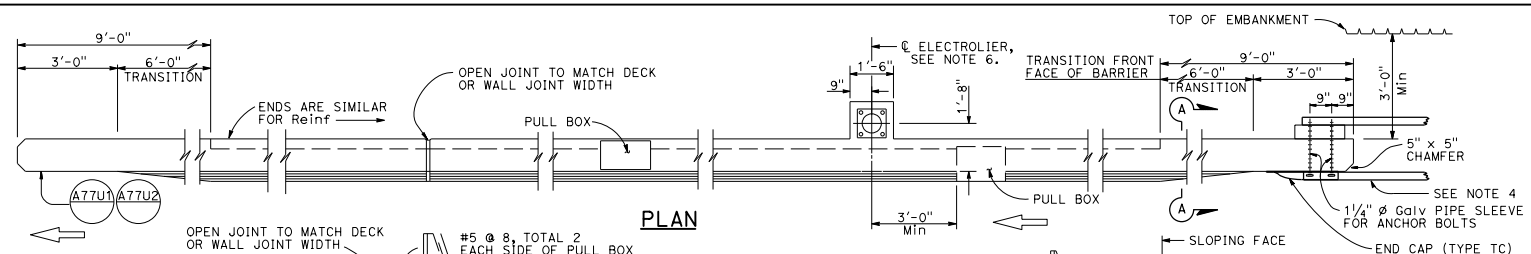
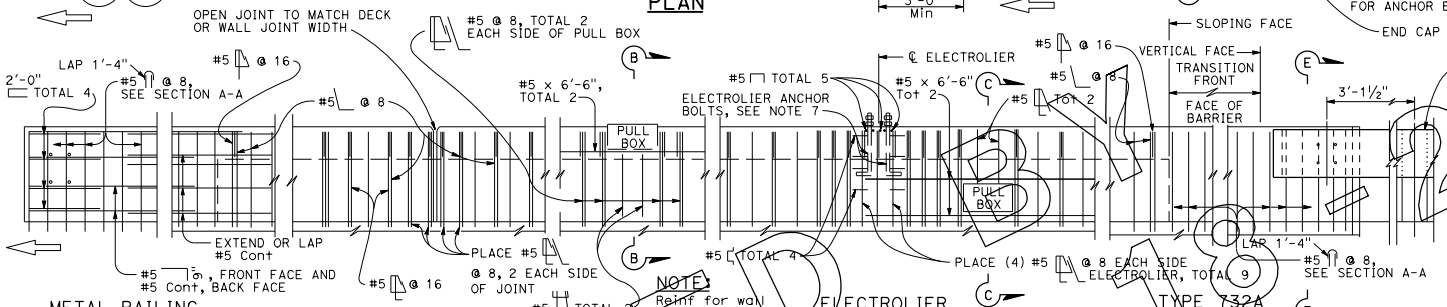
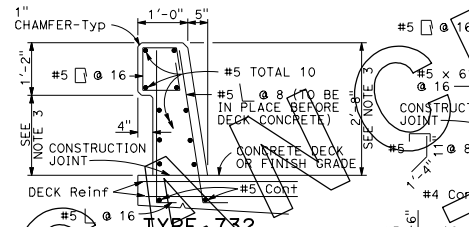
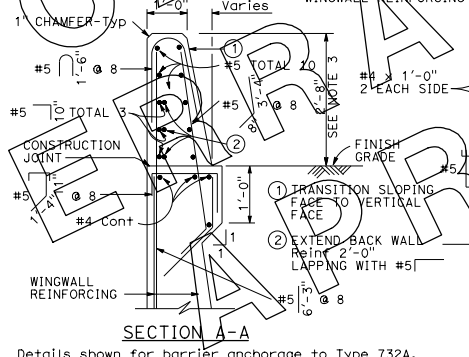


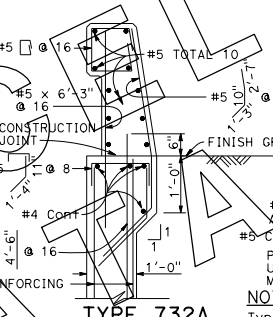


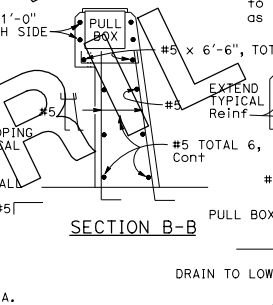
NOTES:

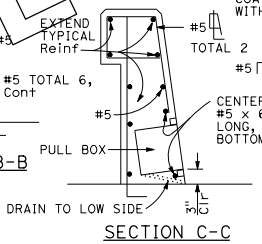
1. Walls are to be backfilled before barrier is placed.
2. Clearance to reinforcing steel in barrier to be 1", except as noted. Longitudinal reinforcement to stop at all expansion joints.
3. Dimensions may vary with roadway cross slope and with certain thickness of surfacing. See Project Plans.
4. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
5. See Standard Plans ES-9A, ES-9B, ES-9C, ES-9D and 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 Standard Plans ES-6A and 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.

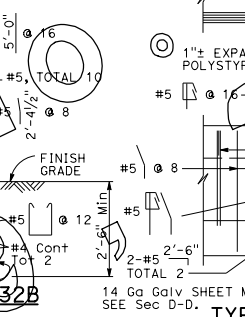




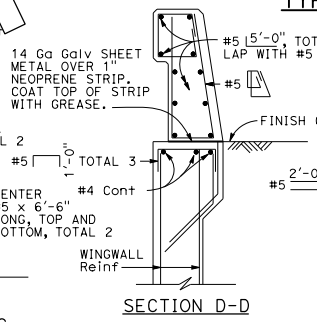


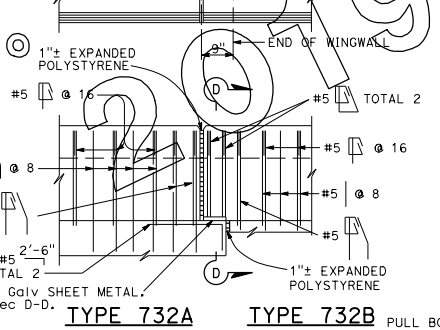


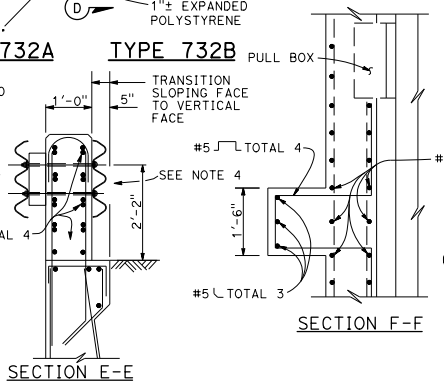


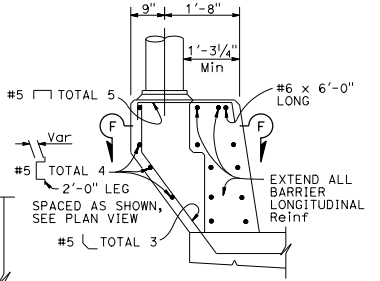


NOTE:
Types 732A and 732B are similar to Type 732 except as noted.









STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 732

NO SCALE

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

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

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

Tiliat Satter
No. C42892
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

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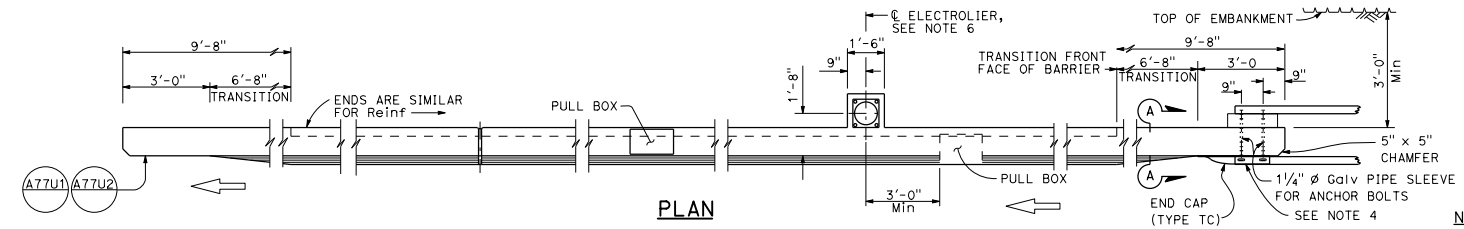
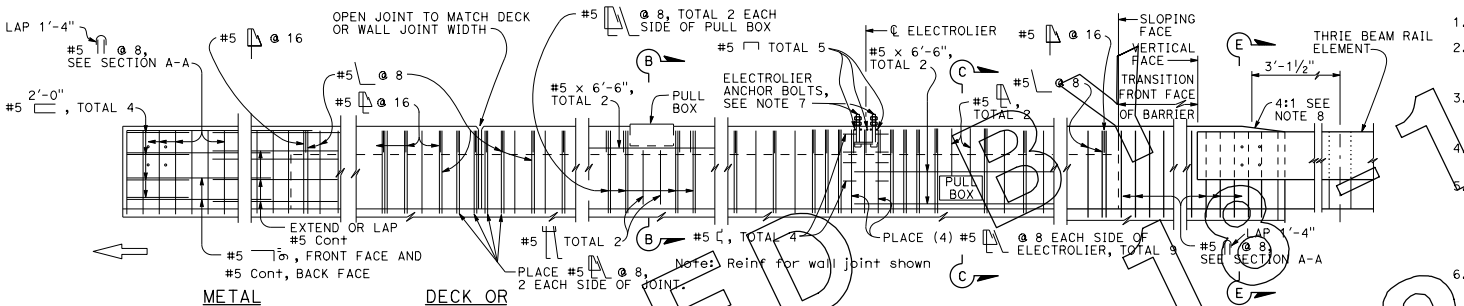
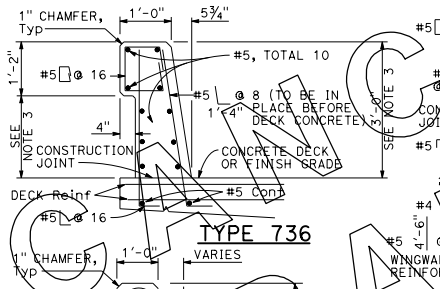
REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-20 CIVIL — STATE OF CALIFORNIA

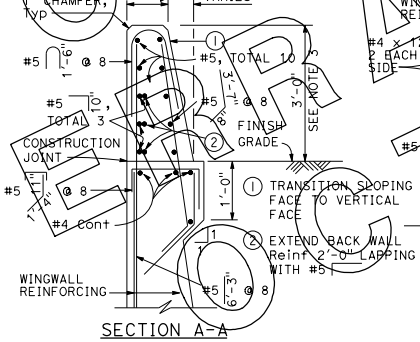




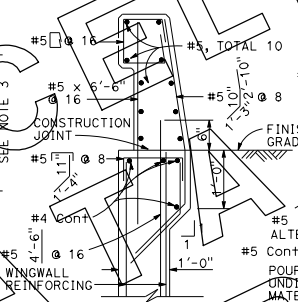
NOTES:

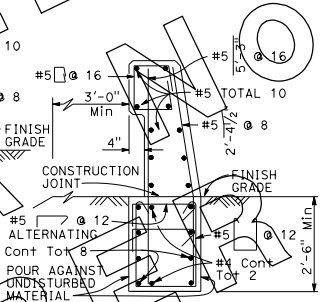
1. Walls are to be backfilled before barrier is placed.
2. Clearance to reinforcing steel in barrier to be 1", except as noted. Longitudinal reinforcement to stop at all expansion joints.
3. Dimensions may vary with roadway cross slope and with certain thickness of surfacing. See Project Plans.
4. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
5. See Standard Plans ES-9A, ES-9B, ES-9C, ES-9D and 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 Standard Plans ES-6A and 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.



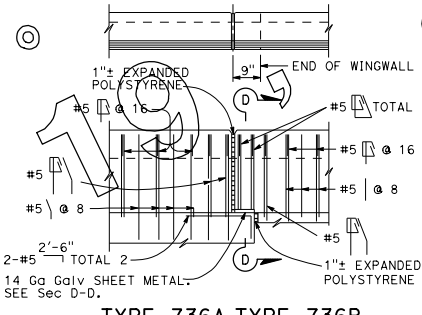


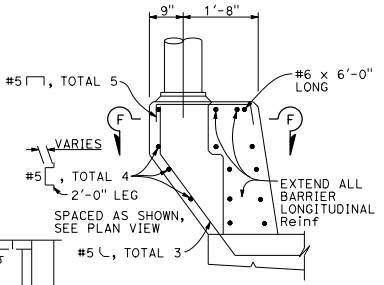
Details shown for barrier anchorage to Type 736A. Anchorgae for barrier Types 736 and 736B are similar to their respective details.

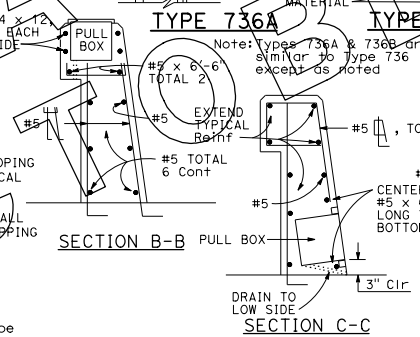


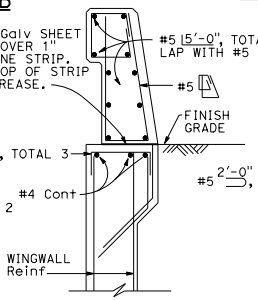


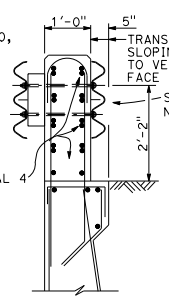
Note: Types 736A & 736B are similar to Type 736 except as noted

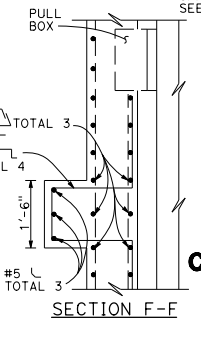












STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 736

NO SCALE

B11-56

1-26-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

Tillat Satter
No. C42892
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER

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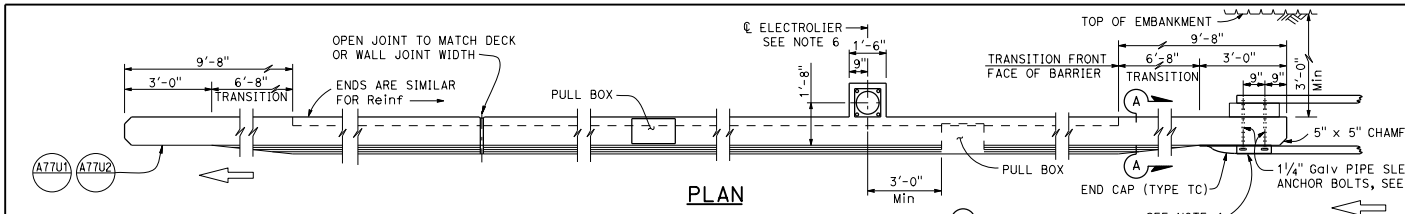
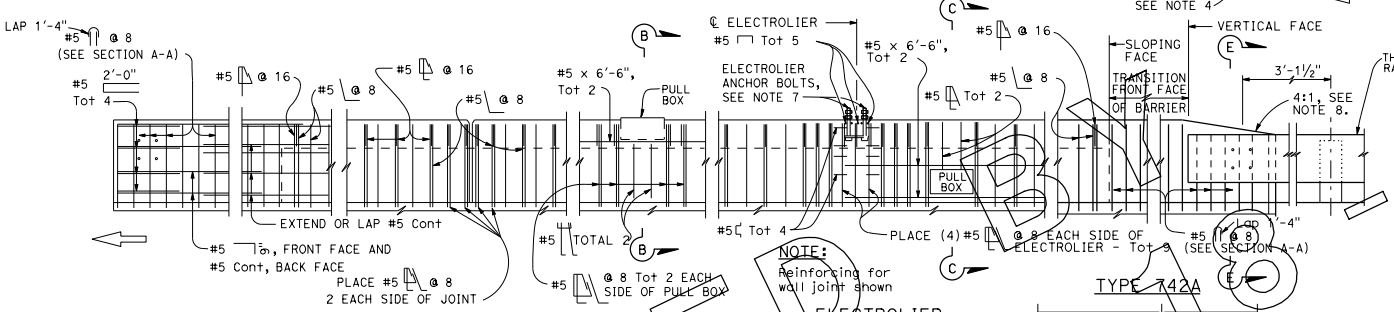


PLAN



NOTE:
Reinforcing for wall joint shown

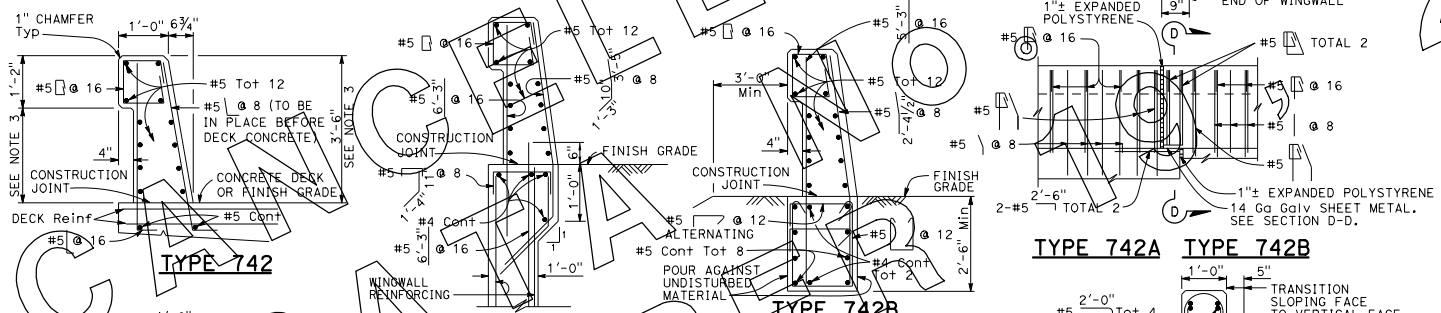
ELECTROLIER
(See Note 5)

TYPE 742A

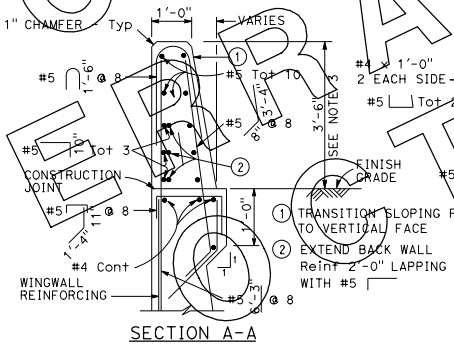
METAL RAILING CONNECTION

DECK OR WALL JOINT

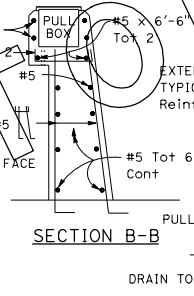
ELEVATION



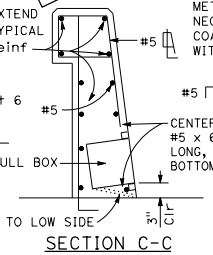
NOTE:
Types 742A & 742B are similar to Type 742 except as noted



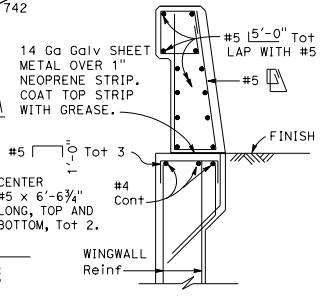
SECTION A-A



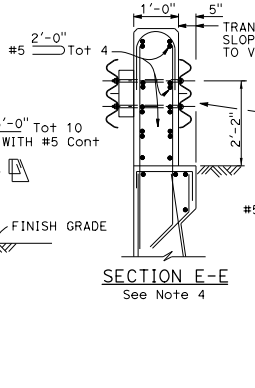
SECTION B-B



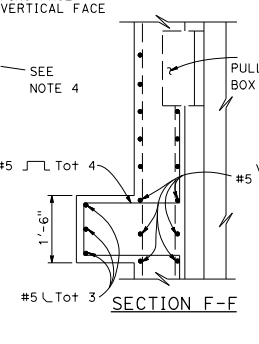
SECTION C-C
See Notes



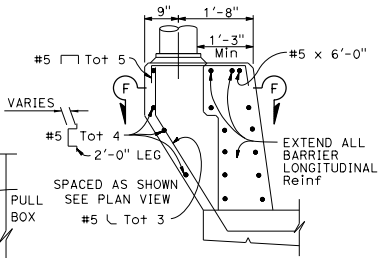
SECTION D-D



SECTION E-E
See Note 4



SECTION F-F



PEDESTAL ELEVATION

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

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, ES-9C, ES-9D and 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 Standard Plans ES-6A and 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 architectural 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.

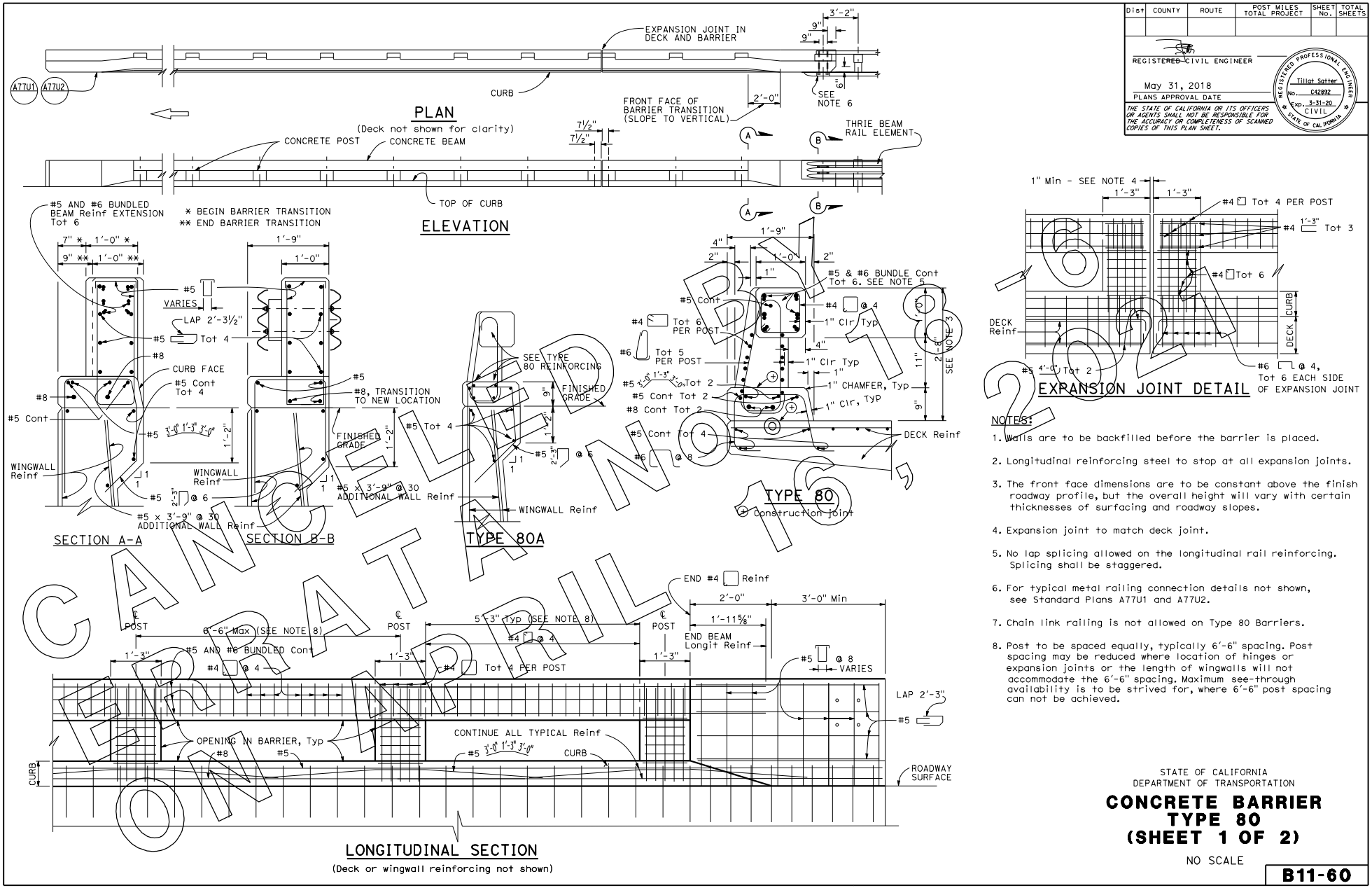
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 742

NO SCALE

B11-57

1-26-18



EXPANSION JOINT DETAIL

NOTES:

1. Walls are to be backfilled before the barrier is placed.
2. Longitudinal reinforcing steel to stop at all expansion joints.
3. The front face dimensions are to be constant above the finish roadway profile, but the overall height will vary with certain thicknesses of surfacing and roadway slopes.
4. Expansion joint to match deck joint.
5. No lap splicing allowed on the longitudinal rail reinforcing. Splicing shall be staggered.
6. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
7. Chain link railing is not allowed on Type 80 Barriers.
8. Post to be spaced equally, typically 6'-6" spacing. Post spacing may be reduced where location of hinges or expansion joints or the length of wingwalls will not accommodate the 6'-6" spacing. Maximum see-through availability is to be strived for, where 6'-6" post spacing can not be achieved.

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-20 — CIVIL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 80 (SHEET 1 OF 2)

NO SCALE

B11-60

2018 STANDARD PLAN B11-60

CANCELLED EFFECTIVE APRIL 2020

1-26-18

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

REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

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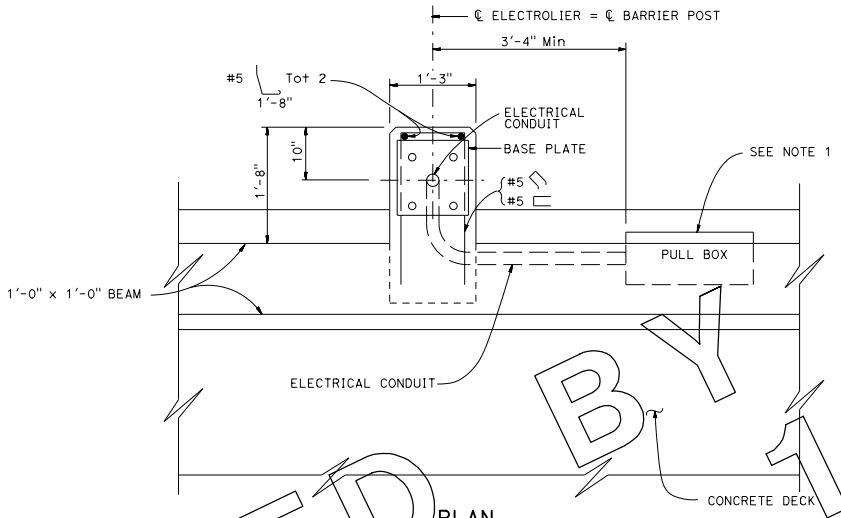
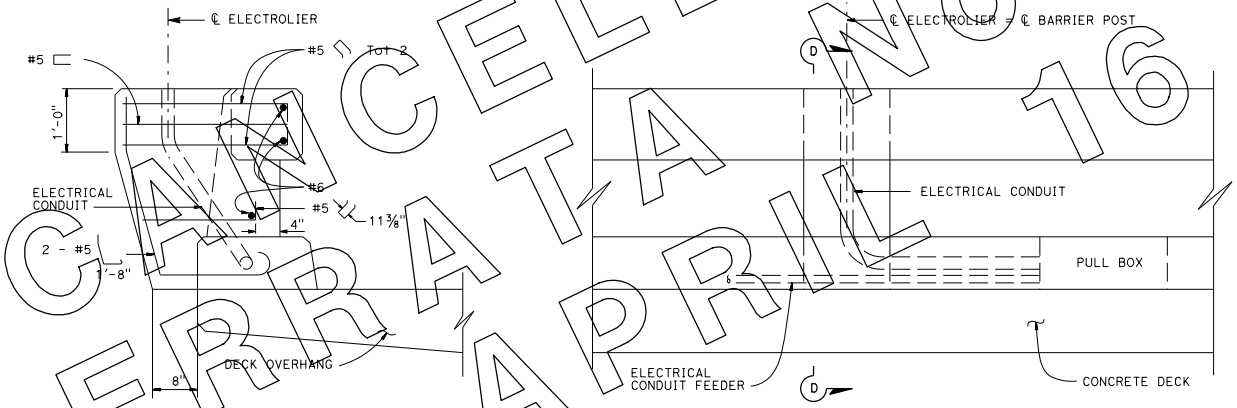
TO ACCOMPANY PLANS DATED _____



PLAN

Bend #5 and #8 Reinf in curb as required to clear pull box.



SECTION D-D

ELEVATION

BARRIER MODIFICATION FOR ELECTROLIER

See Note 4

ELECTROLIER NOTES:

1. See Project Plans for electrolier and pull box locations.
2. For electrical details, see Standard Plans ES-9A and ES-9B, and Revised Standard Plans RSP ES-9C, RSP ES-9D, and RSP ES-9E.
3. This barrier is designed to accommodate only two 1½" electrical conduit for electroliers on the structure. Any transporting of larger conduit is restricted to within the structure.
4. Only the additional reinforcing for the electrolier pedestal is shown. For other typical reinforcing for Type 80 Barrier, see Standard Plan B11-60.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 80 (SHEET 2 of 2)

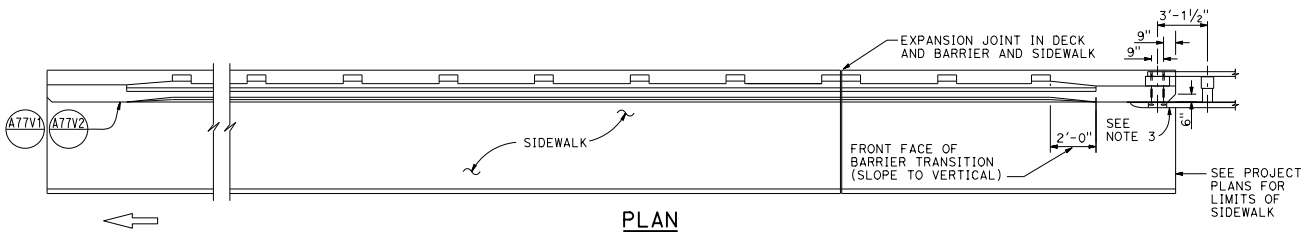
NO SCALE

RSP B11-61 DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN B11-61 DATED MAY 31, 2018 - PAGE 368 OF THE STANDARD PLANS BOOK DATED 2018.

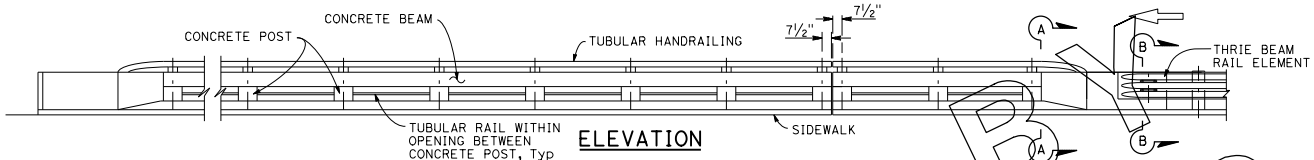
REVISED STANDARD PLAN RSP B11-61

2018 REVISED STANDARD PLAN RSP B11-61

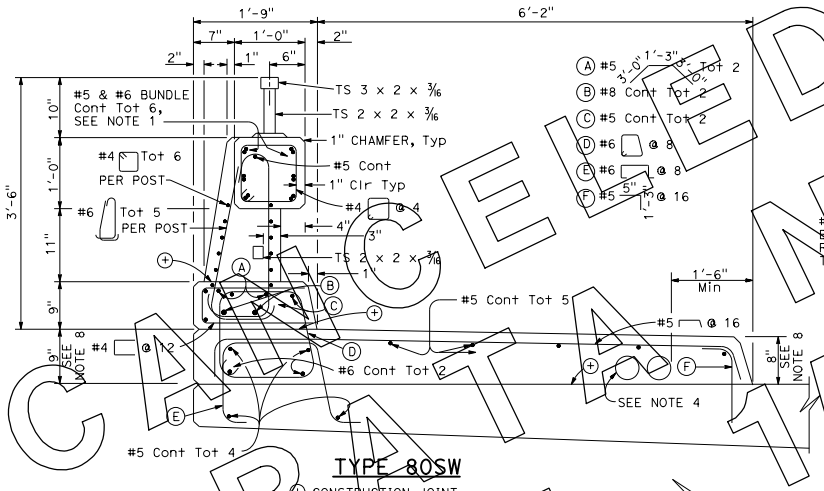
1-10-20



PLAN

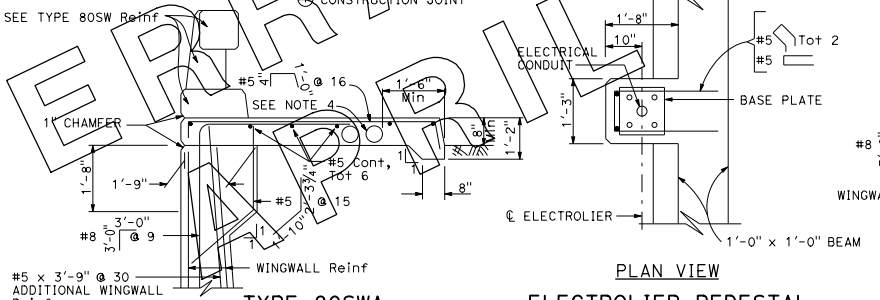


ELEVATION



TYPE 80SW

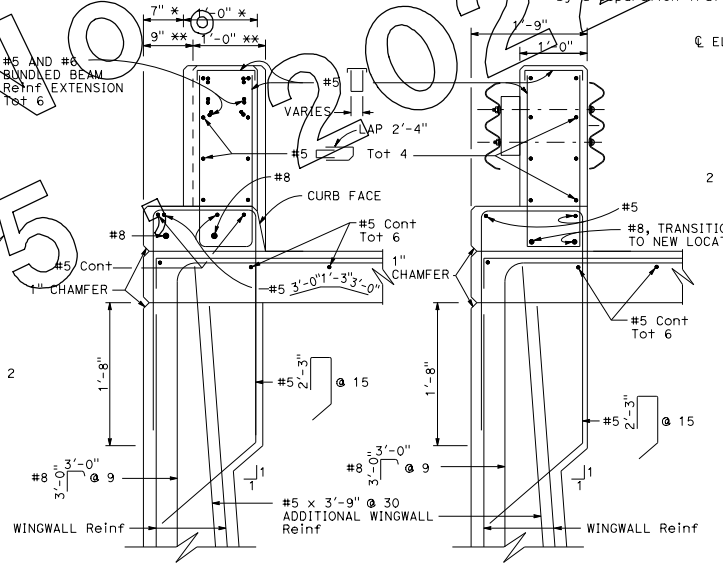
⊕ CONSTRUCTION JOINT



TYPE 80SWA

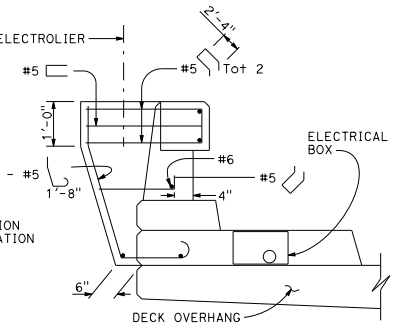
PLAN VIEW

ELECTROLIER PEDESTAL



SECTION A-A
(Tubular handrailing not shown)

SECTION B-B



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

BARRIER MODIFICATION FOR ELECTROLIER

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, ES-9C, ES-9D and 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.

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tiligt Satter — No. C42892 — Exp. 3-31-20 — CIVIL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

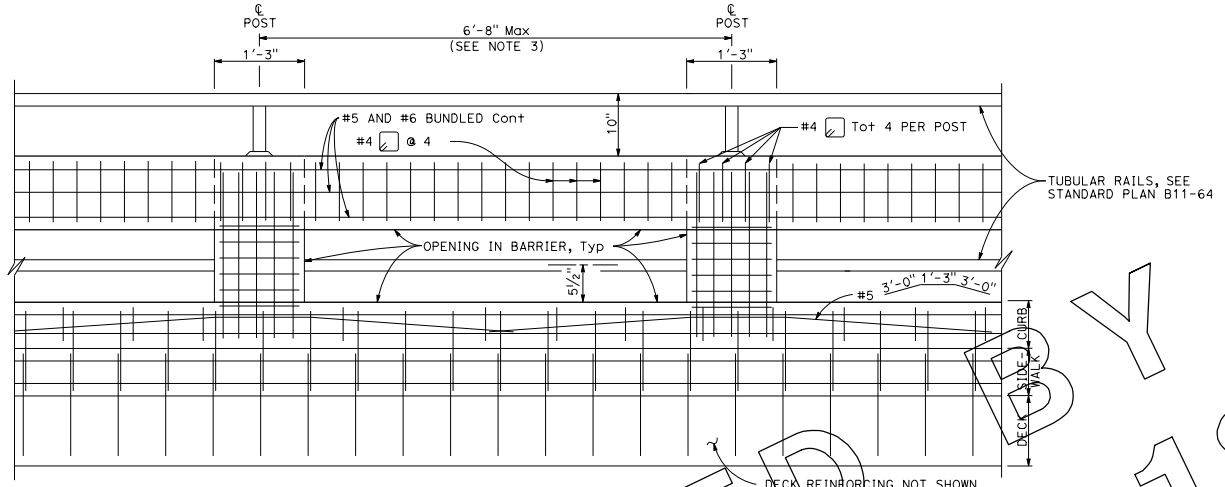
CONCRETE BARRIER TYPE 80SW (SHEET 1 OF 3)

NO SCALE

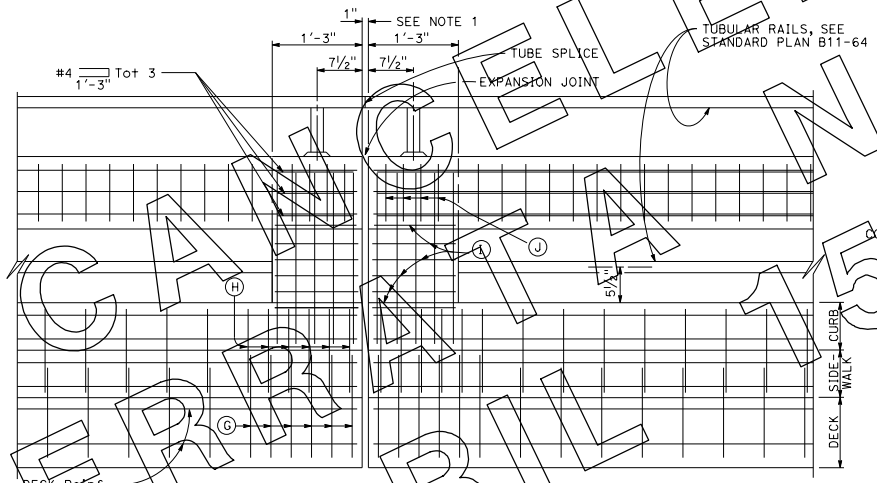
B11-62

2018 STANDARD PLAN B11-62

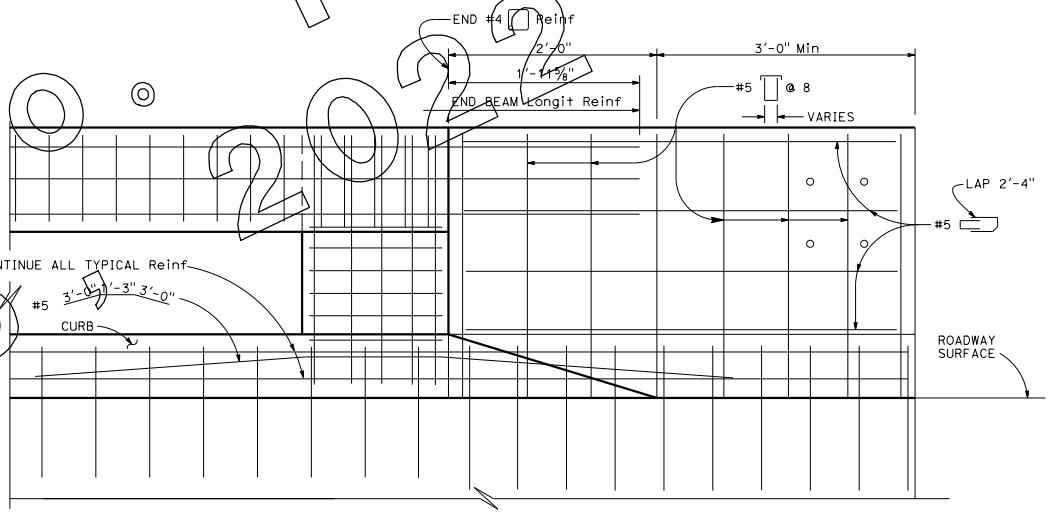
1-26-18



LONGITUDINAL SECTION



EXPANSION JOINT DETAIL



END SECTION
(Handrailing not shown)

NOTES:

1. Expansion joint to match deck joint.
2. Continue (A), (B), (C), and #4 longitudinal reinforcing. See Type 80SW typical section on Standard Plan B11-62.
3. Post to be spaced equally, typically 6'-8" spacing. Post spacing may be reduced where location of hinges or expansion joints or the length of wingwalls will not accommodate the 6'-8" spacing. Maximum see-through availability is to be strived for, where 6'-8" post spacing can not be achieved.

Ⓖ #6 Tot 6 @ 4 each side of expansion joint

Ⓗ #6 Tot 6 @ 4 each side of expansion joint

Ⓘ #4 Tot 6 per post

Ⓙ #4 Tot 4 per post

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

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiligt Satter
No. C42892
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 80SW (SHEET 2 OF 3)

NO SCALE

B11-63

1-26-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

Tiligt Satter
No. C42892
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

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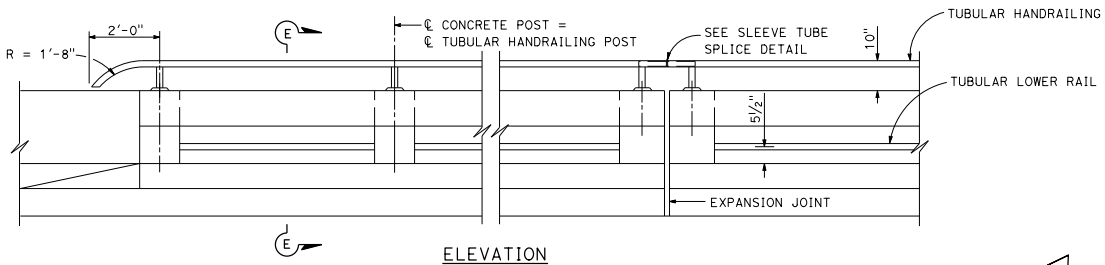
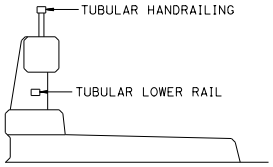
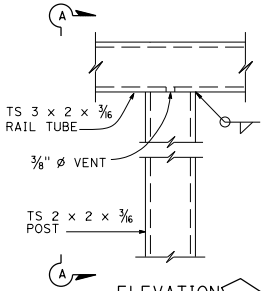


ELEVATION



SECTION E-E



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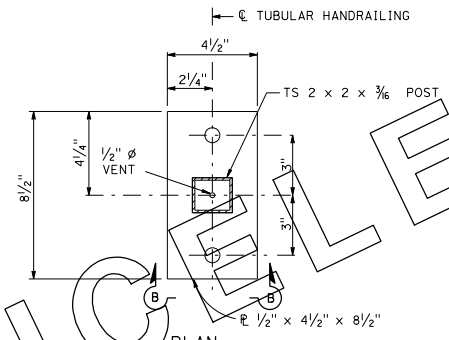
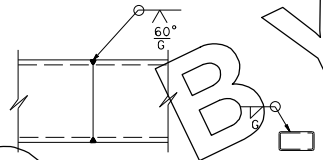


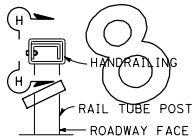
PLAN

This plate detail is restricted to Tubular Handrailing (TS 2 x 2 x 3/16 post)

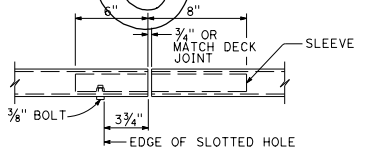


TUBE - WELDED SPLICE

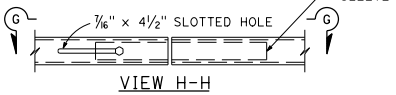
RAIL CAP



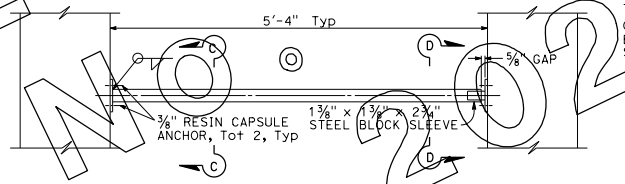
ELEVATION



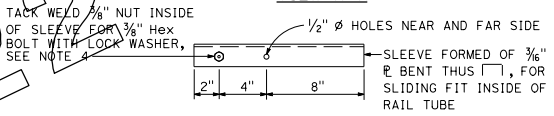
VIEW G-G



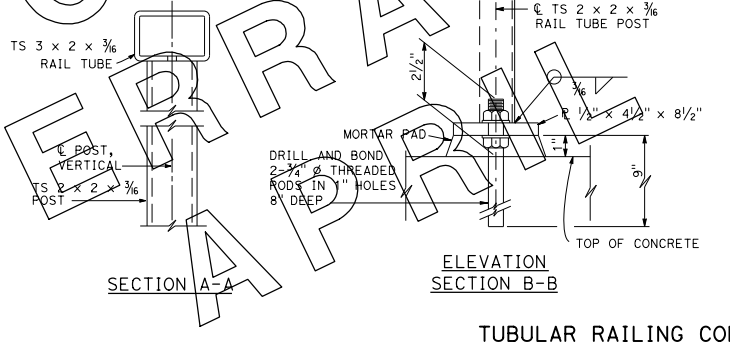
VIEW H-H



LOWER RAIL DETAIL

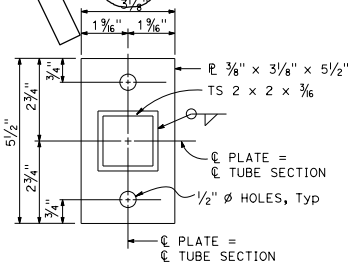


SLEEVE TUBE SPLICE DETAIL

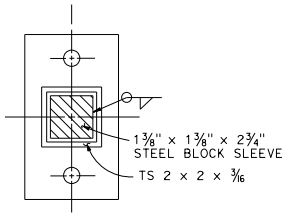


SECTION A-A

ELEVATION
SECTION B-B



SECTION C-C



SECTION D-D

See Section C-C for details not shown

TUBULAR RAILING CONNECTION DETAILS

NOTES:

1. Posts shall be normal to railing.
2. 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 accordingly.
3. Top rail tube shall be continuous over not less than two posts except a short length is permitted near deck or wall joints, electroliers, or other rail discontinuities.
4. ⅜" nut tack welded to sleeve may be replaced by drilled and tapped hole in sleeve.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 80SW (SHEET 3 OF 3)

NO SCALE

B11-64

1-26-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

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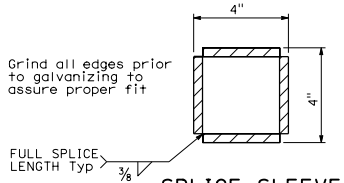
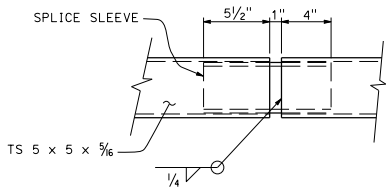
REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-20 — CIVIL — STATE OF CALIFORNIA



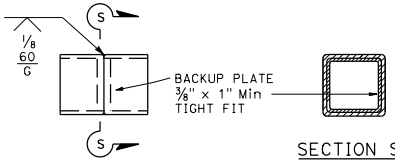
SPLICE SLEEVE

Make from 3/8" plates
Splice to fit freely inside TS 5 x 5 x 5/16



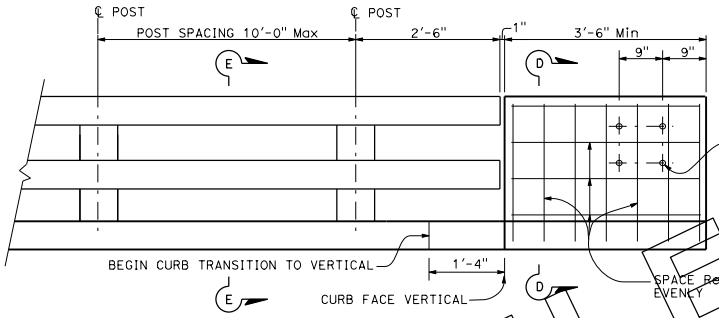
EXPANSION JOINT

See Note 4

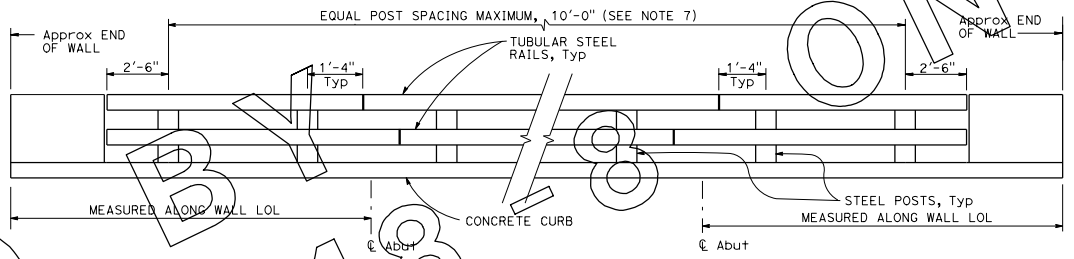


SECTION S-S

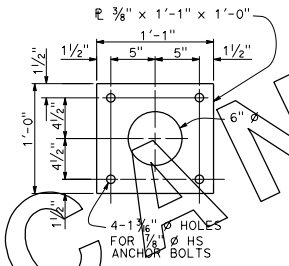
ALTERNATE TUBE WELDED SPLICE



END OF RAILING ELEVATION

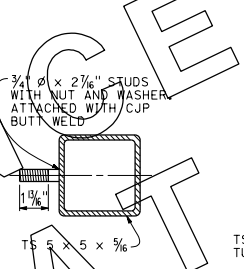


BRIDGE RAILING ELEVATION



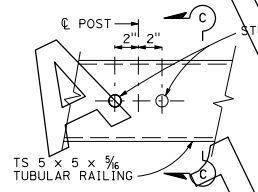
SECTION B-B

POST ANCHOR BOLT PLATE



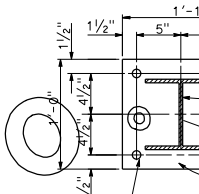
SECTION C-C

STUD BOLT



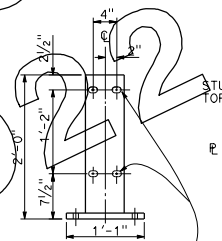
STUD BOLT LOCATION DETAIL

(Backside view of railing)



PLAN

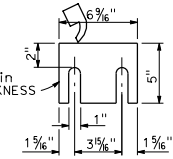
POST BASE PLATE PLAN



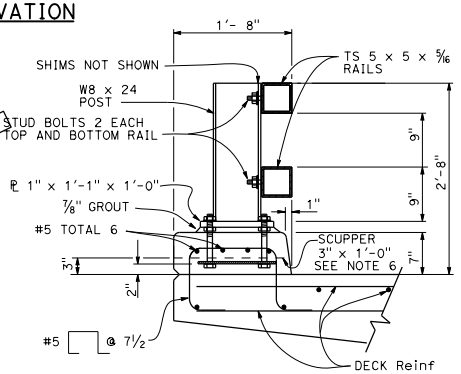
ELEVATION

BRIDGE POST

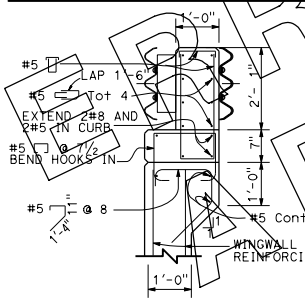
(Front view)



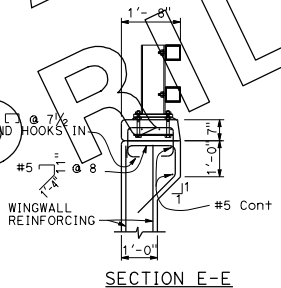
RAILING SHIM DETAIL



TYPICAL SECTION

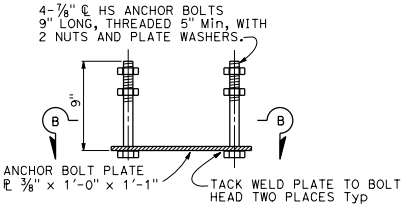


SECTION D-D



SECTION E-E

On Wingwall



POST ANCHOR BOLT DETAILS

GENERAL NOTES:

1. Post shall be normal to railing.
2. All exposed corners shall be ground smooth.
3. Tubing shall be continuous over not less than 3 intermediate posts.
4. Expansion joints in rail tubes shall match deck expansion joints.
5. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
6. If required, place scuppers midway between rail posts near centerline spans. Adjust reinforcing spacing to clear openings.
7. Post spacing and/or end block length to be adjusted to fit bridge length or approach slab.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-30 BRIDGE RAIL

NO SCALE

B11-65

1-26-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-20 — CIVIL — STATE OF CALIFORNIA

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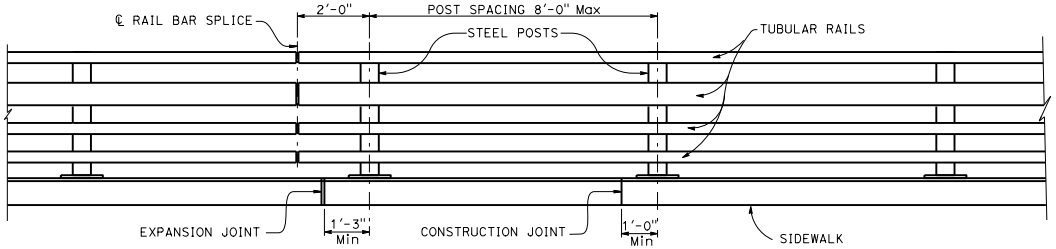
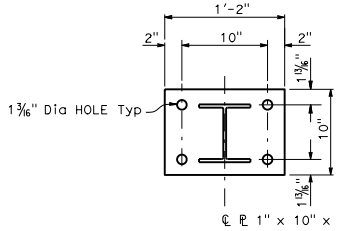
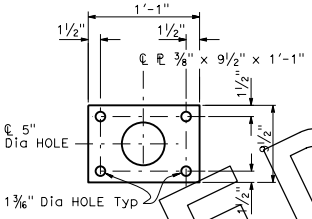


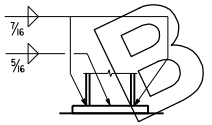
BRIDGE RAILING ELEVATION



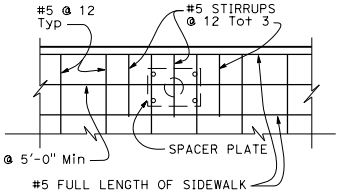
POST BASE PLATE PLAN



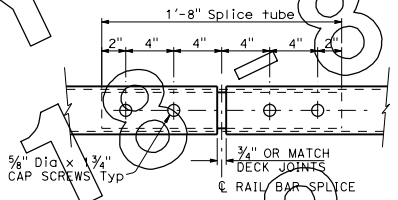
SPACER PLATE PLAN



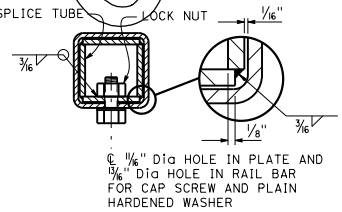
POST BASE WELD DETAIL



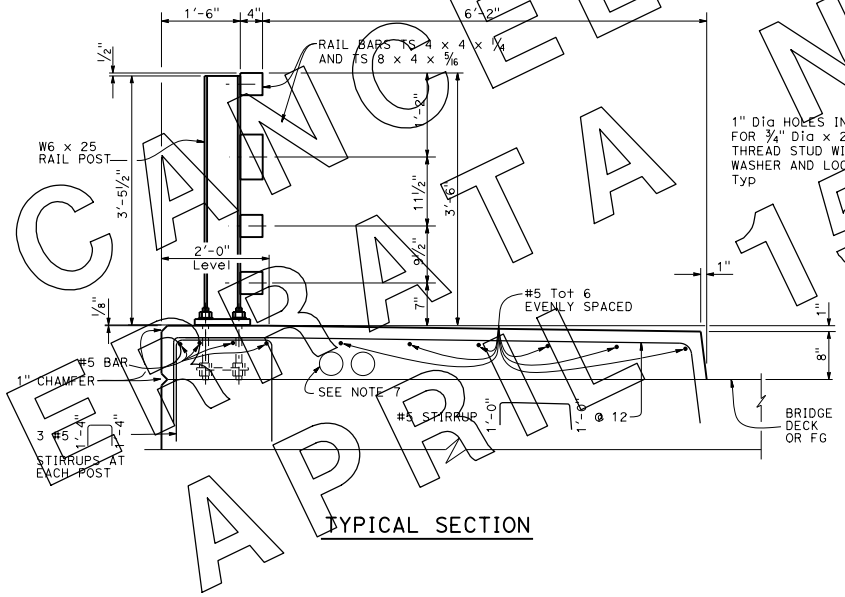
SIDEWALK REINFORCING PLAN



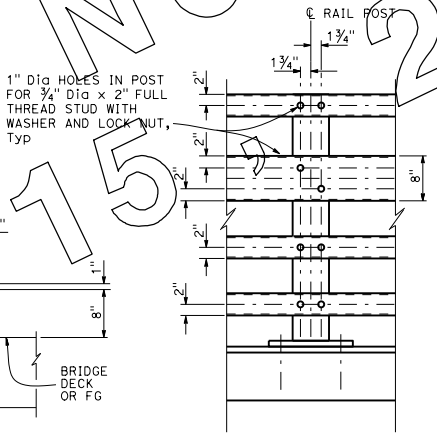
BOTTOM VIEW
RAIL BAR SPLICE DETAIL



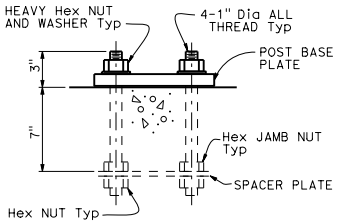
RAIL BAR
SPLICE SECTION



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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

B11-66

1-26-18

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

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

Tiligt Satter
No. C42892
Exp. 3-31-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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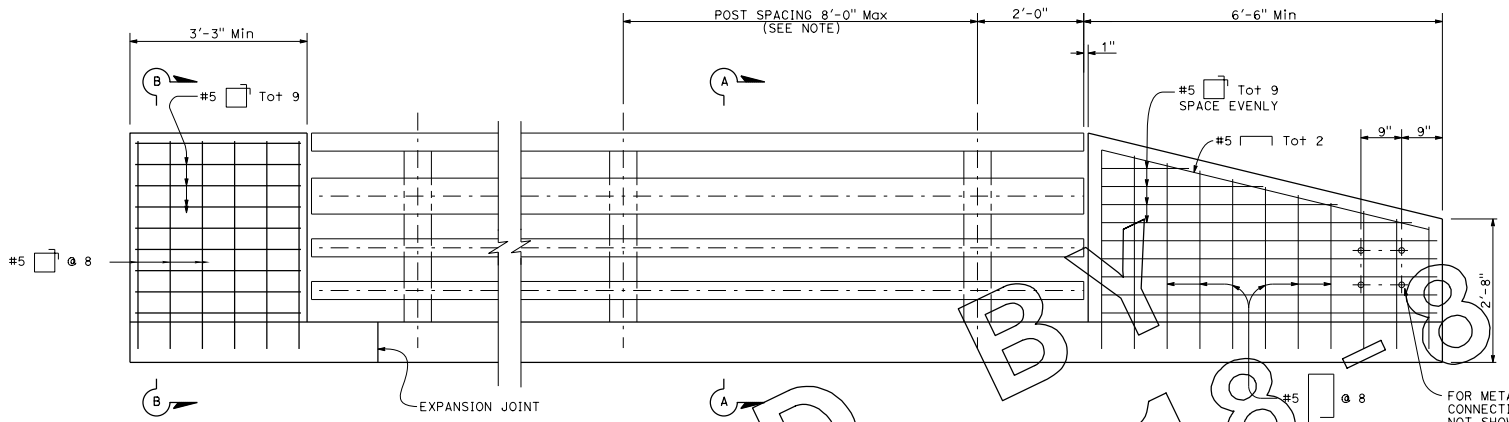
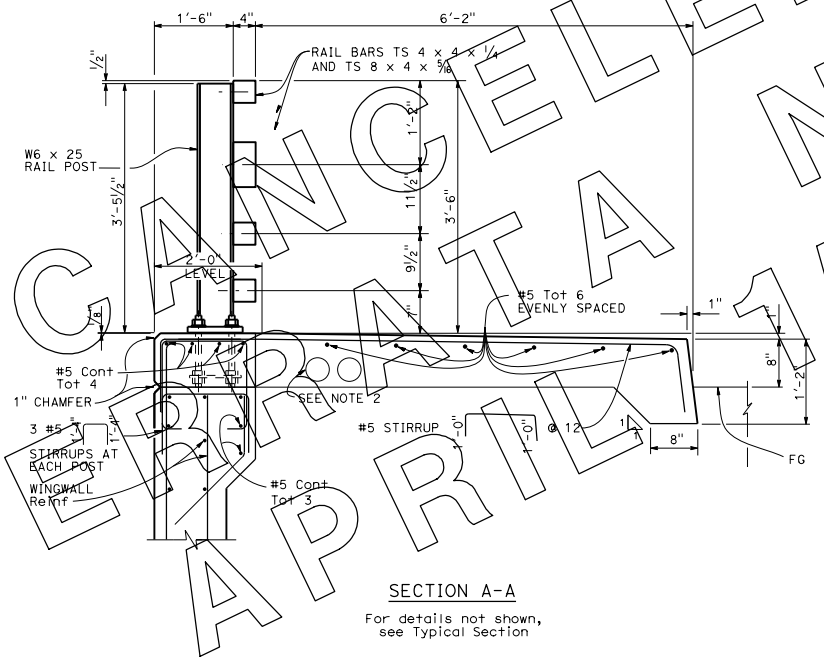
TO ACCOMPANY PLANS DATED

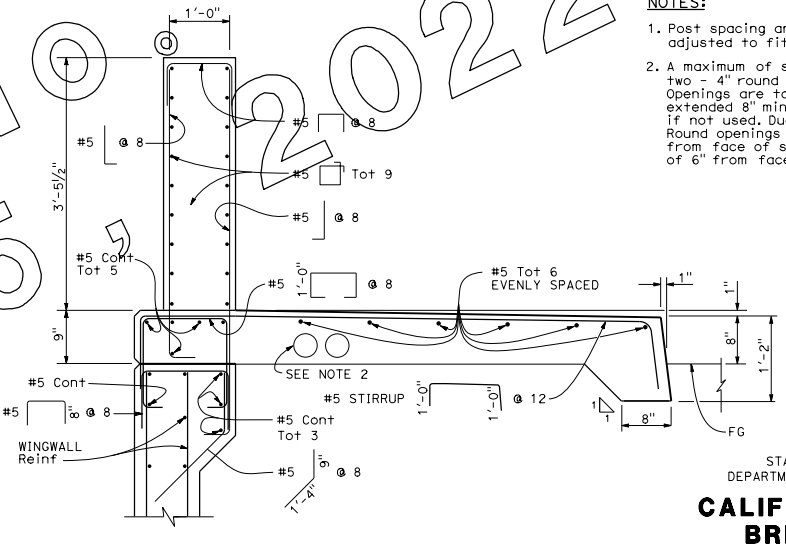


END OF RAILING ELEVATION



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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN B11-67
DATED MAY 31, 2018 - PAGE 374 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-67

2018 REVISED STANDARD PLAN RSP B11-67

6-12-19

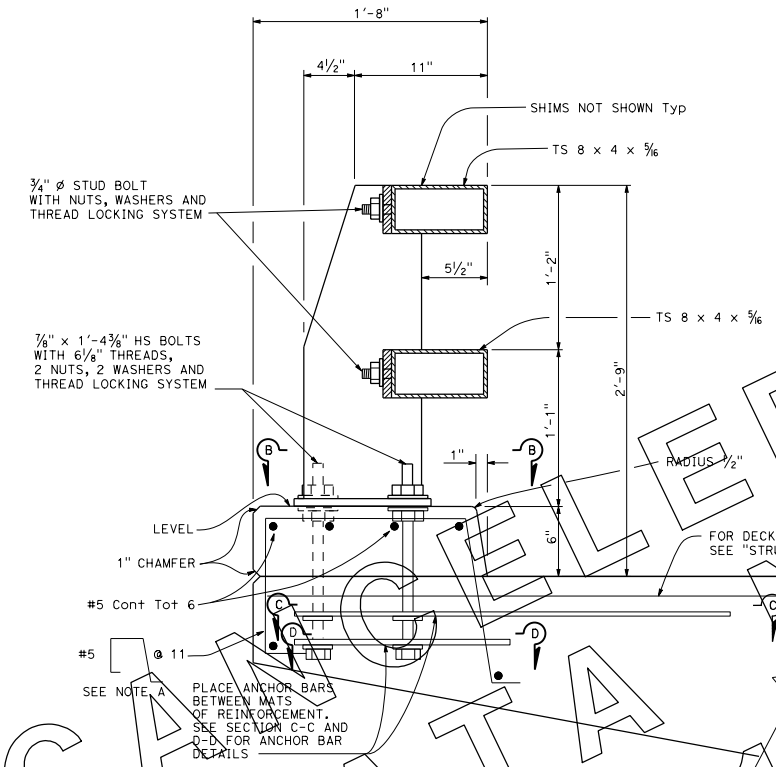
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

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

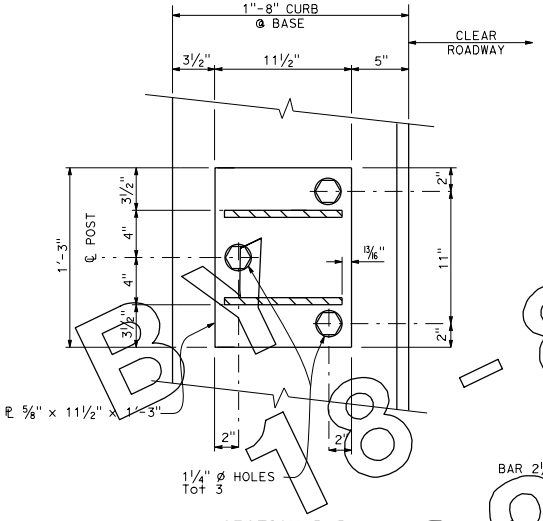
REGISTERED PROFESSIONAL ENGINEER
Tiligt Satter
No. C42892
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA



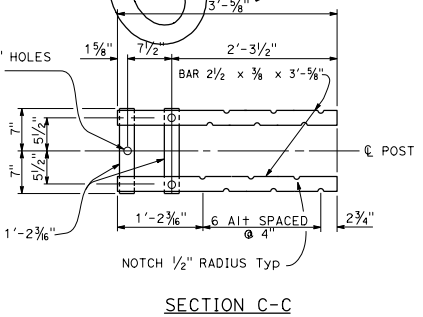
TYPICAL RAIL SECTION

NOTE A

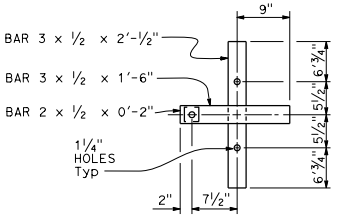
Adjust spacing to clear scupper opening by 2" if applicable.



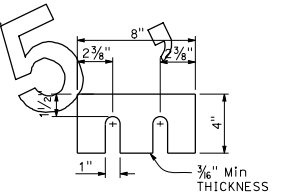
SECTION B-B



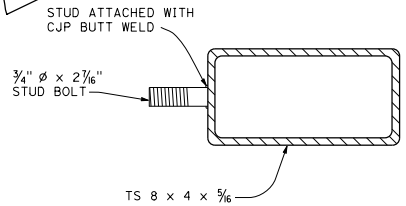
SECTION C-C
Top Anchorage



SECTION D-D
Lower Anchorage



SHIMS REQUIRED FOR TOP AND BOTTOM RAIL



SECTION AT POST

STUD BOLT DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-10 BRIDGE RAIL (SHEET 1 OF 3)

NO SCALE

B11-68

2018 STANDARD PLAN B11-68

1-26-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tiligt Satter — No. C42892 — Exp. 3-31-20 — CIVIL — STATE OF CALIFORNIA

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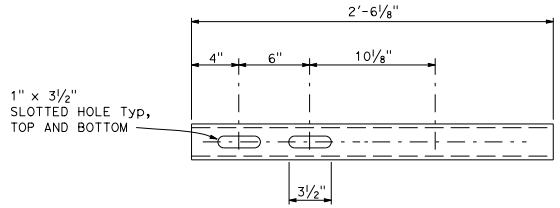
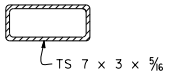
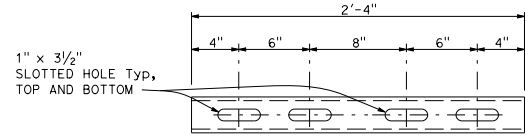


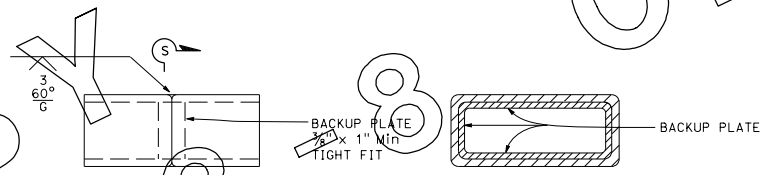
EXPANSION SLEEVE DETAIL



SECTION SLEEVE

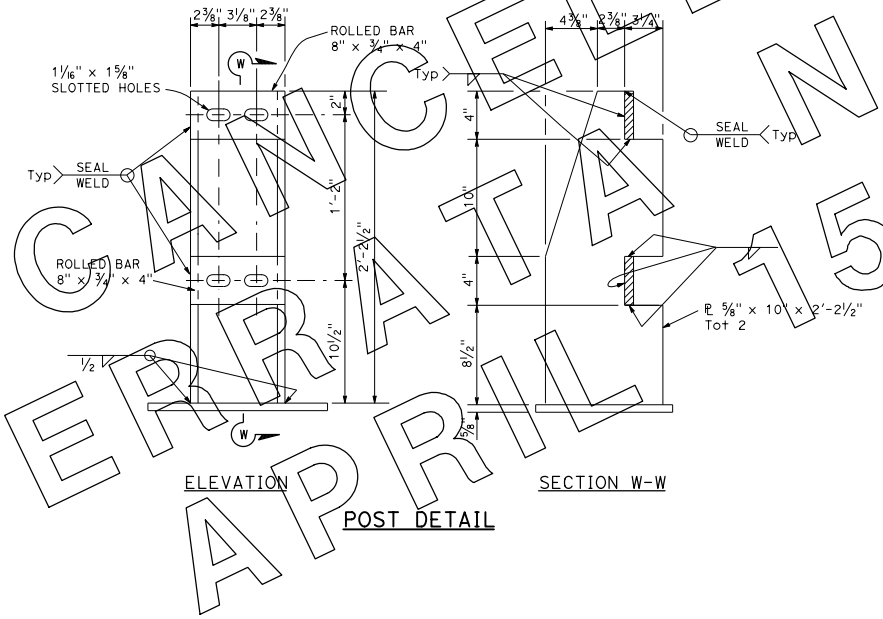


STANDARD SLEEVE DETAIL



SECTION S-S

ALTERNATE TUBE WELDED SPLICE



ELEVATION SECTION W-W

POST DETAIL

GENERAL NOTES:

1. Anchor bolts may be tack welded (shop or field) to anchorage.
2. All rough edges on posts and rails shall be ground smooth.
3. The alternative welded splice may be used in lieu of The Standard Splice.
4. Each rail length shall be continuous over a minimum of two posts.
5. The contractor shall check that the tubular sleeves splices conform to the dimensions indicated to assure proper clearance.
6. Except for expansion splices, not more than one splice shall be permitted per same side of post.
7. See project plans for approach guard railing details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-10 BRIDGE RAIL (SHEET 2 OF 3)

NO SCALE

B11-69

1-26-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

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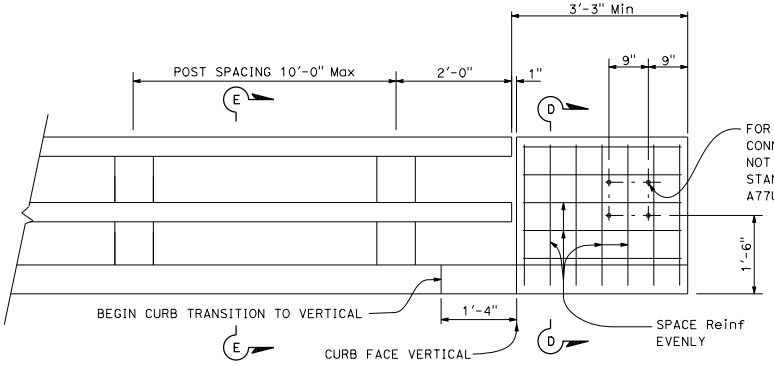
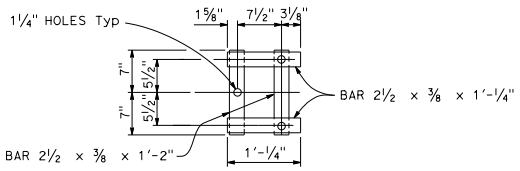
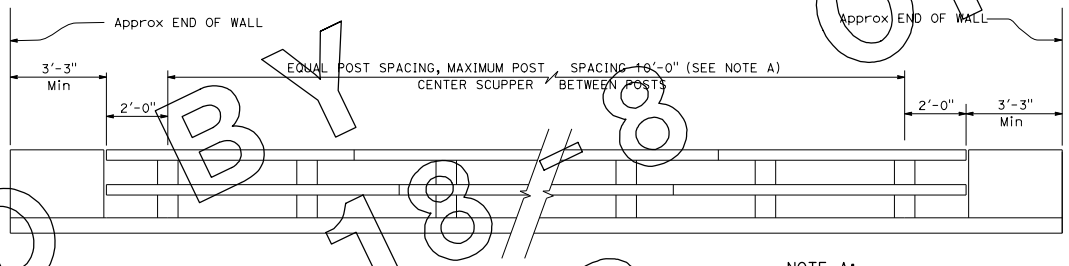


END OF RAILING ELEVATION



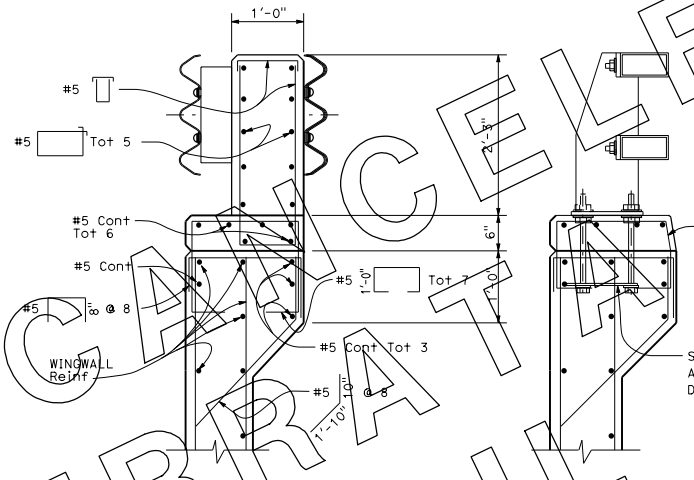
WALL ANCHOR PLATE DETAIL



BRIDGE RAILING ELEVATION

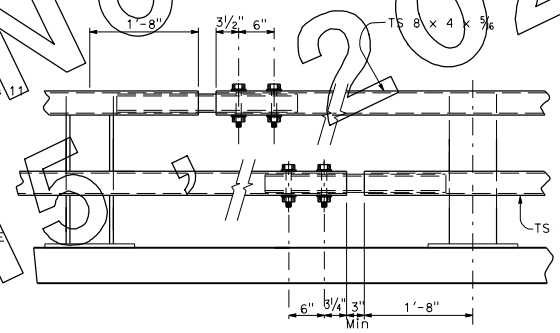
NOTE A:

Post spacing and/or block length to be adjusted to fit bridge length or wingwall length.



SECTION D-D

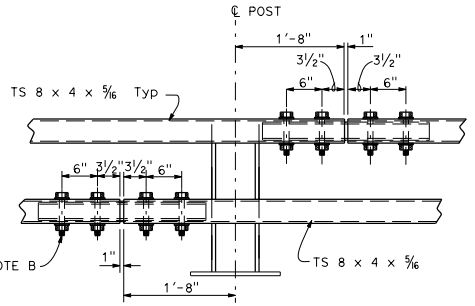
SECTION E-E
Reinf same as for Section D-D except as noted.



EXPANSION SPLICE

NOTE B:

Use ¾" x x 5⅝"
Hs bolts with washers, fully tensioned.
1" holes in rail Typ



STANDARD SPLICE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CALIFORNIA ST-10 BRIDGE RAIL (SHEET 3 OF 3)

NO SCALE

B11-70

1-26-18

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

Kathryn Griswell
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

Kathryn Griswell
No. C55599
Exp. 12-31-18
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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LEGEND:

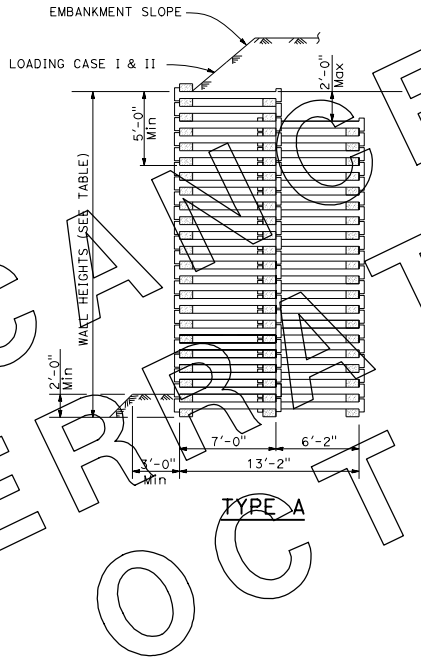
10" x 6" x 1'-0" FILLER BLOCK ALIGNED AGAINST HEADER.

10" x 6" STRETCHERS

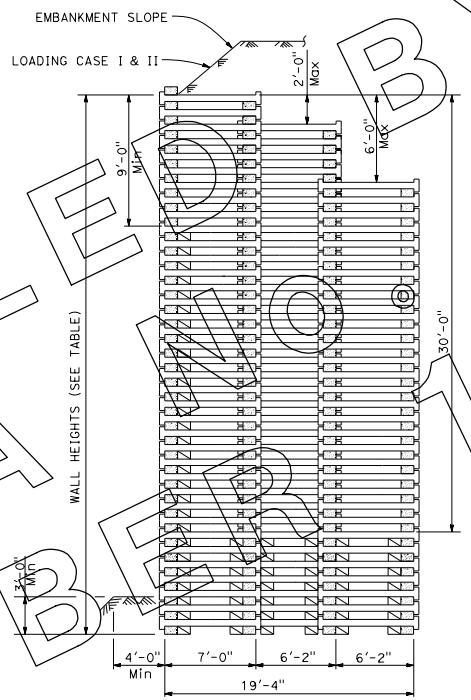
LC1 = LOADING CASE I
LC2 = LOADING CASE II

y = 4 AND 6 FOR BATTERED FOR TYPES A, B, AND C

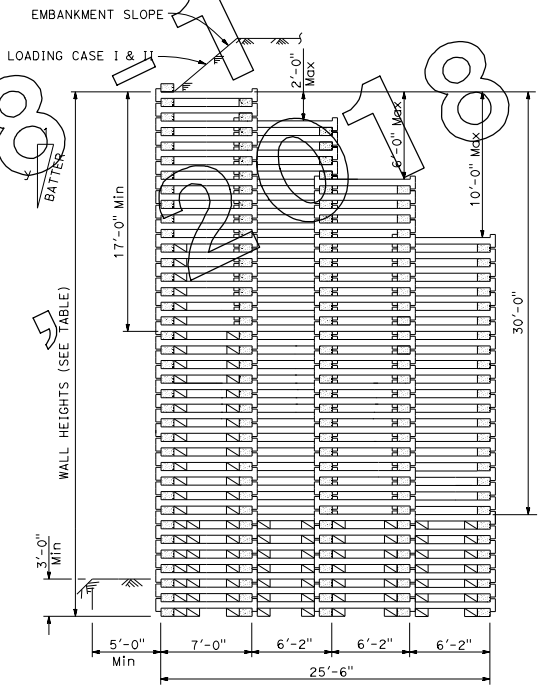
MAXIMUM WALL HEIGHTS						
BATTER	TYPE A		TYPE B		TYPE C	
	LC1	LC2	LC1	LC2	LC1	LC2
VERTICAL	24'-0"	11'-0"	27'-0"	20'-0"	31'-0"	27'-0"
1:6	31'-0"	13'-0"	36'-0"	23'-0"	36'-0"	33'-0"
1:4	33'-0"	15'-0"	36'-0"	25'-0"	36'-0"	36'-0"



TYPE A



TYPE B



TYPE C

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

REINFORCED CONCRETE CRIB WALL TYPES A, B AND C

NO SCALE

C7A

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

Kathryn Griswell No. C55599 Exp. 12-31-18 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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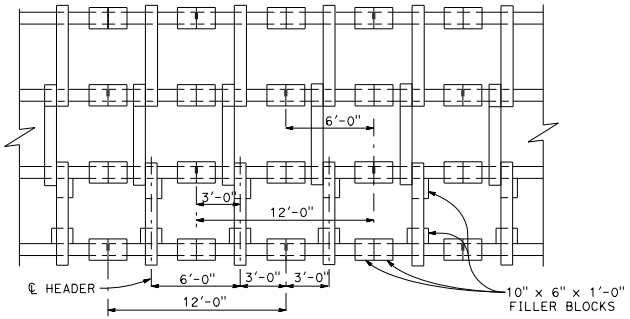
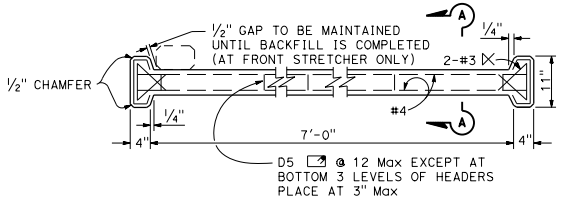
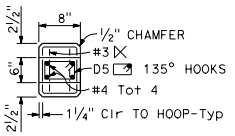


PARTIAL PLAN AT BASE

Type "B" shown, others similar

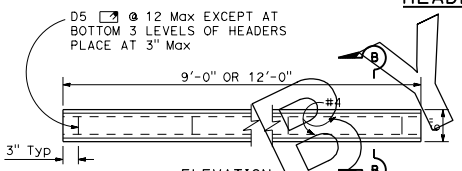


ELEVATION

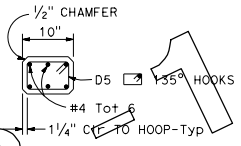


SECTION A-A

HEADER DETAIL

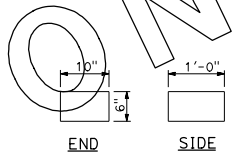


ELEVATION



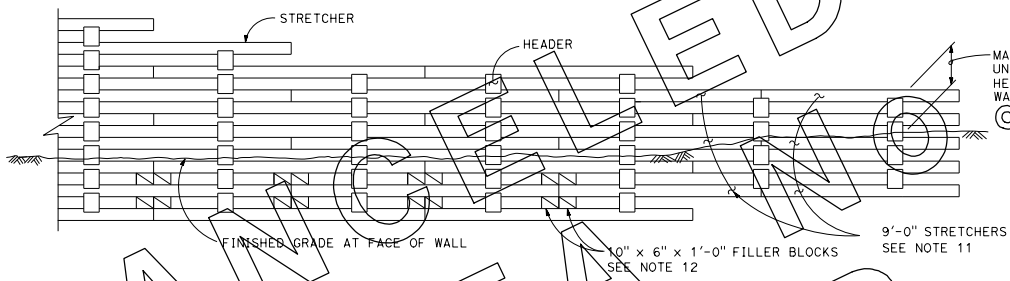
SECTION B-B

STRETCHER DETAIL

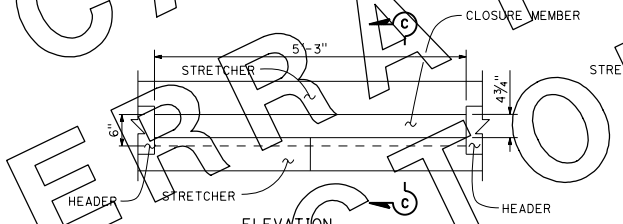


END SIDE

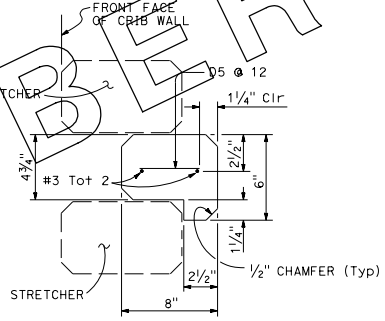
FILLER BLOCK DETAIL



PARTIAL ELEVATION



ELEVATION



SECTION C-C

FRONT FACE CLOSURE MEMBER

NOTES:

1. Design: AASHTO LRFD Bridge Design Specifications, 4th edition with the California Amendments.
2. Reinforced Concrete: f_y = 60 ksi, f'_c = 3.6 ksi, ρ = 3
3. Soil Parameters: Φ = 34°, δ = 25.5°, γ = 120 pcf, A = 0.2g

   Lateral earth pressure determined by Coulomb's theory.
4. Concrete to concrete bearing surfaces shall be finished to a smooth plane. The gap between bearing surfaces shall not exceed ⅛ inch. Where a gap of 1/16 inch to ⅛ inch exists, a 1/16 inch pad of asphalt felt or sheet neoprene shall be placed between the bearing surfaces. For wall Types B and C, a 1/16 inch asphalt felt pad or sheet neoprene shall be placed between all concrete bearing surfaces below the 29'-10" level.
5. All members may be manufactured to dimensions ⅛ inch greater in thickness and stretchers ½ inch less in length.
6. Where an opening is specified in the face of a wall, special length stretchers and additional headers may be required.
7. For non-tangent wall alignment, special length stretchers may be required.
8. For non-tangent wall alignment and at locations where filler blocks are required, special length front face closure members may be required.
9. The thickness of the lowest step for each wall type shall not be less than the dimension shown on these plans.
10. Use "Front Face Closure Member" only when specified on project plans or in the Special Provisions.
11. All stretchers are 12'-0" except as noted.
12. Place 2 filler blocks midspan between stretchers in the bottom 2 levels of walls 9' high and higher.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

REINFORCED CONCRETE CRIB WALL TYPES A, B, AND C HEADER AND STRETCHER DETAILS

NO SCALE

C7B

1-29-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER
Kathryn Griswell
No. C55599
Exp. 12-31-18
CIVIL
STATE OF CALIFORNIA

VERTICAL WALL HEIGHT

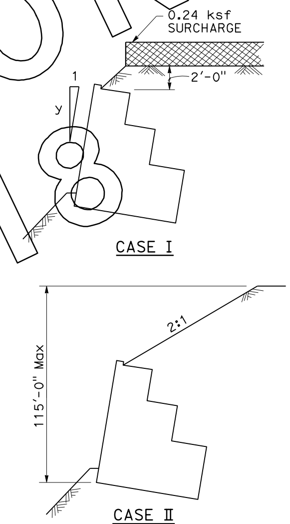
TYPE	CASE	BEARING (ksf) AND B′ (ft)	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	36′
A	I	qu	1.4	1.6	1.8	2.0	2.1	2.4	2.6	2.9	3.2	3.5	3.8	4.1	4.4	4.8	5.2	5.6	6.1	6.6	7.1	7.7]												
		B′	13.2	13.2	13.2	13.2	13.1	12.9	12.7	12.4	12.1	11.9	11.6	11.4	11.1	10.8	10.5	10.2	9.9	9.6	9.3	9.0												
	II	qu	1.8	1.9	2.1	2.3	2.5	2.7	2.9]																									
		B′	13.2	13.2	13.2	13.2	13.2	13.2	13.1																									
B	I	qu					2.2	2.4	2.5	2.7	2.9	3.2	3.4	3.6	3.9	4.1	4.4	4.7	5.0	5.3	5.6	5.9	6.3	6.6	7.0]									
		B′					19.3	19.3	19.3	19.3	19.2	19.0	18.8	18.6	18.4	18.2	18.0	17.8	17.6	17.4	17.2	16.9	16.7	16.5	16.2									
	II	qu					3.0	3.1	3.3	3.5	3.6	3.9	4.1	4.3	4.5	4.8	5.1	5.5]																
		B′					19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.1	18.8	18.4																
C	I	qu													3.7	3.9	4.1	4.4	4.6	4.9	5.2	5.4	5.7	6.0	6.3	6.6	6.9	7.2	7.5]					
		B′													25.2	25.1	25.0	24.8	24.7	24.5	24.4	24.2	24.0	23.9	23.7	23.5	23.3	23.1	22.9					
	II	qu													5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.5	6.8	7.2	7.5]									
		B′													25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.4	25.1	24.8	24.5									

1:6 BATTERED WALL HEIGHT

TYPE	CASE	BEARING (ksf) AND B′ (ft)	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	36′
A	I	qu	1.4	1.5	1.7	1.9	2.1	2.3	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.1	4.3	4.6	4.9	5.2	5.5	5.8	6.1	6.4	6.8	7.1	7.6	8.2]					
		B′	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.0	12.9	12.8	12.6	12.5	12.3	12.1	11.9	11.8	11.6	11.4	11.2	8.2	7.8					
	II	qu	1.8	1.9	2.1	2.2	2.4	2.6	2.8	3.0	3.2]																							
		B′	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2																							
B	I	qu					2.0	2.2	2.4	2.6	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.2	5.4	5.6	5.8	6.0	6.2	6.5	6.8	7.0	7.3	7.6	7.8]
		B′					19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.2	19.0	18.9	18.8	18.7	18.5
	II	qu					2.9	3.0	3.2	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.2	5.4	5.6]													
		B′					19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3													
C	I	qu													3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.1	5.3	5.5	5.7	5.9	6.2	6.4	6.6	6.9	7.1	7.3	7.5]
		B′													25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
	II	qu													4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.6	6.8	7.0	7.3	7.5	7.7	8.0	8.3]			
		B′													25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.4	25.3			

1:4 BATTERED WALL HEIGHT

TYPE	CASE	BEARING (ksf) AND B′ (ft)	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	36′
A	I	qu	1.3	1.5	1.6	1.9	2.0	2.2	2.4	2.6	2.8	3.0	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.2	6.5	6.7	7.0]			
		B′	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.1	13.0	12.9	12.8	12.7			
	II	qu	1.9	1.9	2.1	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6]																					
		B′	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2																					
B	I	qu					2.0	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.9	7.1	7.3]
		B′					19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3
	II	qu					2.8	2.9	3.1	3.3	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.9]											
		B′					19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3											
C	I	qu													3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.6	5.8	6.0	6.2	6.4	6.6	6.9	7.1	7.3]
		B′													25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
	II	qu													4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5	6.8	7.0	7.2	7.4	7.7	7.9	8.1	8.4	8.6]
		B′													25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5



DETAIL OF
DESIGN LOADING CASES

DESIGN FOOTNOTE:

1. Nominal soil bearing resistance, design lateral loads, settlement and overall slope stability shall be determined by analysis based on a foundation site investigation. Walls shall not be founded on unimproved original ground with nominal bearing resistance less than 3 ksf.

LEGEND:

B′ - EFFECTIVE FOOTING WIDTH (ft)
qu - GROSS FACTORED BEARING STRESS (ksf)
] - INDICATES MAXIMUM ALLOWABLE WALL HEIGHT FOR PARTICULAR WALL TYPE AND PARTICULAR LOADING CASE.
y = 4 AND 6 FOR BATTERED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

REINFORCED CONCRETE CRIB WALL FOUNDATION PRESSURE

NO SCALE

C7C

2018 STANDARD PLAN C7C

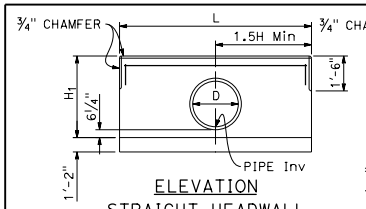
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

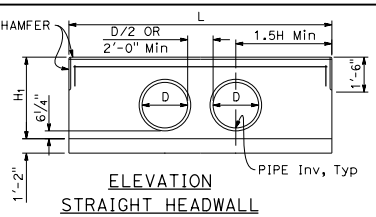
May 31, 2018

PLANS APPROVAL DATE

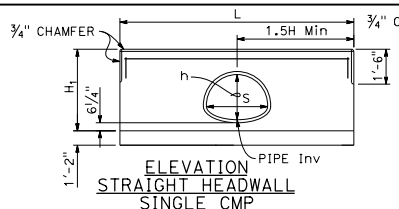
Carl M. Duan, No. C59976, Exp. 6-30-18, CIVIL, STATE OF CALIFORNIA



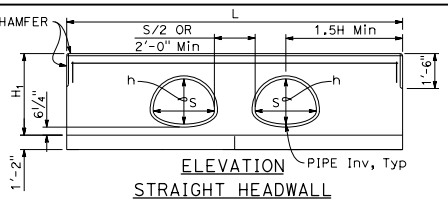
ELEVATION
STRAIGHT HEADWALL
SINGLE CIRCULAR PIPE



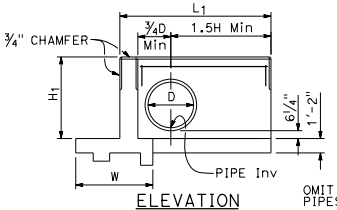
ELEVATION
STRAIGHT HEADWALL
DOUBLE CIRCULAR PIPE



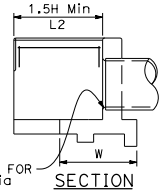
ELEVATION
STRAIGHT HEADWALL
SINGLE CMP



ELEVATION
STRAIGHT HEADWALL
DOUBLE CMP

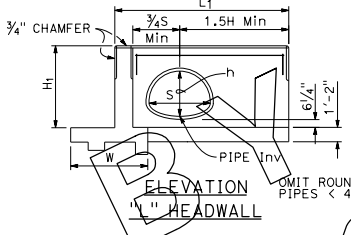


ELEVATION
"L" HEADWALL

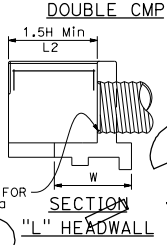


SECTION
"L" HEADWALL

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"	-

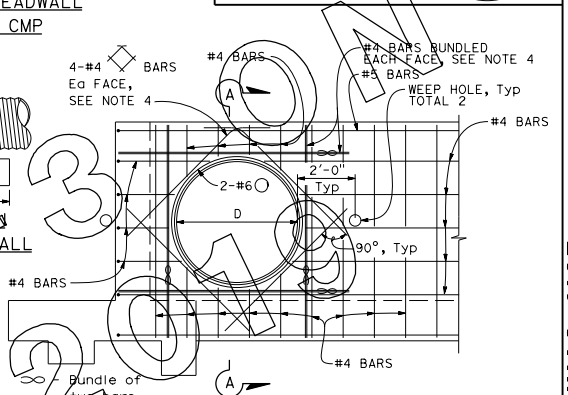


ELEVATION
"L" HEADWALL



SECTION
"L" HEADWALL

CMP ARCH CULVERT HEADWALLS

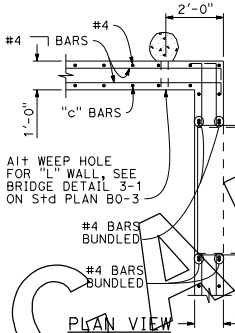


REINFORCEMENT MODIFICATION

"L" headwall shown. Straight headwall similar.
Circular pipe shown. CMP arch similar.

CIRCULAR PIPE CULVERT HEADWALLS

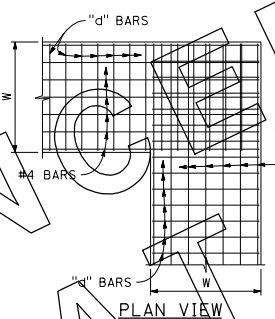
See Note 2



PLAN VIEW

STEM WALL

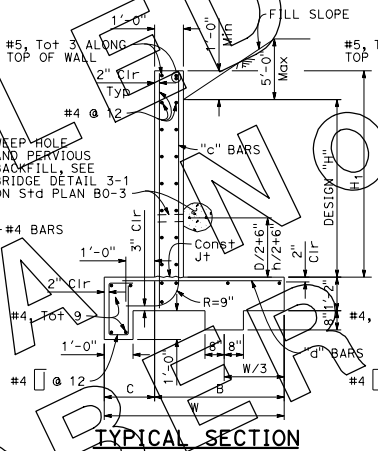
"L" headwall shown.
Straight headwall similar.



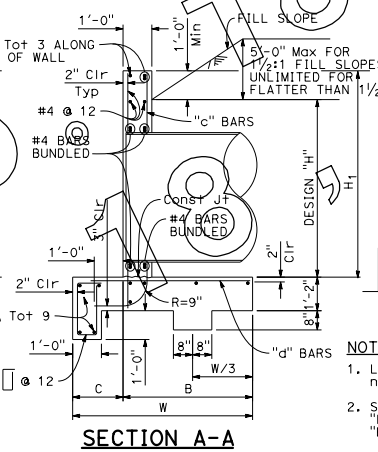
PLAN VIEW

FOOTING

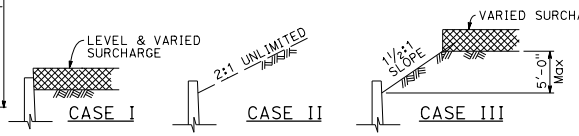
"L" headwall shown.
Straight headwall similar.



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, 1.85	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, 4.21	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, 4.78	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, 4.40	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

D89

1-29-18

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

May 31, 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.

NOTES:

1. The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.

2. In unpaved areas a raised portland cement concrete pad 2'-0" x 4" x width of foundation shall be constructed in front of new service equipment enclosure installation. Pad shall be set to elevation of foundation.

3. Plug-in circuit breakers may be mounted in the vertical or horizontal position. Cable-in/cable-out circuit breakers shall be mounted in the vertical position.

4. Type Ⅲ-AF and Type Ⅲ-BF service equipment enclosures shall have the meter viewing windows located on the front side of the service equipment enclosures.

5. Type Ⅲ-AR and Type Ⅲ-BR service equipment enclosure shall be similarly constructed as Type Ⅲ-AF and Type Ⅲ-BF respectively, except the meter viewing windows shall be located on the back side of the service equipment enclosures.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE NOTES TYPE Ⅲ SERIES)

NO SCALE

ES-2C

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

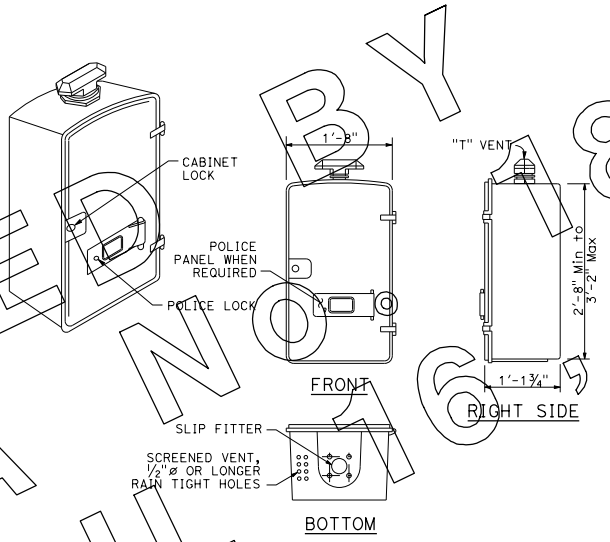
H.R.J.
REGISTERED ELECTRICAL ENGINEER

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

October 19, 2018
PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED _____



TYPE G CABINET

NOTES:

1. Cabinet dimensions are nominal.
2. Cabinet fan may be installed at an alternate location near the top of the cabinet when approved by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CONTROLLER CABINET DETAILS)

NO SCALE

RSP ES-3A DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-3A
DATED MAY 31, 2018 - PAGE 485 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3A

2018 REVISED STANDARD PLAN RSP ES-3A

5-8-18

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

October 19, 2018
PLANS APPROVAL DATE

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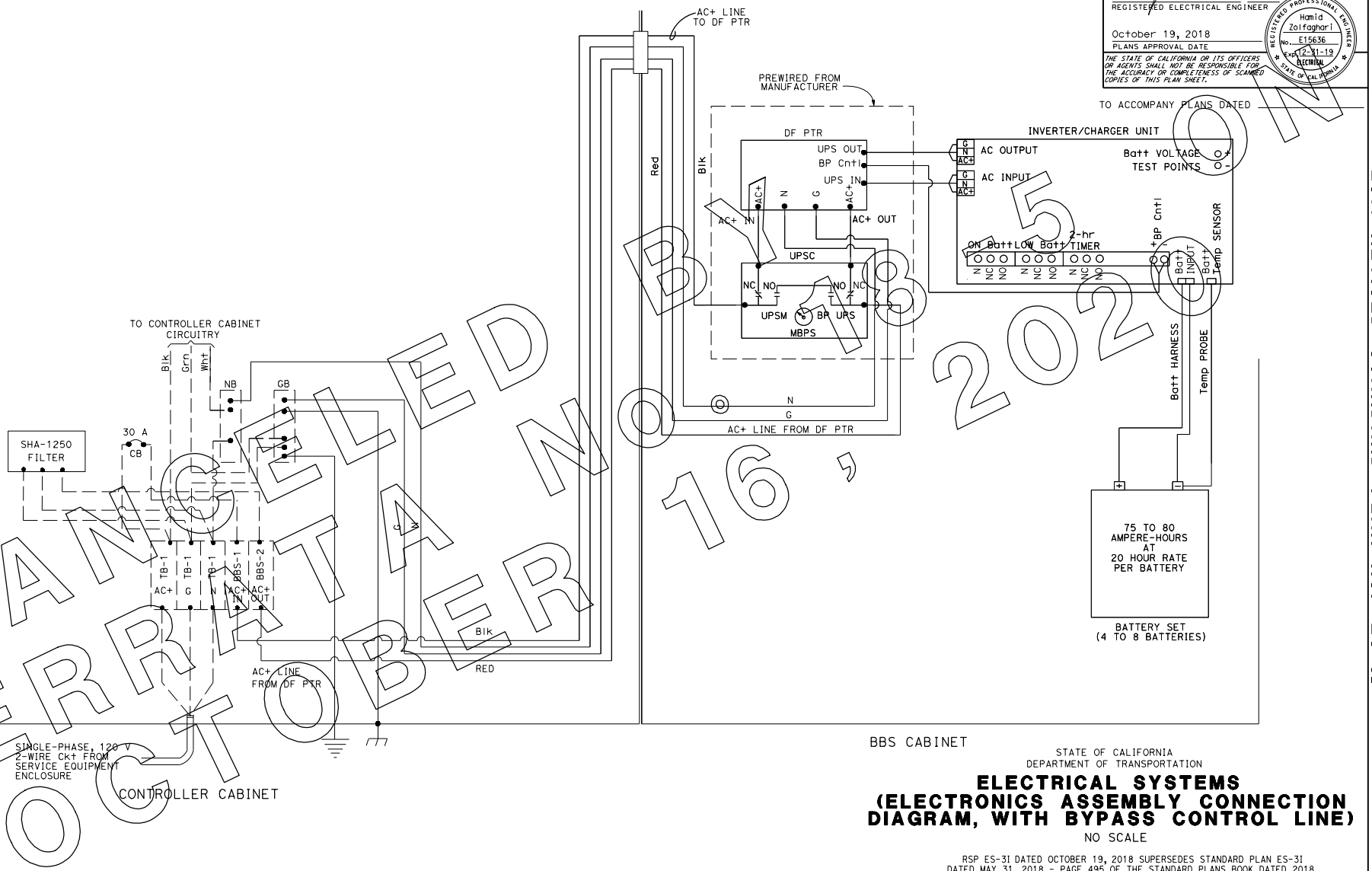
TO ACCOMPANY PLANS DATED



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRONICS ASSEMBLY CONNECTION DIAGRAM, WITH BYPASS CONTROL LINE)

NO SCALE

RSP ES-3I DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-3I DATED MAY 31, 2018 - PAGE 495 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3I

2018 REVISED STANDARD PLAN RSP ES-3I

1-30-18

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

H.R.J
REGISTERED ELECTRICAL ENGINEER
May 31, 2018
PLANS APPROVAL DATE

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

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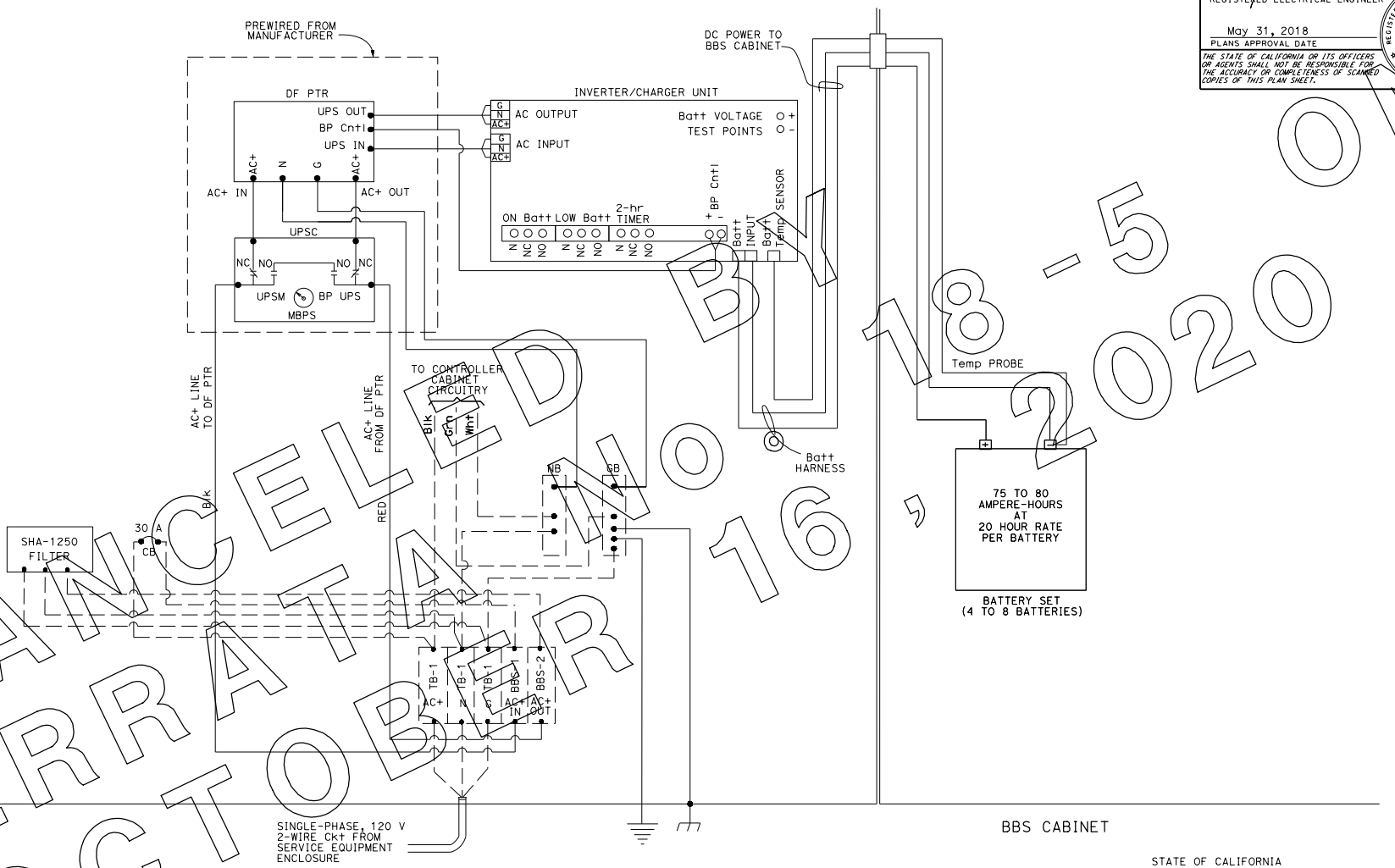


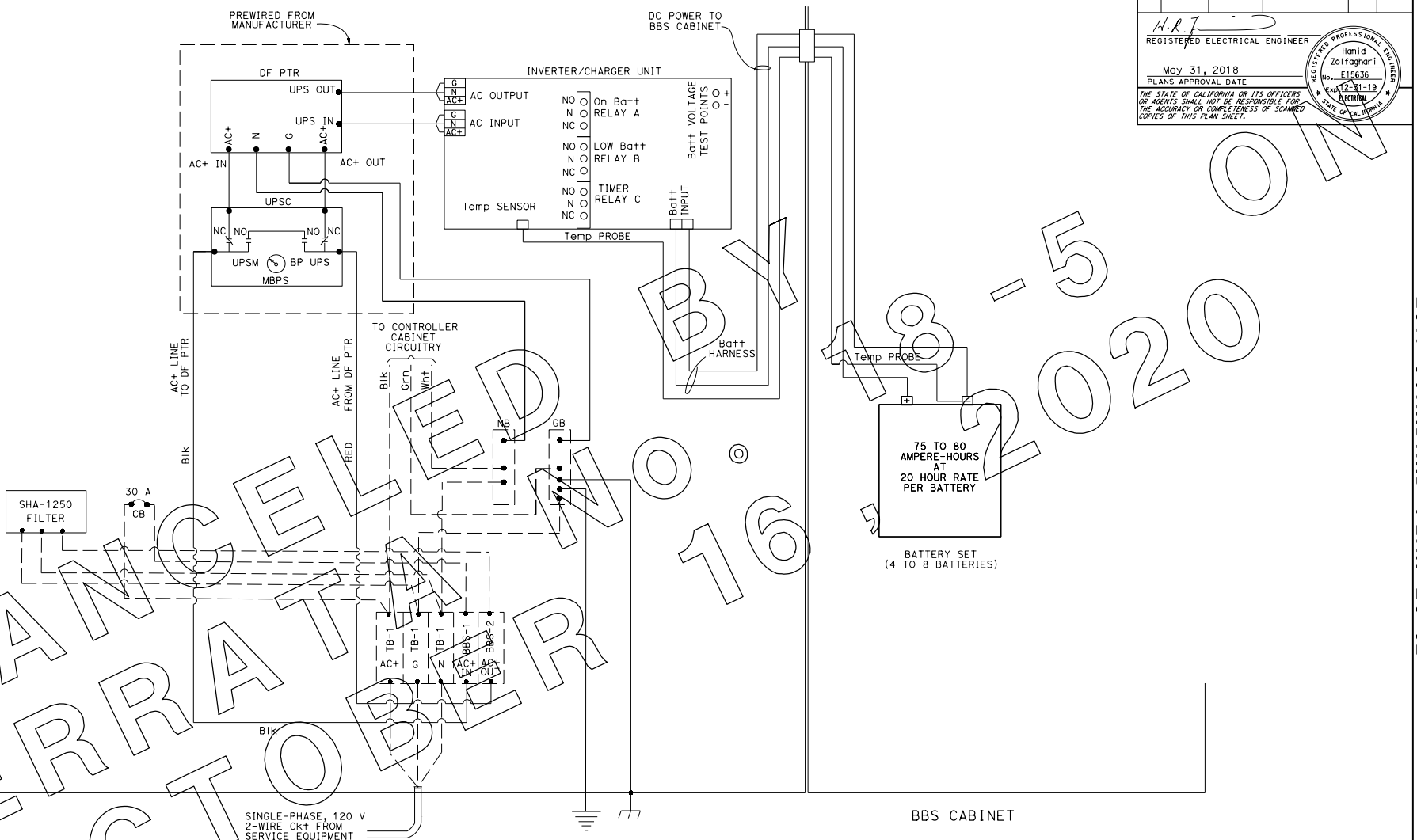
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRONICS ASSEMBLY CONNECTION DIAGRAM, WITH BYPASS CONTROL LINE)

NO SCALE

ES-3J

1-30-18



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

H.R.J.
REGISTERED ELECTRICAL ENGINEER
May 31, 2018
PLANS APPROVAL DATE

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRONICS ASSEMBLY CONNECTION DIAGRAM, WITHOUT BYPASS CONTROL LINE)

NO SCALE

ES-3L

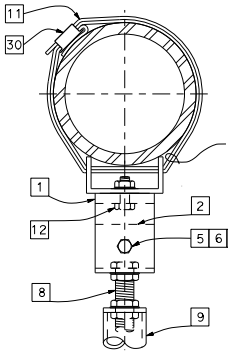
1-30-18

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

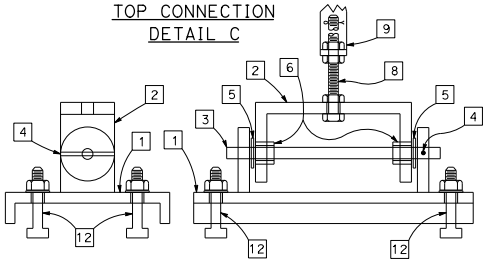
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

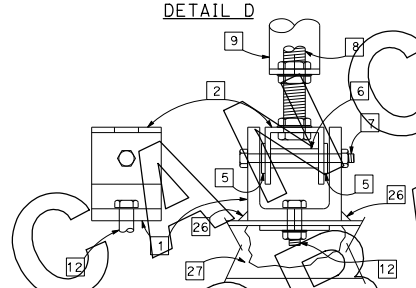
Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA



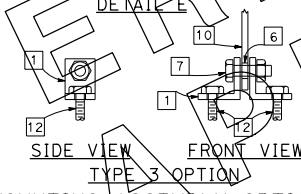
TOP CONNECTION
DETAIL C



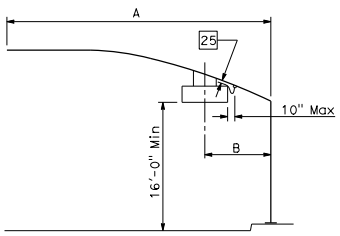
DETAIL D



DETAIL E



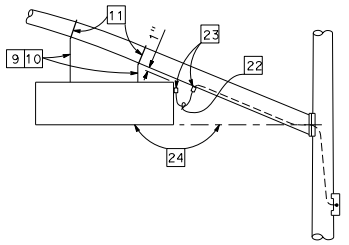
MOUNTING ASSEMBLY OPTIONS
DETAIL F



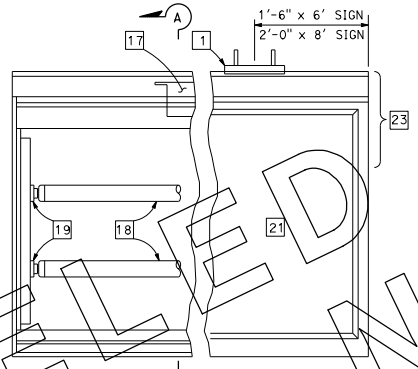
SIGN PLACEMENT
DETAIL G

SIGN PLACEMENT

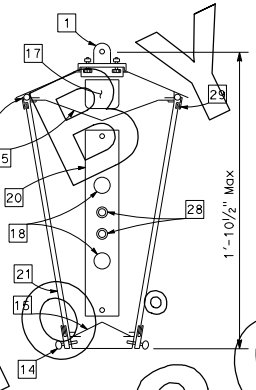
A	B	
PROJECTED LENGTH	6'-0" SIGN	8'-0" SIGN
20'-0"	7'-10"	8'-10"
25'-0"	9'-2"	10'-2"
30'-0"	9'-6"	10'-6"
35'-0"	10'-6"	11'-6"
40'-0"	12'-6"	13'-6"
45'-0"		
50'-0"		
55'-0"		
60'-0"		
65'-0"		



SIGN MOUNTING
DETAIL H

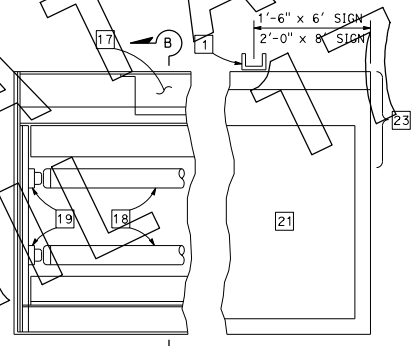


DETAIL A-1

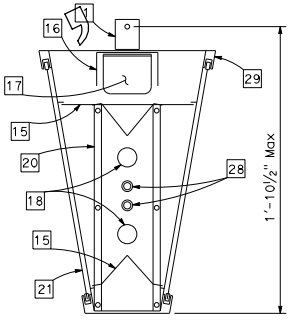


SECTION A-A

TYPE A SIGN
DETAIL A



DETAIL B-1



SECTION B-B

TYPE B SIGN
DETAIL B

LEGEND:

1. LOWER MOUNTING ASSEMBLY WITH GASKET.
2. UPPER MOUNTING ASSEMBLY.
3. ROD, ½" Ø, STAINLESS STEEL.
4. LOCKING PIN, STEEL.
5. FLAT WASHER, STAINLESS STEEL.
6. BUSHING, BRONZE.
7. BOLT, ¼" Ø STAINLESS STEEL, WITH SELF-LOCKING NUT.
8. BOLT, ½" Ø STAINLESS STEEL, WITH THREE NUTS, AND COTTER KEY. LENGTH AS REQUIRED FOR PROPER MOUNTING OF SIGN.
9. BRACKET, ¼" X 1½" MINIMUM, LENGTH VARIABLE.
10. BRACKET, 2-PIECE ADJUSTABLE. ¼" X 1½" MINIMUM, TWO ½" Ø HEXAGON HEAD BOLTS WITH NUTS AND LOCKWASHERS.
11. ¾" X 0.020" MINIMUM ROUNDED EDGE STAINLESS STEEL STRAP WITH 2" LONG BEND UNDER BUCKLE. IF ATTACHING TO A MULTISIDED SECTION BEND UNDER SECTION SHALL BE LONG ENOUGH TO CONTACT AT LEAST 3 CORNERS.
12. MOUNTING BOLT, ¼" Ø MINIMUM, WITH NUT AND LOCKWASHER, OR SELF-LOCKING NUT AND COTTER KEY.
13. CONTINUOUS HINGE.
14. THUMB SCREW, ⅝" Ø MINIMUM TWO PER SIDE ON 4'-0" CENTERS.
15. REFLECTOR, 0.040" MINIMUM THICKNESS.
16. ALUMINUM STIFFENER.
17. FLUORESCENT BALLAST (2 REQUIRED).
18. LAMP, F72T12CW FOR 6'-0" SIGN
    F96T12CW FOR 8'-0" SIGN
19. LAMP HOLDER.
20. LAMP HOLDER TURRET.
21. SIGN PANEL, 1'-3" MINIMUM HEIGHT. MESSAGE IS SHOWN ELSEWHERE.
22. CORD, 16/3 TYPE SJT. CONTINUOUS FROM SIGN TERMINAL BLOCK TO SIGNAL HEAD MOUNTING TERMINAL COMPARTMENT. FORM A 1'-0" DRIP LOOP BETWEEN SIGN AND SIGNAL MAST ARM.
23. CORD CONNECTOR, 90° ANGLE CONNECTOR AT THE SIGN LOCATED IN UPPER 1/3 OF THE SIGN AND STRAIGHT CONNECTOR AT THE SIGNAL MAST ARM. DRILL AND TAP BOTTOM OF THE SIGNAL MAST ARM.
24. ADJUST FIXTURE LEVEL NO LOWER THAN CENTER OF SIGNAL MAST ARM CONNECTION.
25. APPROXIMATE CLEARANCE, 1".
26. ¼" FILLET WELD, 1¼" LONG.
27. SIGN FRAME.
28. FUSE HOLDER AND FUSE.
29. CLOSE CELL NEOPRENE GASKET (CONTINUOUS).
30. STAINLESS STEEL STRAP BUCKLE.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (INTERNALLY ILLUMINATED STREET NAME SIGN)

NO SCALE

ES-7P

1-30-18

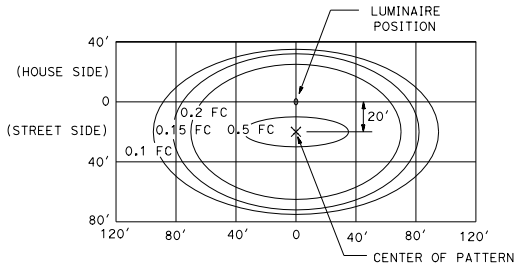
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

H.R.J.
REGISTERED ELECTRICAL ENGINEER

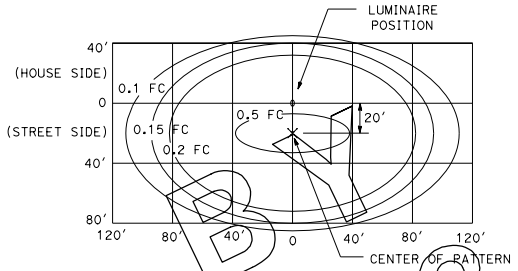
May 31, 2018
PLANS APPROVAL DATE

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

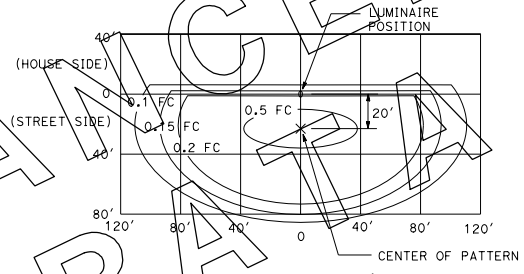
NOTE:
Curves represent the minimum maintained illuminance (FC).



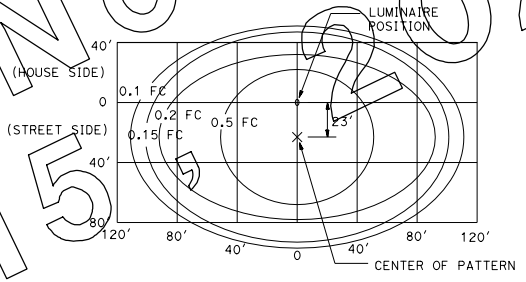
ROADWAY 1
34′ Mounting Height
165 W (Max)



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

ES-10A

1-26-18

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

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

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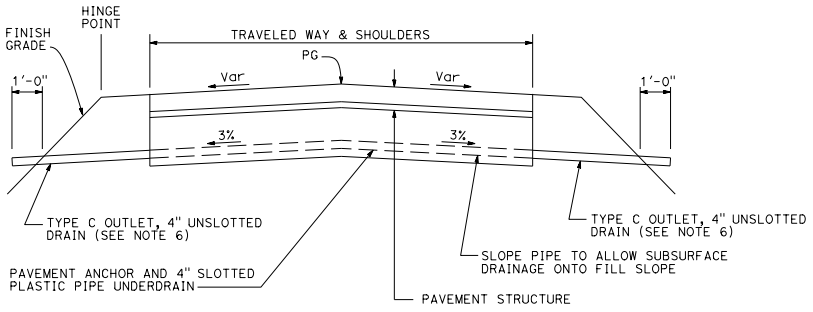
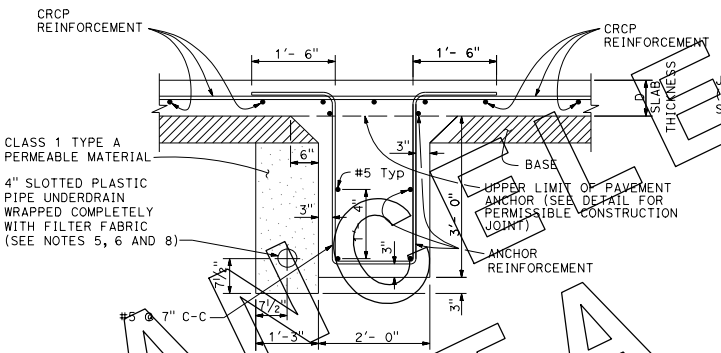
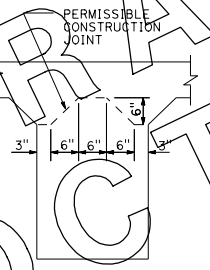


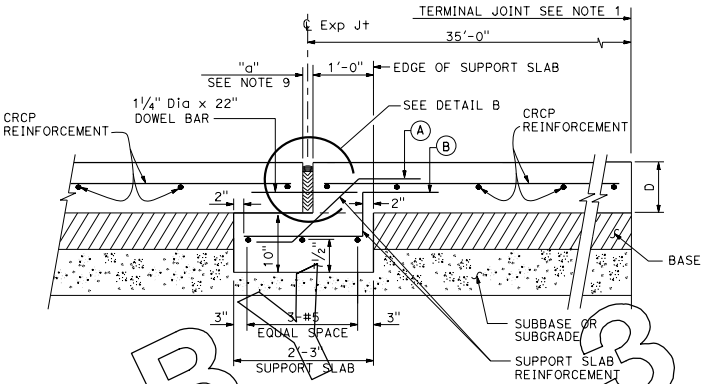
PAVEMENT ANCHOR PROFILE



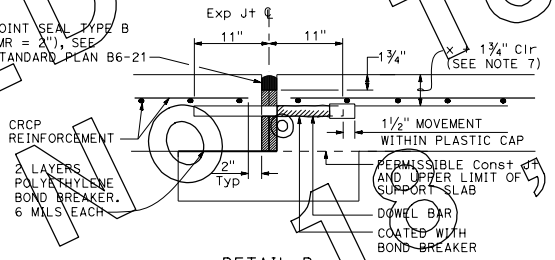
PAVEMENT ANCHOR



PAVEMENT ANCHOR DETAIL SHOWING PERMISSIBLE CONSTRUCTION JOINT

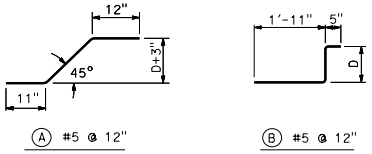


EXPANSION JOINT TYPE AN



DETAIL B

(For layout, tolerances, and other details not shown, see Standard Plan P10.)



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 Standard Plans P4 and 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 ⅜" polystyrene.
6. See Standard Plan P51 for details not shown.
7. See Standard Plan 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

P31B

1-29-18

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

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Dulce Rufino Feldman
No. C81459
Exp. 9-30-19
CIVIL
STATE OF CALIFORNIA

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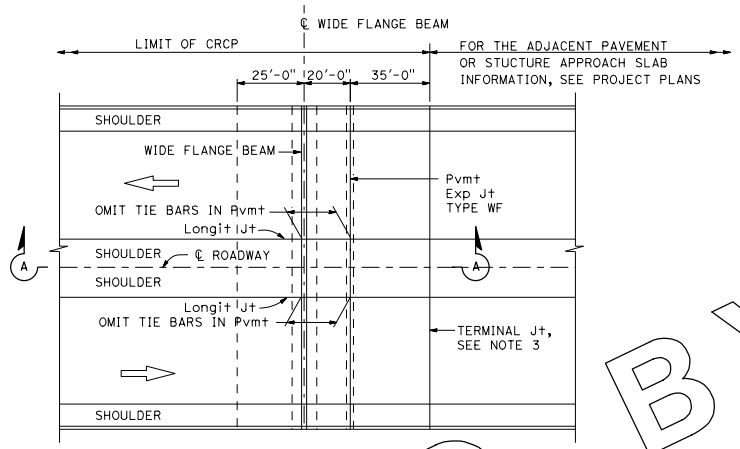
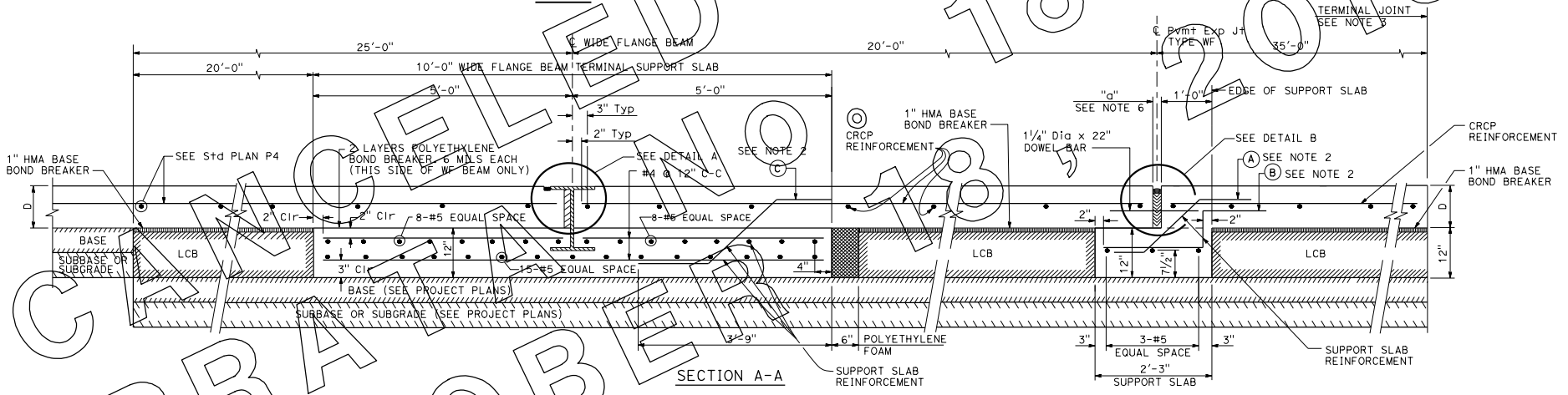


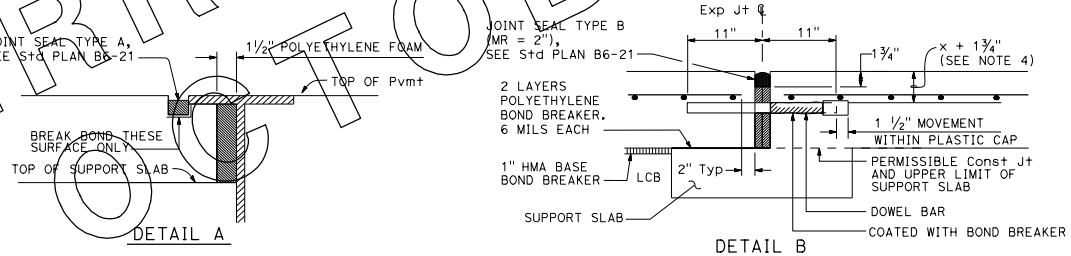
PLAN

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 Standard Plan P4 for "x".
5. D = Thickness of CRCP
6. See Standard Plan B6-21 for "a".



SECTION A-A



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

P32A

1-29-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018

PLANS APPROVAL DATE

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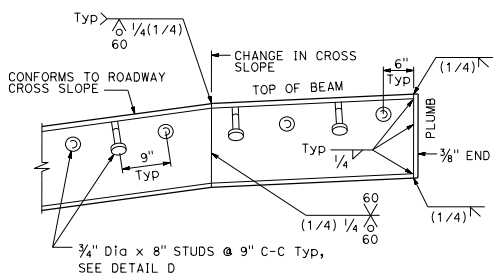
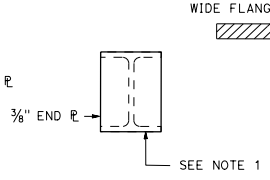
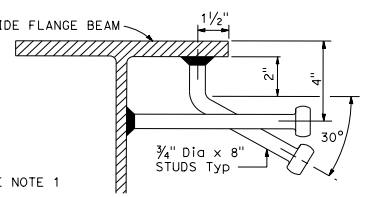
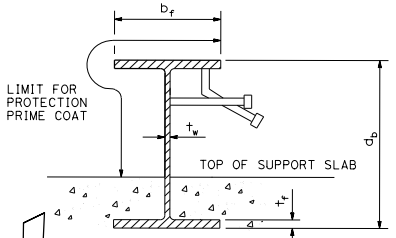


WIDE FLANGE DETAIL





DETAIL D



WIDE FLANGE PAINTING DETAIL

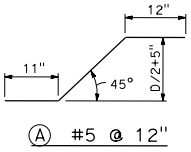
See "TABLE OF BEAM SIZES"

LEGEND:

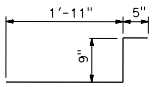
b_f - FLANGE WIDTH
t_f - FLANGE THICKNESS
t_w - WEB THICKNESS
d_b - BEAM DEPTH
D1, D2 - PAVEMENT THICKNESSES

NOTES:

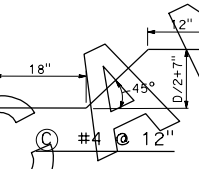
1. Weld 3/8" plate to each end of wide flange beam at pavement edges only. End plate covers the entire wide flange beam.
2. Extend polyethylene foam to the sides and edges of the front part of the plate.



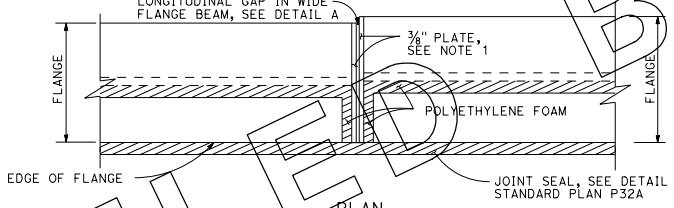
Ⓐ #5 @ 12"



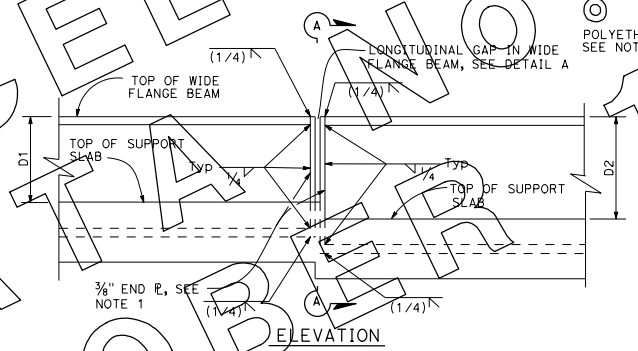
Ⓑ #5 @ 12"



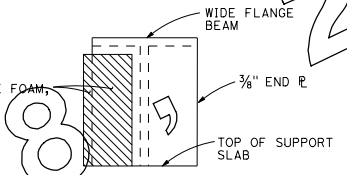
Ⓒ #4 @ 12"



PLAN

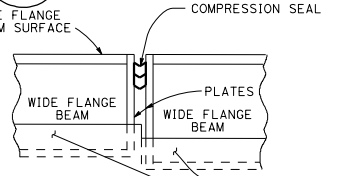


ELEVATION



SECTION A-A

POLYETHYLENE FOAM, SEE NOTE 2



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

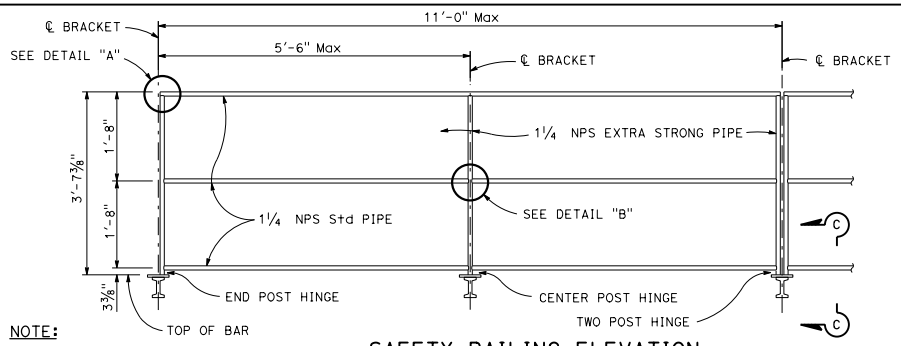
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT WIDE FLANGE BEAM TERMINALS

NO SCALE

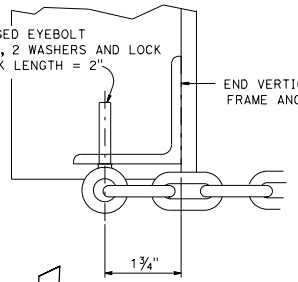
P32B

1-29-18



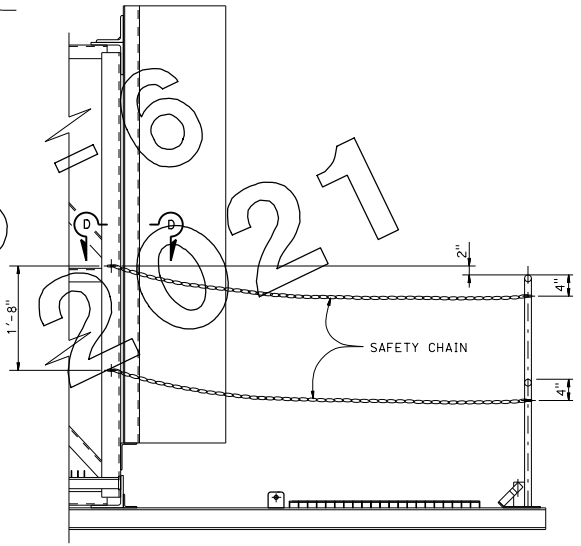
NOTE:
Chain assembly behind
(see detail this page)

SAFETY RAILING ELEVATION

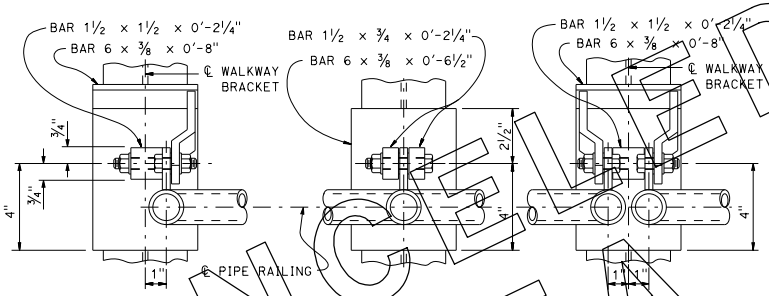


SECTION D-D

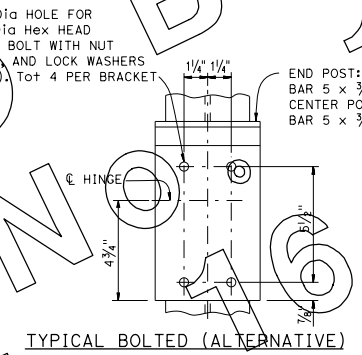
NOTE:
See Standard Plans
S101 and S105 and S109
for walkway bracket spacing.



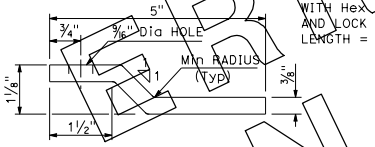
CHAIN ASSEMBLY



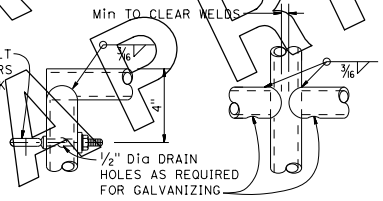
WELDED HINGE - PLAN



TYPICAL BOLTED (ALTERNATIVE) HINGED CONNECTION



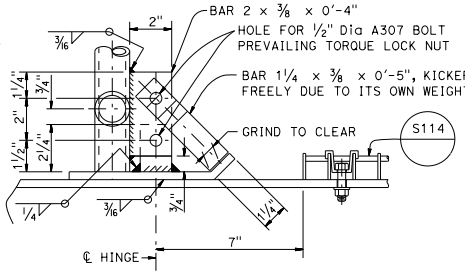
PLAN - KICKER BAR



DETAIL "A"

DETAIL "B"

NOTE:
Alternative venting methods may be
used if approved by the Engineer.



SECTION C-C
ELEVATION VIEW

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

REGISTERED CIVIL ENGINEER

May 31, 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGN-TRUSS SINGLE POST TYPE WALKWAY SAFETY RAILING DETAILS CHANGEABLE MESSAGE SIGNS MODEL 500 AND 510

NO SCALE

S140

2018 STANDARD PLAN S140

1-29-18

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

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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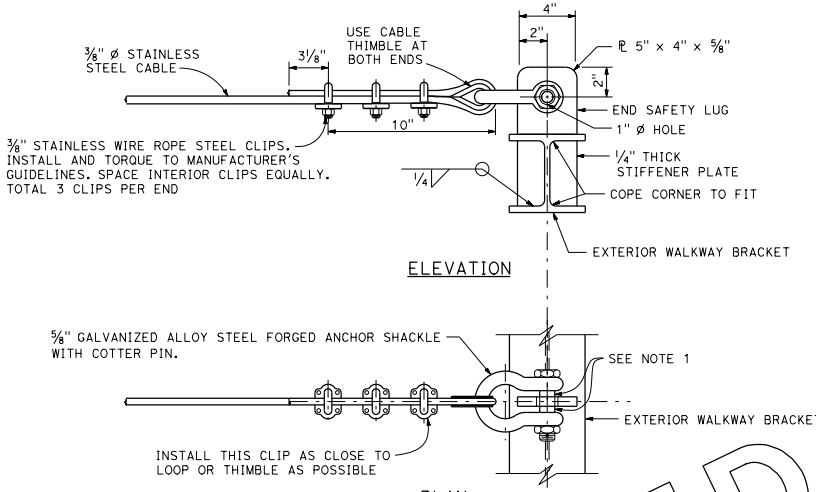
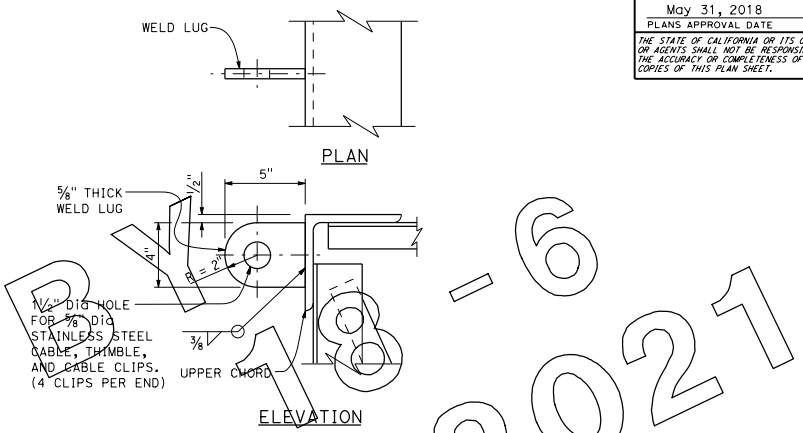


END SAFETY CABLE DETAIL

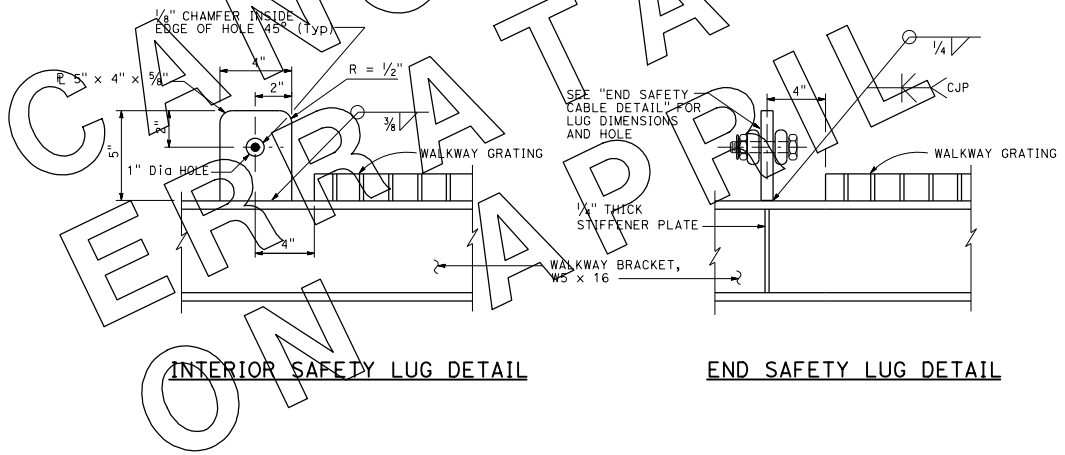


BACKSIDE WELD LUG DETAIL

NOTE 3 Backside weld lug shall be installed only for projects requiring backside walkways.

NOTES:

1. Place an equal amount of washers on each side to align cable with end lug without restricting shakle bolt rotation or contacting cable.
2. For walkway grating details, see Standard Plan S114.



INTERIOR SAFETY LUG DETAIL

END SAFETY LUG DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGN-TRUSS SINGLE POST TYPE SAFETY CABLE ANCHORAGE DETAILS CHANGEABLE MESSAGE SIGNS MODEL 500 AND 510

NO SCALE

S141

1-29-18

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

REGISTERED CIVIL ENGINEER

May 31, 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.

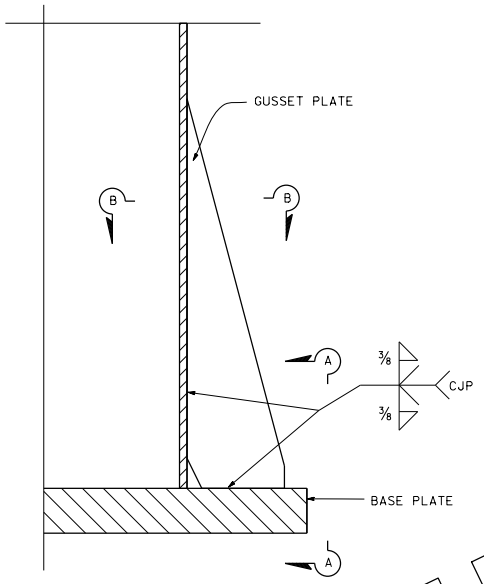
NOTES:

1. All gussets to be same height.
2. Provide a smooth transition from gusset plate to tube.

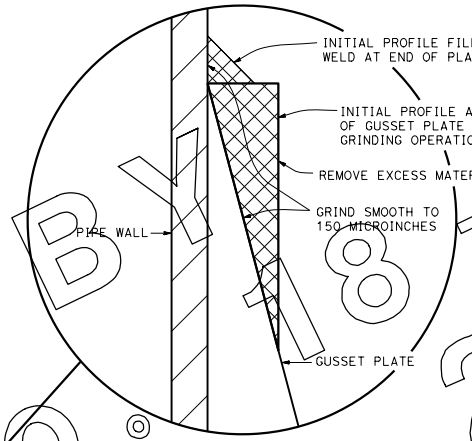
LEGEND:

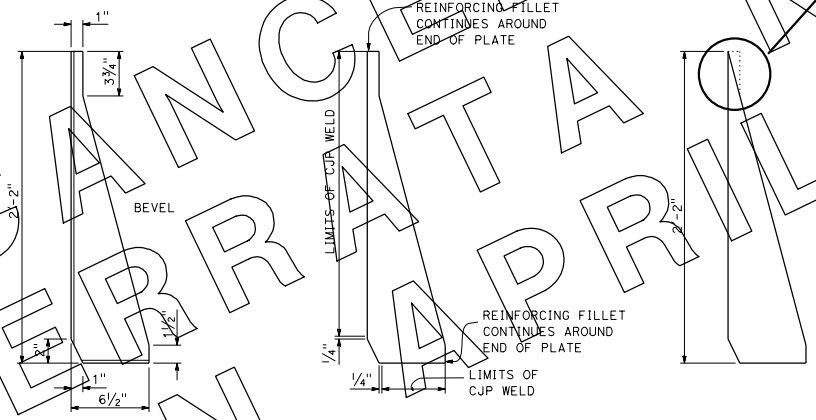
NEW

REMOVAL



WELD DETAILS

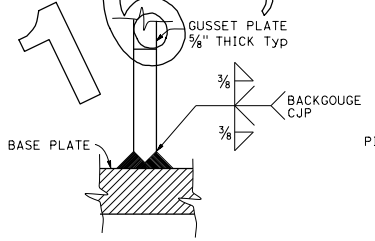




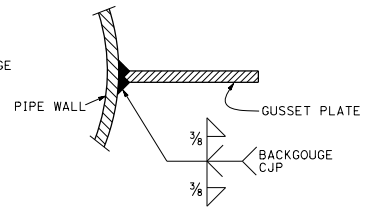
GUSSET PLATE
(Initial Shape)

GUSSET PLATE WELDING
(See Weld Details)

GUSSET PLATE GRINDING



SECTION A-A



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGN-TRUSS SINGLE POST TYPE GUSSET PLATE DETAILS CHANGEABLE MESSAGE SIGNS MODEL 500 AND 510

NO SCALE

S142

1-29-18

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

Atifa Ferouz
No. C80402
Exp. 3-31-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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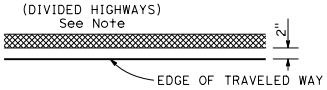
TO ACCOMPANY PLANS DATED _____

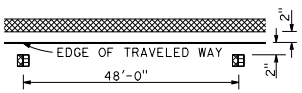
LEFT EDGE LINES

(DIVIDED HIGHWAYS)
See Note

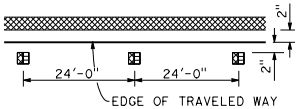
DETAIL 24



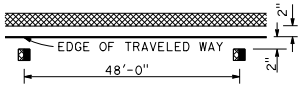
DETAIL 25



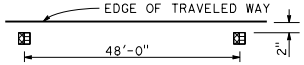
DETAIL 25A



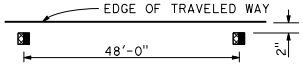
DETAIL 25B



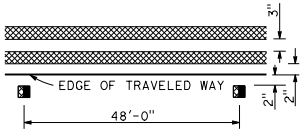
DETAIL 26



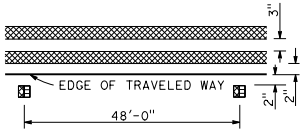
DETAIL 26A



DETAIL 26B



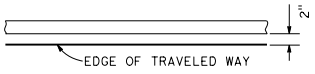
DETAIL 27



RIGHT EDGE LINES

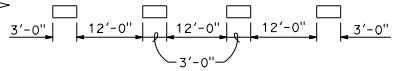
~~DETAIL 27A~~ DETAIL 27A DELETED

DETAIL 27B



RIGHT EDGE LINE EXTENSION THROUGH INTERSECTIONS

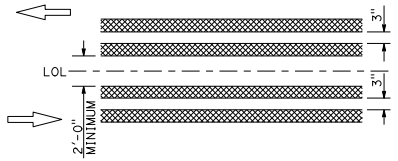
DETAIL 27C



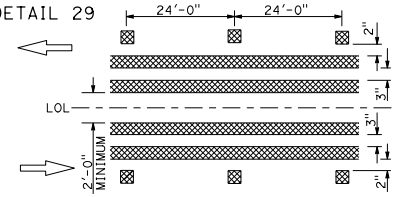
LEFT EDGE LINES NOTE:
On freeways use traffic stripe details with Type RY markers.

MEDIAN ISLANDS

DETAIL 28



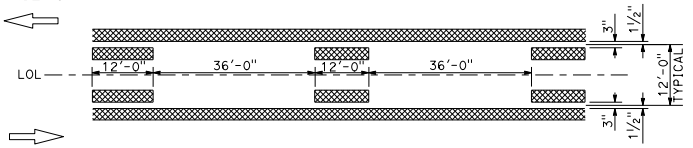
DETAIL 29



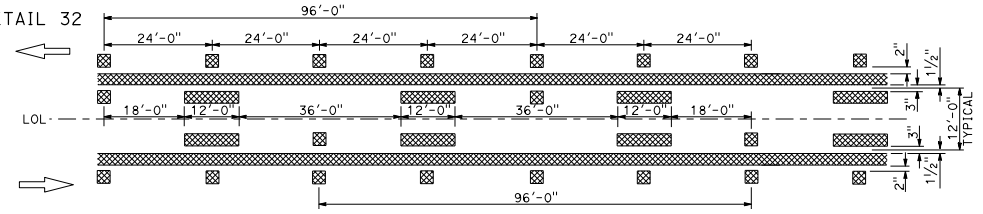
~~DETAIL 30~~ DETAIL 30 DELETED

TWO-WAY LEFT TURN LANES

DETAIL 31



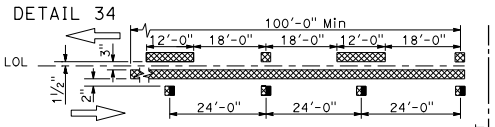
DETAIL 32



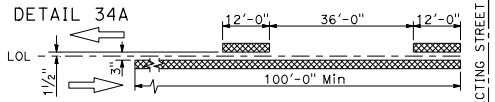
~~DETAIL 33~~ DETAIL 33 DELETED

INTERSECTION TREATMENTS

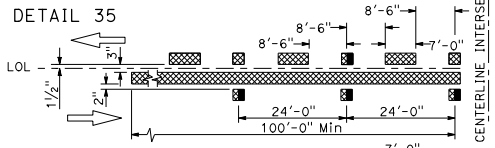
DETAIL 34



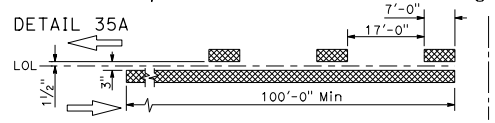
DETAIL 34A



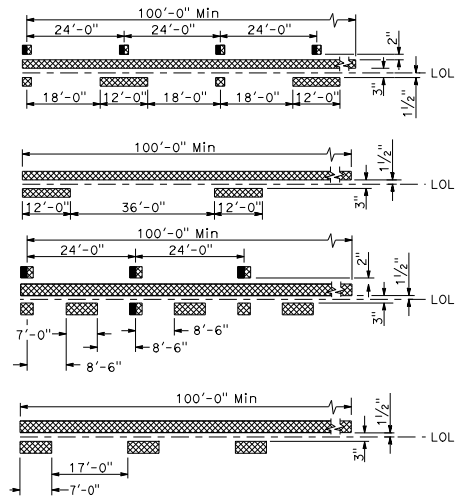
DETAIL 35



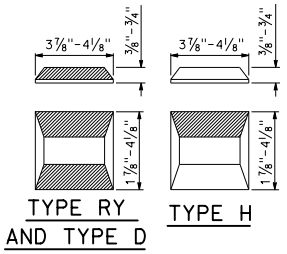
DETAIL 35A



CENTERLINE INTERSECTING STREET



MARKER DETAILS



LEGEND

MARKERS

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

LINES

- 6" WHITE
- 6" YELLOW

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

RSP A20B DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN A20B
DATED MAY 31, 2018 - PAGE 13 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A20B

2018 REVISED STANDARD PLAN RSP A20B

11-15-18

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Atifa Ferouz — No. C80402 — Exp. 3-31-21 — CIVIL — STATE OF CALIFORNIA

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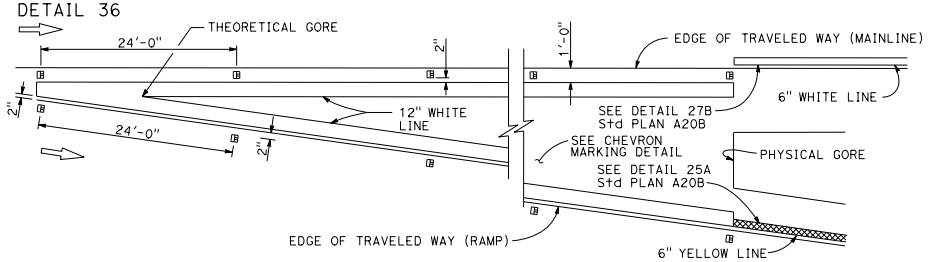
TO ACCOMPANY PLANS DATED _____

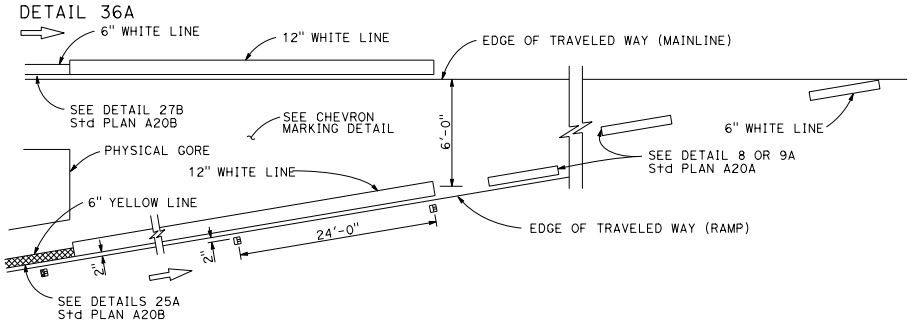
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT

DETAIL 36



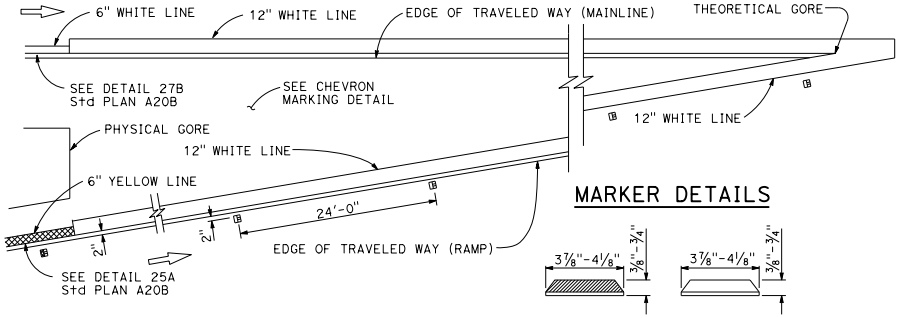
ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT

DETAIL 36A

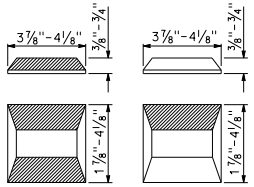


ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT

DETAIL 36B



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

NOTES:

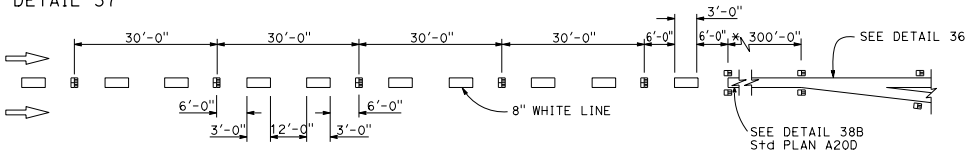
Install a minimum of 1 chevron in the gore area. If at least 1 chevron will not fit into the gore area, do not install chevrons.

Terminate chevron markings at physical gore.

Gore area chevron pavement markings shown. For Exit and Entrance Ramp channelizing lines details, see Details 36, 36A, and 36B.

LANE DROP AT EXIT RAMPS

DETAIL 37

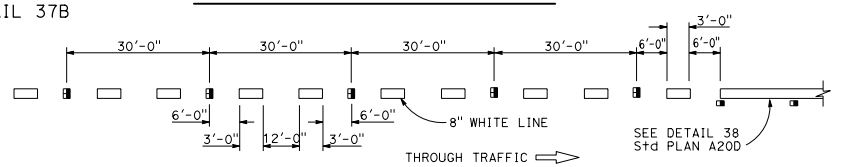


* The solid channelizing line shown may be omitted on short auxiliary lanes where weaving length is critical.

~~DETAIL 37A~~ DETAIL 37A DELETED

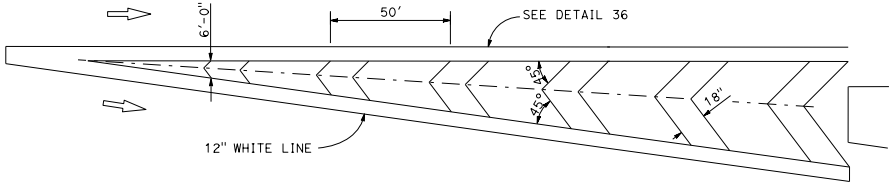
LANE DROP AT INTERSECTIONS

DETAIL 37B

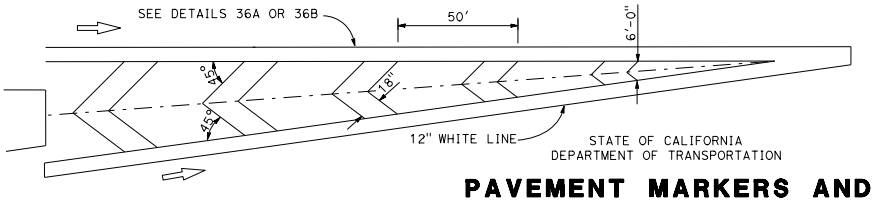


~~DETAIL 37C~~ DETAIL 37C DELETED

CHEVRON PAVEMENT MARKINGS AT EXIT RAMP GORE AREA



CHEVRON PAVEMENT MARKINGS AT ENTRANCE RAMP GORE AREA



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

RSP A20C DATED APRIL 17, 2020 SUPERSEDES RSP A20C DATED OCTOBER 19, 2018 AND STANDARD PLAN A20C DATED MAY 31, 2018 - PAGE 14 OF THE STANDARD PLANS BOOK DATED 2018.

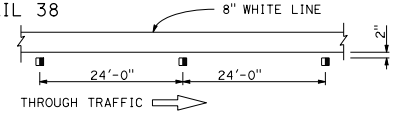
REVISED STANDARD PLAN RSP A20C

2018 REVISED STANDARD PLAN RSP A20C

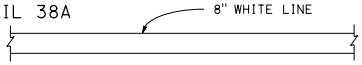
12-6-19

CHANNELIZING LINE

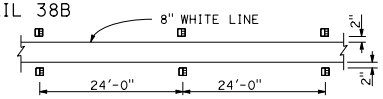
DETAIL 38



DETAIL 38A

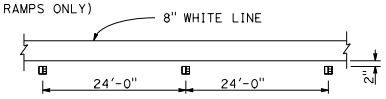


DETAIL 38B



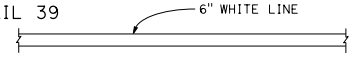
~~DETAIL 38C~~ DETAIL 38C DELETED

DETAIL 38D
(EXIT RAMPS ONLY)



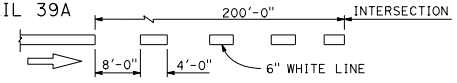
BIKE LANE LINE

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

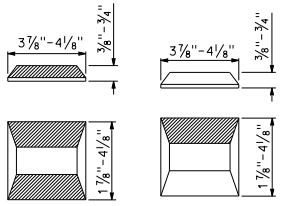
~~DETAIL 41A~~ DETAIL 41A DELETED

LEGEND

MARKERS

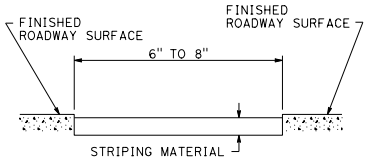
- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- 6" YELLOW LINE

MARKER DETAILS



TYPE C TYPE G

RETROREFLECTIVE FACE



DETAIL FOR RECESSED TRAFFIC STRIPE

See Notes A and B.

RECESSED NOTES:

A. See typical traffic line details for pavement marking patterns.

B. See standard specifications for recess depth and recess striping material thickness.

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

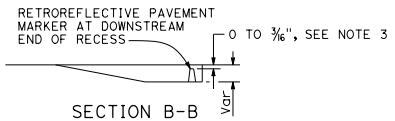
Atifa Ferouz
REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

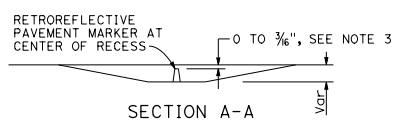
REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

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.

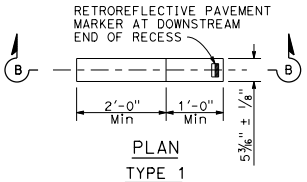
TO ACCOMPANY PLANS DATED _____



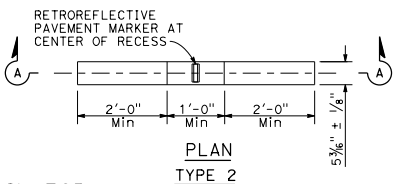
SECTION B-B



SECTION A-A



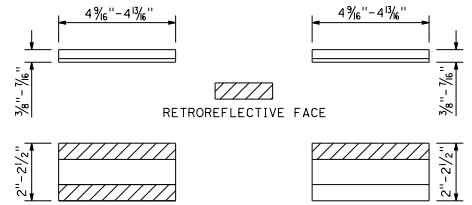
PLAN
TYPE 1



PLAN
TYPE 2

RECESS DETAIL FOR RETROREFLECTIVE PAVEMENT MARKER

See Note 4



TYPE C, TYPE RY, AND TYPE D

TYPE G, TYPE R, AND TYPE H

RETROREFLECTIVE PAVEMENT MARKER FOR RECESSED INSTALLATION

See Notes 1 and 2.

RECESSED MARKER NOTES:

1. See typical traffic line details for marker patterns to be used with recessed pavement markers.
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.
4. Use Type 1 recess for pavement markers with one-way retroreflective face. Use Type 2 recess for pavement markers with two-way retroreflective face.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

RSP A20D DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN A20D
DATED MAY 31, 2018 - PAGE 15 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A20D

2018 REVISED STANDARD PLAN RSP A20D

5-10-18

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTE:

1. See Standard Plans A20A, A20B, A20C, A20D, and A20F for pavement markers and traffic lines typical details.

TYPICAL LANE LINE OR RIGHT EDGE LINE CONTRAST DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAIL FOR CONTRAST STRIPING

NO SCALE

RSP A20E DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN A20E
DATED MAY 31, 2018 - PAGE 16 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A20E

2018 REVISED STANDARD PLAN RSP A20E

11-9-18

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

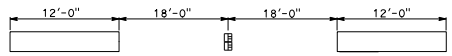
REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

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 _____

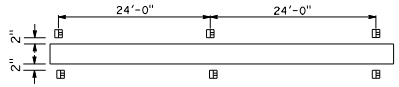
PREFERENTIAL LANE LINES

DETAIL 42

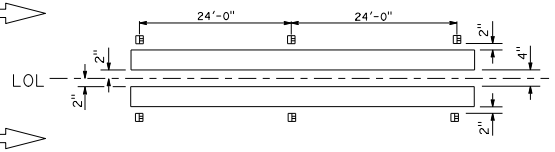


DETAIL 43

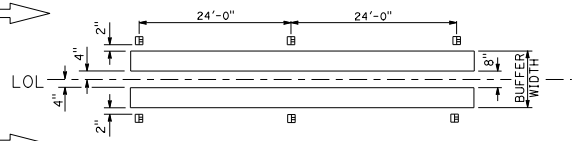
DETAIL 43A



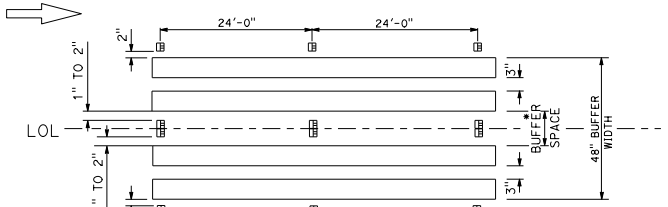
DETAIL 44A



DETAIL 44B



DETAIL 45



* If buffer space is wider than 4 feet use chevron markings.

LEGEND

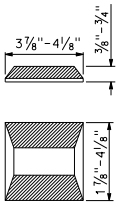
MARKERS

TYPE C RED-CLEAR RETROREFLECTIVE

LINES

8" WHITE LINE

MARKER DETAILS



TYPE C

RETROREFLECTIVE FACE

2018 REVISED STANDARD PLAN RSP A20F

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

RSP A20F DATED APRIL 19, 2019 SUPERSEDES RSP A20F
DATED OCTOBER 19, 2018 THAT SUPPLEMENTS TO THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A20F

11-9-18

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

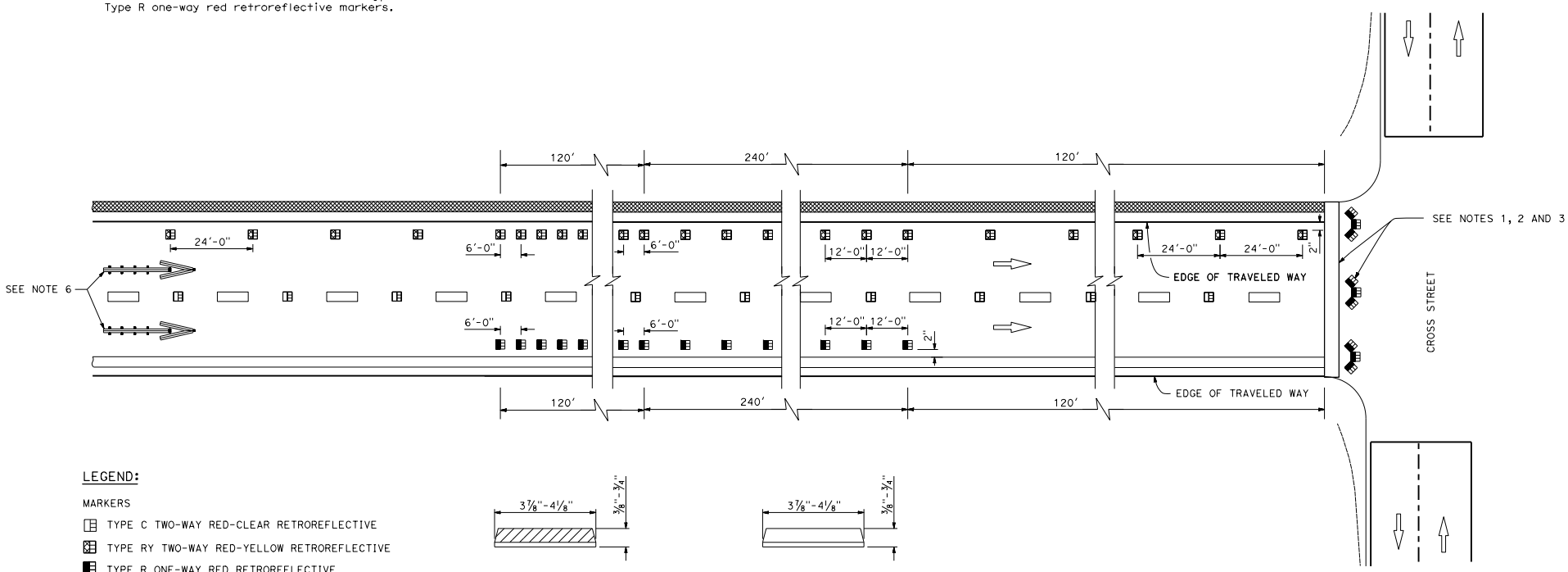
REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-23
CIVIL
STATE OF CALIFORNIA

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. May be a limit line or crosswalk.
2. See standard plan A24F and Revised Standard Plan RSP A24G for crosswalk and pavement marker details.
3. Place Type R one-way red retroreflective markers on outermost limit line or crosswalk line with red facing the intersection.
4. The distances and marker spacings may be adjusted based on site specific conditions or exit ramp geometry.
5. The layout shown is a typical deail of an exit ramp, see Figure 3B-24 of the CA MUTCD for exit ramp configuration and arrow placement and spacing.
6. See Revised Standard Plan RSP A24G for Type V arrow detail with Type R one-way red retroreflective markers.



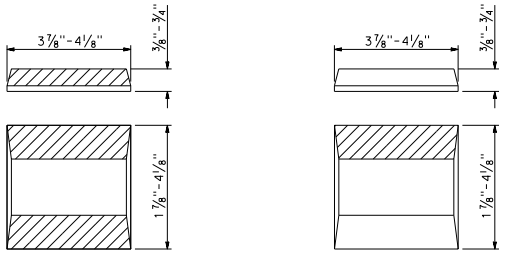
LEGEND:

MARKERS

- TYPE C TWO-WAY RED-CLEAR RETROREFLECTIVE
- TYPE RY TWO-WAY RED-YELLOW RETROREFLECTIVE
- TYPE R ONE-WAY RED RETROREFLECTIVE

LINES

- 6" WHITE
- 6" YELLOW



TYPE C AND TYPE RY TYPE R

MARKER DETAILS

RETROREFLECTIVE FACE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXIT RAMP WITH ENHANCED PAVEMENT MARKERS FOR WRONG WAY DETAILS

NO SCALE

RSP A20G DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A20G

2018 REVISED STANDARD PLAN RSP A20G

12-15-20

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

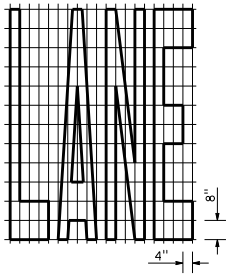
Atifa Ferouz
REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

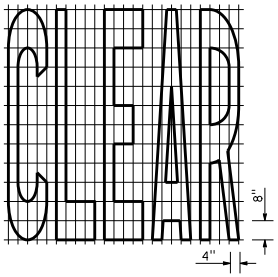
REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA

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.

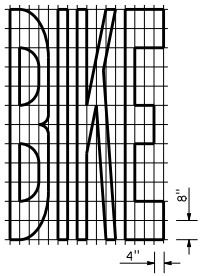
TO ACCOMPANY PLANS DATED _____



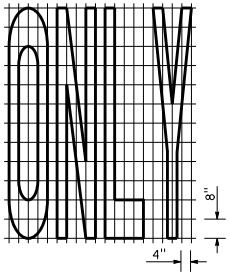
A=24 ft²



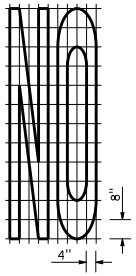
A=27 ft²



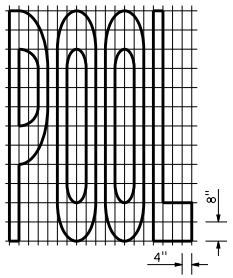
A=21 ft²



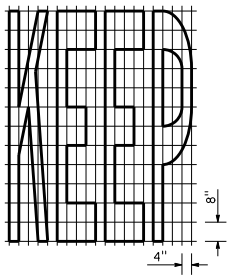
A=22 ft²



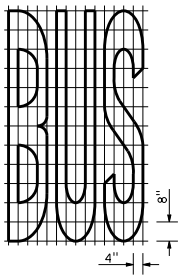
A=14 ft²



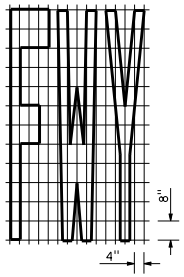
A=23 ft²



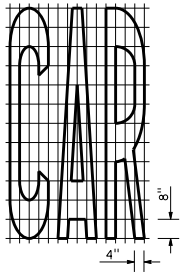
A=24 ft²



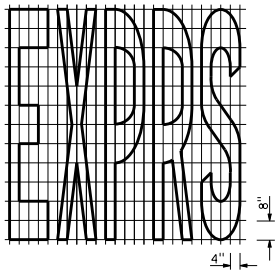
A=20 ft²



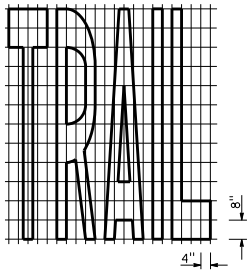
A=16 ft²



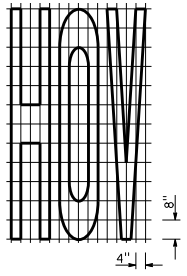
A=17 ft²



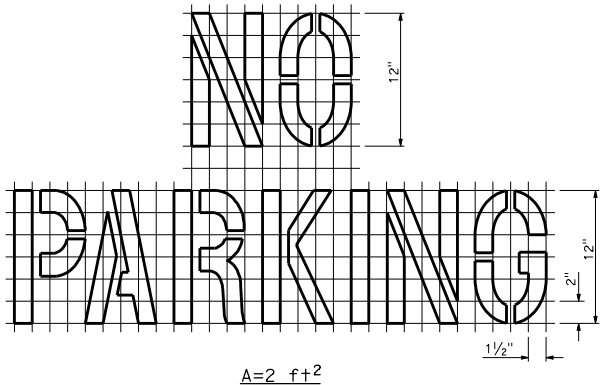
A=30 ft²



A=23 ft²



A=18 ft²



A=2 ft²
See Notes 5 and 6

NOTES:

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

WORD MARKINGS

ITEM	ft²	ITEM	ft²
LANE	24	NO	14
POOL	23	BIKE	21
CAR	17	BUS	20
CLEAR	27	ONLY	22
KEEP	24	FWY	16
HOV	18	EXPRS	30
TRAIL	23		

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS
WORDS

NO SCALE

RSP A24E DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN A24E
DATED MAY 31, 2018 - PAGE 21 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A24E

2018 REVISED STANDARD PLAN RSP A24E

4-17-18

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Atifa Ferouz — No. C80402 — Exp. 3-31-23 — CIVIL — STATE OF CALIFORNIA

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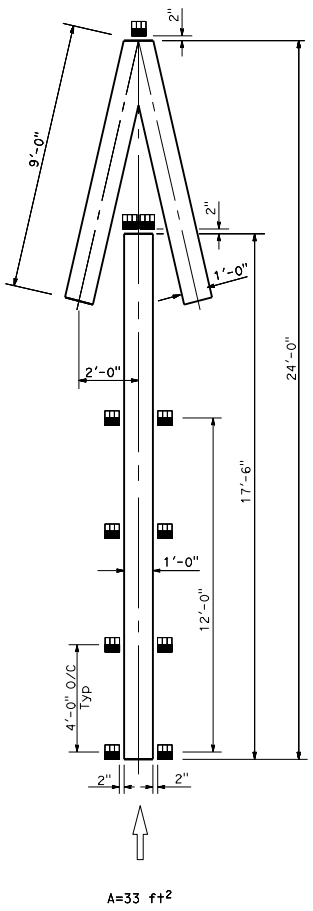
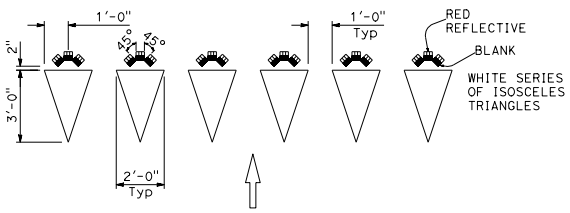
TO ACCOMPANY PLANS DATED _____

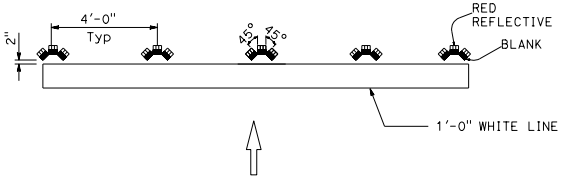


A=33 ft²

TYPE V ARROW AT EXIT RAMP



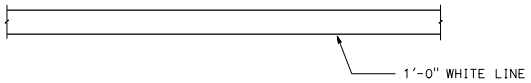
YIELD LINE AT EXIT RAMP



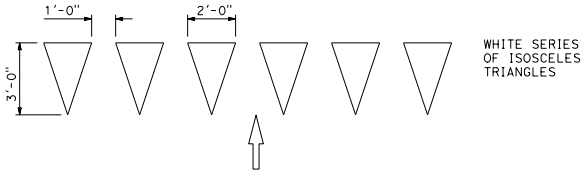
LIMIT LINE (STOP LINE) AT EXIT RAMP

NOTE:

1. If there is crosswalk at the end of the exit ramp, place Type R markers in front of the first line for wrong way vehicle that travels up the ramp with the red reflective side facing the intersection.



LIMIT LINE (STOP LINE)



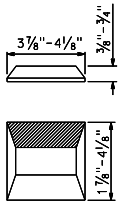
YIELD LINE

LEGEND:

MARKERS

TYPE R ONE-WAY RED RETROREFLECTIVE

MARKER DETAILS



TYPE R

RETROREFLECTIVE FACE ON BACKSIDE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS YIELD LINES, LIMIT LINES, AND WRONG WAY DETAILS

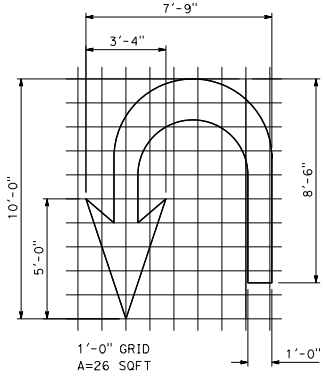
NO SCALE

RSP A24G DATED APRIL 16, 2021 SUPERSEDES RSP A24G
DATED OCTOBER 19, 2018 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

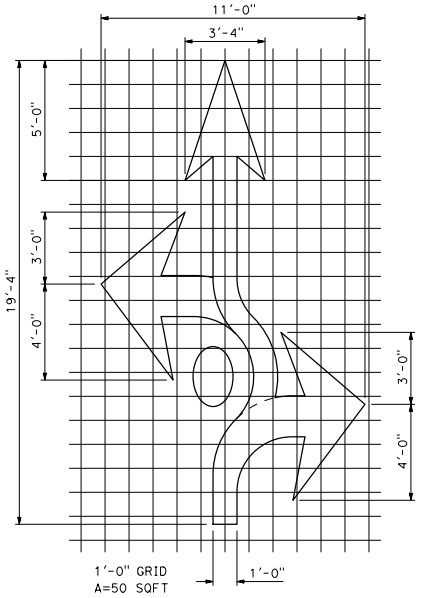
REVISED STANDARD PLAN RSP A24G

2018 REVISED STANDARD PLAN RSP A24G

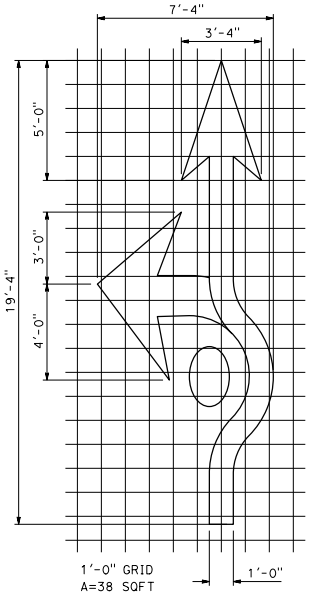
11-24-20



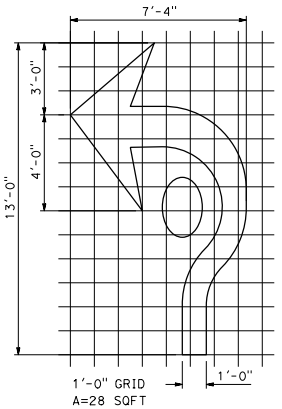
TYPE IX ARROW
U-TURN ARROW



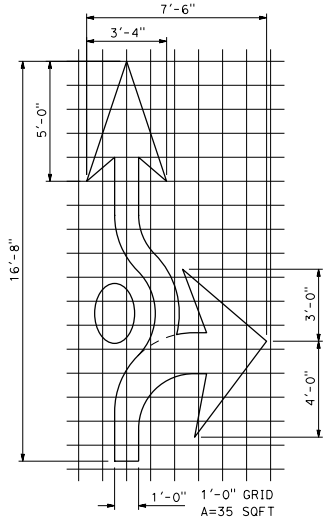
TYPE FH I ARROW



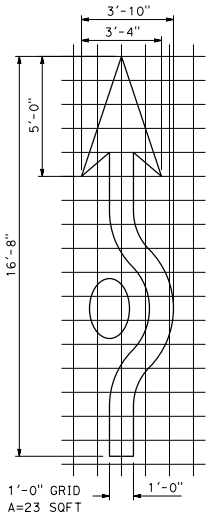
TYPE FH II ARROW



TYPE FH IV ARROW



TYPE FH III ARROW
OPTIONAL LANE USE CIRCULAR ARROWS



TYPE FH V ARROW
MANDATORY LANE USE CIRCULAR ARROWS

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-23
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

PAVEMENT MARKING ARROWS

NO SCALE

RSP A24H DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

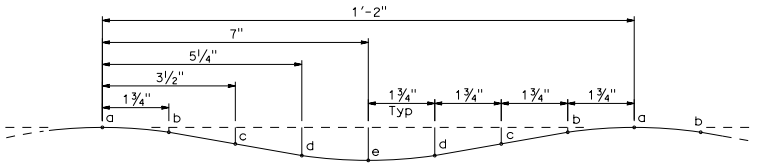
REVISED STANDARD PLAN RSP A24H

2018 REVISED STANDARD PLAN RSP A24H

11-24-20

NOTES:

1. For shoulder, edge line, and center line rumble strip details, see Standard Plans A40B, A40C, and A40D.
2. See Project Plans and Standard Plan A20A and Revised Standard Plan RSP A20B for pavement markers and traffic lines typical details.



ELEVATIONS

SECTION A-A

LOCATION	SHOULDER DEPTH INCHES
a	0
b	1/16
c	5/32
d	9/32
e	5/16

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Atifa Ferouz — No. C80402 — Exp. 3-31-21 CIVIL — STATE OF CALIFORNIA

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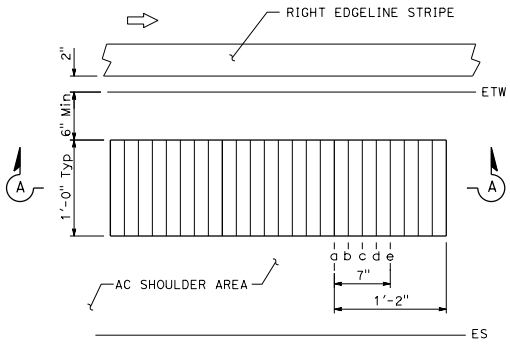
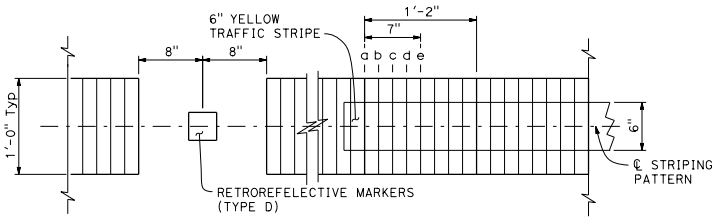
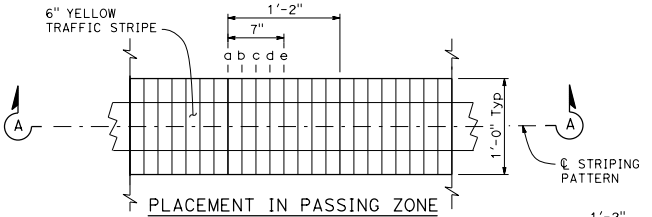
TO ACCOMPANY PLANS DATED _____



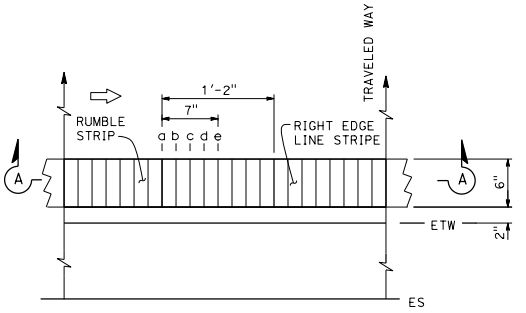
RIGHT OF DIRECTION OF TRAVEL



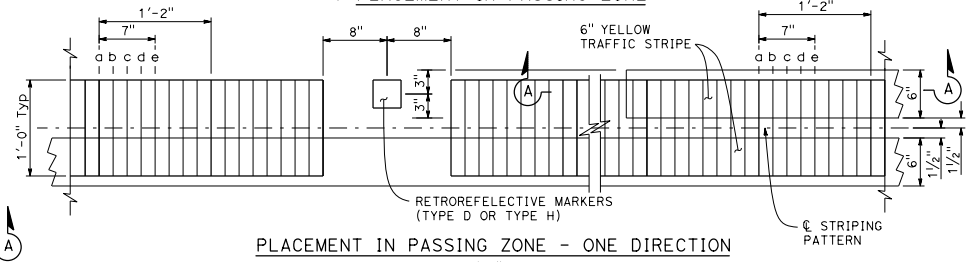
PLACEMENT IN PASSING ZONE - WITH RETROREFELECTIVE MARKERS



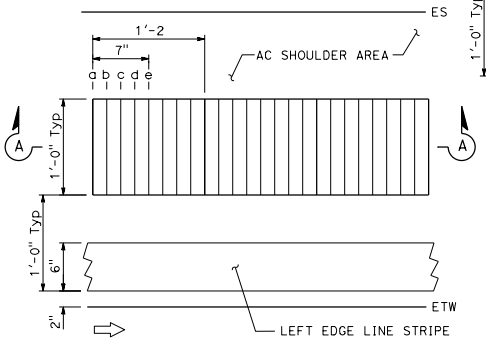
PLACEMENT IN PASSING ZONE



RIGHT OF DIRECTION OF TRAVEL



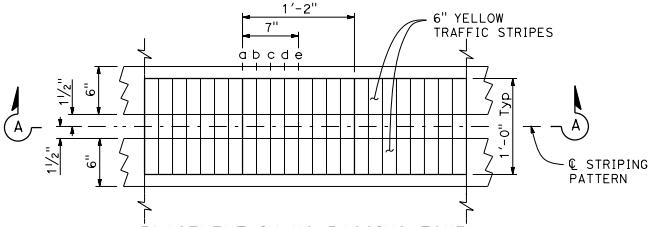
PLACEMENT IN PASSING ZONE - ONE DIRECTION



LEFT OF DIRECTION OF TRAVEL

PLAN

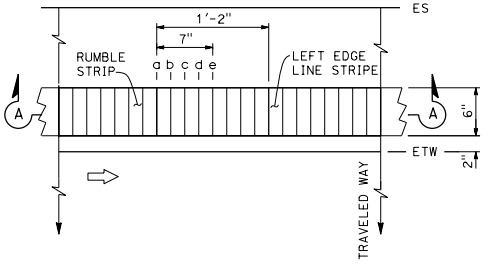
TYPICAL SHOULDER PLACEMENT



PLACEMENT IN NO PASSING ZONE

PLAN

TYPICAL CENTERLINE PLACEMENT



LEFT OF DIRECTION OF TRAVEL

PLAN

TYPICAL EDGE LINE PLACEMENT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SINUSOIDAL RUMBLE STRIP DETAILS GROUND-IN INDENTATIONS

NO SCALE

RSP A40G DATED OCTOBER 16, 2020 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A40G

2018 REVISED STANDARD PLAN RSP A40G

6-10-20

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-23
CIVIL
STATE OF CALIFORNIA

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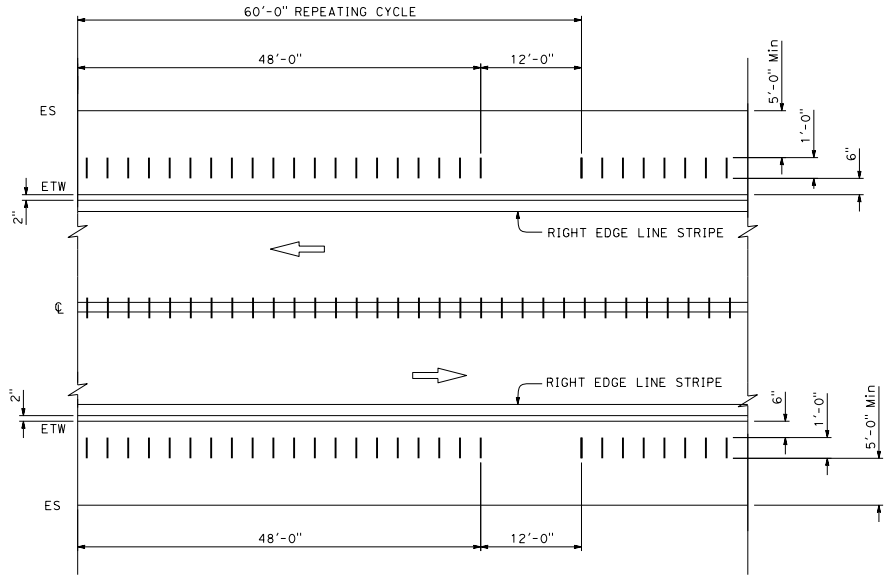
TO ACCOMPANY PLANS DATED _____

NOTE:

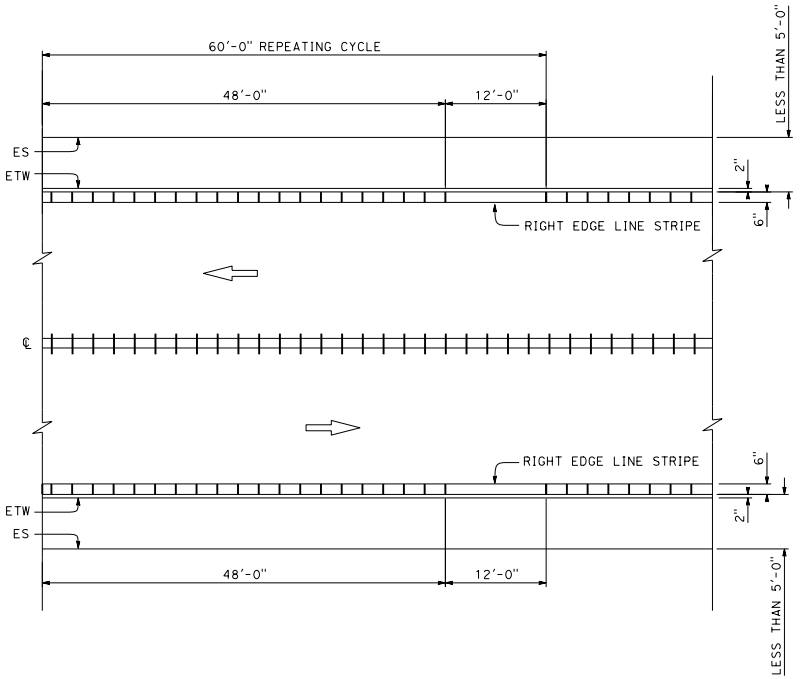
For shoulder, edge line and center line rumble strip details, see Standard Plans A40B, A40C and A40D.

LEGEND:

RUMBLE STRIPS (GROUND-IN)



SHOULDER RUMBLE STRIPS WITH GAPS FOR BICYCLE
WHERE BICYCLES ARE PERMITTED AND CLEAR
SHOULDER WIDTH IS 5 FEET OR GREATER



EDGE LINE RUMBLE STRIPS WITH GAPS FOR BICYCLE
WHERE BICYCLES ARE PERMITTED AND CLEAR
SHOULDER WIDTH IS LESS THAN 5 FEET

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RUMBLE STRIP PLACEMENT WITH GAPS FOR BICYCLES

NO SCALE

RSP A40H DATED APRIL 16, 2021 SUPERSEDES RSP A40H
DATED OCTOBER 16, 2020 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A40H

2018 REVISED STANDARD PLAN RSP A40H

8-7-20

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

Gary Wang
REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gary Wang
No. C58298
Exp. 6-30-22
CIVIL
STATE OF CALIFORNIA

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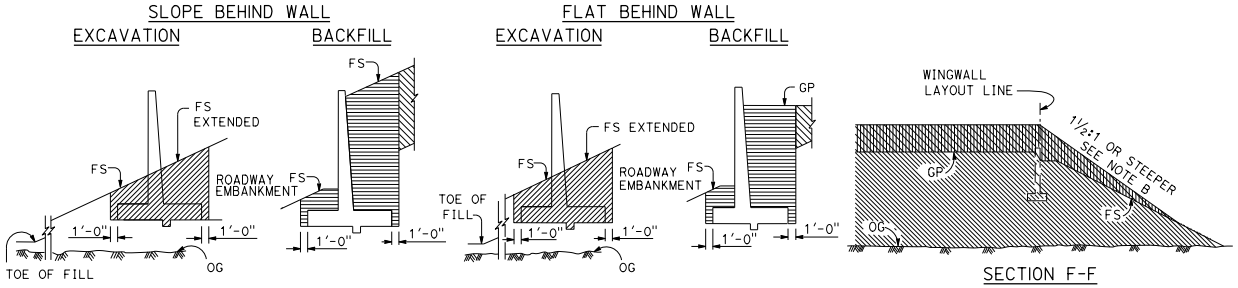
TO ACCOMPANY PLANS DATED _____

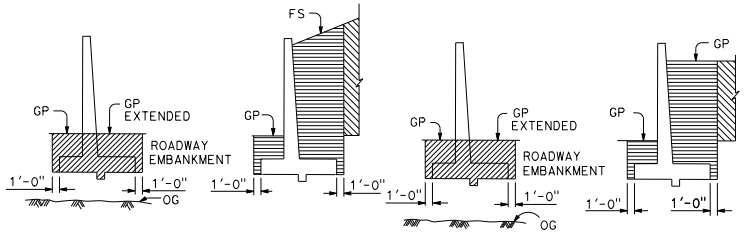
SURCHARGE NOTES:

A. Bridge embankment surcharges to be placed at locations and to the heights listed in the special provisions.

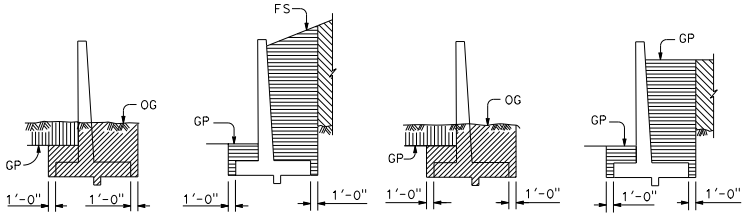
B. Surcharge slopes to be as steep as stability of material permits.



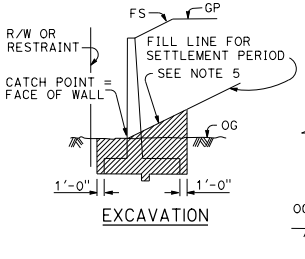
RETAINING WALL IN FILL, ON SLOPE

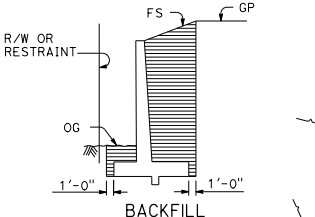


RETAINING WALL IN FILL

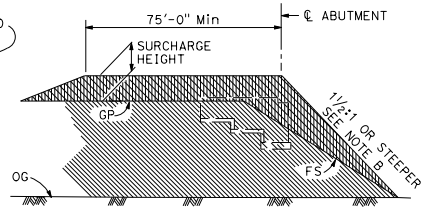


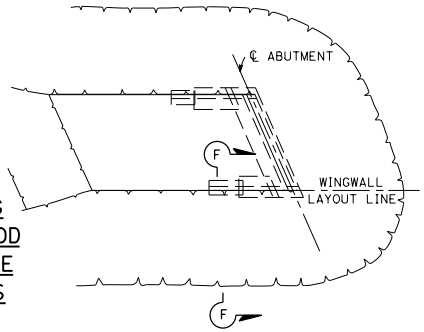
RETAINING WALL IN FILL AND CUT



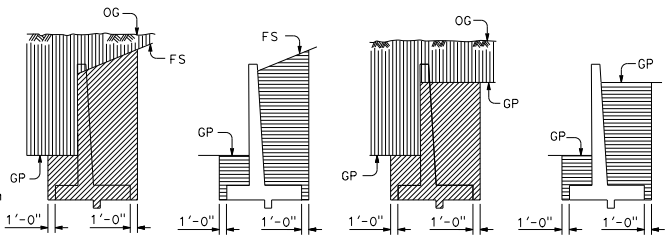


RETAINING WALL IN OG WITH SETTLEMENT PERIOD AND NEXT TO R/W LINE OR OTHER RESTRAINTS





BRIDGE EMBANKMENT SURCHARGE



RETAINING WALL IN CUT

LEGEND

- STRUCTURE EXCAVATION
- STRUCTURE BACKFILL
- ROADWAY EXCAVATION
- ROADWAY EMBANKMENT
- BRIDGE EMBANKMENT SURCHARGE

NOTES:

1. Roadway embankment is not delineated on excavation drawings for clarity.
2. Embankment, if any, must be in place before structure excavation is made.
3. If no roadway or ditch excavation or embankment is involved at the wall, structure excavation will be measured from the original ground.
4. When an embankment settlement period is required, the upper limits of structure excavation are raised to conform to the elevation of the embankment after the settlement period or, when an embankment surcharge is used to the finished surface and grading plane elevations.
5. Embankment slopes to be as steep as material permits. Slope assumed to be 1:1 for purposes of quantity calculations.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL BRIDGE SURCHARGE AND WALL

NO SCALE

RSP A62B DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN A62B
DATED MAY 31, 2018 - PAGE 29 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A62B

2018 REVISED STANDARD PLAN RSP A62B

4-28-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-22
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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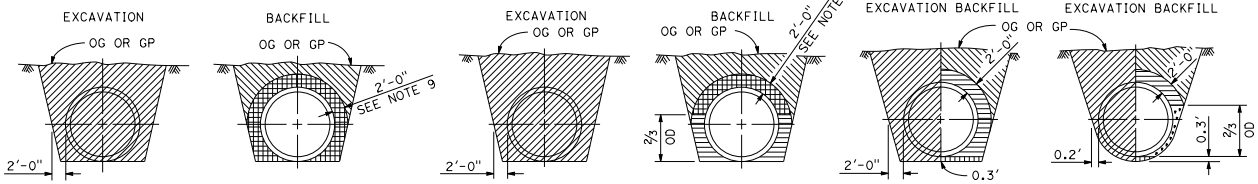
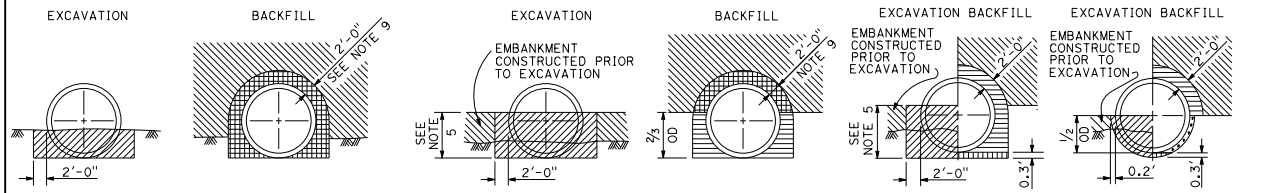
TO ACCOMPANY PLANS DATED _____



IN TRENCH | IN TRENCH | SAND BEDDING | SOIL CEMENT BEDDING

IN TRENCH



IN EMBANKMENT | IN EMBANKMENT | SAND BEDDING | SOIL CEMENT BEDDING

A B

IN EMBANKMENT

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 1

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

See Notes 6 and 9

METHOD 1

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 2

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

See Notes 8 and 9

METHOD 2

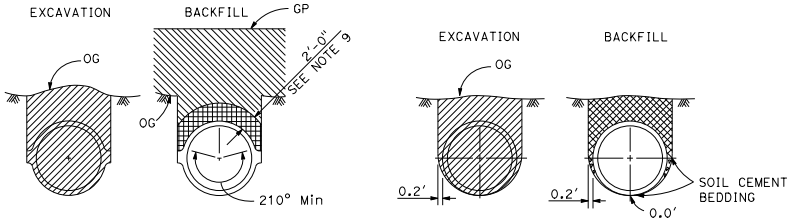
REINFORCED CONCRETE PIPE

See Notes 1, 2, 7 and 10

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 3

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

METHOD 3



IN TRENCH ONLY
CAST-IN-PLACE

IN TRENCH ONLY
PRECAST
See Notes 7 and 11

NON-REINFORCED CONCRETE PIPE

LEGEND

- STRUCTURE EXCAVATION (CULVERT)
- STRUCTURE BACKFILL (CULVERT) 95% RELATIVE COMPACTION
- STRUCTURE BACKFILL (CULVERT) 90% RELATIVE COMPACTION
- LOOSE BACKFILL
- SAND BEDDING
- SOIL CEMENT BEDDING
- ROADWAY EMBANKMENT

OD = OUTSIDE DIAMETER FOR CIRCULAR PIPES AND MAXIMUM VERTICAL DIMENSION FOR OTHER SHAPES

ID = INSIDE DIAMETER FOR CIRCULAR PIPES AND MINIMUM VERTICAL DIMENSION FOR OTHER SHAPES

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS

NO SCALE

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

REVISED STANDARD PLAN RSP A62D

2018 REVISED STANDARD PLAN RSP A62D

6-1-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER — Carl W. Duan — No. C59976 — Exp. 6-30-22 — CIVIL — STATE OF CALIFORNIA

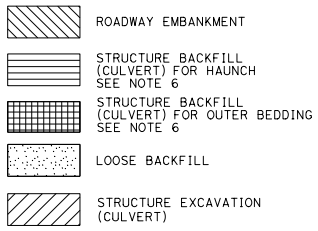
TO ACCOMPANY PLANS DATED _____

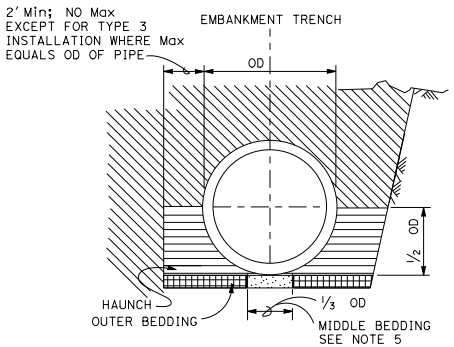
DESIGN NOTES:

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

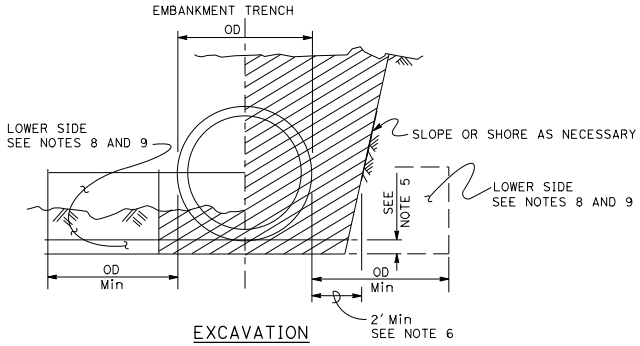
Soil: w Fe = 162 pcf Installation Type 1
w Fe = 168 pcf Installation Types 2 & 3
w = Unit weight of soil (pcf)
Fe = Soil-structure interaction factor

LEGEND:





BACKFILL



EXCAVATION

INSTALLATION TYPE 1:

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

INSTALLATION TYPE 2:

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

INSTALLATION TYPE 3:

The haunch and outer bedding shall be compacted to a minimum 85 percent relative compaction. 90 percent relative compaction will be required where the fill over the pipe is less than 4′-0" or ½ OD. In addition, the minimum sand equivalent in these areas shall be 25.

INSTALLATION TYPE 1

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

INSTALLATION TYPE 2

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

INSTALLATION TYPE 3

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

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS INDIRECT DESIGN METHOD

NO SCALE

RSP A62DA DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN A62DA DATED MAY 31, 2018 - PAGE 32 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A62DA

2018 REVISED STANDARD PLAN RSP A62DA

6-1-21

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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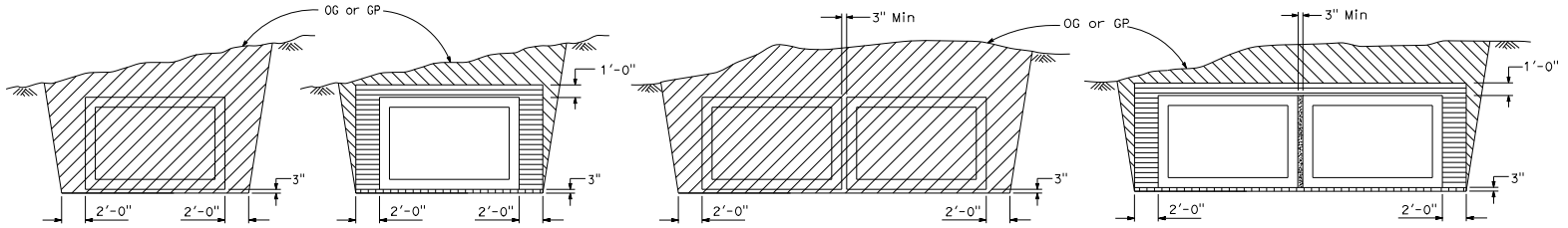
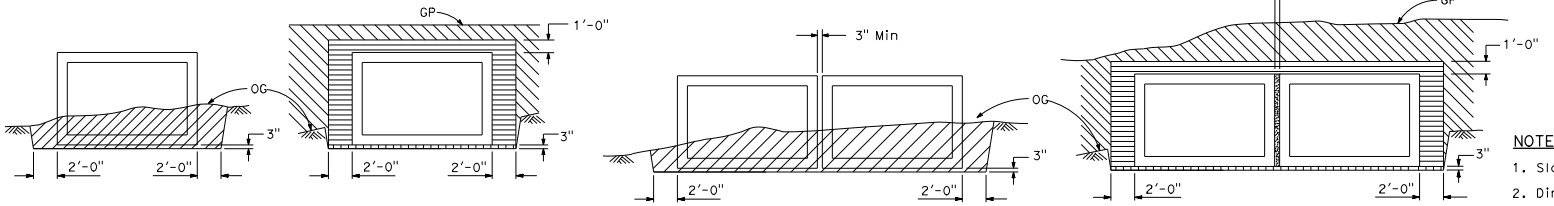
TO ACCOMPANY PLANS DATED _____



EXCAVATION BACKFILL EXCAVATION BACKFILL

IN TRENCH IN TRENCH



EXCAVATION BACKFILL EXCAVATION BACKFILL

IN EMBANKMENT IN EMBANKMENT

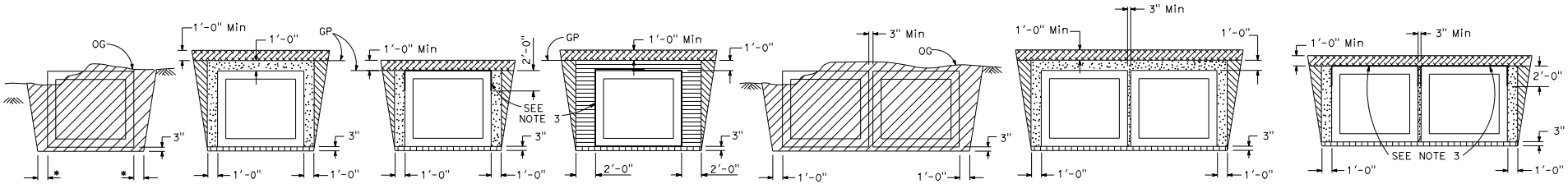
FILL HEIGHT GREATER THAN 2'-0"

LEGEND:

- STRUCTURE EXCAVATION (CULVERT)
- STRUCTURE BACKFILL (CULVERT) 95% RELATIVE COMPACTION
- ROADWAY EMBANKMENT
- SLURRY CEMENT BACKFILL
- SAND BEDDING (CULVERT)
- ROADWAY PAVEMENT STRUCTURE

NOTES:

1. Slope or shore excavation sides as necessary.
2. Dimensions shown are minimum.
3. Method 2 and 3 for single or multiple boxes requires an approved external sealing band. See Revised Standard Plan RSP D83A.
4. Construction of Roadway Pavement Structure in Method 2 or Method 3 shall not disturb the external sealing band installation.



EXCAVATION METHOD 1 METHOD 2 METHOD 3 EXCAVATION METHOD 1 METHOD 2

BACKFILL BACKFILL

FILL HEIGHT 2'-0" OR LESS

* 1'-0" Where Method 1 or 2 Backfill is used.
2'-0" Where Method 3 Backfill is used.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL PRECAST REINFORCED CONCRETE BOX CULVERT

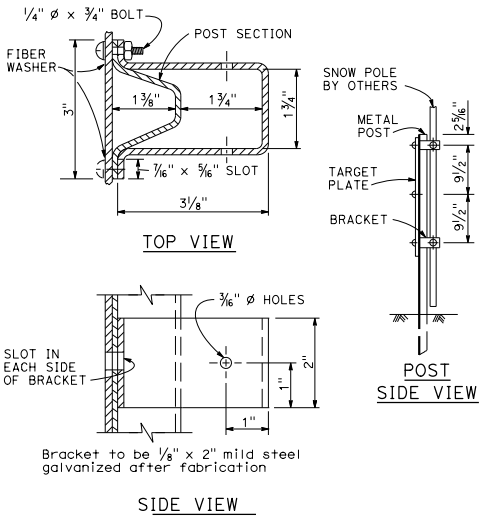
NO SCALE

RSP A62G DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN A62G
DATED MAY 31, 2018 - PAGE 35 OF THE STANDARD PLANS BOOK DATED 2018.

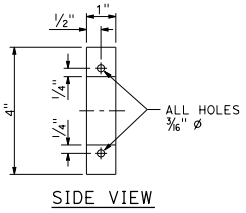
REVISED STANDARD PLAN RSP A62G

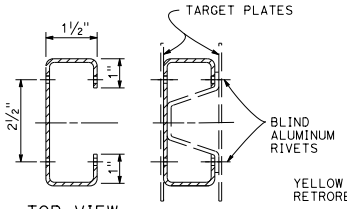
2018 REVISED STANDARD PLAN RSP A62G

5-10-18

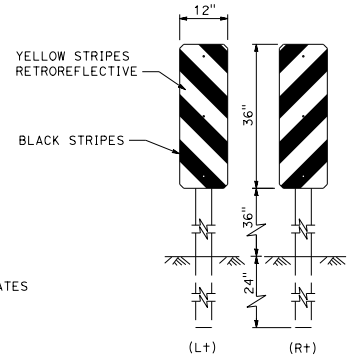


SNOW POLE BRACKET

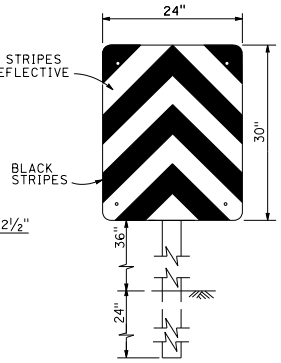




TWO PLATE POST MOUNT



TYPE P (CA)



TYPE R (CA)

NOTES:

A. See Std Plan A73A for additional object markers.

B. Type P(CA) and R(CA) markers shall have orange and white retroreflective stripes in work zones.

C. Diagonal stripes on Type P(CA) markers shall be sloped down in the direction of travel.

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

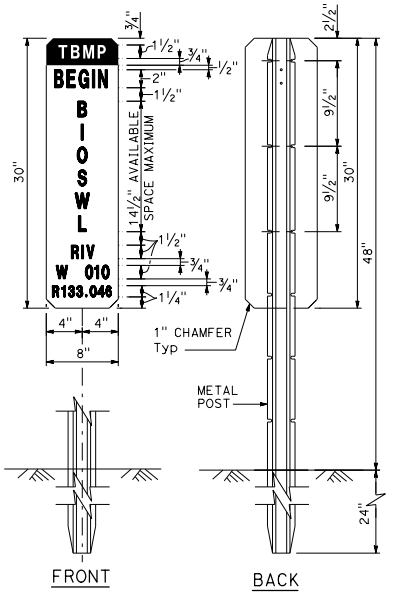
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER
Arshad Iqbal
No. C62831
Exp. 6-30-20
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

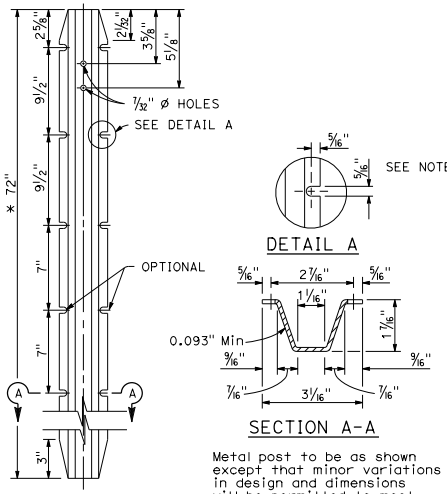


TBMP MARKER

TREATMENT BEST MANAGEMENT PRACTICE (TBMP) MARKER

NOTES:

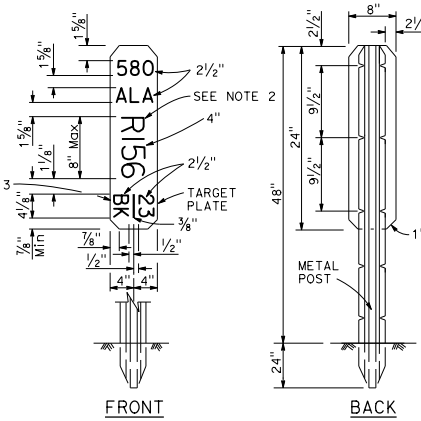
1. The marker header shall be green (non-reflective) background with white (non-reflective) Series C letters.
2. The marker body shall be white (non-reflective) target plate with black Series C numbers and letters.
3. "BEGIN" or "END" shall apply as directed by the Engineer.
4. TBMP abbreviations shall be Series D letters up to a maximum of 2" tall, to fit within the available maximum space of 14.5".
5. See Project Plans for TBMP abbreviations.



Metal post to be as shown except that minor variations in design and dimensions will be permitted to meet manufacturer's standards.

* 8'-0" for Type P object marker

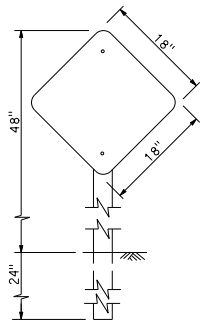
METAL POST DETAIL



MILEPOST MARKER

MILEPOST MARKER NOTES:

1. The marker shall be white (non-reflective) target plate with black Series D numerals and letters.
2. A post mile prefix, such as "R", shall apply only when directed by the Engineer.
3. "BK" (Back), "AH" (Ahead), or a blank space shall apply as directed by the Engineer.
4. All information shall be in U.S. Customary units (miles).



TYPE N-1 (CA), N-2 (CA), N-3 (CA)

N-1(CA). Yellow retroreflective.
N-2(CA). Red retroreflective.
N-3(CA). Orange retroreflective.

OBJECT MARKERS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MARKERS

NO SCALE

RSP A73B DATED OCTOBER 18, 2019 SUPERSEDES RSP A73B DATED OCTOBER 19, 2018 AND STANDARD PLAN A73B DATED MAY 31, 2018 - PAGE 39 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A73B

2018 REVISED STANDARD PLAN RSP A73B

5-7-19

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 CIVIL — STATE OF CALIFORNIA

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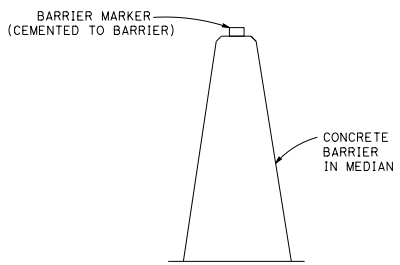
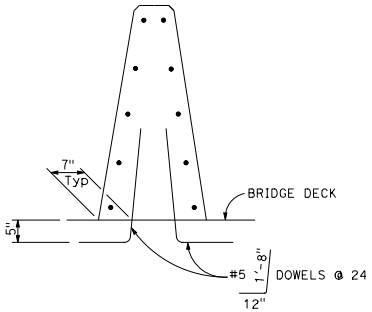
TO ACCOMPANY PLANS DATED _____



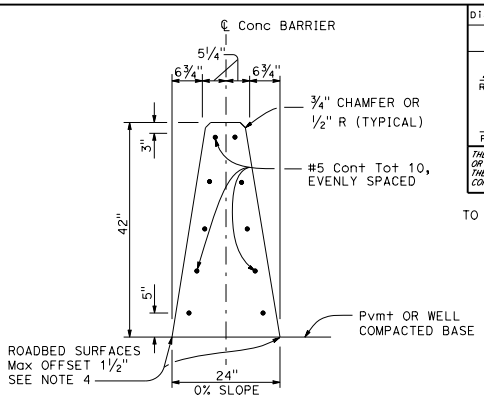
CONCRETE BARRIER TYPE 60M DELINEATION

See Note 5



CONCRETE BARRIER TYPE 60MA

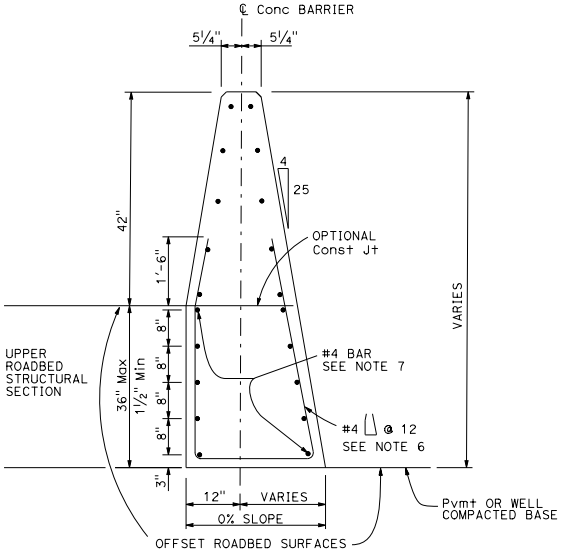
Details similar to Type 60M except as noted.



CONCRETE BARRIER TYPE 60M

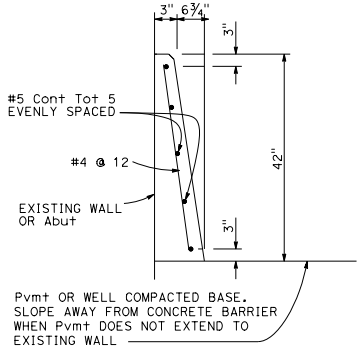
NOTES:

1. See Standard Plan 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 Standard Plan 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.
8. For weep hole alignment and drainage details not shown, see Standard Plans B0-3 and B3-5.



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

See Note 8

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60M

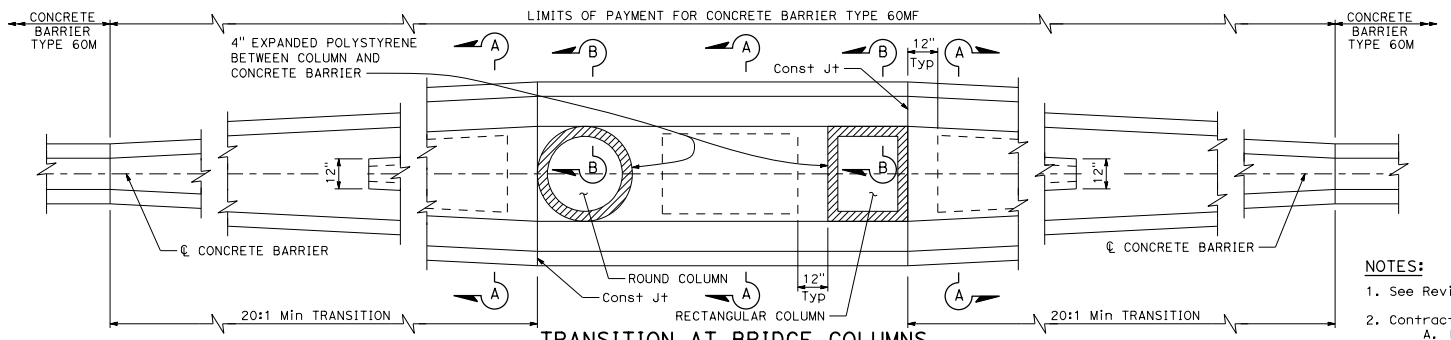
NO SCALE

RSP A76A DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN A76A
DATED MAY 31, 2018 - PAGE 42 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A76A

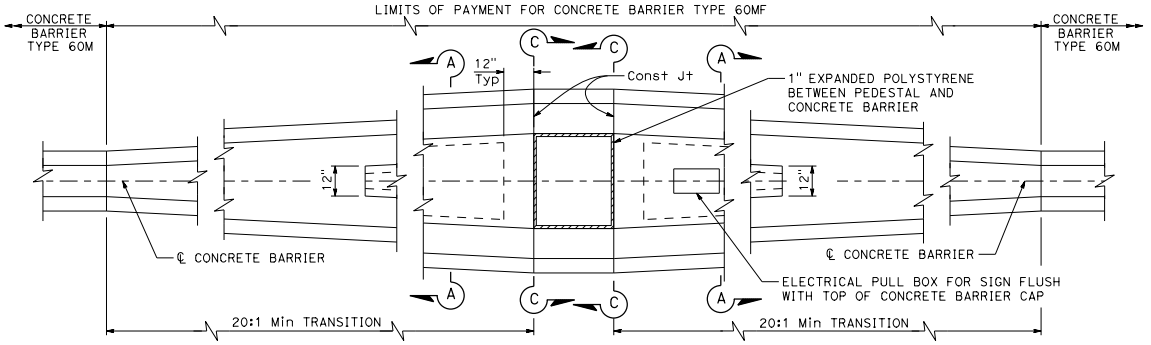
10-27-20

2018 REVISED STANDARD PLAN RSP A76A



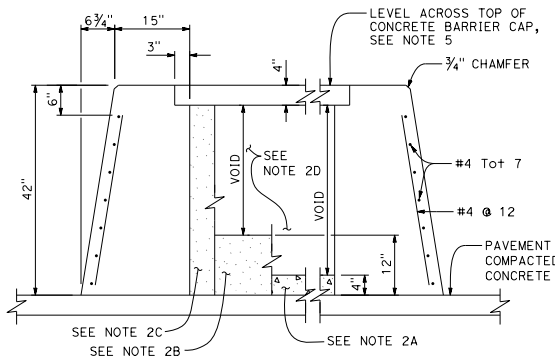
TRANSITION AT BRIDGE COLUMNS

Concrete Barrier Type 60MF,
see Note 7.

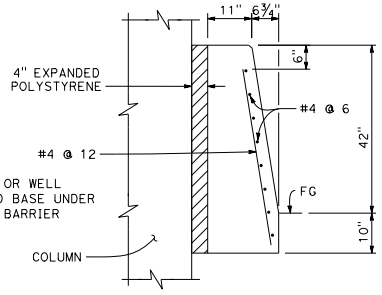


TRANSITION AT SIGN PEDESTAL

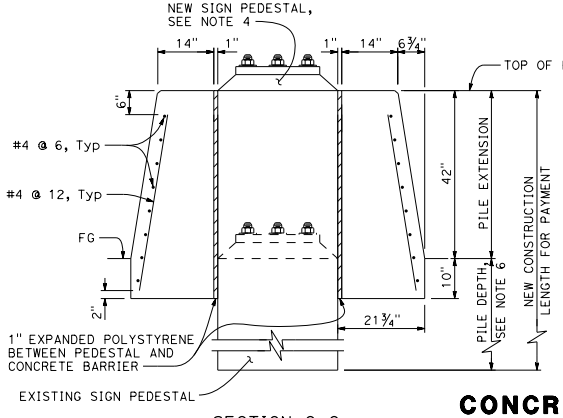
Concrete Barrier Type 60MF,
see Note 7.



SECTION A-A



SECTION B-B



SECTION C-C

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 Standard Plan A76F for use of Concrete Barrier Type 60MGF.

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Mark Ballentine
No. C64101
Exp. 09-30-22
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

CONCRETE BARRIER TYPE 60MF

NO SCALE

RSP A76C DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN A76C
DATED MAY 31, 2018 - PAGE 47 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A76C

2018 REVISED STANDARD PLAN RSP A76C

9-21-21

NOTES:

1. See Standard Plan A76G for Concrete Barrier Type 60MS and Type 60MSA.
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 Standard Plan A78I for transition to Thrie Beam Barrier.

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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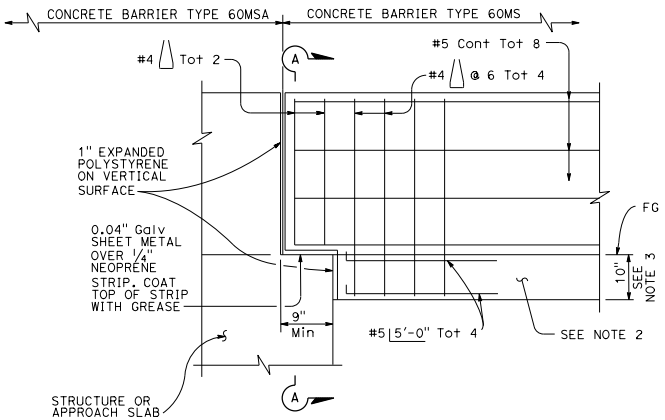
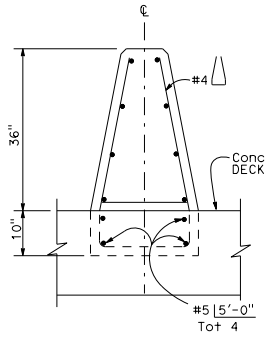
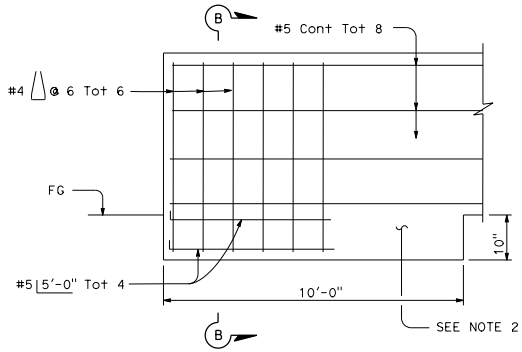
TO ACCOMPANY PLANS DATED _____



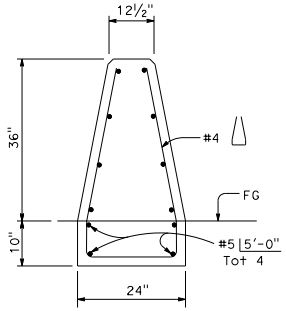
CONCRETE BARRIER TYPE 60MS
CONNECTION TO STRUCTURE



SECTION A-A



CONCRETE BARRIER TYPE 60MS
END ANCHORAGE



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MS

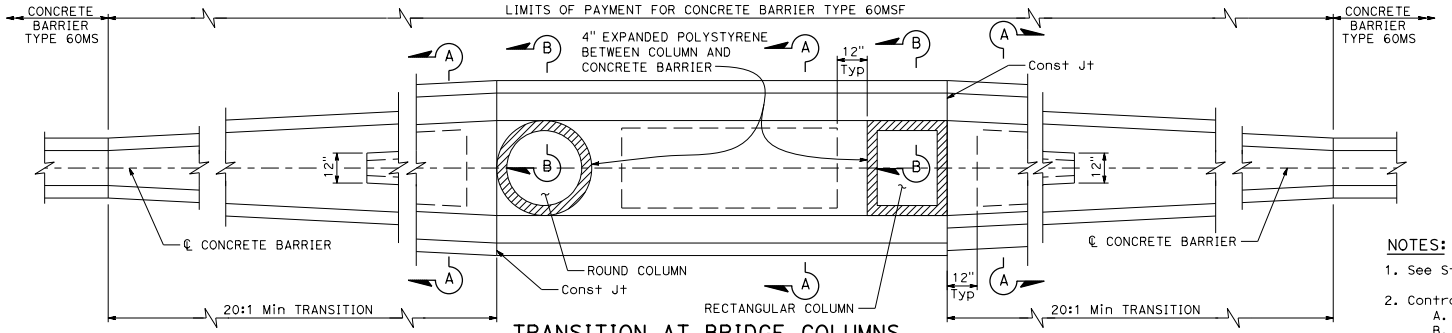
NO SCALE

RSP A76H DATED OCTOBER 16, 2020 SUPERSEDES STANDARD PLAN A76H
DATED MAY 31, 2018 - PAGE 52 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A76H

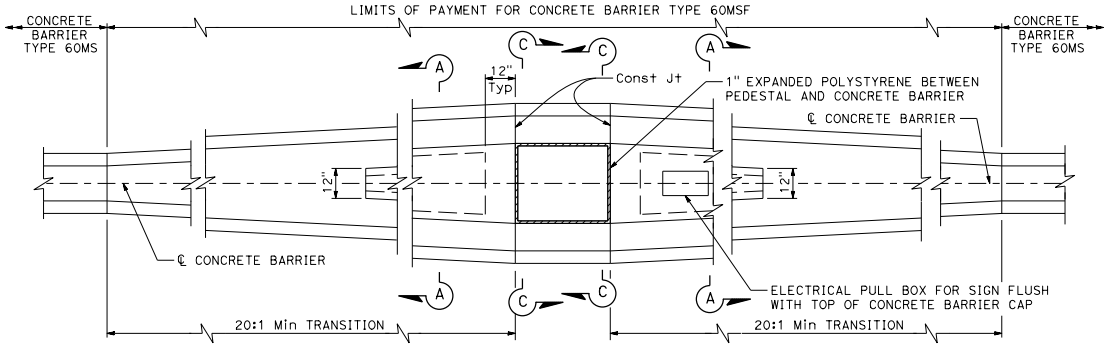
2018 REVISED STANDARD PLAN RSP A76H

2-10-20



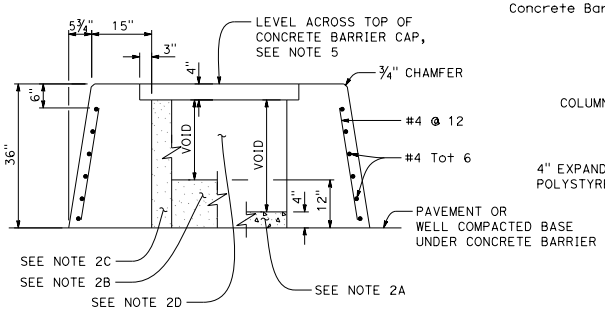
TRANSITION AT BRIDGE COLUMNS

Concrete Barrier Type 60MSF, see Note 7.

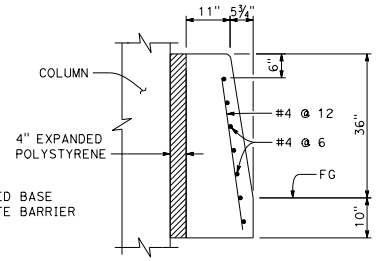


TRANSITION AT SIGN PEDESTAL

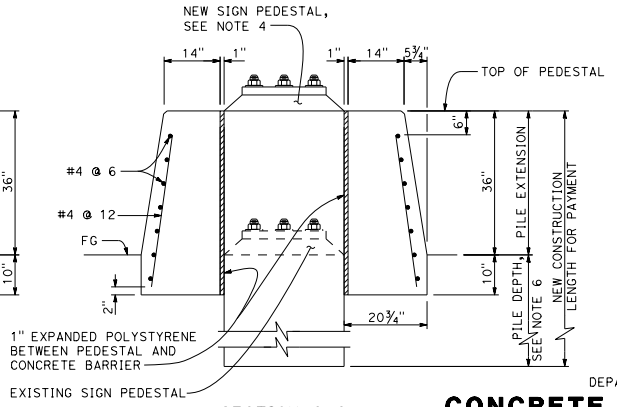
Concrete Barrier Type 60MSF, see Note 7.



SECTION A-A



SECTION B-B



SECTION C-C

NOTES:

1. See Standard Plan 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 Standard Plan A76F for use of Concrete Barrier Type 60MGF.

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MSF

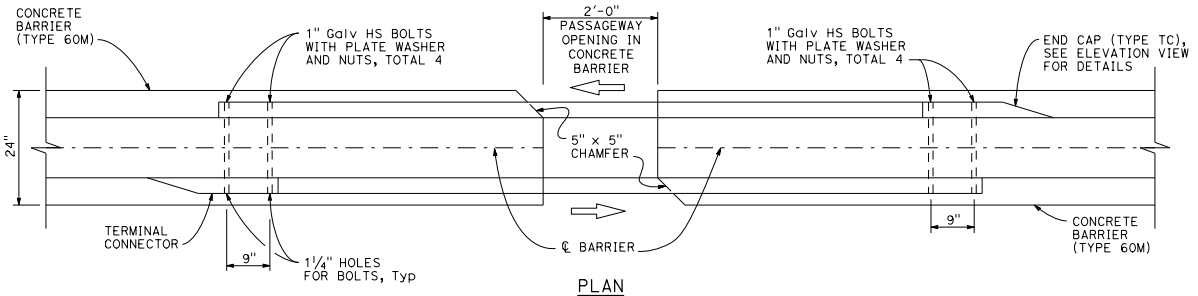
NO SCALE

RSP A76I DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN A76I
DATED MAY 31, 2018 - PAGE 53 OF THE STANDARD PLANS BOOK DATED 2018.

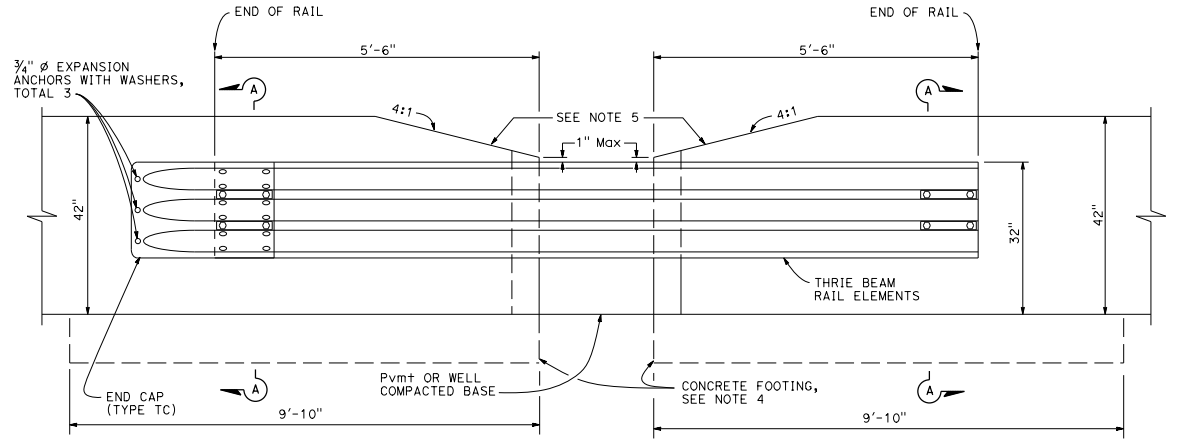
REVISED STANDARD PLAN RSP A76I

9-21-21

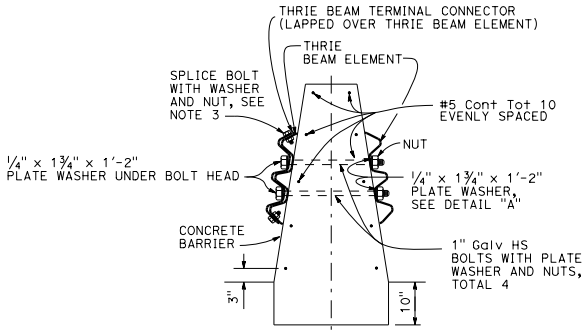
2018 REVISED STANDARD PLAN RSP A76I



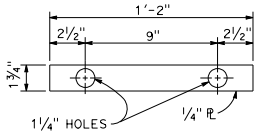
PLAN



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

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
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 Standard Plan A76A.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER WILDLIFE PASSAGEWAY (TYPE MM)

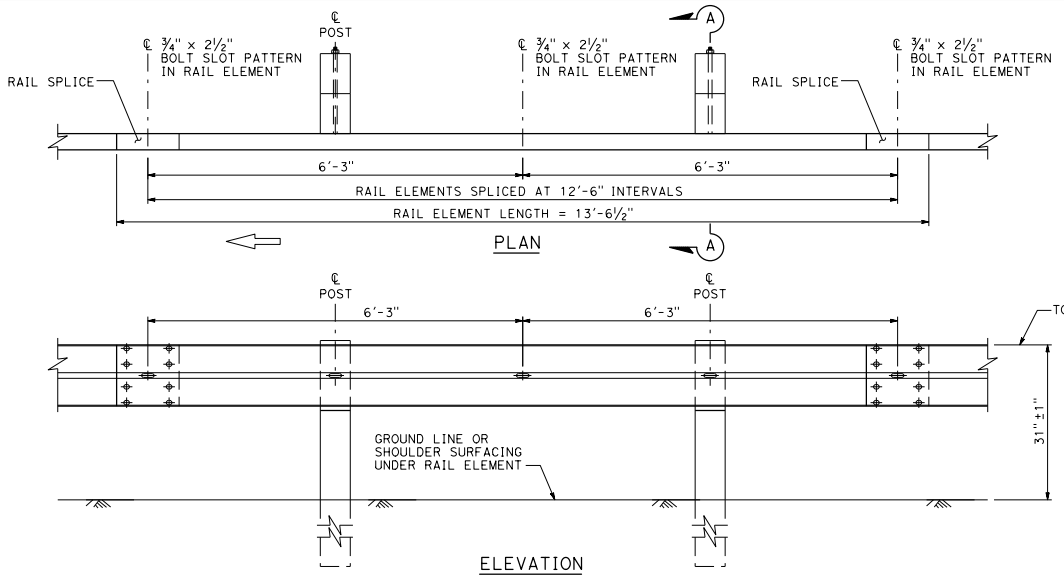
NO SCALE

RSP A76K DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN A76K
DATED MAY 31, 2018 - PAGE 55 OF THE STANDARD PLANS BOOK DATED 2018.

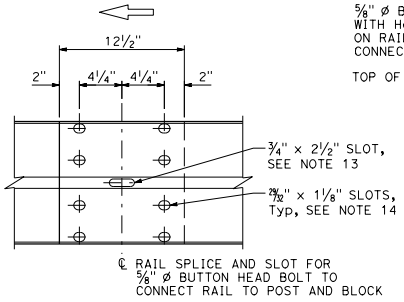
REVISED STANDARD PLAN RSP A76K

2018 REVISED STANDARD PLAN RSP A76K

5-16-19



MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS

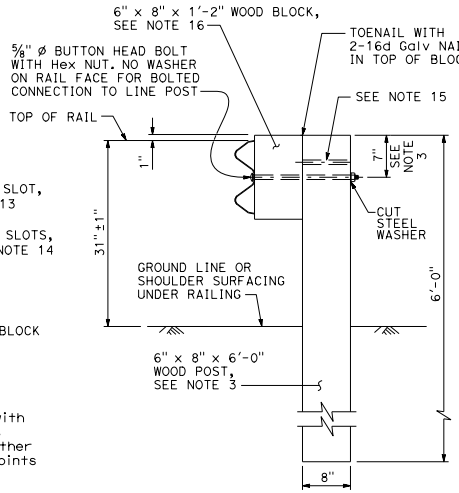


RAIL ELEMENT SPLICE DETAIL

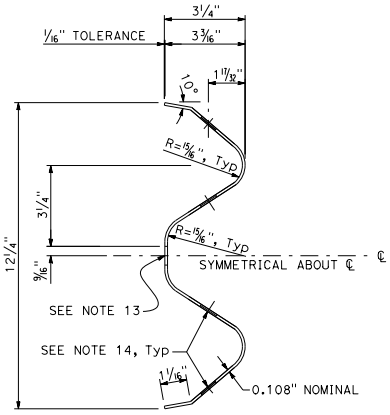
a) Connect the overlapped end of the rail elements with ⅝" ø x 1¼" button head oval shoulder splice bolts inserted into the 29/32" x 1⅛" slots and bolted together with ⅝" ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice 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



SECTION THRU RAIL ELEMENT

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

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 Revised Standard Plan RSP 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 Revised Standard Plan RSP 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 Revised Standard Plans RSP A77S1 and RSP A77T2.
9. For details of MGS transition to bridge railing, see Revised Standard Plan RSP A77U4.
10. For additional details of MGS connection to bridge railing, see Standard Plans A77U1, A77U2 and A77V1.
11. For MGS connection details to abutments and walls, see Revised Standard Plan RSP A77U3.
12. For typical MGS delineation and dike positioning details, see Revised Standard Plan RSP 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" Type A dike.
17. Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

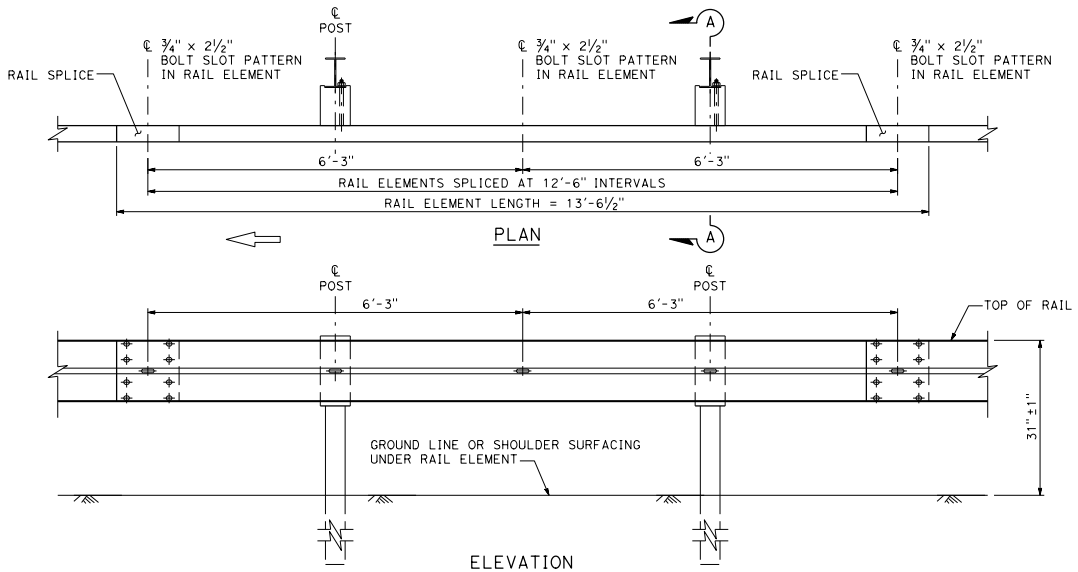
NO SCALE

RSP A77L1 DATED APRIL 15, 2022 SUPERSEDES RSP A77L1 DATED OCTOBER 16, 2020, RSP A77L1 DATED APRIL 19, 2019 AND STANDARD PLAN A77L1 DATED MAY 31, 2018 - PAGE 57 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77L1

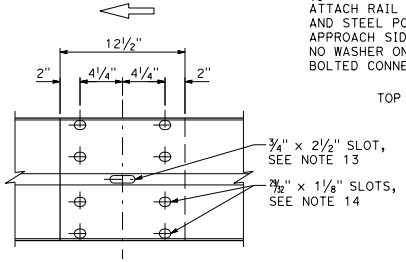
2018 REVISED STANDARD PLAN RSP A77L1

12-23-21



ELEVATION

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



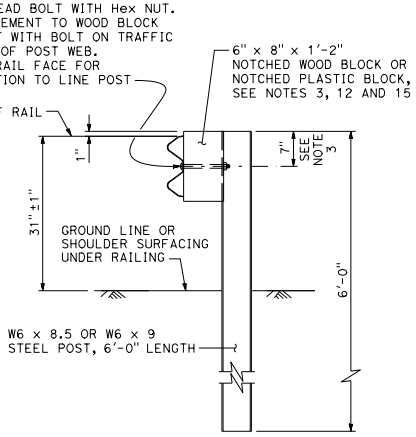
ELEVATION

RAIL ELEMENT SPLICE DETAIL

a) Connect the overlapped end of the rail elements with ⅝" Ø x 1¼" 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).

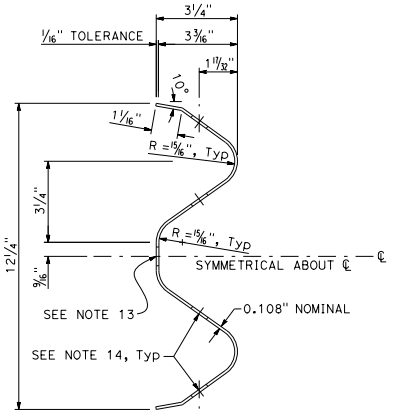
c) Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



SECTION A-A

TYPICAL STEEL LINE POST INSTALLATION

See Note 4



SECTION THRU RAIL ELEMENT

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 Revised Standard Plan RSP 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 Revised Standard Plan RSP 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 Revised Standard Plans RSP A77S1 and RSP A77T2.
9. For details of MGS transition to bridge railing, see Revised Standard Plan RSP 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 Revised Standard Plan RSP 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" Type A dike.
16. Install posts in soil.

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

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 APRIL 15, 2022 SUPERSEDES RSP A77L2 DATED OCTOBER 16, 2020, RSP A77L2 DATED OCTOBER 18, 2019, RSP A77L2 DATED APRIL 19, 2019 AND STANDARD PLAN A77L2 DATED MAY 31, 2018 - PAGE 58 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77L2

2018 REVISED STANDARD PLAN RSP A77L2

12-23-21

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 CIVIL — STATE OF CALIFORNIA

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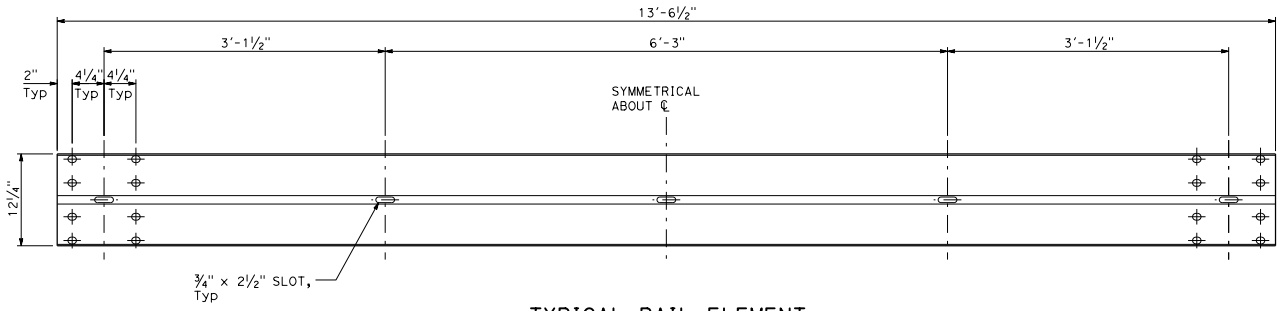
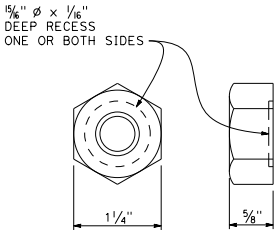
TO ACCOMPANY PLANS DATED _____



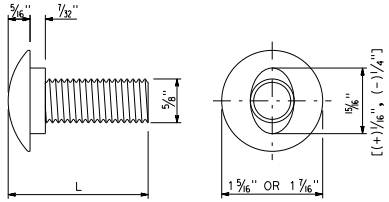
TYPICAL RAIL ELEMENT

NOTE:

1. Slotted holes for splice bolts to overlap ends of rail element.



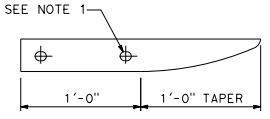
⅝" ø RECESS NUT



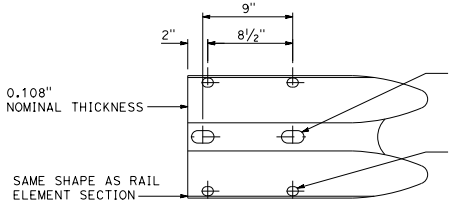
⅝" ø BUTTON HEAD BOLT

BUTTON HEAD BOLT	
L	THREAD LENGTH
1¼"	FULL THREAD LENGTH
2"	FULL THREAD LENGTH
10"	4" Min THREAD LENGTH
18"	4" Min THREAD LENGTH
20"	4" Min THREAD LENGTH
22"	4" Min THREAD LENGTH
26"	4" Min THREAD LENGTH
36"	4" Min THREAD LENGTH
** 2¾"	2" Min THREAD LENGTH
** 19"	4" Min THREAD LENGTH

** For nested rail applications

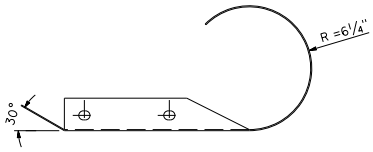


PLAN

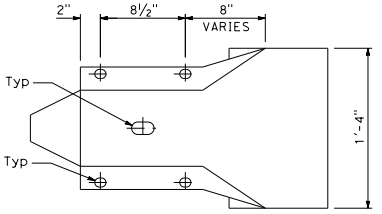


ELEVATION

END CAP (TYPE A)



PLAN



ELEVATION

END CAP (TYPE B)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STANDARD HARDWARE

NO SCALE

RSP A77M1 DATED APRIL 15, 2022 SUPERSEDES RSP A77M1 DATED OCTOBER 16, 2020 AND STANDARD PLAN A77M1 DATED MAY 31, 2018 - PAGE 60 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77M1

12-16-21

2018 REVISED STANDARD PLAN RSP A77M1

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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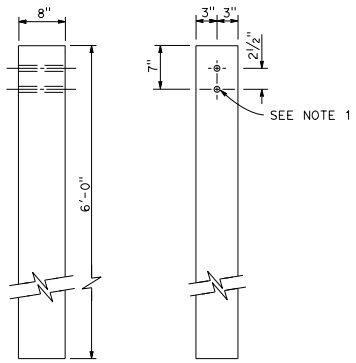
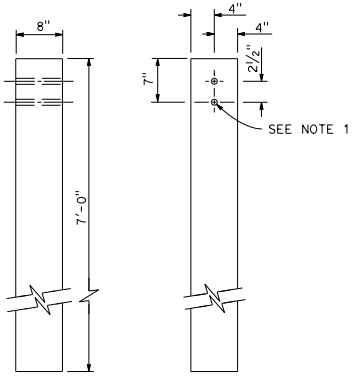
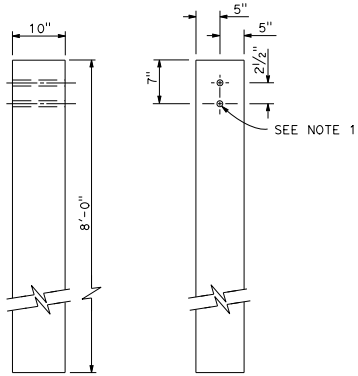
TO ACCOMPANY PLANS DATED _____



6" x 8" WOOD POST
See Note 3



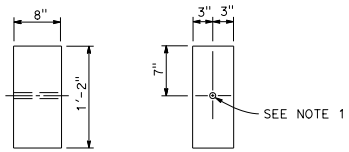
8" x 8" WOOD POST
See Note 4



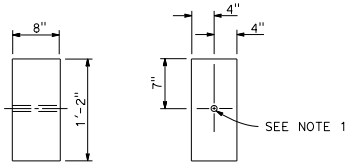
10" x 10" WOOD POST
See Note 5

NOTES:

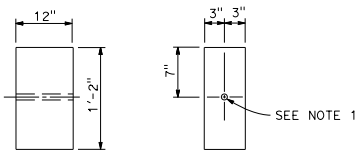
1. All holes in wood posts and blocks shall be ¾" Dia ± 1/16".
2. Dimensions shown for wood post are nominal.
3. This post and block combination used for standard line post sections of MGS.
4. This post and 8" x 8" block combination used for line post sections of MGS on narrow roadways.
5. This post and 8" x 8" block combination is typically used where strengthened line post sections of MGS are warranted to shield fixed objects.
6. See Standard Plan 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.



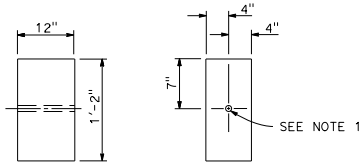
6" x 8" WOOD BLOCK
See Note 6 and Note 3



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



6" x 12" WOOD BLOCK
See Note 8



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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN A77N1 DATED MAY 31, 2018 - PAGE 61 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77N1

2018 REVISED STANDARD PLAN RSP A77N1

7-2-19

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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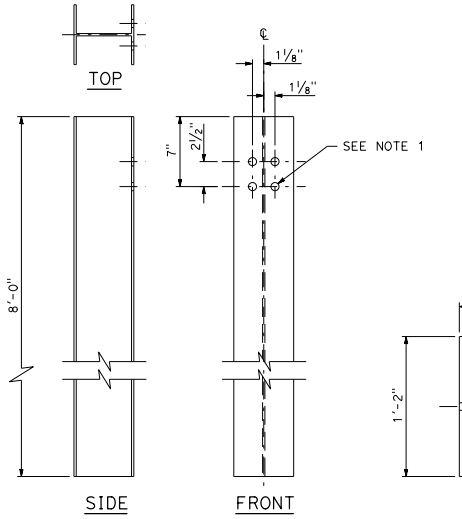
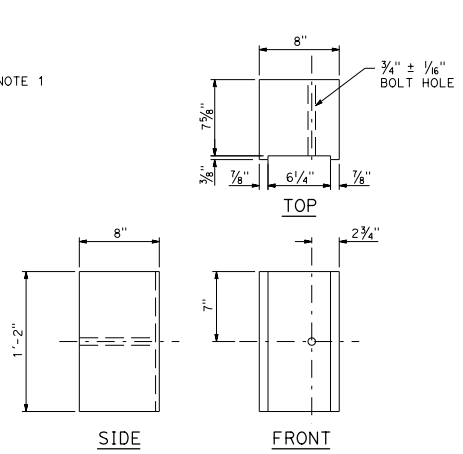
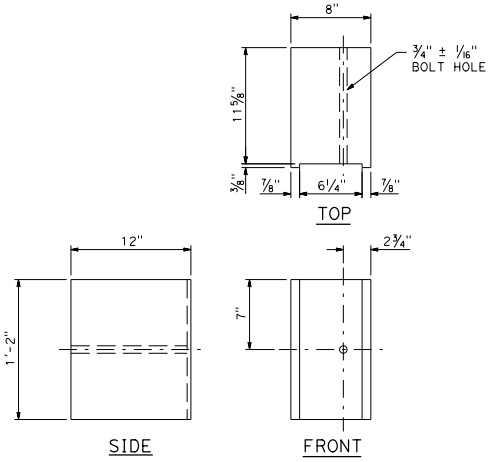
TO ACCOMPANY PLANS DATED _____



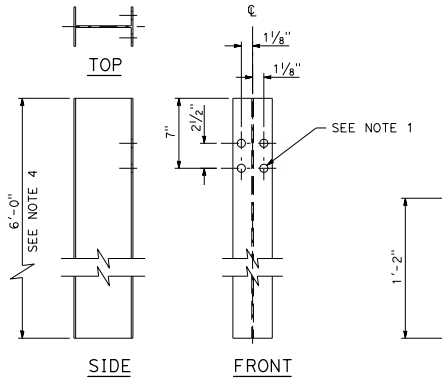
W6 x 15
STEEL POST



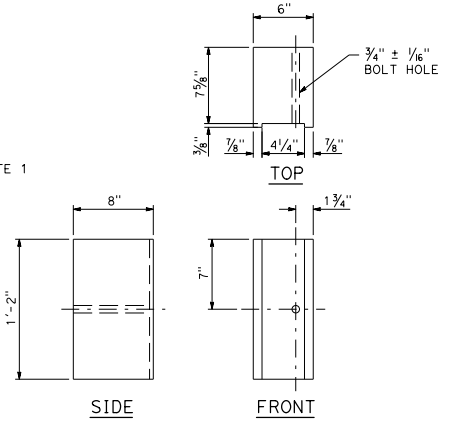
8" x 8"
NOTCHED WOOD OR PLASTIC BLOCK



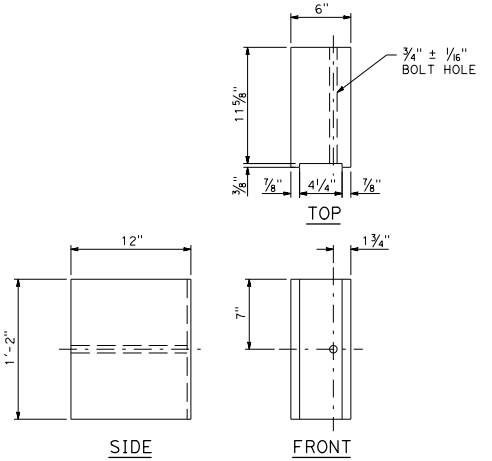
8" x 12"
NOTCHED WOOD OR PLASTIC BLOCK
See Notes 2, 3 and 7



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



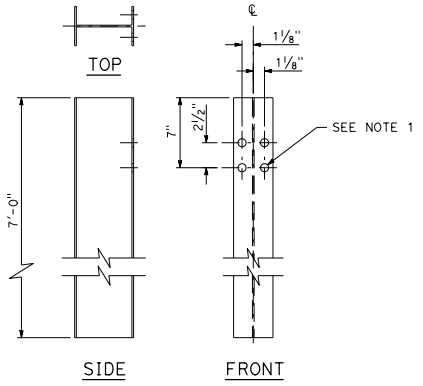
6" x 8"
NOTCHED WOOD OR PLASTIC BLOCK



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

NOTES:

1. All holes in steel post shall be 13/16" ø 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 Revised Standard Plan RSP A77N3.
5. The standard block on W8 x 6.5 or W6 x 9 post separates the metal beam guardrail element 8" from the post. The 12" block is an option to the 8" block.
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. Post longer than 6' must be labeled on post web with 2" letters using black acrylic paint.
7. 6" x 12" notched wood block and 8" x 12" notched wood block must be used with 6" Type A dike.



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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STEEL POST AND NOTCHED WOOD BLOCK DETAILS

NO SCALE

RSP A77N2 DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN A77N2
DATED MAY 31, 2018 - PAGE 62 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77N2

2018 REVISED STANDARD PLAN RSP A77N2

12-22-21

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

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

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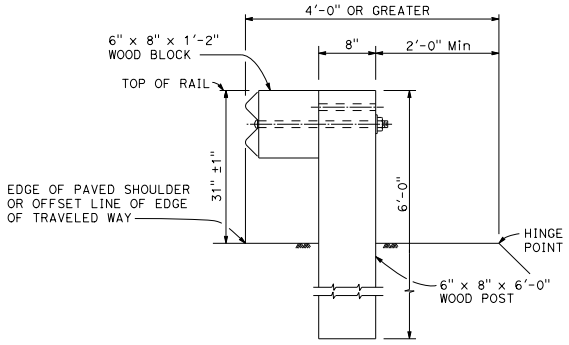
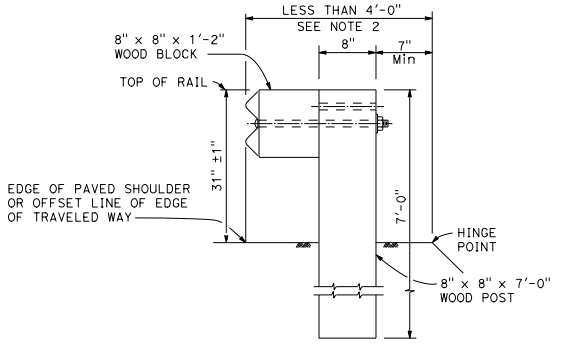
TO ACCOMPANY PLANS DATED _____



DETAIL A

TYPICAL ROADWAY INSTALLATION

See Note 1

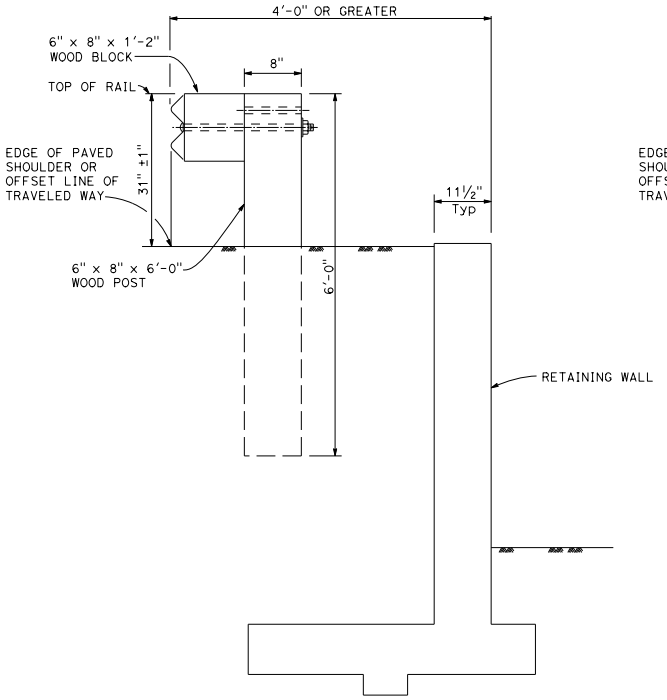


DETAIL B

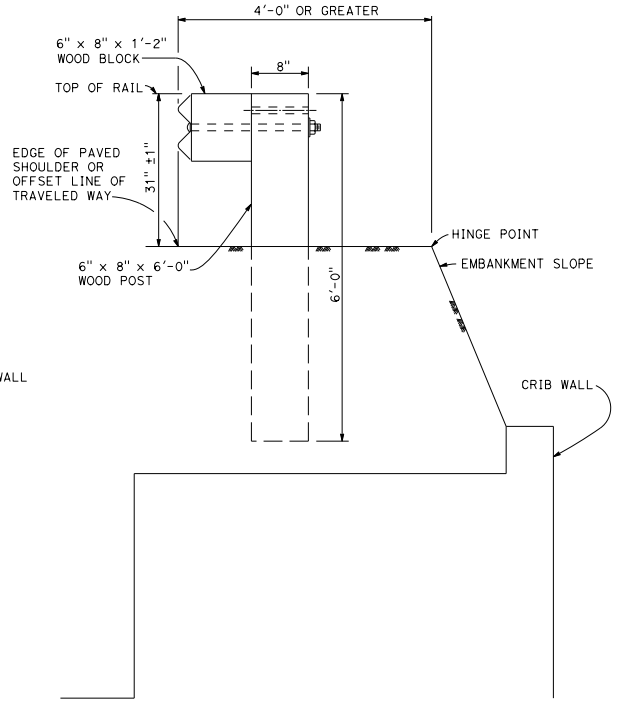
NARROW ROADWAY INSTALLATION

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 Standard Plans A77L1 and A77L2.
2. Where the distance between the back of the post and the hinge point is less than 7", 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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN A77N3 DATED MAY 31, 2018 - PAGE 63 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77N3

2018 REVISED STANDARD PLAN RSP A77N3

7-11-18

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

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

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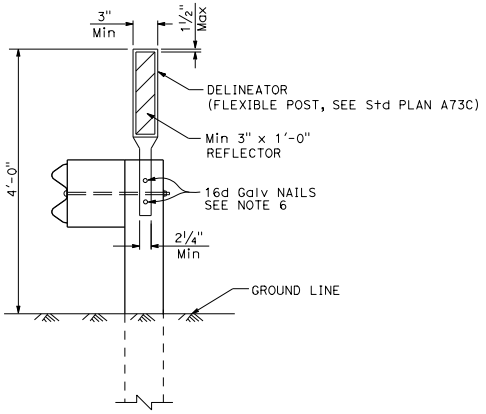
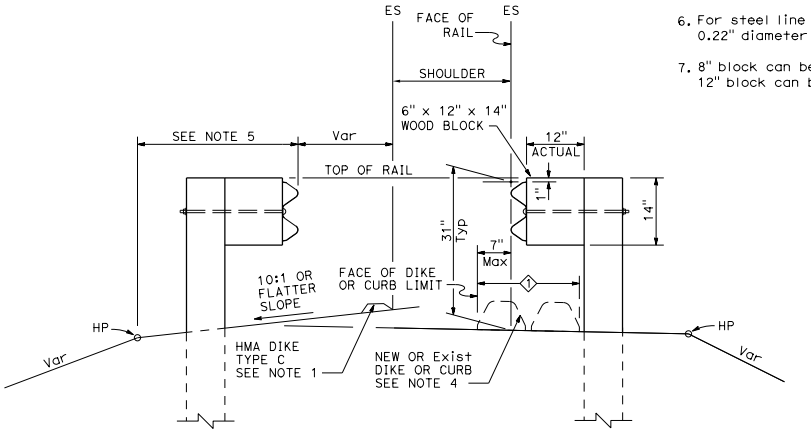
TO ACCOMPANY PLANS DATED _____



MGS DELINEATION
See Note 3



DIKE POSITIONING
See Note 1

① PERMISSIBLE DIKE OR CURB PLACEMENT AREA

NOTES:

1. When necessary to place dike more than 7" in front of face of MGS, only Type C dike may be used. For dike details, see Standard Plan A87B.
2. For standard railing post embedment, see Standard Plan A77N3.
3. MGS delineation to be used where shown on the Project Plans.
4. When dike or curb is placed under MGS, the maximum height of the dike or curb shall be 6". Mountable dike should not be used. For dike and curb details, see Standard Plans A87A and A87B.
5. For details of typical distance between the face of rail and hinge point, see Standard Plan A77N3.
6. For steel line posts, use ¼ - 20 self-tapping screws in 0.22" diameter holes or ¼" bolts in $^{9}/_{32}$" diameter holes.
7. 8" block can be used with 4" or lower dike, or no dike. 12" block can be used with 6" or lower dike, or no dike.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL RAILING DELINEATION AND DIKE POSITIONING DETAILS

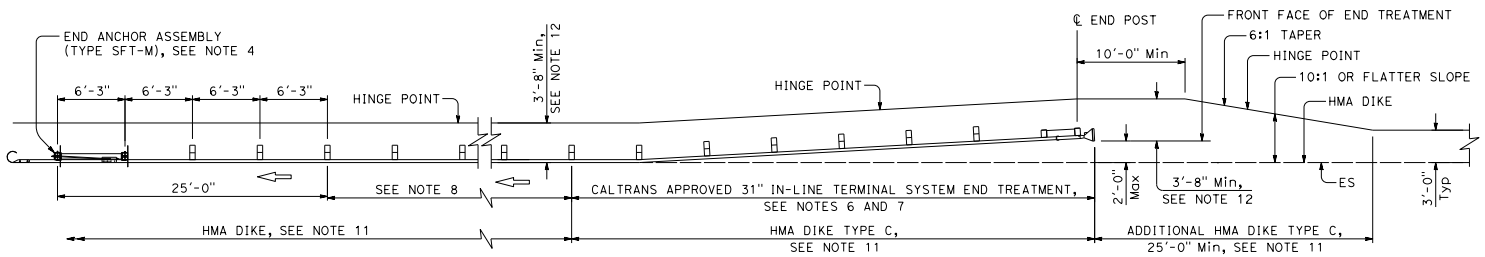
NO SCALE

RSP A77N4 DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN A77N4
DATED MAY 31, 2018 - PAGE 64 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77N4

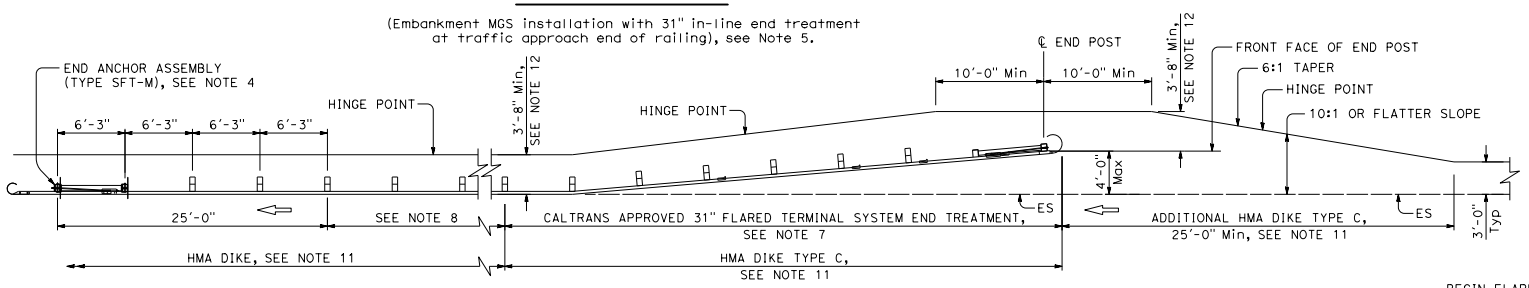
2018 REVISED STANDARD PLAN RSP A77N4

12-11-18



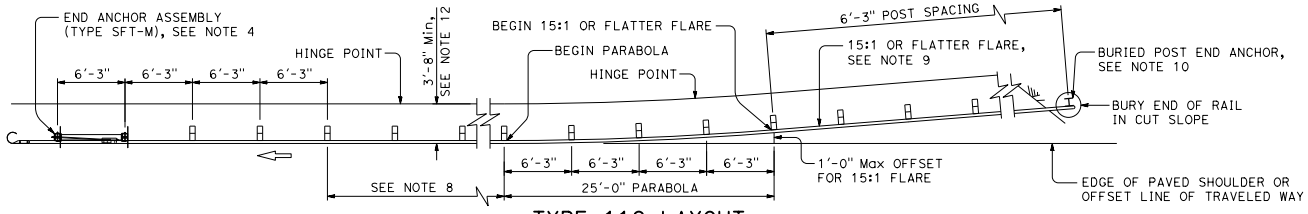
TYPE 11A LAYOUT

(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.

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 RSP 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-M) details, see Revised Standard Plan RSP 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.
10. For details of the buried post end anchor used with Type 11C Layout, see Revised Standard Plans RSP A77T2 and RSP A77T3.
11. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP 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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Mark Ballentine
No. C64101
Exp. 09-30-22
CIVIL
STATE OF CALIFORNIA

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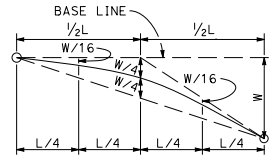
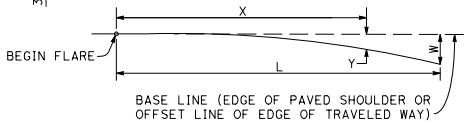


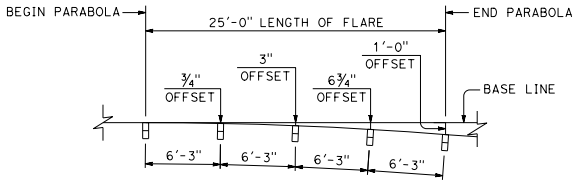
TYPICAL PARABOLIC LAYOUT



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

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

PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS FOR 1 FOOT Max END OFFSET

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P1 DATED APRIL 15, 2022 SUPERSEDES RSP A77P1 DATED OCTOBER 18, 2019 AND STANDARD PLAN A77P1 DATED MAY 31, 2018 - PAGE 80 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77P1

2018 REVISED STANDARD PLAN RSP A77P1

12-22-21

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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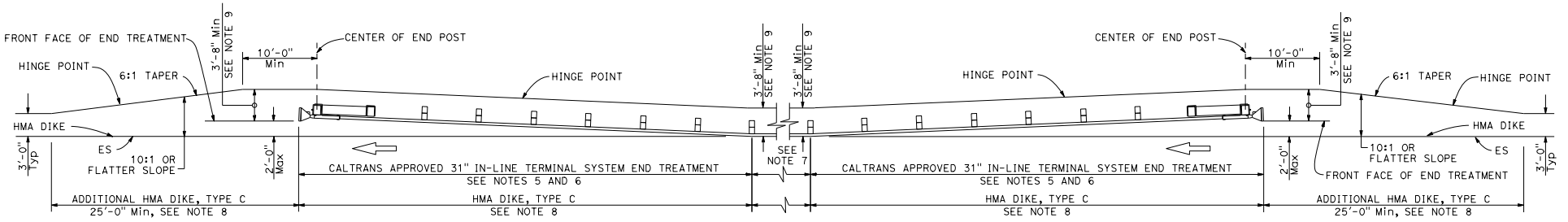
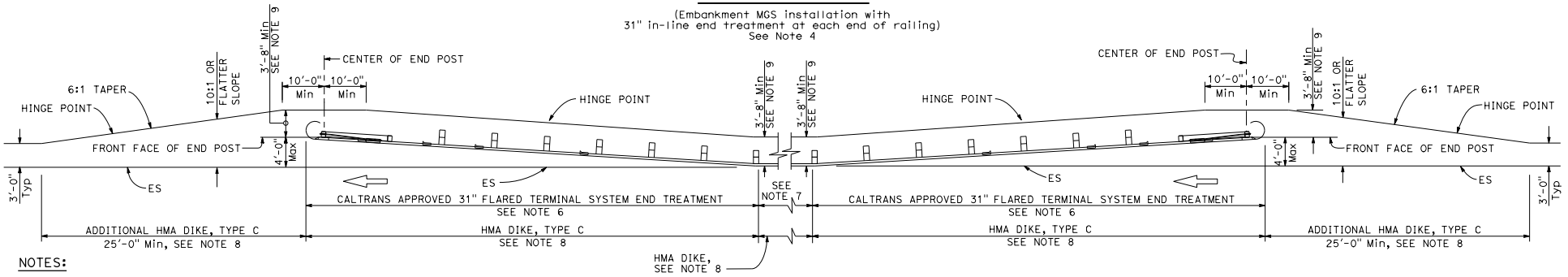
TO ACCOMPANY PLANS DATED _____



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, Standard Plans A77N2 and 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 APRIL 17, 2020 SUPERSEDES RSP A77P2 DATED OCTOBER 18, 2019 AND STANDARD PLAN A77P2 DATED MAY 31, 2018 - PAGE 81 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77P2

12-10-19

2018 REVISED STANDARD PLAN RSP A77P2

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

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randall D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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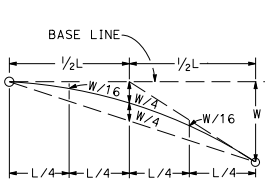
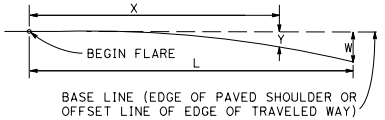
TO ACCOMPANY PLANS DATED _____



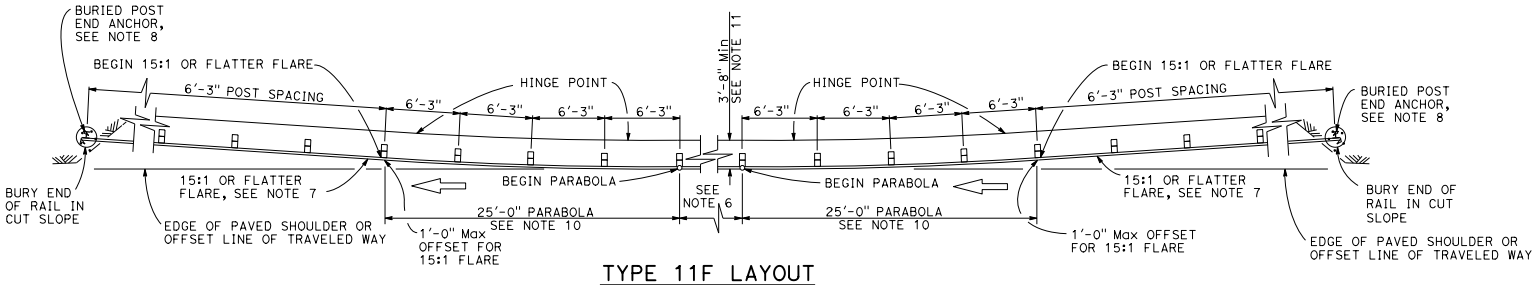
TYPICAL PARABOLIC LAYOUT



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

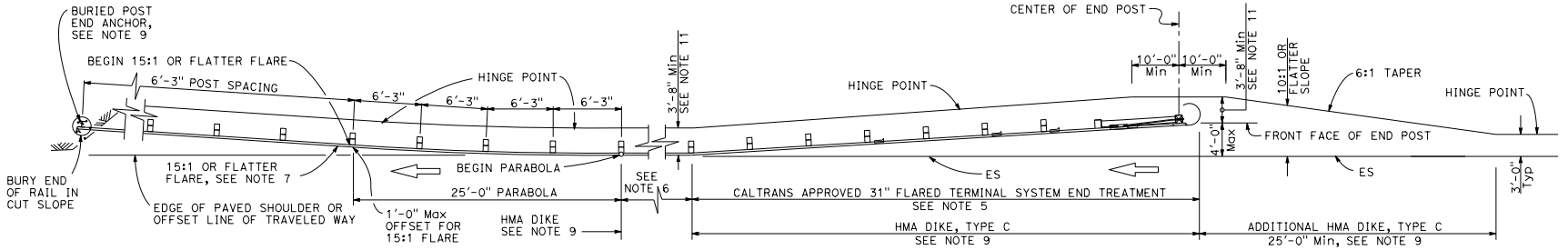
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

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, Standard Plans A77N2 and 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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN A77P3 DATED MAY 31, 2018 - PAGE 82 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77P3

2018 REVISED STANDARD PLAN RSP A77P3

6-19-19

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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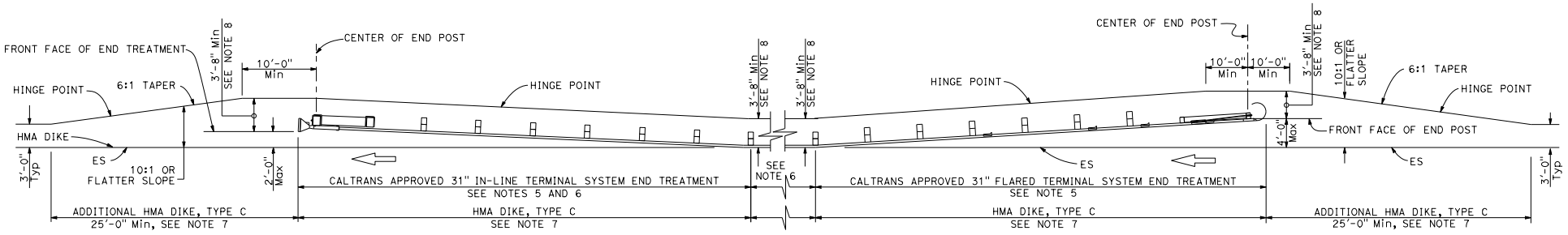
TO ACCOMPANY PLANS DATED _____



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, Standard Plans A77N2 and 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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN A77P4
DATED MAY 31, 2018 - PAGE 83 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77P4

2018 REVISED STANDARD PLAN RSP A77P4

6-19-19

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

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

Randall D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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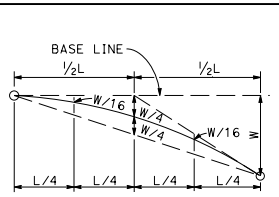
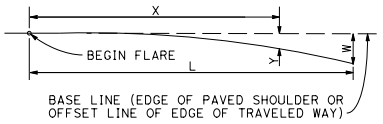
TO ACCOMPANY PLANS DATED _____



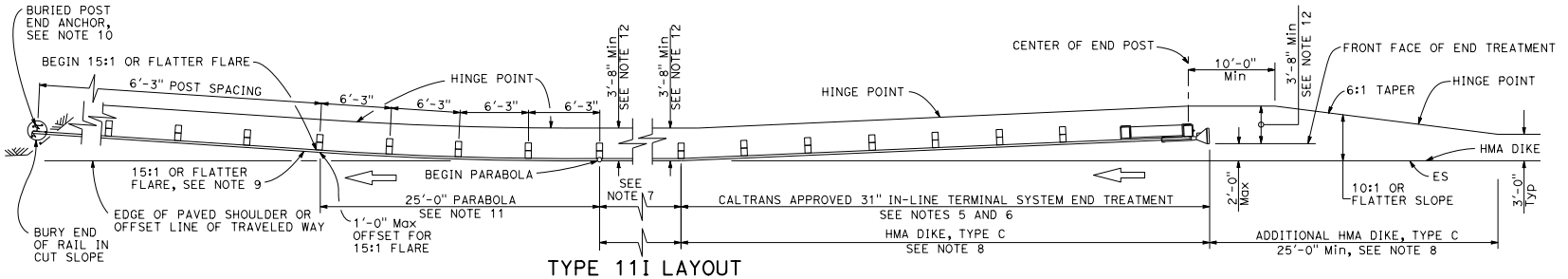
TYPICAL PARABOLIC LAYOUT



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

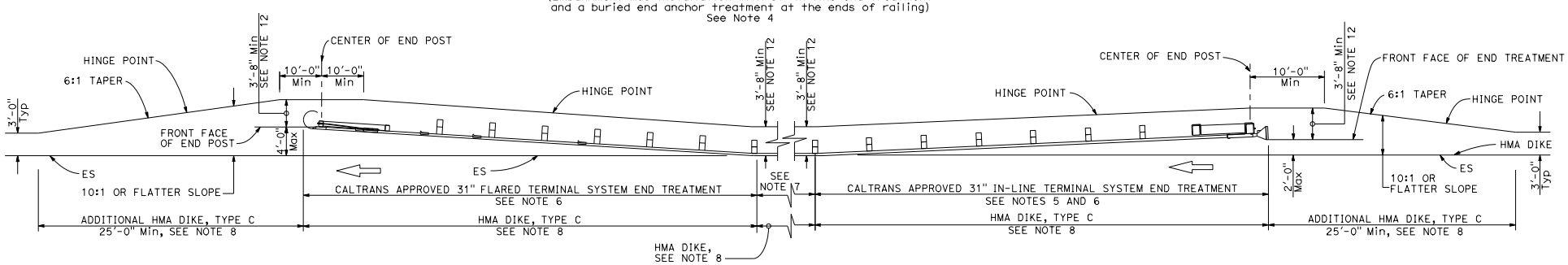
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPE 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, Standard Plans A77N2 and 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 APRIL 17, 2020 SUPERSEDES RSP A77P5 DATED OCTOBER 18, 2019 AND STANDARD PLAN A77P5 DATED MAY 31, 2018 - PAGE 84 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77P5

12-10-19

2018 REVISED STANDARD PLAN RSP A77P5

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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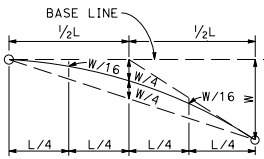
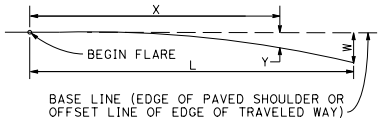
TO ACCOMPANY PLANS DATED _____



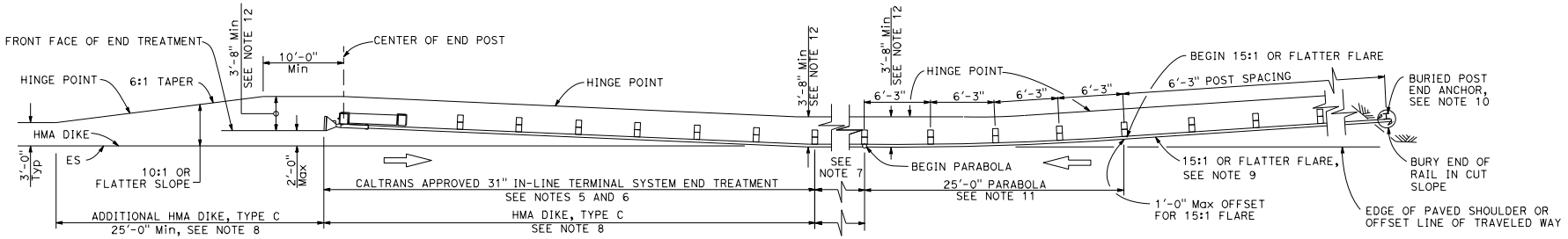
TYPICAL PARABOLIC LAYOUT



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

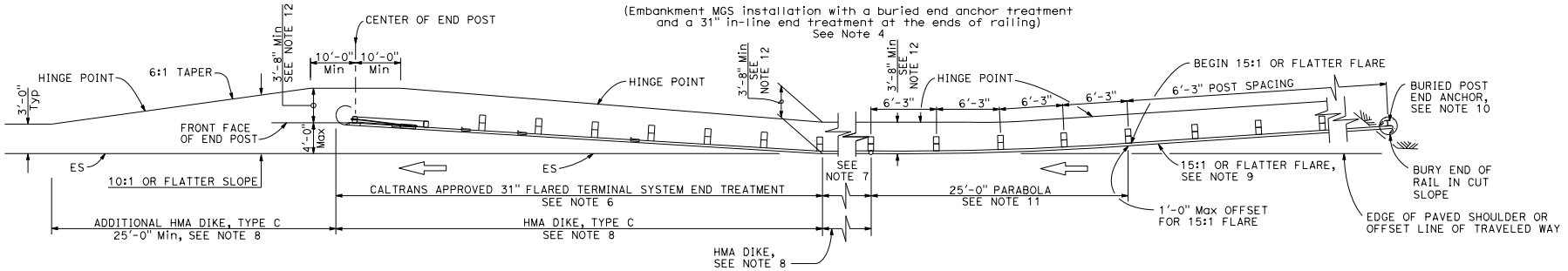
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPE 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, Standard Plans A77N2 and 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 APRIL 17, 2020 SUPERSEDES RSP A77P6 DATED OCTOBER 18, 2019 AND STANDARD PLAN A77P6 DATED MAY 31, 2018 - PAGE 85 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77P6

12-10-19

2018 REVISED STANDARD PLAN RSP A77P6

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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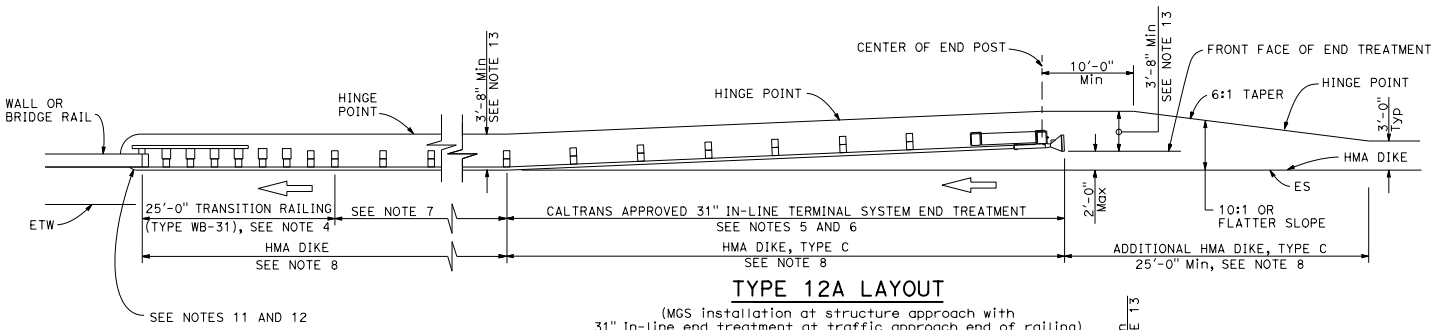
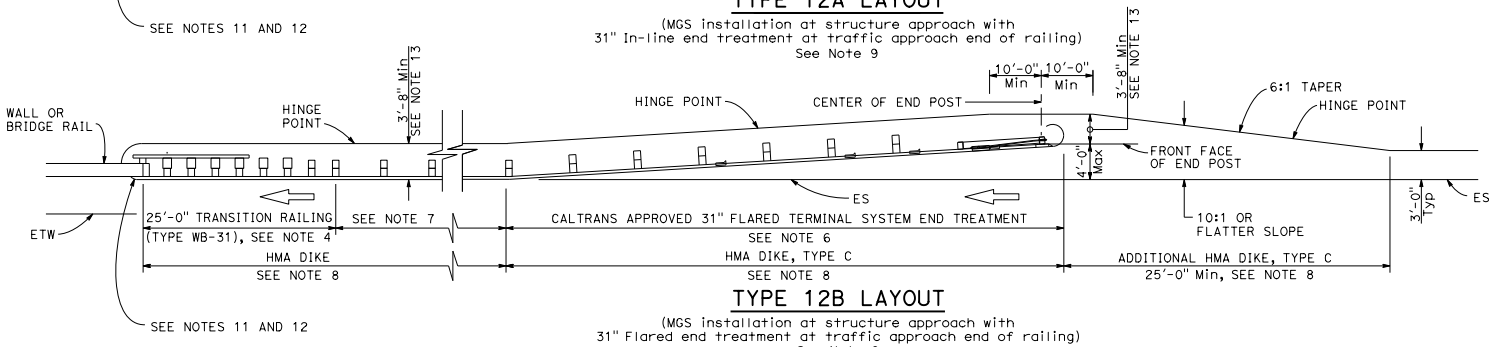
TO ACCOMPANY PLANS DATED _____



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, Standard Plans A77N2 and 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 Standard Plan 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. 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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN A77Q1
DATED MAY 31, 2018 - PAGE 86 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77Q1

2018 REVISED STANDARD PLAN RSP A77Q1

6-17-19

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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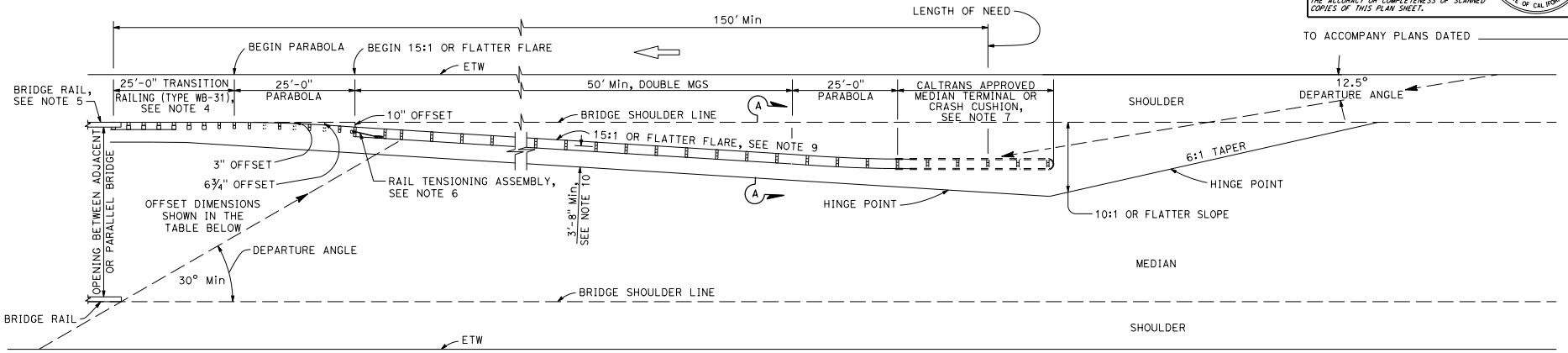
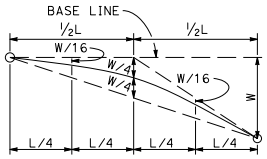
TO ACCOMPANY PLANS DATED _____

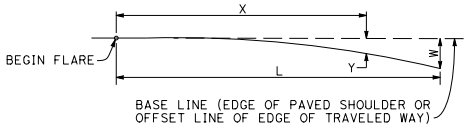


TYPE 12E LAYOUT

See Note 9



TYPICAL PARABOLIC LAYOUT

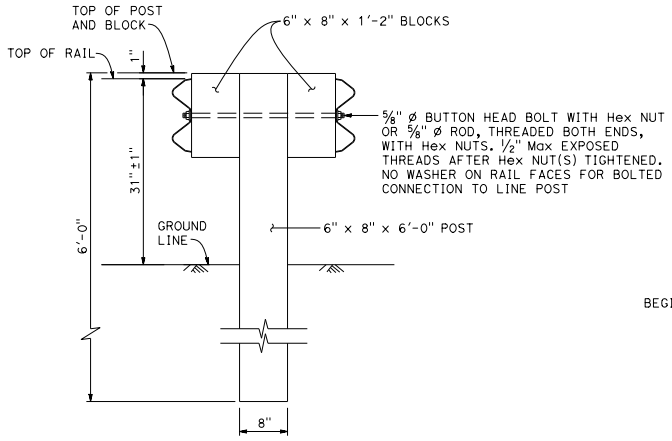


$$Y = \frac{WX^2}{L^2}$$

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

PARABOLIC FLARE OFFSETS

X=	3.125'	6.25'	9.325'	12.5'	15.625'	18.75'	21.825'	25.00'
Y=	-	1"	2"	3"	4"	6"	8"	10"



SECTION A-A

TYPICAL DOUBLE MIDWEST GUARDRAIL SYSTEM

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 RSP 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 Revised Standard Plan RSP 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 Revised Standard Plan RSP A77S2.
7. The median terminal or 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 APRIL 15, 2022 SUPERSEDES RSP A77Q3 DATED OCTOBER 18, 2019 AND STANDARD PLAN A77Q3 DATED MAY 31, 2018 - PAGE 88 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77Q3

12-29-21

2018 REVISED STANDARD PLAN RSP A77Q3

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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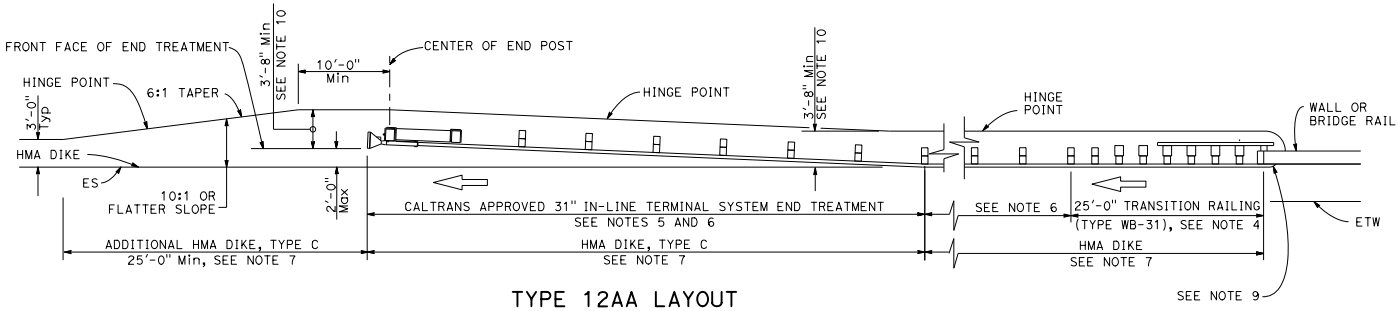
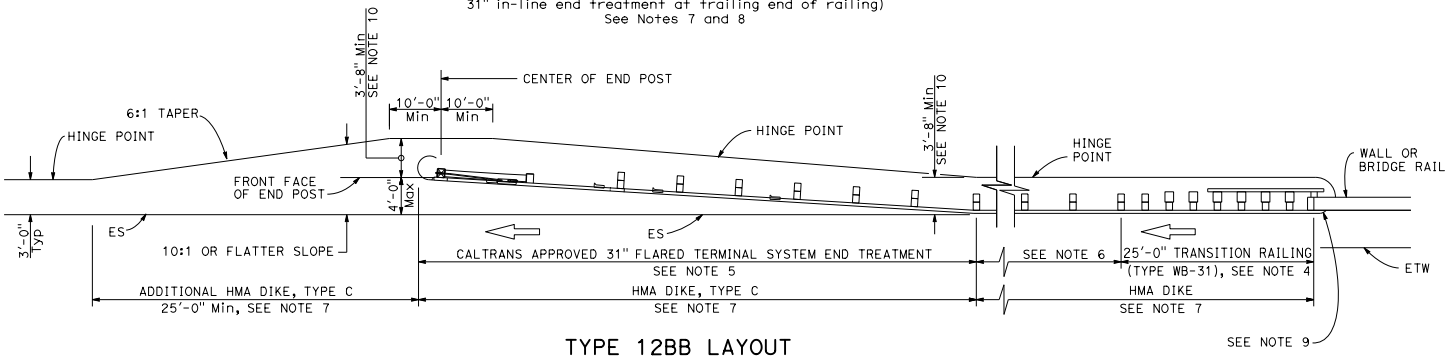
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



TYPE 12AA LAYOUT

(MGS installation at structure departure with 31" in-line end treatment at trailing end of railing)
See Notes 7 and 8



TYPE 12BB LAYOUT

(MGS installation at structure departure with 31" in-line end treatment at trailing end of railing)
See Notes 7 and 8

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, Standard Plans A77N2 and 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 Revised Standard Plan RSP A77U4.
5. The type of 31" terminal system to be used will be shown on the Project Plans.
6. 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.
7. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
8. 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.
9. 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.
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 DEPARTURE

NO SCALE

RSP A77Q4 DATED OCTOBER 18, 2019 SUPERSEDES RSP A77Q4 DATED APRIL 19, 2019 AND STANDARD PLAN A77Q4 DATED MAY 31, 2018 - PAGE 89 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77Q4

2018 REVISED STANDARD PLAN RSP A77Q4

6-19-19

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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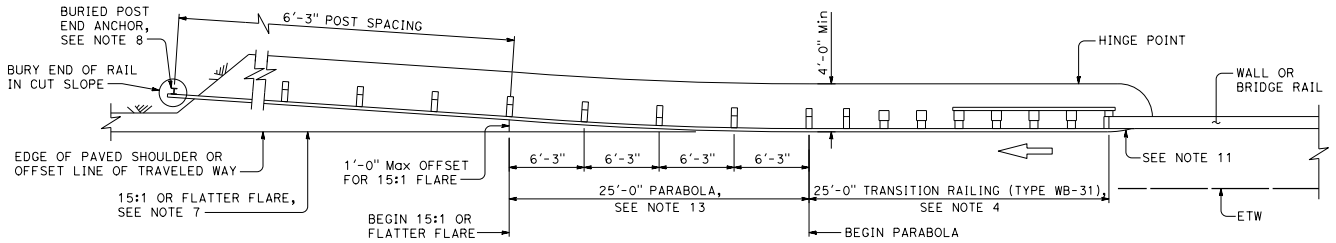
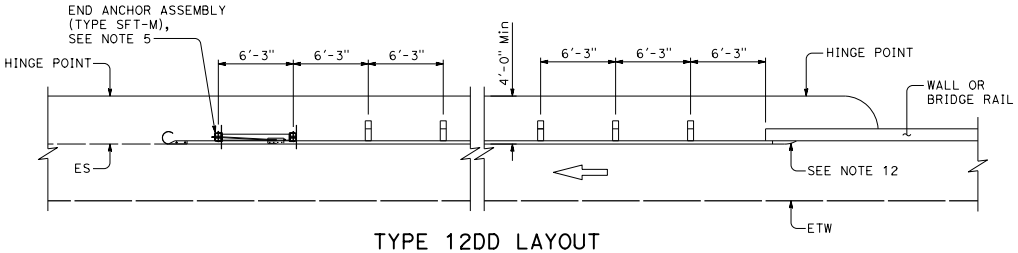
TO ACCOMPANY PLANS DATED _____



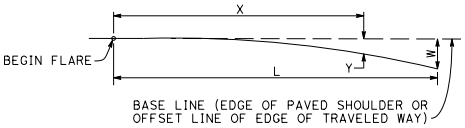
TYPE 12CC LAYOUT

(MGS installation at structure departure with a buried end anchor treatment at trailing end of railing), see Notes 9 and 10.



TYPE 12DD LAYOUT

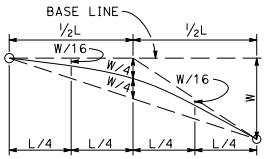
(MGS installation at structure departure with end anchor assembly at trailing end of railing), see Notes 6 and 9.



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

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 RSP A77M1.
2. MSG 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 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" 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 12" x 1'-2" wood blocks where applicable and when specified.
4. For Transition Railing (Type WB-31) details for Type 12CC Layout, see Revised Standard Plan RSP A77U4.
5. For details of End Anchor Assembly (Type SFT-M) used with Type 12DD Layout, see Revised Standard Plan RSP A77S1.
6. Type 12DD layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is equal to or greater than 40 feet and MGS is recommended (embankment height, side slopes or other fixed objects). Length of railing to be equal to multiples of 12'-6". For MGS connection details to bridge rail, see Standard Plans A77U1 and A77V1. For MGS connection details to wall, see Revised Standard Plan RSP A77U3.
7. The 15:1 or flatter flare for Type 12CC 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".
8. For details of the buried post end anchor used with Type 12CC Layout, see Revised Standard Plans RSP A77T2 and RSP A77T3.
9. Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
10. Type 12CC Layout is 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.
11. For additional details of a typical connection to bridge rail for Layout Type 12CC, see Connection Detail CC on Standard Plan A77U2 and Connection Detail HH on Standard Plan A77V2.
12. For additional details of a typical connection to bridge rail for Layout Type 12DD, see Connection Detail BB on Standard Plan A77U1 and Connection Detail GG on Standard Plan A77V1.
13. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE DEPARTURE

NO SCALE

RSP A77Q5 DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN A77Q5 DATED MAY 31, 2018 - PAGE 90 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77Q5

2018 REVISED STANDARD PLAN RSP A77Q5

12-22-21

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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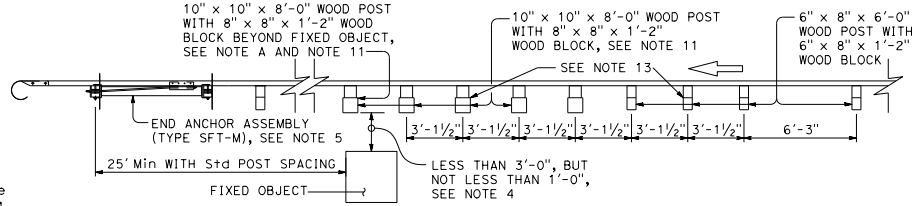
TO ACCOMPANY PLANS DATED _____

NOTES:

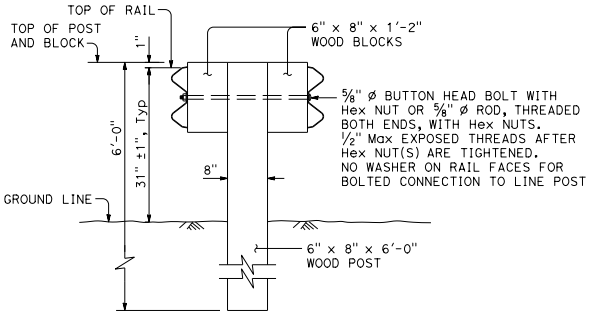
1. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, RSP A77N2, and RSP A77M1.
2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. 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 back of post and the face of a fixed object is less than 3'-0", but not less than 1'-0". Where the clearance is less than 1'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. For End Anchor Assembly (Type SFT-M) details, see Revised Standard Plan RSP A77S1.
6. For details of Rail Tensioning Assembly, see Revised Standard Plan RSP A77S2.
7. The median terminal or 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 8.5 or W6 x 9 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.
13. Do not bolt rail to block. Only bolt block to post.



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.

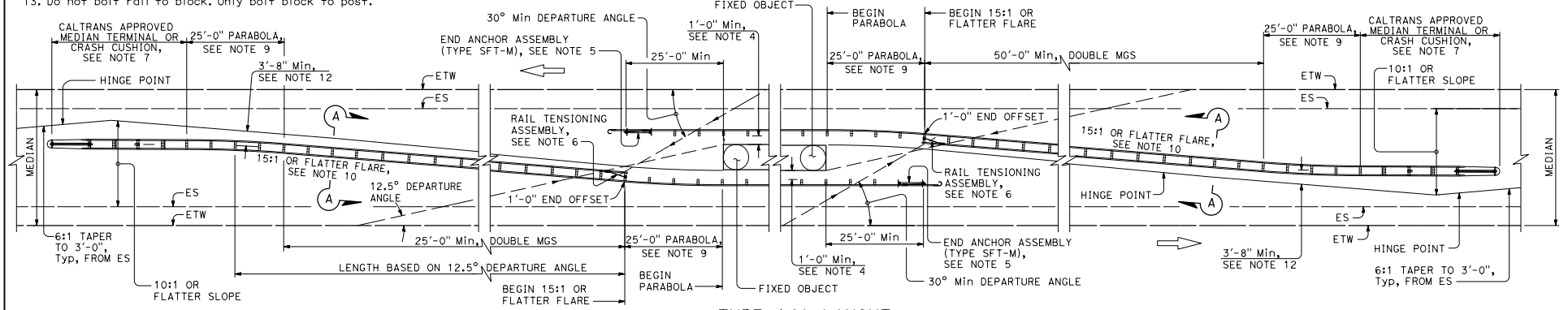
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with Type 14A layout where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-0", see Note 4.



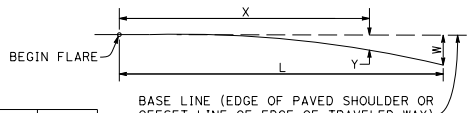
SECTION A-A

TYPICAL DOUBLE MIDWEST GUARDRAIL SYSTEM



TYPE 14A LAYOUT

See Note 8

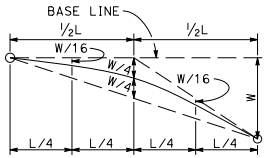


X=	3.125'	6.25'	9.325'	12.5'	15.625'	18.75'	21.825'	25.00'
Y=	-	1"	2"	3"	4"	6"	8"	10"

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

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 APRIL 15, 2022 SUPERSEDES RSP A77R1 DATED OCTOBER 18, 2019, RSP A77R1 DATED APRIL 19, 2019 AND STANDARD PLAN A77R1 DATED MAY 31, 2018 - PAGE 91 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77R1

12-29-21

2018 REVISED STANDARD PLAN RSP A77R1

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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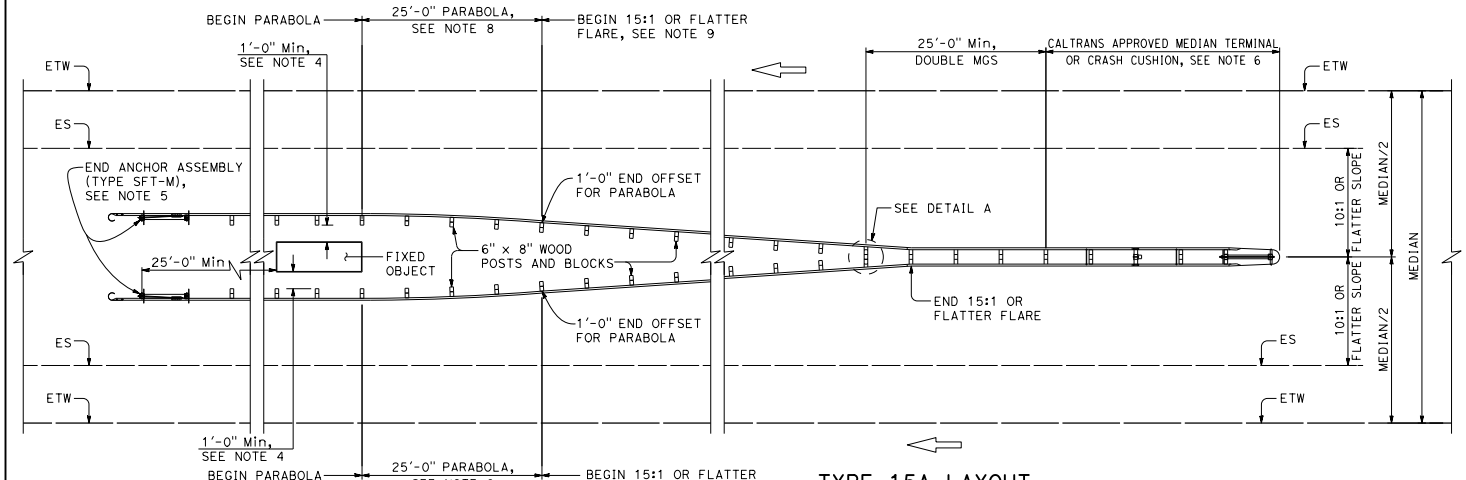
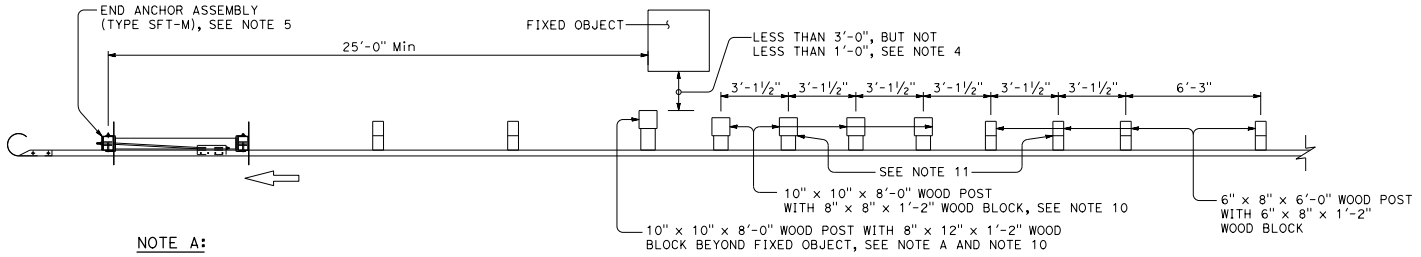
TO ACCOMPANY PLANS DATED _____



TYPE 15A LAYOUT

See Note 7

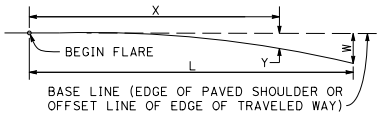


NOTE A:

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

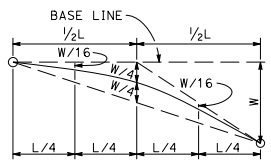
Use strengthened MGS sections with Type 15A Layout where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-0", see Note 4.



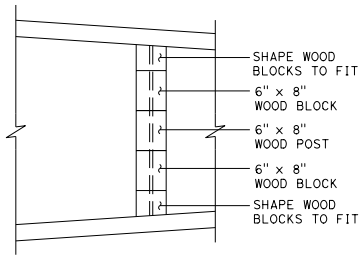
$Y = \frac{WX^2}{L^2}$

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

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 RSP 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. See Revised Standard Plans RSP A77S1 for clearance distance behind the rail within 50' of End Anchor Assembly (Type SFT-M). Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object" on this plan, where the clearance between the back of post and the face of a fixed object is less than 3'-0", but not less than 1'-0". Where the clearance is less than 1'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. For End Anchor Assembly (Type SFT-M) details, see Revised Standard Plan RSP A77S1.
6. The median terminal or 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 traveled way.
10. W6 x 8.5 or W6 x 9 steel post, 8'-0" in length, with 8" block or notched 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. Do not bolt rail to block. Only bolt block to post.

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 APRIL 15, 2022 SUPERSEDES RSP A77R2 DATED OCTOBER 18, 2019, RSP A77R2 DATED APRIL 19, 2019 AND STANDARD PLAN A77R2 DATED MAY 31, 2018 - PAGE 92 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77R2

2018 REVISED STANDARD PLAN RSP A77R2

12-24-21

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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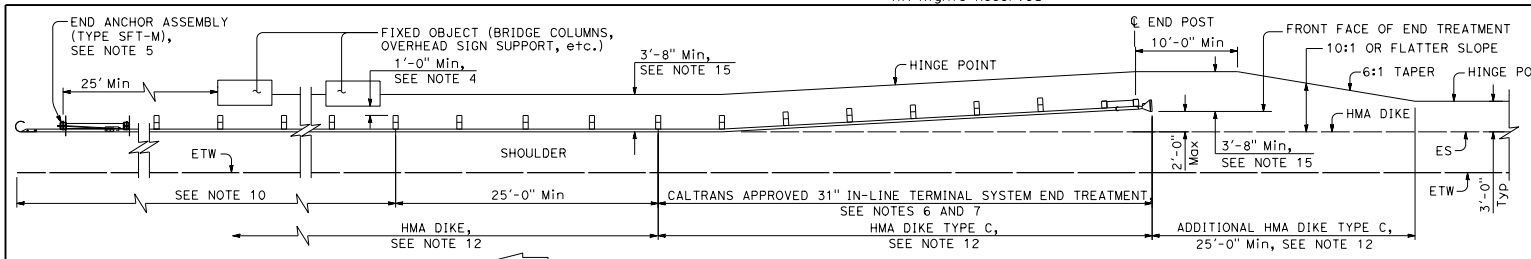
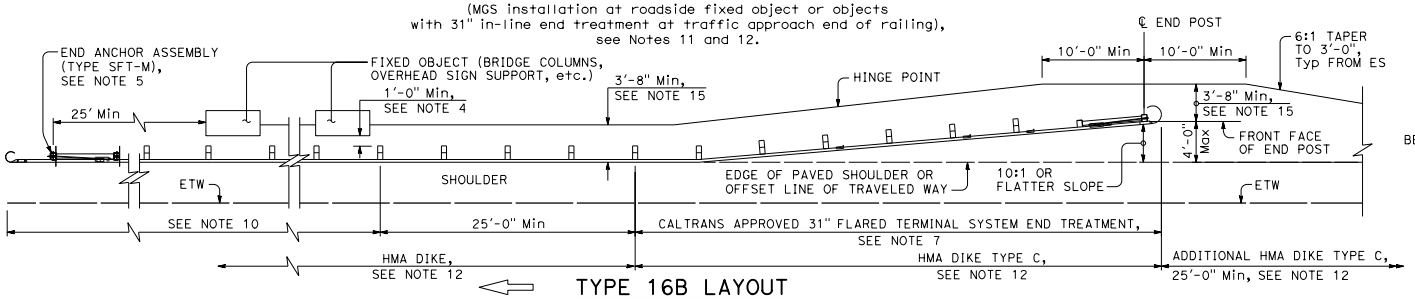
TO ACCOMPANY PLANS DATED _____



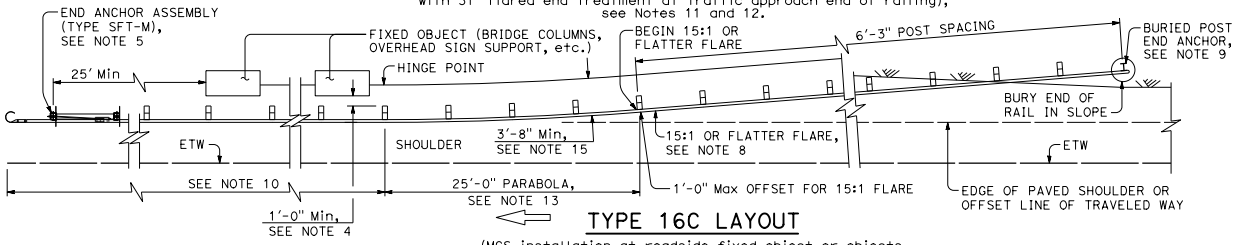
TYPE 16A LAYOUT

(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.



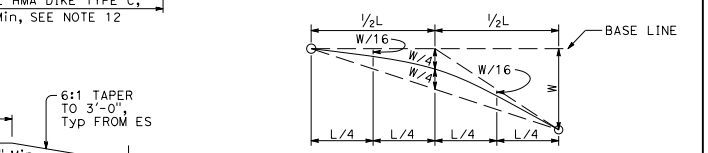
TYPE 16B LAYOUT

(MGS installation at roadside fixed object or objects with 31" flared end treatment at traffic approach end of railing), see Notes 11 and 12.

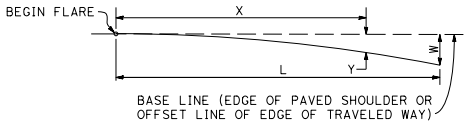


TYPE 16C LAYOUT

(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

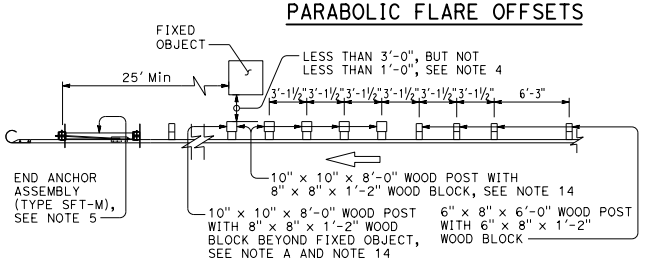


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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

PARABOLIC FLARE OFFSETS



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.

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 RSP 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 3'-0", but not less than 1'-0". Where the clearance is less than 1'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. For End Anchor Assembly (Type SFT-M) details, see Revised Standard Plan RSP 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 paved shoulder or offset line of edge of 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 Revised Standard Plans RSP A77T2 and RSP A77T3.
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 Revised Standard Plan RSP 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 8.5 or W6 x 9 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.

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with Types 16A, 16B or 16C layouts where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-0", see Note 4.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R3 DATED APRIL 15, 2022 SUPERSEDES RSP A77R3 DATED OCTOBER 18, 2019, RSP A77R3 DATED APRIL 19, 2019 AND STANDARD PLAN A77R3 DATED MAY 31, 2018 - PAGE 93 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77R3

2018 REVISED STANDARD PLAN RSP A77R3

12-22-21

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 CIVIL — STATE OF CALIFORNIA

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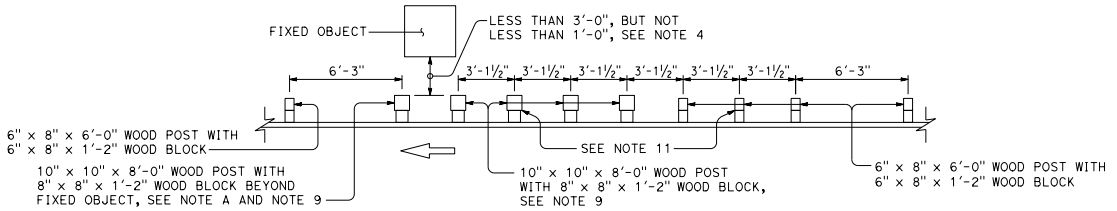
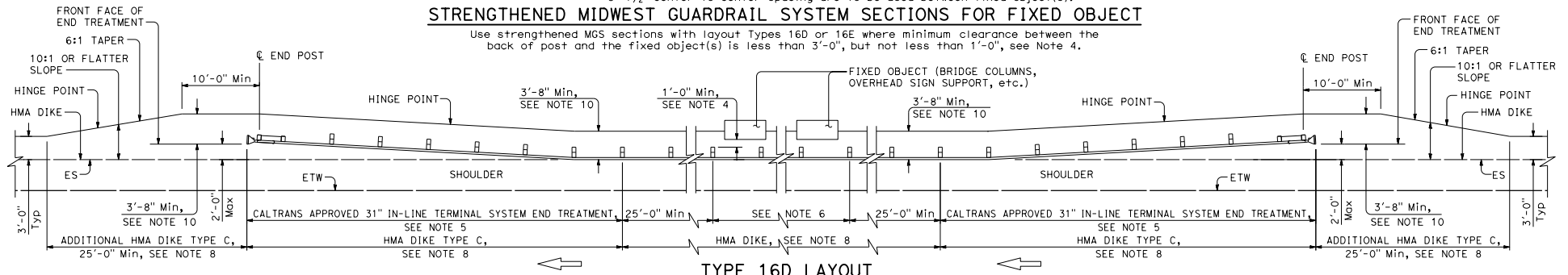
TO ACCOMPANY PLANS DATED _____



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).

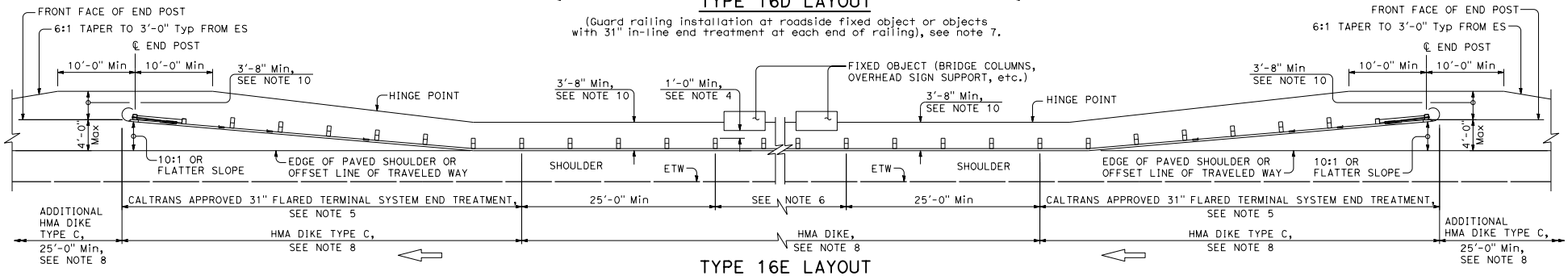
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with layout Types 16D or 16E where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-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 7.



TYPE 16E LAYOUT

(Guard railing installation at roadside fixed object or objects with 31" flared end treatment at each end of railing), see Note 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 RSP 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 back of post and the face of a fixed object is less than 3'-0", but not less than 1'-0". Where the clearance is less than 1'-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. 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.
7. Layout Types 16D through 16L, shown on the Revised Standard Plans A77R Series, 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.
8. Where placement of dike is required with MGS, see Revised Standard Plan RSP A77N4 for dike positioning details.
9. W6 x 8.5 or W6 x 9 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".
10. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.
11. Where post is at rail splice, do not bolt rail to block. Only bolt block to post.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

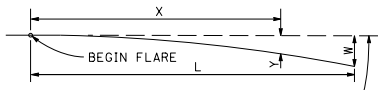
NO SCALE

RSP A77R4 DATED APRIL 15, 2022 SUPERSEDES RSP A77R4 DATED OCTOBER 18, 2019, RSP A77R4 DATED APRIL 19, 2019 AND STANDARD PLAN A77R4 DATED MAY 31, 2018 - PAGE 94 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77R4

2018 REVISED STANDARD PLAN RSP A77R4

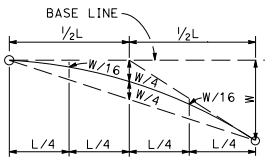
12-22-21



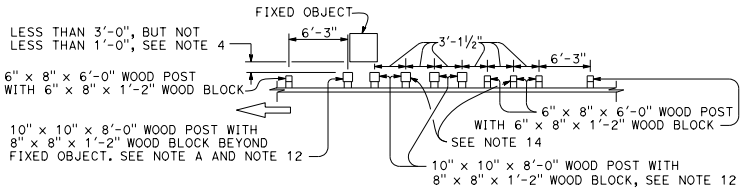
$Y = \frac{WX^2}{L^2}$

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).

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

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randall D. Hiatt — No. C50200 — Exp. 6-30-21 — CIVIL — STATE OF CALIFORNIA

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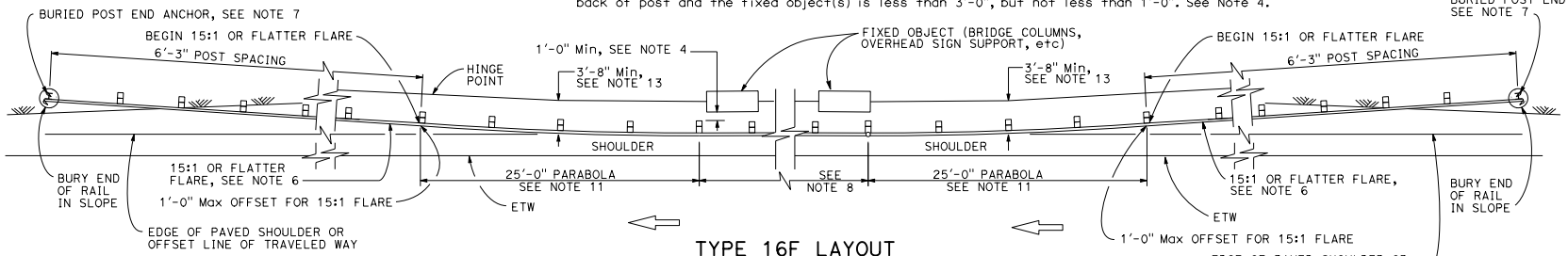
TO ACCOMPANY PLANS DATED _____

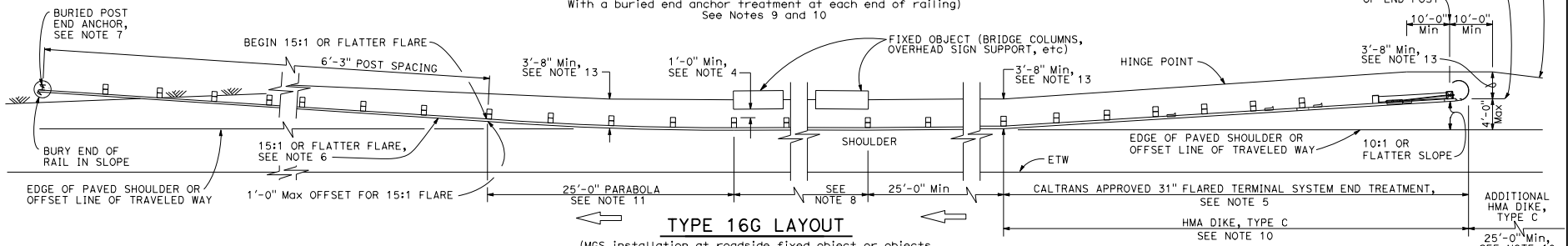
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with layout Types 16F or 16G where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-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" in-line 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, Standard Plans A77N2 and 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 back of post and the face of a fixed object is less than 3'-0", but not less than 1'-0". Where the clearance is less than 1'-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 Revised Standard Plan RSP A77N4 for dike positioning details.
11. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
12. W6 x 8.5 or W6 x 9 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".
13. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.
14. Do not bolt rail to block. Only bolt block to post.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R5 DATED OCTOBER 18, 2019 SUPERSEDES RSP A77R5 DATED APRIL 19, 2019 AND STANDARD PLAN A77R5 DATED MAY 31, 2018 - PAGE 95 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77R5

2018 REVISED STANDARD PLAN RSP A77R5

6-19-19

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-21 CIVIL — STATE OF CALIFORNIA

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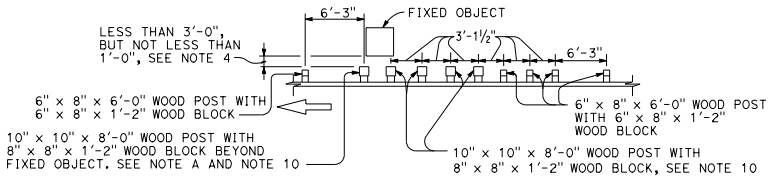
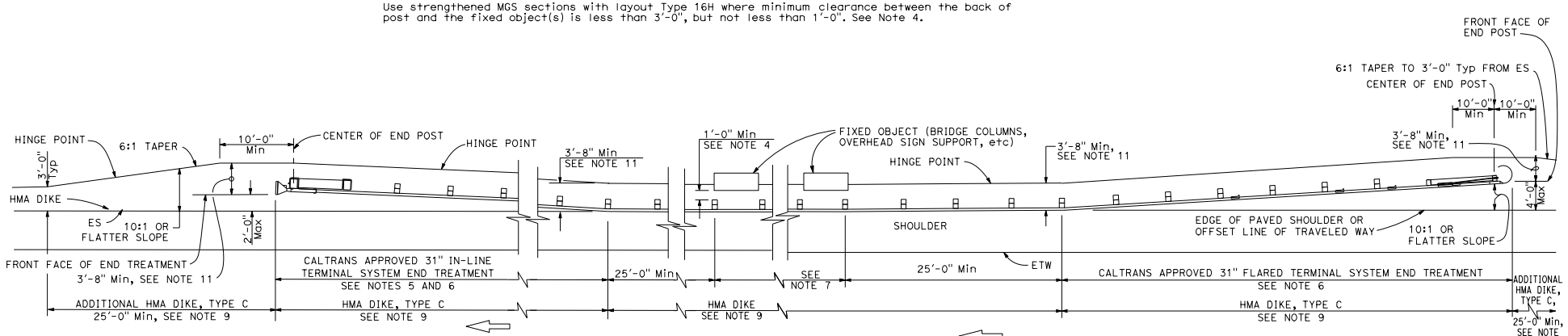
TO ACCOMPANY PLANS DATED _____



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 Type 16H where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-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, Standard Plans A77N2 and 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 back of post and the face of a fixed object is less than 3'-0", but not less than 1'-0". Where the clearance is less than 1'-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 8.5 or W6 x 9 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

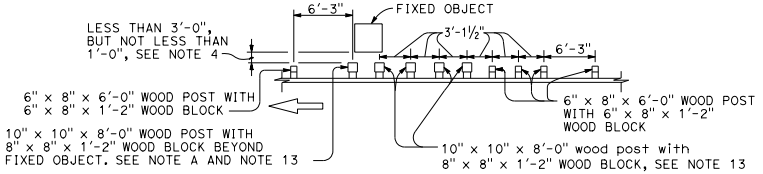
NO SCALE

RSP A77R6 DATED OCTOBETR 18, 2019 SUPERSEDES RSP A77R6 DATED APRIL 19, 2019 AND STANDARD PLAN A77R6 DATED MAY 31, 2018 - PAGE 96 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77R6

2018 REVISED STANDARD PLAN RSP A77R6

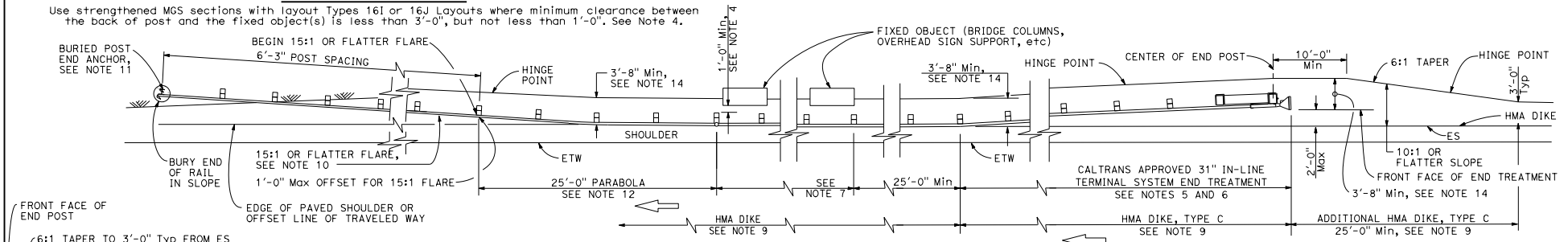
6-19-19



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).

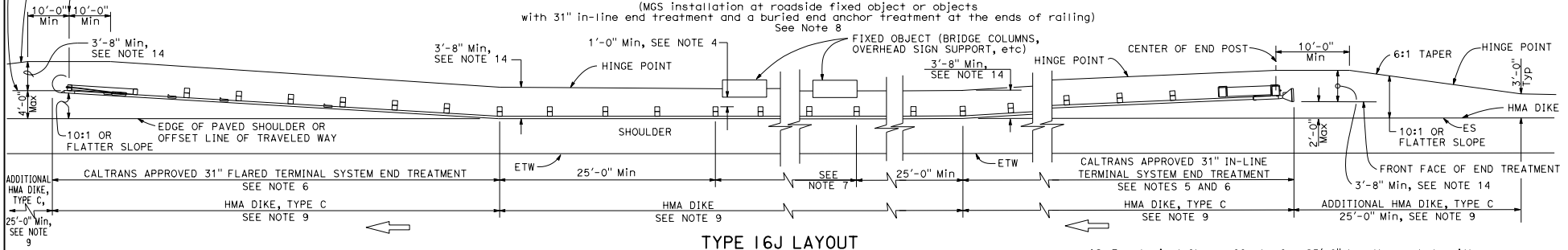
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with layout Types 16I or 16J Layouts where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-0". See Note 4.



TYPE 16I LAYOUT

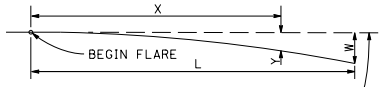
(MGS installation at roadside fixed object or objects with 31" in-line end treatment and a buried end anchor treatment at the ends of railing) See Note 8



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

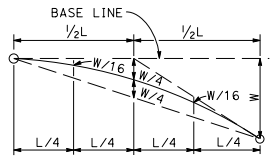
PARABOLIC FLARE OFFSETS



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

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

TYPICAL PARABOLIC LAYOUT



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

Randall D. Hiatt
REGISTERED CIVIL ENGINEER
October 18, 2019
PLANS APPROVAL DATE
Randall D. Hiatt No. C50200 Exp. 6-30-21 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. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, Standard Plans A77N2 and 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 back of post and the face of a fixed object is less than 3'-0", but not less than 1'-0". Where the clearance is less than 1'-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 8.5 or W6 x 9 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".
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

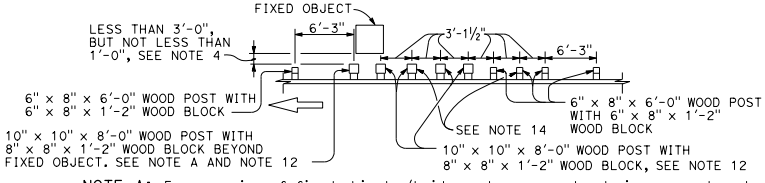
NO SCALE

RSP A77R7 DATED OCTOBER 18, 2019 SUPERSEDES RSP A77R7 DATED APRIL 19, 2019 AND STANDARD PLAN A77R7 DATED MAY 31, 2018 - PAGE 97 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77R7

2018 REVISED STANDARD PLAN RSP A77R7

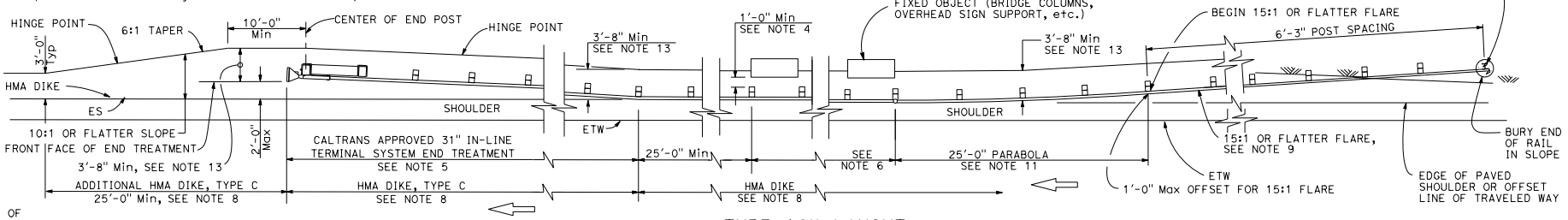
6-19-19



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).

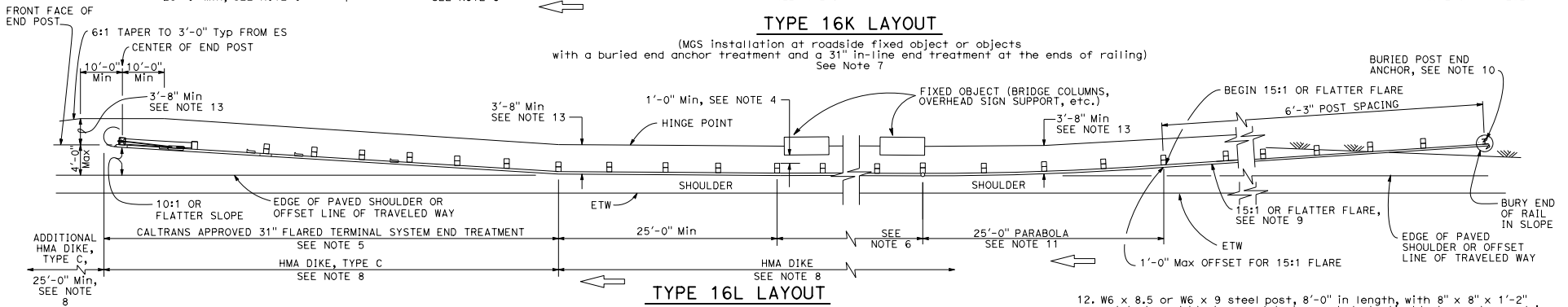
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

Use strengthened MGS sections with layout Types 16K or 16L layouts where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-0". See Note 4.



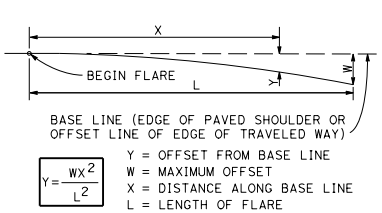
TYPE 16K LAYOUT

(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 7

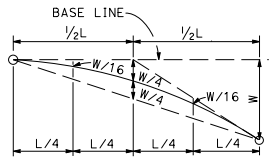


TYPE 16L LAYOUT

(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 7



PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-21 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. Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77N1, Standard Plans A77N2 and 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 back of post and the face of a fixed object is less than 3'-0", but not less than 1'-0". Where the clearance is less than 1'-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. 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.
7. 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.
8. Where placement of dike is required with MGS, see Revised Standard Plan RSP A77N4 for dike positioning details.
9. 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".
10. For details of Buried Post End Anchor, 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. W6 x 8.5 or W6 x 9 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".
13. Use this offset for 8" block. For 12" block use minimum 4'-0" offset.
14. Do not bolt rail to block. Only bolt block to post.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

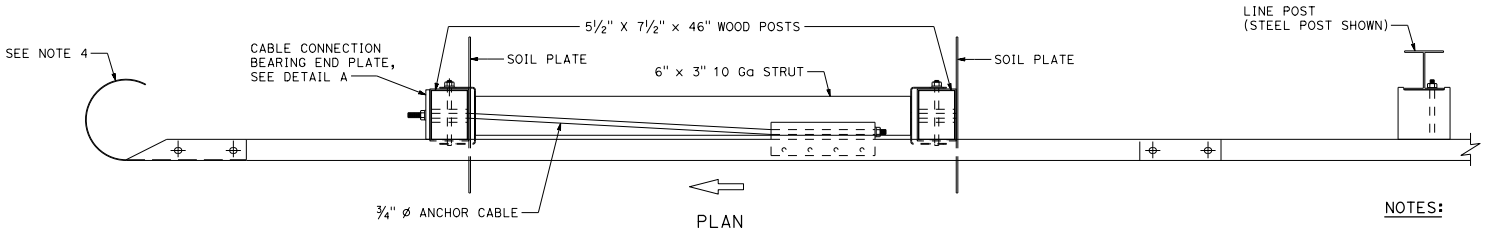
NO SCALE

RSP A77R8 DATED OCTOBER 18, 2019 SUPERSEDES RSP A77R8 DATED APRIL 19, 2019 AND STANDARD PLAN A77R8 DATED MAY 31, 2018 - PAGE 98 OF THE STANDARD PLANS BOOK DATED 2018.

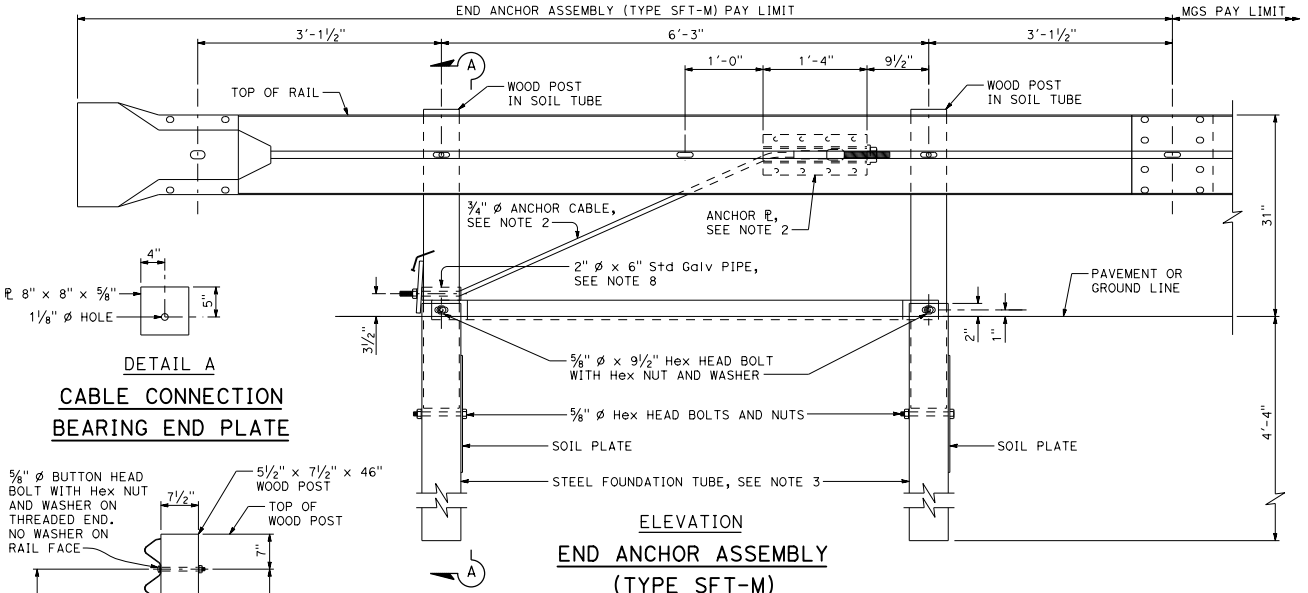
REVISED STANDARD PLAN RSP A77R8

2018 REVISED STANDARD PLAN RSP A77R8

6-19-19



PLAN

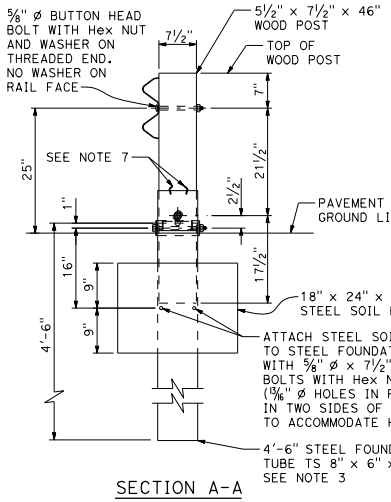


ELEVATION

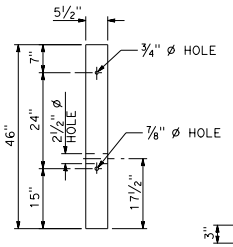
END ANCHOR ASSEMBLY (TYPE SFT-M)

DETAIL A

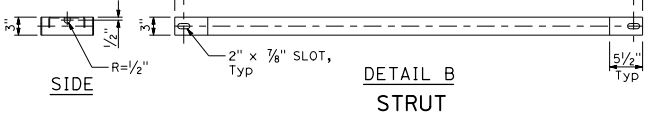
CABLE CONNECTION BEARING END PLATE



SECTION A-A



WOOD POST IN SOIL TUBE



PLAN

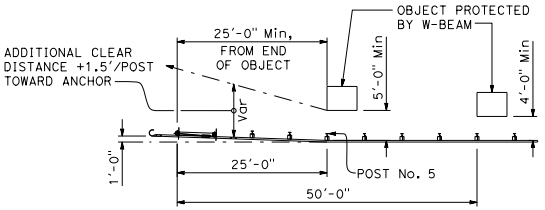
SIDE

DETAIL B

STRUT

NOTES:

1. See the A77P, A77Q and A77R series of Standard Plans for typical use of End Anchor Assembly (Type SFT-M).
2. For details of the anchor plate and ¾" cable, see Revised Standard Plan RSP A77S3.
3. 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.
4. Place End Cap Type B when pedestrians, bicycles or traffic is within contact of the trailing end of the exposed element or rail element may be cut 1" past the end of the post. Clean, treat and cut off sharp edges.
5. Increased clear distance behind the rail is required from 50' prior to the last post of the End Anchor Assembly (Type SFT-M). Beginning at 50' upstream of the last post of the End Anchor Assembly, the required clear distance increases to 5' at post No. 5. From post No. 5 to the last post of the End Anchor Assembly, the required clear distance increases at a rate of 1.5' for each post.
6. Dike with a maximum height of 4" may be placed under or in front of the End Anchor Assembly (Type SFT-M). If the anchor posts are in conflict with the 4" high dike, the last 25' of rail may be tapered back a maximum of 1'-0" to allow the dike to maintain alignment.
7. Secure End Plate with two 16D nails to maintain alignment.
8. 2" ø Standard Galvanized Pipe or 2⅜" ø Galvanized Pipe.



LAYOUT

See Note 5

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 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

MIDWEST GUARDRAIL SYSTEM
END ANCHOR ASSEMBLY
(TYPE SFT-M)

NO SCALE

RSP A77S1 DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN A77S1 DATED MAY 31, 2018 - PAGE 99 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77S1

2018 REVISED STANDARD PLAN RSP A77S1

1-7-22

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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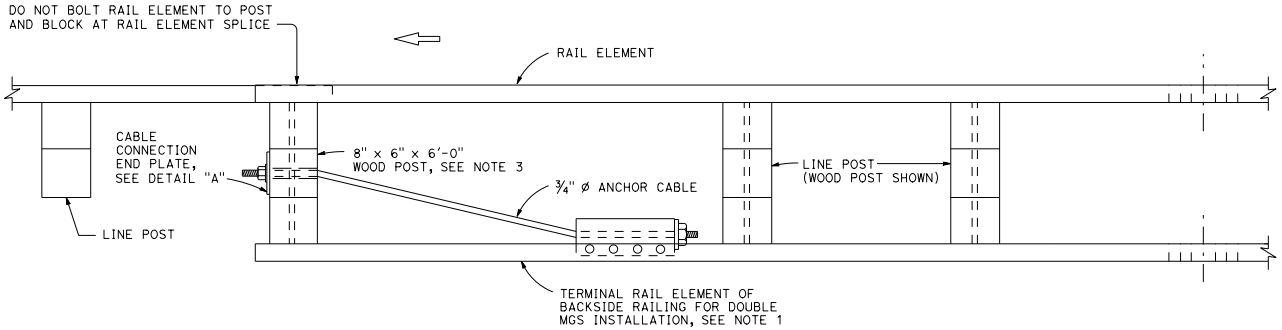
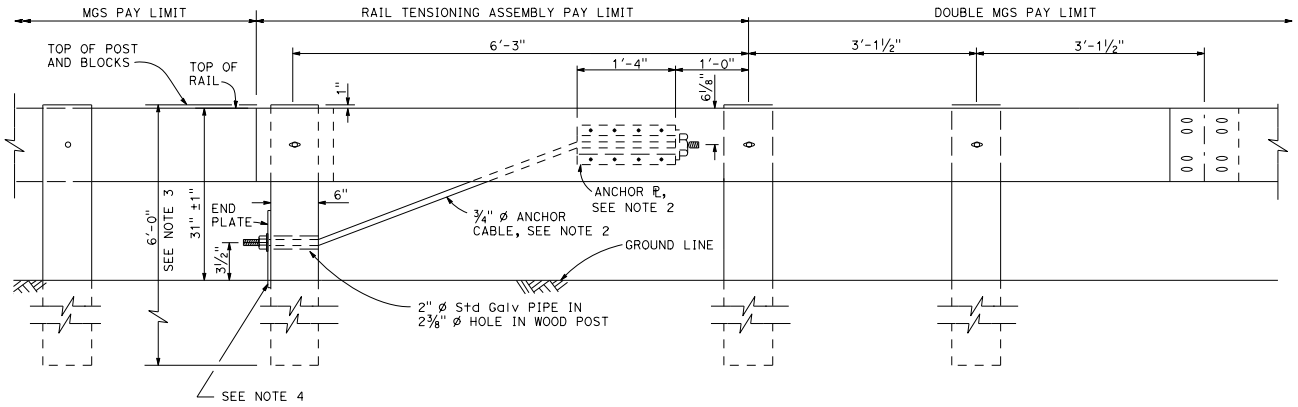
TO ACCOMPANY PLANS DATED _____



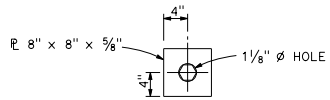
PLAN



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.
3. A steel foundation tube with a wood post as shown on A77S1 may be used in place of the 8" x 6" x 6" wood post shown.
4. Cable connection end plate must not be encased in HMA, concrete, or any other material that could restrict the plate from releasing.



DETAIL "A"
CABLE CONNECTION END PLATE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
RAIL TENSIONING ASSEMBLY

NO SCALE

RSP A77S2 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN A77S2
DATED MAY 31, 2018 - PAGE 100 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77S2

2018 REVISED STANDARD PLAN RSP A77S2

11-16-20

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Mark Ballentine
No. C64101
Exp. 09-30-22
CIVIL
STATE OF CALIFORNIA

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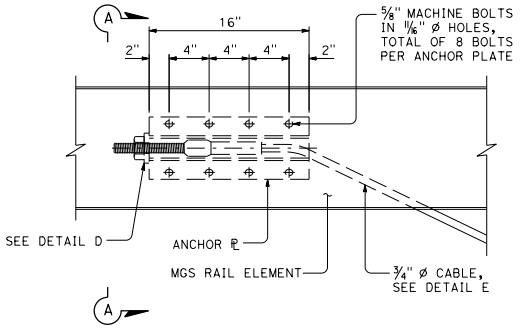
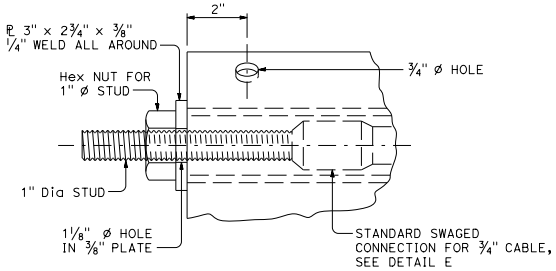
TO ACCOMPANY PLANS DATED _____

NOTE:

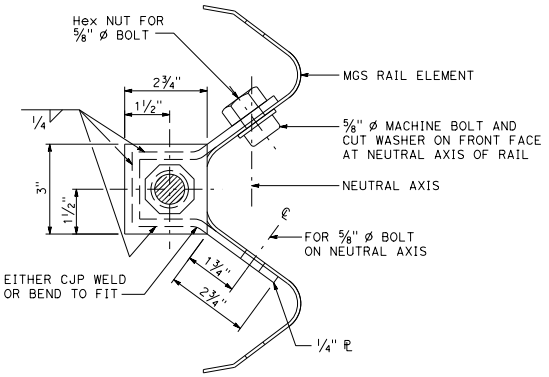
See Revised Standard Plans RSP A77S1, RSP A77S2 and RSP A77T1 for typical use of anchor cable and anchor plate.



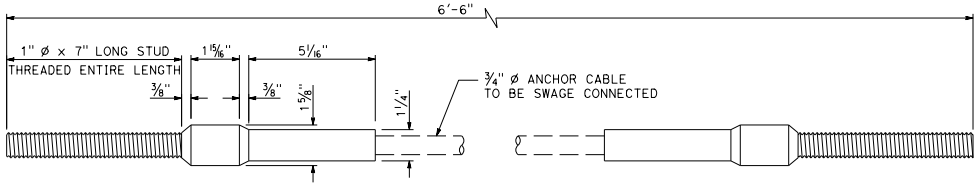
ANCHOR PLATE DETAIL
(MGS shown, TBB similar)



DETAIL D



SECTION A-A



DETAIL E

ANCHOR CABLE WITH SWAGED FITTING AND STUD

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL RAILING ANCHOR CABLE AND ANCHOR PLATE DETAILS

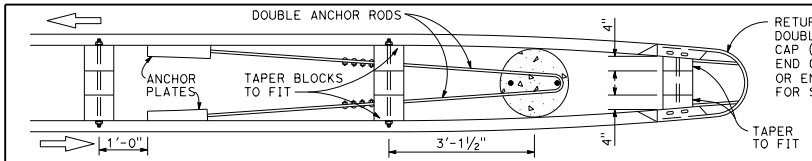
NO SCALE

RSP A77S3 DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN A77S3
DATED MAY 31, 2018 - PAGE 101 OF THE STANDARD PLANS BOOK DATED 2018.

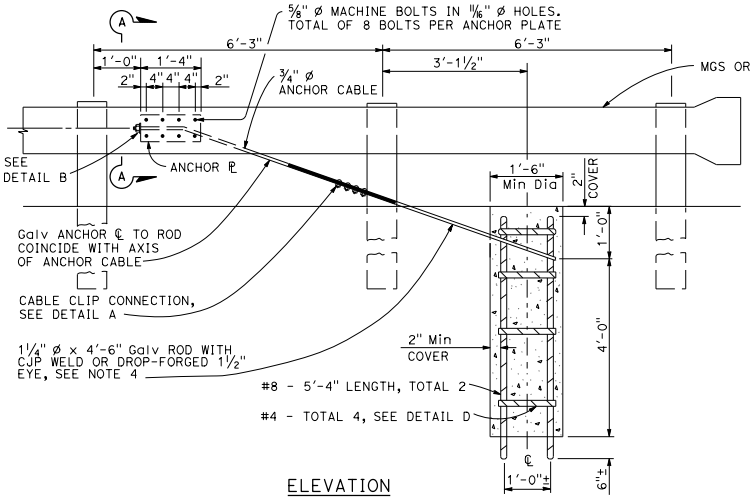
REVISED STANDARD PLAN RSP A77S3

12-2-21

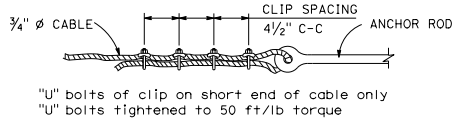
2018 REVISED STANDARD PLAN RSP A77S3



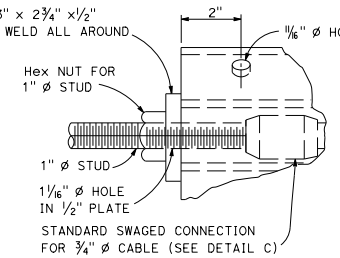
PLAN
See Note 4



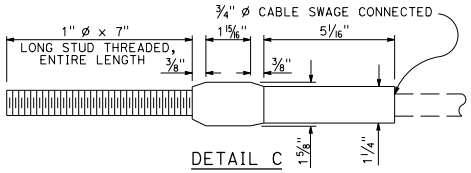
ELEVATION
END ANCHOR ASSEMBLY (TYPE CA)
(Wood post, MGS shown, details similar for Thrie Beam Barrier.)



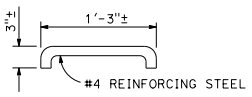
DETAIL A
CABLE CLIP CONNECTION



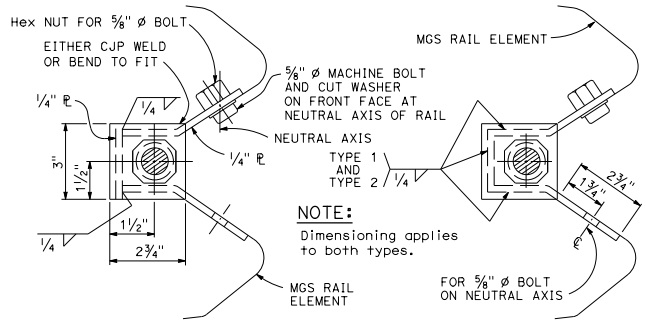
DETAIL B



DETAIL C
ANCHOR CABLE WITH SWAGED FITTING AND STUD



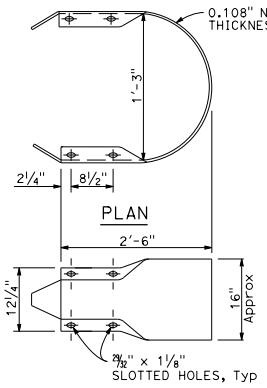
DETAIL D



SECTION A-A
(Alternative Type 1)

SECTION A-A
(Alternative Type 2)

ANCHOR PLATE DETAILS



ELEVATION
RETURN CAP (TYPE A)

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

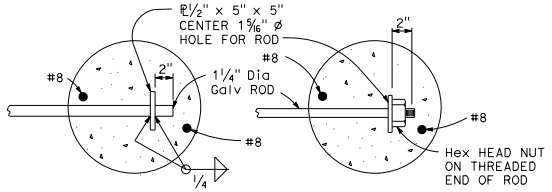
Randall D. Hiatt
REGISTERED CIVIL ENGINEER
October 19, 2018
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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

TO ACCOMPANY PLANS DATED _____

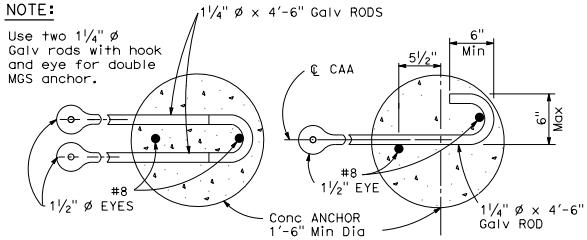
NOTES:

1. For typical use of this type of end anchor, see Standard Plan A78E2.
2. Anchor cable to be parallel to railing for straight runs of rail. Anchor cable may have angle point at anchor plate if railing is curved.
3. Anchor rod hooks to be in contact with anchor reinforcement when concrete is placed. Wire ties may be used to position anchor rods.
4. Single sided railing installations require only one anchor plate, anchor rod and anchor cable. Single sided railing will not have a rail element or blockouts on backside of line posts as shown in the plan view.



OPTIONAL ENDS ON SINGLE ANCHOR ROD
(Not to be used for double anchors)

NOTE:
Use two 1¼" Ø Galv rods with hook and eye for double MGS anchor.



DOUBLE ANCHOR SINGLE ANCHOR
ANCHOR RODS

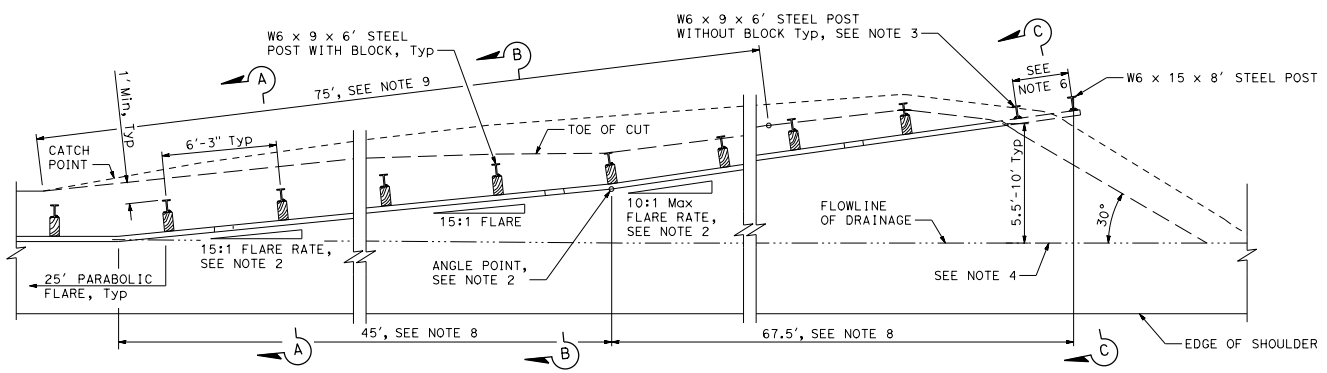
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
METAL RAILING END ANCHOR ASSEMBLY (TYPE CA)
NO SCALE

RSP A77T1 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN A77T1
DATED MAY 31, 2018 - PAGE 102 OF THE STANDARD PLANS BOOK DATED 2018.

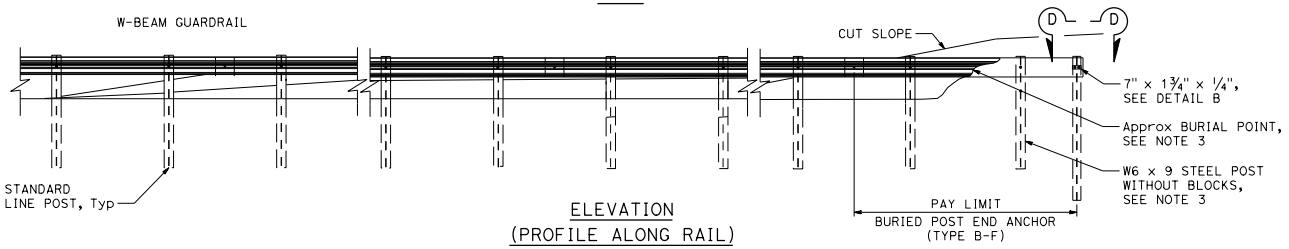
REVISED STANDARD PLAN RSP A77T1

2018 REVISED STANDARD PLAN RSP A77T1

6-8-18

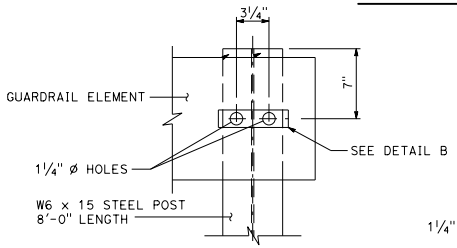


PLAN

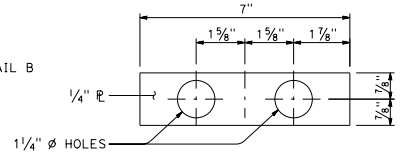


ELEVATION
(PROFILE ALONG RAIL)

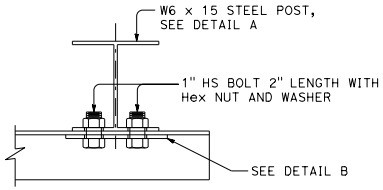
BURIED POST END ANCHOR ASSEMBLY (TYPE B-F)



DETAIL A

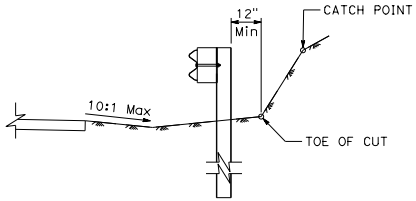


DETAIL B

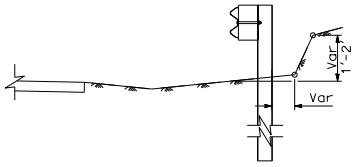


SECTION D-D

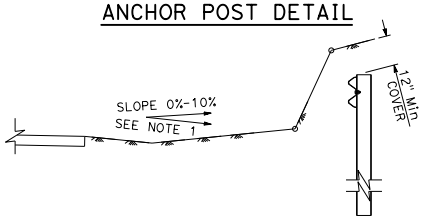
ANCHOR POST DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

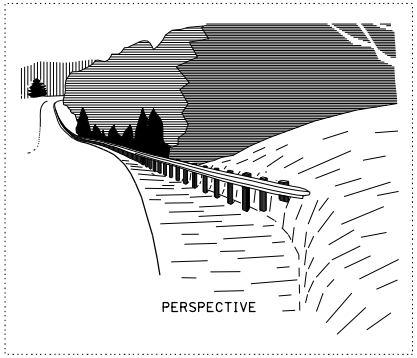
REGISTERED PROFESSIONAL ENGINEER
Mark Ballentine
No. C64101
Exp. 09-30-22
CIVIL
STATE OF CALIFORNIA

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. The buried end anchor assembly for flat slopes (Type B-F) should be installed on slopes between 3:1 and 2:1. Where slopes are steeper than 2:1, use Revised Standard Plan RSP A77T3 buried end anchor for steep slopes (Type B-S).
2. Maximum flare rate of guardrail should be 15:1 based on the edge of paved shoulder or offset line of the ETW. The flare rate can be increased up to 10:1 once the toe of cut slope behind the guardrail intersects the back of the guardrail post.
3. Do not place blocks on posts where blocks are in contact with soil.
4. For dike details, see Revised Standard Plan RSP A77N4.
5. Elevation of the guardrail should follow the grade of the shoulder within 1'-0" from face of the rail, see Section B-B. Slope for elevation will be determined by the Engineer.
6. W6 x 15 x 8' anchor post with hardware may be shifted up to 3'-1½" from end if authorized.
7. Details not shown for dike and slope treatment.
8. Lengths shown of Buried End Anchor Shallow Slope are based on x-slope of 3:1 and may need to be adjusted to match slope in field.
9. Typical guardrail shown with steel post. Wood post may be used when specified or allowed by the Engineer.



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
BURIED POST END ANCHOR (TYPE B-F)

NO SCALE

RSP A77T2 DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN A77T2
DATED MAY 31, 2018 - PAGE 103 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77T2

2018 REVISED STANDARD PLAN RSP A77T2

12-29-21

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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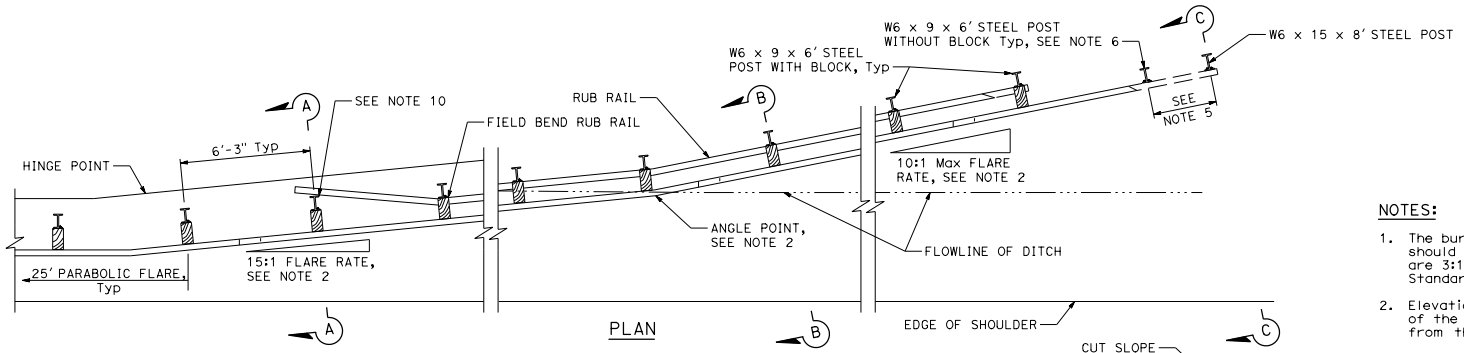
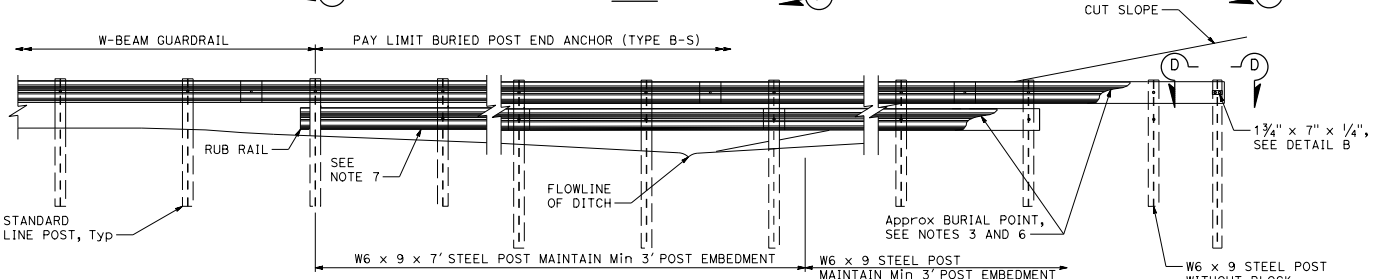
TO ACCOMPANY PLANS DATED _____

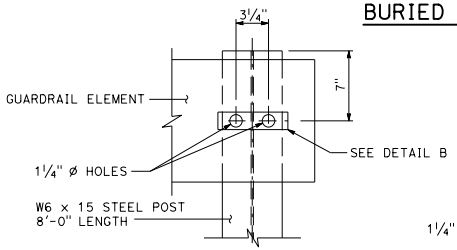


PLAN

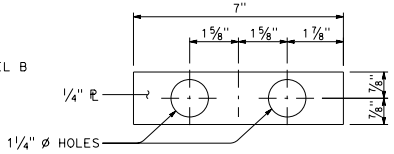


ELEVATION
(PROFILE ALONG RAIL)

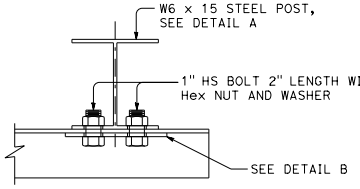
BURIED POST END ANCHOR ASSEMBLY (TYPE B-S)



DETAIL A

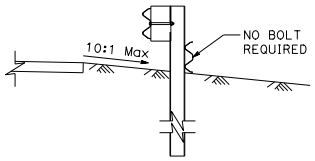


DETAIL B

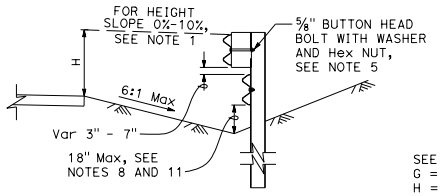


SECTION D-D

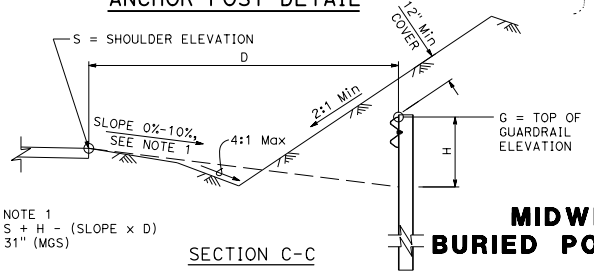
ANCHOR POST DETAIL



SECTION A-A

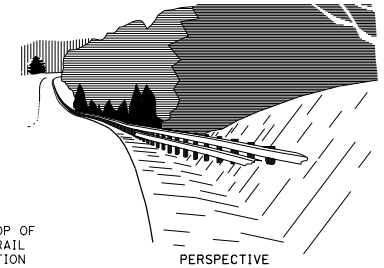


SECTION B-B



SEE NOTE 1
G = S + H - (SLOPE x D)
H = 31" (MGS)

SECTION C-C



PERSPECTIVE

NOTES:

1. The buried end anchor assembly for steep slopes (Type B-S) should be installed on a 2:1 or steeper slope. Where slopes are 3:1 to 2:1, use Buried End Anchor Assembly Revised Standard Plan RSP A77T2.
2. Elevation of the guardrail should follow the profile grade of the shoulder and be no lower than 10% of the offset from the shoulder to the rail, see section B-B.
3. Maximum flare rate of guardrail from the shoulder to the flowline is 15:1. Flare rate can be increased up to 10:1 after crossing the ditch flowline.
4. No Blocks on post where blocks are in contact with soil.
5. W6 x 15 x 8' anchor post and hardware may be shifted 3'-1½" from end if authorized.
6. Do not place blocks on post where blocks are in contact with soil.
7. Use standard guardrail elements with no blocks for rub rail.
8. Begin rub rail when the height of the guardrail is more than 34" above the ground directly below the rail. Holes cut through flange of steel post shall be ¾" Ø and on the trailing side of post.
9. Continue rub rail until the top of rub rail is buried in the backslope.
10. On one way roadways at departure end, rub rail may remain on traffic side of post.
11. Rub rail shall be 6" Min - 18" Max above flowline to not restrict flow. Height will be determined by the Engineer.
12. Rub rail splices shall be bolted same as and keep parallel with MGS. Position will be determined by the Engineer.
13. Typical guardrail shown with steel post. Wood post may be used when specified or allowed by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
BURIED POST END ANCHOR (TYPE B-S)

NO SCALE

RSP A77T3 DATED APRIL 15, 2022 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77T3

2018 REVISED STANDARD PLAN RSP A77T3

12-21-21

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 — CIVIL — STATE OF CALIFORNIA

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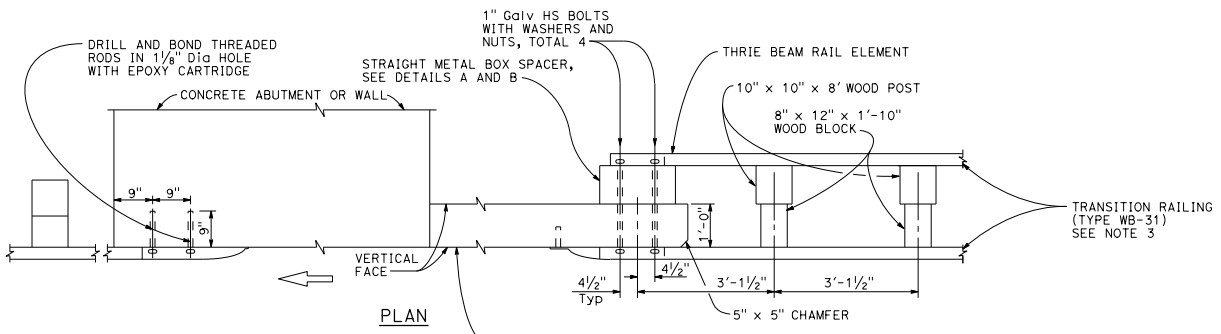
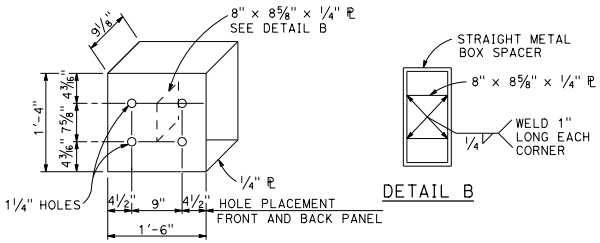
TO ACCOMPANY PLANS DATED _____



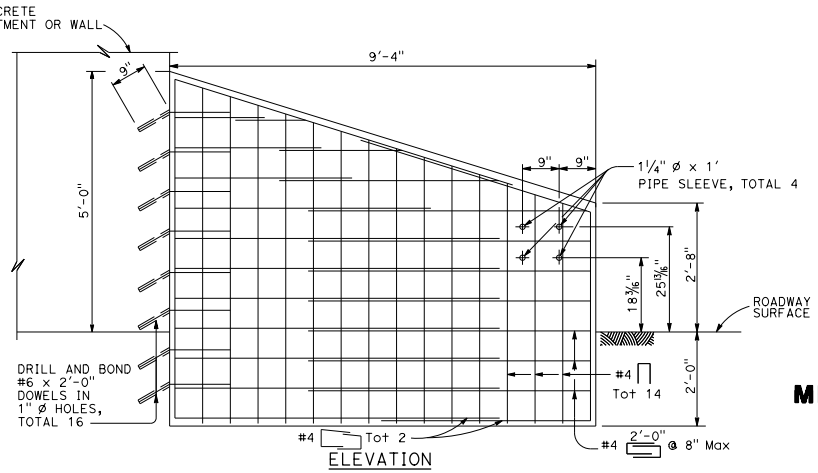
MIDWEST GUARDRAIL SYSTEM CONNECTION TO ABUTMENT OR WALL

NOTES:

1. These connection details apply to abutments and walls.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1 and RSP A77N1 and Standard Plan A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gauge nested thrie beam railingsection which is connected to the concrete anchor block.
4. For typical use of Connection Details DD, see Layout Types 12A and 12B on Revised Standard Plan RSP A77Q1 and Layout Types 12C and 12D on Standard Plan A77Q2.
5. For typical use of Connection Detail EE, see Layout Type 12D on Standard Plan A77Q2 and Layout Type 12DD on Standard Plan A77Q5.



STRAIGHT METAL BOX SPACER



ANCHOR BLOCK FOR TRANSITION RAILING CONNECTION

DETAIL C

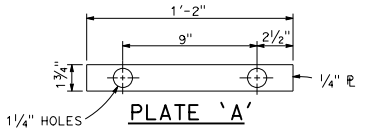


PLATE 'A'

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO ABUTMENTS AND WALLS

NO SCALE

RSP A77U3 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN A77U3
DATED MAY 31, 2018 - PAGE 106 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77U3

2018 REVISED STANDARD PLAN RSP A77U3

7-22-20

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER

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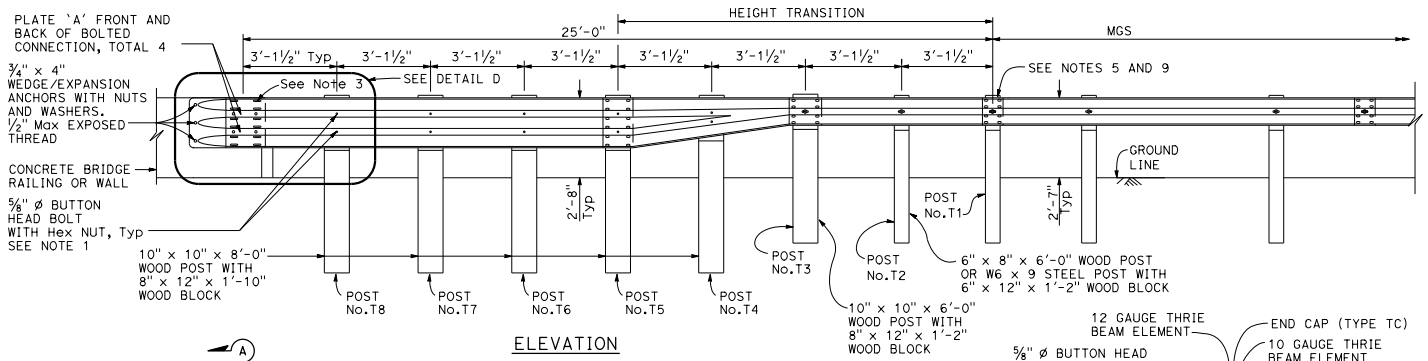
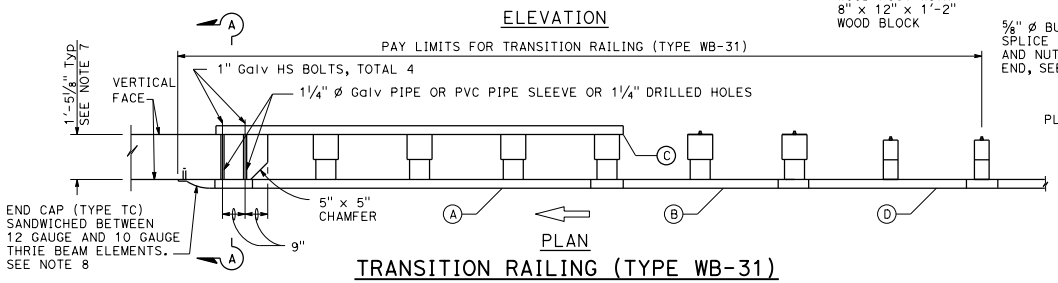


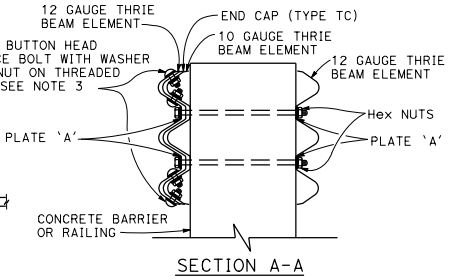
ELEVATION



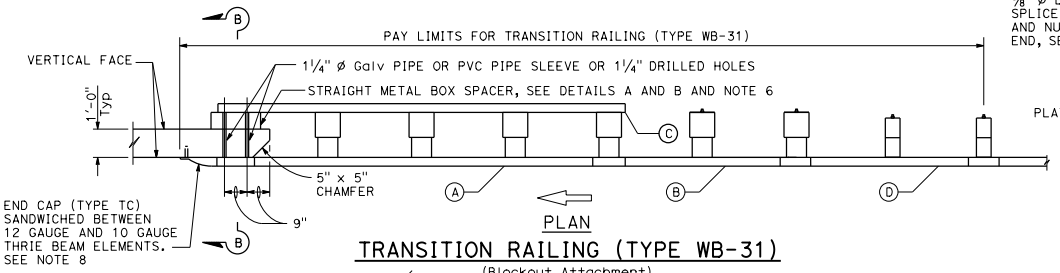
PLAN

TRANSITION RAILING (TYPE WB-31)

(No Blockout Attachment)



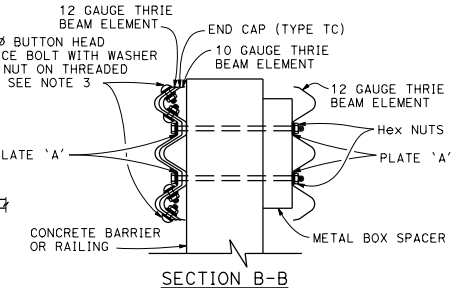
SECTION A-A



PLAN

TRANSITION RAILING (TYPE WB-31)

(Blockout Attachment)

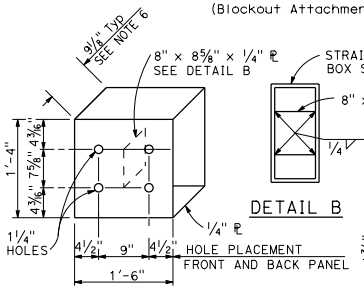


SECTION B-B

LEGEND:

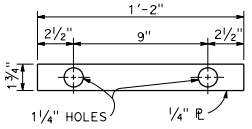
- (A) NESTED THRIE BEAM ELEMENTS (ONE 12 GAUGE ELEMENT NESTED OVER ONE 10 GAUGE ELEMENT).
- (B) ONE ASYMMETRICAL 10 GAUGE "W" BEAM TO THRIE BEAM ELEMENT.
- (C) ONE 12 GAUGE THRIE BEAM ELEMENT.
- (D) ONE 10 GAUGE "W" BEAM RAIL ELEMENT (7'-3 1/2"LENGTH)

10 GAUGE = 0.138" THICK
12 GAUGE = 0.108" THICK



DETAIL A

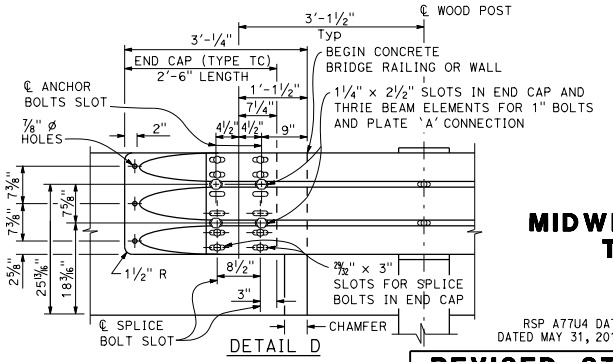
DETAIL B



DETAIL C

STRAIGHT METAL BOX SPACER

PLATE 'A'



DETAIL D

NOTES:

TO ACCOMPANY PLANS DATED

1. Use 5/8" Ø Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
2. The nested rail elements, end cap, and 'W' beam to thrie beam element may be spliced together prior to bolting the elements to the wood post and concrete barrier or railing.
3. Exterior splice bolt holes for rail element splices at Post No. T5 and the connection to the concrete barrier or railing shall be the standard 29/32" x 1 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1 1/4" Ø. Only the top 4 and the bottom 4 splice bolts with washers and nuts are required for rail splices at Post No. T5 and the connection to the concrete barrier or railing.
4. The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
5. Typically, the railing connected to Transition Railing (Type WB-31) will be either standard railing section of MGS with height transition ratio of 150:1 or a Caltrans approved 31" end treatment attached to Post No. T1.
6. The depth of the metal box spacer varies from the 9 1/8" to 1 1/2" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 21 1/8". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1 1/2", metal plates similar to Plate 'A' are to be used as spacers.
7. Where the width of the concrete railing or wall is greater than 17 1/8", wood blocks are to be used to fill the space created between the backside of Posts No. T5 through No. T8 and the rear thrie beam element. These wood blocks shall be 8" in width and 1'-2" in length. The dimension between the front thrie beam element and the rear thrie beam element is to match the width of the concrete railing or wall.
8. End cap may be installed over 12 gauge and 10 gauge thrie beam elements where transition railing is installed on the departure end of bridge railing.
9. Conform standard railing section height to 31" at Post No. T1 using height transition ratio of 150:1. MGS tolerance at post No. T1 is ± 1".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TRANSITION RAILING (TYPE WB-31)

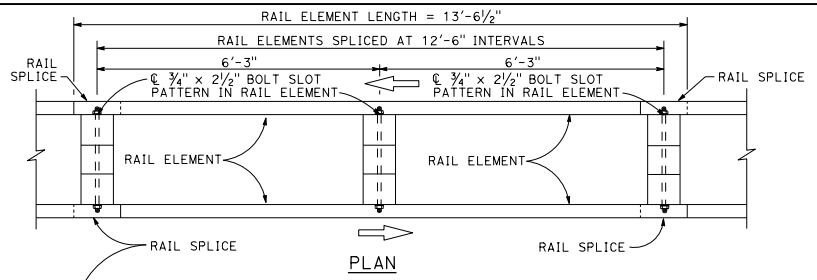
NO SCALE

RSP A77U4 DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN A77U4
DATED MAY 31, 2018 - PAGE 107 OF THE STANDARD PLANS BOOK DATED 2018.

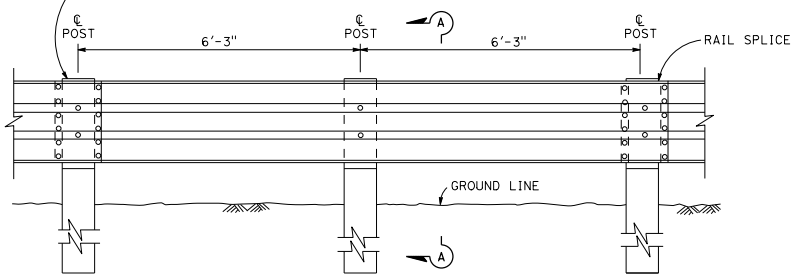
REVISED STANDARD PLAN RSP A77U4

2018 REVISED STANDARD PLAN RSP A77U4

12-11-18



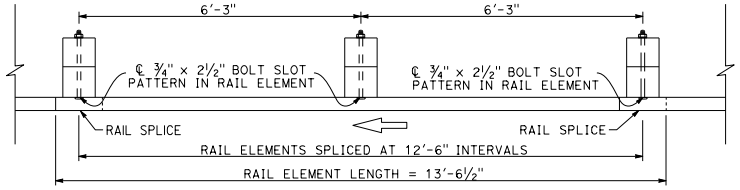
PLAN



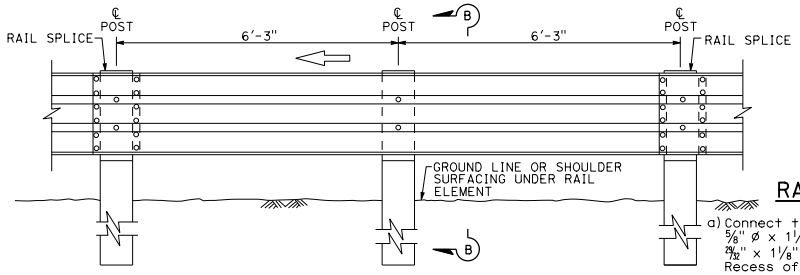
ELEVATION

DOUBLE THRIE BEAM BARRIER

(Wood post and blocks)
See Note 1



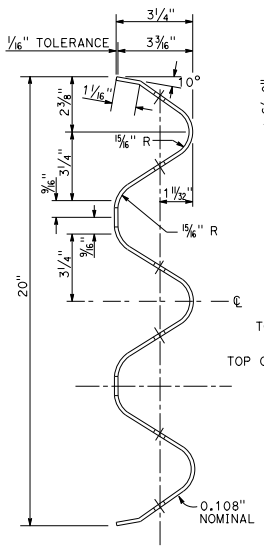
PLAN



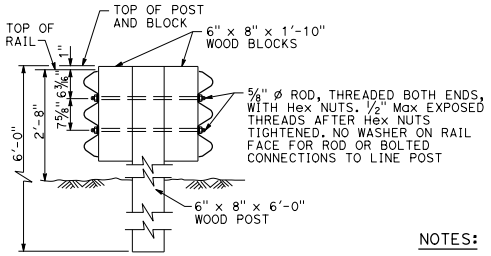
ELEVATION

SINGLE THRIE BEAM BARRIER

(Wood post and blocks)
See Note 1

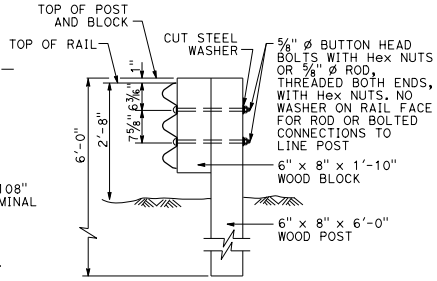


SECTION THRU RAIL ELEMENT



SECTION A-A

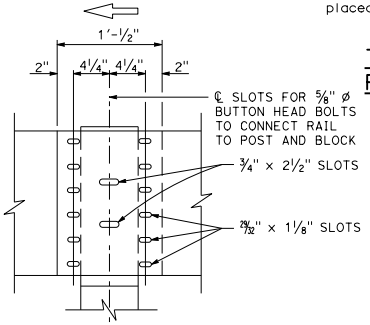
TYPICAL WOOD LINE POST INSTALLATION



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



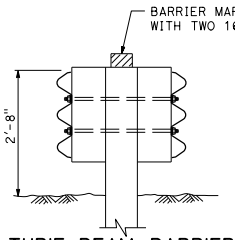
ELEVATION

RAIL ELEMENT SPLICE DETAIL

a) Connect the overlapped ends of the thrie beam rail elements with ⅝" ø x 1¼" button head oval shoulder 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 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 19, 2019
PLANS APPROVAL DATE

Randall 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 Standard Plans 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.
9. Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A78A DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN A78A
DATED MAY 31, 2018 - PAGE 111 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A78A

12-13-18

2018 REVISED STANDARD PLAN RSP A78A

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

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

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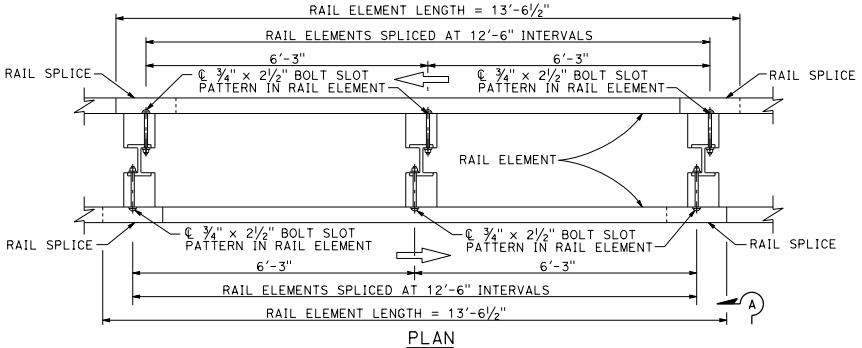
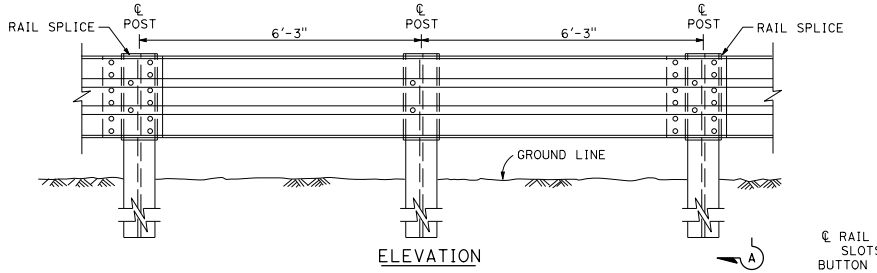
TO ACCOMPANY PLANS DATED _____



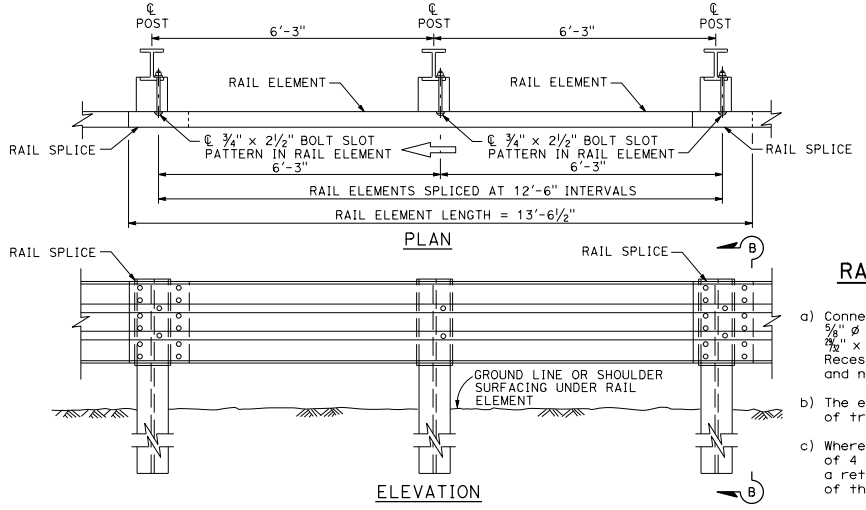
PLAN



ELEVATION

DOUBLE THRIE BEAM BARRIER

(Steel post with notched wood or notched plastic blocks)
See Note 1

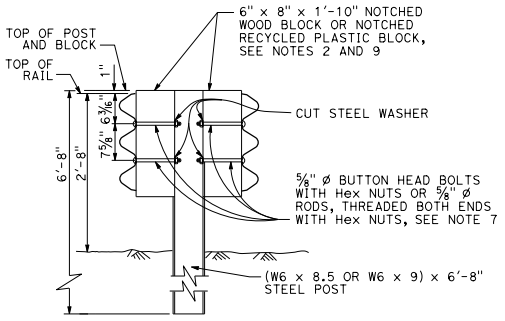


PLAN

ELEVATION

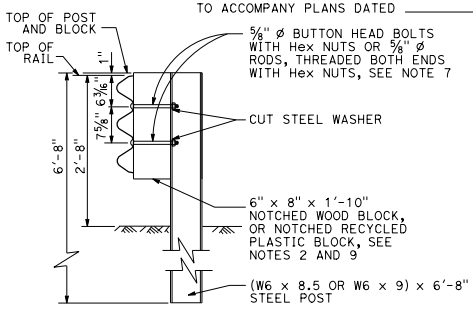
SINGLE THRIE BEAM BARRIER

(Steel post with notched wood or notched plastic blocks)
See Note 1



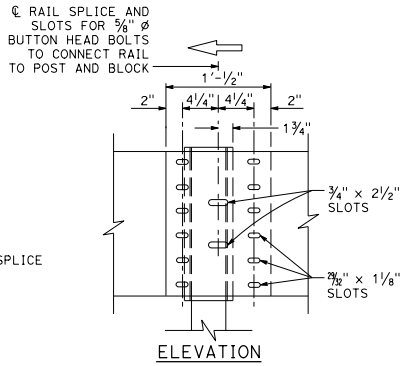
SECTION A-A

TYPICAL STEEL LINE POST INSTALLATION



SECTION B-B

TYPICAL STEEL LINE POST INSTALLATION



ELEVATION

RAIL ELEMENT SPLICE DETAIL

a) Connect the overlapped ends of the thrie beam rail elements with ⅝" ø x 1¼" button head oval shoulder 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 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.

NOTES:

1. For details of the cross section of the thrie beam rail element and details for wood post with wood block installations, see Standard Plan A78A.
2. For details of standard hardware, posts and blocks used to construct thrie beam barrier, see Standard Plans 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 A78E1, A78E2, A78E3, A78F1, A78F2, A78G and A78H.
6. For connection to Concrete Barrier, see Standard Plan A78I.
7. Attach rail element to block and steel post with 2 bolts or rods on approaching traffic side of block and post web. No washer on rail face for rod or bolted connections to line post.
8. For details of thrie beam barrier on bridges, see Standard Plan A78D2. For details of thrie beam barrier at fixed objects, see Standard Plan A78D1.
9. Notched face of block faces steel post.
10. Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

THRIE BEAM BARRIER STANDARD BARRIER RAILING SECTION (STEEL POST WITH NOTCHED WOOD BLOCK OR NOTCHED RECYCLED PLASTIC BLOCK)

NO SCALE

RSP A78B DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN A78B
DATED MAY 31, 2018 - PAGE 112 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A78B

2018 STANDARD PLAN A78B

12-13-18

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Mark Ballentine
No. C64101
Exp. 09-30-22
CIVIL
STATE OF CALIFORNIA

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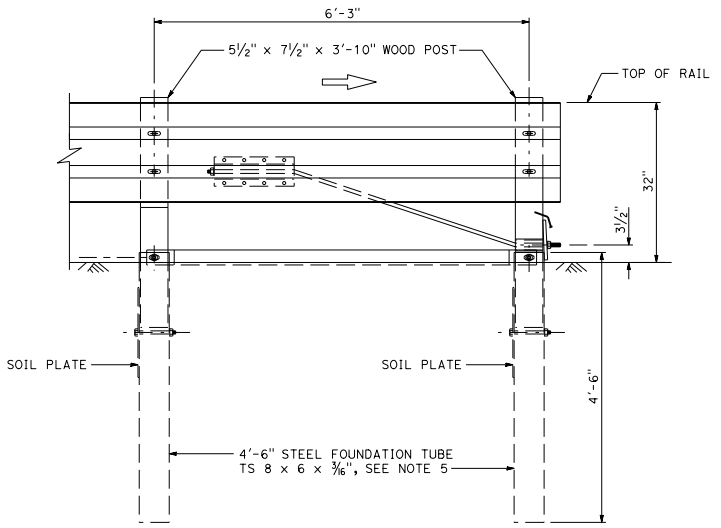
TO ACCOMPANY PLANS DATED _____

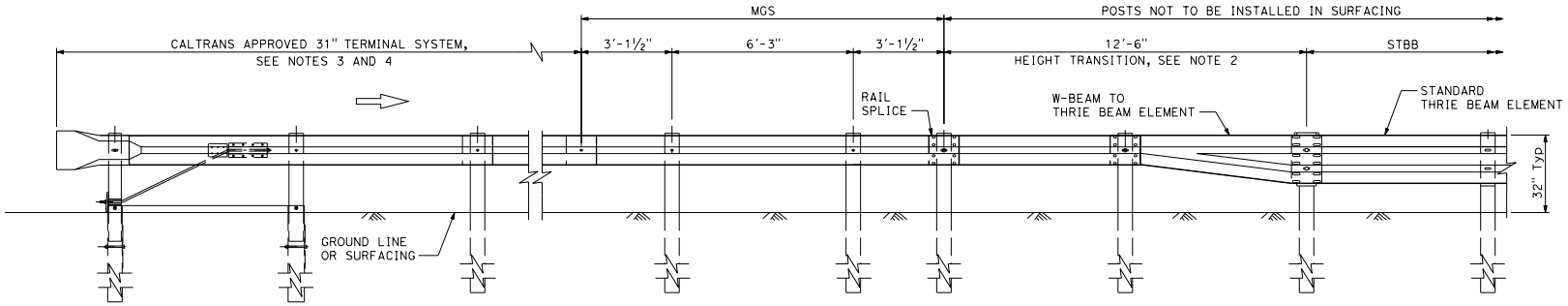


END ANCHOR ASSEMBLY (TYPE SFT-M) FOR TRAFFIC DEPARTURE END OF SINGLE THRIE BEAM BARRIER

(For one-way roadways)
See Note 1

NOTES:

1. For additional details of End Anchor Assembly (Type SFT-M), see Revised Standard Plan RSP A77S1.
2. The W-beam to thrie beam section is only required where the terminal system connection to the thrie beam barrier is a W-beam rail.
3. The type of terminal system to be used will be shown on the Project Plans.
4. A Caltrans approved crash cushion should be used in place of a terminal system end treatment where the backside of the railing would be exposed to traffic.
5. A 6'-0" length steel foundation tube, TS 8 x 6 x 5/16, 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 5/8" 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.



ELEVATION

END TREATMENT FOR TRAFFIC APPROACH END OF SINGLE THRIE BEAM BARRIER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SINGLE THRIE BEAM BARRIER END ANCHOR ASSEMBLY AND TERMINAL SYSTEM END TREATMENT

NO SCALE

RSP A78E1 DATED APRIL 15, 2022 SUPERSEDES RSP A78E1 DATED OCTOBER 19, 2018 AND STANDARD PLAN A78E1 DATED MAY 31, 2018 - PAGE 125 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A78E1

2018 REVISED STANDARD PLAN RSP A78E1

1-7-22

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

Mark Ballentine
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mark Ballentine — No. C64101 — Exp. 09-30-22 CIVIL — STATE OF CALIFORNIA

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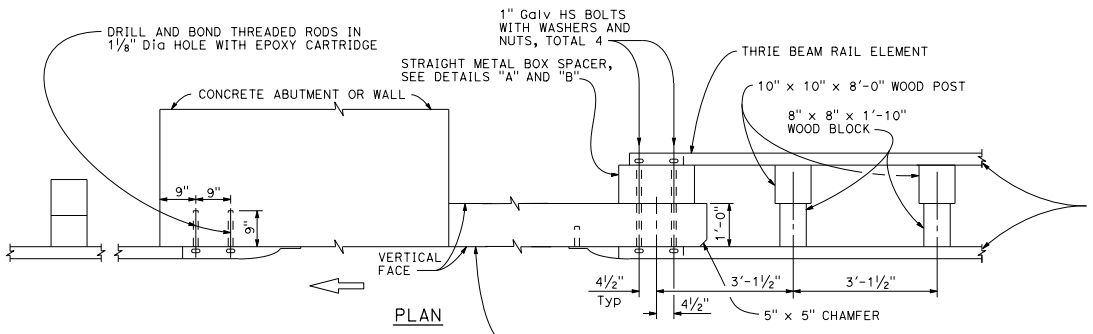
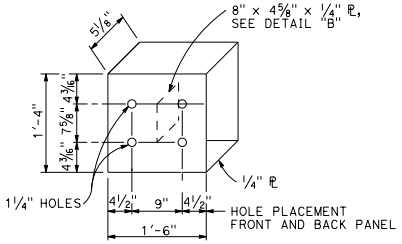
TO ACCOMPANY PLANS DATED _____



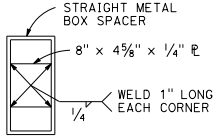
SINGLE THRIE BEAM BARRIER CONNECTION TO ABUTMENT OR WALL

NOTES:

1. These connection details apply to concrete abutments and walls. For additional connections details, see Project Plans.
2. For additional details of Transition Railing (Type STB), see Standard Plan A78J. Transition Railing (Type STB) transitions the standard 12 gauge single thrie beam barrier to a heavier gauge single thrie beam railing section then to a heavier gauge nested double thrie beam barrier section which then is connected to the concrete anchor block.
3. For details of End Cap (Type TC), see Standard Plan A78C1.

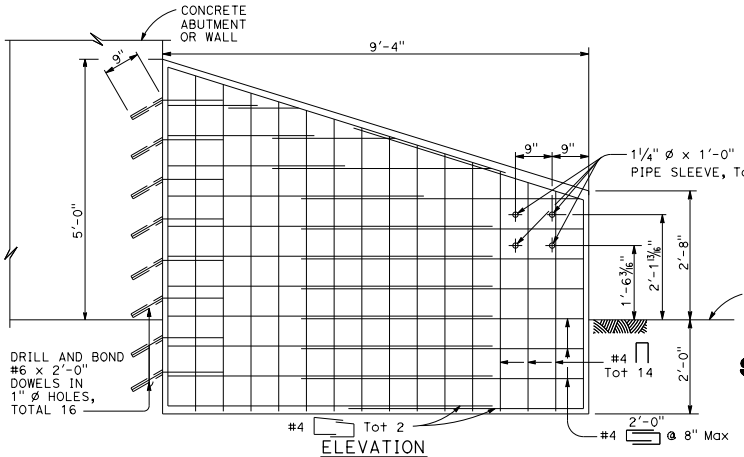


DETAIL "A"



DETAIL "B"

STRAIGHT METAL BOX SPACER



ELEVATION

ANCHOR BLOCK FOR TRANSITION RAILING CONNECTION

DETAIL "C"

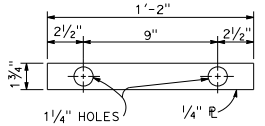


PLATE 'A'

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SINGLE THRIE BEAM BARRIER CONNECTIONS TO ABUTMENTS AND WALLS

NO SCALE

RSP A78G DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN A78G
DATED MAY 31, 2018 - PAGE 130 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A78G

2018 REVISED STANDARD PLAN RSP A78G

7-22-20

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Randell D. Hiatt — No. C50200 — Exp. 6-30-21 — CIVIL — STATE OF CALIFORNIA

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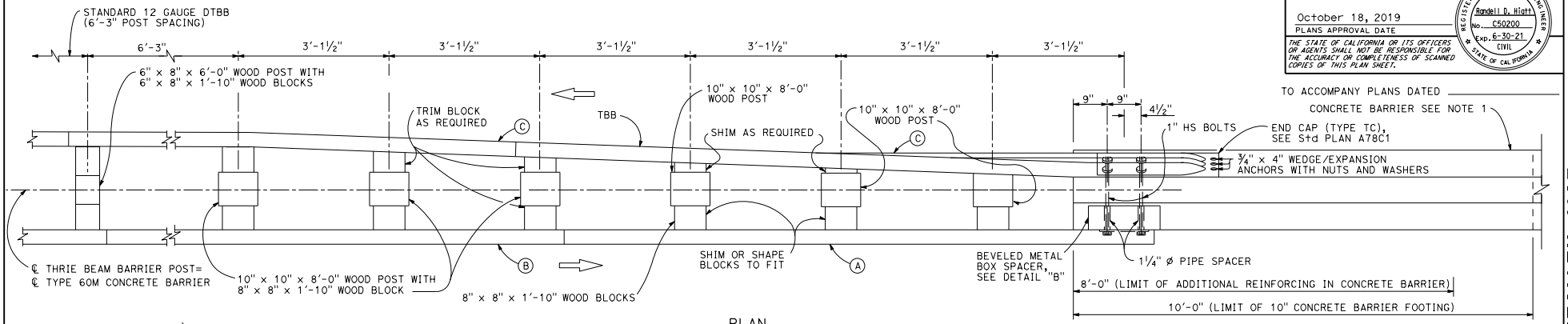
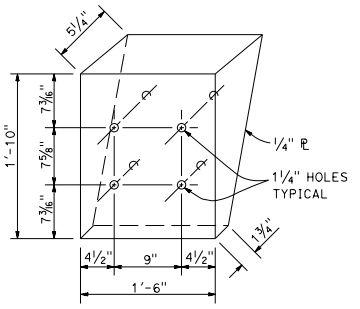
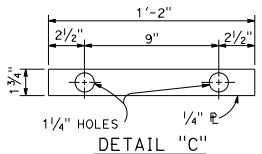
TO ACCOMPANY PLANS DATED _____



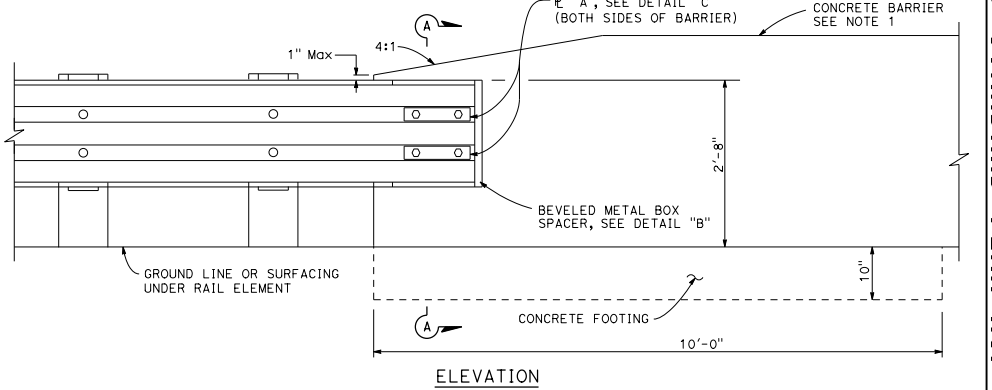
PLAN



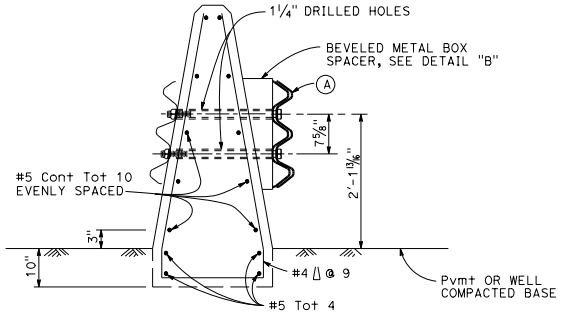
DETAIL "B"
Beveled metal box spacer
See Note 3



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 Standard Plan 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 Standard Plans A78A, 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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN A78I
DATED MAY 31, 2018 - PAGE 132 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A78I

2018 REVISED STANDARD PLAN RSP A78I

5-16-19

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Mr. Reza Valizadeh, No. C51902, Exp. 6-30-20, CIVIL, REGISTERED PROFESSIONAL ENGINEER, STATE OF CALIFORNIA

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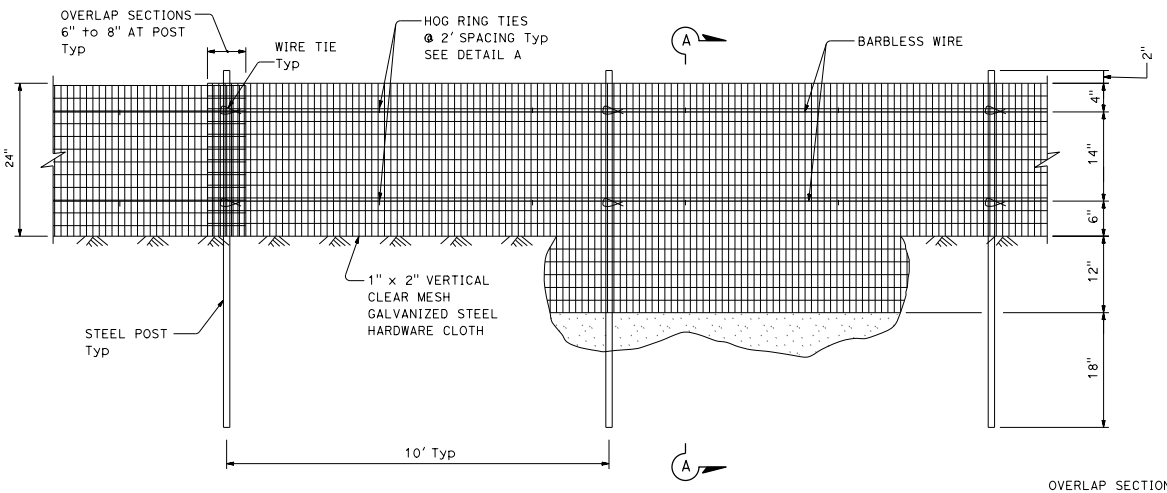
TO ACCOMPANY PLANS DATED _____



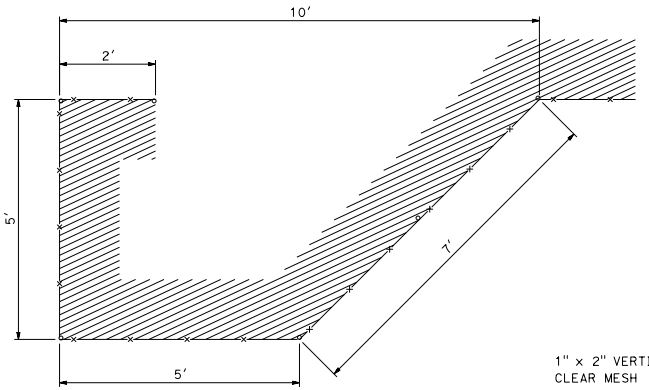
FRONT VIEW

LEGEND:

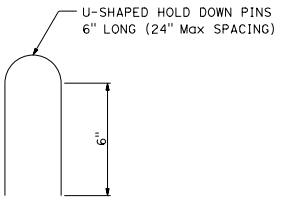
Desert Tortoise Habitat

NOTE:

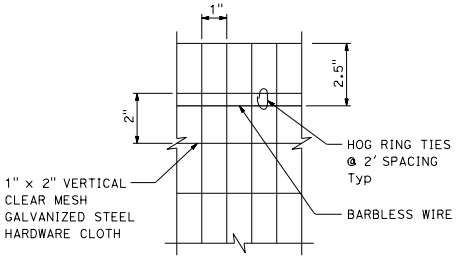
1. Exact locations for desert tortoise fence are shown on the plans.



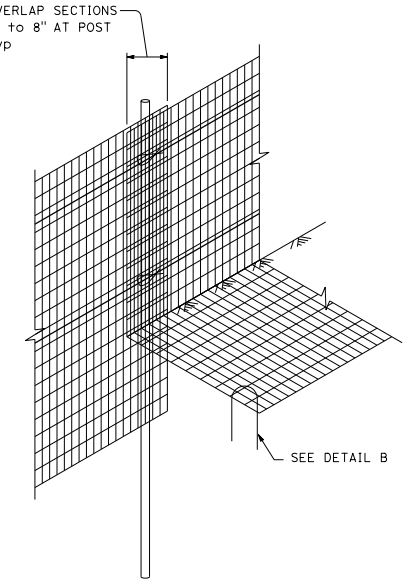
REDIRECTIONAL CONFIGURATION PLAN VIEW



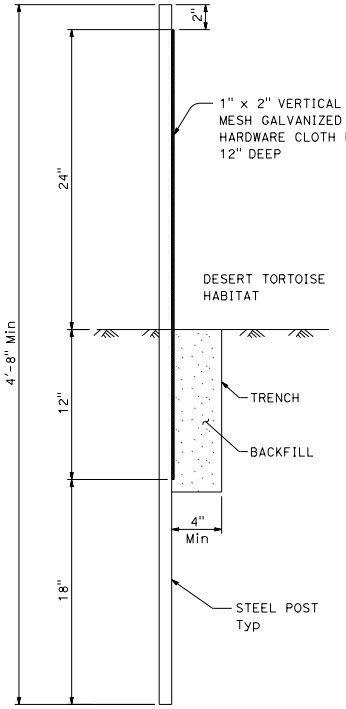
DETAIL B



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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN A84B
DATED MAY 31, 2018 - PAGE 139 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A84B

2018 REVISED STANDARD PLAN RSP A84B

6-13-18

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

R. Valizadeh
REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

W. Reza Valizadeh No. C51902 Exp. 6-30-20 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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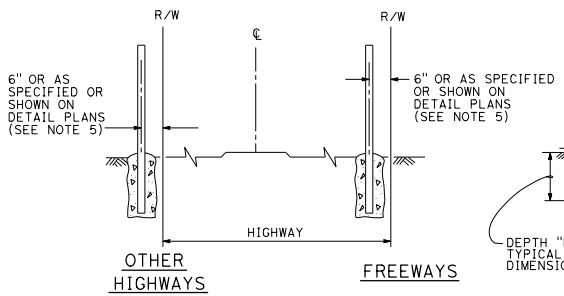
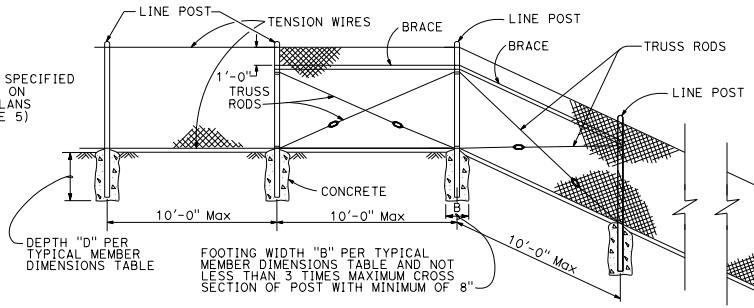
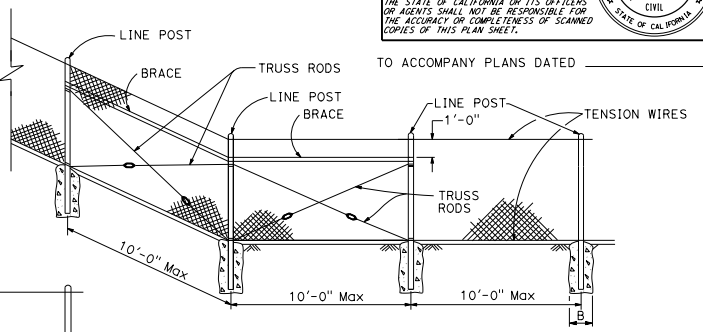
TO ACCOMPANY PLANS DATED _____

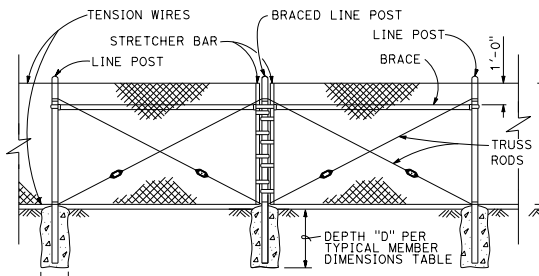


FENCE LOCATION



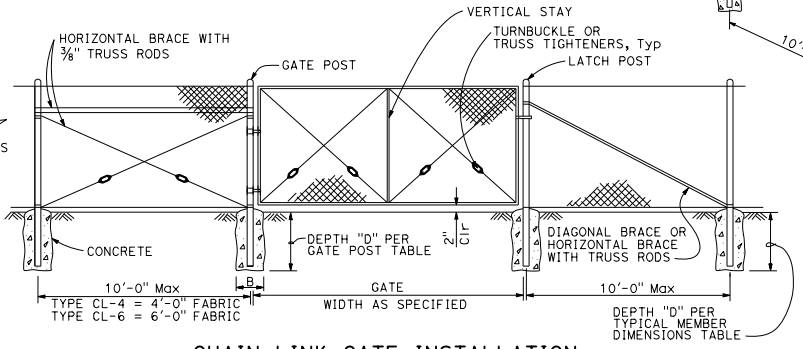
CHAIN LINK FENCE ON SHARP BREAK IN GRADE





BRACED LINE POST INSTALLATION

Braced line post at intervals not exceeding 1000'



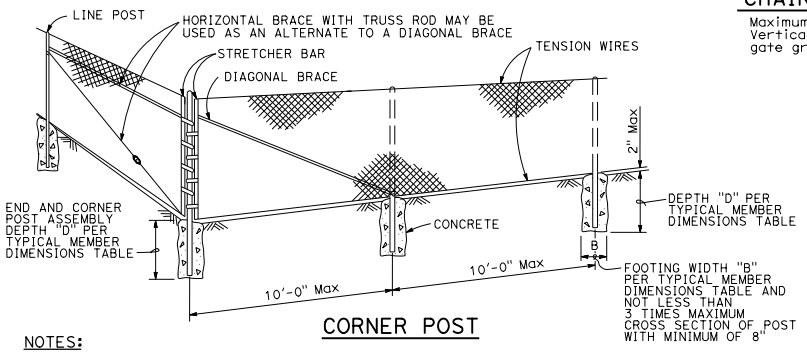
CHAIN LINK GATE INSTALLATION

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

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



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

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

REVISED STANDARD PLAN RSP A85

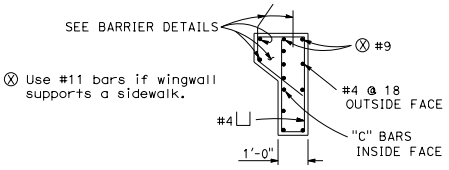
2018 REVISED STANDARD PLAN RSP A85

2-1-18

BRIDGE DESIGNATIONS AND ABBREVIATIONS

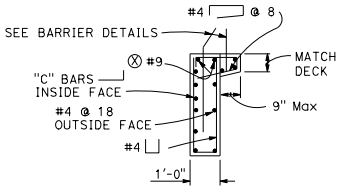
See Standard Plans A3A, A3B, and A3C for additional or standard abbreviations

J	Outer, outer left bridge
K	Outer left bridge
S	Outer right bridge
T	Outer, outer right bridge
RWLOL	Retaining Wall Layout Line
WWLOL	Wingwall Layout Line



Ⓧ Use #11 bars if wingwall supports a sidewalk.

SECTION J-J
Without overhang



SECTION J-J
With overhang

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

Peter W. Norboe
REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Peter W. Norboe — No. C57519 — Exp. 12-31-19 CIVIL — STATE OF CALIFORNIA

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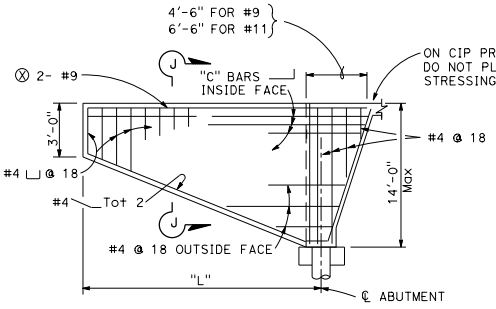
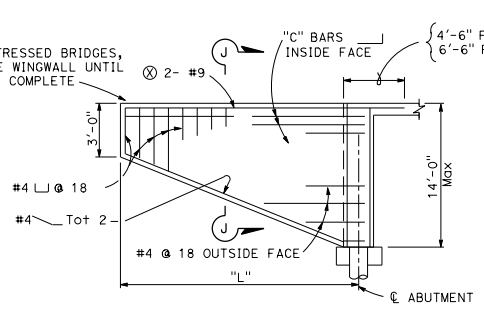
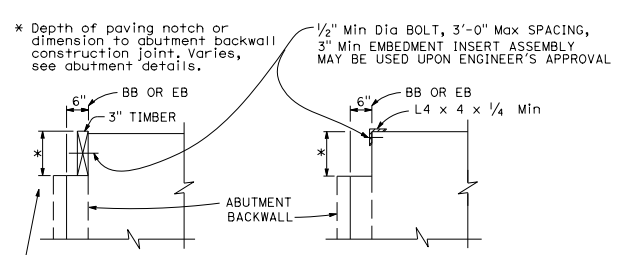
TO ACCOMPANY PLANS DATED _____



ELEVATION
SLOPING ABUTMENT



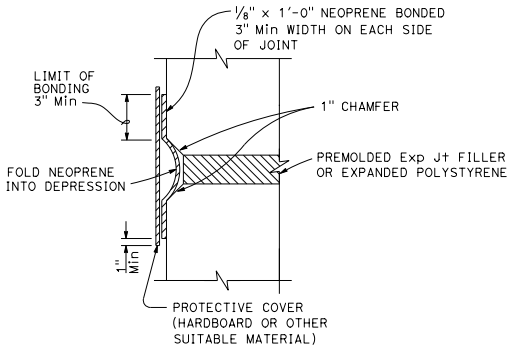
ELEVATION
VERTICAL ABUTMENT



TEMPORARY BUMPERS
BRIDGE DETAIL 1-2

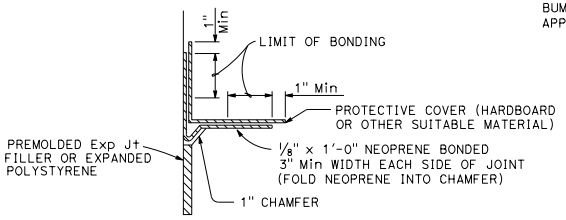
ALTERNATIVE 1 ALTERNATIVE 2

TOP OF BUMPER TO BE AT OR ABOVE THE TOP OF DECK CONCRETE. BUMPERS AND BOLTS TO BE REMOVED IMMEDIATELY PRIOR TO PLACING APPROACH PAVEMENT



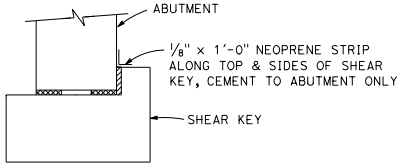
BRIDGE DETAIL 1-3
STRIP WATERSTOP DETAIL

When used on CIP prestressed bridges, do not apply waterstop until stressing is complete.

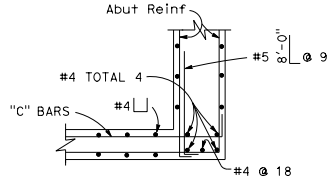


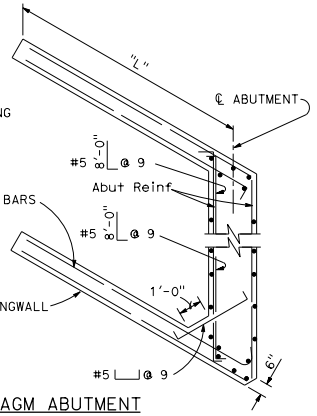
BRIDGE DETAIL 1-4
STRIP WATERSTOP CORNER DETAIL

When used on CIP prestressed bridges, do not apply waterstop until stressing is complete.



BRIDGE DETAIL 1-6
SHEAR KEY JOINT PROTECTION





WINGWALLS FOR DIAPHRAGM ABUTMENT
BRIDGE DETAIL 1-5

CORNER DETAIL
FOR SKEW 20° AND LESS

CORNER DETAIL
FOR SKEW OVER 20°

"L"	"C" BARS
12'-0"	#5 @ 9"
14'-0"	#6 @ 9"
16'-0"	#7 @ 9"
18'-0"	#8 @ 9"
20'-0"	#9 @ 9"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BRIDGE DETAILS

NO SCALE

RSP D83B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN D83B DATED MAY 31, 2018 - PAGE 318 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B0-1

2018 REVISED STANDARD PLAN RSP B0-1

5-21-18

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

Gary Wang
REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gary Wang — No. C58298 — Exp. 6-30-22 — CIVIL — STATE OF CALIFORNIA

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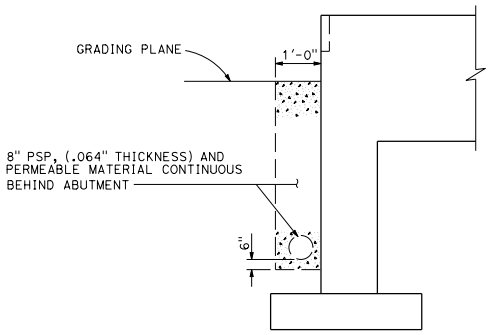
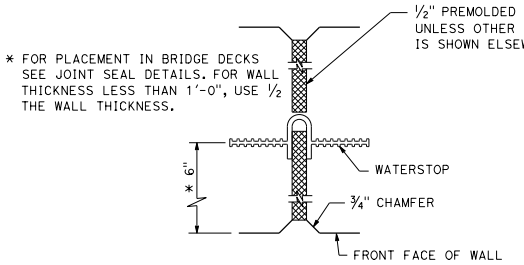
TO ACCOMPANY PLANS DATED _____



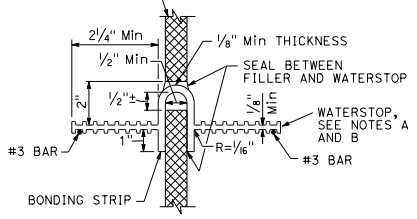
BRIDGE DETAIL 3-5

8" PSP AND PERMEABLE MATERIAL



BRIDGE DETAIL 3-4

WALL EXPANSION JOINT



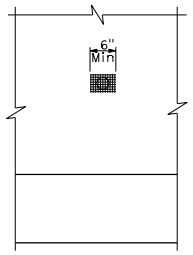
BRIDGE DETAIL 3-6

WATERSTOP

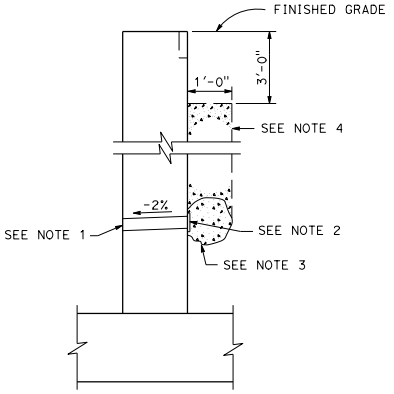
NOTES:

A. 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.

B. 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.

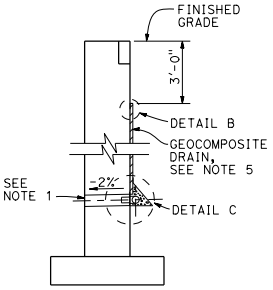


ELEVATION

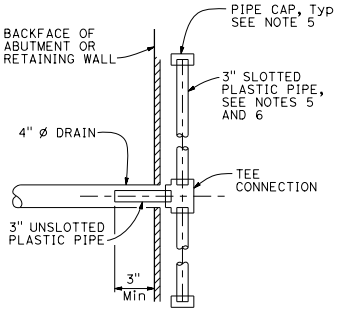


SECTION

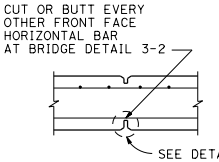
BRIDGE DETAIL 3-1



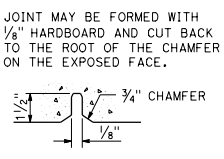
WALL SECTION



SECTION A-A



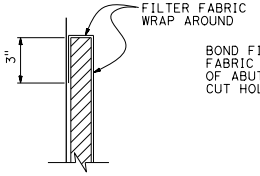
SECTION



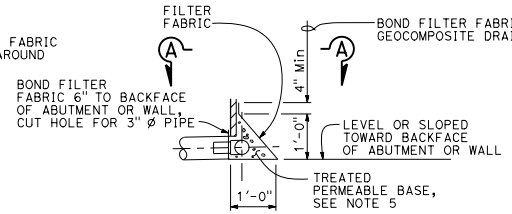
DETAIL A

BRIDGE DETAIL 3-2

WEAKENED PLANES



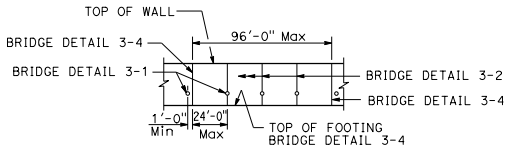
DETAIL B



DETAIL C

BRIDGE DETAIL 3-7

WEEP HOLE, PERVIOUS BACKFILL AND GEOCOMPOSITE DRAIN



BRIDGE DETAIL 3-3

WALL EXPANSION JOINTS AND WEAKENED PLANES

NOTES:

1. 4" Ø Drains at intermediate sag points and 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.
2. 6" square aluminum or galvanized steel wire ¼" mesh hardware cloth, minimum wire diameter 0.025". Anchor firmly to backface.
3. One cubic foot pervious backfill material in a nonwoven filter fabric, securely tied.
4. Pervious backfill material continuous behind retaining wall or abutment.
5. Geocomposite drain, treated permeable base and 3" Ø slotted plastic pipe continuous behind retaining wall or abutment. Cap ends of pipe. Provide "Tee" connection at each 4" Ø drain.
6. Connect the low end of plastic pipe to the main outlet pipe as applicable.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BRIDGE DETAILS

NO SCALE

RSP B0-3 DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN B0-3 DATED MAY 31, 2018 - PAGE 319 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B0-3

2018 REVISED STANDARD PLAN RSP B0-3

7-6-21

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Amir M. Malek
No. C62397
Exp. 9-30-19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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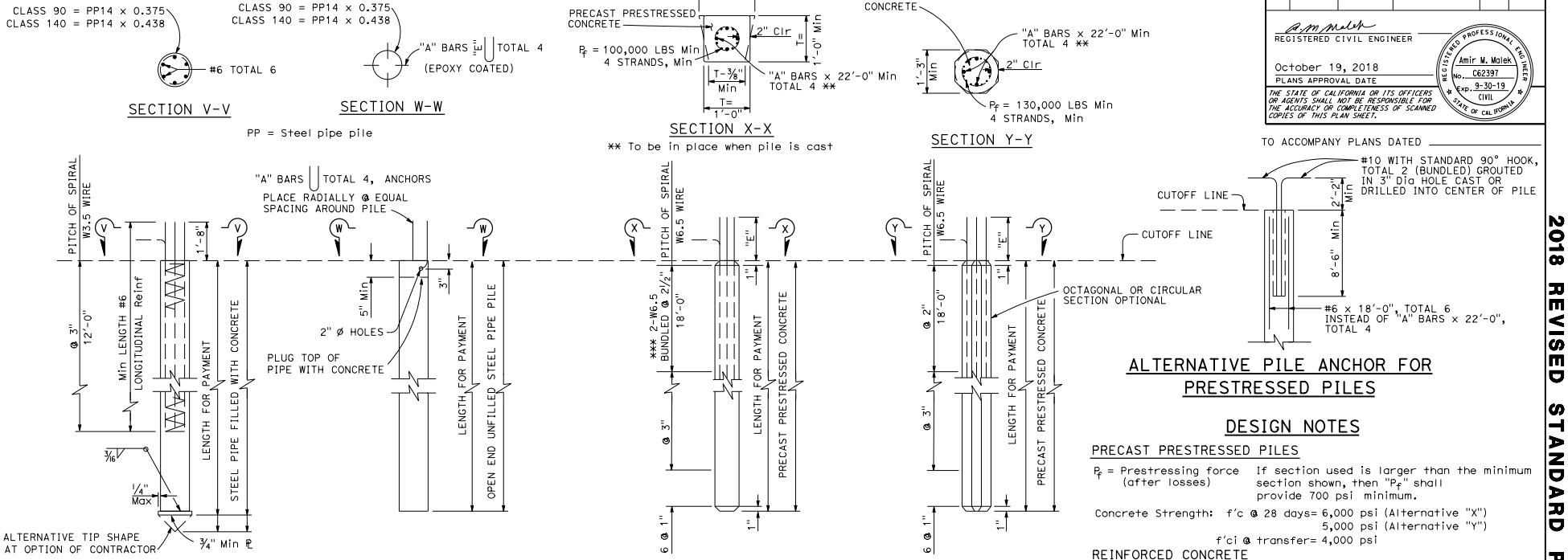
TO ACCOMPANY PLANS DATED _____



ALTERNATIVE "V" ALTERNATIVE "W" ALTERNATIVE "X" ALTERNATIVE "Y"

*** W11.0 at 2" may be substituted

ALTERNATIVE PILE ANCHOR FOR PRESTRESSED PILES

DESIGN NOTES

PRECAST PRESTRESSED PILES

P_f = Prestressing force (after losses)

If section used is larger than the minimum section shown, then "P_f" shall provide 700 psi minimum.

Concrete Strength: f'c @ 28 days= 6,000 psi (Alternative "X")
5,000 psi (Alternative "Y")
f'ci @ transfer= 4,000 psi

REINFORCED CONCRETE

f'c = 4,000 psi
fy = 60,000 psi

STEEL PIPE PILE

Fy (Minimum yield strength) = 45,000 psi
Fu (Minimum tensile strength) = 66,000 psi

DESIGN CAPACITY

Class 90

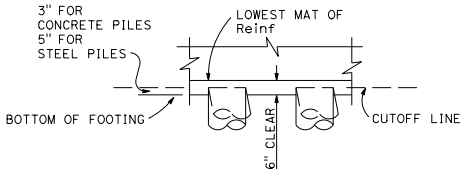
Compression = 90 kip (Service state)
= 180 kip (Nominal axial structural resistance)

Tension = 36 kip (Service state)
= 90 kip (Nominal axial structural resistance)

Class 140

Compression = 140 kip (Service state)
= 280 kip (Nominal axial structural resistance)

Tension = 56 kip (Service state)
= 140 kip (Nominal axial structural resistance)



PILE EMBEDMENT

	REQUIRED NOMINAL RESISTANCE (TENSION) *	
	60 kips OR LESS	GREATER THAN 60 kips
"A" BARS	#6	#8
"E" DIMENSION	1'-8"	2'-8"

* See Pile Data Table on the Project Plans for Nominal Resistance (Tension) Requirements

NOTES:

1. Details are the same for both Class 90 and Class 140 piles unless noted otherwise.
2. At the Contractor's option, alternative steel pipe with at least the diameter and wall thickness shown on these plans may be used. The diameter shall not exceed 1'-6".
3. Pile reinforcement and steel pile anchor bars extending into a footing shall be hooked as required to provide clearance to top of footing. Piles shall be extended only with details shown on the Project Plans.
4. 2" clearance to spiral reinforcement shall be maintained if section used is larger than the minimum section shown.
5. Maximum cutoff length at the top of the Alternative "X" and Alternative "Y" Piles is 10'-0".
6. For longitudinal reinforcement and prestressing for anchor piles and load test piles, see "Load Test Pile Details (2)", Standard Plan B2-10.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PILE DETAILS
CLASS 90 AND CLASS 140

NO SCALE

RSP B2-5 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN B2-5 DATED MAY 31, 2018 - PAGE 323 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B2-5

2018 REVISED STANDARD PLAN RSP B2-5

5-10-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Amir M. Malek
No. C62397
Exp. 9-30-19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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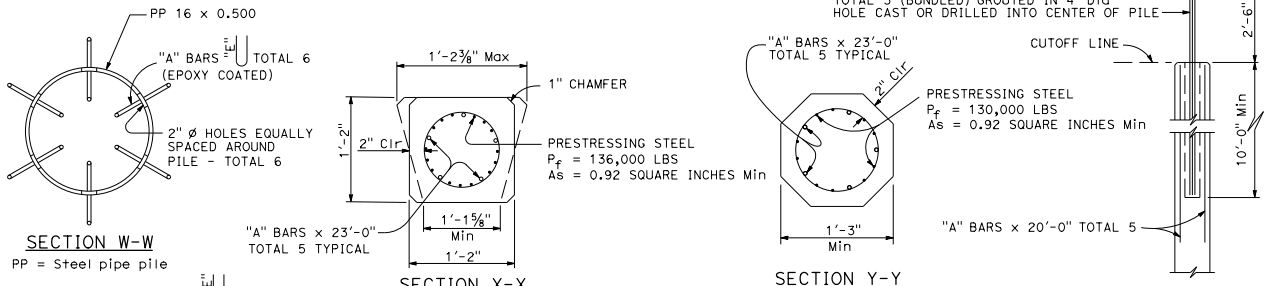
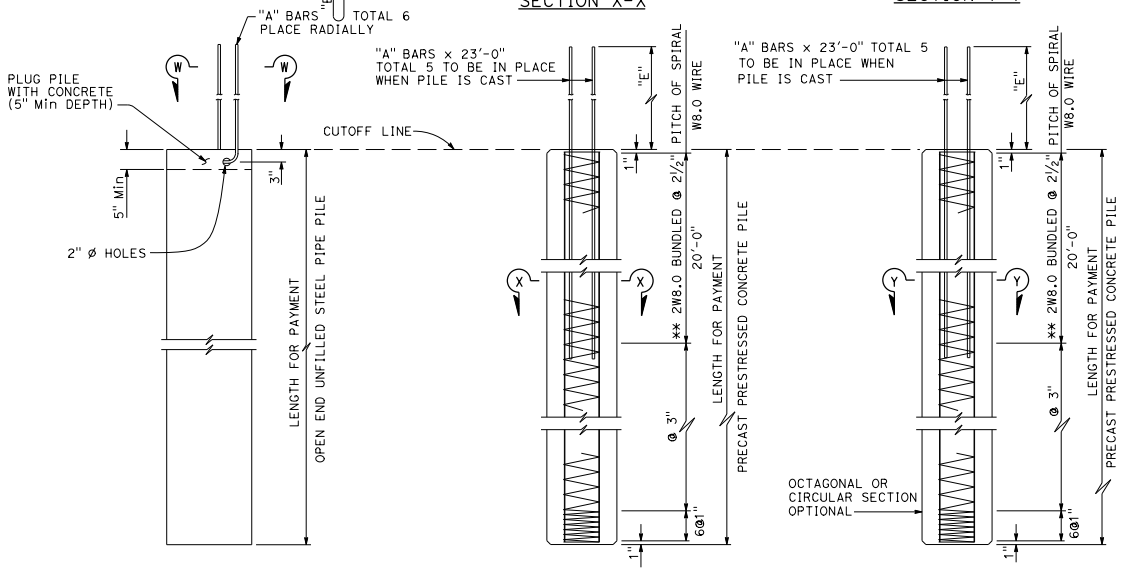
TO ACCOMPANY PLANS DATED _____

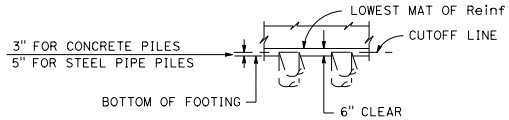


ALTERNATIVE PILE ANCHOR FOR PRESTRESSED PILE



	REQUIRED NOMINAL RESISTANCE (TENSION) *	
	75 kips OR LESS	GREATER THAN 75 kips
"A" BARS	#6	#8
"E" DIMENSION	1'-8"	2'-8"

* See Pile Data Table on the Project Plans for Nominal Resistance (Tension) Requirements



PILE EMBEDMENT

DESIGN NOTES:

DESIGN CAPACITY
Compression = 200 kip (Service state)
= 400 kip (Nominal axial structural resistance)
Tension = 80 kip (Service state)
= 200 kip (Nominal axial structural resistance)

REINFORCED CONCRETE
f'_c = 4,000 psi
f_y = 60,000 psi

PRECAST PRESTRESSED PILES
P_f = Prestress Force (After losses)
Concrete Strength f'_c @ 28 days = 7,000 psi
f'_{ci} @ transfer = 4,000 psi

STEEL PIPE PILE
Fy (minimum yield strength) = 45,000 psi
Fu (minimum tensile strength) = 66,000 psi

NOTES:

1. Pile reinforcement extending into footing shall be hooked as required to provide clearance to top of footing. Piles shall be extended only with details shown on the Project Plans.
2. At the Contractor's option, alternative steel pipe with at least the diameter and wall thickness shown on these plans may be used. The diameter shall not exceed 1'-6".
3. Maximum cut-off length at the top of the Alternative "X" and Alternative "Y" piles is 10'-0".
4. 2" clearance to spiral reinforcement shall be maintained if section used is larger than the minimum section shown.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PILE DETAILS CLASS 200

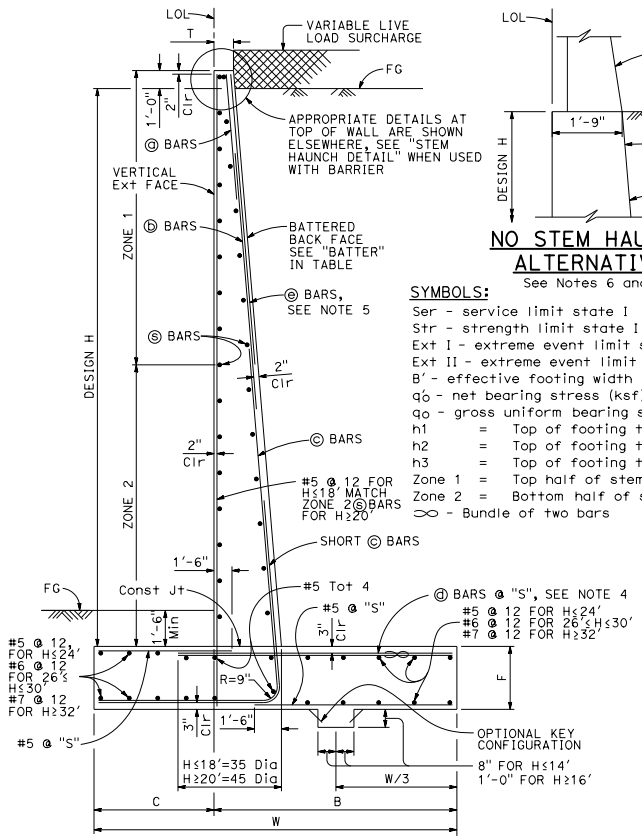
NO SCALE

RSP B2-8 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN B2-8 DATED MAY 31, 2018 - PAGE 324 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B2-8

2018 REVISED STANDARD PLAN RSP B2-8

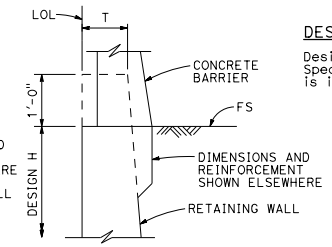
5-10-18



TYPICAL SECTION

NO STEM HAUNCH ALTERNATIVE

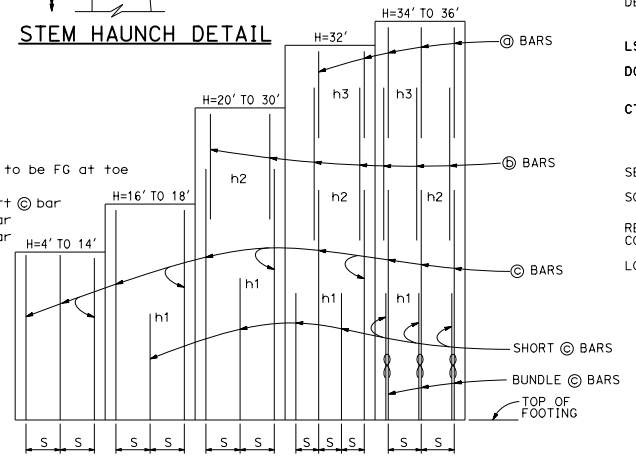
See Notes 6 and 7



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



ELEVATION

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.

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

Gary Wang
REGISTERED CIVIL ENGINEER
April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gary Wang — No. C58298 — Exp. 6-30-22 — 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.

DESIGN NOTES: TO ACCOMPANY PLANS DATED _____

DESIGN: AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated April 2019

LS: Variable live load surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

CT: 54 kip transverse force applied at 32" above FS, 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 BACKFILL: ø = 34°, γ = 120 pcf SOIL FOR BASE FRICTION: ø = 32°, 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+0.5LS+1.0CT

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

NOTES:

1. For details not shown and drainage notes, see B3-5.
2. For wall stem joint details, see RSP B0-3 3-3 and RSP 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 from H = 22' to 36'.
5. Provide #6 @ 10" x 18'-0" Ⓔ bars over a distance of 8'-0" measured from all expansion joints, begin wall and end wall locations. For H ≤ 16', hook Ⓔ bar into footing and reduce bar length as needed to maintain Min Clr cover.
6. For no stem haunch alternative, where H ≤ 18': Increase stem thickness, "T", to constant 1'-9" with no batter.
7. For no stem haunch alternative, where H > 18': Adjust stem batter to maintain original stem thickness at top of footing according to data defined in table.

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'-9"	6'-6"	6'-7"	7'-4"	8'-3"	9'-3"	9'-9"	10'-8"	11'-8"	12'-9"	13'-9"	14'-10"	15'-11"	17'-3"	18'-3"	19'-3"	20'-3"
C	2'-6"	2'-6"	2'-4"	2'-4"	2'-6"	3'-0"	3'-3"	3'-8"	3'-8"	3'-9"	4'-0"	4'-4"	4'-8"	5'-3"	5'-6"	6'-0"	6'-6"
B	4'-3"	4'-0"	4'-3"	5'-0"	5'-9"	6'-3"	6'-6"	7'-0"	8'-0"	9'-0"	9'-9"	10'-6"	11'-3"	12'-0"	12'-9"	13'-3"	13'-9"
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'-7"	4'-9"
T	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	1'-1"	1'-1"
BATTER	0.5:12	0.5:12	0.5:12	0.5:12	0.5:12	0.5:12	0.5:12	0.5:12	0.5:12	0.5:12	0.625:12	0.625:12	0.75:12	1:12	1:12	1.2:12	1.2:12
SPACING "S"	12"	12"	12"	11"	9"	8"	6"	5"	6"	5"	5"	5"	5"	5"	6"	10"	8"
ⓐ BARS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#7	#6	#6
ⓑ BARS	-	-	-	-	-	-	-	-	#7	#6	#6	#6	#6	#6	#9	#9	#8
ⓒ BARS	#6	#6	#6	#6	#6	#6	#7	#7	#8	#8	#8	#9	#9	#9	#10	#11	#11
ⓓ BARS	#5	#5	#5	#6	#6	#6	#6	#6	#8	#7	#8	#9	#9	#9	#10	#11	#11
h1	-	-	-	-	-	-	9'-5"	9'-7"	12'-8"	12'-7"	13'-7"	14'-8"	15'-8"	15'-8"	19'-5"	16'-6"	14'-8"
h2	-	-	-	-	-	-	-	-	14'-2"	16'-10"	17'-7"	20'-5"	21'-11"	23'-8"	21'-9"	21'-6"	21'-6"
h3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24'-10"	24'-5"	26'-4"
ZONE 1 Ⓢ BARS	#4 @ 18"	#5 @ 18"	#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"
ZONE 2 Ⓢ BARS	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#4 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#6 @ 12"	#7 @ 12"	#7 @ 12"
Ser: B', q_o	6.5, 0.8	6.1, 1.0	5.4, 1.4	5.7, 1.8	6.2, 2.1	7.0, 2.2	7.1, 2.5	7.7, 2.7	8.4, 3.0	9.1, 3.4	9.7, 3.7	10.5, 4.0	11.1, 4.3	12.3, 4.4	12.9, 4.7	13.2, 5.2	13.9, 5.4
Str: B', q_o	6.4, 1.6	3.6, 1.7	2.7, 2.8	2.7, 3.6	3.1, 4.1	3.7, 4.3	3.5, 5.2	4.0, 5.4	4.4, 5.8	4.9, 6.3	5.2, 7.0	5.7, 7.5	6.0, 8.2	6.8, 8.3	7.1, 8.9	6.8, 10.7	7.1, 11.2
Ext I: B', q_o	5.3, 1.1	4.6, 1.5	3.9, 2.2	4.0, 2.8	4.3, 3.4	4.9, 3.8	4.8, 4.5	5.3, 4.9	5.6, 5.5	6.0, 6.3	6.3, 7.0	6.8, 7.5	7.2, 8.2	8.1, 8.4	8.4, 9.1	8.5, 10.4	9.1, 10.8
Ext II: B', q_o	2.5, 2.4	2.2, 3.3	2.3, 3.9	3.4, 3.4	4.7, 3.2	6.3, 3.0	7.2, 3.1	8.6, 3.0	9.8, 3.2	11.3, 3.4	12.4, 3.6	13.7, 3.8	14.9, 4.1	16.5, 4.2	17.5, 4.5	18.4, 4.9	19.6, 5.1

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 1)

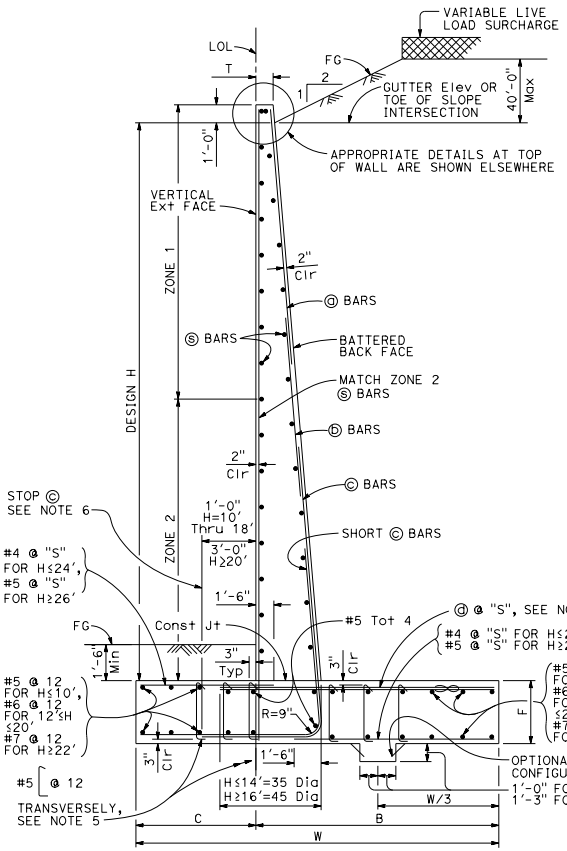
NO SCALE

RSP B3-1A DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN B3-1A DATED MAY 31, 2018 - PAGE 328 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B3-1A

2018 REVISED STANDARD PLAN RSP B3-1A

10-21-21



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, 8th Edition with California Amendments, Preface dated April 2019

LS: Variable live load surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

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

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

SOIL FOR BASE FRICTION: $\phi = 32°$, $\gamma = 120$ 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 I - 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 Wang
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gary Wang — No. C58298 — Exp. 6-30-22 — CIVIL — STATE OF CALIFORNIA

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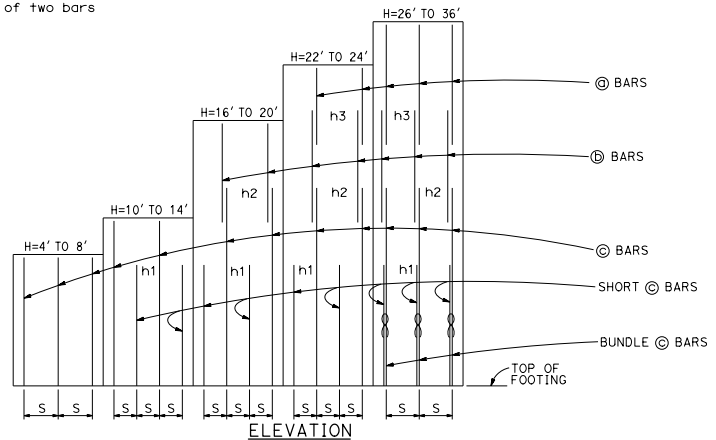
TO ACCOMPANY PLANS DATED _____



ELEVATION

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'-6"	6'-6"	7'-8"	8'-9"	10'-0"	11'-7"	14'-0"	16'-3"	16'-3"	17'-6"	19'-0"	20'-3"	21'-6"	22'-9"	23'-6"	24'-6"	25'-6"
C	2'-3"	2'-3"	2'-10"	3'-0"	3'-6"	3'-10"	4'-9"	5'-0"	5'-0"	5'-6"	5'-9"	6'-3"	6'-6"	6'-9"	7'-0"	7'-6"	8'-0"
B	4'-3"	4'-3"	4'-10"	5'-9"	6'-6"	7'-9"	9'-3"	11'-3"	11'-3"	12'-0"	13'-3"	14'-0"	15'-0"	16'-0"	16'-6"	17'-0"	17'-6"
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	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	1'-0"	1'-0"	1'-1"	1'-4"	1'-6"	1'-10"	2'-1"	2'-9"	3'-7"
BATTER	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.625: 12	0.875:12	0.875: 12	1.125:12	1.125: 12	1.125: 12	1.125: 12	1.2: 12	1.2: 12	1.2: 12	1.2: 12
SPACING "S"	16"	14"	10"	7"	7"	7"	7"	7"	7"	6"	6"	10"	8"	8"	7"	7"	7"
ⓐ BARS	-	-	-	-	-	-	-	-	-	#5	#5	#5	#5	#5	#5	#5	#5
ⓑ BARS	-	-	-	-	-	-	#6	#6	#6	#7	#7	#7	#7	#7	#7	#7	#7
ⓒ BARS	#5	#5	#6	#6	#7	#8	#8	#9	#10	#10	#11	#11	#11	#11	#11	#11	#11
ⓓ BARS	#5	#6	#5	#6	#6	#7	#8	#10	#10	#10	#10	#10	#10	#10	#10	#10	#10
h1	-	-	-	8'-3"	10'-0"	10'-7"	12'-2"	12'-11"	13'-8"	12'-7"	13'-9"	14'-6"	15'-0"	16'-3"	17'-0"	17'-9"	18'-8"
h2	-	-	-	-	-	-	15'-1"	17'-8"	20'-3"	19'-4"	21'-9"	21'-9"	21'-4"	22'-3"	22'-6"	23'-0"	23'-6"
h3	-	-	-	-	-	-	-	-	-	20'-4"	22'-1"	22'-7"	22'-10"	23'-10"	28'-7"	30'-1"	31'-0"
No. of Toe Stirrups	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6
No. of Heel Stirrups	0	0	0	0	0	0	0	2	3	4	6	7	7	8	8	8	8
ZONE 1 Ⓢ BARS	#4 @ 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"	#6 @ 12"	#6 @ 12"	#7 @ 12"	#7 @ 12"
ZONE 2 Ⓢ BARS	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#6 @ 12"	#6 @ 12"	#7 @ 12"	#7 @ 12"	#7 @ 12"	#8 @ 12"	#8 @ 12"
Ser: B', q'_o	6.2, 0.6	6.5, 0.8	7.5, 1.1	8.2, 1.5	9.3, 1.7	10.8, 2.0	13.6, 2.1	15.9, 2.4	15.1, 2.9	16.2, 3.1	17.6, 3.4	18.8, 3.7	19.9, 4.0	21.0, 4.3	21.4, 4.6	22.3, 4.9	23.0, 5.2
Str: B', q_o	6.0, 1.3	6.4, 1.6	7.3, 2.1	8.1, 2.6	9.1, 3.0	10.5, 3.5	13.3, 3.6	15.6, 4.1	14.7, 4.8	15.8, 5.2	17.2, 5.6	18.3, 5.9	19.4, 6.3	20.4, 6.8	20.8, 7.3	21.6, 7.7	22.2, 8.1
Ext I: B', q_o	5.8, 1.7	4.8, 2.6	5.2, 3.5	5.5, 4.5	6.1, 5.1	7.2, 5.6	9.7, 5.3	11.7, 5.6	10.4, 7.0	11.2, 7.5	12.3, 7.9	13.2, 8.2	14.0, 8.7	14.7, 9.2	14.8, 9.9	15.4, 10.4	15.9, 11.0

NOTES:

1. For details not shown and drainage notes, see B3-5.
2. For wall stem joint details, see RSP B0-3 3-3 and RSP 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'.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 2)

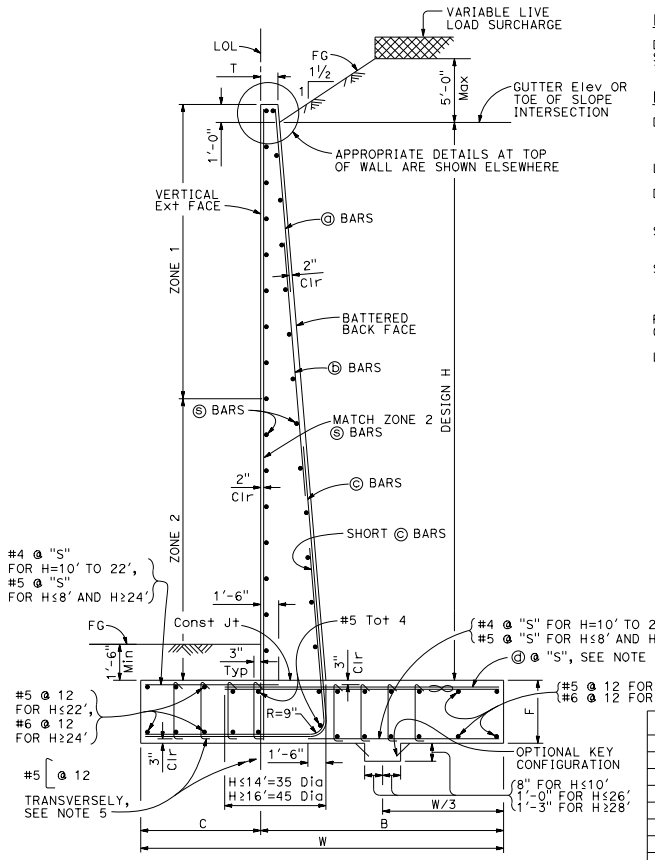
NO SCALE

RSP B3-1B DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN B3-1B
DATED MAY 31, 2018 - PAGE 329 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B3-1B

2018 REVISED STANDARD PLAN RSP B3-1B

10-21-21



TYPICAL SECTION

NOTES:

1. For details not shown and drainage notes, see B3-5.
2. For wall stem joint details, see RSP B0-3 3-3 and RSP 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.

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, 8th Edition with California Amendments, Preface dated April 2019

LS: Variable live load surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

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

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

SOIL FOR BASE FRICTION: $\phi = 32°$, $\gamma = 120$ pcf

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

LOAD COMBINATIONS AND LIMIT STATES:

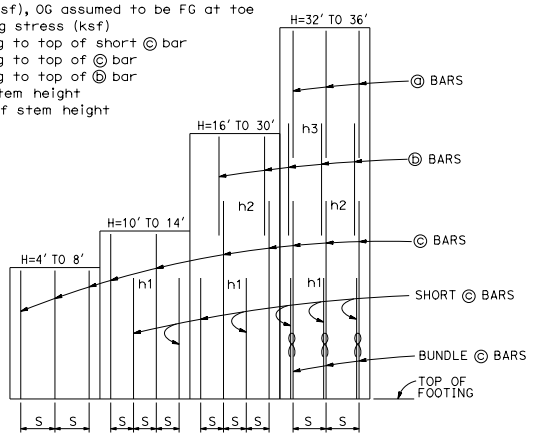
Service I	$Q = 1.00DC+1.00EV+1.00EH+1.00LS$
Strength I	$Q = \alpha DC+\beta EV+\eta EH+1.75LS$
Extreme I	$Q = 1.00DC+1.00EV+1.00EH+1.00EQD+1.00EQE$

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 I - 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



ELEVATION

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

Gary Wang
REGISTERED CIVIL ENGINEER
April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gary Wang — No. C58298 — Exp. 6-30-22 — 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 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	5'-9"	6'-0"	6'-9"	8'-2"	9'-9"	11'-1"	12'-6"	13'-5"	14'-5"	15'-4"	16'-3"	17'-6"	19'-3"	20'-0"	21'-0"	22'-3"	23'-6"
C	1'-9"	2'-0"	2'-3"	2'-8"	3'-0"	3'-6"	3'-9"	4'-3"	4'-9"	5'-0"	5'-3"	6'-0"	7'-6"	7'-9"	8'-0"	8'-6"	9'-3"
B	4'-0"	4'-0"	4'-6"	5'-6"	6'-9"	7'-7"	8'-9"	9'-2"	9'-8"	10'-4"	11'-0"	11'-6"	11'-9"	12'-3"	13'-0"	13'-9"	14'-3"
F	1'-4"	1'-4"	1'-4"	1'-4"	1'-6"	1'-8"	1'-10"	2'-1"	2'-2"	2'-3"	2'-10"	2'-10"	2'-10"	3'-0"	3'-3"	3'-3"	3'-3"
T	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	1'-3"	1'-6"	1'-8"	2'-1"
BATTER	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.75: 12	0.875:12	0.75: 12	1: 12	1.125: 12	1.2: 12	1.2: 12	1.2: 12	1.2: 12
SPACING "S"	16"	16"	14"	8"	8"	7"	6"	6"	6"	6"	7"	7"	6"	6"	6"	5"	8"
ⓐ BARS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#5	#6	#6
ⓑ BARS	-	-	-	-	-	-	#5	#5	#5	#6	#7	#7	#7	#7	#8	#9	#9
ⓒ BARS	#5	#5	#6	#5	#7	#6	#7	#8	#8	#9	#10	#10	#10	#10	#10	#10	#11
ⓓ BARS	#5	#5	#6	#6	#8	#7	#10	#9	#8	#9	#11	#10	#10	#10	#11	#11	#11
h1	-	-	-	7'-3"	10'-6"	9'-8"	11'-2"	12'-7"	13'-4"	14'-6"	17'-10"	18'-5"	17'-4"	18'-4"	19'-1"	16'-10"	16'-9"
h2	-	-	-	-	-	-	13'-11"	16'-8"	18'-1"	19'-5"	22'-2"	23'-4"	23'-4"	24'-10"	23'-7"	19'-7"	19'-6"
h3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28'-1"	27'-5"	27'-8"
No. of Toe Stirrups	0	0	0	0	0	0	0	0	0	0	3	4	4	5	5	6	6
No. of Heel Stirrups	0	0	0	0	0	0	0	3	3	4	5	5	5	5	5	5	5
ZONE 1 Ⓢ BARS	#4 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#4 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#6 @ 12"
ZONE 2 Ⓢ BARS	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#4 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#6 @ 12"	#7 @ 12"	#7 @ 12"	#7 @ 12"	#7 @ 12"
Ser: B', q'_o	5.5, 0.6	4.4, 1.2	4.5, 1.7	5.5, 1.9	6.5, 2.2	7.4, 2.4	8.4, 2.7	9.1, 2.9	9.8, 3.2	10.5, 3.4	11.2, 3.7	12.3, 3.8	14.5, 3.6	14.5, 4.0	15.2, 4.3	16.5, 4.4	17.7, 4.5
Str: B', q_o	5.5, 1.3	3.1, 2.3	2.7, 3.4	3.1, 3.9	3.6, 4.5	4.0, 5.1	4.5, 5.5	4.7, 6.2	4.9, 6.9	5.3, 7.3	5.7, 7.7	6.4, 7.8	8.1, 6.8	7.7, 8.1	8.1, 8.7	9.1, 8.6	10.0, 8.5
Ext I: B', q_o	4.4, 1.3	3.1, 2.1	4.1, 2.5	4.9, 2.8	5.8, 3.3	6.6, 3.6	7.3, 4.2	7.7, 4.7	8.1, 5.2	8.4, 5.7	8.7, 6.4	9.4, 6.8	11.6, 6.1	11.6, 6.7	12.0, 7.4	12.9, 7.6	13.9, 7.6

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 3)

NO SCALE

RSP B3-1C DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN B3-1C
DATED MAY 31, 2018 - PAGE 330 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B3-1C

2018 REVISED STANDARD PLAN RSP B3-1C

10-21-21

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

Gary Wang
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gary Wang
No. C58298
Exp. 6-30-22
CIVIL
STATE OF CALIFORNIA

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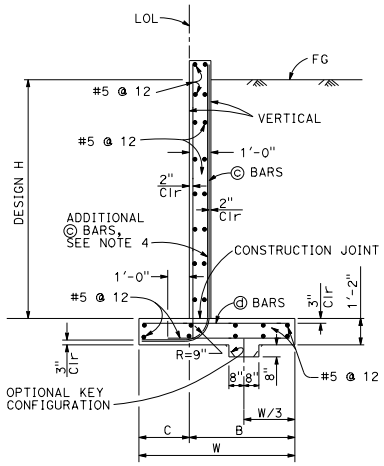
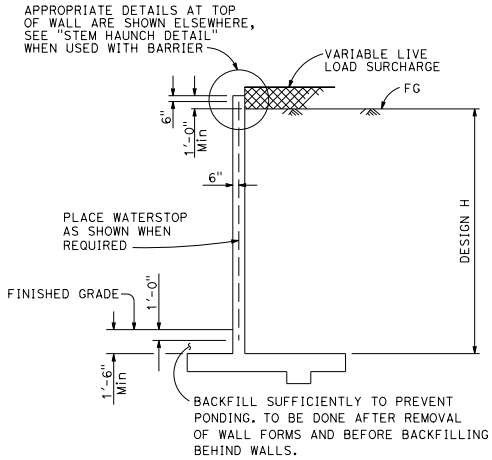
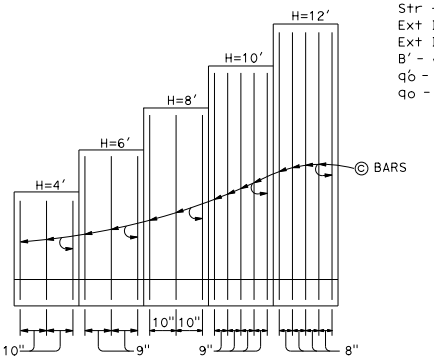


SPREAD FOOTING SECTION

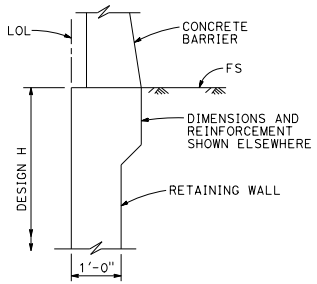
Place concrete in toe against undisturbed material, except as permitted by the Engineer.



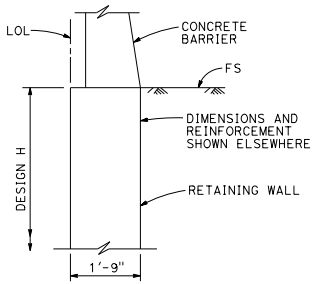
DESIGN SECTION



ELEVATION



STEM HAUNCH DETAIL



NO STEM HAUNCH ALTERNATIVE

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_0 - net bearing stress (ksf), OG assumed to be FG at toe
q_o - gross uniform bearing stress (ksf)

TABLE OF REINFORCING STEEL, DIMENSIONS AND DATA					
DESIGN H	4'	6'	8'	10'	12'
W	6'-0"	6'-3"	6'-6"	7'-4"	8'-2"
C	2'-0"	2'-0"	2'-0"	2'-4"	2'-7"
B	4'-0"	4'-3"	4'-6"	5'-0"	5'-7"
Ⓒ BARS	#6 @ 10	#6 @ 9	#7 @ 10	#7 @ 9	#7 @ 8
Ⓓ BARS	#5 @ 10	#5 @ 9	#6 @ 10	#7 @ 9	#7 @ 8
Ser: B', q_0	6.0, 0.8	5.6, 1.1	5.2, 1.5	5.7, 1.7	6.2, 2.0
Str: B', q_o	4.5, 1.4	3.2, 1.9	2.5, 3.0	2.8, 3.4	3.1, 3.9
Ext I: B', q_o	4.4, 1.2	4.1, 1.7	3.7, 2.4	4.1, 2.8	4.4, 3.2
Ext II: B', q_o	1.1, 4.7	1.6, 4.3	2.0, 4.3	3.4, 3.3	4.6, 3.1

DESIGN CONDITIONS: TO ACCOMPANY PLANS DATED _____

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, 8th Edition with California Amendments, Preface dated April 2019

LS: Variable live load surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

CT: 54 kip transverse force applied at 32" above FS, 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 BACKFILL: $\phi = 34°$, $\gamma = 120$ pcf; SOIL FOR BASE FRICTION: $\phi = 32°$, $\gamma = 120$ 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	$Q = 1.00DC+1.00EV+1.00EH+1.00EQD+1.00EQE$
Extreme II	$Q = 1.00DC+1.00EV+1.00EH+0.5LS+1.0CT$

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

NOTES:

1. For details not shown and drainage notes, see B3-5.
2. For wall stem joint details, see RSP B0-3 3-3 and RSP 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. Provide #6 @ 8" Ⓒ bars in addition to tabulated Ⓒ bars over a distance of 8'-0" measured from all expansion joints, begin wall and end wall location.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1A (CASE 1)

NO SCALE

RSP B3-3A DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN B3-3A
DATED MAY 31, 2018 - PAGE 331 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B3-3A

2018 REVISED STANDARD PLAN RSP B3-3A

10-21-21

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

Gary Wang
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gary Wang
No. C58298
Exp. 6-30-22
CIVIL
STATE OF CALIFORNIA

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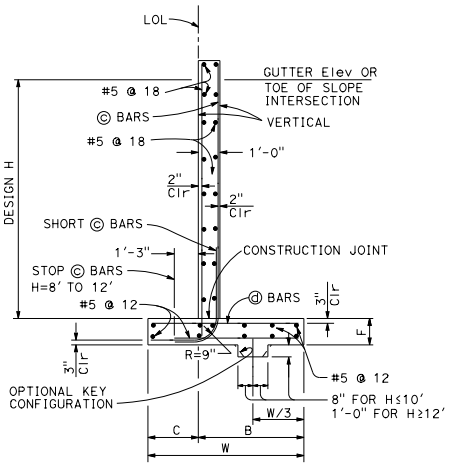
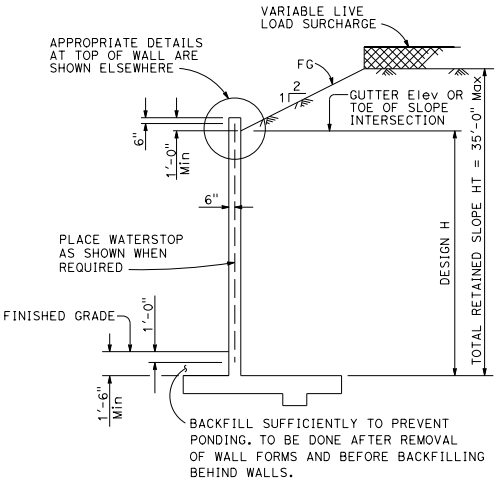
TO ACCOMPANY PLANS DATED _____

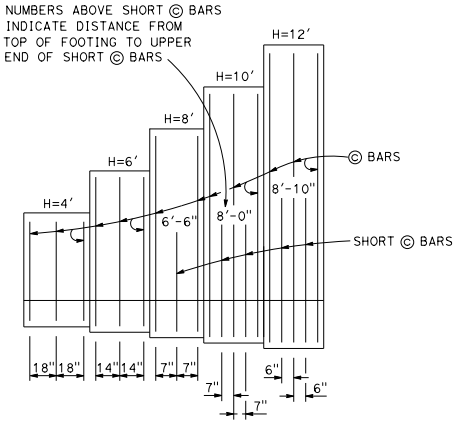


SPREAD FOOTING SECTION

Place concrete in toe against undisturbed material, except as permitted by the Engineer.



DESIGN SECTION



ELEVATION

SYMBOLS:

Ser - service limit state I
Str - strength limit state I
Ext I - 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)

TABLE OF REINFORCING STEEL, DIMENSIONS AND DATA					
DESIGN H	4'	6'	8'	10'	12'
W	4'-3"	5'-9"	6'-7"	7'-4"	8'-3"
C	1'-3"	1'-9"	2'-4"	2'-4"	2'-6"
B	3'-0"	4'-0"	4'-3"	5'-0"	5'-9"
F	1'-4"	1'-7"	1'-7"	1'-9"	1'-9"
© BARS	#5 @ 18	#5 @ 12	#5 @ 7	#6 @ 7	#7 @ 6
ⓓ BARS	#5 @ 18	#5 @ 12	#5 @ 7	#5 @ 7	#6 @ 6
Ser: B', q'_o	3.9, 0.7	5.3, 1.0	6.0, 1.2	6.2, 1.7	6.8, 2.0
Str: B', q_o	3.8, 1.4	5.2, 1.8	5.9, 2.1	6.0, 2.8	6.6, 3.4
Ext I: B', q_o	2.6, 2.6	3.6, 3.1	3.9, 3.6	3.7, 5.0	4.0, 5.9

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, 8th Edition with California Amendments, Preface dated April 2019

LS: Variable live load surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

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

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

SOIL FOR BASE FRICTION: $\phi = 32°$, $\gamma = 120$ 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 =	αDC+βEV+ηEH+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

NOTES:

1. For details not shown and drainage notes, see B3-5.
2. For wall stem joint details, see RSP B0-3 3-3 and RSP 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1A (CASE 2)

NO SCALE

RSP B3-3B DATED APRIL 15, 2022 SUPERSEDES STANDARD PLAN B3-3B
DATED MAY 31, 2018 - PAGE 332 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B3-3B

2018 REVISED STANDARD PLAN RSP B3-3B

10-21-21

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

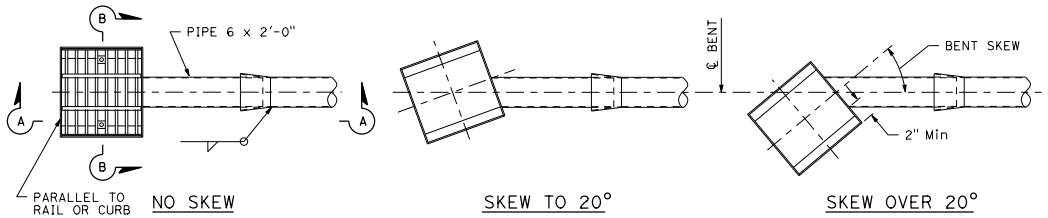
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

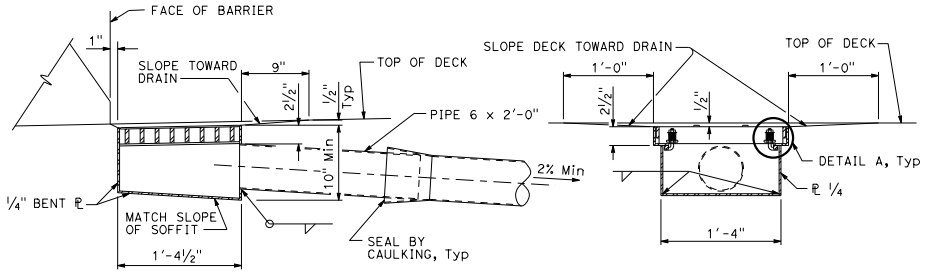
REGISTERED PROFESSIONAL ENGINEER
C.J. Sims
No. C46471
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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 _____

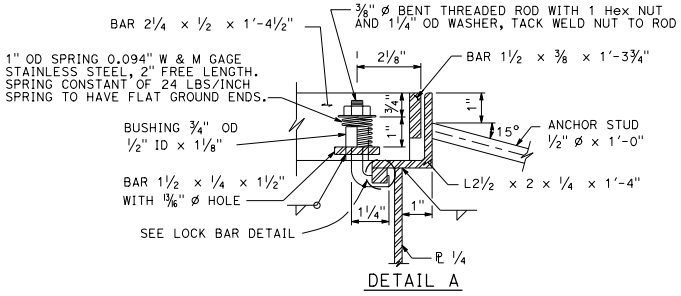


PLAN-DECK DRAIN ASSEMBLY

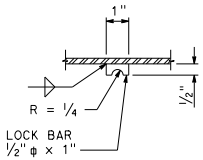


SECTION A-A SECTION B-B

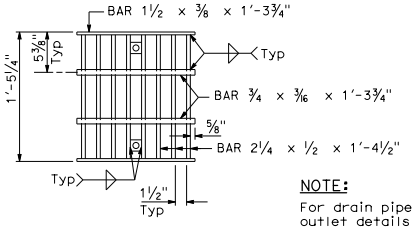
DECK DRAIN ASSEMBLY DETAIL



DETAIL A

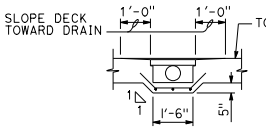


LOCK BAR

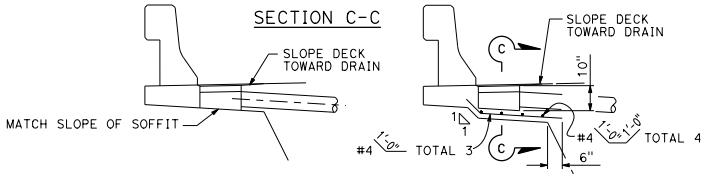


GRATE

NOTE:
For drain pipe alignment, sleeve connection, drain outlet details and notes, see Standard Plan B7-6.



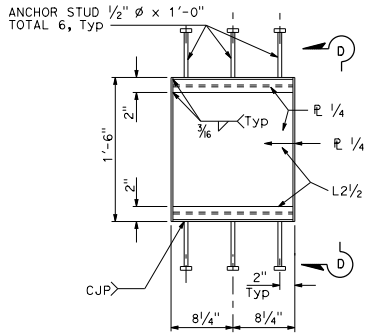
SECTION C-C



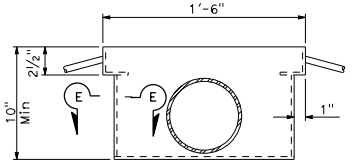
DETAIL 7-9
DRAIN FLUSH WITH OVERHANG

DETAIL 7-10
DRAIN WITH HAUNCHED OVERHANG

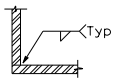
ELEVATION-DECK DRAIN LOCATIONS



FRAME



VIEW D-D



SECTION E-E

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DECK DRAIN TYPE D-3

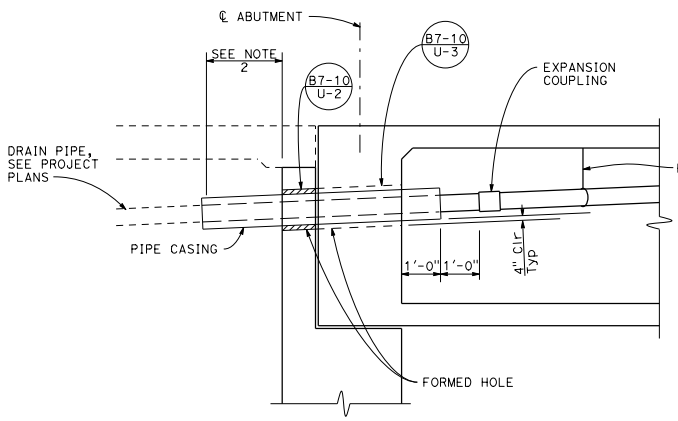
NO SCALE

RSP B7-7 DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN B7-7 DATED MAY 31, 2018 - PAGE 347 OF THE STANDARD PLANS BOOK DATED 2018.

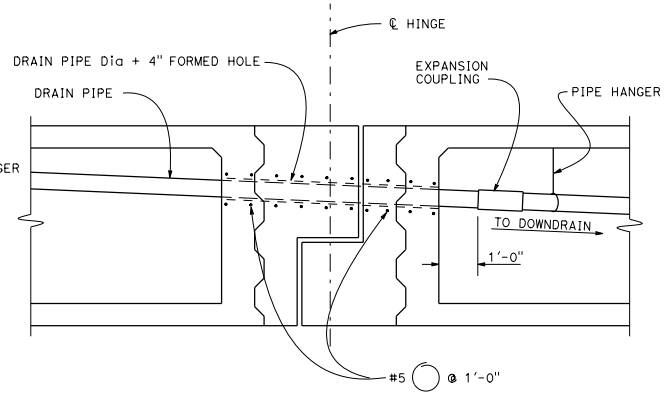
REVISED STANDARD PLAN RSP B7-7

2018 REVISED STANDARD PLAN RSP B7-7

6-11-19



ABUTMENT

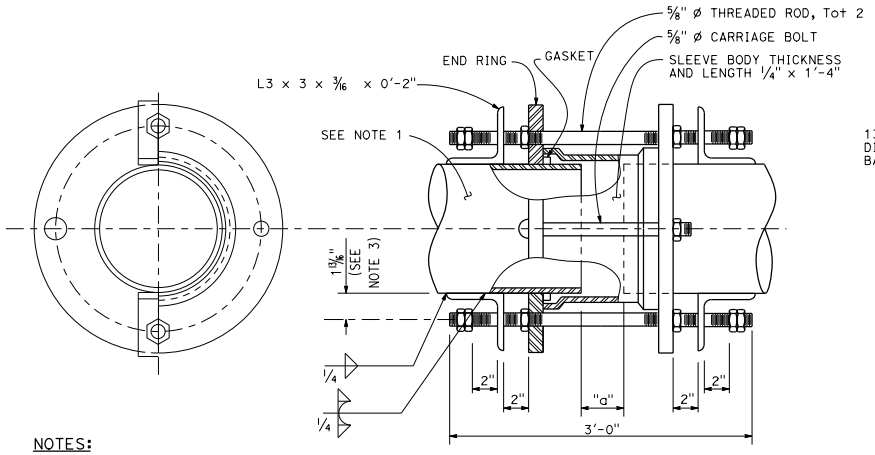


HINGE

DECK DRAIN PIPE DETAIL

NOTES:

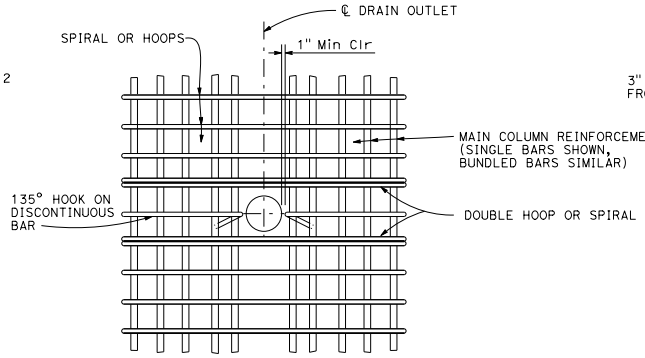
1. Pipe casing OD = Drain pipe Dia + 4" (1/4" Min wall thickness)
2. Unless otherwise shown on Project Plans, casing shall extend to the greater of 5'-0" beyond the end of approach slab or 20'-0" beyond the back of abutment.



NOTES:

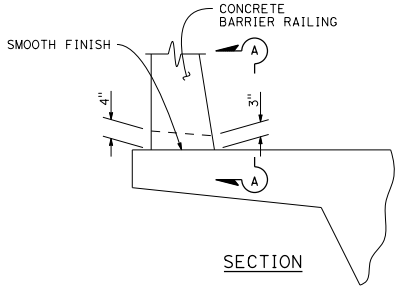
1. For "a" dimension and pipe diameter, see Project Plans.
2. Expansion coupling with 4 bolts shown. Coupling with a greater number of bolts allowed.
3. Adjust dimension to suit coupler end ring bolt circle.

EXPANSION COUPLING

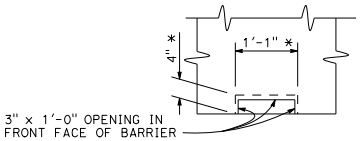


NOTE:
Adjust spacing of main column reinforcement to clear drain outlet.

COLUMN REINFORCEMENT AT DRAIN OUTLET



SECTION



ELEVATION A-A

SCUPPER DETAIL

* At exterior face of barrier

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

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
C.J. Sims
No. C46471
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DECK DRAINAGE DETAILS

NO SCALE

RSP B7-8 DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN B7-8 DATED MAY 31, 2018 - PAGE 348 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B7-8

2018 REVISED STANDARD PLAN RSP B7-8

7-11-19

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

Peter W. Norboe
REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

Peter W. Norboe No. C57519 Exp. 12-31-19 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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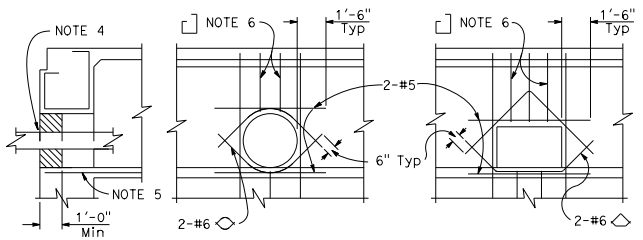
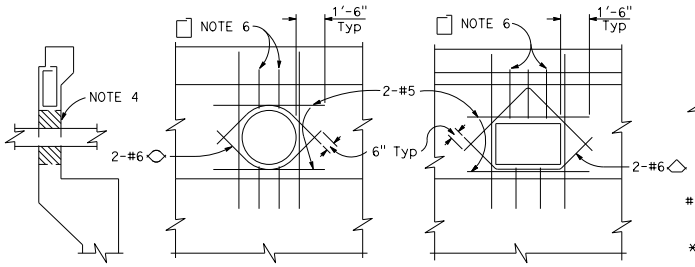
TO ACCOMPANY PLANS DATED _____

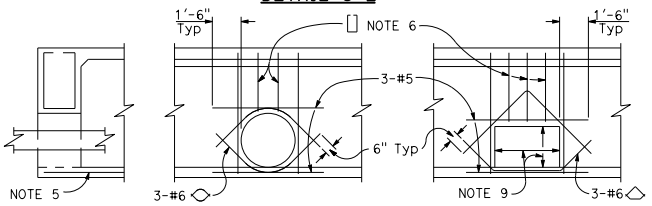
ABUTMENT DIAPHRAGMS



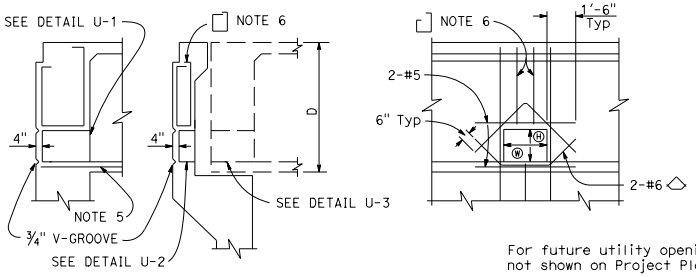
DETAIL U-1



DETAIL U-2

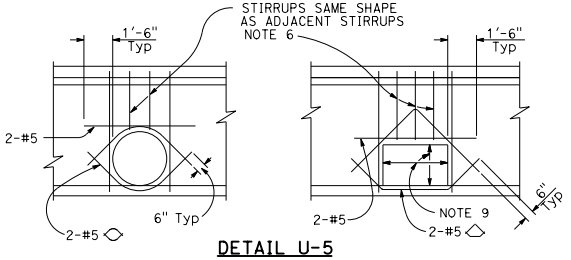


DETAIL U-3

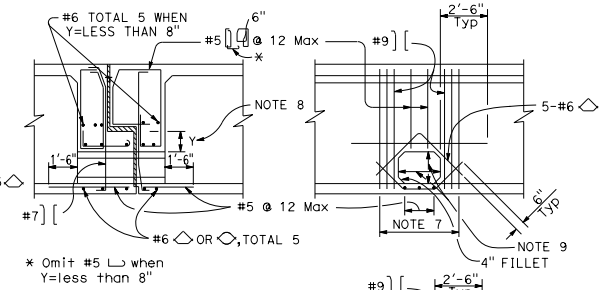


DETAIL U-4
(FOR FUTURE UTILITY OPENING)

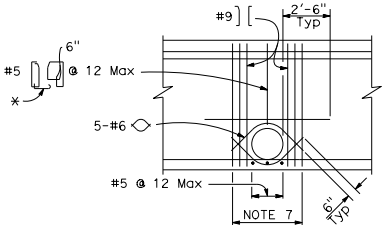
INTERMEDIATE DIAPHRAGMS AND HINGES



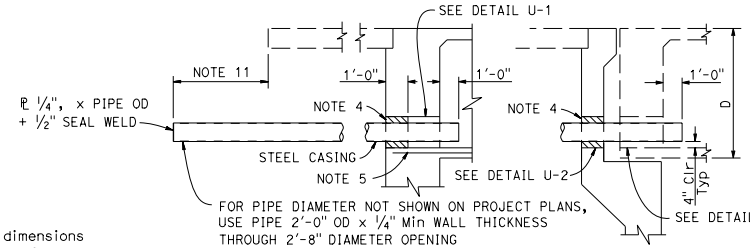
DETAIL U-5
AT INTERMEDIATE DIAPHRAGM



* Omit #5 ⌙ when Y=less than 8"



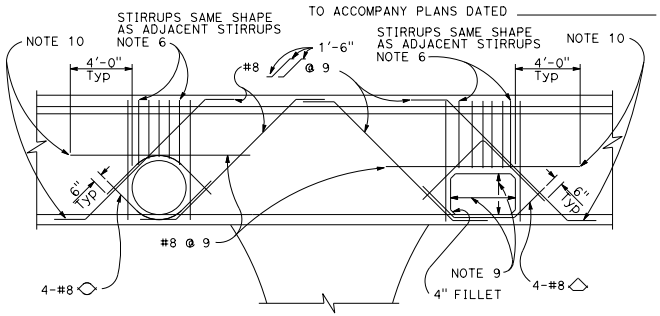
DETAIL U-6
AT HINGE



DETAIL U-8
(FOR FUTURE UTILITY PROVISIONS UNDER APPROACH SLAB)

For future utility opening dimensions not shown on Project Plans use:
Ⓗ = ⅓ D or 1'-6" minimum, whichever is greater.
Ⓦ = ⅓ D or 2'-0" minimum, whichever is greater.

BENT CAPS



DETAIL U-7
NEAR OR BETWEEN COLUMNS

NOTES:

1. The exact location, elevation, size, and direction of openings shall be in accordance with the Project Plans and as directed by the Engineer.
2. Girders not shown. See Project Plans.
3. All reinforcement detailed to be placed in addition to reinforcement shown on Project Plans.
4. Seal utilities at abutments with concrete or mortar, after tightly wrapping utility with 2 layers of 15 LBS building paper. If structure is prestressed, seal to be placed after stressing is completed.
5. Main reinforcement to clear opening.
6. Reinforcement to be same bar size and ⅔ the spacing of adjacent reinforcement shown on Project Plans.
7. Replace each set of 2-#9 bars cut off by opening. Place ½ on each side of opening.
8. When "Y" is less than 8", extend top of opening to bottom of bearing seat elevation.
9. For future utility opening dimensions, see Project Plans and Detail U-4.
10. When there is insufficient space to place reinforcement as shown, hook reinforcement into exterior girder.
11. Unless otherwise shown on Project Plans, casing shall extend to the greater of 5'-0" beyond the end of the approach slab, 5'-0" beyond the end of the adjacent wingwall, 20'-0" beyond the back of the abutment, or to the State right-of-way limit.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

UTILITY OPENING BOX GIRDER

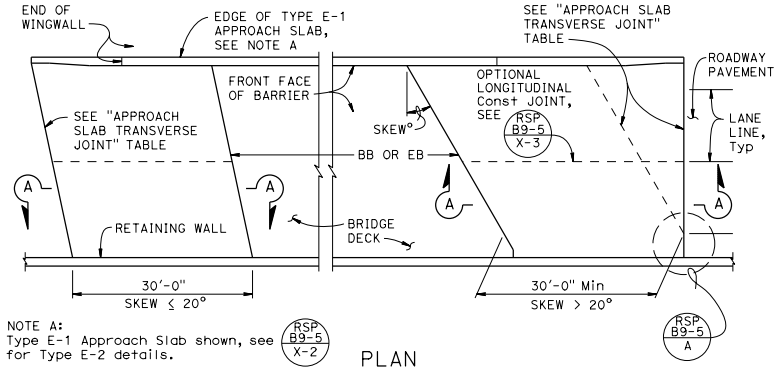
NO SCALE

RSP B7-10 DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN B7-10 DATED MAY 31, 2018 - PAGE 349 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B7-10

2018 REVISED STANDARD PLAN RSP B7-10

8-21-18



NOTE A:
Type E-1 Approach Slab shown, see RSP B9-5 X-2 for Type E-2 details.

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"

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Daniel Sessions — No. 77723 — Exp. 6-30-23 CIVIL — STATE OF CALIFORNIA

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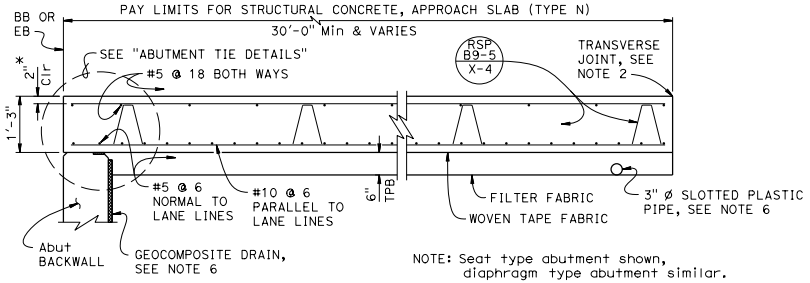
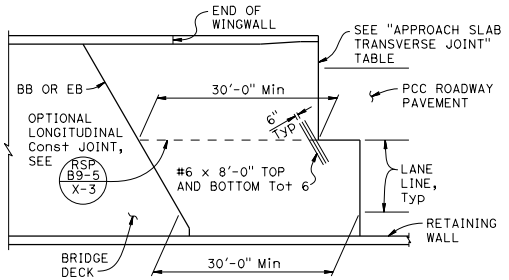
TO ACCOMPANY PLANS DATED _____

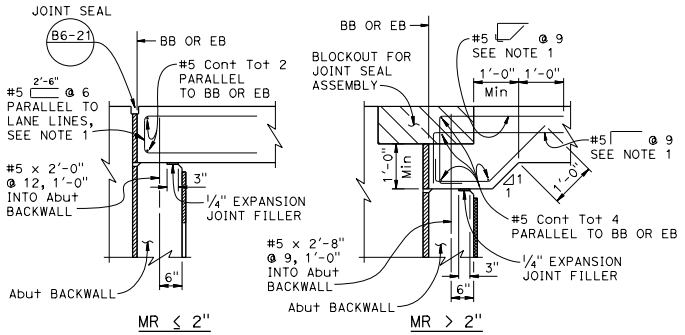


NOTE: Seat type abutment shown, diaphragm type abutment similar.

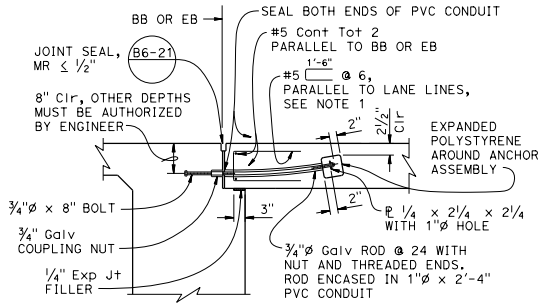
SECTION A-A



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.
3. Place dowels into the adjacent PCC pavement along the Transverse Joint, refer to Standard Plans P10 and P30.
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. For details not shown, refer to Revised Standard Plan RSP B9-5.
6. For structure approach drainage details, refer to Standard Plan B9-6.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE APPROACH TYPE N (30)

NO SCALE

RSP B9-1 DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN B9-1 DATED MAY 31, 2018 - PAGE 352 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B9-1

2018 REVISED STANDARD PLAN RSP B9-1

6-18-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
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Daniel Sessions
No. 77723
Exp. 6-30-23
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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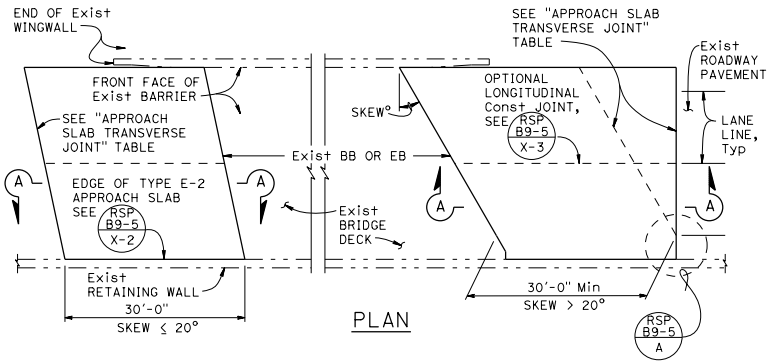
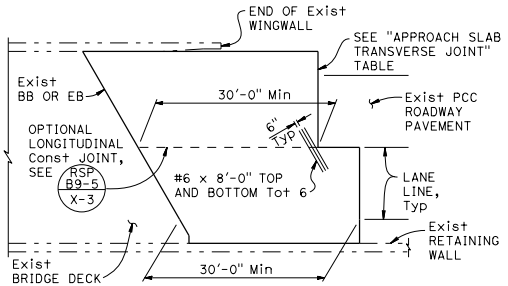
TO ACCOMPANY PLANS DATED _____

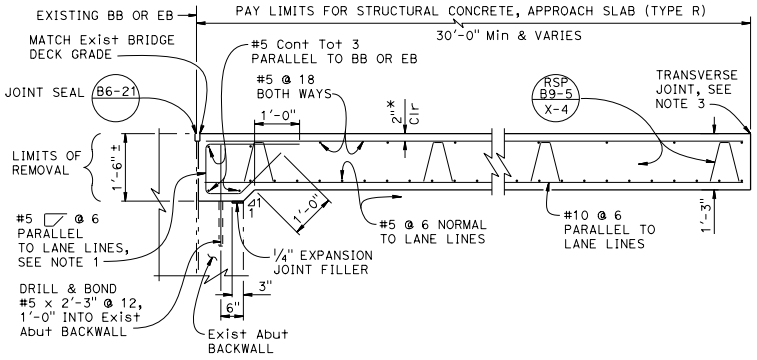


PLAN

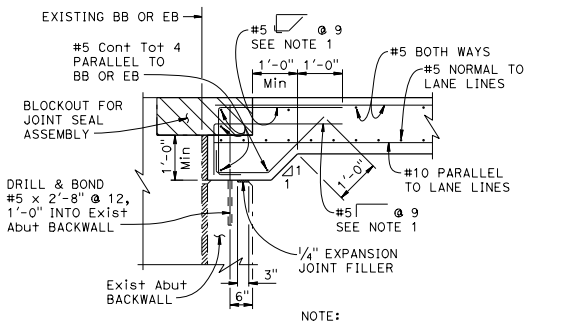


END STAGGER DETAIL

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"

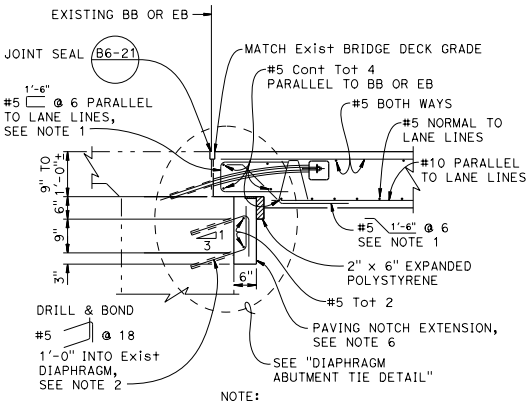


SEALED JOINT



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

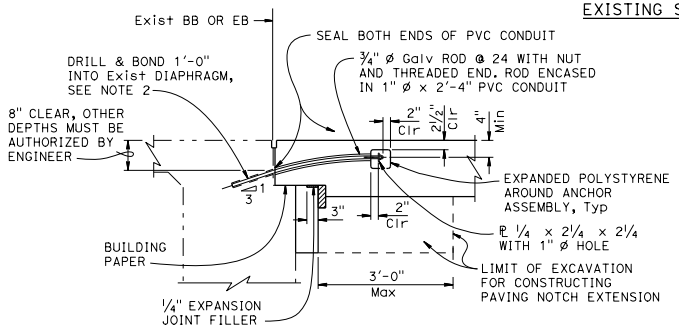
JOINT SEAL ASSEMBLY



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.
4. Place dowels into the adjacent PCC pavement along the Transverse Joint, refer to Standard Plans P10 and P30.
5. 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.
6. Paving notch extension is required if existing diaphragm paving notch is < 6".
7. 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)

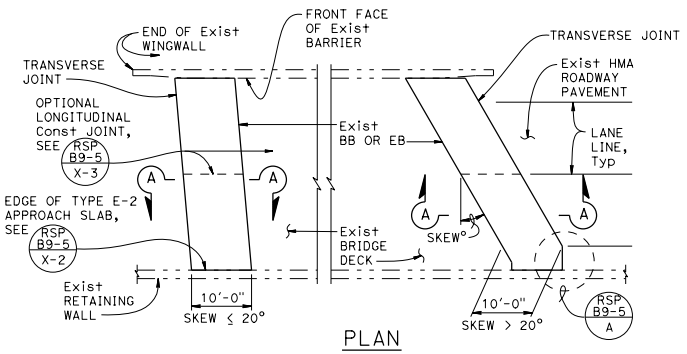
NO SCALE

RSP B9-2 DATED OCTOBER 15, 2021 SUPERSEDES RSP B9-2 DATED APRIL 19, 2019 AND STANDARD PLAN B9-2 DATED MAY 31, 2018 - PAGE 353 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B9-2

2018 REVISED STANDARD PLAN RSP B9-2

6-18-21



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. Place dowels into the adjacent PCC pavement along the Transverse Joint, refer to Standard Plans P10 and P30.
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.

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

REGISTERED CIVIL ENGINEER

October 15, 2021

PLANS APPROVAL DATE

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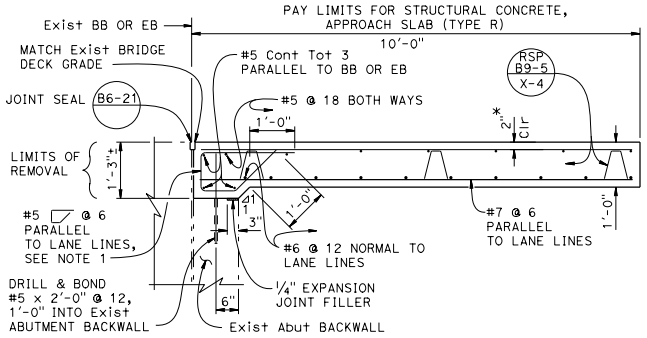
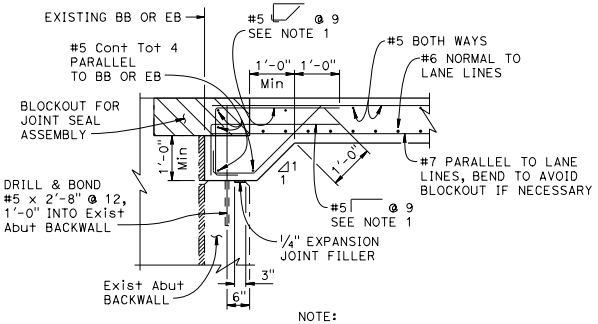
TO ACCOMPANY PLANS DATED _____

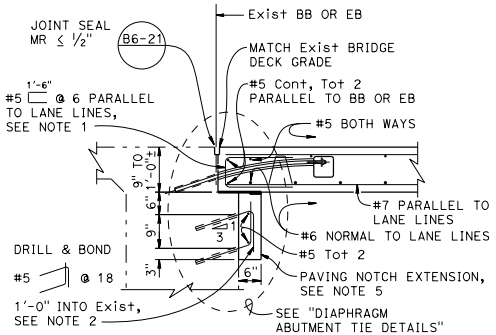


SEALED JOINT



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

JOINT SEAL ASSEMBLY

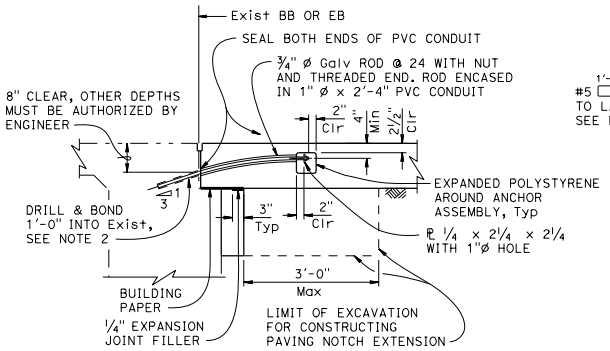


NOTE:
For additional details not shown, see "EXISTING SEAT ABUTMENT"

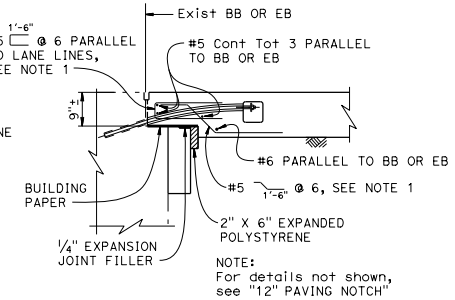
EXISTING DIAPHRAGM ABUTMENT

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 OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN B9-3 DATED MAY 31, 2018 - PAGE 354 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B9-3

2018 REVISED STANDARD PLAN RSP B9-3

6-4-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

Daniel Sessions
No. 77723
Exp. 6-30-23
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REGISTERED PROFESSIONAL ENGINEER
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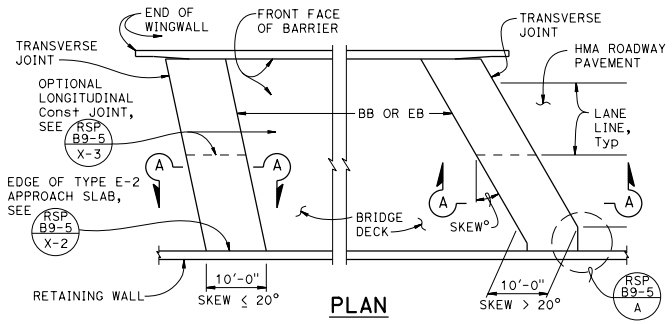
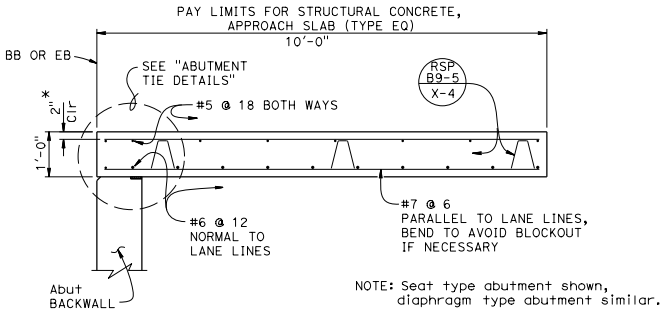
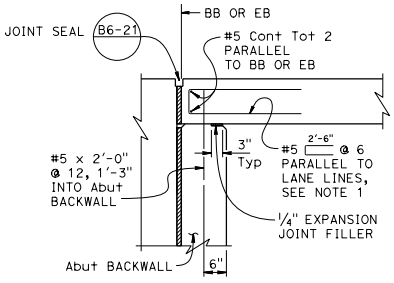


PLAN

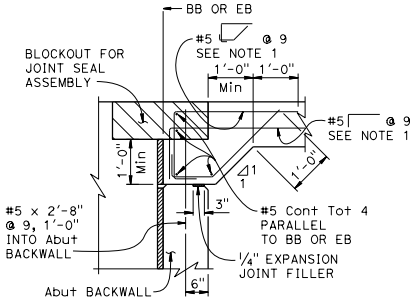


NOTE: Seat type abutment shown, diaphragm type abutment similar.

SECTION A-A

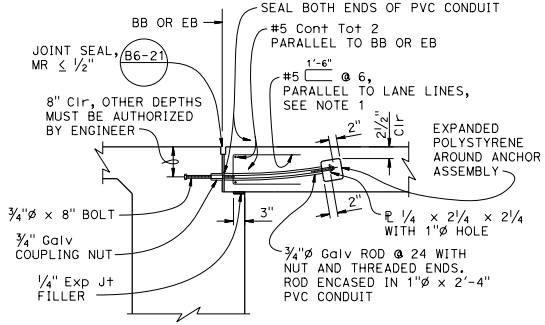


MR ≤ 2"



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. Place dowels into the adjacent PCC pavement along the Transverse Joint, refer to Standard Plans P10 and P30.
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 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 OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN B9-4
DATED MAY 31, 2018 - PAGE 355 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B9-4

2018 REVISED STANDARD PLAN RSP B9-4

6-4-21

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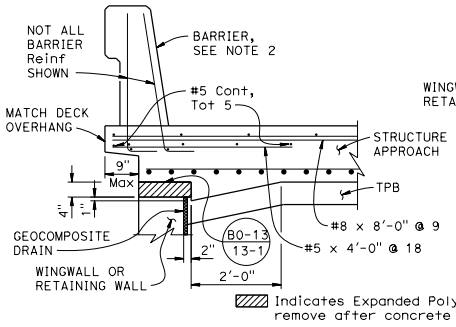
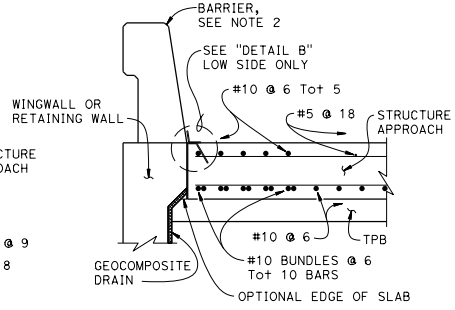
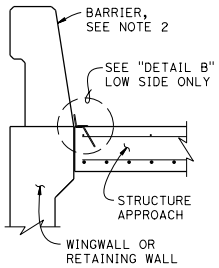


DETAIL X-1
TYPE E-1

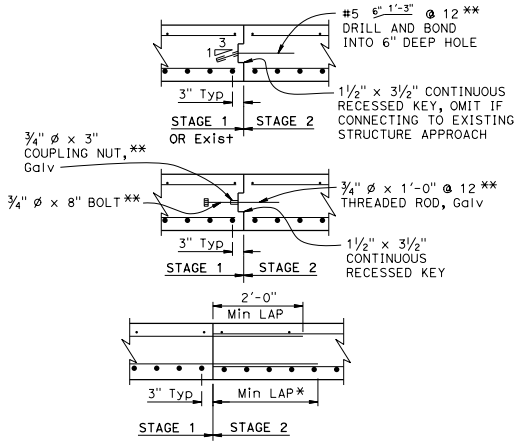


DETAIL X-2

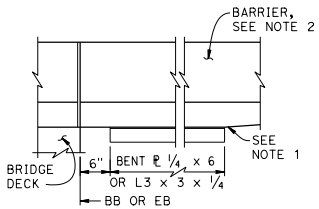


DETAIL X-2
TYPE R (10) AND EQ

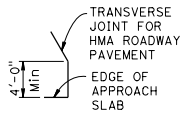
TYPE E-2



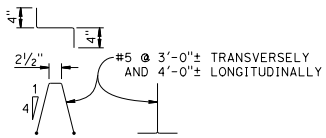
DETAIL X-3
LONGITUDINAL CONSTRUCTION JOINT ALTERNATIVES



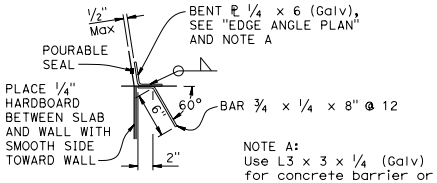
EDGE ANGLE PLAN



DETAIL A



DETAIL X-4
BAR CHAIR DETAIL



DETAIL B

NOTE A:
Use L3 x 3 x ¼ (Galv) for concrete barrier or curb with vertical face.

DESIGN NOTES

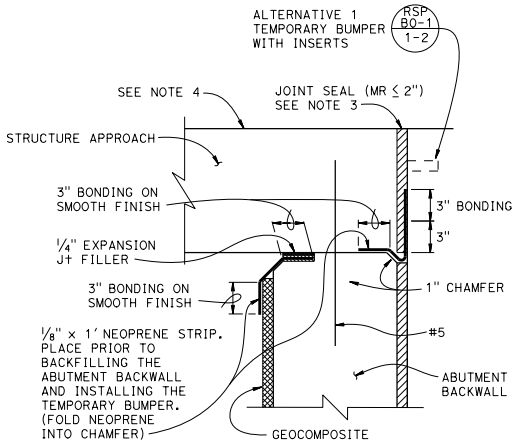
DESIGN: AASHTO LRFD Bridge Design Specifications, 2012 Edition with Caltrans Amendments, preface dated January 2014

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 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 or epoxy-coated prefabricated 9" Drill and Bond dowels into a 9" deep hole.

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.
4. Polyester concrete shall be placed across approach slab to match bridge deck protection in Freeze-Thaw Area.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE APPROACH SLAB DETAILS

NO SCALE

RSP B9-5 DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN B9-5
DATED MAY 31, 2018 - PAGE 356 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B9-5

6-24-21

2018 REVISED STANDARD PLAN RSP B9-5

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

REGISTERED CIVIL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

Tillat Satter
No. C42892
Exp. 3-31-22
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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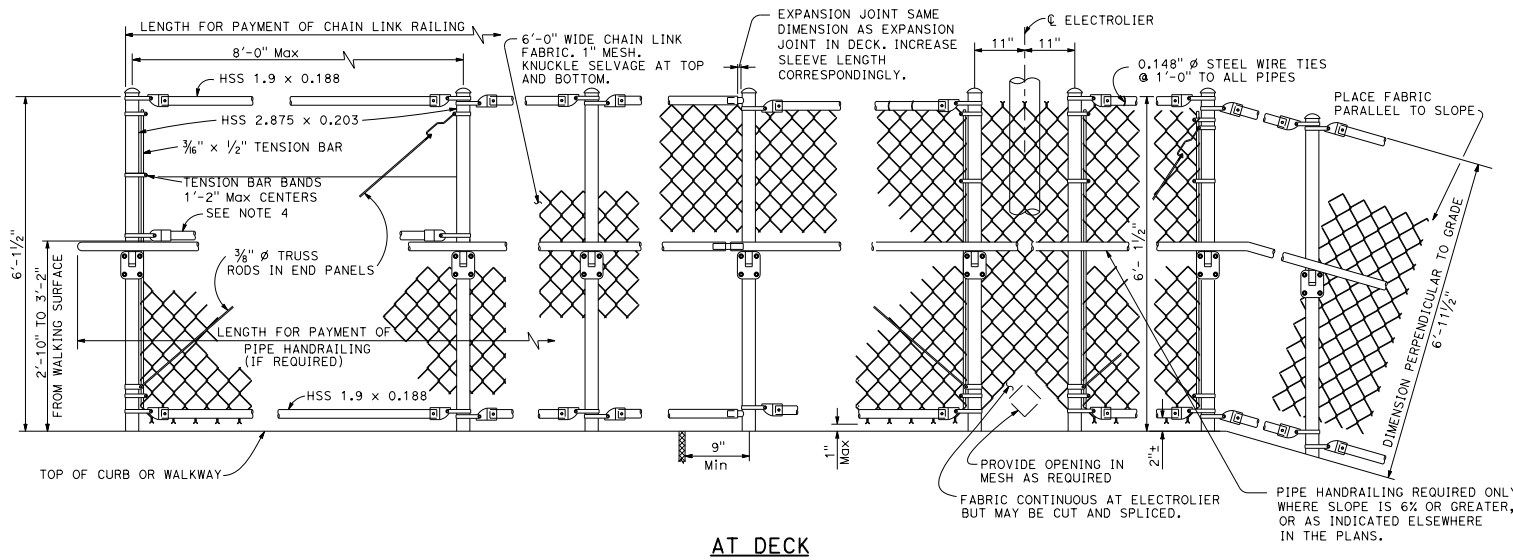
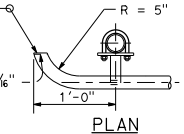
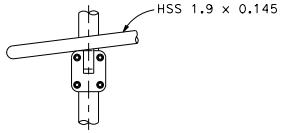
TO ACCOMPANY PLANS DATED _____



END POST | INTERMEDIATE POSTS AT DECK EXPANSION JOINTS | AT ELECTROLIER | ON SLOPES



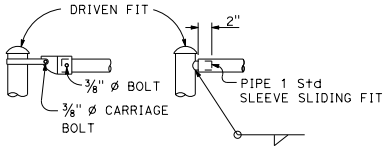
PLAN



ELEVATION

PIPE HANDRAILING AT END

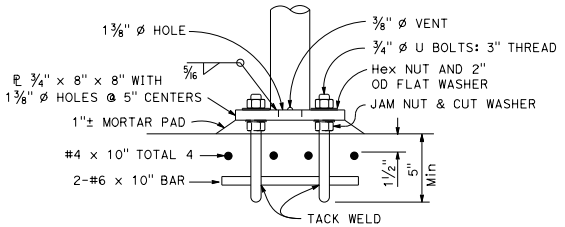
ALTERNATIVE DETAILS



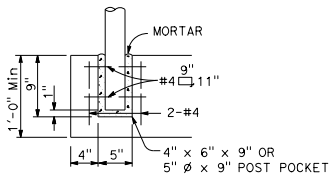
TYPICAL CONNECTION DETAILS

NOTES:

1. Peen all bolt threads.
2. Railing shall conform to horizontal and vertical alignment. Posts shall be vertical. Top and bottom pipes shall be bent if radius is 148'-0" or less; may be on 8'-0" chords if radius is over 148'-0".
3. When railing is on slope, 6'-0" chain link fabric shall be placed parallel to slope.
4. Additional HSS 1.9 x 0.188 required when radius is less than 150'-0".



ANCHORAGE DETAIL



ALTERNATIVE ANCHORAGE DETAIL

May be used when thickness of concrete is 1'-0" or more.

DESIGN NOTES

DESIGN:

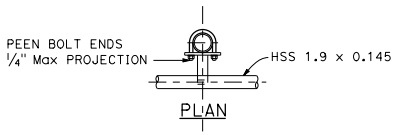
AASHTO LRFD Bridge Design Specifications 8th Edition 2017 with California Amendments April 2019

CONCRETE:

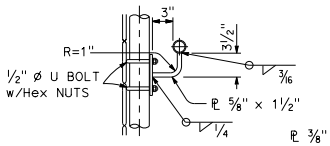
f_y = 60 ksi
f'_c = 3.6 ksi

STRUCTURAL STEEL

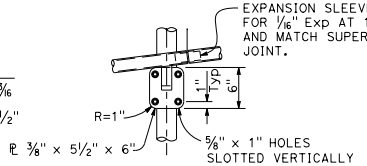
HSS: f_y = 50 ksi



PLAN



SIDE VIEW



ELEVATION

PIPE HANDRAILING BRACKET

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK RAILING

NO SCALE

RSP B11-7 DATED OCTOBER 16, 2020 SUPERSEDES STANDARD PLAN B11-7 DATED MAY 31, 2018 - PAGE 358 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-7

3-27-20

2018 REVISED STANDARD PLAN RSP B11-7

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

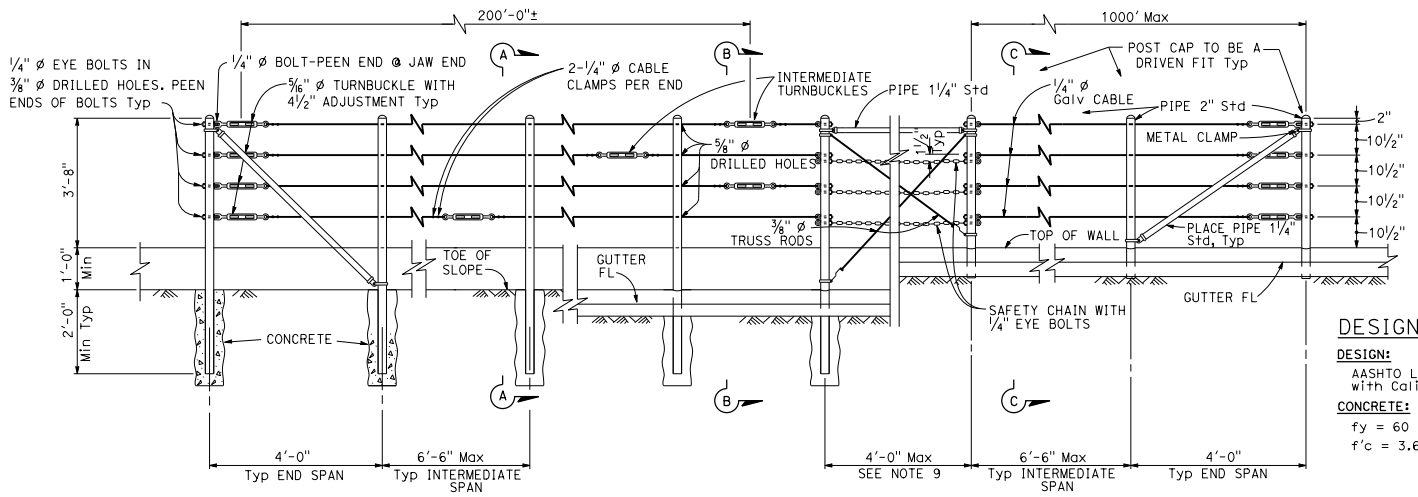
REGISTERED CIVIL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER
Tillat Satter
No. C42892
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



EXISTING WALL (WITHOUT GUTTER)
Existing

RETAINING WALL (WITH GUTTER)
Existing

RETAINING WALL (WITH GUTTER)
New construction

ELEVATION

DESIGN NOTES

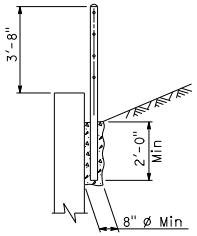
DESIGN:

AASHTO LRFD Bridge Design Specifications 8th Edition 2017 with California Amendments April 2019

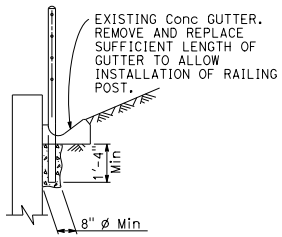
CONCRETE:

fy = 60 ksi

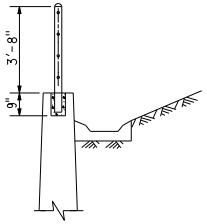
f'c = 3.6 ksi



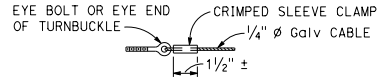
SECTION A-A
Existing



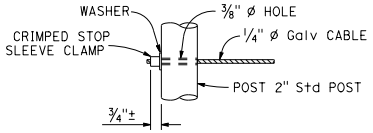
SECTION B-B
Existing



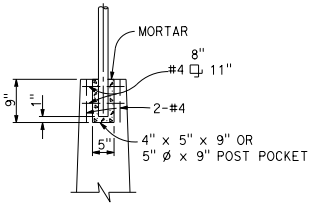
SECTION C-C
New construction



ALTERNATIVE CABLE CONNECTION



ALTERNATIVE DEAD END ANCHORAGE



POST POCKET

NOTES:

1. Maximum distance between turnbuckles shall be 200'-0"±.
2. Intermediate turnbuckles to be placed in adjacent spans.
3. Cable shall not be spliced between intermediate turnbuckles and end posts.
4. Posts to be vertical.
5. Alignment of holes in posts may vary to conform to slope of top of retaining wall.
6. The Contractor shall verify all dependent dimensions in the field before ordering or fabricating any material.
7. Line posts shall be braced horizontally and trussed diagonally in both directions at intervals not to exceed 1000'.
8. Post pockets to be centered in top of wall.
9. Typical end spans, braced in both directions, shall be constructed at changes in line where the angle of deflection is 15° or more.
10. Shall not be used for pedestrian walkways.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CABLE RAILING

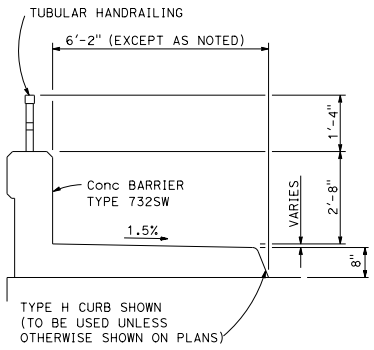
NO SCALE

RSP B11-47 DATED OCTOBER 16, 2020 SUPERSEDES STANDARD PLAN B11-47 DATED MAY 31, 2018 - PAGE 359 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-47

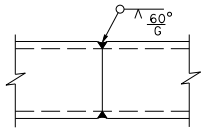
2018 REVISED STANDARD PLAN RSP B11-47

3-27-20

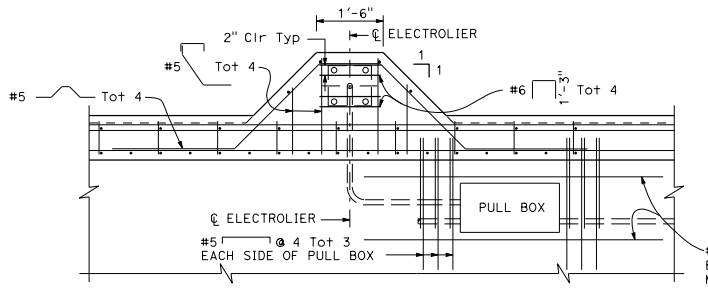


TYPICAL SECTION

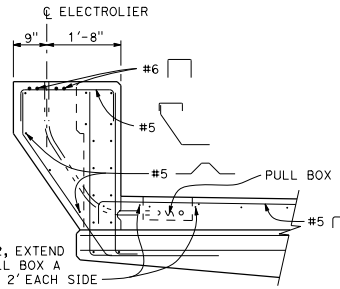
RAIL CAP
HSS 3 x 2 x 3/16 similar



TUBE-WELDED SPLICE



PLAN



SECTION B-B

#5 TOTAL 2, EXTEND BEYOND PULL BOX A MINIMUM OF 2' EACH SIDE

ELECTROLIER PEDESTAL DETAILS

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

REGISTERED CIVIL ENGINEER
October 16, 2020
PLANS APPROVAL DATE
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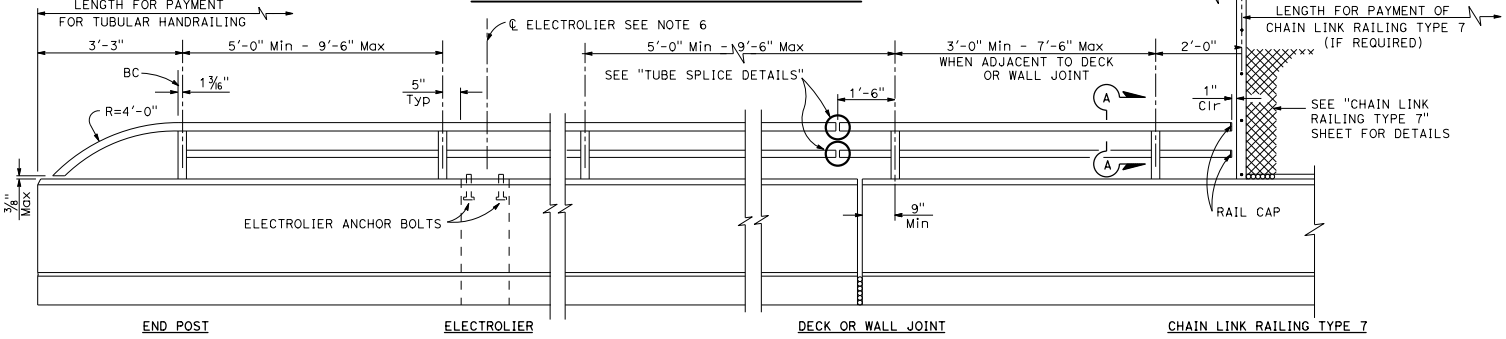
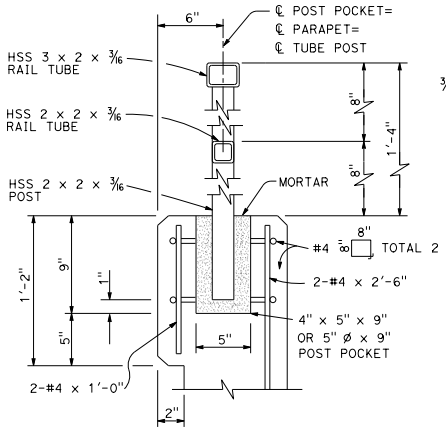
REGISTERED PROFESSIONAL ENGINEER
Tillat Satter
No. C42892
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

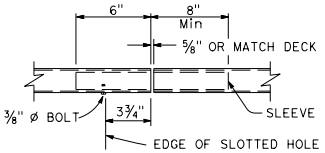
TO ACCOMPANY PLANS DATED _____



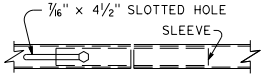
ELEVATION



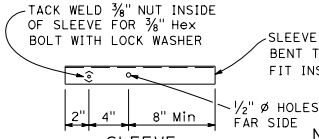
POST ANCHORAGE DETAILS



VIEW G-G

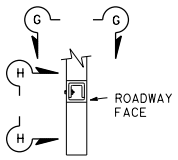


VIEW H-H



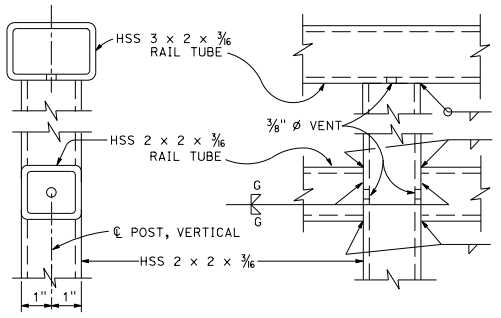
SLEEVE

TUBE SPLICE DETAILS
HSS 3 x 2 x 3/16 similar



SECTION

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



SECTION A-A

ELEVATION

RAIL CONNECTION DETAILS

DESIGN NOTE:
AASHTO LRFD Bridge Design Specifications 8th Edition 2017 with California Amendments April 2019

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 Standard Plan B11-58.
6. For electrolier mounting details, see Revised Standard Plan RSP ES-6A and Standard Plan ES-6B.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TUBULAR HANDRAILING

NO SCALE

RSP B11-51 DATED OCTOBER 16, 2020 SUPERSEDES RSP B11-51 DATED OCTOBER 18, 2019 AND STANDARD PLAN B11-51 DATED MAY 31, 2018 - PAGE 360 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-51

3-27-20

2018 REVISED STANDARD PLAN RSP B11-51

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

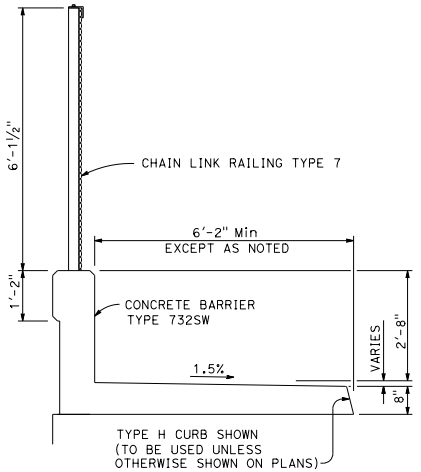
REGISTERED CIVIL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

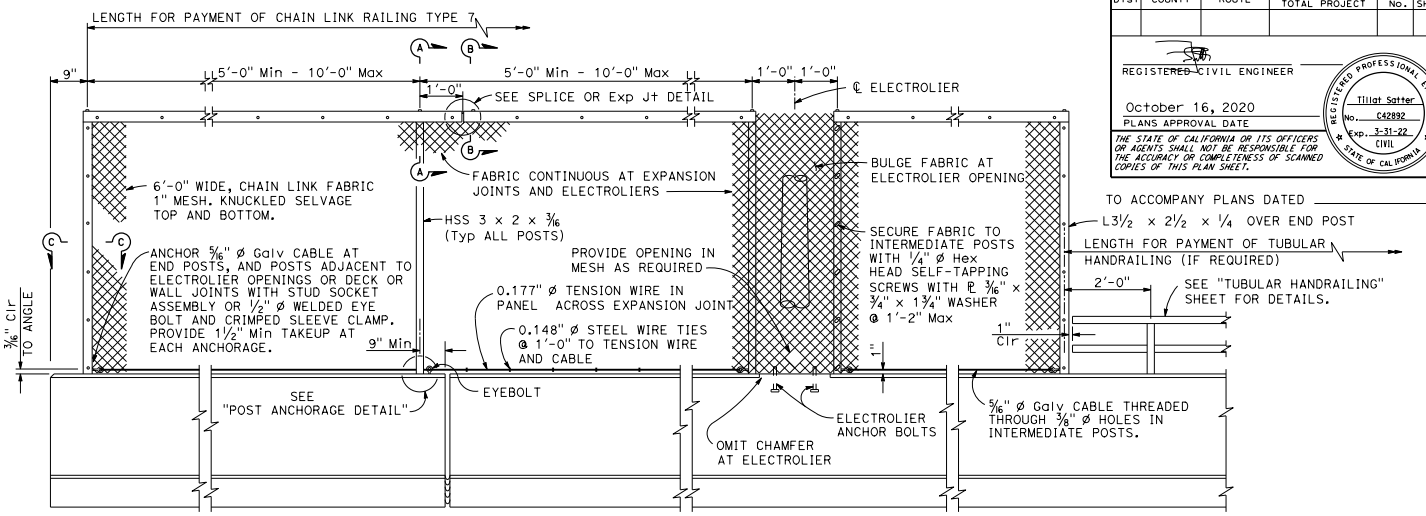
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — Tillat Satter — No. C42892 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

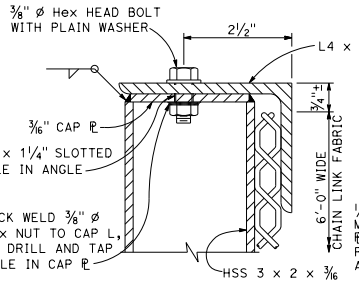


TYPICAL SECTION

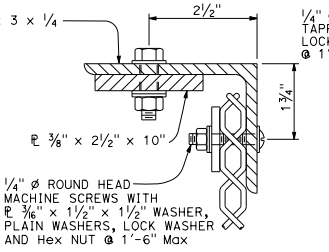


END POST — DECK OR WALL JOINT — ELECTROLIER — TUBULAR HANDRAILING

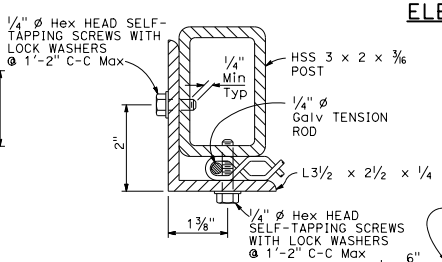
ELEVATION



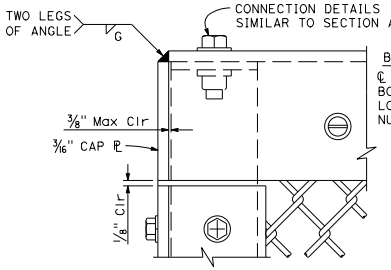
SECTION A-A



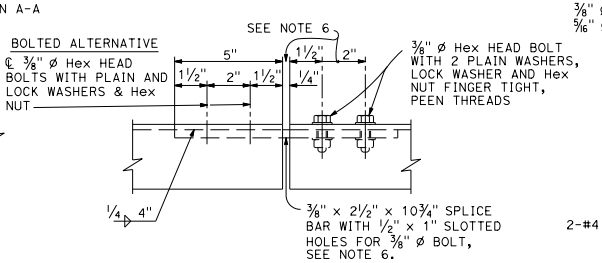
SECTION B-B



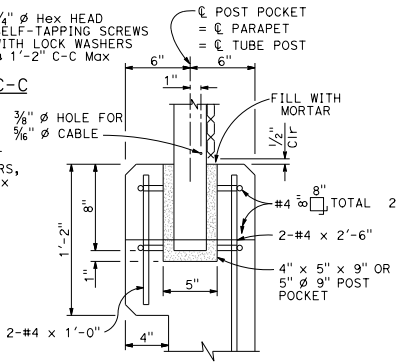
SECTION C-C



END POST ELEVATION



SPLICE OR EXPANSION JOINT DETAIL



POST ANCHORAGE DETAIL

DESIGN NOTES

DESIGN:

AASHTO LRFD Bridge Design Specifications 8th Edition 2017
with California Amendments April 2019

CONCRETE:

fy = 60 ksi
f'c = 3.6 ksi

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 Standard Plan B11-58.
6. Expansion joint same dimension as expansion joint in deck or wall. Increase slotted hole length and splice bar length correspondingly.
7. Design valid for bridges with the top of Chanin Link Railing Type 7 equal to or less than 150' height above surrounding ground surfaces.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK RAILING TYPE 7

NO SCALE

RSP B11-52 DATED OCTOBER 16, 2020 SUPERSEDES STANDARD PLAN B11-52
DATED MAY 31, 2018 - PAGE 361 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-52

2018 REVISED STANDARD PLAN RSP B11-52

3-27-20

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

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

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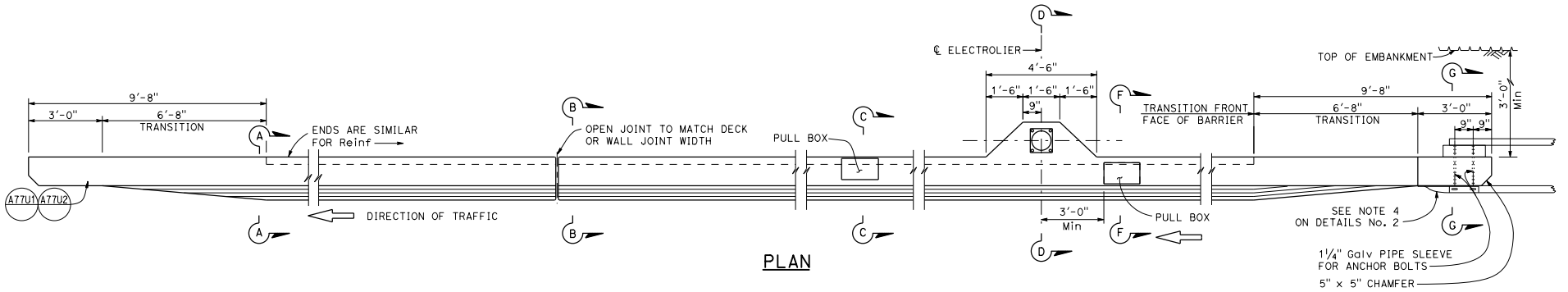
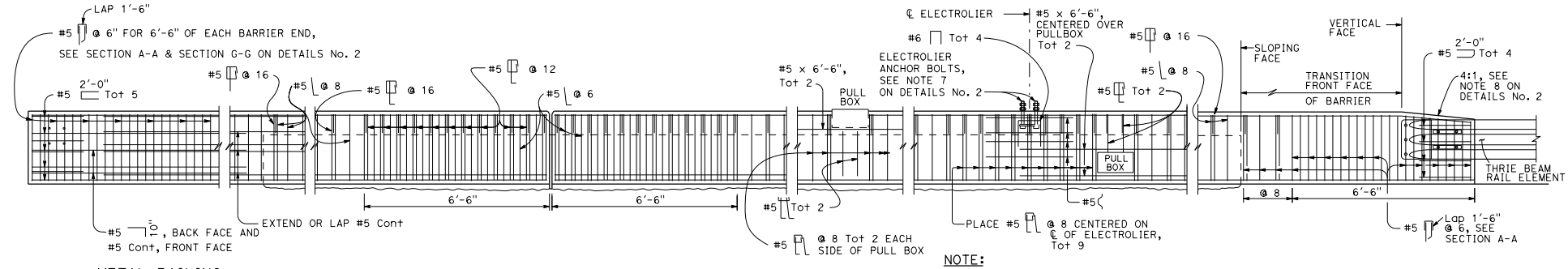
TO ACCOMPANY PLANS DATED _____

2018 REVISED STANDARD PLAN RSP B11-79



PLAN



METAL RAILING CONNECTION

DECK OR WALL JOINT

ELECTROLIER
(SEE NOTE 5 ON DETAILS No. 2)

NOTE:
Reinforcing for wall joint shown

ELEVATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

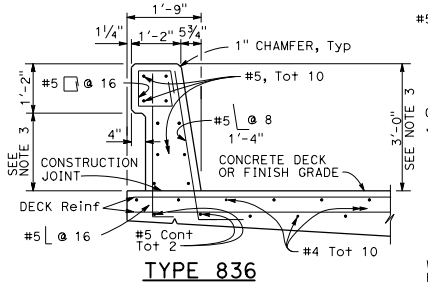
CONCRETE BARRIER TYPE 836
DETAILS No. 1

NO SCALE

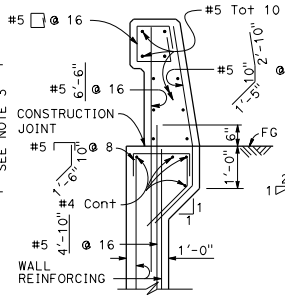
RSP B11-79 DATED OCTOBER 18, 2019 SUPERSEDES RSP B11-79
DATED OCTOBER 19, 2018 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-79

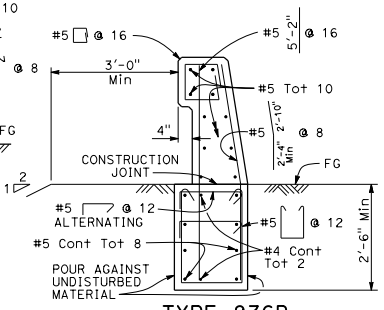
1-22-19



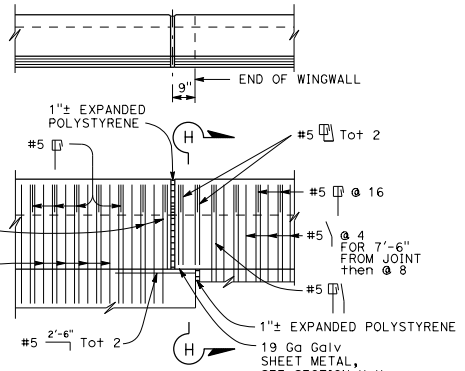
TYPE 836



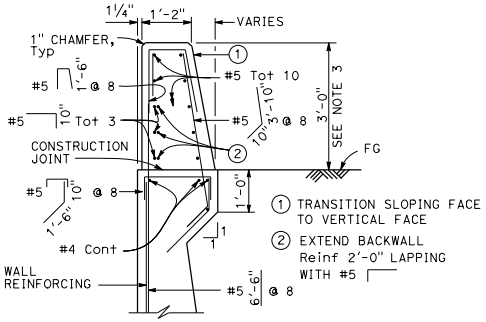
TYPE 836A



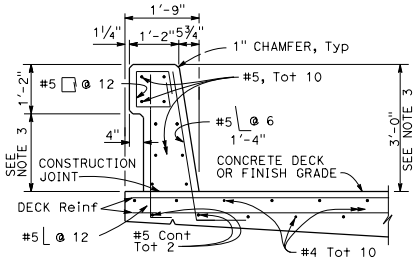
TYPE 836B



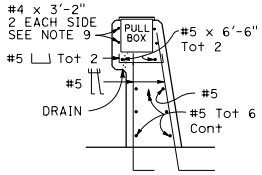
TYPE 836A TYPE 836B



SECTION A-A

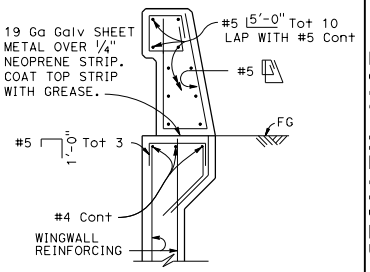


SECTION B-B

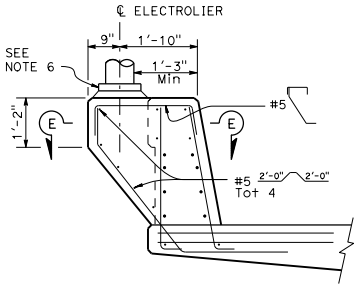


SECTION C-C
SEE NOTES

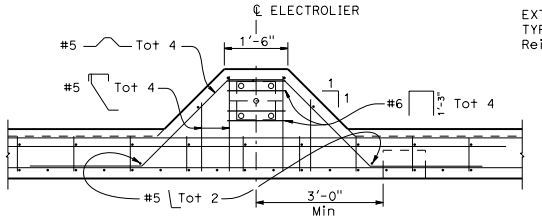
NOTE:
Types 836A and 836B are similar to Type 836 except as noted



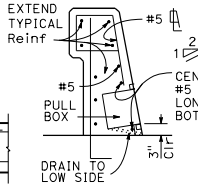
SECTION H-H



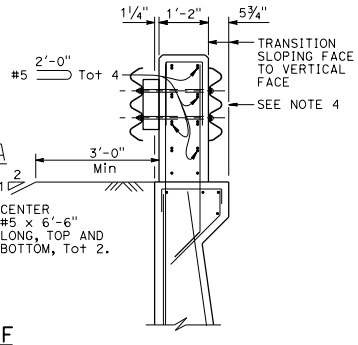
PEDESTAL ELEVATION
SECTION D-D



SECTION E-E



SECTION F-F
SEE NOTES



SECTION G-G

NOTES:

1. Walls are to be backfilled before barrier is placed.
2. Clearance to reinforcing steel in barrier to be 2", 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 "ROADWAY PLANS."
4. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
5. See Standard Plans ES-9A, ES-9B, ES-9C, ES-9D, and 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 electroiler mounting details, See Standard Plans ES-6A and ES-6B.
7. Minimum concrete edge distance, to the renforcing shown, shall be maintained. Edge distance may be adjusted to accomodate increase in concrete cover for architectural 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.
9. In front and back of pull box (SECTION C-C) the #4 x 3'-2" bars must be centered so that they extend minimum 8" beyond ends of pull box. As an alternative, may substitute 4 x 4 - W12 x W12 welded fabric extending minimum 8" beyond ends of pull box.

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

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tillat Satter
No. C42892
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

CONCRETE BARRIER TYPE 836 DETAILS No. 2

NO SCALE

RSP B11-80 DATED OCTOBER 18, 2019 SUPERSEDES RSP B11-80 DATED OCTOBER 19, 2018 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-80

2018 REVISED STANDARD PLAN RSP B11-80

1-22-19

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

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

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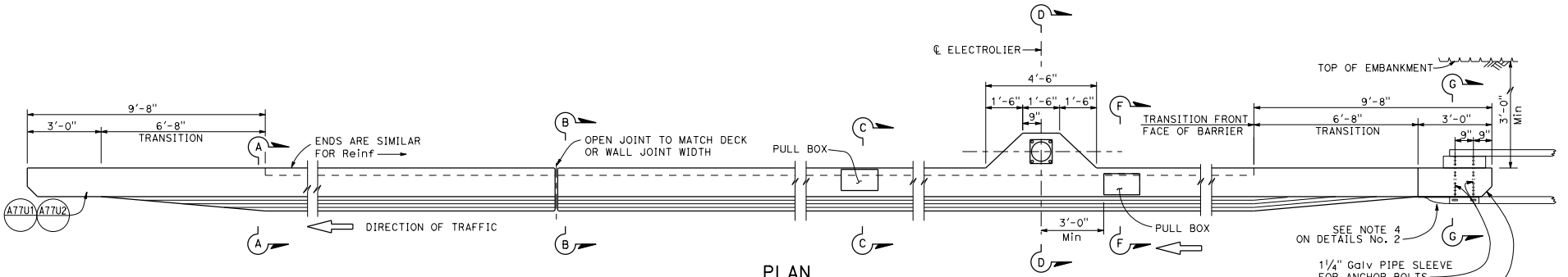
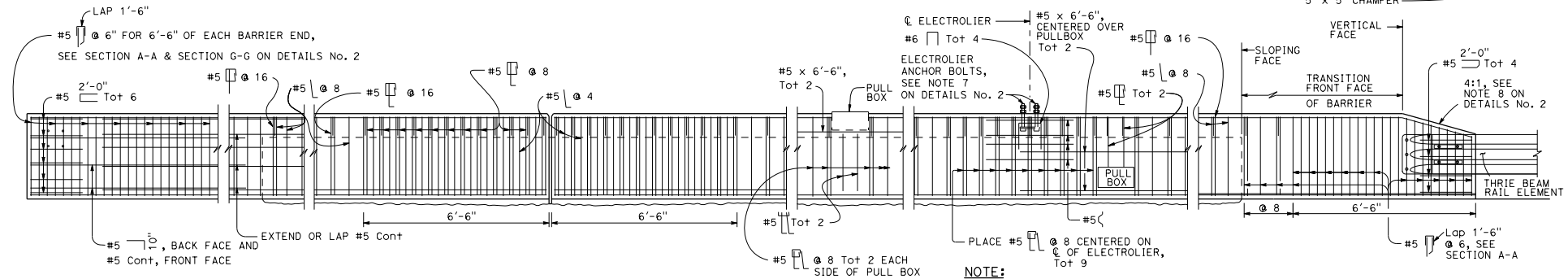
TO ACCOMPANY PLANS DATED _____

2018 REVISED STANDARD PLAN RSP B11-81



PLAN



METAL RAILING CONNECTION

DECK OR WALL JOINT

ELEVATION

NOTE:
Reinforcing for wall joint shown

ELECTROLIER
(SEE NOTE 5 ON DETAILS No. 2)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 842
DETAILS No. 1

NO SCALE

RSP B11-81 DATED OCTOBER 18, 2019 SUPERSEDES RSP B11-81
DATED OCTOBER 19, 2018 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-81

1-22-19

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

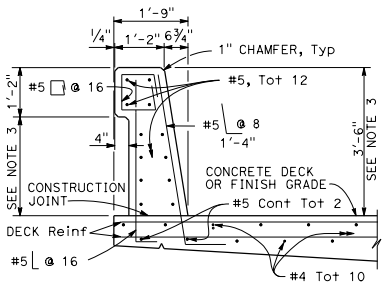
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

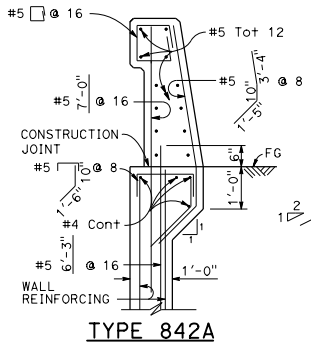
Tillat Satter
No. C42892
Exp. 3-31-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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.

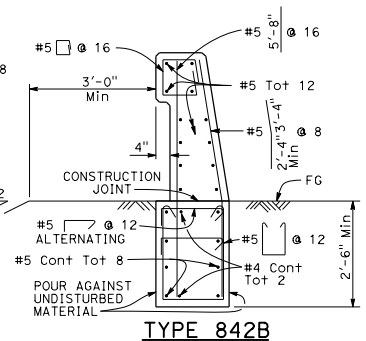
TO ACCOMPANY PLANS DATED _____



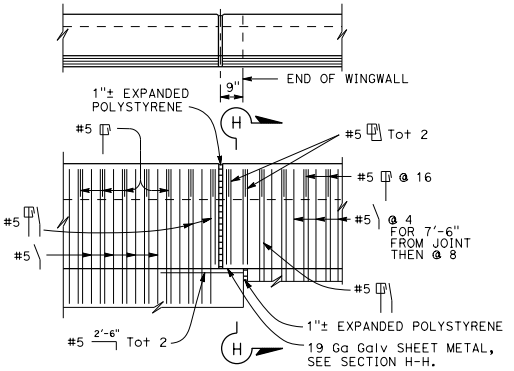
TYPE 842



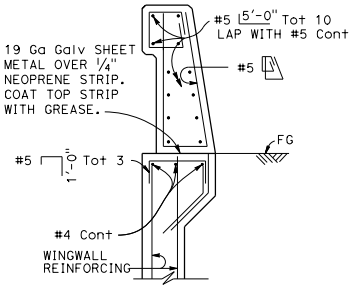
TYPE 842A



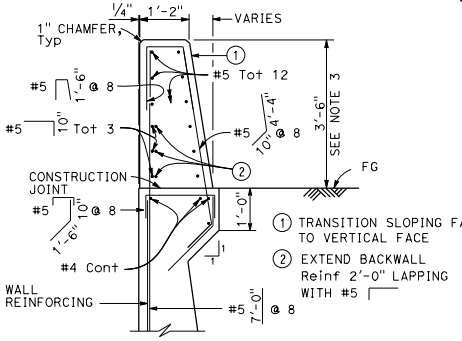
TYPE 842B



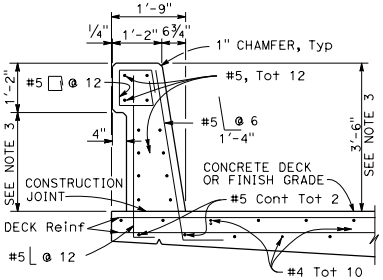
TYPE 842A TYPE 842B



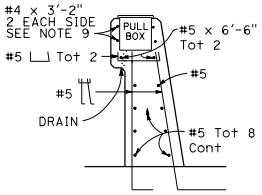
SECTION H-H



SECTION A-A

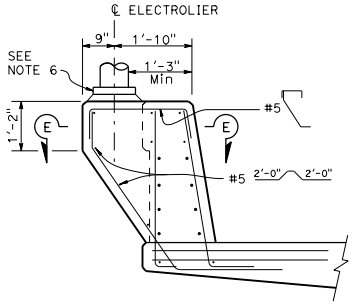


SECTION B-B

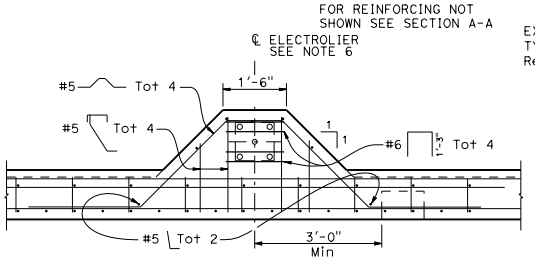


SECTION C-C
SEE NOTES

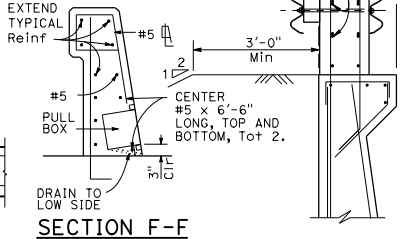
NOTE:
Types 842A & 842B are similar to Type 842 except as noted



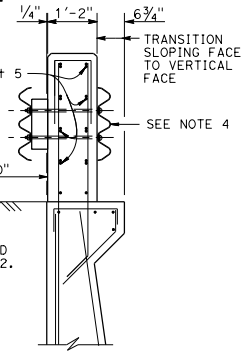
PEDESTAL ELEVATION
SECTION D-D



SECTION E-E



SECTION F-F
SEE NOTES



SECTION G-G

NOTES:

1. Walls are to be backfilled before barrier is placed.
2. Clearance to reinforcing steel in barrier to be 2", 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 "ROADWAY PLANS."
4. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
5. See Standard Plans ES-9A, ES-9B, ES-9C, ES-9D, and 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 electroiler mounting details, See Standard Plans ES-6A and ES-6B.
7. Minimum concrete edge distance, to the renforcing shown, shall be maintained. Edge distance may be adjusted to accomodate increase in concrete cover for architectural 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.
9. In front and back of pull box (SECTION C-C) the #4 x 3'-2" bars must be centered so that they extend minimum 8" beyond ends of pull box. As an alternative, may substitute 4 x 4 - W12 x W12 welded fabric extending minimum 8" beyond ends of pull box.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 842 DETAILS No. 2

NO SCALE

RSP B11-82 DATED OCTOBER 18, 2019 SUPERSEDES RSP B11-82
DATED OCTOBER 19, 2018 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-82

1-22-19

2018 REVISED STANDARD PLAN RSP B11-82

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

REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gregory J. Kaderabek — No. C40814 — Exp. 3-31-23 — CIVIL — STATE OF CALIFORNIA

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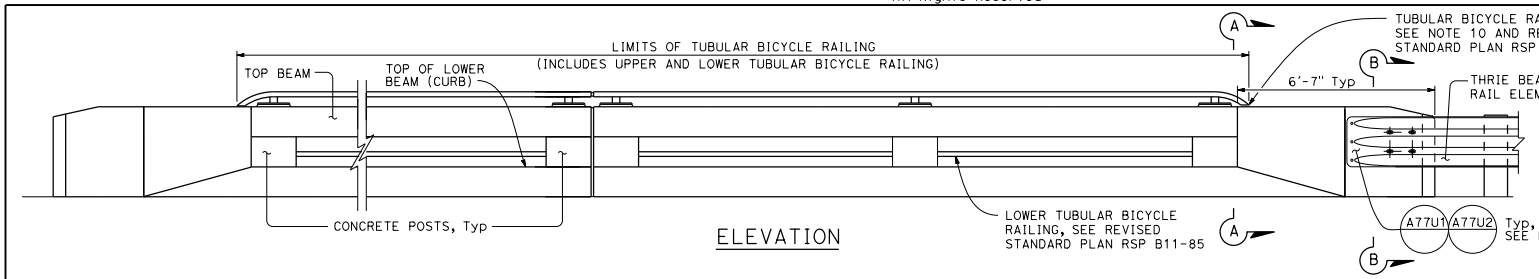
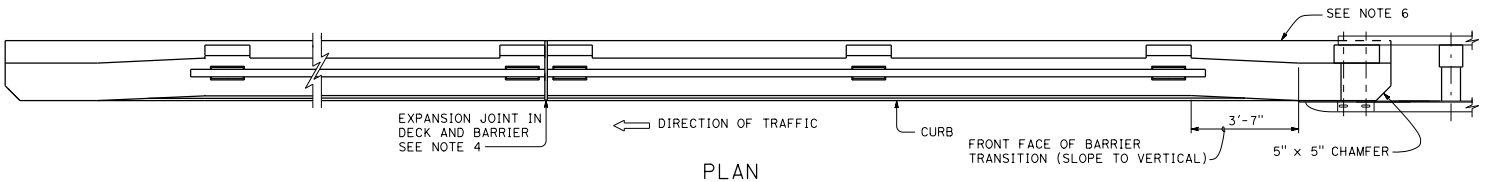
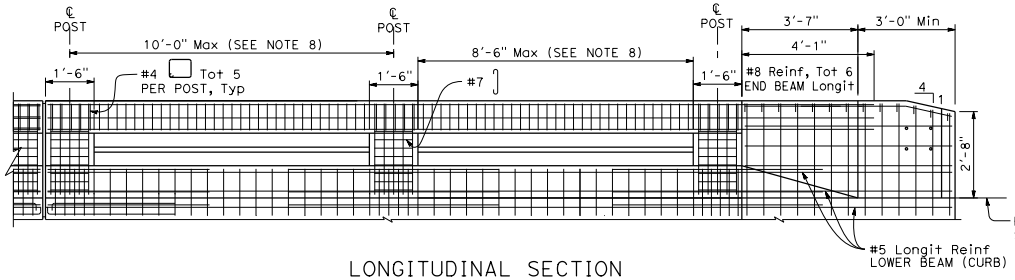
TO ACCOMPANY PLANS DATED _____



ELEVATION

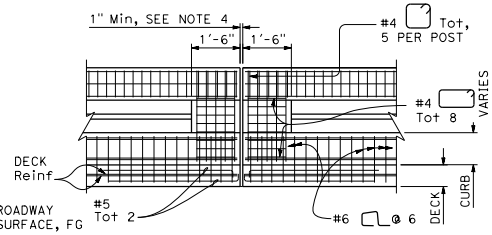


PLAN



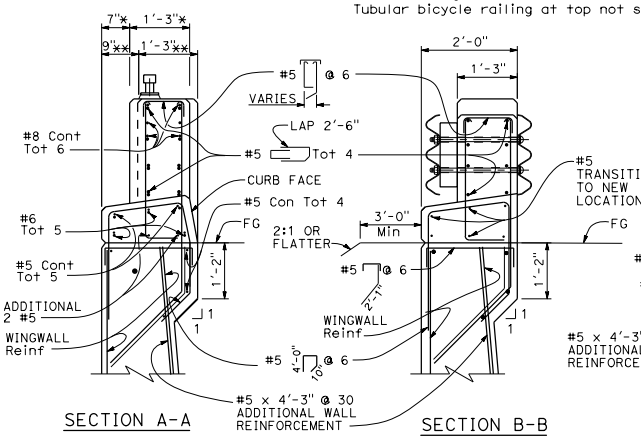
LONGITUDINAL SECTION

NOTES: Deck and wing wall reinforcement not shown.
Tubular bicycle railing at top not shown for clarity.



EXPANSION JOINT DETAIL

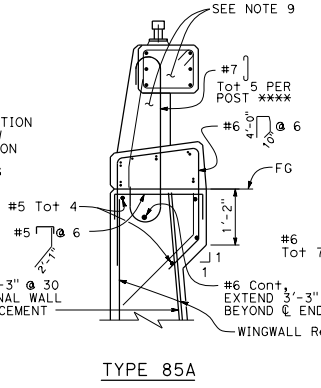
NOTE: Not all reinforcement shown.



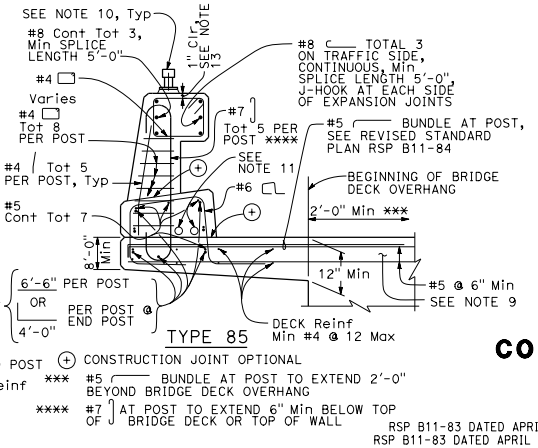
SECTION A-A

SECTION B-B

* BEGIN BARRIER TRANSITION
** END BARRIER TRANSITION



TYPE 85A



TYPE 85

⊕ CONSTRUCTION JOINT OPTIONAL

*** #5 ⊂ BUNDLE AT POST TO EXTEND 2'-0" BEYOND BRIDGE DECK OVERHANG

**** #7 ⌐ AT POST TO EXTEND 6" Min BELOW TOP OF ⌐ BRIDGE DECK OR TOP OF WALL

NOTES:

1. Walls are to be backfilled before the barrier is placed.
2. Longitudinal reinforcing steel to stop at all expansion joints.
3. The front face dimensions are to be constant above the finished roadway profile, but the overall height will vary with certain thicknesses of surfacing and roadway slopes.
4. Bridge rail expansion joint to match deck joint, 1" Min.
5. Butt welds are acceptable alternative splice to lap splicing #8 bars. No portion of a lap splice can encroach on the post location.
6. For typical metal railing connection details not shown, see Standard Plans A77U1 and A77U2.
7. Chain link railing is not allowed on Type 85 Barriers, except over railroads and for locations with security concerns.
8. Posts to be spaced equally, typically 10'-0" spacing. Post spacing may be reduced where location of expansion joints or the length of wingwalls will not accommodate the 10'-0" spacing. Maximum see-through availability is to be strived for, where 10'-0" post spacing can not be achieved.
9. For additional reinforcement details, see Revised Standard Plan RSP B11-84.
10. Tubular bicycle railing to extend to where level bench elevation along exterior face of wing wall is within 1'-0" of roadway shoulder FG.
11. The maximum number of conduits is limited to two 1½" Dia and must be placed in front half of the lower beam/curb. See also Standard Plan B14-3 CONDUIT IN BRIDGE RAILING detail.
12. For reinforcement not shown, see other details.
13. 1" clearance, typical for bridge rail except for 2" clearance at traffic face and back side of lower beam (curb).

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 85 DETAILS No. 1

NO SCALE

RSP B11-83 DATED APRIL 15, 2022 SUPERSEDES RSP B11-83 DATED OCTOBER 15, 2021 AND RSP B11-83 DATED APRIL 16, 2021 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-83

12-21-21

2018 REVISED STANDARD PLAN RSP B11-83

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

REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gregory J. Kaderabek
No. C40814
Exp. 3-31-23
CIVIL
STATE OF CALIFORNIA

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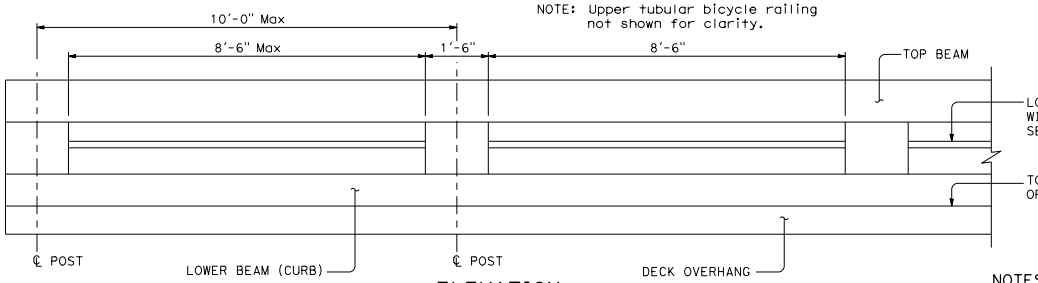
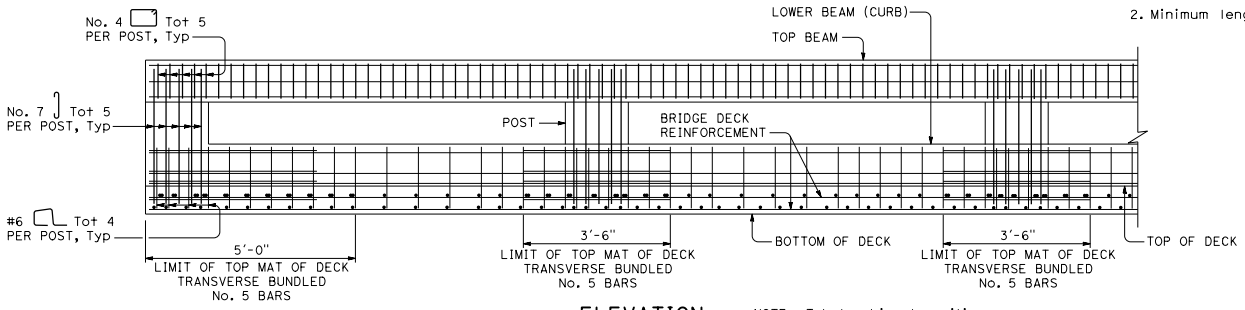
TO ACCOMPANY PLANS DATED _____

NOTE: Upper tubular bicycle railing not shown for clarity.



ELEVATION

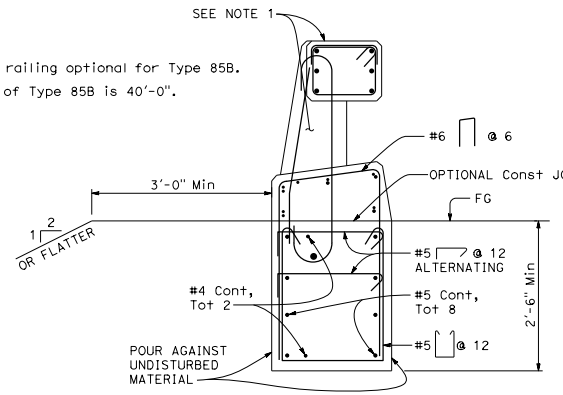


ELEVATION

NOTE: Tubular bicycle railing not shown for clarity.

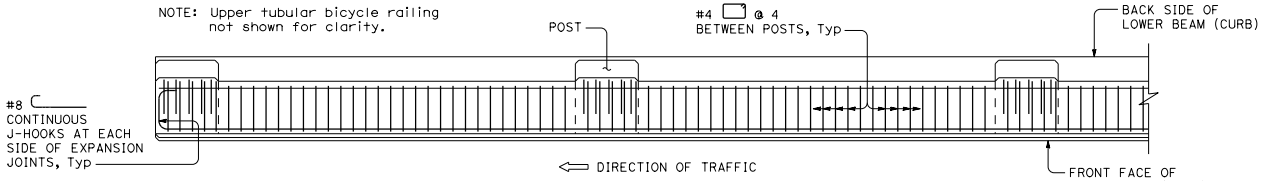
NOTES:

1. Tubular bicycle railing optional for Type 85B.
2. Minimum length of Type 85B is 40'-0".

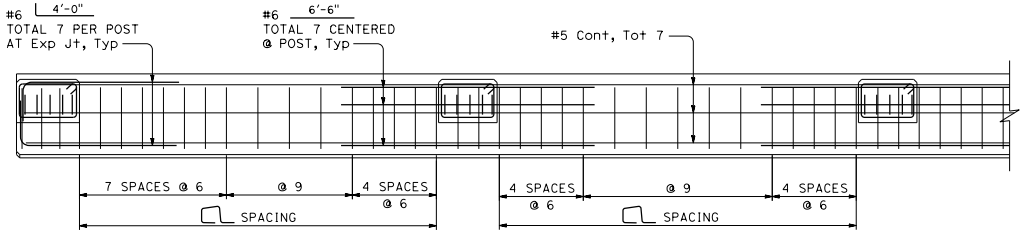


TYPE 85B

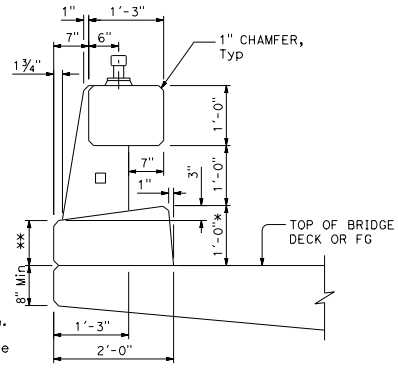
NOTE: Upper tubular bicycle railing not shown for clarity.



PLAN AT TOP BEAM



PLAN AT LOWER BEAM (CURB)



* Dimension must be 1'-0" above top of Bridge Deck or FG (including overlay). Increase lower beam (curb) height by 2" Max to match overlay depth.

** Dimension determined by bridge cross-slope and whether or not there is an overlay.

TYPICAL SECTION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 85 DETAILS No. 2

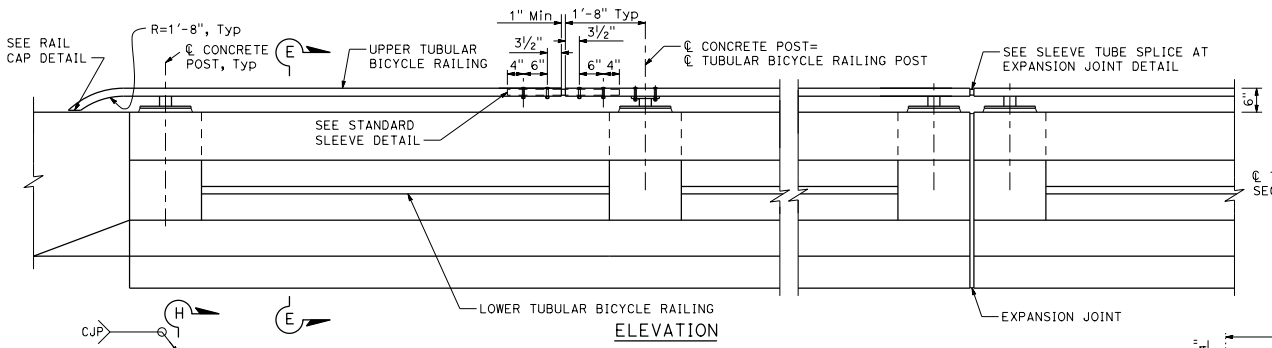
NO SCALE

RSP B11-84 DATED APRIL 15, 2022 SUPERSEDES RSP B11-84 DATED OCTOBER 15, 2021 AND RSP B11-84 DATED APRIL 16, 2021 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

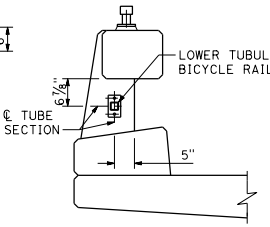
REVISED STANDARD PLAN RSP B11-84

2018 REVISED STANDARD PLAN RSP B11-84

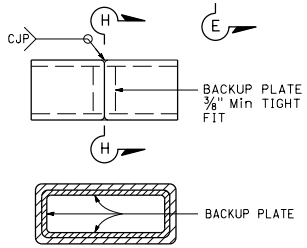
12-16-21



ELEVATION



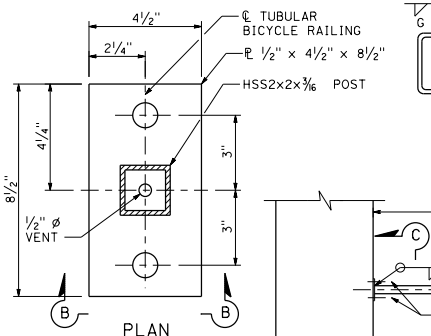
SECTION E-E



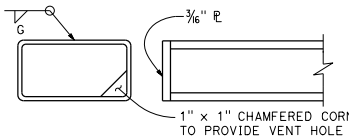
SECTION H-H

ALTERNATIVE TUBE WELDED STANDARD SPLICE

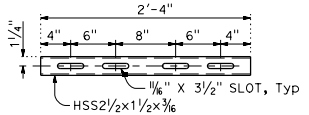
NOTE: FOR SPLICES NOT AT EXPANSION JOINTS



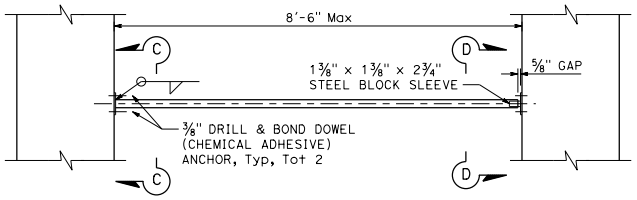
PLAN



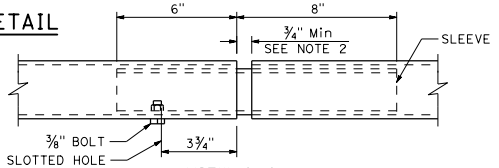
RAIL CAP DETAIL



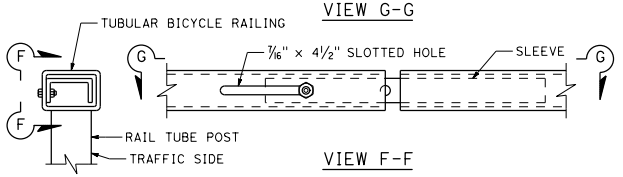
STANDARD SLEEVE DETAIL



LOWER TUBULAR BICYCLE RAILING DETAIL

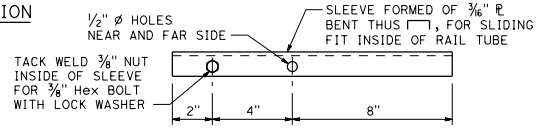


VIEW G-G

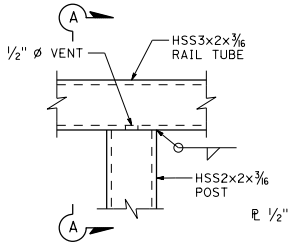


ELEVATION

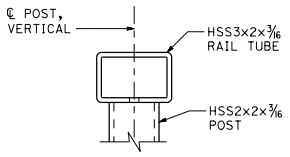
VIEW F-F



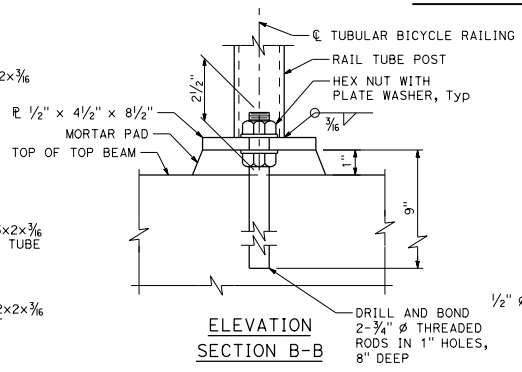
SLEEVE TUBE SPLICE AT EXPANSION JOINT DETAIL



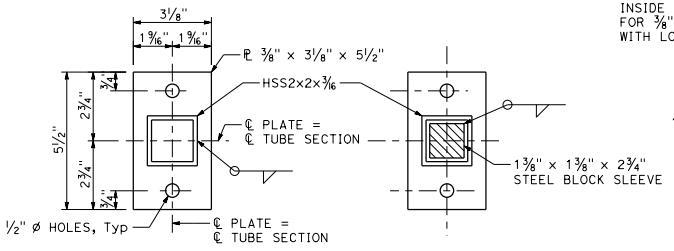
ELEVATION



SECTION A-A



ELEVATION
SECTION B-B



SECTION C-C

SECTION D-D

See Section C-C for details not shown.

TUBULAR BICYCLE RAILING DETAILS

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

REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Gregory J. Kaderabek — No. C40814 — Exp. 3-31-23 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. Tubular bicycle railing posts shall be normal to railing.
2. 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 accordingly.
3. Upper tubular bicycle railing shall be continuous over not less than two posts.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 85 DETAILS No. 3

NO SCALE

RSP B11-85 DATED APRIL 15, 2022 SUPERSEDES RSP B11-85 DATED OCTOBER 15, 2021 AND RSP B11-85 DATED APRIL 16, 2021 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B11-85

2018 REVISED STANDARD PLAN RSP B11-85

12-16-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
STATE OF CALIFORNIA

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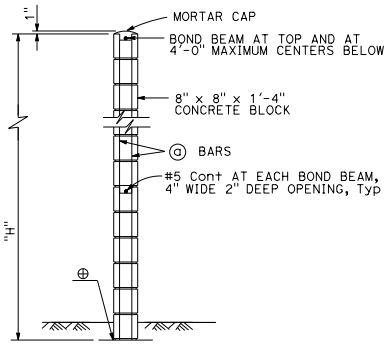
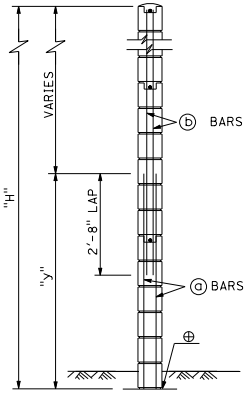
TO ACCOMPANY PLANS DATED _____



H=6'-0" THRU H=10'-0"

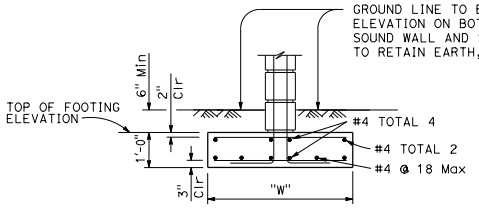


H=12'-0" THRU H=16'-0"

For details not shown, see H=6'-0" thru H=10'-0".

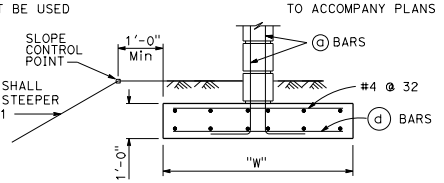
TYPICAL SECTION

⊕ Full mortar bed at bottom of wall



CASE 1

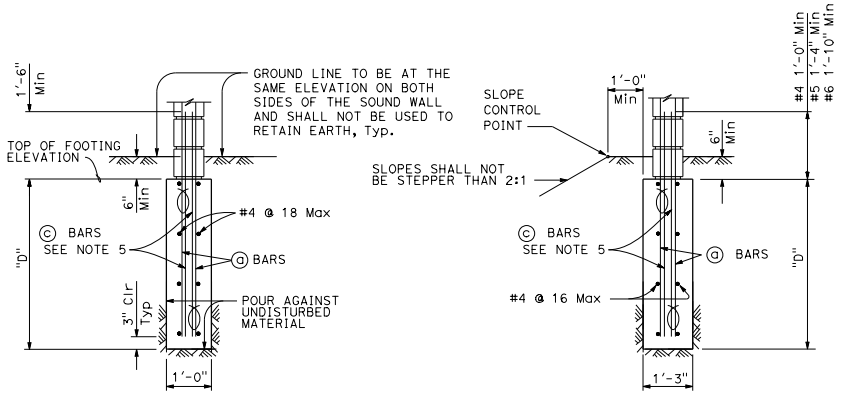
For details not shown, see Case 2. Level ground (±10%) on both sides of the sound wall.



CASE 2

For details not shown, see Case 1. Level ground (±10%) on the traffic side of the sound wall and sloping ground on the opposite side.

SPREAD FOOTING SECTION



CASE 1

For details not shown, see Case 2. Level ground (±10%) on both sides of the sound wall.

CASE 2

For details not shown, see Case 1. Level ground (±10%) on one side of the sound wall and sloping ground on the opposite side.

TRENCH FOOTING SECTION

TRENCH FOOTING

MAXIMUM H	CASE 1			CASE 2		ⓒ BARS @ 1'-4" Max
	Ø = 25 Min	Ø = 30 Min	Ø = 35 Min	Ø = 30 Min	Ø = 35 Min	
	D	D	D	D	D	
6'-0"	5'-3"	4'-3"	3'-9"	7'-9"	5'-0"	———
8'-0"	6'-0"	5'-0"	4'-6"	8'-9"	6'-0"	#4
10'-0"	6'-9"	5'-9"	5'-0"	10'-0"	6'-9"	#4
12'-0"	7'-9"	6'-6"	5'-6"	11'-0"	7'-9"	#5
14'-0"	8'-6"	7'-3"	6'-0"	11'-9"	8'-6"	#5
16'-0"	9'-3"	7'-9"	6'-6"	12'-9"	9'-3"	#6

Case 1 - Level ground (±10%) on both sides of the sound wall.
Case 2 - Level ground (±10%) on one side of the sound wall and sloping ground on opposite side.

LEGEND:

Bundled reinforcement

SPREAD FOOTING

MAXIMUM H	W	ⓓ BARS
6'-0"	3'-3"	#5 @ 16
8'-0"	4'-0"	#5 @ 16
10'-0"	5'-0"	#5 @ 16
12'-0"	5'-9"	#5 @ 16
14'-0"	6'-6"	#4 @ 8
16'-0"	7'-6"	#4 @ 8

SOUND WALL REINFORCEMENT TABLE

MAXIMUM H	ⓐ BARS @ 1'-4" Max	ⓑ BARS @ 1'-4" Max	"y"
6'-0"	#4	———	———
8'-0"	#4	———	———
10'-0"	#4	———	———
12'-0"	#5	#4	6'-0"
14'-0"	#6	#4	8'-0"
16'-0"	#6	#4	10'-0"

NOTES:

1. For type of block and joint finish, see other sheets.
2. When blocks are laid in stacked bond, ladder type, galvanized joint reinforcement shall be provided. A minimum of 2-9 gauge wires continuous at 4'-0" maximum to be used. Locate reinforcement in joints that are at the approximate midpoint between bond beams.
3. Horizontal joints shall be tooled concave or weathered. vertical joints shall be tooled concave or raked.
4. For intermediate wall heights that are between the "H's" given, use the tabular information for the next higher "H".
5. Bundle additional ⓒ bars with typical ⓐ bars.
6. If wall is placed behind traffic barriers, clear distance from face of barrier to face of wall shall exceed 4'-0". Wall is not designed for impact loading.
7. Ultimate spread footing factored bearing pressure demand, q_o = 1.25 ksf, B' = W/3 Where B' is the effective footing width (ft).

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON FOOTING DETAILS (1)

NO SCALE

RSP B15-1 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-1 DATED APRIL 17, 2020 AND STANDARD PLAN B15-1 DATED MAY 31, 2018 - PAGE 390 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-1

2018 REVISED STANDARD PLAN RSP B15-1

6-2-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
STATE OF CALIFORNIA

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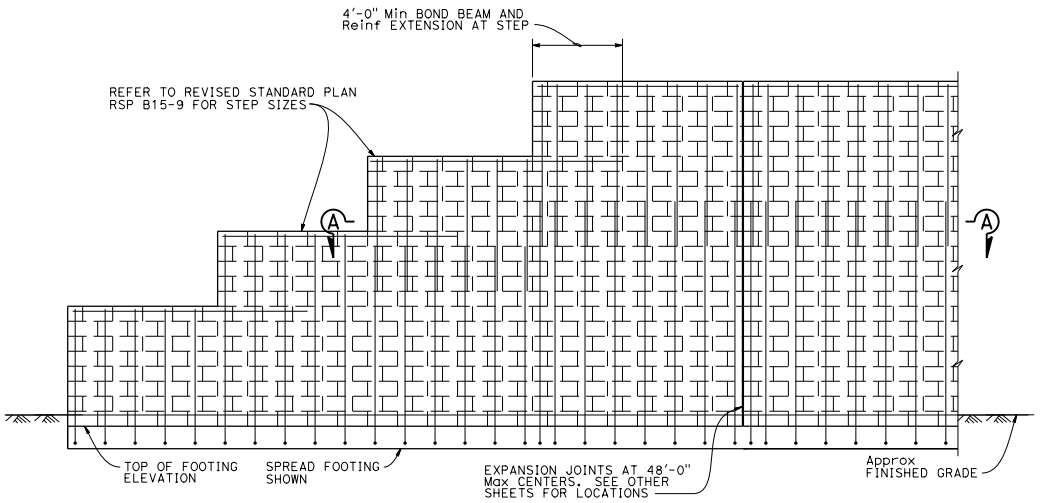
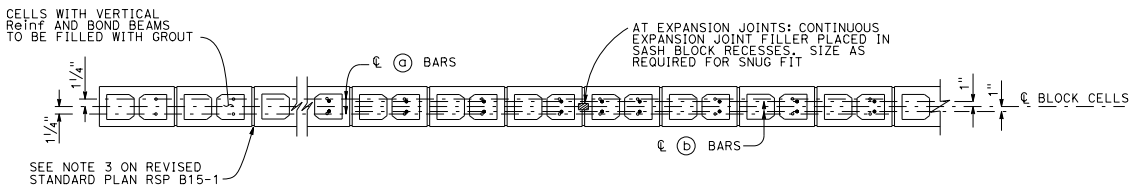
TO ACCOMPANY PLANS DATED _____



ELEVATION



SECTION A-A

DESIGN NOTES

DESIGN:
AASHTO LRFD Bridge Design Specifications,
8th Edition 2017 with California Amendment,
Preface date April 2019
TMS 402-16
2019 California Building Code

DESIGN WIND LOAD:
36.5 psf

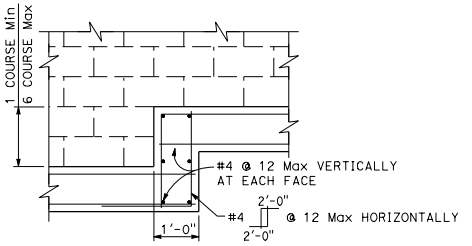
DESIGN SEISMIC LOAD:
0.57 Dead Load

REINFORCED CONCRETE AND
CONCRETE MASONRY:
f_y = 60 ksi
f'_c = 3.6 ksi
f'_m = 2000 psi *

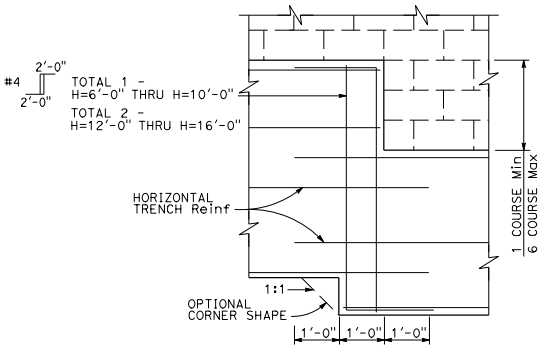
* Provide materials to achieve the net compressive strength of concrete masonry unit equal or greater than the specified f'_m.

NOTE:

1. For details not shown, see Revised Standard Plan RSP B15-1.



SPREAD FOOTING



TRENCH FOOTING

FOOTING STEP DETAILS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL
MASONRY BLOCK ON FOOTING
DETAILS (2)

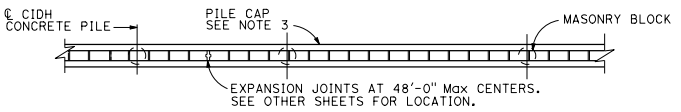
NO SCALE

RSP B15-2 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-2 DATED APRIL 17, 2020 AND STANDARD PLAN B15-2 DATED MAY 31, 2018 - PAGE 391 OF THE STANDARD PLANS BOOK DATED 2018.

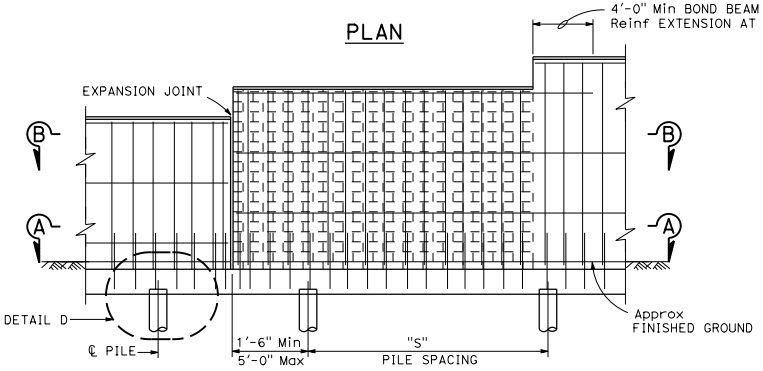
REVISED STANDARD PLAN RSP B15-2

2018 REVISED STANDARD PLAN RSP B15-2

5-27-21



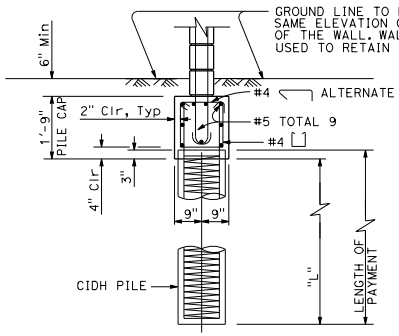
PLAN



ELEVATION

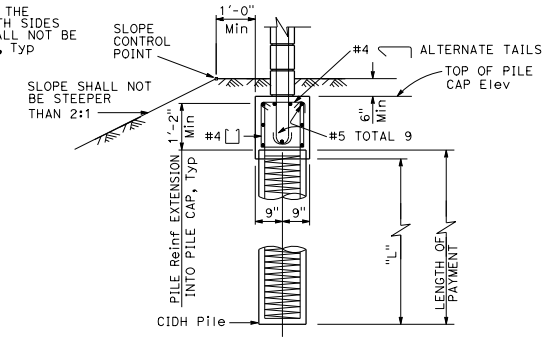
NOTES:

1. For Detail D, see Revised Standard Plan RSP B15-5.
2. For sections and details not shown, see Revised Standard Plans RSP B15-4 and RSP B15-5.
3. See Revised Standard Plan RSP B15-9 for other details.



CASE 1

For details not shown, see Case 2.
Level ground (±10%) on both sides of the sound wall.



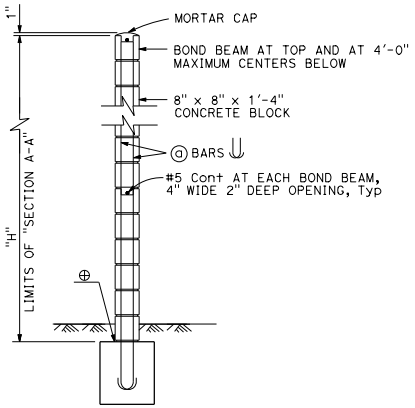
CASE 2

For details not shown, see Case 1.
Level ground (±10%) on one side of the sound wall and sloping ground on the opposite side.

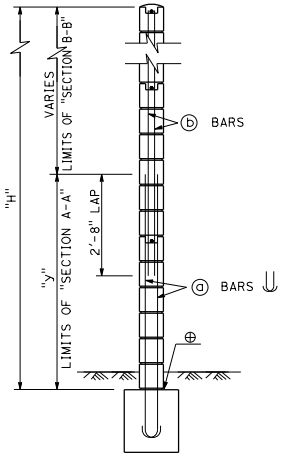
PILE CAP SECTION

SOUND WALL REINFORCEMENT TABLE

MAXIMUM H	ⓐ BARS @ 1'-4" Max	ⓑ BARS @ 1'-4" Max	"y"
6'-0"	#4		
8'-0"	#4		
10'-0"	#4		
12'-0"	#5	#4	6'-0"
14'-0"	#6	#4	8'-0"
16'-0"	#6	#4	10'-0"



H=6'-0" THRU H=10'-0"



H=12'-0" THRU H=16'-0"
For details not shown, see H=6'-0" thru H=10'-0".

TYPICAL SECTION

⊕ Full mortar bed at bottom of wall.

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
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

SOUND WALL
MASONRY BLOCK ON PILE CAP
DETAILS (1)

NO SCALE

RSP B15-3 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-3 DATED APRIL 17, 2020 AND STANDARD PLAN B15-3 DATED MAY 31, 2018 - PAGE 392 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-3

2018 REVISED STANDARD PLAN RSP B15-3

6-2-21

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

REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
STATE OF CALIFORNIA

October 15, 2021
PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED _____

GENERAL NOTES:

1. For type of block and joint finish, see other sheets.
2. When blocks are laid in stacked bond, ladder type, galvanized joint reinforcement shall be provided. A minimum of 2-9 gauge wires continuous at 4'-0" maximum to be used. Locate reinforcement in joints that are at the approximate midpoint between bond beams.
3. Horizontal joints shall be tooled concave or weathered. Vertical joints shall be tooled concave or raked.
4. For intermediate wall heights that are between the "H's" given, use the tabular information for the next higher "H".
5. If wall is placed behind traffic barriers, clear distance from face of barrier to face of wall shall exceed 4'-0". Wall is not designed for impact loading.

DESIGN NOTES

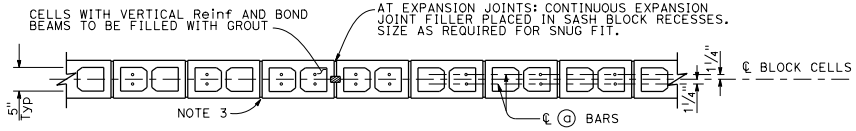
DESIGN:
AASHTO LRFD Bridge Design Specifications,
8th Edition 2017 with California Amendment,
Preface date April 2019
TMS 402-16
2019 California Building Code

DESIGN WIND LOAD:
36.5 psf

DESIGN SEISMIC LOAD:
0.57 Dead Load

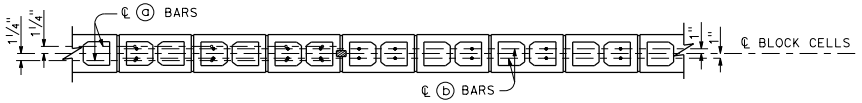
REINFORCED CONCRETE &
CONCRETE MASONRY:
f_y = 60 ksi
f'_c = 3.6 ksi
f'_m = 2000 psi *

* Provide materials to achieve the net compressive strength of concrete masonry unit equal or greater than the specified f'_m.



SECTION A-A
For details not shown, see other sections.

H=6'-0" THRU H=10'-0"



SECTION A-A **SECTION B-B**
For details not shown, see other sections.

H=12'-0" THRU H=16'-0"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL
MASONRY BLOCK ON PILE CAP
DETAILS (2)

NO SCALE

RSP B15-4 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-4 DATED APRIL 17, 2020 AND STANDARD PLAN B15-4 DATED MAY 31, 2018 - PAGE 393 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-4

2018 REVISED STANDARD PLAN RSP B15-4

6-2-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
STATE OF CALIFORNIA

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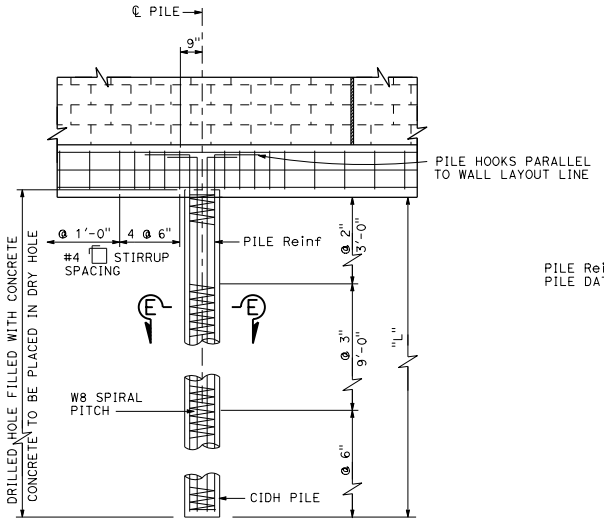
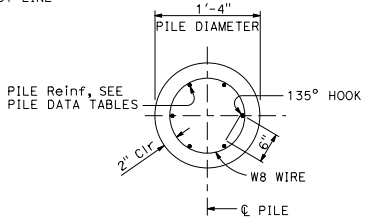
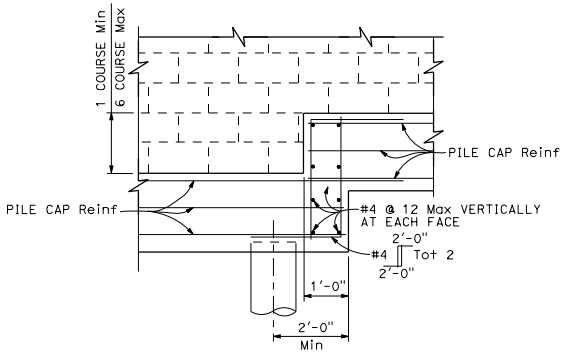
TO ACCOMPANY PLANS DATED _____



DETAIL D



SECTION E-E



PILE CAP STEP DETAIL

NOTE:

1. For details not shown, see Revised Standard Plans RSP B15-3 and RSP B15-4.

CASE 1 : PILE DATA TABLE

MAXIMUM H	ø = 25 Min			ø = 30 Min			ø = 35 Min			MAXIMUM H
	S	L	PILE Reinf	S	L	PILE Reinf	S	L	PILE Reinf	
6'-0"	16'-0"	9'-6"	#6 Tot 6	16'-0"	7'-6"	#6 Tot 6	16'-0"	6'-0"	#6 Tot 6	6'-0"
8'-0"	16'-0"	10'-6"	#6 Tot 7	16'-0"	8'-6"	#6 Tot 7	16'-0"	7'-0"	#6 Tot 7	8'-0"
10'-0"	16'-0"	11'-6"	#7 Tot 6	16'-0"	9'-6"	#7 Tot 6	16'-0"	8'-0"	#7 Tot 6	10'-0"
12'-0"	15'-0"	12'-6"	#8 Tot 7	16'-0"	10'-6"	#8 Tot 7	16'-0"	8'-6"	#8 Tot 7	12'-0"
14'-0"	13'-0"	13'-0"	#8 Tot 7	14'-0"	11'-0"	#8 Tot 7	14'-0"	9'-0"	#8 Tot 7	14'-0"
16'-0"	12'-0"	13'-6"	#8 Tot 7	13'-0"	11'-6"	#8 Tot 7	13'-0"	9'-6"	#8 Tot 7	16'-0"

Case 1 - Level ground (±10%) on both sides of the sound wall.

CASE 2 : PILE DATA TABLE

MAXIMUM H	ø = 30 Min			ø = 35 Min			MAXIMUM H
	S	L	PILE Reinf	S	L	PILE Reinf	
6'-0"	16'-0"	13'-0"	#8 Tot 7	16'-0"	9'-6"	#6 Tot 7	6'-0"
8'-0"	16'-0"	15'-0"	#8 Tot 7	16'-0"	10'-6"	#7 Tot 6	8'-0"
10'-0"	15'-0"	16'-0"	#8 Tot 7	16'-0"	12'-0"	#7 Tot 7	10'-0"
12'-0"	12'-0"	16'-0"	#8 Tot 7	15'-0"	13'-6"	#8 Tot 7	12'-0"
14'-0"	10'-0"	16'-0"	#8 Tot 7	12'-0"	13'-6"	#8 Tot 7	14'-0"
16'-0"	8'-0"	16'-0"	#8 Tot 7	11'-0"	14'-0"	#8 Tot 7	16'-0"

Case 2 - Level ground (±10%) on traffic side of the sound wall and sloping ground on opposite side.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL
MASONRY BLOCK ON PILE CAP
DETAILS (3)

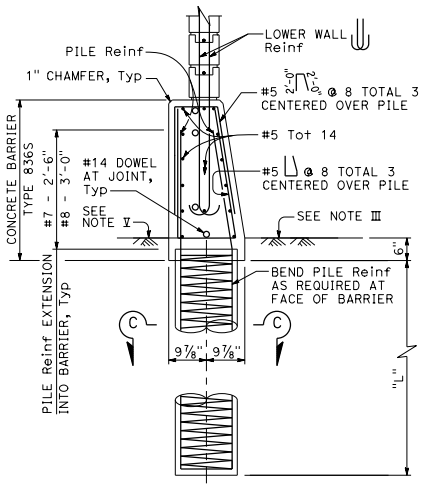
NO SCALE

RSP B15-5 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-5 DATED APRIL 17, 2020 AND STANDARD PLAN B15-5 DATED MAY 31, 2018 - PAGE 394 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-5

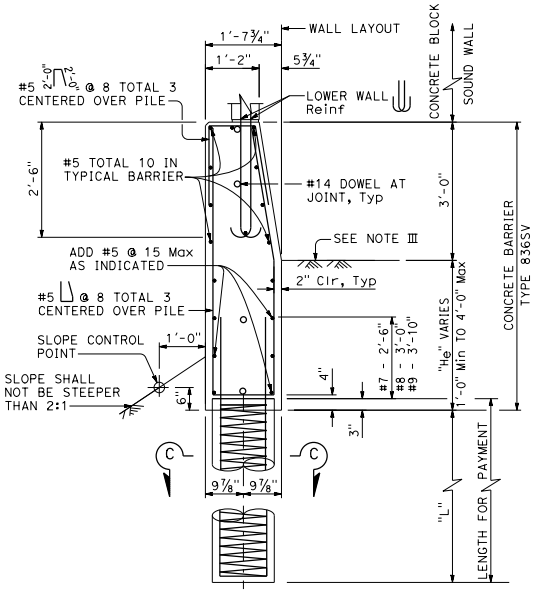
2018 REVISED STANDARD PLAN RSP B15-5

5-27-21



CASE 1

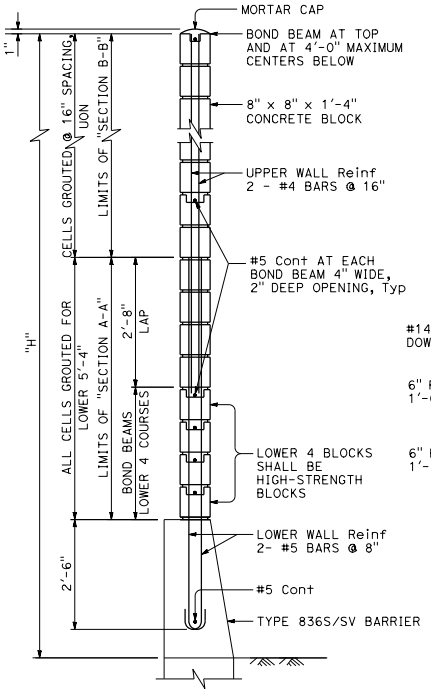
For details not shown, See Case 2.
Level ground ±10% on both sides of barrier.



CASE 2

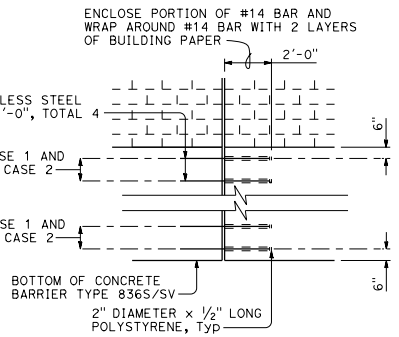
For details not shown, See Case 1.
Level ground ±10% at the traffic side of barrier and sloping ground on the opposite side.

BARRIER SECTIONS

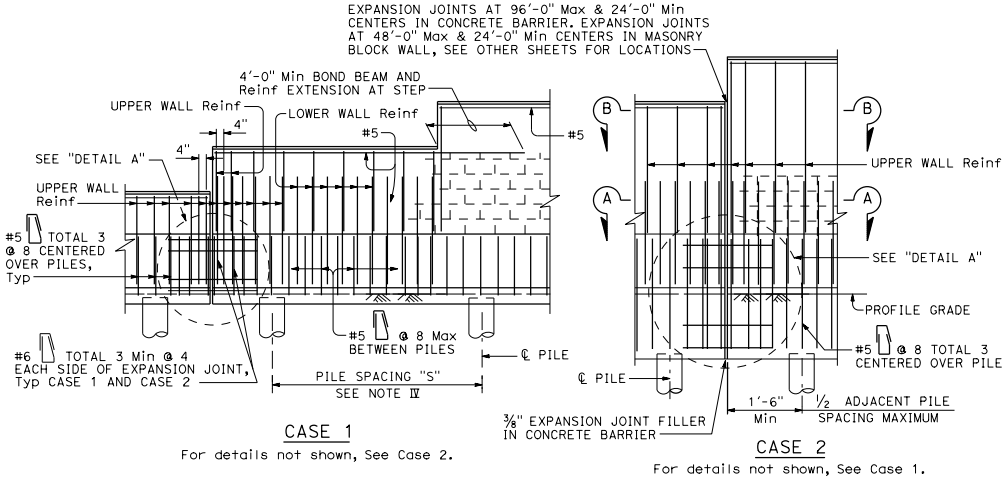


TYPICAL SECTION

See Revised Standard Plan RSP B15-8 for pile details.



DETAIL A



CASE 1

For details not shown, See Case 2.

CASE 2

For details not shown, See Case 1.

PARTIAL ELEVATIONS

NOTES I THROUGH VI:

I. Details shown are primarily to conform design of sound walls to Type 836S and Type 836SV Concrete Barriers.

II. For details and sections not shown, see Revised Standard Plans RSP B15-7 and RSP B15-8.

III. Slope ground at traffic side of barrier to drain. Maximum slope ±10%. See Note 3 on Revised Standard Plan RSP B11-80.

IV. Pile spacing may be varied, but shall not exceed the tabular values. See Revised Standard Plan RSP B15-8.

V. For Case 1 - ground line to be at the same elevation on both sides of the barrier. Barrier shall not be used to retain earth.

VI. See Revised Standard Plan RSP B15-9 for other details.

NOTES A THROUGH G:

A. For type of block, type of block bond, and joint finish, see other sheets.

B. When blocks are laid in stacked bond, ladder type, galvanized joint reinforcement shall be provided. A minimum of 2-9 gauge wires continuous at 4'-0" maximum to be used. Locate reinforcement in joints that are at the approximate midpoint between bond beams.

C. Horizontal joints shall be tooled concave or weathered. Vertical joints shall be tooled concave or raked.

D. For intermediate wall heights (H), or barrier depths (H_e), that are between the values given, use the tabular information for the next higher (H) or (H_e).

E. Refer to Revised Standard Plan RSP B15-7 for masonry strength.

F. For wall heights = 7'-8", the upper wall reinforcement may be omitted.

G. Minimum wall height shall be 7'-8". Maximum wall height shall be 16'-4".

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — AIMAN MALAK — No. C73369 — Exp. 12-31-22 — CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON TYPE 836S/SV BARRIER DETAILS (1)

NO SCALE

RSP B15-6 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-6 DATED APRIL 17, 2020 AND STANDARD PLAN B15-6 DATED MAY 31, 2018 - PAGE 395 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-6

2018 REVISED STANDARD PLAN RSP B15-6

6-1-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

DESIGN NOTES

DESIGN:
AASHTO LRFD Bridge Design Specifications,
8th Edition 2017 with California Amendment,
Preface date April 2019
TMS 402-16
2019 California Building Code

DESIGN WIND LOAD:
36.5 psf

DESIGN SEISMIC LOAD:
0.57 Dead Load

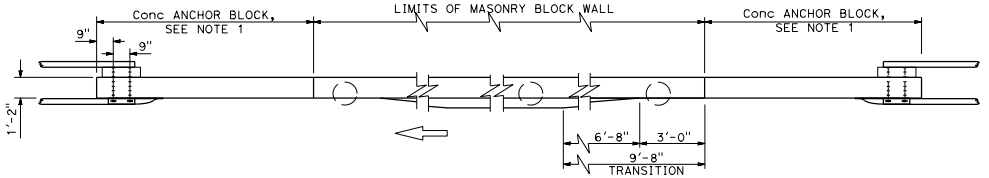
DESIGN IMPACT LOAD:
TL-3

DESIGN LIVE LOAD SURCHARGE:
240 psf surcharge on level ground surface

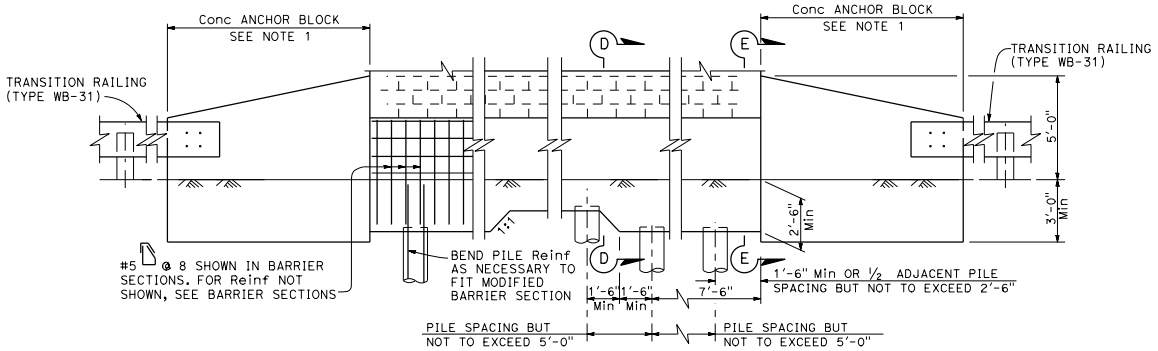
REINFORCED CONCRETE AND CONCRETE MASONRY:

f_y = 60 ksi
f'_c = 3.6 ksi
f'_m = 2000 psi *
f'_m = 2500 psi for high-strength blocks only *

* Provide materials to achieve the net compressive strength of concrete masonry unit equal or greater than the specified f'_m.



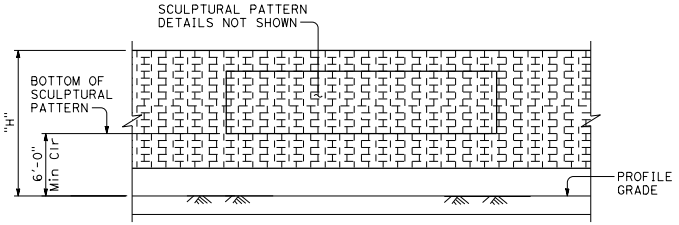
PLAN



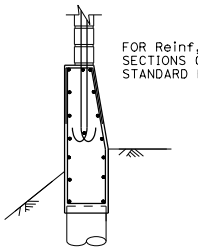
ELEVATION

MIDWEST GUARDRAIL SYSTEM ANCHORAGE

For details not shown, see Revised Standard Plans RSP B11-79 and RSP B11-80.

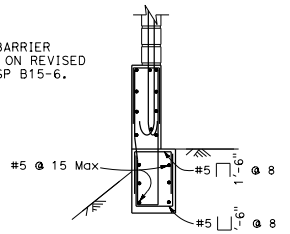


CLEARANCE DETAIL

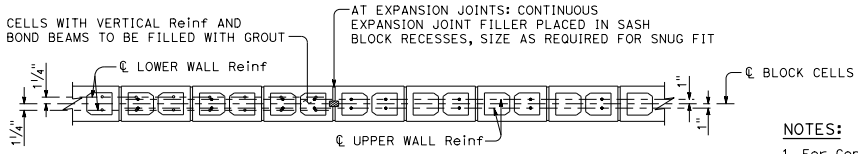


SECTION D-D

FOR Reinf, SEE "BARRIER SECTIONS CASE 2" ON REVISED STANDARD PLAN RSP B15-6.



SECTION E-E



SECTION A-A SECTION B-B

For details not shown, see other details.

NOTES:

1. For Concrete Anchor Block and connection details, see "Connection Detail DD" on Revised Standard Plan RSP A77U3.
2. At this location, Pile Reinforcement shall be taken from Revised Standard Plan RSP B15-8.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON TYPE 836S/SV BARRIER DETAILS (2)

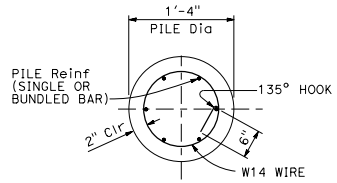
NO SCALE

RSP B15-7 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-7 DATED APRIL 17, 2020 AND STANDARD PLAN B15-7 DATED MAY 31, 2018 - PAGE 396 OF THE STANDARD PLANS BOOK DATED 2018.

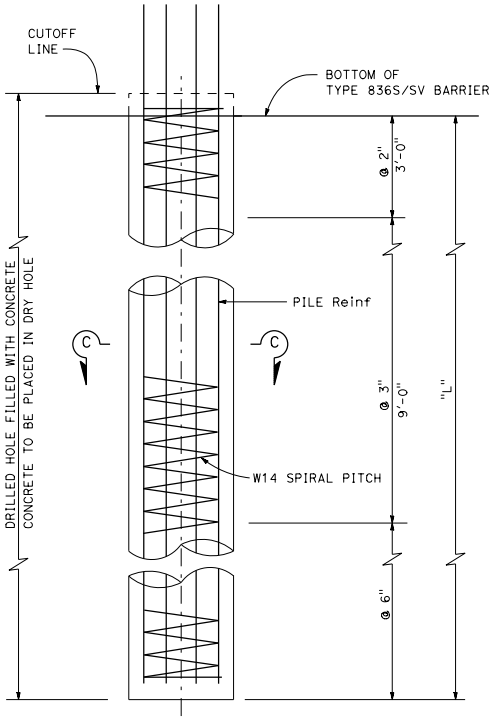
REVISED STANDARD PLAN RSP B15-7

2018 REVISED STANDARD PLAN RSP B15-7

6-2-21



SECTION C-C



ELEVATION

CASE 1: PILE DATA TABLE

MAXIMUM H	ø = 25 Min			ø = 30 Min			ø = 35 Min		
	S	L	PILE Reinf	S	L	PILE Reinf	S	L	PILE Reinf
8'-4"	10'-0"	16'-0"	#7 Tot 7	10'-0"	10'-0"	#7 Tot 7	10'-0"	8'-0"	#8 Tot 6
10'-4"	10'-0"	16'-0"	#7 Tot 7	10'-0"	10'-0"	#7 Tot 7	10'-0"	8'-0"	#8 Tot 6
12'-4"	10'-0"	16'-0"	#7 Tot 7	10'-0"	10'-0"	#7 Tot 7	10'-0"	8'-6"	#8 Tot 6
14'-4"	10'-0"	16'-0"	#7 Tot 7	10'-0"	10'-6"	#7 Tot 7	10'-0"	9'-0"	#8 Tot 6
16'-4"	10'-0"	16'-0"	#8 Tot 7	10'-0"	11'-6"	#8 Tot 7	10'-0"	9'-6"	#8 Tot 6

CASE 2: PILE DATA TABLE

H_e	MAXIMUM H	ø = 30 Min			ø = 35 Min		
		S	L	PILE Reinf	S	L	PILE Reinf
1'-0"	8'-4"	10'-0"	16'-0'	#7 Tot 7	10'-0"	11'-6"	#7 Tot 7
	10'-4"	9'-7"	16'-0"	#7 Tot 7	10'-0"	12'-6"	#7 Tot 7
	12'-4"	8'-4"	16'-0"	#7 Tot 7	10'-0"	13'-0"	#8 Tot 7
	14'-4"	7'-1"	16'-0"	#7 Tot 7	10'-0"	14'-0'	#8 Tot 7
	16'-4"	6'-3"	16'-0"	#7 Tot 7	10'-0"	14'-6"	#8 Tot 7
2'-0"	8'-4"	8'-4"	16'-0"	#7 Tot 7	10'-0"	13'-0"	#7 Tot 7
	10'-4"	7'-6"	16'-0"	#7 Tot 7	10'-0"	13'-6'	#8 Tot 7
	12'-4"	6'-3"	16'-0"	#7 Tot 7	10'-0"	14'-6"	#8 Tot 7
	14'-4"	5'-10"	16'-0"	#7 Tot 7	10'-0"	15'-0"	**#8 Tot 10
	16'-4"	5'-0"	16'-0"	#7 Tot 7	9'-7"	15'-6"	**#8 Tot 10
3'-0"	8'-4"	6'-3"	16'-0"	#7 Tot 7	10'-0"	14'-6"	#8 Tot 7
	10'-4"	5'-5"	16'-0"	#7 Tot 7	10'-0"	15'-0"	**#8 Tot 10
	12'-4"	5'-0"	16'-0"	#7 Tot 7	10'-0"	15'-6"	**#8 Tot 10
	14'-4"	4'-7'	16'-0"	#7 Tot 7	9'-7"	16'-0"	**#8 Tot 10
	16'-4"	4'-2"	16'-0"	#7 Tot 7	8'-4"	16'-0"	**#8 Tot 10
4'-0"	8'-4"	4'-7"	16'-0"	#7 Tot 7	10'-0"	16'-0"	#9 Tot 6
	10'-4"	4'-2"	16'-0"	#7 Tot 7	9'-2"	16'-0"	**#8 Tot 10
	12'-4"	3'-9"	16'-0"	#7 Tot 7	8'-4"	16'-0"	**#8 Tot 10
	14'-4"	3'-4"	16'-3"	#7 Tot 7	7'-11"	16'-0"	**#8 Tot 10
	16'-4"	3'-4"	16'-6"	#7 Tot 7	7'-1"	16'-0"	**#8 Tot 10

** Indicates bundled bars (bundle of two bars)

NOTE:

1. For details not shown, see Revised Standard Plans RSP B15-6 and RSP B15-7.

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
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 _____

2018 REVISED STANDARD PLAN RSP B15-8

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON TYPE 836S/SV BARRIER DETAILS (3)

NO SCALE

RSP B15-8 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-8 DATED APRIL 17, 2020 AND STANDARD PLAN B15-8 DATED MAY 31, 2018 - PAGE 397 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-8

5-27-21

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

REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tiliat Satter — No. C42892 — Exp. 3-31-22 CIVIL — STATE OF CALIFORNIA

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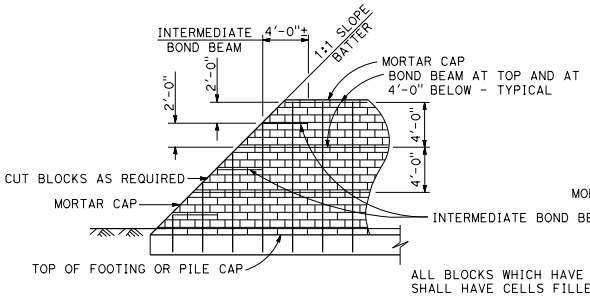
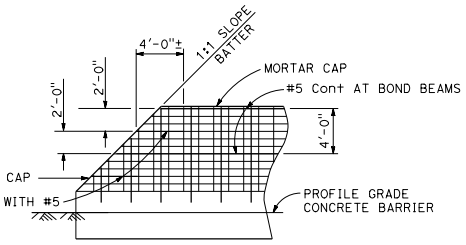
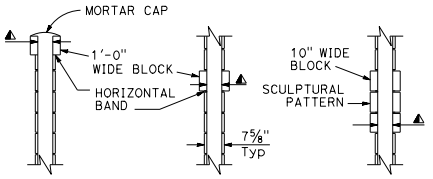
TO ACCOMPANY PLANS DATED _____



TYPE I

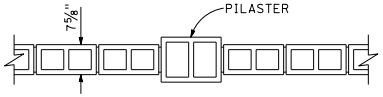
Slope batter shall not be flatter than 1:1.



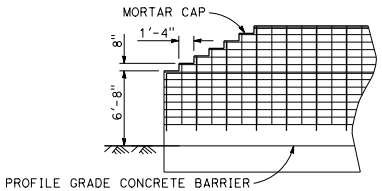


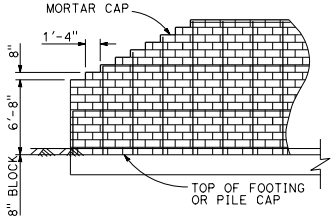
ARCHITECTURAL ALTERNATIVES

▲ Cell width to match 8" block.



1'-0" WIDE PROJECTING BLOCK

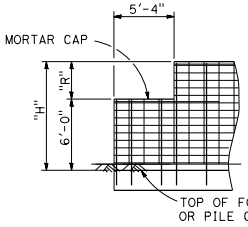




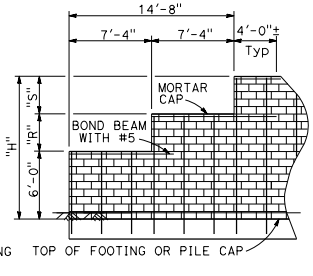
TYPE II

NOTES:

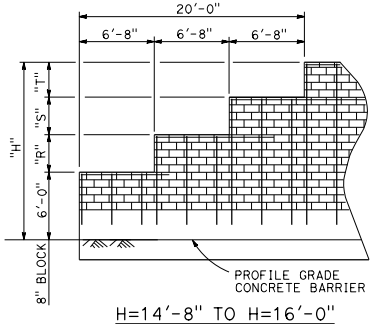
1. 1'-0" wide block not allowed within 6'-0" of profile grade.
2. For structural details, see other sheets.
3. Type Ⅲ not permitted for sound walls with "H" less than 10'-0".
4. The end of the wall details may be used with any of the standard supporting foundations for masonry block. The foundations shown for the different types are for the purpose of illustration only.



H=10'-0"
SINGLE STEP

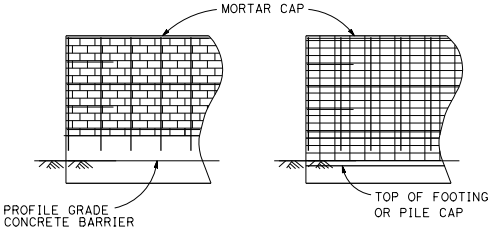


H=10'-8" TO H=14'-0"
2 STEPS



H=14'-8" TO H=16'-0"
3 STEPS

TYPE Ⅲ



TYPE Ⅳ

END OF WALL DETAILS

8" x 8" x 16" BLOCK

H	R	S	T
10'-0"	4'-0"	—	—
10'-8"	2'-8"	2'-0"	—
11'-4"	2'-8"	2'-8"	—
12'-0"	3'-4"	2'-8"	—
12'-8"	3'-4"	3'-4"	—
13'-4"	4'-0"	3'-4"	—
14'-0"	4'-0"	4'-0"	—
14'-8"	3'-4"	2'-8"	2'-8"
15'-4"	3'-4"	3'-4"	2'-8"
16'-0"	3'-4"	3'-4"	3'-4"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK MISCELLANEOUS DETAILS

NO SCALE

RSP B15-9 DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN B15-9
DATED MAY 31, 2018 - PAGE 398 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-9

2018 REVISED STANDARD PLAN RSP B15-9

10-16-19

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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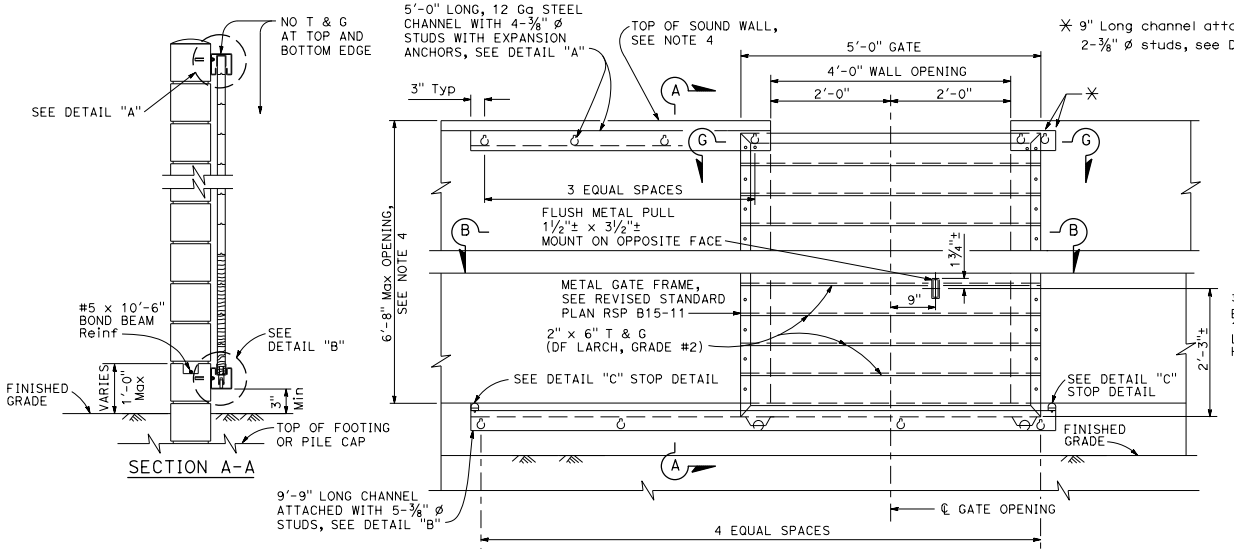
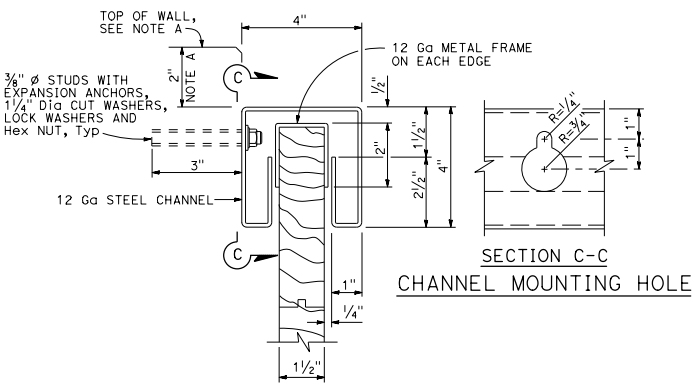
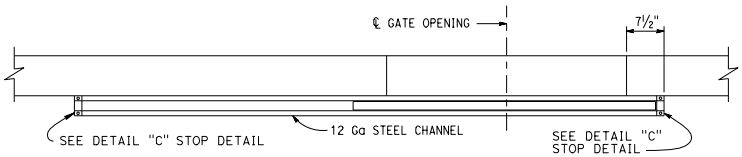
TO ACCOMPANY PLANS DATED _____

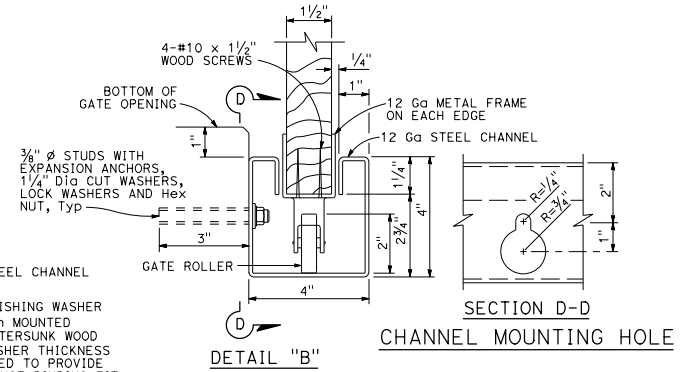


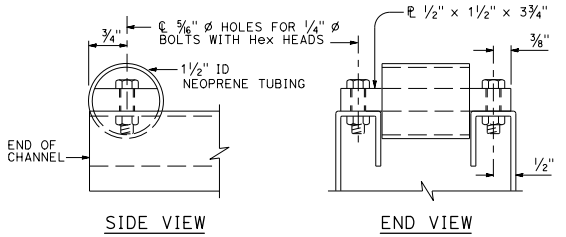


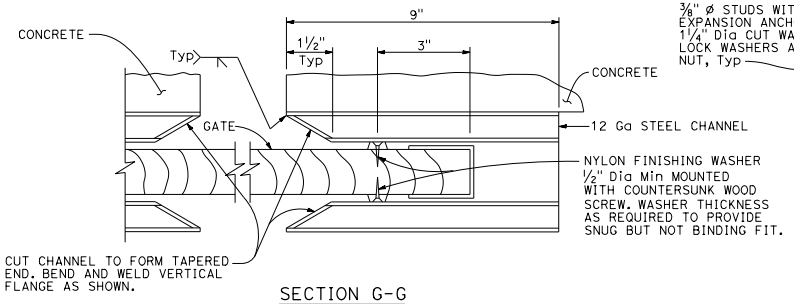
NOTES:

1. Gate mounted on sloping grade shall be oriented to be in closed position when at lower grade point.
2. Two masonry cells adjacent to each side of gate to be reinforced and grouted.
3. Those blocks upon which the supporting steel channels are mounted shall be smooth faced on the mounting side.
4. When sound wall as measured from the bottom of the gate opening exceeds 6'-8", see Revised Standard Plan RSP B15-11.









For location of nylon finishing washers, see Revised Standard Plan RSP B15-11.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON FOOTING OR PILE CAP 5'-0" ACCESS GATE DETAILS (1)

NO SCALE

RSP B15-10 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-10 DATED APRIL 17, 2020 AND STANDARD PLAN B15-10 DATED MAY 31, 2018 - PAGE 399 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-10

2018 REVISED STANDARD PLAN RSP B15-10

6-2-21

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

REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Tiliat Satter
No. C42892
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

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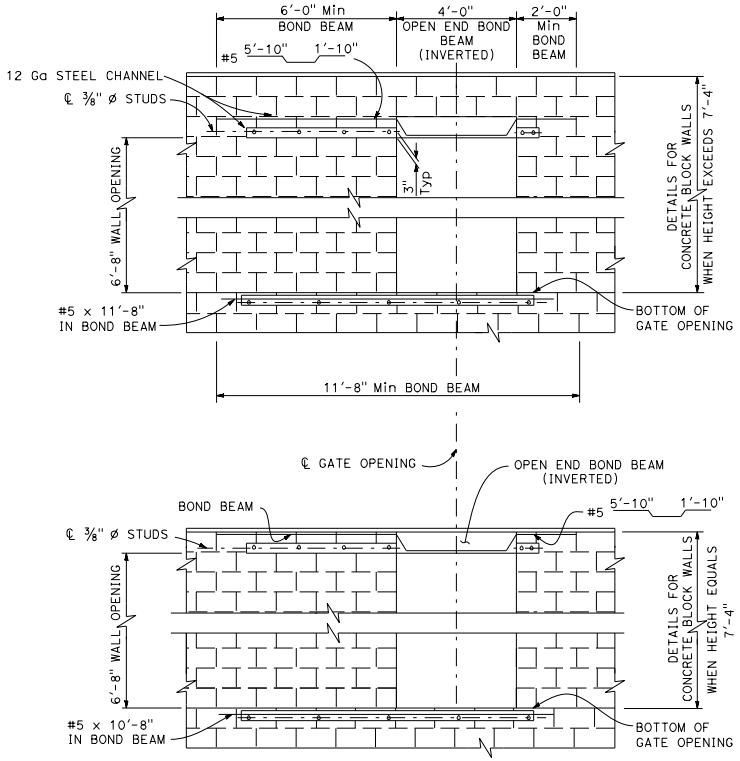
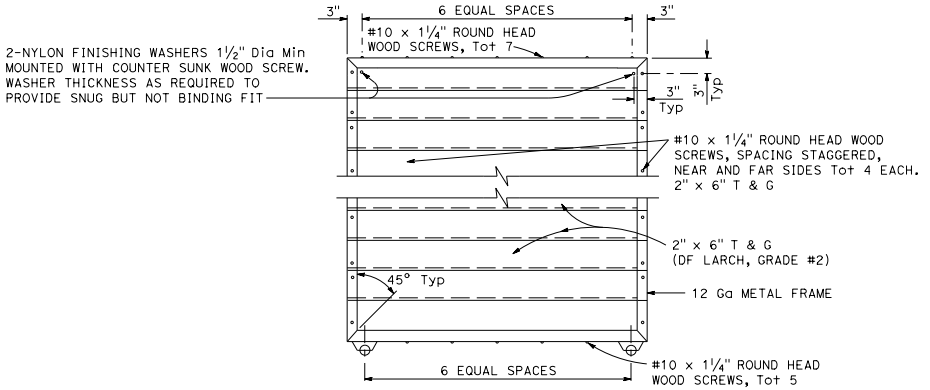
TO ACCOMPANY PLANS DATED _____



PARTIAL ELEVATION (BACK)

For details not shown, see above.



ELEVATION - METAL FRAME

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON FOOTING OR PILE CAP 5'-0" ACCESS GATE DETAILS (2)

NO SCALE

RSP B15-11 DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN B15-11
DATED MAY 31, 2018 - PAGE 400 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-11

2018 REVISED STANDARD PLAN RSP B15-11

10-15-19

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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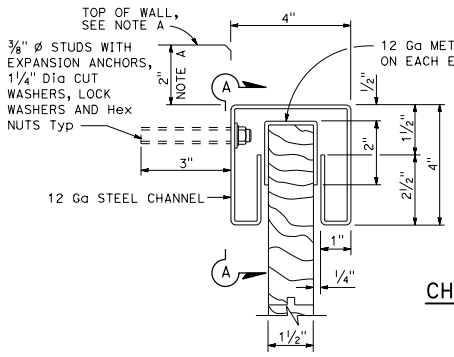
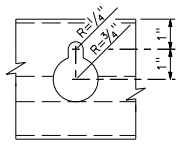
TO ACCOMPANY PLANS DATED _____

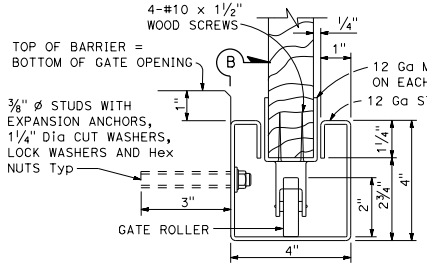


DETAIL "A"



SECTION A-A

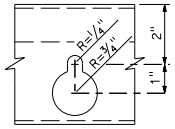
CHANNEL MOUNTING HOLE



DETAIL "B"

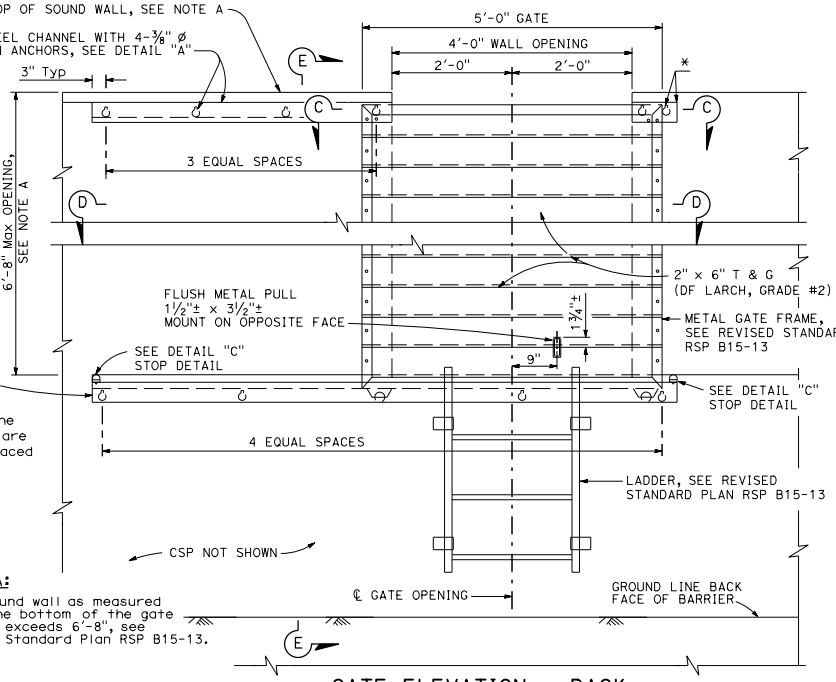
9'-9" LONG CHANNEL ATTACHED WITH 5-3/8" Ø STUDS, SEE DETAIL "B"

NOTE: Those blocks upon which the supporting steel channels are mounted shall be smooth faced on the mounted side.



SECTION B-B

CHANNEL MOUNTING HOLE



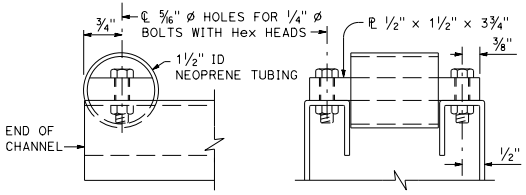
NOTE A: When sound wall as measured from the bottom of the gate opening exceeds 6'-8", see Revised Standard Plan RSP B15-13.

GATE ELEVATION - BACK

* 9" long channel attached with 2-3/8" Ø studs, see DETAIL "A".

NOTE:

1. Gate mounted on sloping grade shall be oriented to be in closed position when at lower grade point.

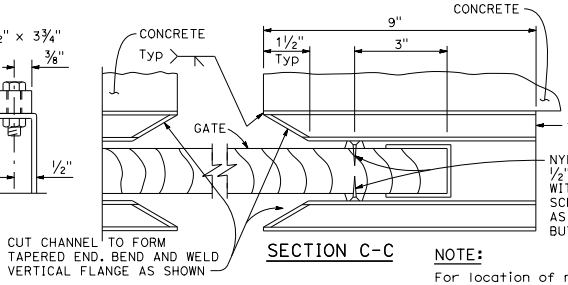


SIDE VIEW

END VIEW

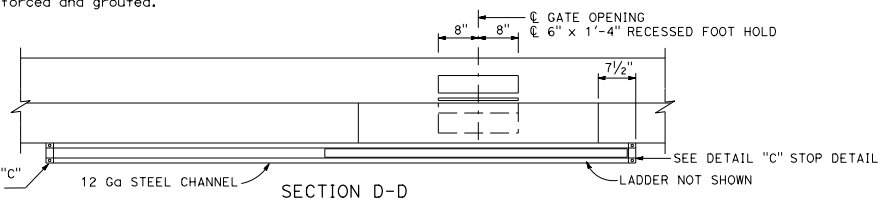
DETAIL "C" STOP DETAIL

NOTE: Two masonry cells adjacent to each side of the gate to be reinforced and grouted.

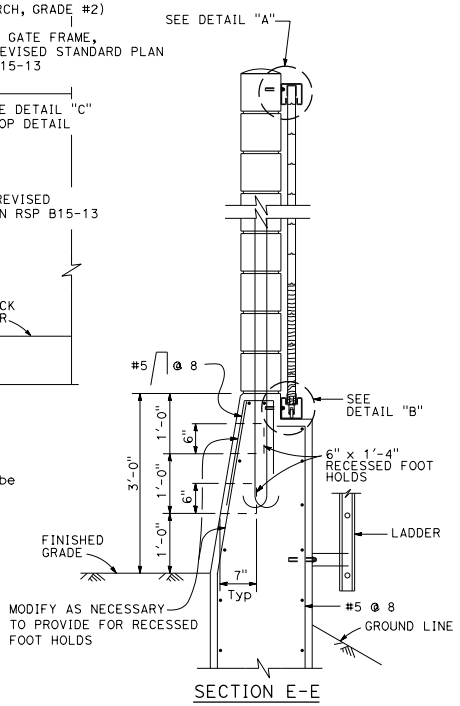


SECTION C-C

NOTE: For location of nylon finishing washers, see Revised Standard Plan RSP B15-13.



SECTION D-D



SECTION E-E

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON BARRIER 5'-0" ACCESS GATE DETAILS (1)

NO SCALE

RSP B15-12 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-12 DATED APRIL 17, 2020 AND STANDARD PLAN B15-12 DATED MAY 31, 2018 - PAGE 401 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-12

2018 REVISED STANDARD PLAN RSP B15-12

6-2-21

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
STATE OF CALIFORNIA

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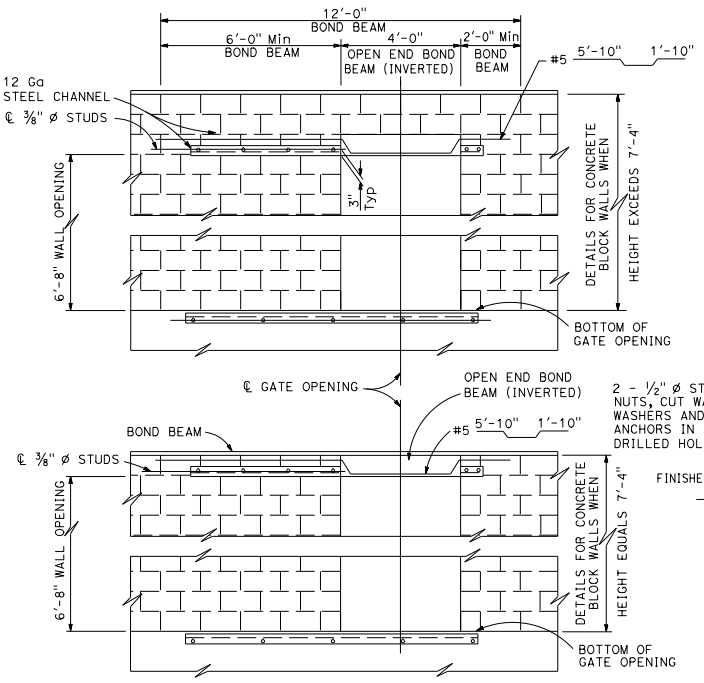
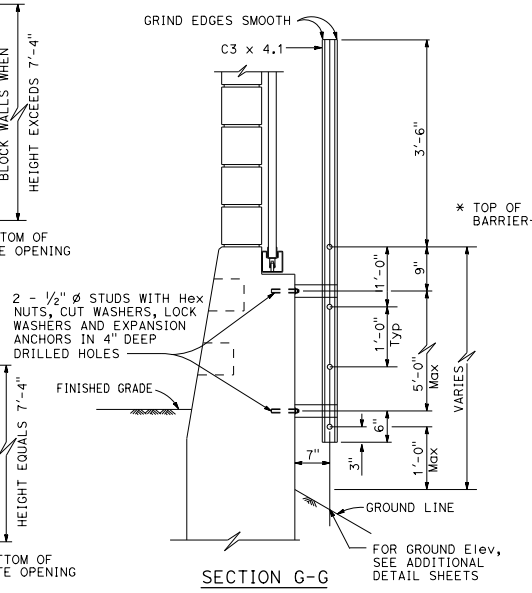
TO ACCOMPANY PLANS DATED _____

2018 REVISED STANDARD PLAN RSP B15-13

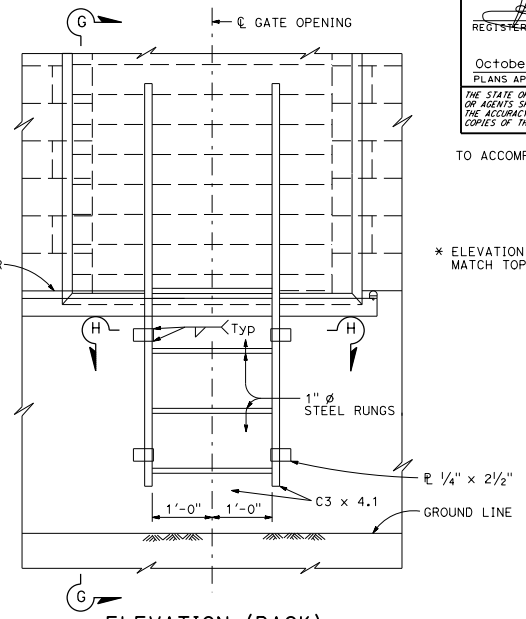


PART ELEVATION (BACK)

For details not shown, see above.

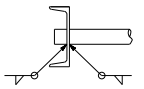


SECTION G-G



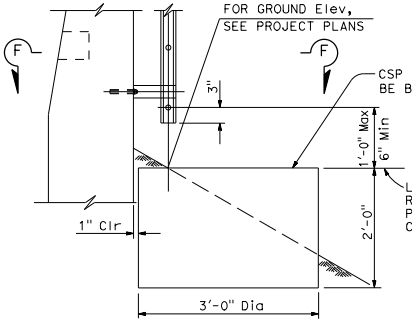
ELEVATION (BACK)

* ELEVATION OF CENTERLINE OF TOP RUNG TO MATCH TOP OF CONCRETE BARRIER ELEVATION

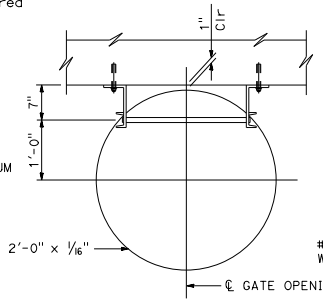


DETAIL "A"

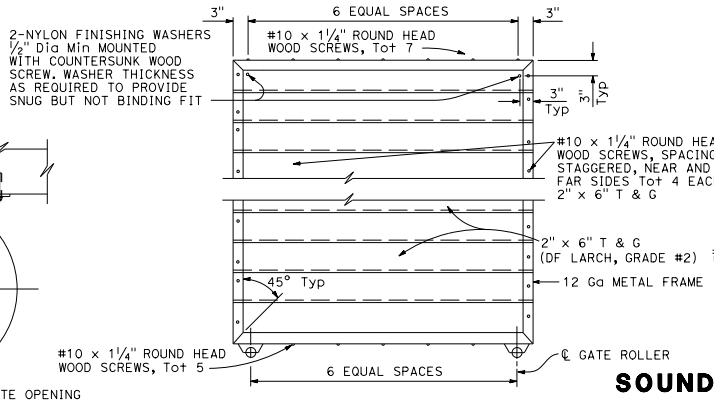
NOTE:
CSP landing required when slope of ground behind barrier is steeper than 8:1. See additional detail sheets for location where required



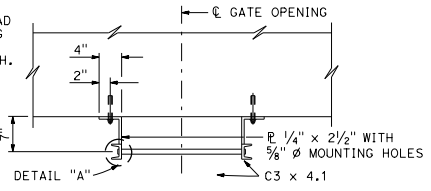
CORRUGATED STEEL PIPE LANDING DETAILS



SECTION F-F



ELEVATION - METAL FRAME



SECTION H-H

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON BARRIER 5'-0" ACCESS GATE DETAILS (2)

NO SCALE

RSP B15-13 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-13 DATED APRIL 17, 2020 AND STANDARD PLAN B15-13 DATED MAY 31, 2018 - PAGE 402 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-13

6-2-21

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

REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

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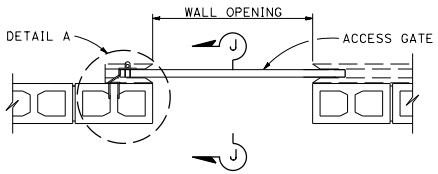
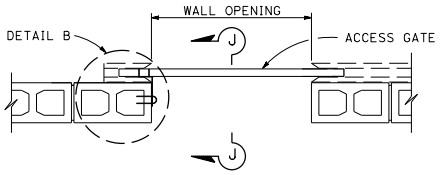
REGISTERED PROFESSIONAL ENGINEER — Elliot Satter — No. C42892 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

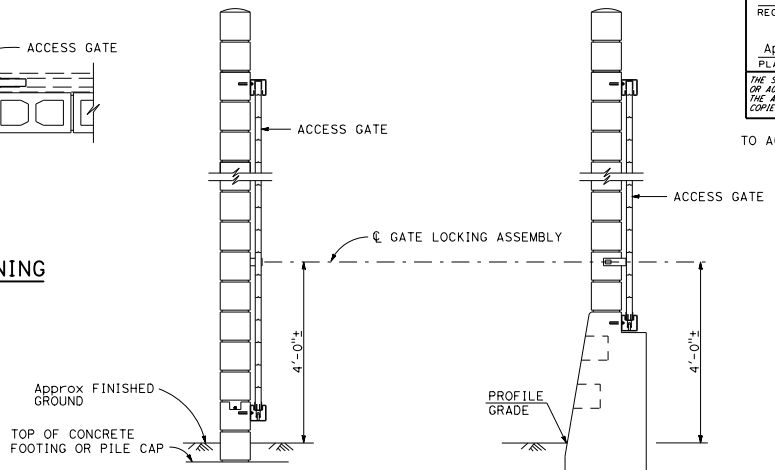
TO ACCOMPANY PLANS DATED _____



PLAN
LOCK ON
GATE SIDE OF WALL



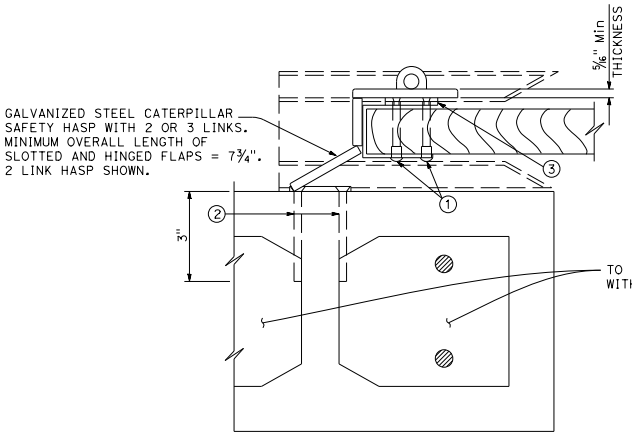
PLAN
LOCK ON
INSIDE OF WALL OPENING



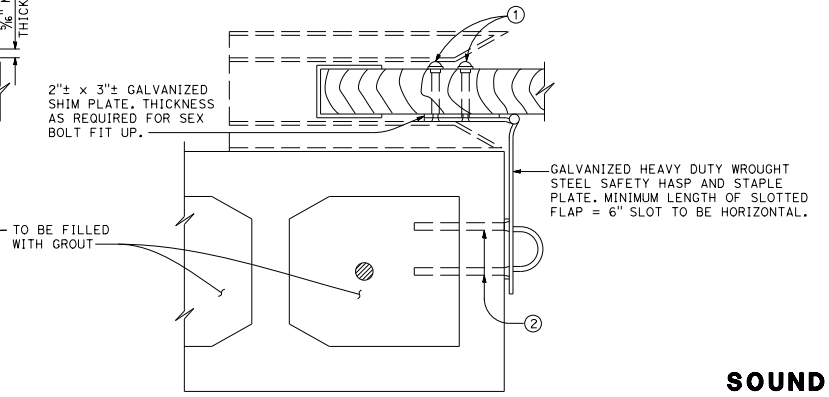
MASONRY ON FOOTING
OR PILE CAP

MASONRY ON BARRIER

SECTION J-J



DETAIL A



DETAIL B

NOTES:

1. Masonry anchors to be installed after the grout in the block cells has attained specified strength.
2. The Contractor may submit alternative gate locking assemblies for approval by the Engineer.
3. See other sheets for gate details.

① 4 - SEX BOLTS WITH ¼" - 20 FLAT HEAD CORROSION RESISTANT MACHINE SCREWS.

② 4 - ¼" ø x 3" LONG FLAT HEAD SLEEVE TYPE CORROSION RESISTANT MASONRY ANCHORS.

③ GALVANIZED SHIM PLATE. SIZE AS REQUIRED TO MATCH HASP STAPLE PLATE. THICKNESS AS REQUIRED FOR SEX BOLT FIT UP.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ACCESS GATE LOCKING DETAILS

NO SCALE

RSP B15-14 DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN B15-14
DATED MAY 31, 2018 - PAGE 403 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-14

2018 REVISED STANDARD PLAN RSP B15-14

10-15-19

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
AIMAN MALAK
No. C73369
Exp. 12-31-22
CIVIL
STATE OF CALIFORNIA

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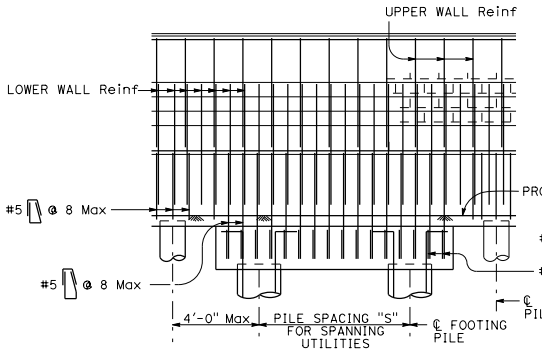
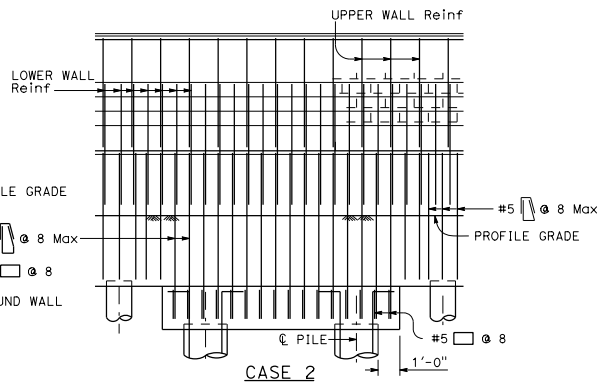
TO ACCOMPANY PLANS DATED _____



CASE 1

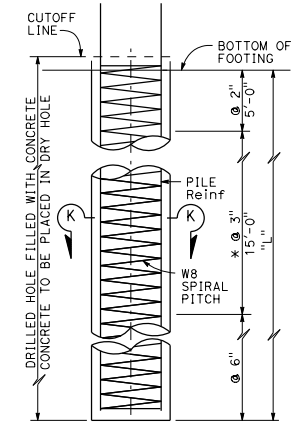
For details not shown, see Case 2.
See Note 1



CASE 2

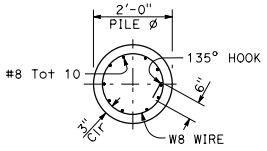
For details not shown, see Case 1.
See Note 1

PART ELEVATIONS

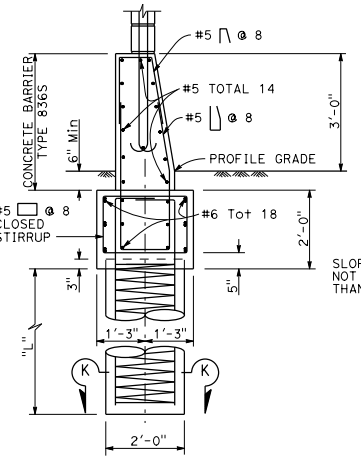


ELEVATION

* @ 2" at option of Contractor.

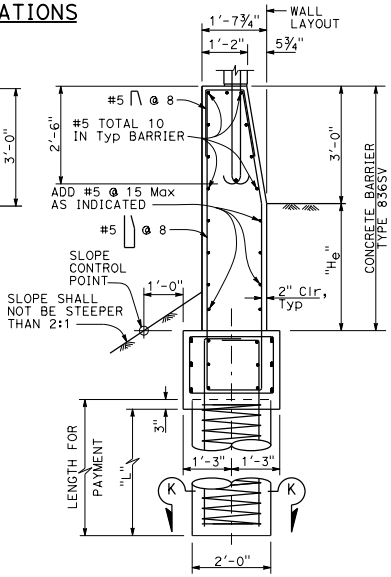


SECTION K-K



CASE 1

Level ground ±10% on both sides of barrier.
For details not shown, see Case 2.



CASE 2

Level ground ±10% at the traffic side of barrier and sloping ground on the opposite side.
For details not shown, see Case 1.

BARRIER SECTIONS

DESIGN NOTES:

DESIGN

AASHTO LRFD Bridge Design Specifications,
8th Edition 2017 with California Amendment,
Preface date April 2019
TMS 402-16
2019 California Building Code

DESIGN WIND LOAD	DESIGN SEISMIC LOAD	DESIGN IMPACT LOAD
36.5 psf	0.57 Dead load	TL-3

DESIGN LIVE LOAD SURCHARGE

240 psf surcharge on level ground surface

REINFORCED CONCRETE & CONCRETE MASONRY

f'_c = 3.6 ksi
f_y = 60 ksi
f'_m = 2000 psi *
f'_m = 2500 psi for high-strength blocks only *

* Provide materials to achieve the net compressive strength of concrete masonry unit equal or greater than the specified f'_m.

CASE 1 : PILE DATA TABLE

MAXIMUM H	ø = 25		ø = 30		ø = 35		MAXIMUM H
	S	L	S	L	S	L	
8'-4"	16'-0"	13'-6"	16'-0"	10'-0"	16'-0"	8'-0"	8'-4"
10'-4"	16'-0"	14'-0"	16'-0"	10'-6"	16'-0"	8'-6"	10'-4"
12'-4"	16'-0"	14'-6"	16'-0"	11'-0"	16'-0"	8'-6"	12'-4"
14'-4"	16'-0"	15'-0"	16'-0"	11'-6"	16'-0"	9'-0"	14'-4"
16'-4"	16'-0"	15'-6"	16'-0"	12'-0"	16'-0"	9'-6"	16'-4"

CASE 2 : PILE DATA TABLE

H_e	H	ø = 30 Min		ø = 35 Min		H
		S	L	S	L	
1'-0"	8'-4"	16'-0"	18'-0"	16'-0"	13'-6"	8'-4"
	10'-4"	16'-0"	19'-0"	16'-0"	14'-6"	10'-4"
	12'-4"	16'-0"	19'-6"	16'-0"	15'-6"	12'-4"
	14'-4"	16'-0"	20'-6"	16'-0"	16'-6"	14'-4"
	16'-4"	16'-0"	21'-6"	16'-0"	17'-6"	16'-4"
2'-0"	8'-4"	16'-0"	20'-0"	16'-0"	15'-0"	8'-4"
	10'-4"	16'-0"	20'-6"	16'-0"	16'-0"	10'-4"
	12'-4"	16'-0"	21'-6"	16'-0"	17'-0"	12'-4"
	14'-4"	16'-0"	22'-6"	16'-0"	18'-0"	14'-4"
	16'-4"	14'-6"	22'-6"	16'-0"	18'-6"	16'-4"
3'-0"	8'-4"	16'-0"	22'-0"	16'-0"	16'-6"	8'-4"
	10'-4"	15'-6"	22'-6"	16'-0"	17'-6"	10'-4"
	12'-4"	14'-0"	22'-6"	16'-0"	18'-6"	12'-4"
	14'-4"	13'-0"	22'-6"	15'-6"	19'-0"	14'-4"
	16'-4"	12'-0"	22'-6"	14'-0"	19'-0"	16'-4"
4'-0"	8'-4"	12'-3"	22'-6"	15'-3"	18'-0"	8'-4"
	10'-4"	11'-6"	22'-6"	14'-3"	18'-6"	10'-4"
	12'-4"	10'-9"	22'-6"	13'-3"	18'-6"	12'-4"
	14'-4"	10'-0"	22'-6"	12'-3"	18'-6"	14'-4"
	16'-4"	9'-6"	22'-6"	11'-3"	19'-0"	16'-4"

NOTE:

1. For wall reinforcement details, see Revised Standard Plan RSP B15-6.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON TYPE 836S/SV BARRIER ON PILE FOOTING FOR SPANNING UTILITIES

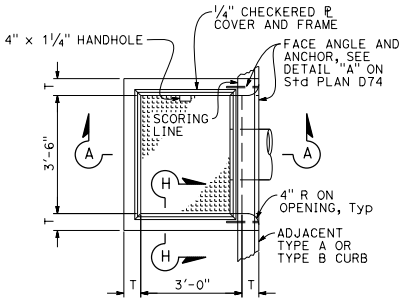
NO SCALE

RSP B15-15 DATED OCTOBER 15, 2021 SUPERSEDES RSP B15-15 DATED APRIL 17, 2020 AND STANDARD PLAN B15-15 DATED MAY 31, 2018 - PAGE 404 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP B15-15

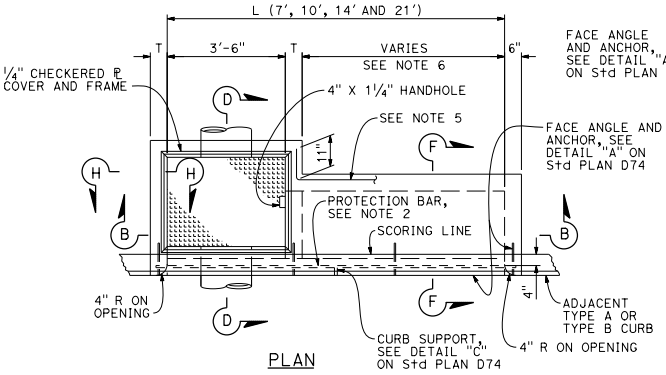
2018 REVISED STANDARD PLAN RSP B15-15

6-2-21



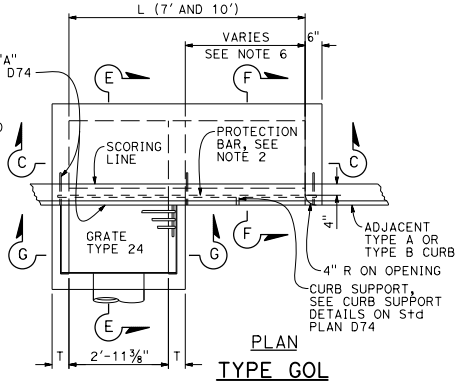
PLAN

TYPE OS



PLAN

TYPE OL



PLAN

TYPE GOL

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

REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-20
CIVIL
STATE OF CALIFORNIA

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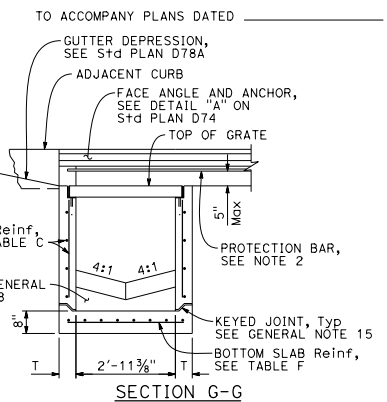
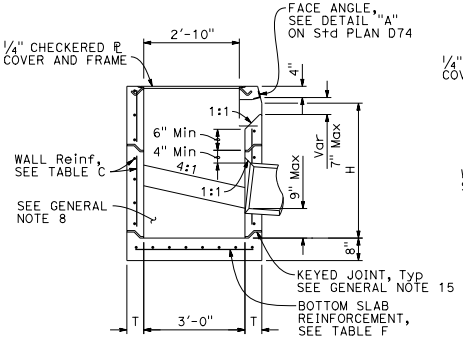
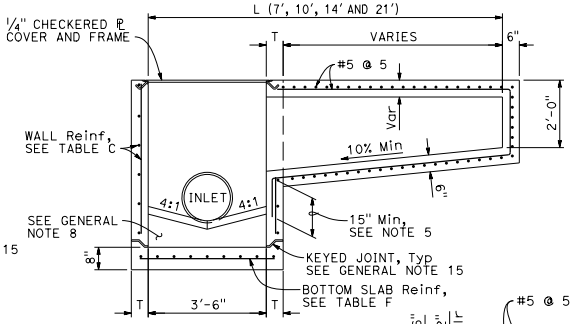
TO ACCOMPANY PLANS DATED _____



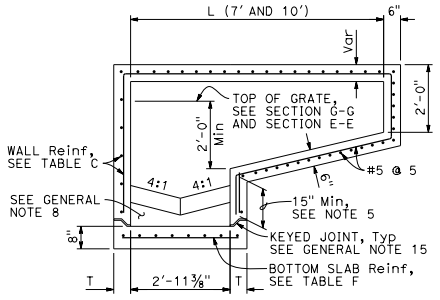
SECTION G-G



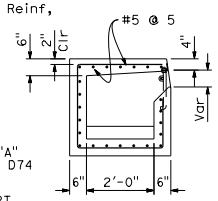
SECTION A-A



SECTION B-B

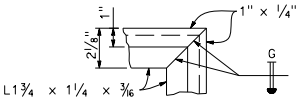


SECTION C-C



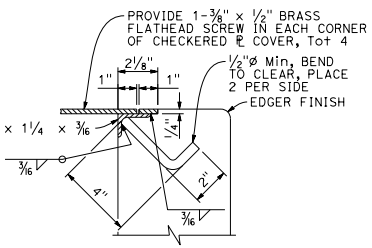
SECTION F-F

SEE NOTE 5

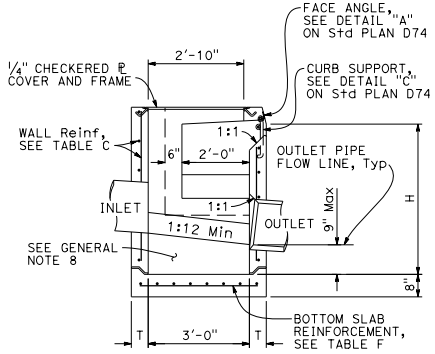


COVER FRAME

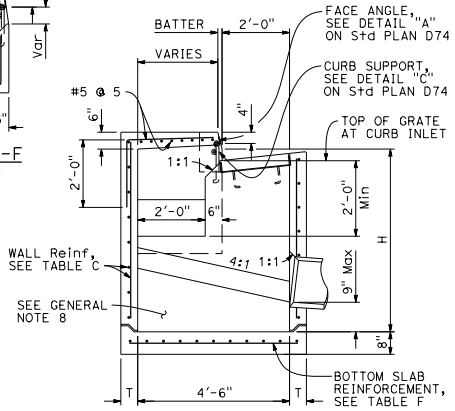
TYPICAL EACH CORNER
(CHECKERED ℄ COVER NOT SHOWN)



SECTION H-H



SECTION D-D



SECTION E-E

NOTES:

1. See Standard Plan D73F for General Notes and additional details. See Standard Plan 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLETS TYPES OS, OL AND GOL

NO SCALE

RSP D73A DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN D73A
DATED MAY 31, 2018 - PAGE 202 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D73A

2018 REVISED STANDARD PLAN RSP D73A

10-12-18

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

REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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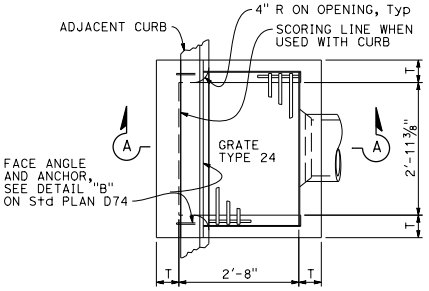
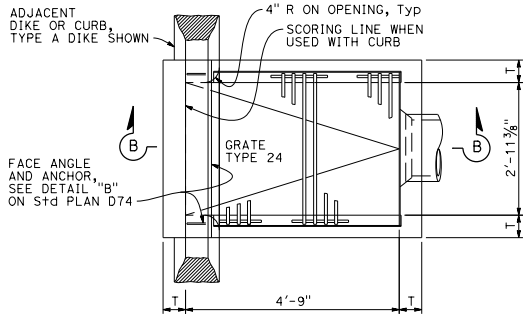
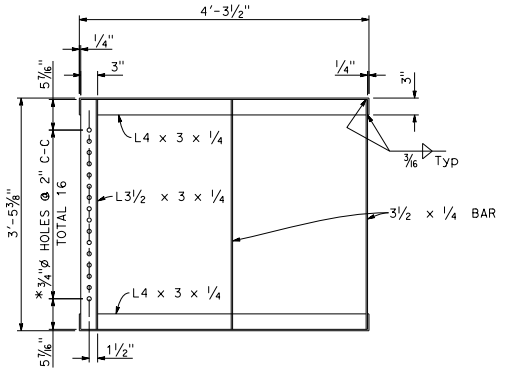
TO ACCOMPANY PLANS DATED _____



PLAN
TYPE GO

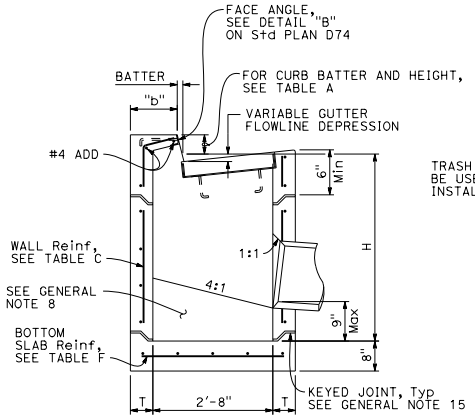


PLAN
TYPE GDO

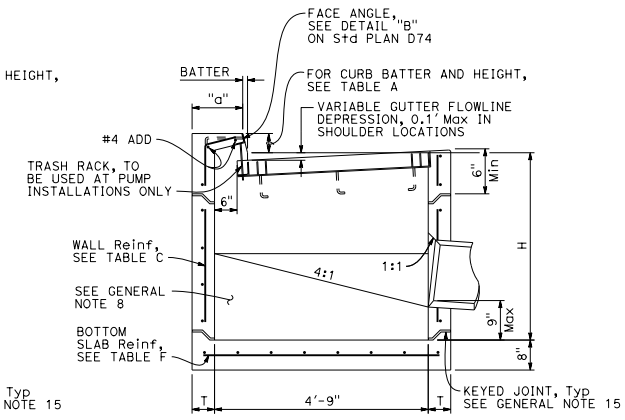


GRATE FRAME FOR TYPE GDO INLET

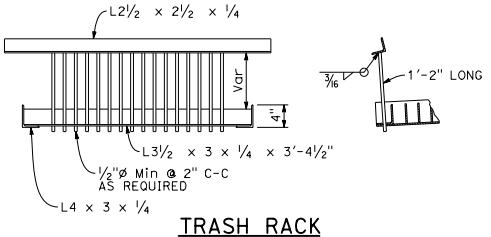
* HOLES REQUIRED ONLY WITH TRASH RACK



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 Standard Plan D73F for General Notes and additional details. See Standard Plan D73G 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

PRECAST DRAINAGE INLETS TYPES GO AND GDO

NO SCALE

RSP D73E DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN D73E
DATED MAY 31, 2018 - PAGE 206 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D73E

2018 REVISED STANDARD PLAN RSP D73E

10-25-18

WALL A

	ID	†	MINIMUM COVER TO 10'-0" Max COVER									20'-0" Max COVER									40'-0" Max COVER		40'-0" Max COVER	
			METHOD 1			METHOD 2			METHOD 3A			METHOD 1			METHOD 2			METHOD 3A			METHOD 3A		METHOD 3B	
			A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{si}	A_{so}
f'_c = 6 ksi	24"	2½"	0.23	-	0.21	0.16	-	0.16	0.14	-	0.14	0.25	-	0.27	0.17	-	0.18	0.14	-	0.14	0.25	0.20	0.24	0.16
	30"	2¾"	0.29	-	0.27	0.21	-	0.20	0.18	-	0.17	0.40	0.20	0.41	0.25	-	0.23	0.19	-	0.18	0.37	0.25	0.31	0.22
	36"	3"	0.28	0.16	0.31	0.22	0.15	0.22	0.19	0.13	0.20	–	–	–	0.29	0.19	0.29	0.21	0.14	0.23	0.47	0.32	0.37	0.27
	42"	3½"	0.32	0.20	0.36	0.21	0.15	0.22	0.19	0.13	0.21	–	–	–	0.33	0.21	0.33	0.24	0.15	0.27	0.53	0.40	0.42	0.29
	48"	4"	0.44	0.26	0.48	0.20	0.16	0.23	0.20	0.14	0.22	–	–	–	0.37	0.23	0.37	0.28	0.19	0.30	-	-	0.47	0.31
	54"	4½"	0.53	0.31	0.58	0.20	0.16	0.24	0.21	0.14	0.23	–	–	–	0.41	0.25	0.42	0.30	0.23	0.32	–	–	0.57	0.34
	60"	5"	0.59	0.34	0.61	0.22	0.17	0.25	0.22	0.15	0.25	–	–	–	0.46	0.27	0.46	0.32	0.26	0.34	–	–	0.63	0.37
	66"	5½"	0.66	0.39	0.68	0.24	0.17	0.27	0.23	0.16	0.27	–	–	–	0.51	0.29	0.52	0.33	0.27	0.35	–	–	0.65	0.39
	72"	6"	0.68	0.45	0.70	0.26	0.18	0.28	0.24	0.17	0.28	–	–	–	0.56	0.31	0.57	0.34	0.28	0.37	–	–	0.68	0.42
	78"	6½"	0.72	0.50	0.74	0.28	0.19	0.29	0.25	0.17	0.30	–	–	–	0.61	0.34	0.62	0.35	0.28	0.38	–	–	0.74	0.45
	84"	7"	0.74	0.56	0.76	0.30	0.20	0.31	0.27	0.18	0.31	–	–	–	0.67	0.36	0.68	0.37	0.29	0.39	–	–	–	–
	90"	7½"	0.76	0.65	0.78	0.33	0.21	0.34	0.29	0.19	0.32	–	–	–	0.73	0.39	0.74	0.40	0.30	0.41	–	–	–	–
	96"	8"	0.78	0.66	0.81	0.35	0.23	0.36	0.32	0.19	0.33	–	–	–	0.79	0.41	0.80	0.42	0.31	0.43	–	–	–	–
	102"	8½"	0.80	0.68	0.84	0.38	0.24	0.39	0.36	0.20	0.38	–	–	–	0.85	0.44	0.86	0.45	0.32	0.46	–	–	–	–
	108"	9"	0.83	0.70	0.87	0.41	0.26	0.42	0.38	0.21	0.42	–	–	–	–	–	–	0.48	0.34	0.49	–	–	–	–
	114"	9½"	0.86	0.72	0.90	0.44	0.28	0.47	0.40	0.24	0.47	–	–	–	–	–	–	0.51	0.36	0.52	–	–	–	–
	120"	10"	0.89	0.74	0.93	0.53	0.34	0.54	0.44	0.27	0.52	–	–	–	–	–	–	0.54	0.38	0.56	–	–	–	–

WALL B

	ID	†	MINIMUM COVER TO 10'-0" Max COVER									20'-0" Max COVER									40'-0" Max COVER		40'-0" Max COVER	
			METHOD 1			METHOD 2			METHOD 3A			METHOD 1			METHOD 2			METHOD 3A			METHOD 3A		METHOD 3B	
			A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{si}	A_{so}
f'_c = 5 ksi	24"	3"	0.18	-	0.16	0.14	-	0.12	0.12	-	0.11	0.22	-	0.25	0.15	-	0.14	0.12	-	0.11	0.21	0.18	0.19	0.12
	30"	3½"	0.27	-	0.19	0.17	-	0.14	0.15	-	0.15	0.30	-	0.27	0.21	-	0.17	0.18	-	0.12	0.25	0.20	0.29	0.14
	36"	4"	0.24	0.14	0.26	0.15	0.09	0.17	0.13	0.08	0.13	0.28	0.15	0.29	0.20	0.12	0.20	0.15	0.09	0.15	0.29	0.23	0.30	0.17
	42"	4½"	0.28	0.17	0.31	0.16	0.09	0.18	0.14	0.08	0.14	0.35	0.18	0.36	0.23	0.14	0.24	0.17	0.11	0.17	0.34	0.25	0.32	0.21
	48"	5"	0.33	0.19	0.38	0.17	0.10	0.19	0.15	0.09	0.16	0.43	0.22	0.44	0.27	0.16	0.27	0.19	0.13	0.20	0.38	0.32	0.35	0.24
	54"	5½"	0.40	0.24	0.44	0.18	0.10	0.20	0.16	0.10	0.17	0.51	0.27	0.52	0.30	0.19	0.31	0.22	0.14	0.22	0.40	0.43	0.42	0.27
	60"	6"	0.47	0.28	0.53	0.20	0.11	0.21	0.18	0.10	0.18	0.60	0.31	0.61	0.34	0.21	0.34	0.25	0.16	0.25	–	–	0.50	0.35
	66"	6½"	0.56	0.33	0.62	0.21	0.13	0.22	0.20	0.12	0.18	–	–	–	0.37	0.23	0.38	0.27	0.18	0.28	–	–	0.58	0.38
	72"	7"	0.61	0.38	0.64	0.23	0.14	0.23	0.21	0.12	0.19	–	–	–	0.41	0.26	0.42	0.30	0.20	0.30	–	–	0.59	0.45
	78"	7½"	0.65	0.45	0.67	0.25	0.15	0.26	0.22	0.12	0.22	–	–	–	0.46	0.28	0.47	0.32	0.22	0.33	–	–	0.60	0.50
	84"	8"	0.67	0.50	0.69	0.28	0.17	0.28	0.23	0.13	0.26	–	–	–	0.52	0.31	-	0.35	0.24	0.36	–	–	–	-
	90"	8½"	0.69	0.52	0.71	0.30	0.18	0.31	0.25	0.16	0.30	–	–	–	0.59	0.33	-	0.38	0.26	0.39	–	–	–	–
	96"	9"	0.71	0.57	0.73	0.33	0.20	0.34	0.29	0.17	0.34	–	–	–	0.65	0.36	-	0.41	0.28	0.42	–	–	–	–
	102"	9½"	0.75	0.68	0.75	0.35	0.22	0.38	0.36	0.20	0.38	–	–	–	0.72	0.39	-	0.44	0.30	0.45	–	–	–	–
	108"	10"	0.76	0.69	0.77	0.38	0.23	0.43	0.38	0.22	0.43	–	–	–	0.79	0.42	-	0.47	0.32	0.48	–	–	–	–
	114"	10½"	0.78	0.70	0.79	0.41	0.25	0.48	0.41	0.24	0.48	–	–	–	–	–	–	0.50	0.34	-	–	–	–	–
	120"	11"	0.80	0.72	0.82	0.49	0.30	0.53	0.45	0.27	0.53	–	–	–	–	–	–	0.53	0.36	-	–	–	–	–

WALL X

	ID	†	Min COVER TO 10'-0" Max COVER						20'-0" Max COVER						30'-0" Max COVER			
			METHOD 3A			METHOD 3B			METHOD 3A			METHOD 3B			METHOD 3A		METHOD 3B	
			A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{se}	A_{si}	A_{so}	A_{si}	A_{so}
f'_c = 6 ksi	24"	1⅞"	0.19	-	0.19	0.18	-	0.18	0.19	-	0.19	0.18	-	0.18	0.22	0.17	0.18	0.15
	30"	2⅛"	0.23	-	0.21	0.22	-	0.20	0.23	-	0.21	0.22	-	0.20	0.23	0.19	0.20	0.17
	36"	2⅜"	0.23	0.17	0.25	0.21	0.16	0.22	0.23	0.17	0.23	0.21	0.16	0.22	0.25	0.21	0.21	0.18
	42"	2¾"	0.26	0.19	0.27	0.24	0.18	0.25	0.26	0.19	0.26	0.24	0.18	0.25	0.35	0.27	0.26	0.24
	48"	2⅞"	0.28	0.21	0.28	0.26	0.20	0.27	0.28	0.21	0.28	0.26	0.20	0.27	0.43	0.33	0.30	0.28
	54"	3¼"	0.29	0.22	0.31	0.27	0.20	0.29	0.29	0.21	0.30	0.27	0.20	0.29	0.47	0.34	0.32	0.29
	60"	3½"	0.30	0.23	0.32	0.28	0.21	0.31	0.30	0.24	0.30	0.27	0.21	0.29	0.56	0.42	0.40	0.33
	66"	3¾"	0.31	0.24	0.34	0.29	0.21	0.33	0.36	0.27	0.37	0.28	0.24	0.30	0.66	0.50	0.48	0.39
	72"	4¼"	0.33	0.24	0.36	0.31	0.22	0.35	0.37	0.27	0.37	0.30	0.24	0.32	0.68	0.52	0.48	0.40
	78"	4¾"	0.34	0.25	0.38	0.32	0.23	0.37	0.37	0.27	0.38	0.32	0.24	0.33	0.70	0.53	0.49	0.41
	84"	5¼"	0.36	0.25	0.39	0.33	0.24	0.38	0.38	0.28	0.39	0.33	0.24	0.36	0.71	0.55	0.50	0.41
	90"	5¾"	0.37	0.26	0.40	0.34	0.24	0.39	0.39	0.30	0.40	0.34	0.26	0.37	0.73	0.57	0.52	0.42
	96"	6"	0.38	0.27	0.42	0.36	0.25	0.40	0.43	0.31	0.44	0.36	0.28	0.38	0.77	0.58	0.55	0.42
	102"	6½"	0.40	0.29	0.43	0.38	0.26	0.42	0.48	0.34	0.49	0.38	0.30	0.39	0.84	0.60	0.62	0.43
	108"	7"	0.41	0.29	0.45	0.40	0.26	0.44	0.53	0.36	0.54	0.39	0.32	0.41	–	–	0.68	0.46
	114"	7½"	0.42	0.30	0.47	0.41	0.27	0.45	0.57	0.38	0.58	0.42	0.34	0.45	–	–	0.75	0.50
	120"	8"	0.43	0.31	0.50	0.43	0.27	0.50	0.62	0.41	0.64	0.45	0.36	0.50	–	–	0.81	0.53

WALL AA

	ID	†	40'-0" Max COVER
			METHOD 3B
			A_{si}	A_{so}
f'_c = 7 ksi	84"	7"	0.75	0.46
	90"	7½"	0.81	0.49
	96"	8"	0.87	0.52
	102"	8½"	0.93	0.55
	108"	9½"	0.94	0.56
	114"	10½"	0.96	0.57
	120"	11"	1.02	0.60

WALL BB

	ID	†	80'-0" Max COVER
			METHOD 3B
			A_{si}	A_{so}
f'_c = 6 ksi	24"	5¾"	0.31	0.18
	30"	6"	0.33	0.22
	36"	6½"	0.39	0.36
	42"	7½"	0.48	0.45
	48"	8½"	0.57	0.55
	54"	10"	0.61	0.58
f'_c = 7 ksi	60"	11"	0.63	0.61
	66"	11½"	0.65	0.63
	72"	12½"	0.73	0.71
	78"	13½"	0.80	0.78
	84"	14¾"	0.83	0.81
	90"	16"	0.86	0.84
	96"	17¼"	0.90	0.88

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

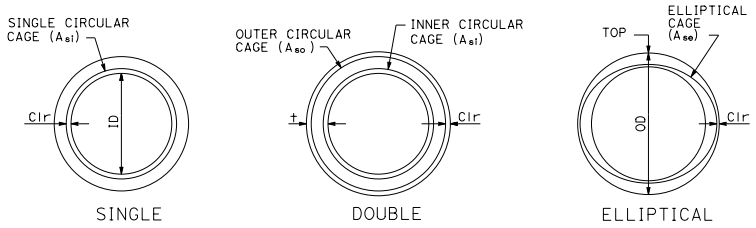
REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Carl M. Duan — No. C59976 — Exp. 6-30-22 — 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 _____



DESIGN NOTES:

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

Earth Loading: Paris/Uniform Soil Pressure Distribution
Vertical: 140 pcf
Horizontal: Varies, see design lateral pressure chart (Circular Pipe only)

Unit Stresses: (Used in Design Tables)
f_y = 65 ksi
f'_c = See Tables

The RCP as shown on this sheet is not intended to be used in a corrosive environment. A special design may be required.

CAGE REINFORCEMENT

† = Pipe barrel wall thickness, inches

A_{si} = Inner cage reinforcement, or single circular cage reinforcement, square inches/LF

A_{so} = Outer cage reinforcement, square inches/LF

A_{se} = Elliptical single cage reinforcement, square inches/LF

Clr = Design clearance, inches (see Note 6)

NOTES:

1. For details of the method of excavation, backfill and bedding (Method 1, Method 2, etc.), see Revised Standard Plan RSP A62D.
2. The tables for minimum allowable classes and D-loads of RCP on Revised Standard Plan RSP A62D shall not apply to direct design RCP.
3. Notes 3, 9 and 10 on Revised Standard Plan RSP A62D shall apply to direct design RCP.
4. Throughout the length of any given culvert, the direct design selected by the Contractor shall be the same, including the method of excavation, backfill and bedding.
5. The embankment height prior to excavation specified in note 5 of the Revised Standard Plan RSP A62D shall apply to the direct design RCP installation when Method 2, 3A or 3B are used.
6. For single circular cage reinforcement, minimum clearance shall be 40% of the wall thickness (t). For elliptical and double circular cage reinforcement where the wall thickness (t) is less than 2½", the minimum clearance (Clr) for reinforcement shall be ¾", and where the wall thickness (t) is 2½" or more, the minimum clearance (Clr) for reinforcement shall be 1".
7. Minimum cover measured at the Edge of Traveled Way (ETW) shall be 2'-0" to top of HMA or existing AC pavement and 1'-0" to bottom of rigid pavement.
8. Cover greater than the table maximum requires a special design.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE PIPE DIRECT DESIGN METHOD

NO SCALE

RSP D79 DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN D79 DATED MAY 31, 2018 - PAGE 219 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D79

2018 REVISED STANDARD PLAN RSP D79

7-1-21

WALL B

	ID	†	MINIMUM COVER TO 10'-0" Max COVER									20'-0" Max COVER								
			INSTALLATION TYPE 1			INSTALLATION TYPE 2			INSTALLATION TYPE 3			INSTALLATION TYPE 1			INSTALLATION TYPE 2			INSTALLATION TYPE 3		
			A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}
f'_c = 6 ksi	24"	3"	0.17	–	0.16	0.19	–	0.17	0.21	–	0.19	0.17	–	0.16	0.19	–	0.17	0.21	–	0.19
	30"	3½"	0.21	–	0.17	0.22	–	0.18	0.25	–	0.21	0.21	–	0.17	0.22	–	0.18	0.25	–	0.24
	36"	4"	0.17	0.09	0.18	0.18	0.10	0.19	0.21	0.11	0.22	0.17	0.09	0.18	0.21	0.11	0.22	0.28	0.16	0.30
	42"	4½"	0.18	0.09	0.19	0.21	0.12	0.23	0.22	0.12	0.23	0.19	0.10	0.19	0.25	0.14	0.26	0.36	0.19	0.36
	48"	5"	0.19	0.10	0.20	0.24	0.14	0.27	0.23	0.13	0.24	0.22	0.12	0.23	0.29	0.16	0.31	0.44	0.23	0.45
	54"	5½"	0.20	0.11	0.22	0.29	0.17	0.32	0.24	0.14	0.25	0.25	0.14	0.28	0.33	0.20	0.37	0.52	0.28	0.53
	60"	6"	0.21	0.12	0.23	0.34	0.20	0.38	0.25	0.15	0.27	0.29	0.17	0.32	0.40	0.23	0.44	-	-	-
	66"	6½"	0.21	0.13	0.24	0.41	0.24	0.45	0.32	0.19	0.35	0.36	0.22	0.40	0.48	0.28	0.53	-	-	-
	72"	7"	0.22	0.14	0.25	0.49	0.29	0.54	0.37	0.22	0.41	0.43	0.25	0.47	0.57	0.34	0.63	-	-	-
	78"	7½"	0.23	0.15	0.26	0.57	0.34	0.63	0.42	0.25	0.47	0.50	0.30	0.55	0.66	0.39	0.66	-	-	-
	84"	8"	0.26	0.16	0.31	0.64	0.38	0.69	0.48	0.29	0.54	0.57	0.34	0.63	0.69	0.45	-	-	-	-
	90"	8½"	0.34	0.21	0.38	0.69	0.41	0.72	0.54	0.33	0.61	0.63	0.37	0.70	0.72	0.51	-	-	-	-
	96"	9"	0.39	0.24	0.44	0.70	0.45	0.74	0.61	0.36	0.68	0.70	0.41	0.74	-	-	-	-	-	-
	102"	9½"	0.48	0.29	0.49	0.72	0.54	0.76	0.73	0.44	0.74	0.75	0.50	0.78	-	-	-	-	-	-
	108"	10"	0.57	0.30	0.55	0.75	0.65	0.79	0.76	0.53	0.80	0.77	0.60	0.80	-	-	-	-	-	-
	114"	10½"	0.66	0.31	0.60	0.78	0.76	0.81	0.80	0.62	0.83	0.79	0.69	0.82	-	-	-	-	-	-
	120"	11"	0.75	0.31	0.66	0.81	0.86	0.83	0.84	0.72	0.86	0.81	0.79	0.84	-	-	-	-	-	-

WALL BB

	ID	†	40'-0" Max COVER INSTALLATION TYPE 1	
			A_{sl}	A_{so}
f'_c = 6 ksi	24"	3"	0.22	0.13
	30"	3½"	0.27	0.14
	36"	4"	0.33	0.17
	42"	4½"	0.42	0.22
	48"	5"	0.52	0.27
	54"	5¾"	0.54	0.29
	60"	6½"	0.57	0.34
	66"	7¼"	0.60	0.38
	72"	8½"	0.62	0.40
	78"	9½"	0.64	0.42
	84"	10¼"	0.65	0.43
f'_c = 7 ksi	90"	10½"	0.66	0.44
	96"	10¾"	0.79	0.46
	102"	11¾"	0.80	0.48
	108"	12¼"	0.88	0.53
	114"	13¼"	0.90	0.55
	120"	14"	0.93	0.56

WALL C

	ID	†	MINIMUM COVER TO 10'-0" Max COVER									20'-0" Max COVER								
			INSTALLATION TYPE 1			INSTALLATION TYPE 2			INSTALLATION TYPE 3			INSTALLATION TYPE 1			INSTALLATION TYPE 2			INSTALLATION TYPE 3		
			A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}
f'_c = 5 ksi	24"	3¾"	0.15	–	0.12	0.15	–	0.13	0.18	–	0.14	0.15	–	0.12	0.15	–	0.13	0.18	–	0.14
	30"	4¼"	0.18	–	0.14	0.19	–	0.14	0.21	–	0.16	0.18	–	0.14	0.19	–	0.14	0.25	–	0.19
	36"	4¾"	0.14	0.07	0.14	0.15	0.08	0.16	0.17	0.09	0.17	0.14	0.07	0.14	0.18	0.09	0.18	0.23	0.12	0.23
	42"	5¼"	0.15	0.07	0.16	0.16	0.09	0.17	0.18	0.10	0.20	0.16	0.08	0.16	0.21	0.11	0.22	0.27	0.14	0.28
	48"	5¾"	0.16	0.07	0.17	0.19	0.10	0.21	0.19	0.11	0.21	0.19	0.10	0.19	0.25	0.13	0.25	0.32	0.17	-
	54"	6¼"	0.17	0.08	0.18	0.21	0.12	0.23	0.20	0.12	0.22	0.22	0.11	0.22	0.28	0.15	0.29	0.40	0.21	-
	60"	6¾"	0.18	0.09	0.19	0.24	0.15	0.27	0.22	0.15	0.24	0.25	0.14	0.26	0.32	0.18	0.33	0.49	0.25	-
	66"	7¼"	0.22	0.11	0.20	0.31	0.19	0.34	0.25	0.16	0.28	0.28	0.17	0.31	0.37	0.23	-	-	-	-
	72"	7¾"	0.24	0.15	0.26	0.36	0.21	0.40	0.31	0.19	0.34	0.34	0.20	0.37	0.44	0.26	-	-	-	-
	78"	8¼"	0.28	0.18	0.31	0.42	0.24	0.47	0.36	0.22	0.41	0.40	0.23	0.44	0.51	0.30	-	-	-	-
	84"	8¾"	0.32	0.18	0.35	0.50	0.30	0.56	0.43	0.25	0.47	0.47	0.28	0.52	0.62	0.37	-	-	-	-
	90"	9¼"	0.38	0.23	0.41	0.59	0.35	0.66	0.51	0.30	0.56	0.56	0.33	0.62	0.65	0.44	-	-	-	-
	96"	9¾"	0.42	0.25	0.47	0.65	0.42	0.68	0.59	0.35	0.65	0.64	0.40	0.65	0.68	0.51	-	-	-	-
	102"	10¼"	0.44	0.27	0.54	0.67	0.50	0.70	0.68	0.40	0.71	0.67	0.47	0.69	-	-	-	-	-	-
	108"	10¾"	0.46	0.28	0.60	0.69	0.59	0.72	0.71	0.50	0.73	0.69	0.55	-	-	-	-	-	-	-
	114"	11¼"	0.47	0.31	0.67	0.71	0.68	0.74	0.73	0.59	0.75	0.71	0.64	-	-	-	-	-	-	-
	120"	11¾"	0.49	0.35	0.73	0.73	0.77	0.76	0.75	0.59	0.77	0.73	0.73	-	-	-	-	-	-	-

WALL CC

	ID	†	80'-0" Max COVER INSTALLATION TYPE 1	
			A_{sl}	A_{so}
f'_c = 6 ksi	24"	6½"	0.21	0.19
	30"	7½"	0.35	0.30
	36"	8½"	0.45	0.42
	42"	10¼"	0.49	0.45
f'_c = 7 ksi	48"	10½"	0.52	0.49
	54"	11½"	0.60	0.58
	60"	12¾"	0.65	0.63
	66"	14½"	0.68	0.67
	72"	16½"	0.70	0.68
	78"	18"	0.73	0.72
	84"	19½"	0.76	0.75
	90"	20¾"	0.80	0.79
	96"	22½"	0.82	0.81

WALL X

	ID	†	10'-0" Max COVER INSTALLATION TYPE 1			20'-0" Max COVER INSTALLATION TYPE 1		
			A_{sl}	A_{so}	A_{se}	A_{sl}	A_{so}	A_{se}
f'_c = 6 ksi	24"	2"	0.25	0.16	0.25	0.25	0.16	0.25
	30"	2⅜"	0.26	0.16	0.26	0.26	0.16	0.26
	36"	2¾"	0.31	0.20	0.32	0.31	0.20	0.32
	42"	3"	0.32	0.21	0.34	0.41	0.25	0.44
	48"	3½"	0.33	0.22	0.35	0.46	0.27	0.51
	54"	3¾"	0.34	0.24	0.36	0.54	0.28	0.55
	60"	4¼"	0.35	0.26	0.38	0.56	0.29	0.57
	66"	4¾"	0.36	0.27	0.40	0.59	0.31	0.60
	72"	5¼"	0.38	0.28	0.42	0.62	0.32	0.63
	78"	5¾"	0.39	0.28	0.43	0.66	0.34	0.67
	84"	6¼"	0.41	0.29	0.44	0.70	0.36	0.71
	90"	7"	0.42	0.31	0.46	0.71	0.37	0.73
	96"	7½"	0.44	0.32	0.48	0.72	0.38	0.74
	102"	8"	0.45	0.32	0.50	0.77	0.40	0.79
	108"	8½"	0.47	0.33	0.51	0.82	0.43	-
	114"	9¼"	0.49	0.34	0.52	0.85	0.44	-
	120"	9¾"	0.50	0.35	0.54	0.87	0.45	-

NOTES:

1. For details of the method of excavation, backfill and bedding (Installation Type 1, Installation Type 2, etc.), see Revised Standard Plan RSP A62DA.
2. The tables for minimum allowable classes and D-loads of RCP on Revised Standard Plan RSP A62DA shall not apply to direct design RCP.
3. Notes 3 and 7 on Revised Standard Plan RSP A62DA shall apply to direct design RCP.
4. Throughout the length of any given culvert, the direct design selected by the Contractor shall be the same, including the method of excavation, backfill and bedding.
5. For single circular cage reinforcement, minimum clearance shall be 40% of the wall thickness (t). For elliptical and double circular cage reinforcement where the wall thickness (t) is less than 2½", the minimum clearance (Clr) for reinforcement shall be ¾", and where the wall thickness (t) is 2½" or more, the minimum clearance (Clr) for reinforcement shall be 1".
6. Minimum cover measured at the Edge of Traveled Way (ETW) shall be 2'-0" to top of HMA or existing AC pavement and 1'-0" to bottom of rigid pavement.
7. Cover greater than the table maximum requires a special design.

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Carl M. Duan — No. C59976 — Exp. 6-30-22 — CIVIL — STATE OF CALIFORNIA

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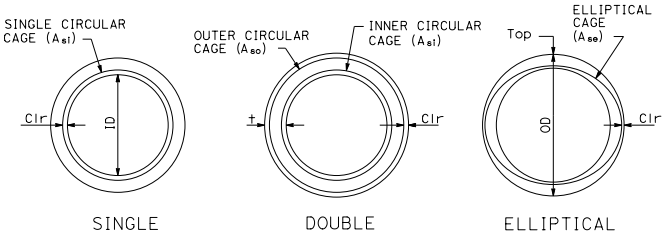
TO ACCOMPANY PLANS DATED _____



CAGE REINFORCEMENT

† = Pipe barrel wall thickness, inches

A_{sl} = Inner cage reinforcement, or single circular cage reinforcement, square inches/LF

A_{so} = Outer cage reinforcement, square inches/LF

A_{se} = Elliptical single cage reinforcement, square inches/LF

Clr = Design clearance, inches (see Note 5)

DESIGN NOTES:

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

Earth Loading: Heger Soil Pressure Distribution
γ = 140 pcf
VAF & HAF modification factor = 0.86

Unit Stresses: (Used in Design Tables)
f_y = 65 ksi
f'_c = See Tables

The RCP as shown on this sheet is not intended to be used in a corrosive environment. A special design may be required.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE PIPE DIRECT DESIGN METHOD

NO SCALE

RSP D79A DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN D79A
DATED MAY 31, 2018 - PAGE 220 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D79A

2018 REVISED STANDARD PLAN RSP D79A

7-1-21

		SPAN, S	4′			5′				6′				7′					8′				
		HEIGHT, H	2′	3′	4′	2′	3′	4′	5′	3′	4′	5′	6′	3′	4′	5′	6′	7′	4′	5′	6′	7′	8′
	MAXIMUM EARTH COVER		10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′
Conc	ROOF T_1		7½″ 7″	8″ 7″	8″ 7″	8″ 8″	8″ 8″	8″ 7½″	8″ 8″	8″ 9″	8½″ 9½″	8″ 9″	8″ 9″	9″ 11″	9″ 11″	9″ 10½″	9″ 10½″	9″ 10½″	9½″ 12½″	9½″ 11½″	9½″ 11½″	9½″ 11½″	9″ 11½″
Conc	WALLS T_2		6″ 6″	6″ 6″	7″ 7″	6″ 6″	6½″ 6½″	7″ 7½″	7″ 9″	7″ 7″	7″ 7½″	7½″ 9″	8½″ 10½″	6½″ 7″	6½″ 7½″	7″ 9½″	8½″ 10½″	10″ 12″	6½″ 8″	7″ 9½″	8½″ 11″	10″ 12″	11″ 13½″
Conc	INVERT T_3		7″ 7″	7″ 7½″	7″ 7½″	7½″ 8″	7½″ 8″	7½″ 9″	7½″ 9½″	8″ 10″	8″ 10½″	8″ 10½″	8″ 10″	8″ 11½″	8″ 10½″	8″ 11″	8″ 11½″	8½″ 11″	8½″ 13″	8½″ 13″	8½″ 12″	8½″ 13″	8½″ 12″
Reinf	"a" SIZE BAR		#5 #5	#5 #5	#4 #5	#5 #5	#5 #5	#5 #5	#5 #5	#5 #6	#5 #5	#5 #5	#5 #6	#5 #5	#5 #5	#5 #5	#6 #5	#5 #5	#5 #5	#6 #6	#6 #6	#6 #6	#6 #6	#5 #6
Reinf	"a" SPACING		6″ 5″	6″ 5″	5″ 5″	5½″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 5″	5″ 5″	4½″ 4½″	4½″ 4½″	4½″ 5″	4½″ 5″	4½″ 5″	4½″ 5″	4½″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″
Reinf	"b" SIZE BAR		#4 #5	#4 #5	#5 #5	#5 #5	#5 #5	#5 #5	#5 #5	#5 #5	#5 #5	#5 #5	#5 #6	#5 #5	#5 #5	#6 #5	#6 #6	#6 #6	#5 #5	#6 #5	#6 #5	#6 #6	#6 #5	#9 #6
Reinf	"b" SPACING		5½″ 6″	6″ 6″	6″ 4½″	5″ 4½″	6″ 5½″	6″ 5½″	4½″ 5½″	5½″ 4½″	6″ 5″	5″ 5½″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 5″	5″ 4½″	5″ 4½″	4½″ 4½″	5″ 4½″	5″ 4½″	4½″ 4½″	4½″ 4½″	4½″ 4½″
Reinf	"e" SIZE BAR		#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #4	#4 #5
Reinf	"e" SPACING		13½″ 13½″	13½″ 13½″	9″ 7″	13½″ 13½″	13½″ 13½″	12″ 11″	6½″ 7½″	12½″ 12½″	12″ 11″	9″ 8½″	6½″ 6″	13½″ 12½″	11″ 11″	9″ 8″	7″ 7″	6″ 5″	11″ 10″	9″ 8″	7½″ 6½″	7″ 6″	5″ 7″
	DIMENSION "B" ft-inch		2-4 2-0	2-4 2-1	5-7 2-6	2-6 2-1	2-7 2-4	2-9 2-8	2-9 2-10	2-9 2-3	2-9 2-4	3-0 2-11	3-4 3-1	2-11 2-6	2-11 2-9	3-5 2-11	3-6 3-3	3-7 3-7	3-1 2-9	3-4 2-8	3-7 3-3	5-8 3-6	5-9 3-10
QUANTITIES	CONCRETE CF/LF		8.0 7.8	9.3 9.0	11.1 10.9	9.8 10.0	11.1 11.4	12.4 13.9	13.8 17.0	13.1 14.8	14.5 17.1	15.9 19.7	18.4 22.8	14.7 18.8	15.8 19.8	17.4 23.3	20.4 26.5	23.9 30.1	18.0 25.2	19.6 27.5	22.6 30.3	25.8 34.4	29.0 38.1
QUANTITIES	REINFORCEMENT LB/LF		79 84	84 96	104 127	107 110	112 114	123 128	154 140	126 147	132 139	159 153	206 186	145 162	155 169	203 186	232 205	245 244	193 197	229 210	262 234	491 242	527 309
**	SOIL PRESSURE (ksf), Ser		2.4 3.5	2.4 3.5	2.4 3.5	2.1 3.5	2.1 3.5	2.1 3.6	2.1 3.6	1.9 3.5	1.9 3.6	1.9 3.6	2.0 3.7	1.9 3.6	1.9 3.6	1.9 3.6	2.0 3.7	2.0 3.7	1.9 3.6	1.9 3.7	2.0 3.7	2.0 3.7	2.0 3.8
**	SOIL PRESSURE (ksf), Str		3.9 4.5	3.0 4.5	3.9 4.6	3.3 4.5	3.3 4.5	3.3 4.6	3.4 4.7	2.9 4.6	2.9 4.6	3.0 4.7	3.0 4.7	2.6 4.6	2.6 4.6	2.7 4.7	2.7 4.8	2.7 4.8	2.5 4.7	2.5 4.7	2.5 4.8	2.6 4.8	2.6 4.9

		SPAN, S	10′					12′					14′					
		HEIGHT, H	5′	6′	7′	8′	9′	10′	6′	7′	8′	9′	10′	11′	12′	7′	8′	9′
	MAXIMUM EARTH COVER		10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′	10′ 20′
Conc	ROOF T_1		10″ 15″	9½″ 14″	9½″ 13½″	9½″ 14″	10″ 15″	10″ 15″	11½″ 17″	11½″ 16½″	11½″ 16″	11″ 16″	11½″ 17″	11½″ 17½″	12″ 18″	13″ 19½″	13″ 19″	13″ 17½″
Conc	WALLS T_2		8½″ 10″	8½″ 11½″	10″ 12½″	11½″ 14″	12″ 15½″	13½″ 16½″	9″ 12″	10½″ 13″	11½″ 14½″	12½″ 16″	14″ 16½″	15″ 18″	16½″ 20″	9½″ 13½″	11½″ 15″	12½″ 16½″
Conc	INVERT T_3		10″ 15″	10″ 15″	10″ 15″	10″ 15½″	10″ 16″	10½″ 15″	11″ 17½″	11″ 17½″	11″ 17″	11″ 17″	11½″ 16″	12″ 19″	12½″ 20″	12½″ 19½″	12½″ 19½″	12½″ 19″
Reinf	"a" SIZE BAR		#6 #7	#6 #7	#6 #7	#6 #6	#6 #6	#5 #6	#7 #7	#7 #7	#7 #7	#7 #7	#6 #7	#6 #6	#6 #6	#8 #8	#7 #8	#7 #8
Reinf	"a" SPACING		4½″ 5″	4½″ 5″	5″ 5″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″	5″ 4½″	4½″ 4½″	4½″ 4½″	5″ 5″	4½″ 5″	4½″ 5″
Reinf	"b" SIZE BAR		#5 #5	#6 #6	#6 #6	#7 #5	#7 #6	#7 #6	#6 #6	#6 #7	#6 #7	#6 #7	#7 #7	#7 #6	#7 #6	#7 #6	#7 #6	#7 #6
Reinf	"b" SPACING		4½″ 4½″	5″ 5″	4½″ 5″	5″ 4½″	4½″ 4½″	4½″ 5	4½″ 5″	4½″ 5″	4½″ 5″	4½″ 5″	4½″ 5″	4½″ 4½″	4½″ 4½″	4½″ 4½″	4½″ 4½″	4½″ 5″
Reinf	"e" SIZE BAR		#4 #4	#4 #4	#4 #4	#4 #4	#4 #5	#5 #5	#4 #4	#4 #4	#4 #5	#4 #5	#5 #6	#5 #5	#5 #6	#4 #4	#4 #5	#4 #5
Reinf	"e" SPACING		9½″ 7½″	8½″ 6″	7½″ 5½″	6″ 5″	5″ 6½″	6″ 5″	8½″ 6″	7″ 5½″	6″ 7½″	5½″ 6½″	5″ 6½″	5½″ 5″	4½″ 6″	7½″ 5″	6″ 7″	5½″ 6″
	DIMENSION "B" ft-inch		3-10 3-10	3-9 3-3	4-0 3-6	4-9 4-5	4-9 4-11	4-10 4-7	4-3 4-1	4-3 4-1	5-0 4-3	5-3 5-1	5-3 6-2	5-4 5-6	5-4 5-7	4-8 4-6	5-0 4-5	5-4 5-0
QUANTITIES	CONCRETE CF/LF		26.1 37.5	27.1 40.3	30.6 43.3	34.7 49.0	38.0 55.8	43.4 59.4	34.3 52.3	38.0 55.3	41.4 59.0	44.6 64.3	50.8 68.1	55.9 78.6	63.1 88.6	44.2 68.6	49.2 72.9	52.9 75.7
QUANTITIES	REINFORCEMENT LB/LF		251 284	285 318	307 338	375 313	418 375	425 404	381 381	382 397	469 418	497 455	488 534	526 479	548 515	526 492	498 512	550 540
**	SOIL PRESSURE (ksf), Ser		2.0 3.7	2.0 3.7	2.0 3.8	2.0 3.8	2.1 3.9	2.1 3.9	2.2 3.8	2.3 3.8	2.3 3.8	2.3 3.9	2.3 3.9	2.4 4.0	2.5 4.1	2.2 3.9	2.3 3.9	2.3 3.9
**	SOIL PRESSURE (ksf), Str		2.5 4.8	2.5 4.8	2.6 4.9	2.6 4.9	2.7 5.0	2.7 5.1	3.0 4.9	3.0 4.9	3.1 5.0	3.1 5.0	3.2 5.1	3.2 5.2	3.3 5.3	3.0 5.0	3.1 5.0	3.1 5.0

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

REGISTERED CIVIL ENGINEER

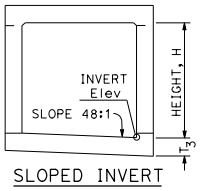
October 15, 2021
PLANS APPROVAL DATE

Carl W. Duan
No. C59976
Exp. 6-30-22
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER

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.

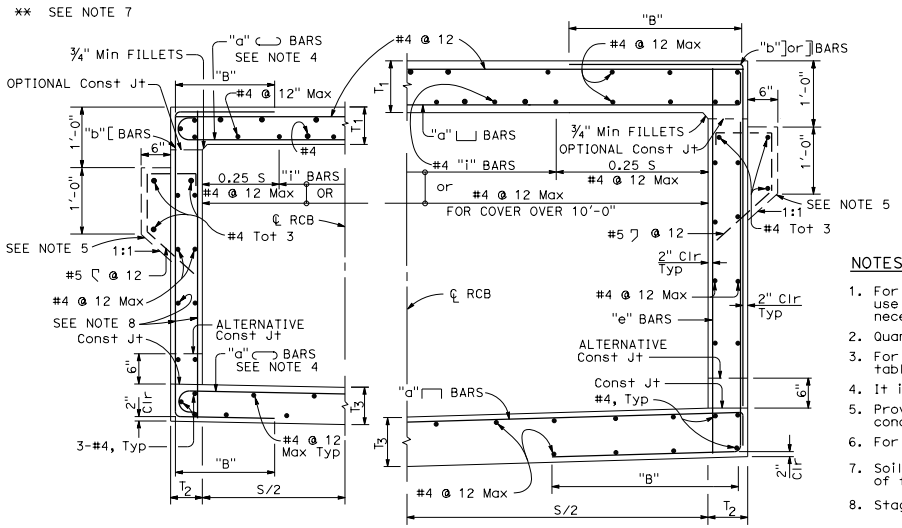
TO ACCOMPANY PLANS DATED _____

"i" BARS, FOR EARTH COVERS UP TO AND INCLUDING 10′-0"								
SPAN	4′	5′	6′	7′	8′	10′	12′	14′
NUMBER	7	8	9	10	11	12	15	20



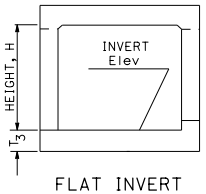
SLOPED INVERT

** SEE NOTE 7

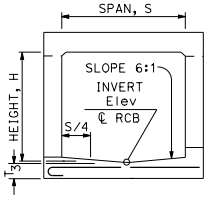


TYPICAL SECTION
SPANS 4′ THRU 8′

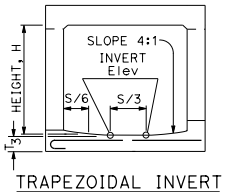
TYPICAL SECTION
SPANS 10′ THRU 14′



FLAT INVERT



V INVERT



TRAPEZOIDAL INVERT

ALTERNATIVE INVERTS

NOTES:

1. For boxes with span or height less than any of those shown in table, use next greater size box concrete dimensions and reinforcement. Make necessary changes in bar lengths and quantities.
2. Quantities are approximate and for design purposes only.
3. For boxes with span or height or cover greater than those shown in tables, a special design is required.
4. It is permissible to eliminate the 180° hooks on every other bar.
5. Provide paving notch when top is exposed and when pavement is concrete, and adjust quantities.
6. For design and details not shown, see Revised Standard Plan RSP D82.
7. Soil pressures shown are factored per AASHTO LRFD and include soil weight of fill over box, self weight of box and live load where applicable.
8. Stagger rebars for wall thickness less than 8".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE REINFORCED CONCRETE SINGLE BOX CULVERT

NO SCALE

RSP D80 DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN D80
DATED MAY 31, 2018 - PAGE 221 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D80

7-1-21

2018 REVISED STANDARD PLAN RSP D80

SPAN, S	4′						5′							
HEIGHT, H	2′		3′		4′		2′		3′		4′		5′	
MAXIMUM EARTH COVER	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′
Conc ROOF T_1	8"	8½"	8"	8½"	8"	8½"	7½"	10"	7½"	10"	8"	10"	8"	10"
Conc WALLS T_2	6"	6½"	6½"	7"	7"	8"	6"	6½"	6½"	7½"	7½"	8"	8"	9½"
Conc INVERT T_3	7"	9½"	7"	9½"	7"	9½"	7½"	11"	7½"	11"	8"	11"	8"	11"
REINFORCEMENT "a" SIZE BAR	#4	#4	#4	#4	#4	#4	#5	#4	#5	#4	#5	#4	#5	#4
"a" SPACING	5"	5½"	5"	5½"	5"	5½"	5½"	5½"	5½"	5½"	6"	5½"	6"	5½"
"b" SIZE BAR	#4	#4	#4	#4	#5	#4	#4	#4	#4	#4	#4	#4	#5	#4
"b" SPACING	5½"	6½"	6"	6"	6½"	6"	5"	5½"	5½"	6"	5½"	5½"	5½"	5"
"e" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
"e" SPACING	13½"	13½"	13½"	12½"	9½"	9½"	13½"	13½"	13½"	11"	11"	10"	8½"	8"
*"f" SIZE BAR	#5	#5	#5	#6	#6	#6	#6	#6	#6	#6	#6	#6	#6	#6
*"f" SPACING	4½"	4½"	4½"	5"	5"	4½"	4½"	5"	4½"	5"	5"	5"	6"	5"
"h" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
"h" SPACING	6"	13½"	7½"	13½"	8"	13½"	6"	13½"	6"	13½"	6"	13½"	6½"	13½"
DIM "B" ft-inch	2-8	2-6	2-8	2-7	2-10	2-8	2-10	2-9	2-10	2-10	2-11	2-10	3-3	3-1
DIM "Bm" ft-inch	2-5	2-10	2-9	2-10	2-10	2-10	2-11	3-0	2-11	3-1	3-0	3-1	3-2	3-2
QUANTITIES CONCRETE CF/LF	14.9	17.5	16.7	19.5	18.8	22.1	17.4	23.4	19.2	25.8	22.7	28.0	25.0	31.6
QUANTITIES REINFORCEMENT LB/LF	145	131	157	156	205	158	212	169	221	182	224	196	261	215
** SOIL PRESSURE (ksf), Ser	1.8	3.5	1.9	3.5	1.9	3.5	2.1	3.5	2.2	3.5	2.2	3.6	2.2	3.6
** SOIL PRESSURE (ksf), Str	2.9	4.4	2.9	4.5	2.9	4.5	2.9	4.5	2.9	4.5	2.9	4.5	2.9	4.6

SPAN, S	6′							
HEIGHT, H	3′		4′		5′		6′	
MAXIMUM EARTH COVER	10′	20′	10′	20′	10′	20′	10′	20′
Conc ROOF T_1	7½"	12"	7½"	11½"	8"	11½"	8"	11½"
Conc WALLS T_2	6½"	7½"	7"	8½"	7½"	10"	8½"	11"
Conc INVERT T_3	8½"	12½"	8½"	12½"	8½"	13"	8½"	12½"
REINFORCEMENT "a" SIZE BAR	#5	#4	#5	#4	#5	#4	#5	#4
"a" SPACING	5½"	5"	5½"	5"	5"	5"	5"	5"
"b" SIZE BAR	#5	#4	#4	#4	#5	#4	#5	#5
"b" SPACING	5½"	6"	5"	5½"	5"	5"	4½"	5"
"e" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4
"e" SPACING	13½"	11"	12½"	9½"	9"	7½"	7"	6½"
*"f" SIZE BAR	#7	#6	#7	#6	#7	#6	#7	#6
*"f" SPACING	5"	4½"	5"	4½"	5"	5"	5"	4½"
"h" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4
"h" SPACING	5"	13½"	5½"	13½"	6"	13½"	6"	13½"
DIM "B" ft-inch	3-1	3-2	3-1	3-1	3-3	3-2	3-6	3-8
DIM "Bm" ft-inch	3-8	3-3	3-8	3-4	3-9	3-5	3-10	3-5
QUANTITIES CONCRETE CF/LF	22.9	33.3	24.9	35.5	27.7	39.8	30.6	43.3
QUANTITIES REINFORCEMENT LB/LF	268	209	287	232	333	244	362	297
** SOIL PRESSURE (ksf), Ser	2.2	3.6	2.2	3.6	2.2	3.6	2.2	3.7
** SOIL PRESSURE (ksf), Str	2.9	4.5	2.9	4.6	2.9	4.6	3.0	4.6

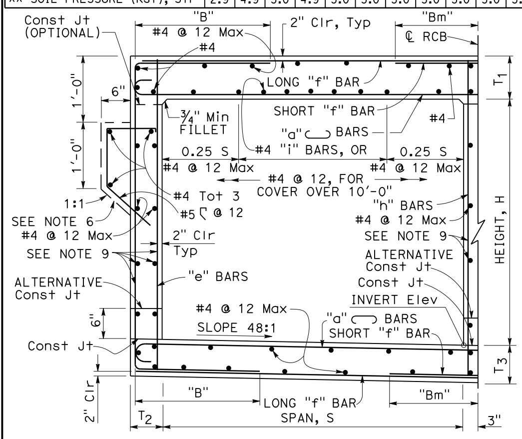
SPAN, S	7′									
HEIGHT, H	3′		4′		5′		6′		7′	
MAXIMUM EARTH COVER	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′
Conc ROOF T_1	9"	13½"	8½"	13½"	8½"	13"	8½"	13"	8½"	13"
Conc WALLS T_2	6½"	7½"	7½"	8"	7½"	9½"	8½"	11"	9½"	13"
Conc INVERT T_3	9½"	14"	9½"	14"	9½"	14"	9½"	14"	9½"	14½"
REINFORCEMENT "a" SIZE BAR	#5	#4	#5	#4	#5	#5	#5	#5	#5	#5
"a" SPACING	5½"	6"	5"	6"	5"	6"	5½"	6"	5½"	6"
"b" SIZE BAR	#5	#4	#5	#4	#5	#5	#5	#5	#6	#5
"b" SPACING	5"	5"	6"	5"	5"	5"	5"	5"	5½"	6"
"e" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
"e" SPACING	13½"	11"	11"	10"	10½"	8"	8"	6½"	6"	5½"
*"f" SIZE BAR	#7	#7	#7	#7	#7	#7	#7	#7	#7	#6
*"f" SPACING	5"	5"	5"	5"	5"	5"	5"	5"	5"	4½"
"h" SIZE BAR	#5	#4	#4	#4	#4	#4	#4	#4	#4	#4
"h" SPACING	5½"	13½"	5½"	13½"	5½"	13½"	6"	13½"	6½"	13½"
DIM "B" ft-inch	3-4	3-5	3-5	3-5	3-5	3-7	3-8	3-8	3-10	4-1
DIM "Bm" ft-inch	3-10	4-0	3-11	4-0	3-10	3-10	3-1	3-10	4-2	3-10
QUANTITIES CONCRETE CF/LF	28.8	41.4	30.6	44.3	32.4	47.3	35.4	50.8	38.7	57.6
QUANTITIES REINFORCEMENT LB/LF	327	264	333	276	355	311	377	338	406	348
** SOIL PRESSURE (ksf), Ser	2.2	3.6	2.2	3.6	2.2	3.6	2.3	3.7	2.3	3.7
** SOIL PRESSURE (ksf), Str	2.9	4.6	2.9	4.6	3.0	4.6	3.0	4.6	3.0	4.7

SPAN, S	8′									
HEIGHT, H	4′		5′		6′		7′		8′	
MAXIMUM EARTH COVER	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′
Conc ROOF T_1	10"	15"	9½"	15"	9½"	14½"	9½"	14½"	9½"	14½"
Conc WALLS T_2	6½"	8"	7½"	9½"	8½"	11½"	9½"	13"	11"	15"
Conc INVERT T_3	10½"	15½"	10½"	15½"	10½"	16"	10½"	16"	10½"	16"
REINFORCEMENT "a" SIZE BAR	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5
"a" SPACING	5½"	5½"	5½"	5½"	5½"	5½"	5½"	5½"	5½"	6½"
"b" SIZE BAR	#5	#5	#5	#5	#5	#5	#5	#5	#6	#5
"b" SPACING	5"	7"	5"	6"	5½"	5½"	5"	5½"	5"	5½"
"e" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5
"e" SPACING	13"	10"	11"	8"	9"	6"	7"	5½"	5½"	7"
*"f" SIZE BAR	#7	#7	#7	#7	#7	#7	#7	#7	#7	#7
*"f" SPACING	5"	5"	5"	5"	5"	5"	5"	5"	4½"	5"
"h" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
"h" SPACING	6½"	13½"	6½"	13½"	7"	13½"	7"	13½"	7½"	13½"
DIM "B" ft-inch	3-8	3-8	3-8	3-11	3-9	3-11	4-0	4-1	4-5	4-5
DIM "Bm" ft-inch	4-1	4-3	4-2	4-4	4-2	4-5	4-5	4-6	4-5	4-7
QUANTITIES CONCRETE CF/LF	36.4	52.7	38.3	56.4	41.4	61.3	44.7	66.1	49.2	72.3
QUANTITIES REINFORCEMENT LB/LF	373	339	388	367	399	395	429	414	509	441
** SOIL PRESSURE (ksf), Ser	2.2	3.7	2.3	3.7	2.3	3.7	2.3	3.8	2.3	3.8
** SOIL PRESSURE (ksf), Str	3.0	4.6	3.0	4.7	3.0	4.7	3.0	4.7	3.0	4.8

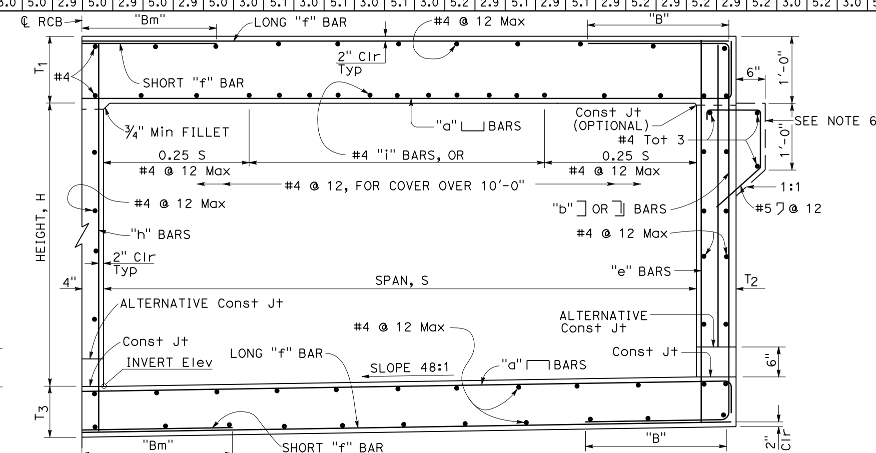
SPAN, S	10′											
HEIGHT, H	5′		6′		7′		8′		9′		10′	
MAXIMUM EARTH COVER	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′
Conc ROOF T_1	12"	19"	12"	18½"	11½"	18½"	11½"	18½"	11½"	18½"	11½"	18"
Conc WALLS T_2	8½"	10"	8½"	11½"	10"	12½"	11"	14"	11½"	15½"	13"	16½"
Conc INVERT T_3	10½"	19"	10½"	19"	10½"	19"	10½"	19"	11"	19½"	11"	19½"
REINFORCEMENT "a" SIZE BAR	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5
"a" SPACING	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"
"b" SIZE BAR	#5	#5	#5	#5	#6	#5	#6	#5	#7	#5	#7	#5
"b" SPACING	5½"	6"	4½"	5½"	5"	6½"	4½"	5½"	5"	5½"	4½"	4½"
"e" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#5
"e" SPACING	9½"	7½"	9½"	6½"	7½"	5½"	6½"	5"	5"	7"	6½"	6"
"f" SIZE BAR	#9	#7	#9	#7	#9	#7	#9	#7	#8	#7	#8	#7
"f" SPACING *	4½"	4½"	4½"	4½"	4½"	4½"	4½"	4½"	4½"	4½"	4½"	4½"
"h" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
"h" SPACING	7½"	10"	7½"	10"	8"	10"	8"	10"	8"	10"	8½"	10"
DIM "B" ft-inch	4-3	4-5	4-3	4-7	4-3	4-7	4-4	4-7	4-6	4-9	4-8	5-0
DIM "Bm" ft-inch	5-10	4-9	5-10	4-9	5-10	4-10	6-1	4-11	6-3	5-0	5-7	5-2
QUANTITIES CONCRETE CF/LF	51.8	82.4	53.9	86.1	57.3	90.4	61.3	95.9	65.6	102.9	71.2	107.4
QUANTITIES REINFORCEMENT LB/LF	614	465	642	491	690	512	727	532	715	557	773	608
** SOIL PRESSURE (ksf), Ser	2.2	3.9	2.3	3.9	2.3	3.9	2.3	3.9	2.3	4.0	2.4	4.0
** SOIL PRESSURE (ksf), Str	2.9	4.9	3.0	4.9	3.0	5.0	3.0	5.0	3.0	5.0	3.0	5.0

SPAN, S	12′													
HEIGHT, H	6′		7′		8′		9′		10′		11′		12′	
MAXIMUM EARTH COVER	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′
Conc ROOF T_1	13½"	22"	13½"	22"	13½"	22"	13"	22"	13"	21½"	14½"	21½"	14½"	21½"
Conc WALLS T_2	8½"	11½"	10"	13"	11"	14½"	12"	16"	13"	16½"	14½"	17½"	16"	19½"
Conc INVERT T_3	12½"	22"	12"	22"	12"	22½"	12"	22½"	12½"	22½"	13½"	23"	13½"	22½"
REINFORCEMENT "a" SIZE BAR	#5	#6	#5	#6	#5	#6	#5	#6	#5	#6	#5	#6	#5	#6
"a" SPACING	4½"	5½"	4½"	5½"	4½"	5½"	4½"	5½"	4½"	5½"	5"	5½"	5½"	5½"
"b" SIZE BAR	#5	#5	#5	#5	#6	#5	#7	#5	#7	#5	#7	#5	#7	#6
"b" SPACING	5"	4½"	4½"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	4½"	5"
"e" SIZE BAR	#4	#4	#4	#4	#4	#5	#4	#5	#4	#5	#5	#5	#5	#5
"e" SPACING	9½"	6"	7½"	5½"	6½"	7½"	6"	6½"	5"	6"	6½"	5"	5½"	4½"
"f" SIZE BAR	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#8	#8	#8	#8
"f" SPACING *	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"
"h" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
"h" SPACING	7"	10"	7½"	10"	7½"	10"	8"	10"	8"	10"	8"	10"	8"	10"
DIM "B" ft-inch	4-10	5-2	4-10	5-2	4-10	5-3	4-10	5-3	4-10	5-2	5-4	5-9	5-4	5-11
DIM "Bm" ft-inch	6-3	5-9	6-4	5-10	6-4	5-11	6-4	6-0	6-6	6-0	6-1	6-2	6-1	6-4
QUANTITIES CONCRETE CF/LF	69.0	113.0	72.3	118.2	76.3	125.1	79.6	131.4	85.4	134.7	97.1	141.7	103.8	149.4
QUANTITIES REINFORCEMENT LB/LF	733	671	766	692	817	718	886	744	919	764	861	804	921	881
** SOIL PRESSURE (ksf), Ser	2.2	4.0	2.3	4.0	2.3	4.0	2.3	4.0	2.3	4.1	2.4	4.1	2.4	4.1
** SOIL PRESSURE (ksf), Str	2.9	5.0	2.9	5.0	2.9	5.0	3.0	5.1	3.0	5.1	3.0	5.1	3.0	5.2

SPAN, S	14′															
HEIGHT, H	7′		8′		9′		10′		11′		12′		13′		14′	
MAXIMUM EARTH COVER	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′
Conc ROOF T_1	16½"	25½"	16½"	25½"	16½"	25"	16"	25"	16"	24½"	16"	24½"	16"	24½"	15½"	24½"
Conc WALLS T_2	10"	13"	11"	14½"	12"	16½"	13½"	16½"	14½"	17½"	16"	19½"	16½"	21"	19"	23½"
Conc INVERT T_3	15"	25"	15"	25½"	15"	25½"	15"	25½"	15"	25½"	15"	26"	15"	26"	15½"	26"
REINFORCEMENT "a" SIZE BAR	#5	#6	#5	#6	#5	#6	#5	#6	#5	#6	#5	#6	#5	#6	#5	#6
"a" SPACING	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"
"b" SIZE BAR	#5	#6	#5	#6	#5	#6	#6	#6	#6	#6	#7	#6	#7	#6	#7	#6
"b" SPACING	5"	6"	5"	5½"	4½"	5½"	5"	5½"	4½"	5½"	5"	5½"	4½"	5"	4½"	4½"
"e" SIZE BAR	#4	#4	#4	#5	#4	#5	#4	#5	#5	#5	#5	#5	#5	#5	#6	#6
"e" SPACING	7½"	5½"	6½"	7½"	6"	6½"	5"	6½"	7"	5½"	6"	5"	4½"	4½"	6"	5½"
"f" SIZE BAR	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#8	#8
"f" SPACING *	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	5"	4½"	4½"	4½"
"h" SIZE BAR	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
"h" SPACING	10"	10"	10"	10"	9½"	10"	9"	10"	9½"	10"	9½"	10"	9½"	10"	9½"	10"
DIM "B" ft-inch	5-4	5-9	5-6	5-10	5-7	5-9	5-7	6-0	5-9	5-11	5-10	6-2	6-1	6-5	6-2	6-7
DIM "Bm" ft-inch	6-8	6-3	6-9	6-4	6-9	6-5	6-10	6-5	7-0	6-6	7-2	6-7	7-3	6-10	5-7	6-11
QUANTITIES CONCRETE CF/LF	96.0	149.6	100.1	156.8	104.5	163.0	109.0	166.4	114.2	171.0	121.0	180.0	125.6	189.5	135.9	201.3
QUANTITIES REINFORCEMENT LB/LF	804	833	824	874	856	901	921	920	968	950	1046	984	1126	1041	1107	1114
** SOIL PRESSURE (ksf), Ser	2.3	4.1	2.3	4.1	2.3	4.1	2.3	4.1	2.3	4.1	2.3	4.2	2.4	4.2	2.4	4.3
** SOIL PRESSURE (ksf), Str	2.9	5.1	2.9	5.1	2.9	5.2	2.9	5.2	2.9	5.2	3.0	5.2	3.0	5.3	3.0	5.3



TYPICAL SECTION SPANS 4′ THRU 8′



TYPICAL SECTION SPANS 10′ THRU 14′

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

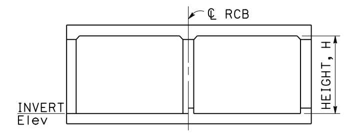
REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Carl M. Duan
No. C59976
Exp. 6-30-22
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 ____________



FLAT INVERT ALTERNATIVE

"i" BARS, FOR EARTH COVERS UP TO AND INCLUDING 10′-0"								
SPAN	4′	5′	6′	7′	8′	10′	12′	14′
NUMBER	5	6	8	10	13	14	16	19

* SEE NOTE 5
** SEE NOTE 8

NOTES:

1. For boxes with span or height less than any of those shown in table, use next greater size box concrete dimensions and reinforcement. Make necessary changes in bar lengths and quantities.
2. For boxes with span or height or cover greater than those shown in tables, a special design is required.
3. Quantities are approximate and for design purposes only.
4. It is permissible to eliminate the 180° hooks on every other "e" bar.
5. Spacing shown is between long and short "f" bars.
6. Provide paving notch when top is exposed and when pavement is concrete, and adjust quantities.
7. For design and details not shown, see Revised Standard Plan RSP D82.
8. Soil pressures shown are factored per AASHTO LRFD and include soil weight of fill over box, self weight of box and live load where applicable.
9. Stagger rebars for wall thickness less than 8".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE REINFORCED CONCRETE DOUBLE BOX CULVERT

NO SCALE

RSP D81 DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN D81 DATED MAY 31, 2018 - PAGE 222 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D81

2018 REVISED STANDARD PLAN RSP D81

7-1-21

DESIGN NOTES:

Design Specifications:
AASHTO LRFD Bridge Design Specifications, 8th Edition and CA Amendments.

Loading:
Live load: (AASHTO LRFD 3.6.1.2) and CA Amendments 3.6.1.8:
HL-93 design truck or design tandem
P15 Permit Design Vehicle

Impact Factor: (Apply to roof slab only)
$IM = 33(1.0-0.125D_E) \geq 0\%$ (AASHTO LRFD 3.6.2.2)
D_E = minimum depth of earth cover

Earth load:
Earth pressure for two conditions:
140 pcf vertical, 36 pcf horizontal
140 pcf vertical, 120 pcf horizontal

Load Factors:
AASHTO-CA BDS-8 Table 3.4.1.1 & Table 3.4.1.2

Unit stresses:
f'_c = 3600 psi
f_y = 60,000 psi

Distribution "i" bars:
Up to and including 10'-0" cover
Express as a percentage of main positive reinforcement required: $\frac{100}{\sqrt{S}}$, Max 50%,
Over 10'-0" cover, # 4 @ 12 maximum

Shear:
For Slabs less than 16" thick and fill ≥ 2'-0"
$V_c = \{0.0676\lambda\sqrt{f'_c}+4.6\frac{A_s}{bd_e}\frac{Vud_e}{Mu}\}bd_e \leq 0.126\lambda\sqrt{f'_c}bd_e$(Kips)
V_c shall not be less than $0.0948\lambda\sqrt{f'_c}$ for frame
For all other members
$Vc = 0.0316\beta\lambda\sqrt{f'_c}bd_v$(kips)
β = 2.0 for members less than 16" thick
= based on iterative θ and β method for all other cases

Control of cracking by distribution of reinforcement:
Class 2 exposure environment Service Limit State

CONSTRUCTION NOTES:

Construction loads:
Strutting required as shown on Standard Plan D88. Strutting may be required on culvert extensions when existing parapet is removed.

Expansion joints:
Invert:
No expansion joints shall be permitted.

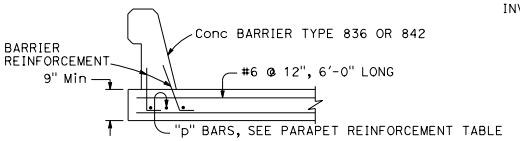
Roof and Walls:
When cover is less than span length-
Place ½" premolded expansion joint filler at 30'-0" ± centers outside the paved roadway lanes and place Bridge Detail 3-2, Revised Standard Plan RSP B0-3, at 30'-0" centers under paved roadway lanes.
When cover is more than span length-
Place ½" premolded expansion joint filler at 30'-0"± centers and additional ½" premolded expansion joints at locations of change in foundation character, as directed by the Engineer.

Construction joints:
Temporary joints may be permitted if normal (or radial) to ℄ of RCB. Otherwise, the contractor is to submit a proposal for consideration.

Cutoff walls:
4'-0" cutoff walls are to be provided at inlet and/or outlet unless adjacent channel is lined and unless otherwise shown. These walls are to be extended if scour conditions warrant.

Earthwork:
See Standard Plan A62E.

Backfill:
See Standard Specifications, except that the difference in level of backfill (against outside walls) shall not exceed 2'-0".



BARRIER SECTION (30'-0" MINIMUM)

GENERAL NOTES:

Designation:
Standard single or multiple box culverts are shown on plans as span times height with maximum cover over roof thus: 8' x 5' RCB with 10' or double 10' x 5' RCB with 20', followed by alternatives.

Alternatives:
Single cell: Invert will be sloped unless "trapezoidal invert", "flat invert" or "V invert" is included in designation.
Multiple cell: Invert will be vee unless "flat invert" is specified. Ends of culvert will be rounded unless "square ends" are designated. Parapets will be as shown unless designated in plans. Such designations may be different for inlet and outlet ends.

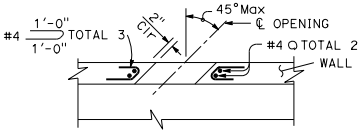
Quantities:
Quantities do not include the following:
- Concrete for parapet, paving notches and cut-off wall.
- Reinforcement for 2% splices, parapets, paving notches, cut-off wall and additional required bars for exposed top slab.

Reinforcement placement:
Main reinforcement is to be placed transversely or, for curved culverts, radially. When radial, reinforcing spacing of the "a" and "f" bars is measured along the centerline. Stagger splices not shown. Hooks may be rotated or tilted, as necessary, for clearance.

Special reinforcement coverage:
Box standard plans are not to be used for culverts in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

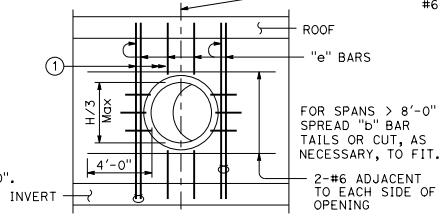
Special design:
Required for culverts with conditions, loads, design bearing pressures or sizes greater than those given on this plan or Revised Standard Plans RSP D80 and RSP D81. Also required for multiple cell culverts with unequal spans. For culverts with railroad loading, see the current AREMA design specification.

Three or more cells:
For culverts with more than two cells, use dimensions and reinforcement for the standard "double box culvert". Reduce spacing of "f" bars and "b" bars by ½" and adjust quantities accordingly.



PART PLAN-SECTION

BRIDGE DETAIL 3-2 REVISED STANDARD PLAN RSP B0-3, NO EXPANSION JOINT WITHIN 4'-0" OF ℄ OPENING

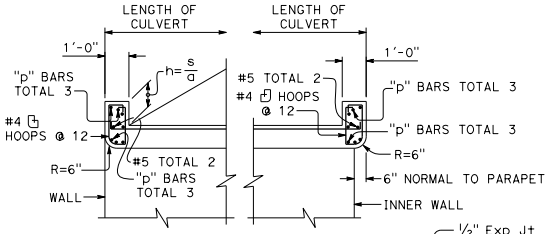


LONGITUDINAL SECTION

UTILITY OPENING-WALL

H = Height of Box

① Adjacent to each side of the opening, place additional bars equivalent to half the interrupted main reinforcement.



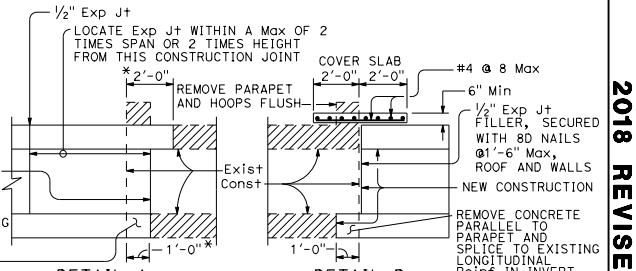
SINGLE SPAN MULTIPLE SPAN

PARAPET DETAIL

s = Clear span (ft)
a = 12 cosine skew angle
h = Height, 1'-0" Min

PARAPET "p" BARS			
SKEW ANGLE / SPAN	0° TO 15°	16° TO 30°	31° TO 45°
4'	#4	#4	#4
6'	#4	#4	#5
8'	#4	#5	#6
10'	#5	#6	#7
12'	#6	#7	#8
14'	#7	#8	#9

PARAPET REINFORCEMENT



DETAIL A

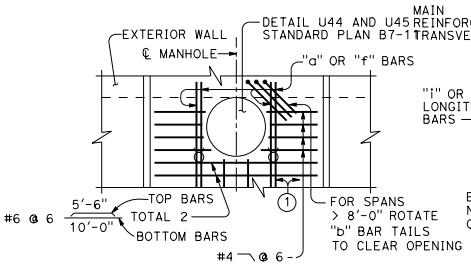
20° maximum skew as shown. If existing longitudinal and transverse reinforcing bars in top slab are lap spliced with new longitudinal and transverse reinforcing bars, the 20° skew may be exceeded. Lap splicing may require removal of top slab in excess of 2'-0" shown.

DETAIL B

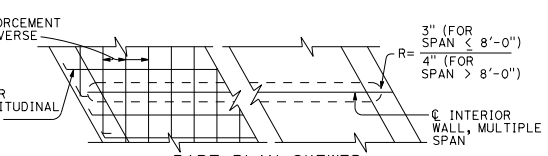
Single cell only, no skew allowed, 1'-0" minimum cover.

* Measured perpendicular to parapet

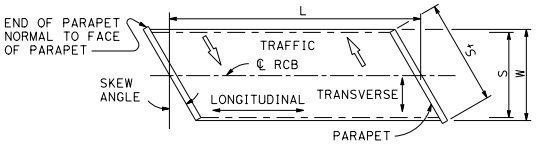
CULVERT EXTENSION



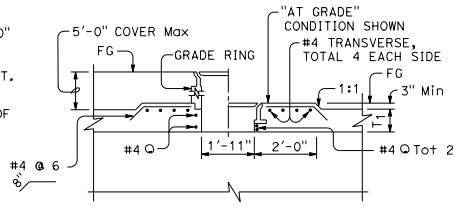
PART PLAN



PART PLAN-SKEWED



RCB TERMINOLOGY



PART LONGITUDINAL SECTION

MANHOLE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE REINFORCED CONCRETE BOX CULVERT MISCELLANEOUS DETAILS

NO SCALE

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

Carl M. Duch
No. C59976
Exp. 6-30-22
CIVIL
STATE OF CALIFORNIA

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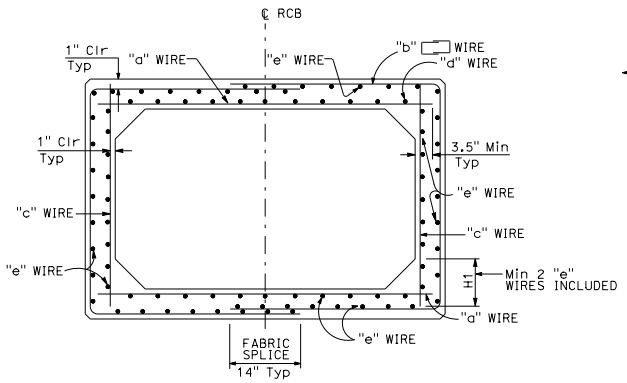
TO ACCOMPANY PLANS DATED _____

RSP D82 DATED OCTOBER 15, 2021 SUPERSEDES RSP D82 DATED OCTOBER 19, 2018 AND STANDARD PLAN D82 DATED MAY 31, 2018 - PAGE 223 OF THE STANDARD PLANS BOOK DATED 2018.

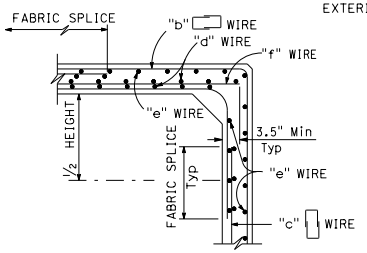
REVISED STANDARD PLAN RSP D82

2018 REVISED STANDARD PLAN RSP D82

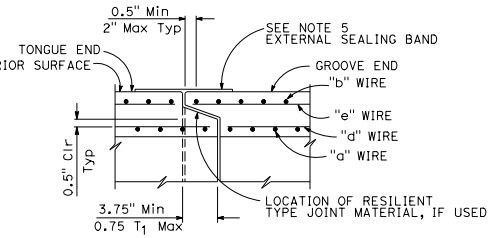
7-1-21



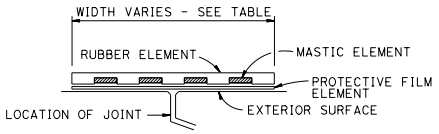
TYPICAL SECTION - SPANS 4'-0" THRU 12'-0"



ALTERNATIVE DETAILING OPTION



END JOINT DETAIL



EXTERNAL SEALING BAND SCHEMATIC

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Carl W. Duan — No. C59976 — Exp. 6-30-20 CIVIL — STATE OF CALIFORNIA

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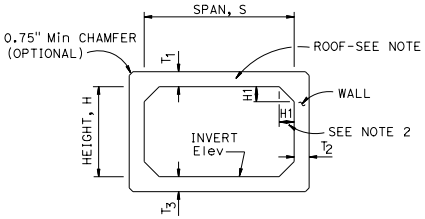
TO ACCOMPANY PLANS DATED _____



SCHEMATIC

TABLE	
SPAN	EXTERNAL SEALING BAND WIDTH, Min
4'-6'	9"
7'-8'	11"
10'-12'	13"

SPAN, S			4'						5'								6'								7'							
HEIGHT, H			2'		3'		4'		2'		3'		4'		5'		3'		4'		5'		6'		3'		4'		5'		6'		7'	
MAXIMUM EARTH COVER			10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'
CONCRETE (INCH)	ROOF	T_1	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	7"	7"	7"	7"	7"	7"	7"	7"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"
	SIDE WALL	T_2	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	7"	7"	7"	7"	7"	7"	7"	7"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"
	INVERT	T_3	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	7"	7"	7"	7"	7"	7"	7"	7"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"
MINIMUM WELDED WIRE FABRIC ($inch^2/ft$)		"a"	.33	.47	.34	.49	.34	.50	.40	.62	.41	.62	.42	.64	.43	.64	.44	.67	.45	.70	.46	.71	.47	.72	.47	.72	.48	.75	.50	.78	.50	.79	.51	.80
		"b"	.23	.28	.23	.25	.21	.23	.26	.36	.24	.36	.24	.33	.24	.30	.28	.44	.27	.40	.27	.37	.27	.38	.33	.52	.31	.48	.30	.45	.30	.43	.30	.48
		"c"	.11	.11	.11	.12	.18	.24	.11	.11	.11	.11	.13	.23	.24	.34	.11	.11	.11	.12	.19	.27	.27	.42	.11	.11	.11	.11	.13	.20	.26	.31	.30	.50
		"d"	.16	.11	.16	.11	.16	.11	.17	.11	.18	.11	.18	.11	.18	.11	.17	.11	.18	.11	.18	.11	.18	.11	.17	.11	.17	.11	.18	.11	.18	.11	.18	.11
		"e"	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
		"f"	.22	.36	.23	.37	.22	.26	.29	.51	.30	.51	.29	.41	.26	.30	.33	.56	.34	.58	.27	.44	.21	.30	.36	.61	.37	.64	.37	.57	.25	.48	.21	.30
* QUANTITY	Conc	CY/LF	.31		.34		.38		.37		.41		.44		.48		.51		.56		.60		.64		.63		.68		.73		.78		.83	
	Reinf	LB/LF	35	41	39	45	45	51	49	58	49	62	54	69	62	78	60	79	64	83	72	93	80	107	72	98	76	102	81	110	92	120	101	143
** SOIL PRESSURE (ksf)			2.3	4.4	2.4	4.5	2.4	4.5	3.1	4.4	3.1	4.5	3.1	4.5	3.2	4.5	2.7	4.5	2.8	4.5	2.8	4.6	2.8	4.6	2.5	4.5	2.5	4.6	2.5	4.6	2.5	4.6	2.6	4.6

SPAN, S			8'								10'								12'													
HEIGHT, H			4'		5'		6'		7'		8'		5'		6'		7'		8'		9'		10'		6'		7'		8'		9'		10'	
MAXIMUM EARTH COVER			10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'
CONCRETE (INCH)	ROOF	T_1	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
	SIDE WALL	T_2	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
	INVERT	T_3	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	8.5"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
MINIMUM WELDED WIRE FABRIC ($inch^2/ft$)		"a"	.55	.87	.56	.90	.57	.92	.58	.93	.58	.94	.66	1.07	.67	1.10	.69	1.13	.70	1.14	.70	1.16	.71	1.16	.73	1.21	1.21	1.24	.77	1.27	1.24	1.29	1.27	1.31	.78	1.32	1.29	1.32
		"b"	.37	.59	.35	.55	.33	.52	.33	.52	.36	.57	.45	.74	.43	.70	.41	.67	.40	.64	.43	.67	.48	.67	.51	.85	.85	.81	.49	.77	.81	.74	.77	.77	.53	.79	.74	.79
		"c"	.11	.11	.11	.11	.20	.31	.31	.42	.38	.62	.11	.11	.11	.11	.22	.31	.36	.42	.40	.62	.54	.86	.11	.11	.11	.11	.23	.30	.37	.42	.42	.60	.54	.82	.42	1.06
		"d"	.19	.11	.19	.11	.20	.11	.20	.11	.20	.11	.20	.11	.20	.11	.21	.11	.21	.11	.21	.11	.21	.11	.20	.11	.20	.11	.21	.11	.22	.11	.22	.11	.22	.11	.22	.11
		"e"	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
		"f"	.44	.76	.45	.79	.37	.61	.27	.52	.20	.31	.55	.96	.56	.99	.47	.81	.34	.73	.31	.53	.16	.30	.62	1.10	1.10	1.13	.64	.97	1.13	.87	.97	.71	.40	.50	.87	.26
* QUANTITY	Conc	CY/LF	.78		.83		.88		.94		.99		1.10		1.17		1.23		1.29		1.35		1.41		1.56		1.63		1.70		1.78		1.85		1.93		2.00	
	Reinf	LB/LF	93	129	97	133	105	148	117	161	131	189	133	191	138	196	148	212	191	225	176	253	201	282	174	255	179	261	191	279	207	293	223	323	249	357	281	393
** SOIL PRESSURE (ksf)			2.5	4.6	2.5	4.6	2.5	4.6	2.5	4.6	2.5	4.6	3.8	4.6	3.8	4.7	3.8	4.7	4.6	4.7	3.9	4.7	3.9	4.8	3.6	4.7	3.7	4.7	3.7	4.8	3.7	4.8	3.7	4.8	3.8	4.9	3.8	4.9

* See Note 3 ** See Note 6

NOTES:

1. The inside and outside surfaces of the RCB roof shall be marked "TOP".
2. H1 minimum shall equal the wall thickness. H1 maximum shall be 8" for spans through 8' and 14" for spans over 8'.
3. Quantities are approximate and for design purposes only.
4. For design and details not shown see Revised Standard Plan RSP D83B.
5. For external sealing band applications see Revised Standard Plan RSP A62G.
6. Soil pressures shown are factored per AASHTO LRFD and include soil weight of fill over box, self weight of box and live load where applicable.
7. If earth cover is less than 2', the concrete cover for the reinforcement at the top of top slab shall be 2", T1 in the Table shall have an additional 1" and quantities shall be revised accordingly in this case.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE BOX CULVERT

NO SCALE

RSP D83A DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN D83A
DATED MAY 31, 2018 - PAGE 224 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D83A

2018 REVISED STANDARD PLAN RSP D83A

7-10-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Carl W. Duan
No. C59976
Exp. 6-30-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

DESIGN NOTES:

Specifications:

AASHTO LRFD Bridge Design Specifications, 6th Edition with California Amendments.

Earth load:

Earth pressures for two conditions:
140 pcf Vert, 36 pcf Horiz
140 pcf Vert, 120 pcf Horiz

Unit stresses:

f'c = 5.0 ksi
fy = 65.0 ksi for weld wire fabric
n = 7

Shear:

Based on

$V_c = \{2.14\sqrt{f'_c} + 4600 \frac{A_s}{bd_e}\frac{V_u d_e}{M_u}\} b.d_e \leq 4.0\sqrt{f'_c} b.d_e$ (Pounds)

V_c shall not be less than $3.00\sqrt{f'_c} b.d_e$
for frame members and $2.5\sqrt{f'_c} b.d_e$
for simply supported members.

Exclusion:

Axial loading on the members has not been considered.

GENERAL NOTES:

Designation:

Standard single or multiple precast box culverts are shown on the plans as span times height with maximum cover over roof thus: 8' x 5' RCB with 10'-0" or double 10' x 5' RCB with 20'-0", followed by alternatives.

Alternatives:

Single cell:

Standard dimensions of AASHTO Material Specification 'M259' or 'M273'.

Multiple cell:

Constructed by placing single cells adjacent to each other. Inlet and outlet ends of culvert will be rounded unless square ends are designated. Parapet will be shown unless designated in plans. Such designation may be different for inlet and outlet ends.

Limitations:

Where the overfill is less than 12", Precast RCB culverts are not to be used. Precast RCB culverts are not to be used in siphon or pressurized installations unless appropriate "watertight" jointing is provided.

Special reinforcement coverage:

Precast RCB culvert standard plans are not to be used in a corrosive environment or where there is a severe abrasive flow condition or freeze-thaw locations.

Special design:

Required for culvert with different conditions, loads or design bearing pressures greater than those given on these plans. Required for culverts where end details need higher skew angles, higher parapets or barrier sections.

CONSTRUCTION NOTES:

Cutoff walls:

4'-0" Cutoff walls are to be provided at inlet and/or outlet unless channel is lined and unless otherwise shown. These walls are to be extended if scour conditions warrant. See Standard Plans D84, D85 and D86A.

Wingwalls:

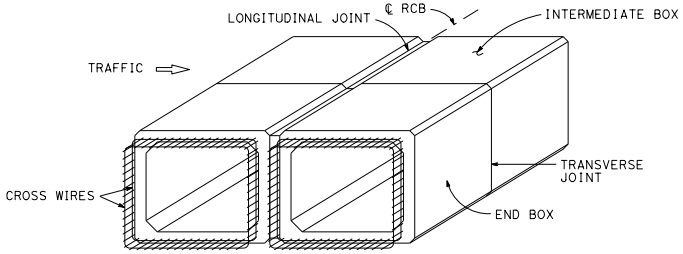
Wingwalls shall be cast-in-place and shall conform to standard plan details for box culvert wingwalls. See Standard Plans D84, D85 and D86A.

Earthwork:

See Revised Standard Plan RSP A62G.

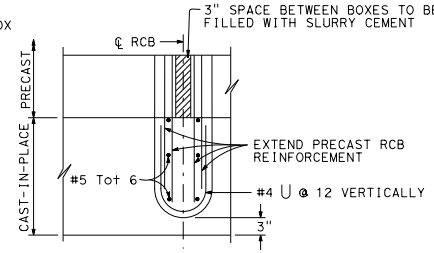
Construction loads:

Strutting may be required near temporary ends. For construction loads on culverts, See Standard Plan D88.



PRECAST RCB TERMINOLOGY

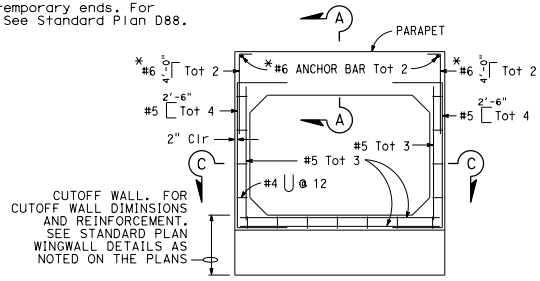
NOTE: Inner and outer reinforcement to be exposed as required to tie to cast-in-place construction. A minimum of two cross wires shall be exposed on all sides.



PARTIAL PLAN INTERIOR WALL MULTICELL CULVERT

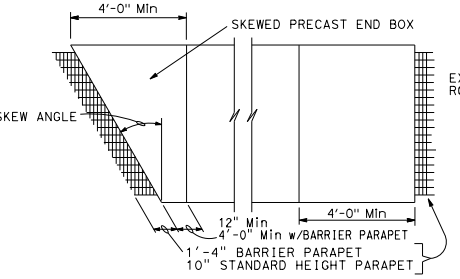
PARAPET "P" BARS			
SKEW ANGLE / SPAN	0° TO 15°	16° TO 30°	31° TO 45°
4'-0"	#5	#5	#5
5'-0"	#5	#5	#6
6'-0"	#6	#6	#6
7'-0"	#7	#7	#7
8'-0"	#7	#7	#8
10'-0"	#8	#8	#9
12'-0"	#9	#9	#10

BARRIER PARAPET REINFORCEMENT



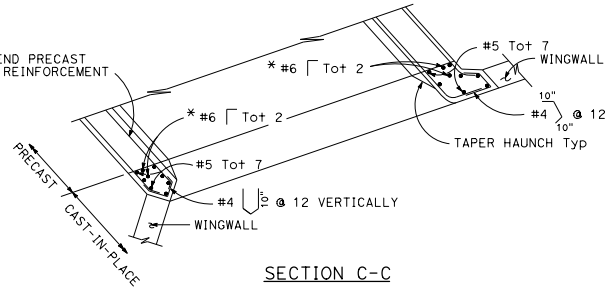
CAST-IN-PLACE END ELEVATION

* Reinforcing required for barrier parapet application only.



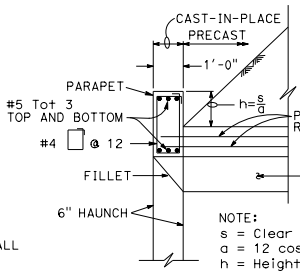
PARTIAL PLAN VIEW

For illustrative purposes only.
For correct skew direction see plans.

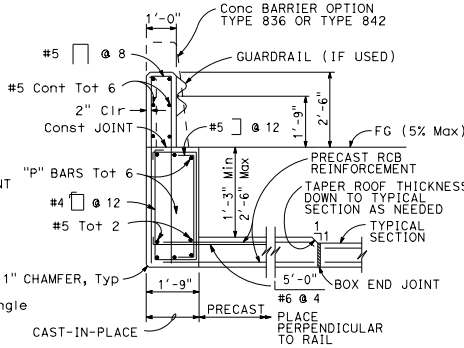


SECTION C-C

* Reinforcing required for barrier parapet application only.



SECTION A-A
(Standard Height Parapet)



SECTION A-A
(Barrier Parapet)

TYPICAL CULVERT END DETAILS

For wall and invert reinforcement not shown, See "End Elevation" detail.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE BOX CULVERT MISCELLANEOUS DETAILS

RSP D83B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN D83B DATED MAY 31, 2018 - PAGE 225 OF THE STANDARD PLANS BOOK DATED 2018.

NO SCALE

REVISED STANDARD PLAN RSP D83B

2018 REVISED STANDARD PLAN RSP D83B

4-10-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Carl M. Duan
No. C59976
Exp. 6-30-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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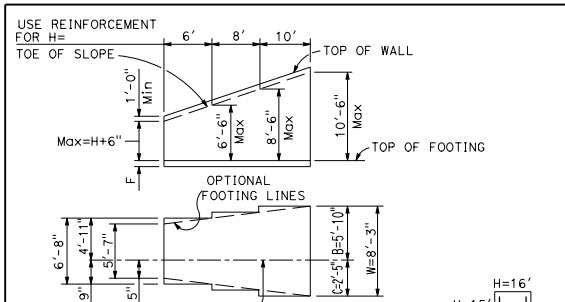
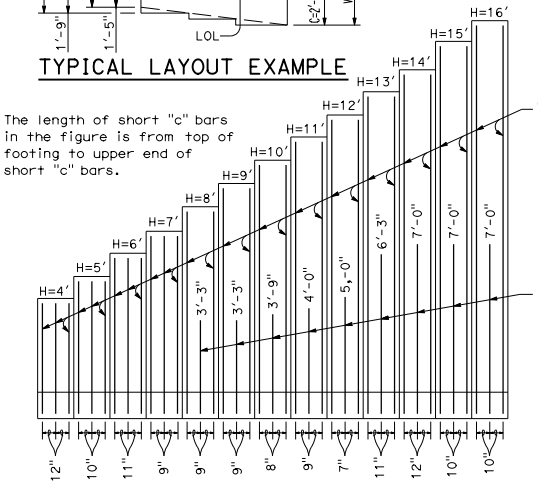
TO ACCOMPANY PLANS DATED _____

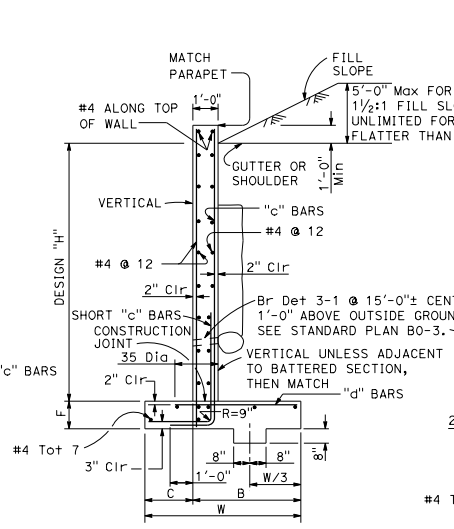
2018 REVISED STANDARD PLAN RSP D84



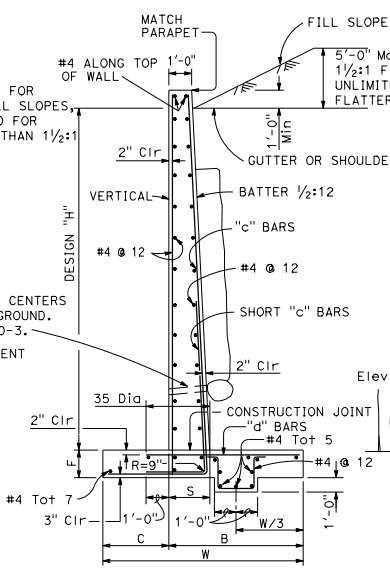
TYPICAL LAYOUT EXAMPLE



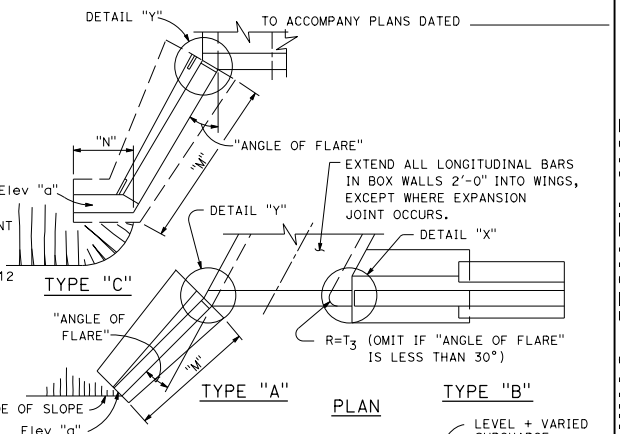
REINFORCED CONCRETE WINGWALLS

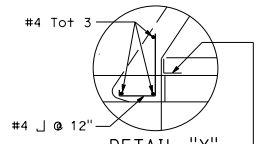


TYPICAL SECTION H=4' THRU 12'

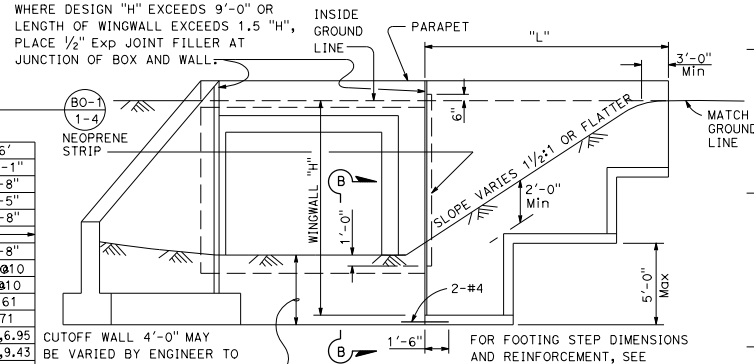


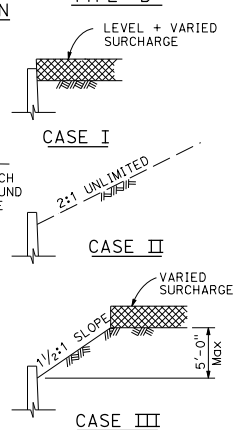
TYPICAL SECTION H=13' THRU 16'





DETAIL "X"





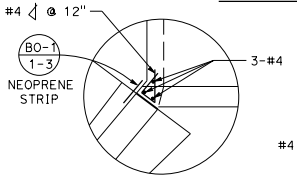
DETAIL OF DESIGN LOADING CASES

"H"	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
W	5'-7"	6'-2"	6'-8"	7'-1"	7'-6"	7'-10"	8'-3"	8'-8"	9'-2"	9'-7"	10'-2"	10'-6"	11'-1"
C	1'-5"	1'-7"	1'-9"	1'-11"	2'-1"	2'-3"	2'-5"	2'-8"	2'-10"	3'-1"	3'-4"	3'-6"	3'-8"
B	4'-2"	4'-7"	4'-11"	5'-2"	5'-5"	5'-7"	5'-10"	6'-0"	6'-4"	6'-6"	6'-10"	7'-0"	7'-5"
F	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-3"	1'-5"	1'-5"	1'-6"	1'-6"	1'-8"
BATTER	None									½:12			
S	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6½"	1'-7"	1'-7½"	1'-8"
"c" BARS	#4@12	#4@10	#5@11	#5@9	#6@9	#7@9	#7@8	#8@9	#7@7	#8@11	#9@12	#10@10	#10@10
"d" BARS	#5@12	#5@10	#6@11	#6@9	#6@9	#6@9	#6@8	#7@9	#6@7	#7@11	#8@12	#8@10	#9@10
* Conc CY/LF	0.46	0.52	0.58	0.64	0.69	0.74	0.80	0.88	1.00	1.25	1.37	1.45	1.61
* Reinf LB/LF	26	32	41	50	59	70	81	95	102	112	120	156	171
** CASE I qu (ksf), B'(ft)	3.75,2.24	3.66,2.69	3.59,3.11	3.56,3.49	3.52,3.89	3.52,4.21	3.69,4.46	3.77,4.77	3.89,5.17	3.92,5.61	3.92,6.18	4.04,6.40	4.13,6.95
** CASE II qu (ksf), B'(ft)	1.16,5.58	1.33,6.13	1.51,6.55	1.69,6.86	1.88,7.16	2.08,7.33	2.29,7.60	2.50,7.86	2.77,8.14	2.97,8.47	3.18,8.93	3.41,9.05	3.70,9.43
** CASE III qu (ksf), B'(ft)	1.26,5.46	1.36,5.97	1.49,6.37	1.64,6.66	1.79,6.93	1.95,7.08	2.11,7.33	2.28,7.55	2.50,7.84	2.66,8.12	2.81,8.59	3.00,8.69	3.22,9.10

B'=B-(2) eccentricity, B' is the effective footing width.
* Quantities include 1'-0" extension above the design "H" limit.
** Soil bearing pressure shown in the table is the equivalent uniform pressure per AASHTO LRFD - 11.6.3.2

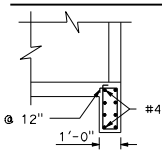
NOTES:

Unit Stresses: f'c=3,600 psi, fy=60,000 psi
Earth density: 120 pcf
Equivalent fluid pressure: 36 pcf
Elevations, length and angle of flare of wings may be varied by the Engineer to suit conditions encountered in the field.
Dimensions "H","L","M","N", Elevation "a" and "Angle of flare" (as applicable) are shown on the plans.
Wall height may be exceeded by 6" before going to next greater "H".
Eliminate cutoff wall if adjacent channel is paved and skew is 20° maximum.
For wall offset values, see Standard Plan B3-5.



DETAIL "Y"

STRAIGHT WINGWALLS



SECTION B-B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BOX CULVERT WINGWALLS TYPES A, B AND C

NO SCALE

RSP D84 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN D84 DATED MAY 31, 2018 - PAGE 226 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D84

6-15-18

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

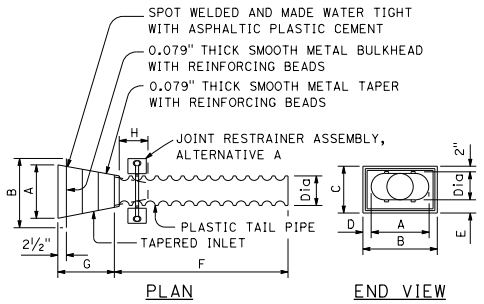
REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

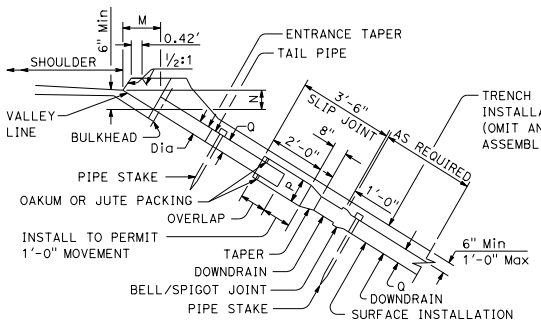
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
Bruce D. Swanger
No. C61257
Exp. 6-30-23
CIVIL
STATE OF CALIFORNIA

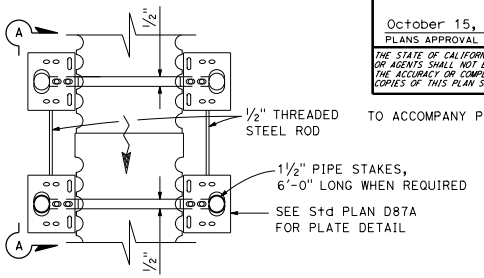
TO ACCOMPANY PLANS DATED



ENTRANCE TAPER - TYPE 1



SECTION - TYPE 1



PLAN

PLASTIC PIPE DIMENSIONS AS TABULATED BELOW.

P	10"	15"	18"	21"	27"
Q	8"	12"	15"	18"	24"

Dia	Min L	M	N
8"	10'-0"	1'-6"	8"
12"	15'-0"	1'-8"	1'-0"
15"	25'-0"	2'-0"	1'-3"
18"	30'-0"	2'-6"	1'-4"
24"	40'-0"	3'-0"	1'-6"

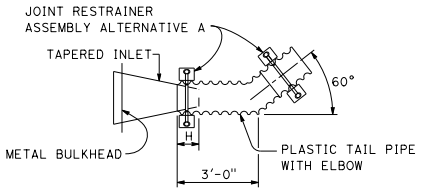
TAPER JOINTS MAY BE WELDED OR RIVETED.
DIMENSIONS TO BE AS TABULATED BELOW.

Dia	A	B	C	D	E	F	G	H
8"	1'-4"	2'-1 1/2"	1'-3"	4 3/4"	5"	6'-0"	2'-0"	1'-0"
12"	1'-6"	2'-1 1/2"	1'-7"	3 3/4"	5"	6'-0"	2'-0"	1'-0"
15"	1'-9"	2'-6"	1'-11"	4 1/2"	6"	6'-0"	2'-0"	1'-2"
18"	2'-0"	2'-10"	2'-3"	5"	7"	6'-0"	2'-0"	1'-4"
24"	2'-10"	3'-10"	2'-11"	6"	9"	4'-0"	4'-0"	1'-6"

ENTRANCE TAPER - TYPE 1

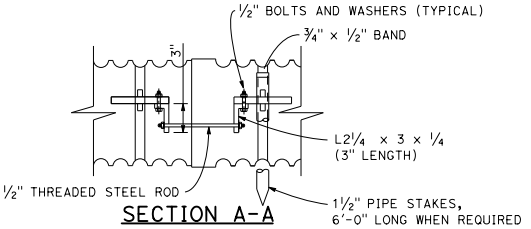
NOTES:

1. Cable or slip joint to be used when specified.
2. Slip joint to be omitted when completely buried.



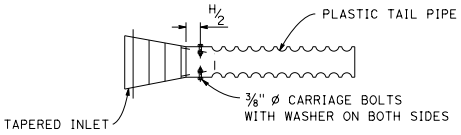
Tapered inlet of same construction and dimensions as type 1.

ENTRANCE TAPER - TYPE 2



SECTION A-A
PLASTIC PIPE JOINT RESTRAINER ASSEMBLY

Alternative B

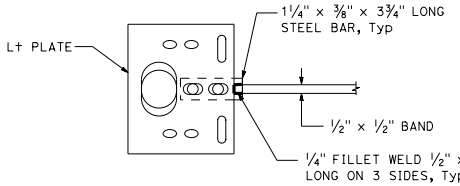


PLAN

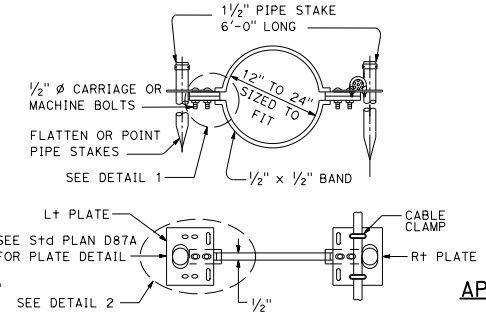
Alternative tail pipe to entrance pipe connection

DETAIL "A"

(See Note 5)

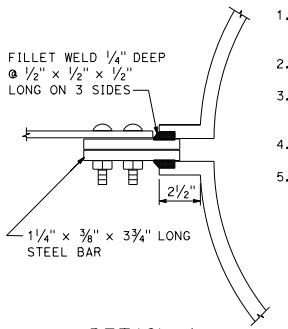


DETAIL 2
APPLIES TO BOTH L & R PLATE



PLASTIC PIPE JOINT RESTRAINER ASSEMBLY

Alternative A



DETAIL 1
APPLIES TO BOTH L & R PLATE

NOTES:

1. See Standard Plan D87A for details of entrance taper placement at dike.
2. Pipe stakes to be used with joint restrainer when specified.
3. Entrance taper "H" dimension is length of insertion of metal taper into plastic pipe.
4. For cable anchorage system details, see Standard Plan D87C.
5. At contractors option, tail pipe and tapered inlet may be supplied from manufacturer as a pre-connected unit as shown in Detail "A".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PLASTIC PIPE DOWNDRAIN DETAILS

NO SCALE

RSP D87B DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN D87B DATED MAY 31, 2018 - PAGE 232 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D87B

2018 REVISED STANDARD PLAN RSP D87B

5-21-21

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

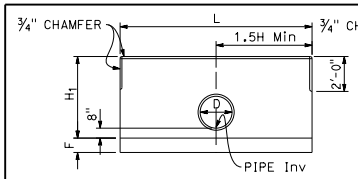
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

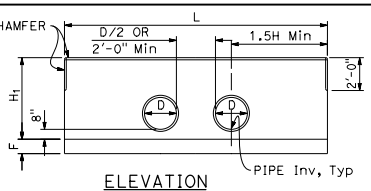
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — Carl M. Duan — No. C59976 — Exp. 6-30-20 CIVIL — STATE OF CALIFORNIA

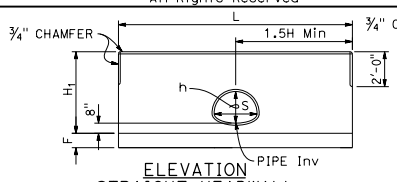
TO ACCOMPANY PLANS DATED _____



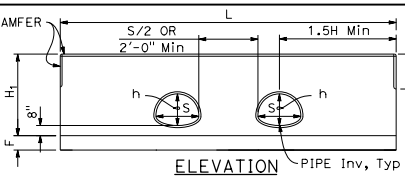
ELEVATION
STRAIGHT HEADWALL
SINGLE CIRCULAR PIPE



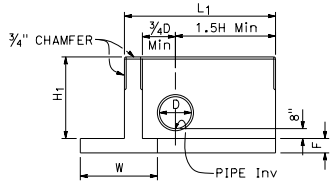
ELEVATION
STRAIGHT HEADWALL
DOUBLE CIRCULAR PIPE



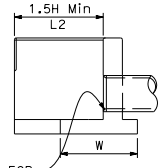
ELEVATION
STRAIGHT HEADWALL
SINGLE CMP



ELEVATION
STRAIGHT HEADWALL
DOUBLE CMP



ELEVATION
"L" HEADWALL



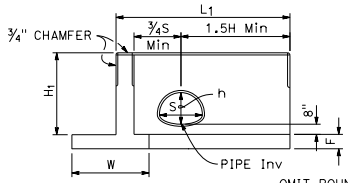
OMIT ROUNDING FOR PIPES < 48" Dia

SECTION
"L" HEADWALL

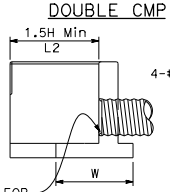
H (Min)	CIRCULAR PIPE SIZE D	CMP ARCH SIZE S x h
3'-11"	12"	-
4'-2"	15"	21" x 15"
4'-5"	18"	24" x 18"
4'-8"	21"	28" x 20"
4'-11"	24"	35" x 24"
5'-2"	27"	-
5'-5"	30"	42" x 29"
5'-8"	33"	49" x 33"
5'-11"	36"	-
6'-2"	39"	57" x 38"
6'-5"	42"	64" x 43"
6'-8"	45"	-
6'-11"	48"	71" x 47"

CIRCULAR PIPE CULVERT HEADWALLS

SEE NOTE 2



ELEVATION
"L" HEADWALL

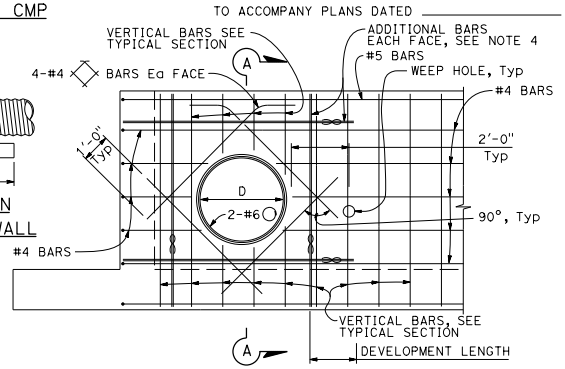


OMIT ROUNDING FOR PIPES < 48" Dia

SECTION
"L" HEADWALL

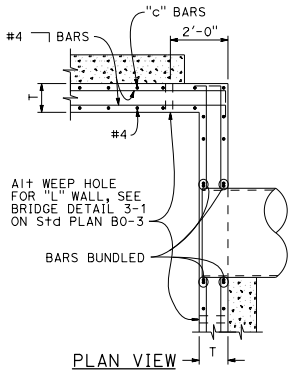
CMP ARCH CULVERT HEADWALLS

SEE NOTE 2



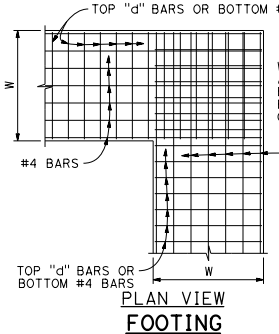
REINFORCEMENT MODIFICATION

"L" headwall shown. Straight headwall similar.
Circular pipe shown. CMP arch similar.



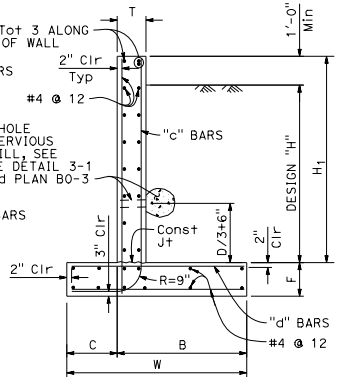
STEM WALL

"L" headwall shown.
Straight headwall similar.

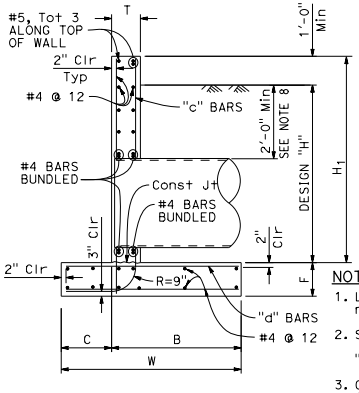


FOOTING

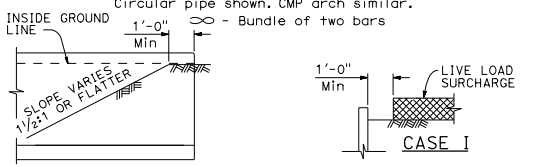
"L" headwall shown.
Straight headwall similar.



TYPICAL SECTION



SECTION A-A



DETAIL OF DESIGN LOADING CASES

H	3'-11"	4'-2"	4'-5"	4'-8"	4'-11"	5'-2"	5'-5"	5'-8"	5'-11"	6'-2"	6'-5"	6'-8"	6'-11"
T	10"	10"	10"	10"	10"	10"	10"	10"	10"	1'-0"	1'-0"	1'-0"	1'-0"
W	4'-10"	4'-10"	5'-0"	5'-4"	5'-4"	5'-4"	5'-4"	5'-4"	5'-4"	5'-4"	5'-6"	5'-9"	6'-0"
C	1'-0"	1'-0"	1'-0"	1'-4"	1'-4"	1'-4"	1'-4"	1'-4"	1'-4"	1'-4"	1'-6"	1'-6"	1'-6"
B	3'-10"	3'-10"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-3"	4'-6"
F	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-2"	1'-2"	1'-2"	1'-2"
"c" BARS	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 9	#5 @ 9
"d" BARS	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 8	#5 @ 8	#5 @ 8	#5 @ 8	#6 @ 8	#6 @ 8	#6 @ 8	#6 @ 6	#6 @ 6	#6 @ 6
* Conc CY/LF	0.33	0.34	0.35	0.37	0.38	0.39	0.40	0.40	0.41	0.50	0.51	0.53	0.55
* Reinf LB/LF	32	32	33	37	38	39	43	47	48	53	58	60	
**CASE I Ser (q'o, B')	0.87, 4.68	0.88, 4.69	0.88, 4.75	0.89, 4.80	0.90, 4.95	0.92, 5.09	0.95, 5.00	0.96, 4.90	1.05, 4.80	1.10, 4.67	1.12, 4.70	1.14, 5.05	1.15, 5.32
**CASE I Str (q'o, B')	1.45, 4.60	1.49, 4.65	1.50, 4.71	1.52, 4.78	1.53, 4.81	1.55, 4.99	1.62, 4.50	2.10, 3.15	2.20, 2.50	2.38, 1.63	2.15, 1.65	2.10, 2.20	2.04, 2.41

* 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

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

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 one foot.
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.
5. Quantities are approximate and for design purposes only. No deduction is made for pipe or arch occupancy.
6. Provide necessary erosion protection in front of wall.
7. If precast construction is used, the design standard shall be equal to or exceed that shown here, and the bottom of footing must be roughened.
8. Minimum earth cover of two feet at ETW of the roadway without cap protection to pipe.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PIPE CULVERT HEADWALLS STRAIGHT AND "L"

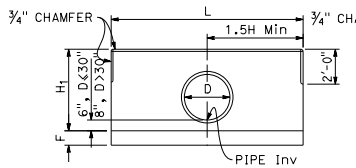
NO SCALE

RSP D89A DATED OCTOBER 18, 2019 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

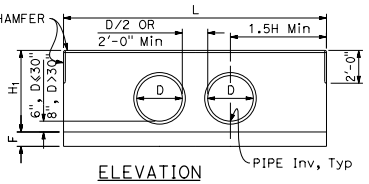
REVISED STANDARD PLAN RSP D89A

2018 REVISED STANDARD PLAN RSP D89A

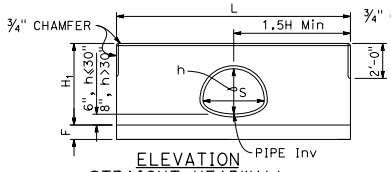
6-21-19



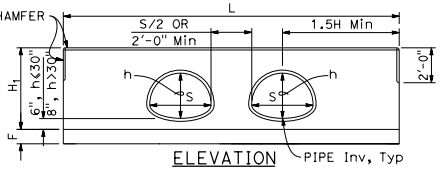
ELEVATION
STRAIGHT HEADWALL
SINGLE CIRCULAR PIPE



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

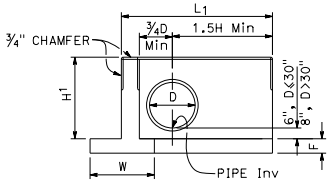
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

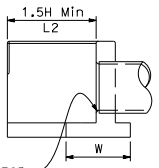
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
Carl M. Duan
No. C59976
Exp. 6-30-20
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

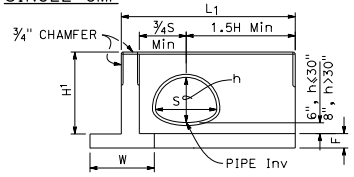


ELEVATION
"L" HEADWALL

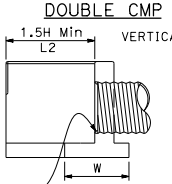


SECTION
"L" HEADWALL

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'-8"	33"	49" x 33"
4'-11"	36"	-
5'-2"	39"	57" x 38"
5'-5"	42"	64" x 43"
5'-8"	45"	-
5'-11"	48"	71" x 47"
6'-2"	51"	-
6'-5"	54"	-



ELEVATION
"L" HEADWALL



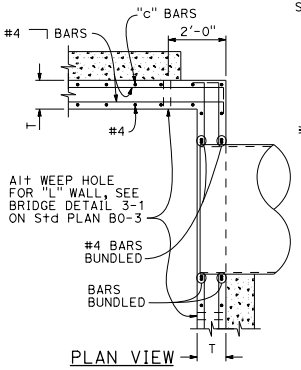
SECTION
"L" HEADWALL

CIRCULAR PIPE CULVERT HEADWALLS

SEE NOTE 2

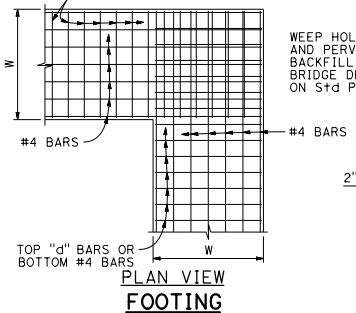
CMP ARCH CULVERT HEADWALLS

SEE NOTE 2



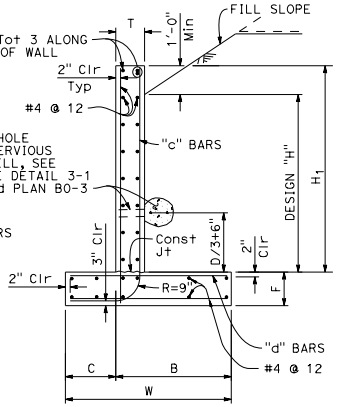
PLAN VIEW
STEM WALL

"L" headwall shown.
Straight headwall similar.

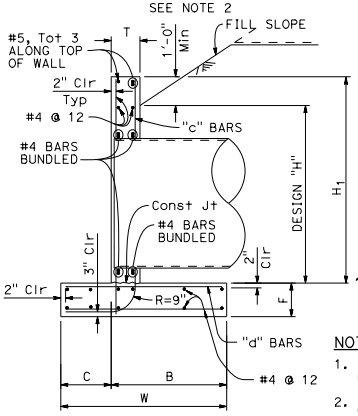


PLAN VIEW
FOOTING

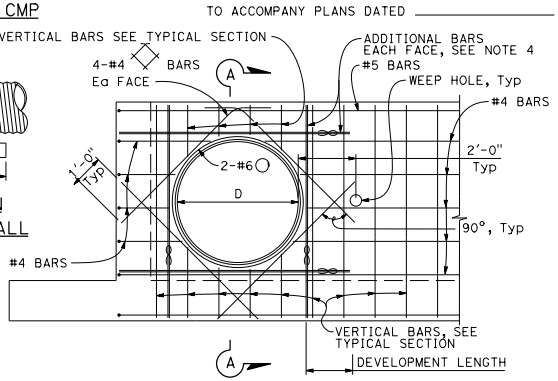
"L" headwall shown.
Straight headwall similar.



TYPICAL SECTION

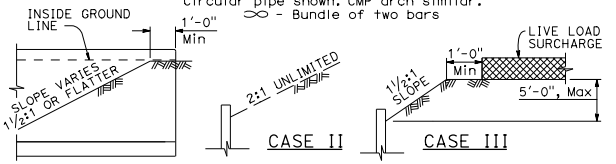


SECTION A-A



REINFORCEMENT MODIFICATION

"L" headwall shown. Straight headwall similar.
Circular pipe shown. CMP arch similar.
∞ - Bundle of two bars



DETAIL OF DESIGN LOADING CASES

H		2'-8"	2'-11"	3'-2"	3'-5"	3'-8"	3'-11"	4'-2"	4'-8"	4'-11"	5'-2"	5'-5"	5'-8"	5'-11"	6'-2"	6'-5"
T		10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	1'-0"	1'-0"	1'-0"
W		2'-3"	2'-3"	2'-3"	2'-6"	2'-6"	2'-6"	3'-0"	3'-0"	3'-3"	3'-9"	4'-0"	4'-2"	4'-2"	4'-6"	4'-9"
C		6"	6"	6"	6"	6"	6"	9"	9"	9"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-3"
B		1'-9"	1'-9"	1'-9"	2'-0"	2'-0"	2'-0"	2'-3"	2'-3"	2'-3"	2'-9"	3'-0"	3'-2"	3'-2"	3'-6"	3'-6"
F		1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"
"c" BARS		#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 9	#5 @ 9	#5 @ 9
"d" BARS		#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 9	#5 @ 9	#5 @ 9	#5 @ 9	#6 @ 12	#6 @ 9	#6 @ 9	#6 @ 9
* Conc CY/LF		0.20	0.20	0.21	0.23	0.24	0.26	0.29	0.30	0.32	0.35	0.37	0.39	0.44	0.46	0.48
* Reinf LB/LF		19	20	21	22	24	24	27	32	33	36	38	39	43	47	49
**CASE II	Ser (q'o, B')	0.41, 1.85	0.48, 1.89	0.55, 1.91	0.60, 1.95	0.62, 2.08	0.62, 2.20	0.63, 2.44	0.67, 2.61	0.71, 2.72	0.75, 2.87	0.80, 2.93	0.84, 3.10	0.88, 3.20	0.91, 3.44	0.95, 3.78
	Str (q'o, B')	1.07, 1.80	1.12, 1.83	1.20, 1.85	1.32, 1.89	1.34, 2.05	1.36, 2.19	1.39, 2.36	1.45, 2.48	1.50, 2.64	1.55, 2.77	1.62, 2.91	1.69, 3.16	1.72, 3.23	1.79, 3.33	1.82, 3.67
**CASE III	Ser (q'o, B')	0.56, 2.05	0.62, 2.08	0.70, 2.10	0.75, 2.12	0.81, 2.20	0.83, 2.38	0.85, 2.49	0.91, 2.60	0.94, 2.75	0.97, 2.81	1.02, 2.91	1.09, 3.05	1.12, 3.12	1.18, 3.23	1.22, 3.50
	Str (q'o, B')	0.91, 2.01	0.98, 2.05	1.06, 2.04	1.19, 2.06	1.22, 2.28	1.30, 2.34	1.36, 2.40	1.41, 2.51	1.49, 2.59	1.55, 2.68	1.65, 2.76	1.71, 2.90	1.79, 3.03	1.85, 3.07	1.90, 3.33

* 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

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 one foot.
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.
5. Quantities are approximate and for design purposes only. No deduction is made for pipe or arch occupancy.
6. Provide necessary erosion protection in front of wall.
7. If precast construction is used, the design standard shall be equal to or exceed that shown here, and the bottom of footing must be roughened.

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 D89B DATED OCTOBER 18, 2019 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D89B

2018 REVISED STANDARD PLAN RSP D89B

6-21-19

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

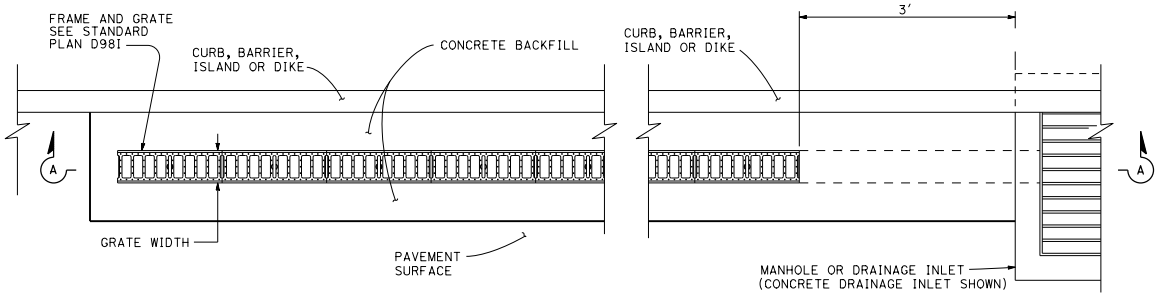
REGISTERED CIVIL ENGINEER

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

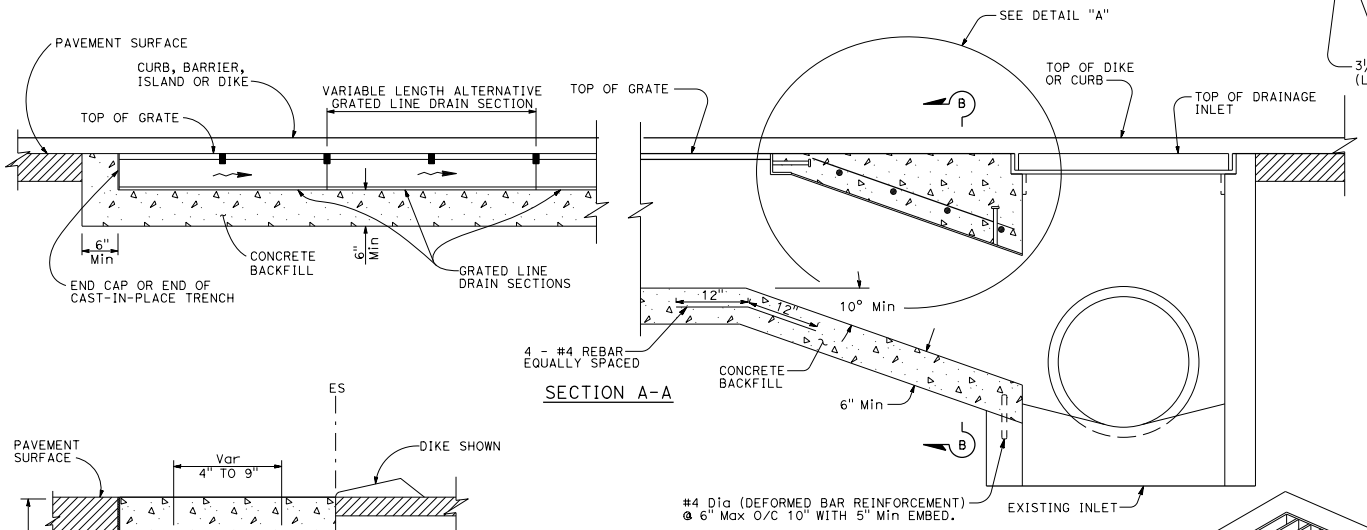
April 16, 2021
PLANS APPROVAL DATE

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

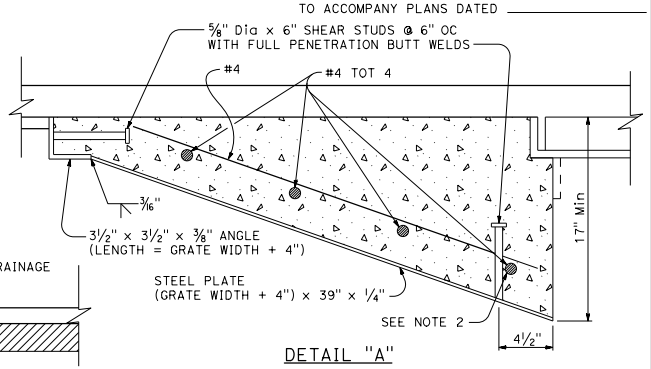
TO ACCOMPANY PLANS DATED _____



GRATED LINE DRAIN PLAN



SECTION A-A



DETAIL "A"

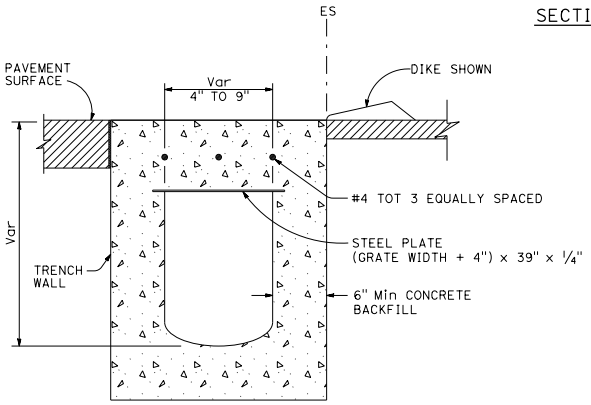
LEGEND:

Pavement

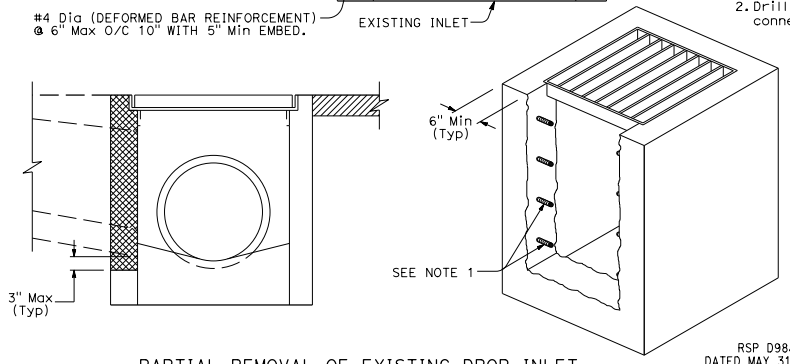
Limits of Removal

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 perpendicular 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.



SECTION B-B



PARTIAL REMOVAL OF EXISTING DROP INLET

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GRATED LINE DRAIN DETAILS No. 4 - CONNECTION TO EXISTING DRAINAGE STRUCTURE

NO SCALE

RSP D98J DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN D98J
DATED MAY 31, 2018 - PAGE 262 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D98J

2018 REVISED STANDARD PLAN RSP D98J

7-30-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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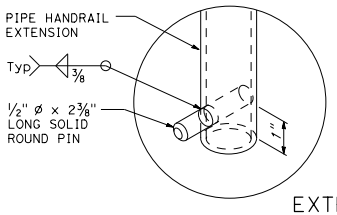
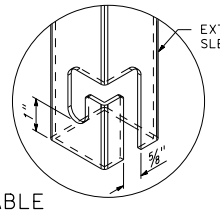
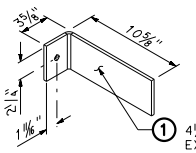
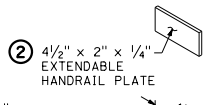
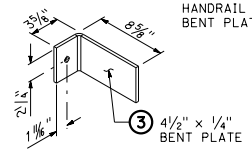


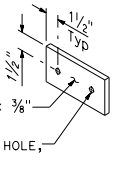


EXTENDABLE HANDRAIL LATCH

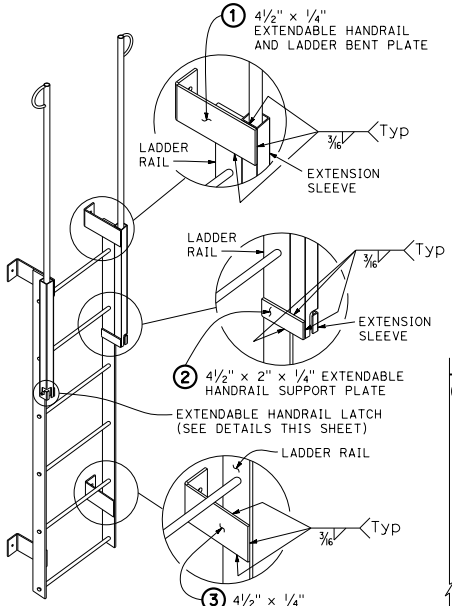




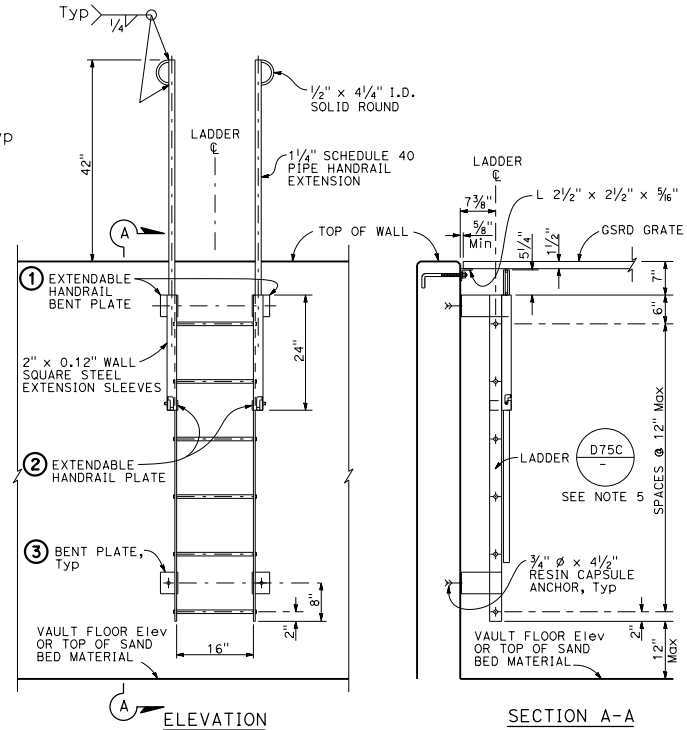




BRACKET DETAILS



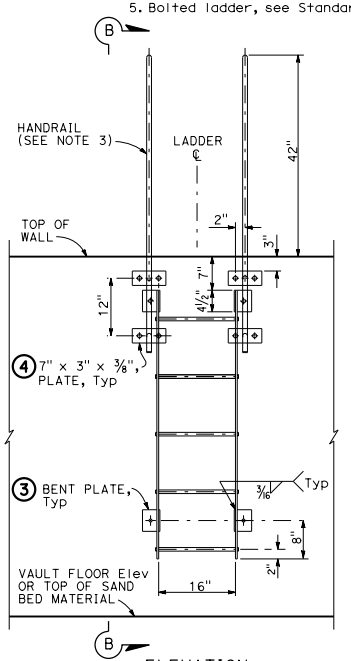
LADDER

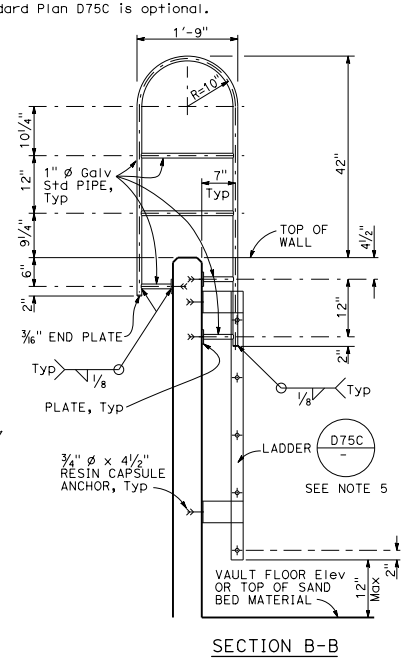


EXTENDABLE HANDRAIL

NOTES (THIS SHEET ONLY):

1. Rungs must be skid resistant. TO ACCOMPANY PLANS DATED _____
2. Use wall mounted handrails for vault depths between 4'-0" and 6'-6". For deeper vaults use extendable handrails detail. Vault depth is distance between top of wall and either top of floor slab or top of filter media material (use which ever distance is less). Ladders must not extend into filter media material.
3. No handrail required for Linear Radial GSRD 4'-0" depth, due to grate conflict.
4. At ladder locations provide a ladder on the outside of the wall if landing area finished grade elevations is 24" or greater from the top of wall elevation. use Standard Plan D75C.
5. Bolted ladder, see Standard Plan D75C is optional.





WALL MOUNTED HANDRAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LADDER DETAILS

NO SCALE

RSP D118 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D118

2018 REVISED STANDARD PLAN RSP D118

12-29-20

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

Karen E M Bamfield
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Karen E M Bamfield — No. C71121 — Exp. 6-30-23 — CIVIL — STATE OF CALIFORNIA

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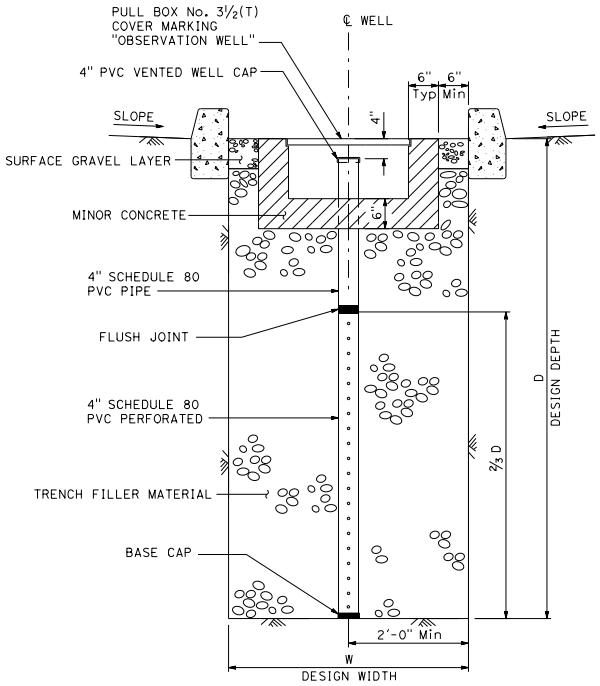
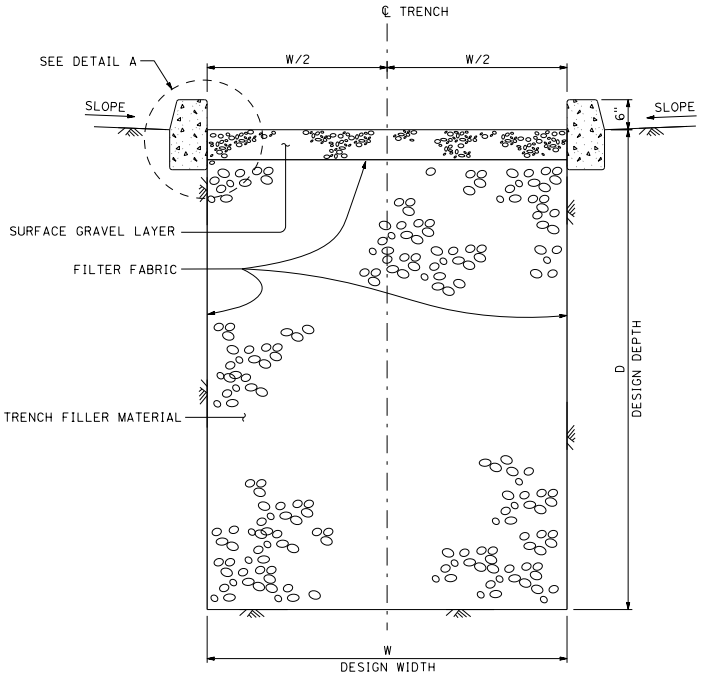
TO ACCOMPANY PLANS DATED _____



SECTION

OBSERVATION WELL

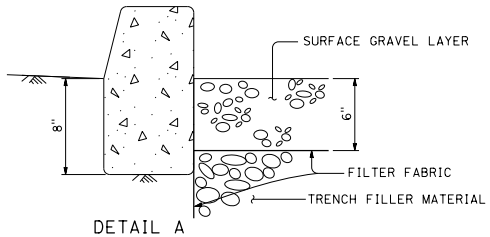


SECTION

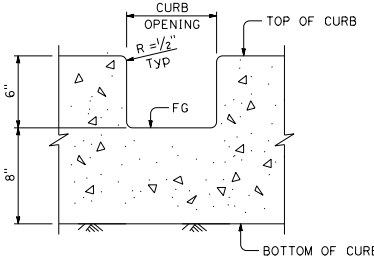
INFILTRATION TRENCH

NOTES:

1. Filter fabric shall be placed between trench filler material and surface gravel layer and along the sides of the infiltration trench.
2. Place concrete curb at the locations shown on the plans. See Standard Plan A87A for details not shown.
3. The exact location of curb openings shall be determined by the Engineer in the field.
4. Centerline of observation well to be placed a minimum of 1'-6" from edge of trench.
5. The plastic protection well cover shall be flush with top of the surface gravel layer.



DETAIL A
See Note 2



CURB OPENING DETAIL
See Note 3

MODIFIED TYPE A1-6 CURB

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

INFILTRATION TRENCH AND OBSERVATION WELL

NO SCALE

RSP D131 DATED APRIL 15, 2022 SUPERSEDES RSP D131 DATED OCTOBER 15, 2021 AND RSP D131 DATED APRIL 16, 2021 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D131

2018 REVISED STANDARD PLAN RSP D131

9-27-21

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Bruce D. Swanger — No. C61257 — Exp. 6-30-21 — 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 _____

GENERAL NOTES

Designation:
Types of Gross Solids Removal Devices (GSRDs) are Linear Radial (LR) and Inclined Screen. The Linear Radial has either a standard or high velocity configuration noted as Linear Radial or Linear Radial (HV). All GSRD BMP Detail Drawings are applicable for velocities up to 20 fps.

Special Reinforcement Coverage:
GSRD BMP Detail Drawings are not to be used in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

Special Design:
Required for ground water conditions above bottom of GSRD, surcharge loads exceeding HS20 truck load, design bearing pressures or sizes greater than those on this plan.

Traffic Loading:
No traffic load is allowed over GSRDs. As determined by the Engineer, barriers or MBGR shall be provided between GSRDs and traffic lanes.

INCLINED SCREEN DESIGN FLOW CHART

GSRD TYPE	TOTAL SCREEN LENGTH "C"	FLOW RATE (cfs)	DEBRIS AREA (acres)
A	3′-4"	5.83	2.21
B	5′-0"	8.74	3.31
C	6′-8"	11.65	4.41
D	8′-4"	14.57	5.52
E	10′-0"	17.48	6.63
F	11′-8"	20.39	7.74

NOTE:
1. The total screen length "C" is shown on Revised Standard Plans RSP D139B, RSP D139F1, and RSP D139G1.

DESIGN NOTES

Specifications:
Design:
Bridge Design Specification April 2000 (LFD)
(1996 AASHTO) with interims and revisions by Caltrans

Wall (LFD) : 1.5 D + 1.5 E and 1.5D + W
Footing (LFD): 1.5 D + 1.5 E
Where D = Dead Load
E = Earth Load

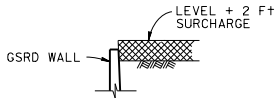
Capacity reduction factor is included.

Earth Load:
125 lb/ft vertical,

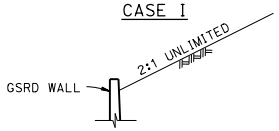
Water Load:
62.4 lb/ft horizontal,

Equivalent Fluid Pressure =
100 lb/ft horizontal (Case I).

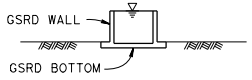
Earth pressure for 2:1 unlimited slope determined from Rankine's formula with ø = 33°42′ (Case II).



CASE I



CASE II



CASE III

DETAIL OF DESIGN LOADING CASES

CASE I Level + 2′-0" surcharge, GSRD empty
CASE II 2:1 Unlimited slope, GSRD empty
CASE III GSRD full of water, no soil pressure

Grating (LL) Load :
0.5 psi

Unit Stresses:
f'_c = 4.0 ksi
f_y = 60 ksi (bar reinforcing)

Design Soil Bearing Pressure (Service Load) = 20 psi

ABBREVIATIONS

cfs	CUBIC FEET PER SECOND
EWT&B	EACH WAY TOP AND BOTTOM
fps	FEET PER SECOND
GSRD	GROSS SOLIDS REMOVAL DEVICE
LL	LIVE LOAD
FRP	FIBERGLASS REINFORCED PLASTIC

LEGEND

DESIGN WATER DEPTH

STANDARD PLAN SHEET No.

DETAIL No.

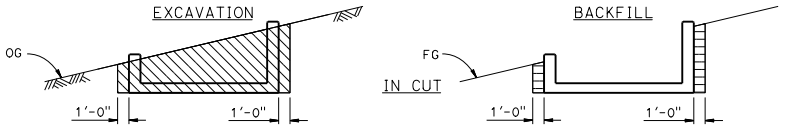
NOTES

Expansion joints:
Inverts - No expansion joints permitted.
Walls - Place ½" expansion joint filler vertically at 26′-0" centers with strip water stop (B0-1 / 1-3).

Construction Joints:
Construction joints may be permitted if normal (or radial) to ℄ of GSRD.

Backfill:
See Standard Specifications, except the difference in backfill will not exceed 4 ft between side walls and will not exceed the lesser of wall height "H" or 4 ft between inlet and outlet walls.

Earthwork:
Excavation and Backfill with Cut and Exposed conditions:



INCLINED SCREEN

LEGEND
STRUCTURE EXCAVATION
STRUCTURE BACKFILL
90% RELATIVE COMPACTION

NOTES
1. Slope or shore excavation sides as necessary.
2. Dimensions shown are minimum.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE
INCLINED SCREEN LEGEND

NO SCALE

RSP D139A DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D139A

12-29-20

2018 REVISED STANDARD PLAN RSP D139A

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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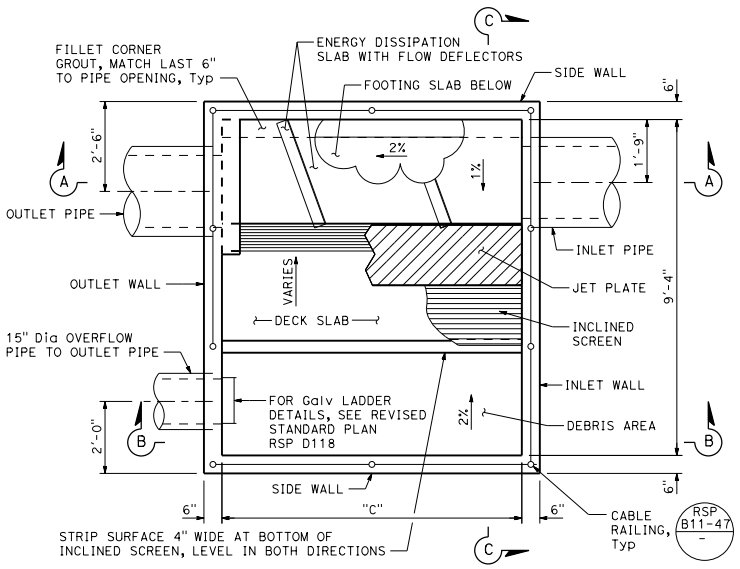
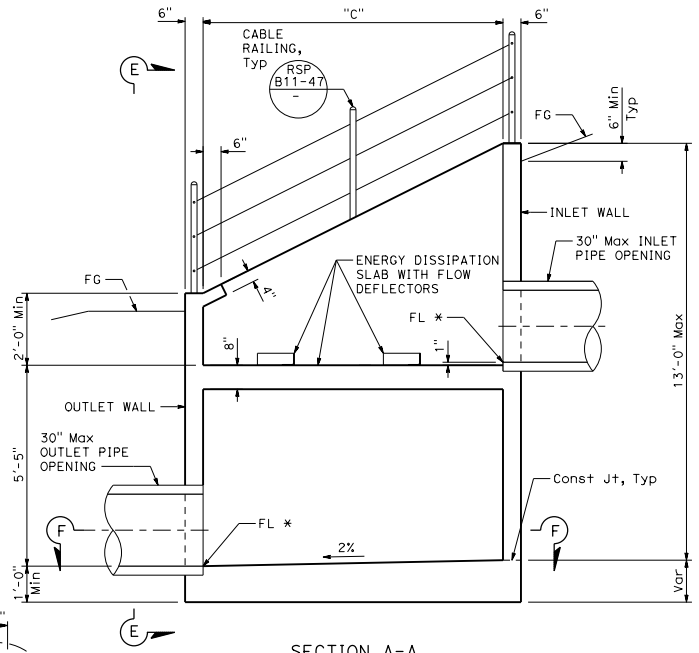
TO ACCOMPANY PLANS DATED _____



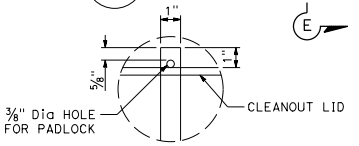
PLAN



SECTION A-A

* FOR FL ELEVATIONS, SEE "DRAINAGE PROFILES".

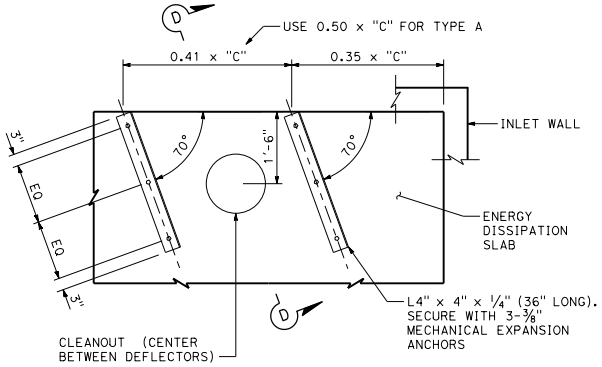
JET PLATE NOT SHOWN FOR CLARITY, SEE REVISED STANDARD PLAN RSP D139D.



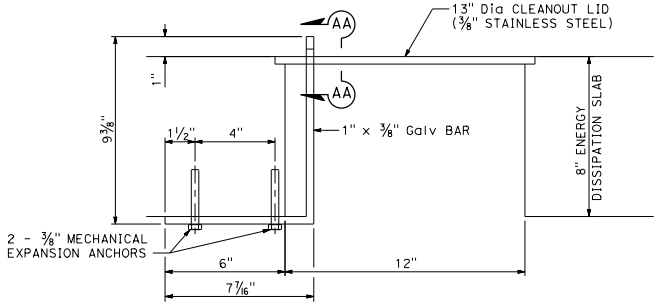
VIEW AA-AA

NOTES (THIS SHEET ONLY):

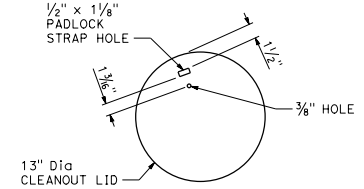
1. See "Drainage Plans" for additional details.
2. Inlet and outlet pipe opening sizes are shown on "Drainage Plans". The overflow and outlet piping must be connected via standard elbows and tees.
3. For Sections B-B and C-C, see Revised Standard Plans RSP D139F1 and RSP D139G1.
4. For reinforcing details which include Sections A-A, B-B, C-C and F-F, see Revised Standard Plan rsp D139D.
5. For inlet and outlet pipe details not shown, see Revised Standard Plan RSP D139C.
6. For View E-E, see Revised Standard Plan RSP D139C.



DEFLECTOR PLAN



SECTION D-D



CLEANOUT LID DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN LAYOUT

NO SCALE

RSP D139B DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D139B

12-29-20

2018 REVISED STANDARD PLAN RSP D139B

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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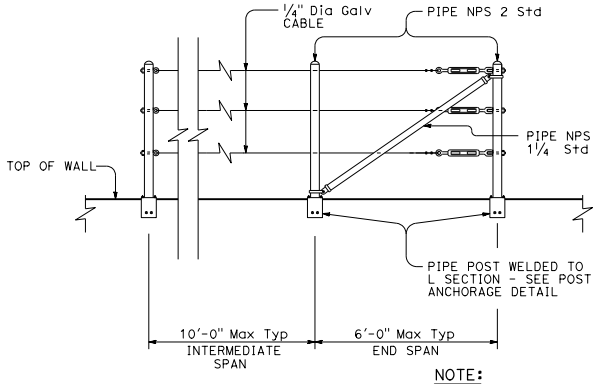
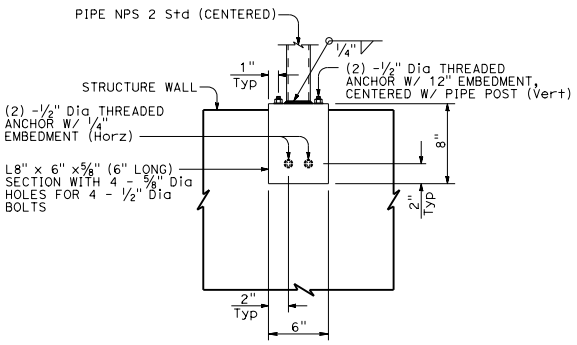


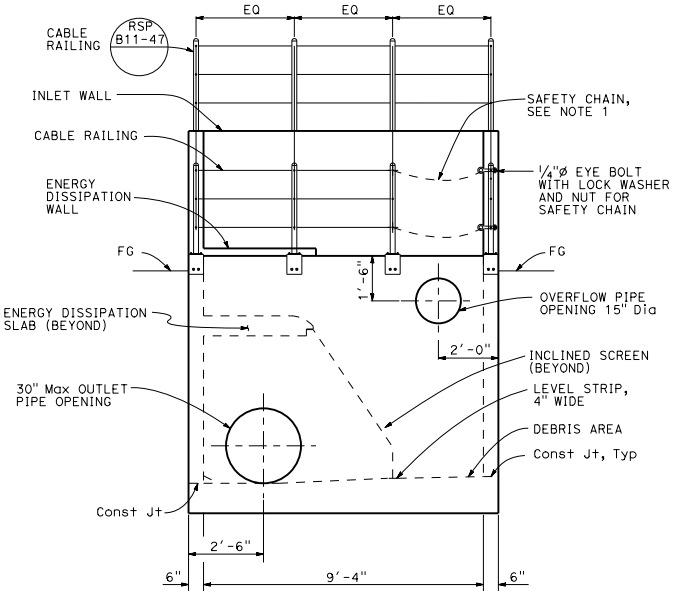
CABLE RAILING

NOTE:
REFER TO REVISED STANDARD PLAN RSP B11-47 FOR ADDITIONAL INFORMATION.



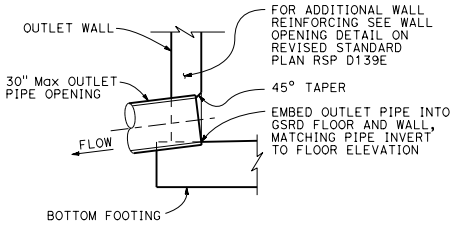
POST ANCHORAGE

NOTE:
1. Safety chain must be ¼" galvanized steel coil chain, approximately 12 links per foot. Length must be minimum which allows lock-up of safety railing. Minimum of two safety chains per safety railing. Material must be grade 43 high test chain ASTM A413.



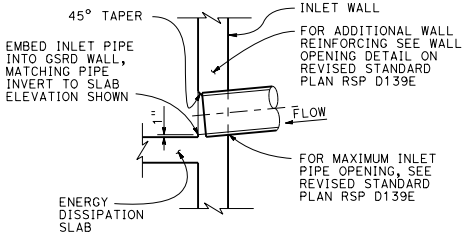
VIEW E-E

NOTE:
JET PLATE AND FLOW DEFLECTORS NOT SHOWN FOR CLARITY.



OUTLET DETAIL

PIPE EXIT AT WALL - INCLINED SCREEN



INLET DETAIL

PIPE ENTRANCE AT WALL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN DETAILS No. 1

NO SCALE

RSP D139C DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D139C

2018 REVISED STANDARD PLAN RSP D139C

12-29-20

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

REGISTERED CIVIL ENGINEER

Bruce D. Swanger
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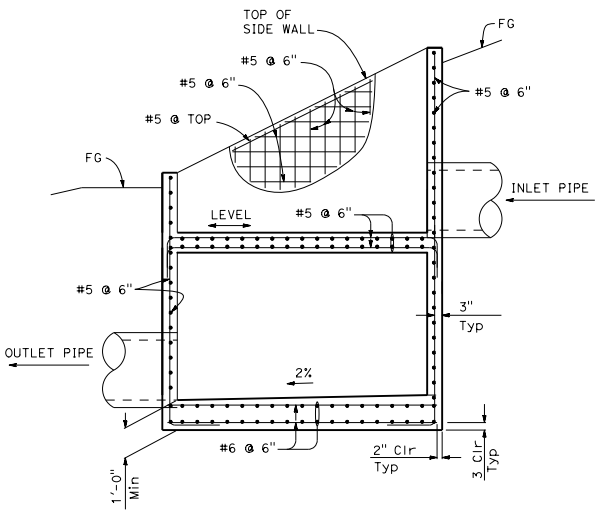
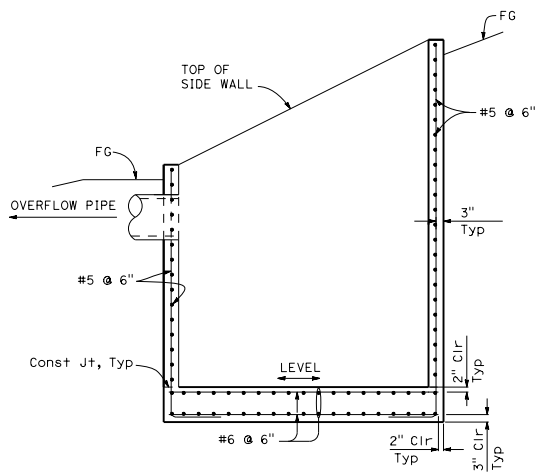
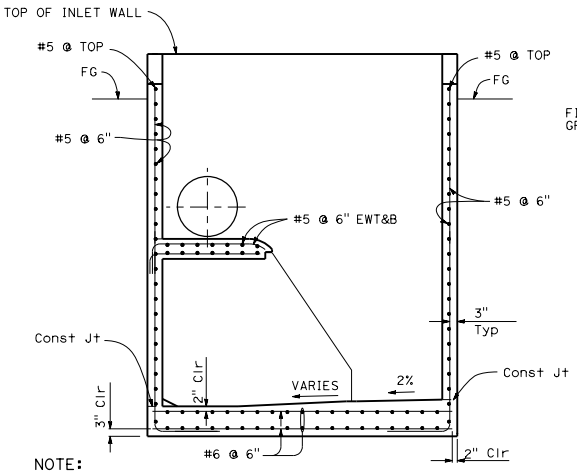


SECTION A-A - REINFORCEMENT

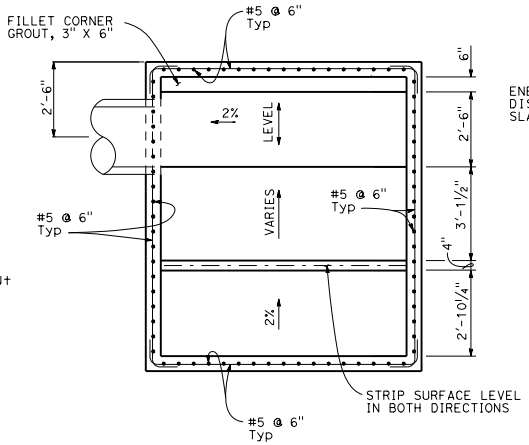


SECTION B-B - REINFORCEMENT



NOTE:
Flow deflectors and jet plate not shown for clarity

SECTION C-C - REINFORCEMENT

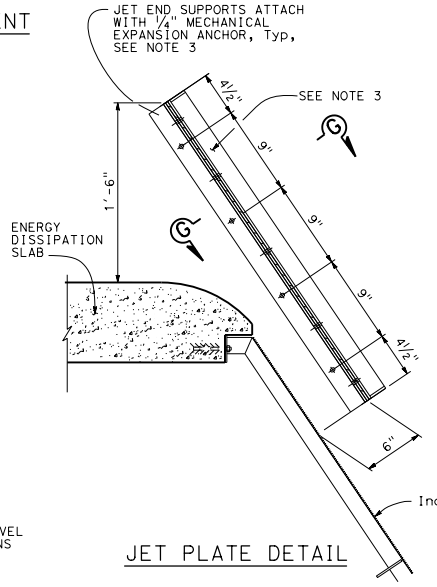


SECTION F-F

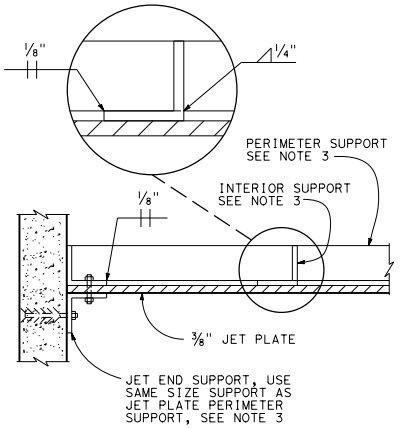
WALL REINFORCEMENT AND GRADES AT FOOTING SLAB

NOTES:

1. For additional reinforcing at openings, see Revised Standard Plan RSP D139E.
2. For section locations, see Revised Standard Plan RSP D139B.
3. ⅜" jet plate with L2" x 2" x ¼" braced supports around perimeter for screen lengths up to 6'-8". For longer screen lengths use L3" x 2" x ¼". Use additional interior supports at 2'-6" Max O.C. equally spaced. Fillet weld brace supports to plate @ 1'-6" O.C. Fasten jet plate assembly to jet end supports with five ¼" machine bolts A307 equally spaced. Start bolt pattern @ 2¼" Max from edge.



JET PLATE DETAIL



SECTION G-G

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN DETAILS No. 2

NO SCALE

RSP D139D DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D139D

12-29-20

2018 REVISED STANDARD PLAN RSP D139D

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

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STATE OF CALIFORNIA

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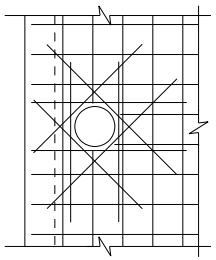
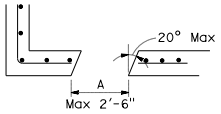
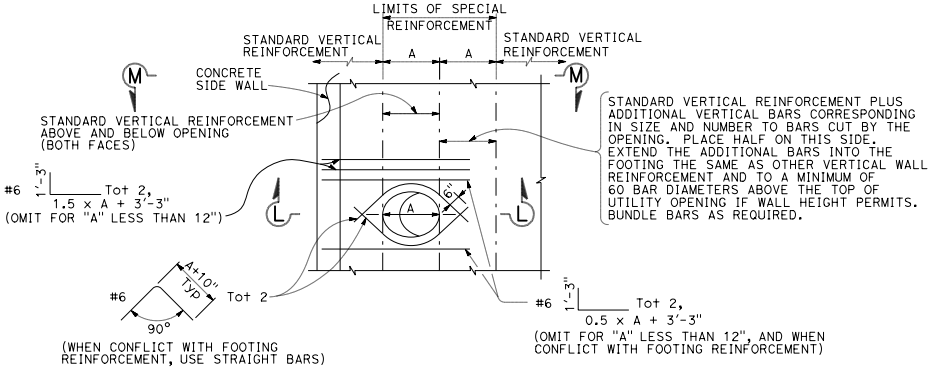


ENERGY DISSIPATION SLAB

To be used at cleanout
(Place 8 - #5 as shown top and bottom. Extend bars 1'-3" past the opening or use 6" hook if development length is not available.)

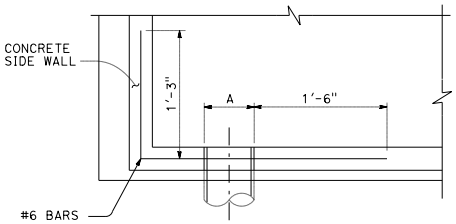


SECTION L-L



WALL OPENING

To be used at inlet and outlet pipe locations



SECTION M-M

(Only specified horizontal bars are shown)

NOTE:
In all opening locations, horizontal reinforcement to be standard except as shown. All reinforcement to clear opening by 2" minimum.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN DETAILS No. 3 WALL OPENING DETAILS

NO SCALE

RSP D139E DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D139E

12-29-20

2018 REVISED STANDARD PLAN RSP D139E

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REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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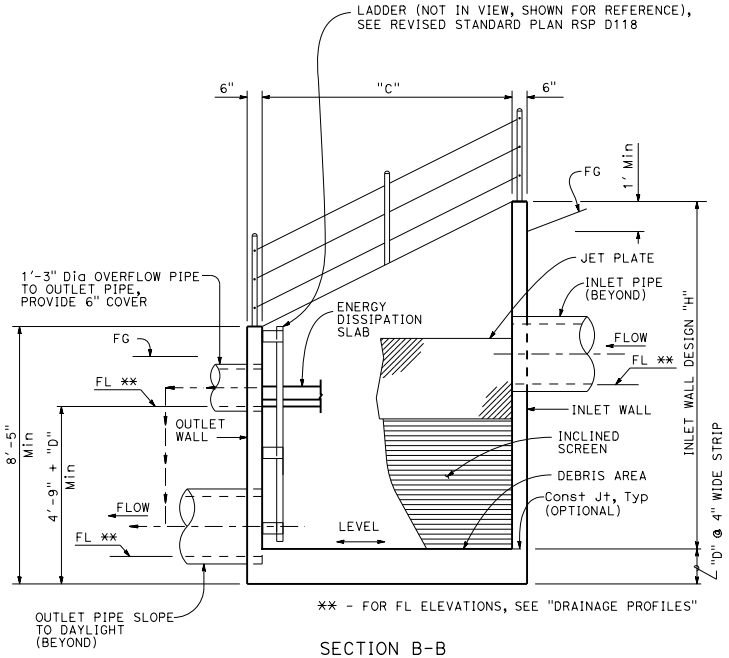
TO ACCOMPANY PLANS DATED _____

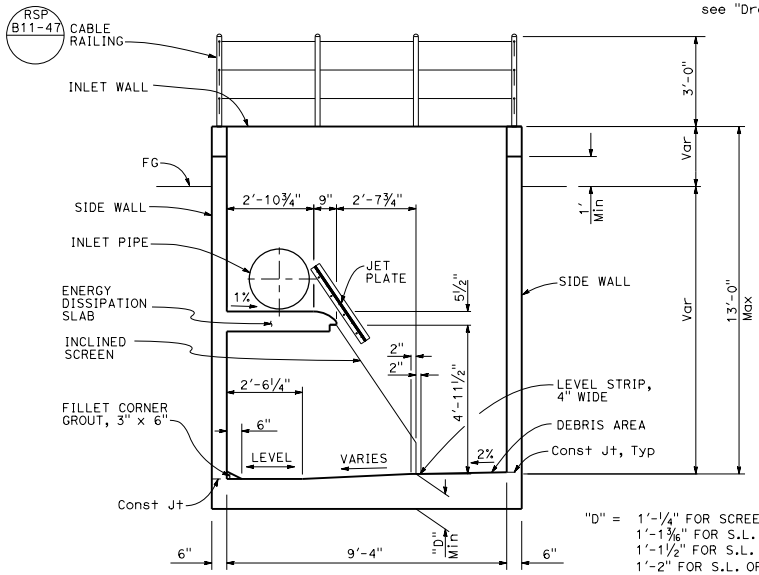
NOTES:

1. See "Drainage Plans" for additional details.
2. For Section B-B and C-C locations, see Revised Standard Plan RSP D139B.
3. Inlet and outlet piping opening sizes are shown on the "Drainage Plans." The overflow and outlet piping shall be connected via standard elbows and tees.
4. For inlet and outlet pipe details not shown, see "Drainage Plans".



SECTION B-B

FLOW DEFLECTORS NOT SHOWN FOR CLARITY



"D" = 1'-¼" FOR SCREEN LENGTH (S.L.) OF 3'-4⅛".
1'-1 3/16" FOR S.L. OF 5'-0"
1'-1½" FOR S.L. OF 6'-8"
1'-2" FOR S.L. OF 8'-4"
1'-2⅜" FOR S.L. OF 10'-0"
1'-2¾" FOR S.L. OF 11'-8⅛"

SECTION C-C

FLOW DEFLECTORS NOT SHOWN FOR CLARITY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN DETAILS No. 4 WEDGE-WIRE SCREEN

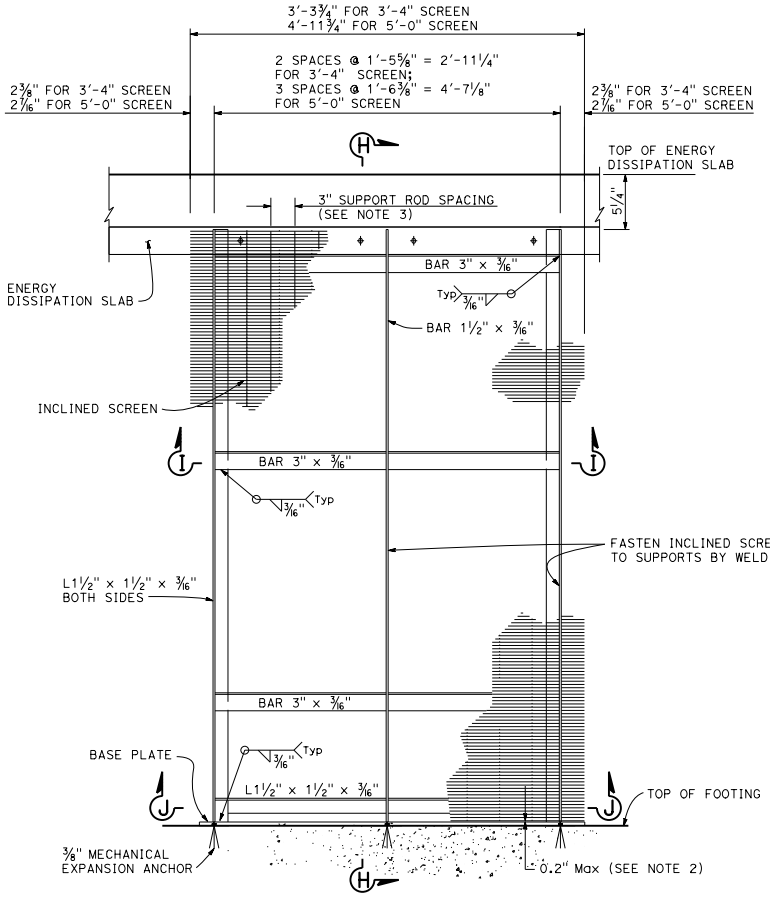
NO SCALE

RSP D139F1 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

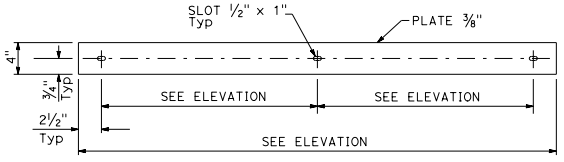
REVISED STANDARD PLAN RSP D139F1

12-29-20

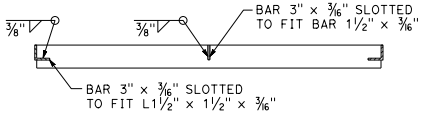
2018 REVISED STANDARD PLAN RSP D139F1



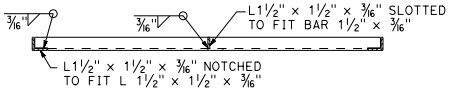
ELEVATION



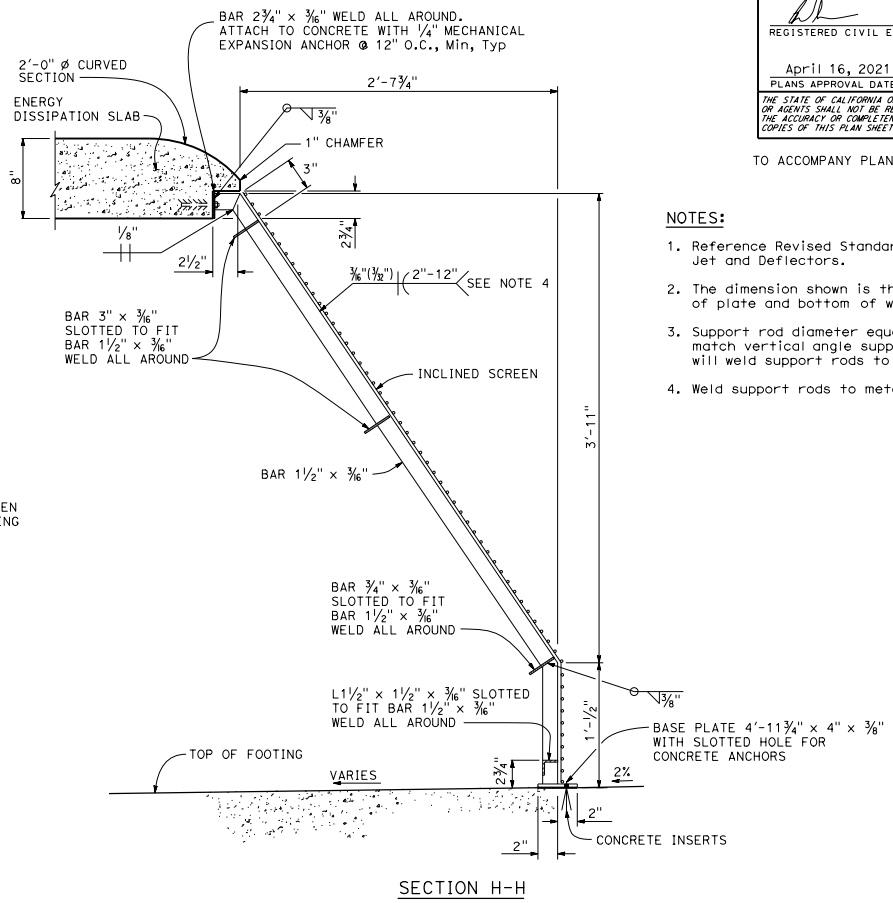
BASE PLATE



SECTION I-I



SECTION J-J



SECTION H-H

NOTES:

1. Reference Revised Standard Plan RSP D139D for Jet and Deflectors.
2. The dimension shown is the distance between top of plate and bottom of wire.
3. Support rod diameter equals ⅜". Align rods to match vertical angle supports. Screen manufacturer will weld support rods to wedge wire.
4. Weld support rods to metal frame (all around).

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN DETAILS No. 5 WEDGE-WIRE SCREEN

NO SCALE

RSP D139F2 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D139F2

12-29-20

2018 REVISED STANDARD PLAN RSP D139F2

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

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No. C61257
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CIVIL
REGISTERED PROFESSIONAL ENGINEER
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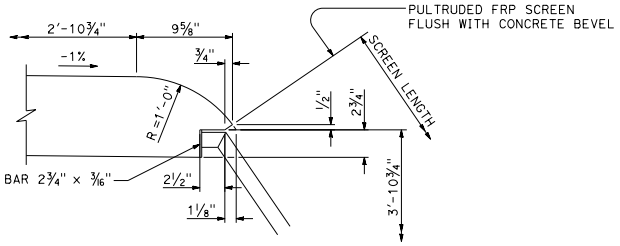
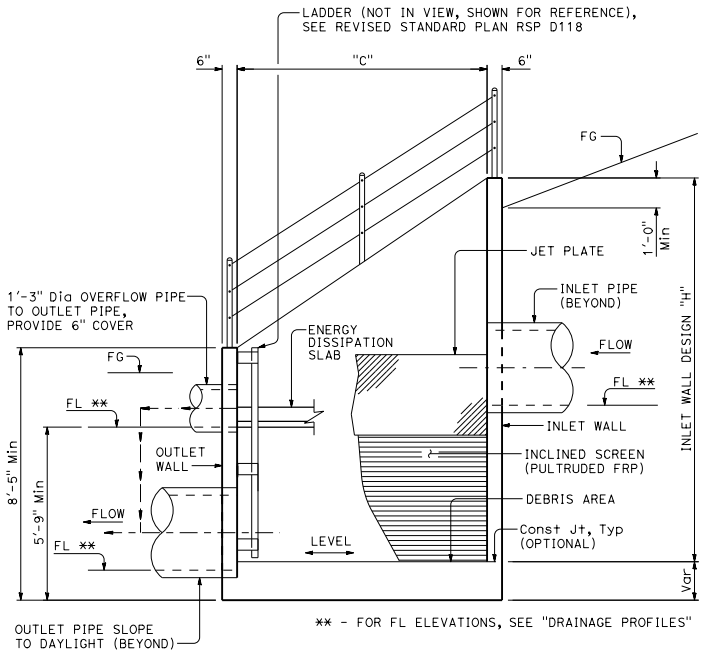


NOTCHED DETAIL

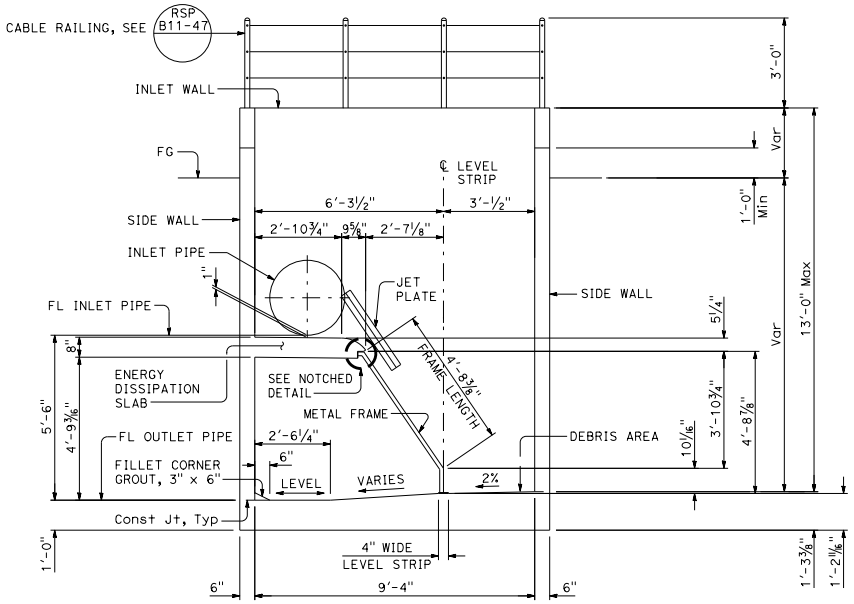
NOTES:

1. See "Drainage Plans" for additional details.
2. For Section B-B and Section C-C locations, see Revised Standard Plan RSP D139B.
3. Inlet and outlet piping opening sizes are shown on the "Drainage Plans." The overflow and outlet piping shall be connected via standard elbows and tees.
4. For inlet and outlet pipe details not shown, see "Drainage Plans".



SECTION B-B

FLOW DEFLECTORS NOT SHOWN FOR CLARITY



SECTION C-C

FLOW DEFLECTORS NOT SHOWN FOR CLARITY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN DETAILS No. 6 PULTRUDED FRP SCREEN

NO SCALE

RSP D139G1 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D139G1

12-29-20

2018 REVISED STANDARD PLAN RSP D139G1

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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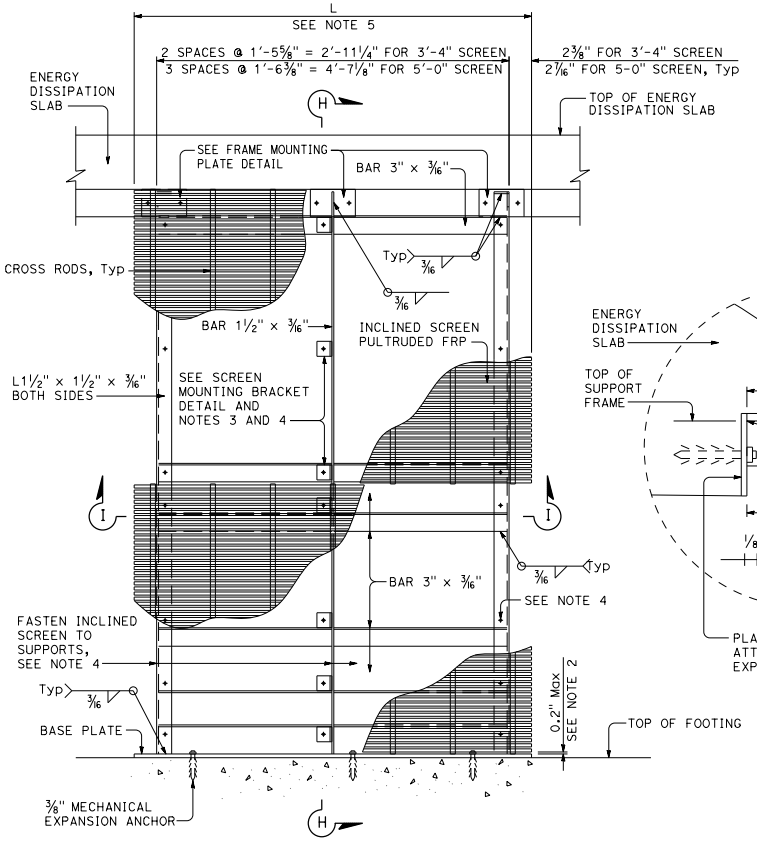
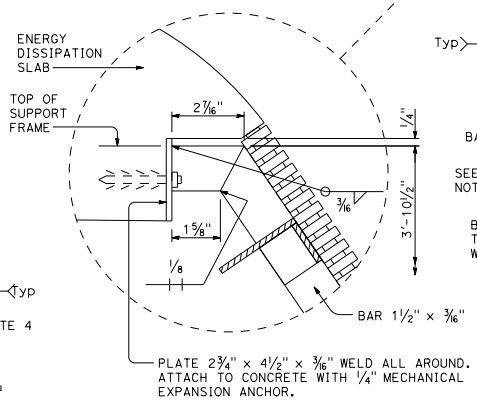
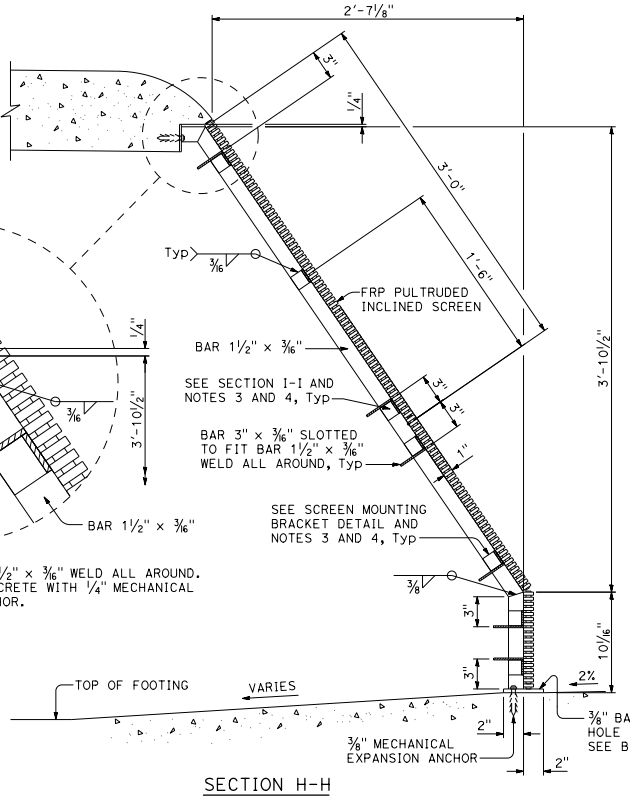
TO ACCOMPANY PLANS DATED _____



ELEVATION





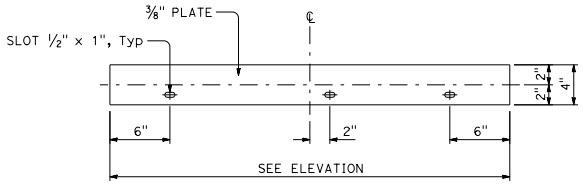
SECTION H-H

NOTES:

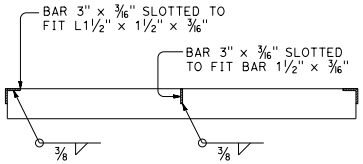
1. Reference Revised Standard Plan RSP D139D for Jet and Deflectors.
2. The dimension shown is the distance between top of plate and bottom of screen.
3. Weld L1½" x 1½" x ⅜16" to metal frame.
4. Mount screen to metal frame using stainless steel tamper proof bolt/clip assembly. Field locate and drill 1/32" ø hole in the support beam and screen mounting bracket to install the hold down clip assembly. Use a minimum of 9 clip assemblies for top 3' width FRP screen. Use 6 clip assemblies for FRP screens that are less than 3'. Adjust screen mounting bracket locations as needed. Place bracket in between tie rods.
5. Pultruded FRP screen length is:

TYPE	L (ft)
A	3'-3¾"
B	4'-11¾"
C	6'-7¾"
D	8'-3¾"
E	9'-11¾"
F	11'-7¾"

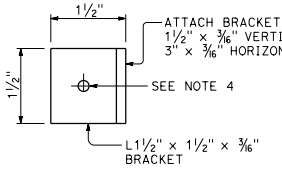
6. Use silicone at all edges of screen and concrete where gap is > 0.2".



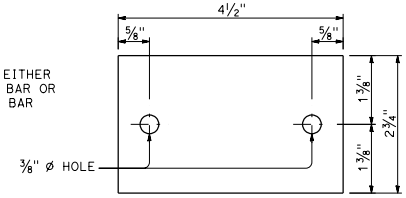
BASE PLATE



SECTION I-I



SCREEN MOUNTING BRACKET



FRAME MOUNTING PLATE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE
INCLINED SCREEN DETAILS No. 7
PULTRUDED FRP SCREEN

NO SCALE

RSP D139G2 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D139G2

2018 REVISED STANDARD PLAN RSP D139G2

12-29-20

GENERAL NOTES

Designation:
Types of Gross Solids Removal Devices (GSRDs) are Linear Radial (LR) and Inclined Screen. The Linear Radial has either a standard or high velocity configuration noted as Linear Radial or Linear Radial (HV). All GSRD BMP Detail Drawings are applicable for velocities up to 20 fps.

Special Reinforcement Coverage:
GSRD BMP Detail Drawings are not to be used in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

Special Design:
Required for ground water conditions above bottom of GSRD, surcharge loads exceeding HS20 truck load, design bearing pressures or sizes greater than those on this plan.

Traffic Loading:
No traffic load is allowed over GSRDs. As determined by the Engineer, barriers or MBGR shall be provided between GSRDs and traffic lanes.

LINEAR RADIAL DESIGN CHART

GSRD TYPE	TOTAL SCREENED PIPE LENGTH "T_S"	FLOW RATE (cfs)	DEBRIS AREA (acres)	INSIDE LENGTH "L"	HIGH VELOCITY INSIDE LENGTH "L_{HV}" *	No. OF INTERMEDIATE SCREENED PIPES
LR-1	5′-6"	3.54	0.79	11′-11"	14′-3¾"	0
LR-2	10′-6"	7.07	1.58	16′-11"	19′-3¾"	1
LR-3	15′-6"	10.96	2.25	21′-11"	24′-3¾"	2
LR-4	20′-6"	14.49	3.16	26′-11"	29′-3¾"	3
LR-5	25′-6"	18.38	3.95	31′-11"	34′-3¾"	4
LR-6	30′-6"	21.91	4.74	36′-11"	39′-3¾"	5

* High velocity is achieved when inlet Velocity exceeds 8.2 fps.

NOTES:

1. The total screened pipe length "T_S" is the sum of the end screened and intermediate screened pipes. For dimension "T_S" and location of end screened pipe and intermediate screened pipes, see Revised Standard Plan RSP D140B.
2. Example of Linear Radial nomenclature is LR-1 (6′-0"); for high velocity type LR(HV)-3 (3′-0"). The wall height is the number represented in the parentheses.
3. The inside length "L" is shown on Revised Standard Plan RSP D140B, see plan view. Likewise, the inside length "L_{HV}" is shown on Revised Standard Plan RSP D140G, see plan view.

DESIGN NOTES

Specifications:
Design:
Bridge Design Specification April 2000 (LFD) (1996 AASHTO) with interims and revisions by Caltrans

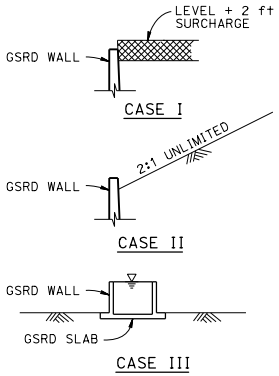
Wall (LFD) : 1.5 D + 1.5 E and 1.5 D + W
Footing (LFD) : 1.5 D + 1.5 E
Where: D = Dead Load
E = Earth Load
Capacity reduction factor is included.

Earth Load:
125 lb/ft^3 vertical,

Water Load:
62.4 lb/ft^3 horizontal,

Equivalent Fluid Pressure =
100 lb/ft^3 horizontal (Case I).

Earth pressure for 2:1 unlimited slope determined from Rankine's formula with ø = 33°42′ (Case II).



DETAIL OF DESIGN LOADING CASES

CASE I Level + 2′-0" surcharge, GSRD empty
CASE II 2:1 Unlimited slope, GSRD empty
CASE III GSRD full of water, no soil pressure

Grating (LL) Load :
0.5 psi

Unit Stresses:
f'_c = 3.6 ksi
f_y = 60 ksi (bar reinforcing)

Design Soil Bearing Pressure (Service Load) = 20 psi

ABBREVIATIONS

cfs	CUBIC FEET PER SECOND
fps	FEET PER SECOND
GSRD	GROSS SOLIDS REMOVAL DEVICE
HV	HIGH VELOCITY
LL	LIVE LOAD
LR	LINEAR RADIAL

LEGEND

DESIGN WATER DEPTH
STANDARD PLAN SHEET No.
DETAIL No.

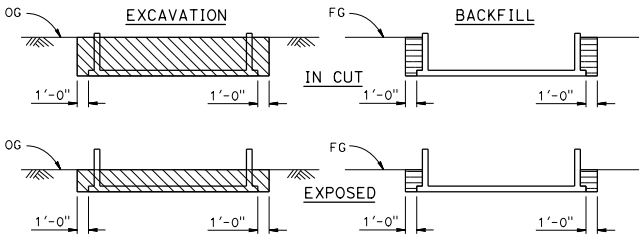
NOTES:

Expansion joints:
Inverts - No expansion joints shall be permitted.
Walls - Place ½" expansion joint filler vertically at 26′-0" centers with strip water stop (B0-1 / 1-3).

Construction Joints:
Construction joints may be permitted if normal (or radial) to ℄ of GSRD.

Backfill:
See Standard Specifications, except the difference in backfill shall not exceed 4 ft between side walls and shall not exceed the lesser of wall height "H" or 4 ft between inlet and outlet walls.

Earthwork:
Excavation and Backfill with Cut and Exposed conditions:



LINEAR RADIAL

LEGEND
STRUCTURE EXCAVATION
STRUCTURE BACKFILL 90% RELATIVE COMPACTION

NOTES:
1. Slope or shore excavation sides as necessary.
2. Dimensions shown are minimum.

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

REGISTERED CIVIL ENGINEER
April 16, 2021
PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL ENGINEER
Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE
LINEAR RADIAL LEGEND

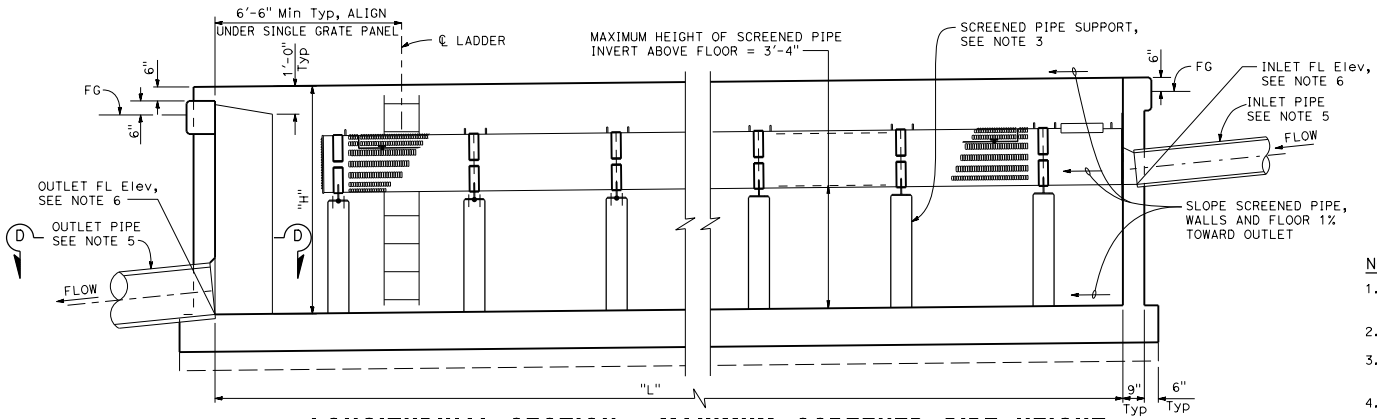
NO SCALE

RSP D140A DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

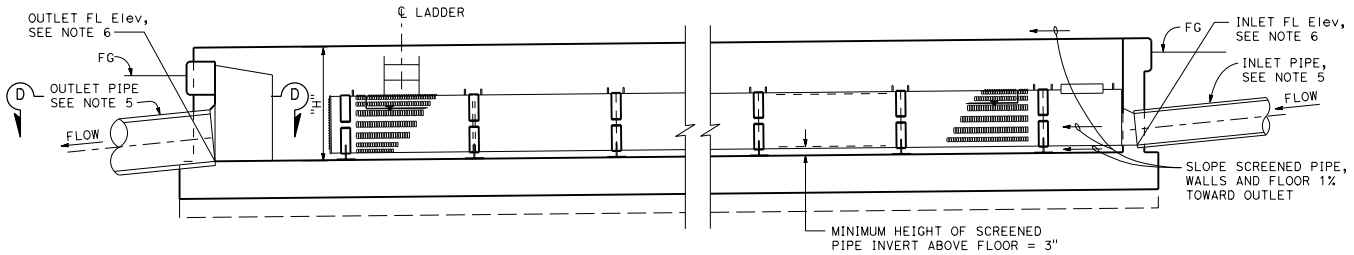
REVISED STANDARD PLAN RSP D140A

2018 REVISED STANDARD PLAN RSP D140A

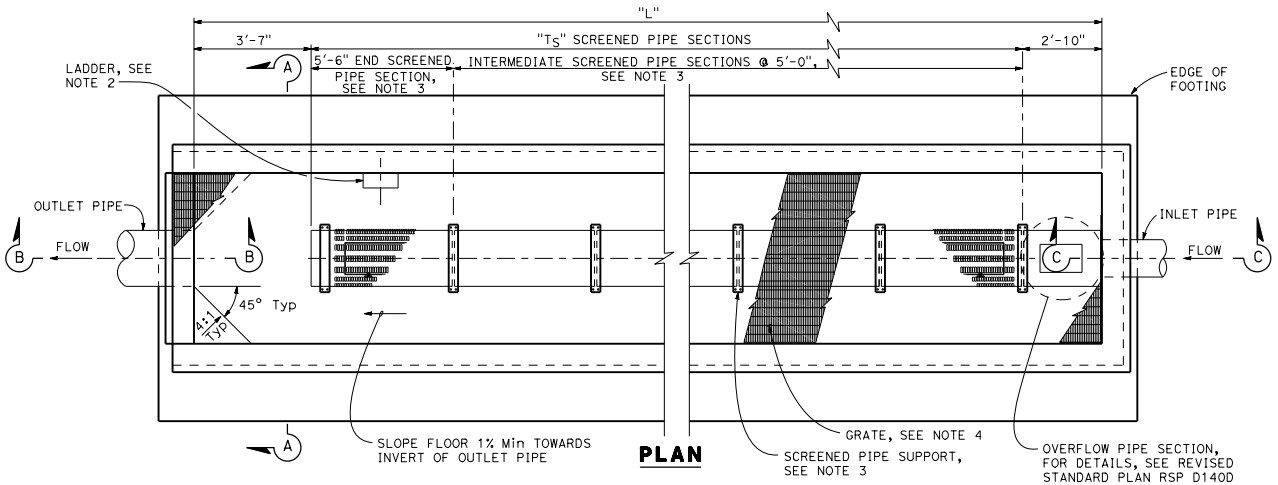
12-29-20



LONGITUDINAL SECTION - MAXIMUM SCREENED PIPE HEIGHT



LONGITUDINAL SECTION - MINIMUM SCREENED PIPE HEIGHT



PLAN

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Bruce D. Swanger — No. C61257 — Exp. 6-30-21 CIVIL — STATE OF CALIFORNIA

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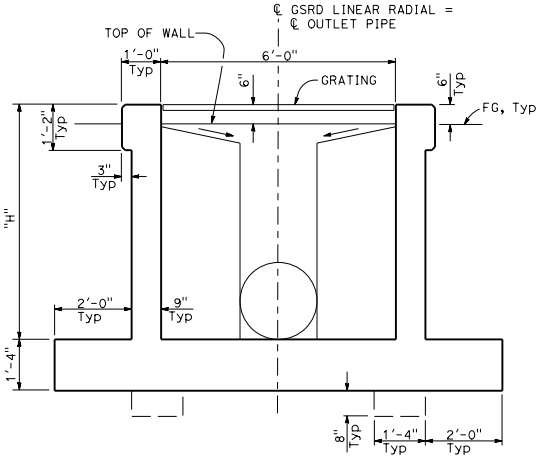
TO ACCOMPANY PLANS DATED _____

NOTES (THIS SHEET ONLY):

1. For Sections A-A, B-B, C-C and D-D, see Revised Standard Plan RSP D140C.
2. For ladder details, see Revised Standard Plan RSP D118.
3. For end and intermediate screened pipe details, see Revised Standard Plan RSP D140E.
4. For grate details, see Revised Standard Plan RSP D140F.
5. For layout of inlet and outlet pipes, see "Drainage Plans".
6. For FL elevation of inlet and outlet pipes, see "Drainage Profiles".
7. For dimension "L", "T_S" and other design data, see Revised Standard Plan RSP D140A.
8. For dimension "H", see Revised Standard Plan RSP D140C.



TYPICAL SECTION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE LINEAR RADIAL LAYOUT

NO SCALE

RSP D140B DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D140B

2018 REVISED STANDARD PLAN RSP D140B

12-29-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

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No. C61257
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CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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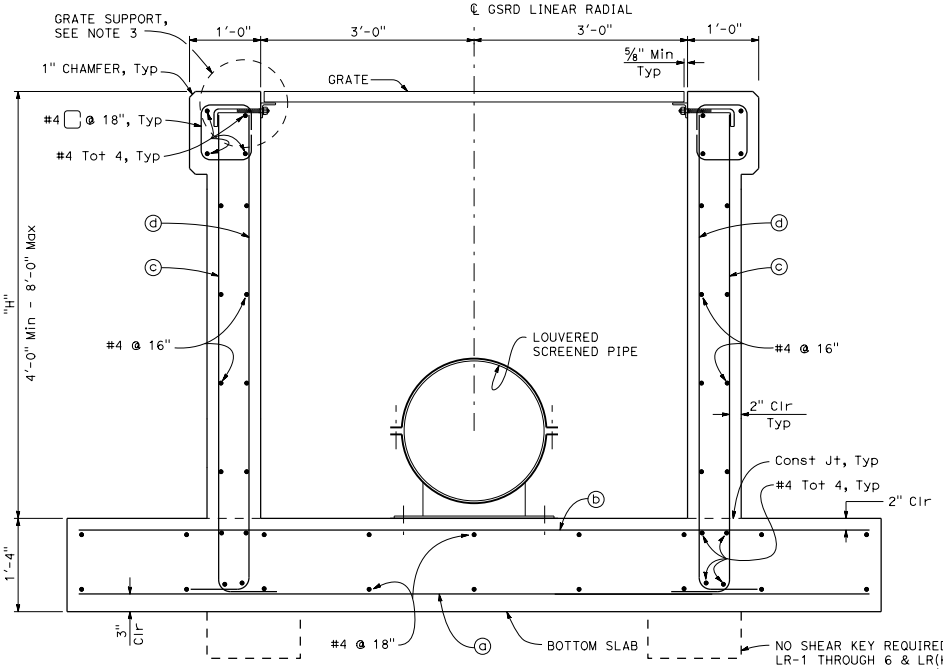
TO ACCOMPANY PLANS DATED _____

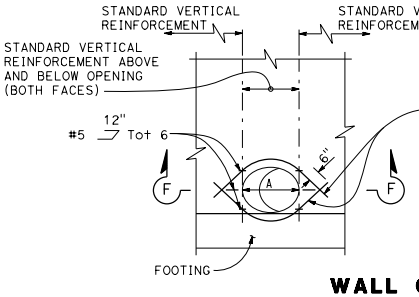
NOTES (THIS SHEET ONLY):

1. For location of sections A-A, B-B, C-C and D-D, see Revised Standard Plan RSP D140C.
2. For invert elevation differential between inlet and outlet, see "Drainage Profiles" sheets.
3. For grate support detail, see Revised Standard Plan RSP D140F.



SECTION A-A

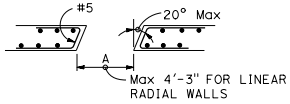
REINFORCING STEEL AND DATA FOR WALLS			
Design "H"	4'-0"	6'-0"	8'-0"
ⓓ BARS	#4 @ 18"	#5 @ 12"	#5 @ 8"
ⓑ BARS	#4 @ 18"	#4 @ 18"	#5 @ 16"
ⓒ BARS ⌊	#5 @ 14"	#5 @ 9"	#5 @ 4"
ⓓ BARS ⌋	#5 @ 14"	#5 @ 14"	#5 @ 12"



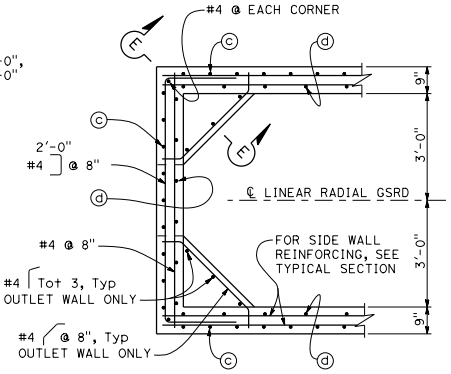
NOTE:
In all opening locations, horizontal reinforcement to be standard except as shown. All reinforcement to clear opening by 2" minimum.

WALL OPENING DETAILS

To be used at Linear Radial inlet and outlet pipe locations

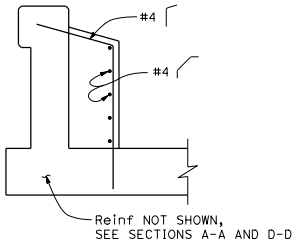


SECTION F-F



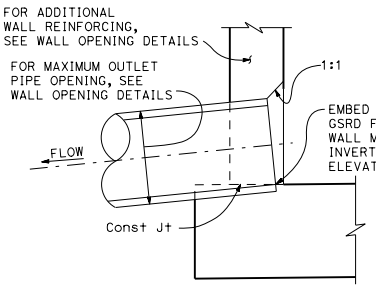
SECTION D-D

NOTE:
Outlet wall shown, inlet wall similar.

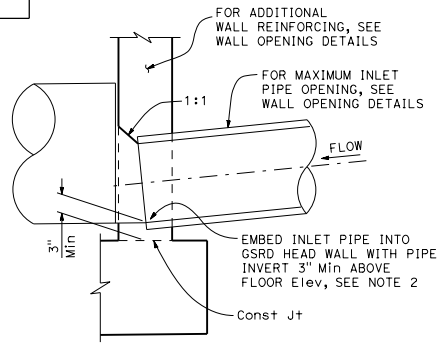


SECTION E-E

Outlet end only



SECTION B-B



SECTION C-C

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE LINEAR RADIAL DETAILS

NO SCALE

RSP D140C DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D140C

2018 REVISED STANDARD PLAN RSP D140C

12-29-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

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No. C61257
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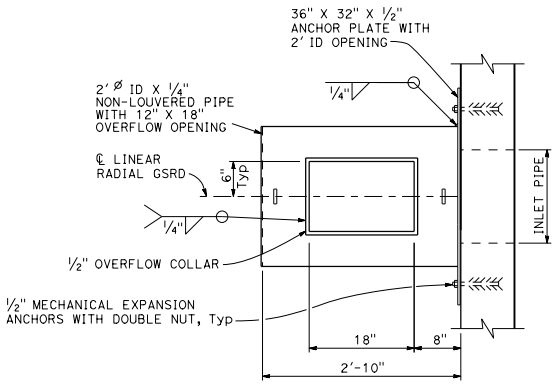
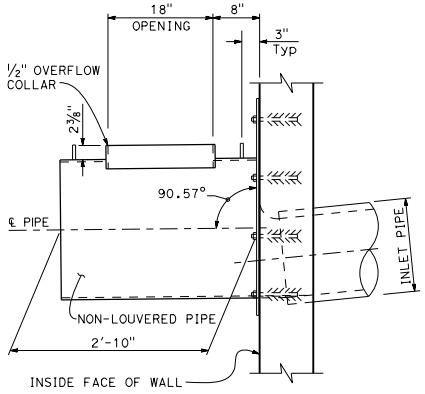
TO ACCOMPANY PLANS DATED _____

NOTE (THIS SHEET ONLY):

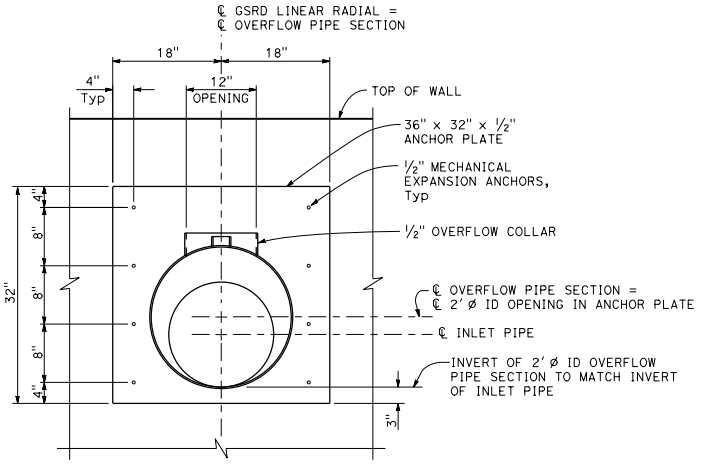
1. All metal components of screen pipe including connections to concrete must be stainless steel.



TOP VIEW



SIDE VIEW



END VIEW

OVERFLOW PIPE AND ANCHOR PLATE DETAILS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE
LINEAR RADIAL OVERFLOW PIPE DETAILS

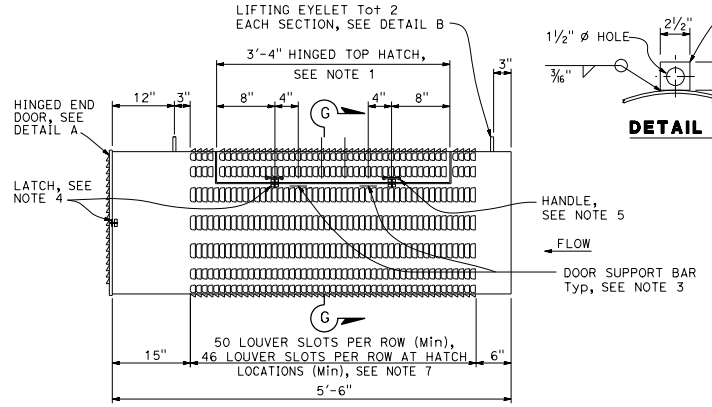
NO SCALE

RSP D140D DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D140D

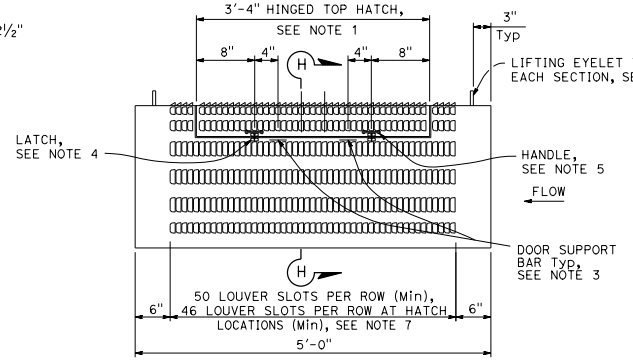
12-29-20

2018 REVISED STANDARD PLAN RSP D140D

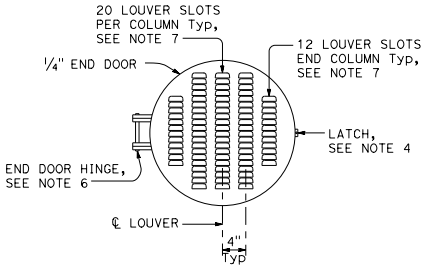


END SCREENED PIPE

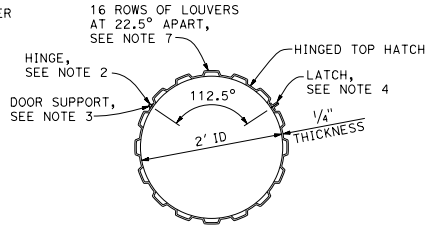
DETAIL B



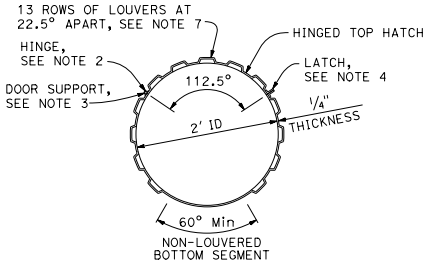
INTERMEDIATE SCREENED PIPE



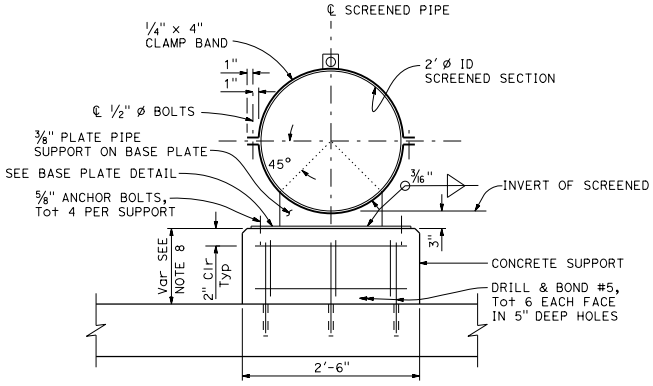
DETAIL A



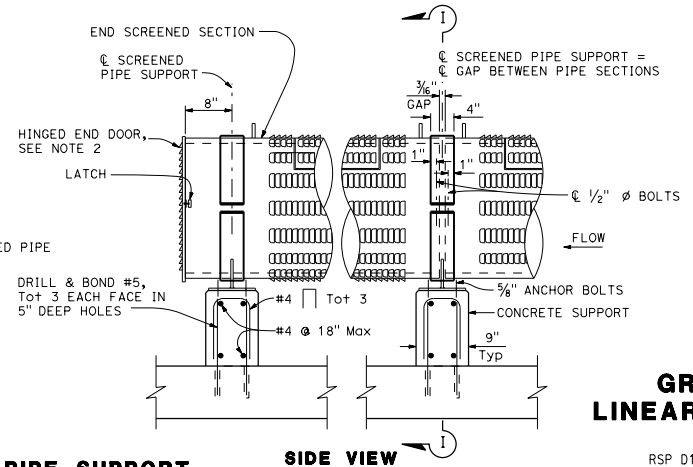
SECTION G-G



SECTION H-H

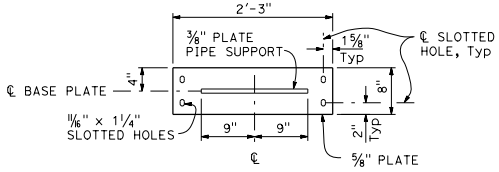


SECTION I-I



SIDE VIEW

SCREENED PIPE SUPPORT



BASE PLATE DETAIL

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

REGISTERED CIVIL ENGINEER

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

April 16, 2021
PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED _____

NOTES (THIS SHEET ONLY):

1. Provide 1" x ⅜" stainless steel bar at all cut edges to provide a seat and support for all doors when closed.
2. Provide stainless steel ¼" thick heavy duty hinges 4" x 4" thick with ⅝" Dia pin. Use fillet weld at cover and frame. Total 2 each door, evenly spaced.
3. Attach 2 - 1" x 1" x 3" stainless steel bars (or fabricator equivalent design) to support doors when in an open position. Mechanical stops can be welded on hinges.
4. Provide latch. Latch must have threaded U-bolt for adjustment. Latch to have ⅜" total adjustability and 1⅜" drawing movement and be rated at 360 LB.
5. Provide stainless steel handles at locations indicated.
6. End door to be secured to end screen with ⅜" Dia x 10" continuous bolt with lock nut through flat bars.
7. The aperture size of each louver slot must be ⅜" wide x 2½" long. Louver slot apertures must meet the following requirements:

Width:	% of Total
0.189" - 0.200"	90
0.181" - 0.200"	95
0.169" - 0.200"	100

Length:	% of Total
2.250" - 2.750"	90
2.000" - 3.000"	100

8. If inlet invert height above floor is at the minimum 3 inch height, use anchor bolts to mount the pipe support base plate to the floor. Otherwise, construct concrete support.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE
LINEAR RADIAL SCREENED PIPE DETAILS

NO SCALE

RSP D140E DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D140E

2018 REVISED STANDARD PLAN RSP D140E

12-29-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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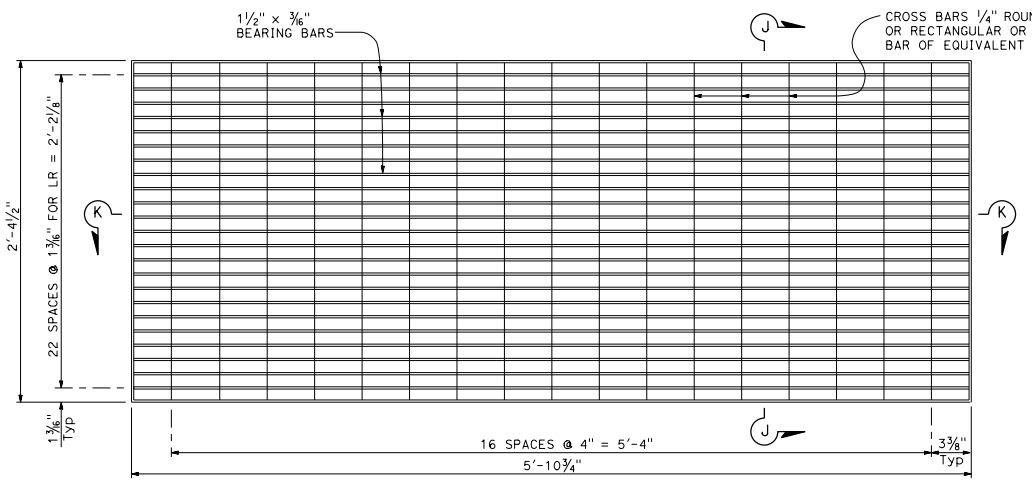
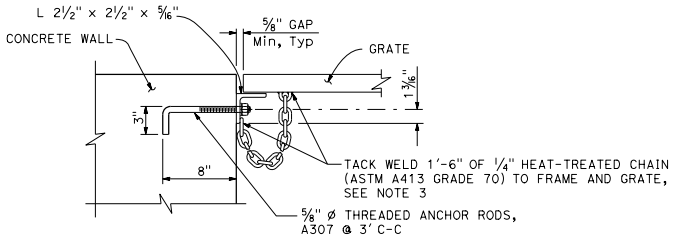
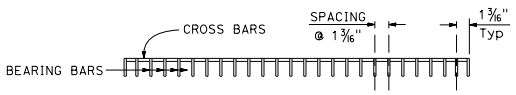
TO ACCOMPANY PLANS DATED _____



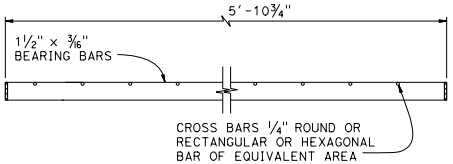
GRATE PANEL



GRATE SUPPORT



SECTION J-J



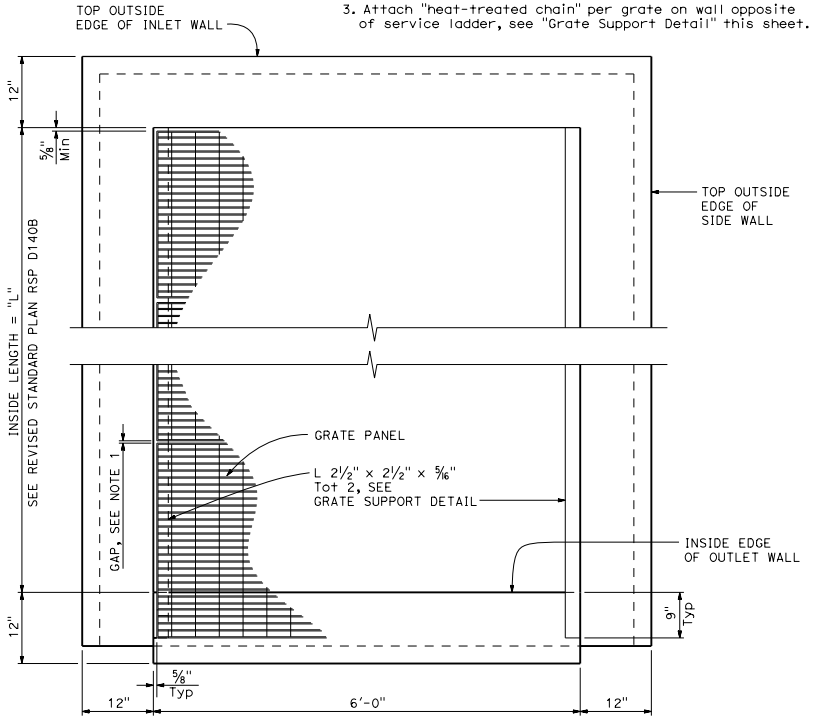
SECTION K-K

NOTE: CROSS BARS MAYBE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.

No. OF INTERMEDIATE SCREENED PIPES	LR No. OF GRATES	LR(HV) No. OF GRATES
0	5	6
1	7	8
2	9	10
3	11	12
4	13	14
5	15	16

NOTES (THIS SHEET ONLY):

1. Gap between grate panels is 1".
2. All metal components of grating including connections to wall must be galvanized.
3. Attach "heat-treated chain" per grate on wall opposite of service ladder, see "Grate Support Detail" this sheet.



GRATE LAYOUT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE
LINEAR RADIAL GRATE PANEL DETAILS

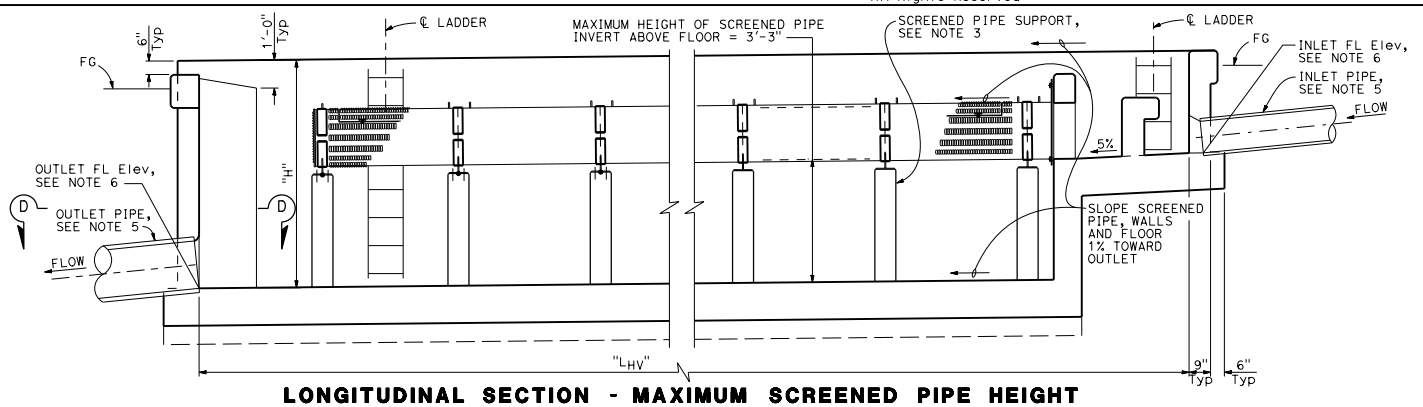
NO SCALE

RSP D140F DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

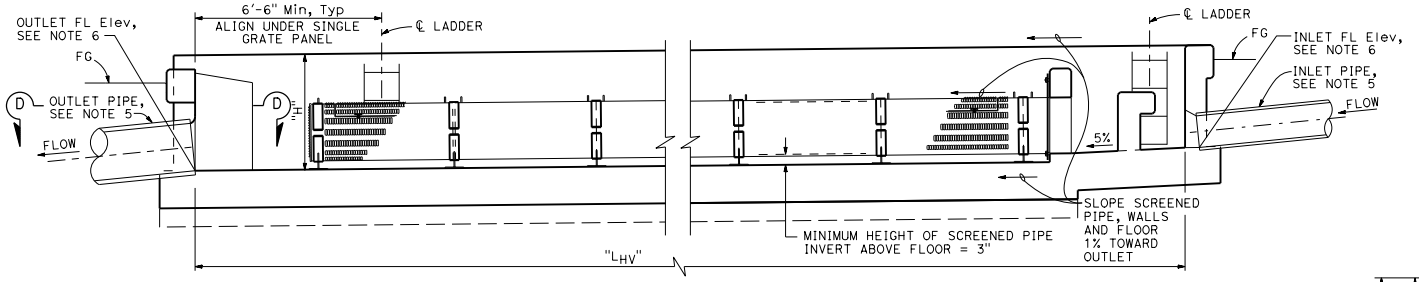
REVISED STANDARD PLAN RSP D140F

2018 REVISED STANDARD PLAN RSP D140F

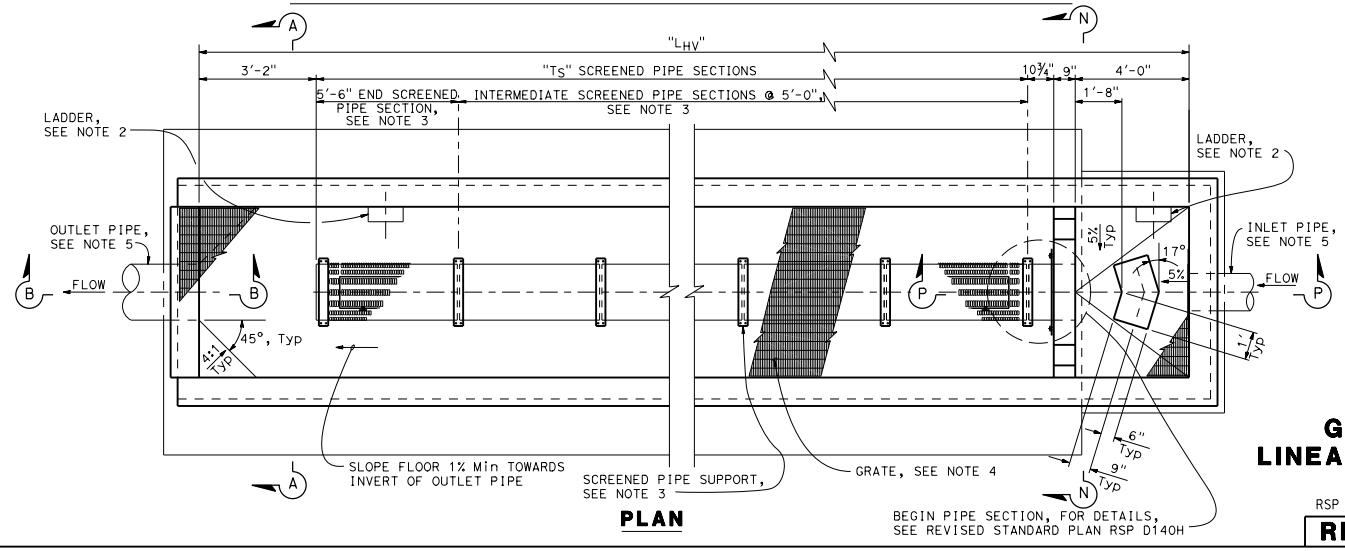
12-29-20



LONGITUDINAL SECTION - MAXIMUM SCREENED PIPE HEIGHT



LONGITUDINAL SECTION - MINIMUM SCREENED PIPE HEIGHT



PLAN

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

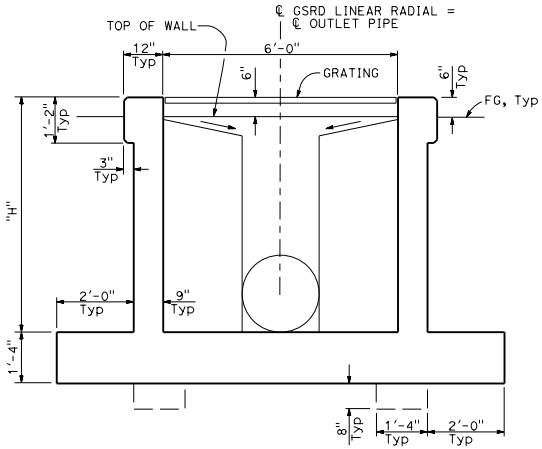
REGISTERED PROFESSIONAL ENGINEER
Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

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 (THIS SHEET ONLY):

1. For Section A-A, B-B, and D-D, see Revised Standard Plan RSP D140C.
2. For ladder details, see Revised Standard Plan RSP D118.
3. For end and intermediate screened pipe details, see Revised Standard Plan RSP D140E.
4. For grate details, see Revised Standard Plan RSP D140F.
5. For layout of inlet and outlet pipes, see "Drainage Plans".
6. For FL elevations of inlet and outlet pipes, see "Drainage Profiles".
7. For dimension "L_{HV}", "T_S" and other design data, see Design Chart on Revised Standard Plan RSP D140A.
8. For dimension "H", see Revised Standard Plan RSP D140C.
9. For Sections N-N and P-P, see Revised Standard Plan RSP D140H.



TYPICAL SECTION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE
LINEAR RADIAL (HIGH VELOCITY) LAYOUT

NO SCALE

RSP D140G DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D140G

2018 REVISED STANDARD PLAN RSP D140G

12-29-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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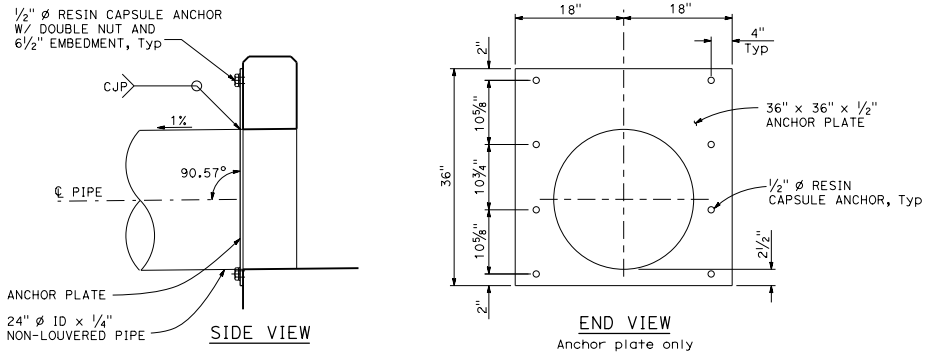
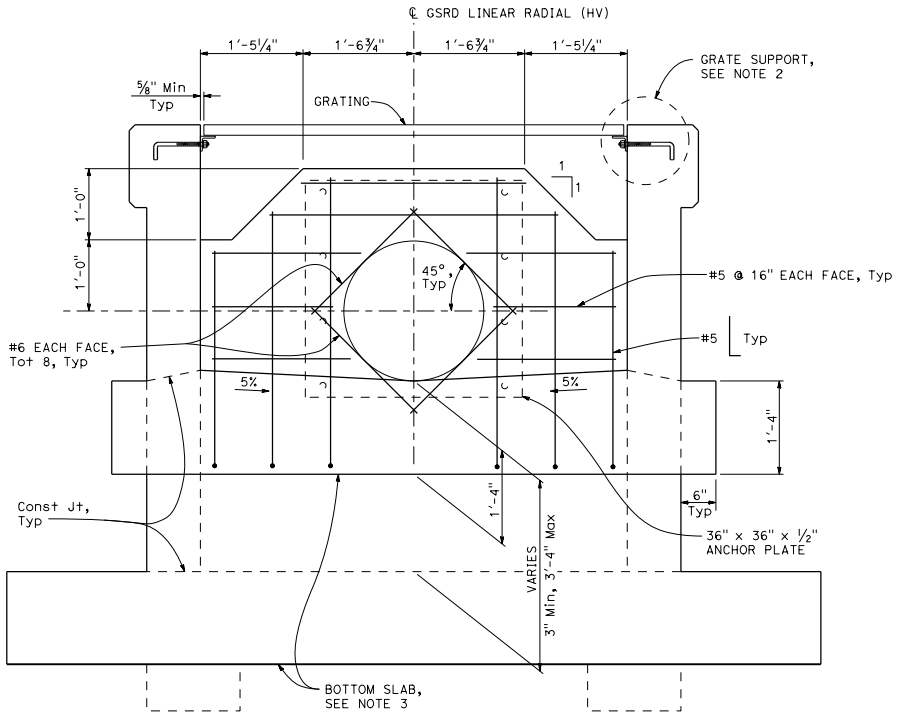
TO ACCOMPANY PLANS DATED _____



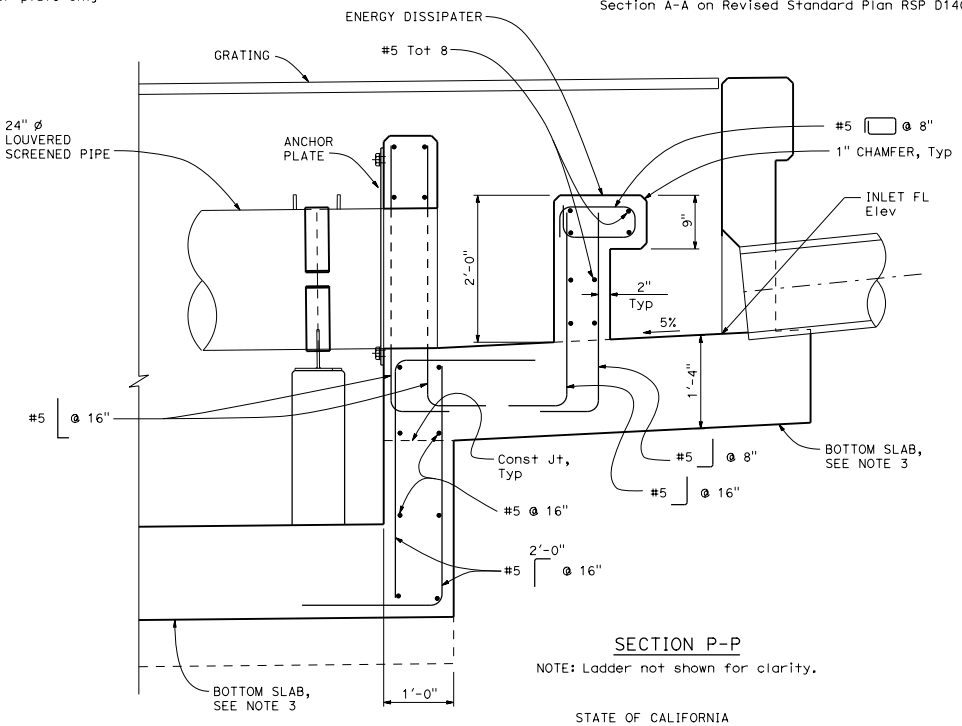
ANCHOR PLATE DETAILS

NOTES:

1. For location of Sections N-N and P-P, see Revised Standard Plan RSP D140G.
2. For Grate Support Details, see Revised Standard Plan RSP D140F.
3. For bottom slab details not shown, see Section A-A on Revised Standard Plan RSP D140C.



SECTION N-N



SECTION P-P

NOTE: Ladder not shown for clarity.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE LINEAR RADIAL (HIGH VELOCITY) DETAILS

NO SCALE

RSP D140H DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D140H

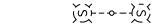
2018 REVISED STANDARD PLAN RSP D140H

12-29-20

ANNOTATION

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

STANDARD

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

SOFFIT AND WALL-MOUNTED LUMINAIRES

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

NOTE:
Arrow indicates "street side" of luminaire.

MISCELLANEOUS ELECTROLIERS

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

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

REGISTERED ELECTRICAL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-23
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 _____

2018 REVISED STANDARD PLAN RSP ES-1A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND)

NO SCALE

RSP ES-1A DATED APRIL 15, 2022 SUPERSEDES RSP ES-1A DATED OCTOBER 15, 2021 AND RSP ES-1A DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-1A DATED MAY 31, 2018 - PAGE 475 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-1A

12-3-21

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

REGISTERED ELECTRICAL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

CONDUIT

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

SERVICE EQUIPMENT

NEW	EXISTING	DESCRIPTION
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

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

FLASHING BEACON

NEW	EXISTING	DESCRIPTION
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	DESCRIPTION
		PEDESTRIAN SIGNAL HEAD
		PUSH BUTTON ASSEMBLY POST
		PEDESTRIAN BARRICADE
		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW, AND GREEN SECTIONS
		VEHICLE SIGNAL HEAD WITH ANGLE VISOR
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) "PHBF" INDICATES TYPE MAS-3A FOR PEDESTRIAN HYBRID BEACON FACE
		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW, AND GREEN LEFT ARROW SECTIONS
		VEHICLE SIGNAL HEAD CONSISTING OF RED AND YELLOW SECTIONS WITH AN UP GREEN ARROW SECTION
		VEHICLE SIGNAL HEAD (5 SECTION) CONSISTING OF RED, YELLOW, AND GREEN SECTIONS WITH YELLOW AND GREEN RIGHT ARROW SECTIONS
		TYPE 15TS STANDARD WITH VEHICLE SIGNAL HEAD, PEDESTRIAN SIGNAL HEAD, AND LUMINAIRE
		TYPE 21TS STANDARD WITH VEHICLE SIGNAL HEAD, PEDESTRIAN SIGNAL HEAD, AND LUMINAIRE
		STANDARD WITH LUMINAIRE AND SIGNAL MAST ARMS AND ATTACHED VEHICLE SIGNAL HEADS
		TYPE 1 STANDARD WITH ATTACHED VEHICLE SIGNAL HEADS
		STANDARD WITH A SIGNAL MAST ARM, ATTACHED VEHICLE SIGNAL HEADS AND STREET NAME SIGN
		CONTROLLER ASSEMBLY. DOOR INDICATES FRONT OF CABINET
		GUARD POST
		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.

OVERHEAD SIGN

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND)

NO SCALE

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

REVISED STANDARD PLAN RSP ES-1B

2018 REVISED STANDARD PLAN RSP ES-1B

12-12-19

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

REGISTERED ELECTRICAL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

EQUIPMENT DESIGNATION

SIGN:

SIGN No. 12345
10 OSL SCI 1.0

- EQUIPMENT IDENTIFICATION CHARACTERS
- TRANSFORMER RATING (kVA)
- LIGHTING CONTROL TYPE
- NUMBER OF OVERHEAD SIGN LUMINAIRES

LIGHTING STANDARD, SIGNAL AND LIGHTING STANDARD:

L2745 - 15'-0"

- MAST ARM LENGTH
- EQUIPMENT IDENTIFICATION CHARACTERS

SOFFIT:

L98765

- EQUIPMENT IDENTIFICATION CHARACTERS

NOTE:

EXISTING EQUIPMENT IDENTIFICATION CHARACTERS ARE SHOWN IN PARENTHESIS

MISCELLANEOUS EQUIPMENT

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

CONDUIT AND CONDUCTORS

7 3½"C, 2#10 (Ltg), 15#14 (Sig), 2 DLC, 12P#18, 1-COAXIAL CABLE (camera), 3-3CSC, 2 SIC

- CONDUIT RUN NUMBER
- PAIR
- NUMBER AND SIZE OF CONDUCTORS AND CABLES
- SIZE OF CONDUIT IN INCHES

DETAILS

- STANDARD PLAN SHEET NUMBER
- DETAIL, NUMBER, SECTION, TYPE, OR ELEVATION
- (B) EQUIPMENT OR MATERIAL DESIGNATION

PHASE

PEDESTRIAN
Ø1, Ø2, Ø2P, etc.
PHASE

TRAFFIC PHASE IDENTIFICATION FOR SIGNALS, DETECTORS, AND PHASE DIAGRAMS

WIRING COMPONENTS

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

HANDHOLES, PULL BOXES, AND VAULTS

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

DESIGNATION — 6(E) — TYPE — (T)

DESIGNATIONS:

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

TYPE:

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

VEHICLE DETECTOR DESIGNATION

5 J 9 U

- INPUT FILE (U = UPPER, L = LOWER)
- SLOT NUMBER IN INPUT FILE (1 TO 9)
- INPUT FILE (I OR J)
- PHASE (1 TO 8)

DETECTORS

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND)

NO SCALE

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

REVISED STANDARD PLAN RSP ES-1C

2018 REVISED STANDARD PLAN RSP ES-1C

12-13-19

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

October 19, 2018
PLANS APPROVAL DATE

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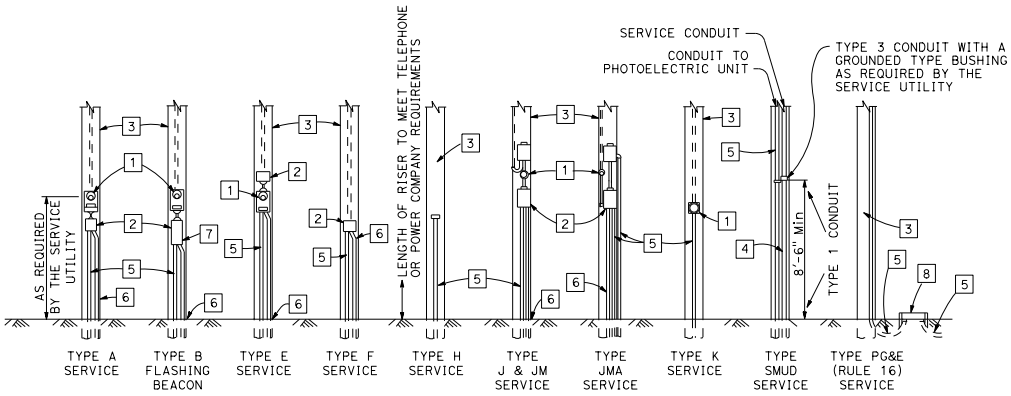
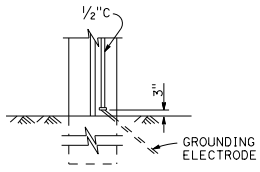
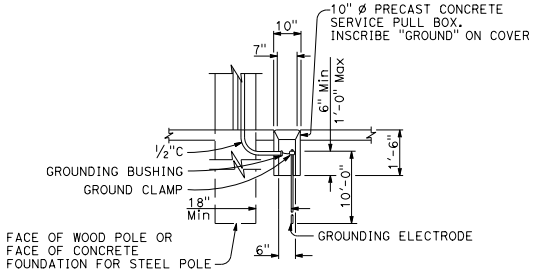
TO ACCOMPANY PLANS DATED _____



POLE MOUNTED SERVICE INSTALLATIONS



TYPE A
See Note 1



TYPE B
See Note 2

SERVICE GROUNDING

LEGEND:

1. METER SOCKET.
2. SERVICE ENCLOSURE WITH A MINIMUM 60 A RATED MAIN CIRCUIT BREAKER, UNLESS OTHERWISE SHOWN.
3. A. UTILITY OWNED POLE. THE SERVICE UTILITY WILL FURNISH AND INSTALL REQUIRED SERVICE RISER, PEU WITH CONDUCTORS AND OTHER EQUIPMENT AS NEEDED.
   B. STATE OWNED POLE. THE CONTRACTOR SHALL FURNISH AND INSTALL REQUIRED SERVICE RISER AND EQUIPMENT.
4. 2"C, SERVICE CONDUIT MUST HAVE A GROUNDED TYPE BUSHING INSTALLED AT UPPER END OF THE METALLIC POLE RISER CONDUIT. A GROUNDING CONDUCTOR MUST BE ATTACHED TO THE BUSHING, CARRIED THROUGH THE CONDUIT RUN AND ATTACHED TO THE SERVICE EQUIPMENT ENCLOSURE'S GROUNDING ELECTRODE.
5. CONDUIT, LENGTH AND SIZE AS REQUIRED.
6. ½"C, 1#6. SEE SERVICE GROUNDING.
7. FLASHING BEACON CONTROL ASSEMBLY.
8. SERVICE PULL BOX, No. 5 UNLESS OTHERWISE NOTED, FURNISHED AND INSTALLED BY THE CONTRACTOR. SERVICE UTILITY SHALL DETERMINE THE EXACT LOCATION.

NOTES:

1. Ground clamp and required fittings must be accessible. Conduit must extend to protect grounding electrode conductor from mechanical damage.
2. Use where service utility requires 18" clearance between grounding electrode and the pole or service equipment enclosure. Installation shown is for sidewalk or paved areas. In unpaved areas, omit special service pull box and locate ground clamp above ground or locate ground clamp in nearest pull box.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT)

NO SCALE

RSP ES-2A DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-2A
DATED MAY 31, 2018 - PAGE 478 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-2A

2018 REVISED STANDARD PLAN RSP ES-2A

6-13-18

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

H.R.J
REGISTERED ELECTRICAL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

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

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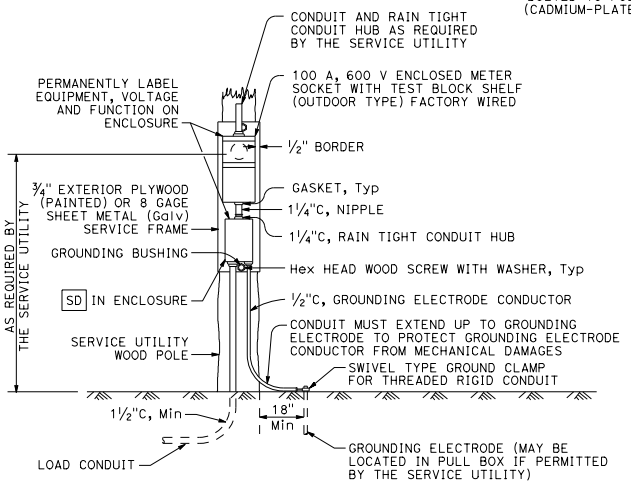
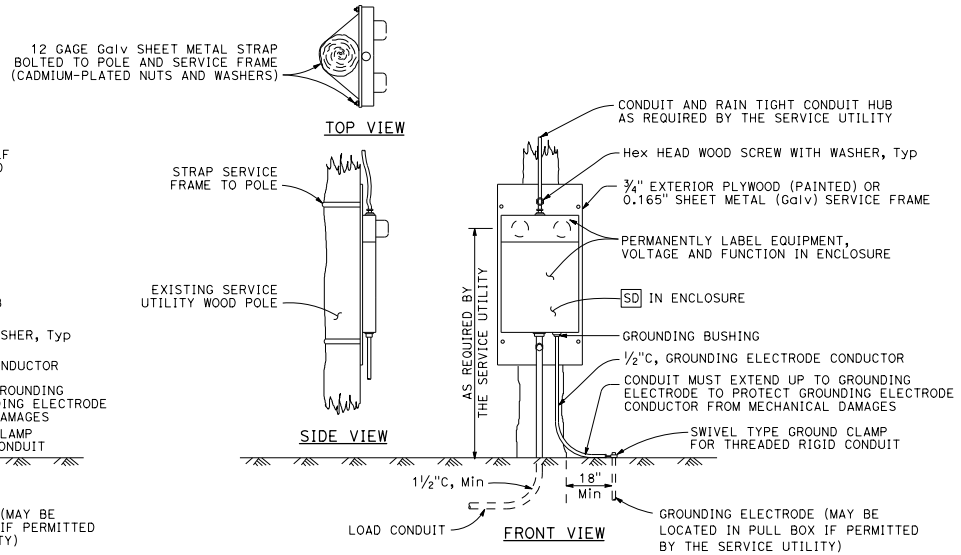
TO ACCOMPANY PLANS DATED _____



TYPE SCE-1
DETAIL A



TYPE SCE-2
DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT)

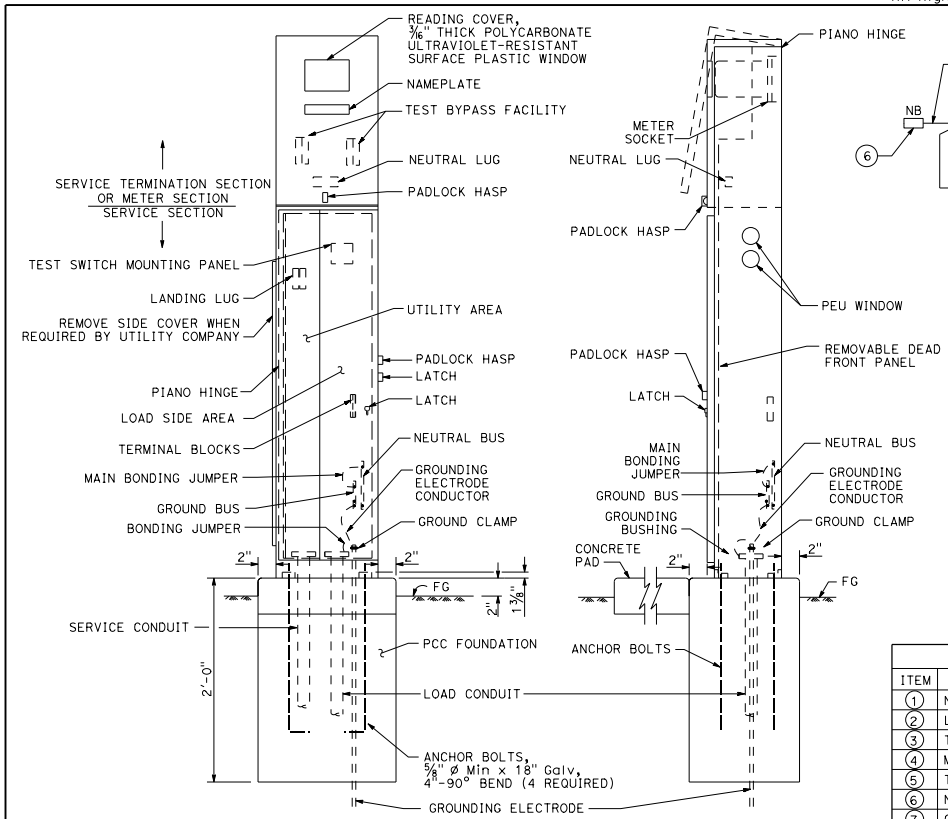
NO SCALE

RSP ES-2B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-2B DATED MAY 31, 2018 - PAGE 479 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-2B

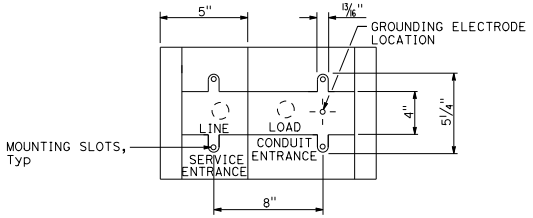
2018 REVISED STANDARD PLAN RSP ES-2B

5-9-18



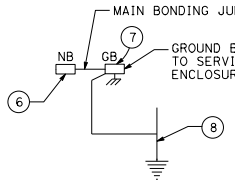
TYPE III-AF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

DETAIL A

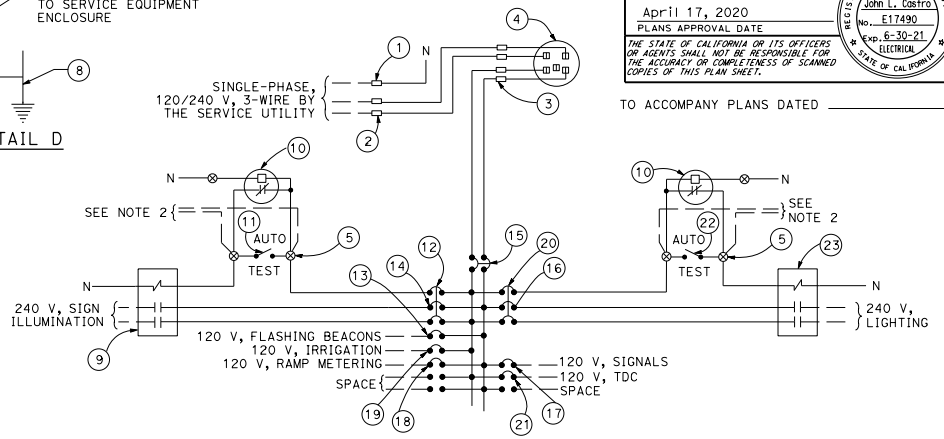


BASE FOR TYPE III-A SERVICE EQUIPMENT ENCLOSURE

DETAIL B



DETAIL D



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		(13)	15 A, 120 V, 1P, CB	FLASHING BEACON
(2)	LANDING LUG		(14)	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
(3)	TEST BYPASS FACILITY		(15)	100 A, 240 V, 2P, CB	MAIN BREAKER
(4)	METER SOCKET AND SUPPORT		(16)	30 A, 240 V, 2P, CB	LIGHTING
(5)	TERMINAL BLOCKS		(17)	50 A, 120 V, 1P, CB	SIGNALS
(6)	NEUTRAL BUS		(18)	30 A, 120 V, 1P, CB	RAMP METERING
(7)	GROUND BUS		(19)	20 A, 120 V, 1P, CB	IRRIGATION
(8)	GROUNDING ELECTRODE		(20)	15 A, 120 V, 1P, CB	LIGHTING CONTROL
(9)	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	(21)	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET
(10)	PHOTOELECTRIC UNIT (NOTE 4)	PEU	(22)	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
(11)	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	(23)	60 A, 2P, NO CONTACTOR	LIGHTING
(12)	15 A, 120 V, 1P, CB	SIGN ILLUMINATION 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) and (20) shall be ganged operated CB.
6. The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.

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

REGISTERED ELECTRICAL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — John L. Castro — No. E17490 — Exp. 6-30-21 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 _____

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 APRIL 17, 2020 SUPERSEDES RSP ES-2D DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-2D DATED MAY 31, 2018 - PAGE 481 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-2D

2018 REVISED STANDARD PLAN RSP ES-2D

12-12-19

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

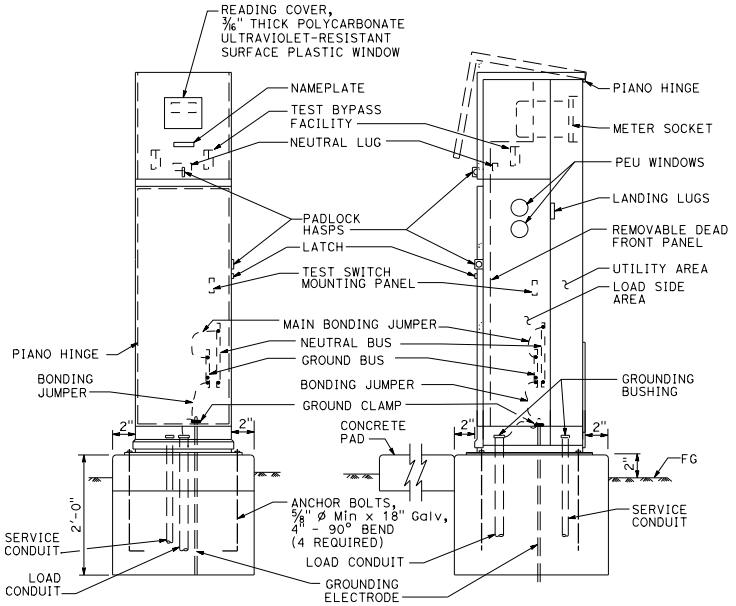
REGISTERED ELECTRICAL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER — John L. Castro — No. E17490 — Exp. 6-30-21 — ELECTRICAL — STATE OF CALIFORNIA

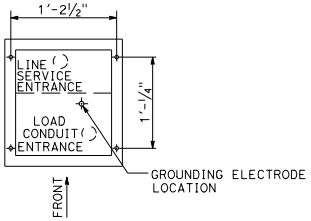
TO ACCOMPANY PLANS DATED _____



FRONT VIEW SIDE VIEW

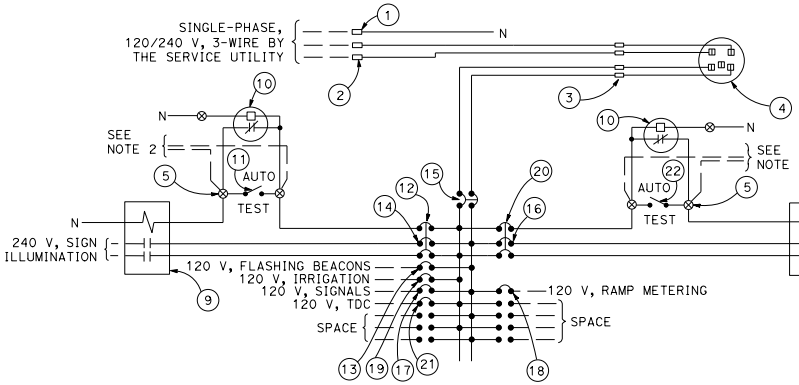
TYPE III-BF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

DETAIL A



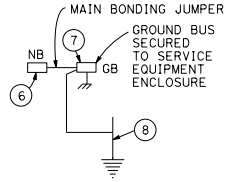
BASE FOR TYPE III-B SERVICE EQUIPMENT ENCLOSURE

DETAIL B



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C



DETAIL D

TYPE III-B SERVICE EQUIPMENT ENCLOSURE LEGEND (120/240 V)

ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
1	NEUTRAL LUG		13	15 A, 120 V, 1P, CB	FLASHING BEACON
2	LANDING LUG		14	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
3	TEST BYPASS FACILITY		15	100 A, 240 V, 2P, CB	MAIN BREAKER
4	METER SOCKET AND SUPPORT		16	30 A, 240 V, 2P, CB	LIGHTING
5	TERMINAL BLOCKS		17	50 A, 120 V, 1P, CB	SIGNALS
6	NEUTRAL BUS		18	30 A, 120 V, 1P, CB	RAMP METERING
7	GROUND BUS		19	20 A, 120 V, 1P, CB	IRRIGATION
8	GROUNDING ELECTRODE		20	15 A, 120 V, 1P, CB	LIGHTING CONTROL
9	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	21	20 A, 120 V, IP, CB	TELEPHONE DEMARCATION CABINET
10	PHOTOELECTRIC UNIT (NOTE 4)	PEU	22	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
11	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	23	60 A, 2P, NO CONTACTOR	LIGHTING
12	15 A, 120 V, 1P, CB	SIGN ILLUMINATION 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) and (20) shall be ganged operated CB.
6. The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-B SERIES)

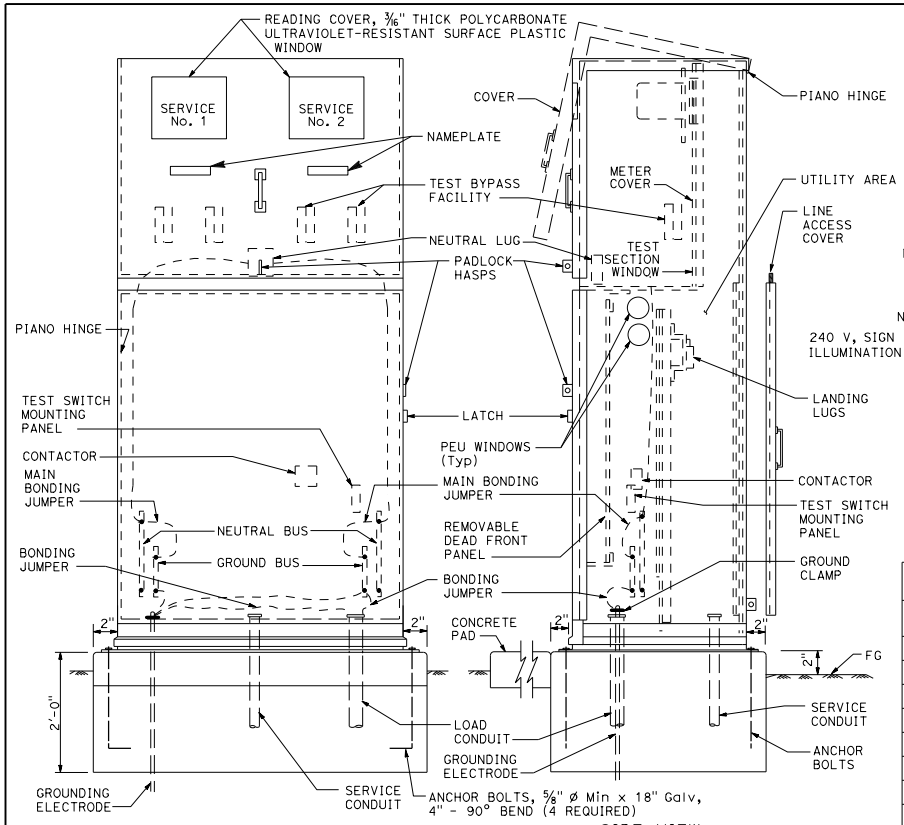
NO SCALE

RSP ES-2E DATED APRIL 17, 2020 SUPERSEDES RSP ES-2E DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-2E DATED MAY 31, 2018 - PAGE 482 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-2E

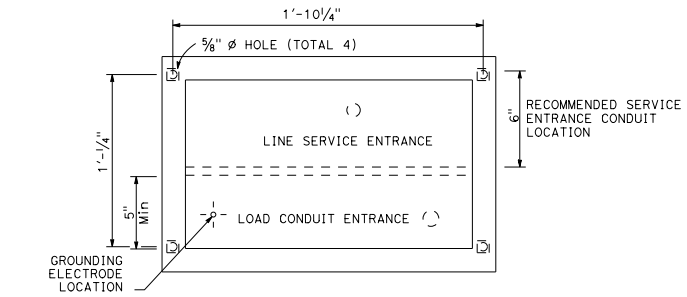
12-12-19

2018 REVISED STANDARD PLAN RSP ES-2E



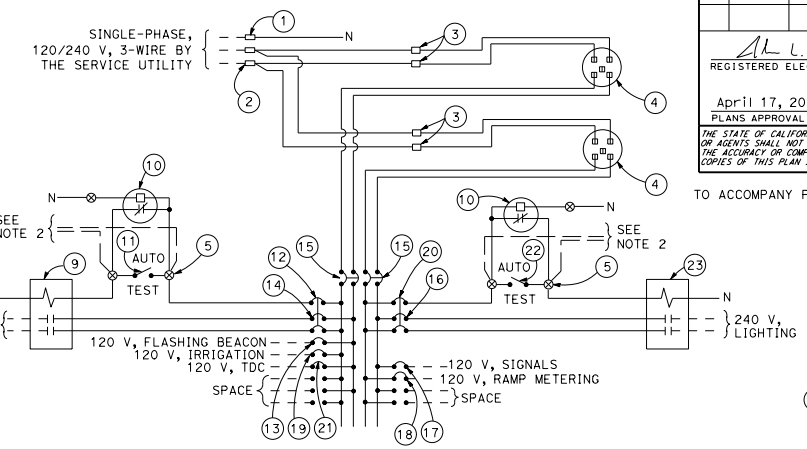
TYPE III-CF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

DETAIL A



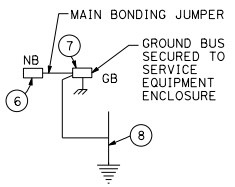
BASE FOR TYPE III-C SERVICE EQUIPMENT ENCLOSURE

DETAIL B



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C



DETAIL D

TYPE III-C SERVICE EQUIPMENT ENCLOSURE LEGEND (120/240 V)

ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
(1)	NEUTRAL LUG		(13)	15 A, 120 V, 1P, CB	FLASHING BEACON
(2)	LANDING LUG		(14)	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
(3)	TEST BYPASS FACILITY		(15)	100 A, 240 V, 2P, CB	MAIN BREAKER
(4)	METER SOCKET AND SUPPORT		(16)	30 A, 240 V, 2P, CB	LIGHTING
(5)	TERMINAL BLOCKS		(17)	50 A, 120 V, 1P, CB	SIGNALS
(6)	NEUTRAL BUS		(18)	30 A, 120 V, 1P, CB	RAMP METERING
(7)	GROUND BUS		(19)	20 A, 120 V, 1P, CB	IRRIGATION
(8)	GROUNDING ELECTRODE		(20)	15 A, 120 V, 1P, CB	LIGHTING CONTROL
(9)	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	(21)	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET
(10)	PHOTOELECTRIC UNIT (NOTE 4)	PEU	(22)	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
(11)	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	(23)	60 A, 2P, NO CONTACTOR	LIGHTING
(12)	15 A, 120 V, 1P, CB	SIGN ILLUMINATION 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) and (20) shall be ganged operated CB.
6. The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.

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

REGISTERED ELECTRICAL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
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 _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-C SERIES)

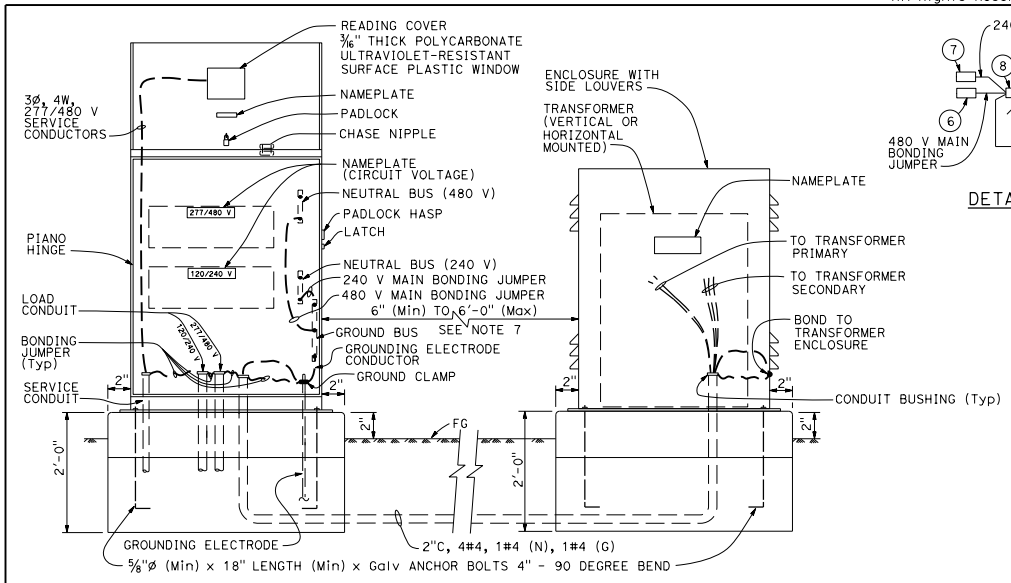
NO SCALE

RSP ES-2F DATED APRIL 17, 2020 SUPERSEDES RSP ES-2F DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-2F DATED MAY 31, 2018 - PAGE 483 OF THE STANDARD PLANS BOOK DATED 2018.

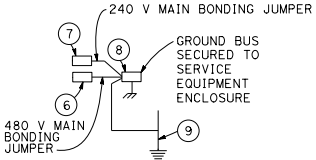
REVISED STANDARD PLAN RSP ES-2F

2018 REVISED STANDARD PLAN RSP ES-2F

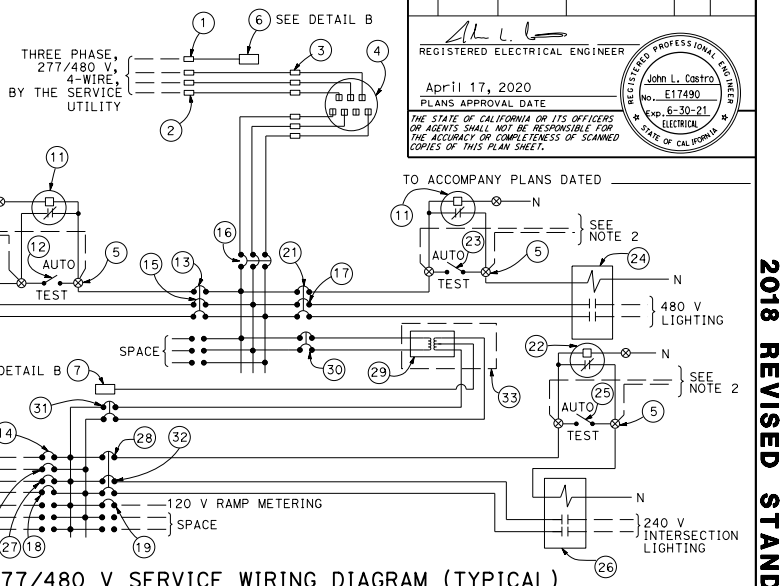
12-12-19



SIDE INSTALLATION OF TRANSFORMER

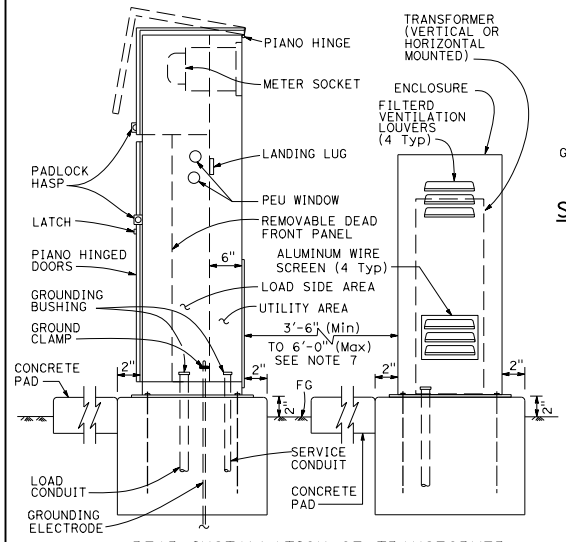


DETAIL B



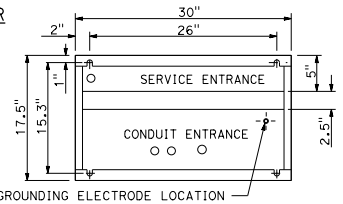
277/480 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C



REAR INSTALLATION OF TRANSFORMER

TYPE III-DF SERVICE EQUIPMENT ENCLOSURE TYPICAL



BASE FOR TYPE III-D SERVICE EQUIPMENT ENCLOSURE

DETAIL A

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 Y 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 (28) shall be ganged operated CB.
7. The enclosure shall be located to the side of the service equipment enclosure unless otherwise indicated on the plans.
8. The base dimension for the enclosure for the transformer shall be as per manufacturer's design.
9. The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.

TYPE III-D SERVICE (277/480 V) EQUIPMENT LEGEND

ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
(1)	NEUTRAL LUG		(18)	50 A, 120 V, 1P, CB	SIGNAL (120 V)
(2)	LANDING LUG		(19)	30 A, 120 V, 1P, CB	RAMP METERING (120 V)
(3)	TEST BYPASS FACILITY		(20)	20 A, 120 V, 1P, CB	IRRIGATION (120 V)
(4)	METER SOCKET AND SUPPORT		(21)	10 A, 277 V, 1P, CB	LIGHTING CONTROL (277 V)
(5)	TERMINAL BLOCKS		(22)	PHOTOELECTRIC UNIT (NOTE 4)	PEU (120/240 V)
(6)	NEUTRAL BUS	NEUTRAL BUS (480 V)	(23)	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH (277 V)
(7)	NEUTRAL BUS	NEUTRAL BUS (240 V)	(24)	30 A, 2P, NO CONTACTOR	LIGHTING (480 V)
(8)	GROUND BUS		(25)	15 A, 1P, TEST SWITCH	INTERSECTION LIGHTING TEST SWITCH (120 V)
(9)	GROUNDING ELECTRODE		(26)	30 A, 2P, NO CONTACTOR	INTERSECTION LIGHTING (120 V)
(10)	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION (480 V)	(27)	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET (120 V)
(11)	PHOTOELECTRIC UNIT (NOTE 4)	PEU (277/480 V PEU)	(28)	10 A, 120 V, 1P, CB	INTERSECTION LIGHTING CONTROL (120 V)
(12)	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH (277 V)	(29)	15 kVA, 480-120/240 V TRANSFORMER	TRANSFORMER, 15 kVA, 480-240 V
(13)	10 A, 277 V, 1P, CB	SIGN ILLUMINATION CONTROL (277 V)	(30)	40 A, 480 V, 2P, CB	TRANSFORMER PRIMARY (480 V)
(14)	15 A, 120 V, 1P, CB	FLASHING BEACON (120 V)	(31)	80 A, 240 V, 2P, CB	TRANSFORMER SECONDARY (240 V)
(15)	15 A, 480 V, 2P, CB	SIGN ILLUMINATION (480 V)	(32)	30 A, 240 V, 2P, CB	INTERSECTION LIGHTING (240 V)
(16)	100 A, 480 V, 3P, CB	MAIN BREAKER (480 V)	(33)	ENCLOSURE	TRANSFORMER, 15 kVA, 480-240 V
(17)	15 A, 480 V, 2P, CB	LIGHTING (480 V)			

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

REGISTERED ELECTRICAL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — John L. Castro — No. E17490 — Exp. 6-30-21 ELECTRICAL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-D SERIES)

NO SCALE

RSP ES-2G DATED APRIL 17, 2020 SUPERSEDES RSP ES-2G DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-2G DATED MAY 31, 2018 - PAGE 484 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-2G

12-12-19

2018 REVISED STANDARD PLAN RSP ES-2G

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

REGISTERED ELECTRICAL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

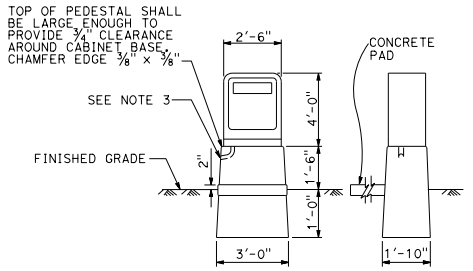
REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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. Cabinet 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 4" thick x width of foundation.
3. A 1" drain shall be provided through the foundation of a cabinet. Drain pipe shall be screened.
4. Cabinet shelves shall be adjustable for vertical spacing and shall be removable.
5. 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.
6. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
7. 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.
8. Anchor bolts for cabinet shall be ¾" ø x 1'-6" with a 2" - 90° bend.



FRONT VIEW SIDE VIEW

PEDESTAL FOUNDATION FOR MODEL 336LS CABINET

DETAIL A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CONTROLLER CABINET ADAPTER, FOUNDATIONS, AND PAD DETAILS)

NO SCALE

RSP ES-3B DATED APRIL 16, 2021 SUPERSEDES RSP ES-3B DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-3B DATED MAY 31, 2018 - PAGE 486 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3B

12-21-20

2018 REVISED STANDARD PLAN RSP ES-3B

NOTES:

1. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
2. 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

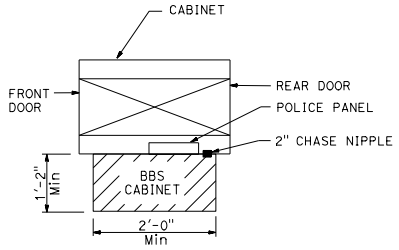
REGISTERED ELECTRICAL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

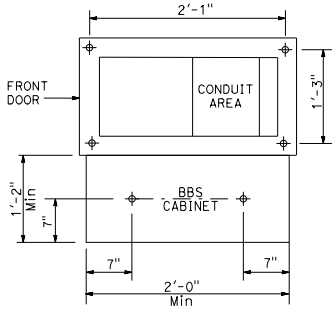
REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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 _____

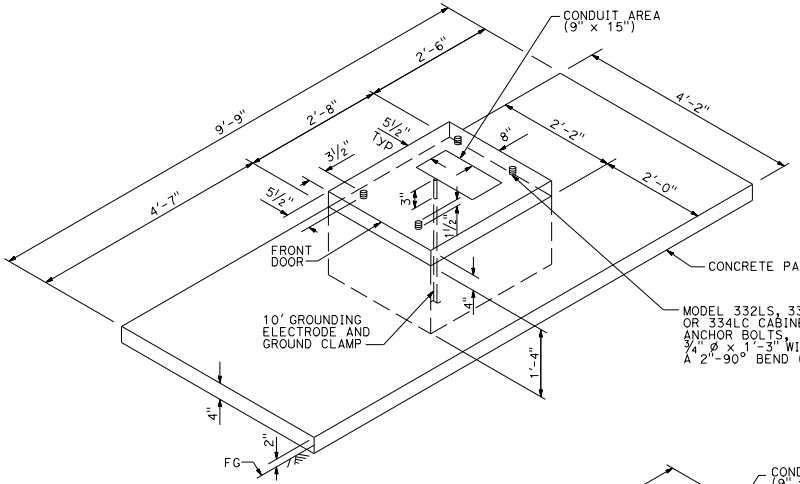


TOP VIEW



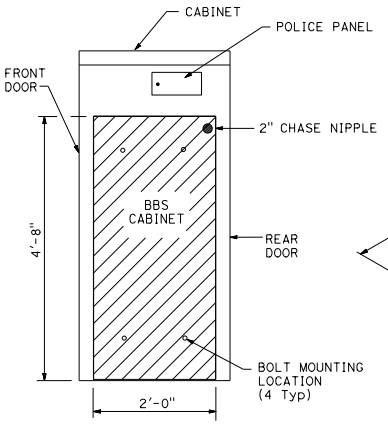
BASE PLAN FOR LX-BBS CABINET MOUNTED TO THE MODEL 332LS CABINET

(FOR DIMENSIONS AND DETAILS NOT SHOWN, SEE CABINET HOUSING DETAILS OF THE TRANSPORTATION ELECTRICAL EQUIPMENT SPECIFICATION (TEES))



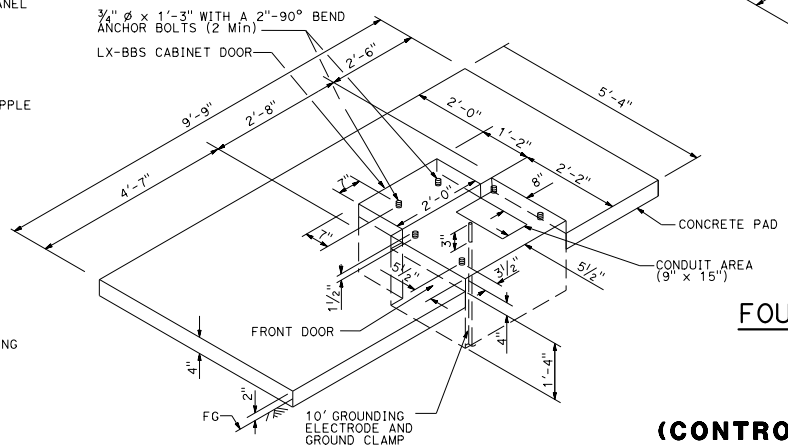
FOUNDATION AND PAD DETAIL

Model 332LS, 334LS, and 334LC



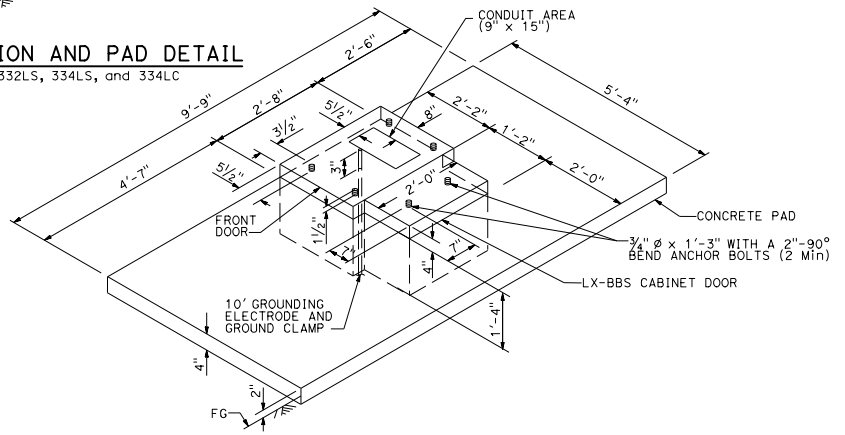
SIDE VIEW

LX-BBS CABINET MOUNTED TO THE MODEL 332LS CABINET



LEFT SIDE INSTALLATION

DETAIL A



RIGHT SIDE INSTALLATION

DETAIL B

MODEL 332LS CABINET
FOUNDATION DETAIL WITH LX-BATTERY BACKUP SYSTEM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(CONTROLLER CABINET FOUNDATION AND PAD DETAILS)

NO SCALE

RSP ES-3C DATED APRIL 16, 2021 SUPERSEDES RSP ES-3C DATED OCTOBER 16, 2020 AND RSP ES-3C DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-3C DATED MAY 31, 2018 - PAGE 487 OF THE STANDARD PLANS BOOK DATED 2018.

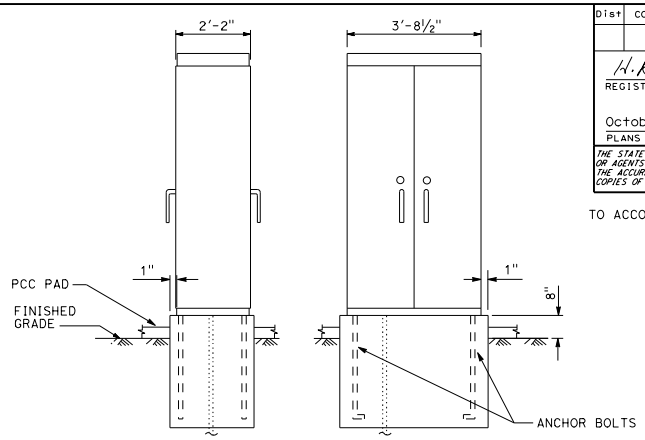
REVISED STANDARD PLAN RSP ES-3C

2018 REVISED STANDARD PLAN RSP ES-3C

11-2-20

NOTES:

1. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
2. 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.
3. Dimensions are nominal.
4. For Model 342LX, 344LX, and 346LX cabinets details, see "Transportation Electrical Equipment Specifications".
5. Grounding electrode shall be placed 3 inches in front of the service conduit area.
6. Conduit area, to 120 V Service.
7. Conduit area for the controller side of cabinet.



FOUNDATION FOR TYPE LX CABINET
DETAIL A

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

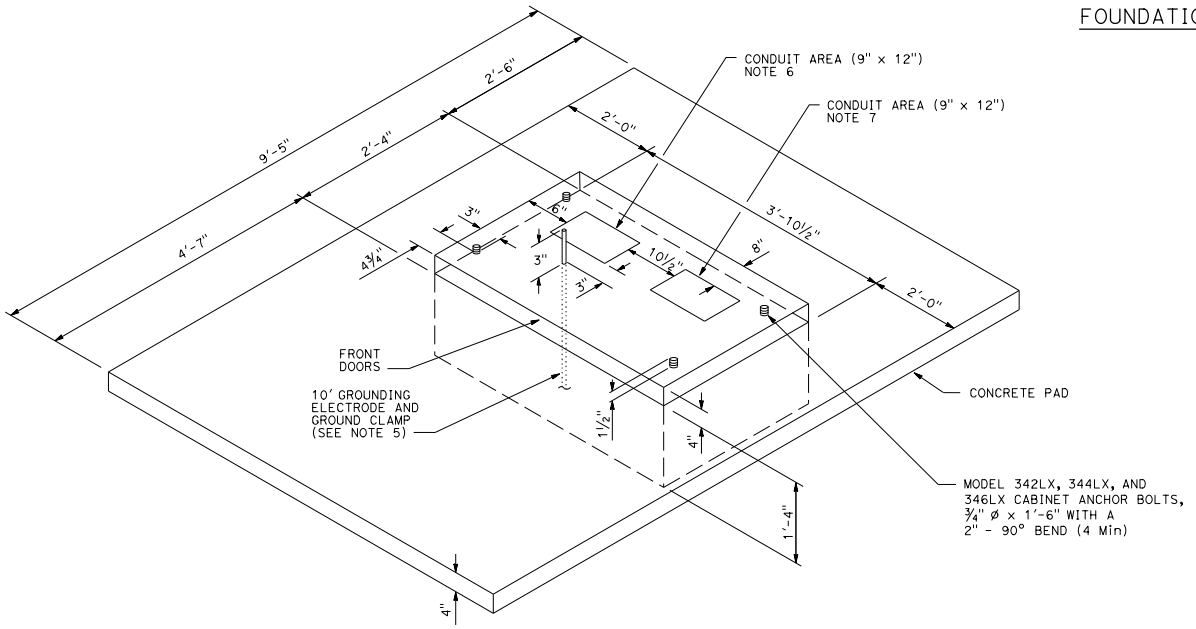
H.R.J
REGISTERED ELECTRICAL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

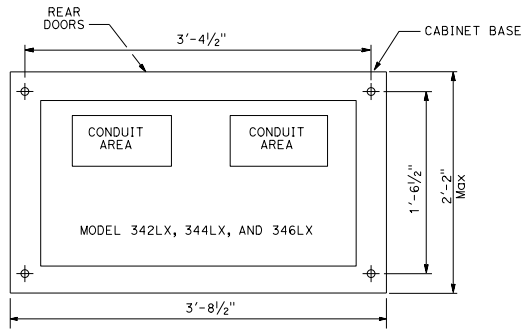
REGISTERED PROFESSIONAL ENGINEER
Hamid Zolfaghari
No. E15636
Exp. 12-31-19
ELECTRICAL
STATE OF CALIFORNIA

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 _____



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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-3C1 DATED MAY 31, 2018 - PAGE 488 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3C1

2018 REVISED STANDARD PLAN RSP ES-3C1

5-21-18

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

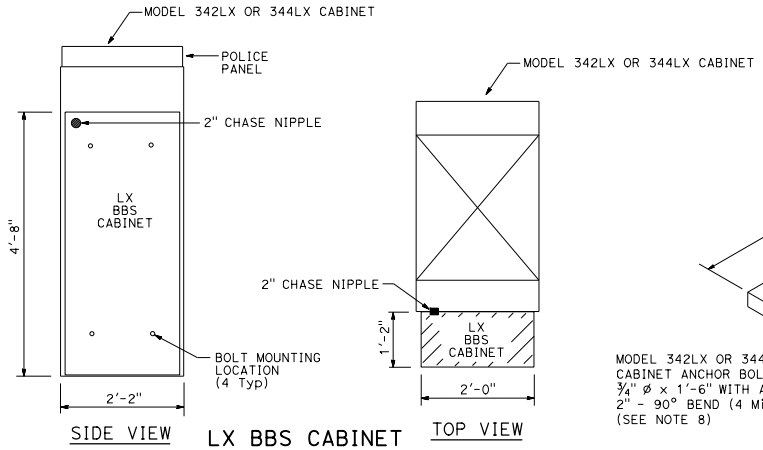
REGISTERED ELECTRICAL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

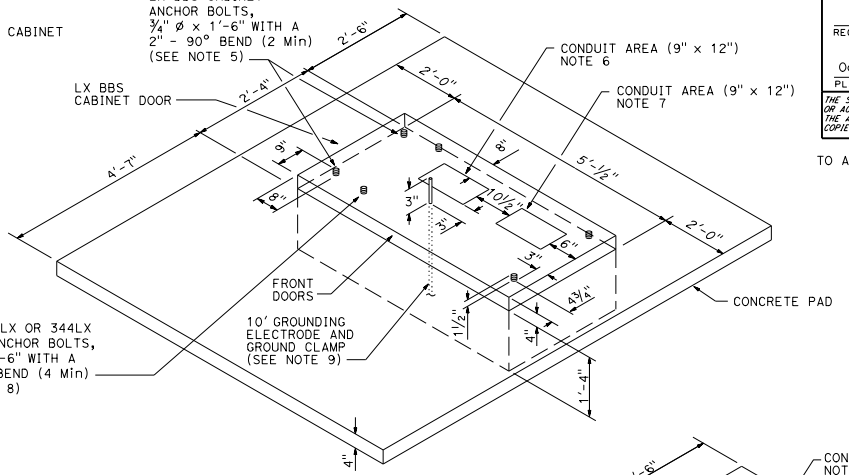
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

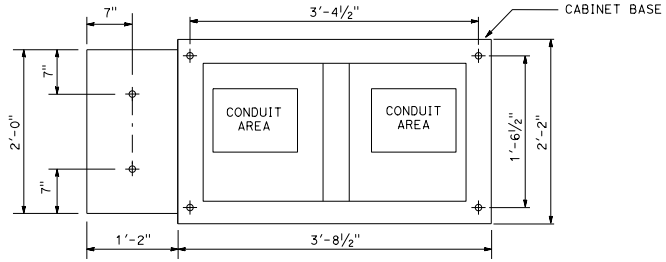
TO ACCOMPANY PLANS DATED _____



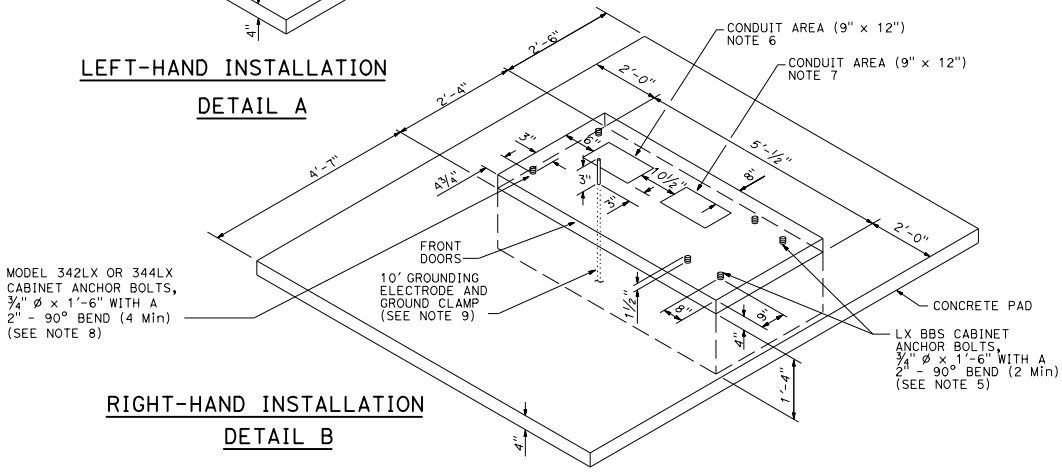
LX BBS CABINET MOUNTED TO THE MODEL 342LX OR 344LX CABINETS



LEFT-HAND INSTALLATION DETAIL A



BASE PLAN FOR MODEL 342LX OR 344LX CABINETS



RIGHT-HAND INSTALLATION DETAIL B

NOTES:

1. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
2. 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.
3. 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.
4. All dimensions are nominal.
5. The dimensions of the BBS cabinet shall be verified prior to constructing the foundation of the Model 342LX or 344LX cabinet foundation.
6. Conduit area, to 120 V Service.
7. Conduit area for the controller side of cabinet.
8. For Type LX cabinets details, see "Transportation Electrical Equipment Specifications".
9. Grounding electrode shall be placed 3 inches in front of the service conduit area.

MODEL 342LX OR 344LX CABINET FOUNDATION DETAIL WITH BATTERY BACKUP SYSTEM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CONTROLLER CABINET FOUNDATION DETAILS)

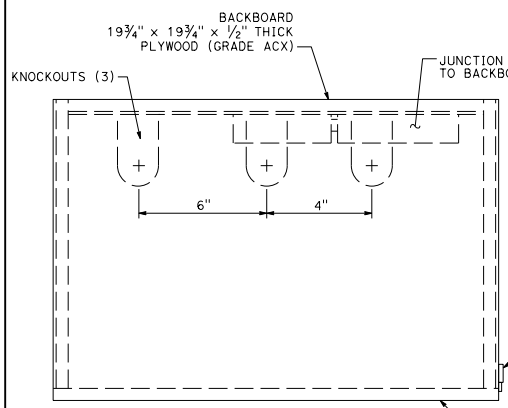
NO SCALE

RSP ES-3C2 DATED OCTOBER 16, 2020 SUPERSEDES RSP ES-3C2 DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-3C2 DATED MAY 31, 2018 - PAGE 489 OF THE STANDARD PLANS BOOK DATED 2018.

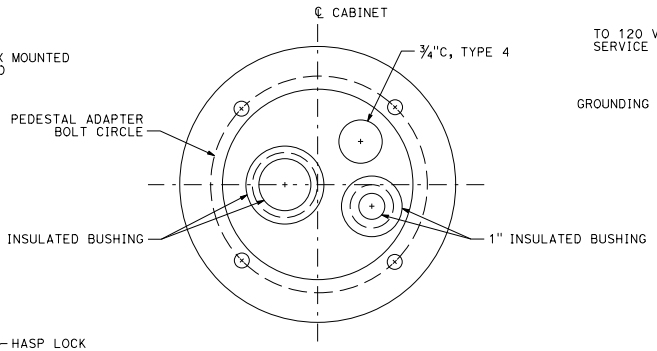
REVISED STANDARD PLAN RSP ES-3C2

2018 REVISED STANDARD PLAN RSP ES-3C2

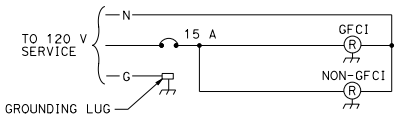
6-9-20



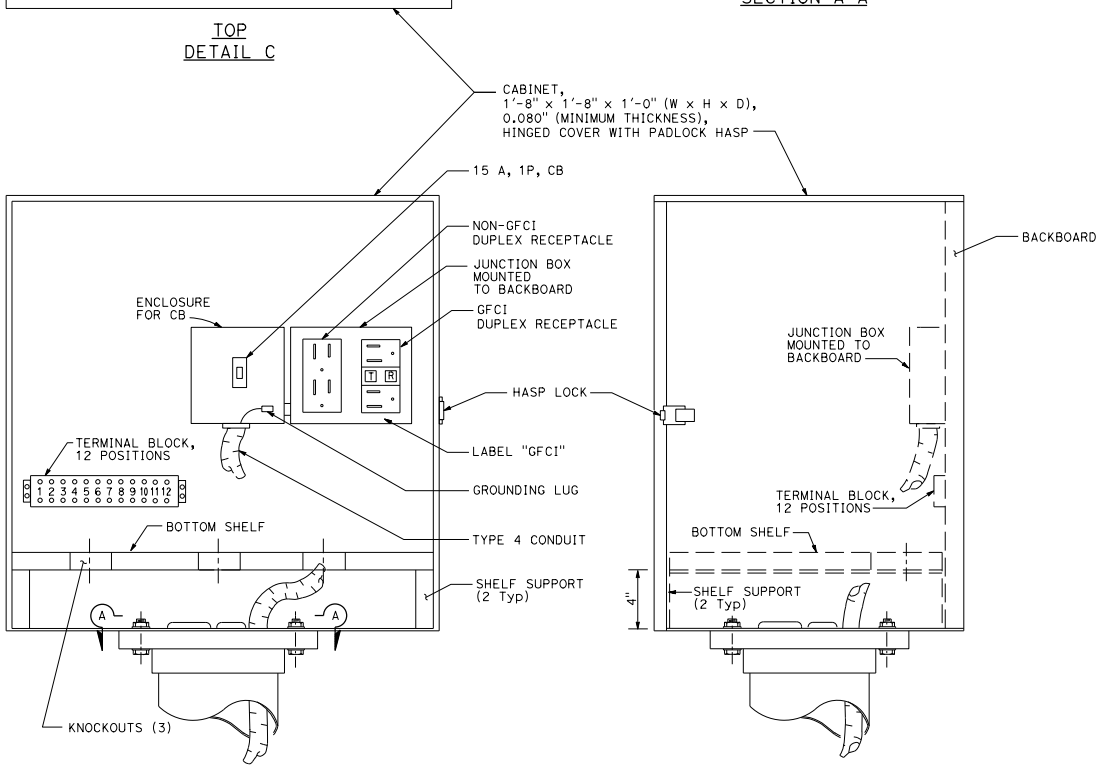
TOP
DETAIL C



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

H. R. J.
REGISTERED ELECTRICAL ENGINEER

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

October 19, 2018
PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED _____

NOTES:

1. 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 Revised Standard Plan 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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-3D DATED MAY 31, 2018 - PAGE 490 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3D

2018 REVISED STANDARD PLAN RSP ES-3D

5-15-18

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

October 19, 2018
PLANS APPROVAL DATE

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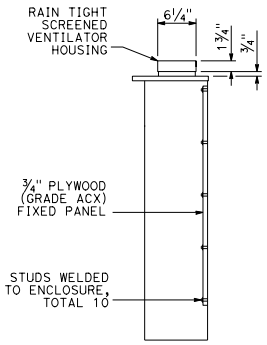
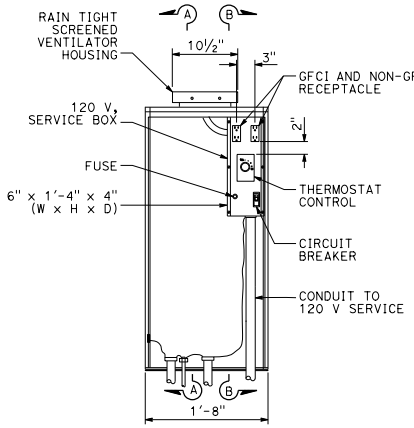
TO ACCOMPANY PLANS DATED _____

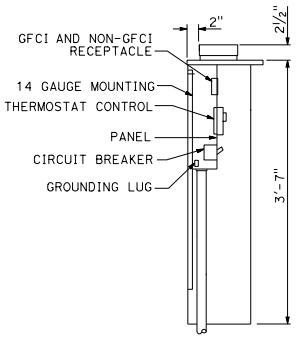


SECTION A-A

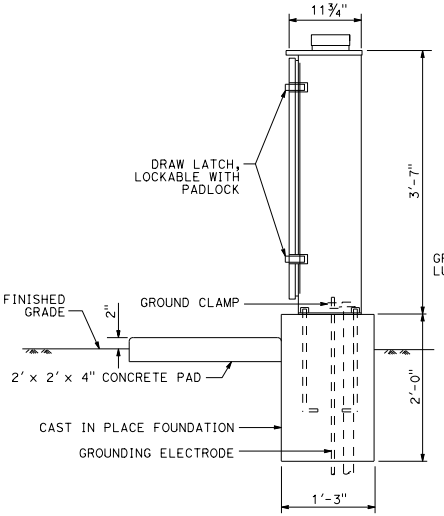


FRONT VIEW

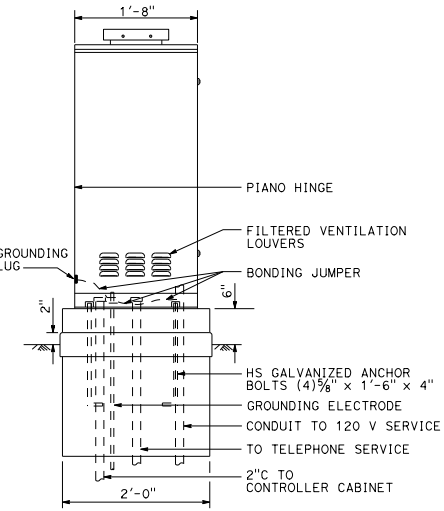
INTERIOR
DETAIL A



SECTION B-B

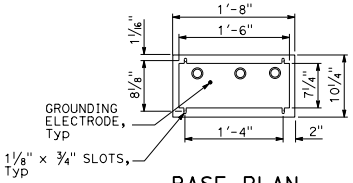


SIDE VIEW

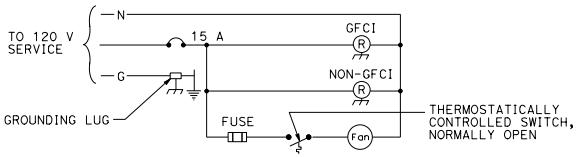


FRONT VIEW

EXTERIOR
DETAIL B



BASE PLAN
DETAIL C



WIRING DIAGRAM
DETAIL D

NOTE:

1. Dimensions are nominal.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TELEPHONE DEMARCATION CABINET, TYPE B)

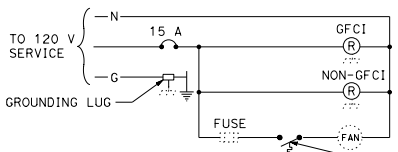
NO SCALE

RSP ES-3E DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-3E
DATED MAY 31, 2018 - PAGE 491 OF THE STANDARD PLANS BOOK DATED 2018.

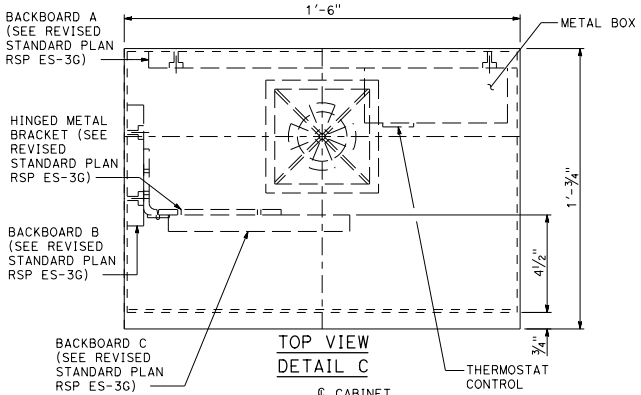
REVISED STANDARD PLAN RSP ES-3E

2018 REVISED STANDARD PLAN RSP ES-3E

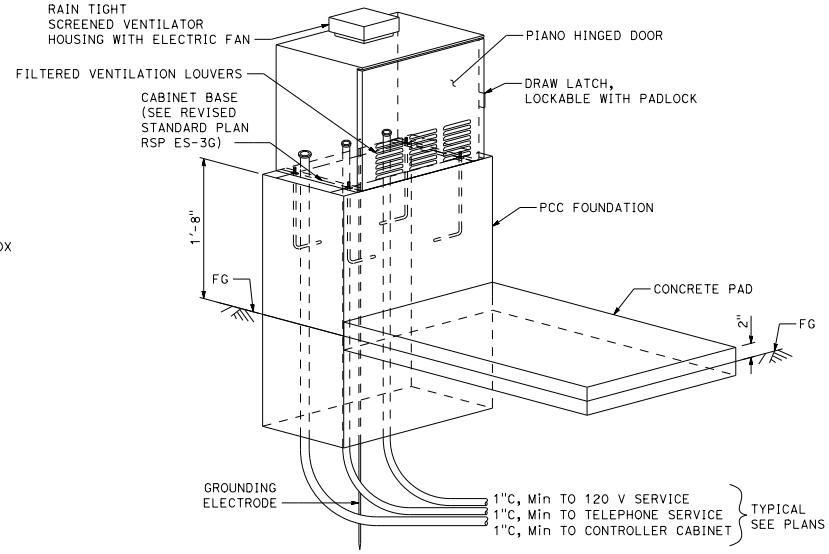
4-25-18



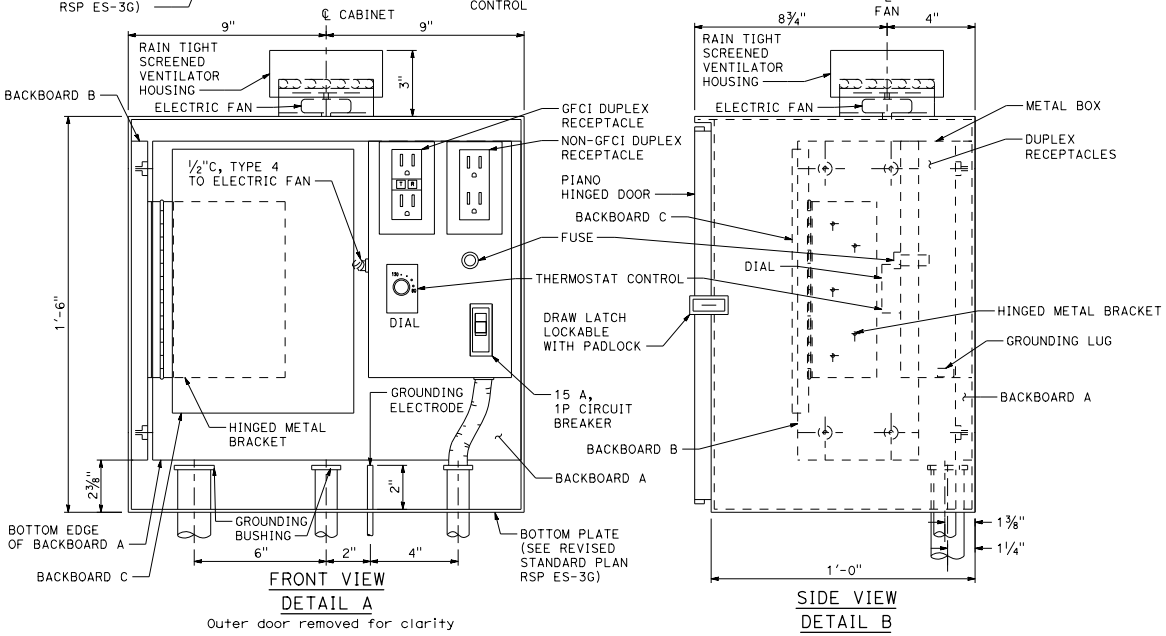
WIRING DIAGRAM
DETAIL F



TOP VIEW
DETAIL C



DETAIL D



FRONT VIEW
DETAIL A
Outer door removed for clarity

SIDE VIEW
DETAIL B

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. 12-31-19
ELECTRICAL
STATE OF CALIFORNIA

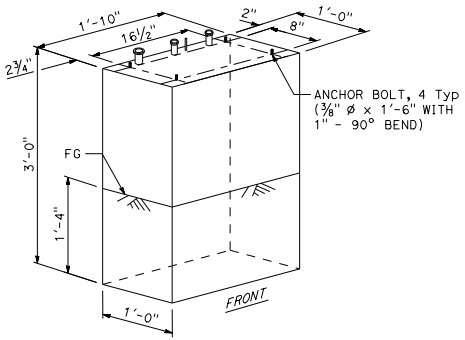
October 19, 2018
PLANS APPROVAL DATE

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

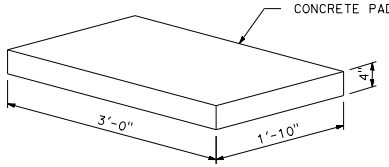
TO ACCOMPANY PLANS DATED _____

NOTES:

1. 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 No. 10 x ¾" wood screws (9 required).



FOUNDATION



CONCRETE PAD

FOUNDATION AND PAD DETAILS
DETAIL E

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TELEPHONE DEMARCATION CABINET, TYPE C)

NO SCALE

RSP ES-3F DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-3F
DATED MAY 31, 2018 - PAGE 492 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3F

2018 REVISED STANDARD PLAN RSP ES-3F

5-9-18

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

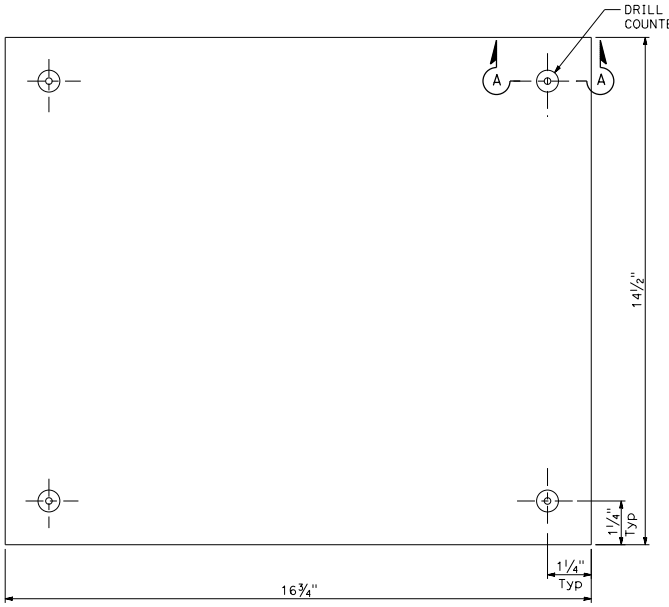
October 19, 2018
PLANS APPROVAL DATE

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

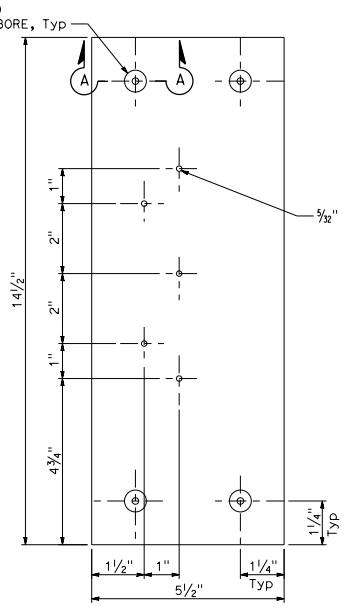
TO ACCOMPANY PLANS DATED _____

NOTE:

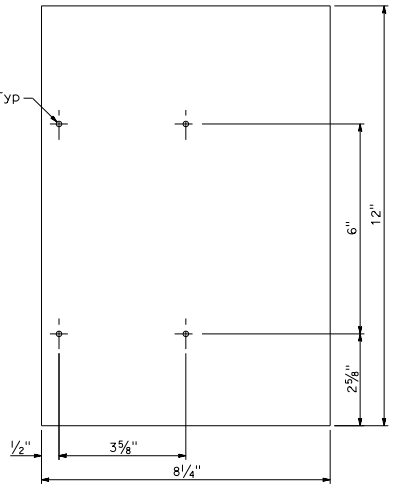
1. Base mounting frame shall be constructed with 0.134" galvanized steel.



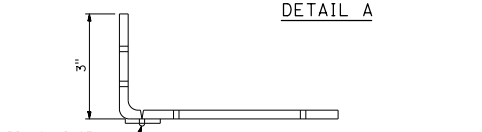
BACKBOARD A
DETAIL A

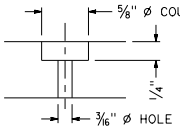


BACKBOARD B
DETAIL B

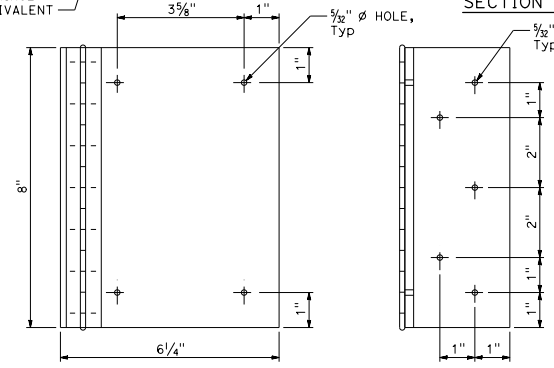


BACKBOARD C
DETAIL C

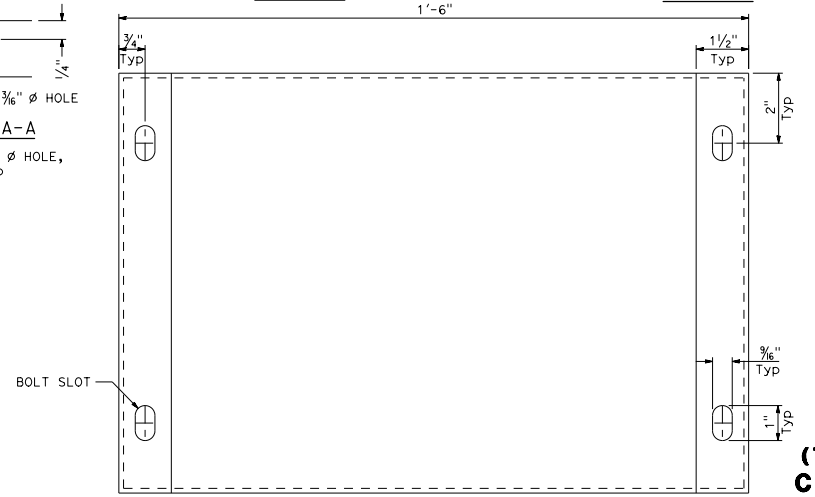




SECTION A-A



HINGED METAL BRACKET
DETAIL D



CABINET BASE
DETAIL E

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TELEPHONE DEMARCATION CABINET, TYPE C DETAILS)

NO SCALE

RSP ES-3G DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-3G DATED MAY 31, 2018 - PAGE 493 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3G

2018 REVISED STANDARD PLAN RSP ES-3G

5-24-18

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

H.R.Z
REGISTERED ELECTRICAL ENGINEER

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

October 19, 2018
PLANS APPROVAL DATE

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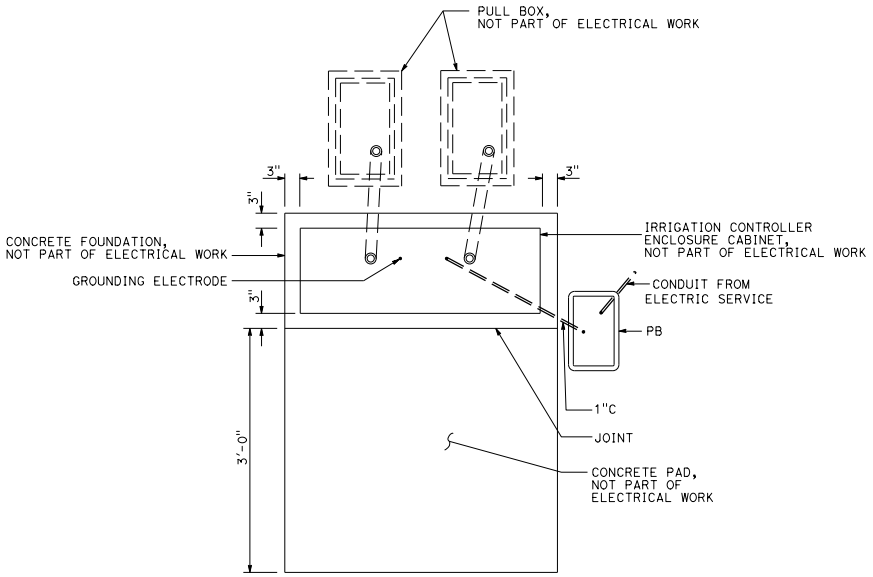
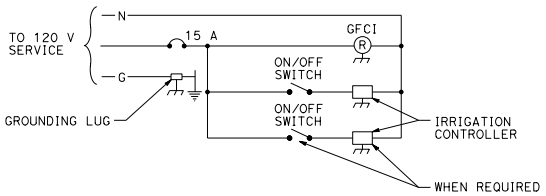
TO ACCOMPANY PLANS DATED _____

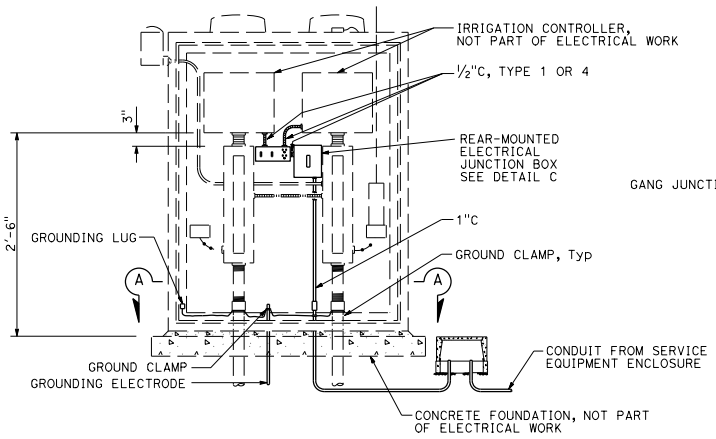


SECTION A-A



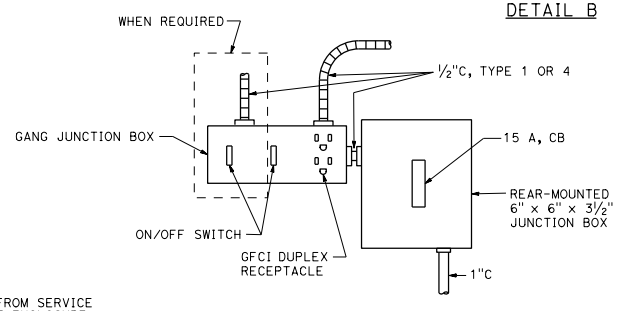
IRRIGATION CONTROLLER ENCLOSURE CABINET WIRING DIAGRAM (Typ)

DETAIL B



ELEVATION

DETAIL A



ELECTRICAL JUNCTION BOX LAYOUT

DETAIL C

NOTES:

1. See Standard Plan H10 for other details.
2. Underground electrical work done prior to foundation installation.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (IRRIGATION CONTROLLER ENCLOSURE CABINET)

NO SCALE

RSP ES-3H DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-3H DATED MAY 31, 2018 - PAGE 494 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3H

2018 REVISED STANDARD PLAN RSP ES-3H

4-25-18

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

REGISTERED ELECTRICAL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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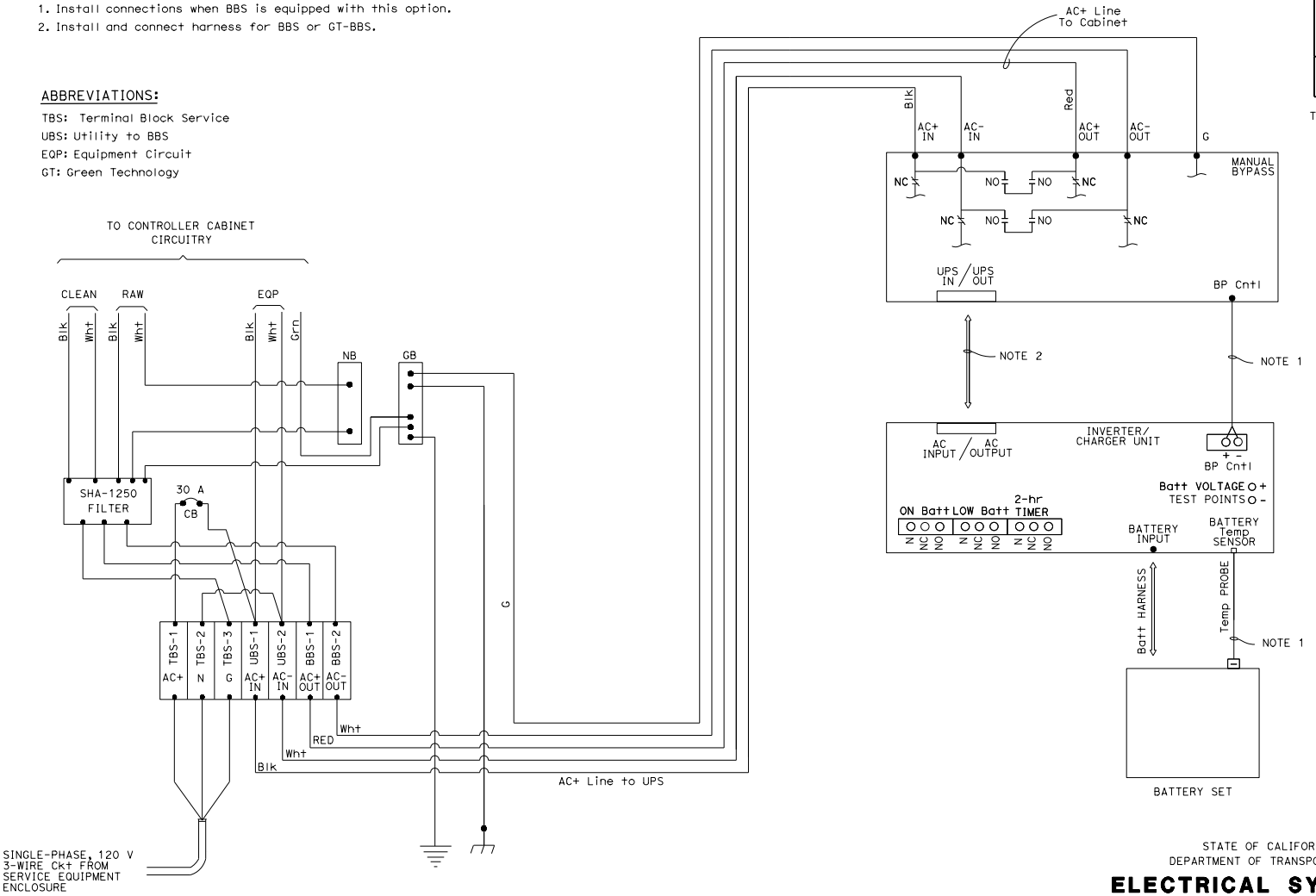
TO ACCOMPANY PLANS DATED _____

NOTES:

1. Install connections when BBS is equipped with this option.
2. Install and connect harness for BBS or GT-BBS.

ABBREVIATIONS:

TBS: Terminal Block Service
UBS: Utility to BBS
EQP: Equipment Circuit
GT: Green Technology



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRONICS ASSEMBLY CONNECTION DIAGRAM) (BATTERY BACKUP SYSTEM)

NO SCALE

RSP ES-3K DATED APRIL 16, 2021 SUPERSEDES RSP ES-3K DATED OCTOBER 16, 2020 AND STANDARD PLAN ES-3K DATED MAY 31, 2018 - PAGE 497 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-3K

2018 REVISED STANDARD PLAN RSP ES-3K

11-2-20

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

REGISTERED ELECTRICAL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-23
ELECTRICAL
STATE OF CALIFORNIA

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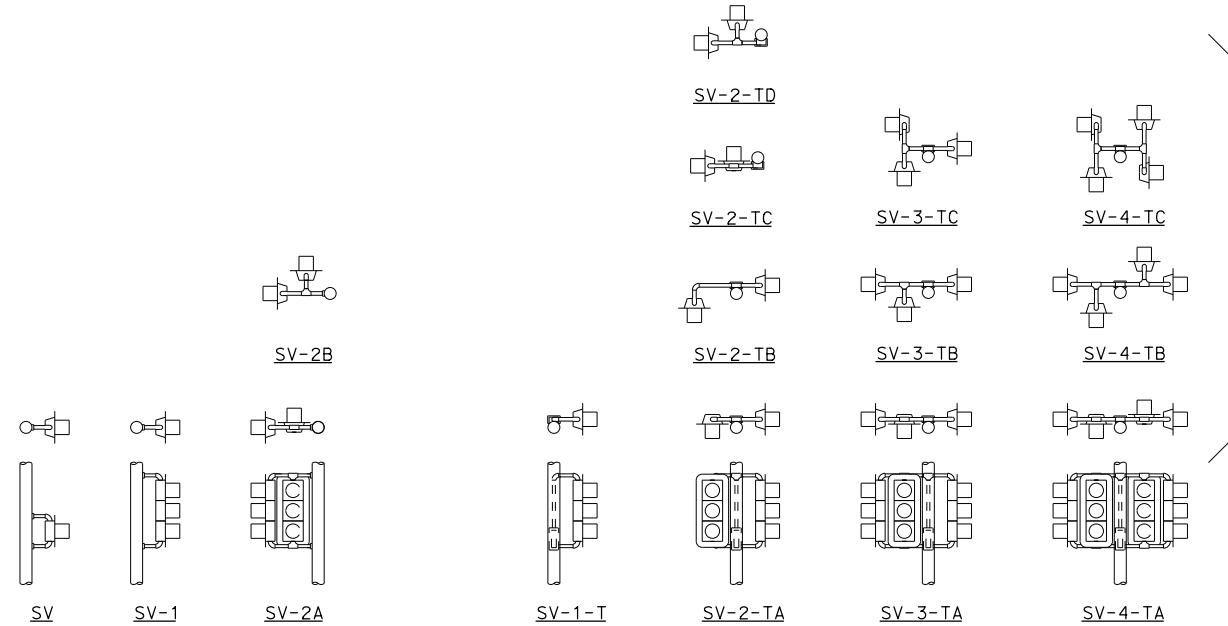
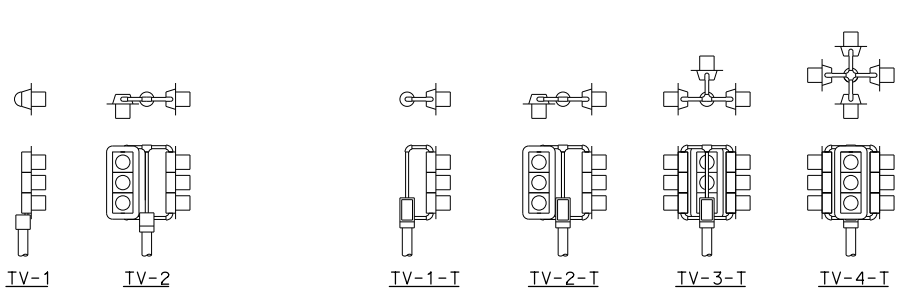
TO ACCOMPANY PLANS DATED _____



PLAN VIEW OF OTHER SIDE MOUNTINGS

SIDE MOUNTINGS



PLAN VIEW OF TOP MOUNTINGS

TOP MOUNTINGS

ABBREVIATIONS:

SV	SIDE MOUNTED SIGNAL HEADS
T	TERMINAL COMPARTMENT
TV	TOP MOUNTED SIGNAL HEADS
1, 2, 3, 4	NUMBER OF SIGNAL FACES
A, B, C, D	CONFIGURATION OF SIGNALS

NOTES:

1. Mountings shall be oriented to provide maximum horizontal clearance to adjacent roadway.
2. See Revised Standard Plans RSP ES-4D and RSP ES-4E for attachment fitting details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEAD MOUNTING)

NO SCALE

RSP ES-4A DATED OCTOBER 15, 2021 SUPERSEDES RSP ES-4A DATED APRIL 17, 2020 AND RSP ES-4A DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-4A DATED MAY 31, 2018 - PAGE 499 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-4A

2018 REVISED STANDARD PLAN RSP ES-4A

6-2-21

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

H.R.J
REGISTERED ELECTRICAL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

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

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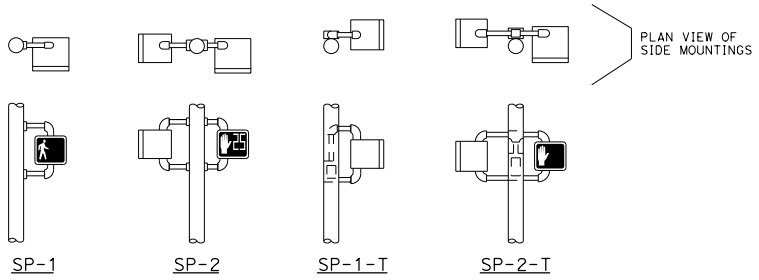
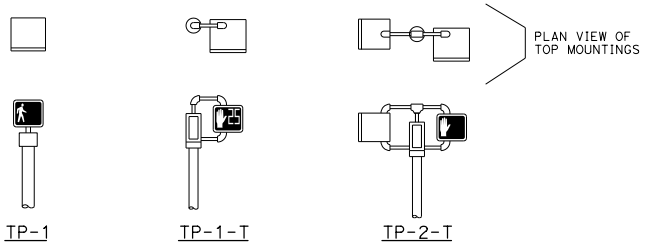
TO ACCOMPANY PLANS DATED _____



SIDE MOUNTINGS



TOP MOUNTINGS

PEDESTRIAN SIGNAL HEAD MOUNTINGS

DETAIL A

PERSON WALKING INTERVAL FLASHING UPRAISED HAND INTERVAL STEADY UPRAISED HAND INTERVAL

LED COUNTDOWN PEDESTRIAN SIGNAL FACE MODULE

DETAIL B

NOTES:

1. Mounting shall be oriented to provide maximum horizontal clearance to adjacent roadway.
2. See Revised Standard Plan RSP ES-4D for attachment fittings details.

ABBREVIATIONS:

1, 2	NUMBER OF SIGNAL FACES
SP	SIDE MOUNTED PEDESTRIAN SIGNAL
T	TERMINAL COMPARTMENT
TP	TOP MOUNTED PEDESTRIAN SIGNAL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (PEDESTRIAN SIGNAL HEADS)

NO SCALE

RSP ES-4B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-4B DATED MAY 31, 2018 - PAGE 500 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-4B

2018 REVISED STANDARD PLAN RSP ES-4B

5-29-18

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

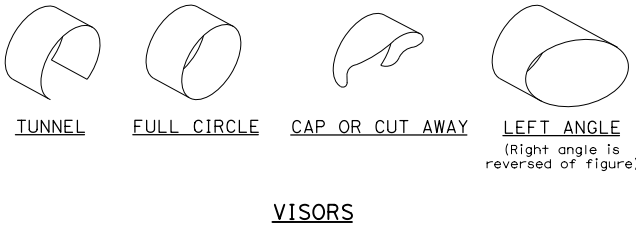
REGISTERED ELECTRICAL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

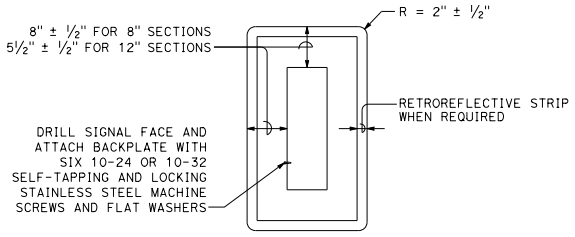
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

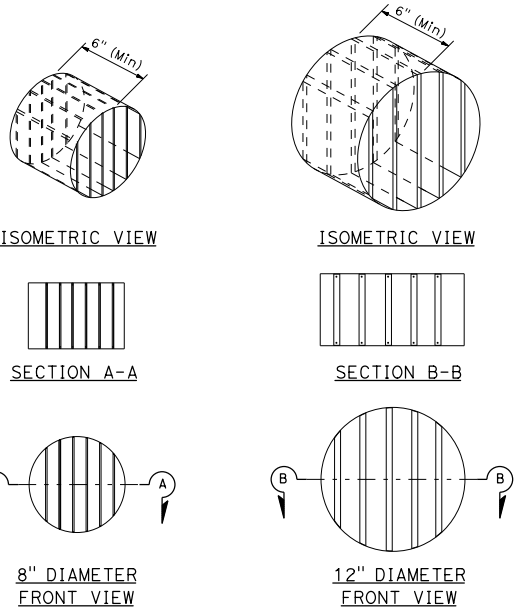


VISORS



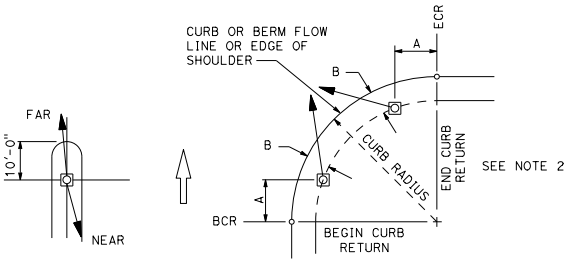
8" AND 12" SECTIONS

BACKPLATE



DIRECTIONAL LOUVER

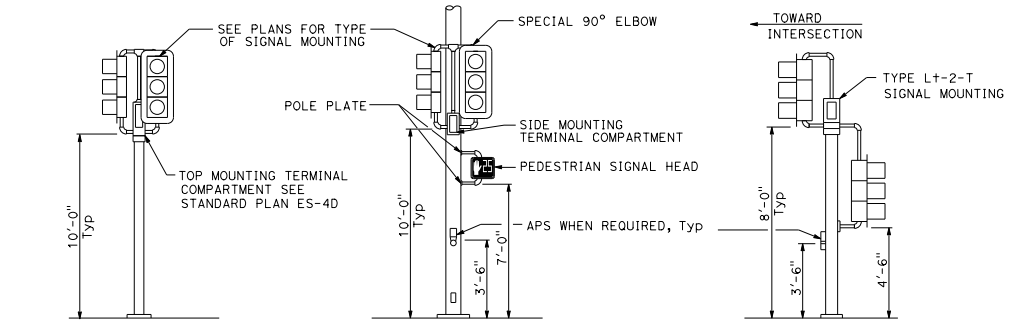
Directional louvers shall be oriented and secured in place with one plated brass machine screw and nut.



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

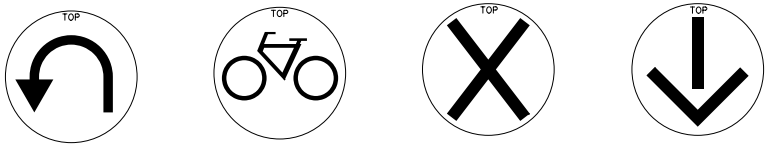


TOP MOUNTED SIGNALS (TV)
Type 1-A, 1-B, 1-C and 1-D standard as indicated on the plans

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4C DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN ES-4C DATED MAY 31, 2018 - PAGE 501 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-4C

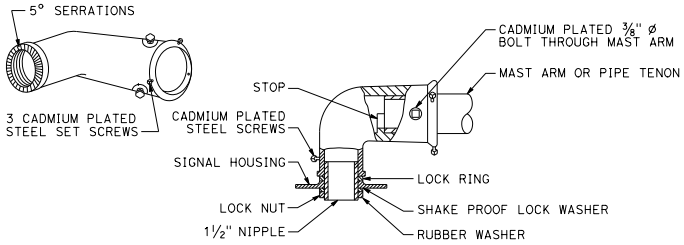
12-20-19

2018 REVISED STANDARD PLAN RSP ES-4C

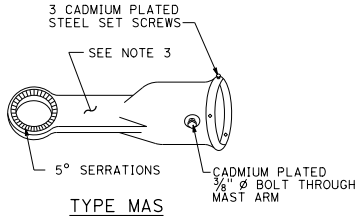
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

H.R.Z
REGISTERED ELECTRICAL ENGINEER
October 19, 2018
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.
REGISTERED PROFESSIONAL ENGINEER — Hamid Zolfaghari — No. E15636 — Exp. 12-31-19 — ELECTRICAL — STATE OF CALIFORNIA

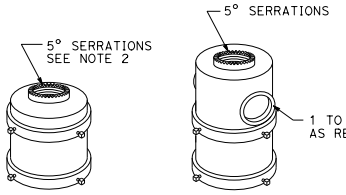
TO ACCOMPANY PLANS DATED _____



TYPE MAT
MAST ARM MOUNTING
For 2 NPS pipe, see Note 1.

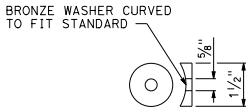


TYPE MAS
MAST ARM MOUNTING
For 2 NPS pipe, see Note 1.

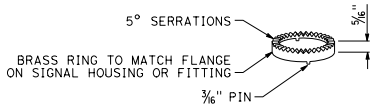


TOP MOUNTINGS
For 4 NPS pipe, see Note 2.

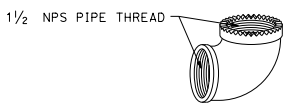
SIGNAL SLIP FITTERS



DETAIL C



LOCK RING
Use where locking ring is not integral With signal housing or fitting.

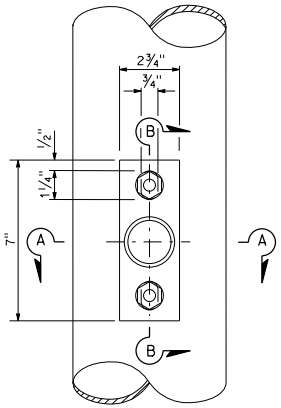


SPECIAL 90° ELBOW
One for each signal head, except those With special slip fitter mounting

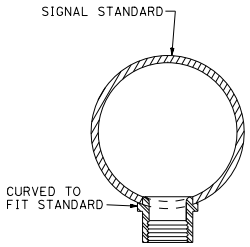
NOTES:

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 3/8" 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".

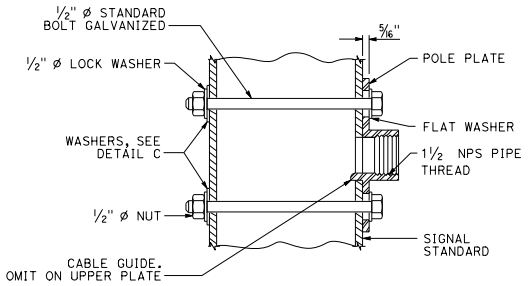
MISCELLANEOUS MOUNTING HARDWARE



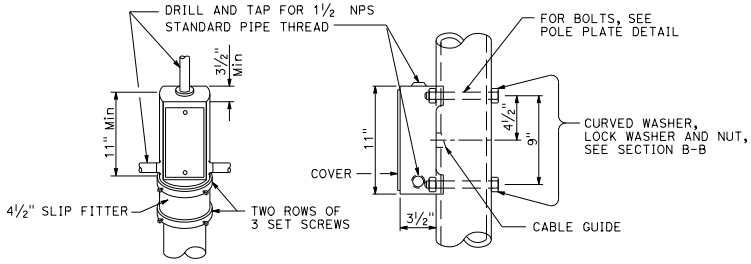
TOP VIEW



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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-4D
DATED MAY 31, 2018 - PAGE 502 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-4D

2018 REVISED STANDARD PLAN RSP ES-4D

4-17-18

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

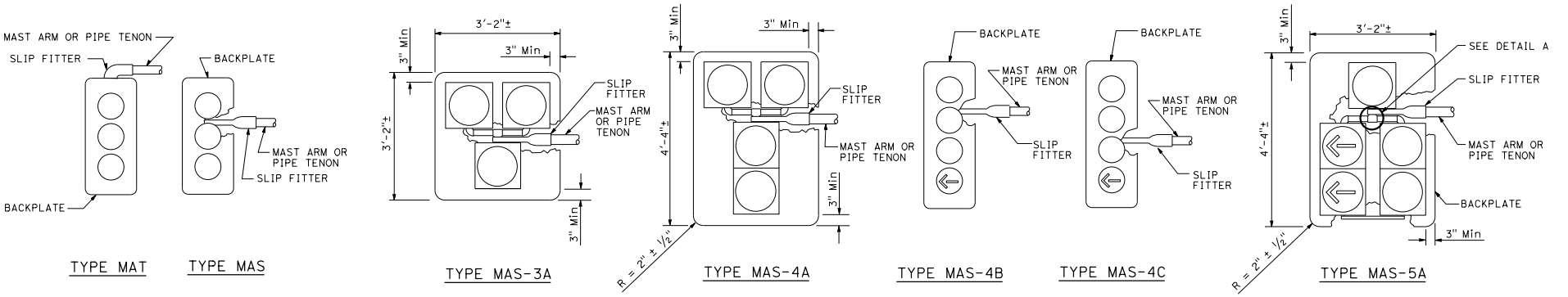
REGISTERED ELECTRICAL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

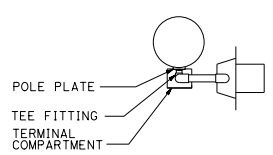
REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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.

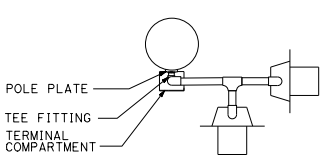
TO ACCOMPANY PLANS DATED _____



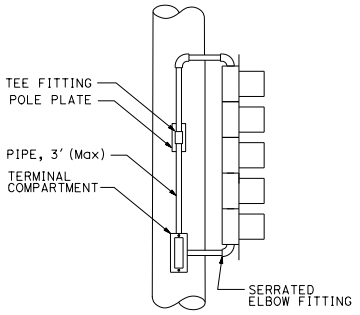
MAST ARM MOUNTINGS



PLAN

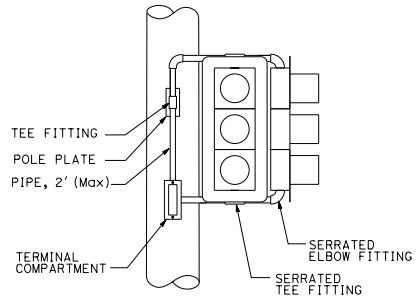


PLAN



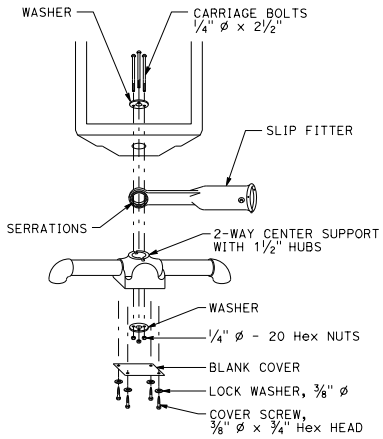
SIDE VIEW

SV-1-T WITH 5 SIGNAL SECTIONS



SIDE VIEW

SV-2-TD



DETAIL A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND OPTICAL DETECTOR MOUNTING)

NO SCALE

RSP ES-4E DATED APRIL 17, 2020 SUPERSEDES RSP ES-4E DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-4E DATED MAY 31, 2018 - PAGE 503 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-4E

2018 REVISED STANDARD PLAN RSP ES-4E

12-12-19

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

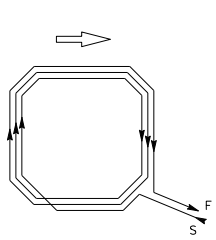
H.R.J.
REGISTERED ELECTRICAL ENGINEER

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

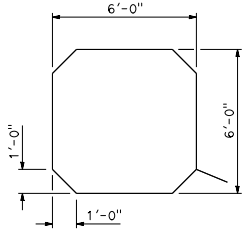
October 19, 2018
PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED _____

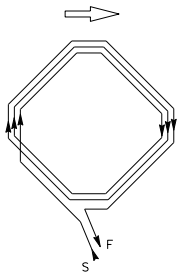


WINDING DETAIL

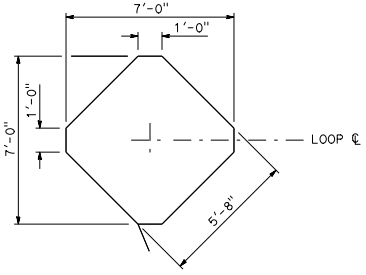


SAW CUT DETAIL

TYPE A LOOP DETECTOR CONFIGURATION



WINDING DETAIL

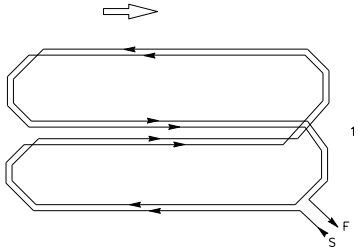


SAW CUT DETAIL

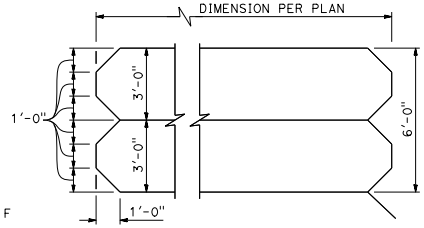
TYPE B LOOP DETECTOR CONFIGURATION

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, E, and F installation in single lane.
3. Use Type D and F loops for limit line detection and bicycle lanes.

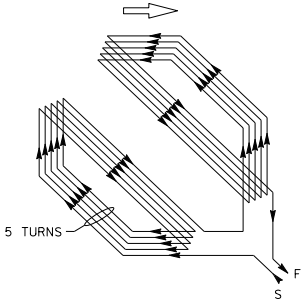


WINDING DETAIL

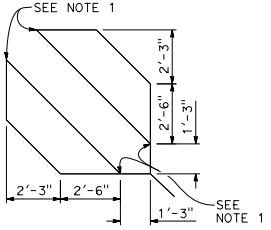


SAW CUT DETAIL

TYPE C LOOP DETECTOR CONFIGURATION

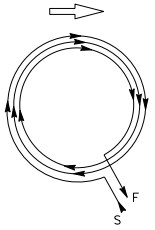


WINDING DETAIL

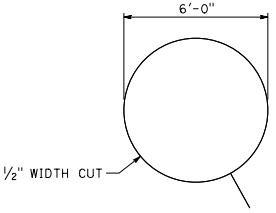


SAW CUT DETAIL

TYPE D LOOP DETECTOR CONFIGURATION

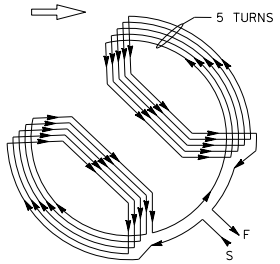


WINDING DETAIL

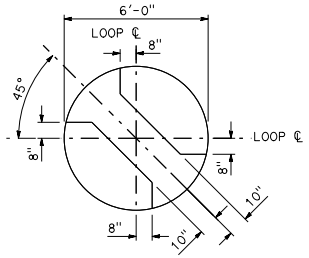


SAW CUT DETAIL

TYPE E LOOP DETECTOR CONFIGURATION

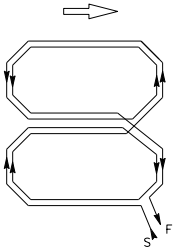


WINDING DETAIL

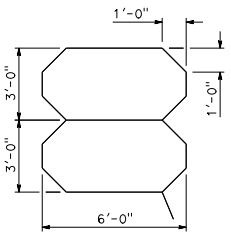


SAW CUT DETAIL

TYPE F LOOP DETECTOR CONFIGURATION

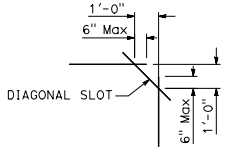


WINDING DETAIL



SAW CUT DETAIL

TYPE Q LOOP DETECTOR CONFIGURATION



PLAN VIEW OF DIAGONAL SLOT AT CORNERS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (DETECTORS)

NO SCALE

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

REVISED STANDARD PLAN RSP ES-5B

2018 REVISED STANDARD PLAN RSP ES-5B

2-27-18

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

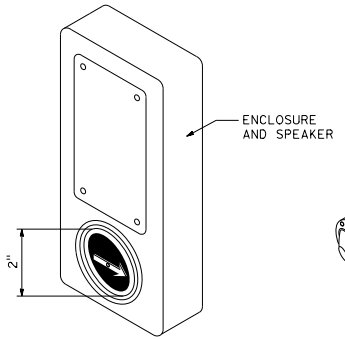
REGISTERED ELECTRICAL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

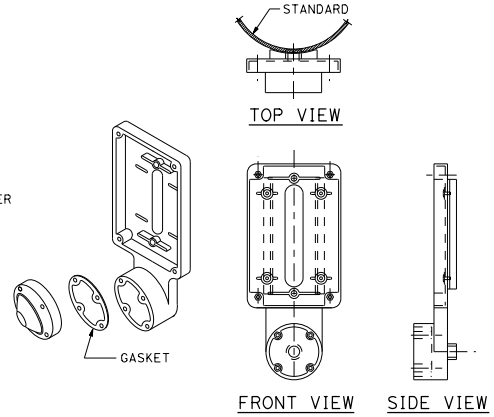
REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-23
ELECTRICAL
STATE OF CALIFORNIA

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.

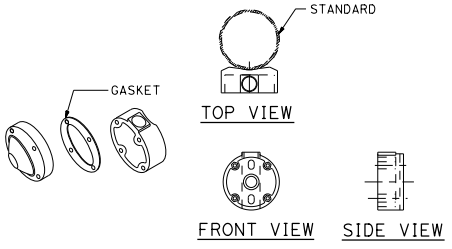
TO ACCOMPANY PLANS DATED _____



ACCESSIBLE PEDESTRIAN SIGNAL
DETAIL A



TYPE B PUSH BUTTON ASSEMBLY
DETAIL B



TYPE C PUSH BUTTON ASSEMBLY
DETAIL C

2018 REVISED STANDARD PLAN RSP ES-5C

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

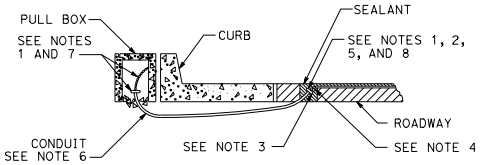
ELECTRICAL SYSTEMS (ACCESSIBLE PEDESTRIAN SIGNAL AND PUSH BUTTON ASSEMBLIES)

NO SCALE

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

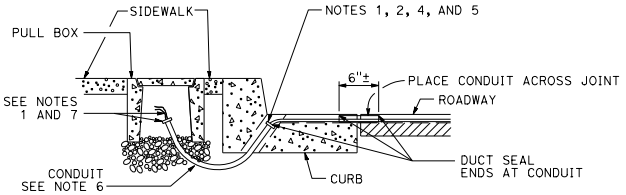
REVISED STANDARD PLAN RSP ES-5C

6-2-21

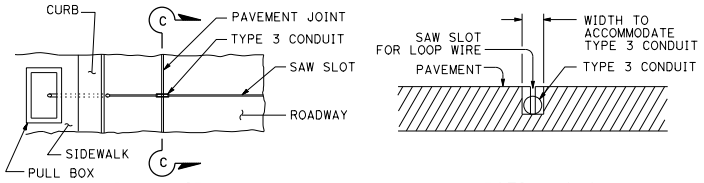


TYPE A

CURB TERMINATION DETAIL



CROSS SECTION

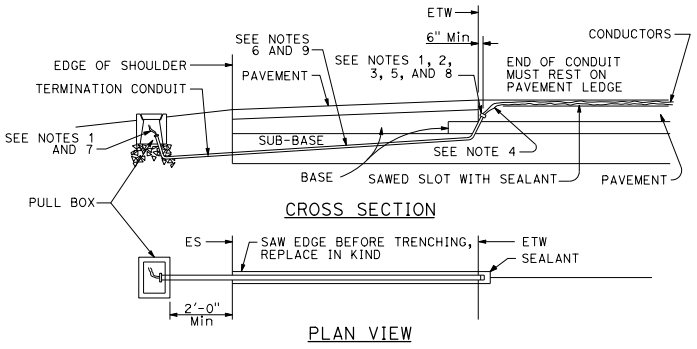


PLAN VIEW

SECTION C-C

TYPE B

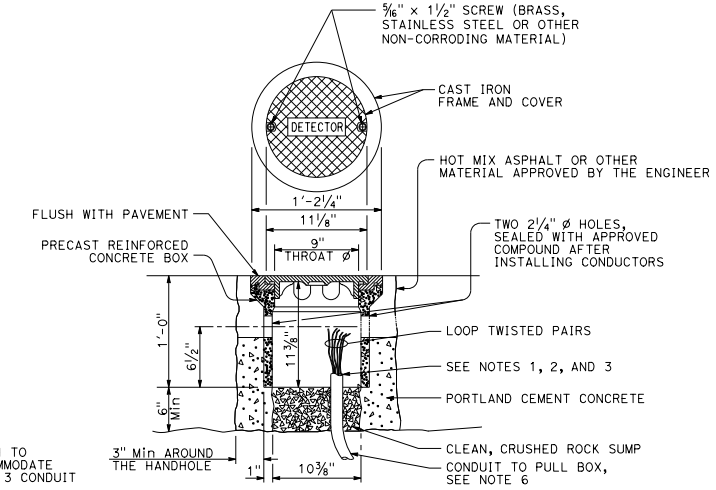
CURB TERMINATION DETAIL



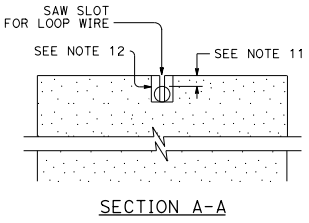
CROSS SECTION

PLAN VIEW

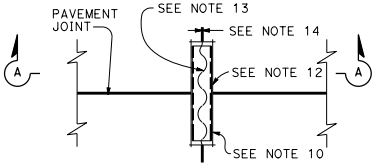
SHOULDER TERMINATION DETAILS



DETECTOR HANDHOLE DETAIL

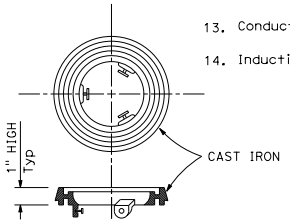


SECTION A-A



PLAN VIEW

TYPICAL LOOP LEAD-IN DETAIL AT PAVEMENT JOINT



LOCKING GRADE RING

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

H. R. J.
REGISTERED ELECTRICAL ENGINEER

October 19, 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. Bushing shall be used at end of conduit.
2. Tape detector conductors 3" each side of bushings.
3. Install duct seal compound to each end of termination conduit before installing sealant.
4. Round all sharp edges where detector conductors have to pass.
5. End of conduit shall be 3⅛" below roadway surface.
6.

Conduit size	Loop conductors
1"C minimum	1 to 2 pairs
1½"C minimum	3 to 4 pairs
2"C minimum	5 or more pairs

7. Splice detector conductors to detector lead-in-cable.
8. Location of detector handhole when shown on plans.
9. When the shoulder and traveled way are paved with the same material and there is no joint between them, the conduit shall extend only 2'-0" into the shoulder pavement.
10. ¾"C, Type 3 conduit 6" long minimum, plug both ends with duct compound to keep out sealant.
11. ½" Minimum between top of conduit and pavement surface.
12. Sawcut shall not exceed 1" in width and ⅛" longer than conduit to be installed.
13. Conductors with ½" minimum slack inside conduit.
14. Inductive loop detector saw slot.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CURB AND SHOULDER TERMINATION, TRENCH, AND HANDHOLE DETAILS)

NO SCALE

RSP ES-5D DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-5D DATED MAY 31, 2018 - PAGE 507 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-5D

2018 REVISED STANDARD PLAN RSP ES-5D

5-2-18

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

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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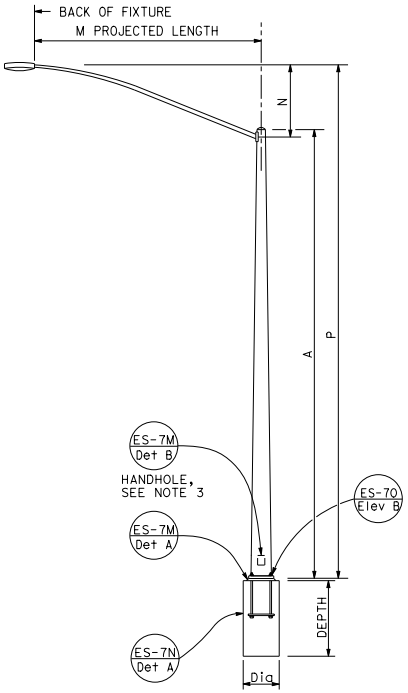
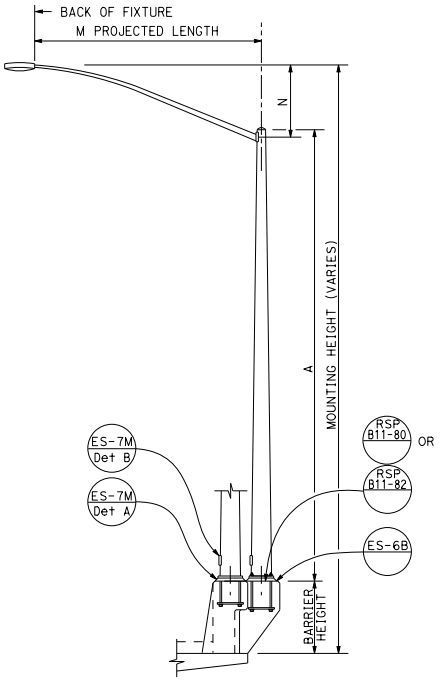
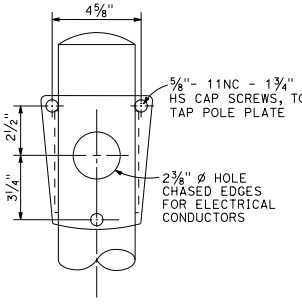
TO ACCOMPANY PLANS DATED _____

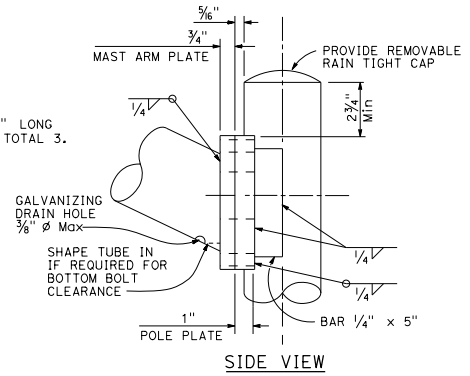


TYPE 15 AND TYPE 21
ELEVATION A

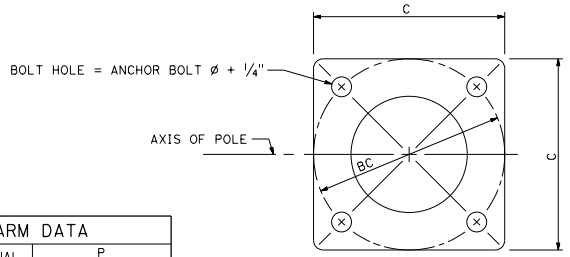


TYPE 15 AND TYPE 21 BARRIER RAIL MOUNTED
ELEVATION B





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"	3 11/16"	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 STANDARD PLAN 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 Standard Plans ES-7M and ES-7N.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD, TYPES 15 AND 21)

NO SCALE

RSP ES-6A DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN ES-6A
DATED MAY 31, 2018 - PAGE 508 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-6A

2018 REVISED STANDARD PLAN RSP ES-6A

5-2-19

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"		

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

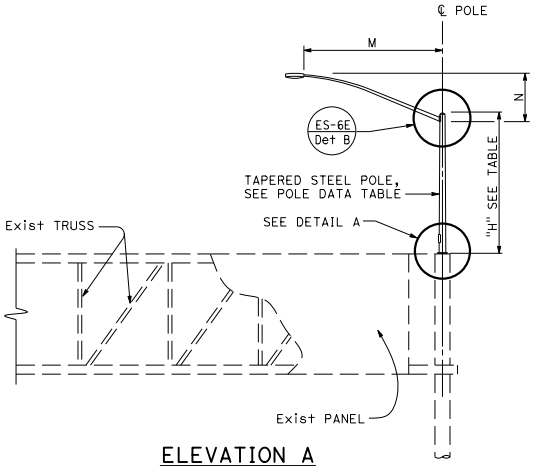
Stanley P. Johnson
No. C57793
Exp. 3-31-22
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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.

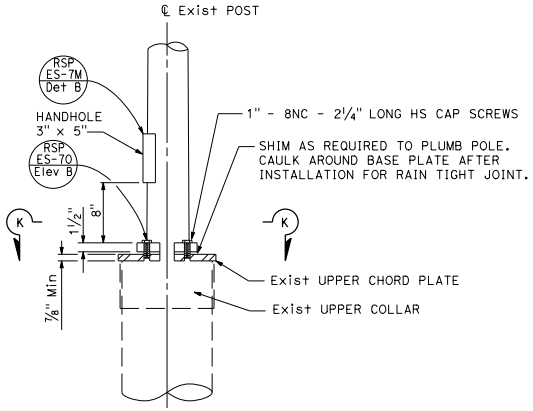
TO ACCOMPANY PLANS DATED _____

NOTES:

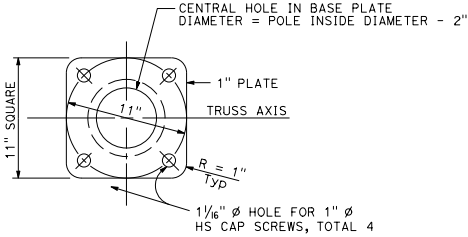
1. The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.
2. Bolt hole locations may vary at the discretion of the Engineer.
3. For Wind Loading see Revised Standard Plan RSP ES-7M.
4. See Standard Plans S13 and S113.
5. Materials (Structural Steel):
   a. fy = 55,000 psi tapered steel tube (pole)
   b. fy = 50,000 psi unless otherwise noted



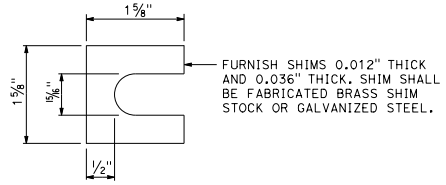
ELEVATION A



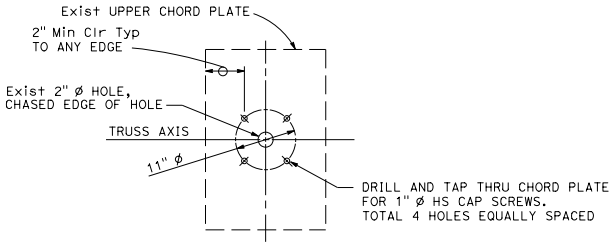
DETAIL A



SECTION K-K



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)

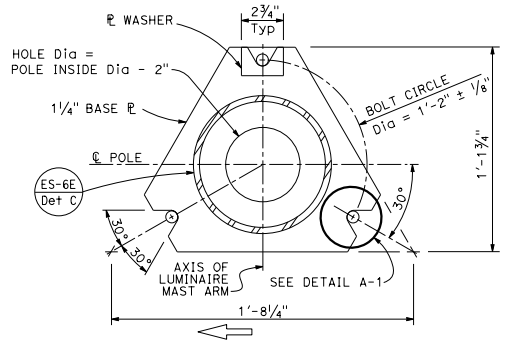
NO SCALE

RSP ES-6C DATED APRIL 16, 2021 SUPERSEDES RSP ES-6C DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-6C DATED MAY 31, 2018 - PAGE 510 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-6C

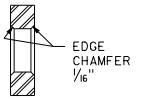
2018 REVISED STANDARD PLAN RSP ES-6C

11-2-20



BASE PLATE
DETAIL A

DETAIL A-1



SECTION A-A

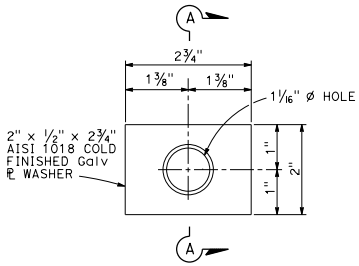
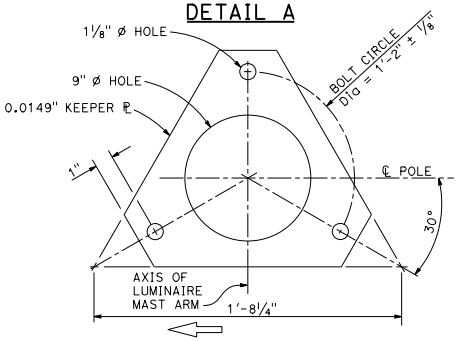
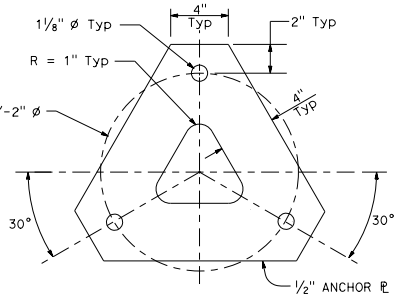


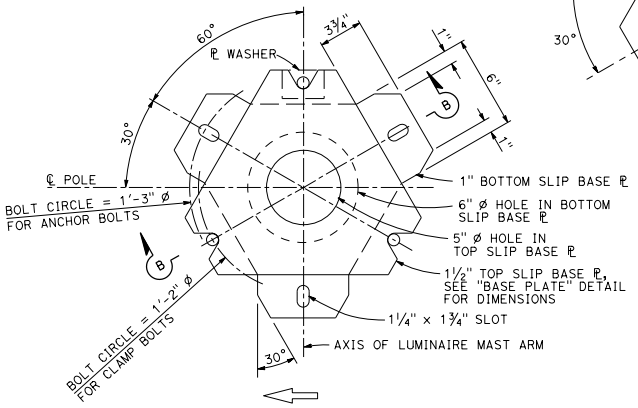
PLATE WASHER
DETAIL D



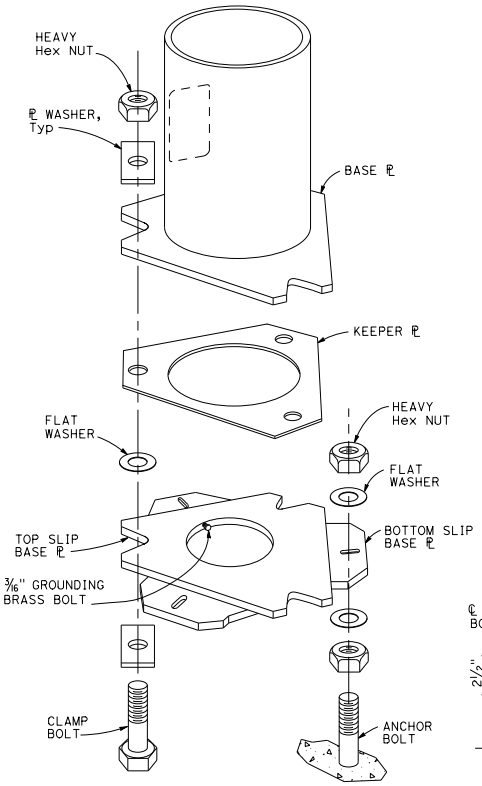
KEEPER PLATE
DETAIL B



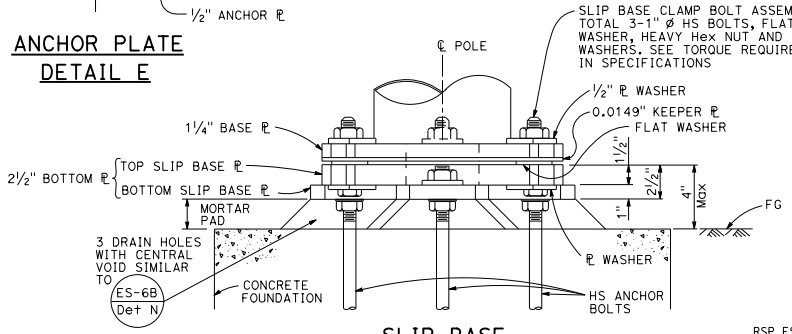
ANCHOR PLATE
DETAIL E



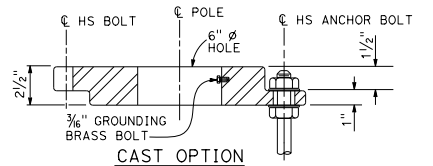
BOTTOM PLATE
DETAIL C



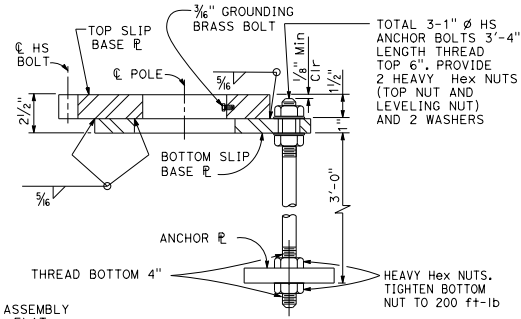
SLIP BASE DETAIL
DETAIL F



SLIP BASE
ELEVATION A



CAST OPTION



WELDED OPTION
SECTION B-B

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

REGISTERED CIVIL ENGINEER

October 19, 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. 1" Ø HS anchor bolts. For clamp bolts, see specifications.
2. Conduit shall not protrude more than 2" above top of foundation.
3. Handhole shall be located on the downstream side of traffic.
4. For Type 30 fixed base and for Type 31 fixed base, see Notes 2 and 3 on Standard Plan ES-6E.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD, SLIP BASE PLATE)

NO SCALE

RSP ES-6F DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-6F DATED MAY 31, 2018 - PAGE 513 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-6F

2018 REVISED STANDARD PLAN RSP ES-6F

5-21-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

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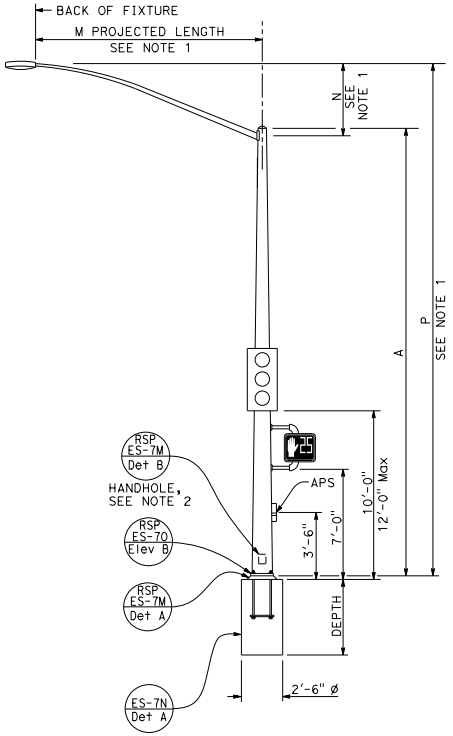
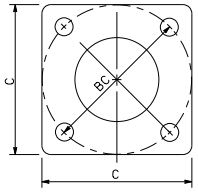
TO ACCOMPANY PLANS DATED _____

NOTES:

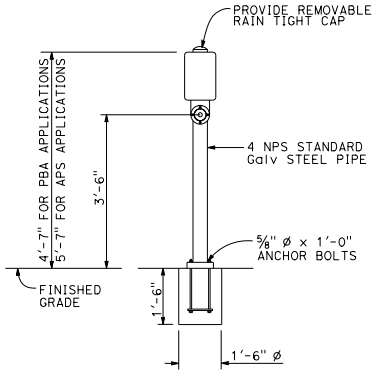
1. For additional notes, details and data for Type 15TS and Type 21TS Standards, see Standard Plan ES-6A.
2. Handhole shall be located on the downstream side of traffic.



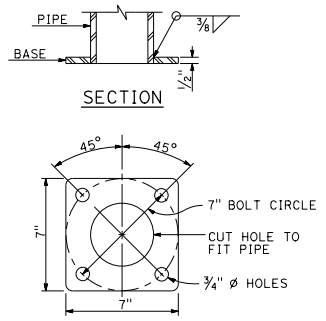
TYPE 15TS AND 21TS STANDARD
ELEVATION A
(See Note 1)



BASE PLATE
TYPE 15TS AND 21TS
DETAIL A



ELEVATION



BASE PLATE
PBA POST

PUSH BUTTON ASSEMBLY POST
DETAIL B

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"	3 11/16"	0.1793"	1'-1 1/2"	1'-0"	2"	1 1/2" Ø x 42"	7'-6"
21TS	35'-0"	9 3/8"	3 3/16"		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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-7A
DATED MAY 31, 2018 - PAGE 515 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7A

2018 REVISED STANDARD PLAN RSP ES-7A

5-31-18

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

REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

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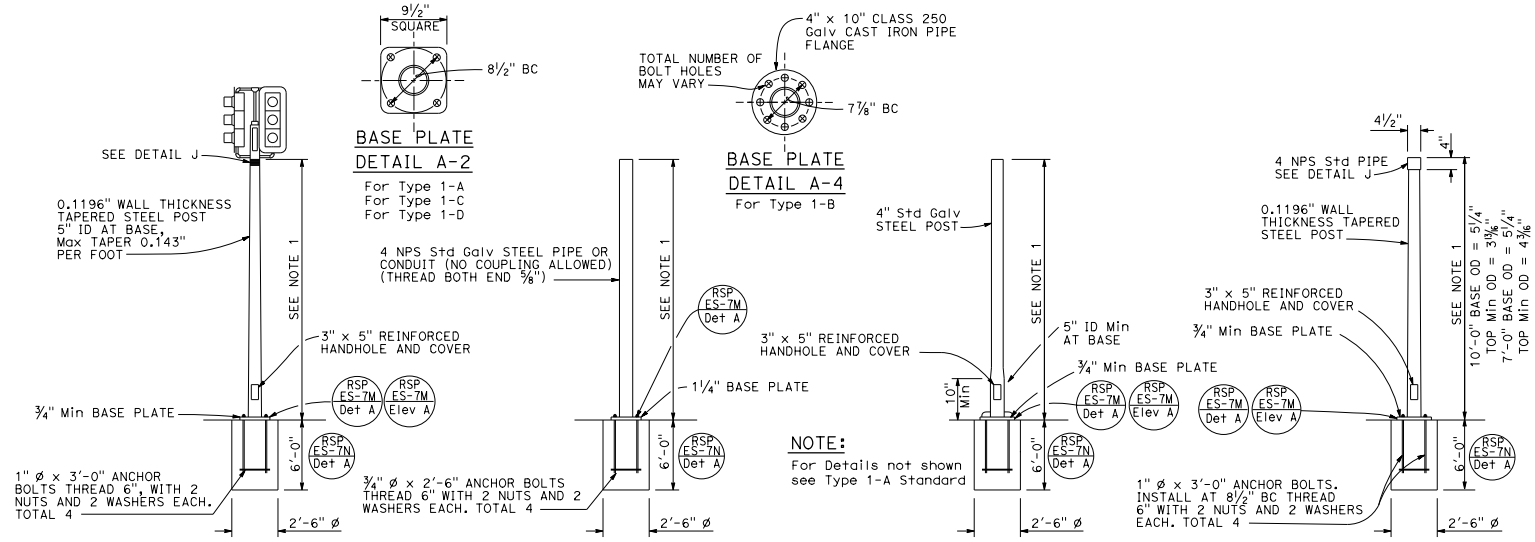
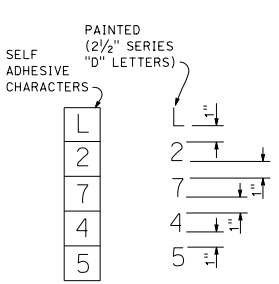
TO ACCOMPANY PLANS DATED _____



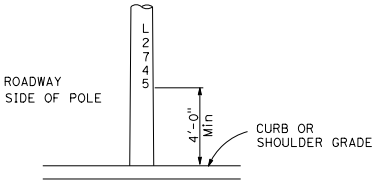
TYPE 1 SIGNAL STANDARDS
DETAIL A

NOTES:

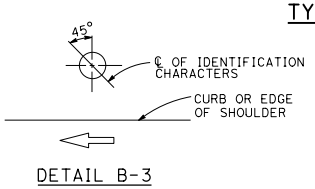
1. Standards shall be 12'-0"±2" for flashing beacons, 10'-0" ± 2" for vehicle signals, and 7'-0" ± 2" for pedestrian signals unless shorter pole is noted on project plans.
2. Top of standards shall be 4" OD.
3. Conduits shall extend 2" maximum above finished surface of foundation and for Types 1-A, 1-C and 1-D shall be sloped toward handhole.
4. Coupling nuts to be used only when shown or specified on project plans.



IDENTIFICATION CHARACTER DETAIL
DETAIL B-1

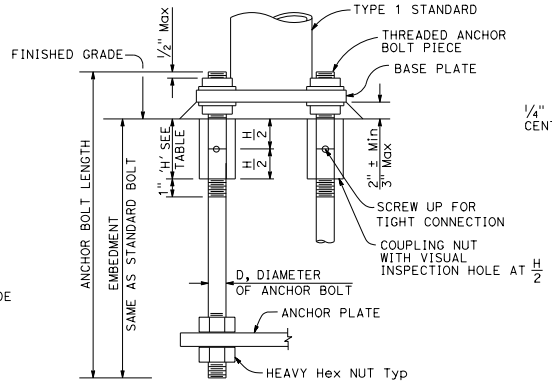


TYPICAL IDENTIFICATION CHARACTER FORMAT
DETAIL B-2

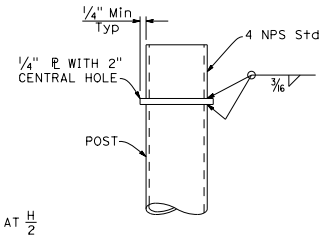


DETAIL B-3

LOCATION OF EQUIPMENT IDENTIFICATION CHARACTERS ON STANDARDS AND POSTS
DETAIL B



ANCHOR BOLTS WITH COUPLING NUTS
DETAIL C
See Note 4



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)

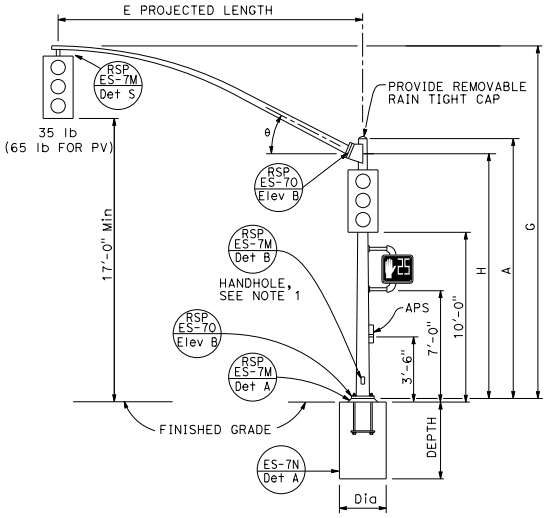
NO SCALE

RSP ES-7B DATED OCTOBER 15, 2021 SUPERSEDES RSP ES-7B DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-7B DATED MAY 31, 2018 - PAGE 516 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7B

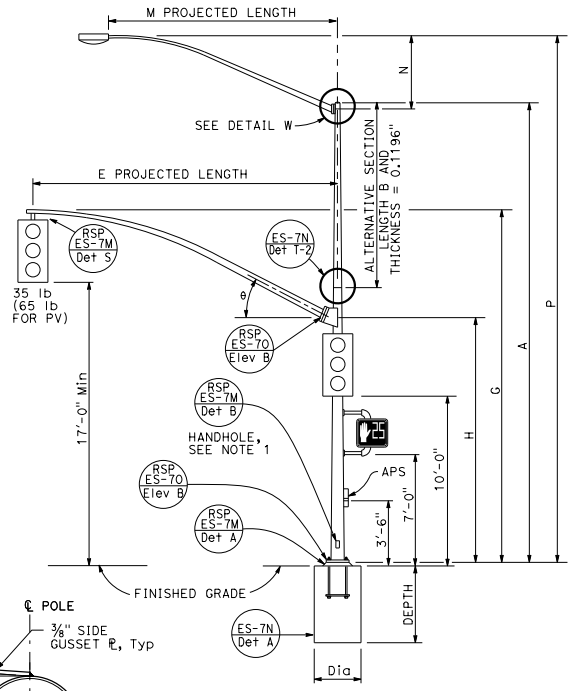
2018 REVISED STANDARD PLAN RSP ES-7B

6-3-21



TYPE 16-1-100, 18-1-100

ELEVATION A

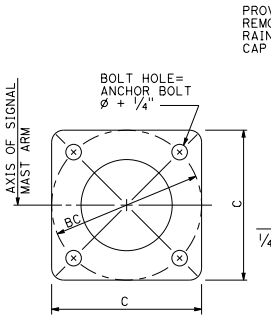


TYPE 19-1-100, 19A-1-100

ELEVATION B

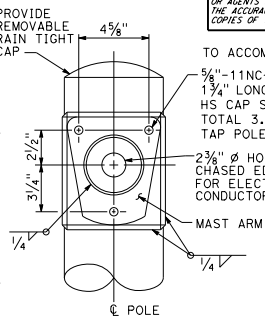
NOTES:

1. Handhole shall be located on the downstream side of traffic.
2. Δ = Luminaire mast arm skew -90° or +90° default 0°



DETAIL D

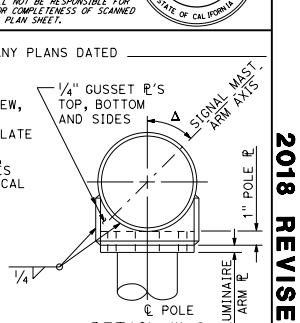
BASE PLATE



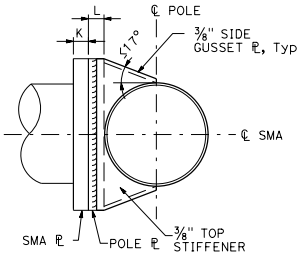
DETAIL W-1

LUMINAIRE MAST ARM CONNECTION

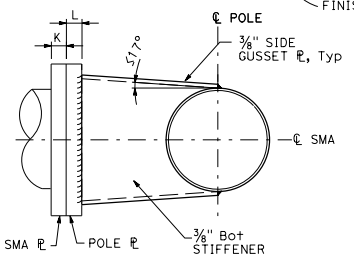
DETAIL W



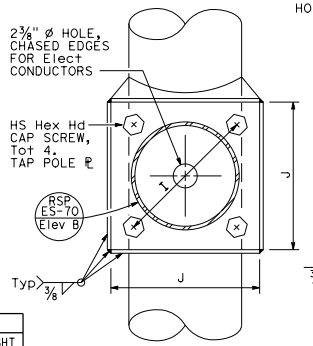
DETAIL W-2



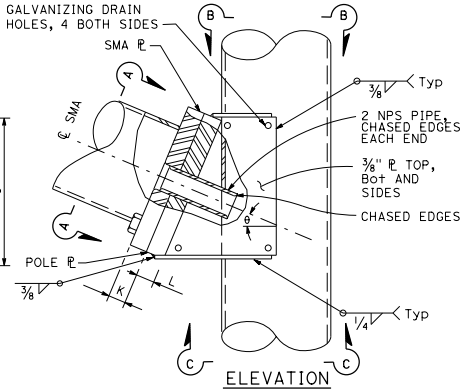
SECTION B-B



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 3/8"	0.1793"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°
20'-0"			8"				1'-1"			
25'-0"	22'-8"±	16'-0"	9"							
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	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						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
16-1-100	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"	11 7/8"	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"		9"					6'-15' 15'-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

October 19, 2018

PLANS APPROVAL DATE

Stanley P. Johnson No. C57793 Exp. 3-31-20 CIVIL STATE OF CALIFORNIA — REGISTERED PROFESSIONAL ENGINEER

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TO ACCOMPANY PLANS DATED

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')

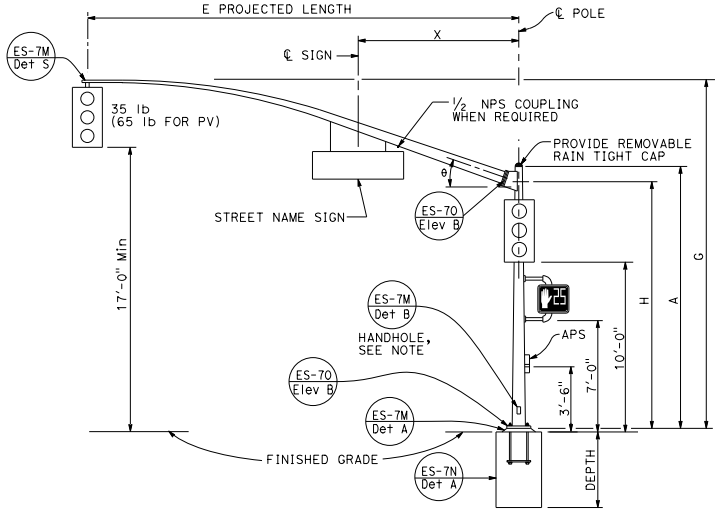
NO SCALE

RSP ES-7C DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-7C DATED MAY 31, 2018 - PAGE 517 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7C

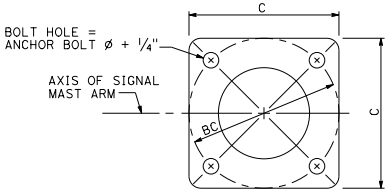
2018 REVISED STANDARD PLAN RSP ES-7C

7-6-18



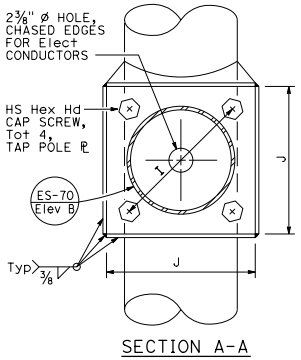
TYPE 16-2-100, 18-2-100

ELEVATION A

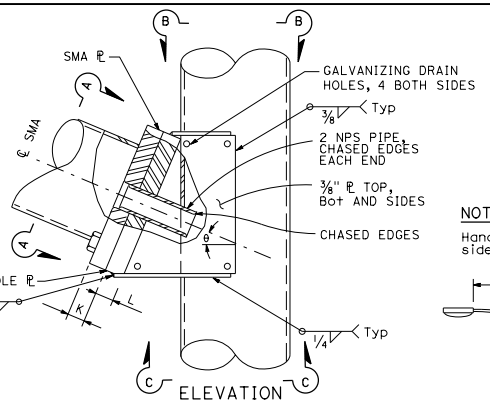


BASE PLATE

DETAIL B



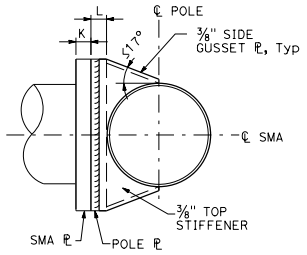
SECTION A-A



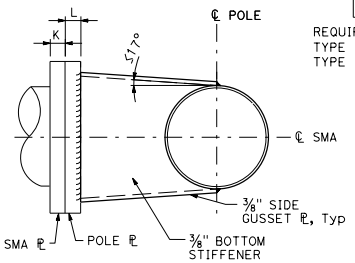
ELEVATION

SIGNAL MAST ARM CONNECTION

DETAIL A



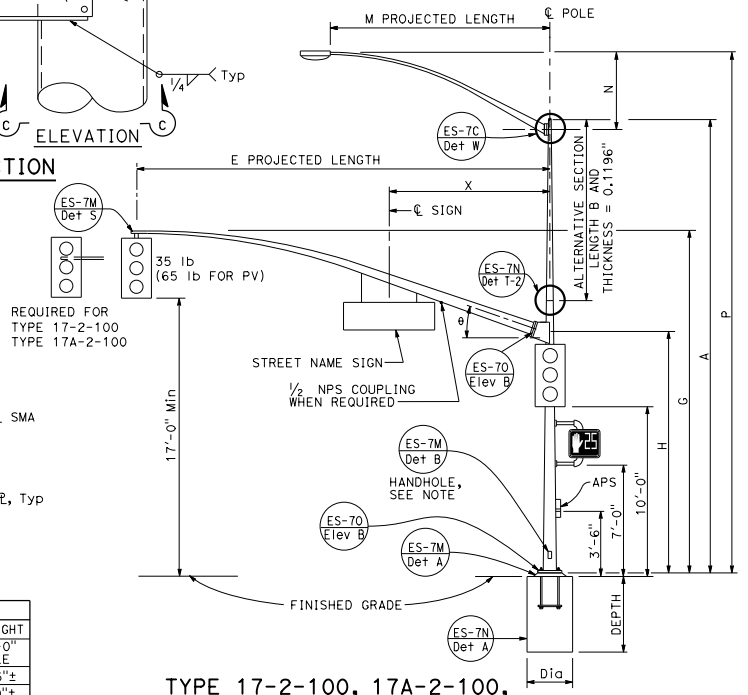
SECTION B-B



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 ℙ THICKNESS	L POLE ℙ 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"	11⅛"	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"	11⅛"	9¾"					6'-15' 12'-0"			
19A-2-100			35'-0"	16"	11"		15'-0"	13⅜"	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

April 17, 2020

PLANS APPROVAL DATE

Stanley P. Johnson No. C57793 Exp. 3-31-22 CIVIL STATE OF CALIFORNIA

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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')

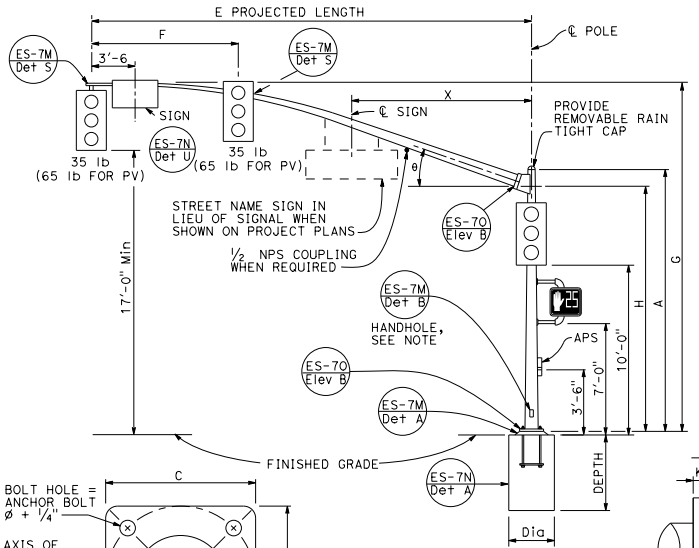
NO SCALE

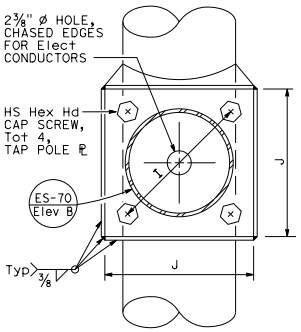
RSP ES-7D DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN ES-7D
DATED MAY 31, 2018 - PAGE 518 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7D

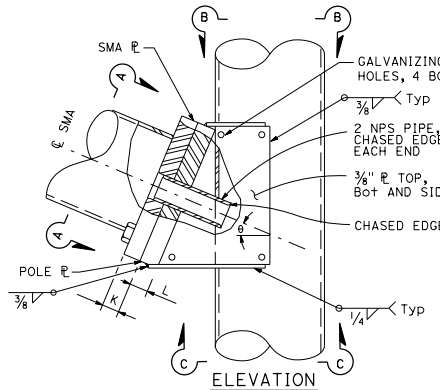
2018 REVISED STANDARD PLAN RSP ES-7D

12-12-19



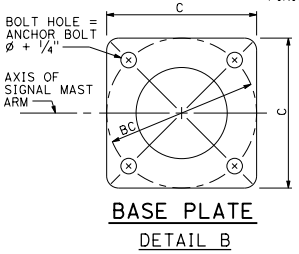


SECTION A-A



ELEVATION

SIGNAL MAST ARM CONNECTION

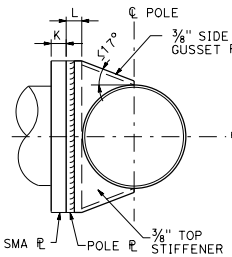


BASE PLATE

DETAIL B

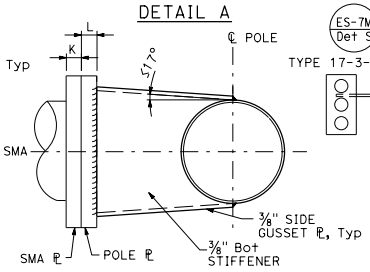
TYPE 16-3-100, 18-3-100, 23-3-100, 27-3-100

ELEVATION A

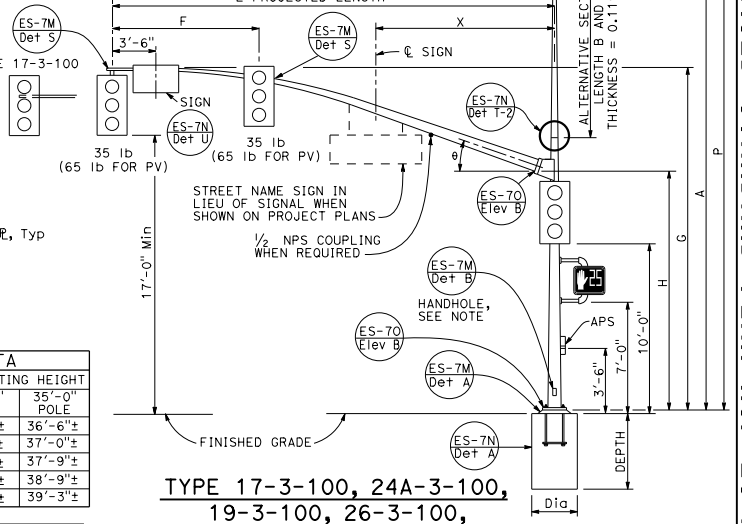


SECTION B-B

DETAIL A



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 ℄ THICKNESS	L POLE ℄ THICKNESS	θ	X Max
15'-0"	8'-0"	21'-8"±	17'-6"	7⅜"	0.1793"	12"	1¼"-7NC-3"	1'-3"	1¼"	1½"	23°	-
20'-0"		21'-8"±		7⅜"								
25'-0"	12'-0"	22'-8"±		7⅜"								10'-6"
30'-0"				8"								
35'-0"	14'-0"	23'-0"±	16'-0"	8¾"	0.2391"	13"			1½"	1¾"	21°	
40'-0"	15'-0"			9⅜"							15°	13'-0"
45'-0"		23'-8"±		10⅛"				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"±	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	CIDH PILE FOUNDATION DEPTH
16-3-100	3	100	18'-6"	16"	13⅜"	0.2391" OR 0.25"				1'-11"	1'-9"	3"	2¼" ø x 42"	NONE	15'-0", 20'-0"	3'-6"	12'-0"
17-3-100			30'-0"		11¾"		10'-0"	13⅛"	11¾"								
18-3-100			17'-0"		13⅜"									NONE	25'-0", 30'-0"		
19-3-100			30'-0"		11¾"		10'-0"	13⅛"	11¾"					6'-15' 12'-0"			
19A-3-100			35'-0"		11"	0.3125"	15'-0"		11"					6'-15' 15'-0"			
23-3-100			17'-0"		13⅜"	0.2391" OR 0.25"								NONE			
24-3-100			30'-0"		11¾"	0.3125"	10'-0"	13⅛"	11¾"					6'-15' 12'-0"	35'-0"		
24A-3-100			35'-0"		11"		15'-0"		11"					6'-15' 15'-0"			
26-3-100			30'-0"	18"	13¾"		10'-0"	15⅛"	13¾"	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"		15⅝"									NONE			

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

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

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 3 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 15' TO 45')

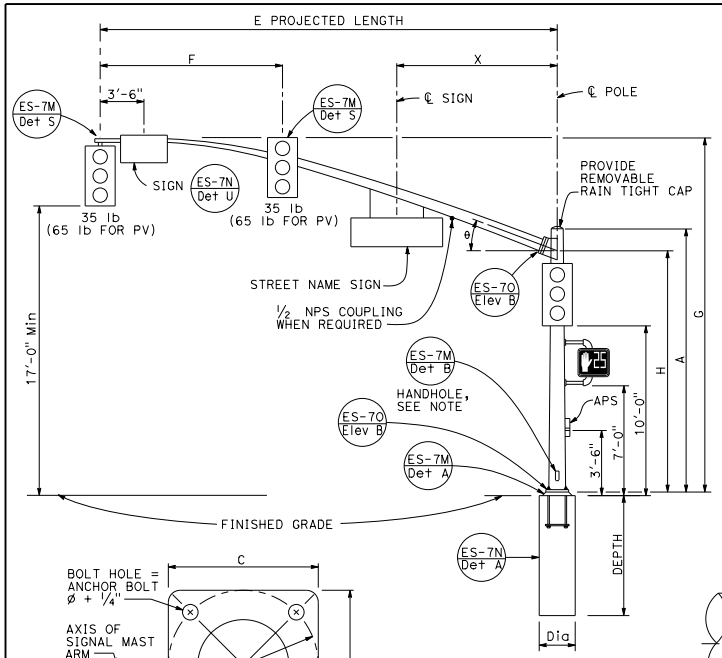
NO SCALE

RSP ES-7E DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN ES-7E
DATED MAY 31, 2018 - PAGE 519 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7E

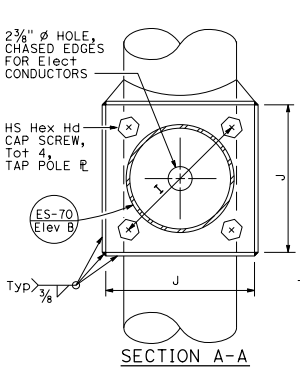
2018 REVISED STANDARD PLAN RSP ES-7E

12-12-19

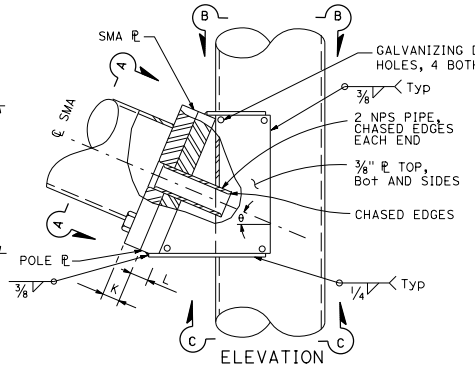


TYPE 18-4-100,
23-4-100, 27-4-100
ELEVATION A

BASE PLATE
DETAIL B

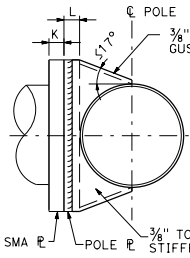


SECTION A-A

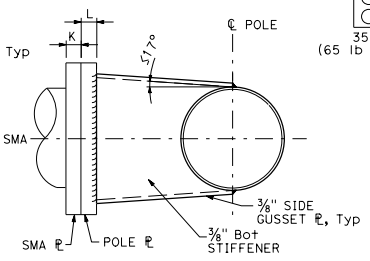


ELEVATION

SIGNAL MAST ARM CONNECTION
DETAIL A



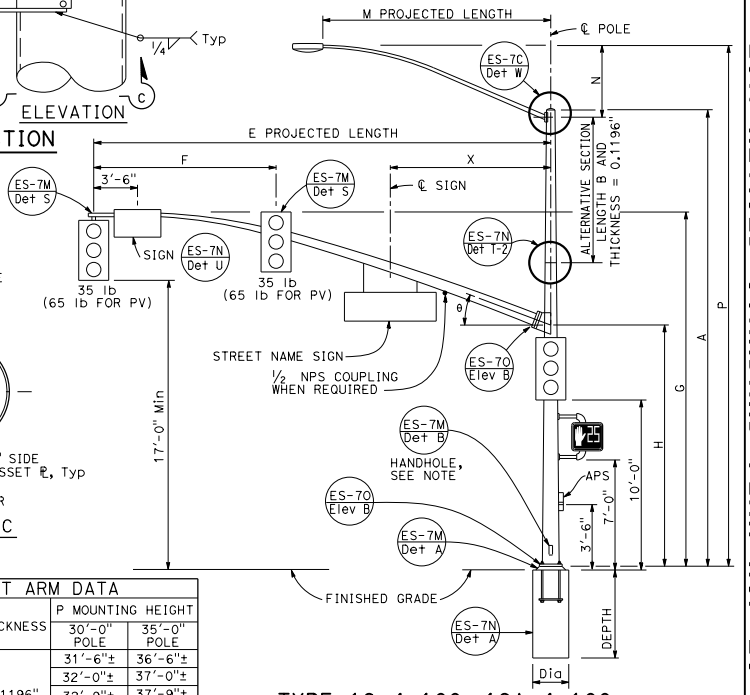
SECTION B-B



SECTION C-C

NOTE:
Handhole shall be located on the downstream side of traffic.

TO ACCOMPANY PLANS DATED _____



TYPE 19-4-100, 19A-4-100,
24-4-100, 24A-4-100,
26-4-100, 26A-4-100
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 ℄ 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"		13½"			1½"	1¾"	21°	
35'-0"	14'-0"			8⅛"								
40'-0"	15'-0"			9⅜"				1'-5"			15°	13'-0"
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							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
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"		11¼"		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.

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

REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

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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')

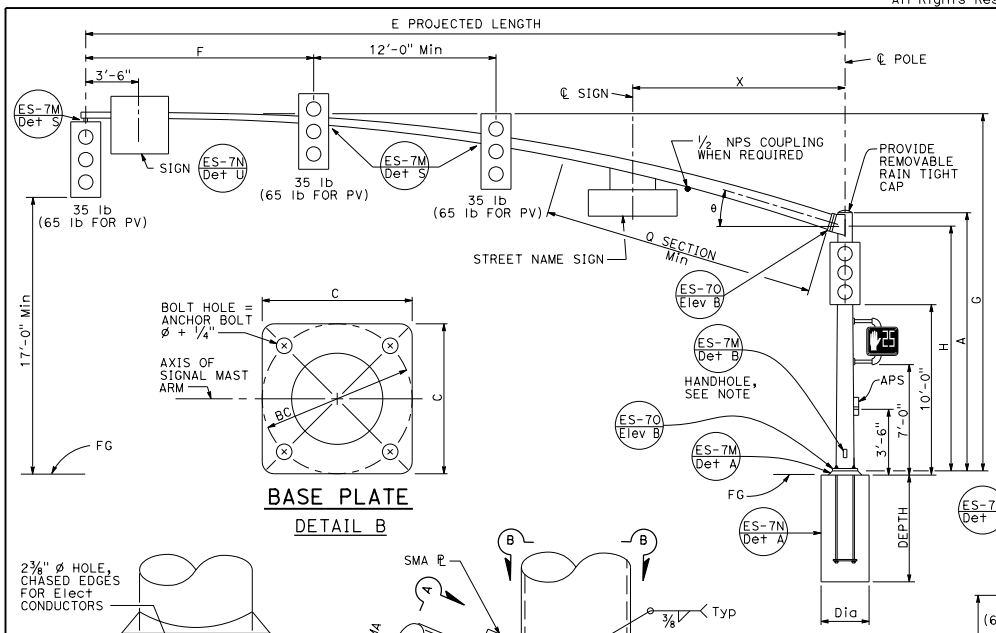
NO SCALE

RSP ES-7F DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN ES-7F
DATED MAY 31, 2018 - PAGE 520 OF THE STANDARD PLANS BOOK DATED 2018.

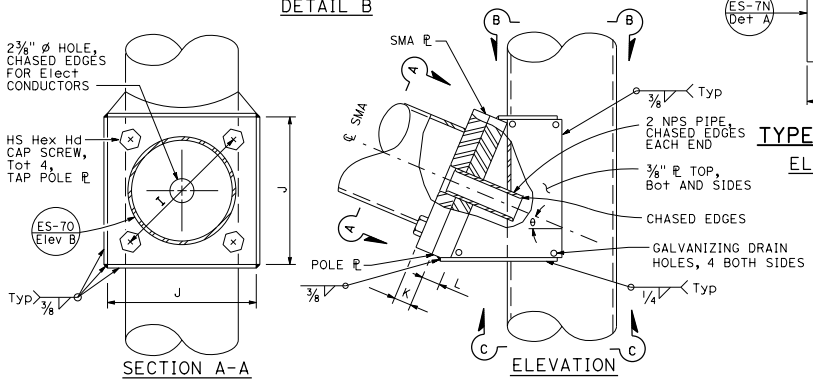
REVISED STANDARD PLAN RSP ES-7F

2018 REVISED STANDARD PLAN RSP ES-7F

12-12-19

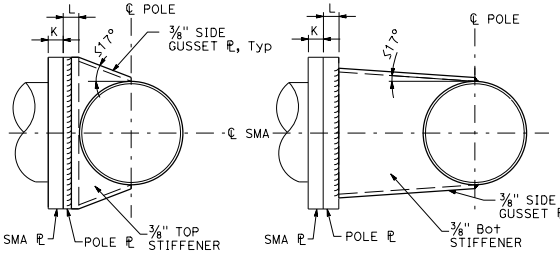


BASE PLATE
DETAIL B



SIGNAL MAST ARM CONNECTION
DETAIL A

TYPE 28-5-100
ELEVATION A



SECTION B-B

SECTION C-C

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

REGISTERED CIVIL ENGINEER
April 17, 2020
PLANS APPROVAL DATE
Stanley P. Johnson No. C57793 Exp. 3-31-22 CIVIL STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER
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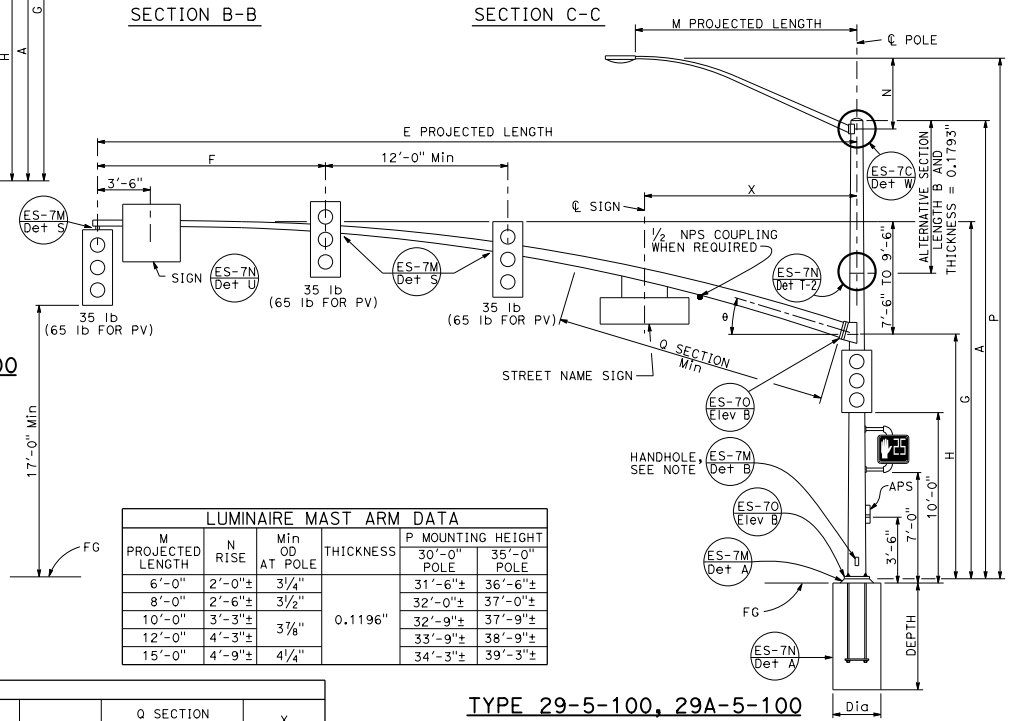
TO ACCOMPANY PLANS DATED

NOTE:
Handhole shall be located on the downstream side of traffic.



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"±

TYPE 29-5-100, 29A-5-100
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 ℄ 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"	10'-0"	1 9/16"	17¾"	2'-6"	2'-4"	3"	2¼"ø x 42"	NONE	50'-0", [55'-0"]	4'-0"	14'-0"
29-5-100			30'-0"		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.

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')

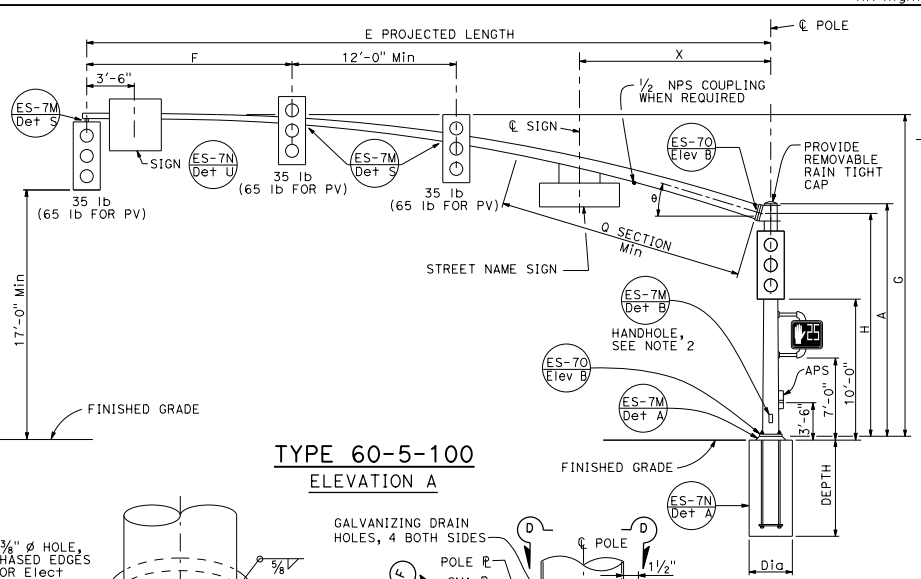
NO SCALE

RSP ES-7G DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN ES-7G
DATED MAY 31, 2018 - PAGE 521 OF THE STANDARD PLANS BOOK DATED 2018.

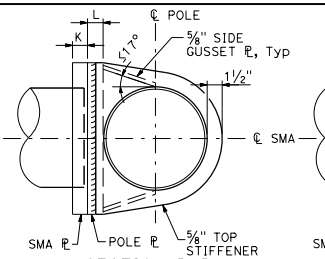
REVISED STANDARD PLAN RSP ES-7G

2018 REVISED STANDARD PLAN RSP ES-7G

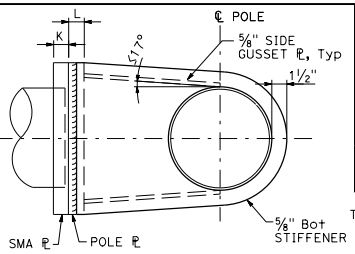
12-12-19



TYPE 60-5-100
ELEVATION A



SECTION D-D



SECTION E-E

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

REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

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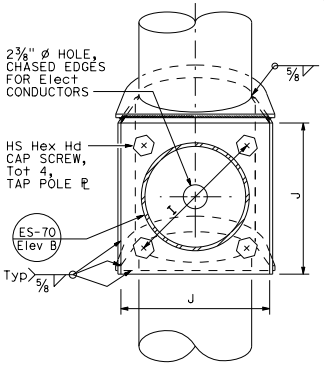
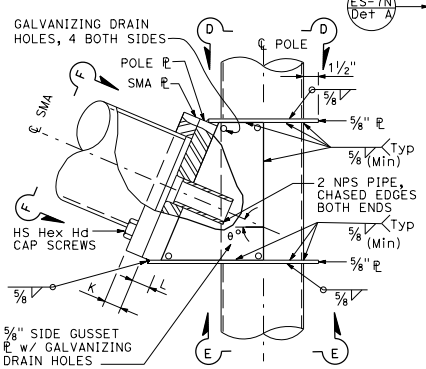
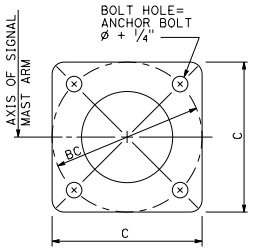
TO ACCOMPANY PLANS DATED _____



SECTION F-F

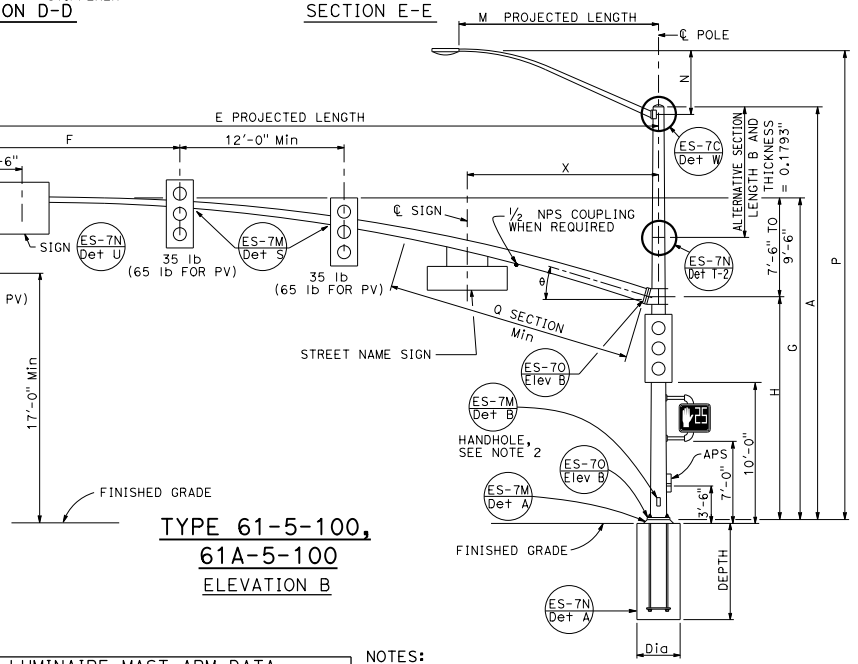


ELEVATION



DETAIL B
BASE PLATE

SIGNAL MAST ARM CONNECTION
DETAIL A



TYPE 61-5-100,
61A-5-100
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	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"	

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	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
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"		15'-0"		20"	2'-11"	2'-9"		3"ø x 60"	6'-15' [15'-0"]		4'-6"	15'-0"
61A-5-100			35'-0"		20"												

[ ] 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 5 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 60' TO 65')

NO SCALE

RSP ES-7H DATED APRIL 17, 2020 SUPERSEDES STANDARD PLAN ES-7H
DATED MAY 31, 2018 - PAGE 522 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7H

12-13-19

2018 REVISED STANDARD PLAN RSP ES-7H

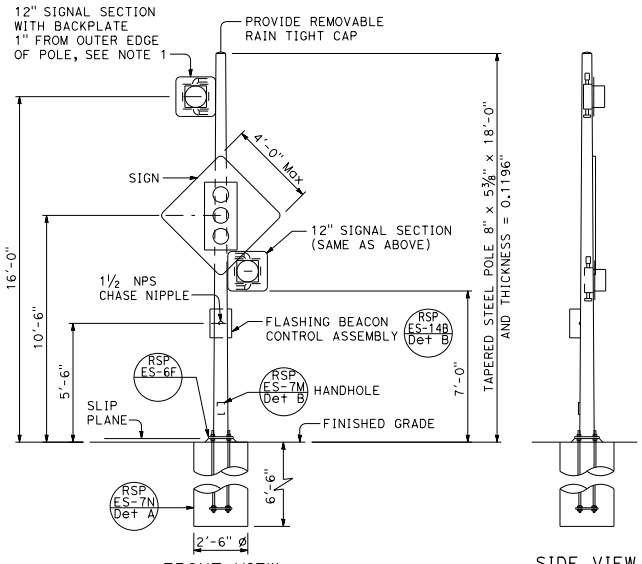
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — Stanley P. Johnson, No. C57793, Exp. 3-31-24, CIVIL, REGISTERED PROFESSIONAL ENGINEER, STATE OF CALIFORNIA

April 15, 2022
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.

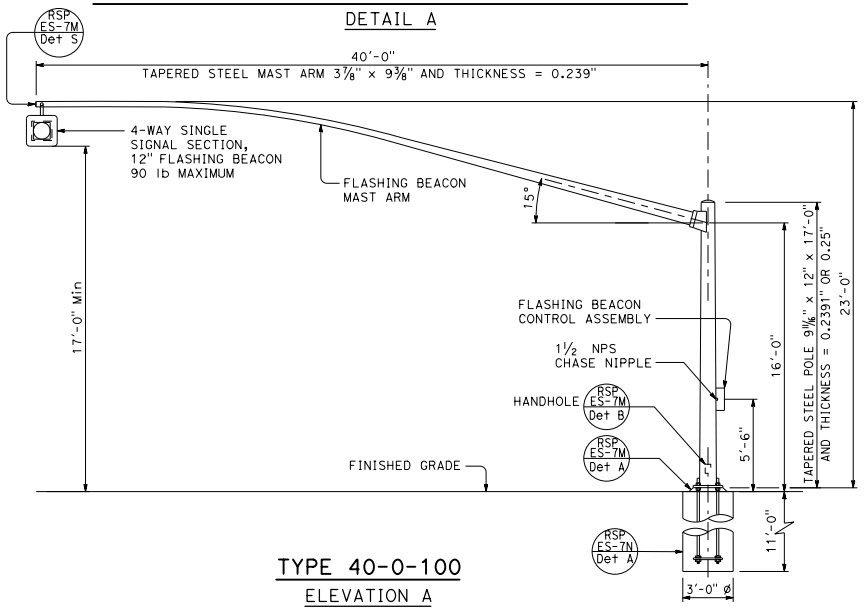
TO ACCOMPANY PLANS DATED _____



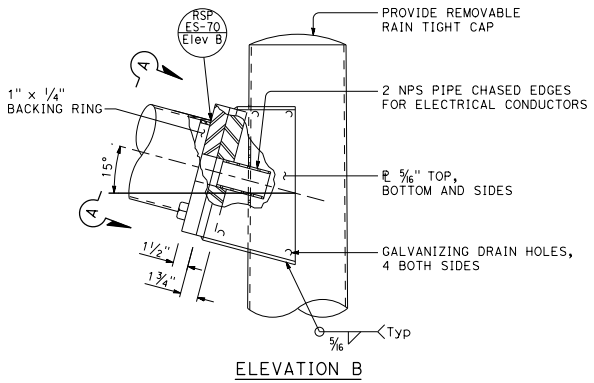
FRONT VIEW

SIDE VIEW

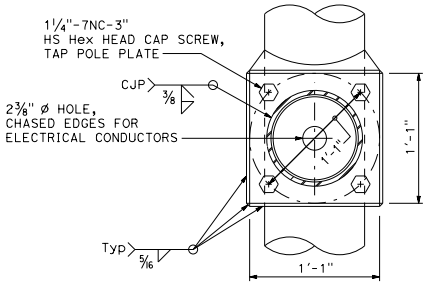
TYPE 15-FBS
FLASHING BEACON WITH SLIP BASE INSTALLATION
DETAIL A



TYPE 40-0-100
ELEVATION A

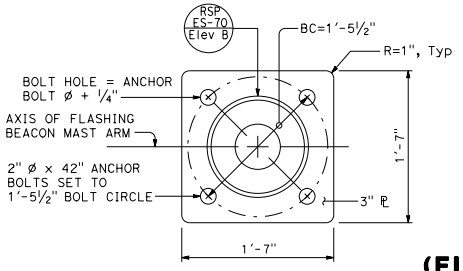


ELEVATION B

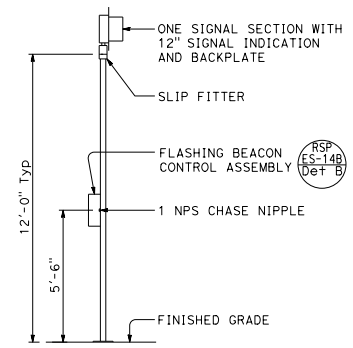


VIEW A-A

FLASHING BEACON MAST ARM CONNECTION DETAIL
DETAIL B



BASE PLATE
DETAIL C



TYPE 1
FLASHING BEACON INSTALLATION
DETAIL D

NOTE:

1. See Revised Standard Plans RSP ES-4A and RSP ES-4D for attachment fitting details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(FLASHING BEACON ON A TYPE 1, TYPE 15-FBS, AND TYPE 40 STANDARD)

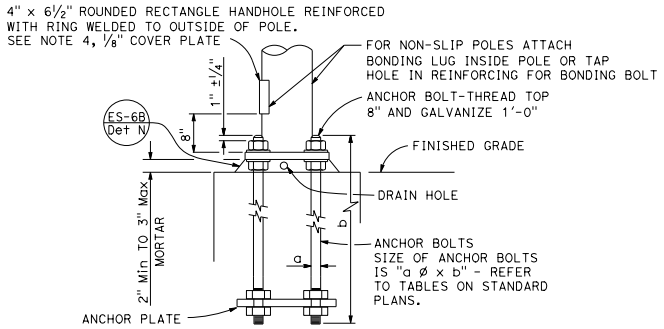
NO SCALE

RSP ES-7J DATED APRIL 15, 2022 SUPERSEDES RSP ES-7J DATED OCTOBER 15, 2021, RSP ES-7J DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-7J DATED MAY 31, 2018 - PAGE 523 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7J

2018 REVISED STANDARD PLAN RSP ES-7J

12-3-21



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 RSP ES-7D

26A - 3 - 100 - 45 - 10 - F or FB

SAMPLE IDENTIFICATION NUMBER

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

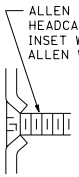
REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

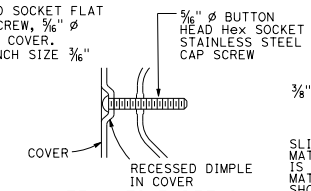
REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 CIVIL — STATE OF CALIFORNIA

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.

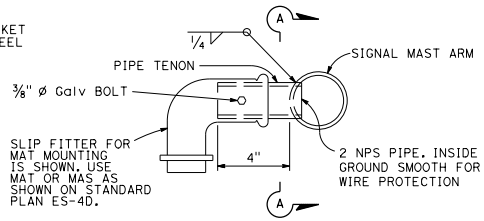
TO ACCOMPANY PLANS DATED _____



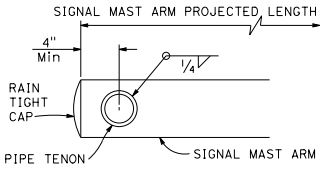
TYPICAL DETAIL
DETAIL B-1



ALTERNATIVE DETAIL
DETAIL B-2



SIDE TENON
DETAIL S-1

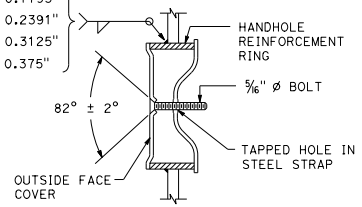


SECTION A-A

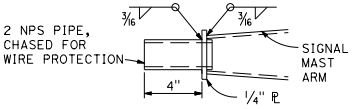
NOTES:

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"



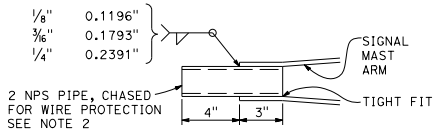
TAMPER RESISTANT HANDHOLE COVER
DETAIL B



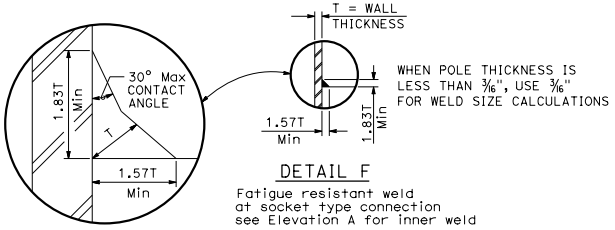
TIP TENON
DETAIL TL
This detail supersedes Detail S when so designated

PIPE TENONS
DETAIL S

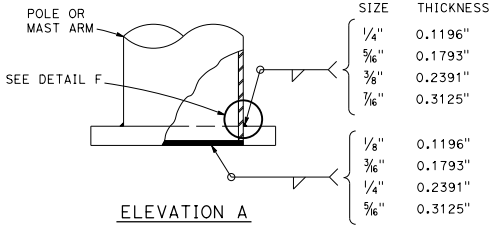
WELD SIZE	WALL THICKNESS
⅛"	0.1196"
⅜"	0.1793"
¼"	0.2391"



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"

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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-7M DATED MAY 31, 2018 - PAGE 526 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7M

2018 REVISED STANDARD PLAN RSP ES-7M

5-31-18

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

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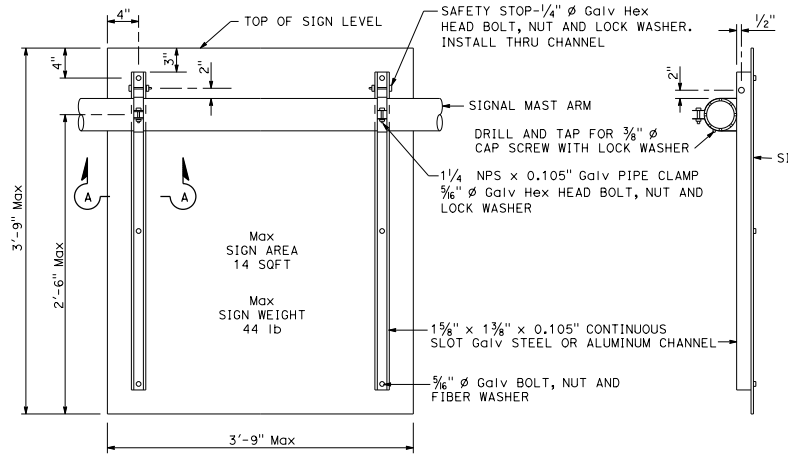
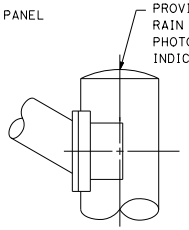
TO ACCOMPANY PLANS DATED _____



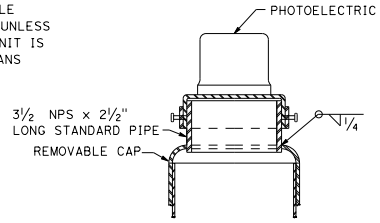
REAR VIEW

SIDE VIEW

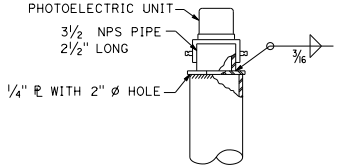
SIGN MOUNTING DETAILS
DETAIL U



STANDARD TOP
DETAIL B-1

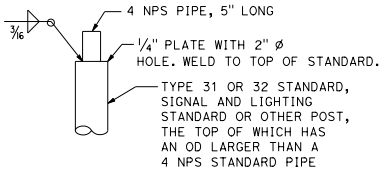


MOUNTING ADAPTER FOR PHOTOELECTRIC UNIT
DETAIL B-2

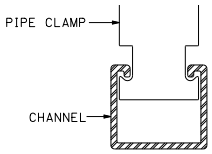


ALTERNATIVE MOUNTING ADAPTER
DETAIL B-3

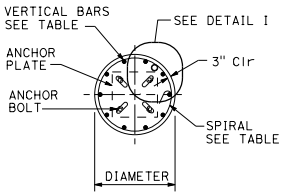
POLE TOP DETAILS
DETAIL B



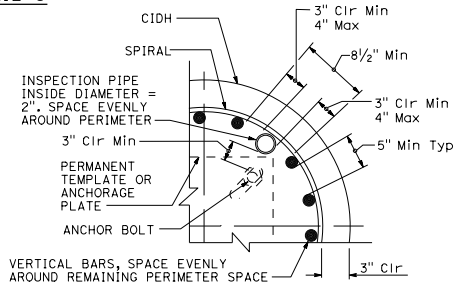
DETAIL C-1



SECTION A-A



SECTION B-B

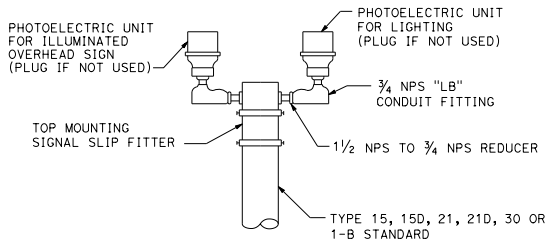


INSPECTION PIPE PLACEMENT
DETAIL I

CIDH REINFORCING AND INSPECTION PIPE SCHEDULE

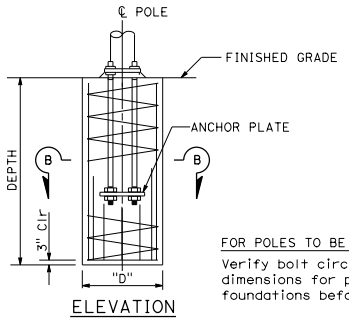
CIDH DIAMETER	VERTICAL BARS	SPIRAL	INSPECTION PIPE
2 ft	8-#5	#4 AT 6	2
2.5 ft	10-#6		4*
3 ft	12-#7	#5 AT 6	
3.5 ft	14-#8		4
4 ft	18-#9	2-#4 AT 7	5
4.5 ft	18-#9	2-#5 AT 7	5
5 ft	22-#10	2-#5 AT 7	6
6 ft	26-#11	2-#6 AT 7	7

* FOR SLIP BASE VERSIONS WITH 3 ANCHOR BOLTS USE 3 INSPECTION PIPES.



DETAIL C-2

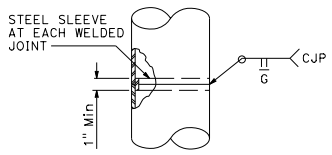
DUAL PHOTOELECTRIC UNIT MOUNTING DETAIL
DETAIL C



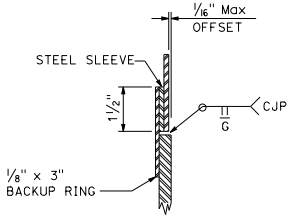
ELEVATION

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 PIPE THICKNESS
DETAIL T-1



AT PIPE 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 APRIL 16, 2021 SUPERSEDES STANDARD PLAN ES-7N DATED MAY 31, 2018 - PAGE 527 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7N

2018 REVISED STANDARD PLAN RSP ES-7N

12-21-20

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

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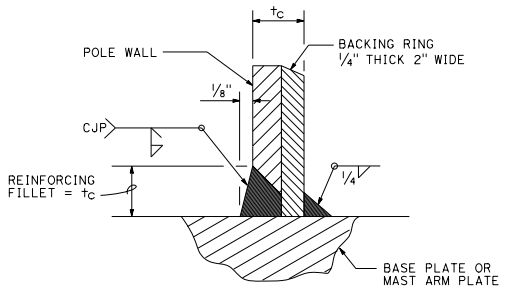
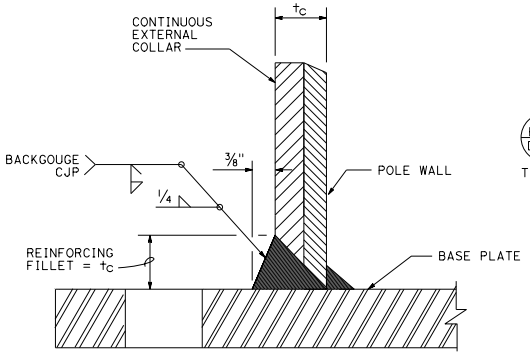
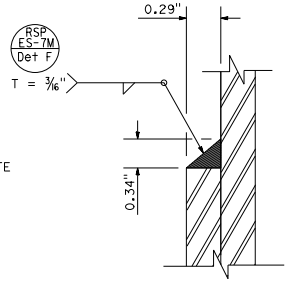
TO ACCOMPANY PLANS DATED _____



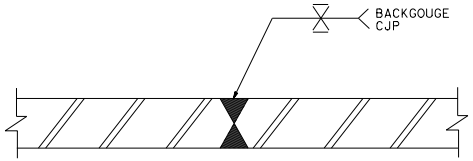
DETAIL B



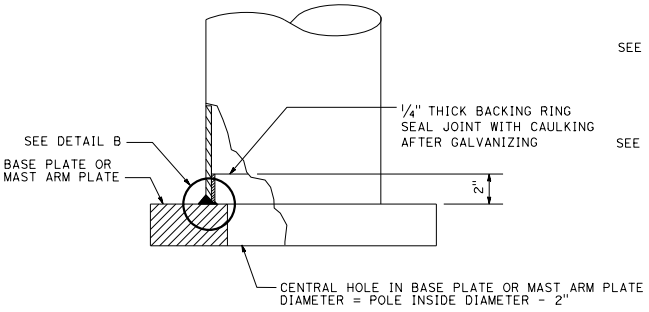
DETAIL C1



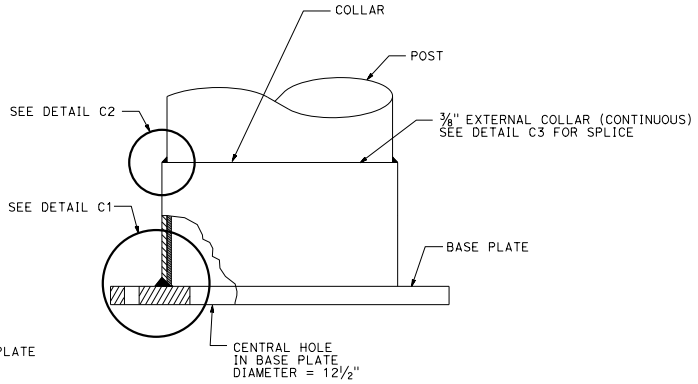
DETAIL C2



DETAIL C3

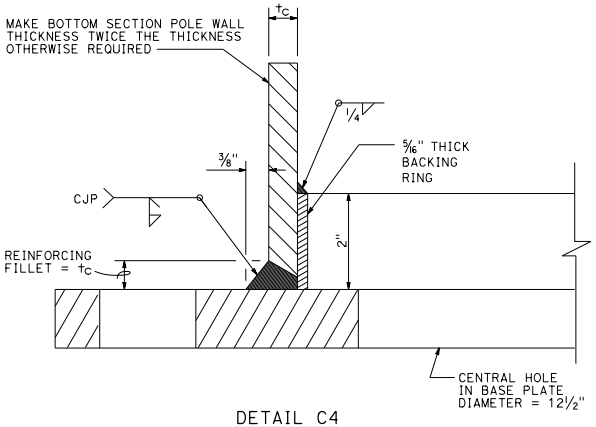


ELEVATION B



ELEVATION C

For alternative base, see Detail C4



DETAIL C4

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, DETAIL No. 3)

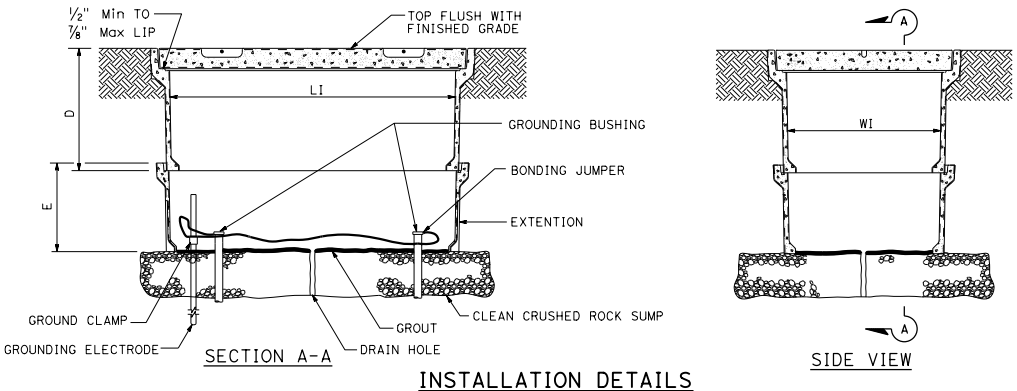
NO SCALE

RSP ES-7O DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-7O
DATED MAY 31, 2018 - PAGE 528 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7O

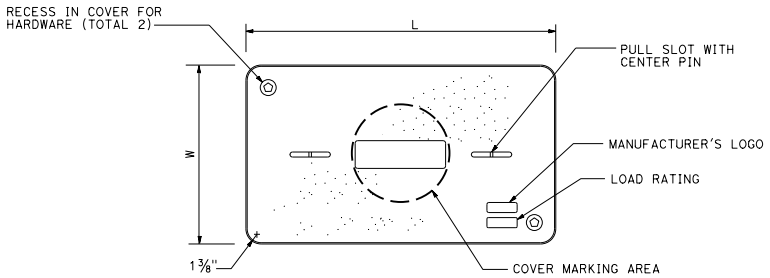
2018 REVISED STANDARD PLAN RSP ES-7O

5-16-18

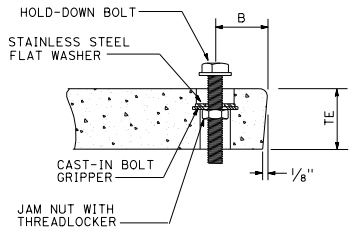


INSTALLATION DETAILS

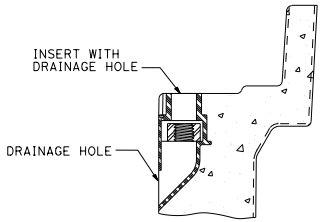
DETAIL A



COVER TOP VIEW



TYPICAL COVER CAPTIVE BOLT
OR SIMILAR



TYPICAL THREADED INSERT
OR SIMILAR

NOMINAL DIMENSIONS TABLE

PULL BOX						COVER				
PULL BOX TYPE	MINIMUM DEPTH BOX (D)	MINIMUM DEPTH EXTENSION (E)	MAXIMUM WEIGHT	LI Min	WI Min	TE	B	L	W	MAXIMUM WEIGHT
No. 3½	12"	N/A	40 lb	1'-2⅜"	9"	1⅝"-1¾"	1¾"	1'-3¼" - 1'-3⅜"	10" - 10⅛"	30 lb
No. 5	12"	10"	65 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"	95 lb

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

October 18, 2019
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 _____

2018 REVISED STANDARD PLAN RSP ES-8A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (NON-TRAFFIC PULL BOX)

NO SCALE

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

REVISED STANDARD PLAN RSP ES-8A

7-17-19

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. 12-31-19
ELECTRICAL
STATE OF CALIFORNIA

October 18, 2019
PLANS APPROVAL DATE

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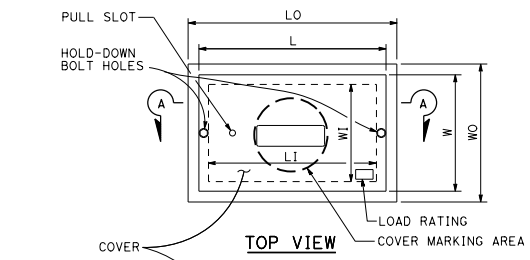
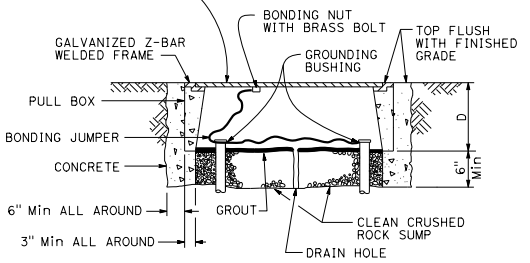
TO ACCOMPANY PLANS DATED _____



TOP VIEW



SECTION A-A

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

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TRAFFIC PULL BOX)

NO SCALE

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

REVISED STANDARD PLAN RSP ES-8B

2018 REVISED STANDARD PLAN RSP ES-8B

6-17-19

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

H.R.J
REGISTERED ELECTRICAL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

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

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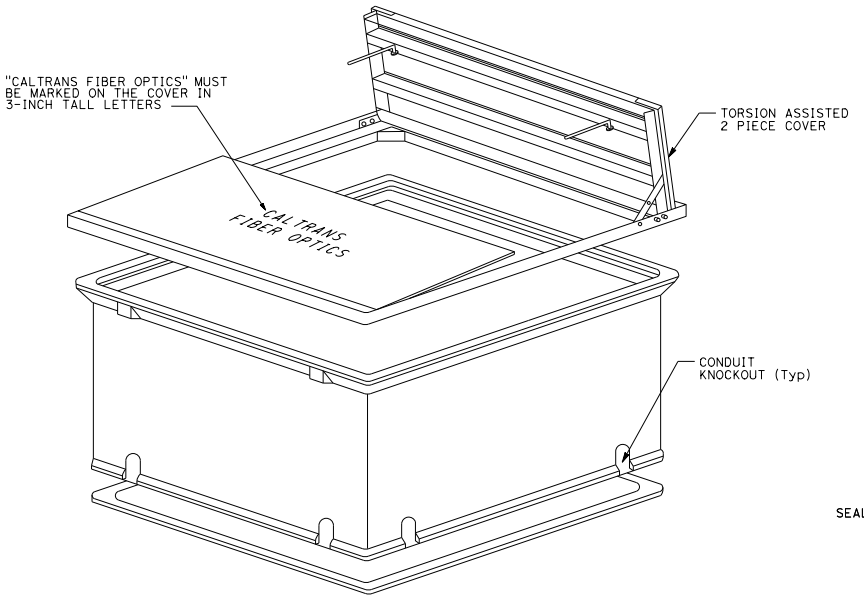
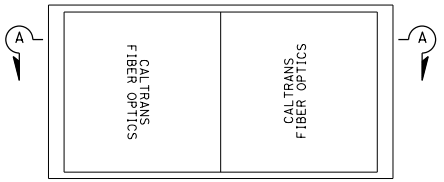
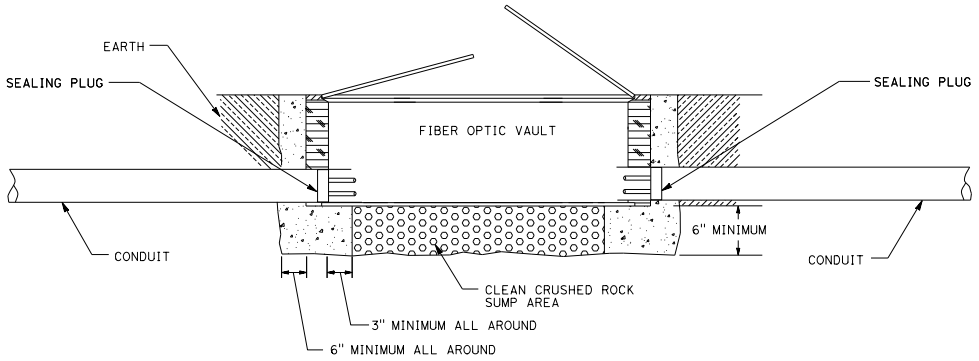
TO ACCOMPANY PLANS DATED _____



VAULT-ISOMETRIC VIEW



TOP VIEW



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (VAULTS)

NO SCALE

RSP ES-8C DATED APRIL 19, 2019 SUPERSEDES RSP ES-8C DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-8C DATED MAY 31, 2018 - PAGE 534 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-8C

2018 REVISED STANDARD PLAN RSP ES-8C

12-11-18

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

REGISTERED ELECTRICAL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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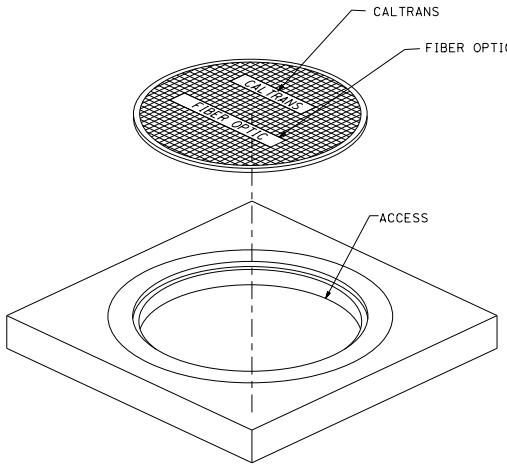
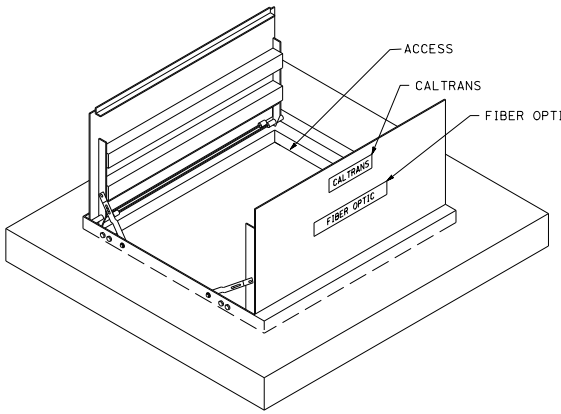
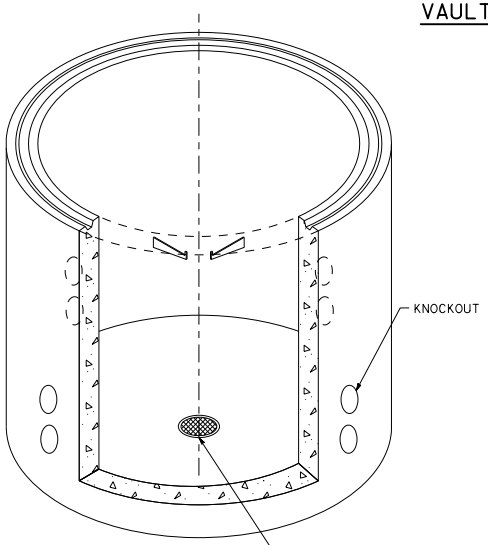
TO ACCOMPANY PLANS DATED _____

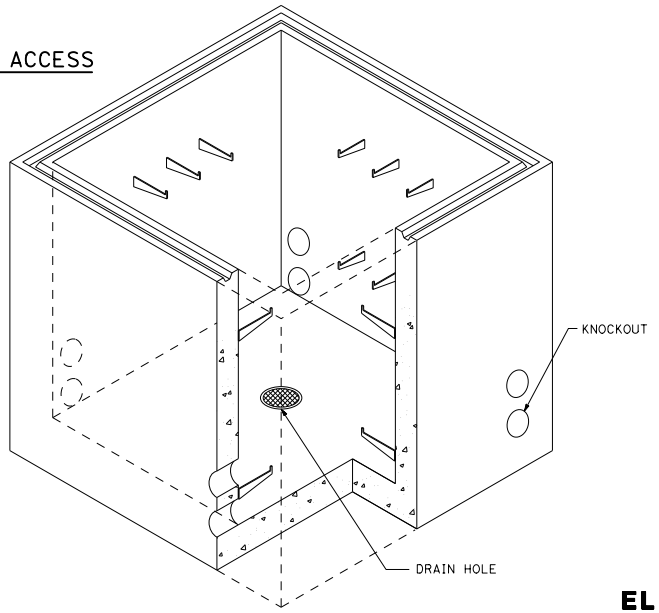




VAULT COVER AND ACCESS



ROUND VAULT



BOX VAULT

VAULT BODY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (VAULTS)

NO SCALE

RSP ES-8D DATED APRIL 16, 2021 SUPERSEDES REVISED STANDARD PLAN RSP ES-8D DATED OCTOBER 19, 2018 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-8D

2018 REVISED STANDARD PLAN RSP ES-8D

11-2-20

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

REGISTERED ELECTRICAL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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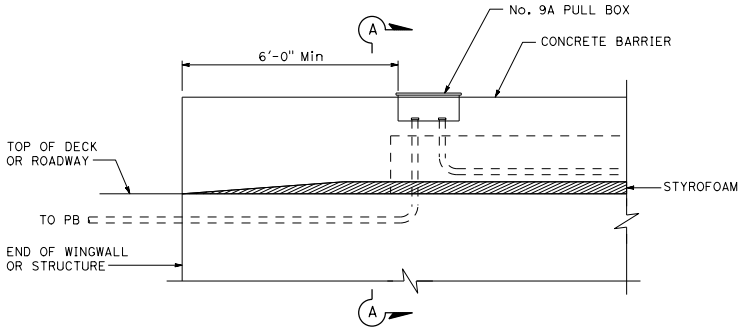
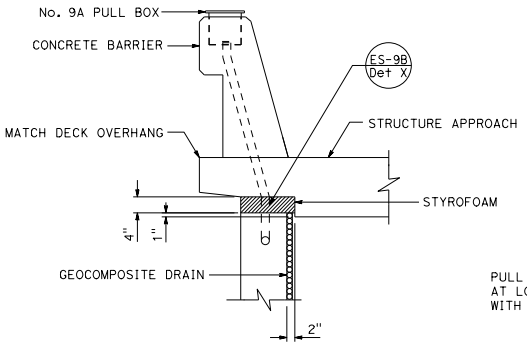
TO ACCOMPANY PLANS DATED _____



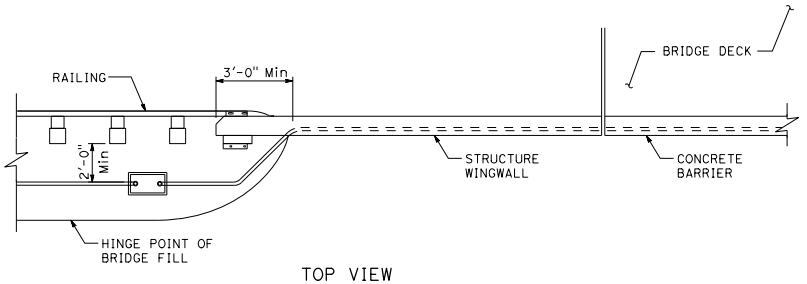
SIDE VIEW



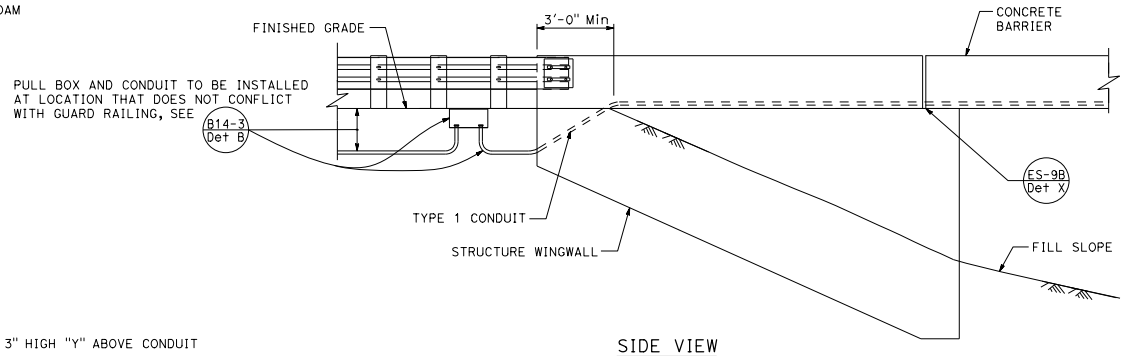
SECTION A-A

CONDUIT TERMINATION

DETAIL A



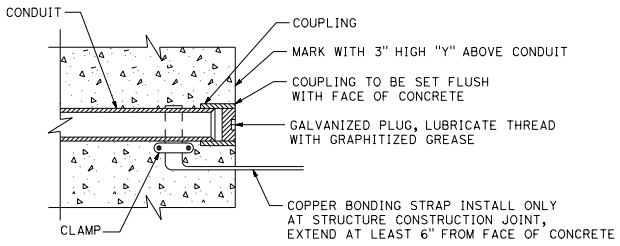
TOP VIEW



SIDE VIEW

CONDUIT TERMINATION

DETAIL I



CONDUIT TERMINATION

DETAIL C

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(STRUCTURE PULL BOX INSTALLATIONS)

NO SCALE

RSP ES-9A DATED OCTOBER 16, 2020 SUPERSEDES STANDARD PLAN ES-9A
DATED MAY 31, 2018 - PAGE 535 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-9A

2018 REVISED STANDARD PLAN RSP ES-9A

6-16-20

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

REGISTERED ELECTRICAL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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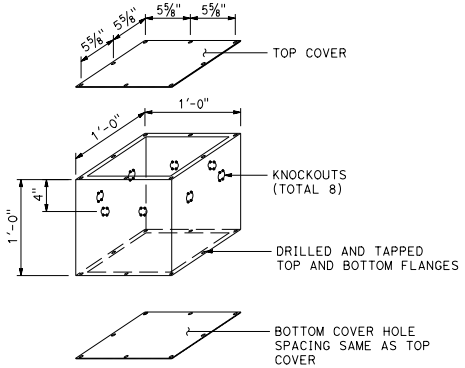
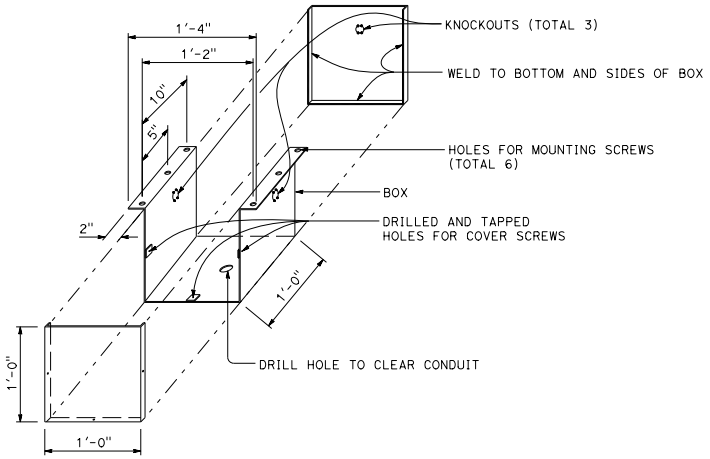
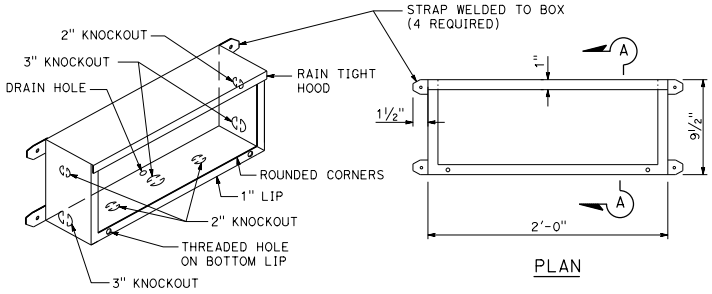
TO ACCOMPANY PLANS DATED _____



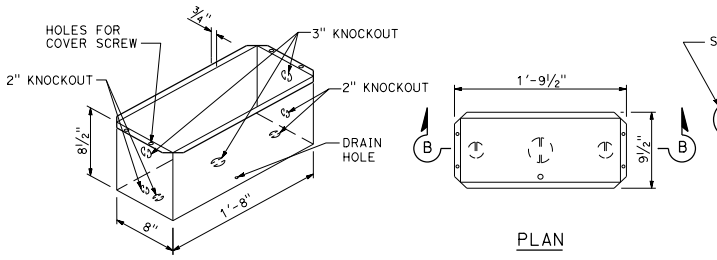
No. 7 PULL BOX



No. 8 PULL BOX



No. 9 PULL BOX



No. 9A PULL BOX

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (STRUCTURE PULL BOX)

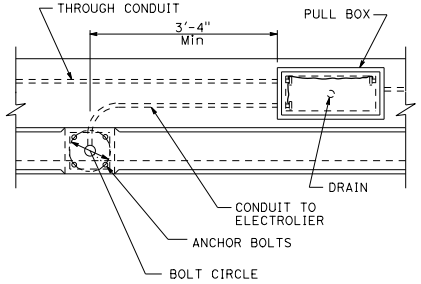
NO SCALE

RSP ES-9C DATED OCTOBER 16, 2020 SUPERSEDES RSP ES-9C DATED OCTOBER 18, 2019 AND STANDARD PLAN ES-9C DATED MAY 31, 2018 - PAGE 537 OF THE STANDARD PLANS BOOK DATED 2018.

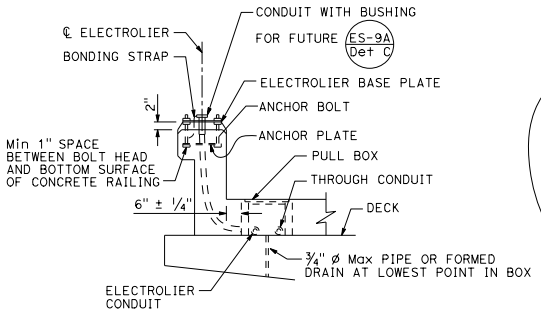
REVISED STANDARD PLAN RSP ES-9C

6-18-20

2018 REVISED STANDARD PLAN RSP ES-9C



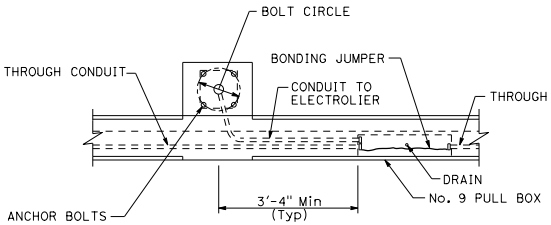
TOP VIEW



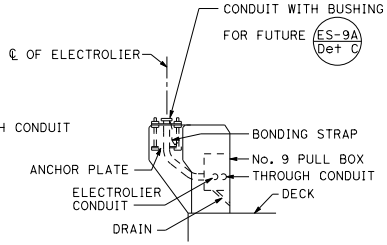
END VIEW

No. 3½, 5, OR 6 PULL BOX INSTALLATION

DETAIL A



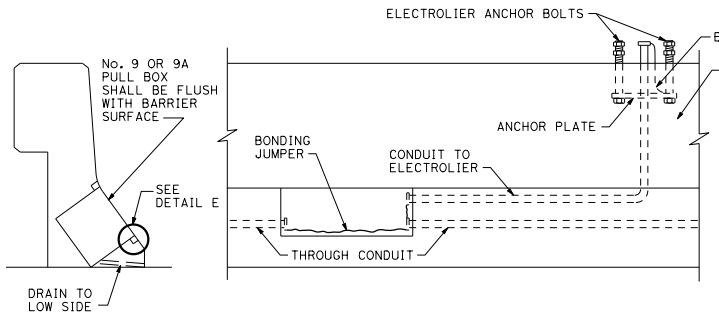
TOP VIEW



END VIEW

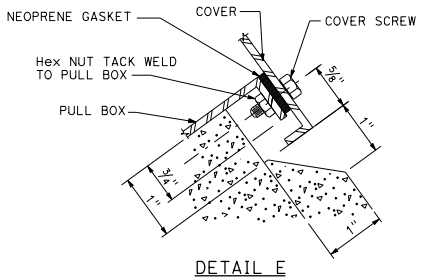
No. 9 PULL BOX INSTALLATION

DETAIL B

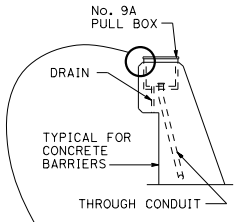


INSTALLATION IN SLOPING PARAPETS

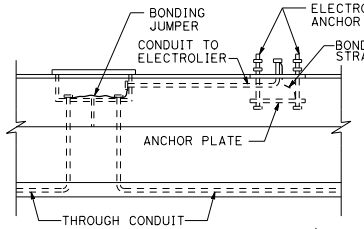
DETAIL D



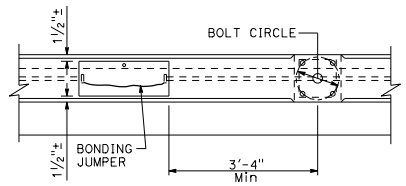
DETAIL E



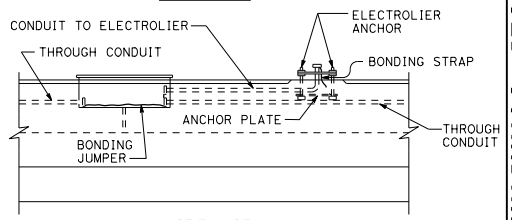
END VIEW



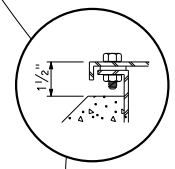
SIDE VIEW

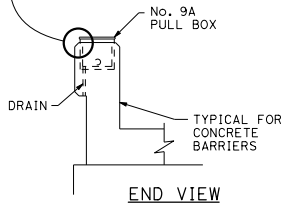


TOP VIEW



SIDE VIEW





END VIEW

No. 9A PULL BOX INSTALLATION

DETAIL C

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

H.R.
REGISTERED ELECTRICAL ENGINEER

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

October 18, 2019
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED _____

2018 REVISED STANDARD PLAN RSP ES-9D

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (STRUCTURE PULL BOX INSTALLATIONS)

NO SCALE

RSP ES-9D DATED OCTOBER 18, 2019 SUPERSEDES RSP ES-9D DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-9D DATED MAY 31, 2018 - PAGE 538 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-9D

8-23-19

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

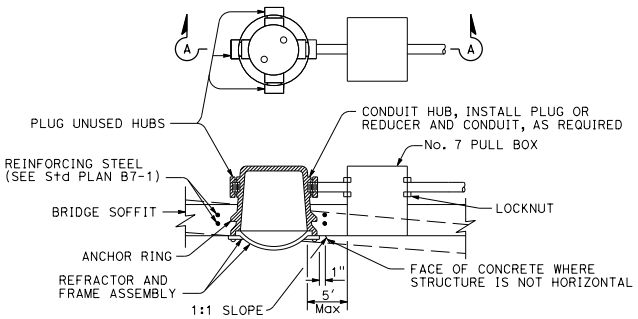
H.R.J
REGISTERED ELECTRICAL ENGINEER

April 19, 2019
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.

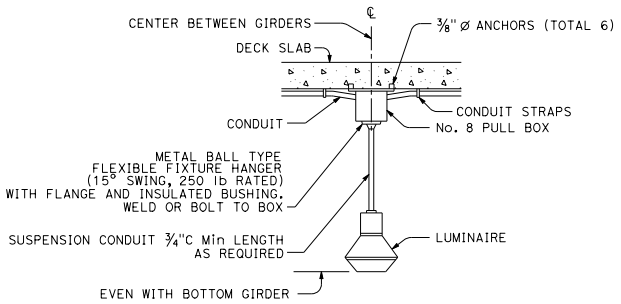
TO ACCOMPANY PLANS DATED _____



SECTION A-A

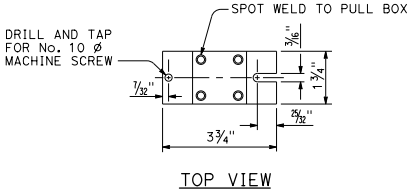
FLUSH-MOUNTED SOFFIT LUMINAIRE INSTALLATION

DETAIL F

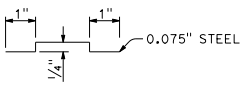


PENDANT SOFFIT LUMINAIRE INSTALLATION

DETAIL P



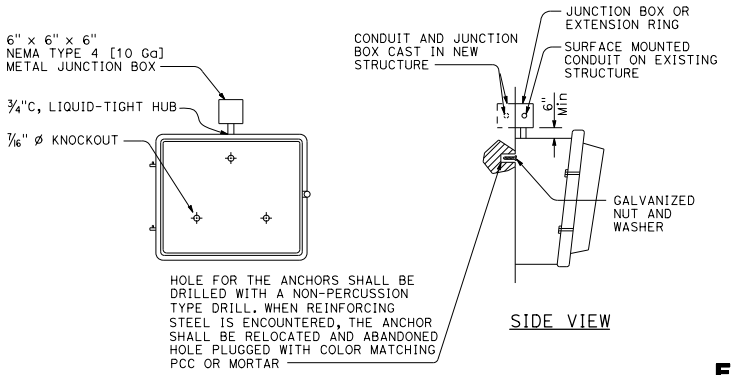
TOP VIEW



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 19, 2019 SUPERSEDES RSP ES-9E DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-9E DATED MAY 31, 2018 - PAGE 539 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-9E

2018 REVISED STANDARD PLAN RSP ES-9E

12-6-18

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

H.R.J
REGISTERED ELECTRICAL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

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

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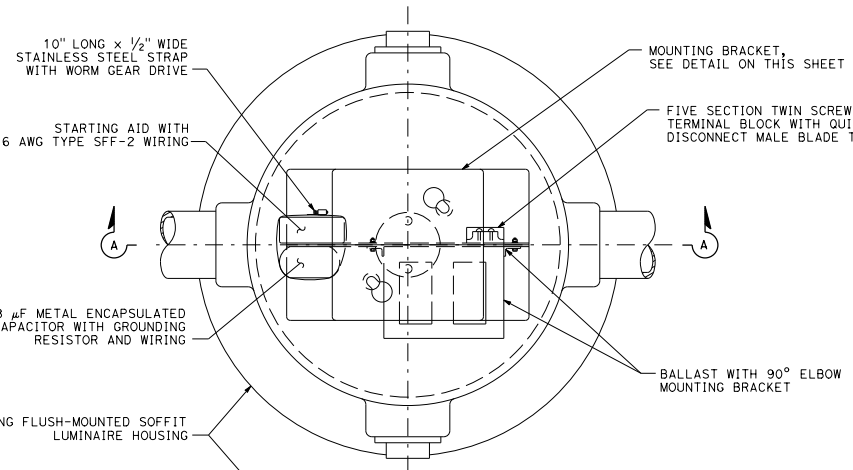
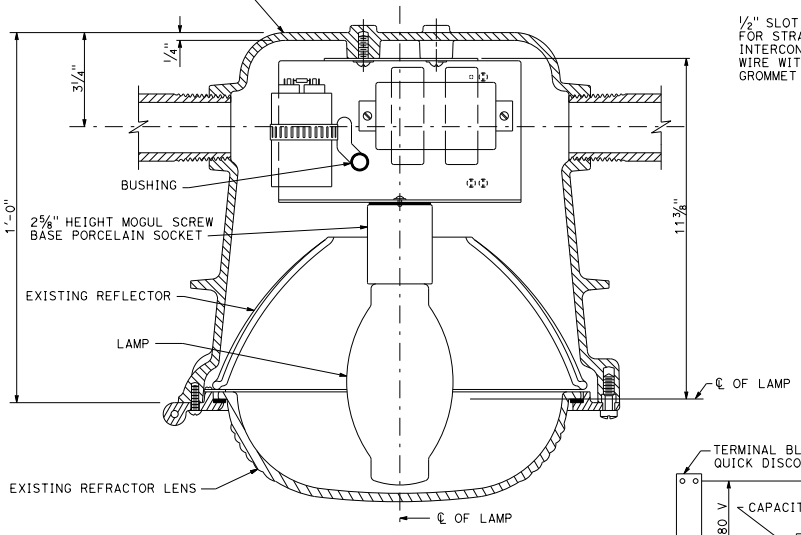
TO ACCOMPANY PLANS DATED _____

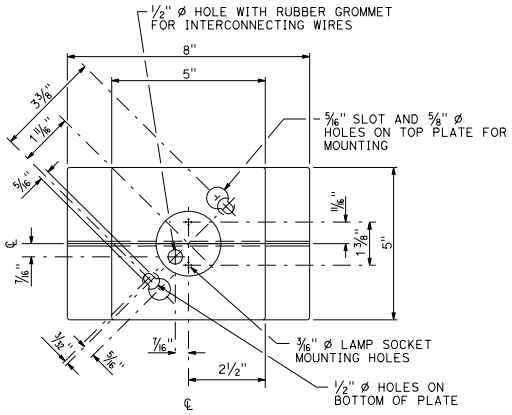


PLAN

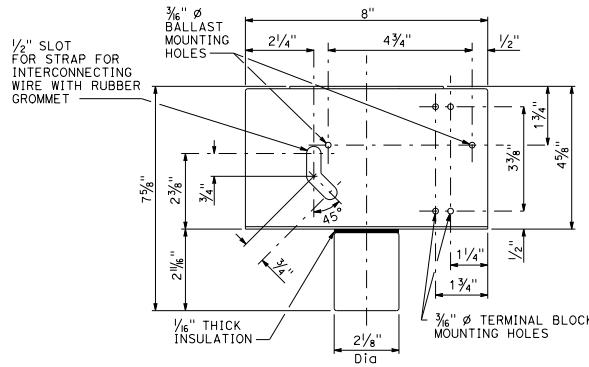


SECTION A-A

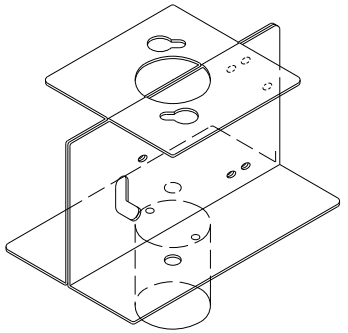
FLUSH-MOUNTED SOFFIT LUMINAIRE ASSEMBLY



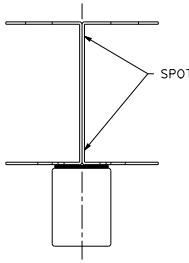
TOP VIEW



FRONT VIEW

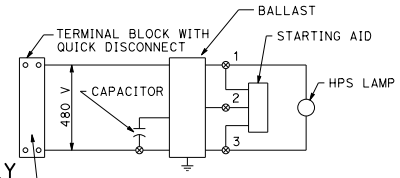


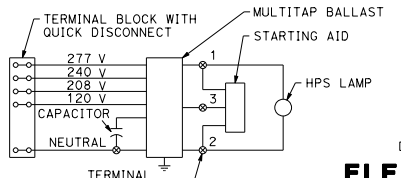
PREFORM TWO SHEETS 1/16" MILD STEEL AS SHOWN, SPOTWELD TOGETHER IN EACH CORNER WITH FOUR SPOTWELDS.



SIDE VIEW

MOUNTING BRACKET DETAILS





WIRING DIAGRAM

NOTE:
1. Use No. 8 ø machine screws, lockwashers and nuts for mounting ballast and terminal strips.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FLUSH-MOUNTED SOFFIT LUMINAIRE DETAILS)

NO SCALE

RSP ES-9F DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-9F DATED MAY 31, 2018 - PAGE 540 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-9F

2018 REVISED STANDARD PLAN RSP ES-9F

6-5-18

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

REGISTERED ELECTRICAL ENGINEER

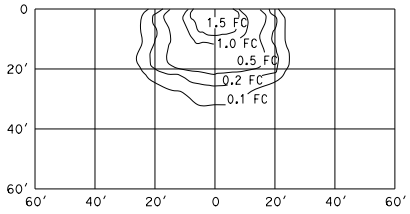
October 16, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

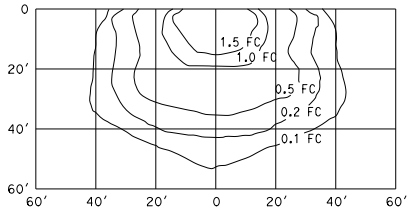
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

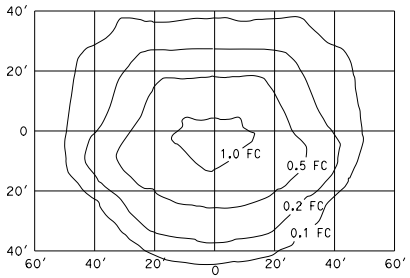
NOTE:
Curves represent the minimum maintained illuminance (FC).



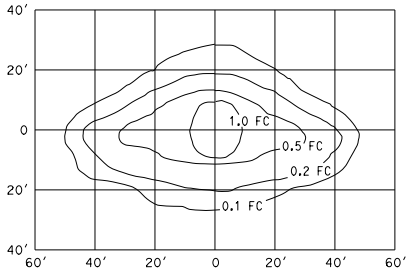
WALL-MOUNTED
15′ Mounting Height
ANSI Designation S62
Lamp operated at 5,800 lm
70 W (Max)



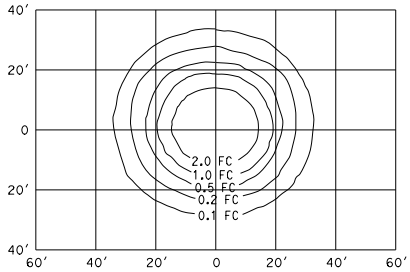
WALL-MOUNTED
15′ Mounting Height
ANSI Designation S54
Lamp operated at 9,500 lm
100 W (Max)



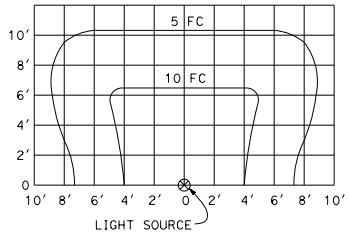
FLUSH-MOUNTED SOFFIT
17′ Mounting Height
ANSI Designation S62
Lamp operated at 5,800 lm
70 W (Max)



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)



OVERHEAD SIGN LUMINAIRE
60 W (Max)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ISOFOOTCANDLE CURVES)

NO SCALE

RSP ES-10B DATED OCTOBER 16, 2020 SUPERSEDES RSP ES-10B DATED APRIL 19, 2019 AND RSP ES-10B DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-10B DATED MAY 31, 2018 - PAGE 542 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-10B

2018 REVISED STANDARD PLAN RSP ES-10B

6-11-20

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

H.R.J
REGISTERED ELECTRICAL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

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

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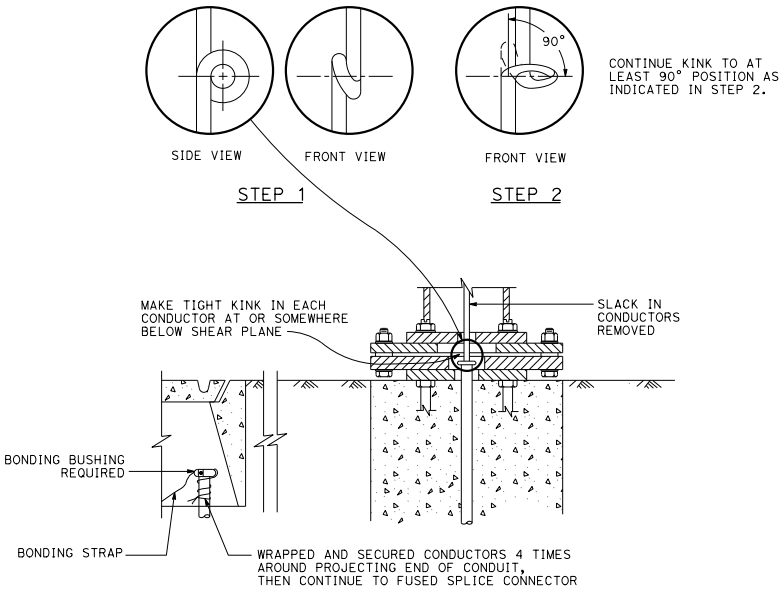
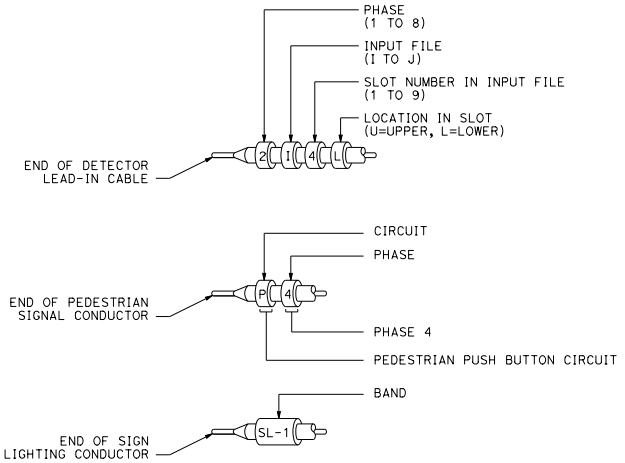
TO ACCOMPANY PLANS DATED _____



KINKING DETAIL FOR SLIP BASE STANDARDS

DETAIL A



TYPICAL BANDING DETAILS

DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (KINKING AND BANDING DETAIL)

NO SCALE

RSP ES-13B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-13B DATED MAY 31, 2018 - PAGE 545 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-13B

2018 REVISED STANDARD PLAN RSP ES-13B

5-29-18

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

H.R.J.
REGISTERED ELECTRICAL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

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

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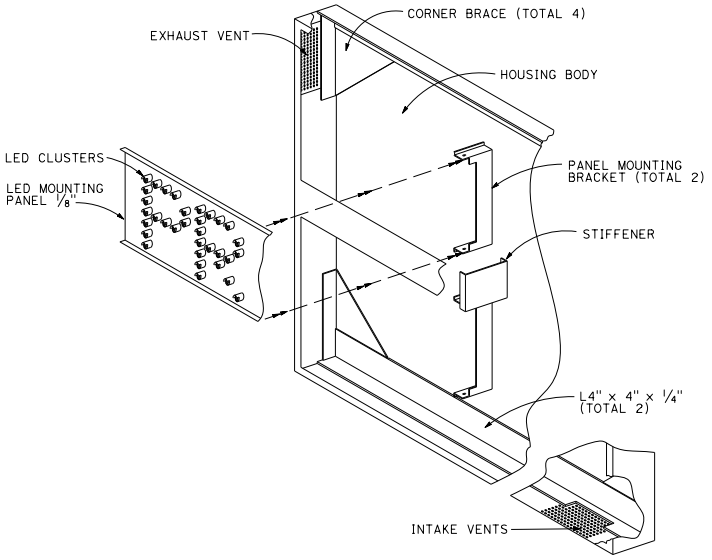
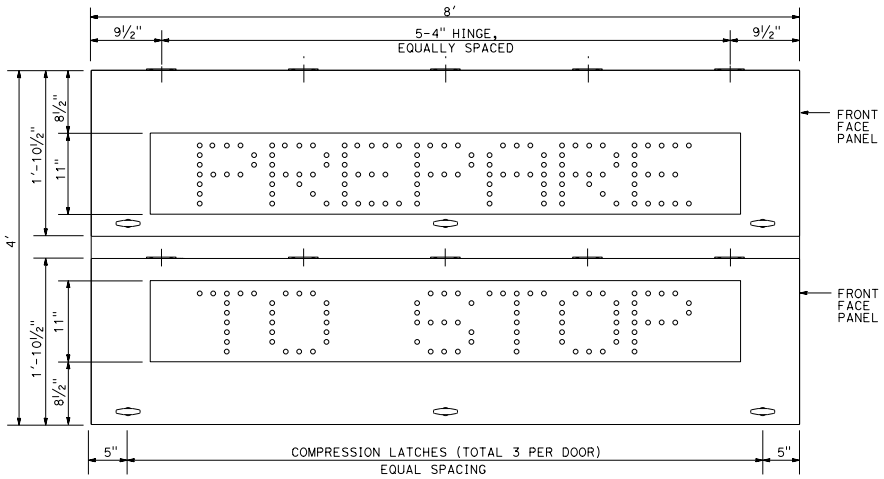
TO ACCOMPANY PLANS DATED _____



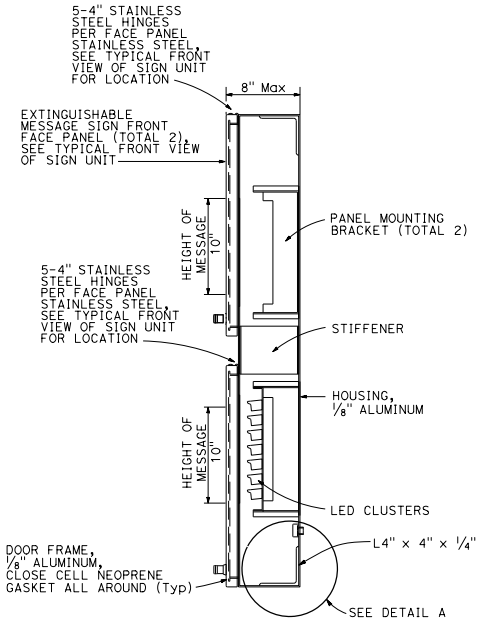
ISOMETRIC VIEW



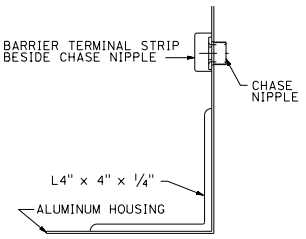
TYPICAL FRONT VIEW OF SIGN UNIT

NOTES:

1. Sheet metal shall be 1/8".
2. Welds shall be continuous.
3. Powder coat all internal and external surfaces black.
4. The door frame shall utilize two gas spring lift arms and two latching devices to maintain an open position.
5. See Wiring Notes and Symbols on Revised Standard Plan RSP ES-14B, Detail A.



CROSS-SECTION OF SIGN



DETAIL A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (EXTINGUISHABLE MESSAGE SIGN 10" LETTERS)

NO SCALE

RSP ES-14A DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-14A DATED MAY 31, 2018 - PAGE 546 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-14A

2018 REVISED STANDARD PLAN RSP ES-14A

4-17-18

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. 12-31-19
ELECTRICAL
STATE OF CALIFORNIA

October 19, 2018
PLANS APPROVAL DATE

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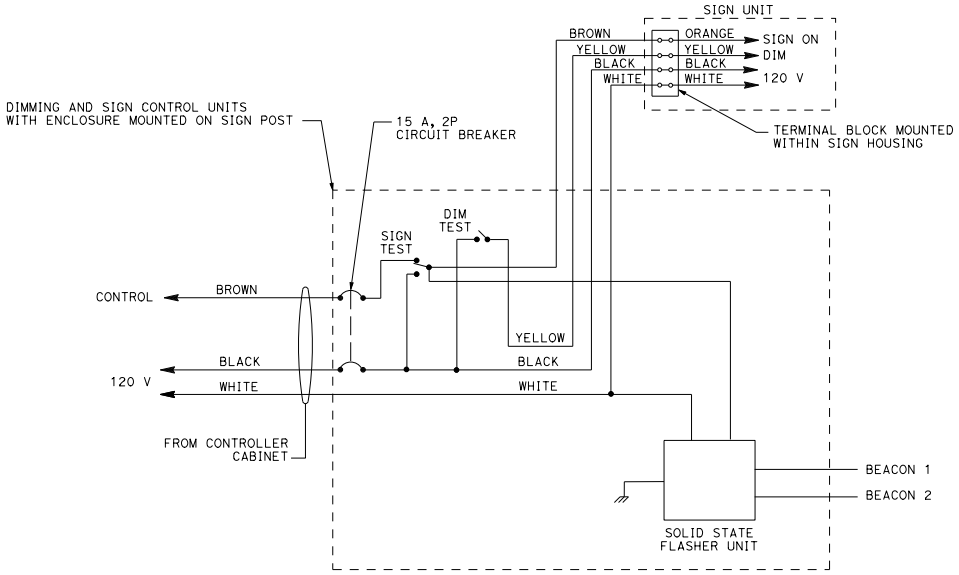
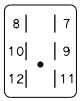
TO ACCOMPANY PLANS DATED _____



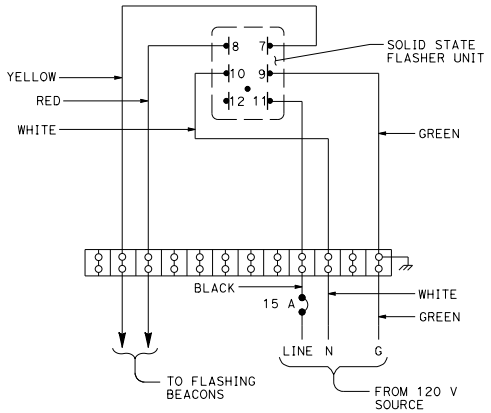
WIRING DIAGRAM
EXTINGUISHABLE MESSAGE SIGN
DETAIL A

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 (EMS AND FBCA WIRING DIAGRAMS)

NO SCALE

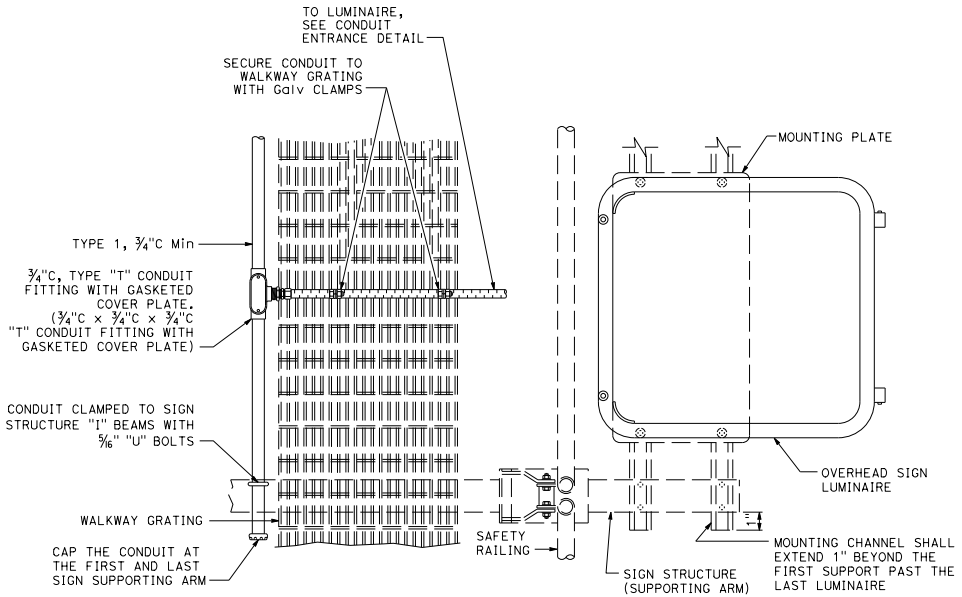
RSP ES-14B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-14B DATED MAY 31, 2018 - PAGE 547 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-14B

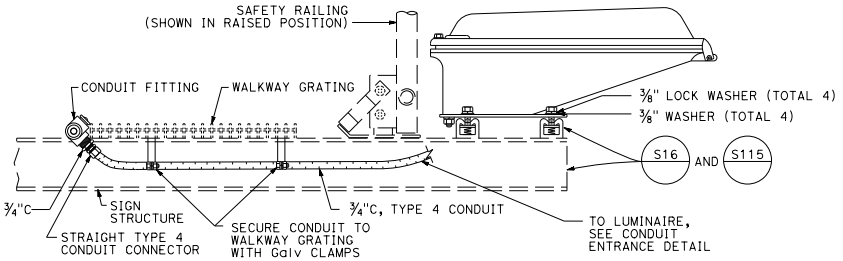
2018 REVISED STANDARD PLAN RSP ES-14B

4-26-18

LENGTH OF SIGN PANEL	NUMBER OF OVERHEAD SIGN LUMINAIRE (EACH)	OVERHEAD SIGN LUMINAIRE SPACING SEE NOTES
5'-0"	1	2'-6"
6'-0"		3'-0"
7'-0"		3'-6"
8'-0"		4'-0"
9'-0"		4'-6"
10'-0"		5'-0"
11'-0"		5'-6"
12'-0"		6'-0"
13'-0"		6'-6"
14'-0"		7'-0"
15'-0"		7'-6"
16'-0"		8'-0"
17'-0"	2	4'-3":8'-6"
18'-0"		4'-6":9'-0"
19'-0"		4'-9":9'-6"
20'-0"		5'-0":10'-0"
21'-0"		5'-3":10'-6"
22'-0"		5'-6":11'-0"
23'-0"		5'-9":11'-6"
24'-0"		6'-0":12'-0"
25'-0"		6'-3":12'-6"
26'-0"		6'-6":13'-0"
27'-0"		6'-9":13'-6"
28'-0"		7'-0":14'-0"
29'-0"		7'-3":14'-6"
30'-0"		7'-6":15'-0"
31'-0"		7'-9":15'-6"
32'-0"		8'-0":16'-0"
33'-0"	3	5'-6":11'-0"
34'-0"		5'-8":11'-4"
35'-0"		5'-10":11'-8"
36'-0"		6'-0":12'-0"
37'-0"		6'-2":12'-4"
38'-0"		6'-4":12'-8"
39'-0"		6'-6":13'-0"
40'-0"		6'-8":13'-4"
41'-0"		6'-10":13'-8"
42'-0"		7'-0":14'-0"
43'-0"		7'-2":14'-4"
44'-0"		7'-4":14'-8"
45'-0"		7'-6":15'-0"
46'-0"		7'-8":15'-4"
47'-0"		7'-10":15'-8"
48'-0"		8'-0"-16'-0"
49'-0"	4	6'-1½":12'-3"
50'-0"		6'-3":12'-6"
51'-0"		6'-4½":12'-9"
52'-0"		6'-6":13'-0"
53'-0"		6'-7½":13'-3"
54'-0"		6'-9":13'-6"
55'-0"		6'-10½":13'-9"
56'-0"		7'-0":14'-0"
57'-0"		7'-1½":14'-3"
58'-0"		7'-3":14'-6"
59'-0"		7'-4½":14'-9"
60'-0"		7'-6":15'-0"
61'-0"		7'-7½":15'-3"
62'-0"		7'-9":15'-6"
63'-0"		7'-10½":15'-9"
64'-0"		8'-0":16'-0"



TOP VIEW



ALL BOLTS, NUTS, WASHERS AND OTHER HARDWARE SHALL BE SAE GRADE 5 AND CADMIUM-PLATED.

SIDE VIEW

OVERHEAD SIGN LUMINAIRE MOUNTING DETAIL (TYPICAL)

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

REGISTERED ELECTRICAL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

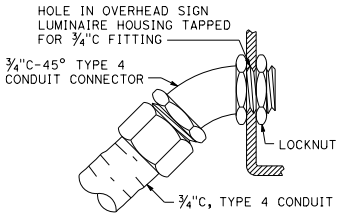
REGISTERED PROFESSIONAL ENGINEER — John L. Castro — No. E17490 — Exp. 6-30-21 — ELECTRICAL — STATE OF CALIFORNIA

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. The first number listed is the dimension from the edge of the sign panel to the center of the end-most sign luminaire. The second number listed is the dimension between centers of successive sign luminaire.
2. Where adjacent sign panels are spaced 1'-0" or less the combination of these panels (and spaces) shall be considered a single panel.
3. Physical configuration and mounting details may vary from what is shown.



CONDUIT ENTRANCE DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGN ILLUMINATION EQUIPMENT)

NO SCALE

RSP ES-15A DATED APRIL 16, 2021 SUPERSEDES RSP ES-15A DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-15A DATED MAY 31, 2018 - PAGE 549 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-15A

2018 REVISED STANDARD PLAN RSP ES-15A

11-2-20

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

REGISTERED ELECTRICAL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

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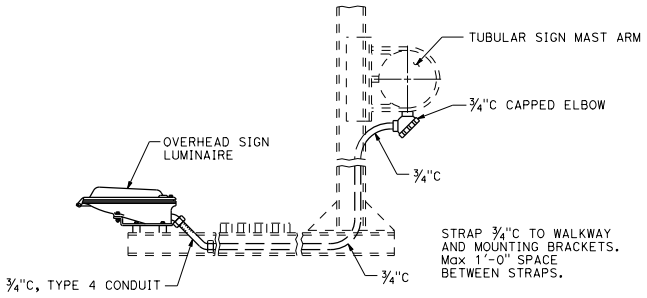
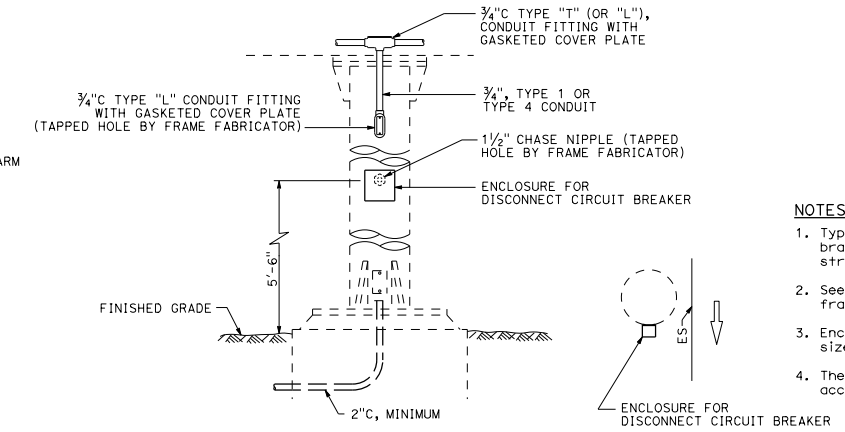
TO ACCOMPANY PLANS DATED _____



TYPICAL SIGN ILLUMINATION EQUIPMENT INSTALLATION FOR OVERHEAD SIGNS TUBULAR

DETAIL A

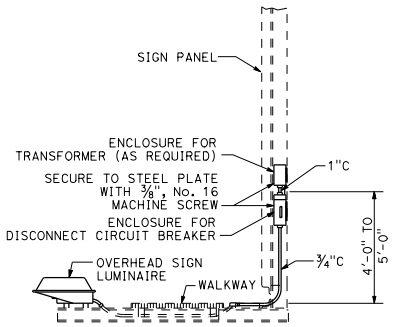


TYPICAL SIGN ILLUMINATION EQUIPMENT INSTALLATION FOR OVERHEAD SIGNS ROUND POST

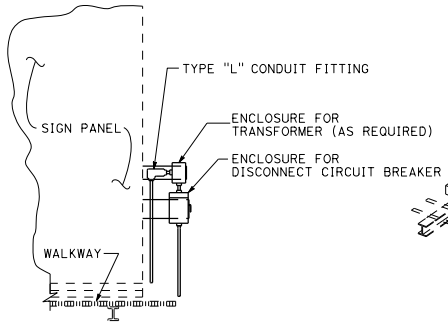
DETAIL B

NOTES:

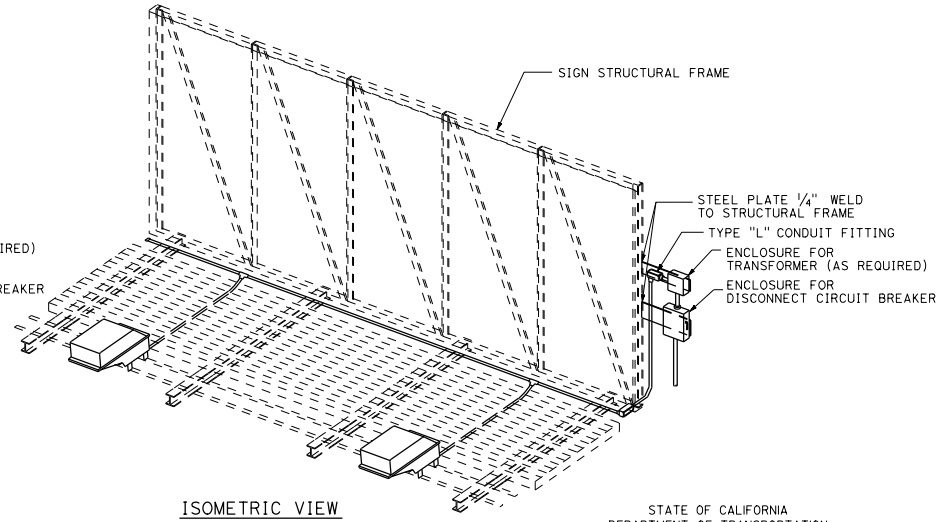
1. Type 4 conduit shall be secured to the nearest walkway bracket using one-hole galvanized malleable iron or steel straps and brass machine screws tapped into the bracket.
2. See Overhead Signs Standard Plans for overhead signs and frame juncture details for photoelectric unit installation.
3. Enclosures and straps shall be secured by ⅜" maximum size screws.
4. The contactor and test switch enclosures shall be readily accessible from the sign walkway.



SIDE VIEW



FRONT VIEW



ISOMETRIC VIEW

TYPICAL SIGN ILLUMINATION EQUIPMENT INSTALLATION FOR OVERHEAD SIGNS BRIDGE MOUNTED

DETAIL C
See Note 4

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGN ILLUMINATION EQUIPMENT)

NO SCALE

RSP ES-15C DATED APRIL 16, 2021 SUPERSEDES RSP ES-15C DATED OCTOBER 19, 2018 AND STANDARD PLAN ES-15C DATED MAY 31, 2018 - PAGE 550 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-15C

11-19-20

2018 REVISED STANDARD PLAN RSP ES-15C

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. 12-31-19
ELECTRICAL
STATE OF CALIFORNIA

October 19, 2018
PLANS APPROVAL DATE

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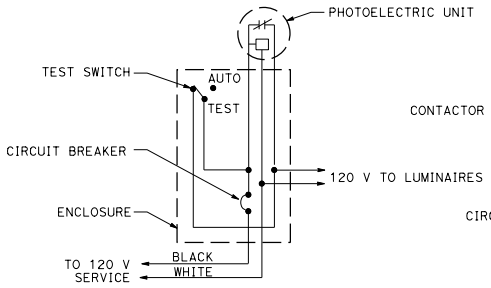
TO ACCOMPANY PLANS DATED _____

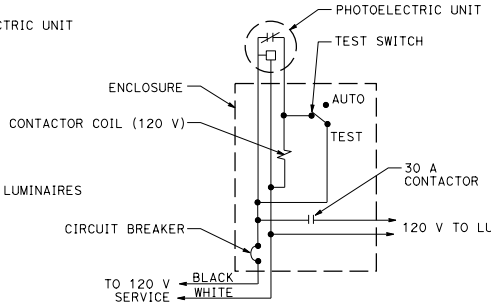
NOTE:

1. Type SC1A, SC2A, SC3A controls are similar to Types SC1, SC2 and SC controls respectively except test switch and wiring are not required.



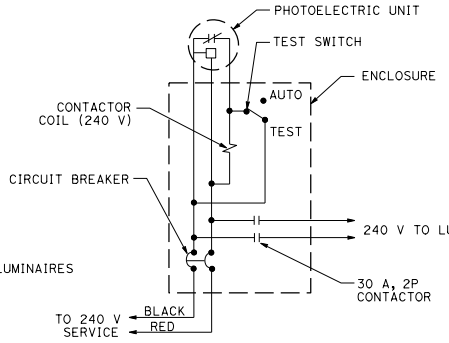
TYPE LC1 CONTROL

For 120 V unswitched circuit with no more than 1000 W load.



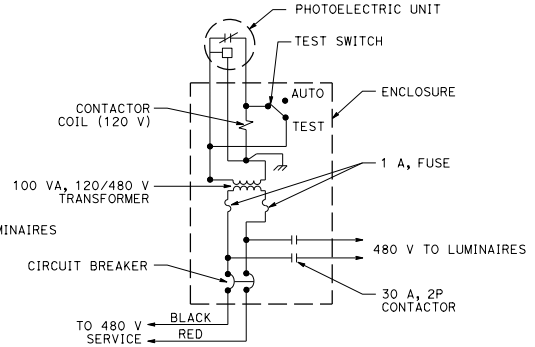
TYPE LC2 CONTROL

For 120 V unswitched circuit



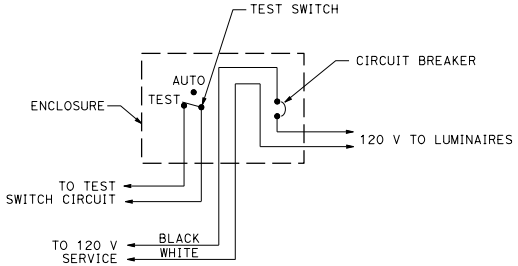
TYPE LC3 CONTROL

For 240 V unswitched circuits



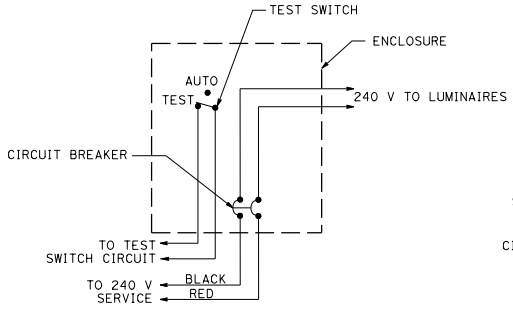
TYPE LC4 CONTROL

For 480 V unswitched circuits



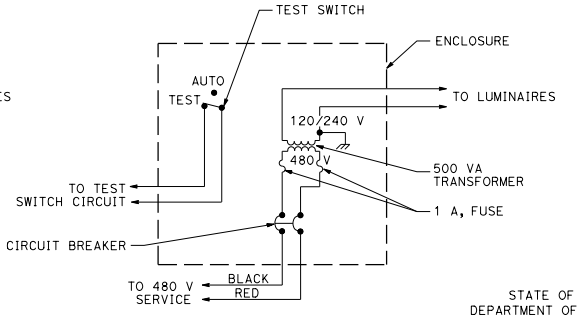
TYPE SC1 CONTROL

For 120 V switched circuit, see Note 1 for Type SC1A



TYPE SC2 CONTROL

For 240 V switched circuit, see Note 1 for Type SC2A



TYPE SC3 CONTROL

For 480 V switched sign circuit, see Note 1 for Type SC3A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING AND SIGN ILLUMINATION CONTROL)

NO SCALE

RSP ES-15D DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-15D DATED MAY 31, 2018 - PAGE 551 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-15D

2018 REVISED STANDARD PLAN RSP ES-15D

5-21-18

POLE EXTENSION TYPE	POLE DATA				HANDHOLE SIZE
	HEIGHT "h"	Min OD		THICKNESS	
		BASE	TOP		
CAMERA POLE 5	5′	4 3/16"	3 3/4"	0.1793"	3" x 5"
CAMERA POLE 10	10′	5 1/4"			
CAMERA POLE 15	15′	5 15/16"			

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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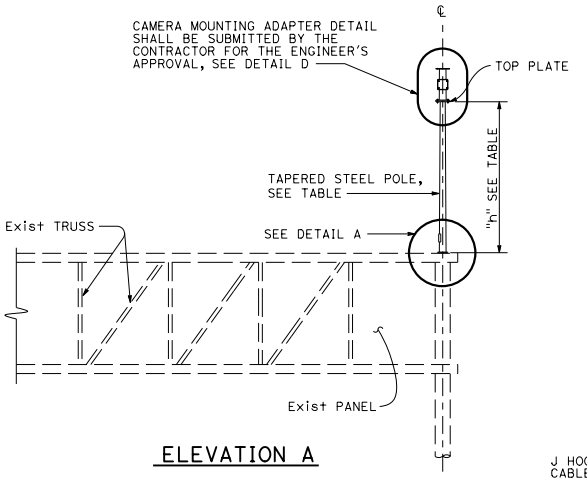
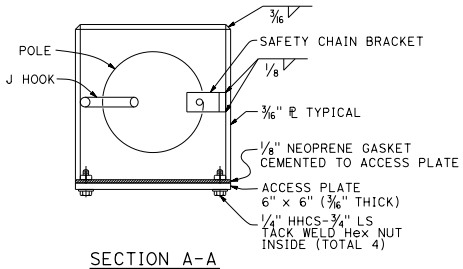
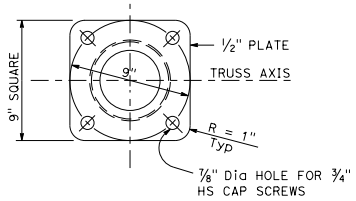
TO ACCOMPANY PLANS DATED _____



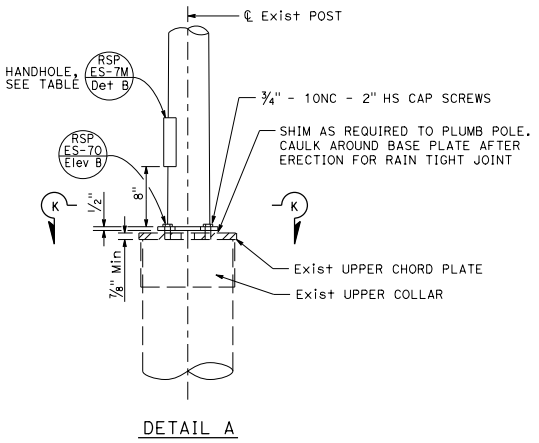
ELEVATION A



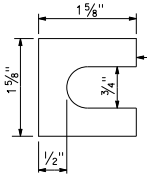
SECTION A-A



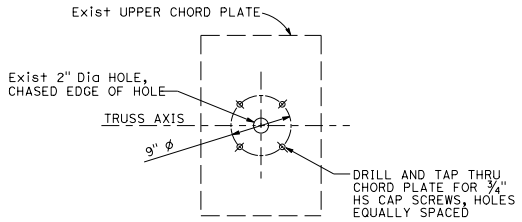
SECTION K-K



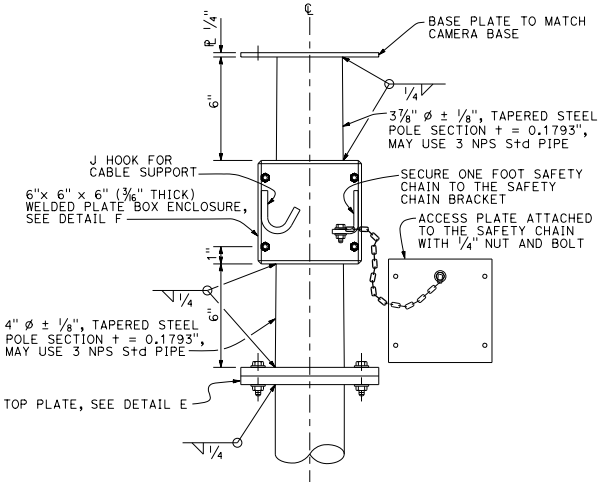
DETAIL A



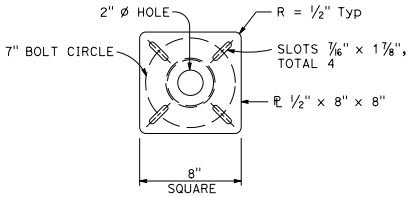
SHIM
DETAIL B



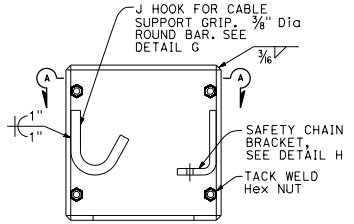
UPPER CHORD PLATE
DETAIL C
See Note 3



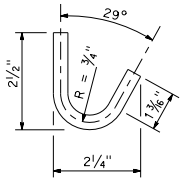
CAMERA MOUNTING ADAPTER
DETAIL D



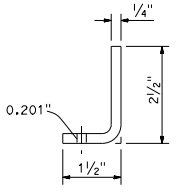
TOP PLATE
DETAIL E



BOX ENCLOSURE
DETAIL F



J HOOK
DETAIL G



SAFETY CHAIN BRACKET
DETAIL H

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)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CAMERA POLE 5' TO 15' OVERHEAD SIGN MOUNTED)

NO SCALE

RSP ES-16A DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-16A DATED MAY 31, 2018 - PAGE 552 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-16A

2018 REVISED STANDARD PLAN RSP ES-16A

5-15-18

POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH	
	HEIGHT "h"	Min OD		THICKNESS	"C"	THICKNESS	ANCHOR BOLT SIZE	BC = BOLT CIRCLE	Dia	"d"
		BASE	TOP							
CAMERA POLE 25	25′	7 3/8"	3 3/4"	0.1793"	1′-1"	1"	1 1/2" ø x 36"	11 1/2"	2′-6"	7′-0"
CAMERA POLE 30	30′	8"			1′-1 1/2"			1′-0"		7′-6"
CAMERA POLE 35	35′	8 5/8"			1′-2"			1′-1"		8′-0"
CAMERA POLE 40	40′	9 3/8"			1′-3"			1′-1 1/2"		8′-6"
CAMERA POLE 45	45′	10"						1′-2"		

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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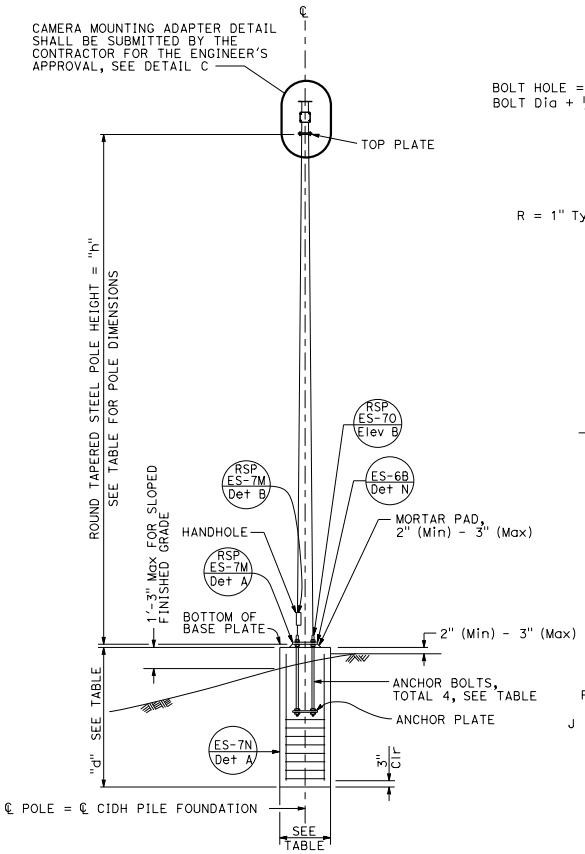
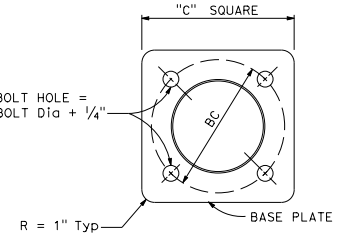
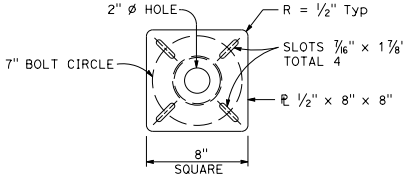
TO ACCOMPANY PLANS DATED _____



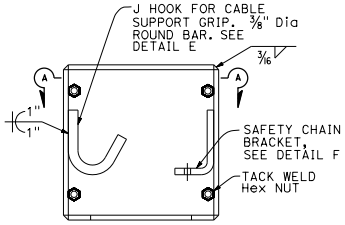
ELEVATION A



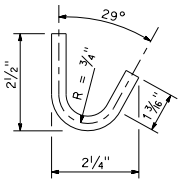
BASE PLATE
DETAIL A



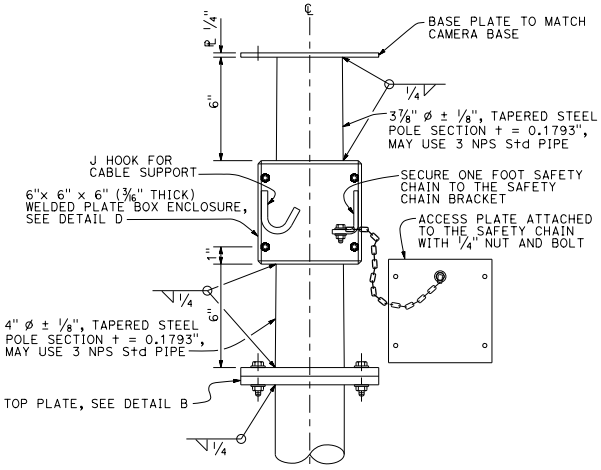
TOP PLATE
DETAIL B



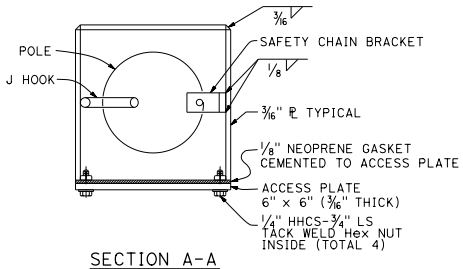
BOX ENCLOSURE
DETAIL D



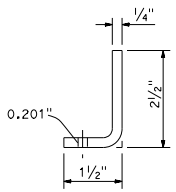
J HOOK
DETAIL E



CAMERA 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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CAMERA POLE 25' TO 45')

NO SCALE

RSP ES-16B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-16B DATED MAY 31, 2018 - PAGE 553 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-16B

2018 REVISED STANDARD PLAN RSP ES-16B

6-5-18

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 CAMERA POLE 50	50'	18"	10⅞"	0.3125"	0.1875"	32"	2"	12	2¼"	25"	3'-6"	13'-0"
HM CAMERA POLE 60	60'		9½"									
HM CAMERA POLE 70	70'	22"	12"			36"	3"			29"	4'-0"	14'-0"
HM CAMERA POLE 80	80'	22"	11⅝"	0.375"	0.25"	39"			3"	30"	4'-6"	
HM CAMERA POLE 90	90'	25"	17⅛"			46"				37"	6'-0"	15'-0"

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 CIVIL — STATE OF CALIFORNIA

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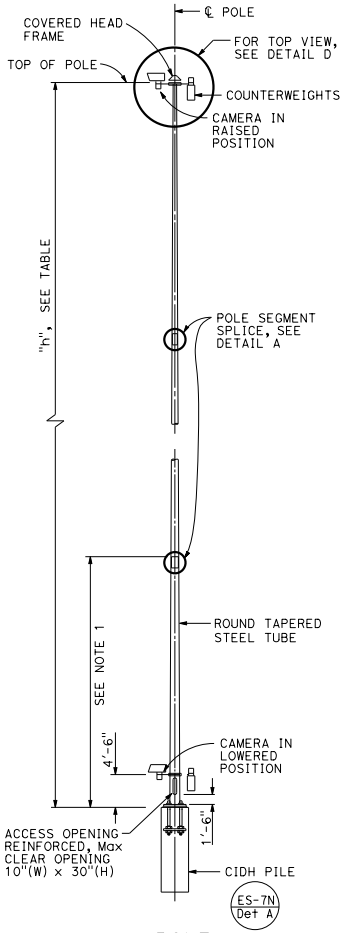
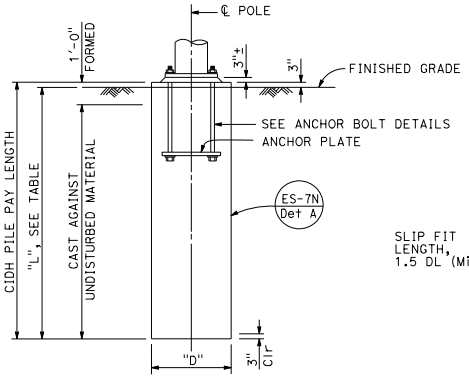
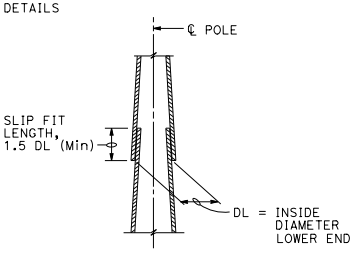
TO ACCOMPANY PLANS DATED _____



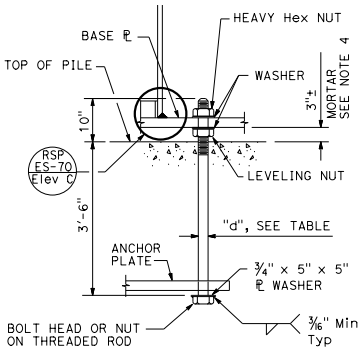
POLE
ELEVATION A



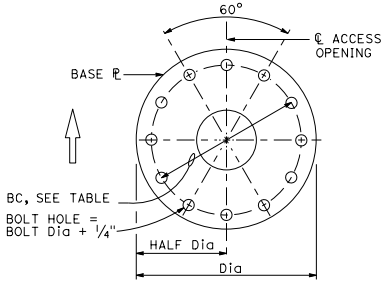
TYPICAL LOCATION
ELEVATION B



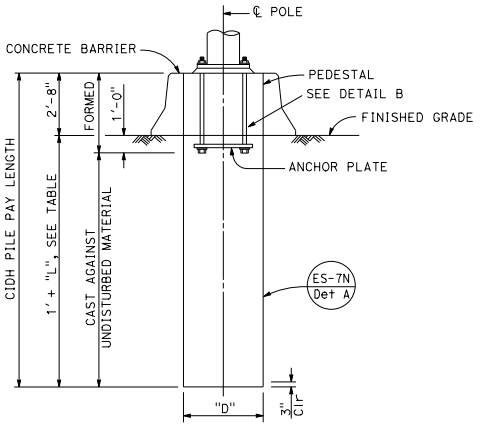
POLE SEGMENT SPLICE
DETAIL A



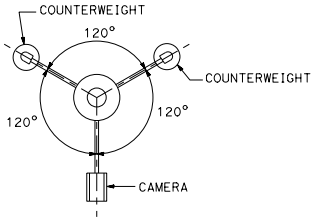
ANCHOR BOLT
DETAIL B



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. Access opening shall be located on the downstream side of traffic unless otherwise determined by the Engineer.
3. Foundation design is based on a 3-second wind gust of 100 mph.
4. For central void and drain holes in mortar, see Standard Plan 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)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (HIGH MAST CAMERA POLE 50' TO 90')

NO SCALE

RSP ES-16C DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-16C DATED MAY 31, 2018 - PAGE 554 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-16C

2018 REVISED STANDARD PLAN RSP ES-16C

5-21-18

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

REGISTERED CIVIL ENGINEER

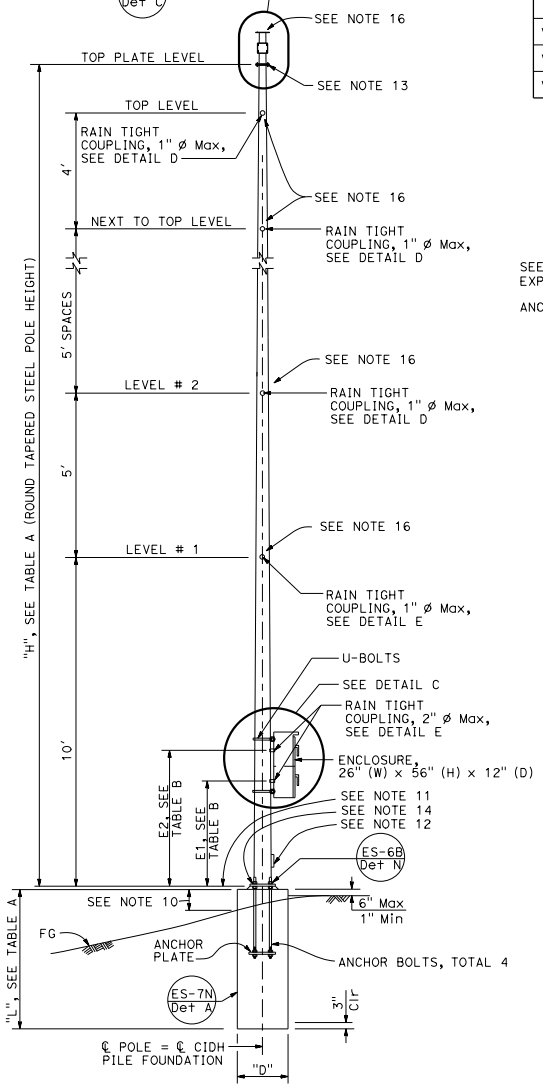
October 19, 2018
PLANS APPROVAL DATE

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 _____

WHEN A CAMERA IS REQUIRED, THE CAMERA MOUNTING ADAPTER DETAIL SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE ENGINEER'S APPROVAL, SEE RSP ES-16B Det C

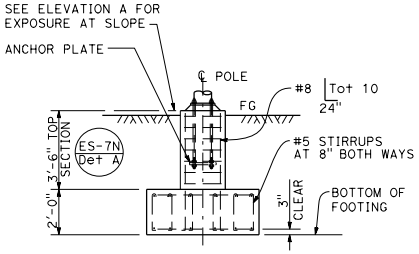


ELEVATION A

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"	0.1793"		2"				7'-0"	9'-0"
VDS 40	40'	12"	5 5/8"	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		

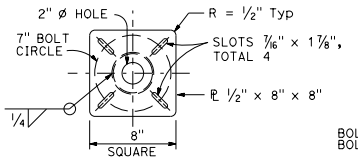
TABLE C		
SPREAD FOOTING		
GROUND	FOOTING SIZE (LENGTH x WIDTH x DEPTH)	REINFORCEMENT TOP & BOTTOM
LEVEL	8'-6" x 8'-6" x 2'-0"	12 - #5 EW
UP TO 2:1	10'-0" x 10'-0" x 2'-0"	15 - #5 EW



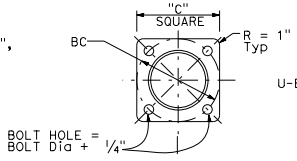
ALTERNATIVE FOOTING
ELEVATION B

TABLE D - LIMITATION ON ATTACHMENTS *		
LOCATION	MAXIMUM TOTAL EPA PER LEVEL (SQUARE FEET)	MAXIMUM TOTAL WEIGHT (lb)
LEVEL #1		
LEVEL #2	14	200
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 **		

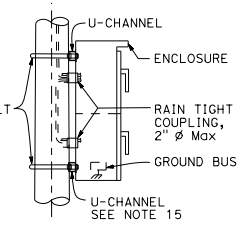
* MAXIMUM HORIZONTAL EXTENT BEYOND POLE FACE IS 4 FEET.
** MAXIMUM EXTENT ABOVE TOP PLATE IS 3 FEET.
*** 14 IF LEVEL #1 IS ZERO.



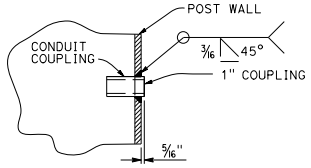
TOP PLATE
DETAIL A



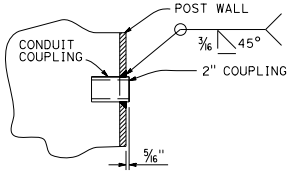
BASE PLATE
DETAIL B



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 enclosure shall be located on the downstream side and perpendicular to the roadway.
10. 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 camera is not used.
14. RSP 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (VEHICLE DETECTION SYSTEM POLE 30' TO 40')

NO SCALE

RSP ES-16D DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-16D DATED MAY 31, 2018 - PAGE 555 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-16D

2018 REVISED STANDARD PLAN RSP ES-16D

5-21-18

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

H.R.F.
REGISTERED ELECTRICAL ENGINEER

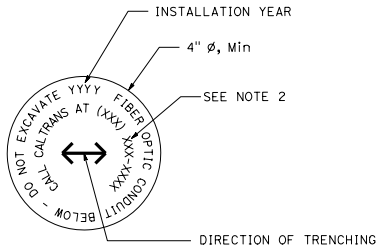
Hamid Zolfaghari
No. E15636
Exp. 12-31-19
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

October 19, 2018
PLANS APPROVAL DATE

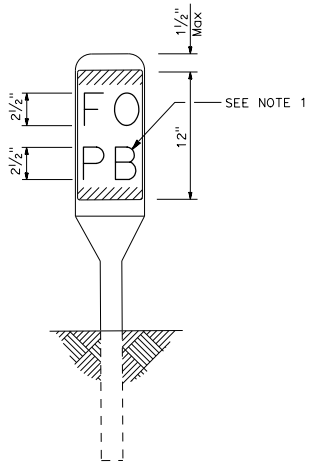
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

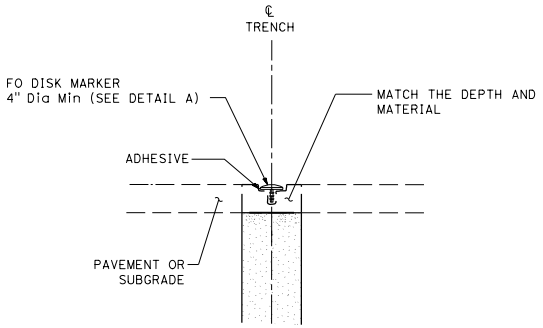
NOTES:
1. "PB" for Pull Box or "VT" for Vault.
2. Telephone number as specified.
3. 1" black text.
4. ½" black text.



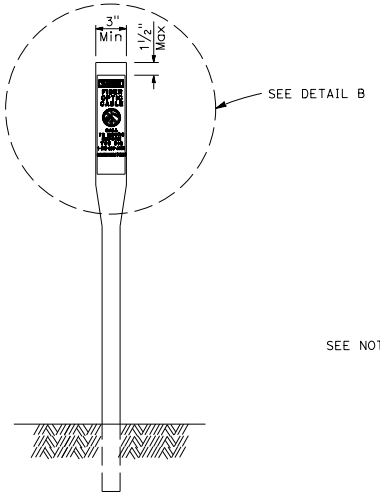
DISK MARKER ETCHING
DETAIL A



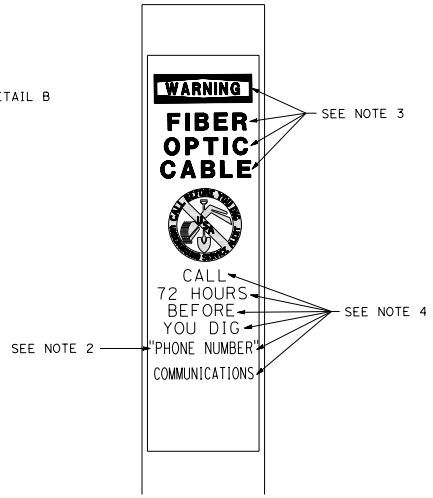
FIBER OPTIC MARKER
FOR VAULTS AND PULL BOXES



FIBER OPTIC MARKER
FOR PAVED AREAS



FIBER OPTIC MARKER
FOR UNPAVED AREAS



DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(FIBER OPTIC MARKER DETAILS)

NO SCALE

RSP ES-17A DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-17A
DATED MAY 31, 2018 - PAGE 556 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-17A

2018 REVISED STANDARD PLAN RSP ES-17A

5-24-18

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

REGISTERED CIVIL ENGINEER

October 19, 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.

TO ACCOMPANY PLANS DATED _____

POLE SELECTION TABLE

LEGEND

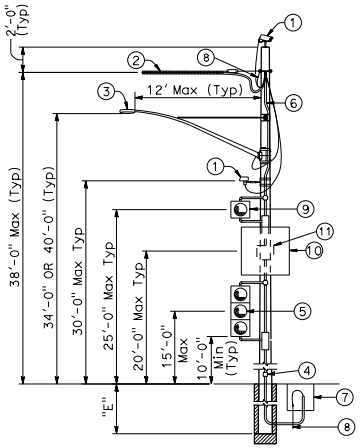
- Wood Pole No Attachments
- A — Wood Pole with Attachments
- —OH— Overhead Bundle

OVERHEAD BUNDLE HORIZONTAL SPAN (Max)		CASE 1N				CASE 2N				CASE 3N				CASE 4N				CASE 5N
	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′												

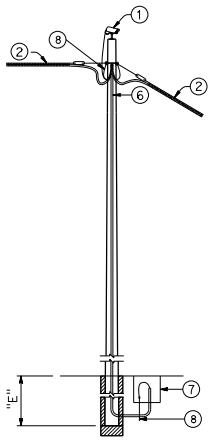
1. Camera or vehicle detection system
2. Overhead bundle consisting of a 3/8" ø messenger wire, overhead conductors, and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button or accessible push button
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with 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. 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:

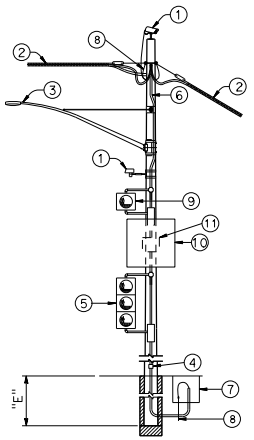
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100′.
2. Cases 1N, 3N and 4N may substitute the attachments shown in Case 5N if the photovoltaic panel is not included.
3. For Case 1N without an overhead bundle (item 2) use minimum pole class H-1 with E=11′.



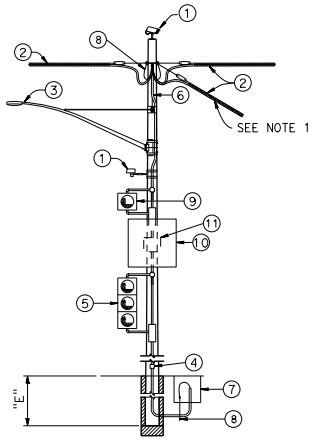
CASE 1N
POLE AT DEAD END WITH ATTACHMENTS
See Note 2



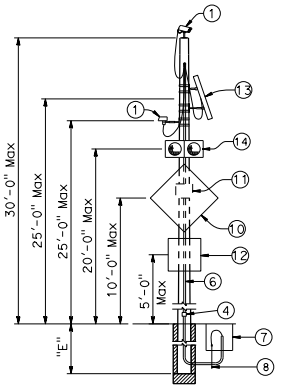
CASE 2N
POLE AT TANGENT WITHOUT ATTACHMENTS



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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-18B
DATED MAY 31, 2018 - PAGE 558 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-18B

2018 REVISED STANDARD PLAN RSP ES-18B

5-15-18

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

REGISTERED CIVIL ENGINEER

October 19, 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.

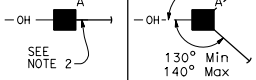
TO ACCOMPANY PLANS DATED _____

POLE SELECTION TABLE

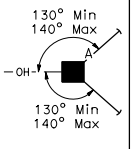
LEGEND

- A — Wood Pole with Attachments
- —OH— Overhead Bundle
- Guy Anchor

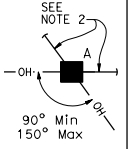
CASE 1G



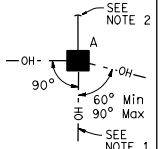
CASE 2G



CASE 3G



CASE 4G

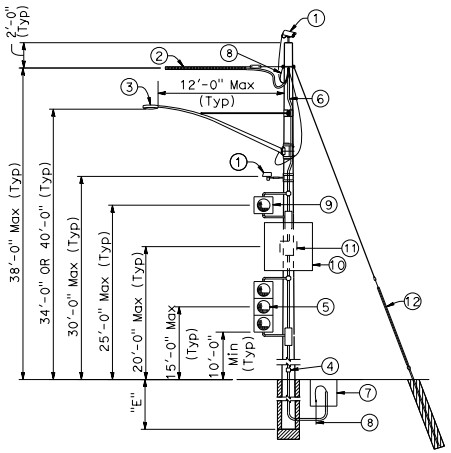


OVERHEAD BUNDLE HORIZONTAL SPAN (Max)		MAXIMUM d_p	Case 1G 1"	Case 1G 1.5"	Case 1G 2.0"	Case 1G 2.5"	Case 2G 1"	Case 2G 1.5"	Case 2G 2.0"	Case 2G 2.5"	Case 3G 1"	Case 3G 1.5"	Case 3G 2.0"	Case 3G 2.5"	Case 4G 1"	Case 4G 1.5"	Case 4G 2.0"	Case 4G 2.5"
	50′	MINIMUM POLE CLASS	H-1	H-1	H-2	H-2	1	1	1	1	1	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′			

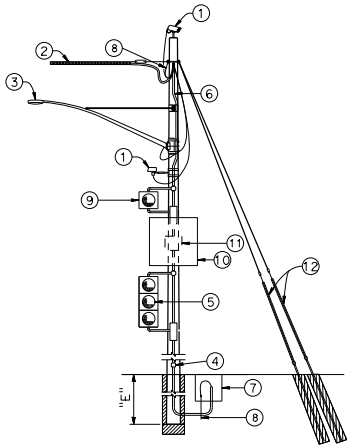
1. Camera or vehicle detection system
2. Overhead bundle consisting of a ⅜" ø messenger wire, overhead conductors, and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button or accessible push button
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with weather 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:

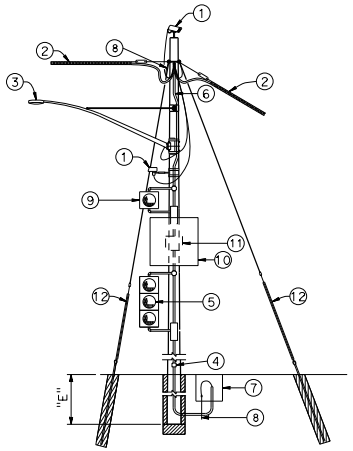
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100′.
2. Guy wire in line with opposing span ± 5°.



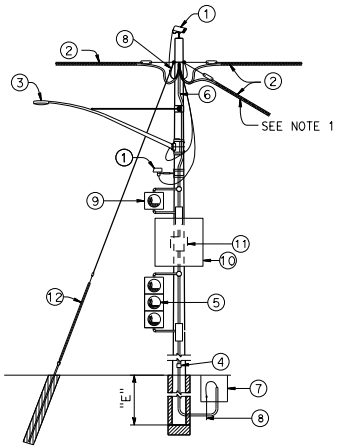
CASE 1G
POLE AT DEAD END
WITH ATTACHMENTS



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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-18C
DATED MAY 31, 2018 - PAGE 559 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-18C

2018 REVISED STANDARD PLAN RSP ES-18C

5-15-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

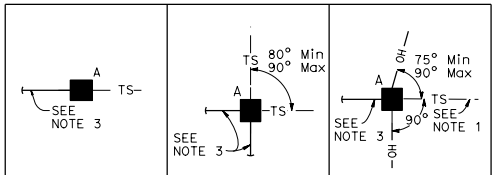
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

LEGEND

- A — Wood Pole with Attachments
- —TS— Overhead Bundle with Signal Faces (See Note 2)
- —OH— Overhead Bundle
- Guy Anchor

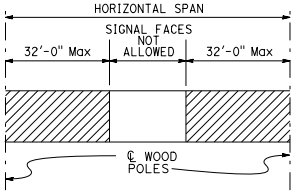
POLE SELECTION TABLE



OVERHEAD BUNDLE HORIZONTAL SPAN Max		MAXIMUM d_p	CASE 1GT 1"	CASE 1GT 1.5"	CASE 1GT 2.0"	CASE 2GT 1"	CASE 2GT 1.5"	CASE 2GT 2.0"	CASE 3GT 1"	CASE 3GT 1.5"	CASE 3GT 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'		

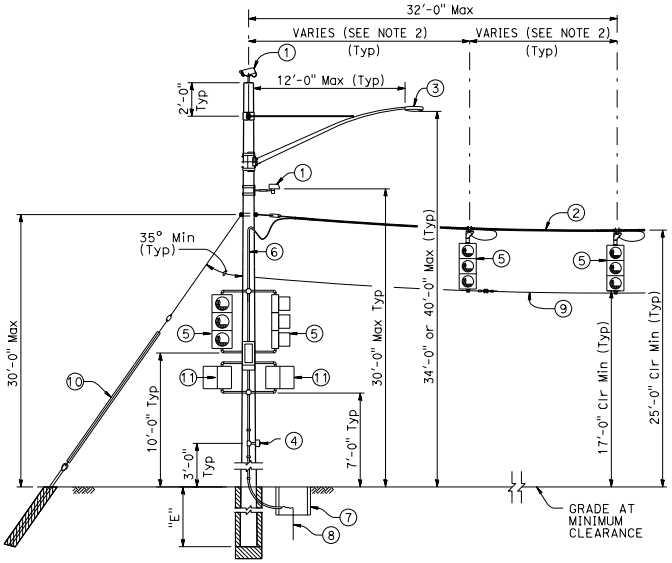
NOTES:

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°.

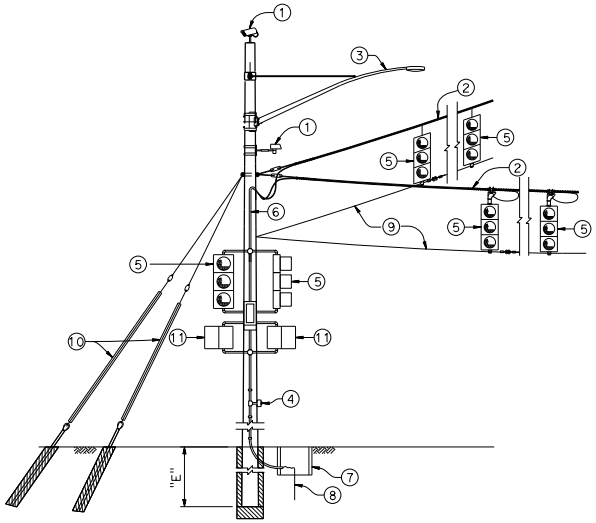


LOCATION OF SIGNAL FACES

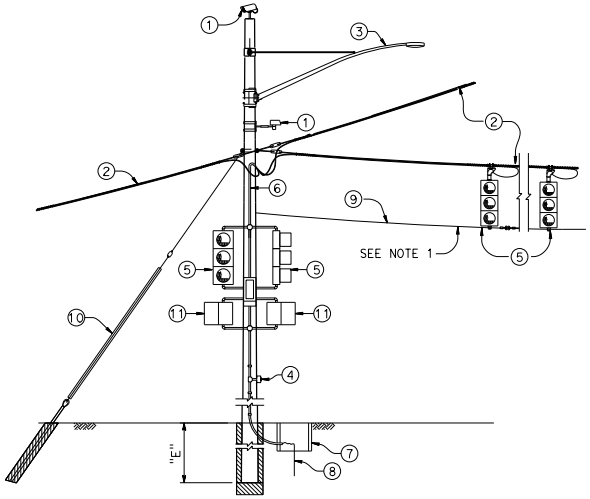
1. Camera or vehicle detection system
2. Overhead bundle consisting of ⅜" ø messenger wire and overhead conductors and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button or accessible push button
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with weather 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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-18D DATED MAY 31, 2018 - PAGE 560 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-18D

2018 REVISED STANDARD PLAN RSP ES-18D

5-15-18

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

REGISTERED CIVIL ENGINEER

October 19, 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 _____

LEGEND

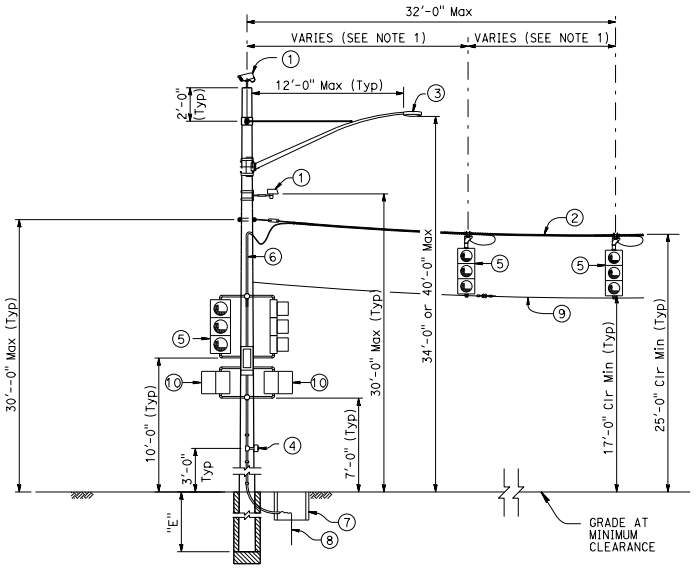
A — Wood Pole with Attachments

— TS — Overhead Bundle with Signal Faces (See Note 1)

POLE SELECTION TABLE

OVERHEAD BUNDLE HORIZONTAL SPAN (Max)			A — TS — CASE 1NT		
75′		MAXIMUM d_p	1"	1.5"	2.0"
		MINIMUM POLE CLASS	H-5	H-6	H-6
		POLE EMBEDMENT (E)	13′		

1. Camera 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 or accessible push button
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

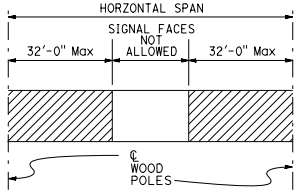


CASE 1NT

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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-18E DATED MAY 31, 2018 - PAGE 561 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-18E

2018 REVISED STANDARD PLAN RSP ES-18E

5-15-18

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

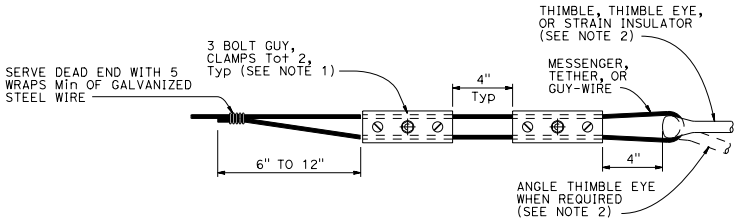
REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

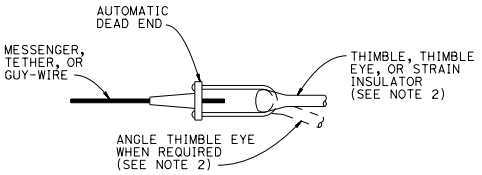
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 CIVIL — STATE OF CALIFORNIA

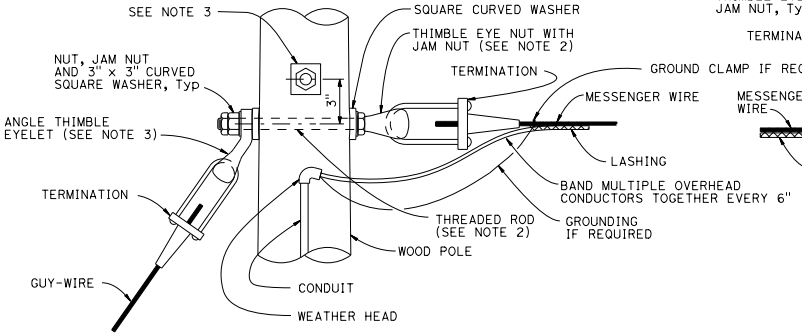
TO ACCOMPANY PLANS DATED _____



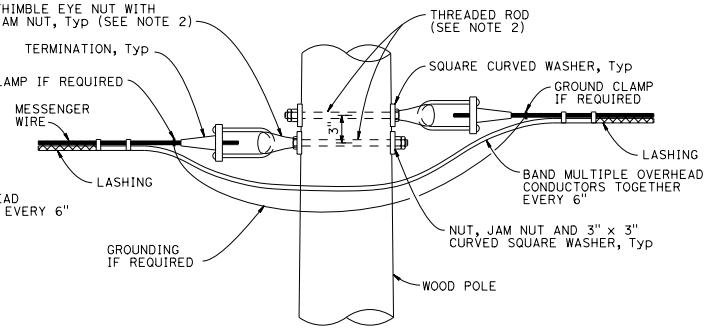
ALTERNATIVE TERMINATION OF MESSENGER WIRES USING GUY CLAMPS



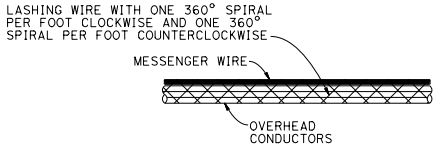
TERMINATION OF WIRES USING AUTOMATIC DEAD END



POLE AT DEAD END WITH GUY-WIRE CONNECTION

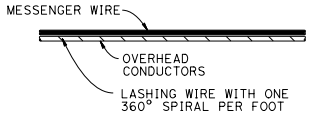


POLE AT TANGENT OR CORNER CONNECTION



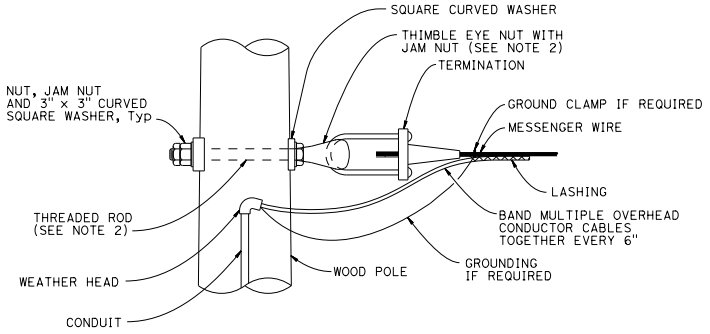
DOUBLE LASHING DETAIL

USE IF d_p IS GREATER THAN 1½"

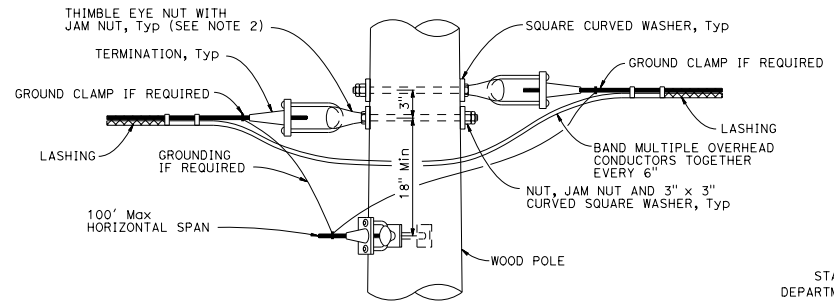


TYPICAL LASHING DETAIL

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

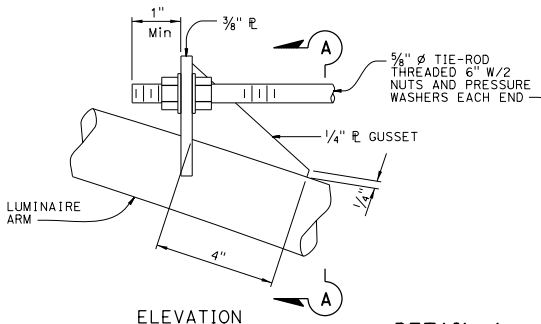
NO SCALE

9RSP ES-19A DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-19A
DATED MAY 31, 2018 - PAGE 562 OF THE STANDARD PLANS BOOK DATED 2018.

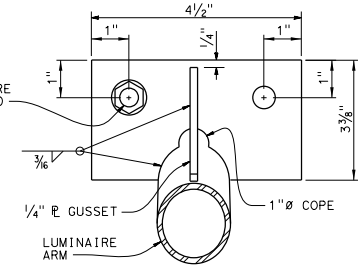
REVISED STANDARD PLAN RSP ES-19A

5-24-18

2018 REVISED STANDARD PLAN RSP ES-19A



ELEVATION



SECTION A-A

DETAIL A
TIE-ROD AT LUMINAIRE ARM

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 9" 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.

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-20 CIVIL — STATE OF CALIFORNIA

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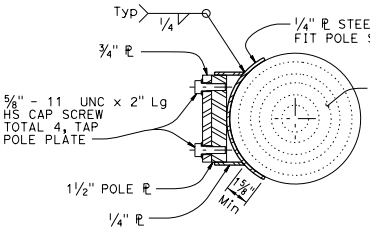
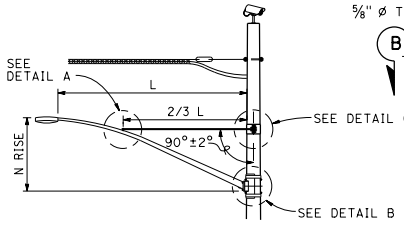
TO ACCOMPANY PLANS DATED _____

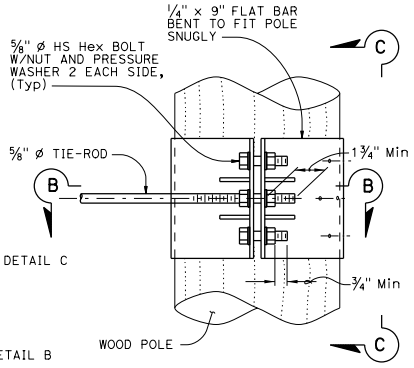


SECTION E-E

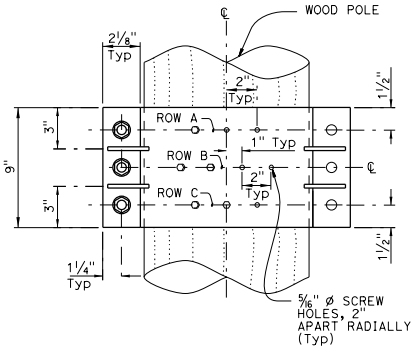
LUMINAIRE MAST ARM DATA			
PROJECTED LENGTH	N RISE	Min OD AT POLE	NOMINAL THICKNESS
6'-0"	2'-0"±	3¼"	0.1196"
8'-0"	2'-6"±	3½"	
10'-0"	3'-3"±	3⅞"	
12'-0"	4'-3"±		



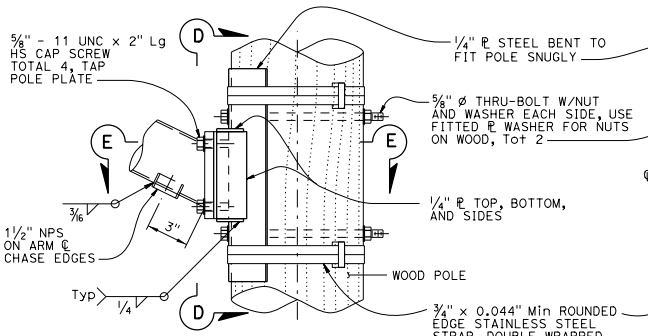
LUMINAIRE MAST ARM



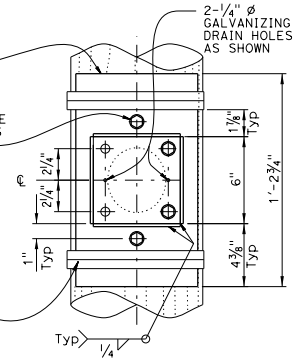
ELEVATION



VIEW C-C

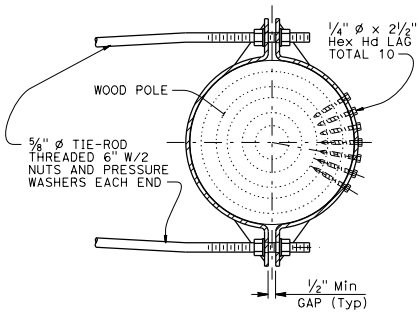


ELEVATION

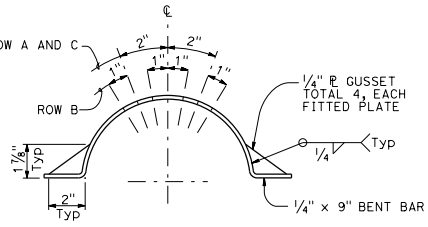


VIEW D-D

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

9RSP ES-19C DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-19C DATED MAY 31, 2018 - PAGE 564 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-19C

2018 REVISED STANDARD PLAN RSP ES-19C

5-24-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-20
CIVIL
STATE OF CALIFORNIA

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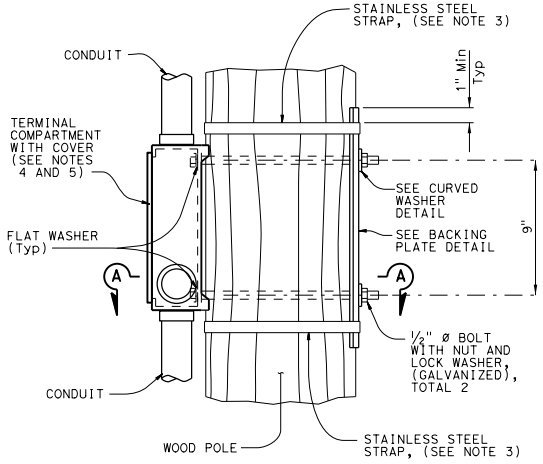
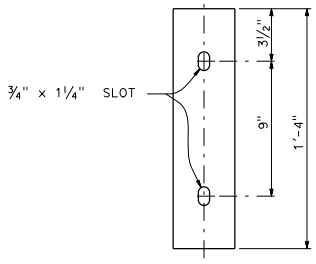
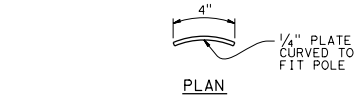
TO ACCOMPANY PLANS DATED _____



ELEVATION

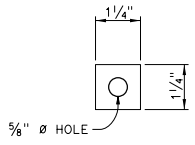


ELEVATION

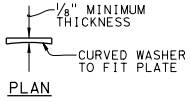


PLAN

BACKING PLATE DETAIL



ELEVATION

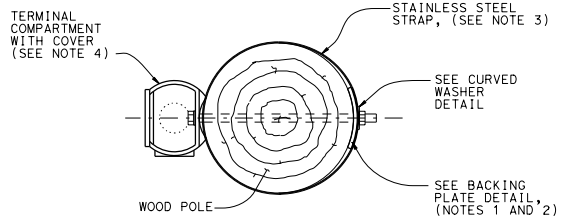


PLAN

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 Revised Standard Plan RSP 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 OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-19D DATED MAY 31, 2018 - PAGE 565 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-19D

2018 REVISED STANDARD PLAN RSP ES-19D

4-17-18

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

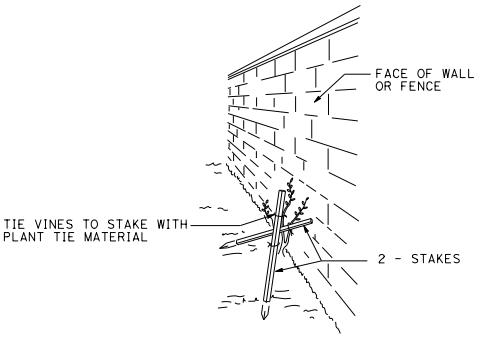
LICENSED LANDSCAPE ARCHITECT

October 15, 2021
PLANS APPROVAL DATE

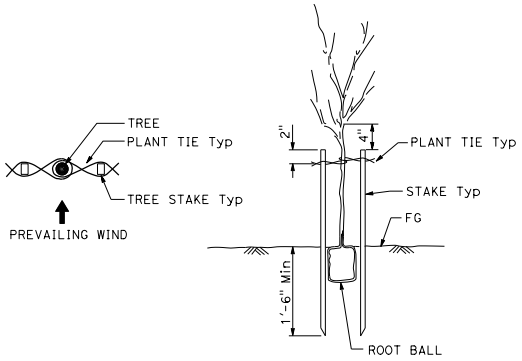
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LICENSED LANDSCAPE ARCHITECT
Stephen T. Ferrone
Signature
9-30-23
Renewal Date
Date
STATE OF CALIFORNIA

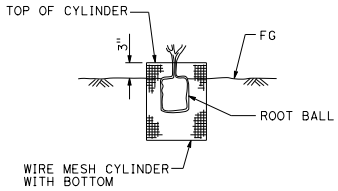
TO ACCOMPANY PLANS DATED _____



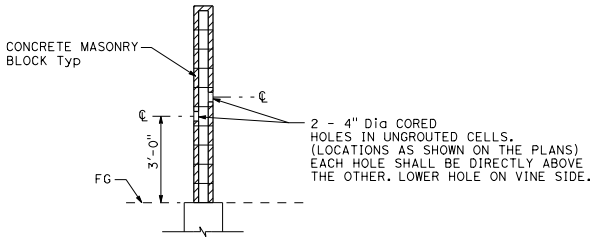
PERSPECTIVE
VINE STAKING



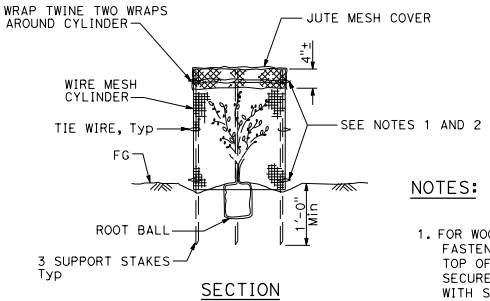
TREE STAKING



SECTION
ROOT PROTECTOR



SECTION
CORE HOLE (VINE)



SECTION
FOLIAGE PROTECTOR

NOTES:

1. FOR WOOD SUPPORT STAKES:
   FASTEN WOOD SCREWS 2" FROM
   TOP OF STAKE AND 1" ABOVE FG.
   SECURE WIRE MESH TO STAKE
   WITH SCREWS AND TIE WIRE.

2. FOR REBAR SUPPORT STAKES:
   SECURE WIRE MESH TO STAKE WITH WIRE.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

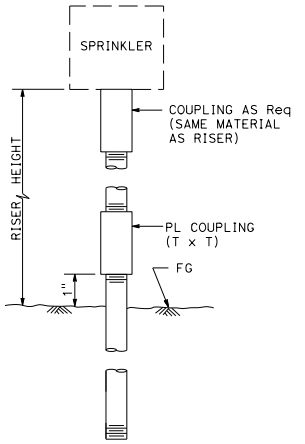
NO SCALE

RSP H3 DATED OCTOBER 15, 2021 SUPERSEDES STANDARD PLAN H3
DATED MAY 31, 2018 - PAGE 268 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP H3

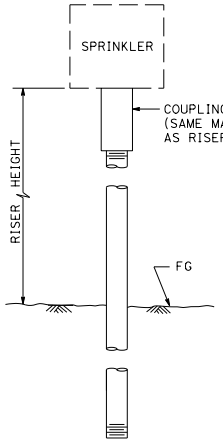
2018 REVISED STANDARD PLAN RSP H3

5-28-21



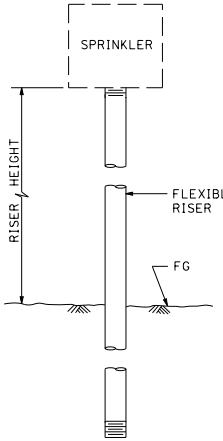
ELEVATION

RISER TYPE I



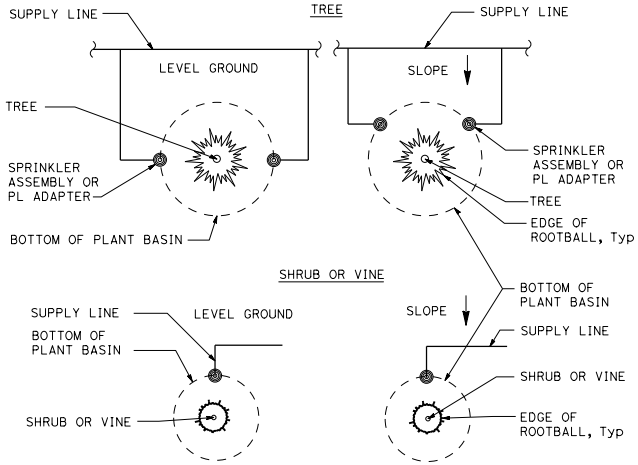
ELEVATION

RISER TYPE II



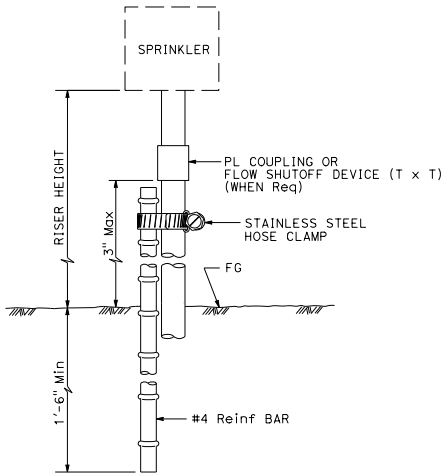
ELEVATION

RISER TYPE III



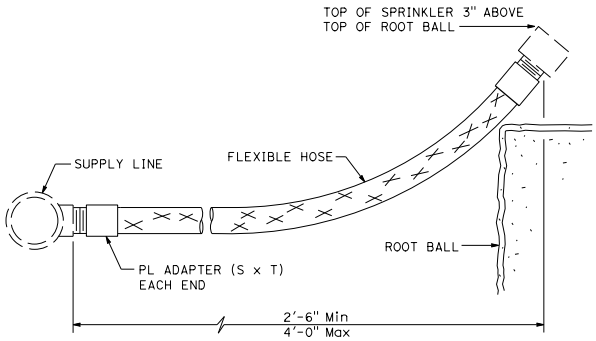
PLAN

TREE WELL ASSEMBLY AND RISER TYPE V DIAGRAM



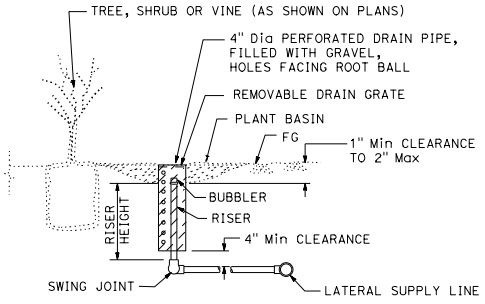
ELEVATION

RISER TYPE IV



ELEVATION

RISER TYPE V



SECTION

TREE WELL SPRINKLER ASSEMBLY

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

LICENSED LANDSCAPE ARCHITECT

April 19, 2019
PLANS APPROVAL DATE

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

LICENSED LANDSCAPE ARCHITECT — Stephen C. Ferrone, 5663 — Signature — 9-30-19 Renewal Date — Date — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

NOTES:

1. See Project Plans for type and quantity of sprinklers.
2. Refer to plant legend and Standard Plan H2 for plant basin dimensions.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS (SPRINKLER ASSEMBLY)

NO SCALE

RSP H4 DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN H4
DATED MAY 31, 2018 - PAGE 269 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP H4

2018 REVISED STANDARD PLAN RSP H4

12-3-18

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

LICENSED LANDSCAPE ARCHITECT

April 19, 2019
PLANS APPROVAL DATE

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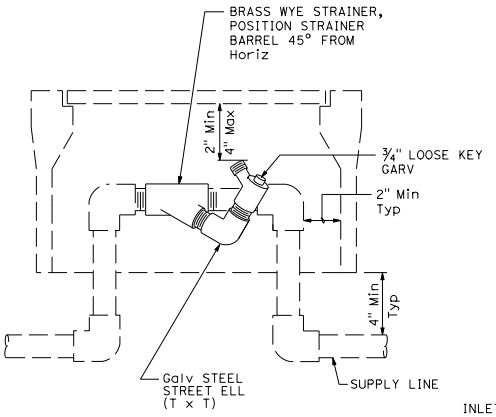
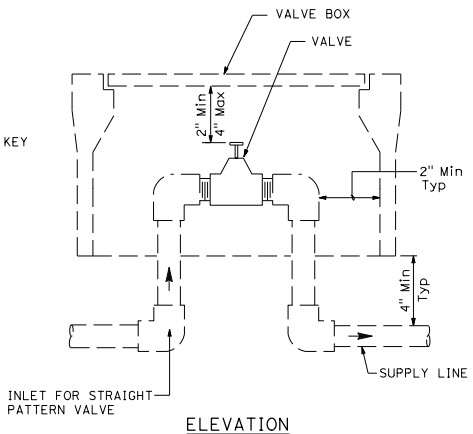
LICENSED LANDSCAPE ARCHITECT — Shannon C. Ferrara — Signature — 9-30-19 — Renewal Date — Date — STATE OF CALIFORNIA

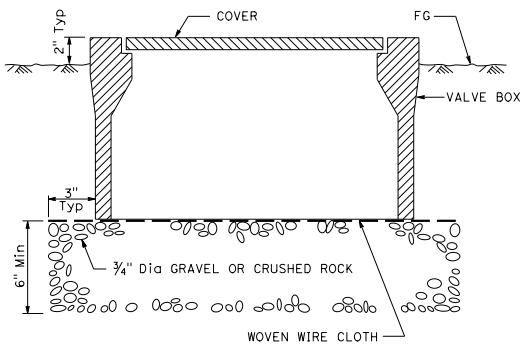
TO ACCOMPANY PLANS DATED _____



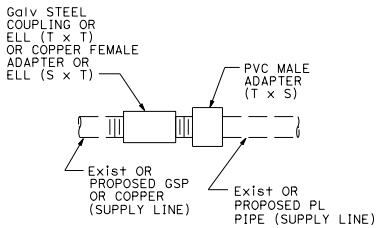
ELEVATION
WYE STRAINER ASSEMBLY



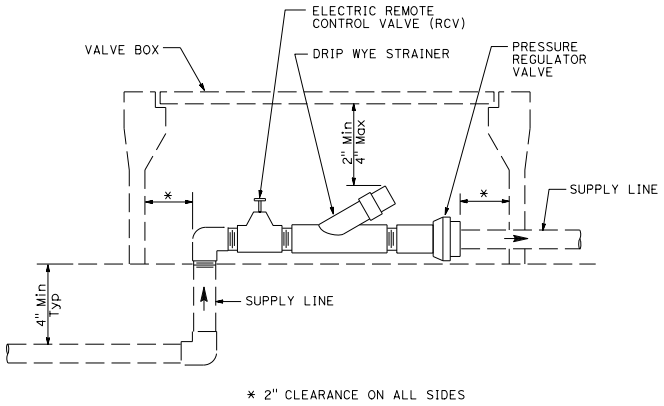
ELEVATION
VALVE



SECTION
VALVE BOX

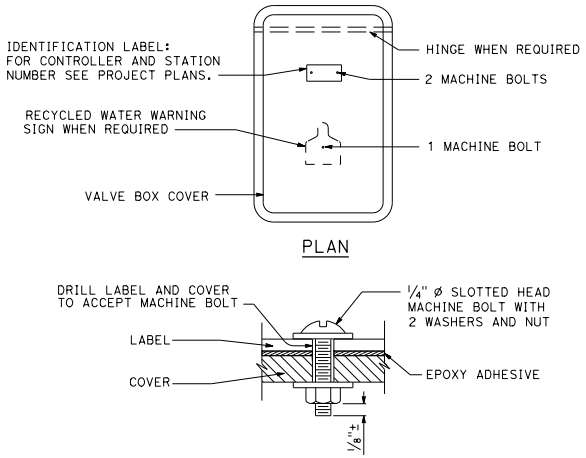


GALVANIZED OR COPPER PIPE CONNECTION TO PLASTIC PIPE

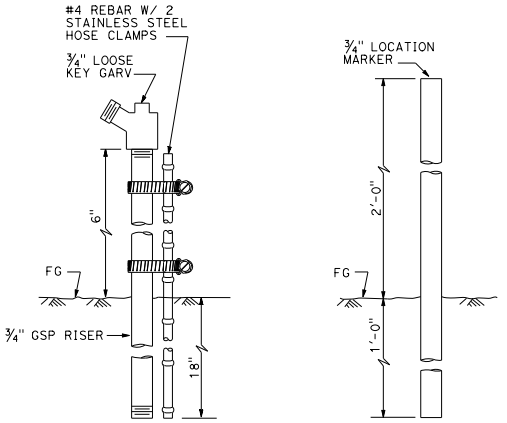


* 2" CLEARANCE ON ALL SIDES

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

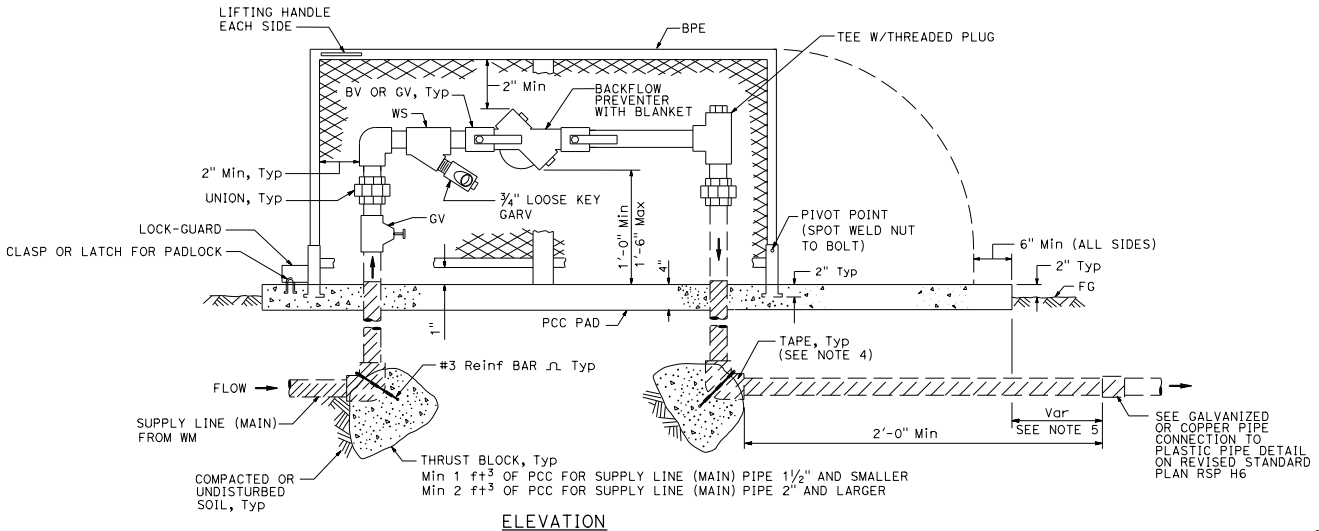
NO SCALE

RSP H6 DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN H6
DATED MAY 31, 2018 - PAGE 271 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP H6

2018 REVISED STANDARD PLAN RSP H6

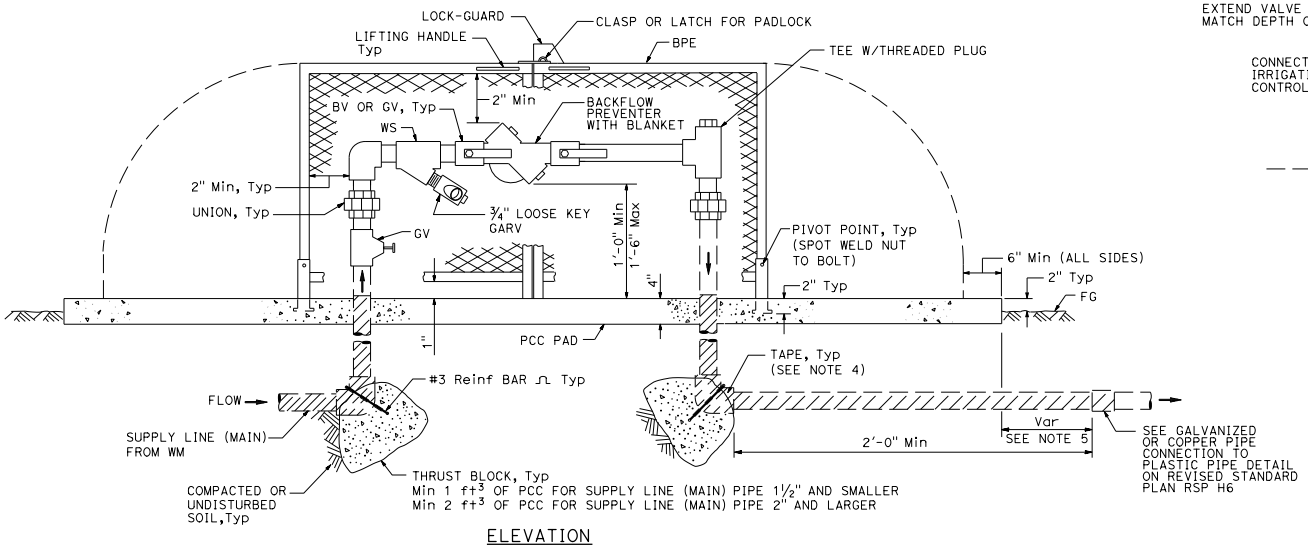
10-31-18



ELEVATION

BACKFLOW PREVENTER ASSEMBLY

IN ONE PIECE ENCLOSURE



ELEVATION

BACKFLOW PREVENTER ASSEMBLY

IN TWO PIECE ENCLOSURE

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

LICENSED LANDSCAPE ARCHITECT

October 15, 2021
PLANS APPROVAL DATE

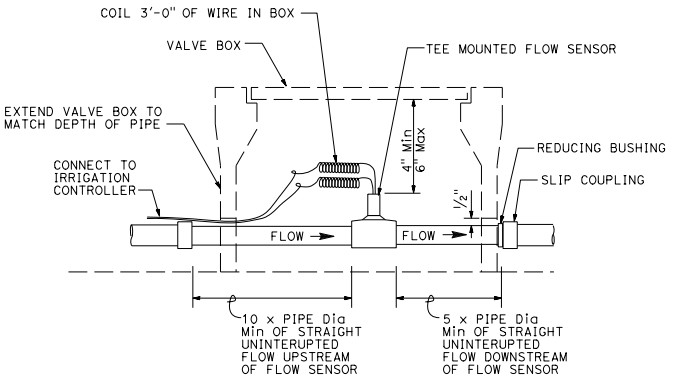
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LICENSED LANDSCAPE ARCHITECT
Stephen C. Ferrara 5063
Signature
9-30-23
Renewal Date
Date
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

NOTES:

1. Wye strainer and fittings must be the same size as the backflow preventer shown on the plans.
2. Wye strainer must be located and fitted in accordance with local water ordinance.
3. 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.
4. 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.
5. The connector must be located 6 to 9 inches away from the edge of PCC pad.



SECTION

FLOW SENSOR

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

RSP H7 DATED OCTOBER 15, 2021 SUPERSEDES RSP H7 DATED APRIL 16, 2021 AND STANDARD PLAN H7 DATED MAY 31, 2018 - PAGE 272 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP H7

2018 REVISED STANDARD PLAN RSP H7

6-10-21

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

LICENSED LANDSCAPE ARCHITECT

April 19, 2019
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT
Michael V. Ferrara 3959
Signature
9-30-19
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.

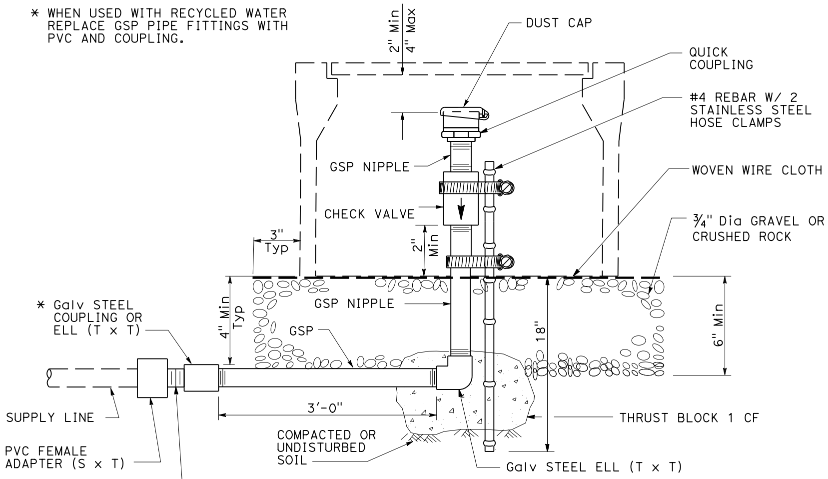
TO ACCOMPANY PLANS DATED ____________

2018 REVISED STANDARD PLAN RSP H8

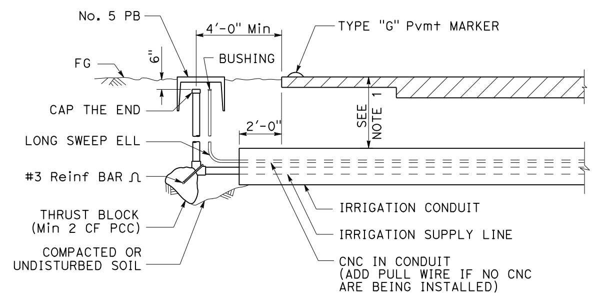
* WHEN USED WITH RECYCLED WATER REPLACE GSP PIPE FITTINGS WITH PVC AND COUPLING.

NOTES:

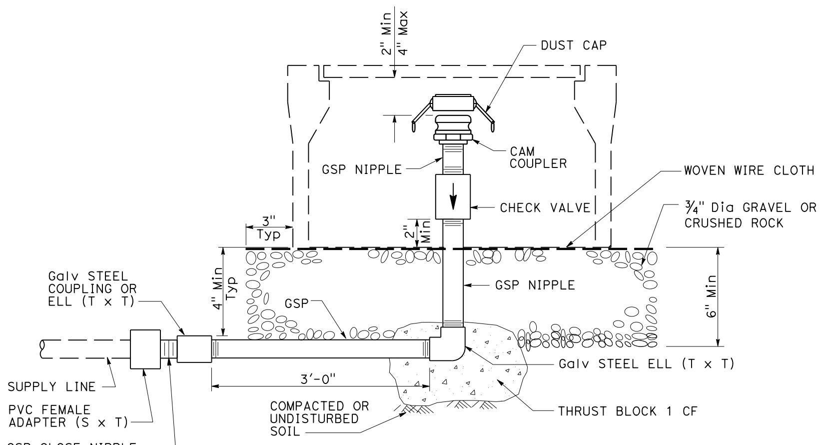
1. 40" - 50"
2. 12" downstream of RCV
   18" upstream of RCV



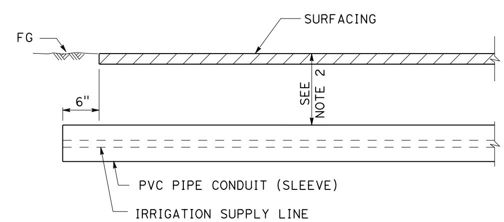
ELEVATION
QUICK COUPLING VALVE



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 APRIL 19, 2019 SUPERSEDES STANDARD PLAN H8 DATED MAY 31, 2018 - PAGE 273 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP H8

12-3-18

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

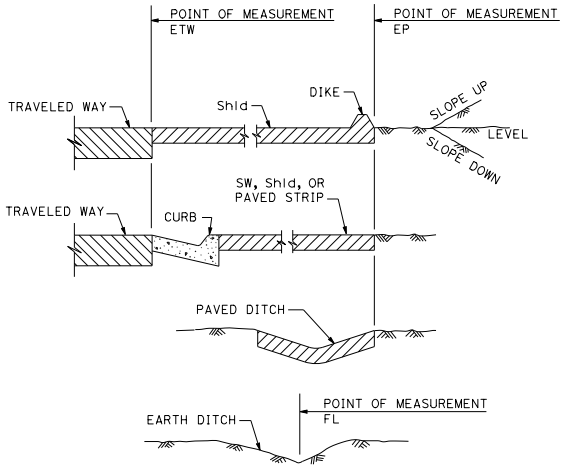
LICENSED LANDSCAPE ARCHITECT

October 16, 2020
PLANS APPROVAL DATE

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

LICENSED LANDSCAPE ARCHITECT
Shannon C. Ferrara 5663
Signature
9-30-21
Renewal Date
Date
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

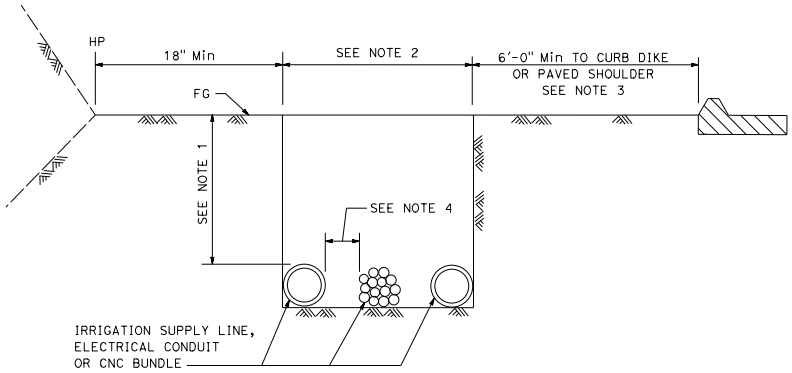


SECTION

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

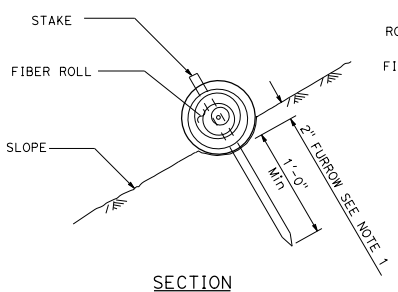
NO SCALE

RSP H9 DATED OCTOBER 16, 2020 SUPERSEDES STANDARD PLAN H9
DATED MAY 31, 2018 - PAGE 274 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP H9

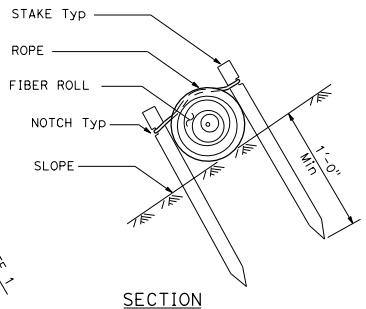
3-17-20

2018 REVISED STANDARD PLAN RSP H9

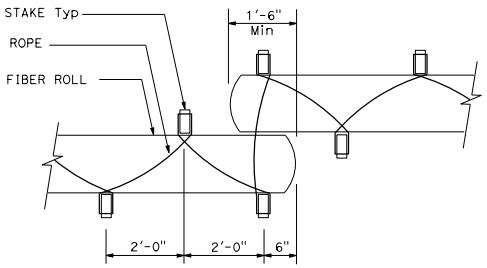


SECTION

FIBER ROLL (TYPE 1)

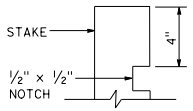


SECTION



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.

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

LICENSED LANDSCAPE ARCHITECT

October 18, 2019
PLANS APPROVAL DATE

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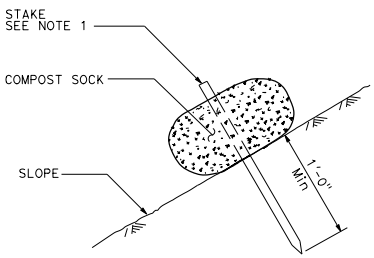
LICENSED LANDSCAPE ARCHITECT
Stephen C. Ferrone, 5063
Signature
9-30-21
Renewal Date
Date
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

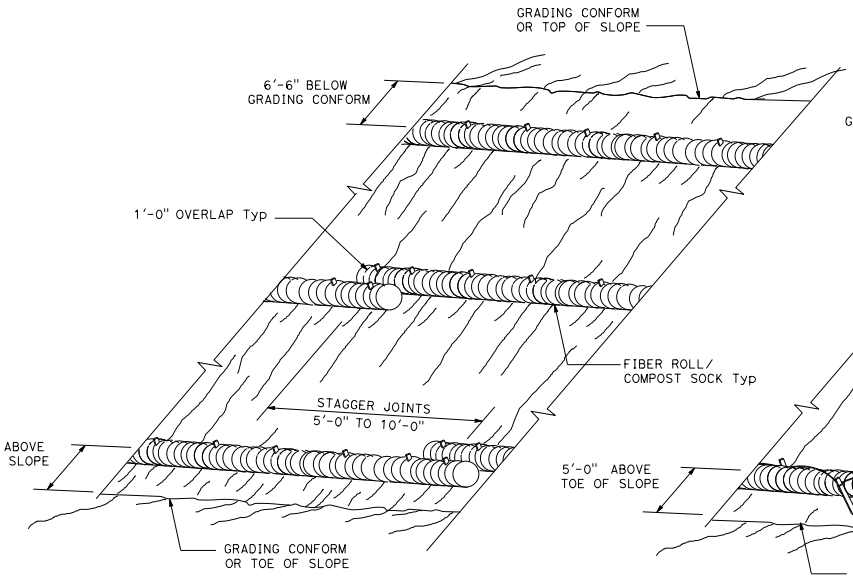


SECTION

COMPOST SOCK

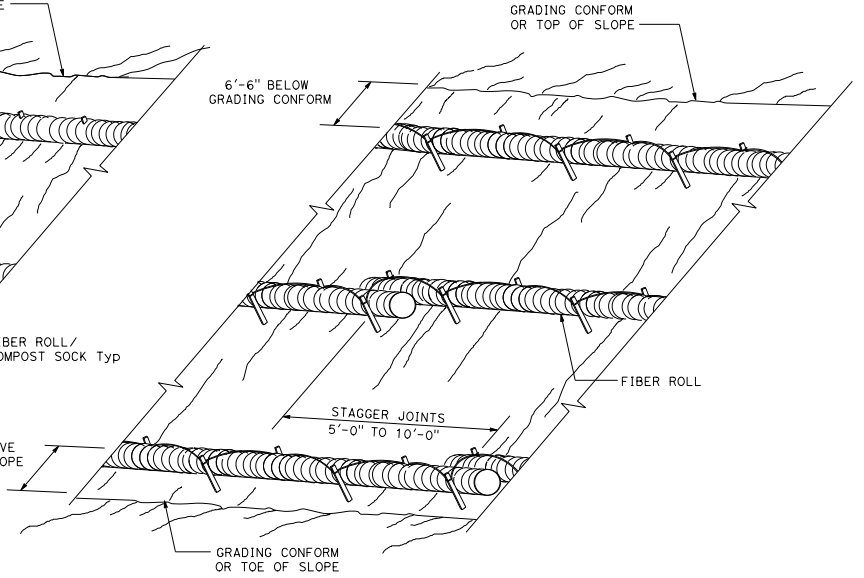
NOTE:

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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN H51 DATED MAY 31, 2018 - PAGE 276 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP H51

2018 REVISED STANDARD PLAN RSP H51

5-16-19

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

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Dulce Rufino Feldman
No. C81459
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

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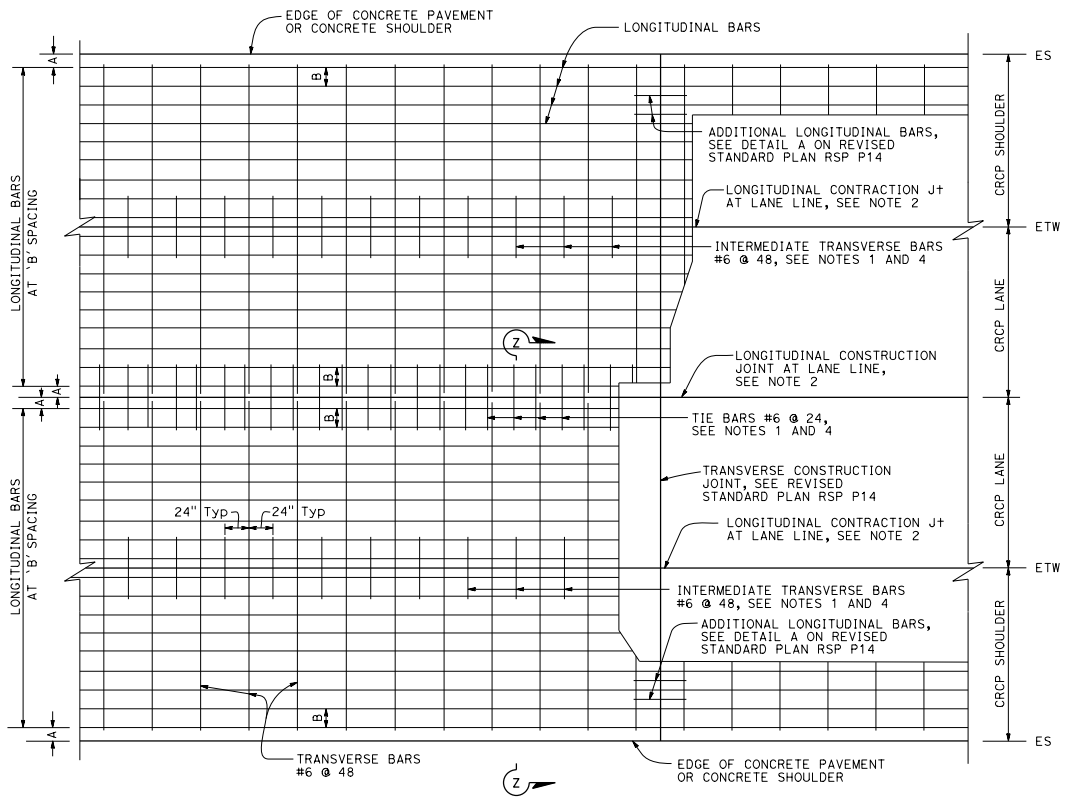
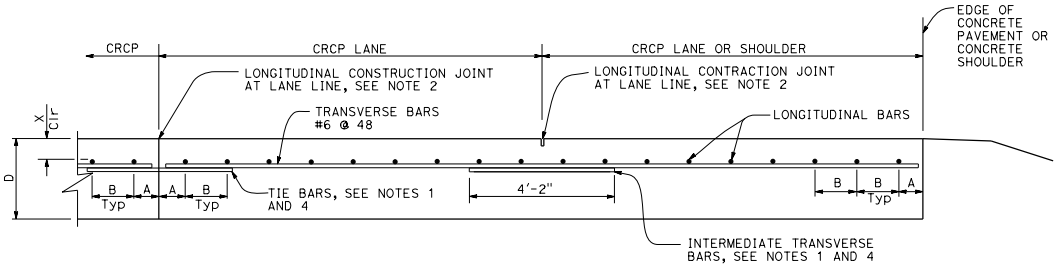
TO ACCOMPANY PLANS DATED _____



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"	7.0"	14"	4"
.80′	#6	3" TO 4"	6.5"	13"	4"
.85′	#6	3" TO 4"	6.0"	12"	4"
.90′	#6	3" TO 4"	5.5"	11"	4"
.95′	#6	3" TO 4"	5.25"	10.5"	4"
1.00′	#6	3" TO 4"	5.0"	10"	5"
1.05′	#7	3" TO 4"	6.5"	13"	5"
1.10′	#7	3" TO 4"	6.25"	12.5"	5.5"

NOTES:

1. Place tie bars and intermediate transverse bars parallel to and in the same plane as transverse bars.
2. For longitudinal contraction and construction joint details, see Standard Plan P16.
3. For curved lane layout see Standard Plan P16.
4. For tie bar and intermediate transverse bar details, see Standard Plan P16.

ABBREVIATION:

D = Thickness of CRCP

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

NO SCALE

RSP P4 DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN P4
DATED MAY 31, 2018 - PAGE 158 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP P4

2018 REVISED STANDARD PLAN RSP P4

7-9-19

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

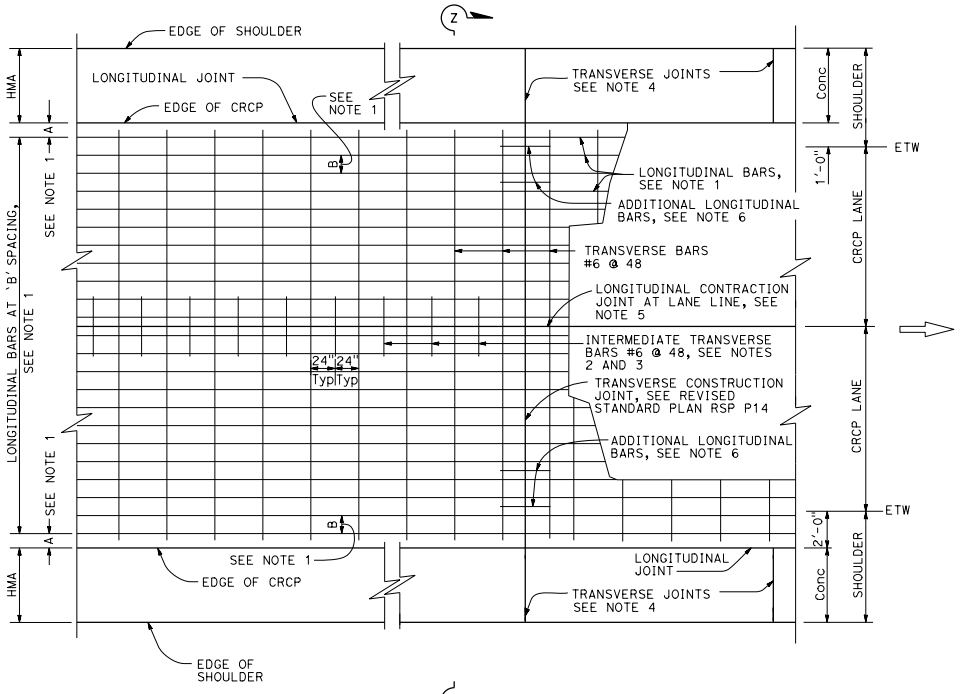
Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER
Dulce Rufino Feldman
No. C81459
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



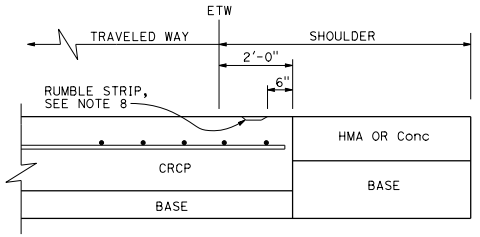
PLAN
See Note 7

NOTES:

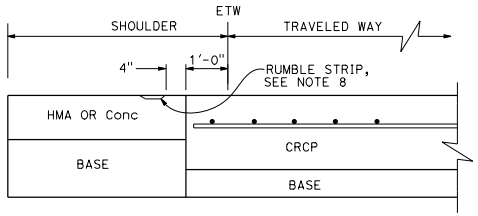
1. For longitudinal bar size, spacing and clearances, see Revised Standard Plan RSP P4.
2. For tie bar and intermediate transverse bar details, see Standard Plan P16.
3. Place Intermediate transverse bars parallel to and in the same plane as transverse bars.
4. Construct transverse joints at right angle 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 or expansion joint. Omit dowel bars.
5. For longitudinal contraction joint details, see Standard Plan 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 Standard Plan P16.
8. For limits of rumble strips, see Project Plans.

ABBREVIATION:

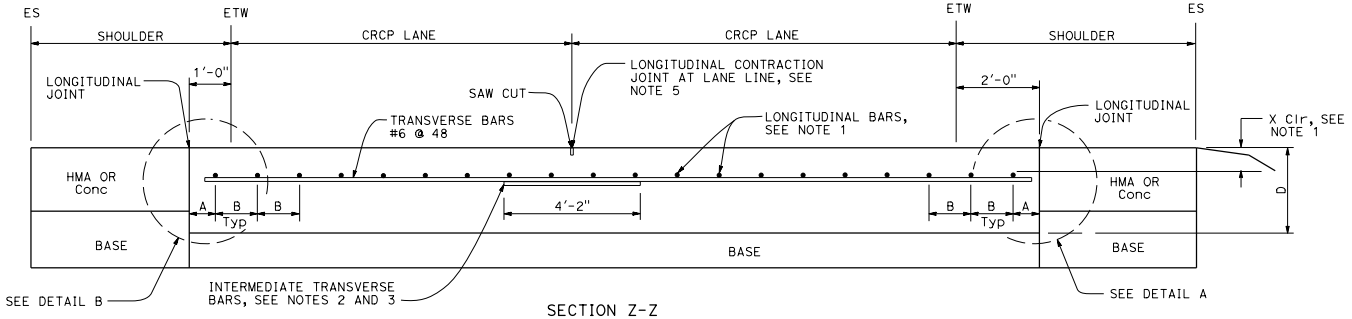
D = Thickness of CRCP



DETAIL A



DETAIL B



SECTION Z-Z

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (WIDENED LANE)

NO SCALE

RSP P5A DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN P5A
DATED MAY 31, 2018 - PAGE 159 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP P5A

2018 REVISED STANDARD PLAN RSP P5A

7-9-19

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

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Dulce Rufino Feldman
No. C81459
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

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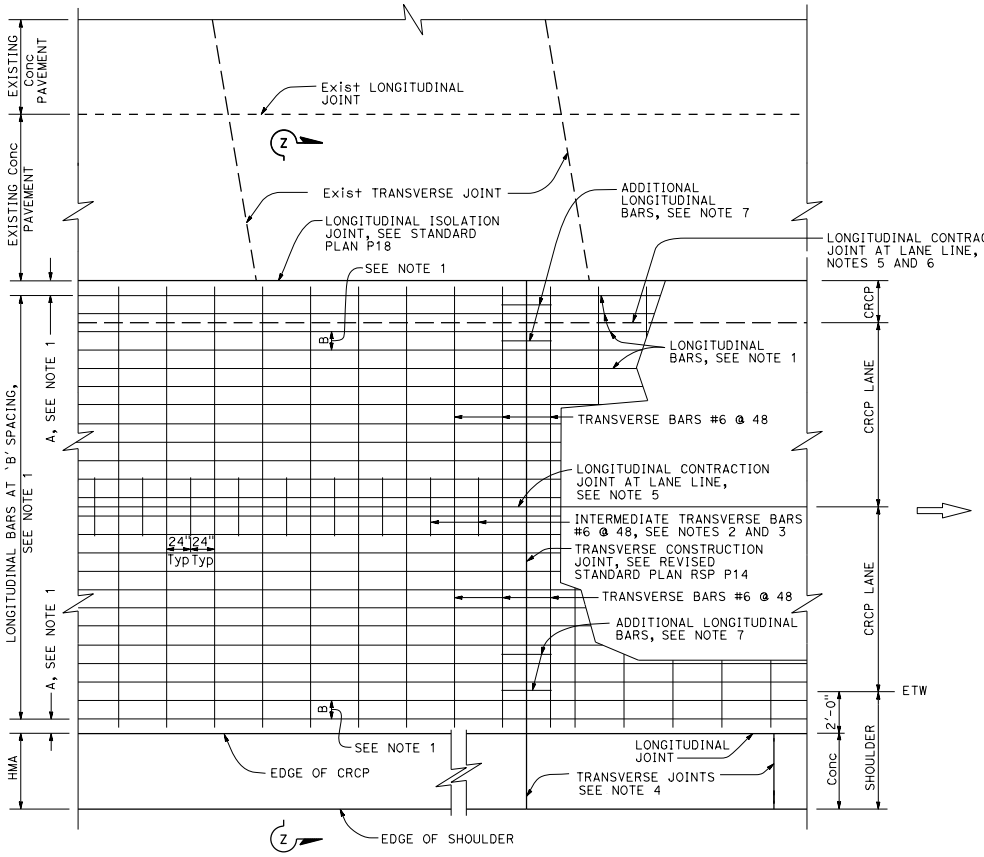
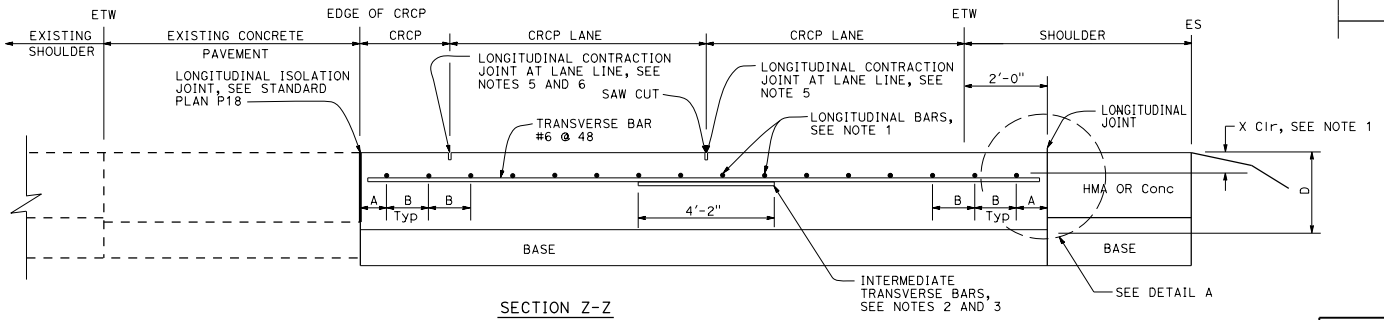
TO ACCOMPANY PLANS DATED _____



PLAN
See Note 8



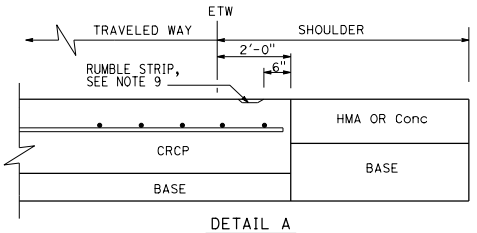
SECTION Z-Z

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 Standard Plan 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 or expansion joint. Omit dowel bars.
5. For longitudinal contraction joint details, see Standard Plan 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 Standard Plan 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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN P5B
DATED MAY 31, 2018 - PAGE 160 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP P5B

2018 REVISED STANDARD PLAN RSP P5B

7-10-19

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

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Dulce Rufino Feldman
No. C81459
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

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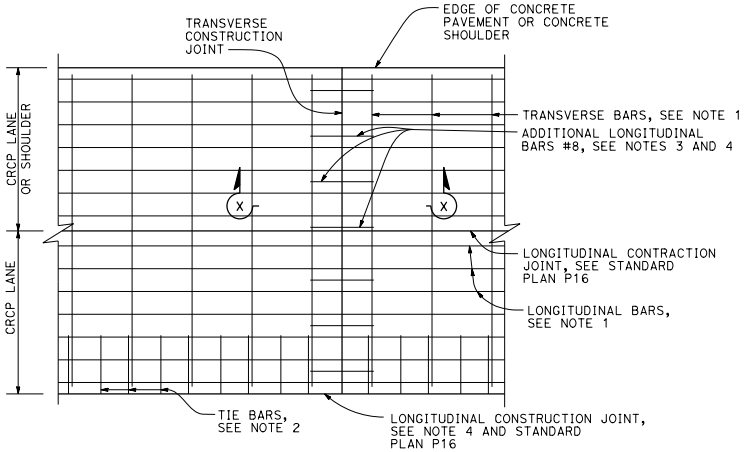
TO ACCOMPANY PLANS DATED _____

NOTES:

1. For transverse and longitudinal bar sizes, spacing and clearances, see Table 1 on Revised Standard Plan RSP P4.
2. For tie bars in longitudinal construction joint, see Standard Plan 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.

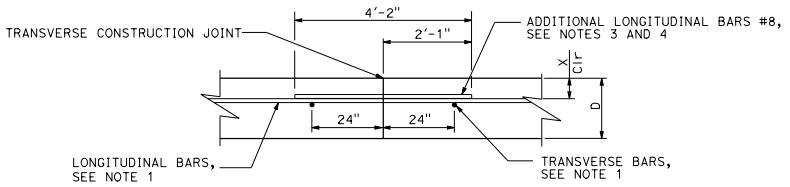
ABBREVIATION

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 OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN P14
DATED MAY 31, 2018 - PAGE 167 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP P14

2018 REVISED STANDARD PLAN RSP P14

7-9-19

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

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER
October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Dulce Rufino Feldman — No. C81459 — Exp. 9-30-21 — CIVIL — STATE OF CALIFORNIA

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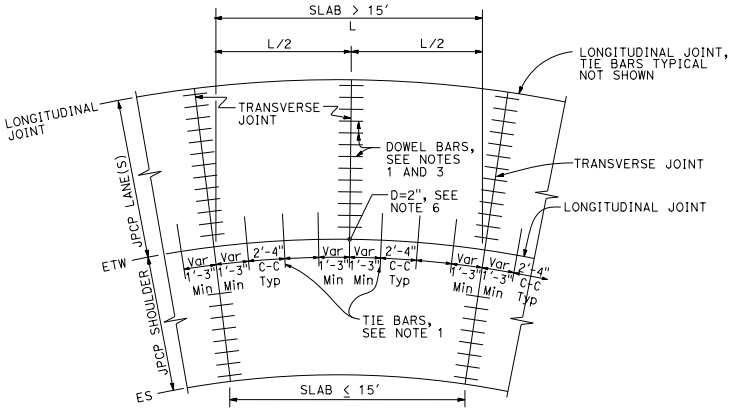
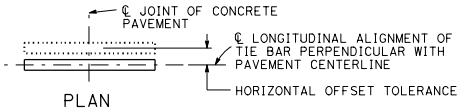
TO ACCOMPANY PLANS DATED _____

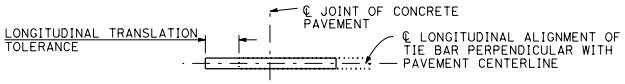


TIE BAR LAYOUT IN CURVED LANES



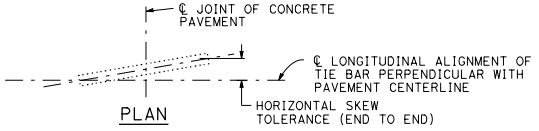
PLAN

HORIZONTAL OFFSET TOLERANCE



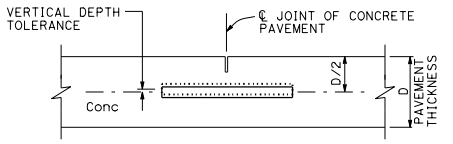
PLAN

LONGITUDINAL TRANSLATION TOLERANCE



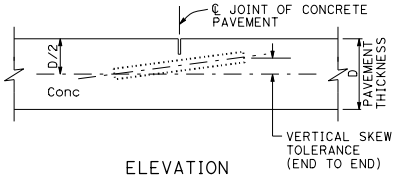
PLAN

HORIZONTAL SKEW TOLERANCE



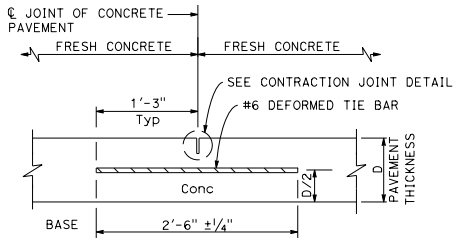
ELEVATION

VERTICAL DEPTH TOLERANCE

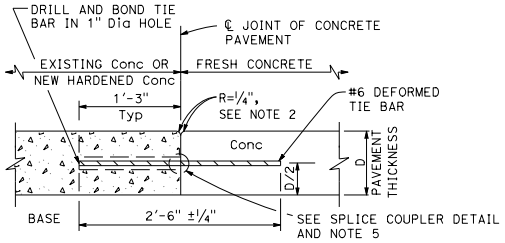


ELEVATION

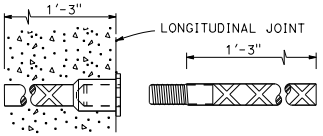
VERTICAL SKEW TOLERANCE



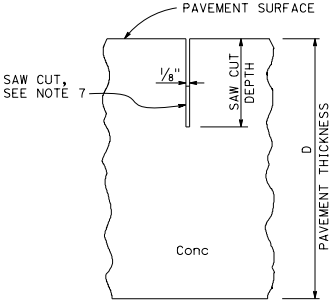
LONGITUDINAL CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



ALTERNATIVE SPLICE COUPLER



CONTRACTION JOINT DETAIL

NOTES:

1. See Standard Plan P1 for typical dowel bar and tie bar placement and locations.
2. Where new pavement is placed against existing concrete pavement, rounding the corner is not required.
3. For dowel bar sizes, See Standard Plan P10.
4. Tie bar details apply to inside widenings.
5. Use either drill and bond or splice couplers.
6. Full depth drilled hole. Fill hole with filler material.
7. The bottom of the saw cut must be at least 0.5" clear of any dowel bar, tie bar and bar reinforcement.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT- TIE BAR DETAILS

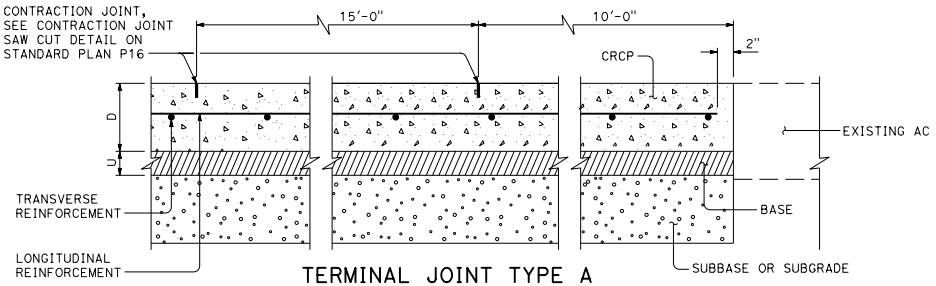
NO SCALE

RSP P15 DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN P15
DATED MAY 31, 2018 - PAGE 168 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP P15

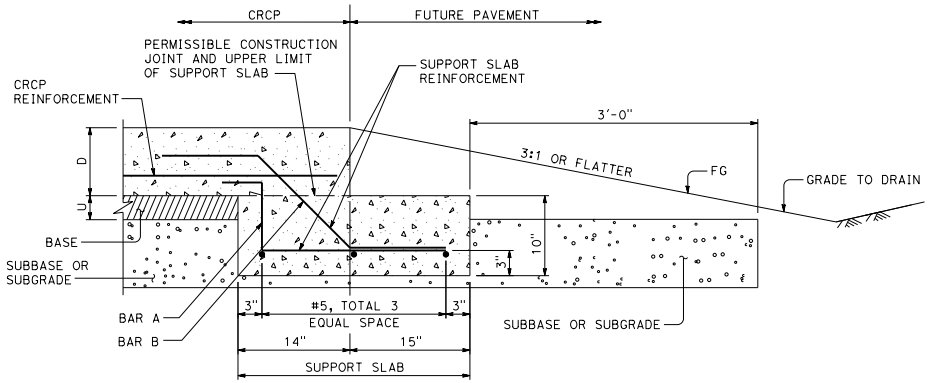
6-21-19

2018 REVISED STANDARD PLAN RSP P15



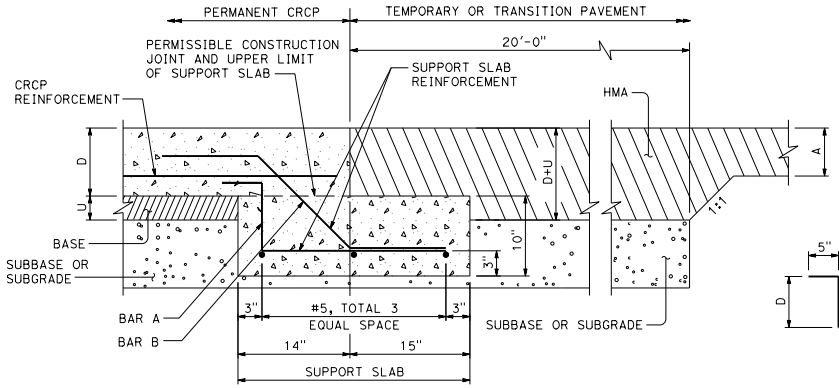
TERMINAL JOINT TYPE A

For Existing AC



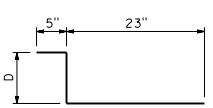
TERMINAL JOINT TYPE B

For Future Pavement

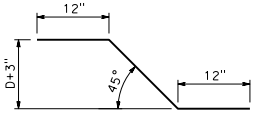


TERMINAL JOINT TYPE C

For HMA Pavement



#5 BAR A
At 12" C-C



#5 BAR B
At 12" C-C

REINFORCEMENT DETAIL

ABBREVIATIONS:

D = Thickness of CRCP
A = Depth of HMA as shown on Project Plans
U = Thickness of Base

NOTES:

1. See Standard Plan B6-21 for "a".
2. For layout, tolerances, and other details not shown, see Standard Plan P10.
3. See Revised Standard Plan RSP P32.

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

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

April 15, 2022
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Dulce Rufino Feldman
No. C81459
Exp. 9-30-23
CIVIL
STATE OF CALIFORNIA

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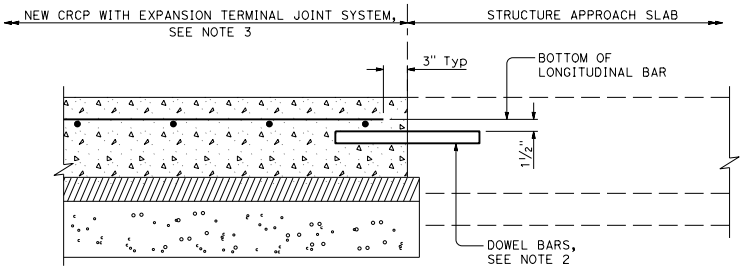
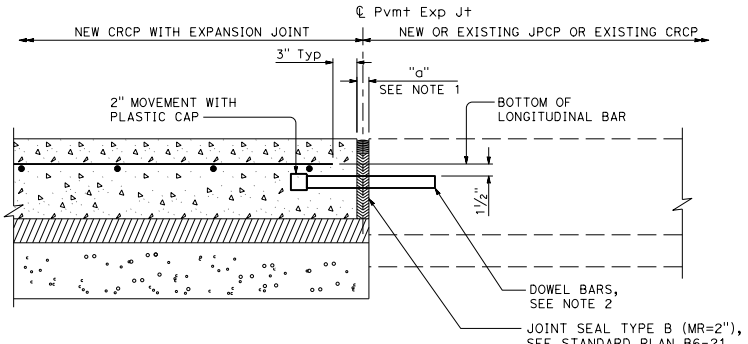
TO ACCOMPANY PLANS DATED _____



TERMINAL JOINT TYPE F

For Structure Approach Slabs



TERMINAL JOINT TYPE G

For New or Existing JPCP or Existing CRCP

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT TERMINAL JOINT DETAILS

NO SCALE

RSP P31A DATED APRIL 15, 2022 SUPERSEDES RSP P31A DATED APRIL 17, 2020, RSP P31A DATED OCTOBER 18, 2019 AND STANDARD PLAN P31A DATED MAY 31, 2018 - PAGE 174 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP P31A

2018 REVISED STANDARD PLAN RSP P31A

1-3-22

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

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Dulce Rufino Feldman
No. C81459
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

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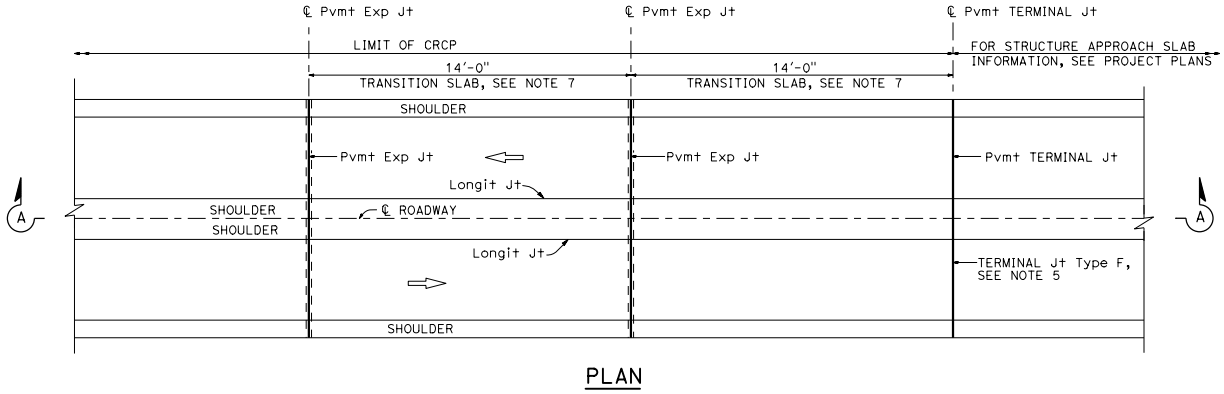
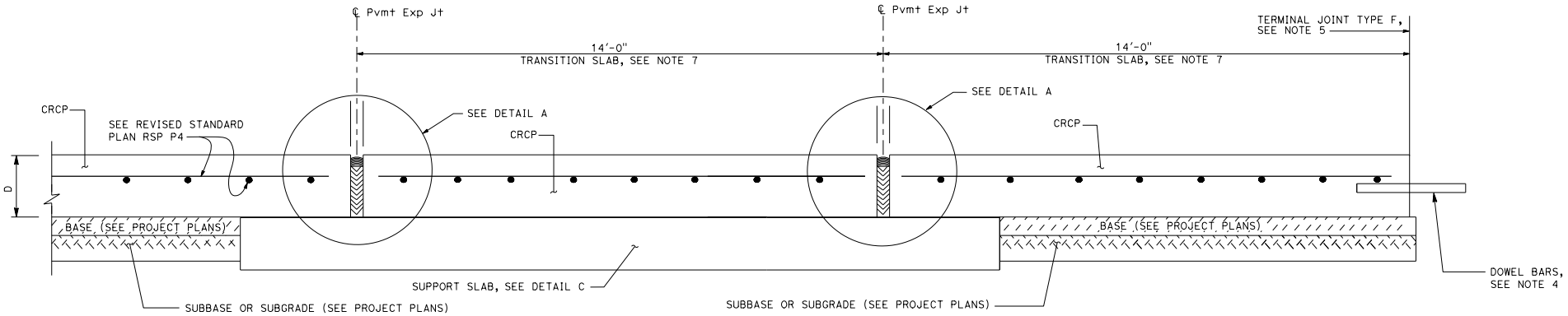
TO ACCOMPANY PLANS DATED _____



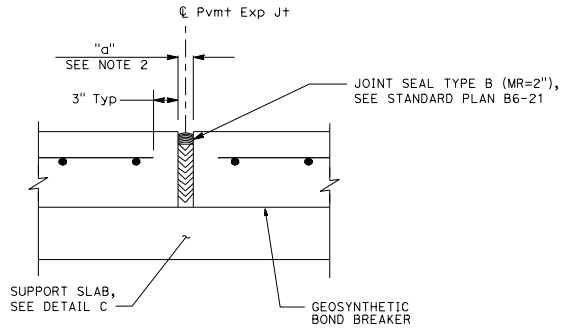
PLAN

NOTES:

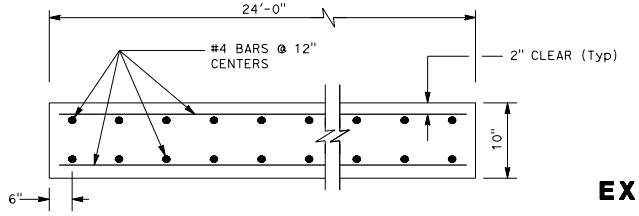
1. D = Thickness of CRCP (See Project Plans).
2. See Standard Plan B6-21 for "a".
3. Extend support slab 2'-0" beyond the outside edges of CRCP.
4. For layout, tolerances, and other details not shown, see Standard Plan P10.
5. For the Pavement Terminal Joint Type F Detail, See Revised Standard Plan RSP P31A.
6. No bar splices allowed within 14'-0" of expansion joints.
7. No bar splices allowed in transition slabs.



SECTION A-A



DETAIL A



DETAIL C

Support slab, see Note 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT - EXPANSION TERMINAL JOINT SYSTEM

NO SCALE

RSP P32 DATED APRIL 17, 2020 SUPERSEDES RSP P32 DATED OCTOBER 18, 2019 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP P32

2018 REVISED STANDARD PLAN RSP P32

1-8-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

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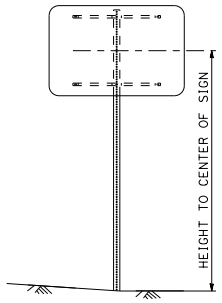
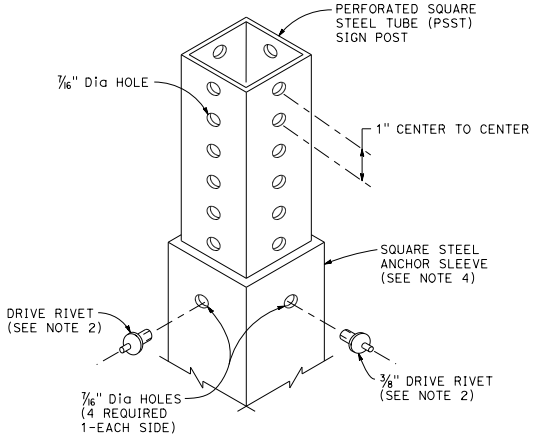
TO ACCOMPANY PLANS DATED _____



SINGLE POST INSTALLATION

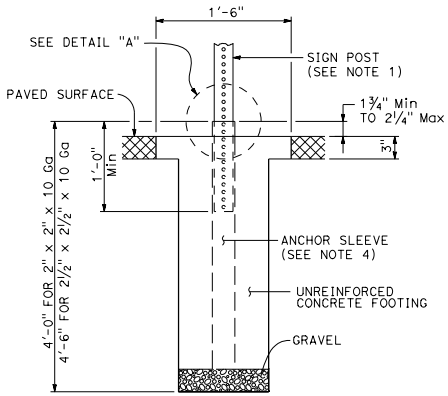
POST SIZE	Max AREA (SQUARE FEET) OF SIGN							SLEEVE SIZE
2" x 2" x 12 Ga	10.8	8.9	7.6	6.6	5.9	5.3	4.8	2¼" x 2¼" x 10 Ga
2½" x 2½" x 10 Ga	20	18	16	14	12	11	10	2¾" x 2¾" x 10 Ga
HEIGHT TO CENTER OF SIGN SINGLE POST GROUND SIGNS 100 MPH WIND SPEED	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	-



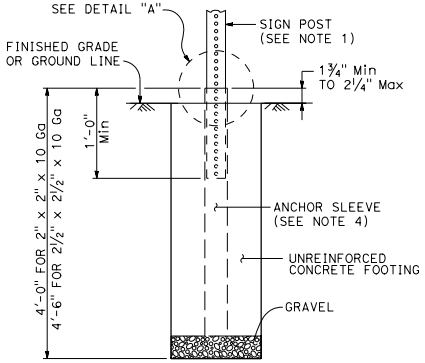
DETAIL "A"

NOTES:

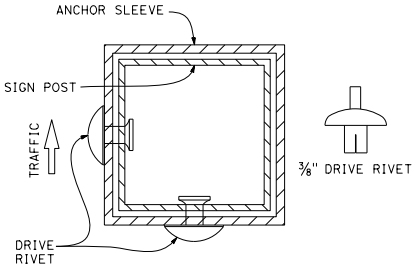
1. The sign post shall have 7/16" diameter perforations 1" on center on all four sides for the full length.
2. Use two drive rivets to fasten assembled sign and sign post into anchor sleeve. Install drive rivets or fastener alternative into the sides facing traffic.
3. All steel sign posts and anchor sleeves shall be galvanized.
4. All anchor sleeves shall be embedded in PCC.
5. For details not shown, see Standard Plans RS1 and RS2.
6. Steel post: fy = 60 ksi



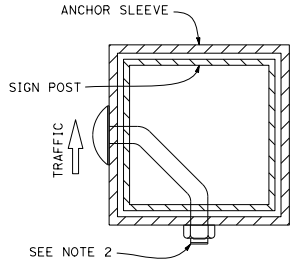
ANCHOR SLEEVE IN PAVED SURFACE



ANCHOR SLEEVE IN UNPAVED SURFACE



FASTENER



FASTENER ALTERNATIVE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ROADSIDE SIGN PSST POST TYPICAL INSTALLATION DETAILS No. 1

NO SCALE

RSP RS5 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP RS5

12-28-20

2018 REVISED STANDARD PLAN RSP RS5

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
EXP. 3-31-22
CIVIL
STATE OF CALIFORNIA

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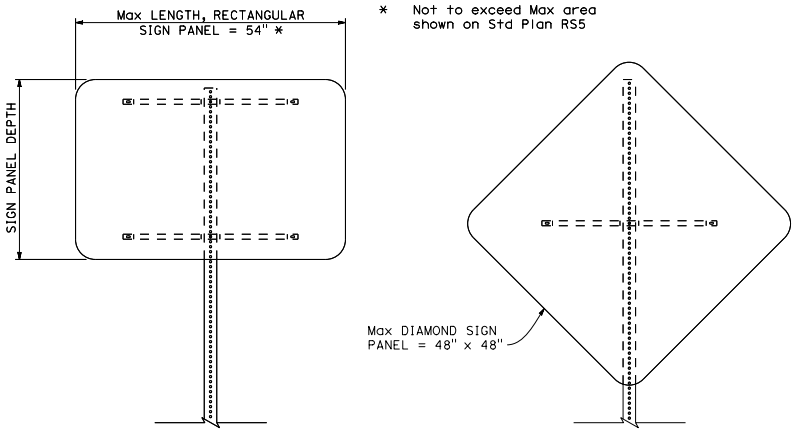
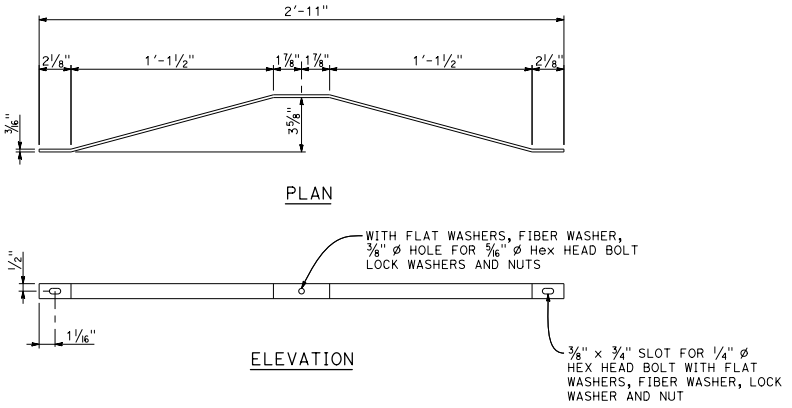
TO ACCOMPANY PLANS DATED _____

NOTES:

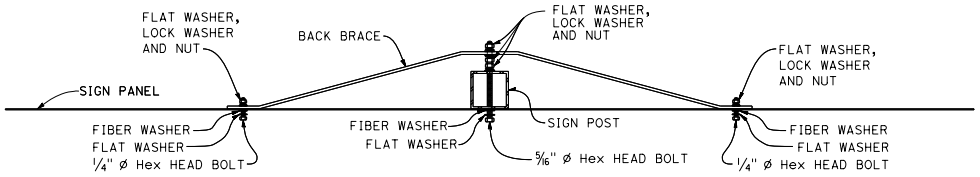
1. Balanced single post installations of single sheet aluminum panel signs require back braces when 2'-10" or more in length.
2. Wood block spacers are not required for signs mounted on metal posts.
3. Attach rectangular sign panel to sign post with bolts at the top and bottom. Center may be attached with either bolt or 3/8" drive rivets.
4. Attach diamond sign panel to sign post with bolt at center. Top and bottom may be attached with either bolts or 3/8" drive rivets.
5. For details not shown, see Standard Plans RS1 and RS2.



SINGLE POST INSTALLATION



BACK BRACE DETAIL
See note 1



BACK BRACE MOUNTING DETAIL
See Note 1

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ROADSIDE SIGN PSST POST TYPICAL INSTALLATION DETAILS No. 2

NO SCALE

RSP RS6 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP RS6

12-8-20

2018 REVISED STANDARD PLAN RSP RS6

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

Juan J. Jauregui
No. C63939
Exp. 9-30-20
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.

TO ACCOMPANY PLANS DATED _____

INSTRUCTIONS TO FABRICATOR

PROJECT PLANS SHOW:

1. Sign structure location.
2. Length of structure frame.
3. Panel size and locations on structure.
4. Walkway length for two post signs.
5. Post type and height to bottom of frame.
6. Base plate elevation.
7. Footing elevation or location of pile foundation.
8. Photoelectric unit location if required.

REFER TO THE FOLLOWING STANDARD PLANS FOR DETAILS NOT SHOWN ON PROJECT PLANS:

Sheet No.	SHEET NAME
S1	Overhead Signs-Truss, Instructions and Examples
S2	Overhead Signs-Truss, Single Post Type, Post Types II to IX
S3	Overhead Signs-Truss, Single Post Type, Base Plate and Anchorage Details
S4	Overhead Signs-Truss, Single Post Type, Structural Frame Members Details No. 1
S5	Overhead Signs-Truss, Single Post Type, Structural Frame Members Details No. 2
S6	Overhead Signs-Truss, Gusset Plate Details
S8	Overhead Signs-Truss, Single Post Type, Round Pedestal Pile Foundation
S9	Overhead Signs-Truss, Two Post Type, Post Types I-S through VIII-S
S10	Overhead Signs-Truss, Two Post Type, Base Plate and Anchorage Details
S11	Overhead Signs-Truss, Two Post Type, Structural Frame Members
S12	Overhead Signs-Truss, Structural Frame Details
S13	Overhead Signs-Truss, Frame Juncture Details
S15	Overhead Signs-Truss, Two Post Type, Round Pedestal Pile Foundation
S16	Overhead Signs, Walkway Details No. 1
S17	Overhead Signs, Walkway Details No. 2
S17A	Overhead Signs, Walkway Details No. 3
S18	Overhead Signs, Walkway Safety Railing Details
S19	Overhead Signs-Truss, Sign Mounting Details, Laminated Panel-Type A
S20	Overhead Signs, Steel Frames, Removable Sign Panel Frames
S21	Overhead Signs, Removable Sign Panel Frames, Mounting Details
S22	Overhead Signs-Truss, Removable Sign Panel Frames, 9'-2" and 10'-0" Sign Panels

WALKWAY BRACKETS:

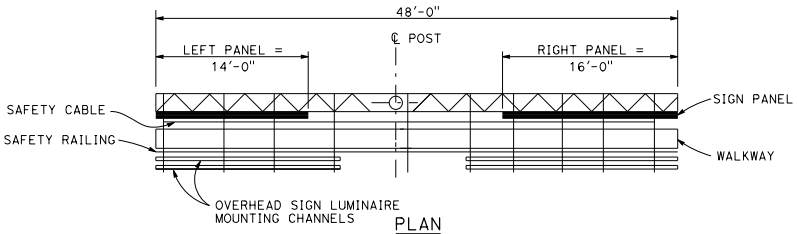
Space all walkway brackets maintaining uniform spacing where possible. Maximum spacing shall not exceed 5'-6".

OVERHEAD SIGN LUMINAIRE MOUNTING CHANNELS:

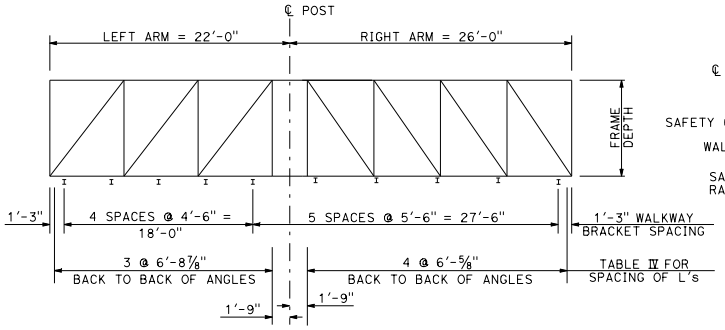
Where distance from walkway bracket to end of sign panel exceeds 1'-4", extend overhead sign luminaire mounting channels to next walkway bracket. See Example No. 2.

WALKWAY AND SAFETY RAILING:

Walkway to be continuous for entire length of frame for single post signs. For two post signs, see Project Plans. Safety railing to protect entire walkway, but continuous for no more than 11'-0" in one unit.



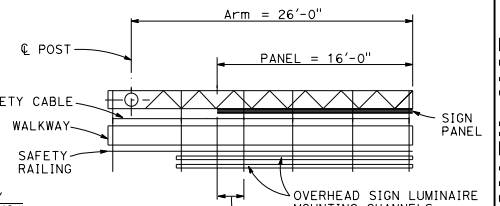
PLAN



ELEVATION

UNBALANCED SINGLE POST TYPE

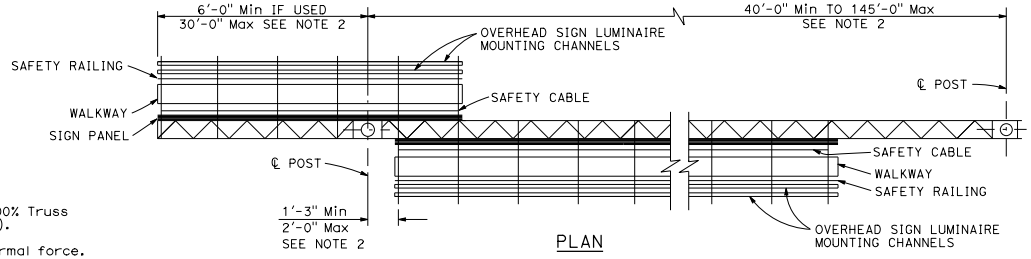
Example No. 1



PLAN

CANTILEVER SINGLE POST TYPE

Example No. 2



PLAN

TWO POST TYPE WITH CANTILEVER (PART DOUBLE-FACED)

Example No. 3

STANDARD PLAN SHEET No.
DETAIL No.

NOTES:

1. Signs are shown and dimensioned looking in the direction of traffic. Double faced signs are shown and dimensioned looking ahead along stationing.
2. Mandatory dimension limit.

GENERAL NOTES:

LOADING:

WIND LOADING:

Normal to face of sign: 40.3 psf on 100% Truss surface area (i.e. 100% panel coverage).

Transverse to face of sign: 20% of normal force.

WALKWAY LOADING:

Dead load +500 LB concentrated live load.

UNIT STRESSES:

STRUCTURAL STEEL: fy = 36,000 psi
REINFORCED CONCRETE: fy = 60,000 psi
f'c = 3600 psi
FOOTING SOIL PRESSURE: 2.5 ksf (spread footing)

MINIMUM CLEARANCE

Vertical roadway clearance 18'-0" (bottom of walkway system)

WELDING:

All welding continuous unless otherwise noted on the plans.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TRUSS INSTRUCTIONS AND EXAMPLES

NO SCALE

RSP S1 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN S1 DATED MAY 31, 2018 - PAGE 409 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S1

2018 REVISED STANDARD PLAN RSP S1

5-8-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

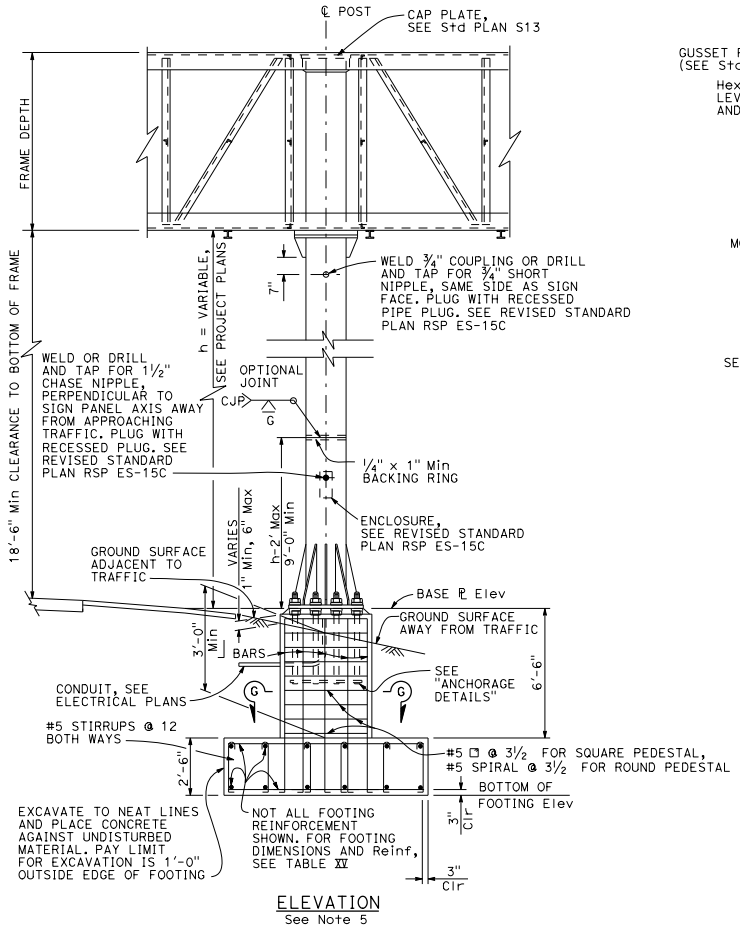
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — Juan J. Jauregui — No. C63939 — Exp. 9-30-20 CIVIL — STATE OF CALIFORNIA

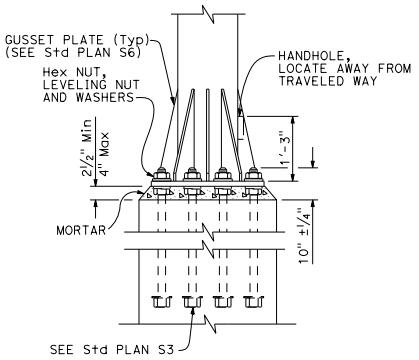
TO ACCOMPANY PLANS DATED _____

TABLE XV

POST TYPE	PIPE		CAP PLATE SIZE FOR CHORD L's 5 x 5	CAP PLATE SIZE FOR CHORD L's 6 x 6	ROUND PEDESTAL					SQUARE PEDESTAL						SPREAD FOOTING						
						VERTICAL J-BARS		SPIRAL			VERTICAL J-BARS			HOOP		(SEE NOTE 2)	REINFORCEMENT					
																	WIDTH		LONGITUDINAL		FOOTING STIRRUPS	
	NPS	THICKNESS			Dia	EQUALLY SPACED TOTAL	BAR SIZE	BAR SIZE	PITCH	SQUARE	EQUALLY SPACED TOTAL	BAR SIZE	# OF BARS EA FACE	BAR SIZE	SPACING		TOP	BOTTOM	TOP	BOTTOM		
II	14	1/2"	2'-0" x 2'-0" x 1"	2'-2" x 2'-2" x 1"	5'-3"	16	#10	#5	3 1/2"	5'-3"	16	#10	5	#5	3 1/2"	12'-0" x 14'-0" x 2'-6"	14-#6	14-#7	13-#9	13-#9	#5 @ 12	
III	16		2'-2" x 2'-2" x 1"	2'-4" x 2'-4" x 1"												12'-0" x 14'-0" x 2'-6"	15-#6	15-#7				
IV	18		2'-4" x 2'-4" x 1"	2'-6" x 2'-6" x 1"												12'-0" x 14'-0" x 2'-6"	15-#6	15-#7				
V	20		2'-6" x 2'-6" x 1"	2'-8" x 2'-8" x 1"												13'-0" x 14'-0" x 2'-6"	15-#6	15-#7	14-#9	14-#9		
VI	24		2'-10" x 2'-10" x 1"	3'-0" x 3'-0" x 1"	5'-9"		#11			5'-9"		#11				13'-0" x 16'-0" x 2'-6"	17-#7	17-#7		14-#11		
VII	24	3/4"														13'-0" x 17'-0" x 2'-6"	18-#7	18-#7				
VIII	24	31/32"														13'-0" x 18'-0" x 2'-6"	19-#7	19-#7				
IX	24	31/32"														13'-0" x 18'-0" x 2'-6"	19-#7	19-#7				

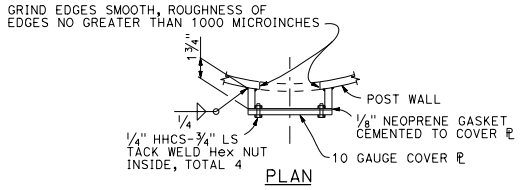


ELEVATION
See Note 5

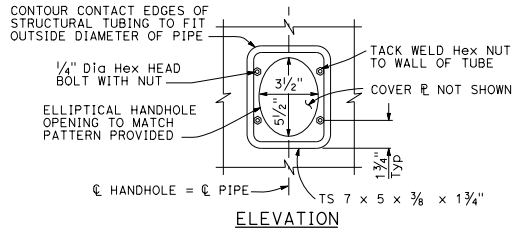


ELEVATION

ANCHORAGE DETAILS



PLAN

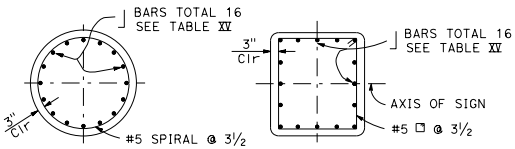


ELEVATION

TYPICAL DETAILS OF HANDHOLE AND COVER

NOTES:

1. For "General Notes", see Revised Standard Plan RSP S1.
2. Longer side of footing (longitudinal) shall be normal to axis of sign.
3. Backfill shall be in place prior to erection of post.
4. Thread upper 10" of anchor bolts and galvanize upper 1'-0".
5. Spread footing with square pedestal foundation shown, use Pile Foundation when shown on the Project Plans. For pile foundation details, see Standard Plan S8.
6. Anchor plates may be retained with hexagon nut or formed head as alternatives to details shown.
7. On single post sign structures, the post shall be raked out of plumb, with the use of the leveling nuts to make the bottom of the sign frame level.
8. At final position of post all top and bottom nuts shall be tightened against base plate.
9. When foundation is located on a steep slope with exposed face of concrete adjacent to traffic, see "Detail C" on Standard Plan S8, as applicable.
10. Slope protection required when indicated on the Project Plans.



SECTION G-G
ROUND PEDESTAL

SECTION G-G
SQUARE PEDESTAL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TRUSS SINGLE POST TYPE POST TYPES II THROUGH IX

NO SCALE

RSP S2 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN S2
DATED MAY 31, 2018 - PAGE 410 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S2

2018 REVISED STANDARD PLAN RSP S2

7-17-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-20
CIVIL
STATE OF CALIFORNIA

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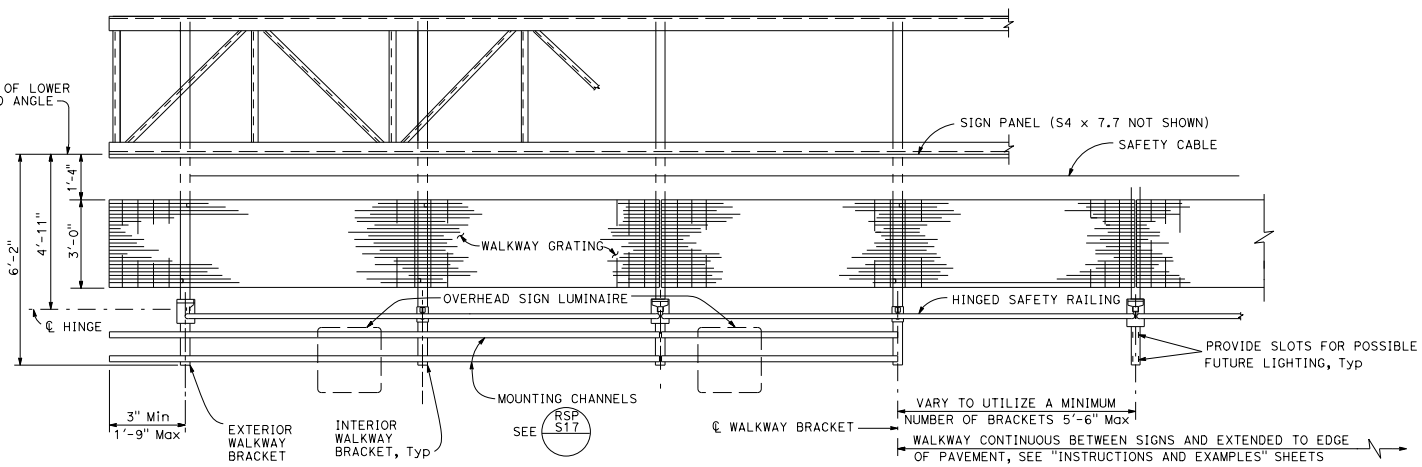
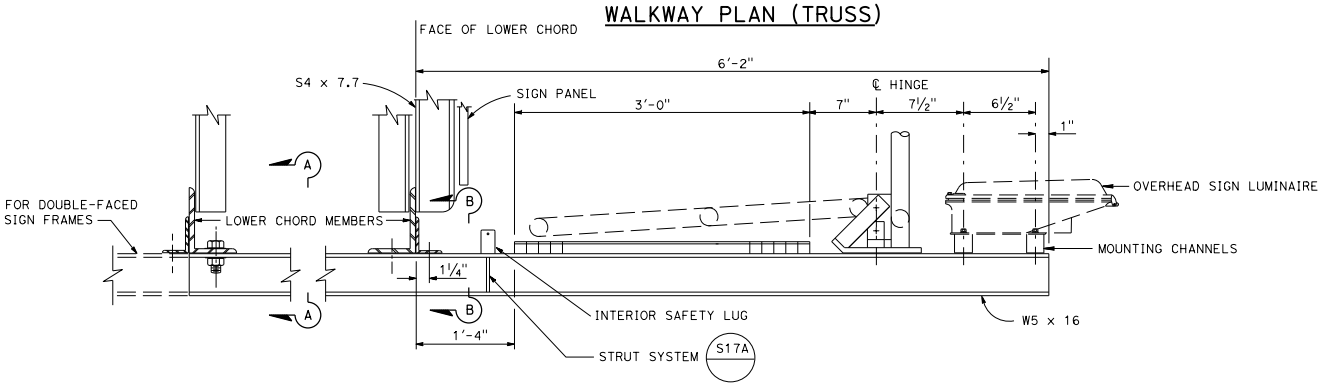
TO ACCOMPANY PLANS DATED _____

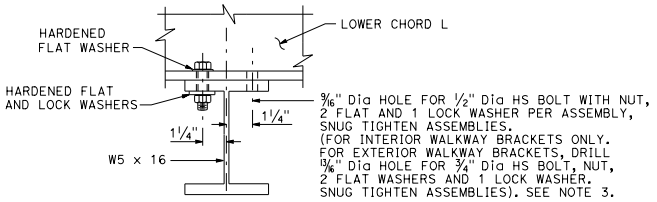


WALKWAY PLAN (TRUSS)

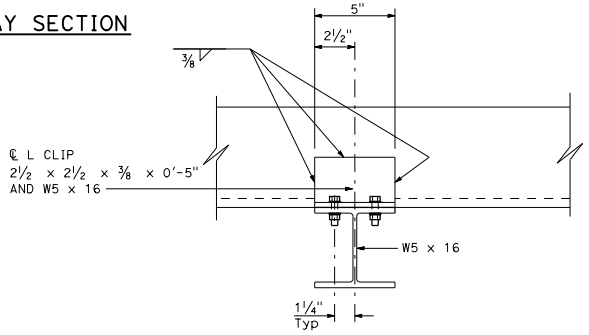


TRUSS

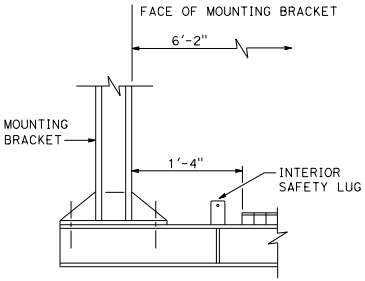
TYPICAL WALKWAY SECTION



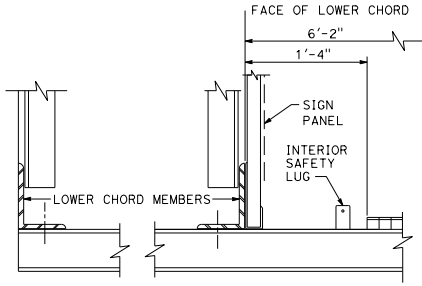
SECTION A-A



SECTION B-B



TUBULAR AND BRIDGE MOUNTED



BOX BEAM
CLOSED TRUSS

NOTES:

1. For spacing of overhead sign luminaire, see Revised Standard Plan RSP ES-15A.
2. For safety lug details, see Revised Standard Plan RSP S17.
3. For double faced sign frames with double walkways, use a total 8 bolt assemblies per bracket.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS
WALKWAY DETAILS No. 1

NO SCALE

RSP S16 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN S16 DATED MAY 31, 2018 - PAGE 422 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S16

2018 REVISED STANDARD PLAN RSP S16

5-8-18

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

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Juan J. Jauregui — No. C63939 — Exp. 9-30-20 — CIVIL — STATE OF CALIFORNIA

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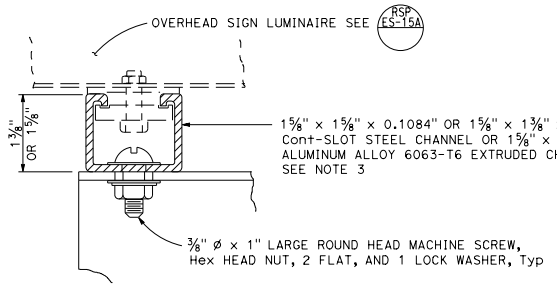
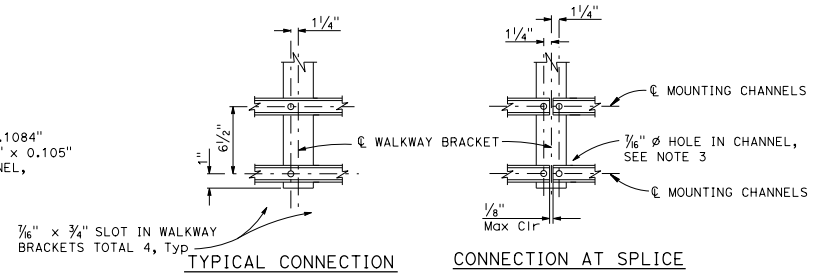
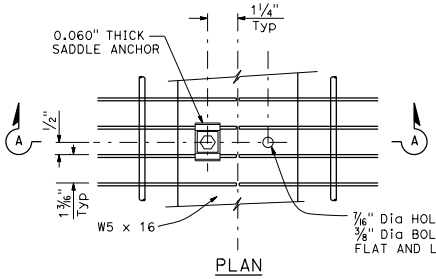
TO ACCOMPANY PLANS DATED _____

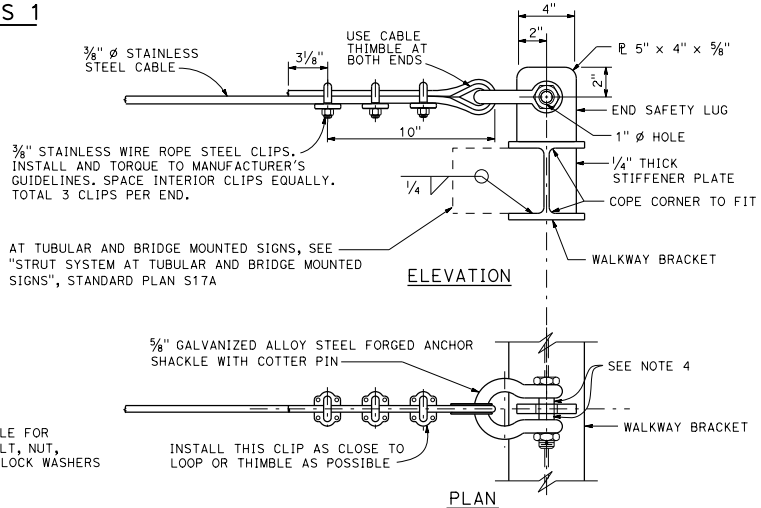


OVERHEAD SIGN LUMINAIRE MOUNTING CHANNEL DETAILS 1



OVERHEAD SIGN LUMINAIRE MOUNTING CHANNEL DETAILS 2

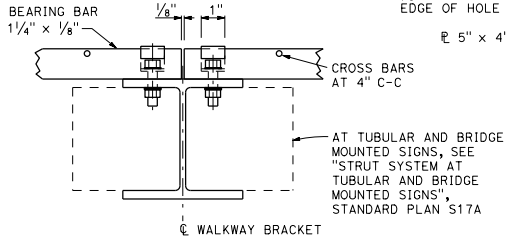




END SAFETY CABLE DETAIL

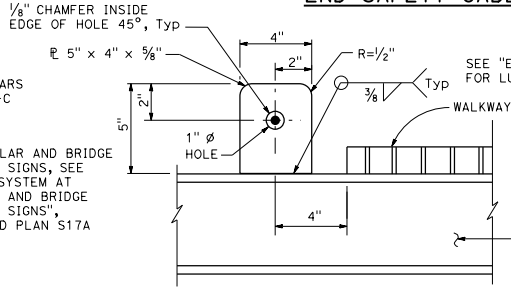
NOTES:

1. Welded type grating shall have 1¼" x ⅛" bearing bars at 1 3/16" centers with ¼" diameter (or equal) cross bars at 4" centers. If mechanical lock grating is used, it shall be equal in strength to the welded type. Alternate hold-down clips may be submitted for approval.
2. Walkway grating and overhead sign luminaire mounting channels to be continuous (no splices) over as many walkway brackets as practical and consistent with fabrication, ease of handling and assembly.
3. Contractor may substitute 1⅝" x 1⅝" x .1084" cont-slot steel channel with pre-punched slots not larger than 11/32" x 3". Slots shall be at bottom of channel and shall be parallel to channel. Slots shall be spaced not closer than 4" center to center.
4. Place an equal amount of washers on each side to align cable with end lug without restricting shakle bolt rotation or contacting cable.



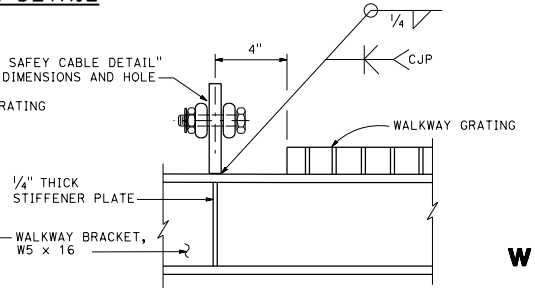
WALKWAY GRATING DETAILS

Shown at splice



INTERIOR SAFETY LUG DETAIL

(At every walkway bracket between exterior walkway brackets)



END SAFETY LUG DETAIL

(At exterior walkway brackets)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS
WALKWAY DETAILS No. 2

NO SCALE

RSP S17 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN S17
DATED MAY 31, 2018 - PAGE 423 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S17

2018 REVISED STANDARD PLAN RSP S17

5-8-18

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Juan J. Jauregui
No. C63939
Exp. 9-30-22
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 _____

INSTRUCTIONS TO FABRICATOR

PROJECT PLANS SHOW:

1. Sign structure location.
2. Length of structure frame.
3. Panel size and locations on structure.
4. Walkway length for two post signs.
5. Post type and height to bottom of frame.
6. Base plate elevation.
7. Pedestal height and shape, if applicable.
8. Location of pile foundation.
9. Photoelectric unit location if required.

REFER TO THE FOLLOWING REVISED STANDARD PLANS FOR DETAILS NOT SHOWN ON PROJECT PLANS:

SHEET No.	SHEET NAME
RSP S100	Overhead Signs-Versatile Truss, One and Two Post Type

ONE POST TYPE SHEETS

RSP S101	Overhead Signs-Versatile Truss, One Post Type, Truss Layout
RSP S102	Overhead Signs-Versatile Truss, One Post Type, Steel Post Type and Truss Member Table
RSP S103	Overhead Signs-Versatile Truss, One Post Type, Steel Post Base Plate and Anchorage Details
RSP S104	Overhead Signs-Versatile Truss, One Post Type, CIDH Pile Foundation Details
RSP S105	Overhead Signs-Versatile Truss, One Post Type, Concrete Pedestal with CIDH Pile Foundation Details

TWO POST TYPE SHEETS

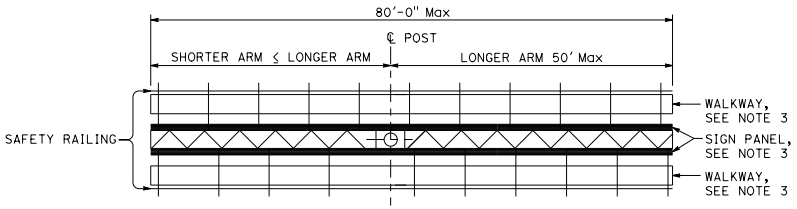
RSP S106	Overhead Signs-Versatile Truss, Two Post Type, Truss Layout
RSP S107	Overhead Signs-Versatile Truss, Two Post Type, Steel Post Type and Truss Member Table
RSP S108	Overhead Signs-Versatile Truss, Two Post Type, Steel Post Base Plate and Anchorage Details
RSP S109	Overhead Signs-Versatile Truss, Two Post Type, CIDH Pile Foundation Details
RSP S110	Overhead Signs-Versatile Truss, Two Post Type, Concrete Pedestal with CIDH Pile Foundation Details

COMMOM ELEMENTS SHEETS

RSP S111	Overhead Signs-Versatile Truss, Truss Connection Details
RSP S112	Overhead Signs-Versatile Truss, Chord Splice Details
RSP S113	Overhead Signs-Versatile Truss, Truss To Steel Post Connection Details
RSP S114	Overhead Signs-Versatile Truss, CIDH Pile Foundation with Inspection Pipes
RSP S115	Overhead Signs-Versatile Truss, Walkway Details No. 1
RSP S116	Overhead Signs-Versatile Truss, Walkway Details No. 2
RSP S117	Overhead Signs-Versatile Truss, Walkway Details No. 3
RSP S118	Overhead Signs-Versatile Truss, Walkway Safety Railing Details
RSP S119	Overhead Signs-Versatile Truss, Sign Mounting Details Laminated Panel-Type A
RSP S120	Overhead Signs-Versatile Truss, Removable Sign Panel Frames Details No. 1
RSP S121	Overhead Signs-Versatile Truss, Removable Sign Panel Frames Details No. 2
RSP S122	Overhead Signs-Versatile Truss, Exit Plaque Mounting Details
RSP S123	Overhead Signs-Versatile Truss, CMS Mounting Details
RSP S124	Overhead Signs-Versatile Truss, EMS and Flashing Beacon Details

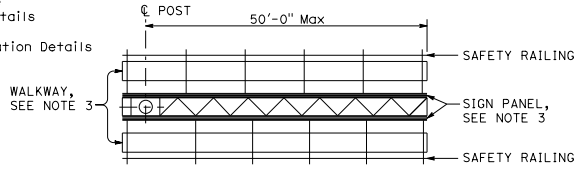
NOTES:

1. Signs are shown and dimensioned looking in the direction of traffic. Double faced signs are shown and dimensioned looking ahead along stationing.
2. For Two Post Type, Maximum cantilever length ≤ Main Span length/3.
3. For cantilever lengths ≤ 40′-0", sign panels and walkways may be placed on both sides of truss. For cantilever lengths > 40′-0" and ≤ 50′-0", sign panels and walkways may only be placed on one side of truss.
4. A single Changeable Message Sign (CMS) 500, 700, or 710 may be placed anywhere on the truss. CMS and static sign panels may be placed on the same truss.
5. Refer to Revised Standard Plan RSP S123 for CMS mounting details.
6. Place walkway and safety railing on truss only when called out on the project plans. When required, walkway to be continuous for entire length of frame for one post signs. For two post signs, see Project Plans. Safety railing to run the entire length of walkway.
7. Thread locking nuts or locking washers shall be used for all connections, unless noted otherwise.
8. All high strength (HS) bolts are to be snug tightened unless otherwise noted on the plans.
9. All welds are continuous unless otherwise noted on the plans.



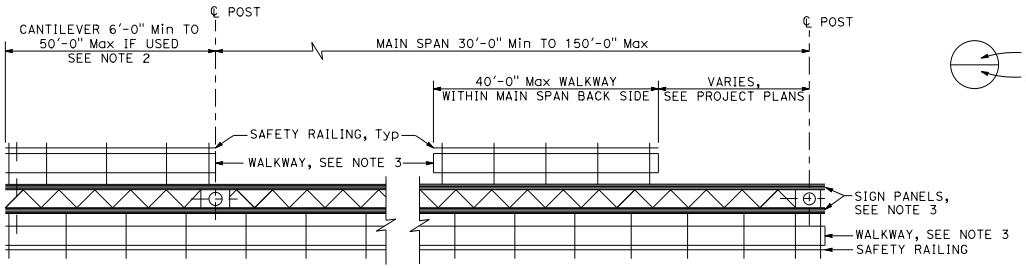
PLAN

UNBALANCED ONE POST TYPE MAXIMUM COVERAGE



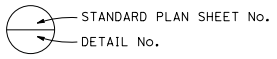
PLAN

CANTILEVER ONE POST TYPE MAXIMUM COVERAGE



PLAN

TWO POST TYPE WITH CANTILEVER MAXIMUM COVERAGE



DESIGN NOTES:

WIND LOADING:
Wind loading per AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals, 6th Edition, 2013 with 2015 interim revisions.

Design wind speed (V) = 100 mph
Importance factor (Ir) = 1.0
Velocity conversion factor (Cv) = 1.0
Height and exposure factor (Kz) = 1.18
Gust effect factor (G) = 1.14

WALKWAY LOADING:
Dead load plus 500 lb concentrated live load.

CMS LOADING:
CMS 500 maximum weight = 2400 lb
CMS 700 maximum weight = 2400 lb
CMS 710 maximum weight = 2000 lb

MATERIALS & UNIT STRESSES:

Structural Steel:	fy = 50 ksi	
Steel Posts:	Dia ≤ 24"	fy = 35 ksi
	Dia > 24"	fy = 50 ksi
Base Plates:	fy = 50 ksi	
Anchor Bolts:	fy = 55 ksi	
Reinforced Concrete:	fy = 60 ksi	
	f′c = 4 ksi	

SOIL PARAMETERS FOR CIDH FOUNDATION:
Minimum Soil Shear Strength: 1.5 ksf (cohesive soils)
Minimum Soil Friction Angle: 30° (non-cohesive soils)
Minimum Unit weight of soil: 120 pcf (non-cohesive soils)

MINIMUM CLEARANCE:
Vertical roadway clearance 18′-6" (bottom of frame/ sign/CMS/walkway)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE AND TWO POST TYPE

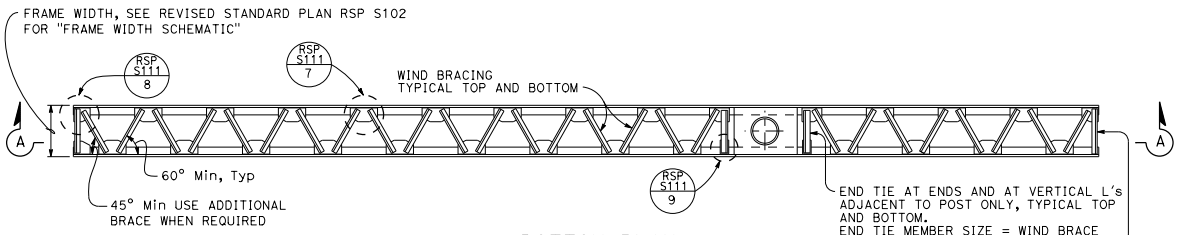
NO SCALE

RSP S100 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S100

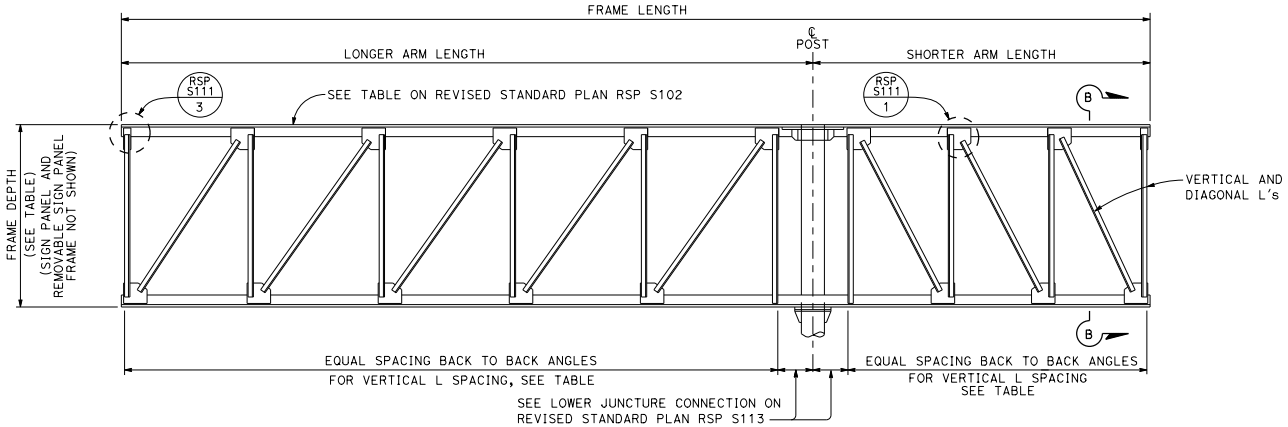
10-22-20

2018 REVISED STANDARD PLAN RSP S100



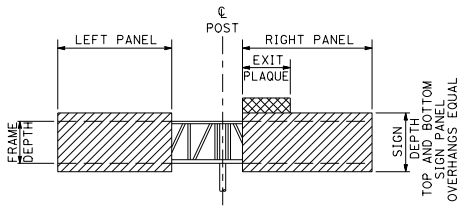
BOTTOM PLAN

Vertical, diagonal and interior L members not shown. Walkway not shown.



SECTION A-A

Walkway and wind bracing not shown



SIGN AND EXIT PLAQUE PLACEMENT

NOTE:
Equal sign panel overhangs apply to sign panels only. The exit plaque is mounted above sign panels and the walkway is mounted below the sign panels, when used.

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
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. For connection of frame to post, see Revised Standard Plan RSP S113.
2. For walkway details, see Revised Standard Plans RSP S115, RSP S116, and RSP S117.
3. For walkway length, see Revised Standard Plan RSP S100.
4. Minimum length of frame varies by frame depth, see Revised Standard Plan RSP S102.
5. For interior members, refer to "Typical Section B-B" on Revised Standard Plan RSP S111.
6. A single exit plaque may be placed above the sign, at any location on the truss. Maximum exit plaque length = 16'-0". Maximum exit plaque depth = 5'-0".
7. See Revised Standard Plan RSP S122 for Exit Plaque Mounting Details.

LEGEND:

SIGN PANEL

EXIT PLAQUE

TRUSS FRAME DEPTH AND VERTICAL ANGLE SPACING TABLE

MAXIMUM SIGN PANEL DEPTH	FRAME DEPTH	MAXIMUM VERTICAL L SPACING
80"	60"	45"
180"	72"	54"
240"	120"	90"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE TRUSS LAYOUT

NO SCALE

RSP S101 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S101
DATED MAY 31, 2018 - PAGE 456 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S101

2018 REVISED STANDARD PLAN RSP S101

10-21-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
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TO ACCOMPANY PLANS DATED _____

TRUSS MEMBER TABLE

SIGN PANEL DEPTH ≤ 80"

LONGER ARM LENGTH L	FRAME DEPTH	ANGLE MEMBER SIZE AND MINIMUM OVERLAP LENGTH TO GUSSET PLATE									
		CHORD	VERTICAL	L_V	DIAGONAL	L_d	WIND BRACE	L_W	INTERIOR	L_I
10'-0" ≤ L ≤ 20'-0"	60"	L4 x 4 x 3/8	L3 x 2 x 3/8	3	L2 1/2 x 2 1/2 x 1/4	3	L2 1/2 x 2 1/2 x 1/4	3	L2 1/2 x 2 1/2 x 1/4	3
20'-0" < L ≤ 30'-0"	60"	L5 x 5 x 1/2	L3 x 2 x 1/2	3	L3 x 3 x 3/8	4	L2 1/2 x 2 1/2 x 1/4	3	L2 1/2 x 2 1/2 x 1/4	3
30'-0" < L ≤ 40'-0"	60"	L5 x 5 x 1/2	L5 x 3 1/2 x 1/2	3	L4 x 4 x 1/2	4	L2 1/2 x 2 1/2 x 1/4	4	L2 1/2 x 2 1/2 x 1/4	3
40'-0" < L ≤ 50'-0"	60"	L5 x 5 x 1/2	L5 x 5 x 1/2	4	L5 x 5 x 1/2	4	L3 x 3 x 5/16	4	L2 1/2 x 2 1/2 x 1/4	3

80" < SIGN PANEL DEPTH ≤ 180"

LONGER ARM LENGTH L	FRAME DEPTH	ANGLE MEMBER SIZE AND MINIMUM OVERLAP LENGTH TO GUSSET PLATE								
		CHORD	VERTICAL	L_V	DIAGONAL	L_d	WIND BRACE	L_W	INTERIOR	L_I
15'-0" ≤ L ≤ 20'-0"	72"	L5 x 5 x 1/2	L3 x 2 x 3/8	4	L3 x 3 x 3/8	4	L2 1/2 x 2 1/2 x 1/4	4	L2 1/2 x 2 1/2 x 1/4	3
20'-0" < L ≤ 30'-0"	72"	L5 x 5 x 1/2	L3 x 3 x 3/8	3	L4 x 4 x 1/2	4	L2 1/2 x 2 1/2 x 3/8	4	L2 1/2 x 2 1/2 x 1/4	3
30'-0" < L ≤ 40'-0"	72"	L6 x 6 x 5/8	L5 x 3 x 1/2	3	L4 x 4 x 1/2	5	L3 x 3 x 3/8	5	L3 x 3 x 5/16	3
40'-0" < L ≤ 50'-0"	72"	L6 x 6 x 3/4	L5 x 3 1/2 x 3/4	3	L5 x 5 x 1/2	5	L4 x 3 x 3/8	5	L3 x 3 x 5/16	3

180" < SIGN PANEL DEPTH ≤ 240"

LONGER ARM LENGTH L	FRAME DEPTH	ANGLE MEMBER SIZE AND MINIMUM OVERLAP LENGTH TO GUSSET PLATE								
		CHORD	VERTICAL	L_V	DIAGONAL	L_d	WIND BRACE	L_W	INTERIOR	L_I
20'-0"	120"	L6 x 6 x 5/8	L3 x 3 x 3/8	4	L5 x 5 x 1/2	3	L2 1/2 x 2 1/2 x 1/4	3	L2 1/2 x 2 1/2 x 1/4	3
20'-0" < L ≤ 30'-0"	120"	L6 x 6 x 5/8	L4 x 4 x 3/8	4	L5 x 5 x 1/2	4	L3 x 3 x 3/8	5	L3 x 3 x 5/16	3
30'-0" < L ≤ 40'-0"	120"	L6 x 6 x 1	L5 x 3 x 1/2	3	L5 x 5 x 1/2	4	L3 x 3 x 3/8	5	L3 x 3 x 5/16	3
40'-0" < L ≤ 50'-0"	120"	L6 x 6 x 1	L5 x 3 x 1/2	3	L5 x 5 x 1/2	5	L4 x 3 x 3/8	5	L3 x 3 x 5/16	3

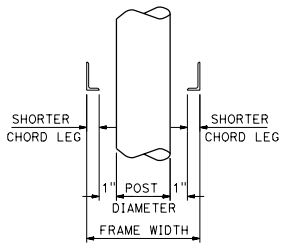
Note: All table dimensions are given in inches, unless otherwise noted.

POST SELECTION TABLE

SIGN PANEL DEPTH D	LONGER ARM LENGTH L	POST TYPE BY POST CLEAR HEIGHT			
		≤ 16 ft	≤ 20 ft	≤ 24 ft	≤ 28 ft
D ≤ 80"	20'-0"	1A	1A	1A	1B
	20'-0" < L ≤ 30'-0"	1B	1B	1D	1D
	30'-0" < L ≤ 40'-0"	1C	1D	1D	1F
	40'-0" < L ≤ 50'-0"	1F	1F	1F	1F
80" < D ≤ 100"	20'-0"	1A	1A	1B	1C
	20'-0" < L ≤ 30'-0"	1B	1D	1D	1E
	30'-0" < L ≤ 40'-0"	1D	1D	1F	1F
	40'-0" < L ≤ 50'-0"	1F	1F	1F	1F
100" < D ≤ 120"	20'-0"	1A	1B	1C	1C
	20'-0" < L ≤ 30'-0"	1C	1D	1E	1F
	30'-0" < L ≤ 40'-0"	1D	1F	1F	1F
	40'-0" < L ≤ 50'-0"	1F	1F	1F	1F
120" < D ≤ 150"	20'-0"	1B	1C	1D	1D
	20'-0" < L ≤ 30'-0"	1D	1E	1F	1F
	30'-0" < L ≤ 40'-0"	1F	1F	1F	1G
	40'-0" < L ≤ 50'-0"	1F	1F	1G	1G
150" < D ≤ 180"	20'-0"	1B	1C	1D	1D
	20'-0" < L ≤ 30'-0"	1E	1F	1F	1F
	30'-0" < L ≤ 40'-0"	1F	1G	1G	1G
	40'-0" < L ≤ 50'-0"	1F	1G	1G	1G
180" < D ≤ 210"	20'-0"	1D	1D	1E	1F
	20'-0" < L ≤ 30'-0"	1F	1F	1G	1G
	30'-0" < L ≤ 40'-0"	1G	1G	1G	1G
	40'-0" < L ≤ 50'-0"	1G	1G	1G	1H
210" < D ≤ 240"	20'-0"	1D	1E	1F	1F
	20'-0" < L ≤ 30'-0"	1F	1G	1G	1G
	30'-0" < L ≤ 40'-0"	1G	1G	1G	1H
	40'-0" < L ≤ 50'-0"	1H	1H	1H	1H

POST TYPE TABLE

POST TYPE	DIAMETER	Min NOMINAL THICKNESS
1A	16"	1.218"
1B	18"	1.156"
1C	20"	1.031"
1D	22"	1.125"
1E	24"	0.969"
1F	30"	0.625"
1G	30"	1"
1H	36"	1"



FRAME WIDTH SCHEMATIC

NOTES:

1. Shorter arm member sizes shall match the member sizes selected for the longer arm.
2. Post clear height is measured to underside of bottom truss chord.
3. Refer to Revised Standard Plan RSP S111 for connection details.
4. Minimum overlap lengths to gusset plates (Lv, Ld, Lw, and Li) are in inches.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE STEEL POST TYPE AND TRUSS MEMBER TABLE

NO SCALE

RSP S102 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S102
DATED MAY 31, 2018 - PAGE 457 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S102

2018 REVISED STANDARD PLAN RSP S102

10-21-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Juan J. Jauregui — No. C63939 — Exp. 9-30-22 — CIVIL — STATE OF CALIFORNIA

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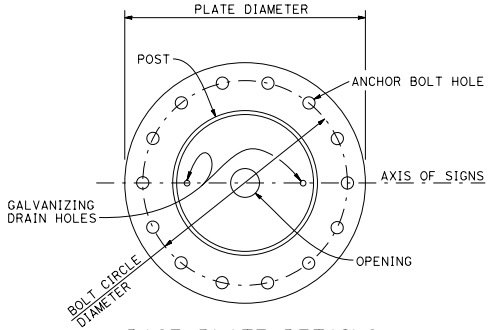
TO ACCOMPANY PLANS DATED _____

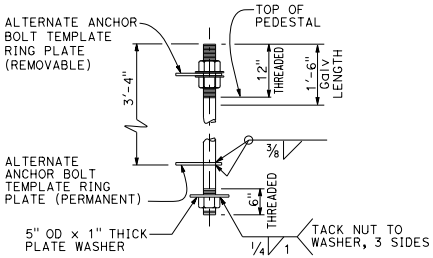
BASE PLATE AND ANCHOR BOLT DIMENSIONS

POST TYPE	BASE PLATE			ANCHOR BOLTS				
	PLATE THICKNESS	PLATE DIAMETER	OPENING DIAMETER	NUMBER OF BOLTS	BOLT DIAMETER	BOLT LENGTH	BOLT HOLE DIAMETER	BOLT CIRCLE DIAMETER
1A	3½"	2'-7"	5"	14	1¾"	5'-0"	2"	2'-0"
1B	3½"	2'-10"	6"	14	2"	5'-0"	2¼"	2'-2"
1C	3"	3'-0"	6"	16	2"	5'-0"	2¼"	2'-4"
1D	3½"	3'-2"	7"	16	2"	5'-0"	2¼"	2'-6"
1E	3"	3'-6"	7½"	18	2"	5'-0"	2¼"	2'-10"
1F	3"	4'-0"	9"	20	2"	5'-0"	2¼"	3'-4"
1G	3½"	4'-2"	9"	20	2½"	5'-0"	2¾"	3'-4"
1H	3½"	4'-8"	11"	24	2½"	5'-0"	2¾"	3'-10"



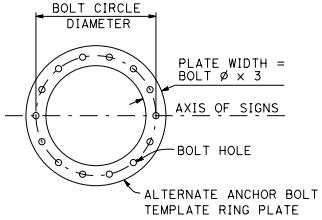
BASE PLATE DETAILS SINGLE POST TYPE

14 bolt base plate depicted. Others similar.



ALTERNATE ANCHOR BOLT TEMPLATE ASSEMBLY

NOTE: One bolt shown only. Other bolts same configuration around ring plate.



ALTERNATE ANCHOR BOLT TEMPLATE

14 bolt template depicted. Others similar.
NOTE: Permanent plate thickness = ¾", Removable plate thickness = ½"

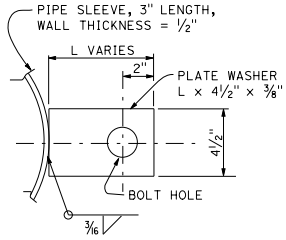
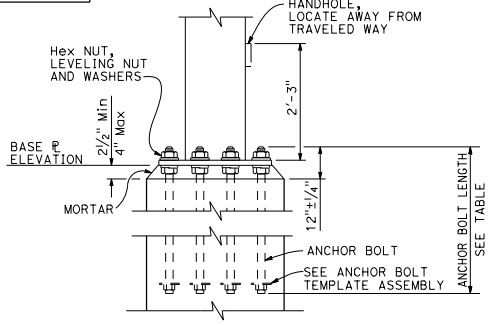
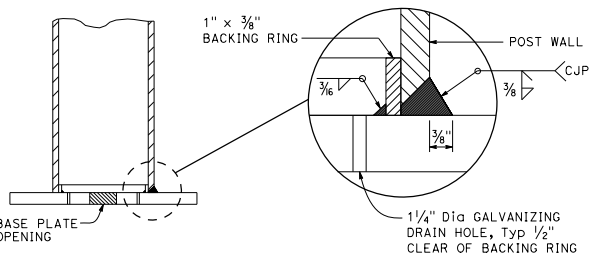


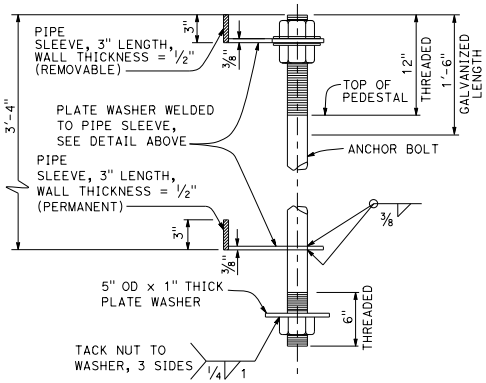
PLATE WASHER DETAIL



POST AND ANCHORAGE DETAIL

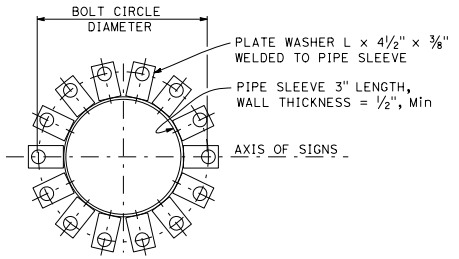


POST TO BASE PLATE CONNECTION DETAIL



ANCHOR BOLT TEMPLATE ASSEMBLY

NOTE: One bolt shown only. Other bolts same configuration around pipe sleeve.



ANCHOR BOLT TEMPLATE

14 bolt template depicted. Others similar.
NOTE: Template to match base plate anchor bolt pattern. Pipe sleeve diameter same as post type diameter

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE STEEL POST BASE PLATE AND ANCHORAGE DETAILS

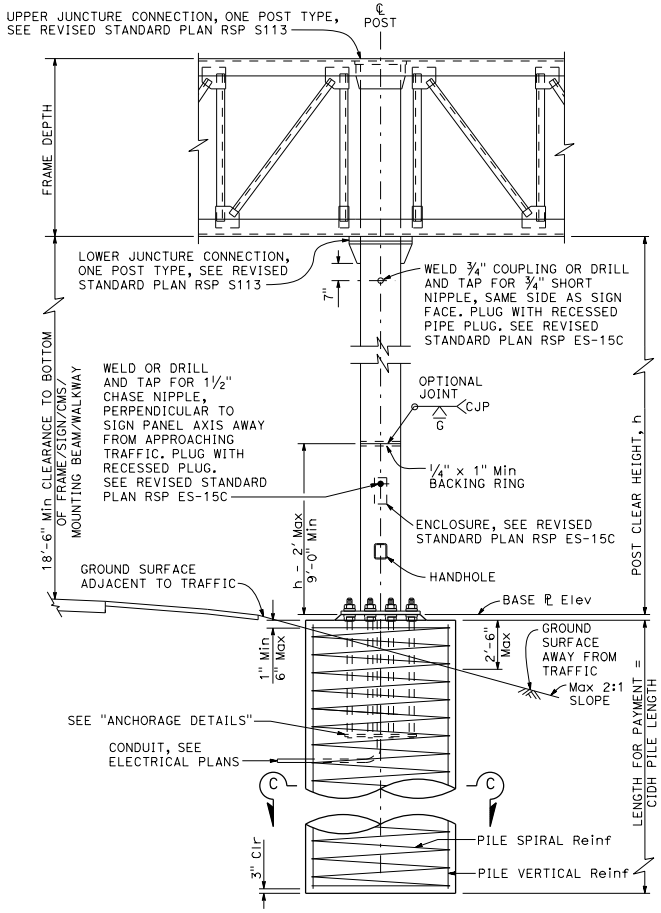
NO SCALE

RSP S103 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S103
DATED MAY 31, 2018 - PAGE 458 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S103

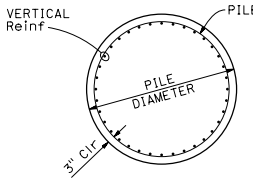
2018 REVISED STANDARD PLAN RSP S103

10-21-20



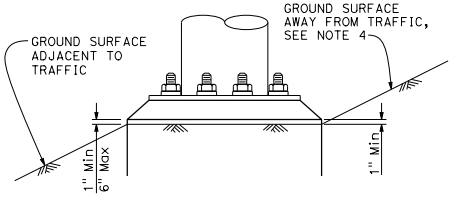
ELEVATION

CIDH in fill-slope depicted

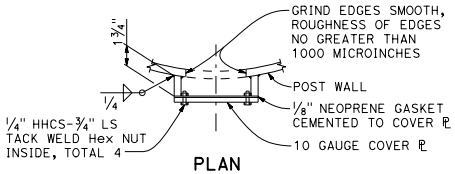


SECTION C-C

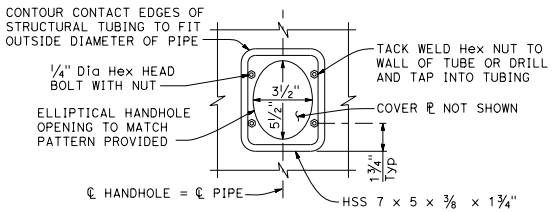
See Note 10



CIDH IN CUT-SLOPE



PLAN



ELEVATION

TYPICAL DETAILS OF HANDHOLE AND COVER

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. For "ANCHORAGE DETAILS", see Revised Standard Plan RSP S103.
2. For "Base ℄ Elevation", see Project Plans.
3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
4. Slope stabilization required when indicated on the Project Plans.
5. For drain holes and central void in mortar, see Standard Plan ES-6B Detail N.
6. Refer to Revised Standard Plan RSP S102 for "Post Type Table".
7. Use pedestal with CIDH pile foundation when shown on the Project Plans. See Revised Standard Plan RSP S105.
8. On single post sign structures, the post shall be raked out of plumb, with the use of the leveling nuts to make the bottom of the sign frame level.
9. At final position of post all top and bottom nuts shall be tightened against base plate.
10. For CIDH pile foundation with inspection pipes, see Revised Standard Plan RSP S114.
11. Maximum electrical conduit diameter is 3".

CIDH CONCRETE PILE TABLE

POST TYPE	DIAMETER	VERTICAL BAR SIZE	TOTAL NUMBER OF VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL PITCH	MINIMUM CIDH PILE LENGTH
1A	5'-0"	#10	30	#6	5"	22'-0"
1B	5'-0"	#10	30	#6	5"	22'-0"
1C	5'-0"	#10	30	#6	5"	22'-0"
1D	5'-0"	#10	30	#6	5"	22'-0"
1E	5'-0"	#10	32	#6	5"	24'-0"
1F	5'-0"	#10	36	#6	5"	27'-0"
1G	5'-0"	#10	36	#6	4"	30'-0"
1H	5'-6"	#10	40	#6	4"	32'-0"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE CIDH PILE FOUNDATION DETAILS

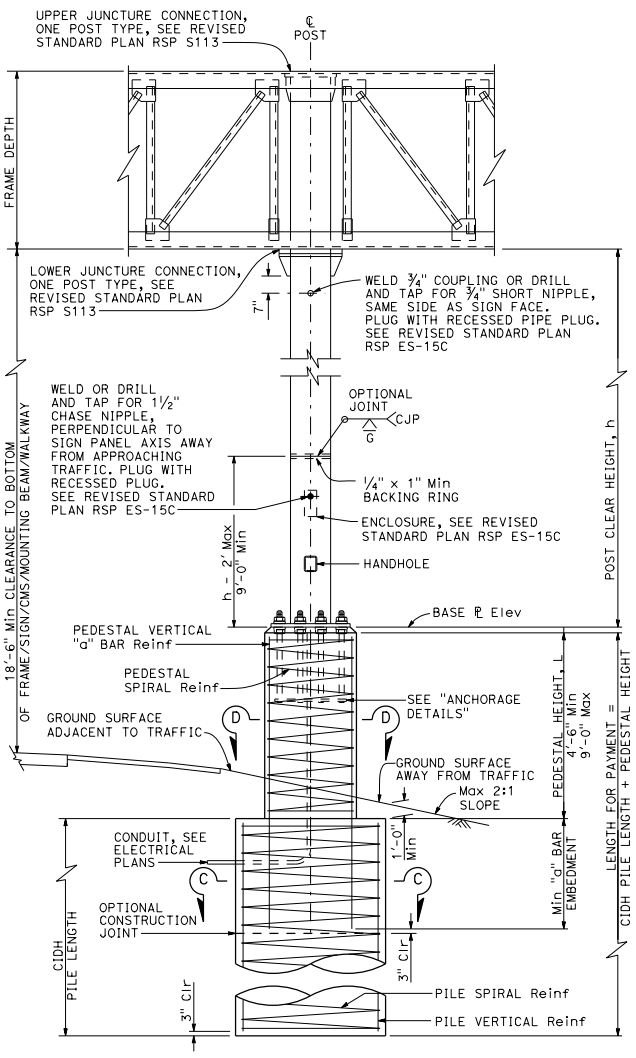
NO SCALE

RSP S104 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S104
DATED MAY 31, 2018 - PAGE 459 OF THE STANDARD PLANS BOOK DATED 2018.

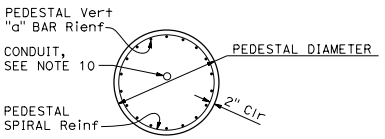
REVISED STANDARD PLAN RSP S104

2018 REVISED STANDARD PLAN RSP S104

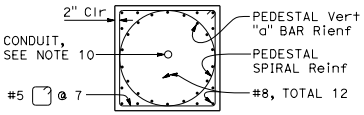
10-29-20



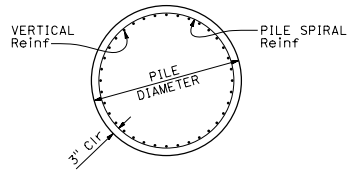
ELEVATION



SECTION D-D
ROUND PEDESTAL



SECTION D-D
SQUARE PEDESTAL



SECTION C-C
See Note 9

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Juan J. Jauregui — No. C63939 — Exp. 9-30-22 — 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. For "ANCHORAGE DETAILS", see Revised Standard Plan RSP S103.
2. For "Base ℄ Elevation", see Project Plans.
3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
4. For "PEDESTAL HEIGHT" and "PEDESTAL SHAPE", see Project Plans.
5. Refer to Revised Standard Plan RSP S104 for CIDH pile foundation details when a pedestal is not indicated in the Project Plans.
6. Refer to Revised Standard Plan RSP S104 for additional details and notes not shown on this sheet.
7. For drain holes and central void in mortar, see Standard Plan ES-6B detail N.
8. Refer to Revised Standard Plan RSP S102 for "Post Type Table".
9. For CIDH pile foundation with inspection pipes, see Revised Standard Plan RSP S114.
10. Maximum electrical conduit diameter is 3".

CONCRETE PEDESTAL AND CIDH CONCRETE PILE TABLE

POST TYPE	CONCRETE PEDESTAL							CIDH CONCRETE PILE					
	ROUND PEDESTAL DIAMETER	SQUARE PEDESTAL SIDES LENGTH	VERTICAL "a" BAR SIZE	NUMBER OF VERTICAL "a" BARS	SPIRAL BAR SIZE	SPIRAL PITCH	Min "a" BAR EMBEDMENT	DIAMETER	VERTICAL BAR SIZE	TOTAL NUMBER OF VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL PITCH	MINIMUM CIDH PILE LENGTH
1A	3'-6"	3'-6"	#8	18	#5	3½"	54"	5'-0"	#10	30	#6	5"	20'-0"
1B	3'-8"	3'-8"	#8	20	#5	3½"	54"	5'-0"	#10	30	#6	5"	20'-0"
1C	3'-10"	3'-10"	#9	18	#5	3½"	72"	5'-0"	#10	30	#6	5"	20'-0"
1D	4'-0"	4'-0"	#9	22	#5	3½"	72"	5'-0"	#10	30	#6	5"	20'-0"
1E	4'-4"	4'-4"	#9	24	#5	3½"	72"	5'-0"	#10	32	#6	5"	22'-0"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE CONCRETE PEDESTAL WITH CIDH PILE FOUNDATION DETAILS

NO SCALE

RSP S105 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S105
DATED MAY 31, 2018 - PAGE 460 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S105

2018 REVISED STANDARD PLAN RSP S105

10-28-30

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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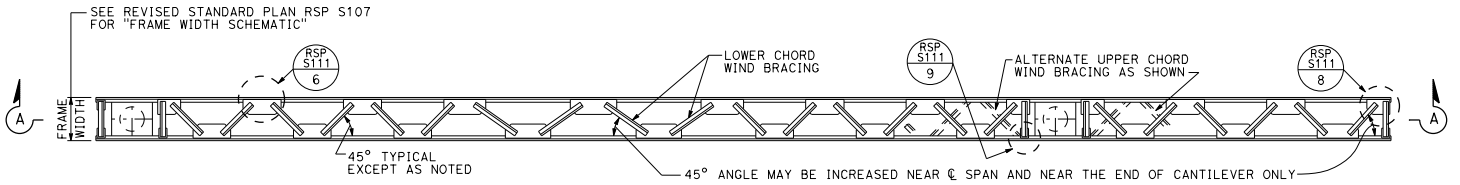
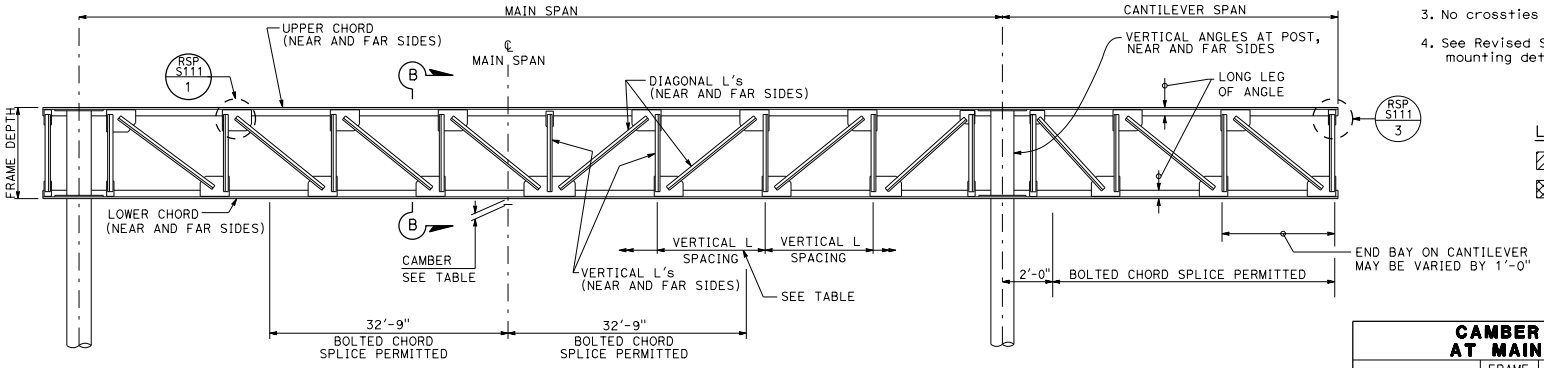
TO ACCOMPANY PLANS DATED _____



BOTTOM PLAN

Vertical, diagonal and interior L members not shown, walkway not shown



SECTION A-A

Walkway and wind bracing not shown

NOTES:

1. Frame widths shown are nominal. These widths may be varied by ¼" to standardize fabrication methods.
2. For Section B-B, see Revised Standard Plan RSP S111.
3. No crossties on diagonals.
4. See Revised Standard Plan RSP S122 for exit plaque mounting details.

LEGEND:

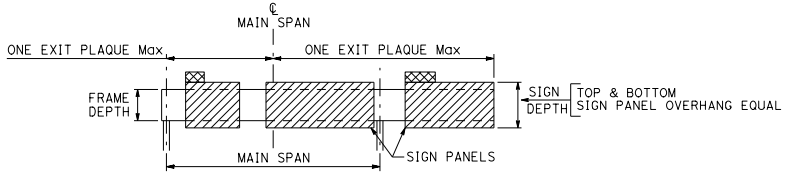
SIGN

EXIT PLAQUE

CAMBER FOR FABRICATION AT MAIN SPAN CENTERLINE

SPAN	FRAME DEPTH	CAMBER	FRAME DEPTH	CAMBER	FRAME DEPTH	CAMBER
30'-0" TO 60'-0"	60"	1½"	72"	1¼"	120"	1"
61'-0" TO 105'-0"	60"	3½"	72"	3"	120"	2"
106'-0" TO 150'-0"	60"	8"	72"	6¼"	120"	3½"

Camber to approximate parabola.
Camber of cantilever arm = ½" for arms greater than 10'-0".



Right cantilever shown.
Cantilever may be left or right.

SIGN AND EXIT PLAQUE PLACEMENT

NOTE: Equal sign panel overhangs apply to sign panels only. The exit plaque is mounted above the sign panels and the walkway is mounted below the sign panels, when used.

TRUSS FRAME DEPTH AND VERTICAL ANGLE SPACING TABLE

MAXIMUM SIGN PANEL DEPTH	FRAME DEPTH	MAXIMUM VERTICAL L SPACING
80"	60"	45"
180"	72"	54"
240"	120"	90"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE TRUSS LAYOUT

NO SCALE

RSP S106 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S106
DATED MAY 31, 2018 - PAGE 461 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S106

2018 REVISED STANDARD PLAN RSP S106

10-21-20

POST SELECTION TABLE

SIGN PANEL DEPTH D	MAIN SPAN LENGTH L	POST TYPE BY POST CLEAR HEIGHT ≤ 16 ft	≤ 20 ft	≤ 24 ft	≤ 28 ft
D ≤ 80"	30'-0"	2A	2A	2A	2B
	30'-0" < L ≤ 45'-0"	2A	2B	2C	2D
	45'-0" < L ≤ 60'-0"	2C	2C	2E	2E
	60'-0" < L ≤ 75'-0"	2D	2E	2E	2E
	75'-0" < L ≤ 90'-0"	2E	2E	2E	2E
	90'-0" < L ≤ 105'-0"	2E	2E	2E	2F
	105'-0" < L ≤ 120'-0"	2E	2E	2F	2F
	120'-0" < L ≤ 135'-0"	2E	2F	2F	2G
	135'-0" < L ≤ 150'-0"	2F	2F	2G	2G
80" < D ≤ 100"	30'-0"	2A	2A	2B	2C
	30'-0" < L ≤ 45'-0"	2B	2C	2D	2E
	45'-0" < L ≤ 60'-0"	2C	2E	2E	2E
	60'-0" < L ≤ 75'-0"	2E	2E	2E	2E
	75'-0" < L ≤ 90'-0"	2E	2E	2F	2F
	90'-0" < L ≤ 105'-0"	2E	2F	2F	2G
	105'-0" < L ≤ 120'-0"	2E	2F	2G	2G
	120'-0" < L ≤ 135'-0"	2F	2F	2G	2G
	135'-0" < L ≤ 150'-0"	2F	2G	2G	2H
100" < D ≤ 120"	30'-0"	2A	2B	2C	2D
	30'-0" < L ≤ 45'-0"	2C	2D	2E	2E
	45'-0" < L ≤ 60'-0"	2E	2E	2E	2E
	60'-0" < L ≤ 75'-0"	2E	2E	2E	2F
	75'-0" < L ≤ 90'-0"	2E	2E	2F	2F
	90'-0" < L ≤ 105'-0"	2E	2F	2G	2G
	105'-0" < L ≤ 120'-0"	2F	2F	2G	2G
	120'-0" < L ≤ 135'-0"	2F	2G	2G	2H
	135'-0" < L ≤ 150'-0"	2G	2G	2H	2H
120" < D ≤ 150"	30'-0"	2B	2C	2D	2E
	30'-0" < L ≤ 45'-0"	2D	2E	2E	2E
	45'-0" < L ≤ 60'-0"	2E	2E	2E	2F
	60'-0" < L ≤ 75'-0"	2E	2F	2F	2G
	75'-0" < L ≤ 90'-0"	2F	2F	2G	2G
	90'-0" < L ≤ 105'-0"	2F	2G	2G	2H
	105'-0" < L ≤ 120'-0"	2F	2G	2H	2H
	120'-0" < L ≤ 135'-0"	2G	2H	2H	2H
	135'-0" < L ≤ 150'-0"	2G	2H	2H	2H
150" < D ≤ 180"	30'-0"	2C	2D	2E	2E
	30'-0" < L ≤ 45'-0"	2E	2E	2E	2E
	45'-0" < L ≤ 60'-0"	2E	2E	2F	2F
	60'-0" < L ≤ 75'-0"	2E	2F	2G	2G
	75'-0" < L ≤ 90'-0"	2F	2G	2G	2H
	90'-0" < L ≤ 105'-0"	2G	2G	2H	2H
	105'-0" < L ≤ 120'-0"	2G	2H	2H	2H
	120'-0" < L ≤ 135'-0"	2H	2H	2H	2H
	135'-0" < L ≤ 150'-0"	2H	2H	2H	2H
180" < D ≤ 210"	30'-0"	2D	2E	2E	2E
	30'-0" < L ≤ 45'-0"	2E	2E	2F	2F
	45'-0" < L ≤ 60'-0"	2F	2F	2G	2G
	60'-0" < L ≤ 75'-0"	2F	2G	2G	2H
	75'-0" < L ≤ 90'-0"	2G	2G	2H	2H
	90'-0" < L ≤ 105'-0"	2H	2H	2H	2H
	105'-0" < L ≤ 120'-0"	2H	2H	2H	2H
	120'-0" < L ≤ 135'-0"	2H	2H	2H	2H
	135'-0" < L ≤ 150'-0"	2H	2H	2H	2H
210" < D ≤ 240"	30'-0"	2E	2E	2E	2E
	30'-0" < L ≤ 45'-0"	2E	2F	2F	2G
	45'-0" < L ≤ 60'-0"	2F	2F	2G	2G
	60'-0" < L ≤ 75'-0"	2G	2G	2H	2H
	75'-0" < L ≤ 90'-0"	2G	2H	2H	2H
	90'-0" < L ≤ 105'-0"	2H	2H	2H	2H
	105'-0" < L ≤ 120'-0"	2H	2H	2H	2H
	120'-0" < L ≤ 135'-0"	2H	2H	2H	2H
	135'-0" < L ≤ 150'-0"	2H	2H	2H	-

TRUSS MEMBER TABLE

SIGN PANEL DEPTH ≤ 80"

MAIN SPAN LENGTH L	FRAME DEPTH	ANGLE MEMBER SIZE AND MINIMUM OVERLAP LENGTH TO GUSSET PLATE: CHORD	VERTICAL	Lv	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
30'-0"	60"	L4 x 4 x 3/8	L3 x 3 x 3/8	3	L3 x 3 x 5/16	3	L2½ x 2½ x ¼	3	L2½ x 2½ x ¼	3
30'-0" < L ≤ 45'-0"	60"	L4 x 4 x 3/8	L3 x 3 x 3/8	3	L3 x 3 x 5/16	4	L2½ x 2½ x ¼	3	L2½ x 2½ x ¼	3
45'-0" < L ≤ 60'-0"	60"	L4 x 4 x ½	L3 x 2 x 3/8	3	L3 x 3 x 3/8	4	L2½ x 2½ x ¼	3	L2½ x 2½ x ¼	3
60'-0" < L ≤ 75'-0"	60"	L4 x 4 x ½	L3 x 2 x 3/8	3	L4 x 3 x 3/8	4	L2½ x 2½ x ¼	4	L2½ x 2½ x ¼	3
75'-0" < L ≤ 90'-0"	60"	L5 x 5 x ½	L4 x 4 x ½	3	L4 x 4 x ½	4	L3 x 3 x 5/16	4	L2½ x 2½ x ¼	3
90'-0" < L ≤ 105'-0"	60"	L5 x 5 x 5/8	L5 x 3 x ½	3	L5 x 3 x ½	4	L3 x 3 x 3/8	4	L2½ x 2½ x ¼	3
105'-0" < L ≤ 120'-0"	60"	L6 x 6 x 5/8	L5 x 3½ x ½	3	L5 x 3 x ½	4	L3 x 3 x 3/8	4	L2½ x 2½ x ¼	3
120'-0" < L ≤ 135'-0"	60"	L6 x 6 x ¾	L5 x 3½ x ¾	3	L5 x 5 x ½	5	L3 x 3 x 3/8	4	L2½ x 2½ x ¼	3
135'-0" < L ≤ 150'-0"	60"	L8 x 6 x 7/8	L5 x 5 x 5/8	4	L5 x 5 x ½	6	L3½x 3½x 3/8	5	L2½ x 2½ x ¼	3

80" < SIGN PANEL DEPTH ≤ 180"

MAIN SPAN LENGTH L	FRAME DEPTH	ANGLE MEMBER SIZE AND MINIMUM OVERLAP LENGTH TO GUSSET PLATE: CHORD	VERTICAL	Lv	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
30'-0"	72"	L4 x 4 x ¾	L3 x 3 x 5/16	3	L3 x 3 x 5/16	3	L2½ x 2½ x ¼	3	L2½ x 2½ x ¼	3
30'-0" < L ≤ 45'-0"	72"	L4 x 4 x ¾	L3 x 3 x 3/8	3	L4 x 4 x 3/8	4	L2½ x 2½ x 3/8	3	L2½ x 2½ x ¼	3
45'-0" < L ≤ 60'-0"	72"	L5 x 5 x 5/8	L3 x 3 x 3/8	3	L4 x 4 x 3/8	4	L3 x 3 x 5/16	5	L2½ x 2½ x ¼	3
60'-0" < L ≤ 75'-0"	72"	L5 x 5 x ¾	L3 x 3 x 3/8	3	L4 x 4 x 3/8	5	L3 x 2½ x 3/8	5	L2½ x 2½ x ¼	3
75'-0" < L ≤ 90'-0"	72"	L6 x 6 x 5/8	L4 x 4 x ½	3	L4 x 4 x ½	5	L4 x 3 x 3/8	5	L2½ x 2½ x ¼	3
90'-0" < L ≤ 105'-0"	72"	L6 x 6 x ¾	L5 x 3 x ½	3	L5 x 5 x ½	5	L4 x 4 x 3/8	6	L3 x 3 x 5/16	3
105'-0" < L ≤ 120'-0"	72"	L6 x 6 x 1	L5 x 3 x ½	3	L5 x 5 x ½	5	L4 x 4 x 3/8	6	L3 x 3 x 5/16	3
120'-0" < L ≤ 135'-0"	72"	L8 x 6 x 1	L6 x 6 x 5/8	4	L5 x 5 x 5/8	5	L4 x 4 x ½	6	L3 x 3 x 5/16	3
135'-0" < L ≤ 150'-0"	72"	L8 x 8 x 1	L6 x 6 x 5/8	4	L6 x 6 x 5/8	5	L4 x 4 x ½	6	L3 x 3 x 5/16	3

180" < SIGN PANEL DEPTH ≤ 240"

MAIN SPAN LENGTH L	FRAME DEPTH	ANGLE MEMBER SIZE AND MINIMUM OVERLAP LENGTH TO GUSSET PLATE: CHORD	VERTICAL	Lv	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
30'-0"	120"	L5 x 5 x 5/8	L3 x 3 x 3/8	3	L5 x 5 x ½	3	L2½ x 2½ x ¼	3	L3 x 3 x 5/16	3
30'-0" < L ≤ 45'-0"	120"	L6 x 6 x 5/8	L3 x 3 x 3/8	3	L5 x 5 x ½	3	L2½ x 2½ x 3/8	3	L3 x 3 x 5/16	3
45'-0" < L ≤ 60'-0"	120"	L6 x 6 x 5/8	L3 x 3 x 3/8	3	L5 x 5 x ½	3	L3 x 2½ x 3/8	4	L3 x 3 x 5/16	3
60'-0" < L ≤ 75'-0"	120"	L6 x 6 x 5/8	L3 x 3 x 3/8	3	L5 x 5 x ½	4	L3 x 3 x ½	4	L3 x 3 x 5/16	3
75'-0" < L ≤ 90'-0"	120"	L6 x 6 x 5/8	L4 x 4 x ½	3	L5 x 5 x ½	5	L4 x 4 x 3/8	6	L3 x 3 x 5/16	3
90'-0" < L ≤ 105'-0"	120"	L6 x 6 x 1	L5 x 3 x ½	3	L5 x 5 x ½	5	L4 x 4 x ½	6	L3 x 3 x 5/16	3
105'-0" < L ≤ 120'-0"	120"	L6 x 6 x 1	L5 x 3 x ½	3	L5 x 5 x ½	5	L4 x 4 x ½	6	L3 x 3 x 5/16	3
120'-0" < L ≤ 135'-0"	120"	L8 x 8 x ¾	L5 x 3 x ½	3	L5 x 5 x 5/8	5	L5 x 5 x ½	6	L3 x 3 x 5/16	3
135'-0" < L ≤ 150'-0"	120"	L8 x 8 x 7/8	L5 x 3½ x ¾	3	L5 x 5 x 5/8	5	L5 x 5 x ½	6	L3 x 3 x 5/16	3

POST TYPE TABLE

POST TYPE	DIAMETER	Min NOMINAL THICKNESS	SPLIT
2A	16"	1.218"	N/A
2B	18"	1.156"	N/A
2C	20"	1.031"	N/A
2D	22"	1.125"	N/A
2E	24"	0.969"	N/A
2F	30"	0.625"	12"
2G	30"	1"	12"
2H	36"	1"	12"

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Juan J. Jauregui — No. C63939 — Exp. 9-30-22 — CIVIL — STATE OF CALIFORNIA

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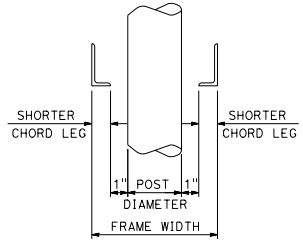
TO ACCOMPANY PLANS DATED _____



FRAME WIDTH SCHEMATIC

NOTES:

1. If a cantilever span is added, the same member sizes and weld lengths shall be used on the main and cantilever spans. Refer to Revised Standard Plan RSP S100 for rules on span lengths.
2. Post clear height is measured to underside of bottom truss chord.
3. Refer to Revised Standard Plan RSP S111 for connection details.
4. Minimum overlap lengths to Gusset Plates (Lv, Ld, Lw, and Li) are in inches.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE STEEL POST TYPE AND TRUSS MEMBER TABLE

NO SCALE

RSP S107 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S107
DATED MAY 31, 2018 - PAGE 462 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S107

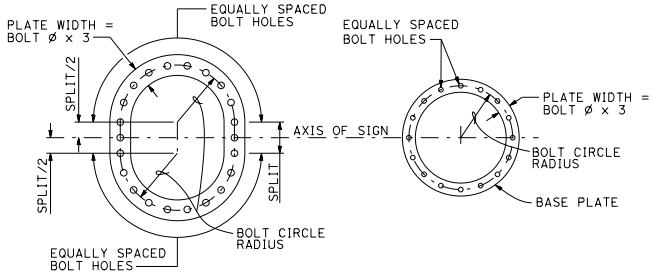
2018 REVISED STANDARD PLAN RSP S107

10-21-20

BASE PLATE AND ANCHOR BOLT DIMENSIONS

POST TYPE	BASE PLATE				ANCHOR BOLTS				
	PLATE THICKNESS	PLATE RADIUS	SPLIT	OPENING RADIUS	NUMBER OF BOLTS	BOLT DIAMETER	BOLT LENGTH	BOLT HOLE DIAMETER	BOLT CIRCLE RADIUS
2A	3½"	1'-3"	N/A	2½"	14	1½"	5'-0"	1¾"	1'-0"
2B	3½"	1'-4½"	N/A	3"	14	1¾"	5'-0"	2"	1'-1"
2C	3"	1'-5½"	N/A	3"	16	1¾"	5'-0"	2"	1'-2"
2D	3½"	1'-6½"	N/A	3½"	16	1¾"	5'-0"	2"	1'-3"
2E	3"	1'-9"	N/A	3¾"	18	2"	5'-0"	2¼"	1'-5"
2F	3"	2'-0"	12"	4½"	22	2"	5'-0"	2¼"	1'-8"
2G	3½"	2'-0"	12"	4½"	22	2"	5'-0"	2¼"	1'-8"
2H	3½"	2'-4"	12"	5½"	24	2½"	5'-0"	2¾"	1'-11"

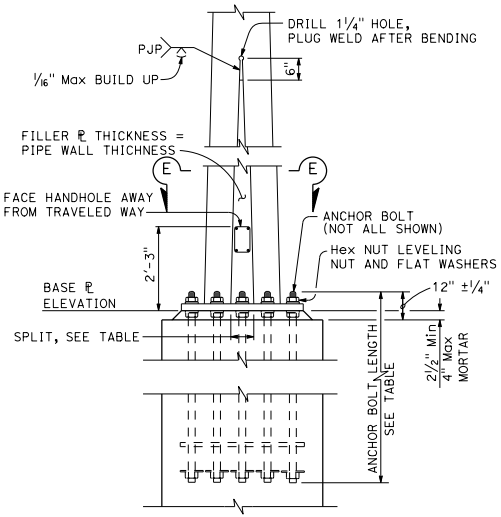
Note:
Thread locking nuts not required for anchor bolts.



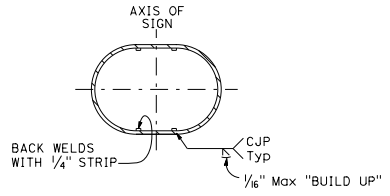
TEMPLATE WITH SPLIT
22 Bolt base plate depicted, others similar

TEMPLATE WITHOUT SPLIT
16 Bolt base plate depicted, others similar

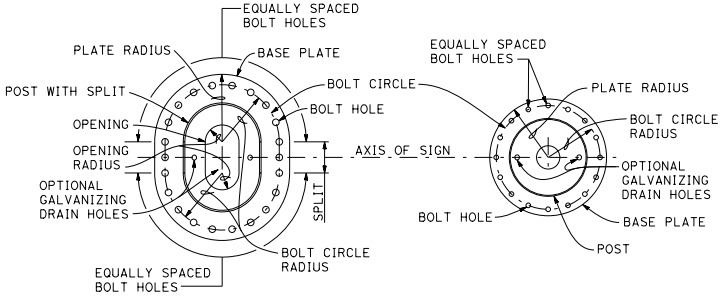
ANCHOR BOLT TEMPLATE
Note: Permanent plate thickness = ¾", Removable plate thickness = ½"



POST AND ANCHORAGE DETAIL



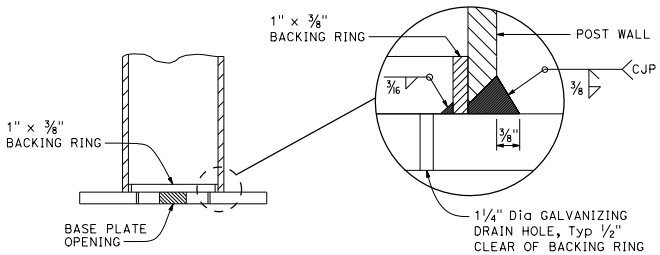
SECTION E-E



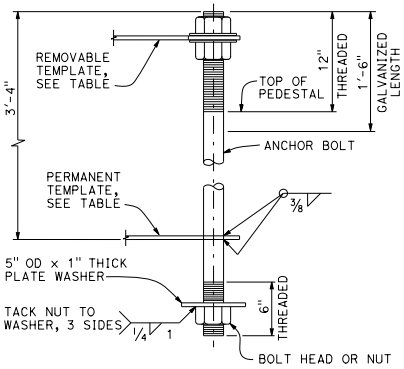
BASE PLATE WITH SPLIT
22 Bolt base plate depicted, others similar

BASE PLATE WITHOUT SPLIT
16 Bolt base plate depicted, others similar

BASE PLATE DETAILS



POST TO BASE PLATE CONNECTION DETAIL



ANCHOR BOLT TEMPLATE ASSEMBLY

Note: One bolt shown only. Other bolts same configuration around pipe sleeve. Template to match base plate anchor bolt pattern.

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

REGISTERED CIVIL ENGINEER
April 16, 2021
PLANS APPROVAL DATE
REGISTERED PROFESSIONAL ENGINEER — Juan J. Jauregui — No. C63939 — Exp. 9-30-22 — CIVIL — STATE OF CALIFORNIA
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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE STEEL POST BASE PLATE AND ANCHORAGE DETAILS

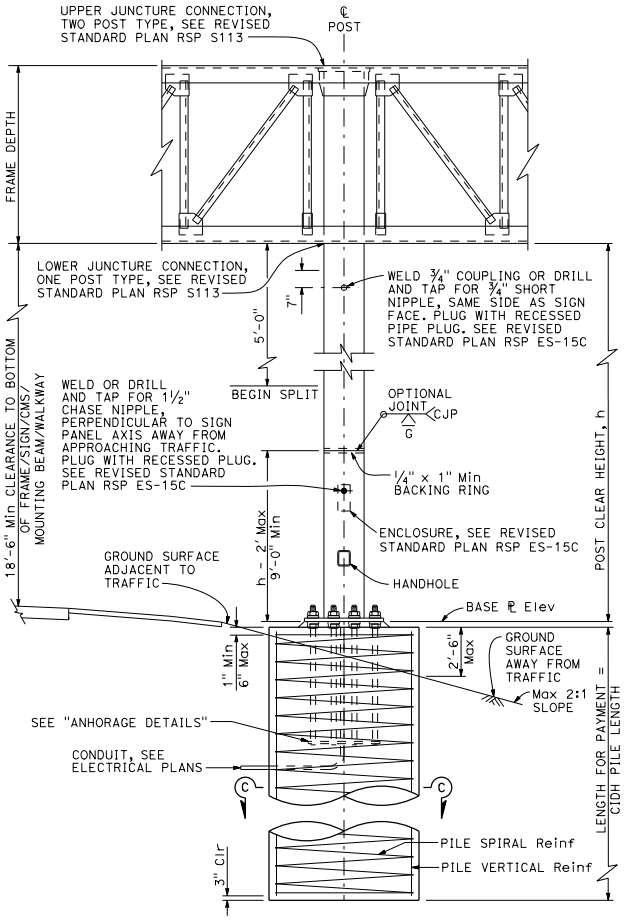
NO SCALE

RSP S108 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S108
DATED MAY 31, 2018 - PAGE 463 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S108

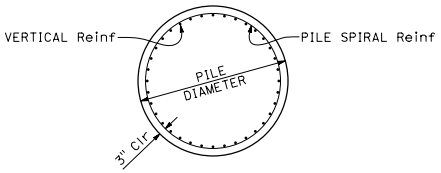
2018 REVISED STANDARD PLAN RSP S108

10-16-20



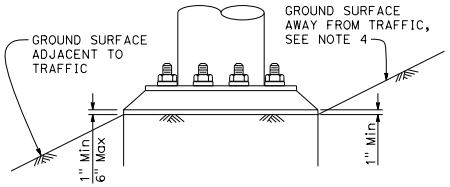
ELEVATION

CIDH in fill-slope depicted

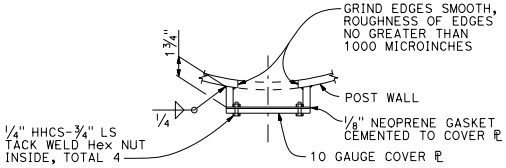


SECTION C-C

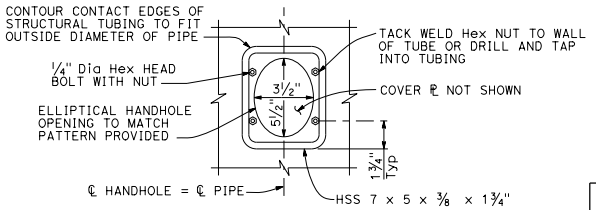
See Note 10



CIDH IN CUT-SLOPE



PLAN



ELEVATION

TYPICAL DETAILS OF HANDHOLE AND COVER

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. For "ANCHORAGE DETAILS", see Revised Standard Plan RSP S108.
2. For "Base ℄ Elevation", see Project Plans.
3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
4. Slope stabilization required when indicated on the Project Plan.
5. For drain holes and central void in mortar, see Standard Plans ES-6B detail N.
6. Refer to Revised Standard Plan RSP S107 for "Post Type Table".
7. Use Pedestal with CIDH pile foundation when shown on the Project Plans. See Revised Standard Plan RSP S110.
8. On single post sign structures, the post shall be raked out of plumb, with the use of the leveling nuts to make the bottom of the sign frame level.
9. At final position of post all top and bottom nuts shall be tightened against base plate.
10. For CIDH Pile Foundation with Inspection Pipes, see Revised Standard Plan RSP S114.
11. Maximum electrical conduit diameter is 3".

CIDH CONCRETE PILE TABLE

POST TYPE	DIAMETER	VERTICAL BAR SIZE	TOTAL NUMBER OF VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL PITCH	MINIMUM CIDH PILE LENGTH
2A	5'-0"	#10	30	#6	5"	22'-0"
2B	5'-0"	#10	30	#6	5"	22'-0"
2C	5'-0"	#10	30	#6	5"	22'-0"
2D	5'-0"	#10	30	#6	5"	22'-0"
2E	5'-0"	#10	32	#6	5"	24'-0"
2F	6'-0"	#10	36	#6	5"	25'-0"
2G	6'-0"	#10	36	#6	4"	29'-0"
2H	6'-6"	#10	40	#6	4"	36'-0"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE CIDH PILE FOUNDATION DETAILS

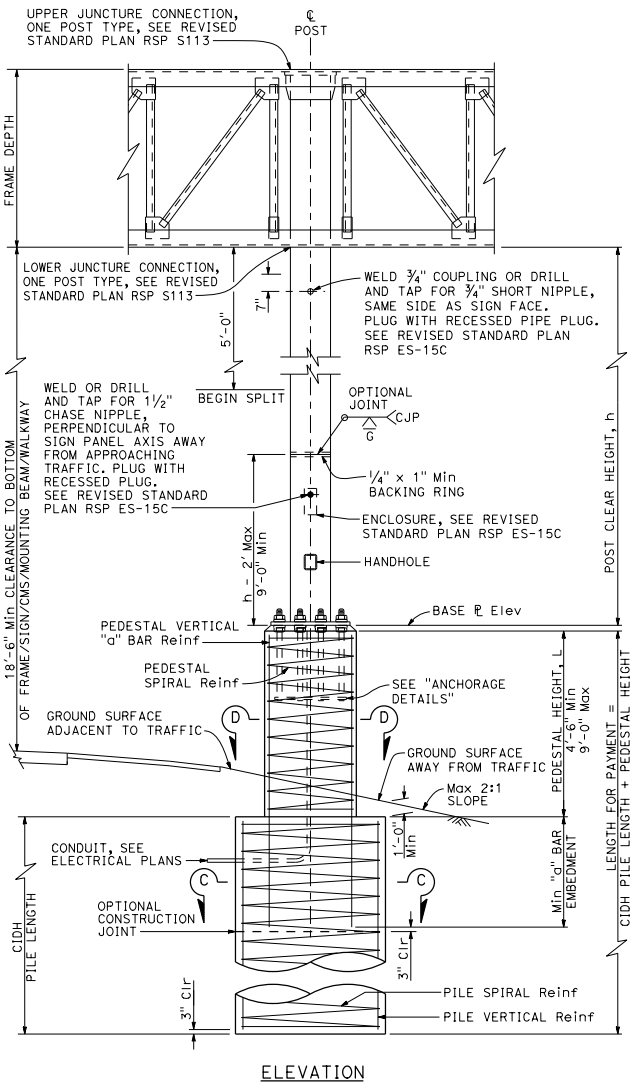
NO SCALE

RSP S109 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S109
DATED MAY 31, 2018 - PAGE 464 OF THE STANDARD PLANS BOOK DATED 2018.

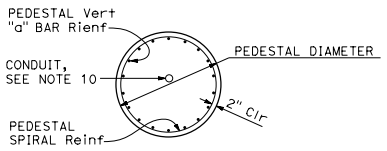
REVISED STANDARD PLAN RSP S109

2018 REVISED STANDARD PLAN RSP S109

10-29-20

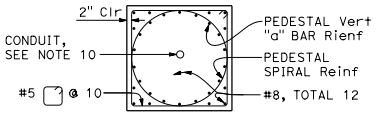


ELEVATION



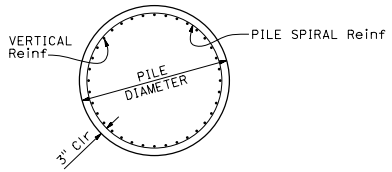
SECTION D-D

ROUND PEDESTAL



SECTION D-D

SQUARE PEDESTAL



SECTION C-C

See Note 9

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

REGISTERED CIVIL ENGINEER

April 16, 2021

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Juan J. Jauregui — No. C63939 — Exp. 9-30-22 — CIVIL — STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. For "ANCHORAGE DETAILS", see Revised Standard Plan RSP S108.
2. For "Base ℄ elevation", see Project Plans.
3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
4. For "PEDESTAL HEIGHT" and "PEDESTAL SHAPE", see Project Plans.
5. Refer to Revised Standard Plan RSP S109 for CIDH pile foundation details when a pedestal is not indicated in the Project Plans.
6. Refer to Revised Standard Plan RSP S109 for additional details and notes not shown on this sheet.
7. For drain holes and central void in mortar, see Standard Plan ES-6B Detail N.
8. Refer to Revised Standard Plan RSP S107 for "Post Type Table".
9. For CIDH Pile Foundation with Inspection Pipes, see Revised Standard Plan RSP S114.
10. Maximum electrical conduit diameter is 3".

CONCRETE PEDESTAL AND CIDH CONCRETE PILE TABLE

POST TYPE	CONCRETE PEDESTAL							CIDH CONCRETE PILE					
	ROUND PEDESTAL DIAMETER	SQUARE PEDESTAL SIDES LENGTH	VERTICAL "a" BAR SIZE	NUMBER OF VERTICAL "a" BARS	SPIRAL BAR SIZE	SPIRAL PITCH	Min "a" BAR EMBEDMENT	DIAMETER	VERTICAL BAR SIZE	TOTAL NUMBER OF VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL PITCH	MINIMUM CIDH PILE LENGTH
2A	3'-6"	3'-6"	#8	18	#5	5"	54"	5'-0"	#10	30	#6	5"	20'-0"
2B	3'-8"	3'-8"	#8	20	#5	5"	54"	5'-0"	#10	30	#6	5"	20'-0"
2C	3'-10"	3'-10"	#9	22	#5	5"	72"	5'-0"	#10	30	#6	5"	20'-0"
2D	4'-0"	4'-0"	#9	24	#5	5"	72"	5'-0"	#10	30	#6	5"	20'-0"
2E	4'-4"	4'-4"	#9	22	#5	5"	72"	5'-0"	#10	32	#6	5"	22'-0"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE CONCRETE PEDESTAL WITH CIDH PILE FOUNDATION DETAILS

NO SCALE

RSP S110 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S110
DATED MAY 31, 2018 - PAGE 465 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S110

2018 REVISED STANDARD PLAN RSP S110

10-28-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
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REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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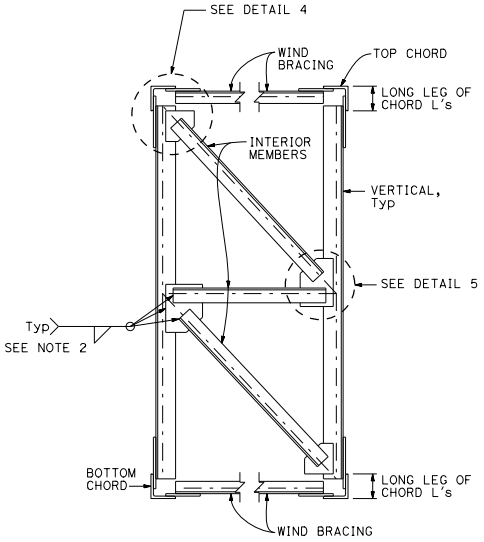
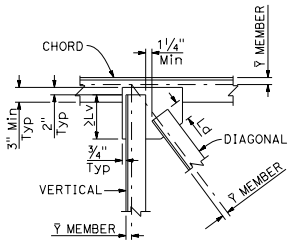
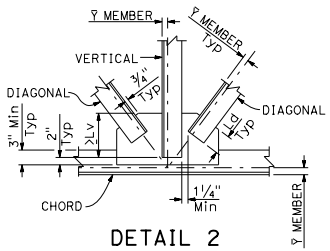


TYPICAL SECTION B-B

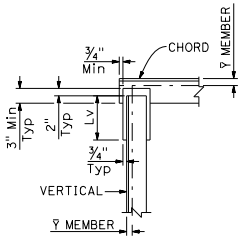
Diagonal members not shown, see Revised Standard Plans RSP S101 and RSP S106



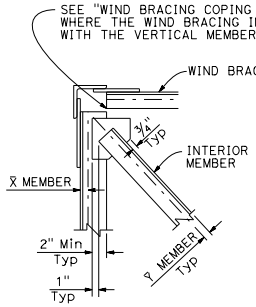
DETAIL 1



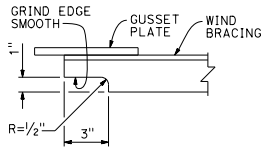
DETAIL 2



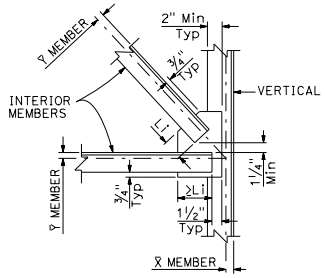
DETAIL 3



DETAIL 4



WIND BRACING COPING DETAIL



DETAIL 5

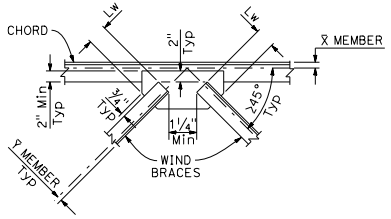
NOTES:

1. Lv, Ld, Lw and Li indicate minimum overlap lengths for member to gusset plates. Refer to Revised Standard Plans RSP S102 and RSP S107 for values.
2. Unless otherwise noted, connections between members and gusset plates are fillet welds around all edges. See "Weld Table" for fillet weld size.
3. Gusset plate thickness = ⅝".
4. Gusset plate dimensions vary based on connecting member sizes and the orientation of their centroids.
5. All connection details are typical and may be mirrored depending on the connection location.

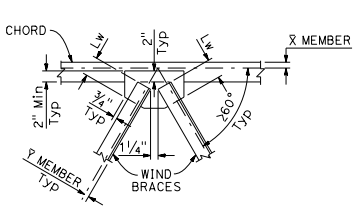
ABBREVIATIONS:

$\bar{X}$ = Distance to centroid of L along the short leg
$\bar{Y}$ = Distance to centroid of L along the long leg

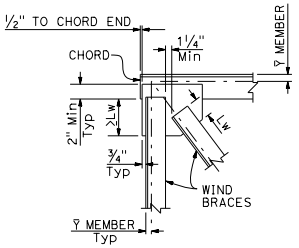
WELD TABLE	
THICKNESS OF ANGLE	WELD SIZE
¼"	3/16"
5/16"	3/16"
⅜"	¼"
½"	⅜"
⅝"	½"
≥ ¾"	9/16"



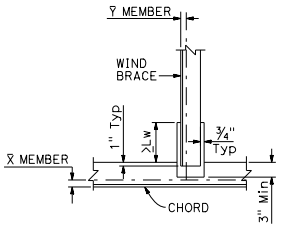
DETAIL 6



DETAIL 7



DETAIL 8



DETAIL 9

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TRUSS CONNECTION DETAILS

NO SCALE

RSP S111 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S111
DATED MAY 31, 2018 - PAGE 466 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S111

2018 REVISED STANDARD PLAN RSP S111

10-21-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
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TO ACCOMPANY PLANS DATED _____

TABLE 1
BOLTED CHORD SPLICE

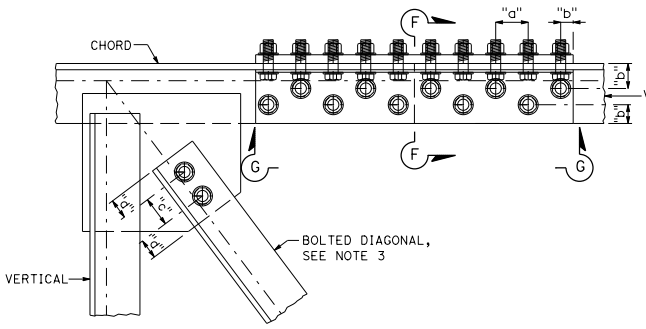
CHORD THICKNESS	NOMINAL BOLT DIAMETER	"a" Min	"b" Min
3/8"	3/4"	2 1/4"	1"
1/2"	7/8"	2 5/8"	1 1/8"
5/8"	1"	3"	1 1/4"
3/4"	1 1/4"	3 3/4"	1 5/8"
7/8"	1 1/2"	4 1/2"	1 7/8"
1"	1 1/2"	4 1/2"	1 7/8"

TABLE 2
BOLTED WIND BRACE AT CHORD SPLICE

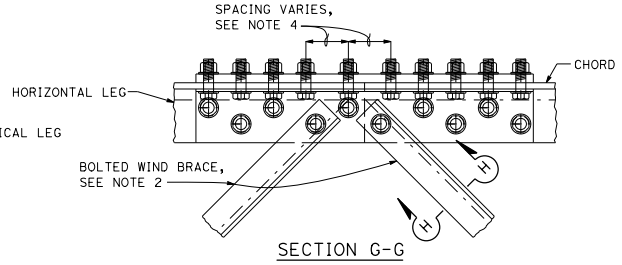
CHORD THICKNESS	BOLTED WIND BRACE	
	BOLTED LEG Min WIDTH	Min THICKNESS
3/8"	2 1/2"	5/16"
1/2"	3"	5/16"
5/8"	3"	3/8"
3/4"	3"	1/2"
7/8"	3 1/2"	1/2"
1"	3 1/2"	1/2"

TABLE 3
BOLTED MEMBER TO GUSSET PLATE

MEMBER THICKNESS	NOMINAL BOLT DIAMETER	"c" Min	"d" Min
5/16"	5/8"	1 7/8"	7/8"
3/8"	3/4"	2 1/4"	1"
1/2"	7/8"	2 5/8"	1 1/8"
5/8"	1"	3"	1 1/4"
3/4"	1 1/4"	3 3/4"	1 5/8"

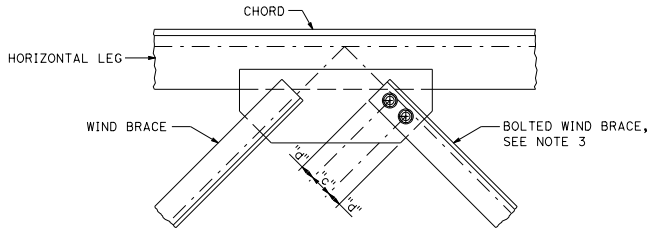


BOLTED CHORD SPLICE
Wind bracing not shown

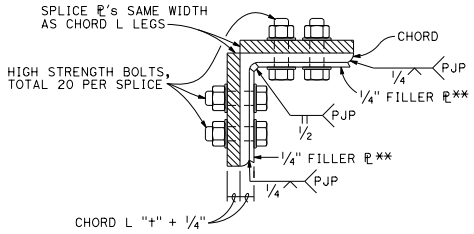


SECTION G-G

BOLTED WIND BRACE AT BOLTED CHORD SPLICE

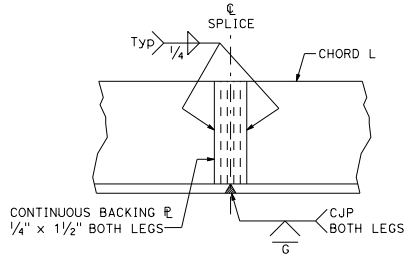


BOLTED WIND BRACE AT GUSSET PLATES

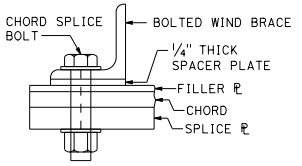


SECTION F-F

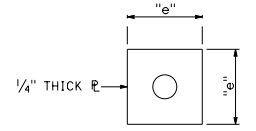
** 5/16" Filler ℄ at 3/4" thick chord angle
** 3/8" Filler ℄ at 7/8" and 1" thick chord angle



WELDED CHORD SPLICE



SECTION H-H



SPACER PLATE
"e" = WIND BRACE LEG WIDTH

NOTES:

1. All bolted connections for the chord splice and gusset plate connections are fully tensioned.
2. See "Truss Member Table" on Revised Standard Plans RSP S102 and RSP S107 for the size of bolted wind brace angle. The bolted wind brace leg width and thickness shall be increased if necessary in order to meet the minimum dimensions on "Table 2".
3. See "Table 3" for nominal bolt diameter and spacing for bolted members to gusset plate.
4. The bolt spacing for the bolted chord splice may be increased up to 1" in order to accomodate the bolted wind brace. The unbolted leg of the wind brace may be trimmed in order to avoid conflicts with the chord splice bolts, see "Wind Bracing Coping Detail" on Revised Standard Plan RSP S111.
5. See Revised Standard Plan RSP S111 for details not shown.

SPLICE NOTES:

Location of Splices:
The splice shall be located so as not to interfere with the gusset plate connections for the vertical and diagonal Ls. For two post type, see also RSP S106.

Filler ℄:
The filler plates welded to the angle legs on the inside shall be welded before drilling the bolt holes. The filler plates shall be the same length as the splice plates. The filler plates are not necessary on the single post signs if the splice is located over 1/3 of the cantilever length from the post. Alternative splice details may be used if approved by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS CHORD SPLICE DETAILS

NO SCALE

RSP S112 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S112
DATED MAY 31, 2018 - PAGE 467 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S112

2018 REVISED STANDARD PLAN RSP S112

10-21-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Registered Professional Engineer — Juan J. Jauregui — No. C63939 — Exp. 9-30-22 — CIVIL — State of California

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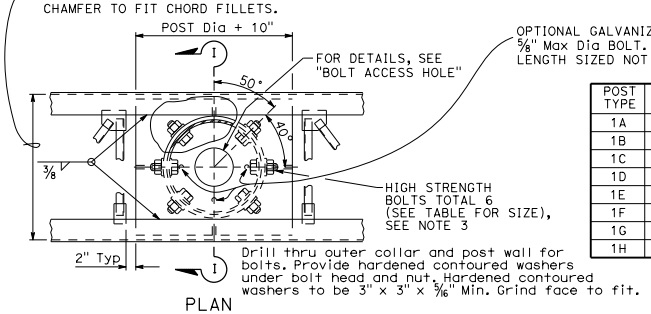
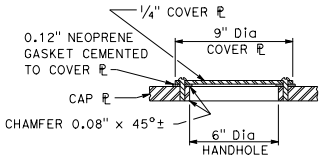
TO ACCOMPANY PLANS DATED _____

℄ LENGTH = FRAME WIDTH LESS THICKNESS OF CHORD ANGLES. CHAMFER TO FIT CHORD FILLETS.

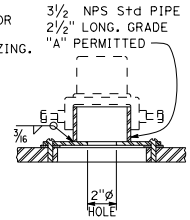


PLAN

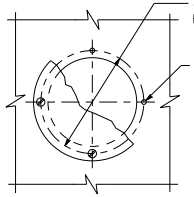
POST TYPE	BOLT SIZE
1A	1"
1B	1"
1C	1⅛"
1D	1⅛"
1E	1¼"
1F	1½"
1G	1½"
1H	1½"



SECTION
Without photoelectric unit



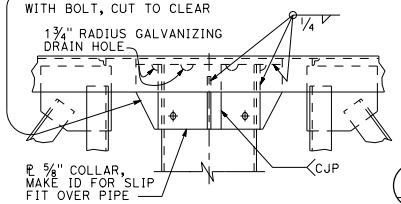
SECTION
With photoelectric unit



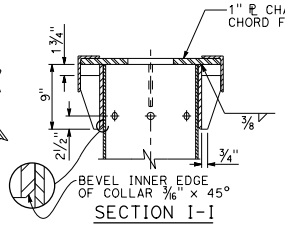
PLAN

BOLT-ACCESS HOLE ONE POST TYPE

½" GUSSET ℄ (4 REQUIRED). WHERE GUSSET INTERFERES WITH BOLT, CUT TO CLEAR



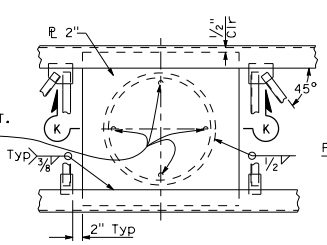
ELEVATION

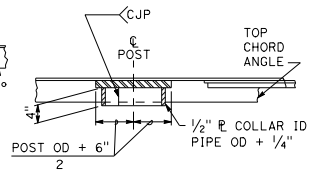


SECTION I-I

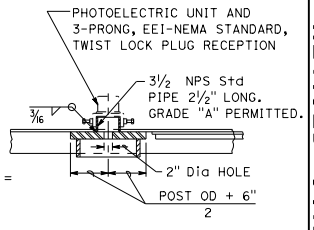
UPPER JUNCTURE CONNECTION ONE POST TYPE

OPTIONAL GALVANIZING DRAIN HOLES: DRILL AND TAP THROUGH CAP PLATE FOR 5/8" Max Dia BOLT. HOLE SHALL BE 1/4" CLEAR OF INSIDE COLLAR WALL. BOLT LENGTH SIZED NOT TO INTERFERE WITH POST. INSTALL BOLT AFTER GALVANIZING.





SECTION K-K
Without photoelectric unit

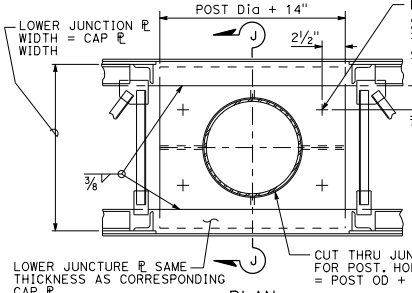


SECTION K-K
With photoelectric unit

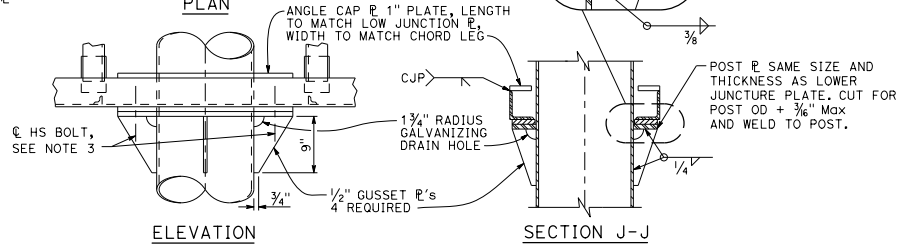
UPPER JUNCTURE CONNECTION TWO POST TYPE

NOTES: (SINGLE POST TYPE)

1. In all cases, truss shall be supported at lower juncture connection. Bearing surface shall be finished true.
2. Post to truss connections shall be fitted in shop.
3. High strength bolts shall be snug tighten. Torque requirements are waived.



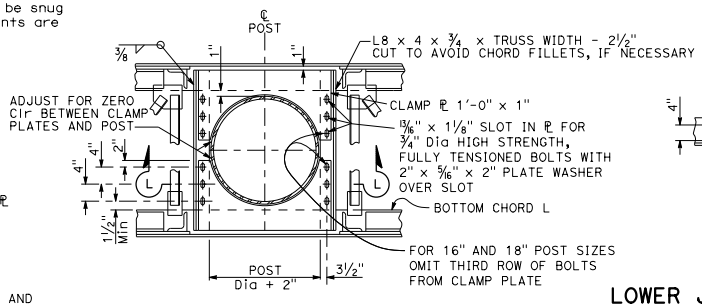
PLAN

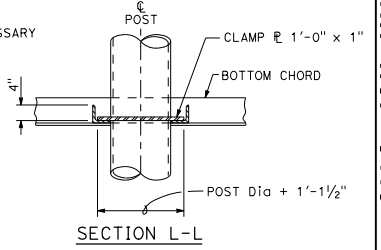


ELEVATION

SECTION J-J

LOWER JUNCTURE CONNECTION ONE POST TYPE





SECTION L-L

LOWER JUNCTURE CONNECTION TWO POST TYPE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TRUSS TO STEEL POST CONNECTION DETAILS

NO SCALE

RSP S113 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S113
DATED MAY 31, 2018 - PAGE 468 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S113

10-14-20

2018 REVISED STANDARD PLAN RSP S113

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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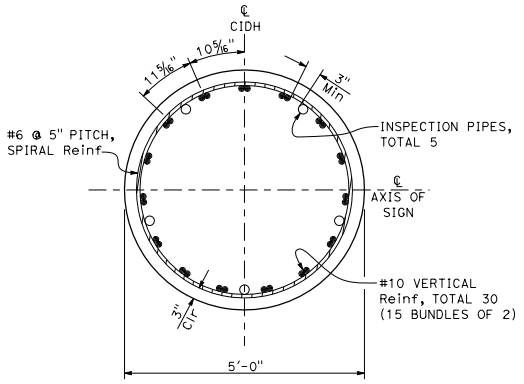
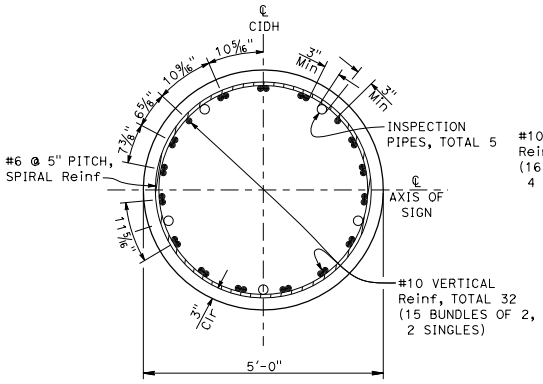
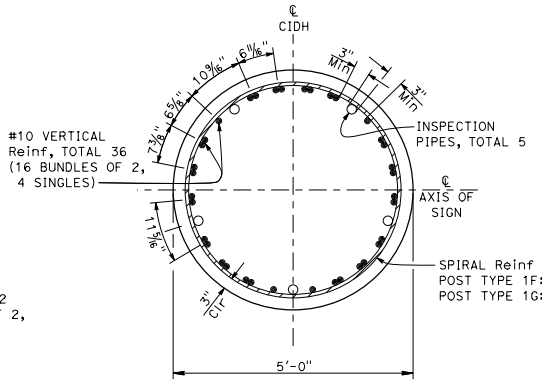
TO ACCOMPANY PLANS DATED _____



POST TYPES 1A, 1B, 1C, 1D, 2A, 2B, 2C AND 2D



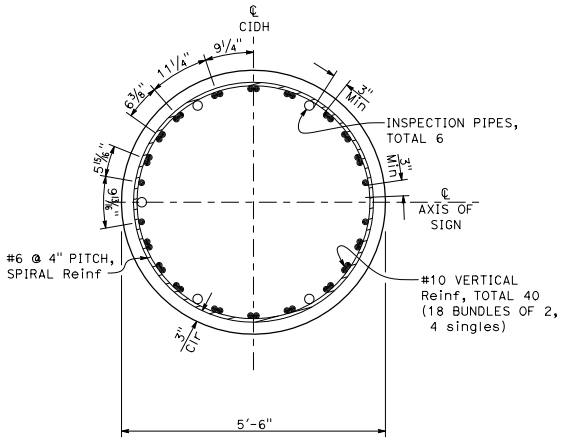
POST TYPES 1E AND 2E



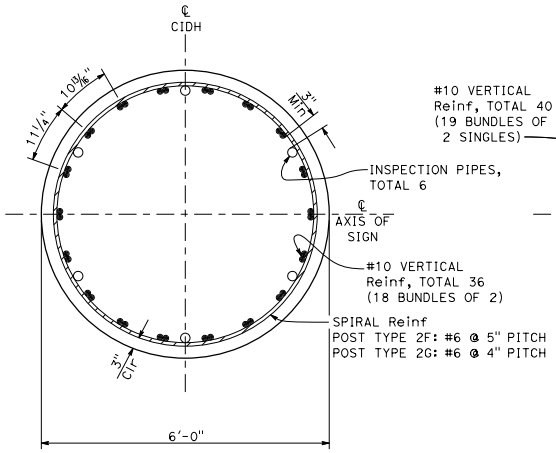
POST TYPES 1F AND 1G

NOTE:

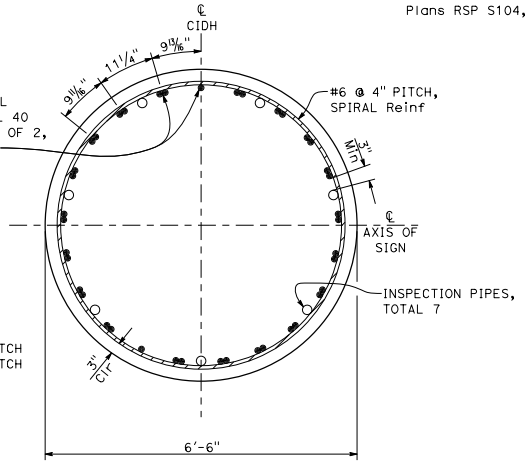
1. For details not shown, see Revised Standard Plans RSP S104, RSP S105, RSP S109 and RSP S110.



POST TYPE 1H



POST TYPES 2F AND 2G



POST TYPE 2H

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS CIDH PILE FOUNDATION WITH INSPECTION PIPES

NO SCALE

RSP S114 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S114
DATED MAY 31, 2018 - PAGE 469 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S114

2018 REVISED STANDARD PLAN RSP S114

10-14-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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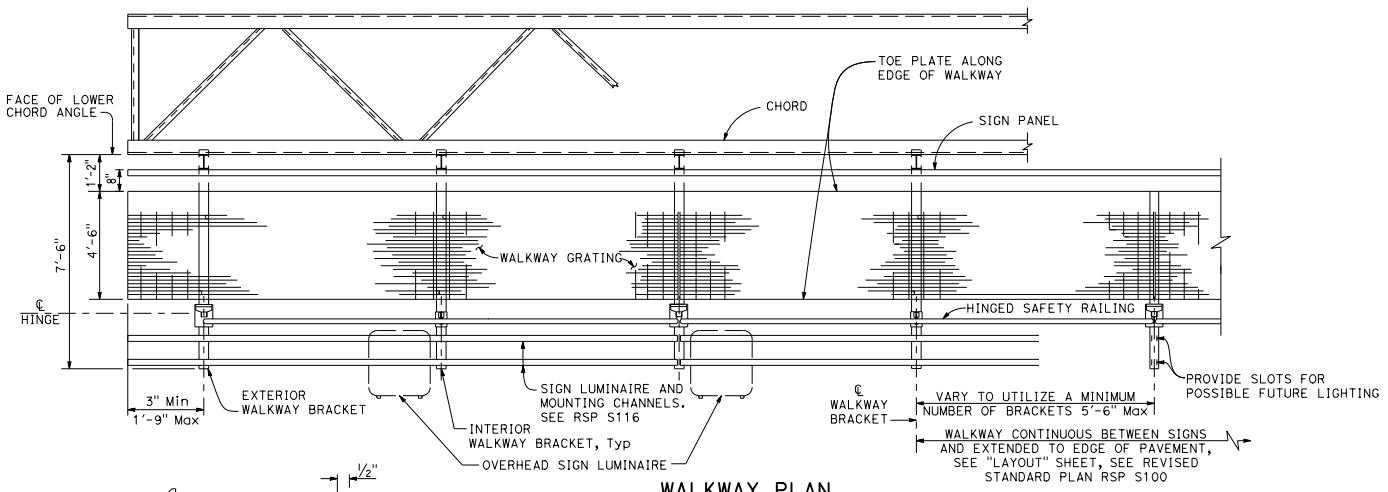
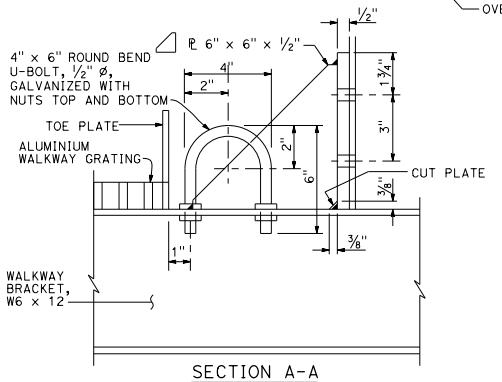
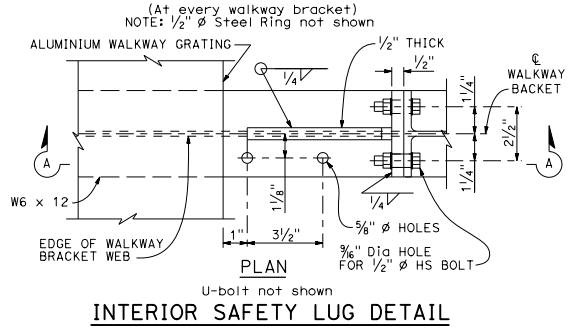
TO ACCOMPANY PLANS DATED _____



WALKWAY PLAN



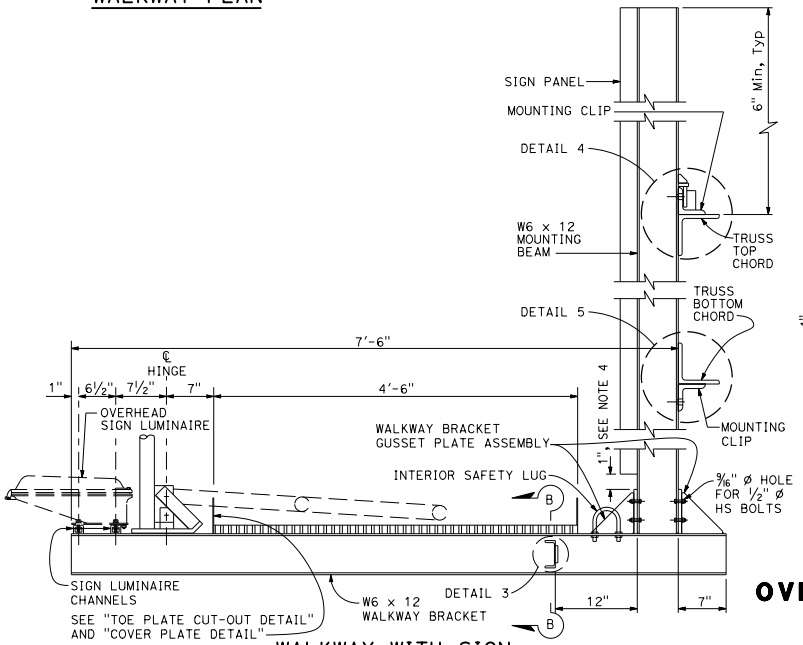
SECTION A-A



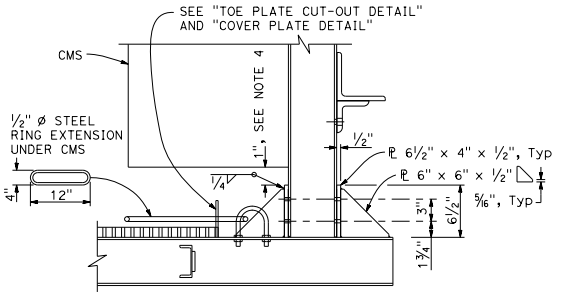
PLAN

U-bolt not shown

INTERIOR SAFETY LUG DETAIL



WALKWAY WITH SIGN



WALKWAY WITH CMS 500/700/710

NOTES:

1. Mounting beam spacing to be determined by sign requirements. Refer to Revised Standard Plans RSP S119 to RSP S124 for details.
2. For signs without walkways, mounting beam to be cut short at bottom. Refer to Revised Standard Plans RSP S119 to RSP S122 and RSP S124 for details.
3. Walkway brackets shall be bolted to mounting beams when walkways are provided. Maximum spacing = 5'-6".
4. For sign panels and CMS 710 that don't project below the truss, maintain 1" clearance between the mounting clip and walkway bracket gusset plate assembly.
5. For sign luminaire mounting channel details, see Revised Standard Plan RSP S116.
6. For aluminum walkway grating details, see Revised Standard Plan RSP S116.
7. For "Section B-B" and "Detail 3" see Revised Standard Plan RSP S116.
8. For "Detail 4" and "Detail 5" see Revised Standard Plan RSP S117.
9. For "Toe Plate Cut-Out Detail" and "Cover Plate Detail" see Revised Standard Plan RSP 117.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS WALKWAY DETAILS No.1

NO SCALE

RSP S115 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S115
DATED MAY 31, 2018 - PAGE 470 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S115

2018 REVISED STANDARD PLAN RSP S115

10-14-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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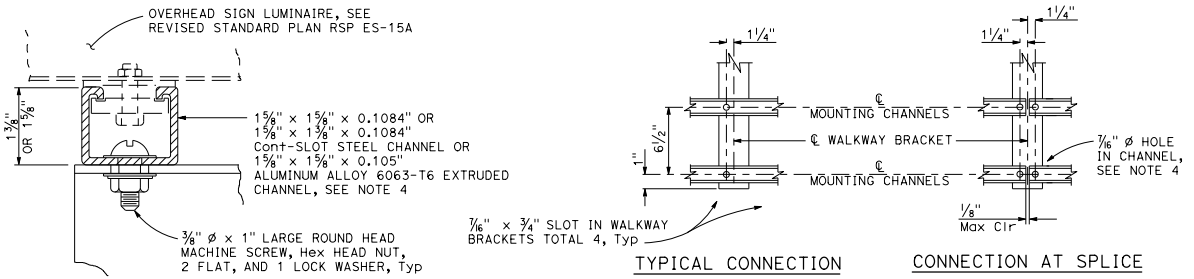
TO ACCOMPANY PLANS DATED _____



DETAIL 1

TYPICAL CONNECTION

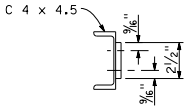
CONNECTION AT SPLICE

DETAIL 2

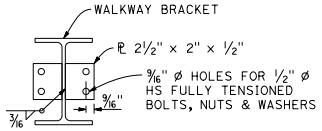
SIGN LUMINAIRE MOUNTING CHANNEL

NOTES:

1. Aluminum bar grating with bearing bars at 11/16" spacing shall be used, with cross bars at Max 4" spacing. Max unsupported span shall be 5'-6". Bearing bar Min height shall be 1½", Max height shall be 2½", and bearing bar thickness shall be 3/16". Grating shall be capable of carrying a 500 lb concentrated load and a 40 psf uniform load, applied non-concurrently. Max allowable deflection under 40 psf uniform loading shall be 1.75". The Max allowable grating self-weight shall be 9.0 psf.
2. Aluminum walkway grating and light fixture mounting channels to be continuous (no splices) over as many walkway brackets as practical and consistent with fabrication, ease of handling, and assembly.
3. Hold down saddle anchors shall be installed at every walkway bracket (not just spliced locations). At non-splice locations, saddle anchors may be installed on one side of girder web only. All hold-down hardware shall be galvanized, the hold-down saddle clip shall be aluminum, and a nylon washer shall be installed on the underside of the nut.
4. Contractor may substitute 1 5/8" x 1 5/8" x .1084" cont-slot steel channel with pre-punched slots not larger than 11/32" x 3". Slots shall be at bottom of channel and shall be parallel to channel. Slots shall be spaced not closer than 4" center to center.

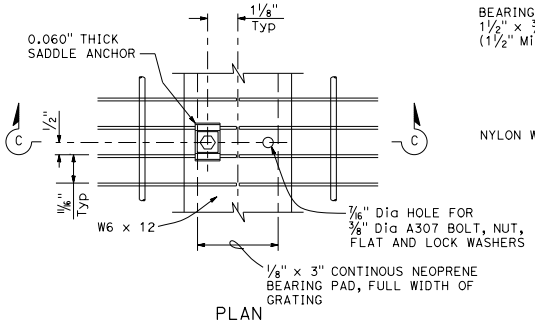


DETAIL 3

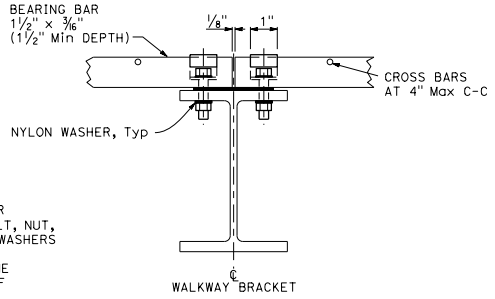


SECTION B-B

Walkway and C-shape not shown



PLAN



SECTION C-C

ALUMINIUM WALKWAY GRATING DETAILS

Shown at splice

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS WALKWAY DETAILS No.2

NO SCALE

RSP S116 DATED APRIL 16, 2021 SUPERSEDES STANDARD PLAN S116
DATED MAY 31, 2018 - PAGE 471 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S116

2018 REVISED STANDARD PLAN RSP S116

10-14-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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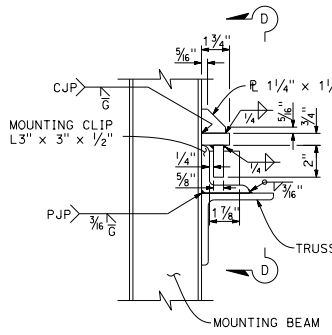
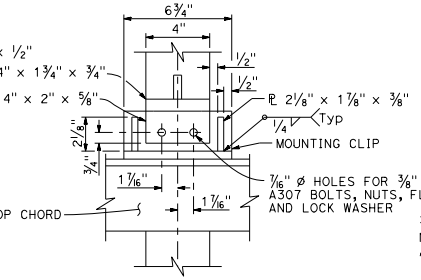
TO ACCOMPANY PLANS DATED _____

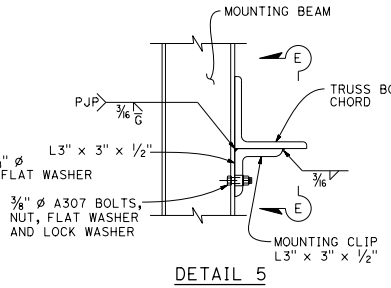


DETAIL 4
Bolt holes not shown

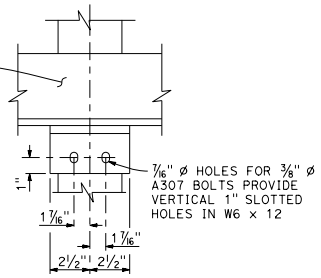


SECTION D-D

NOTE: L3" x 3" x ½" mounting beam supports may be installed over full length of truss if greater sign placement flexibility is desired.



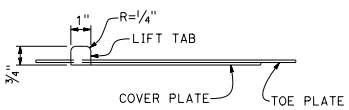
DETAIL 5



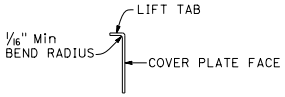
SECTION E-E

NOTES:

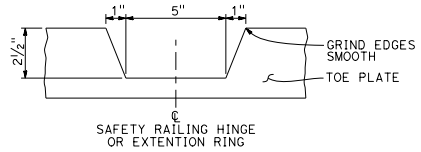
1. Cover plates placed on the walkway grating side of toe plate.
2. Cover plate is 1/16" thick aluminum sheet 5052-H-32.



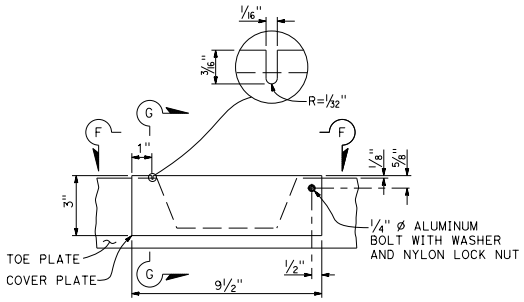
SECTION F-F



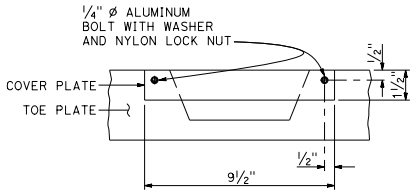
SECTION G-G



TOE PLATE CUT-OUT DETAIL



AT SAFETY RAILING HINGE



AT RING EXTENTION UNDER CMS

COVER PLATE DETAIL
(SEE NOTES 1 AND 2)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS WALKWAY DETAILS No.3

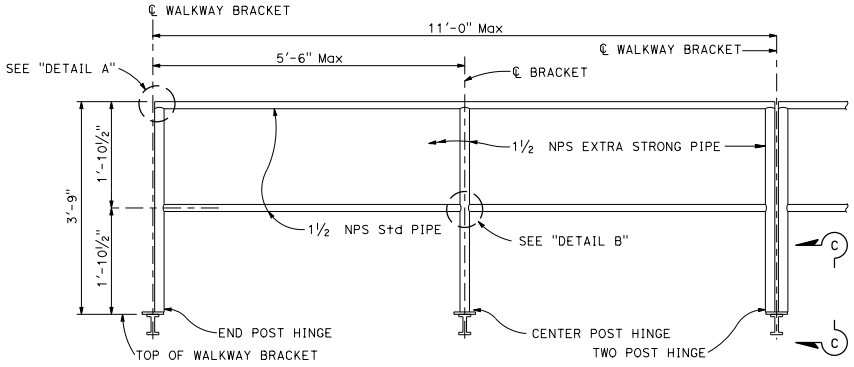
NO SCALE

RSP S117 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

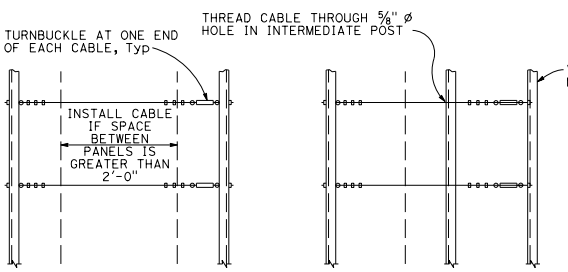
REVISED STANDARD PLAN RSP S117

10-14-20

2018 REVISED STANDARD PLAN RSP S117



SAFETY RAILING ELEVATION



UPPER SAFETY CABLE ELEVATION

NOTE: Thread cable through ⅝" ø hole in diagonal members, Diagonal members not shown.

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

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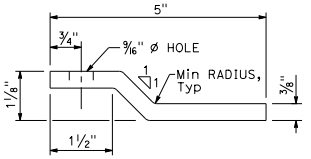
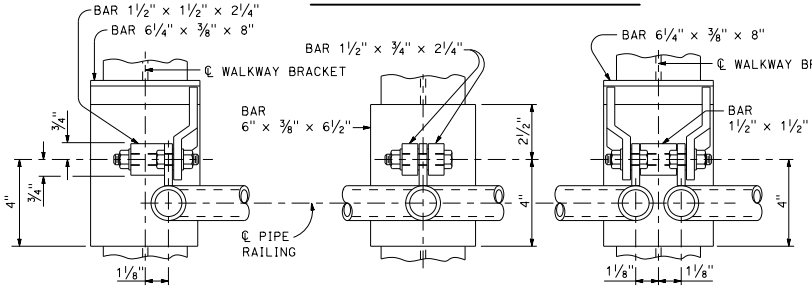
REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

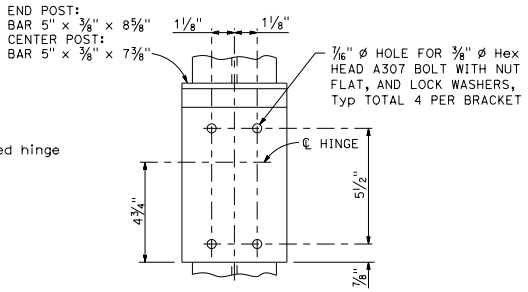


KICKER BAR - PLAN

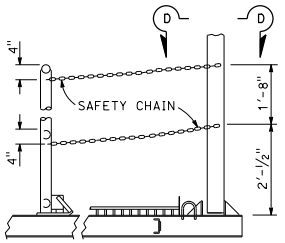


NOTE:
℄ Bracket = ℄ Welded hinge

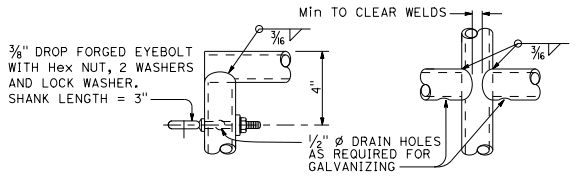
WELDED HINGE - PLAN



TYPICAL BOLTED (ALTERNATIVE) HINGED CONNECTION

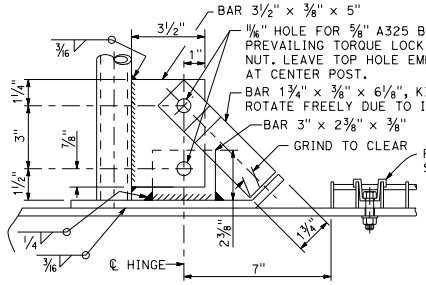


CHAIN ASSEMBLY

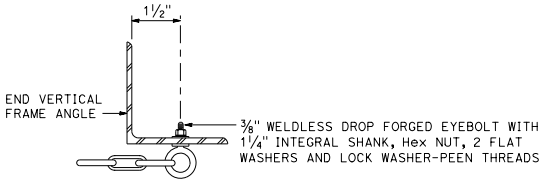


DETAIL A DETAIL B

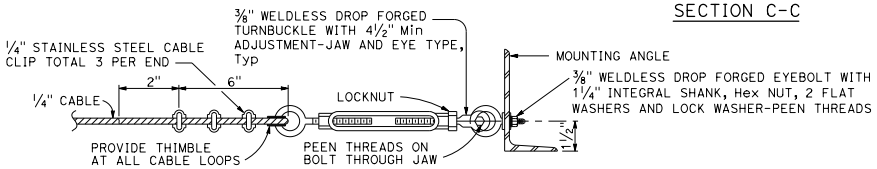
NOTE: Alternative venting methods may be used if approved by the Engineer.



SECTION C-C



VIEW D-D



TURNBUCKLE DETAILS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS WALKWAY SAFETY RAILING DETAILS

NO SCALE

RSP S118 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S118

2018 REVISED STANDARD PLAN RSP S118

10-14-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER

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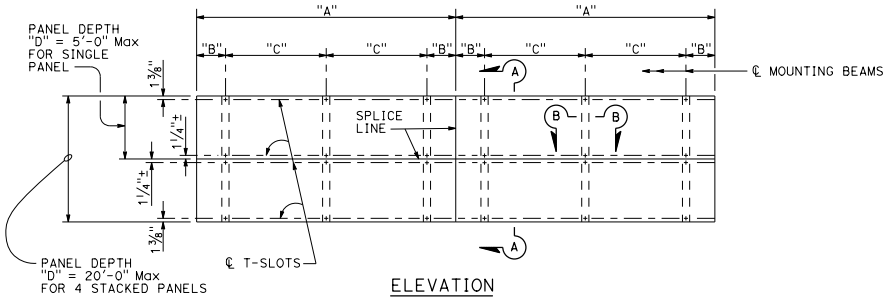
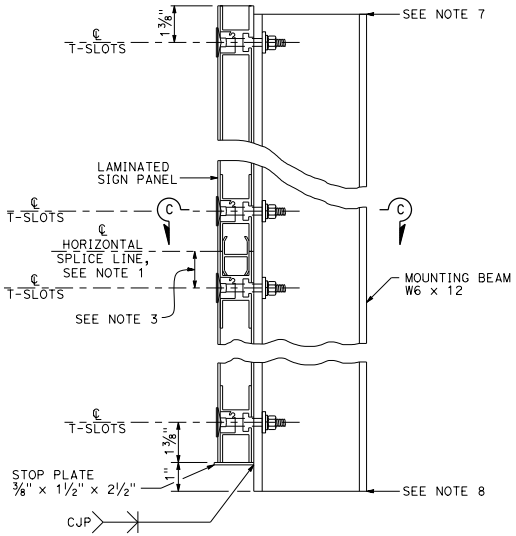
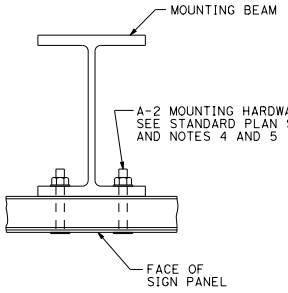
TO ACCOMPANY PLANS DATED _____



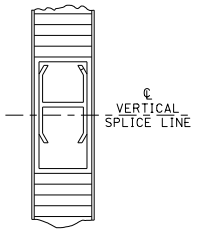
ELEVATION
SIGN



SECTION A-A



SECTION B-B



SECTION C-C
Mounting beam
not shown

MOUNTING BEAM SPACING TABLE			
SIGN PANEL LENGTH *	NUMBER MOUNTING BEAMS	SIGN PANEL OVERHANG	MOUNTING BEAM SPACING
"A"		"B"	"C"
5'-0"	2	9"	3'-6"
6'-0"		1'-0"	4'-0"
7'-0"		1'-3"	4'-6"
8'-0"		1'-6"	5'-0"
9'-0"		1'-10"	5'-6"
10'-0"		2'-0"	6'-0"
11'-0"		2'-0"	7'-0"
12'-0"		2'-6"	7'-0"
13'-0"	↓	2'-6"	8'-0"
14'-0"	3	1'-0"	6'-0"
15'-0"		1'-0"	6'-6"
16'-0"		6"	7'-6"
17'-0"		1'-0"	7'-6"
18'-0"		1'-0"	8'-0"
19'-0"		1'-6"	8'-0"
20'-0"	↓	2'-0"	8'-0"
21'-0"	4	1'-6"	6'-0"
22'-0"		2'-0"	6'-0"
23'-0"		1'-0"	7'-0"
24'-0"	↓	1'-6"	7'-0"

* Signs longer than 24'-0" are fabricated and mounted as adjoining single panels. The location of the vertical splice line will be determined by the Engineer.

NOTES:

1. The location of the horizontal splice line is dependent on the Contractor for signs greater than 60" in depth.
2. Mounting bolts and clamps are required on each side of the horizontal splice lines at each support beam.
3. Dimension varies from panel to panel. Average value approximate 1".
4. Torque stainless steel sign panel mounting bolts to 100 inch-pounds.
5. Drill through panel at integral track. Install Type A-2 mounting hardware and attach reflective tape.
6. Refer to Revised Standard Plan RSP S115 for mounting beam to truss connection details.
7. For sign panel depths of 70" or less the top of the mounting beam extends beyond the limits of the sign panel. Refer to Revised Standard Plan RSP S115.
8. For sign panel depths of 60" or less, or where a walkway is installed, the bottom of the mounting beam extends further than 1" from the bottom of the sign panel. Refer to Revised Standard Plan RSP S115.
9. The Contractor must verify all dependent dimensions in the field before ordering or fabricating any material.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS
SIGN MOUNTING DETAILS
LAMINATE PANEL - TYPE A

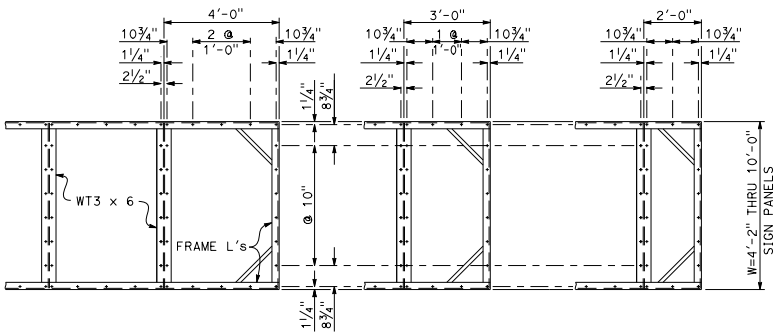
NO SCALE

RSP S119 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S119

10-14-20

2018 REVISED STANDARD PLAN RSP S119

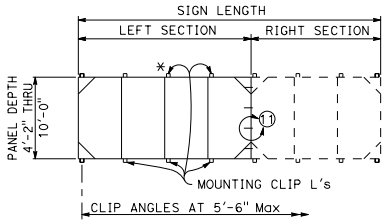


TYPICAL 4'-0" PANEL TYPICAL 3'-0" PANEL TYPICAL 2'-0" PANEL

All holes ½" diameter maximum.

MOUNTING HOLE SPACING SIGN PANEL AND FRAME

Hole spacing is for single sheet sign panels. For Overhead Formed Panels refer to "Removable Sign Panel Frames, Details No. 2" Sheet.

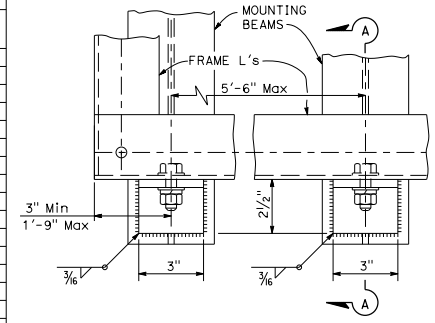


REMOVABLE FRAME GREATER THAN 20'-0"

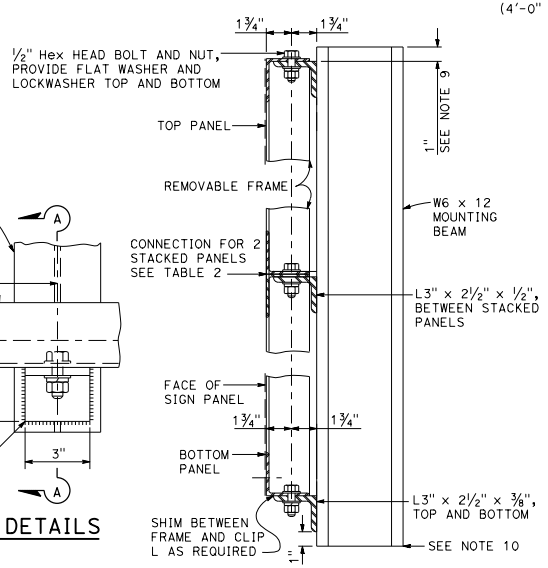
SECTION LENGTH TABLE		
SIGN LENGTH	LEFT SECTION	RIGHT SECTION
22'-0"	12'-0"	10'-0"
23'-0"	12'-0"	11'-0"
24'-0"	12'-0"	12'-0"
25'-0"	12'-0"	13'-0"
26'-0"	12'-0"	14'-0"
27'-0"	12'-0"	15'-0"
28'-0"	16'-0"	12'-0"
29'-0"	16'-0"	13'-0"
30'-0"	16'-0"	14'-0"
31'-0"	16'-0"	15'-0"
32'-0"	16'-0"	16'-0"
33'-0"	16'-0"	17'-0"
34'-0"	16'-0"	18'-0"
35'-0"	16'-0"	19'-0"
36'-0"	20'-0"	16'-0"
37'-0"	20'-0"	17'-0"
38'-0"	20'-0"	18'-0"
39'-0"	20'-0"	19'-0"
40'-0"	20'-0"	20'-0"

NOTES:

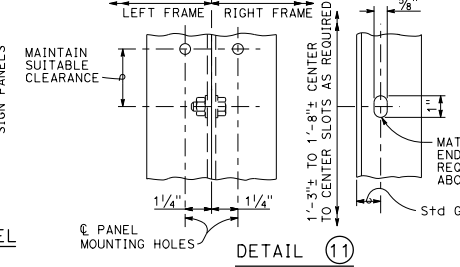
Frames for signs greater than 20'-0" in length shall be fabricated in two sections with left section a multiple of 4'-0" in length. See table above.
Sections shall be hoisted into place individually and bolted together as per detail (11) prior to tightening of mounting clip bolts.
Bolting two sections together and hoisting simultaneously will not be permitted.
For signs up to 20'-0" in height, 2 panels shall be stacked vertically. Refer to Section T-T for connection details.



FRAME MOUNTING DETAILS



SECTION A-A



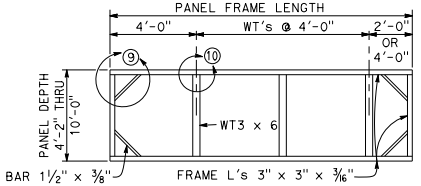
DETAIL (11)

FRAME TO FRAME CONNECTION DETAILS

SLOT TABLE	
PANEL DEPTH	No. OF SLOTS
4'-2"	2
5'-0"	3
5'-10"	3
6'-8" AND 7'-6"	4
8'-4" AND 9'-2"	5
10'-0"	6

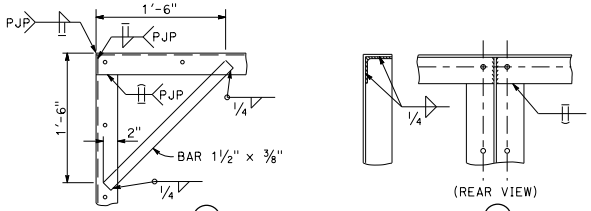
NOTES:

Panel mounting holes not shown.
Panel lengths available in 2'-0" increments.



TYPICAL REMOVABLE FRAME

(4'-0" thru 20'-0")



DETAIL (9) DETAIL (10)

TYPICAL FRAME JOINT DETAILS

NOTES:

1. Frames shall be all-welded construction.
2. Panel mounting holes shall be drilled by template. Sign panel may be considered as a template.
3. Drilled and tapped holes ¼" may be used where interference due to welds or structural members is encountered.
4. WT3 x 6 shall be flush with faces of frame angles.
5. Mounting clip angles shall be located such as to allow the top and bottom frame angles of the removable sign panel to lie on a straight horizontal line.
6. Holes for mounting removable sign panel frame may be slotted 1" maximum parallel to the axis of the sign.
7. WT3 x 6 may be crimped at ends to join frame angles. Fillet weld all around.
8. For "TABLE 2" see Revised Standard Plan RSP S121.
9. For sign panel depth of 70" or less the top of the mounting beam extends beyond the limits of the sign panel. Refer to Revised Standard Plan RSP S115.
10. For sign panel depth of 60" or less, or where a walkway is installed, the bottom of the mounting beam extends further than 1" below the clip L.

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Juan J. Jauregui — No. C63939 — Exp. 9-30-22 — CIVIL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS REMOVABLE SIGN PANEL FRAMES DETAILS No.1

NO SCALE

RSP S120 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S120

2018 REVISED STANDARD PLAN RSP S120

10-14-20

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

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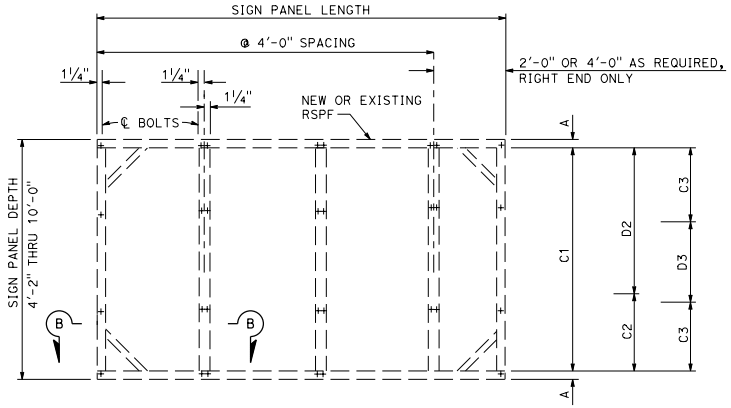
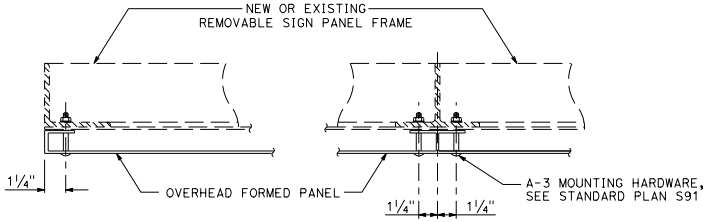


ELEVATION VIEW



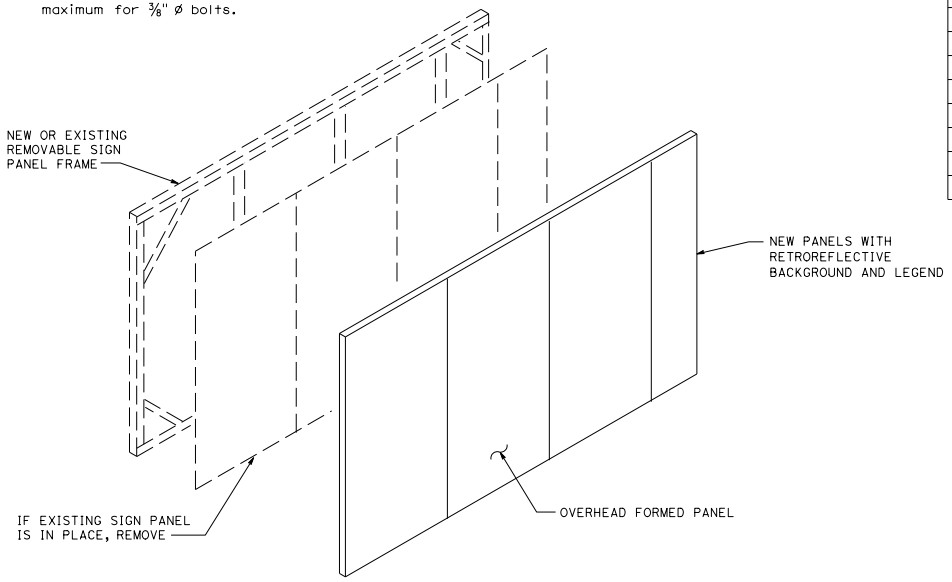
CORNER DETAIL PANEL CONNECTION

SECTION B-B

NEW OR EXISTING REMOVABLE SIGN PANEL FRAME MOUNTING HOLE SPACING

NOTE:

Sign panel mounting holes ½" ø maximum for ⅜" ø bolts.



NOTE:

The Contractor shall verify all dependent dimensions in the field before ordering or fabricating any material.

TABLE 1

MOUNTING BOLT SPACING

PANEL DEPTH	A	1 SPACE	2 SPACE		3 SPACE		
		C1	C2	D2	C3	D3	C3
50"	1¼"	3'-11½"					
60"			2'-4¾"	2'-4¾"			
70"			1'-6¾"	4'-¾"			
80"			3'-2¾"	3'-2¾"			
90"			3'-2¾"	4'-¾"			
100"			4'-¾"	4'-¾"			
110"					3'-2¾"	2'-6"	3'-2¾"
120"	1¼"				4'-¾"	1'-8"	4'-¾"

TABLE 2

PANEL DEPTH GREATER THAN 120"

TOTAL PANEL DEPTH	TOP PANEL	BOTTOM PANEL
130"	70"	60"
140"	70"	70"
150"	80"	70"
160"	80"	80"
170"	90"	80"
180"	90"	90"
190"	100"	90"
200"	100"	100"
210"	110"	100"
220"	110"	110"
230"	120"	110"
240"	120"	120"

NOTES:

When constructing a new frame:

1. Refer to Revised Standard Plan RSP S120 for structural details.
2. Sign panels shall be considered as a template for drilling holes for mounting bolts.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS REMOVABLE SIGN PANEL FRAMES DETAILS No.2

NO SCALE

RSP S121 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S121

10-14-20

2018 REVISED STANDARD PLAN RSP S121

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

REGISTERED CIVIL ENGINEER

April 16, 2021
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Juan J. Jauregui
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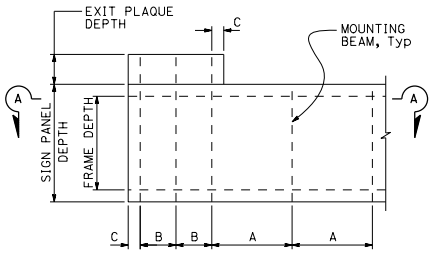
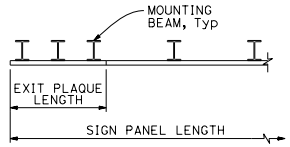


SIGN PANEL ELEVATION



SECTION A-A

MOUNTING BEAM SPACING NOTES AND ABBREVIATIONS:

A: Maximum mounting beam spacing for sign support = 8'-0".

B: Maximum mounting beam spacing for exit plaque support. A minimum of 2 mounting beams are required per exit plaque. Refer to "EXIT PLAQUE MOUNTING BEAM TABLE" for "B" values.

C: Maximum sign panel/exit plaque overhang length. Refer to Revised Standard Plans RSP S119 and RSP S120 for permissible overhang values.

Note: Additional mounting beams will be required when walkways are installed. Maximum mounting beam spacing at walkways = 5'-6". Refer to Revised Standard Plan RSP S115 for walkway mounting beam details. When mounting beams are added for walkway or exit plaque support, they are not required to be attached to the sign panels.

EXIT PLAQUE MOUNTING BEAM TABLE

SIGN PANEL DEPTH, D	B
D ≤ 80"	8'-0"
80"< D ≤100"	8'-0"
100"< D ≤120"	8'-0"
120"< D ≤150"	7'-0"
150"< D ≤180"	6'-0"
180"< D ≤210"	7'-0"
210"< D ≤240"	4'-0"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS EXIT PLAQUE MOUNTING DETAILS

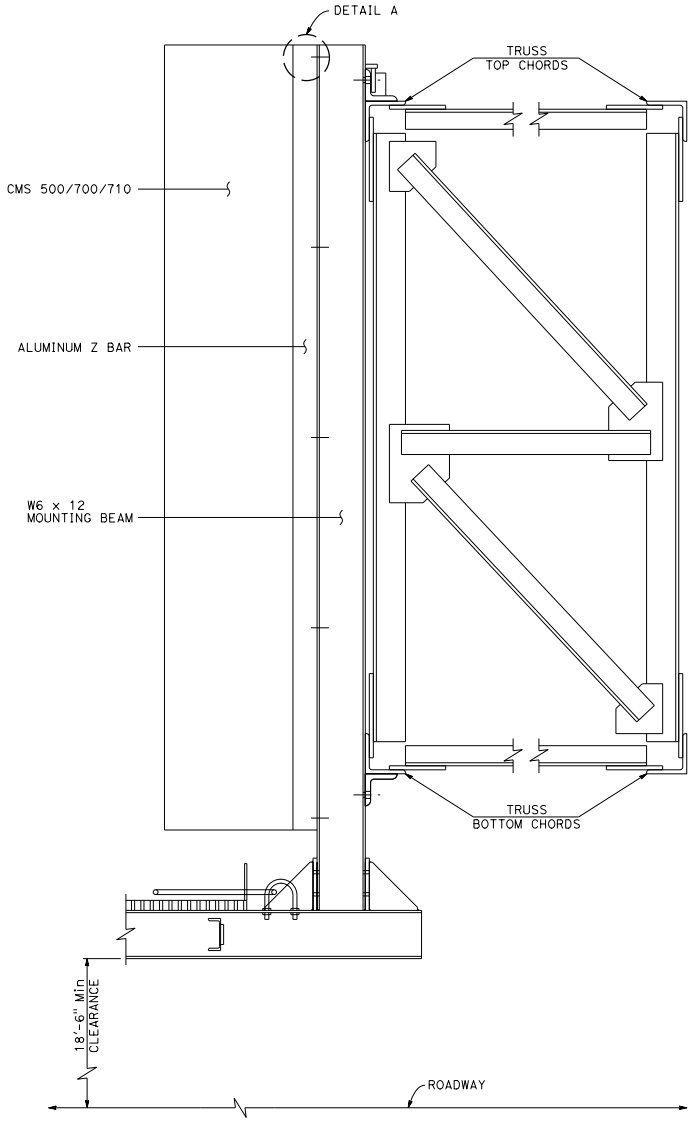
NO SCALE

RSP S122 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S122

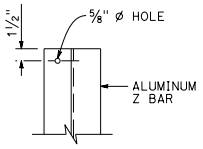
2018 REVISED STANDARD PLAN RSP S122

10-14-20

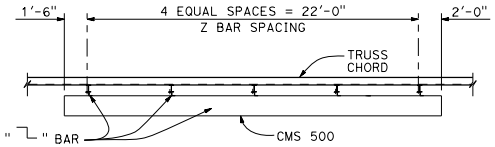


ELEVATION

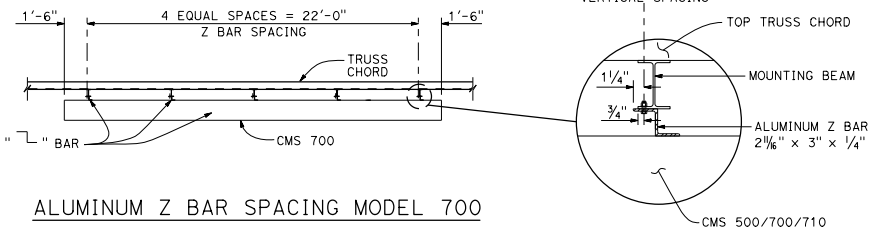
(DIAGONAL AND WIND BRACE MEMBERS NOT SHOWN)



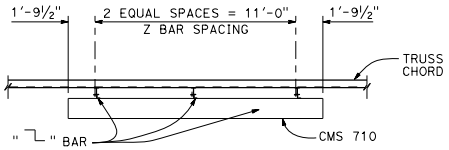
DETAIL A



ALUMINUM Z BAR SPACING MODEL 500



ALUMINUM Z BAR SPACING MODEL 700



ALUMINUM Z BAR SPACING MODEL 710

NOTES:

1. For mounting beam to truss chord connection details, see Revised Standard Plan RSP S115.
2. For horizontal and vertical position of CMS 500, 700 or 710 see Project Plans.
3. Contractor shall verify Z bar spacing prior to drilling holes in mounting channels.
4. If walkway is required per Project Plans, refer to Revised Standard Plan RSP S115 for details. Minimum vertical clearance shall be measured to underside of walkway.

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS CMS MOUNTING DETAILS

NO SCALE

RSP S123 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S123

2018 REVISED STANDARD PLAN RSP S123

10-14-20

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

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Juan J. Jauregui
No. C63939
Exp. 9-30-22
CIVIL
STATE OF CALIFORNIA

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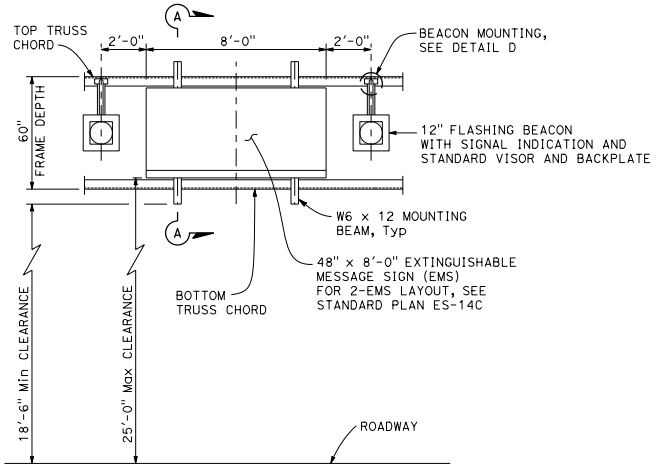
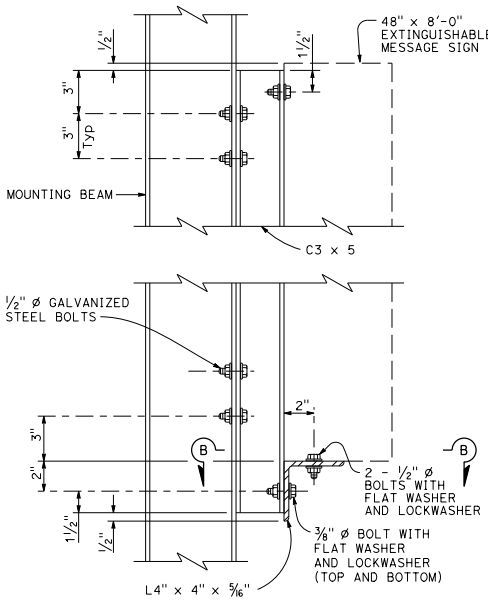
TO ACCOMPANY PLANS DATED _____

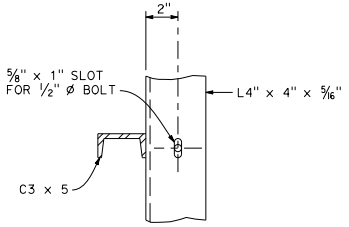


ELEVATION A

Vertical and Diagonal Truss Members Not Shown



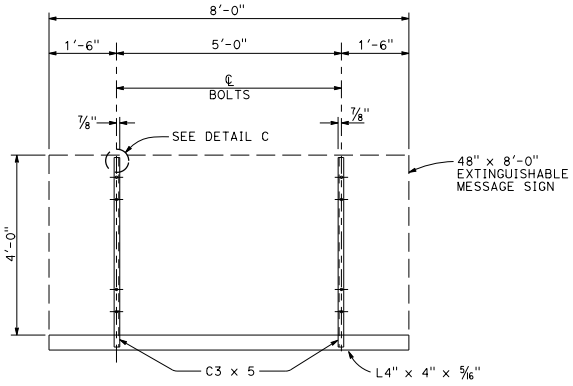
SECTION A-A



SECTION B-B

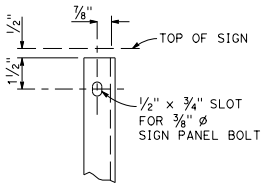
NOTES:

1. For mounting beam to truss chord connection details, see Revised Standard Plan RSP S115.
2. For horizontal and vertical position of Extinguishable message, see Project Plans.
3. Beveled washers must be used at the channel member flanges.

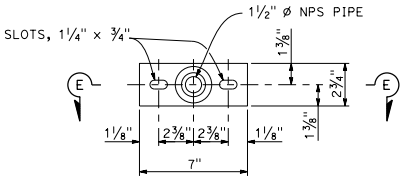


DETAIL H

SIGN MOUNTING

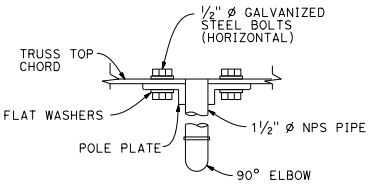


DETAIL C



DETAIL D

Top Truss Chord not shown



SECTION E-E

Refer to Standard Plan ES-14C for additional details

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS EMS AND FLASHING BEACON DETAILS

NO SCALE

RSP S124 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP S124

2018 REVISED STANDARD PLAN RSP S124

10-14-20

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 Standard Plan T9 for tables.

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

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

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

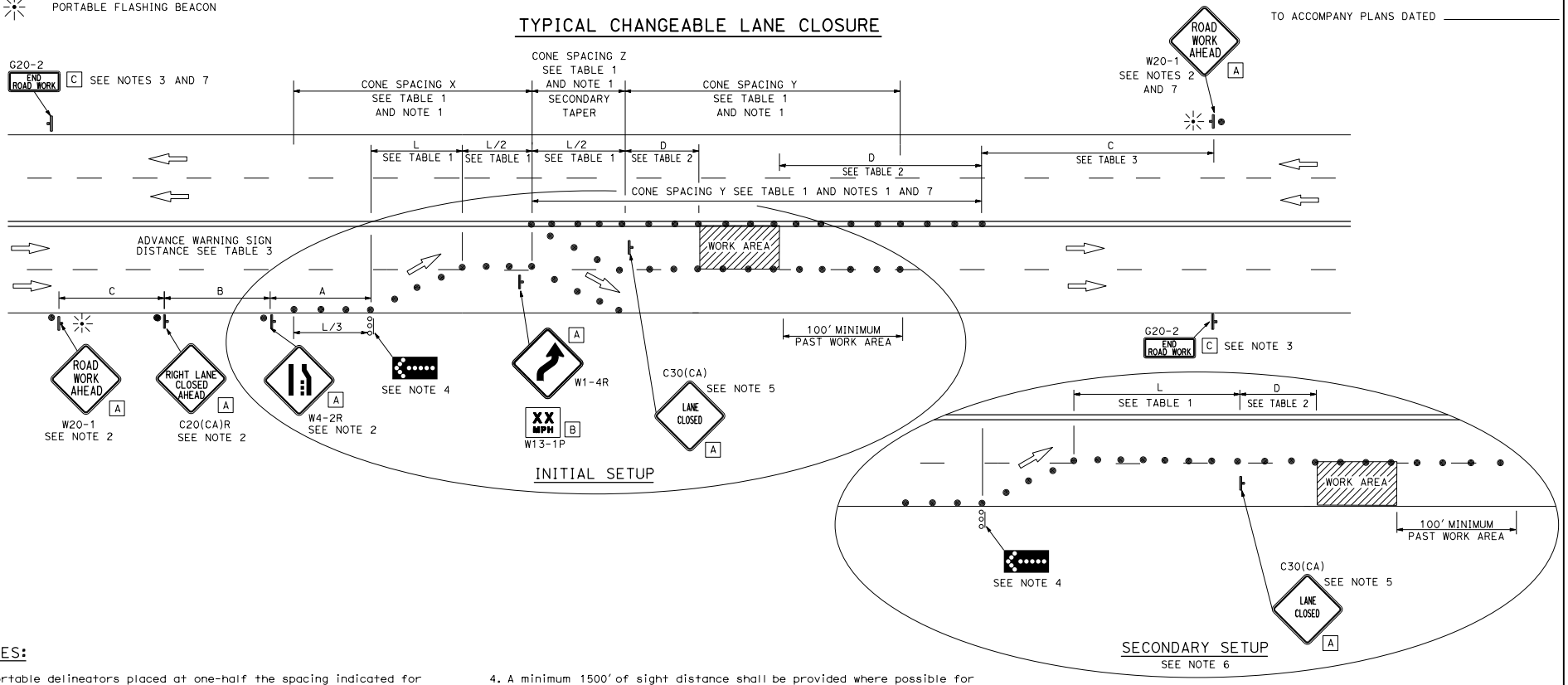
October 18, 2019
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-21
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 _____

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.
7. Sign installations and cones are not required when a median barrier is in place.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR CHANGEABLE LANE CLOSURE ON MULTILANE CONVENTIONAL HIGHWAYS AND EXPRESSWAYS

NO SCALE

RSP T11A DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN T11A
DATED MAY 31, 2018 - PAGE 289 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T11A

2018 REVISED STANDARD PLAN RSP T11A

5-8-19

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-23
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.

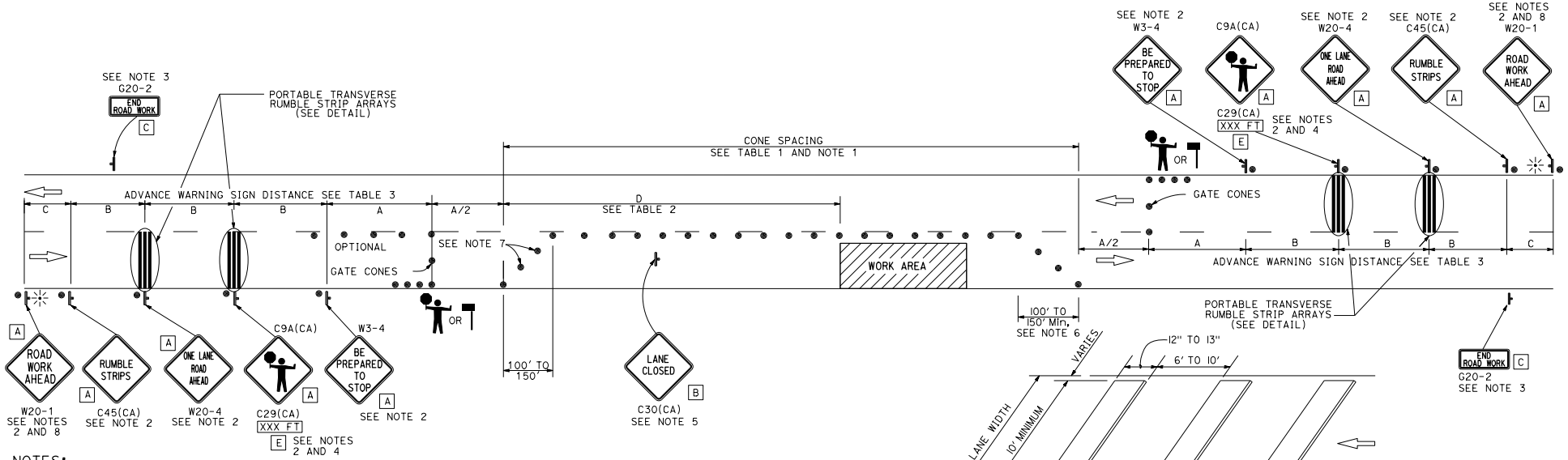
TO ACCOMPANY PLANS DATED _____

NOTES:

See Standard Plan T9 for tables.

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

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



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. Sign must be equipped with at least two flags for daytime closures. Flags must be orange in color and at least 16 inches by 16 inches in size. Place flashing beacons as shown for closures during hours of darkness.
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 the 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. If C45(CA) is not used, measure distance C from W20-4.

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
- AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM WITH REVERSIBLE CONTROL ON TWO LANE CONVENTIONAL HIGHWAYS

NO SCALE

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

REVISED STANDARD PLAN RSP T13

2018 REVISED STANDARD PLAN RSP T13

10-14-20

LEGEND:

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- PORTABLE FLASHING BEACON
- TRAILER
- FLAGGER
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN

SIGN PANEL SIZE (Min):

[A] 48" x 48"

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

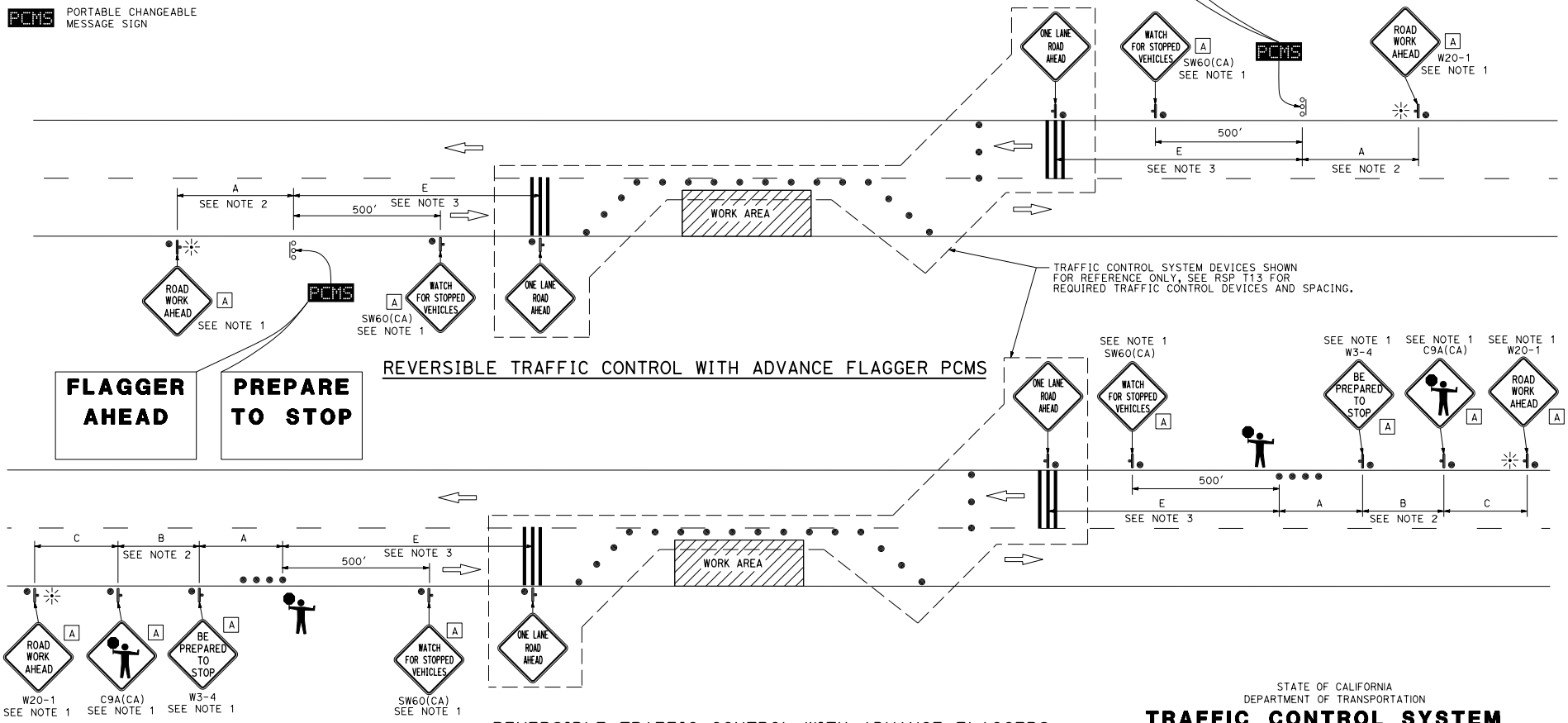
Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Atifa Ferouz — No. C80402 — Exp. 3-31-23 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. Sign must be equiped with at least two flags for daytime closures. Flags must be orange in color and at least 16 inches by 16 inches in size. Place flashing beacons as shown for closures during hours of darkness.
2. See Standard Plan T9, Table 3 for advanced warning sign spacing.
3. See Standard Specification 12-4.02C.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM TWO LANE CONVENTIONAL HIGHWAYS

NO SCALE

RSP T13A DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T13A

2018 REVISED STANDARD PLAN RSP T13A

12-9-20

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Atifa Ferouz — No. C80402 — Exp. 3-31-23 CIVIL — STATE OF CALIFORNIA

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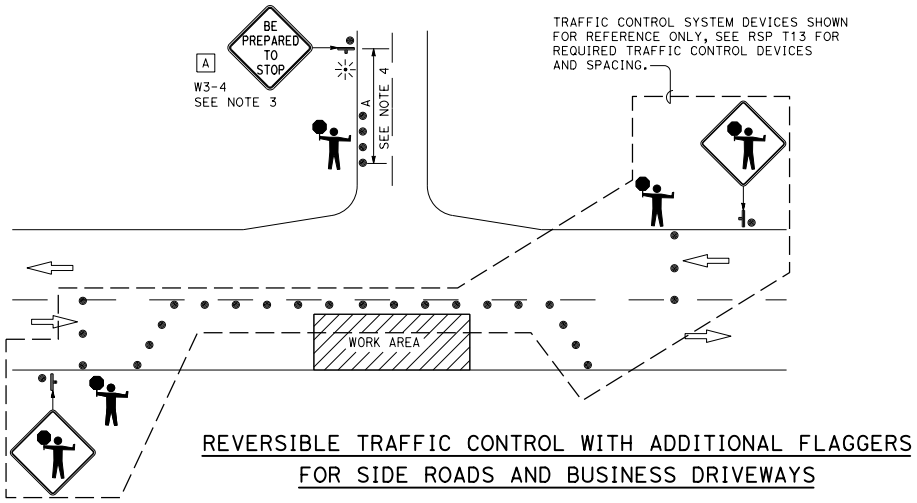
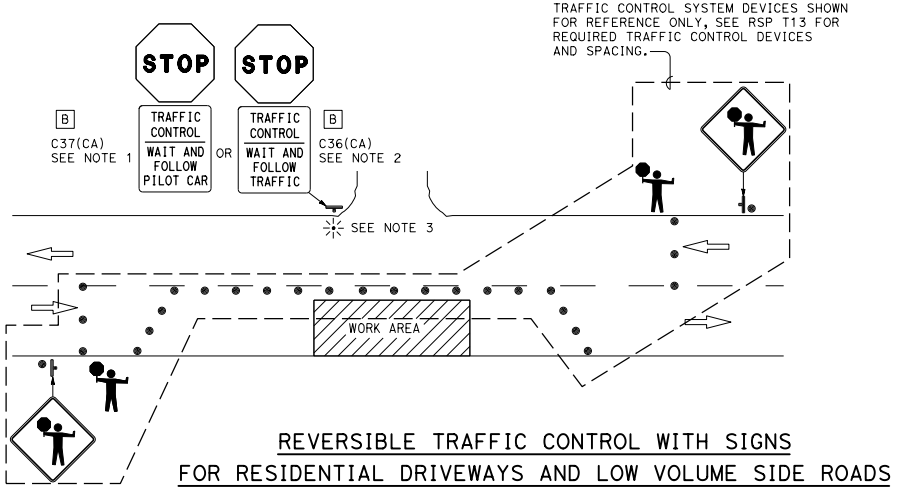
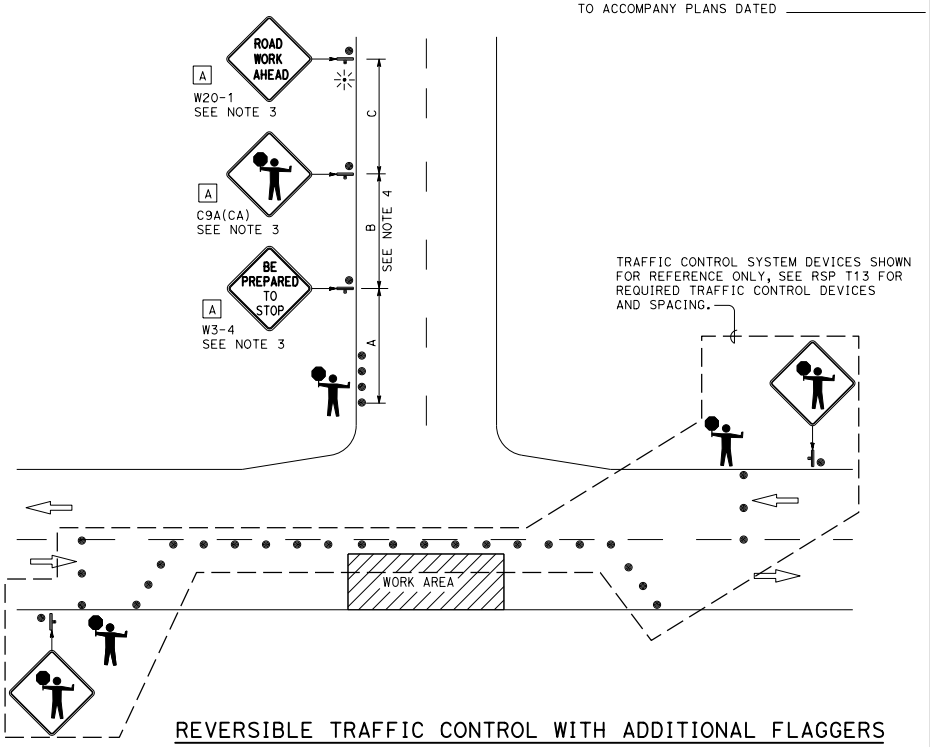
TO ACCOMPANY PLANS DATED _____



REVERSIBLE TRAFFIC CONTROL WITH ADDITIONAL FLAGGERS
FOR SIDE ROADS AND BUSINESS DRIVEWAYS



REVERSIBLE TRAFFIC CONTROL WITH SIGNS
FOR RESIDENTIAL DRIVEWAYS AND LOW VOLUME SIDE ROADS



REVERSIBLE TRAFFIC CONTROL WITH ADDITIONAL FLAGGERS
AT HIGH VOLUME INTERSECTIONS

NOTES:

1. Place C37(CA) sign when pilot car is used.
2. Place C36(CA) sign when pilot car is not used.
3. Sign must be equipped with at least two flags for daytime closures. Flags must be orange in color and at least 16 inches by 16 inches in size. Place flashing beacons as shown for closures during hours of darkness.
4. See Standard Plan T9, Table 3 for advance warning sign spacing.

LEGEND:

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- PORTABLE FLASHING BEACON
- FLAGGER

SIGN PANEL SIZE (Min)

- A 48" x 48"
- B 36" x 42"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM TWO LANE CONVENTIONAL HIGHWAYS

NO SCALE

RSP T13B DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T13B

2018 REVISED STANDARD PLAN RSP T13B

10-15-20

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

Atifa Ferouz
No. C80402
Exp. 3-31-21
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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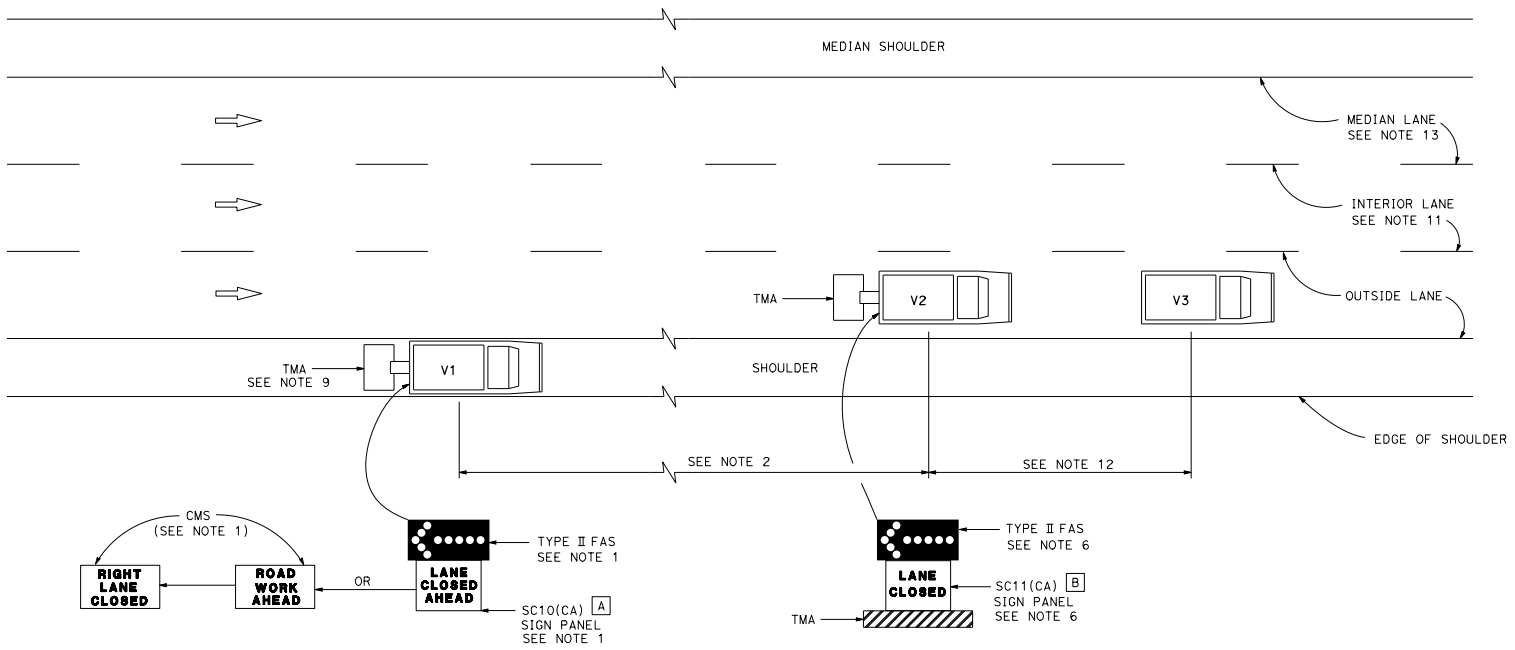
TO ACCOMPANY PLANS DATED _____



MOVING LANE CLOSURE ON MEDIAN LANE OR OUTSIDE LANE OF MULTILANE HIGHWAYS

SIGN PANEL SIZE (Min)

A 66" x 36"
B 54" x 42"

LEGEND

V1	SIGN VEHICLE
V2	SHADOW VEHICLE
V3	WORK/APPLICATION VEHICLE
	FLASHING ARROW SIGN (FAS)
CMS	CHANGEABLE MESSAGE SIGN
TMA	TRUCK-MOUNTED ATTENUATOR

NOTES:

1. Either a changeable message sign or a SC10(CA) sign panel and a Type II flashing arrow sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "RIGHT LANE CLOSED" message. For median lane closure, the flashing arrow symbol shall be reversed with the arrowhead on the right and the changeable message sign shall show "LEFT LANE CLOSED".
2. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders are not available.
3. A minimum sight distance of 1500′ should be provided in advance of sign vehicle V1.
4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500′.
5. Vehicle-mounted sign panels shall have Type III or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.
6. Shadow vehicle V2 shall be equipped with a truck-mounted attenuator. The sign panel shown and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2. For median lane closure the flashing arrow sign symbol shall be displayed with the arrowhead on the right.
7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application operation.
8. All vehicles shall be equipped with flashing or rotating amber lights.
9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
10. Where workers would be on foot in the work area, a stationary type lane closure (Standard Plan T10, T11, etc., as applicable) shall be used instead of this plan.
11. For moving lane closure on interior lane of multilane highways, use Standard Plan T16.
12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.
13. When the work/application vehicle V3 occupies the median lane, sign vehicle V1 should drive in the median shoulder and indicate left lane closed ahead.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR MOVING LANE CLOSURE ON MULTILANE HIGHWAYS

NO SCALE

RSP T15 DATED APRIL 19, 2019 SUPERSEDES STANDARD PLAN T15
DATED MAY 31, 2018 - PAGE 293 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T15

2018 REVISED STANDARD PLAN RSP T15

12-14-18

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

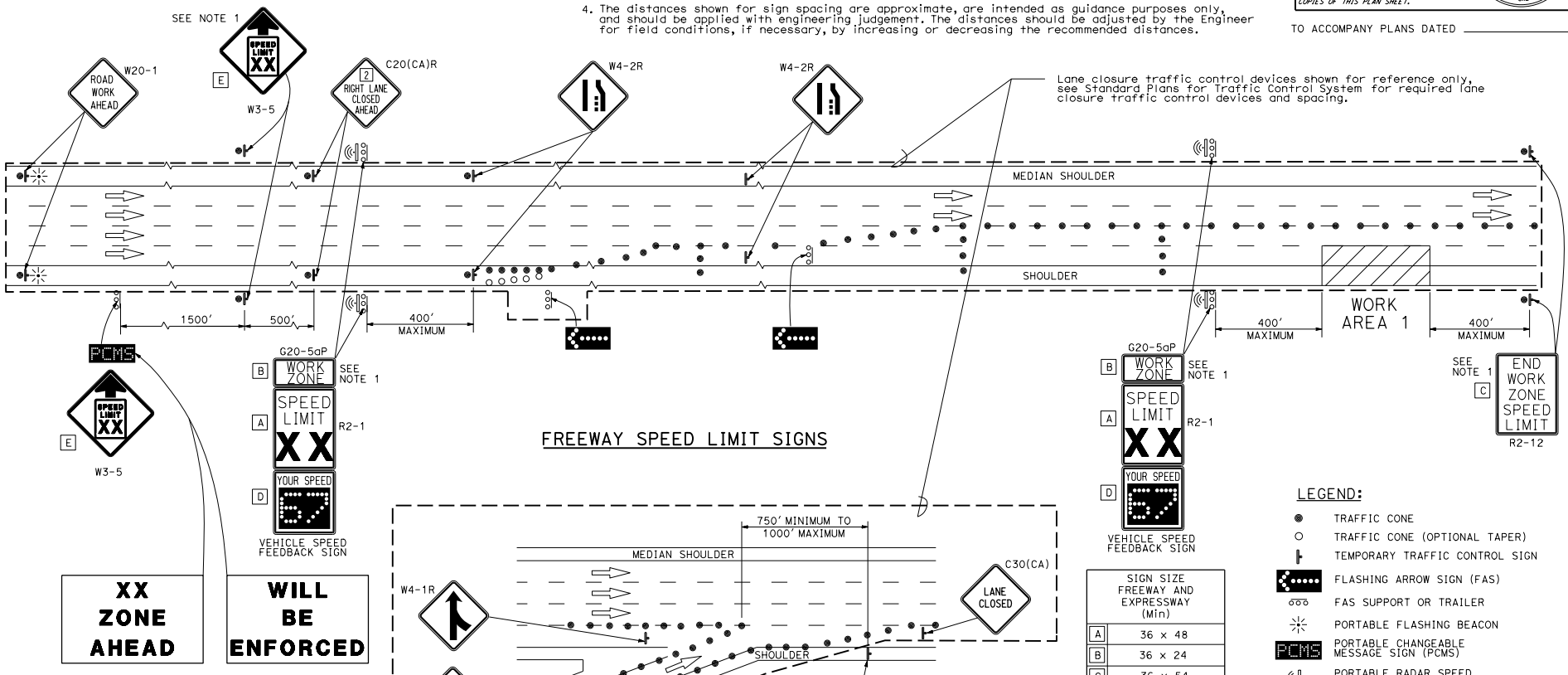
REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

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. 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.
2. Where speed limit reduction zones are longer than 3 miles, place intermediate R2-1 sign and G20-5aP plaque at approximate 3-mile spacing throughout the speed limit reduction zone,
3. Place an R2-1 sign and G20-5aP plaque at each entrance ramp within the speed limit reduction zone.
4. The distances shown for sign spacing are approximate, are intended as guidance purposes only, and should be applied with engineering judgement. The distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommended distances.



FREEWAY SPEED LIMIT SIGNS

ENTRANCE RAMP SPEED LIMIT SIGN

SIGN SIZE FREEWAY AND EXPRESSWAY (Min)	
A	36 x 48
B	36 x 24
C	36 x 54
D	36 x 36
E	48 x 48

LEGEND:

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
- PORTABLE RADAR SPEED FEEDBACK SIGN SYSTEM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM CONSTRUCTION WORK ZONE SPEED LIMIT REDUCTION ON FREEWAYS AND EXPRESSWAYS

NO SCALE

RSP T18 DATED APRIL 17, 2020 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T18

2018 REVISED STANDARD PLAN RSP T18

12-13-19

LEGEND:

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
- PORTABLE RADAR SPEED FEEDBACK SIGN SYSTEM

SIGN PANEL SIZE (Min)

A	48" x 48"
B	36" x 18"
C	24" x 30"
D	24" x 18"
E	24" x 36"
F	24" x 24"

NOTES:

1. See Standard Plan T9 for Table 3 showing advanced warning sign spacing.
2. If the PCMS is outside the W20-1 construction area sign, place a W20-1 sign in advance of the PCMS.
3. Place additional R2-1 sign and G20-5aP plaque:
   a. Where speed limit reduction zones are longer than 3 miles. Place intermediate signs at approximately 3-mile spacing throughout the speed limit reduction zone.
   b. Approximately 500 feet downstream from major intersections within the speed limit reduction zone.

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

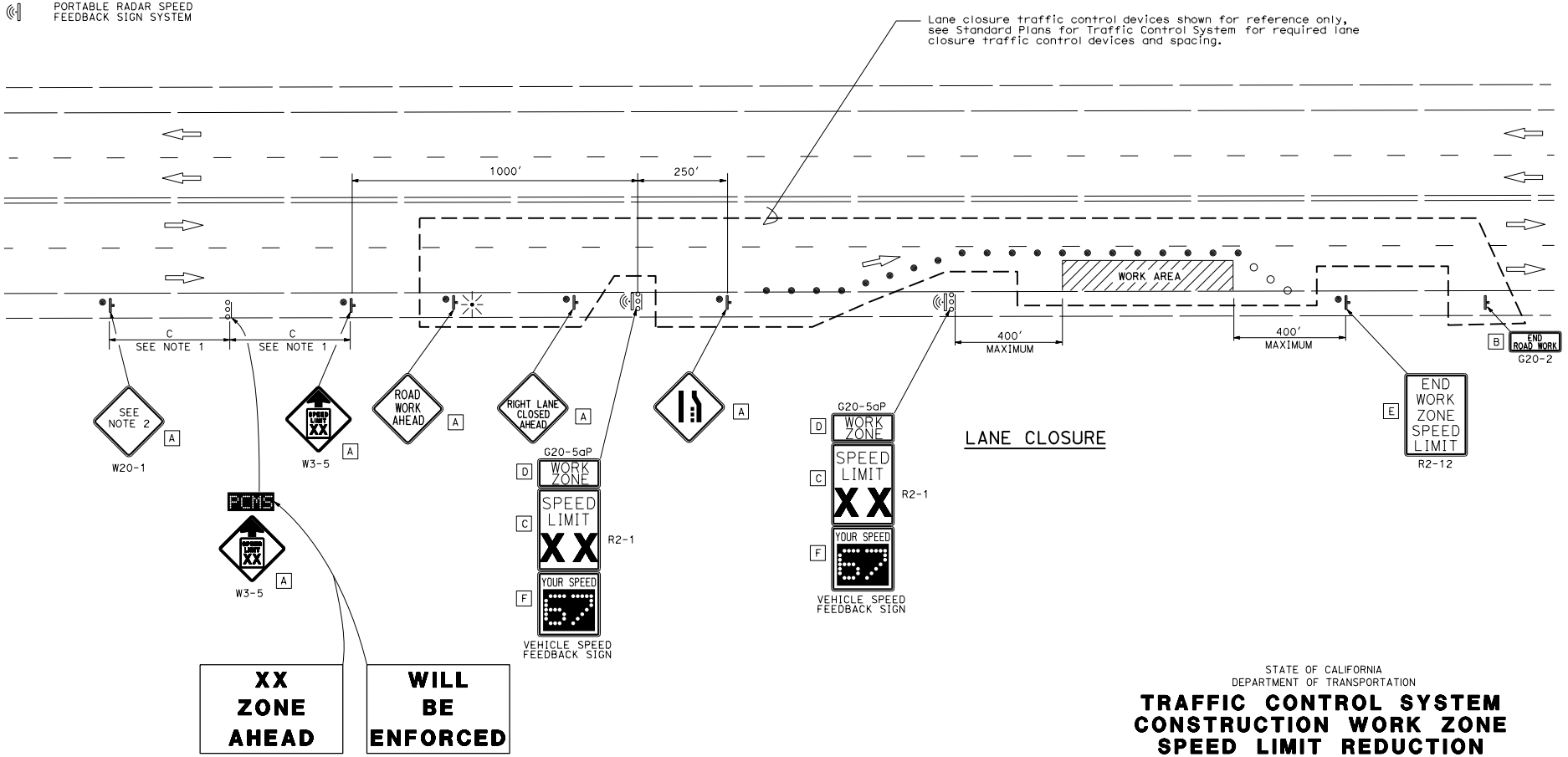
Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

Atifa Ferouz
No. C80402
Exp. 3-31-21
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 _____



LANE CLOSURE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM CONSTRUCTION WORK ZONE SPEED LIMIT REDUCTION ON CONVENTIONAL HIGHWAYS

NO SCALE

RSP T19 DATED APRIL 17, 2020 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T19

2018 REVISED STANDARD PLAN RSP T19

12-6-19

LEGEND:

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
- PORTABLE RADAR SPEED FEEDBACK SIGN SYSTEM

	SIGN SIZE (Min)	
	FREEWAY AND EXPRESSWAY	CONVENTIONAL SINGLE LANE AND MULTILANE
A	36 x 48	24 x 30
B	36 x 24	24 x 18
C	36 x 54	24 x 36
D	36 x 36	24 x 24
E	48 x 48	48 x 48

NOTES:

1. See Standard Plan T9 for Table 3 showing advanced warning sign spacing.
2. 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.
3. If the PCMS is outside the W20-1 construction area sign, place a W20-1 sign in advance of the PCMS.
4. Place the R3(CA) sign 400 feet downstream from the end of the last work area and place an additional vehicle speed feedback sign system 400 feet upstream from the beginning of each work area with a separtion of more than 2 miles.
5. The distances shown for sign spacing are approximate, are intended as guidance purposes only, and should be applied with engineering judgement. The distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommended distances.

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Atifa Ferouz — No. C80402 — Exp. 3-31-21 CIVIL — STATE OF CALIFORNIA

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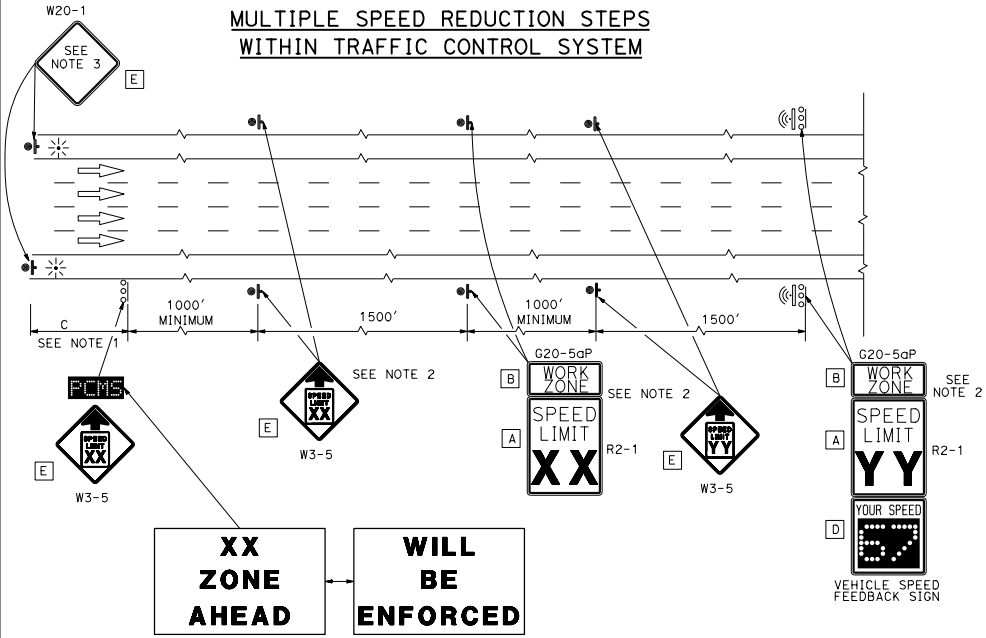
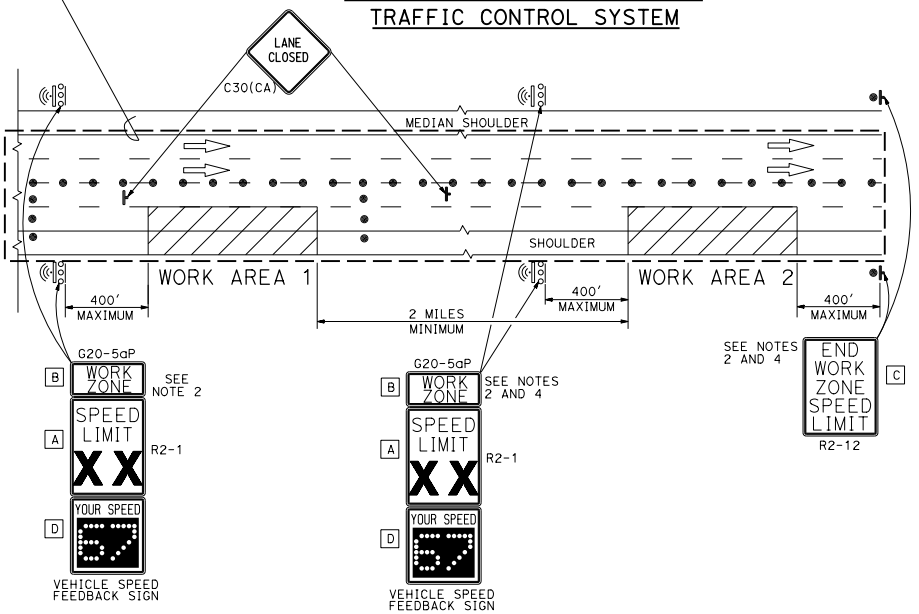
TO ACCOMPANY PLANS DATED _____

Lane closure traffic control devices shown for reference only, see Standard Plans for Traffic Control System for required lane closure traffic control devices and spacing.

MULTIPLE SPEED REDUCTION STEPS WITHIN TRAFFIC CONTROL SYSTEM



MULTIPLE WORK AREAS WITHIN TRAFFIC CONTROL SYSTEM



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM CONSTRUCTION WORK ZONE SPEED LIMIT REDUCTION DETAILS

NO SCALE

RSP T20 DATED OCTOBER 16, 2020 SUPERSEDES RSP T20 DATED APRIL 17, 2020 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T20

2018 REVISED STANDARD PLAN RSP T20

5-18-20

LEGEND:

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
- TEMPORARY RADAR SPEED FEEDBACK SIGN SYSTEM

	SIGN SIZE (Min)	
	FREEWAY AND EXPRESSWAY	CONVENTIONAL SINGLE LANE AND MULTILANE
A	36 x 48	24 x 30
B	36 x 24	24 x 18
C	36 x 54	24 x 36
D	36 x 36	24 x 24
E	48 x 48	48 x 48

NOTES:

1. See Standard Plan T9 for Table 3 showing advanced warning sign spacing.
2. 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.
3. Place additional R2-1 sign and G20-5aP plaque:
   a. Where speed limit reduction zones are longer than 3 miles. Place intermediate sign at approximately 3-mile spacing throughout the speed limit reduction zone.
   b. At each entrance ramp within the speed limit reduction zone.
   c. Approximately 500 feet downstream from major intersections within the speed limit reduction zone.
4. Place appropriate advanced warning sign for the roadway condition that requires the construction work zone speed limit reduction.
5. Where speed limit reduction zones are longer than 3 miles, place additional appropriate advanced warning signs intermediate at approximately 3-mile spacing throughout the speed reduction zone.

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

October 16, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Atifa Ferouz — No. C80402 — Exp. 3-31-21 CIVIL — STATE OF CALIFORNIA

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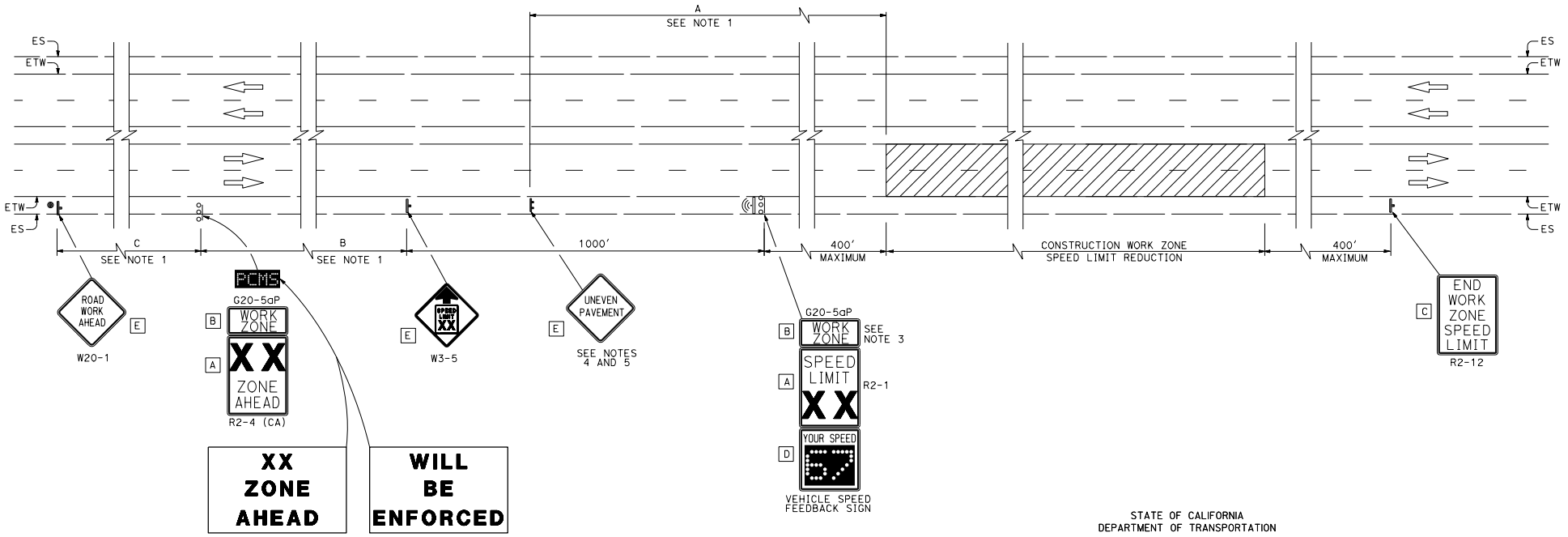
TO ACCOMPANY PLANS DATED _____



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM
CONSTRUCTION WORK ZONE SPEED LIMIT REDUCTION
TWENTY-FOUR HOURS A DAY 7 DAYS A WEEK (24/7)

NO SCALE
RSP T21 DATED OCTOBER 16, 2020 SUPERSEDES RSP T21 DATED APRIL 17, 2020
THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T21

2018 REVISED STANDARD PLAN RSP T21

5-18-20

LEGEND:

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- PORTABLE FLASHING BEACON
- FLAGGER
- PORTABLE RADAR SPEED FEEDBACK SIGN SYSTEM (PRSFSS)
- PRSFSS SUPPORT OR TRAILER
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

SIGN PANEL SIZE (Min)

A	48" x 48"
B	24" x 30"
C	24" x 18"
D	24" x 24"
E	24" x 36"

NOTES:

1. See Standard Plan T9, Table 3 for advanced warning sign spacing.
2. The distance B to the PRSFS is measured from the C29 (CA) sign or the PCMS at the Advance Flagger Station.
3. If rumble strips are not used, the distance B to PRSFS is measured from W20-4.

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

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 16, 2021
APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Atifa Ferouz — No. C80402 — Exp. 3-31-23 CIVIL — STATE OF CALIFORNIA

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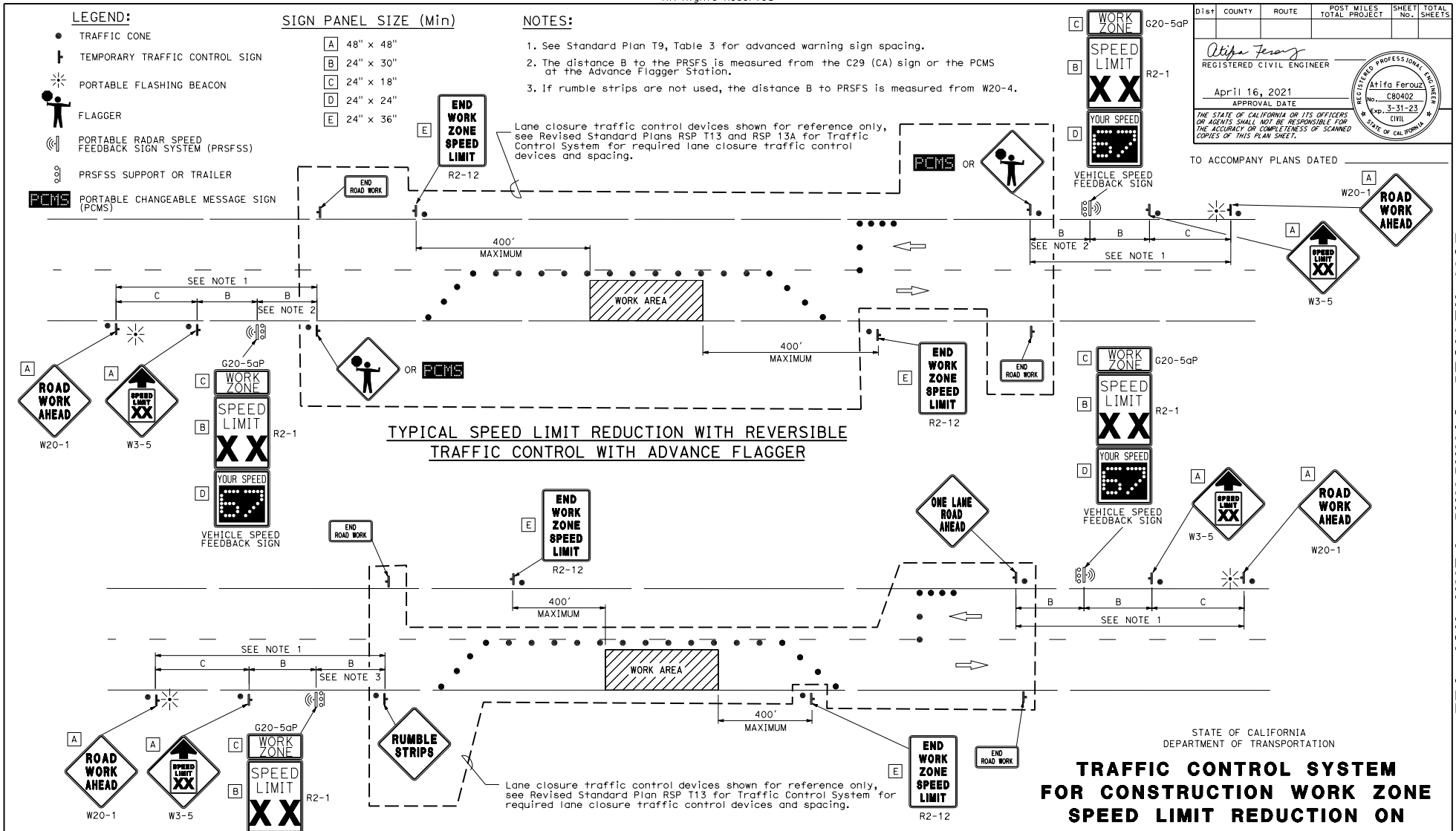
TO ACCOMPANY PLANS DATED _____



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR CONSTRUCTION WORK ZONE SPEED LIMIT REDUCTION ON TWO LANE CONVENTIONAL HIGHWAYS

NO SCALE

RSP T22 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T22

2018 REVISED STANDARD PLAN RSP T22

12-22-20

NOTES:

1. Channelizing devices shown adjacent to the mobile barrier may be removed or not placed while the mobile barrier is stationary, but must be placed or replaced as the barrier moves within the work area.
2. See Standard Plan T9 for tables.
3. One impact attenuator vehicle per closed internal lane adjacent to the mobile barrier.

LEGEND:

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL)
- TEMPORARY TRAFFIC CONTROL SIGN
- TYPE II FLASHING ARROW SIGN
- FAS SUPPORT OR TRAILER
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN
- REPOSITIONING MOBILE BARRIER
- IMPACT ATTENUATOR
- TYPE II FLASHING ARROW SIGN FLASHING CAUTION MODE
- TYPE II FLASHING ARROW SIGN ALTERNATING DIAMONDS

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

Charles D Suszko
REGISTERED CIVIL ENGINEER

October 15, 2021
PLANS APPROVAL DATE

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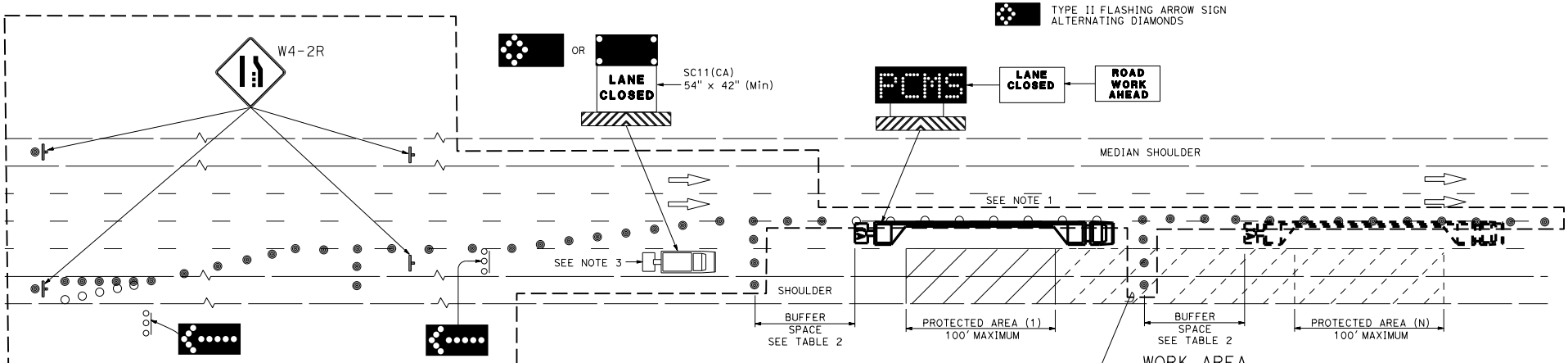
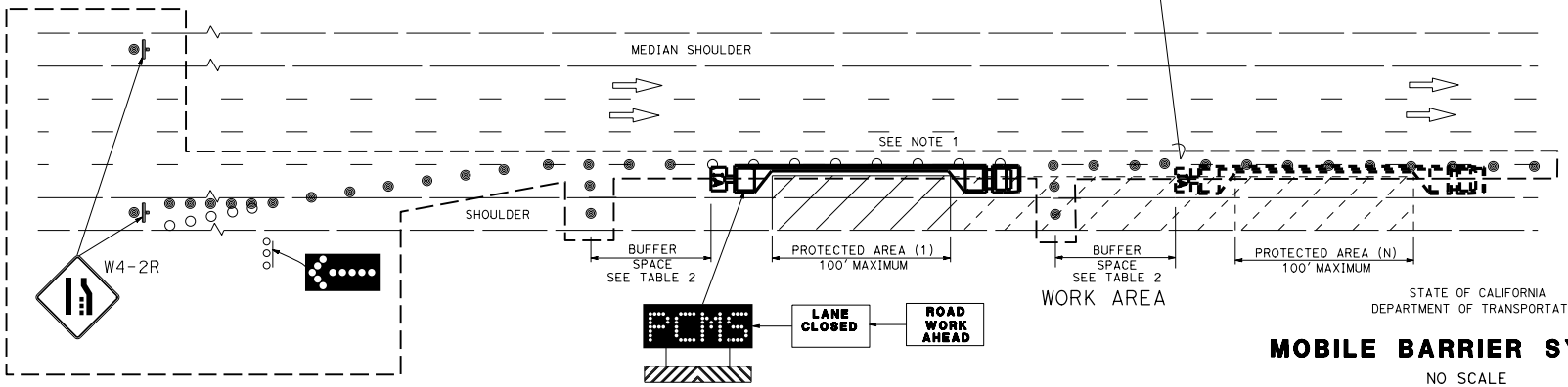
REGISTERED PROFESSIONAL ENGINEER
Charles D. Suszko
No. C43029
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



MOBILE BARRIER WITHIN TRAFFIC CONTROL SYSTEM
IN LANE ADJACENT TO WORK AREA

TRAFFIC CONTROL SYSTEM DEVICES SHOWN FOR REFERENCE ONLY, SEE TRAFFIC CONTROL SYSTEM STANDARD PLANS FOR REQUIRED TRAFFIC CONTROL DEVICES AND SPACING.



MOBILE BARRIER WITHIN TRAFFIC CONTROL SYSTEM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MOBILE BARRIER SYSTEM

NO SCALE

RSP T24 DATED OCTOBER 15, 2021 SUPERSEDES RSP T24
DATED APRIL 16, 2021 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T24

2018 REVISED STANDARD PLAN RSP T24

6-16-21

NOTE:

1. Channelizing devices shown adjacent to the mobile barrier may be removed or not placed while the mobile barrier is stationary, but must be placed or replaced as the barrier moves within the work area.
2. See Standard Plan T9 for tables.

LEGEND:

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL)
- TEMPORARY TRAFFIC CONTROL SIGN
- TYPE II FLASHING ARROW SIGN
- FAS SUPPORT OR TRAILER
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN
- REPOSITIONING MOBILE BARRIER

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

Charles D Suszko
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Charles D. Suszko — No. C43029 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

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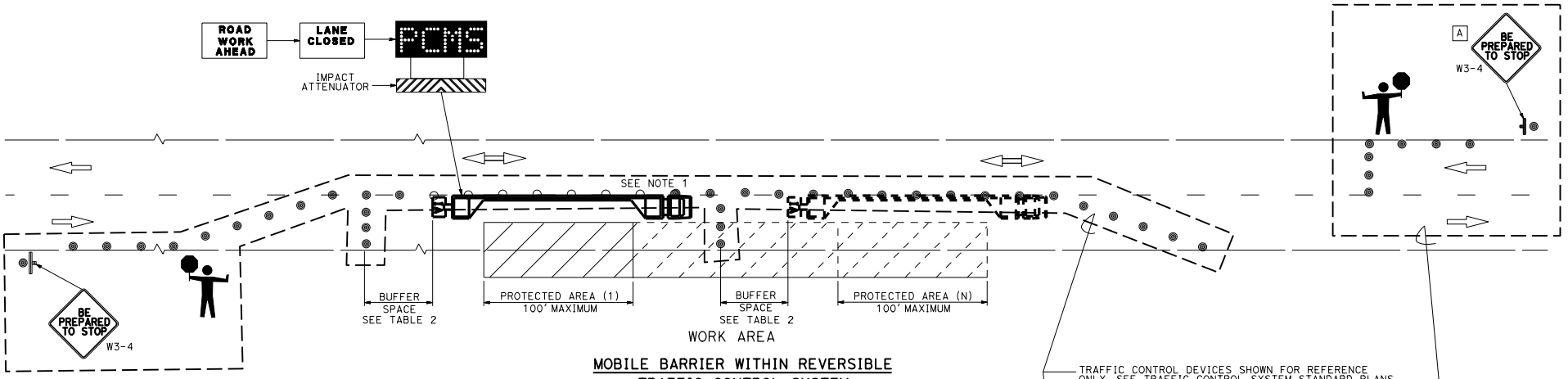
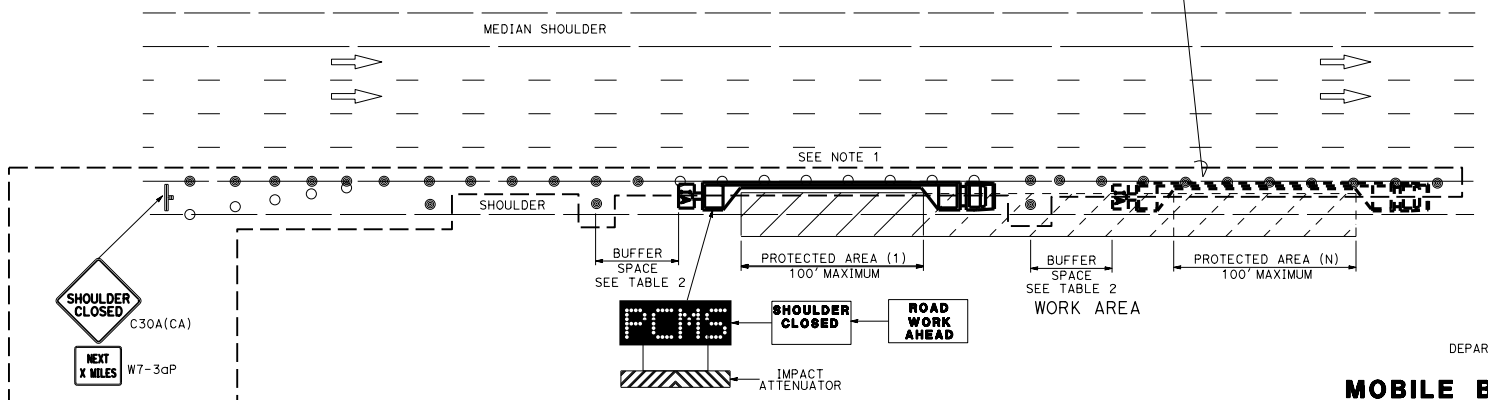
TO ACCOMPANY PLANS DATED _____



MOBILE BARRIER WITHIN REVERSIBLE TRAFFIC CONTROL SYSTEM

TRAFFIC CONTROL DEVICES SHOWN FOR REFERENCE ONLY, SEE TRAFFIC CONTROL SYSTEM STANDARD PLANS FOR REQUIRED TRAFFIC CONTROL DEVICES AND SPACING.



MOBILE BARRIER WITHIN SHOULDER TRAFFIC CONTROL SYSTEM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MOBILE BARRIER SYSTEM

NO SCALE

RSP T25 DATED APRIL 16, 2021 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T25

12-22-20

2018 REVISED STANDARD PLAN RSP T25

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

Charles D Suszko
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

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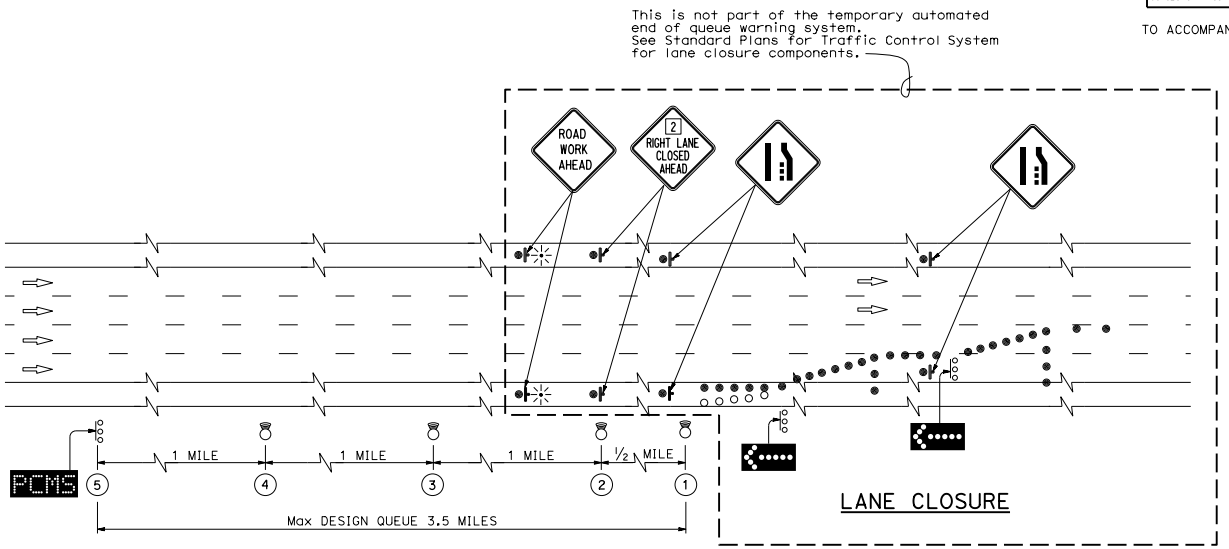
REGISTERED PROFESSIONAL ENGINEER
Charles D. Suszko
No. C43029
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

LEGEND:

- PORTABLE VEHICLE SPEED SENSOR
- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- PORTABLE FLASHING BEACON
- SIGN
- SUPPORT OR TRAILER
- (1) LOCATION
- FLASHING ARROW SIGN
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)



OPERATIONAL GUIDELINE FOR PCMS MESSAGES FOR POSTED SPEED LIMIT 55 MPH				
MESSAGE AT (5)	LAST 5 Min SPEED AVERAGES, V(MPH)			
	SENSOR AT (4)	SENSOR AT (3)	SENSOR AT (2)	SENSOR AT (1)
ROAD WORK AHEAD	> 45	> 45	> 45	=> 45
SLOW TRAFFIC 3 MILES	> 45	> 45	=> 45	25 < V < 45
SLOW TRAFFIC 2 MILES	> 45	=> 45	25 < V < 45	---
SLOW TRAFFIC 1 MILE	=> 45	25 < V < 45	---	---
SLOW TRAFFIC AHEAD	25 < V < 45	---	---	---
STOPPED TRAFFIC 3 MILES	> 25	> 25	> 25	<= 25
STOPPED TRAFFIC 2 MILES	> 25	> 25	<= 25	---
STOPPED TRAFFIC 1 MILE	> 25	<= 25	---	---
STOPPED TRAFFIC AHEAD	<= 25	---	---	---

For other posted speed limits adjust speeds shown on the table by adding or subtracting the calculated speed adjustment using the following formula:

Speed Adjustment = X posted speed limit - 55 mph

Add speed adjustments to speed averages.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY AUTOMATED END OF QUEUE WARNING SYSTEM TYPE 1 (QUEUE <= 3.5 MILES)

NO SCALE

RSP T26 DATED APRIL 17, 2020 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T26

2018 REVISED STANDARD PLAN RSP T26

1-8-20

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

Charles D Suszko
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

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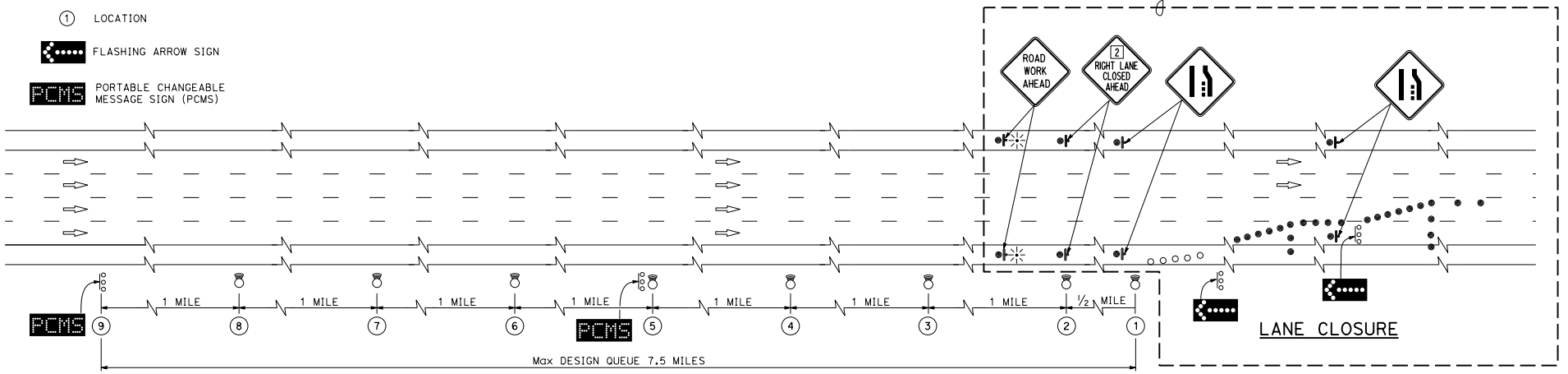
TO ACCOMPANY PLANS DATED _____

LEGEND:

- PORTABLE VEHICLE SPEED SENSOR
- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- PORTABLE FLASHING BEACON
- SIGN
- SUPPORT OR TRAILER
- (1) LOCATION
- FLASHING ARROW SIGN
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

This is not part of the temporary automated end of queue warning system. See Standard Plans for Traffic Control System for lane closure components.



OPERATIONAL GUIDELINE FOR PCMS MESSAGES FOR POSTED SPEED LIMIT 55 MPH

MESSAGE AT (9)	LAST 5 Min SPEED AVERAGES, V(MPH)				MESSAGE AT (5)	LAST 5 Min SPEED AVERAGES, V(MPH)			
	SENSOR AT (8)	SENSOR AT (7)	SENSOR AT (6)	SENSOR AT (5)		SENSOR AT (4)	SENSOR AT (3)	SENSOR AT (2)	SENSOR AT (1)
ROAD WORK AHEAD	> 45	> 45	> 45	=> 45	ROAD WORK AHEAD	> 45	> 45	> 45	=> 45
SLOW TRAFFIC 3 MILES	> 45	> 45	=> 45	25 < V < 45	SLOW TRAFFIC 3 MILES	> 45	> 45	=> 45	25 < V < 45
SLOW TRAFFIC 2 MILES	> 45	=> 45	25 < V < 45	---	SLOW TRAFFIC 2 MILES	> 45	=> 45	25 < V < 45	---
SLOW TRAFFIC 1 MILE	=> 45	25 < V < 45	---	---	SLOW TRAFFIC 1 MILE	=> 45	25 < V < 45	---	---
SLOW TRAFFIC AHEAD	25 < V < 45	---	---	---	SLOW TRAFFIC AHEAD	25 < V < 45	---	---	---
STOPPED TRAFFIC 3 MILES	> 25	> 25	> 25	<= 25	STOPPED TRAFFIC 3 MILES	> 25	> 25	> 25	<= 25
STOPPED TRAFFIC 2 MILES	> 25	> 25	<= 25	---	STOPPED TRAFFIC 2 MILES	> 25	> 25	<= 25	---
STOPPED TRAFFIC 1 MILE	> 25	<= 25	---	---	STOPPED TRAFFIC 1 MILE	> 25	<= 25	---	---
STOPPED TRAFFIC AHEAD	<= 25	---	---	---	STOPPED TRAFFIC AHEAD	<= 25	---	---	---

For other posted speed limits adjust speeds shown on the table by adding or subtracting the calculated speed adjustment using the following formula:

Speed Adjustment = X posted speed limit - 55 mph

Add speed adjustments to speed averages.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY AUTOMATED END OF QUEUE WARNING SYSTEM TYPE 2 (QUEUE <= 7.5 MILES)

NO SCALE

RSP T27 DATED APRIL 17, 2020 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP T27

2018 REVISED STANDARD PLAN RSP T27

1-8-20