 is shown. Use plastic pipe plug shown in Detail A with Type 3 cleanouts. Use vent cover shown on Revised Standard Plan RSP P51 with Type G vents.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EDGE DRAIN CLEANOUT AND VENT DETAILS

NO SCALE

RSP P52 DATED JULY 21, 2017 SUPERSEDES STANDARD PLAN P52
DATED OCTOBER 30, 2015 - PAGE 162 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP P52

2015 REVISED STANDARD PLAN RSP P52

5-10-17

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

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randall D. Hiatt — No. C50200 — Exp. 6-30-17 — CIVIL — STATE OF CALIFORNIA

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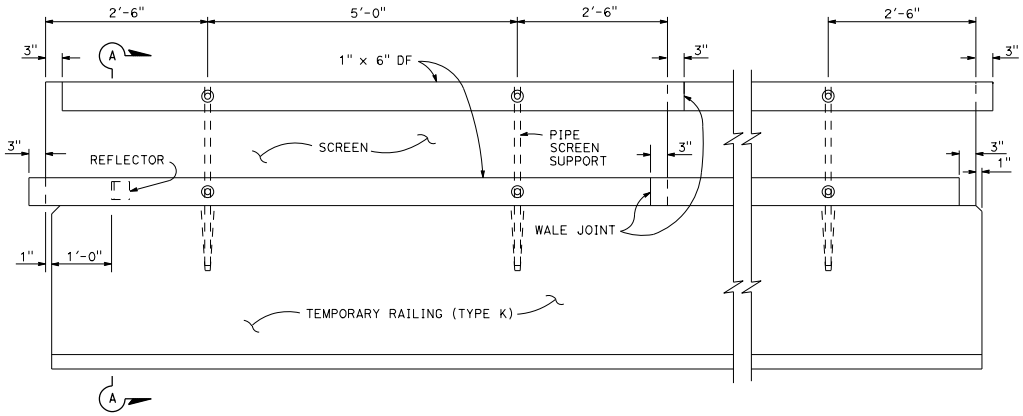
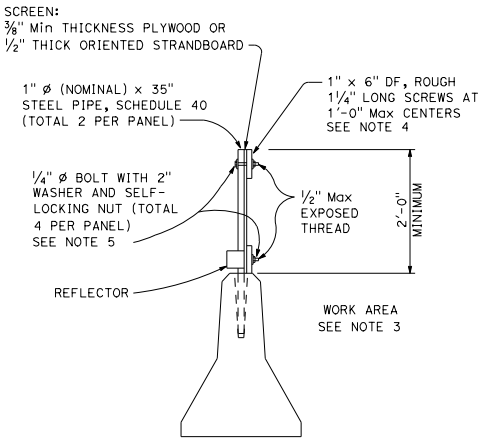
TO ACCOMPANY PLANS DATED _____



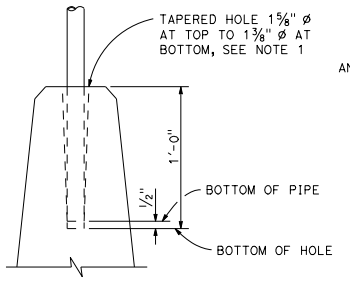
ELEVATION



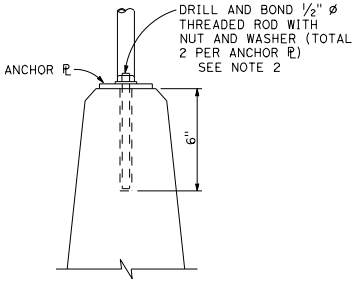
SECTION A-A

NOTES:

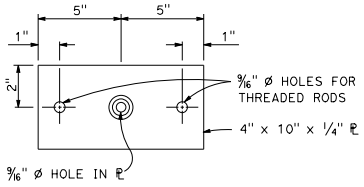
1. Straight holes 1½" Ø of the depth shown may be used in lieu of the tapered holes.
2. Resin capsule-type anchorage devices may be substituted for threaded rods.
3. Place screen on work area side of the temporary railing where traffic will only be on one side of the temporary railing.
4. Clinched 8d box nails may be substituted for screws. The nails shall be clinched on the work area side of the screen where traffic will only be on one side of the temporary railing.
5. U-bolts may be substituted for 1/4" Ø bolts.



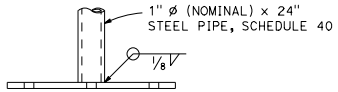
SCREEN ANCHORAGE DETAIL



SCREEN ANCHORAGE DETAIL
ALTERNATIVE "A"

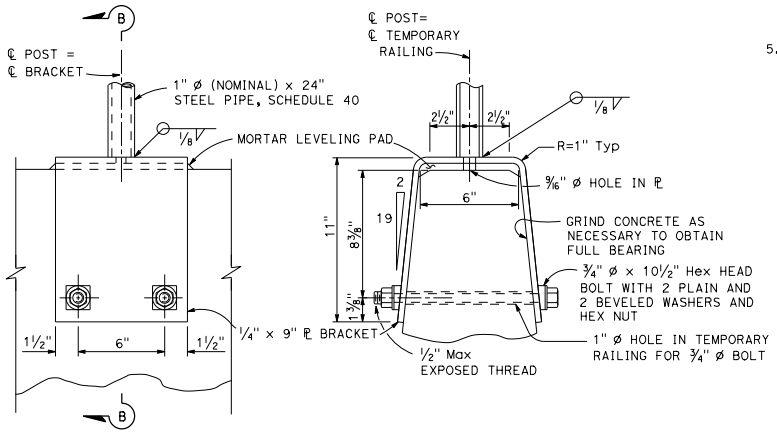


PLAN



ELEVATION

ANCHOR PLATE DETAIL
ALTERNATIVE "A"



ELEVATION SECTION B-B

SCREEN ANCHORAGE DETAIL
ALTERNATIVE "B"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY TRAFFIC SCREEN

NO SCALE

RSP T4 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN T4 DATED OCTOBER 30, 2015 - PAGE 247 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T4

2015 REVISED STANDARD PLAN RSP T4

6-7-16

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

Devinder Singh
REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Devinder Singh — No. C50470 — Exp. 6-30-17 — 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.

TO ACCOMPANY PLANS DATED _____

TABLE 1

TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING							
SPEED (S)	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)				MAXIMUM CHANNELIZING DEVICE SPACING		
					X	Y	Z **
	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	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

LONGITUDINAL BUFFER SPACE AND FLAGGER STATION SPACING				
SPEED *	Min D **	DOWNGRADE Min D ***		
		-3%	-6%	-9%
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

ADVANCE WARNING SIGN SPACING			
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 recommmended distances.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM TABLES FOR LANE AND RAMP CLOSURES

NO SCALE

RSP T9 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN T9
DATED OCTOBER 30, 2015 - PAGE 249 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T9

2015 REVISED STANDARD PLAN RSP T9

11-1-16

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Robert D. Mcnew — No. C68559 — Exp. 9-30-19 CIVIL — STATE OF CALIFORNIA

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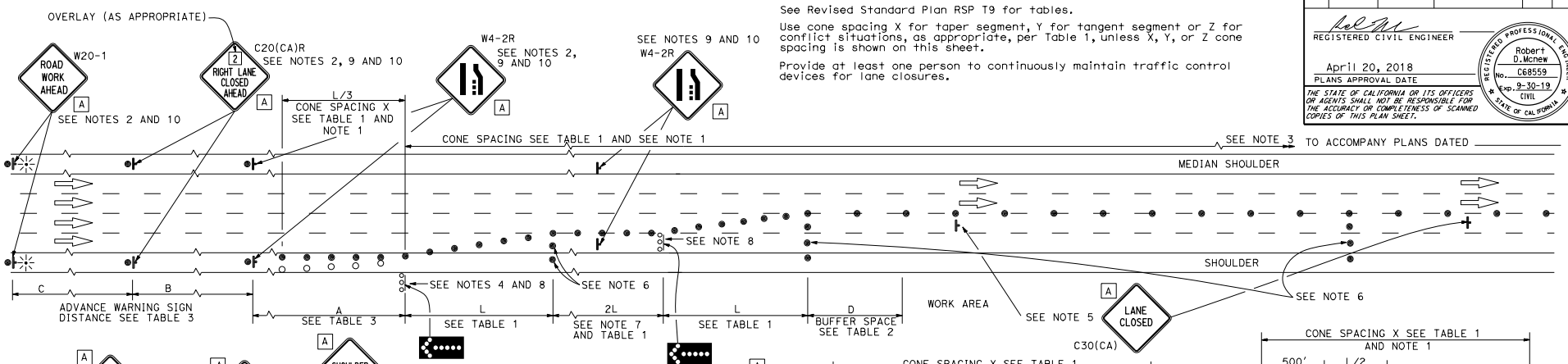
NOTES:

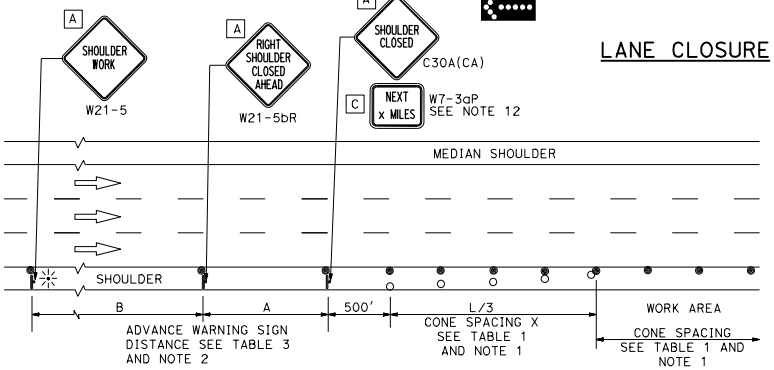
See Revised Standard Plan RSP T9 for tables.

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.

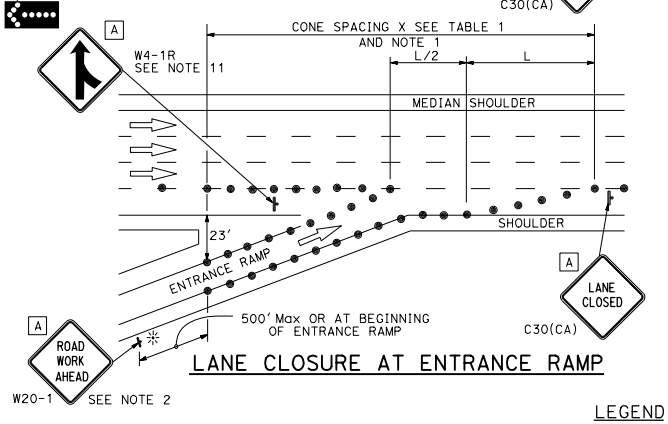
Provide at least one person to continuously maintain traffic control devices for lane closures.



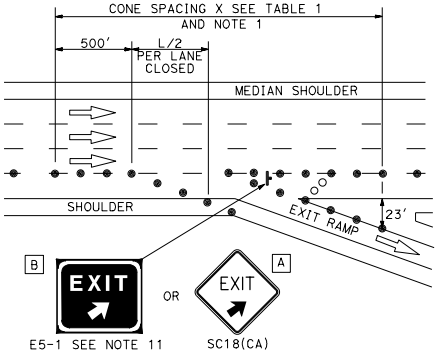
LANE CLOSURE



SHOULDER CLOSURE



LANE CLOSURE AT ENTRANCE RAMP



LANE CLOSURE AT EXIT RAMP

SEE NOTE 13

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 G20-2 "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 verticle 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.

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

RSP T10 DATED APRIL 20, 2018 SUPERSEDES RSP T10 DATED JANUARY 20, 2017 AND STANDARD PLAN T10 DATED OCTOBER 30, 2015 - PAGE 250 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T10

11-8-17

2015 REVISED STANDARD PLAN RSP T10

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Robert D. Mcnew
No. C68559
Exp. 9-30-19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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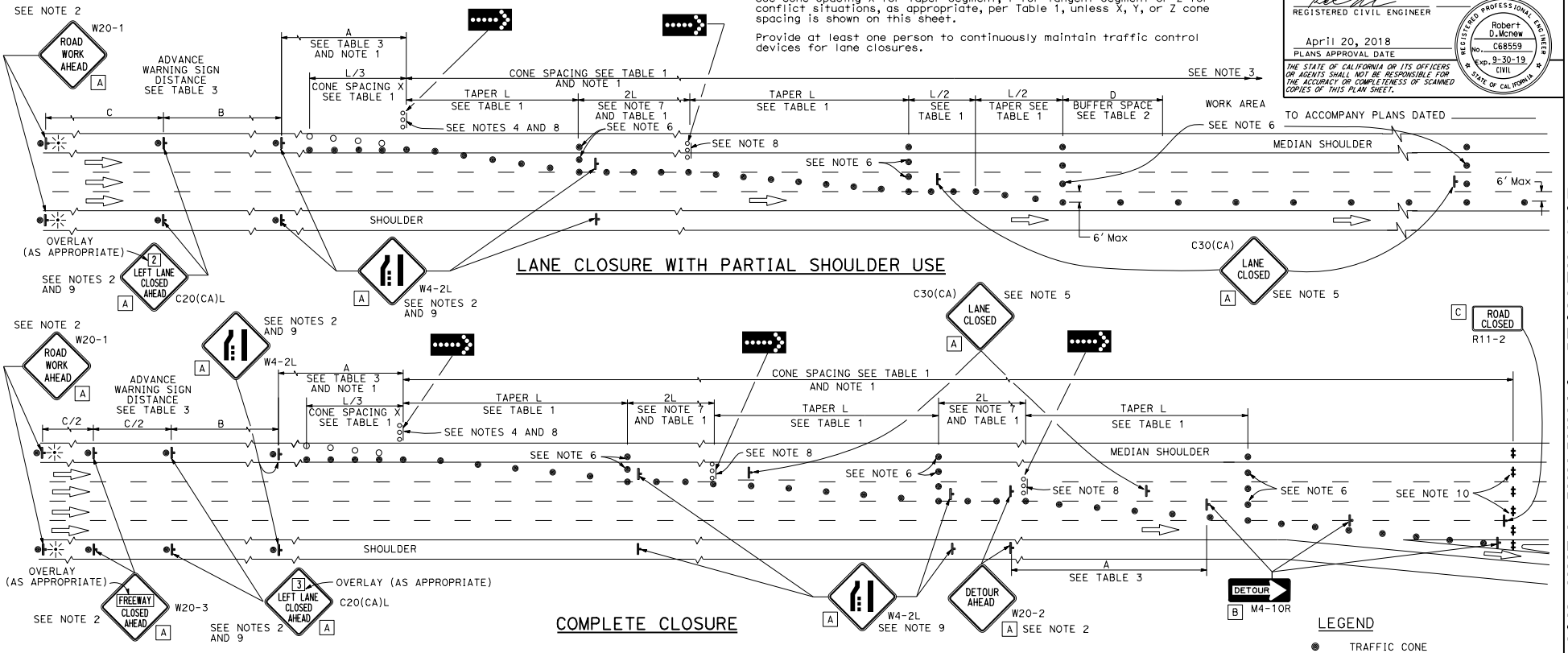
TO ACCOMPANY PLANS DATED _____

NOTES:

See Revised Standard Plan RSP 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.



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 G20-2 "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 a larger project's limits.
4. 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.
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 with Partial Shoulder USE" 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. Lane closures on the right side using partial median shoulder as a traffic lane shall conform to the details shown except that C20(CA)R and W4-2R signs shall be used.
10. A minimum of Two Type II or III barricades shall be placed across each closed lane and shoulder at the location shown and every 2000' within the complete closure area. Within the complete closure area, the transverse alignment of the barricades on the closed shoulder may be shifted from the transverse alignment to provide access to the work.

SIGN PANEL SIZE (Min)

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

LEGEND

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON FREEWAYS AND EXPRESSWAYS

NO SCALE

RSP T10A DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN T10A
DATED OCTOBER 30, 2015 - PAGE 251 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T10A

2015 REVISED STANDARD PLAN RSP T10A

12-15-17

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Robert D. Mcnew
No. C68559
Exp. 9-30-19
CIVIL
STATE OF CALIFORNIA

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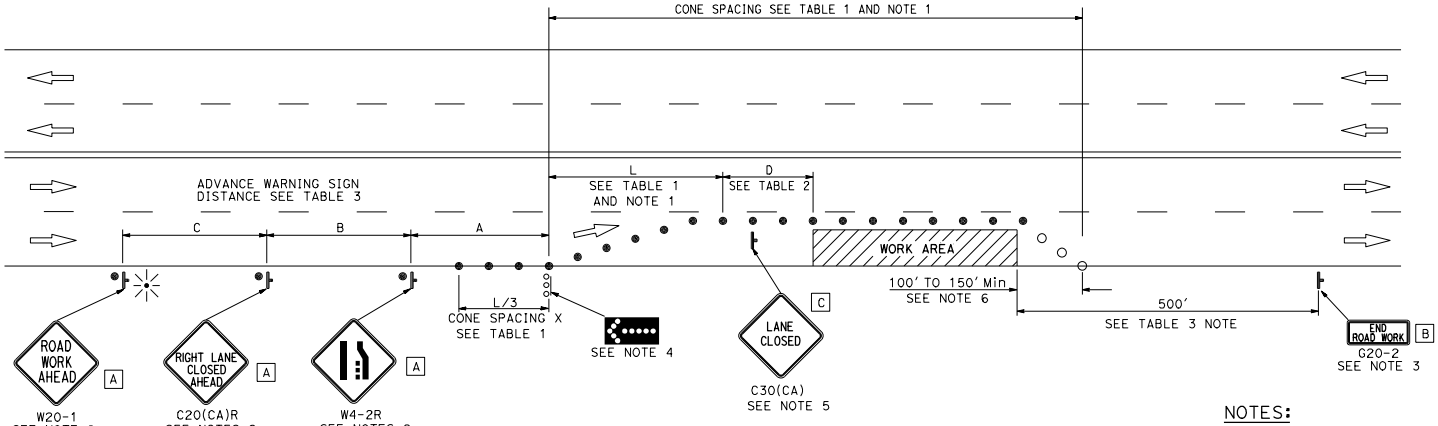
TO ACCOMPANY PLANS DATED _____



TYPICAL LANE CLOSURE

NOTES:

See Revised Standard Plan RSP 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:

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 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.
4. 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.
5. Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals throughout extended work area.
6. Length may be reduced by the Engineer to address site conditions.
7. Median lane closures shall conform to the details shown except that C20(CA)L and W4-2L signs shall be used.
8. 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

RSP T11 DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN T11
DATED OCTOBER 30, 2015 - PAGE 252 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T11

2015 REVISED STANDARD PLAN RSP T11

11-8-17

LEGEND

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON

SIGN PANEL SIZE (Min)

- [A] 48" x 48"
- [B] 24" x 24"
- [C] 36" x 18"

NOTES:

See Revised Standard Plan RSP 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.

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

REGISTERED CIVIL ENGINEER

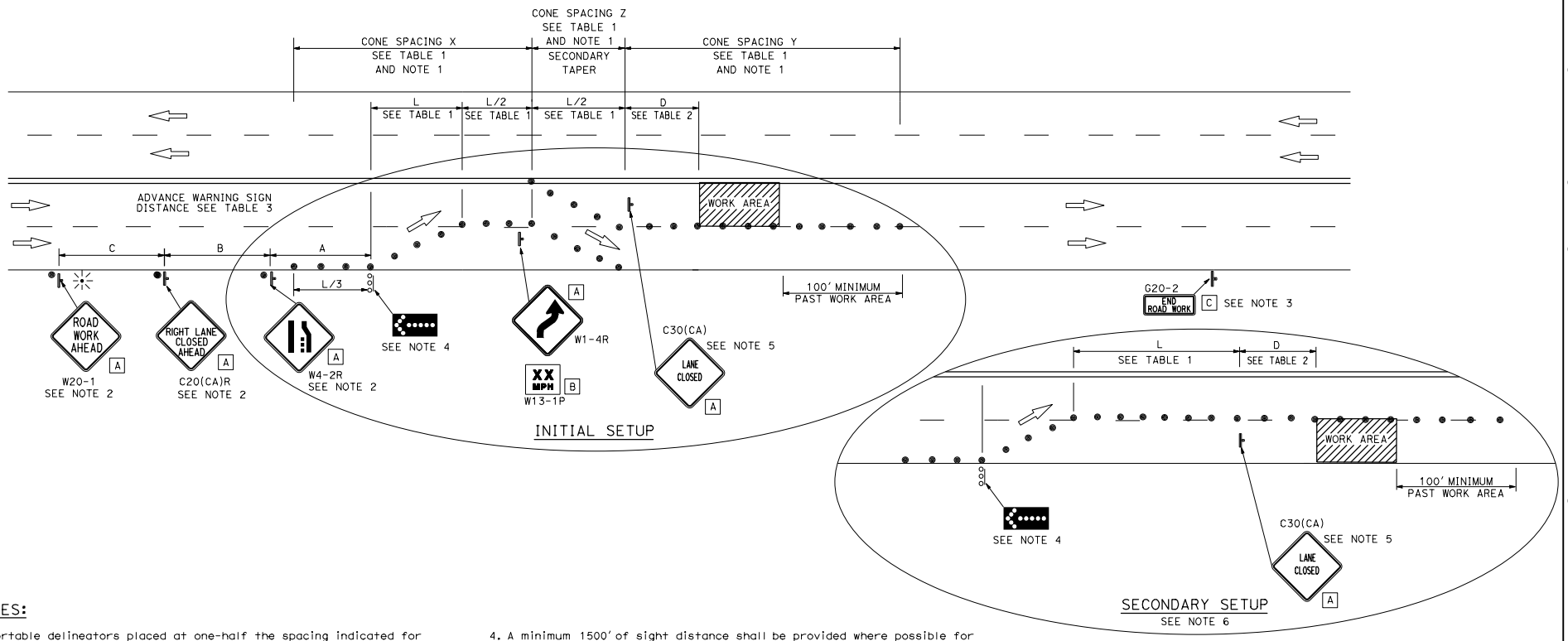
April 20, 2018
PLANS APPROVAL DATE

Robert D. McNew
No. C68559
Exp. 9-30-19
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.

TO ACCOMPANY PLANS DATED _____

TYPICAL CHANGEABLE LANE CLOSURE



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 beacon shall be placed at the locations indicated for lane closure during hours of darkness.
3. 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.
4. 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.
5. Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals throughout extended work area.
6. Relocate secondary taper to tangent location and relocate C30(CA) sign. Remove W1-4R/W13-1P sign package.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR CHANGEABLE LANE CLOSURE ON MULTILANE CONVENTIONAL HIGHWAYS AND EXPRESSWAYS

NO SCALE

RSP T11A DATED APRIL 20, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T11A

2015 REVISED STANDARD PLAN RSP T11A

11-9-17

LEGEND

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON

SIGN PANEL SIZE (Min)

- [A] 48" x 48"
- [B] 24" x 24"
- [C] 36" x 18"

NOTES:

See Revised Standard Plan RSP 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.

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Robert D. Mcnew — No. C68559 — Exp. 9-30-19 CIVIL — STATE OF CALIFORNIA

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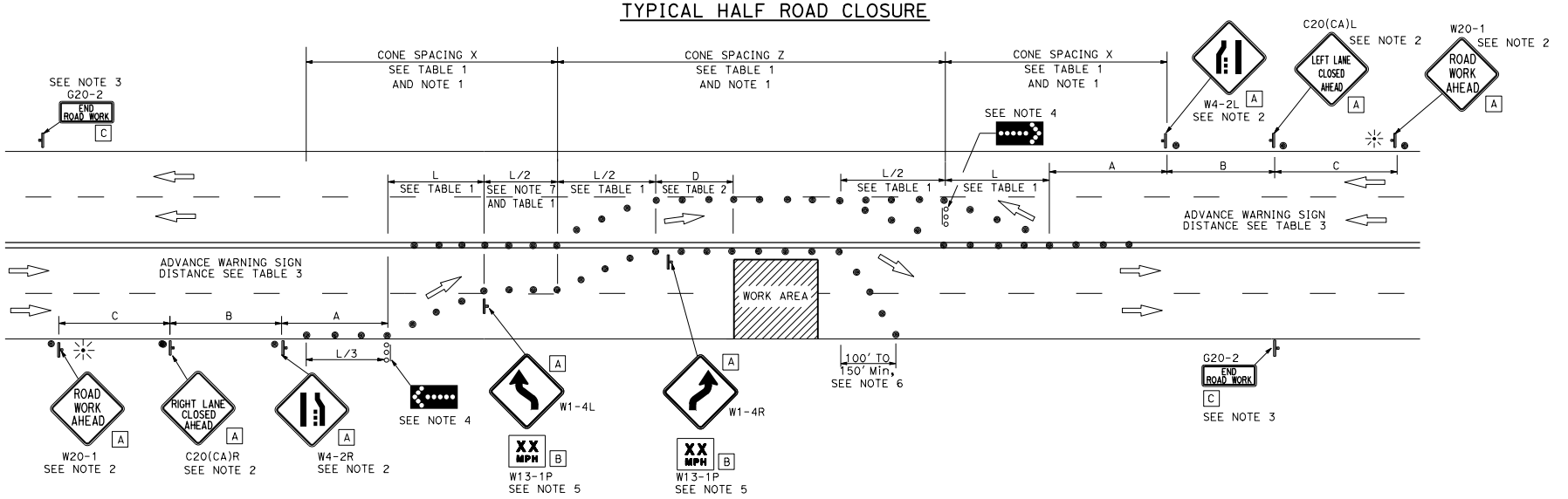
TO ACCOMPANY PLANS DATED _____

TYPICAL HALF ROAD CLOSURE



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 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.
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 verticle curve or on a horizontal curve.
5. Advisory speed will be determined by the Engineer, The W13-1P Plaque will not be required when advidory speed is more than the posted or maximum speed limit.
6. Length may be reduced by the Engineer to address site conditions.
7. The tangent (L/2) shall be used.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR HALF ROAD CLOSURE ON MULTILANE CONVENTIONAL HIGHWAYS AND EXPRESSWAYS

NO SCALE

RSP T12 DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN T12
DATED OCTOBER 30, 2015 - PAGE 253 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T12

2015 REVISED STANDARD PLAN RSP T12

11-8-17

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Robert D. McNew
No. C68559
Exp. 9-30-19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

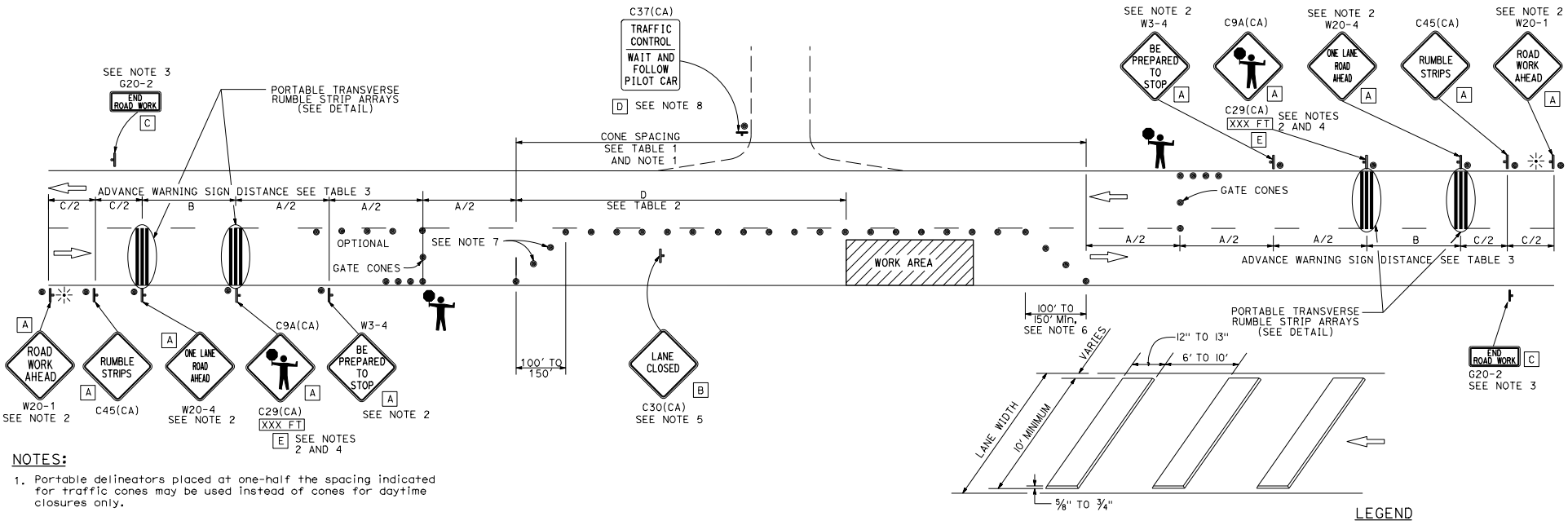
NOTES:

See Revised Standard Plan RSP 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.

TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL



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 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.
4. An optional C29(CA) sign may be placed below the C9A(CA) sign.
5. 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 nthe flagger station.
6. Length may be reduced by the Engineer to address site conditions.
7. Either traffic cones or barricades shall be placed on the taper. Barricades shall be Type I, II, or III.
8. When a pilot car is used, place a C37(CA) "TRAFFIC CONTROL-WAIT AND FOLLOW PILOT CAR" sign with black legend on white background at all intersections, driveways and alleys without a flagger within the traffic control area.

PORTABLE TRANSVERSE RUMBLE STRIP ARRAY DETAIL

SIGN PANEL SIZE (Min)

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

LEGEND

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- PORTABLE FLASHING BEACON
- FLAGGER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON TWO LANE CONVENTIONAL HIGHWAYS

NO SCALE

RSP T13 DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN T13 DATED OCTOBER 30, 2015 - PAGE 254 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T13

2015 REVISED STANDARD PLAN RSP T13

11-8-17

TYPICAL RAMP CLOSURES

SIGN PANEL SIZE (Min)

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

LEGEND

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- BARRICADES
- PORTABLE FLASHING BEACON

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

REGISTERED CIVIL ENGINEER

April 20, 2018
PLANS APPROVAL DATE

Robert D. McNew No. C68559 Exp. 9-30-19 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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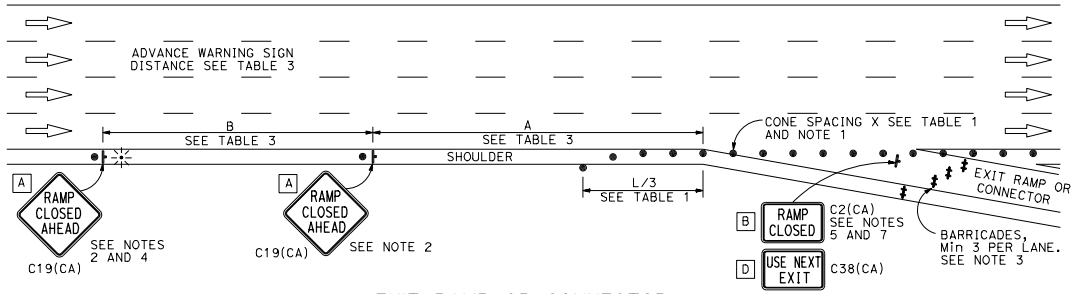
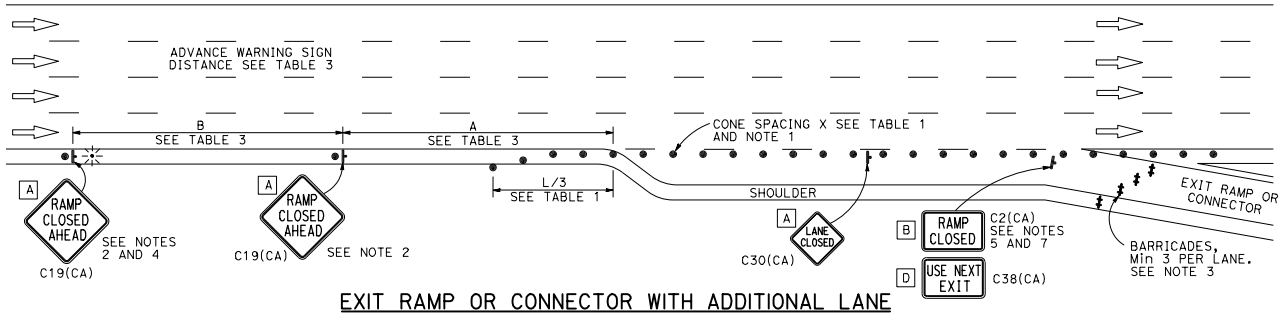
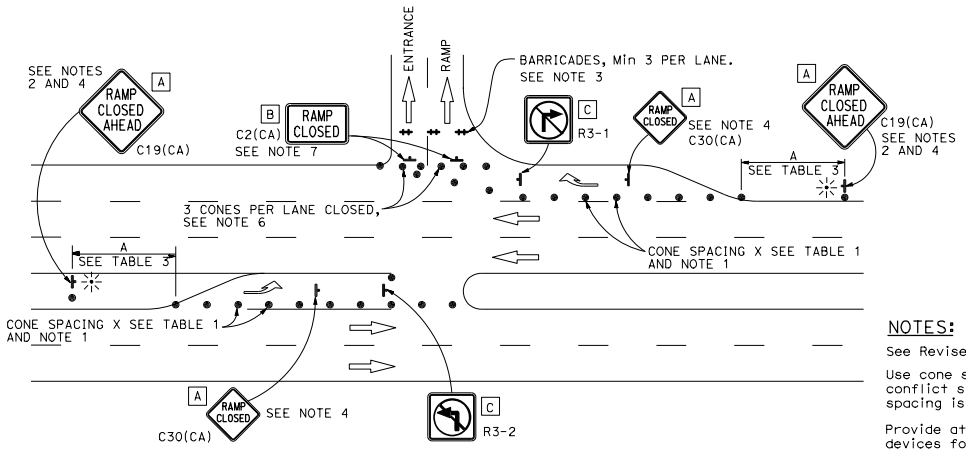
TO ACCOMPANY PLANS DATED _____



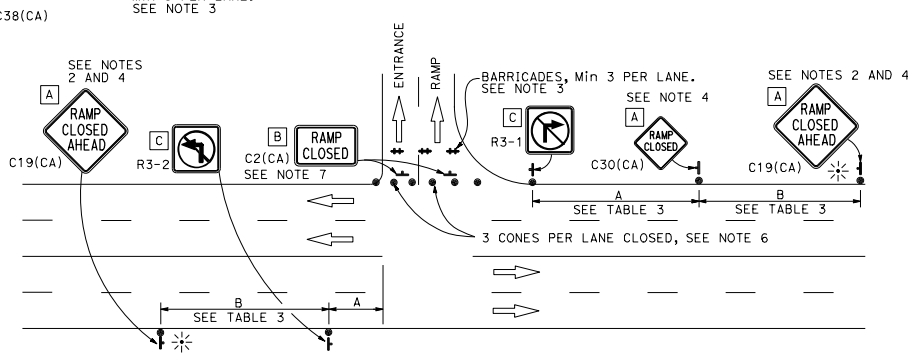
EXIT RAMP OR CONNECTOR



EXIT RAMP OR CONNECTOR WITH ADDITIONAL LANE



ENTRANCE RAMP WITH TURNING POCKETS



ENTRANCE RAMP WITHOUT TURNING POCKETS

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 C19(CA) "RAMP CLOSED AHEAD" 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. A flashing beacon shall be placed on top of the first C19(CA) sign during hours of darkness.
3. Barricades shall be Type I, II or III for closures lastind one week or less ans Type III for closures lasting longer than one week.
4. In addition to placing the C19(CA) "RAMP CLOSED AHEAD" and C30(CA) "RAMP CLOSED" signs, black on orange overlay plates with the word "closed" may be mounted. As directed by the Engineer on all guide signs that refer to the closed ramp. The letter size on the overlay shall be the same as the guide sign.
5. The existing "EXIT" signs shall be covered during ramp closures.
6. A minimum of 3 cones shall be placed transversely across each closed lane and shoulder.
7. C2(CA) sign shall be black and white.

NOTES:

See Revised Standard Plan RSP 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR RAMP CLOSURE

NO SCALE

RSP T14 DATED APRIL 20, 2018 SUPERSEDES STANDARD PLAN T14
DATED OCTOBER 30, 2015 - PAGE 255 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T14

2015 REVISED STANDARD PLAN RSP T14

11-8-17

NOTES:

1. Only signs related to pedestrians are shown. For all other signs see appropriate T-sheets.
2. Barricades closing sidewalk shall cover the full width of the sidewalk. Use R9-11 sign when there are destination points between the detour and the work area. Locate the R9-11 sign to allow pedestrian access.
3. Advance warning sign is not required if the work area is within the limits of a larger work zone. Sign shall be equipped with at least two flags for daytime closure. Each flag shall be orange or fluorescent red-orange in color.

NOTES:

See Revised Standard Plan RSP 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.

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Robert D.Mcnew
No. C68559
Exp. 9-30-17
CIVIL
STATE OF CALIFORNIA

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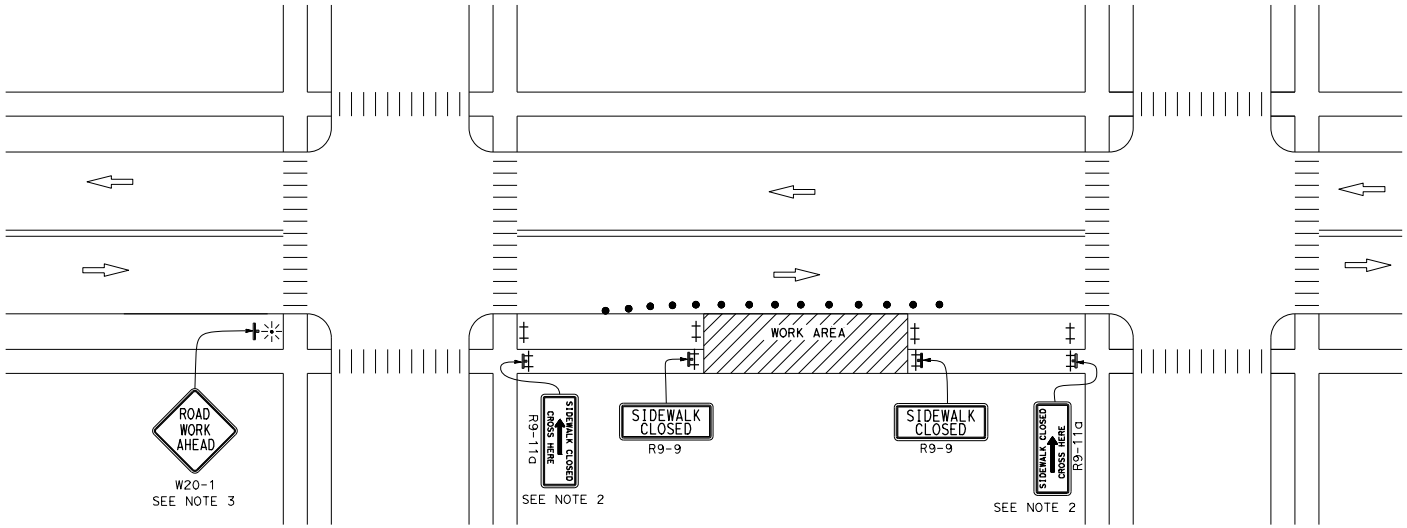
TO ACCOMPANY PLANS DATED _____



LEGEND:

- ‡ BARRICADE
- ● TRAFFIC CONE
- ✳ PORTABLE FLASHING BEACON
- ▮ SIGN
- ‡▮ TEMPORARY TRAFFIC CONTROL SIGN ON BARRICADE

SIGN PANEL SIZE (Min)

SIGN DESIGNATION	SIGN OR PLAQUE	SIGN SIZE
R9-9	SIDEWALK CLOSED	24" x 12"
R9-11	SIDEWALK CLOSED AHEAD CROSS HERE	24" x 18"
R9-11a	SIDEWALK CLOSED CROSS HERE	24" x 12"
W20-1	ROAD WORK AHEAD	36" x 36"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY PEDESTRIAN ACCESS ROUTES TYPICAL SIDEWALK CLOSURE AND PEDESTRIAN DETOUR

NO SCALE

RSP T30 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T30

2015 REVISED STANDARD PLAN RSP T30

6-27-17

NOTES:

1. Only signs related to pedestrians are shown. For all other signs see appropriate T-sheets.
2. Separate pedestrian walkway from traffic and work zone activities, when temporary walkway is adjacent to traffic.
3. The temporary pedestrian access route must not lead into conflict with vehicles or work.
4. Advance warning sign is not required if the work area is within the limits of a larger work zone. Sign shall be equipped with at least two flags for daytime closure. Each flag shall be orange or fluorescent red-orange in color.
5. All devices used to channelize pedestrian flow must connect such that gaps do not allow pedestrians to stray from the channelized path.
6. Barricades closing sidewalk shall cover the full width of the sidewalk.
7. Separate the temporary pedestrian access route from traffic using a temporary barrier and a crash cushion if necessary.
8. When it is not possible to maintain a minumum of 60 inches throughout the length of the pedestrian route, maintain a minimum width of 48 inches and provide a 60 X 60-inch passing space at least every 200 feet.
9. See Revised Standard Plan RSP A88A for detectable warning surface for curb ramps to apply to temporary curb ramps.
10. See Revised Standard Plan RSP T34 for temporary curb ramp options.

NOTES:

See Revised Standard Plan RSP 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.

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Robert D. Mcnew
No. C68559
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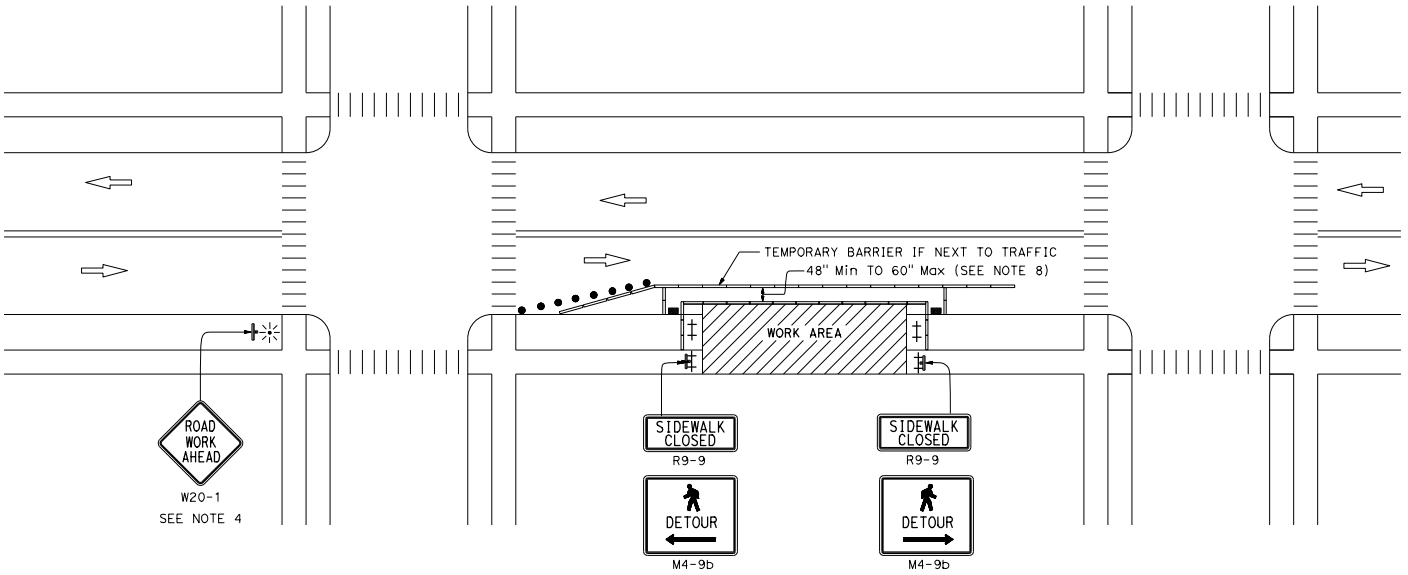
TO ACCOMPANY PLANS DATED _____



LEGEND:

- BARRICADE
- TEMPORARY CURB RAMP
- CHANNELIZING DEVICE
- TRAFFIC CONE
- PORTABLE FLASHING BEACON
- TEMPORARY TRAFFIC CONTROL SIGN
- TEMPORARY TRAFFIC CONTROL SIGN ON BARRICADE

SIGN PANEL SIZE (Min)

SIGN DESIGNATION	SIGN OR PLAQUE	SIGN SIZE
M4-9b	PEDESTRIAN DETOUR	30" x 24"
R9-9	SIDEWALK CLOSED	24" x 12"
W20-1	ROAD WORK AHEAD	36" x 36"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY PEDESTRIAN ACCESS ROUTES
TYPICAL SIDEWALK DIVERSION WITHIN ROADBED

NO SCALE

RSP T31 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T31

2015 REVISED STANDARD PLAN RSP T31

6-27-17

NOTES:

1. Only signs related to pedestrians are shown. For all other signs see appropriate T-sheets.
2. Barricades closing sidewalk shall cover the full width of the sidewalk. Use R9-11 sign when there are destination points between the detour and the work area. Locate the R9-11 sign to allow pedestrian access.
3. Advance warning sign is not required if the work area is within the limits of a larger work zone. Sign shall be equipped with at least two flags for daytime closure. Each flag shall be orange or fluorescent red-orange in color.

NOTES:

See Revised Standard Plan RSP 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.

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

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No. C68559
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STATE OF CALIFORNIA

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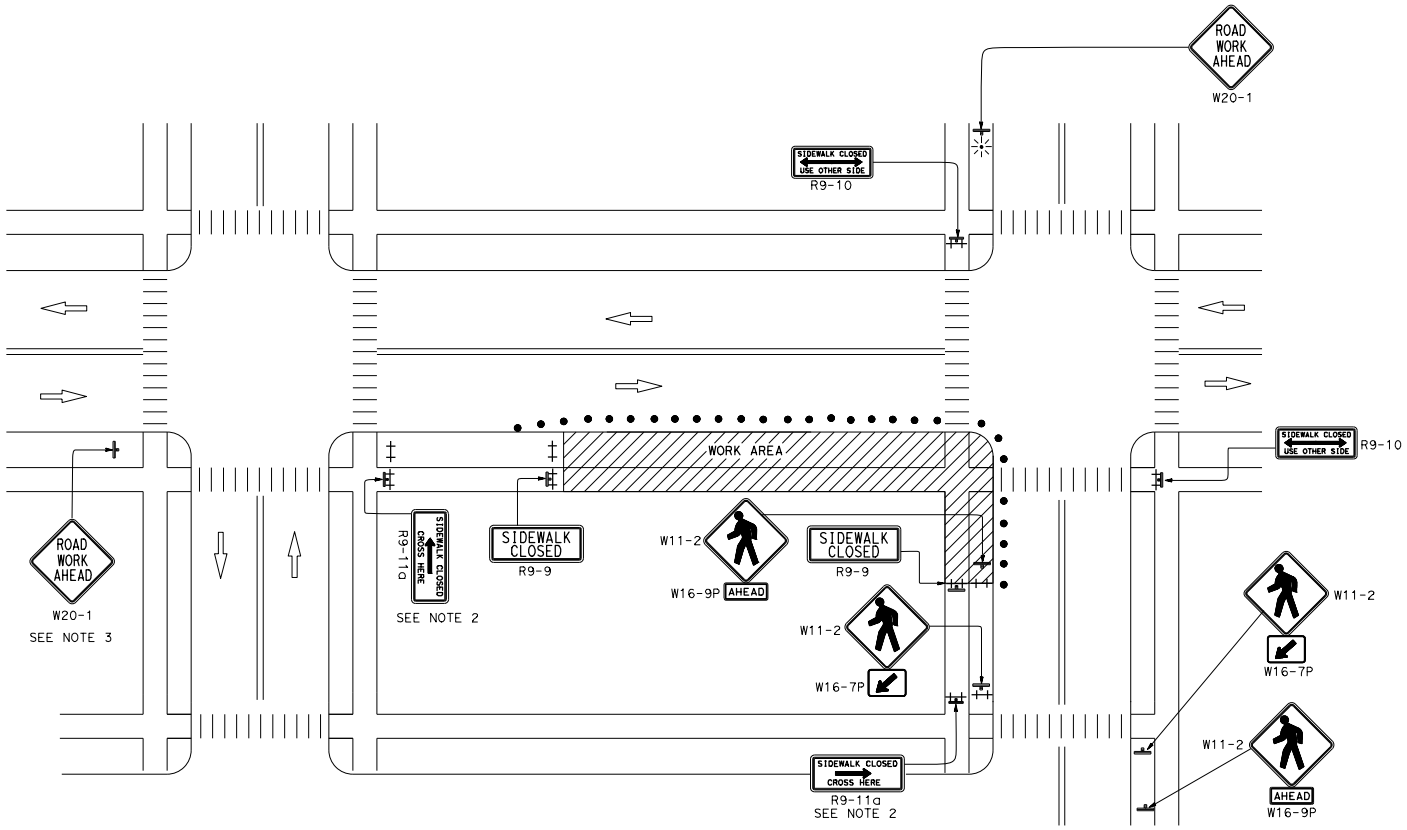
TO ACCOMPANY PLANS DATED _____



LEGEND:

- BARRICADE
- TRAFFIC CONE
- PORTABLE FLASHING BEACON
- TEMPORARY TRAFFIC CONTROL SIGN
- TEMPORARY TRAFFIC CONTROL SIGN ON BARRICADE

SIGN PANEL SIZE (Min)

SIGN DESIGNATION	SIGN OR PLAQUE	SIGN SIZE
R9-9	SIDEWALK CLOSED	24" x 12"
R9-10	SIDEWALK CLOSED USE OTHER SIDE	24" x 12"
R9-11	SIDEWALK CLOSED AHEAD CROSS HERE	24" x 18"
R9-11a	SIDEWALK CLOSED CROSS HERE	24" x 12"
W11-2	PEDESTRIAN	36" x 36"
W16-7P	DIAGONAL DOWNWARD POINTING ARROW (PLAQUE)	24" x 12"
W16-9P	AHEAD (PLAQUE)	24" x 12"
W20-1	ROAD WORK AHEAD	36" x 36"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY PEDESTRIAN ACCESS ROUTES TYPICAL SIDEWALK/CROSSWALK CLOSURE AND PEDESTRIAN DETOUR

NO SCALE

RSP T32 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T32

2015 REVISED STANDARD PLAN RSP T32

6-27-17

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Robert D. Mcnew
No. C68559
Exp. 9-30-17
CIVIL
STATE OF CALIFORNIA

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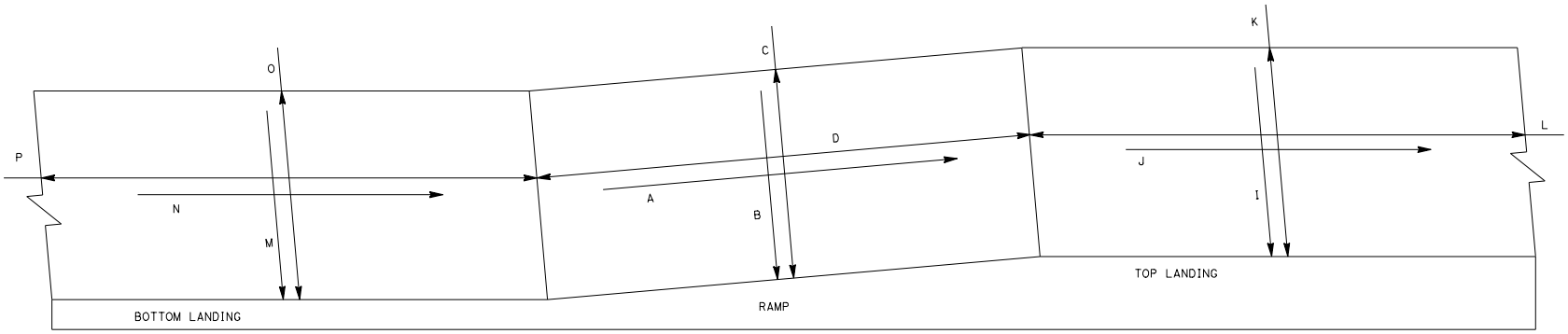
TO ACCOMPANY PLANS DATED _____

RAMP				HAND RAIL		EDGE PROTECTION	
SLOPE	CROSS SLOPE	WIDTH	LENGTH	HEIGHT RIGHT SIDE	HEIGHT LEFT SIDE	RAIL RIGHT SIDE	RAIL LEFT SIDE
A	B	C	D	E	F	G	H
8.3% OR LESS	2.0% OR LESS	48 INCHES OR GREATER	30 FEET OR LESS	34 TO 38 INCHES	34 TO 38 INCHES	WITHIN 2 INCHES FROM GROUND	WITHIN 2 INCHES FROM GROUND
TOP LANDING				BOTTOM LANDING			
CROSS SLOPE	SLOPE	WIDTH	DEPTH	CROSS SLOPE	SLOPE	WIDTH	DEPTH
I	J	K	L	M	N	O	P
2.0% OR LESS	2.0% OR LESS	48 INCHES OR GREATER	60 INCHES OR GREATER	2.0% OR LESS	2.0% OR LESS	48 INCHES OR GREATER	60 INCHES OR GREATER



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY PEDESTRIAN ACCESS ROUTES
RAMP

NO SCALE

RSP T33 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T33

2015 REVISED STANDARD PLAN RSP T33

5-30-17

CURB RAMP			TOP LANDING				DETECTABLE WARNING SURFACE
SLOPE	CROSS SLOPE	WIDTH	CROSS SLOPE	SLOPE	WIDTH	DEPTH	DEPTH
A	B	C	D	E	F	G	K
8.3% OR LESS	2.0% OR LESS	48 INCHES OR GREATER	2.0% OR LESS	2.0% OR LESS	48 INCHES OR GREATER	60 INCHES OR GREATER	MINIMUM 36 INCHES

NOTES: If the above requirements cannot be met, on existing sites with space limitations, the following slopes are allowed:

For a maximum rise of 6 inches a slope between 1:12 to 1:10 is allowed.
For a maximum rise of 3 inches a slope between 1:10 to 1:8 is allowed.

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

REGISTERED CIVIL ENGINEER

July 21, 2017
PLANS APPROVAL DATE

Robert D. McNew
No. C68559
Exp. 9-30-17
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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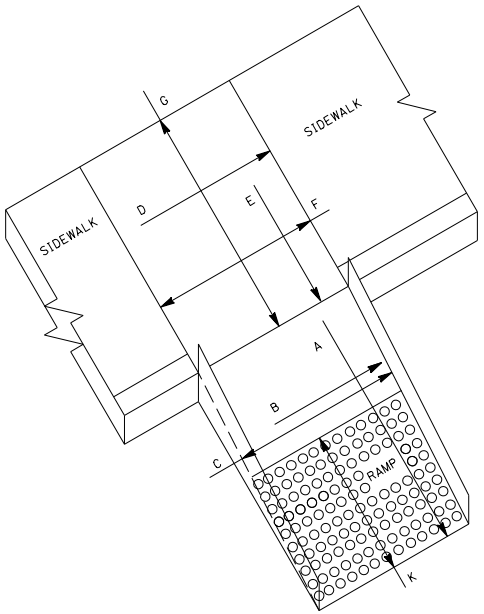
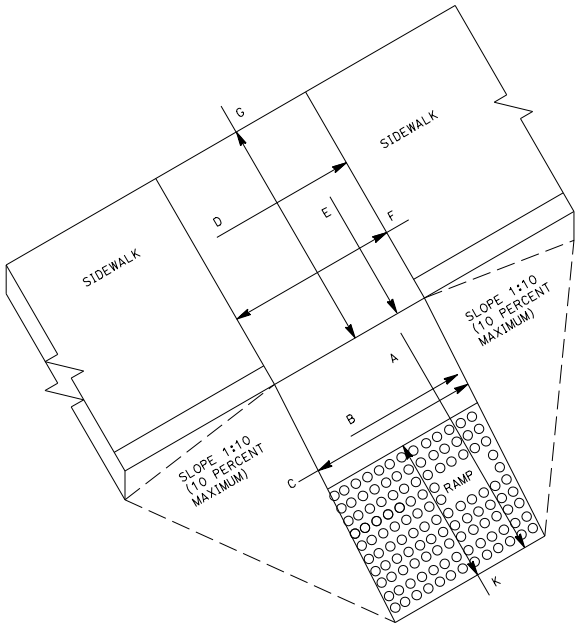
TO ACCOMPANY PLANS DATED _____



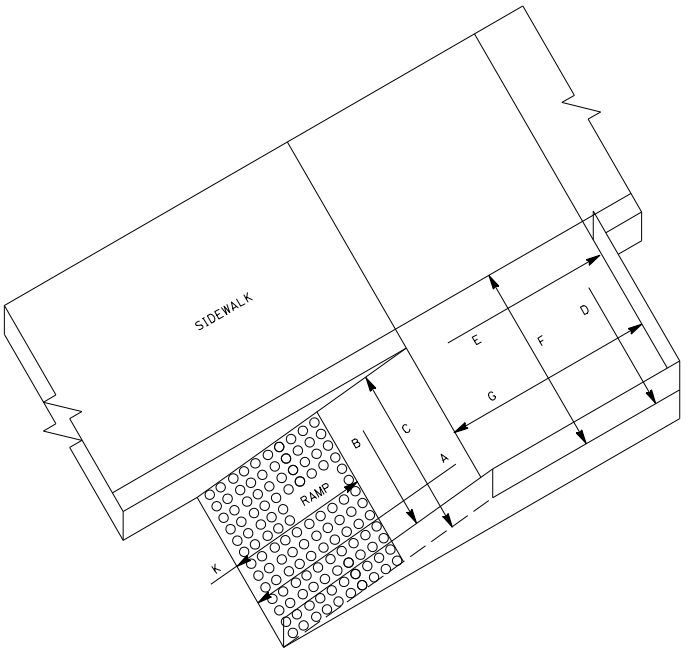
OPTION A

SHOWN WITH SIDE EDGE



OPTION B

SHOWN WITH SIDE APRON



OPTION C

PARALLEL RAMP

SHOWN WITH SIDE EDGE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY PEDESTRIAN ACCESS ROUTES CURB RAMP OPTIONS

NO SCALE

RSP T34 DATED JULY 21, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T34

2015 REVISED STANDARD PLAN RSP T34

6-9-17

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

Robert B. Schott
LICENSED LANDSCAPE ARCHITECT

January 20, 2017
PLANS APPROVAL DATE

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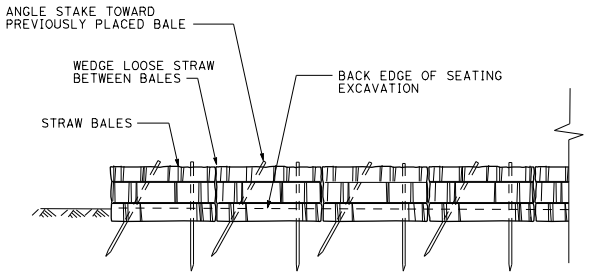
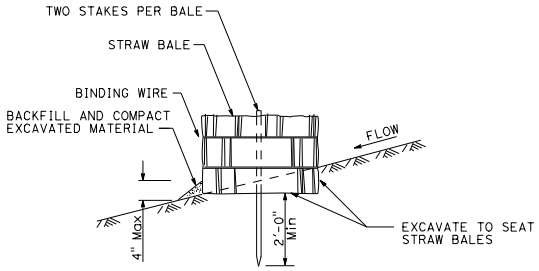
LICENSED LANDSCAPE ARCHITECT — Robert B. Schott — Signature 11-30-18 Renewal Date — Date — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



FRONT ELEVATION

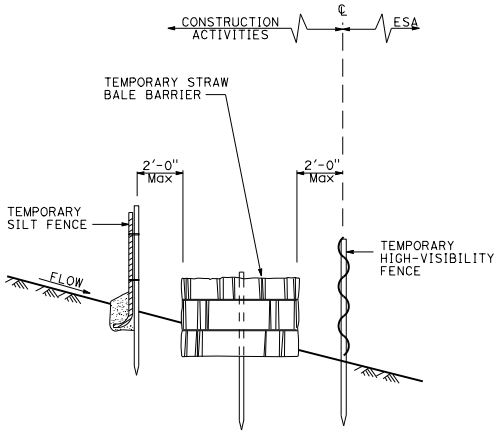


SECTION

TEMPORARY STRAW BALE BARRIER

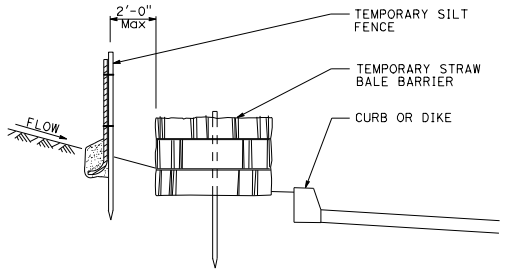
NOTE:

1. Temporary silt fence and temporary high-visibility fence shown for reference purposes only.



SECTION

PLACEMENT DETAIL
FOR TEMPORARY SILT FENCE
AND TEMPORARY HIGH-VISIBILITY FENCE
USED WITH TEMPORARY STRAW BALE BARRIER
(See Note 1)



SECTION

PLACEMENT DETAIL
FOR TEMPORARY SILT FENCE
USED WITH TEMPORARY
STRAW BALE BARRIER
(See Note 1)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY STRAW BALE BARRIER)

NO SCALE

RSP T52 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN T52
DATED OCTOBER 30, 2015 - PAGE 260 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T52

2015 REVISED STANDARD PLAN RSP T52

10-19-16

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

Robert B. Schott
LICENSED LANDSCAPE ARCHITECT

January 20, 2017
PLANS APPROVAL DATE

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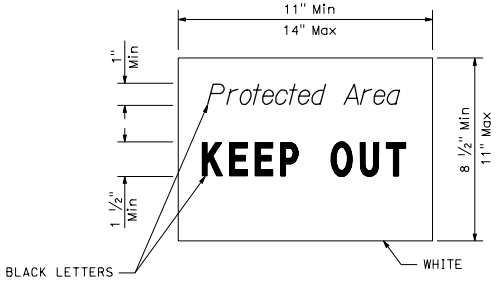
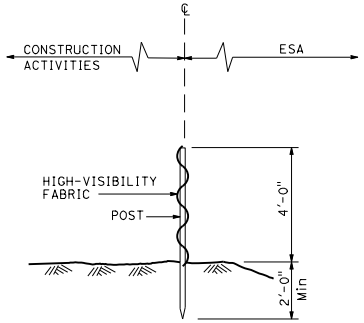
LICENSED LANDSCAPE ARCHITECT — Robert B. Schott — Signature 11-30-18 Renewal Date — Date — STATE OF CALIFORNIA

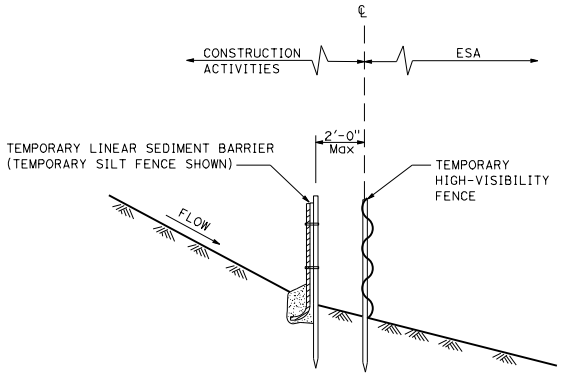
TO ACCOMPANY PLANS DATED _____



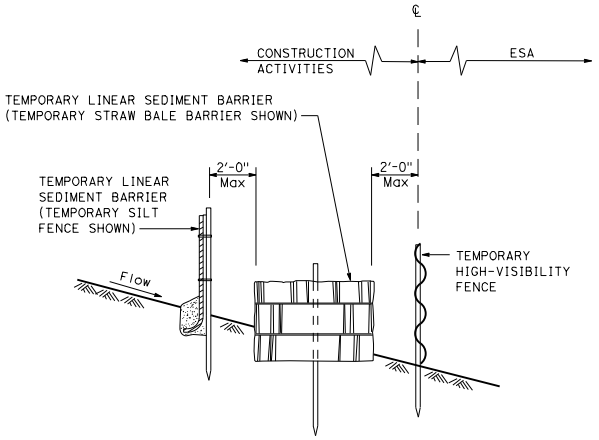
SIGN DETAIL



SECTION
TEMPORARY HIGH-VISIBILITY FENCE



SECTION
PLACEMENT DETAIL
FOR TEMPORARY LINEAR SEDIMENT BARRIER
USED WITH TEMPORARY
HIGH-VISIBILITY FENCE



SECTION
PLACEMENT DETAIL
FOR TEMPORARY SILT FENCE
AND TEMPORARY STRAW BALE BARRIER
USED WITH TEMPORARY HIGH-VISIBILITY FENCE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY HIGH-VISIBILITY FENCE)

NO SCALE

RSP T65 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN T65
DATED OCTOBER 30, 2015 - PAGE 273 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T65

2015 REVISED STANDARD PLAN RSP T65

10-19-16

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

Robert B. Schatt
LICENSED LANDSCAPE ARCHITECT

January 20, 2017
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT Robert B. Schatt Signature 11-30-18 Renewal Date Date STATE OF CALIFORNIA

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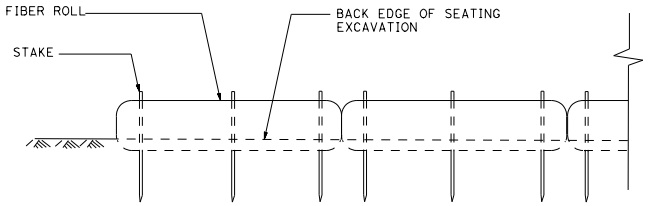
TO ACCOMPANY PLANS DATED _____

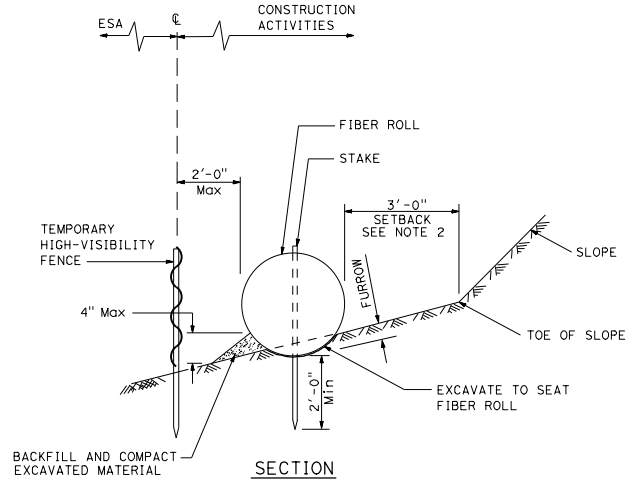
NOTES:

1. Temporary high-visibility fence shown for reference purposes only.
2. Setback dimension may vary according to field conditions or as designated on plans.



FRONT ELEVATION

TEMPORARY LARGE SEDIMENT BARRIER



SECTION

PLACEMENT DETAIL
FOR TEMPORARY HIGH-VISIBILITY FENCE
USED WITH TEMPORARY LARGE SEDIMENT BARRIER

(See Note 1)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY LARGE SEDIMENT BARRIER)

NO SCALE

RSP T66 DATED JANUARY 20, 2017 SUPERSEDES STANDARD PLAN T66
DATED OCTOBER 30, 2015 - PAGE 274 OF THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP T66

2015 REVISED STANDARD PLAN RSP T66

10-19-16