Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1501	1710

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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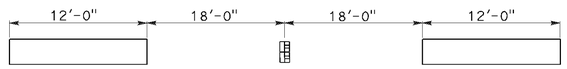
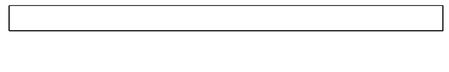
TO ACCOMPANY PLANS DATED October 8, 2021

PREFERENTIAL LANE LINES

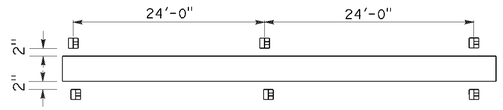
DETAIL 42



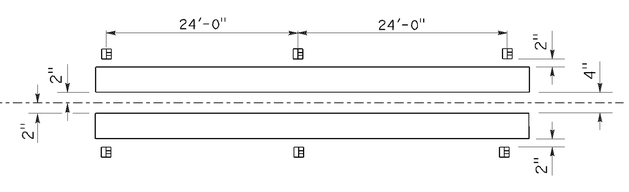
DETAIL 43



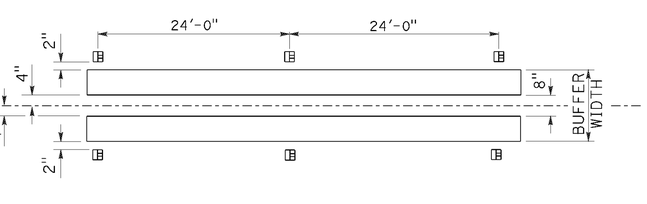
DETAIL 43A



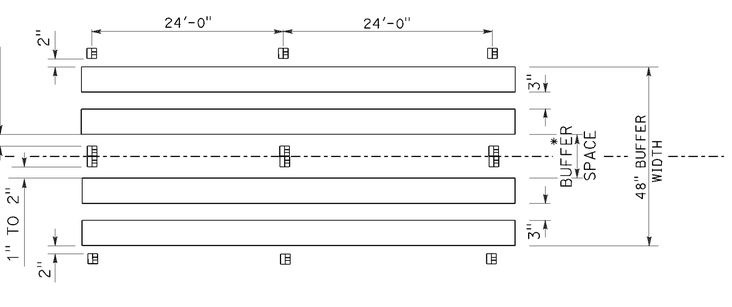
DETAIL 44A



DETAIL 44B



DETAIL 45



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

LEGEND

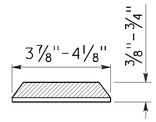
MARKERS

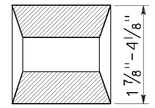
TYPE C RED-CLEAR RETROREFLECTIVE

LINES

8" WHITE LINE

MARKER DETAILS





TYPE C

RETROREFLECTIVE FACE

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

2018 REVISED STANDARD PLAN RSP A20F

11-9-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1502	1710

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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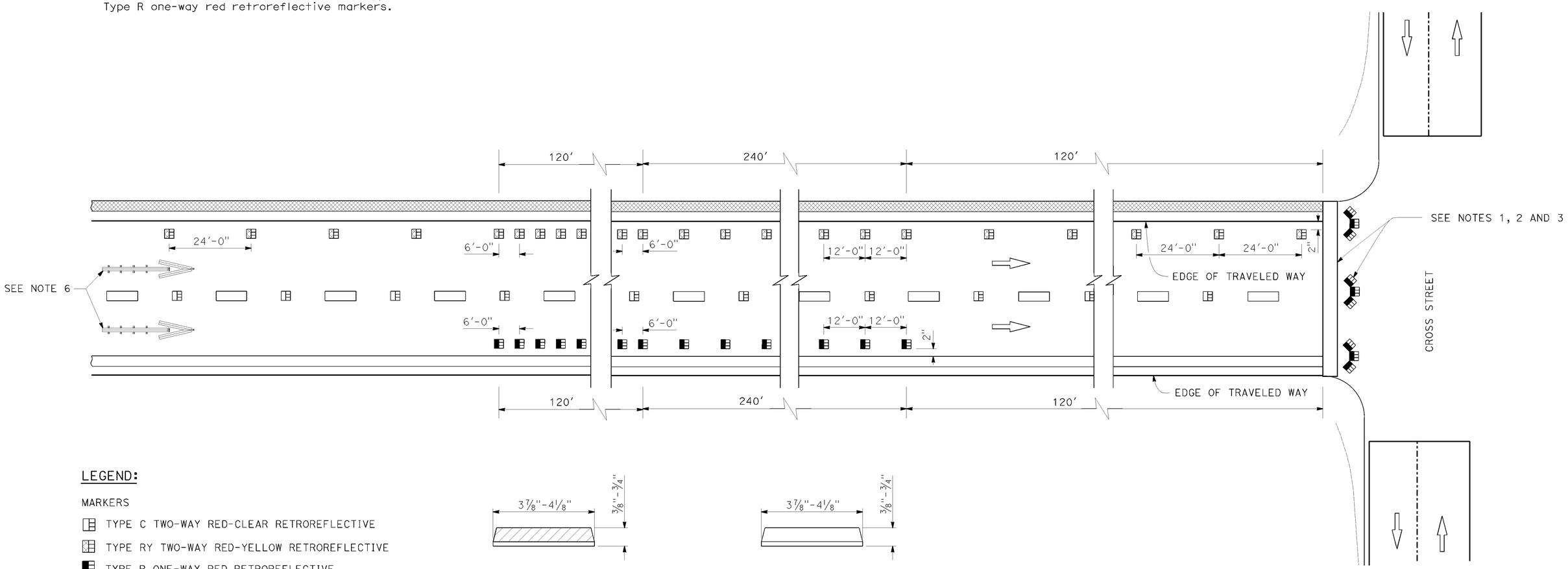
TO ACCOMPANY PLANS DATED October 8, 2021

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.



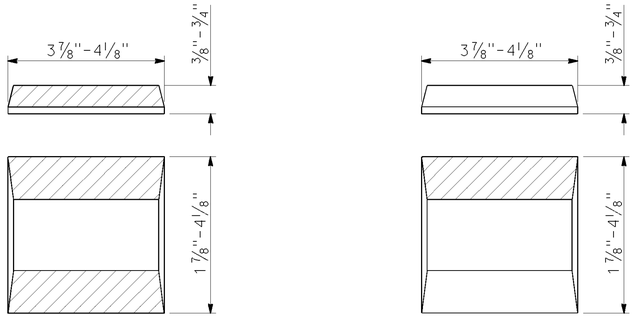
LEGEND:

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1503	1710

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

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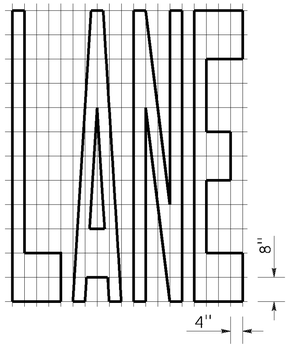
TO ACCOMPANY PLANS DATED October 8, 2021



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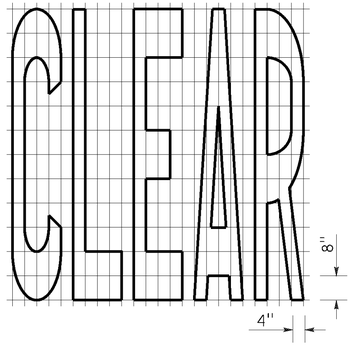
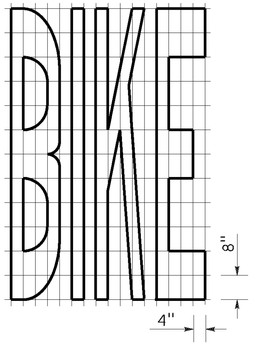


A=27 ft²



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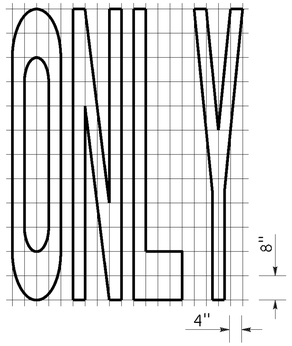

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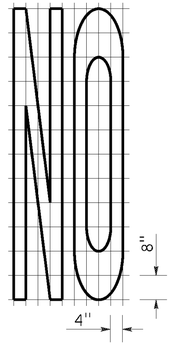
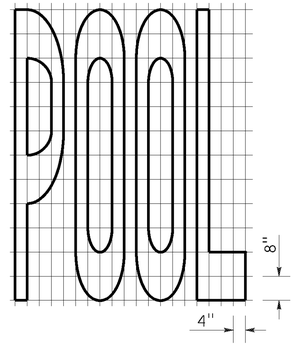
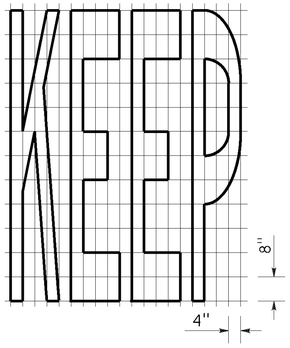


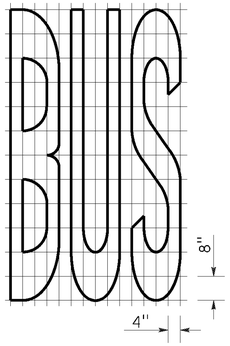
A=14 ft²



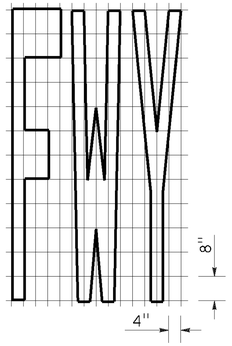
A=23 ft²



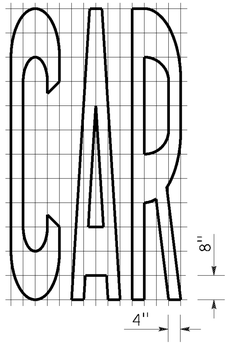
A=24 ft²



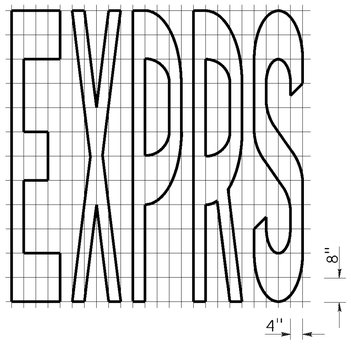
A=20 ft²



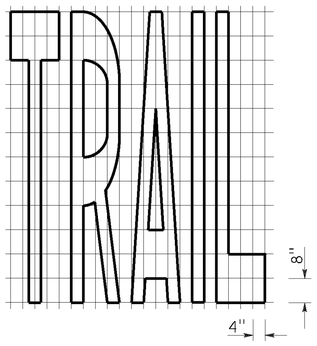
A=16 ft²



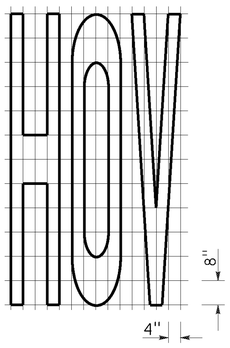
A=17 ft²



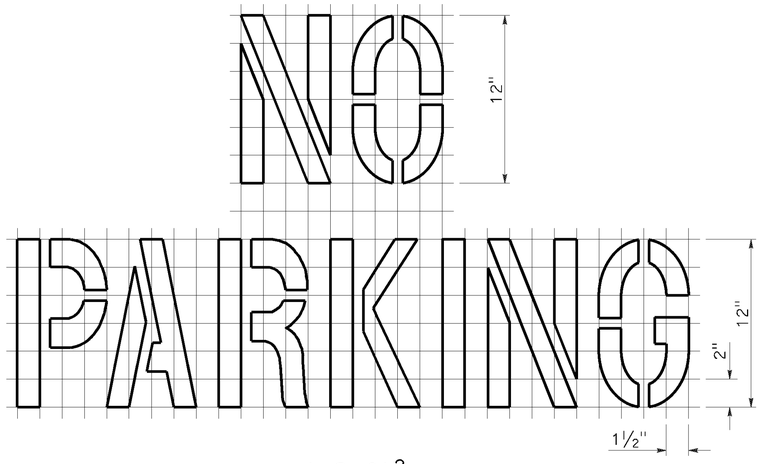
A=30 ft²



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1504	1710

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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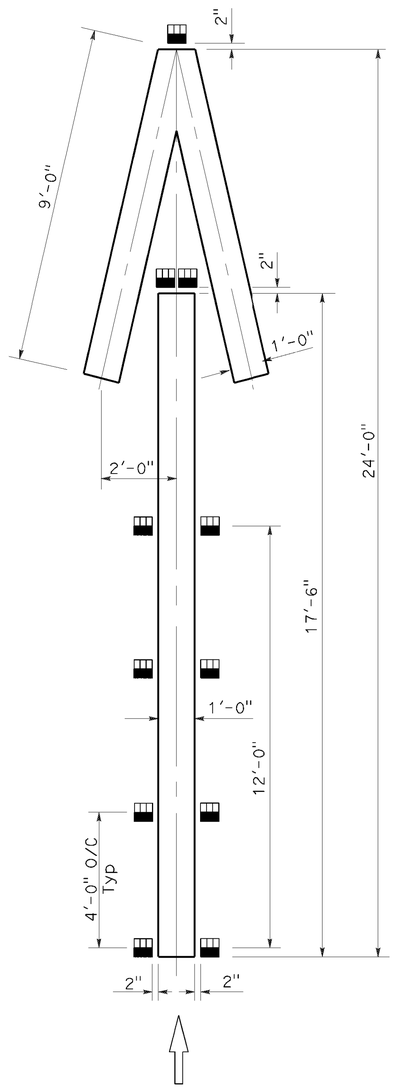
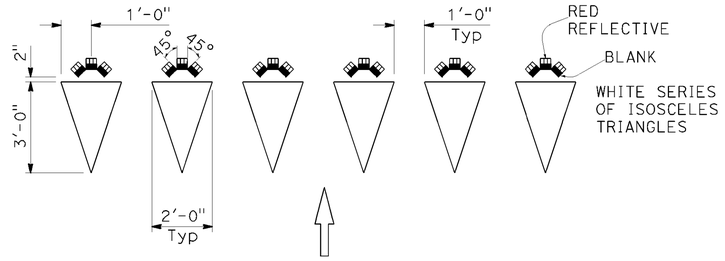
TO ACCOMPANY PLANS DATED October 8, 2021

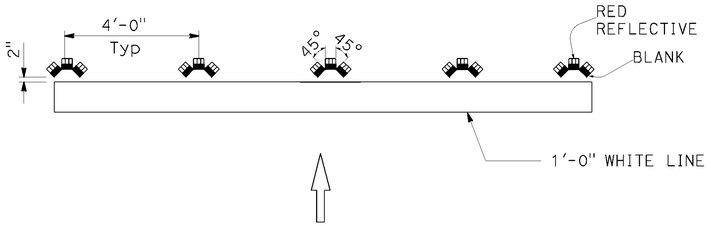


A=33 ft²

TYPE V ARROW AT EXIT RAMP



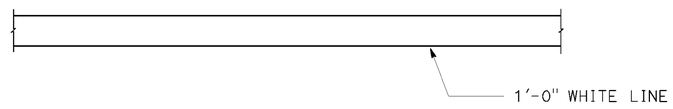
YIELD LINE AT EXIT RAMP



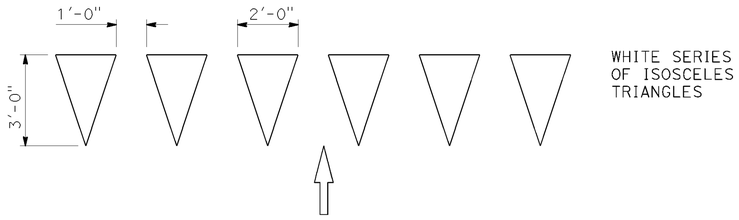
LIMIT LINE (STOP LINE) AT EXIT RAMP

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)



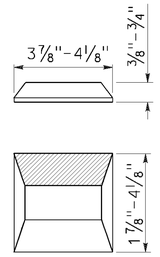
YIELD LINE

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1505	1710

Gary Wang
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Gary Wang
No. C58298
Exp. 6-30-22
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 October 8, 2021

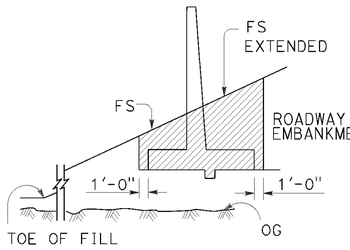
SURCHARGE NOTES:

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

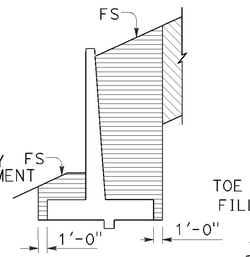
B. Surcharge slopes to be as steep as stability of material permits.

RETAINING WALL IN FILL, ON SLOPE

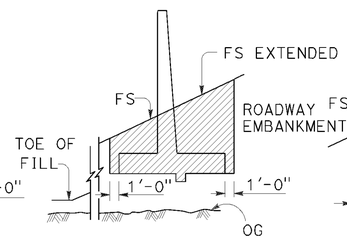
SLOPE BEHIND WALL — EXCAVATION



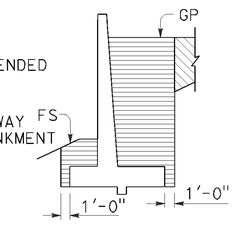
SLOPE BEHIND WALL — BACKFILL

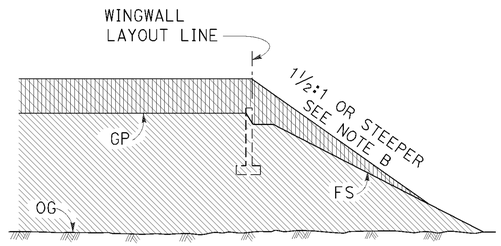


FLAT BEHIND WALL — EXCAVATION

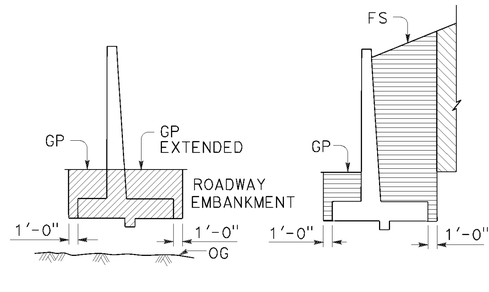


FLAT BEHIND WALL — BACKFILL

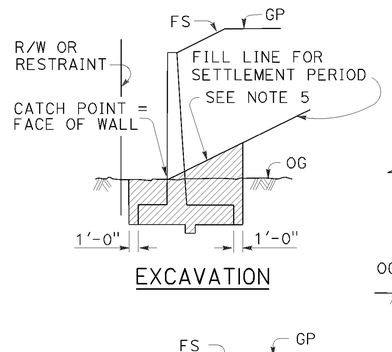




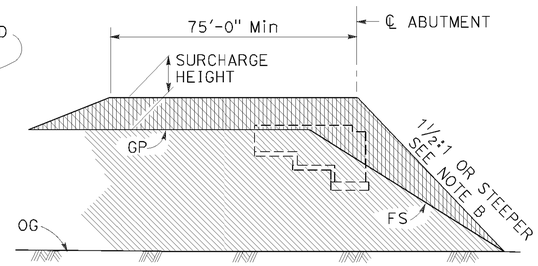
SECTION F-F



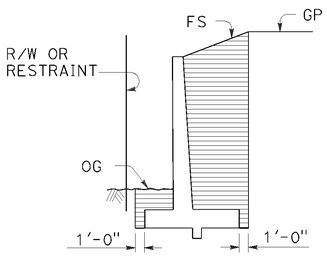
RETAINING WALL IN FILL



EXCAVATION

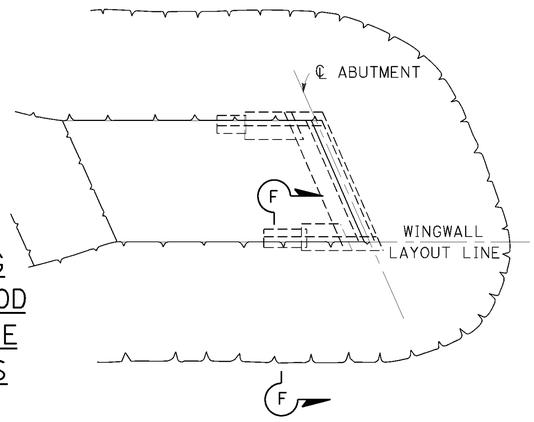


ELEVATION



BACKFILL

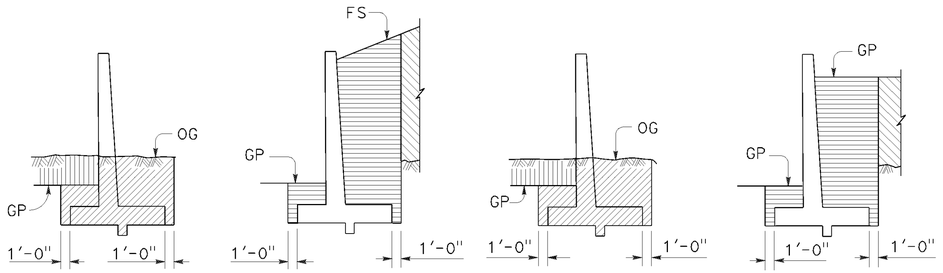
RETAINING WALL IN OG WITH SETTLEMENT PERIOD AND NEXT TO R/W LINE OR OTHER RESTRAINTS



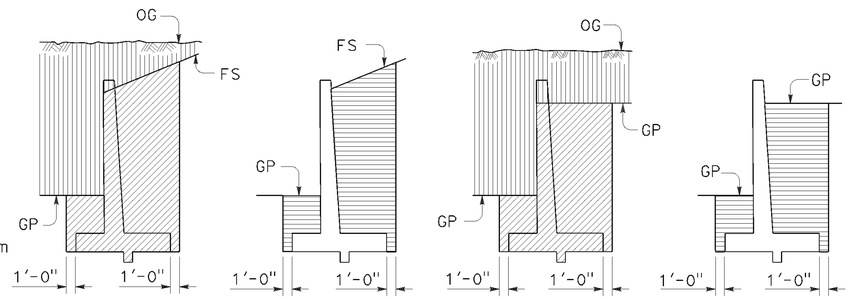
PLAN

BRIDGE EMBANKMENT SURCHARGE

RETAINING WALL IN FILL AND CUT



RETAINING WALL IN CUT



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.

LEGEND

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

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1506	1710

REGISTERED CIVIL ENGINEER

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

October 15, 2021
PLANS APPROVAL DATE

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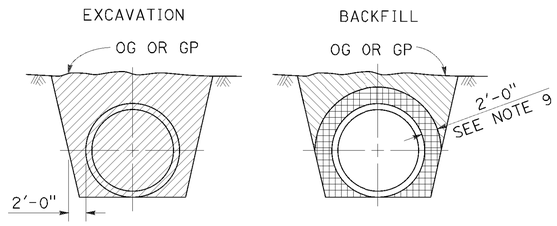
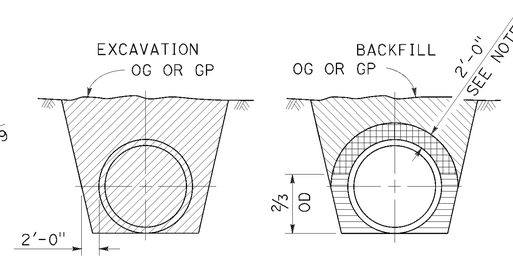
TO ACCOMPANY PLANS DATED October 8, 2021



IN TRENCH



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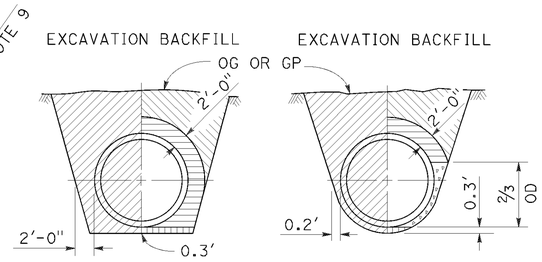
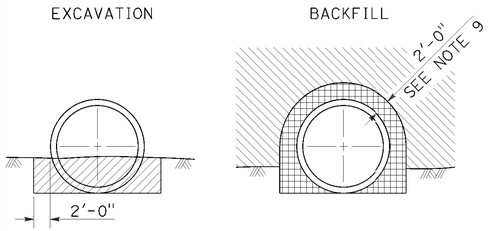
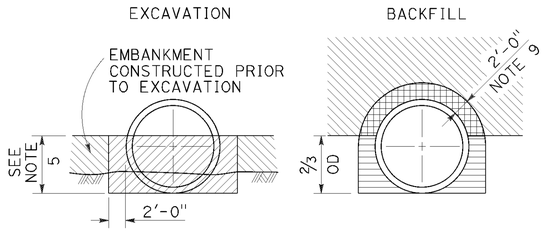


SAND BEDDING SOIL CEMENT BEDDING

IN TRENCH



IN EMBANKMENT



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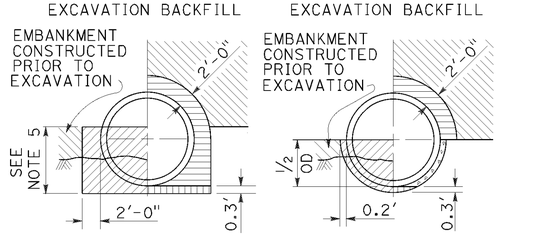


SAND BEDDING SOIL CEMENT BEDDING

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

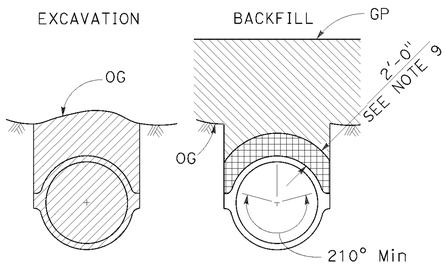
REINFORCED CONCRETE PIPE

See Notes 1, 2, 7 and 10

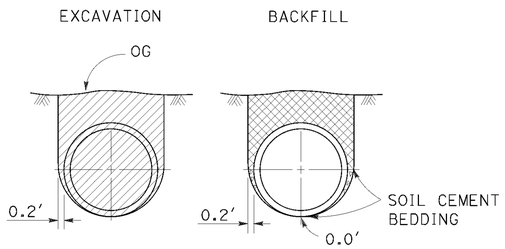
MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 3

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

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.

LEGEND

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

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

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS

NO SCALE

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

REVISED STANDARD PLAN RSP A62D

2018 REVISED STANDARD PLAN RSP A62D

6-1-21

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1507	1710

REGISTERED CIVIL ENGINEER

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

October 15, 2021
PLANS APPROVAL DATE

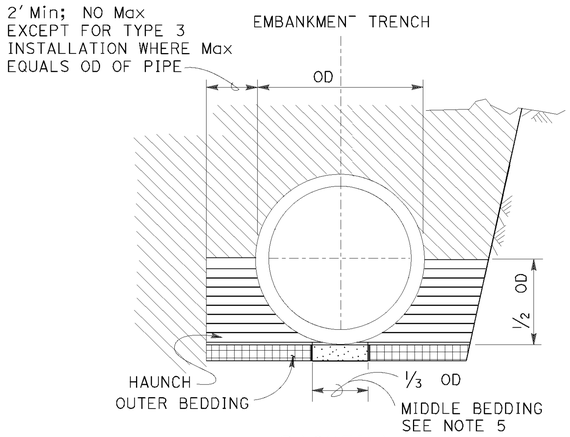
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED October 8, 2021

DESIGN NOTES:

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

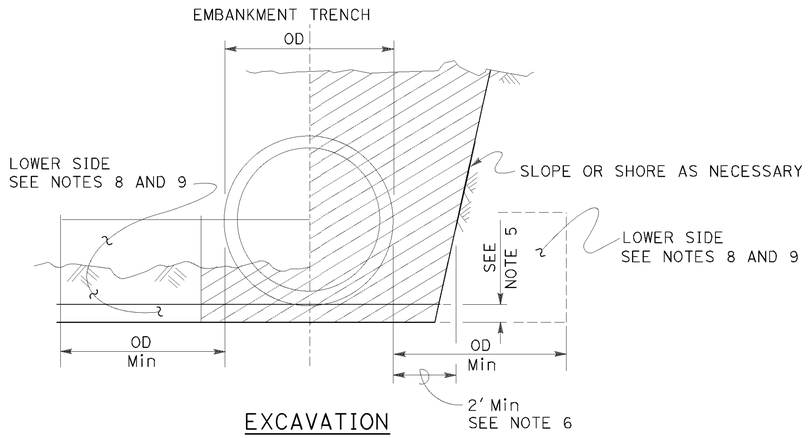
Soil: w Fe = 162 pcf Installation Type 1
w Fe = 168 pcf Installation Types 2 & 3
w = Unit weight of soil (pcf)
Fe = Soil-structure interaction factor



BACKFILL

LEGEND:

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



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: ¼ OD Min, not less than 3" for soil foundation; ½ 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 ⅓ of the outside diameter of the pipe shall be softened by scarifying or other means to a minimum depth of ¼ 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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1508	1710

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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

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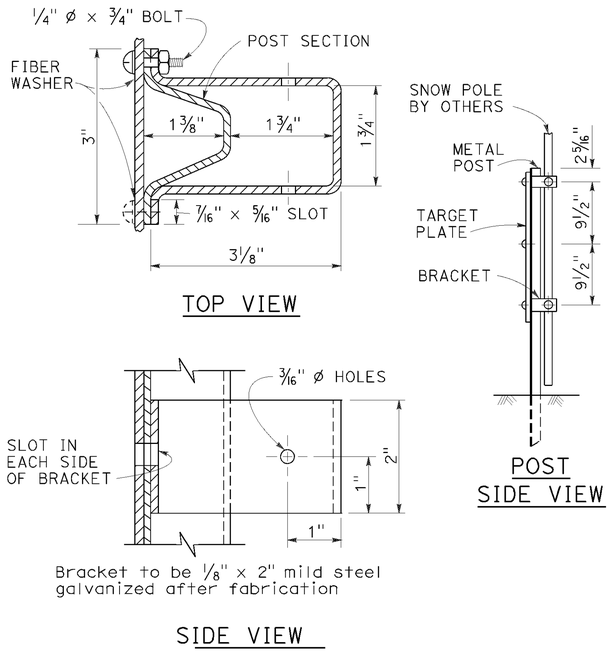
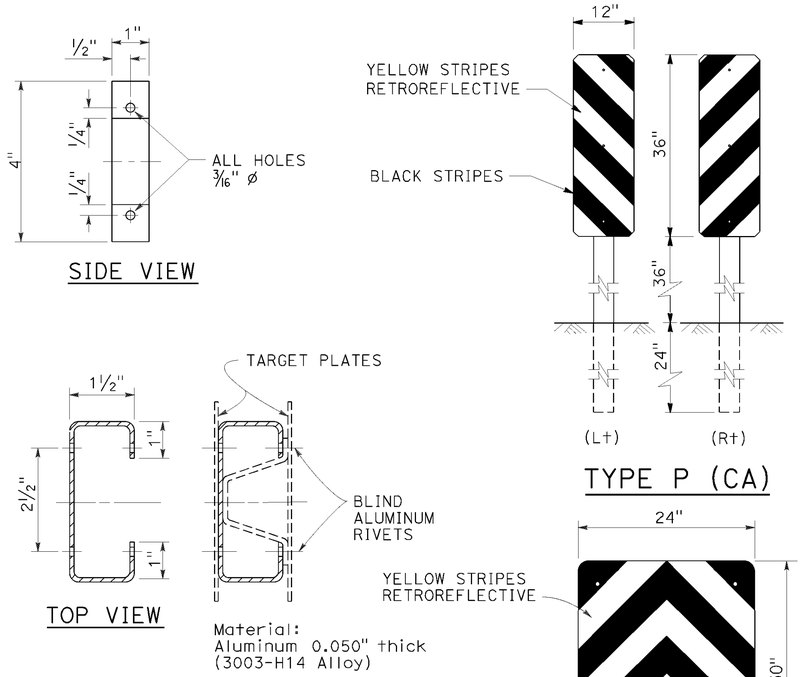
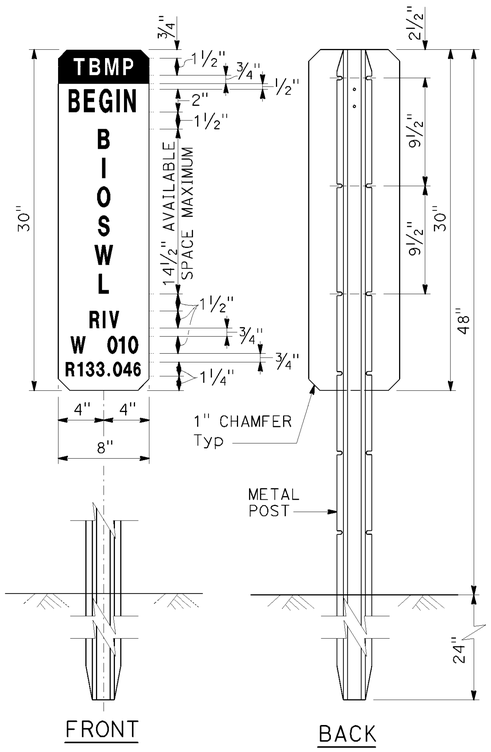
TO ACCOMPANY PLANS DATED October 8, 2021







TREATMENT BEST MANAGEMENT PRACTICE (TBMP) MARKER

NOTES:

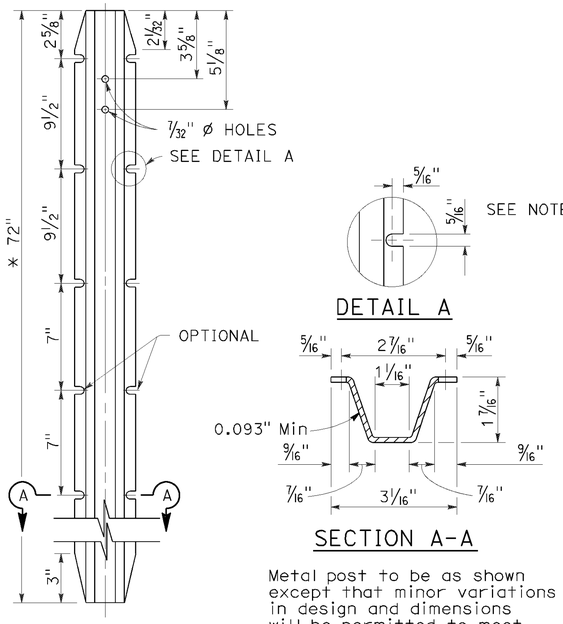
1. The marker header shall be green (non-reflective) background with white (non-reflective) Series C letters.
2. The marker body shall be white (non-reflective) target plate with black Series C numbers and letters.
3. "BEGIN" or "END" shall apply as directed by the Engineer.
4. TBMP abbreviations shall 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.

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.

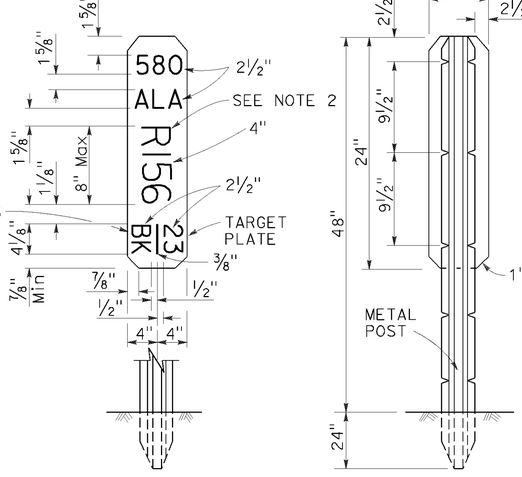
C. Diagonal stripes on Type P(CA) markers shall be sloped down in the direction of travel.



* 8'-0" for Type P object marker

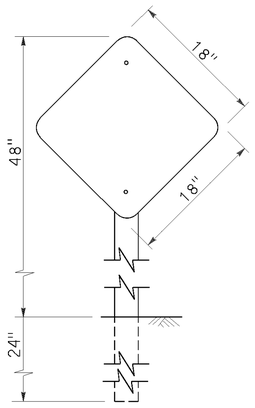
METAL POST DETAIL

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



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1509	1710

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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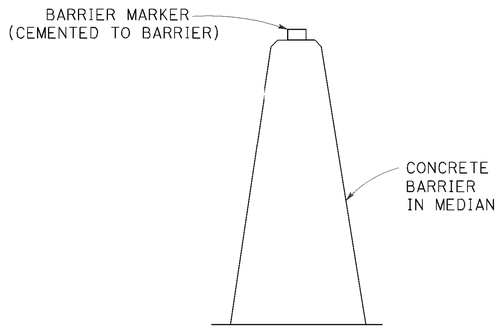
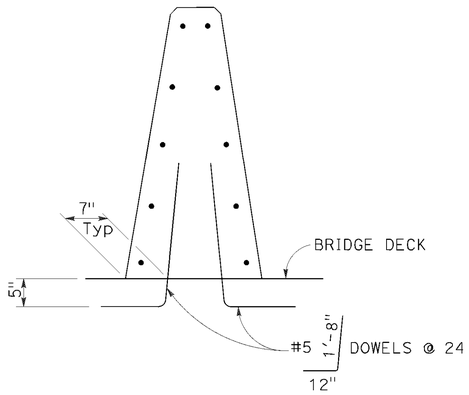
TO ACCOMPANY PLANS DATED October 8, 2021



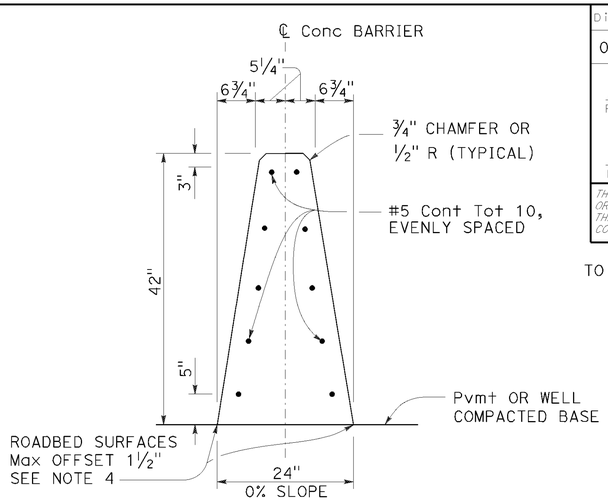
CONCRETE BARRIER TYPE 60M DELINEATION

See Note 5



CONCRETE BARRIER TYPE 60MA

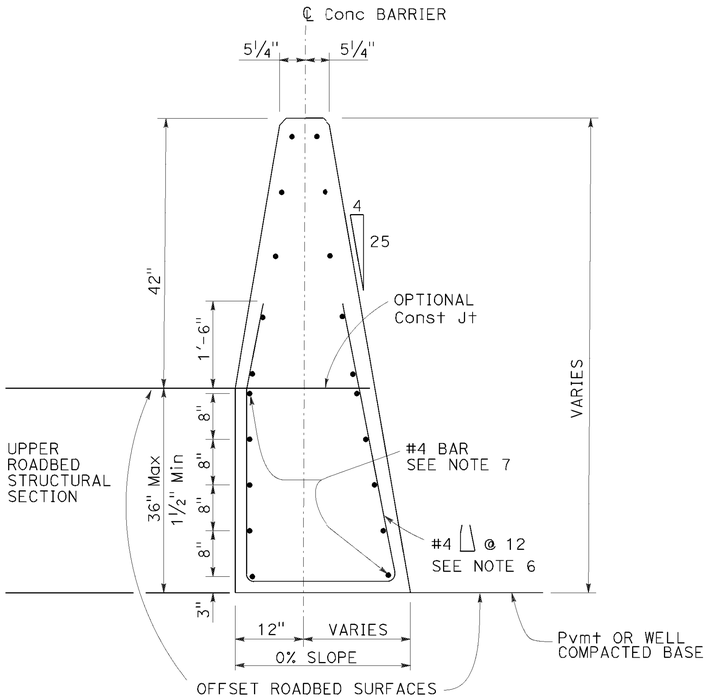
Details similar to Type 60M except as noted.



CONCRETE BARRIER TYPE 60M

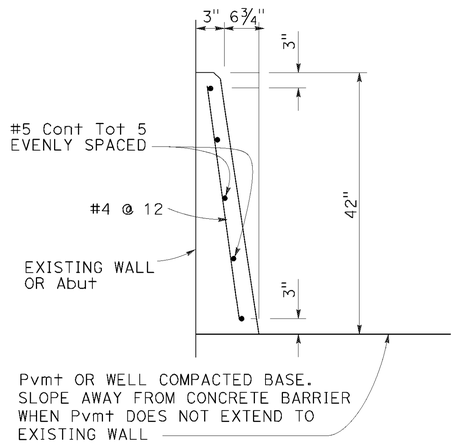
NOTES:

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

2018 REVISED STANDARD PLAN RSP A76A

10-27-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1510	1710

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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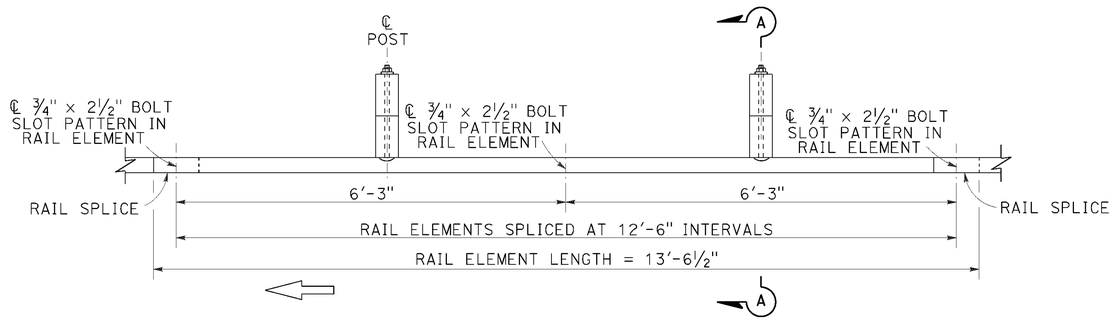
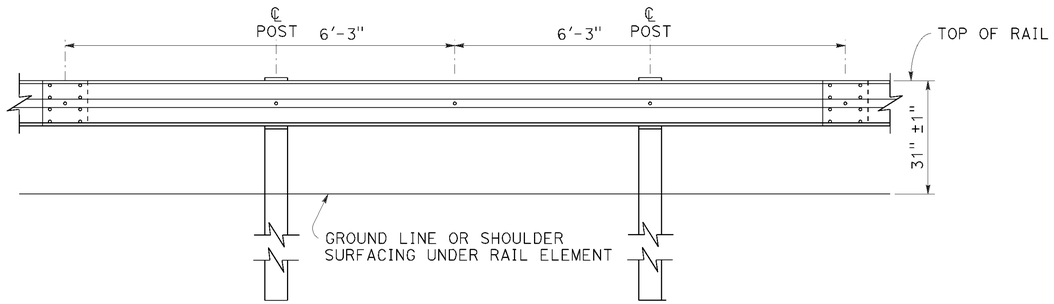
TO ACCOMPANY PLANS DATED October 8, 2021

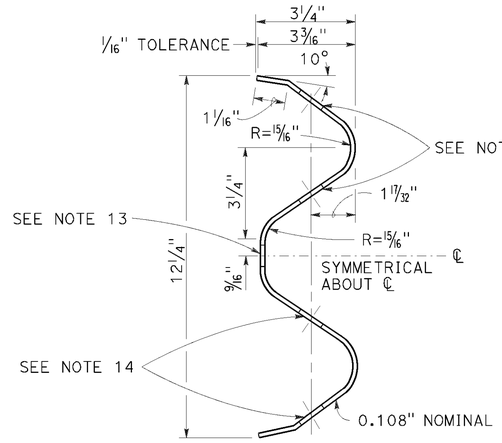


PLAN

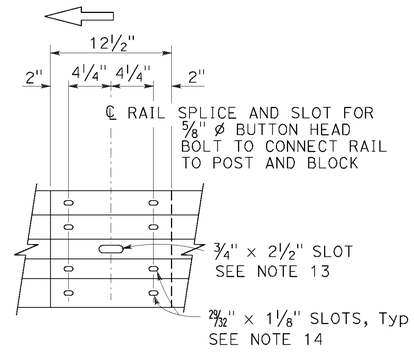


ELEVATION

MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS



SECTION THRU RAIL ELEMENT



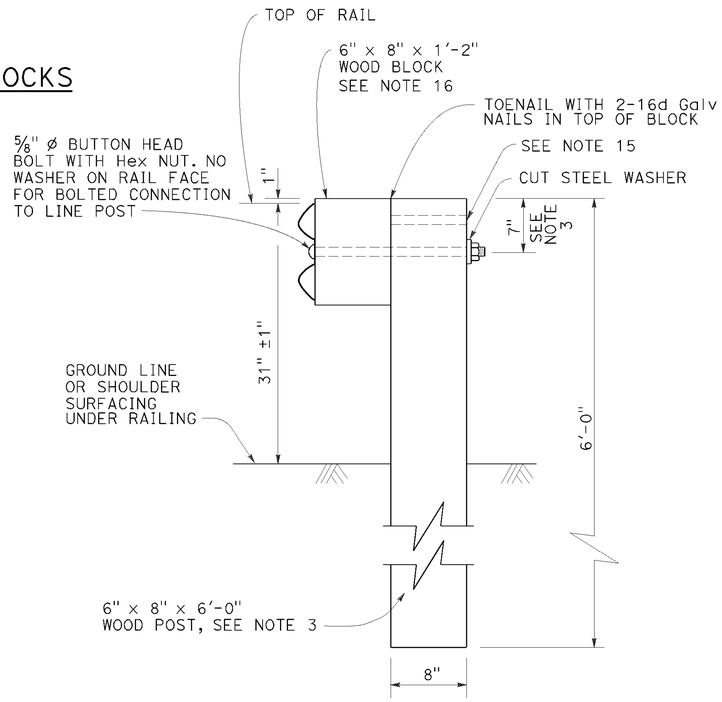
ELEVATION

RAIL ELEMENT SPLICE DETAIL

a) Connect the overlapped end of the rail elements with ⅝" ø x 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

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 Standard Plan A77N1.
4. For additional installation details, see Standard Plan A77N3.
5. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
6. For MGS typical layouts, see the A77P, A77Q and A77R Series of Standard Plans.
7. If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
8. For MGS end anchor details, see Standard Plans A77S1 and A77T2.
9. For details of MGS transition to bridge railing, see 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 Standard Plan 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 Standard Plan A77N1.
16. 6" x 12" x 1'-2" block must be used with 6" 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 OCTOBER 16, 2020 SUPERSEDES 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

3-10-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1511	1710

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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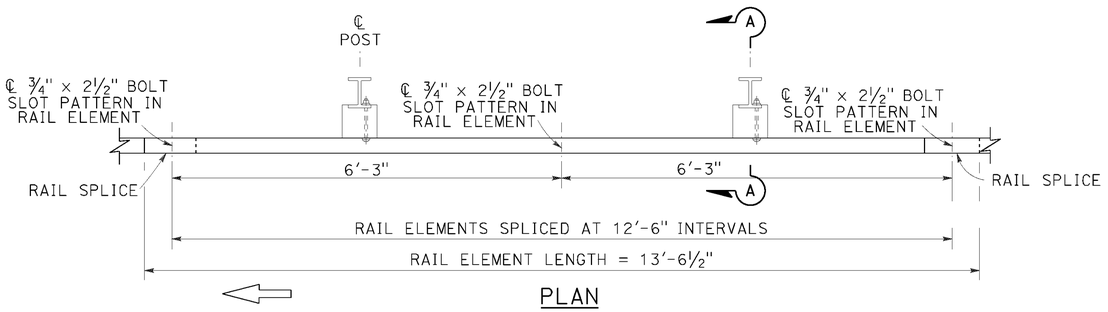
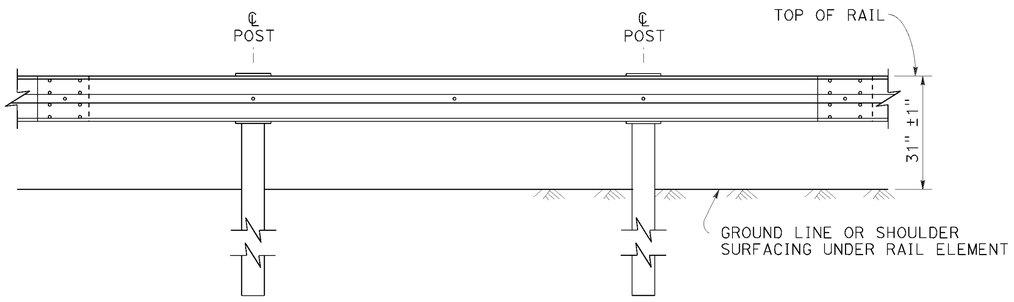
TO ACCOMPANY PLANS DATED October 8, 2021

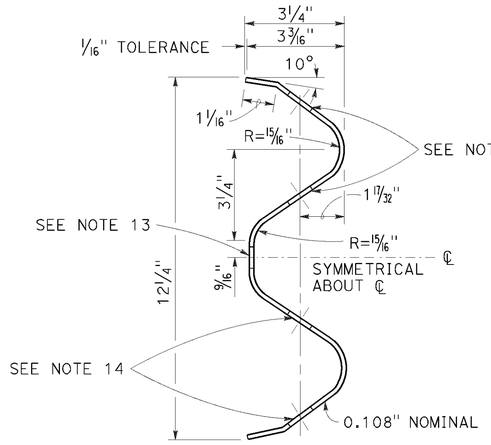


PLAN



ELEVATION

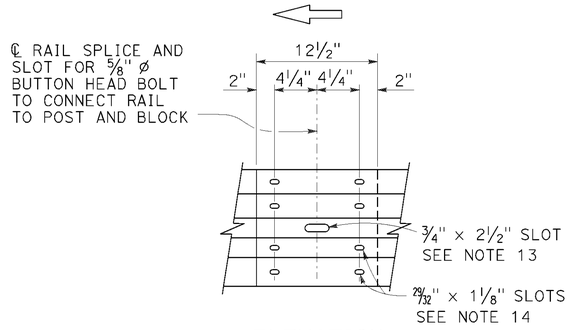
MIDWEST GUARDRAIL SYSTEM WITH STEEL POSTS AND NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCKS



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 Standard Plan A77N2.
4. For additional installation details, see Standard Plan A77N3.
5. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
6. For MGS typical layouts, see the A77P, A77Q and A77R Series of Standard Plans.
7. If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
8. For MGS end anchor details, see Standard Plans A77S1 and A77T2.
9. For details of MGS transition to bridge railing, see 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" dike.
16. Install posts in soil.



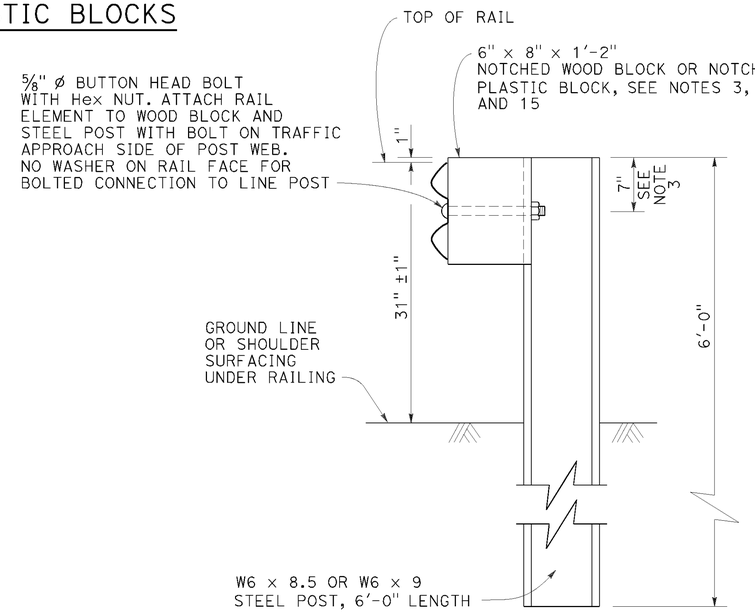
ELEVATION

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

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 OCTOBER 16, 2020 SUPERSEDES 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

3-10-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1512	1710

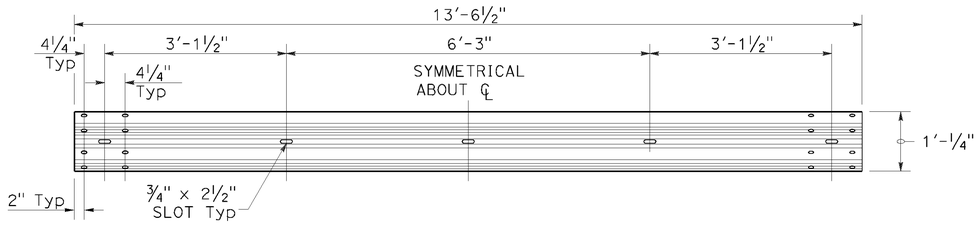
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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

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.

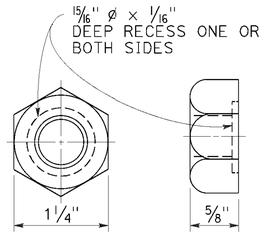
TO ACCOMPANY PLANS DATED October 8, 2021



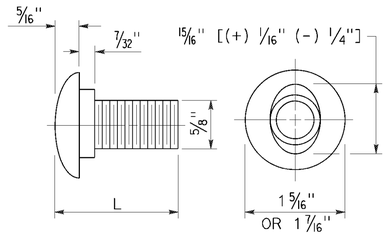
TYPICAL RAIL ELEMENT

NOTE:

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



⅝" ø RECESS NUT

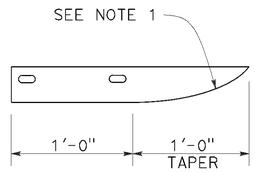


⅝" ø BUTTON HEAD BOLT

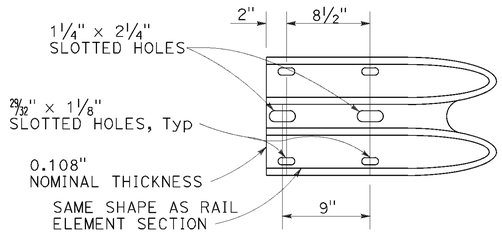
BUTTON HEAD BOLT

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)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STANDARD HARDWARE

NO SCALE

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

REVISED STANDARD PLAN RSP A77M1

2018 REVISED STANDARD PLAN RSP A77M1

2-26-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1513	1710

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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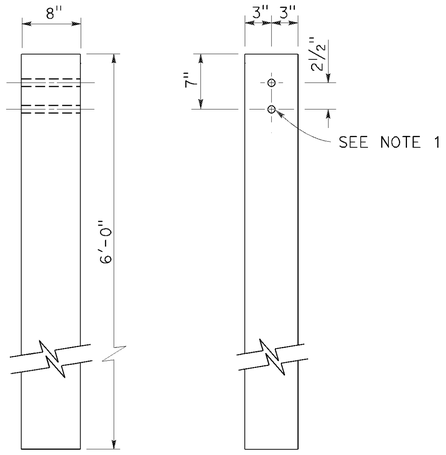
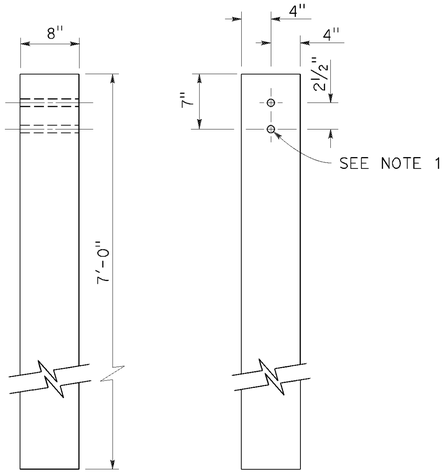
TO ACCOMPANY PLANS DATED October 8, 2021



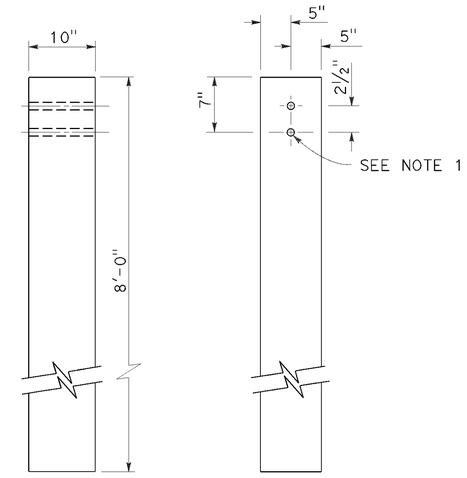
SIDE FRONT

6" x 8" WOOD POST
See Note 3



SIDE FRONT

8" x 8" WOOD POST
See Note 4

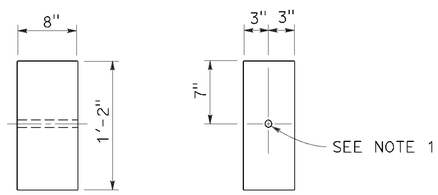


SIDE FRONT

10" x 10" WOOD POST
See Note 5

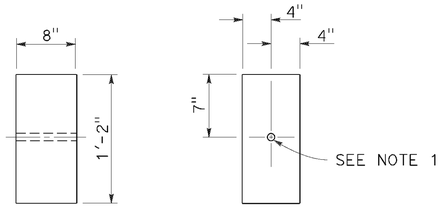
NOTES:

1. All holes in wood posts and blocks shall be ¾" Dia ± 1/16".
2. Dimensions shown for wood post are nominal.
3. This post and block combination used for standard line post sections of MGS.
4. This post and 8" x 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.



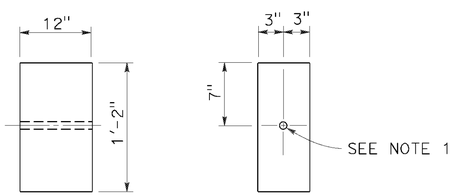
SIDE FRONT

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



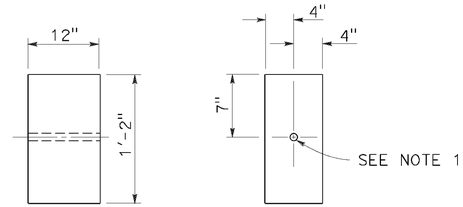
SIDE FRONT

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



SIDE FRONT

6" x 12" WOOD BLOCK
See Note 8



SIDE FRONT

8" x 12" WOOD BLOCK
See Note 7

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM WOOD POST AND WOOD BLOCK DETAILS

NO SCALE

RSP A77N1 DATED 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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1514	1710

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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

October 19, 2018
PLANS APPROVAL DATE

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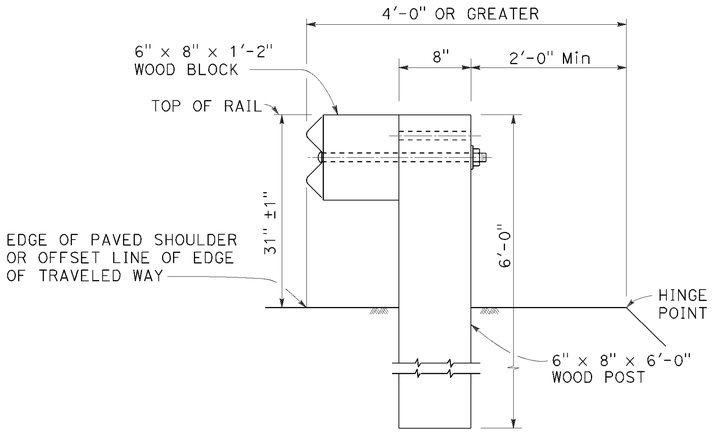
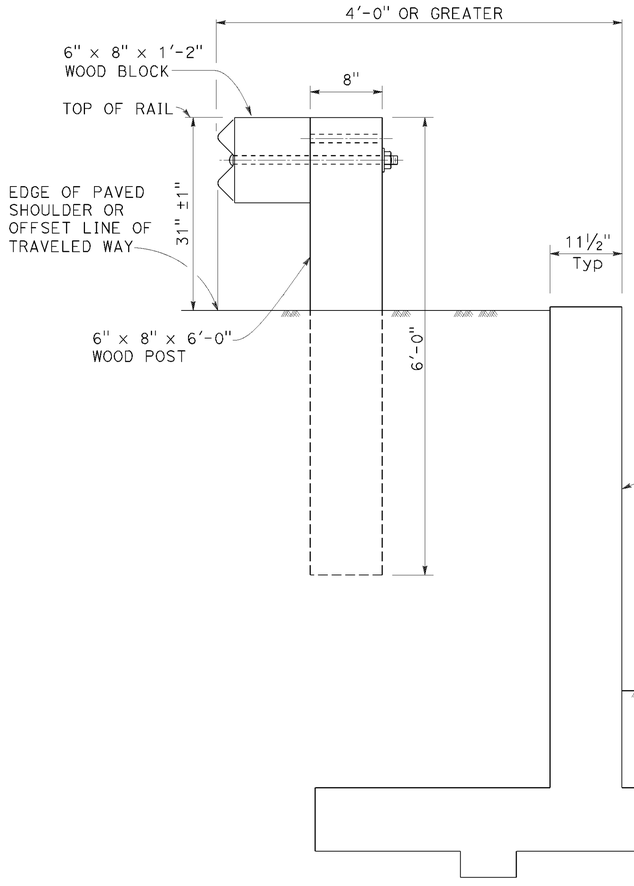
TO ACCOMPANY PLANS DATED October 8, 2021



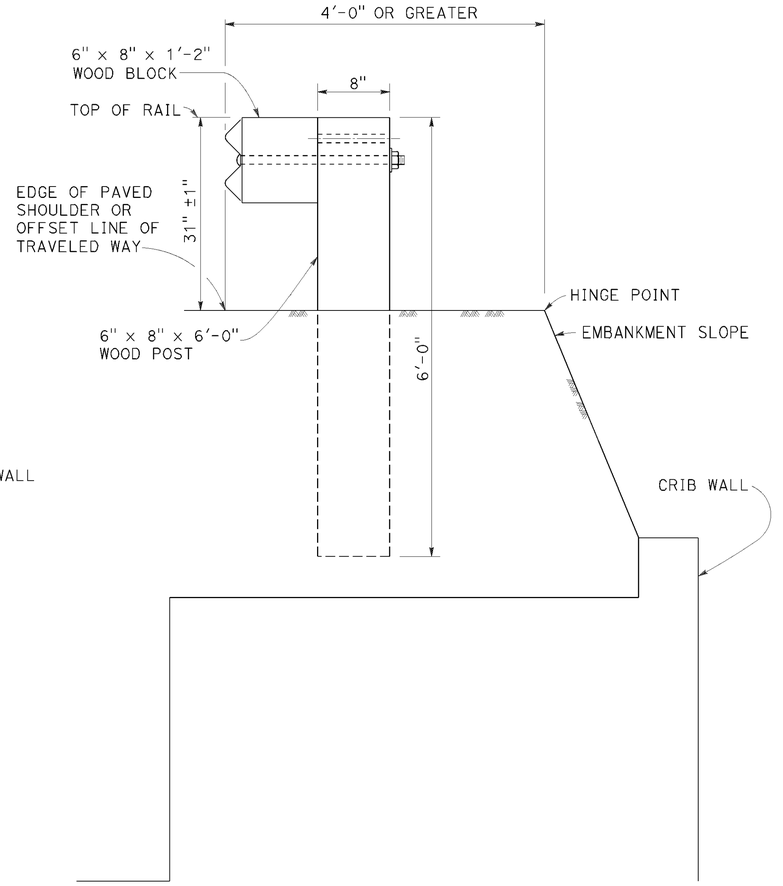
DETAIL A

TYPICAL ROADWAY INSTALLATION

See Note 1



DETAIL C



DETAIL D

DETAIL B

NARROW ROADWAY INSTALLATION

See Note 1

POST EMBEDMENT

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 p ace 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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1515	1710

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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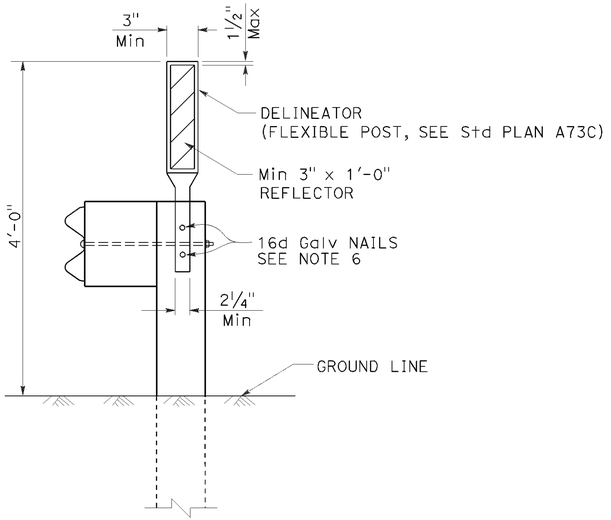
TO ACCOMPANY PLANS DATED October 8, 2021

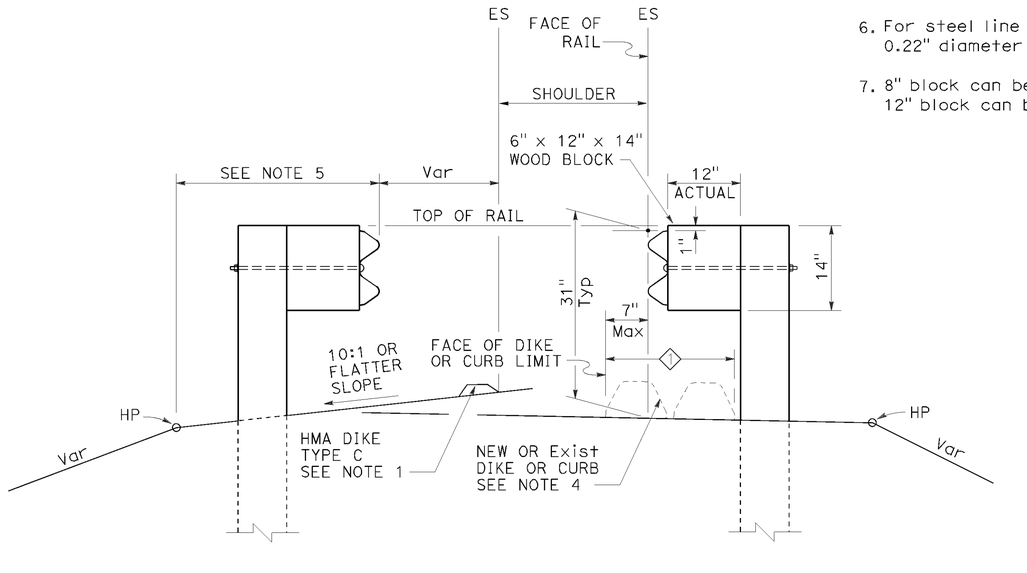
2018 REVISED STANDARD PLAN RSP A77N4

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.



MGS DELINEATION
See Note 3



DIKE POSITIONING
See Note 1

① PERMISSIBLE DIKE OR CURB PLACEMENT AREA

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

12-11-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1516	1710

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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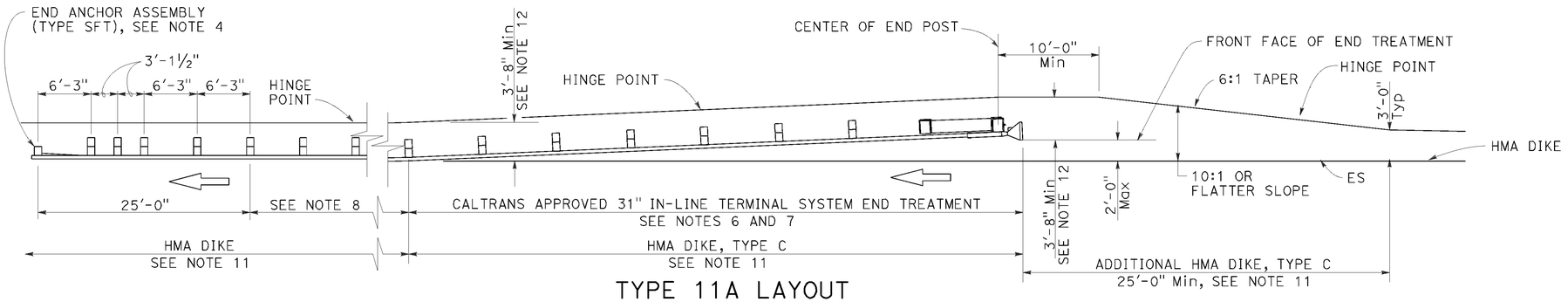
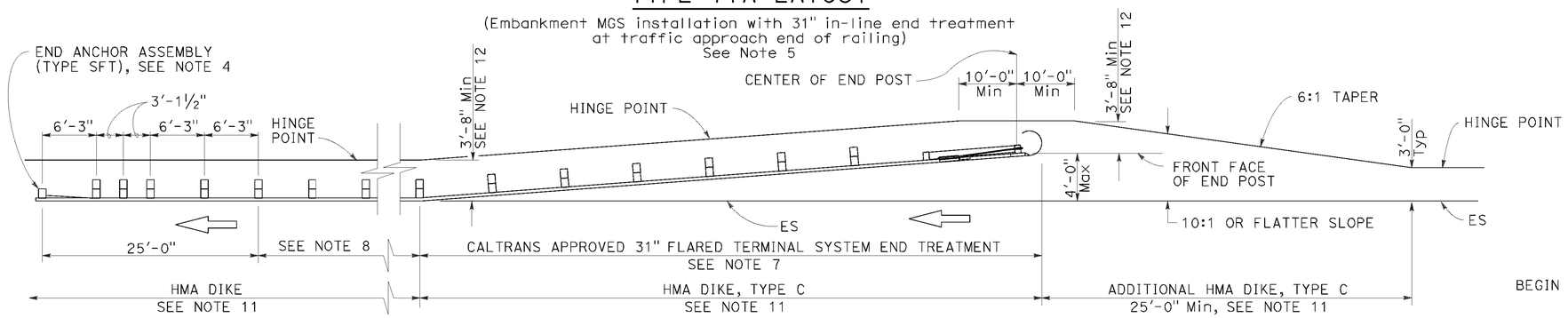
TO ACCOMPANY PLANS DATED October 8, 2021



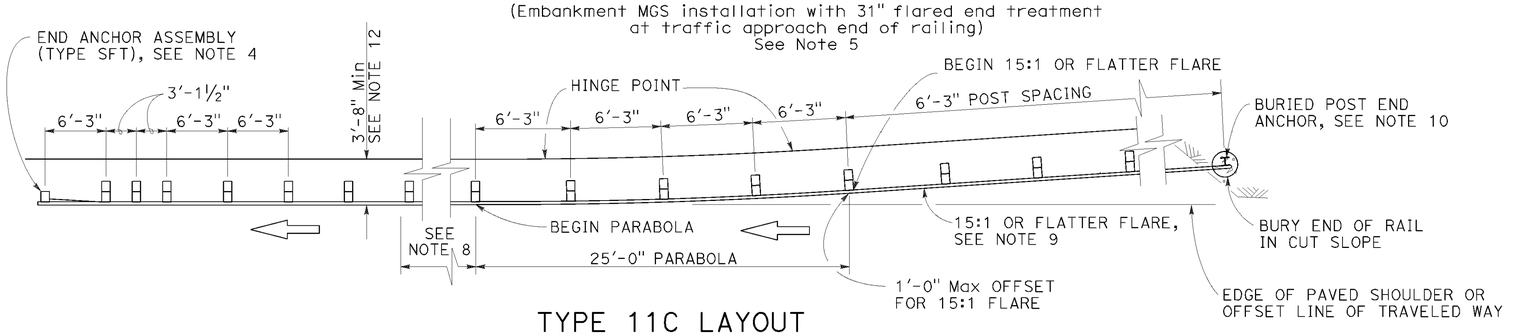
TYPE 11A LAYOUT

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



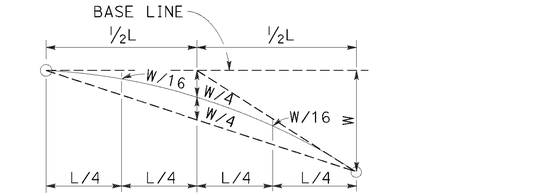
TYPE 11B LAYOUT

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

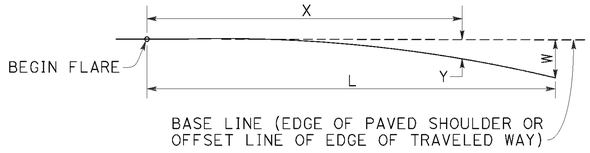


TYPE 11C LAYOUT

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



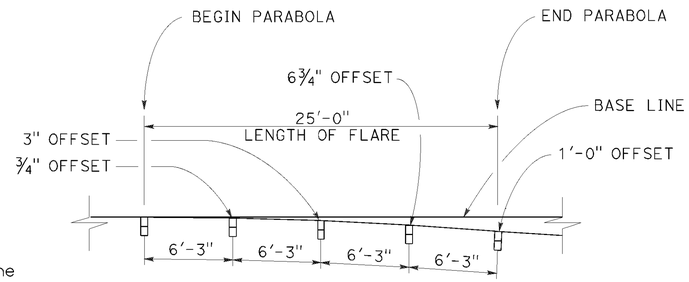
TYPICAL PARABOLIC LAYOUT



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

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

PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS FOR 1 FOOT Max END OFFSET

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P1 DATED OCTOBER 18, 2019 SUPERSEDES 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

6-17-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1517	1710

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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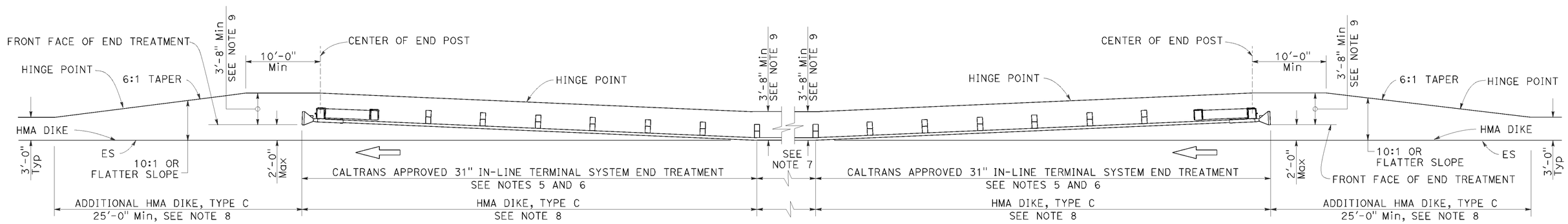
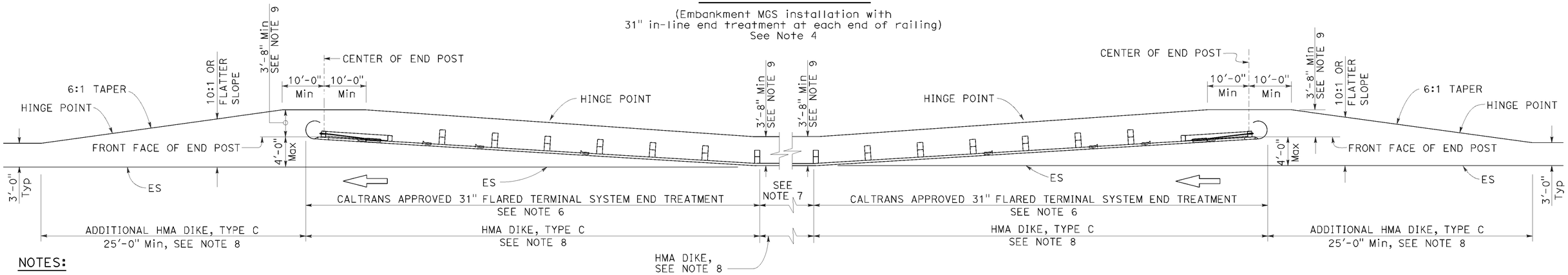
TO ACCOMPANY PLANS DATED October 8, 2021



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

2018 REVISED STANDARD PLAN RSP A77P2

12-10-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1518	1710

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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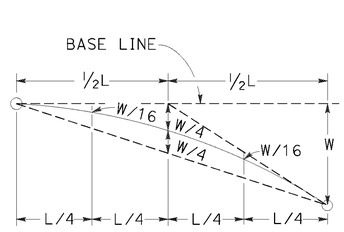
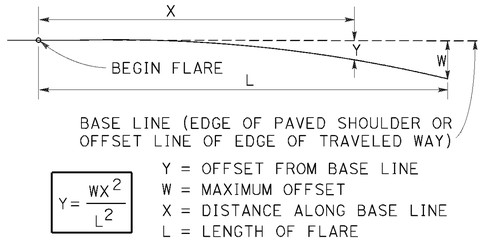
TO ACCOMPANY PLANS DATED October 8, 2021



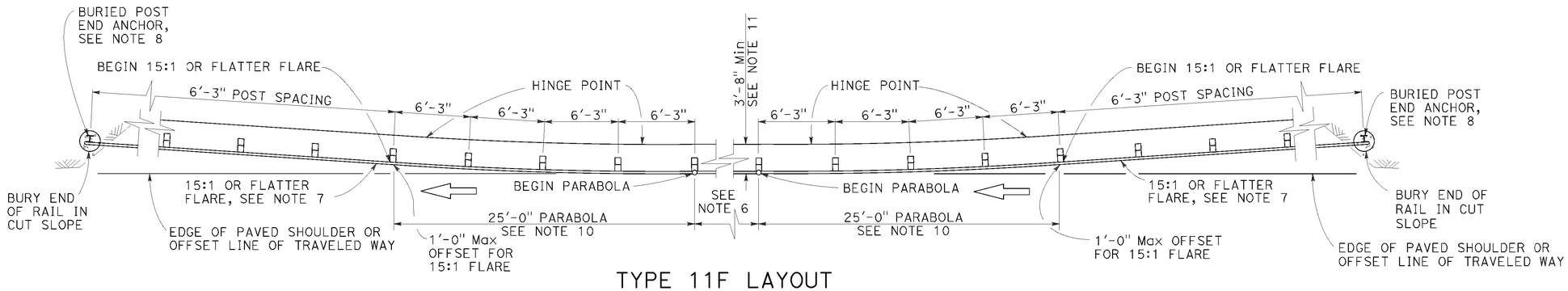
TYPICAL PARABOLIC LAYOUT



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

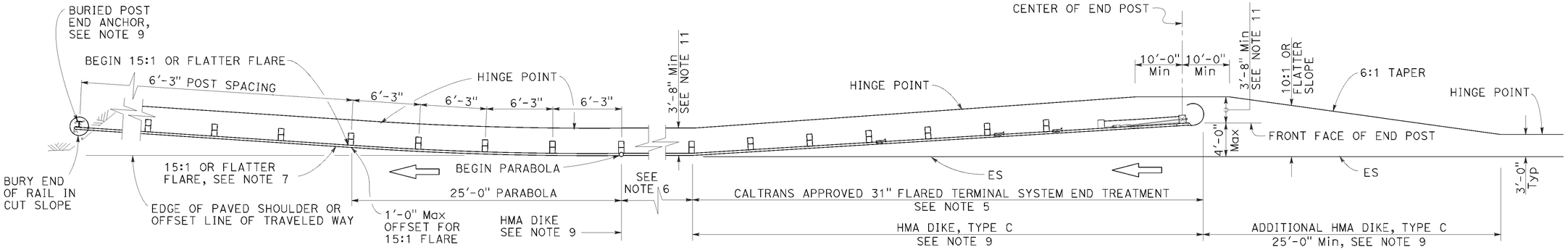
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1519	1710

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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

October 18, 2019
PLANS APPROVAL DATE

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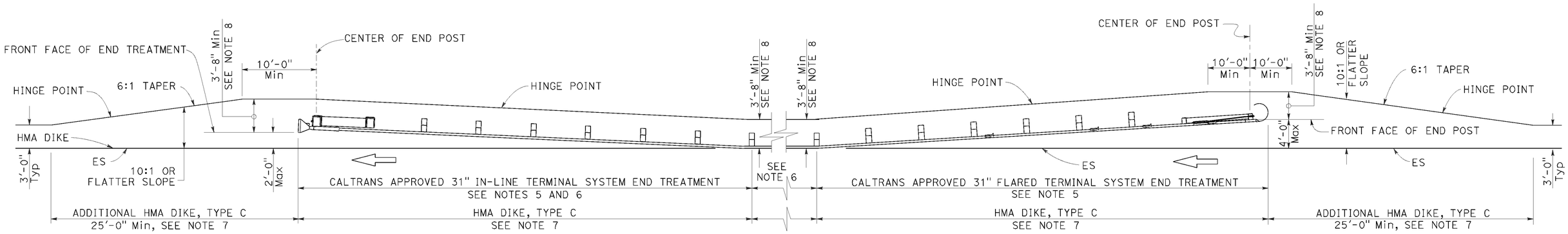
TO ACCOMPANY PLANS DATED October 8, 2021



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1520	1710

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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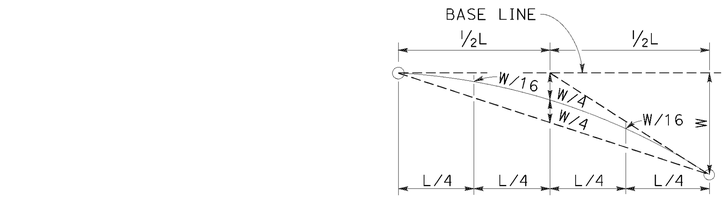
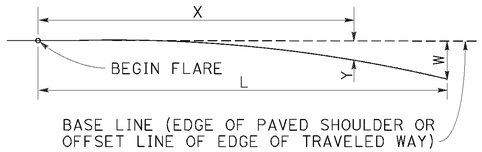
TO ACCOMPANY PLANS DATED October 8, 2021



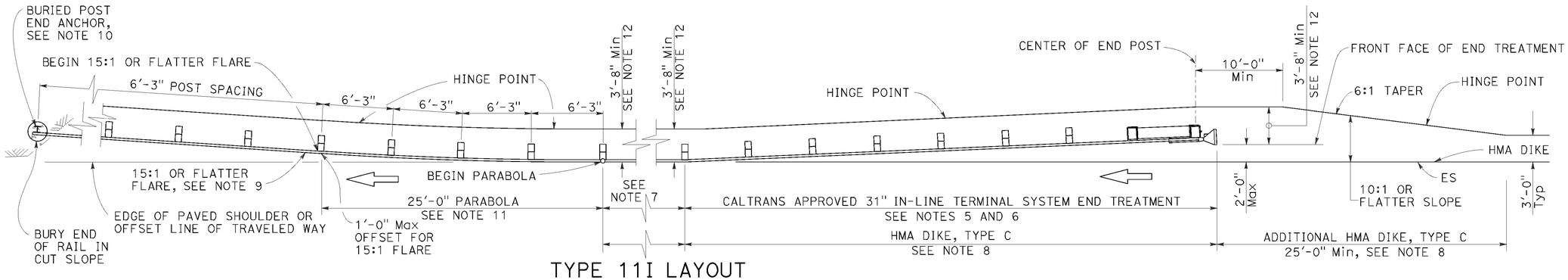
TYPICAL PARABOLIC LAYOUT



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

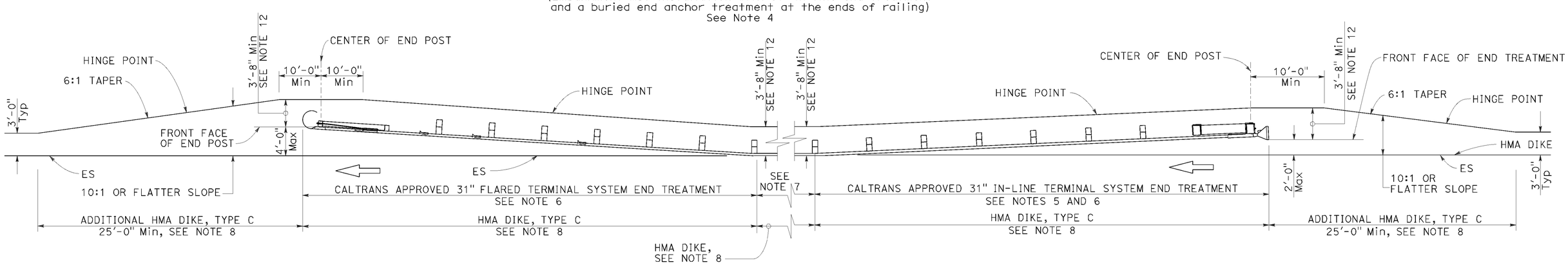
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

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

2018 REVISED STANDARD PLAN RSP A77P5

12-10-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1521	1710

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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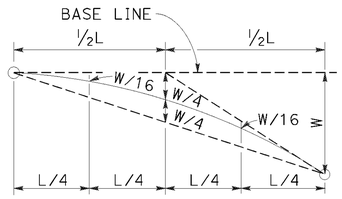
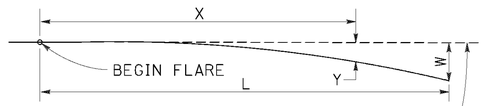
TO ACCOMPANY PLANS DATED October 8, 2021



TYPICAL PARABOLIC LAYOUT

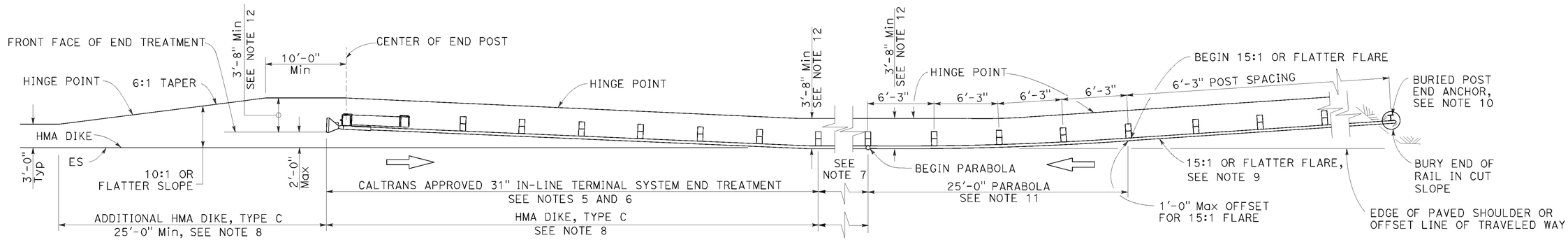


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

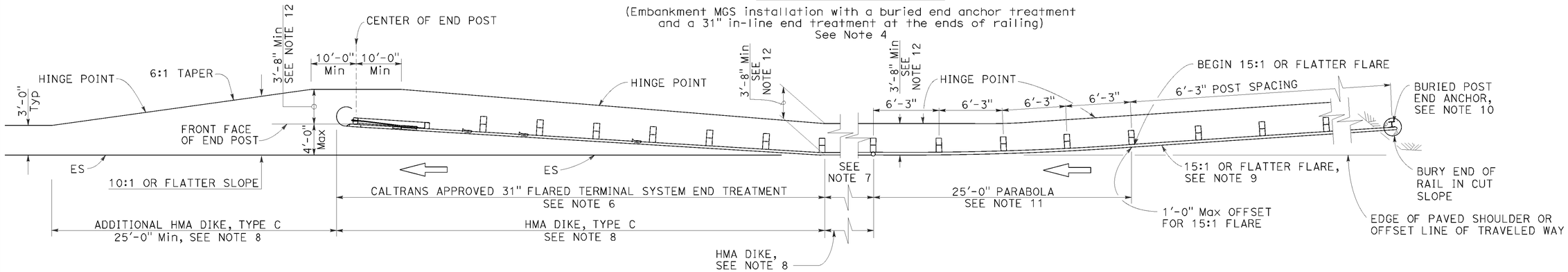
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



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

2018 REVISED STANDARD PLAN RSP A77P6

12-10-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1522	1710

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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

October 18, 2019
PLANS APPROVAL DATE

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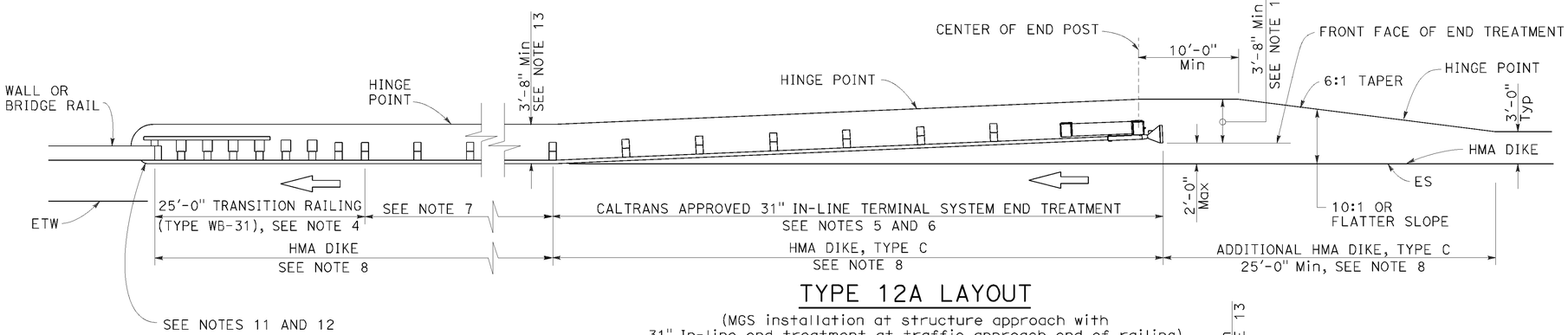
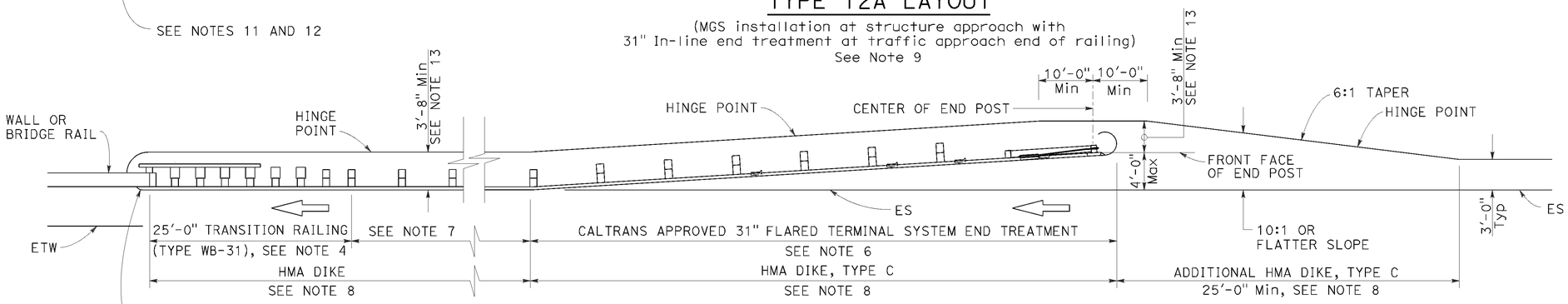
TO ACCOMPANY PLANS DATED October 8, 2021



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 A77Q3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
11. For additional details of typical connections to bridge rail, see Connection Detail AA on Standard Plans A77U1 and A77U2 and Connection Detail FF on Standard Plans A77V1 and A77V2.
12. For additional details of a typical connection to walls or abutments, see Standard Plan A77U3.
13. Use this offset for 8" block. For 12" block, use 4'-0" Min offset.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

RSP A77Q1 DATED 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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1523	1710

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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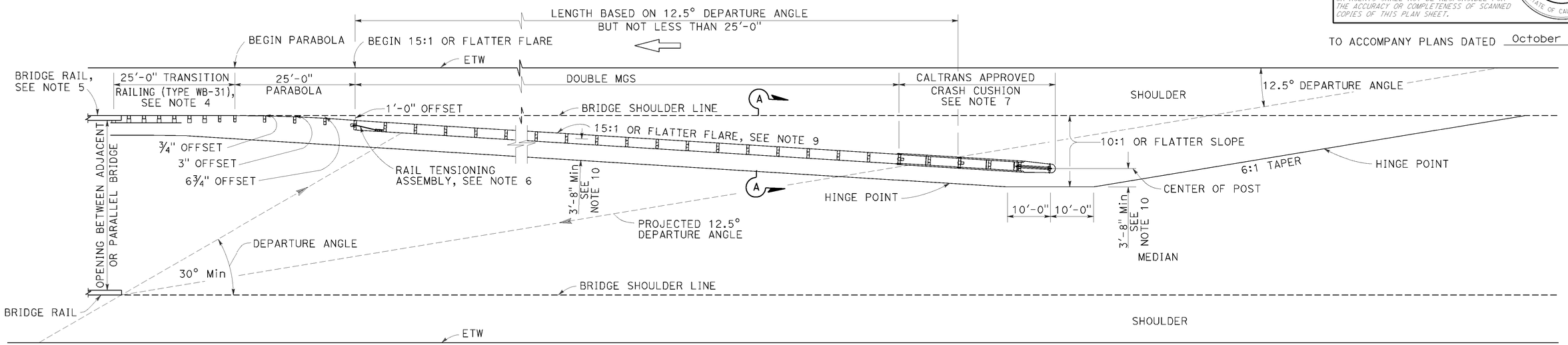
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

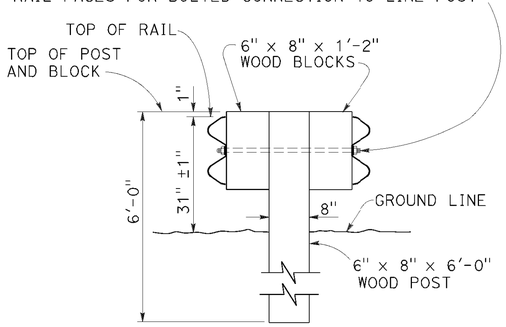
TO ACCOMPANY PLANS DATED October 8, 2021



TYPE 12E LAYOUT

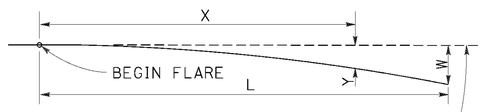
See Note 9

⅝" ø BUTTON HEAD BOLT WITH Hex NUT OR ⅝" ø ROD, THREADED BOTH ENDS, WITH Hex NUTS. ½" Max EXPOSED THREADS AFTER Hex NUT(S) TIGHTENED. NO WASHER ON RAIL FACES FOR BOLTED CONNECTION TO LINE POST



SECTION A-A

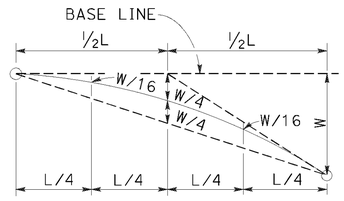
TYPICAL DOUBLE MIDWEST GUARDRAIL SYSTEM



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

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

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

RSP A77Q3 DATED OCTOBER 18, 2019 SUPERSEDES STANDARD PLAN A77Q3 DATED MAY 31, 2018 - PAGE 88 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP A77Q3

2018 REVISED STANDARD PLAN RSP A77Q3

6-21-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1524	1710

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
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Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA

October 18, 2019
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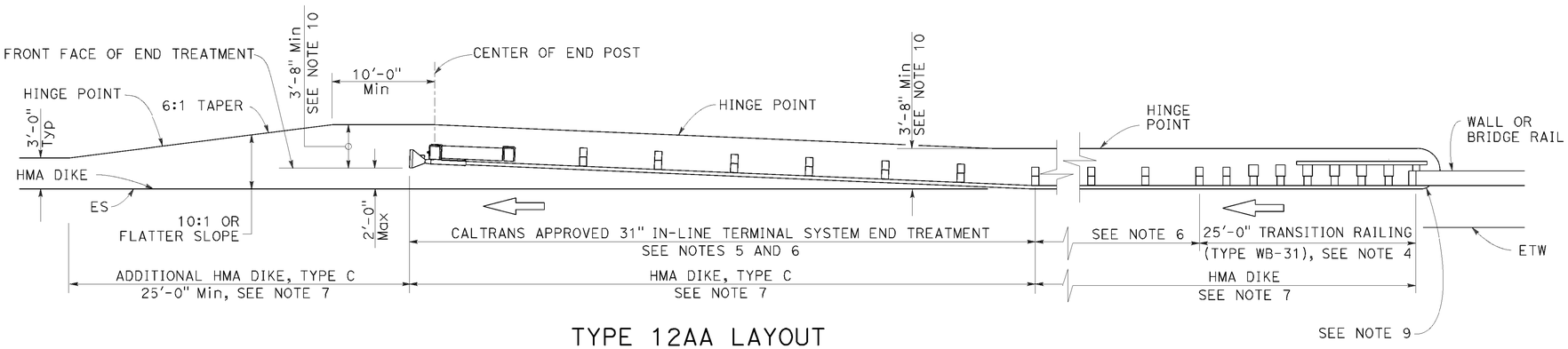
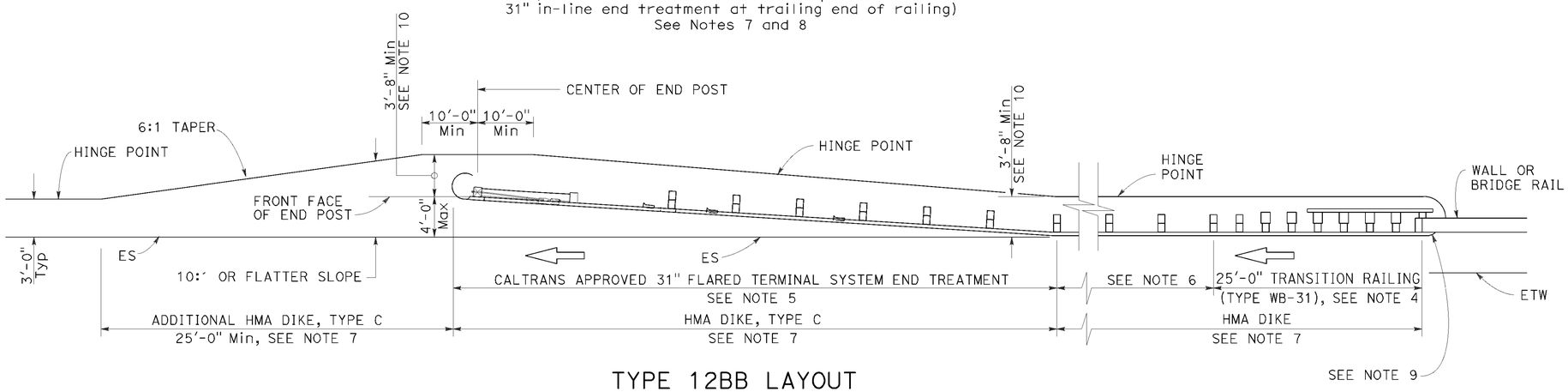
TO ACCOMPANY PLANS DATED October 8, 2021



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1525	1710

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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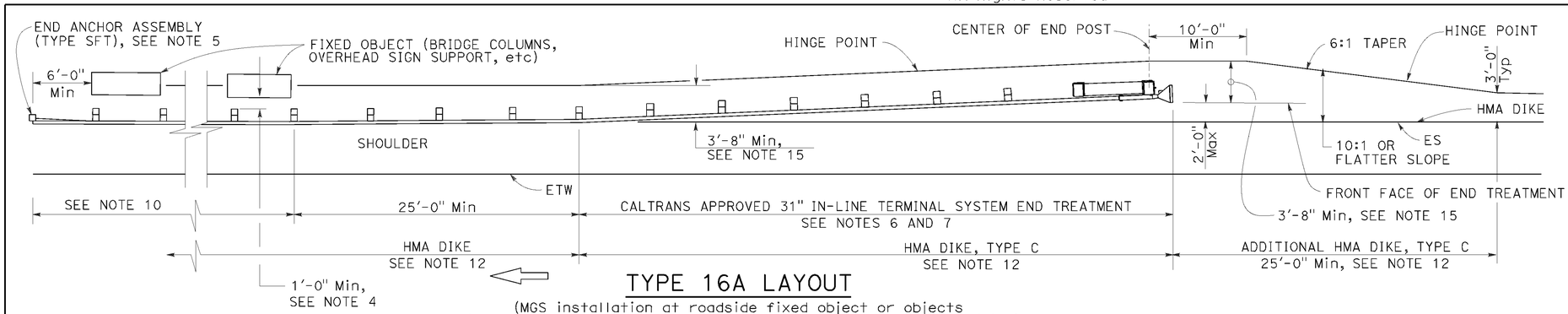
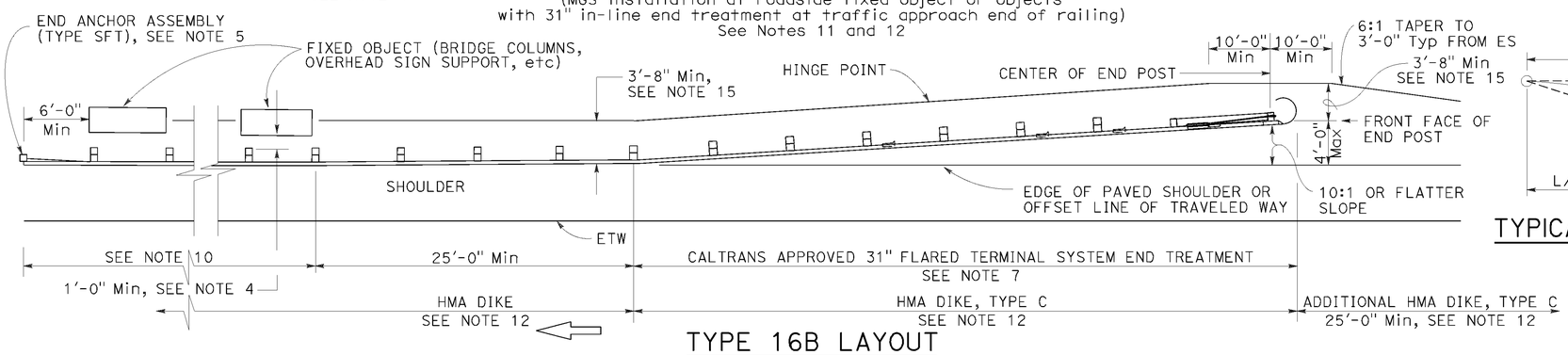
TO ACCOMPANY PLANS DATED October 8, 2021



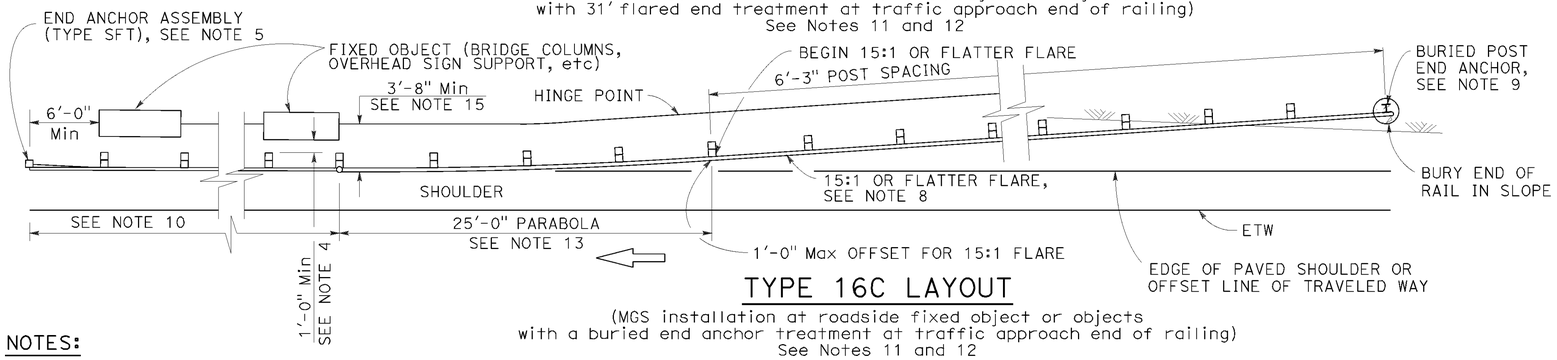
TYPE 16A LAYOUT

(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



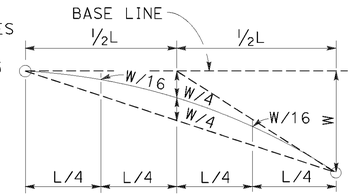
TYPE 16B LAYOUT

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

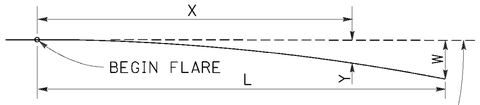


TYPE 16C LAYOUT

(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

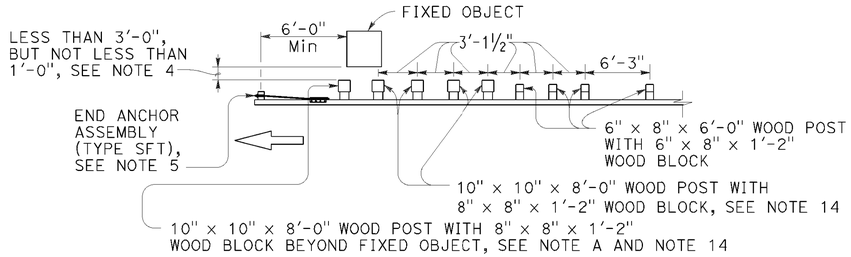


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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.

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.

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 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) details, see Standard Plan A77S1.
6. 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
7. The type of 31" terminal system to be used will be shown on the Project Plans.
8. The 15:1 or flatter flare used with Type 16C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
9. For details of the Buried Post End Anchor used with Type 16C Layout, see Standard Plan A77T2.
10. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
11. Layout Types 16A, 16B or 16C are typically used where MGS is recommended to shield roadside fixed object(s) and a crashworthy 31" end treatment is required for only one direction of traffic.
12. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.
13. 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 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".
15. 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 A77R3 DATED OCTOBER 18, 2019 SUPERSEDES 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

6-19-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1526	1710

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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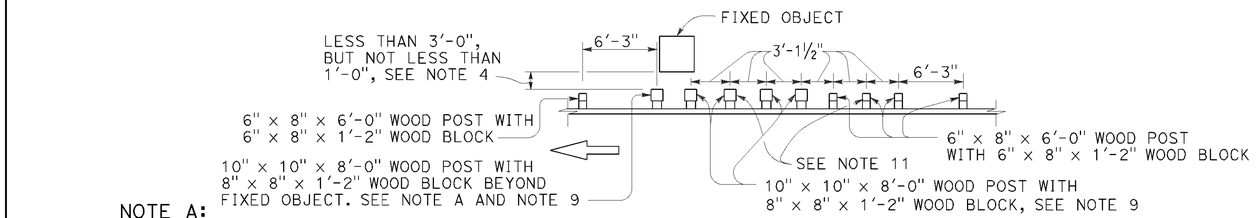
TO ACCOMPANY PLANS DATED October 8, 2021

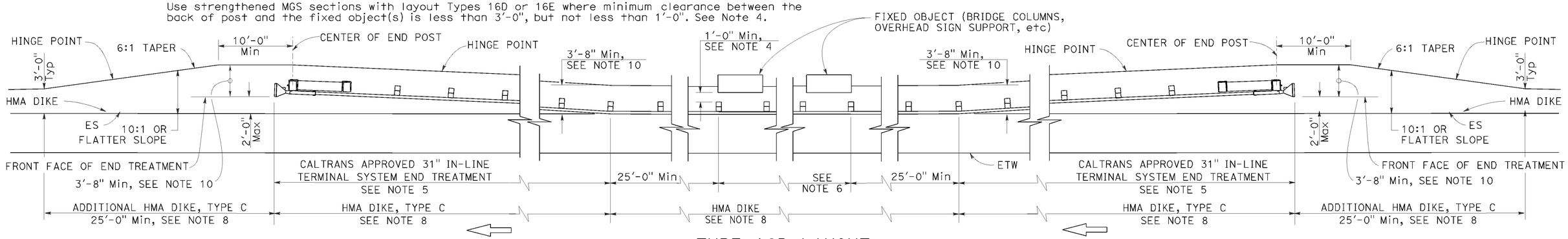


NOTE A:

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).

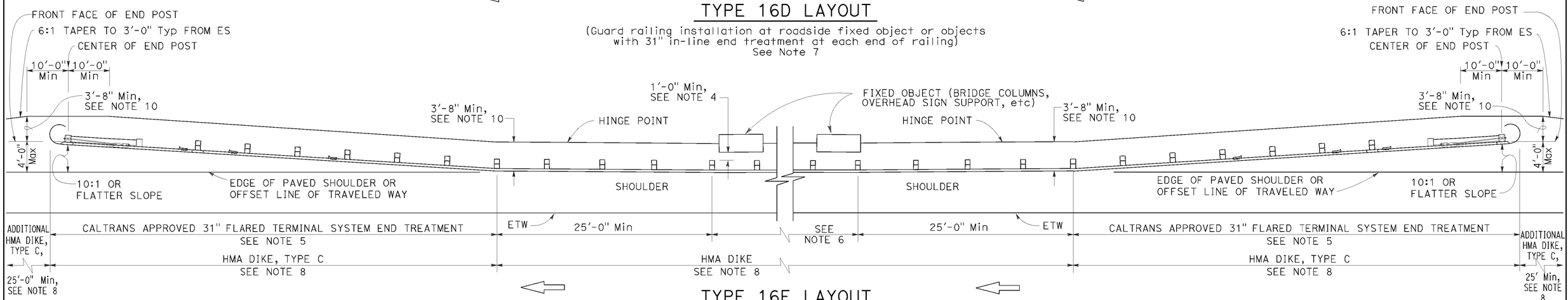
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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

(MGS installation at roadside fixed object or objects with 31" in-line 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, 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 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 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. 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. 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

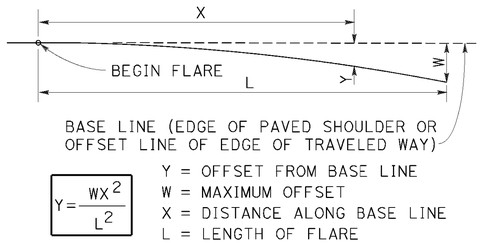
NO SCALE

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

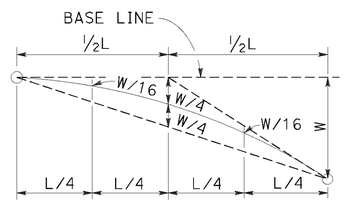
REVISED STANDARD PLAN RSP A77R4

2018 REVISED STANDARD PLAN RSP A77R4

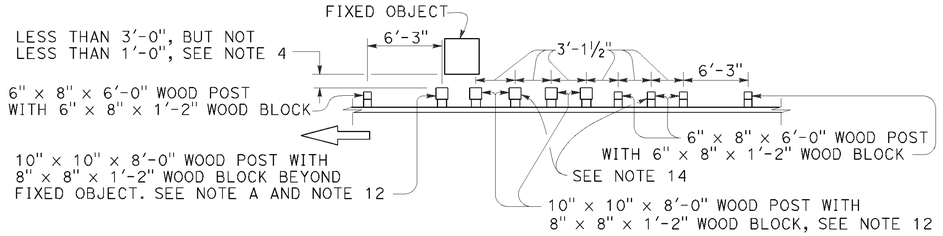
6-19-19



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1527	1710

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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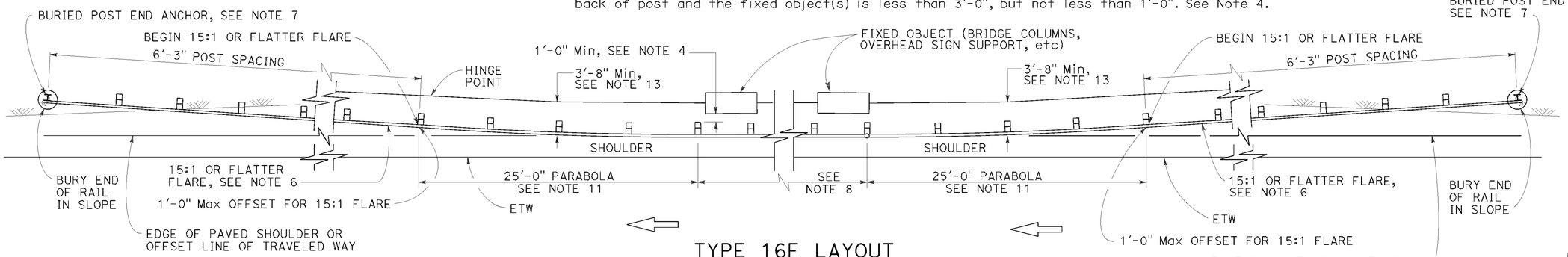
TO ACCOMPANY PLANS DATED October 8, 2021

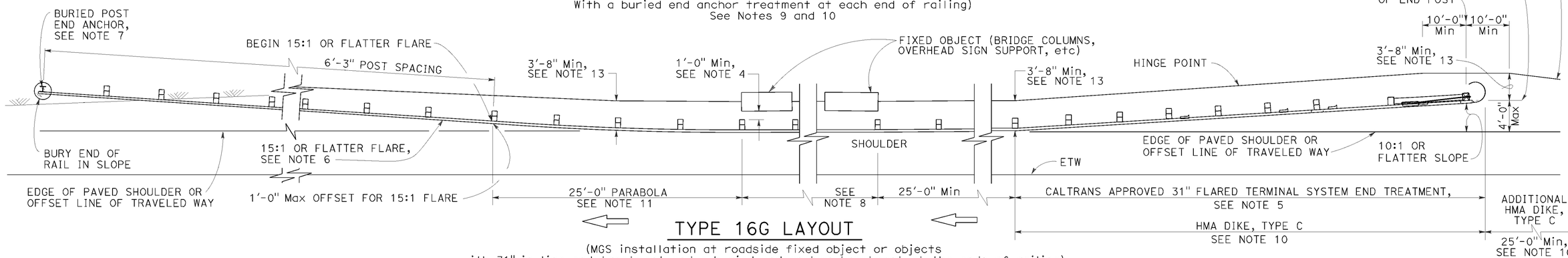
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1528	1710

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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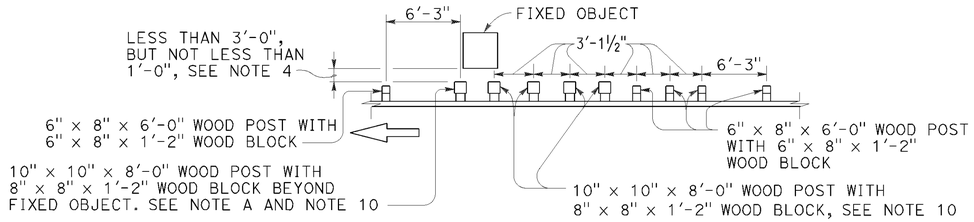
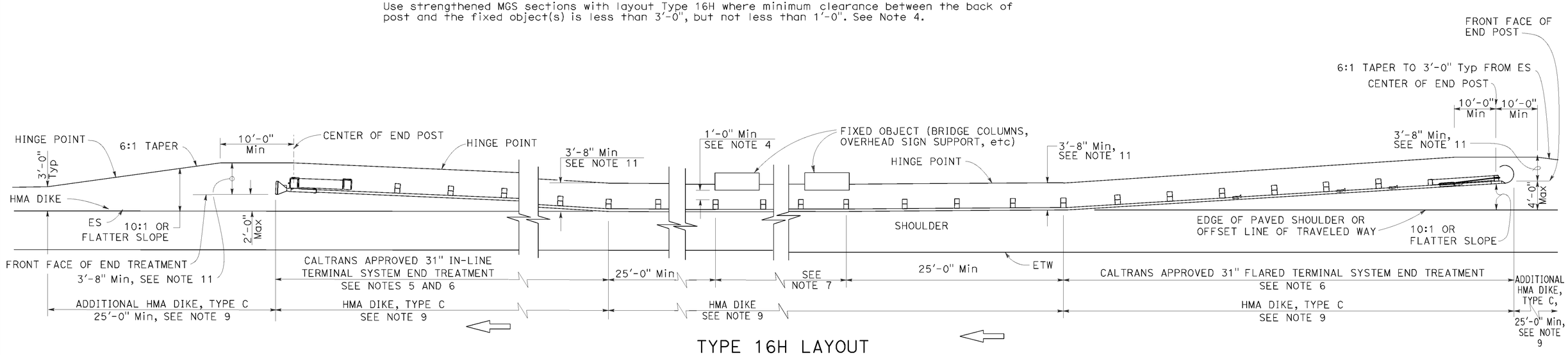
TO ACCOMPANY PLANS DATED October 8, 2021



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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1529	1710

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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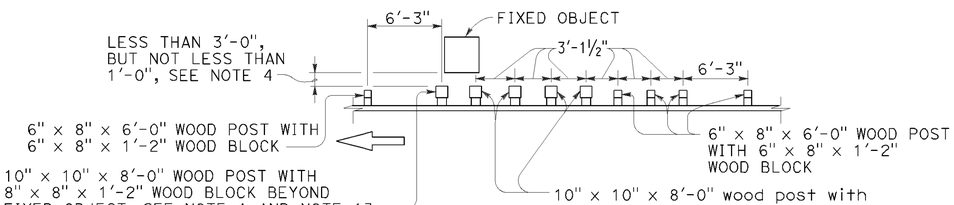
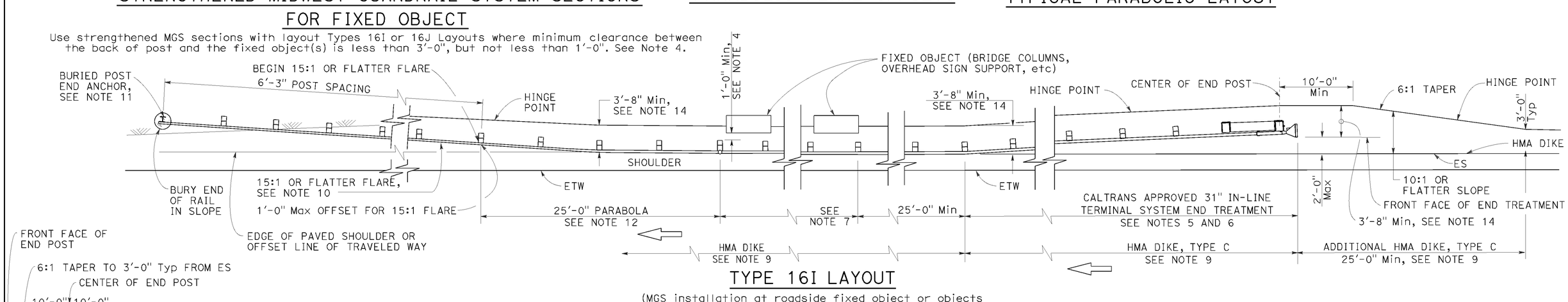
TO ACCOMPANY PLANS DATED October 8, 2021



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).

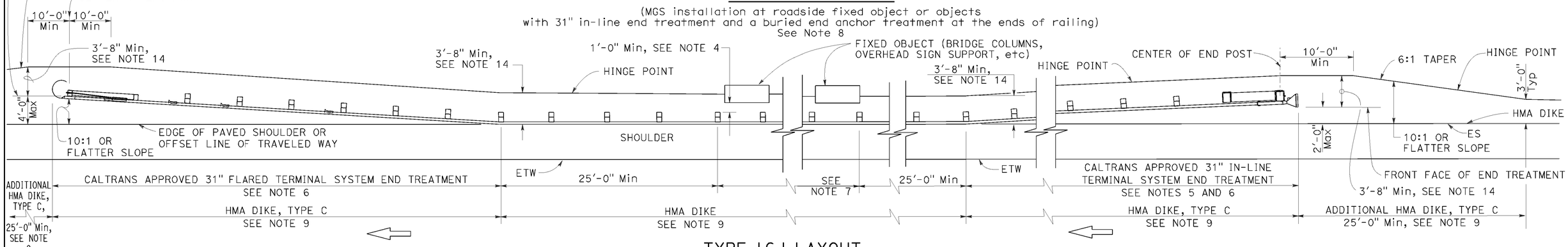
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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.



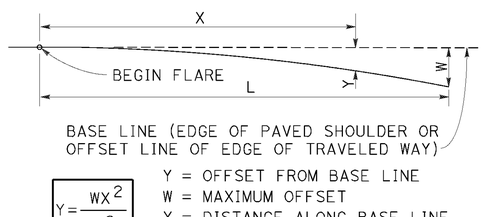
TYPE 16I LAYOUT

(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

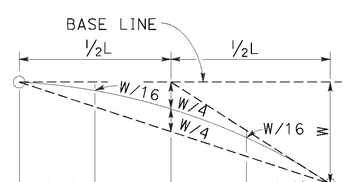
(MGS installation at roadside fixed object or objects with a 31" in-line end treatment and a 31" flared end treatment at the ends of railing) See Note 8



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

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, 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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1530	1710

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
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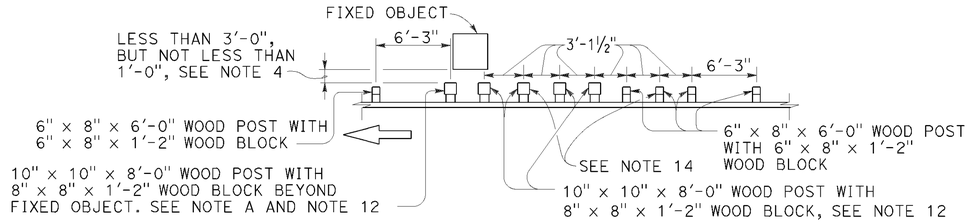
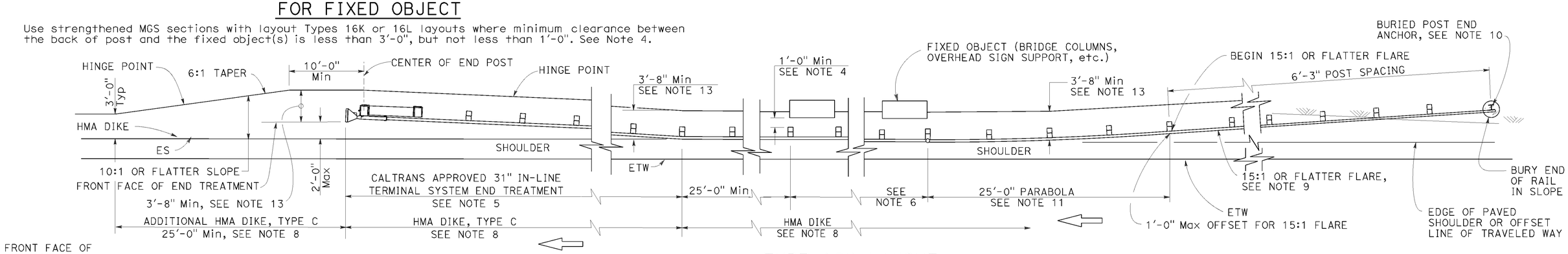
TO ACCOMPANY PLANS DATED October 8, 2021



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).

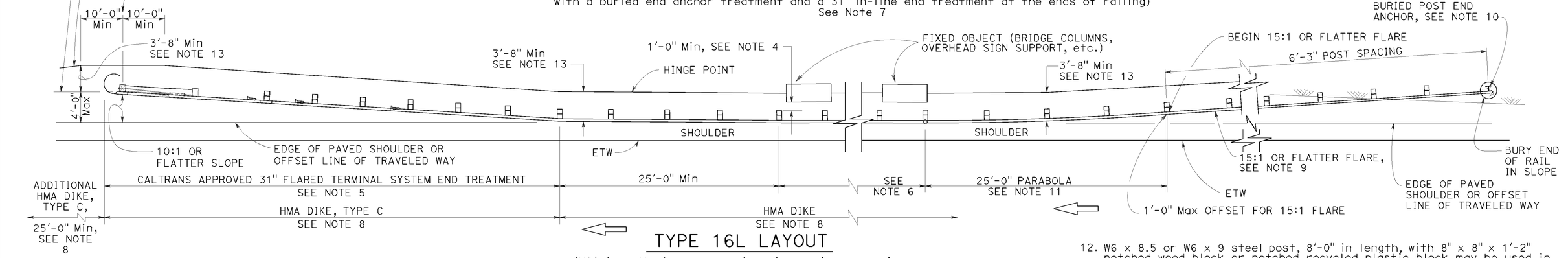
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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.



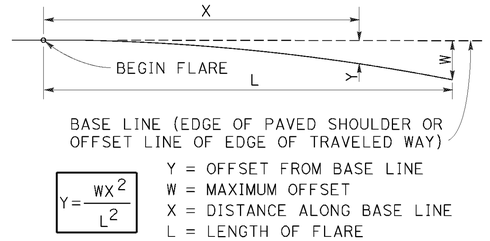
TYPE 16K LAYOUT

(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

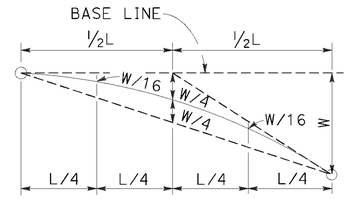
(MGS installation at roadside fixed object or objects with a buried end anchor treatment and a 31" in-line end treatment at the ends of railing) See Note 7



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

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, 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 A77R8

6-19-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1531	1710

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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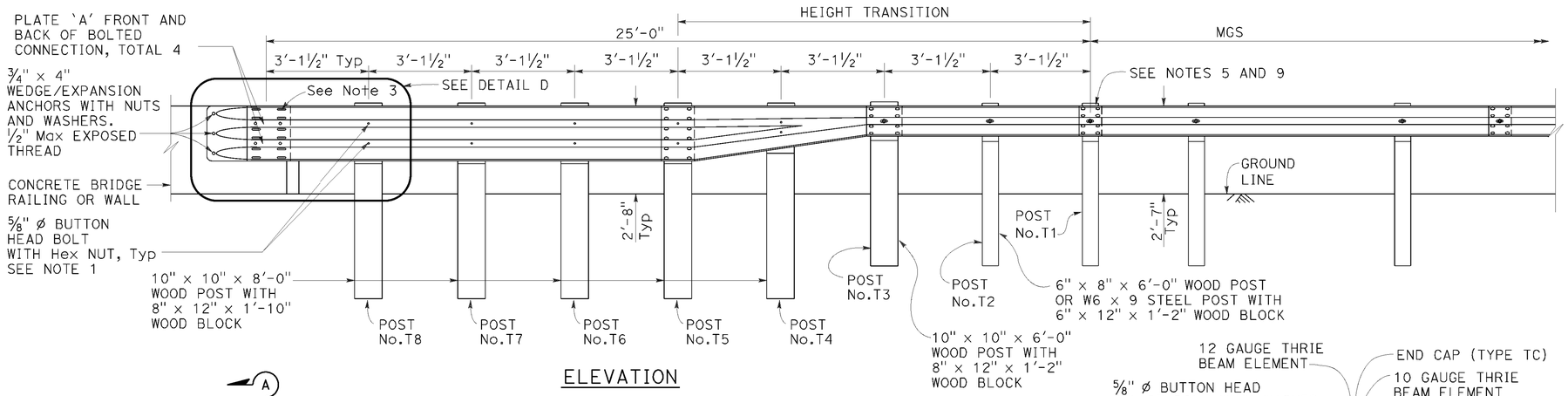
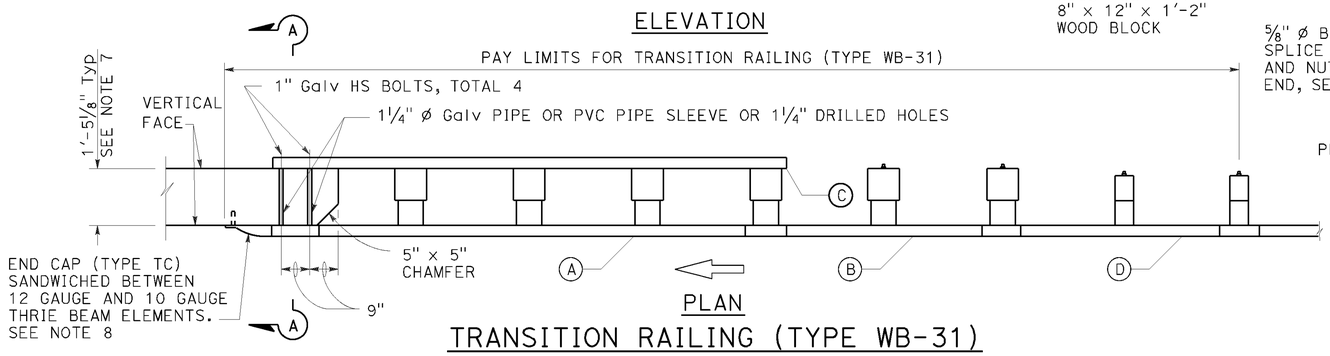
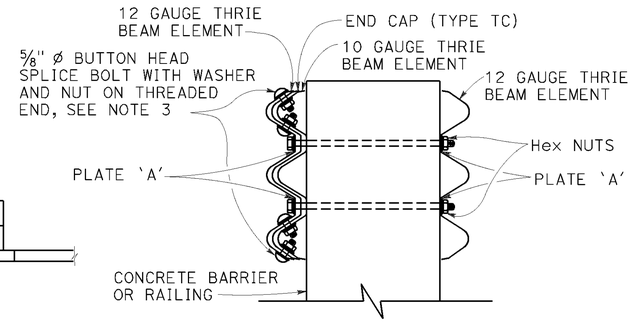


ELEVATION



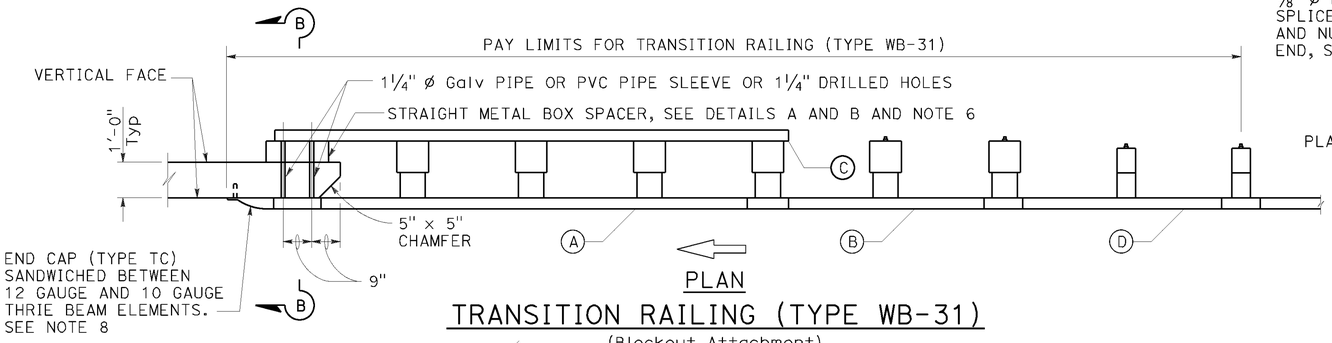
PLAN



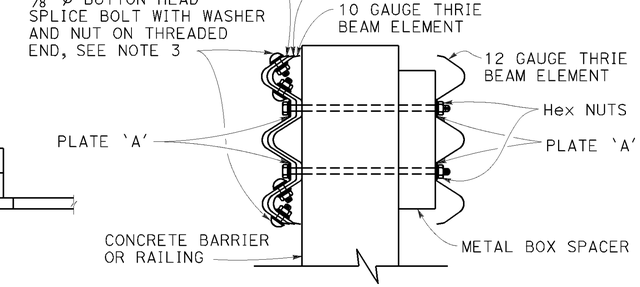
SECTION A-A

TRANSITION RAILING (TYPE WB-31)

(No Blockout Attachment)



PLAN



SECTION B-B

TRANSITION RAILING (TYPE WB-31)

(Blockout Attachment)

LEGEND:

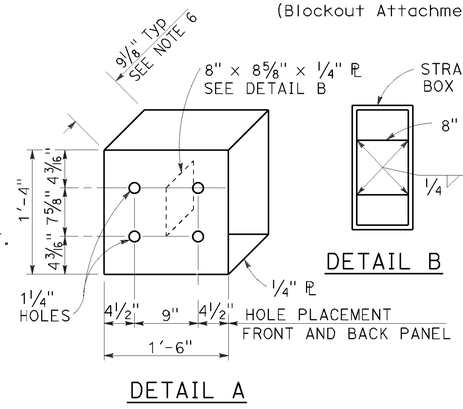
(A) NESTED THRIE BEAM ELEMENTS (ONE 12 GAUGE ELEMENT NESTED OVER ONE 10 GAUGE ELEMENT).

(B) ONE ASYMMETRICAL 10 GAUGE "W" BEAM TO THRIE BEAM ELEMENT.

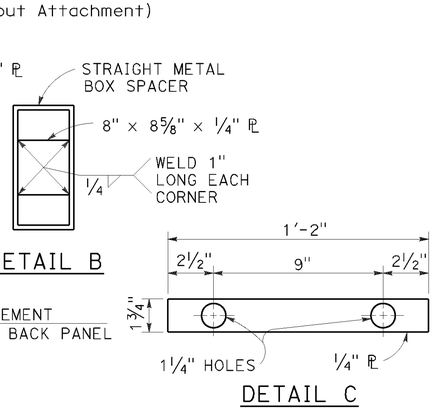
(C) ONE 12 GAUGE THRIE BEAM ELEMENT.

(D) ONE 10 GAUGE "W" BEAM RAIL ELEMENT (7'-3½"LENGTH)

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

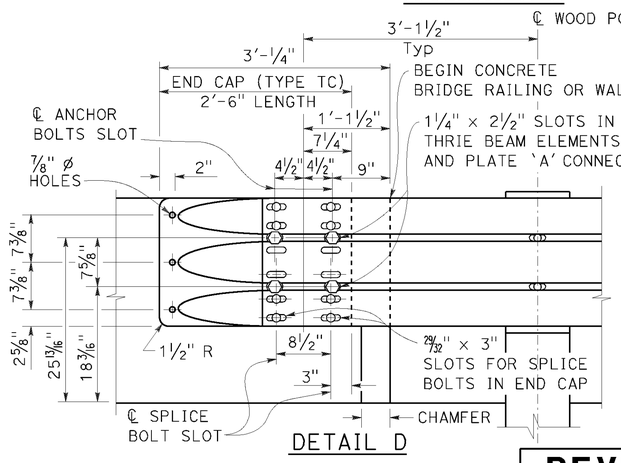


DETAIL A



DETAIL B

DETAIL C



DETAIL D

STRAIGHT METAL BOX SPACER

PLATE 'A'

NOTES:

TO ACCOMPANY PLANS DATED October 8, 2021

1. Use ⅝" 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 1⅛" slot size. Interior splice bolt holes at these locations may be increased up to 1¼" 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 9⅛" to 1½" 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 21⅛". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1½", 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 17⅛", 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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1532	1710

B. Valizadeh
REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

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

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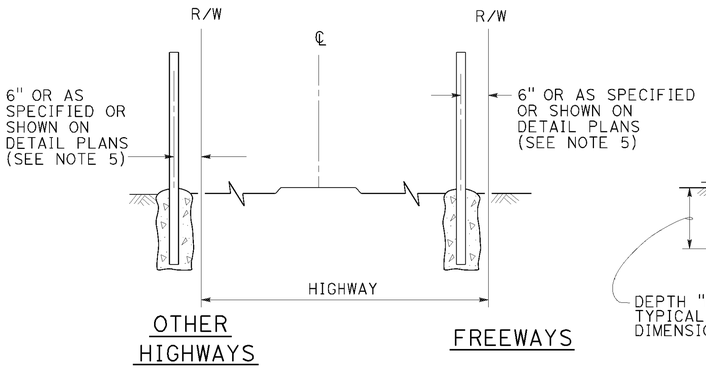
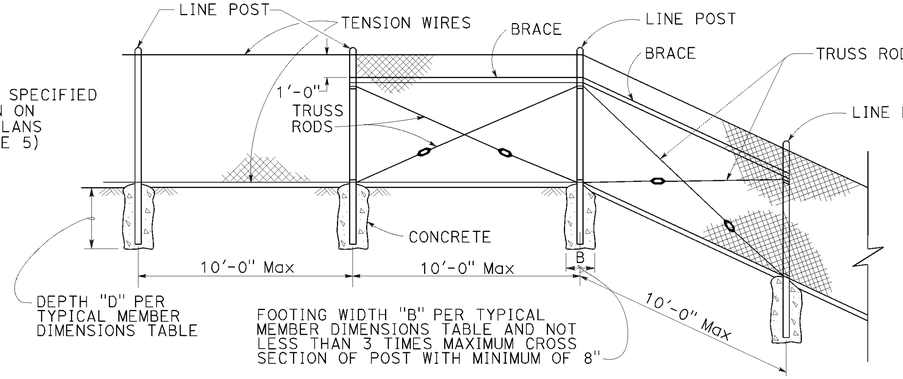
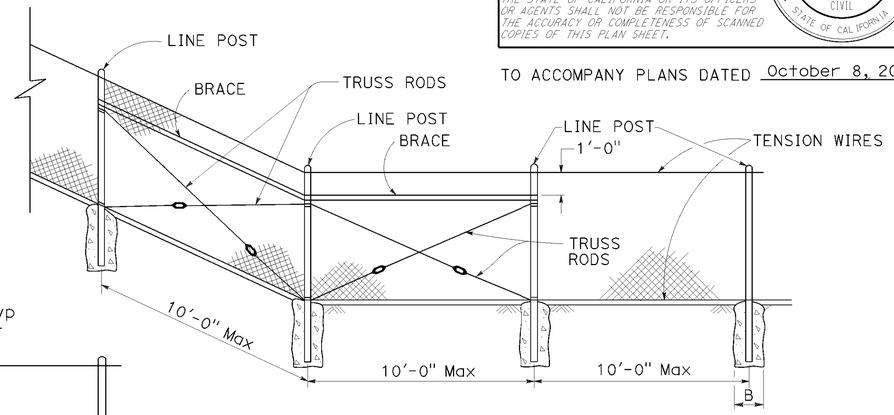
TO ACCOMPANY PLANS DATED October 8, 2021

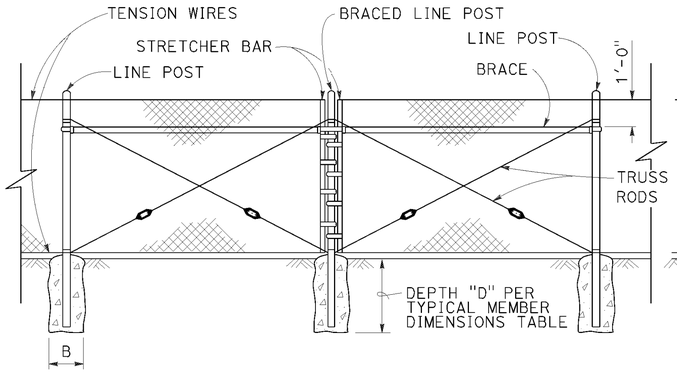


FENCE LOCATION



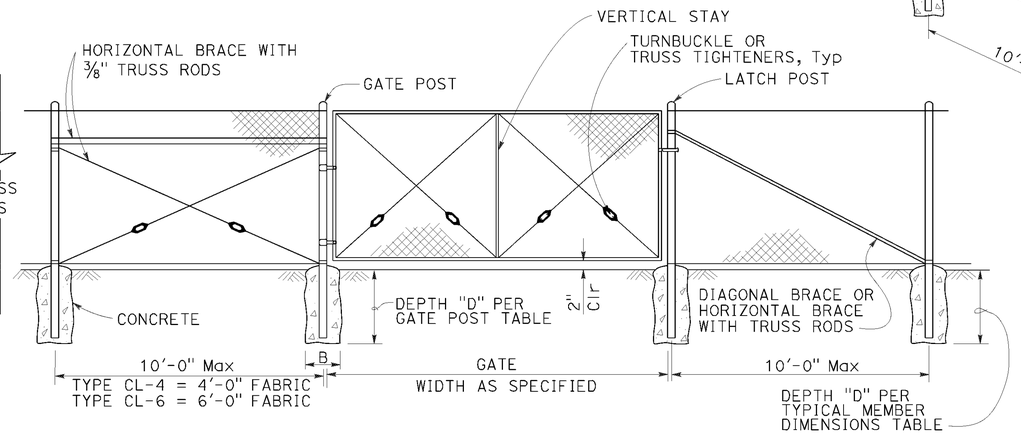
CHAIN LINK FENCE ON SHARP BREAK IN GRADE





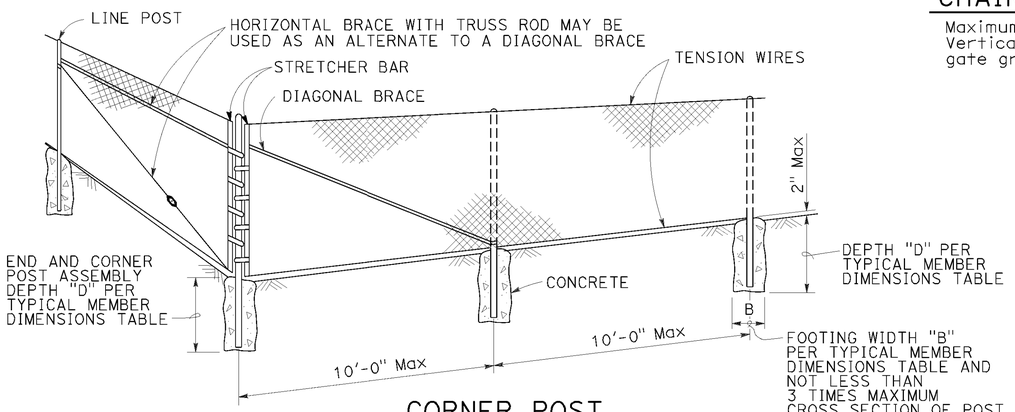
BRACED LINE POST INSTALLATION

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.



CORNER POST

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.

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1533	1710

Dulce Rufino Feldman
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Dulce Rufino Feldman
No. C81459
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

October 18, 2019
PLANS APPROVAL DATE

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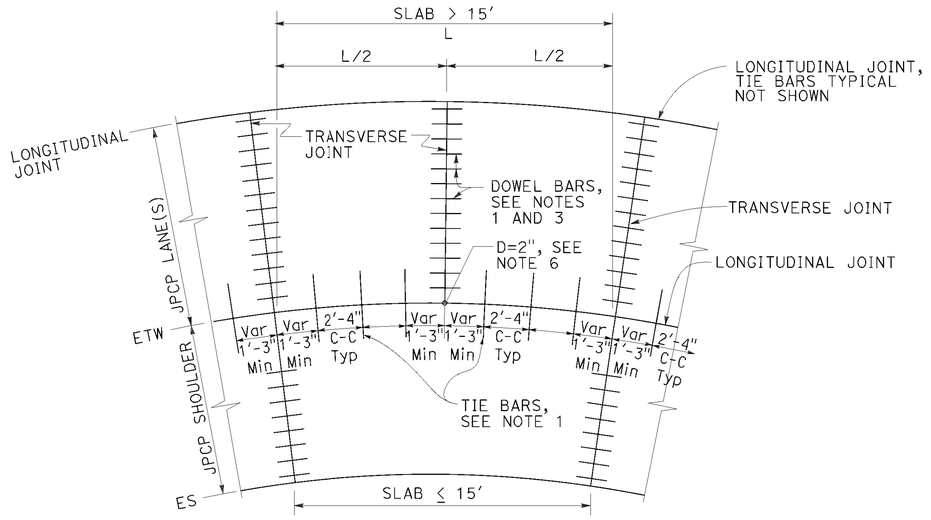
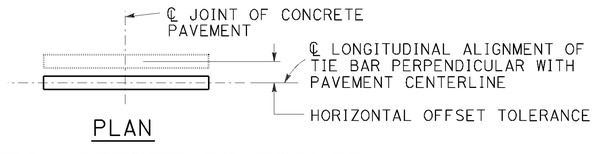
TO ACCOMPANY PLANS DATED October 8, 2021

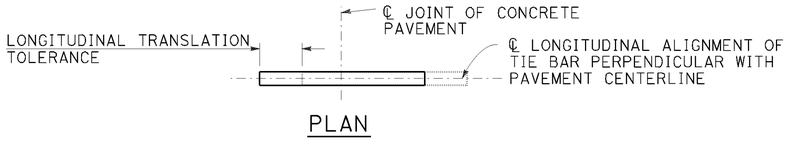


TIE BAR LAYOUT IN CURVED LANES



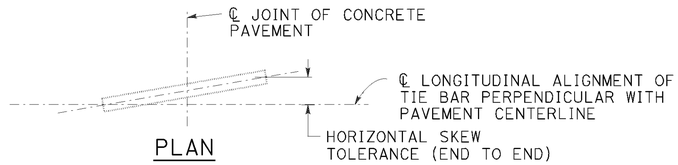
PLAN

HORIZONTAL OFFSET TOLERANCE



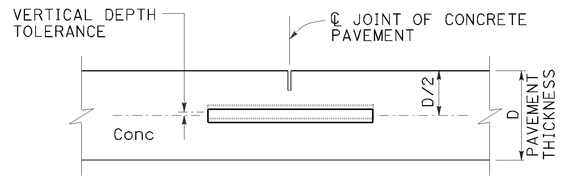
PLAN

LONGITUDINAL TRANSLATION TOLERANCE



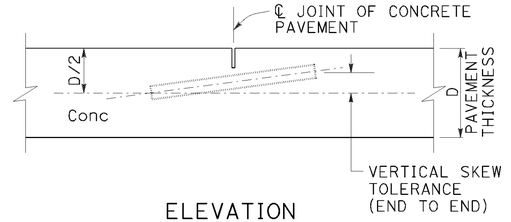
PLAN

HORIZONTAL SKEW TOLERANCE



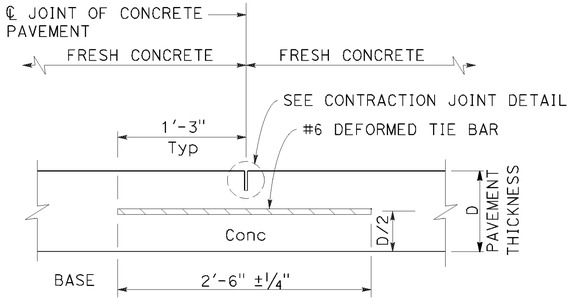
ELEVATION

VERTICAL DEPTH TOLERANCE

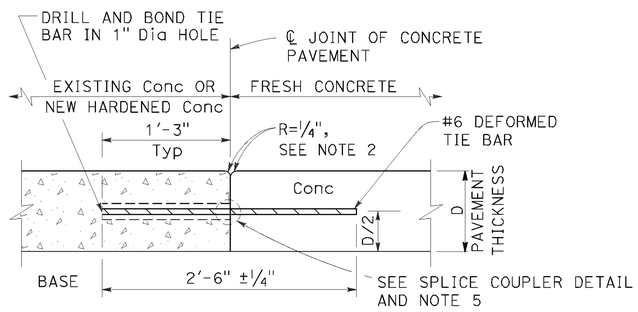


ELEVATION

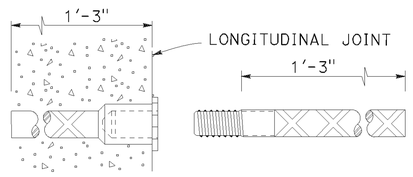
VERTICAL SKEW TOLERANCE



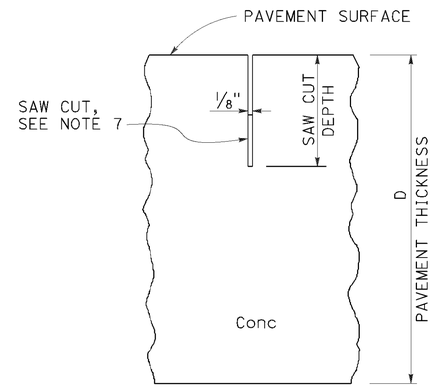
LONGITUDINAL CONTRACTION JOINT



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

2018 REVISED STANDARD PLAN RSP P15

6-21-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1534	1710

REGISTERED CIVIL ENGINEER

April 19, 2019
PLANS APPROVAL DATE

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

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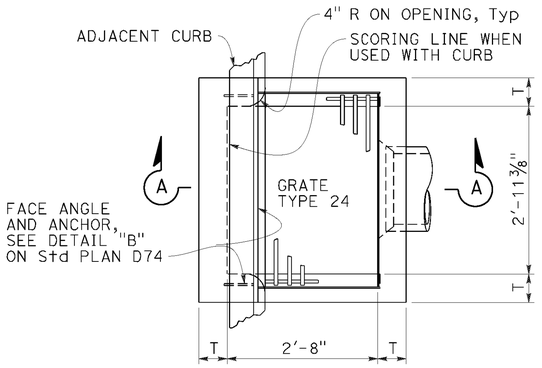
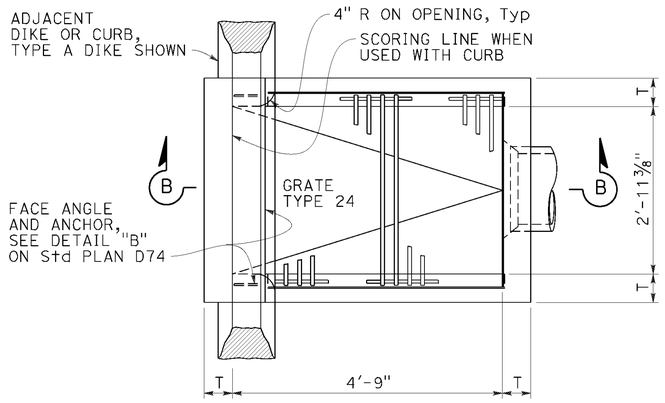
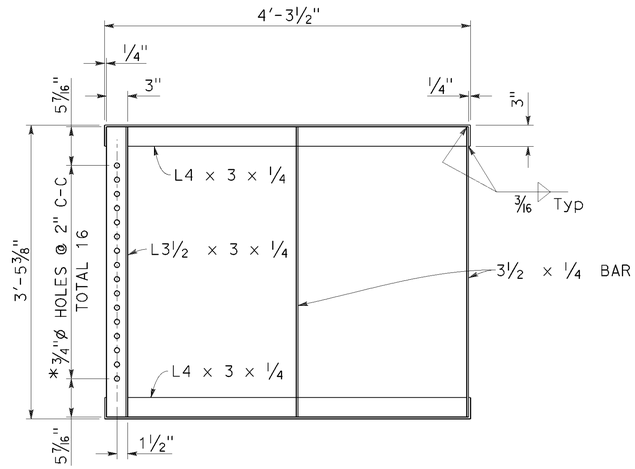
TO ACCOMPANY PLANS DATED October 8, 2021



PLAN
TYPE GO

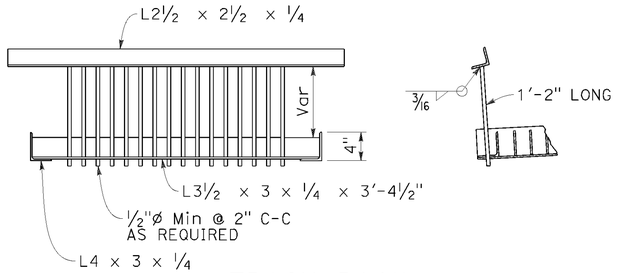


PLAN
TYPE GDO



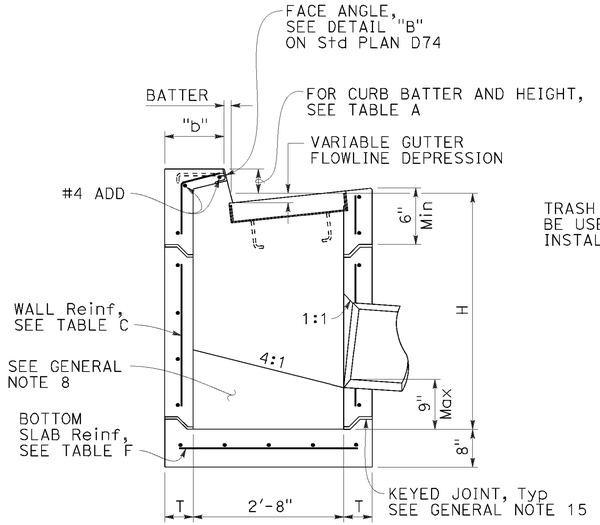
GRATE FRAME FOR TYPE GDO INLET

* HOLES REQUIRED ONLY WITH TRASH RACK

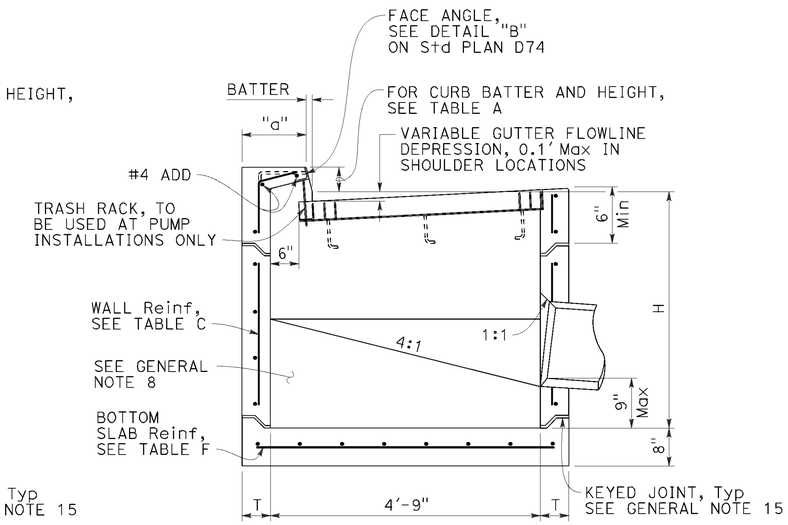


TRASH RACK

FOR USE WITH PUMP INSTALLATION



SECTION A-A



SECTION B-B

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	t	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	t	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	t	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	t	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	t	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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1535	1710

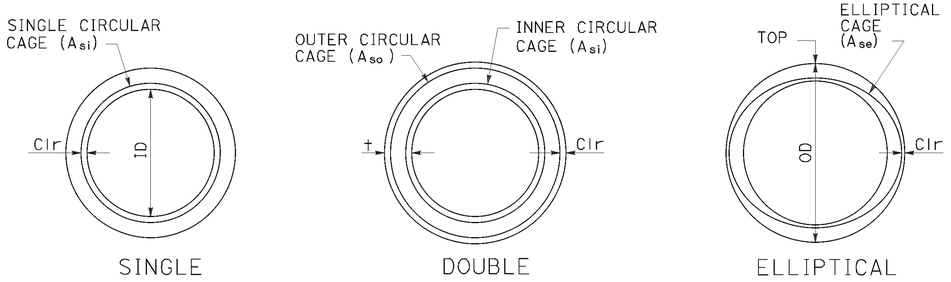
REGISTERED CIVIL ENGINEER

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

TO ACCOMPANY PLANS DATED October 8, 2021



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.

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.

CAGE REINFORCEMENT

t = 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)

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1536	1710

REGISTERED CIVIL ENGINEER

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

October 15, 2021
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED October 8, 2021

WALL B

f'c = 6 ksi

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		
		Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase
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	0.36	0.83	0.84	0.72	0.86	0.81	0.79	0.84	–	–	–	–	–	–

WALL BB

ID	†	40'-0" Max COVER INSTALLATION TYPE 1	
		Asi	Aso
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

f'c = 5 ksi

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		
		Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase
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	–	–	–	–	–	–	–

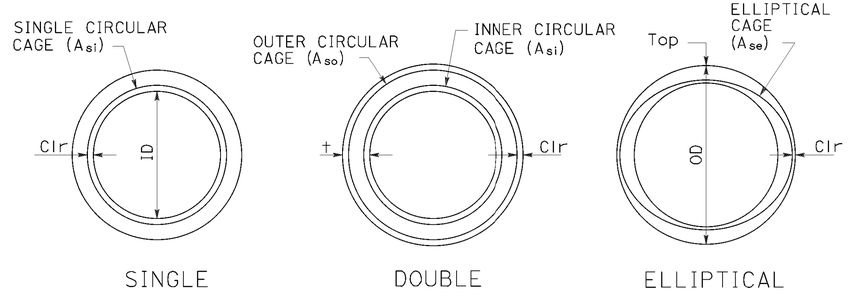
WALL CC

ID	†	80'-0" Max COVER INSTALLATION TYPE 1	
		Asi	Aso
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

f'c = 6 ksi

ID	†	10'-0" Max COVER INSTALLATION TYPE 1			20'-0" Max COVER INSTALLATION TYPE 1		
		Asi	Aso	Ase	Asi	Aso	Ase
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	–



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 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.

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.

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1537	1710

REGISTERED CIVIL ENGINEER

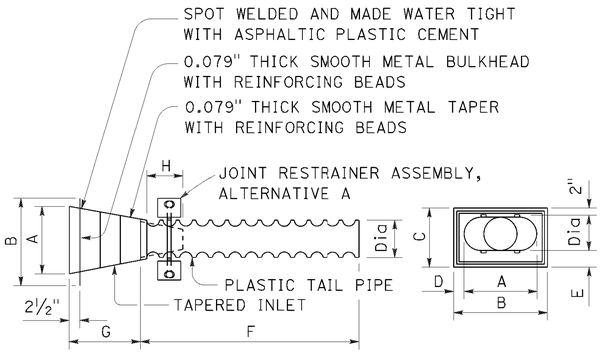
Bruce D. Swanger
No. C61257
Exp. 6-30-23
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER

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.

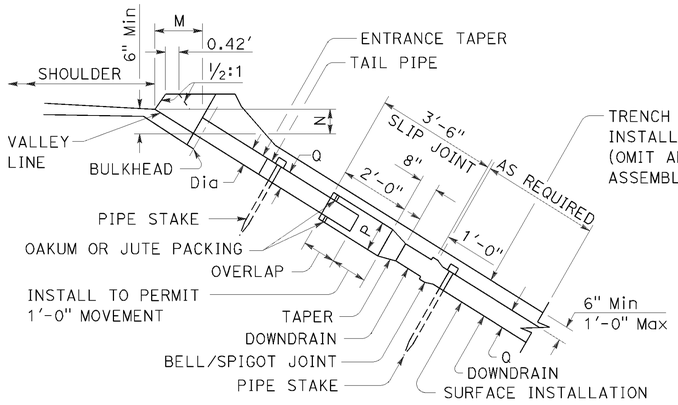
TO ACCOMPANY PLANS DATED October 8, 2021

2018 REVISED STANDARD PLAN RSP D87B



PLAN END VIEW

ENTRANCE TAPER - TYPE 1



SECTION - TYPE 1

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"

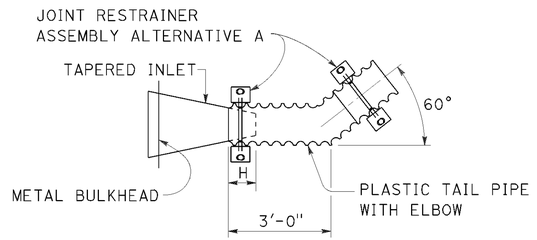
TAPER JOINTS MAY BE WELDED OR RIVETED.
DIMENSIONS TO BE AS TABULATED BELOW.

Dia	A	B	C	D	E	F	G	H
8"	1'-4"	2'-1½"	1'-3"	4¾"	5"	6'-0"	2'-0"	1'-0"
12"	1'-6"	2'-1½"	1'-7"	3¾"	5"	6'-0"	2'-0"	1'-0"
15"	1'-9"	2'-6"	1'-11"	4½"	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

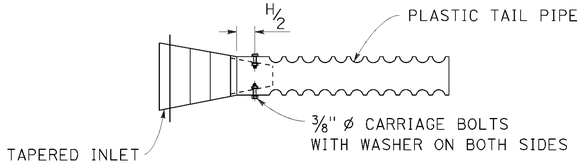
NOTES:

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

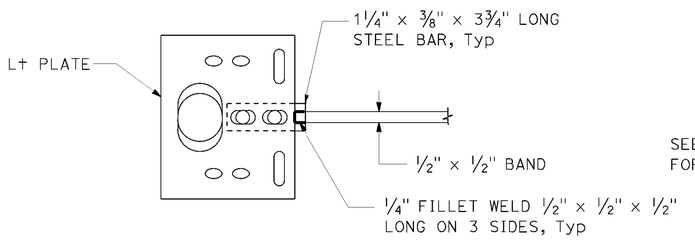


PLAN

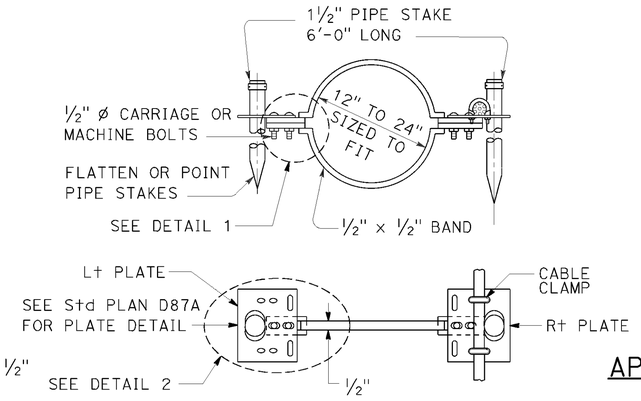
Alternative tail pipe to entrance pipe connection

DETAIL "A"

(See Note 5)

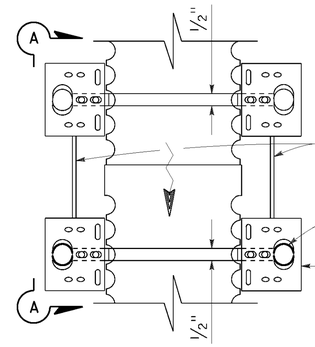


DETAIL 2
APPLIES TO BOTH L & R PLATE

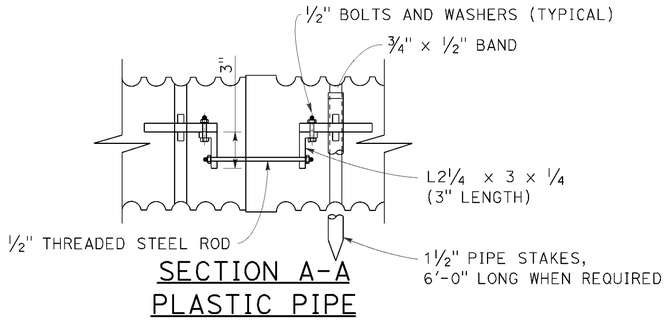


PLASTIC PIPE
JOINT RESTRAINER ASSEMBLY

Alternative A

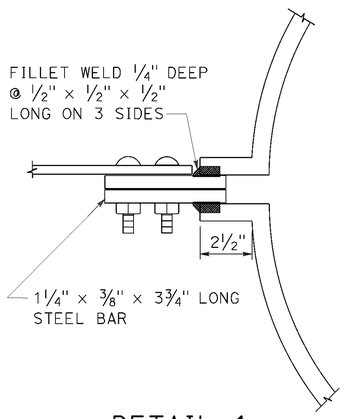


PLAN



SECTION A-A
PLASTIC PIPE
JOINT RESTRAINER ASSEMBLY

Alternative B



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

5-21-21

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1538	1710

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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

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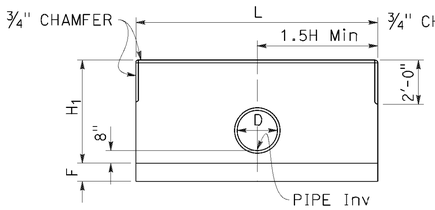
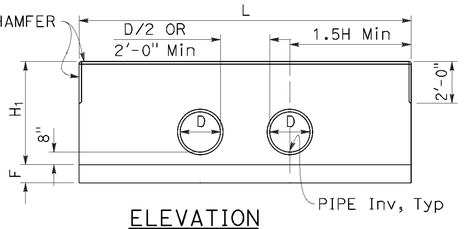
TO ACCOMPANY PLANS DATED October 8, 2021

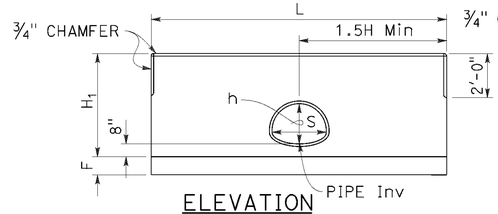
2018 REVISED STANDARD PLAN RSP D89A



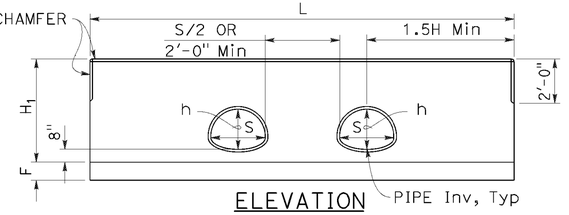
ELEVATION
STRAIGHT HEADWALL
SINGLE CIRCULAR PIPE



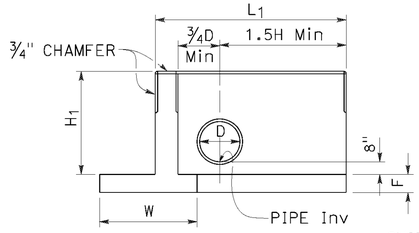
ELEVATION
STRAIGHT HEADWALL
DOUBLE CIRCULAR PIPE



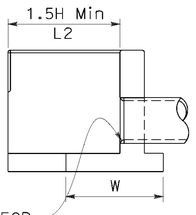
ELEVATION
STRAIGHT HEADWALL
SINGLE CMP



ELEVATION
STRAIGHT HEADWALL
DOUBLE CMP



ELEVATION
"L" HEADWALL



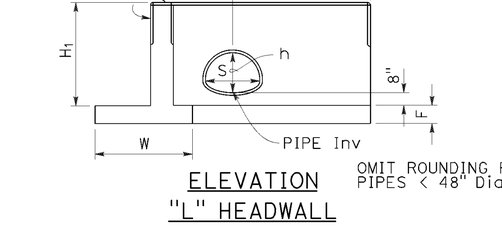
OMIT ROUNDING FOR PIPES < 48" Dia

SECTION
"L" HEADWALL

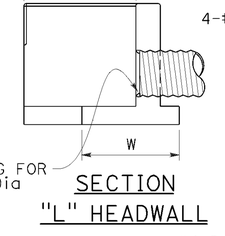
H (Min)	CIRCULAR PIPE SIZE D	CMP ARCH SIZE S x h
3'-11"	12"	-
4'-2"	15"	21" x 15"
4'-5"	18"	24" x 18"
4'-8"	21"	28" x 20"
4'-11"	24"	35" x 24"
5'-2"	27"	-
5'-5"	30"	42" x 29"
5'-8"	33"	49" x 33"
5'-11"	36"	-
6'-2"	39"	57" x 38"
6'-5"	42"	64" x 43"
6'-8"	45"	-
6'-11"	48"	71" x 47"

CIRCULAR PIPE CULVERT HEADWALLS

SEE NOTE 2



ELEVATION
"L" HEADWALL

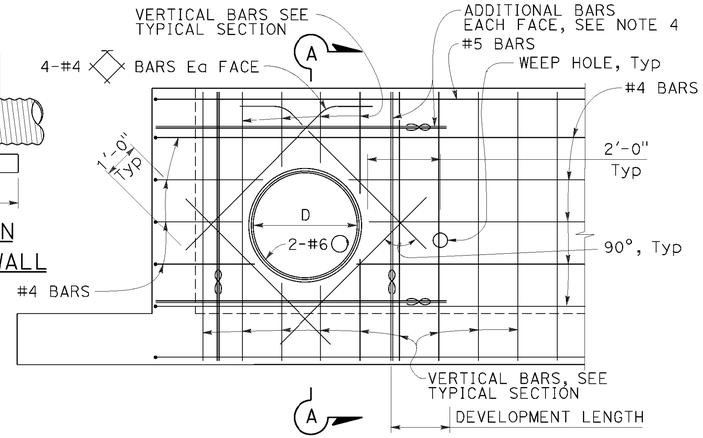


OMIT ROUNDING FOR PIPES < 48" Dia

SECTION
"L" HEADWALL

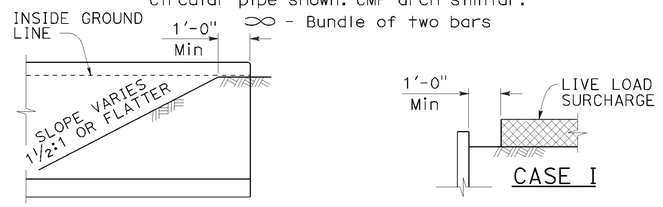
CMP ARCH CULVERT HEADWALLS

SEE NOTE 2

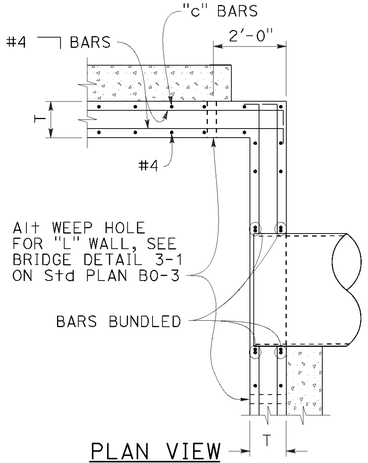


REINFORCEMENT MODIFICATION

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

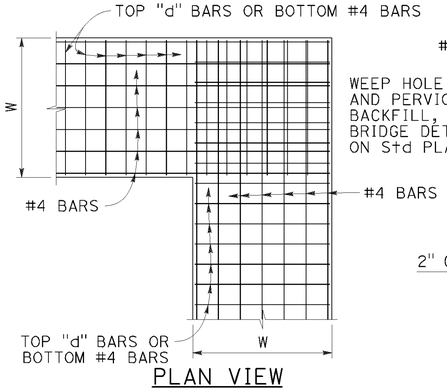


DETAIL OF DESIGN LOADING CASES



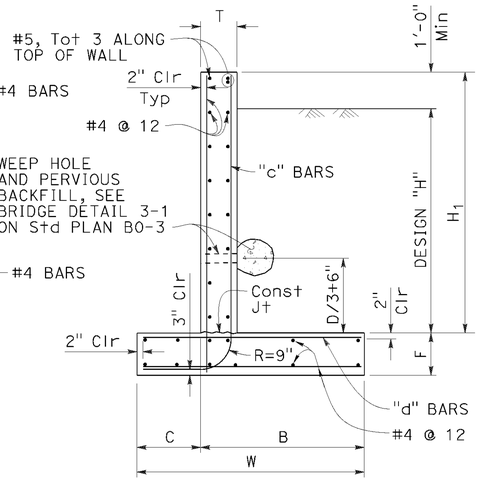
PLAN VIEW
STEM WALL

"L" headwall shown.
Straight headwall similar.

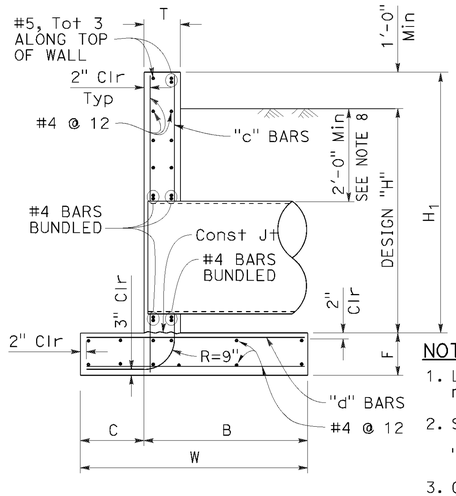


PLAN VIEW
FOOTING

"L" headwall shown.
Straight headwall similar.



TYPICAL SECTION



SECTION A-A

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	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

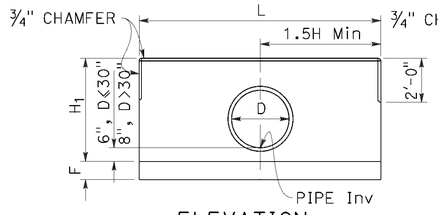
PIPE CULVERT HEADWALLS STRAIGHT AND "L"

NO SCALE

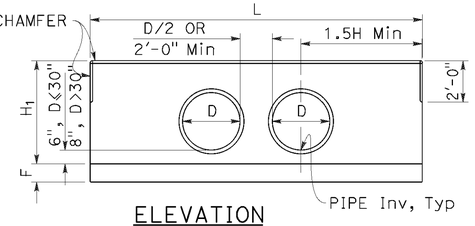
RSP D89A DATED OCTOBER 18, 2019 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP D89A

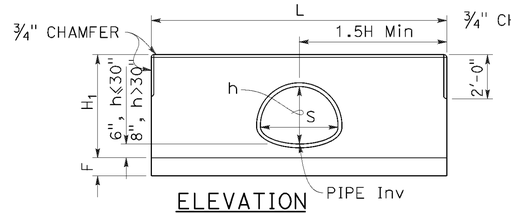
6-21-19



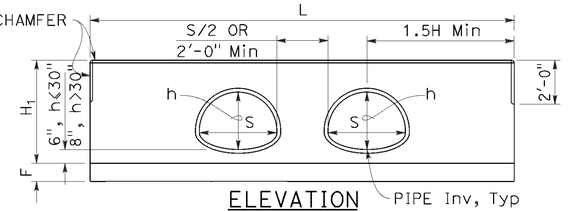
ELEVATION
STRAIGHT HEADWALL
SINGLE CIRCULAR PIPE



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1539	1710

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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

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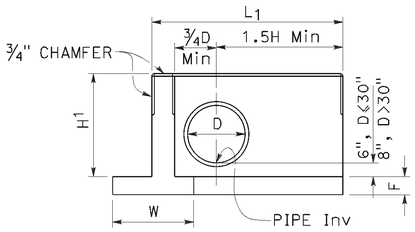
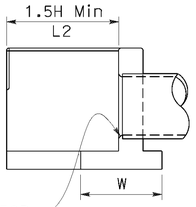
TO ACCOMPANY PLANS DATED October 8, 2021



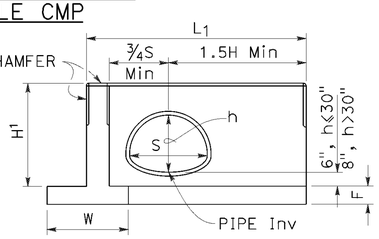
ELEVATION
"L" HEADWALL



OMIT ROUNDING FOR PIPES < 48" Dia

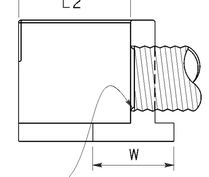
SECTION
"L" HEADWALL

H	CIRCULAR PIPE SIZE D	CMP ARCH SIZE S x h
2'-8"	12"	-
2'-11"	15"	21" x 15"
3'-2"	18"	24" x 18"
3'-5"	21"	28" x 20"
3'-8"	24"	35" x 24"
3'-11"	27"	-
4'-2"	30"	42" x 29"
4'-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"	-

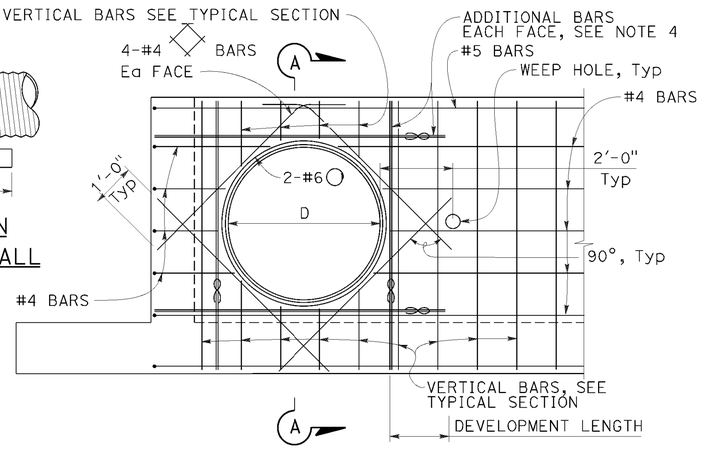


ELEVATION
"L" HEADWALL

OMIT ROUNDING FOR PIPES < 48" Dia



SECTION
"L" HEADWALL



CIRCULAR PIPE CULVERT HEADWALLS

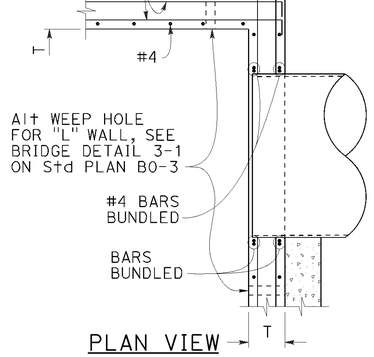
SEE NOTE 2

CMP ARCH CULVERT HEADWALLS

SEE NOTE 2

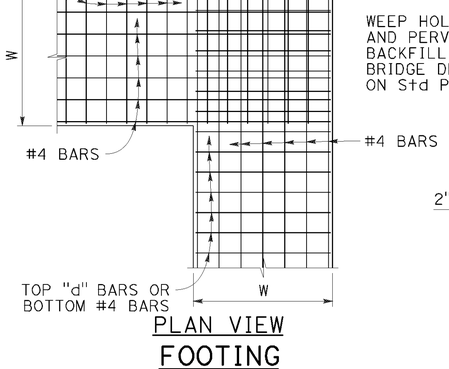
REINFORCEMENT MODIFICATION

"L" headwall shown. Straight headwall similar.
Circular pipe shown. CMP arch similar.
∞ - Bundle of two bars



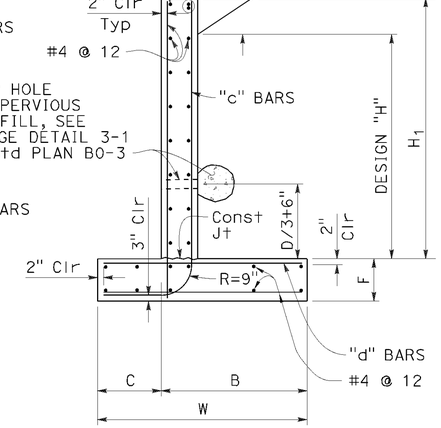
PLAN VIEW
STEM WALL

"L" headwall shown.
Straight headwall similar.

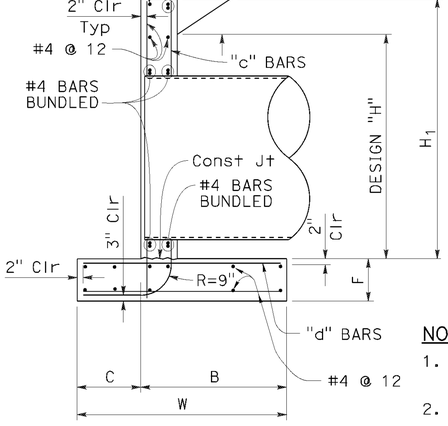


PLAN VIEW
FOOTING

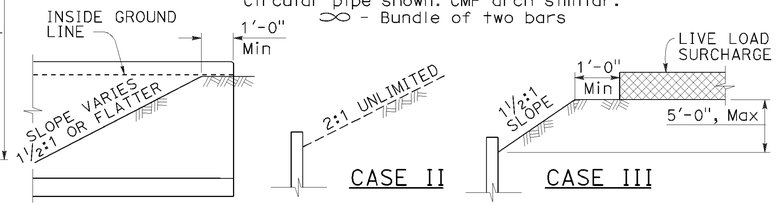
"L" headwall shown.
Straight headwall similar.



TYPICAL SECTION



SECTION A-A



CASE II CASE III

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

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.

* 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

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1540	1710

REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

Bruce D. Swanger
No. C61257
Exp. 6-30-21
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER

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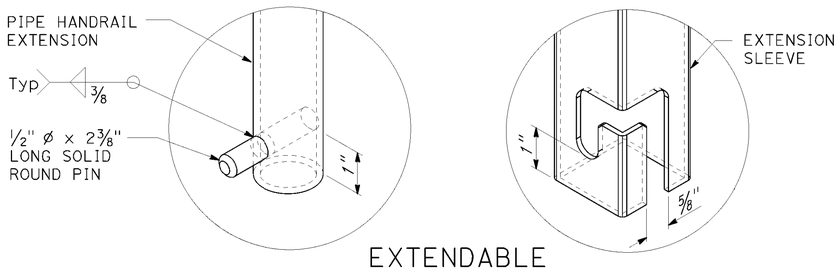
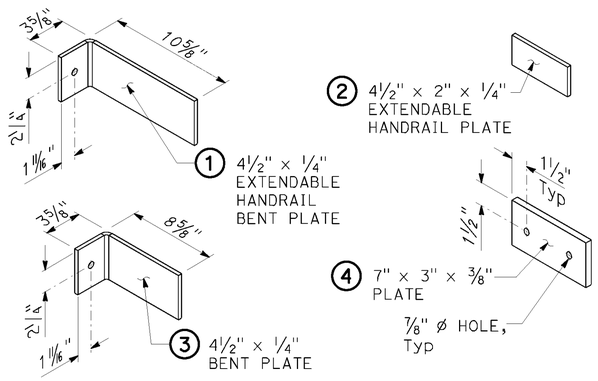


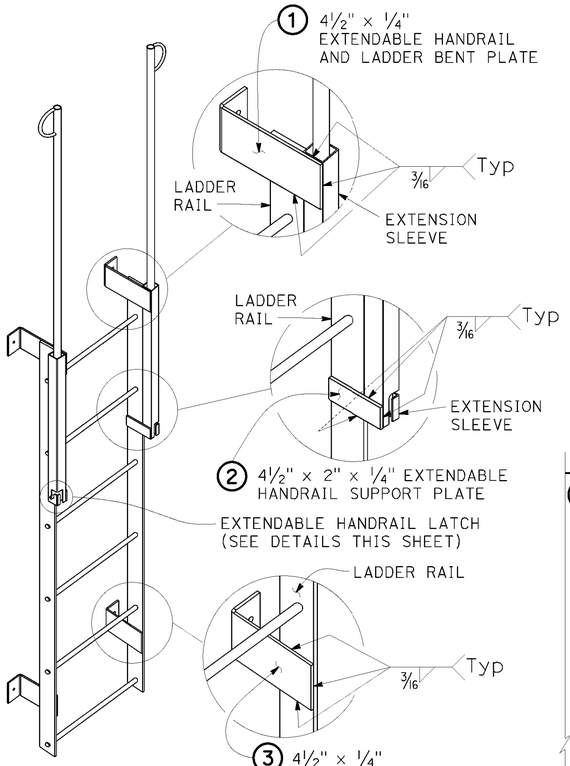
EXTENDABLE HANDRAIL LATCH



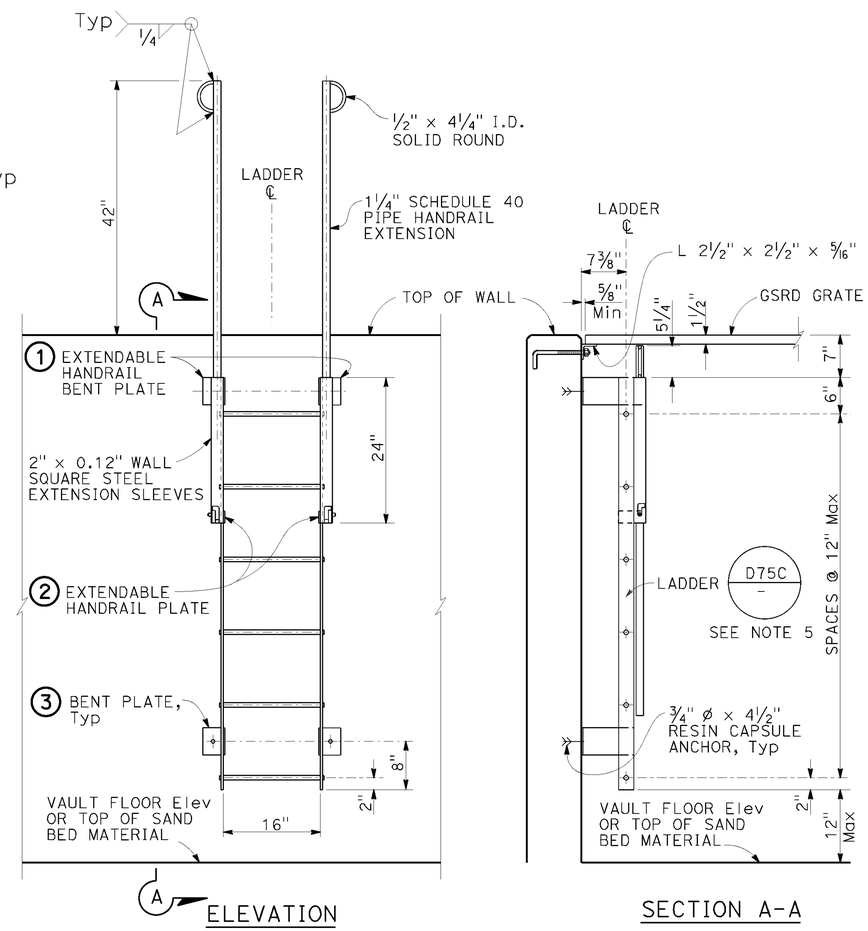
BRACKET DETAILS

NOTES (THIS SHEET ONLY):

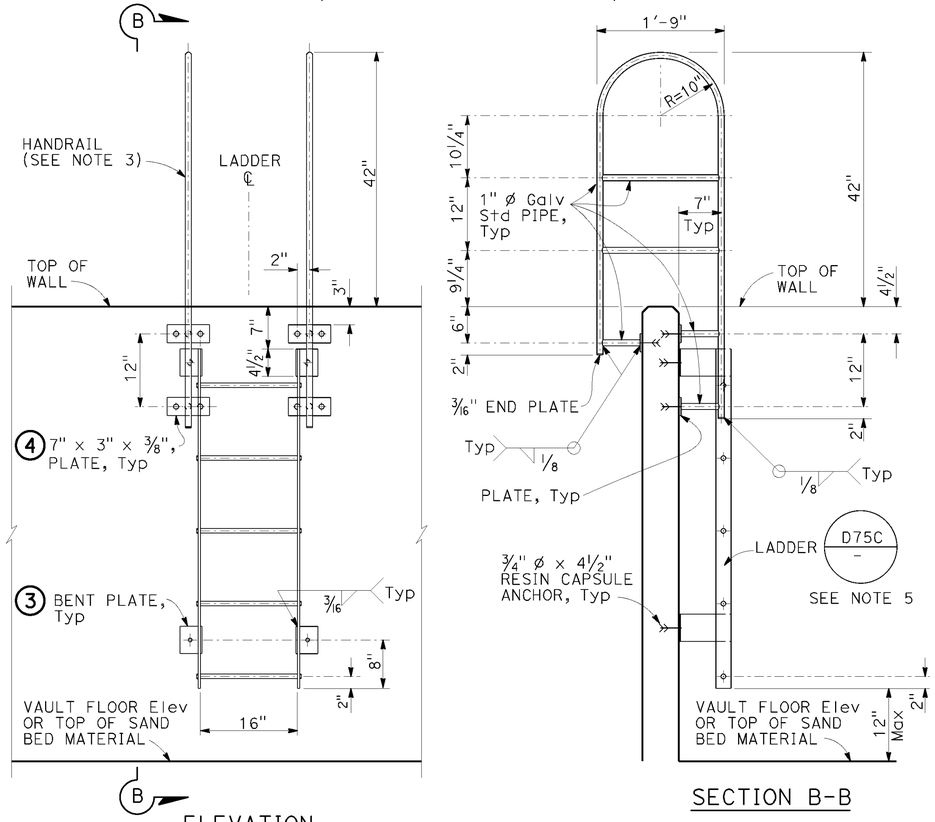
1. Rungs must be skid resistant. TO ACCOMPANY PLANS DATED October 8, 2021
2. Use wall mounted handrails for vault depths between 4'-0" and 6'-6". For deeper vaults use extendable handrails detail. Vault depth is distance between top of wall and either top of floor slab or top of filter media material (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.



LADDER



EXTENDABLE HANDRAIL



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1541	1710

LICENSED LANDSCAPE ARCHITECT

April 19, 2019
PLANS APPROVAL DATE

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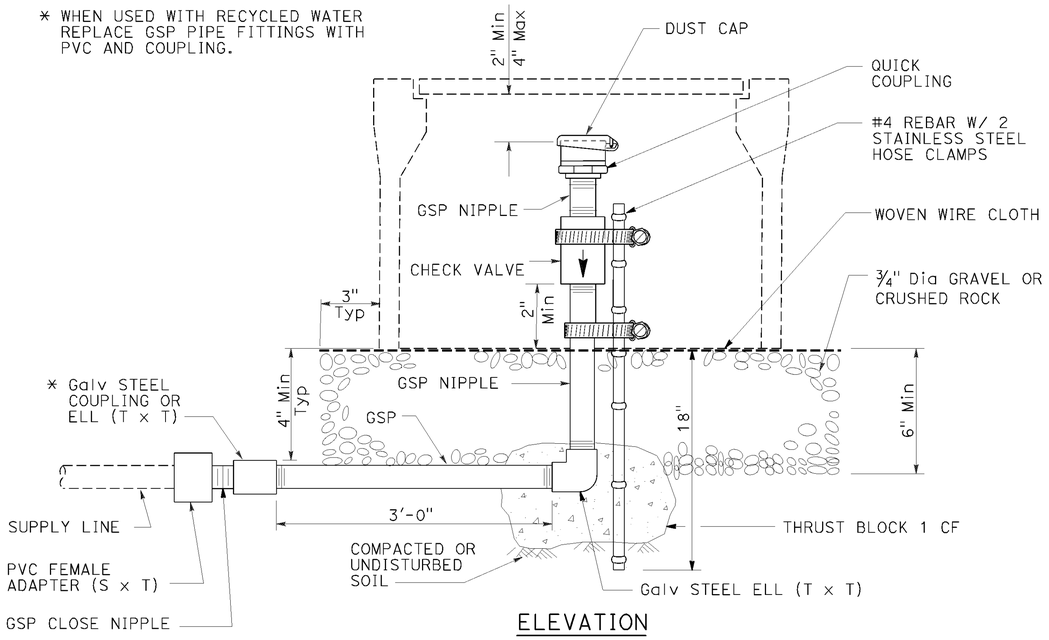
LICENSED LANDSCAPE ARCHITECT — Miguel V. Ferrara 3629 — Registered — 9-30-19 Renewal Date — Date — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED October 8, 2021

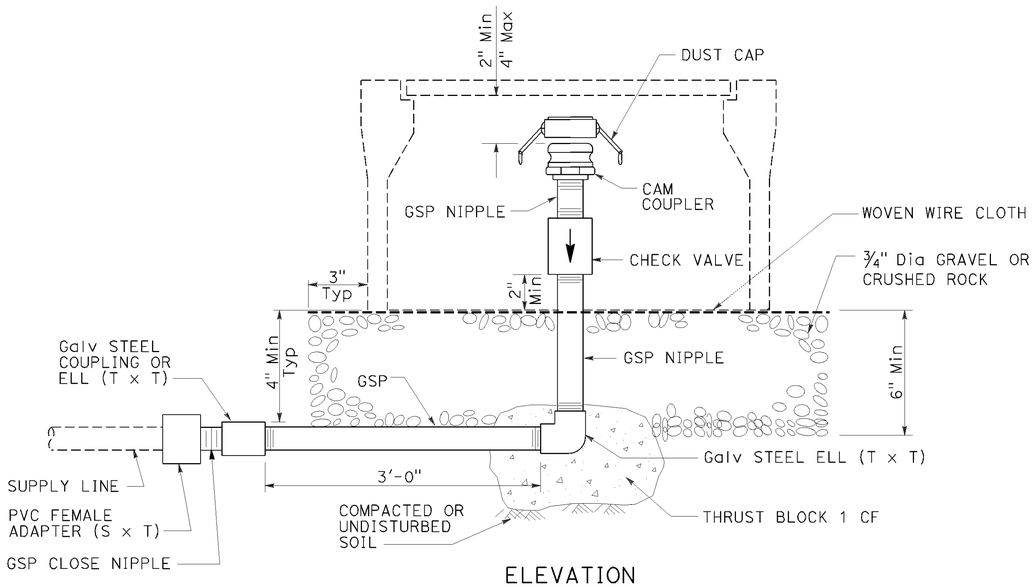
2018 REVISED STANDARD PLAN RSP H8

* WHEN USED WITH RECYCLED WATER REPLACE GSP PIPE FITTINGS WITH PVC AND COUPLING.



ELEVATION

QUICK COUPLING VALVE

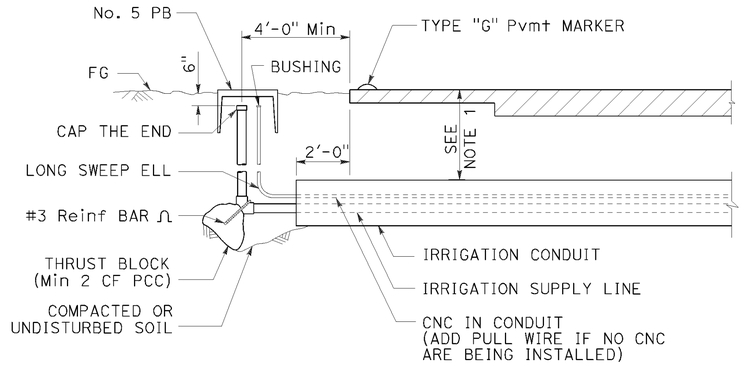


ELEVATION

CAM COUPLER ASSEMBLY

NOTES:

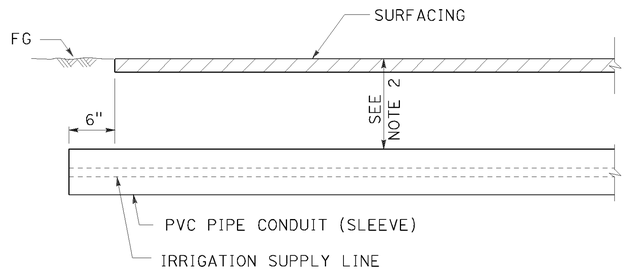
1. 40" - 50"
2. 12" downstream of RCV
   18" upstream of RCV



SECTION

IRRIGATION CONDUIT

UNDER TRAVELED WAY



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1542	1710

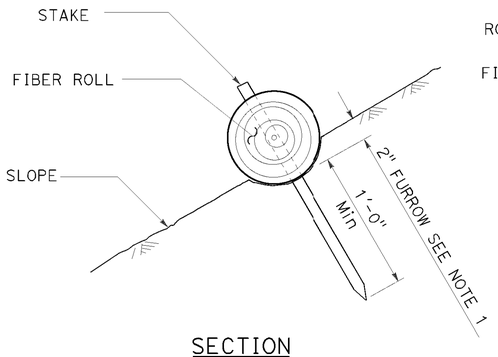
LICENSED LANDSCAPE ARCHITECT

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.

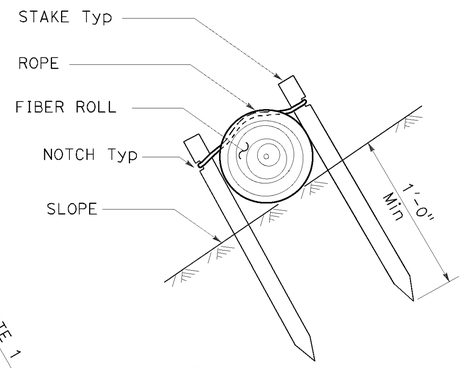
LICENSED LANDSCAPE ARCHITECT — Michael V. Ferrara 3869 — 9-30-21 Renewal Date — Date — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED October 8, 2021

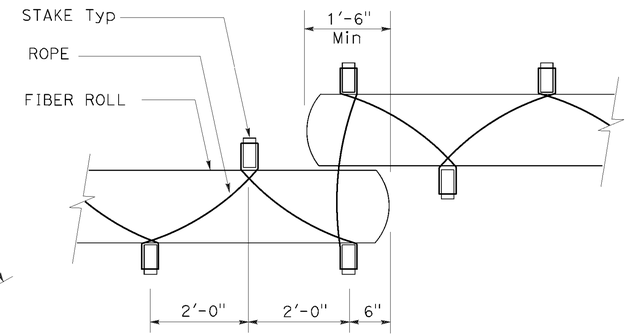


SECTION

FIBER ROLL (TYPE 1)

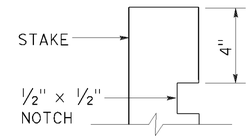


SECTION



PLAN

FIBER ROLL (TYPE 2)

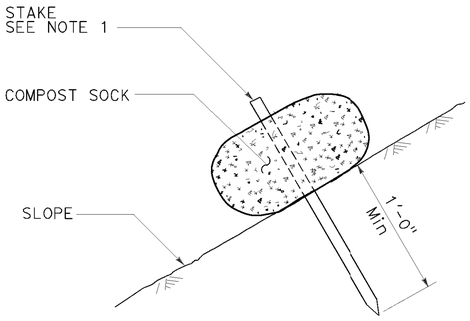


ELEVATION

STAKE NOTCH DETAIL

NOTE:

1. Installations shown in the perspectives are for slope inclination of 10:1 (Horiz:Vert) and steeper.

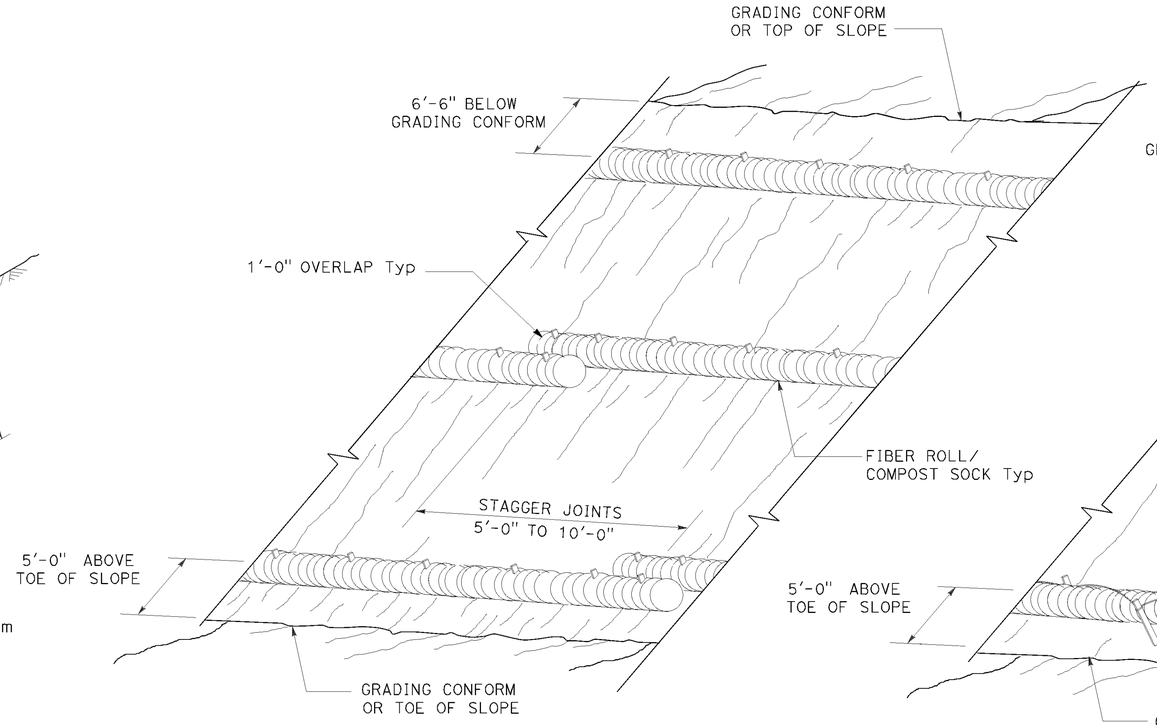


SECTION

COMPOST SOCK

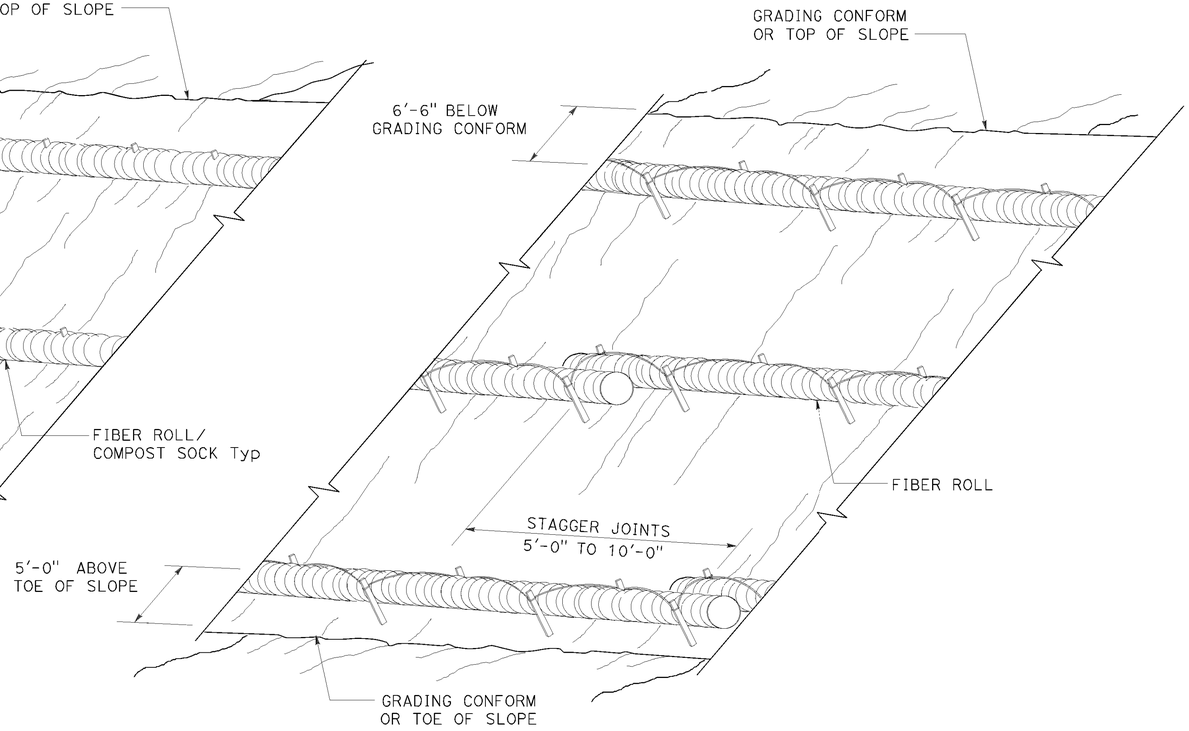
NOTE:

1. May install stake adjacent to bottom edge of compost sock.



PERSPECTIVE

FIBER ROLL (TYPE 1) COMPOST SOCK



PERSPECTIVE

FIBER ROLL (TYPE 2)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EROSION CONTROL DETAILS FIBER ROLL AND COMPOST SOCK

NO SCALE

RSP H51 DATED 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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1543	1710

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

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TO ACCOMPANY PLANS DATED October 8, 2021

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"

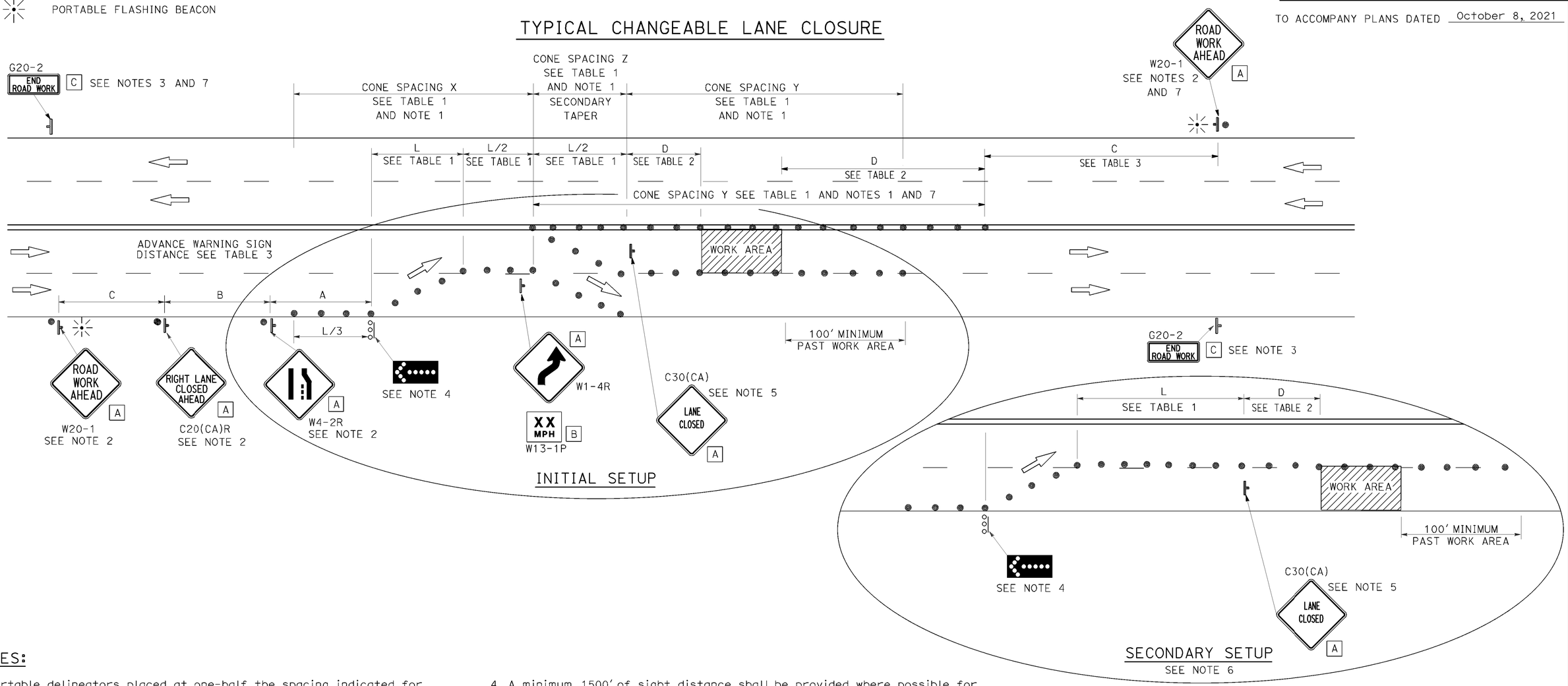
NOTES:

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.

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1544	1710

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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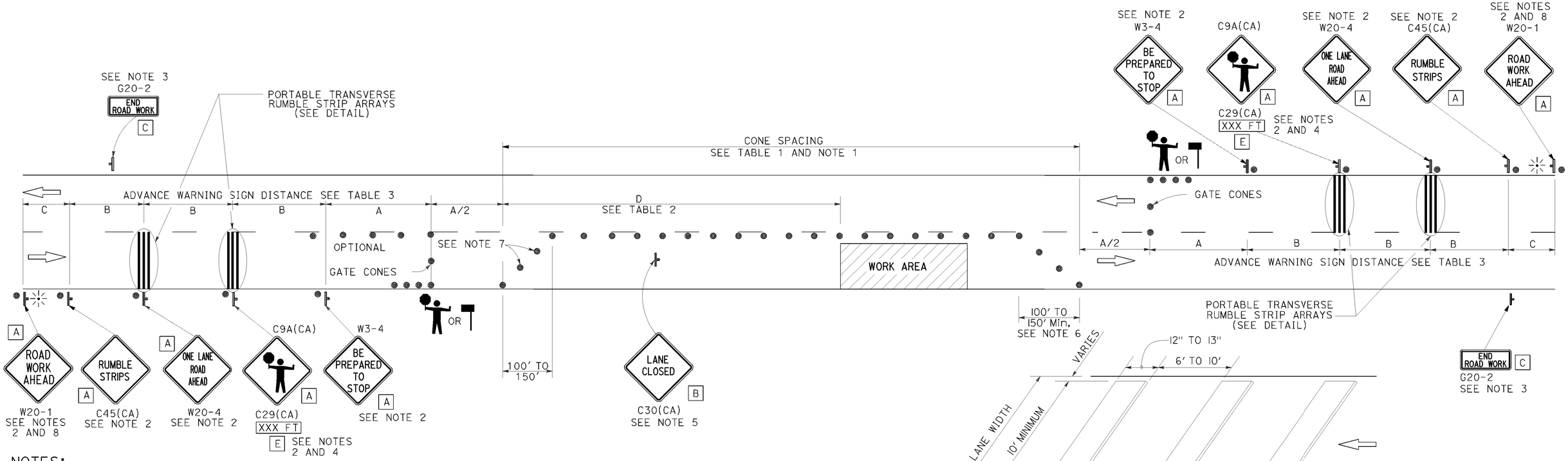
TO ACCOMPANY PLANS DATED October 8, 2021

NOTES:

See Standard Plan T9 for tables.

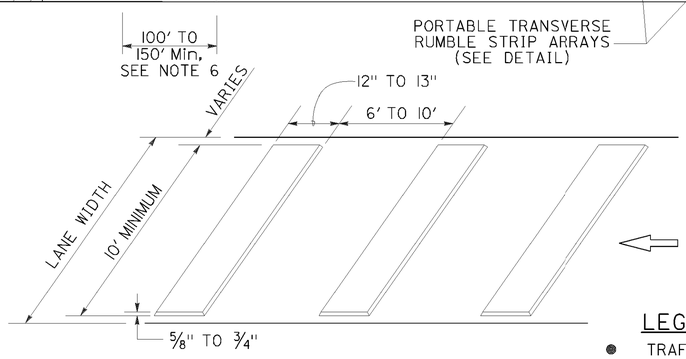
Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1545	1710

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 October 8, 2021

2018 REVISED STANDARD PLAN RSP T13A

LEGEND:

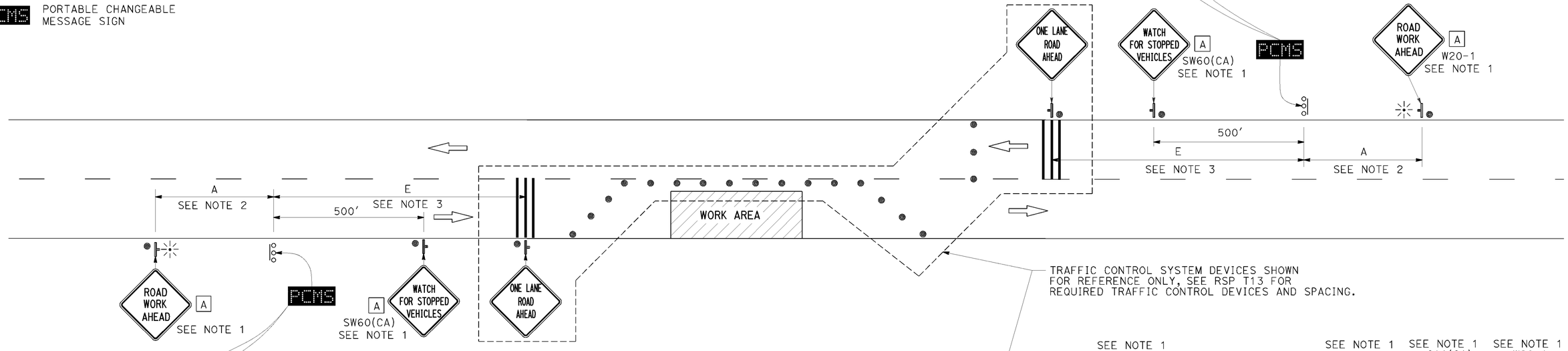
- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- PORTABLE FLASHING BEACON
- TRAILER
- FLAGGER
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN

SIGN PANEL SIZE (Min):

[A] 48" x 48"

FLAGGER AHEAD

PREPARE TO STOP

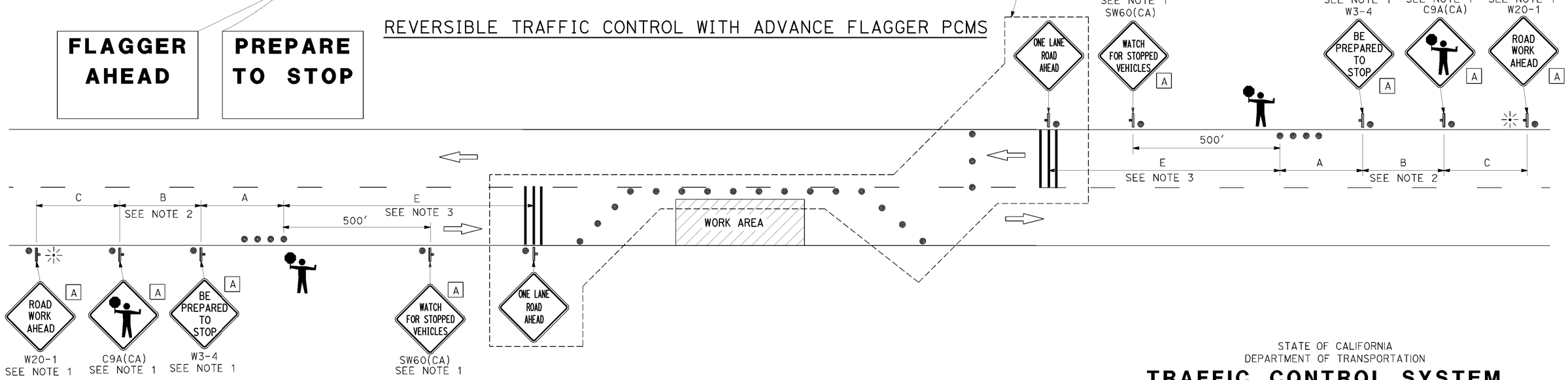


TRAFFIC CONTROL SYSTEM DEVICES SHOWN FOR REFERENCE ONLY, SEE RSP T13 FOR REQUIRED TRAFFIC CONTROL DEVICES AND SPACING.

REVERSIBLE TRAFFIC CONTROL WITH ADVANCE FLAGGER PCMS

FLAGGER AHEAD

PREPARE TO STOP



REVERSIBLE TRAFFIC CONTROL WITH ADVANCE FLAGGERS

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

12-9-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1546	1710

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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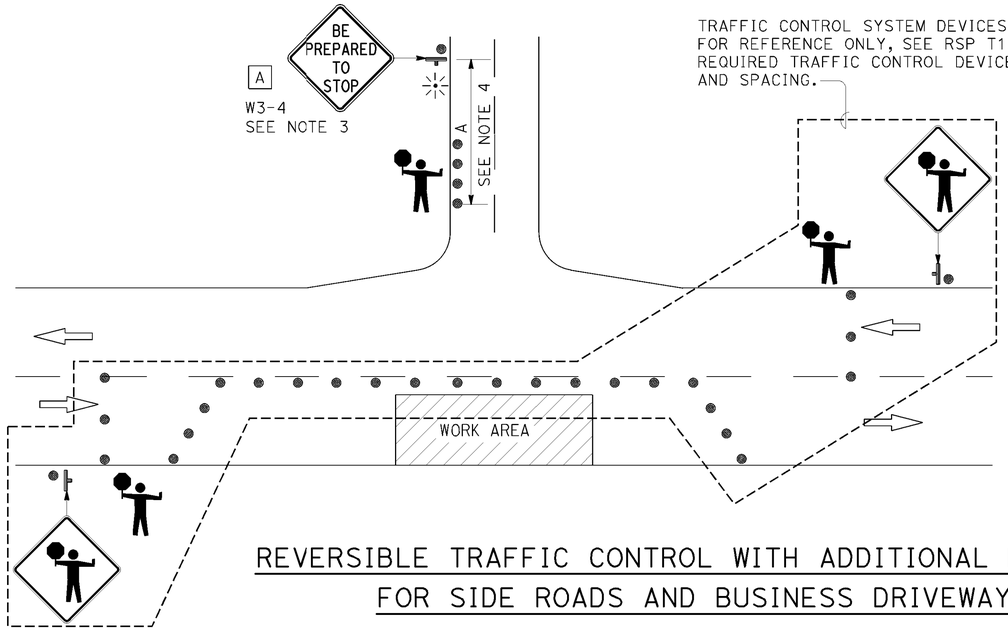
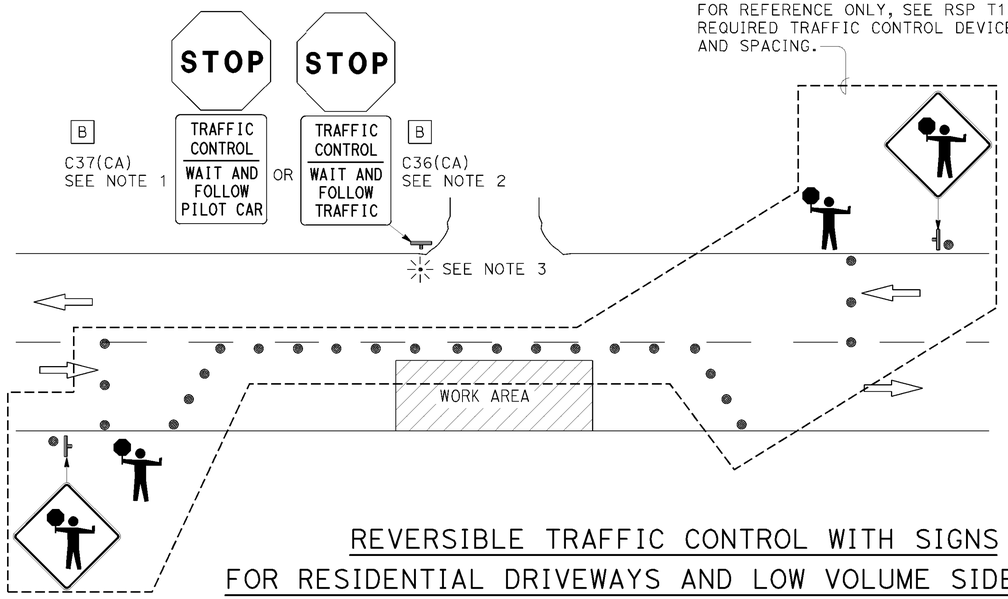
TO ACCOMPANY PLANS DATED October 8, 2021

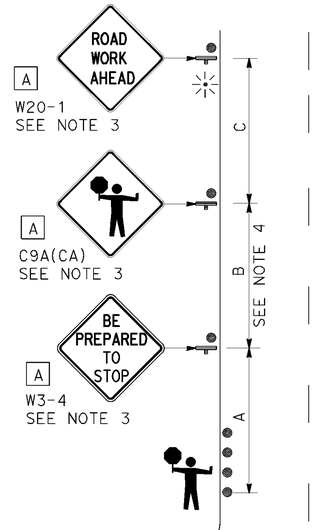
2018 REVISED STANDARD PLAN RSP T13B

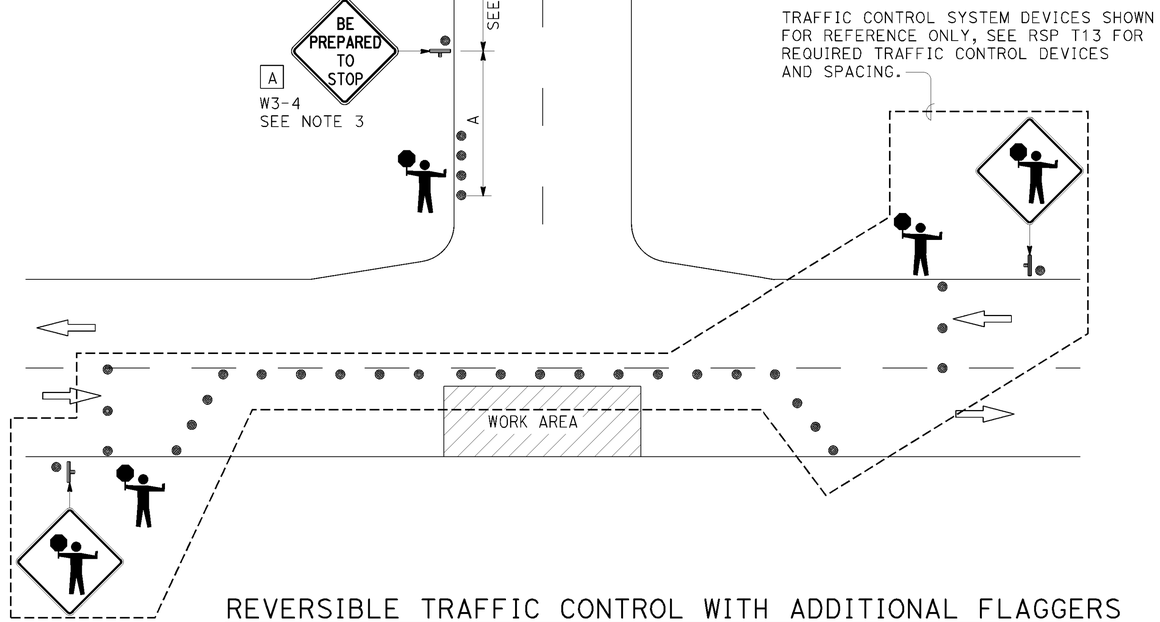


REVERSIBLE TRAFFIC CONTROL WITH ADDITIONAL FLAGGERS FOR SIDE ROADS AND BUSINESS DRIVEWAYS



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" × 48"
- B 36" × 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

10-15-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1547	1710

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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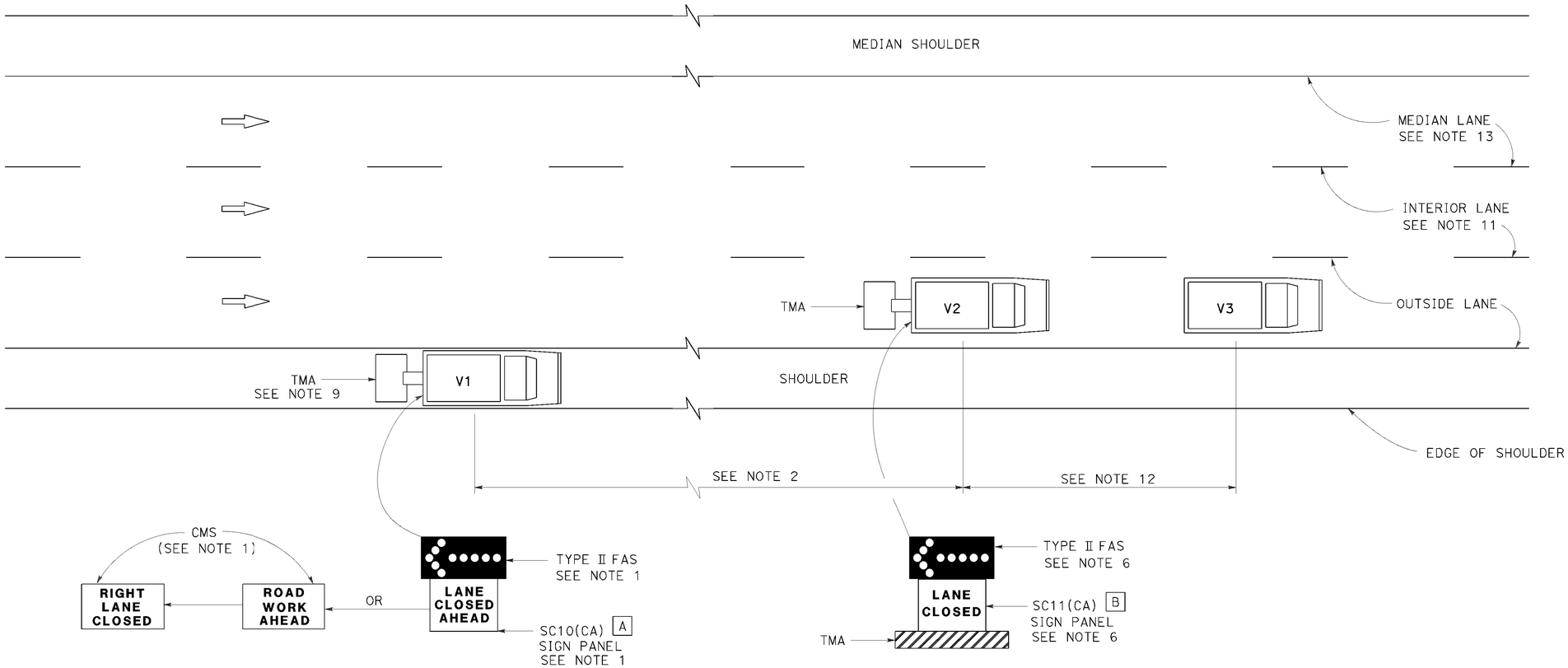
TO ACCOMPANY PLANS DATED October 8, 2021



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

MOVING LANE CLOSURE ON MEDIAN LANE OR OUTSIDE LANE OF MULTILANE HIGHWAYS

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1548	1710

Atifa Ferouz
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

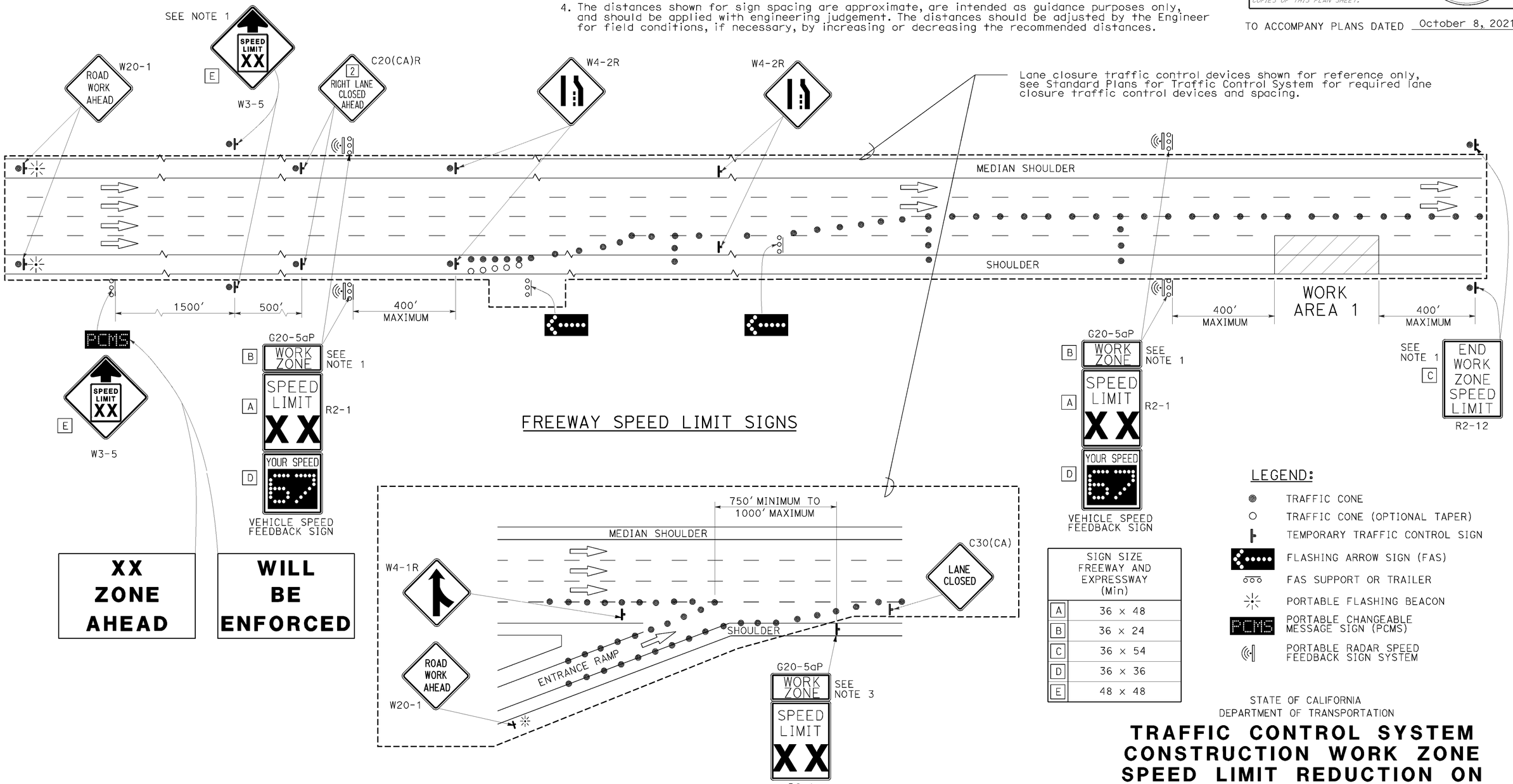
REGISTERED PROFESSIONAL ENGINEER
Atifa Ferouz
No. C80402
Exp. 3-31-21
CIVIL
STATE OF CALIFORNIA

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 October 8, 2021

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

XX ZONE AHEAD

WILL BE ENFORCED

ENTRANCE RAMP SPEED LIMIT SIGN

SIGN SIZE FREEWAY AND EXPRESSWAY (Min)	
A	36 × 48
B	36 × 24
C	36 × 54
D	36 × 36
E	48 × 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 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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1549	1710

Atifa Ferouz
REGISTERED CIVIL ENGINEER

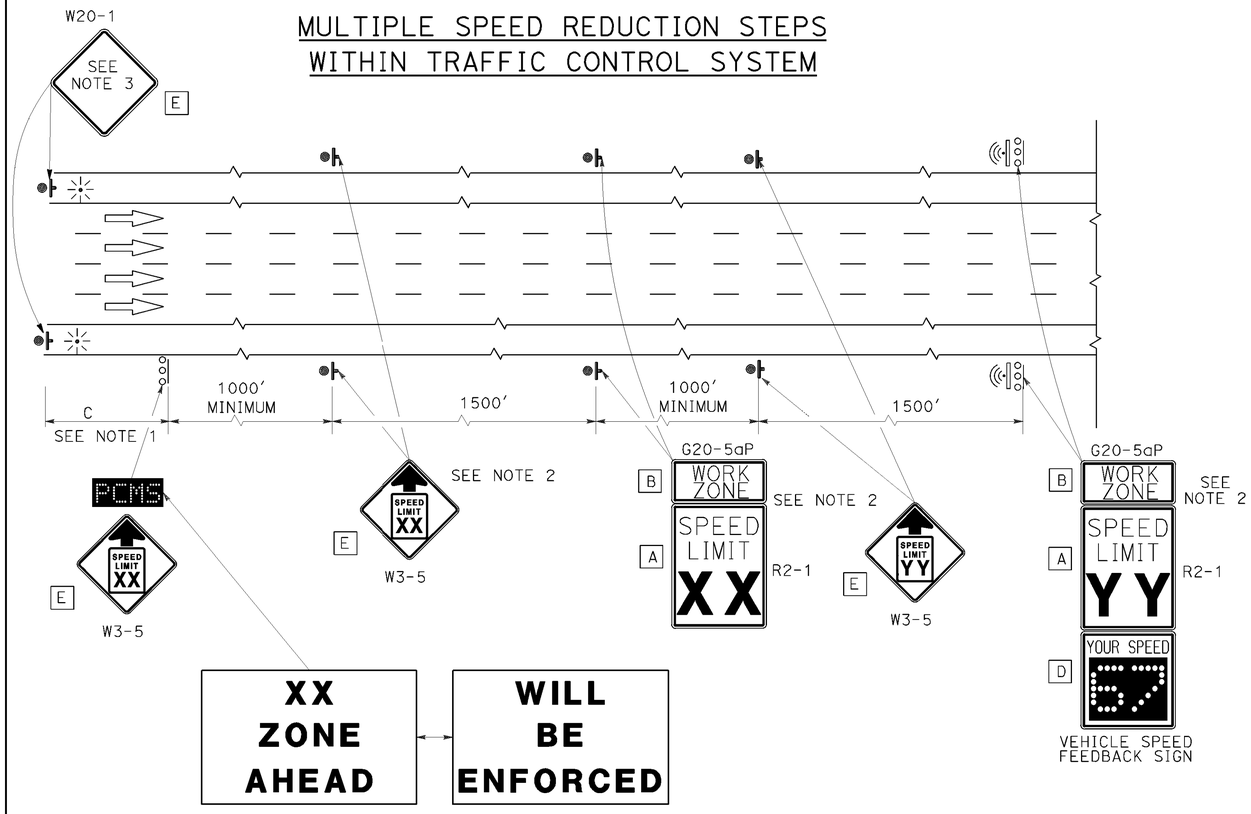
October 16, 2020
PLANS APPROVAL DATE

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

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.

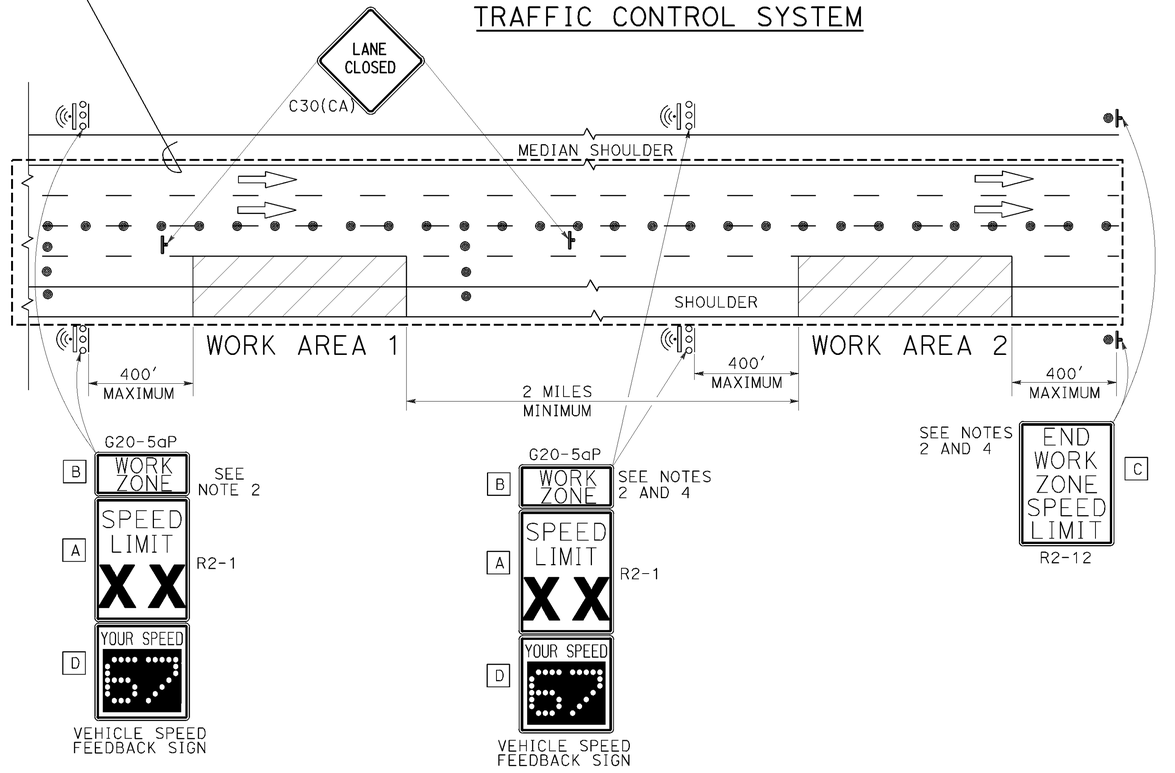
TO ACCOMPANY PLANS DATED October 8, 2021

MULTIPLE SPEED REDUCTION STEPS WITHIN TRAFFIC CONTROL SYSTEM



MULTIPLE WORK AREAS WITHIN TRAFFIC CONTROL SYSTEM

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.



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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1550	1710

Peter W. Norboe
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.

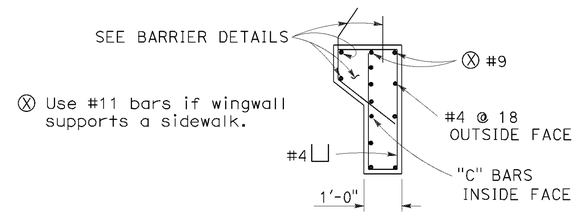
REGISTERED PROFESSIONAL ENGINEER — Peter W. Norboe — No. C57519 — Exp. 12-31-19 — CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED October 8, 2021

BRIDGE DESIGNATIONS AND ABBREVIATIONS

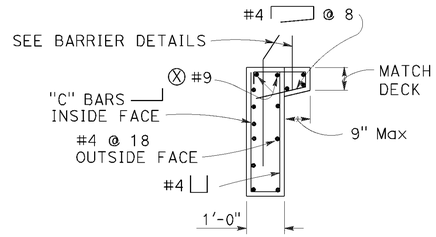
See Standard Plans A3A, A3B, and A3C for additional or standard abbreviations

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

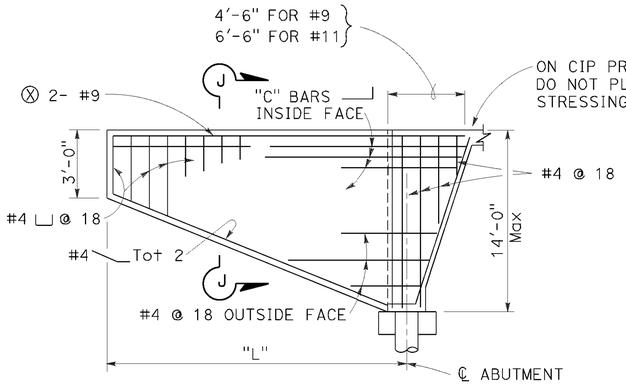


Ⓧ Use #11 bars if wingwall supports a sidewalk.

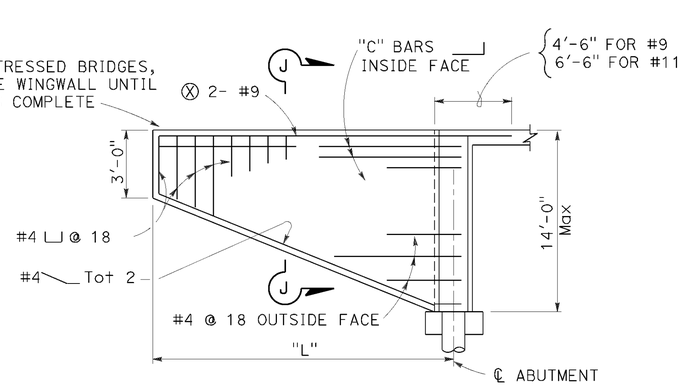
SECTION J-J
Without overhang



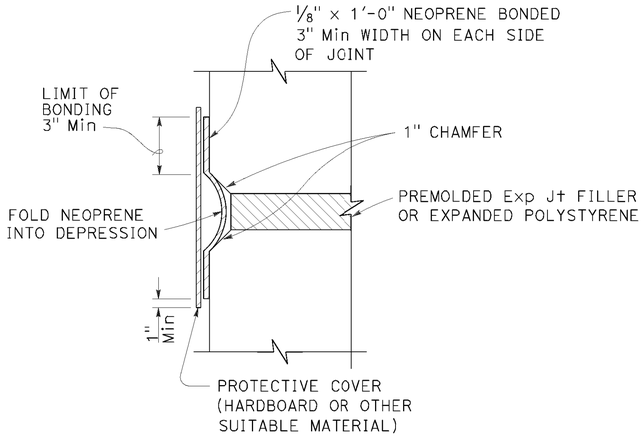
SECTION J-J
With overhang



ELEVATION
SLOPING ABUTMENT

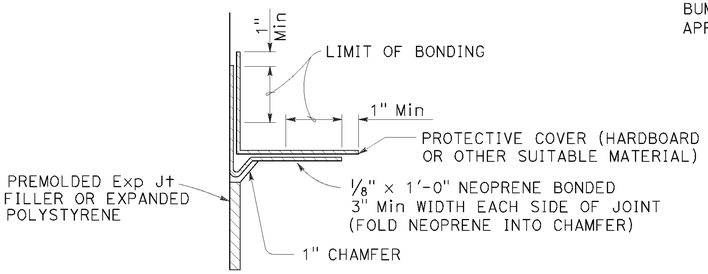


ELEVATION
VERTICAL ABUTMENT



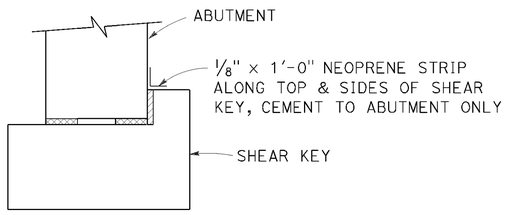
BRIDGE DETAIL 1-3
STRIP WATERSTOP DETAIL

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

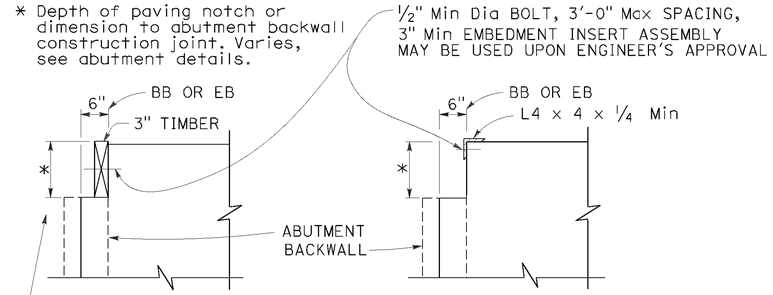


BRIDGE DETAIL 1-4
STRIP WATERSTOP CORNER DETAIL

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



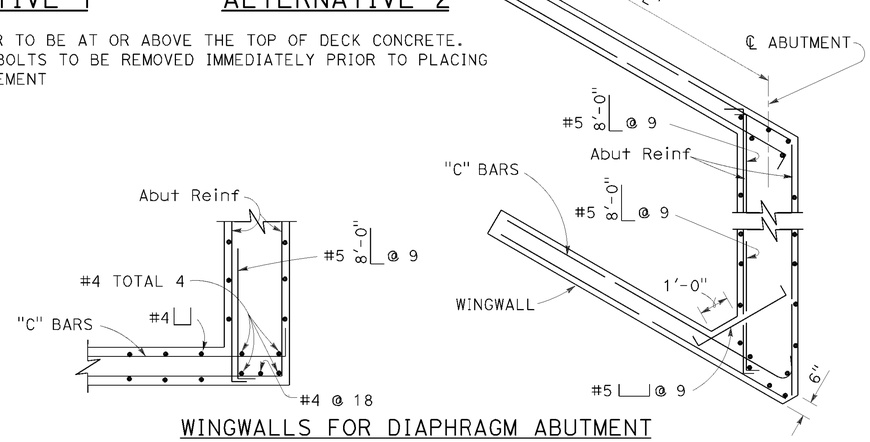
BRIDGE DETAIL 1-6
SHEAR KEY JOINT PROTECTION



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



WINGWALLS FOR DIAPHRAGM ABUTMENT
BRIDGE DETAIL 1-5

CORNER DETAIL FOR SKEW 20° AND LESS

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

CORNER DETAIL FOR SKEW OVER 20°

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1551	1710

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

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 October 8, 2021

BRIDGE DESIGNATIONS AND ABBREVIATIONS

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

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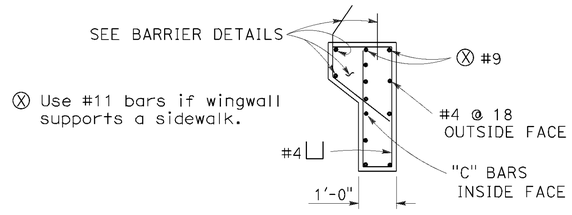
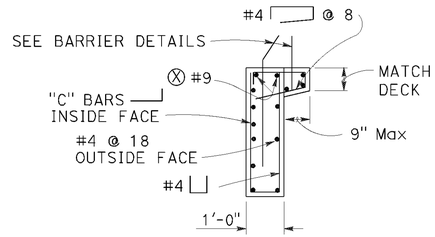
WWLOL	Wingwall Layout Line

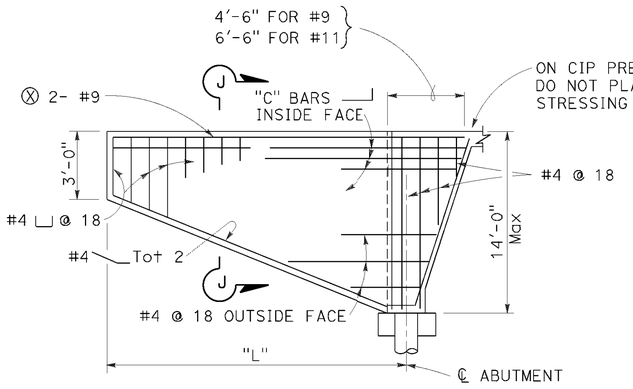


Ⓧ Use #11 bars if wingwall supports a sidewalk.

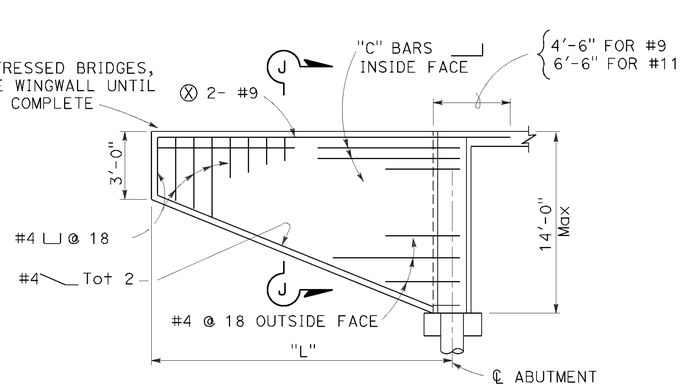
SECTION J-J
Without overhang



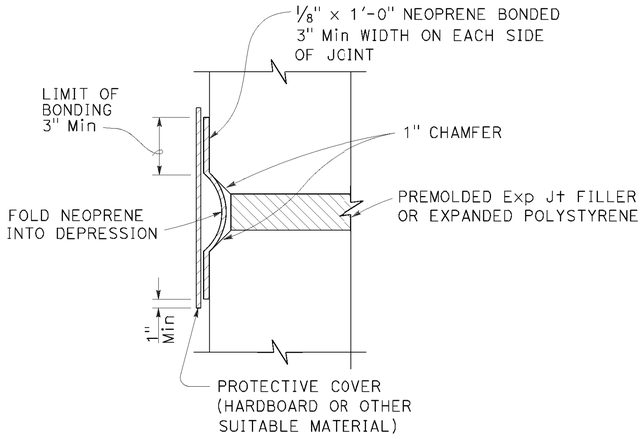
SECTION J-J
With overhang



ELEVATION
SLOPING ABUTMENT

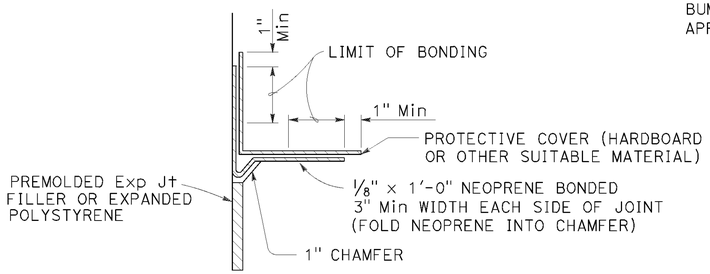


ELEVATION
VERTICAL ABUTMENT



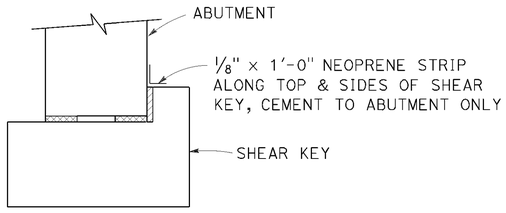
BRIDGE DETAIL 1-3
STRIP WATERSTOP DETAIL

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

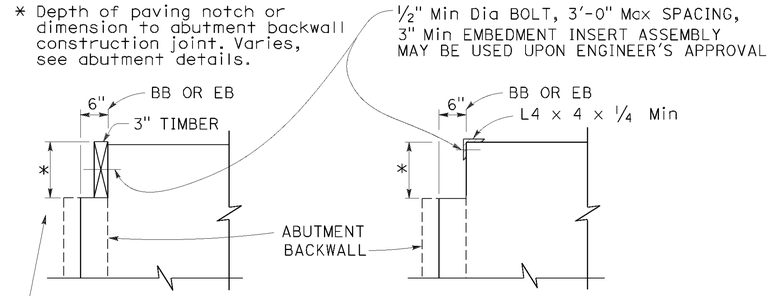


BRIDGE DETAIL 1-4
STRIP WATERSTOP CORNER DETAIL

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



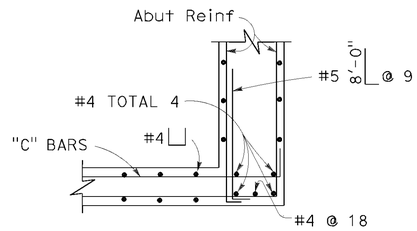
BRIDGE DETAIL 1-6
SHEAR KEY JOINT PROTECTION

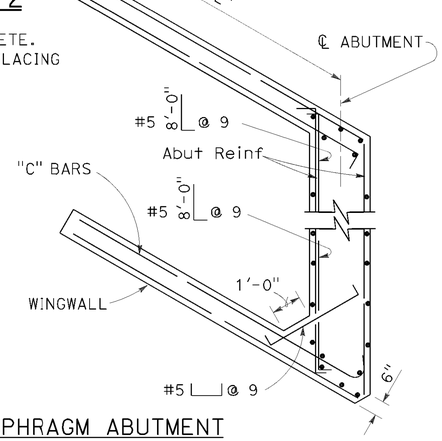


TEMPORARY BUMPERS
BRIDGE DETAIL 1-2

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





WINGWALLS FOR DIAPHRAGM ABUTMENT
BRIDGE DETAIL 1-5

CORNER DETAIL
FOR SKEW 20° AND LESS

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

CORNER DETAIL
FOR SKEW OVER 20°

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1552	1710

Gary Wang
REGISTERED CIVIL ENGINEER

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

October 15, 2021
PLANS APPROVAL DATE

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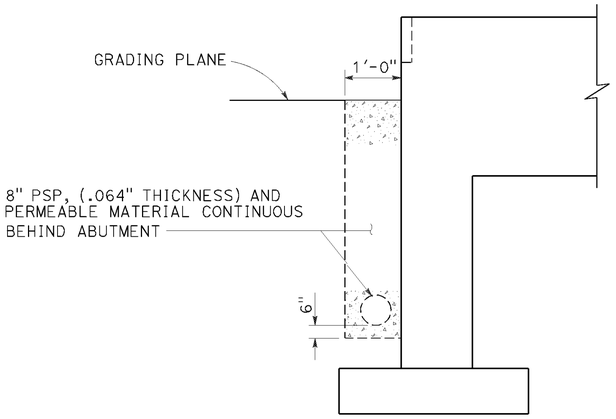
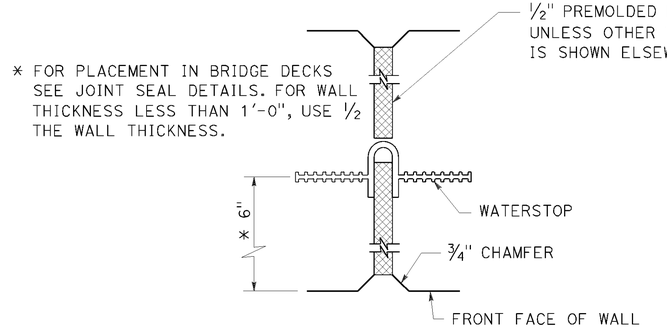
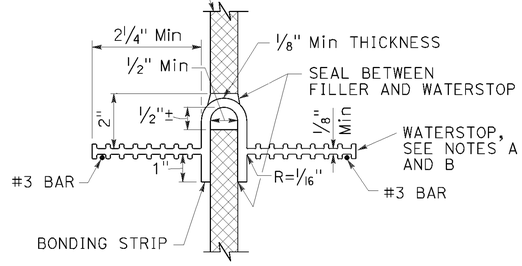
TO ACCOMPANY PLANS DATED October 8, 2021



BRIDGE DETAIL 3-5
8" PSP AND PERMEABLE MATERIAL



BRIDGE DETAIL 3-4
WALL EXPANSION JOINT

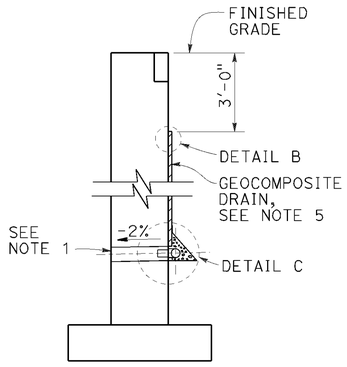


BRIDGE DETAIL 3-6
WATERSTOP

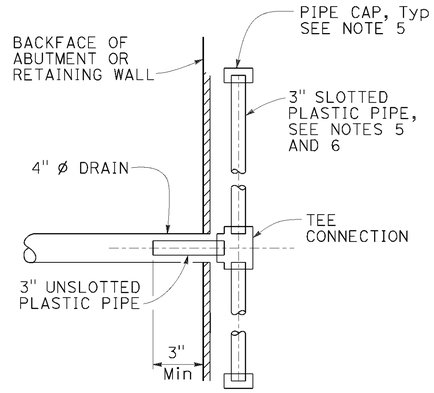
NOTES:

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.

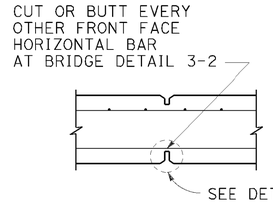
B. Waterstop to have 5 or more pairs of raised ribs to provide 0.1 square inch minimum rib cross-section area on each half of the waterstop.



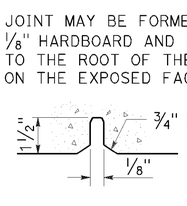
WALL SECTION



SECTION A-A

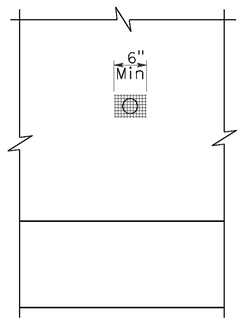


SECTION

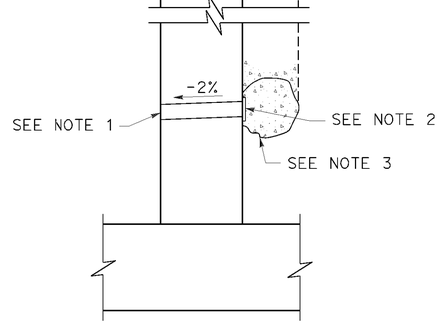


DETAIL A

BRIDGE DETAIL 3-2
WEAKENED PLANES

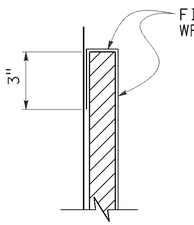


ELEVATION

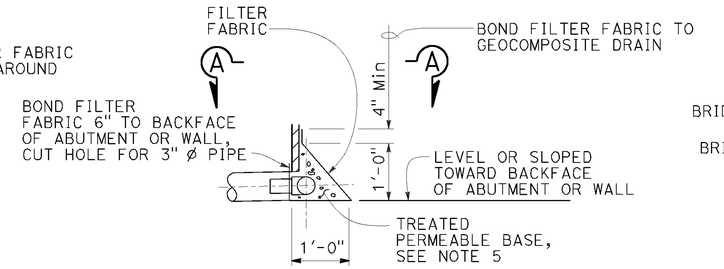


SECTION

BRIDGE DETAIL 3-1



DETAIL B



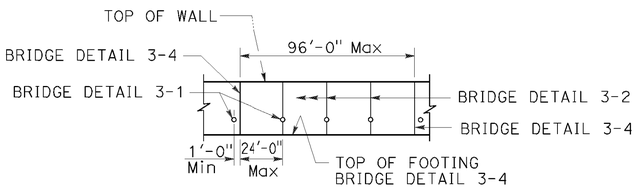
DETAIL C

BRIDGE DETAIL 3-7

WEEP HOLE, PERVIOUS BACKFILL AND GEOCOMPOSITE DRAIN

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.



BRIDGE DETAIL 3-3
WALL EXPANSION JOINTS AND WEAKENED PLANES

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1553	1710

REGISTERED CIVIL ENGINEER

October 19, 2018
PLANS APPROVAL DATE

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

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TO ACCOMPANY PLANS DATED October 8, 2021

2018 REVISED STANDARD PLAN RSP B2-5

CLASS 90 = PP14 x 0.375
CLASS 140 = PP14 x 0.438

#6 TOTAL 6

SECTION V-V

CLASS 90 = PP14 x 0.375
CLASS 140 = PP14 x 0.438

"A" BARS "E" TOTAL 4
(EPOXY COATED)

SECTION W-W

PP = Steel pipe pile

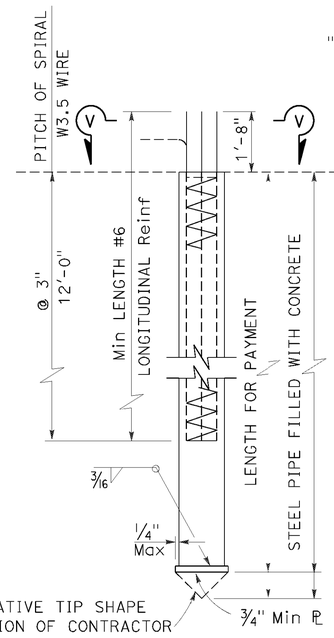
T+3/8" Max
PRECAST PRESTRESSED CONCRETE
P_f = 100,000 LBS Min
4 STRANDS, Min
2" Clr
T= 1'-0" Min
T-3/8" Min
T= 1'-0"
"A" BARS x 22'-0" Min TOTAL 4 **

SECTION X-X

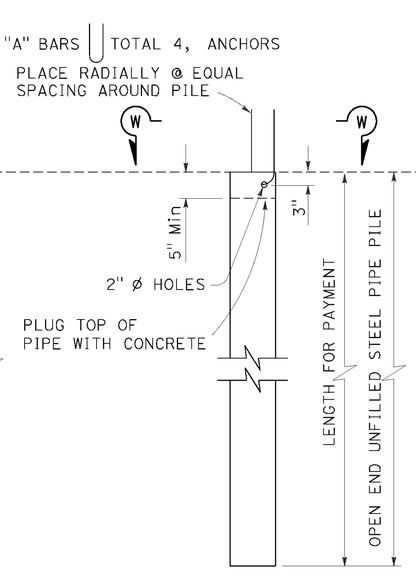
** To be in place when pile is cast

PRECAST PRESTRESSED CONCRETE
"A" BARS x 22'-0" Min TOTAL 4 **
2" Clr
1'-3" Min
P_f = 130,000 LBS Min
4 STRANDS, Min

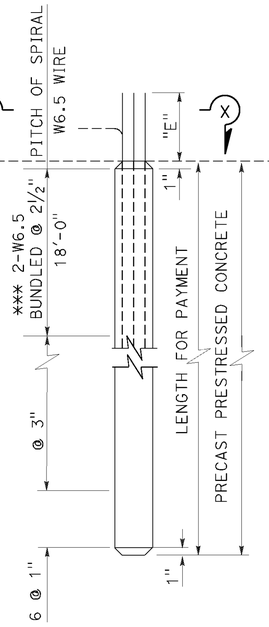
SECTION Y-Y



ALTERNATIVE "V"

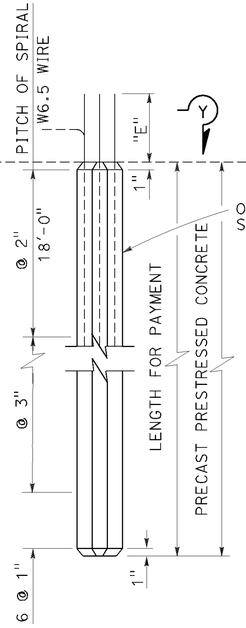


ALTERNATIVE "W"

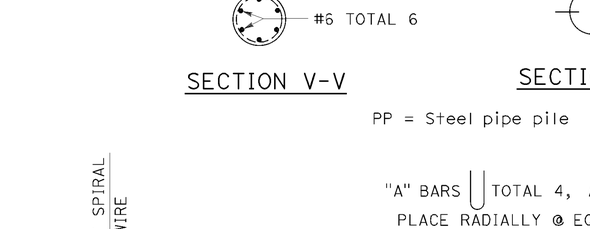


ALTERNATIVE "X"

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



ALTERNATIVE "Y"



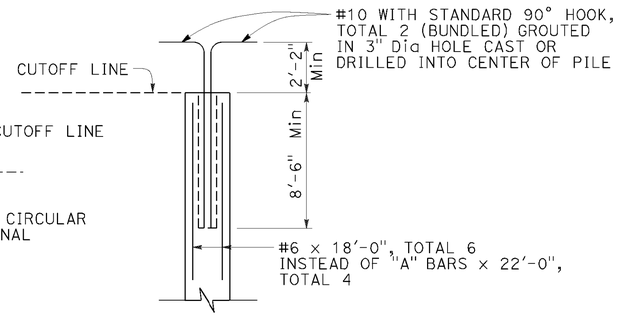
PILE EMBEDMENT

	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.



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)

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

5-10-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1554	1710

REGISTERED CIVIL ENGINEER

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

October 19, 2018
PLANS APPROVAL DATE

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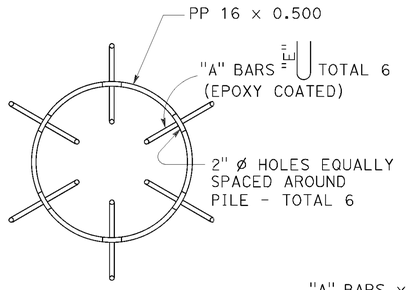
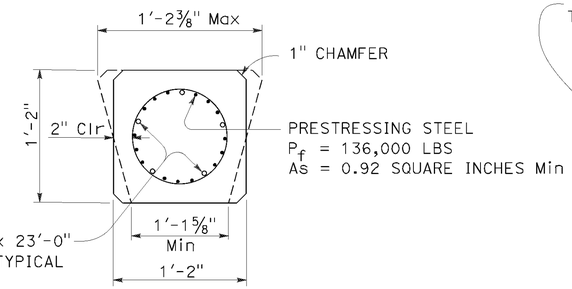
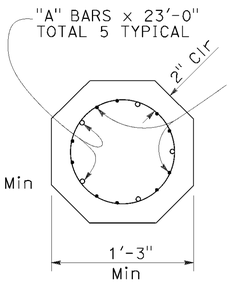
TO ACCOMPANY PLANS DATED October 8, 2021



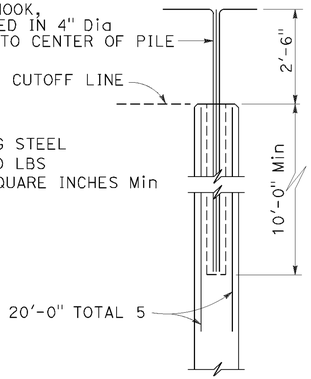
SECTION W-W
PP = Steel pipe pile



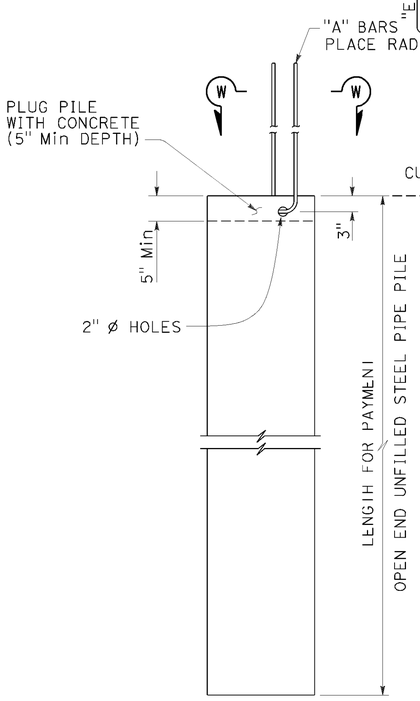
SECTION X-X



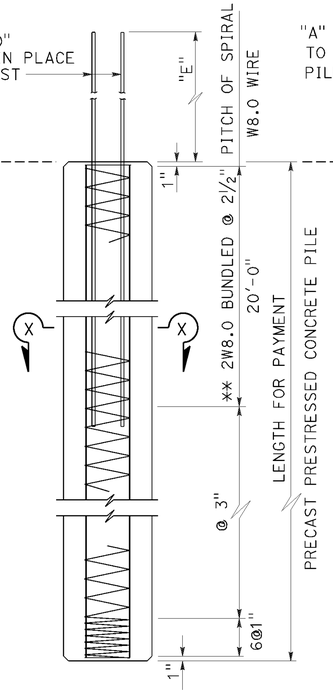
SECTION Y-Y



ALTERNATIVE PILE ANCHOR FOR PRESTRESSED PILE

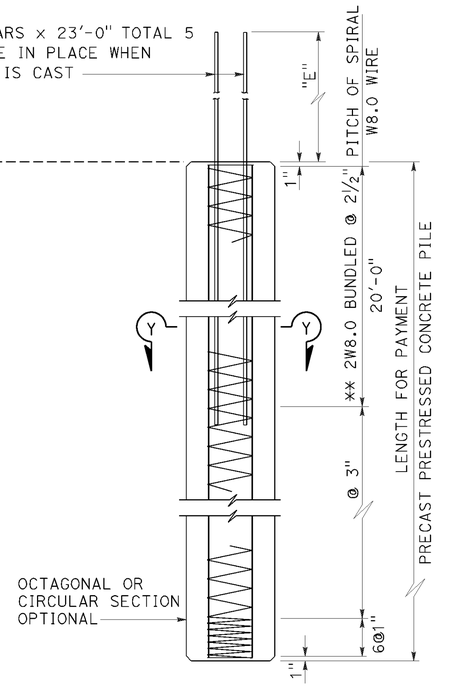


ALTERNATIVE "W"



** W11.0 @ 1¾" may be substituted

ALTERNATIVE "X"



** W11.0 @ 1¾" may be substituted

ALTERNATIVE "Y"

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.

	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

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1555	1710

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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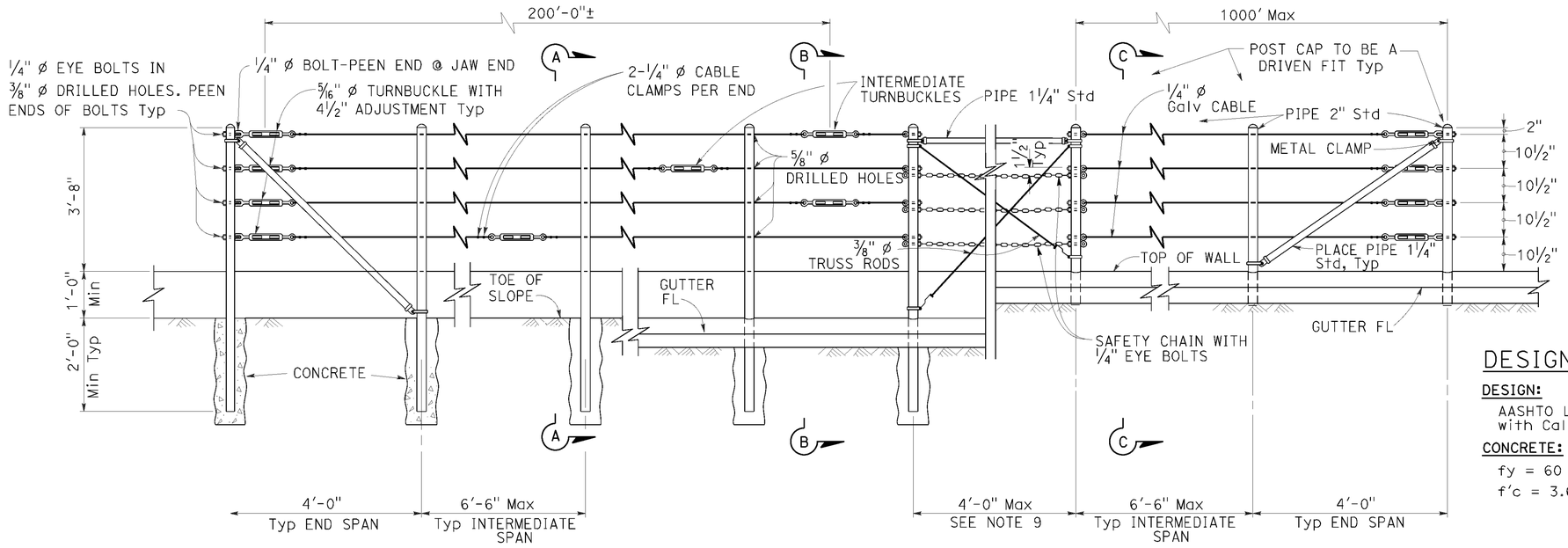
TO ACCOMPANY PLANS DATED October 8, 2021



EXISTING WALL (WITHOUT GUTTER)
Existing

RETAINING WALL (WITH GUTTER)
Existing

RETAINING WALL (WITH GUTTER)
New construction

ELEVATION

DESIGN NOTES

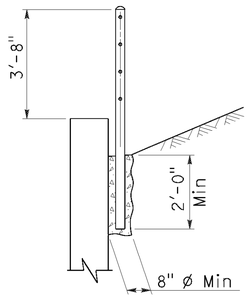
DESIGN:

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

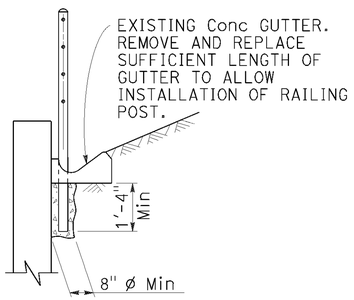
CONCRETE:

fy = 60 ksi

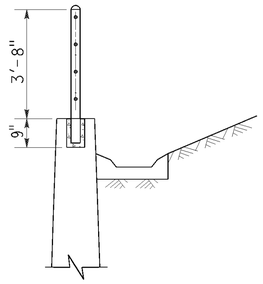
f'c = 3.6 ksi



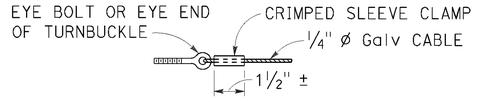
SECTION A-A
Existing



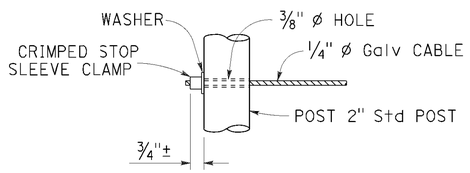
SECTION B-B
Existing



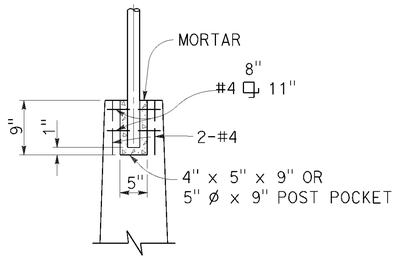
SECTION C-C
New construction



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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1556	1710

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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

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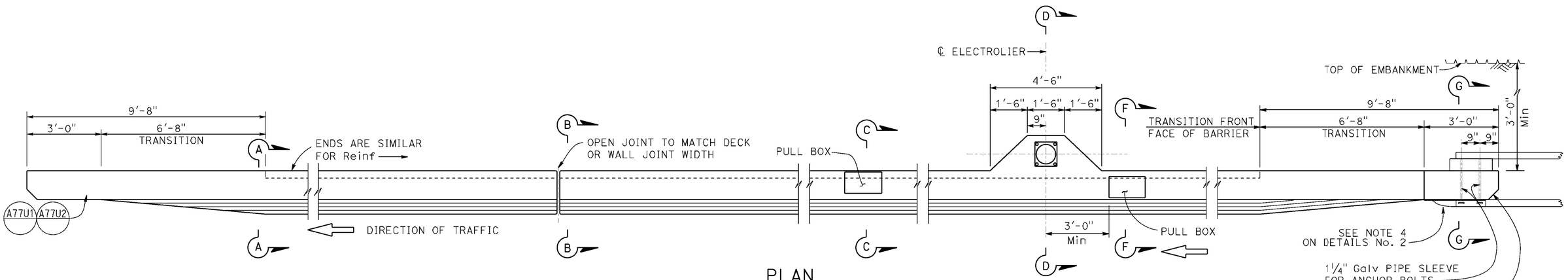
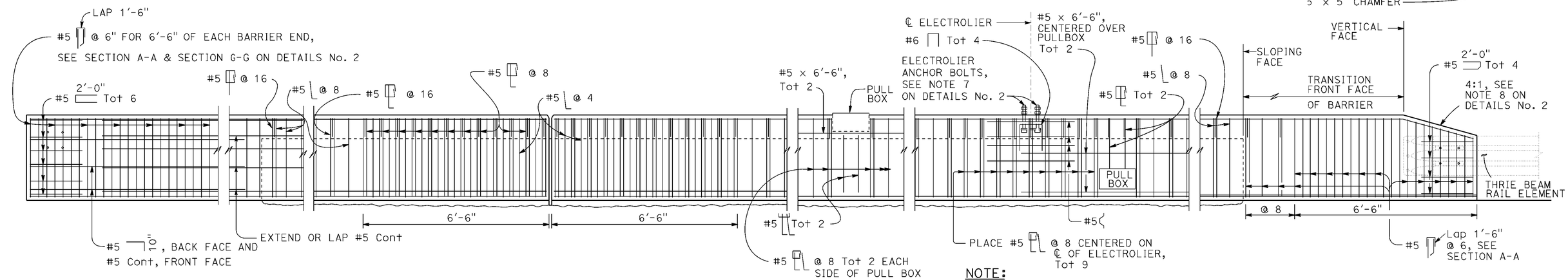
TO ACCOMPANY PLANS DATED October 8, 2021

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1557	1710

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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

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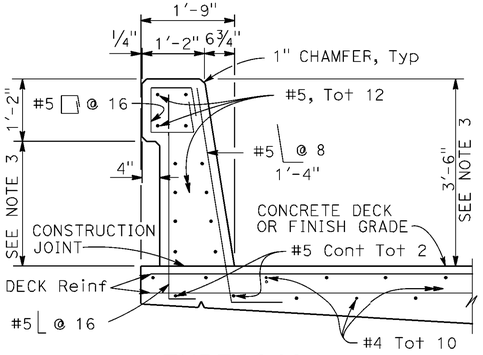
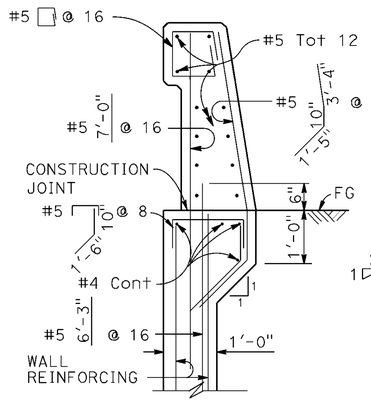
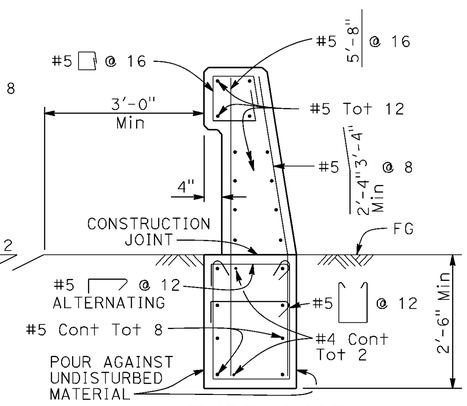
TO ACCOMPANY PLANS DATED October 8, 2021



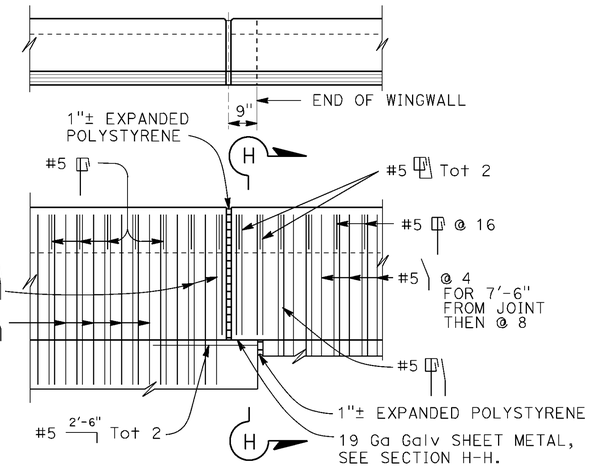
TYPE 842



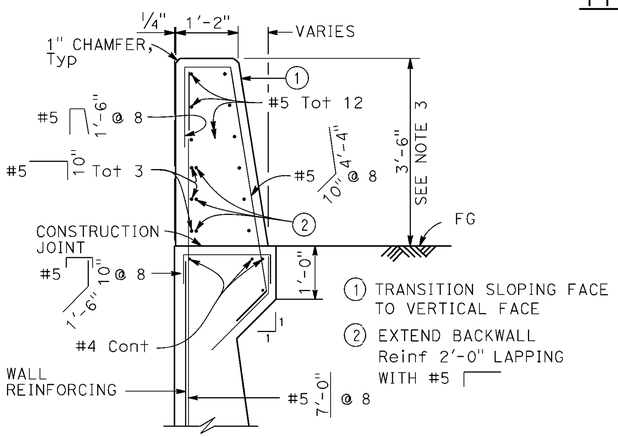
TYPE 842A



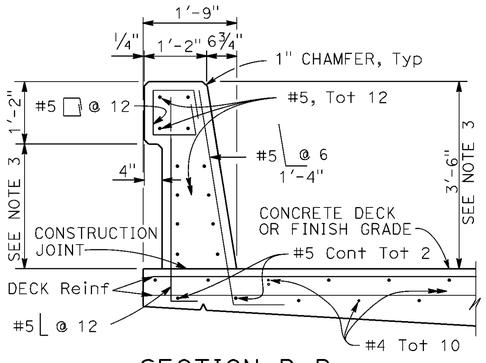
TYPE 842B



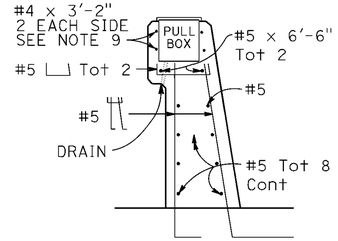
TYPE 842A TYPE 842B



SECTION A-A

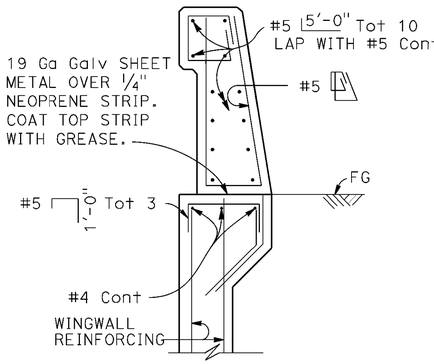


SECTION B-B

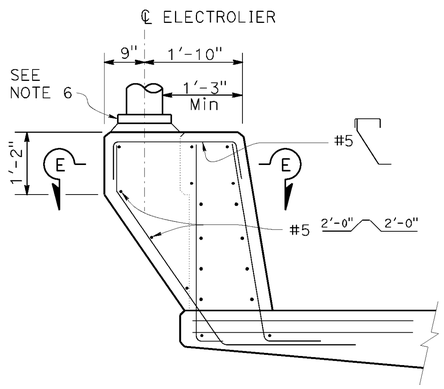


SECTION C-C
SEE NOTES

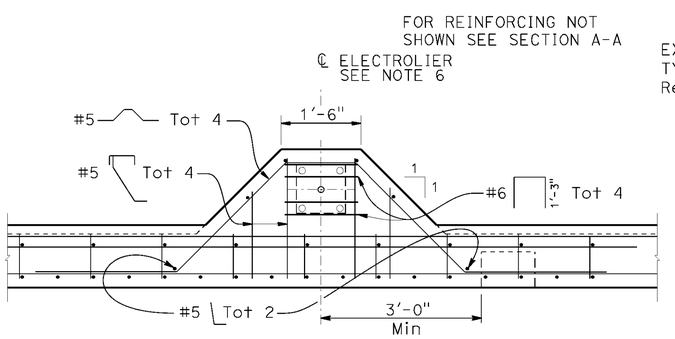
NOTE:
Types 842A & 842B are similar to Type 842 except as noted



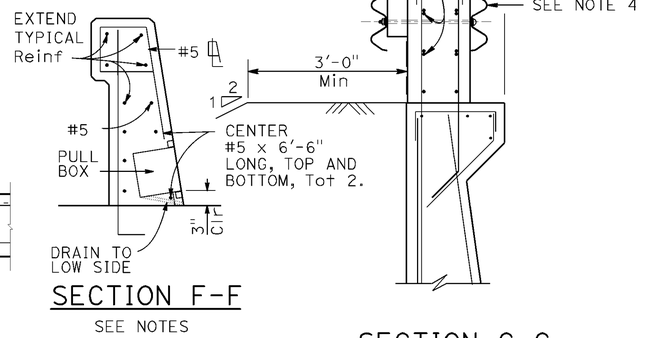
SECTION H-H



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.

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

2018 REVISED STANDARD PLAN RSP B11-82

1-22-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1558	1710

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 October 8, 2021

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 VII-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.

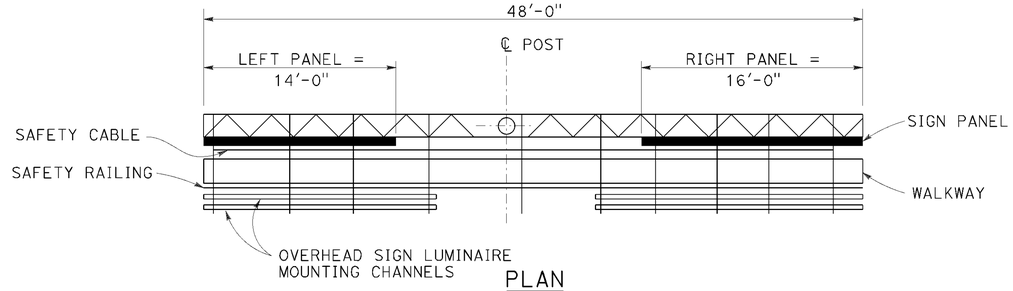
WALKWAY AND SAFETY RAILING:

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.

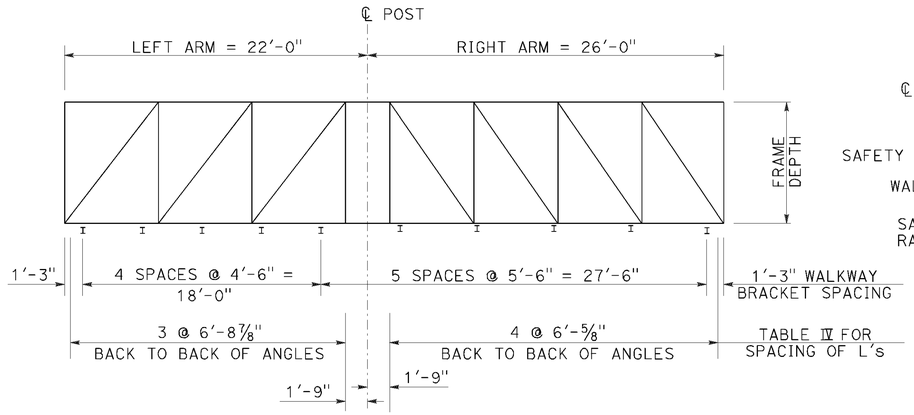
STANDARD PLAN SHEET No.
DETAIL No.

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.



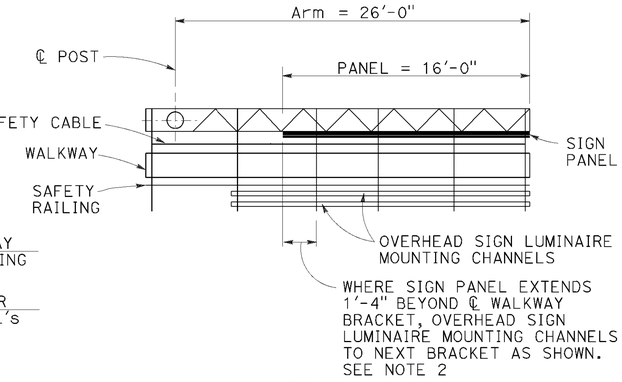
PLAN



ELEVATION

UNBALANCED SINGLE POST TYPE

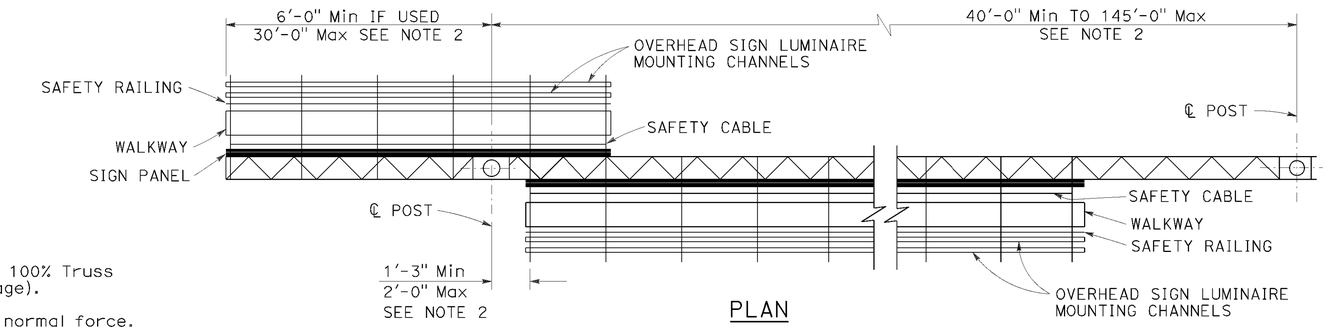
Example No. 1



PLAN

CANTILEVER SINGLE POST TYPE

Example No. 2



PLAN

TWO POST TYPE WITH CANTILEVER (PART DOUBLE-FACED)

Example No. 3

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1559	1710

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

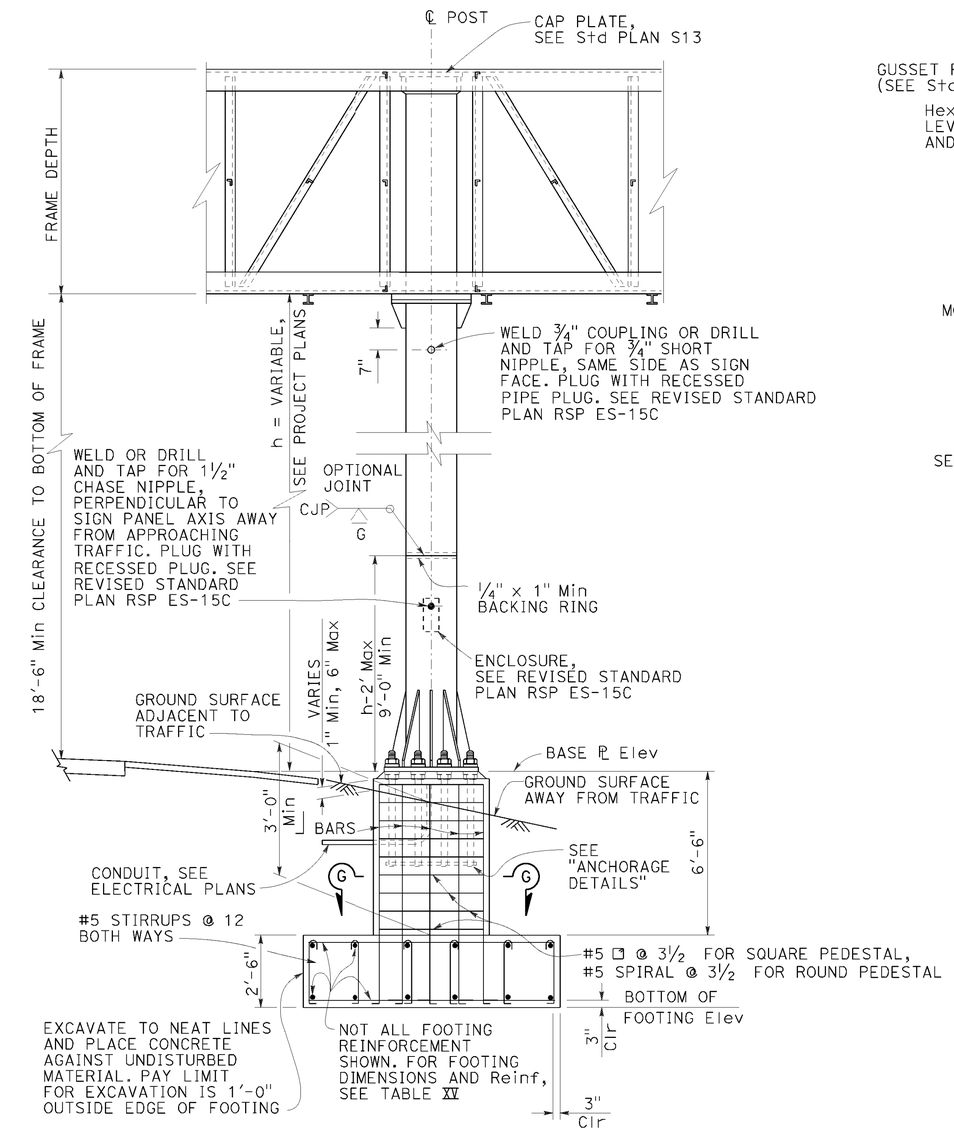
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED October 8, 2021

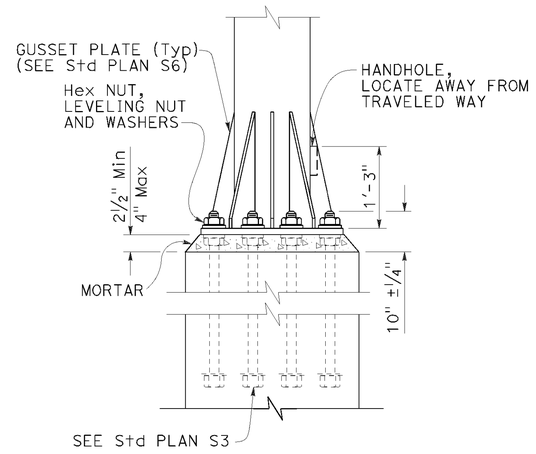
TABLE XV

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					
					PEDESTAL SIZE	VERTICAL ⌋-BARS		SPIRAL		PEDESTAL SIZE	VERTICAL ⌋-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	½"	2'-0" x 2'-0" x 1"	2'-2" x 2'-2" x 1"	5'-3"	16	#10	#5	3½"	5'-3"	16	#10	5	#5	3½"	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	¾"	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	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	↓	↓	↓

TO ACCOMPANY PLANS DATED October 8, 2021



ELEVATION
See Note 5

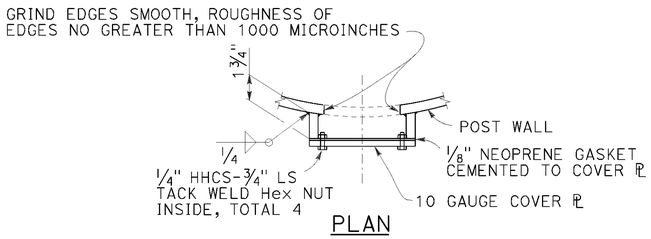


ELEVATION

ANCHORAGE DETAILS

NOTES:

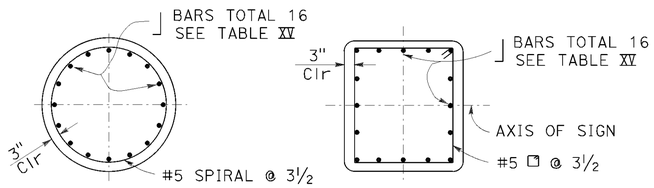
1. For "General Notes", see Revised Standard Plan RSP S1.
2. Longer side of footing (longitudinal) shall be normal to axis of sign.
3. Backfill shall be in place prior to erection of post.
4. Thread upper 10" of anchor bolts and galvanize upper 1'-0".
5. Spread footing with square pedestal foundation 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.



PLAN

ELEVATION

TYPICAL DETAILS OF HANDHOLE AND COVER



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1560	1710

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

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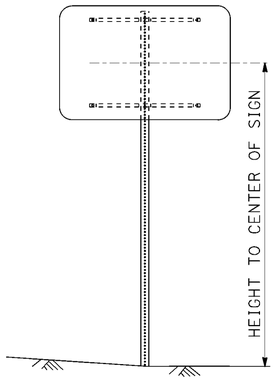
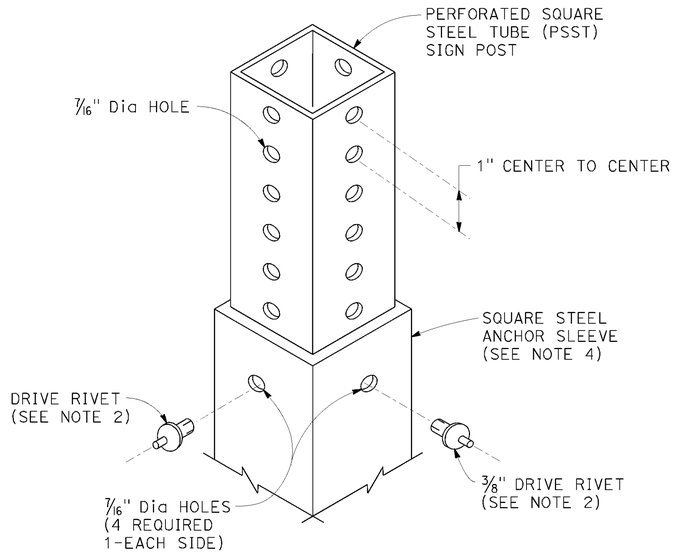
TO ACCOMPANY PLANS DATED October 8, 2021



SINGLE POST INSTALLATION

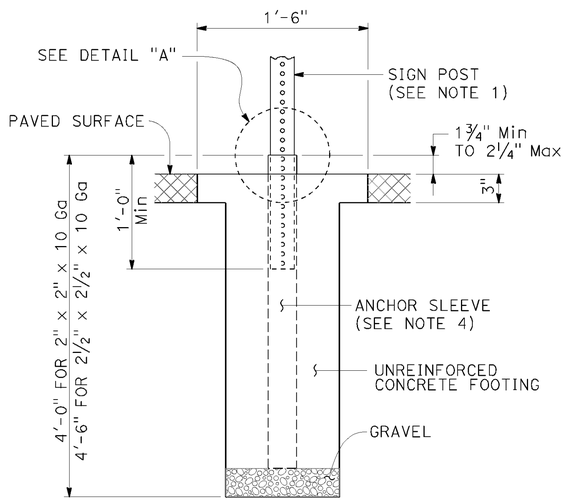
POST SIZE	Max AREA (SQUARE FEET) OF SIGN							SLEEVE SIZE
2" x 2" x 12 Ga	10.8	8.9	7.6	6.6	5.9	5.3	4.8	2¼" x 2¼" x 10 Ga
2½" x 2½" x 10 Ga	20	18	16	14	12	11	10	2¾" x 2¾" x 10 Ga
HEIGHT TO CENTER OF SIGN SINGLE POST GROUND SIGNS 100 MPH WIND SPEED	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	-



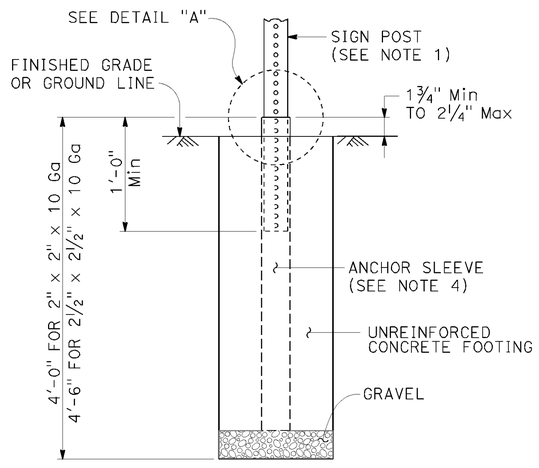
DETAIL "A"

NOTES:

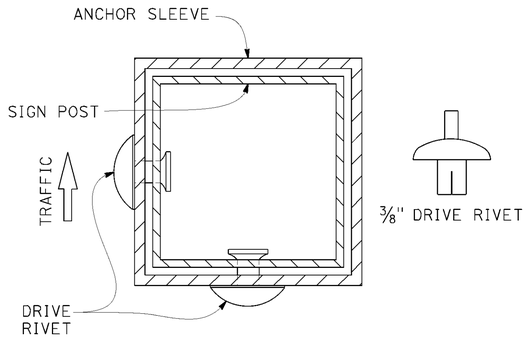
1. The sign post shall have 7/16" diameter perforations 1" on center on all four sides for the full length.
2. Use two drive rivets to fasten assembled sign and sign post into anchor sleeve. Install drive rivets or fastener alternative into the sides facing traffic.
3. All steel sign posts and anchor 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



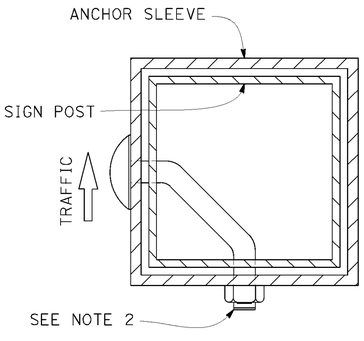
ANCHOR SLEEVE IN PAVED SURFACE



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

2018 REVISED STANDARD PLAN RSP RS5

12-28-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1561	1710

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 October 8, 2021

2018 REVISED STANDARD PLAN RSP ES-1A

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
9	SPECIFIC PROJECT NOTES

STANDARD

NEW	EXISTING	TYPE
		15
		15D
S	S	15 STRUCTURE
S	S	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
M	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)
C	C	CITY ELECTROLIER
F	F	ELECTROLIER FOUNDATION (FUTURE INSTALLATION)

NOTE:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND)

NO SCALE

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

REVISED STANDARD PLAN RSP ES-1A

5-17-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1562	1710

REGISTERED ELECTRICAL ENGINEER

John L. Castro No. E17490 Exp. 6-30-21 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

April 17, 2020
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED October 8, 2021

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	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

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

NOTES:

1. All signal sections shall be 12" unless shown otherwise.
2. Signal heads shall be provided with backplates unless shown otherwise.

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1563	1710

REGISTERED ELECTRICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

April 17, 2020
PLANS APPROVAL DATE

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

TO ACCOMPANY PLANS DATED October 8, 2021

EQUIPMENT DESIGNATION

SIGN:

SIGN No. 12345
10 OSL SCI 1.0

- 12345 — EQUIPMENT IDENTIFICATION CHARACTERS
- 1.0 — TRANSFORMER RATING (kVA)
- SCI — LIGHTING CONTROL TYPE
- OSL — NUMBER OF OVERHEAD SIGN LUMINAIRES

LIGHTING STANDARD, SIGNAL AND LIGHTING STANDARD:

L2745 - 15'-0"

- 15'-0" — MAST ARM LENGTH
- L2745 — EQUIPMENT IDENTIFICATION CHARACTERS

SOFFIT:

L98765

- L98765 — EQUIPMENT IDENTIFICATION CHARACTERS

NOTE:
EXISTING EQUIPMENT IDENTIFICATION CHARACTERS ARE SHOWN IN PARENTHESIS

MISCELLANEOUS EQUIPMENT

NEW	EXISTING	DESCRIPTION
CMS	cms	CHANGEABLE MESSAGE SIGN
		CAMERA
EMS	ems	HIGHWAY ADVISORY RADIO POLE AND ANTENNA
		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

- 7 — CONDUIT RUN NUMBER
- 12P#18 — PAIR
- 2#10 (Ltg), 15#14 (Sig), 2 DLC, 12P#18, 1-COAXIAL CABLE (camera), 3-3CSC, 2 SIC — NUMBER AND SIZE OF CONDUCTORS AND CABLES
- 3½"C — 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. — TRAFFIC PHASE IDENTIFICATION FOR SIGNALS, DETECTORS, AND PHASE DIAGRAMS
PHASE

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

- U — INPUT FILE (U = UPPER, L = LOWER)
- 9 — SLOT NUMBER IN INPUT FILE (1 TO 9)
- J — INPUT FILE (I OR J)
- 5 — 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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1564	1710

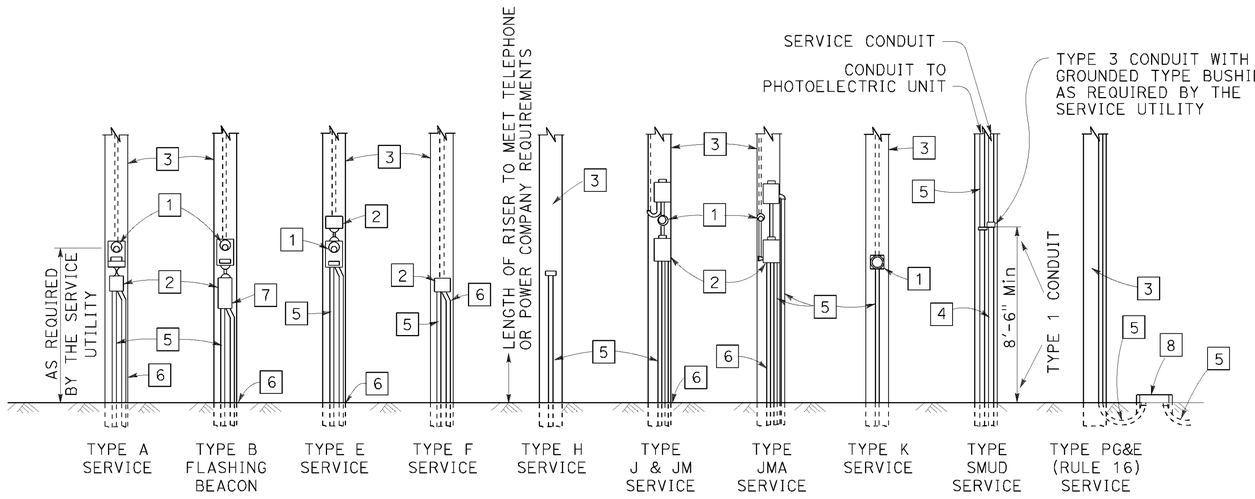
H.R.F
REGISTERED ELECTRICAL ENGINEER

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

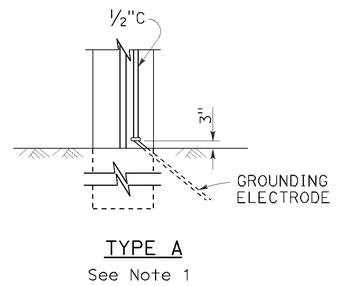
October 19, 2018
PLANS APPROVAL DATE

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.

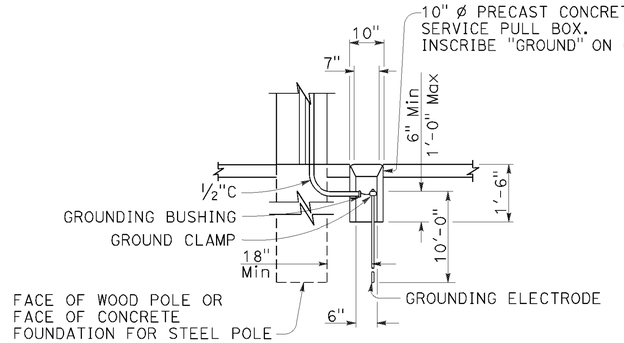
TO ACCOMPANY PLANS DATED October 8, 2021



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)

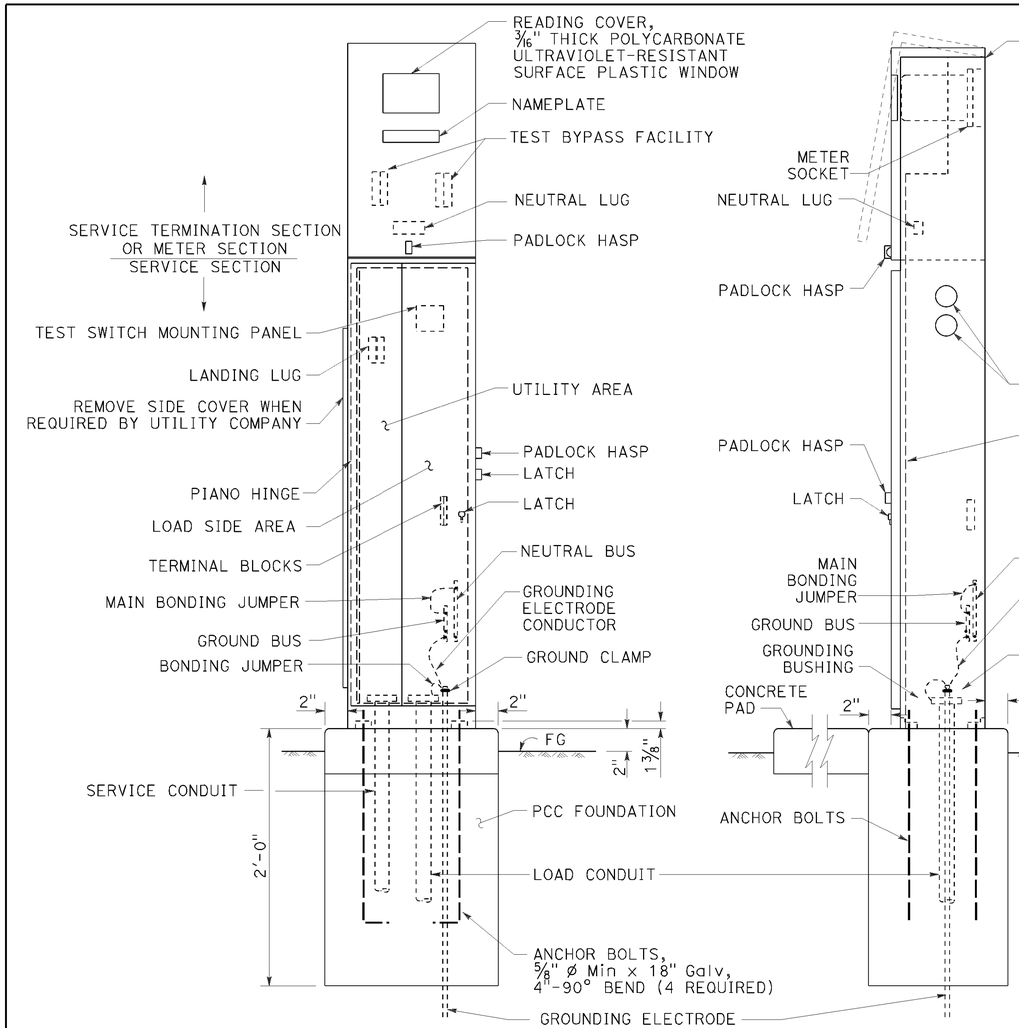
NO SCALE

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

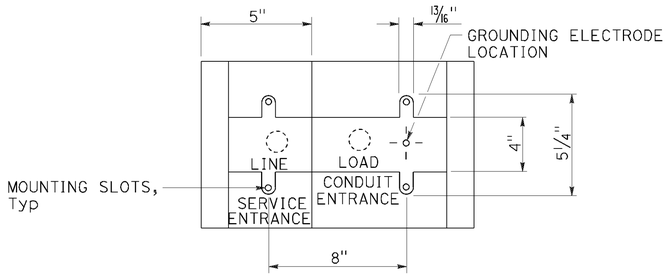


FRONT VIEW

SIDE VIEW

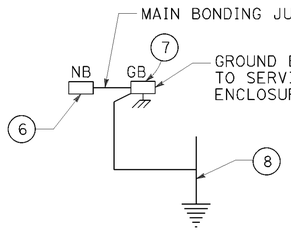
TYPE Ⅲ-AF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

DETAIL A

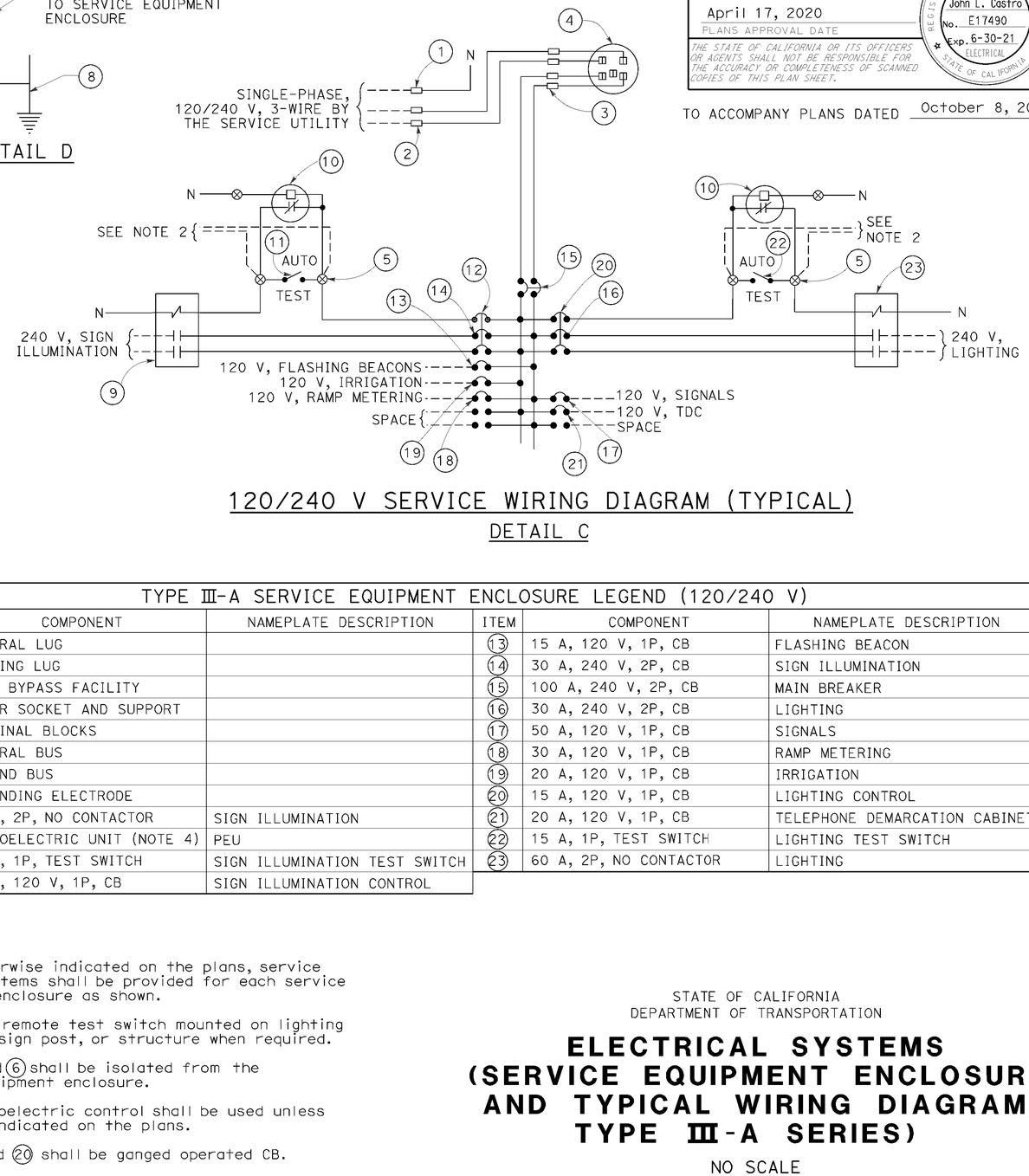


BASE FOR TYPE Ⅲ-A SERVICE EQUIPMENT ENCLOSURE

DETAIL B



DETAIL D



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1565	1710

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 October 8, 2021

2018 REVISED STANDARD PLAN RSP ES-2D

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.

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

12-12-19

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1566	1710

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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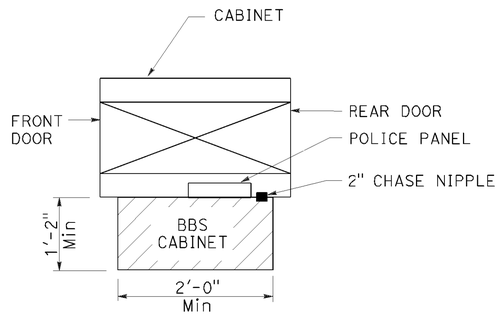
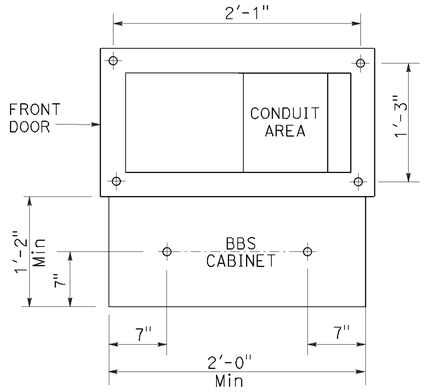
TO ACCOMPANY PLANS DATED October 8, 2021

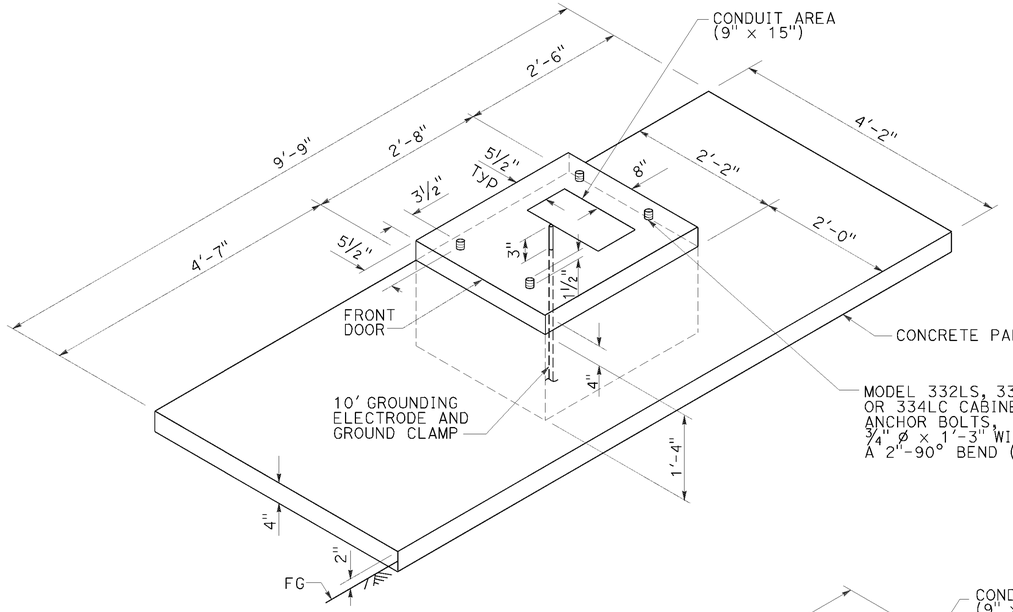


TOP VIEW



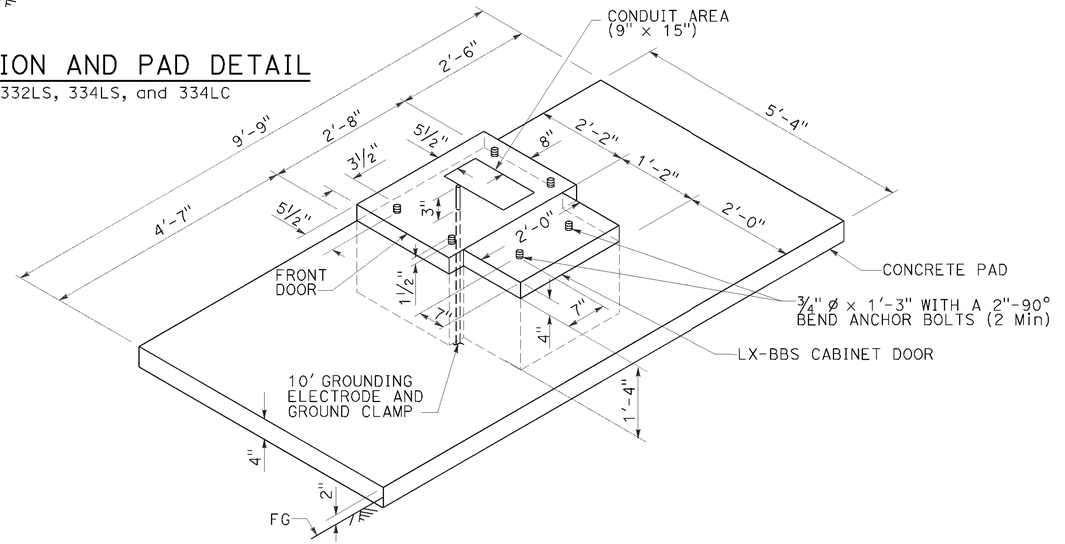
BASE PLAN FOR LX-BBS CABINET MOUNTED TO THE MODEL 332LS CABINET

(FOR DIMENSIONS AND DETAILS NOT SHOWN, SEE CABINET HOUSING DETAILS OF THE TRANSPORTATION ELECTRICAL EQUIPMENT SPECIFICATION (TEES))



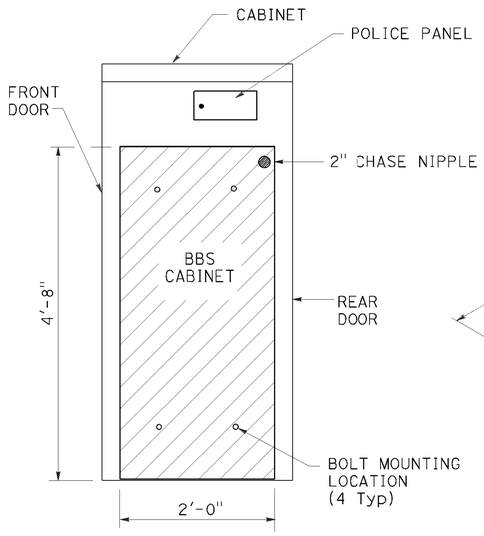
FOUNDATION AND PAD DETAIL

Model 332LS, 334LS, and 334LC



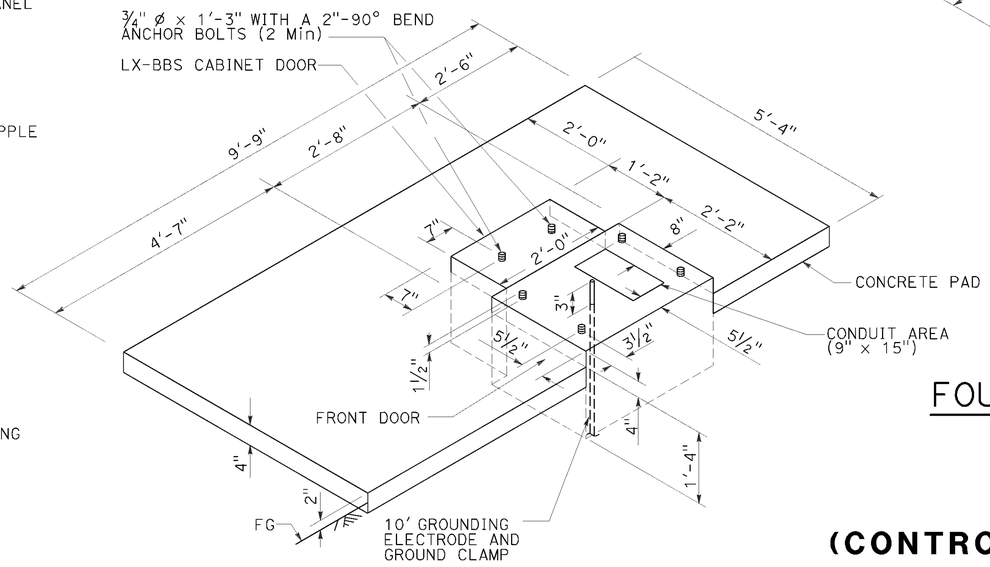
RIGHT SIDE INSTALLATION

DETAIL B



SIDE VIEW

LX-BBS CABINET MOUNTED TO THE MODEL 332LS CABINET



LEFT SIDE INSTALLATION

DETAIL A

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1567	1710

REGISTERED ELECTRICAL ENGINEER

John L. Castro No. E17490 Exp. 6-30-21 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

October 16, 2020
PLANS APPROVAL DATE

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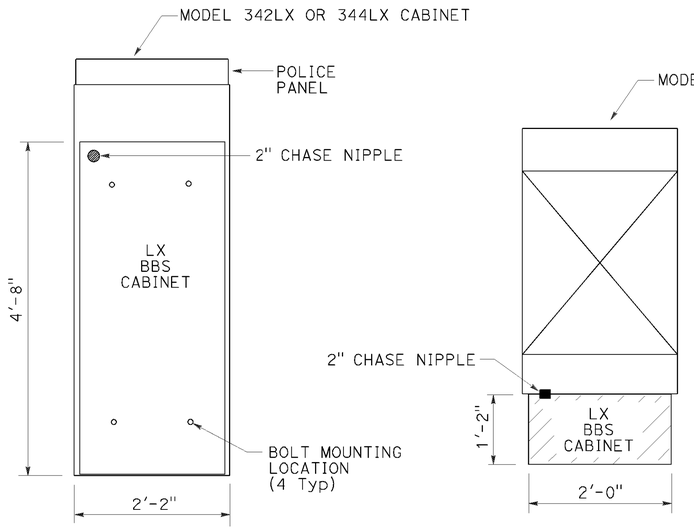
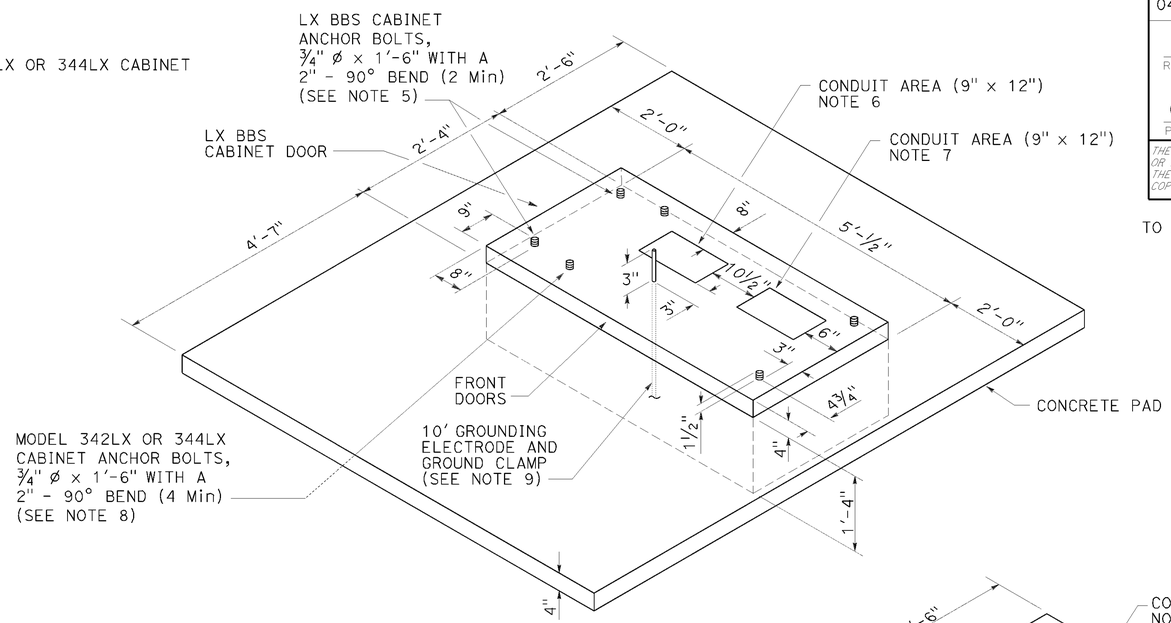
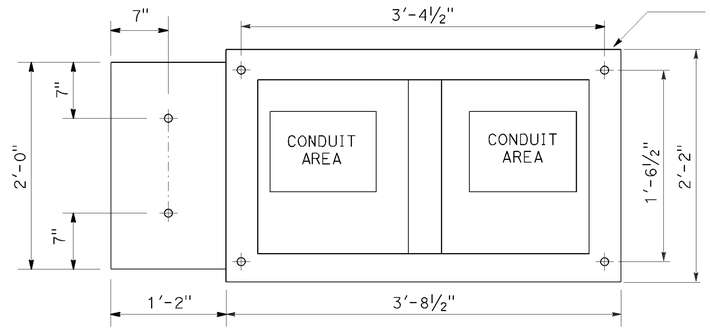
TO ACCOMPANY PLANS DATED October 8, 2021



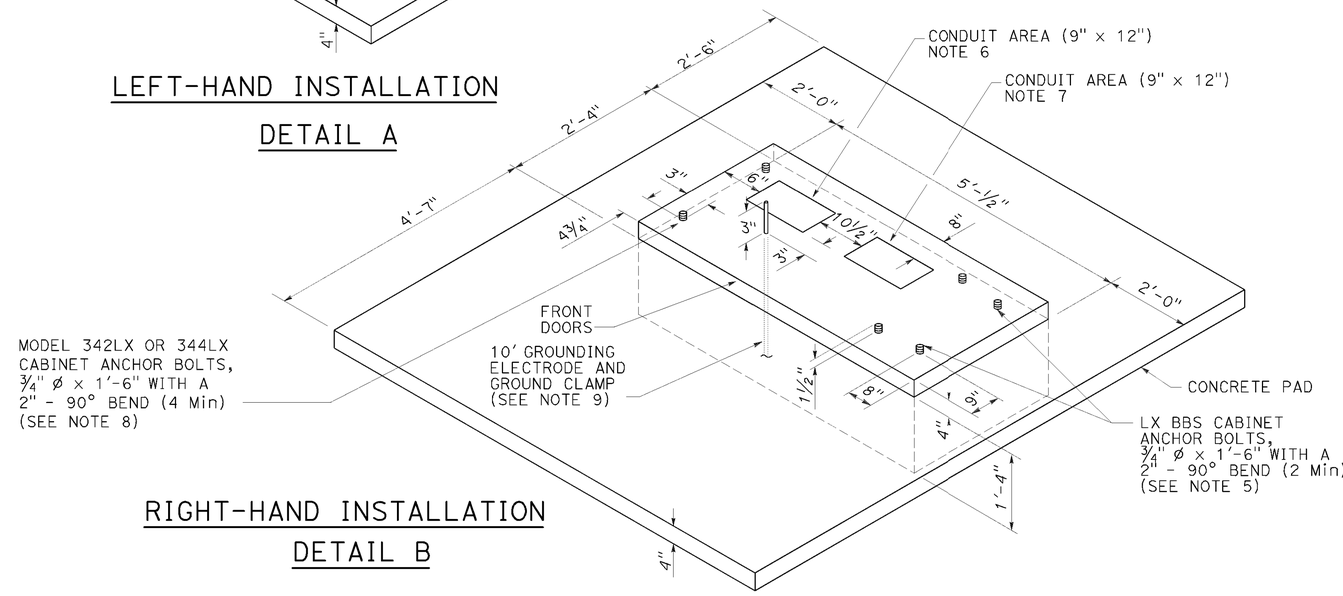
LX BBS CABINET MOUNTED TO THE MODEL 342LX OR 344LX CABINETS



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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1568	1710

REGISTERED ELECTRICAL ENGINEER

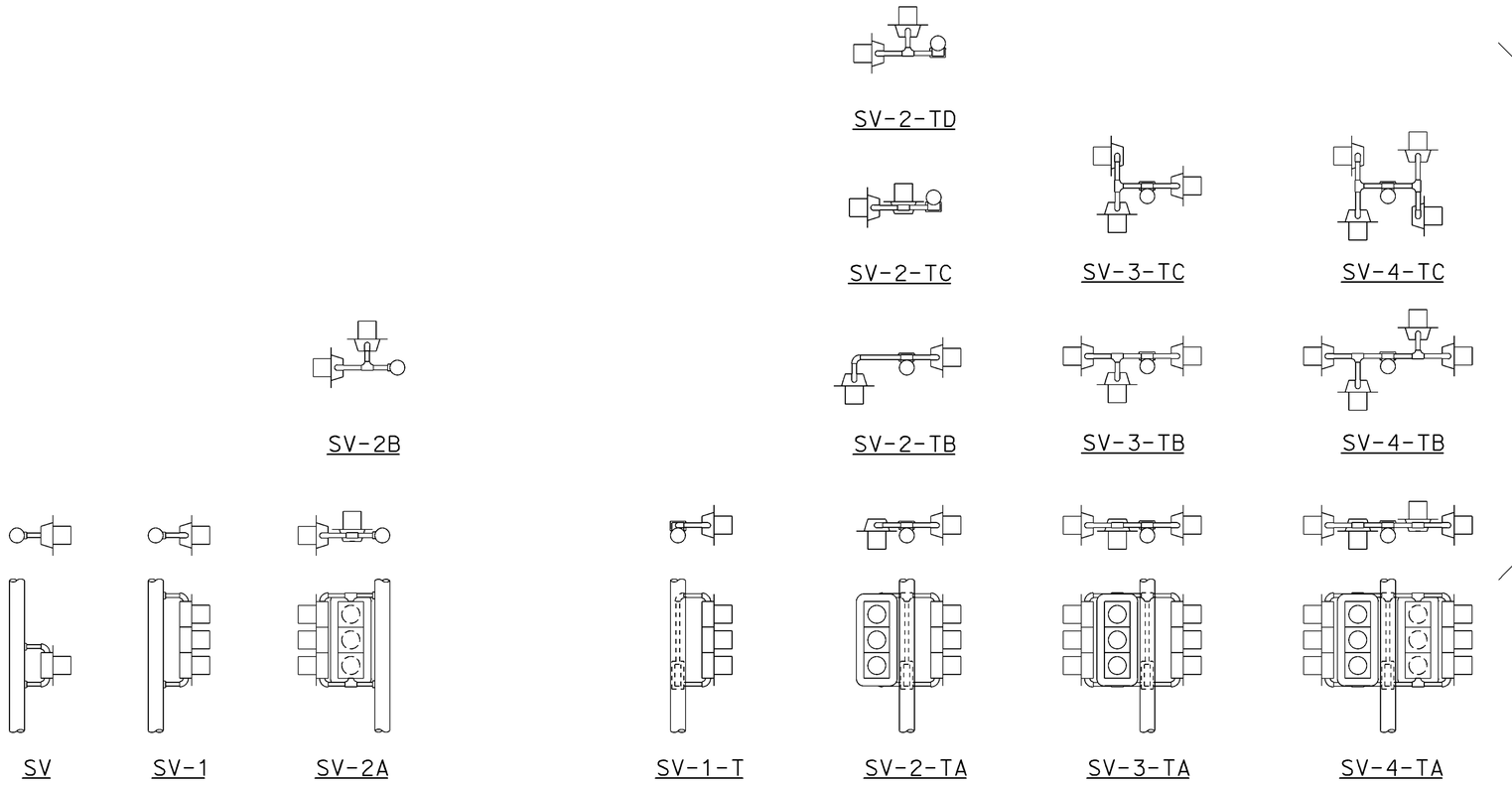
REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

April 17, 2020
PLANS APPROVAL DATE

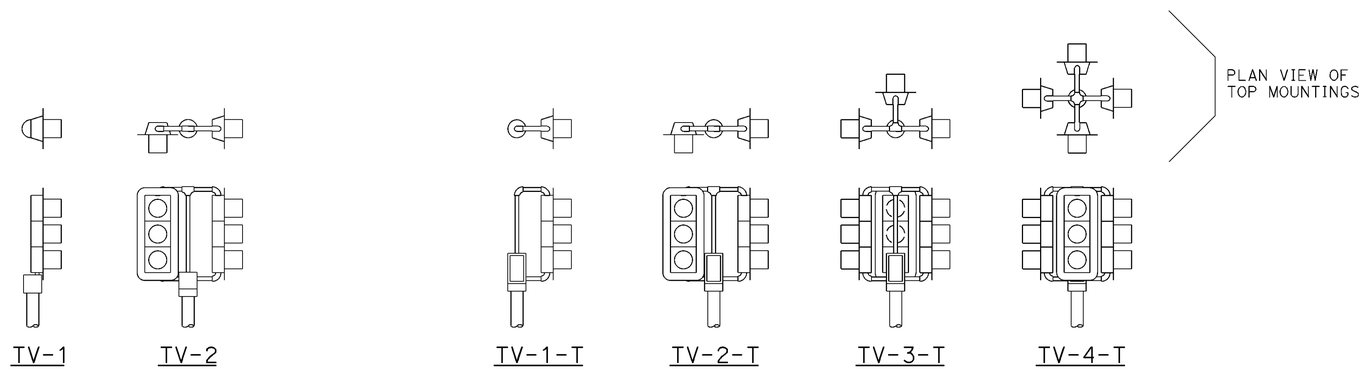
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED October 8, 2021

2018 REVISED STANDARD PLAN RSP ES-4A



SIDE 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 APRIL 17, 2020 SUPERSEDES 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

12-12-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1569	1710

REGISTERED ELECTRICAL ENGINEER

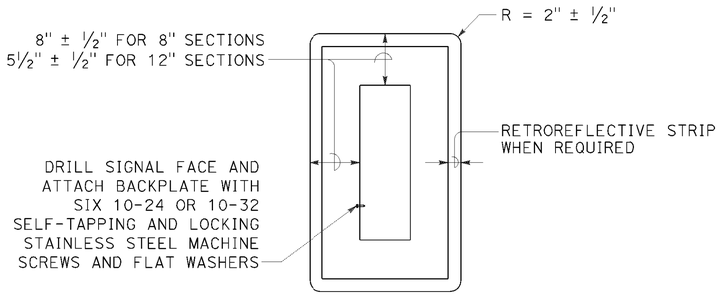
REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

April 17, 2020
PLANS APPROVAL DATE

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

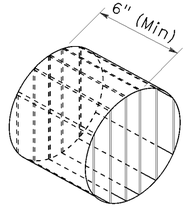
TO ACCOMPANY PLANS DATED October 8, 2021

VISORS

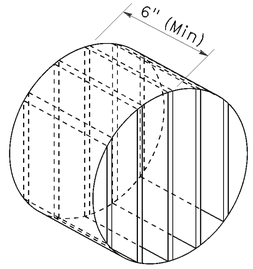


8" AND 12" SECTIONS

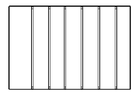
BACKPLATE



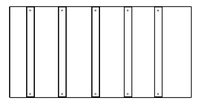
ISOMETRIC VIEW



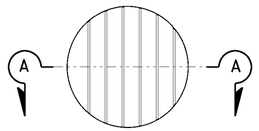
ISOMETRIC VIEW



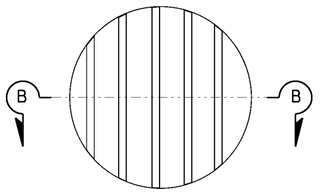
SECTION A-A



SECTION B-B



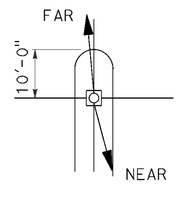
8" DIAMETER FRONT VIEW

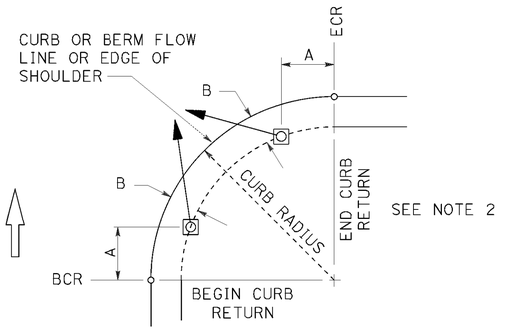


12" DIAMETER FRONT VIEW

DIRECTIONAL LOUVER

Directional louvers shall be oriented and secured in place with one plated brass machine screw and nut.

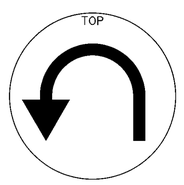




NOTES:

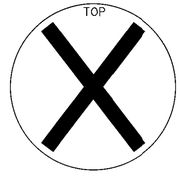
1. Typical signal pole placement unless dimensioned on plans.
2. For A and B dimensions, see Pole Schedule.

SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS



U-TURN

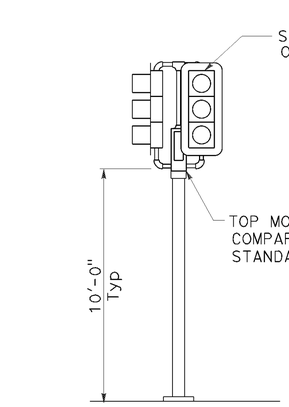
BICYCLE



LANE CONTROL

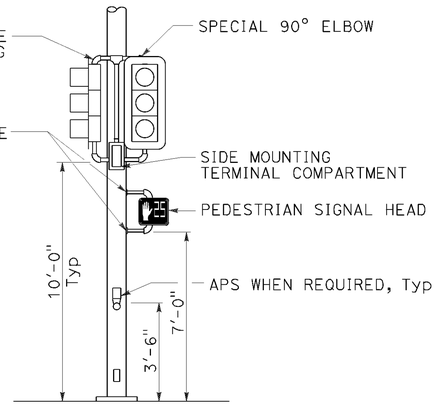
LANE CONTROL

SIGNAL FACES



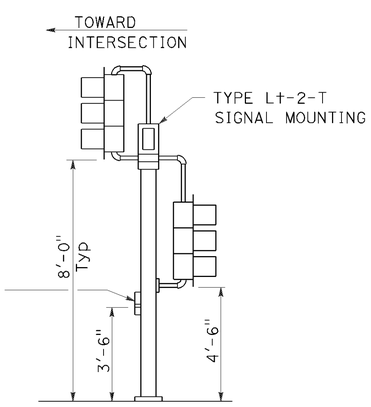
TOP MOUNTED SIGNALS (TV)

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

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

2018 REVISED STANDARD PLAN RSP ES-4C

12-20-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1570	1710

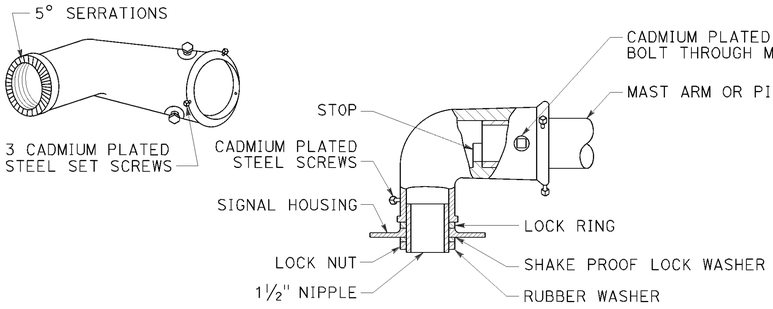
H.R.F
REGISTERED ELECTRICAL ENGINEER

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

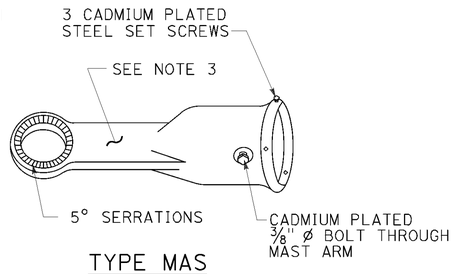
October 19, 2018
PLANS APPROVAL DATE

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 October 8, 2021

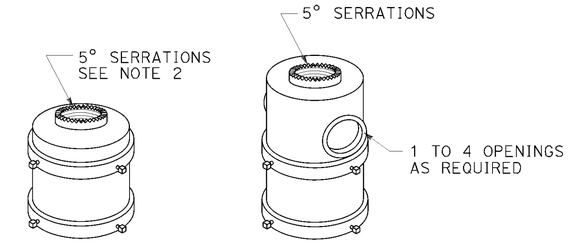


TYPE MAT
MAST ARM MOUNTING
For 2 NPS pipe, see Note 1.



TYPE MAS
MAST ARM MOUNTING
For 2 NPS pipe, see Note 1.

SIGNAL SLIP FITTERS

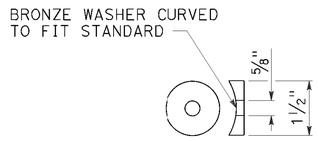


FOR ONE MOUNTING FOR MULTIPLE MOUNTINGS

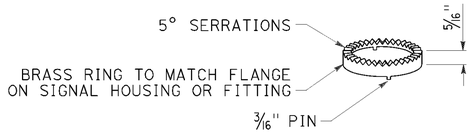
TOP MOUNTINGS
For 4 NPS pipe, see Note 2.

NOTES:

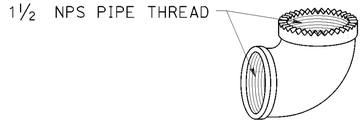
1. After mast arm signal has been plumbed and secured, drill 7/16" hole through mast arm tenon in line with slip fitter hole. Place a cadmium plated ⅜" ø galvanized bolt with washer under bolt head through hole and secure with washer, nut, and locknut. Seal openings between mast arm mountings and mast arm with mastic.
2. Threaded top mounted slip fitter openings shall be 1½ NPS. Serrations in fittings shall match those on bottom of signal heads or in lock ring. Top opening shall be offset when backplate is used.
3. Wireway shall have a cross section area of 0.95 square inch minimum. Minimum width of ½".



DETAIL C

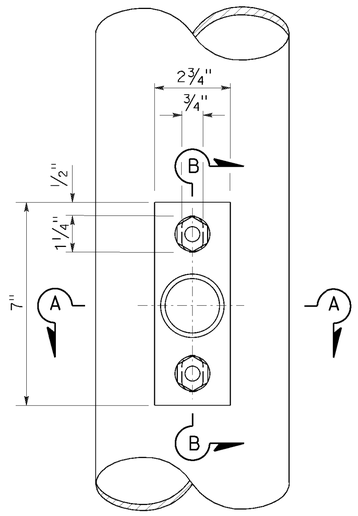


LOCK RING
Use where locking ring is not integral With signal housing or fitting.

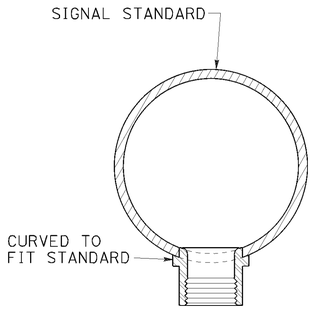


SPECIAL 90° ELBOW
One for each signal head, except those With special slip fitter mounting

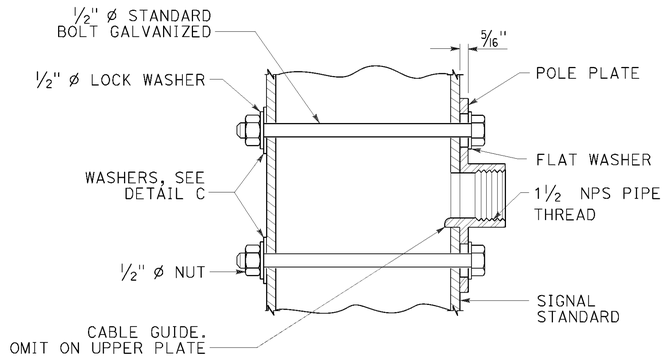
MISCELLANEOUS MOUNTING HARDWARE



TOP VIEW

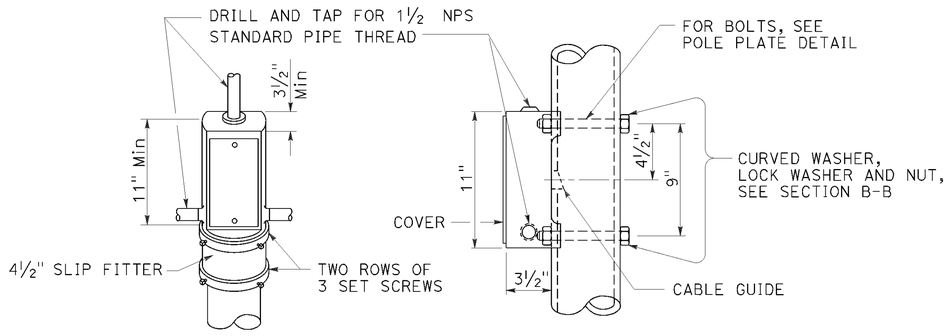


SECTION A-A



SECTION B-B

POLE PLATE FOR SIDE MOUNTED SIGNAL HEAD
WITHOUT TERMINAL COMPARTMENT



TOP MOUNTING SIDE MOUNTING

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1571	1710

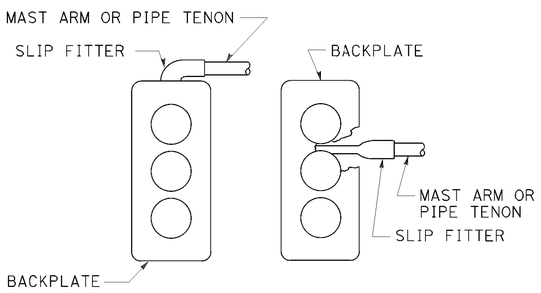
REGISTERED ELECTRICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

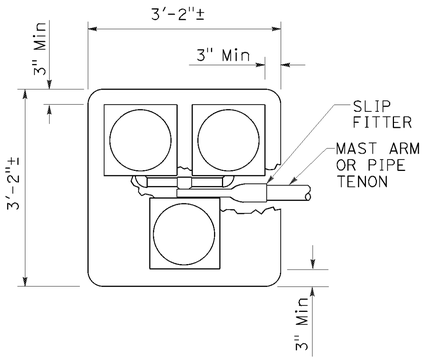
April 17, 2020
PLANS APPROVAL DATE

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

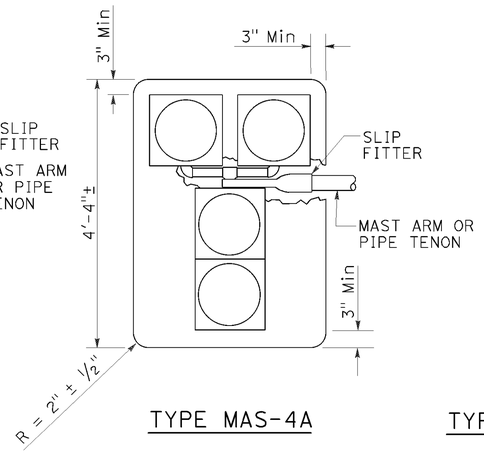
TO ACCOMPANY PLANS DATED October 8, 2021



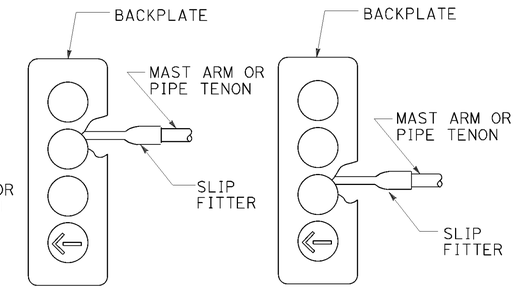
TYPE MAT TYPE MAS



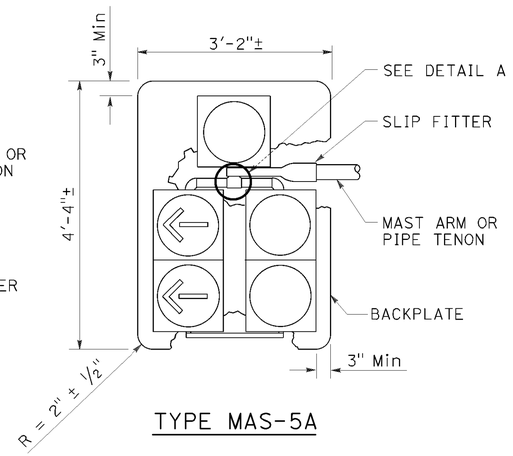
TYPE MAS-3A



TYPE MAS-4A

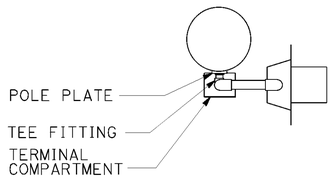


TYPE MAS-4B TYPE MAS-4C

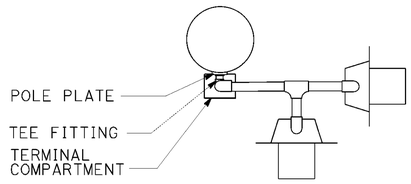


TYPE MAS-5A

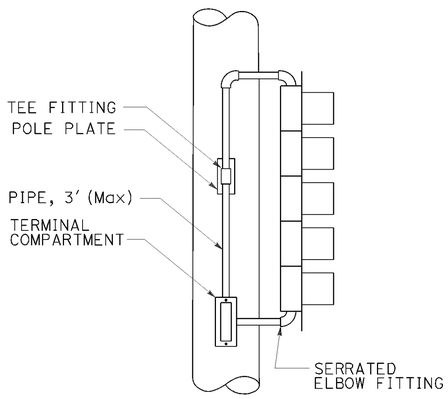
MAST ARM MOUNTINGS



PLAN

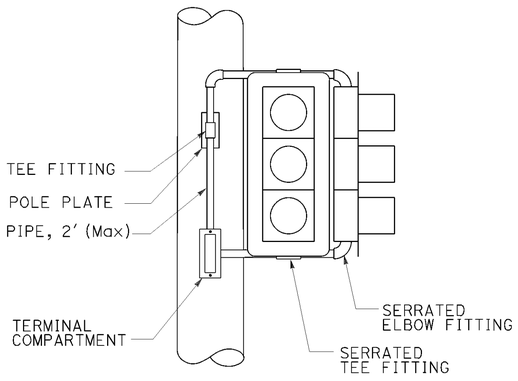


PLAN



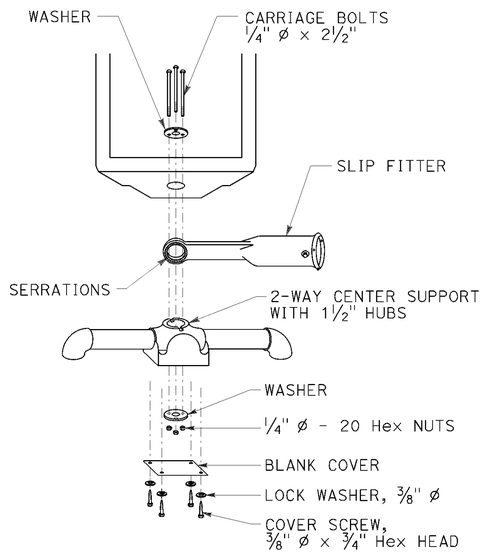
SIDE VIEW

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1572	1710

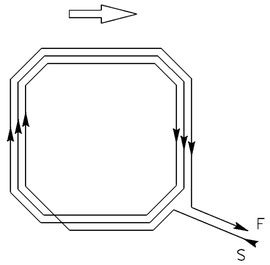
H.R.F
REGISTERED ELECTRICAL ENGINEER

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

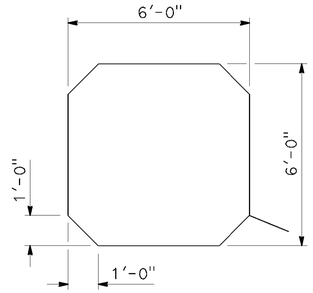
October 19, 2018
PLANS APPROVAL DATE

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 October 8, 2021

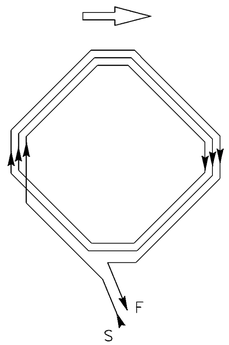


WINDING DETAIL

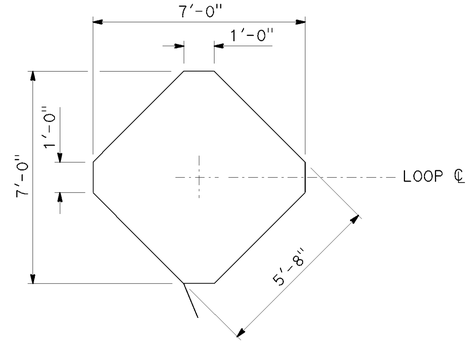


SAW CUT DETAIL

TYPE A LOOP DETECTOR CONFIGURATION



WINDING DETAIL

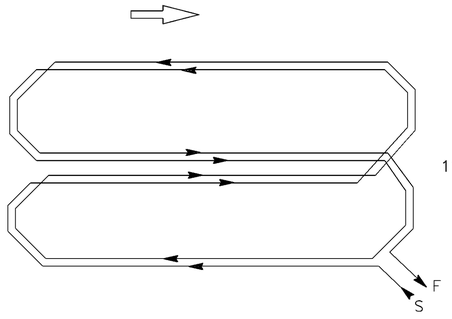


SAW CUT DETAIL

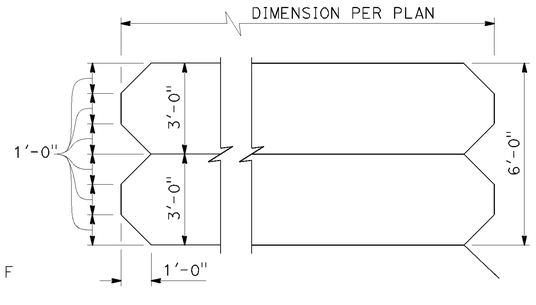
TYPE B LOOP DETECTOR CONFIGURATION

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.

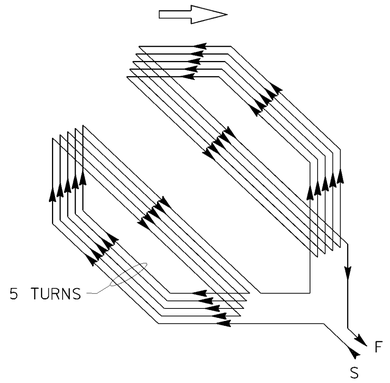


WINDING DETAIL

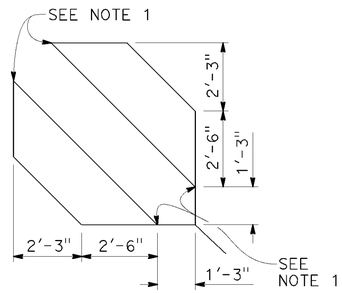


SAW CUT DETAIL

TYPE C LOOP DETECTOR CONFIGURATION

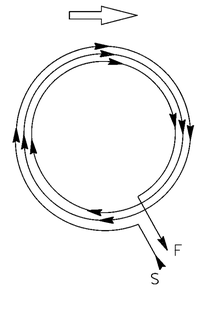


WINDING DETAIL

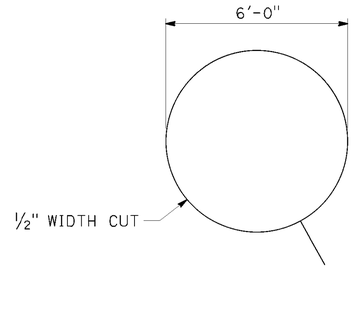


SAW CUT DETAIL

TYPE D LOOP DETECTOR CONFIGURATION

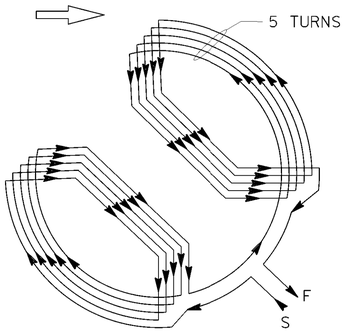


WINDING DETAIL

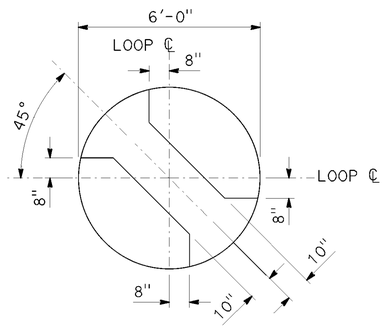


SAW CUT DETAIL

TYPE E LOOP DETECTOR CONFIGURATION

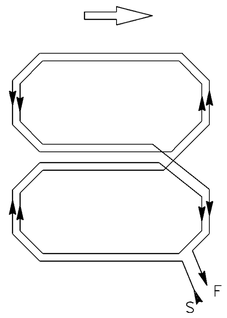


WINDING DETAIL

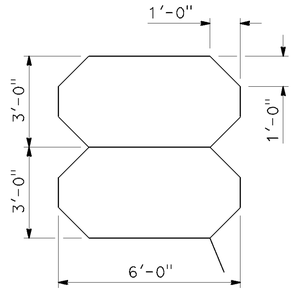


SAW CUT DETAIL

TYPE F LOOP DETECTOR CONFIGURATION

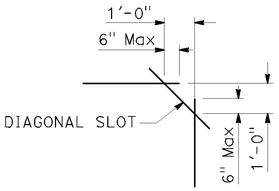


WINDING DETAIL



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1573	1710

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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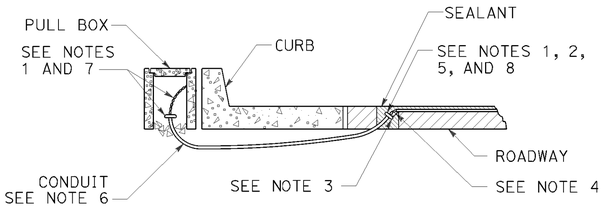
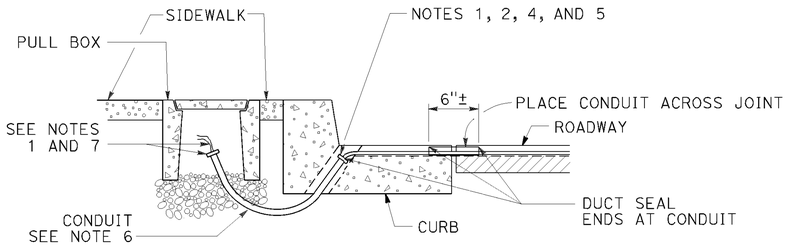
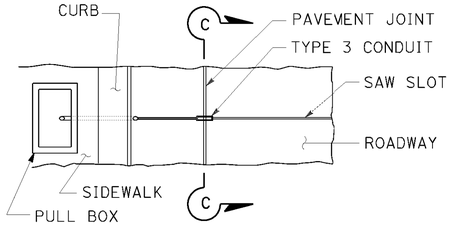
TO ACCOMPANY PLANS DATED October 8, 2021



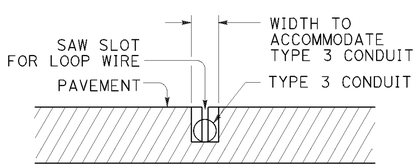
TYPE A
CURB TERMINATION DETAIL



CROSS SECTION

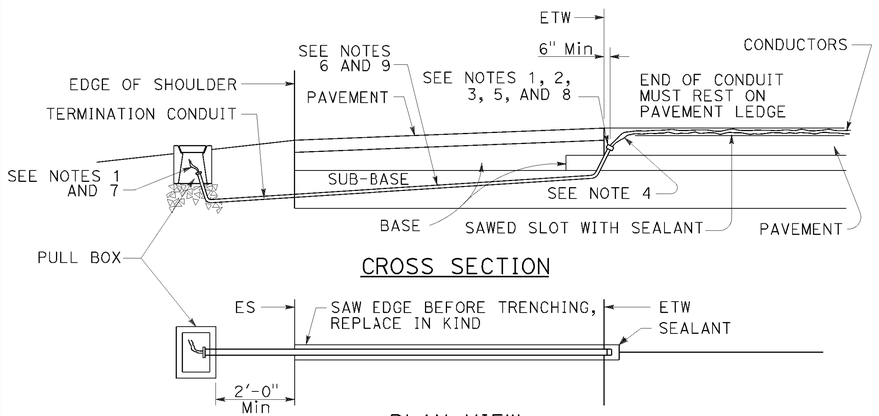


PLAN VIEW



SECTION C-C

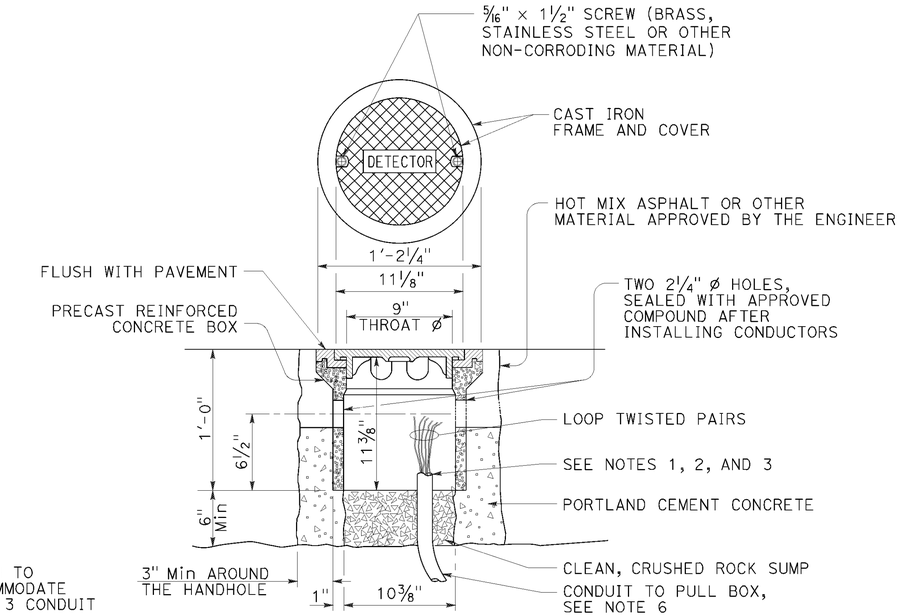
TYPE B
CURB TERMINATION DETAIL



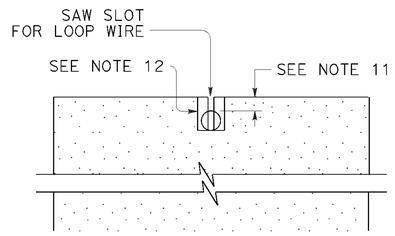
CROSS SECTION

PLAN VIEW

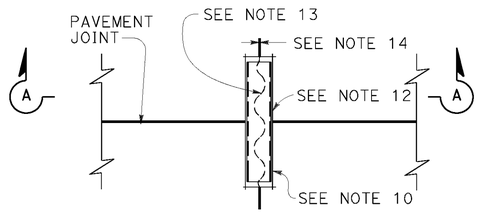
SHOULDER TERMINATION DETAILS



DETECTOR HANDHOLE DETAIL

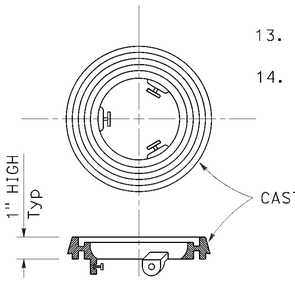


SECTION A-A



PLAN VIEW

TYPICAL LOOP LEAD-IN DETAIL AT PAVEMENT JOINT



LOCKING GRADE RING

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1574	1710

REGISTERED CIVIL ENGINEER

October 18, 2019
PLANS APPROVAL DATE

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

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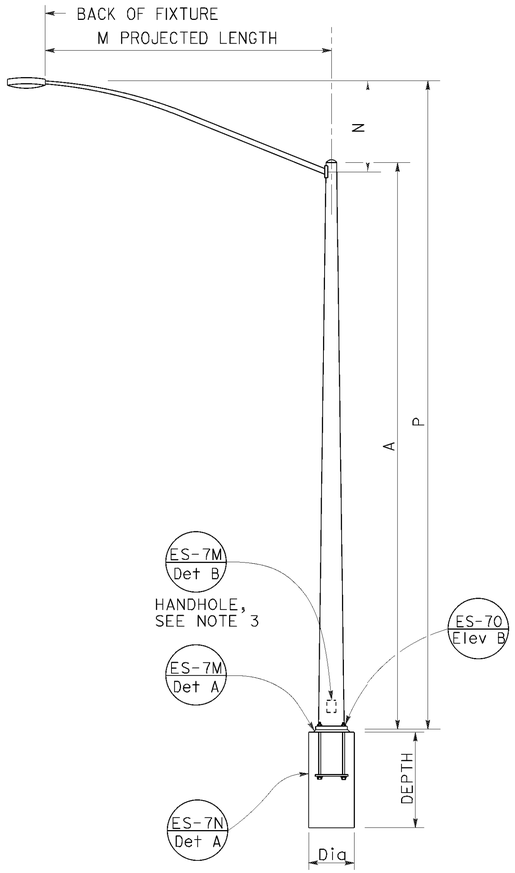
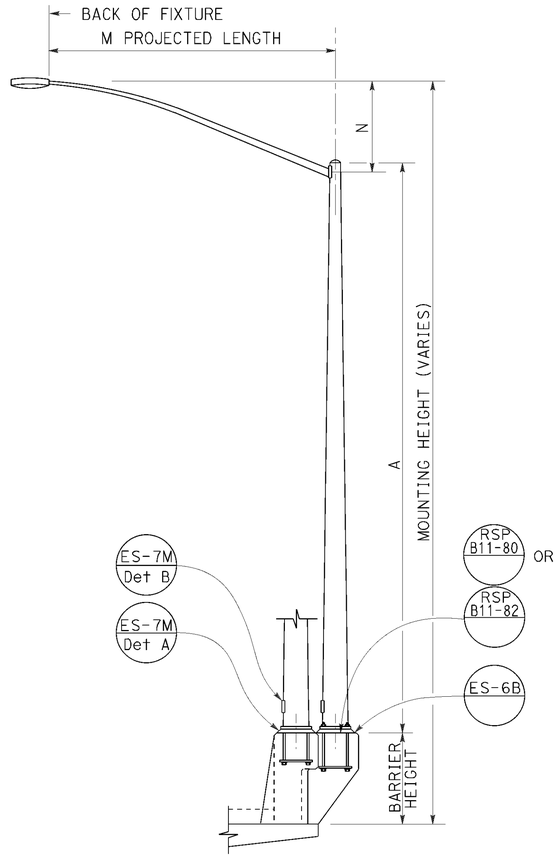
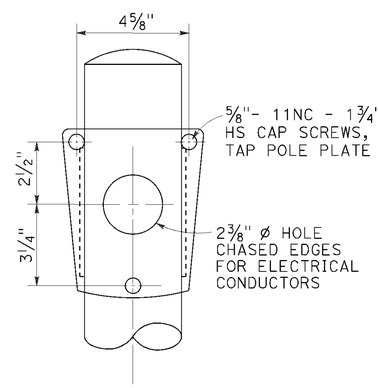
TO ACCOMPANY PLANS DATED October 8, 2021



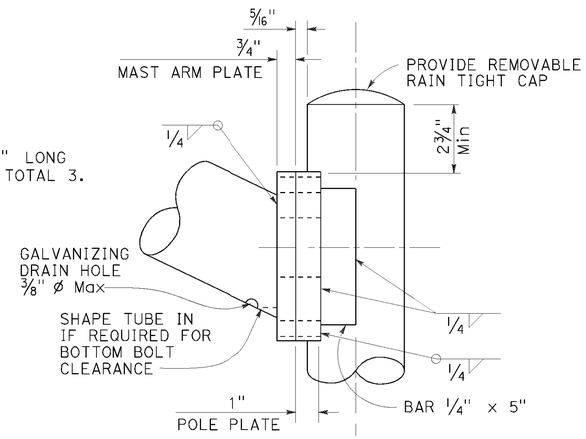
TYPE 15 AND TYPE 21
ELEVATION A



TYPE 15 AND TYPE 21 BARRIER RAIL MOUNTED
ELEVATION B

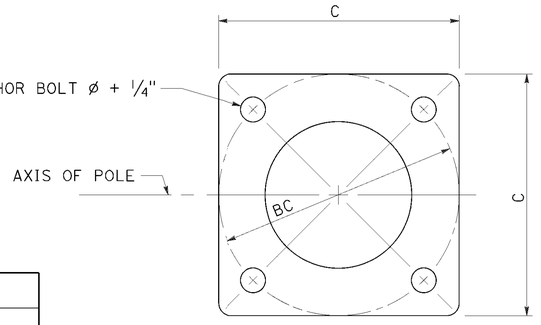


FRONT VIEW



SIDE VIEW

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"	1 1/2"	1" ø x 36" *	2'-6"	6'-0"
21	35'-0"	8 5/8"	3 9/16"	0.1793"			2"	1 1/4" 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"±	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"±

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)

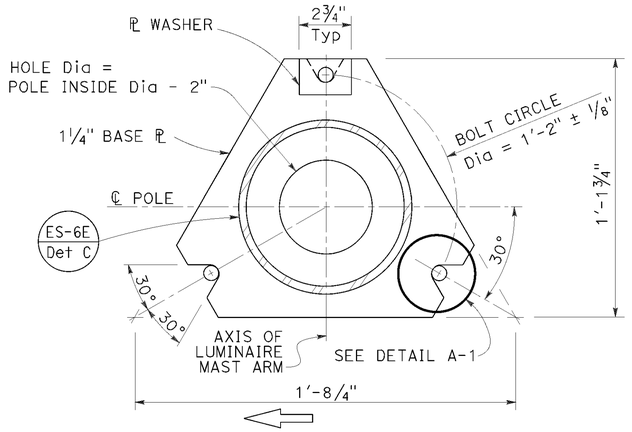
NO SCALE

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.

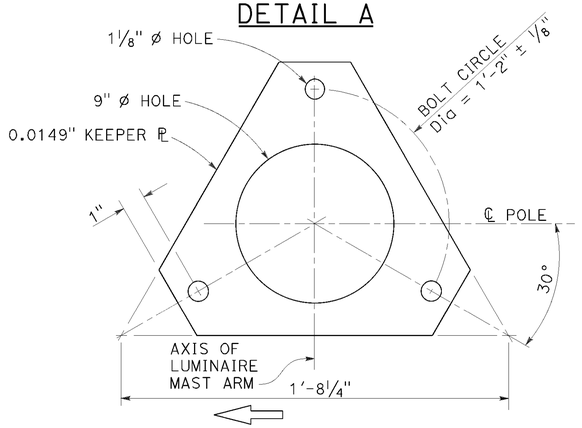
REVISED STANDARD PLAN RSP ES-6A

2018 REVISED STANDARD PLAN RSP ES-6A

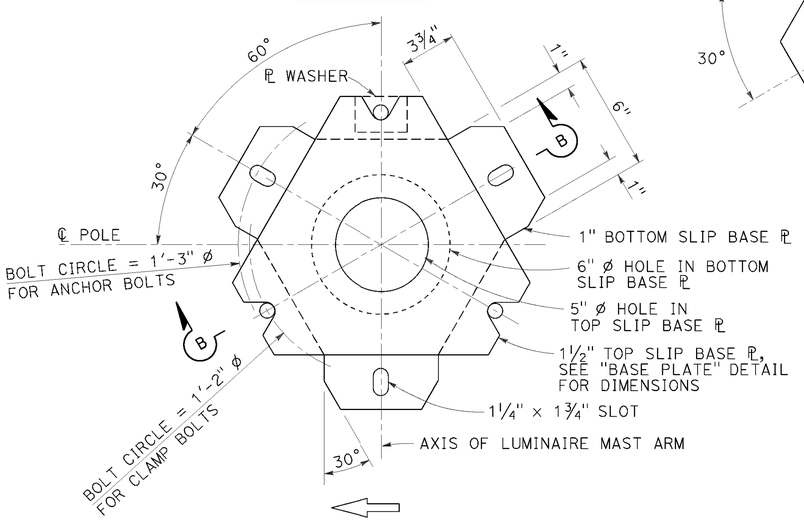
5-2-19



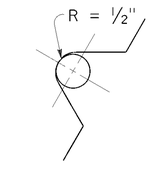
BASE PLATE DETAIL A



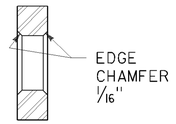
KEEPER PLATE DETAIL B



BOTTOM PLATE DETAIL C



DETAIL A-1



SECTION A-A

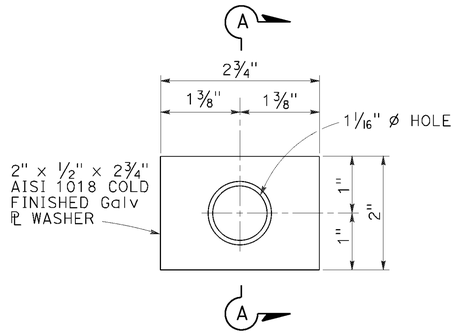
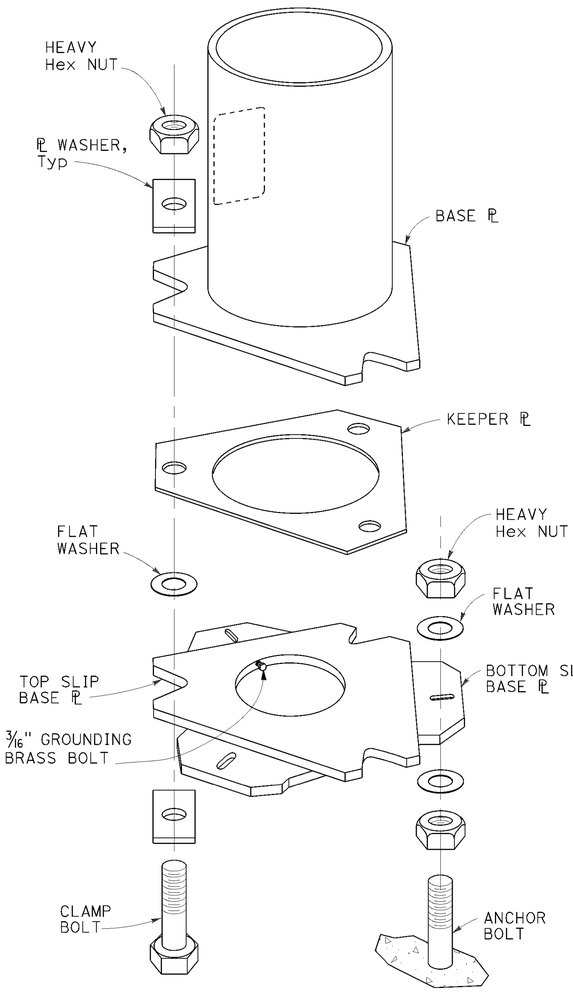
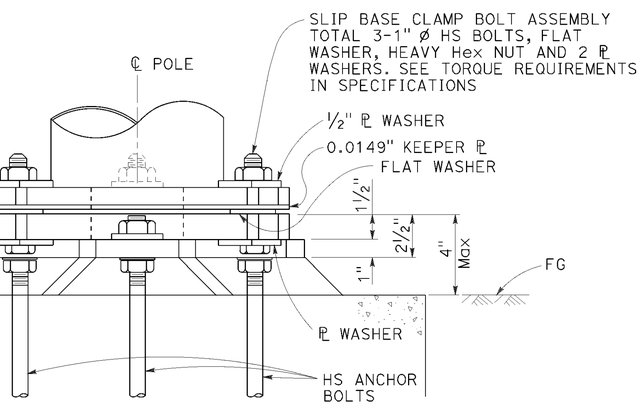


PLATE WASHER DETAIL D

ANCHOR PLATE DETAIL E



SLIP BASE DETAIL DETAIL F



SLIP BASE ELEVATION A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1575	1710

REGISTERED CIVIL ENGINEER

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

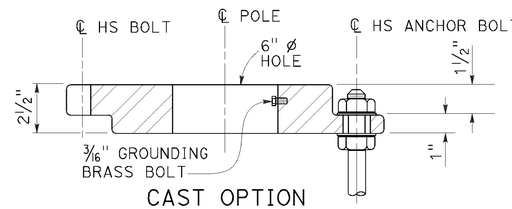
October 19, 2018
PLANS APPROVAL DATE

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.

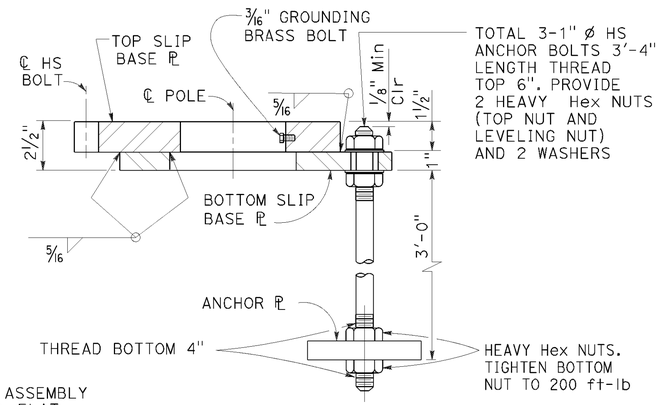
TO ACCOMPANY PLANS DATED October 8, 2021

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.



CAST OPTION



TOTAL 3-1" ø HS ANCHOR BOLTS 3'-4" LENGTH THREAD TOP 6". PROVIDE 2 HEAVY Hex NUTS (TOP NUT AND LEVELING NUT) AND 2 WASHERS

WELDED OPTION SECTION B-B

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1576	1710

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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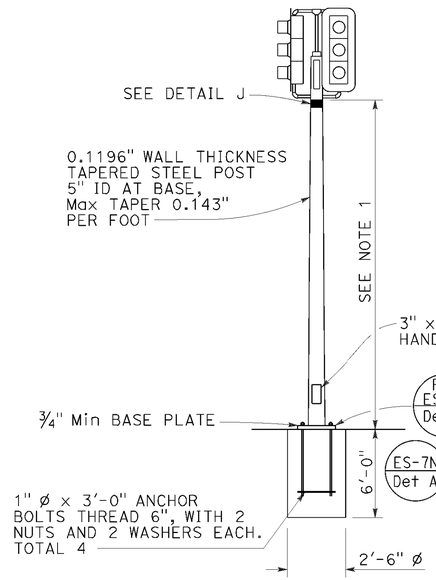
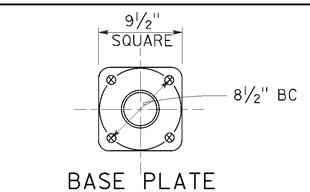
TO ACCOMPANY PLANS DATED October 8, 2021

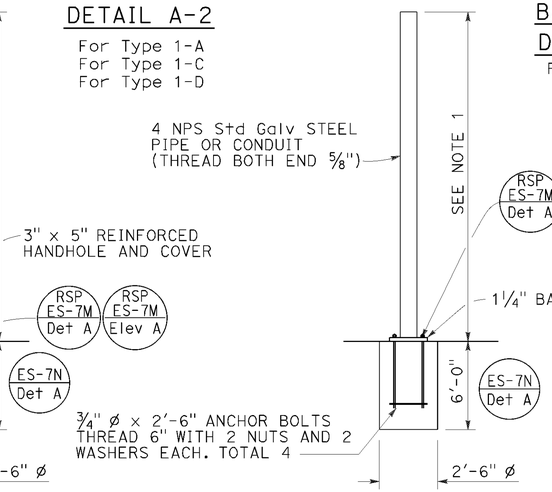
TYPE 1 SIGNAL STANDARDS



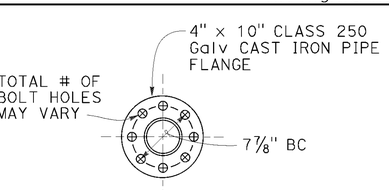
TYPE 1-A STANDARD
DETAIL A-1



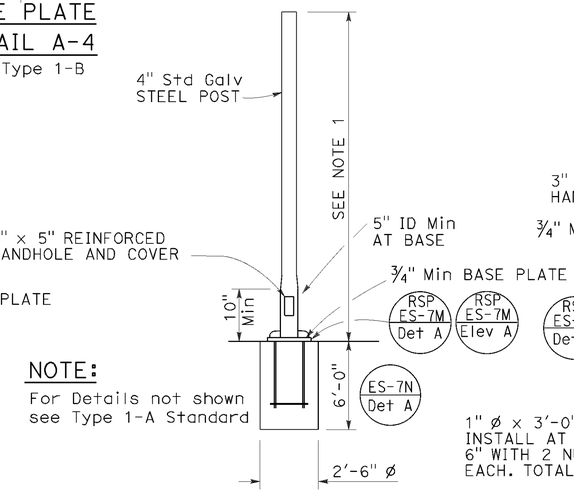
BASE PLATE
DETAIL A-2
For Type 1-A
For Type 1-C
For Type 1-D



TYPE 1-B STANDARD
DETAIL A-3

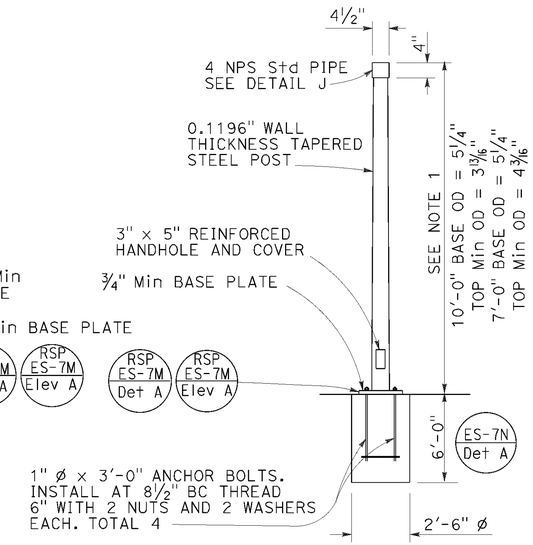


BASE PLATE
DETAIL A-4
For Type 1-B



NOTE:
For Details not shown see Type 1-A Standard

TYPE 1-C STANDARD
DETAIL A-5

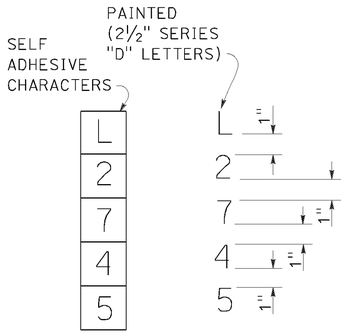


TYPE 1-D STANDARD
DETAIL A-6

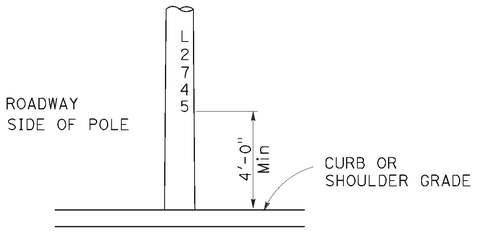
NOTES:

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. Anchor bolts shall be bonded to conduit or grounding conductor.
5. For additional notes and details, see Revised Standard Plan RSP ES-7M, and Standard Plan ES-7N.
6. Pour foundation concrete against undisturbed soil.
7. For standards with handhole, locate in the downstream side of traffic.
8. Coupling nuts to be used only when shown or specified on project plans.

TYPE 1 SIGNAL STANDARDS
DETAIL A

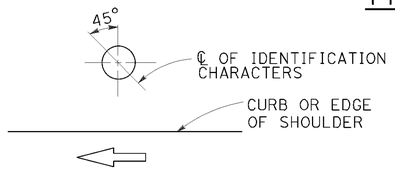


IDENTIFICATION CHARACTER DETAIL
DETAIL B-1

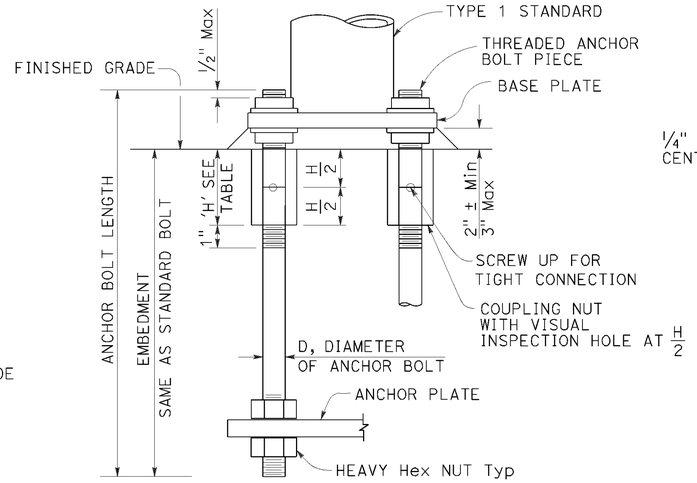


TYPICAL IDENTIFICATION CHARACTER FORMAT
DETAIL B-2

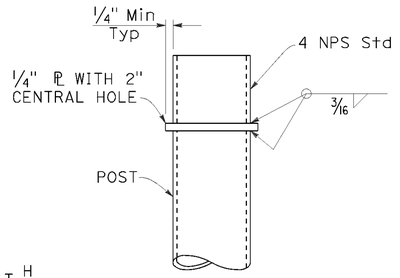
LOCATION OF EQUIPMENT IDENTIFICATION CHARACTERS ON STANDARDS AND POSTS
DETAIL B



DETAIL B-3



ANCHOR BOLTS WITH SLEEVE NUTS
DETAIL C
(See Note 8)



DETAIL J

COUPLING NUT TABLE	
BOLT DIAMETER	NUT TABLE THICKNESS 'H'
¾"	2¼"
1"	3"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, TYPE 1 AND EQUIPMENT IDENTIFICATION CHARACTERS)

NO SCALE

RSP ES-7B DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-7B DATED MAY 31, 2018 - PAGE 516 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-7B

5-21-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1577	1710

Stanley P Johnson
REGISTERED CIVIL ENGINEER

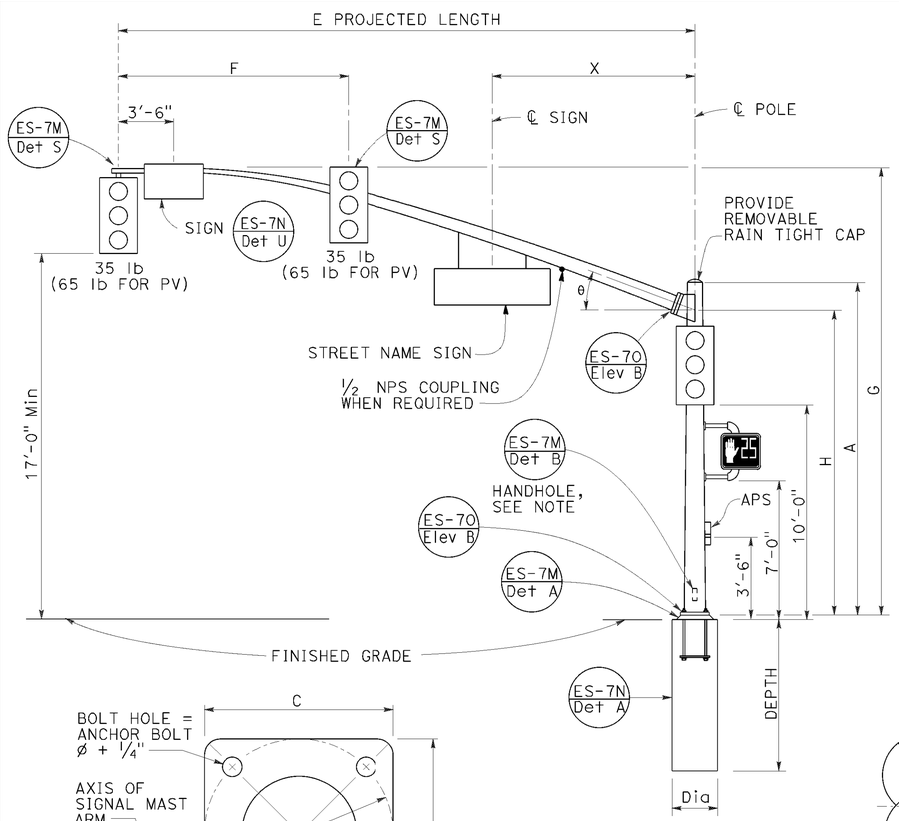
April 17, 2020
PLANS APPROVAL DATE

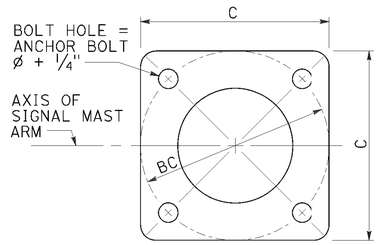
REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

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

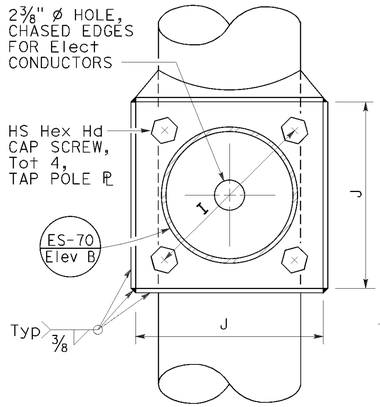
NOTE: TO ACCOMPANY PLANS DATED October 8, 2021

Handhole shall be located on the downstream side of traffic.

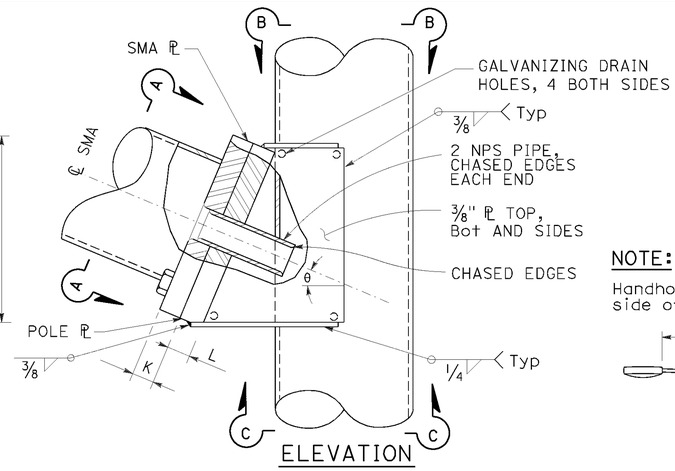




BASE PLATE
DETAIL B

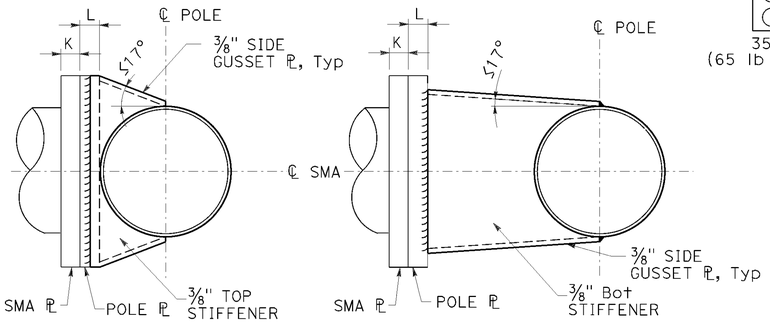


SECTION A-A



ELEVATION

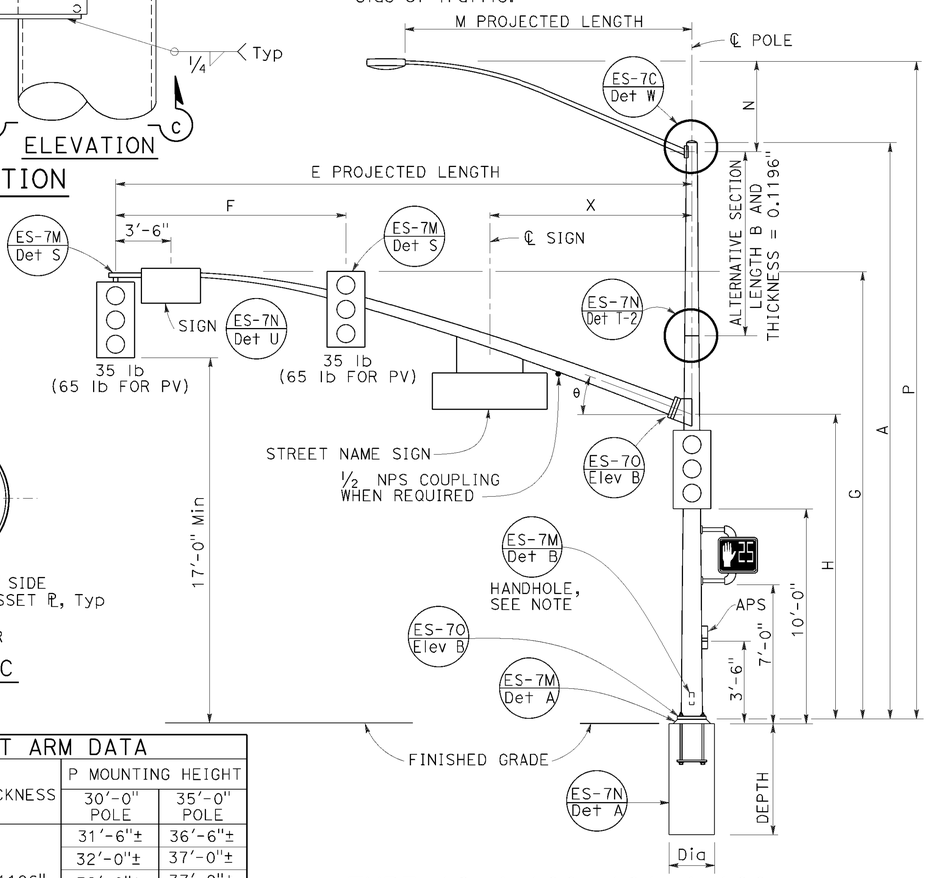
SIGNAL MAST ARM CONNECTION
DETAIL A



SECTION B-B

SECTION C-C

TYPE 18-4-100,
23-4-100, 27-4-100
ELEVATION A



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"			8"								
35'-0"	14'-0"	23'-0"±		8 11/16"		13½"			1½"	1¾"	21°	
40'-0"	15'-0"			9⅜"							15°	13'-0"
45'-0"		23'-8"±		10¼"				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
18-4-100	4	100	17'-0"	16"	13⅝"	0.2391" OR 0.25"				1'-11"	1'-9"	3"	2¼"ø x 42"	NONE	25'-0", [30'-0"]	3'-6"	12'-0"
19-4-100			30'-0"		11¾"		10'-0"	13⅛"	11¾"					6'-15' [12'-0"]			
19A-4-100			35'-0"		11"	0.3125"	15'-0'	13⅛"	11"					6'-15' [15'-0"]			
23-4-100			17'-0"		13⅝"									NONE	35'-0"		
24-4-100			30'-0"		11¾"		10'-0"	15⅛"	13¾"					6'-15' [12'-0"]			
24A-4-100			35'-0"		11"		15'-0"	13⅛"	11"					6'-15' [15'-0"]			
26-4-100			30'-0"	18"	13¾"		10'-0"	15⅛"	13¾"	2'-1"	1'-11"			6'-15' [12'-0"]	40'-0", [45'-0"]		13'-0"
26A-4-100			35'-0"		13"		15'-0"	15⅛"	13"					6'-15' [15'-0"]			
27-4-100			17'-0"		15⅝"									NONE			

[ ] INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 4 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 25' TO 45')

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1578	1710

Stanley P. Johnson
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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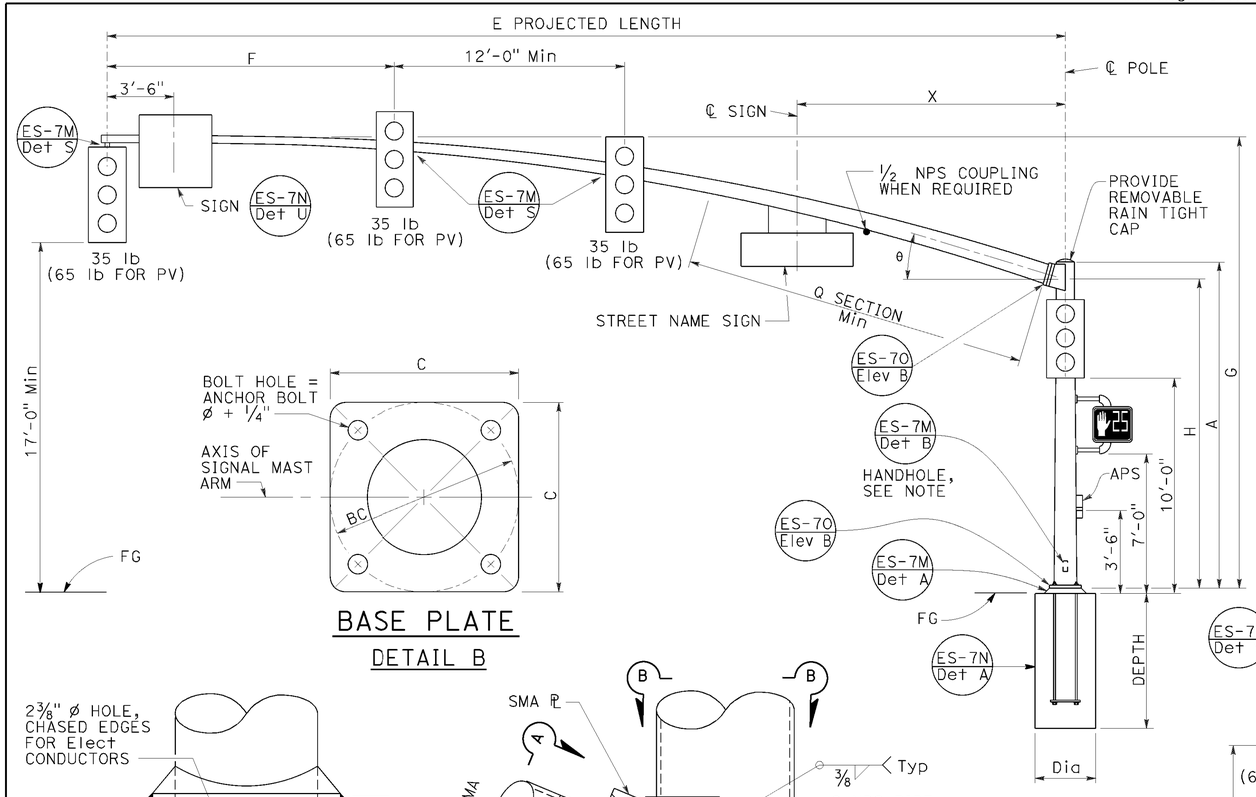
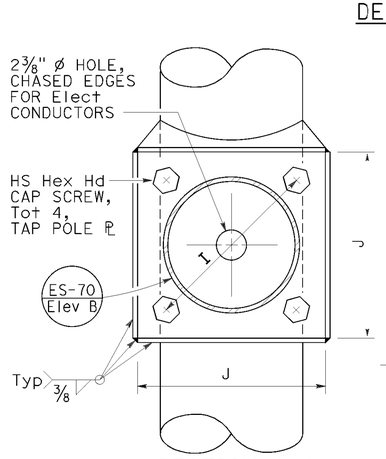
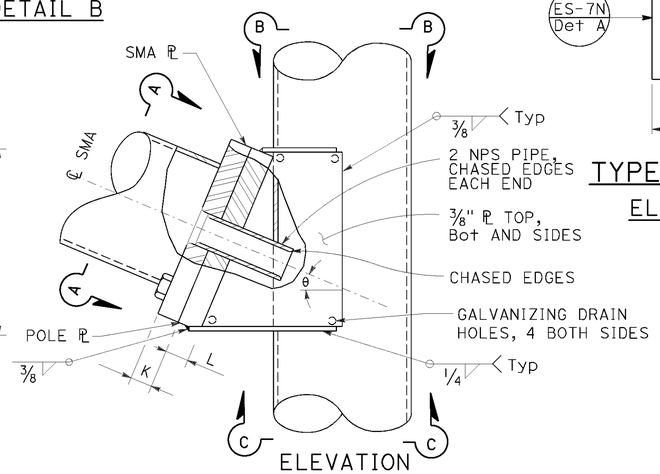
TO ACCOMPANY PLANS DATED October 8, 2021

NOTE:
Handhole shall be located on the downstream side of traffic.





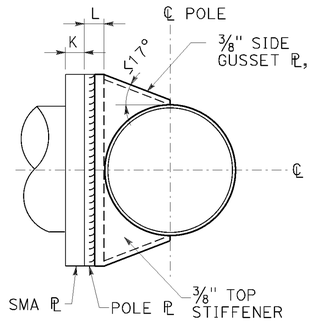
SECTION A-A



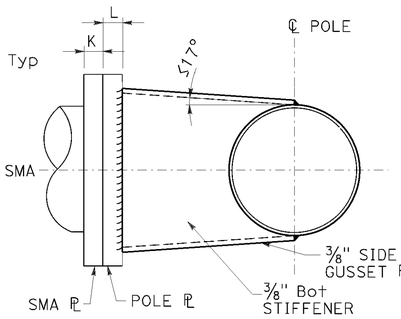
ELEVATION

SIGNAL MAST ARM CONNECTION
DETAIL A

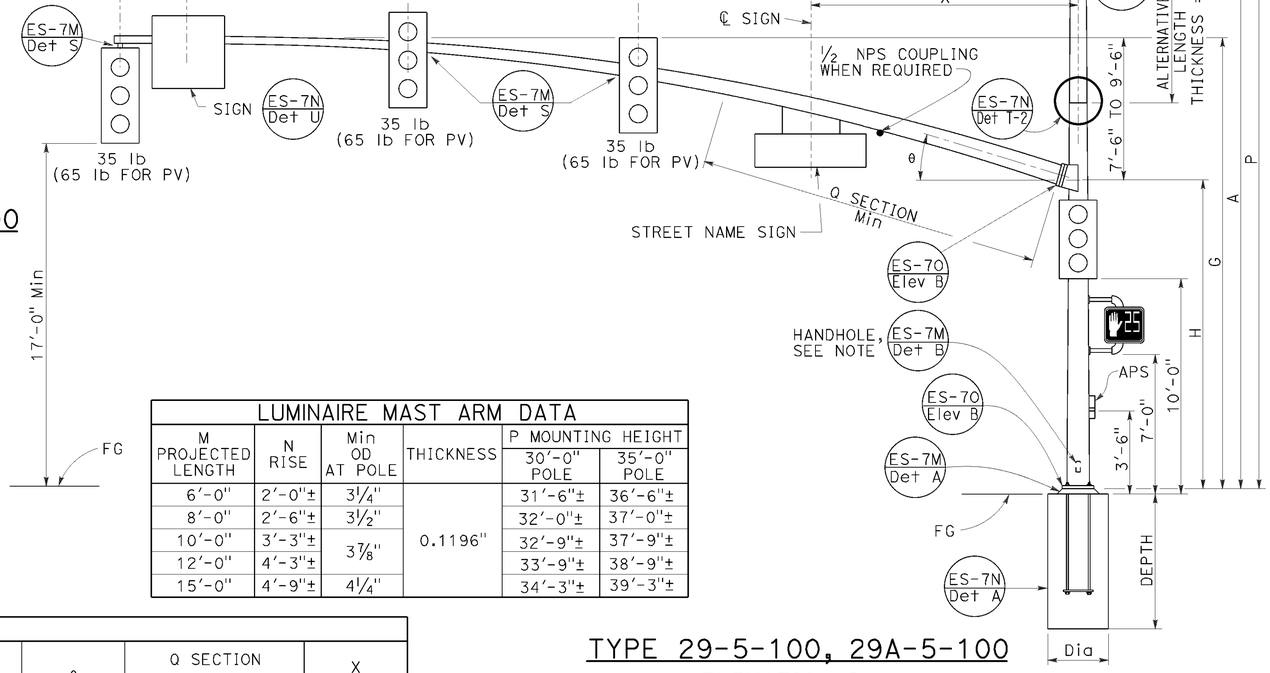
BASE PLATE
DETAIL B



SECTION B-B



SECTION C-C



TYPE 29-5-100, 29A-5-100
ELEVATION B

LUMINAIRE MAST ARM DATA					
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT 30'-0" POLE	P MOUNTING HEIGHT 35'-0" POLE
6'-0"	2'-0"±	3¼"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3½"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3⅞"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4¼"		34'-3"±	39'-3"±

SIGNAL MAST ARM DATA														
E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℙ THICKNESS	L POLE ℙ 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 5/8"	0.375"		19⅛"	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"		10'-0"							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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1579	1710

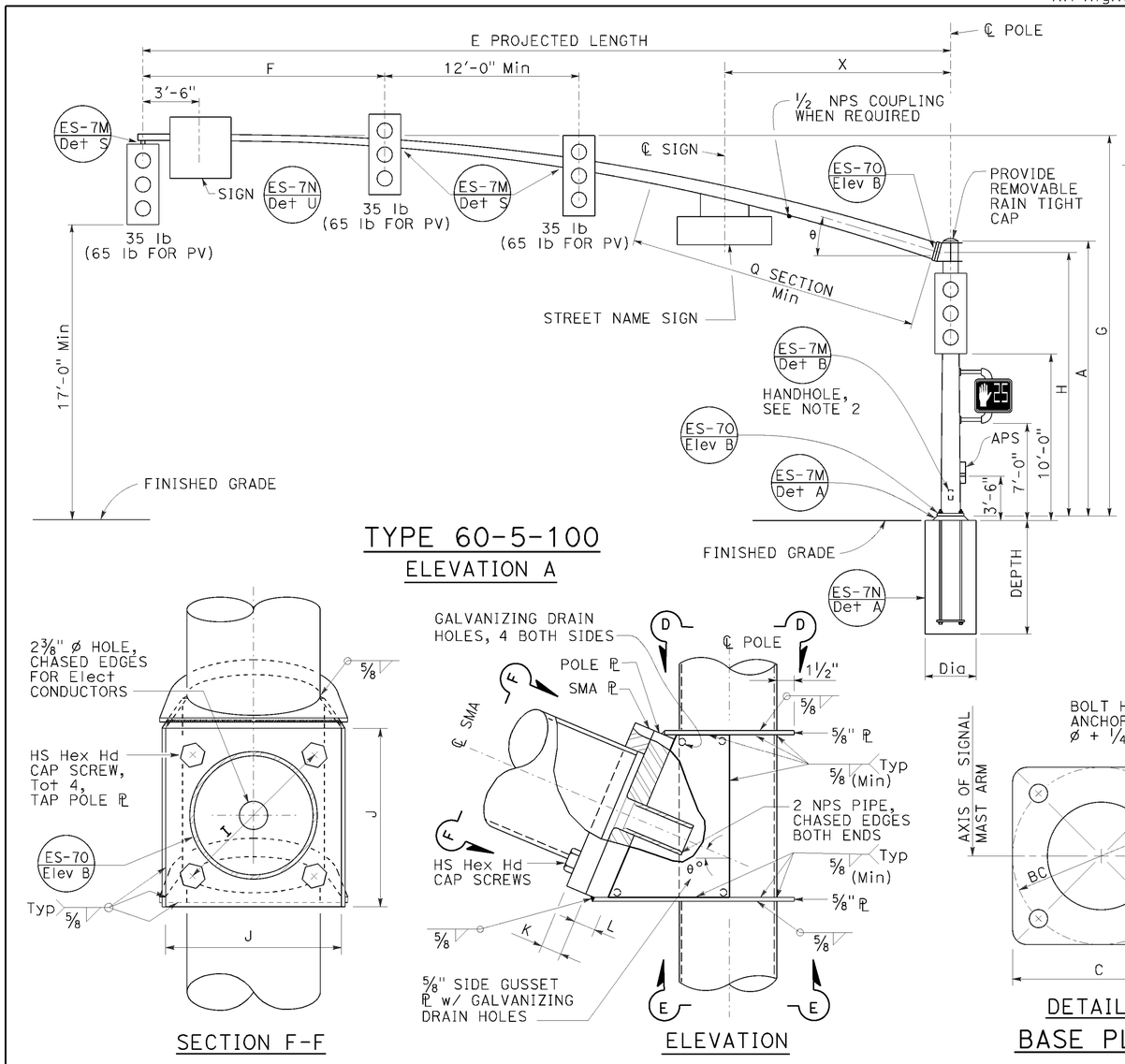
Stanley P. Johnson
REGISTERED CIVIL ENGINEER

April 17, 2020
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 3-31-22 — CIVIL — STATE OF CALIFORNIA

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.

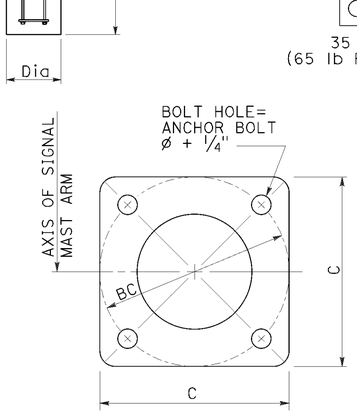
TO ACCOMPANY PLANS DATED October 8, 2021



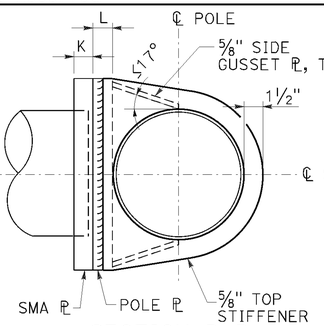
TYPE 60-5-100
ELEVATION A

SECTION F-F

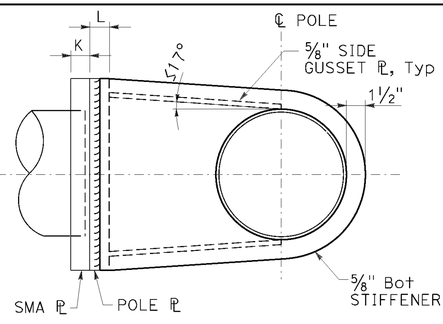
ELEVATION



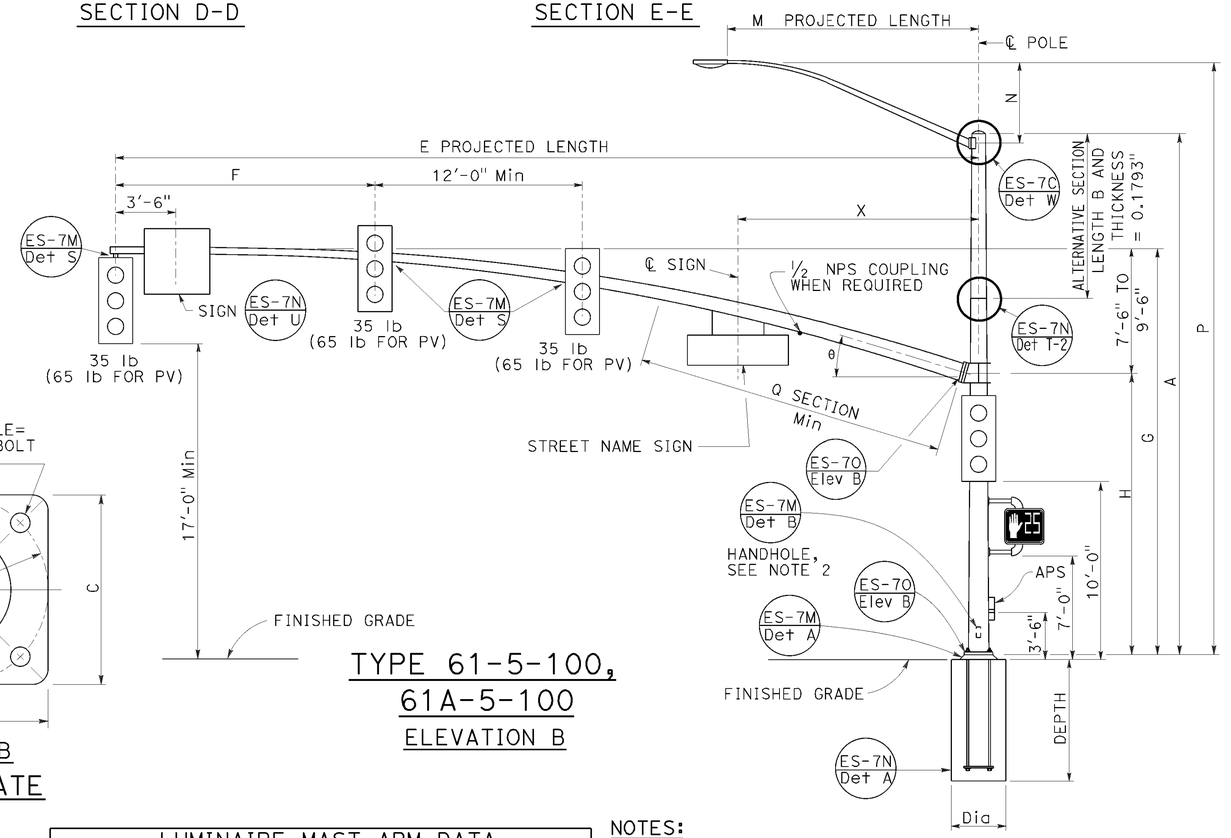
DETAIL B
BASE PLATE



SECTION D-D



SECTION E-E



TYPE 61-5-100, 61A-5-100
ELEVATION B

SIGNAL MAST ARM CONNECTION
DETAIL A

SIGNAL MAST ARM DATA

E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℄ THICKNESS	L POLE ℄ THICKNESS	θ	Q SECTION LENGTH	Q SECTION THICKNESS	X Max
60'-0"	15'-0"	23'-7" TO 25'-7"	16'-0"	1'-1½"	0.1793"	20"	1½"-6NC-4"	2'-0"	2"	2"	15°	24'-0"	0.2391"	14'-0"
65'-0"					0.2391"							29'-0"	0.3125"	

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 DATA / BASE PLATE DATA

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	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	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"				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"		10'-0"	22⅛"	20¾"	2'-11"	2'-9"		3"ø x 60"	6'-15' [15'-0"]		4'-6"	15'-0"
61A-5-100			35'-0"		20"		15'-0"		20"								

[ ] INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

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.

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')

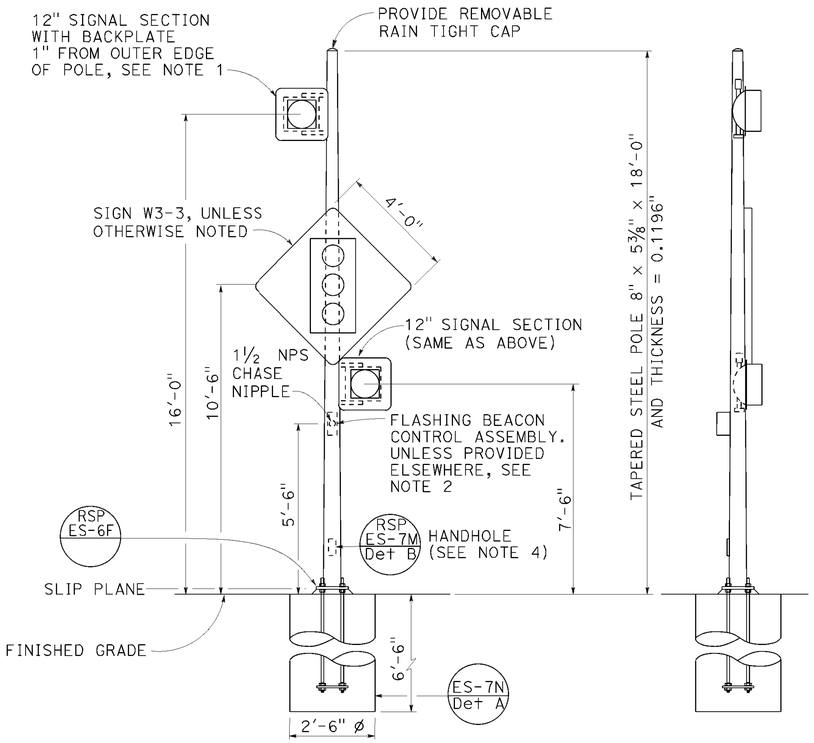
NO SCALE

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

2018 REVISED STANDARD PLAN RSP ES-7H

12-13-19



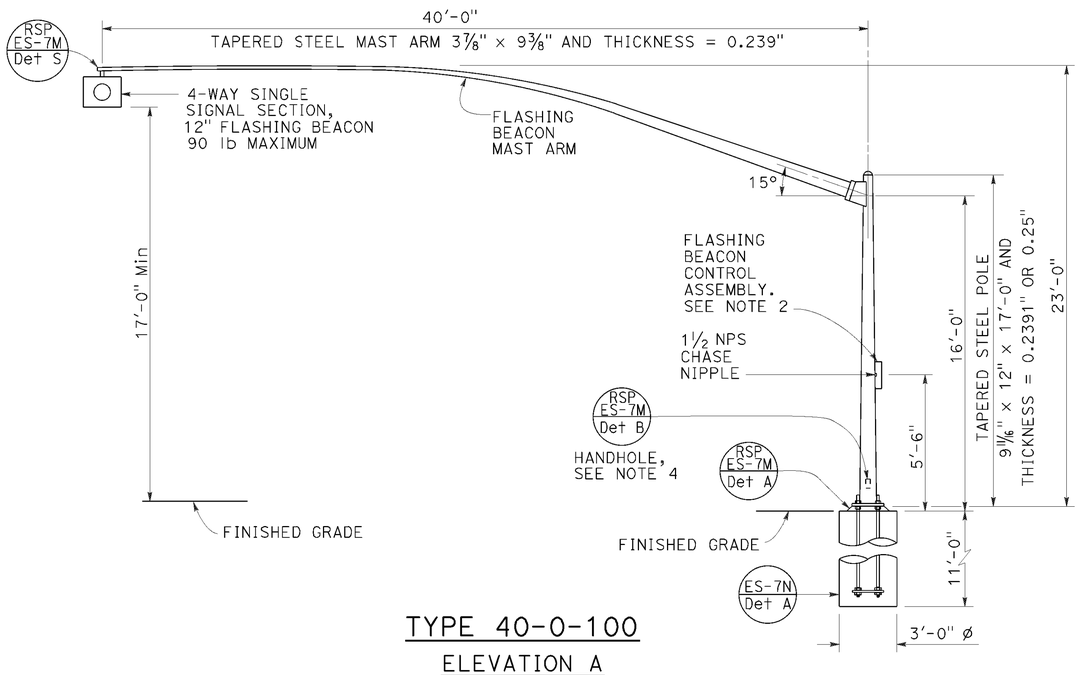
FRONT VIEW

SIDE VIEW

TYPE 15-FBS

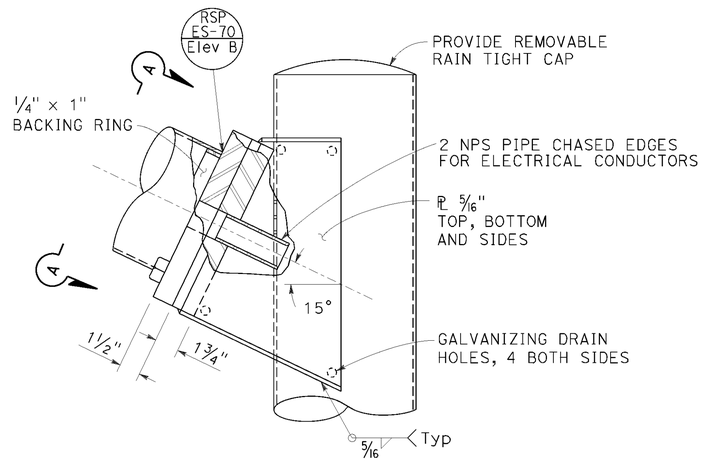
FLASHING BEACON WITH SLIP BASE INSTALLATION

DETAIL A

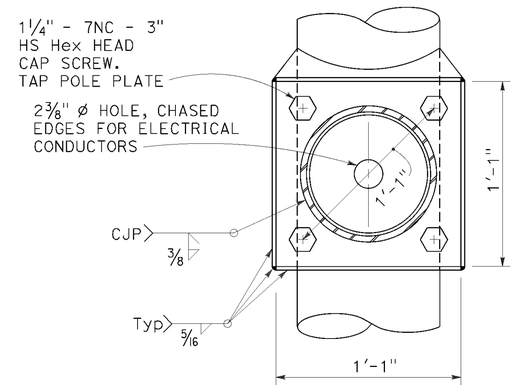


TYPE 40-0-100

ELEVATION A



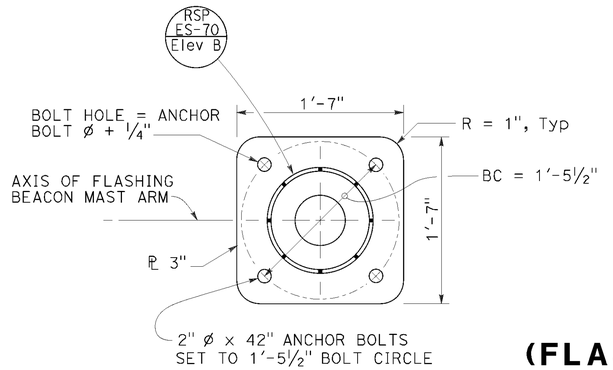
ELEVATION B



VIEW A-A

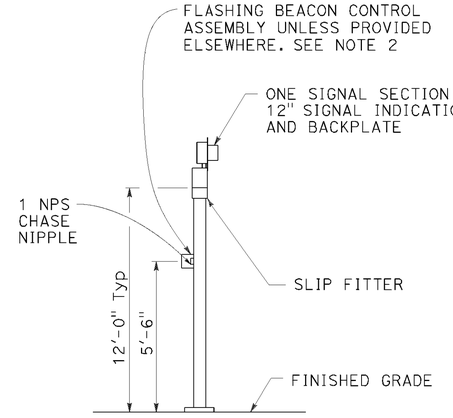
FLASHING BEACON MAST ARM CONNECTION DETAIL

DETAIL B



BASE PLATE

DETAIL C



TYPE 1-A, 1-C, AND 1-D

FLASHING BEACON INSTALLATION

DETAIL D

See Note 5

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1580	1710

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 October 8, 2021

NOTES:

1. See Standard Plan ES-4A and Revised Standard Plan RSP ES-4D for attachment fitting details.
2. For wiring diagram, see Revised Standard Plan RSP ES-14B.
3. For additional notes and details, see Revised Standard Plan RSP ES-7M and Standard Plan ES-7N.
4. Handhole shall be located on the downstream side of traffic.
5. See project plans for type of standard to be installed.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FLASHING BEACON ON A TYPE 1, TYPE 15-FBS, AND TYPE 40 STANDARD)

NO SCALE

RSP ES-7J DATED OCTOBER 19, 2018 SUPERSEDES 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

6-14-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1581	1710

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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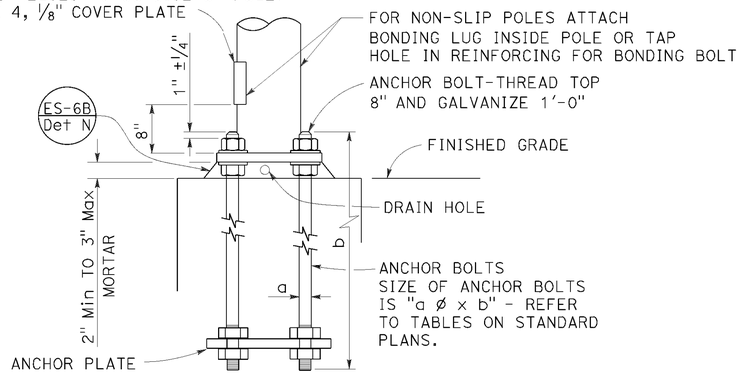
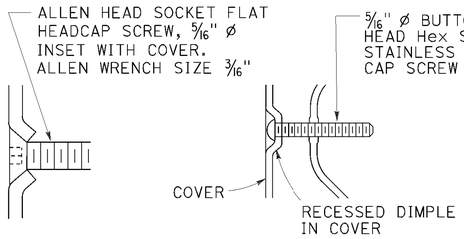
TO ACCOMPANY PLANS DATED October 8, 2021

2018 REVISED STANDARD PLAN RSP ES-7M

4" x 6½" ROUNDED RECTANGLE HANDHOLE REINFORCED WITH RING WELDED TO OUTSIDE OF POLE. SEE NOTE 4, ⅛" COVER PLATE

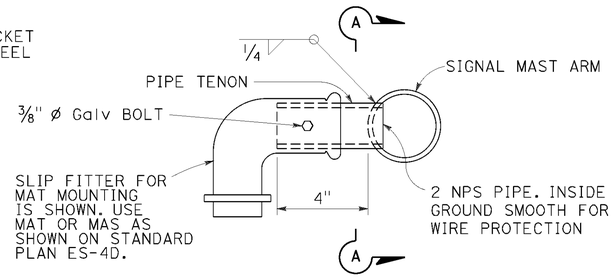


HANDHOLE AND ANCHORAGE
DETAIL A



TYPICAL DETAIL
DETAIL B-1

ALTERNATIVE DETAIL
DETAIL B-2



SIDE TENON
DETAIL S-1

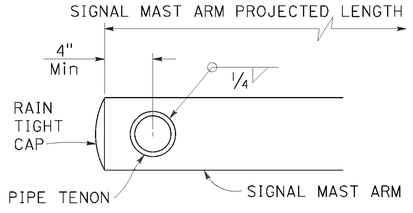
IDENTIFICATION NUMBER

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-7O

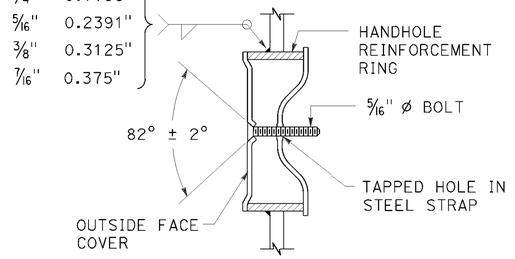
26A - 3 - 100 - 45 - 10 - F or FB

SAMPLE IDENTIFICATION NUMBER

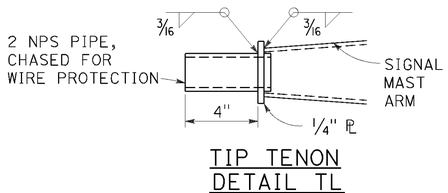


SECTION A-A

PIPE TENONS
DETAIL S

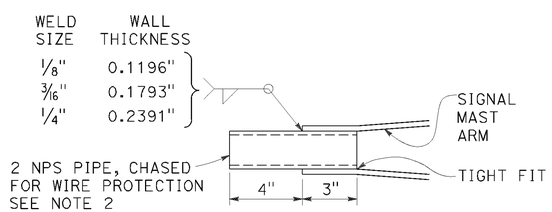


TAMPER RESISTANT HANDHOLE COVER
DETAIL B

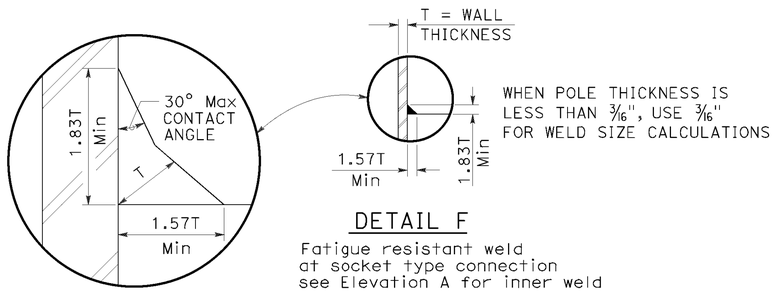


TIP TENON
DETAIL TL

This detail supersedes Detail S when so designated

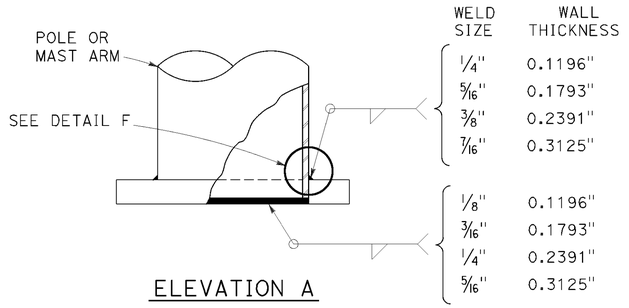


TIP TENON
DETAIL TS



DETAIL F

Fatigue resistant weld at socket type connection see Elevation A for inner weld



ELEVATION 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

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

5-31-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1582	1710

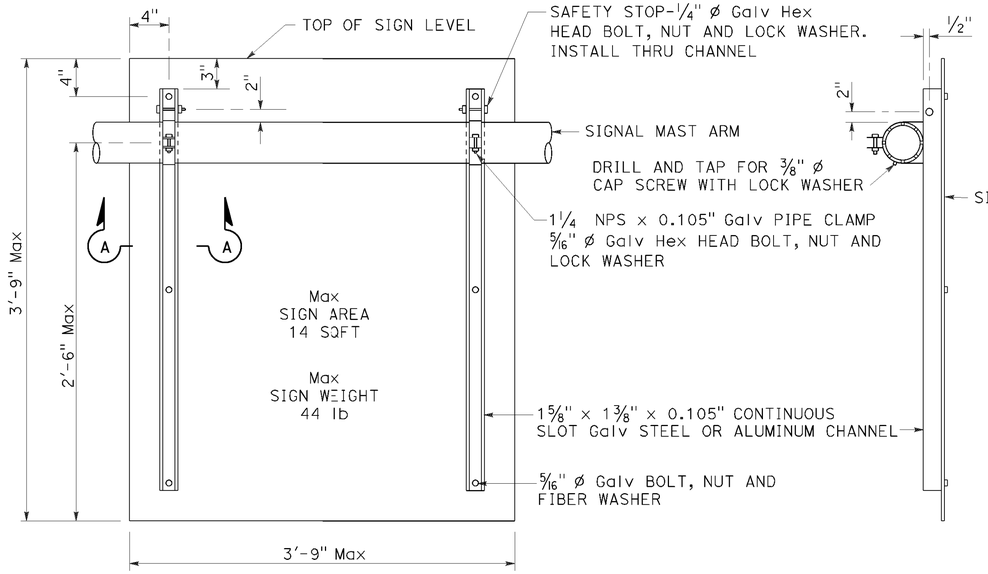
REGISTERED CIVIL ENGINEER

April 16, 2021
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

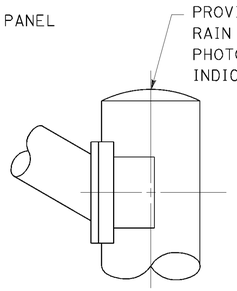
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED October 8, 2021

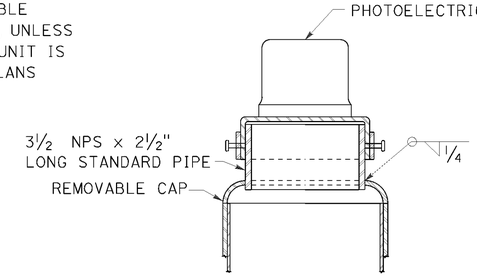


REAR VIEW

SIDE VIEW

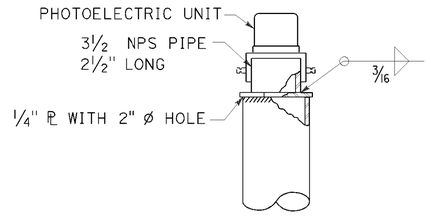


STANDARD TOP
DETAIL B-1



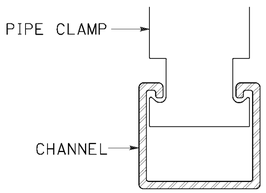
MOUNTING ADADPTER FOR
PHOTOELECTRIC UNIT
DETAIL B-2

POLE TOP DETAILS
DETAIL B

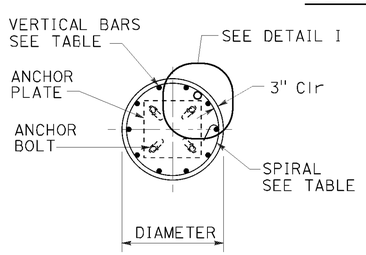


ALTERNATIVE
MOUNTING ADAPTER
DETAIL B-3

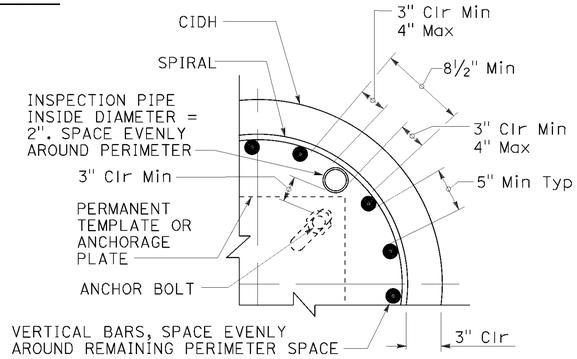
SIGN MOUNTING DETAILS
DETAIL U



SECTION A-A



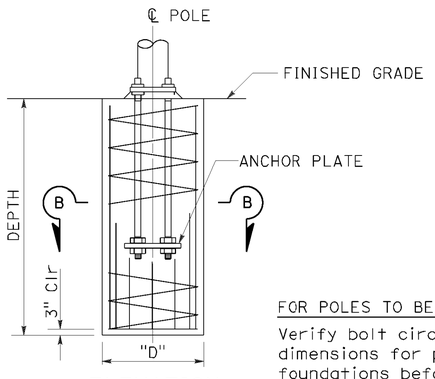
SECTION B-B



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.

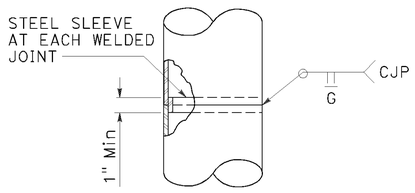


ELEVATION

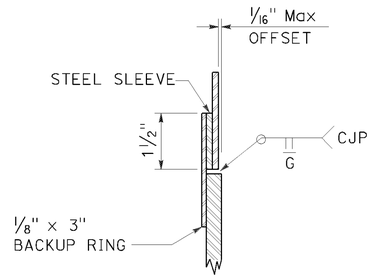
FOR POLES TO BE INSTALLED ON EXISTING FOUNDATION:

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

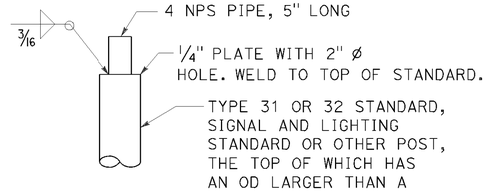


FOR UNIFORM PIPE THICKNESS
DETAIL T-1

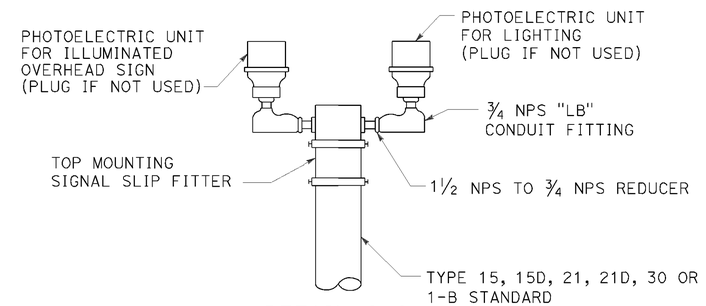


AT PIPE THICKNESS CHANGE
DETAIL T-2

POLE SPLICES
DETAIL T



DETAIL C-1



DETAIL C-2

DUAL PHOTOELECTRIC UNIT MOUNTING DETAIL
DETAIL C

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1583	1710

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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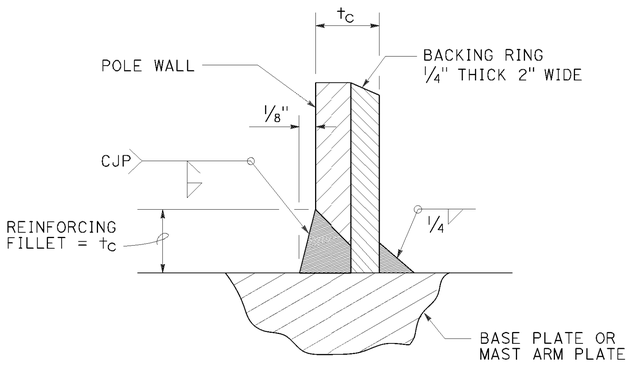
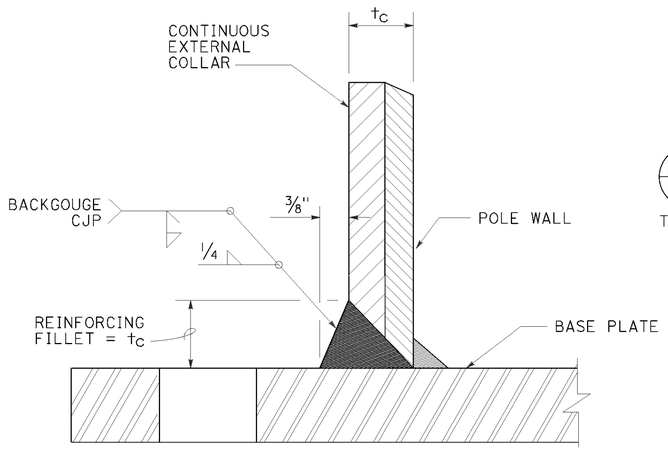
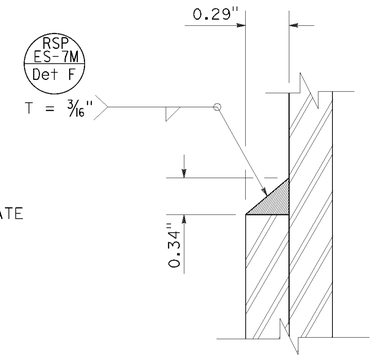
TO ACCOMPANY PLANS DATED October 8, 2021



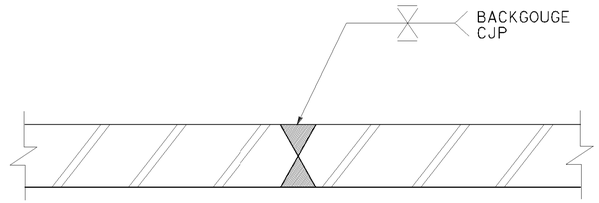
DETAIL B



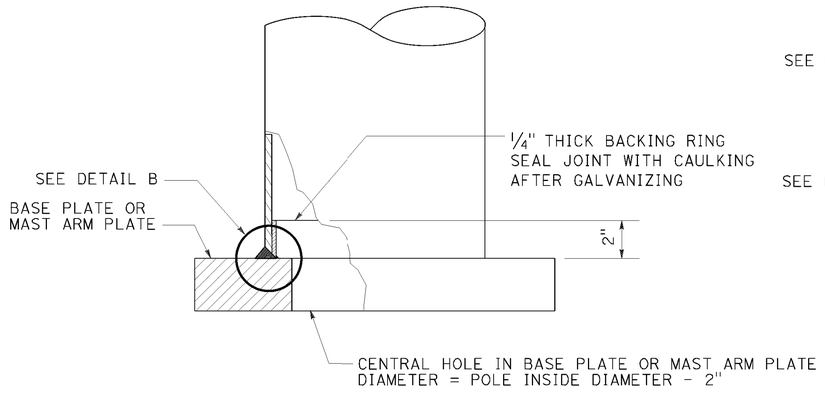
DETAIL C1



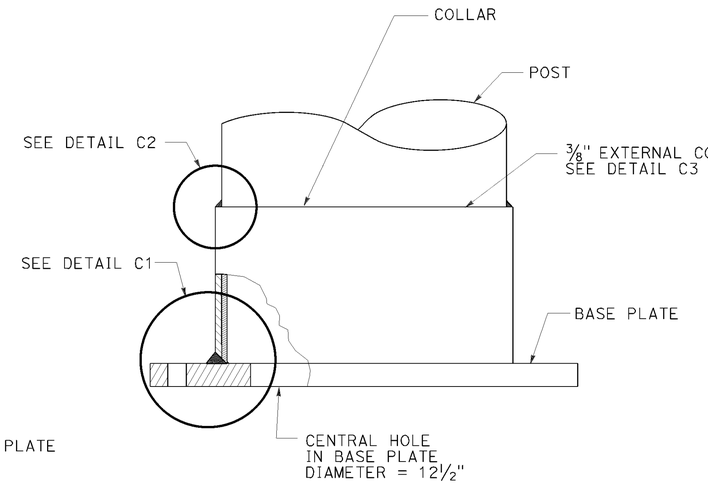
DETAIL C2



DETAIL C3

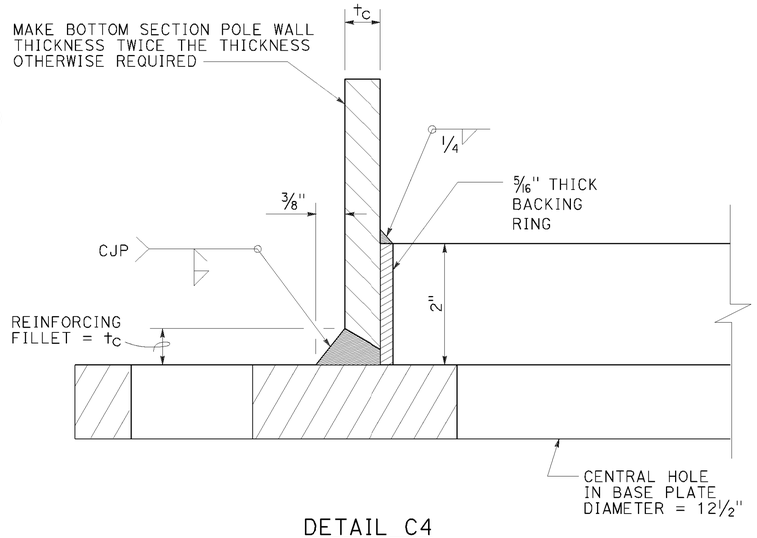


ELEVATION B



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-70 DATED OCTOBER 19, 2018 SUPERSEDES STANDARD PLAN ES-70
DATED MAY 31, 2018 - PAGE 528 OF THE STANDARD PLANS BOOK DATED 2018.

REVISED STANDARD PLAN RSP ES-70

2018 REVISED STANDARD PLAN RSP ES-70

5-16-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1584	1710

H.R.F.
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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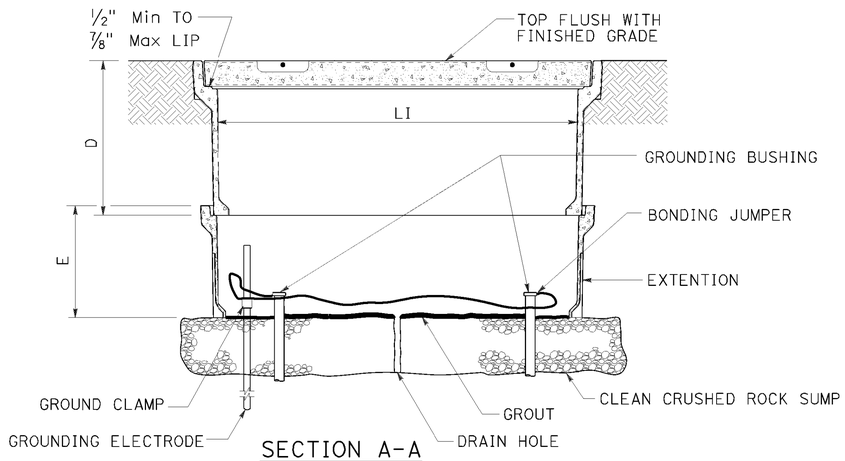
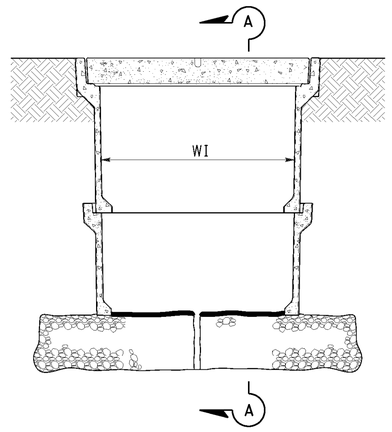
TO ACCOMPANY PLANS DATED October 8, 2021



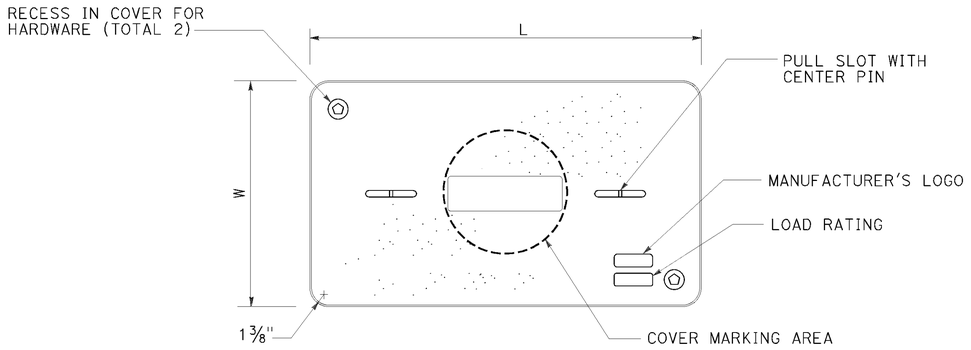
SECTION A-A



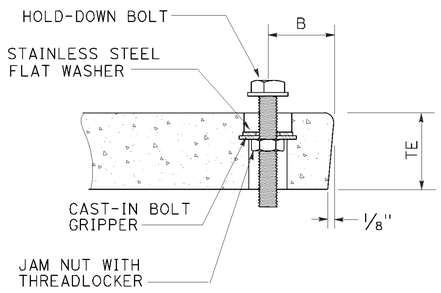
SIDE VIEW

INSTALLATION DETAILS

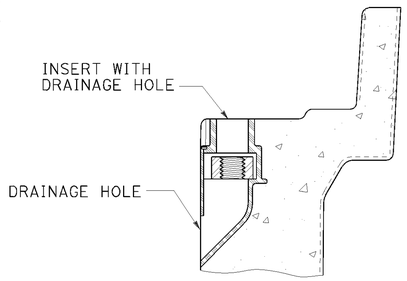
DETAIL A



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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (NON-TRAFFIC PULL BOX)

NO SCALE

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

REVISED STANDARD PLAN RSP ES-8A

2018 REVISED STANDARD PLAN RSP ES-8A

7-17-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1585	1710

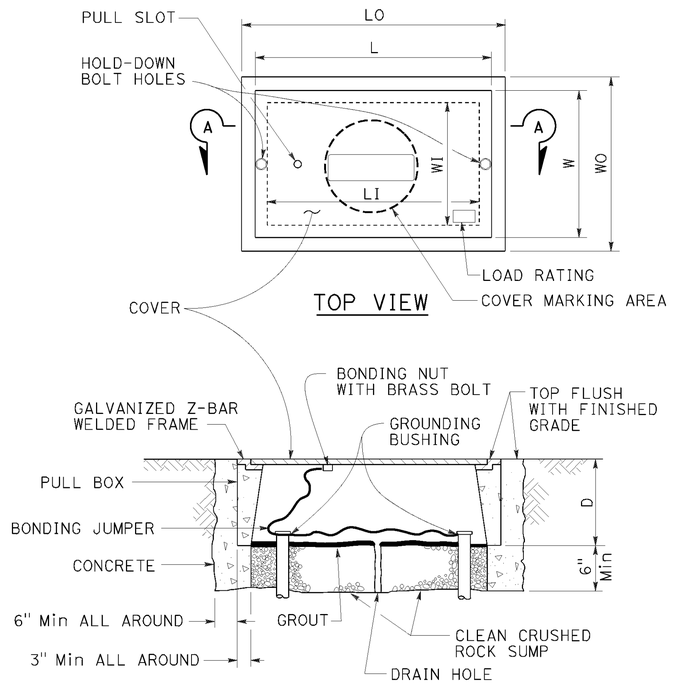
H.R.Z
REGISTERED ELECTRICAL ENGINEER

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

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.

TO ACCOMPANY PLANS DATED October 8, 2021



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1586	1710

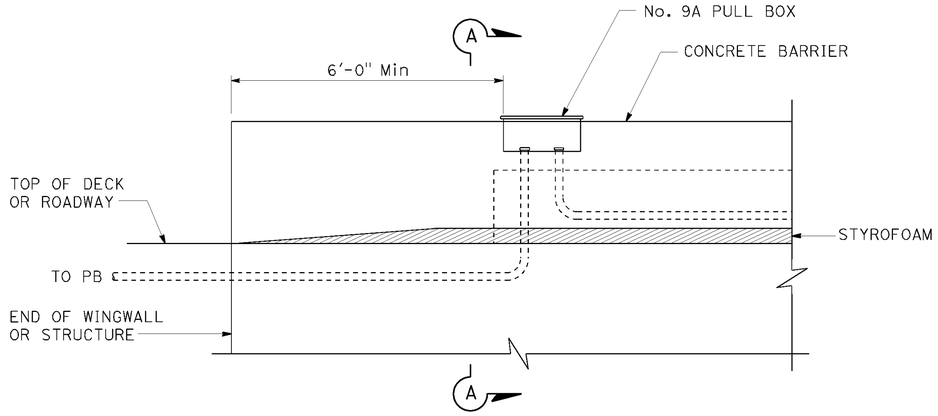
REGISTERED ELECTRICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

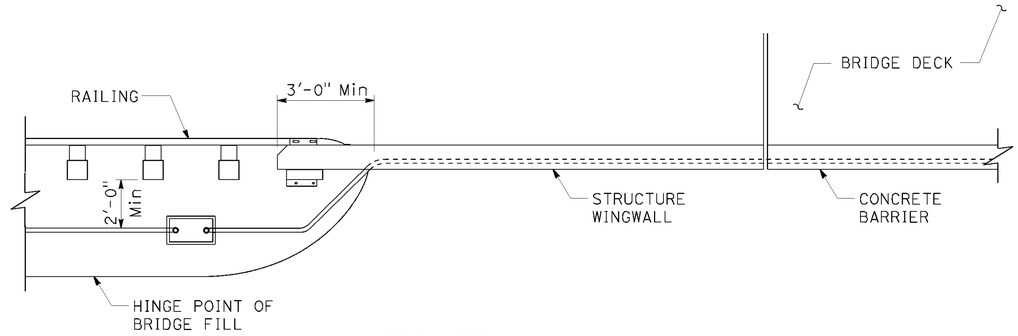
October 16, 2020
PLANS APPROVAL DATE

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.

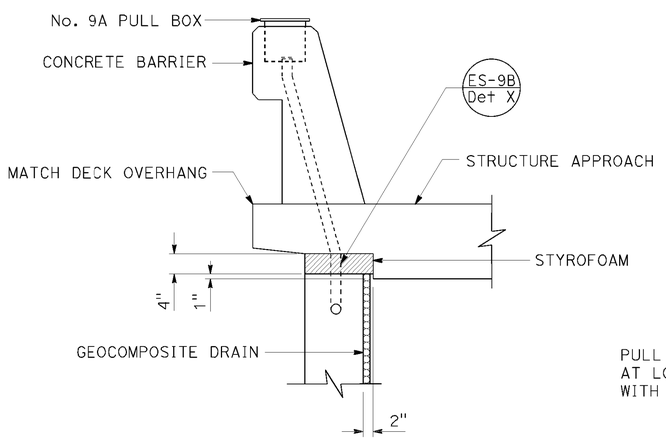
TO ACCOMPANY PLANS DATED October 8, 2021



SIDE VIEW



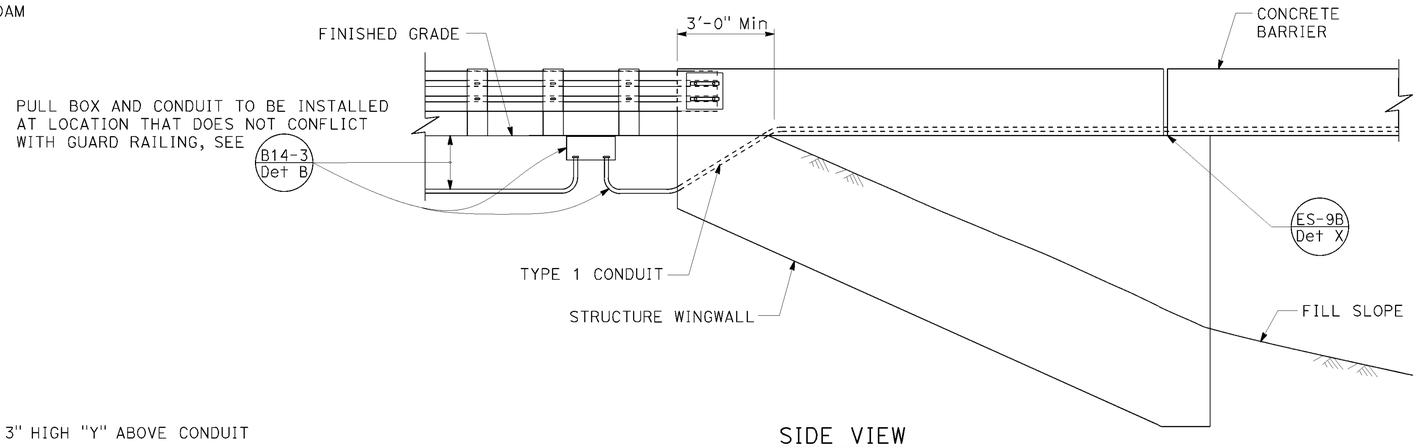
TOP VIEW



SECTION A-A

CONDUIT TERMINATION

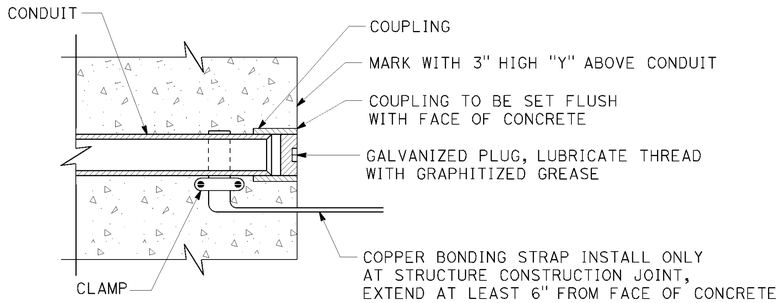
DETAIL A



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1587	1710

REGISTERED ELECTRICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
John L. Castro
No. E17490
Exp. 6-30-21
ELECTRICAL
STATE OF CALIFORNIA

October 16, 2020
PLANS APPROVAL DATE

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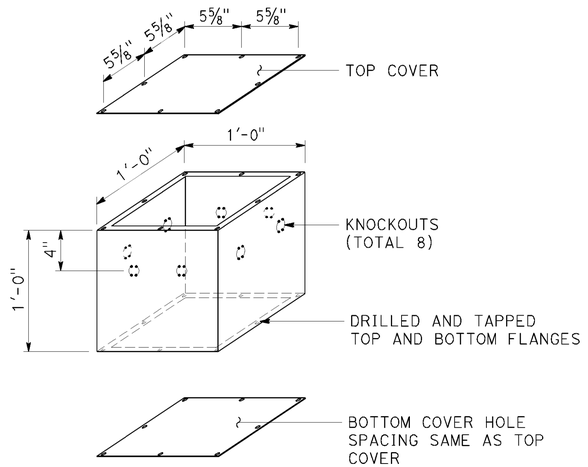
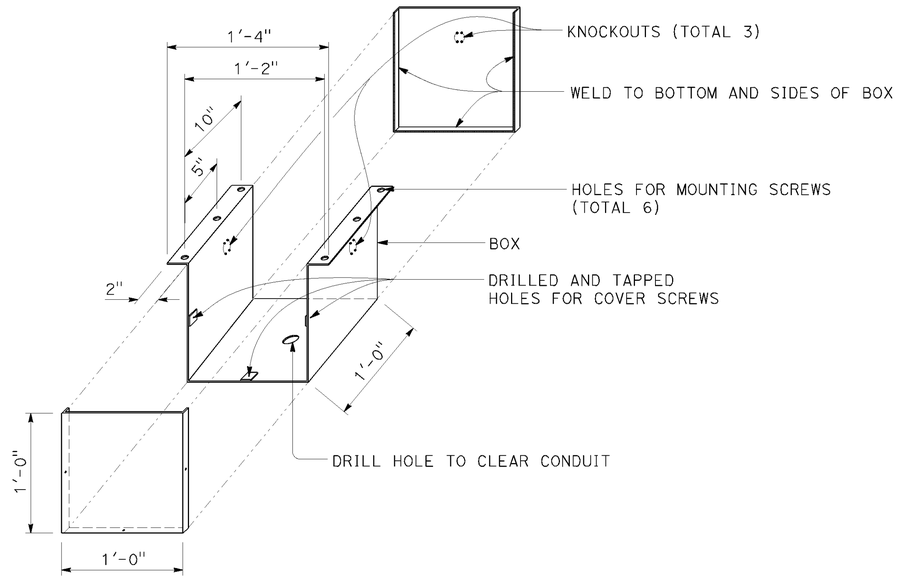
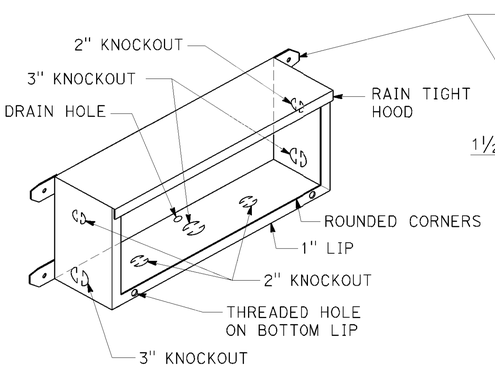
TO ACCOMPANY PLANS DATED October 8, 2021

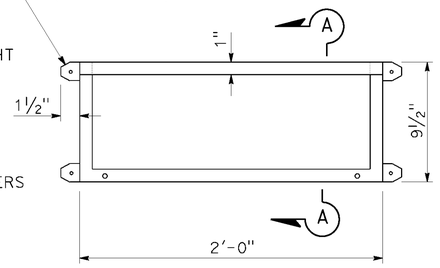


No. 7 PULL BOX

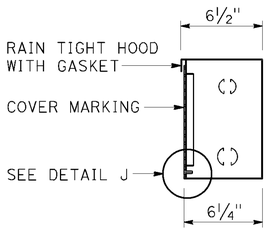


No. 8 PULL BOX



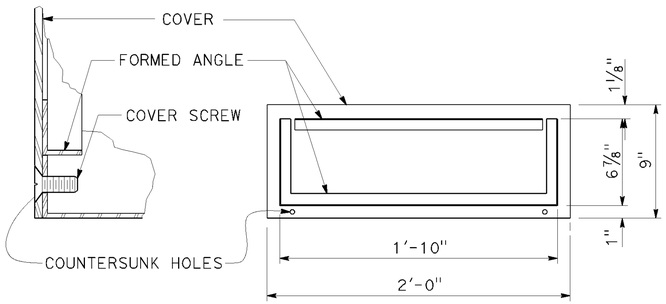


PLAN



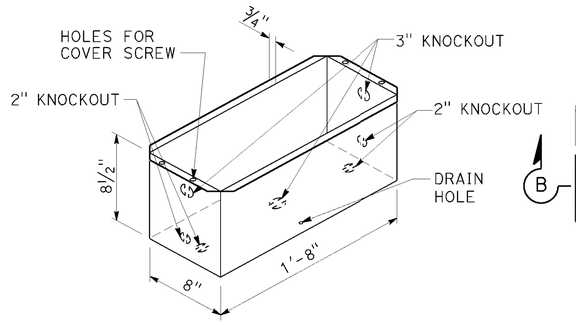
SECTION A-A

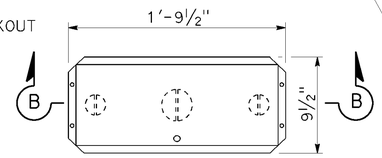
No. 9 PULL BOX



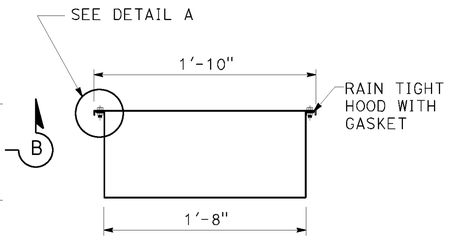
DETAIL J

COVER DETAIL

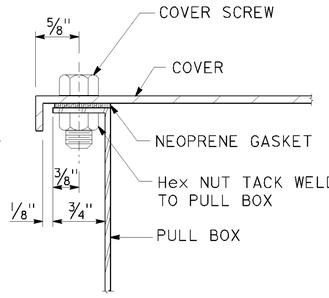




PLAN

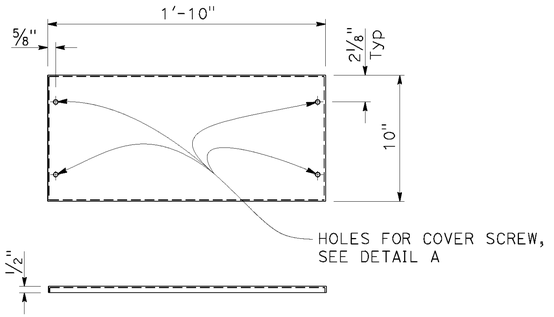


SECTION B-B



DETAIL A

No. 9A PULL BOX



COVER DETAIL

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

2018 REVISED STANDARD PLAN RSP ES-9C

6-18-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1588	1710

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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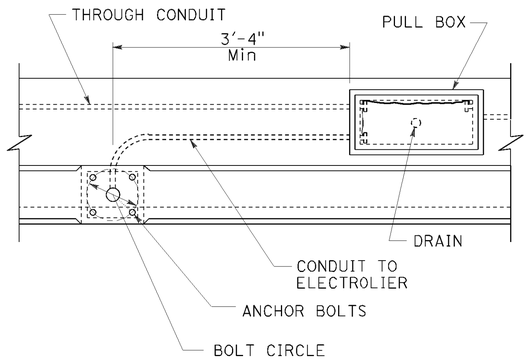
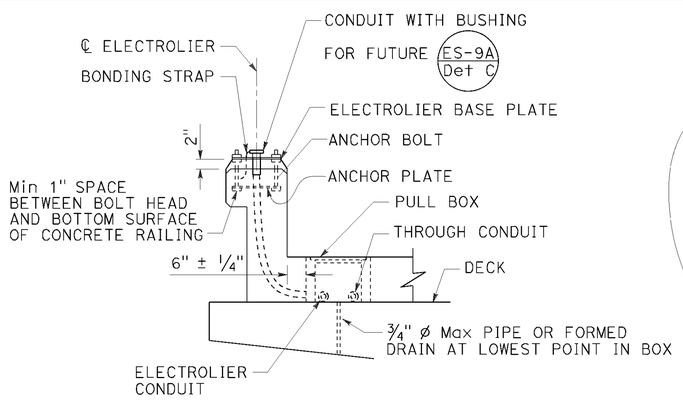
TO ACCOMPANY PLANS DATED October 8, 2021



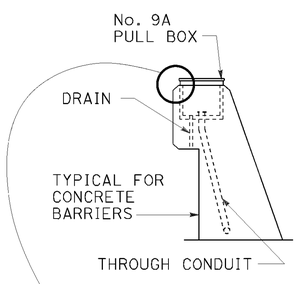
TOP VIEW



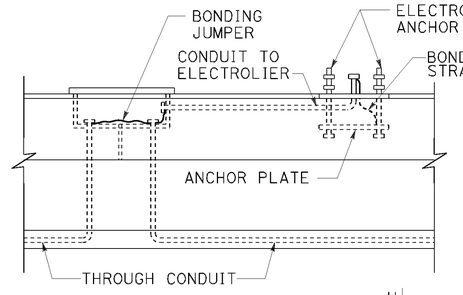
END VIEW

No. 3½, 5, OR 6 PULL BOX INSTALLATION

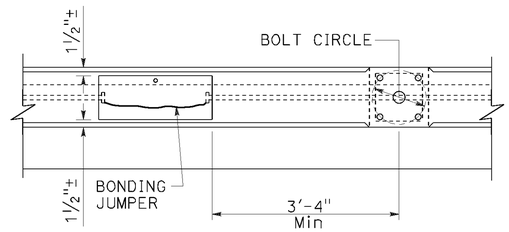
DETAIL A



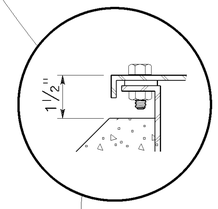
END VIEW

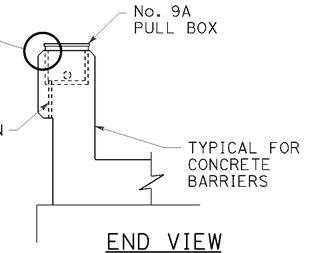


SIDE VIEW

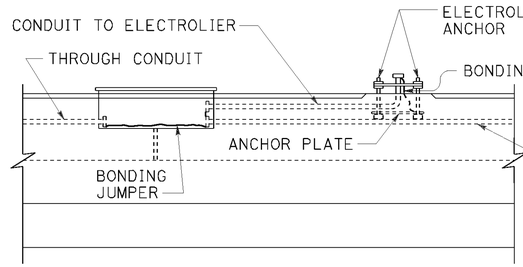


TOP VIEW





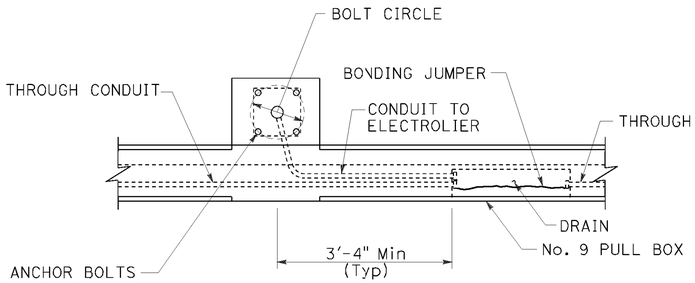
END VIEW



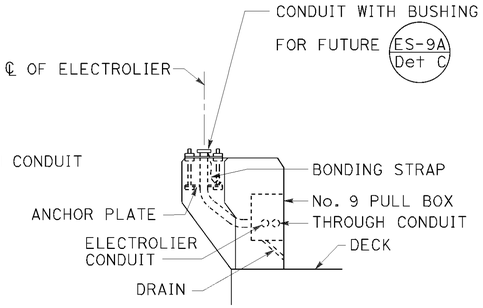
SIDE VIEW

No. 9A PULL BOX INSTALLATION

DETAIL C



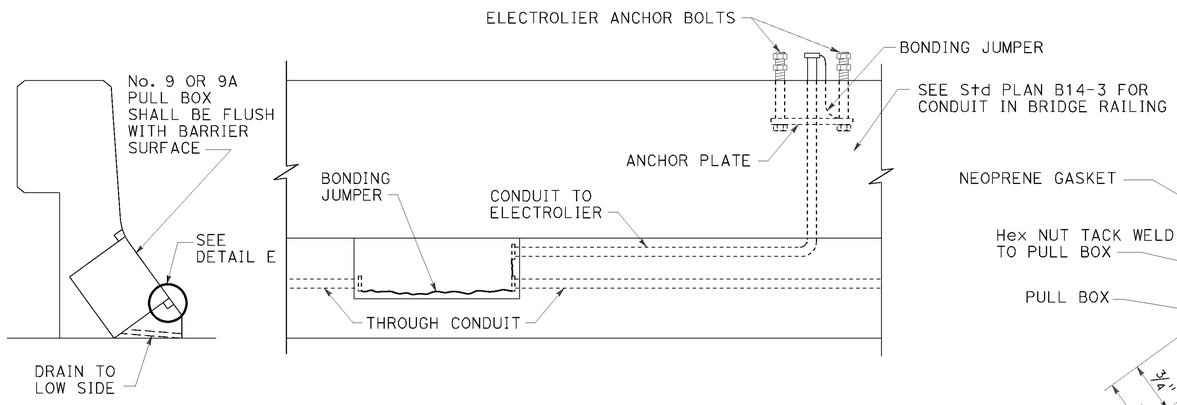
TOP VIEW



END VIEW

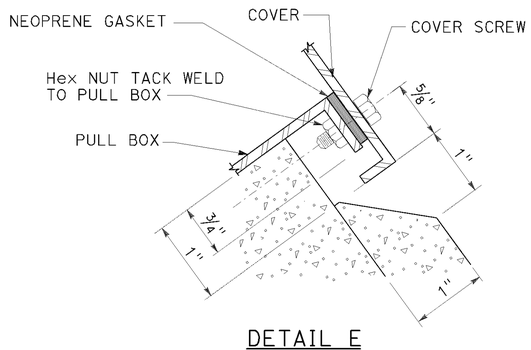
No. 9 PULL BOX INSTALLATION

DETAIL B



INSTALLATION IN SLOPING PARAPETS

DETAIL D



DETAIL E

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

2018 REVISED STANDARD PLAN RSP ES-9D

8-23-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1589	1710

H.R.F
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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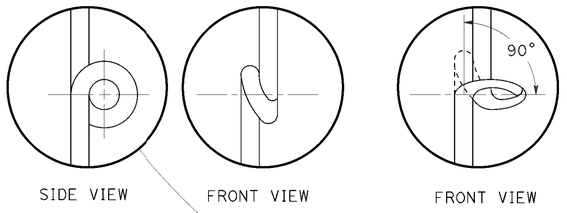
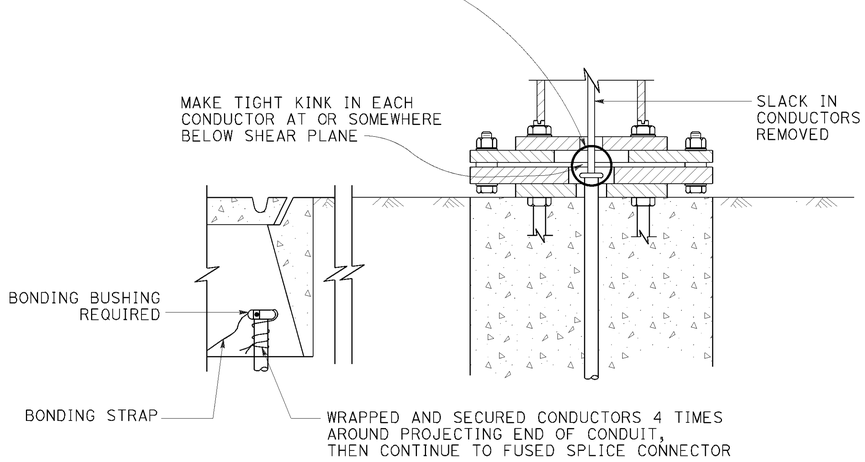
TO ACCOMPANY PLANS DATED October 8, 2021



STEP 1

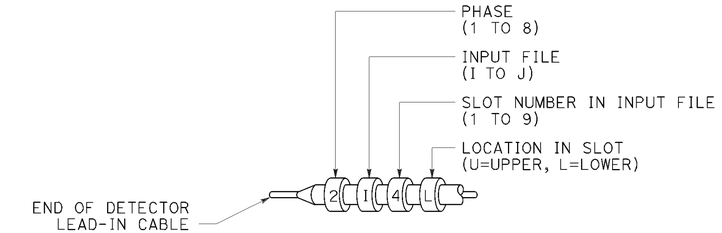
STEP 2

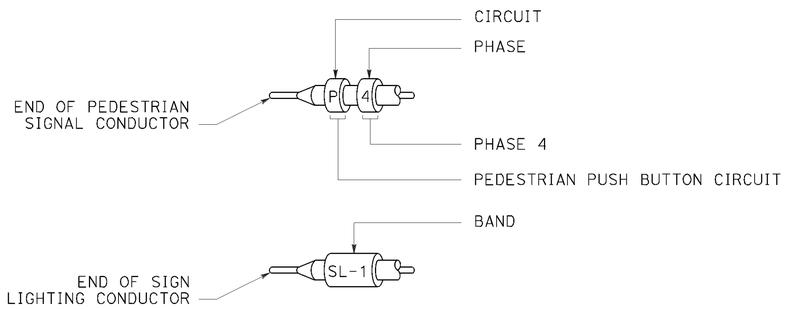
CONTINUE KINK TO AT LEAST 90° POSITION AS INDICATED IN STEP 2.



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1590	1710

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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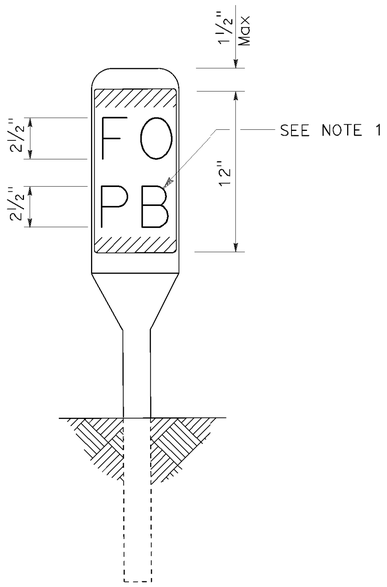
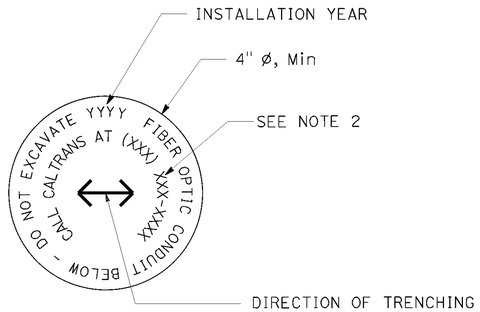
TO ACCOMPANY PLANS DATED October 8, 2021

NOTES:

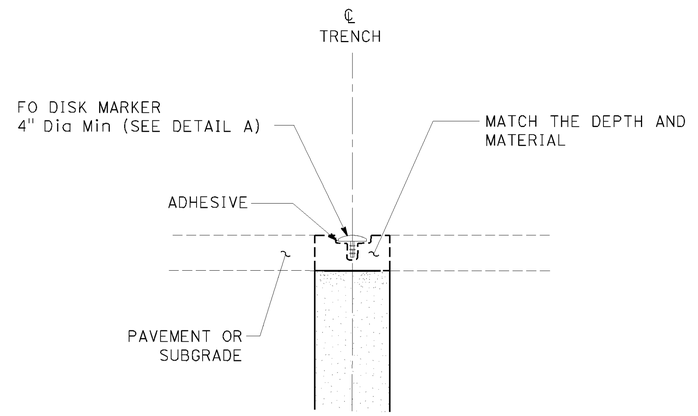
1. "PB" for Pull Box or "VT" for Vault.
2. Telephone number as specified.
3. 1" black text.
4. ½" black text.



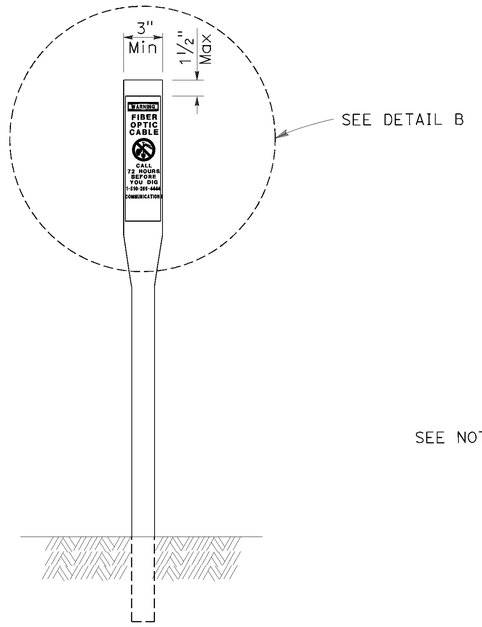
FIBER OPTIC MARKER
FOR VAULTS AND PULL BOXES



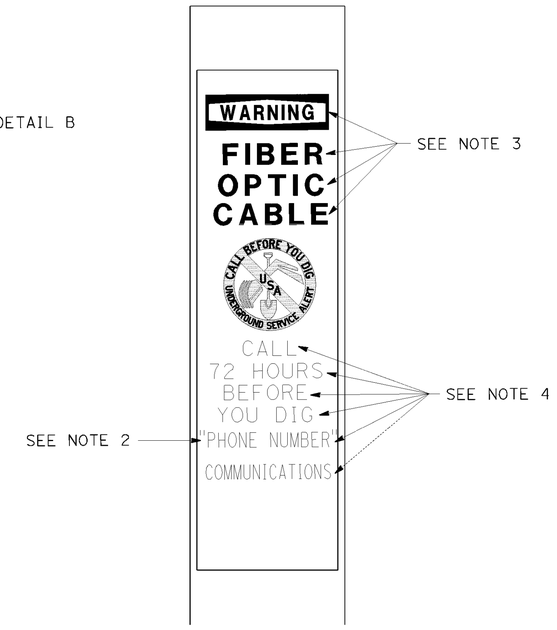
DISK MARKER ETCHING
DETAIL A



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1591	1710

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

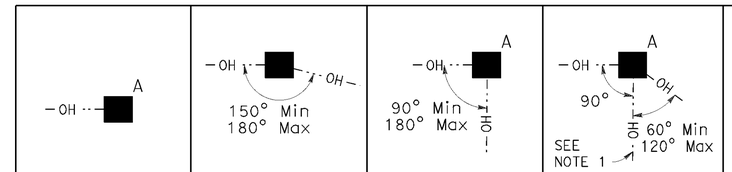
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED October 8, 2021

POLE SELECTION TABLE

LEGEND

- Wood Pole No Attachments
- A — Wood Pole with Attachments
- —OH— Overhead Bundle

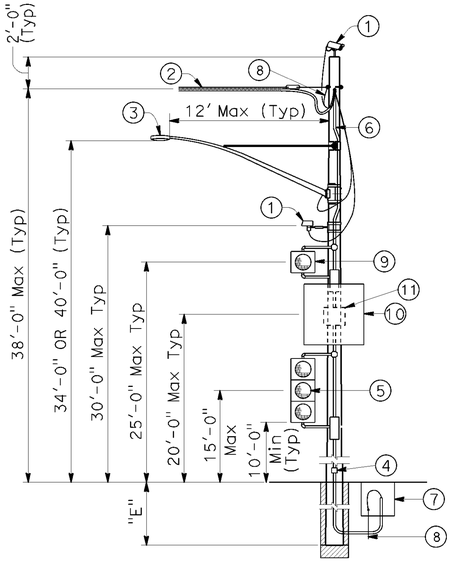


OVERHEAD BUNDLE HORIZONTAL SPAN (Max)		MAXIMUM d_p	CASE 1N				CASE 2N				CASE 3N				CASE 4N				CASE 5N
			1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1.0"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	N/A
50′		MINIMUM POLE CLASS	H-1	H-2	H-2	H-2	4	3	2	1	H-2	H-2	H-3	H-3	H-4	H-4	H-4	H-5	CLASS 1 E = 10′
		POLE EMBEDMENT (E)	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′												

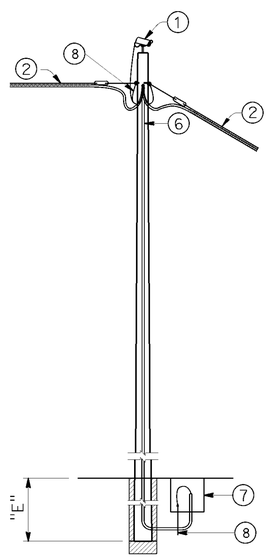
1. Camera or vehicle detection system
2. Overhead bundle consisting of a 3/8" ø messenger wire, overhead conductors, and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button or accessible push button
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with 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:

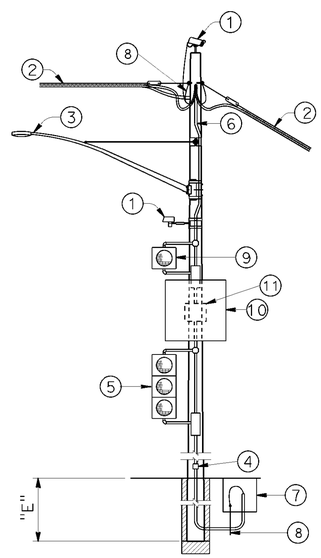
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100′.
2. Cases 1N, 3N and 4N may substitute the attachments shown in Case 5N if the photovoltaic panel is not included.
3. For Case 1N without an overhead bundle (item ②) use minimum pole class H-1 with E=11′.



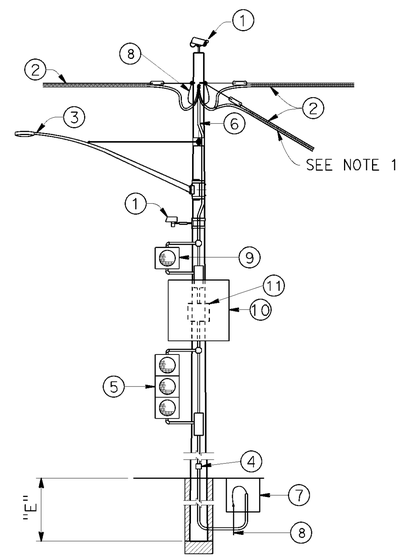
CASE 1N
POLE AT DEAD END WITH ATTACHMENTS
See Note 2



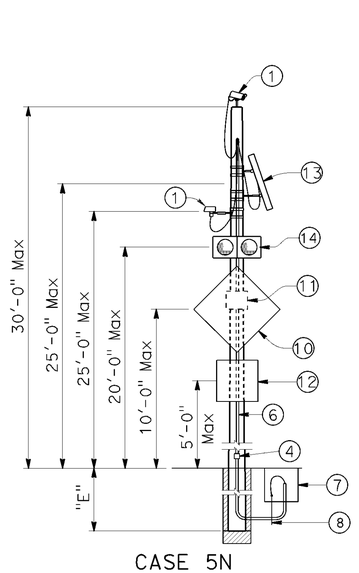
CASE 2N
POLE AT TANGENT WITHOUT ATTACHMENTS



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1592	1710

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 October 8, 2021

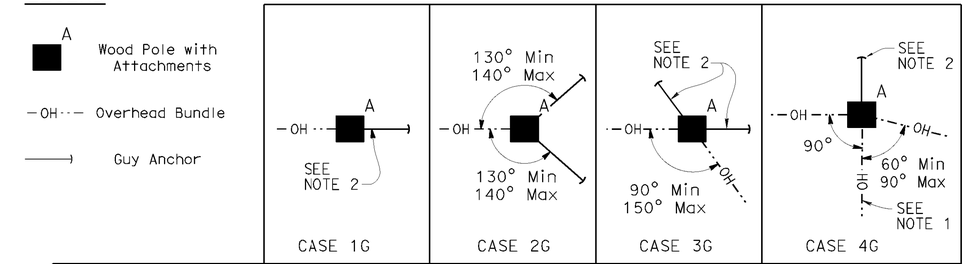
POLE SELECTION TABLE

LEGEND

A — Wood Pole with Attachments

—OH··— Overhead Bundle

——→ Guy Anchor

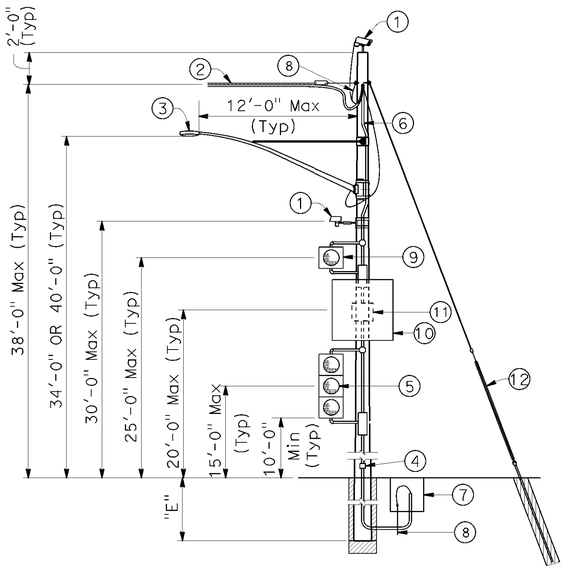


OVERHEAD BUNDLE HORIZONTAL SPAN (Max)		MAXIMUM d_p	CASE 1G				CASE 2G				CASE 3G				CASE 4G			
			1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"	1"	1.5"	2.0"	2.5"
	50′	MINIMUM POLE CLASS	H-1	H-1	H-2	H-2	1	1	1	1	1	1	1	H-1	H-2	H-2	H-3	H-3
		POLE EMBEDMENT (E)	10′				9′				9′				11′			
	100′	MINIMUM POLE CLASS	H-2	H-2	H-3	H-4	1	H-1	H-1	H-1	1	H-1	H-2	H-2	H-3	H-3	H-4	H-4
		POLE EMBEDMENT (E)	11′				9′				9′				12′			
	150′	MINIMUM POLE CLASS	H-3	H-3	H-4	H-5	H-1	H-1	H-2	H-2	H-2	H-3	H-3	H-3	H-4	H-5	H-5	H-6
		POLE EMBEDMENT (E)	11′				9′				9′				12′			
	200′	MINIMUM POLE CLASS	H-4	H-4	H-5	H-6	H-1	H-2	H-3	H-3	H-3	H-3	H-4	H-4	H-5	H-6		
		POLE EMBEDMENT (E)	11′				9′				9′				12′			

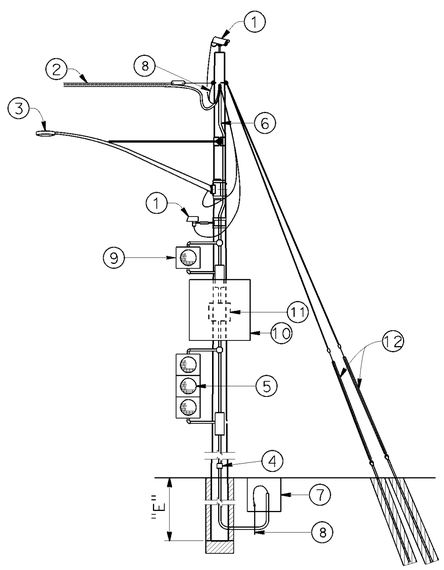
① Camera or vehicle detection system
② Overhead bundle consisting of a 3/8" ø messenger wire, overhead conductors, and lashing wire
③ Luminaire with mast arm
④ Pedestrian push button or accessible push button
⑤ Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
⑥ Riser with weather 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 ½" ø guy wire with white guy marker and strain insulator (for anchorage see "TEMPORARY WOOD POLES-DETAILS No. 2" sheet)

NOTES:

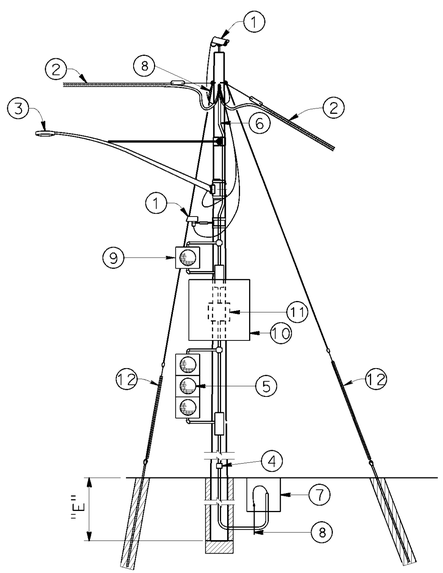
1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100′.
2. Guy wire in line with opposing span ± 5°.



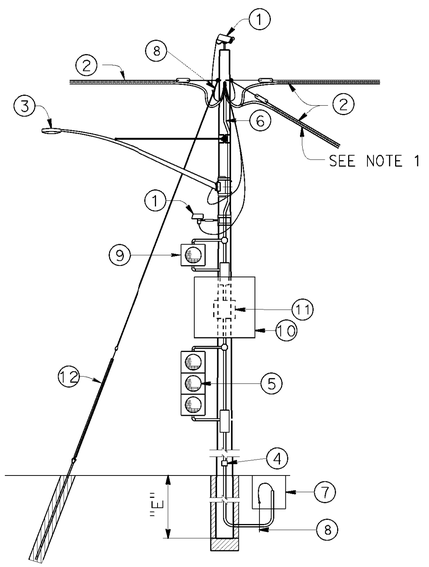
CASE 1G
POLE AT DEAD END
WITH ATTACHMENTS



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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1593	1710

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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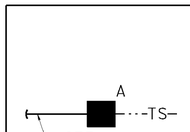
TO ACCOMPANY PLANS DATED October 8, 2021

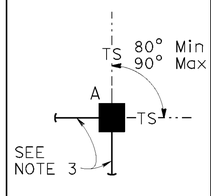
LEGEND

- A — Wood Pole with Attachments
- —TS— Overhead Bundle with Signal Faces (See Note 2)
- —OH— Overhead Bundle
- ⟶ Guy Anchor

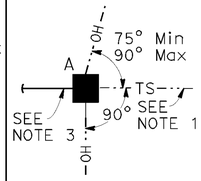
POLE SELECTION TABLE



CASE 1GT



CASE 2GT

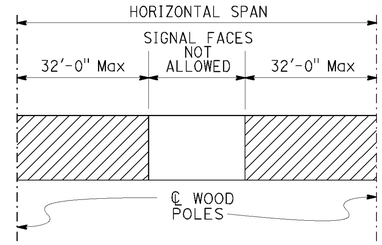


CASE 3GT

		MAXIMUM d_p	1"	1.5"	2.0"	1"	1.5"	2.0"	1"	1.5"	2.0"
OVERHEAD BUNDLE HORIZONTAL SPAN Max	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′		

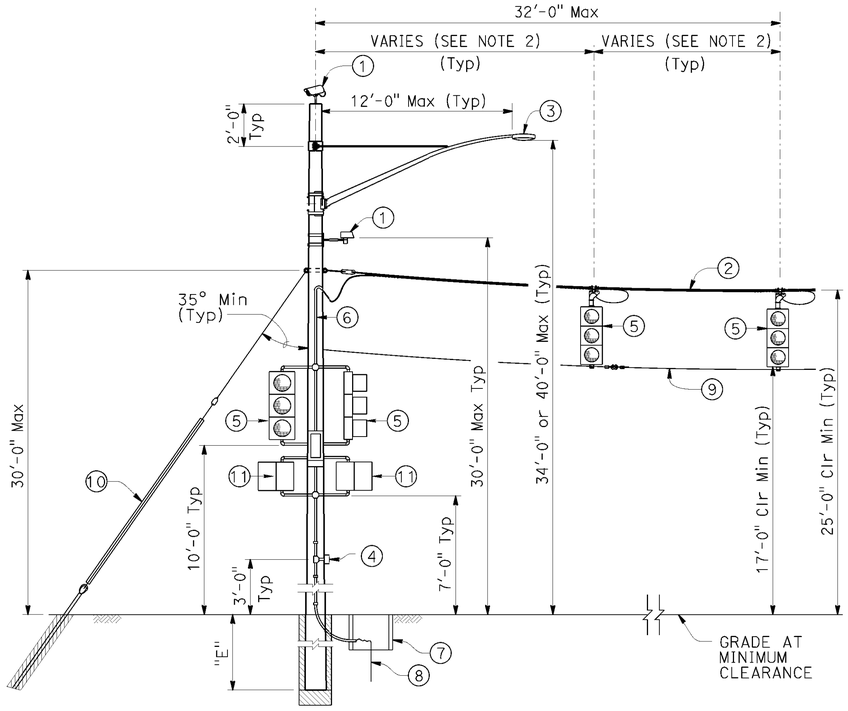
NOTES:

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°.



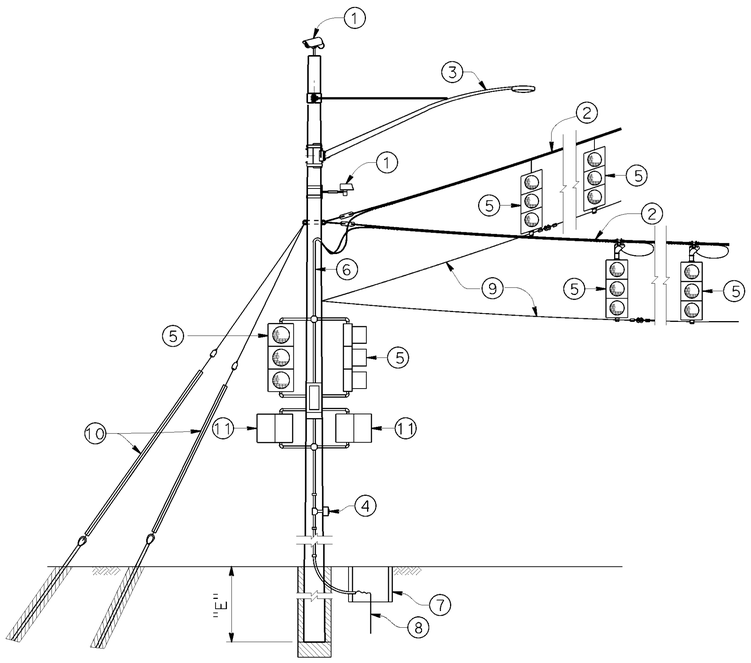
LOCATION OF SIGNAL FACES

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



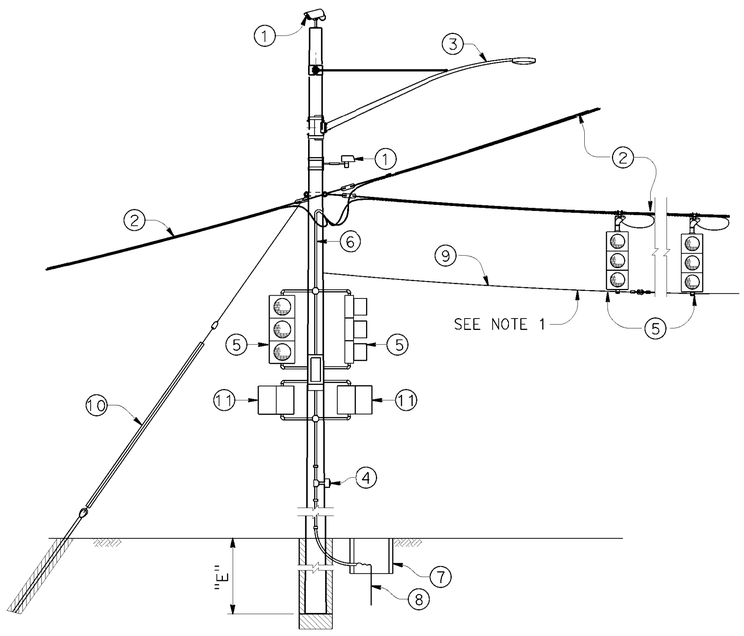
CASE 1GT

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1594	1710

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 October 8, 2021

2018 REVISED STANDARD PLAN RSP ES-18E

LEGEND

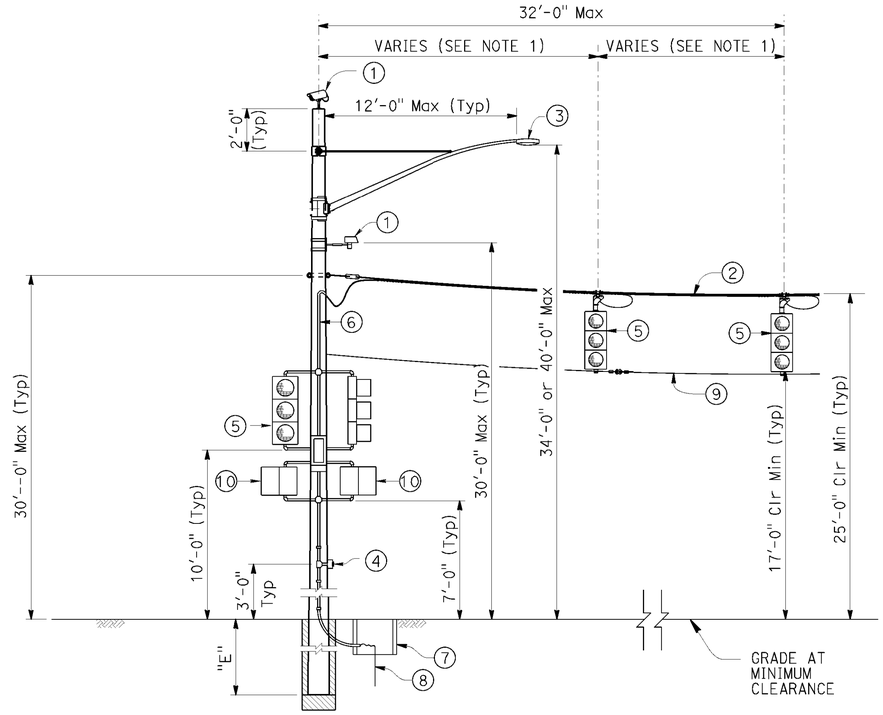
A — Wood Pole with Attcchments

—··TS—··· Overhead Bundle with Signal Faces (See Note 1)

POLE SELECTION TABLE

OVERHEAD BUNDLE HORIZONTAL SPAN (Max)			CASE 1NT A ··TS—·—·		
75′		MAXIMUM d_p	1"	1.5"	2.0"
		MINIMJM POLE CLASS	H-5	H-6	H-6
		POLE EMBEDMENT (E)	13′		

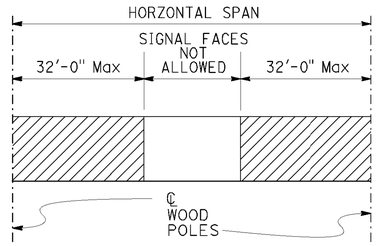
1. Camera or vehicle detection system
2. Overhead bundle consisting of a ⅜" ø messenger wire and overhead conductors and lashing wire
3. Luminaire with mast arm
4. Pedestrian push button or accessible push button
5. Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
6. Riser with 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

5-15-18

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1595	1710

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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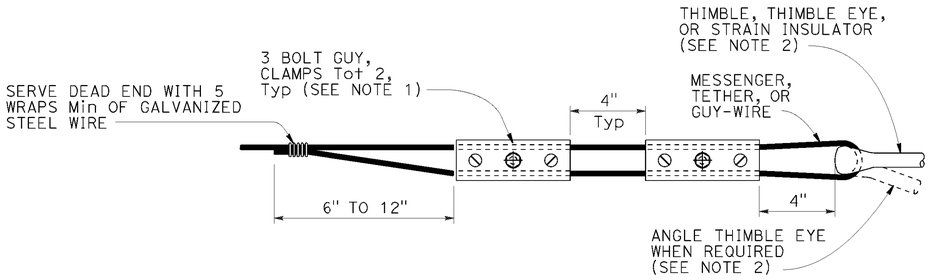
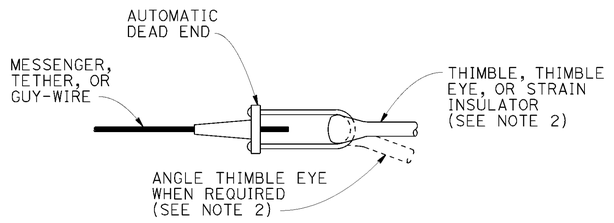
TO ACCOMPANY PLANS DATED October 8, 2021

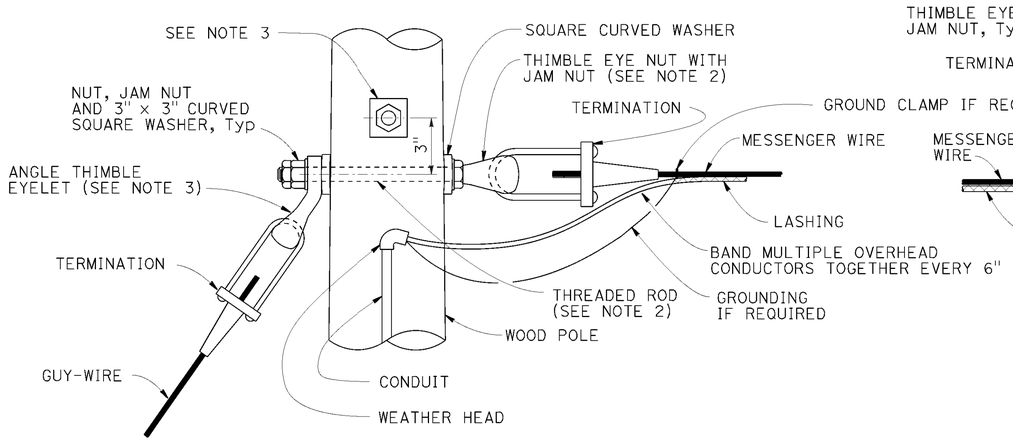
2018 REVISED STANDARD PLAN RSP ES-19A



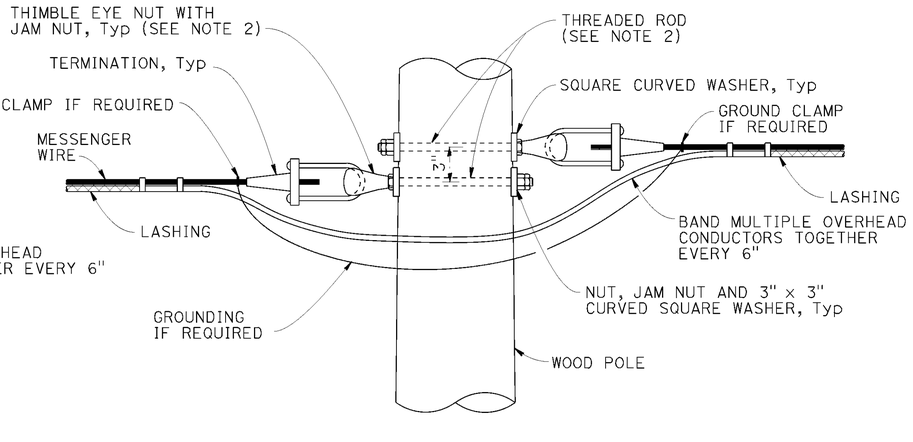
ALTERNATIVE TERMINATION OF MESSENGER WIRES USING GUY CLAMPS



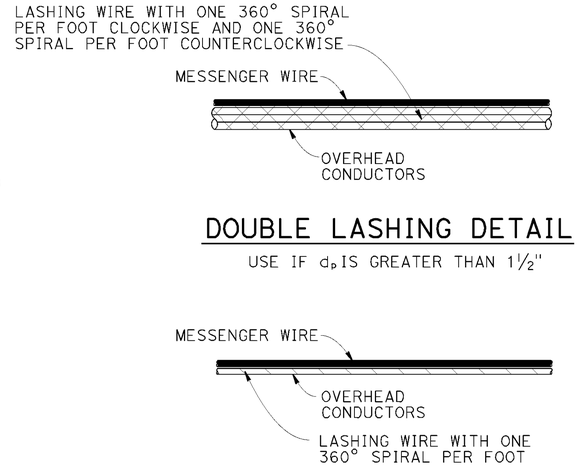
TERMINATION OF WIRES USING AUTOMATIC DEAD END



POLE AT DEAD END WITH GUY-WIRE CONNECTION



POLE AT TANGENT OR CORNER CONNECTION

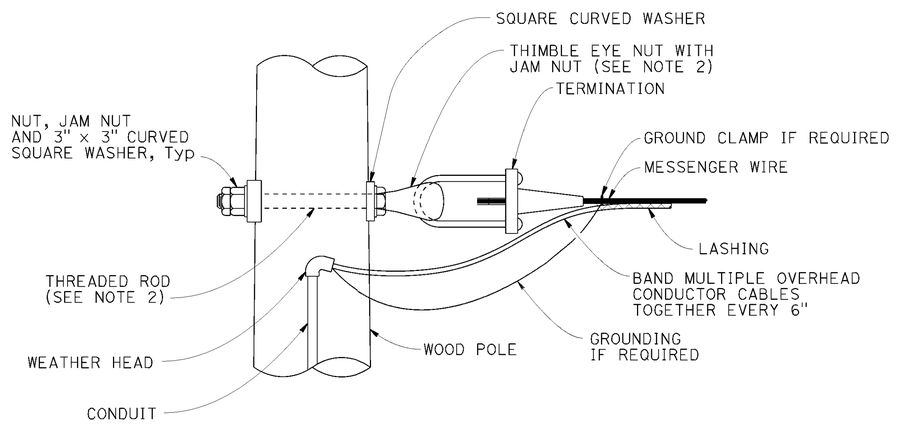


DOUBLE LASHING DETAIL

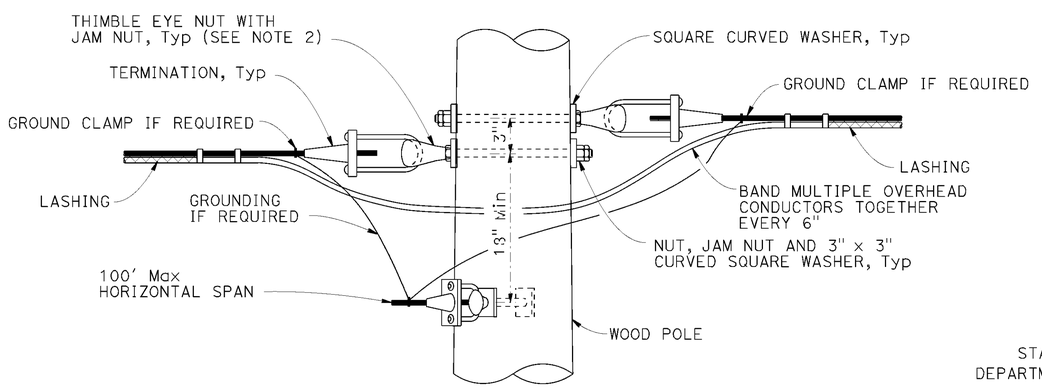
USE IF d_p IS GREATER THAN 1½"

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1596	1710

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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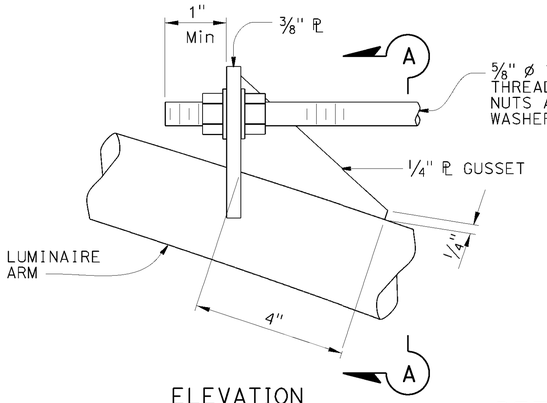
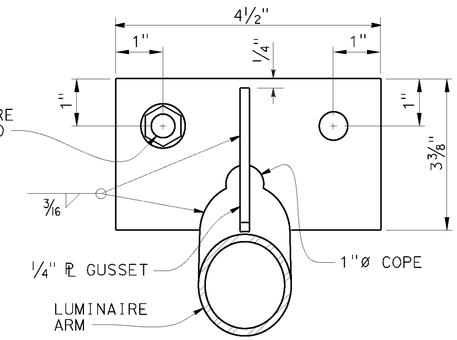
TO ACCOMPANY PLANS DATED October 8, 2021

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.

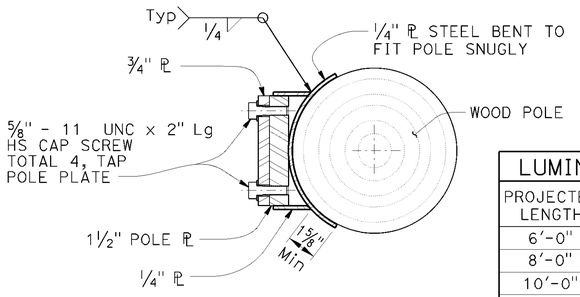


ELEVATION



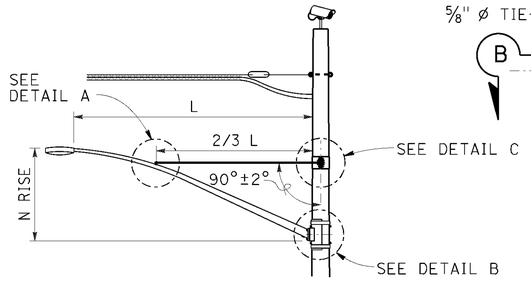
SECTION A-A

DETAIL A
TIE-ROD AT LUMINAIRE ARM

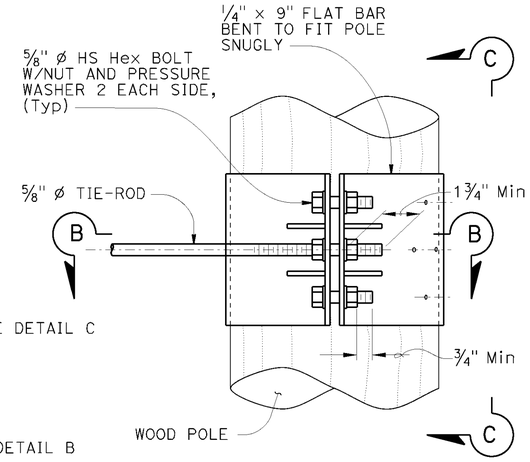


SECTION E-E

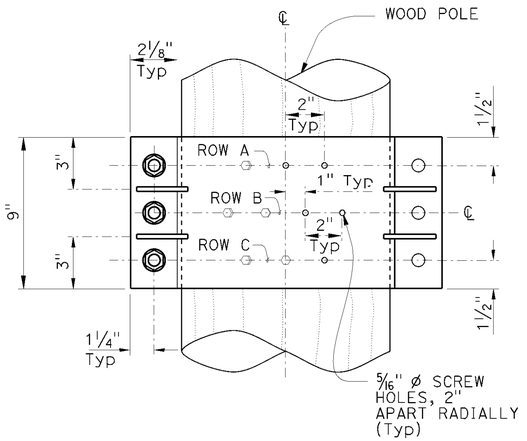
LUMINAIRE MAST ARM DATA			
PROJECTED LENGTH	N RISE	Min OD AT POLE	NOMINAL THICKNESS
6'-0"	2'-0"±	3 1/4"	0.1196"
8'-0"	2'-6"±	3 1/2"	
10'-0"	3'-3"±	3 7/8"	
12'-0"	4'-3"±		



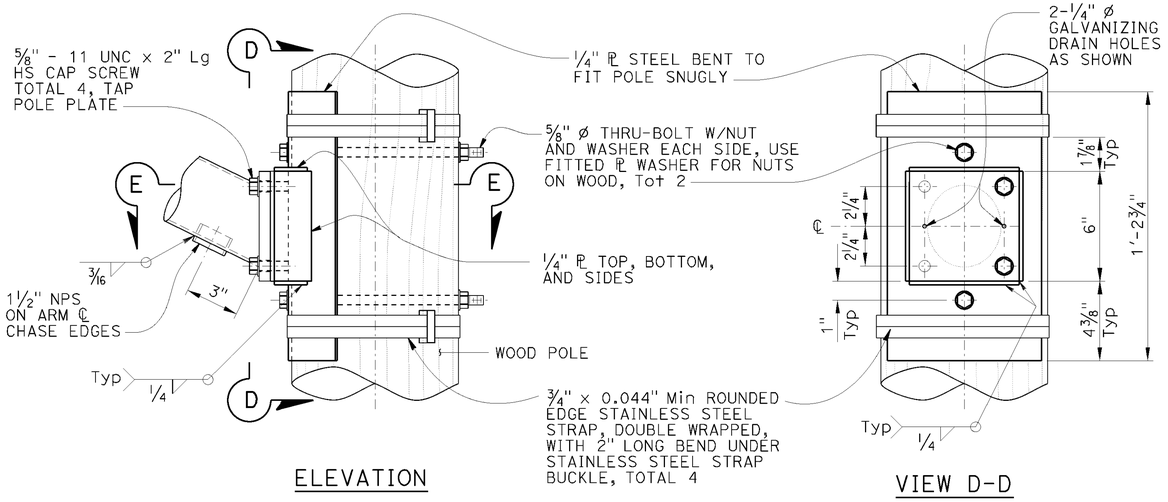
LUMINAIRE MAST ARM



ELEVATION



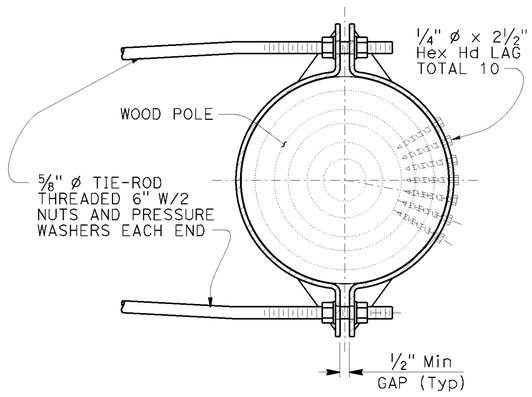
VIEW C-C



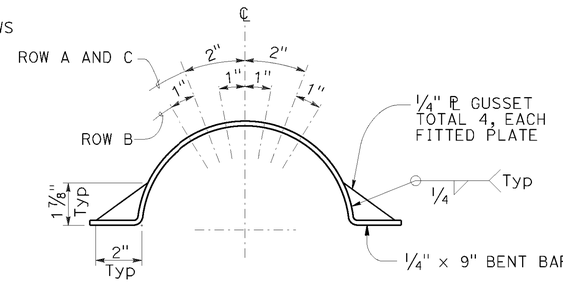
ELEVATION

VIEW D-D

DETAIL B
ARM CONNECTION DETAILS



SECTION B-B



LAG SCREW AND GUSSET PLATE LAYOUT

DETAIL C
TIE-ROD AT POLE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES DETAILS No. 3

NO SCALE

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
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1597	1710

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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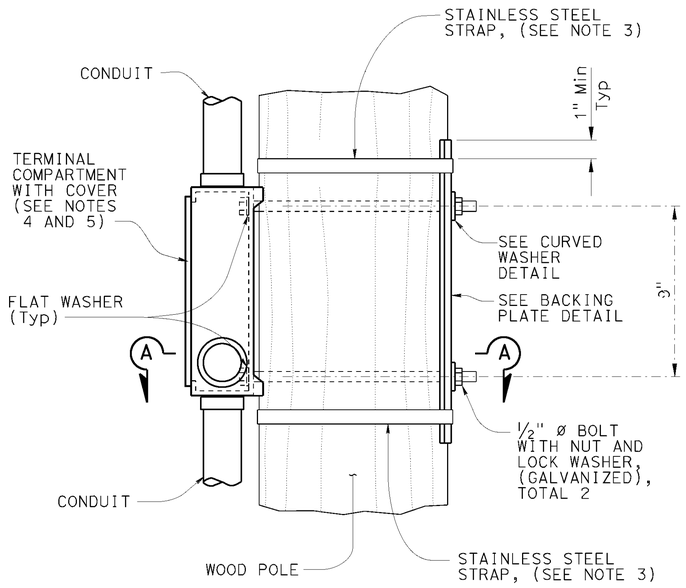
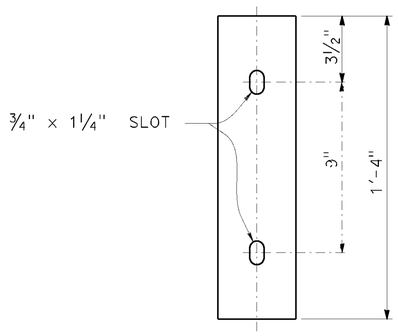
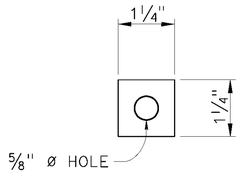
TO ACCOMPANY PLANS DATED October 8, 2021



ELEVATION



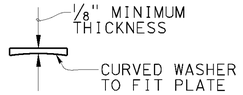
ELEVATION



ELEVATION

PLAN

BACKING PLATE DETAIL

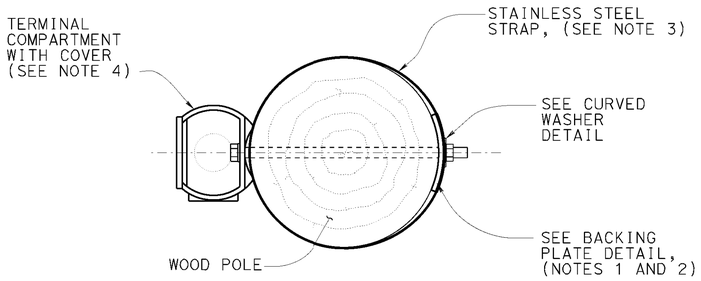


PLAN

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" × 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

TO ACCOMPANY CONTRACT PLANS DATED October 8, 2021

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1598	1710

DATE THIS PLAN APPROVED

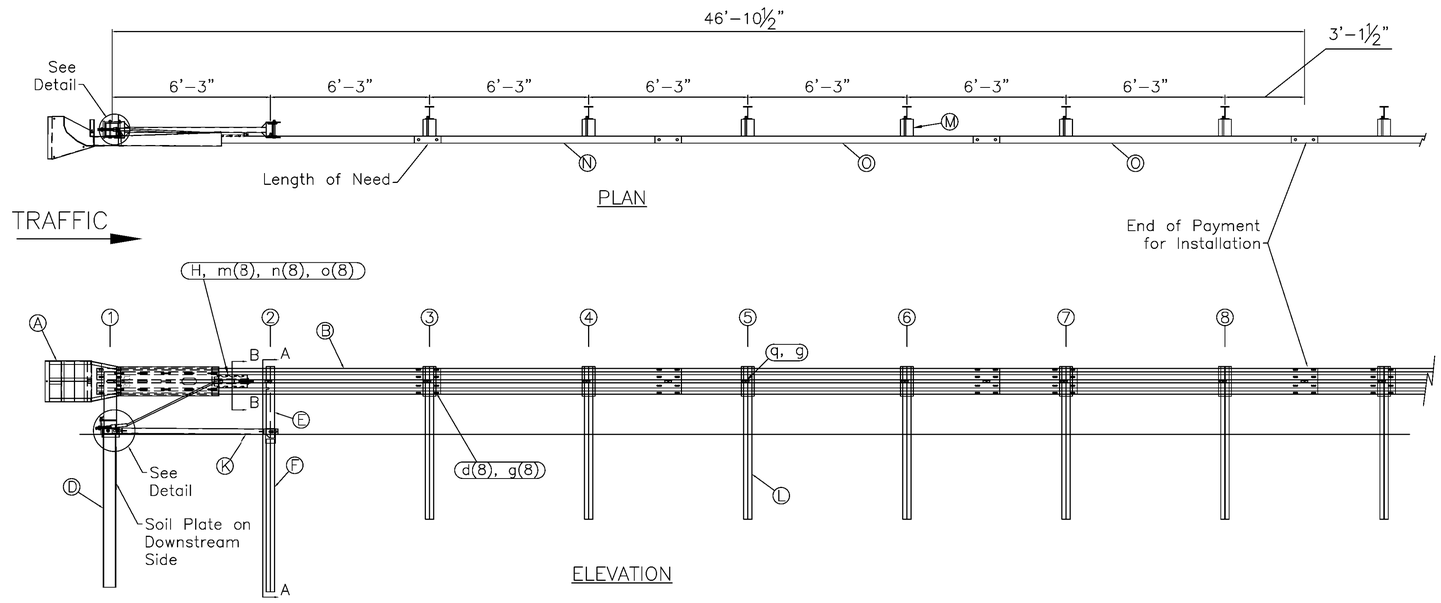
11-20-17

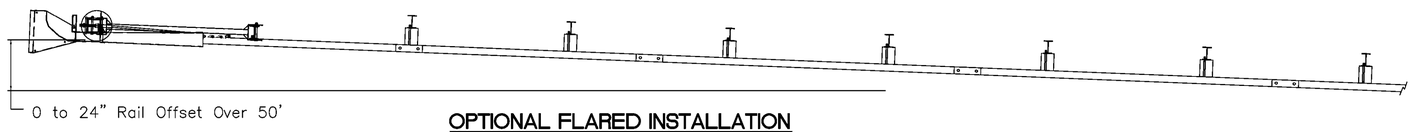
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
PAMELA BETH FERGUSON
No. C-56545
Exp. 06-30-19
CIVIL
STATE OF CALIFORNIA

APPROVED PLAN FOR CALTRANS USE

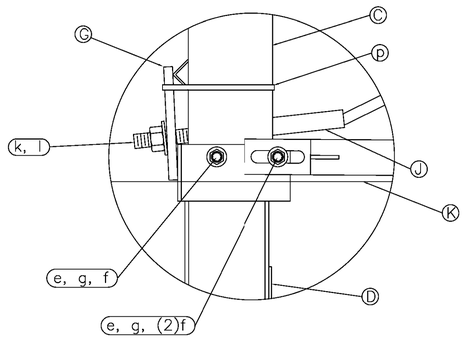




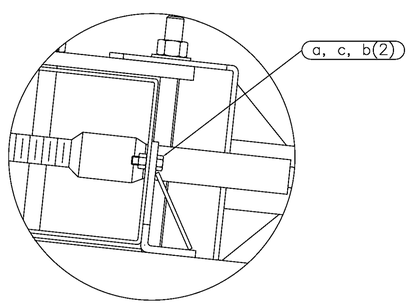
OPTIONAL FLARED INSTALLATION
25:1 Maximum flare rate

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	FIRST POST TOP (6X6X⅛" Tube)	MTPHP1A
D	1	FIRST POST BOTTOM (6' W6X15)	MTPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	STRUT	MS785
L	6	6x9 (6x8.5) STEEL POST	P621
M	6	RECYCLED PLASTIC BLOCK OR EQUIV.	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	25	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	2	5/8 Dia. x 9 HEX BOLT A449	B580904A
f	3	5/8 WASHER	W050
g	33	5/8 Dia. H.G.R NUT	N050
h	1	3/4 Dia. x 8 1/2 HEX BOLT GRD A449	B340854A
j	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2 RSI SHOULDER BOLT W/WASHER	SB12A
n	8	1/2 STRUCTURAL NUT	N012A
o	8	1/2 STRUCTURAL WASHER	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002

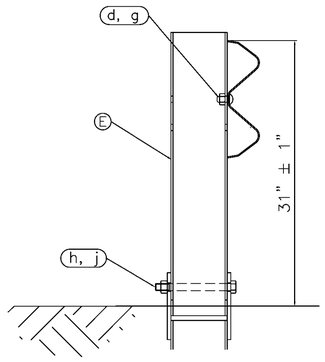
GENERAL NOTES:
1. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
2. The lower sections of the Posts 1&2 shall not protrude more than 4 in. above the ground (measured along a 5' cord longitudinal to the system). Site grading may be necessary to meet this requirement.
3. The lower section of the hinged post should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
4. When competent rock is encountered, a 12 in. Ø post hole, 20 in. deep cored into the rock surface may be used if approved by the engineer for Posts 1 and/or 2. Granular material will be placed in the bottom of the hole, approximately 2.5 in. deep to provide drainage. The first and/or second post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
5. The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.



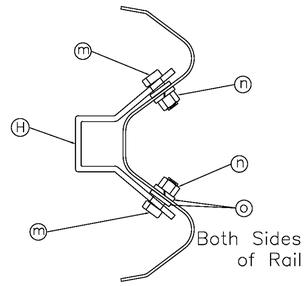
POST No. 1 CONNECTION DETAIL



IMPACT HEAD CONNECTION DETAIL



SECTION A-A
Post No. 2



SECTION B-B
Anchor Bracket

ROAD SYSTEMS, INC. 3616 OLD HOWARD COUNTY AIRPORT BIG SPRINGS, TX 79720	Midwest Guardrail System Terminal (8" Blocks) Test Level 3		
DRAWING No._Revision: MSKT-SP-MGS8		SHEET 1 OF 1	NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

BORDER LAST REVISED 8/1/2016 NAME OF FILE: MSKT-SP-MGS8-052017 UNIT 0733 PROJECT NUMBER & PHASE 04200002351

NOTES: UNLESS OTHERWISE SPECIFIED

1. SYSTEM TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. SEE ASSEMBLY AND INSTALLATION MANUAL FOR ADDITIONAL DETAILS.
3. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING THE POST TO PREVENT DAMAGE TO THE GALVANIZING ON THE TOP OF THE POST.
4. CABLES SHALL BE TIGHTENED USING THE HEX NUTS AT THE ISS PANEL UNTIL THEY ARE NOT VISIBLY SAGGING BETWEEN THE POST. DO NOT TIGHTEN THE CABLES AT THE FRONT OF THE GROUND STRUT ANCHOR.
5. SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
6. ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
7. IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH LOCAL STANDARDS AND SPECIFICATIONS.
8. EXTRA SELF-DRILLING SCREW IS PROVIDED.
9. ITEM IS PART OF KIT P/N: BSI-1702051-KT: MAX-TENSION SYSTEM HW KIT.
10. ITEM IS PART OF KIT P/N: BSI-1702052-KT: MAX-TENSION GUARDRAIL SPLICE HW KIT, IMPERIAL.
11. ITEM IS PART OF KIT P/N: BSI-1702053-KT: MAX-TENSION POST HW KIT, IMPERIAL.
12. RECESSED HEX NUTS TO BE INSTALLED ON TRAFFIC SIDE.

TO ACCOMPANY CONTRACT October 8, 2021
PLANS DATED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1599	1710

DATE THIS PLAN APPROVED
5-15-18

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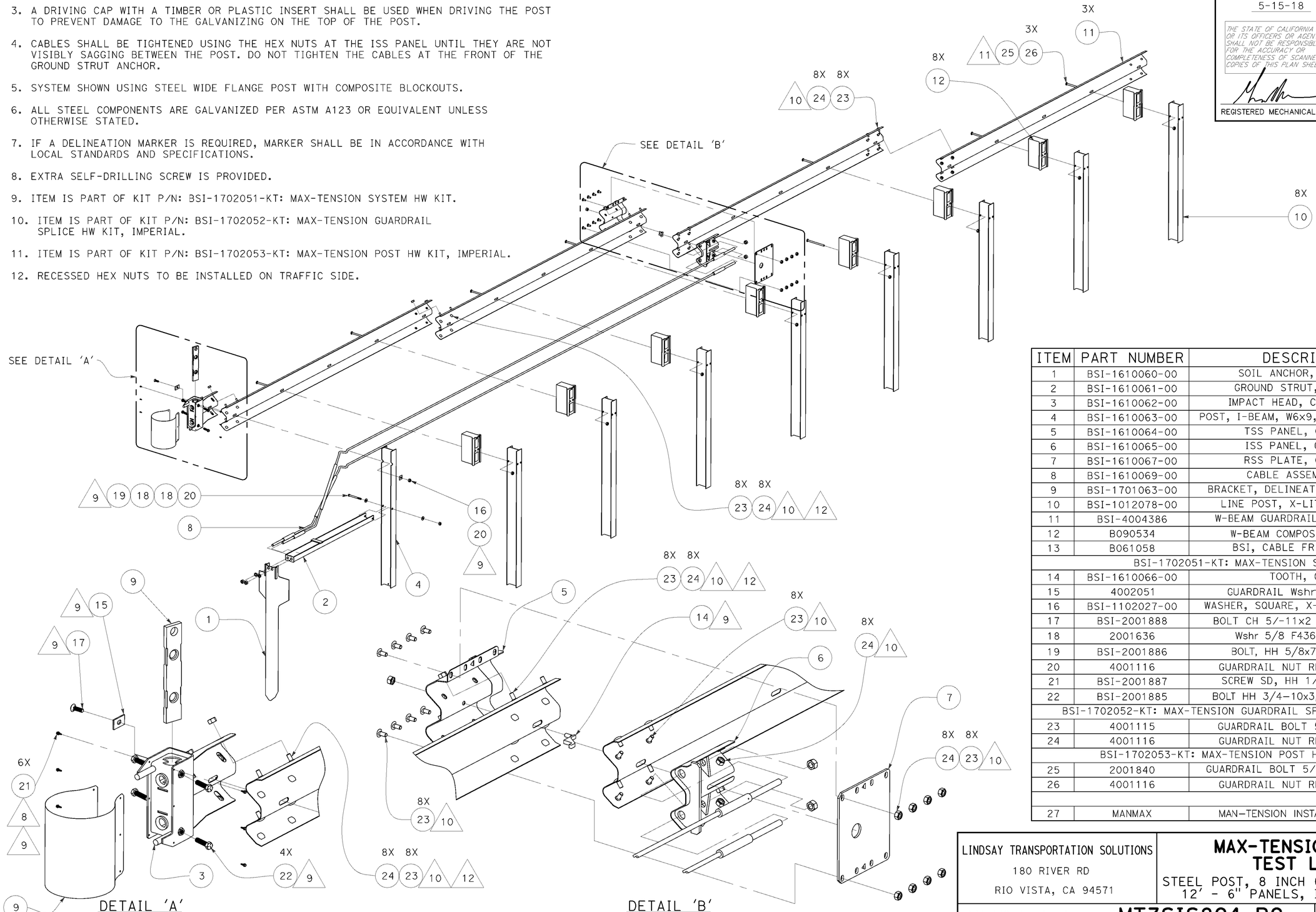
REGISTERED PROFESSIONAL ENGINEER
GERRIT A. DYKE
No. M33056
Exp. 6-30-19
MECHANICAL
STATE OF CALIFORNIA

REGISTERED MECHANICAL ENGINEER

APPROVED PLAN FOR CALTRANS USE



ITEM	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR, GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT, GALVANIZED	1
3	BSI-1610062-00	IMPACT HEAD, CHASE THREADS	1
4	BSI-1610063-00	POST, I-BEAM, W6x9, 6Ft., GALVANIZED	1
5	BSI-1610064-00	TSS PANEL, GALVANIZED	1
6	BSI-1610065-00	ISS PANEL, GALVANIZED	1
7	BSI-1610067-00	RSS PLATE, GALVANIZED	1
8	BSI-1610069-00	CABLE ASSEMBLY, MXTN	2
9	BSI-1701063-00	BRACKET, DELINEATION, MAX-TENSION	1
10	BSI-1012078-00	LINE POST, X-LITE, GALVANIZED	8
11	BSI-4004386	W-BEAM GUARDRAIL PANEL, RWM04a	4
12	B090534	W-BEAM COMPOSITE BLOCKOUT	8
13	B061058	BSI, CABLE FRICTION PLATE	1
BSI-1702051-KT: MAX-TENSION SYSTEM KIT			
14	BSI-1610066-00	TOOTH, GEOMET	1
15	4002051	GUARDRAIL Wshr Rect AASHTO	1
16	BSI-1102027-00	WASHER, SQUARE, X-LITE, GALVANIZED	1
17	BSI-2001888	BOLT CH 5/-11x2 FULLY THREADED	1
18	2001636	Wshr 5/8 F436 Struct MGalv	2
19	BSI-2001886	BOLT, HH 5/8x7, 2in THREADS	1
20	4001116	GUARDRAIL NUT RECESSED 5/8-11	3
21	BSI-2001887	SCREW SD, HH 1/4x3/4, 410 SS	6
22	BSI-2001885	BOLT HH 3/4-10x3, FULLY THREADED	4
BSI-1702052-KT: MAX-TENSION GUARDRAIL SPLICE HW KIT, IMPERIAL			
23	4001115	GUARDRAIL BOLT 5/8-11 x 1 1/4	48
24	4001116	GUARDRAIL NUT RECESSED 5/8-11	48
BSI-1702053-KT: MAX-TENSION POST HW KIT, IMPERIAL			
25	2001840	GUARDRAIL BOLT 5/8-11 x 10, MGalv	8
26	4001116	GUARDRAIL NUT RECESSED 5/8-11	8
27	MANMAX	MAN-TENSION INSTALLATION MANUAL	1

LINDSAY TRANSPORTATION SOLUTIONS
180 RIVER RD
RIO VISTA, CA 94571

MAX-TENSION TANGENT TEST LEVEL 3

STEEL POST, 8 INCH COMPOSITE BLOCKOUTS
12' - 6" PANELS, IMPERIAL HARDWARE

DRAWING No._Revision: MT3SIS8C4-RC | SHEET 1 OF 2 | NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

BORDER LAST REVISED 8/1/2016 | NAME OF FILE: $REQUEST | UNIT 0733 | PROJECT NUMBER & PHASE 04200002351

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala, CC	680	R11.0/R21.9, R0.0/R0.9	1600	1710

TO ACCOMPANY CONTRACT October 8, 2021
PLANS DATED

DATE THIS PLAN APPROVED
5-15-18

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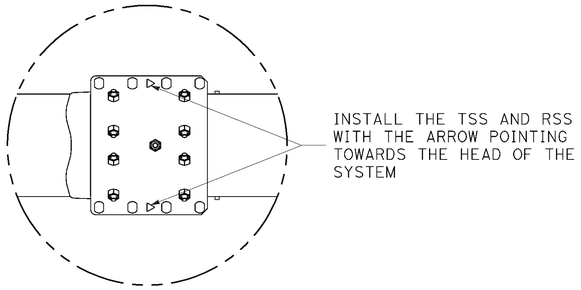
REGISTERED PROFESSIONAL ENGINEER
GERRIT A. DYKE
No. M33056
Exp. 6-30-19
MECHANICAL
STATE OF CALIFORNIA

REGISTERED MECHANICAL ENGINEER



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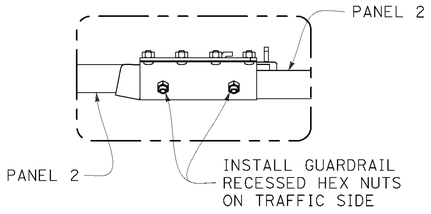

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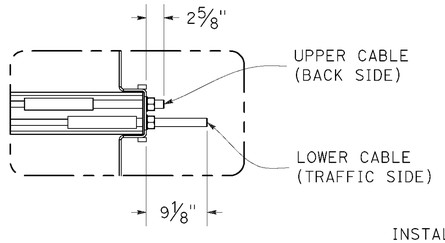

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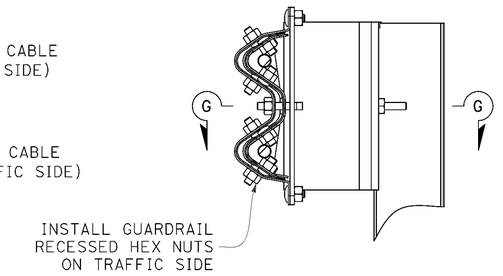
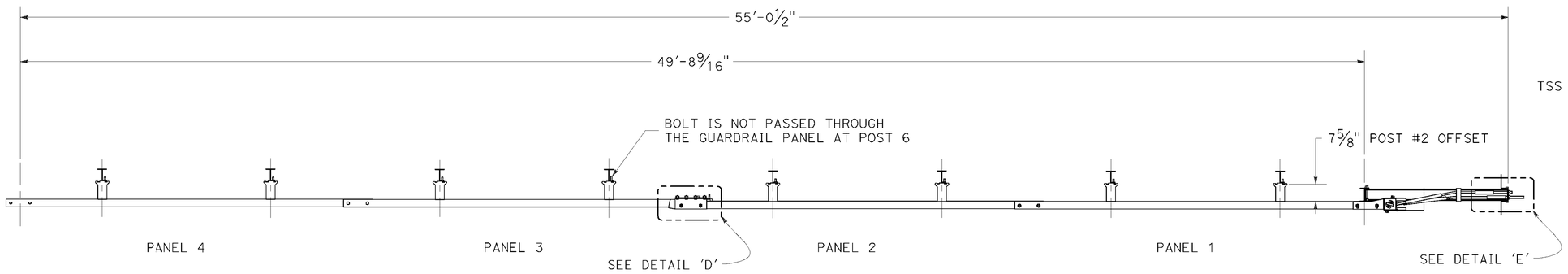
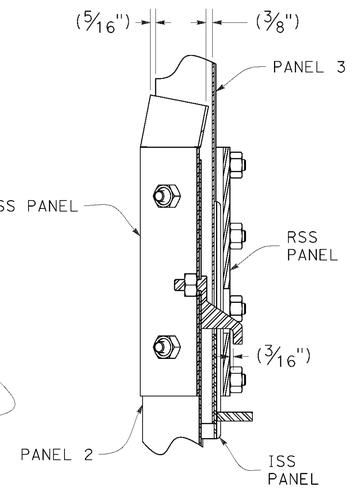


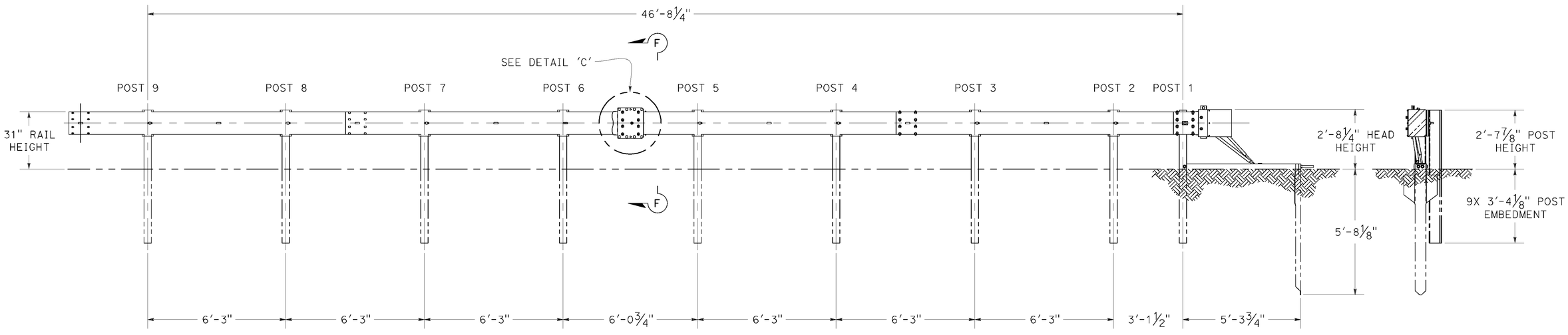
SECTION F-F



PLAN



SECTION G-G



ELEVATION

LINDSAY TRANSPORTATION SOLUTIONS 180 RIVER RD RIO VISTA, CA 94571	**MAX-TENSION TANGENT TEST LEVEL 3** STEEL POST, 8 INCH COMPOSITE BLOCKOUTS 12' - 6" PANELS, IMPERIAL HARDWARE		
DRAWING No._Revision:	**MT3SIS8C4-RC**	SHEET 2 OF 2	NO SCALE

APPROVED PLAN FOR CALTRANS USE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

BORDER LAST REVISED 8/1/2016 | NAME OF FILE: $REQUEST | UNIT 0733 | PROJECT NUMBER & PHASE 04200002351