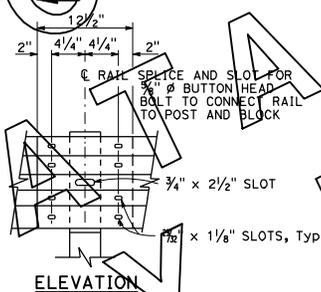
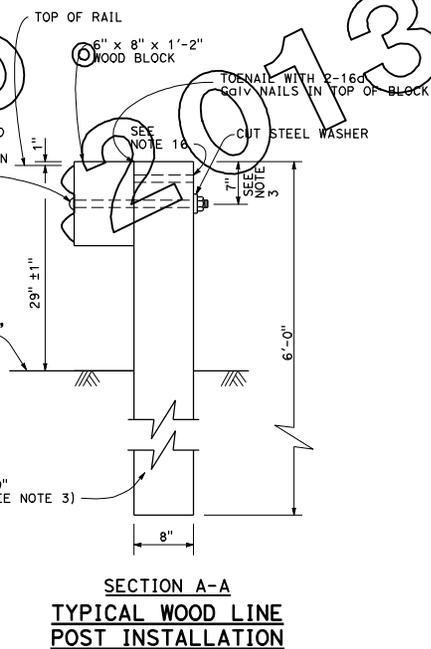
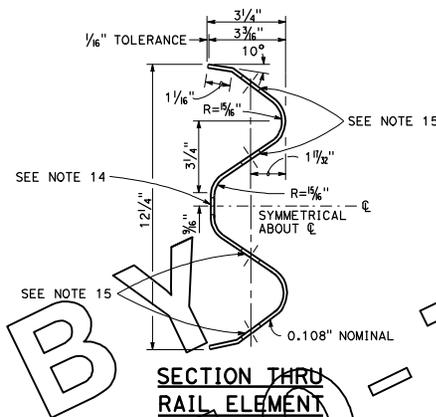


METAL BEAM GUARD RAILING WITH WOOD POST AND BLOCKS



- a) Connect the overlapped end of the rail elements with $\frac{7}{8}$ " x $1\frac{1}{8}$ " button head oval shoulder splice bolts inserted into the $\frac{3}{4}$ " x $1\frac{1}{8}$ " slots and bolted together with $\frac{3}{4}$ " recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- c) Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used.



NOTES:

1. For details of steel post installations, see Standard Plan A77A2.
2. For details of standard hardware used to construct guard railing, see Standard Plan A77B1.
3. For details of wood posts and wood blocks used to construct guard railing, see Standard Plan A77C1.
4. For additional installation details, see Standard Plan A77C3.
5. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
6. For guard railing typical layouts, see the A77E, A77F and A77G Series of Standard Plans.
7. To connect railing to terminal system end treatment, transition the top of railing height at a ratio of 120:1 to terminal system end treatment height plus one 12'-6" standard railing section at the transitioned height for a horizontal connection to the end treatment.
8. For guard railing end anchor details, see Standard Plans A77H1 and A77I2.
9. For details of guard railing transition to bridge railing, see Standard Plan A77J4.
10. For additional details of guard railing connection to bridge railings, see Standard Plans A77J1, A77J2 and A77K1.
11. For guard railing connection details to abutments and walls, see Standard Plan A77J3.
12. Direction of adjacent traffic indicated by \rightarrow .
13. For typical guard railing delineation and dike positioning details, see Standard Plan A77C4.
14. Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
15. Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
16. Additional hole in uppermost portion of line post is for potential future adjustments of railing height. See Standard Plan A77C1.
17. Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
STANDARD RAILING SECTION
(WOOD POST WITH
WOOD BLOCK)**

NO SCALE

A77A1

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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STATE OF CALIFORNIA

2010 STANDARD PLAN A77A1

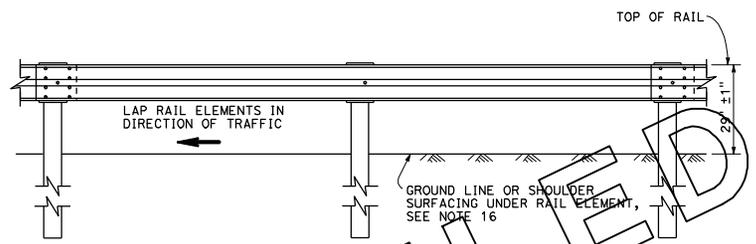
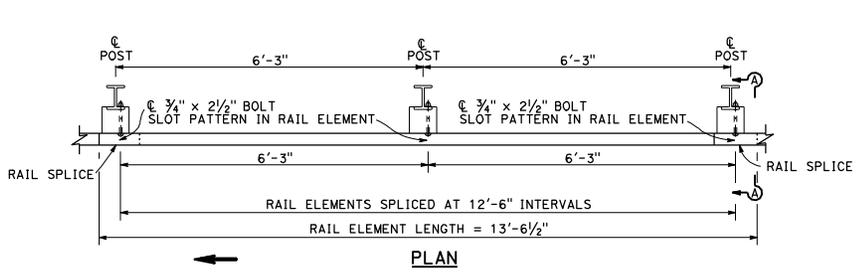
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

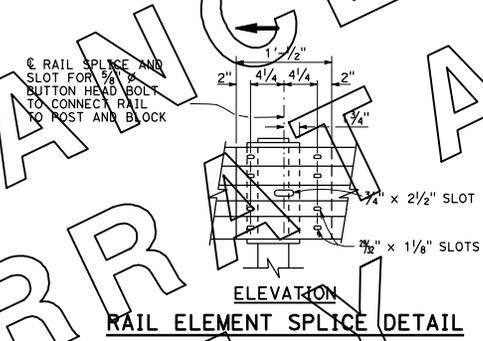
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No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

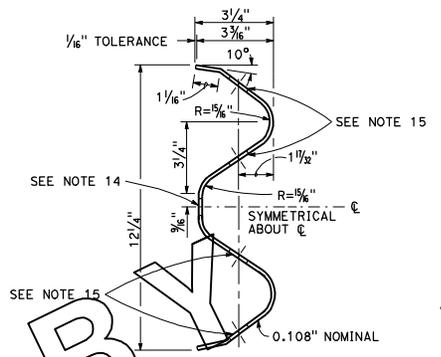
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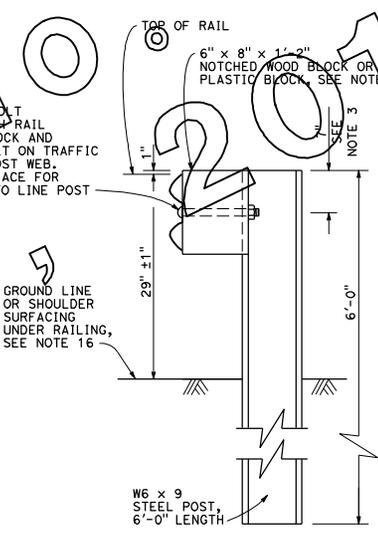
METAL BEAM GUARD RAILING WITH STEEL POSTS AND NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCKS



- Connect the overlapped end of the rail elements with $\frac{3}{8}$ " ϕ x $1\frac{1}{8}$ " button head oval shoulder splice bolts inserted into the $\frac{3}{4}$ " x $2\frac{1}{2}$ " slots and bolted together with $\frac{3}{8}$ " ϕ 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.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- 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



SECTION A-A TYPICAL STEEL LINE POST INSTALLATION

See Note 4

NOTES:

- For details of wood post installations, see Standard Plan A77A1.
- For details of standard hardware used to construct guard railing, see Standard Plan A77B1.
- For details of steel posts and notched wood blocks used to construct guard railing, see Standard Plan A77C2.
- For additional installation details, see Standard Plan A77C3.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- For guard railing typical layouts, see the A77E, A77F and A77G Series of Standard Plans.
- To connect railing to terminal system end treatment, transition the top of railing height at a ratio of 120:1 to terminal system end treatment height plus one 12'-6" standard railing section at the transitioned height for a horizontal connection to the end treatment.
- For guard railing end anchor details, see Standard Plans A77H1 and A77I2.
- For details of guard railing transition to bridge railing, see Standard Plan A77J4.
- For additional details of guard railing connection to bridge railings, see Standard Plans A77J1, A77J2 and A77K1.
- For dike positioning and guard railing delineation details, see Standard Plan A77C4.
- Direction of adjacent traffic indicated by \rightarrow .
- Notched face of block faces steel post.
- Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
- Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
- Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
STANDARD RAILING SECTION
(STEEL POST WITH NOTCHED
WOOD OR NOTCHED
RECYCLED PLASTIC BLOCK)**

NO SCALE

A77A2

47

2010 STANDARD PLAN A77A2

10-11-10

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

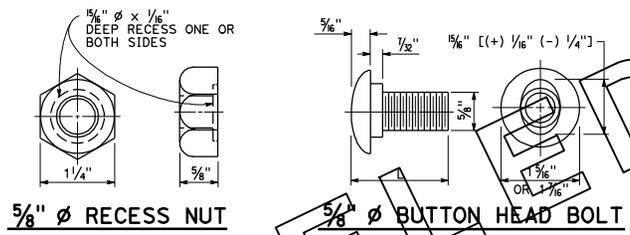
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REGISTERED CIVIL ENGINEER

May 20, 2011
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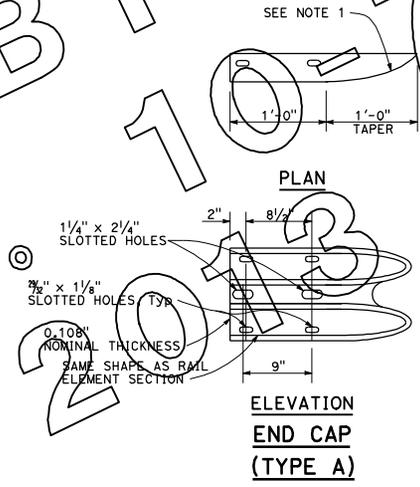
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No. CS0200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

ON



L	THREAD LENGTH
1 3/8"	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
** 23 1/4"	2" Min THREAD LENGTH
** 10"	4" Min THREAD LENGTH

** For nested rail applications.



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

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ERRATA NO. 2013
JULY 19, 2013

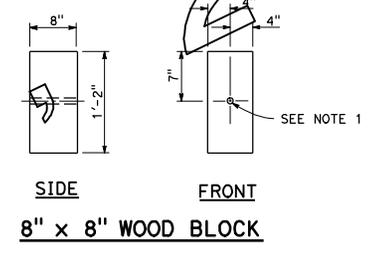
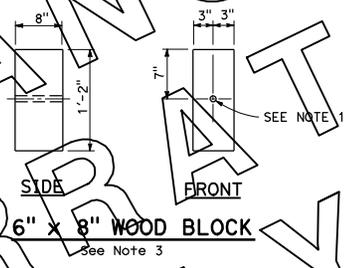
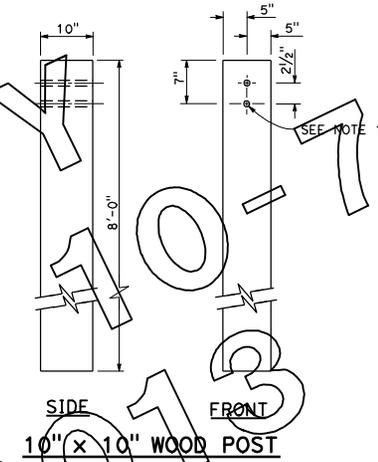
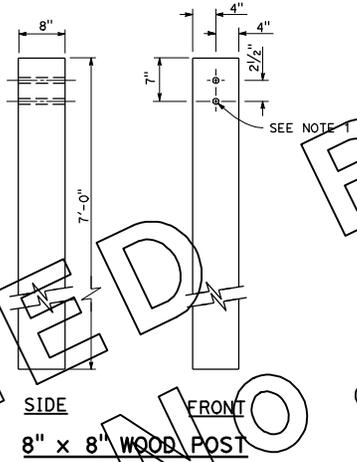
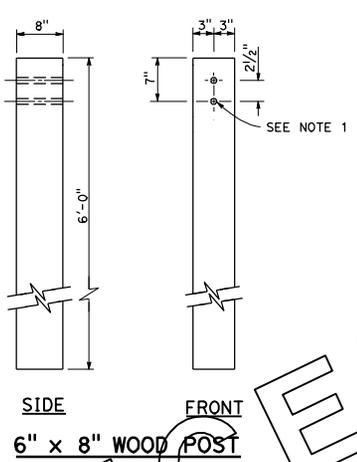
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DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
STANDARD HARDWARE**

NO SCALE

A77B1

2010 STANDARD PLAN A77B1

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

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

STATE OF CALIFORNIA
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**METAL BEAM GUARD RAILING
WOOD POST AND
WOOD BLOCK DETAILS**

NO SCALE

A77C1

CANCELLED BY 1013
 ERRATA NO 19
 JULY 19

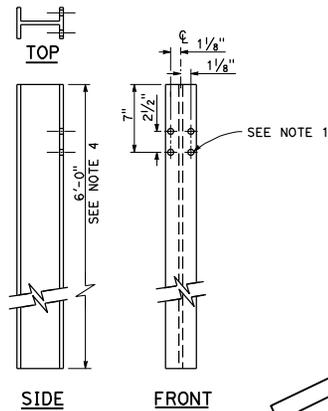
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
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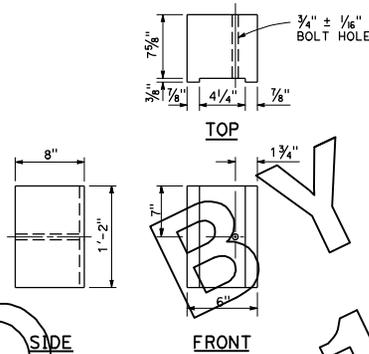
May 20, 2011
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STATE OF CALIFORNIA

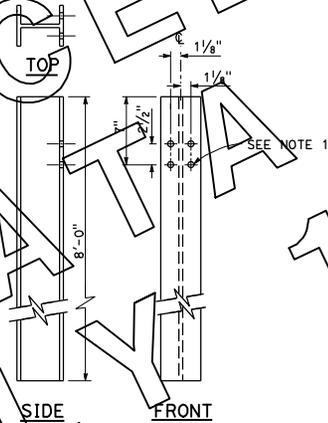
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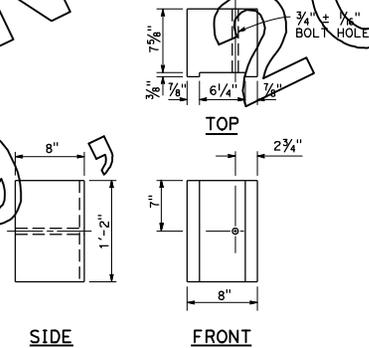
**W6 x 9
STEEL POST**
See Note 4



**6" x 8"
NOTCHED WOOD BLOCK**
See Notes 2 and 3



**W6 x 15
STEEL POST**



**8" x 8"
NOTCHED WOOD BLOCK**
See Notes 2 and 3

NOTES:

1. All holes in steel post shall be 3/8" Dia maximum.
2. Dimensions shown for wood block are nominal.
3. Notched face of block faces steel post.
4. 6'-0" length posts to be used for typical roadway installation, 7'-0" length posts to be used for narrow roadway installation. See Standard Plan A77C3.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
STEEL POST AND
NOTCHED WOOD BLOCK DETAILS**

NO SCALE

A77C2

50

2010 STANDARD PLAN A77C2

10-6-10

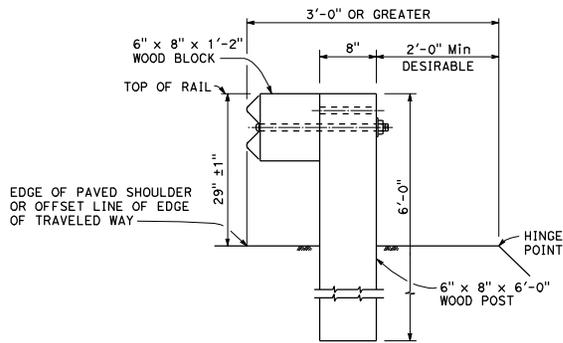
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
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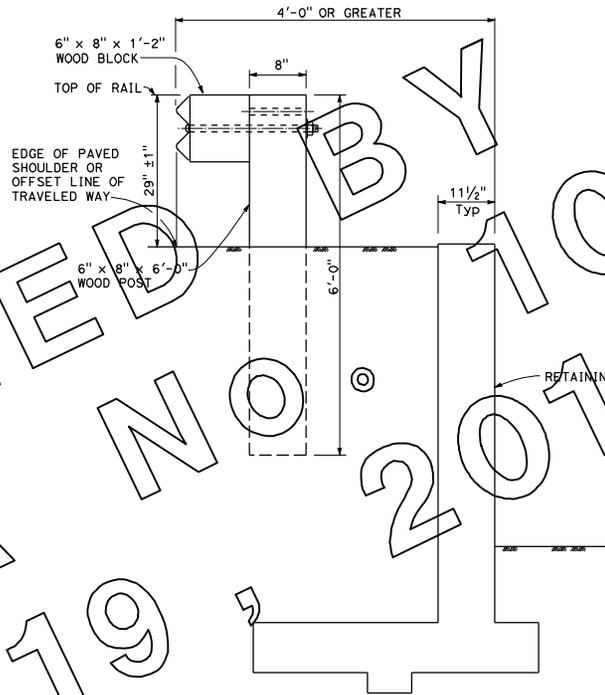
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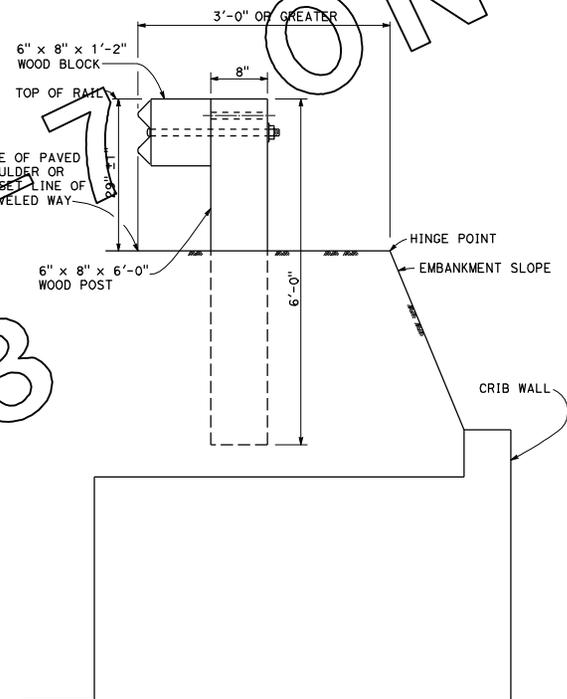
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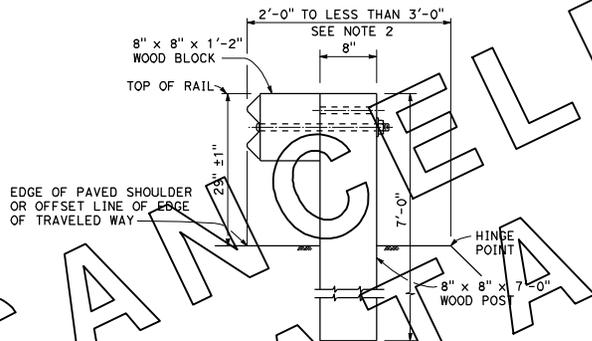
DETAIL A
TYPICAL ROADWAY
INSTALLATION
See Note 1



DETAIL C



DETAIL D



DETAIL B
NARROW ROADWAY
INSTALLATION
See Note 1

POST EMBEDMENT

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 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 7 steel post, 7'-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 additional installation details, see Standard Plans A77A1 and A77A2.
2. Where the distance between the face of the rail and the hinge point is less than 2'-0", see the Project Plans for special details.
3. For dike positioning with guard railing installations, see Standard Plan A77C4.

INSTALLATION AT EARTH RETAINING WALLS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING
TYPICAL LINE POST
EMBEDMENT AND
HINGE POINT OFFSET DETAILS

NO SCALE

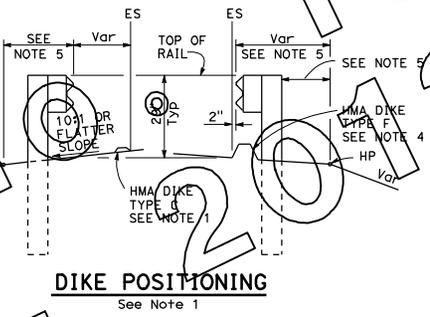
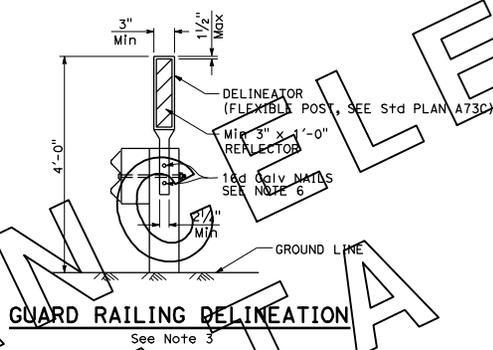
A77C3

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NOTES:

1. When necessary to place dike in front of face of guard railing, only Type C dike may be used. For dike details, see Standard Plan A87B.
2. For standard railing post embedment, see Standard Plans A77C3.
3. Guard railing delineation to be used where shown on the Project Plans.
4. When dike or curb is placed under guard railing, the maximum height of the dike or curb shall be 4". 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 A77C3.
6. For steel line posts, use 1/4" - 20 self-tapping screws in 0.22" diameter holes or 1/4" bolts in 3/8" diameter holes.

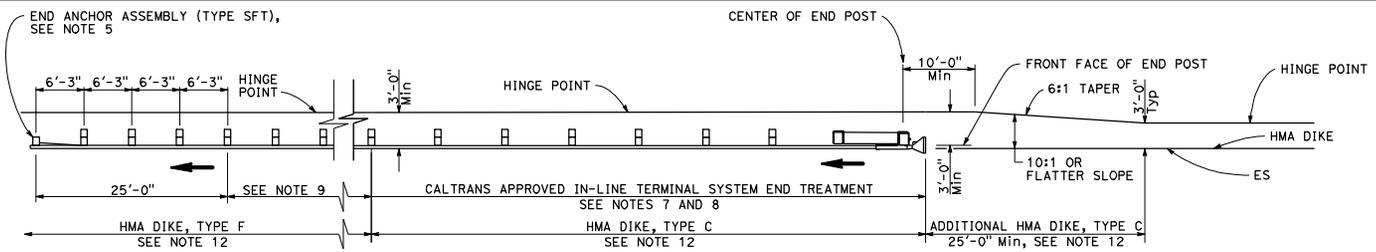


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 ERRATA JULY 19, 2013

STATE OF CALIFORNIA
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**METAL BEAM GUARD RAILING
 TYPICAL RAILING DELINEATION
 AND DIKE POSITIONING DETAILS**
 NO SCALE

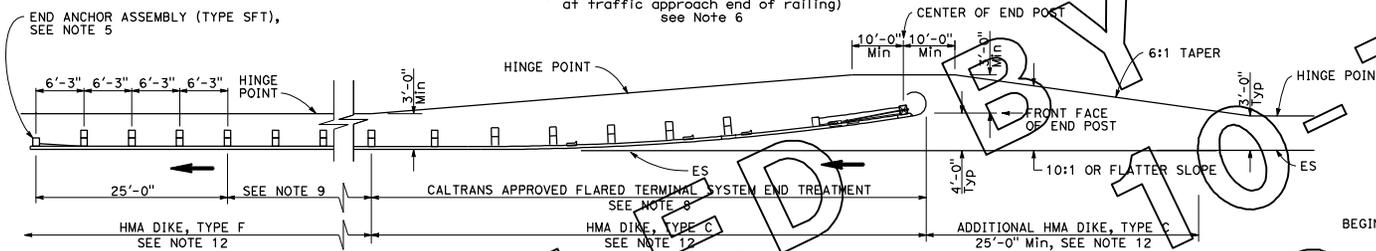
A77C4

2010 STANDARD PLAN A77C4



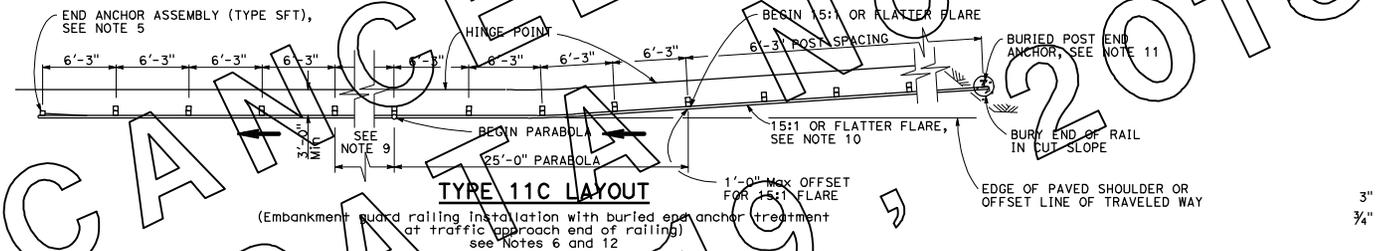
TYPE 11A LAYOUT

(Embankment guard railing installation with in-line end treatment at traffic approach end of railing) see Note 6



TYPE 11B LAYOUT

(Embankment guard railing installation with flared end treatment at traffic approach end of railing) see Note 6



TYPE 11C LAYOUT

(Embankment guard railing installation with buried end anchor treatment at traffic approach end of railing) see Notes 6 and 12

NOTES:

- Line post blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1, and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, 1/2" x 3/4" 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.
- Direction of adjacent traffic indicated by \rightarrow .
- For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- Layout Types 11A, 11B or 11C are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for only one direction of traffic.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- 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 guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11C Layout, see Standard Plan A77I2.
- Where placement of dike is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.

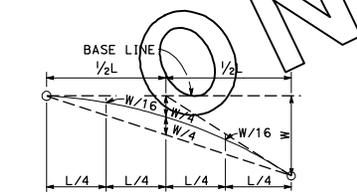
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

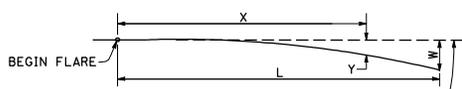
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TYPICAL PARABOLIC LAYOUT

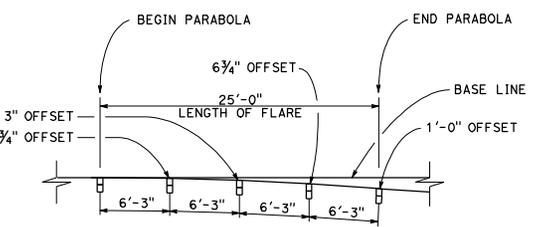


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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

PARABOLIC FLARE OFFSETS



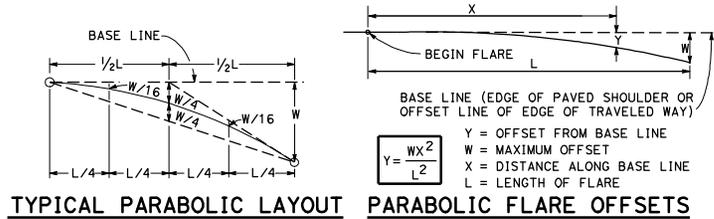
TYPICAL FLARE OFFSETS FOR 1 FOOT Max END OFFSET

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**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
EMBANKMENTS**

NO SCALE

A77E1



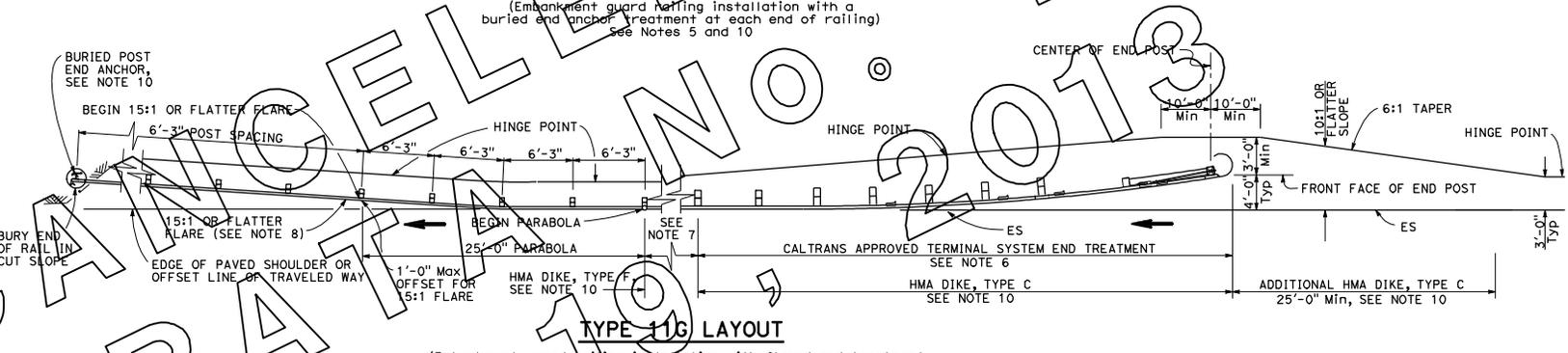
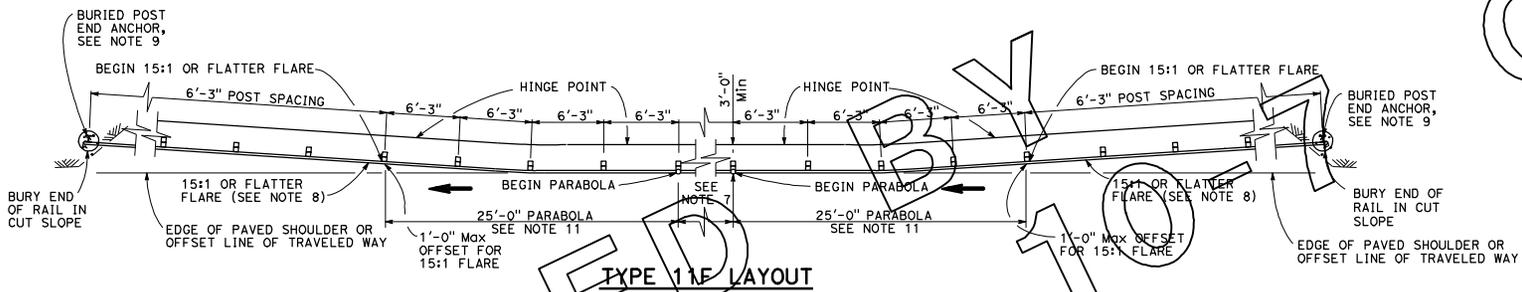
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

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- NOTES:**
1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
 2. Guard rail 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, 6" x 8" 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. Direction of adjacent traffic indicated by \blackrightarrow .
 5. Layout Types 11D through 11L, shown on the A77E Series of Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.

6. The type of 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 guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
8. 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 guard railing 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 11F and 11G Layouts, see Standard Plan A77I2.
10. Where placement of dike is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.
11. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.

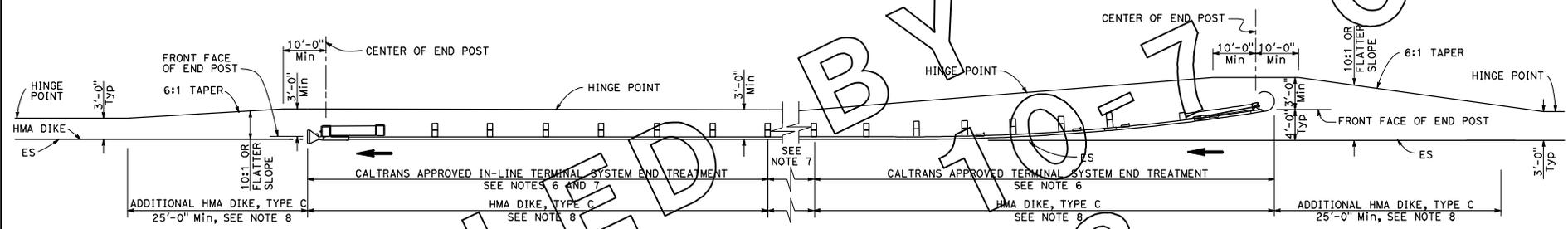
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**METAL BEAM GUARD RAILING
 TYPICAL LAYOUTS FOR
 EMBANKMENTS**

NO SCALE

A77E3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER					
May 20, 2011 PLANS APPROVAL DATE					
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TYPE 11H LAYOUT

(Embankment guard railing installation on flared end treatment and an in-line treatment at the ends of railing) See Notes 5 and 8

NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, 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.
- Direction of adjacent traffic indicated by →.
- Layout Types 11D through 11L, shown on the A77E Series of Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- Where placement of dike is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.

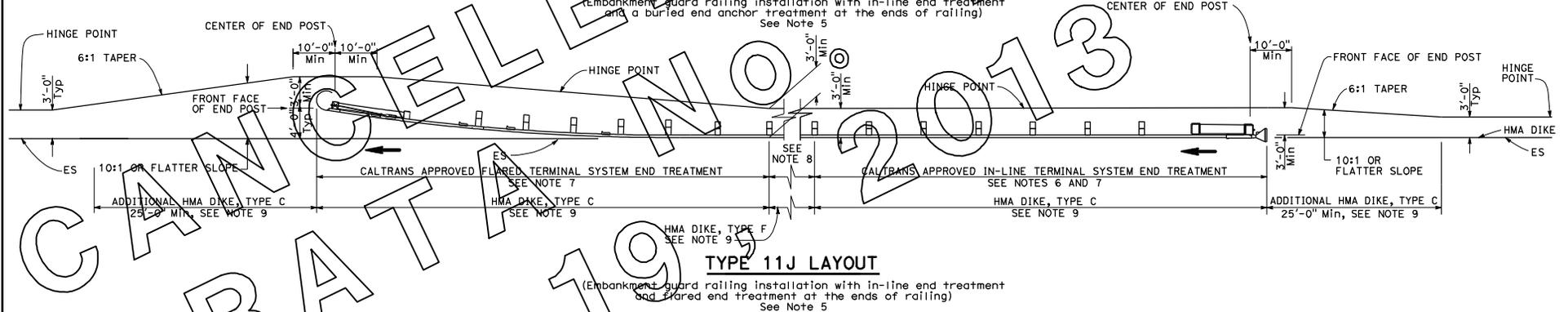
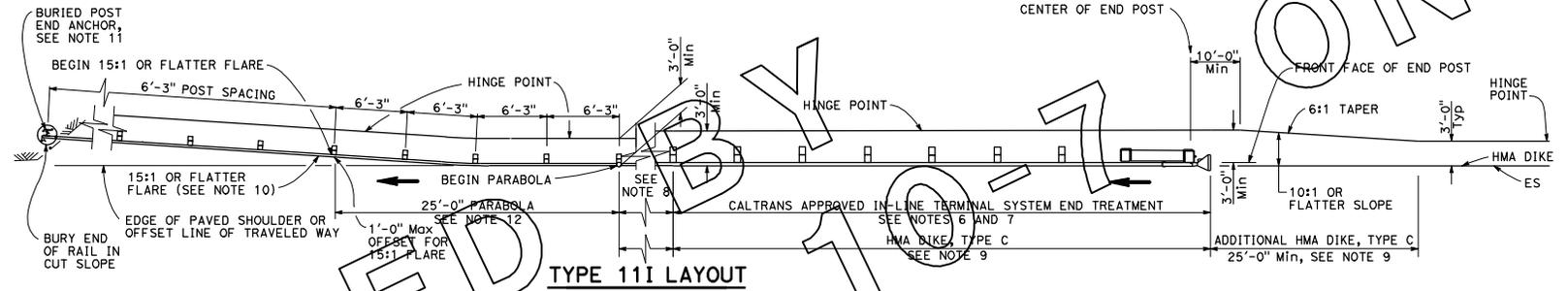
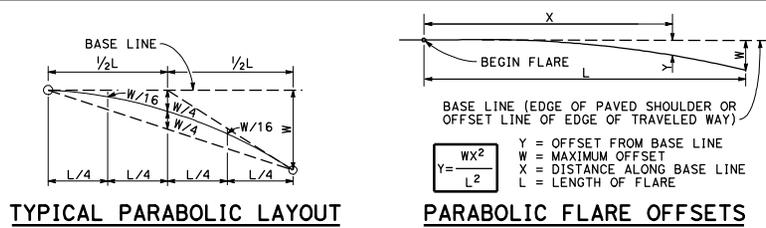
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**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
EMBANKMENTS**

NO SCALE

A77E4

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

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- NOTES:**
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
 - Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-32" wood blocks, 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.
 - Direction of adjacent traffic indicated by →.
 - Layout Types 11D through 11J, shown on the A77E Series of Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
 - In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.

- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- Where placement of dike is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.
- 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 guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11I Layout, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.

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TYPICAL LAYOUTS FOR
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A77E5

2010 STANDARD PLAN A77E5

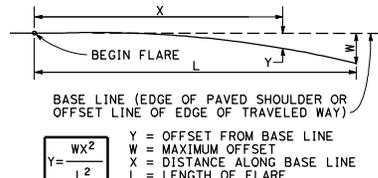
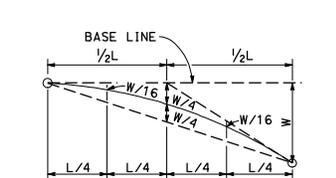
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

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May 20, 2011
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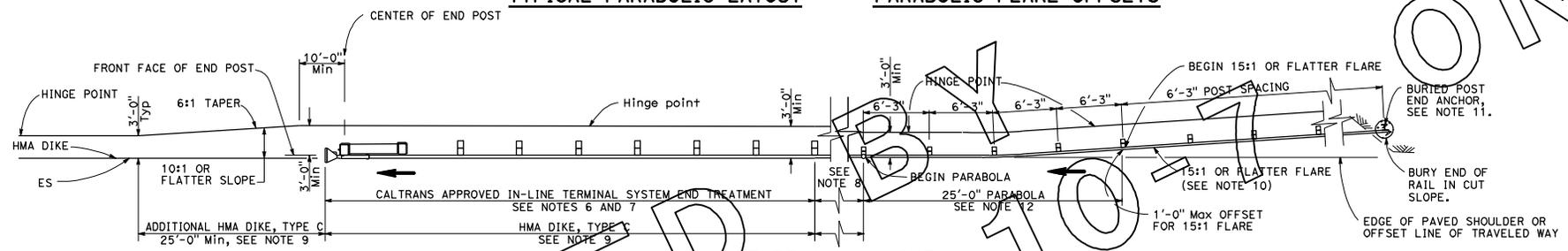
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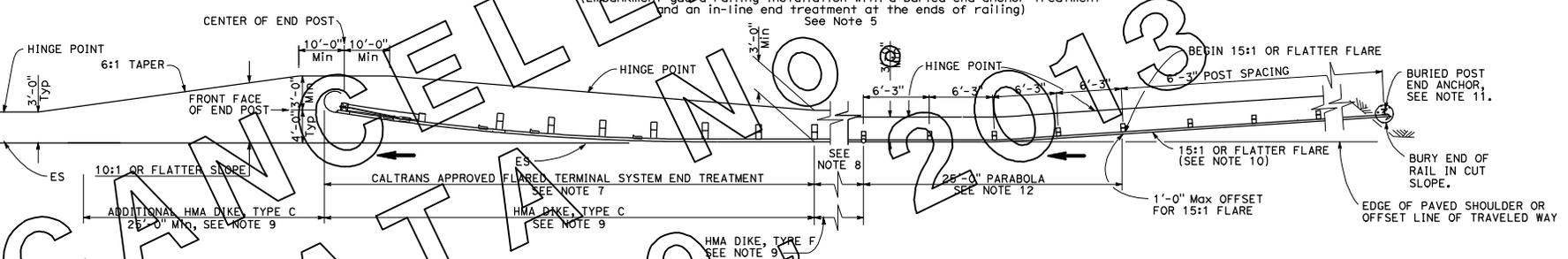
TYPICAL PARABOLIC LAYOUT

PARABOLIC FLARE OFFSETS



TYPE 11K LAYOUT

(Embankment guard railing installation with a buried end anchor treatment and an in-line end treatment at the ends of railing) See Note 5



TYPE 11L LAYOUT

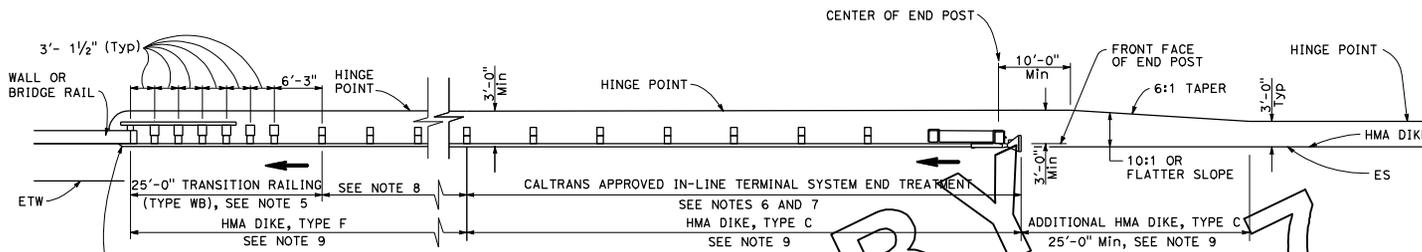
(Embankment guard railing installation with a buried end anchor treatment and a flared end treatment at the ends of railing) See Note 5

NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 5'-0" in length, with 8" x 4" 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.
- Direction of adjacent traffic indicated by \rightarrow .
- Layout Types 11D through 11L, shown on the A77E Series of Standard Plans, are typically used where guard railing is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional guard railing (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- Where placement of dike is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.
- 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 guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 11K and 11L Layouts, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.

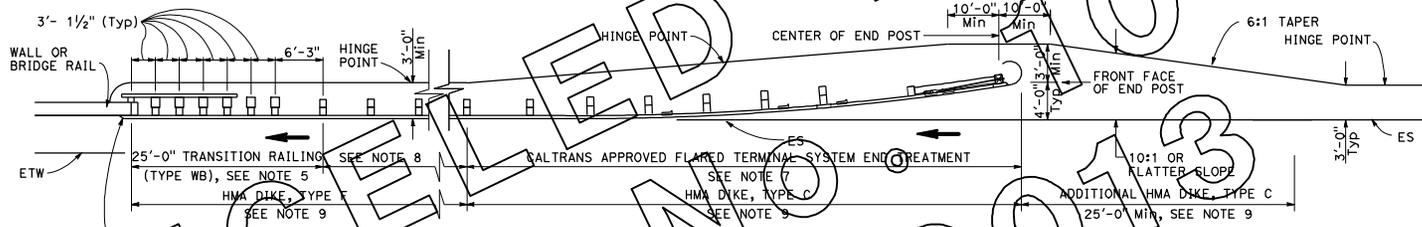
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TYPICAL LAYOUTS FOR
EMBANKMENTS**
NO SCALE

A77E6



TYPE 12A LAYOUT

(Guard railing installation at structure approach with an in-line end treatment at traffic approach end of railing)
See Notes 10



TYPE 12B LAYOUT

(Guard railing installation at structure approach with a flared end treatment at traffic approach end of railing)
See Notes 10

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard rail 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 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. Direction of adjacent traffic indicated by →.
5. For Transition Railing (Type WB) details for Types 12A and 12B Layouts, see Standard Plan A77J4.
6. In-Line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
7. The type of terminal system end treatment to be used will be shown on the Project Plans.
8. 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.
9. Where placement of dike is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.
10. 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.
11. See Standard Plan A77F3 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.
12. For additional details of typical connections to bridge rail, see Connection Detail AA on Standard Plans A77J1 and A77J2 and Connection Detail FF on Standard Plans A77K1 and A77K2.
13. For additional details of a typical connection to walls or abutments, see Standard Plan A77J3.

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**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
STRUCTURE APPROACH**
NO SCALE

A77F1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

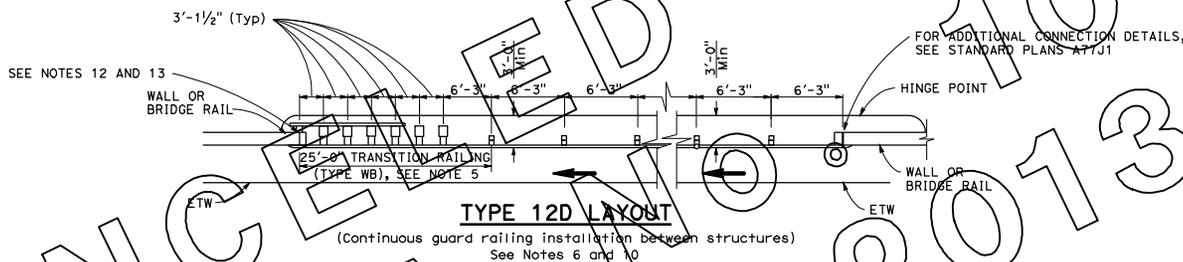
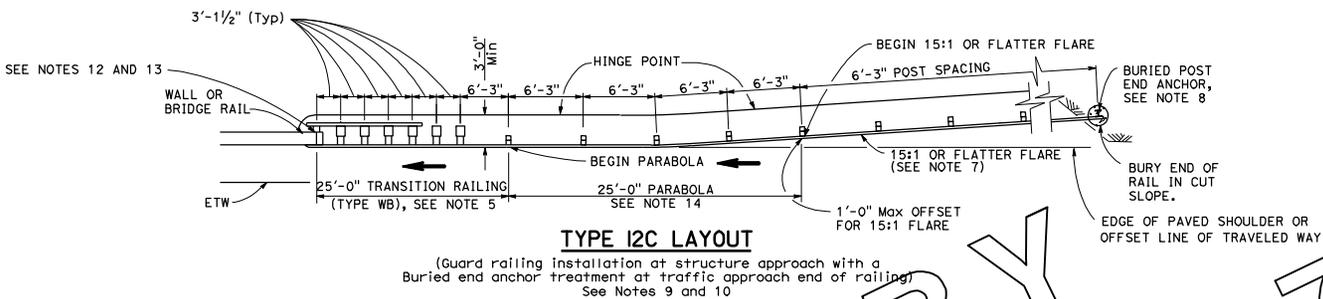
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May 20, 2011
PLANS APPROVAL DATE

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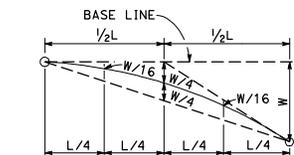


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" w. wood with 6" x 8" x 1'-2" wood blocks, #6 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.
- Direction of adjacent traffic indicated by →.
- For Transition Railing (Type WB) details for Types 12C and 12D Layouts, see Standard Plan A77J4.
- Type 12D layout is typically used where continuous guard railing is recommended between structures.
- The 15:1 or flatter flare for Type 12C layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing with the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 12C Layout, see Standard Plan A77I2.
- Where placement of dikes is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.
- Type 12C Layout is typically used:
 - To the right of approaching traffic, at the end of the structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - To the left of approaching traffic, at each of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
 - To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- See Standard Plan A77F3 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.
- For additional details of typical connections to bridge rail, see Connection Detail AA on Standard Plans A77J1 and A77J2 and Connection Detail FF on Standard Plans A77K1 and A77K2.
- For additional details of a typical connection to walls or abutments, see Standard Plan A77J3.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.

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**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
STRUCTURE APPROACH
AND BETWEEN STRUCTURES**

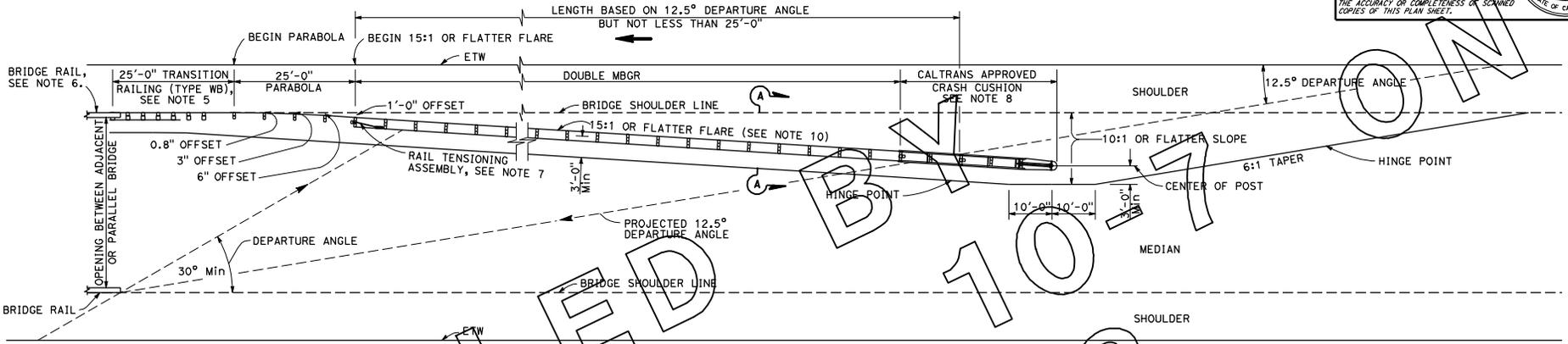
NO SCALE

A77F2

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

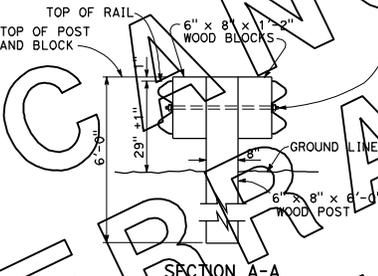
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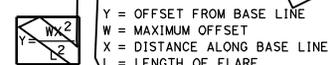


TYPE 12E LAYOUT

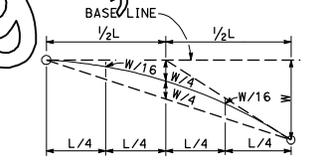
5/8" Ø BUTTON HEAD BOLT WITH HEX NUT OR 5/8" Ø ROD, THREADED BOTH ENDS, WITH HEX NUTS; 1/2" MAX EXPOSED THREADS AFTER HEX NUT(S) TIGHTENED. NO WASHER ON RAIL FACES FOR BOLTED CONNECTION TO LINE POST



PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT



NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A3, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. 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.
- Direction of adjacent traffic indicated by →.
- For Transition Railing (Type WB) details, see Standard Plan A77J4.
- For additional details of a typical connection to bridge rail, see Connection Detail AA on Standard Plan A77J1.
- For Rail Tensioning Assembly details, see Standard Plan A77H2.
- The type of Crash Cushion to be used will be shown on the Project Plans.
- 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.
- The 15:1 or flatter flare is measured off of the edge of traveled way.

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 TYPICAL LAYOUTS FOR
 STRUCTURE APPROACH**
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A77F3

2010 STANDARD PLAN A77F3

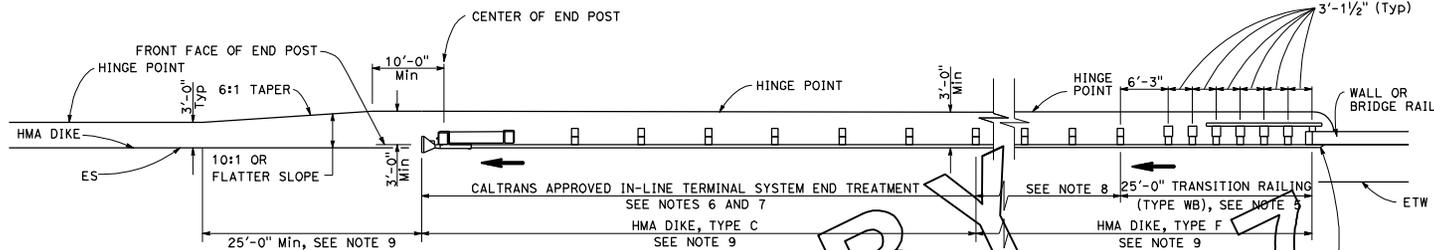
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

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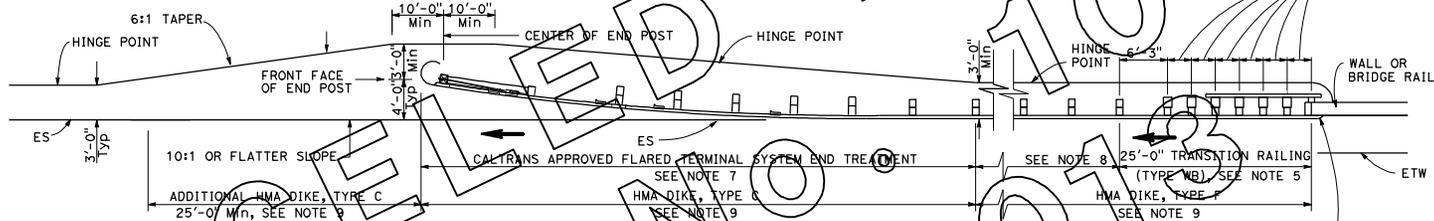
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TYPE 12AA LAYOUT

(Guard railing installation at structure departure with an in-line end treatment at trailing end of railing. See Notes 9 and 10)



TYPE 12BB LAYOUT

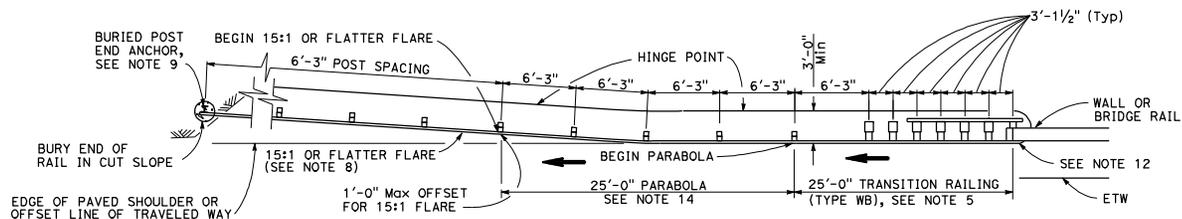
(Guard railing installation at structure departure with a flared end treatment at trailing end of railing. See Notes 9 and 10)

NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W-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.
- Direction of adjacent traffic indicated by
- For Transition Railing (Type WB) details for Types 12AA and 12BB Layouts, see Standard Plan A77J4.
- In-line Terminal System Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height, side slopes, 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 treatments.
- Where placement of dike is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.
- 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.
- For additional details of typical connections to bridge rail, see Connection Detail CC on Standard Plan A77J2 and Connection Detail HH on Standard Plans A77K2.

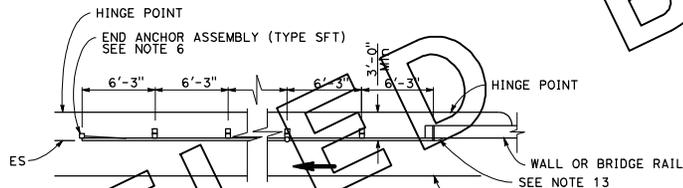
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**METAL BEAM GUARD RAILING
 TYPICAL LAYOUTS FOR
 STRUCTURE DEPARTURE**
 NO SCALE

A77F4



TYPE 12CC LAYOUT

(Guard railing installation at structure departure with a Buried end anchor treatment at trailing end of railing)
See Notes 10 and 11



TYPE 12DD LAYOUT

(Guard railing installation at structure departure with end anchor assembly at trailing end of railing)
See Notes 7 and 10

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

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May 20, 2011
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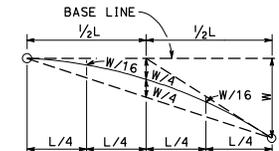
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BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, 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.
- Direction of adjacent traffic indicated by →.
- For Transition Railing (Type WB) details for Type 12CC Layout, see Standard Plan A77J4.
- For details of End Anchor Assembly (Type SFT) used with Type 12DD Layout, see Standard Plan A77H1.
- Type 12DD layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is equal to or greater than 40 feet and guard railing is recommended (embankment height, side slopes, other fixed objects). Length of railing to be equal to multiples of 12'-6". For guard railing connection details to bridge rail, see Standard Plans A77J1 and A77K1. For guard railing connection details to wall, see Standard Plan A77J3.
- The 15:1 or flatter flare for Type 12CC Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 12CC Layout, see Standard Plan A77I2.
- Where placement of dike is required with guard railing installations, see Standard Plan A77C4 for dike positioning details.
- Type 12CC Layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- For additional details of a typical connection to bridge rail for Layout Type 12CC, see Connection Detail CC on Standard Plan A77J2 and Connection Detail HH on Standard Plan A77K2.
- For additional details of a typical connection to bridge rail for Layout Type 12DD, see Connection Detail BB on Standard Plan A77J1 and Connection Detail GG on Standard Plan A77K1.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.

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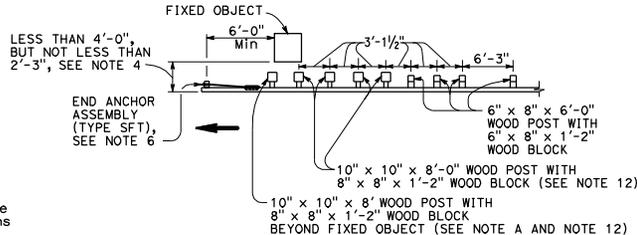
**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
STRUCTURE DEPARTURE**

NO SCALE

A77F5

NOTES:

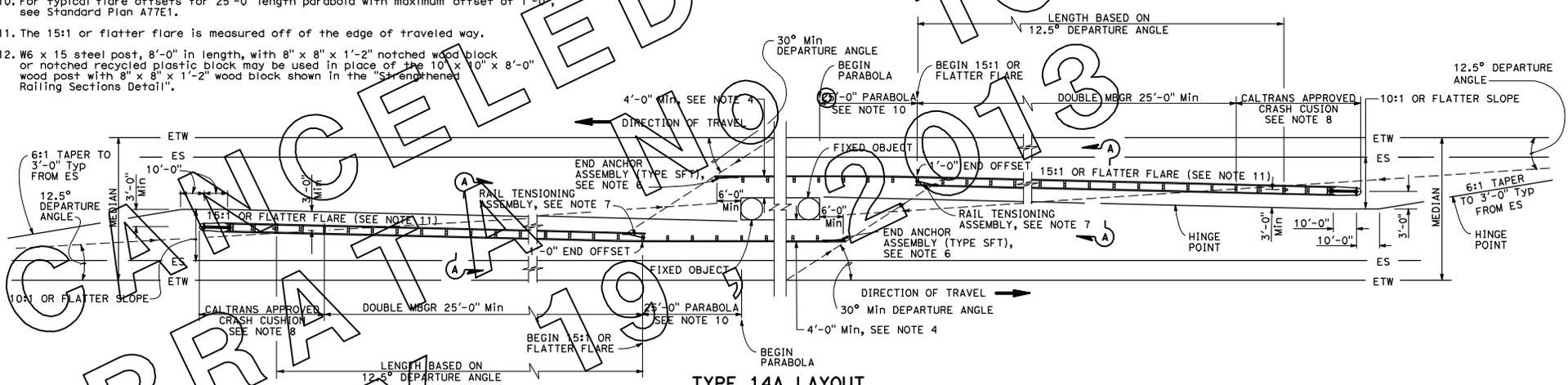
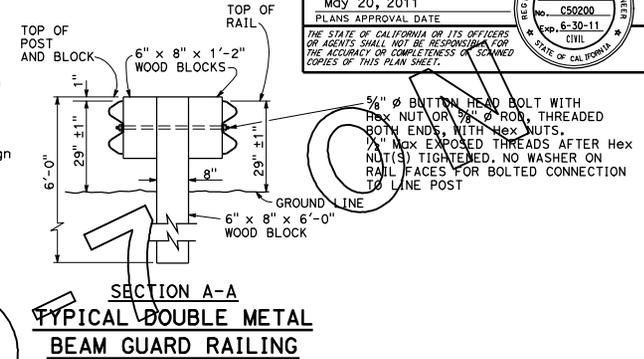
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, W6 x 9 steel posts, 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.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by \rightarrow .
- For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- For details of Rail Tensioning Assembly, see Standard Plan A77H2.
- The type of crash cushion to be used will be shown on the Project Plans.
- Type 14A layout is typically used on multilane freeways or expressways to shield fixed objects where a median type barrier is not constructed between the separated roadbeds.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.
- The 15:1 or flatter flare is measured off of the edge of traveled way.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic block may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".



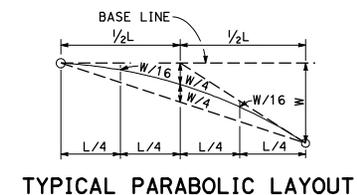
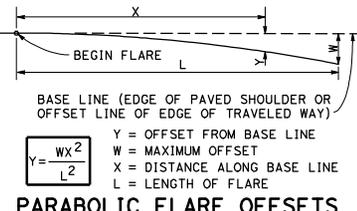
NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

Use strengthened railing sections with type 14A layout where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3", See Note 4.



TYPE 14A LAYOUT
See Note 9



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**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
FIXED OBJECTS
BETWEEN SEPARATE ROADBEDS
(TWO-WAY TRAFFIC)**
NO SCALE

A77G1

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

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2010 STANDARD PLAN A77G1

NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, 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.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing section with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by →.

- For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- Type of crash cushion to be used will be shown on the Project Plans.
- Type 15A layout is typically used on multilane freeways or expressways to shield fixed objects in the area between separated one-way roadbeds.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.
- The 15:1 or flatter flare is measured off of the edge of the traveled way.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

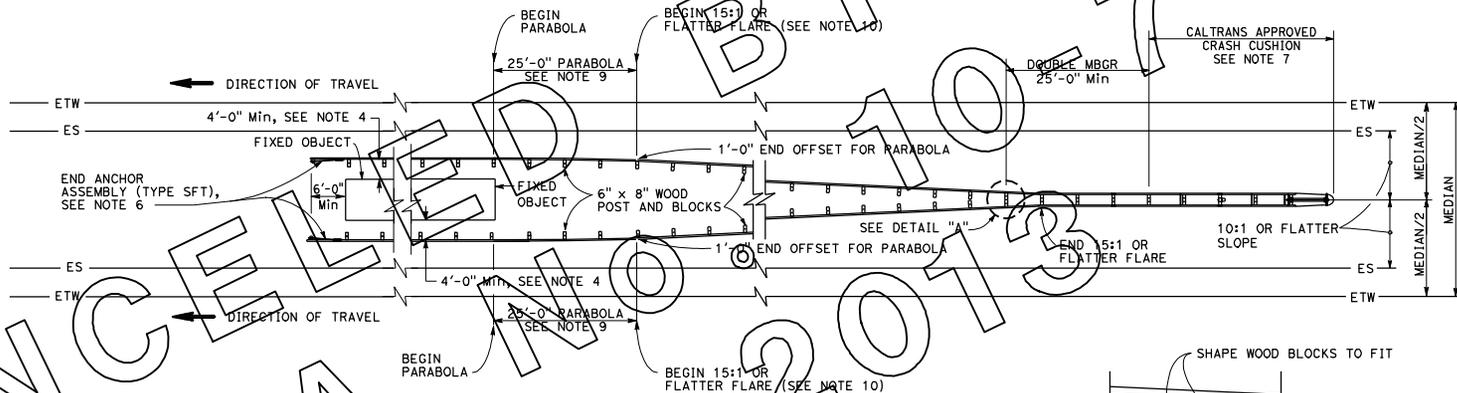
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

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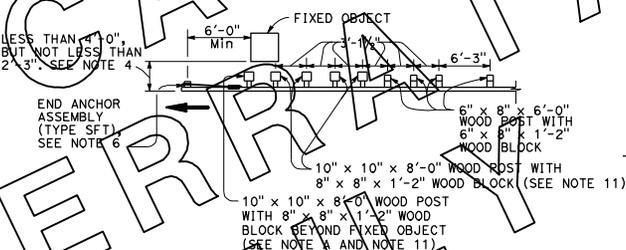
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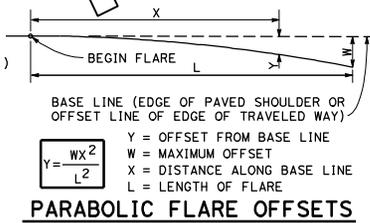
TYPE 15A LAYOUT

See Note 8

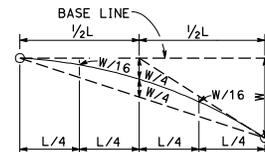


STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

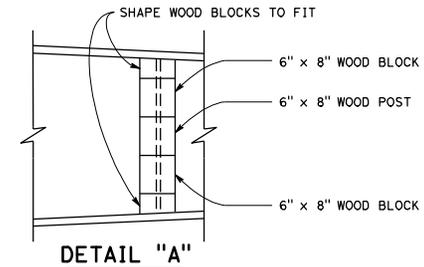
Use strengthened railing sections with Type 15A layout where minimum clearance between the face of the guard railing and the fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT



METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR FIXED OBJECTS BETWEEN SEPARATE ROADBEDS (ONE-WAY TRAFFIC)

NO SCALE

A77G2

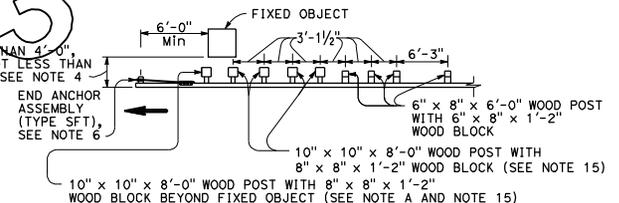
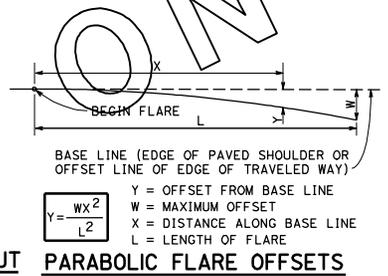
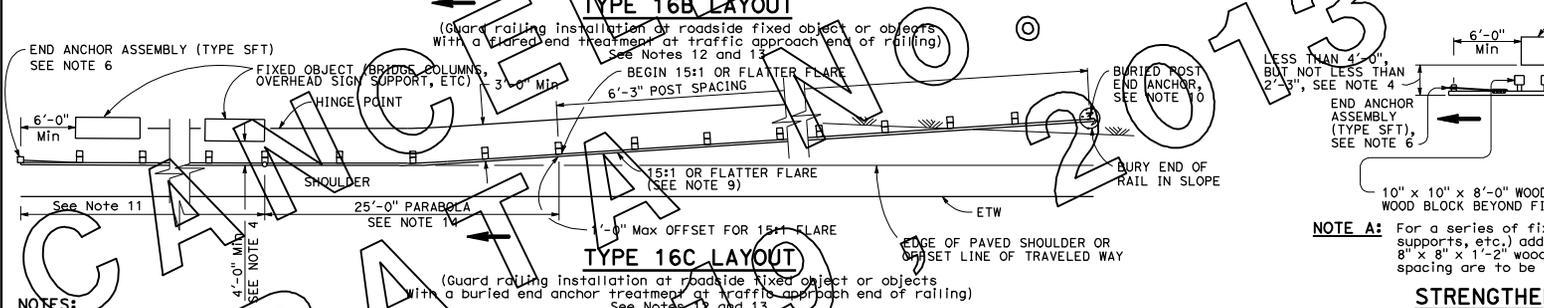
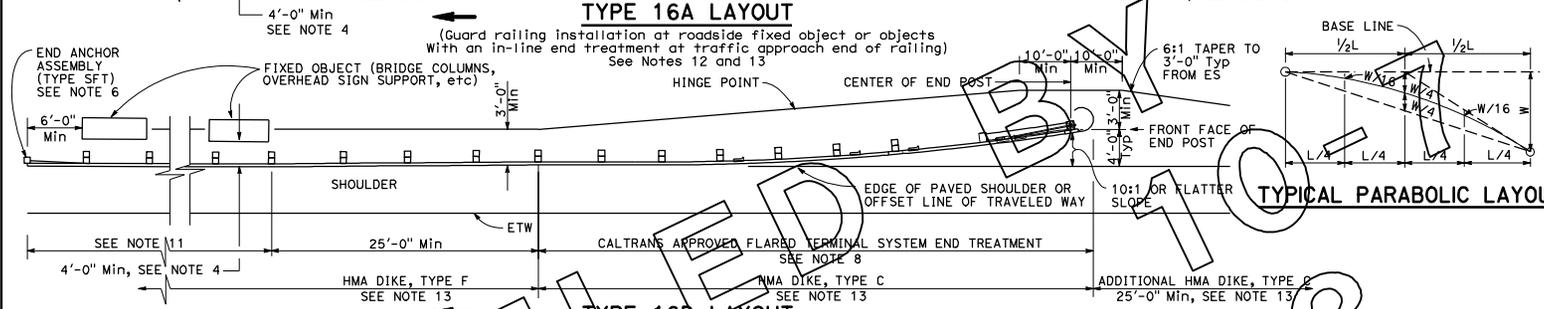
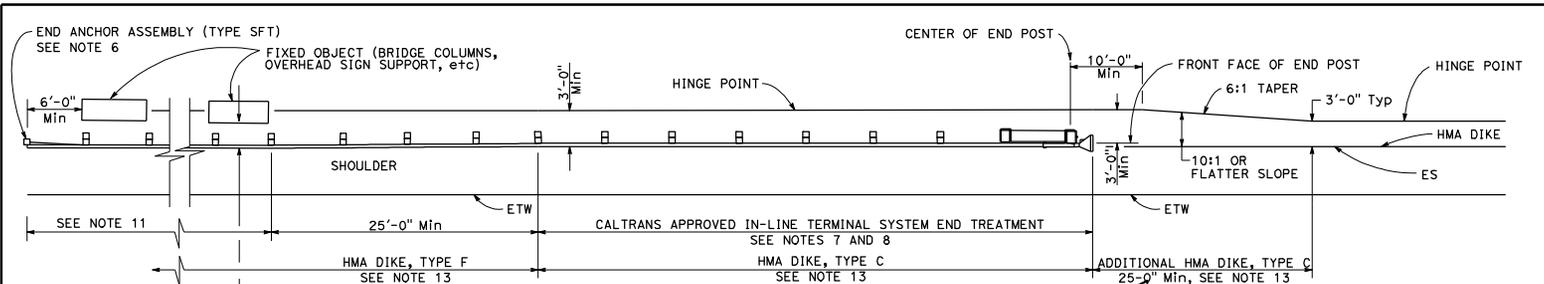
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

Use strengthened railing sections with Types 16A, 16B or 16C layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4

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METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS

NO SCALE

A77G3

- NOTES:**
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
 - Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, 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 line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
 - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
 - Direction of adjacent traffic indicated by →.
 - For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
 - In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
 - The type of terminal system to be used will be shown on the Project Plans.

- 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 guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the Buried Post End Anchor used with Type 16C Layout, see Standard Plan A77I2.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
- Layout Types 16A, 16B or 16C are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for only one direction of traffic.
- Where placement of dike is required with guard railing, see Standard Plan A77C4 for dike positioning details.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

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2010 STANDARD PLAN A77G3

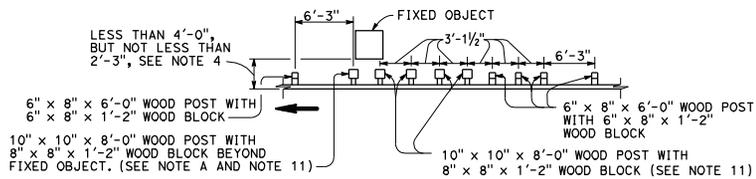
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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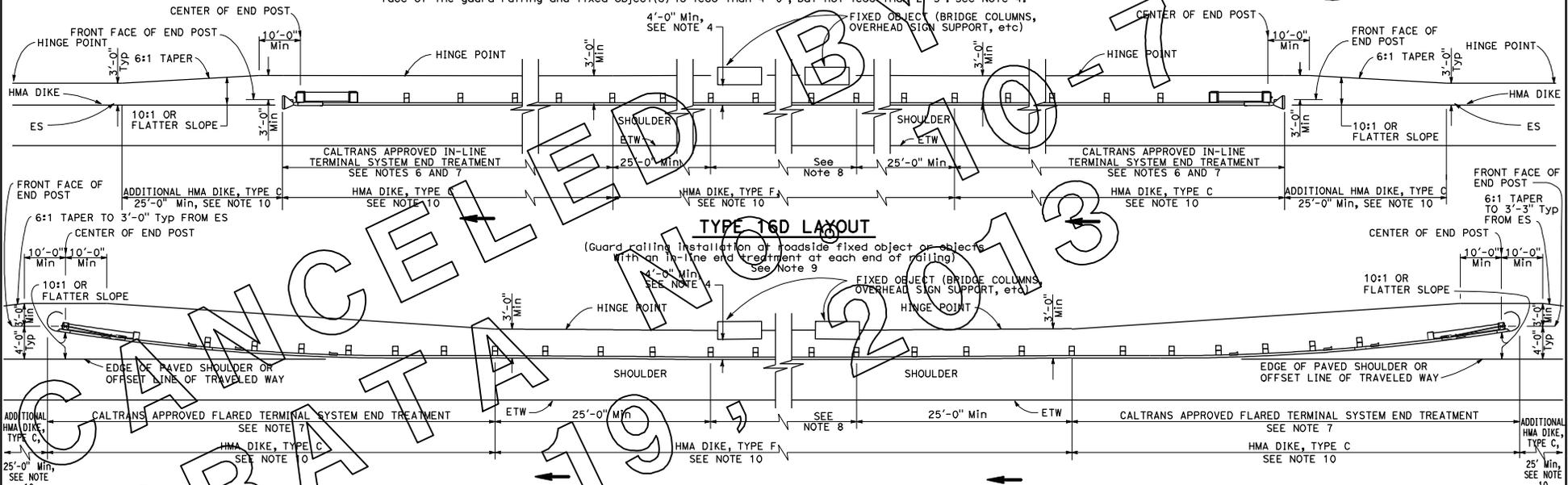
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NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

**STRENGTHENED RAILING SECTIONS
FOR FIXED OBJECT**

Use strengthened railing sections with layout Types 16D or 16E, where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



- NOTES:**
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
 - Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. 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.
 - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
 - Direction of adjacent traffic indicated by \rightarrow .

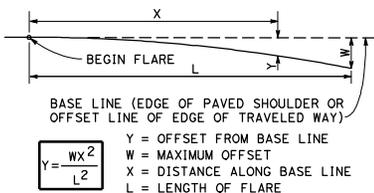
- TYPE 16E LAYOUT**
(Guard railing installation at roadside fixed object or objects with a flared end treatment at each end of railing)
See Note 9
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
 - The type of terminal system to be used will be shown on the Project Plans.
 - As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
 - Layout Types 16D through 16L, shown on the A77G Series of Standard Plans, are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
 - Where placement of dike is required with guard railing, see Standard Plan A77C4 for dike positioning details.

- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic block may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail."

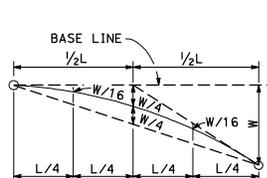
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**
NO SCALE

A77G4

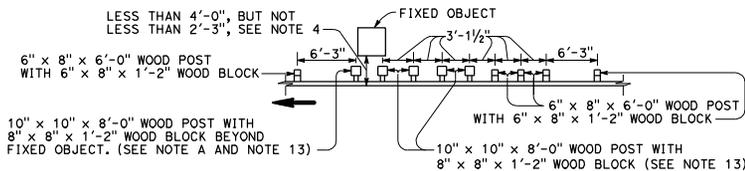
2010 STANDARD PLAN A77G4



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'-1/2" center to center spacing are to be used between fixed object(s).

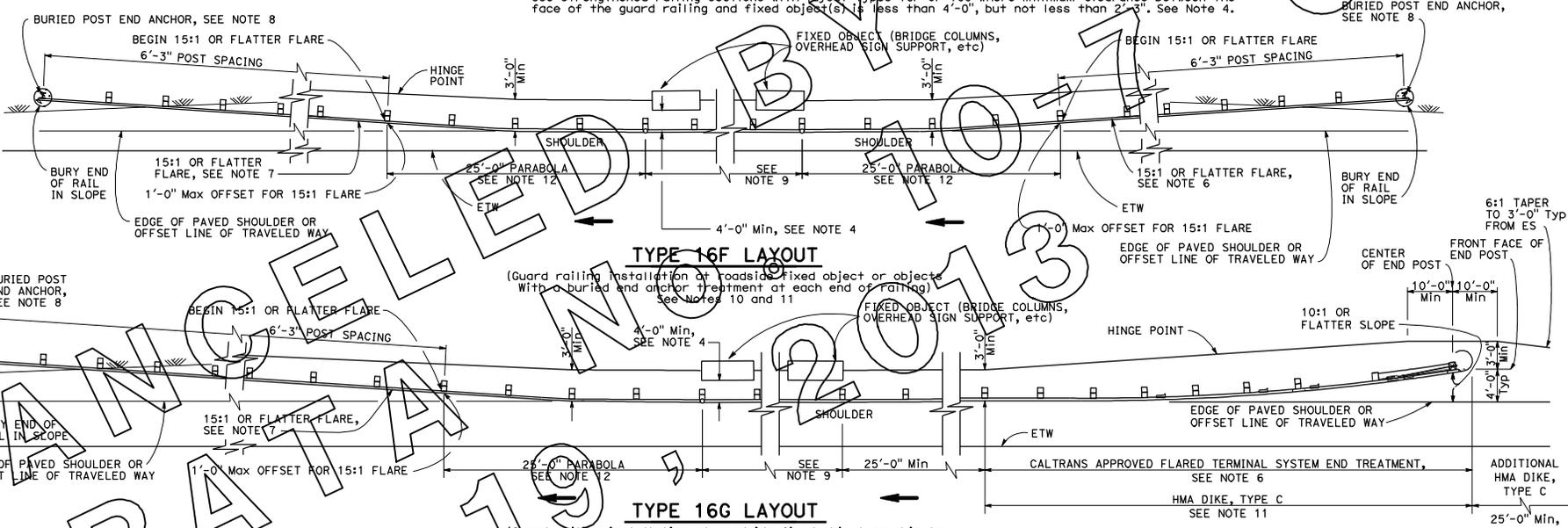
STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

Use strengthened railing sections with layout types 16F or 16G where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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Randell D. Hiatt
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May 20, 2011
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- NOTES:**
- Line post, blocks and hardware to be used are shown on standard Plans A77A1, A77A2, A77A3, A77C1, and A77C2.
 - Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, the posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks, 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.
 - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
 - Direction of adjacent traffic indicated by \rightarrow .
 - The type of terminal system to be used will be shown on the Project Plans.
 - The 15:1 or flatter flare for the buried post anchor is based on the edge of the paved shoulder or offset line of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
 - For details of the Buried Post End Anchor details, see Standard Plan A77I2.
 - As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
 - Layout Types 16D through 16L, shown on the A77G Series of Standard Plans, are typically used on highways where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
 - Where placement of dike is required with guard railing, see Standard Plan A77C4 for dike positioning details.
 - For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.
 - W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

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METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS

NO SCALE

A77G5

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2010 STANDARD PLAN A77G5

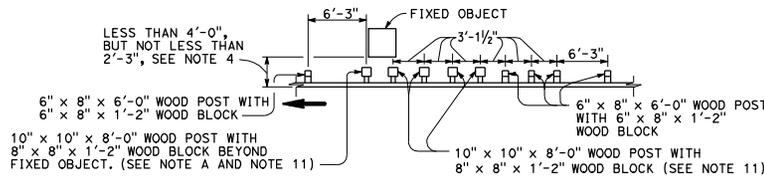
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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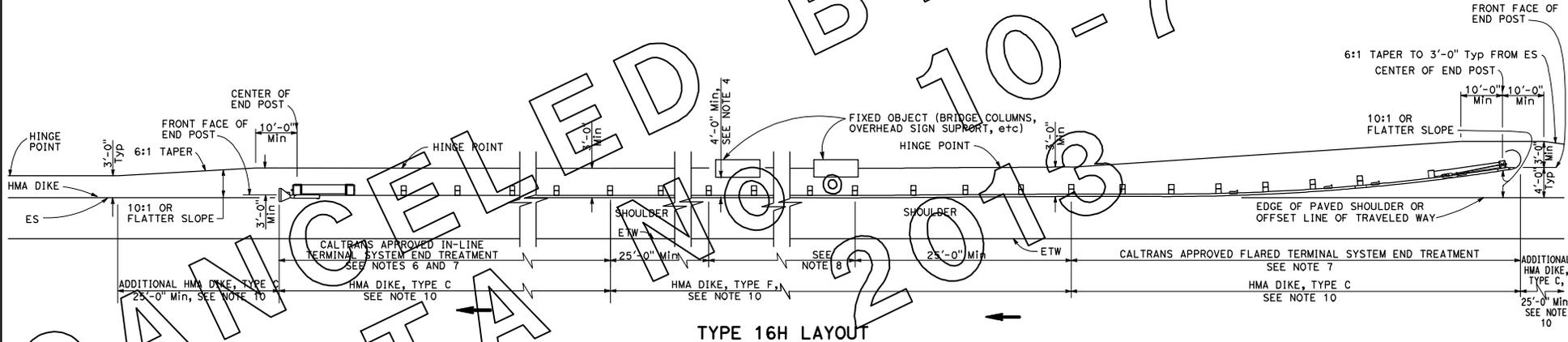
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NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

**STRENGTHENED RAILING SECTIONS
FOR FIXED OBJECT**

Use strengthened railing sections with layout Type 16H where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



TYPE 16H LAYOUT

(Guard railing installation at roadside fixed object or objects
with a flared end treatment and an in-line treatment at the ends of railing)
See Note 9

NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 8'-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.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by →.

- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
- Layout Types 16D through 16L, shown on the A77G Series of Standard Plans, typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Standard Plan A77C4 for dike positioning details.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

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TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**

NO SCALE

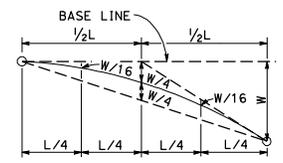
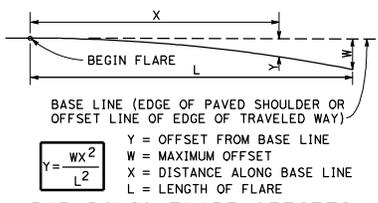
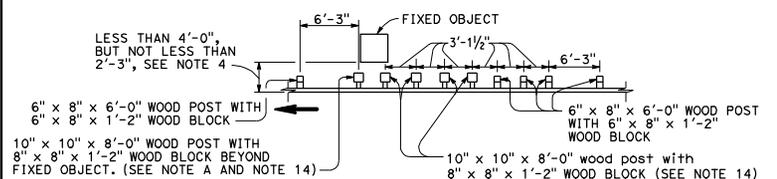
A77G6

2010 STANDARD PLAN A77G6

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

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. C50200
 Exp. 6-30-11
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE
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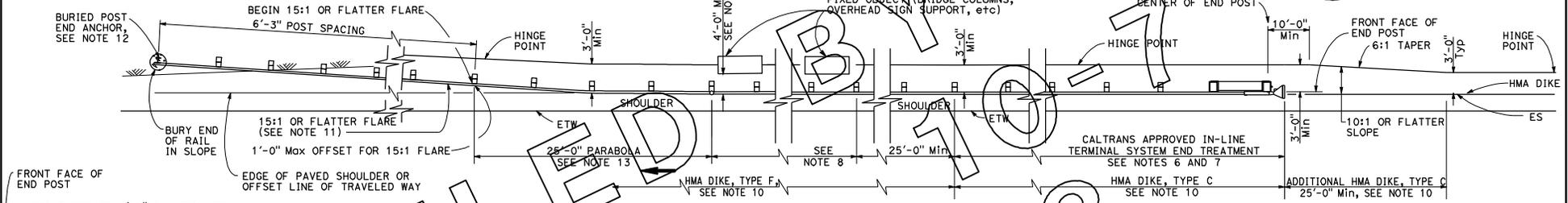
NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10' x 10' x 8'-0" wood post with 8' x 8' x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

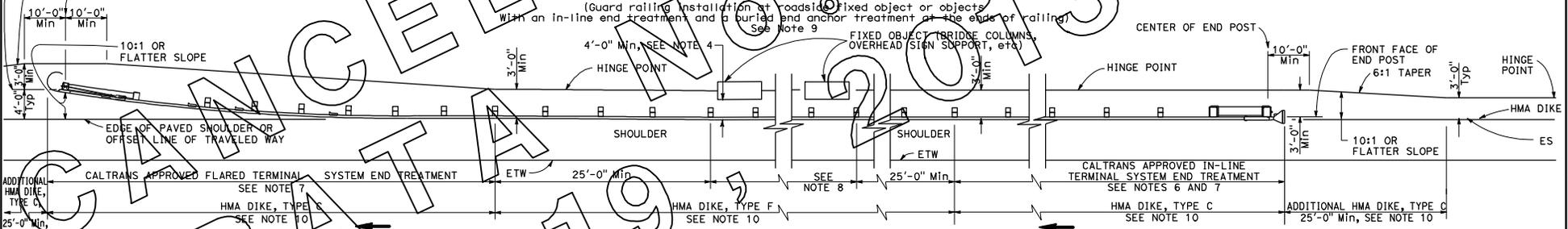
PARABOLIC FLARE OFFSETS

TYPICAL PARABOLIC LAYOUT

Use strengthened railing sections with layout Types 16I or 16J Layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



TYPE 16I LAYOUT



TYPE 16J LAYOUT

- NOTES:**
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
 - Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. 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.
 - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
 - Direction of adjacent traffic indicated by \rightarrow .
 - In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
 - The type of terminal system to be used will be shown on the Project Plans.
 - As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
 - Layout Types 16D through 16L, shown on the A77G Series of Standard Plans, are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
 - Where placement of dike is required with guard railing, see Standard Plan A77C4 for dike positioning details.
 - 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 guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
 - For details of Buried Post End Anchor details, see Standard Plan A77I2.
 - For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.
 - W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS

NO SCALE

A77G7

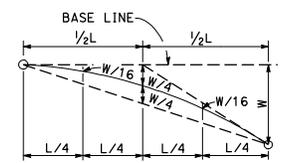
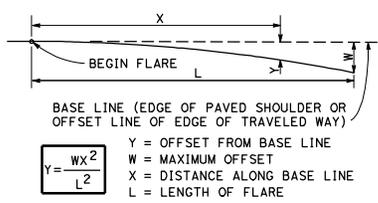
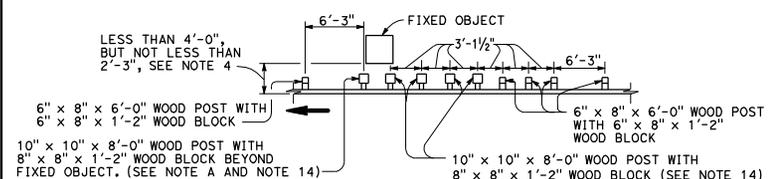
76

2010 STANDARD PLAN A77G7

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

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. C50200
 Exp. 6-30-11
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE
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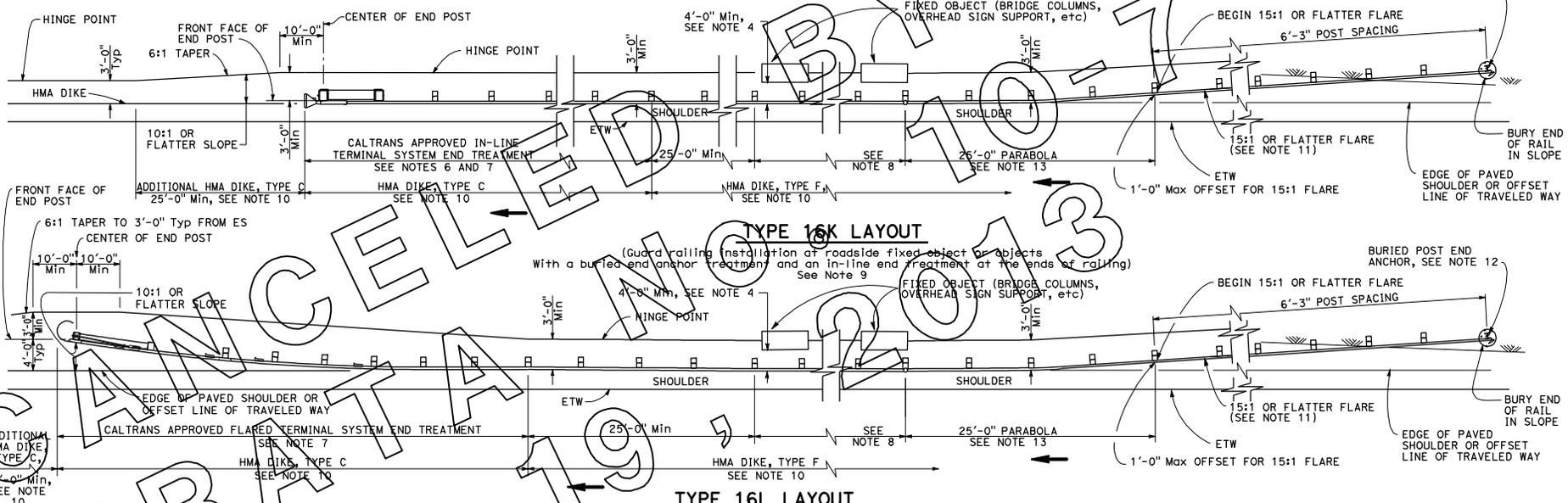
NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

PARABOLIC FLARE OFFSETS

TYPICAL PARABOLIC LAYOUT

Use strengthened railing sections with layout Types 16K or 16L layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



- NOTES:**
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
 - Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" notched wood blocks or 6" x 8" x 1'-2" 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.
 - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
 - Direction of adjacent traffic indicated by →.

- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
- Layout Types 16D through 16L, shown on the A77C Series of Standard Plans are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
- Where placement of dike is required with guard railing, see Standard Plan A77C4 for dike positioning details.
- The 15:1 or flatter flare for the buried post end anchor is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".

- For details of Buried Post End Anchor details, see Standard Plan A77I2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Standard Plan A77E1.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**

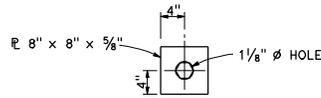
NO SCALE

A77G8

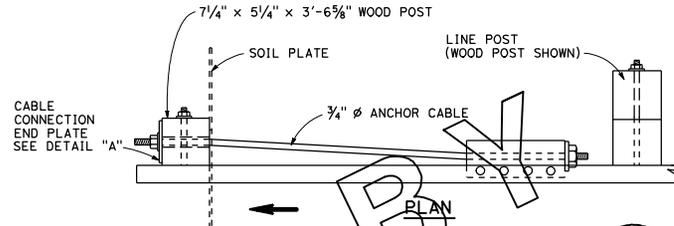
77

2010 STANDARD PLAN A77G8

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER					
May 20, 2011 PLANS APPROVAL DATE					
REGISTERED PROFESSIONAL ENGINEER No. C50200 Exp. 6-30-11 CIVIL STATE OF CALIFORNIA					
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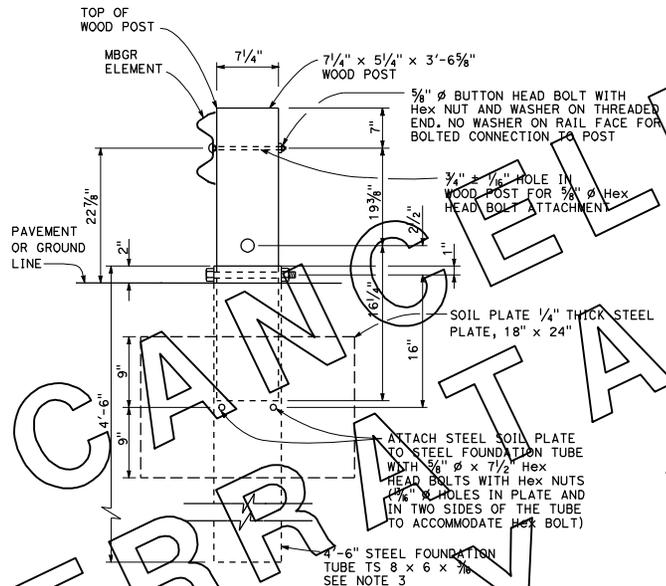


DETAIL "A"
CABLE CONNECTION
END PLATE

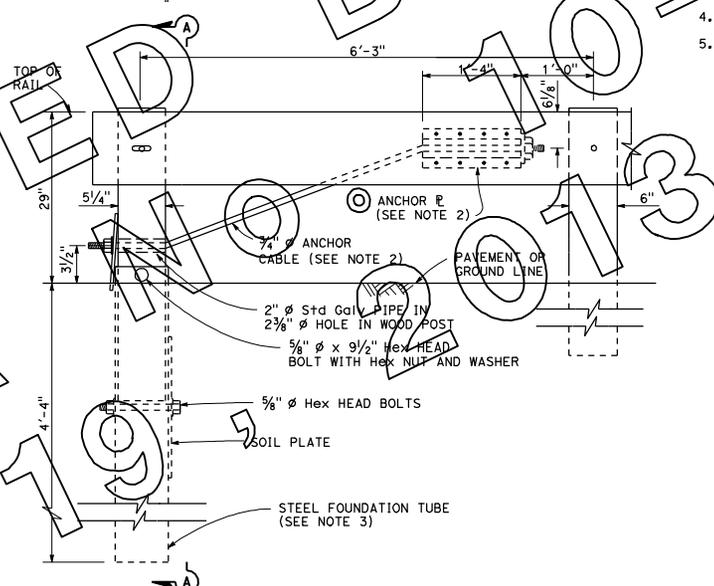


NOTES:

1. See the A77E, A77F and A77G series of Standard Plans for typical use of End Anchor Assembly (Type SFT).
2. For details of the anchor plate and 3/4" cable, see Standard Plan A77H3.
3. A 6'-0" length steel foundation tube, TS 8 x 6 x 3/8, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 3/8" diameter Hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
4. Direction of traffic indicated by →.
5. Install line post, steel foundation tube and soil plate in soil.



SECTION A-A

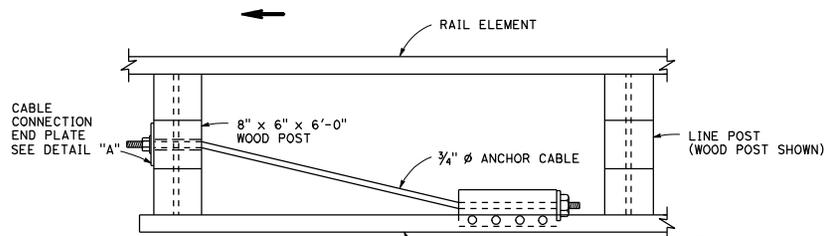


ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)
 See Note 1

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

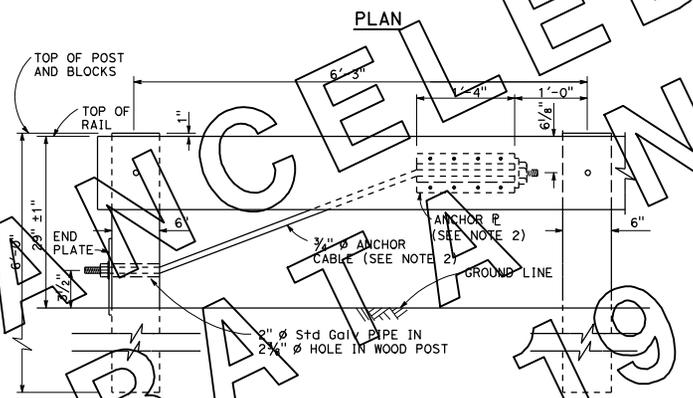
A77H1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER					
May 20, 2011 PLANS APPROVAL DATE					
No. C50200 Exp. 6-30-11 CIVIL					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

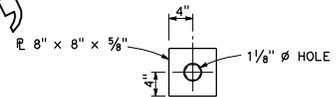


NOTES:

1. See Standard Plan A77F3 and Standard Plan A77G1 for typical use of rail tensioning assembly.
2. For details of the anchor plate and 3/4" cable, see Standard Plan A77H3.
3. Direction of traffic indicated by →.



**ELEVATION
RAIL TENSIONING
ASSEMBLY**
See Note 1



**DETAIL "A"
CABLE CONNECTION
END PLATE**

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**METAL RAILING
RAIL TENSIONING ASSEMBLY**

NO SCALE

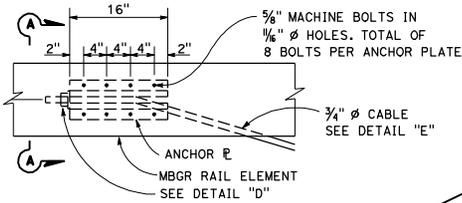
A77H2

79

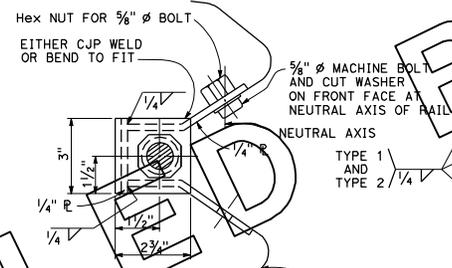
CANCELLED BY 10-7
 ERRATA JULY 19, 2013
 NO. 2013

2010 STANDARD PLAN A77H2

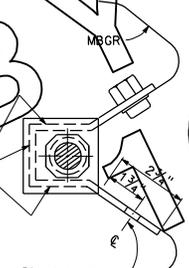
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER					
May 20, 2011 PLANS APPROVAL DATE					
REGISTERED PROFESSIONAL ENGINEER No. C50200 Exp. 6-30-11 CIVIL STATE OF CALIFORNIA					
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ANCHOR PLATE DETAIL
(MBGR shown, TBB similar)

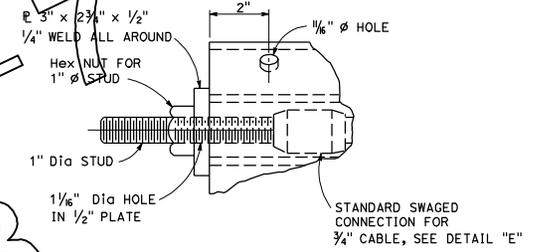


SECTION A-A
(ALTERNATIVE TYPE 1)

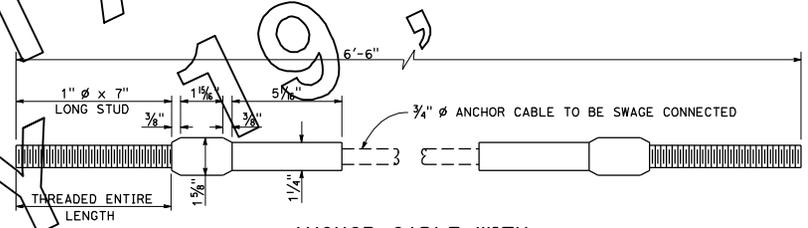


SECTION A-A
(ALTERNATIVE TYPE 2)

NOTE:
Dimensioning applies to both types.



DETAIL "D"



ANCHOR CABLE WITH SWAGED FITTING AND STUD
DETAIL "E"

NOTE:
1. See Standard Plan A77H1 and Standard Plan A77H2 for typical use of anchor cable and anchor plate.

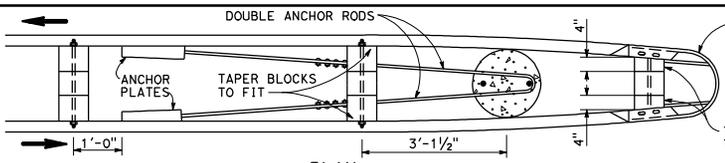
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
METAL RAILING
ANCHOR CABLE AND
ANCHOR PLATE DETAILS

NO SCALE

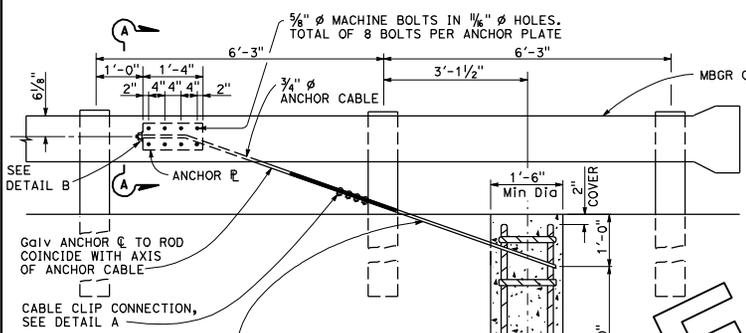
A77H3

80

2010 STANDARD PLAN A77H3

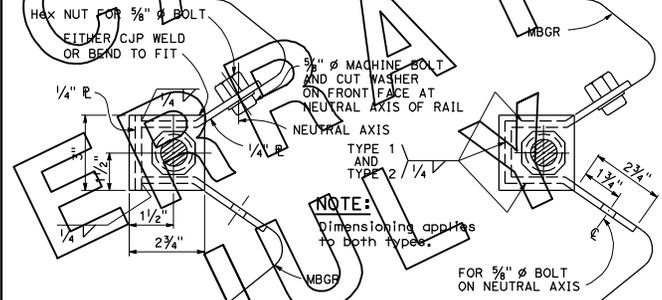


PLAN
See Note 4

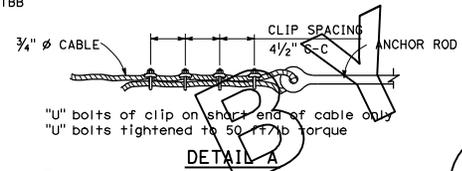


ELEVATION
END ANCHOR ASSEMBLY
(TYPE CA)

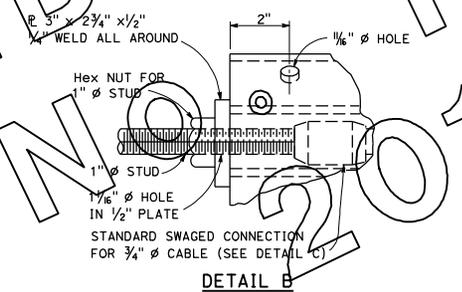
(Wood post, metal beam guard railing shown; details similar for Thrie Beam Barrier.)



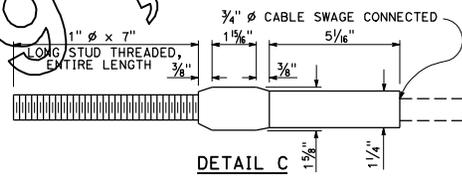
SECTION A-A (Alternative Type 1)
SECTION A-A (Alternative Type 2)
ANCHOR PLATE DETAILS



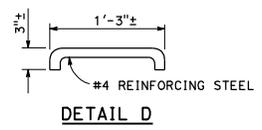
DETAIL A
CABLE CLIP CONNECTION



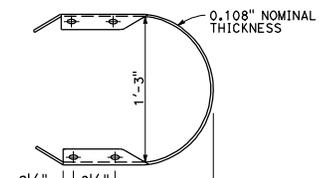
DETAIL B
ANCHOR CABLE WITH SWAGED FITTING AND STUD



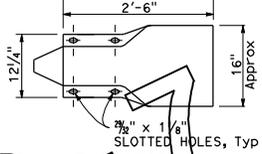
DETAIL C
ANCHOR CABLE WITH SWAGED FITTING AND STUD



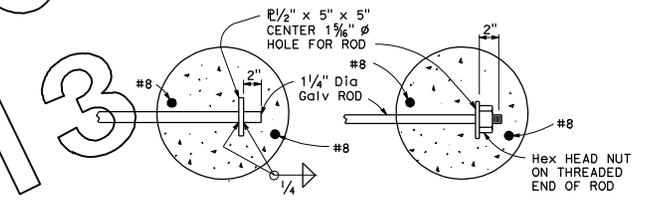
DETAIL D



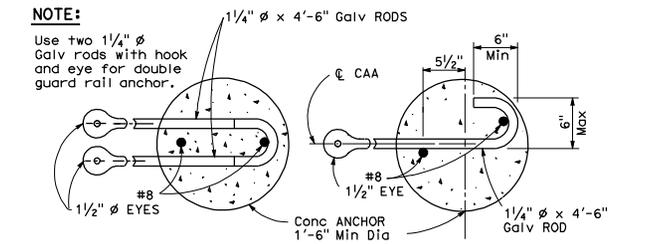
ELEVATION
RETURN CAP (TYPE A)



PLAN
RETURN CAP (TYPE A)



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



DOUBLE ANCHOR ANCHOR RODS
SINGLE ANCHOR ANCHOR RODS

NOTE:
Use two 1/4" Galv rods with hook and eye for double guard rail anchor.

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

A771I

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

Professional Engineer
No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

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

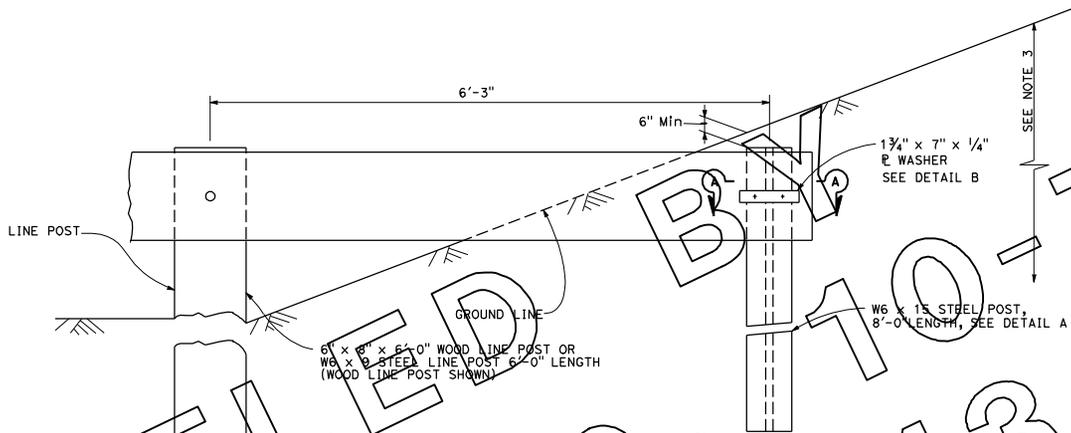
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

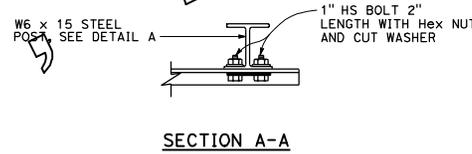
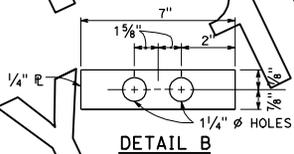
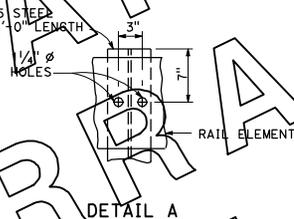
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NOTES:

1. For typical use of this type of end anchor with guard railing, see the A77E, A77F and A77G Series of the Standard Plans.
2. Holes excavation in the slope to construct the buried post end anchor shall be backfilled with selected earth, placed in layers approximately 1'-0" thick. Each layer shall be moistened and thoroughly compacted.
3. The buried post end anchor shall only be constructed at those locations where the slope perpendicular to the roadway is non-traversable.

BURIED POST END ANCHOR
See Note 3



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
BURIED POST END ANCHOR**

NO SCALE

A77I2

2010 STANDARD PLAN A77I2

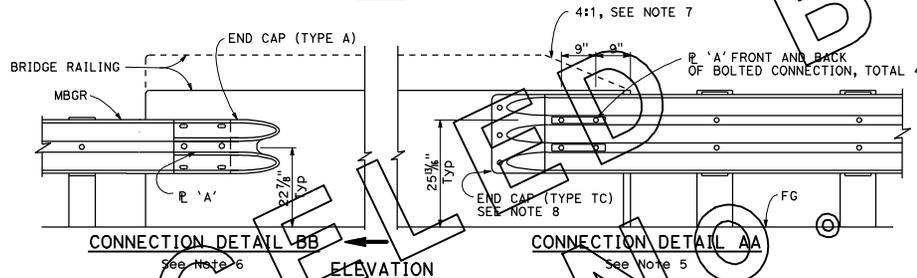
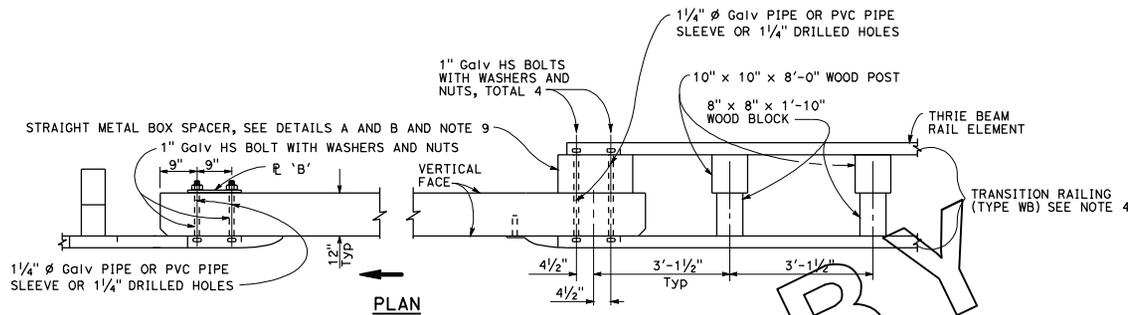
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE: May 20, 2011

REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-11
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STATE OF CALIFORNIA

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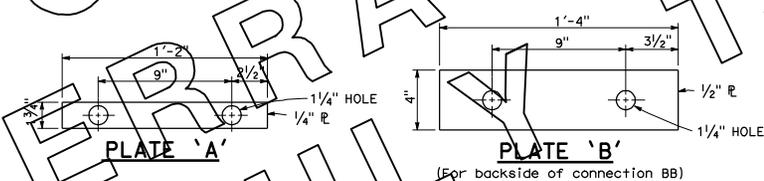
GUARD RAILING CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

1. See Standard Plan A77J2 for additional connection details to bridges without sidewalks.
2. Additional details of posts, blocks and hardware are shown on Standard Plan A77B1, A77C1 and A77C2.
3. Direction of adjacent traffic indicated by \rightarrow .
4. For additional details of Transition Railing (Type WB), see Standard Plan A77J4. Transition Railing (Type WB) transitions the 12 gauge w-beam standard railing section of guard railing to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
5. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Standard Plan A77F1, Layout Types 12C and 12D on Standard Plan A77F2, and Layout Type 12E on Standard Plan A77F3.
6. For typical use of Connection Detail BB, see Layout Type 12D (structure departure railing connection) on Standard Plan A77F2 and Layout Type 12DD on Standard Plan A77F5.
7. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam rail.
8. For details of End Cap (Type TC), see Standard Plan A77J4.
9. See Standard Plan A77J4 for additional details regarding depth dimension for straight metal box spacer.

CANGGILAN BY 2013

ERRATA JULY 19



DETAIL A
STRAIGHT METAL BOX SPACER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS
DETAILS No. 1

NO SCALE

A77J1

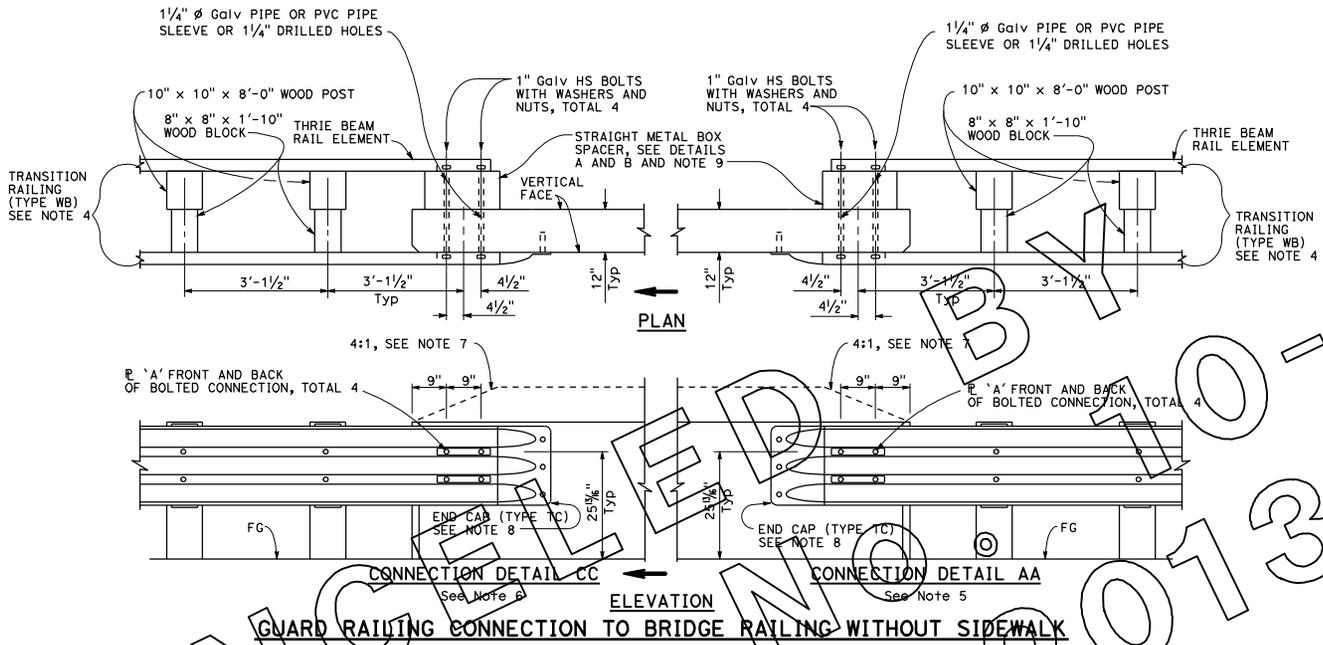
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

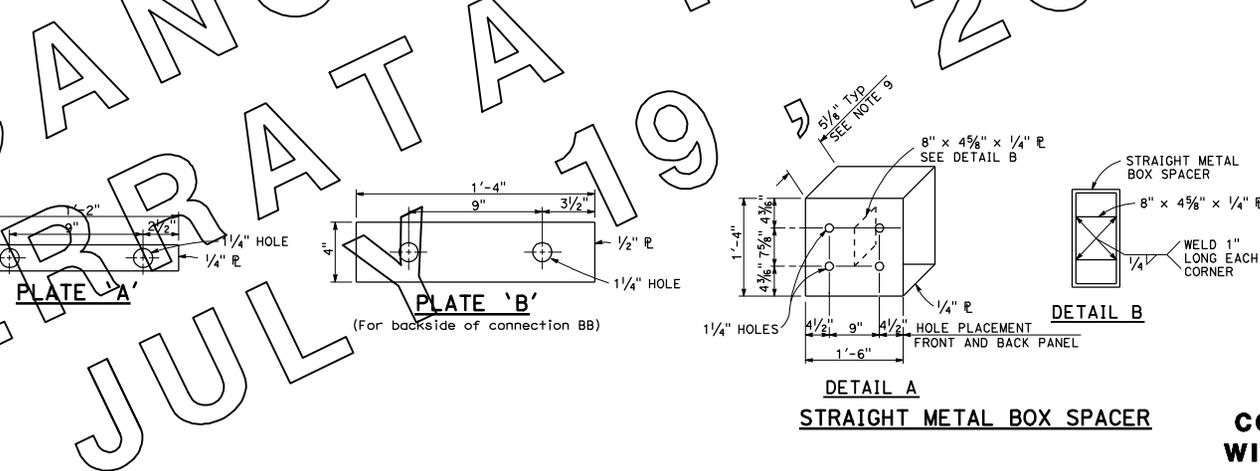
REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

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NOTES:

1. See Standard Plan A77J1 for additional connection details to bridges without sidewalks.
2. Additional details of posts, blocks and hardware are shown on Standard Plan A77B1, A77C1 and A77C2.
3. Direction of adjacent traffic indicated by →.
4. For additional details of Transition Railing (Type WB), see Standard Plan A77J4. Transition Railing (Type WB) transitions the 12 gauge w-beam standard railing section of guard railing to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
5. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Standard Plan A77F1, Layout Types 12C and 12D on Standard Plan A77F2, and Layout Type 12E on Standard Plan A77F3.
6. For typical use of Connection Detail CC, see Layout Types 12AA and 12BB on Standard Plan A77F4 and Layout Type 12CC on Standard Plan A77F5.
7. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA and connection Detail CC, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
8. For details of End Cap (Type TC), see Standard Plans A77J4.
9. See Standard Plans A77J4 for additional details regarding depth dimension for straight metal box spacer.



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
CONNECTIONS TO BRIDGE RAILINGS
WITHOUT SIDEWALKS DETAILS No. 2**

NO SCALE

A77J2

2010 STANDARD PLAN A77J2

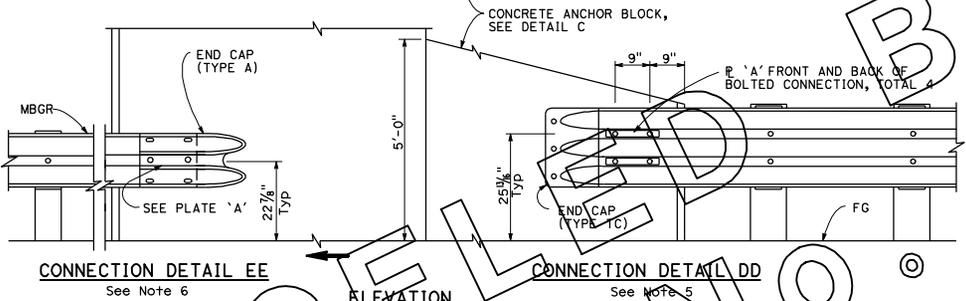
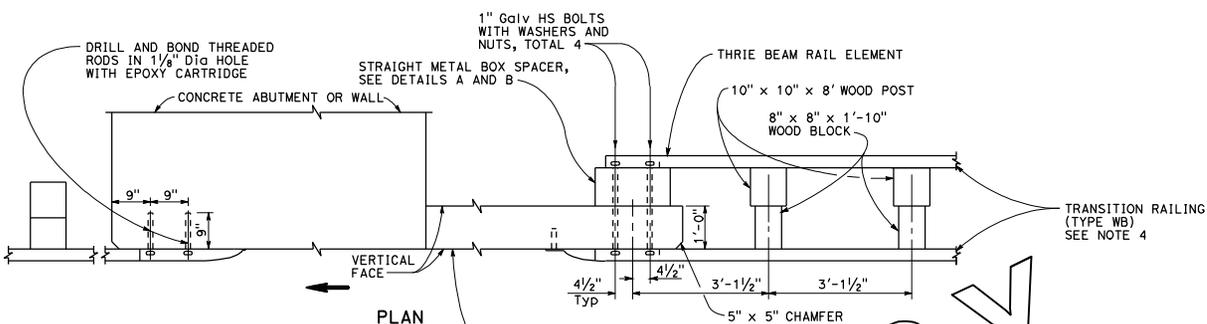
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

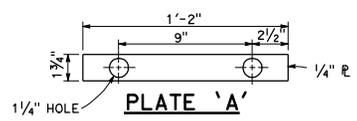
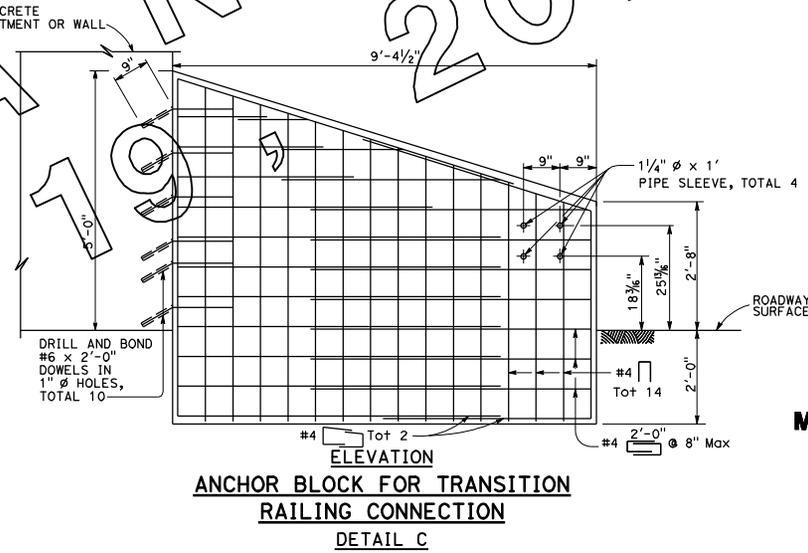
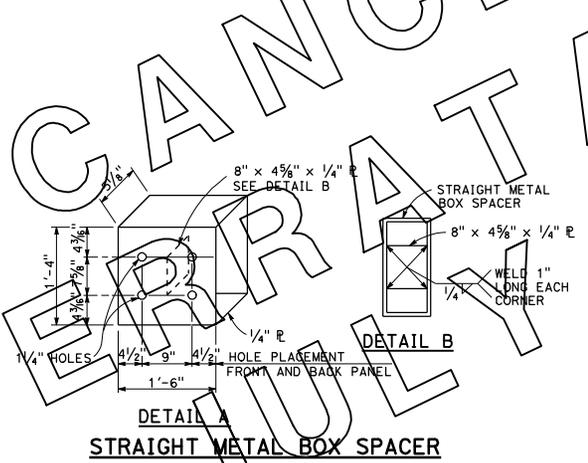
May 20, 2011
PLANS APPROVAL DATE

No. C50200
Exp. 6-30-11
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STATE OF CALIFORNIA

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GUARD RAILING CONNECTION TO ABUTMENT OR WALL



NOTES:

1. These connection details apply to abutments and walls.
2. Additional details of posts, blocks and hardware are shown on Standard Plans A77B1, A77C1 and A77C2.
3. Direction of adjacent traffic indicated by →.
4. For additional details of Transition Railing (Type WB), see Standard Plan A77J4 Transition Railing (Type WB) transitions the 12 gauge w-beam standard railing section of guard railing to a heavier gauge nested three beam railing section which is connected to the concrete anchor block.
5. For typical use of Connection Details DD, See Layout Types 12A and 12B on Standard Plan A77F1 and Layout Types 12C and 12D on Standard Plan A77F2.
6. For typical use of Connection Detail EE, see Layout Type 12D on Standard Plan A77F2 and Layout Type 12DD on Standard Plan A77F5.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING CONNECTIONS TO ABUTMENTS AND WALLS

NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

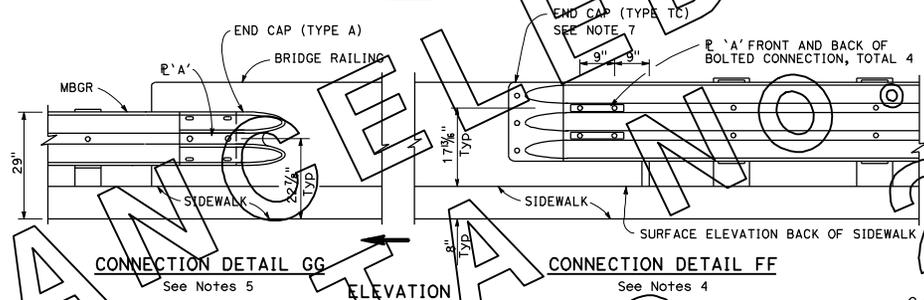
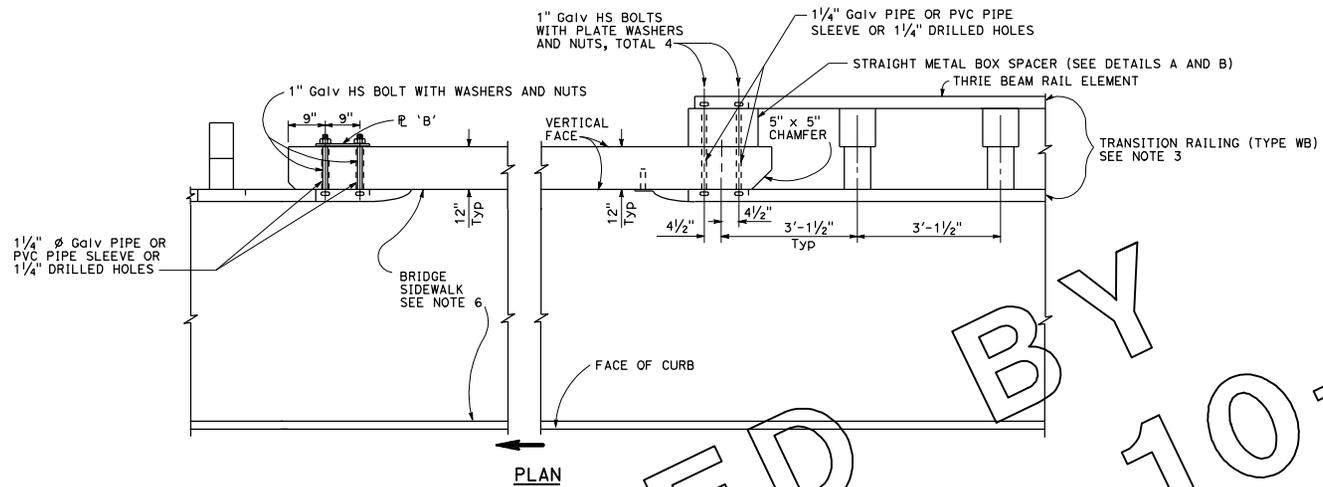
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

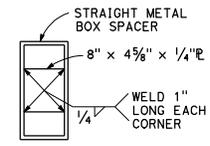
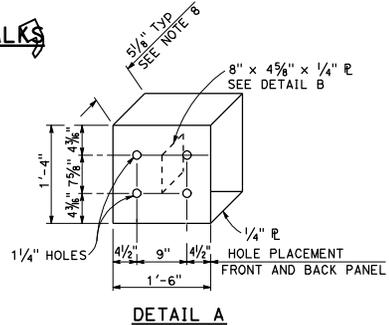
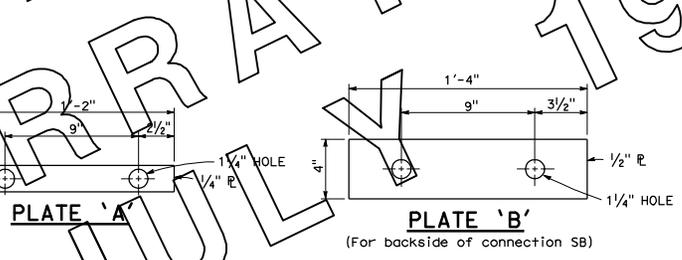
Randell D. Hiatt
No. CS0200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER

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GUARD RAILING CONNECTION TO BRIDGE RAILING WITH SIDEWALKS



STRAIGHT METAL BOX SPACER

NOTES:

1. See Standard Plan A77K2 for additional connection details to bridges with sidewalks.
2. Direction of adjacent traffic indicated by →.
3. For additional details of Transition Railing (Type WB), see Standard Plan A77J4. Transition Railing (Type WB) transitions the 12 gage w-beam standard railing section of guard railing to a heavier gage nested three beam railing which is connected to the concrete bridge railing.
4. For typical use of Connection Detail FF, see Layout Types 12A and 12B on Standard Plan A77F1.
5. For typical use of Connection Detail GG, see Layout Type 12D on Standard Plan A77F2 and Layout Type 12DD on Standard Plan A77F5.
6. Where the bridge sidewalk is not continued beyond the end of the bridge railing, the portion of the sidewalk beyond each end of the bridge railing shall be transitioned down from the top elevation of the sidewalk, for its entire width, to the finished grade of the adjacent roadbed. The longitudinal slope of each sidewalk elevation transition shall not exceed 8.33 percent.
7. For details of End Cap (Type TC), see Standard Plan A77J4.
8. See Standard Plan A77J4 for additional details regarding depth dimension for straight metal box spacer.

METAL BEAM GUARD RAILING CONNECTIONS TO BRIDGE RAILINGS WITH SIDEWALKS DETAILS No. 1

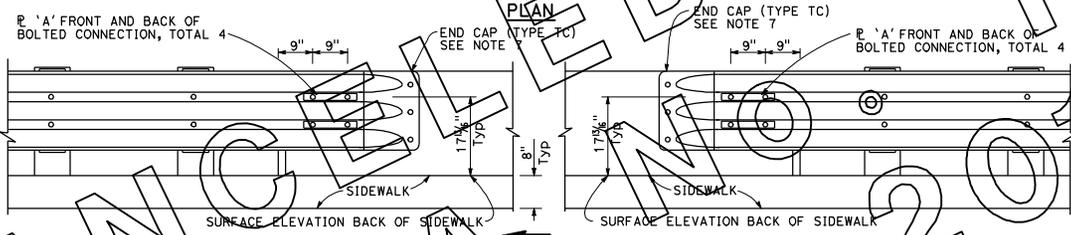
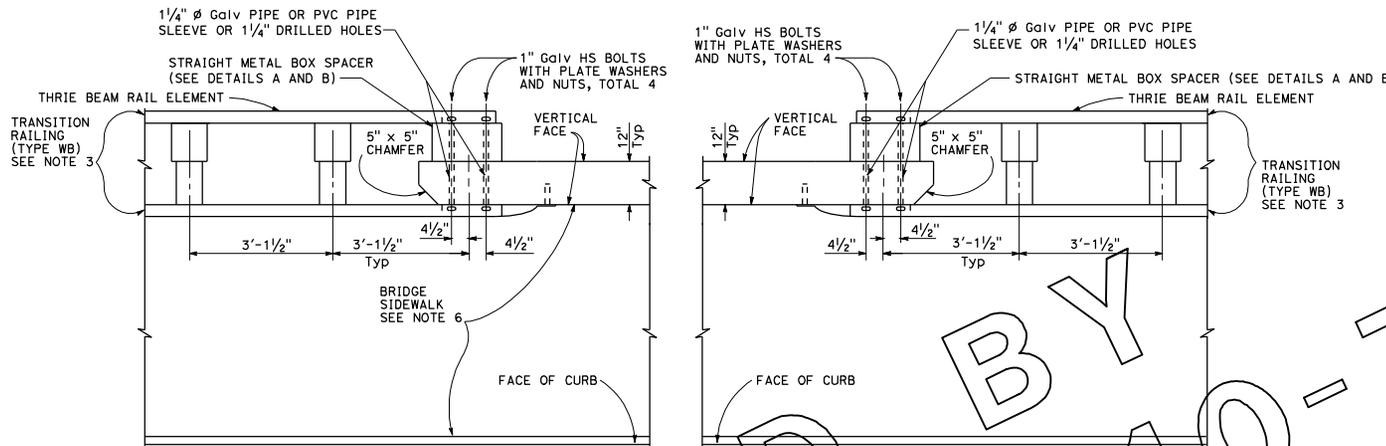
NO SCALE

A77K1

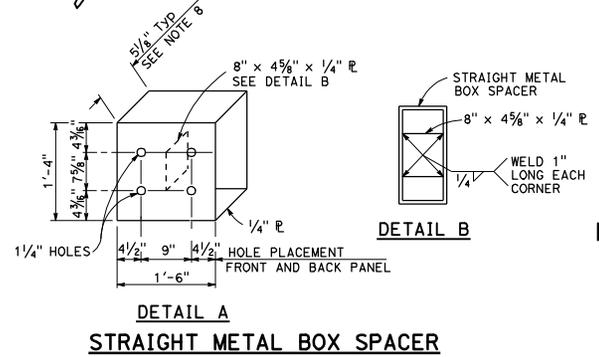
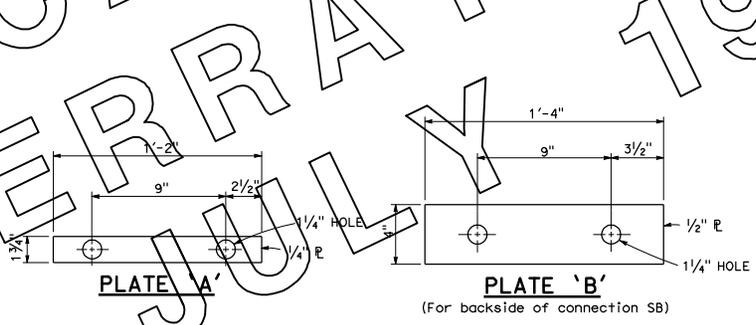
2010 STANDARD PLAN A77K1

CANCELLED BY 10-7-2013

ERRATA JULY 19



GUARD RAILING CONNECTION TO BRIDGE RAILING WITH SIDEWALKS



- NOTES:**
1. See Standard Plan A77K for additional connection details to bridges with sidewalks.
 2. Direction of adjacent traffic indicated by \rightarrow .
 3. For additional details of Transition Railing (Type WB), see Standard Plan A77J4. Transition Railing (Type WB) transitions the 12 gage w-beam standard railing section of guard railing to a heavier gage nested three beam railing which is connected to the concrete bridge railing.
 4. For typical use of Connection Detail FF, see Layout Types 12A and 12B on Standard Plan A77F1.
 5. For typical use of Connection Detail HH, see Layout Types 12AA and 12BB on Standard Plan A77F4.
 6. Where the bridge sidewalk is not continued beyond the end of the bridge railing, the portion of the sidewalk beyond each end of the bridge railing shall be transitioned down from the top elevation of the sidewalk, for its entire width, to the finished grade of the adjacent roadbed. The longitudinal slope of each sidewalk elevation transition shall not exceed 8.33 percent.
 7. For details of End Cap (Type TC), see Standard Plan A77J4.
 8. See Standard Plan A77J4 for additional details regarding depth dimension for straight metal box spacer.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE
May 20, 2011

REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-11
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

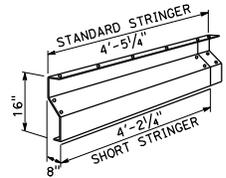
**METAL BEAM GUARD RAILING
CONNECTIONS TO BRIDGE
RAILINGS WITH SIDEWALKS
DETAILS No. 2**

NO SCALE

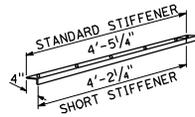
A77K2

2010 STANDARD PLAN A77K2

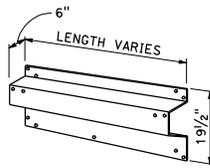
D16+	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	NO. SHEETS
<i>Kathy Orlove</i> REGISTERED CIVIL ENGINEER				
May 20, 2011 PLANS APPROVAL DATE				
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>				



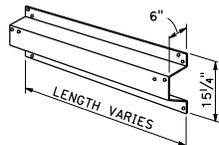
STRINGER-0.109"



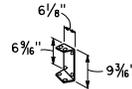
STRINGER STIFFENER-0.168"



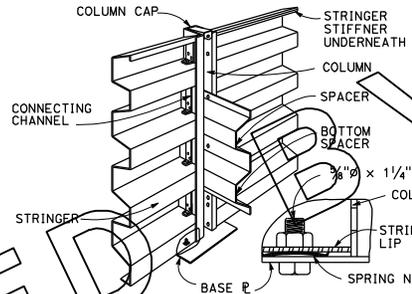
SPACER-0.109"



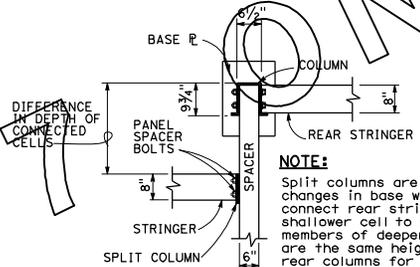
BOTTOM SPACER-0.109"



CONNECTING CHANNEL-0.168"

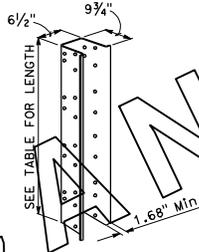


CRIB ASSEMBLY FRONT COLUMN
Rear Column Similar

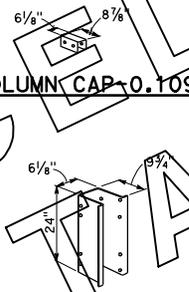


DETAIL SPLIT COLUMN ATTACHMENT

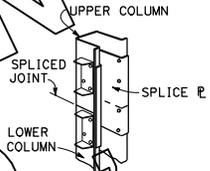
NOTE:
Split columns are used at changes in base width to connect rear stringers of shallower cell to spacer members of deeper cell. They are the same height as the rear columns for the shallower cell.



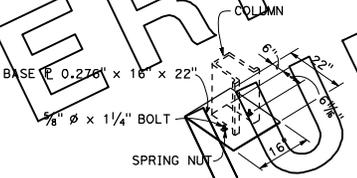
COLUMN-0.168"



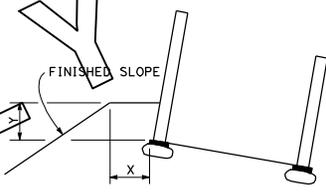
COLUMN SPLICE PLATE-0.138"



ASSEMBLY AT COLUMN SPLICE

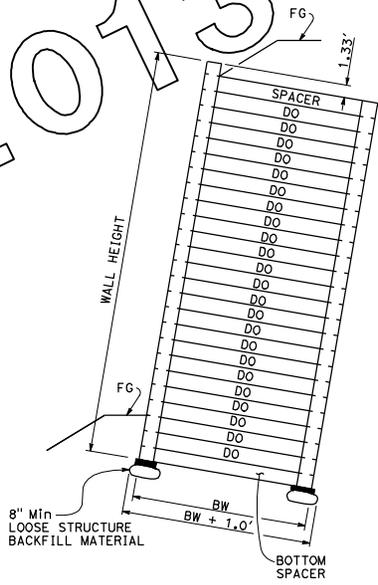


BASE PLATE ARRANGEMENT



EMBEDMENT DETAIL

EMBEDMENT DATA		
WALL TYPE	X	Y
A	2'-6"	2'-6"
B	3'-0"	3'-0"
C	3'-6"	3'-0"
D	4'-0"	3'-0"
E	4'-6"	3'-0"



WALL SECTION

NOTE:
All bolts 5/8" ϕ and 1 1/4" long, minimum

LEGEND
DO = DITTO
BW = BASE WIDTH

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
STEEL CRIB WALL CONSTRUCTION DETAILS

NO SCALE

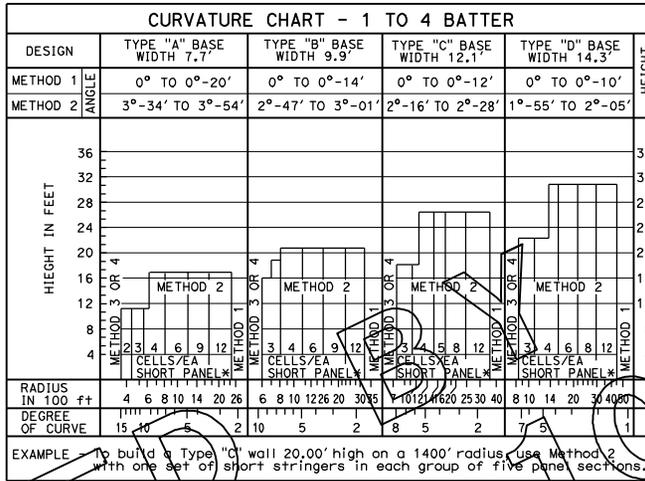
C8A

151

2010 STANDARD PLAN C8A

STRINGER MEMBERS REQUIRED PER CELL							
STANDARD FOR STRAIGHT	SHORT IN FRONT			SHORT IN REAR			ST'd
	0.064"	S't'r	S't'd	SHORT	S't'r	S't'd	
4.00	3	1	1	2	1	2	1
5.33	5	1	2	3	1	3	2
6.67	7	1	3	4	1	4	3
8.00	9	1	4	5	1	5	4
9.33	11	1	5	6	1	6	5
10.67	13	1	6	7	1	7	6
12.00	15	1	7	8	1	8	7
13.33	17	1	8	9	1	9	8
14.67	19	1	9	10	1	10	9
16.00	21	1	10	11	1	11	10
17.33	23	1	11	12	1	12	11
18.67	25	1	12	13	1	13	12
20.00	27	1	13	14	1	14	13
21.33	29	1	14	15	1	15	14
22.67	31	1	15	16	1	16	15
24.00	33	1	16	17	1	17	16
25.33	35	1	17	18	1	18	17
26.67	37	1	18	19	1	19	18
28.00	39	1	19	20	1	20	19
29.33	41	1	20	21	1	21	20
30.67	43	1	21	22	1	22	21
32.00	45	1	22	23	1	23	22
33.33	47	1	23	24	1	24	23
34.67	49	1	24	25	1	25	24
36.00	51	1	25	26	1	26	25

NOTE: This table applies only to stringers for both front and rear of a 5' length of wall.



OTHER MEMBERS REQUIRED PER CELL

WALL HEIGHT (ft)	BEARING PLATE	FRONT COLUMN HEIGHT (ft)				REAR COLUMN HEIGHT (ft)				TOTAL COLUMN LENGTH (ft)	COLUMN SPACER	COLUMN CAP	SPACERS (BY LENGTH)				WALL HEIGHT (ft)
		1st	2nd	3rd	TOTAL	1st	2nd	3rd	TOTAL				SPACERS (BY LENGTH)				
													7.4'	9.6'	11.8'	14.0'	
4.00	16" x 22"	1.00	1.00	1.00	3.00	1.00	1.00	1.00	3.00	2.67	6.67	2	1	1	1	4.00	
5.33	2	1.33	1.33	1.33	4.00	1.33	1.33	1.33	4.00	9.33	2	2	2	2	1	5.33	
6.67	2	1.67	1.67	1.67	5.00	1.67	1.67	1.67	5.00	12.00	2	2	2	2	1	6.67	
8.00	2	2.00	2.00	2.00	6.00	2.00	2.00	2.00	6.00	14.67	2	2	2	2	1	8.00	
9.33	2	2.33	2.33	2.33	7.00	2.33	2.33	2.33	7.00	17.33	2	2	2	2	1	9.33	
10.67	2	2.67	2.67	2.67	8.00	2.67	2.67	2.67	8.00	20.00	2	2	2	2	1	10.67	
12.00	2	3.00	3.00	3.00	9.00	3.00	3.00	3.00	9.00	22.67	2	2	2	2	1	12.00	
13.33	2	3.33	3.33	3.33	10.00	3.33	3.33	3.33	10.00	25.33	2	2	2	2	1	13.33	
14.67	2	3.67	3.67	3.67	11.00	3.67	3.67	3.67	11.00	28.00	2	2	2	2	1	14.67	
16.00	2	4.00	4.00	4.00	12.00	4.00	4.00	4.00	12.00	30.67	2	2	2	2	1	16.00	
17.33	2	4.33	4.33	4.33	13.00	4.33	4.33	4.33	13.00	33.33	2	2	2	2	1	17.33	
18.67	2	4.67	4.67	4.67	14.00	4.67	4.67	4.67	14.00	36.00	2	2	2	2	1	18.67	
20.00	2	5.00	5.00	5.00	15.00	5.00	5.00	5.00	15.00	38.67	2	2	2	2	1	20.00	
21.33	2	5.33	5.33	5.33	16.00	5.33	5.33	5.33	16.00	41.33	2	2	2	2	1	21.33	
22.67	2	5.67	5.67	5.67	17.00	5.67	5.67	5.67	17.00	44.00	2	2	2	2	1	22.67	
24.00	2	6.00	6.00	6.00	18.00	6.00	6.00	6.00	18.00	46.67	2	2	2	2	1	24.00	
25.33	2	6.33	6.33	6.33	19.00	6.33	6.33	6.33	19.00	49.33	2	2	2	2	1	25.33	
26.67	2	6.67	6.67	6.67	20.00	6.67	6.67	6.67	20.00	52.00	2	2	2	2	1	26.67	
28.00	2	7.00	7.00	7.00	21.00	7.00	7.00	7.00	21.00	54.67	2	2	2	2	1	28.00	
29.33	2	7.33	7.33	7.33	22.00	7.33	7.33	7.33	22.00	57.33	2	2	2	2	1	29.33	
30.67	2	7.67	7.67	7.67	23.00	7.67	7.67	7.67	23.00	60.00	2	2	2	2	1	30.67	
32.00	2	8.00	8.00	8.00	24.00	8.00	8.00	8.00	24.00	62.67	2	2	2	2	1	32.00	
33.33	2	8.33	8.33	8.33	25.00	8.33	8.33	8.33	25.00	65.33	2	2	2	2	1	33.33	
34.67	2	8.67	8.67	8.67	26.00	8.67	8.67	8.67	26.00	68.00	2	2	2	2	1	34.67	
36.00	2	9.00	9.00	9.00	27.00	9.00	9.00	9.00	27.00	70.67	2	2	2	2	1	36.00	

NOTE: This table applies only to standard panel sections for a 5' length of wall.

METHOD 1

DEFLECTION ANGLE

Use normal play in bolt holes of standard panels. Maximum deflection shown at top of table can be obtained at edge column. Chart shows smallest radius which can be used for each design of wall.

METHOD 2

SHORT STRINGER SECTION

STANDARD PANEL SECTION

Use short stringer members (4'-2 1/4" face or rear) in addition to play in bolt holes. Curvature chart indicates number of cells in each group, including a modified cell, necessary to build a curved wall at a required height and radius.

METHOD 3

Use stringers field cut (with saber saw) and drilled to fit wall dimensions as it is assembled. Any radius can be fitted on any height of wall. Generally standard panels are used between field cut panels. With very short radii the spacing of the spacer members can be reduced so that two pieces can be cut from each stringer. This method is applicable to large single deflections.

METHOD 4

SPECIAL CORNER

FACE

Use special shop fabricated corner connection pieces. Batter, height, angle, direction of turn, and base width determine the dimension limitations applicable on this method. Manufacturer should be contacted before detailing design for a specific turn. Rear stringers are omitted and it may be necessary to increase the base width of adjacent cells to provide needed stability. This method is an alternative for Method 3.

LEGEND

S't'r = STRINGERS
 S't+f = STIFFENER
 S't+d = STANDARD
 S'h+ = SHORT LENGTH OF 4'-2/4"

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**STEEL CRIB WALL
 DESIGN DATA**
 NO SCALE

C8B

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

Kathryn Orlove
 REGISTERED CIVIL ENGINEER

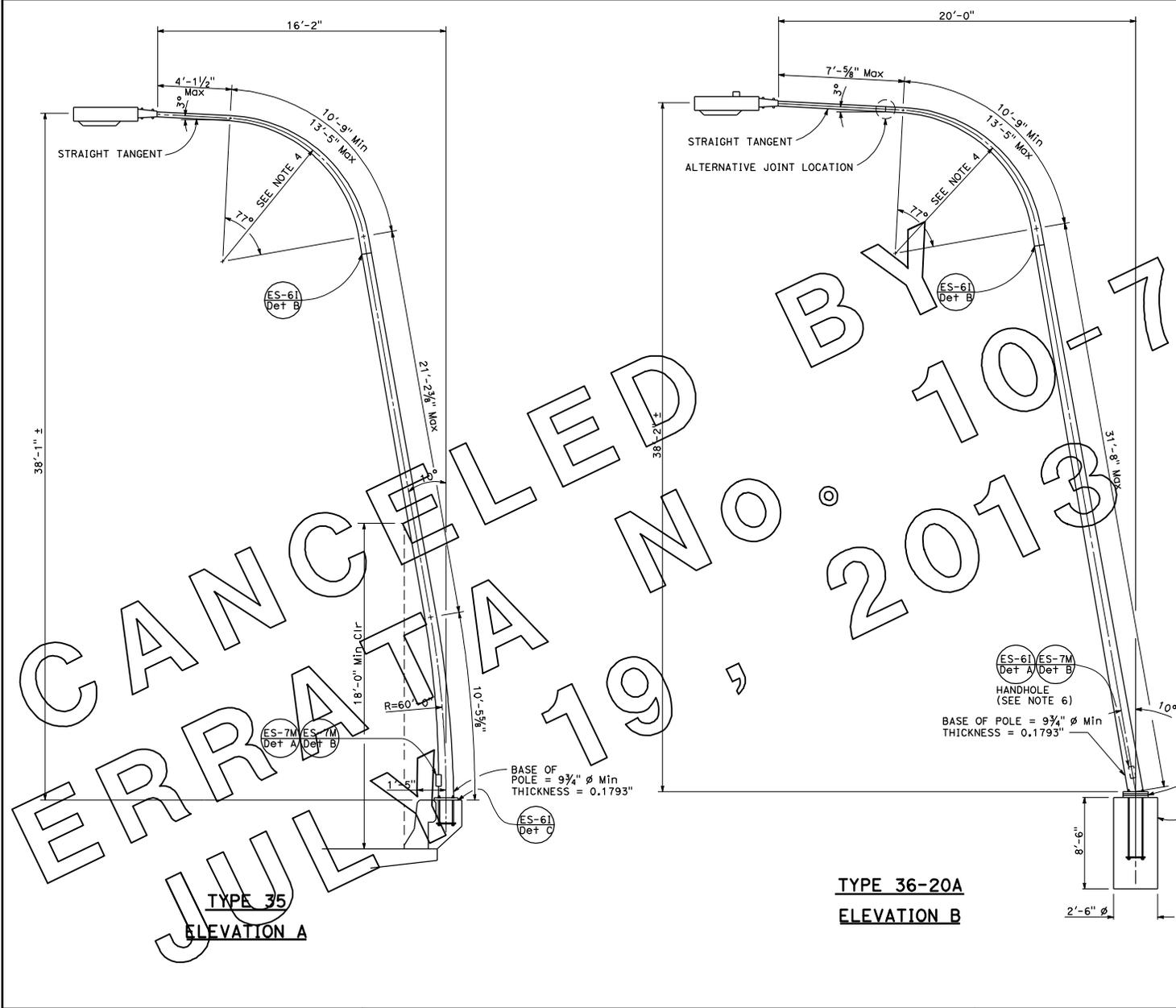
May 20, 2011
 PLANS APPROVAL DATE

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Kathryn Orlove
 No. C55599
 Exp. 12-31-12
 CIVIL ENGINEER
 STATE OF CALIFORNIA

ON

2010-7-3



TYPE 35
ELEVATION A

TYPE 36-20A
ELEVATION B

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 May 20, 2011
 PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL ENGINEER
 Stanley P. Johnson
 No. CS7393
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

NOTES:

1. For additional notes and details, see Standard Plans ES-7M and ES-7N.
2. For ground installation of Type 35, use anchor bolts and foundation for Type 36-20A.
3. Anchor bolts for Type 36-20A: 1/2" ϕ x 3'-0"
4. Knee radius 8'-0" Min to 10'-0" Max.
5. Tube bends shall be made in a manner to prevent buckling or crimping.
6. Handhole shall be located on the downstream side of traffic.
7. Pole and arm configurations shown are the final form when erected in place. Provide camber as necessary.
8. Poles and arms shall be round, tapered steel tubes with a taper of 0.1375" to 0.143" per foot.
9. A 2 NPS Std pipe tenon, 8" Max long may be used for the luminaire connection.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
 (LIGHTING STANDARD,
 TYPES 35 AND 36-20A,
 10 DEGREE TYPE)**

NO SCALE

ES-6H

2010 STANDARD PLAN ES-6H

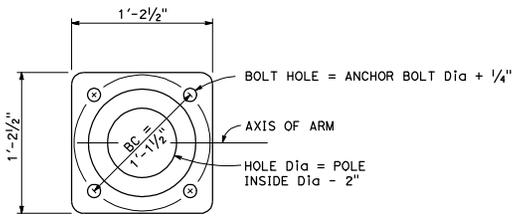
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER

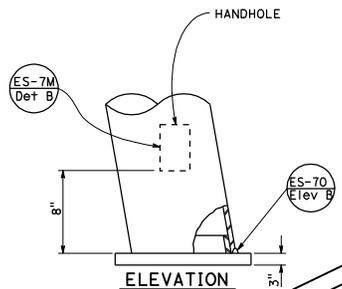
May 20, 2011
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 Stanley P. Johnson
 No. CS793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

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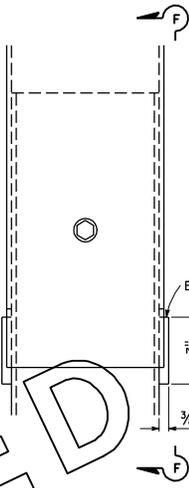


PLAN

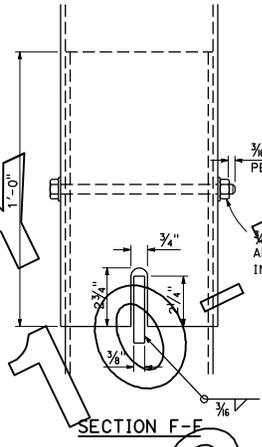


BASE PLATE DETAILS

DETAIL A



FRONT VIEW



SECTION F-F

JOINT DETAILS

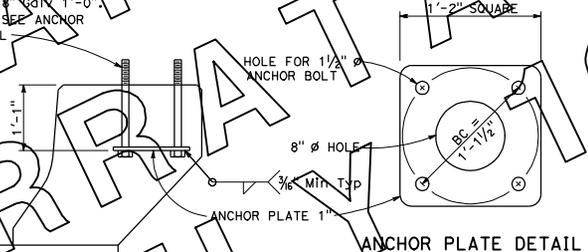
DETAIL B

3/8" Max PEEN END
 3/4" Hex HEAD BOLT, Hex NUT AND 2 FLAT WASHERS. INSTALL AFTER ERECTION

NOTE:

1. Alternative slip joint or sleeve joint designs may be submitted with calculations to the Engineer for approval.

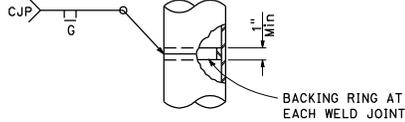
1/4" ϕ x 1'-0" BOLT, THREAD TOP 8" Galv 1'-0". FOR LAYOUT SEE ANCHOR PLATE DETAIL



ELEVATION

TYPE 35 ANCHOR DETAILS

DETAIL C



POLE SPLICE

DETAIL D

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
 (LIGHTING STANDARD,
 TYPES 35 AND 36-20A,
 10 DEGREE TYPE DETAILS)**
 NO SCALE

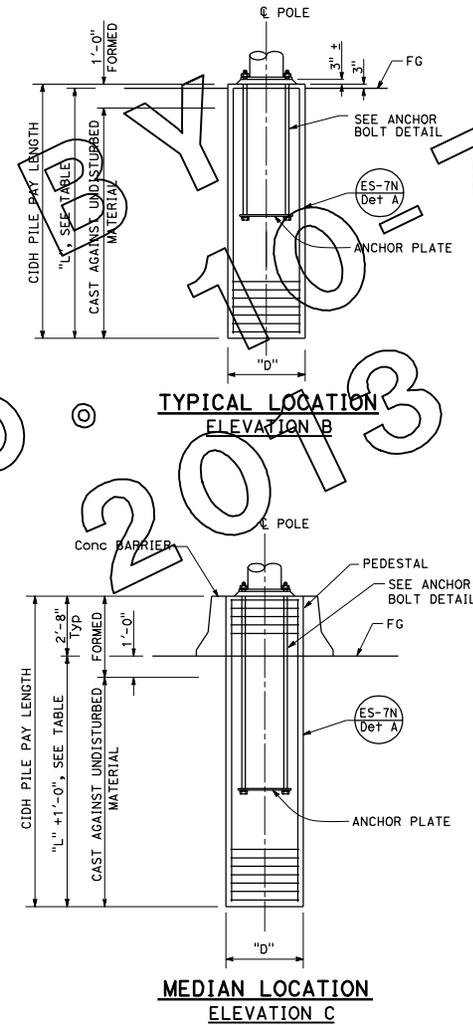
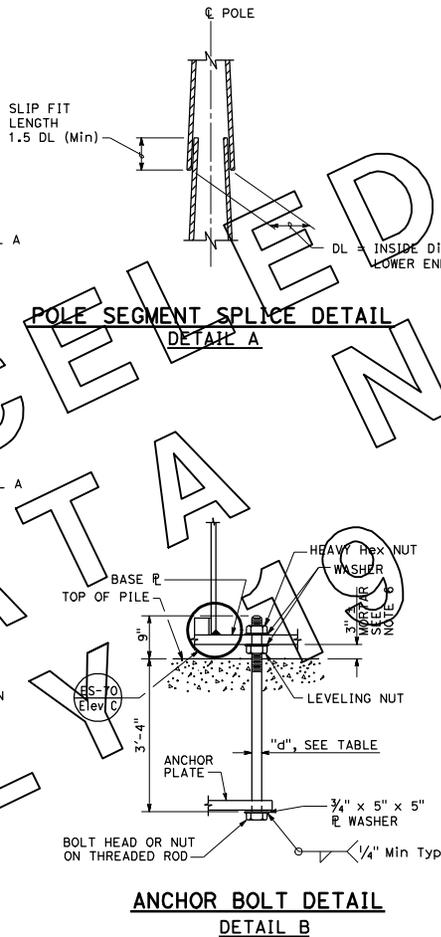
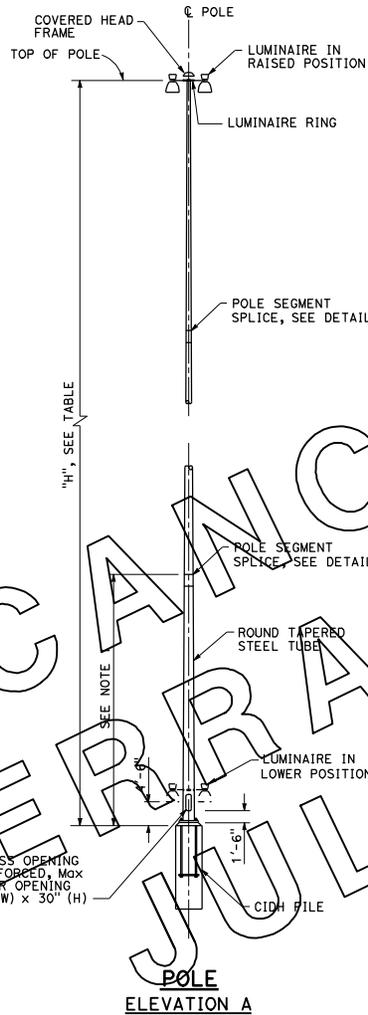
ES-61

2010 STANDARD PLAN ES-61

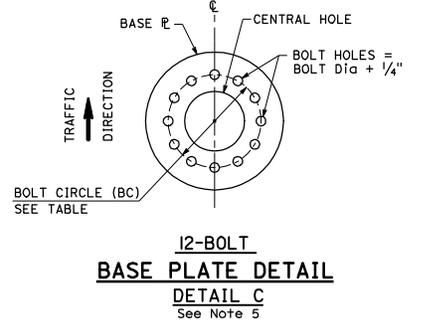
460

POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH PILE DATA	
	HEIGHT "H"	Min OD BASE	Min THICKNESS BASE *	Dia	THICKNESS	ANCHOR BOLT SIZE		BC = BOLT CIRCLE	"D"	"L"
						TOTAL	"d"			
HM 80	80'-0"	1'-6"	0.3125"	2'-4"	3"	12	1 1/2"	1'-11"	3'-6"	12'-0"
HM 100	100'-0"	1'-8"		2'-6"			1 1/2"	2'-1"	4'-0"	13'-0"
HM 120	120'-0"	1'-10"	0.375"	3'-2"			1 3/4"	2'-8"	5'-0"	14'-0"
HM 160	160'-0"	2'-2 1/2"	0.5"	3'-6"			3'-0"	6'-0"	15'-0"	

* WHEN USING ALTERNATIVE BASE, SEE ES-70, DETAIL C4 FOR BASE THICKNESS ADJUSTMENT.



- NOTES:**
1. Pole details shall suit the lowering device and this foundation plan. Pole details shall be submitted to the Engineer for approval.
 2. For number of luminaires to be mounted on the pole, see Electrical Plans.
 3. Foundation design is based on a maximum of 10 luminaires. Design wind velocity 80 mph (fastest mile).
 4. Slip fit length shall not be less than 1.5 DL.
 5. Base plate shape optional.
 6. For central void and drain holes in mortar, see ES-6B, Detail N.
 7. Access opening shall be located on the downstream side of traffic unless otherwise determined by the Engineer.



STATE OF CALIFORNIA
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**ELECTRICAL SYSTEMS
(LIGHTING STANDARD,
80' TO 160' HIGH MAST
LIGHT POLE)**
NO SCALE

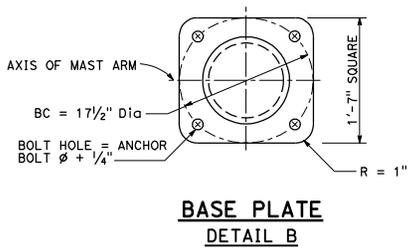
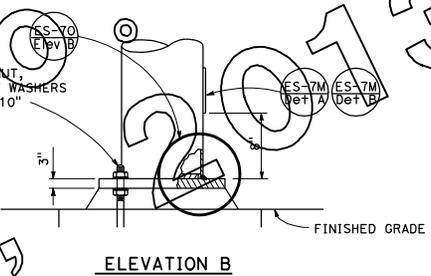
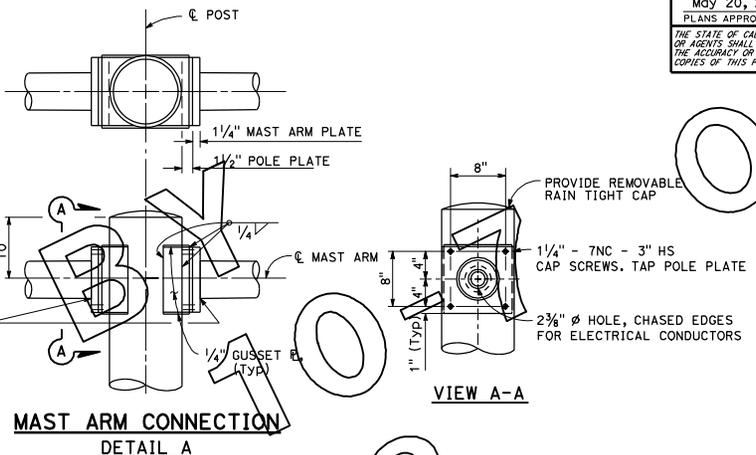
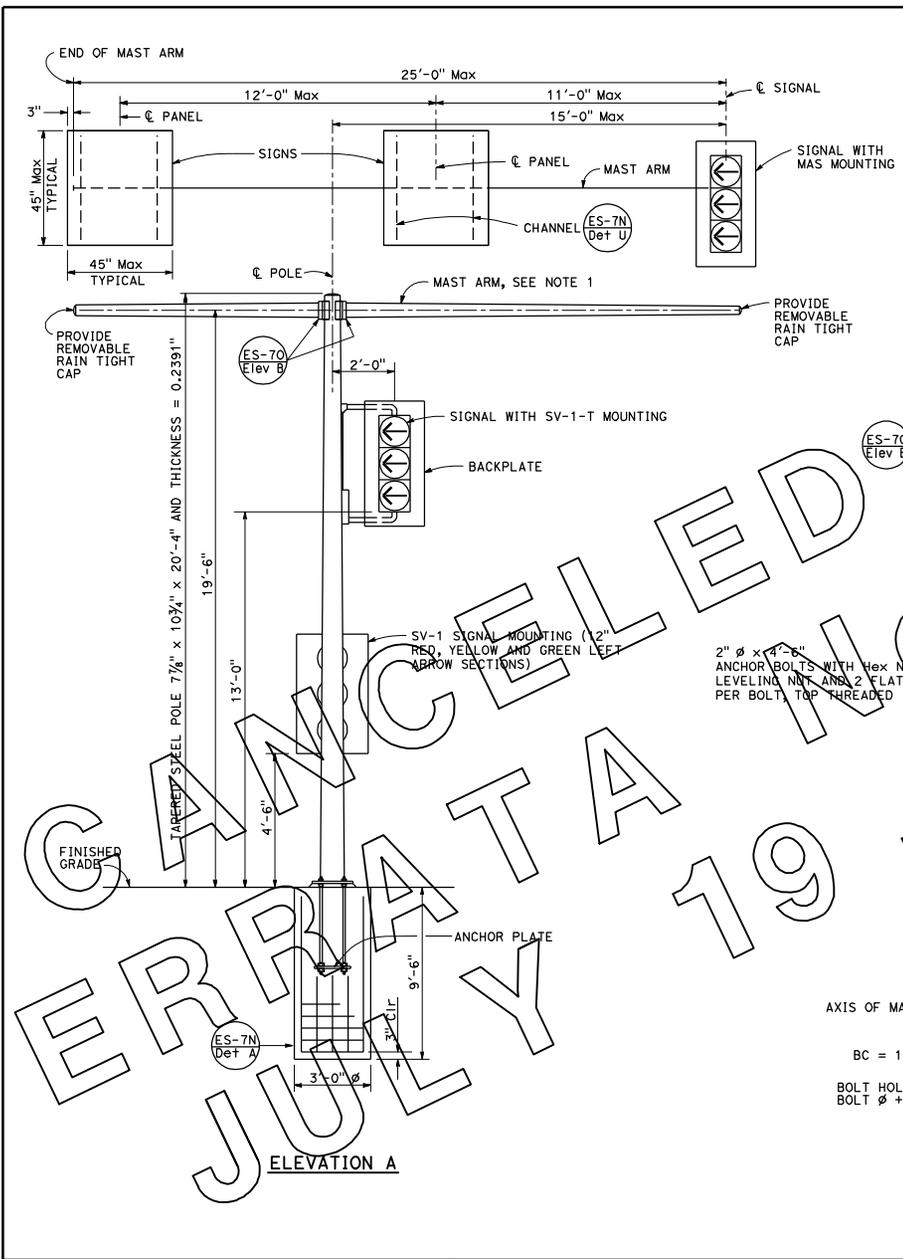
ES-6J

2010 STANDARD PLAN ES-6J

461

8-6-10

470



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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE

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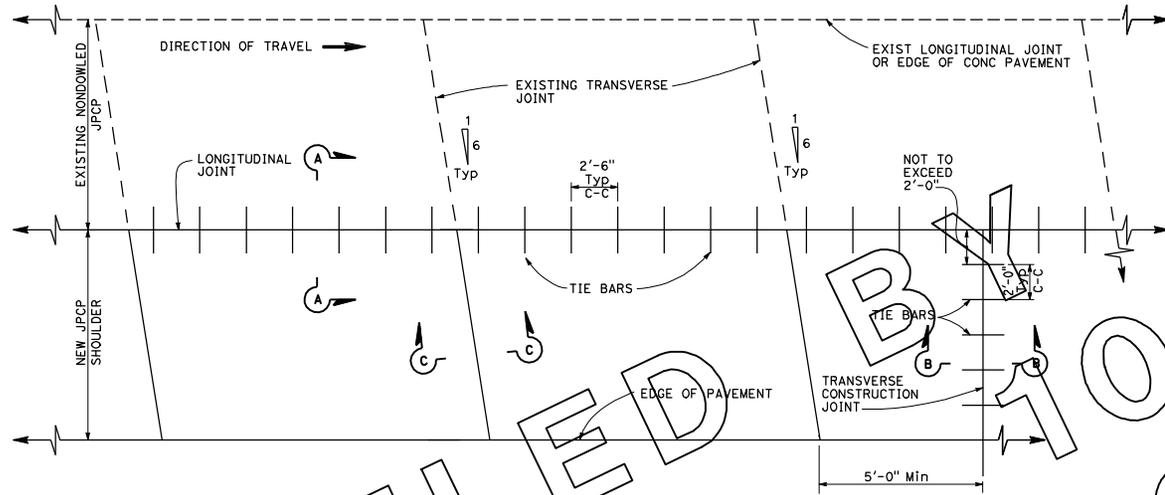
- NOTES:**
1. Round tapered steel tube thickness 0.1793" with maximum taper of 0.143-inch per foot and 7 3/8" OD minimum at pole.
 2. Cap screws shall be tightened by the turn-of-nut method, 1/3 turn from snug tight condition. No washer will be required.
 3. For mast arm lengths, signs or signals required on each side of pole, see project plans.
 4. Signal mounted on mast arm shall be MAS mounted on pipe tenon, see Detail S on Standard Plan ES-7M.
 5. Sign area shall not exceed 14.0 square feet for each sign.
 6. If 2 signs are placed on one side of pole, one sign must be placed adjacent to pole.

STATE OF CALIFORNIA
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**ELECTRICAL SYSTEMS
 (SIGNAL AND SIGN STANDARD,
 TYPE 33 LEFT TURN)**

NO SCALE

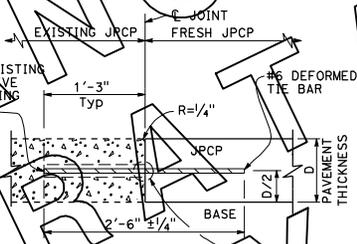
ES-7I

2010 STANDARD PLAN ES-7I



PLAN

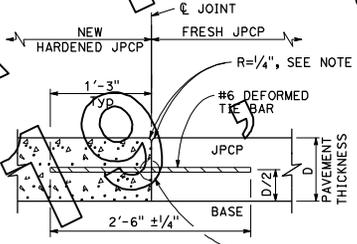
DRILL 1" Dia HOLE INTO EXISTING JPCP. USE CHEMICAL ADHESIVE TO BOND TIE BAR TO EXISTING CONCRETE PAVEMENT.



SECTION A-A

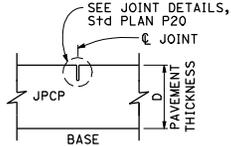
LONGITUDINAL JOINT

(Between fresh and hardened concrete)



SECTION B-B

TRANSVERSE CONSTRUCTION JOINT



SECTION C-C

TRANSVERSE CONTRACTION JOINT

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

William K. Farnbach
 REGISTERED CIVIL ENGINEER

May 20, 2011
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
 William K. Farnbach
 No. C49042
 Exp. 9-30-12
 CIVIL
 STATE OF CALIFORNIA

NOTES:

1. New transverse contraction joints shall match the skewed offset and spacing of the adjacent existing contraction joints, as shown.
2. Transverse construction joints, with tie bars spaced as shown, shall be installed at the end of paving operations. Transverse construction joints shall be placed at least 5'-0" from any contraction joint.
3. This Standard Plan only applicable for constructing a nondoweled Jointed Plain Concrete Pavement shoulder next to existing nondoweled Jointed Plain Concrete Pavement lane.
4. If fresh concrete is placed adjacent to existing concrete, the top corner of the new hardened concrete does not need to be rounded to the 1/4" radius as shown.

TABLE A

TIE BAR SPACING		
SLAB LENGTH	TOTAL TIE BARS PER SLAB	CLEARANCE TIE BAR TO TRANSVERSE JOINT
9'-0"	3	1'-3"
9'-6"	3	1'-4 1/2"
12'-0"	5	1'-4"
13'-0"	5	1'-10"
14'-0"	5	2'-3 3/4"
15'-0"	6	1'-8"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

JOINTED PLAIN CONCRETE PAVEMENT-NONDOWELED SHOULDER ADDITION/RECONSTRUCTION

NO SCALE

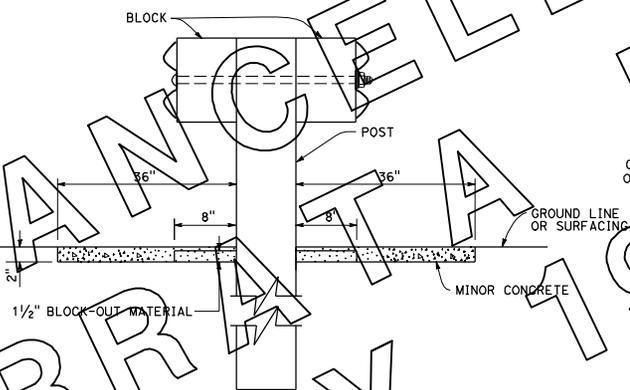
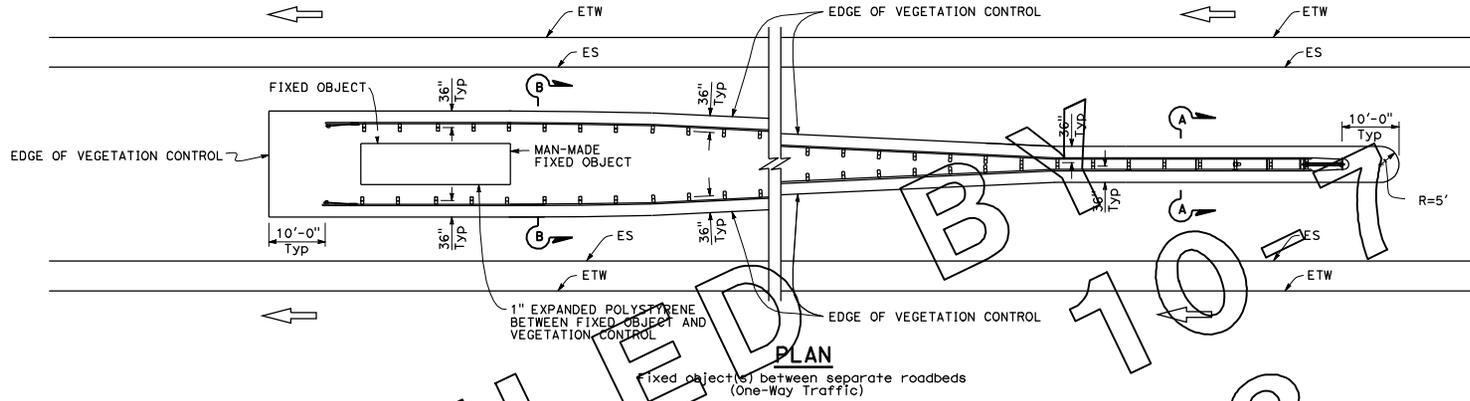
NOTES:

1. See Revised Standard Plan RSP A77C5 for additional vegetation control details.
2. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.

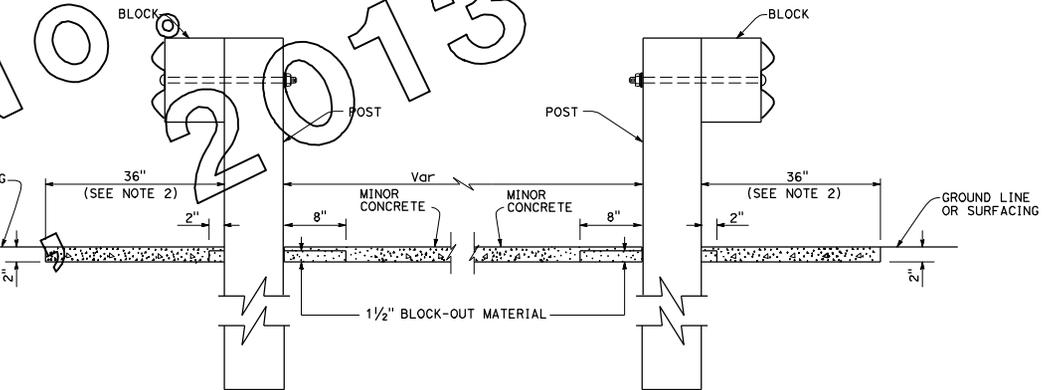
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randall D. Hiett
 REGISTERED CIVIL ENGINEER
 October 19, 2012
 PLANS APPROVAL DATE
 No. C50200
 Exp. 6-30-13
 CIVIL
 STATE OF CALIFORNIA

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SECTION A-A



SECTION B-B

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
 TYPICAL VEGETATION CONTROL
 AT FIXED OBJECT**

NO SCALE
 RSP A77C10 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A77C10
 DATED MAY 20, 2011 - PAGE 58 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77C10

CANCELLED
 ERRATA
 JULY 19 2013
 NO 2013

TO ACCOMPANY PLANS DATED
O M

2010 REVISED STANDARD PLAN RSP A77C10

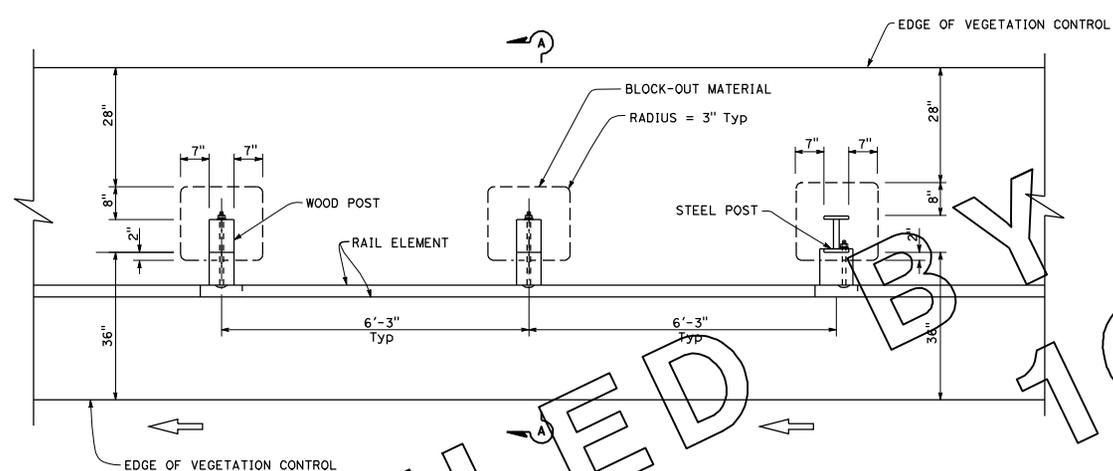
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 19, 2012
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
No. CS0200
Exp. 6-30-13
CIVIL
STATE OF CALIFORNIA

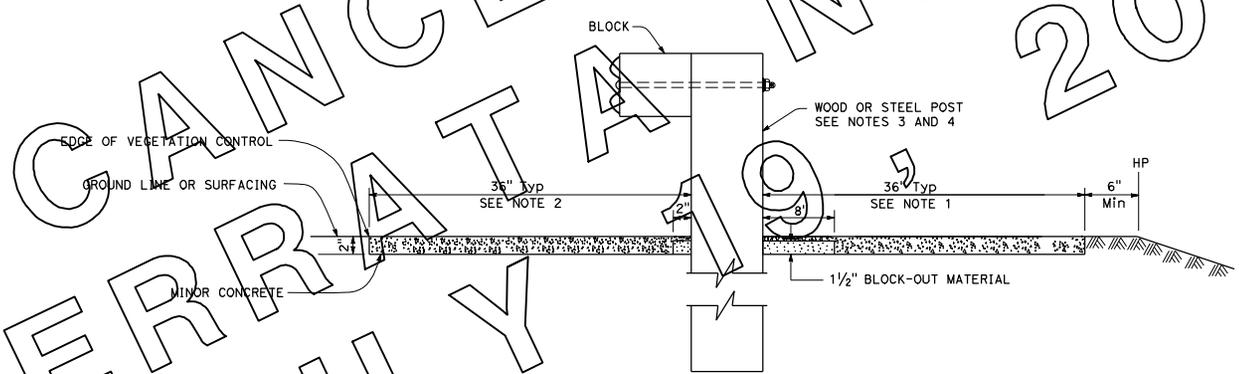
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NOTES:

1. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
2. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. For wood post sizes, see Standard Plan A77C1.
4. For steel post sizes, see Standard Plan A77C2.
5. For details not shown, see Standard Plans A77A1 and A77A2.

PLAN



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
STANDARD RAILING SECTION**

NO SCALE

RSP A77C5 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A77C5
DATED MAY 20, 2011 - PAGE 53 OF THE STANDARD PLANS BOOK DATED 2010.

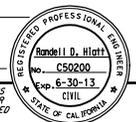
REVISED STANDARD PLAN RSP A77C5

2010 REVISED STANDARD PLAN RSP A77C5

CANCELED BY 1010
ERRATA NO. 2013
JULY

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

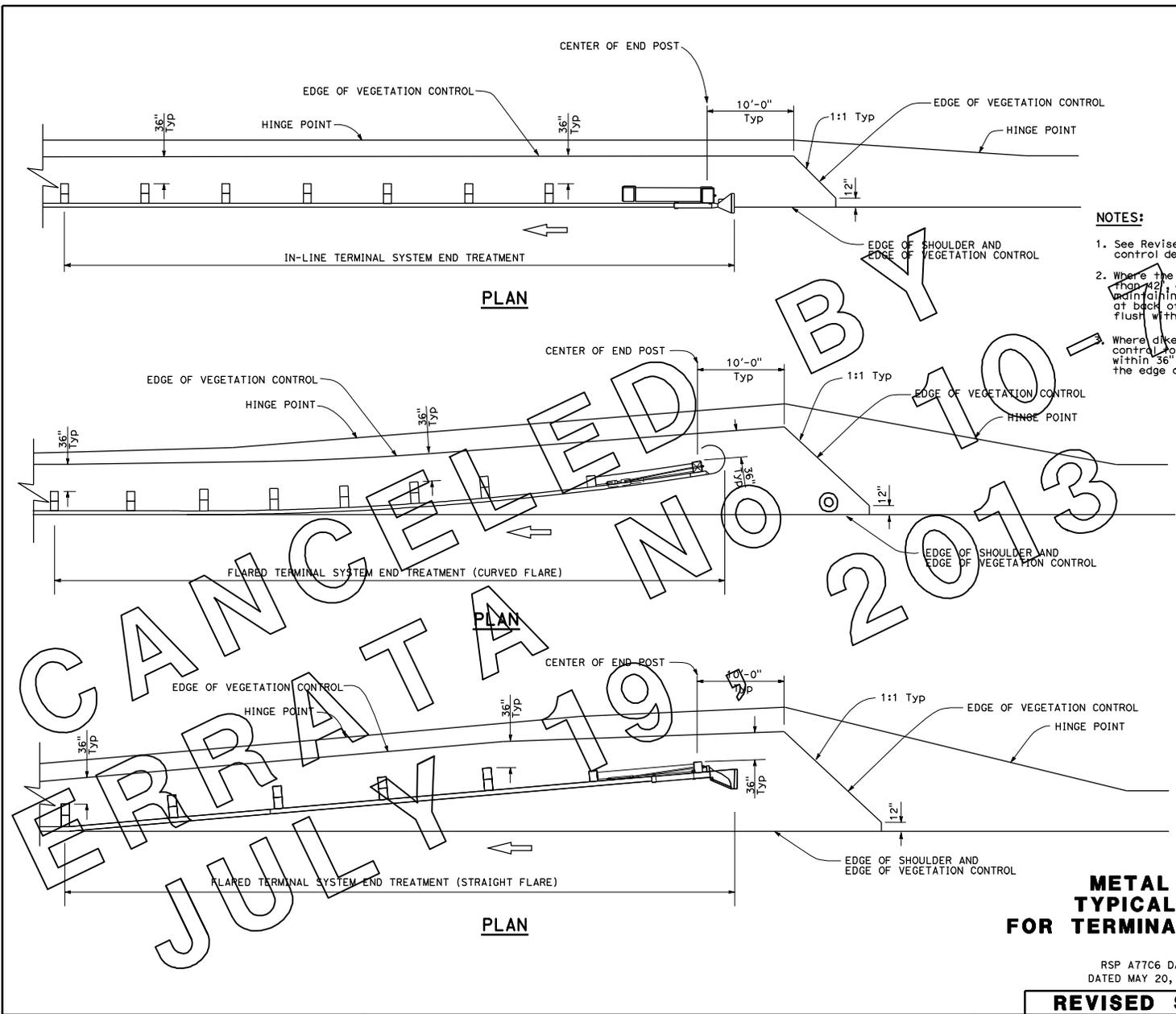
Randall D. Hiatt
 REGISTERED CIVIL ENGINEER
 October 19, 2012
 PLANS APPROVAL DATE
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TO ACCOMPANY PLANS DATED _____

NOTES:

1. See Revised Standard Plan RSP A77C5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.



CANCELLED BY NO. 10-13
 ERRATA JULY 19 2013

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
 TYPICAL VEGETATION CONTROL
 FOR TERMINAL SYSTEM END TREATMENTS**
 NO SCALE
 RSP A77C6 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A77C6
 DATED MAY 20, 2011 - PAGE 54 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A77C6

2010 REVISED STANDARD PLAN RSP A77C6

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

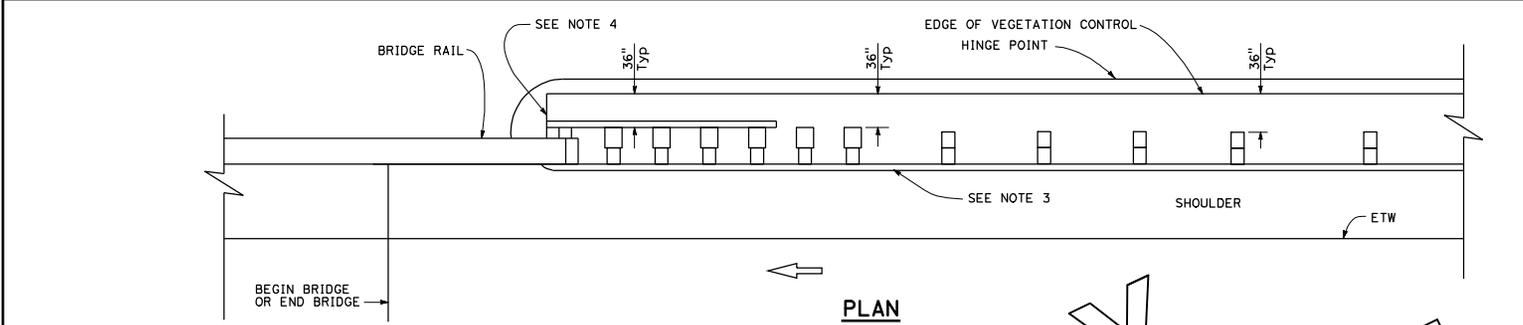
Randall D. Hiatt
 REGISTERED CIVIL ENGINEER
 October 19, 2012
 PLANS APPROVAL DATE
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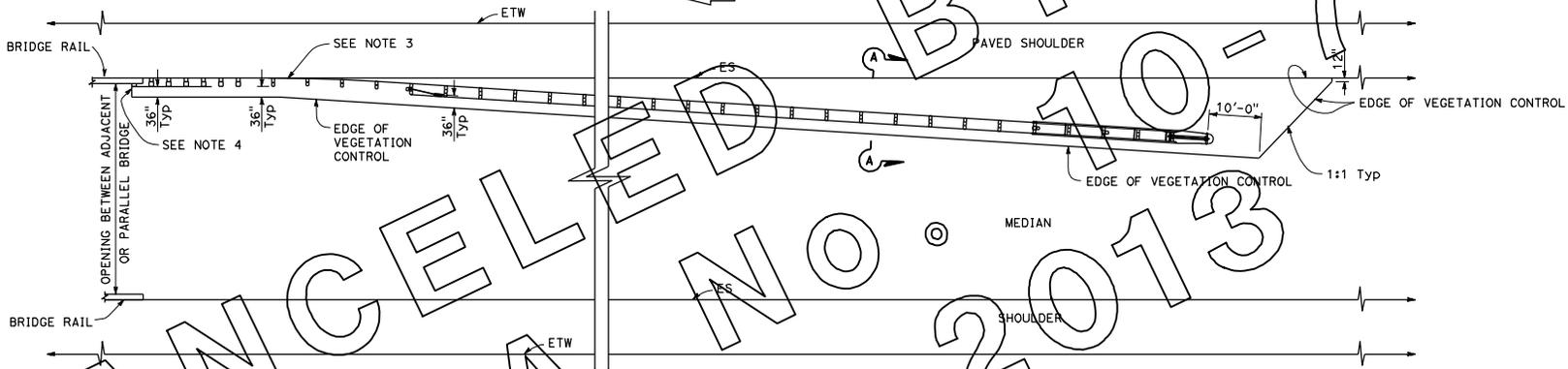
TO ACCOMPANY PLANS DATED

OM

2010 REVISED STANDARD PLAN RSP A77C7



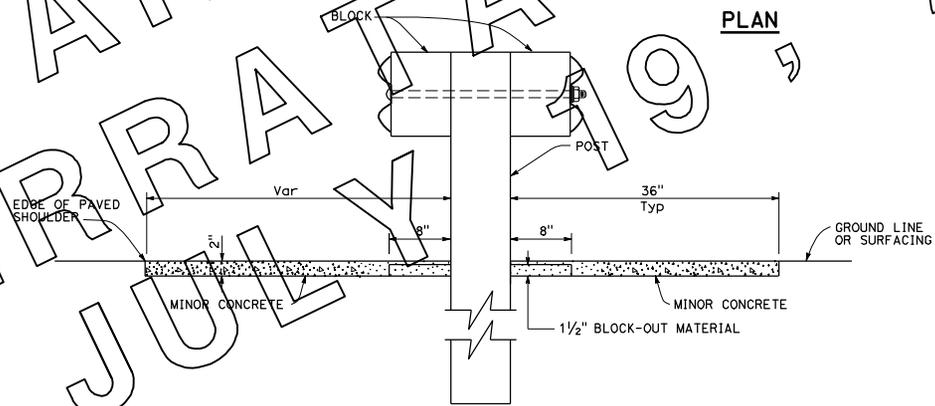
PLAN



PLAN

NOTES:

1. See Revised Standard Plan RSP A77C5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
4. End vegetation control at end of backside rail element.



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
AT STRUCTURE APPROACH**

NO SCALE

RSP A77C7 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A77C7 DATED MAY 20, 2011 - PAGE 55 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77C7

CANCELLED BY 10-7
 ERRATA JULY 19, 2013
 No. 2013

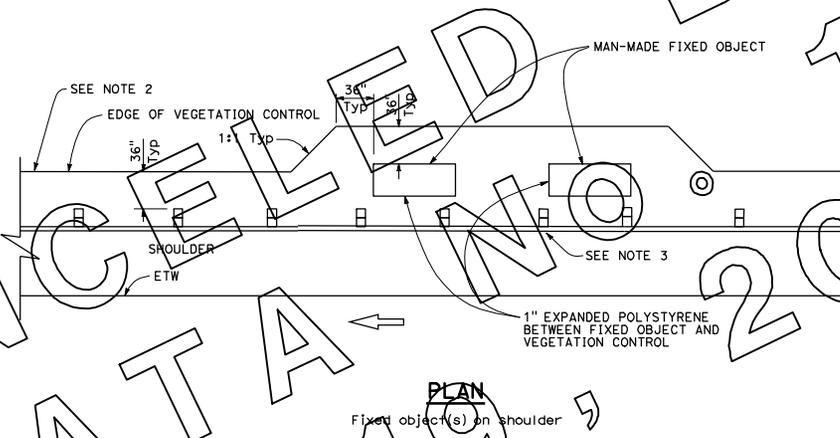
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
October 19, 2012 PLANS APPROVAL DATE					
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TO ACCOMPANY PLANS DATED _____

NOTES:

1. See Revised Standard Plan RSP A77C5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.



PLAN
Fixed object(s) on shoulder

CANCELLED BY NO 10
 ERRATA NO 19
 JULY 2013

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**METAL BEAM GUARD RAILING
 TYPICAL VEGETATION CONTROL
 AT FIXED OBJECT**

NO SCALE

RSP A77C8 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A77C8
 DATED MAY 20, 2011 - PAGE 56 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77C8

2010 REVISED STANDARD PLAN RSP A77C8

NOTES:

1. See Revised Standard Plan RSP A77C5 for additional vegetation control details.
2. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.

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

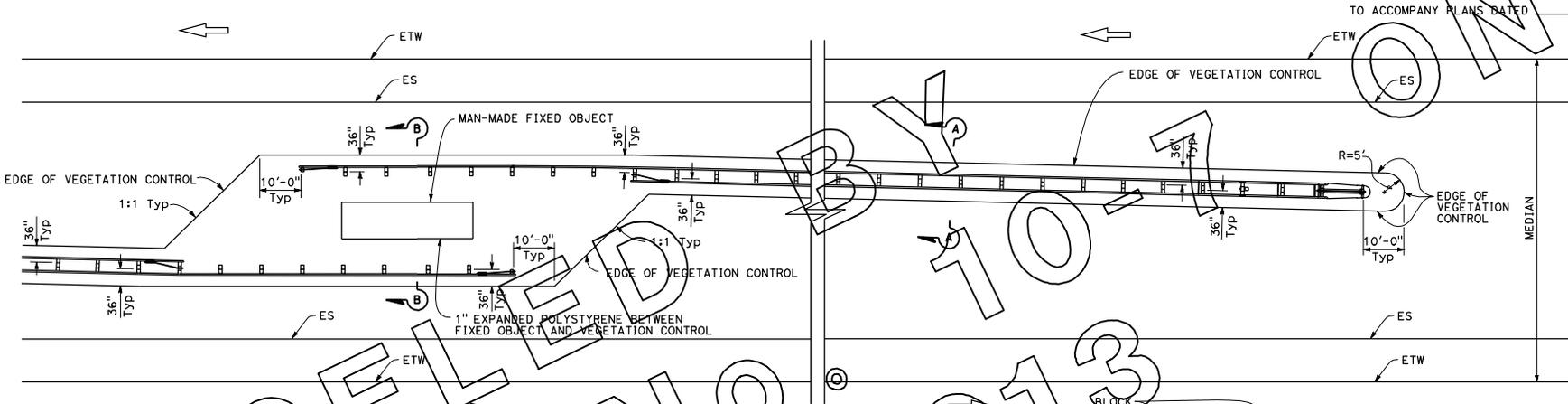
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 19, 2012
PLANS APPROVAL DATE

Randell D. Hiatt
No. C50200
Exp. 6-30-13
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER

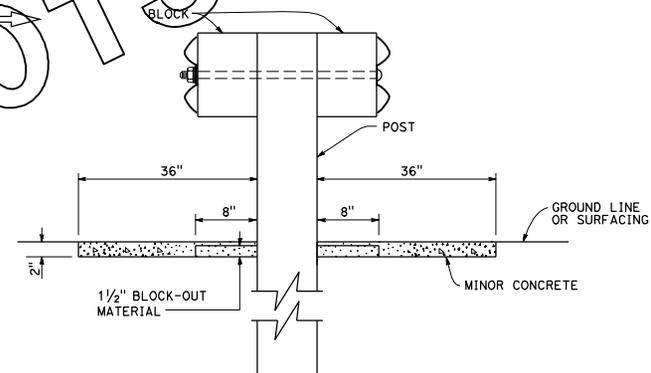
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PLAN

Fixed object(s) in median

CANCELLED
 JULY 19 2013
 PER RATA NO 19 2013



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
TYPICAL VEGETATION CONTROL
AT FIXED OBJECT**

NO SCALE

RSP A77C9 DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A77C9
DATED MAY 20, 2011 - PAGE 57 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77C9

2010 REVISED STANDARD PLAN RSP A77C9

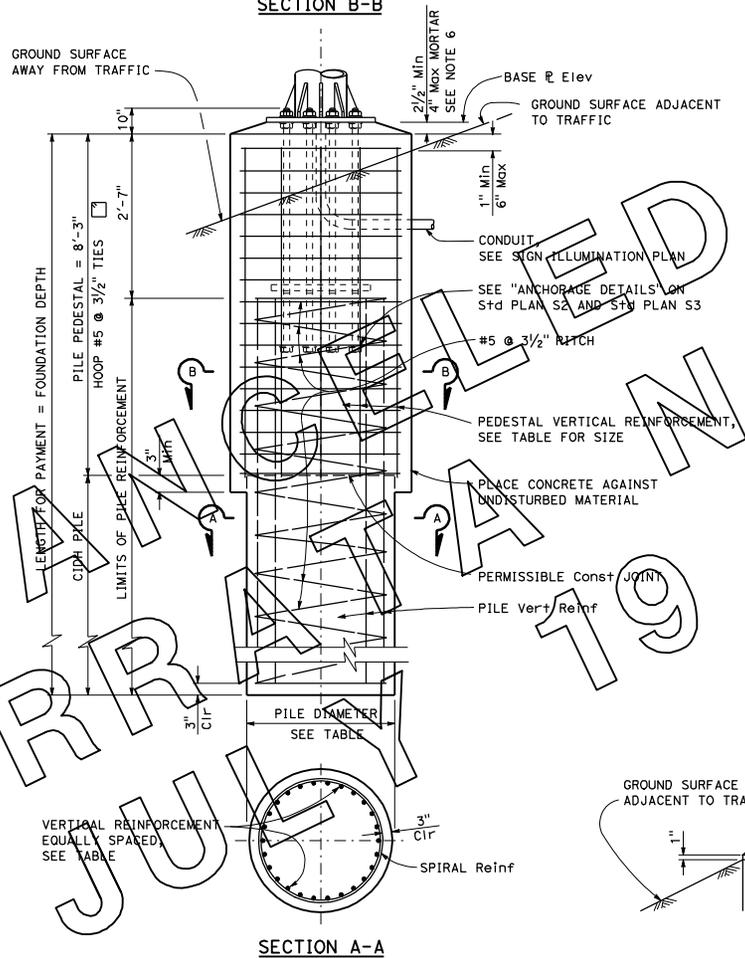
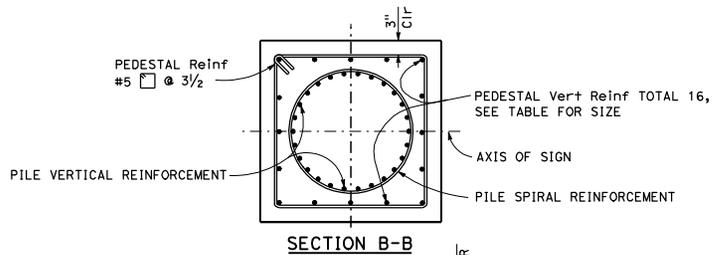
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER

May 20, 2011
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
 Stanley P. Johnson
 No. CS793
 Exp. 3-31-12
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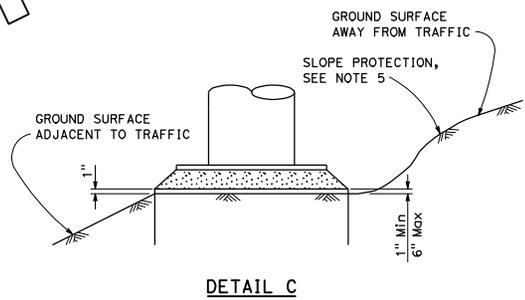


POST TYPE No.	ANCHOR BOLTS			SQUARE PILE PEDESTAL				CIPH PILE			FOUNDATION DEPTH * *
	BOLT CIRCLE	BOLT TOTAL AND Dia	TOTAL LENGTH	PEDESTAL SQUARE ONE SIDE	VERTICAL REINFORCING TOTAL	# OF BARS EACH FACE	HOOP BAR SIZE SPACING	PILE Dia	VERTICAL REINFORCING TOTAL	SPIRAL BAR SIZE PITCH	
II	2'-0"	12'-2"	4'-2"	5'-3"	16	#10	#5 3/2"	4'-6"	26	#10 #5 3/2"	14'-9"
III	2'-0"	12'-2"	4'-2"	5'-3"	16	#10	#5 3/2"	4'-6"	26	#10 #5 3/2"	16'-0"
IV	2'-0"	12'-2"	4'-2"	5'-3"	16	#10	#5 3/2"	4'-6"	26	#10 #5 3/2"	18'-0"
V	2'-10"	16'-2 1/2"	5'-0"	5'-9"	16	#11	#5 3/2"	5'-0"	28	#11 #5 3/2"	19'-0"
VI											22'-0"
VII											23'-0"
VIII											25'-0"
IX											25'-0"

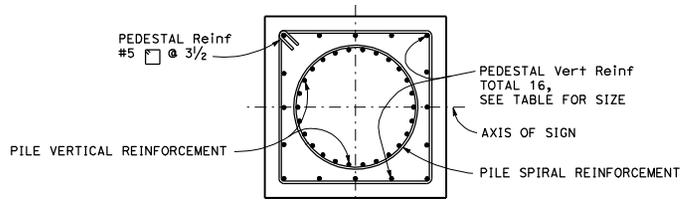
* * Use Foundation Depth shown in table unless otherwise shown on the Project Plans.

NOTES:

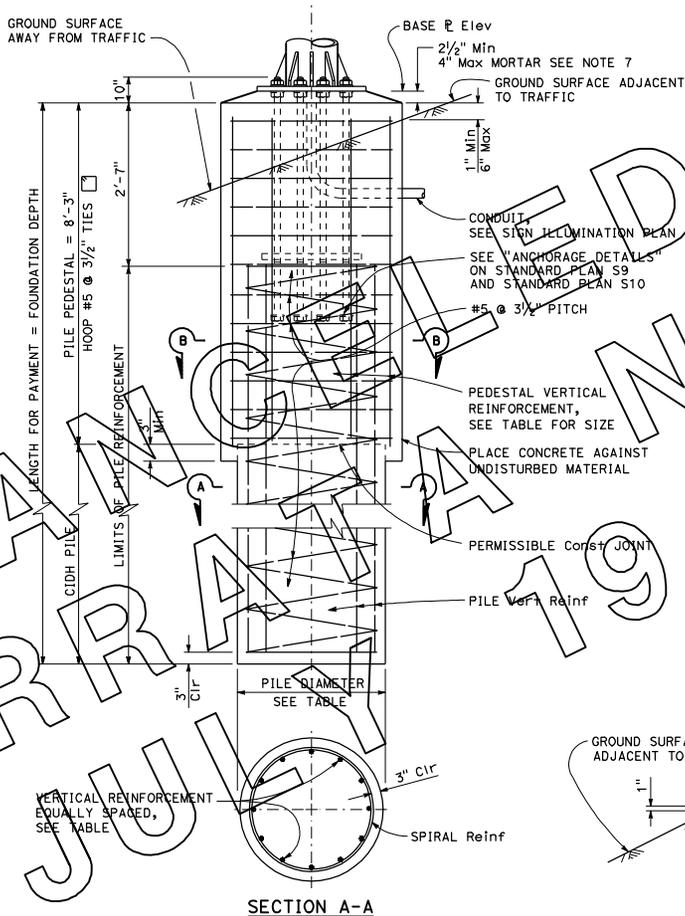
1. For anchor bolt layout, see Standard Plan S3.
2. For "Base E elevation" see Project Plans.
3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
4. Pedestal shall be formed 6" minimum below ground surface. Remainder to be placed against undisturbed material.
5. Slope protection required when indicated on the Project Plans.
6. For drain holes and central void in mortar, see Standard Plan ES-68 Detail N.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGNS-TRUSS
 SINGLE POST TYPE
 SQUARE PEDESTAL PILE FOUNDATION**
 NO SCALE



SECTION B-B



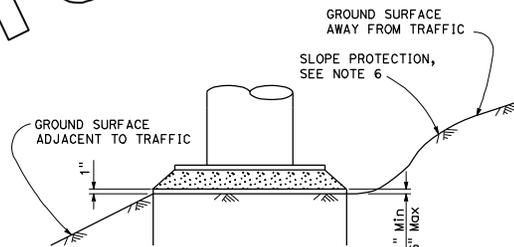
SECTION A-A

POST TYPE	ANCHOR BOLTS				SQUARE PILE PEDESTAL				CIDH PILE				FOUNDATION DEPTH **			
	TOTAL	Dia	BOLT CIRCLE	TOTAL LENGTH	PEDESTAL SQUARE ONE SIDE	VERTICAL REINFORCING TOTAL	BAR SIZE	# OF BARS EACH FACE	HOOP BAR SIZE	SPACING	PILE Dia	VERTICAL REINFORCING TOTAL		BAR SIZE	SPIRAL BAR SIZE	PITCH
I-S	12	2"	2'-4"	4'-2"	5'-3"	16	#10	5	#5	3 1/2"	4'-6"	26	#10	#5	3 1/2"	18'-0"
II-S	12		2'-4"													19'-8"
III-S	12		2'-7"													23'-0"
IV-S	14		2'-10"													23'-0"
V-S	16	2 1/2"	3'-2"	5'-0"	5'-10"		#11				5'-0"	28	#11			26'-3"
VI-S	16	2 1/2"	3'-5"	5'-0"	5'-10"		#11				5'-0"	28	#11			27'-10"
VII-S	16	2 1/2"	3'-5"	5'-0"	5'-10"		#11				5'-0"	28	#11			27'-10"

** Use Foundation Depth shown in table unless otherwise shown on the Project Plans.

NOTES:

1. For anchor bolt layout, see Standard Plan S10.
2. For "Base E elevation" see Project Plans.
3. Longer side of post shall be normal to axis of sign.
4. Prior to erection of the post, backfill which is equivalent to the surrounding material, shall be in place.
5. Pedestal shall be formed 6" Min below ground surface. Remainder to be placed against undisturbed material.
6. Slope protection required when indicated on the Project Plans.
7. For drain holes and central void in mortar see Standard Plan ES-6B detail N.



DETAIL C

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGNS-TRUSS
TWO POST TYPE
SQUARE PEDESTAL PILE FOUNDATION**

NO SCALE

S14

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

Stanley P. Johnson
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

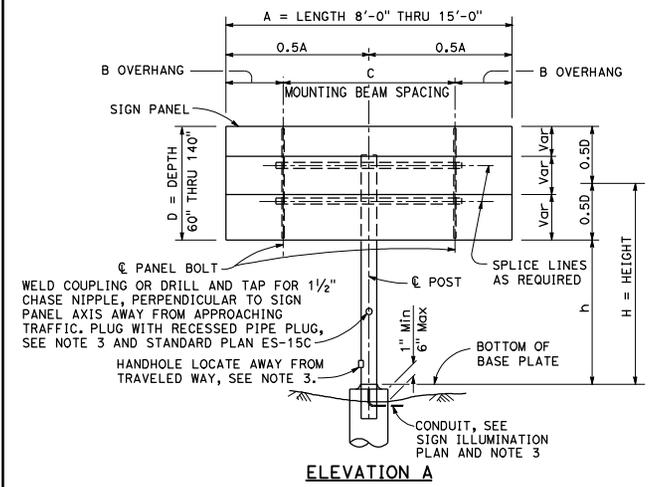
Stanley P. Johnson
No. CS783
Exp. 3-31-12
REGISTERED PROFESSIONAL ENGINEER
CIVIL
STATE OF CALIFORNIA

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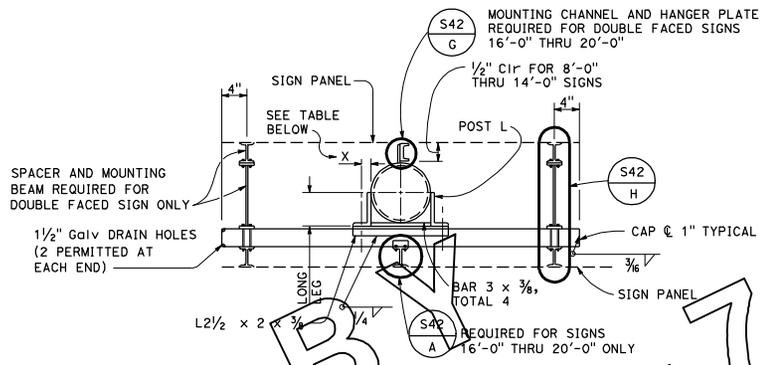
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER
 Stanley P. Johnson
 No. CS793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

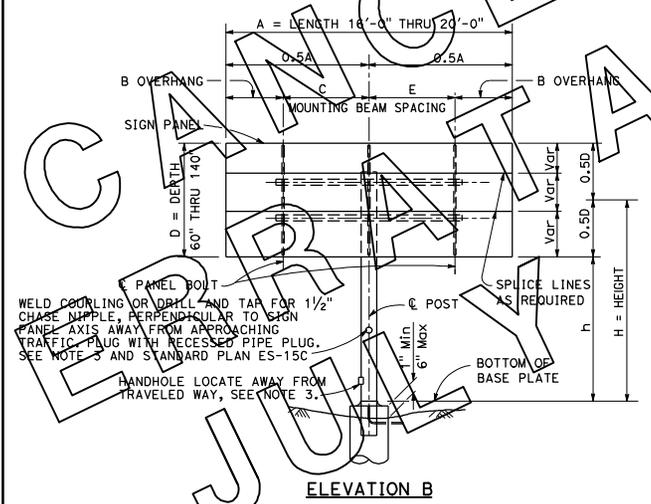
MAY 20, 2011
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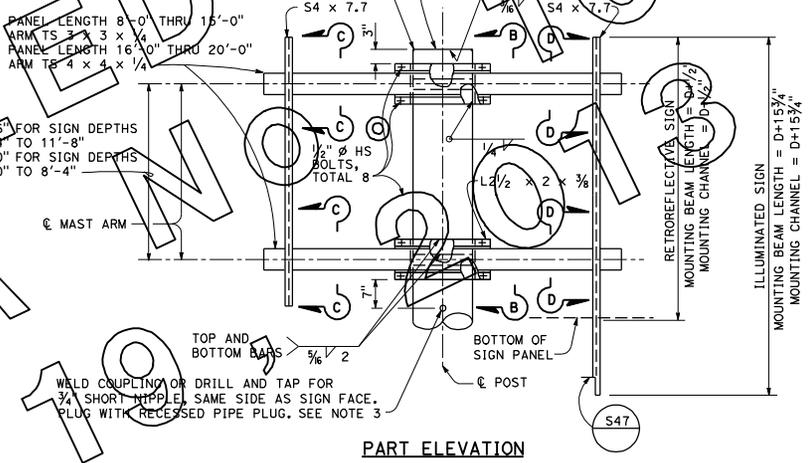
ELEVATION A



PART ELEVATION



ELEVATION B



POST		POST ANGLES		
NPS	Min 1/4"	ANGLE	X	WELD
6	3/8"	L3 1/2 x 3 x 1/2	1 3/4"	1/4"
6	7/8"	L3 1/2 x 3 x 1/2		
8	5/8"	L5 x 3 x 1/2		
8	1/2"	L5 x 3 x 1/2		
10		L6 x 4 x 5/8	2 1/2"	
12		L7 x 4 x 5/8		3/8"
14		L8 x 4 x 3/4		3/8"
14	5/8"	L8 x 4 x 3/4		3/8"

"t" = Wall thickness

MOUNTING BEAM SPACING

SIGN PANEL LENGTH	NUMBER MOUNTING BEAMS	SIGN PANEL OVERHANG B	C	E
5'-0"	2	9"	3'-6"	
6'-0"		1'-0"	4'-0"	
7'-0"		1'-3"	4'-6"	
8'-0"		1'-6"	5'-0"	
9'-0"		1'-10"	5'-4"	
10'-0"		2'-0"	6'-0"	
11'-0"		2'-0"	7'-0"	
12'-0"		2'-6"	7'-0"	
13'-0"		2'-6"	8'-0"	
14'-0"		2'-6"	9'-0"	
15'-0"		3'-0"	9'-0"	
16'-0"	3	6"	7'-6"	7'-6"
17'-0"		1'-0"	7'-6"	7'-6"
18'-0"		1'-0"	8'-0"	8'-0"
19'-0"		1'-0"	8'-6"	8'-6"
20'-0"		1'-6"	8'-6"	8'-6"

NOTES:

- For sections and detail not shown, see S42.
- For post and foundation details, see Standard Plans S48 and S49.
- Drilled holes, plugs, conduit and handhole required on illuminated signs only.
- Optional welded splice in post, see S2.

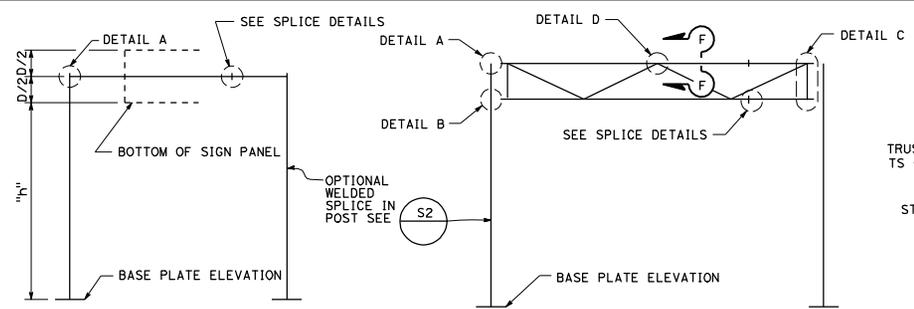
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGNS-LIGHTWEIGHT
 BALANCED-SINGLE STEEL POST
 CONNECTION AND
 MOUNTING DETAILS**
 NO SCALE

S41

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

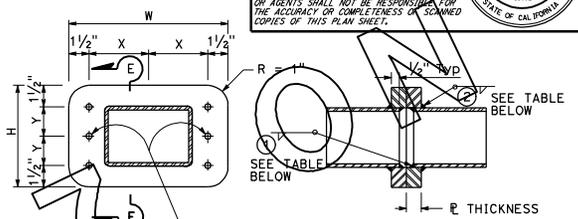
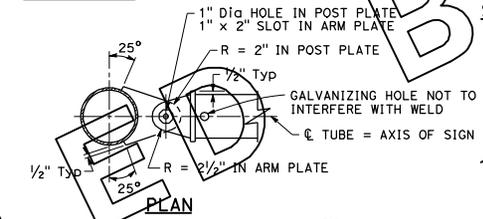
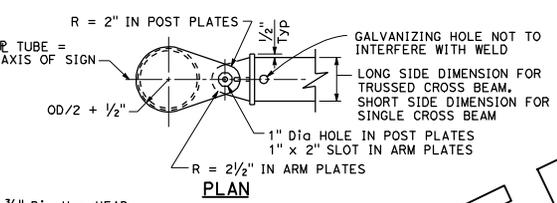
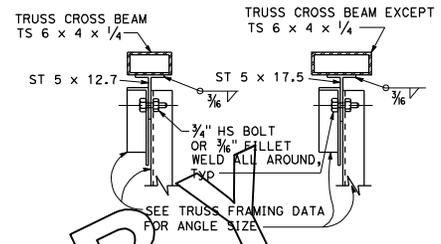
Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
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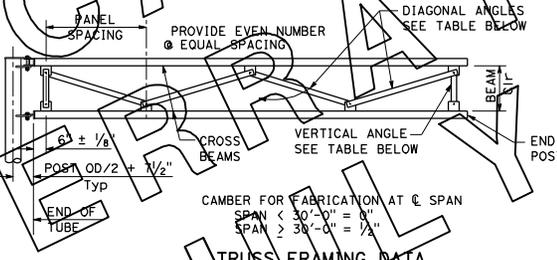
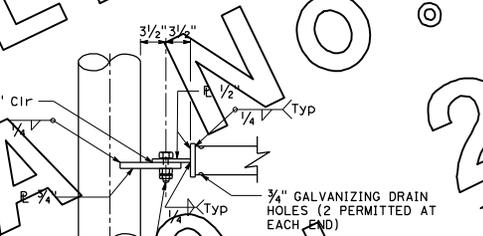
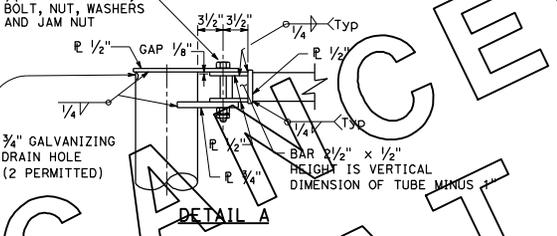


**SINGLE CROSS BEAM SERIES
TYPE A-1**

**TRUSS CROSS BEAM SERIES
TYPE A-2**

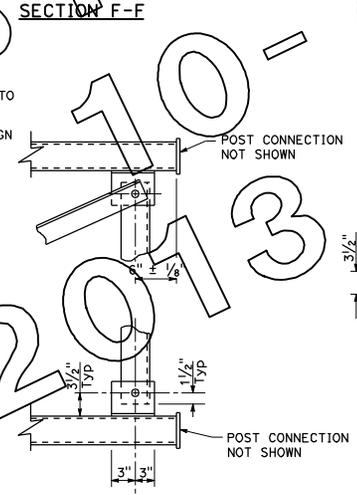


**END VIEW
SECTION E-E
SPLICE DETAILS**



SIGN DEPTH	BEAM CLEARANCE	MAXIMUM PANEL SPACING	VERTICAL ANGLE	DIAGONAL ANGLE
40" TO 70"	2'-0"	5'-6"	L3/2 x 2/2 x 1/4 *	L3/2 x 2/2 x 1/4 *
80" TO 100"	4'-6"	6'-6"	L3/2 x 2/2 x 1/4 *	L3/2 x 2/2 x 1/4 *

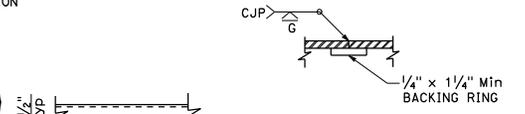
* SHORT LEG OUTSTANDING.



DETAIL C

TUBULAR CROSS BEAM SIZE	HIGH STRENGTH BOLTS		A-36 PLATES		WELDING				
	No.	SIZE	X	Y	W	H	THICKNESS	(1)	(2)
TS 6 x 4 x 1/4	4	4 1/4"	2"	11 1/2"	7"	1"	1"	3/8"	5/8"
TS 8 x 4 x 1/4	6	5 1/4"	2 1/2"	13 1/2"	8"	1 1/8"	1 1/8"	3/8"	5/8"
TS 8 x 6 x 1/4		4 1/4"	3 1/2"	11 1/2"	10"	1 1/8"	1 1/8"	1/2"	5/8"
TS 8 x 6 x 3/8 **		6 1/2"	2 1/2"	16"	8"	1 3/8"	1 3/8"	3/8"	3/4"
TS 10 x 6 x 1/4			3"	16"	9"	1 5/8"	1 5/8"	3/8"	1/2"

** LONG DIMENSION VERTICAL FOR SINGLE CROSS BEAM



**OPTIONAL
WELDED SPLICE**

- NOTES:**
- For post connection to base R see S48.
 - For cross beam to sign panel connections see S46.
 - SEE PROJECT PLANS FOR:
 1. Sign type and location.
 2. Panel type and location on structure.
 3. Post size and dimension "h".
 4. Cross beam size.
 5. Foundation type.
 6. Illumination if required.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGNS-LIGHTWEIGHT
 TYPE A
 CONNECTION DETAILS**

NO SCALE

2010 STANDARD PLAN S43

367

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

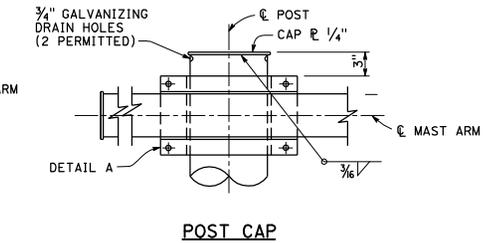
Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS783
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE
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POST TO ARM FRAMING DATA

MAST ARM ANGLES				
ARM SIZE	ANGLE	HS BOLT	Y	WELD
TS 3 x 3 x 1/4	L2 1/2 x 2 1/2 x 3/8	5/8"	1 3/8"	1/4"
TS 4 x 4 x 1/4	L2 1/2 x 2 1/2 x 3/8			
TS 5 x 5 x 1/4	L3 x 2 1/2 x 3/8			
TS 6 x 6 x 1/4	L3 1/2 x 2 1/2 x 3/8			
TS 7 x 7 x 1/4	L4 x 3 x 1/2	3/4"	1 3/4"	3/8"
TS 8 x 8 x 1/4	L5 x 3 x 1/2	7/8"	1 3/4"	5/8"
TS 10 x 10 x 1/4	L6 x 4 x 5/8	1"	2 1/2"	5/8"

POST ANGLES			
NPS	ANGLE	X	WELD
6	L4 x 3 x 1/2	1 3/4"	1/4"
8	L5 x 3 x 1/2	1 3/4"	1/4"
10	L6 x 4 x 5/8	2 1/2"	1/4"
12	L7 x 4 x 3/4	2 1/2"	5/8"
14	L8 x 4 x 3/4	2 1/2"	5/8"



END DETAIL

NOTES:

For post connection to base plate see S48.

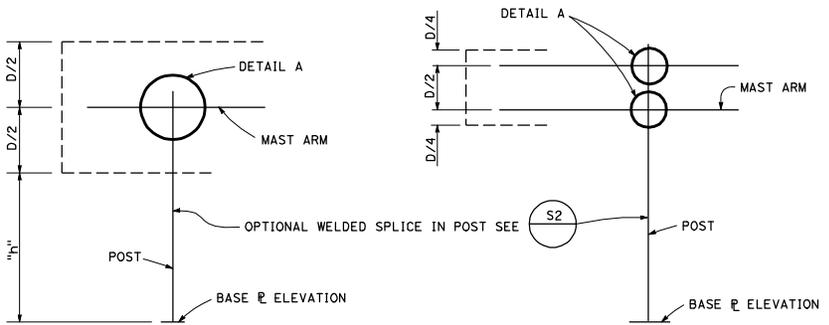
For mast arm length and mast arm-to-sign panel connections see S46.

SEE PROJECT PLANS FOR:

1. Sign type and location.
2. Panel type and location on structure.
3. Post size and dimension "h".
4. Mast arm size.
5. Foundation type.
6. Illumination if required.

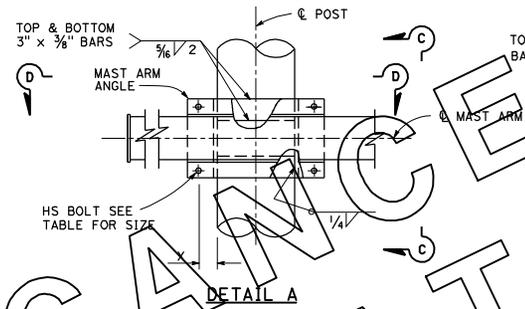
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGNS-LIGHTWEIGHT
 TYPE B
 CONNECTION DETAILS**
 NO SCALE

S44

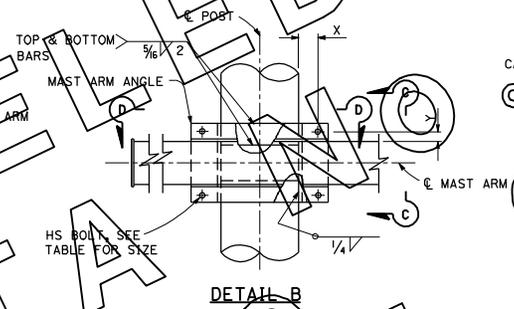


**SINGLE ARM SERIES
TYPE B-1**

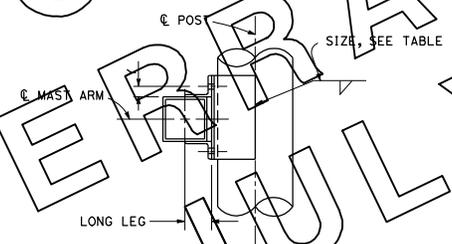
**DOUBLE ARM SERIES
TYPE B-2**



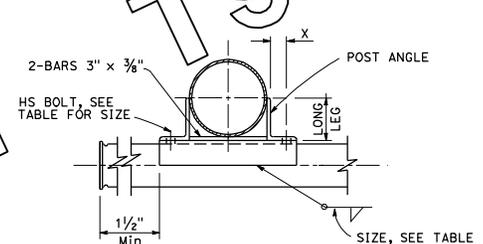
DETAIL A



DETAIL B



SECTION C-C



SECTION D-D

368

2010 STANDARD PLAN S44

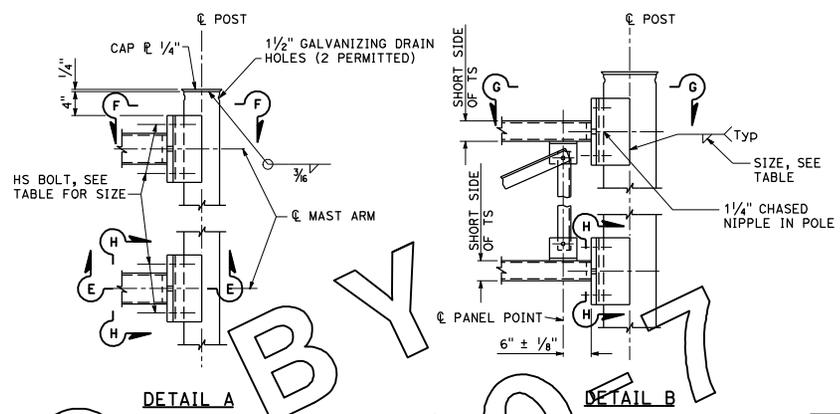
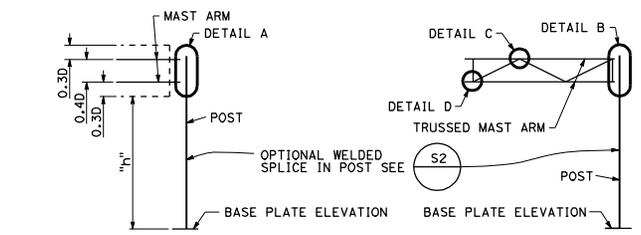
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

Stanley P. Johnson
No. C5793
Exp. 3-31-12
REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

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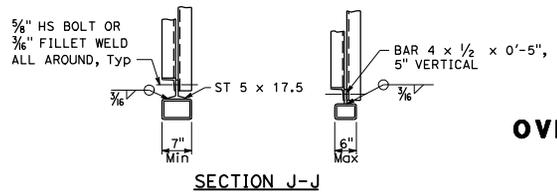
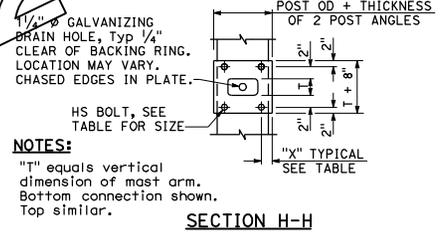
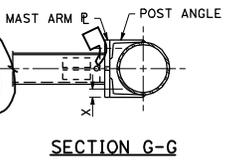
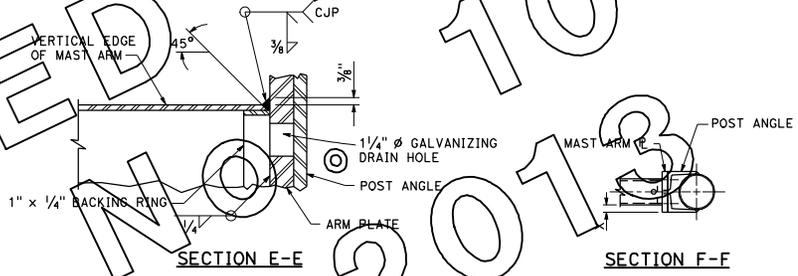
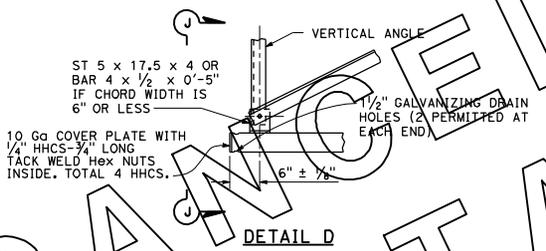
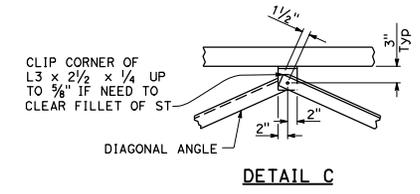


POST ANGLES

NPS	ANGLE	X	WELD
6	L5 x 3 x 1/2	1 3/4"	1/4"
8	L6 x 4 x 5/8	2 1/4"	1/4"
10	L7 x 4 x 5/8		1/4"
12	L8 x 4 x 3/4		5/16"
14	L8 x 4 x 3/4		5/16"

POST TO ARM FRAMING DATA

MAST ARM PLATE			
TWO ARMS	TRUSSED ARMS	PLATE	HS BOLT
TS 3 x 3 x 1/4		3/4"	1/2"
TS 4 x 4 x 1/4		1"	5/8"
TS 5 x 5 x 1/4		1"	3/4"
TS 6 x 6 x 1/4		1"	3/4"
TS 7 x 7 x 1/4	TS 5 x 3 x 3/8	1 1/4"	3/4"
	TS 6 x 4 x 3/8		7/8"
	TS 7 x 5 x 3/8		7/8"
	TS 8 x 6 x 3/8		7/8"
	TS 10 x 6 x 3/8		1"



TRUSS FRAMING DATA

SIGN DEPTH	ARM CLEARANCE	Max PANEL SPACING	VERTICAL ANGLE	DIAGONAL ANGLE
D=40" TO 70"	2'-0"	4'-4"	L2 x 2 x 1/4	L2 x 2 x 1/4
D=80" TO 100"	3'-0"	6'-6"	L3 1/2 x 2 1/2 x 1/4*	L3 1/2 x 2 1/2 x 1/4*

* SHORT LEG OUTSTANDING

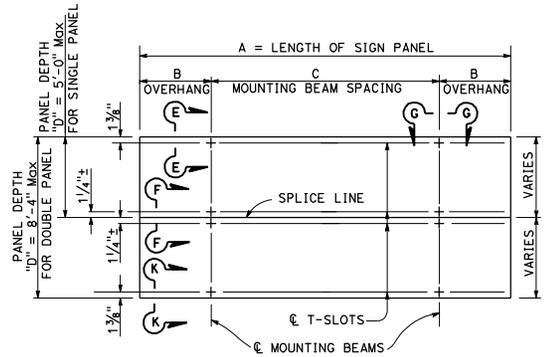
- NOTES:**
- For post connection to base R see (S48).
 - For mast arm length and mast-arm-to sign panel connections see (S46).
 - SEE PROJECT PLANS FOR:
 1. Sign type and location.
 2. Panel type and location on structure.
 3. Post size and dimension "h".
 4. Mast arm size.
 5. Foundation type.
 6. Illumination if required.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

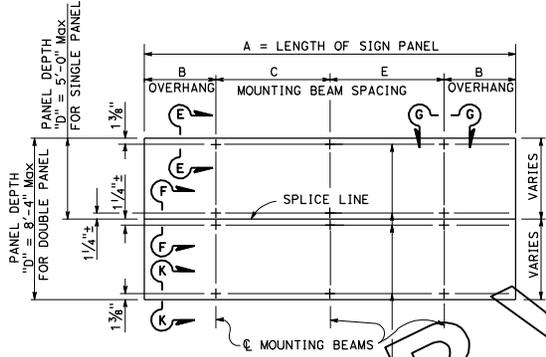
OVERHEAD SIGNS-LIGHTWEIGHT TYPE C CONNECTIONS DETAILS

NO SCALE

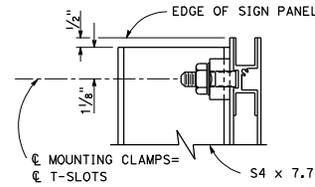
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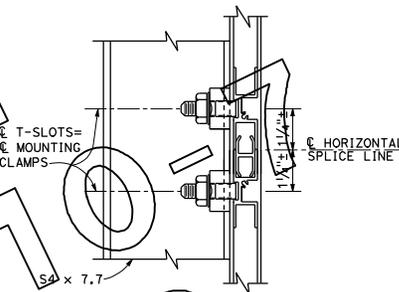
ELEVATION
SIGN PANEL LENGTH 5'-0" TO 15'-0"



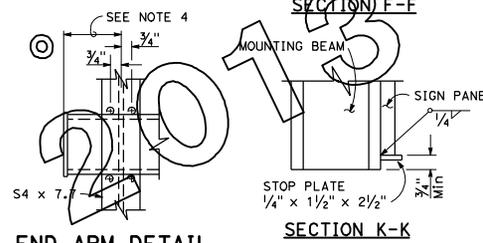
ELEVATION
SIGN PANEL LENGTH 16'-0" TO 24'-0"



SECTION E-E



SECTION F-F

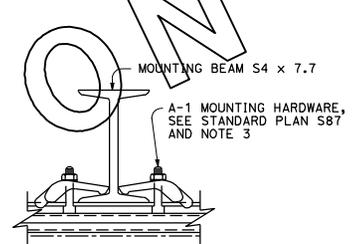


END ARM DETAIL
SINGLE POST SIGNS

D18+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. C8793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
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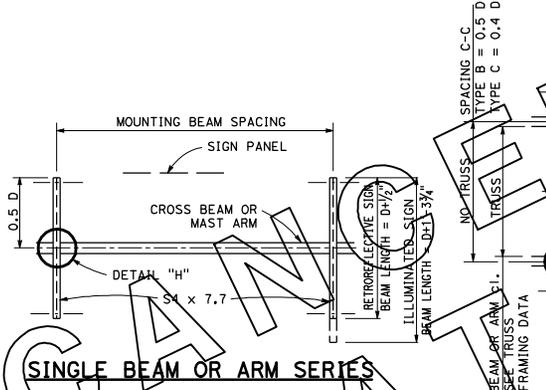


SECTION G-G

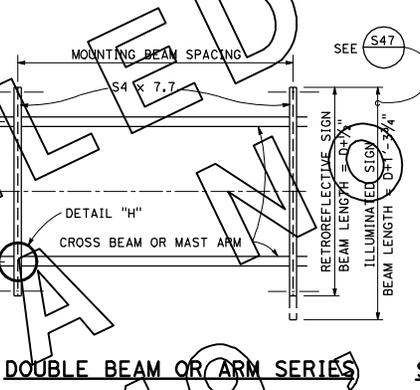
MOUNTING BEAM SPACING

SIGN PANEL LENGTH *	NUMBER MOUNTING BEAMS	SIGN PANEL OVERHANG			MOUNTING BEAM SPACING		
		B	C	E	B	C	E
5'-0"	2	9"	3'-6"				
6'-0"		1'-0"	4'-0"				
7'-0"		1'-3"	4'-6"				
8'-0"		1'-6"	5'-0"				
9'-0"		1'-10"	5'-4"				
10'-0"		2'-0"	6'-0"				
11'-0"		2'-0"	7'-0"				
12'-0"		2'-6"	7'-0"				
13'-0"		2'-6"	8'-0"				
14'-0"		2'-6"	9'-0"				
15'-0"		3'-0"	9'-0"				
16'-0"	3	6"	7'-6"	7'-6"			
17'-0"		1'-0"	7'-6"	7'-6"			
18'-0"		1'-0"	8'-0"	8'-0"			
19'-0"		1'-0"	8'-6"	8'-6"			
20'-0"		1'-6"	8'-6"	8'-6"			
21'-0"		1'-6"	9'-0"	9'-0"			
22'-0"		2'-6"					
23'-0"		2'-6"					
24'-0"		3'-0"					

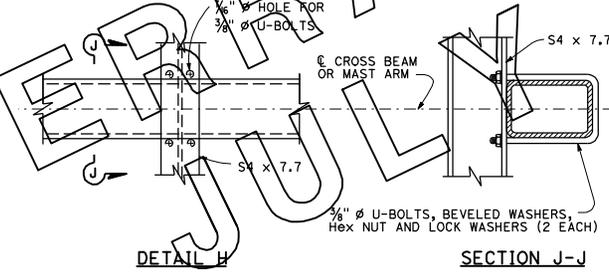
* Signs longer than 24'-0" are fabricated and mounted as adjoining single panels. The location of the vertical splice line will be determined by the Engineer.



SINGLE BEAM OR ARM SERIES



DOUBLE BEAM OR ARM SERIES



DETAIL H

SECTION J-J

NOTES:

1. The location of the horizontal splice line is dependent on the sign panel manufacturer for signs greater than 5'-0" in depth. Mounting bolts and clamps are required on each of the horizontal splice line at each support beam.
2. Position sign panel so that mounting beams will clear truss connections and arm to post joints. Where interference cannot be avoided, 1/2" diameter holes to pass the 3/8" diameter U-bolts may be drilled through mast arm angles or truss connection members as necessary.
3. Torque stainless steel sign panel mounting bolts to 9 foot-pounds.
4. 1'-0" for Type C-1 and C-2. Others, 4".
5. A stop plate is required at each mounting beam under sign panel.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

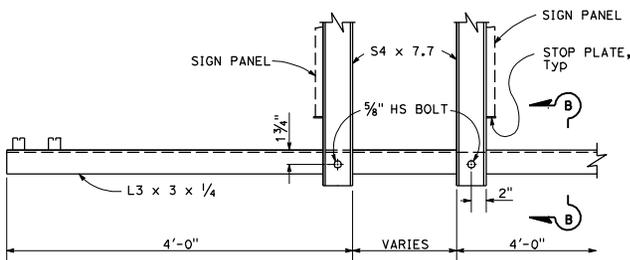
**OVERHEAD SIGNS-LIGHTWEIGHT
SIGN PANEL MOUNTING DETAILS
LAMINATED PANEL-TYPE A**

NO SCALE

S46

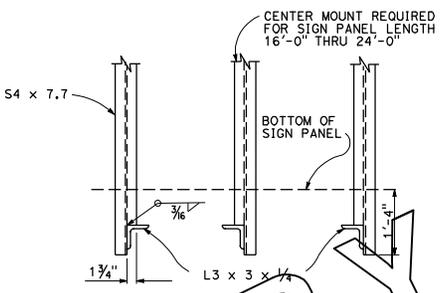
2010 STANDARD PLAN S46

371

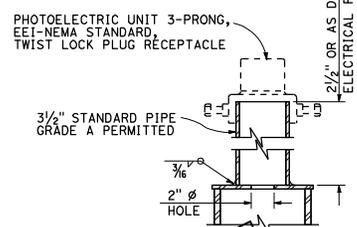


SIDE VIEW - DOUBLE FACED SIGN - END MOUNT

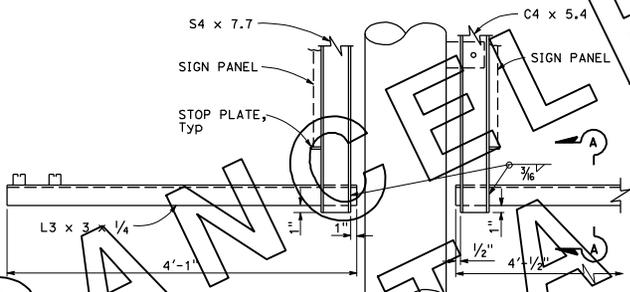
NOTE:
 For details not shown, see
 "Side View - Single Faced
 Sign Type A, B & C" details.



FRONT VIEW



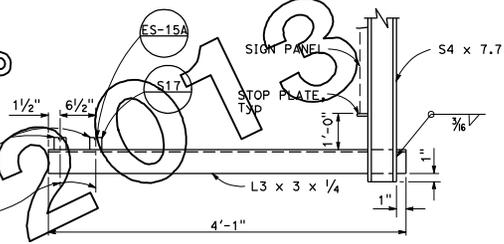
PHOTOELECTRIC UNIT



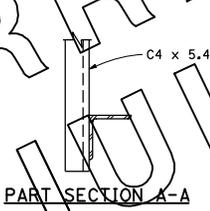
SIDE VIEW - DOUBLE FACED SIGN - CENTER MOUNT
 (Required only on balanced single post sign panel length 16'-0" thru 24'-0")

LIGHTING FIXTURE MOUNTING CHANNEL
 TO BE CONTINUOUS AND OVERHANG
 THE EXTERIOR SUPPORTS BY 4"

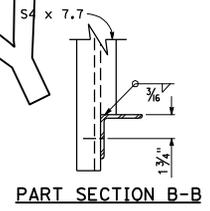
DRILL ANGLE FOR MOUNTING SCREWS.
 PROVIDE 3/8" x 1" Ø LONG MACHINE
 SCREWS, Hex NUTS, FLAT WASHERS
 AND LOCK WASHERS



**SIDE VIEW - SINGLE FACED SIGN TYPES A, B & C
 LIGHTING FIXTURE MOUNTING DETAIL
 SIGNS GREATER THAN 5'-6" IN LENGTH**



PART SECTION A-A



PART SECTION B-B

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER

May 20, 2011
 PLANS APPROVAL DATE

Stanley P. Johnson
 No. CS7893
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

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CANCELLED

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

**OVERHEAD SIGNS-LIGHTWEIGHT
 LIGHT FIXTURE
 MOUNTING DETAILS**

NO SCALE

S47

2010 STANDARD PLAN S47

406

ON

BY

2010

7

2013

ON

NO

19

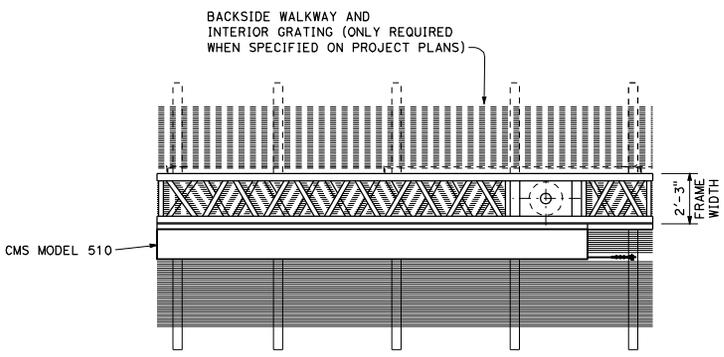
19

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

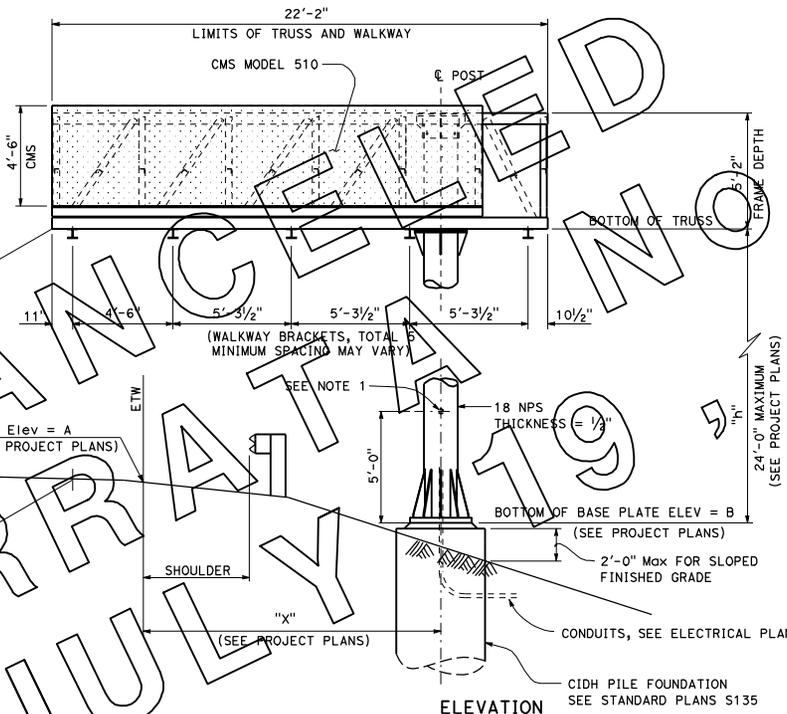
Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS7793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE

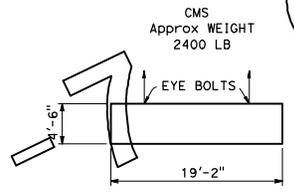
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PLAN



ELEVATION



LIFTING DIAGRAM

NOTES:

1. Drill and tap for 2 1/2" recessed pipe plug.
2. For location and elevation of sign structure see Project Plans.
3. Sign support post shall be raked out of plumb with leveling nuts to make the bottom of the sign frame level.
4. At final position of post, top and bottom nuts shall be tightened against base plate.
5. For "General Notes", see Standard Plan S101.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**OVERHEAD SIGN-TRUSS
SINGLE POST TYPE
LAYOUT
UNBALANCED BUTTERFLY
CHANGEABLE MESSAGE SIGNS
MODEL 510**

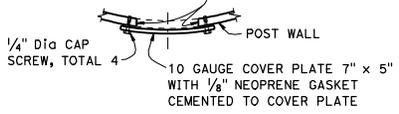
NO SCALE

S120

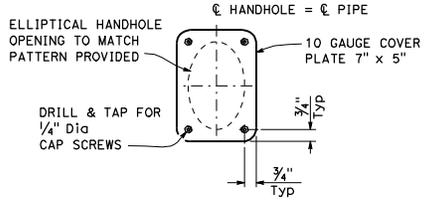
2010 STANDARD PLAN S120

407

GRIND EDGES SMOOTH,
ROUGHNESS OF EDGES NO
GREATER THAN 1000 MICROINCHES

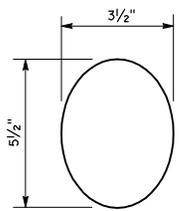


PLAN



ELEVATION

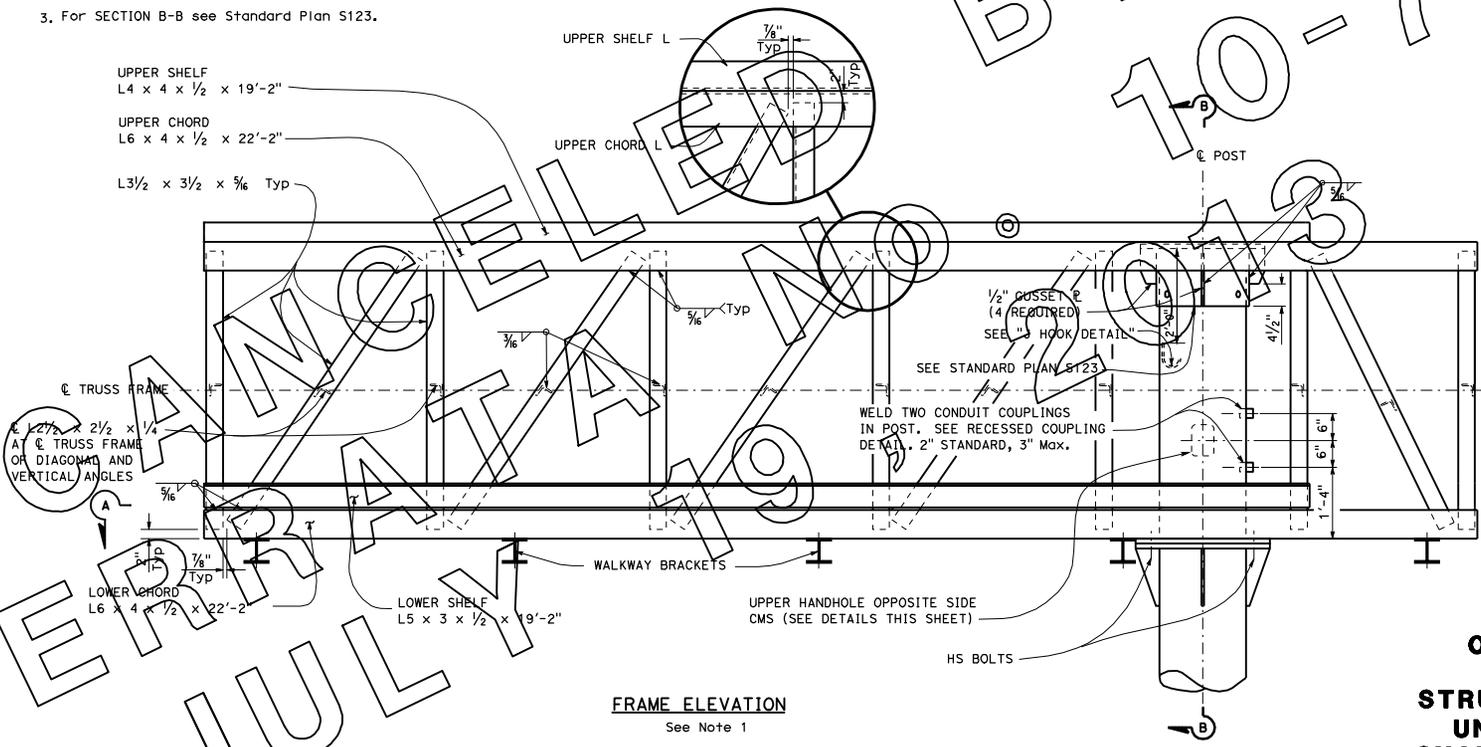
UPPER HANDHOLE & COVER DETAILS



PATTERN OF ELLIPTICAL
HANDHOLE CUT OUT

- NOTES:**
1. Walkways and safety anchorages not shown for clarity.
 2. For SECTION A-A see Standard Plan S123.
 3. For SECTION B-B see Standard Plan S123.

- UPPER SHELF
L4 x 4 x 1/2 x 19'-2"
- UPPER CHORD
L6 x 4 x 1/2 x 22'-2"
- L3 1/2 x 3 1/2 x 3/8 TYP



FRAME ELEVATION
See Note 1

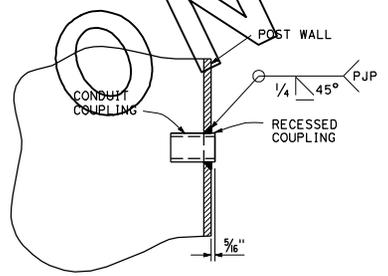
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
REGISTERED CIVIL ENGINEER

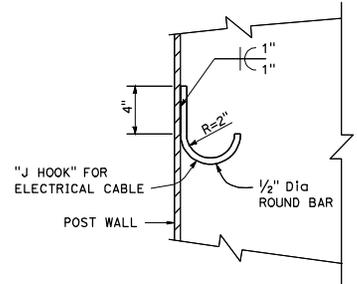
May 20, 2011
PLANS APPROVAL DATE

Stanley P. Johnson
No. CS793
Exp. 3-31-12
CIVIL
STATE OF CALIFORNIA

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RECESSED COUPLING DETAIL



J HOOK DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**OVERHEAD SIGN-TRUSS
SINGLE POST TYPE
STRUCTURAL FRAME DETAILS
UNBALANCED BUTTERFLY
CHANGEABLE MESSAGE SIGNS
MODEL 510**

NO SCALE

S121

2010 STANDARD PLAN S121

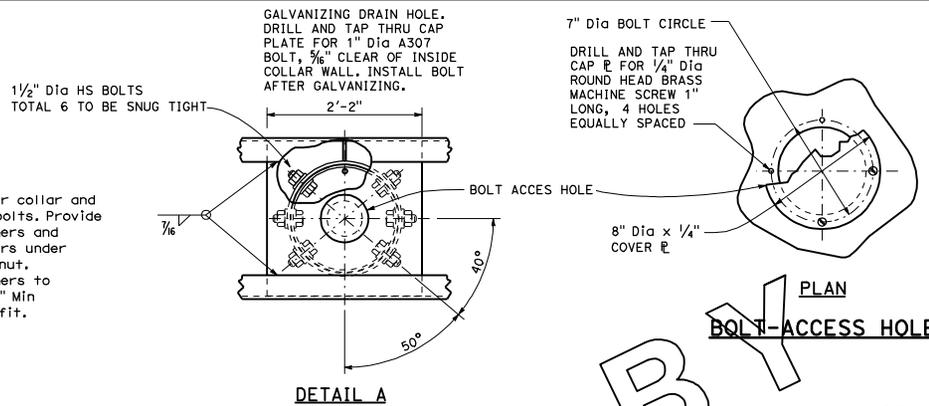
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS7393
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE
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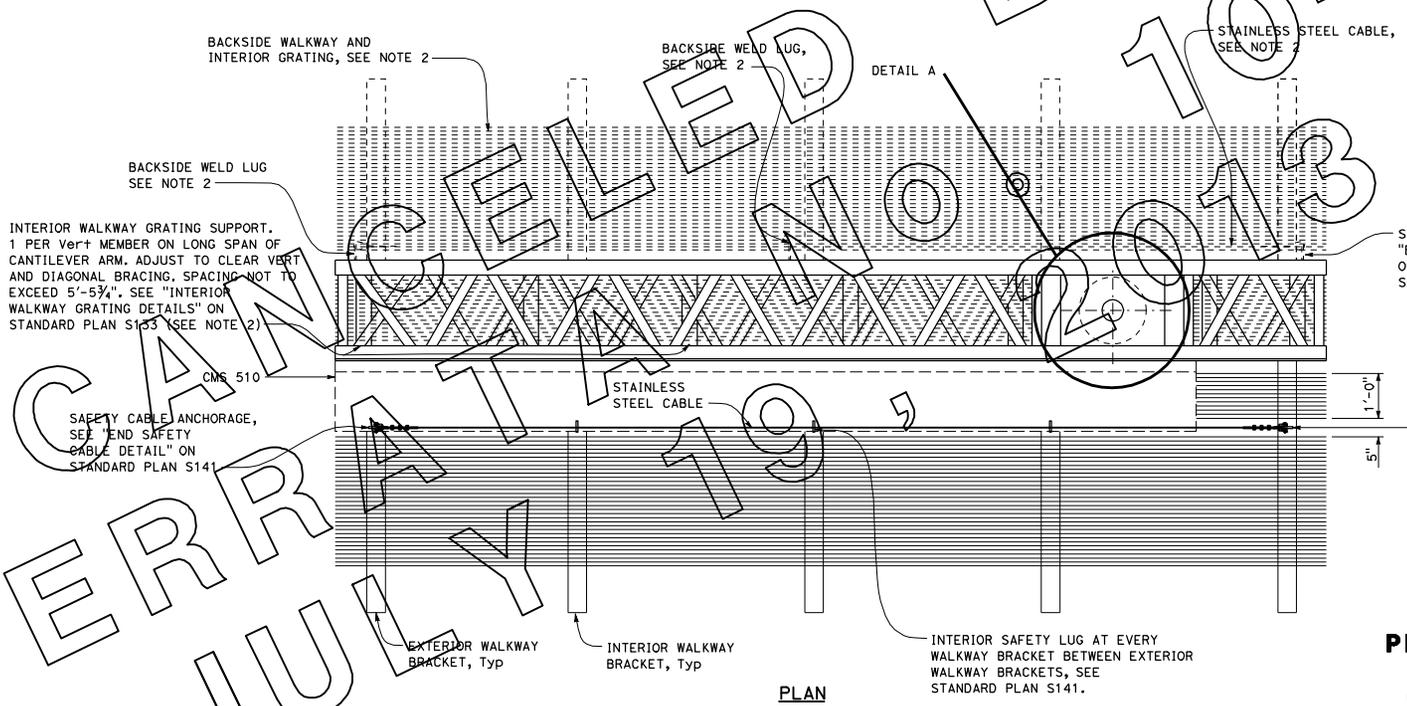
NOTE:

Drill thru outer collar and post wall for bolts. Provide contoured washers and hardened washers under bolt head and nut. Contoured washers to be 3" x 3" x 5/16" Min. Grind face to fit.



NOTES:

1. Cross-ties at vertical and diagonal angles and internal diagonals not shown for clarity.
2. Interior grating, backside safety cable and backside weld lugs shall be installed only for projects requiring backside walkways.

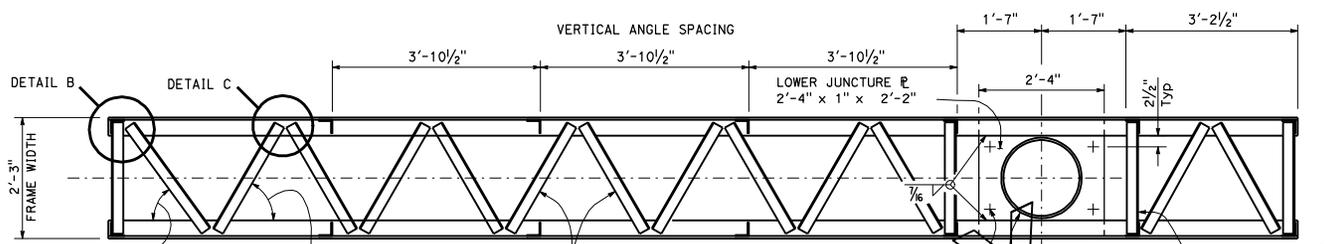


STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 PLAN AND UPPER BOLT DETAILS
 UNBALANCED BUTTERFLY
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**
 NO SCALE

S122

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 May 20, 2011
 PLANS APPROVAL DATE
 No. CS733
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA



45° Min
 DIAGONAL WINDBRACING 60° TYPICAL AND MAY VARY SLIGHTLY AT POINTS OF INTERFERENCE BY 5° Max, 13 REQUIRED TOP & 13 REQUIRED BOTTOM

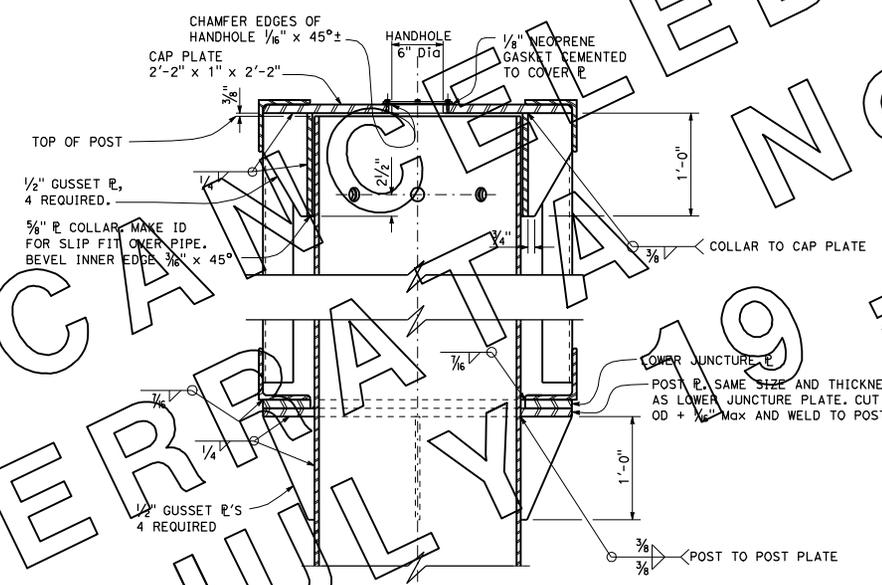
L2 1/2 x 2 1/2 x 1/4
 WIND BRACING TOP AND BOTTOM (Typ)

DRILL THRU JUNCTURE PLATE AND POST PLATE FOR 1/2" DIA A-325 HS BOLTS, TOTAL 4

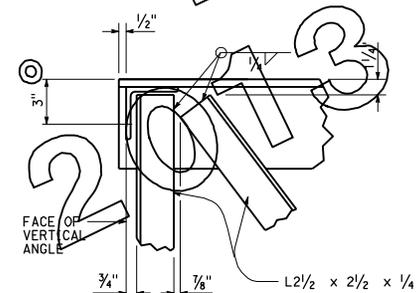
CUT THRU JUNCTURE PLATE FOR POST. HOLE DIAMETER = POST OD + 1" Max

L2 1/2 x 2 1/2 x 1/4
 END TIE TOP AND BOTTOM

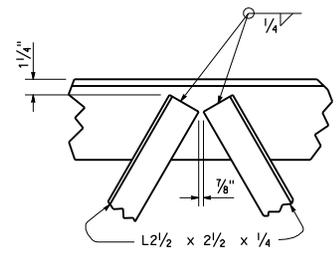
SECTION A-A
LOWER JUNCTURE CONNECTION



SECTION B-B



DETAIL B



DETAIL C

NOTES:

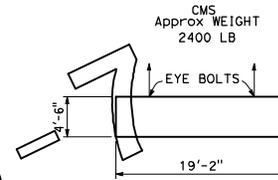
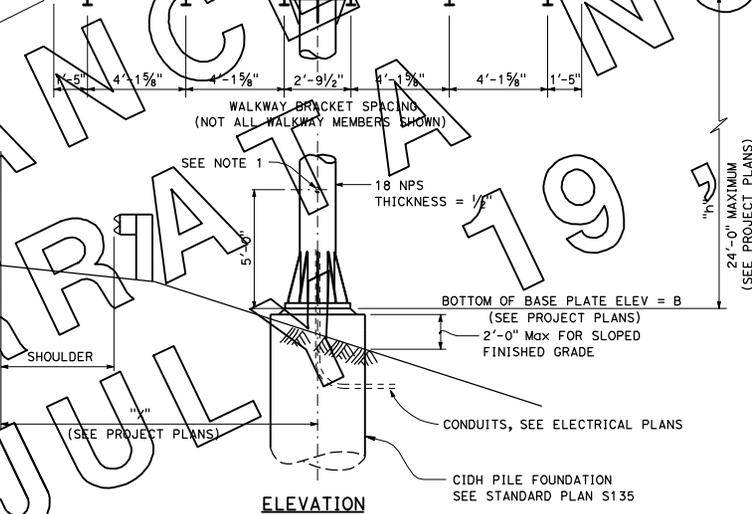
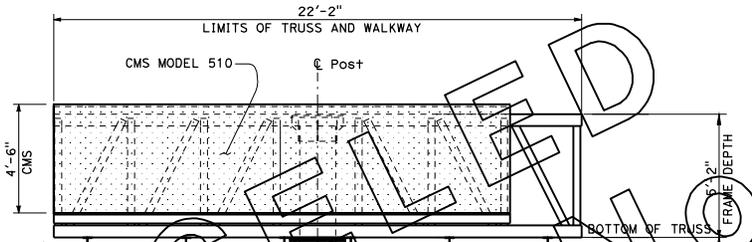
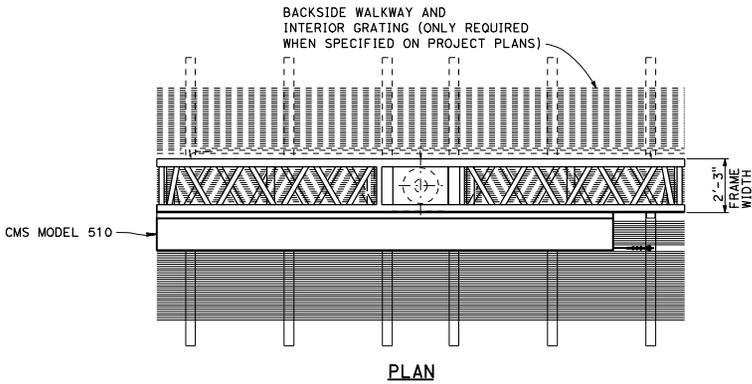
1. In all cases, truss shall be supported at lower juncture connection.
2. Post to truss connections shall be fitted in shop.
3. For gussets parallel to the sign panel, cut to clear bolts as shown on Standard Plan S125.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 FRAME JUNCTURE DETAILS
 UNBALANCED BUTTERFLY
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**
 NO SCALE

S123

409

2010 STANDARD PLAN S123



LIFTING DIAGRAM

NOTES:

1. Drill and tap for 2 1/2" recessed pipe plug.
2. For location and elevation of sign structure see Project Plans.
3. Sign support post shall be raked out of plumb with leveling nuts to make the bottom of the sign frame level.
4. At final position of post, top and bottom nuts shall be tightened against base plate.
5. For "General Notes", see Standard Plan S101.

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 May 20, 2011
 PLANS APPROVAL DATE
 No. CS793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

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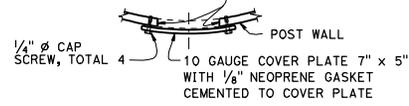
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 LAYOUT
 BALANCED BUTTERFLY
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**

NO SCALE

S124

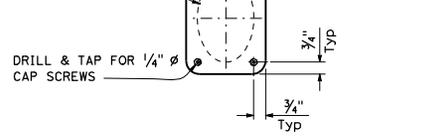
411

GRIND EDGES SMOOTH,
ROUGHNESS OF EDGES NO
GREATER THAN 1000 MICROINCHES

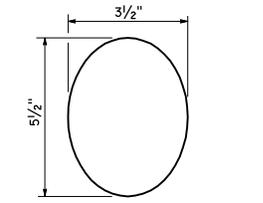


PLAN

ELLIPTICAL HANDHOLE
OPENING TO MATCH
PATTERN PROVIDED



ELEVATION



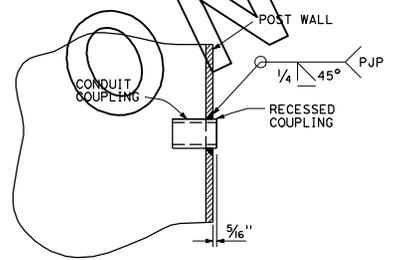
PATTERN OF ELLIPTICAL
HANDHOLE CUT OUT

UPPER HANDHOLE & COVER DETAILS

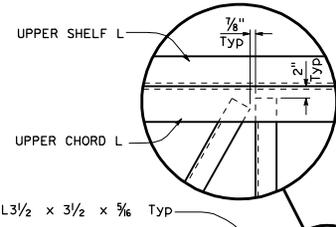
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS7893
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

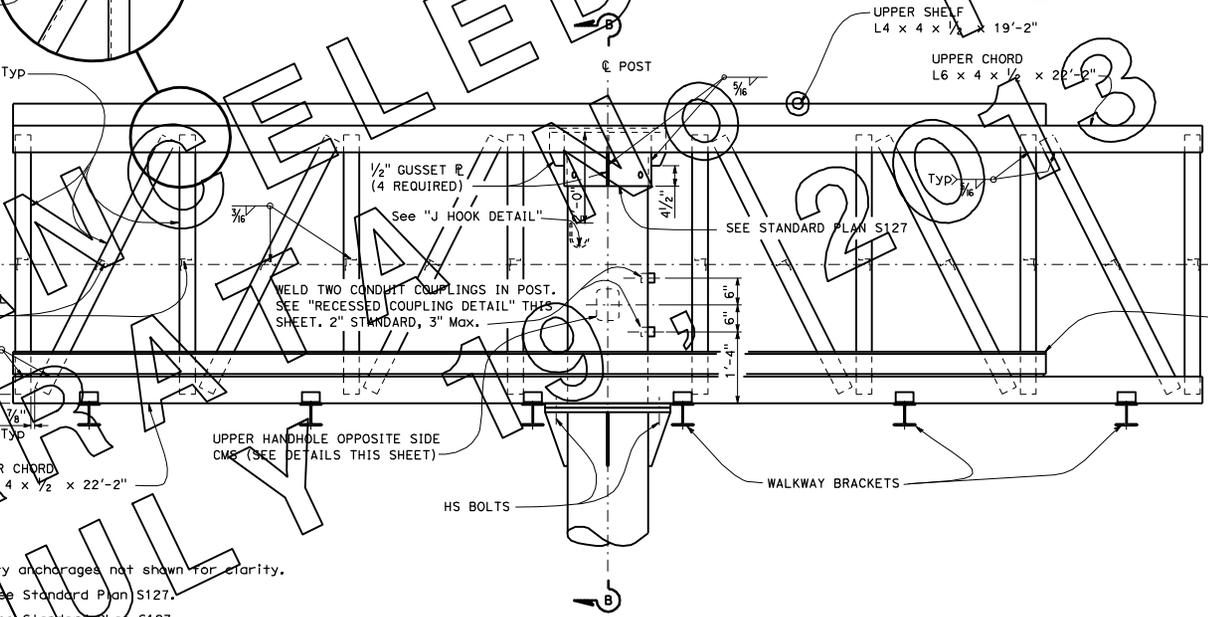
May 20, 2011
 PLANS APPROVAL DATE
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RECESSED COUPLING DETAIL

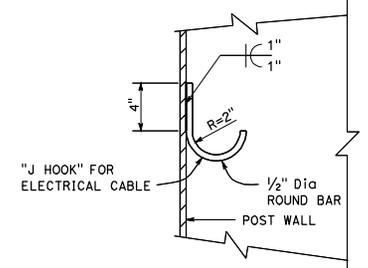


UPPER SHELF L
UPPER CHORD L
L3 1/2 x 3 1/2 x 5/16 Typ



FRAME ELEVATION

See Note 1



J HOOK DETAIL

NOTES:

1. Walkways and safety anchorages not shown for clarity.
2. For SECTION A-A, see Standard Plan S127.
3. For SECTION B-B, see Standard Plan S127.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 STRUCTURAL FRAME DETAILS
 BALANCED BUTTERFLY
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**

NO SCALE

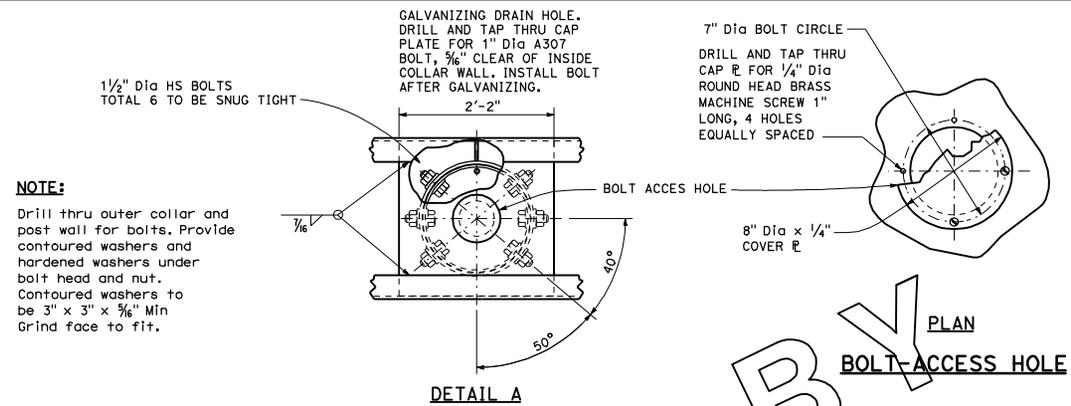
S125

2010 STANDARD PLAN S125

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

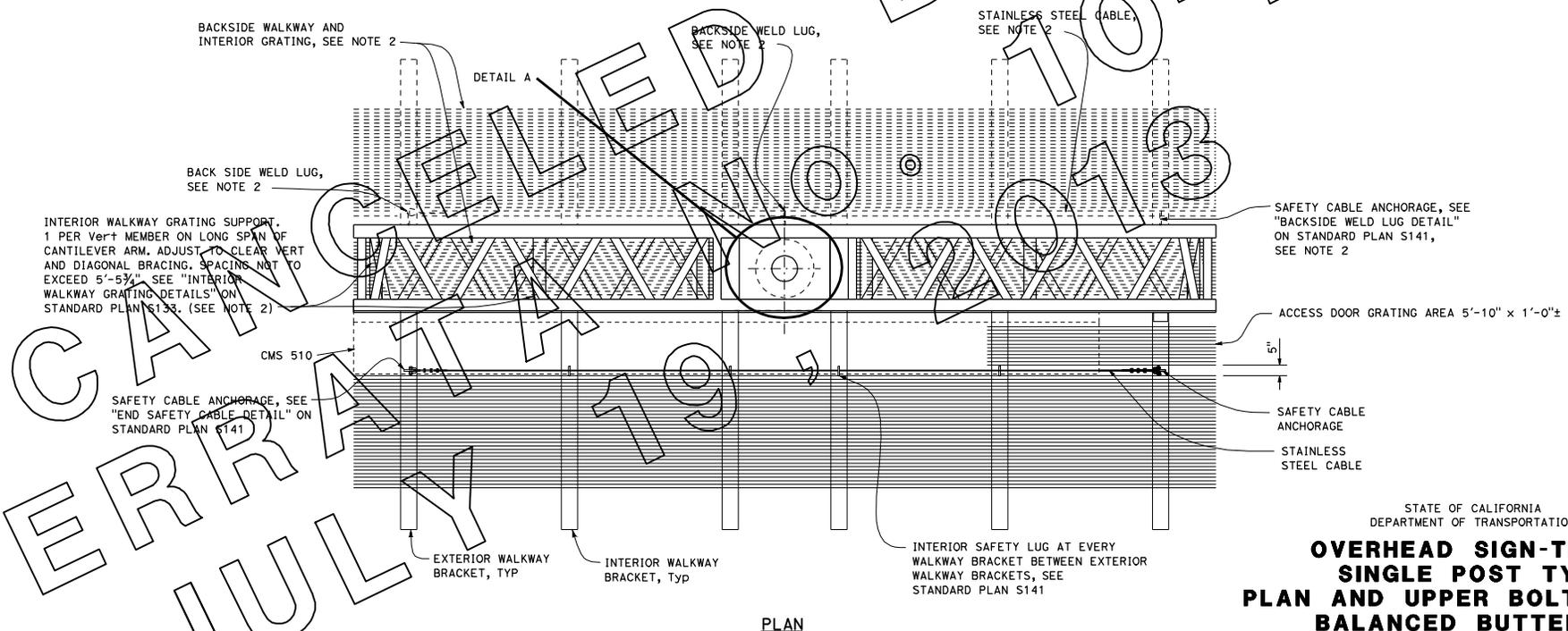
REGISTERED CIVIL ENGINEER
 Stanley P. Johnson
 No. CS7393
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE
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NOTE:
 Drill thru outer collar and post wall for bolts. Provide contoured washers and hardened washers under bolt head and nut. Contoured washers to be 3" x 3" x 3/16" Min Grind face to fit.

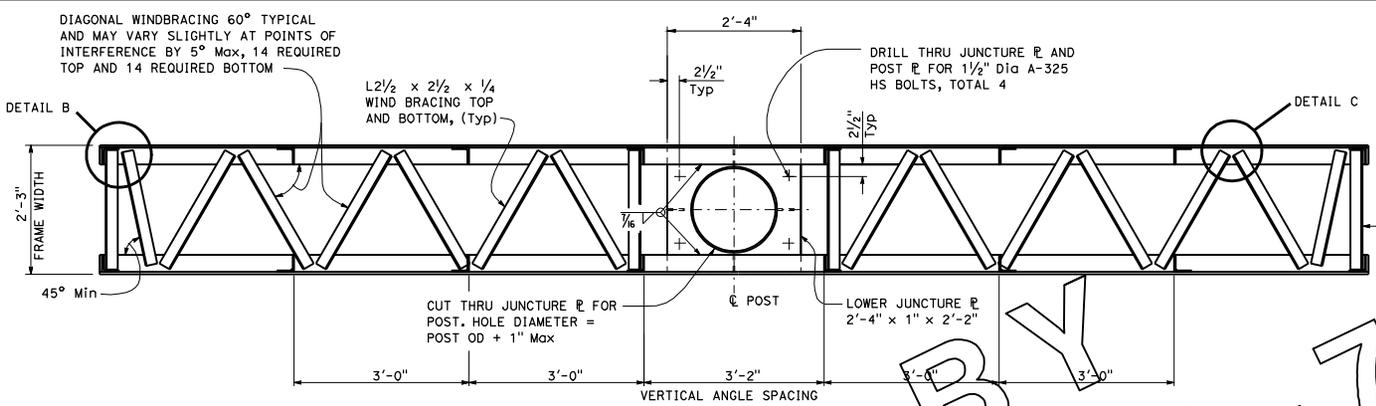
- NOTES:**
1. Cross-ties at vertical and diagonal angles and internal diagonals not shown for clarity.
 2. Interior grating, backside safety cable and backside weld lugs shall be installed only for projects requiring backside walkways.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 PLAN AND UPPER BOLT DETAILS
 BALANCED BUTTERFLY
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**
 NO SCALE

S126

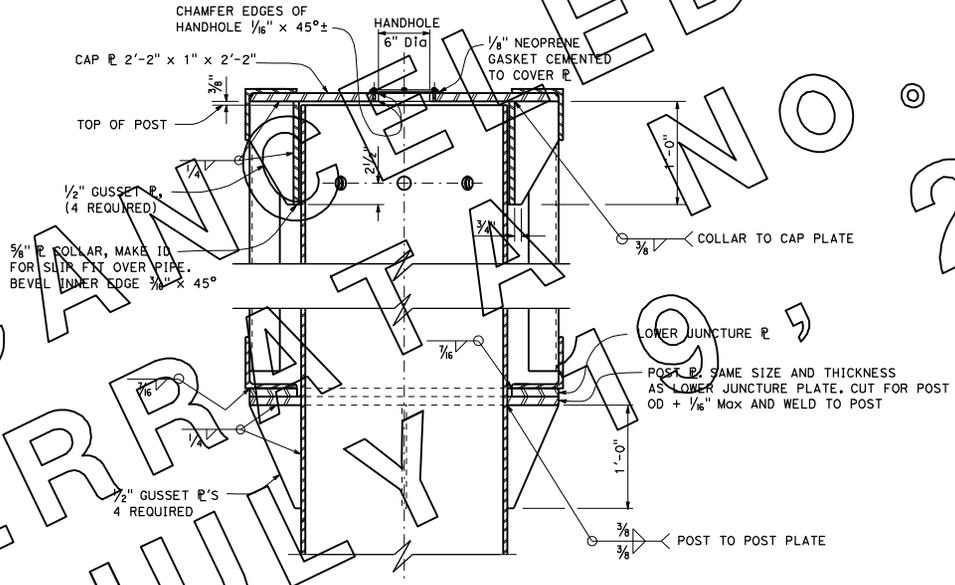
413



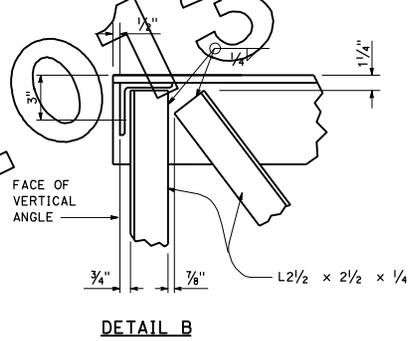
SECTION A-A
LOWER JUNCTURE CONNECTION
See Standard Plan S125

NOTES:

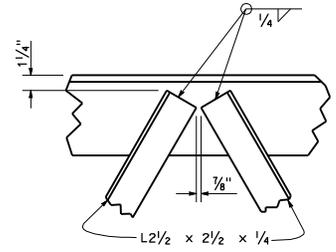
1. In all cases, truss shall be supported at lower juncture connection.
2. Post to truss connections shall be fitted in shop.
3. For gussets parallel to the sign panel, cut to clear bolts as shown on Standard Plan S125



SECTION B-B
See Standard Plan S125



DETAIL B



DETAIL C

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
OVERHEAD SIGN-TRUSS
SINGLE POST TYPE
FRAME JUNCTURE DETAILS
BALANCED BUTTERFLY
CHANGEABLE MESSAGE SIGNS
MODEL 510
NO SCALE

S127

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

Stanley P. Johnson
REGISTERED CIVIL ENGINEER

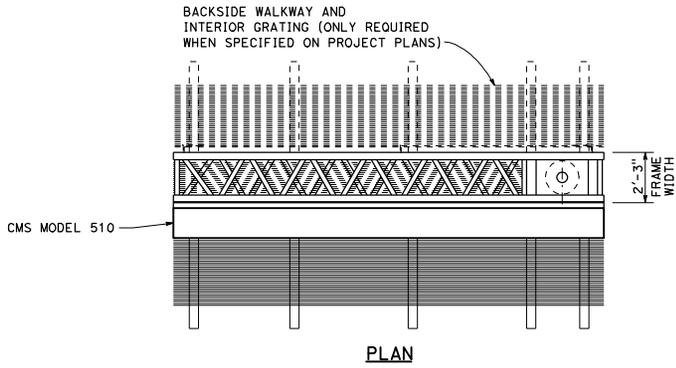
May 20, 2011
PLANS APPROVAL DATE

Stanley P. Johnson
No. CS793
Exp. 3-31-12
CIVIL
STATE OF CALIFORNIA

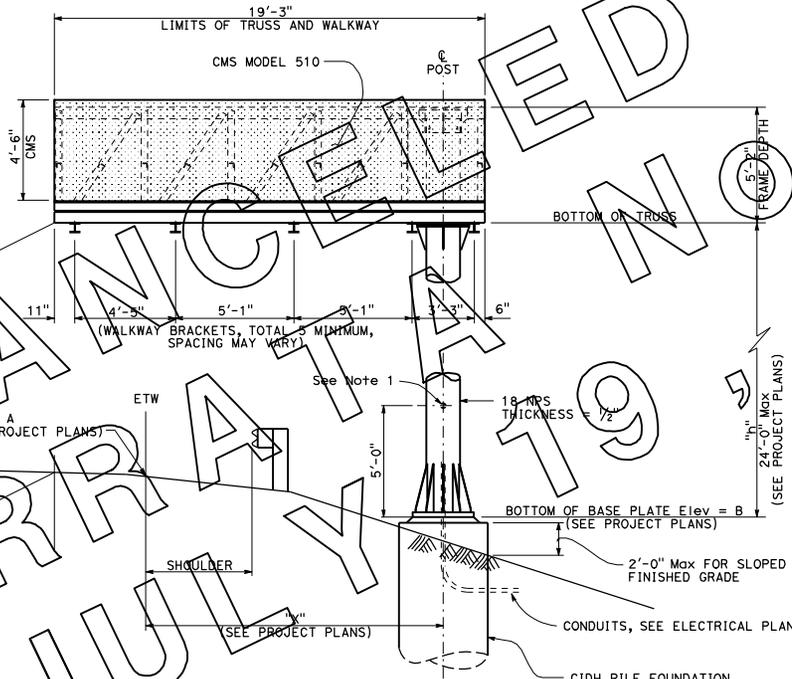
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2010 STANDARD PLAN S127

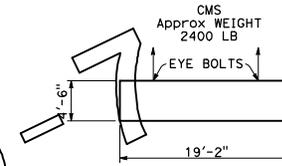
414



PLAN



ELEVATION



LIFTING DIAGRAM

NOTES

1. Drill and tap for 2 1/2" recessed pipe plug.
2. For location and elevation of sign structure see Project Plans.
3. Sign support post shall be raked out of plumb with leveling nuts to make the bottom of the sign frame level.
4. At final position of post, top and bottom nuts shall be tightened against base plate.
5. For "General Notes" see Standard Plan S101.

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 May 20, 2011
 PLANS APPROVAL DATE
 Stanley P. Johnson
 No. CS7393
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

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STATE OF CALIFORNIA
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**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 LAYOUT
 FULL CANTILEVER
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**

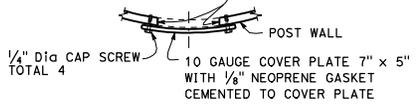
NO SCALE

S128

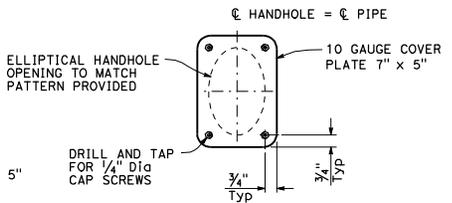
2010 STANDARD PLAN S128

415

GRIND EDGES SMOOTH,
ROUGHNESS OF EDGES NO
GREATER THAN 1000 MICRONS

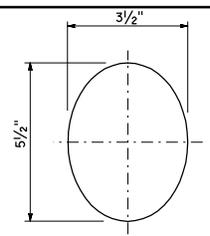


PLAN

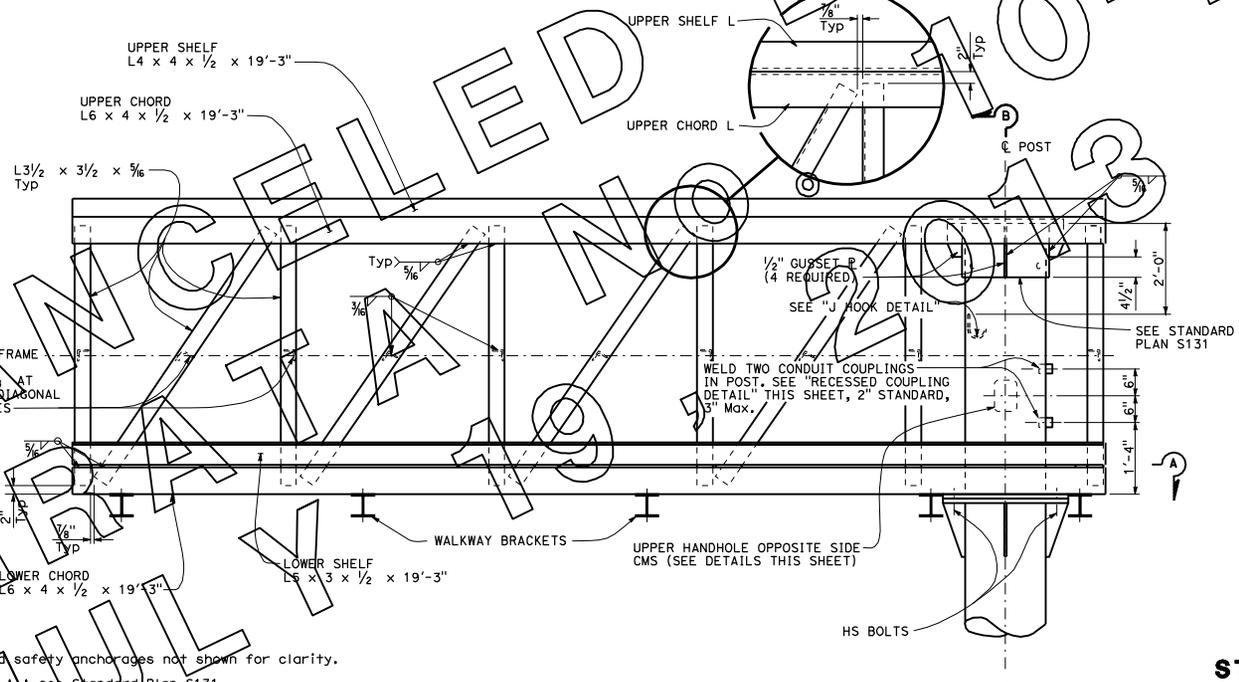


ELEVATION

UPPER HANDHOLE AND COVER DETAILS



PATTERN OF ELLIPTICAL
HANDHOLE CUT OUT



FRAME ELEVATION

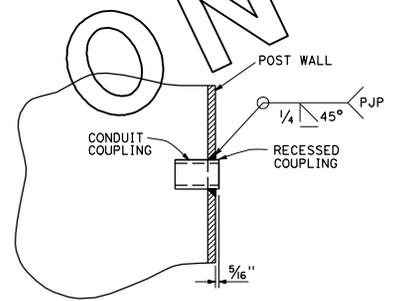
See Note 1

- NOTES:**
1. Walkways and safety anchorages not shown for clarity.
 2. For SECTION A-A see Standard Plan S131.
 3. For SECTION B-B see Standard Plan S131.

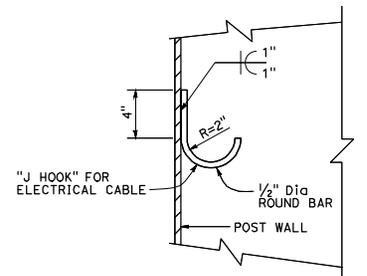
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS7793
 Exp. 3-31-12
 CIVIL
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May 20, 2011
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RECESSED COUPLING DETAIL



J HOOK DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**OVERHEAD SIGN-TRUSS
SINGLE POST TYPE
STRUCTURAL FRAME DETAILS
FULL CANTILEVER
CHANGEABLE MESSAGE SIGNS
MODEL 510**

NO SCALE

S129

2010 STANDARD PLAN S129

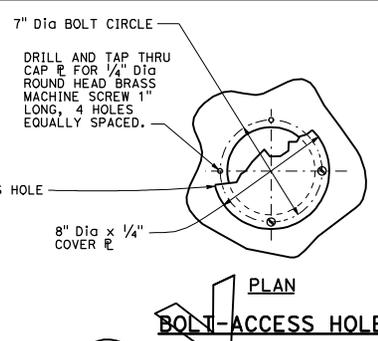
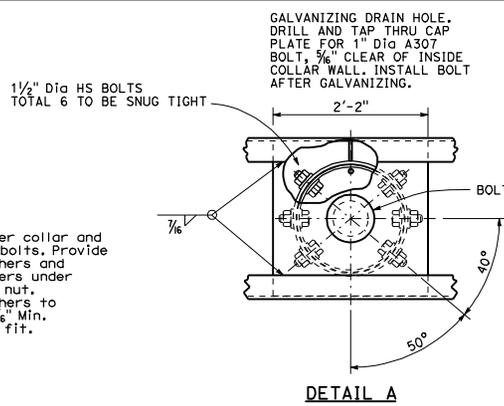
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
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NOTE:

Drill thru outer collar and post wall for bolts. Provide contoured washers and hardened washers under bolt head and nut. Contoured washers to be 3" x 3" x 5/16" Min. Grind face to fit.

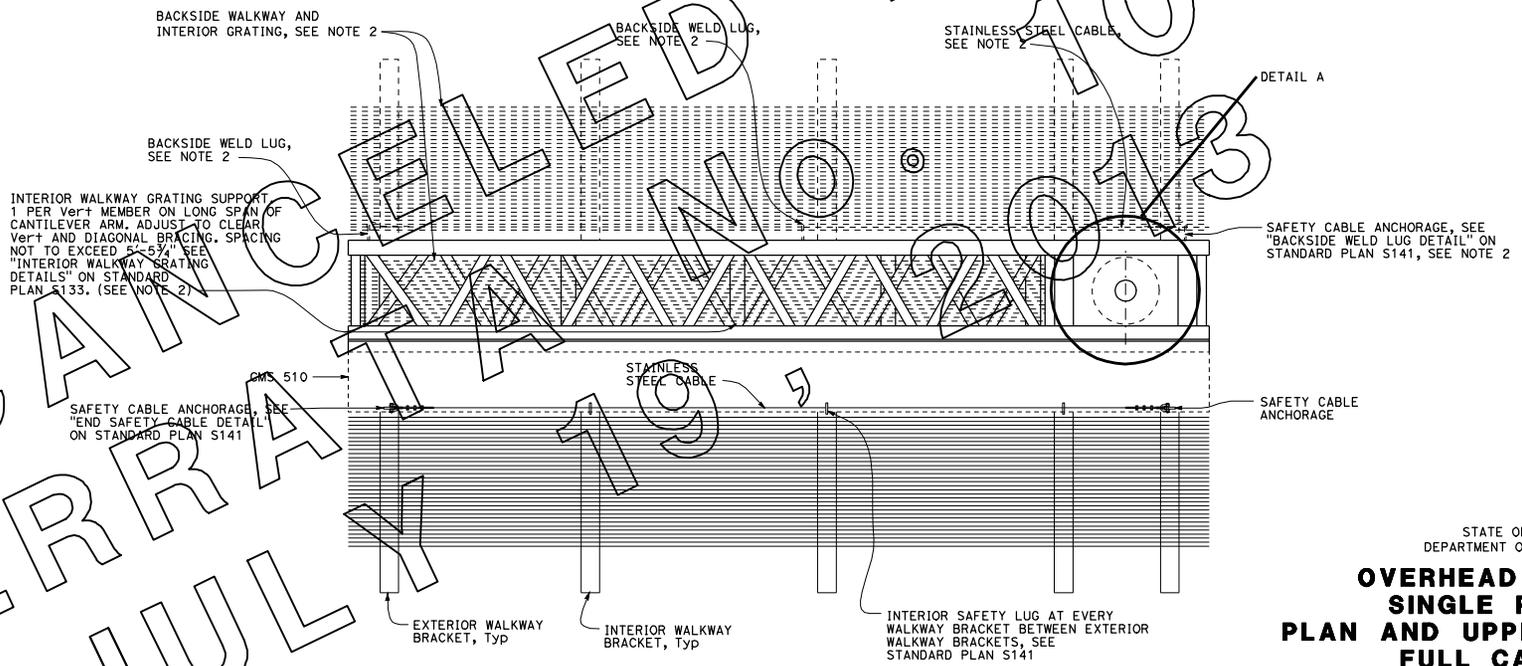


DETAIL A

PLAN BOLT-ACCESS HOLE

NOTES:

1. Cross-ties at vertical and diagonal angles and internal diagonals not shown for clarity.
2. Interior grating, backside safety cable and backside weld lugs shall be installed only for projects requiring backside walkways.



PLAN

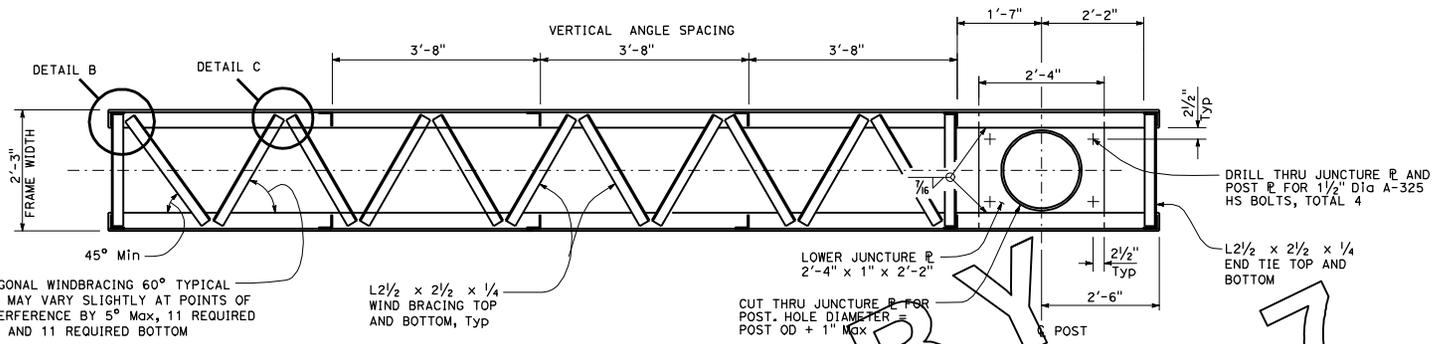
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 PLAN AND UPPER BOLT DETAILS
 FULL CANTILEVER
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**

NO SCALE

S130

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 May 20, 2011
 PLANS APPROVAL DATE
 Stanley P. Johnson
 No. CS793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA
 REGISTERED PROFESSIONAL ENGINEER

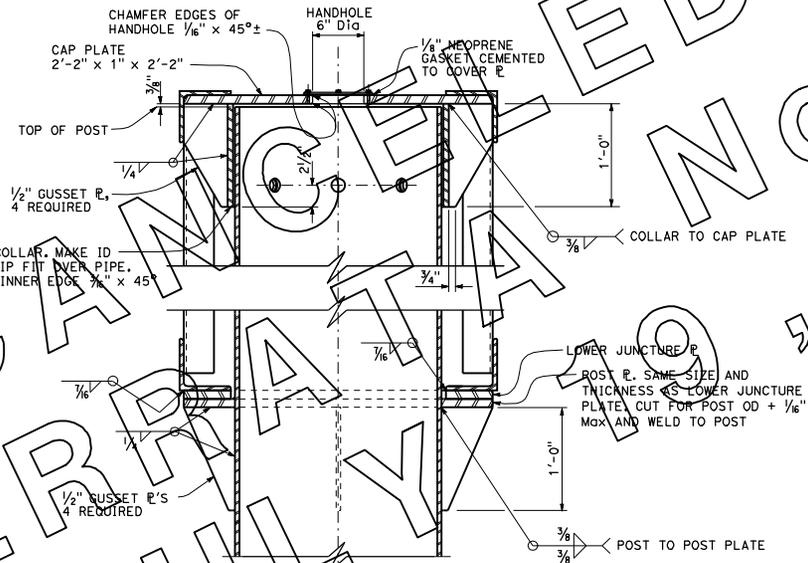


**SECTION A-A
LOWER JUNCTURE CONNECTION**

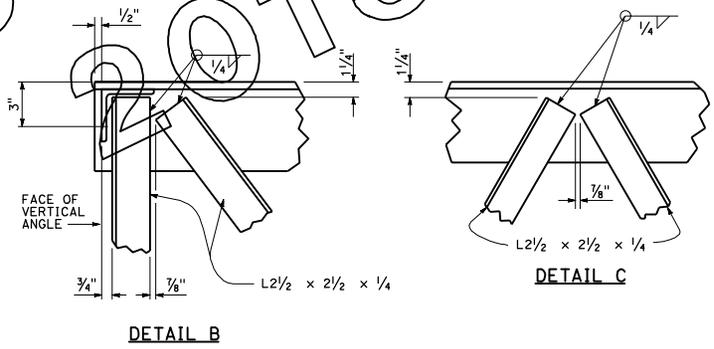
See Standard Plan S129

NOTES:

- In all cases, truss shall be supported at lower juncture connection.
- Post to truss connections shall be fitted in shop.
- For gussets parallel to the sign panel, cut to clear bolts as shown on Standard Plan S129.



SECTION B-B
See Standard Plan S129



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 FRAME JUNCTURE DETAILS
 FULL CANTILEVER
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**

NO SCALE

S131

417

2010 STANDARD PLAN S131

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

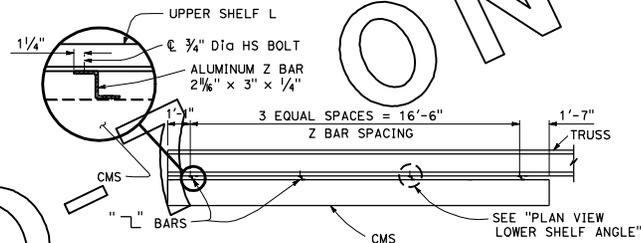
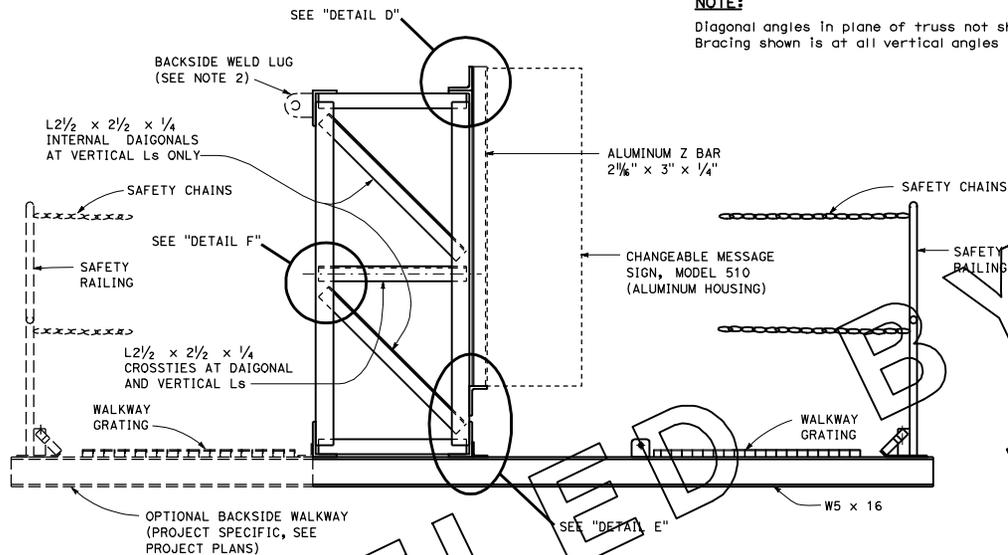
REGISTERED CIVIL ENGINEER
 Stanley P. Johnson
 No. CS793
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE

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NOTE:

Diagonal angles in plane of truss not shown. Bracing shown is at all vertical angles of truss.



ALUMINUM Z BAR SPACING

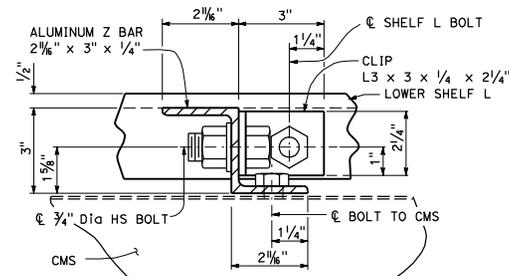
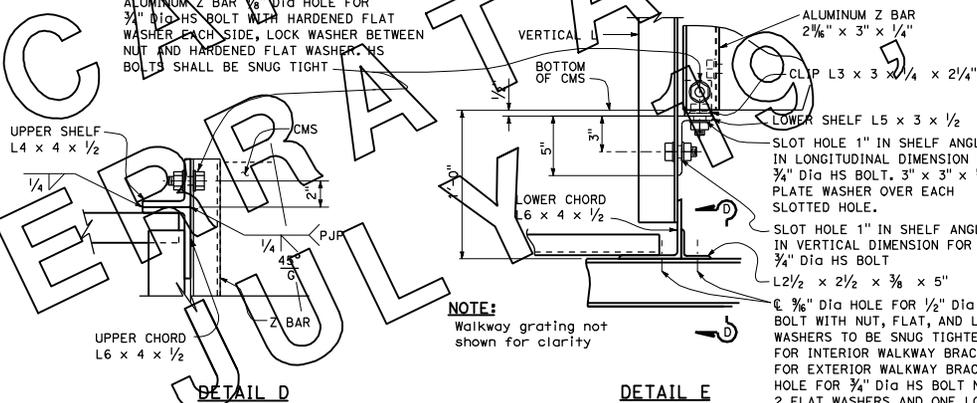
NOTE:

Z bar spacing and orientation may vary slightly.

NOTES:

1. Internal walkway members not shown.
2. Interior grating and backside weld lugs shall be installed only for projects requiring backside walkways.

FOR Z BAR CONNECTIONS ONLY, FIELD DRILL ALUMINUM Z BAR 1/8" DIA HOLE FOR 3/4" DIA HS BOLT WITH HARDENED FLAT WASHER EACH SIDE, LOCK WASHER BETWEEN NUT AND HARDENED FLAT WASHER. HS BOLTS SHALL BE SNUG TIGHT.



PLAN VIEW LOWER SHELF ANGLE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**OVERHEAD SIGN-TRUSS
SINGLE POST TYPE
MOUNTING DETAILS
CHANGEABLE MESSAGE SIGNS
MODEL 510**

NO SCALE

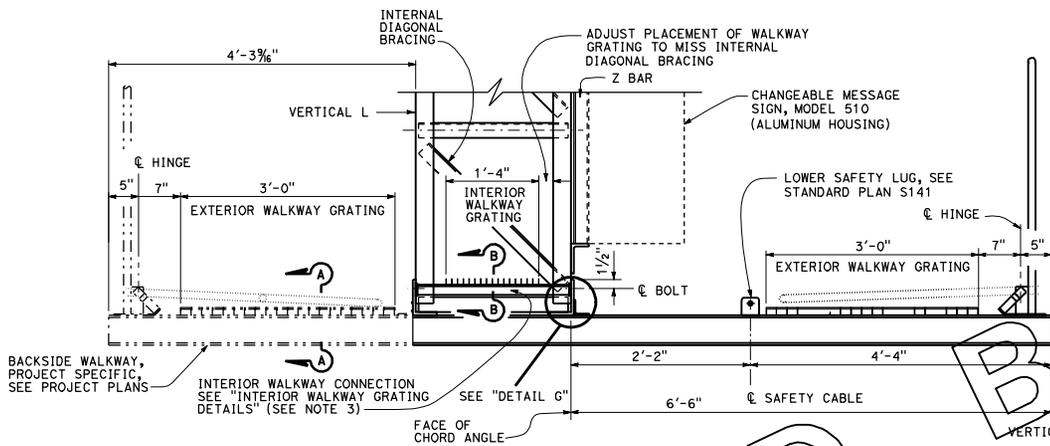
S132

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

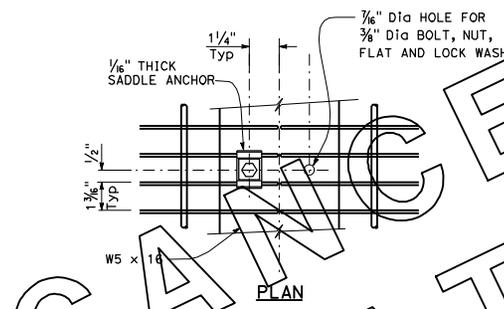
Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS7393
 Exp. 3-31-12
 CIVIL
 STATE OF CALIFORNIA

May 20, 2011
 PLANS APPROVAL DATE

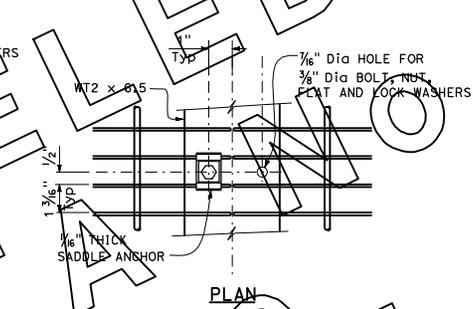
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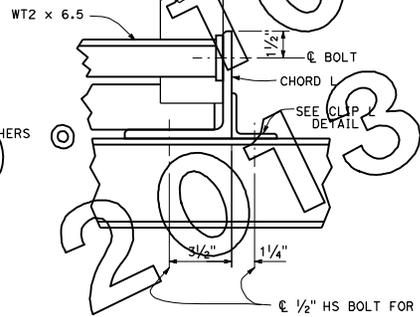
TYPICAL WALKWAY SECTION



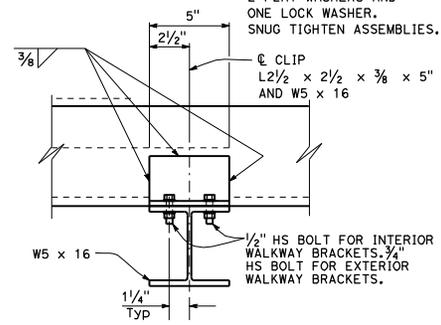
EXTERIOR WALKWAY GRATING DETAILS



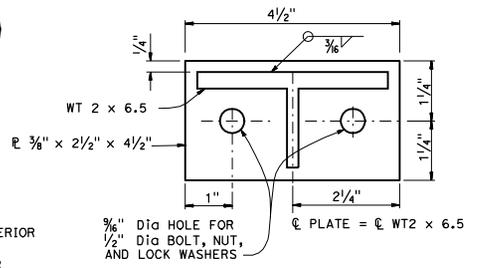
INTERIOR WALKWAY GRATING DETAILS



DETAIL G



CLIP L DETAIL

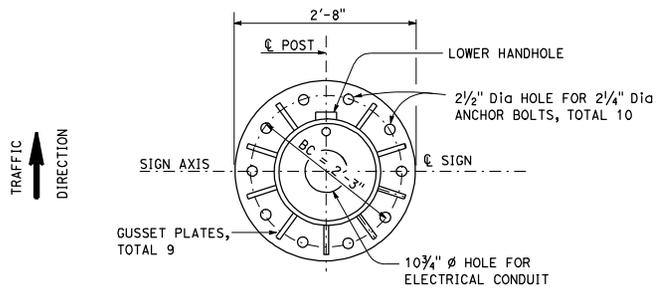


END PLATE CONNECTOR DETAIL

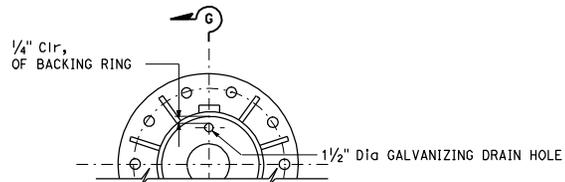
NOTES:

1. Welded type grating shall have 1/4" x 1/8" bearing bars at 1 1/2" centers with 1/4" diameter (or equal) cross bars at 4" centers. If mechanical lock grating is used, it shall be equal in strength to the welded type. Alternate hold-down clips may be submitted for approval.
2. Walkway grating to be continuous (no splices) over as many walkway brackets as practical and consistent with fabrication, ease of handling and assembly.
3. Interior grating shall be installed only for projects requiring backside walkways.

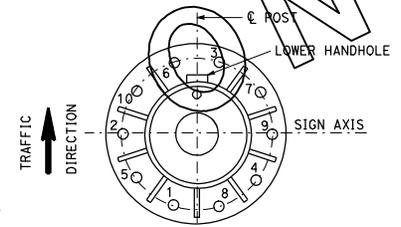
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 WALKWAY DETAILS
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**
 NO SCALE



**10 BOLTS
BASE PLATE DETAILS**



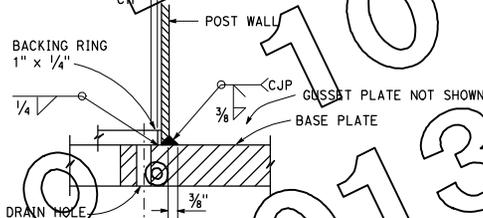
GALVANIZING HOLE LAYOUT



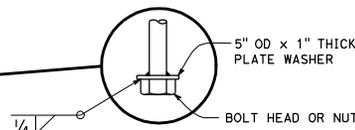
TIGHTENING SEQUENCE

NOTES:

1. Thread upper 10" and galvanize upper 1'-0" of the anchor bolts.
2. Provide anchor bolt templates during installation of anchor bolts. Templates to match base plate anchor bolts pattern. See Standard Plans S3 for typical use of templates, OD = 2'-7", ID = 1'-11", BC = 2'-3", HOLES = 2 5/8" Max, permanent template thickness = 3/4", temporary template thickness = 1/2".
3. Following initial tightening, upper nuts shall be brought to a snug tight condition. This can be obtained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. Snug tightening shall progress systematically according to the tightening sequence as shown. Upper nuts and washers to have full even bearing on base plate.
4. For drain holes and central void in mortar, see Standard Plan ES-6B detail N.



**SECTION G-G
WELDING DETAIL**



ANCHORAGE DETAIL

2 1/4" Dia ANCHOR BOLTS WITH NUT, LEVELING NUT, 2 FLAT WASHERS, AND PLATE WASHER PER BOLT. LEVELING NUTS AND WASHERS TO BE ADJUSTED FOR FULL EVEN BEARING ON BASE PLATE PRIOR TO FINAL TIGHTENING OF UPPER NUTS. SEE NOTE 3.

5/8" THICK GUSSET PLATES, SEE Std PLAN S142

BASE PLATE 2'-8" Dia, 3/4" THICKNESS
TOR OF CIDH PILE

ANCHOR BOLT TEMPLATE (PERMANENT) SEE NOTE 2

CONDUIT, SEE ELECTRICAL PLANS

ELEVATION

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

Stanley P. Johnson
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

Stanley P. Johnson
No. CS793
Exp. 3-31-12
REGISTERED PROFESSIONAL ENGINEER
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**OVERHEAD SIGN-TRUSS
SINGLE POST TYPE
ANCHORAGE AND BASE
PLATE DETAILS
CHANGEABLE MESSAGE SIGNS
MODEL 510**

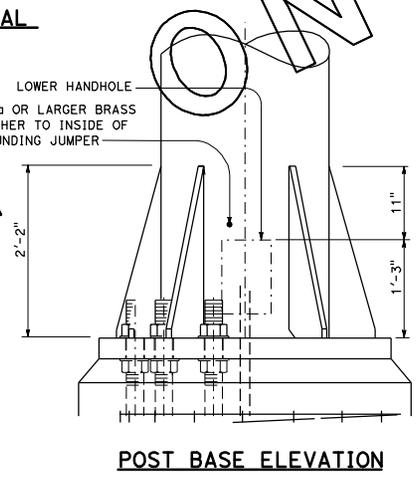
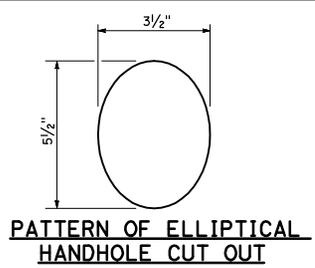
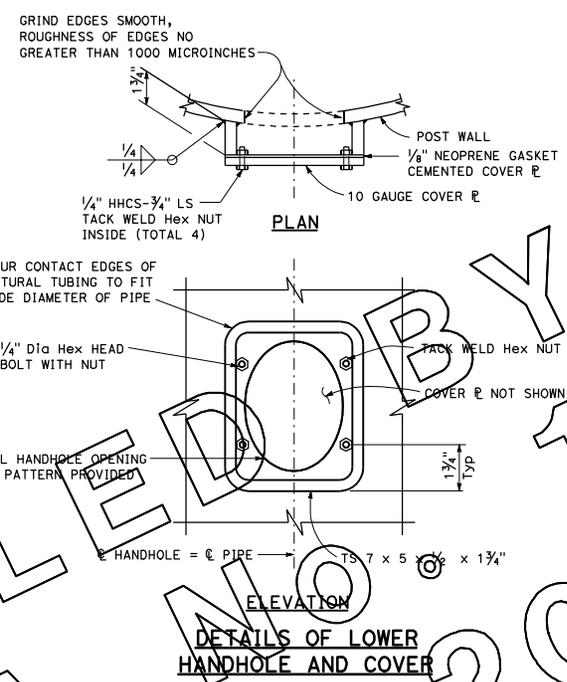
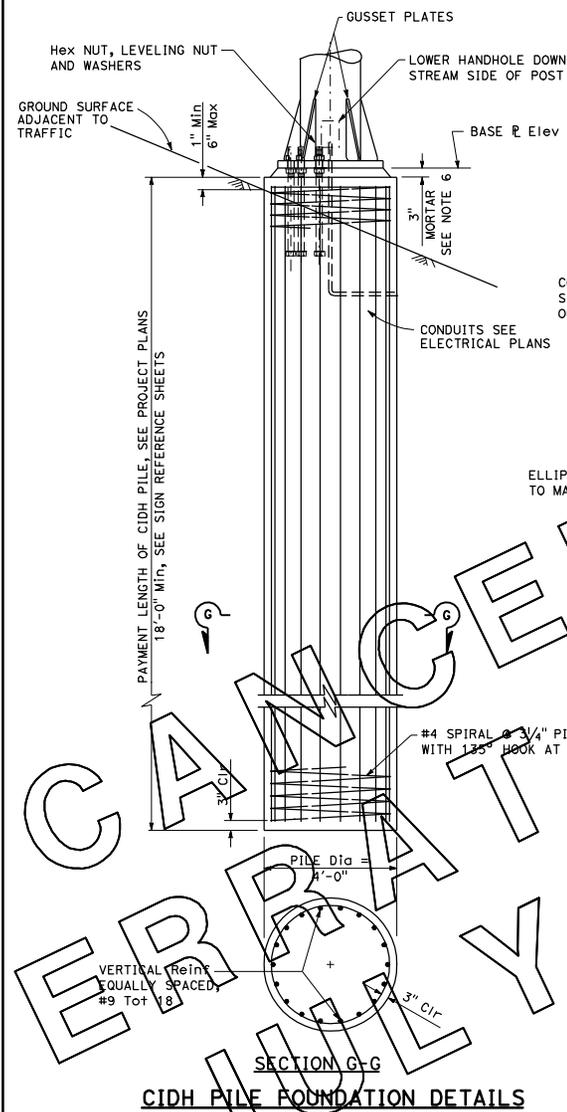
NO SCALE

S134

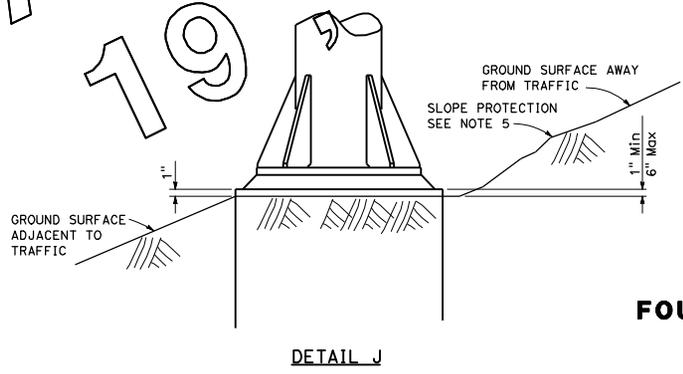
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS793
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- NOTES:**
1. Pile shall be placed against undisturbed material.
 2. Primer and paint post interior from base plate to 6" above lower handhole-unless post is galvanized.
 3. On single post sign structures, the post shall be raked out of plumb, with the use of leveling nuts to make the bottom of the sign frame level.
 4. When foundation is located on a steep slope with exposed face of concrete adjacent to traffic, see "DETAIL J".
 5. Slope protection required when indicated on Project Plans.
 6. For drain holes and central void in mortar, see Standard Plan ES-6B detail N.



STATE OF CALIFORNIA
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**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 FOUNDATION AND MISCELLANEOUS DETAILS
 CHANGEABLE MESSAGE SIGNS
 MODEL 510**
 NO SCALE

S135

M	
Maint	MAINTENANCE
Max	MAXIMUM
MB	METAL BEAM
MBB	METAL BEAM BARRIER
MBGR	METAL BEAM GUARD RAILING
Med	MEDIAN
MGS	MIDWEST GUARDRAIL SYSTEM
MH	MANHOLE
Min	MINIMUM
Misc	MISCELLANEOUS
Misc I & S	MISCELLANEOUS IRON AND STEEL
Mkr	MARKER
Mod	MODIFIED, MODIFY
Mon	MONUMENT
MP	METAL PLATE
MPGR	METAL PLATE GUARD RAILING
MR	MOVEMENT RATING
MSE	MECHANICALLY STABILIZED EMBANKMENT
Mt	MOUNTAIN, MOUNT
MtI	MATERIAL
MVP	MAINTENANCE VEHICLE PULLOUT
N	
N	NORTH
NB	NORTHBOUND
No.	NUMBER (MUST HAVE PERIOD)
Nos.	NUMBERS (MUST HAVE PERIOD)
NPS	NOMINAL PIPE SIZE
NS	NEAR SIDE
NSP	NEW STANDARD PLAN
NTS	NOT TO SCALE
O	
Oblir	OBLITERATE
OC	OVERCROSSING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OG	ORIGINAL GROUND
OGAC	OPEN GRADED ASPHALT CONCRETE
OGFC	OPEN GRADED FRICTION COURSE
OH	OVERHEAD
OHWM	ORDINARY HIGH WATER MARK
O-O	OUT TO OUT
Opp	OPPOSITE
OSD	OVERSIDE DRAIN
P	
P	PAGE
PAP	PERFORATED ALUMINUM PIPE
PB	PULL BOX
PC	POINT OF CURVATURE, PRECAST
PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE
PCMS	PORTABLE CHANGEABLE MESSAGE SIGN
PCP	PERFORATED CONCRETE PIPE, PRESTRESSED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PEC	PERMIT TO ENTER AND CONSTRUCT
Ped	PEDESTRIAN
Ped OC	PEDESTRIAN OVERCROSSING
Ped UC	PEDESTRIAN UNDERCROSSING
Perm MtI	PERMEABLE MATERIAL

P continued	
PG	PROFILE GRADE
PI	POINT OF INTERSECTION
PJP	PARTIAL JOINT PENETRATION
Pkwy	PARKWAY
PL	PLATE
P/L	PROPERTY LINE
PM	POST MILE, TIME FROM NOON TO MIDNIGHT
PN	PAVING NOTCH
POC	POINT OF HORIZONTAL CURVE
POT	POINT OF TANGENT
POVC	POINT OF VERTICAL CURVE
PP	PIPE PILE, PLASTIC PIPE, POWER POLE
PPL	PREFORMED PERMEABLE LINER
PPP	PERFORATED PLASTIC PIPE
PRC	POINT OF REVERSE CURVE
PRF	PAVEMENT REINFORCING FABRIC
PRVC	POINT OF REVERSE VERTICAL CURVE
PS&E	PLANS, SPECIFICATIONS AND ESTIMATES
PS, P/S	PRESTRESSED
PSP	PERFORATED STEEL PIPE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
Pvmt	PAVEMENT
Q	
Qty	QUANTITY
R	
R	RADIUS
R & D	REMOVE AND DISPOSE
R & S	REMOVE AND SALVAGE
R/C	RATE OF CHANGE
RCA	REINFORCED CONCRETE ARCH
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCPA	REINFORCED CONCRETE PIPE ARCH
Rd	ROAD
Reinf	REINFORCED, REINFORCEMENT, REINFORCING
Rel	RELOCATE
Repl	REPLACEMENT
Ret	RETAINING
Rev	REVISED, REVISION
Rdwy	ROADWAY
RHMA	RUBBERIZED HOT MIX ASPHALT
Riv	RIVER
RM	ROAD-MIXED
RP	RADIUS POINT, REFERENCE POINT
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION, REVISED STANDARD PLAN
R+	RIGHT
R+e	ROUTE
RW	REDWOOD, RETAINING WALL
R/W	RIGHT OF WAY
Rwy	RAILWAY

S	
S	SOUTH, SUPPLEMENT
SAE	STRUCTURE APPROACH EMBANKMENT
Salv	SALVAGE
SAPP	STRUCTURAL ALUMINUM PLATE PIPE
SB	SOUTHBOUND
SC	SAND CUSHION
SCSP	SLOTTED CORRUGATED STEEL PIPE
SD	STORM DRAIN
Sec	SECOND, SECTION
Sep	SEPARATION
SG	SUBGRADE
Shld	SHOULDER
Shr	SHEET
Slm	SIMILAR
§	STATION LINE
SM	SELECTED MATERIAL
Spec	SPECIAL, SPECIFICATIONS
SPP	SLOTTED PLASTIC PIPE
SS	SLOPE STAKE
SSBM	STRAP AND SADDLE BRACKET METHOD
SSD	STRUCTURAL SECTION DRAIN
SSPA	STRUCTURAL STEEL PLATE ARCH
SSPP	STRUCTURAL STEEL PLATE PIPE
SSPPA	STRUCTURAL STEEL PLATE PIPE ARCH
SSRP	STEEL SPIRAL RIB PIPE
St	STREET
Sta	STATION
STBB	SINGLE THRIE BEAM BARRIER
Std	STANDARD
Str	STRUCTURE
Surf	SURFACING
SW	SIDEWALK, SOUND WALL, SEWER
Swr	SEWER
Sym	SYMMETRICAL
S4S	SURFACE 4 SIDES
T	
T	SEMI-TANGENT
Tan	TANGENT
TBB	THRIE BEAM BARRIER
Tbr	TIMBER
TC	TOP OF CURB
TCB	TRAFFIC CONTROL BOX
TCE	TEMPORARY CONSTRUCTION EASEMENT
Tel	TELEPHONE
Temp	TEMPORARY
TG	TOP OF GRADE
Tot	TOTAL
TP	TELEPHONE POLE
TPB	TREATED PERMEABLE BASE
TPM	TREATED PERMEABLE MATERIAL
Trans	TRANSITION

T continued	
TS	TRANSVERSE, TRAFFIC SIGNAL, TUBULAR STEEL
Typ	TYPICAL
U	
UC	UNDERCROSSING
UD	UNDERDRAIN
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UP	UNDERPASS
V	
V	VALVE, DESIGN SPEED
Var	VARIABLE, VARIES
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
Vert	VERTICAL
Via	VIADUCT
Vol	VOLUME
W	
W	WEST, WIDTH
WB	WESTBOUND
WH	WEEP HOLE
WM	WIRE MESH
WS	WATER SURFACE
WSP	WELDED STEEL PIPE
Wt	WEIGHT
WV	WATER VALVE
WW	WINGWALL
WWL	WINGWALL LAYOUT LINE
X	
X Sec	CROSS SECTION
Xing	CROSSING
Y	
Yr	YEAR
Yrs	YEARS

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

Shane R. Tushnet
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
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TO ACCOMPANY PLANS DATED _____

UNIT OF MEASUREMENT SYMBOLS:
 Some of the symbols used in the project plan quantity tables and in the Bid Item List are:

SYMBOL USED	DEFINITIONS
ACRE	ACRE
CF	CUBIC FOOT
CY	CUBIC YARD
EA	EACH
GAL	GALLON
LB	POUND
LF	LINEAR FOOT
SQFT	SQUARE FOOT
SQYD	SQUARE YARD
STA	100 FEET
TAB	TABLET
TON	2,000 POUNDS

Some of the symbols used in the plans other than in the project plan quantity tables are:

SYMBOL USED	DEFINITIONS
ksf	KIPS PER SQUARE INCH
ksf	KIPS PER SQUARE FOOT
psf	POUNDS PER SQUARE INCH
psf	POUNDS PER SQUARE FOOT
lb/ft ³ , pcf	POUNDS PER CUBIC FOOT
tsf	TONS PER SQUARE FOOT
mph, MPH *	MILES PER HOUR
∅	NOMINAL DIAMETER
oz	OUNCE
lb	POUND
kip	1,000 POUNDS
cal	CALORIE
ft	FOOT OR FEET
gal	GALLON

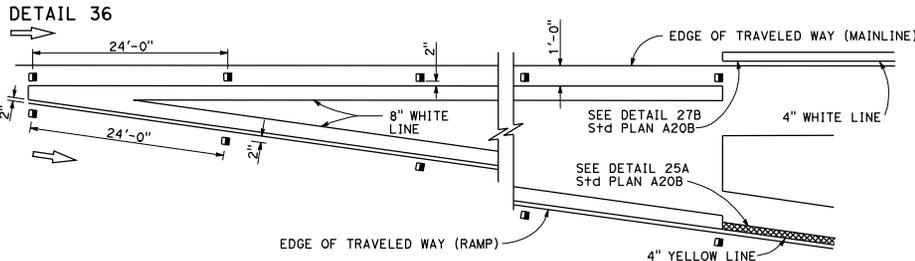
* For use on a sign panel only

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ABBREVIATIONS
(SHEET 2 OF 2)
 NO SCALE

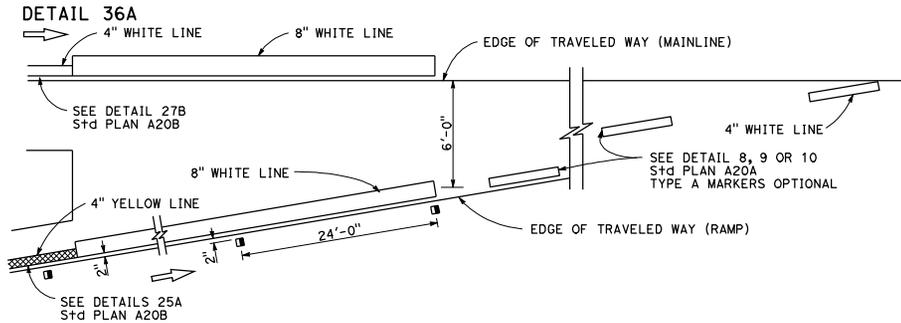
RSP A10B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A10B
 DATED MAY 20, 2011 - PAGE 2 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A10B

2010 REVISED STANDARD PLAN RSP A10B

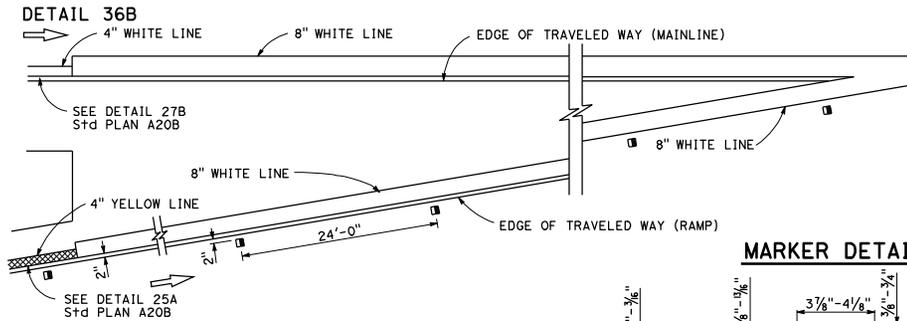
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT



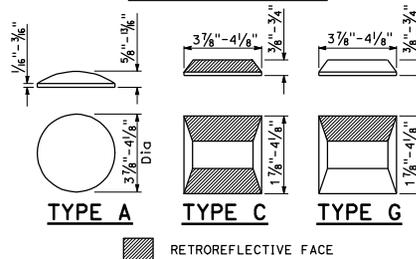
ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT



ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT



MARKER DETAILS



LEGEND:

MARKERS

- TYPE A WHITE NON-REFLECTIVE
- ◻ TYPE C RED-CLEAR RETROREFLECTIVE
- ◼ TYPE G ONE-WAY CLEAR RETROREFLECTIVE

▨ RETROREFLECTIVE FACE

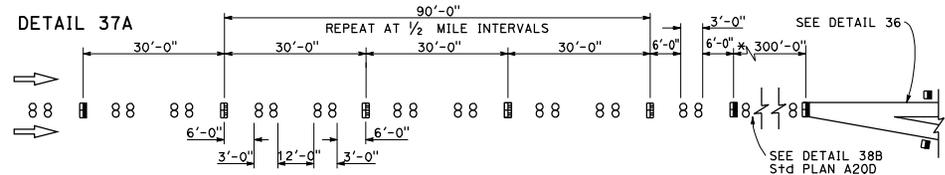
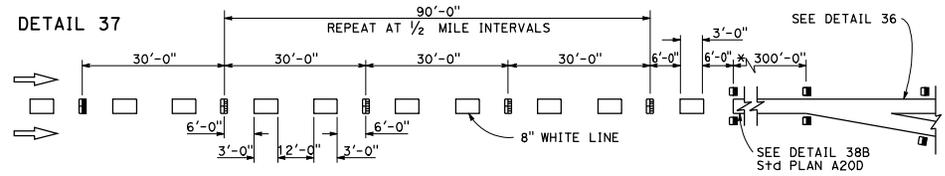
D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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Roberto L. McLaughlin
 REGISTERED CIVIL ENGINEER
 No. C40375
 Exp. 3-31-15
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE
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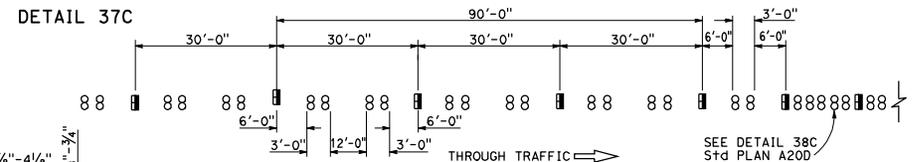
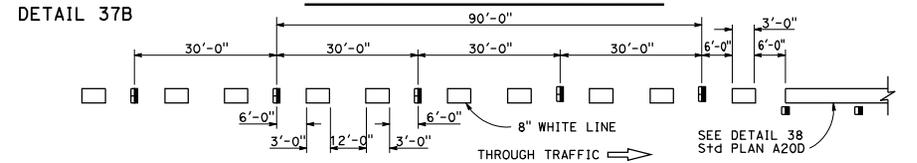
TO ACCOMPANY PLANS DATED _____

LANE DROP AT EXIT RAMP



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

LANE DROP AT INTERSECTIONS



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINE TYPICAL DETAILS

NO SCALE

RSP A20C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A20C DATED MAY 20, 2011 - PAGE 11 OF THE STANDARD PLANS BOOK DATED 2010.

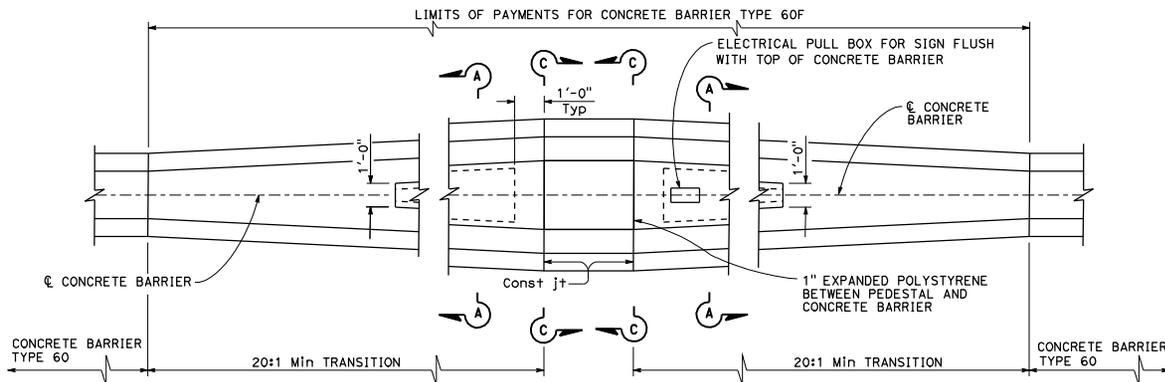
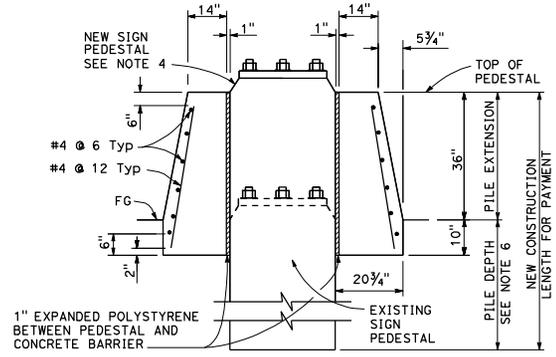
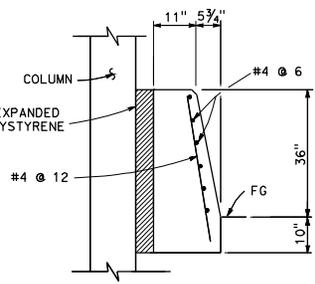
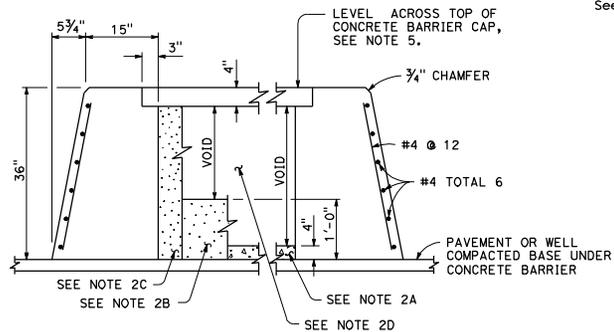
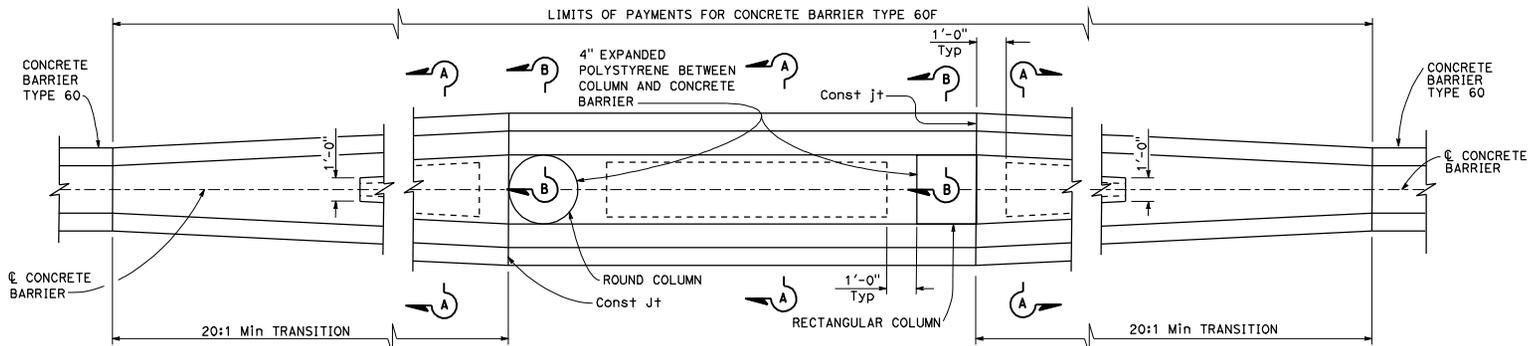
REVISED STANDARD PLAN RSP A20C

2010 REVISED STANDARD PLAN RSP A20C

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

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. CS0200
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
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NOTES:

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

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CONCRETE BARRIER TYPE 60F
 NO SCALE

RSP A76C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A76C
 DATED MAY 20, 2011 - PAGE 36 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A76C

2010 REVISED STANDARD PLAN RSP A76C

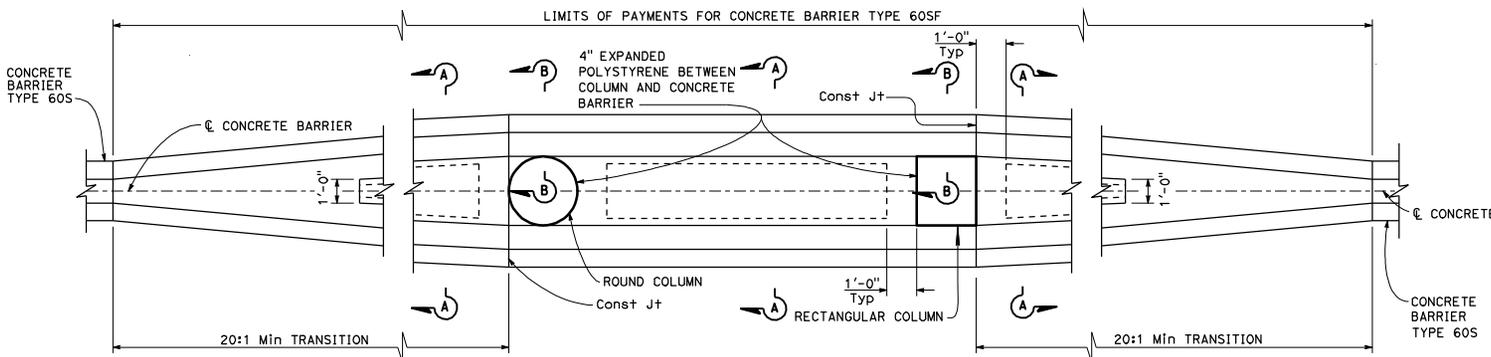
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

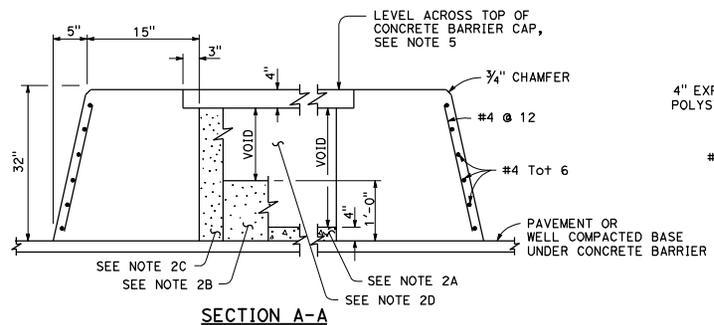
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. CS0200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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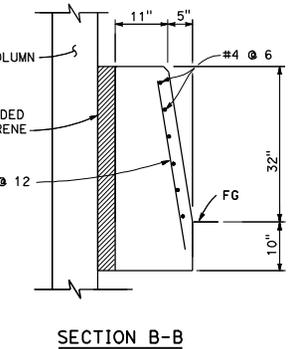


TRANSITION AT BRIDGE COLUMNS

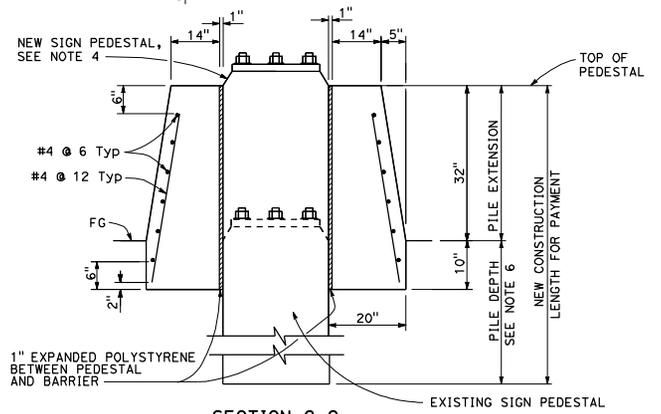
Concrete Barrier Type 60SF
See Note 7



SECTION A-A



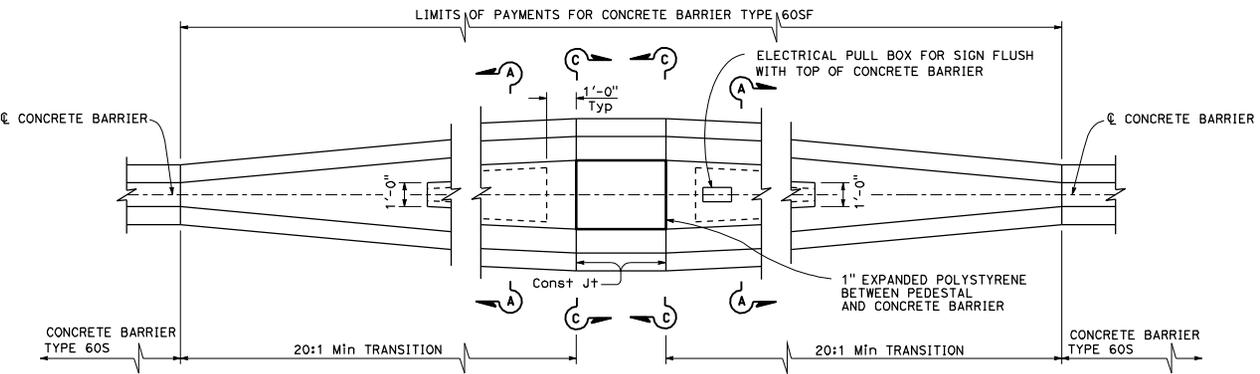
SECTION B-B



SECTION C-C

NOTES:

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



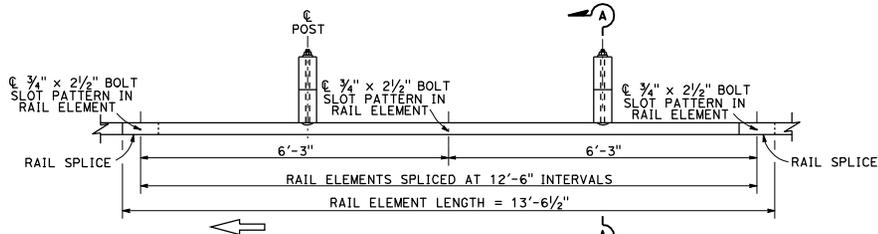
TRANSITION AT SIGN PEDESTAL

Concrete Barrier Type 60SF
See Note 7

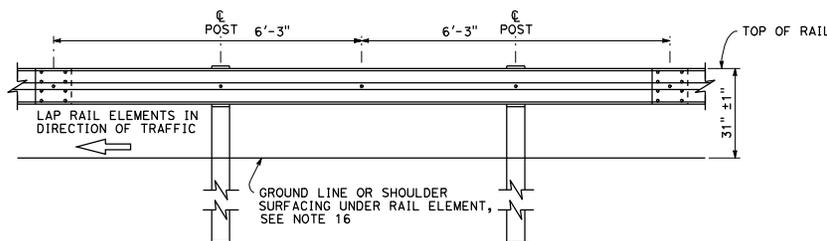
CONCRETE BARRIER TYPE 60SF
NO SCALE

RSP A761 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A761
DATED MAY 20, 2011 - PAGE 42 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A761

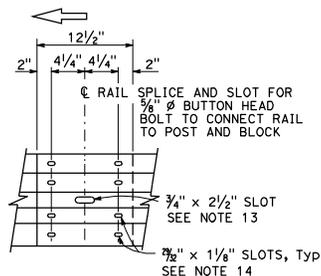


PLAN



ELEVATION

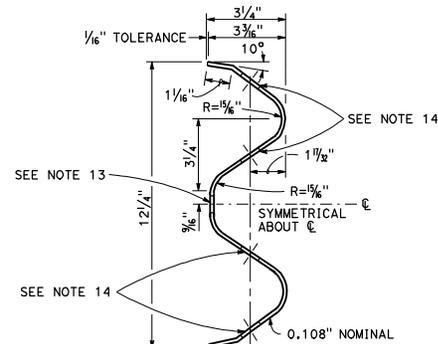
MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS



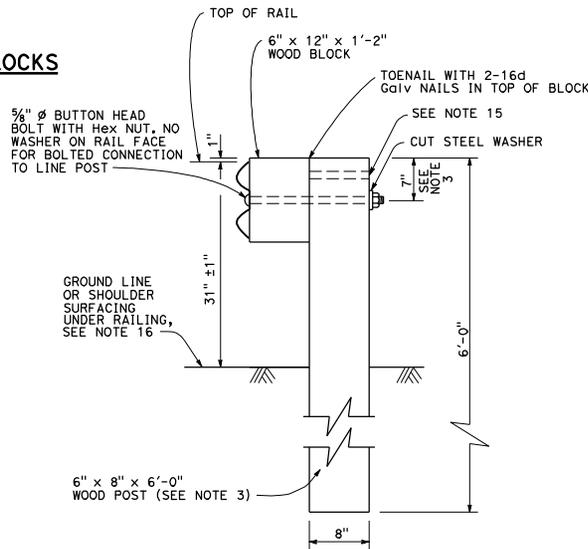
ELEVATION

RAIL ELEMENT SPLICE DETAIL

- Connect the over lapped end of the rail elements with $\frac{5}{8}$ " ϕ x $1\frac{1}{8}$ " button head oval shoulder splice bolts inserted into the $\frac{7}{8}$ " x $1\frac{1}{8}$ " slots and bolted together with $\frac{5}{8}$ " ϕ 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.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- 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 THRU RAIL ELEMENT



SECTION A-A TYPICAL WOOD LINE POST INSTALLATION

See Note 4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

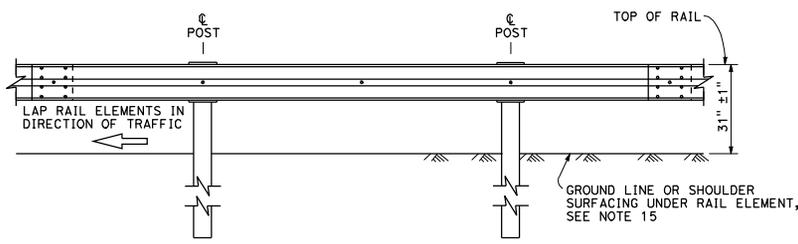
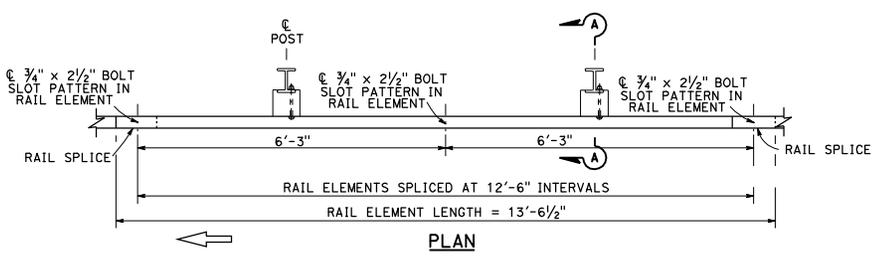
RSP A77L1 DATED JULY 19, 2013 SUPPLEMENTS STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77L1

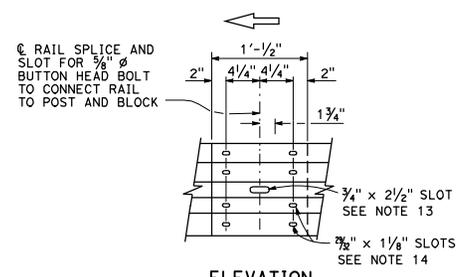
2010 REVISED STANDARD PLAN RSP A77L1

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

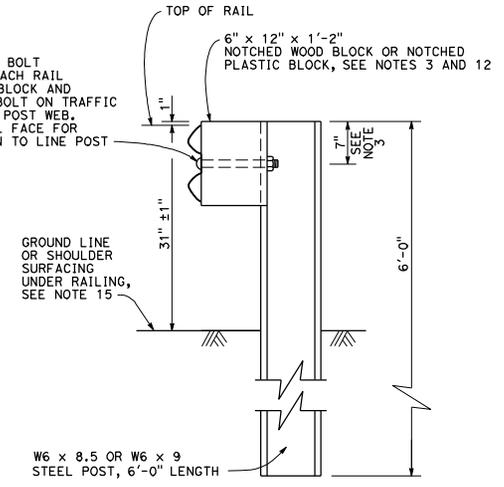
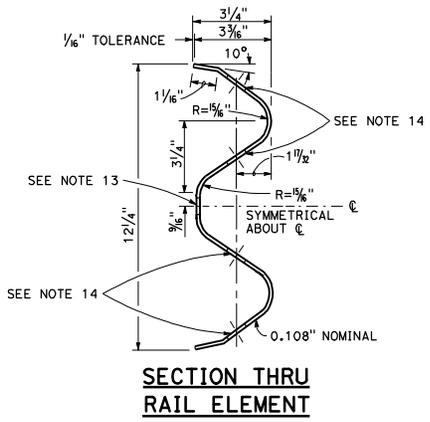
Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. C50200
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA



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



- Connect the over lapped end of the rail elements with 5/8" ø x 1 1/2" button head oval shoulder splice bolts inserted into the 3/4" x 1 1/8" slots and bolted together with 5/8" 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.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- 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

NOTES:

- For details of wood post installations, see Revised Standard Plan RSP A77L1.
- For details of standard hardware used to construct MGS, see Revised Standard Plan RSP A77M1.
- For details of steel posts and notched wood blocks used to construct MGS, see Revised Standard Plan RSP A77N2.
- For additional installation details, see Revised Standard Plan RSP A77N3.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- For MGS typical layouts, see the A77P, A77Q and A77R Series of Standard Plans.
- If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
- For MGS end anchor details, see Revised Standard Plans RSP A77S1 and RSP A77T2.
- For details of MGS transition to bridge railing, see Revised Standard Plan RSP A77U4.
- For additional details of MGS connection to bridge railings, see Revised Standard Plans RSP A77U1, RSP A77U2 and RSP A77V1.
- For dike positioning and MGS delineation details, see Revised Standard Plan RSP A77N4.
- Notched face of block faces steel post.
- Slotted hole for bolted connection of rail element to block and post. See "Section Thru Rail Element".
- Slotted holes for splice bolts to overlap ends of rail element. See "Section Thru Rail Element".
- Install posts in soil.

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 JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A77L2

2010 REVISED STANDARD PLAN RSP A77L2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

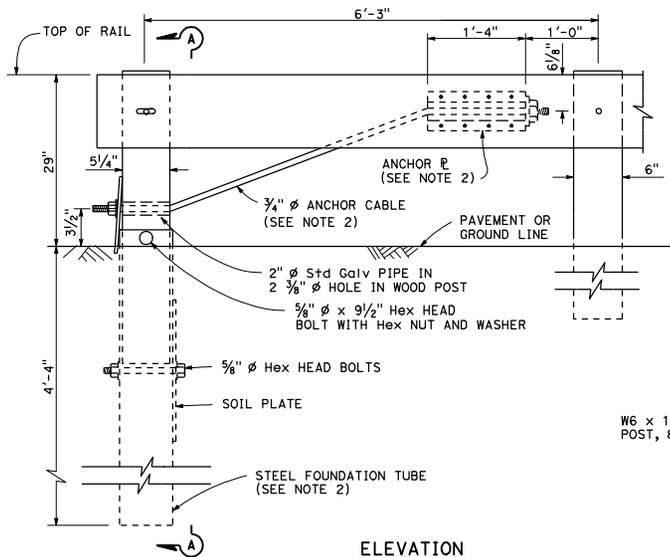
July 19, 2013
PLANS APPROVAL DATE

No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

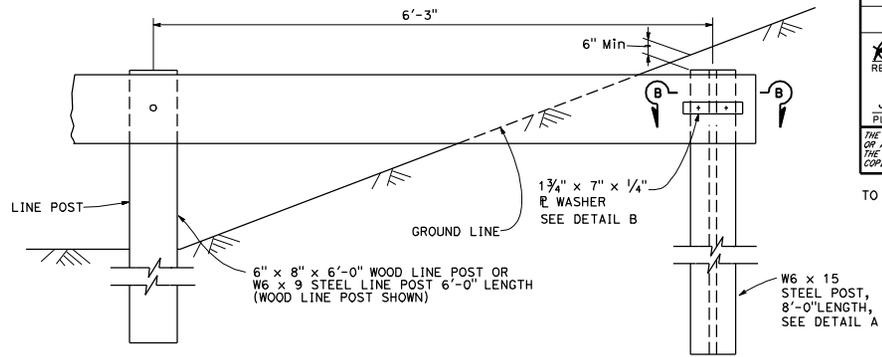
REGISTERED PROFESSIONAL ENGINEER

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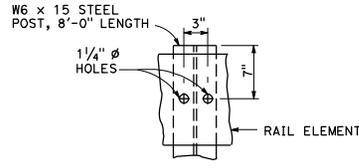
TO ACCOMPANY PLANS DATED _____



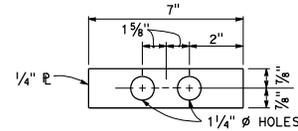
**ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)**



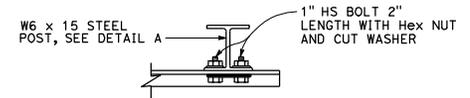
BURIED POST END ANCHOR



DETAIL A



DETAIL B



SECTION B-B

NOTES:

- For wood post and wood block, toenail with 2-16d Galv nails in top of block. For steel post and notched wood or plastic block, notched face of block faces steel post.
- A 6'-0" Length steel foundation tube, TS 8 x 6 x 3/8, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" diameter hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
- To connect railing to 27" terminal system end treatment, transition the top of railing height at a ratio of 120:1 to terminal system end treatment height plus one 12'-6" standard railing section at the transitioned height for a horizontal connection to the end treatment.
- Install posts in soil.
- See Revised Standard Plans RSP A77N1 and RSP A77N2 for details.
- Holes excavation in the slope to construct the buried post end anchor shall be backfilled with selected earth, placed in layers approximately 1'-0" thick. Each layer shall be moistened and thoroughly compacted.

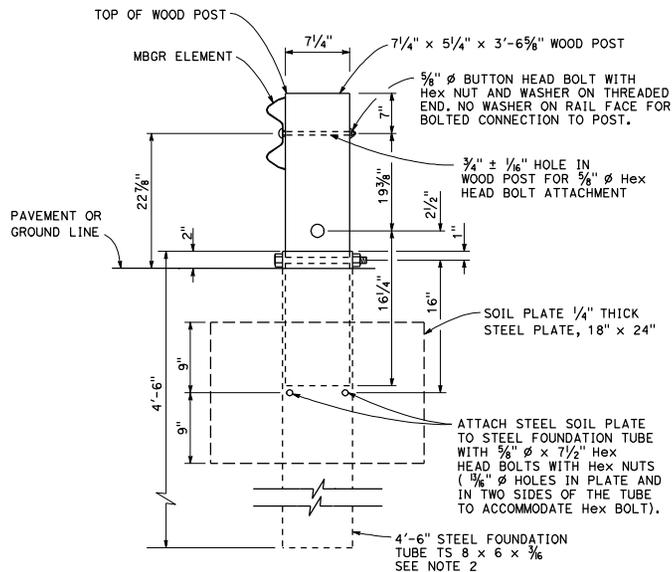
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
RECONSTRUCT INSTALLATION**

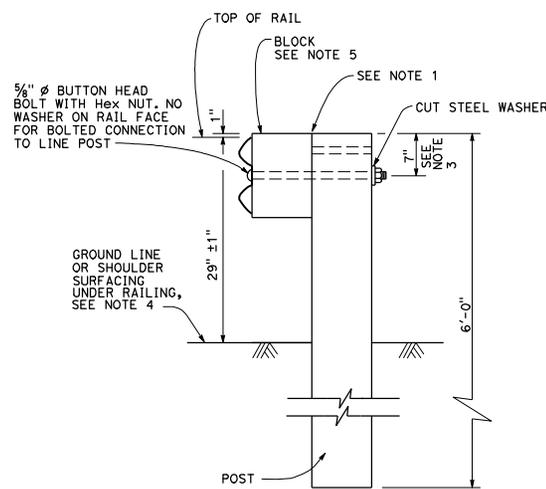
NO SCALE

RSP A77L3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77L3



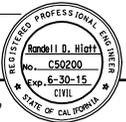
SECTION A-A



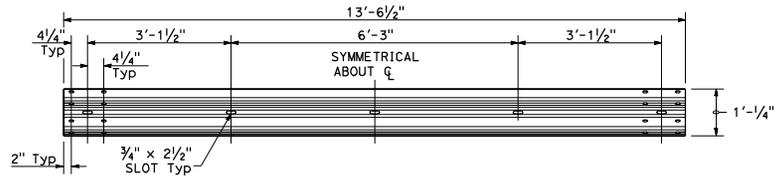
**TYPICAL LINE
POST INSTALLATION**

2010 REVISED STANDARD PLAN RSP A77L3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL No. SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER				
July 19, 2013 PLANS APPROVAL DATE				
No. C50200 Exp. 6-30-15 CIVIL				
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>				

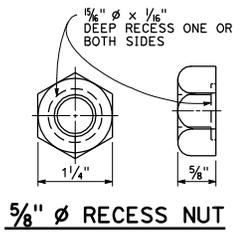


TO ACCOMPANY PLANS DATED _____

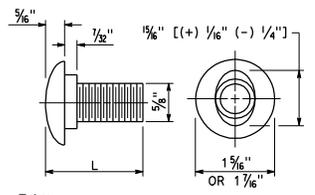


TYPICAL RAIL ELEMENT

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



5/8" Ø RECESS NUT

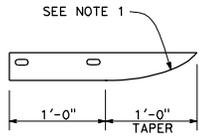


5/8" Ø BUTTON HEAD BOLT

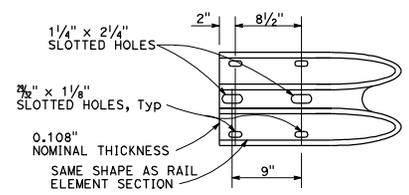
BUTTON HEAD BOLT

L	THREAD LENGTH
1 3/8"	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
** 2 3/4"	2" Min THREAD LENGTH
** 19"	4" Min THREAD LENGTH

** For nested rail applications.



PLAN



**ELEVATION
END CAP
(TYPE A)**

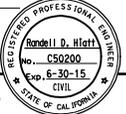
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
STANDARD HARDWARE**

NO SCALE

RSP A77M1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77M1

2010 REVISED STANDARD PLAN RSP A77M1

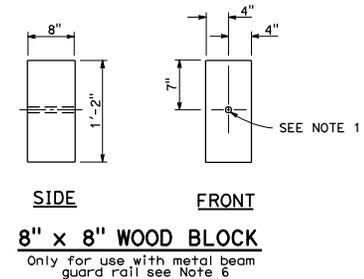
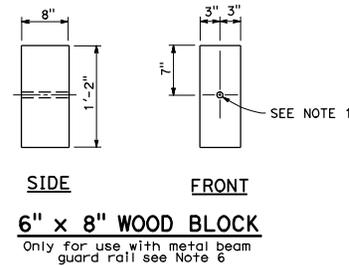
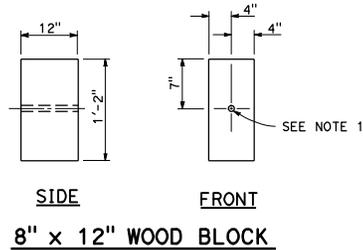
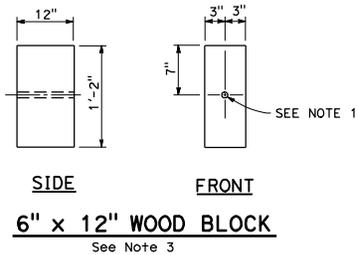
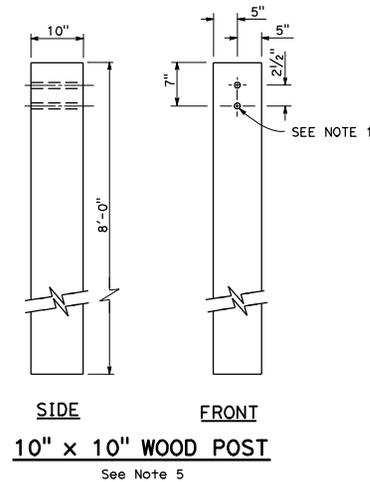
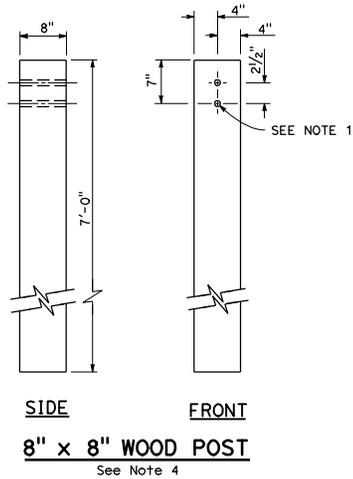
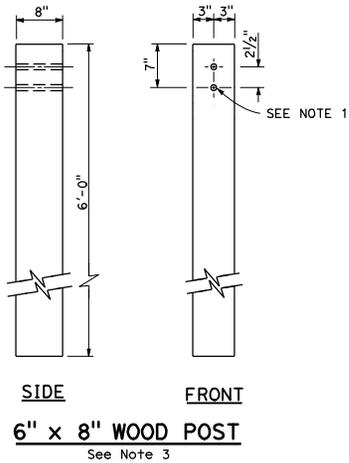
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER				
July 19, 2013 PLANS APPROVAL DATE				
				
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>				

TO ACCOMPANY PLANS DATED _____

NOTES:

1. All holes in wood posts and blocks shall be $\frac{3}{4}$ " Dia \pm $\frac{1}{16}$ ".
2. Dimensions shown for wood post are nominal.
3. This post and block combination used for standard line post sections of MGS.
4. This post and 8" x 12" block combination used for line post sections of MGS on narrow roadways.
5. This post and 8" x 12" block combination is typically used where strengthened line post sections of MGS are warranted to shield fixed objects.
6. See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" wood blocks.

2010 REVISED STANDARD RSP PLAN A77N1



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
WOOD POST AND
WOOD BLOCK DETAILS**

NO SCALE

RSP A77N1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N1

NOTES:

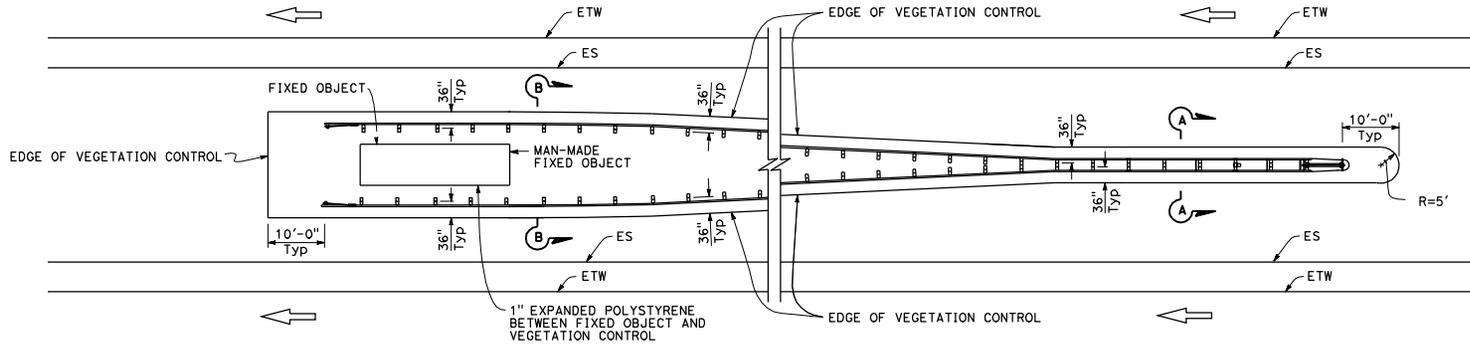
1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.

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

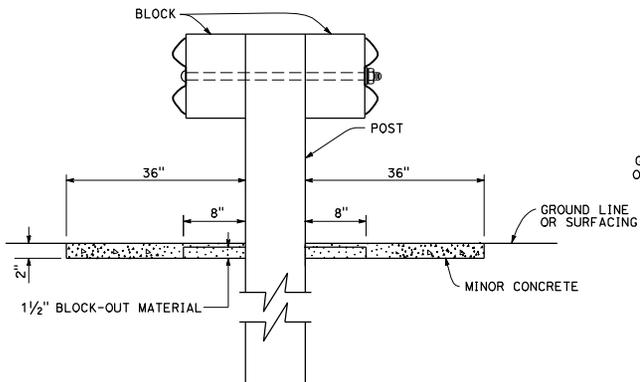
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE: July 19, 2013
No. C50200
Exp. 6-30-15
CIVIL

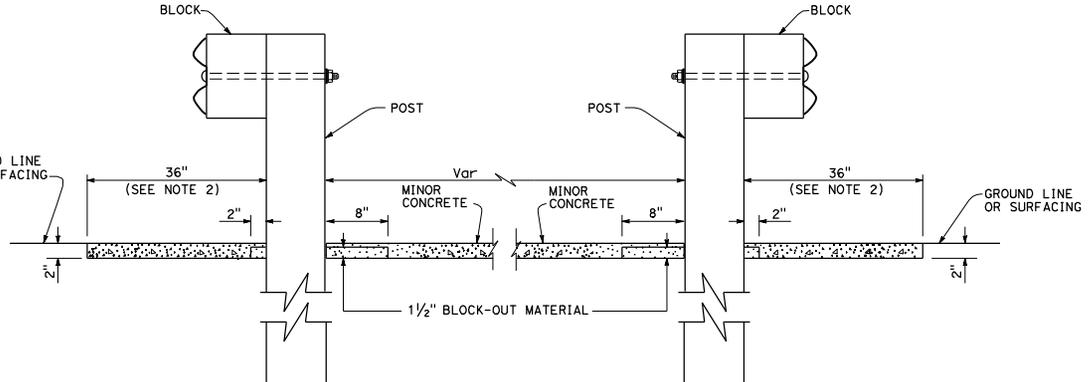
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



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



SECTION A-A



SECTION B-B

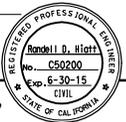
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
AT FIXED OBJECT**
NO SCALE

RSP A77N10 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N10

2010 REVISED STANDARD PLAN RSP A77N10

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

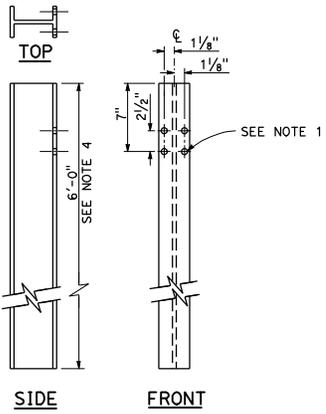


TO ACCOMPANY PLANS DATED _____

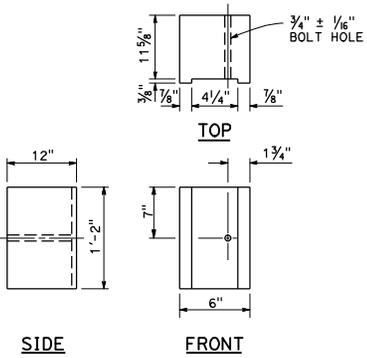
NOTES:

- All holes in steel post shall be $\frac{9}{16}$ " Dia maximum.
- Dimensions shown for wood block are nominal.
- Notched face of block faces steel post.
- 6'-0" length posts to be used for typical roadway installation, 7'-0" length posts to be used for narrow roadway installation. See Revised Standard Plan RSP A77N3.
- See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" notched wood blocks.
- This post and 8" x 12" block combination to be used for line post sections of MGS on narrow roadways and where strengthened line post sections of MGS are warranted to shield fixed objects.

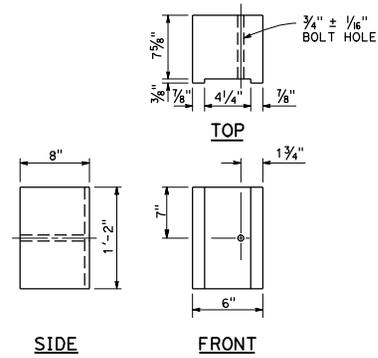
2010 REVISED STANDARD PLAN RSP A77N2



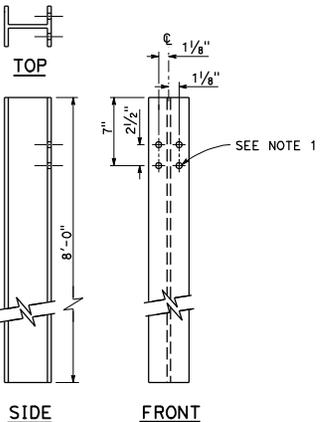
**W6 x 9 OR W6 x 8.5
STEEL POST**
See Note 4



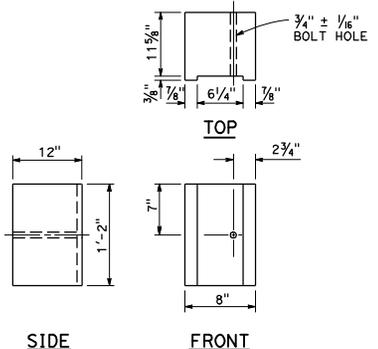
**6" x 12"
NOTCHED WOOD BLOCK**
See Notes 2 and 3



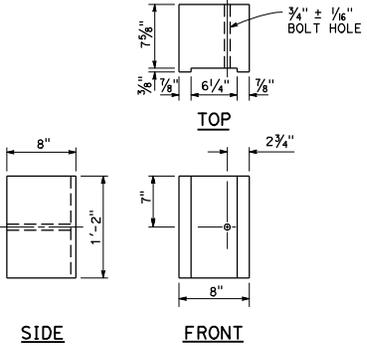
**6" x 8"
NOTCHED WOOD BLOCK**
Only for use with metal beam guard railing. See Note 5



**W6 x 15
STEEL POST**
See Note 6



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



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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
STEEL POST AND
NOTCHED WOOD BLOCK DETAILS**

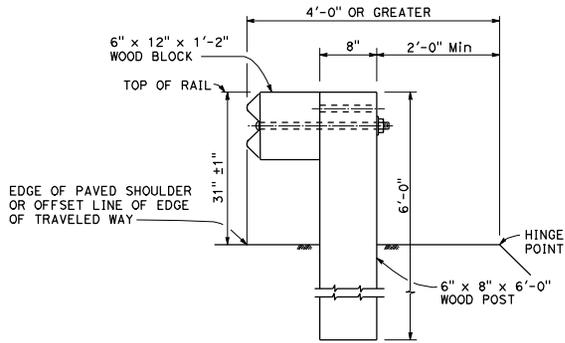
NO SCALE

RSP A77N2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

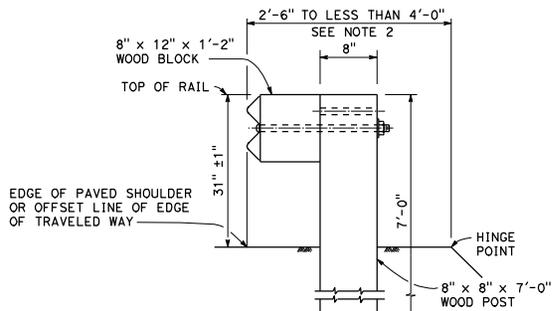
REVISED STANDARD PLAN RSP A77N2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
No. C50200 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

TO ACCOMPANY PLANS DATED _____

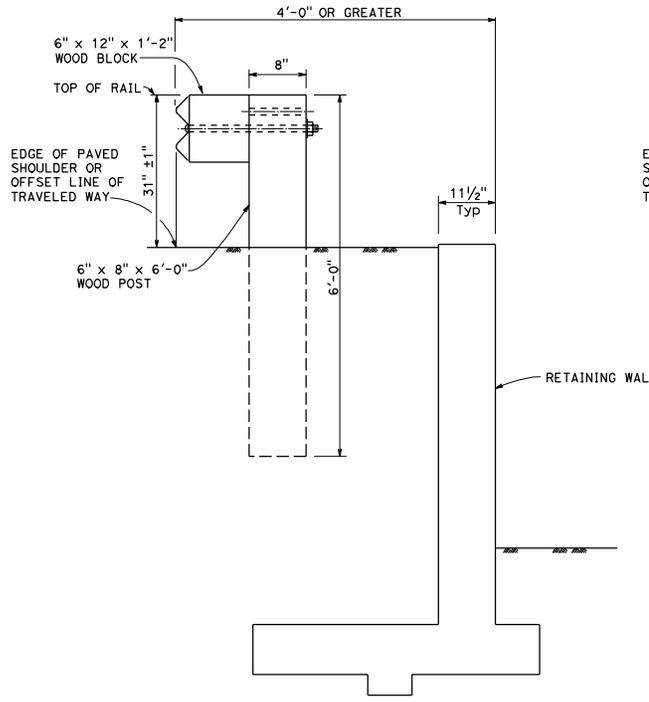


DETAIL A
TYPICAL ROADWAY
INSTALLATION
 See Note 1



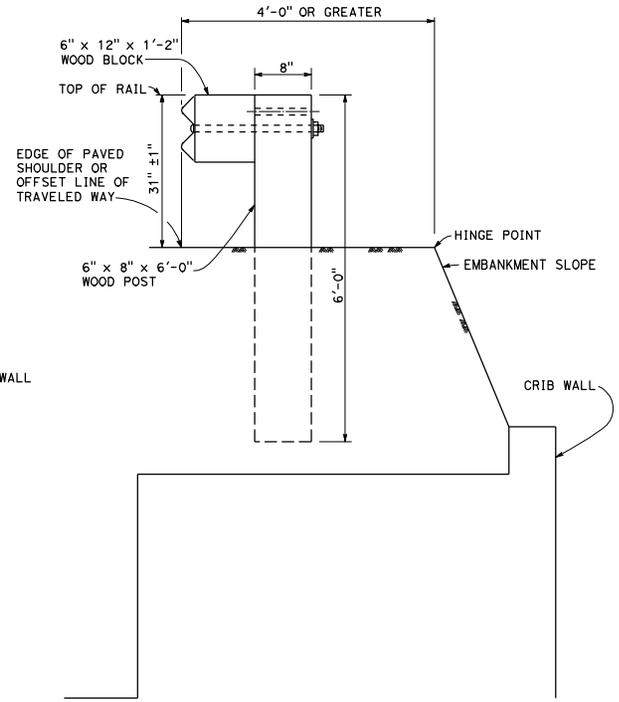
DETAIL B
NARROW ROADWAY
INSTALLATION
 See Note 1

POST EMBEDMENT



DETAIL C

INSTALLATION AT EARTH RETAINING WALLS



DETAIL D

NOTES:

- 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 12" 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, or W6 x 15 steel post, 8'-0" in length, with 8" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks are to be used in place of the size of wood post and wood block shown. For additional installation details, see Revised Standard Plan RSP A77L1 and RSP A77L2.
- Where the distance between the face of the rail and the hinge point is less than 2'-6", see the Project Plans for special details.
- For dike positioning with MGS installations, see Revised Standard Plan RSP A77N4.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
TYPICAL LINE POST
EMBEDMENT AND
HINGE POINT OFFSET DETAILS
 NO SCALE

RSP A77N3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N3

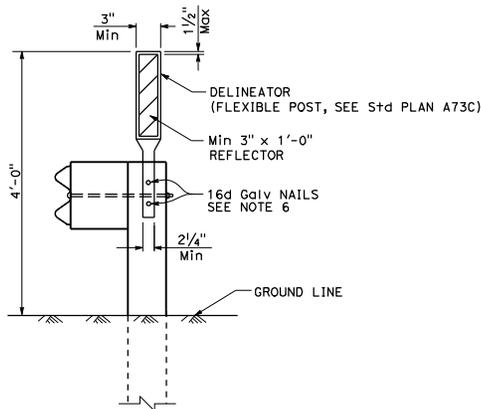
2010 REVISED STANDARD PLAN RSP A77N3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER				
July 19, 2013 PLANS APPROVAL DATE				
No. C50200 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA				
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>				

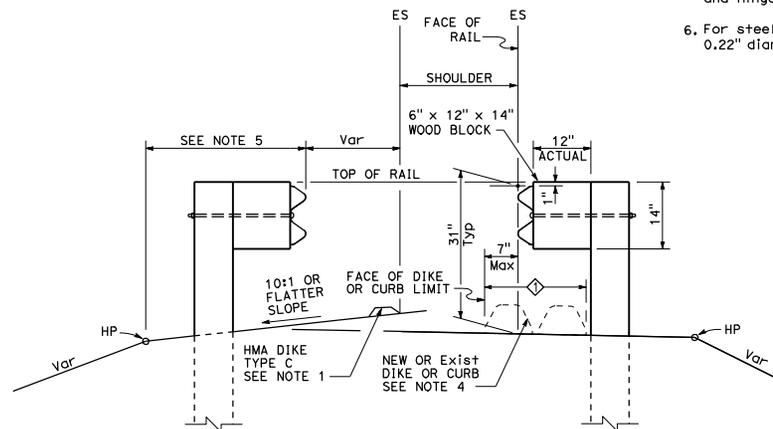
TO ACCOMPANY PLANS DATED _____

NOTES:

- 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 Revised Standard Plan RSP A87B.
- For standard railing post embedment, see Revised Standard Plan RSP A77N3.
- MGS delineation to be used where shown on the Project Plans.
- 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 Revised Standard Plans RSP A87A and RSP A87B.
- For details of typical distance between the face of rail and hinge point, see Revised Standard Plan RSP A77N3.
- For steel line posts, use 1/4" - 20 self-tapping screws in 0.22" diameter holes or 1/4" bolts in 1/2" diameter holes.



MGS DELINEATION
See Note 3



DIKE POSITIONING
See Note 1

◇ PERMISSIBLE DIKE OR CURB PLACEMENT AREA

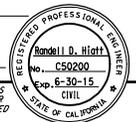
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL RAILING DELINEATION
AND DIKE POSITIONING DETAILS**
NO SCALE

RSP A77N4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

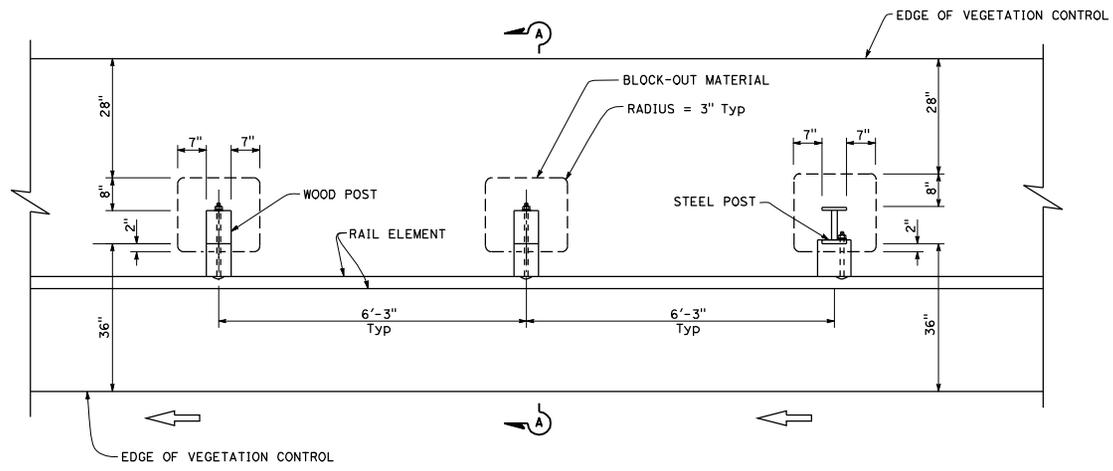
REVISED STANDARD PLAN RSP A77N4

2010 REVISED STANDARD PLAN RSP A77N4

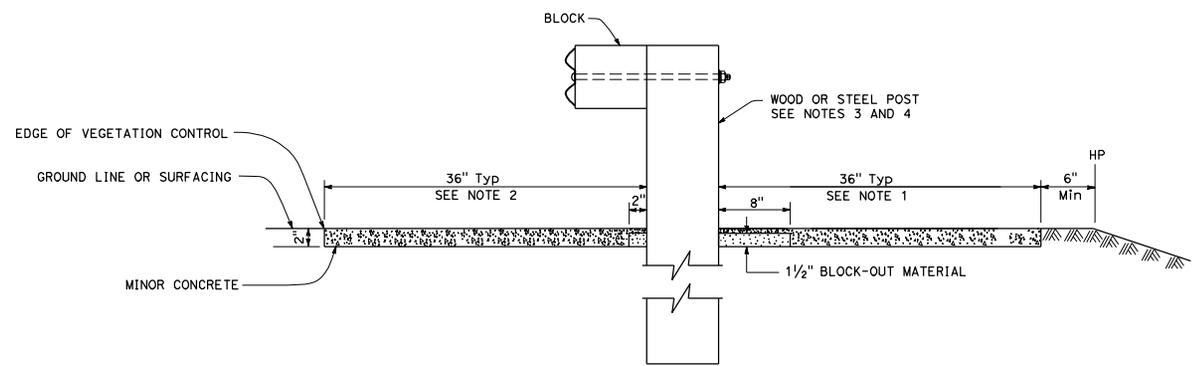
D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
No. <u>C50200</u> Exp. <u>6-30-15</u> CIVIL					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



TO ACCOMPANY PLANS DATED _____



PLAN



SECTION A-A

NOTES:

1. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
2. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. For wood post sizes, see Revised Standard Plan RSP A77N1.
4. For steel post sizes, see Revised Standard Plan RSP A77N2.
5. For details not shown, see Revised Standard Plans RSP A77L1 and RSP A77L2.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
STANDARD RAILING SECTION**

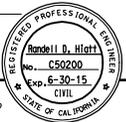
NO SCALE

RSP A77N5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

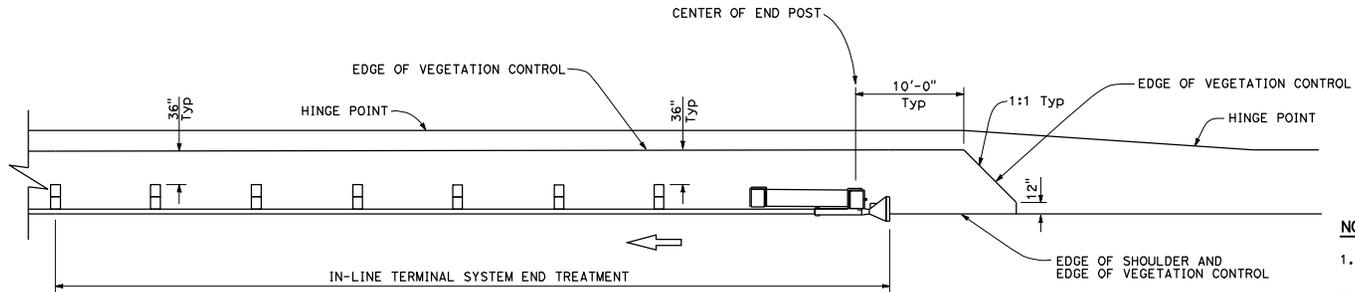
REVISED STANDARD PLAN RSP A77N5

2010 REVISED STANDARD PLAN RSP A77N5

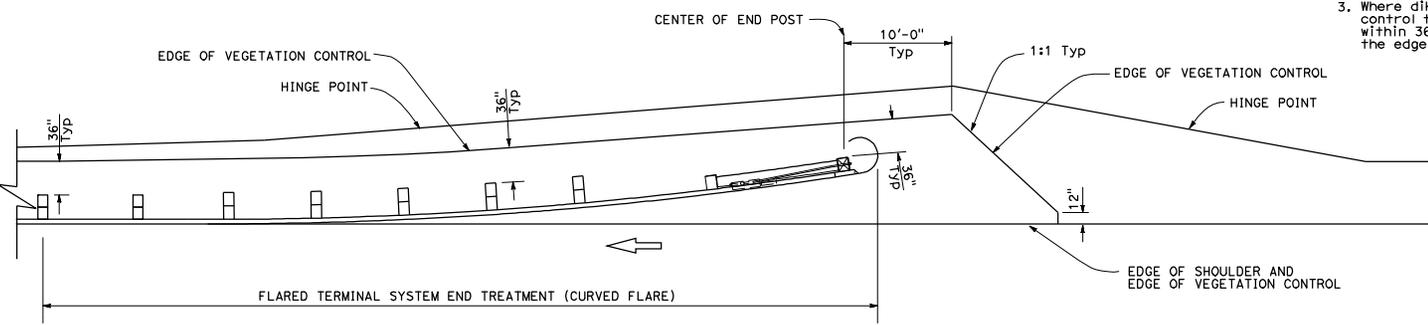
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER				
July 19, 2013 PLANS APPROVAL DATE				
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>				



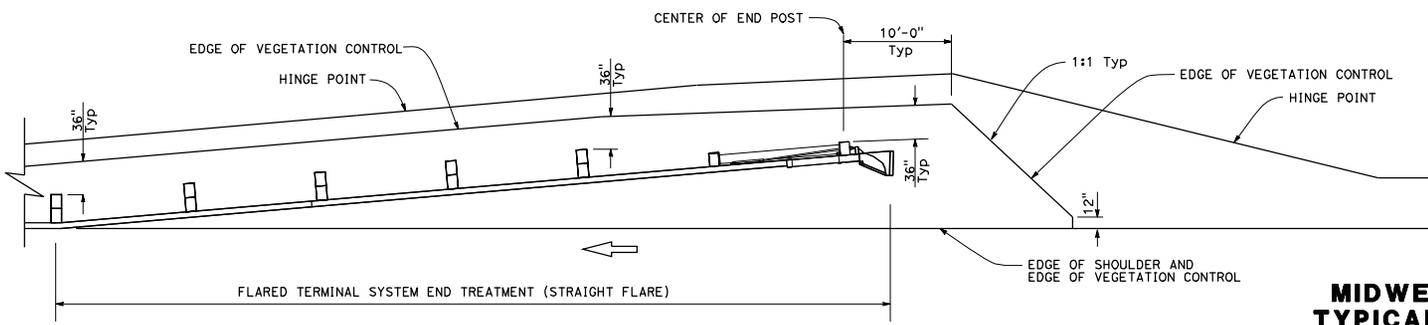
TO ACCOMPANY PLANS DATED _____



PLAN



PLAN



PLAN

NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out of back of post can not be maintained, construct vegetation control flush with the back edge of post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
FOR TERMINAL SYSTEM END TREATMENTS**
NO SCALE

RSP A77N6 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N6

2010 REVISED STANDARD PLAN RSP A77N6

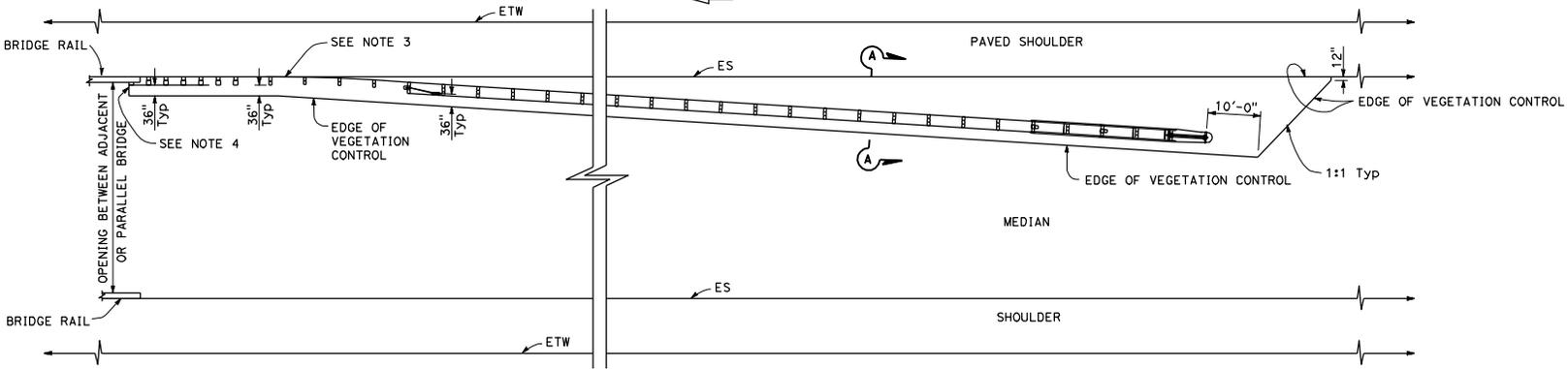
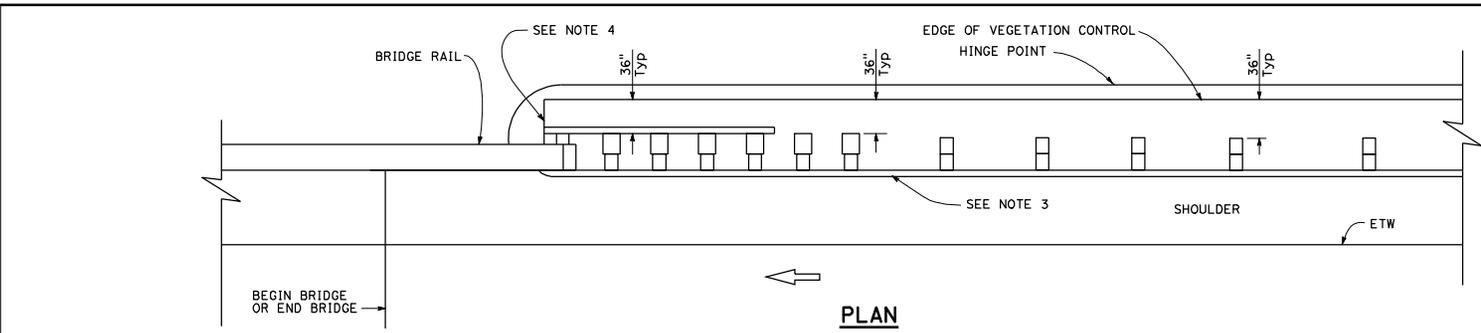
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. C50200
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE

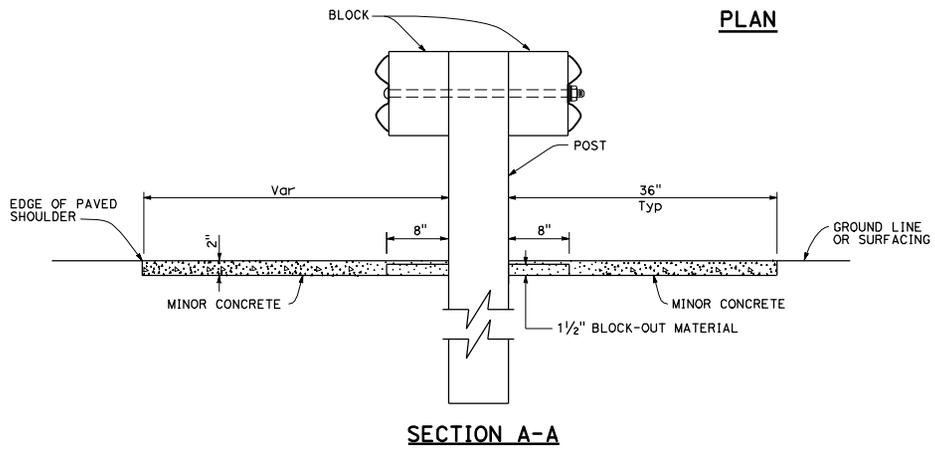
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____



NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
4. End vegetation control at end of backside rail element.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
 TYPICAL VEGETATION CONTROL
 AT STRUCTURE APPROACH**

NO SCALE

RSP A77N7 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N7

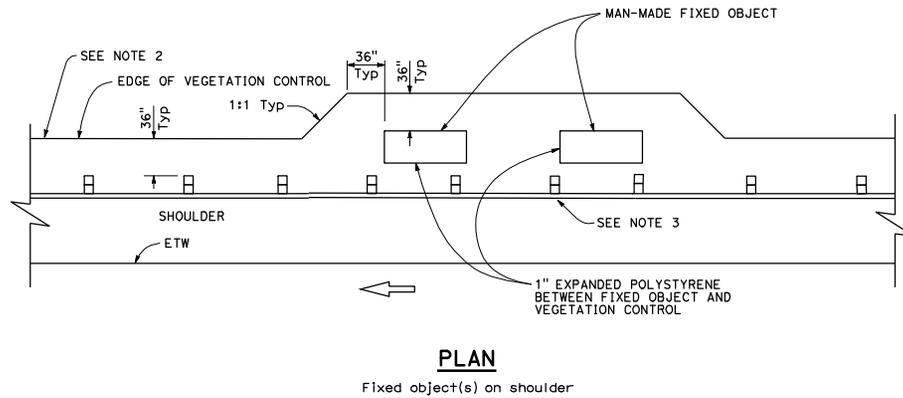
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
 No. C50200
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.



PLAN
Fixed object(s) on shoulder

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
AT FIXED OBJECT

NO SCALE

RSP A77N8 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N8

2010 REVISED STANDARD PLAN RSP A77N8

NOTES:

1. See Revised Standard Plan RSP A77N5 for additional vegetation control details.
2. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

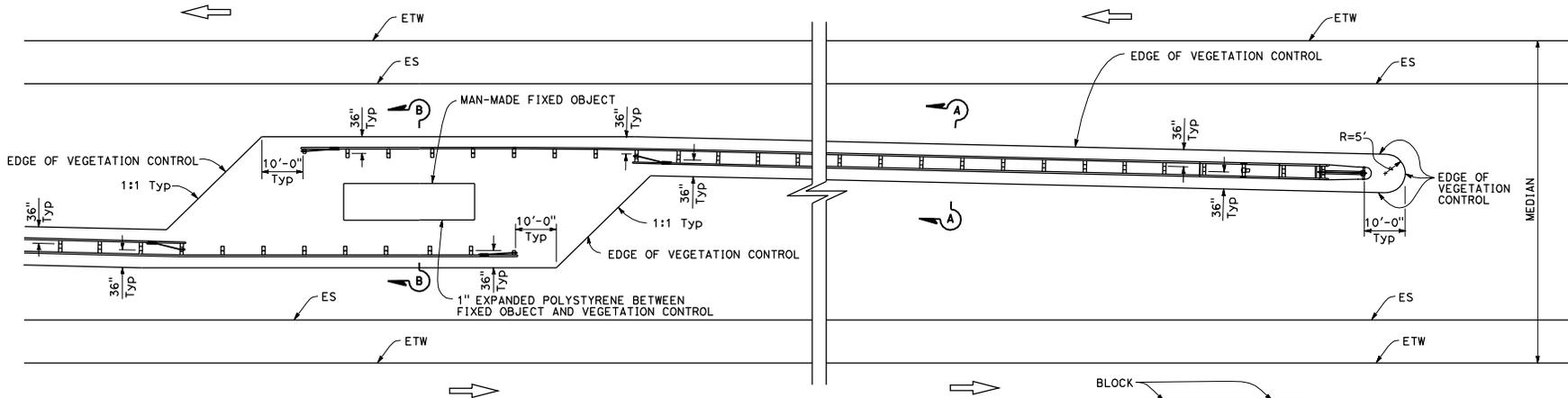
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE
July 19, 2013

REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

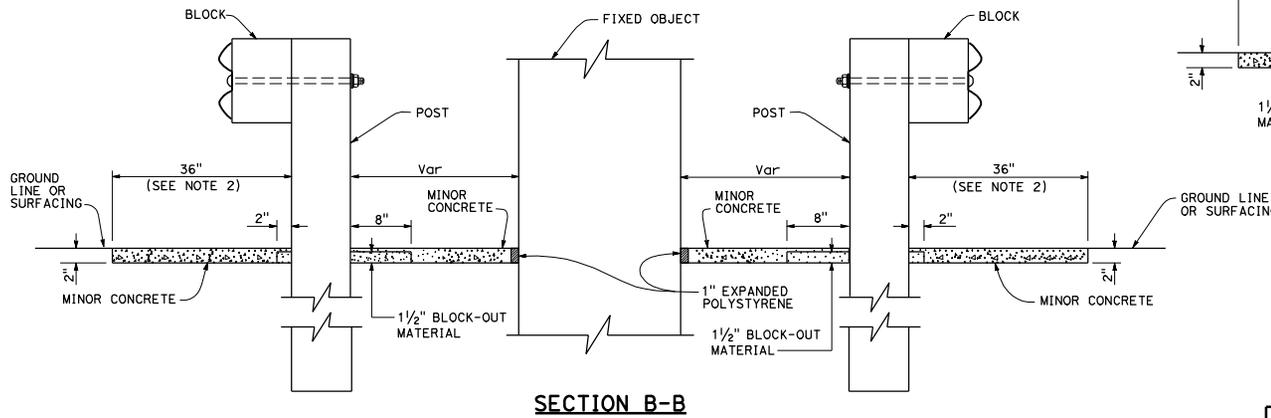
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

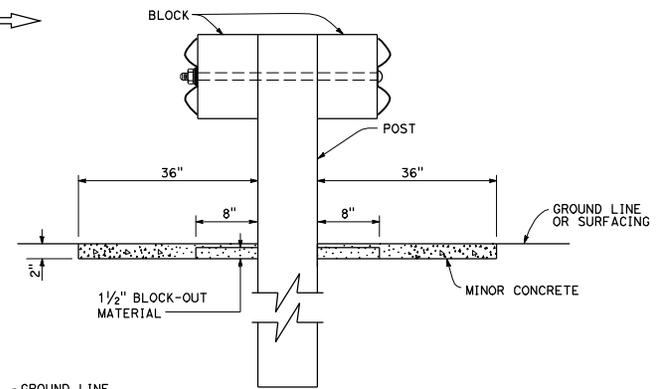


PLAN

Fixed object(s) in median



SECTION B-B



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL VEGETATION CONTROL
AT FIXED OBJECT**

NO SCALE

RSP A77N9 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N9

2010 REVISED STANDARD PLAN RSP A77N9

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

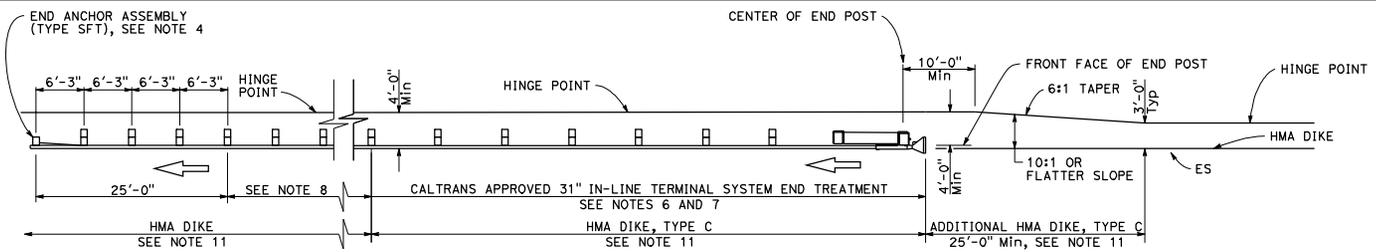
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
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.

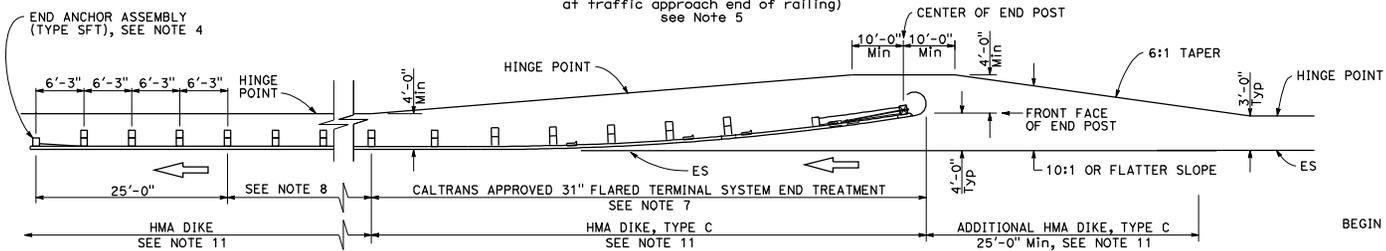
NO. CS0200
Exp. 6-30-15
REGISTERED PROFESSIONAL ENGINEER
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



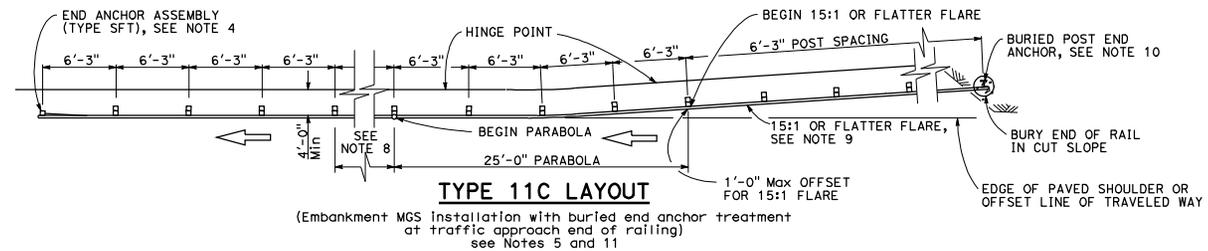
TYPE 11A LAYOUT

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



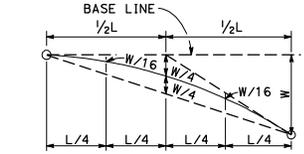
TYPE 11B LAYOUT

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

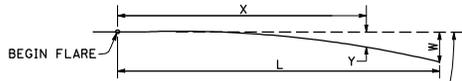


TYPE 11C LAYOUT

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



TYPICAL PARABOLIC LAYOUT

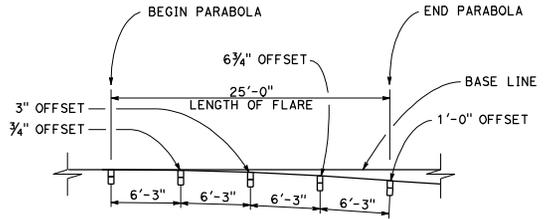


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

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

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

PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS FOR 1 FOOT Max END OFFSET

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77P1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77P1

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks, W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or recycled plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For End Anchor Assembly (Type SFT) details, see Revised Standard Plan RSP A77H1.
- 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.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a flared end treatment.
- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- 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.
- 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".
- For details of the buried post end anchor used with Type 11C Layout, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.

2010 REVISED STANDARD PLAN RSP A77P1

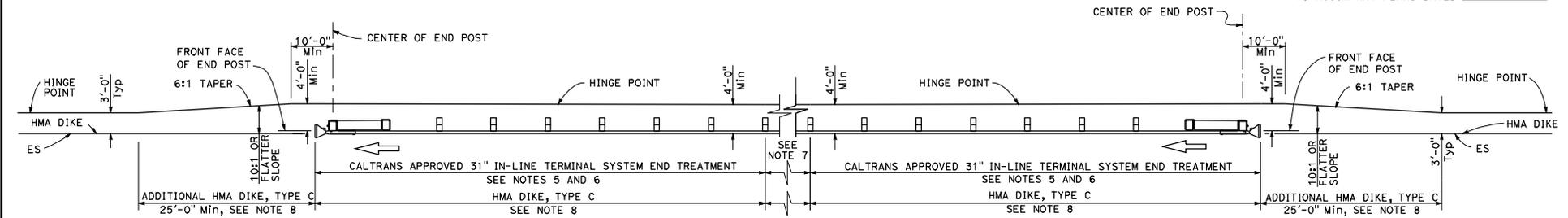
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

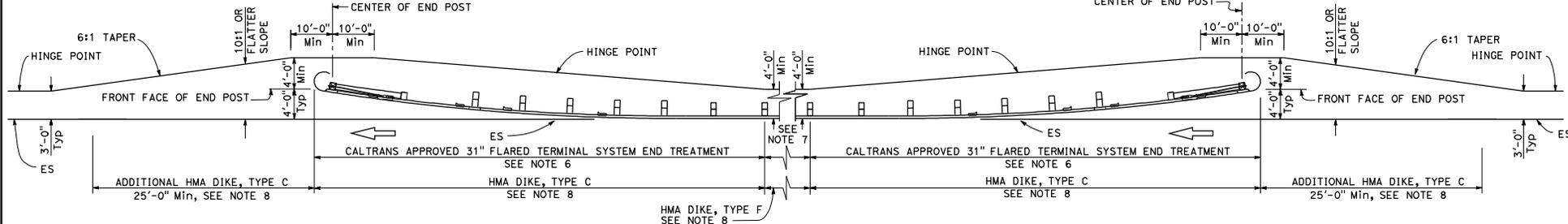
Randell D. Hiatt
REGISTERED PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-15
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TYPE 11D LAYOUT

(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 A77M1, RSP A77N1 and RSP A77N2.
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 12" x 1'-2" wood blocks, W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" 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 Revised Standard Plan RSP A77N4 for dike positioning details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
EMBANKMENTS**

NO SCALE

RSP A77P2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

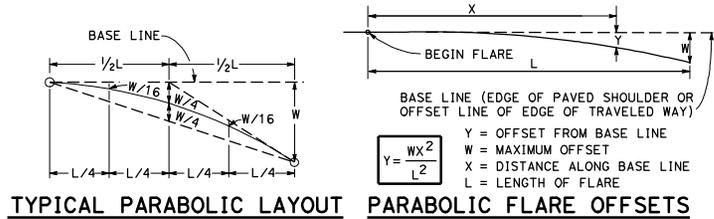
REVISED STANDARD PLAN RSP A77P2

2010 REVISED STANDARD PLAN RSP A77P2

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

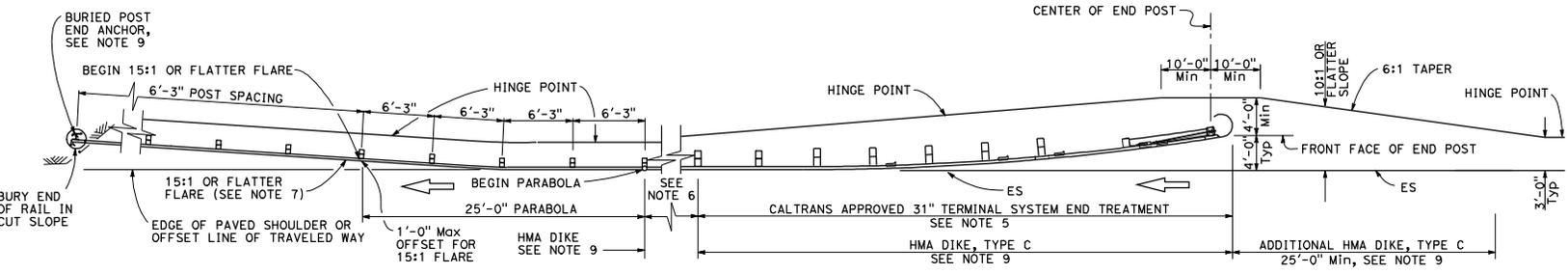
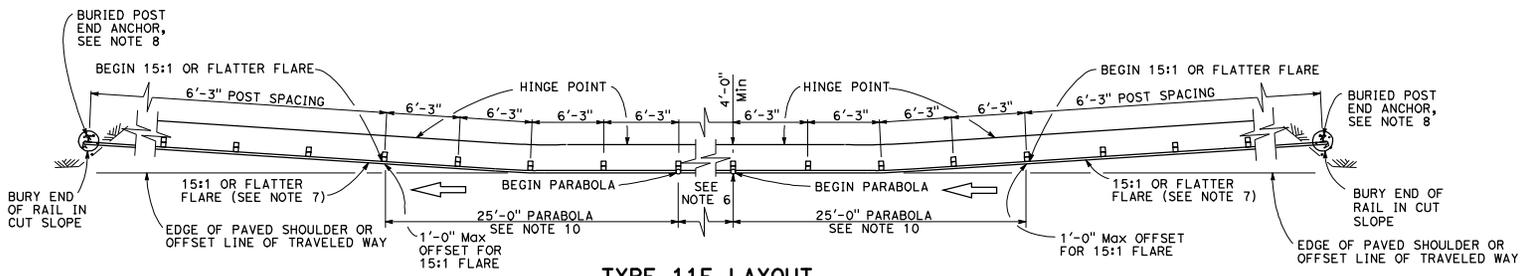
Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. CS0200
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
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2010 REVISED STANDARD PLAN RSP A77P3



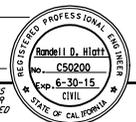
NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks, W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- 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.
- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- 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.
- 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".
- For details of the buried post end anchor used with Type 11F and 11G Layouts, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

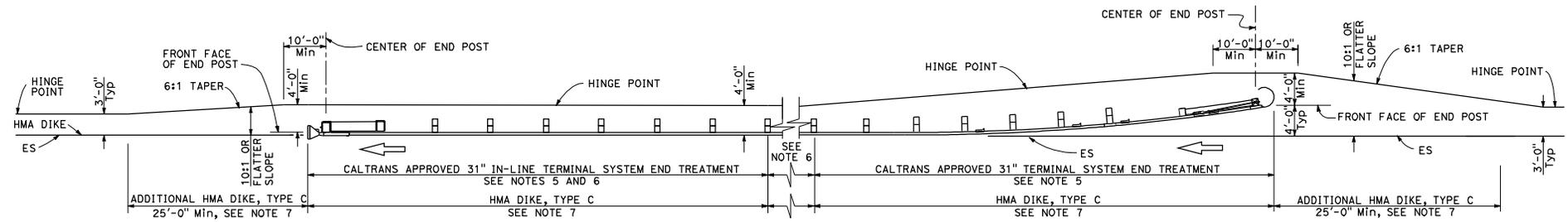
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR EMBANKMENTS
 NO SCALE

RSP A77P3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A77P3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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July 19, 2013 PLANS APPROVAL DATE					
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TO ACCOMPANY PLANS DATED _____



TYPE 11H LAYOUT

(Embankment MGS installation with 31" flared end treatment and 31" in-line 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 A77M1, RSP A77N1 and RSP A77N2.
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 12" x 1'-2" wood blocks, W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" 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 Revised Standard Plan RSP A77N4 for dike positioning details.

STATE OF CALIFORNIA
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**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
EMBANKMENTS**
NO SCALE

RSP A77P4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

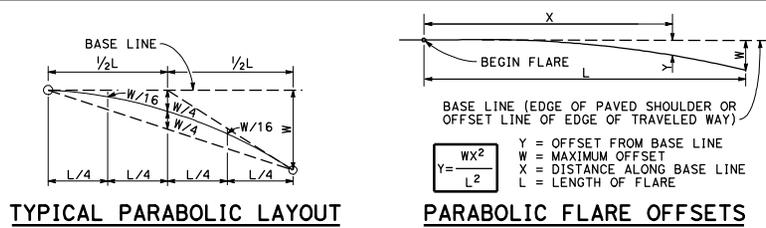
REVISED STANDARD PLAN RSP A77P4

2010 REVISED STANDARD PLAN RSP A77P4

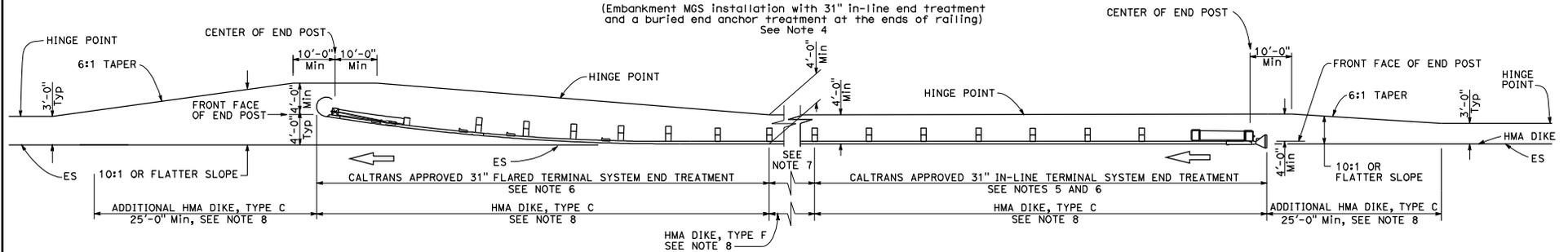
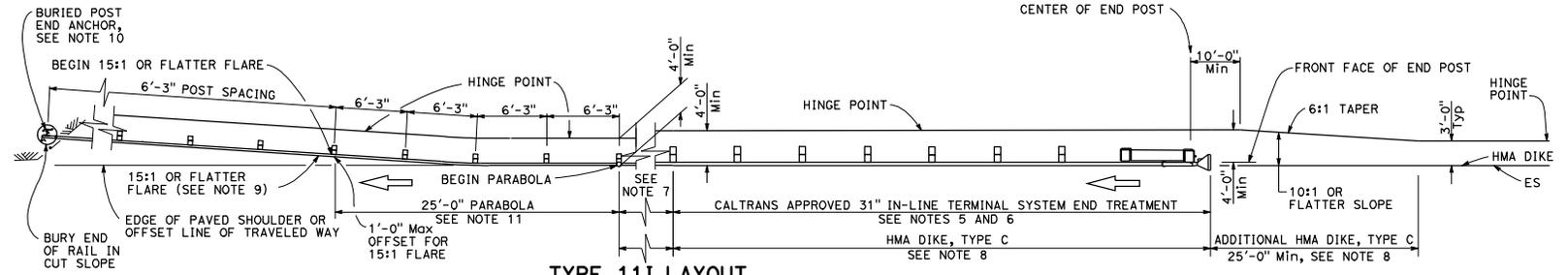
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. CS0200
 Exp. 6-30-15
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- NOTES:**
- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
 - MGS post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks, W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
 - 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.
 - 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.

- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- 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.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- 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".
- For details of the buried post end anchor used with Type 11I Layout, see Revised Standard Plan RSP A77T2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
EMBANKMENTS
 NO SCALE

RSP A77P5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A77P5

2010 REVISED STANDARD PLAN RSP A77P5

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

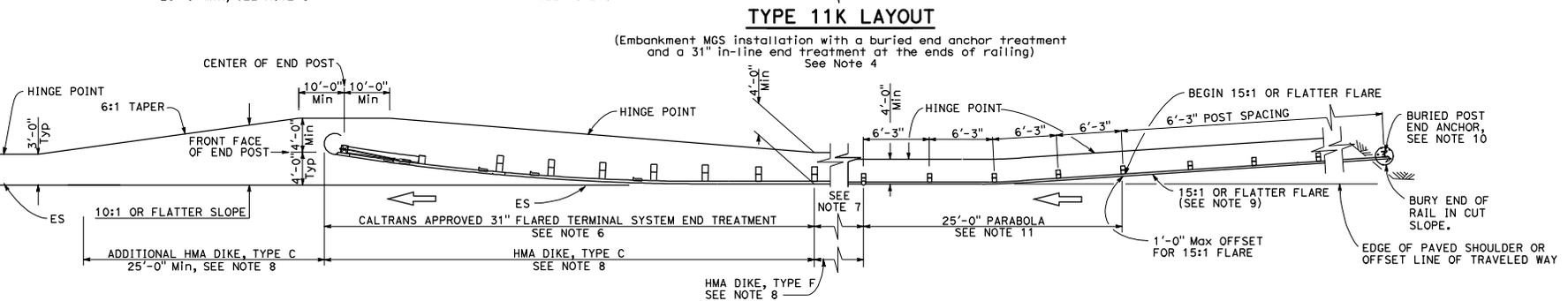
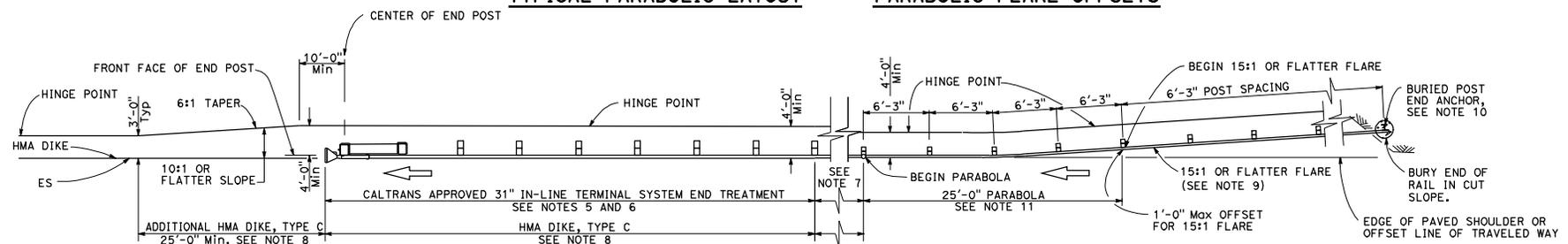
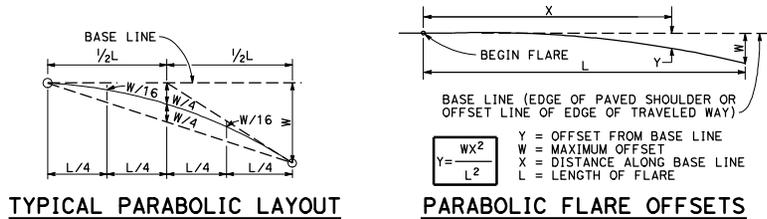
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks, W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- 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.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- 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.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- 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".
- For details of the buried post end anchor used with Type 11K and 11L Layouts, see Revised Standard Plan RSP A77T2.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
EMBANKMENTS**

NO SCALE

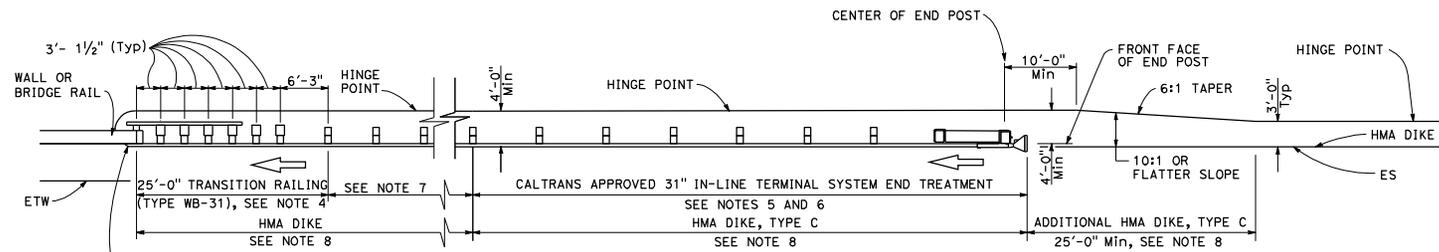
RSP A77P6 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A77P6

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

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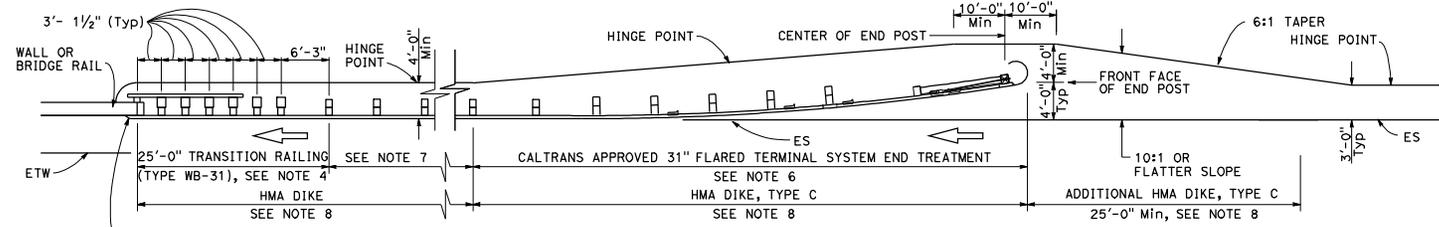
July 19, 2013
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2010 REVISED STANDARD PLAN RSP A77Q1



TYPE 12A LAYOUT

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



TYPE 12B LAYOUT

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

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12A and 12B Layouts, see Revised Standard Plan RSP A77U4.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type 31" of terminal system end treatment to be used will be shown on the Project Plans.
- 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.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12A or Type 12B Layouts are typically used:
 - 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.
 - 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.
 - To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
 - To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- See Revised Standard Plan RSP A77Q3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
- For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77U1 and RSP A77U2 and Connection Detail FF on Revised Standard Plans RSP A77V1 and RSP A77V2.
- For additional details of a typical connection to walls or abutments, see Revised Standard Plan RSP A77U3.

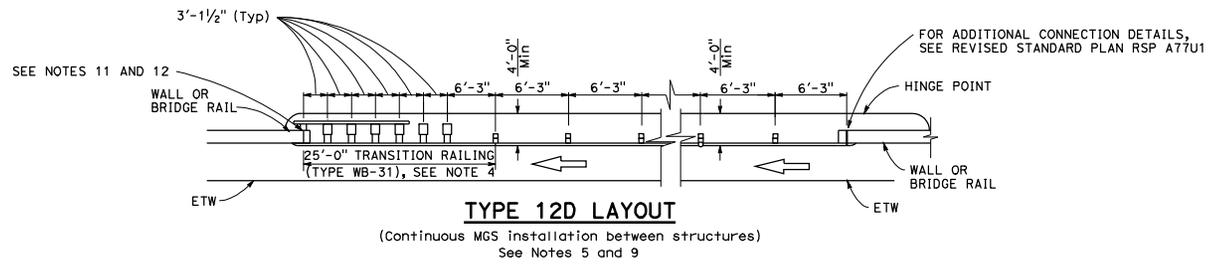
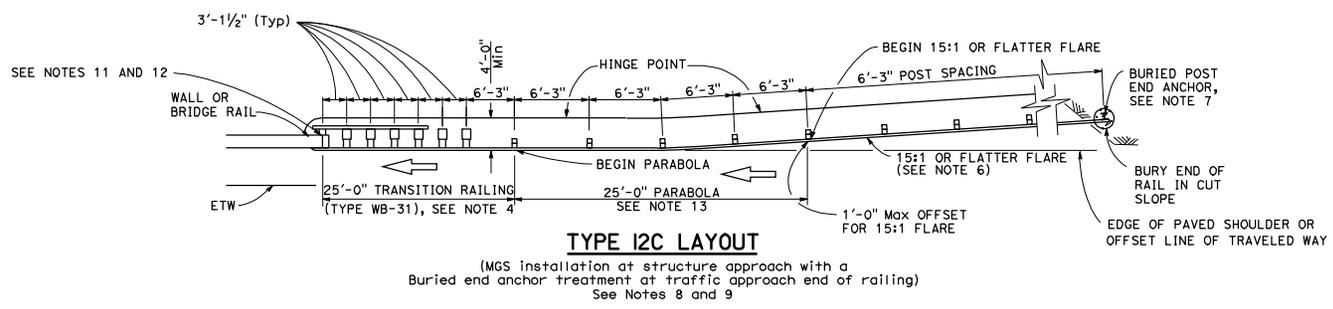
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
STRUCTURE APPROACH**
NO SCALE

RSP A77Q1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER No. CS0200 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA					
July 19, 2013 PLANS APPROVAL DATE					
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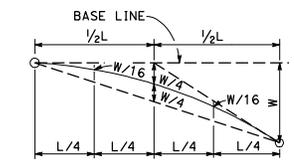
TO ACCOMPANY PLANS DATED _____



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

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

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" m wood with 6" x 12" x 1'-2" wood blocks, W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12C and 12D Layouts, see Revised Standard Plan RSP A77U4.
- Type 12D layout is typically used where continuous MGS is recommended between structures.
- The 15:1 or flatter flare for Type 12C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS with the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 12C Layout, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12C Layout is typically used:
 - To the right of approaching traffic, at the end of the structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - To the left of approaching traffic, at each of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
 - To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
 - To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
- See Revised Standard Plan RSP A77Q3 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
- For additional details of typical connections to bridge rail, see Connection Detail AA on Revised Standard Plans RSP A77U1 and RSP A77U2 and Connection Detail FF on Revised Standard Plans RSP A77V1 and RSP A77V2.
- For additional details of a typical connection to walls or abutments, see Revised Standard Plan RSP A77U3.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

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**MIDWEST GUARDRAIL SYSTEM
 TYPICAL LAYOUTS FOR
 STRUCTURE APPROACH
 AND BETWEEN STRUCTURES**

NO SCALE

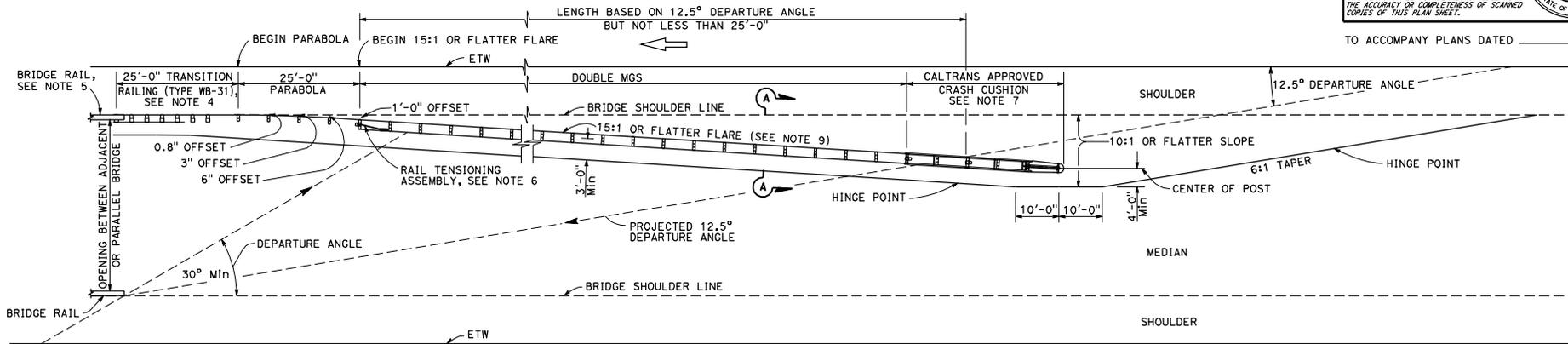
RSP A77Q2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q2

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

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
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July 19, 2013
 PLANS APPROVAL DATE
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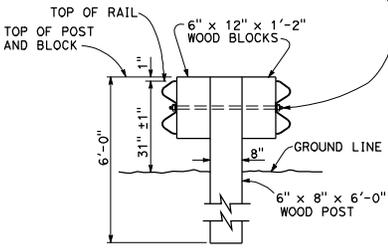


TO ACCOMPANY PLANS DATED _____

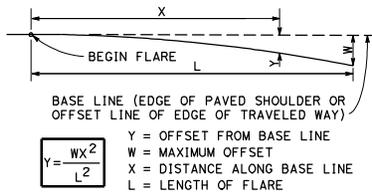
TYPE 12E LAYOUT

See Note 9

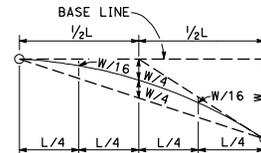
5/8" Ø BUTTON HEAD BOLT WITH HEX NUT OR
 5/8" Ø ROD, THREADED BOTH ENDS, WITH
 HEX NUTS; 1/2" MAX EXPOSED THREADS
 AFTER HEX NUT(S) TIGHTENED. NO WASHER ON
 RAIL FACES FOR BOLTED CONNECTION TO LINE POST



SECTION A-A
TYPICAL DOUBLE MIDWEST
GUARDRAIL SYSTEM



PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details, see Revised Standard Plan RSP A77U4.
- For additional details of a typical connection to bridge rail, see Connection Detail AA on Revised Standard Plan RSP A77U1.
- For Rail Tensioning Assembly details, see Revised Standard Plan RSP A77S2.
- The type of Crash Cushion to be used will be shown on the Project Plans.
- 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.
- The 15:1 or flatter flare is measured off of the edge of the traveled way.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
STRUCTURE APPROACH
 NO SCALE

RSP A77Q3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q3

2010 REVISED STANDARD PLAN RSP A77Q3

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

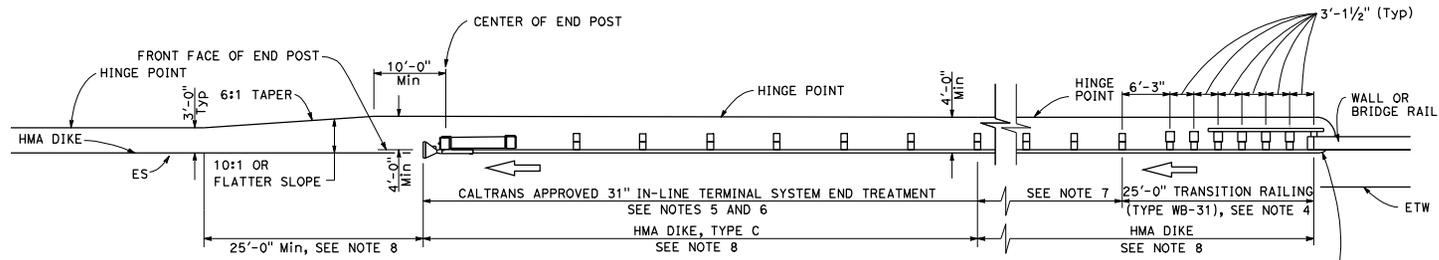
Randell D. Hiatt
 REGISTERED CIVIL ENGINEER

July 19, 2013
 PLANS APPROVAL DATE

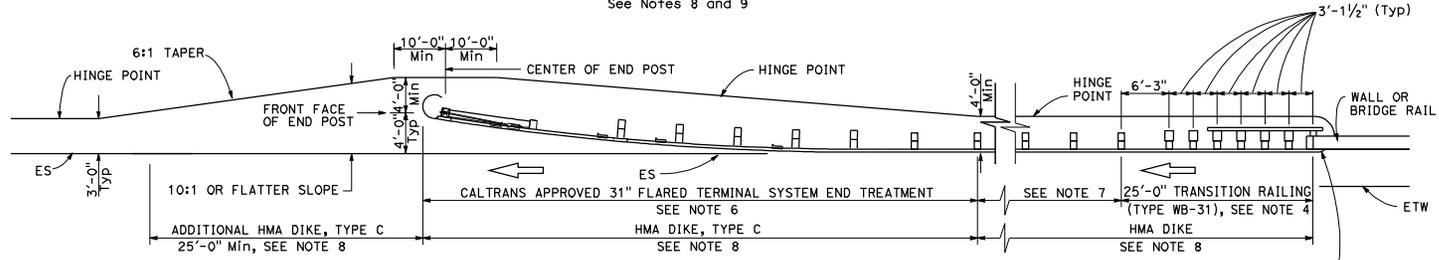
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TYPE 12AA LAYOUT
 (MGS installation at structure departure with 31" in-line end treatment at trailing end of railing)
 See Notes 8 and 9



TYPE 12BB LAYOUT
 (MGS installation at structure departure with 31" flared end treatment at trailing end of railing)
 See Notes 8 and 9

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12AA and 12BB Layouts, see Revised Standard Plan RSP A77U4.
- 31" in-line terminal system treatments are used where site conditions will not accommodate a 31" flared end treatment.
- The type of 31" terminal system to be used will be shown on the Project Plans.
- 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.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- 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.
- For additional details of typical connections to bridge rail, see Connection Detail CC on Revised Standard Plan RSP A77U2 and Connection Detail HH on Revised Standard Plan RSP A77V2.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
STRUCTURE DEPARTURE
 NO SCALE

RSP A77Q4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q4

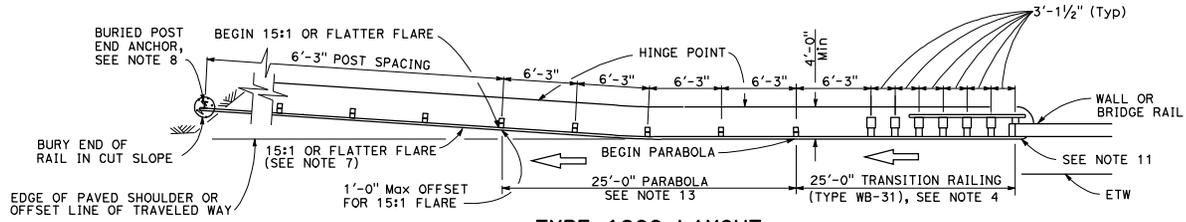
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

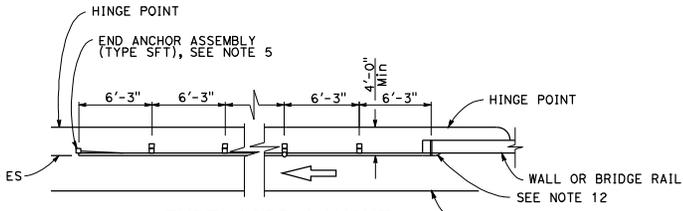
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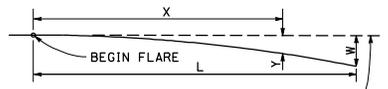
TYPE 12CC LAYOUT

(MGS installation at structure departure with a Buried end anchor treatment at trailing end of railing)
See Notes 9 and 10



TYPE 12DD LAYOUT

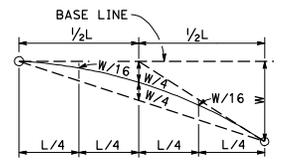
(MGS installation at structure departure With end anchor assembly at trailing end of railing)
See Notes 6 and 9



BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)
Y = OFFSET FROM BASE LINE
W = MAXIMUM OFFSET
X = DISTANCE ALONG BASE LINE
L = LENGTH OF FLARE

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

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Type 12CC Layout, see Revised Standard Plan RSP A77U4.
- For details of End Anchor Assembly (Type SFT) used with Type 12DD Layout, see Revised Standard Plan RSP A77S1.
- Type 12DD layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is equal to or greater than 40 feet and MGS is recommended (embankment height, side slopes, other fixed objects). Length of railing to be equal to multiples of 12'-6". For MGS connection details to bridge rail, see Revised Standard Plans RSP A77U1 and RSP A77V1. For MGS connection details to wall, see Revised Standard Plan RSP A77U3.
- The 15:1 or flatter flare for Type 12CC Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the buried post end anchor used with Type 12CC Layout, see Revised Standard Plan RSP A77T2.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12CC Layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- For additional details of a typical connection to bridge rail for Layout Type 12CC, see Connection Detail CC on Revised Standard Plan RSP A77U2 and Connection Detail HH on Revised Standard Plan RSP A77V2.
- For additional details of a typical connection to bridge rail for Layout Type 12DD, see Connection Detail BB on Revised Standard Plan RSP A77U1 and Connection Detail GG on Revised Standard Plan RSP A77V1.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
STRUCTURE DEPARTURE**

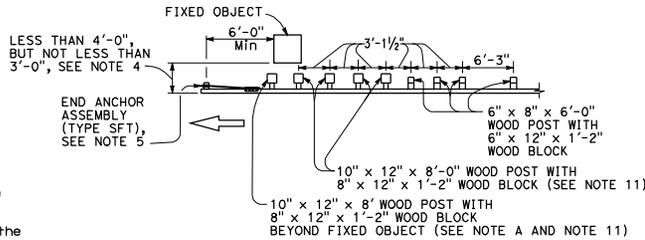
NO SCALE

RSP A77Q5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q5

NOTES:

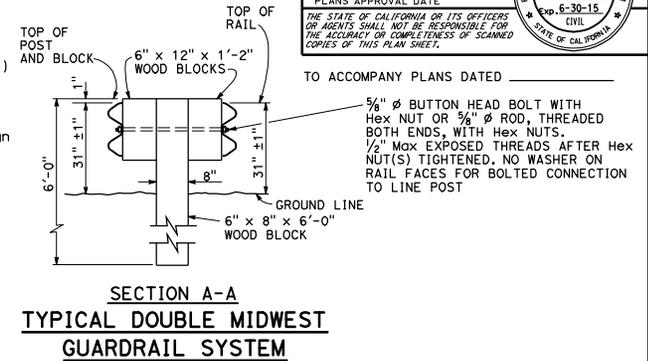
- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1, and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks,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



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 12" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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



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

Randell D. Hiatt
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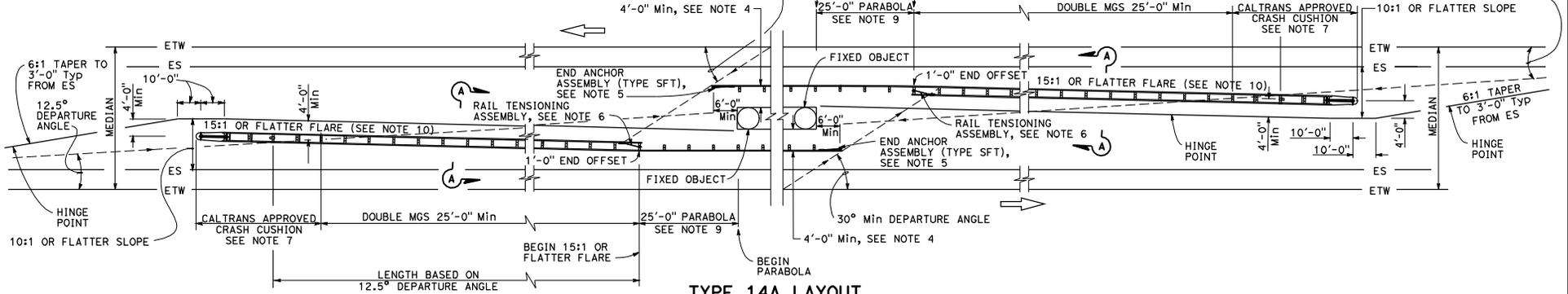
July 19, 2013
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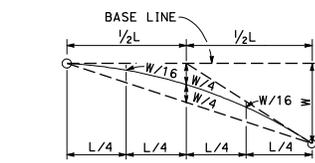
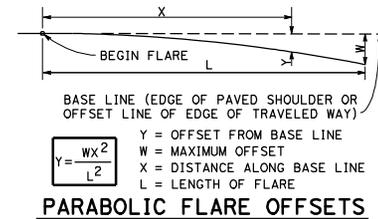
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TO ACCOMPANY PLANS DATED _____



TYPE 14A LAYOUT

See Note 8



TYPICAL PARABOLIC LAYOUT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A77R1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77R1

2010 REVISED STANDARD PLAN RSP A77R1

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS section with post spacing of 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).

- For End Anchor Assembly (Type SFT) details, see Standard Plan RSP A77S1.
- Type of crash cushion to be used will be shown on the Project Plans.
- Type 15A layout is typically used on multilane freeways or expressways to shield fixed objects in the area between separated one-way roadbeds.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
- The 15:1 or flatter flare is measured off of the edge of the traveled way.
- W6 x 15 steel post, 8'-0" in length, with 8" x 12" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" post with 8" x 12" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".

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

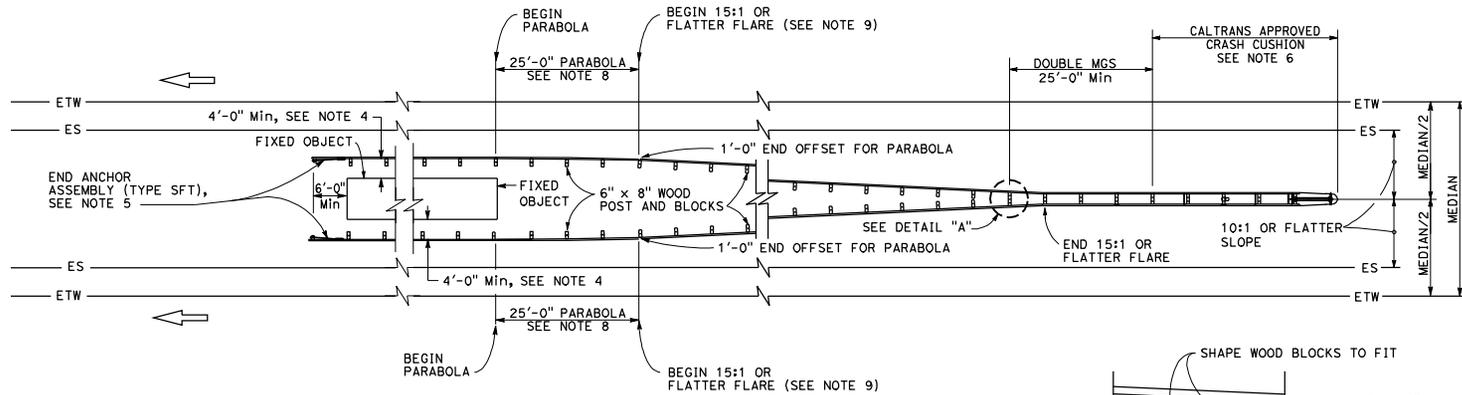
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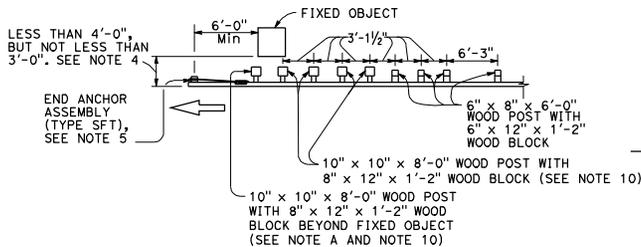
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TYPE 15A LAYOUT

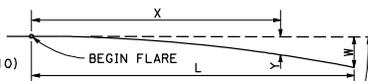
See Note 7



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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

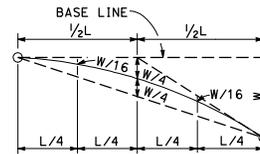


BASE LINE (EDGE OF PAVED SHOULDER OR OFFSET LINE OF EDGE OF TRAVELED WAY)

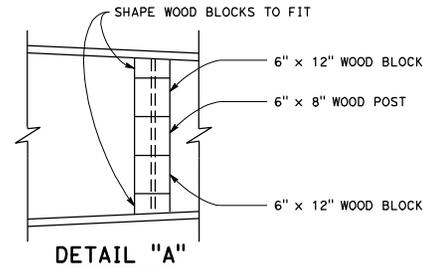
$Y = \frac{wx^2}{L^2}$

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

PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT



DETAIL "A"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

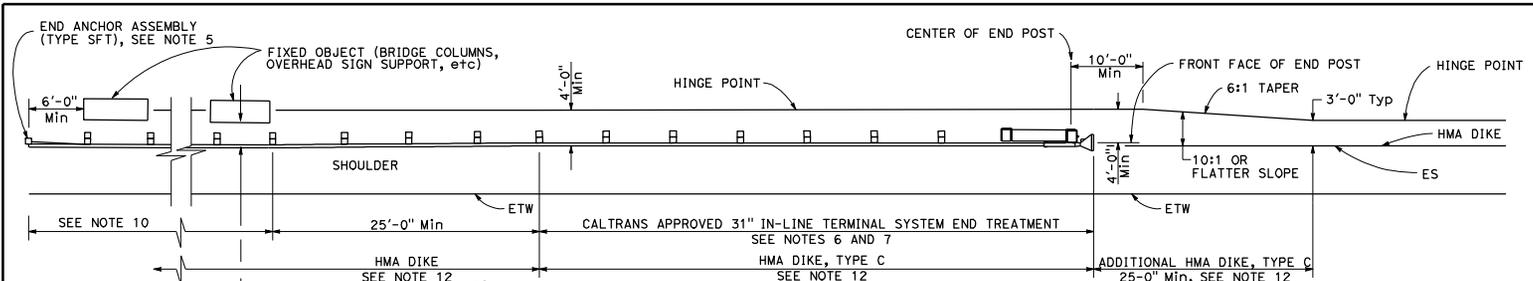
**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
FIXED OBJECTS
BETWEEN SEPARATE ROADBEDS
(ONE-WAY TRAFFIC)**

NO SCALE

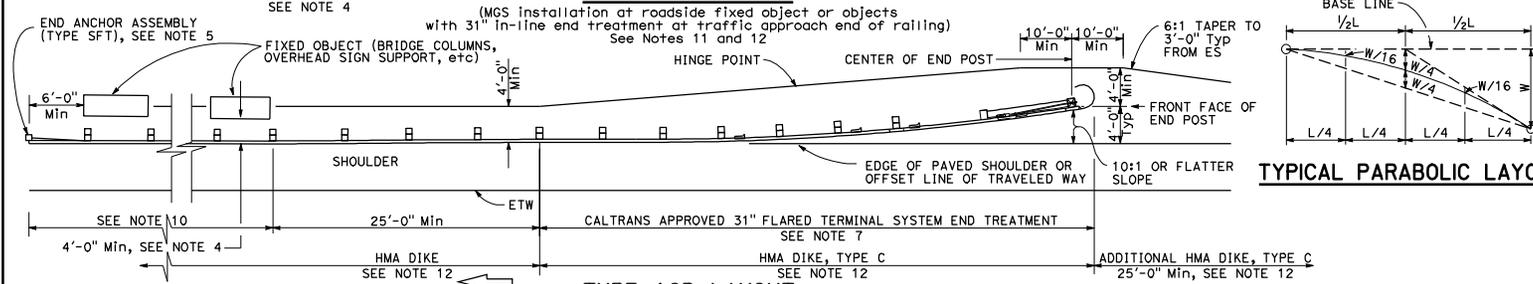
RSP A77R2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77R2

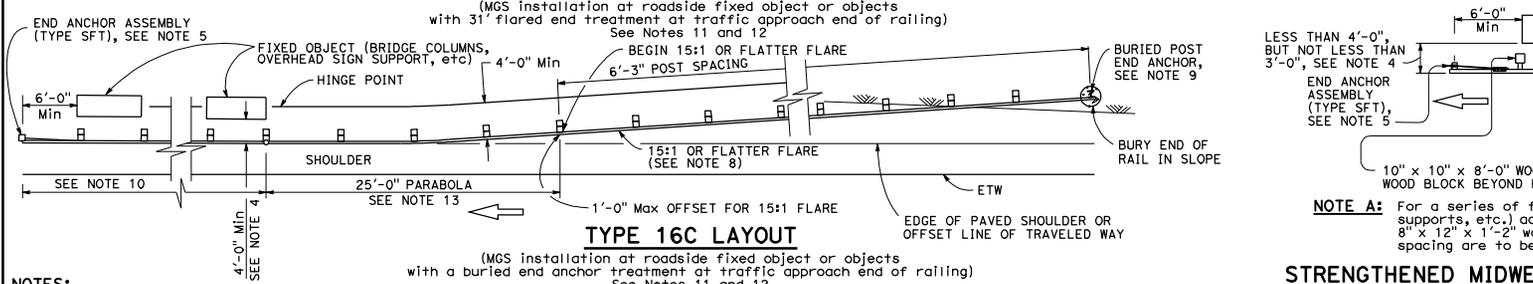
2010 REVISED STANDARD PLAN RSP A77R2



TYPE 16A LAYOUT



TYPE 16B LAYOUT



TYPE 16C LAYOUT

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

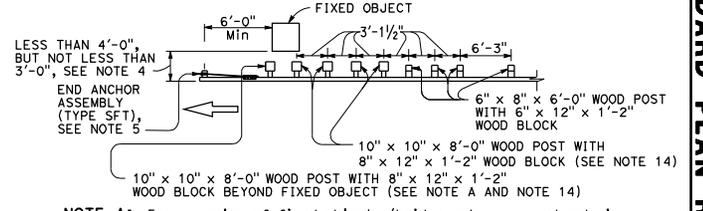
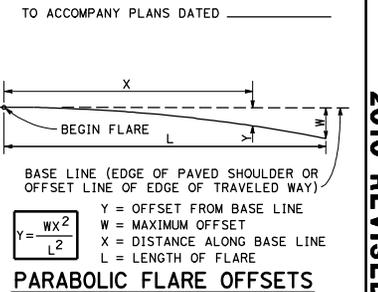
D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.), additional 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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

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**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**

NO SCALE

RSP A77R3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77R3

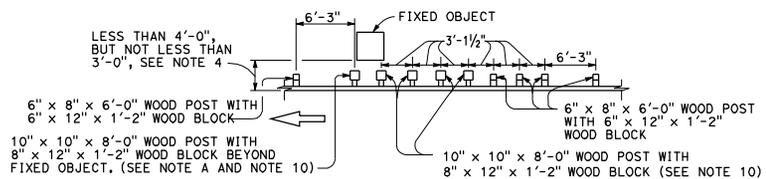
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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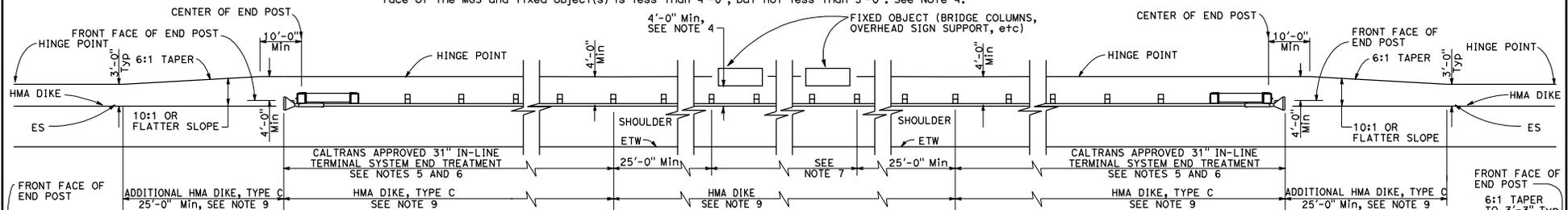
TO ACCOMPANY PLANS DATED _____



NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

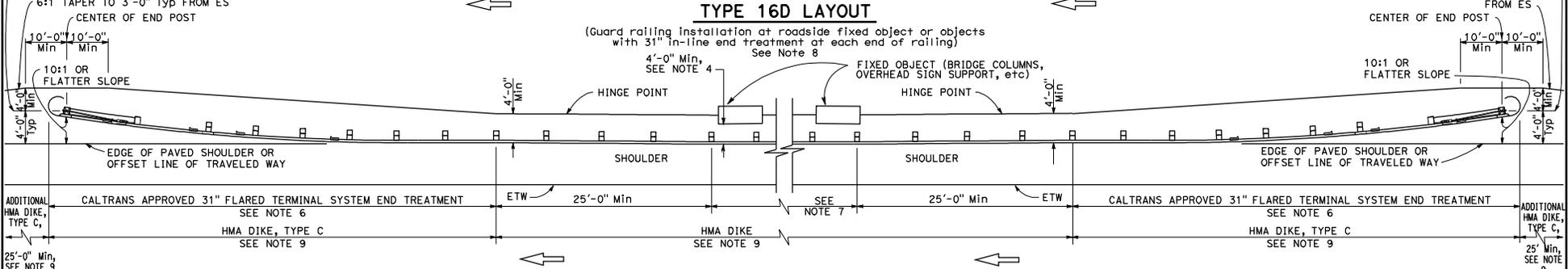
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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



TYPE 16D LAYOUT

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



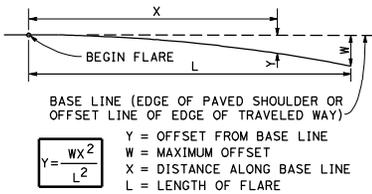
TYPE 16E LAYOUT

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

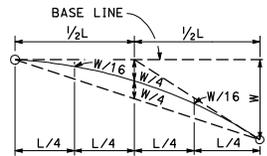
- NOTES:**
- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
 - MGS post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
 - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object", on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
 - 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
 - The type of 31" terminal system to be used will be shown on the Project Plans.
 - 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.
 - 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.
 - Where placement of dike is required with MGS, see Revised Standard Plan RSP A77N4 for dike positioning details.
 - W6 x 15 steel post, 8'-0" in length, with 8" x 12" 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 12" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**
NO SCALE

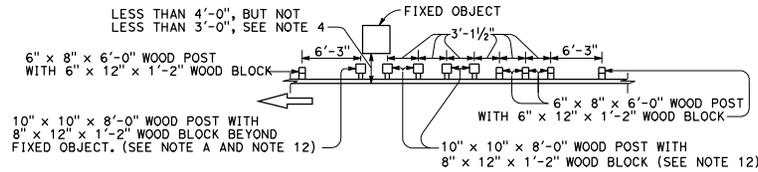
RSP A77R4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A77R4



PARABOLIC FLARE OFFSETS



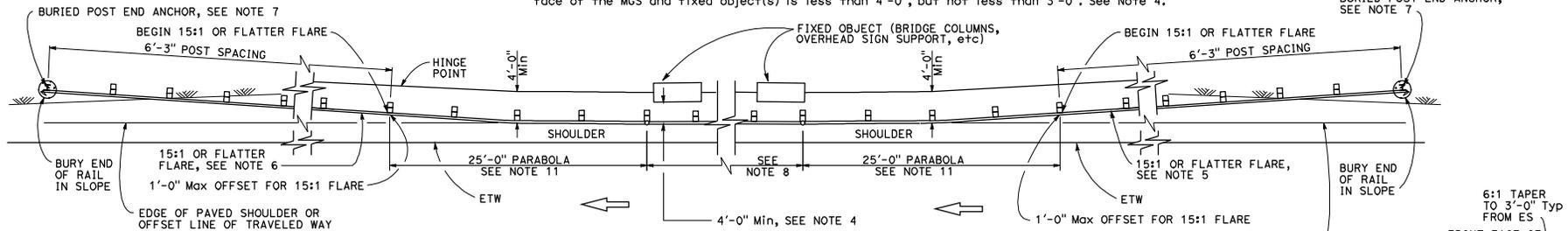
TYPICAL PARABOLIC LAYOUT



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 12" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

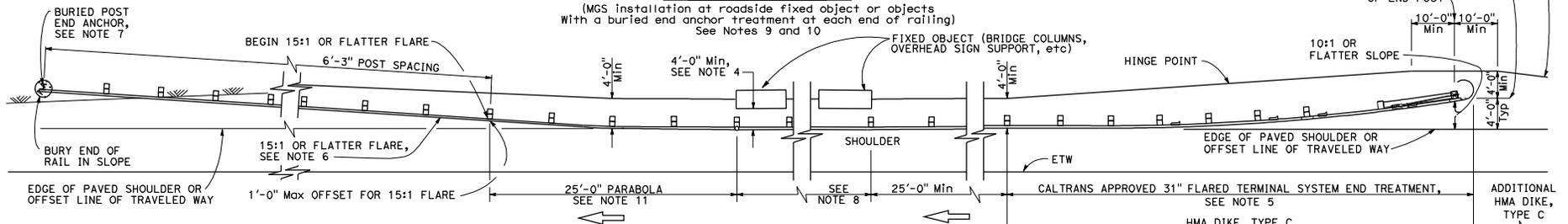
STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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



TYPE 16F LAYOUT

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



TYPE 16G LAYOUT

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

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks, W6 x 8,5 or W6 x 9 steel posts, 6'-0" in length, with 8" x 12" 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 12" x 1'-2" wood blocks where applicable and when specified.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).

- The type of 31" terminal system to be used will be shown on the Project Plans.
- 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".
- For details of the Buried Post End Anchor, see Revised Standard Plan RSP A77T2.
- 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.
- 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.
- Where placement of dike is required with MGS, see Revised Standard Plan RSP A77N4 for dike positioning details.

- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
- W6 x 15 steel post, 8'-0" in length, with 8" x 12" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS
 NO SCALE

RSP A77R5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77R5

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

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER

July 19, 2013
 PLANS APPROVAL DATE

NO. CS0200
 Exp. 6-30-15
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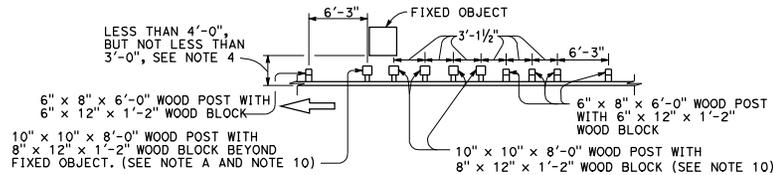
TO ACCOMPANY PLANS DATED _____

2010 REVISED STANDARD PLAN RSP A77R5

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

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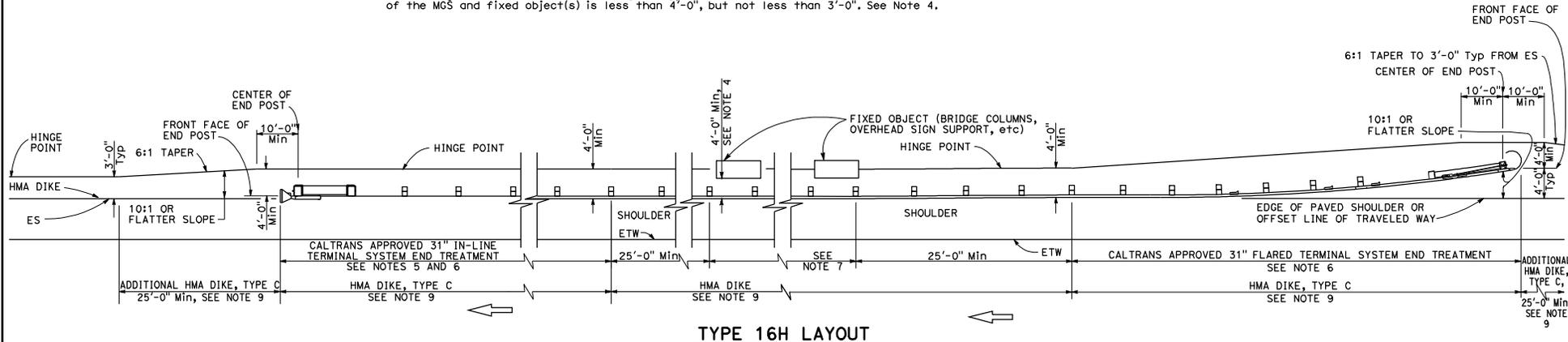
July 19, 2013
 PLANS APPROVAL DATE
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NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

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



TYPE 16H LAYOUT

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

NOTES:

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

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DEPARTMENT OF TRANSPORTATION

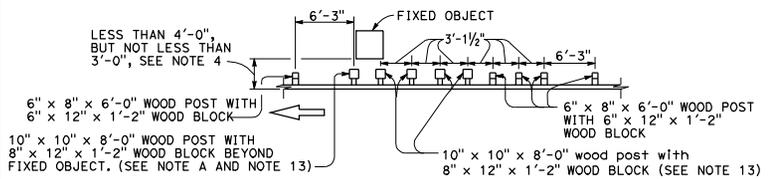
MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R6 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

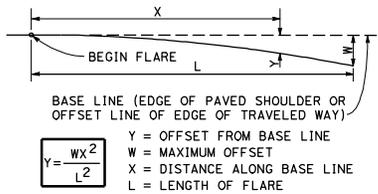
REVISED STANDARD PLAN RSP A77R6

2010 REVISED STANDARD PLAN RSP A77R6

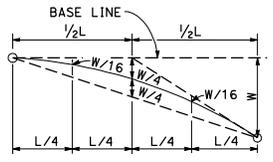


NOTE A: For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed object(s).

STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT



PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

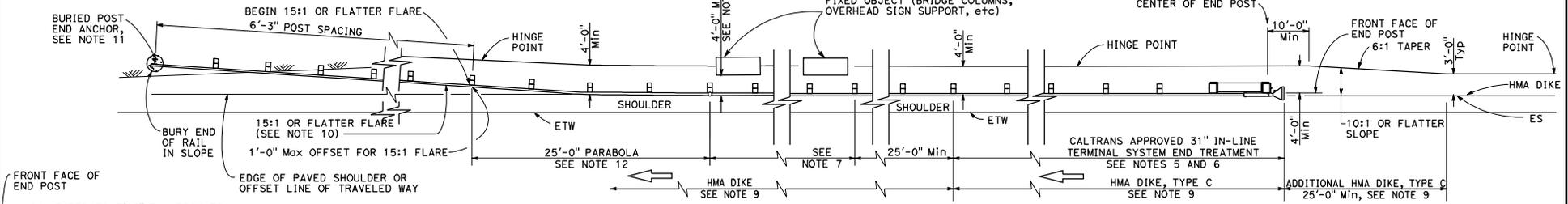
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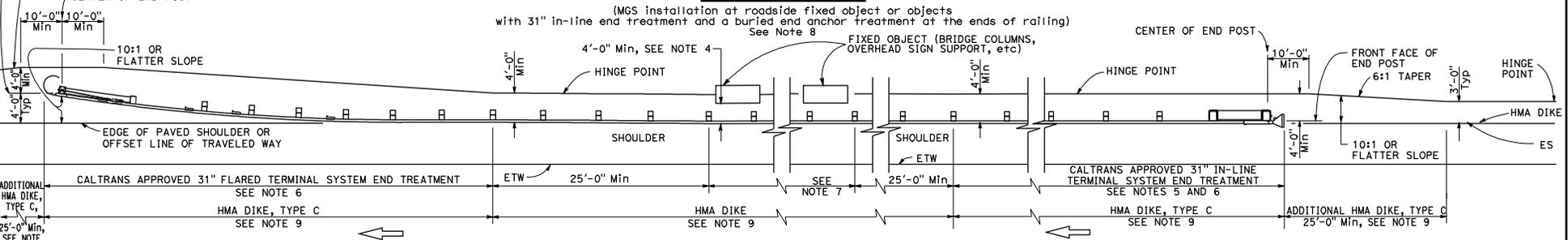
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No. CS0200
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TO ACCOMPANY PLANS DATED _____

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



TYPE 16I LAYOUT



TYPE 16J LAYOUT

- NOTES:**
- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
 - MGS post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks, W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 8" x 12" 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 12" x 1'-2" wood blocks where applicable and when specified.
 - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
 - 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
 - The type of 31" terminal system to be used will be shown on the Project Plans.
 - 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.
 - 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.
 - Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77N4 for dike positioning details.
 - 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".
 - For details of Buried Post End Anchor, see Revised Standard Plan RSP A77T2.
 - For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
 - W6 x 15 steel post, 8'-0" in length, with 8" x 12" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77R7 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77R7

2010 REVISED STANDARD PLAN RSP A77R7

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

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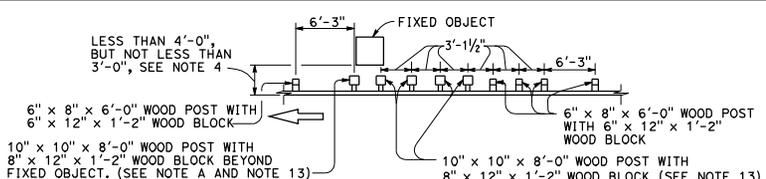
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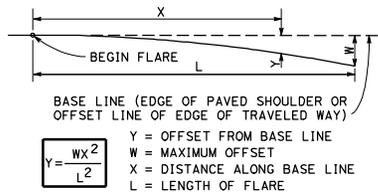
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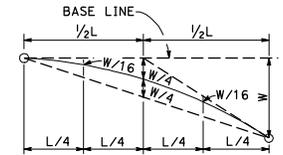


STRENGTHENED MIDWEST GUARDRAIL SYSTEM SECTIONS FOR FIXED OBJECT

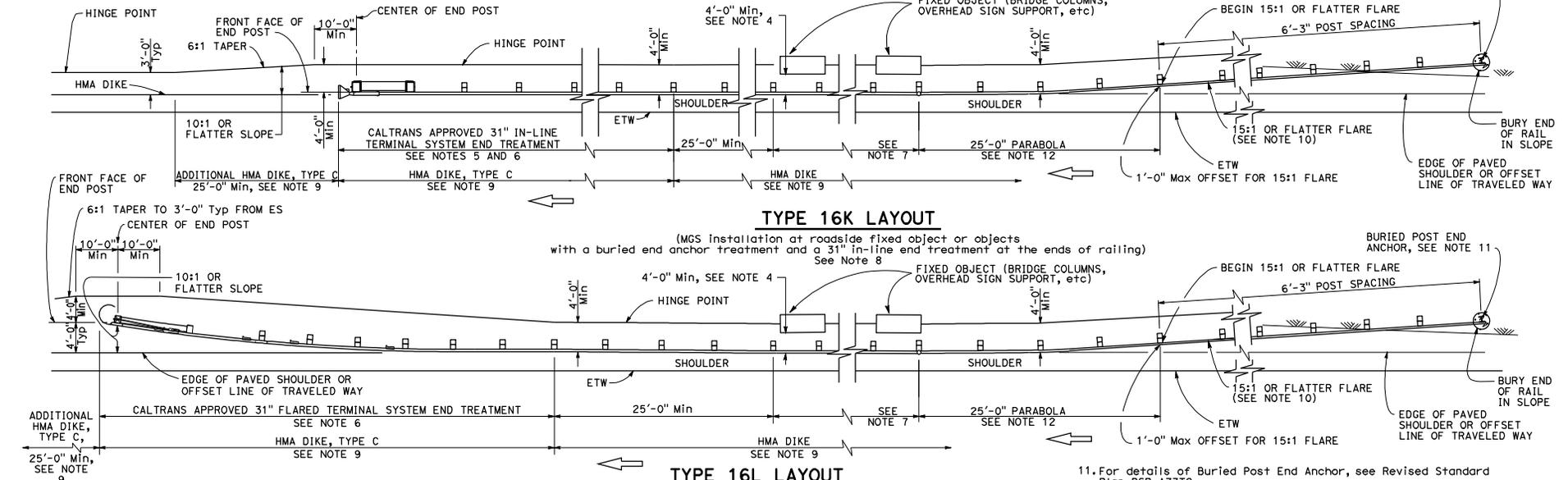
Use strengthened MGS sections with layout Types 16K or 16L layouts where minimum clearance between the face of the MGS and fixed object(s) is less than 4'-0", but not less than 3'-0". See Note 4.



PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT



TYPE 16K LAYOUT

TYPE 16L LAYOUT

- NOTES:**
- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
 - MGS post spacing to be 6'-3" center to center, except as otherwise noted.
 - Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
 - A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 3'-0". Where the clearance is less than 3'-0", a concrete wall or barrier should be constructed to shield the fixed object(s).
 - 31" in-line terminal system end treatments are used where site conditions will not accommodate a 31" flared end treatment.
 - The type of 31" terminal system to be used will be shown on the Project Plans.
 - 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.
 - 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.
 - Where placement of dike is required with MGS, see Revised Standard Plan RSP A77N4 for dike positioning details.
 - 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".
 - For details of Buried Post End Anchor, see Revised Standard Plan RSP A77T2.
 - For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.
 - W6 x 15 steel post, 8'-0" in length, with 8" x 12" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 12" x 1'-2" wood block shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
ROADSIDE FIXED OBJECTS**

NO SCALE

RSP A77R8 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77R8

2010 REVISED STANDARD PLAN RSP A77R8

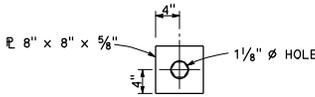
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

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REGISTERED CIVIL ENGINEER

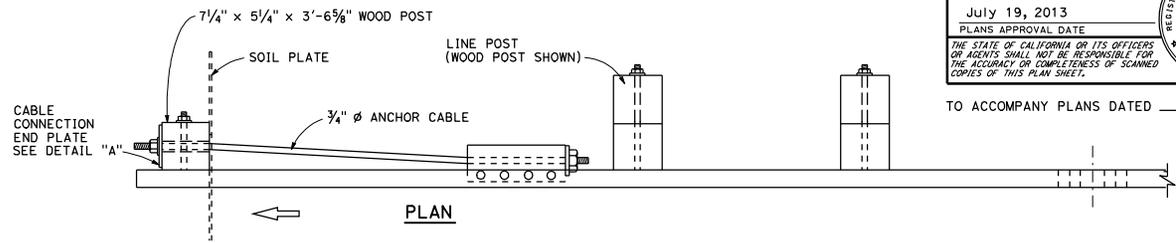
July 19, 2013
PLANS APPROVAL DATE

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STATE OF CALIFORNIA

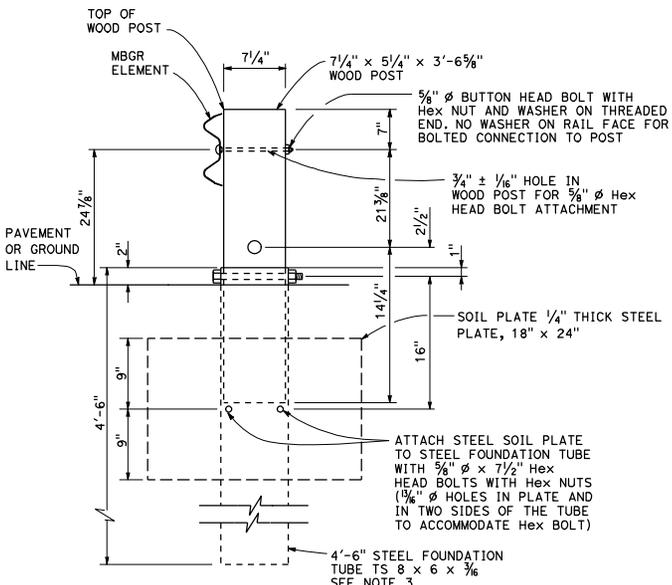
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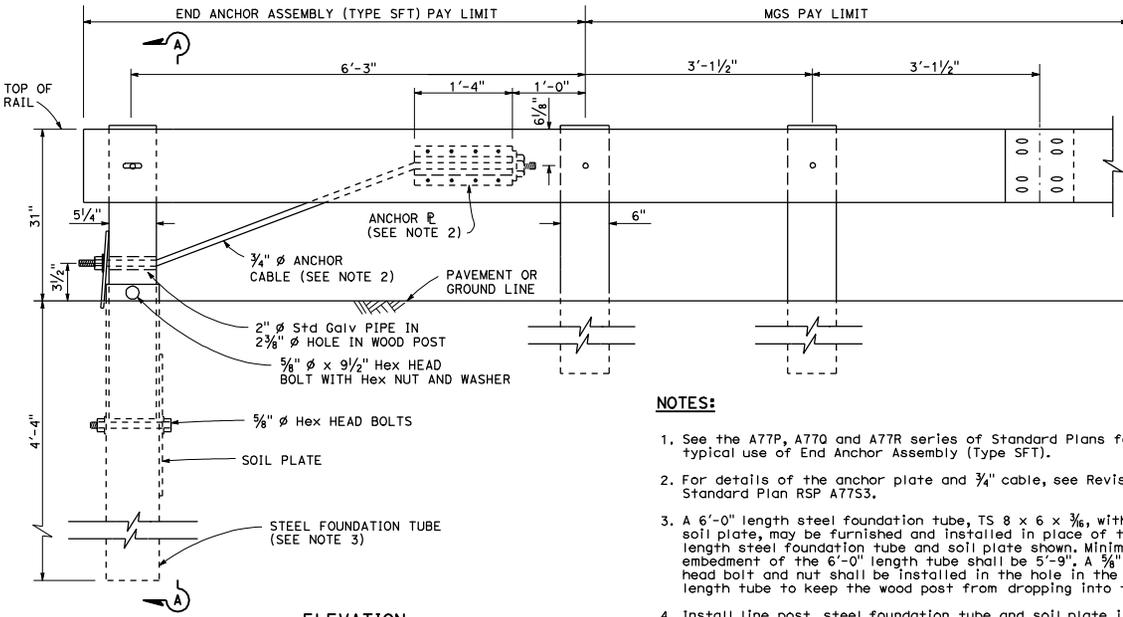
DETAIL "A"
CABLE CONNECTION
END PLATE



PLAN



SECTION A-A



ELEVATION

END ANCHOR
ASSEMBLY (TYPE SFT)
See Note 1

NOTES:

1. See the A77P, A77Q and A77R series of Standard Plans for typical use of End Anchor Assembly (Type SFT).
2. For details of the anchor plate and 3/4" cable, see Revised Standard Plan RSP A7753.
3. A 6'-0" length steel foundation tube, TS 8 x 6 x 3/8, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" diameter hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
4. Install line post, steel foundation tube and soil plate in soil.

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MIDWEST GUARDRAIL SYSTEM
END ANCHOR ASSEMBLY
(TYPE SFT)

NO SCALE

RSP A7751 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A7751

2010 REVISED STANDARD PLAN RSP A7751

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

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER

July 19, 2013
 PLANS APPROVAL DATE

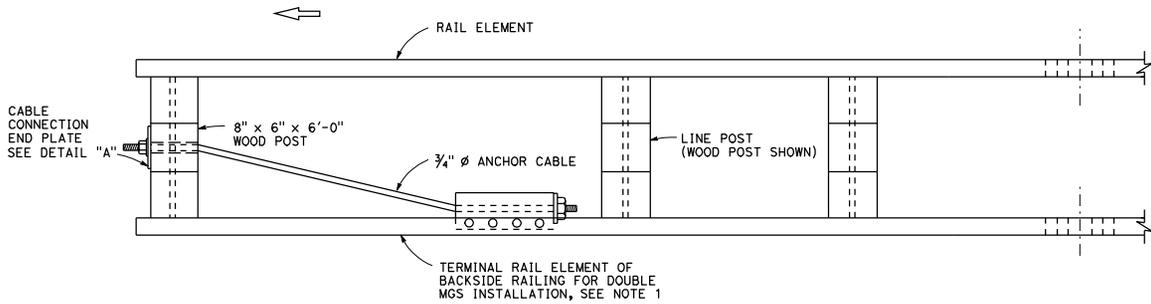
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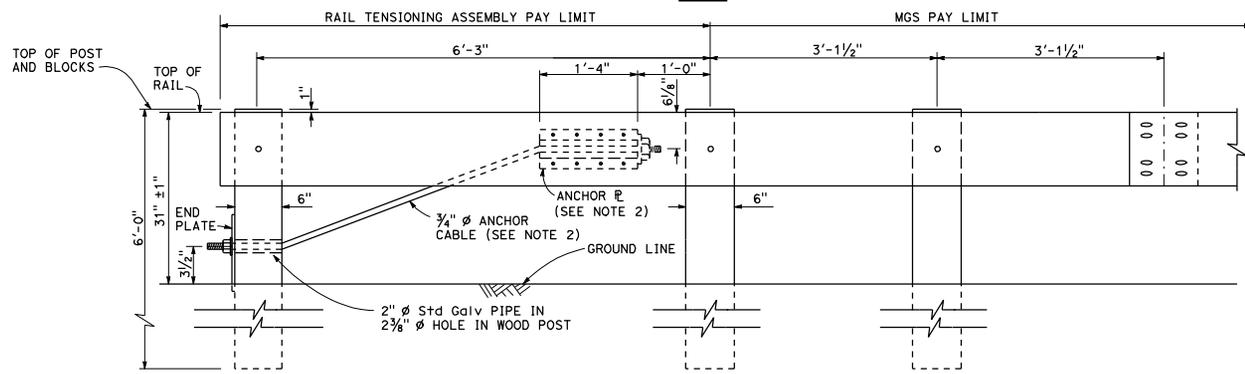
TO ACCOMPANY PLANS DATED _____

NOTES:

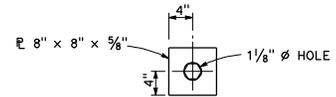
- See Revised Standard Plans RSP A77Q3 and RSP A77R1 for typical use of rail tensioning assembly.
- For details of the anchor plate and 3/4" cable, see Revised Standard Plan RSP A77S3.



PLAN



ELEVATION
RAIL TENSIONING
ASSEMBLY
 See Note 1



DETAIL "A"
CABLE CONNECTION
END PLATE

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
RAIL TENSIONING ASSEMBLY

NO SCALE

RSP A77S2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77S2

2010 REVISED STANDARD PLAN RSP A77S2

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

Randall D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. C50200
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

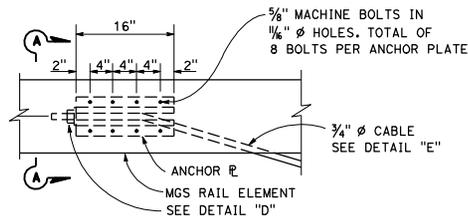
PLANS APPROVAL DATE
 July 19, 2013

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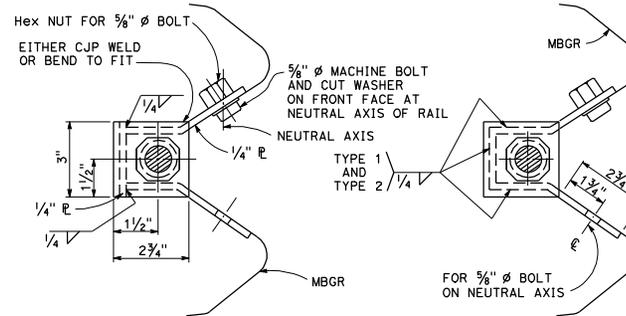
TO ACCOMPANY PLANS DATED _____

NOTE:

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



ANCHOR PLATE DETAIL
(MGS shown, TBB similar)

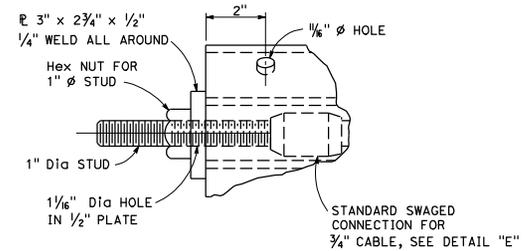


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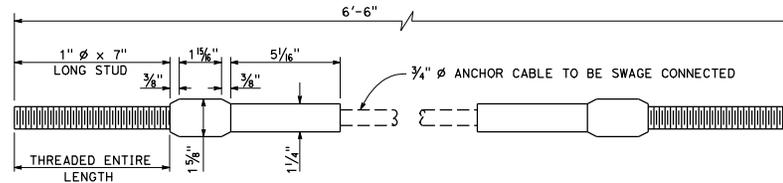
Dimensioning applies to both types.

SECTION A-A (ALTERNATIVE TYPE 1)

SECTION A-A (ALTERNATIVE TYPE 2)



DETAIL "D"



ANCHOR CABLE WITH SWAGED FITTING AND STUD
DETAIL "E"

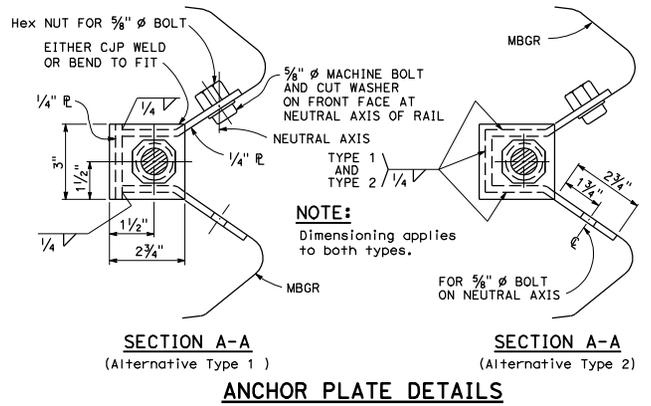
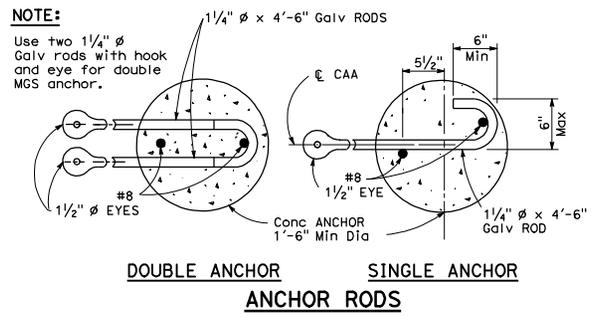
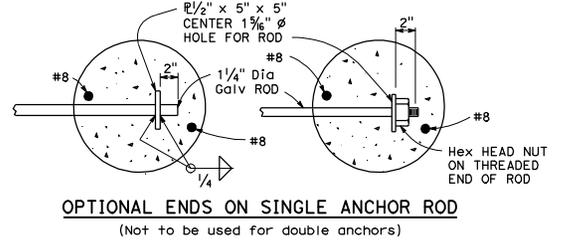
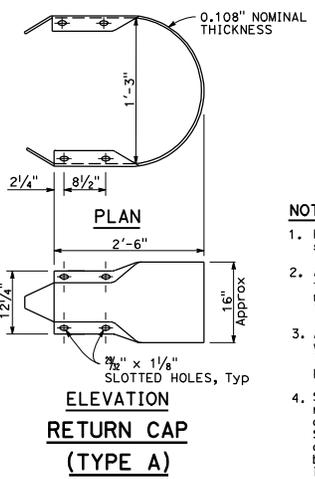
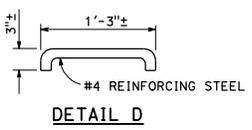
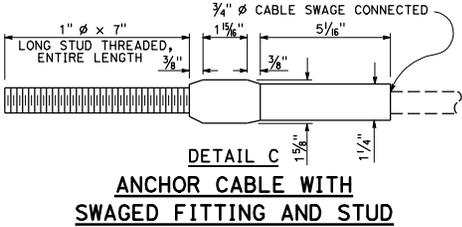
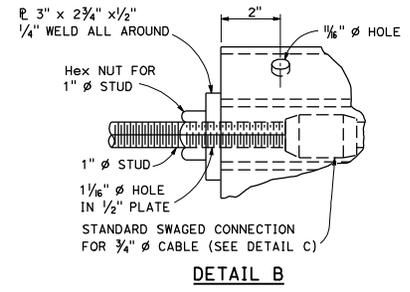
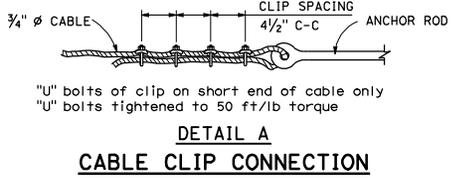
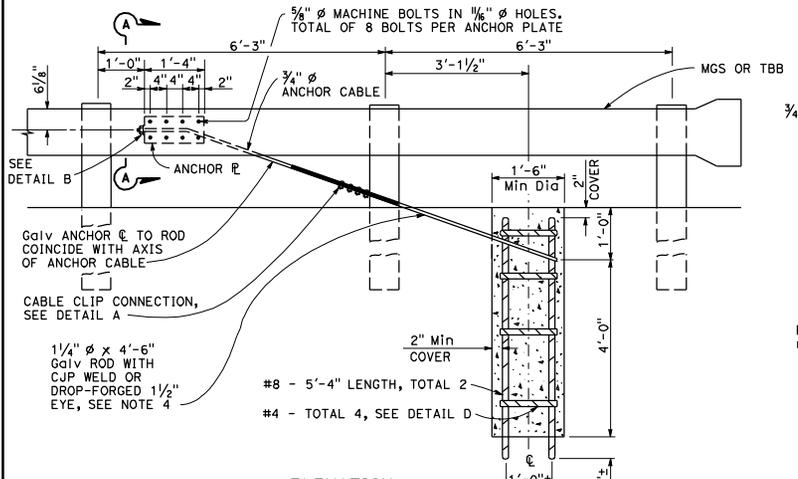
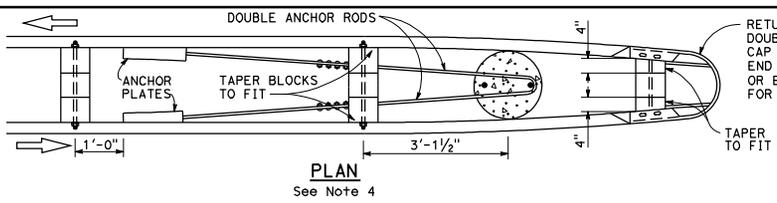
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
METAL RAILING ANCHOR CABLE AND ANCHOR PLATE DETAILS

NO SCALE

RSP A77S3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77S3

2010 REVISED STANDARD PLAN RSP A77S3



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

Randall D. Hatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
Randall D. Hatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

- TO ACCOMPANY PLANS DATED _____
- NOTES:**
- For typical use of this type of end anchor, see Revised Standard Plan RSP A78P2.
 - Anchor cable to be parallel to railing for straight runs of rail. Anchor cable may have angle point at anchor plate if railing is curved.
 - Anchor rod hooks to be in contact with anchor reinforcement when concrete is placed. Wire ties may be used to position anchor rods.
 - Single sided railing installations require only one anchor plate, anchor rod and anchor cable. Single sided railing will not have a rail element or blockouts on backside of line posts as shown in the plan view.

NOTE:

Use two 1/4" Ø Galv rods with hook and eye for double MGS anchor.

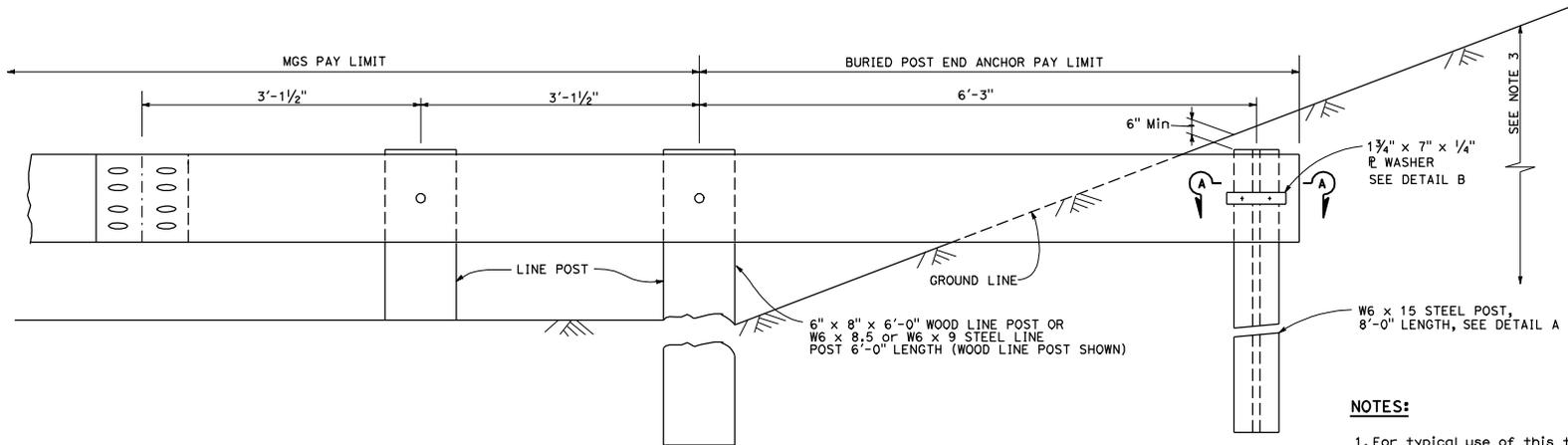
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
METAL RAILING END ANCHOR ASSEMBLY (TYPE CA)
NO SCALE

RSP A77T1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A77T1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
No. C50200 Exp. 6-30-15 CIVIL					
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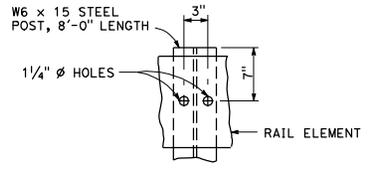
TO ACCOMPANY PLANS DATED _____



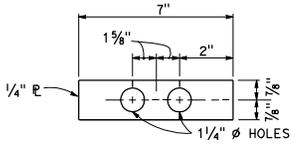
BURIED POST END ANCHOR
See Note 3

NOTES:

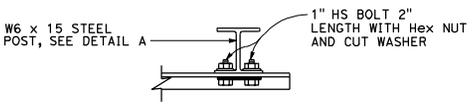
1. For typical use of this type of end anchor with MGS see the A77P, A77Q and A77R Series of the Standard Plans.
2. Holes excavation in the slope to construct the buried post end anchor shall be backfilled with selected earth, placed in layers approximately 1'-0" thick. Each layer shall be moistened and thoroughly compacted.
3. The buried post end anchor shall only be constructed at those locations where the slope perpendicular to the roadway is non-traversable.



DETAIL A



DETAIL B



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM
BURIED POST END ANCHOR

NO SCALE

RSP A77T2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77T2

2010 REVISED STANDARD PLAN RSP A77T2

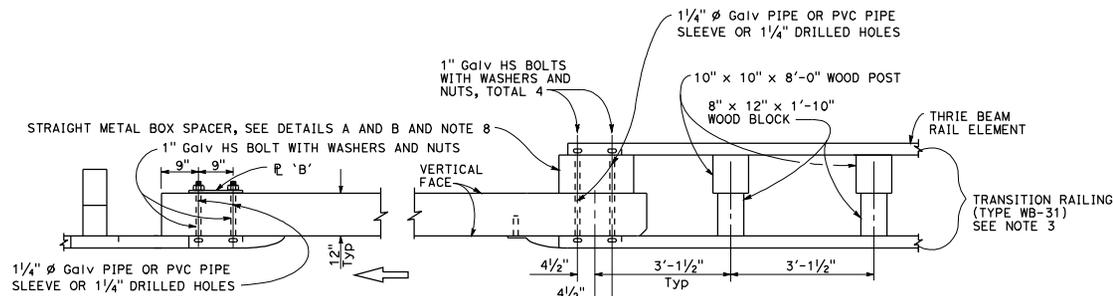
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

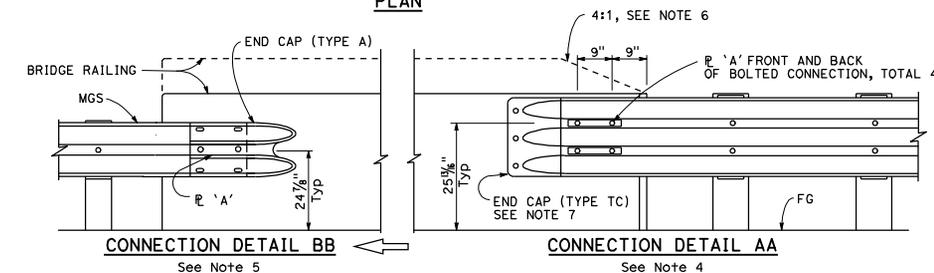
July 19, 2013
PLANS APPROVAL DATE

PROFESSIONAL ENGINEER
No. CS0200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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PLAN

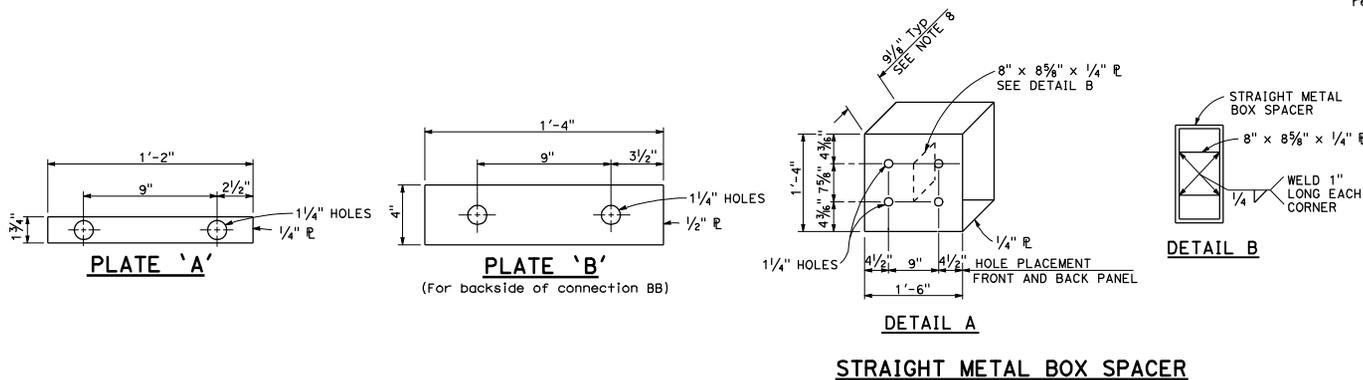


ELEVATION

MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

1. See Revised Standard Plan RSP A77U2 for additional connection details to bridges without sidewalks.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
4. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A7701, Layout Types 12C and 12D on Revised Standard Plan RSP A7702, and Layout Type 12E on Revised Standard Plan RSP A7703.
5. For typical use of Connection Detail BB, see Layout Type 12D (structure departure railing connection) on Revised Standard Plan RSP A7702 and Layout Type 12DD on Revised Standard Plan RSP A7705.
6. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam rail.
7. For details of End Cap (Type TC), see Revised Standard Plan RSP A77U4.
8. See Revised Standard Plan RSP A77U4 for additional details regarding depth dimension for straight metal box spacer.



STRAIGHT METAL BOX SPACER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS
DETAILS No. 1

NO SCALE

RSP A77U1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U1

2010 REVISED STANDARD PLAN RSP A77U1

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

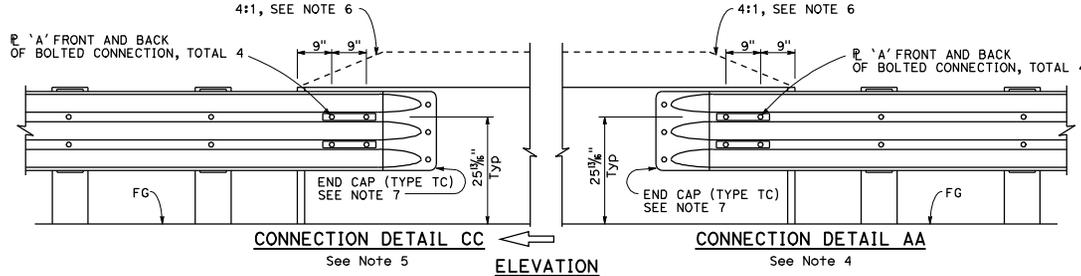
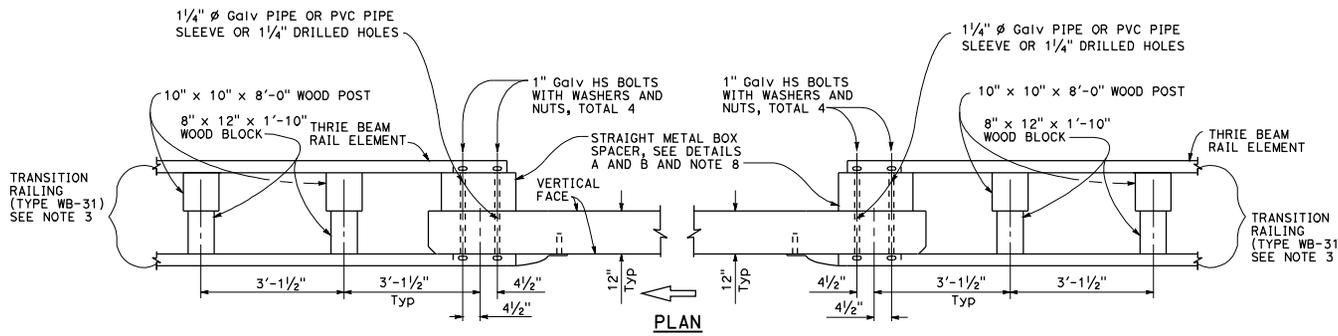
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

PLANS APPROVAL DATE
No. CS0200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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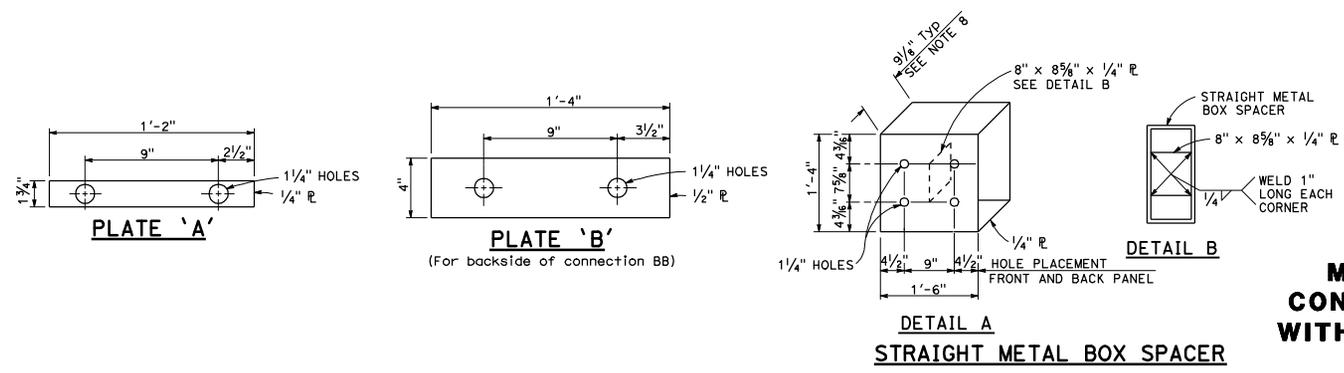
TO ACCOMPANY PLANS DATED _____



MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

1. See Revised Standard Plan RSP A77U1 for additional connection details to sidewalks.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4, Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
4. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A7701, Layout Types 12C and 12D on Revised Standard Plan RSP A7702, and Layout Type 12E on Revised Standard Plan RSP A7703.
5. For typical use of Connection Detail CC, see Layout Types 12AA and 12BB on Revised Standard Plan RSP A7704 and Layout Type 12CC on Revised Standard Plan RSP A7705.
6. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA and connection Detail CC, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
7. For details of End Cap (Type TC), see Revised Standard Plan RSP A77U4.
8. See Revised Standard Plan RSP A77U4 for additional details regarding depth dimension for straight metal box spacer.



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
CONNECTIONS TO BRIDGE RAILINGS
WITHOUT SIDEWALKS DETAILS No. 2**

NO SCALE

RSP A77U2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U2

2010 REVISED STANDARD PLAN RSP A77U2

D16#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

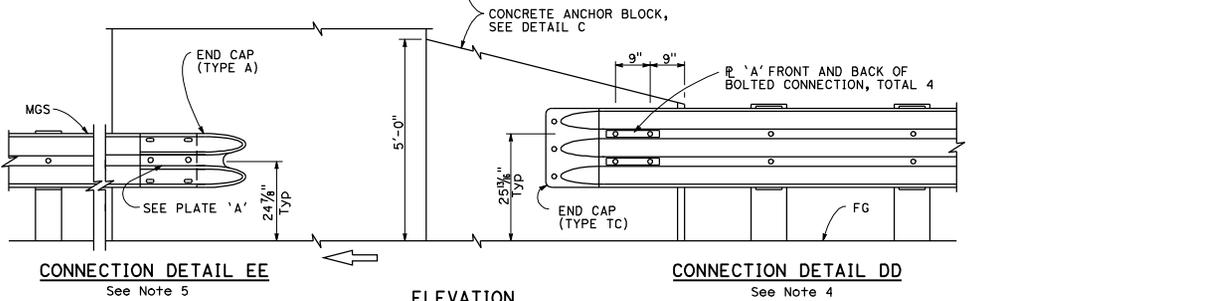
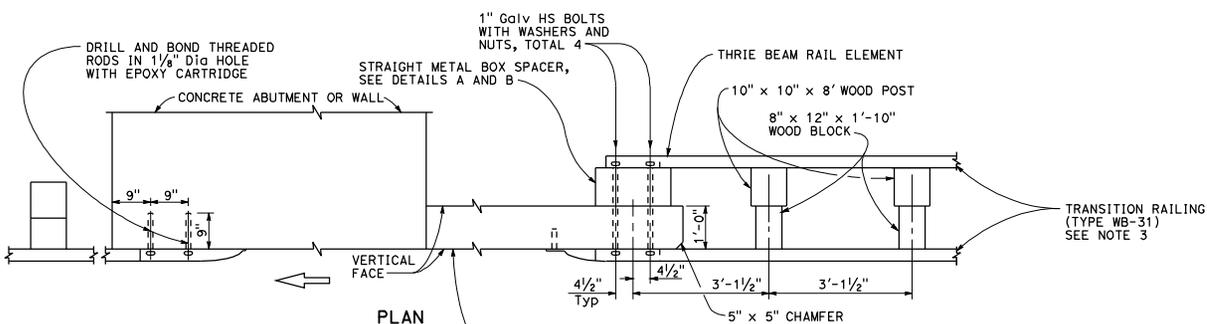
July 19, 2013
PLANS APPROVAL DATE

PLANS APPROVAL NO. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

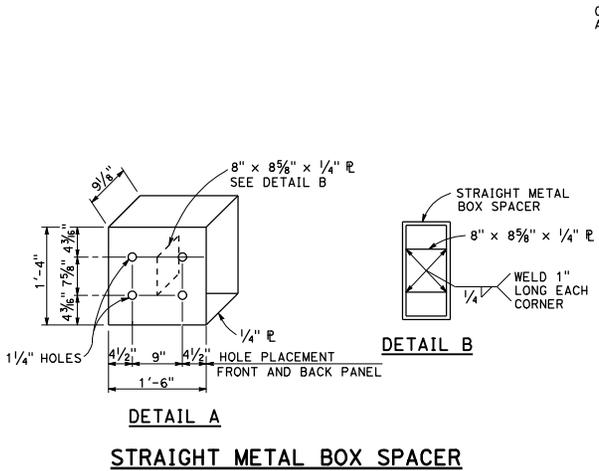
2010 REVISED STANDARD PLAN RSP A77U3



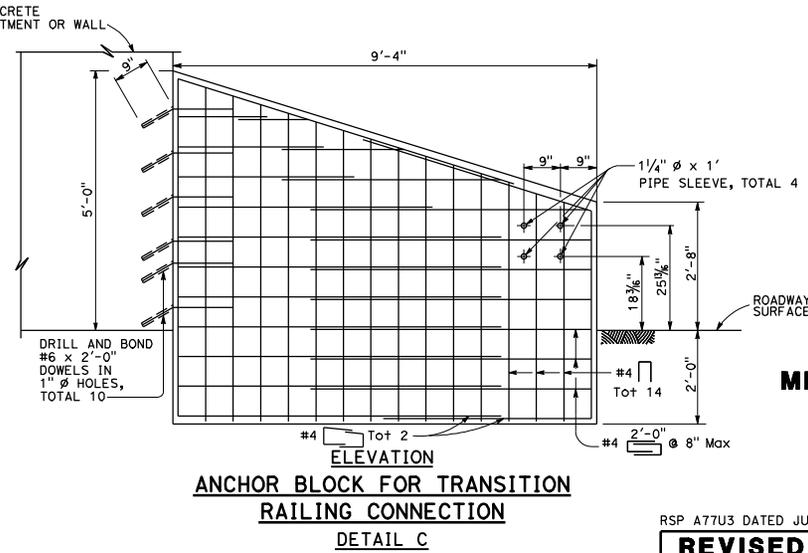
MIDWEST GUARDRAIL SYSTEM CONNECTION TO ABUTMENT OR WALL

NOTES:

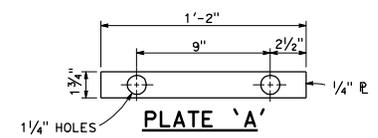
1. These connection details apply to abutments and walls.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4, Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gauge nested thrie beam railing section which is connected to the concrete anchor block.
4. For typical use of Connection Details DD, see Layout Types 12A and 12B on Revised Standard Plan RSP A77O1 and Layout Types 12C and 12D on Revised Standard Plan RSP A77Q2.
5. For typical use of Connection Detail EE, see Layout Type 12D on Revised Standard Plan RSP A77Q2 and Layout Type 12DD on Revised Standard Plan RSP A77Q5.



STRAIGHT METAL BOX SPACER



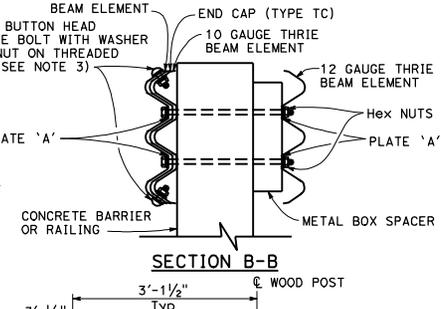
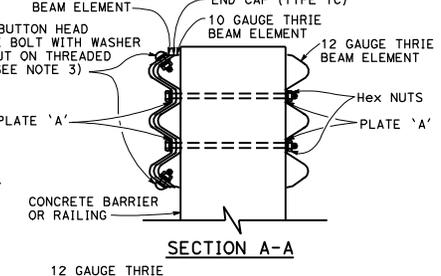
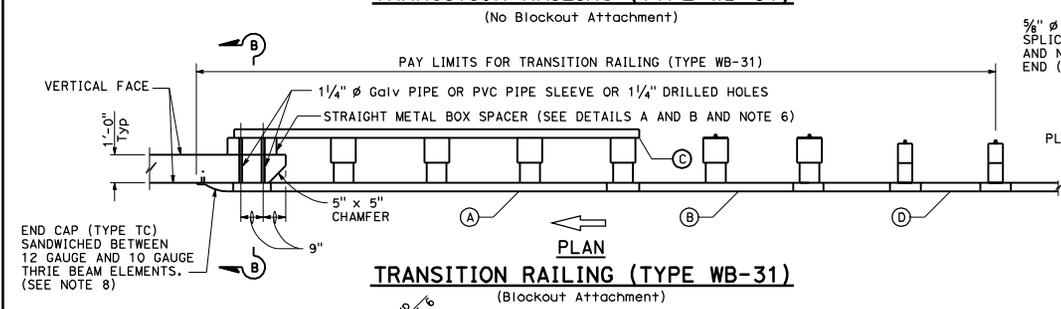
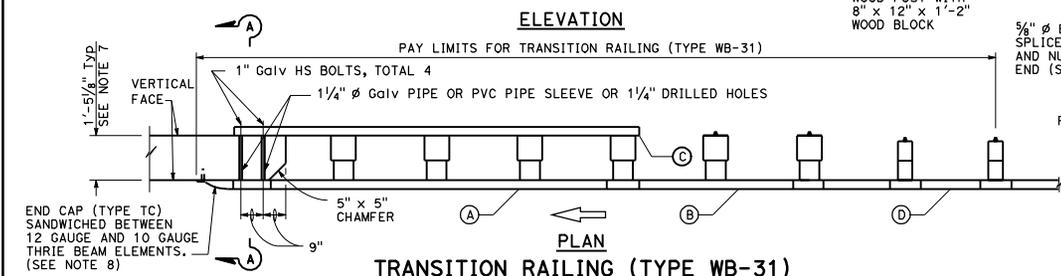
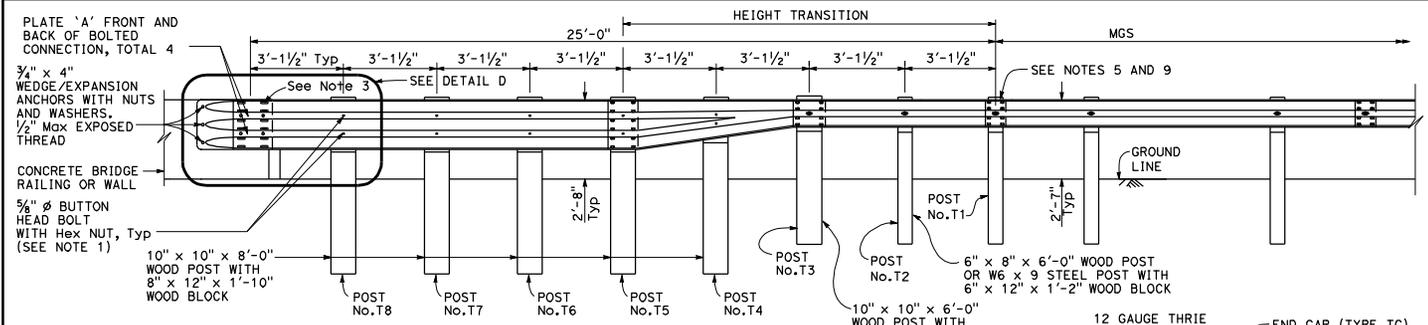
ANCHOR BLOCK FOR TRANSITION RAILING CONNECTION



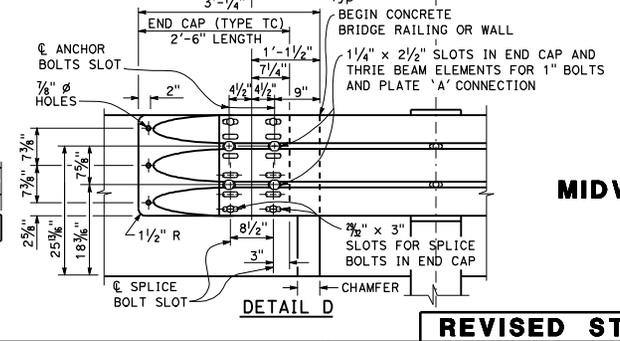
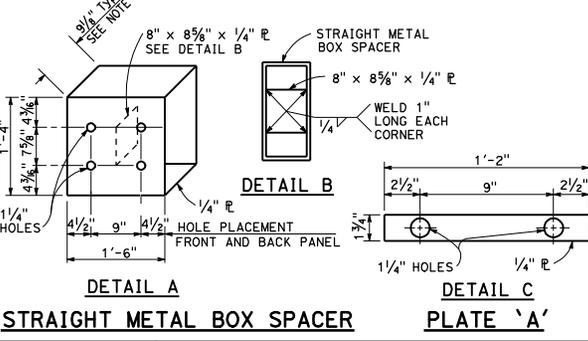
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
MIDWEST GUARDRAIL SYSTEM CONNECTIONS TO ABUTMENTS AND WALLS

NO SCALE

RSP A77U3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A77U3



- LEGEND:**
- (A) NESTED THRIE BEAM ELEMENTS (ONE 12 GAUGE ELEMENT NESTED OVER ONE 10 GAUGE ELEMENT).
 - (B) ONE ASYMMETRICAL 10 GAUGE "W" BEAM TO THRIE BEAM ELEMENT.
 - (C) ONE 12 GAUGE THRIE BEAM ELEMENT.
 - (D) ONE 10 GAUGE "W" BEAM RAIL ELEMENT (7'-3 1/2" LENGTH)
- 10 GAUGE = 0.138" THICK
12 GAUGE = 0.108" THICK



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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

STATE OF CALIFORNIA PROFESSIONAL ENGINEERS
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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- NOTES:** TO ACCOMPANY PLANS DATED _____
1. Use 5/8" Ø button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
 2. The nested rail elements, end cap, and "W" beam to thrie beam element may be spliced together prior to bolting the elements to the wood post and concrete barrier or railing.
 3. Exterior splice bolt holes for rail element splices at Post No. T5 and the connection to the concrete barrier or railing shall be the standard 3/8" x 1 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1/4" Ø. Only the top 4 and the bottom 4 splice bolts with washers and nuts are required for rail splices at Post No. T5 and the connection to the concrete barrier or railing.
 4. The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
 5. Typically, the railing connected to Transition Railing (Type WB-31) will be either standard railing section of MGS with height transition ratio of 150:1 or a Caltrans approved 31" end treatment attached to Post No. T1.
 6. The depth of the metal box spacer varies from the 9/16" to 1 1/2" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 2 1/4". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1 1/2", metal plates similar to Plate 'A' are to be used as spacers.
 7. Where the width of the concrete railing or wall is greater than 1 1/4", wood blocks are to be used to fill the space created between the backside of Posts No. T4 through No. T7 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

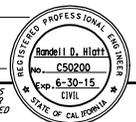
**MIDWEST GUARDRAIL SYSTEM
TRANSITION RAILING
(TYPE WB-31)**

NO SCALE

RSP A77U4 DATED JULY 19, 2013 SUPPLEMENTS
THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U4

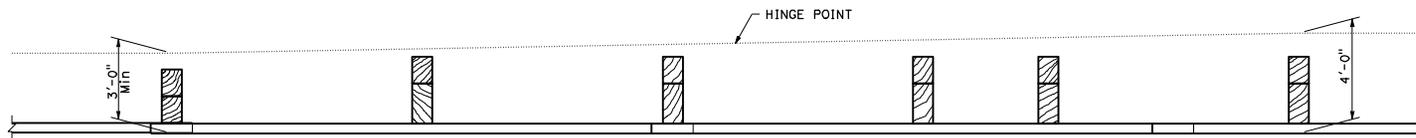
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
No. CS0200 Exp. 6-30-15 CIVIL					
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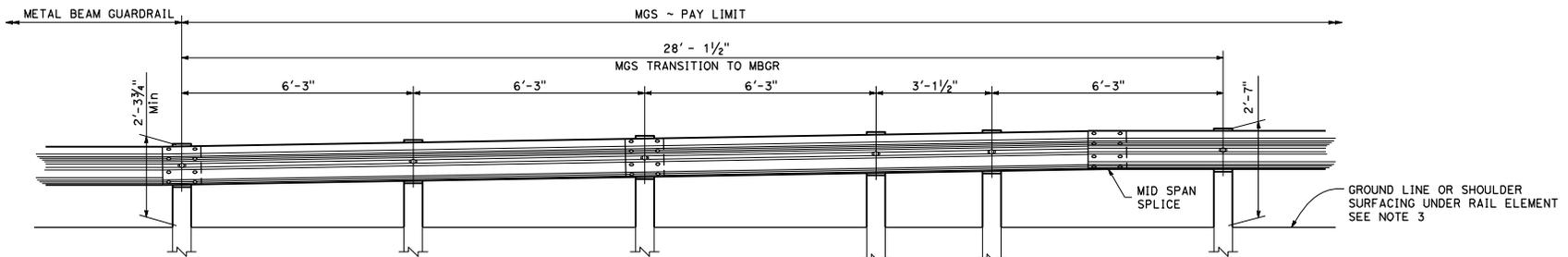
TO ACCOMPANY PLANS DATED _____

NOTES:

1. Refer to Revised Standard Plans RSP A77L1 and RSP A77L2 for component details for MGS not shown on this plan.
2. All posts for any standard barrier run shall be of the same type: Wood or Steel.
3. Install posts in soil.



PLAN



ELEVATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TRANSITION TO METAL BEAM GUARDRAIL

NO SCALE

RSP A77U5 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U5

2010 REVISED STANDARD PLAN RSP A77U5

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

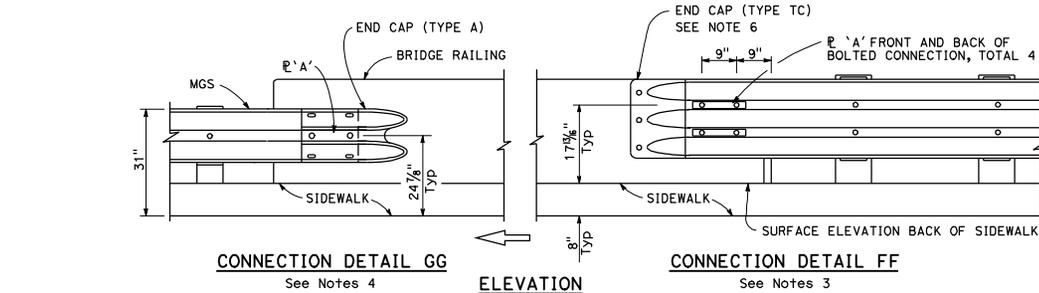
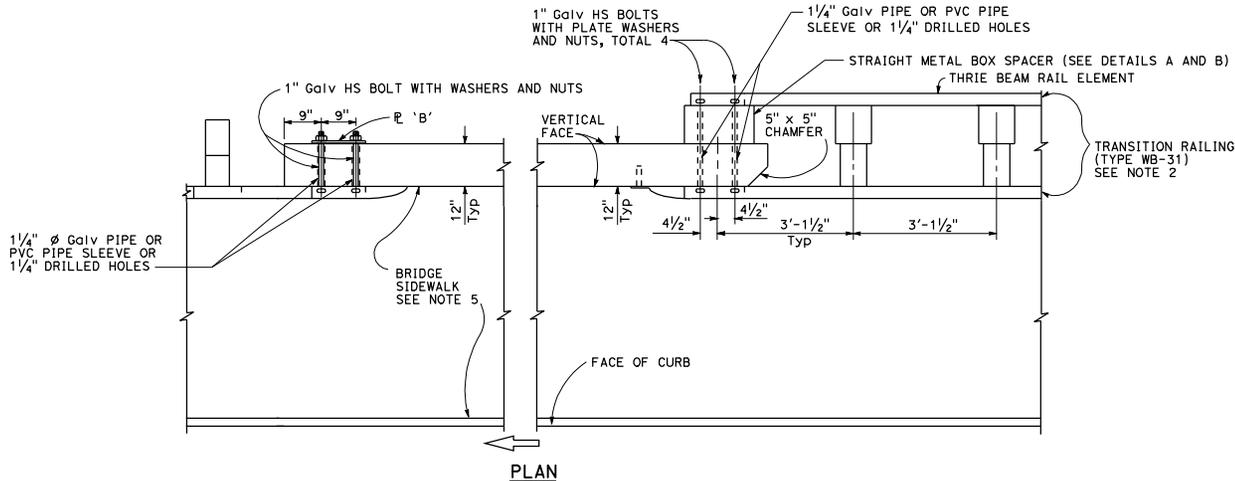
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

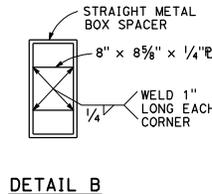
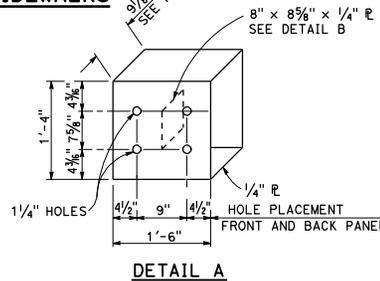
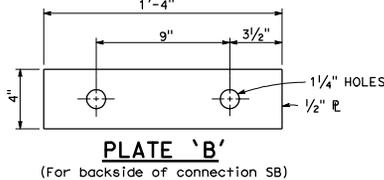
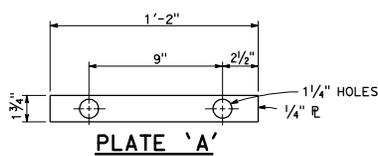
REGISTERED PROFESSIONAL ENGINEER
No. CS0200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____



MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITH SIDEWALKS



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
CONNECTIONS TO BRIDGE
RAILINGS WITH SIDEWALKS
DETAILS No. 1**

NO SCALE

RSP A77V1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77V1

2010 REVISED STANDARD PLAN RSP A77V1

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

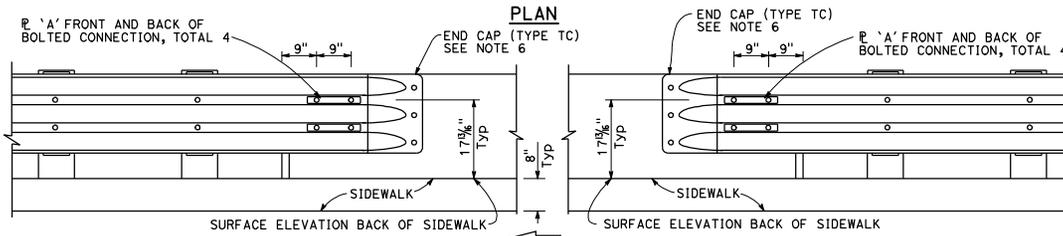
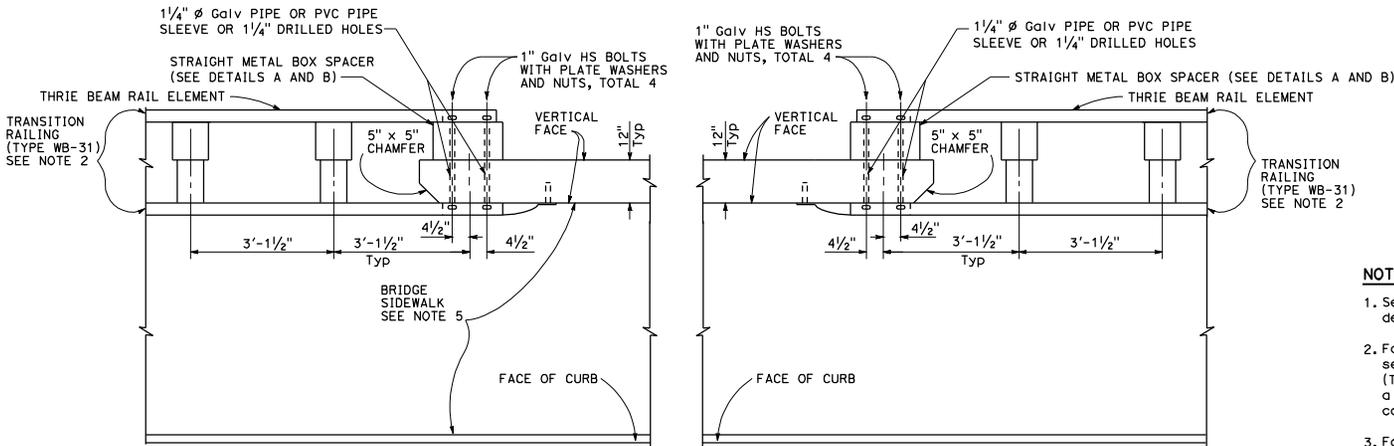
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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No. CS0200
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TO ACCOMPANY PLANS DATED _____



CONNECTION DETAIL HH

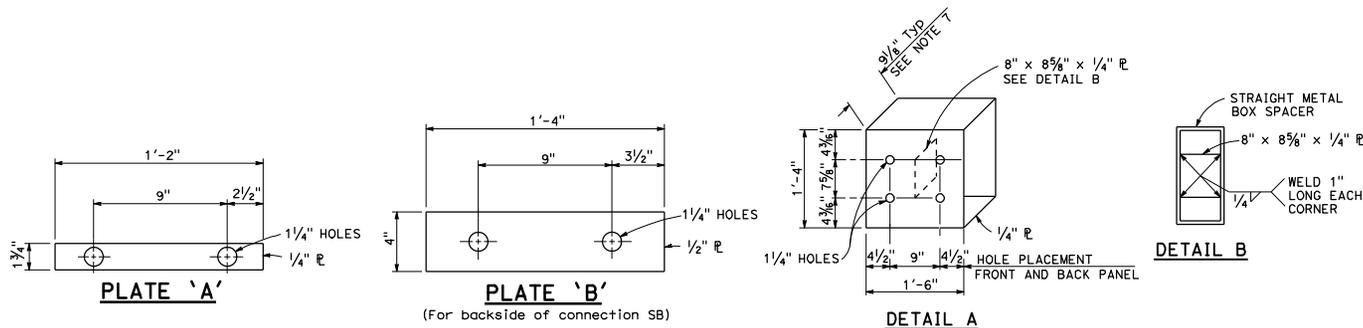
See Notes 4

ELEVATION

CONNECTION DETAIL FF

See Notes 3

MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITH SIDEWALKS



STRAIGHT METAL BOX SPACER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

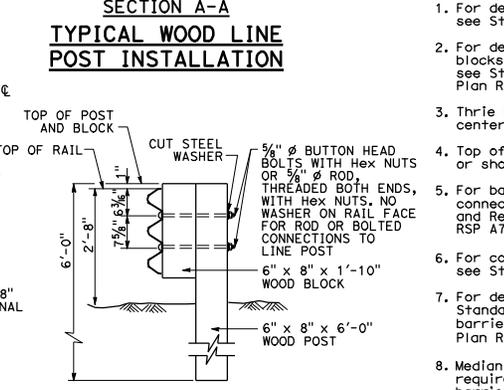
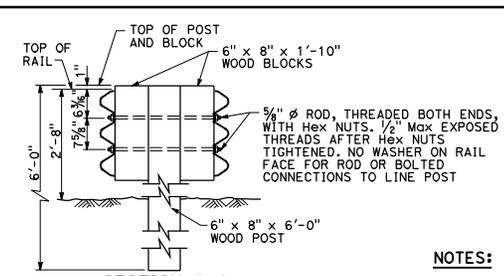
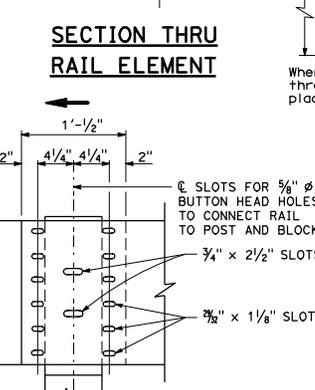
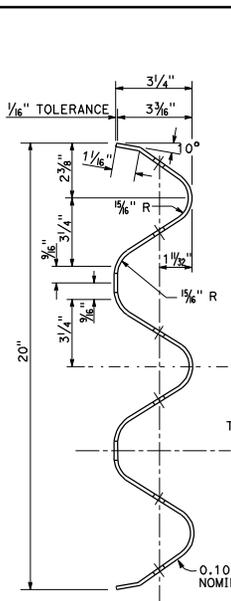
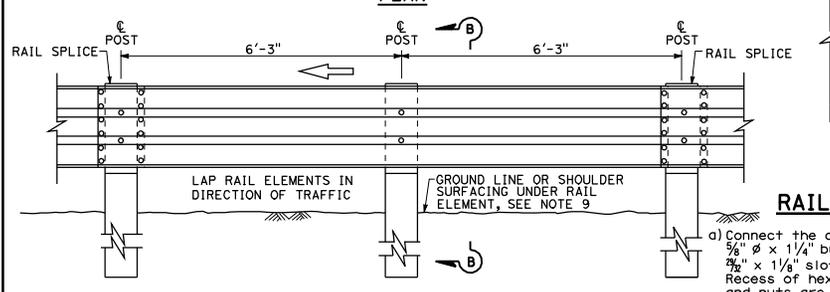
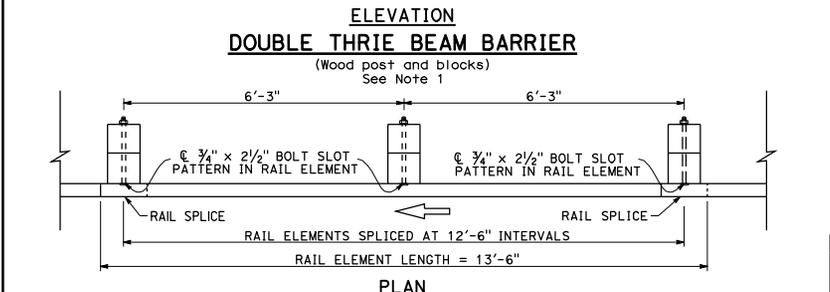
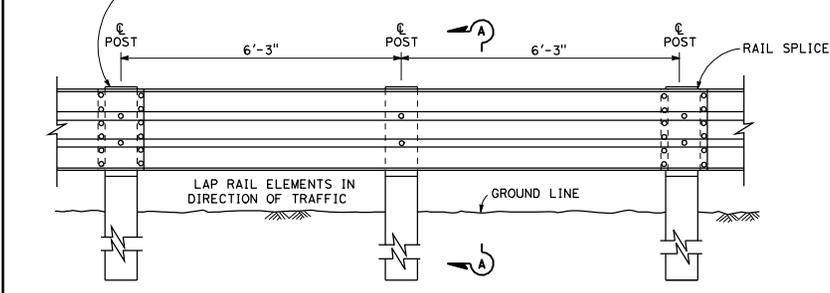
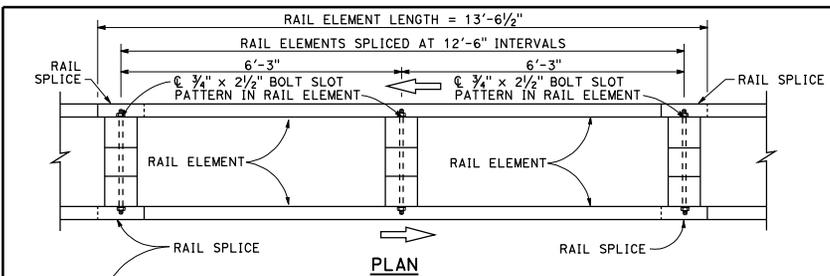
**MIDWEST GUARDRAIL SYSTEM
CONNECTIONS TO BRIDGE
RAILINGS WITH SIDEWALKS
DETAILS No. 2**

NO SCALE

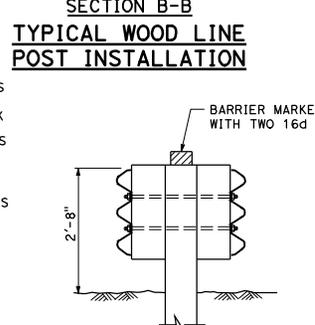
RSP A77V2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77V2

2010 REVISED STANDARD PLAN RSP A77V2



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



- Connect the overlapped ends of the thrie beam rail elements with 5/8" Ø x 1 1/4" button head oval shoulder bolts inserted into the 3/8" x 1 1/4" slots and bolted together with 5/8" Ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 12 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic (see details).
- Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used. Where a return cap is to be attached to the ends of rail elements, a total of 8 of the above described splice bolts and nuts are to be used.

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

Randell D. Hiatt
 REGISTERED CIVIL ENGINEER
 No. CS0200
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

- NOTES:**
- For details of steel post thrie beam barrier, see Standard Plan A78B.
 - For details of standard hardware, posts and blocks used to construct thrie beam barrier, see Standard Plan A78C1 and Revised Standard Plan RSP A78C2.
 - Thrie beam barrier post spacing to be 6'-3" center to center, except as otherwise noted.
 - Top of barrier rail to be 2'-8" above ground line or shoulder surfacing under the rail element.
 - For barrier end treatments and barrier connections, see Standard Plans A78E3 and A78G, and Revised Standard Plans RSP A78E1, RSP A78E2 RSP A7701, RSP A7702 and RSP A78H.
 - For connection to Concrete Barrier (Type 60), see Standard Plans A78I.
 - For details of thrie beam barrier on bridge see Standard Plan A78D2. For details of thrie beam barrier at fixed object, see Revised Standard Plan RSP A78D1.
 - Median barrier delineation to be used when required by the Special Provisions. Spacing of barrier markers to match spacing of raised pavement markers on adjacent median edgeline pavement delineation.
 - Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A78A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78A DATED MAY 20, 2011 - PAGE 89 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A78A

2010 REVISED STANDARD PLAN RSP A78A

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

Exp. 6-30-15
CIVIL

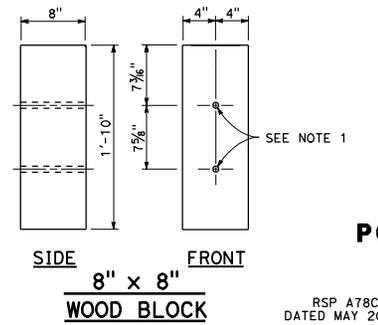
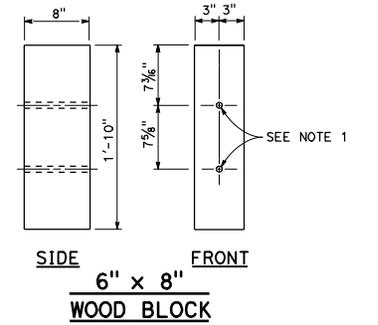
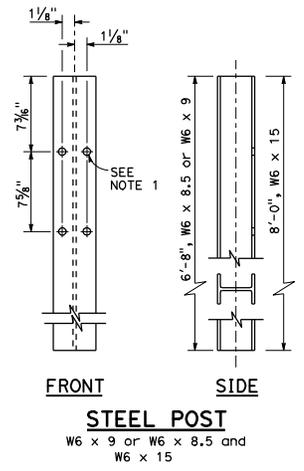
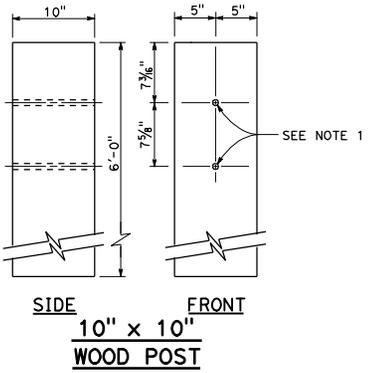
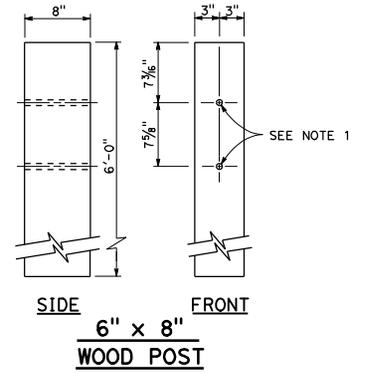
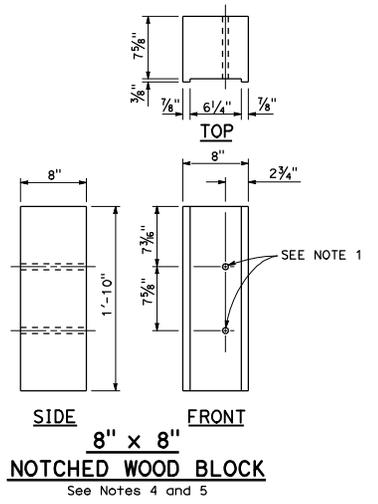
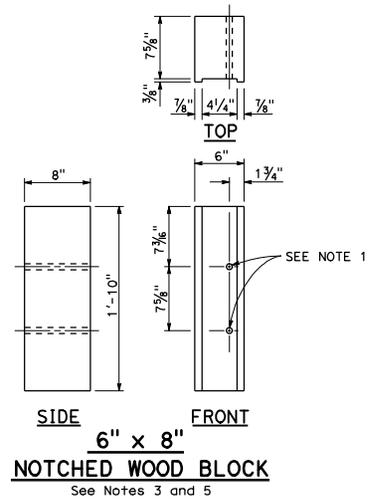
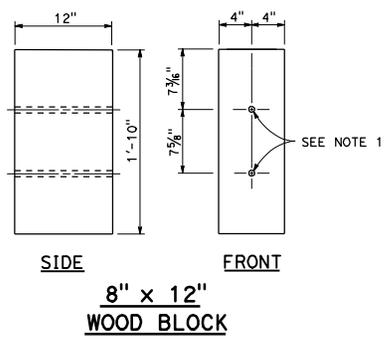
REGISTERED PROFESSIONAL ENGINEER
No. C50200
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

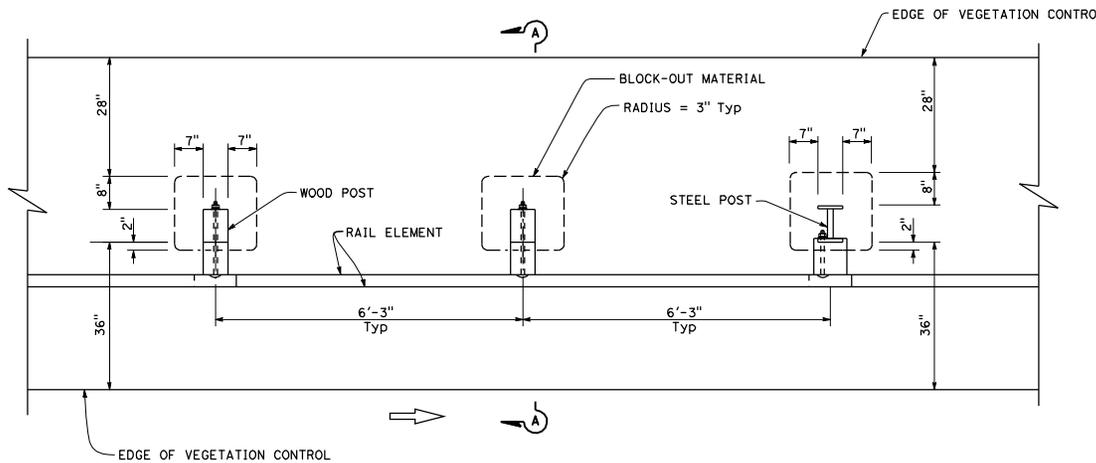
1. All holes in steel post to be $\frac{1}{8}$ " Dia maximum. Holes in wood posts and wood blocks to be $\frac{3}{4}$ " Dia $\pm \frac{1}{16}$ ".
2. Dimensions shown for wood post are nominal.
3. For use with W6 x 8.5 or W6 x 9 steel post.
4. For use with W6 x 15 steel post.
5. Notched face of block faces steel post.



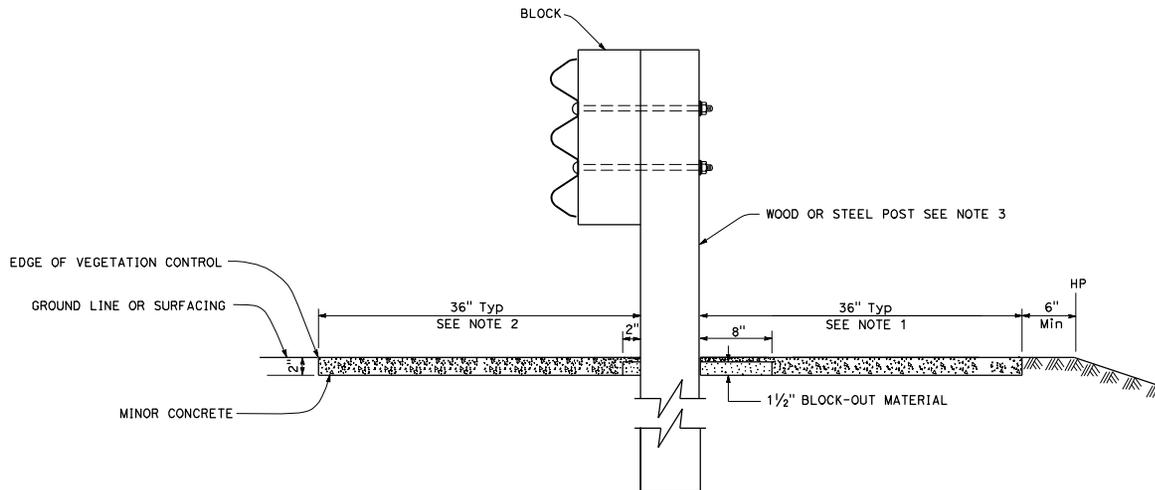
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**THREE BEAM BARRIER
POST AND BLOCK DETAILS**

NO SCALE

RSP A78C2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78C2
DATED MAY 20, 2011 - PAGE 92 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A78C2



PLAN



SECTION A-A

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

Randell D. Hiatt
No. CS0200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post. If the 8" block-out at back of post can not be maintained, construct vegetation control flush with the back edge of post.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
3. For wood and steel post sizes, see Revised Standard Plan RSP A77N2.
4. For details not shown, see Standard Plan A78B and Revised Standard Plan RSP A78A.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**SINGLE THRIE BEAM BARRIER
TYPICAL VEGETATION CONTROL
STANDARD BARRIER RAILING SECTION**

NO SCALE

RSP A78C3 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78C3
DATED MAY 20, 2011 - PAGE 93 OF THE STANDARD PLANS BOOK DATED 2010.

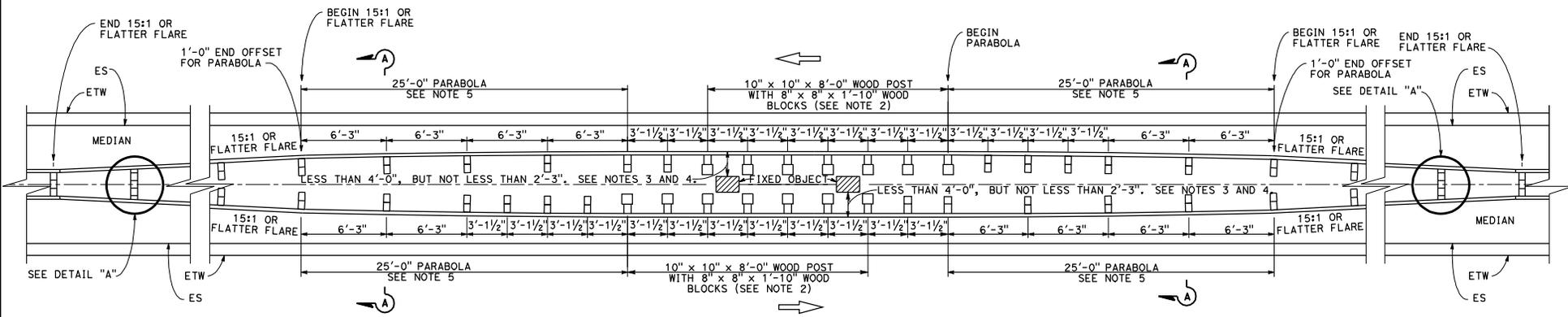
REVISED STANDARD PLAN RSP A78C3

2010 REVISED STANDARD PLAN RSP A78C3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
Randell D. Hiatt REGISTERED CIVIL ENGINEER				
July 19, 2013 PLANS APPROVAL DATE				
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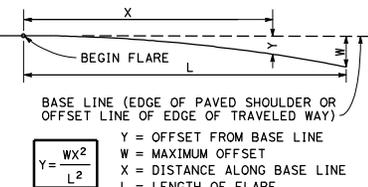
TO ACCOMPANY PLANS DATED _____



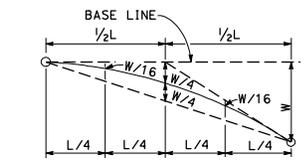
PLAN

THRIE BEAM BARRIER AT FIXED OBJECTS

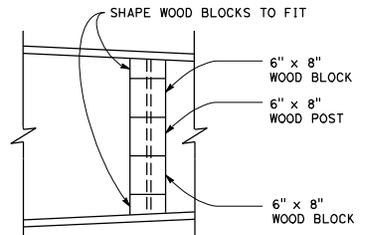
(Wood post and block shown)
See Notes 1, 2 and 3.



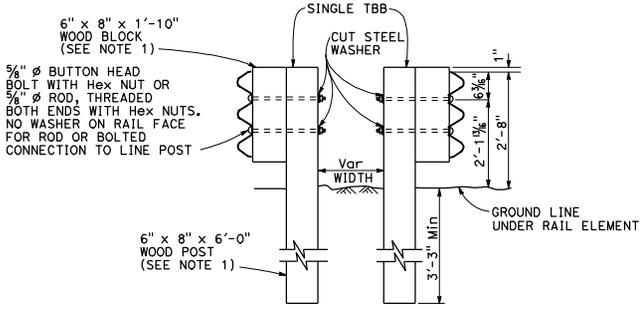
PARABOLIC FLARE OFFSETS



TYPICAL PARABOLIC LAYOUT



DETAIL "A"



SECTION A-A

Wood post with wood block shown
See Note 1

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**THRIE BEAM BARRIER
AT FIXED OBJECTS
IN MEDIAN**

NO SCALE

- NOTES:**
- Where applicable and when specified, (W6 x 8.5 or W6 x 9) x 6'-8" steel post with 6" x 8" x 1'-10" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-10" wood block.
 - Where applicable and when specified, (W6 x 15) x 8'-0" steel post with 8" x 8" x 1'-10" notched wood blocks or notched recycled plastic blocks may be used for the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-10" wood blocks shown at 3'-1/2" center to center spacing.
 - Where a minimum clearance of 4'-0" or more can be obtained between the face of the three beam rail and the face of the fixed object(s), the following substitutions may be made:
 - 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-10" wood blocks for the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-10" wood blocks shown.
 - 6'-3" post spacing for the 3'-1/2" spacing shown.
 - Where the clearance between the face of the railing and the face of a fixed object is less than 2'-3", a concrete barrier should be constructed to shield the fixed object(s).
 - For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

RSP A78D1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78D1
DATED MAY 20, 2011 - PAGE 97 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A78D1

2010 REVISED STANDARD PLAN RSP A78D1

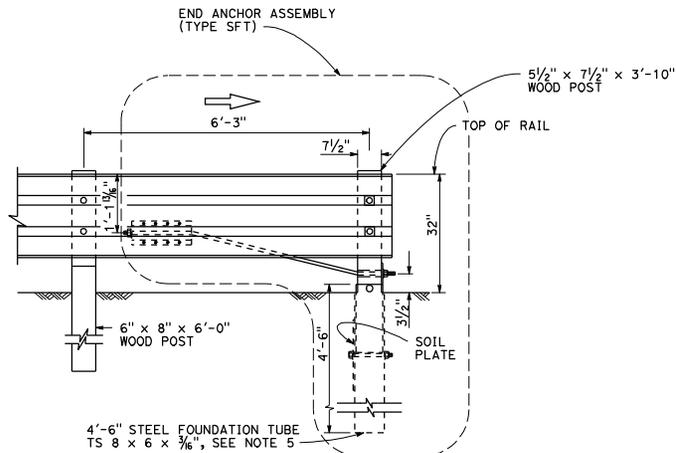
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
No. CS0200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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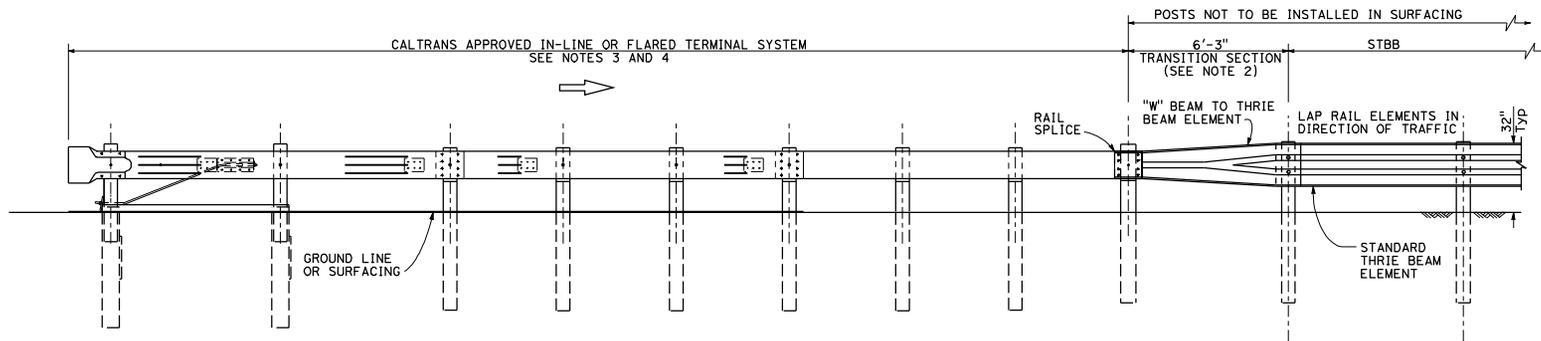


END ANCHOR FOR TRAFFIC DEPARTURE END OF SINGLE THRIE BEAM BARRIER

(For one-way roadways)
See Note 1

NOTES:

- For additional details of End Anchor Assembly (Type SFT), see Revised Standard Plan RSP A77S1.
- The "W" beam to thrie beam section is only required where the terminal system connection to the thrie beam barrier is a "W" beam rail.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment. The type of terminal system to be used will be shown on the Project Plans. Do not use a Caltrans approved 31" end treatment.
- A Caltrans approved crash cushion should be used in place of a terminal system end treatment where the backside of the railing would be exposed to traffic.
- A 6'-0" length steel foundation tube, TS 8 x 6 x 3/8, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-3". A 3/8" x 3/4" hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.



**ELEVATION
END TREATMENT FOR TRAFFIC APPROACH END
OF SINGLE THRIE BEAM BARRIER**

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

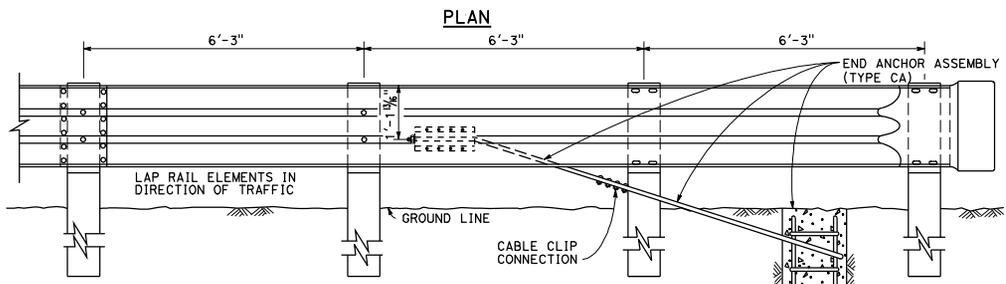
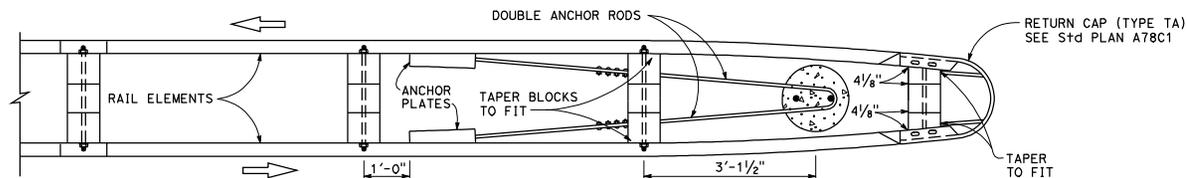
**SINGLE THRIE BEAM BARRIER
END ANCHOR ASSEMBLY AND
TERMINAL SYSTEM
END TREATMENT**

NO SCALE

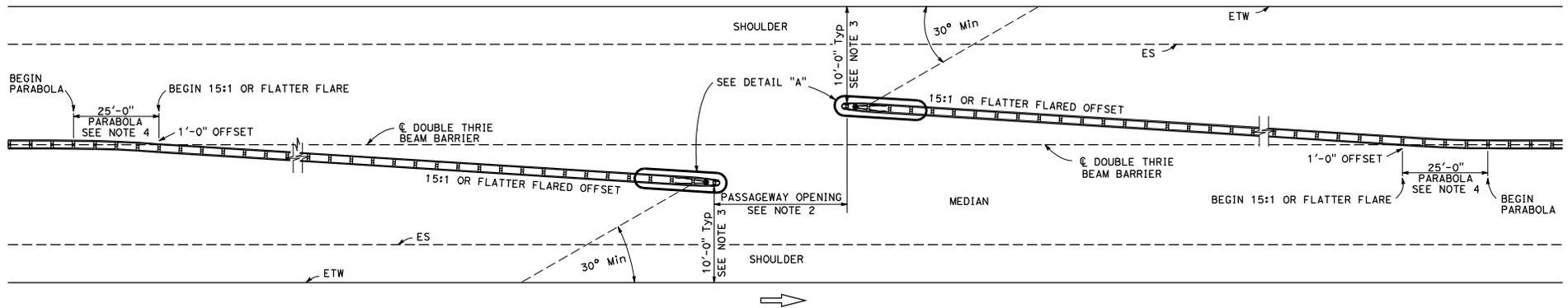
RSP A78E1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78E1
DATED MAY 20, 2011 - PAGE 99 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A78E1

2010 REVISED STANDARD PLAN RSP A78E1



ELEVATION
END ANCHOR FOR DOUBLE THRIE BEAM BARRIER
DETAIL "A"



PLAN
EMERGENCY PASSAGWAY
IN THRIE BEAM BARRIER

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

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

PROFESSIONAL ENGINEER
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

NOTES:

1. For End Anchor Assembly (Type CA) details, see Revised Standard Plan RSP A77T1.
2. The typical passageway opening for motorcycles is 6'-0" to 8'-0". Generally, motorcycle passageways are not used where median width is less than 22'-0". The typical passageway opening for motor vehicles is 12'-0" to 16'-0". Generally, motor vehicle passageways are not used where median width is 32'-0" or less. See Project Plans for width of passageway opening.
3. Barrier end offsets from edge of traveled way vary depending on type of highway facility involved. End offsets other than 10'-0" will be shown on the Project Plans.
4. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77P1.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DOUBLE THRIE BEAM BARRIER
EMERGENCY PASSAGWAY
AND END ANCHOR
ASSEMBLY DETAILS

NO SCALE

RSP A78E2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78E2
DATED MAY 20, 2011 - PAGE 100 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A78E2

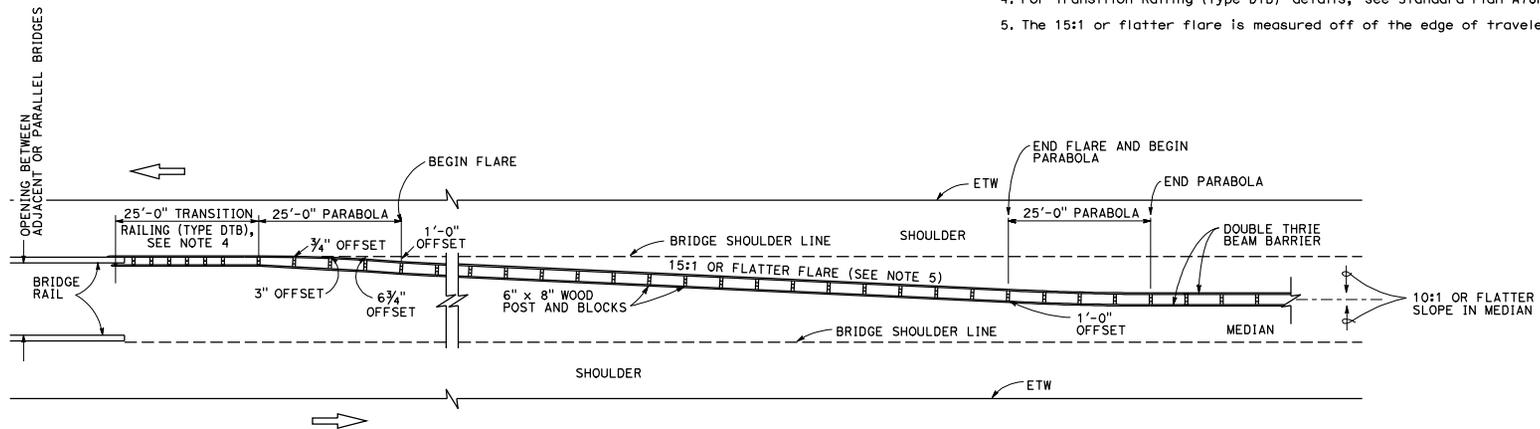
2010 REVISED STANDARD PLAN RSP A78E2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
No. C50200 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA					
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TO ACCOMPANY PLANS DATED _____

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A78A, A78B and A78C1 and Revised Standard Plan RSP A78C2.
2. 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'-10" wood blocks. (W6 x 8.5 or W6 x 9) steel posts, 6'-8" in length, with 6" x 8" x 1'-10" 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'-10" wood blocks where applicable and when specified.
4. For Transition Railing (Type DTB) details, see Standard Plan A78K.
5. The 15:1 or flatter flare is measured off of the edge of traveled way.



TYPE 25A CONNECTION LAYOUT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**THRIE BEAM BARRIER
TYPICAL LAYOUT
FOR CONNECTION TO
BRIDGE RAILING**
NO SCALE

RSP A78H DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A78H
DATED MAY 20, 2011 - PAGE 105 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP A78H

2010 REVISED STANDARD PLAN RSP A78H

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

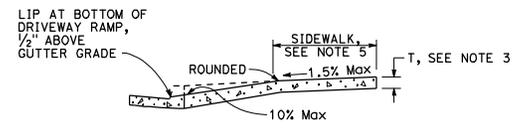
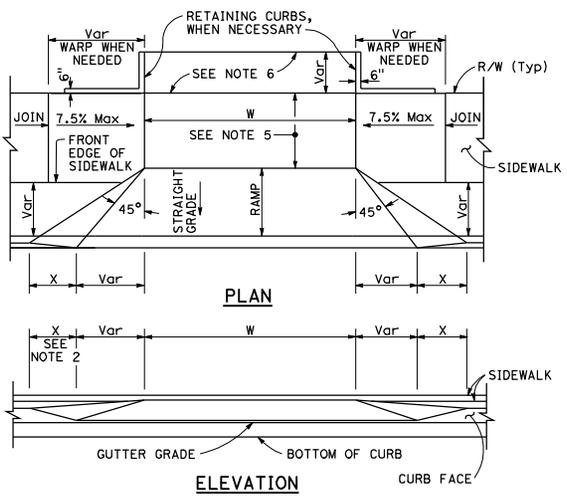
REGISTERED CIVIL ENGINEER
 Michael Janzen
 No. 44788
 Exp. 03-31-14
 CIVIL ENGINEER
 STATE OF CALIFORNIA

July 19, 2013
 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.

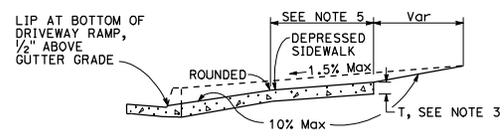
TO ACCOMPANY PLANS DATED _____

CURB QUANTITIES

TYPE	CUBIC YARDS PER LINEAR FOOT
A1-6	0.02585
A1-8	0.03084
A2-6	0.05903
A2-8	0.06379
A3-6	0.01036
A3-8	0.01435
B1-4	0.02185
B1-6	0.02930
B2-4	0.05515
B2-6	0.06171
B3-4	0.00641
B3-6	0.01074
B4	0.05709
D-4	0.04083
D-6	0.06804
E	0.06661



CASE A
Typical driveway, sidewalk not depressed



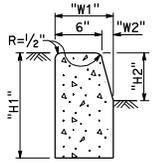
CASE B
Driveway with depressed sidewalk

SECTIONS

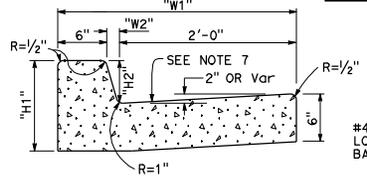
TABLE A

CURB TYPE	DIMENSIONS			
	"H1"	"H2"	"W1"	"W2"
A1-6	1'-2"	6"	7 1/2"	1 1/2"
A1-8	1'-4"	8"	8"	2"
A2-6	1'-0"	6"	2'-7 1/2"	1 1/2"
A2-8	1'-2"	8"	2'-8"	2"
A3-6	6"	5"	7 1/4"	1 1/4"
A3-8	8"	7"	7 3/4"	1 3/4"
B1-4	1'-0"	4"	7 1/2"	2 1/2"
B1-6	1'-2"	6"	9"	4"
B2-4	10"	4"	2'-7 1/2"	2 1/2"
B2-6	1'-0"	6"	2'-9"	4"
B3-4	4"	3"	7"	2"
B3-6	6"	5"	8 1/2"	3 1/2"
D-4	10"	4"	1'-6"	1'-1"
D-6	1'-0"	6"	2'-2"	1'-9"

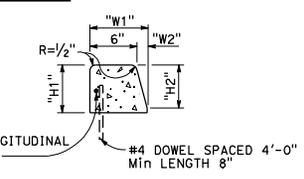
DRIVEWAYS



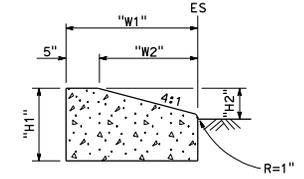
TYPE A1 CURBS
See Table A



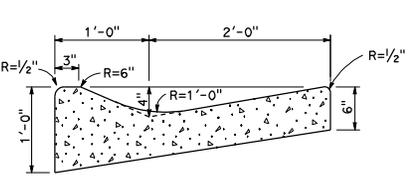
TYPE A2 CURBS
See Table A



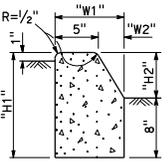
TYPE A3 CURBS
Superimposed on existing pavement
See Table A



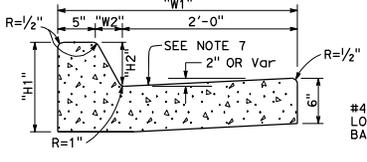
TYPE D CURBS
See Table A



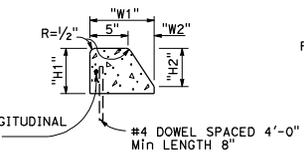
TYPE E CURB



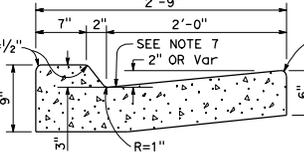
TYPE B1 CURBS
See Table A



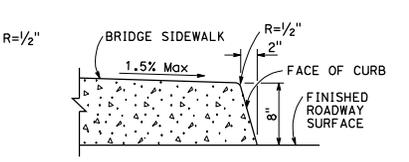
TYPE B2 CURBS
See Table A



TYPE B3 CURBS
Superimposed on existing pavement
See Table A



TYPE B4 CURBS



TYPE H CURB
On Bridges

CURBS

- NOTES:**
- Case A driveway section typically applies.
 - X=3'-0" except for curb heights over 10" where 4:1 slopes shall be used on curb slope.
 - Sidewalk and ramp thickness "T" at driveway shall be 4" for residential and 6" for commercial.
 - Difference in slope of the driveway ramp and the slope of a line between the gutter and a point on the roadway 5'-0" from gutter line shall not exceed 15%. Reduce driveway ramp slope, not gutter slope, where required.
 - Minimum width of clear passageway for sidewalk shall be 4'-2".
 - Retaining curbs and acquisition of construction easement may be necessary for narrow sidewalks or curb heights in excess of 6".
 - Across the pedestrian route at curb ramp locations, the gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.

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CURBS AND DRIVEWAYS

NO SCALE

RSP A87A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A87A
DATED MAY 20, 2011 - PAGE 119 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A87A

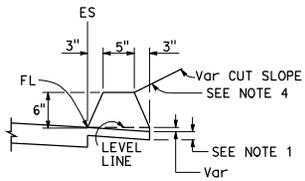
2010 REVISED STANDARD PLAN RSP A87A

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

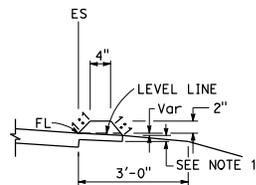
REGISTERED CIVIL ENGINEER
 Michael Janzen
 No. 44788
 Exp. 03-31-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

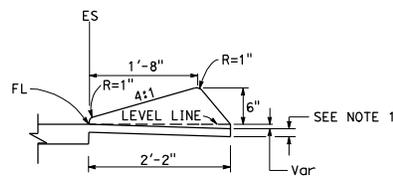
TO ACCOMPANY PLANS DATED _____



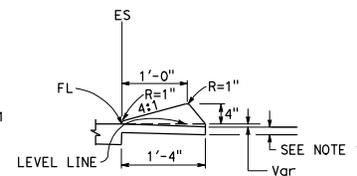
TYPE A
See Note 3



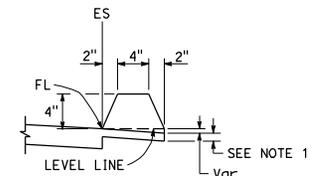
TYPE C



TYPE D

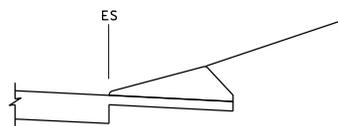


TYPE E

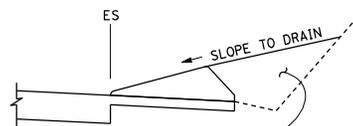


TYPE F
See Note 5

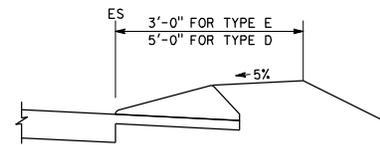
DIKES



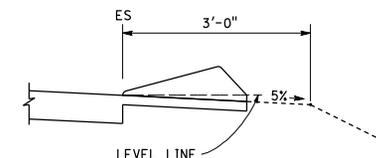
CASE C-1
Cut Slope



CASE C-2
Cut Slope



CASE F



CASE R
See Note 2

TYPE D AND E BACKFILL DETAILS

NOTES:

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

DIKE QUANTITIES

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

Quantities based on 5% cross slope.

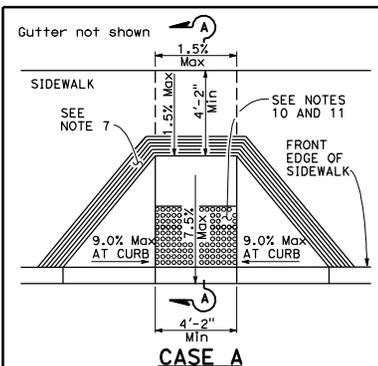
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

HOT MIX ASPHALT DIKES

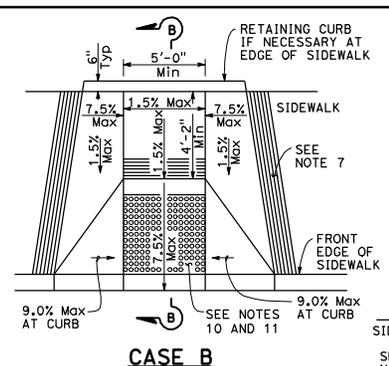
NO SCALE

RSP A87B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A87B
DATED MAY 20, 2011 - PAGE 120 OF THE STANDARD PLANS BOOK DATED 2010.

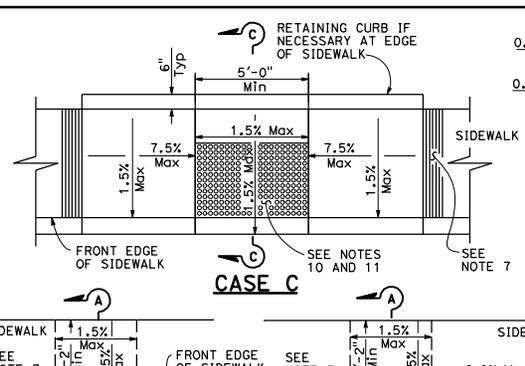
REVISED STANDARD PLAN RSP A87B



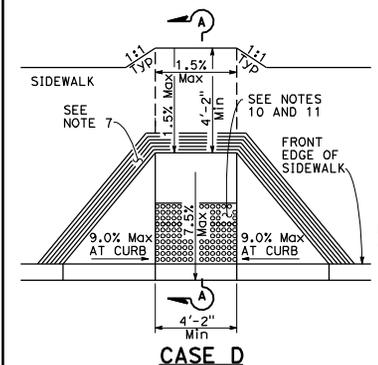
CASE A



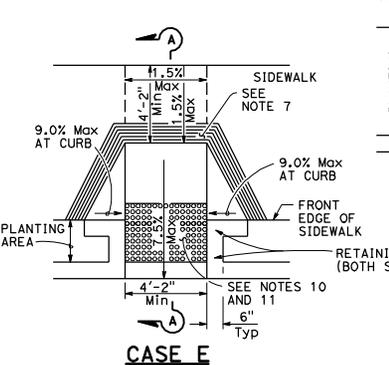
CASE B



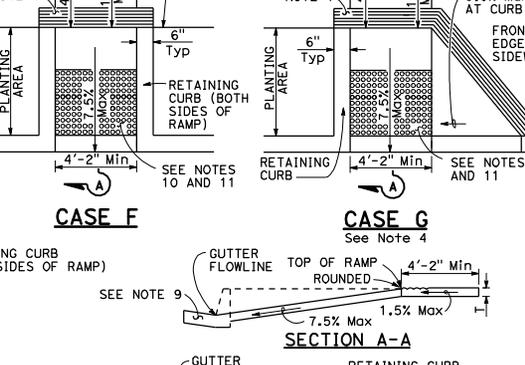
CASE C



CASE D

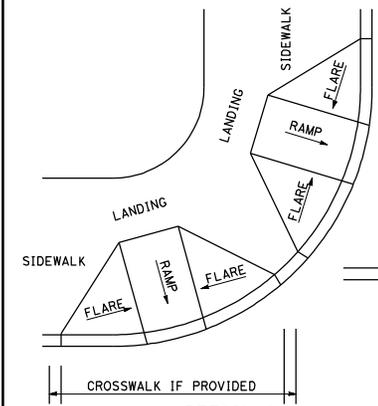


CASE E

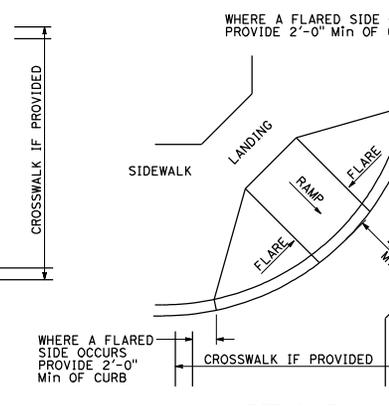


CASE F

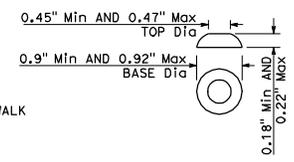
CASE G



**DETAIL A
TYPICAL TWO-RAMP
CORNER INSTALLATION**
See Note 1



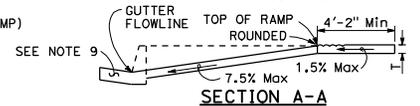
**DETAIL B
TYPICAL ONE-RAMP
CORNER INSTALLATION**
See Notes 1 and 3



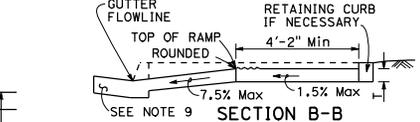
RAISED TRUNCATED DOME

NOTES:

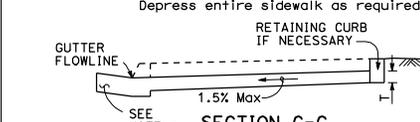
- As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
- If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" (or) form (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
- When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
- As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
- If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-2".
- Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
- The curb ramp shall be outlined, as shown, with a 1'-0" wide border with 1/4" grooves approximately 3/4" on center. See grooving detail.
- Transitions from ramps and landing to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
- Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24" inches of the curb ramp shall not be steeper than 1:20 (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
- Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable Warning Surfaces shall conform to the details on this plan and the requirements in the Standard Specifications.
- The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
- Sidewalk and ramp thickness, "T", shall be 3/2" minimum.
- Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
- Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.



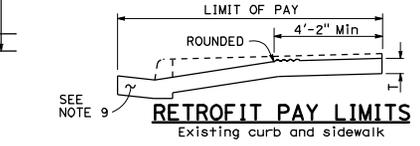
SECTION A-A



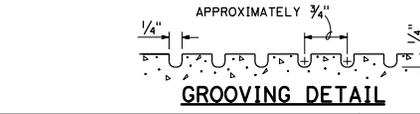
SECTION B-B



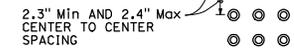
SECTION C-C



RETROFIT PAY LIMITS
Existing curb and sidewalk



GROOVING DETAIL



**RAISED TRUNCATED DOME PATTERN (IN-LINE)
DETECTABLE WARNING SURFACE**
See Note 10

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

RSP A88A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A88A DATED MAY 20, 2011 - PAGE 121 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A88A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

H. David Cordova
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

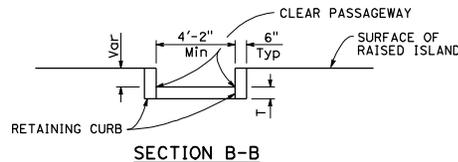
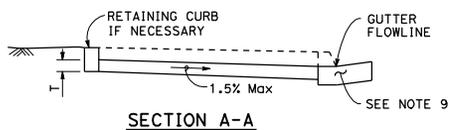
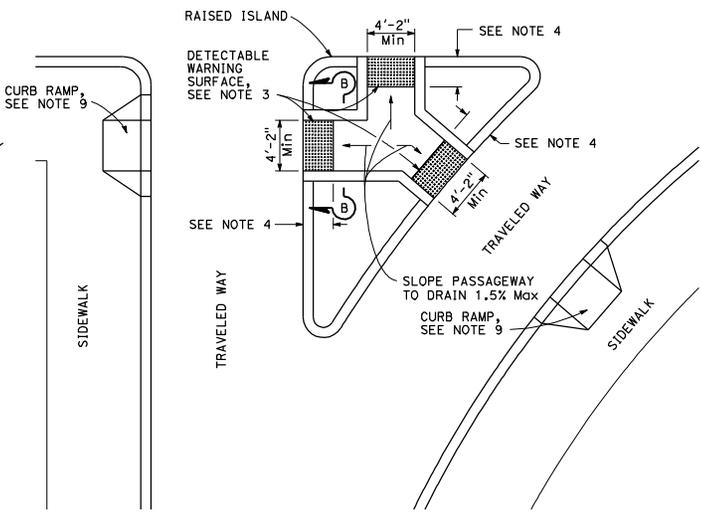
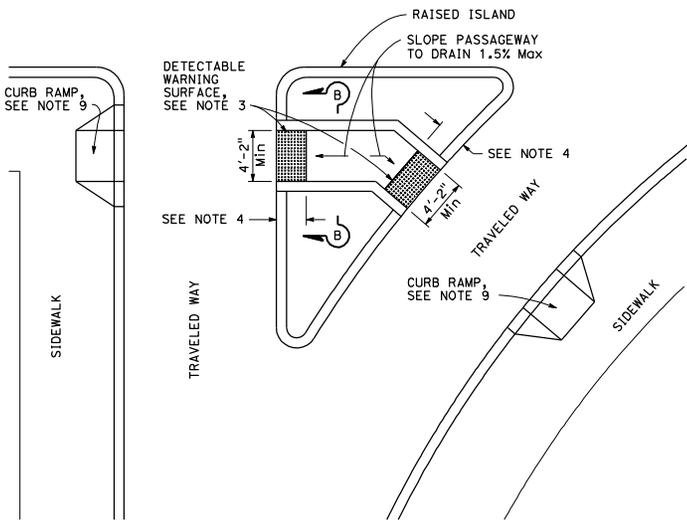
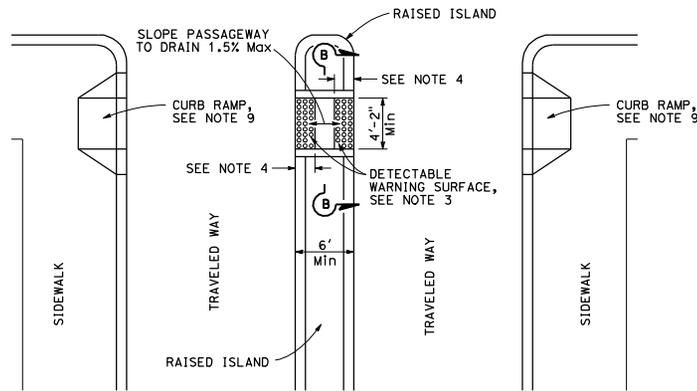
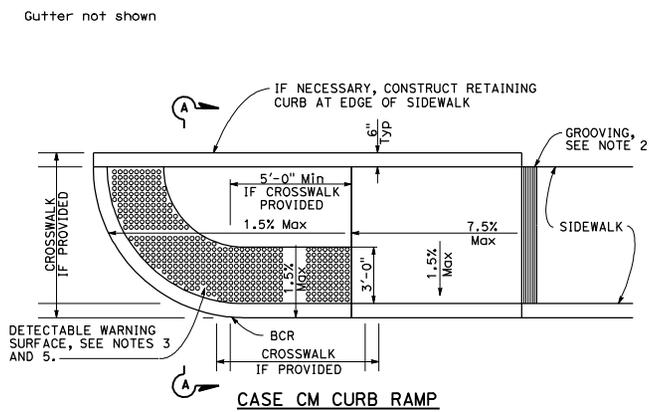
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HECTOR DAVID CORDOVA
REGISTERED PROFESSIONAL ENGINEER
No. C41957
Exp. 3-31-14
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

2010 REVISED STANDARD PLAN RSP A88A

Gutter not shown



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

H. David Cordova
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

Hector David Cordova
No. C41957
Exp. 3-31-14
CIVIL
STATE OF CALIFORNIA

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NOTES:

1. Sidewalk, ramp and passageway thickness, "T", shall be 3/2" minimum.
2. For details of grooving used with Case CM curb ramp, see Revised Standard Plan RSP A88A.
3. For details of detectable warning surfaces, see Revised Standard Plan RSP A88A.
4. Where an island passageway length is greater than or equal to 6'-0", but less than 8'-0", each detectable warning surface shall extend the full width and 2'-0" depth of the passageway length. Where an island passageway length is greater than or equal to 8'-0", each detectable warning surface shall extend the full width and 3'-0" depth of the passageway length.
5. For Case CM curb ramp, the edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
6. Transitions from ramps to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
7. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
8. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.
9. For additional curb ramp details, see Revised Standard Plan RSP A88A.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CURB RAMP AND ISLAND PASSAGEWAY DETAILS

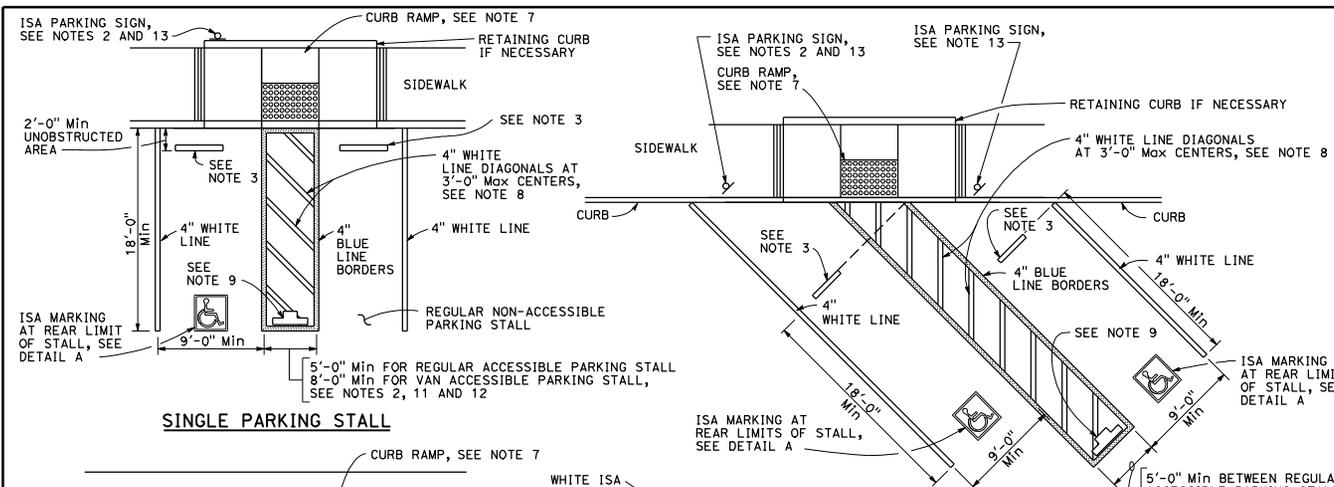
NO SCALE

RSP A88B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A88B DATED MAY 20, 2011 - PAGE 122 OF THE STANDARD PLANS BOOK DATED 2010.

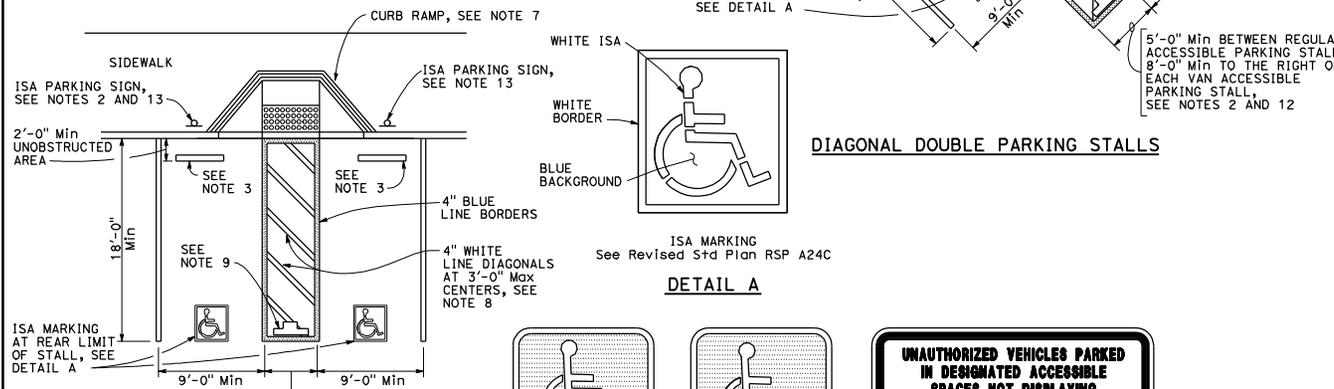
REVISED STANDARD PLAN RSP A88B

2010 REVISED STANDARD PLAN RSP A88B

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
July 19, 2013 PLANS APPROVAL DATE THE STATE OF CALIFORNIA ON ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.				



SINGLE PARKING STALL



DIAGONAL DOUBLE PARKING STALLS



DETAIL A



DOUBLE PARKING STALL

TABLE A

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



SIGN R99 (CA)



SIGN R99C (CA)
See Note 6



SIGN R100B (CA)
See Note 10



SIGN R7-8b
See Notes 2 and 6



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

NOTES:

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

LEGEND

ISA = International Symbol of Accessibility

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**ACCESSIBLE PARKING
OFF-STREET
NO SCALE**

RSP A90A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A90A DATED MAY 20, 2011 - PAGE 123 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A90A

OFF-STREET PARKING SIGNS

(Parking lot or garage)
See Note 6

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

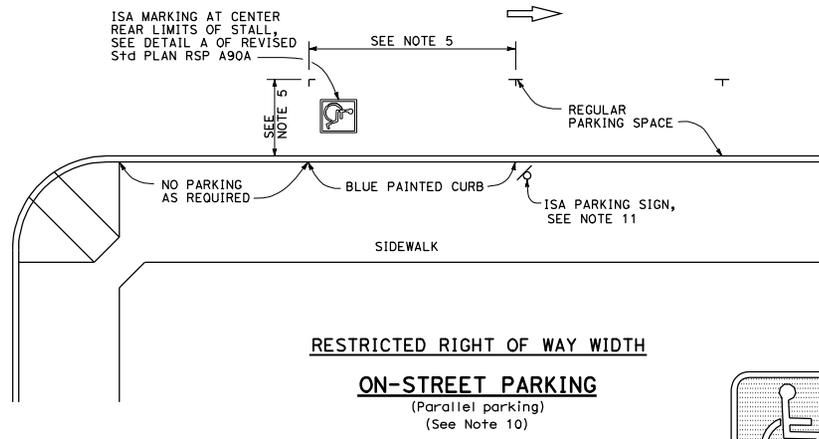
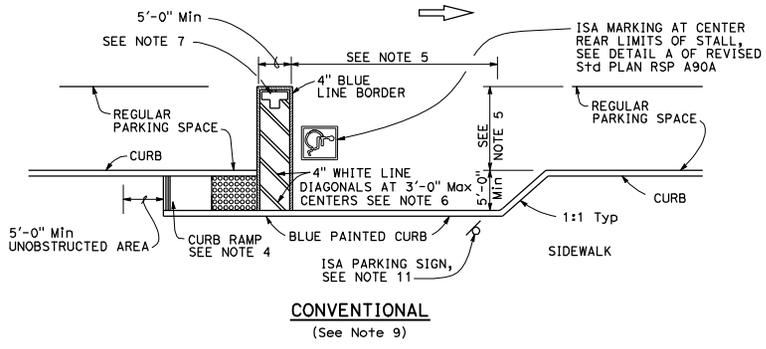
H. David Cordova
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

Hector David Cordova
No. C41957
Exp. 3-31-14
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 _____



**NO
PARKING**

PAVEMENT MARKING
See Note 7



NOTES:

- Parking spaces shall be so located that persons with disabilities are not compelled to wheel or walk behind parked vehicles other than their own.
- Surface slopes of accessible on-street parking spaces shall be the minimum feasible.
- Where Plaque R99B (CA) or Sign R99C (CA) are installed, the bottom of the sign or plaque panel shall be a minimum of 7'-0" above the surrounding surface.
- Curb ramps shall conform to the details shown on Revised Standard Plan RSP A88A.
- Accessible on-street parking spaces shall not be smaller in length or width than that specified by the local jurisdiction for other parking spaces, but not less than 20'-0" in length and not less than 8'-0" in width.
- Blue paint, instead of white may be used for marking accessibility aisles in areas where snow may cause white markings to not be visible.
- 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. See Revised Standard Plan RSP A24E for square foot area for painting the words "NO PARKING".
- There shall be no obstructions on the sidewalk adjacent to and for the full length of the parking space, except for the ISA parking sign shown.
- The Conventional detail should be the primary choice of accessible on-street parking. However, if the sidewalk lacks adequate space to construct a standard curb ramp, the Restricted Right of Way detail should be used.
- If the Restricted Right of Way width detail is selected and it conflicts with a bus stop or other uses, this detail may apply to the other end of the block.
- Accessible Parking Only Sign shall be Sign R99C (CA) or Sign R99 (CA) with Plaque R99B (CA).

LEGEND

ISA = International Symbol of Accessibility

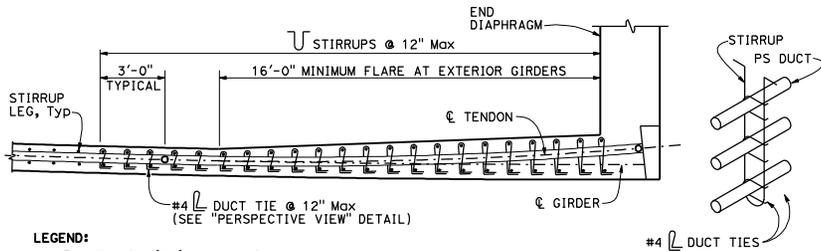
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**ACCESSIBLE PARKING
ON-STREET**

NO SCALE

RSP A90B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A90B
DATED MAY 20, 2011 - PAGE 124 OF THE STANDARD PLANS BOOK DATED 2010.

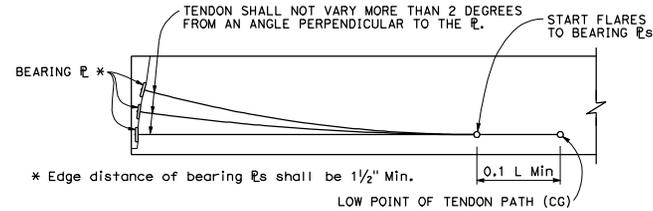
REVISED STANDARD PLAN RSP A90B

2010 REVISED STANDARD PLAN RSP A90B

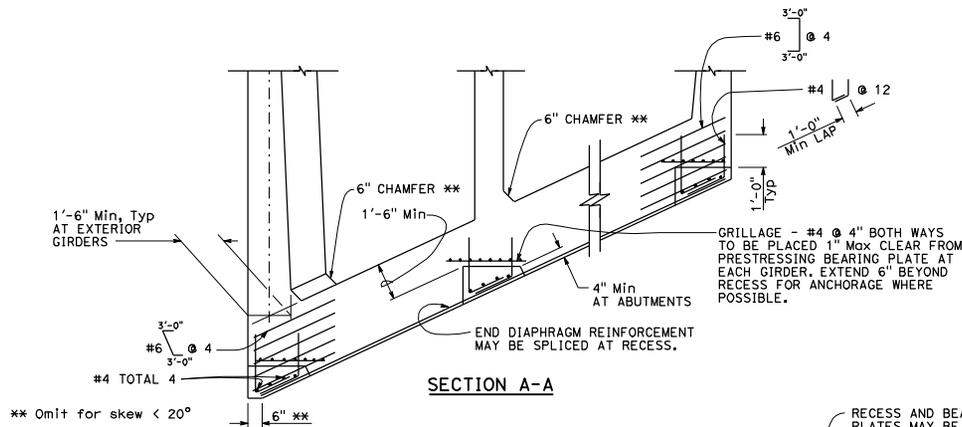


LEGEND:
 ○ - Denotes beginning or end of tendon horizontal angle change (BC, EC or PCC)

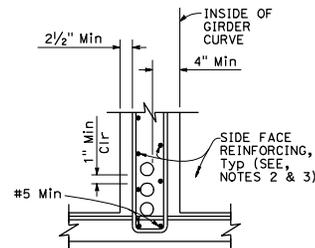
PLAN
DUCT TIES AT TENDON HORIZONTAL ANGLE CHANGES
DETAIL 5-1



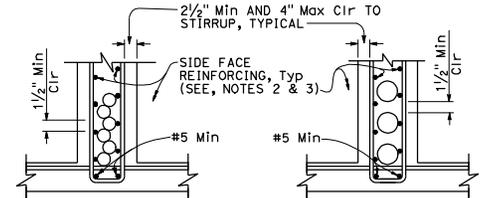
ELEVATION - BEARING PLATE AND PRESTRESSING PATH
DETAIL 5-2



PRESTRESS ANCHORAGE DETAILS
AT END DIAPHRAGMS
DETAIL 5-3



DUCTS 4 1/2" OD AND LESS
FOR HORIZONTAL CURVE
RADIUS ≤ 2000'



DUCTS 4 1/2" OD AND LESS
DUCTS OVER 4 1/2" OD

CLEARANCE REQUIREMENTS FOR DUCTS
DETAIL 5-4

NOTES FOR DETAIL 5-4:

1. Stirrups may also be used.
2. For additional details, see Standard Plan B7-1, and Project Plans.
3. Bar reinforcing which interferes with prestressing ducts may be adjusted as approved by the Engineer.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE
POST-TENSIONED GIRDER DETAILS
 NO SCALE

RSP B8-5 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B8-5
 DATED MAY 20, 2011 - PAGE 291 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP B8-5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

REGISTERED CIVIL ENGINEER
 Marc Friedheim
 No. C57968
 Exp. 6-30-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

NOTES FOR DETAIL 5-1

1. Tendon horizontal angle change at end diaphragm shown. Duct tie placement similar for other locations where tendon horizontal angle changes occur. For curved girders place duct ties at tendon angle changes where tendon radius is smaller than tendon radius.
2. Adjacent duct ties may be staggered to facilitate placement if stirrup spacing is less than 12 inches.
3. Place closed end of duct ties toward inside of tendon curve.
4. Wrap duct ties around both stirrup legs.
5. Individual duct ties may only be used to anchor one duct.

2010 REVISED STANDARD PLAN RSP B8-5

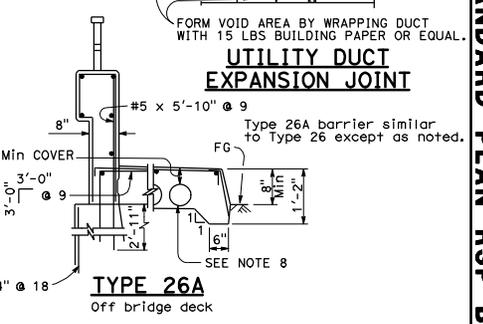
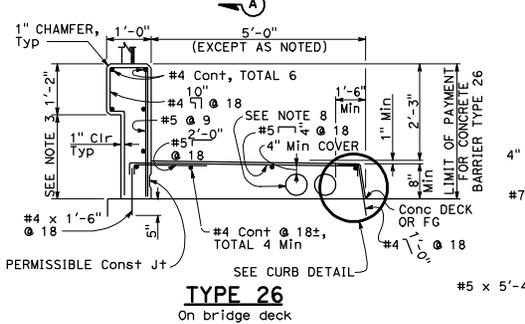
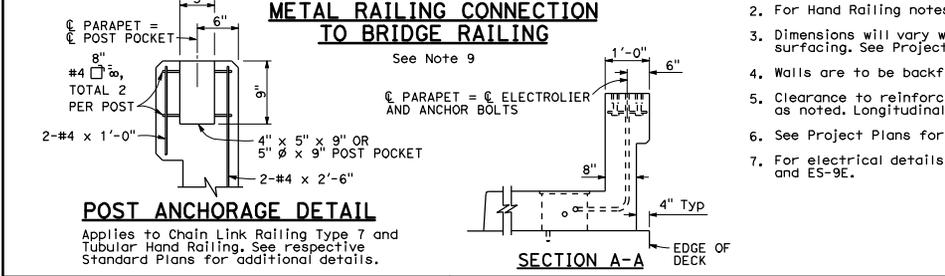
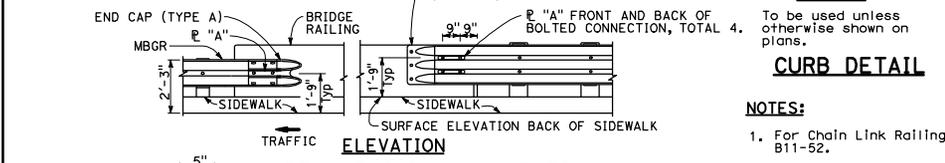
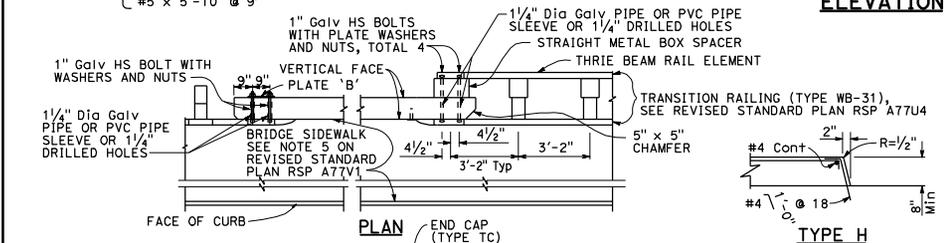
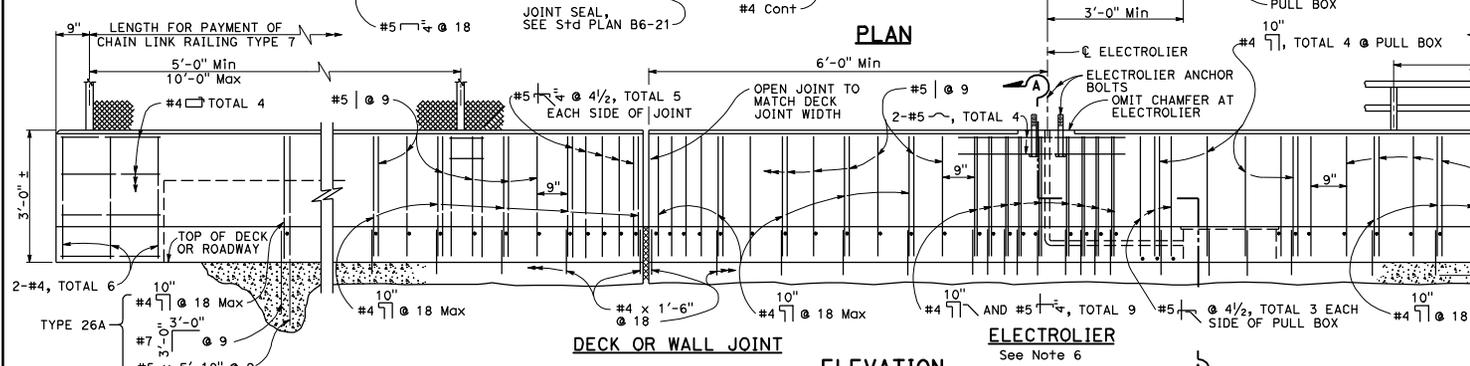
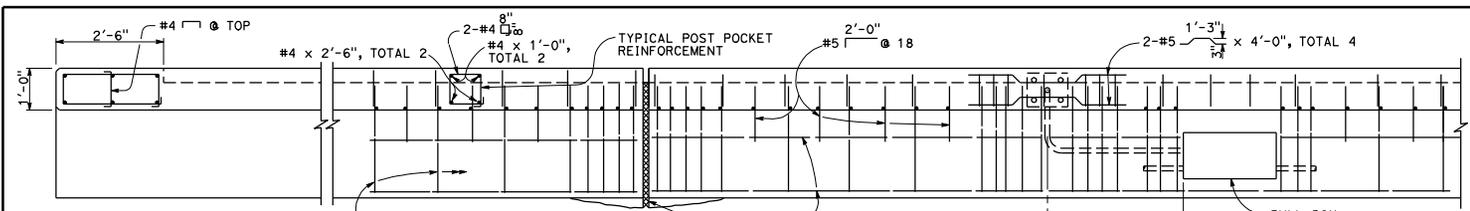
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

Tillot Satter
No. C42892
Exp. 3-31-14
CIVIL
STATE OF CALIFORNIA

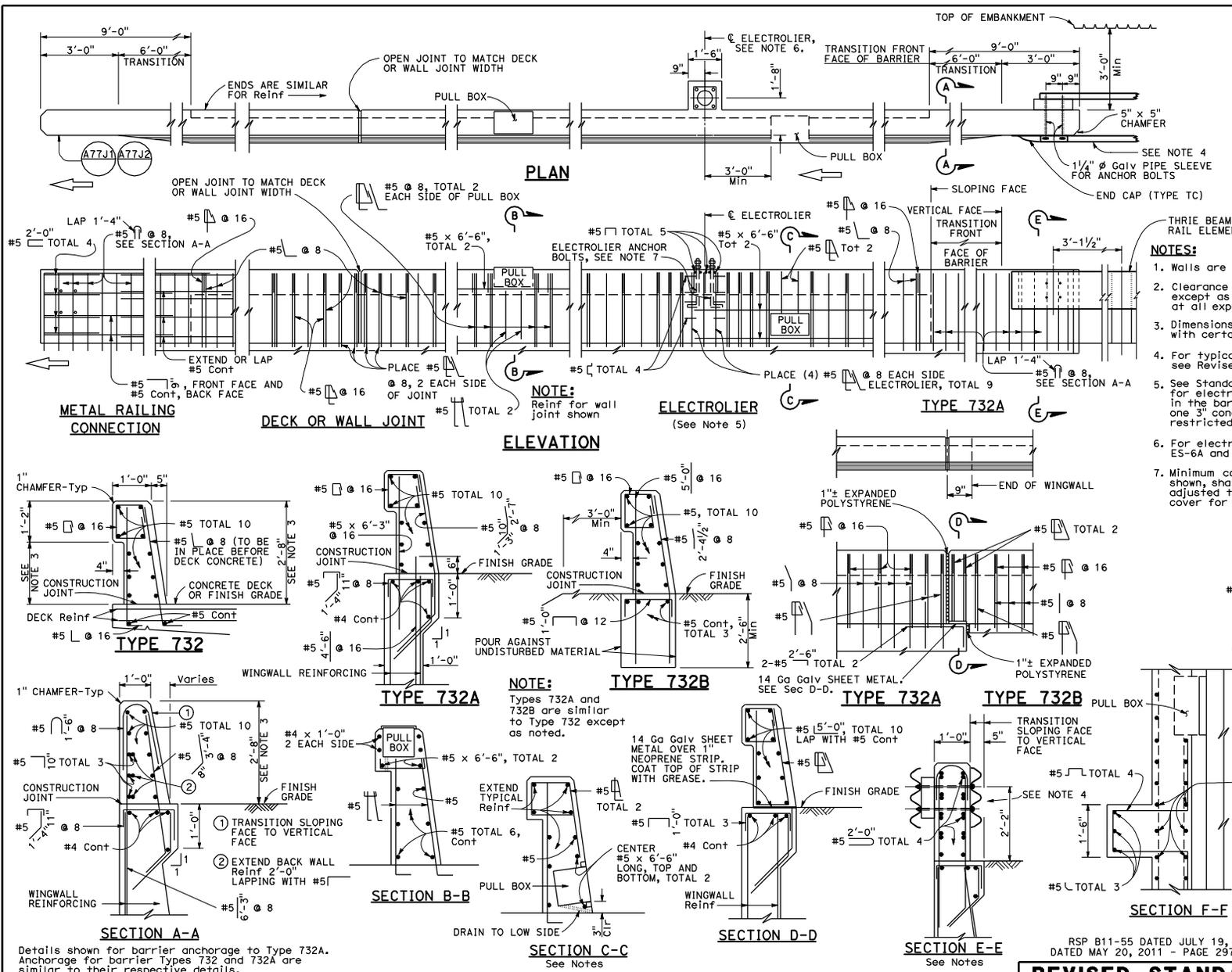
THE STATE OF CALIFORNIA ON ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



- NOTES:**
- For Chain Link Railing notes and details not shown, see Standard Plan B11-52.
 - For Hand Railing notes and details not shown, see Standard Plan B11-51.
 - Dimensions will vary with cross slope and with certain thicknesses of surfacing. See Project Plans.
 - Walls are to be backfilled before railing is placed.
 - Clearance to reinforcing steel in curb and railing to be 1" except as noted. Longitudinal reinforcement to stop at all expansion joints.
 - See Project Plans for electrolier locations and pull box type.
 - For electrical details, see Standard Plans ES-9A, ES-9B, ES-9C, ES-9D, and ES-9E.
 - A maximum of five - 4" and a minimum of two - 4" round openings for future utilities. Openings are to be sealed at ends and extended 8' minimum past end of sidewalk if not used. Duct forms are to be tied down. Minimum of 6" from face of rail to utility opening.
 - For typical metal railing connection details not shown, see Revised Standard Plans RSP A77K1 and RSP A77K2.
 - This barrier is to be used only for speeds of 45 MPH or less. For speeds greater than 45 MPH, pedestrians should be protected by a separation traffic barrier.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONCRETE BARRIER TYPE 26
NO SCALE

RSP B11-54 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B11-54 DATED MAY 20, 2011 - PAGE 296 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP B11-54



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

REGISTERED CIVIL ENGINEER
 Tiliot Sattler
 No. C42892
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

- TO ACCOMPANY PLANS DATED _____
- NOTES:**
- Walls are to be backfilled before barrier is placed.
 - Clearance to reinforcing steel in barrier to be 1", except as noted. Longitudinal reinforcement to stop at all expansion joints.
 - Dimensions may vary with roadway cross slope and with certain thickness of surfacing. See Project Plans.
 - For typical metal railing connection details not shown, see Revised Standard Plans RSP A77U1 and RSP A77U2.
 - 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.
 - For electrolier mounting details, See Standard Plans ES-6A and ES-6B.
 - Minimum concrete edge distance, to the reinforcing shown, shall be maintained. Edge distance may be adjusted to accommodate increase in concrete cover for architectural treatment.

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

RSP B11-55 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B11-55 DATED MAY 20, 2011 - PAGE 297 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP B11-55

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

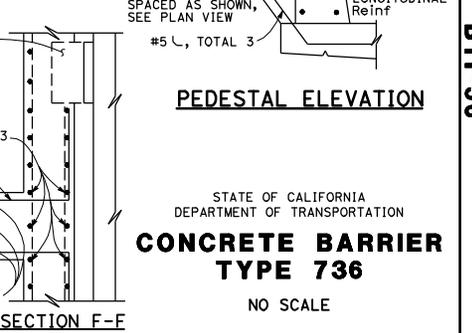
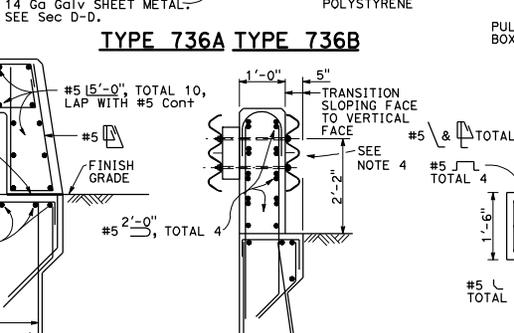
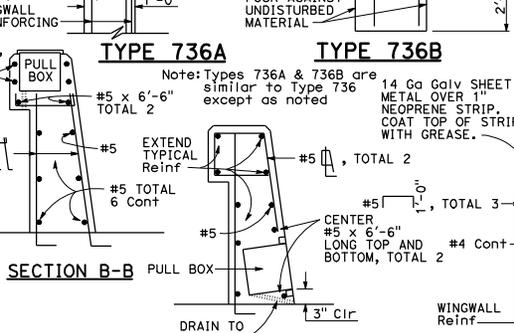
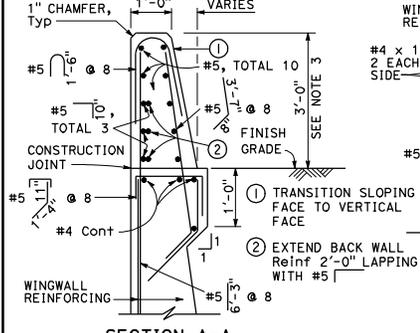
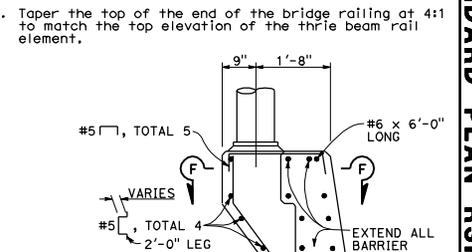
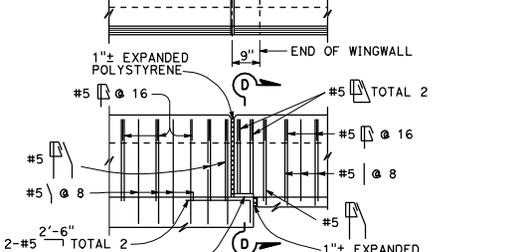
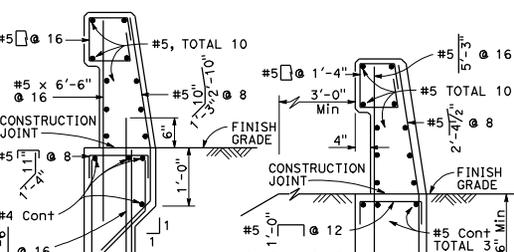
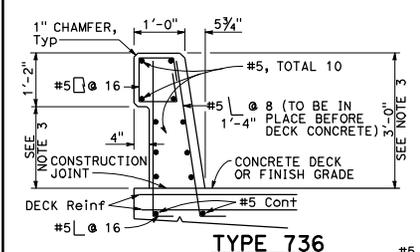
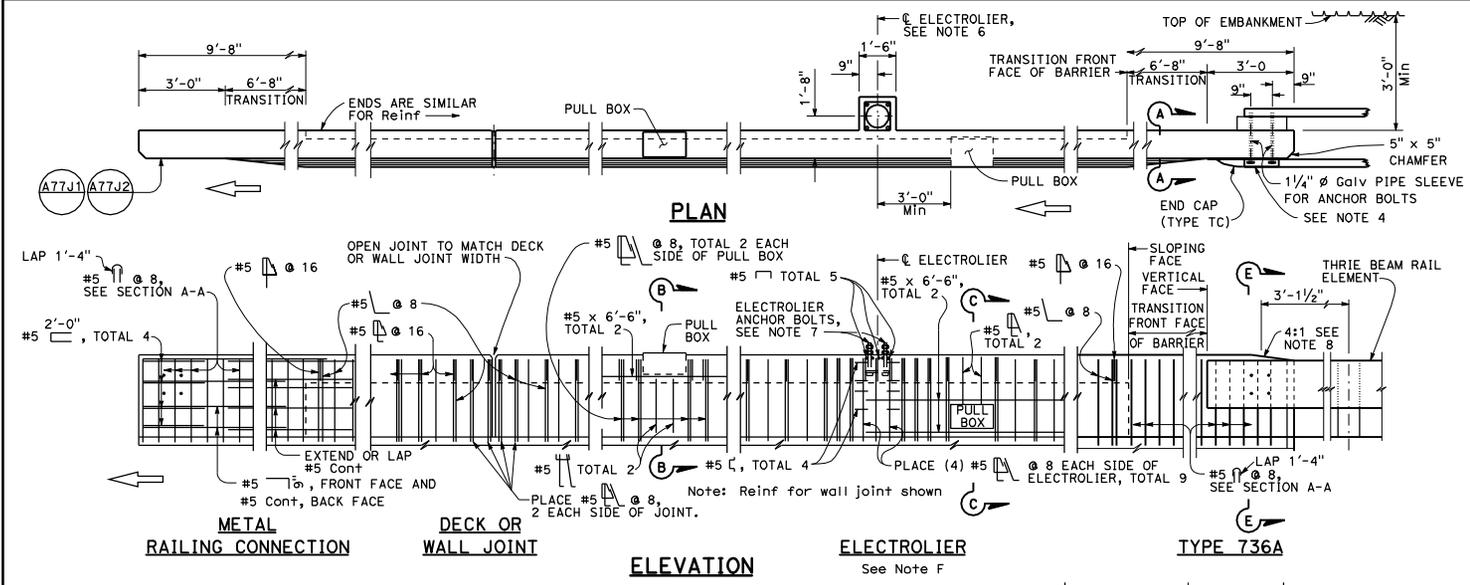
REGISTERED CIVIL ENGINEER	
July 19, 2013	
PLANS APPROVAL DATE	
<small>THE STATE OF CALIFORNIA AND ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>	

TO ACCOMPANY PLANS DATED _____

NOTES:

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

2010 REVISED STANDARD PLAN RSP B11-56



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

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

14 Ga Galv SHEET METAL OVER 1" NEOPRENE STRIP. COAT TOP OF STRIP WITH GREASE.

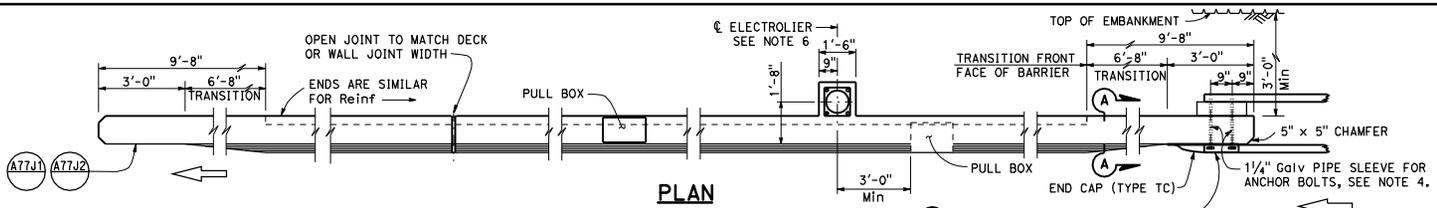
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**CONCRETE BARRIER
TYPE 736**
NO SCALE

RSP B11-56 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B11-56 DATED MAY 20, 2011 - PAGE 298 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP B11-56

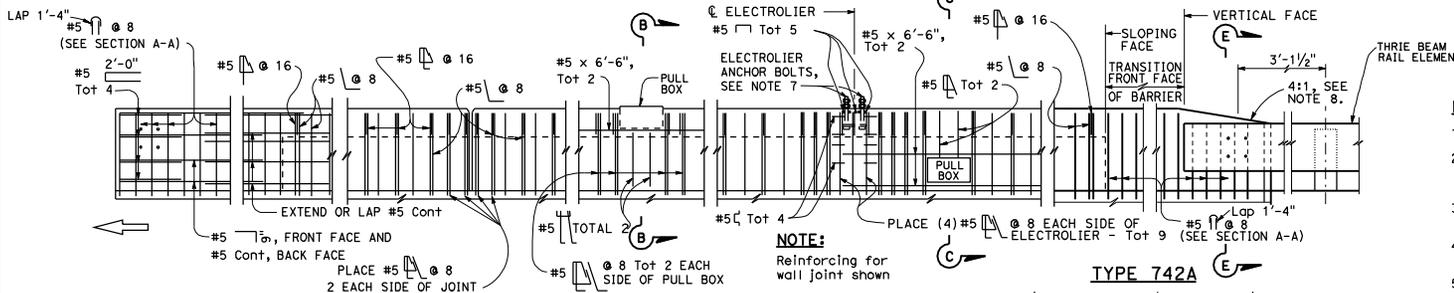
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER	
Tillot Satter	
No. C42892	
PLANS APPROVAL DATE	
July 19, 2013	
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.	

TO ACCOMPANY PLANS DATED _____



PLAN



ELEVATION

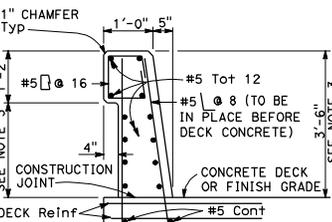
ELECTROLIER
(See Note 5)

NOTES:

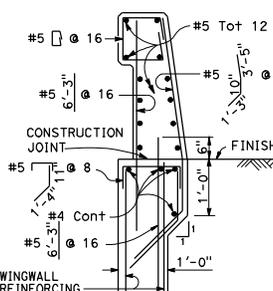
1. Walls are to be backfilled before barrier is placed.
2. Clearance to reinforcing steel in barrier to be 1", except as noted. Longitudinal reinforcement to stop at all expansion joints.
3. Dimensions may vary with roadway cross slope and with certain thickness of surfacing. See Project Plans.
4. For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

METAL RAILING CONNECTION

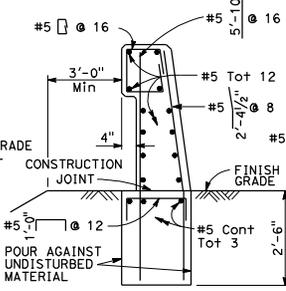
DECK OR WALL JOINT



TYPE 742

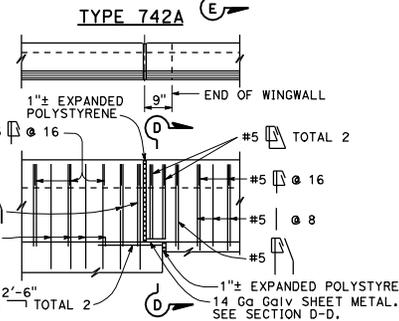


TYPE 742A

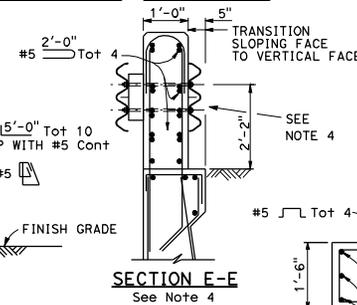


TYPE 742B

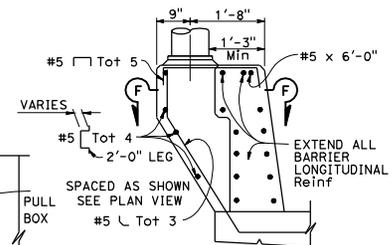
NOTE:
Types 742A & 742B are similar to Type 742 except as noted



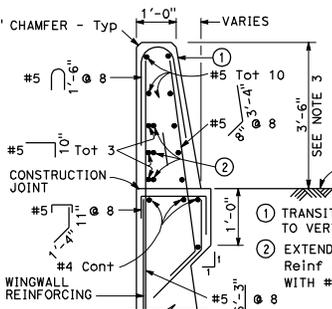
TYPE 742A TYPE 742B



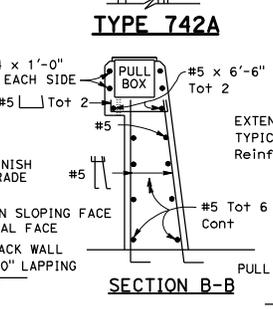
SECTION E-E
See Note 4



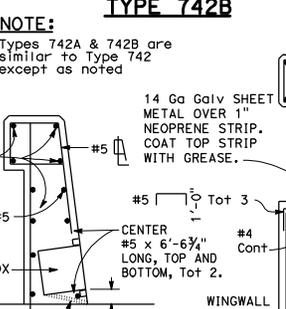
PEDESTAL ELEVATION



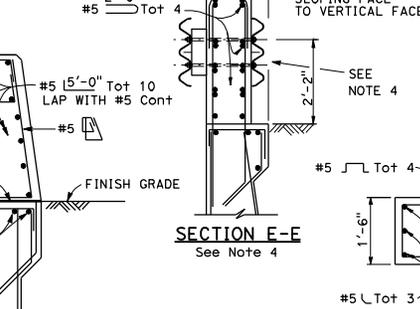
SECTION A-A



SECTION B-B



SECTION C-C
See Notes



SECTION D-D

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONCRETE BARRIER
TYPE 742
NO SCALE

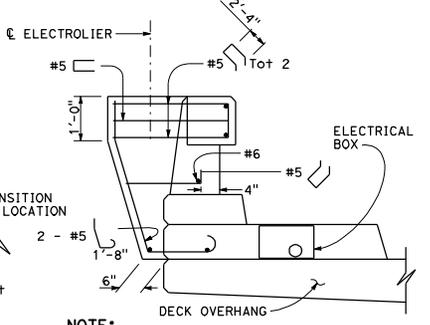
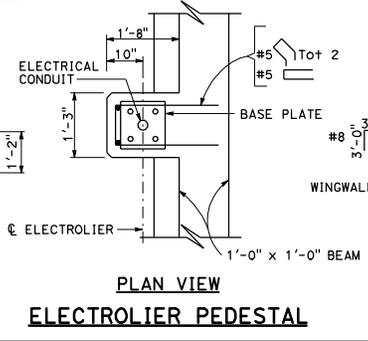
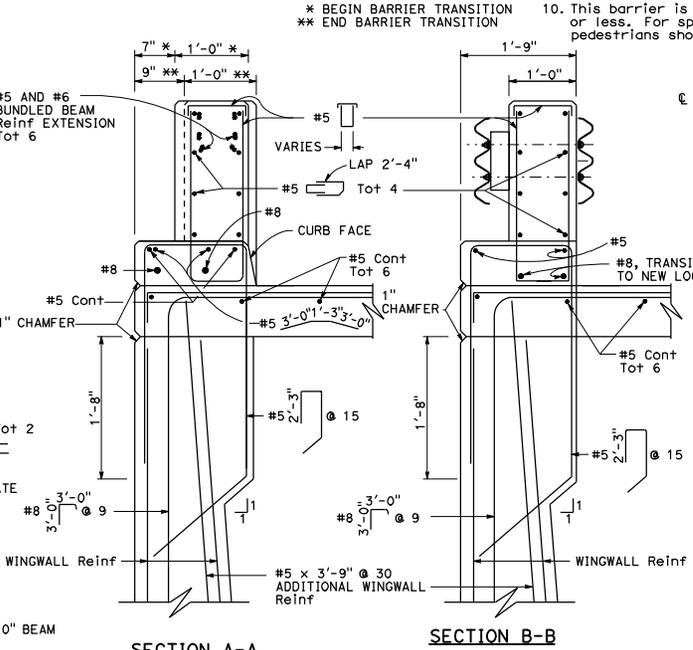
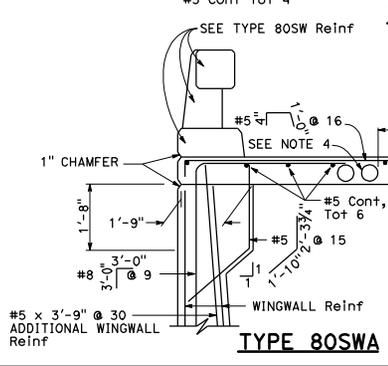
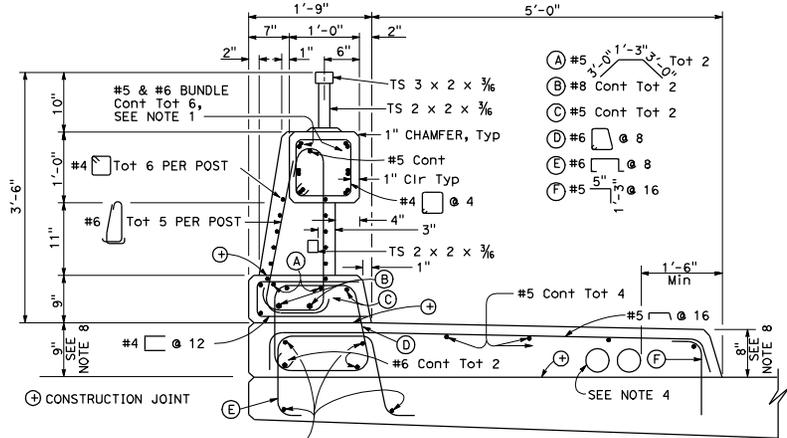
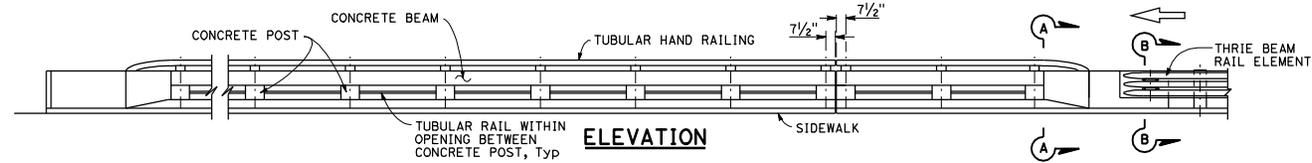
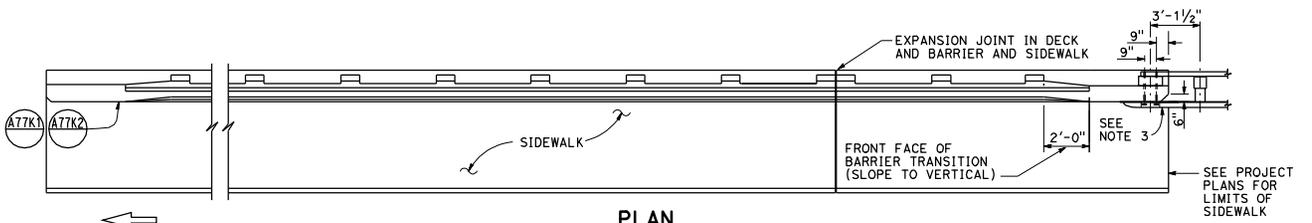
RSP B11-57 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B11-57
DATED MAY 20, 2011 - PAGE 299 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP B11-57

2010 REVISED STANDARD PLAN RSP B11-57

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

REGISTERED CIVIL ENGINEER Tiliot Satter No. C42892 Exp. 3-31-14 CIVIL STATE OF CALIFORNIA	
July 19, 2013 PLANS APPROVAL DATE	
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>	



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

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

BARRIER MODIFICATION FOR ELECTROLIER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 80SW (SHEET 1 OF 3)

NO SCALE

RSP B11-62 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B11-62 DATED MAY 20, 2011 - PAGE 302 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP B11-62

2010 REVISED STANDARD PLAN RSP B11-62

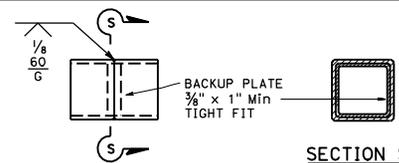
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

REGISTERED CIVIL ENGINEER
 Tiliot Satter
 No. C42892
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

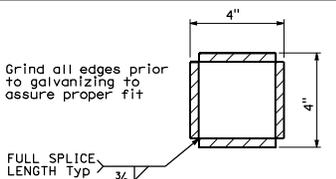
July 19, 2013
 PLANS APPROVAL DATE

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.

**SECTION S-S
 ALTERNATE TUBE WELDED SPLICE**

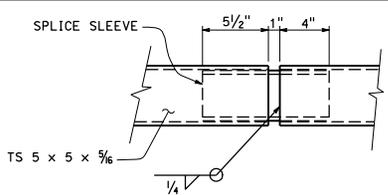


SPLICE SLEEVE

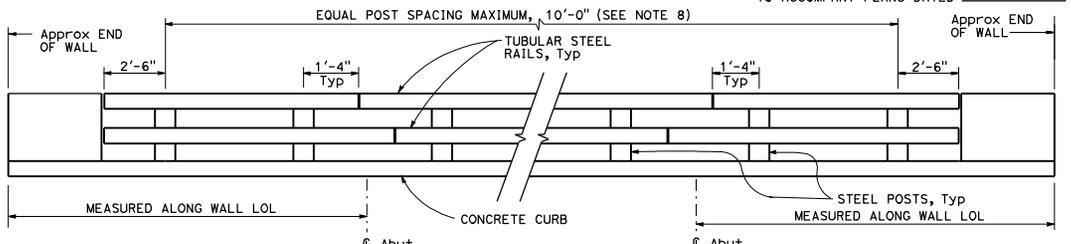


Make from 3/8" plates
 Splice to fit freely
 inside TS 5 x 5 x 3/8"

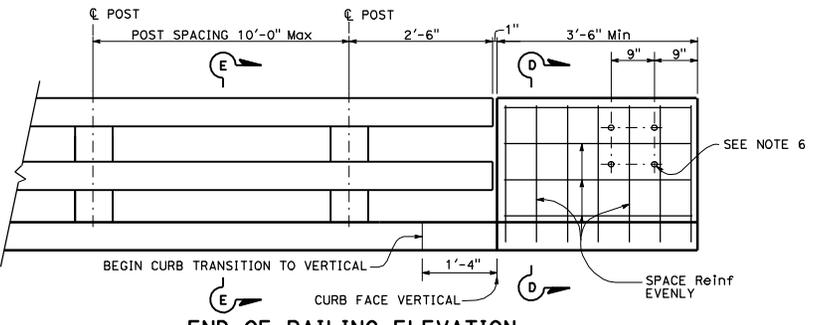
EXPANSION JOINT



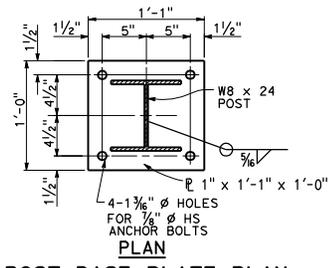
See Note 5



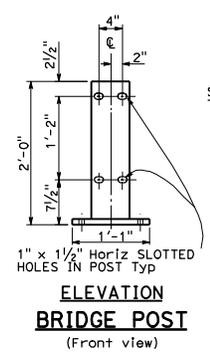
BRIDGE RAILING ELEVATION



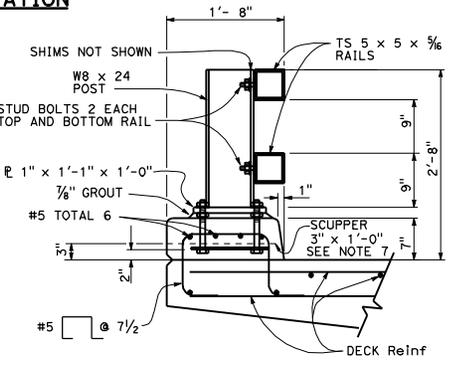
END OF RAILING ELEVATION



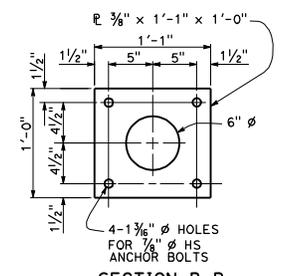
POST BASE PLATE PLAN



**ELEVATION
 BRIDGE POST
 (Front view)**



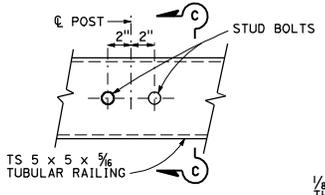
TYPICAL SECTION



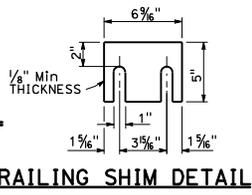
**SECTION B-B
 POST ANCHOR BOLT PLATE**



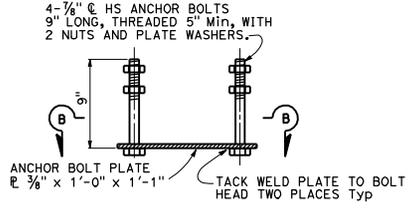
**SECTION C-C
 STUD BOLT**



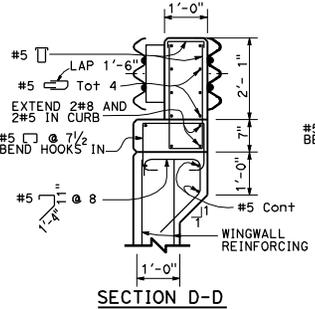
**SECTION D-D
 STUD BOLT LOCATION DETAIL
 (Backside view of railing)**



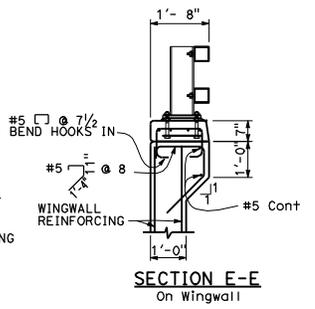
RAILING SHIM DETAIL



POST ANCHOR BOLT DETAILS



SECTION D-D



**SECTION E-E
 On Wingwall**

GENERAL NOTES:

1. Post shall be normal to railing.
2. Tubing shall be bent or fabricated to fit horizontal curve when radius is less than 895'.
3. All exposed corners shall be ground smooth.
4. Tubing shall be continuous over not less than 3 intermediate posts.
5. Expansion joints in rail tubes shall match deck expansion joints.
6. For typical metal railing connection details not shown, see Revised Standard Plans RSP A77U1 and RSP A77U2.
7. If required, place scuppers midway between rail posts near centerline spans. Adjust reinforcing spacing to clear openings.
8. Post spacing and/or end block length to be adjusted to fit bridge length or approach slab.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CALIFORNIA ST-30
 BRIDGE RAIL**
 NO SCALE

RSP B11-65 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B11-65 DATED MAY 20, 2011 - PAGE 305 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP B11-65

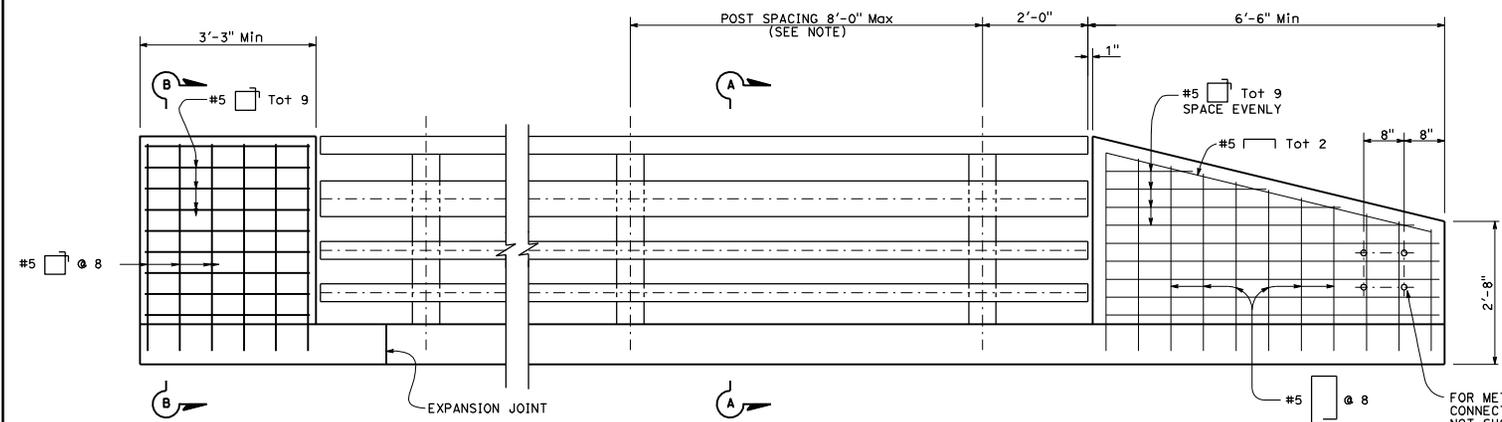
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER
 Tiliot Satter
 No. C42892
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

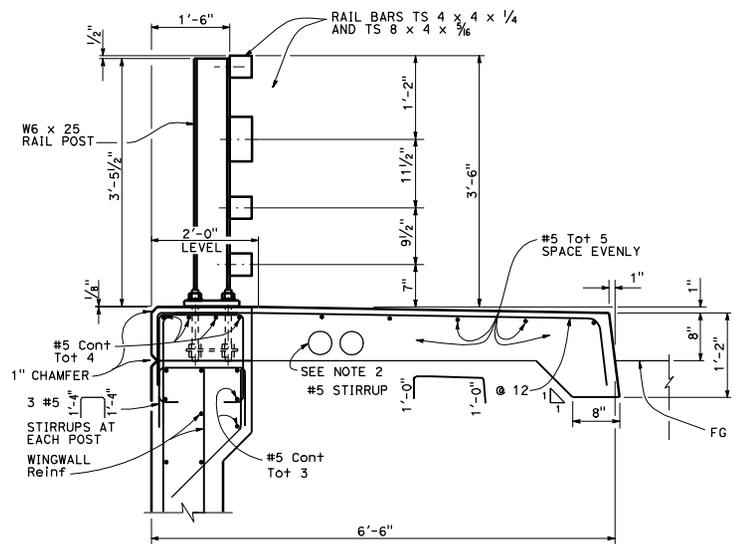
July 19, 2013
 PLANS APPROVAL DATE

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.

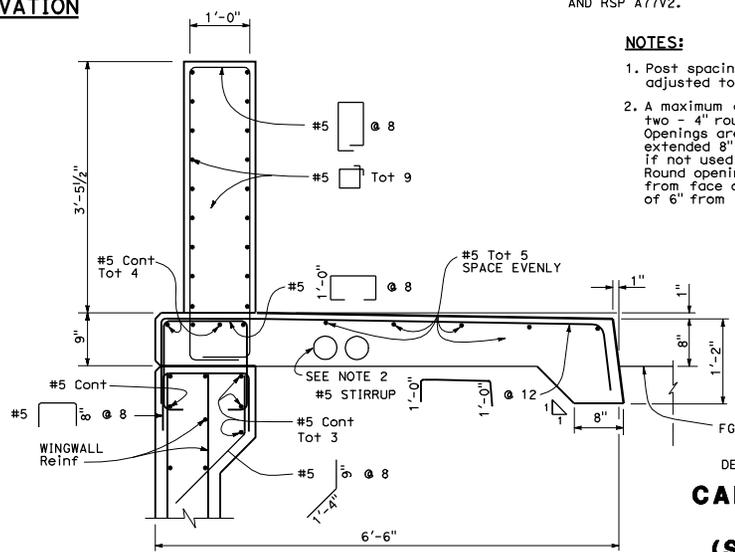
TO ACCOMPANY PLANS DATED _____



END OF RAILING ELEVATION



SECTION A-A



SECTION B-B

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

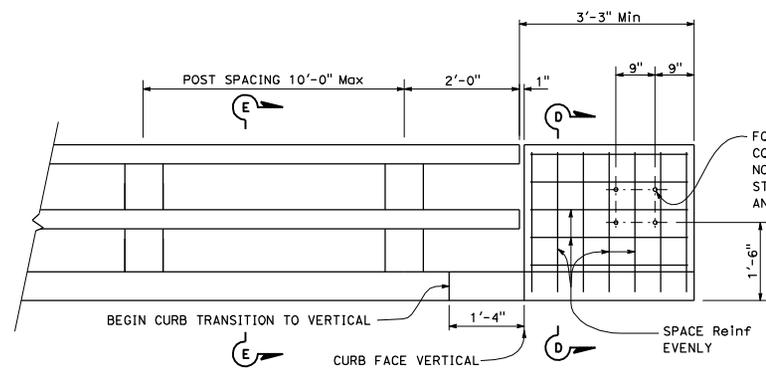
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CALIFORNIA ST-40
 BRIDGE RAIL
 (SHEET 2 OF 2)**
 NO SCALE

RSP B11-67 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B11-67 DATED MAY 20, 2011 - PAGE 307 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP B11-67

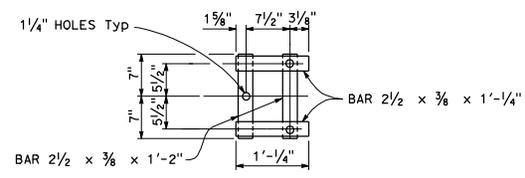
2010 REVISED STANDARD PLAN RSP B11-67

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

REGISTERED CIVIL ENGINEER	
Tillot Satter	
No. C42892	
PLANS APPROVAL DATE	
July 19, 2013	
EXP. 3-31-14	
CIVIL	
STATE OF CALIFORNIA	

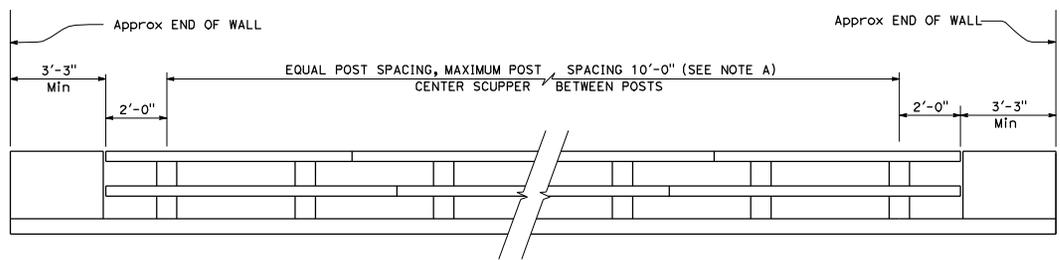


END OF RAILING ELEVATION



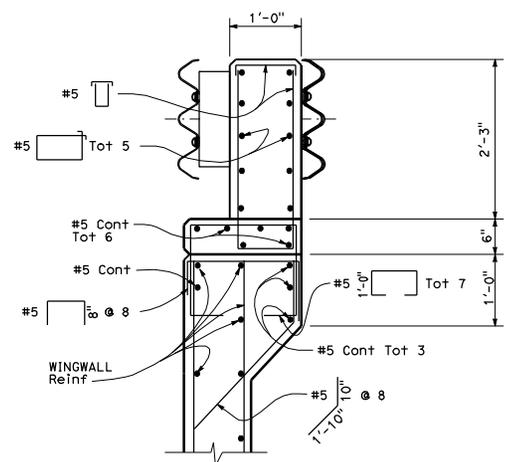
WALL ANCHOR PLATE DETAIL

FOR METAL RAILING CONNECTION DETAILS NOT SHOWN, SEE REVISED STANDARD PLANS RSP A77U1 AND RSP A77U2.

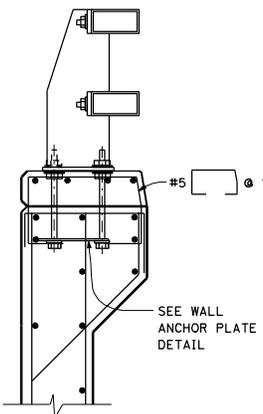


BRIDGE RAILING ELEVATION

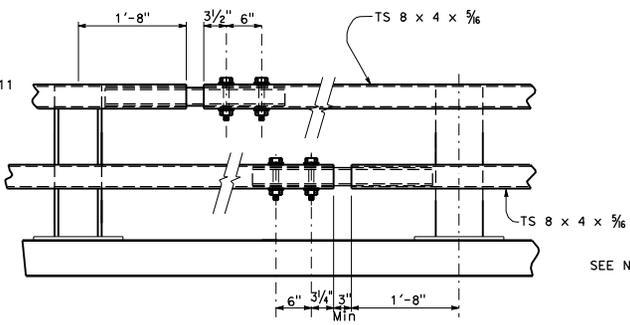
NOTE A:
Post spacing and/or block length to be adjusted to fit bridge length or wingwall length.



SECTION D-D

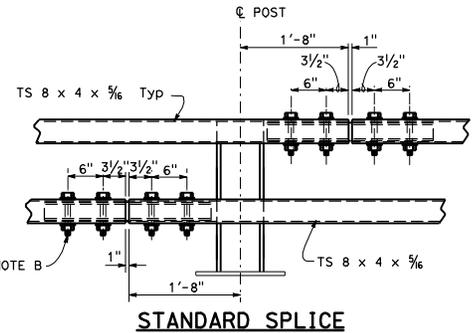


SECTION E-E
Reinf same as for Section D-D except as noted.



EXPANSION SPLICE

NOTE B:
Use 3/4" x 5 1/8" HS bolts with washers, fully tensioned. 1" holes in rail Typ



STANDARD SPLICE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**CALIFORNIA ST-10
BRIDGE RAIL
(SHEET 3 OF 3)**

NO SCALE

RSP B11-70 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B11-70 DATED MAY 20, 2011 - PAGE 310 OF THE STANDARD PLANS BOOK DATED 2010.

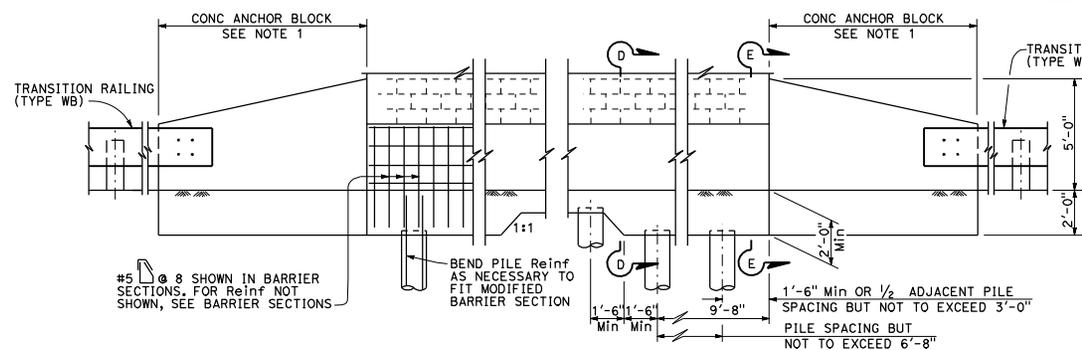
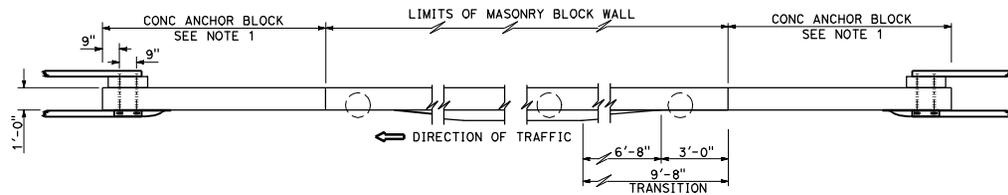
REVISED STANDARD PLAN RSP B11-70

2010 REVISED STANDARD PLAN RSP B11-70

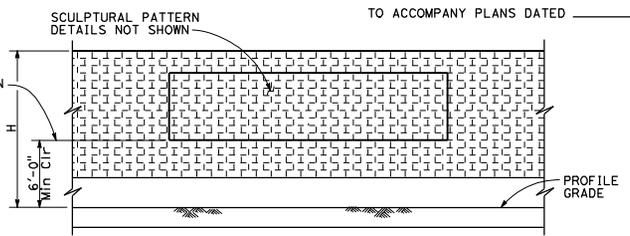
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

REGISTERED CIVIL ENGINEER
 Tiliot Satter
 No. C42892
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

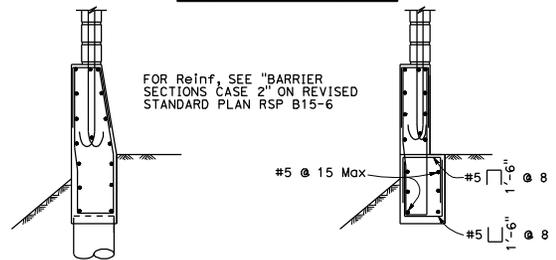
July 19, 2013
 PLANS APPROVAL DATE
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ELEVATION
METAL BEAM GUARDRAIL ANCHORAGE
 For details not shown, see Revised Standard Plan RSP B11-56.



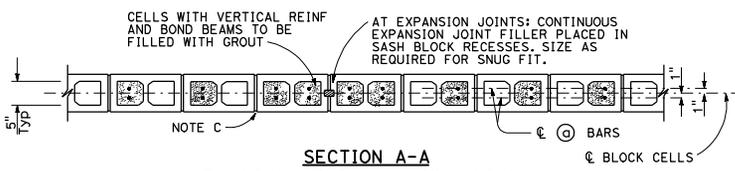
CLEARANCE DETAIL



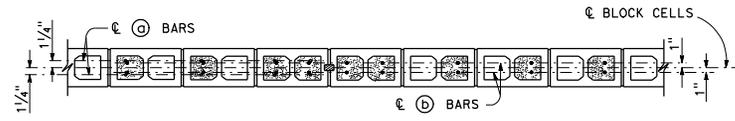
DESIGN NOTES:

- DESIGN**
 Uniform Building Code, 1997 Edition and the Bridge Design Specifications.
- DESIGN WIND LOAD**
 27 psf
- DESIGN SEISMIC LOAD**
 0.57 Dead load
- REINFORCED CONCRETE**
 $f'_c = 3.6 \text{ ksi}$
 $f_y = 60 \text{ ksi}$
- CONCRETE MASONRY**
- | REGULAR STRENGTH | HIGH STRENGTH | |
|----------------------------|----------------------------|----------------------------|
| $f'_m = 1500 \text{ psi}$ | $f'_m = 2000 \text{ psi}$ | $f'_m = 2500 \text{ psi}$ |
| $f_b = 495 \text{ psi}$ | $f_b = 660 \text{ psi}$ | $f_b = 830 \text{ psi}$ |
| $f_s = 24,000 \text{ psi}$ | $f_s = 24,000 \text{ psi}$ | $f_s = 24,000 \text{ psi}$ |
| $n = 25.8$ | $n = 19.3$ | $n = 15.5$ |

NOTE:
 1. For Concrete Anchor Block and connection details, see "Connection Detail DD" on Revised Standard Plan RSP A77U3.



SECTION A-A
 For details not shown, see other details.
H=6'-4" THRU H=10'-4"

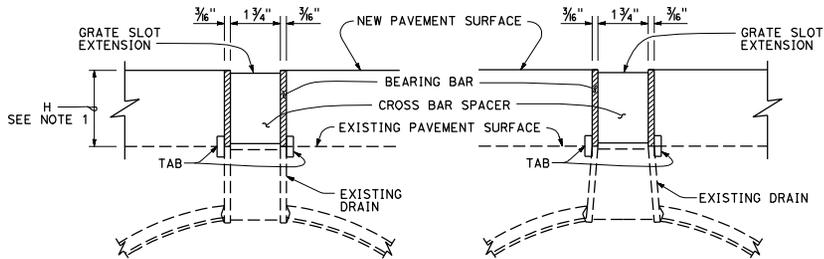


SECTION A-A
 For details not shown, see other details.
H=12'-4" THRU H=16'-4"

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
SOUND WALL MASONRY BLOCK ON TYPE 736S/SV BARRIER DETAILS (2)
 NO SCALE

RSP B15-7 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B15-7 DATED MAY 20, 2011 - PAGE 321 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP B15-7

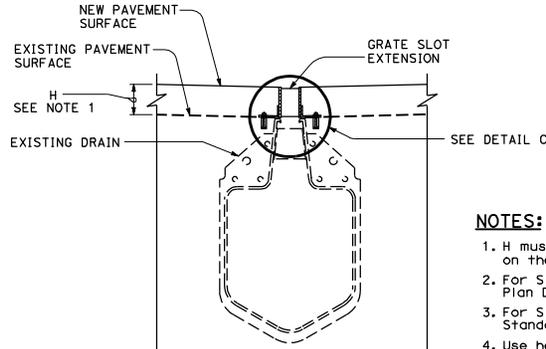
2010 REVISED STANDARD PLAN RSP B15-7



RECTANGULAR SPACER SECTION TAPERED SPACER

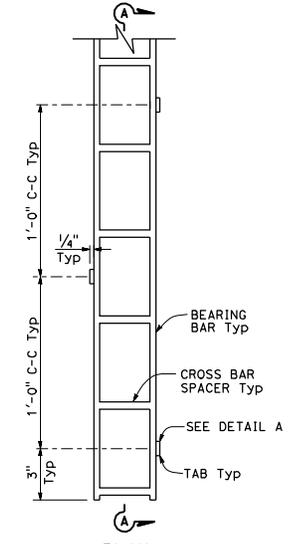
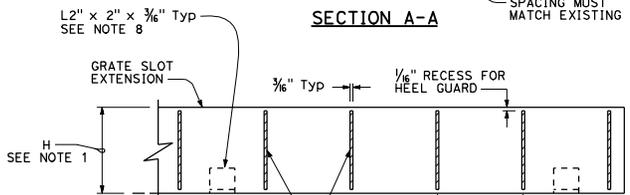
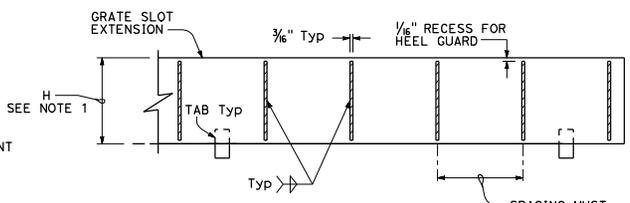
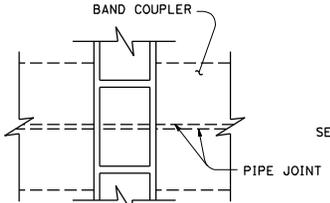
SLOTTED CORRUGATED STEEL PIPE

Grate slot extension



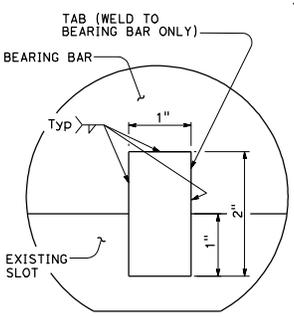
SECTION SLOTTED PLASTIC PIPE

Grate slot extension

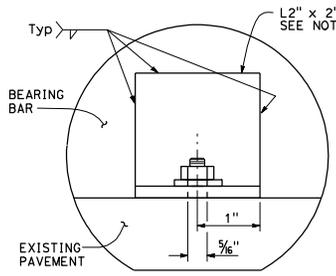


SLOTTED CORRUGATED STEEL PIPE

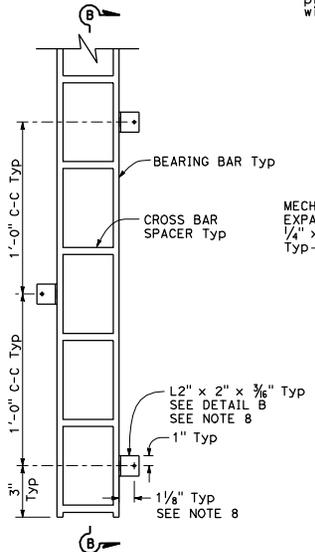
Grate slot extension



DETAIL A



DETAIL B

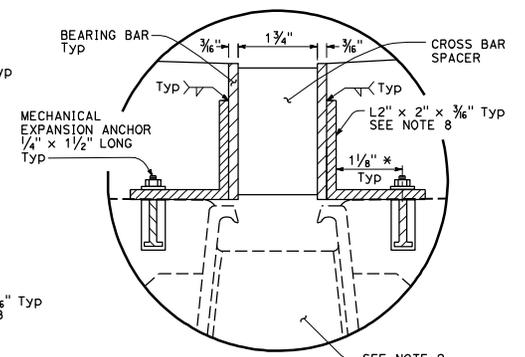


PLAN SLOTTED PLASTIC PIPE

Grate slot extension

NOTES:

1. H must be a minimum of 2 1/2", or otherwise shown on the plans.
2. For Slotted Plastic Pipe Drain Details, see Standard Plan D98D.
3. For Slotted Corrugated Steel Pipe Drain Details, see Standard Plans D98A and D98B.
4. Use heel guard when shown. See Standard Plan D98B for heel guard details.
5. Minimum grate slot extension length is 80".
6. The top corners of the grate slot extension's bearing bars must not vary from a straight line more than 1/2" in 20'-0".
7. Cross bar spacers must be welded to the grate slot extension's bearing bars to achieve a minimum tensile strength of 12,000 LB normal to the longitudinal axis of the bearing bars.
8. When an existing heel resistant grate for a slotted plastic pipe drain is encountered, use a L3" X 2" X 3/16" with a mechanical expansion anchor centerline offset of 2".



DETAIL C

* When an existing heel resistant grate is encountered, this offset is 2".

SLOTTED PIPE GRATE EXTENSION DETAILS

NO SCALE

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

Raymond A. Jasso
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 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.
 STATE OF CALIFORNIA PROFESSIONAL ENGINEERS
 Raymond Don Isztso
 No. C37332
 Exp. 6-30-14
 CIVIL

TO ACCOMPANY PLANS DATED _____

RSP D98F DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP D98F

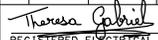
2010 REVISED STANDARD PLAN RSP D98F

LEGEND:

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

ABBREVIATIONS

APS	ACCESSIBLE PEDESTRIAN SIGNAL	M/M	MULTIPLE TO MULTIPLE TRANSFORMER
BBS	BATTERY BACKUP SYSTEM	MtG	MOUNTING
BC	BOLT CIRCLE	MY	MERCURY VAPOR LIGHTING FIXTURE
BPB	BICYCLE PUSH BUTTON	MVDS	MICROWAVE VEHICLE DETECTION SYSTEM
C	CONDUIT	N	NEUTRAL (GROUNDED CONDUCTOR)
CB	CIRCUIT BREAKER	NB	NEUTRAL BUS
CCTV	CLOSED CIRCUIT TELEVISION	NC	NORMALLY CLOSE
CK+	CIRCUIT	NO	NORMALLY OPEN
CMS	CHANGEABLE MESSAGE SIGN	P	CIRCUIT BREAKER'S POLE
CtId	CALTRANS IDENTIFICATION COMMUNICATION	PB	PULL BOX
Comm	COMMUNICATION	PBA	PUSH BUTTON ASSEMBLY
DLC	LOOP DETECTOR LEAD-IN CABLE	PEC	PHOTOELECTRIC CONTROL
EWS	EXTINGUISHABLE MESSAGE SIGN	Ped	PEDESTRIAN
EVUC	EMERGENCY VEHICLE UNIT CABLE	PEU	PHOTOELECTRIC UNIT
EVUD	EMERGENCY VEHICLE UNIT DETECTOR	PT	CONDUIT WITH PULL TAPE
FB	FLASHING BEACON	RE	RELOCATED EQUIPMENT
FBCA	FLASHING BEACON CONTROL ASSEMBLY	RM	RAMP METERING
FBS	FLASHING BEACON WITH SLIP BASE	RWIS	ROADSIDE WEATHER INFORMATION SYSTEM
FO	FIBER OPTIC	SB	SLIP BASE
G	EQUIPMENT GROUNDING CONDUCTOR	SIC	SIGNAL INTERCONNECT CABLE
GB	GROUND BUS	Stg	SIGNAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SMA	SIGNAL MAST ARM
HAR	HIGHWAY ADVISORY RADIO	SNS	STREET NAME SIGN
Hex	HEXAGONAL	SP	SERVICE POINT
HPS	HIGH PRESSURE SODIUM	TDC	TELEPHONE DEMARCATION CABINET
IISNS	INTERNALLY ILLUMINATED STREET NAME SIGN	TMS	TRAFFIC MONITORING STATION
ISL	INDUCTION SIGN LIGHTING	TOS	TRAFFIC OPERATIONS SYSTEM
LED	LIGHT EMITTING DIODE	veh	VEHICLE
LMA	LUMINAIRE MAST ARM	VIVDS	VIDEO IMAGE VEHICLE DETECTION SYSTEM
LPS	LOW PRESSURE SODIUM	WIM	WEIGH-IN-MOTION
Ltg	LIGHTING	Xfmr	TRANSFORMER
Lum	LUMINAIRE		
M	METERED		
MAT	MAST ARM MOUNTING TOP ATTACHMENT		
MAS	MAST ARM MOUNTING SIDE ATTACHMENT		

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
 REGISTERED ELECTRICAL ENGINEER July 19, 2013 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 _____					

SOFFIT AND WALL MOUNTED LUMINAIRES

- ◻ PENDANT, 70 W HPS UNLESS OTHERWISE SPECIFIED
- FLUSH, 70 W HPS UNLESS OTHERWISE SPECIFIED
- ◻ WALL SURFACE, 70 W HPS UNLESS OTHERWISE SPECIFIED
- ⊗ EXISTING SOFFIT OR WALL LUMINAIRE TO REMAIN UNMODIFIED
- ⊗ EXISTING SOFFIT OR WALL LUMINAIRE TO BE MODIFIED AS SPECIFIED

NOTE:
Arrow indicates "street side" of luminaire.

COMMONLY USED SYMBOLS FOR UNITED STATES CUSTOMARY UNITS OF MEASUREMENT:

SYMBOL USED	DEFINITIONS
Ω	OHMS
min	MINUTE
s	SECOND
bps	BITS PER SECOND
Bps	BYTES PER SECOND
A	AMPERE
V	VOLT
V _{DC}	VOLT (DIRECT CURRENT)
V _{AC}	VOLT (ALTERNATING CURRENT)
FC	FOOT - CANDLE
W	WATTS
VA	VOLT-AMPERE
M	MEGA
k	KILO
m	MILLI
μ	MICRO
P	PICO
Hz	HERTZ

MISCELLANEOUS ELECTROLIERS

NEW	EXISTING	
		LUMINAIRE ON WOOD POLE
		NON-STANDARD ELECTROLIER (SEE PROJECT NOTES OR PROJECT PLANS)
		CITY ELECTROLIER
		ELECTROLIER FOUNDATION (FUTURE INSTALLATION)

NOTES:

- HPS luminaires shall be 310 W HPS when installed on Type 21, 21D, 30, 31 and 32 Standards, unless otherwise specified. HPS luminaires shall be 200 W when installed on other type standards or poles, unless otherwise specified.
- LED luminaires shall be 235 W when installed on Type 21, 21D, 30, 31 and 32 Standards, unless otherwise specified. LED luminaires shall be 165 W when installed on other type standards or poles, unless otherwise specified.
- Luminaires shall be the cutoff type, ANSI Type III medium cutoff lighting distribution, unless otherwise specified.

STANDARD ELECTROLIER

NEW	EXISTING	STANDARD TYPE
		15
		150
		15 STRUCTURE
		150 STRUCTURE
		21
		210
		21 STRUCTURE
		210 STRUCTURE
		30
		31
		32

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
(LEGEND AND ABBREVIATIONS)**
NO SCALE

RSP ES-1A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1A
DATED MAY 20, 2011 - PAGE 425 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP ES-1A

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

Theresa Gabriel
 REGISTERED ELECTRICAL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. E15129
 Exp. 6-30-14
 ELECTRICAL
 STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

CONDUIT

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

SERVICE EQUIPMENT

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

POLE-MOUNTED SERVICE DESIGNATION

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

FLASHING BEACON

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

SIGNAL EQUIPMENT

NEW	EXISTING	
		PEDESTRIAN SIGNAL HEAD "C" INDICATES COUNTDOWN PEDESTRIAN HEAD
		PUSH BUTTON ASSEMBLY POST
		PEDESTRIAN BARRICADE
		VEHICLE SIGNAL HEAD (WITH BACKPLATE AND 3-SECTIONS: RED, YELLOW AND GREEN)
		VEHICLE SIGNAL HEAD WITH ANGLE VISOR
MODIFICATIONS OF BASIC SYMBOL: "L" INDICATES ALL NON-ARROW SECTIONS LOUVERED "LG" INDICATES LOUVERED GREEN SECTION ONLY "PV" INDICATES ALL 12" SECTIONS PROGRAMMED VISIBILITY "8" INDICATES ALL 8" SECTIONS (ONLY WHEN SPECIFIED)		
		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW AND GREEN LEFT ARROW SECTIONS
		VEHICLE SIGNAL HEAD CONSISTING OF RED AND YELLOW SECTIONS WITH AN UP GREEN ARROW SECTION
		VEHICLE SIGNAL HEAD (5 SECTION) CONSISTING OF RED, YELLOW AND GREEN SECTIONS WITH YELLOW AND GREEN RIGHT ARROW SECTIONS
		TYPE 15TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		TYPE 21TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		STANDARD WITH LUMINAIRE AND SIGNAL MAST ARMS AND ATTACHED VEHICLE SIGNAL HEADS
		TYPE 1 STANDARD WITH ATTACHED VEHICLE SIGNAL HEADS
		STANDARD WITH A SIGNAL MAST ARM, ATTACHED VEHICLE SIGNAL HEADS AND INTERNALLY ILLUMINATED STREET NAME SIGN
		CONTROLLER ASSEMBLY. DOOR INDICATES FRONT OF CABINET

SIGNAL EQUIPMENT Cont

NEW	EXISTING	
		GUARD POST
		TYPE 1 STANDARD WITH RAMP METERING SIGN
		OPTICAL DETECTOR FOR THE EMERGENCY VEHICLE DETECTION SYSTEM

NOTES:

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

ILLUMINATED OVERHEAD SIGN

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

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
 (LEGEND AND ABBREVIATIONS)**
 NO SCALE

RSP ES-1B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1B DATED MAY 20, 2011 - PAGE 426 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP ES-1B

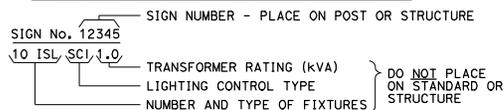
D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
 REGISTERED ELECTRICAL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. E15129
 Exp. 6-30-14
 ELECTRICAL
 STATE OF CALIFORNIA
 REGISTERED PROFESSIONAL ENGINEER

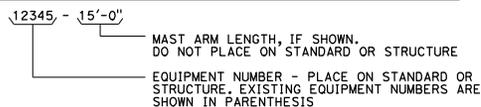
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

EQUIPMENT IDENTIFICATION

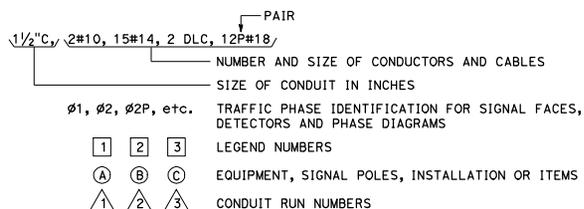
ILLUMINATED SIGN IDENTIFICATION NUMBER:



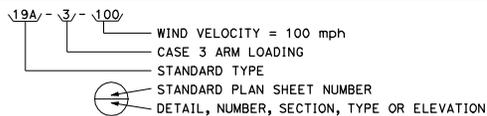
ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



CONDUIT AND CONDUCTOR IDENTIFICATION:



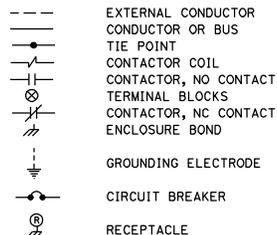
SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



MISCELLANEOUS EQUIPMENT

NEW	EXISTING	
		CHANGEABLE MESSAGE SIGN
		CLOSED CIRCUIT TELEVISION CAMERA
		HIGHWAY ADVISORY RADIO POLE AND ANTENNA
		EXTINGUISHABLE MESSAGE SIGN
		M = MICROWAVE SENSOR
		V = VIDEO IMAGE SENSOR

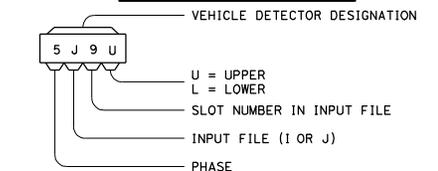
WIRING DIAGRAM LEGEND



PULL BOXES

NEW	EXISTING	
		PULL BOX, No. 5 UNLESS OTHERWISE INDICATED OR NOTED
		PULL BOX, ADDITIONAL DESIGNATIONS OR DESCRIPTIONS (C) COMMUNICATIONS PULL BOX (E) PULL BOX WITH EXTENSION (S) SPRINKLER CONTROL PULL BOX (21) ANCHOR BOLTS AND CONDUIT FOR FUTURE INSTALLATION OF TYPE 21 STANDARD (T) TRAFFIC PULL BOX
3 No. 3/2 PULL BOX		
5 No. 5 PULL BOX		
6 No. 6 PULL BOX		
7 No. 7 (CEILING PULL BOX)		
8 No. 8 (PENDANT SOFFIT PULL BOX)		
9 No. 9 PULL BOX		
9A No. 9A PULL BOX		

VEHICLE DETECTORS



NEW	EXISTING	
		TYPE A DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE B DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE C DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE D DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE E DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		TYPE Q DETECTOR LOOP. OUTLINE OF SAWCUT SHOWN
		MAGNETIC DETECTOR
		DETECTOR HANDHOLE
		MICROWAVE OR VIDEO DETECTION ZONE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

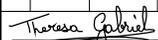
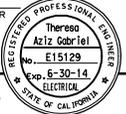
ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

NO SCALE

RSP ES-1C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-1C DATED MAY 20, 2011 - PAGE 427 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-1C

2010 REVISED STANDARD PLAN RSP ES-1C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
 REGISTERED ELECTRICAL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

TO ACCOMPANY PLANS DATED _____

PLAN VIEW OF OTHER
SIDE MOUNTINGS

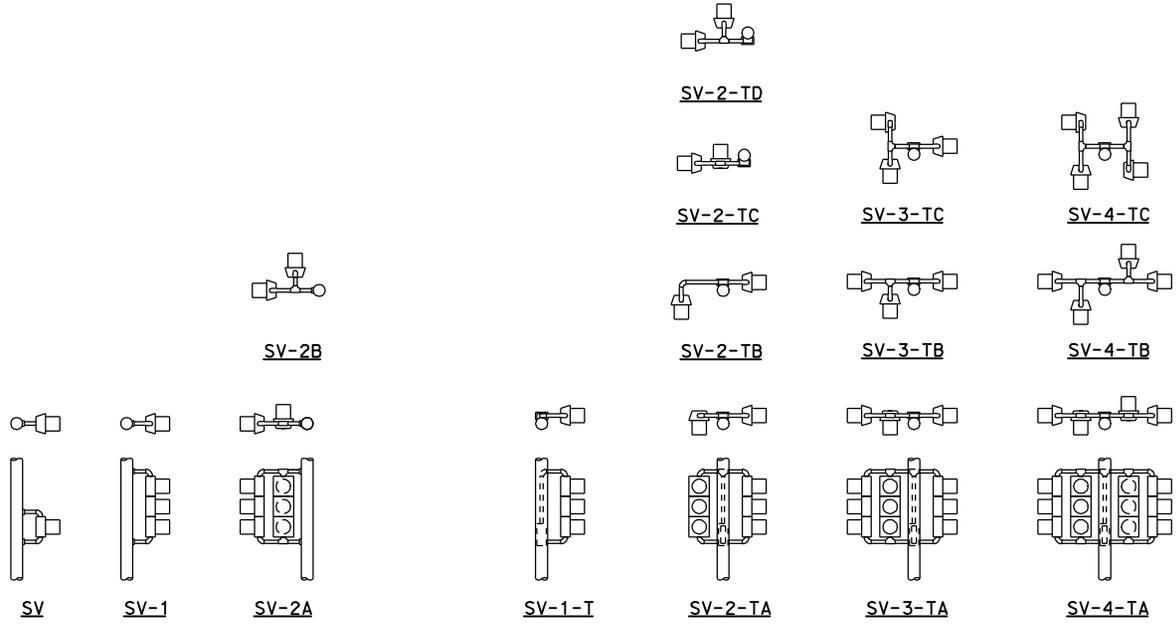
ABBREVIATIONS:

- SV SIDE MOUNTED VEHICLE SIGNALS
- T TERMINAL COMPARTMENT
- TV TOP MOUNTED VEHICLE SIGNALS
- 1, 2, 3, 4 NUMBER OF SIGNAL FACES
(3 - SECTION, UNLESS OTHERWISE INDICATED)
- A, B, C, D CONFIGURATION OF SIGNALS

NOTES:

1. Mountings shall be oriented to provide maximum horizontal clearance to adjacent roadway.
2. Bracket arms shall be long enough to permit proper alignment of signals and backplate installation.
3. See Standard Plans ES-4D and ES-4E for attachment fitting details.

PLAN VIEW OF
TOP MOUNTINGS



SIDE MOUNTINGS

TOP MOUNTINGS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
(VEHICULAR SIGNAL HEADS
AND MOUNTINGS)**

NO SCALE

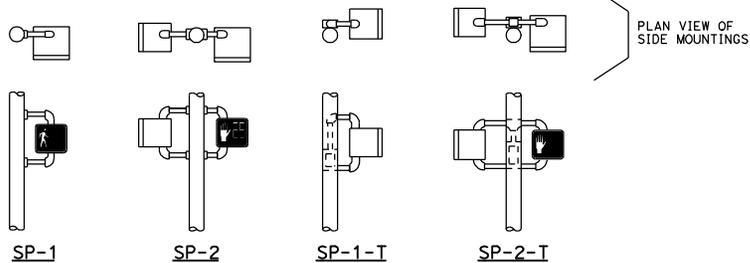
RSP ES-4A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-4A
DATED MAY 20, 2011 - PAGE 443 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-4A

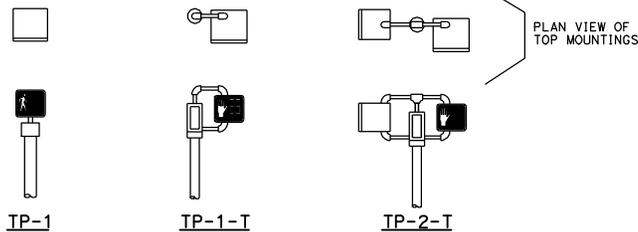
2010 REVISED STANDARD PLAN RSP ES-4A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
					
<i>Theresa Gabriel</i> REGISTERED ELECTRICAL ENGINEER July 19, 2013 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

TO ACCOMPANY PLANS DATED _____



SIDE MOUNTINGS



TOP MOUNTINGS

**PEDESTRIAN SIGNALS AND MOUNTINGS
DETAIL A**

NOTES:

1. Mounting shall be oriented to provide maximum horizontal clearance to adjacent roadway.
2. Bracket arms shall be long enough to permit proper alignment of signals.
3. See Standard Plan ES-40 for attachment fittings details.

ABBREVIATIONS:

- 1, 2 NUMBER OF SIGNAL FACES
 SP SIDE MOUNTED PEDESTRIAN SIGNAL
 T TERMINAL COMPARTMENT
 TP TOP MOUNTED PEDESTRIAN SIGNAL



PERSON WALKING INTERVAL FLASHING UPRaised HAND INTERVAL STEADY UPRaised HAND INTERVAL
PEDESTRIAN SIGNAL MODULE WITH COUNTDOWN
 DETAIL B



RAMP METERING SIGN
 DETAIL D



PERSON WALKING INTERVAL STEADY UPRaised HAND INTERVAL
PEDESTRIAN SIGNAL MODULE WITHOUT COUNTDOWN
 DETAIL C

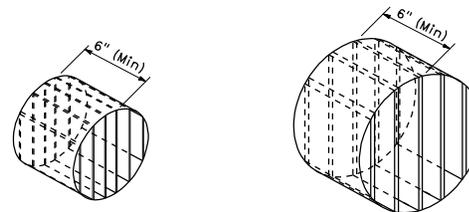
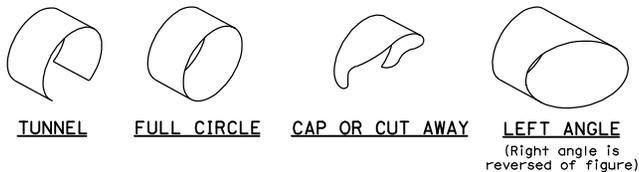
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
 (PEDESTRIAN SIGNAL AND
 RAMP METERING SIGN)**

NO SCALE

RSP ES-4B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-4B
 DATED MAY 20, 2011 - PAGE 444 OF THE STANDARD PLANS BOOK DATED 2010.

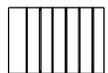
REVISED STANDARD PLAN RSP ES-4B

2010 REVISED STANDARD PLAN RSP ES-4B

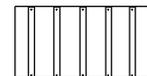


ISOMETRIC VIEW

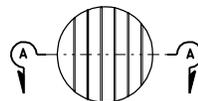
ISOMETRIC VIEW



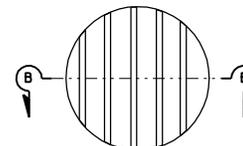
SECTION A-A



SECTION B-B



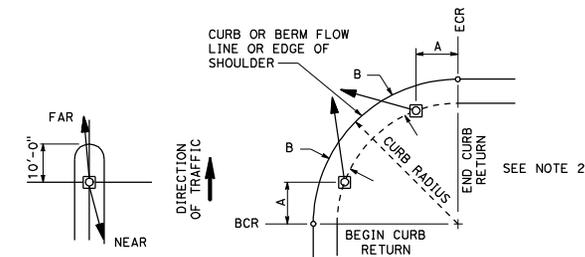
8" DIAMETER FRONT VIEW



12" DIAMETER FRONT VIEW

DIRECTIONAL LOUVER

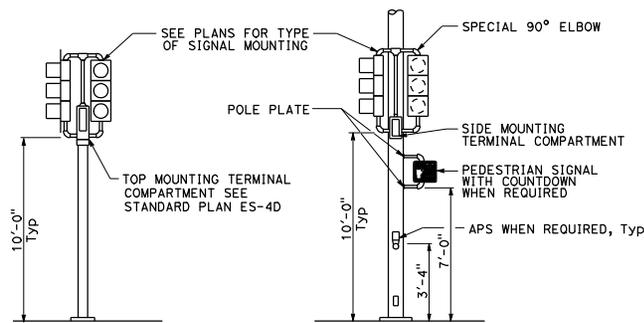
Directional louvers shall be oriented as directed by the Engineer and secured in place with one plated brass machine screw and nut.



NOTES:

1. Typical signal pole placement unless dimensioned on plans.
2. For A and B dimensions, see Pole Schedule, or as directed by the Engineer.

SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS

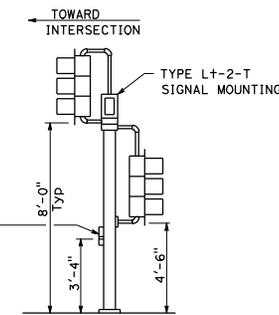


TOP MOUNTED SIGNALS (TV)

Type 1-A, 1-B, 1-C and 1-D standard as indicated on the plans

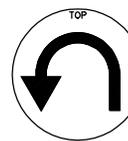
SIDE MOUNTED SIGNALS (SV AND SP)

Normally used on standards with luminaire or signal mast arm



LEFT TURN LANE SIGNAL

Type 1-A, 1-B, 1-C and 1-D standard as indicated on plans



U-TURN



BICYCLE



LANE CONTROL



LANE CONTROL

SIGNAL FACES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (VEHICULAR SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-04C DATED MAY 20, 2011 - PAGE 445 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-4C

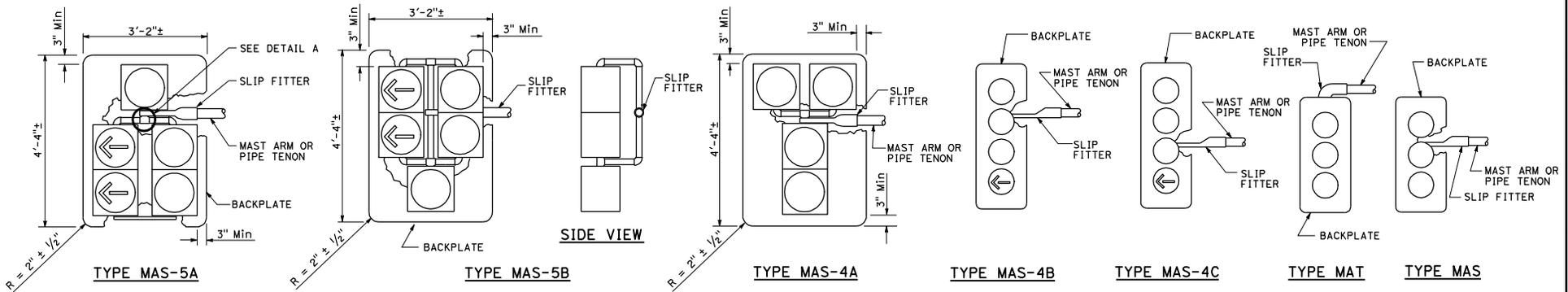
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
 REGISTERED ELECTRICAL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. E15129
 Exp. 6-30-14
 REGISTERED PROFESSIONAL ENGINEER
 Theresa Aziz Gabriel
 No. E15129
 Exp. 6-30-14
 ELECTRICAL
 STATE OF CALIFORNIA

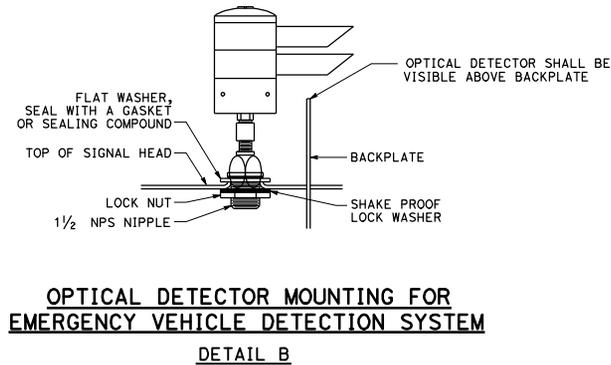
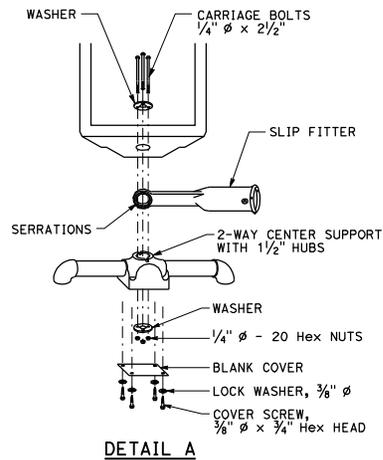
TO ACCOMPANY PLANS DATED _____
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2010 REVISED STANDARD PLAN RSP ES-4C

D16+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<i>Theresa Gabriel</i> REGISTERED ELECTRICAL ENGINEER					
July 19, 2013 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 _____					



MAST ARM MOUNTINGS



OPTICAL DETECTOR MOUNTING FOR EMERGENCY VEHICLE DETECTION SYSTEM

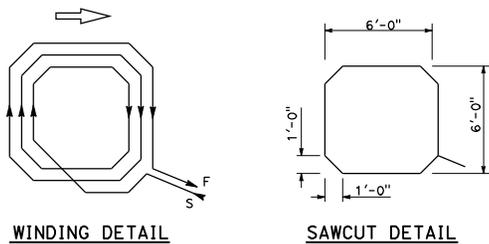
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
 (VEHICULAR SIGNAL HEADS AND
 OPTICAL DETECTOR MOUNTING)**

NO SCALE

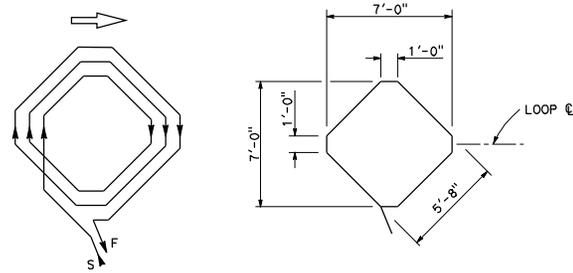
RSP ES-4E DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-4E
 DATED MAY 20, 2011 - 447 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-4E

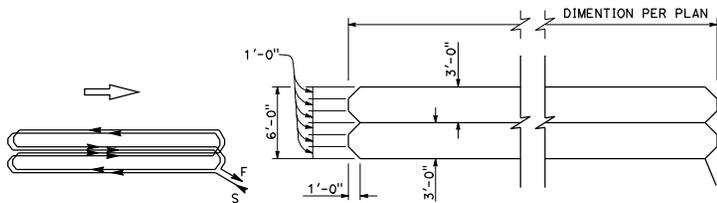
2010 REVISED STANDARD PLAN RSP ES-4E



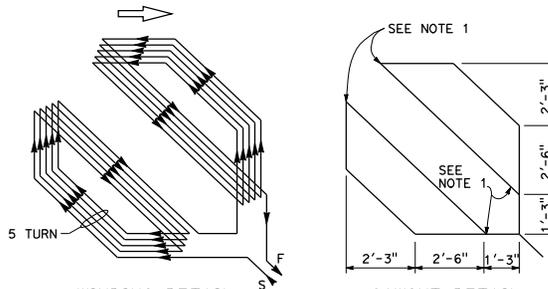
TYPE A LOOP DETECTOR CONFIGURATION



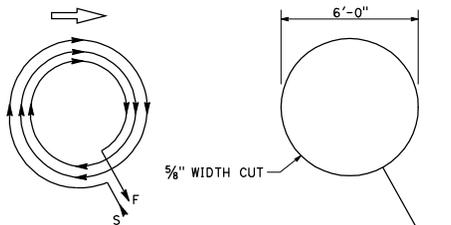
TYPE B LOOP DETECTOR CONFIGURATION



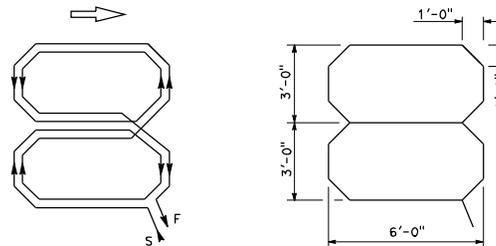
TYPE C LOOP DETECTOR CONFIGURATION



TYPE D LOOP DETECTOR CONFIGURATION



TYPE E LOOP DETECTOR CONFIGURATION



TYPE Q LOOP DETECTOR CONFIGURATION

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

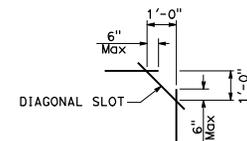
Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
Theresa Aziz Gabriel
No. E15129
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



PLAN VIEW OF DIAGONAL SLOT AT CORNERS

NOTES:

1. Round corners of acute angle sawcuts to prevent damage to conductors.
2. Typical distance separating loops from edge to edge is 10' for Type A, B, D and E installation in single lane.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS (DETECTORS)
NO SCALE

RSP ES-5B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5B DATED MAY 20, 2011 - PAGE 449 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-5B

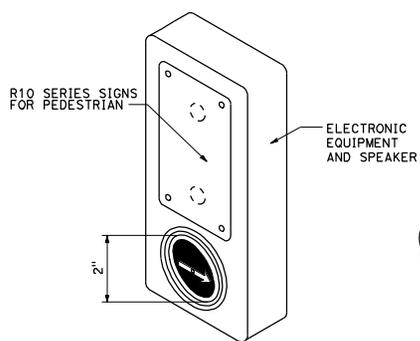
2010 REVISED STANDARD PLAN RSP ES-5B

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
					
Theresa Aziz Gabriel REGISTERED ELECTRICAL ENGINEER July 19, 2013 PLANS APPROVAL DATE <small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

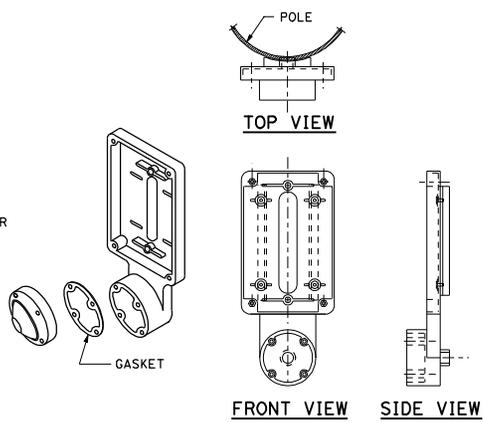
TO ACCOMPANY PLANS DATED _____

NOTES:

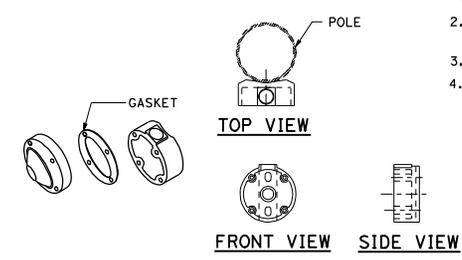
1. Back casting shape to fit curvature of pole.
2. Provide cover fitting for top of post, when PBA is mounted on push button assembly post.
3. Install push button on crosswalk side of standard.
4. Use R10 series regulatory signs and plaques for pedestrian and bicycle facilities.



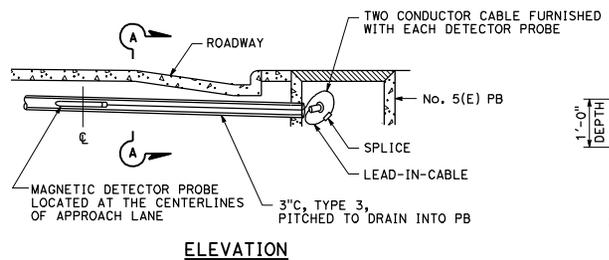
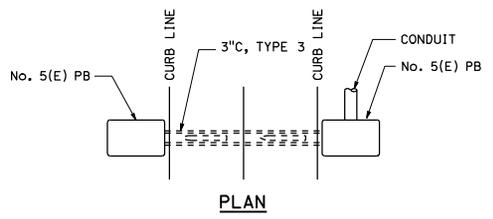
ACCESSIBLE PEDESTRIAN SIGNAL
DETAIL A
 (See note 1 to 4)



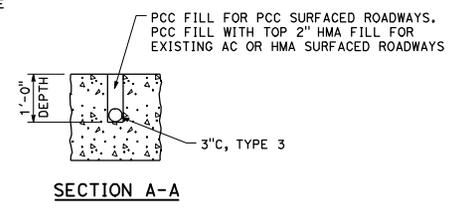
TYPE B PUSH BUTTON ASSEMBLY
DETAIL B
 (See note 1 to 4)



TYPE C PUSH BUTTON ASSEMBLY
DETAIL C
 (See note 1 to 4)



MAGNETIC VEHICLE DETECTOR
INSTALLATION DETAILS
DETAIL D

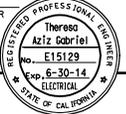


STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(ACCESSIBLE PEDESTRIAN SIGNAL,
PUSH BUTTON ASSEMBLIES AND
MAGNETIC VEHICLE DETECTOR)
 NO SCALE

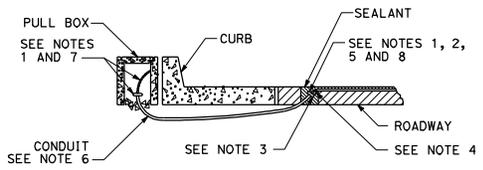
RSP ES-5C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5C
 DATED MAY 20, 2011 - PAGE 450 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP ES-5C

2010 REVISED STANDARD PLAN RSP ES-5C

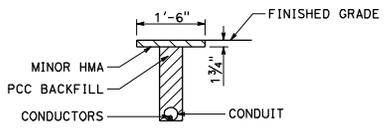
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<i>Theresa Gabriel</i> REGISTERED ELECTRICAL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



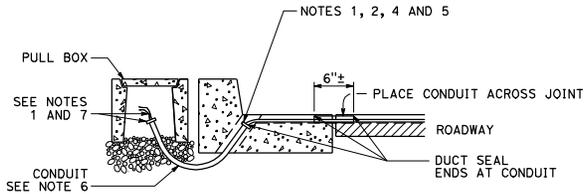
TO ACCOMPANY PLANS DATED _____



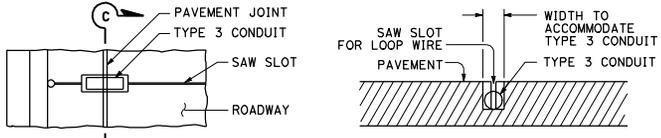
TYPE A
CURB TERMINATION DETAIL



"I" TRENCH
DETAIL I



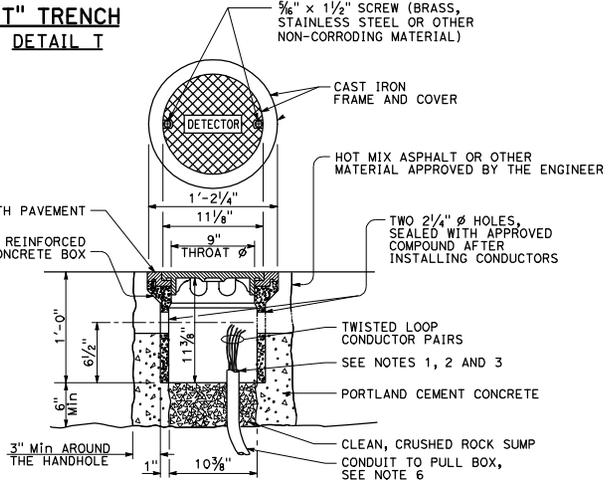
CROSS SECTION



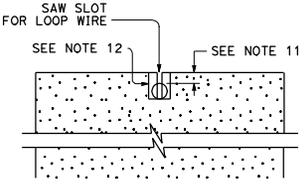
PLAN VIEW

SECTION C-C

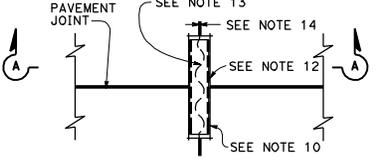
TYPE B
CURB TERMINATION DETAIL



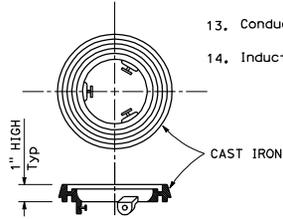
DETECTOR HANDHOLE DETAIL



SECTION A-A



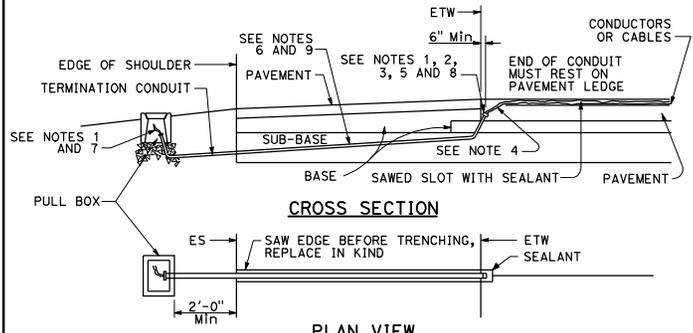
PLAN VIEW
TYPICAL LOOP LEAD-IN DETAIL
AT PAVEMENT JOINT



LOCKING GRADE RING

NOTES:

- Bushing shall be used at end of conduit.
- Tape detector conductors or cables 3" each side of bushings.
- Install duct seal compound to each end of termination conduit before installing sealant.
- Round all sharp edges where detector conductors or cables have to pass.
- End of conduit shall be 3/8" below roadway surface.
- Conduit size Loop conductors
 1" minimum 1 to 2 pairs
 1 1/2" minimum 3 to 4 pairs
 2" minimum 5 or more pairs
- Splice detector conductors or cables to detector lead-in cable.
- Location of detector handhole when shown on plans.
- 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.
- 3/4"C, Type 3 conduit 6" long minimum, plug both ends with duct compound to keep out sealant.
- 1/2" Minimum between top of conduit and pavement surface.
- Sawcut shall not exceed 1" in width and 1/8" longer than conduit to be installed.
- Conductors with 1/2" minimum slack inside conduit.
- Inductive loop detector saw slot.



CROSS SECTION
PLAN VIEW
SHOULDER TERMINATION DETAILS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(CURB TERMINATION
AND HANDHOLE)
NO SCALE

RSP ES-5D DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5D
DATED MAY 20, 2011 - PAGE 451 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-5D

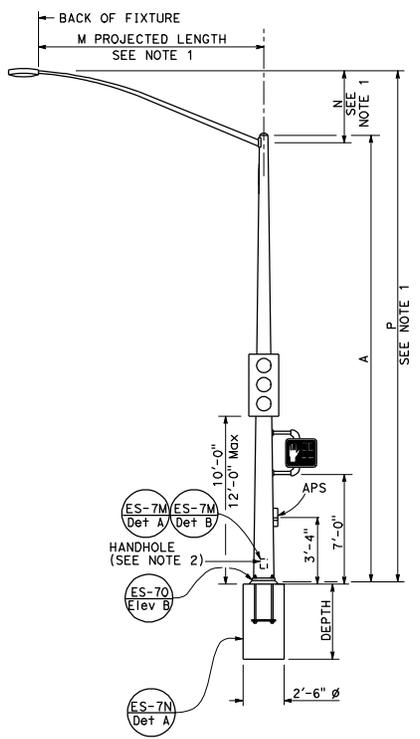
2010 REVISED STANDARD PLAN RSP ES-5D

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

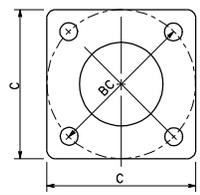
Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS793
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 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.

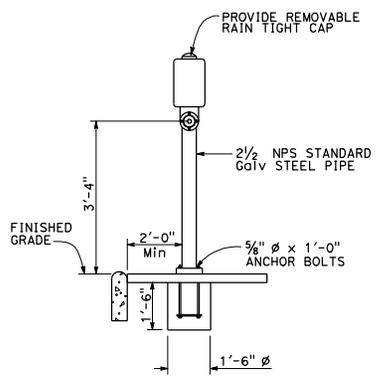
- NOTES:**
- For additional notes, details and data for Type 15TS and Type 21TS Standards, see Standard Plan ES-6A.
 - Handhole shall be located on the downstream side of traffic.



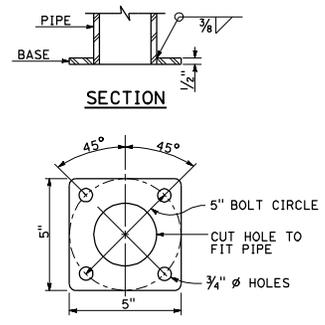
TYPE 15TS AND 21TS STANDARD
ELEVATION A
 (See Note 1)



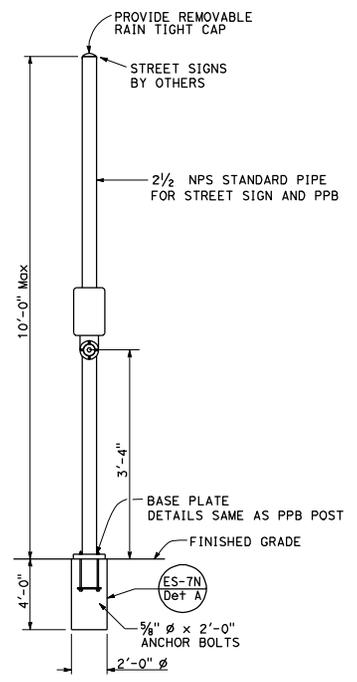
BASE PLATE
TYPE 15TS AND 21TS
DETAIL A



PUSH BUTTON ASSEMBLY POST
DETAIL B



BASE PLATE
PBA POST



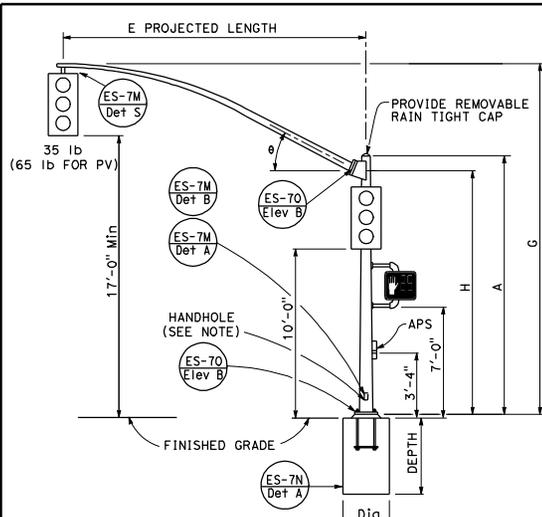
COMBINED STREET SIGN
PUSH BUTTON ASSEMBLY POST
DETAIL C

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

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING STANDARD, TYPE TS, AND PUSH BUTTON ASSEMBLY POST)
 NO SCALE

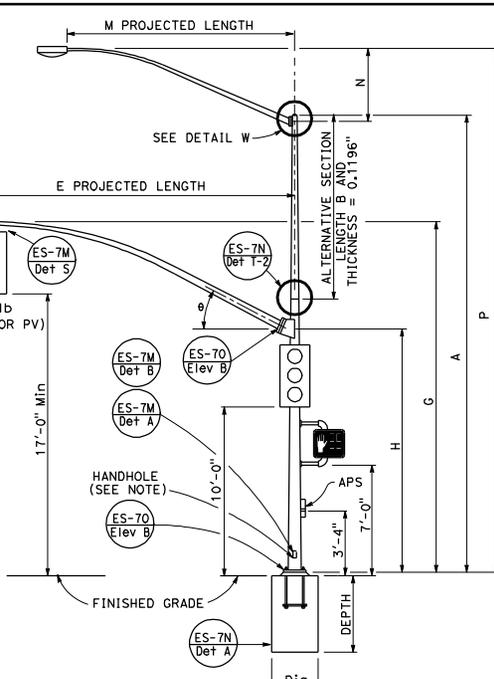
RSP ES-7A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-7A DATED MAY 20, 2011 - PAGE 462 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP ES-7A

2010 REVISED STANDARD PLAN RSP ES-7A



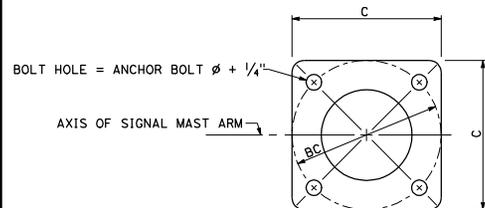
TYPE 16-1-100, 18-1-100

ELEVATION A



TYPE 19-1-100, 19A-1-100

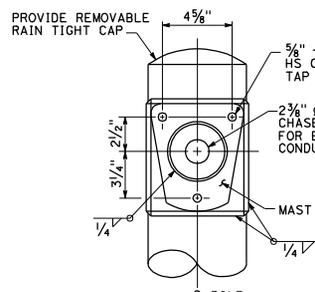
ELEVATION B



**BASE PLATE
DETAIL D**

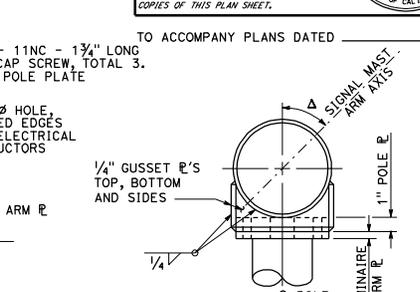
Δ = LUMINAIRE MAST ARM SKEW -90° TO $+90^\circ$
DEFAULT 0°

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



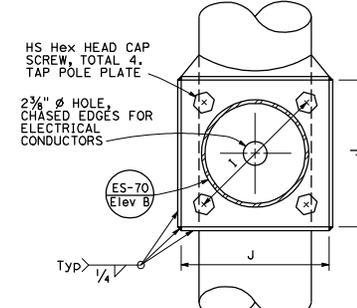
DETAIL W-1

LUMINAIRE MAST ARM CONNECTION

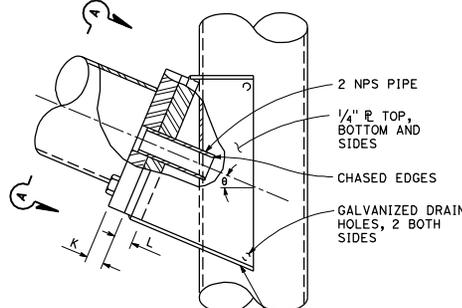


DETAIL W-2

SIGNAL MAST ARM CONNECTION



VIEW A-A



ELEVATION C

SIGNAL MAST ARM CONNECTION

DETAIL C

SIGNAL MAST ARM DATA										
E PROJECTED LENGTH	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM R THICKNESS	L POLE R THICKNESS	θ
15'-0"	21'-8"±	17'-6"	7 3/8"	0.1196"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°
20'-0"	22'-8"±	16'-0"								
25'-0"	22'-8"±	16'-0"								
30'-0"	23'-0"±	16'-0"								

LUMINAIRE MAST ARM DATA					
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT	
				30'-0" POLE	35'-0" POLE
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 3/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±	3 7/8"		33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA				BASE PLATE DATA				LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION			
			A HEIGHT	Min OD	THICKNESS	ALTERNATIVE SECTION B LENGTH	C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE			DIAMETER	DEPTH	REINFORCED	
16-1-100	1	100	18'-6"	8 1/8"	0.1793"	None	1'-5 1/2"	1'-5 1/2"	3"	1 1/2" ϕ x 42"	NONE	15'-0", [20'-0"]	2'-6"	9'-0"	YES	
18-1-100			17'-0"	8 5/8"		None										
19-1-100			30'-0"	6 7/8"		10'-0"										6 7/8"
19A-1-100			35'-0"	5 1/2"		15'-0"										7 7/8"

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 1 SIGNAL MAST ARM LOADING, WIND VELOCITY = 100 MPH AND SIGNAL MAST ARM LENGTHS 15' TO 30')

NO SCALE

RSP ES-7C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-7C DATED MAY 20, 2011 - PAGE 464 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-7C

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

Stanley P. Johnson
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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

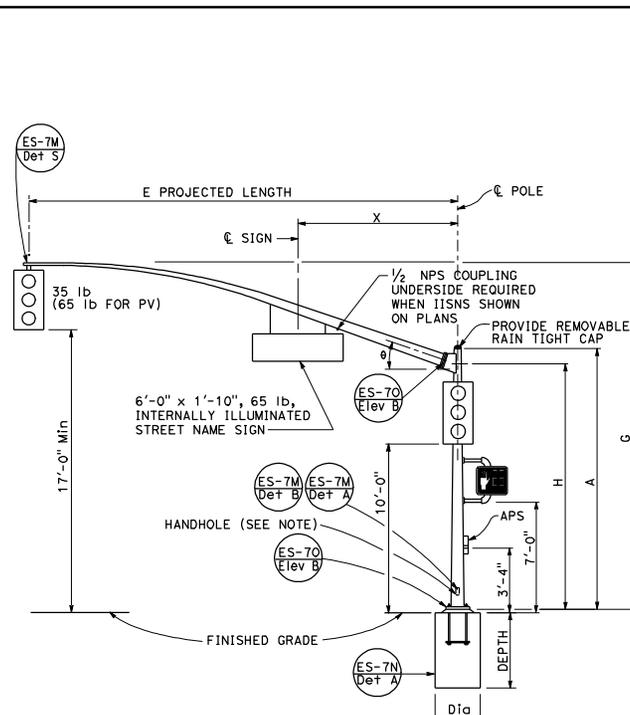
REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C87893
Exp. 3-31-14
CIVIL
STATE OF CALIFORNIA

2010 REVISED STANDARD PLAN RSP ES-7C

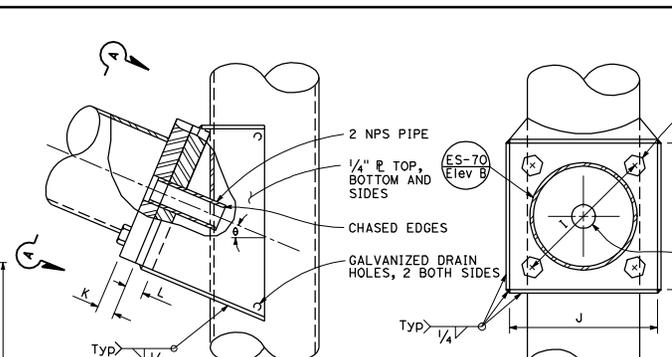
DIST	COUNTY	ROUTE	POST MILES	SHEET	TOTAL
			TOTAL PROJECT	NO.	SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. C8793
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

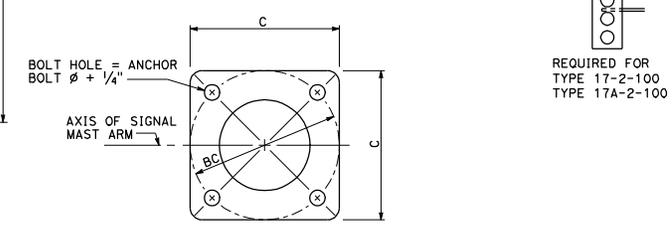
July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



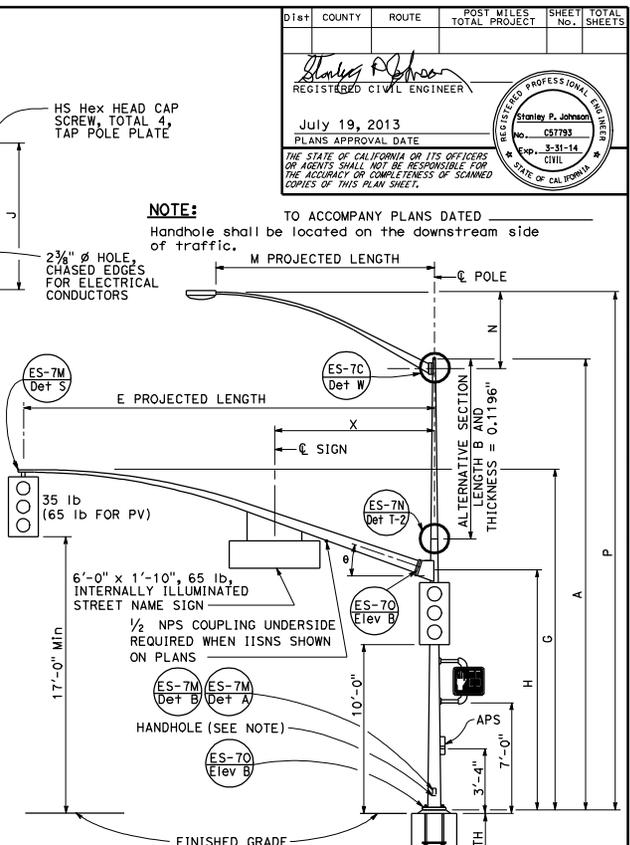
TYPE 16-2-100, 18-2-100
ELEVATION A



SIGNAL MAST ARM CONNECTION
DETAIL A



BASE PLATE
DETAIL B



TYPE 17-2-100, 17A-2-100, 19-2-100, 19A-2-100
ELEVATION B

E PROJECTED LENGTH	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM R THICKNESS	L POLE R THICKNESS	θ	X Max
15'-0"	21'-8"±	17'-6"	7 3/8"	0.1793"	12"	1 1/4"-7NC-3"	1'-0"	1/4"	1 1/2"	23°	10'-6"
20'-0"	21'-8"±	7 3/8"	10'-0"								
25'-0"	22'-8"±	7 3/8"	15'-0"								
19-2-100	22'-8"±	7 3/8"	15'-0"								
30'-0"	23'-0"±	8"	15'-0"								

M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT
6'-0"	2'-0"±	3/4"	0.1196"	30'-0" POLE
8'-0"	2'-6"±	3/2"		35'-0" POLE
10'-0"	3'-3"±	3 3/8"		31'-6"±
12'-0"	4'-3"±	3 7/8"		36'-6"±
15'-0"	4'-9"±	4 1/4"		32'-0"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA				BASE PLATE DATA				CIDH PILE FOUNDATION							
			A HEIGHT	Min OD BASE	Min OD TOP	THICKNESS	B LENGTH	BOTTOM	TOP	C	THICKNESS	ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	DIAMETER	DEPTH	REINFORCED	
16-2-100	2	100	18'-6"	8 1/8"	10 3/4"	0.1793"	NONE	7 7/8"	6 7/8"	1'-5 1/2"	1'-5 1/2"	3"	1 1/2" Ø x 42"	NONE	15'-0", 20'-0"	2'-6"	9'-0"	YES
17-2-100			30'-0"	6 7/8"			10'-0"							6'-15" [12'-0"]				
17A-2-100			35'-0"	5 1/2"			15'-0"							6'-15" [15'-0"]				
18-2-100			17'-0"	8 3/8"			NONE							None				
19-2-100			30'-0"	6 7/8"			10'-0"							6'-15" [12'-0"]				
19A-2-100	35'-0"	5 1/2"	15'-0"	6'-15" [15'-0"]														

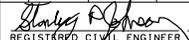
□ INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

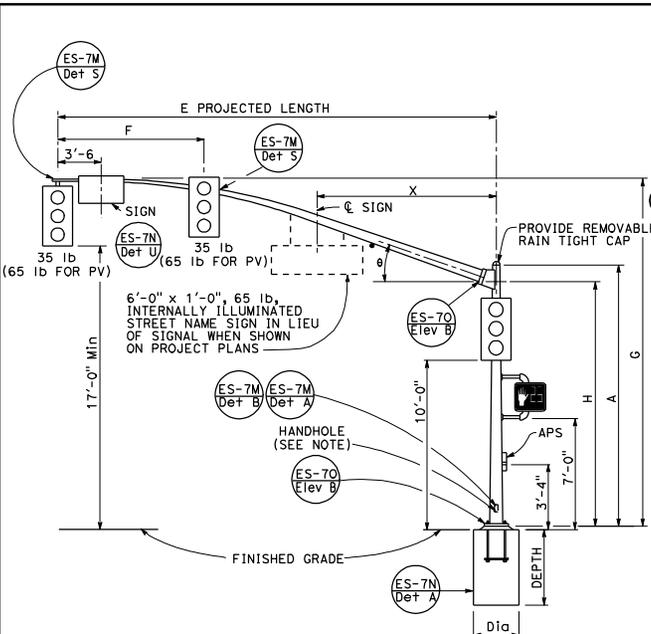
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING STANDARD,
CASE 2 SIGNAL MAST ARM LOADING,
WIND VELOCITY=100 MPH AND SIGNAL
MAST ARM LENGTHS 15' TO 30')
 NO SCALE

RSP ES-7D DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-7D DATED MAY 20, 2011 - PAGE 465 OF THE STANDARD PLANS BOOK DATED 2010.

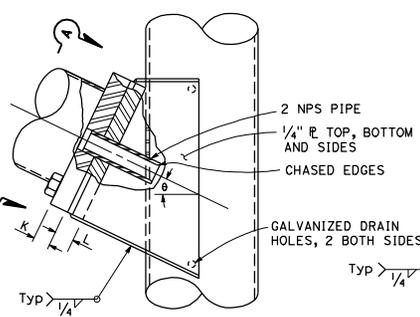
REVISED STANDARD PLAN RSP ES-7D

2010 REVISED STANDARD PLAN RSP ES-7D

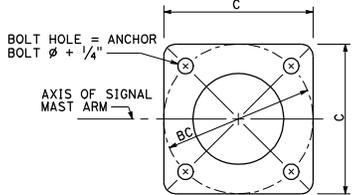
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
 REGISTERED CIVIL ENGINEER No. 05793 Exp. 3-31-14 CIVIL STATE OF CALIFORNIA				
July 19, 2013 PLANS APPROVAL DATE <small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>				



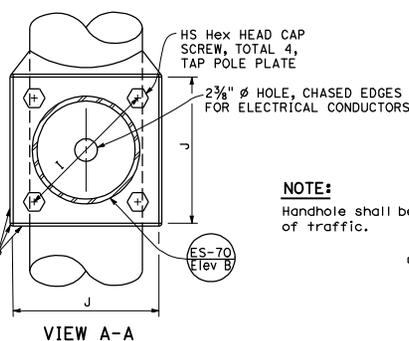
**TYPE 16-3-100, 18-3-100,
23-3-100, 27-3-100**
ELEVATION A



**SIGNAL MAST ARM CONNECTION
DETAIL A**



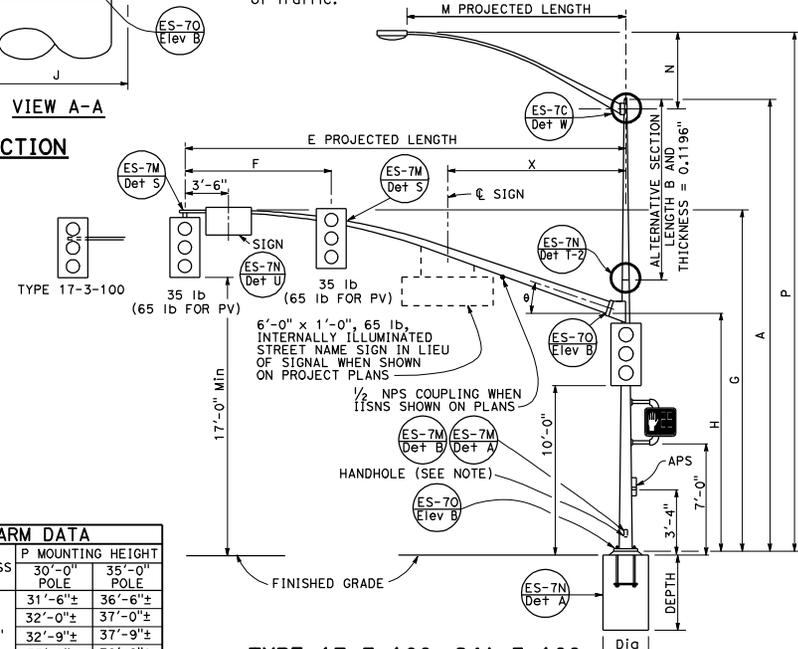
**BASE PLATE
DETAIL B**



VIEW A-A

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

TO ACCOMPANY PLANS DATED _____



**TYPE 17-3-100, 24A-3-100,
19-3-100, 26-3-100,
19A-3-100, 26A-3-100, 24-3-100**
ELEVATION B

SIGNAL MAST ARM DATA											
E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM THICKNESS	L POLE R THICKNESS	θ
15'-0"	8'-0"	21'-8"±	17'-6"	7 7/8"	0.1793"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°
20'-0"		21'-8"±		7 7/8"	0.2391"						
25'-0"	12'-0"	22'-8"±		8"							
30'-0"			16'-0"	8 3/4"							
35'-0"	14'-0"	23'-0"±		9 1/8"	13"	1'-1"	1 1/2"	1 3/4"	15°	13'-0"	
40'-0"	15'-0"	23'-8"±		9 3/8"							
45'-0"				10 1/8"							

LUMINAIRE MAST ARM DATA					
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT	
				30'-0" POLE	35'-0" POLE
6'-0"	2'-0"±	3/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 7/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±	3"		33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA					BASE PLATE DATA				CIDH PILE FOUNDATION							
			A HEIGHT	Min OD		THICKNESS	ALTERNATIVE SECTION			C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	DIAMETER	DEPTH	REINFORCED	
				BASE	TOP		B LENGTH	BOTTOM	TOP										
16-3-100	3	100	18'-6"	10 3/4"	8 1/8"	0.1793"	NONE	1'-5 1/2"	1'-5 1/2"	3"	2"	2" Ø x 42"	NONE	15'-0"	3'-0"	11'-0"	YES		
17-3-100			30'-0"		6 1/8"		10'-0"						7 7/8"	6 1/8"				6'-15' 12'-0"	20'-0"
18-3-100			17'-0"		8 1/8"		NONE						10'-0"	9 1/8"				7 1/8"	6'-15' 12'-0"
19-3-100			30'-0"	7 1/8"	0.2391"	15'-0"	9 1/8"	6 1/8"	6'-15' 15'-0"	30'-0"									
19A-3-100			35'-0"	6 5/8"		NONE	1'-7"	1'-5 1/2"	NONE	NONE									
23-3-100			17'-0"	9 1/8"		10'-0"	7 1/8"	6'-15' 12'-0"	35'-0"										
24-3-100			30'-0"	7 1/8"	0.3125"	15'-0"	9 1/8"	6 5/8"	6'-15' 15'-0"	40'-0"									
24A-3-100			35'-0"	6 5/8"		10'-0"	7 1/8"	6'-15' 12'-0"	45'-0"										
26-3-100			30'-0"	7 1/8"		NONE	1'-11"	1'-9"	NONE	NONE									
26A-3-100			35'-0"	7 1/8"	0.3125"	15'-0"	9 1/4"	7 1/8"	6'-15' 15'-0"	45'-0"									
27-3-100			17'-0"	9 1/8"		NONE	NONE	NONE	NONE	NONE									

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

REVISED STANDARD PLAN RSP ES-7E

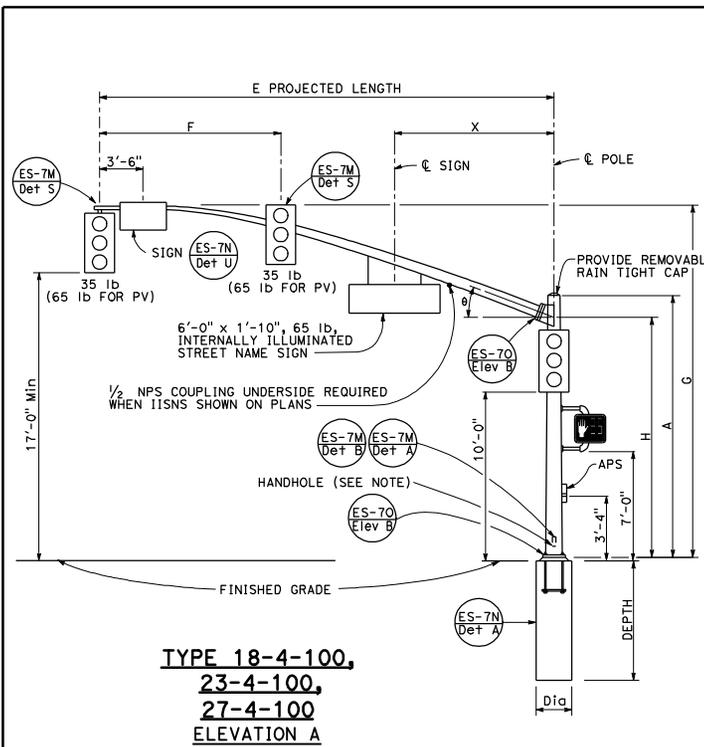
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING STANDARD,
CASE 3 SIGNAL MAST ARM LOADING,
WIND VELOCITY=100 MPH AND SIGNAL
MAST ARM LENGTHS 15' TO 45')**
NO SCALE
RSP 7E DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN 7E
DATED MAY 20, 2011 - PAGE 466 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP ES-7E

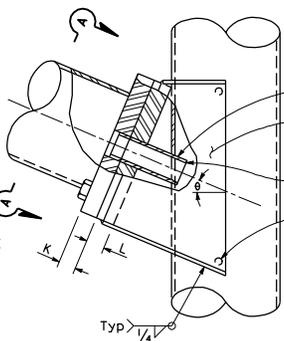
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. C5793
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

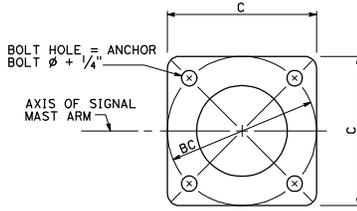
July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



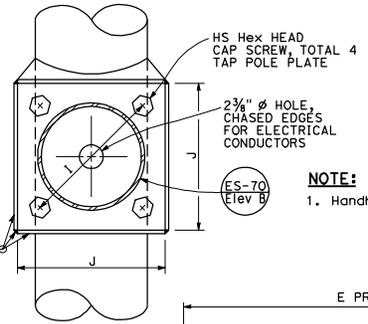
**TYPE 18-4-100,
23-4-100,
27-4-100
ELEVATION A**



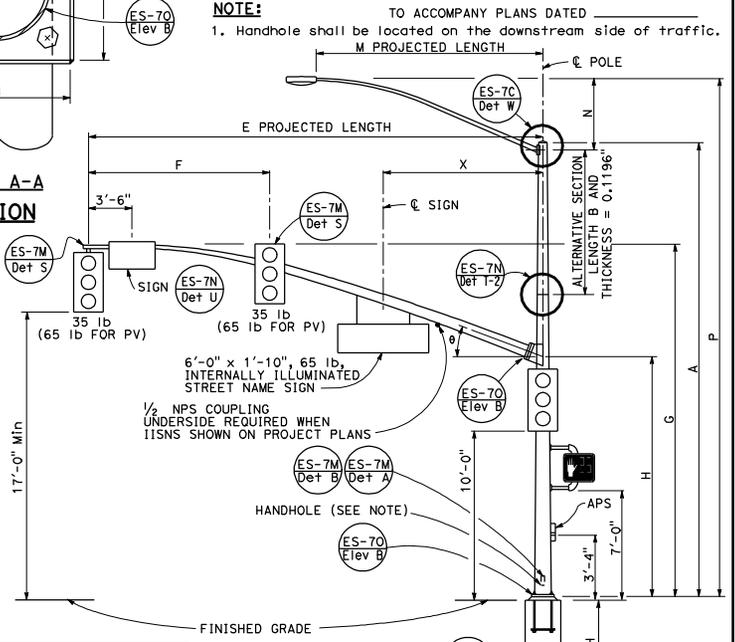
**ELEVATION C
SIGNAL MAST ARM CONNECTION
DETAIL A**



**BASE PLATE
DETAIL B**



VIEW A-A



**TYPE 19-4-100, 19A-4-100,
24-4-100, 24A-4-100,
26-4-100, 26A-4-100
ELEVATION B**

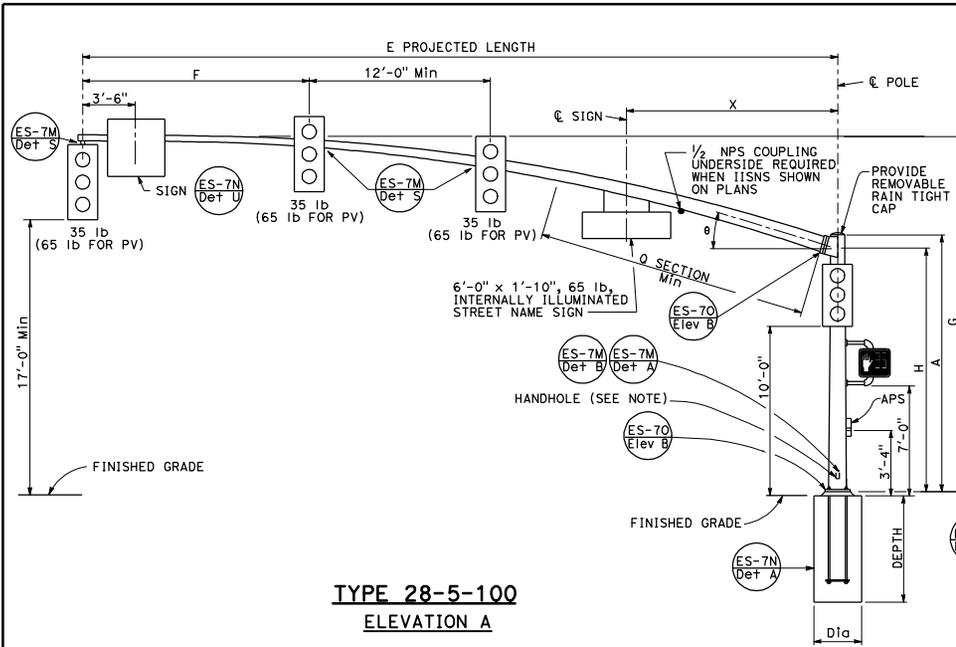
SIGNAL MAST ARM DATA												
E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM THICKNESS	L POLE THICKNESS	θ	X Max
25'-0"	10'-0"	22'-8"±		7 3/8"	0.2391"	12"	1 1/4"-7NC-3"	1'-0"	1/4"	1 1/2"	23°	10'-6"
30'-0"	12'-0"		8"	13 1/2"		1'-0"		1 1/2"	15°	13'-0"		
35'-0"	14'-0"	23'-0"±	16'-0"	8 1/2"		1'-1 1/2"		1 1/2"				
40'-0"	15'-0"			9 3/8"								
45'-0"		23'-8"±		10 1/4"								

LUMINAIRE MAST ARM DATA										
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT						
6'-0"	2'-0"±	3 1/4"	0.1196"	30'-0" POLE						
8'-0"	2'-6"±	3 1/2"		35'-0" POLE						
10'-0"	3'-3"±			31'-6"±						
12'-0"	4'-3"±	3 3/8"		32'-0"±						
15'-0"	4'-9"±	4 1/4"		36'-6"±						

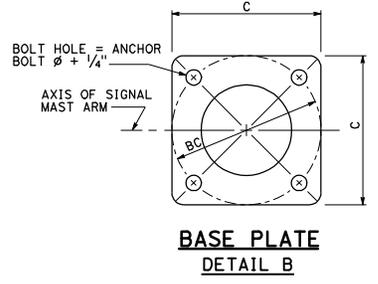
POLE DATA				BASE PLATE DATA				LUMINAIRE MAST ARM				SIGNAL MAST ARM				CIDH PILE FOUNDATION			
POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	A HEIGHT	Min OD	THICKNESS	ALTERNATIVE SECTION			C	BC BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	Dia	DEPTH	REINFORCED		
			BASE			TOP	B LENGTH	BOTTOM										TOP	
18-4-100	4	100	17'-0"	12 1/8"	0.3125"	NONE			1'-7"	1'-5 1/2"	3"	2" φ x 42"	NONE	25'-0"	3'-0"	11'-0"	YES		
19-4-100			30'-0"			9 3/8"	7 1/2"	6'-15' 12'-0"					30'-0"						
19A-4-100			35'-0"			6 5/8"	6'-15' 15'-0"	30'-0"											
23-4-100			17'-0"			NONE													
24-4-100			30'-0"			7 1/2"	7 1/2"	6'-15' 12'-0"					35'-0"						
24A-4-100			35'-0"	6 5/8"		6'-15' 15'-0"	35'-0"												
26-4-100			30'-0"	8 3/8"		8 3/8"	6'-15' 12'-0"	40'-0"											
26A-4-100			35'-0"	7 7/8"		7 7/8"	6'-15' 15'-0"	45'-0"											
27-4-100			17'-0"	10 1/8"		NONE													

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

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING STANDARD,
CASE 4 SIGNAL MAST ARM LOADING,
WIND VELOCITY=100 MPH AND SIGNAL
MAST ARM LENGTHS 25' TO 45')
 NO SCALE
 RSP ES-7F DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-7F
 DATED MAY 20, 2011 - PAGE 467 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP ES-7F



TYPE 28-5-100
ELEVATION A



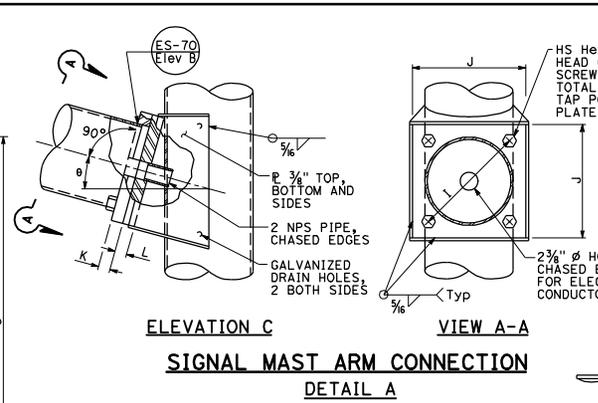
BASE PLATE
DETAIL B

LUMINAIRE MAST ARM DATA					
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT	
6'-0"	2'-0"±	3/4"	0.1196"	30'-0" POLE	35'-0" POLE
8'-0"	2'-6"±	3/2"		31'-6"±	36'-6"±
10'-0"	3'-3"±	3 7/8"		32'-0"±	37'-0"±
12'-0"	4'-3"±	3 7/8"		32'-9"±	37'-9"±
15'-0"	4'-9"±	4 1/4"		33'-9"±	38'-9"±
				34'-3"±	39'-3"±

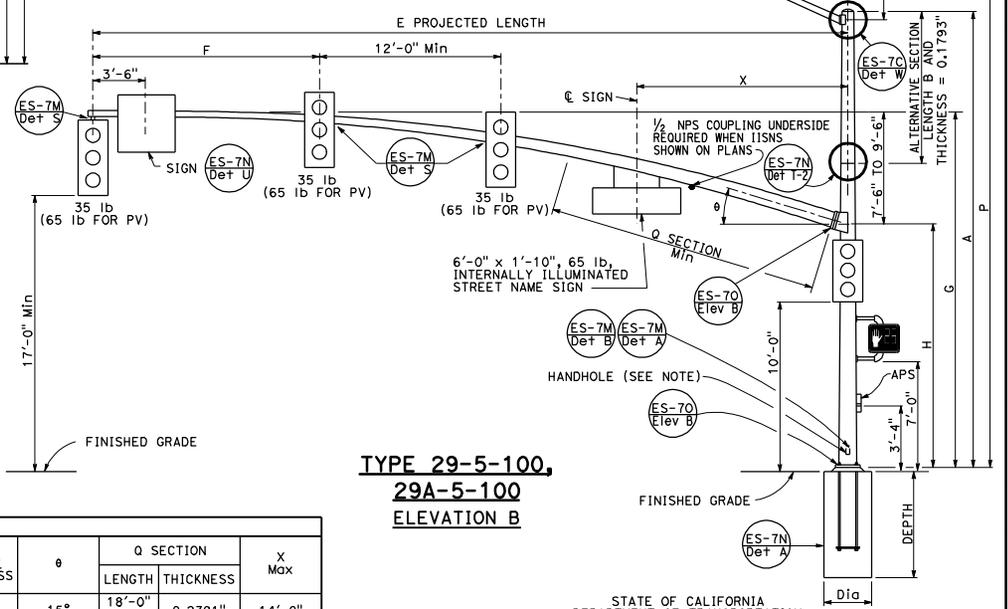
SIGNAL MAST ARM DATA														
E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM THICKNESS	L POLE THICKNESS	θ	Q SECTION		X Max
												LENGTH	THICKNESS	
50'-0"	15'-0"	23'-7 1/2" TO 25'-7 1/2"	16'-0"	11 7/8"	0.1793"	16"	1 1/2"-6NC-3/4"	1'-4"	1 3/4"	1 3/4"	15°	18'-0"	0.2391"	14'-0"
55'-0"				23'-0"										

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA				BASE PLATE DATA				LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION					
			A HEIGHT	Min OD	THICKNESS	ALTERNATIVE SECTION B LENGTH BOTTOM TOP	C	BC BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE			Dia	DEPTH	REINFORCED			
28-5-100	5	100	17'-0"	11 3/8"	0.3125"	NONE	23"	21"	3"	2 1/2" φ x 42"	NONE	50'-0"	3'-6"	12'-0"	YES			
29-5-100			30'-0"	9 1/8"		10'-0"										11 7/8"	9 1/8"	6'-15' [15'-0"]
29A-5-100			35'-0"	8 5/8"		15'-0"										8 5/8"		

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



ELEVATION C
SIGNAL MAST ARM CONNECTION
DETAIL A



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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING STANDARD,
CASE 5 SIGNAL MAST ARM LOADING,
WIND VELOCITY=100 MPH AND SIGNAL
MAST ARM LENGTHS 50' TO 55')
NO SCALE

RSP ES-7G DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-7G
DATED MAY 20, 2011 - PAGE 468 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP ES-7G

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

Stanley P. Johnson
REGISTERED CIVIL ENGINEER
No. C8793
Exp. 3-31-14
CIVIL
STATE OF CALIFORNIA

July 19, 2013
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

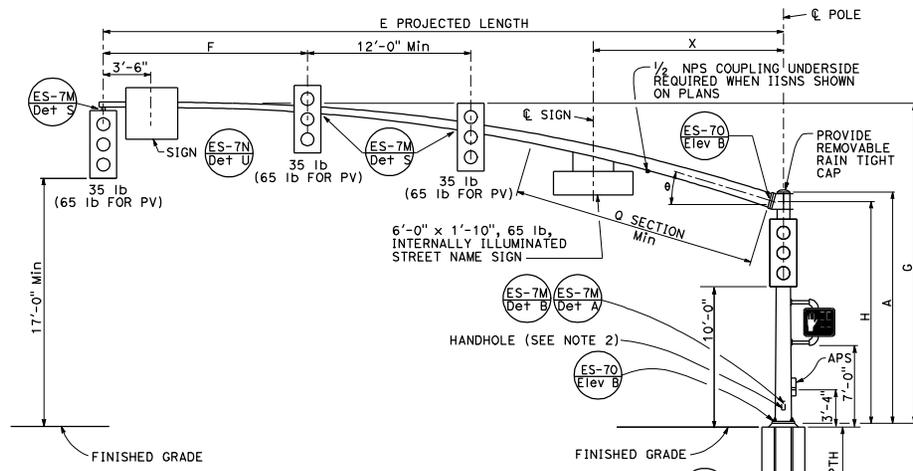
NOTE:
Handhole shall be located on the downstream side of traffic.

2010 REVISED STANDARD PLAN RSP ES-7G

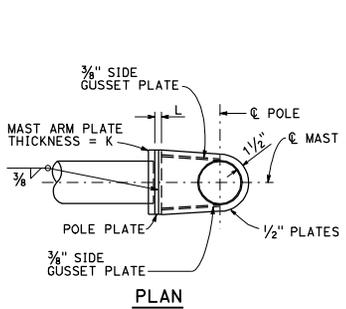
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. C5793
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

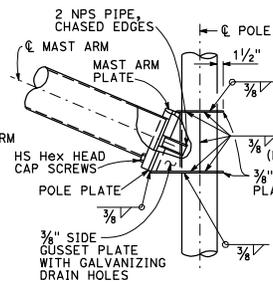
July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



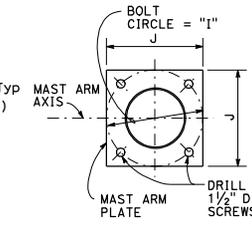
TYPE 60-5-100
ELEVATION A



PLAN



ELEVATION
(See Note 1)



MAST ARM PLATE

SIGNAL MAST ARM CONNECTION
DETAIL A

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 PLATE THICKNESS	L Pole P. THICKNESS	θ	Q SECTION		X Max	
												LENGTH	THICKNESS		
60'-0"	15'-0"	23'-7" TO 25'-7"	16'-0"	1'-1 1/2"	0.1793"	20"	1 1/2"-6NC-4"	1'-8"	2"	2"	15°	24'-0"	0.2391"	14'-0"	
65'-0"					0.2391"								29'-0"	0.3125"	

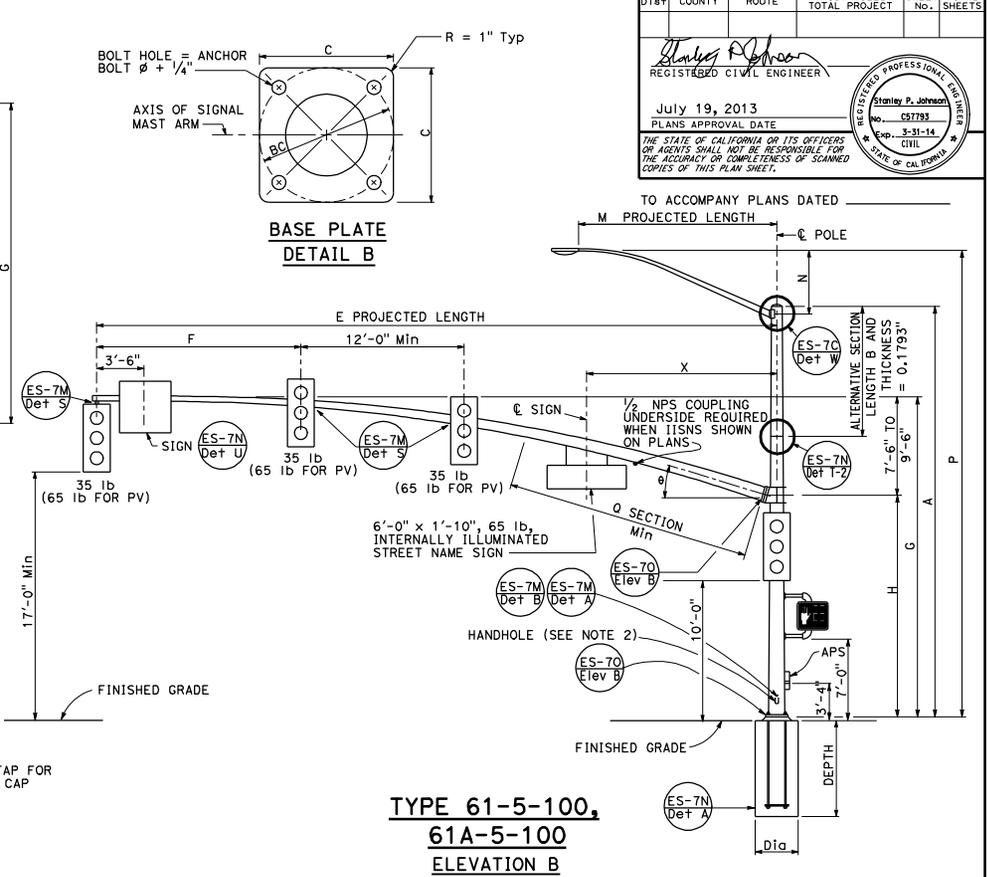
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT POLE	35'-0" POLE
6'-0"	2'-0"±	3/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 3/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±	4"		33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

NOTES:

- The radial separation between the face of the pole and the adjacent insides of the top and bottom gusset plates shall not exceed 3/8". Fillet weld size to be increased by amount of gap.
- Handhole shall be located on the downstream side of traffic.

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA		BASE PLATE DATA				LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION				
			A HEIGHT	Min OD		C	BC = BOLT CIRCLE	THICKNESS			ANCHOR BOLT SIZE	DIAMETER	DEPTH	REINFORCED	
				BASE	TOP										
60-5-100			17'-0"	16"	1'-1 1/2"	0.3125"	2'-0"	1'-11"	3"	2 1/2" ø x 60"	NONE	60'-0"	3'-6"	13'-0"	YES
61-5-100	5	100	30'-0"	16"	11 1/8"	0.3125"	2'-0"	1'-11"	3"	2 1/2" ø x 60"	6'-15' [15'-0"]	60'-0"	3'-6"	13'-0"	YES
61A-5-100			35'-0"	16"	10 5/8"	0.3125"	2'-0"	1'-11"	3"	2 1/2" ø x 60"		60'-0"	3'-6"	13'-0"	YES

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



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

REVISED STANDARD PLAN RSP ES-7H

ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING STANDARD,
CASE 5 SIGNAL MAST ARM LOADING,
WIND VELOCITY=100 MPH AND SIGNAL
MAST ARM LENGTHS 60' TO 65')

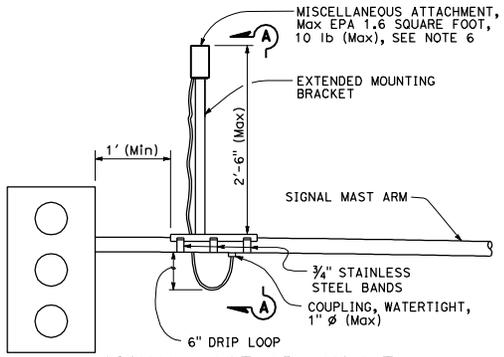
NO SCALE
RSP ES-7H DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-7H DATED MAY 20, 2011 - PAGE 469 OF THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP ES-7H

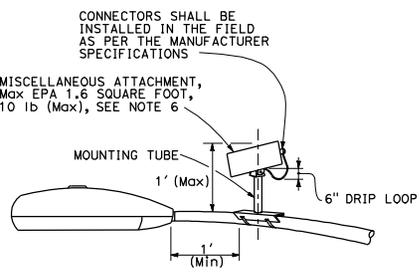
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. C6783
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

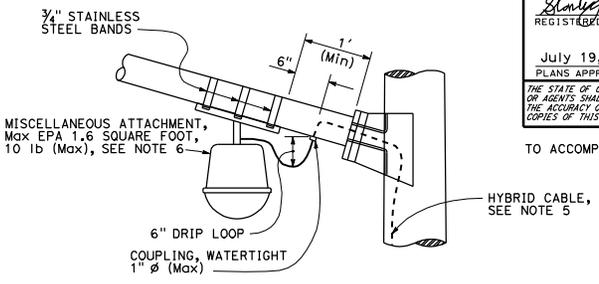
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



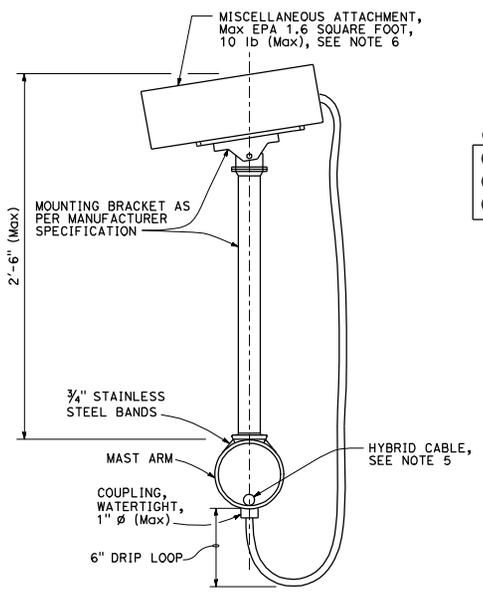
SIGNAL MAST ARM MOUNT
DETAIL A



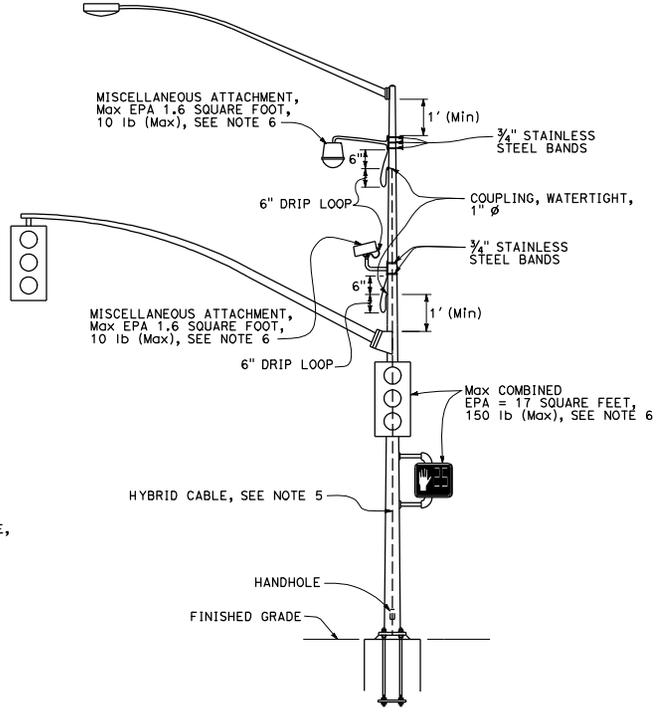
LUMINAIRE MAST ARM MOUNT
DETAIL B



LUMINAIRE MAST ARM MOUNT
DETAIL C



SECTION A-A



SIGNAL POLE MOUNT
DETAIL D

NOTES:

1. Exact mounting location of miscellaneous attachment and bracket shall be approved by the Engineer per manufacturer's recommendation.
2. Location of cable entrances on signal pole shall be a minimum of 1' from any flange or base plate.
3. Hybrid cable entrances on signal pole shall be drilled for weathertight coupling as required.
4. Hybrid cable shall have a drip loop at the entrance into signal pole, luminaire mast arm and signal mast arm.
5. A single hybrid cable shall run continuous and shall not be twisted from the miscellaneous attachment to the controller cabinet. No splices shall be allowed.
6. Use the manufacturer's Effective Projected Area (EPA) for miscellaneous attachment. The maximum EPA for each miscellaneous attachment shall be 1.6 square feet.
7. Maximum of two miscellaneous attachments per traffic signal structure.
8. Maximum of one miscellaneous attachment per mast arm.
9. Miscellaneous attachment shall be mounted using clamping devices.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(SIGNAL AND LIGHTING,
MISCELLANEOUS ATTACHMENT)
 NO SCALE

RSP ES-7R DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-7R
 DATED MAY 20, 2011 - PAGE 479 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP ES-7R

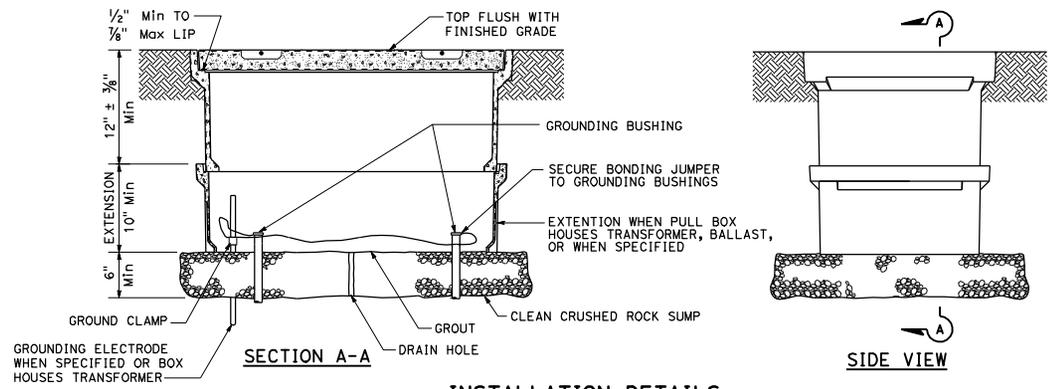
2010 REVISED STANDARD PLAN RSP ES-7R

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

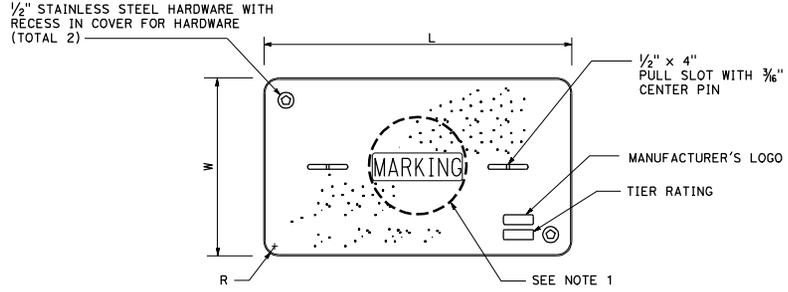
Theresa Gabriel
 REGISTERED ELECTRICAL ENGINEER
 No. E15129
 Exp. 6-30-14
 STATE OF CALIFORNIA

July 19, 2013
 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.

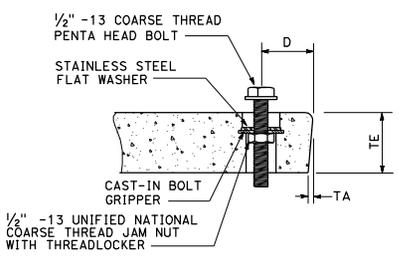
TO ACCOMPANY PLANS DATED _____



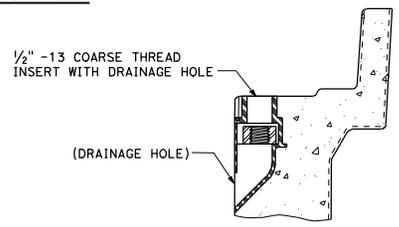
INSTALLATION DETAILS
DETAIL A



COVER TOP VIEW



TYPICAL COVER CAPTIVE BOLT
OR SIMILAR



TYPICAL THREADED INSERT
OR SIMILAR

PULL BOX	PULL BOX			COVER						
	MINIMUM DEPTH BOX	MINIMUM DEPTH EXTENSION	MAXIMUM WEIGHT	L	W	R	TE	TA	D	MAXIMUM WEIGHT
No. 3 1/2	12"	N/A	40 lb	1' - 3 3/8"	10 1/8"	1 3/8"	2"	1/8"	1 3/4"	30 lb
No. 5	12"	10"	55 lb	1' - 11 1/4"	1' - 1 3/4"	1 3/8"	2"	1/8"	1 3/4"	60 lb
No. 6	12"	10"	70 lb	2' - 6 1/2"	1' - 5 1/2"	1 3/8"	2"	1/8"	2"	85 lb

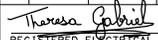
NOTES:

- Pull box covers shall be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" sprinkler control circuits, 50 V or less; "CALTRANS" on all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service;
 - No. 3 1/2 pull box.
 - "SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
 - "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
 - No. 5, 6, 9 or 9A pull box.
 - "TRAFFIC SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
 - "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
 - "LIGHTING-HIGH VOLTAGE" - Lighting or sign lighting circuits where voltage is above 600 V.
 - "IRRIGATION" - Circuits to irrigation controller 120 V or more.
 - "RAMP METER" - Ramp meter circuits.
 - "COUNT STATION" - Count or speed monitor circuits.
 - "COMMUNICATIONS" - Communication circuits.
 - "TOS COMMUNICATIONS" - TOS communication line.
 - "TOS POWER" - TOS power.
 - "TDC POWER" - Telephone demarcation cabinet power.
 - "CCTV" - Closed circuit television circuits.
 - "TMS" - Traffic monitoring station circuits.
 - "CMS" - Changeable message sign circuits.
 - "HAR" - Highway advisory radio circuits.
 - "BOOSTER PUMP" - Booster pump circuit.
- The nominal dimensions of the opening in which the cover sets shall be the same as the cover dimensions except the length and width dimensions shall be 1/8" greater.
- Covers and boxes shall be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces shall be flush within 1/8". Top outside radius of covers and pull boxes shall have a 1/8" radius.
- Pull box extension may be another pull box as long as the bottom edge of the pull box can fit into the cover opening.
- All dimensions for the cover for non-traffic pull box are nominal values.

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

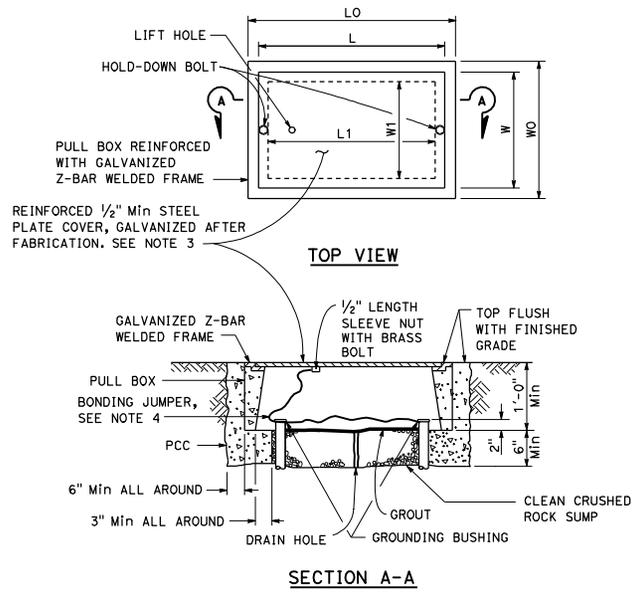
RSP ES-8A DATED JULY 19, 2013 SUPERSEDES RSP ES-8A DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-8A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
 REGISTERED ELECTRICAL ENGINEER					
July 19, 2013 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 _____



SECTION A-A
No. 3 1/2(T), No. 5(T) AND
No. 6(T) TRAFFIC PULL BOX

NOTES:

- Traffic pull box shall be provided with steel cover and special concrete footing. Steel cover shall have embossed non-skid pattern.
- Steel reinforcing shall be as regularly used in the standard products of the respective manufacturer.
- Pull box covers shall be marked as follows: "SERVICE" service circuits between service point and service disconnect; "SPRINKLER-CONTROL" Sprinkler control circuits, 50 V or less; "CALTRANS" On all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service.
 - No. 3 1/2(T) pull box.
 - "SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
 - "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
 - No. 5(T) or 6(T) pull box.
 - "TRAFFIC SIGNAL" - Traffic signal circuits with or without lighting or sign lighting circuits.
 - "LIGHTING" - Lighting or sign lighting circuits where voltage is under 600 V.
 - "LIGHTING-HIGH VOLTAGE" - Lighting or sign lighting circuits where voltage is above 600 V.
 - "IRRIGATION" - Circuits to irrigation controller 120 V or more.
 - "RAMP METER" - Ramp meter circuits.
 - "COUNT STATION" - Count or speed monitor circuits.
 - "COMMUNICATION" - Communication circuits.
 - "TOS COMMUNICATIONS" - TOS communications line.
 - "TOS POWER" - TOS power.
 - "TDC POWER" - Telephone demarcation cabinet power.
 - "CCTV" - Closed circuit television circuits.
 - "TMS" - Traffic monitoring station circuits.
 - "CMS" - Changeable message sign circuits.
 - "HAR" - Highway advisory radio circuits.
 - "BOOSTER PUMP" - Booster pump circuit.
- Bonding jumper for metal covers shall be 3' long, minimum.
- The nominal dimensions of the opening in which the cover sets shall be the same as the cover dimensions except the length and width dimensions shall be 1/8" greater.
- Covers and boxes shall be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces shall be flush within 1/8".

DIMENSION TABLE											
PULL BOX	PULL BOX						COVER				
	MINIMUM * THICKNESS	MINIMUM DEPTH BOX AND EXTENSION	WO	LO	L1	W1	L **	W **	R	EDGE THICKNESS	EDGE TAPER
No. 3 1/2(T)	1 1/2"	1'-0"	1'-5" ± 1"	1'-8 3/4" ±	1'-2 1/2" ±	10 5/8" ± 1"	1'-8" ±	1'-1 3/4" ±	0"	1/2"	NONE
No. 5(T)	1 3/4"	1'-0"	1'-11 1/2" ± 1"	2'-5 1/2" ±	1'-7" ±	1'-1" ± 1"	2'-3" ±	1'-4" ±	0"	1/2"	NONE
No. 6(T)	2"	1'-0"	2'-6" ± 1"	2'-11 1/2" ±	1'-11 1/2" ±	1'-5" ± 1"	2'-9" ±	1'-8" ±	0"	1/2"	NONE

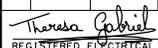
* EXCLUDING CONDUIT WEB ** TOP DIMENSION

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

RSP ES-8B DATED JULY 19, 2013 SUPERSEDES RSP ES-8B DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

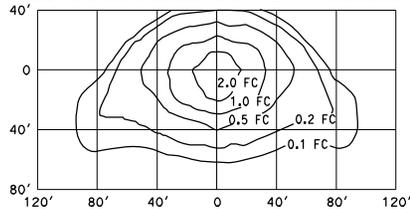
REVISED STANDARD PLAN RSP ES-8B

2010 REVISED STANDARD PLAN RSP ES-8B

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
 REGISTERED ELECTRICAL ENGINEER Theresa Gabriel No. E15129 Exp. 6-30-14 ELECTRICAL STATE OF CALIFORNIA					
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

TO ACCOMPANY PLANS DATED _____

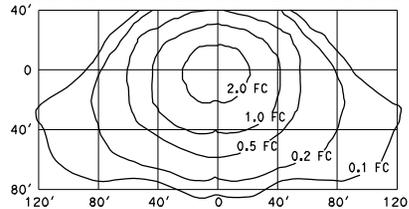
ISOFOOTCANDLE CURVE - MINIMUM



TYPE III MEDIUM CUTOFF

Cutoff Luminaire
34' Mounting Height
Lamp operated at 22,000 lm
200-W high pressure sodium lamp
ANSI Designation S66

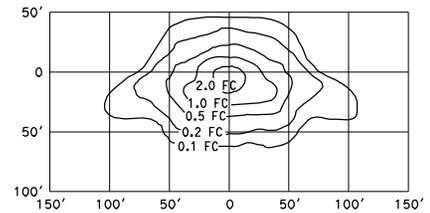
ISOFOOTCANDLE CURVE - MINIMUM



TYPE III MEDIUM CUTOFF

Cutoff Luminaire
40' Mounting Height
Lamp operated at 37,000 lm
310-W high pressure sodium lamp
ANSI Designation S67

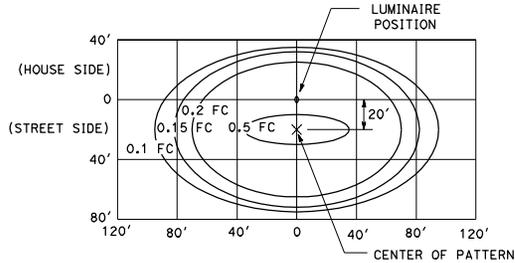
ISOFOOTCANDLE CURVE - MINIMUM



TYPE III MEDIUM CUTOFF

Cutoff Luminaire
30' Mounting Height
Lamp operated at 16,000 lm
150-W high pressure sodium lamp
ANSI Designation S55

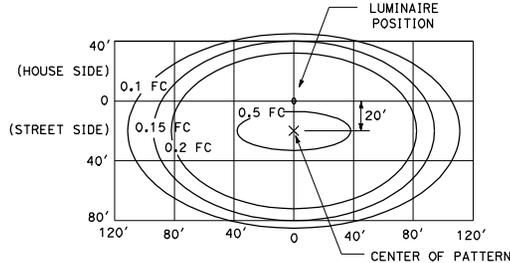
ISOFOOTCANDLE CURVE - MINIMUM



LED LUMINAIRE ROADWAY 1

165-W at 34' Mounting Height

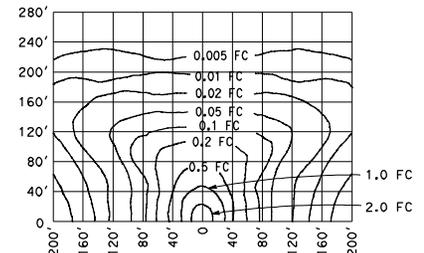
ISOFOOTCANDLE CURVE - MINIMUM



LED LUMINAIRE ROADWAY 2

235-W at 40' Mounting Height

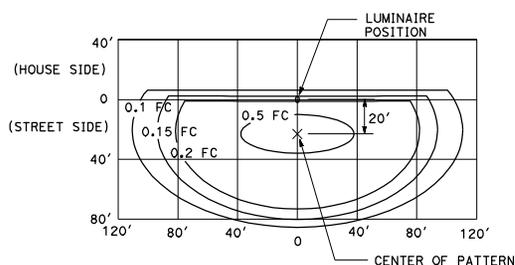
ISOFOOTCANDLE CURVE - MINIMUM



LOW PRESSURE SODIUM LUMINAIRE

40' Mounting Height
Lamp operated at 33,000 lm
180-W low pressure sodium lamp

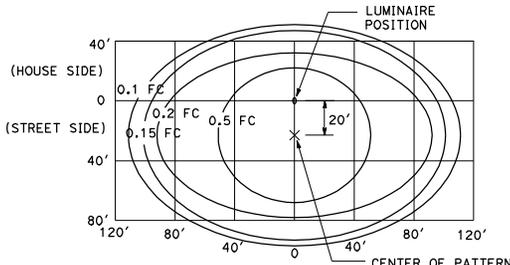
ISOFOOTCANDLE CURVE - MINIMUM



LED LUMINAIRE ROADWAY 3

235-W at 40' Mounting Height
with back side control

ISOFOOTCANDLE CURVE - MINIMUM



LED LUMINAIRE ROADWAY 4

300-W at 40' Mounting Height

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS
(ISOFOOTCANDLE DIAGRAMS)**

NO SCALE

RSP ES-10A DATED JULY 19, 2013 SUPERSEDES RSP ES-10A DATED JULY 20, 2012
THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-10A

2010 REVISED STANDARD PLAN RSP ES-10A

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER

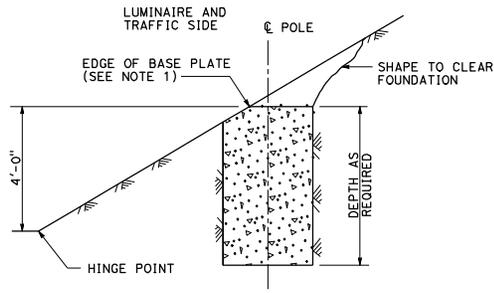
July 19, 2013
 PLANS APPROVAL DATE

Stanley P. Johnson
 No. CS793
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

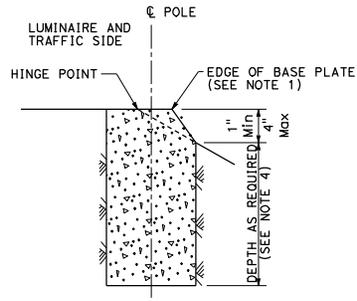
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

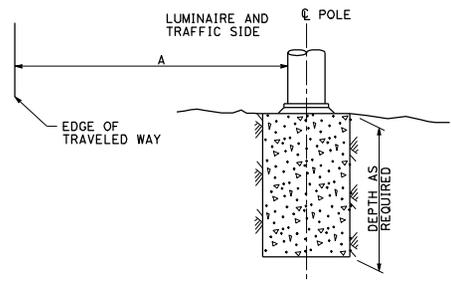
STANDARD TYPE	SETBACK (DIMENSION A)
32	30'-0" (Min)
31	20'-0" (Min)
15, 15D, 15-SB, 21, 21D, 30	ARM LENGTH (Min)



CUT SLOPES
STEEPER THAN 4:1,
LESS THAN 2:1
DETAIL A-1
 See Note 2 and 3



FILL SLOPES
STEEPER THAN 4:1,
LESS THAN 2:1
DETAIL A-2
 See Note 2 and 3

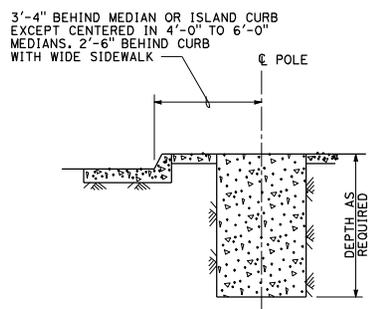


FLAT SECTIONS, CUT OR FILL SLOPES
4:1 OR FLATTER
DETAIL A-3
 See Note 2

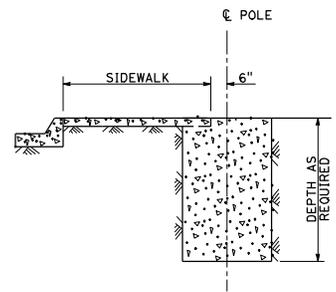
FOUNDATIONS ADJACENT TO ALL ROADWAYS EXCEPT
IN SIDEWALK, MEDIAN AND ISLAND AREAS
DETAIL A

NOTES:

- Where a portion of the foundation is above grade, the top edges shall have a 1" chamfer.
- Slopes shall be horizontal to vertical ratio (Horizontal : Vertical).
- Horizontal setbacks on cut and fill slopes steeper than 4:1 shall not exceed the distance shown for flat sections.
- CIDH embedment depth shall be increased beyond standard depths by the diameter of the CIDH.



MEDIAN, ISLAND
OR WIDE SIDEWALK
DETAIL B-1
 7' Wide and wider



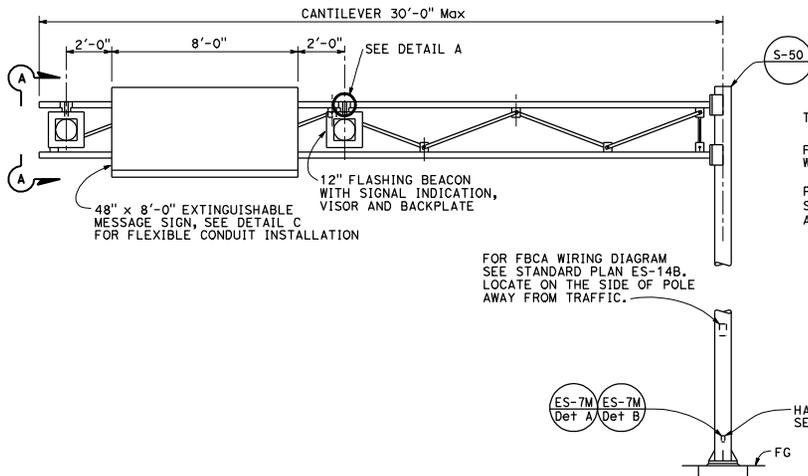
NARROW SIDEWALK
DETAIL B-2
 Less than 7' wide

FOUNDATIONS IN SIDEWALK, MEDIAN AND ISLAND AREAS
DETAIL B

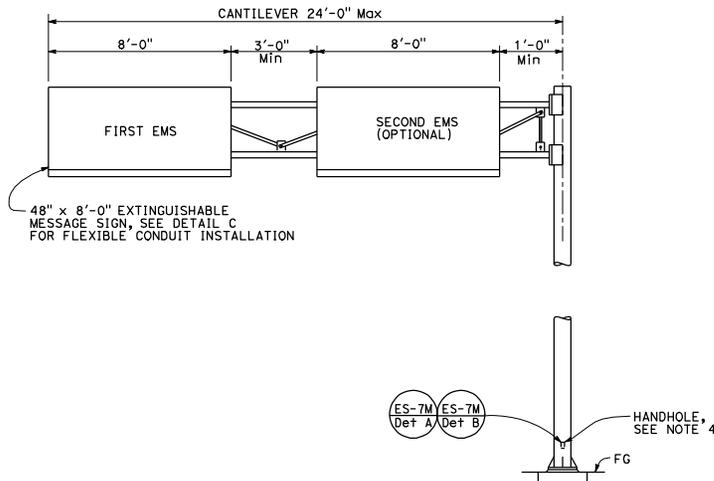
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
ELECTRICAL SYSTEMS
(FOUNDATION INSTALLATIONS)
 NO SCALE

RSP ES-11 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-11
 DATED MAY 20, 2011 - PAGE 488 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP ES-11

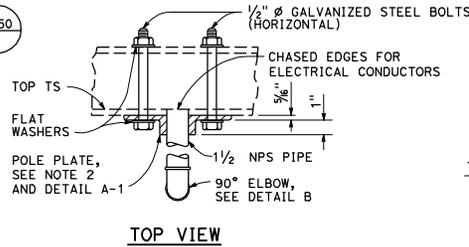
2010 REVISED STANDARD PLAN RSP ES-11



**EMS WITH FLASHING BEACONS
ELEVATION A**

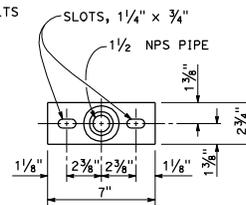


**EMS WITHOUT FLASHING BEACONS
ELEVATION B**

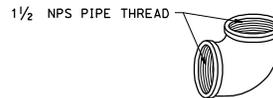


**TOP VIEW
SECTION B-B**

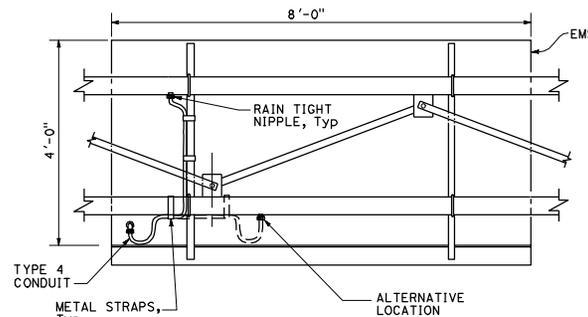
**POLE PLATE
DETAIL A**



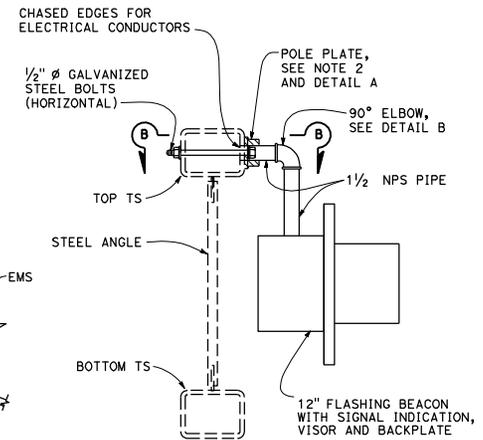
DETAIL A-1



**90° ELBOW
DETAIL B**



**FLEXIBLE CONDUIT INSTALLATION
DETAIL C**
Back view of sign



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**ELECTRICAL SYSTEMS
(EXTINGUISHABLE MESSAGE
SIGN ON A FULL CANTILEVER)**
NO SCALE

RSP ES-14C DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-14C
DATED MAY 20, 2011 - PAGE 495 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-14C

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

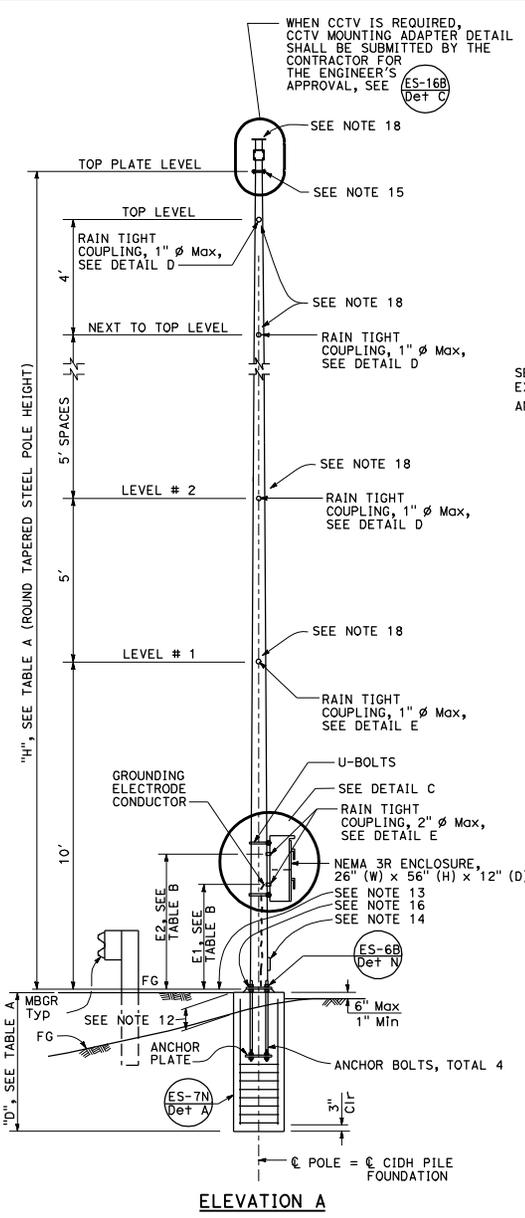
Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. CS783
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

NOTES:

1. Pole plate shall be bronze or galvanized ductile iron.
2. For structure information, see Standard Plan S-50.
3. Wind loading (3-second gust): 100 mph.
4. Handhole shall be located on the downstream side of traffic.

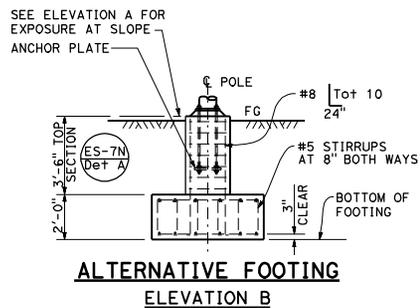
2010 REVISED STANDARD PLAN RSP ES-14C



POLE TYPE	POLE DATA			BASE PLATE DATA			"D" 2'-6" ϕ CIDH Pile UP TO 2:1	
	HEIGHT "H"	Min OD		"c" THICKNESS	THICKNESS	ANCHOR BOLTS SIZE		BC = BOLT CIRCLE
		BASE	TOP					
VDS 30	30'	8"		0.1793"	1'-1 1/2"	1 1/2" ϕ x 3'-0"	1'-1 1/2"	
VDS 35	35'	8 5/8"	3 7/8"		1'-2"		11'-0"	
VDS 40	40'	9 3/8"			1'-3"		13'-0"	

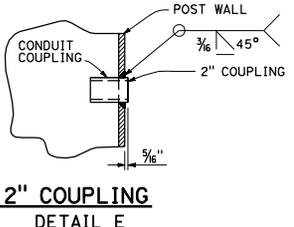
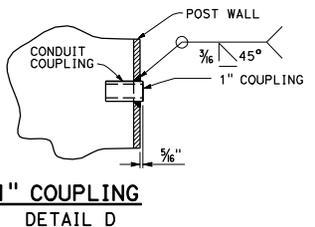
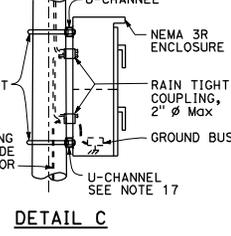
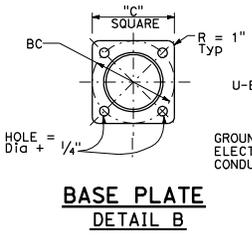
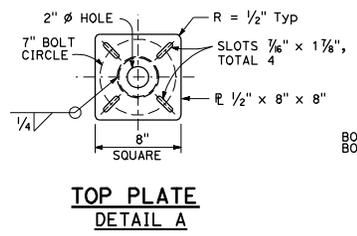
POLE TYPE	COUPLING	
	E1(Max)	E2(Max)
VDS 30		
VDS 35	3'-6"	4'-9"
VDS 40		

SPREAD FOOTING		
GROUND	FOOTING SIZE (LENGTH x WIDTH x DEPTH)	REINFORCEMENT TOP & BOTTOM
LEVEL	8'-6" x 8'-6" x 2'-0"	12 - #5 EW
UP TO 2:1	10'-0" x 10'-0" x 2'-0"	15 - #5 EW



LOCATION	MAXIMUM TOTAL EPA PER LEVEL (SQUARE FEET)	MAXIMUM TOTAL WEIGHT (lb)
LEVEL #1		
LEVEL #2	14	200
LEVEL #3	10 ***	
LEVEL #4 (VDS 35 AND VDS 40 ONLY)		
LEVEL #5 (VDS 40 ONLY)	2.5	50
NEXT TO TOP LEVEL		
ON TOP PLATE LEVEL **		

* MAXIMUM HORIZONTAL EXTENT BEYOND POLE FACE IS 4 FEET.
 ** MAXIMUM EXTENT ABOVE TOP PLATE IS 3 FEET.
 *** 14 IF LEVEL #1 IS ZERO.



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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER

July 19, 2013
 PLANS APPROVAL DATE

Stanley P. Johnson
 No. CS783
 Exp. 3-31-14
 CIVIL ENGINEER
 STATE OF CALIFORNIA

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

- NOTES:
- TO ACCOMPANY PLANS DATED _____
- All steel shall be galvanized after fabrication.
 - During pole installation the post shall be raked as necessary with the use of leveling nuts to provide a plumb pole axis.
 - The foundation shall be treated as level ground condition if the slope inclination is flatter than 4 : 1 (Horizontal : Vertical)
 - For devices mounted and mounting heights, see TABLE B.
 - Design Specification: AASHTO Standard Specification for structural support for highway signs, luminaires and traffic signal dated 2001.
 - Wind Loadings: 100 mph (3-second gust)
 - Unit Stresses (Structural Steel):
 - fy = 55,000 psi (tapered steel tube)
 - fy = 50,000 psi (unless otherwise noted)
 - Anchor bolts: fy = 55,000 psi
 - Unit Stresses (Reinforced Concrete):
 - f'c = 3,600 psi
 - fy = 60,000 psi
 - The Contractor shall verify all controlling field dimensions before ordering of fabricating any material.
 - When no barriers are used, the NEMA 3R enclosure shall be located on the downstream side and perpendicular to the roadway.
 - 1'-3" (Max) for sloped finished grade.
 - Bottom of base plate.
 - Handhole. ES-7M Det B, ES-7M Det A
 - Top plate. Install a blank flange on the top plate when closed circuit television is not used.
 - ES-7O Elev B
 - U-channel with bracket.
 - Use the manufacturer's Effective Projected Area (EPA) for attachments. Assign attachments to nearest level and sum each level, see Table D for limitations.
- STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CLOSED CIRCUIT TELEVISION WITH VEHICLE DETECTION SYSTEM, 30' TO 40' POLE)

NO SCALE

RSP ES-16D DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-16D DATED MAY 20, 2011 - PAGE 503 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-16D

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


 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 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 _____

A

AB AGGREGATE BASE
ABS ACRYLONITRILE-BUTADIENE-STYRENE
AC ASPHALT CONCRETE
ACC ARMOR-CLAD CONDUCTORS
Adj ADJACENT/ADJUSTABLE
AIC AUXILIARY IRRIGATION CONTROLLER
Alt ALTERNATIVE
AMEND AMENDMENT
ARV AIR RELEASE VALVE
AUTO AUTOMATIC
AUX AUXILIARY
AVB ATMOSPHERIC VACUUM BREAKER

B

B&B BALLED AND BURLAPPED
B/B BRASS/BRONZE
B/B/PL BRASS/BRONZE/PLASTIC
B/PL BRASS/PLASTIC
BFM BONDED FIBER MATRIX
Bit Ctd BITUMINOUS COATED
BP BOOSTER PUMP
BPA BACKFLOW PREVENTER ASSEMBLY
BPE BACKFLOW PREVENTER ENCLOSURE
BV BALL VALVE

C

C CONDUIT
CAP CORRUGATED ALUMINUM PIPE
CARV COMBINATION AIR RELEASE VALVE
CB COUPLING BAND
CCA CAM COUPLER ASSEMBLY
CEC CONTROLLER ENCLOSURE CABINET
CHDPE CORRUGATED HIGH DENSITY POLYETHYLENE
CL CHAIN LINK
CNC CONTROL AND NEUTRAL CONDUCTORS
Conc CONCRETE
CP COPPER PIPE
CS COMPOST SOCK
CSP CORRUGATED STEEL PIPE
CST CENTER STRIP
CV CHECK VALVE

D

Dia DIAMETER
DIP DUCTILE IRON PIPE
DIT DRIP IRRIGATION TUBING
DG DECOMPOSED GRANITE
DN DIAMETER NOMINAL
DVA DRIP VALVE ASSEMBLY

E

EC EROSION CONTROL
ECTC EROSION CONTROL TECHNOLOGY COUNCIL
Elect ELECTRIC/ELECTRICAL
Elev ELEVATION
ELL ELBOW
ENCL ENCLOSURE
EP EDGE OF PAVEMENT
ES EDGE OF SHOULDER
EST END STRIP
ESTB ESTABLISHMENT
ETW EDGE OF TRAVELED WAY

F

F FULL CIRCLE
F/P FULL/PART CIRCLE
FCV FLOW CONTROL VALVE
FERT FERTILIZER
FG FINISHED GRADE
FH FLEXIBLE HOSE
FIPT FEMALE IRON PIPE THREAD
FIS FERTILIZER INJECTOR SYSTEM
FL FLOW LINE
FR FIBER ROLL
FS FLOW SENSOR
FSC FLOW SENSOR CABLE
FV FLUSH VALVE

G

Galv GALVANIZED
GARV GARDEN VALVE
GARVA GARDEN VALVE ASSEMBLY
GM GRAVEL MULCH
GPH GALLONS PER HOUR
GPM GALLONS PER MINUTE
GSP GALVANIZED STEEL PIPE
GV GATE VALVE

H

H HALF CIRCLE
HDPE HIGH DENSITY POLYETHYLENE
HP HORSEPOWER/HINGE POINT
HPL HIGH PRESSURE LINE
Hwy HIGHWAY

I

IC IRRIGATION CONTROLLER
ICC IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET
ID INSIDE DIAMETER
IFS IRRIGATION FILTRATION SYSTEM
IPS IRON PIPE SIZE
IPT IRON PIPE THREAD
Irr IRRIGATION

L

L LENGTH
Max MAXIMUM
MBGR METAL BEAM GUARD RAILING
MCV MANUAL CONTROL VALVE
MIC MASTER IRRIGATION CONTROLLER
Min MINIMUM
MIPT MALE IRON PIPE THREAD
Misc MISCELLANEOUS
Mtl MATERIAL
MVP MAINTENANCE VEHICLE PULLOUT

N

NCN NO COMMON NAME
NL NOZZLE LINE
No. NUMBER
NPT NATIONAL PIPE THREAD

O

O/C ON CENTER
OD OUTSIDE DIAMETER
OL OVERLAP

P

P PART CIRCLE
PB PULL BOX
PCC PORTLAND CEMENT CONCRETE
PE POLYETHYLENE
Pkt PACKET
PL PLASTIC
PLS PURE LIVE SEED
PLT PLANT/PLANTING
PLT ESTB PLANT ESTABLISHMENT
PM POST MILE
PR PRESSURE RATED
PRLV PRESSURE RELIEF VALVE
PRV PRESSURE REGULATING VALVE
PVC POLYVINYL CHLORIDE
Pvmt PAVEMENT

Q

Q QUARTER CIRCLE
QCV QUICK COUPLING VALVE

NOTE:
 For additional abbreviations,
 see Standard Plans A10A and A10B.

R

R RADIIUS
RCP REINFORCED CONCRETE PIPE
RCV REMOTE CONTROL VALVE
RCVM REMOTE CONTROL VALVE (MASTER)
RCVMF REMOTE CONTROL VALVE (MASTER) W/FLOW SENSOR
RCVP REMOTE CONTROL VALVE W/PRESSURE REGULATOR
RCW RECYCLED WATER
RECP ROLLED EROSION CONTROL PRODUCT
REQ REQUIRED
RICS REMOTE IRRIGATION CONTROL SYSTEM
R/W RIGHT OF WAY

S

S SLIP
SCH SCHEDULE
SF STATE-FURNISHED
Shld SHOULDER
Sq SQUARE
SST SIDE STRIP
Sta STATION
Std STANDARD
SW SIDEWALK/SOUND WALL

T

T THIRD CIRCLE/THREAD
TLS TRUCK LOADING STANDPIPE
TQ THREE QUARTER CIRCLE
TRM TURF REINFORCEMENT MAT
TT TWO-THIRDS CIRCLE
TWSA TREE WELL SPRINKLER ASSEMBLY
Typ TYPICAL

U

UG UNDERGROUND

W

W WIDTH
W/ WITH
WM WATER METER
WS WYE STRAINER
WSA WYE STRAINER ASSEMBLY
WSP WELDED STEEL PIPE
WWM WELDED WIRE MESH

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**LANDSCAPE AND
 EROSION CONTROL ABBREVIATIONS**
 NO SCALE

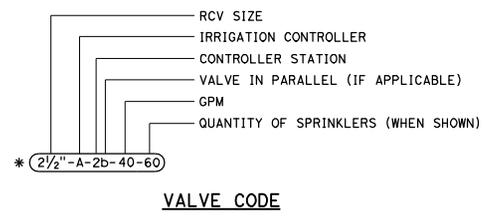
RSP H1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H1
 DATED MAY 20, 2011 - PAGE 218 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H1

2010 REVISED STANDARD PLAN RSP H1

EXISTING	NEW	ITEM DESCRIPTION
		WATER METER (WM)
		BACKFLOW PREVENTER ASSEMBLY (BPA)
		BACKFLOW PREVENTER ENCLOSURE (BPE)
		BOOSTER PUMP (BP)
		TRUCK LOADING STANDPIPE (TLS)
		FLOW SENSOR (FS)
		MASTER IRRIGATION CONTROLLER (MIC)
		AUXILIARY IRRIGATION CONTROLLER (AIC)
		IRRIGATION CONTROLLER (IC)
		IRRIGATION CONTROLLER (IC) (BATTERY)
		IRRIGATION CONTROLLER (IC) (SOLAR)
		IRRIGATION CONTROLLER (IC) (TWO WIRE)
		IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET (ICC)
		ARMOR-CLAD CONDUCTORS (ACC)
		CONTROL AND NEUTRAL CONDUCTORS (CNC)
		IRRIGATION CONDUIT
		EXTEND IRRIGATION CROSSOVER
		DUCTILE IRON PIPE (SUPPLY LINE) (MAIN) (DIP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (MAIN) (GSP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (LATERAL) (GSP)
		PLASTIC PIPE (SUPPLY LINE) (MAIN)
		PLASTIC PIPE (SUPPLY LINE) (LATERAL)
		COPPER PIPE (SUPPLY LINE)
		DRIP IRRIGATION TUBING
		REMOTE CONTROL VALVE (RCV)
		REMOTE CONTROL VALVE (MASTER) (RCVM)
		REMOTE CONTROL VALVE (MASTER) W/FLOW METER (RCVMF)
		REMOTE CONTROL VALVE W/PRESSURE REGULATOR (RCVP)
		EXISTING MANUAL CONTROL VALVE (MCV)
		DRIP VALVE ASSEMBLY (DVA)
		WYE STRAINER ASSEMBLY (WSA)

EXISTING	NEW	ITEM DESCRIPTION
		GATE VALVE (GV)
		BALL VALVE (BV)
		QUICK COUPLING VALVE (QCV)
		CAM COUPLER ASSEMBLY (CCA)
		GARDEN VALVE ASSEMBLY (GARVA)
		PRESSURE REGULATING VALVE (PRV)
		PRESSURE RELIEF VALVE (PRLV)
		FLOW CONTROL VALVE (FCV)
		COMBINATION AIR RELEASE VALVE (CARV)
		CHECK VALVE (CV)
		FLUSH VALVE (FV)
		EXISTING NOZZLE LINE W/TURNING UNION
		EXISTING IRRIGATION SYSTEM
		EXISTING IRRIGATION SYSTEM TO BE REMOVED
		CHAIN LINK GATE
		QUICK COUPLING VALVE W/SPRINKLER PROTECTOR
		SPRINKLER W/SPRINKLER PROTECTOR
		CONNECT TO EXISTING SYSTEM
		CAP
		CAP EXISTING
		FIBER ROLL
		COMPOST SOCK



* VALVE CODES FOR EXISTING VALVES ARE SHOWN IN A DASHED ENCLOSURE.

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

LICENSED LANDSCAPE ARCHITECT
 JULY 19, 2013
 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 _____

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE AND EROSION CONTROL SYMBOLS
 NO SCALE

RSP H2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H2 DATED MAY 20, 2011 - PAGE 219 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H2

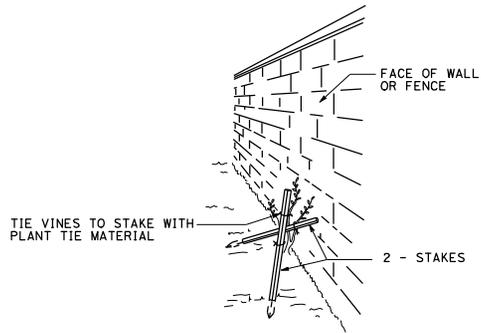
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Gregory A. Baker
 LICENSED LANDSCAPE ARCHITECT

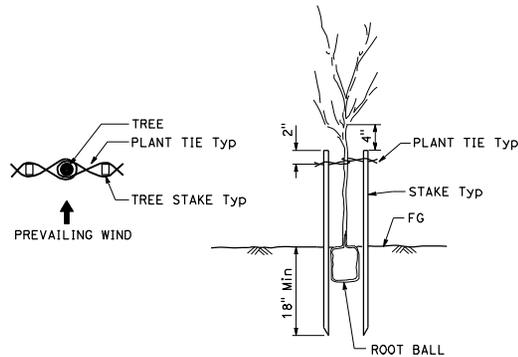
July 19, 2013
 PLANS APPROVAL DATE

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.

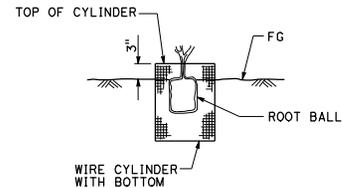
TO ACCOMPANY PLANS DATED _____



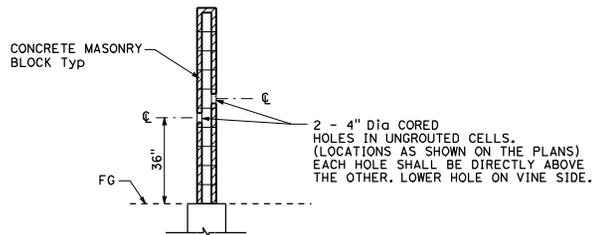
**PERSPECTIVE
VINE STAKING**



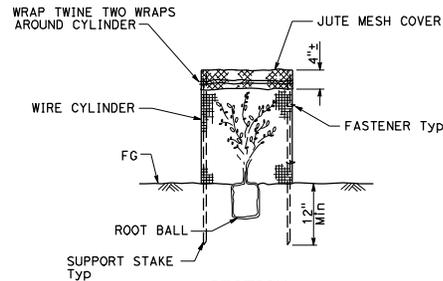
TREE STAKING



**SECTION
ROOT PROTECTOR**



**SECTION
CORE HOLE (VINE)**



**SECTION
FOLIAGE PROTECTOR**

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
 NO SCALE

RSP H4 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H4
 DATED MAY 20, 2011 - PAGE 221 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H4

2010 REVISED STANDARD PLAN RSP H4

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

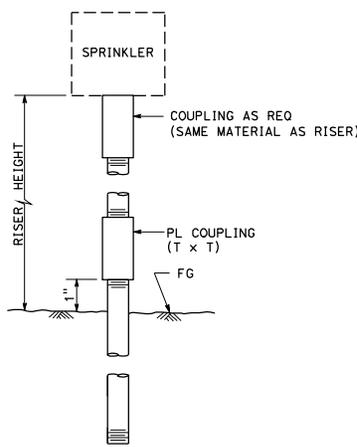
Gregory A. Decker
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



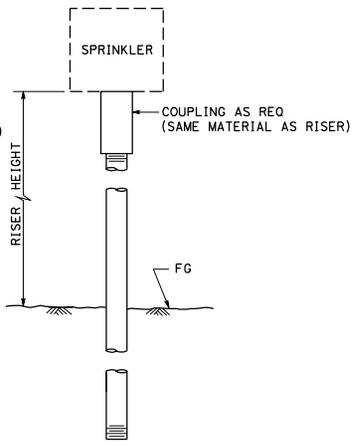
TO ACCOMPANY PLANS DATED _____

NOTES:

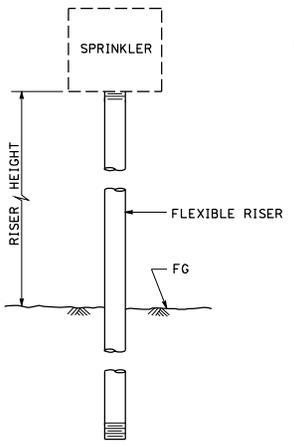
1. Install tree well sprinkler assembly on up-hill side of plant when on slope.
2. Install bubbler within basin.



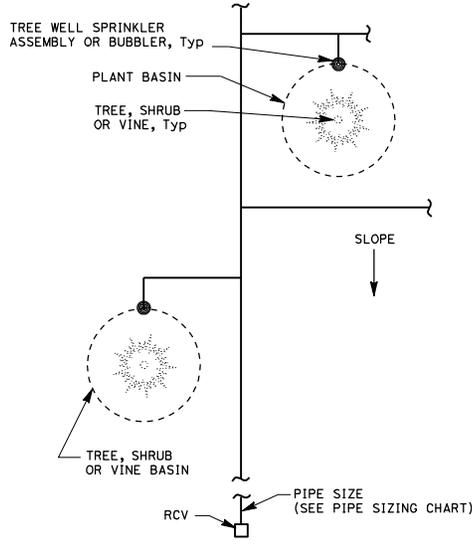
ELEVATION
RISER SPRINKLER ASSEMBLY TYPE I



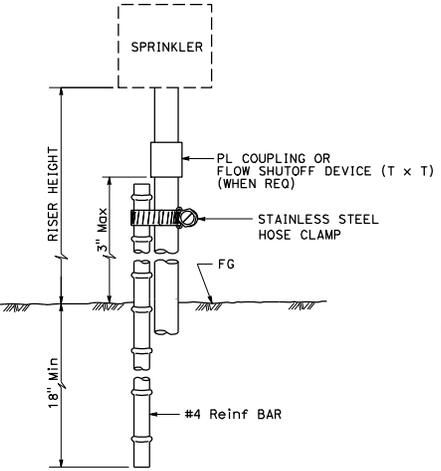
ELEVATION
RISER SPRINKLER ASSEMBLY TYPE II



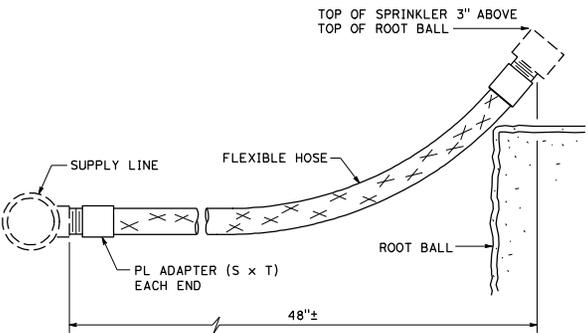
ELEVATION
RISER SPRINKLER ASSEMBLY TYPE III



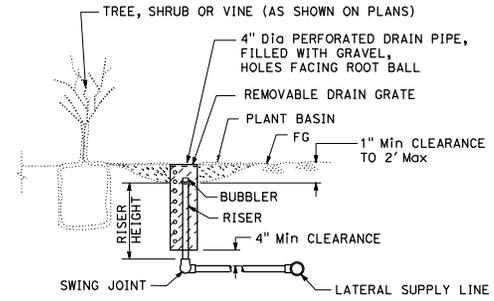
PLAN



ELEVATION
RISER SPRINKLER ASSEMBLY TYPE IV



ELEVATION
RISER SPRINKLER ASSEMBLY TYPE V



SECTION
TREE WELL SPRINKLER ASSEMBLY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS

NO SCALE

RSP H5 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H5 DATED MAY 20, 2011 - PAGE 222 OF THE STANDARD PLANS BOOK DATED 2010.

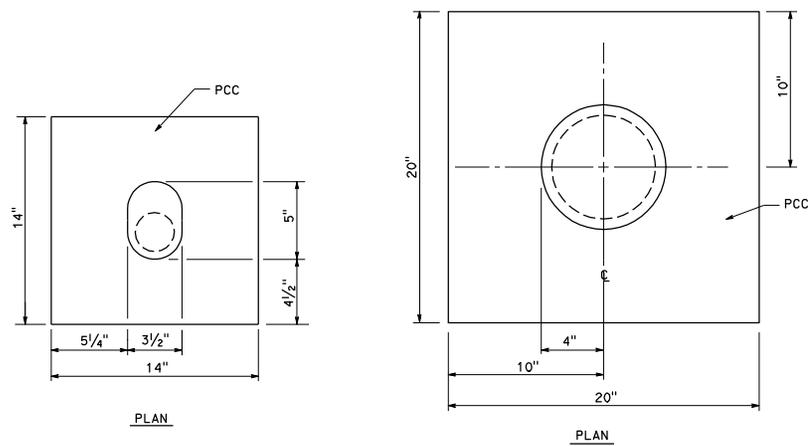
REVISED STANDARD PLAN RSP H5

2010 REVISED STANDARD PLAN RSP H5

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

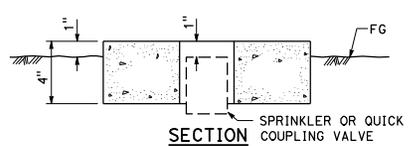
Gregory A. Decker
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____



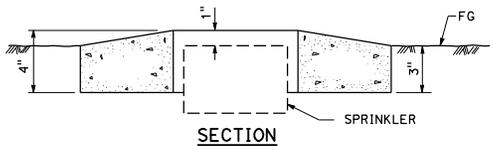
PLAN

PLAN



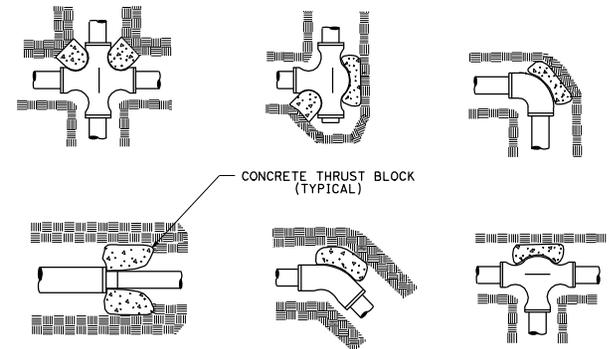
SECTION
SPRINKLER OR QUICK COUPLING VALVE

SPRINKLER PROTECTOR TYPE I



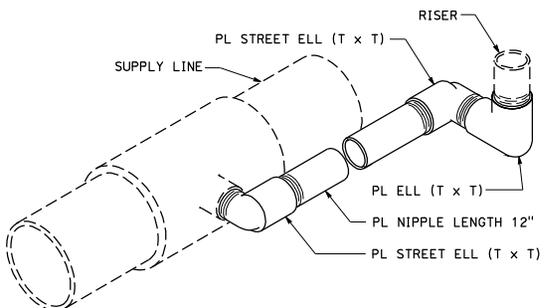
SECTION
SPRINKLER

SPRINKLER PROTECTOR TYPE II



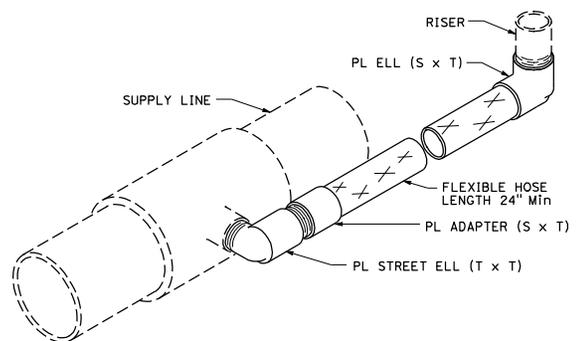
CONCRETE THRUST BLOCK (TYPICAL)

TYPICAL THRUST BLOCKS



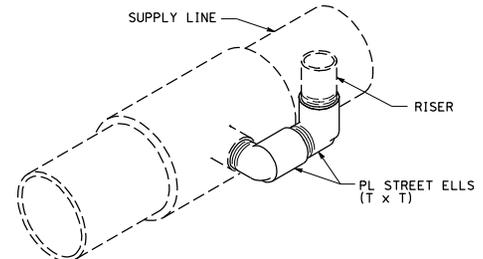
ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE I



ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE II



ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE III

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS

NO SCALE

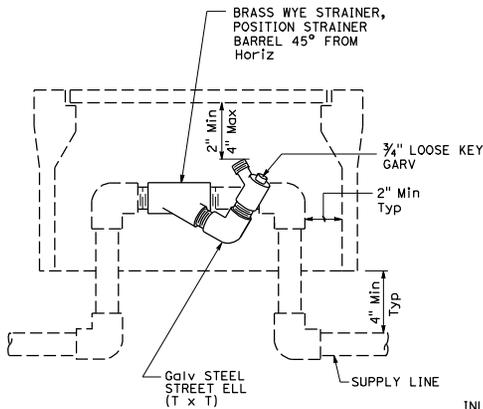
RSP H6 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H6 DATED MAY 20, 2011 - PAGE 223 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H6

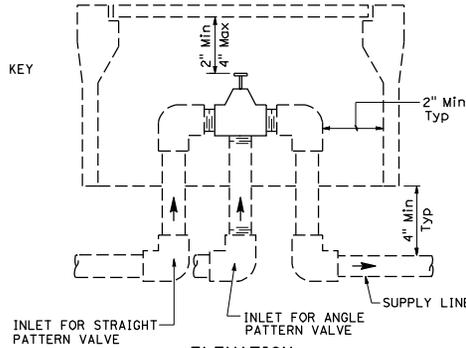
2010 REVISED STANDARD PLAN RSP H6

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

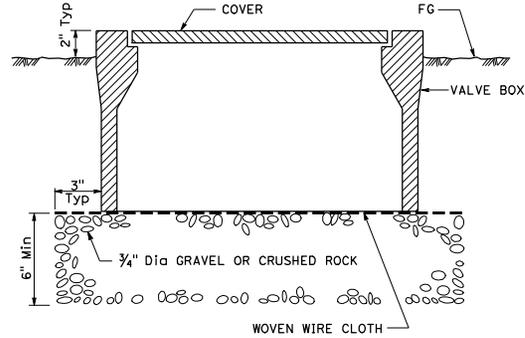
Supra A. Pagan
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



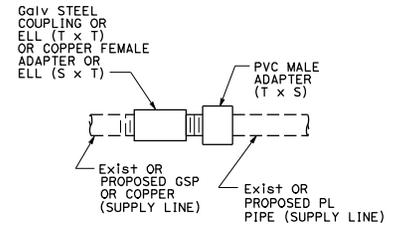
ELEVATION
WYE STRAINER ASSEMBLY



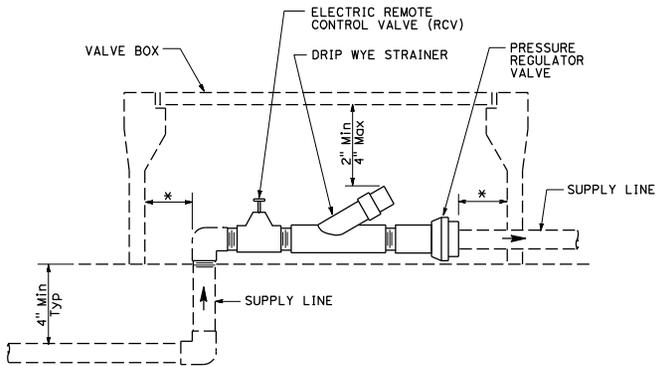
ELEVATION
VALVE



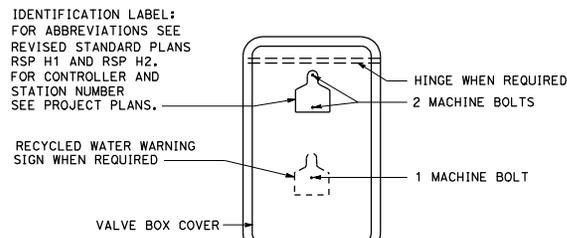
SECTION
VALVE BOX



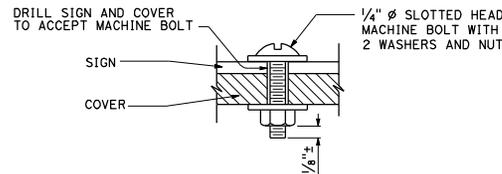
GALVANIZED OR COPPER PIPE CONNECTION TO PLASTIC PIPE



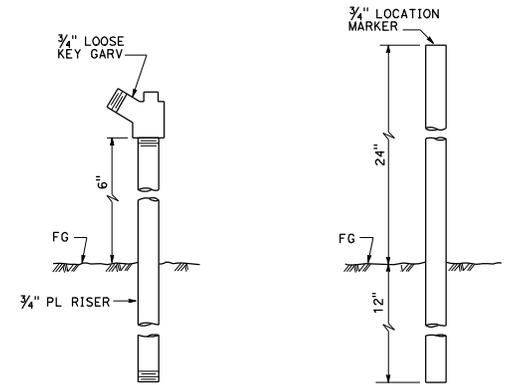
ELEVATION
DRIP VALVE ASSEMBLY



PLAN



SECTION
VALVE BOX IDENTIFICATION



ELEVATION
GARDEN VALVE ASSEMBLY

ELEVATION
LOCATION MARKER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
NO SCALE

RSP H7 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H7 DATED MAY 20, 2011 - PAGE 224 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H7

2010 REVISED STANDARD PLAN RSP H7

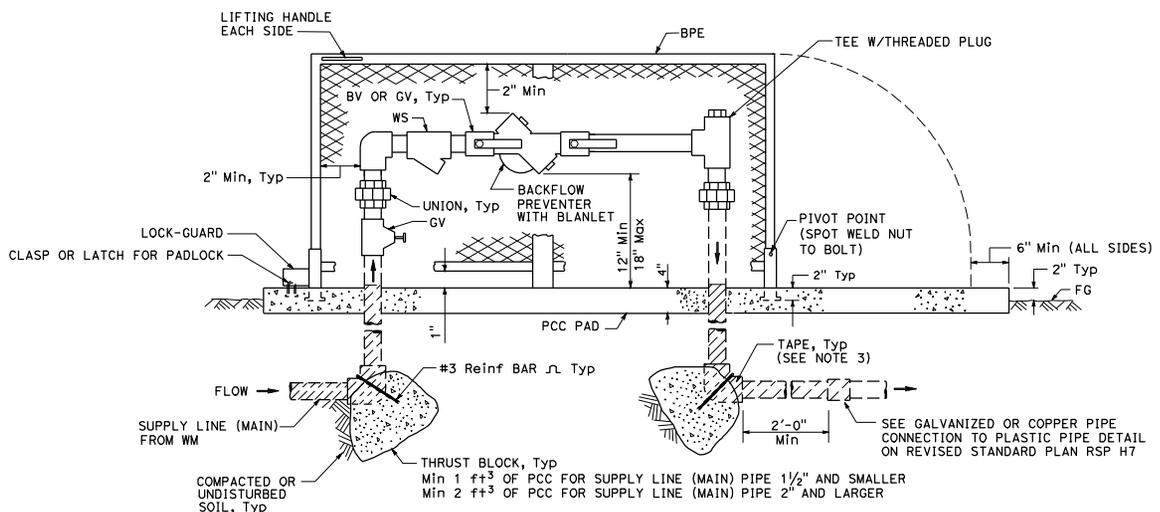
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Supra A. Pagan
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 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
Supra A. Pagan
 25815
 7818-13
 1-308
 STATE OF CALIFORNIA

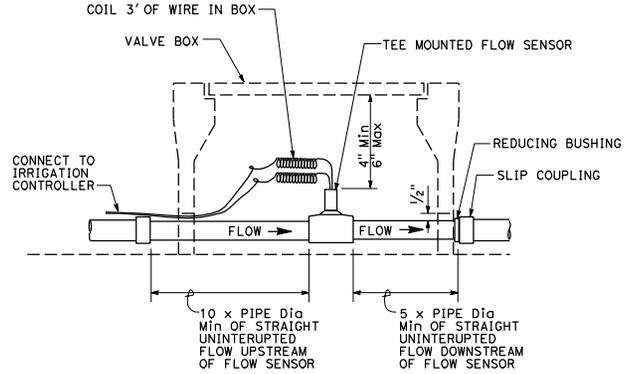
TO ACCOMPANY PLANS DATED _____

NOTES:

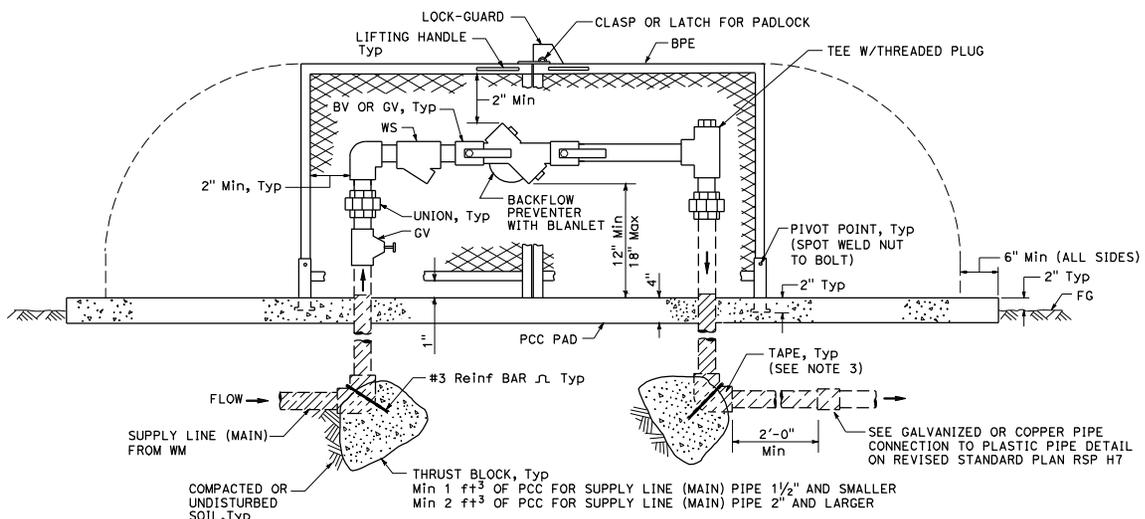
1. Wye strainer and fittings must be the same size as the backflow preventer shown on the plans.
2. Backflow preventer assembly manifold pipe must be the same pipe as the supply line (main) pipe to be installed from the water meter to the backflow preventer assembly.
3. All metal in contact with soil and Portland Cement Concrete must be wrapped with 2" wide plastic backed adhesive polyethylene tape 20 mil thick with 1/2" overlap.



ELEVATION
BACKFLOW PREVENTER ASSEMBLY
 IN ONE PIECE ENCLOSURE



SECTION
FLOW SENSOR



ELEVATION
BACKFLOW PREVENTER ASSEMBLY
 IN TWO PIECE ENCLOSURE

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
 NO SCALE

RSP H8 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H8
 DATED MAY 20, 2011 - PAGE 225 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP H8

2010 REVISED STANDARD PLAN RSP H8

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

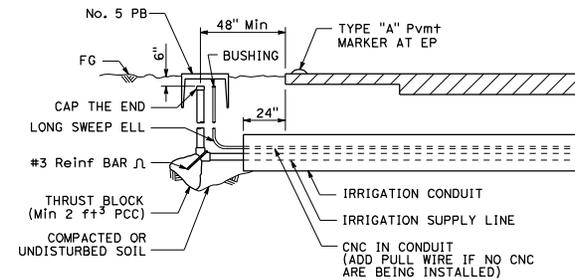
Gregory A. Decker
 LICENSED LANDSCAPE ARCHITECT

July 19, 2013
 PLANS APPROVAL DATE

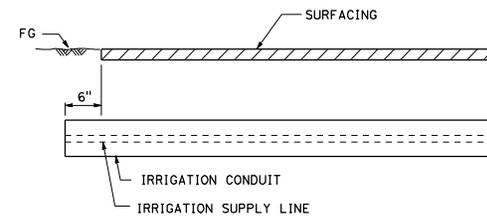
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LICENSED LANDSCAPE ARCHITECT
Gregory A. Decker
 2-28-15
 1-30-15
 STATE OF CALIFORNIA

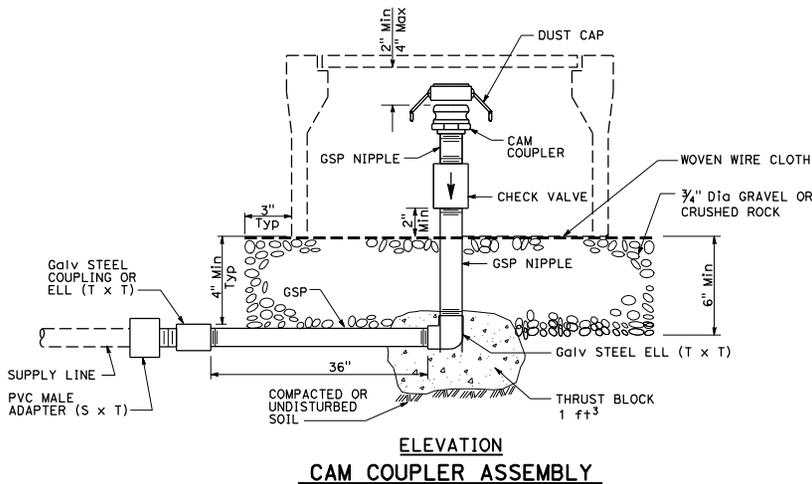
TO ACCOMPANY PLANS DATED _____



SECTION
IRRIGATION CONDUIT
UNDER TRAVELED WAY



SECTION
IRRIGATION CONDUIT
UNDER SIDEWALKS, DRIVEWAYS AND PATHS



ELEVATION
CAM COUPLER ASSEMBLY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
NO SCALE

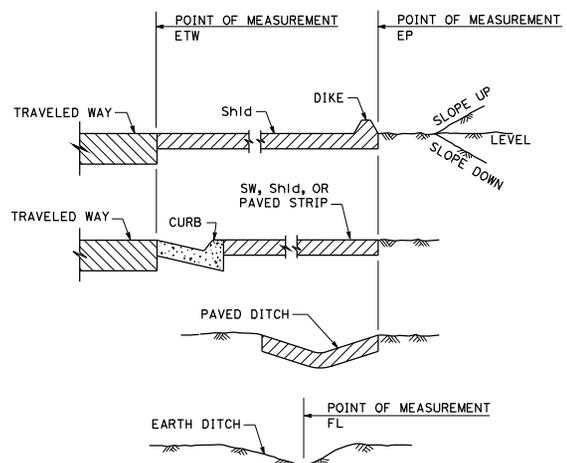
RSP H9 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H9
DATED MAY 20, 2011 - PAGE 226 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H9

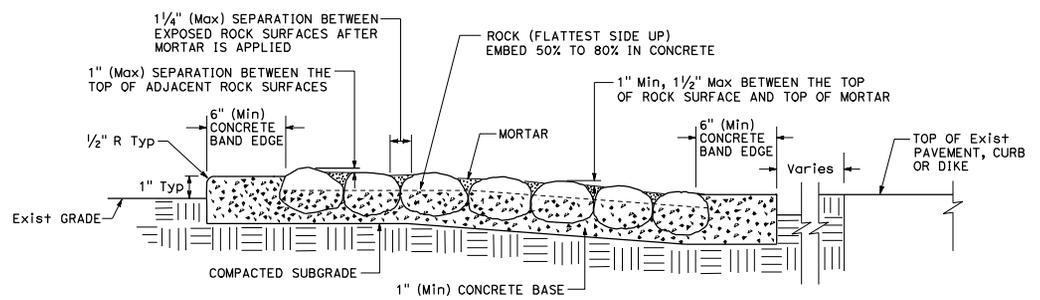
2010 REVISED STANDARD PLAN RSP H9

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

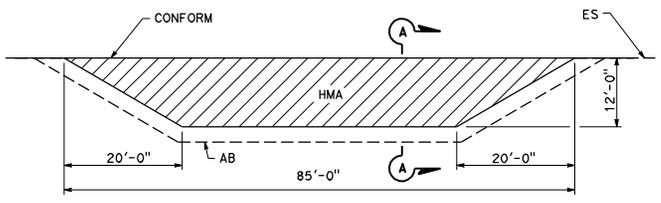
Stephen A. Decker
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



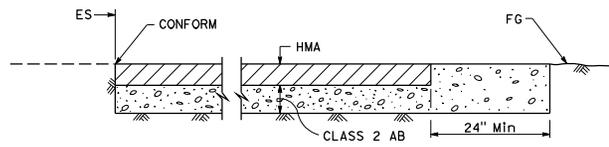
SECTION POINTS OF MEASUREMENT



SECTION ROCK BLANKET



PLAN



SECTION A-A MAINTENANCE VEHICLE PULLOUT

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS
 NO SCALE

RSP H9A DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H9A

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

William K. Farnbach
 REGISTERED CIVIL ENGINEER

July 19, 2013
 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.

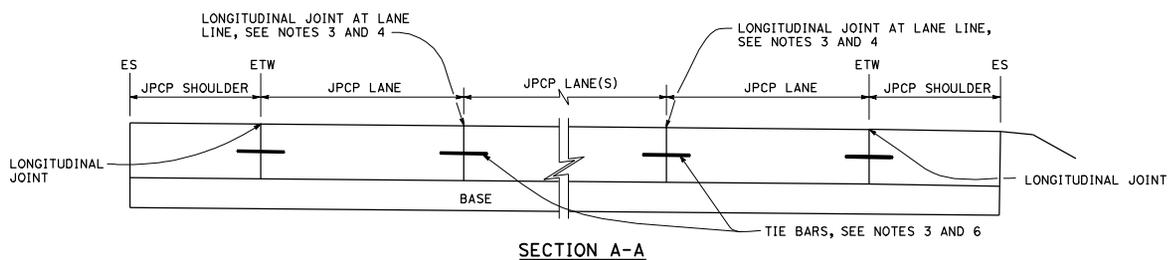
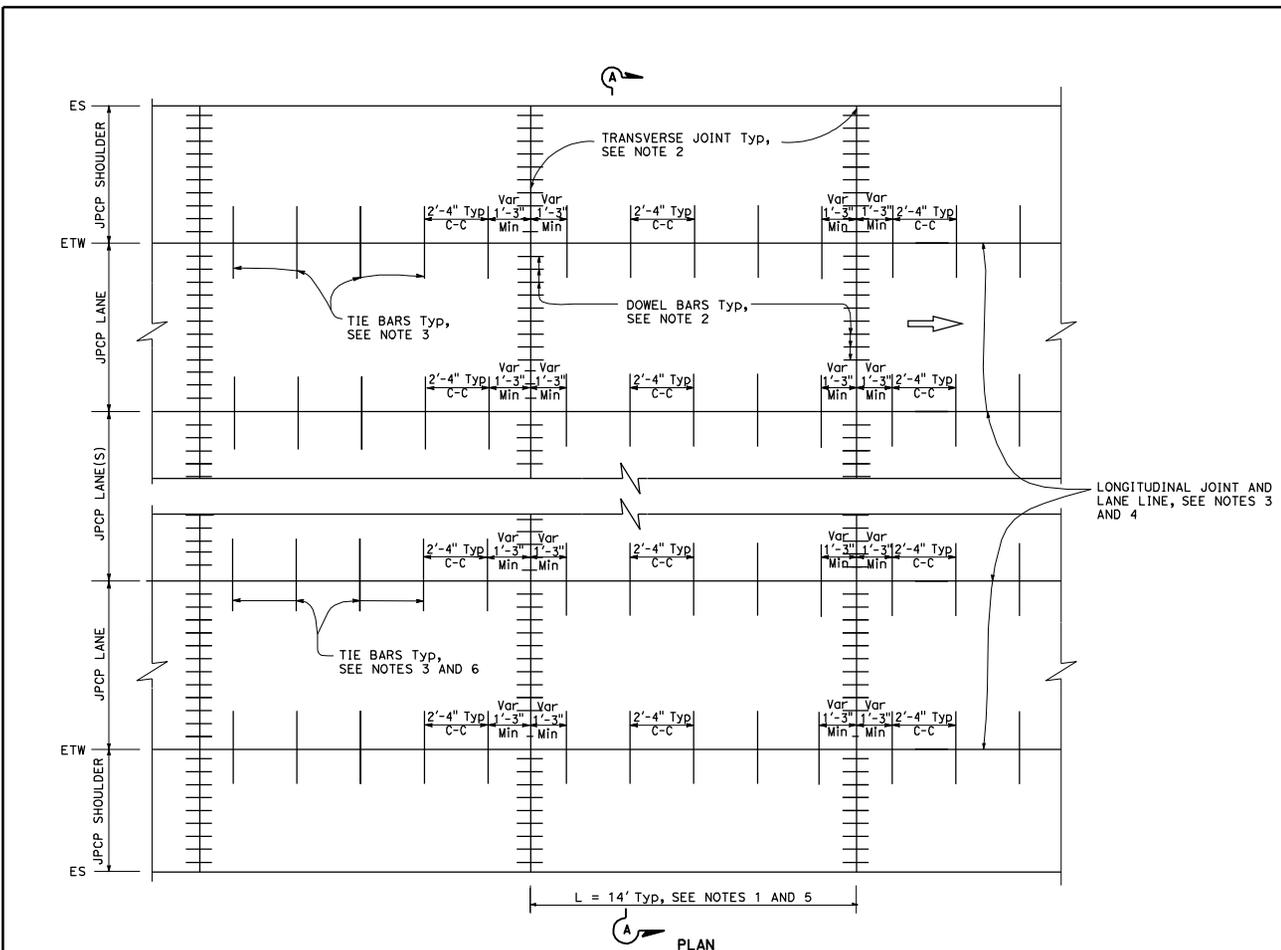
REGISTERED PROFESSIONAL ENGINEER
 William K. Farnbach
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

NOTES:

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

2010 REVISED STANDARD PLAN RSP P1



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

NO SCALE

RSP P1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P1 DATED MAY 20, 2011 - PAGE 125 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P1

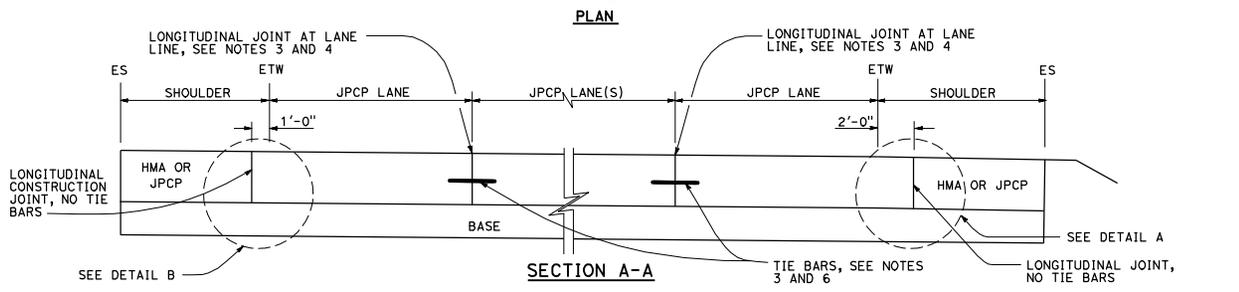
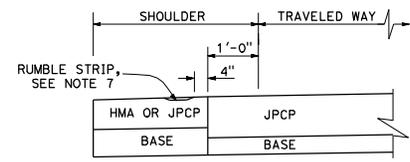
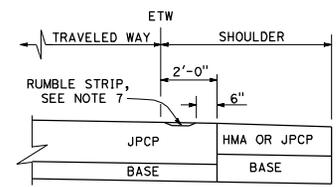
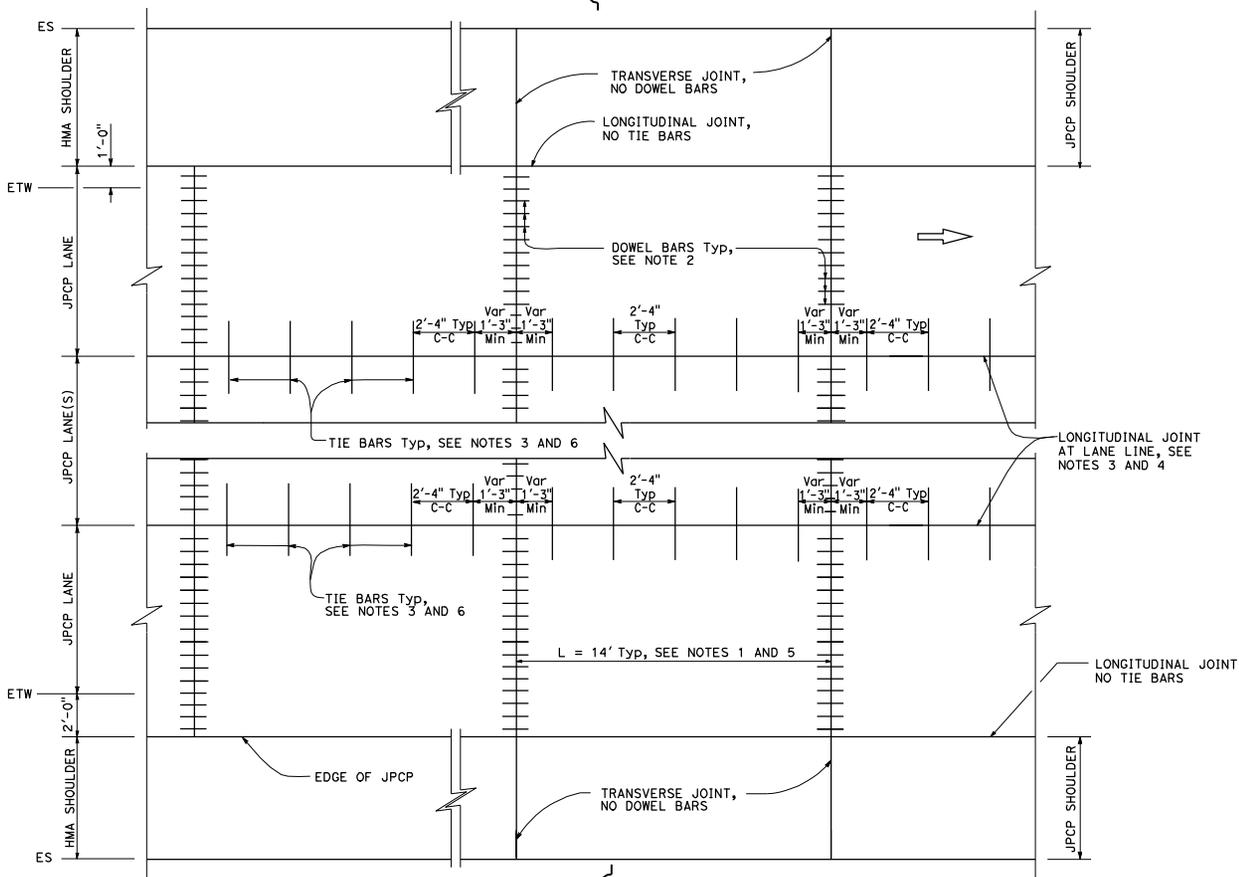
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 REGISTERED PROFESSIONAL ENGINEER
 William K. Farnbach
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

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

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

TO ACCOMPANY PLANS DATED _____



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**JOINTED PLAIN
 CONCRETE PAVEMENT
 (WIDENED LANE)
 NEW CONSTRUCTION**
 NO SCALE

RSP P2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P2 DATED MAY 20, 2011 - PAGE 126 OF THE STANDARD PLANS BOOK DATED 2010.

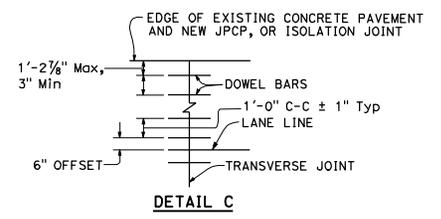
REVISED STANDARD PLAN RSP P2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

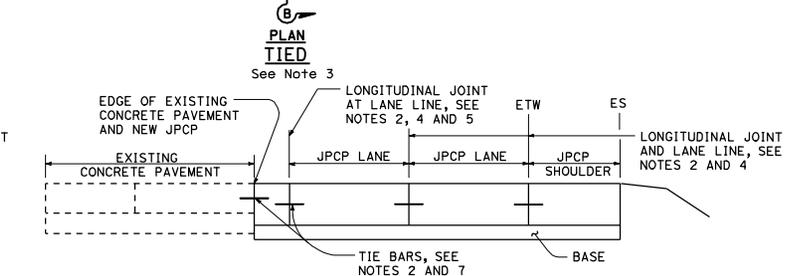
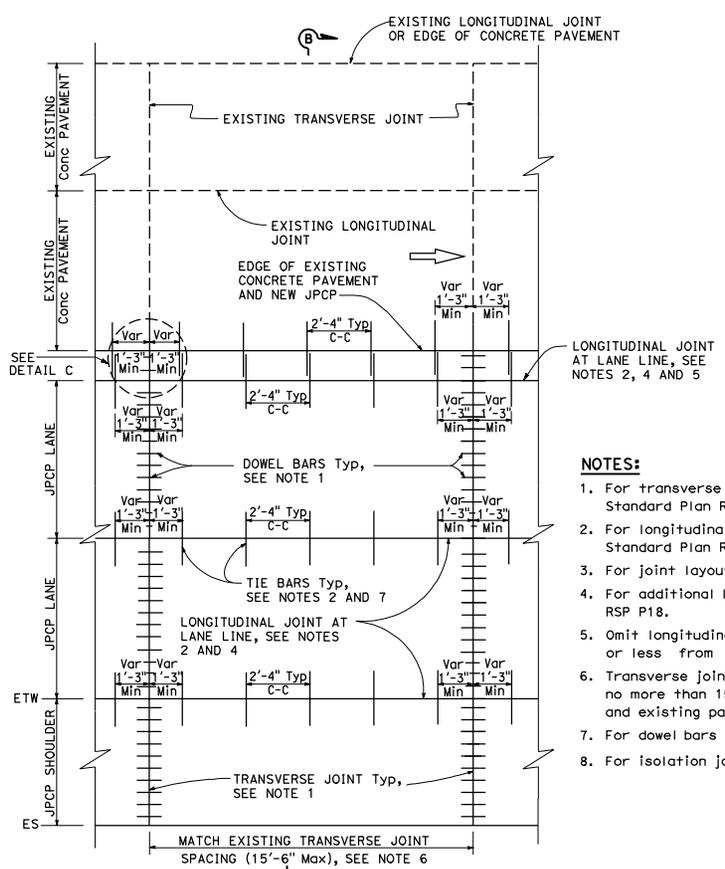
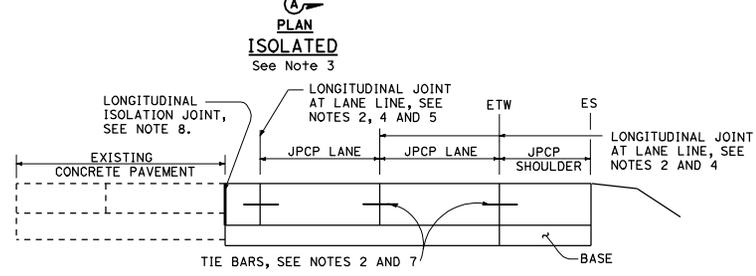
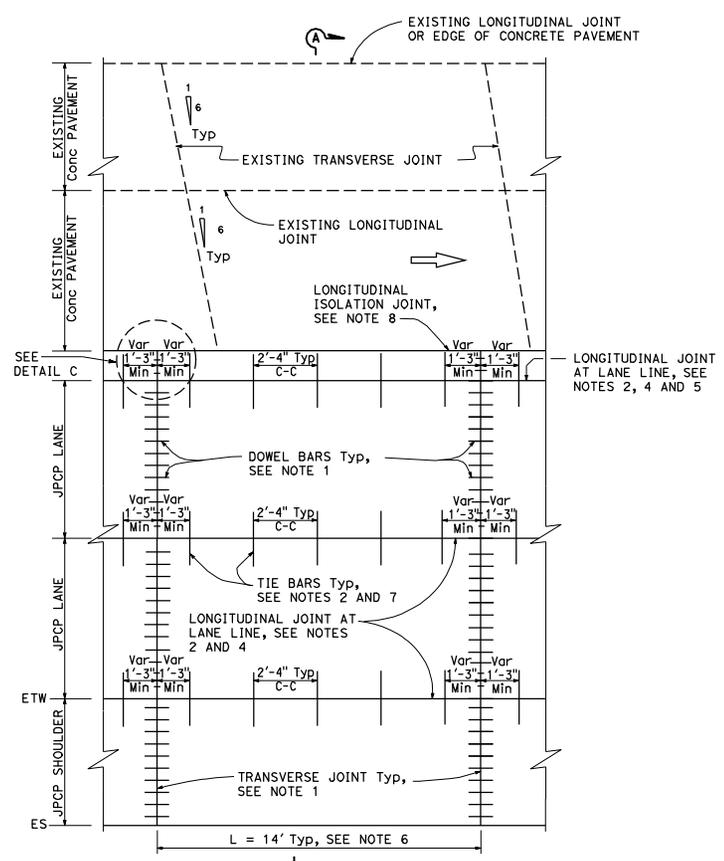
July 19, 2013
 PLANS APPROVAL DATE
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TO ACCOMPANY PLANS DATED _____



NOTES:

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



RSP P3A DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P3A

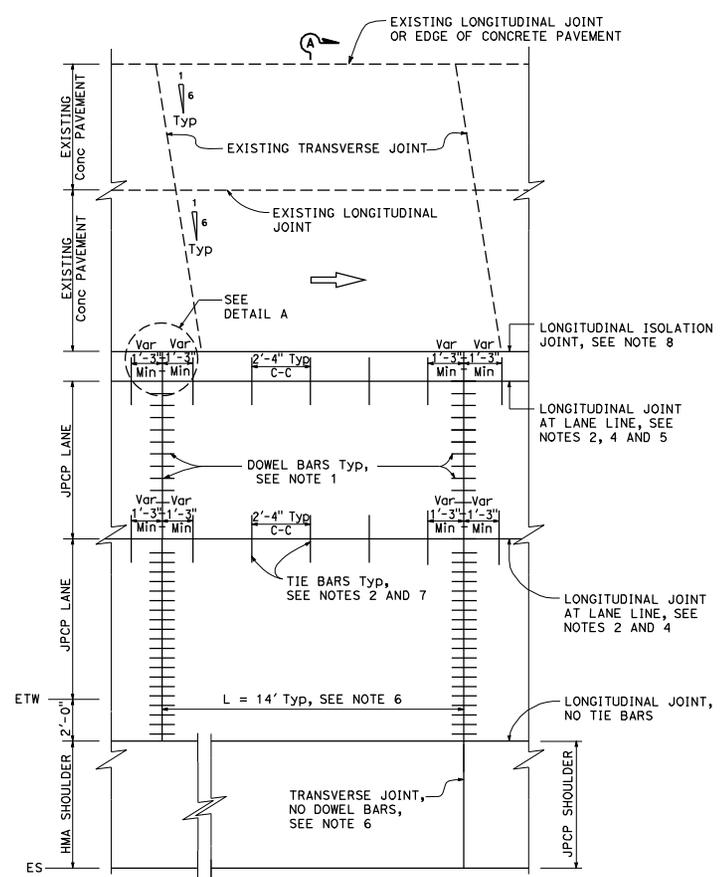
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

JOINTED PLAIN CONCRETE PAVEMENT LANE & SHOULDER ADDITION OR REPLACEMENT

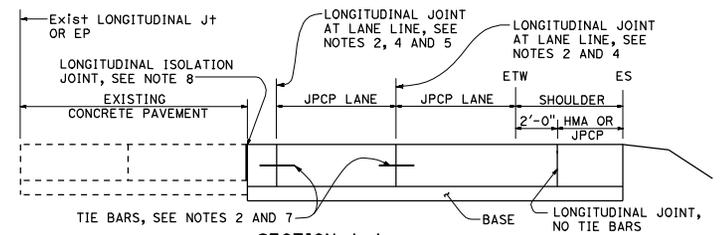
NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
July 19, 2013 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.					

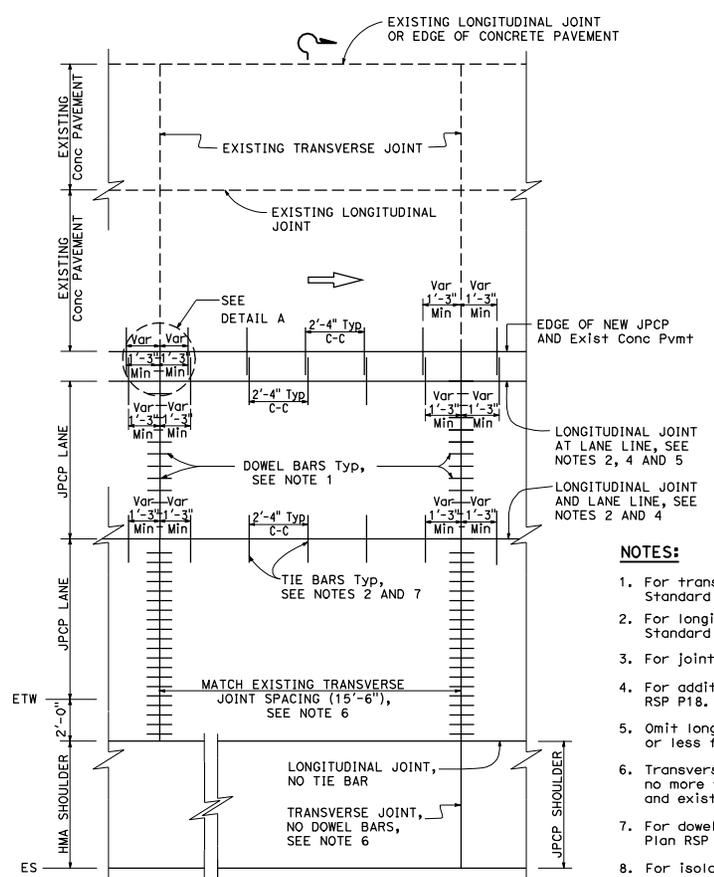
TO ACCOMPANY PLANS DATED _____



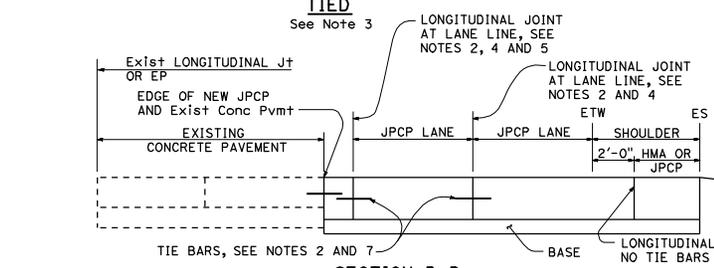
PLAN ISOLATED
See Note 3



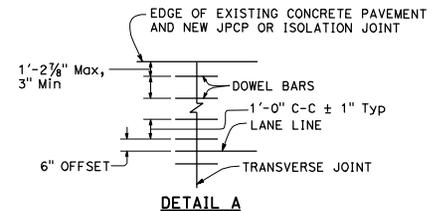
SECTION A-A



PLAN TIED
See Note 3



SECTION B-B



DETAIL A

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**JOINED PLAIN
CONCRETE PAVEMENT
(WIDENED LANE)
LANE AND SHOULDER
ADDITION OR
REPLACEMENT**

NO SCALE

RSP P3B DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P3B

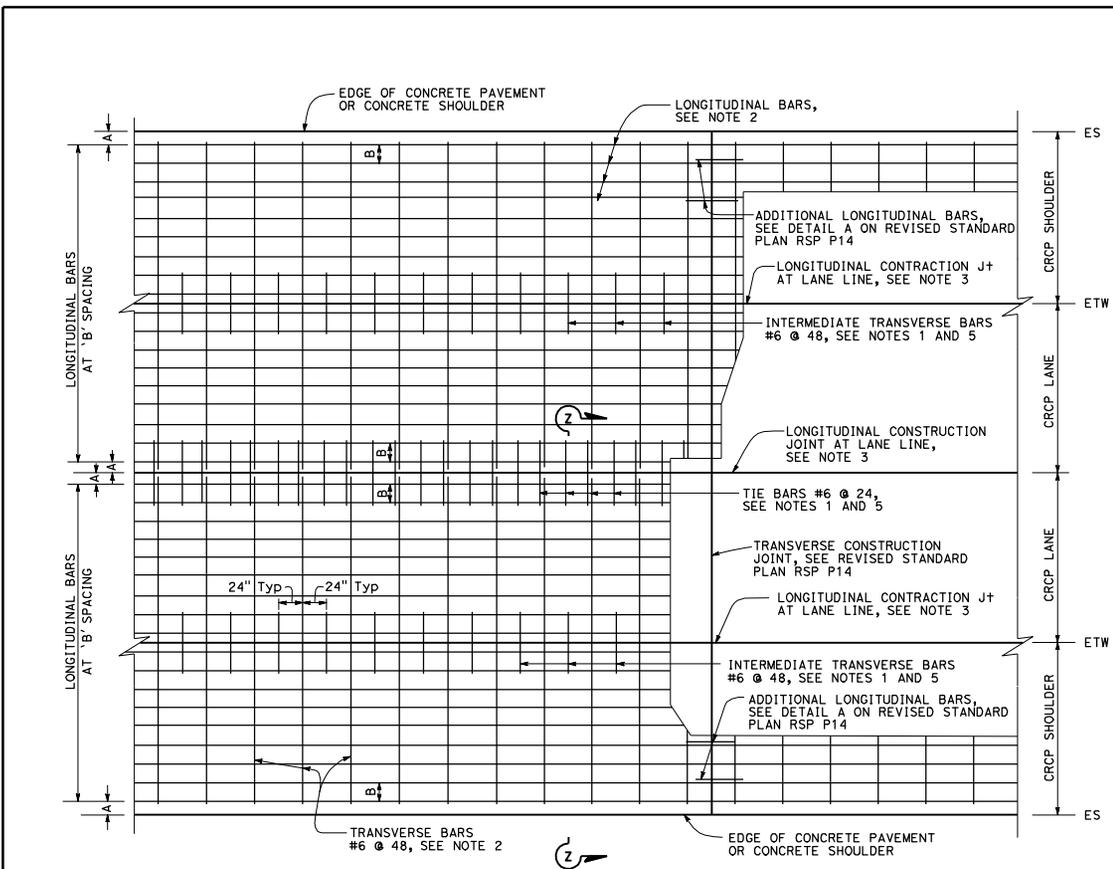
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE
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TO ACCOMPANY PLANS DATED _____

2010 REVISED STANDARD PLAN RSP P4

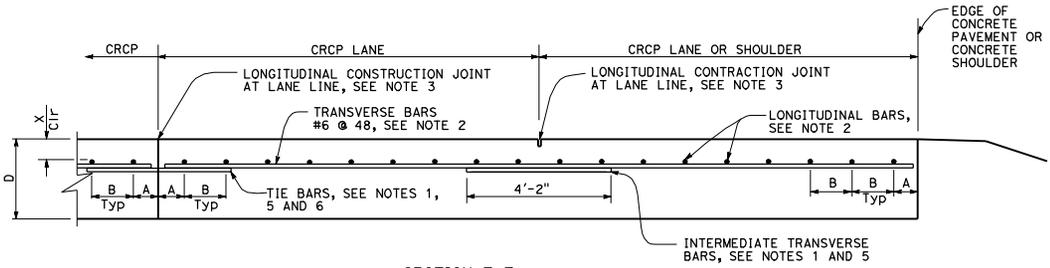


PLAN
See Note 4

SLAB THICKNESS AND BAR SIZE	FIRST SPACING AT EDGE OR JOINT	REGULAR BARS	ADDITIONAL BARS AT TRANSVERSE CONSTRUCTION JOINT		C/c
			SPACING A	SPACING B	
.75'	#6 3" TO 4"	8.0"	16"	4"	4"
.80'	#6 3" TO 4"	7.5"	15"	4"	4"
.85'	#6 3" TO 4"	7.0"	14"	4"	4"
.90'	#6 3" TO 4"	6.5"	13"	4"	4"
.95'	#6 3" TO 4"	6.25"	12.5"	4"	4"
1.00'	#6 3" TO 4"	6.0"	12"	5"	5"
1.05'	#6 3" TO 4"	5.75"	11.5"	5"	5"
1.10'	#6 3" TO 4"	5.5"	11"	5.5"	5.5"

NOTES:

1. Place transverse tie bars and intermediate transverse bars parallel to and in the same plane as transverse bars.
2. The length of lap splices for bar reinforcement must be at least 25".
3. For longitudinal contraction and construction joint details, see Revised Standard Plan RSP P16.
4. For curved lane layout see Revised Standard Plan RSP P16.
5. For tie bar and intermediate transverse bar details see Revised Standard Plan RSP P16.



SECTION Z-Z

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**CONTINUOUSLY REINFORCED
CONCRETE PAVEMENT**

NO SCALE

RSP P4 DATED JULY 19, 2013 SUPERSEDES RSP P4 DATED APRIL 20, 2012 AND STANDARD PLAN P4 DATED MAY 20, 2011 - PAGE 128 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P4

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

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

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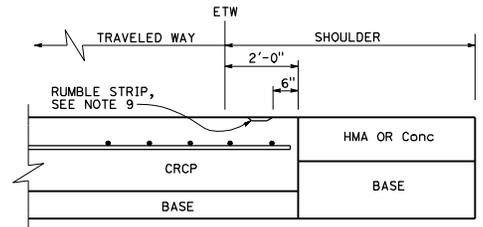
TO ACCOMPANY PLANS DATED _____

NOTES:

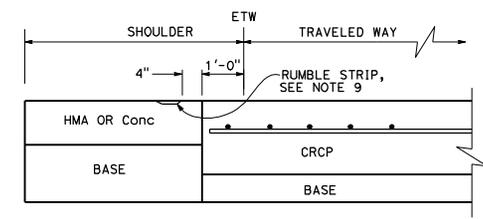
1. For longitudinal bar size, spacing and clearances, see Revised Standard Plan RSP P4.
2. The length of lap splices for bar reinforcement must be at least 25".
3. For tie bar and intermediate transverse bar details, see Revised Standard Plan RSP P16.
4. Place intermediate transverse bars parallel to and in the same plane as transverse bars.
5. Construct transverse joints at right angle to the longitudinal joints in adjacent CRCP. Space joints at no less than 10' intervals and no more than 14' intervals. Match location of JPCP transverse joint with CRCP transverse construction joint, expansion joint or wide flange beam. Omit dowel bars.
6. For longitudinal contraction and construction joint details, see Revised Standard Plan RSP P16.
7. For additional longitudinal bars detail, see Detail A on Revised Standard Plans RSP P14.
8. For longitudinal construction joint plan layout not shown, see Revised Standard Plan RSP P4. For tie bar details at longitudinal construction joint, see Revised Standard Plan RSP P16.
9. For limits of rumble strips, see Project Plans.

ABBREVIATION:

D = Thickness of CRCP



DETAIL A



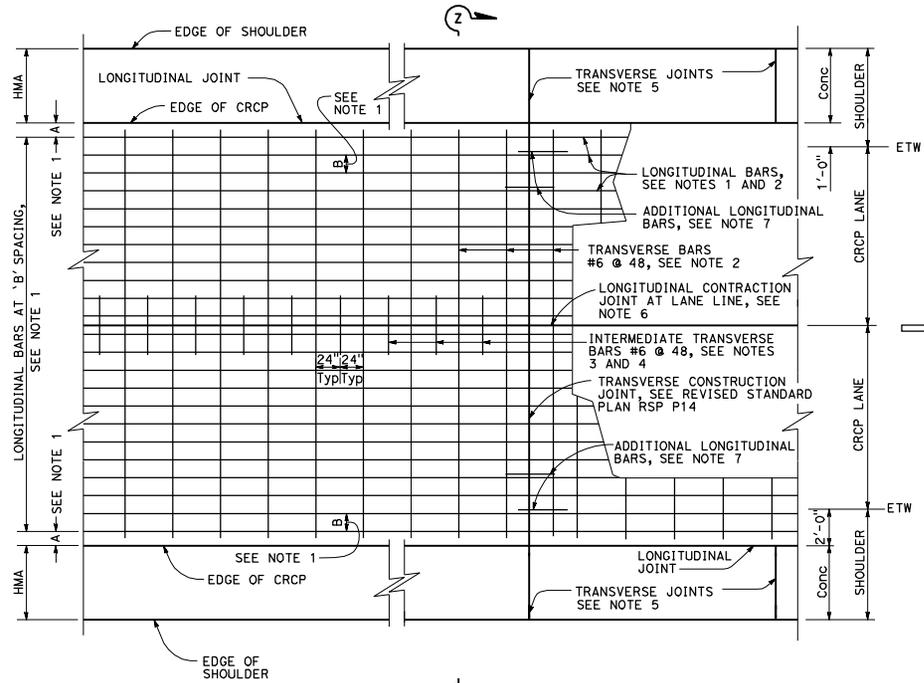
DETAIL B

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CONTINUOUSLY REINFORCED
 CONCRETE PAVEMENT
 (WIDENED LANE)**
 NO SCALE

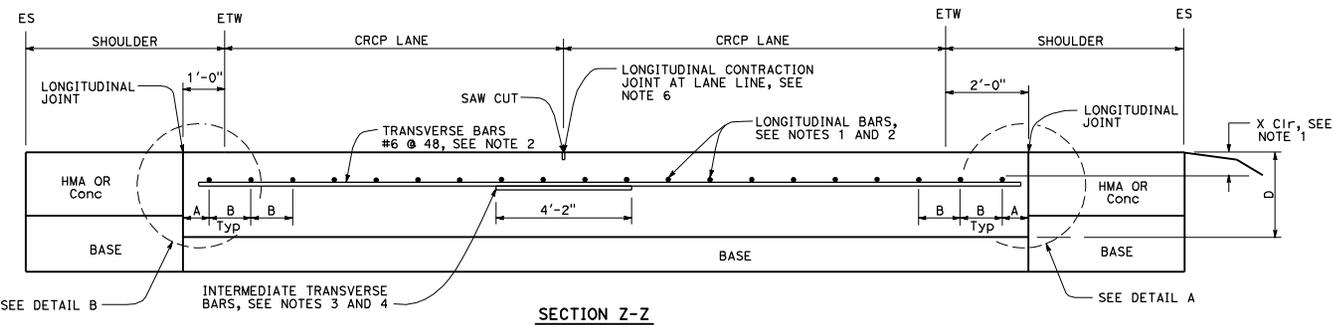
RSP P5A DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P5A

2010 REVISED STANDARD PLAN RSP P5A



PLAN
See Note 8



SECTION Z-Z

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

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE
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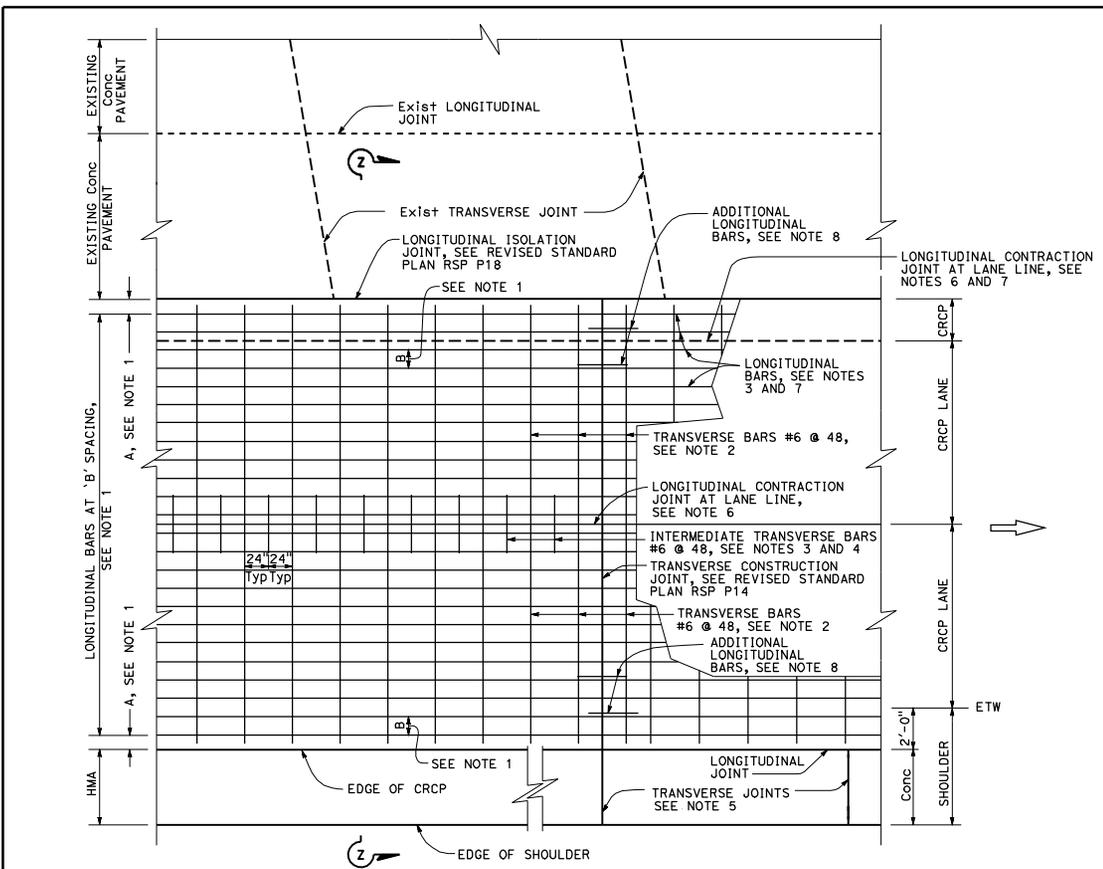
TO ACCOMPANY PLANS DATED _____

NOTES:

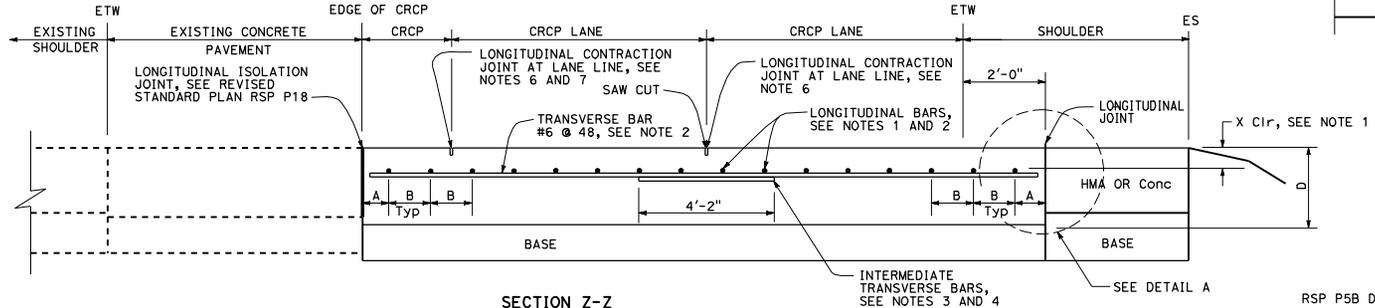
1. For longitudinal bar size, spacing and clearances, see Revised Standard Plan RSP P4.
2. The length of lap splices for bar reinforcement must be at least 25".
3. For tie bar and intermediate transverse bar details, see Revised Standard Plan RSP P16.
4. Place intermediate transverse bars parallel to and in the same plane as transverse bars.
5. Construct transverse joints at right angle to the longitudinal joints in adjacent CRCP. Space joints at no less than 10' intervals and no more than 14' intervals. Match location of JPCP transverse joint with CRCP transverse construction joint, expansion joint or wide flange beam. Omit dowel bars.
6. For longitudinal contraction and construction joint details, see Revised Standard Plan RSP P16.
7. Do not construct longitudinal contraction joint when edge of new CRCP is less than 3'-3" from lane line.
8. For additional longitudinal bars detail, see Detail A on Revised Standard Plan RSP P14.
9. For longitudinal construction joint plan layout not shown, see Revised Standard Plan RSP P4. For tie bar details at longitudinal construction joint, see Revised Standard Plan RSP P16.
10. For limits of rumble strips, see Project Plans.

ABBREVIATION:

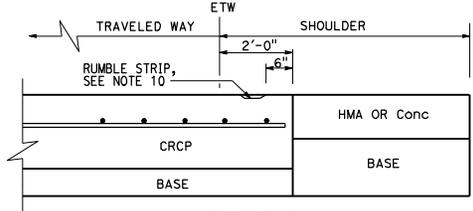
D = Thickness of CRCP



PLAN
See Note 9



SECTION Z-Z



DETAIL A

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CONTINUOUSLY REINFORCED
 CONCRETE PAVEMENT
 (WIDENED LANE)
 LANE AND SHOULDER
 ADDITION OR REPLACEMENT**

NO SCALE

RSP P5B DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P5B

2010 REVISED STANDARD PLAN RSP P5B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL ENGINEER
 William
 K. Farnbach
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

LEGEND

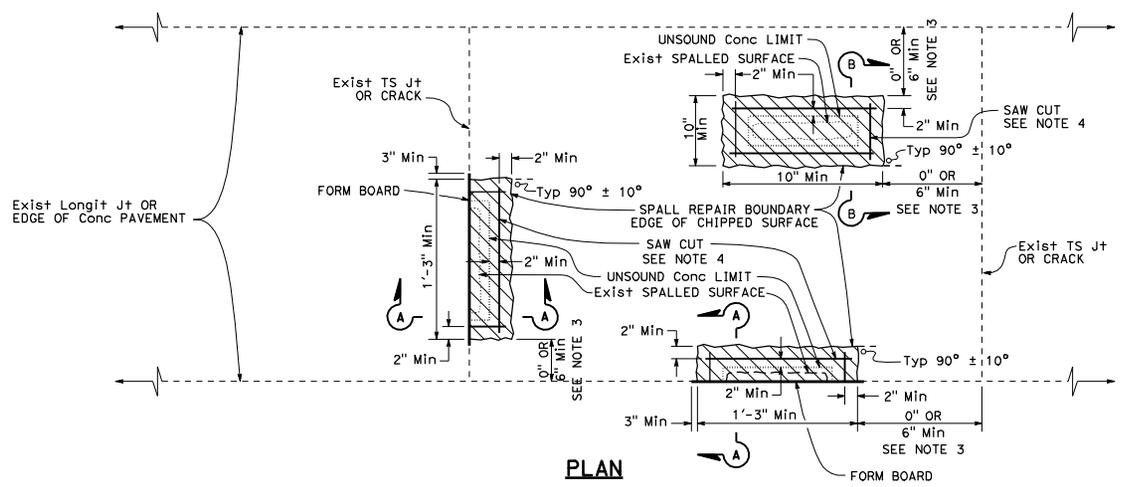


SPALL REPAIR

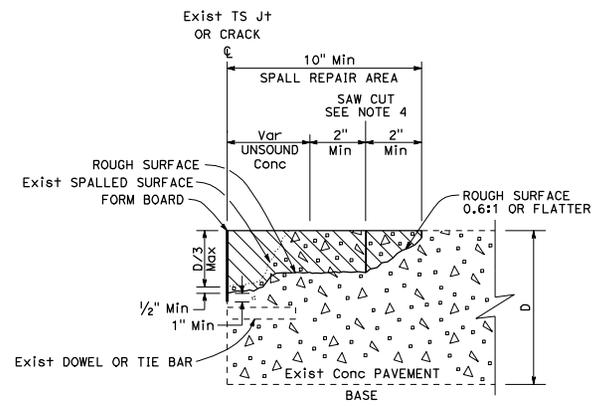
NOTES:

1. See Project Plans for spall repair locations.
2. Combine spall repair areas closer than 2' apart.
3. If the spall repair area is less than 6" from a joint, extend the repair to the joint.
4. Cut at least 2" beyond the rectangular limits of unsound concrete determined by the Engineer. Determine the saw cut depth using the following table:

Conc MATERIAL	SAW CUT DEPTH	
	Min	Max
FAST-SETTING	2"	3 1/2"
POLYESTER	1 1/2"	3 1/2"

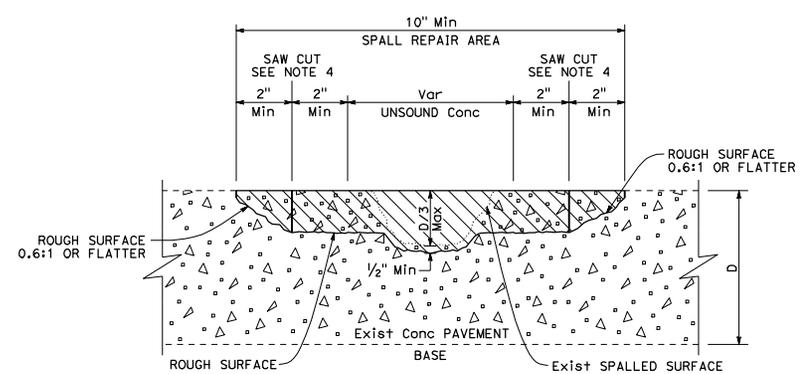


PLAN



SECTION A-A

JOINT, CRACK, OR EDGE OF CONCRETE PAVEMENT REPAIR



SECTION B-B

MISCELLANEOUS SPALL REPAIR

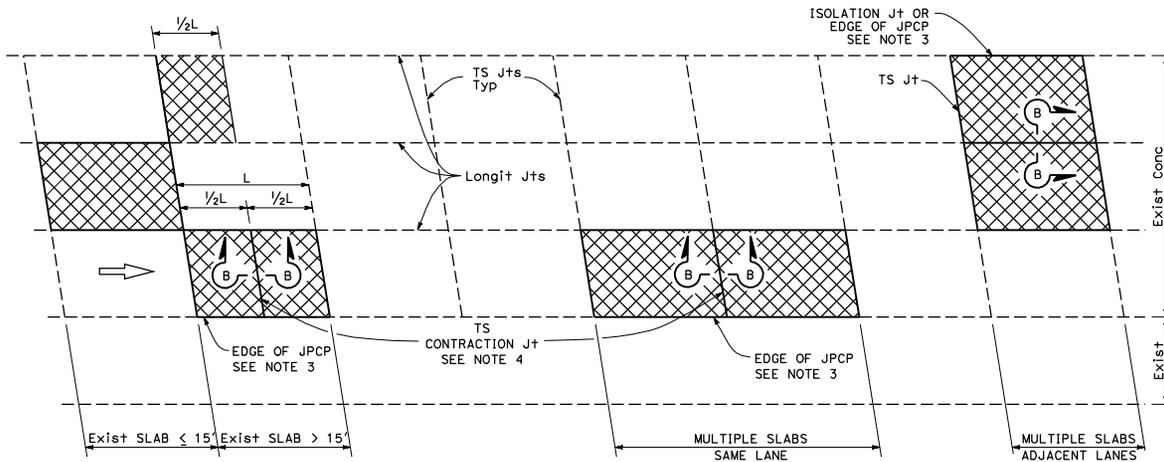
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
SPALL REPAIR
 NO SCALE

RSP P6 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

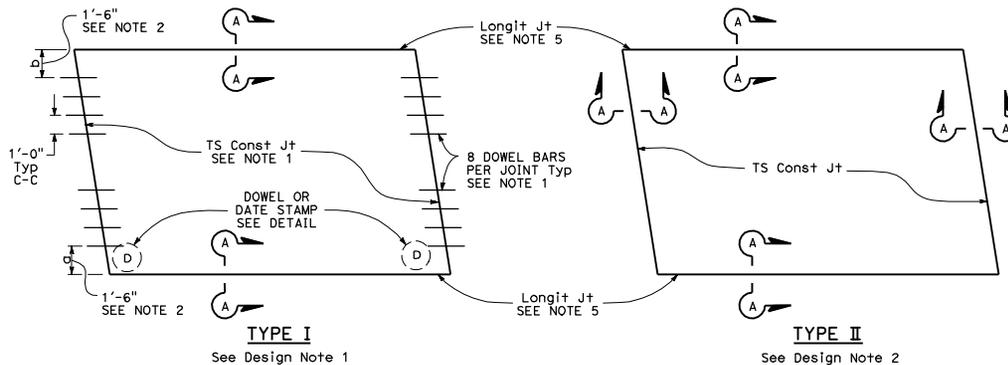
REVISED STANDARD PLAN RSP P6

2010 REVISED STANDARD PLAN RSP P6

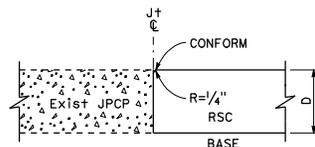
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
<i>William K. Farnbach</i> REGISTERED CIVIL ENGINEER July 19, 2013 PLANS APPROVAL DATE <small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
REGISTERED PROFESSIONAL ENGINEER William K. Farnbach No. C49042 Exp. 9-30-14 CIVIL STATE OF CALIFORNIA					



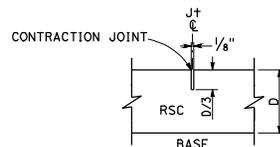
PLAN



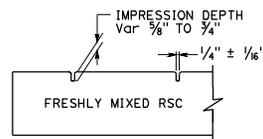
SLAB LAYOUT



SECTION A-A



SECTION B-B



SECTION C-C

LEGEND:

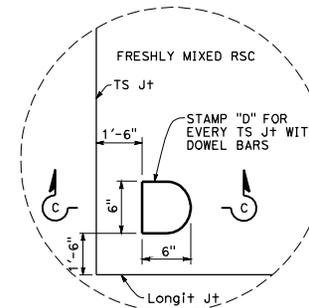
- RSC RAPID STRENGTH CONCRETE
- INDIVIDUAL SLAB REPLACEMENT WITH RSC

NOTES:

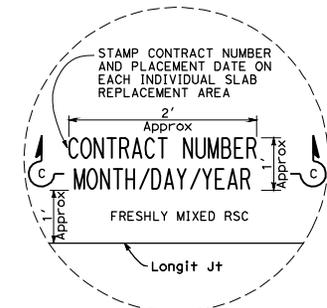
1. For details not shown, see Revised Standard Plan RSP P10.
2. Where the existing outside shoulder is asphalt concrete pavement, "a" = 1'-0" and "b" = 2'-0".
3. Use side forms where edge of RSC pavement is adjacent to asphalt concrete.
4. Transverse contraction joint to match skew of existing joint. Omit dowel bars.
5. Do not place tie bars at longitudinal joints.

DESIGN NOTES:

1. For concrete slab repair with at least 5 years design life.
2. For short term repairs < 5 yrs design life or for slab replacements with cracking and seating.



DOWEL STAMP DETAIL



DATE STAMP DETAIL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

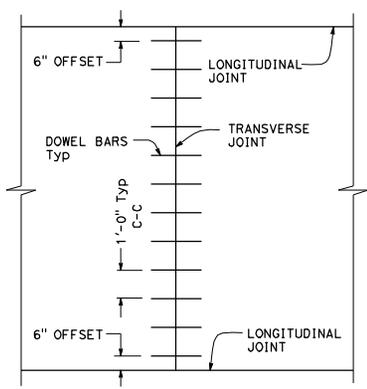
**INDIVIDUAL SLAB REPLACEMENT
WITH RAPID STRENGTH CONCRETE**

NO SCALE

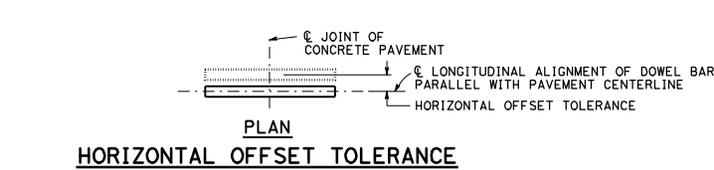
RSP P8 DATED JULY 19, 2013 SUPERSEDES RSP P8 DATED APRIL 20, 2012 AND STANDARD PLAN P8 DATED MAY 20, 2011 - PAGE 130 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P8

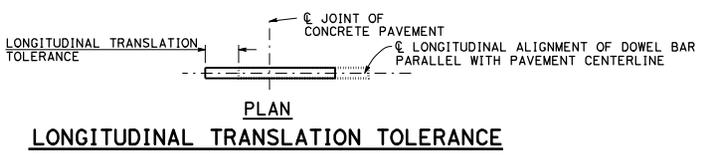
2010 REVISED STANDARD PLAN RSP P8



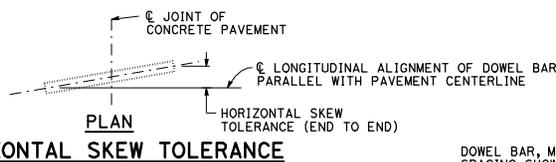
**TRANSVERSE JOINT
DOWEL BAR LAYOUT**



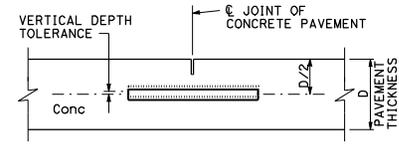
HORIZONTAL OFFSET TOLERANCE



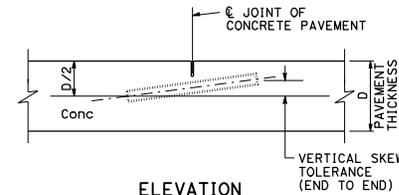
LONGITUDINAL TRANSLATION TOLERANCE



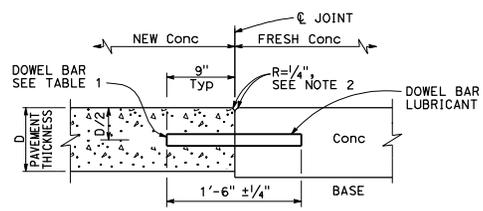
HORIZONTAL SKEW TOLERANCE



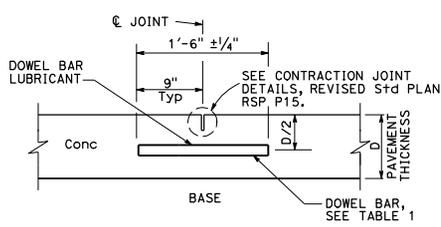
**ELEVATION
VERTICAL DEPTH TOLERANCE**



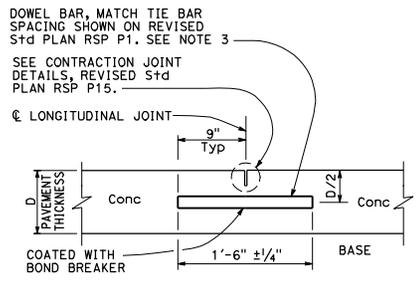
**ELEVATION
VERTICAL SKEW TOLERANCE**



**TRANSVERSE
CONSTRUCTION JOINT DETAIL**

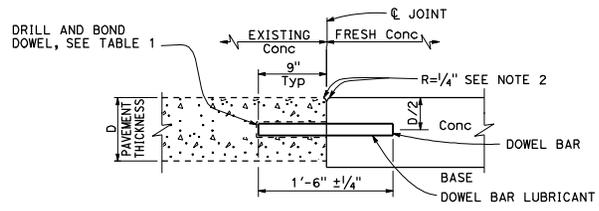


TRANSVERSE CONTRACTION JOINT

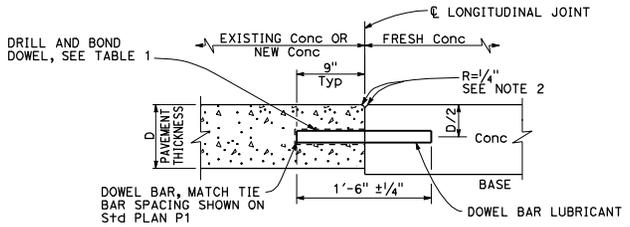


**LONGITUDINAL CONTRACTION
JOINT WITH DOWEL BARS**

See Revised Std Plan RSP P18



**TRANSVERSE CONSTRUCTION JOINT
FOR EXISTING CONCRETE PAVEMENT**



**LONGITUDINAL CONSTRUCTION JOINT
WITH DOWEL BARS**

See Revised Std Plan RSP P18

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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William K. Farnbach
 REGISTERED CIVIL ENGINEER
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
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TO ACCOMPANY PLANS DATED _____

- NOTES:**
- See Revised Standard Plan RSP P1 for typical dowel bar placement and locations.
 - Where fresh concrete pavement is placed against new concrete or existing concrete pavement, rounding the corner of the existing concrete pavement is not required.
 - May also use 3/4" Dia dowel bars 2'-4" ± 1/4" in length, center the length of dowel bars at the centerline of longitudinal joint.

TABLE 1

DOWEL BAR DIAMETER TABLE

PAVEMENT THICKNESS	0.65'	> 0.65' - 0.85'	> 0.85'
MINIMUM DOWEL * BAR DIAMETER	1"	1 1/4"	1 1/2"

* The drilled hole diameter must be 1/8" to 3/16" larger than the bar diameter.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**CONCRETE PAVEMENT
DOWEL BAR
DETAILS**

NO SCALE

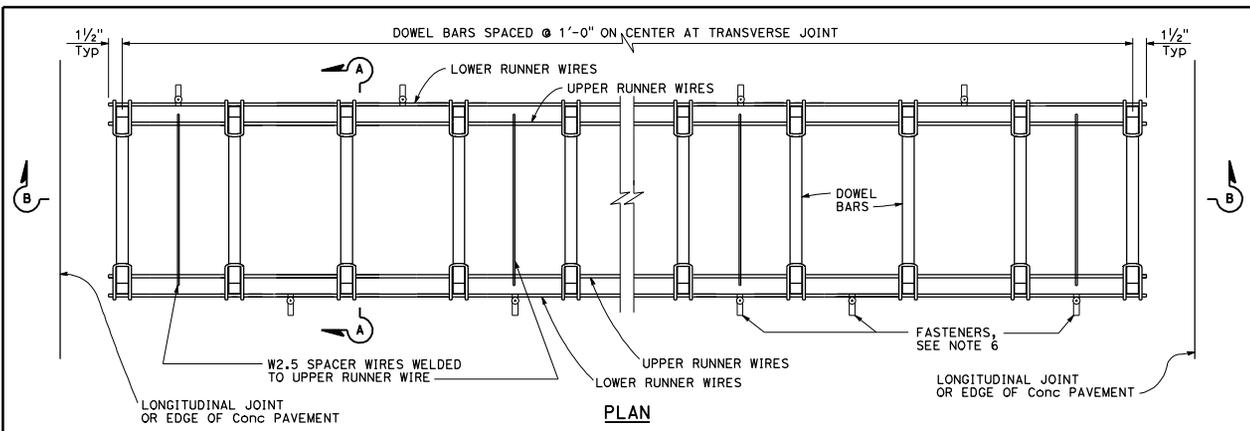
RSP P10 DATED JULY 19, 2013 SUPERSEDES RSP P10 DATED APRIL 20, 2012 AND STANDARD PLAN P10 DATED MAY 20, 2011 - PAGE 131 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P10

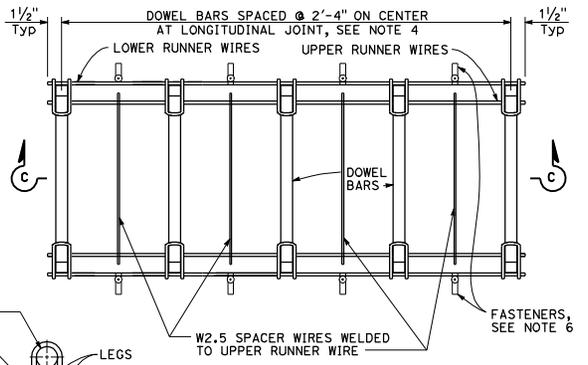
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. C49042
 Exp. 9-30-14
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 STATE OF CALIFORNIA

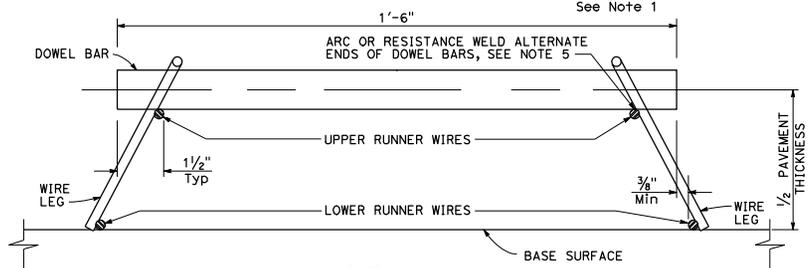
TO ACCOMPANY PLANS DATED _____



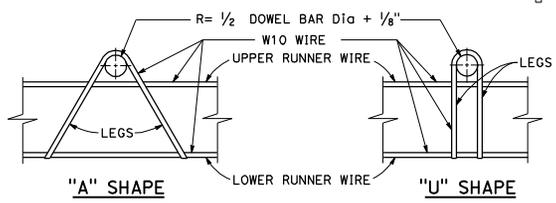
PLAN
DOWEL BAR BASKET
(TRANSVERSE JOINT)
See Note 1



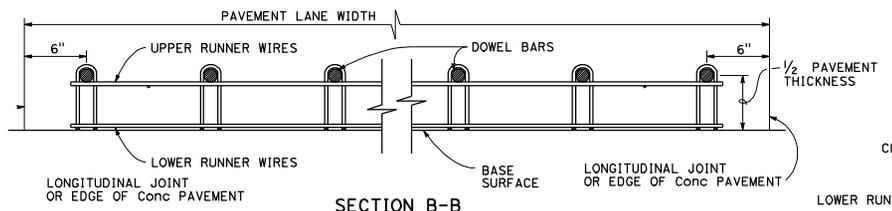
PLAN
DOWEL BAR BASKET
(LONGITUDINAL JOINT)
See Note 1



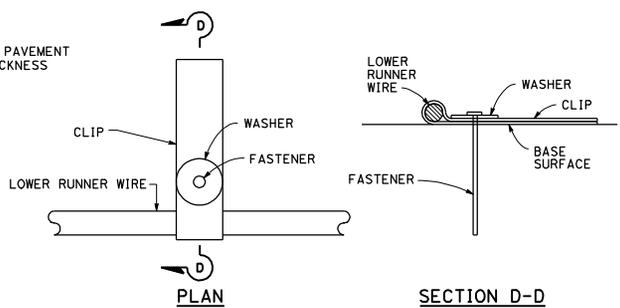
SECTION A-A



ASSEMBLY FRAME DETAILS



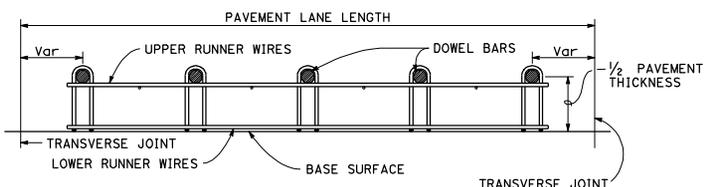
SECTION B-B
See Note 1



FASTENER DETAIL
See Note 6

NOTES:

- "U" frame shape assembly shown. Use either "U" frame shape or "A" frame shape.
- Wire sizes shown are the minimum required.
- All wire intersections must be resistance welded.
- Use tie bar spacing for longitudinal dowel bar locations. See Revised Standard Plans RSP P1, RSP P2, RSP P3A, and RSP P3B for tie bar requirements.
- Weld may be at the top or bottom of the dowel bar.
- Use anchor pins where soil or granular base is used. See Revised Standard Plan RSP P17 for Anchor Pin Detail.



SECTION C-C
See Notes 1 and 4

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONCRETE PAVEMENT
DOWEL BAR BASKET
DETAILS
NO SCALE

RSP P12 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P12
DATED MAY 20, 2011 - PAGE 132 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P12

2010 REVISED STANDARD PLAN RSP P12

NOTES:

1. For longitudinal bar size, spacing and clearances, see Table 1 on Revised Standard Plan RSP P4.
2. The length of lap splices for bar reinforcement must be at least 25".
3. For tie bars in longitudinal construction joint, see Revised Standard Plan RSP P16.
4. Place additional longitudinal bars parallel to and in the same plane as the longitudinal bars.
5. Place additional longitudinal bars symmetrically about longitudinal construction joint.

ABBREVIATION

D = Thickness of CRCP

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

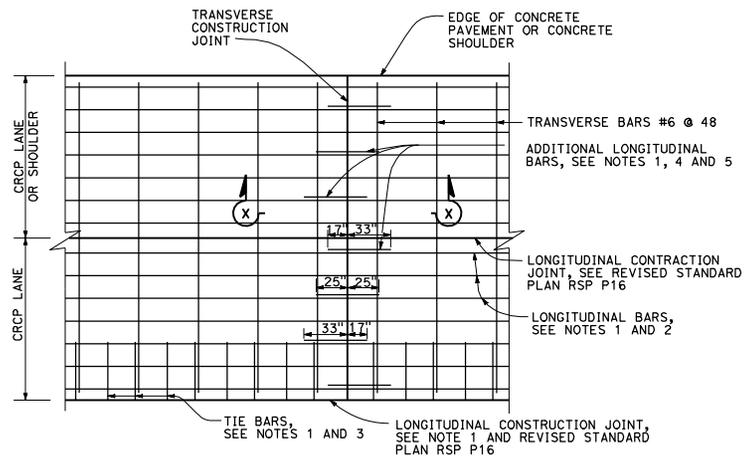
William K. Farnbach
 REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
 William
 K. Farnbach
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 PLANS APPROVAL DATE

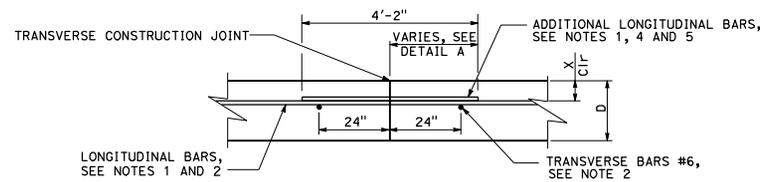
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 COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____



DETAIL A

Additional longitudinal bars at transverse construction joint



**SECTION X-X
TRANSVERSE CONSTRUCTION JOINT**

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CONTINUOUSLY REINFORCED
 CONCRETE PAVEMENT
 TRANSVERSE CONSTRUCTION JOINT**

NO SCALE

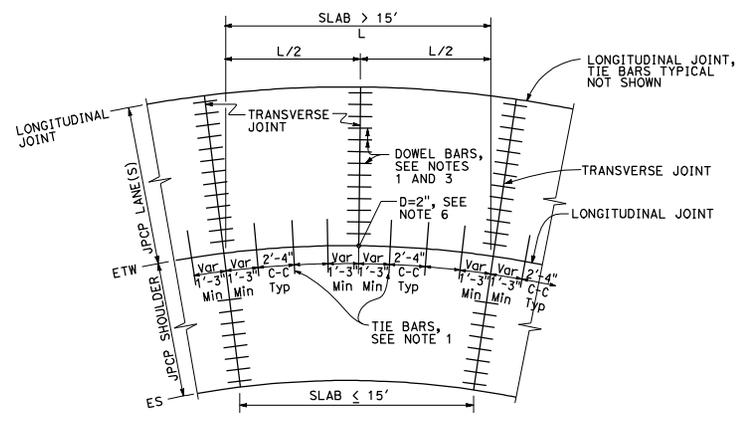
RSP P14 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P14

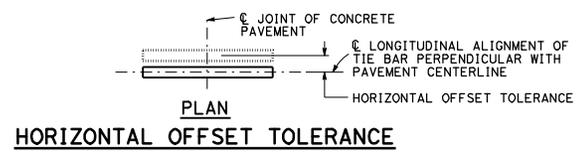
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

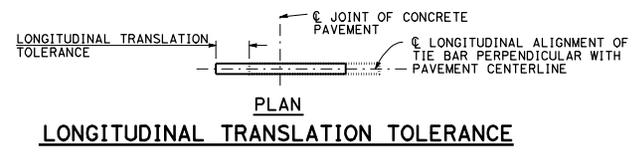
July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



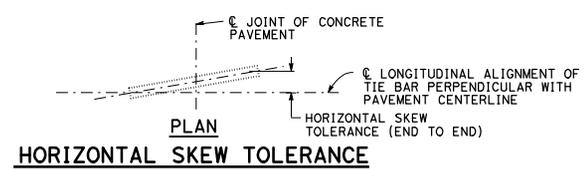
TIE BAR LAYOUT IN CURVED LANES



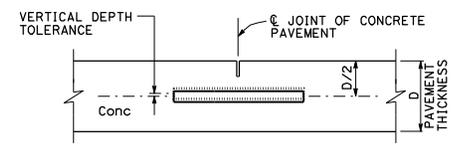
HORIZONTAL OFFSET TOLERANCE



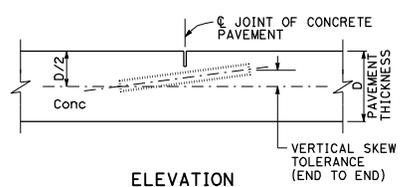
LONGITUDINAL TRANSLATION TOLERANCE



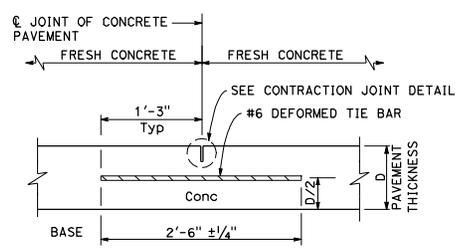
HORIZONTAL SKEW TOLERANCE



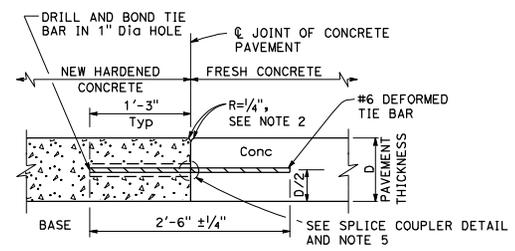
VERTICAL DEPTH TOLERANCE



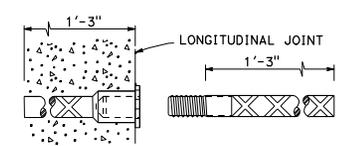
VERTICAL SKEW TOLERANCE



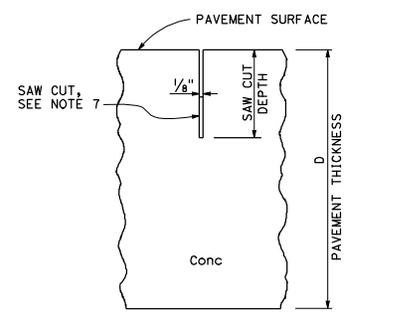
LONGITUDINAL CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



ALTERNATIVE SPLICE COUPLER



CONTRACTION JOINT DETAIL

NOTES:

- See Revised Standard Plan RSP P1 for typical dowel bar and tie bar placement and locations.
- Where new pavement is placed against existing concrete pavement, rounding the corner is not required.
- For dowel bar sizes, See Revised Standard Plan RSP P10.
- Tie bar details apply to inside widenings.
- Use either drill and bond or splice couplers.
- Full depth drilled hole. Fill hole with filler material.
- 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

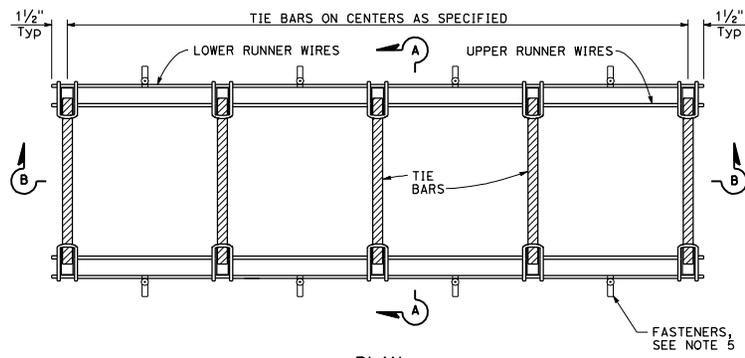
RSP P15 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P15

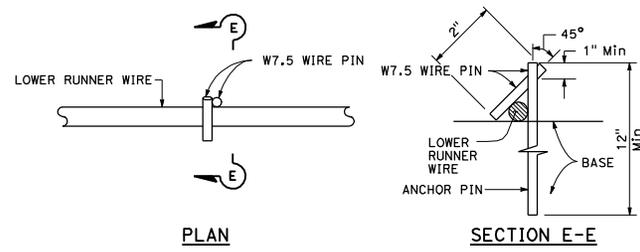
Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	NO. SHEETS
<i>William K. Farnbach</i> REGISTERED CIVIL ENGINEER				
July 19, 2013 PLANS APPROVAL DATE				
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>				



TO ACCOMPANY PLANS DATED _____

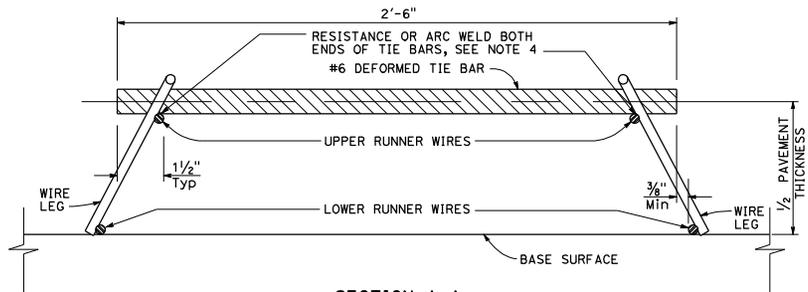


PLAN
TIE BAR BASKET
 (Tie bars at longitudinal joint)
 See Note 1

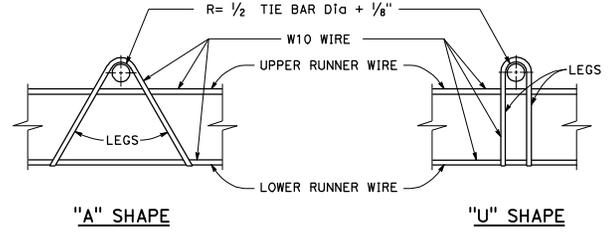


SECTION E-E
ANCHOR PIN DETAIL
 See Note 5

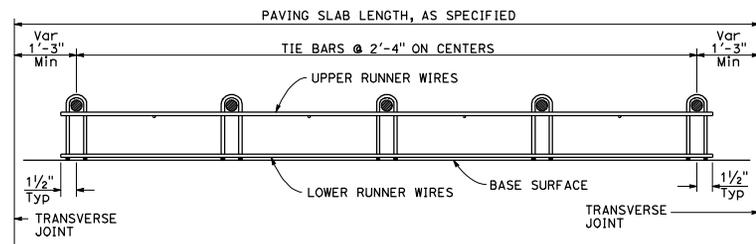
- NOTES:**
- "U" frame shape assembly shown. Use either "U" frame shape or "A" frame shape.
 - Wire sizes shown are the minimum required.
 - All wire intersections must be resistance welded.
 - Weld may be at top or bottom of tie bars.
 - Use anchor pins where soil or granular base is used.



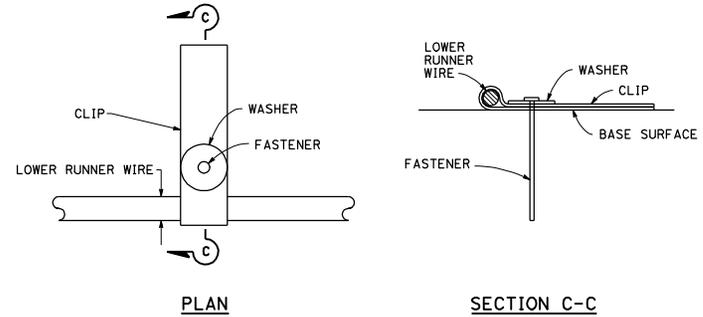
SECTION A-A



"A" SHAPE
"U" SHAPE
ASSEMBLY FRAME DETAILS
 See Note 1



SECTION B-B
 See Note 1



PLAN
SECTION C-C
FASTENER DETAIL

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CONCRETE PAVEMENT
TIE BAR BASKET
DETAILS
 NO SCALE

RSP P17 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P17
 DATED MAY 20, 2011 - PAGE 134 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP P17

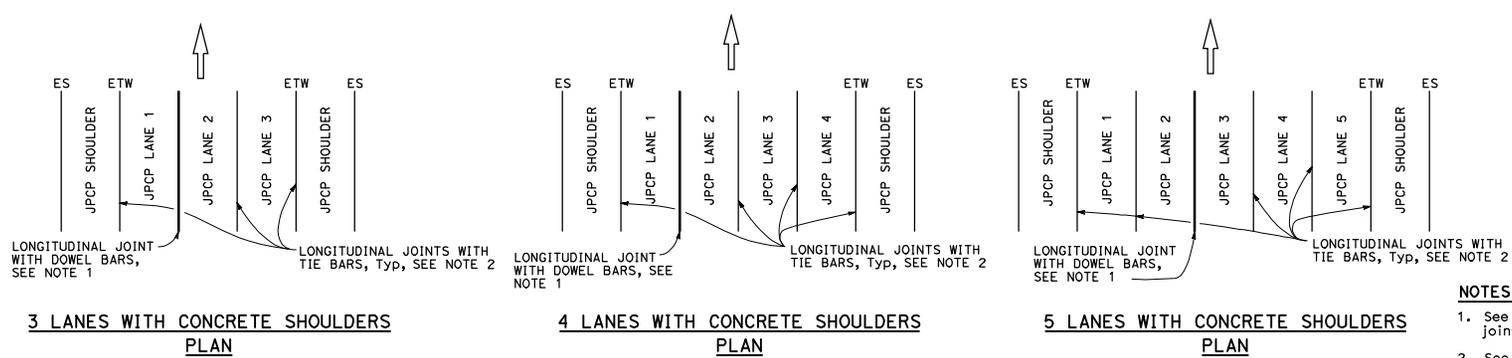
2010 REVISED STANDARD PLAN RSP P17

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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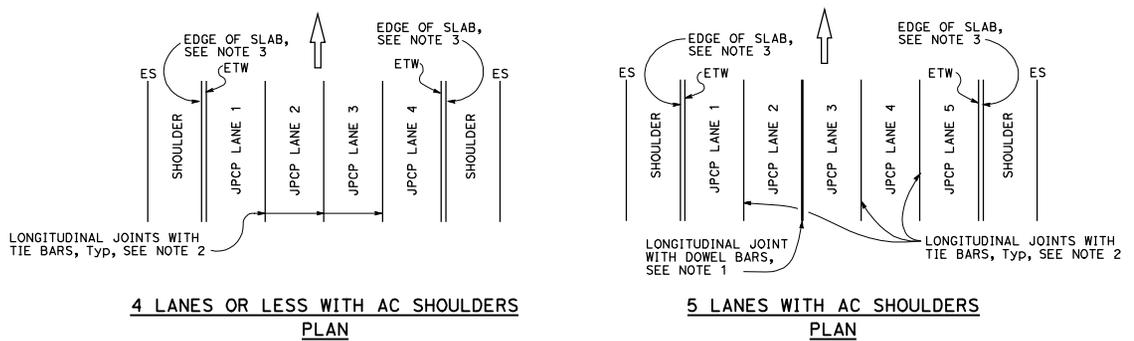
William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

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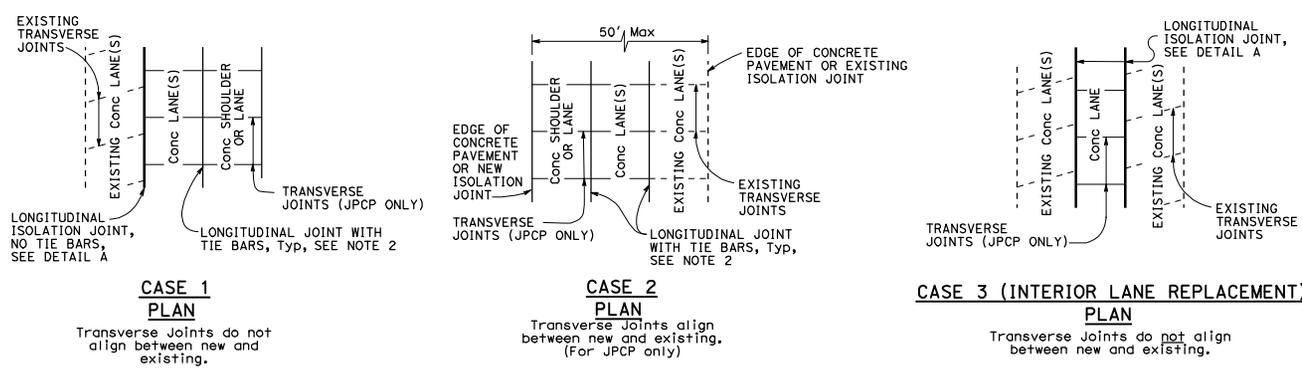
2010 REVISED STANDARD PLAN RSP P18



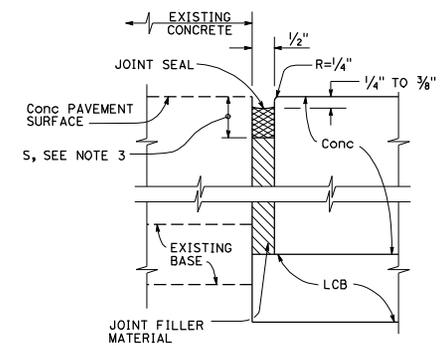
- NOTES:**
- See Revised Standard Plan RSP P10 for longitudinal joint with dowel bars.
 - See Revised Standard Plan RSP P15 for longitudinal joint with tie bars.
 - S = Reservoir depth.
 $S = \frac{7}{8} \pm \frac{1}{16}$ " for asphalt rubber seals
 $S = \frac{3}{8} \pm \frac{1}{16}$ " for silicone seals
 Preformed compression seals must be $\frac{3}{16}$ " wide and $S = 1\frac{1}{16} \pm \frac{1}{16}$ "



NEW CONSTRUCTION
Location of Longitudinal Joints For JPCP



LANE/SHOULDER ADDITION OR RECONSTRUCTION
For JPCP and CRCP



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**CONCRETE PAVEMENT
LANE SCHEMATICS
AND ISOLATION JOINT DETAIL**
NO SCALE

RSP P18 DATED JULY 19, 2013 SUPERSEDES RSP P18 DATED APRIL 20, 2012 AND STANDARD PLAN P18 DATED MAY 20, 2011 - PAGE 135 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P18

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

William K. Farnbach
 REGISTERED CIVIL ENGINEER

July 19, 2013
 PLANS APPROVAL DATE

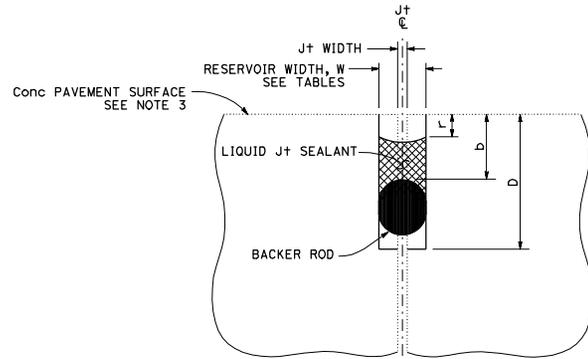
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

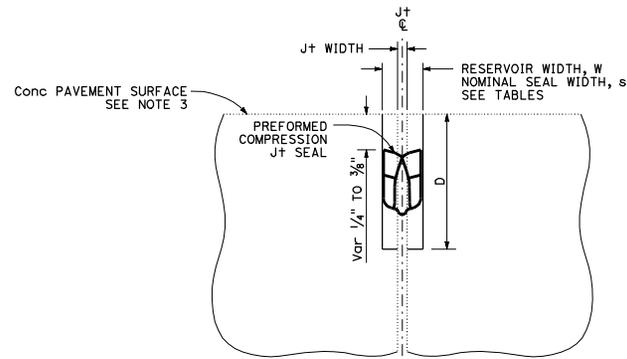


NOTES:

- Details do not apply to isolation joints and longitudinal construction joints.
- Tie bars, dowel bars, and bar reinforcement are not shown.
- Depths are measured from the final concrete pavement surface elevation after any grinding.



LIQUID JOINT SEALANT



PREFORMED COMPRESSION JOINT SEAL

Const SEASON	Min RESERVOIR WIDTH * W ± 1/16"
WINTER	1/4"
SPRING	
SUMMER	3/8"
FALL	

* Minimum reservoir width for replace joint seal = existing joint width + 1/8"

RESERVOIR WIDTH W ± 1/16"	LIQUID JOINT SEALANT DIMENSIONS					
	BACKER ROD NOMINAL Dia *	DEPTHS (ASPHALT RUBBER) **		DEPTHS (SILICONE)		
		RESERVOIR D ± 1/4"	BACKER ROD b ± 1/16"	RESERVOIR D ± 1/4"	BACKER ROD b ± 1/16"	RECESS r ± 1/16"
1/4"	3/8"	1 3/4"	3/8"	1 3/8"	1/2"	1/4"
3/8"	1/2"	1 7/8"	7/8"	1 1/2"	1/2"	1/4"
1/2"	3/4"	2"	7/8"	1 3/4"	9/16"	5/16"
5/8"	7/8"	2 1/4"	1"	2"	5/8"	5/16"
3/4"	1"	2 3/4"	1 1/8"	2 1/4"	3/4"	3/8"
7/8"	1 1/4"	3"	1 1/4"	2 1/2"	15/16"	3/8"
1"	1 1/2"	3 1/4"	1 3/8"	2 5/8"	7/8"	3/8"
1 1/8"	1 1/2"	3 1/2"	1 1/2"	2 13/16"	1"	1/2"

* Larger diameter backer rods may be substituted according to manufacturer recommendations if reservoir depth is increased equivalently.

** Asphalt rubber sealant recess depth "r" varies from 1/4" to 3/8"

RESERVOIR WIDTH W ± 1/16"	PREFORMED COMPRESSION JOINT SEAL DIMENSIONS	
	NOMINAL SEAL WIDTH S	RESERVOIR DEPTH D ± 1/4"
1/4"	3/16"	1 1/4"
3/8"	1/8"	1 7/16"
1/2"	15/16"	1 11/16"
5/8"	1"	1 7/8"
3/4"	1 1/4"	2 1/4"
7/8"	1 5/8"	2 5/8"
1"	1 5/8"	2 5/8"
1 1/8"	2"	2 7/8"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

JOINT SEALS

NO SCALE

RSP P20 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P20
DATED MAY 20, 2011 - PAGE 136 OF THE STANDARD PLANS BOOK DATED 2010.

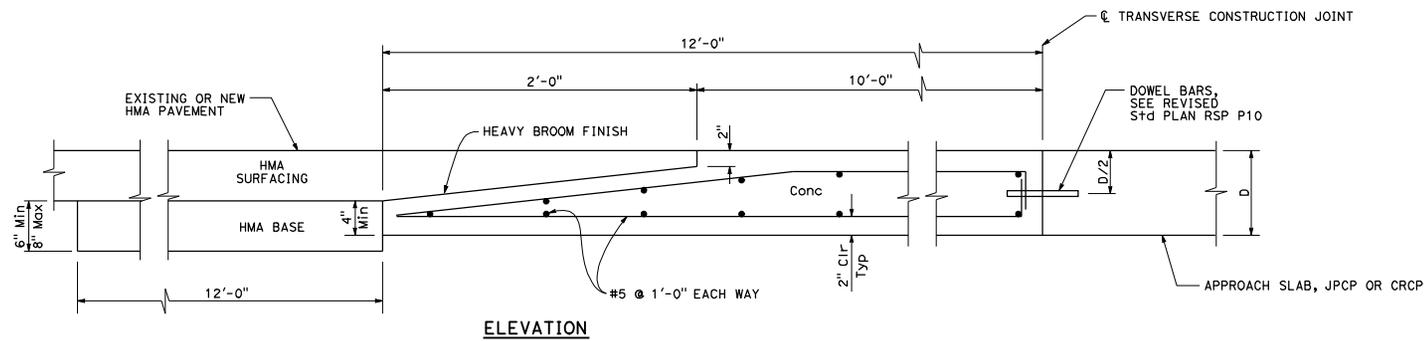
REVISED STANDARD PLAN RSP P20

2010 REVISED STANDARD PLAN RSP P20

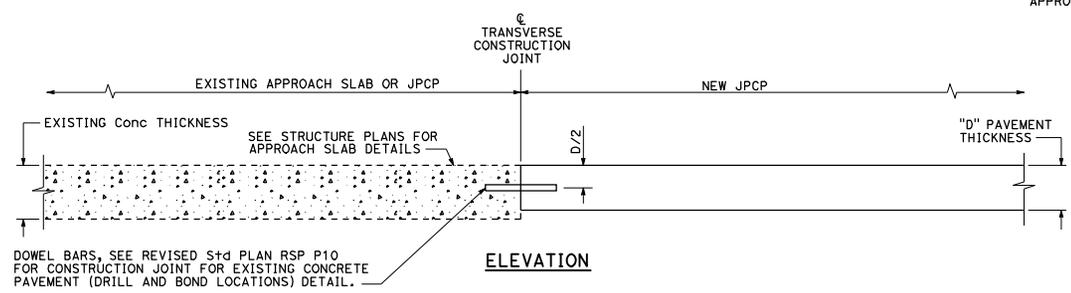
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

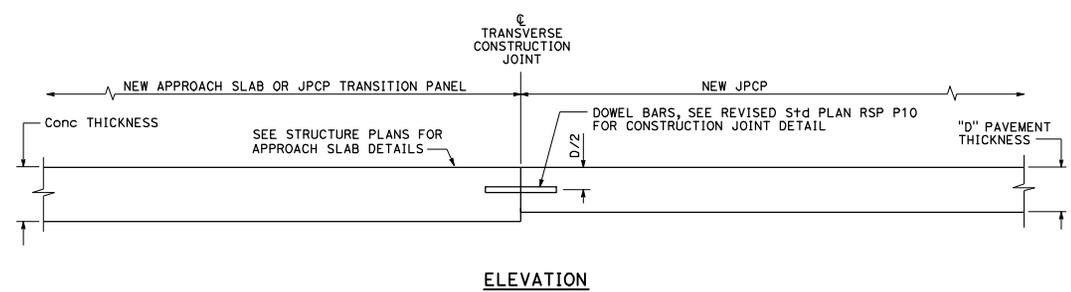
July 19, 2013
 PLANS APPROVAL DATE
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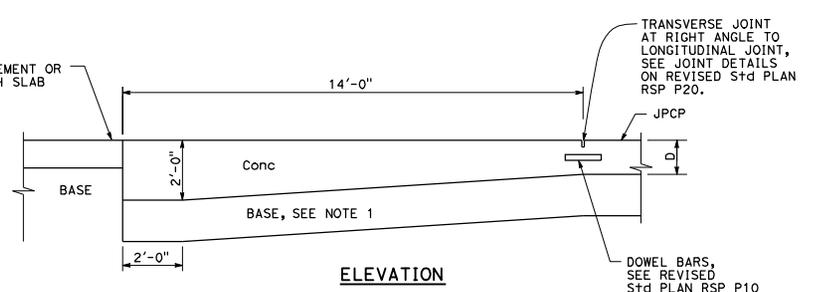
ELEVATION
CONCRETE PAVEMENT
TRANSITION PANEL



ELEVATION
TERMINAL JOINT TYPE 1
 For Exist JPCP or Approach Slab



ELEVATION
TERMINAL JOINT TYPE 2
 For JPCP Transition Panel or Approach Slab



ELEVATION
PAVEMENT END ANCHOR
 For HMA Pmnt or Approach Slab

NOTE:
 1. Maintain same base thickness as JPCP.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CONCRETE PAVEMENT-
 END PANEL
 PAVEMENT TRANSITIONS**
 NO SCALE

RSP P30 DATED JULY 19, 2013 SUPERSEDES RSP P30 DATED APRIL 20, 2012 AND
 STANDARD PLAN P30 DATED MAY 20, 2011 - PAGE 137 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P30

2010 REVISED STANDARD PLAN RSP P30

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

William K. Farnbach
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 No. C49042
 Exp. 9-30-14
 CIVIL
 STATE OF CALIFORNIA

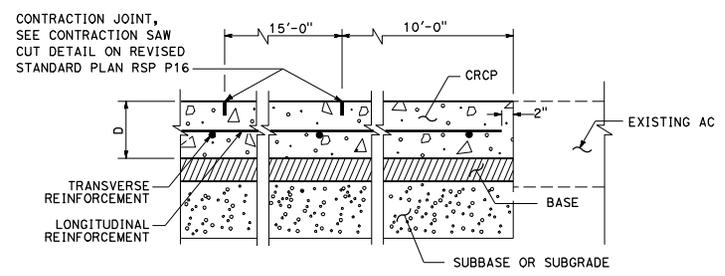
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TO ACCOMPANY PLANS DATED _____

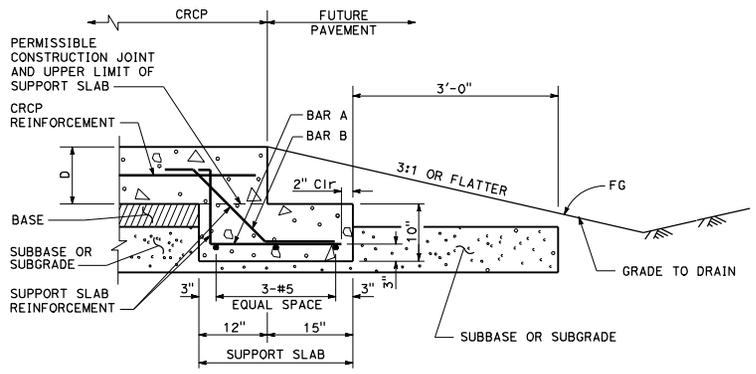
- NOTES:**
- For the locations of wide flange beam terminal, pavement anchors and expansion joints, see Projects Plans.
 - See Revised Standard Plans RSP P31B and RSP P32A.

ABBREVIATIONS

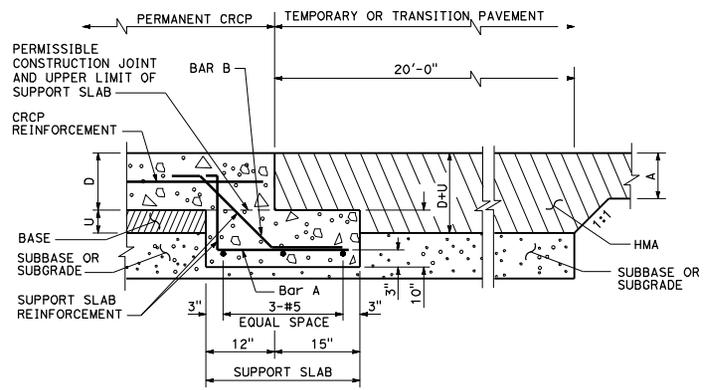
- D = Thickness of CRCP
 A = Depth of HMA as shown on Project Plans
 U = Thickness of Base



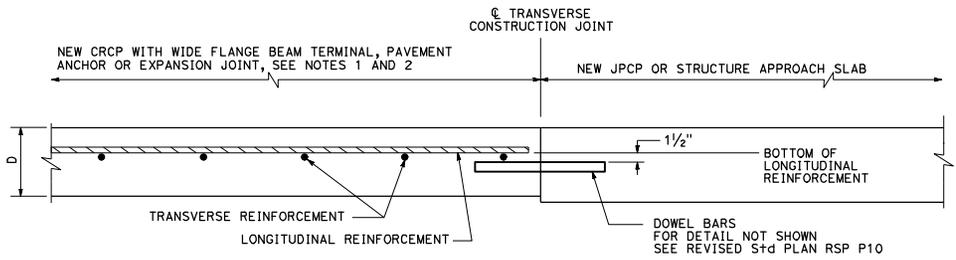
TERMINAL JOINT TYPE A
(For Existing AC)



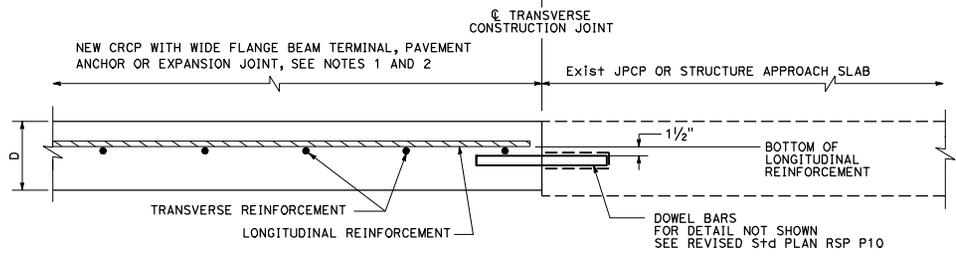
TERMINAL JOINT TYPE B
(For Future Pavement)



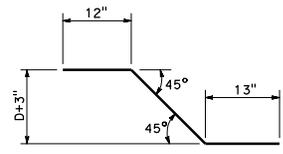
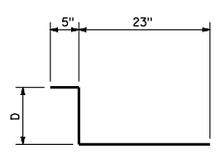
TERMINAL JOINT TYPE C
(For Temporary HMA Pavement)



TERMINAL JOINT TYPE E
(For New JPCP or Structure Approach Slabs)



TERMINAL JOINT TYPE D
(For Existing JPCP or Structure Approach Slabs)

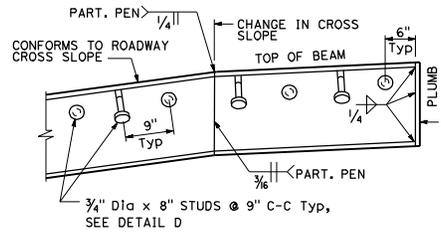


STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CONTINUOUSLY REINFORCED
 CONCRETE PAVEMENT
 TERMINAL JOINT DETAILS**
 NO SCALE

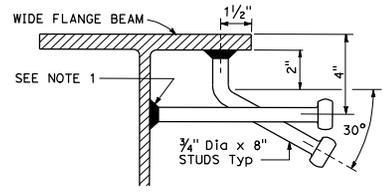
RSP P31A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN P31A
 DATED MAY 20, 2011 - PAGE 138 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP P31A

2010 REVISED STANDARD PLAN RSP P31A

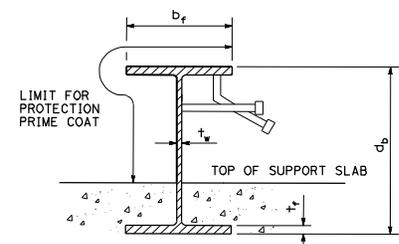
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
William K. Farnbach REGISTERED CIVIL ENGINEER No. C49042 Exp. 9-30-14 CIVIL STATE OF CALIFORNIA					
July 19, 2013 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					



WIDE FLANGE DETAIL



DETAIL D



WIDE FLANGE PAINTING DETAIL

See "TABLE OF BEAM SIZES"

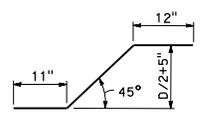
TO ACCOMPANY PLANS DATED _____

LEGEND:

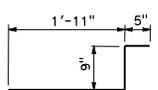
- b_f - FLANGE WIDTH
- t_f - FLANGE THICKNESS
- t_w - WEB THICKNESS
- d_b - BEAM DEPTH
- D1 - PAVEMENT THICKNESSES
- D2 - PAVEMENT THICKNESSES

NOTES:

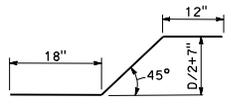
1. Studs must be electric arc end welded with complete fusion. Any stud dislodged in shipping or that can be dislodged by hammer must be replaced.
2. Weld 3/8" plate to each end of wide flange beam at pavement edges only. End plate covers the entire wide flange beam.
3. Extend polyethylene foam to the sides and edges of the front part of the plate.



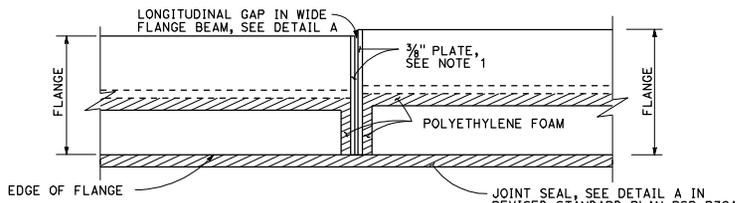
(A) #5 @ 12"



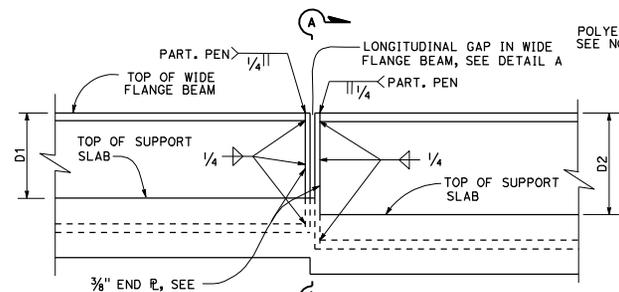
(B) #5 @ 12"



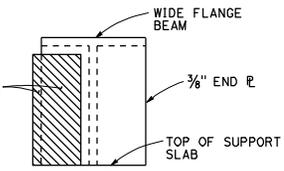
(C) #4 @ 12"



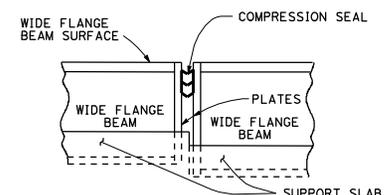
PLAN



ELEVATION



SECTION A-A



DETAIL A

CONCRETE AND STEEL QUANTITIES

ITEM	PAVEMENT THICKNESS							
	.75'	.80'	.85'	.90'	.95'	1.00'	1.05'	1.10'
CONCRETE	4.8 CY	4.8 CY	4.8 CY	4.8 CY	4.8 CY	4.8 CY	4.8 CY	4.8 CY
REINFORCING STEEL	552.0 LBS	552.2 LBS	552.4 LBS	552.6 LBS	552.8 LBS	553.0 LBS	553.1 LBS	553.3 LBS
CONCRETE	1.1 CY	1.1 CY	1.1 CY	1.1 CY	1.1 CY	1.1 CY	1.1 CY	1.1 CY
REINFORCING STEEL	99.9 LBS	99.9 LBS	100.2 LBS	100.5 LBS	100.8 LBS	101.1 LBS	101.1 LBS	101.6 LBS
STEEL BEAM (WEIGHT OF WIDE FLANGE BEAM AND STUDS)	43.0 LBS/LF +2 PLATES @ 14.9 LBS EA	69.51 LBS/LF +2 PLATES @ 14.9 LBS EA	90.51 LBS/LF +2 PLATES @ 18.5 LBS EA	90.51 LBS/LF +2 PLATES @ 18.5 LBS EA	98.51 LBS/LF +2 PLATES @ 22.0 LBS EA	98.51 LBS/LF +2 PLATES @ 22.0 LBS EA	98.51 LBS/LF +2 PLATES @ 22.0 LBS EA	98.51 LBS/LF +2 PLATES @ 22.0 LBS EA

TABLE OF BEAM SIZES					
PAVEMENT THICKNESS	WIDE FLANGE BEAM DESIGNATION	d _b	b _f	t _f	t _w
.75'	W14 x 43	13.70"	8.00"	0.53"	0.31"
.80'	W14 x 68	14.04"	10.04"	0.72"	0.42"
.85'	W16 x 89	16.75"	10.37"	0.88"	0.53"
.90'	W16 x 89	16.75"	10.37"	0.88"	0.53"
.95'	W18 x 97	18.59"	11.15"	0.87"	0.54"
1.00'	W18 x 97	18.59"	11.15"	0.87"	0.54"
1.05'	W18 x 97	18.59"	11.15"	0.87"	0.54"
1.10'	W18 x 97	18.59"	11.15"	0.87"	0.54"

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CONTINUOUSLY REINFORCED
 CONCRETE PAVEMENT
 WIDE FLANGE BEAM TERMINALS**
 NO SCALE

RSP P32B DATED JULY 19, 2013 SUPERSEDES RSP P32B DATED APRIL 20, 2012 AND STANDARD PLAN P32B DATED MAY 20, 2011 - PAGE 141 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP P32B

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".

LIGHTING FIXTURE SUPPORTS:

Where distance from walkway bracket to end of sign panel exceeds 1'-4", extend lighting fixture supports 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.

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:

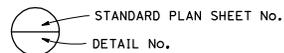
STRUCTURAL STEEL: $f_y = 36,000$ psi
 REINFORCED CONCRETE: $f_y = 60,000$ psi
 $f'_c = 3600$ psi
 FOOTING SOIL PRESSURE: 2.5 ksf (spread footing)

MINIMUM CLEARANCE

Vertical roadway clearance 18'-0" (bottom of walkway system)

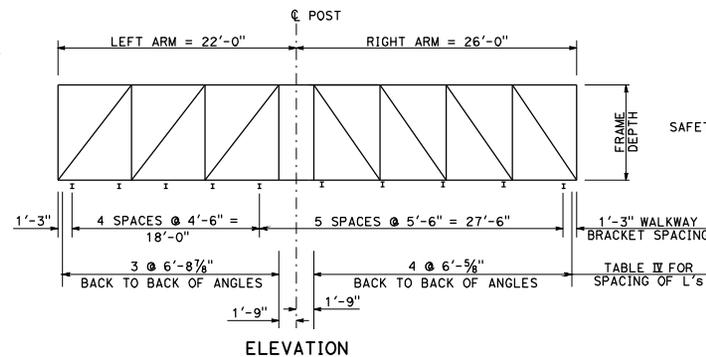
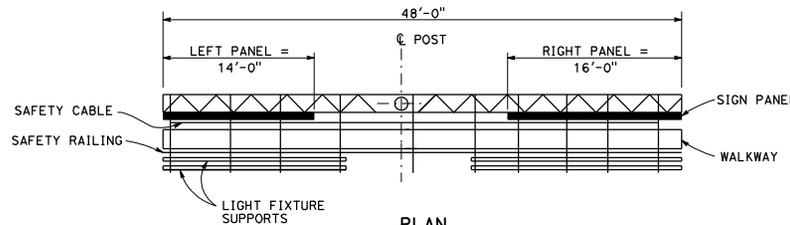
WELDING:

All welding continuous unless otherwise noted on the plans.



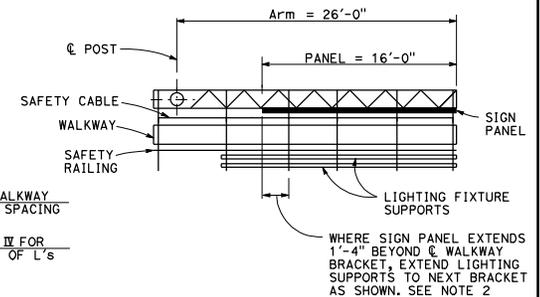
NOTES:

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.



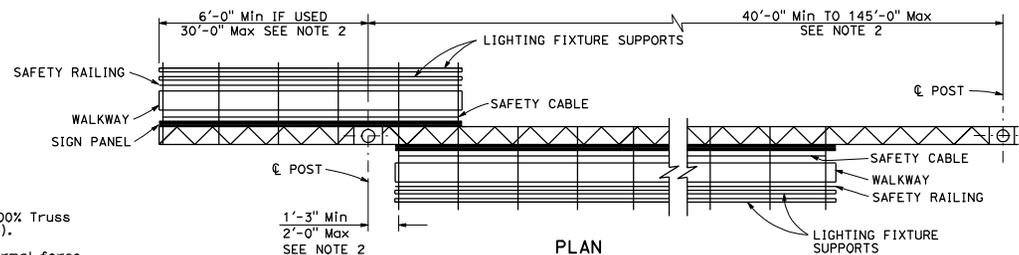
UNBALANCED SINGLE POST TYPE

Example No. 1



CANTILEVER SINGLE POST TYPE

Example No. 2



TWO POST TYPE WITH CANTILEVER (PART DOUBLE-FACED)

Example No. 3

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TRUSS INSTRUCTIONS AND EXAMPLES
 NO SCALE

RSP S1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN S1 DATED MAY 20, 2011 - PAGE 334 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP S1

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS793
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

July 19, 2013
 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.

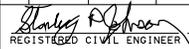
TO ACCOMPANY PLANS DATED _____

2010 REVISED STANDARD PLAN RSP S1

TABLE XV

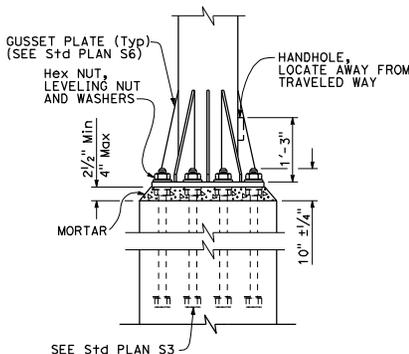
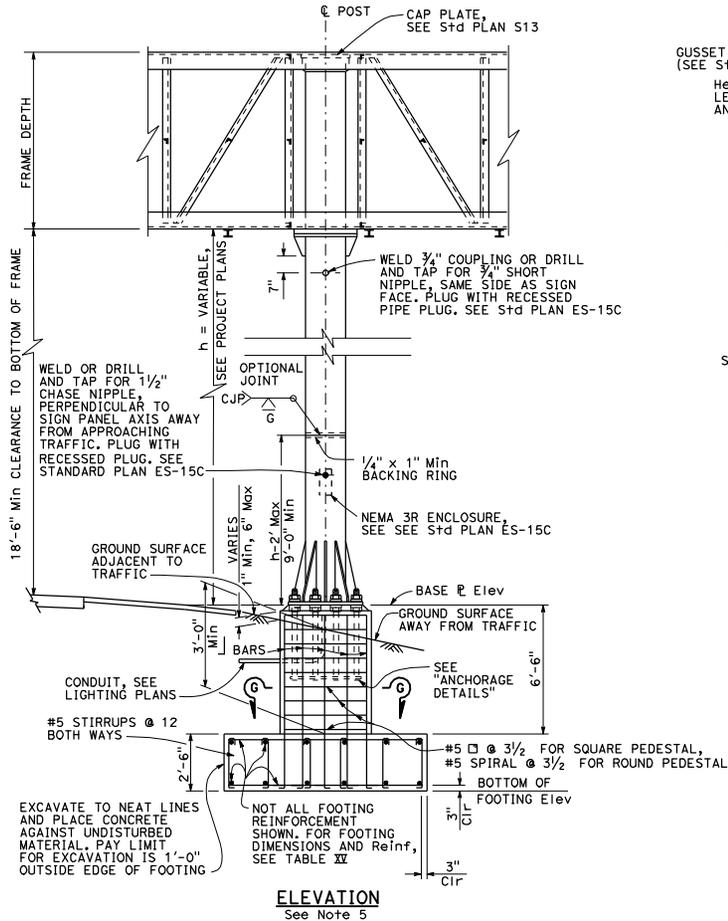
POST TYPE	PIPE NPS	PIPE THICKNESS	CAP PLATE SIZE FOR CHORD L's 5 x 5		CAP PLATE SIZE FOR CHORD L's 6 x 6		ROUND PEDESTAL					SQUARE PEDESTAL					SPREAD FOOTING						
			PEDESTAL SIZE Dia	VERTICAL EQUALLY SPACED TOTAL	J-BARS BAR SIZE	SPIRAL BAR SIZE	PITCH	PEDESTAL SIZE SQUARE	VERTICAL EQUALLY SPACED TOTAL	J-BARS BAR SIZE	# OF BARS EA FACE	HOOP BAR SIZE	SPACING	(SEE NOTE 2)									
														REINFORCEMENT WIDTH		LONGITUDINAL		FOOTING STIRRUPS					
												TOP	BOTTOM	TOP	BOTTOM	TOP	BOTTOM		TOP	BOTTOM	TOP	BOTTOM	TOP
II	14	1/2"	2'-0" x 2'-0" x 1"	2'-2" x 2'-2" x 1"	5'-3"	16	#10	#5	3/2"	5'-3"	16	#10	5	#5	3/2"	12'-0" x 14'-0" x 2'-6"	14-#6	14-#7	13-#9	13-#9	#5 @ 12		
III	16		2'-2" x 2'-2" x 1"	2'-4" x 2'-4" x 1"											12'-0" x 14'-0" x 2'-6"	15-#6	15-#7						
IV	18		2'-4" x 2'-4" x 1"	2'-6" x 2'-6" x 1"											12'-0" x 14'-0" x 2'-6"	15-#6	15-#7						
V	20		2'-6" x 2'-6" x 1"	2'-8" x 2'-8" x 1"											13'-0" x 14'-0" x 2'-6"	15-#6	15-#7	14-#9	14-#9				
VI	24		2'-10" x 2'-10" x 1"	3'-0" x 3'-0" x 1"	5'-9"										13'-0" x 16'-0" x 2'-6"	17-#7	17-#7		14-#11				
VII	24	3/4"													13'-0" x 17'-0" x 2'-6"	18-#7	18-#7						
VIII	24	3/32"													13'-0" x 18'-0" x 2'-6"	19-#7	19-#7						
IX	24	3/32"													13'-0" x 18'-0" x 2'-6"	19-#7	19-#7						

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


 REGISTERED CIVIL ENGINEER
 No. 02793
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

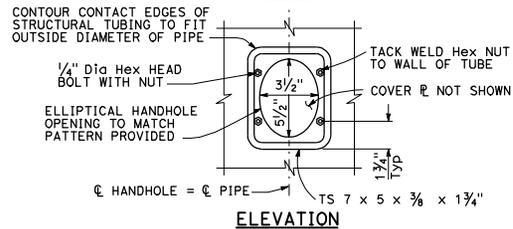
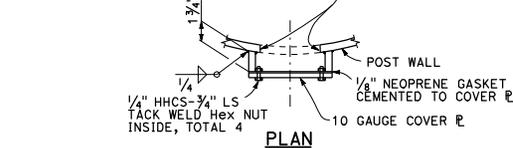
July 19, 2013
 PLANS APPROVAL DATE
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TO ACCOMPANY PLANS DATED _____



ELEVATION ANCHORAGE DETAILS

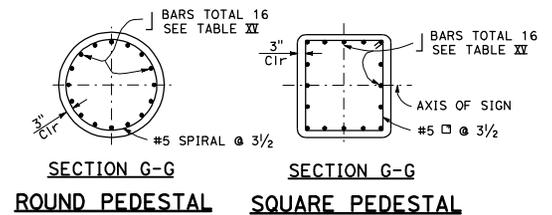
GRIND EDGES SMOOTH, ROUGHNESS OF EDGES NO GREATER THAN 1000 MICROINCHES



TYPICAL DETAILS OF HANDHOLE AND COVER

NOTES:

- For "General Notes", see Revised Standard Plan RSP S1.
- Longer side of footing (longitudinal) shall be normal to axis of sign.
- Backfill shall be in place prior to erection of post.
- Thread upper 10" of anchor bolts and galvanize upper 1'-0".
- Spread footing with square pedestal foundation shown, use Pile Foundation when shown on the Project Plans. For pile foundation details, see Standard Plan S8.
- Anchor plates may be retained with hexagon nut or formed head as alternatives to details shown.
- 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.
- At final position of post all top and bottom nuts shall be tightened against base plate.
- 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.
- Slope protection required when indicated on the Project Plans.



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-SYSTEM
 SINGLE POST TYPE
 POST TYPES II THROUGH IX**
 NO SCALE

RSP S2 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN S2 DATED MAY 20, 2011 - PAGE 335 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP S2

2010 REVISED STANDARD PLAN RSP S2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 No. CS7933
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

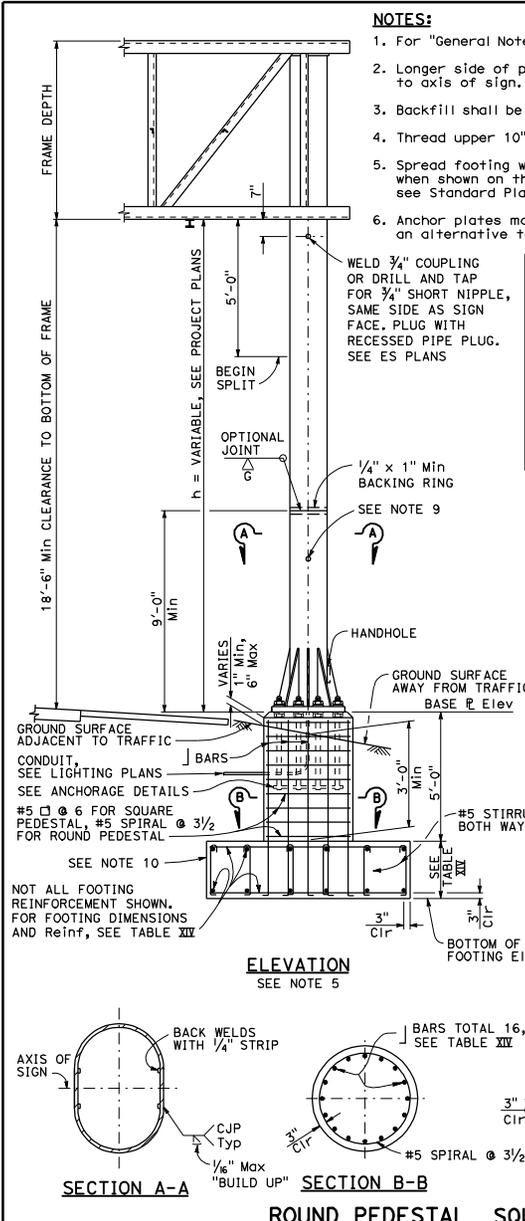
July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

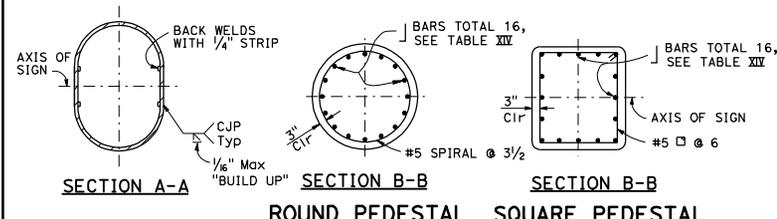
- For "General Notes", see Revised Standard Plan RSP S1.
- Longer side of post and footing (longitudinal) shall be normal to axis of sign.
- Backfill shall be in place prior to erection of post.
- Thread upper 10" of anchor bolts and galvanize upper 1'-0".
- Spread footing with square pedestal shown, use pile foundation when shown on the Project Plans. For pile foundation details, see Standard Plan S15.
- Anchor plates may be retained with Hex nut or formed head as an alternative to details shown.
- When foundation is located on a steep slope with exposed face of concrete adjacent to traffic, see "Detail C" on Standard Plan S15.
- Slope protection required when indicated on Project Plans.
- Weld coupling or drill and tap for 1/2" C chase nipple, perpendicular to sign panel axis away from approaching traffic. Plug with recessed pipe plug. See Standard Plan ES-15C.
- Excavate to neat lines and place concrete against undisturbed material.

TABLE XIV

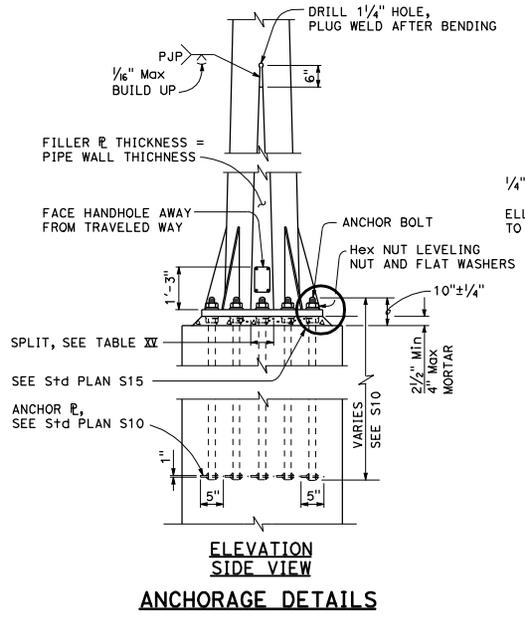
POST TYPE	PIPE			ROUND PEDESTAL				SQUARE PEDESTAL				SPREAD FOOTING							
	NPS	THICKNESS	SPLIT	PEDESTAL SIZE	VERTICAL J-BARS		SPIRAL	PEDESTAL SIZE	VERTICAL J-BARS		HOOP	(SEE NOTE 2)							
					EQUALLY SPACED TOTAL	BAR SIZE			EQUALLY SPACED TOTAL	BAR SIZE		# OF BARS EA FACE	BAR SIZE	SPACING	REINFORCEMENT		FOOTING STIRRUPS		
I-S	14	1/2"	5"	5'-3"	16	#10	#5	3 1/2"	5'-3"	16	#10	5	6"	7'-0" x 13'-0" x 2'-6"	14-#6	14-#7		10-#9	10-#9
II-S	16		6"											7'-0" x 13'-0" x 2'-6"	14-#6	14-#7	10-#9	10-#9	
III-S	18		7"											7'-0" x 13'-0" x 2'-6"	14-#6	14-#7	11-#9	11-#9	
IV-S	20		8"											8'-0" x 14'-0" x 2'-6"	15-#7	15-#7	12-#9	12-#11	
V-S	24		8"	5'-9"			#11		5'-9"		#11			8'-0" x 16'-0" x 3'-0"	17-#7	17-#7	12-#9	12-#11	
VI-S	24	3/32"	10"	5'-9"			#11		5'-9"		#11			9'-0" x 17'-0" x 3'-0"	18-#7	18-#7	12-#9	12-#11	
VII-S	24	3/32"	10"	5'-9"			#11		5'-9"		#11			10'-0" x 18'-0" x 3'-0"	19-#7	19-#7	13-#9	13-#11	



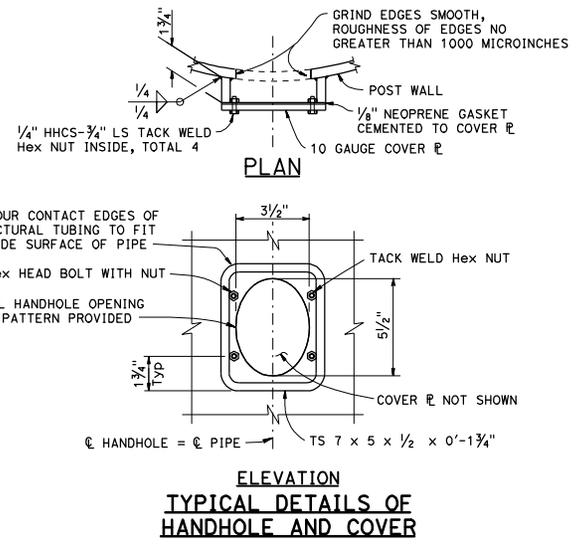
ELEVATION
SEE NOTE 5



ROUND PEDESTAL SQUARE PEDESTAL



ELEVATION SIDE VIEW ANCHORAGE DETAILS



ELEVATION TYPICAL DETAILS OF HANDHOLE AND COVER

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
OVERHEAD SIGNS-TRUSS TWO POST TYPE
POST TYPES I-S THROUGH VII-S
 NO SCALE

RSP S9 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN S9
 DATED MAY 20, 2011 - PAGE 342 OF THE STANDARD PLANS BOOK DATED 2010.
REVISED STANDARD PLAN RSP S9

2010 REVISED STANDARD PLAN RSP S9

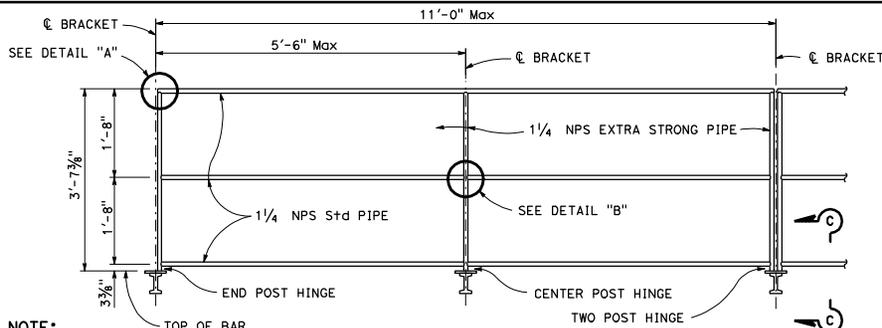
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

July 19, 2013
 PLANS APPROVAL DATE
 REGISTERED CIVIL ENGINEER
 Stanley P. Johnson
 No. CS793
 Exp. 3-31-14
 CIVIL
 STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED _____

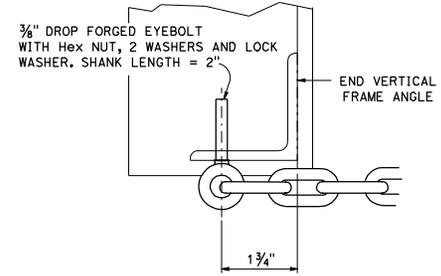
2010 REVISED STANDARD PLAN RSP S140



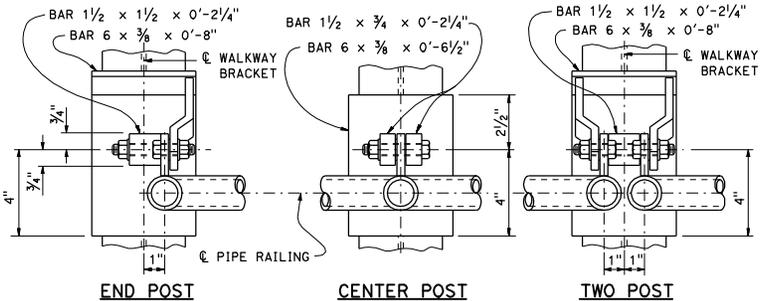
SAFETY RAILING ELEVATION

NOTE:
Chain assembly behind (see detail this page)

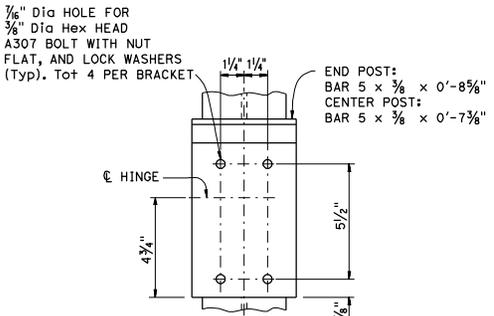
NOTE:
See Standard Plans S101 and S105 and S109 for walkway bracket spacing.



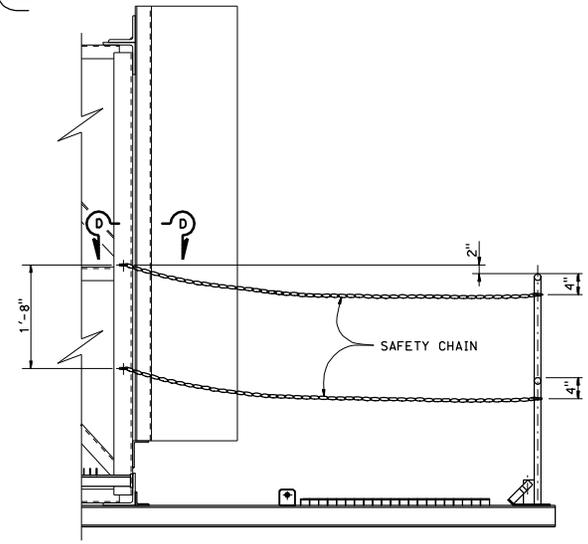
SECTION D-D



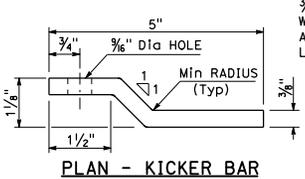
WELDED HINGE - PLAN



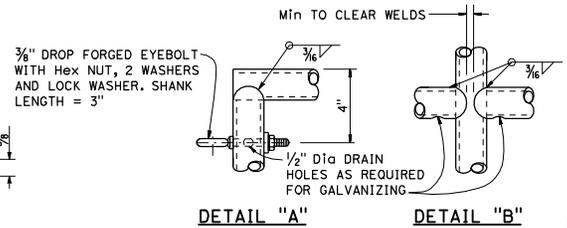
HINGED CONNECTION



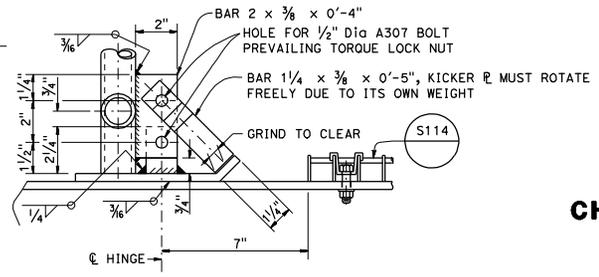
CHAIN ASSEMBLY



PLAN - KICKER BAR



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



SECTION C-C ELEVATION VIEW

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 WALKWAY SAFETY
 RAILING DETAILS
 CHANGEABLE MESSAGE SIGNS
 MODEL 500 AND 510**

NO SCALE

RSP S140 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN S140 DATED MAY 20, 2011 - PAGE 422 OF THE STANDARD PLANS BOOK DATED 2010.

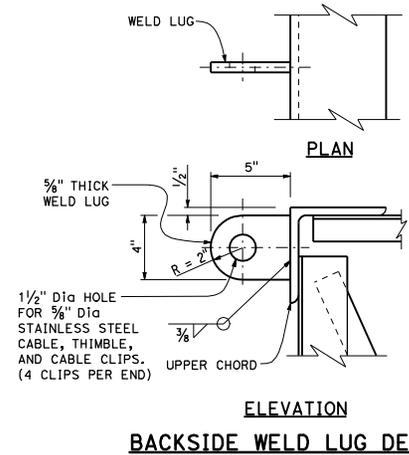
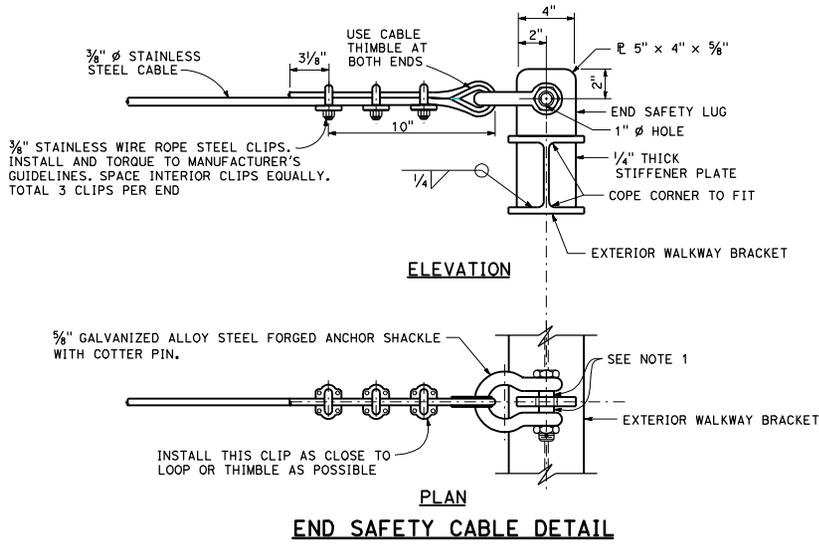
REVISED STANDARD PLAN RSP S140

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

Stanley P. Johnson
 REGISTERED CIVIL ENGINEER
 July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

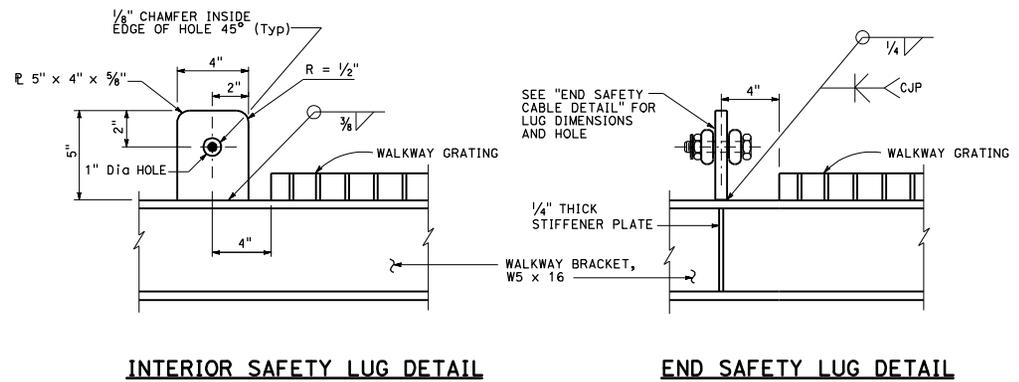


TO ACCOMPANY PLANS DATED _____



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

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



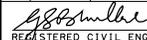
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**OVERHEAD SIGN-TRUSS
 SINGLE POST TYPE
 SAFETY CABLE
 ANCHORAGE DETAILS
 CHANGEABLE MESSAGE SIGNS
 MODEL 500 AND 510**

NO SCALE

RSP S141 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN S141 DATED MAY 20, 2011 - PAGE 423 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP S141

2010 REVISED STANDARD PLAN RSP S141

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
 REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



TO ACCOMPANY PLANS DATED _____

TABLE 1

TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING							
SPEED (S)	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)				MAXIMUM CHANNELIZING DEVICE SPACING		
	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	X	Y	Z **
					TAPER	TANGENT	CONFLICT
mph	ft	ft	ft	ft	ft	ft	ft
20	160	80	40	27	20	40	10
25	250	125	63	42	25	50	12
30	360	180	90	60	30	60	15
35	490	245	123	82	35	70	17
40	640	320	160	107	40	80	20
45	1080	540	270	180	45	90	22
50	1200	600	300	200	50	100	25
55	1320	660	330	220	55	110	27
60	1440	720	360	240	60	120	30
65	1560	780	390	260	65	130	32
70	1680	840	420	280	70	140	35

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

Where: L = Taper length in feet

W = Width of offset in feet

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

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

TABLE 2

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

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

** - Longitudinal buffer space or flagger station spacing

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

TABLE 3

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

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

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP T9 DATED JULY 19, 2013 SUPERSEDES RSP T9 DATED APRIL 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T9