

INDEX OF PLANS

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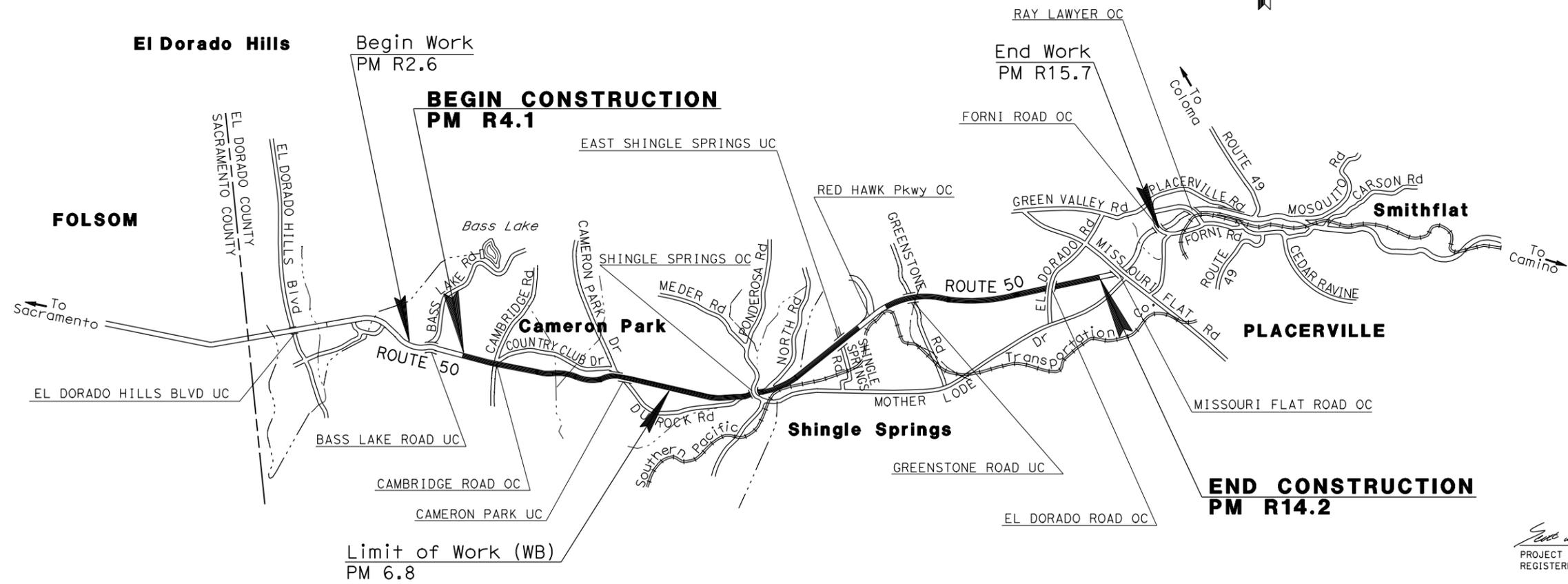
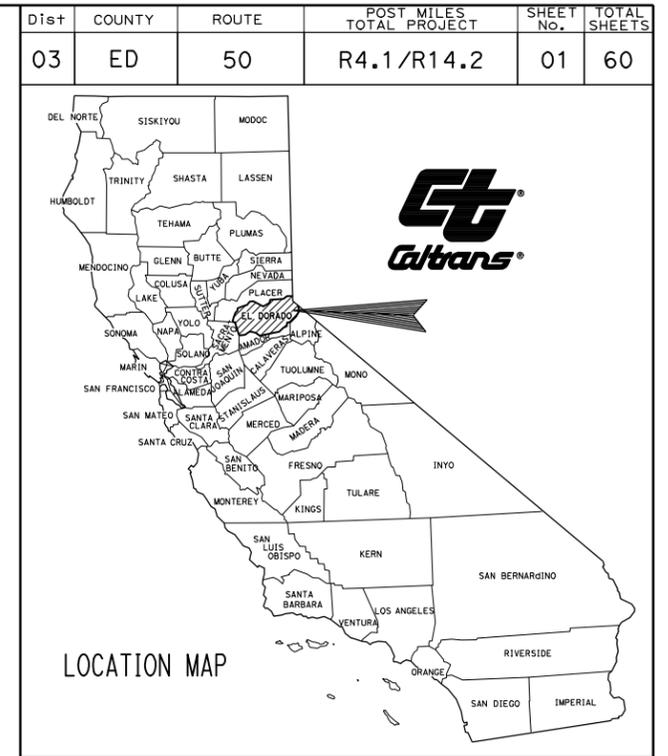
THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

NH-P050(127)E

PROJECT PLANS FOR CONSTRUCTION ON  
STATE HIGHWAY  
IN EL DORADO COUNTY  
NEAR EL DORADO HILLS FROM  
0.3 MILE EAST OF BASS LAKE ROAD UNDERCROSSING  
TO MISSOURI FLAT ROAD OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006



Limit of Work (WB)  
PM 6.8

NO SCALE

PROJECT MANAGER  
C. PERI

DESIGN ENGINEER  
S. MANN

*Scott W. Mann* 5-23-11  
PROJECT ENGINEER DATE  
REGISTERED CIVIL ENGINEER

August 15, 2011  
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.

CONTRACT No. **03-2F0204**  
PROJECT ID **0300020443**

DATE PLOTTED => 28-JUL-2011  
TIME PLOTTED => 14:03  
LAST REVISION 00-00-00

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

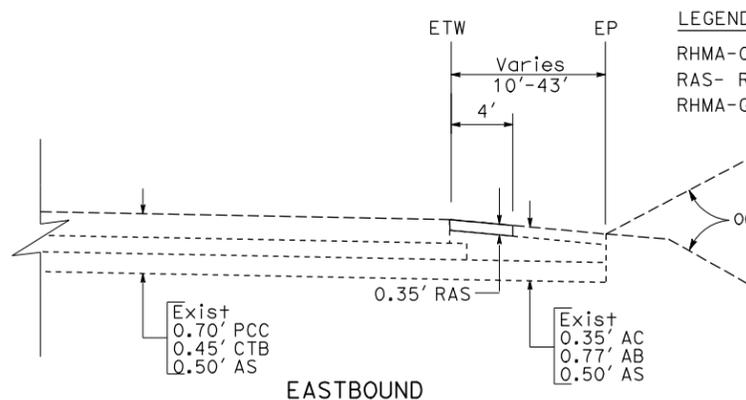
CHECKED BY  
 LUZ VILLANUEVA

DESIGNED BY  
 GINA LOPEZ

REVISOR  
 DATE

**NOTES:**

- DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
- FOR ACCURATE RIGHT OF WAY DATA CONTACT RIGHT OF WAY ENGINEERING AT DISTRICT OFFICE.
- EXISTING UTILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.
- GRIND Exist OGAC PRIOR TO PLACING RHMA-G AND RHMA-O. SEE "SUMMARY OF QUANTITIES" FOR LIMITS.
- SHOULDER AREAS WITH POSITIVE SUPERELEVATIONS SHALL BE PAVED WITH RHMA-O FROM EP TO EP OR AS DIRECTED BY ENGINEER.
- SEE "SUMMARY OF QUANTITIES" FOR EXACT LOCATIONS AND TYPES OF DIKES AND MBGR.
- SEE DETAIL SHEETS FOR SHOULDER BACKING



**LEGEND**

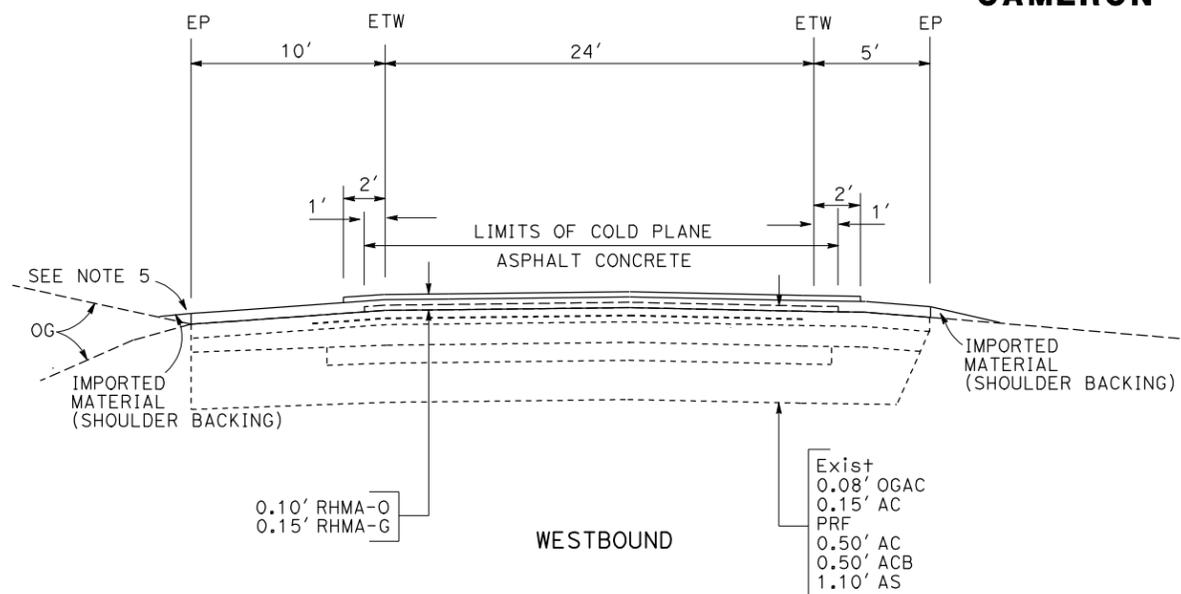
- RHMA-O RUBBERIZED HOT MIX ASPHALT (OPEN GRADED)
- RAS- REPLACE AC SURFACING
- RHMA-G RUBBERIZED HOT MIX ASPHALT (GAP GRADED)

| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 02        | 60           |

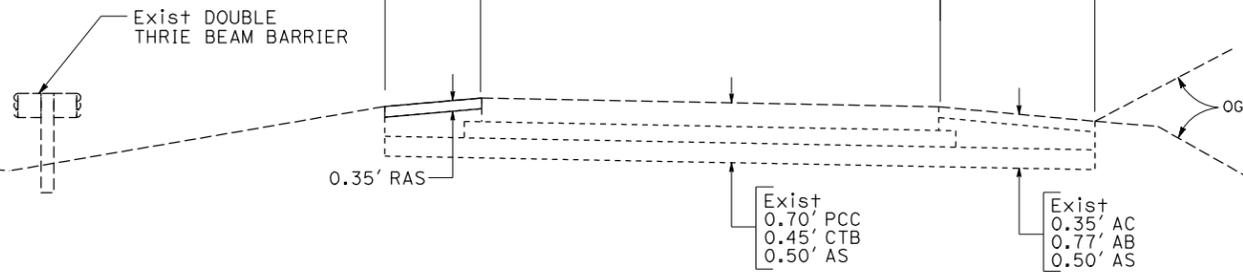
REGISTERED CIVIL ENGINEER  
 DATE 5-23-11  
 PLANS APPROVAL DATE 8-15-11  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

SCOTT MANN  
 No. 72005  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

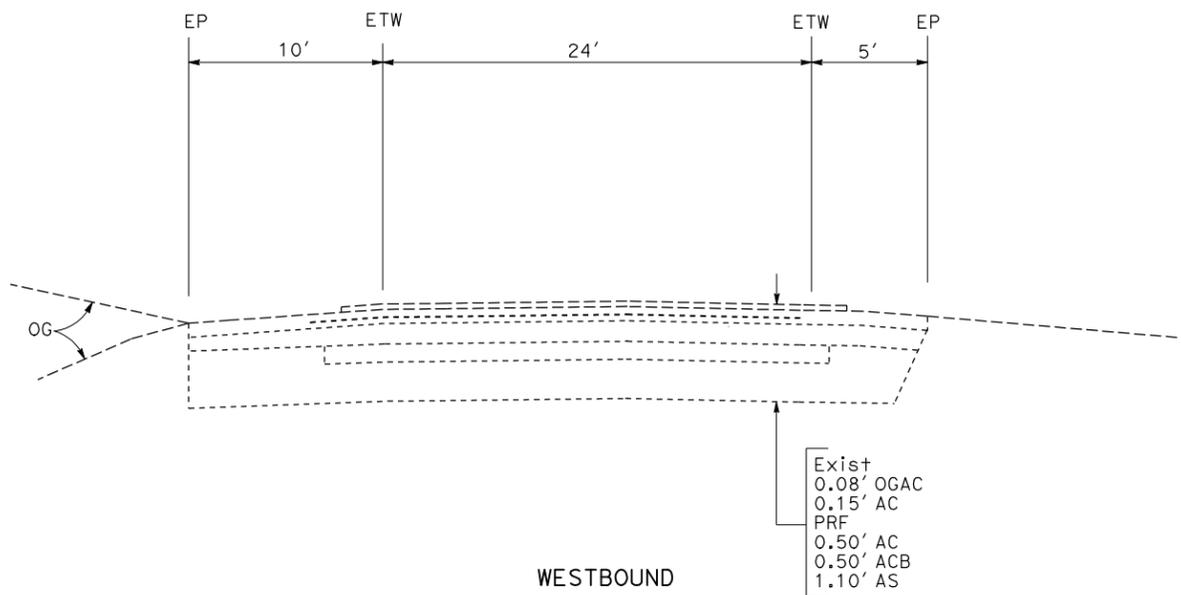
**CAMBRIDGE ROAD OFF/ON RAMP**  
 PM 4.63 TO 5.14  
**CAMERON PARK DRIVE OFF/ON RAMP**  
 PM 6.36 TO 6.92



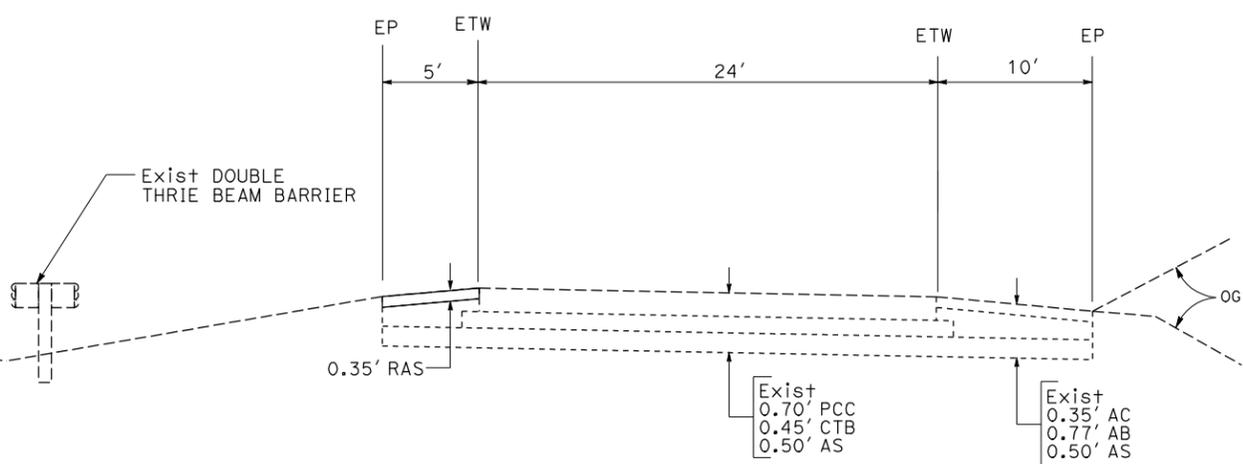
**ROUTE 50**  
 PM 6.8 TO 7.9



**EASTBOUND**



**ROUTE 50**  
 PM R4.09 TO 6.8



**EASTBOUND**

**TYPICAL CROSS SECTIONS**  
 NO SCALE

X-1

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 03        | 60           |

|                           |      |
|---------------------------|------|
| REGISTERED CIVIL ENGINEER | DATE |
| 5-23-11                   |      |
| PLANS APPROVAL DATE       |      |
| 8-15-11                   |      |

|                                  |
|----------------------------------|
| REGISTERED PROFESSIONAL ENGINEER |
| SCOTT MANN                       |
| No. 72005                        |
| Exp. 6-30-12                     |
| CIVIL                            |
| STATE OF CALIFORNIA              |

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

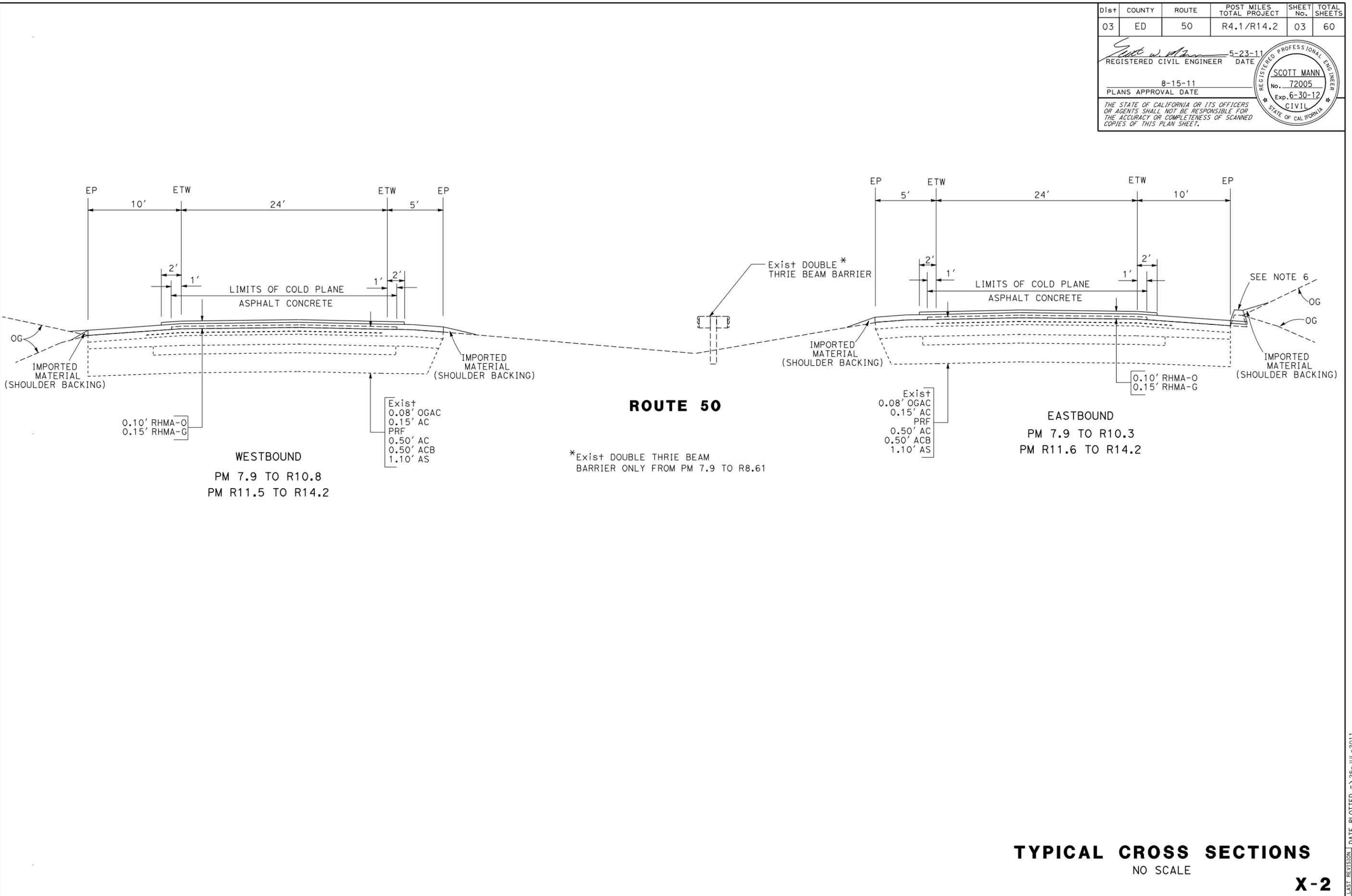
FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

CALCULATED-DESIGNED BY  
 GINA LOPEZ

CHECKED BY  
 LUZ VILLANUEVA

REVISOR BY  
 DATE

REVISOR BY  
 DATE



\*Exist DOUBLE THRIE BEAM BARRIER ONLY FROM PM 7.9 TO R8.61

**TYPICAL CROSS SECTIONS**  
 NO SCALE

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
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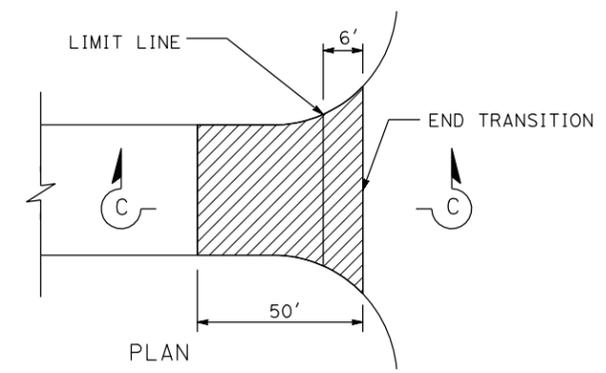
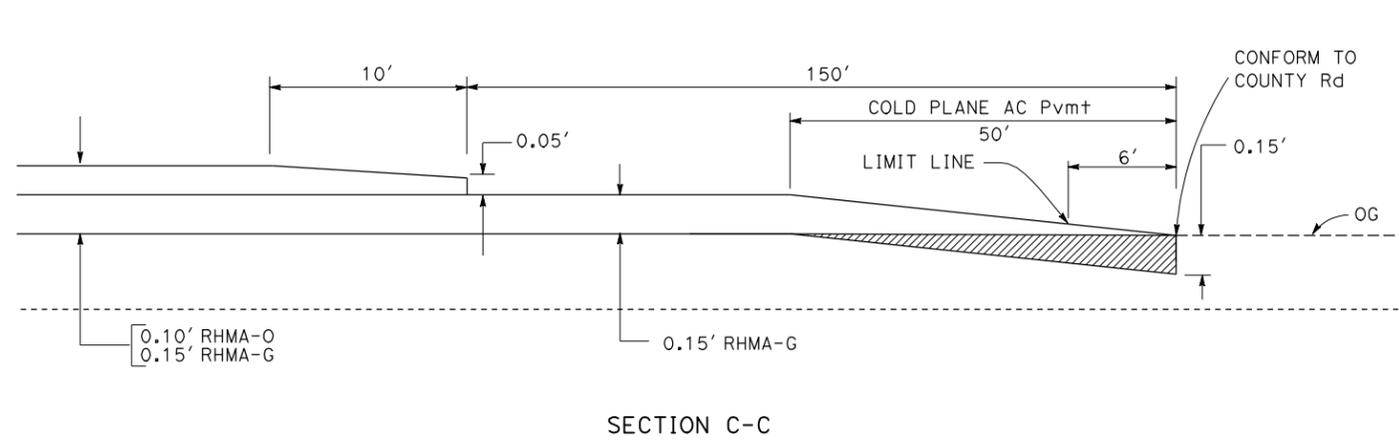
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|---------------------------|---------|------|
| REGISTERED CIVIL ENGINEER | 5-23-11 | DATE |
| PLANS APPROVAL DATE       | 8-15-11 |      |

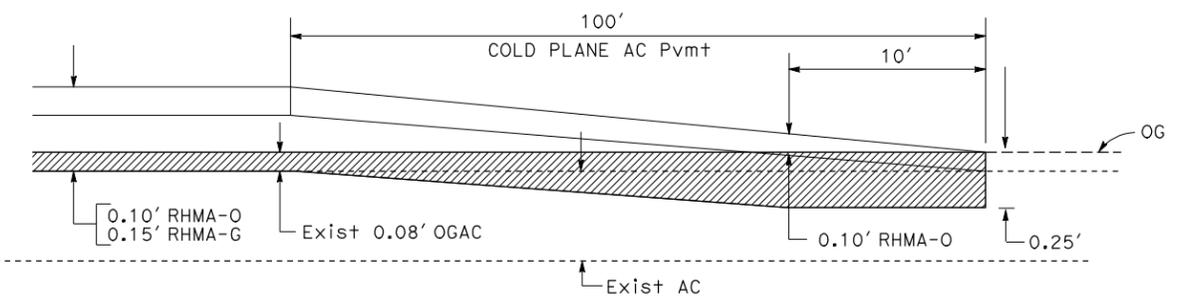
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|----------------------------------|------------|
| REGISTERED PROFESSIONAL ENGINEER | SCOTT MANN |
| No. 72005                        |            |
| Exp. 6-30-12                     |            |
| CIVIL                            |            |

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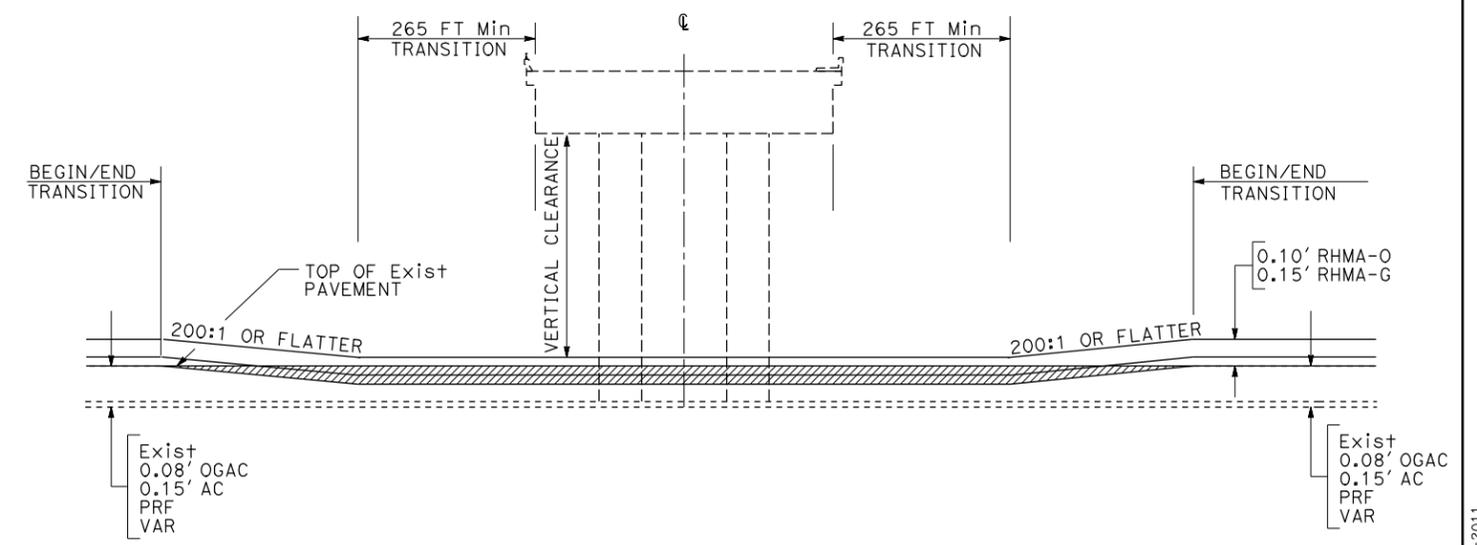
LEGEND:  
 COLD PLANE AC PAVEMENT



**RAMP PAVEMENT TRANSITION AT RAMP TERMINUS**



**CONFORM DETAIL**  
 EB ROUTE 50-PM 7.9,R10.32,R11.64,R14.2  
 WB ROUTE 50-PM 6.8,R10.83,R11.55,R14.2



**BRIDGE CLEARANCE PAVEMENT TRANSITION AT OVERCROSSINGS**

LOCATIONS: SHINGLE SPRINGS OC, EL DORADO RD OC

NOTE:  
 EXACT CONFORM LIMITS TO BE DETERMINED BY ENGINEER.

**CONSTRUCTION DETAILS**  
 NO SCALE  
**C-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

CALCULATED-DESIGNED BY  
 CHECKED BY

REVISOR  
 GINA LOPEZ  
 LUZ VILLANUEVA

REVISOR  
 DATE

USERNAME => s130875  
 DGN FILE => 0300020443ga001.dgn

RELATIVE BORDER SCALE  
 IS IN INCHES



UNIT 0303

PROJECT NUMBER & PHASE

03000204431

DATE PLOTTED => 25-JUL-2011  
 TIME PLOTTED => 15:02

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
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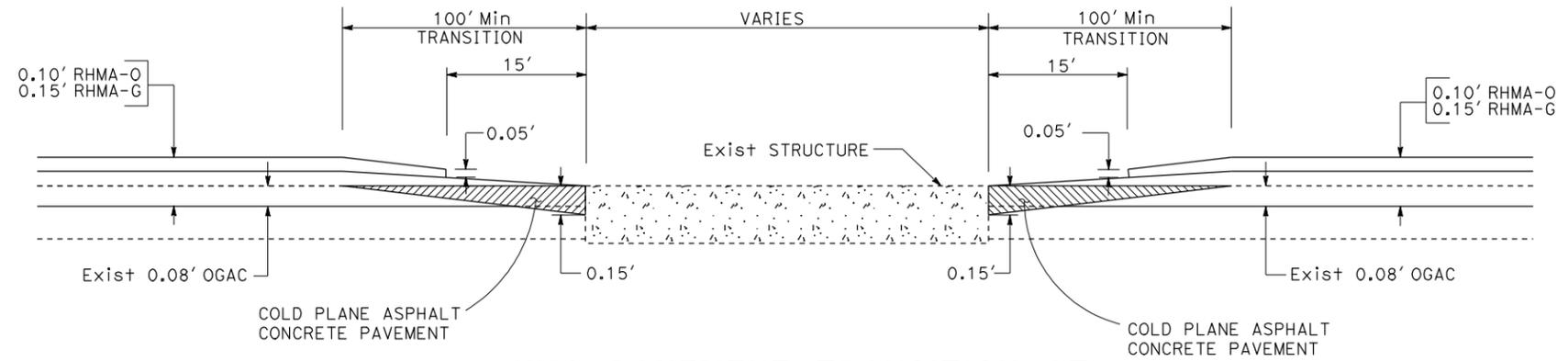
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|---------------------------|---------|------|
| REGISTERED CIVIL ENGINEER | 5-23-11 | DATE |
| PLANS APPROVAL DATE       | 8-15-11 |      |

|                                  |            |
|----------------------------------|------------|
| REGISTERED PROFESSIONAL ENGINEER | SCOTT MANN |
| No. 72005                        |            |
| Exp. 6-30-12                     |            |
| CIVIL                            |            |
| STATE OF CALIFORNIA              |            |

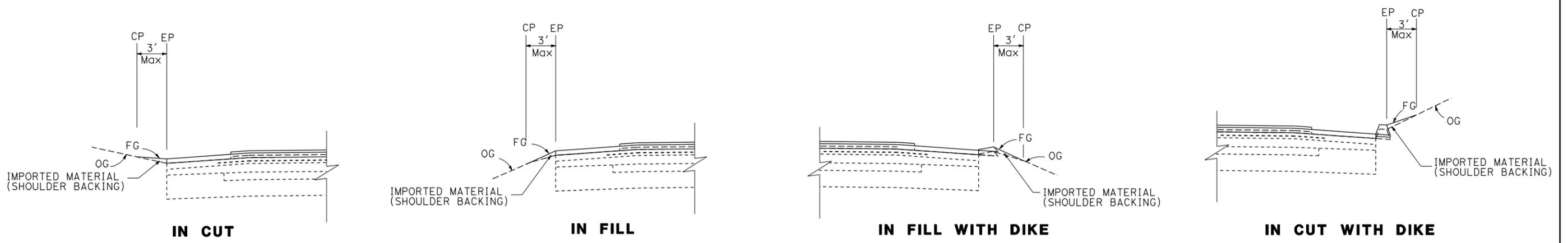
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**LEGEND:**  
 COLD PLANE AC PAVEMENT



**HMA PAVEMENT TRANSITION AT STRUCTURE APPROACH**

LOCATIONS: EAST SHINGLE SPRINGS UC AND GREENSTONE RD UC



**SHOULDER BACKING**

**CONSTRUCTION DETAILS**  
NO SCALE

**C-2**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

CALCULATED-DESIGNED BY  
 CHECKED BY

GINA LOPEZ  
 LUZ VILLANUEVA

REVISED BY  
 DATE REVISED

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 06        | 60           |

|                           |      |         |
|---------------------------|------|---------|
| REGISTERED CIVIL ENGINEER | DATE | 5-23-11 |
| PLANS APPROVAL DATE       |      |         |
| 8-15-11                   |      |         |

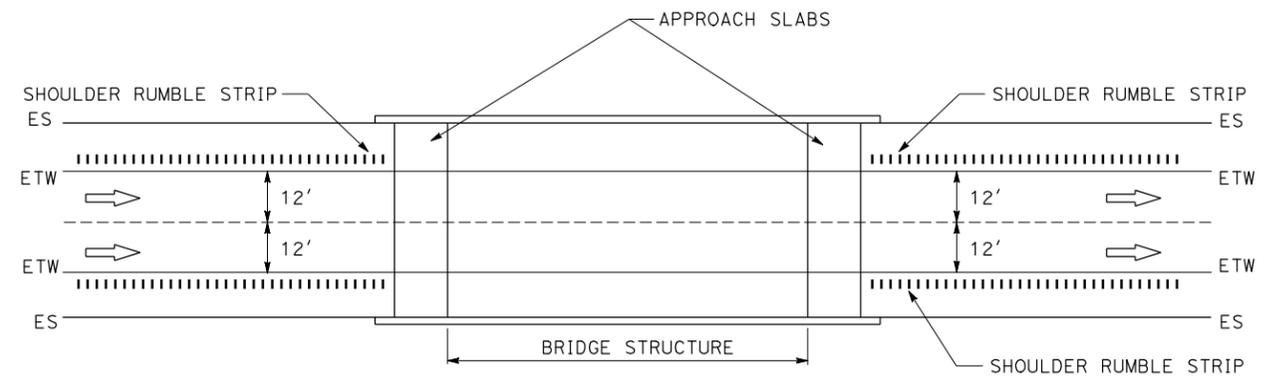
|                                  |                     |
|----------------------------------|---------------------|
| REGISTERED PROFESSIONAL ENGINEER | STATE OF CALIFORNIA |
| SCOTT MANN                       | No. 72005           |
| Exp. 6-30-12                     | CIVIL               |

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.

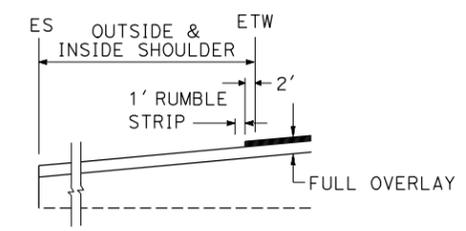
**LEGEND**

→ DIRECTION OF TRAVEL

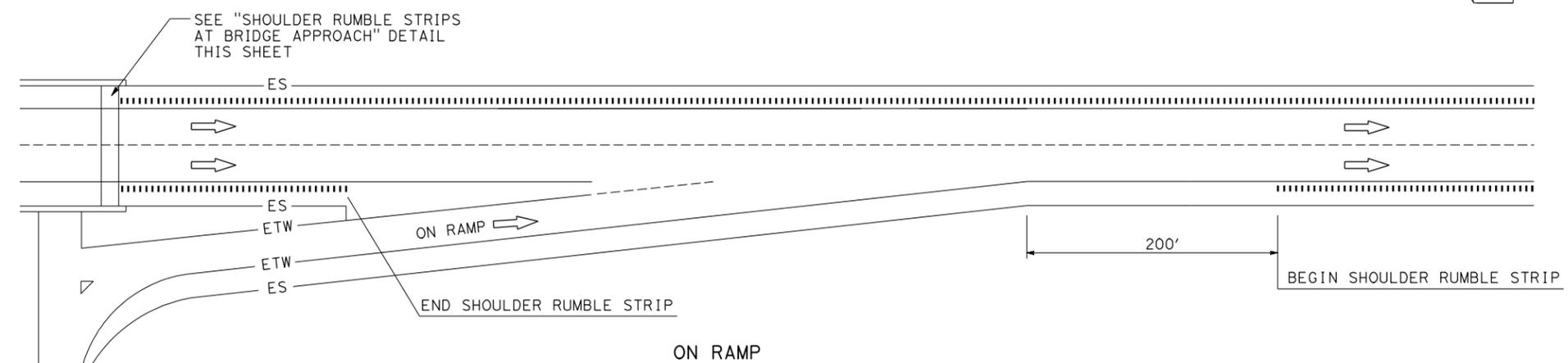
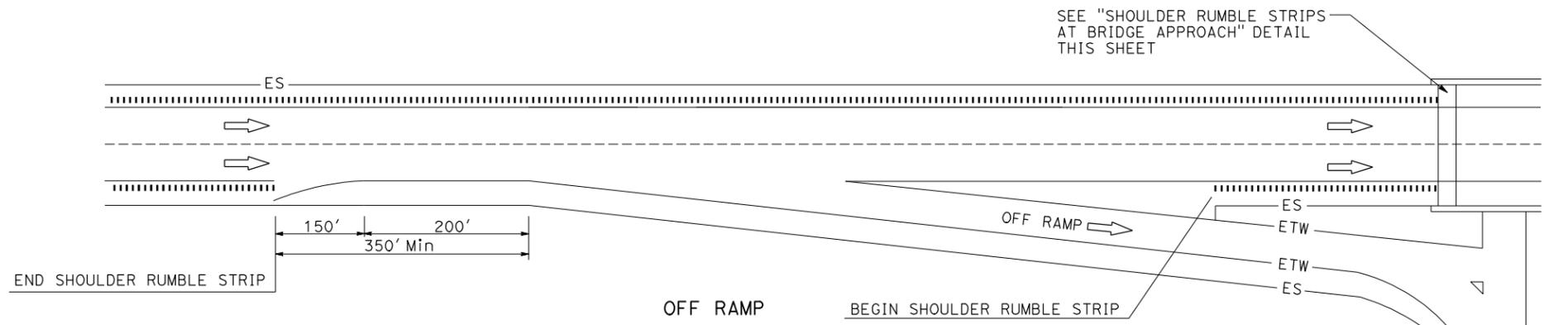
..... SHOULDER RUMBLE STRIP



**SHOULDER RUMBLE STRIPS AT BRIDGE APPROACH**



**RUMBLE STRIP**



**SHOULDER RUMBLE STRIPS AT RAMP LOCATIONS**

**CONSTRUCTION DETAILS**

NO SCALE

**C-3**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

CHECKED BY

DESIGNED BY

GINA LOPEZ  
 LUZ VILLANUEVA

REVISOR  
 DATE

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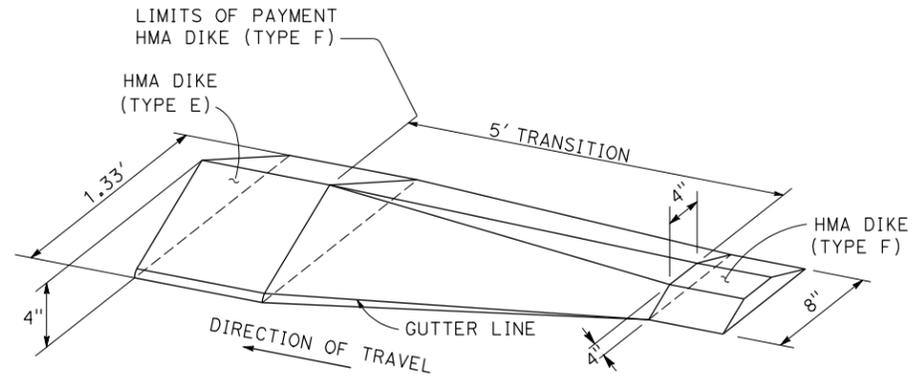
  

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| REGISTERED CIVIL ENGINEER | DATE |
| 5-23-11                   |      |
| PLANS APPROVAL DATE       |      |
| 8-15-11                   |      |

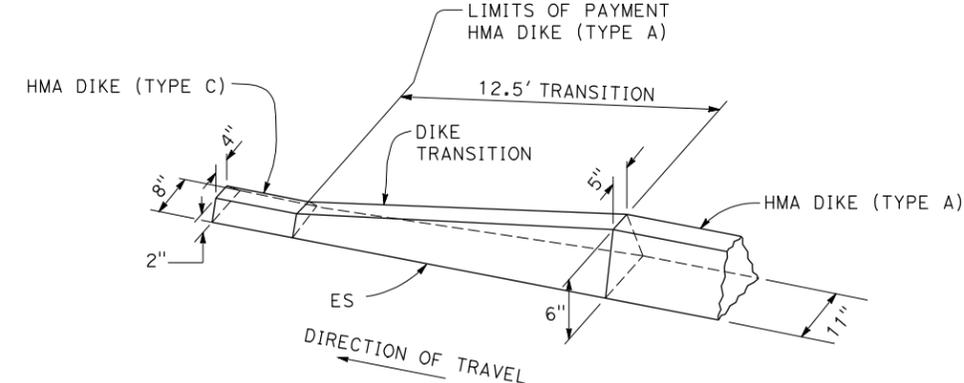
  

|                                  |
|----------------------------------|
| REGISTERED PROFESSIONAL ENGINEER |
| SCOTT MANN                       |
| No. 72005                        |
| Exp. 6-30-12                     |
| CIVIL                            |
| STATE OF CALIFORNIA              |

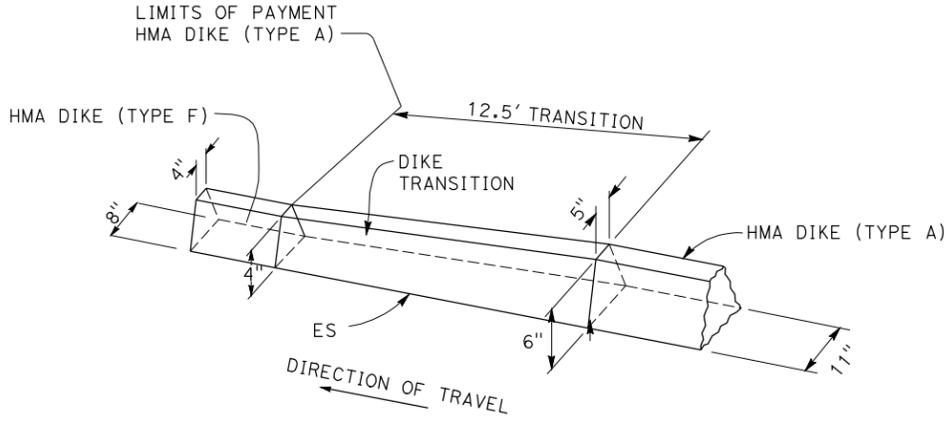
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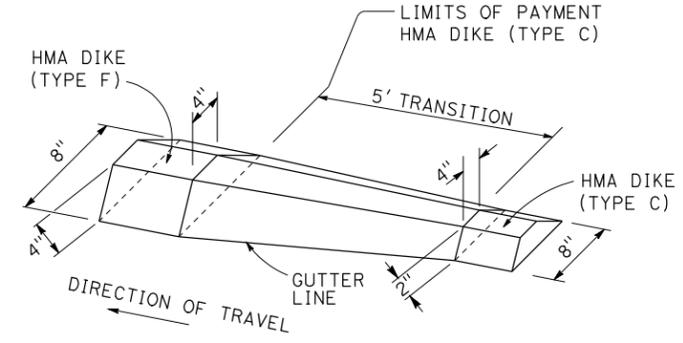
**DIKE TRANSITION  
TYPE F TO TYPE E**



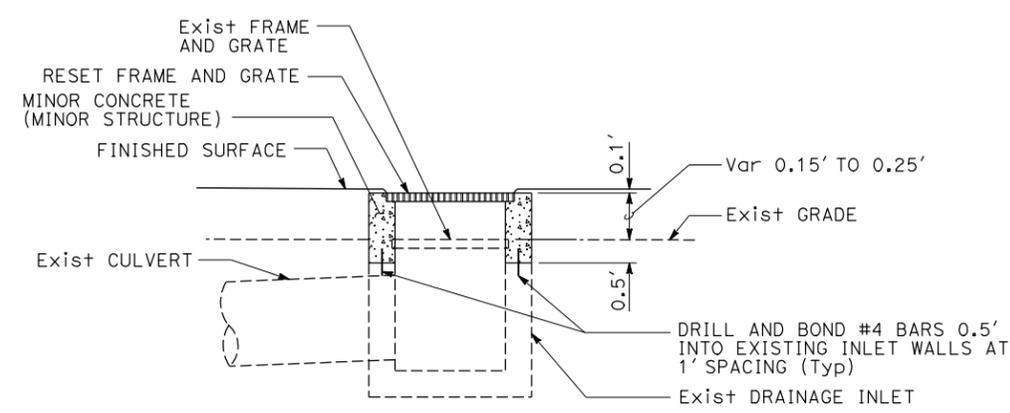
**DIKE TRANSITION  
TYPE A TO TYPE C**



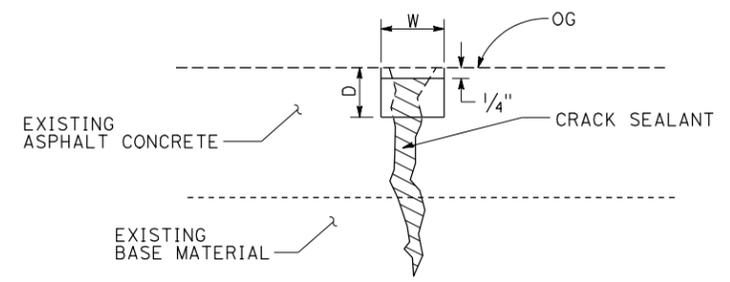
**DIKE TRANSITION  
TYPE A TO TYPE F**



**DIKE TRANSITION  
TYPE C TO TYPE F**



**ADJUST INLET**



**CRACK TREATMENT  
TYPICAL CROSS SECTION**

**LEGEND:**

- W= WIDTH OF ROUTING = WIDTH OF CRACK + 1/4" Min
- D= DEPTH OF ROUTING = W + 1/4" Min

**NOTES:**

1. ALL CRACKS 1/4" WIDE OR GREATER ARE TO BE ROUTED AND SEALED.
2. IF ANY PART OF CRACKS IS 1/4" OR WIDER, THEN THE ENTIRE CRACK WILL BE ROUTED AND SEALED.
3. NO SEALANT MATERIAL WILL BE ALLOWED ON AC PAVEMENT SURFACE.

**CONSTRUCTION DETAILS**

NO SCALE

**C-4**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

CHECKED BY  
 LUZ VILLANUEVA

DESIGNED BY  
 GINA LOPEZ

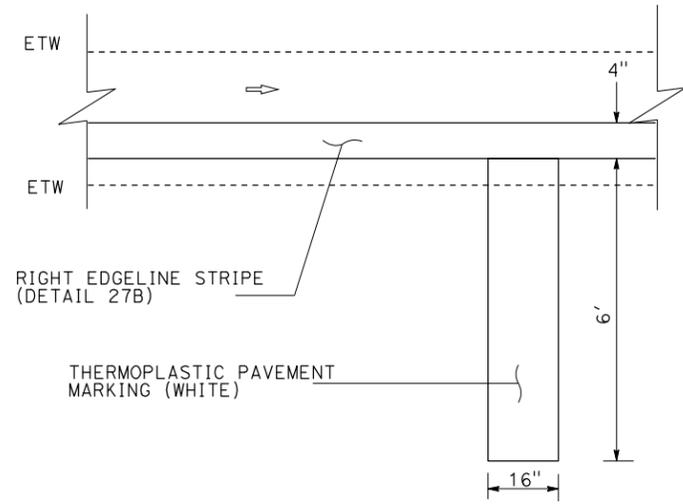
REVISOR  
 DATE

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 08        | 60           |

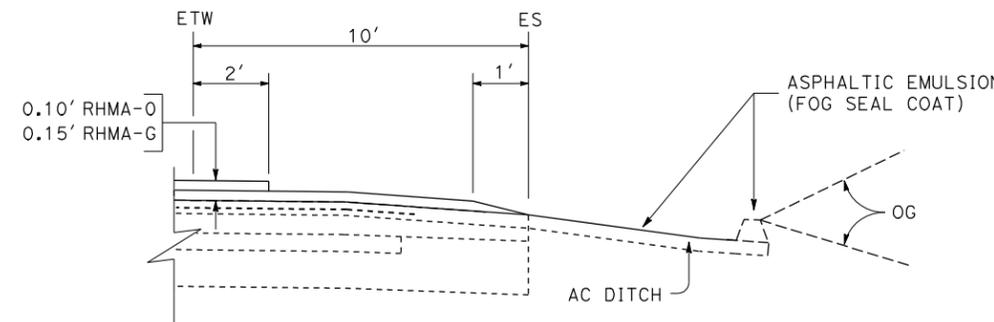
  

|  |         |      |
|--|---------|------|
| REGISTERED CIVIL ENGINEER  | 5-23-11 | DATE |
|  |         |      |
| PLANS APPROVAL DATE  | 8-15-11 |      |
| <small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small> |         |      |

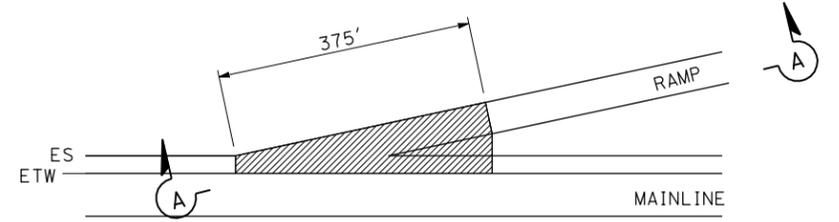
**LEGEND:**  
 COLD PLANE AC PAVEMENT  
 RAS



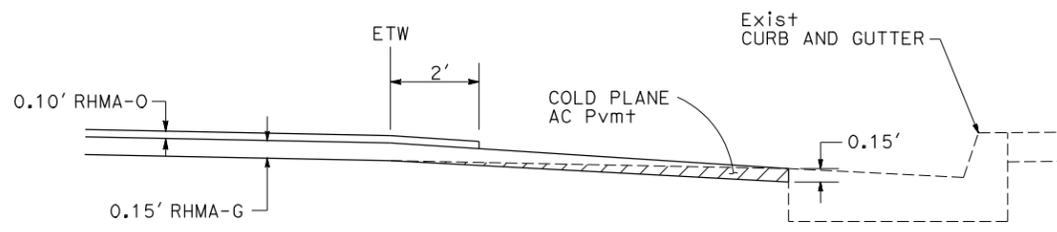
**AERIAL PATROL MARKING**



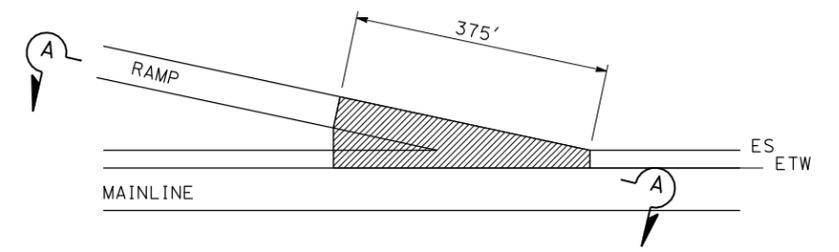
**HMA CONFORM AT AC DITCH**



**ON-RAMP**



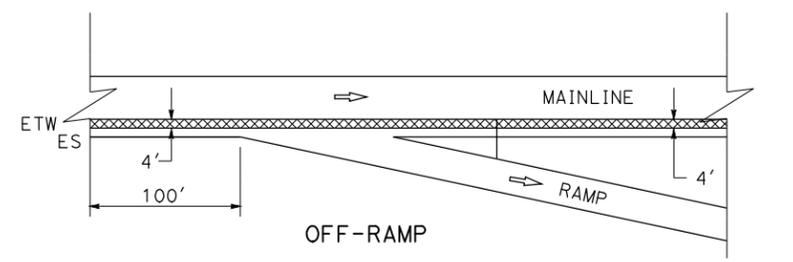
**HMA PVMT CONFORM TO EXIST CURB AND GUTTER DETAIL FOR RAMPS**



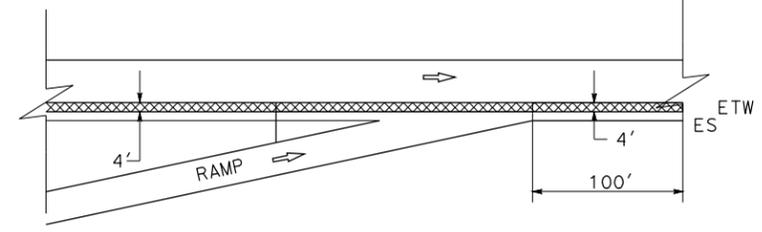
**OFF-RAMP PLAN**

**COLD PLANE AC DETAIL AT RAMPS**

LOCATION: (WB ONLY) CAMERON PARK OFF-RAMP



**OFF-RAMP**

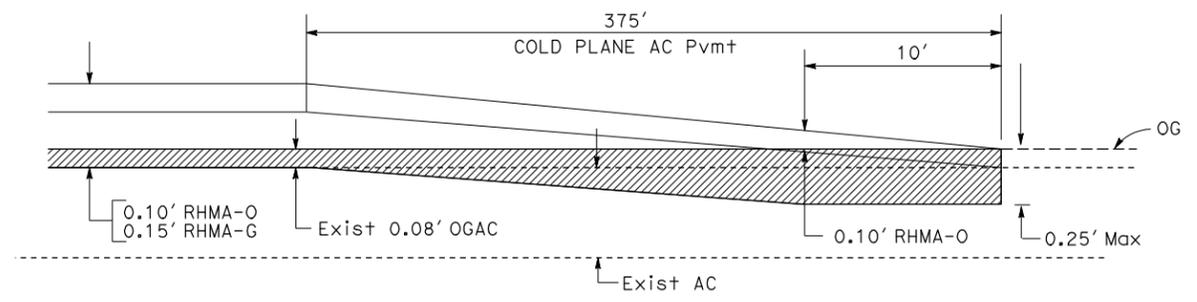


**ON-RAMP**

**SHOULDER REHABILITATION LIMITS\***

LOCATION: (EB ONLY) CAMBRIDGE ROAD OFF/ON-RAMP AND CAMERON PARK ROAD OFF/ON-RAMP.

\* NO SHOULDER REHABILITATION WORK TO BE DONE ON STRUCTURES



**SECTION A-A**

**RAMP PAVEMENT TRANSITION AT RAMP GORE**

**CONSTRUCTION DETAILS**

NO SCALE

**C-5**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 NORTH REGION OFFICE OF DESIGN SOUTH DESIGN BRANCH S4  
 FUNCTIONAL SUPERVISOR SCOTT W. MANN  
 CALCULATED/DESIGNED BY CHECKED BY  
 GINA LOPEZ LUZ VILLANUEVA  
 REVISED BY DATE REVISED  
 GINA LOPEZ  
 LUZ VILLANUEVA

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 09        | 60           |

5-23-11 DATE  
 REGISTERED CIVIL ENGINEER  
 8-15-11 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.

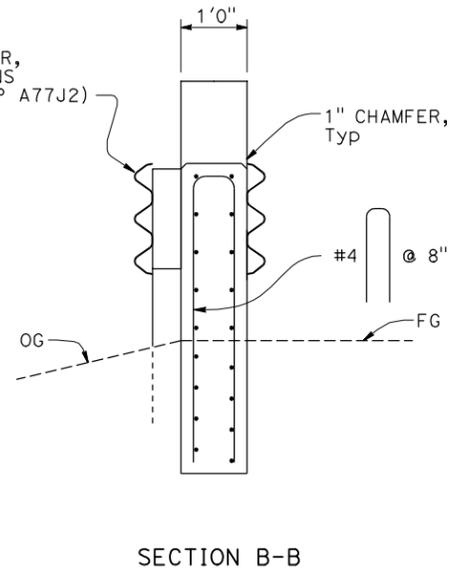
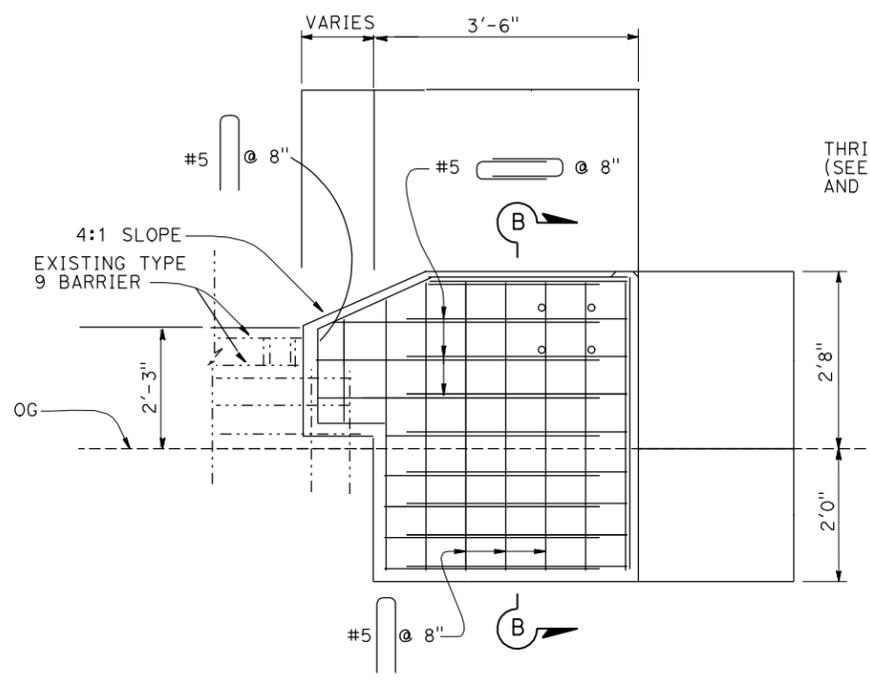
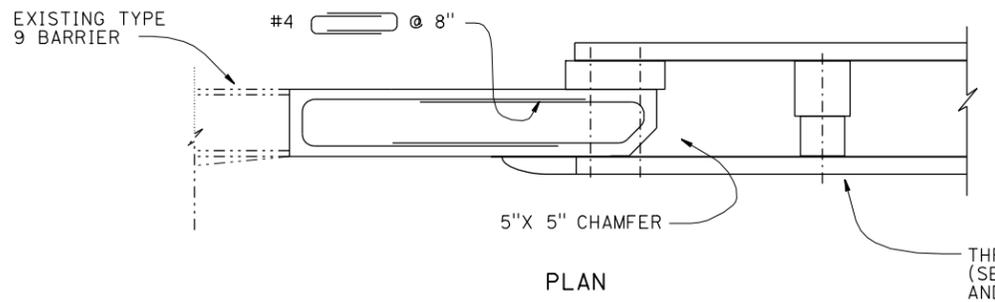
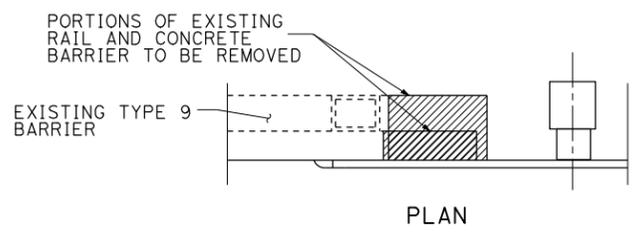
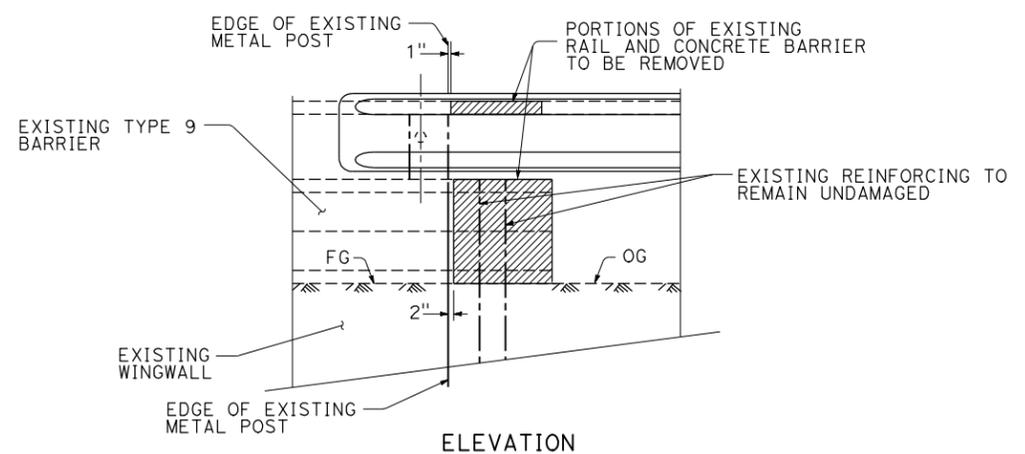
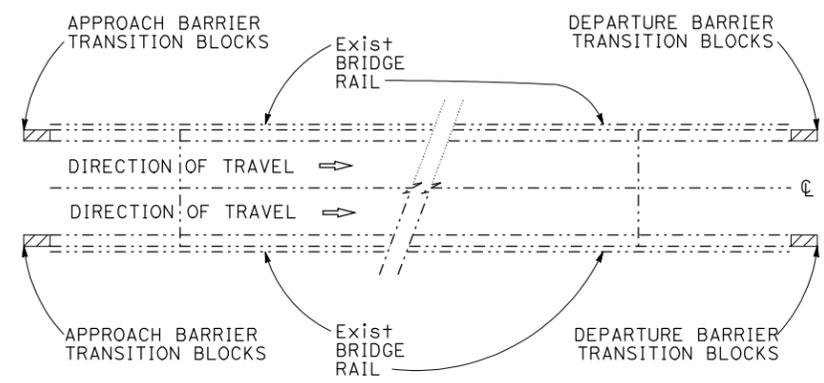
REGISTERED PROFESSIONAL ENGINEER  
**SCOTT MANN**  
 No. 72005  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

**NOTE:**

- FOR LIMITS OF EXCAVATION AND BACKFILL SEE ROADWAY PLANS AND STANDARD PLANS ON TITLE SHEET A62C, SECTION E-E.
- MINIMUM 1" COVER, (TYPICAL).
- TAPER THE TOP OF THE END OF THE CONCRETE TRANSITION RAILING AT 4:1 TO MATCH THE TOP ELEVATION OF THE TRANSITION RAILING (TYPE WB).
- PATCH EXISTING BOLT HOLES WITH CEMENT MORTAR.
- ALL PLATES AND BOLTS ARE GALVANIZED.

**LEGEND:**

- INDICATES EXISTING STRUCTURE
- INDICATES NEW CONSTRUCTION



**LOCATION TABLE OF TYPE 9 BARRIER TRANSITION BLOCK (TYPE WB) APPLICATION**

| BRIDGE No. | BRIDGE NAME             | ROUTE | POST MILE | DIRECTION | (N) No. of WB CONNECTIONS @ |               | (N) CONCRETE BARRIER (TRANSITION BLOCK) (LF) |
|------------|-------------------------|-------|-----------|-----------|-----------------------------|---------------|--|
|            |                         |       |           |           | APPROACH END                | DEPARTURE END |  |
| 25-75 L    | GREENSTONE ROAD UC      | 50    | 11.9      | EB        | 2                           |               | 11   |
| 25-75 R    | GREENSTONE ROAD UC      | 50    | 11.9      | WB        | 2                           |               | 11   |
| 25-78 L    | EAST SHINGLE SPRINGS UC | 50    | 10.0      | EB        | 2                           |               | 11   |
| 25-78 R    | EAST SHINGLE SPRINGS UC | 50    | 10.0      | WB        | 1                           |               | 5.5  |

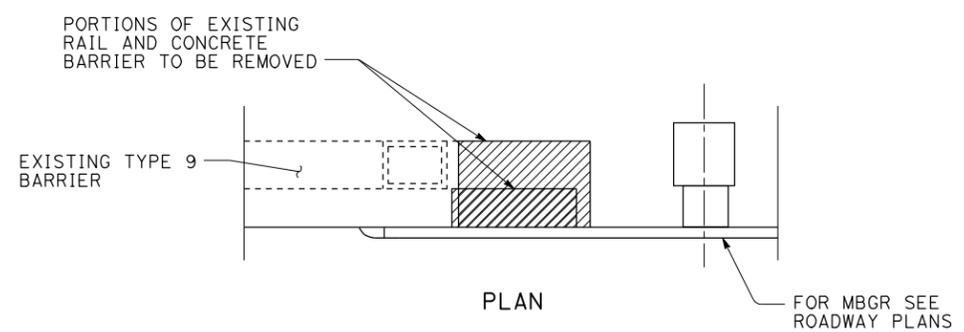
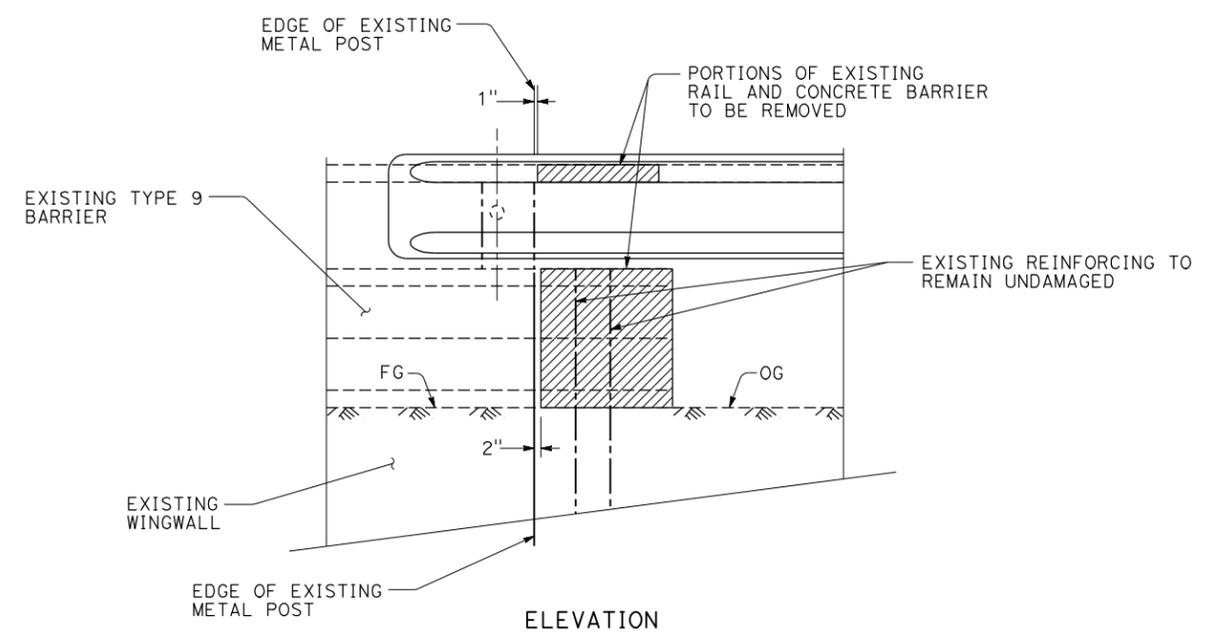
(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY

**CONSTRUCTION DETAILS**  
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 NORTH REGION OFFICE OF DESIGN SOUTH DESIGN BRANCH S4  
 FUNCTIONAL SUPERVISOR SCOTT W. MANN  
 CALCULATED-DESIGNED BY CHECKED BY  
 LUZ VILLANUEVA GUSTAVO REYNOSO  
 REVISED BY DATE REVISED

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 10        | 60           |

REGISTERED CIVIL ENGINEER *Scott W. Mann* DATE 5-23-11  
 PLANS APPROVAL DATE 8-15-11  
 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.



**DEMOLITION**  
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

CALCULATED-DESIGNED BY  
 CHECKED BY

LUZ VILLANUEVA  
 GUSTAVO REYNOSO

REVISED BY  
 DATE REVISED



STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

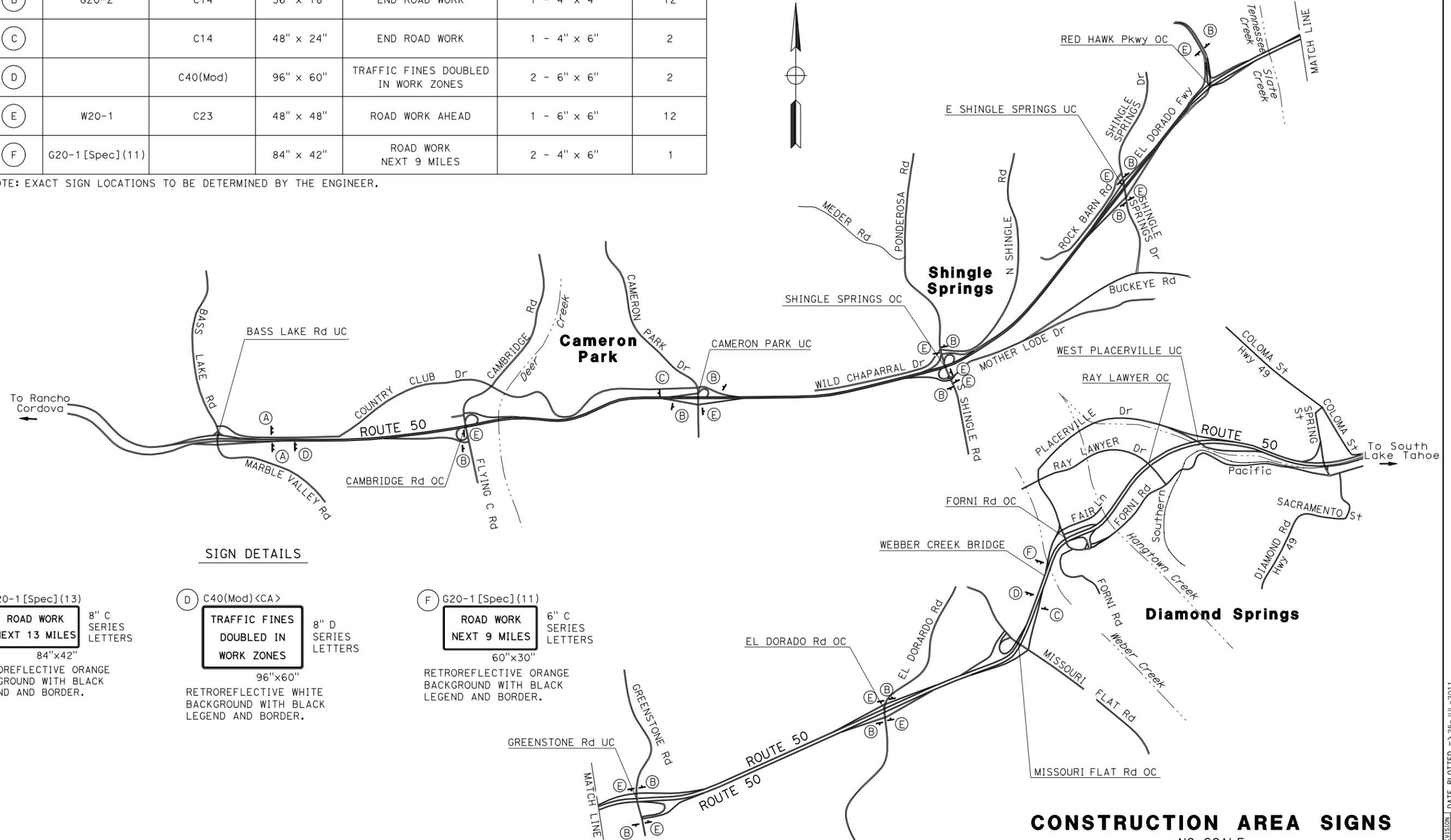
| SIGN LETTER | SIGN CODE         |            | PANEL SIZE | SIGN MESSAGE                        | NUMBER OF POST AND SIZE | NUMBER OF SIGNS |
|-------------|-------------------|------------|------------|-------------------------------------|-------------------------|-----------------|
|             | FEDERAL           | CALIFORNIA |            |                                     |                         |                 |
| (A)         | G20-1 [Spec] (13) |            | 84" x 42"  | ROAD WORK NEXT 13 MILES             | 2 - 4" x 6"             | 2               |
| (B)         | G20-2             | C14        | 36" x 18"  | END ROAD WORK                       | 1 - 4" x 4"             | 12              |
| (C)         |                   | C14        | 48" x 24"  | END ROAD WORK                       | 1 - 4" x 6"             | 2               |
| (D)         |                   | C40(Mod)   | 96" x 60"  | TRAFFIC FINES DOUBLED IN WORK ZONES | 2 - 6" x 6"             | 2               |
| (E)         | W20-1             | C23        | 48" x 48"  | ROAD WORK AHEAD                     | 1 - 6" x 6"             | 12              |
| (F)         | G20-1 [Spec] (11) |            | 84" x 42"  | ROAD WORK NEXT 9 MILES              | 2 - 4" x 6"             | 1               |

NOTE: EXACT SIGN LOCATIONS TO BE DETERMINED BY THE ENGINEER.

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 11        | 60           |

REGISTERED CIVIL ENGINEER DATE 5-23-11  
 REGISTERED PROFESSIONAL ENGINEER  
**SCOTT MANN**  
 No. 72005  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

8-15-11  
 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.



SIGN DETAILS

(A) G20-1 [Spec] (13)

ROAD WORK  
 NEXT 13 MILES

8" C SERIES LETTERS  
 84"x42"  
 RETROREFLECTIVE ORANGE BACKGROUND WITH BLACK LEGEND AND BORDER.

(D) C40(Mod) <CA>

TRAFFIC FINES  
 DOUBLED IN  
 WORK ZONES

8" D SERIES LETTERS  
 96"x60"  
 RETROREFLECTIVE WHITE BACKGROUND WITH BLACK LEGEND AND BORDER.

(F) G20-1 [Spec] (11)

ROAD WORK  
 NEXT 9 MILES

6" C SERIES LETTERS  
 60"x30"  
 RETROREFLECTIVE ORANGE BACKGROUND WITH BLACK LEGEND AND BORDER.

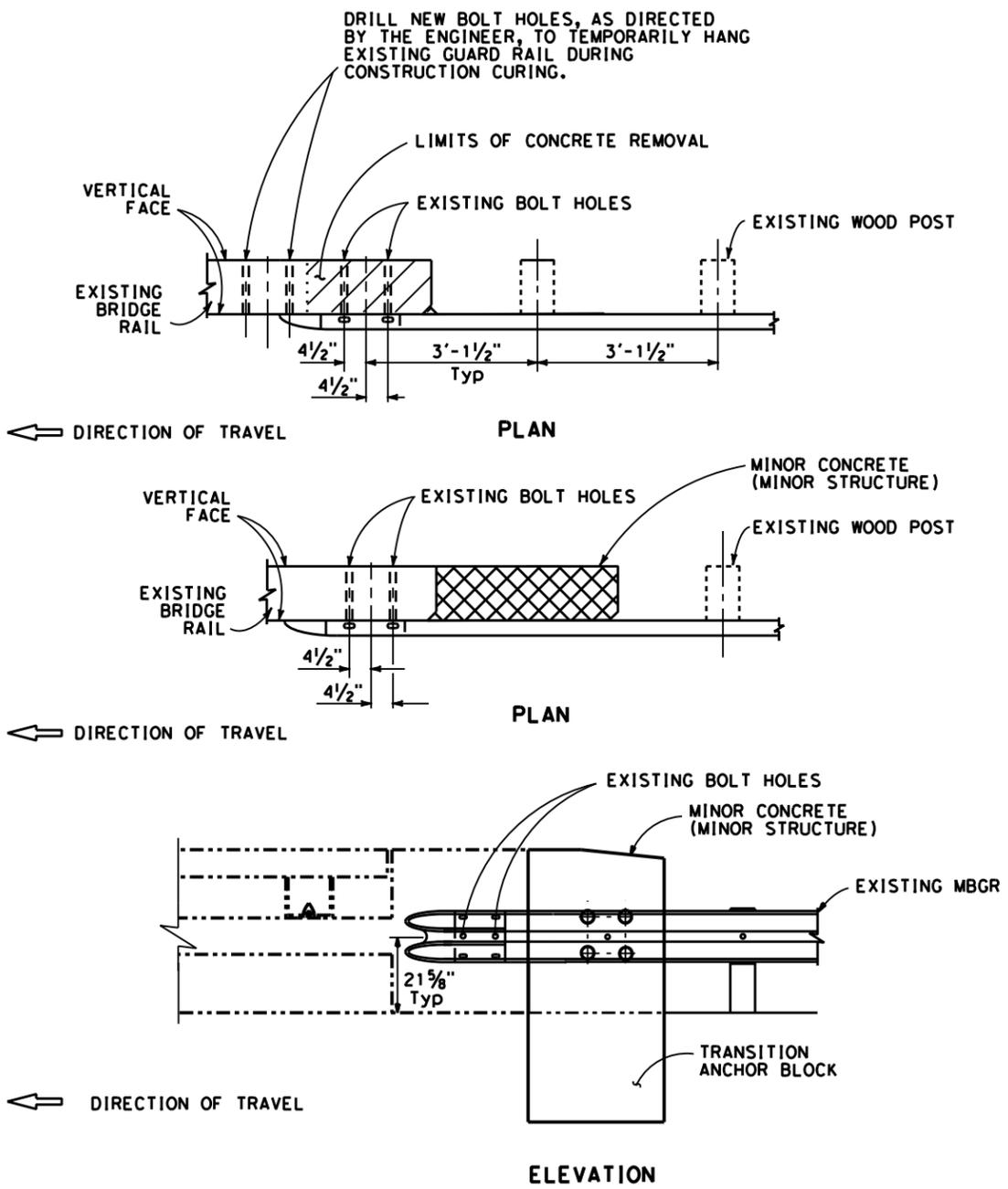
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4  
 ST. Caltrans

REVISOR: LUZ VILLANUEVA  
 DATE: 8-15-11  
 CHECKED BY: GUSTAVO REYNOSO  
 DESIGNED BY: SCOTT W. MANN  
 SUPERVISOR: SCOTT W. MANN

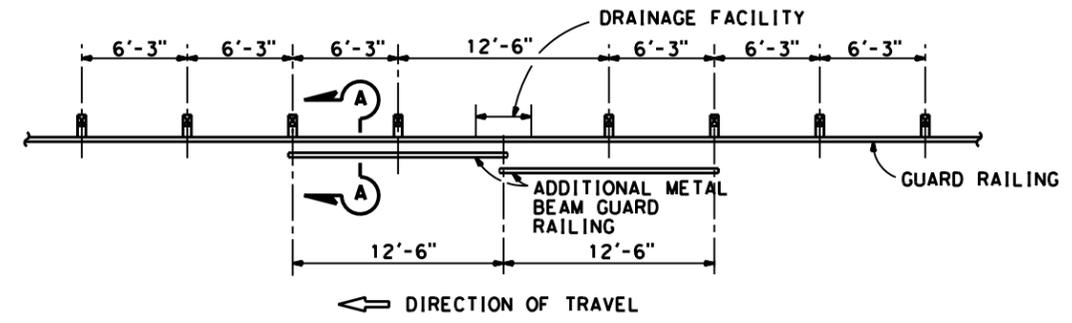
|  |        |       |   |           |              |
|--|--------|-------|---|-----------|--------------|
| Dist   | COUNTY | ROUTE | POST MILES TOTAL PROJECT  | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2  | 12        | 60           |
| REGISTERED CIVIL ENGINEER<br>DATE 5-23-11  |        |       | REGISTERED PROFESSIONAL ENGINEER<br>No. 72005<br>Exp. 6-30-12<br>CIVIL<br>STATE OF CALIFORNIA |           |              |
| PLANS APPROVAL DATE 8-15-11  |        |       |   |           |              |
| <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:**

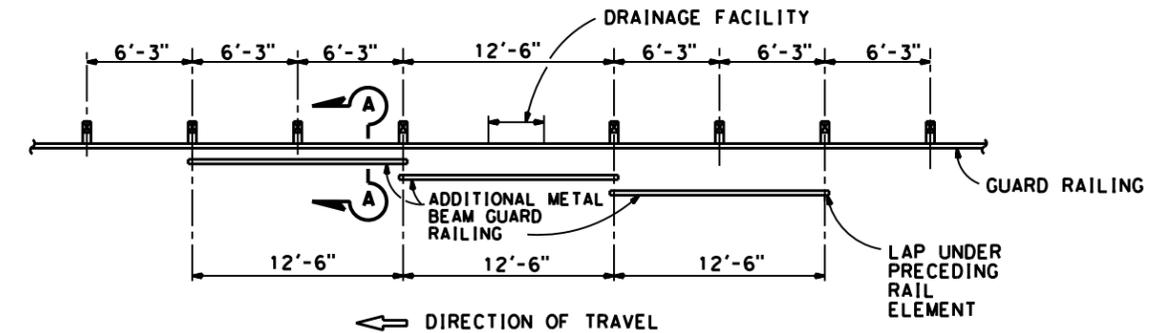
1. TO PROTECT NEW ANCHOR BLOCK DURING CURE TIME, RE-HANG EXISTING RAIL ELEMENT IN EXISTING BOLT HOLES.
2. USE FOR TRANSITION BLOCKS LESS THAN 10'.



**TEMPORARY TRAFFIC PROTECTION DETAILS**

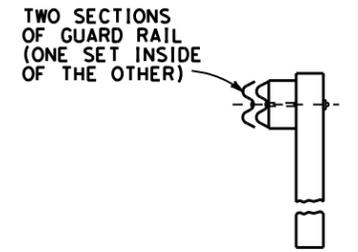


**CASE 1  
ONE POST OMITTED (SPlice IN CENTER)**



**CASE 2  
ONE POST OMITTED (SPlice AT POSTS)**

**NESTED RAIL ELEMENTS  
FOR DETAILS NOT SHOWN SEE STANDARD PLAN A77A1.**



SECTION A-A

**TRAFFIC HANDLING DETAILS  
NO SCALE  
THD-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
NORTH REGION  
OFFICE OF DESIGN SOUTH  
DESIGN BRANCH 84

FUNCTIONAL SUPERVISOR  
SCOTT W. MANN

REVISOR  
LUZ VILLANUEVA

DESIGNER  
GUSTAVO REYNOSO

REVISIONS

|     |             |      |
|-----|-------------|------|
| NO. | DESCRIPTION | DATE |
|     |             |      |

|      |        |       |                             |              |                 |
|------|--------|-------|-----------------------------|--------------|-----------------|
| Dist | COUNTY | ROUTE | POST MILES<br>TOTAL PROJECT | SHEET<br>No. | TOTAL<br>SHEETS |
| 03   | ED     | 50    | R4.1/R14.2                  | 13           | 60              |

*Scott W. Mann* 5-23-11  
 REGISTERED CIVIL ENGINEER DATE

8-15-11  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
**SCOTT MANN**  
 No. 72005  
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 CIVIL  
 STATE OF CALIFORNIA

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### PAVEMENT MARKINGS

| LOCATION<br>PM/DESCRIPTION         | DIRECTION | THERMOPLASTIC PAVEMENT MARKING |          |        |       |        |       |               |               |          |
|------------------------------------|-----------|--------------------------------|----------|--------|-------|--------|-------|---------------|---------------|----------|
|                                    |           | ARROWS                         |          |        | WORDS |        |       | LIMIT<br>LINE | CROSS<br>WALK | CHP LINE |
|                                    |           | TYPE I<br>(24'-0")             | TYPE III | TYPE V | STOP  | SIGNAL | AHEAD |               |               |          |
|                                    |           | EB/WB                          | SQFT     |        |       | SQFT   |       |               | SQFT          |          |
| MAINLINE PM R4.09 TO R10.32        | EB        |                                |          |        |       |        |       |               |               | 40       |
| MAINLINE PM R11.64 TO R14.2        | EB        |                                |          |        |       |        |       |               |               | 24       |
| MAINLINE PM 6.80 TO R10.83         | WB        |                                |          |        |       |        |       |               |               | 32       |
| MAINLINE PM R11.55 TO R14.20       | WB        |                                |          |        |       |        |       |               |               | 24       |
| PONDEROSA Rd OFF RAMP              | EB        | 62                             | 168      | 33     |       | 96     | 93    | 177           |               |          |
| PONDEROSA Rd ON RAMP (LOOP)        | EB        | 62                             |          |        |       |        |       |               |               |          |
| SHINGLE SPRINGS Dr OFF RAMP        | EB        |                                |          | 66     | 44    |        |       |               | 60            |          |
| SHINGLE SPRINGS Dr ON RAMP         | EB        | 31                             |          |        |       |        |       |               |               |          |
| GREENSTONE Rd OFF RAMP             | EB        |                                |          | 66     | 44    |        |       |               | 38            |          |
| GREENSTONE Rd ON RAMP              | EB        | 31                             |          |        |       |        |       |               |               |          |
| EL DORADO Rd OFF RAMP              | EB        |                                |          | 66     | 44    |        |       |               | 56            |          |
| EL DORADO Rd ON RAMP               | EB        | 31                             |          |        |       |        |       |               |               |          |
| SHINGLE SPRINGS/PONDEROSA Rd OFF   | WB        |                                | 84       | 33     |       | 32     | 31    |               | 40            |          |
| SHINGLE SPRINGS/PONDEROSA Rd ON(L) | WB        | 31                             |          |        |       |        |       |               |               |          |
| SHINGLE SPRINGS/PONDEROSA Rd ON    | WB        | 31                             |          |        |       |        |       |               |               |          |
| SHINGLE SPRINGS Dr OFF RAMP        | WB        |                                |          | 66     | 44    |        |       |               | 60            |          |
| SHINGLE SPRINGS Dr ON RAMP         | WB        | 31                             |          |        |       |        |       |               |               |          |
| GREENSTONE Rd OFF RAMP             | WB        |                                |          | 66     | 44    |        |       |               | 65            |          |
| GREENSTONE Rd ON RAMP              | WB        | 31                             |          |        |       |        |       |               |               |          |
| EL DORADO Rd OFF RAMP              | WB        |                                |          | 66     | 66    |        |       |               | 60            |          |
| EL DORADO Rd ON RAMP               | WB        | 31                             |          |        |       |        |       |               |               |          |
| SUBTOTAL                           |           | 372                            | 252      | 462    | 286   | 128    | 310   | 177           | 379           | 120      |
| TOTAL                              |           | 2,486                          |          |        |       |        |       |               |               |          |

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

CALCULATED-DESIGNED BY  
 CHECKED BY

GUSTAVO REYNOSO  
 LUZ VILLANUEVA

REVISED BY  
 DATE REVISED

## PAVEMENT DELINEATION QUANTITIES

PDQ-1

LAST REVISION  
 00-00-00     
 DATE PLOTTED => 25-JUL-2011  
 TIME PLOTTED => 15:03

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 14        | 60           |

*Scott W. Mann* 5-23-11  
 REGISTERED CIVIL ENGINEER DATE  
 8-15-11  
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REGISTERED PROFESSIONAL ENGINEER  
**SCOTT MANN**  
 No. 72005  
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### THERMOPLASTIC TRAFFIC STRIPES AND MARKERS

| LOCATION<br>PM/DESCRIPTION       | DIRECTION | 4" THERMOPLASTIC TRAFFIC STRIPE |              |      | 4" THERMOPLASTIC TRAFFIC STRIPE |        |         |         | 8" THERMOPLASTIC TRAFFIC STRIPE |      |     | PAVEMENT MARKER |      |      |
|----------------------------------|-----------|---------------------------------|--------------|------|---------------------------------|--------|---------|---------|---------------------------------|------|-----|-----------------|------|------|
|                                  |           | BROKEN 17-7                     | BROKEN 36-12 |      |                                 |        |         |         |                                 |      |     | RETROREFLECTIVE |      |      |
|                                  |           | DETAIL No.                      |              |      | DETAIL No.                      |        |         |         | DETAIL No.                      |      |     | TYPE            |      |      |
|                                  |           | 9                               | 12           | 14A  | 21                              | 25     | 25A     | 27B     | 36                              | 36A  | 38B | C               | G    | H    |
|                                  |           | EB/WB                           |              | LF   |                                 | LF     |         |         |                                 | LF   |     |                 | EA   |      |
| MAINLINE PM R4.09 TO R10.32      | EB        |                                 | 32,894       |      |                                 | 32,894 |         | 25,344  |                                 |      |     |                 | 664  | 687  |
| MAINLINE PM R11.64 TO R14.2      | EB        |                                 | 13,517       |      |                                 | 13,517 |         | 11,458  |                                 |      |     |                 | 260  | 283  |
| MAINLINE PM 6.80 TO R10.83       | WB        |                                 | 21,278       |      |                                 | 21,278 |         | 5,016   |                                 |      |     |                 | 422  | 445  |
| MAINLINE PM R11.55 TO R14.20     | WB        |                                 | 13,992       |      |                                 | 13,992 |         | 11,774  |                                 |      |     |                 | 270  | 293  |
| CAMBRIDGE Rd OFF RAMP            | EB        |                                 |              | 432  |                                 |        |         |         | 506                             |      |     | 12              | 24   |      |
| CAMBRIDGE Rd ON RAMP             | EB        | 400                             |              |      |                                 |        |         |         |                                 | 147  |     |                 | 18   |      |
| CAMERON PARK Rd OFF RAMP         | EB        |                                 |              | 432  |                                 |        |         |         | 524                             |      |     | 12              | 24   |      |
| CAMERON PARK Rd ON RAMP          | EB        | 257                             |              |      |                                 |        |         |         |                                 | 284  |     |                 | 20   |      |
| PONDEROSA Rd OFF RAMP            | EB        |                                 |              | 432  |                                 | 1,069  | 1,687   | 510     |                                 | 770  | 12  | 24              | 46   |      |
| PONDEROSA Rd ON RAMP (LOOP)      | EB        | 254                             |              |      |                                 | 575    | 1,780   |         |                                 | 182  |     | 16              | 25   |      |
| SHINGLE SPRINGS Dr OFF RAMP      | EB        |                                 |              | 432  |                                 | 900    | 1,200   | 578     |                                 |      | 12  | 28              | 39   |      |
| SHINGLE SPRINGS Dr ON RAMP       | EB        |                                 |              |      |                                 | 710    | 708     |         |                                 |      |     |                 | 31   |      |
| GREENSTONE Rd OFF RAMP           | EB        |                                 |              | 432  | 711                             | 702    | 1,975   | 514     |                                 |      | 12  | 24              | 31   |      |
| GREENSTONE Rd ON RAMP            | EB        | 342                             |              |      |                                 | 694    | 2,511   |         |                                 | 214  |     | 19              | 30   |      |
| EL DORADO Rd OFF RAMP            | EB        |                                 |              | 432  |                                 | 708    | 1,327   | 516     |                                 |      | 12  | 24              | 31   |      |
| EL DORADO Rd ON RAMP             | EB        | 224                             |              |      |                                 | 716    | 1,549   |         |                                 | 276  |     | 19              | 31   |      |
| SHINGLE SPRINGS/PONDEROSA Rd OFF | WB        |                                 |              | 432  |                                 | 1,040  | 1,630   | 502     |                                 | 140  | 12  | 24              | 45   |      |
| SHINGLE SPRINGS/PONDEROSA Rd ON  | WB        | 349                             |              |      |                                 | 559    | 1,789   |         |                                 | 195  |     | 19              | 25   |      |
| SHINGLE SPRINGS/PONDEROSA Rd ON  | WB        | 214                             |              |      |                                 | 713    | 1,950   |         |                                 | 268  |     | 19              | 31   |      |
| SHINGLE SPRINGS Dr OFF RAMP      | WB        |                                 |              | 432  |                                 | 770    | 950     | 532     |                                 |      | 12  | 26              | 34   |      |
| SHINGLE SPRINGS Dr ON RAMP       | WB        | 285                             |              |      |                                 | 875    | 1,200   |         |                                 | 255  |     | 19              | 38   |      |
| GREENSTONE Rd OFF RAMP           | WB        |                                 |              | 432  |                                 | 859    | 1,462   | 466     |                                 |      | 12  | 22              | 37   |      |
| GREENSTONE Rd ON RAMP            | WB        | 238                             |              |      |                                 | 989    | 1,919   |         |                                 | 362  |     | 23              | 43   |      |
| EL DORADO Rd OFF RAMP            | WB        |                                 |              | 432  |                                 | 638    | 1,218   | 510     |                                 |      | 12  | 24              | 28   |      |
| EL DORADO Rd ON RAMP             | WB        | 301                             |              |      |                                 | 691    | 1,837   |         |                                 | 234  |     | 19              | 30   |      |
| <b>SUBTOTAL</b>                  |           | 2864                            | 81,682       | 4320 | 711                             | 81,682 | 13,208  | 115,667 | 5158                            | 2417 | 910 | 120             | 2110 | 2283 |
| <b>TOTAL</b>                     |           | 2864                            | 86,002       |      |                                 |        | 211,268 |         |                                 | 8485 |     |                 | 4513 |      |

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

FUNCTIONAL SUPERVISOR  
**SCOTT W. MANN**

CALCULATED-DESIGNED BY  
 CHECKED BY

GUSTAVO REYNOSO  
 LUZ VILLANUEVA

REVISED BY  
 DATE REVISED

## PAVEMENT DELINEATION QUANTITIES

**PDQ-2**

LAST REVISION     
 DATE PLOTTED => 25-JUL-2011     
 TIME PLOTTED => 15:03

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 15        | 60           |

REGISTERED CIVIL ENGINEER 5-23-11 DATE  
 8-15-11 PLANS APPROVAL DATE

SCOTT MANN  
 No. 72005  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

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**METAL BEAM GUARD RAIL**

| LOCATION | POSTMILE | DESCRIPTION  | DIRECTION | ADJUST TERMINAL SYSTEM (N) |                                  |                                |                            |                                   |                         |                   |                            |     | MBGR TYPICAL LAYOUT | MBGR (WOOD POST) | DOUBLE MBGR (WOOD POST) | ADJUST MBGR | RAIL TENSIONING ASSEMBLY | TRANSITION RAILING (TYPE WB) | END CAP (TYPE TC) | MINOR CONCRETE (MINOR STRUCTURE) | OBJECT MARKER (TYPE L-1) | OBJECT MARKER (TYPE P) | GUARD RAILING DELINEATOR |
|----------|----------|--|-----------|----------------------------|----------------------------------|--------------------------------|----------------------------|-----------------------------------|-------------------------|-------------------|----------------------------|-----|---------------------|------------------|-------------------------|-------------|--------------------------|------------------------------|-------------------|----------------------------------|--------------------------|------------------------|--------------------------|
|          |          |  |           | REMOVE MBGR                | REMOVE DOUBLE THRIE BEAM BARRIER | END ANCHOR ASSEMBLY (TYPE SFT) | TERMINAL SYSTEM (TYPE CAT) | TERMINAL SYSTEM (TYPE CAT) BACKUP | IN-LINE TERMINAL SYSTEM | FLARED END SYSTEM | TERMINAL SYSTEM (TYPE CAT) | LF  |                     |                  |                         |             |                          |                              |                   |                                  |                          |                        |                          |
| 1        | R4.02    | Rt Shld  | EB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 412.5                   |             |                          |                              |                   |                                  | 1                        |                        |                          |
| 2        | 5.05     | Rt Shld  | EB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 1575                    |             |                          |                              |                   |                                  | 2                        |                        | 12                       |
| 3        | 5.61     | Rt Shld  | EB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 437.5                   |             |                          |                              |                   |                                  | 1                        |                        | 4                        |
| 4        | 6.55     | ATTACH TO Br No. 25-0084 (CAMERON PARK UC), Rt Shld          | EB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 12B |                     |                  |                         |             |                          |                              |                   |                                  | 1                        |                        |                          |
| 5        | 6.93     | Rt Shld  | EB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 762.5                   |             |                          |                              |                   |                                  | 1                        |                        |                          |
| 6        | 7.31     | Rt Shld  | EB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 550.0                   |             |                          |                              |                   |                                  | 1                        |                        | 3                        |
| 7        | 7.48     | Rt Shld  | EB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 912.5                   |             |                          |                              |                   |                                  | 1                        |                        |                          |
| 8        | R10.17   | Rt Shld  | EB        |                            |                                  | 1                              |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 37.5                    |             |                          |                              |                   |                                  | 1                        |                        |                          |
| 9        | R10.25   | ATTACH TO Br No. 25-0078R (EAST SHINGLE SPRINGS UC), Lt Shld | EB        | 75.0                       | 100.0                            |                                |                            |                                   |                         |                   | 1                          | 12E | 25.0                | 137.5            |                         | 1           | 1                        | 1                            | 1                 | 1                                | 1                        | 1                      |                          |
| 10       | R10.28   | ATTACH TO Br No. 25-0078R (EAST SHINGLE SPRINGS UC), Rt Shld | EB        | 25.0                       |                                  |                                |                            |                                   |                         |                   | 1                          | 12B |                     |                  |                         |             | 1                        | 1                            | 1                 | 1                                | 1                        |                        |                          |
| 11       | R12.15   | ATTACH TO Br No. 25-0075R (GREENSTONE ROAD UC), Lt Shld      | EB        | 75.0                       | 100.0                            |                                |                            |                                   |                         |                   | 1                          | 12E | 25.0                | 137.5            |                         | 1           | 1                        | 1                            | 1                 | 1                                | 1                        | 1                      |                          |
| 12       | R12.17   | ATTACH TO Br No. 25-0075R (GREENSTONE ROAD UC), Rt Shld      | EB        | 25.0                       |                                  |                                |                            |                                   | 1                       |                   |                            | 12A |                     |                  |                         |             | 1                        | 1                            | 1                 | 1                                | 1                        | 1                      |                          |
| 13       | R14.0    | MEDIAN SHIELDING Br No. 25-0076 (EL DORADO ROAD OC)          | EB        | 150.0                      |                                  | 2                              | 2                          | 2                                 |                         |                   |                            | 14A | 75.0                | 50.0             |                         | 2           |                          |                              |                   |                                  |                          |                        |                          |
| 14       | R12.26   | ATTACH TO Br No. 25-0075L (GREENSTONE ROAD UC), Lt Shld      | WB        | 75.0                       | 100.0                            |                                |                            |                                   |                         |                   | 1                          | 12E | 25.0                | 137.5            |                         | 1           | 1                        | 1                            | 1                 | 1                                | 1                        | 1                      |                          |
| 15       | R12.22   | ATTACH TO Br No. 25-0075L (GREENSTONE ROAD UC), Rt Shld      | WB        | 25.0                       |                                  |                                |                            |                                   |                         | 1                 |                            | 12A |                     |                  |                         |             | 1                        | 1                            | 1                 | 1                                | 1                        |                        |                          |
| 16       | R10.34   | ATTACH TO Br No. 25-0078L (EAST SHINGLE SPRINGS UC)          | WB        | 25.0                       |                                  |                                |                            |                                   |                         |                   | 1                          | 12B |                     |                  |                         |             | 1                        | 1                            | 1                 | 1                                |                          | 1                      |                          |
| 17       | 7.13     | Rt Shld  | WB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 400.0                   |             |                          |                              |                   |                                  |                          |                        |                          |
| 18       | 6.86     | Rt Shld  | WB        |                            |                                  |                                |                            |                                   |                         |                   | 1                          | 11B |                     |                  | 325.0                   |             |                          |                              |                   |                                  | 1                        |                        | 3                        |
| SUBTOTAL |          |  |           | 475                        | 300                              | 3                              | 2                          | 2                                 | 2                       | 12                | 3                          |     | 150                 | 462.5            | 5412.5                  | 5           | 7                        | 7                            | 7                 | 7                                | 16.0                     | 5                      | 22.0                     |
| TOTAL    |          |  |           | 475                        | 300                              | 3                              | 2                          | 2                                 |                         | 17                |                            |     | 150                 | 462.5            | 5412.5                  | 5           | 7                        | 7                            | 7                 | 7                                | 16.0                     | 5                      | 22.0                     |

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY

**DELINEATORS**

| LOCATION PM        | DIRECTION EB/WB | LOCATION Rt/Lt | DELINEATOR CLASS I |        |
|--------------------|-----------------|----------------|--------------------|--------|
|                    |                 |                | TYPE F             | TYPE G |
|                    |                 |                | EA                 | EA     |
| 5.21-5.40          | EB              | Lt             |                    | 7      |
| 5.97-6.20          | EB              | Lt             |                    | 10     |
| GREENSTONE ROAD    | EB & WB         | Lt & Rt        | 37                 | 39     |
| SHINGLE SPRINGS    | EB & WB         | Lt & Rt        | 102                | 73     |
| E. SHINGLE SPRINGS | EB & WB         | Lt & Rt        | 56                 | 18     |
| EL DORADO ROAD     | EB & WB         | Lt & Rt        | 40                 | 26     |
| SUBTOTAL           |                 |                | 235                | 173    |
| TOTAL              |                 |                | 408                |        |

**ADJUST INLET TO GRADE**

| LOCATION/DESCRIPTION       | DIRECTION-SIDE | ADJUST INLET           |                         |                         |
|----------------------------|----------------|------------------------|-------------------------|-------------------------|
|                            |                | TYPE GO DRAINAGE INLET | TYPE GDO DRAINAGE INLET | TYPE GMP DRAINAGE INLET |
|                            |                | EA                     | EA                      | EA                      |
| R13.97                     | EB-Rt          |                        | 1                       |                         |
| R13.98                     | EB-Rt          | 1                      |                         |                         |
| R13.97                     | WB-Rt          | 1                      |                         |                         |
| R13.96                     | WB-Rt          | 1                      |                         |                         |
| SHINGLE SPRINGS RD ON RAMP | WB-Rt          | 1                      |                         |                         |
| R10.08                     | WB-Rt          | 1                      |                         |                         |
| R8.43                      | WB-GORE        |                        |                         | 1                       |
| SUBTOTAL                   |                | 5                      | 1                       | 1                       |
| TOTAL                      |                | 7                      |                         |                         |

**TEMPORARY WATER POLLUTION CONTROL**

| LOCATION PM TO PM | TEMPORARY FIBER ROLL |
|-------------------|----------------------|
| R4.09 TO R14.2    |                      |
| TOTAL             | 1,000                |

**SUMMARY OF QUANTITIES**

**Q-1**

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 16        | 60           |

REGISTERED CIVIL ENGINEER DATE 5-23-11

8-15-11  
 PLANS APPROVAL DATE

REG. NO. 72005  
 Exp. 6-30-12  
 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.

**HMA DIKE**

| LOCATION                    | DIRECTION-SIDE | REMOVE AC DIKE | PLACE HMA DIKE (TYPE A) | PLACE HMA DIKE (TYPE C) | PLACE HMA DIKE (TYPE E) | PLACE HMA DIKE (TYPE F) | HOT MIX ASPHALT (TYPE A) | ADJUST OVERSIDE DRAIN | RELAY OVERSIDE DRAIN (CMP DOWNDRAIN) |
|-----------------------------|----------------|----------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|-----------------------|--------------------------------------|
|                             |                | LF             | LF                      | LF                      | LF                      | LF                      | TON                      | EA                    | EA                                   |
| 7.9                         | EB-R+          | 1,246          |                         |                         | 1,246                   |                         | 33                       | 2                     |                                      |
| PONDEROSA OFF RAMP          | EB-R+          | 540            |                         |                         | 540                     |                         | 14                       |                       |                                      |
| PONDEROSA ON RAMP           | EB-R+          | 627            | 125                     |                         | 502                     |                         | 17                       |                       |                                      |
| R9.31                       | EB-R+          | 506            |                         |                         | 506                     |                         | 13                       |                       | 1                                    |
| E. SHINGLE SPRINGS OFF RAMP | EB-R+          | 932            | 932                     |                         |                         |                         | 25                       |                       |                                      |
| E. SHINGLE SPRINGS ON RAMP  | EB-R+          | 886            |                         |                         | 886                     |                         | 23                       |                       |                                      |
| R11.71                      | EB-R+          | 210            |                         |                         | 210                     |                         | 6                        | 1                     |                                      |
| R12.09                      | EB-R+          | 501            |                         | 131                     | 370                     |                         | 11                       |                       | 1                                    |
| R12.21                      | EB-R+          | 330            |                         |                         | 330                     |                         | 9                        |                       | 1                                    |
| GREENSTONE Rd OFF RAMP      | EB-R+          | 400            | 400                     |                         |                         |                         | 11                       |                       |                                      |
| GREENSTONE Rd ON RAMP       | EB-R+          | 1,171          | 1,171                   |                         |                         |                         | 32                       |                       |                                      |
| R12.47                      | EB-R+          | 375            |                         |                         | 375                     |                         | 10                       | 1                     |                                      |
| R12.86                      | EB-R+          | 483            |                         |                         | 483                     |                         | 13                       | 1                     |                                      |
| R13.42                      | EB-R+          | 377            |                         |                         | 377                     |                         | 10                       | 1                     |                                      |
| R13.71                      | EB-R+          | 558            |                         |                         | 558                     |                         | 15                       |                       |                                      |
| R13.91                      | EB-R+          | 1,200          | 1,200                   |                         |                         |                         | 33                       |                       |                                      |
| EL DORADO OFF RAMP          | EB-R+          | 699            | 699                     |                         |                         |                         | 19                       |                       |                                      |
| EL DORADO ON RAMP           | EB-R+          | 486            | 486                     |                         |                         |                         | 13                       |                       |                                      |
| R14.14                      | EB-R+          | 1,320          |                         |                         | 1,320                   |                         | 35                       |                       | 1                                    |
| EL DORADO OFF RAMP          | WB-R+          | 458            |                         |                         | 458                     |                         | 12                       | 1                     |                                      |
| EL DORADO ON RAMP           | WB-R+          | 627            |                         |                         | 627                     |                         | 17                       | 1                     |                                      |
| R14.13                      | WB-R+          | 1,368          | 1,368                   |                         |                         |                         | 37                       |                       |                                      |
| R13.53                      | WB-R+          | 1,070          |                         |                         | 1,070                   |                         | 28                       |                       |                                      |
| R12.67                      | WB-R+          | 1,660          |                         |                         | 1,660                   |                         | 44                       |                       | 1                                    |
| GREENSTONE Rd OFF RAMP      | WB-R+          | 220            |                         |                         | 220                     |                         | 6                        |                       |                                      |
| GREENSTONE Rd OFF RAMP      | WB-L+          | 952            | 952                     |                         |                         |                         | 26                       |                       |                                      |
| GREENSTONE Rd ON RAMP       | WB-L+          | 940            | 940                     |                         |                         |                         | 26                       |                       |                                      |
| R11.62                      | WB-R+          | 370            |                         |                         | 370                     |                         | 10                       |                       | 1                                    |
| R10.83                      | WB-R+          | 1,500          |                         |                         | 1,500                   |                         | 39                       |                       | 1                                    |
| SHINGLE SPRINGS Dr OFF RAMP | WB-R+          | 720            | 520                     |                         | 200                     |                         | 19                       | 1                     |                                      |
| SHINGLE SPRINGS Dr OFF RAMP | WB-L+          | 740            | 540                     |                         | 200                     |                         | 20                       |                       |                                      |
| SHINGLE SPRINGS Dr ON RAMP  | WB-L+          | 800            | 800                     |                         |                         |                         | 22                       |                       |                                      |
| R9.92                       | WB-R+          | 1,043          |                         |                         | 1,043                   |                         | 27                       |                       |                                      |
| R9.48                       | WB-R+          | 2,356          |                         |                         | 2,356                   |                         | 62                       |                       | 1                                    |
| PONDEROSA Rd OFF RAMP       | WB-R+          | 85             |                         |                         | 85                      |                         | 2                        |                       |                                      |
| PONDEROSA Rd ON RAMP        | WB-R+          | 656            |                         |                         | 656                     |                         | 17                       | 1                     |                                      |
| 7.84                        | WB-R+          | 1,004          |                         |                         | 1,004                   |                         | 26                       | 1                     |                                      |
| 7.55                        | WB-R+          | 253            |                         |                         | 253                     |                         | 7                        | 1                     |                                      |
| 7.13                        | WB-R+          | 453            |                         | 66                      |                         | 387                     | 6                        |                       |                                      |
| 6.86                        | WB-R+          | 729            |                         | 66                      |                         | 663                     | 9                        |                       |                                      |
| <b>TOTAL</b>                |                | <b>30,851</b>  | <b>10,133</b>           | <b>263</b>              | <b>19,405</b>           | <b>1,050</b>            | <b>804</b>               | <b>12</b>             | <b>8</b>                             |

**ROADWAY QUANTITIES**

| LOCATION/DESCRIPTION        | DIRECTION | RUBBERIZED HOT MIX ASPHALT (GAP GRADED) | RUBBERIZED HOT MIX ASPHALT (OPEN GRADED) | IMPORTED MATERIAL (SHOULDER BACKING) | COLD PLANE ASPHALT CONCRETE PAVEMENT | TACK COAT     | ASPHALTIC EMULSION (FOG SEAL COAT) |
|-----------------------------|-----------|---|--|--------------------------------------|--------------------------------------|---------------|------------------------------------|
|                             |           | TON                                     | TON                                      | TON                                  | SQYD                                 | TON           | TON                                |
| PM R4.09 TO 6.8             | EB        | 2,160                                   |  |                                      |                                      |               | 7.95                               |
| PM 6.8 TO R7.9              | EB        | 1,072                                   |  |                                      |                                      |               | 3.23                               |
| PM R7.9 TO 10.32            | EB        | 5,548                                   | 2,656                                    | 412.6                                | 36,913                               | 39.42         | 3.55                               |
| PM R11.64 TO R14.2          | EB        | 5,891                                   | 2,820                                    | 515.6                                | 39,049                               | 39.12         | 3.75                               |
| PONDEROSA Rd OFF RAMP       | EB        | 451                                     | 187                                      |                                      | 3466                                 |               |                                    |
| PONDEROSA Rd ON RAMP        | EB        | 401                                     | 223                                      | 64.7                                 | 2042                                 |               |                                    |
| SHINGLE SPRINGS Dr OFF RAMP | EB        | 317                                     | 132                                      |                                      | 2042                                 |               |                                    |
| SHINGLE SPRINGS Dr ON RAMP  | EB        | 475                                     | 198                                      | 50.3                                 | 2064                                 |               |                                    |
| GREENSTONE Rd OFF RAMP      | EB        | 504                                     | 211                                      |                                      | 2249                                 |               |                                    |
| GREENSTONE Rd ON RAMP       | EB        | 630                                     | 263                                      | 71.4                                 | 1652                                 |               |                                    |
| EL DORADO Rd OFF RAMP       | EB        | 342                                     | 142                                      |                                      | 1504                                 |               |                                    |
| EL DORADO Rd ON RAMP        | EB        | 442                                     | 185                                      | 47.4                                 | 1504                                 |               |                                    |
| PM 6.8 TO R7.9              | WB        | 2,548                                   | 1,220                                    | 189.5                                | 16,779                               | 16.81         | 1.61                               |
| PM R7.9 TO R10.83           | WB        | 6,730                                   | 3,221                                    | 500.4                                | 43,145                               | 44.76         | 4.26                               |
| PM R14.2 TO R11.5           | WB        | 6,100                                   | 2,920                                    | 453.6                                | 40,421                               | 40.49         | 3.89                               |
| CAMERON PARK Rd OFF RAMP    | WB        | 89                                      | 52                                       | 6.1                                  | 1292                                 |               |                                    |
| PONDEROSA Rd ON RAMP        | WB        | 349                                     | 145                                      |                                      | 3580                                 |               |                                    |
| PONDEROSA Rd ON RAMP        | WB        | 425                                     | 236                                      |                                      | 3106                                 |               |                                    |
| PONDEROSA Rd OFF RAMP       | WB        | 393                                     | 164                                      | 94.9                                 | 3216                                 |               |                                    |
| SHINGLE SPRINGS Dr ON RAMP  | WB        | 277                                     | 116                                      |                                      | 3216                                 |               |                                    |
| SHINGLE SPRINGS Dr OFF RAMP | WB        | 306                                     | 127                                      | 50.3                                 | 3986                                 |               |                                    |
| GREENSTONE Rd ON RAMP       | WB        | 526                                     | 219                                      |                                      | 2620                                 |               |                                    |
| GREENSTONE Rd OFF RAMP      | WB        | 349                                     | 146                                      | 71.4                                 | 2023                                 |               |                                    |
| EL DORADO Rd ON RAMP        | WB        | 293                                     | 121                                      |                                      | 2023                                 |               |                                    |
| EL DORADO Rd OFF RAMP       | WB        | 431                                     | 179                                      | 47.4                                 | 4890                                 |               |                                    |
| <b>TOTAL</b>                |           | <b>37,050</b>                           | <b>15,882</b>                            | <b>2,575.6</b>                       | <b>222,781</b>                       | <b>180.60</b> | <b>28.24</b>                       |

**SUMMARY OF QUANTITIES**

**Q-2**



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 NORTH REGION  
 OFFICE OF DESIGN SOUTH  
 DESIGN BRANCH S4

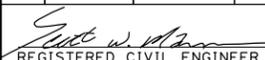
FUNCTIONAL SUPERVISOR  
 SCOTT W. MANN

CALCULATED-DESIGNED BY  
 CHECKED BY

GINA LOPEZ  
 LUZ VILLANUEVA

REVISED BY  
 DATE REVISED

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 17        | 60           |

 5-23-11  
 REGISTERED CIVIL ENGINEER DATE

8-15-11  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
**SCOTT MANN**  
 No. 72005  
 Exp. 6-30-12  
 CIVIL  
 STATE OF CALIFORNIA

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**TEMPORARY DRAINAGE INLET PROTECTION**

| LOCATION/DESCRIPTION       | DIRECTION -SIDE | EA |
|----------------------------|-----------------|----|
| R13.97                     | EB-R+           | 1  |
| R13.98                     | EB-R+           | 1  |
| R13.97                     | WB-R+           | 1  |
| R13.96                     | WB-R+           | 1  |
| SHINGLE SPRINGS Rd ON RAMP | WB-R+           | 1  |
| R10.08                     | WB-R+           | 1  |
| R8.43                      | WB-GORE         | 1  |
| TOTAL                      |                 | 7  |

**REPLACE ASPHALT CONCRETE SURFACING**

| LOCATION/DESCRIPTION    | DIRECTION | (N)   | VOLUME |
|-------------------------|-----------|-------|--------|
|                         |           | WIDTH |        |
|                         |           | LF    | CY     |
| PM R4.09 TO 6.8-L+ Shld | EB        | 4     | 928    |
| PM 6.8 TO 7.9-L+ Shld   | EB        | 4     | 377    |
| PM 4.63 TO 5.14-R+ Shld | EB        | 4     | 140    |
| PM 6.36 TO 6.92-R+ Shld | EB        | 4     | 154    |
| TOTAL                   |           |       | 1,599  |

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY

**SHOULDER RUMBLE STRIP (HMA, GROUND-IN INDENTATIONS)**

| LOCATION           | DIRECTION | LENGTH |
|--------------------|-----------|--------|
|                    |           | STA    |
| PM R4.09 TO R10.32 | EB        | 458    |
| PM R11.64 TO R14.2 | EB        | 271    |
| PM 6.80 TO R10.83  | WB        | 426    |
| PM R11.55 TO R14.2 | WB        | 280    |
| TOTAL              |           | 1,435  |

**CRACK TREATMENT**

| LOCATION           | DIRECTION | LENGTH |
|--------------------|-----------|--------|
|                    |           | LNMI   |
| PM R4.09 TO R10.32 | EB        | 12     |
| PM R11.64 TO R14.2 | EB        | 5      |
| PM 6.80 TO R10.83  | WB        | 8      |
| PM R11.55 TO R14.2 | WB        | 5      |
| TOTAL              |           | 30     |

**CONCRETE CURB, GUTTER, AND SIDEWALK**

| LOCATION/DESCRIPTION | DIRECTION | CURB RAMP DETECTABLE WARNING SURFACE |
|----------------------|-----------|--------------------------------------|
|                      |           | SQFT                                 |
| PONDEROSA RD-ON RAMP | EB        | 48                                   |
| TOTAL                |           | 48                                   |

**SUMMARY OF QUANTITIES**

**Q-3**



**QUANTITY TABLE FOR SIGNAL AND COUNT STATION**

| APPROXIMATE LOCATION        | ELEMENTS             | CO | RTE | APPROXIMATE POST MILE | OFF RAMP | LOOP   |   | SC (EACH) | RC Exist (EACH) | DH (EACH) | PULL BOX (T) (EACH) |
|-----------------------------|----------------------|----|-----|-----------------------|----------|--------|---|-----------|-----------------|-----------|---------------------|
|                             |                      |    |     |                       |          | (EACH) |   |           |                 |           |                     |
|                             |                      |    |     |                       |          | A      | D |           |                 |           |                     |
| OFF RAMP SOUTH SHINGLE ROAD | TRAFFIC SIGNAL       | ED | 50  | R8.5                  | EB       | 12     | 3 | —         | 4               | 4         | 2                   |
| OFF RAMP PONDEROSA ROAD     | TRAFFIC SIGNAL       | ED | 50  | R8.5                  | WB       | 7      | 2 | —         | 2               | 2         | 2                   |
| HWY 50                      | COUNT STATION NO 245 | ED | 50  | R7.1                  | WB       | 4      |   | —         | 7               | 8         | 2                   |
| <b>TOTAL:</b>               |                      |    |     |                       |          | 23     | 5 | —         | 13              | 14        | 6                   |

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 18        | 60           |

*Chamkaur Singh Dhatt* 5-13-11  
 REGISTERED ELECTRICAL ENGINEER DATE

8-15-11  
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.

**QUANTITY TABLE FOR WVDS**

| APPROXIMATE LOCATION                   | APPROXIMATE POST MILE | NUMBER OF LANES/DIRECTION | EQUIPMENT TYPE | WVDS SENSORS |
|--|-----------------------|---------------------------|----------------|--------------|
| 1.0 MILE EAST OF CAMBRIDGE Rd OC       | 6.0                   | 2E2W                      | 8              |              |
| 0.2 MILE EAST OF CAMERON PARK Dr UC    | 6.7                   | 3E2W                      | 10             |              |
| 0.5 MILE EAST OF CAMERON PARK Dr UC    | 7.0                   | 2E2W                      | 8              |              |
| 0.3 MILE WEST OF SHINGLE SPRINGS OC    | 8.2                   | 3E3W                      | 12             |              |
| .01 MILE EAST OF SHINGLE SPRINGS Rd OC | 9.5                   | 2E2W                      | 8              |              |
| 0.5 MILE WEST OF GREENSTONE Rd UC      | 11.7                  | 2E2W                      | 8              |              |
| 0.8 MILE EAST OF GREENSTONE Rd UC      | 13.0                  | 2E2W                      | 8              |              |
| <b>TOTAL SENSORS</b>                   |                       |                           |                | <b>62</b>    |

ABBREVIATIONS

- WVDS WIRELESS VEHICLE DETECTION SYSTEM
- E EASTBOUND
- W WESTBOUND

**MODIFY SIGNAL**  
**MODIFY TRAFFIC MONITORING STATION (COUNT)**  
**MODIFY WIRELESS VEHICLE DETECTION SYSTEM**  
**(QUANTITY TABLE)**

THIS PLAN ACCURATE FOR ELECTRICAL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CHAMKAUR DHATT  
 CHAMKAUR DHATT  
 REVISOR BY DATE  
 REVISOR BY DATE  
 CALCULATED-DRAWN BY  
 CHECKED BY  
 FUNCTIONAL SUPERVISOR  
 STEVEN BLOCK  
 ST. Gobran®



| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 19        | 60           |

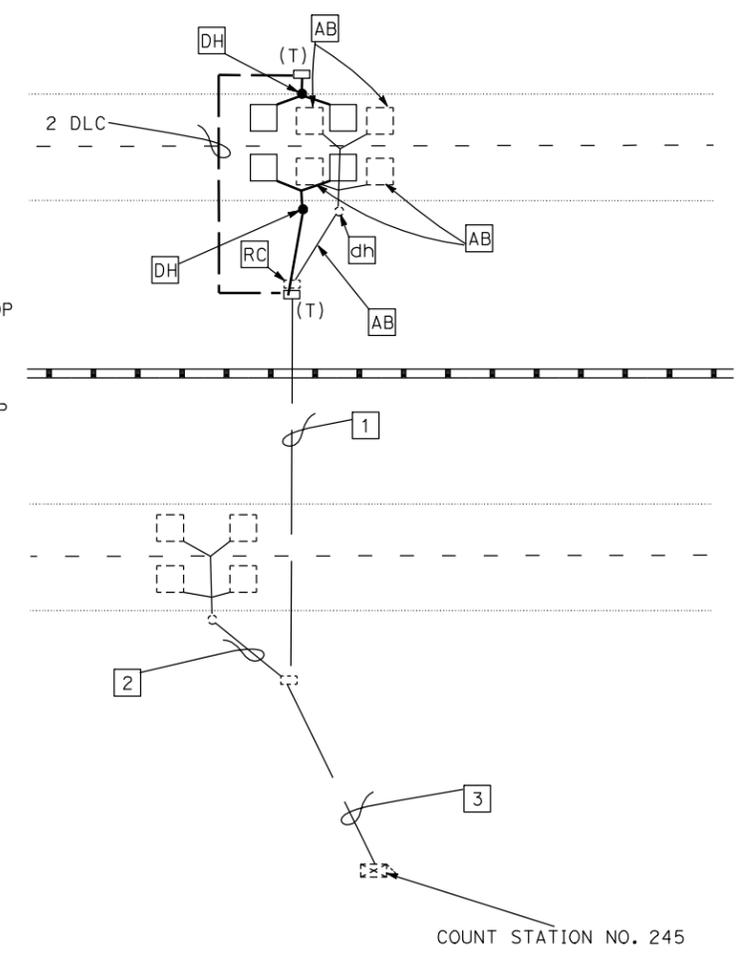
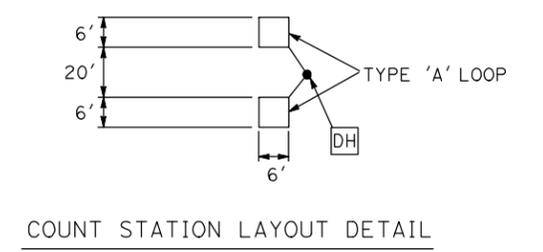
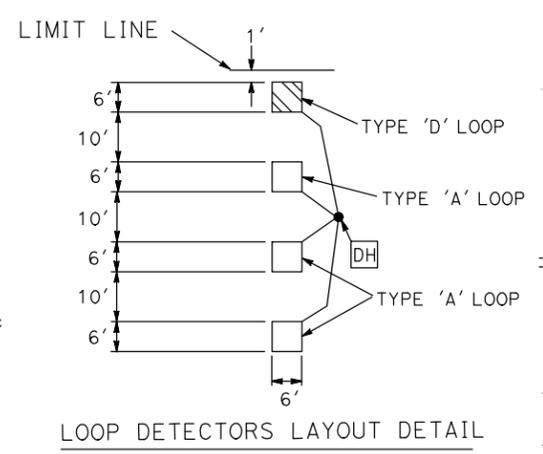
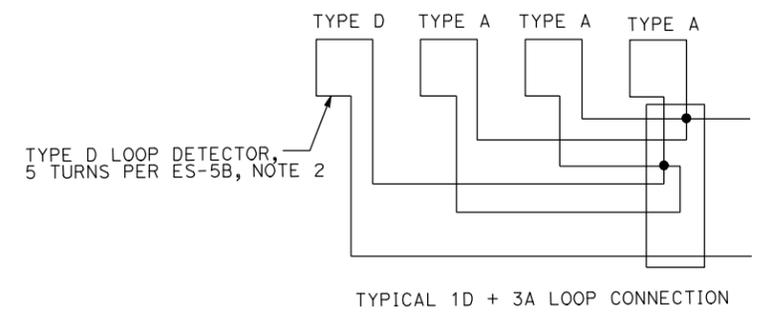
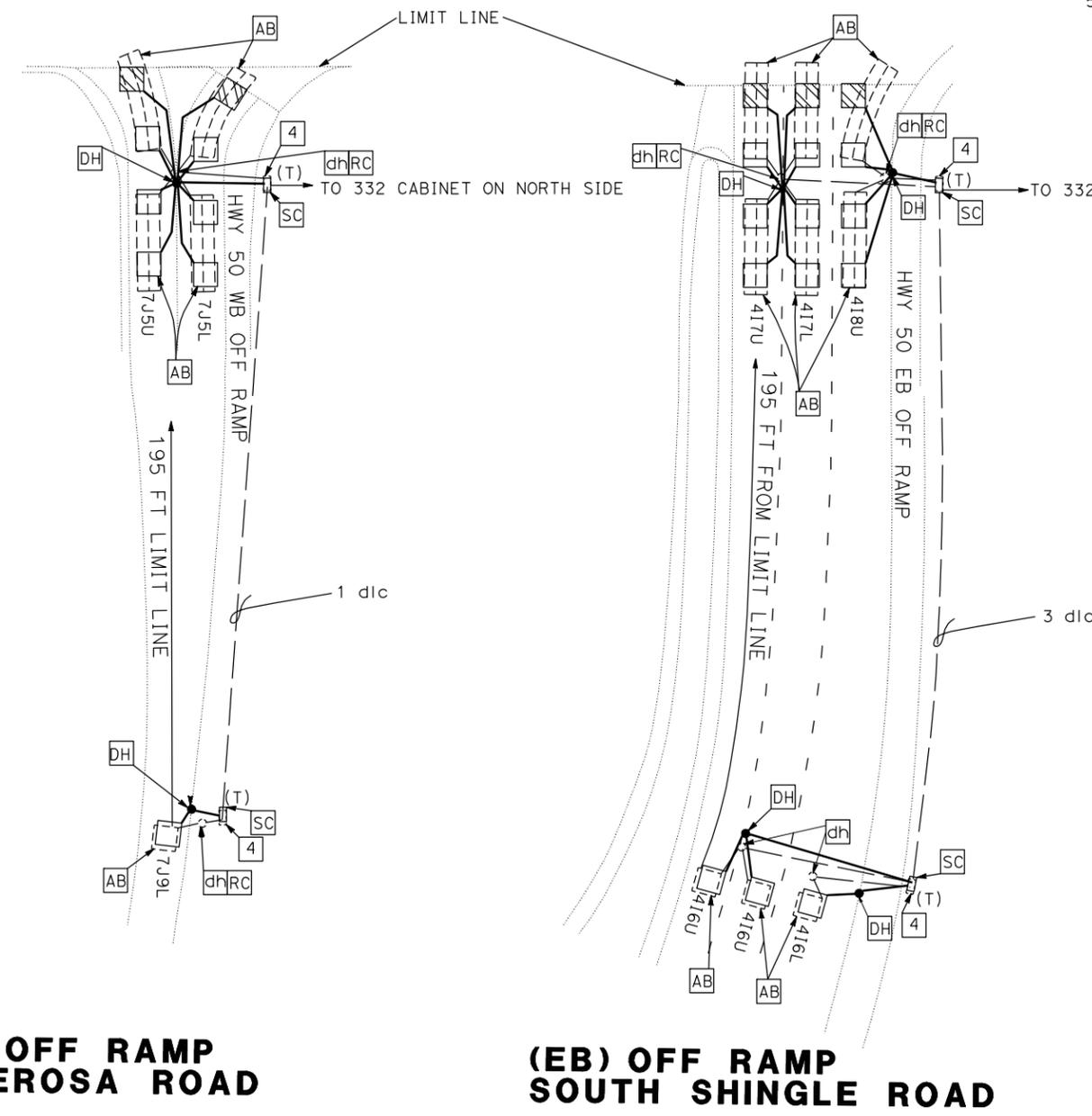
|                                |         |
|--------------------------------|---------|
| Chamkaur Singh Dhatt           | 5-13-11 |
| REGISTERED ELECTRICAL ENGINEER | DATE    |
| 8-15-11                        |         |
| PLANS APPROVAL DATE            |         |

|                     |
|---------------------|
| CHAMKAUR DHATT      |
| No. E15956          |
| Exp. 6/30/2011      |
| ELECTRICAL          |
| STATE OF CALIFORNIA |

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- 1 REMOVE 4 dlc INSTALL 4 DLC.
- 2 REMOVE AND REINSTALL 4 dlc.
- 3 REMOVE AND REINSTALL 4 dlc, INSTALL 4 DLC.
- 4 RC pb INSTALL PB



**(WB) OFF RAMP  
PONDEROSA ROAD**

**(EB) OFF RAMP  
SOUTH SHINGLE ROAD**

**MODIFY SIGNAL  
MODIFY TRAFFIC MONITORING STATION (COUNT)  
(DETAIL) E-2**

THIS PLAN ACCURATE FOR ELECTRICAL WORK ONLY

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 FUNCTIONAL SUPERVISOR: STEVEN BLOCK  
 DESIGNED BY: EPIFANIO CARRASCO  
 CHECKED BY: CHAMKAUR DHATT  
 REVISIONS: (None listed)

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 20        | 60           |

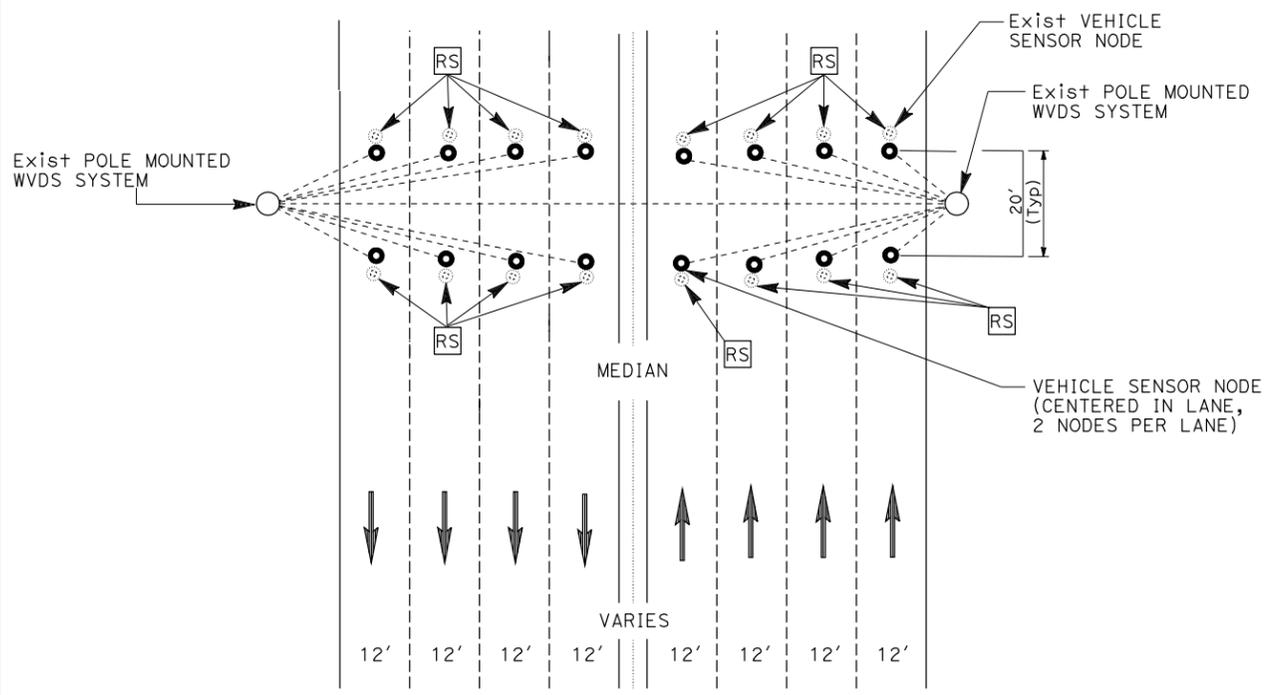
  

|                                |      |         |
|--------------------------------|------|---------|
| <i>Chamkaur Singh Dhatt</i>    |      | 5-13-11 |
| REGISTERED ELECTRICAL ENGINEER | DATE |         |
| 8-15-11                        |      |         |
| PLANS APPROVAL DATE            |      |         |

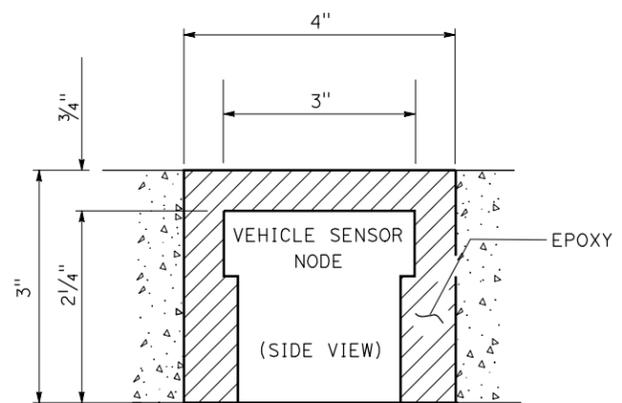
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|----------------------------------|
| REGISTERED PROFESSIONAL ENGINEER |
| CHAMKAUR DHATT                   |
| No. E15956                       |
| Exp. 6/30/2011                   |
| ELECTRICAL                       |
| STATE OF CALIFORNIA              |

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**DETAIL 'A'**

VEHICLE SENSOR NODE PLACEMENT



**DETAIL 'B'**

VEHICLE SENSOR NODE INSTALLATION IN ROADWAY

**WIRELESS VEHICLE DETECTOR SENSOR NODE INSTALLATION PROCEDURE**

1. PRIOR TO INSTALLATION, IDENTIFY SENSOR'S ID, LANE NUMBER, AND LOCATION IN LANE.
2. CORE A HOLE AT LEAST 3" DEEP SO THAT WHEN INSTALLED THE TOP OF THE SENSOR IS AT LEAST 3/4" BELOW THE SURFACE.
3. MAKE SURE THE SENSOR INSTALLS FLAT IN THE CORED HOLE AND IS NOT TILTED.
4. USE THE HEAT-GUN OR HOT COMPRESSED AIR TO DRY THE INSIDE OF THE CORED HOLE. THERE MUST BE ABSOLUTELY NO MOISTURE ON THE APPLIED SURFACE.
5. FILL THE HOLE ABOUT 1/4 FULL OF THE SENSOR EPOXY/ADHESIVE.
6. PLACE SENSOR IN THE HOLE WITH ARROW POINTING IN THE DIRECTION OF TRAFFIC. THE EPOXY SHOULD STILL HAVE WORK TIME, SO THE SENSOR CAN BE ROTATED TO THE RIGHT POSITION. PUSH SENSOR DOWN SO IT LAYS FLAT ON THE BOTTOM OF THE HOLE. THIS ASSURES THAT THERE IS A BOND UNDERNEATH THE SENSOR WITH THE EPOXY.
7. FILL THE HOLE WITH THE REMAINING EPOXY TO COVER THE SENSOR. LEVEL EPOXY WITH THE SURFACE OF THE ROAD.
8. AFTER THE FIRST APPLICATION, DO NOT LET THE EPOXY SIT FOR MORE THAN 30 SECONDS BEFORE THE NEXT APPLICATION.
9. THE INSTALLATION PAVEMENT TEMPERATURE SHOULD BE GREATER THAN 20 °F.
10. DEPENDING ON AMBIENT TEMPERATURE AND HUMIDITY, ADHESIVE DRYING TIME WILL VARY FROM 5 MINUTES TO 15 MINUTES. VERIFY HARDNESS OF EPOXY BEFORE REOPENING THE LANE FOR TRAFFIC.
11. RECORD DISTANCES BETWEEN EACH SENSOR PAIR.

**MODIFY WIRELESS VEHICLE DETECTION SYSTEM**

**(DETAILS)**

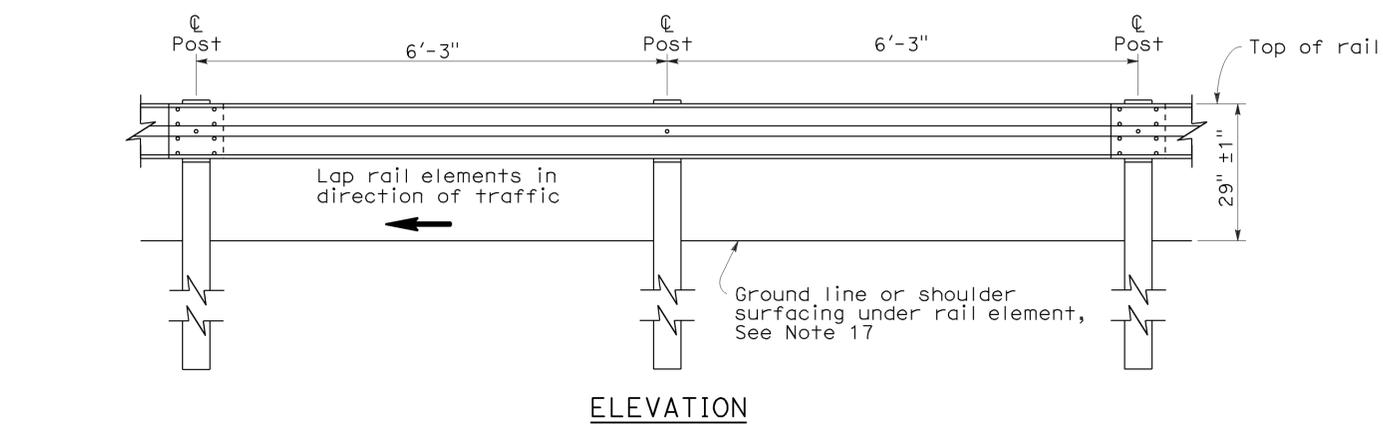
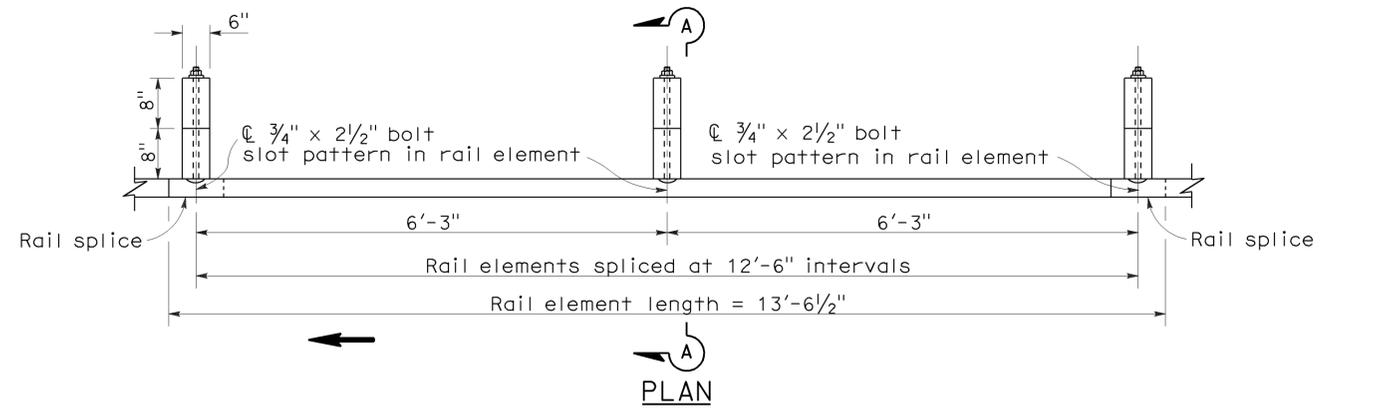
NO SCALE

THIS PLAN ACCURATE FOR ELECTRICAL WORK ONLY

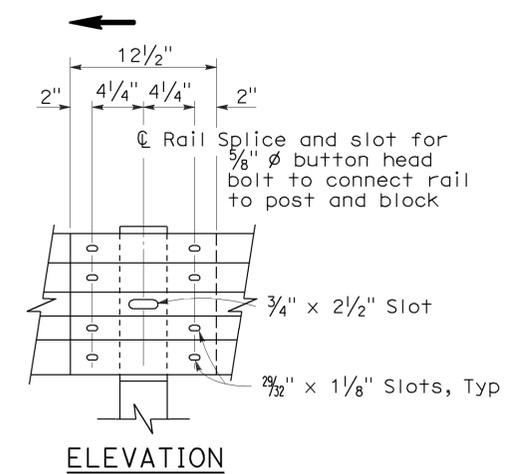
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
*Stantec*  
 FUNCTIONAL SUPERVISOR: STEVEN BLOCK  
 CALCULATED-DRAWN BY: CHAMKAUR DHATT  
 CHECKED BY: CHAMKAUR DHATT  
 REVISED BY: CHAMKAUR DHATT  
 DATE REVISED: CHAMKAUR DHATT

|  |        |       |                          |           |              |
|--|--------|-------|--------------------------|-----------|--------------|
| Dist   | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 21        | 60           |
| <i>Randell D. Hiatt</i><br>REGISTERED CIVIL ENGINEER<br>No. C50200<br>Exp. 6-30-11<br>CIVIL<br>STATE OF CALIFORNIA                                   |        |       |                          |           |              |
| May 20, 2011<br>PLANS APPROVAL DATE  |        |       |                          |           |              |
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To accompany plans dated 8-15-11

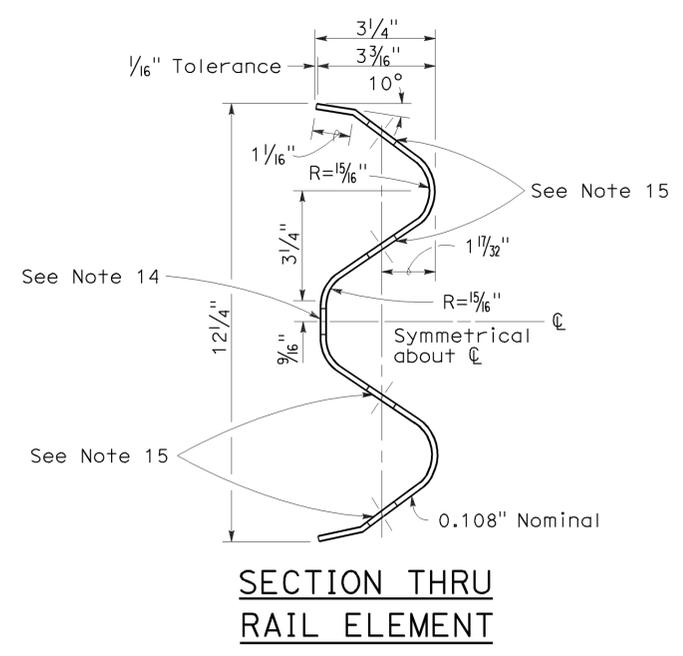


**METAL BEAM GUARD RAILING WITH WOOD POST AND BLOCKS**

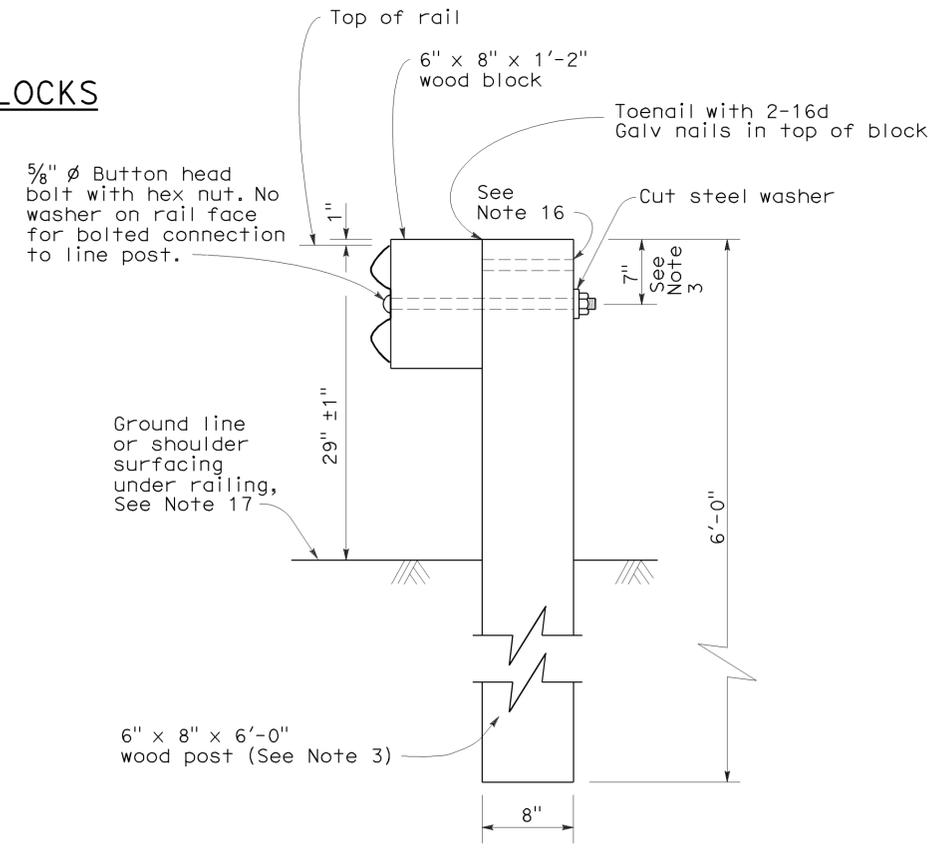


**RAIL ELEMENT SPLICE DETAIL**

- Connect the overlapped end of the rail elements with 5/8"  $\phi$  x 1 3/8" button head oval shoulder splice bolts inserted into the 2 3/32" x 1 1/8" slots and bolted together with 5/8"  $\phi$  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

**NOTES:**

- For details of steel post installations, see Standard Plan A77A2.
- For details of standard hardware used to construct guard railing, see Standard Plan A77B1.
- For details of wood posts and wood blocks used to construct guard railing, see Standard Plan A77C1.
- 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.
- For terminal system end treatment details, see the A77L 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 guard railing connection details to abutments and walls, see Standard Plan A77J3.
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- For typical guard railing delineation and dike positioning details, see Standard Plan A77C4.
- 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 Standard Plan A77C1.
- Install posts in soil.

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

NO SCALE

RSP A77A1 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77A1 DATED MAY 1, 2006 - PAGE 41 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77A1**

2006 REVISED STANDARD PLAN RSP A77A1

To accompany plans dated 8-15-11

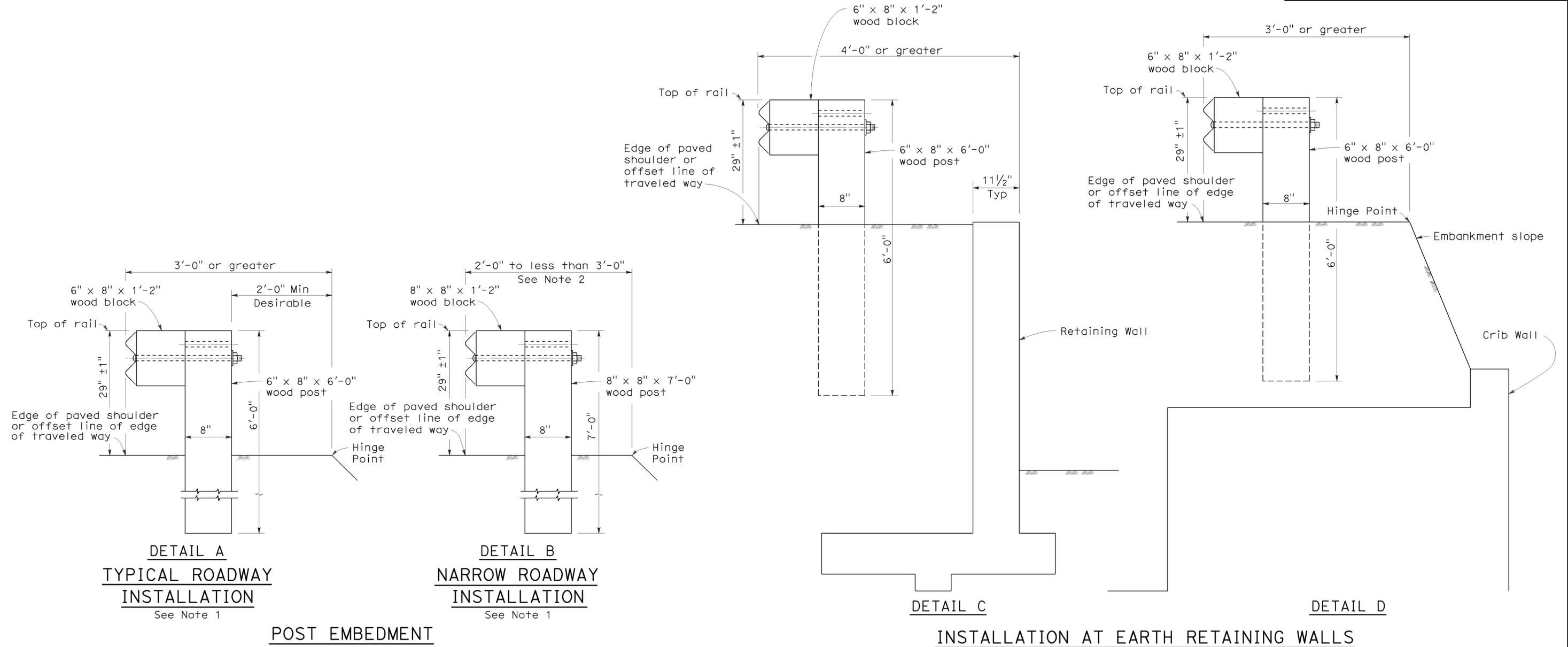
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|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 22        | 60           |

Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

May 20, 2011  
PLANS APPROVAL DATE

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



**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 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 9 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.
- 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.
- For dike positioning with guard railing installations, see Standard Plan A77C4.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A77C3 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77C3  
DATED MAY 1, 2006 - PAGE 46 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77C3**

2006 REVISED STANDARD PLAN RSP A77C3

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 23        | 60           |

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

May 20, 2011  
PLANS APPROVAL DATE

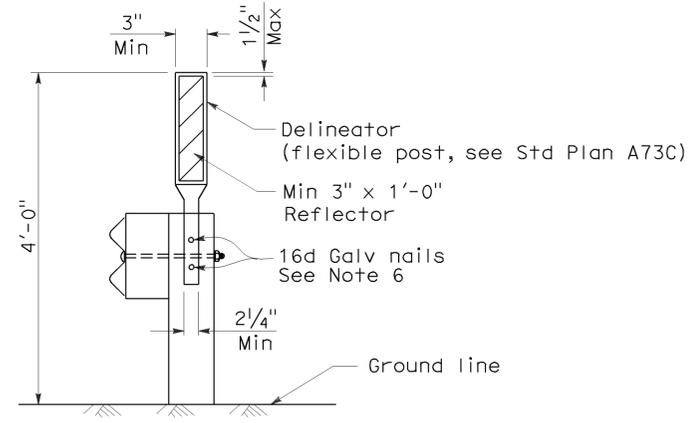
*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-11  
CIVIL  
STATE OF CALIFORNIA

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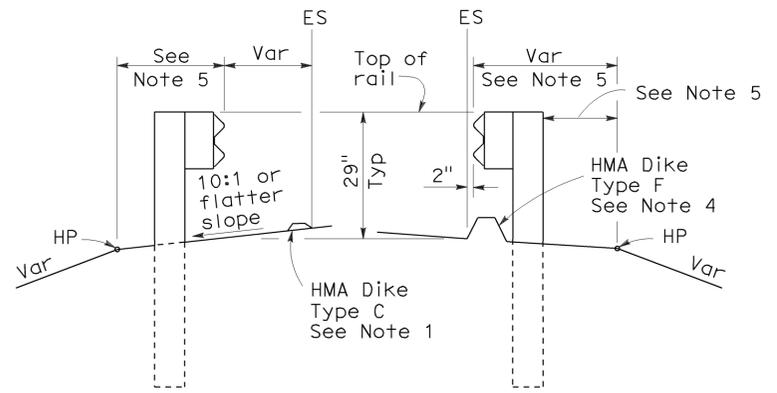
To accompany plans dated 8-15-11

**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.



**GUARD RAILING DELINEATION**  
See Note 3



**DIKE POSITIONING**  
See Note 1

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL RAILING DELINEATION  
AND DIKE POSITIONING DETAILS**

NO SCALE

RSP A77C4 DATED MAY 20, 2011 SUPERSEDES RSP A77C4 DATED JUNE 6, 2008 AND STANDARD PLAN A77C4 DATED MAY 1, 2006 - PAGE 47 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77C4**

2006 REVISED STANDARD PLAN RSP A77C4

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
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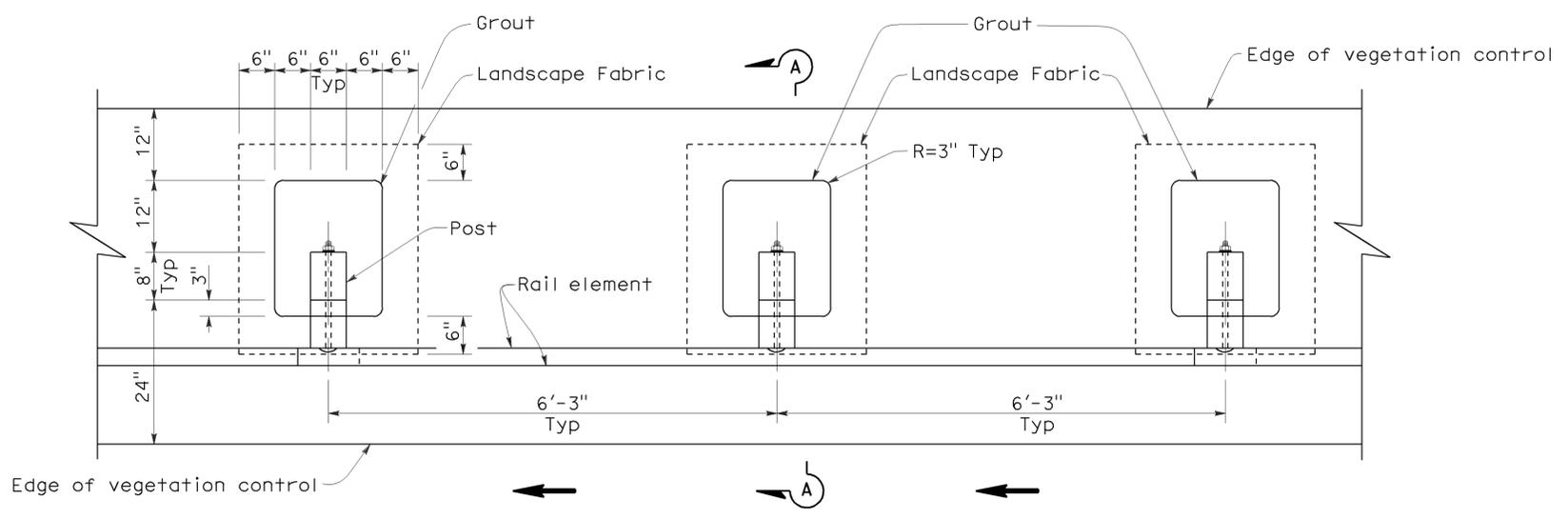
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

October 20, 2006  
PLANS APPROVAL DATE

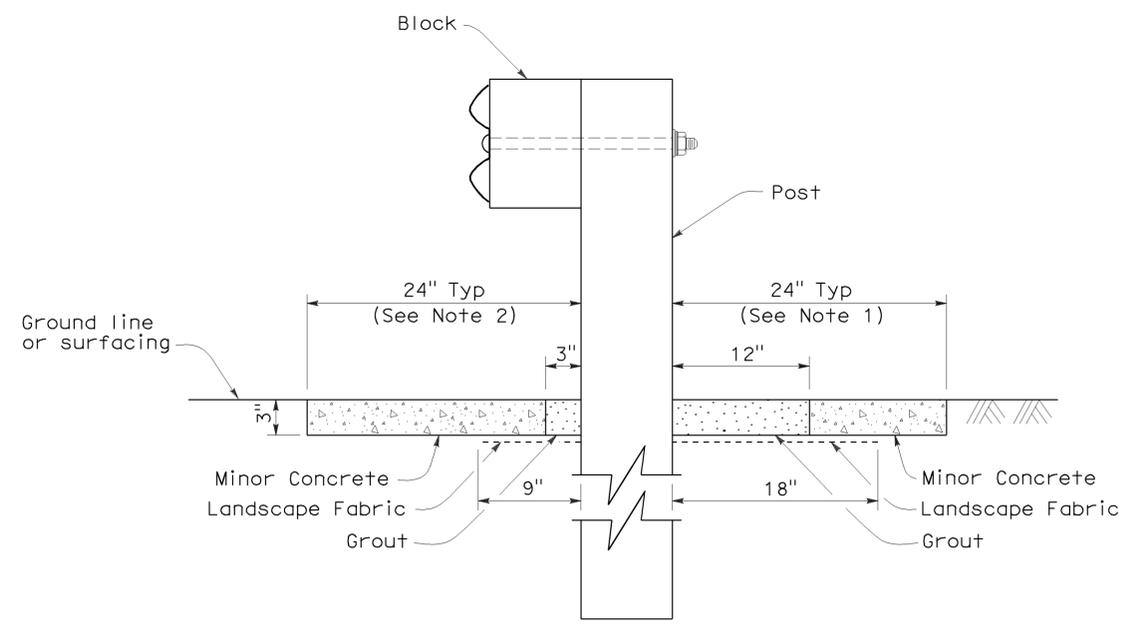
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No. C50200  
Exp. 6-30-07  
CIVIL  
STATE OF CALIFORNIA

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To accompany plans dated 8-15-11



PLAN



SECTION A-A

NOTES:

1. Where the distance between back of post and hinge point is less than 24", vegetation control to be constructed flush with the back edge of the post.
2. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" in front of the post, construct vegetation control to the edge of paved shoulder.
3. Direction of adjacent traffic indicated by ← .

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

NSP A77C5 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD  
PLANS BOOK DATED MAY 2006.

**NEW STANDARD PLAN NSP A77C5**

2006 NEW STANDARD PLAN NSP A77C5

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 25        | 60           |

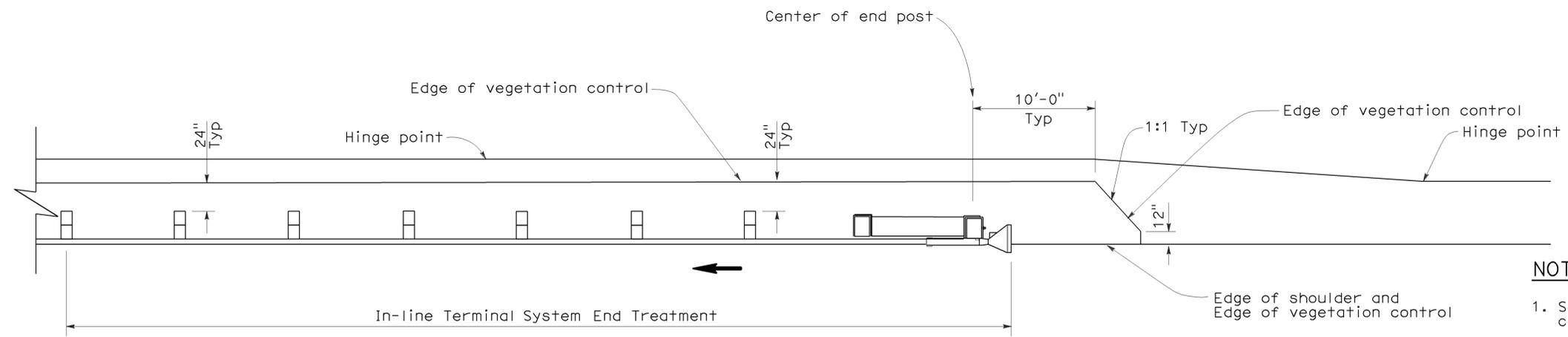
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

October 20, 2006  
PLANS APPROVAL DATE

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STATE OF CALIFORNIA

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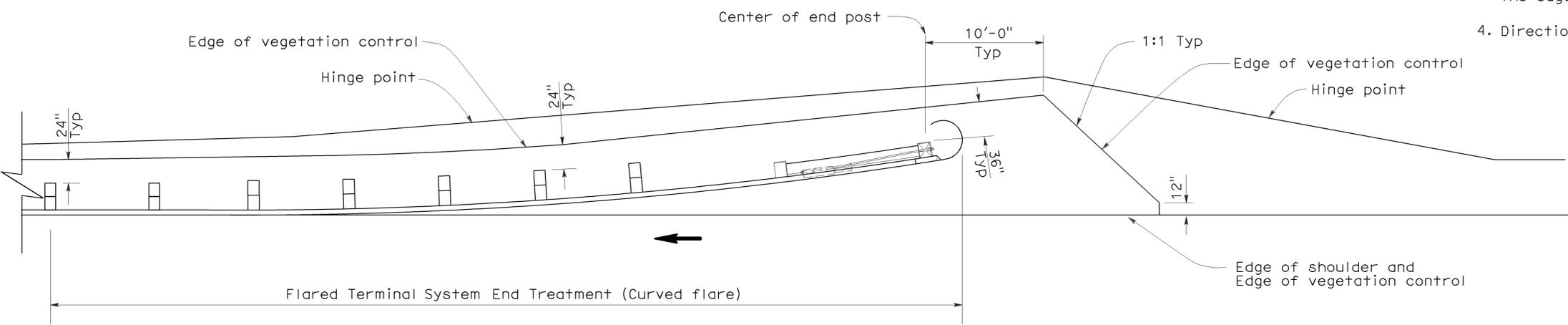
To accompany plans dated 8-15-11



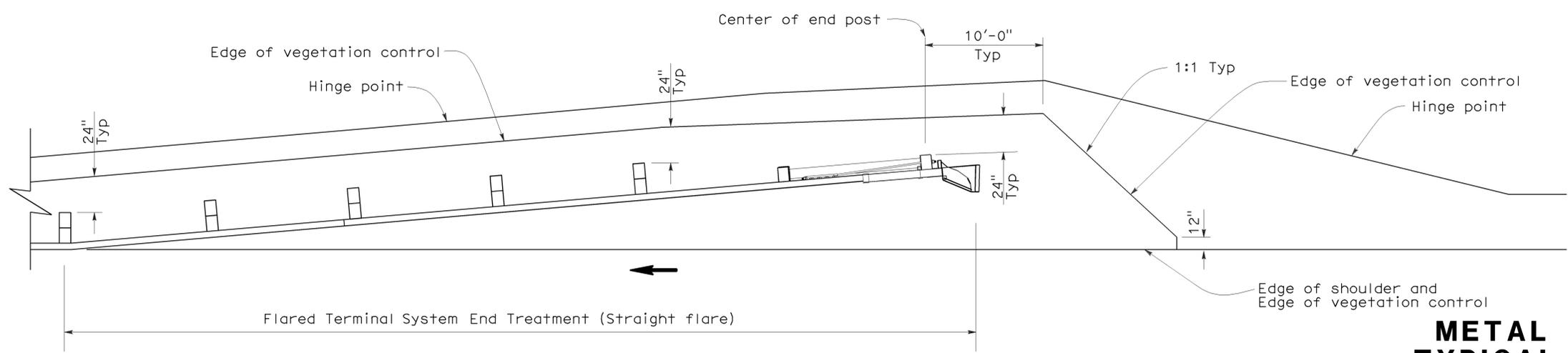
PLAN

**NOTES:**

1. See New Standard Plan NSP A77C5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 24", vegetation control to be constructed flush with the back edge of the post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" in front of the post, construct vegetation control to the edge of paved shoulder.
4. Direction of adjacent traffic indicated by ←.



PLAN



PLAN

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL VEGETATION CONTROL  
FOR TERMINAL SYSTEM END TREATMENTS**

NO SCALE  
NSP A77C6 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD  
PLANS BOOK DATED MAY 2006.

**NEW STANDARD PLAN NSP A77C6**

2006 NEW STANDARD PLAN NSP A77C6

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 26        | 60           |

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

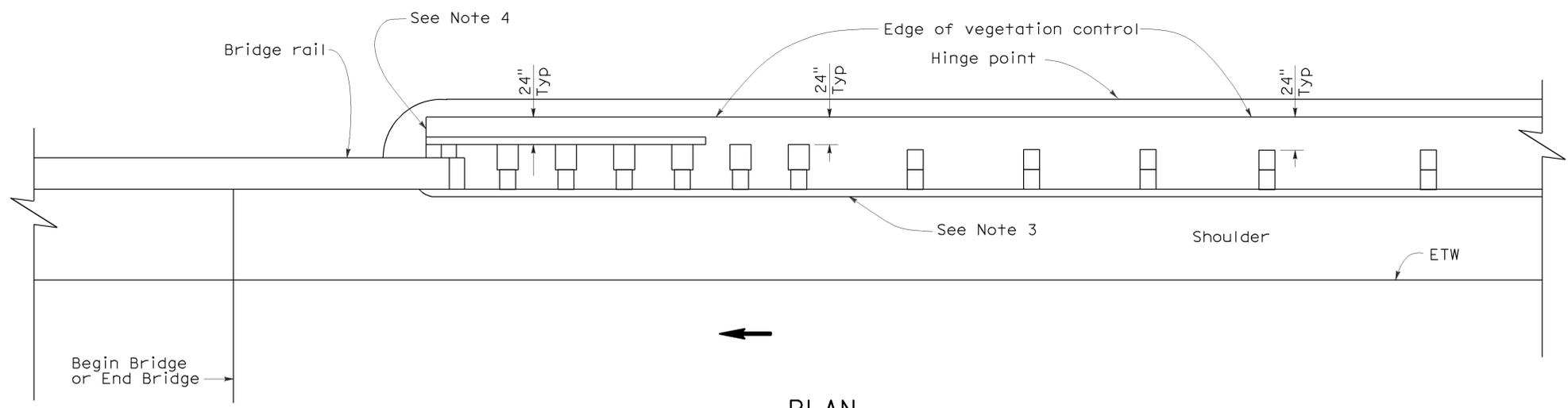
October 20, 2006  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-07  
CIVIL  
STATE OF CALIFORNIA

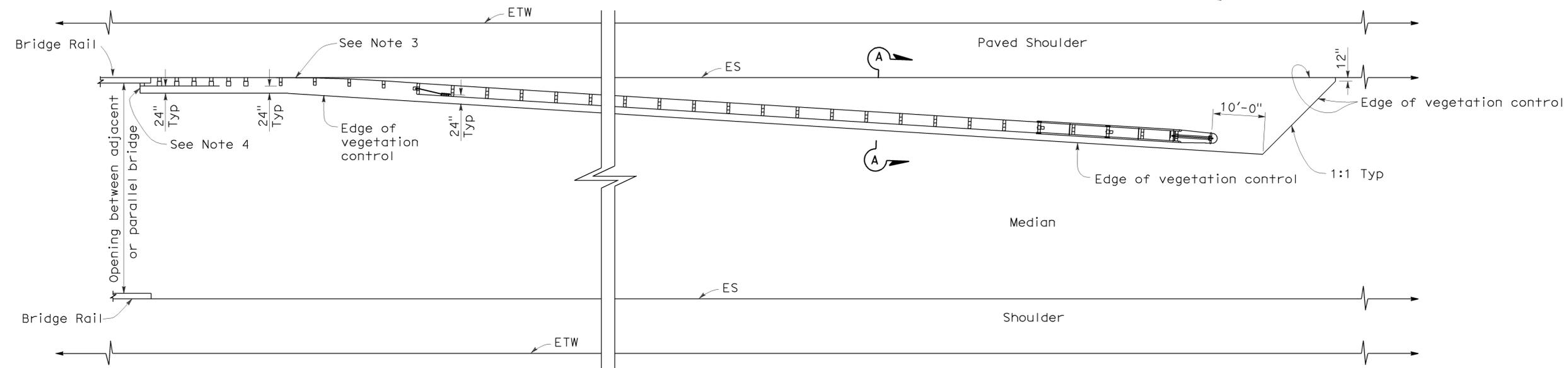
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To accompany plans dated 8-15-11

2006 NEW STANDARD PLAN NSP A77C7



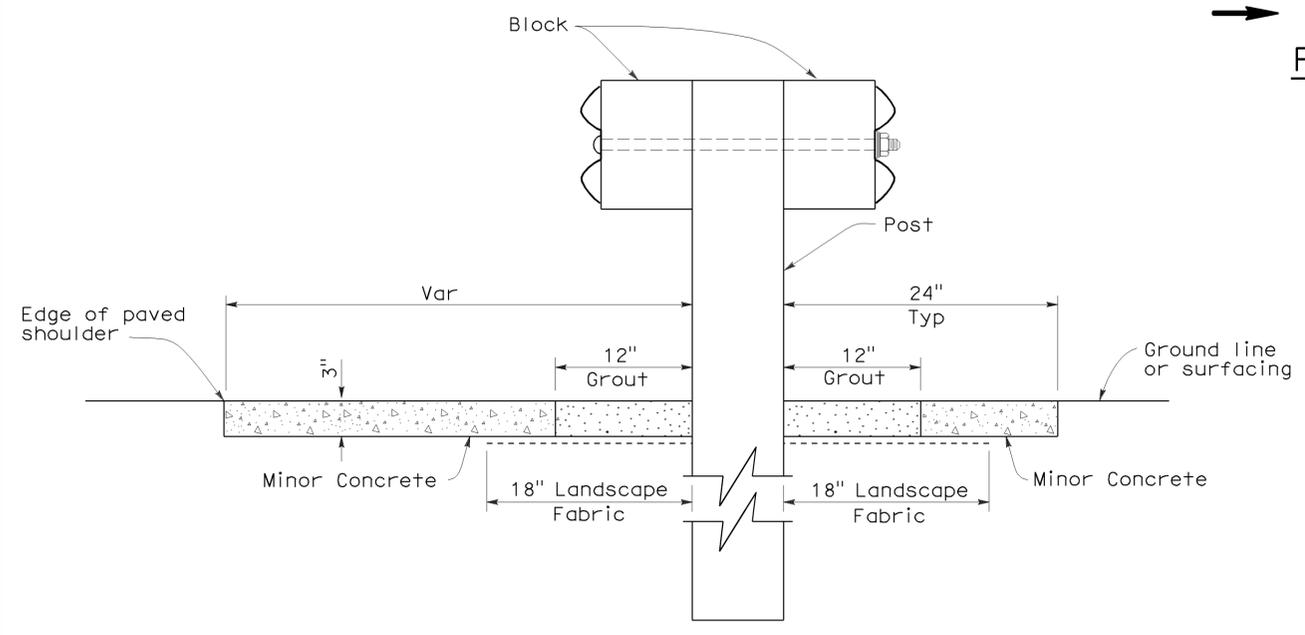
PLAN



PLAN

NOTES:

1. See New Standard Plan NSP A77C5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 24", vegetation control to be constructed flush with the back edge of the post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" in front of the post, construct vegetation control to the edge of paved shoulder.
4. End vegetation control at end of backside rail element.
5. Direction of adjacent traffic indicated by ←.



SECTION A-A

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING  
TYPICAL VEGETATION CONTROL  
AT STRUCTURE APPROACH  
AND DEPARTURE**

NO SCALE  
NSP A77C7 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD  
PLANS BOOK DATED MAY 2006.

**NEW STANDARD PLAN NSP A77C7**

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 27        | 60           |

Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

October 20, 2006  
PLANS APPROVAL DATE

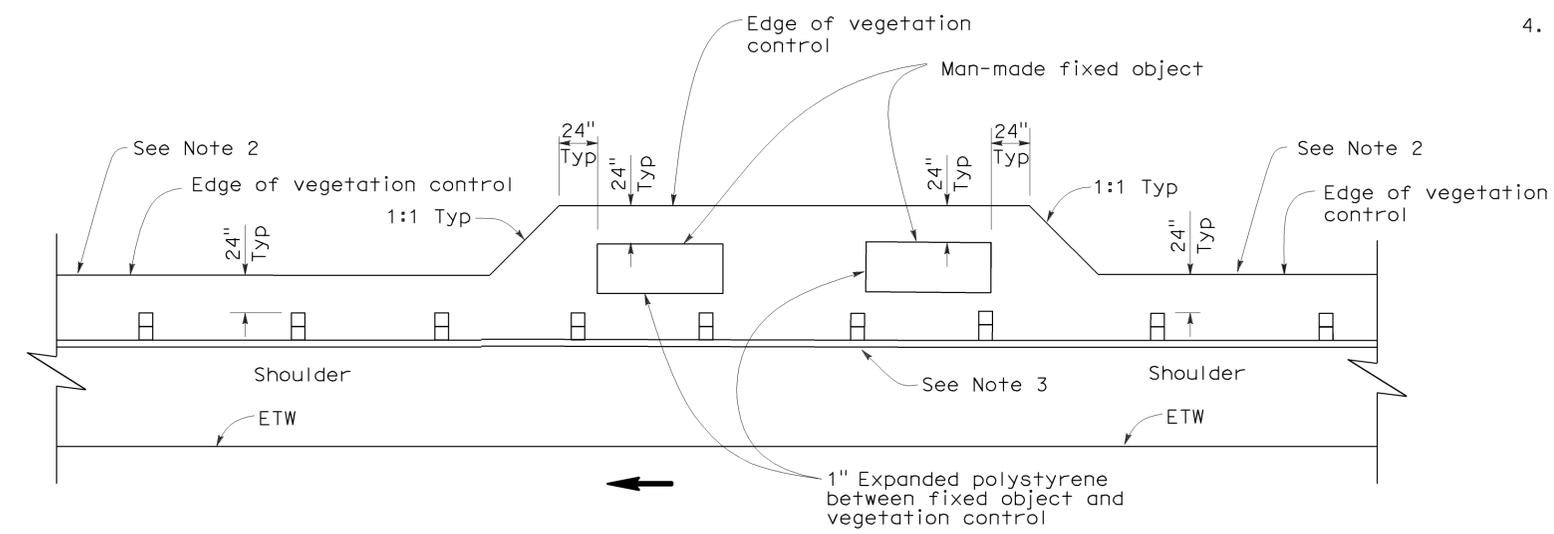
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Randell D. Hiatt  
No. C50200  
Exp. 6-30-07  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 8-15-11

**NOTES:**

1. See New Standard Plan NSP A77C5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 24", vegetation control to be constructed flush with the back edge of the post.
3. Where dike is constructed under railing, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" in front of the post, construct vegetation control to the edge of paved shoulder.
4. Direction of adjacent traffic indicated by ←.



**PLAN**  
FIXED OBJECT(S) ON SHOULDER

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE  
NSP A77C8 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD  
PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP A77C8

**NOTES:**

1. See New Standard Plan NSP 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 24" in front of the post, construct vegetation control to the edge of paved shoulder.
3. Direction of adjacent traffic indicated by ←.

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 28        | 60           |

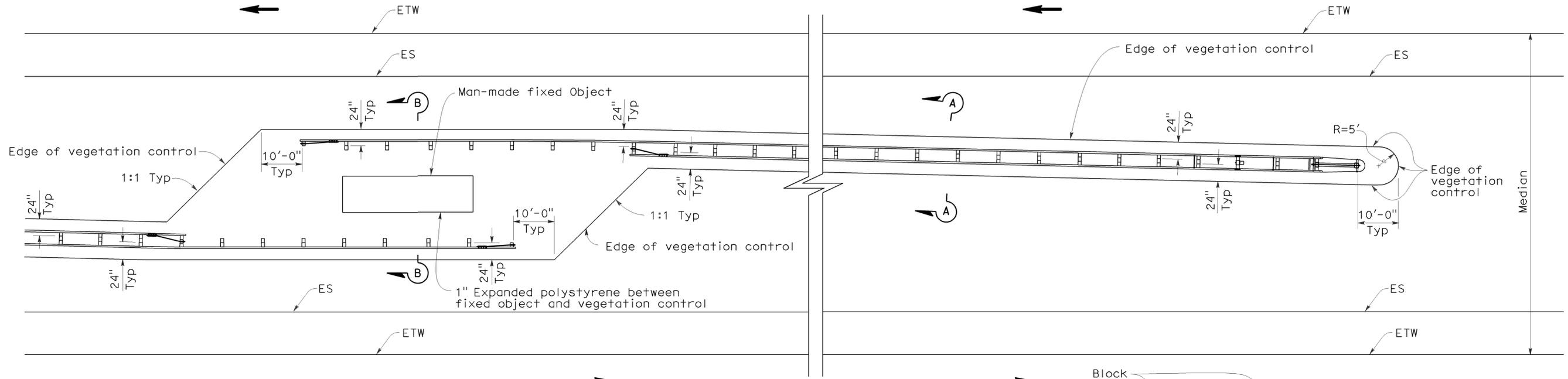
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

October 20, 2006  
PLANS APPROVAL DATE

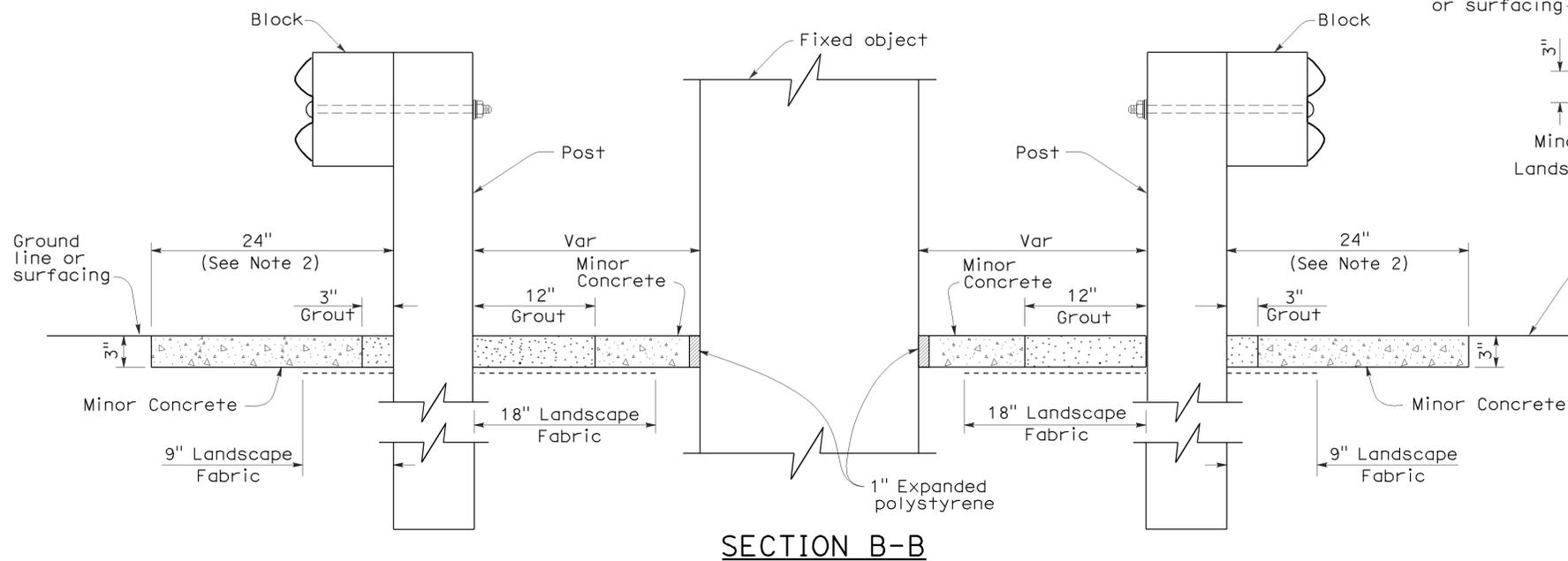
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Exp. 6-30-07  
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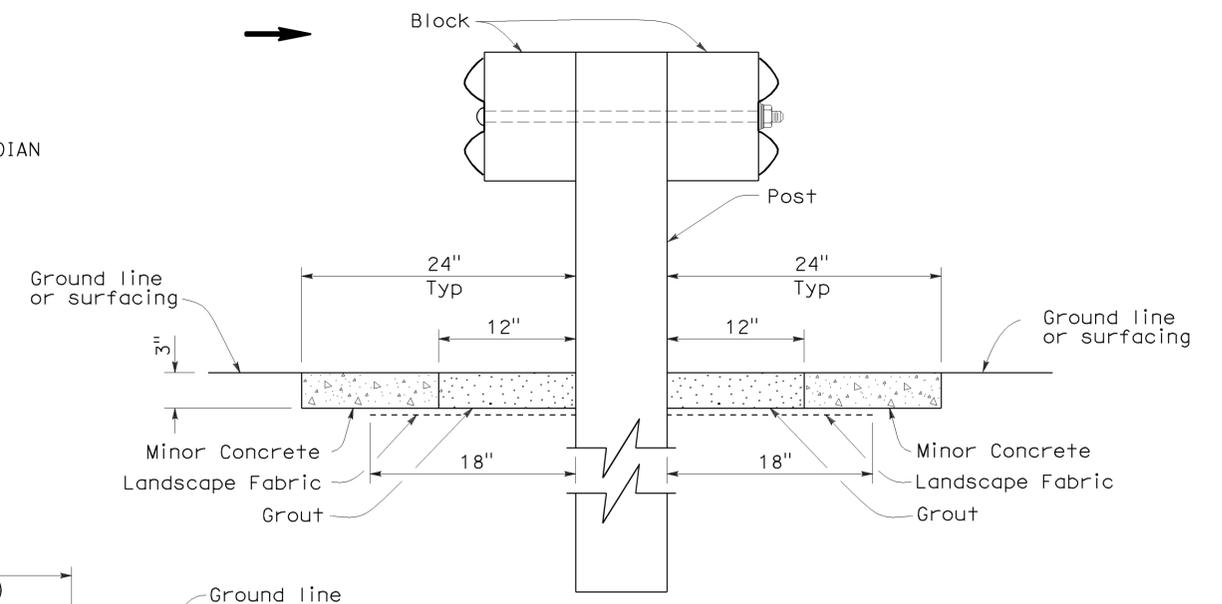
To accompany plans dated 8-15-11



**PLAN**  
FIXED OBJECT(S) IN MEDIAN



**SECTION B-B**



**SECTION A-A**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
TYPICAL VEGETATION CONTROL  
AT FIXED OBJECT**  
NO SCALE

NSP A77C9 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD  
PLANS BOOK DATED MAY 2006.

**NOTES:**

1. See New Standard Plan NSP 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 24" in front of the post, construct vegetation control to the edge of paved shoulder.
3. Direction of adjacent traffic indicated by ←.

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 29        | 60           |

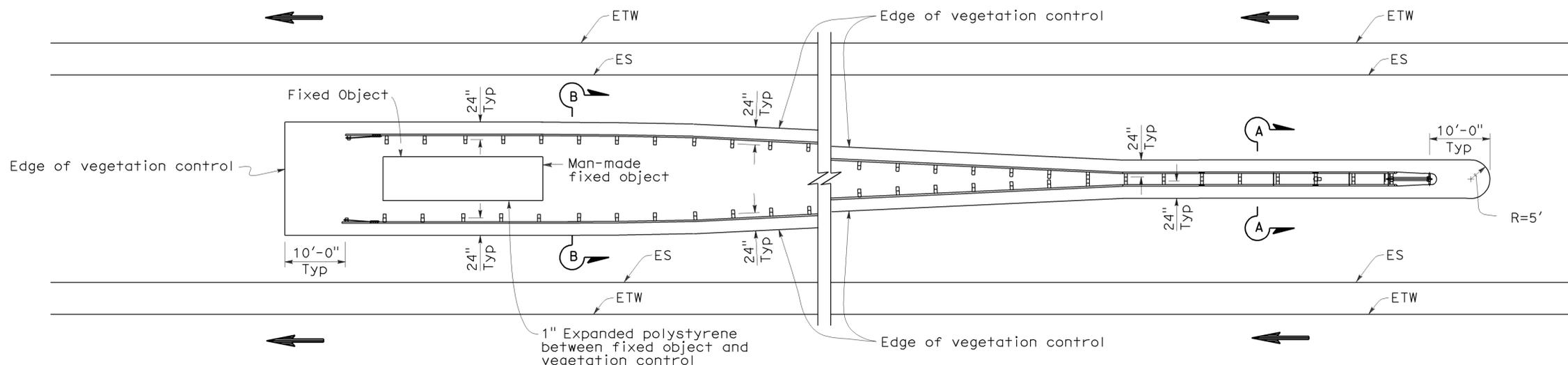
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

October 20, 2006  
PLANS APPROVAL DATE

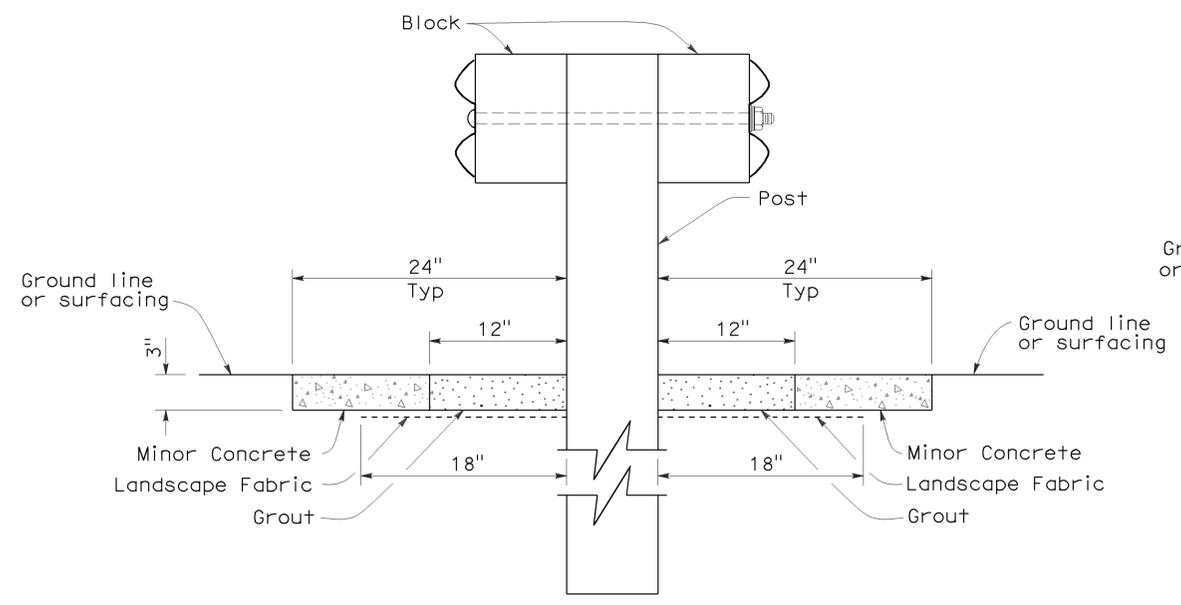
*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-07  
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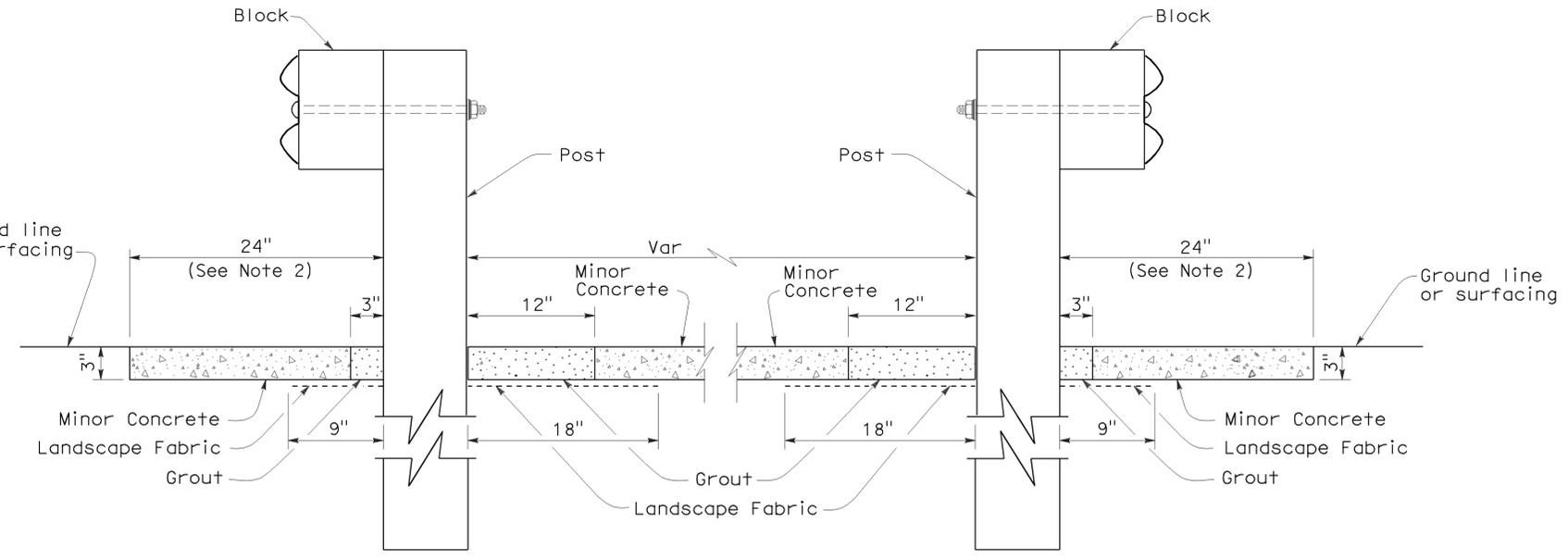
To accompany plans dated 8-15-11



**PLAN**  
FIXED OBJECT(S) BETWEEN SEPARATE ROADBEDS  
(ONE-WAY TRAFFIC)



**SECTION A-A**



**SECTION B-B**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

NSP A77C10 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD  
PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP A77C10

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 30        | 60           |

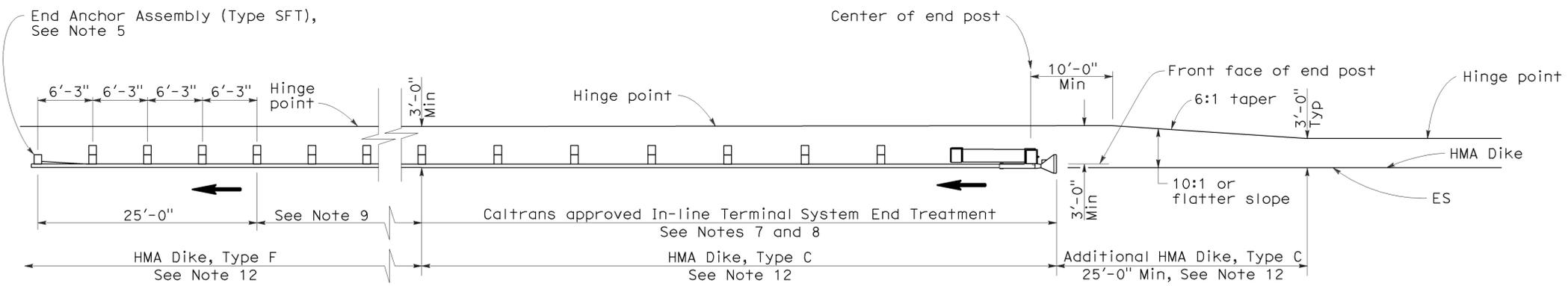
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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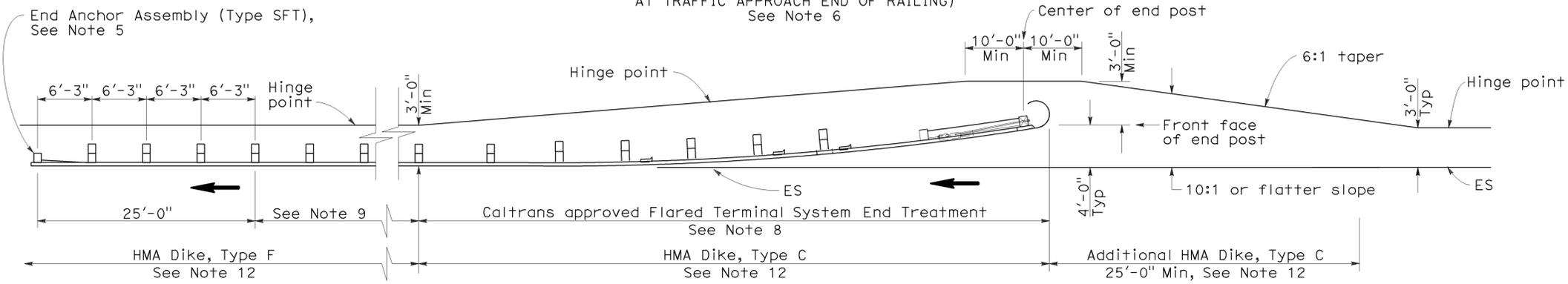
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 8-15-11



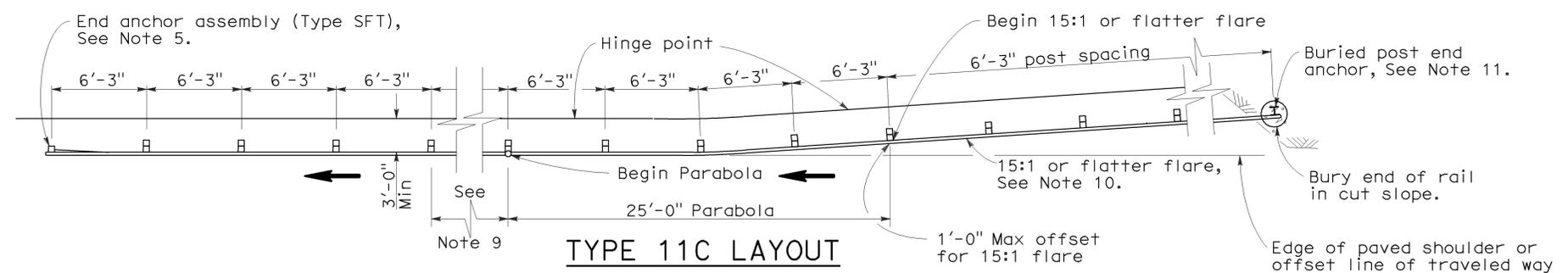
**TYPE 11A LAYOUT**

(EMBANKMENT GUARD INSTALLATION WITH IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Note 6



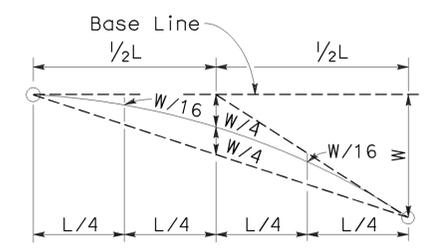
**TYPE 11B LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Note 6

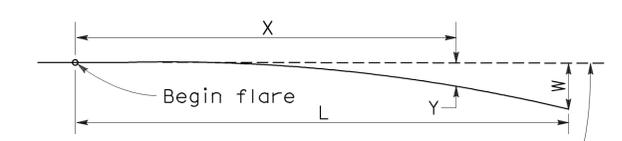


**TYPE 11C LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH BURIED END ANCHOR TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 6 and 12



**TYPICAL PARABOLIC LAYOUT**

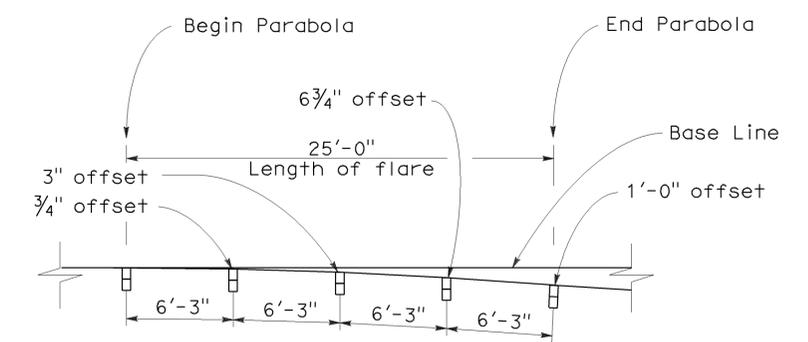


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

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**

**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 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 →.
- 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 Revised Standard Plan RSP A77C4 for dike positioning details.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**  
NO SCALE

RSP A77E1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E1  
DATED MAY 1, 2006 - PAGE 48 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77E1**

2006 REVISED STANDARD PLAN RSP A77E1

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 31        | 60           |

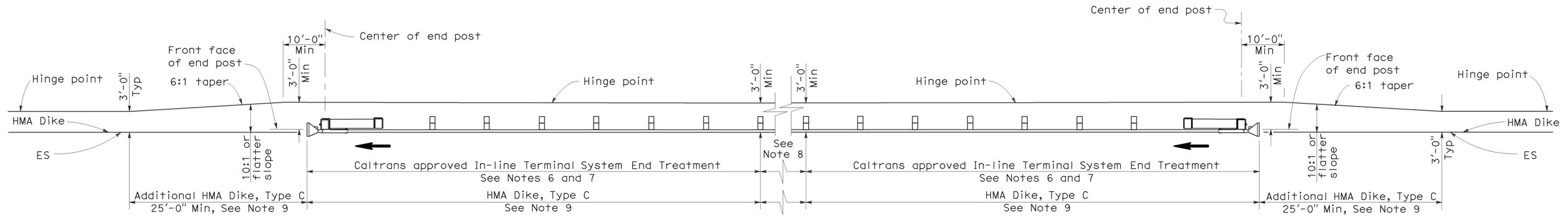
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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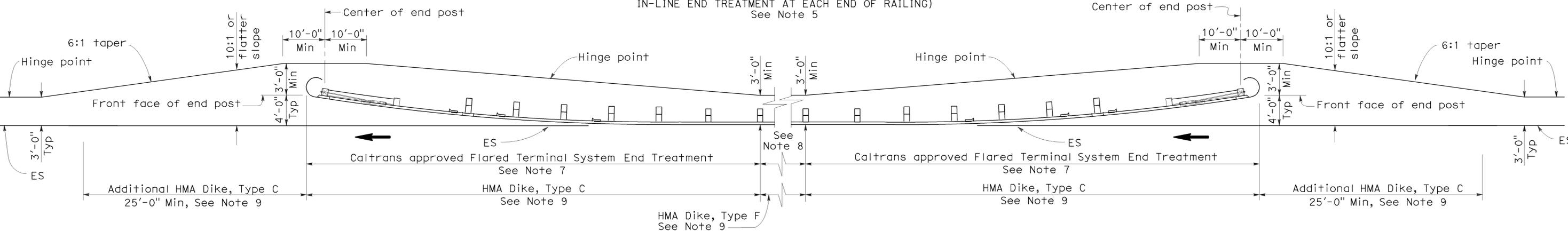
REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 8-15-11



**TYPE 11D LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH IN-LINE END TREATMENT AT EACH END OF RAILING)  
See Note 5



**TYPE 11E LAYOUT**

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AT EACH END 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, 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 Revised 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 Revised Standard Plan RSP A77C4 for dike positioning details.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**

NO SCALE  
RSP A77E2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E2  
DATED MAY 1, 2006 - PAGE 49 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77E2

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 32        | 60           |

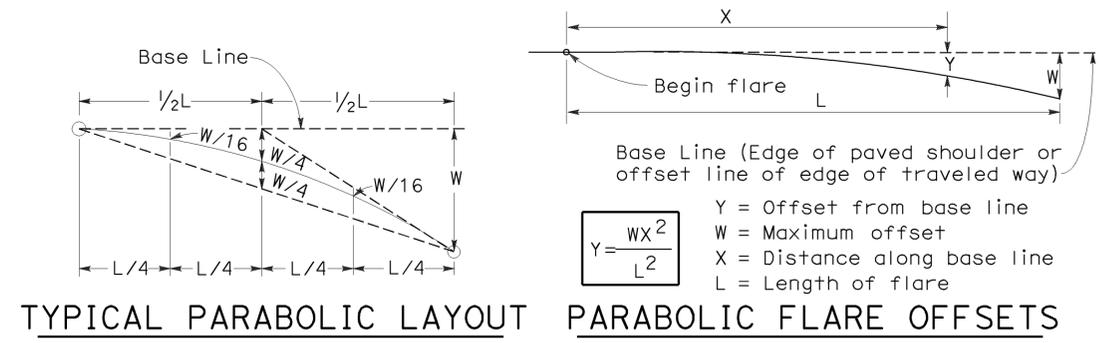
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

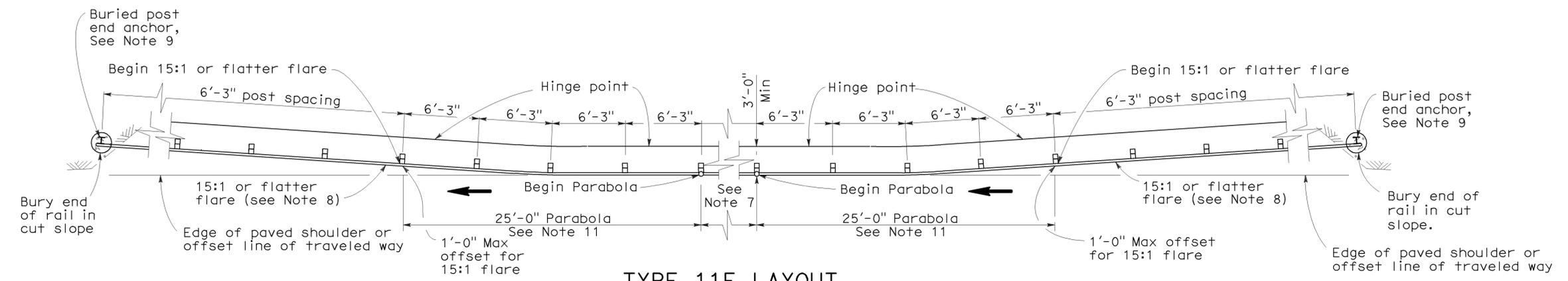
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REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
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STATE OF CALIFORNIA

To accompany plans dated 8-15-11

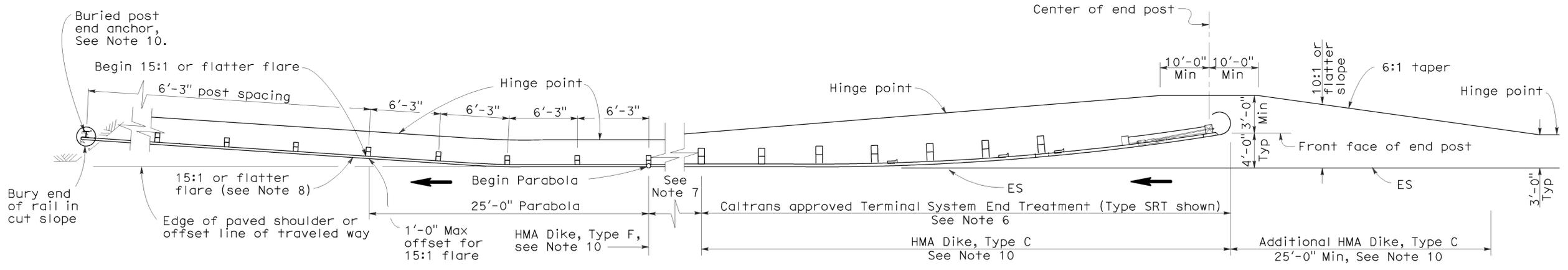


TYPICAL PARABOLIC LAYOUT PARABOLIC FLARE OFFSETS



TYPE 11F LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH A BURIED END ANCHOR TREATMENT AT EACH END OF RAILING)  
See Notes 5 and 10



TYPE 11G LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH FLARED END TREATMENT AND A BURIED END ANCHOR TREATMENT AT THE ENDS OF RAILING)  
See Notes 5 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. 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 Revised 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.
- 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 11F and 11G Layouts, see Standard Plan A77I2.
- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A77E3 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E3  
DATED MAY 1, 2006 - PAGE 50 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77E3**

2006 REVISED STANDARD PLAN RSP A77E3

| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 33        | 60           |

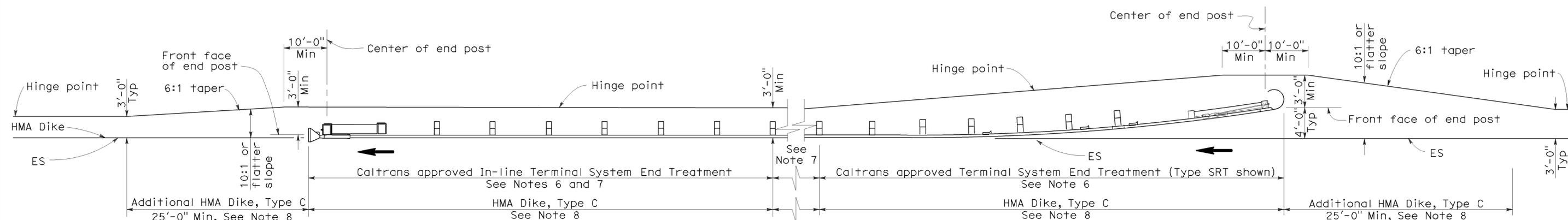
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

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To accompany plans dated 8-15-11



### TYPE 11H LAYOUT

(EMBANKMENT GUARD RAILING INSTALLATION WITH 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 Revised 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 Revised Standard Plan RSP A77C4 for dike positioning details.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

RSP A77E4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E4  
DATED MAY 1, 2006 - PAGE 51 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77E4**

2006 REVISED STANDARD PLAN RSP A77E4

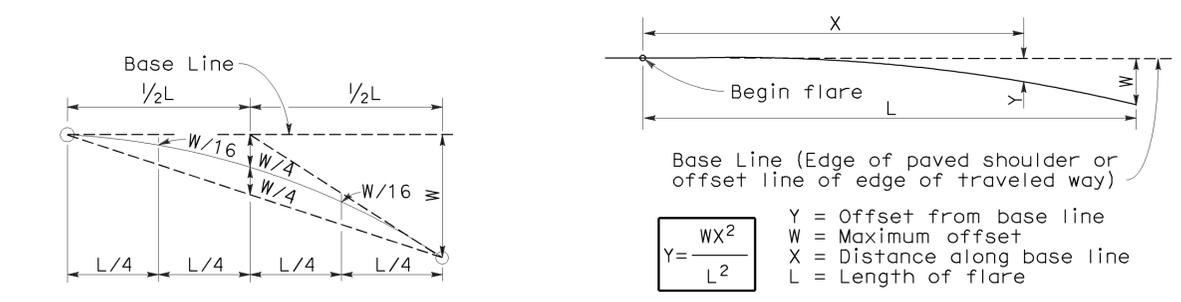
|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 34        | 60           |

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

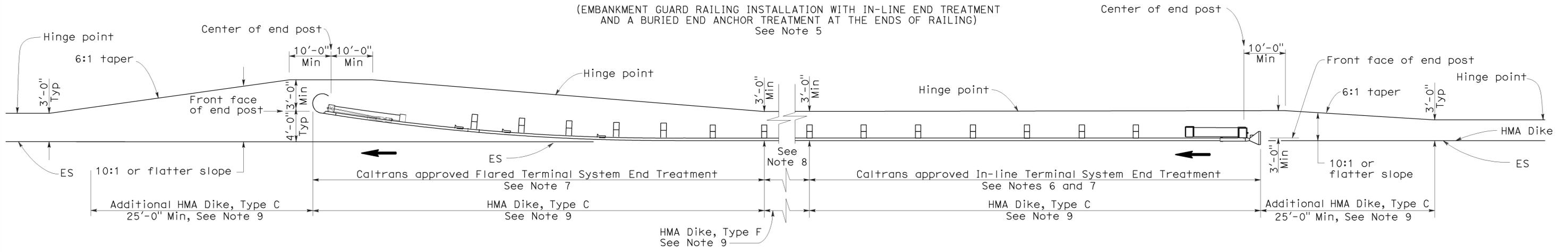
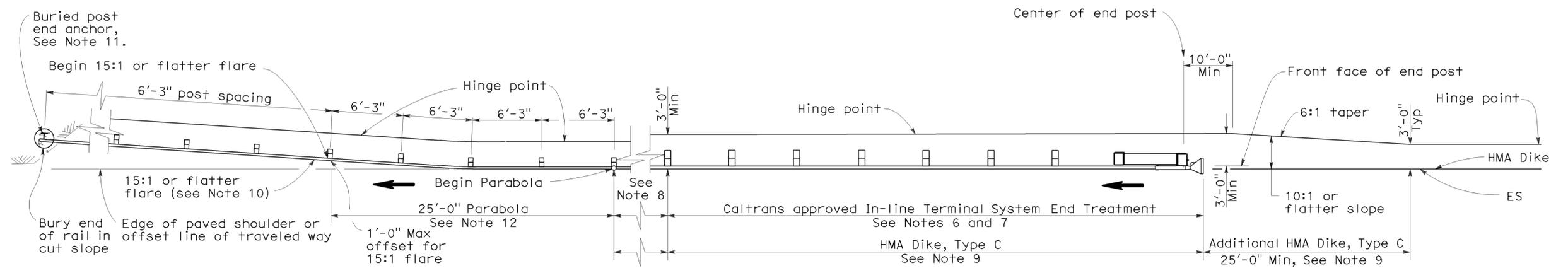
June 6, 2008  
PLANS APPROVAL DATE

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No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA



To accompany plans dated 8-15-11



**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  $\rightarrow$ .
- Layout Types 11D through 11L, shown on the A77E Series of Revised 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 Revised Standard Plan RSP 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 Revised Standard Plan RSP A77E1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A77E5 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E5  
DATED MAY 1, 2006 - PAGE 52 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77E5

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 35        | 60           |

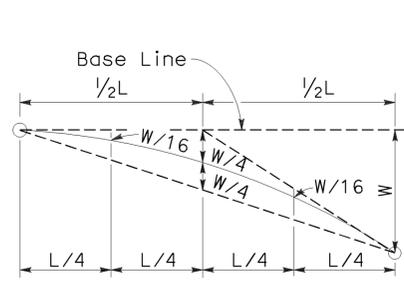
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

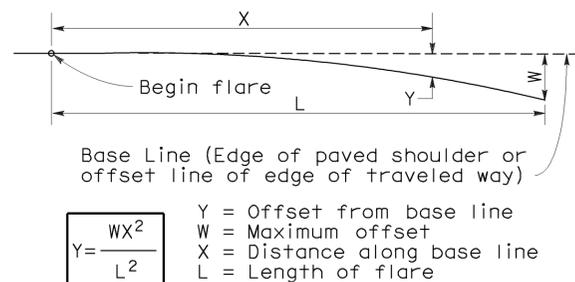
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No. C50200  
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STATE OF CALIFORNIA

To accompany plans dated 8-15-11



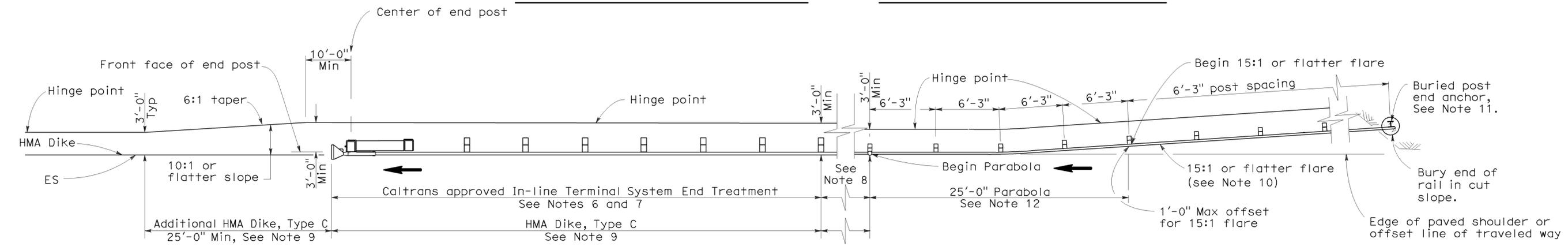
**TYPICAL PARABOLIC LAYOUT**



**PARABOLIC FLARE OFFSETS**

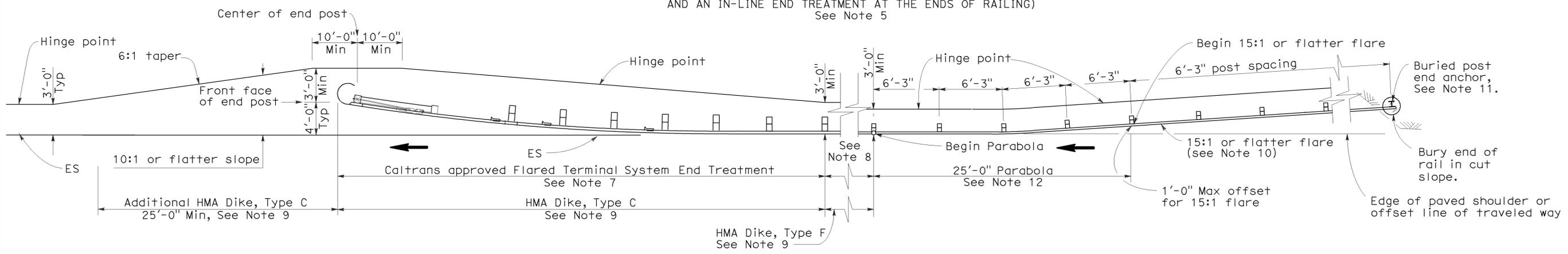
$$Y = \frac{WX^2}{L^2}$$

Y = Offset from base line  
W = Maximum offset  
X = Distance along base line  
L = Length of flare



**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, 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 Revised 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 Revised Standard Plan RSP 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 Revised Standard Plan RSP A77E1.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
EMBANKMENTS**

NO SCALE  
RSP A77E6 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77E6  
DATED MAY 1, 2006 - PAGE 53 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77E6**

2006 REVISED STANDARD PLAN RSP A77E6

| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|------|--------|-------|--------------------------|-----------|--------------|
| 03   | ED     | 50    | R4.1/R14.2               | 36        | 60           |

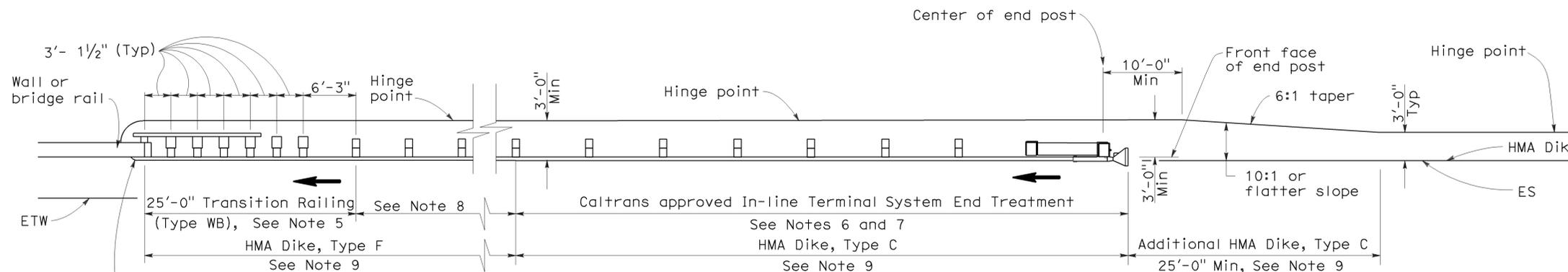
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

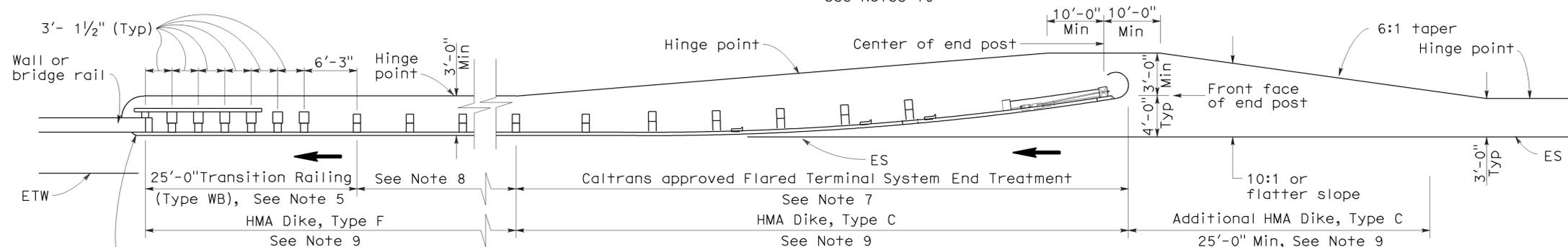
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To accompany plans dated 8-15-11



### 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:

- 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 posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- For Transition Railing (Type WB) details for Types 12A and 12B Layouts, see Standard Plan A77J4.
- 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, 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.

- Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 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 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 Revised Standard Plans RSP A77J1 and RSP 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.

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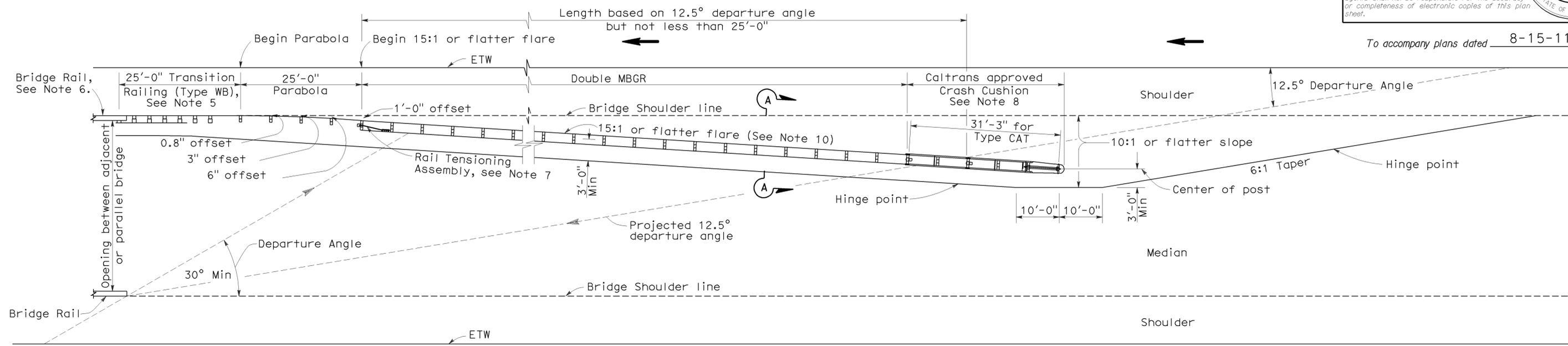
## METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

RSP A77F1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77F1  
DATED MAY 1, 2006 - PAGE 54 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77F1**

2006 REVISED STANDARD PLAN RSP A77F1

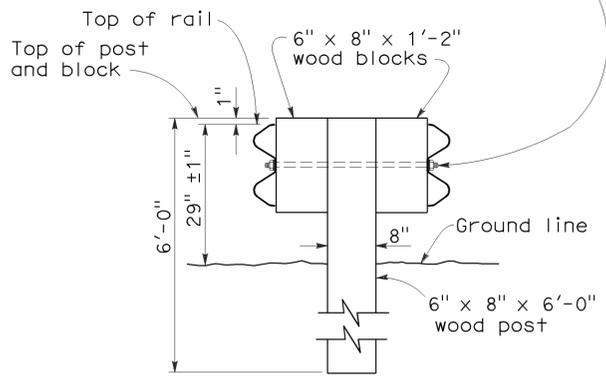


To accompany plans dated 8-15-11

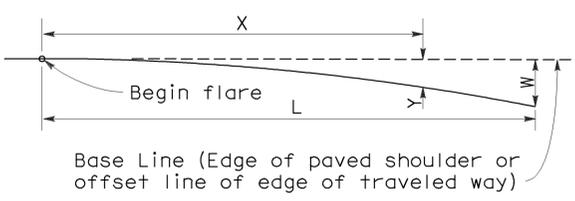
**TYPE 12E LAYOUT**

See Note 10

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.



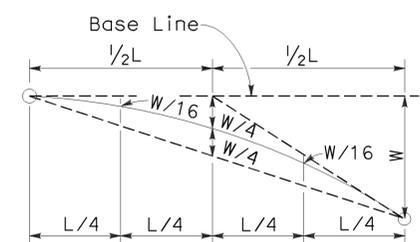
**SECTION A-A**  
**TYPICAL DOUBLE METAL BEAM GUARD RAILING**



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

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 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 Revised Standard Plan RSP 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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**METAL BEAM GUARD RAILING**  
**TYPICAL LAYOUTS FOR**  
**STRUCTURE APPROACH**

NO SCALE

RSP A77F3 DATED MAY 20, 2011 SUPERSEDES RSP A77F3 DATED JUNE 6, 2008 AND STANDARD PLAN A77F3 DATED MAY 1, 2006 - PAGE 56 OF THE STANDARD PLANS BOOK DATED MAY 2006.

2006 REVISED STANDARD PLAN RSP A77F3

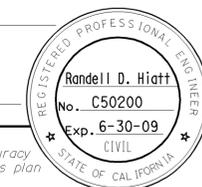
|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 38        | 60           |

Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

June 6, 2008

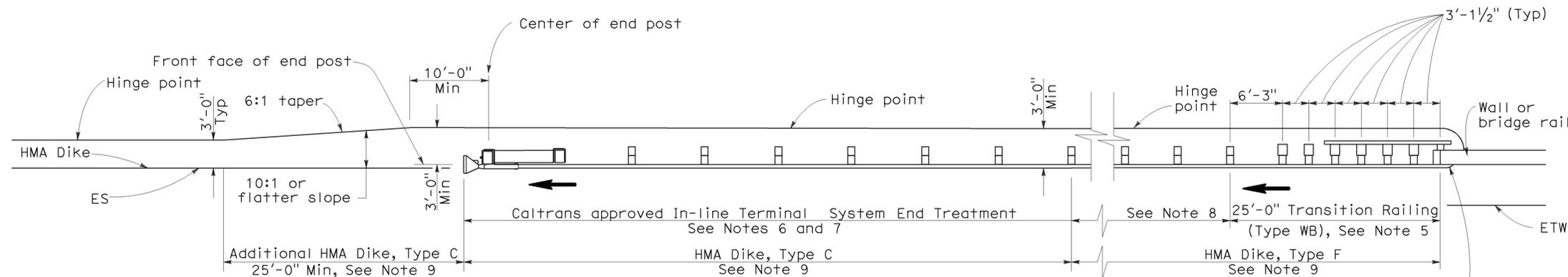
PLANS APPROVAL DATE

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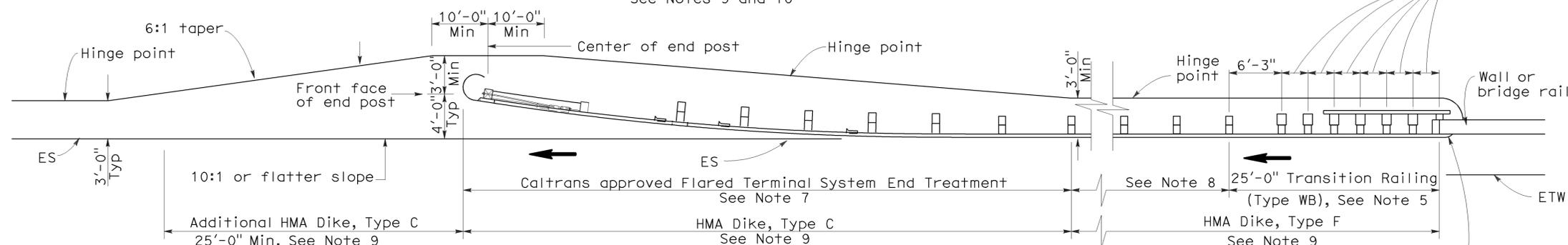
To accompany plans dated 8-15-11

2006 REVISED STANDARD PLAN RSP A77F4



**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. 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.
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- 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 Revised Standard Plan RSP 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 Revised Standard Plan RSP A77J2 and Connection Detail HH on Standard Plans A77K2.

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

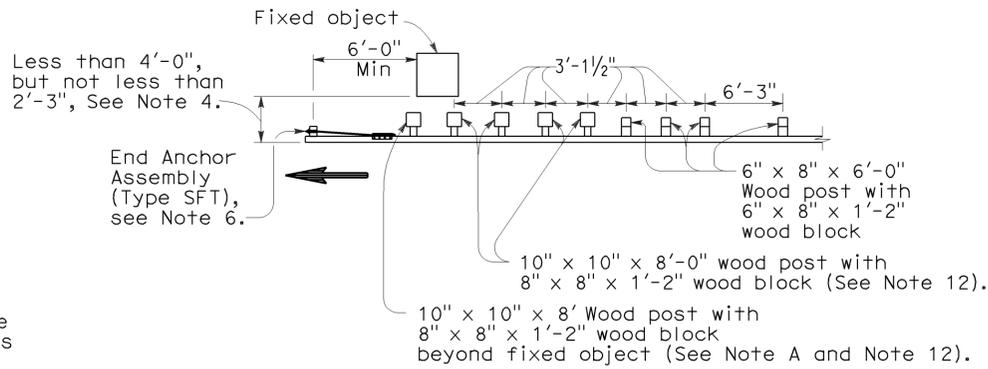
NO SCALE

RSP A77F4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77F4  
DATED MAY 1, 2006 - PAGE 57 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77F4**

**NOTES:**

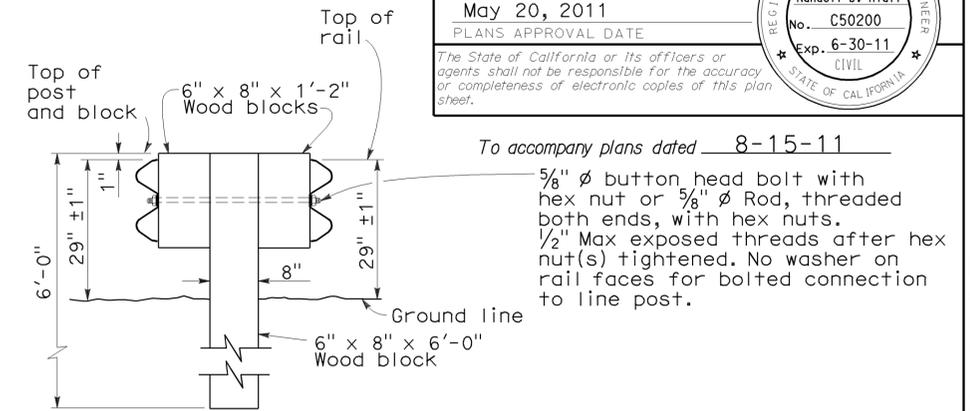
- Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 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 Revised Standard Plan RSP 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.

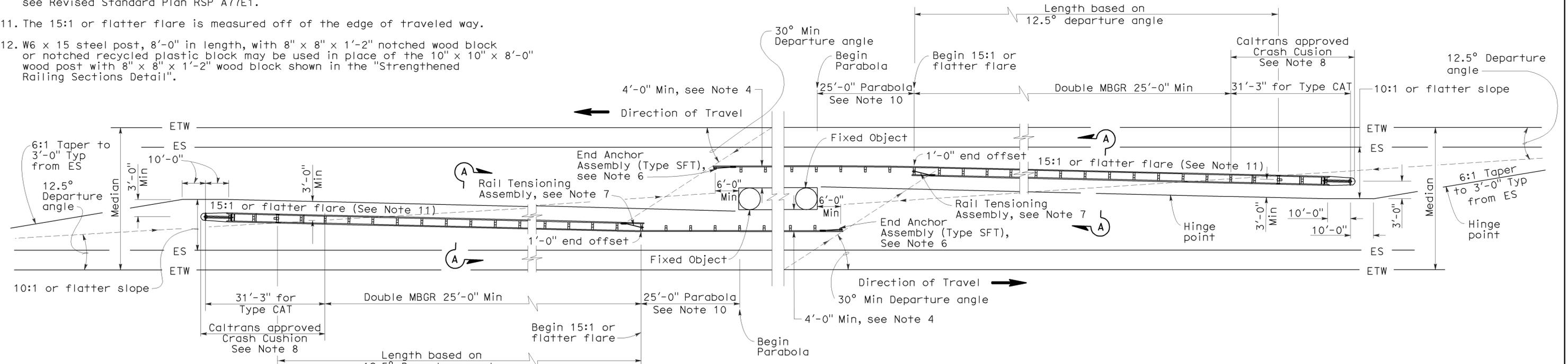
**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

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.



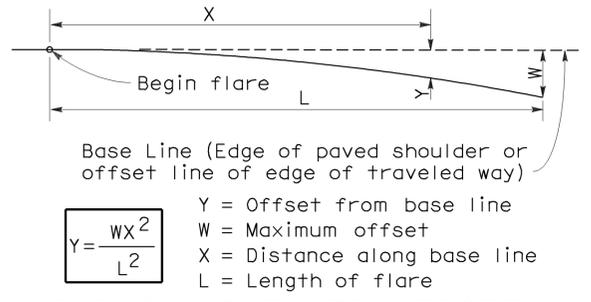
**SECTION A-A  
TYPICAL DOUBLE METAL BEAM GUARD RAILING**

To accompany plans dated 8-15-11  
 5/8"  $\phi$  button head bolt with hex nut or 5/8"  $\phi$  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.

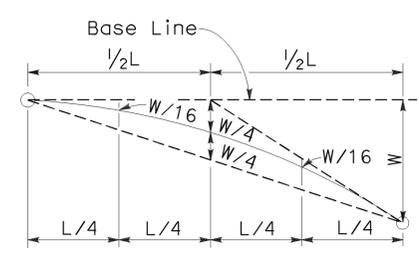


**TYPE 14A LAYOUT**

See Note 9



**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**

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

RSP A77G1 DATED MAY 20, 2011 SUPERSEDES RSP A77G1  
 DATED JUNE 6, 2008 AND STANDARD PLAN A77G1  
 DATED MAY 1, 2006 - PAGE 59 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77G1**

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 39        | 60           |

Randell D. Hiatt  
 REGISTERED CIVIL ENGINEER

May 20, 2011  
 PLANS APPROVAL DATE

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

2006 REVISED STANDARD PLAN RSP 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  $\rightarrow$ .

- 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 Revised Standard Plan RSP 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".

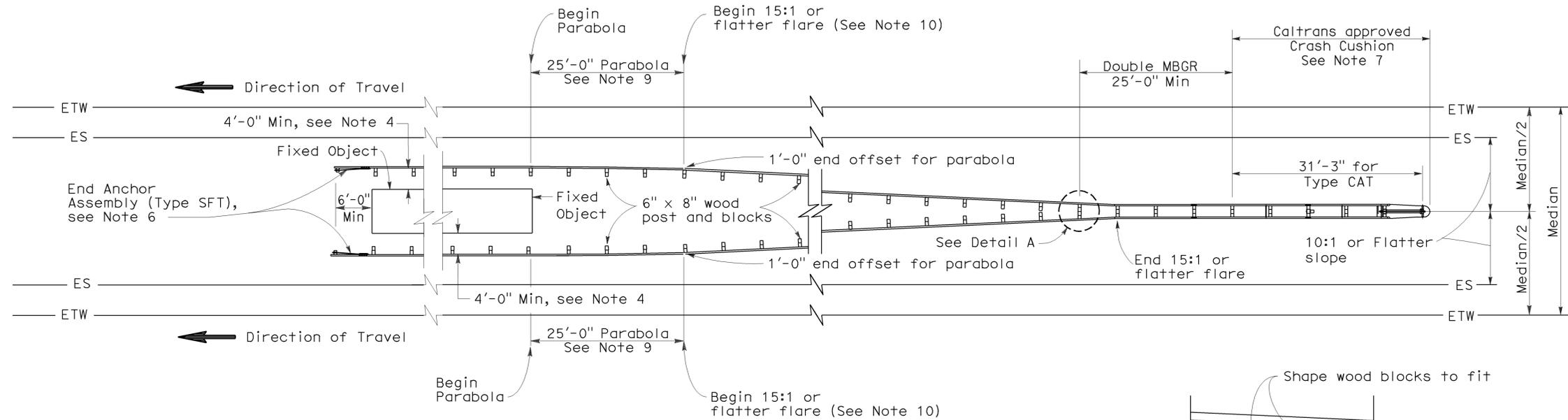
|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 40        | 60           |

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

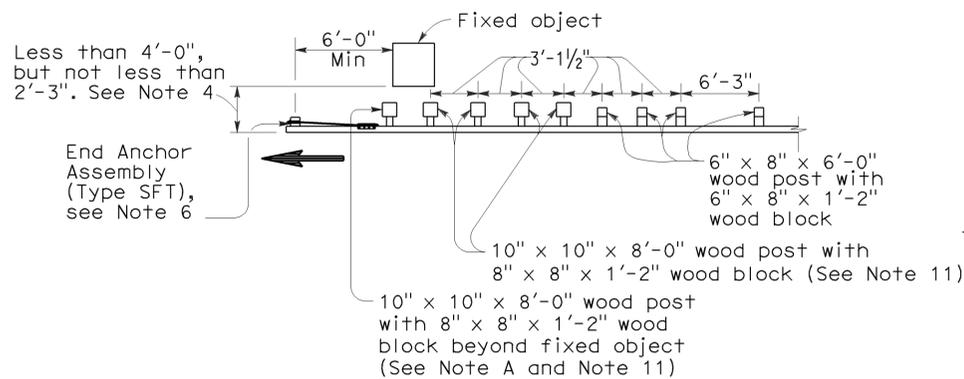
June 6, 2008  
PLANS APPROVAL DATE

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To accompany plans dated 8-15-11



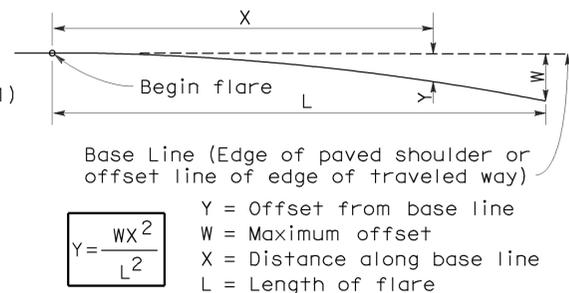
**TYPE 15A LAYOUT**  
See Note 9



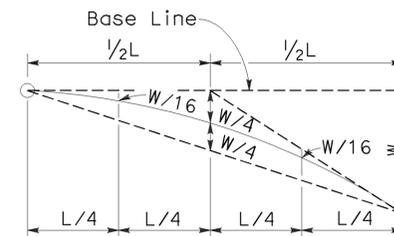
**NOTE A:** For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

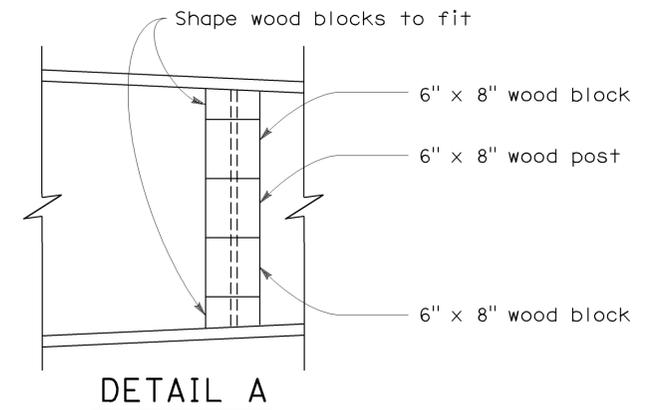
Use strengthened railing sections with Type 15A layout where minimum clearance between the face of the guard railing and the fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4.



**PARABOLIC FLARE OFFSETS**



**TYPICAL PARABOLIC LAYOUT**



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
TYPICAL LAYOUTS FOR  
FIXED OBJECTS  
BETWEEN SEPARATE ROADBEDS  
(ONE-WAY TRAFFIC)**

NO SCALE  
RSP A77G2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G2  
DATED MAY 1, 2006 - PAGE 60 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77G2**

2006 REVISED STANDARD PLAN RSP A77G2

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 41        | 60           |

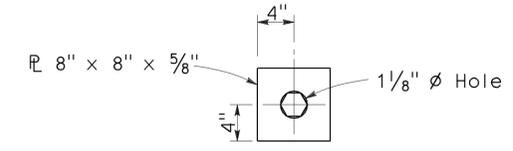
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

May 20, 2011  
PLANS APPROVAL DATE

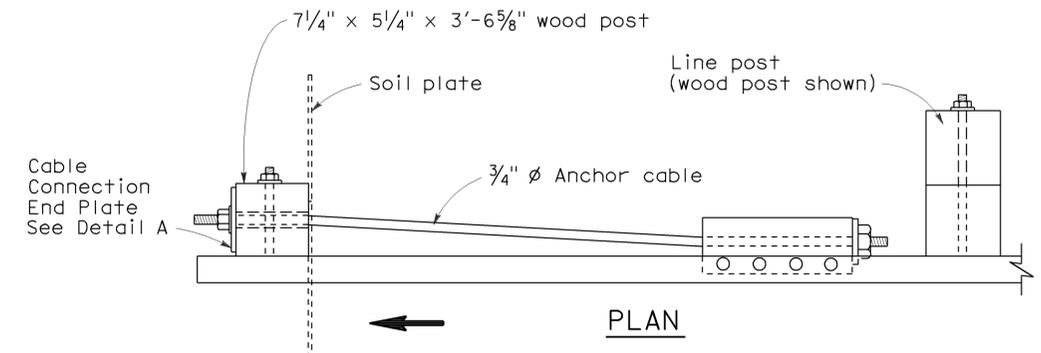
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REGISTERED PROFESSIONAL ENGINEER  
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Exp. 6-30-11  
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STATE OF CALIFORNIA

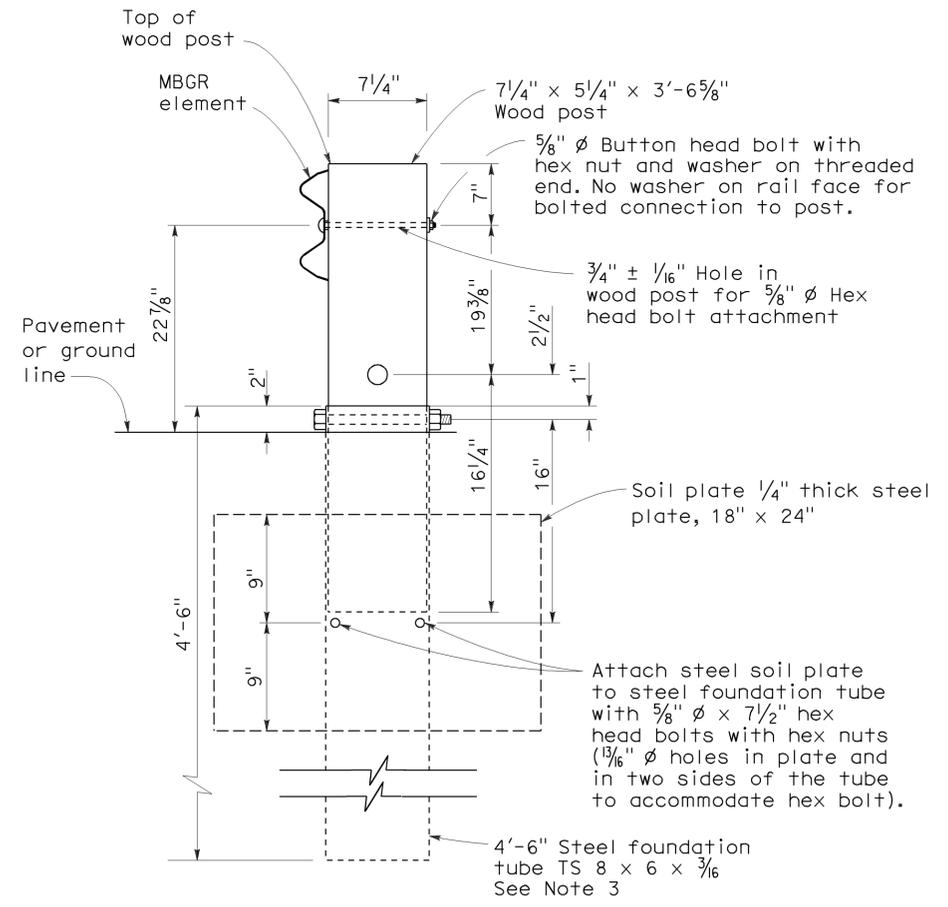
To accompany plans dated 8-15-11



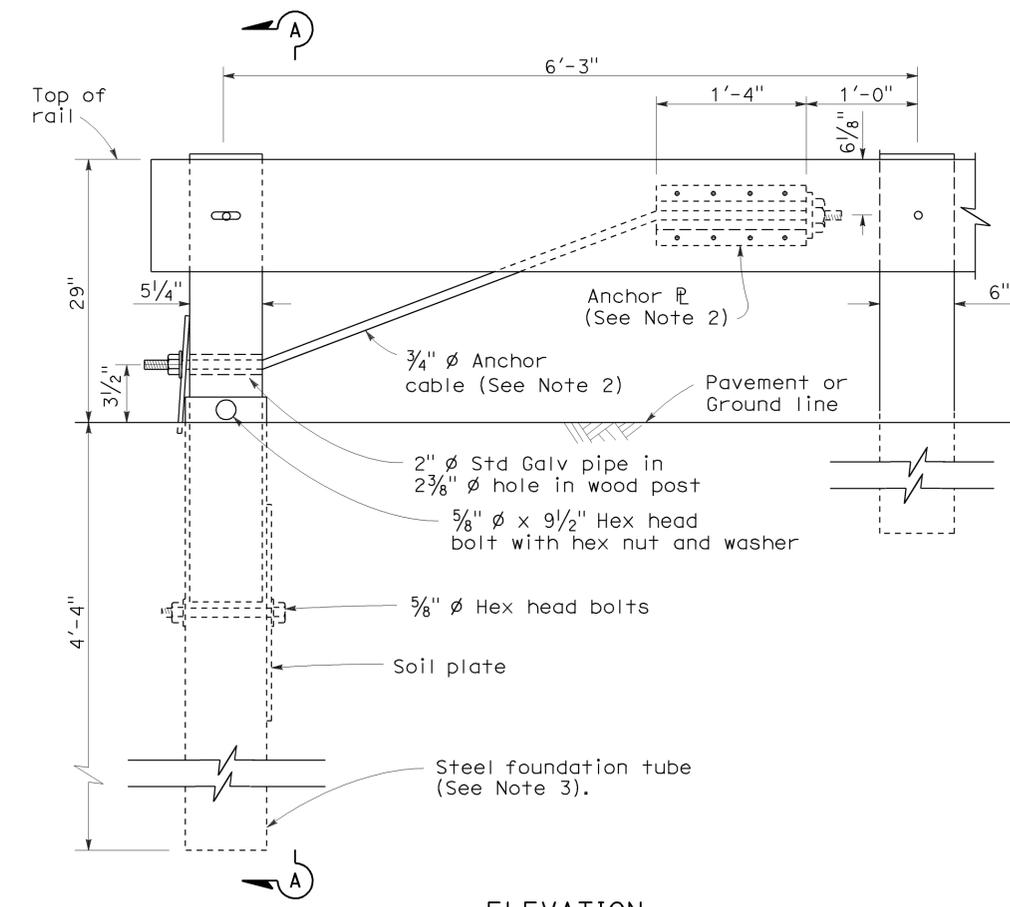
**DETAIL A**  
**CABLE CONNECTION**  
**END PLATE**



**PLAN**



**SECTION A-A**



**ELEVATION**  
**END ANCHOR**  
**ASSEMBLY (TYPE SFT)**  
See Note 1

**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 3/16, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" 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.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**METAL RAILING**  
**END ANCHOR ASSEMBLY**  
**(TYPE SFT)**

NO SCALE

RSP A77H1 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77H1  
DATED MAY 1, 2006 - PAGE 67 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77H1**

2006 REVISED STANDARD PLAN RSP A77H1

|      |        |       |                             |              |                 |
|------|--------|-------|-----------------------------|--------------|-----------------|
| Dist | COUNTY | ROUTE | POST MILES<br>TOTAL PROJECT | SHEET<br>No. | TOTAL<br>SHEETS |
| 03   | ED     | 50    | R4.1/R14.2                  | 42           | 60              |

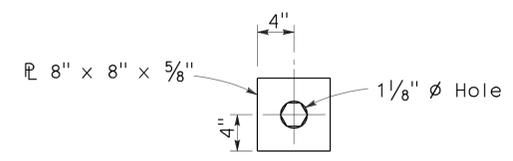
Randell D. Hiatt  
REGISTERED CIVIL ENGINEER

May 20, 2011  
PLANS APPROVAL DATE

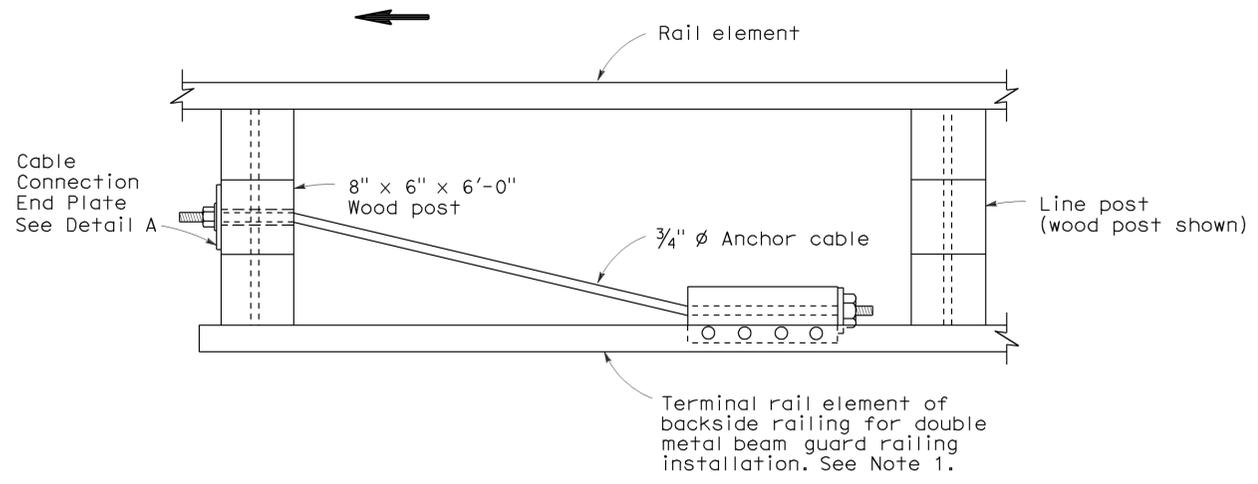
Randell D. Hiatt  
No. C50200  
Exp. 6-30-11  
CIVIL  
STATE OF CALIFORNIA

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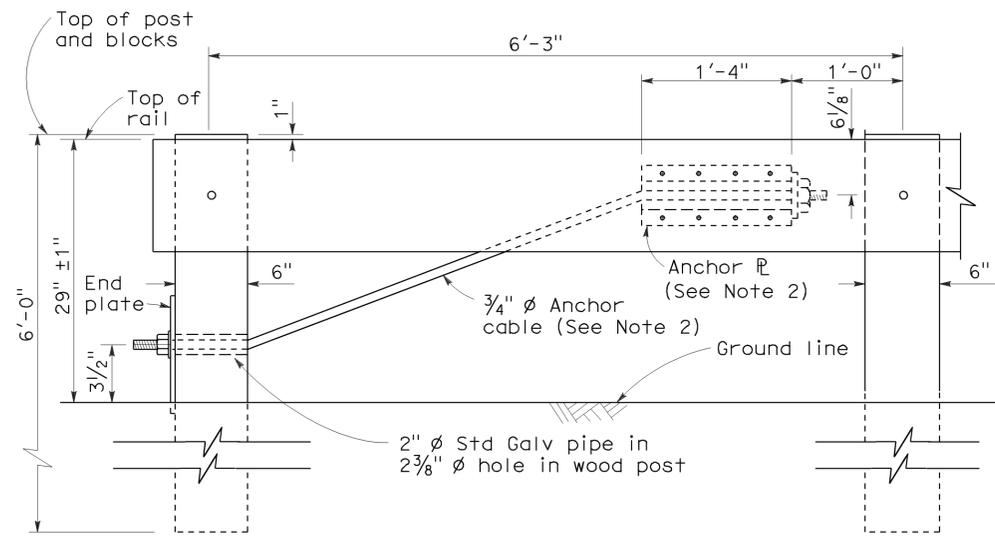
To accompany plans dated 8-15-11



DETAIL A  
CABLE CONNECTION  
END PLATE



PLAN



ELEVATION  
RAIL TENSIONING  
ASSEMBLY  
See Note 1

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 →.

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

NO SCALE

RSP A77H2 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77H2  
DATED MAY 1, 2006 - PAGE 68 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77H2**

2006 REVISED STANDARD PLAN RSP A77H2

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 43        | 60           |

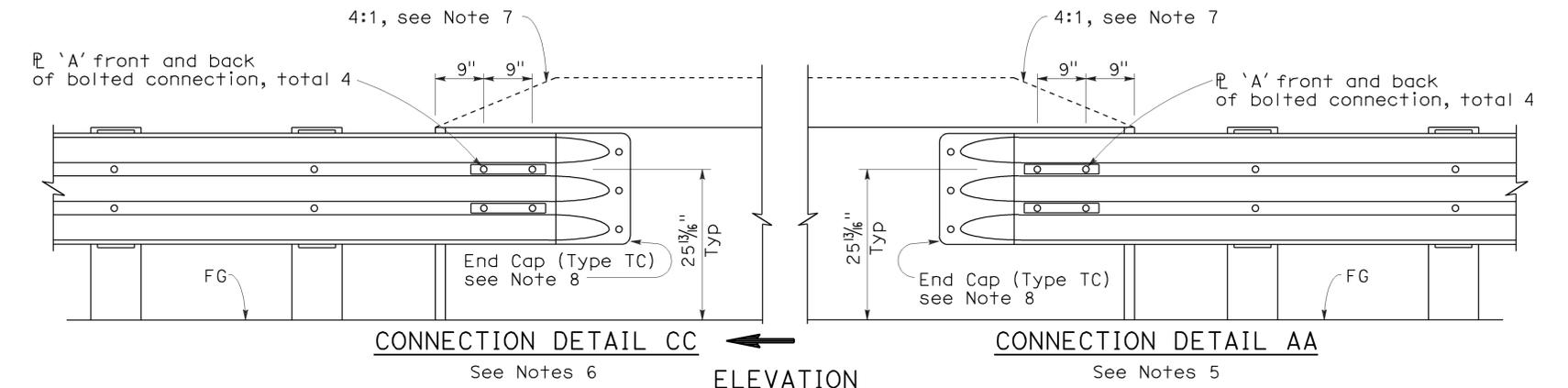
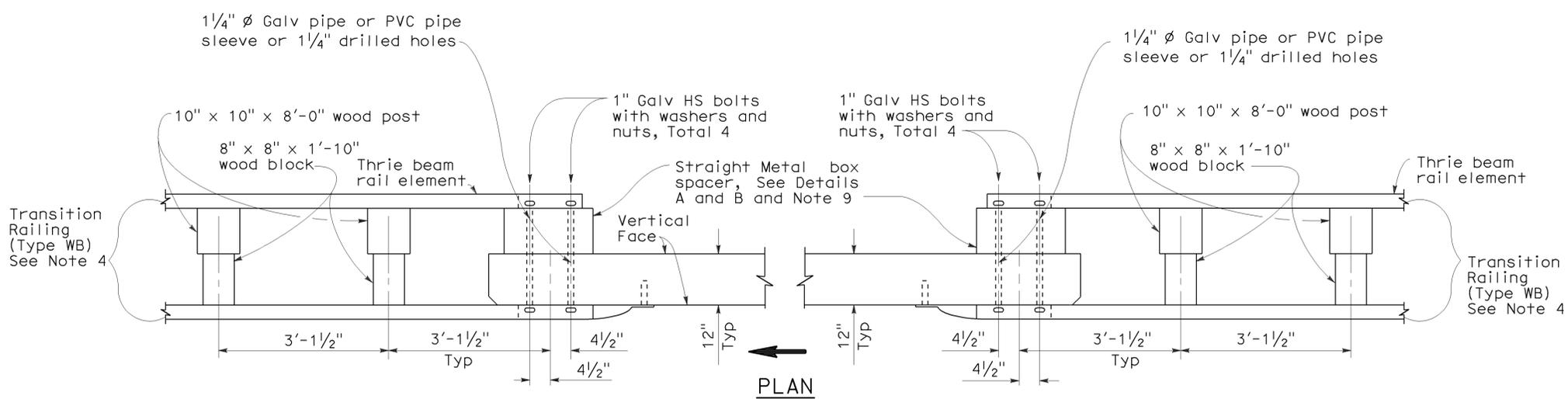
**Randell D. Hiatt**  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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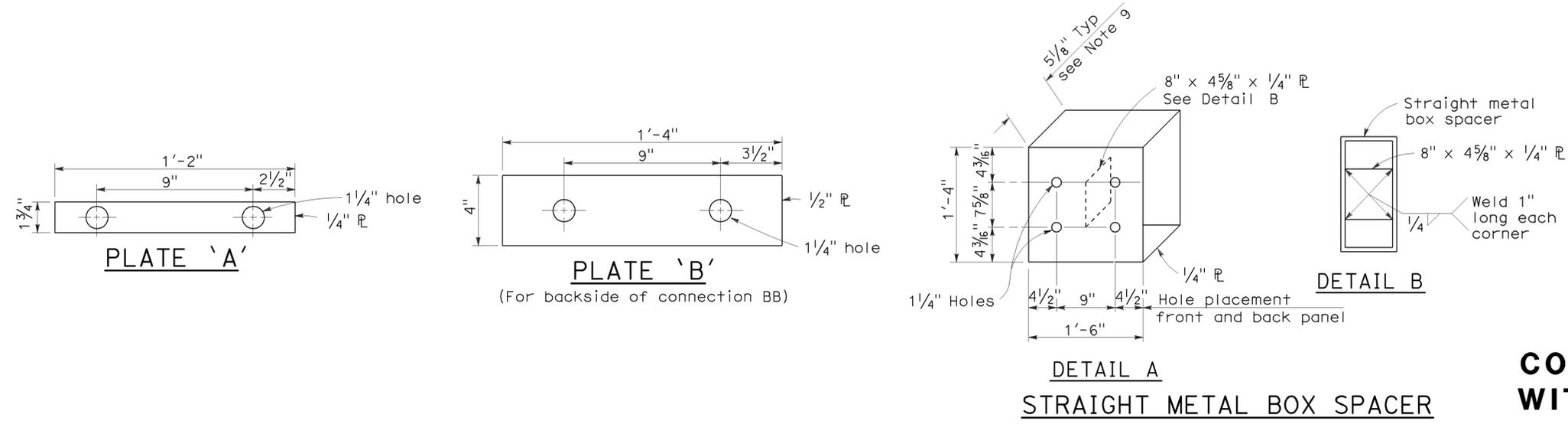
To accompany plans dated 8-15-11



**GUARD RAILING CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK**

**NOTES:**

1. See Revised Standard Plan RSP 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 gage 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 Revised Standard Plan RSP A77F1, Layout Types 12C and 12D on Standard Plan A77F2, and Layout Type 12E on Revised Standard Plan RSP 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  
RSP A77J2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77J2  
DATED MAY 1, 2006 - PAGE 73 OF THE STANDARD PLANS BOOK DATED MAY 2006.

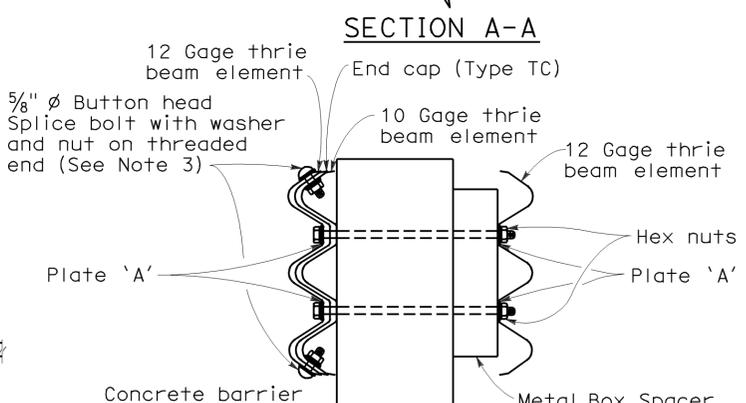
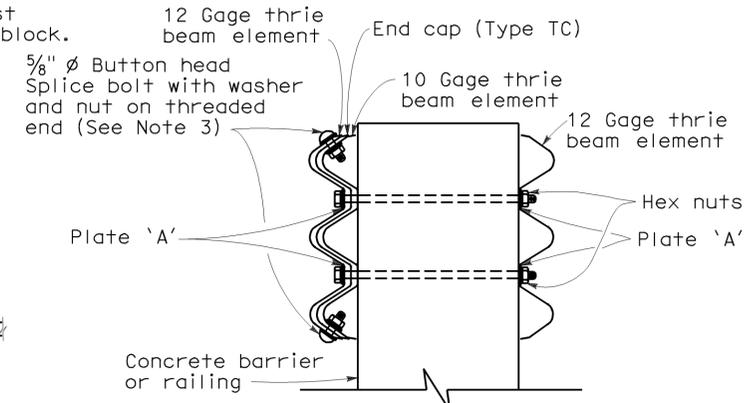
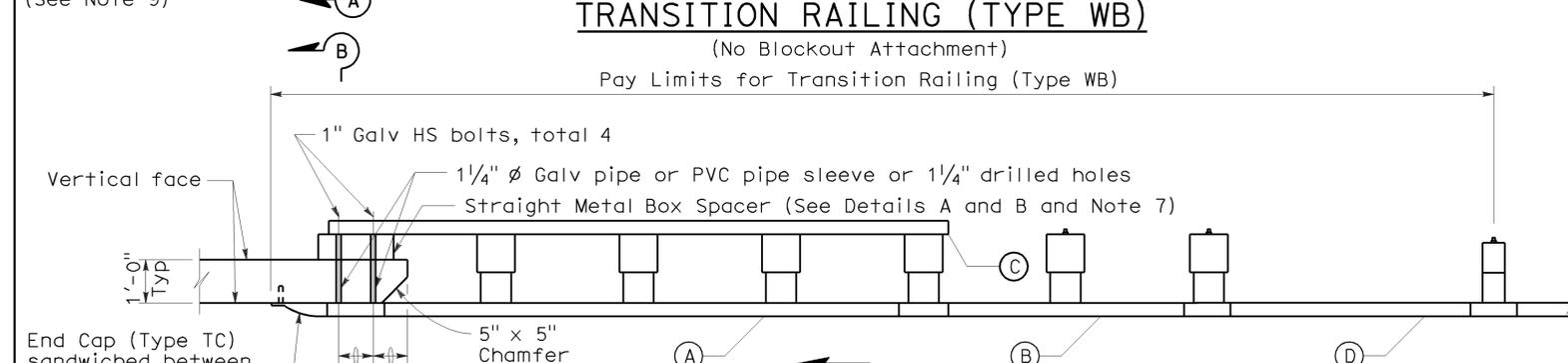
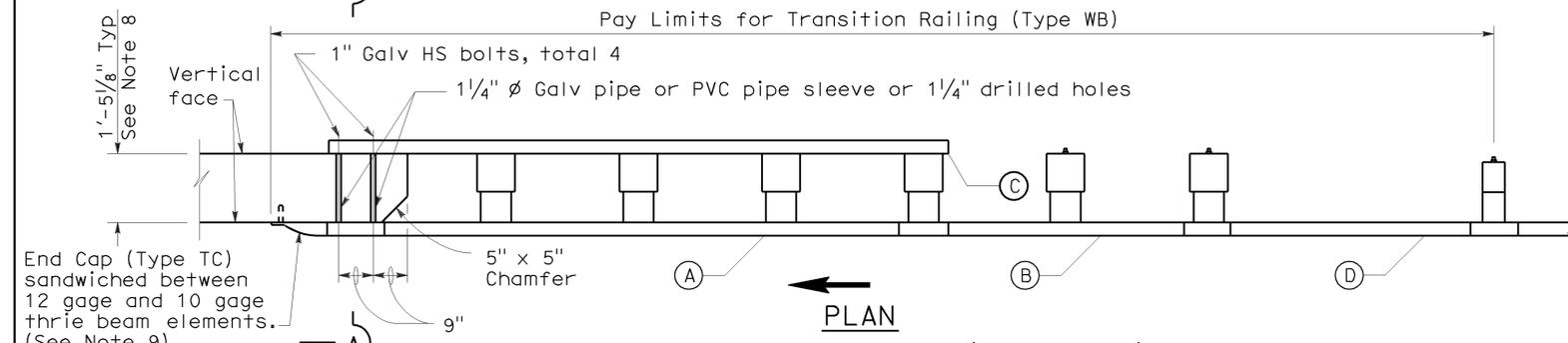
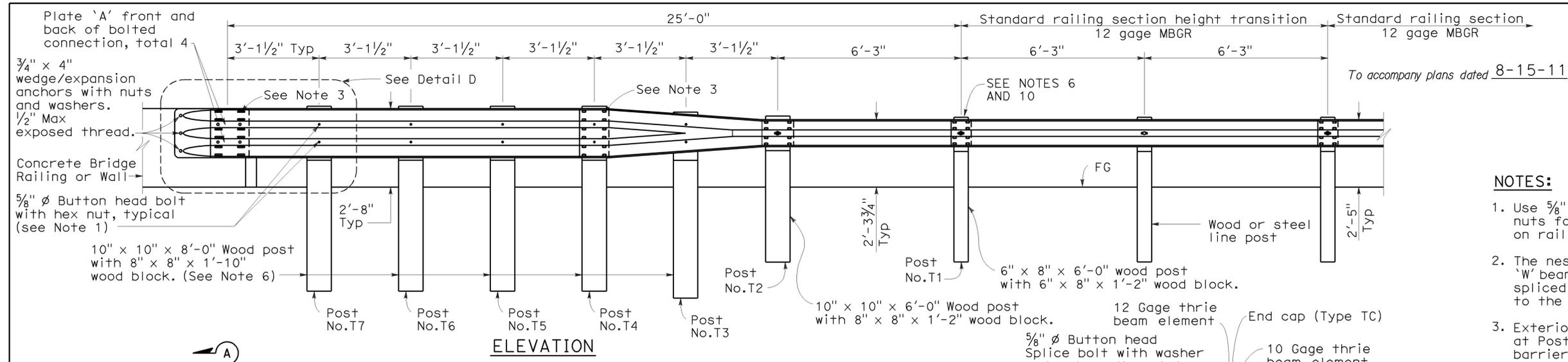
2006 REVISED STANDARD PLAN RSP A77J2

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 44        | 60           |

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

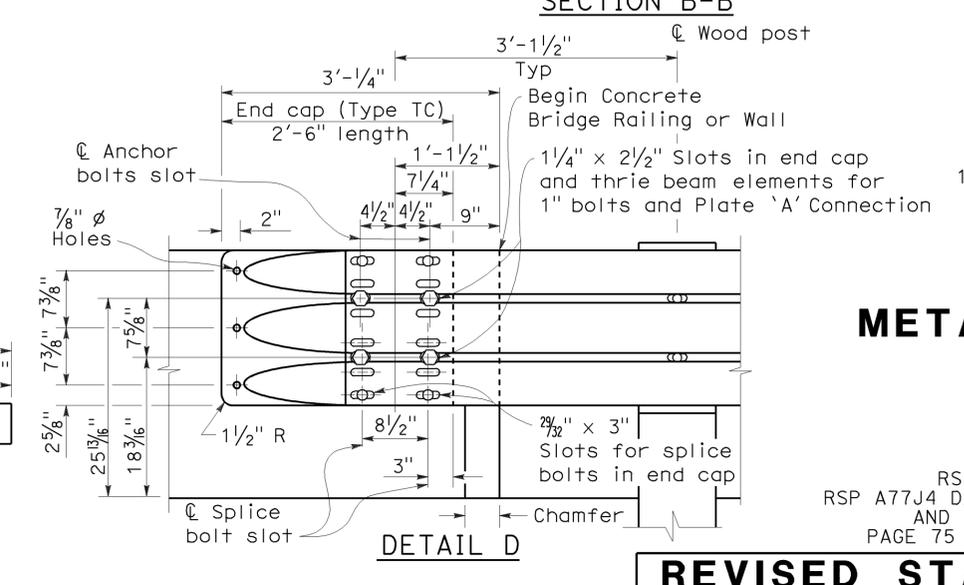
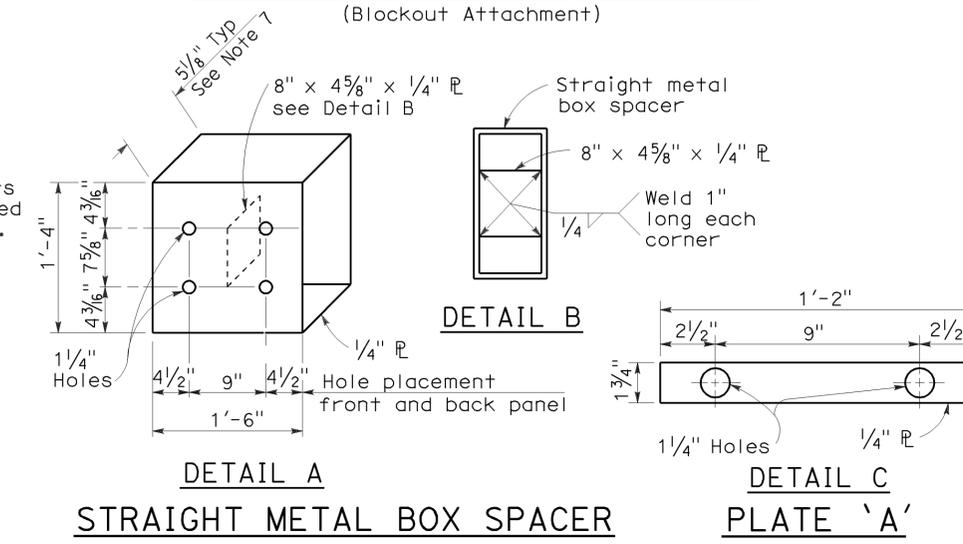
May 20, 2011  
 PLANS APPROVAL DATE

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- NOTES:**
- Use 5/8"  $\phi$  Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
  - 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.
  - Exterior splice bolt holes for rail element splices at Post No. T4 and the connection to the concrete barrier or railing shall be the standard 7/32" x 1/8" slot size. Interior splice bolt holes at these locations may be increased up to 1/4"  $\phi$ . Only the top 2 and the bottom 2 splice bolts with washers and nuts are required for rail splices at Post No. T4 and the connection to the concrete barrier or railing.
  - Direction of adjacent traffic indicated by  $\rightarrow$ .
  - The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
  - Typically, the railing connected to Transition Railing (Type WB) will be either standard railing section of metal beam guard railing with height transition ratio of 120:1 or an approved Caltrans end treatment attached to Post No. T1.
  - The depth of the metal box spacer varies from the 5/8" to 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 17 1/8". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1/2", metal plates similar to Plate 'A' are to be used as spacers.
  - Where the width of the concrete railing or wall is greater than 17 1/8", wood blocks are to be used to fill the space created between the backside of Posts No. 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.
  - End cap may be installed over 12 gage and 10 gage thrie beam elements where transition railing is installed on the departure end of bridge railing.
  - Conform standard railing section height to 2'-3 3/4" at Post No. T1 using height transition ratio of 120:1.

- LEGEND**
- (A) Nested thrie beam elements (one 12 gage element nested over one 10 gage element).
  - (B) One 10 gage "W" beam to thrie beam element.
  - (C) One 12 gage thrie beam element.
  - (D) One 10 gage "W" beam rail element (7'-3 1/2" length)
- 10 gage = 0.135" thick  
 12 gage = 0.108" thick

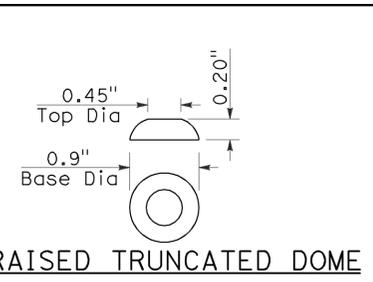
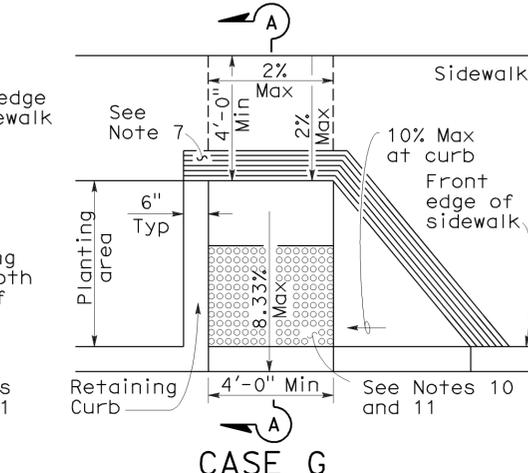
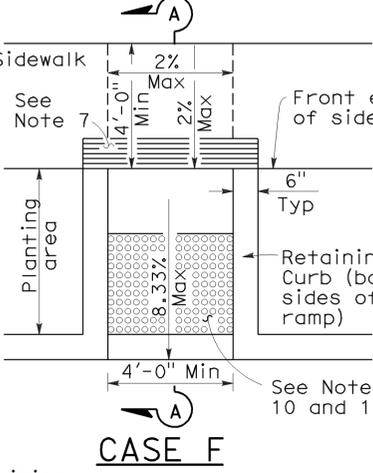
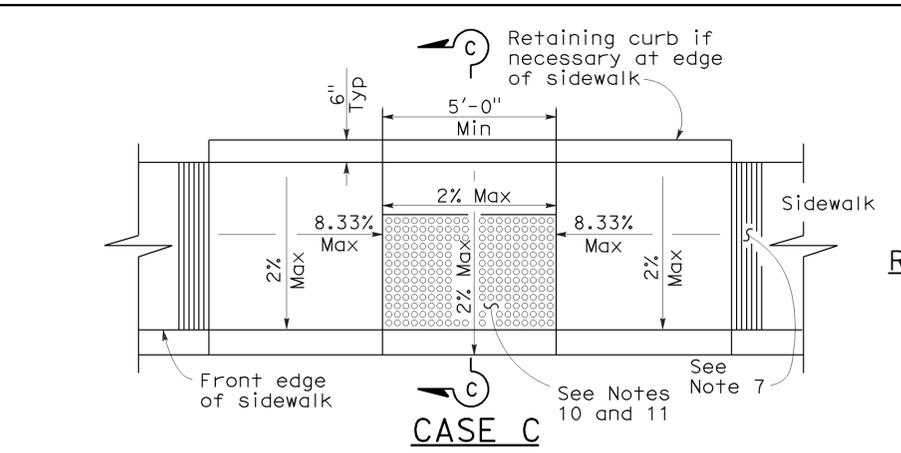
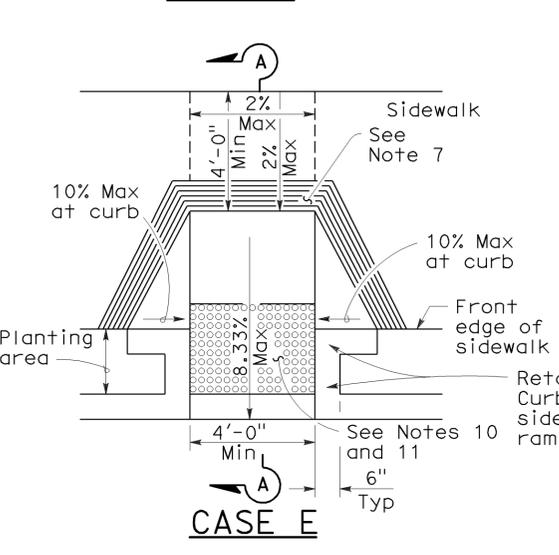
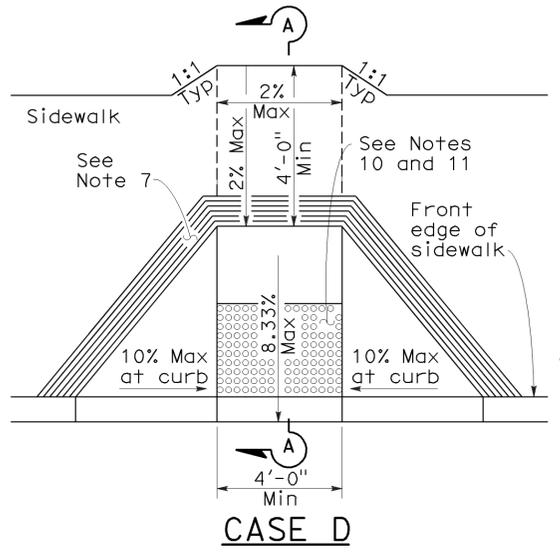
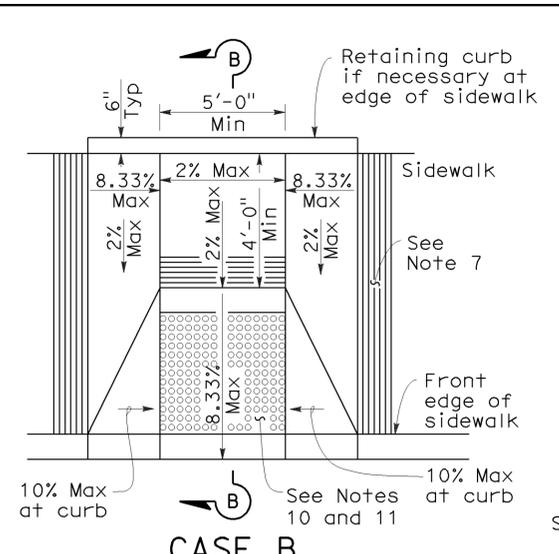
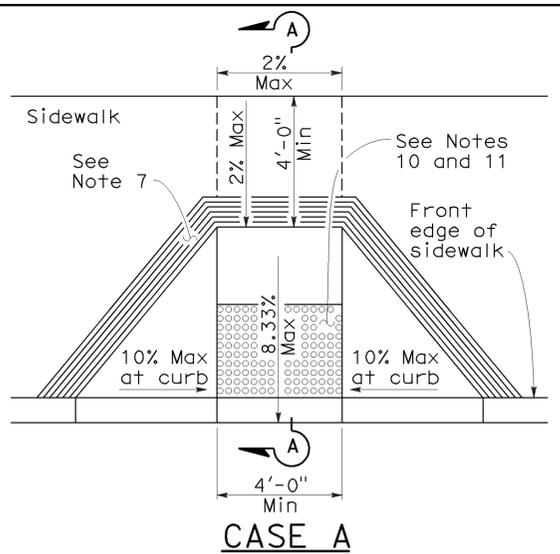


STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING  
 TRANSITION RAILING  
 (TYPE WB)**  
 NO SCALE

RSP A77J4 DATED MAY 20, 2011 SUPERSEDES  
 RSP A77J4 DATED JUNE 5, 2009, RSP A77J4 DATED JUNE 6, 2008  
 AND STANDARD PLAN A77J4 DATED MAY 1, 2006 -  
 PAGE 75 OF THE STANDARD PLANS BOOK DATED MAY 2006.

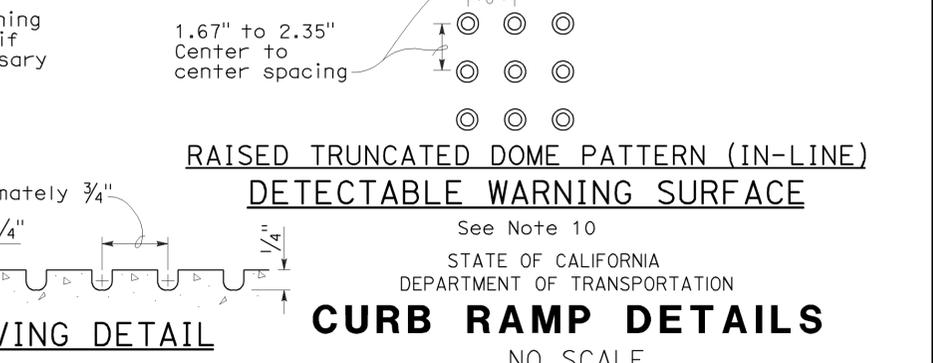
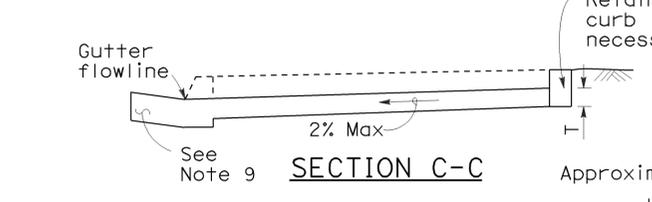
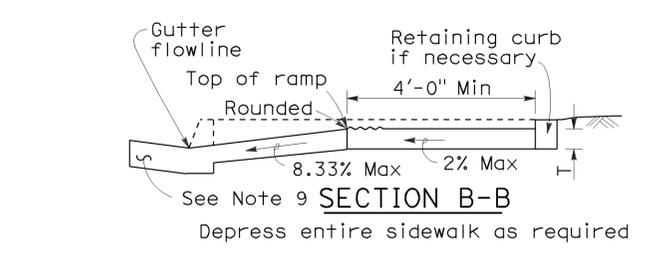
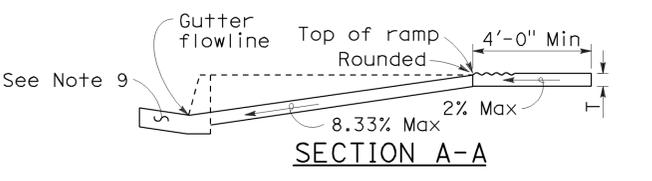
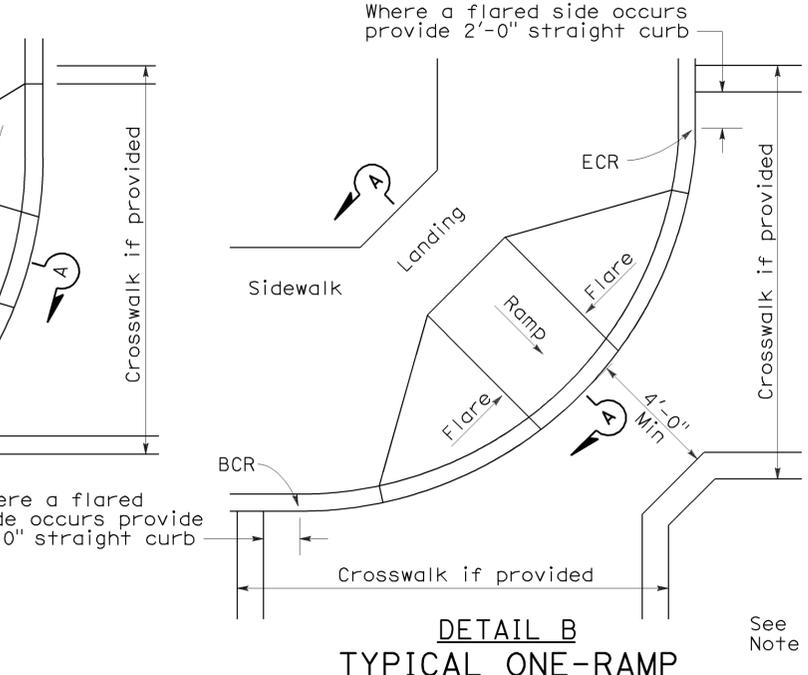
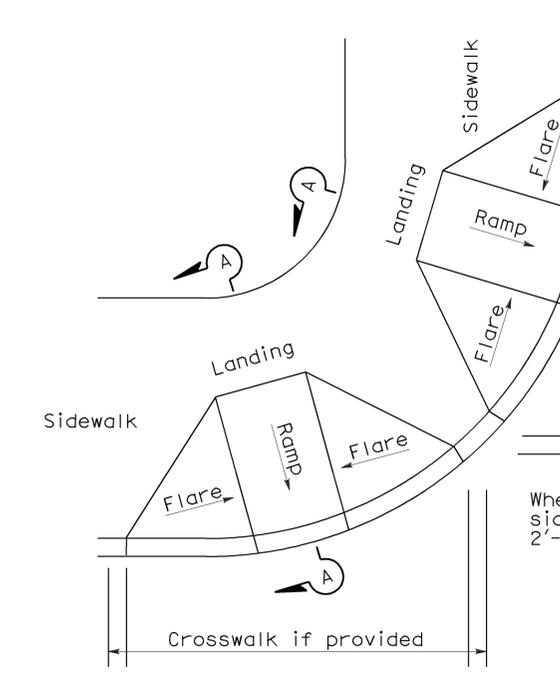
REVISED STANDARD PLAN RSP A77J4

2006 REVISED STANDARD PLAN RSP A77J4



**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'-0" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
- 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'-0".
- Side slope of ramp flares vary uniformly from a maximum of 10% 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 and free of abrupt changes.
- Maximum slopes of adjoining gutters, the road surface immediately adjacent to the curb ramp or accessible route shall not exceed 5 percent within 4'-0" of the top and bottom of the curb ramp.
- 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 Special Provisions.
- 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 1/2" 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.
- For retrofit conditions, removal and replacement of curb apron will be at the Contractor's option, unless otherwise shown on project plans.



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

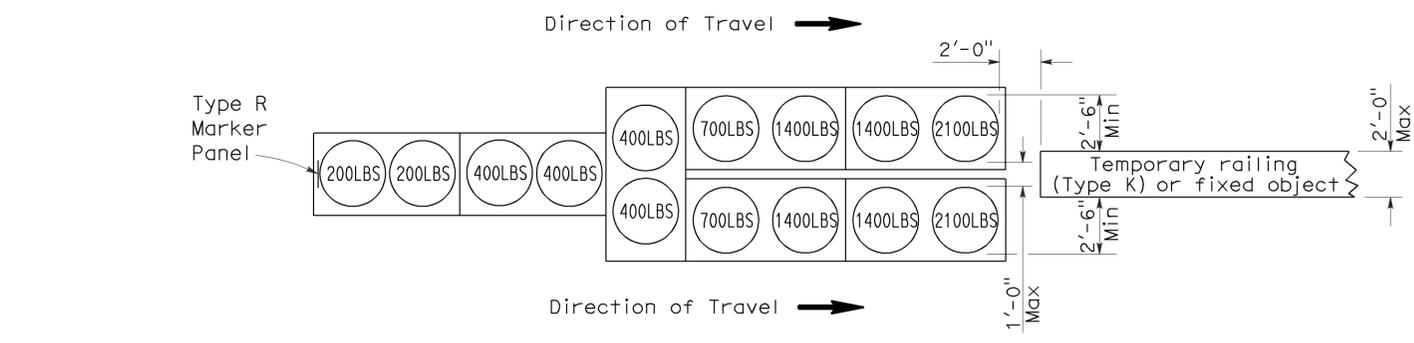
**TYPICAL ONE-RAMP CORNER INSTALLATION**  
See Notes 1 and 3

**RETROFIT DETAIL**  
Existing curb and sidewalk

**CURB RAMP DETAILS**  
NO SCALE

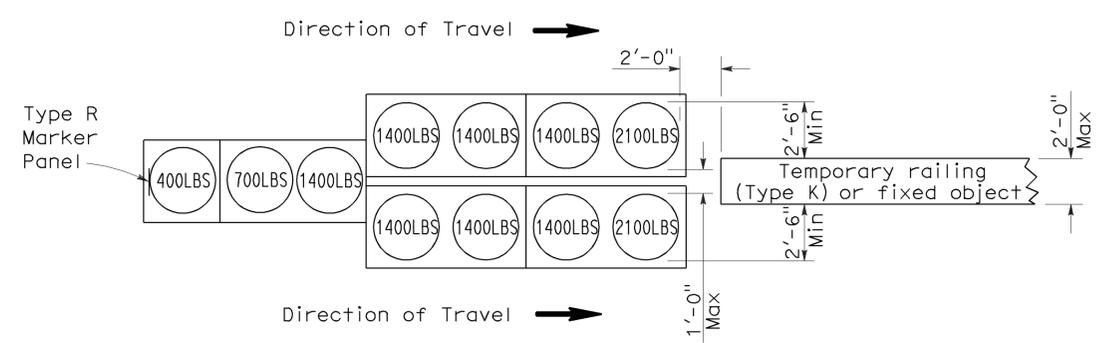
2006 REVISED STANDARD PLAN RSP A88A

To accompany plans dated 8-15-11



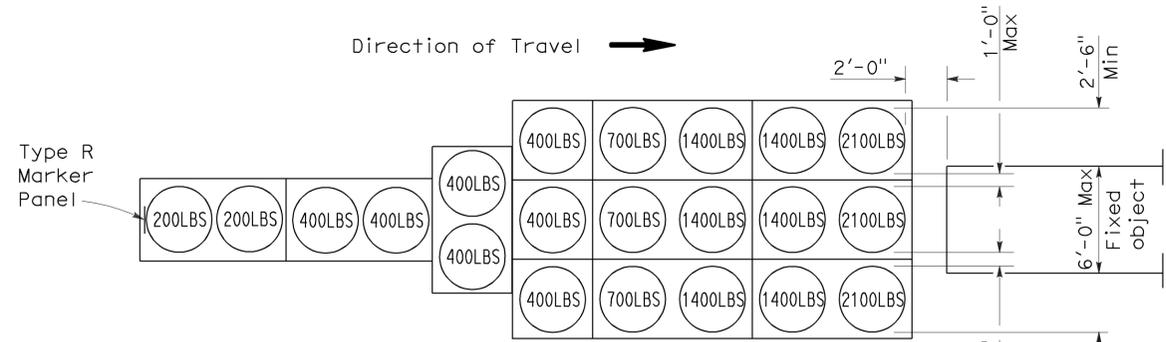
**ARRAY 'TU14'**

Approach speed 45 mph or more



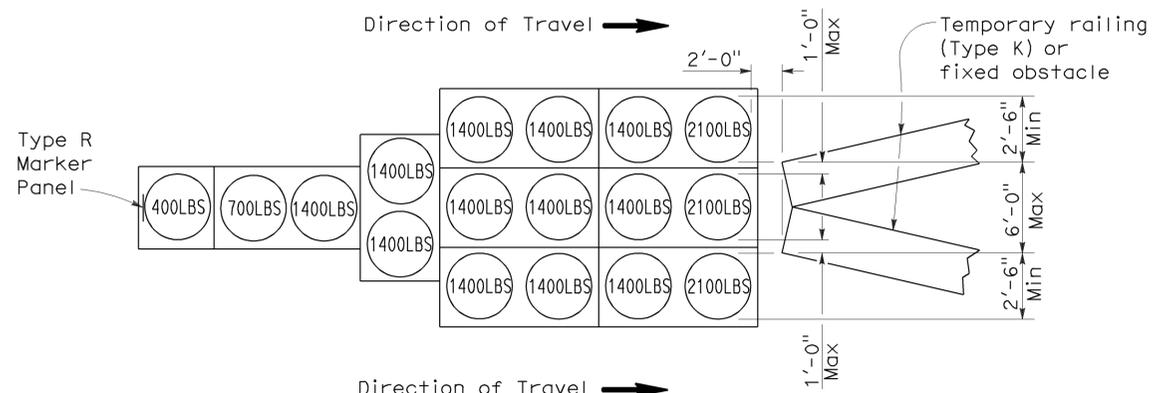
**ARRAY 'TU11'**

Approach speed less than 45 mph



**ARRAY 'TU21'**

Approach speed 45 mph or more

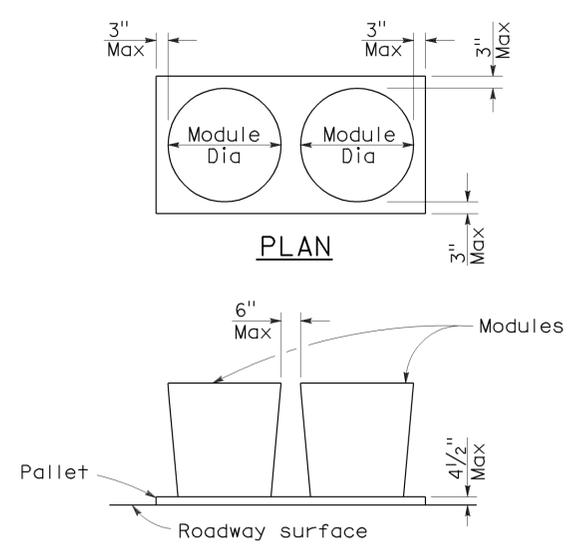


**ARRAY 'TU17'**

Approach speed less than 45 mph

**NOTES:**

1. (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
2. All sand weights are nominal.
3. Temporary crash cushion arrays shall not encroach on the traveled way.
4. Place the top of Type R marker panel 1" below the module lid.
5. Refer to Standard Plan A73B for marker details.
6. Approach speeds indicated conform to NCHRP 350 Report criteria.
7. Use of pallets is optional.



**CRASH CUSHION PALLET DETAIL**  
See Note 7

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(UNIDIRECTIONAL)**

NO SCALE

RSP T1A DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T1A  
DATED MAY 1, 2006 - PAGE 211 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T1A**

2006 REVISED STANDARD PLAN RSP T1A

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 47        | 60           |

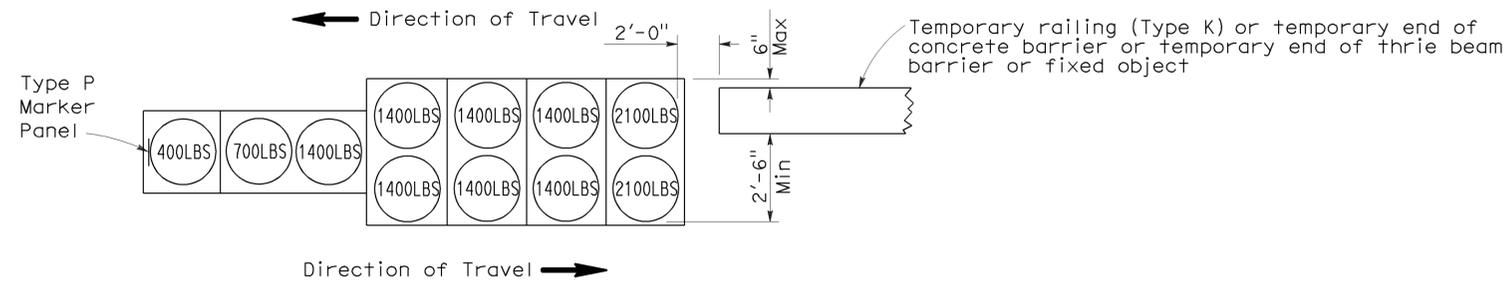
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

*Randell D. Hiatt*  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

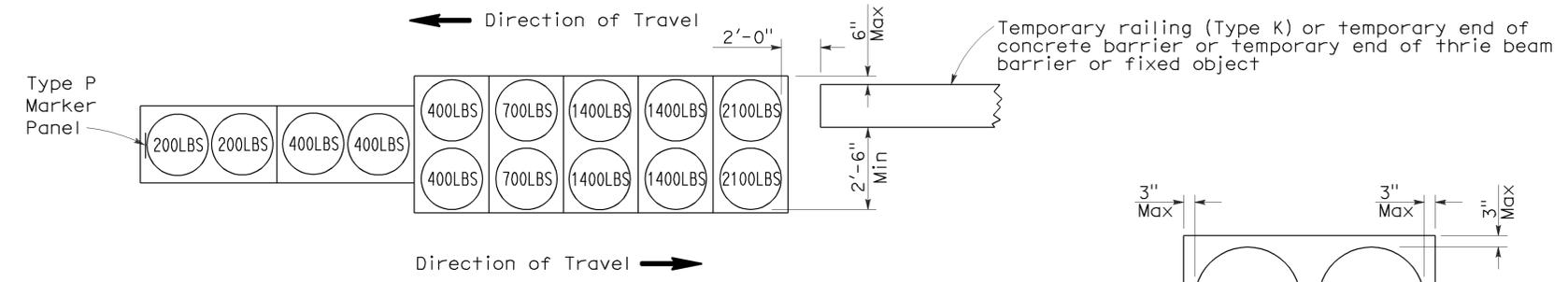
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To accompany plans dated 8-15-11



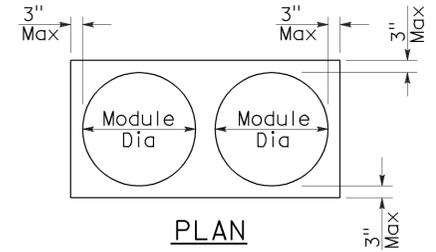
**ARRAY 'TB11'**

Approach speed less than 45 mph

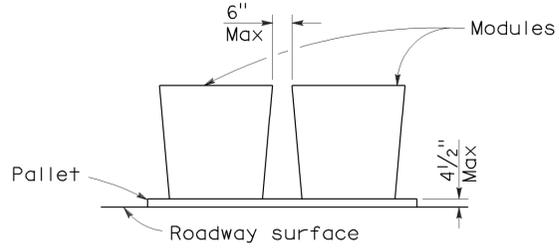


**ARRAY 'TB14'**

Approach speed 45 mph or more



PLAN



ELEVATION

**CRASH CUSHION PALLET DETAIL**

See Note 7

**NOTES:**

1. (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
2. All sand weights are nominal.
3. Temporary crash cushion arrays shall not encroach on the traveled way.
4. Place the Type P marker panel so that the bottom of the panel rests upon the pallet.
5. Refer to Standard Plan A73B for marker details.
6. Approach speeds indicated conform to NCHRP 350 Report criteria.
7. Use of pallets is optional.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(BIDIRECTIONAL)**

NO SCALE

RSP T1B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T1B  
DATED MAY 1, 2006 - PAGE 212 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T1B**

2006 REVISED STANDARD PLAN RSP T1B

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 48        | 60           |

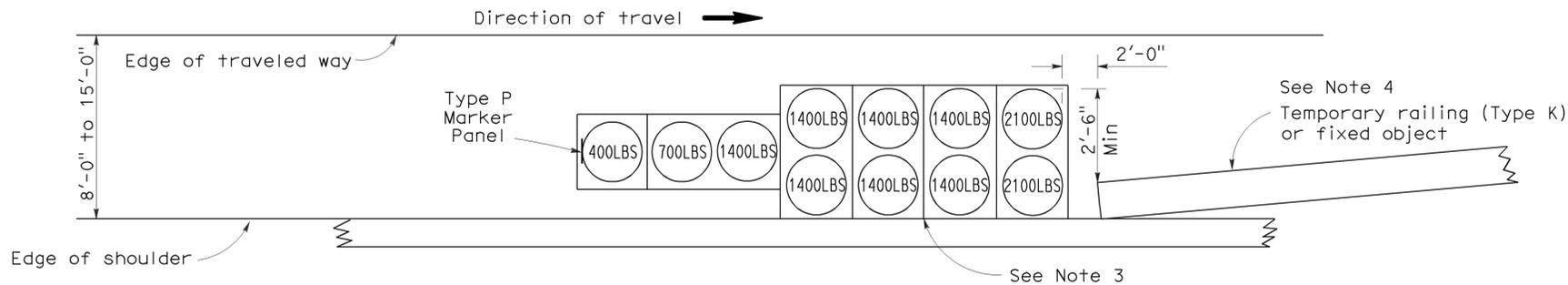
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

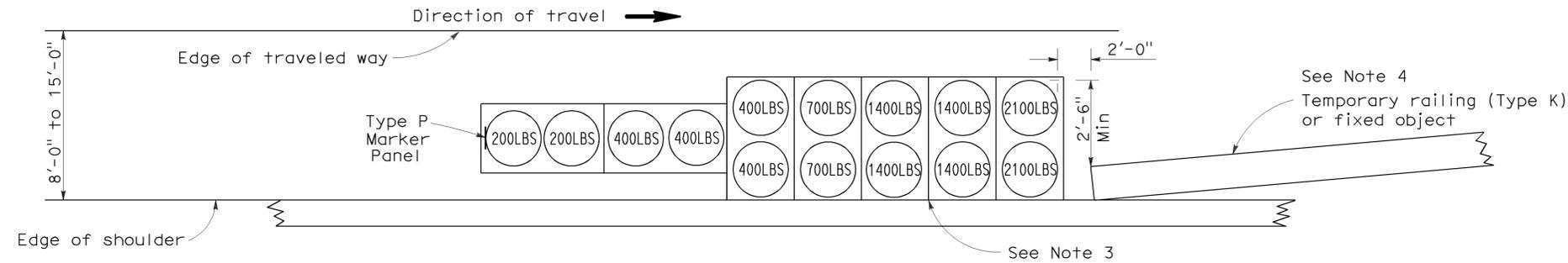
*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

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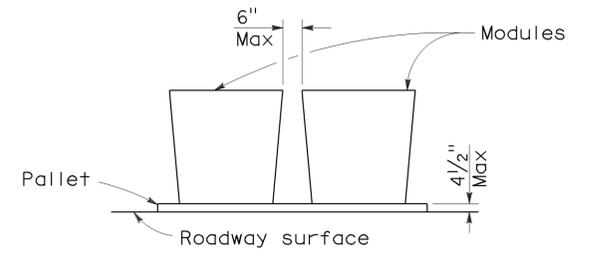
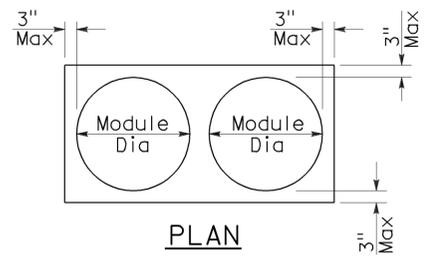
To accompany plans dated 8-15-11



**ARRAY 'TS11'**  
Approach speed less than 45 mph  
See Note 9



**ARRAY 'TS14'**  
Approach speed 45 mph or more  
See Note 9



**CRASH CUSHION PALLET DETAIL**  
See Note 11

**NOTES:**

- (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
- All sand weights are nominal.
- The temporary crash cushion arrays shown on this plan shall be used only in locations where there will be traffic on one side of the temporary crash cushion array.
- If the fixed object or approach end of the temporary railing is less than 15'-0" from the edge of traveled way, a temporary crash cushion is required in a construction or work zone.
- Temporary crash cushion arrays shall not encroach on the traveled way.
- Arrays for median shoulders shall conform to details shown on this plan for outside shoulders.
- Place the Type P marker panel so that the bottom of the panel rests upon the pallet and faces traffic.
- Refer to Standard Plan A73B for marker details.
- For shoulder widths less than 8'-0", appropriate approved crash cushion protection, other than sand filled modules, shall be provided at fixed objects and at approach ends of temporary railing. The specific type of crash cushion shall be as shown on the project plans or as specified in the Special Provisions, or if not shown on the project plans or specified in the Special Provisions, shall be as approved by the Engineer.
- Approach speeds indicated conform to NCHRP 350 Report criteria.
- Use of pallets is optional.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(SHOULDER INSTALLATIONS)**  
NO SCALE

RSP T2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T2  
DATED MAY 1, 2006 - PAGE 213 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T2**

2006 REVISED STANDARD PLAN RSP T2

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 49        | 60           |

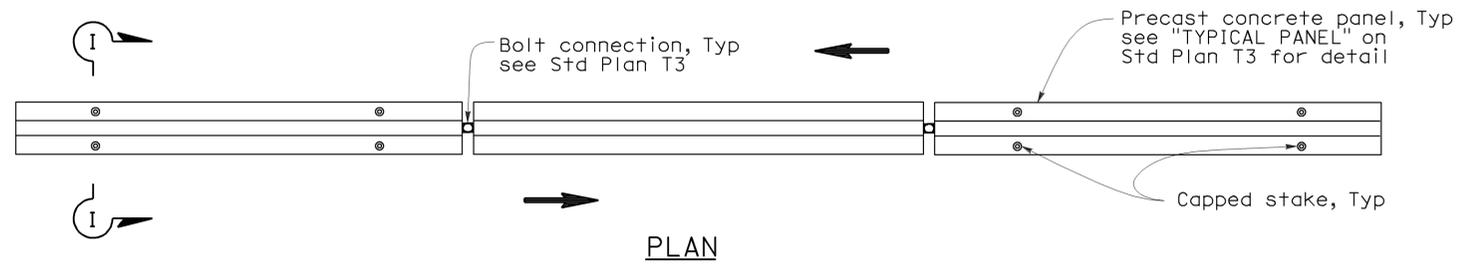
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

May 20, 2011  
PLANS APPROVAL DATE

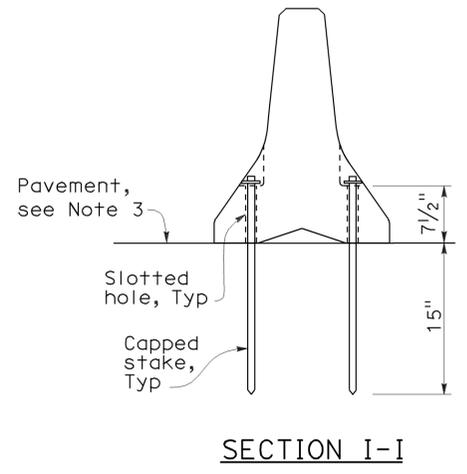
*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-11  
CIVIL  
STATE OF CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 8-15-11



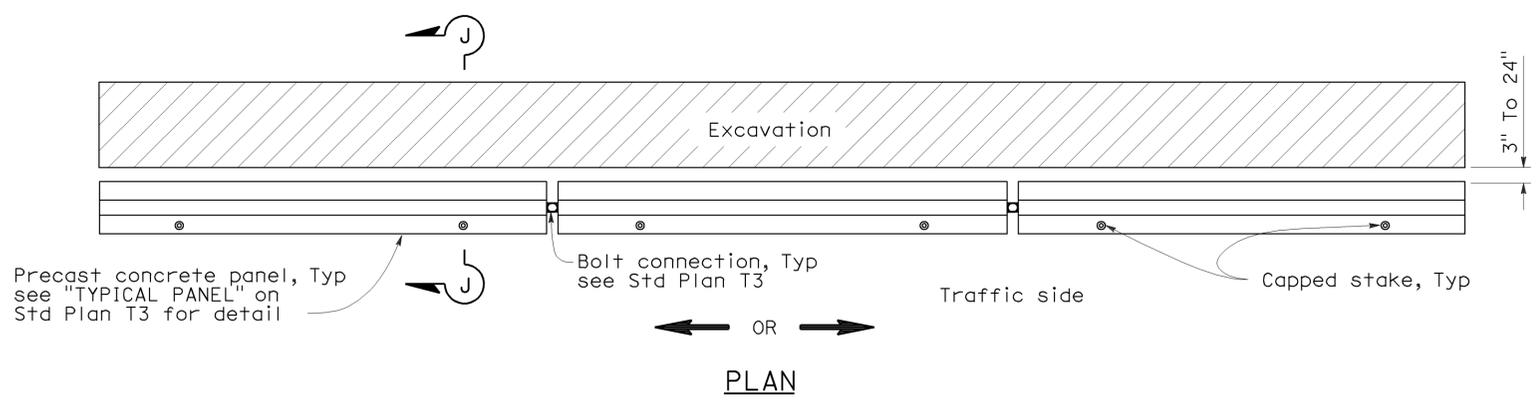
**RAILING STAKING CONFIGURATION FOR TWO-WAY TRAFFIC**  
See Note 1



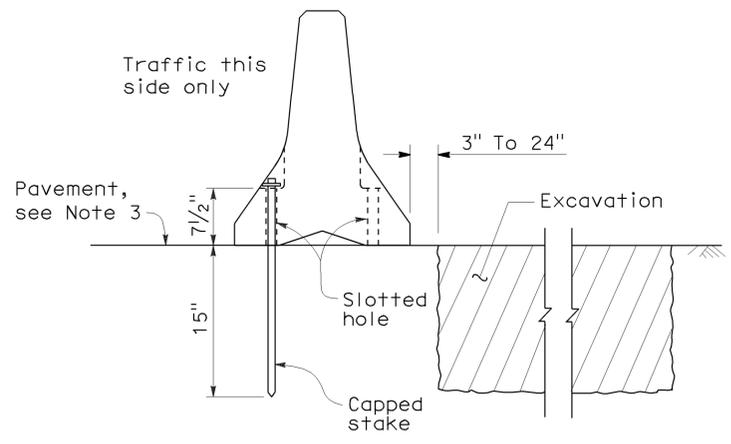
**SECTION I-I**

**NOTES:**

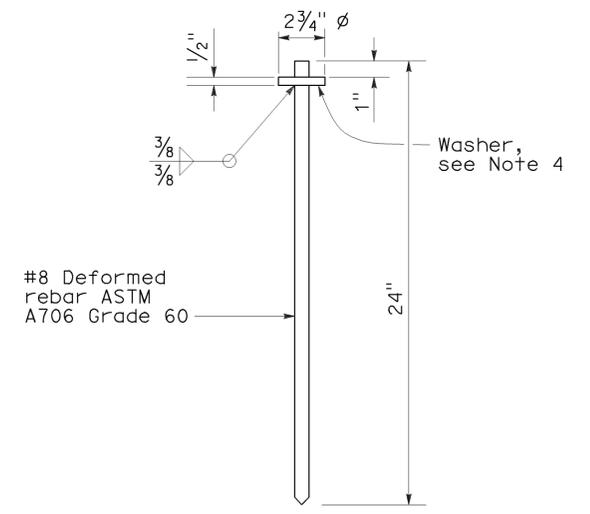
1. Where Type K Temporary Railing is placed as a temporary or long term barrier in two-way traffic on highways with less than 24" from the edge of traveled way, use four capped stakes per every other panel with end panels staked.
2. Where Type K Temporary Railing is placed 3" to 24" from the edge of an excavation on highways, use two capped stakes per panel along the traffic side.
3. Staked Type K Temporary Railing must be supported by at least 4" thick concrete, hot mix asphalt or existing asphalt concrete pavement.
4. The minimum yield strength for the washer must be 60,000 psi.
5. Direction of adjacent traffic indicated by  $\Rightarrow$ .



**RAILING STAKING CONFIGURATION ADJACENT TO AN EXCAVATION**  
See Note 2



**SECTION J-J**



**CAPPED STAKE DETAIL**

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

NSP T3A DATED MAY 20, 2011 SUPPLEMENTS  
THE STANDARD PLANS BOOK DATED MAY 2006.

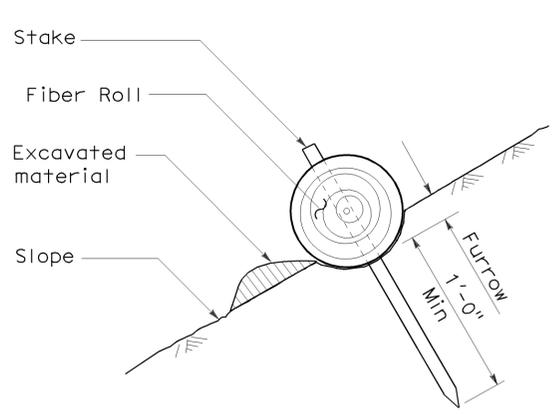
**NEW STANDARD PLAN NSP T3A**

2006 NEW STANDARD PLAN NSP T3A

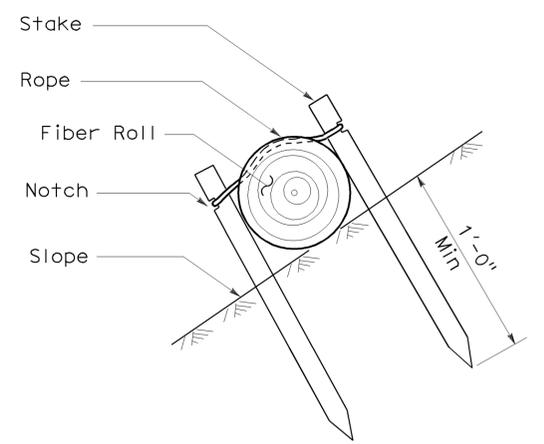


|  |        |       |                          |           |              |
|--|--------|-------|--------------------------|-----------|--------------|
| DIST   | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 51        | 60           |
| <i>Robert B. Schott</i><br>LICENSED LANDSCAPE ARCHITECT<br>April 3, 2009<br>PLANS APPROVAL DATE<br><small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.</small> |        |       |                          |           |              |
|  |        |       |                          |           |              |

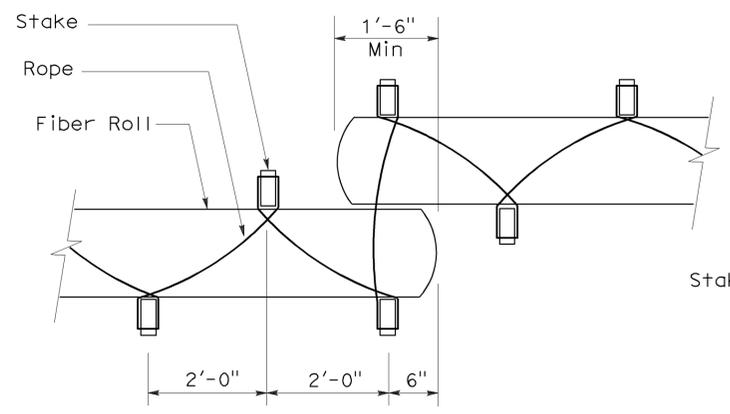
To accompany plans dated 8-15-11



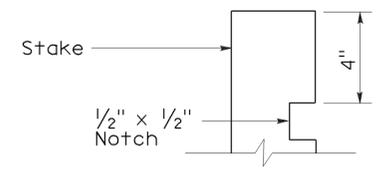
**SECTION**  
**TEMPORARY FIBER ROLL (TYPE 1)**



**SECTION**  
**TEMPORARY FIBER ROLL (TYPE 2)**

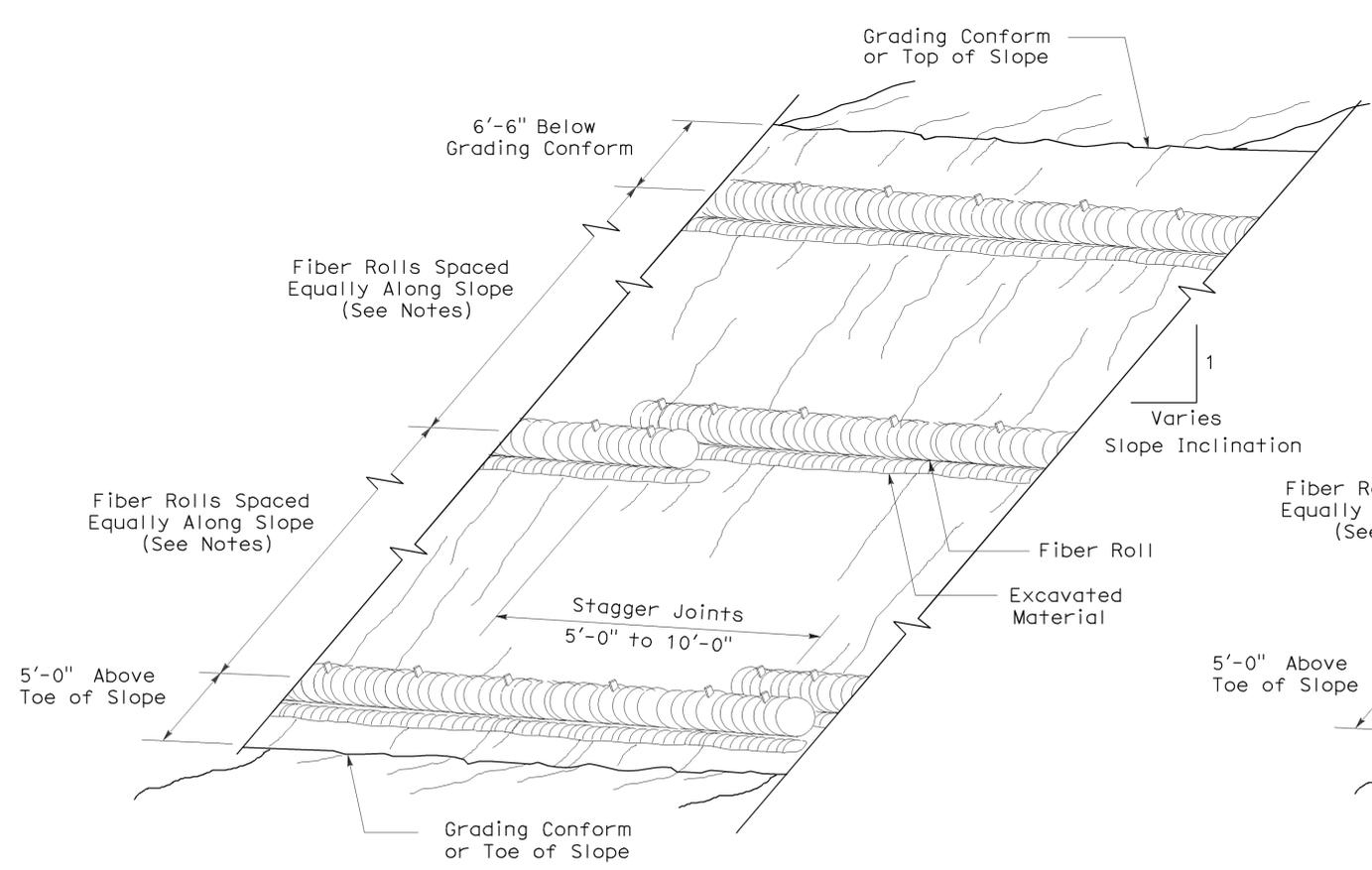


**PLAN**

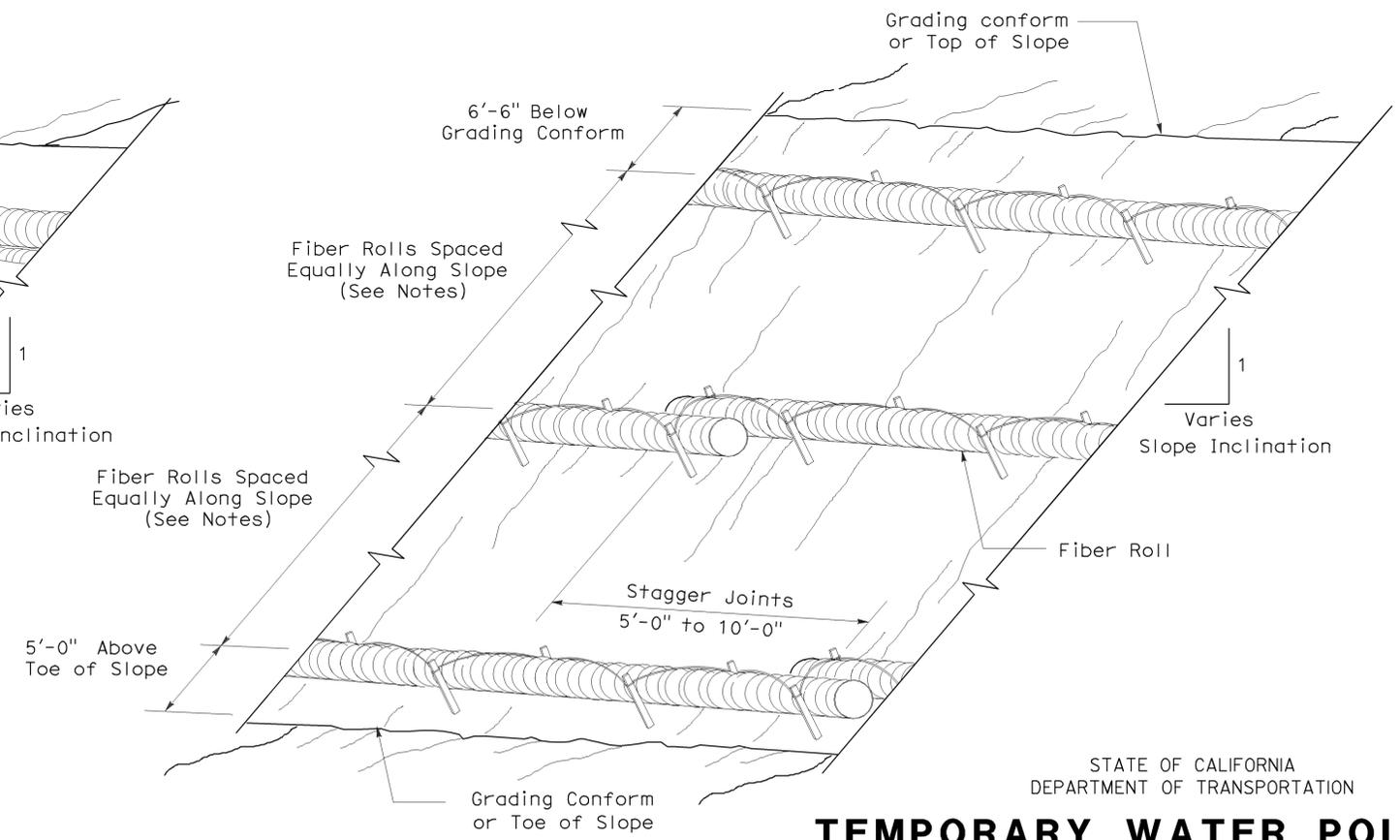


**ELEVATION**  
**STAKE NOTCH DETAIL**

- NOTES:**
1. Temporary fiber roll spacing varies depending upon slope inclination.
  2. Installations shown in the perspectives are for slope inclination of 10:1 and steeper.



**PERSPECTIVE**  
**TEMPORARY FIBER ROLL (TYPE 1)**



**PERSPECTIVE**  
**TEMPORARY FIBER ROLL (TYPE 2)**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY FIBER ROLL)**  
NO SCALE

RSP T56 DATED APRIL 3, 2009 SUPERSEDES STANDARD PLAN T56 DATED MAY 1, 2006 - PAGE 232 OF THE STANDARD PLANS BOOK DATED MAY 2006.

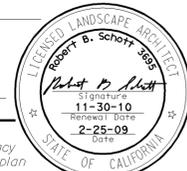
**REVISED STANDARD PLAN RSP T56**

232

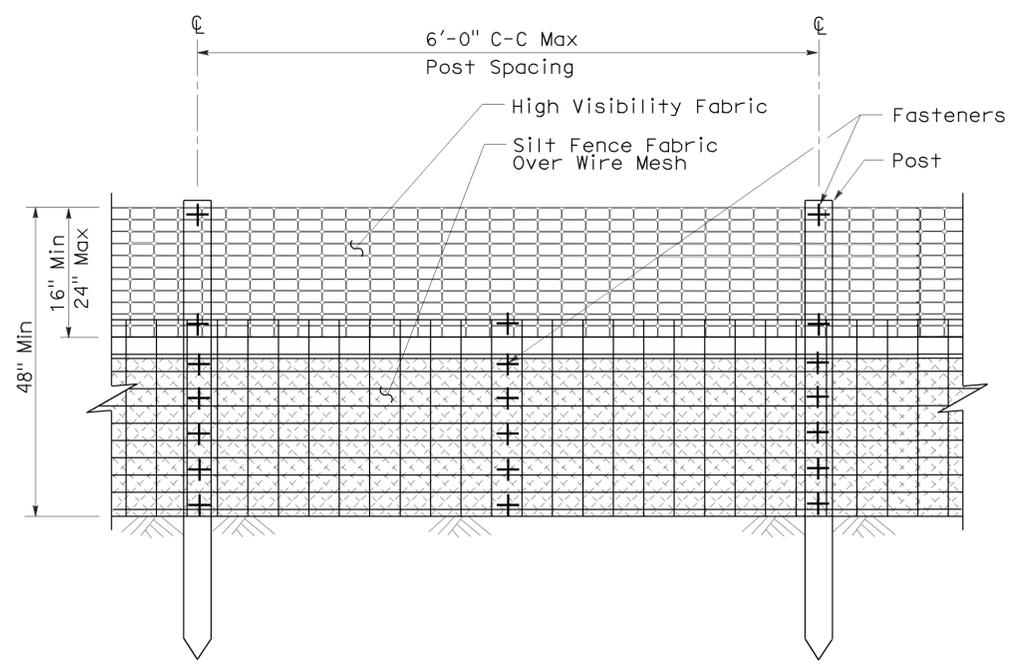
2006 REVISED STANDARD PLAN RSP T56

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 52        | 60           |

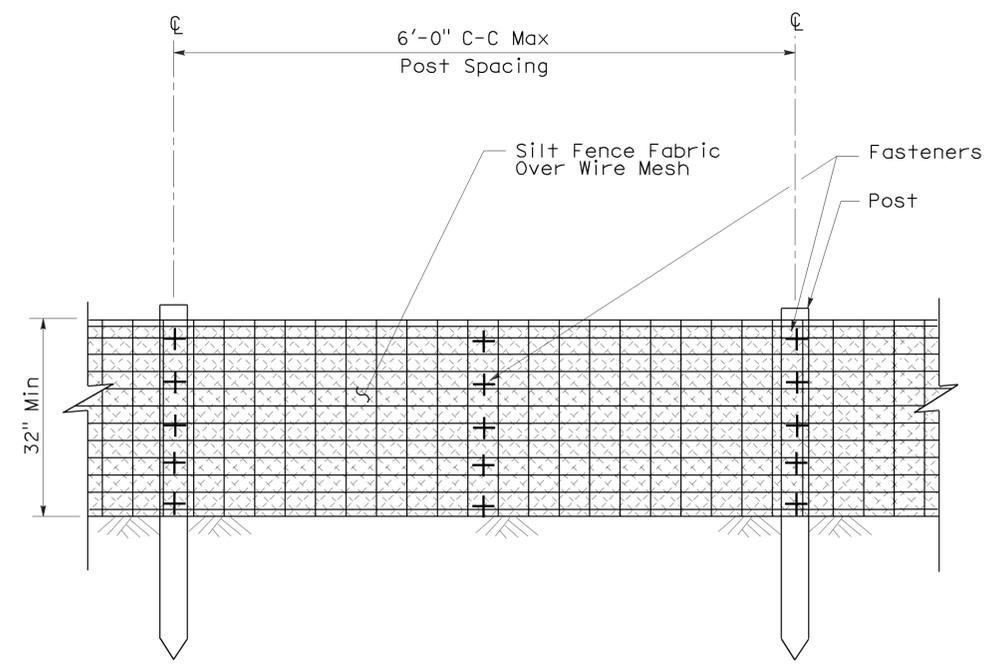
*Robert B. Schott*  
 LICENSED LANDSCAPE ARCHITECT  
 April 3, 2009  
 PLANS APPROVAL DATE  
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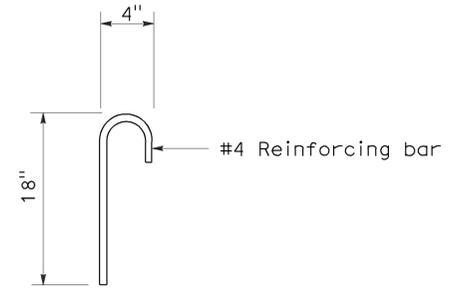
To accompany plans dated 8-15-11



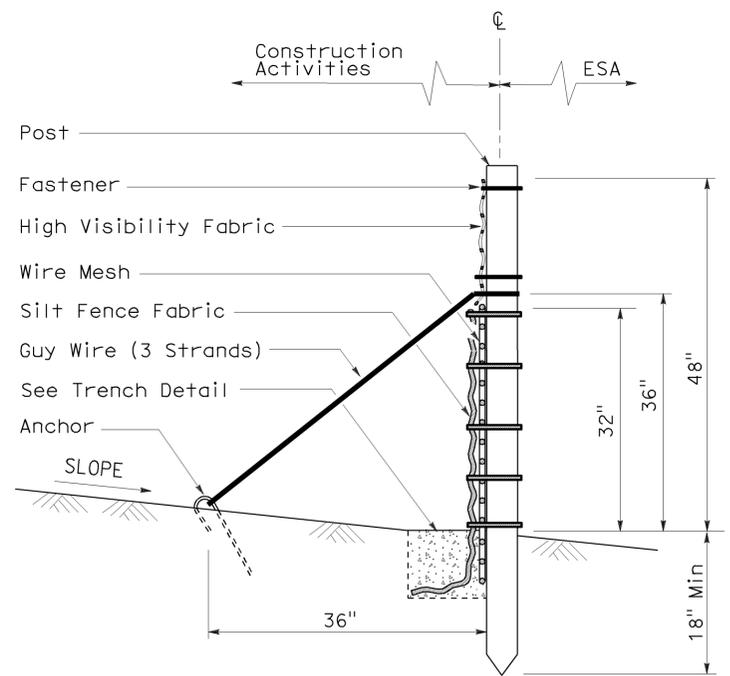
ELEVATION



ELEVATION

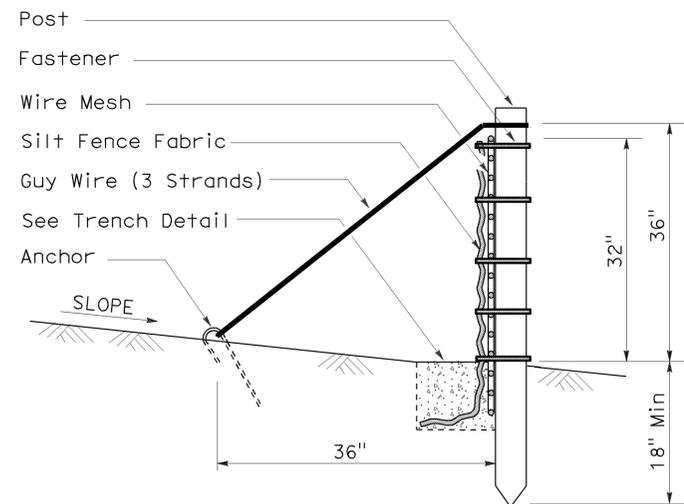


ANCHOR



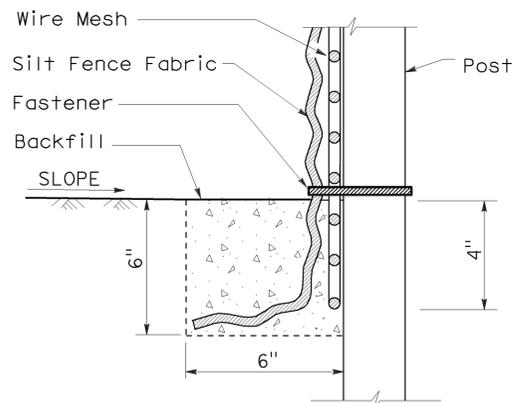
SECTION

TEMPORARY REINFORCED SILT FENCE (TYPE 1)



SECTION

TEMPORARY REINFORCED SILT FENCE (TYPE 2)



SECTION

TRENCH DETAIL

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**TEMPORARY WATER POLLUTION CONTROL DETAILS**  
**(TEMPORARY REINFORCED SILT FENCE)**  
 NO SCALE  
 NSP T60 DATED APRIL 3, 2009 SUPPLEMENTS  
 THE STANDARD PLANS BOOK DATED MAY 2006.

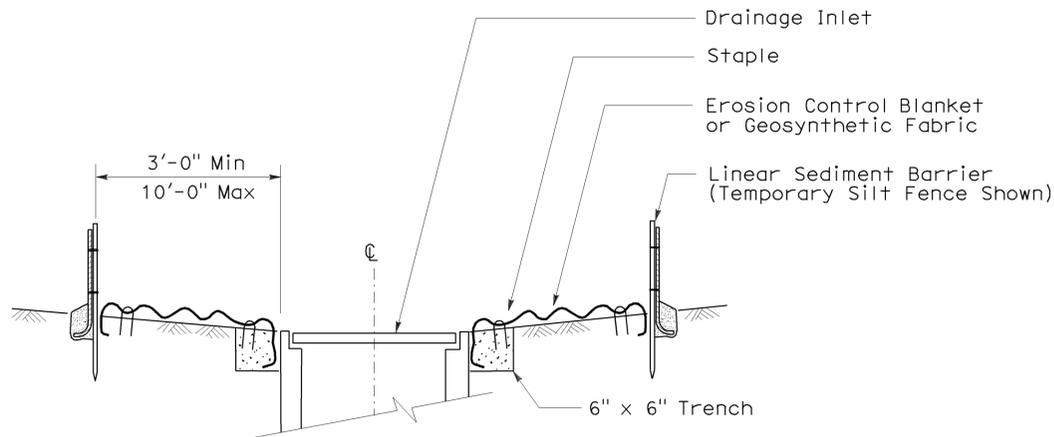
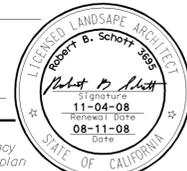
2006 NEW STANDARD PLAN NSP T60

|      |        |       |                             |              |                 |
|------|--------|-------|-----------------------------|--------------|-----------------|
| DIST | COUNTY | ROUTE | POST MILES<br>TOTAL PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
| 03   | ED     | 50    | R4.1/R14.2                  | 53           | 60              |

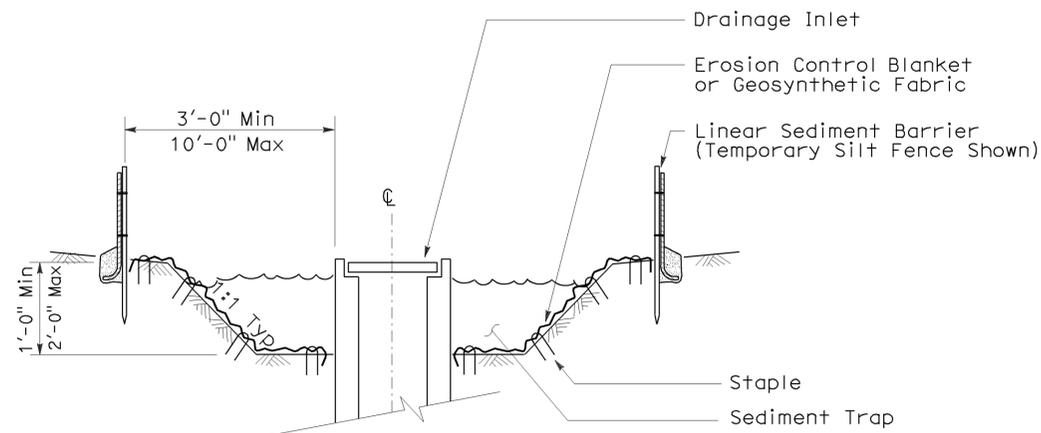
*Robert B. Schott*  
 LICENSED LANDSCAPE ARCHITECT  
 August 15, 2008  
 PLANS Approval DATE

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To accompany plans dated 8-15-11



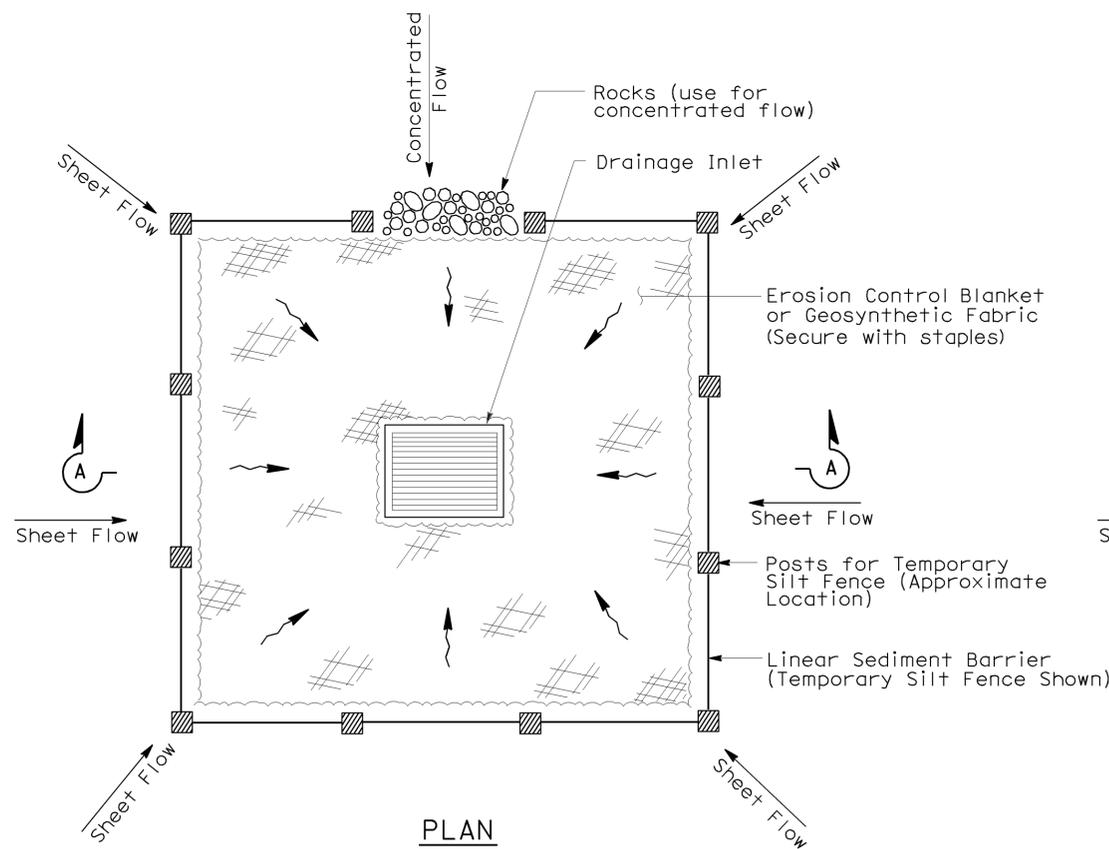
SECTION A-A



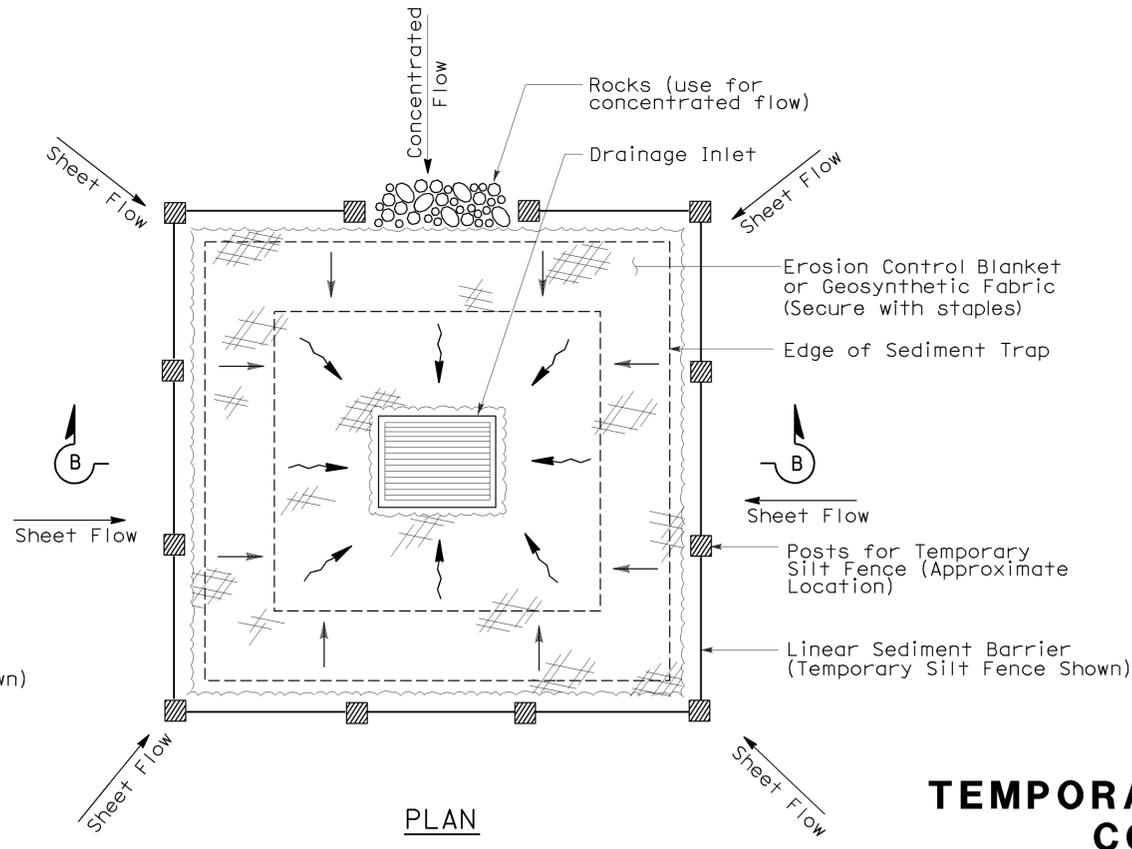
SECTION B-B

**NOTES:**

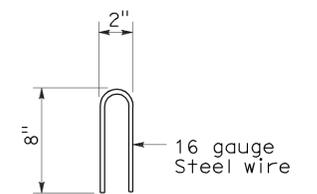
1. See Standard Plan T51 for Temporary Silt Fence.
2. Dimensions may vary to fit field conditions.



TEMPORARY DRAINAGE  
INLET PROTECTION (TYPE 1)



TEMPORARY DRAINAGE  
INLET PROTECTION (TYPE 2)  
(EXCAVATED SEDIMENT TRAP)

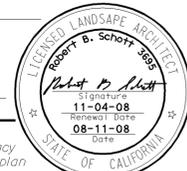


STAPLE DETAIL

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY WATER POLLUTION  
CONTROL DETAILS  
(TEMPORARY DRAINAGE  
INLET PROTECTION)**  
NO SCALE

Nsp t61 dated august 15, 2008 supplements  
the standard plans book dated may 2006.

2006 NEW STANDARD PLAN NSP T61

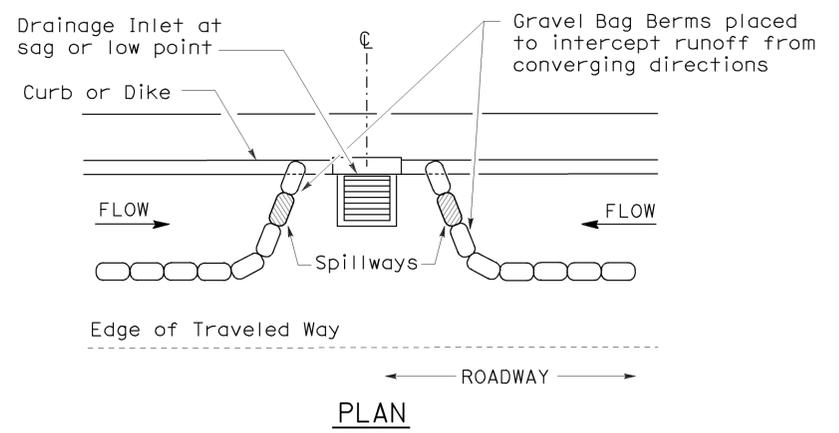


To accompany plans dated 8-15-11

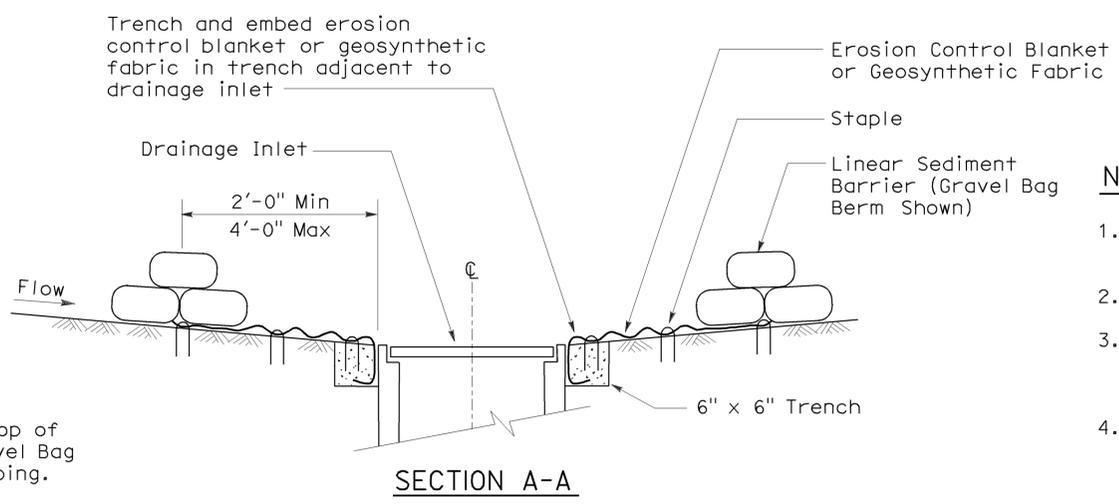
### GRAVEL BAG BERM (TYPE 3A) SPACING TABLE

|                            |          |          |          |         |     |
|----------------------------|----------|----------|----------|---------|-----|
| SLOPE OF ROADWAY (PERCENT) | 1 to 3.9 | 4 to 5.9 | 6 to 7.9 | 8 to 10 | 10+ |
| INTERVAL BETWEEN BERM      | 100'     | 75'      | 50'      | 25'     | 12' |

For slope of less than 1%, install barriers only if erosion/sediment is prevalent



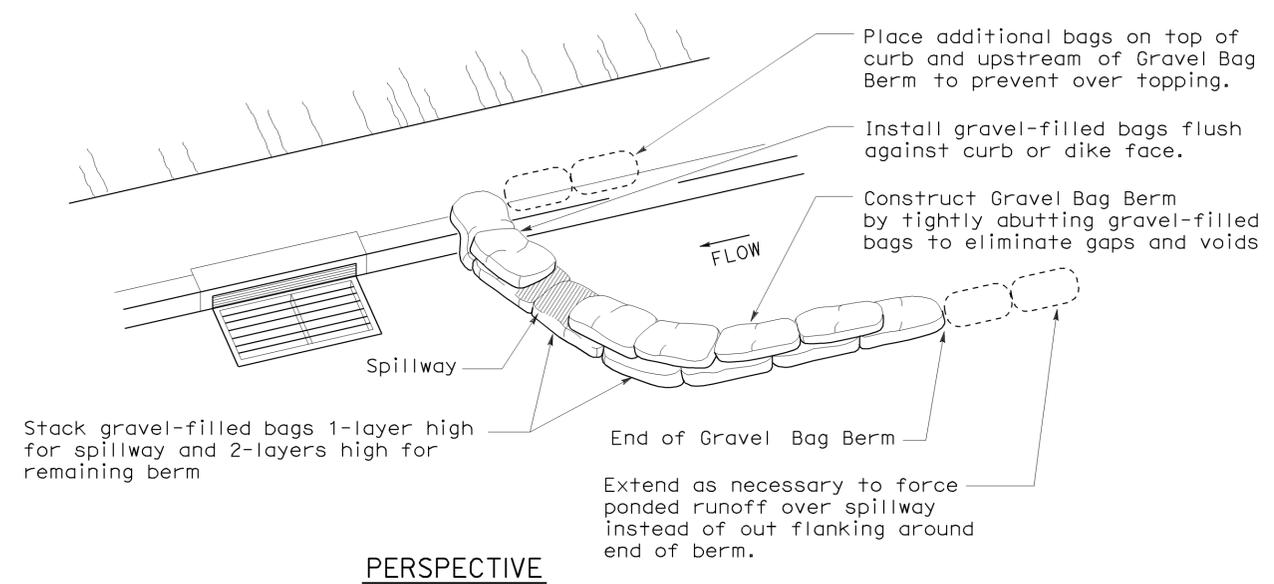
**CONFIGURATION FOR SAG POINT INLET (GRAVEL BAG BERM)**



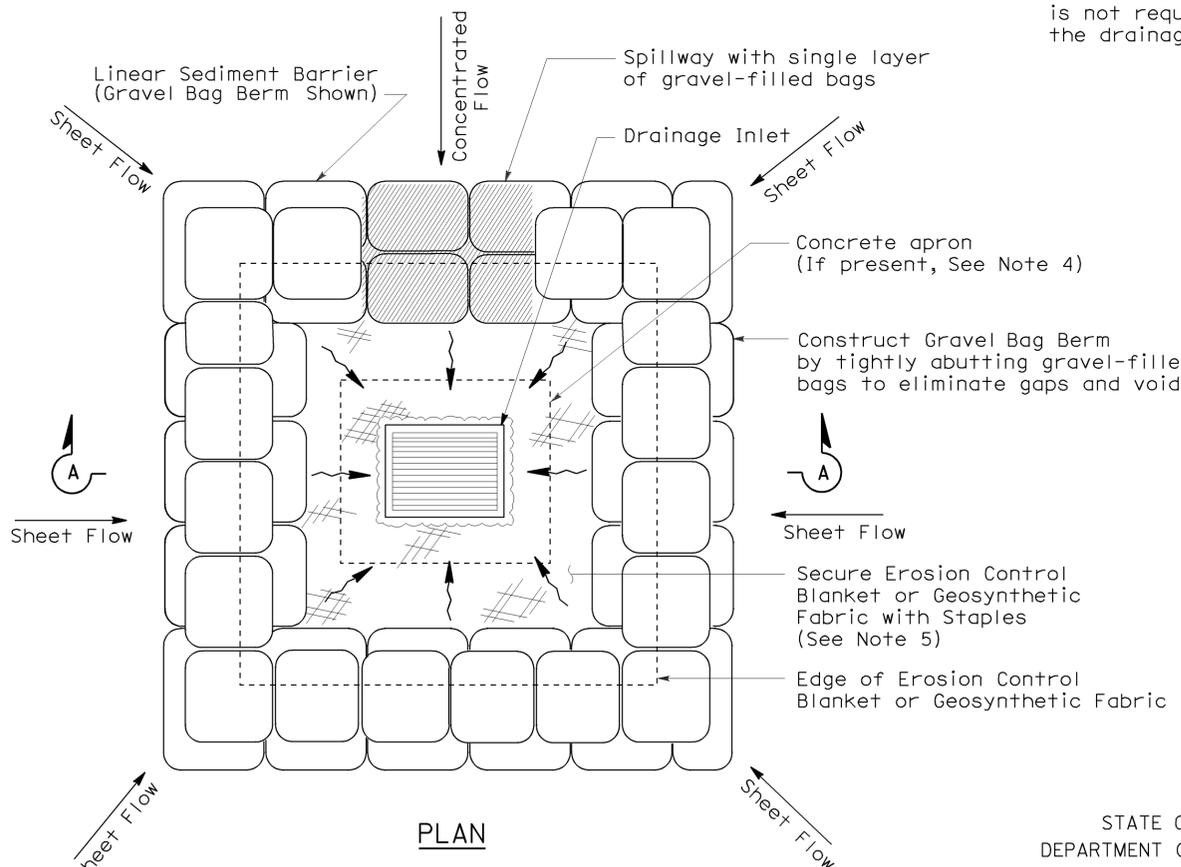
**SECTION A-A**

**NOTES:**

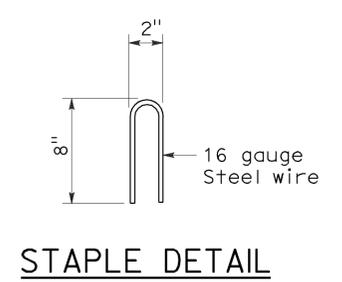
1. Place safety cones adjacent to drainage inlet protection.
2. Dimensions may vary to fit field conditions.
3. Install a minimum of 3 gravel bag berms upstream of each drainage inlet to be protected.
4. Position erosion control blanket or geosynthetic fabric at edge of concrete apron and secure in trench.
5. Erosion control blanket or geosynthetic fabric is not required if the area adjacent to the drainage inlet is vegetated or paved.



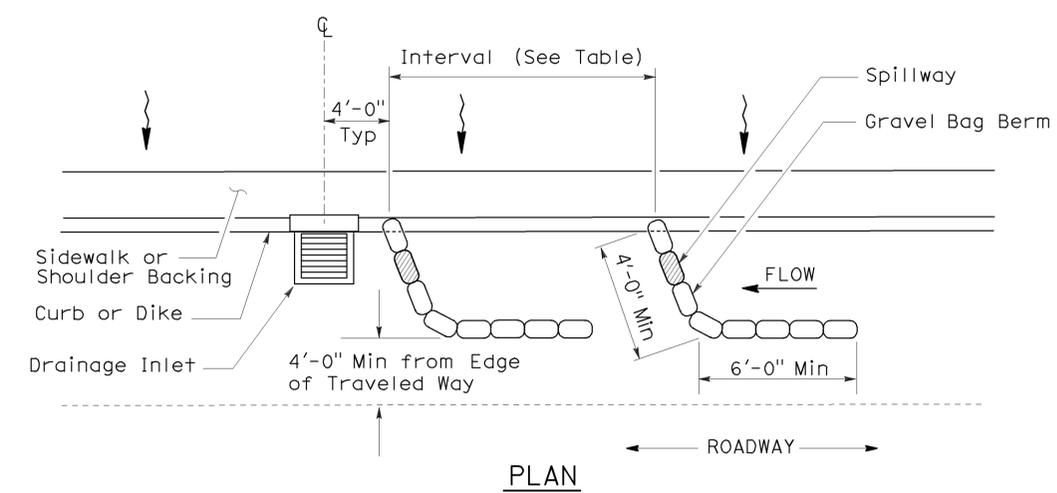
**PERSPECTIVE**



**TEMPORARY DRAINAGE INLET PROTECTION (TYPE 3B)**



**STAPLE DETAIL**



**TEMPORARY DRAINAGE INLET PROTECTION (TYPE 3A) (GRAVEL BAG BERM)**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY DRAINAGE INLET PROTECTION)**

NO SCALE  
NSP T62 DATED AUGUST 15, 2008 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

2006 NEW STANDARD PLAN NSP T62

FLEXIBLE SEDIMENT BARRIER SPACING TABLE

| SLOPE OF ROADWAY (PERCENT) | 0 to 0.9 | 1 to 1.9 | 2 to 2.9 | 3 to 4 | 5+  |
|----------------------------|----------|----------|----------|--------|-----|
| INTERVAL BETWEEN BARRIERS  | 50'      | 35'      | 30'      | 25'    | 20' |
| ANGLE FROM FACE OF CURB    | 70°      | 70°      | 70°      | 45°    | 45° |
| SUGGESTED BARRIER LENGTH   | 6'       | 6'       | 6'       | 6'     | 6'  |

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 55        | 60           |

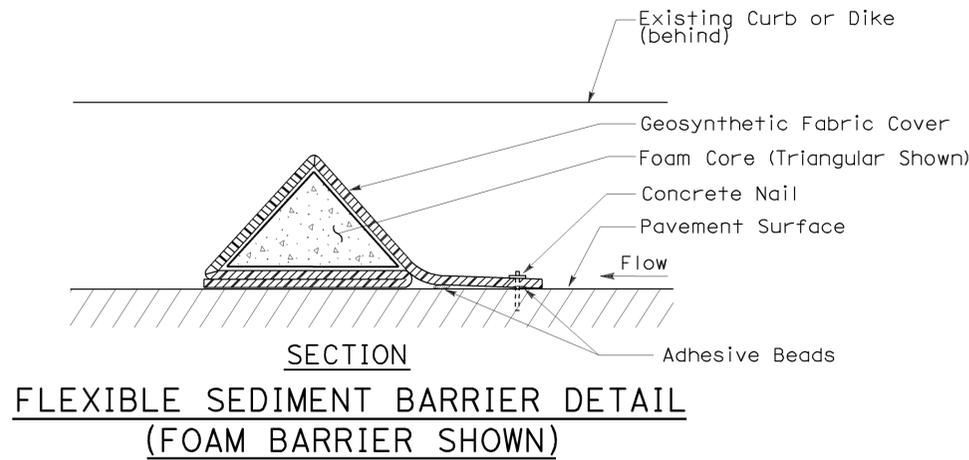
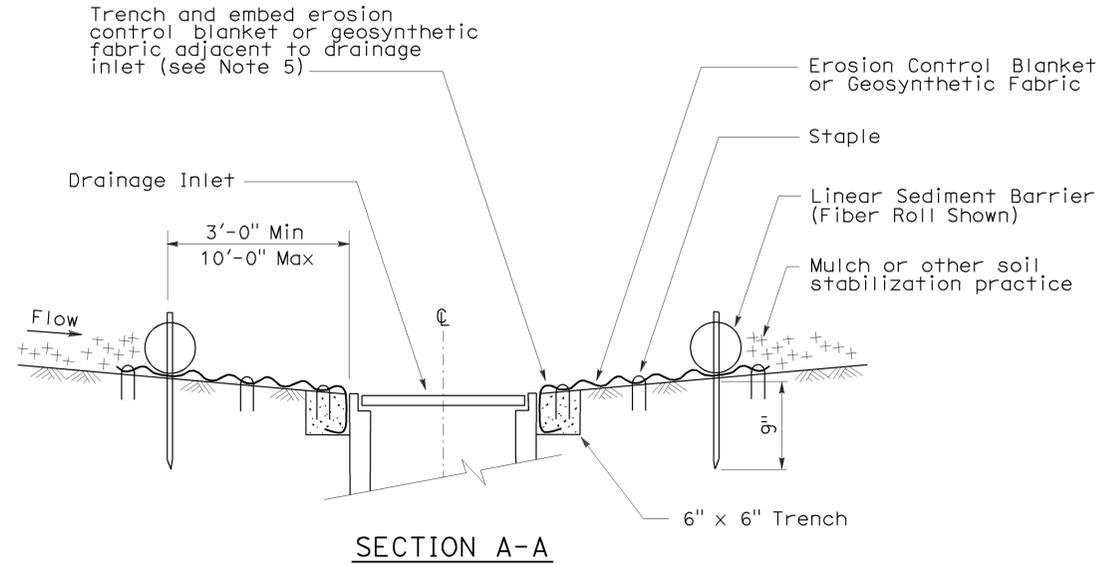
Robert B. Schott  
LICENSED LANDSCAPE ARCHITECT

August 15, 2008  
PLANS APPROVAL DATE

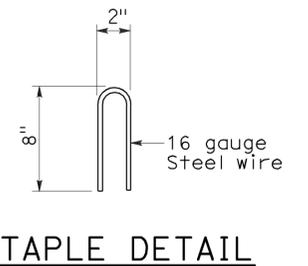
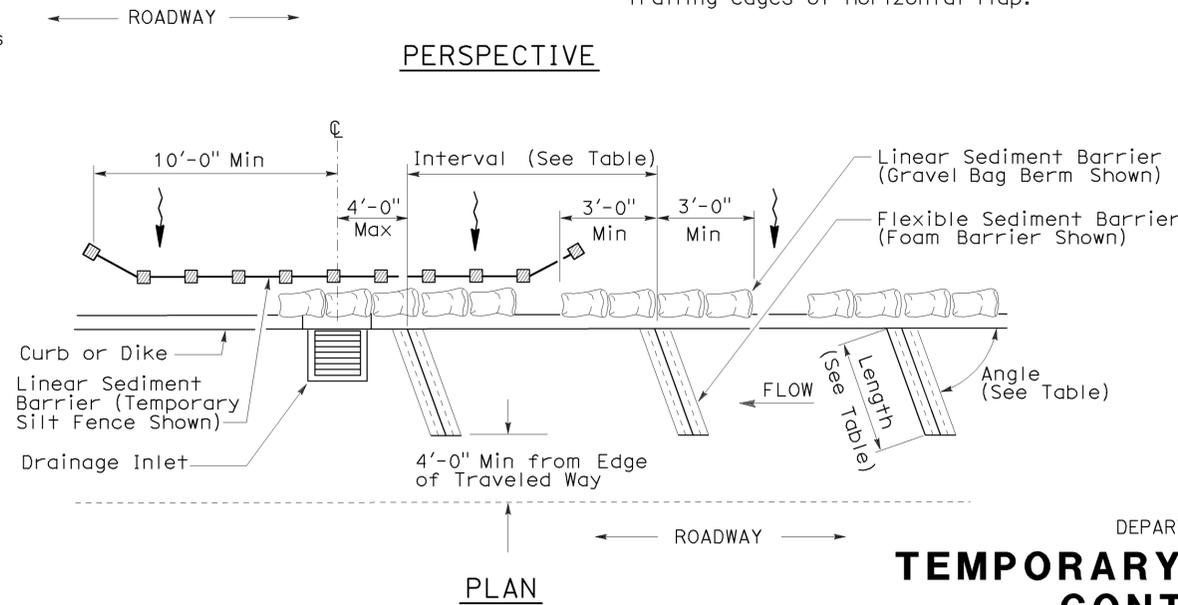
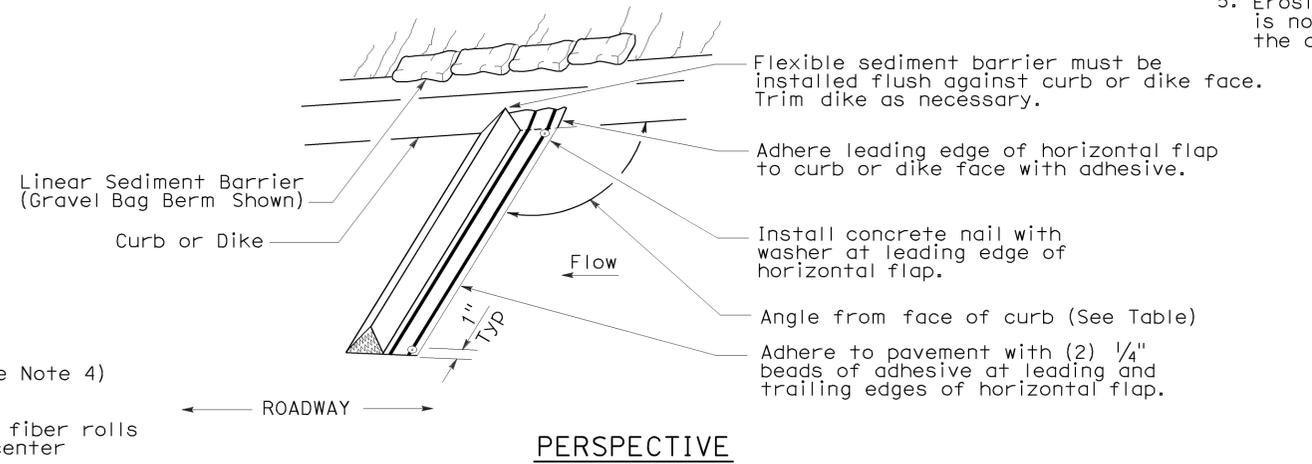
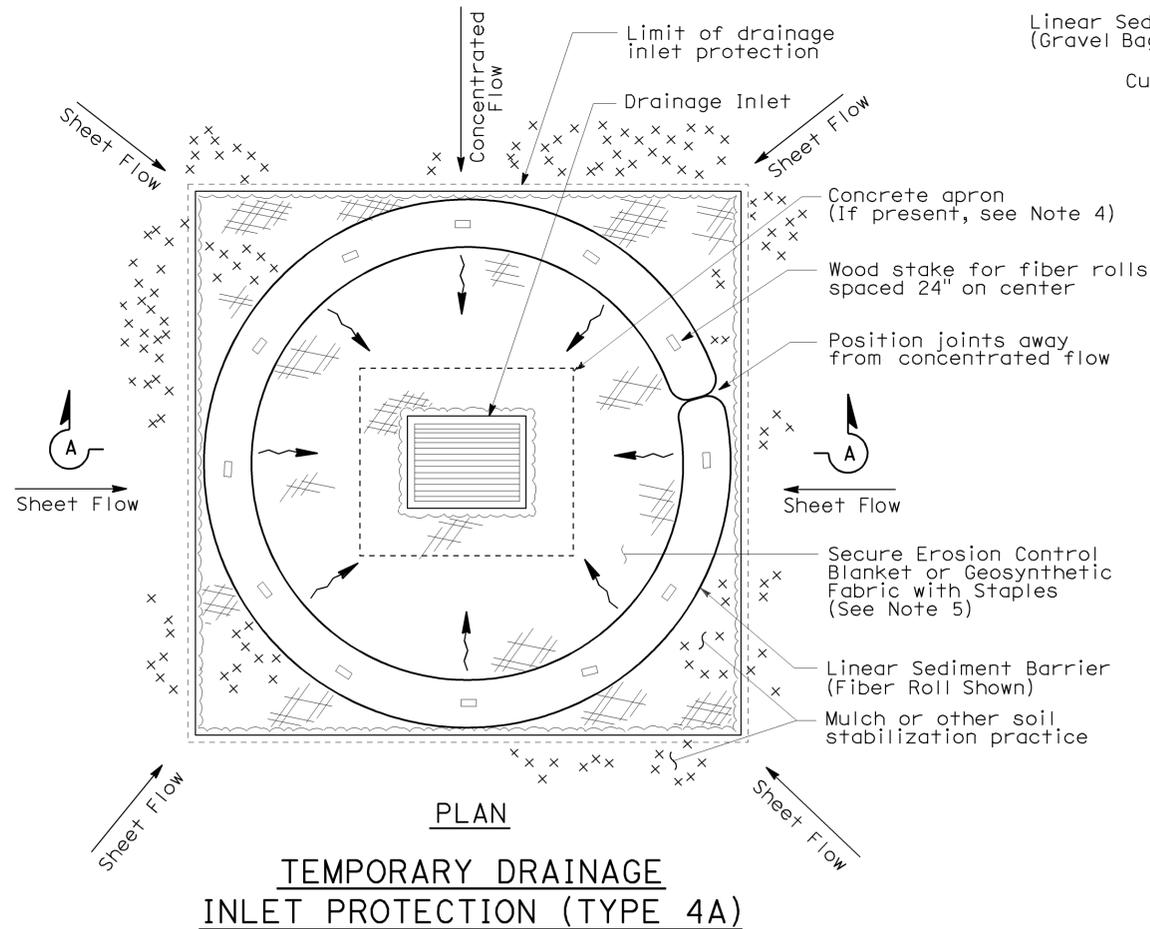
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To accompany plans dated 8-15-11

STATE OF CALIFORNIA  
LICENSED LANDSCAPE ARCHITECT  
Robert B. Schott  
11-04-08  
08-11-08  
Date



- NOTES:**
- See Standard Plan T51 for Temporary Silt Fence.
  - Dimensions may vary to fit field conditions.
  - Install a minimum of 3 flexible sediment barriers upstream of each drainage inlet to be protected.
  - Position erosion control blanket or geosynthetic fabric at edge of concrete apron and secure in trench.
  - Erosion control blanket or geosynthetic fabric is not required if the area adjacent to the drainage inlet is vegetated.



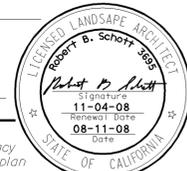
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY DRAINAGE INLET PROTECTION)**

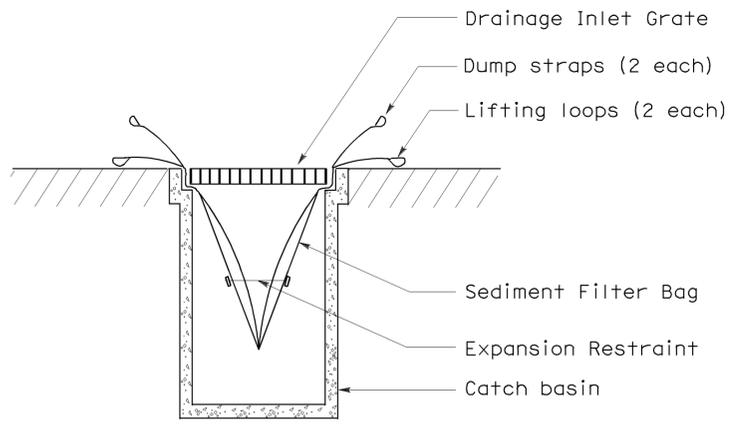
NO SCALE  
NSP T63 DATED AUGUST 15, 2008 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

|      |        |       |                             |              |                 |
|------|--------|-------|-----------------------------|--------------|-----------------|
| DIST | COUNTY | ROUTE | POST MILES<br>TOTAL PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
| 03   | ED     | 50    | R4.1/R14.2                  | 56           | 60              |

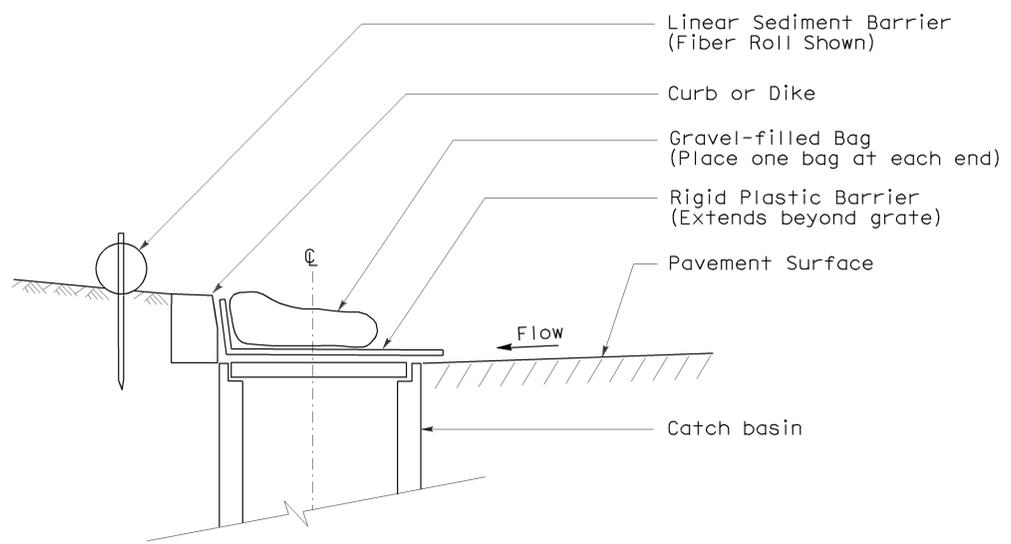
*Robert B. Schott*  
 LICENSED LANDSCAPE ARCHITECT  
 August 15, 2008  
 PLANS APPROVAL DATE  
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



To accompany plans dated 8-15-11

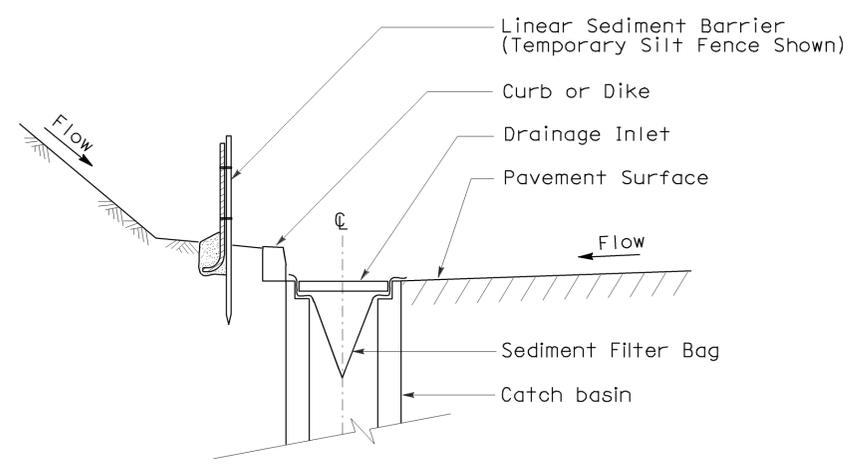


**SECTION B-B**  
**SEDIMENT FILTER BAG DETAIL**

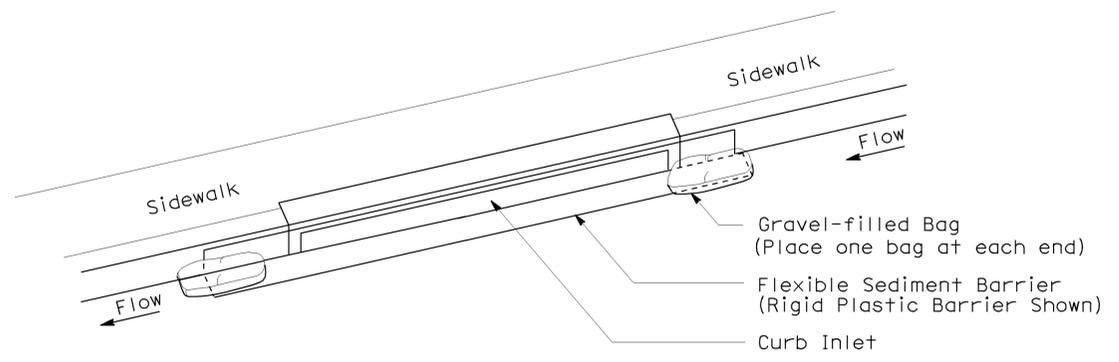


**SECTION**  
**TEMPORARY DRAINAGE**  
**INLET PROTECTION (TYPE 6A)**  
**(CATCH BASIN WITH GRATE)**

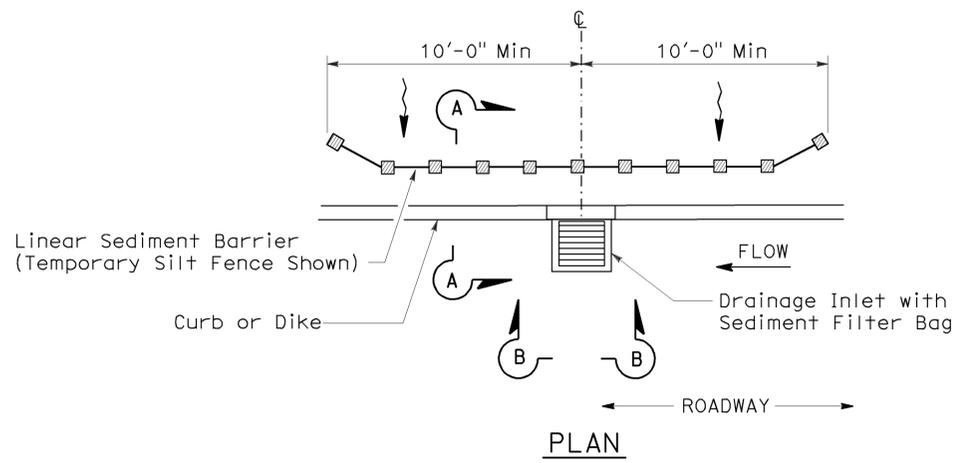
- NOTES:**
1. See Standard Plan T51 for Temporary Silt Fence.
  2. Dimensions may vary to fit field conditions.



**SECTION A-A**



**PERSPECTIVE**  
**TEMPORARY DRAINAGE**  
**INLET PROTECTION (TYPE 6B)**  
**(CURB INLET WITHOUT GRATE)**



**PLAN**  
**TEMPORARY DRAINAGE**  
**INLET PROTECTION (TYPE 5)**  
**(SEDIMENT FILTER BAG)**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY WATER POLLUTION  
CONTROL DETAILS  
(TEMPORARY DRAINAGE  
INLET PROTECTION)**

NO SCALE

NSP T64 DATED AUGUST 15, 2008 SUPPLEMENTS  
THE STANDARD PLANS BOOK DATED MAY 2006.

**NEW STANDARD PLAN NSP T64**

2006 NEW STANDARD PLAN NSP T64

# ELECTROLIERS

| STANDARD TYPES    |  |  |
|-------------------|--|--|
| 15, 15D           |  | High mast light pole                         |
| 15 STRUCTURE      |  | Double Arm lighting standard                 |
| 21, 21D STRUCTURE |  | Existing electrolier                         |
| 30                |  | Electrolier foundation (Future installation) |
| 31                |  |  |
| 32                |  |  |
| 35                |  |  |
| 36-20A            |  |  |

**NOTES:**

- Luminaires shall be 310 W HPS when installed on Type 21, 21D, 30, 31, 32, 35 and 36-20A Standards, unless otherwise specified. Luminaires shall be 200 W HPS 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.
- Variations noted adjacent to symbol on project plans.

- Electrolier (see project notes or project plans)
- Luminaire on wood pole

## STANDARD NOTES:

- 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 wire or rope.
- 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.
- SF** Standard to remain for future use. Remove luminaire, pole conductors, fuses and ballast.
- TSP** Telephone service point.

# ABBREVIATIONS AND EQUIPMENT DESIGNATIONS

## PROPOSED EXISTING

|        |        |  |
|--------|--------|--|
| BBS    | bbs    | Battery backup system  |
| BC     | bc     | Bolt circle  |
| C      | C      | Conduit  |
| CCTV   | cctv   | Closed circuit television  |
| CKT    | ckt    | Circuit  |
| CMS    | cms    | Changeable message sign  |
| DLC    | dlc    | Loop detector lead-in cable  |
| EMS    | ems    | Extinguishable message sign  |
| EVC    | evc    | Emergency vehicle cable  |
| EVD    | evd    | Emergency vehicle detector   |
| FB     | fb     | Flashing beacon  |
| FBCA   | fbca   | Flashing beacon control assembly   |
| FBS    | fbs    | Flashing beacon with slip base   |
| FO     | fo     | Fiber optic  |
| G      | G      | Ground (Equipment Grounding Conductor)                                     |
| GFCI   | GFCI   | Ground fault circuit interrupt   |
| HAR    | har    | Highway advisory radio   |
| HEX    | hex    | Hexagonal  |
| HPS    | hps    | High pressure sodium   |
| IISNS  | iisns  | Internally illuminated street name sign                                    |
| ISL    | isl    | Induction sign lighting  |
| LED    | led    | Light emitting diode   |
| LMA    | lma    | Luminaire mast arm   |
| LPS    | lps    | Low pressure sodium  |
| LTG    | ltg    | Lighting   |
| LUM    | lum    | Luminaire  |
| MAT    | mat    | Mast arm mounting vehicle signal faces, top attachment                     |
| MAS    | mas    | Mast arm mounting vehicle signal faces, side attachment                    |
| MAS-4A | mas-4A | Mast arm mounting vehicle signal faces, side attachment - 4 signal section |
| MAS-4B | mas-4B | Mast arm mounting vehicle signal faces, side attachment - 4 signal section |
| MAS-4C | mas-4C | Mast arm mounting vehicle signal faces, side attachment - 4 signal section |
| MAS-5A | mas-5A | Mast arm mounting vehicle signal faces, side attachment - 5 signal section |
| MAS-5B | mas-5B | Mast arm mounting vehicle signal faces, side attachment - 5 signal section |
| MC     | mc     | Mercury contactor  |
| M/M    | m/m    | Multiple to multiple transformer   |
| MT     | mt     | Conduit with pull wire or rope only  |
| MTG    | mtg    | Mounting   |
|        | mv     | Mercury vapor lighting fixture   |
| N      | N      | Neutral (Grounded Conductor)   |
| NC     | NC     | Normally closed  |
| NO     | NO     | Normally open  |
| PB     | pb     | Pull box   |
| PEC    | pec    | Photoelectric control (Type I, II, III, IV or V as shown)                  |
| PED    | ped    | Pedestrian   |
| PEU    | peu    | Photoelectric unit   |
| PPB    | ppb    | Pedestrian push button   |
| RL     |        | Relocated equipment  |
| RM     | rm     | Ramp metering  |
| SB     | sb     | Slip base  |
| SIC    | sic    | Signal interconnect cable  |
| SIG    | sig    | Signal   |
| SMA    | sma    | Signal mast arm  |
| SNS    | sns    | Street name sign   |
| SP     | sp     | Service point  |
| TDC    | tdc    | Telephone demarcation cabinet  |
| TMS    | tms    | Traffic monitoring station   |
| TOS    | tos    | Traffic Operations System  |
| VEH    | veh    | Vehicle  |
| XFMR   | xfmr   | Transformer  |
| COMM   | comm   | Communication  |
| RWIS   | rwis   | Roadway weather information system   |

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 57        | 60           |

*Jeffery G. McRae*  
REGISTERED ELECTRICAL ENGINEER

October 5, 2007  
PLANS APPROVAL DATE

*Jeffery G. McRae*  
REGISTERED PROFESSIONAL ENGINEER  
No. E14512  
Exp. 6-30-08  
ELECTRICAL  
STATE OF CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 8-15-11

## 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.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

RSP ES-1A DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-1A  
DATED MAY 1, 2006 - PAGE 400 OF THE STANDARD PLANS BOOK DATED MAY 2006.

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

2006 REVISED STANDARD PLAN RSP ES-1A

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 58        | 60           |

*Jeffery G. McRae*  
 REGISTERED ELECTRICAL ENGINEER  
 October 5, 2007  
 PLANS APPROVAL DATE  
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

### CONDUIT

| PROPOSED | 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 in/on structure or service pole         |

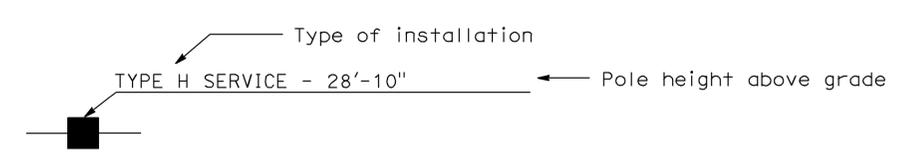
### SIGNAL EQUIPMENT

| PROPOSED | EXISTING |  |
|----------|----------|--|
|          |          | Pedestrian signal face   |
|          |          | Pedestrian push button post  |
|          |          | Pedestrian barricade   |
|          |          | Vehicle signal face (with backplate, 3-Section: red, yellow and green)   |
|          |          | Vehicle signal face with angle visors  |
|          |          | Modifications of basic symbols:<br>"L" Indicates all non-arrow sections lowered<br>"LG" Indicates lowered green section only<br>"PV" Indicates 12" programmed visibility sections<br>"8" indicates all 8" sections (only when specified) |
|          |          | Type 15TS and Vehicle signal face  |
|          |          | Vehicle signal face with red, yellow and green left arrow sections   |
|          |          | Vehicle signal face with red and yellow sections and up green arrow  |
|          |          | Vehicle signal face (5 Section) with red, yellow and green sections and yellow and green right arrows  |
|          |          | Type 1 Standard and attached vehicle signal faces  |
|          |          | Standard with signal mast arm only and attached vehicle signal faces and internally illuminated street name sign   |
|          |          | Type 33 Standard, Left-turn vehicle signal face and sign   |
|          |          | Standard with luminaire and signal mast arms and attached vehicle signal faces   |
|          |          | Cantilever flashing beacon Type 9 Frame, with a sign unless otherwise specified or indicated   |
|          |          | Type 15-FBS Standard with two vehicle signal face sections with lens, backplate and visor with a sign  |
|          |          | Flashing beacon. One vehicle signal face section with lens, backplate and visor. "R" indicates red indication, "Y" indicates yellow indication   |
|          |          | Controller assembly. Door indicates front of cabinet   |

### SERVICE EQUIPMENT

| PROPOSED | EXISTING |   |
|----------|----------|---|
| OH       | oh       | Overhead lines  |
|          |          | Wood pole "U" indicates utility owned                         |
|          |          | Pole guy with anchor  |
|          |          | Utility transformer - ground mounted                          |
|          |          | Service equipment enclosure type                              |
|          |          | Service equipment enclosure door indicates front of enclosure |
| T        | T        | Telephone demarcation cabinet                                 |

### POLE-MOUNTED SERVICE DESIGNATION



### ILLUMINATED OVERHEAD SIGN

| PROPOSED | EXISTING |                                      |
|----------|----------|--------------------------------------|
|          |          | Overhead sign - Single post          |
|          |          | Overhead sign - Two post             |
|          |          | Overhead sign - Mounted on structure |
|          |          | Overhead sign with electrolier       |

### SIGNAL EQUIPMENT Cont

| PROPOSED | EXISTING |                                      |
|----------|----------|--------------------------------------|
|          |          | Guard post                           |
|          |          | Type 1 Standard with "Meter On" sign |
|          |          | Emergency Vehicle detector           |

### NOTES:

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

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

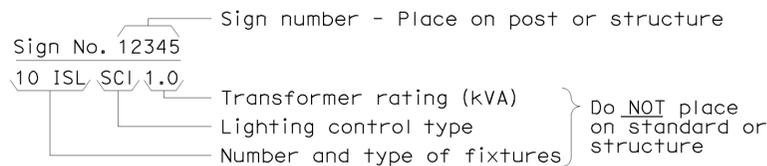
RSP ES-1B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1B  
 DATED MAY 1, 2006 - PAGE 401 OF THE STANDARD PLANS BOOK DATED MAY 2006.

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

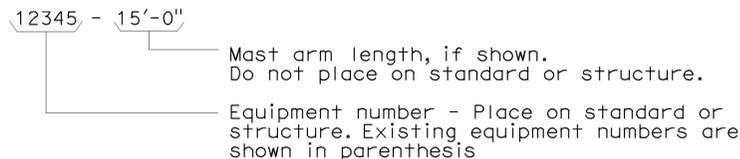
2006 REVISED STANDARD PLAN RSP ES-1B

### EQUIPMENT IDENTIFICATION

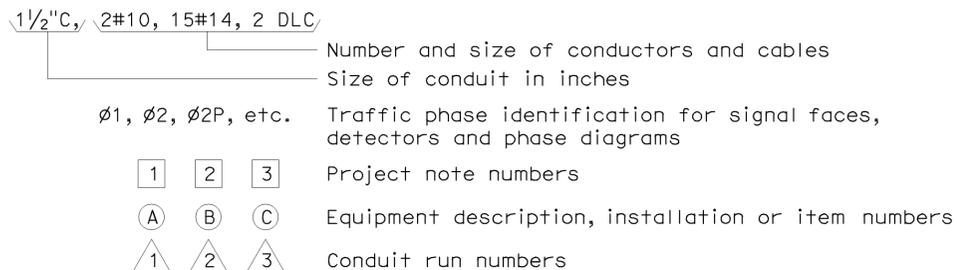
#### ILLUMINATED SIGN IDENTIFICATION NUMBER:



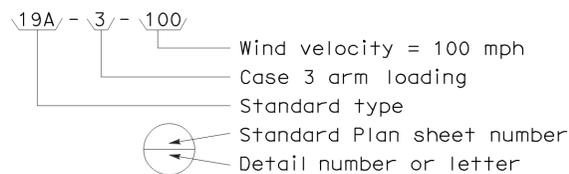
#### ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



#### CONDUIT AND CONDUCTOR IDENTIFICATION:



#### SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



### MISCELLANEOUS EQUIPMENT

| PROPOSED | EXISTING |  |
|----------|----------|--|
|          |          | Changeable message sign  |
|          |          | Closed circuit television camera                                   |
|          |          | Highway advisory radio pole and antenna                            |
|          |          | Extinguishable message sign  |
|          |          | Detection device<br>M = Microwave sensor<br>V = Video image sensor |

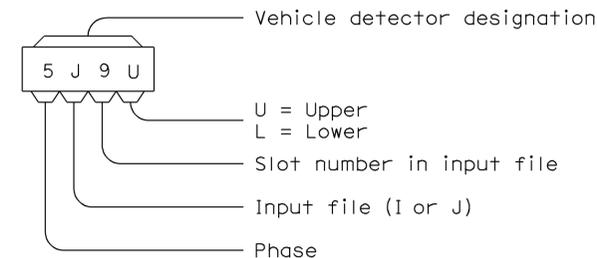
### WIRING DIAGRAM LEGEND

|    |                               |      |                       |
|----|-------------------------------|------|-----------------------|
| P  | Pole                          | ---- | External conductor    |
| CB | Circuit breaker               | —    | Conductor or bus      |
| A  | Ampere                        | —●—  | Tie point             |
| V  | Volt                          | —/—  | Contactor coil        |
| M  | Metered                       | — —  | Contactor, Contact NO |
| UM | Unmetered                     | —X—  | Terminal blocks       |
| NB | Neutral bus                   | —/—  | Contactor, Contact NC |
| GB | Ground bus                    | —/—  | Enclosure bond        |
| G  | Equipment grounding conductor | — —  | Grounding electrode   |
| N  | Grounded conductor (Neutral)  | —●—  | Circuit breaker       |
|    |                               | Ⓜ    | Receptacle            |

### PULL BOXES

| PROPOSED | EXISTING |   |
|----------|----------|---|
|          |          | Pull box-No. 5 unless otherwise indicated or noted.                         |
|          |          | Pull box-Additional designations or descriptions                            |
| 3        |          | (C) = Communications pull box   |
| 5        |          | (E) = Pull box with extension   |
| 6        |          | (S) = Sprinkler control pull box  |
| 7        |          | (21) = Anchor bolts and conduit for future installation of Type 21 Standard |
| 8        |          | (T) = Traffic pull box  |
| 9        |          |   |
| 9A       |          |   |

### VEHICLE DETECTORS



| PROPOSED | 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  
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**ELECTRICAL SYSTEMS**  
**(SYMBOLS AND ABBREVIATIONS)**

NO SCALE

RSP ES-1C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1C  
 DATED MAY 1, 2006 - PAGE 402 OF THE STANDARD PLANS BOOK DATED MAY 2006.

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

2006 REVISED STANDARD PLAN RSP ES-1C

|      |        |       |                          |           |              |
|------|--------|-------|--------------------------|-----------|--------------|
| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
| 03   | ED     | 50    | R4.1/R14.2               | 60        | 60           |

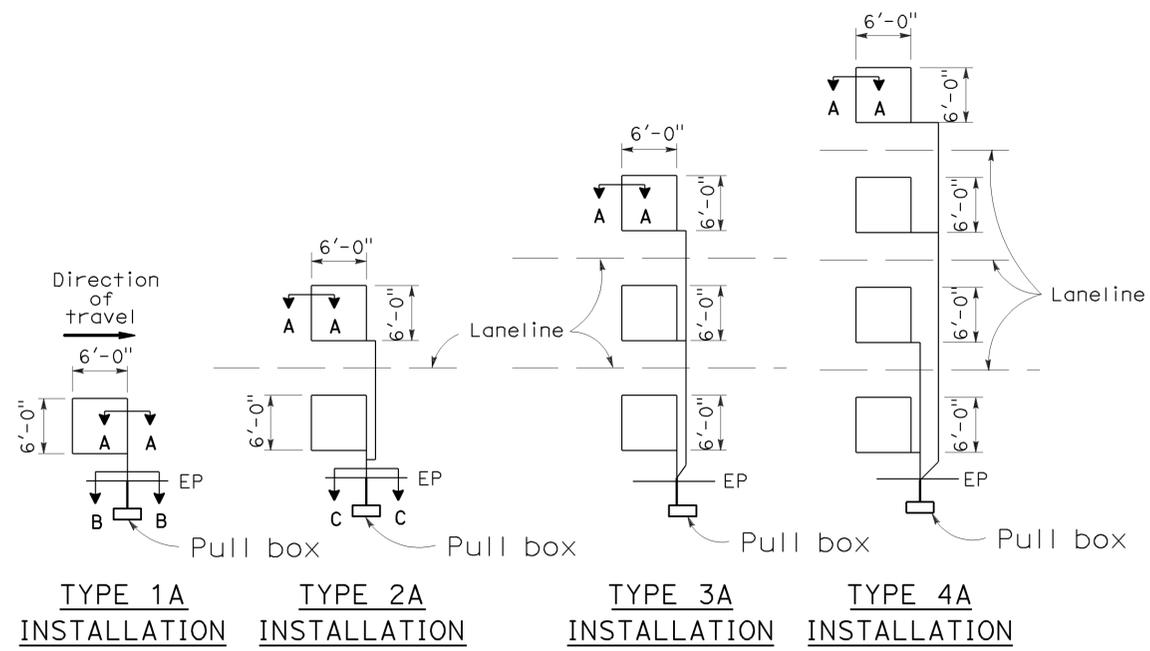
Jeffrey G. McRae  
 REGISTERED ELECTRICAL ENGINEER  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

October 5, 2007  
 PLANS APPROVAL DATE

To accompany plans dated 8-15-11

## LOOP INSTALLATION PROCEDURE

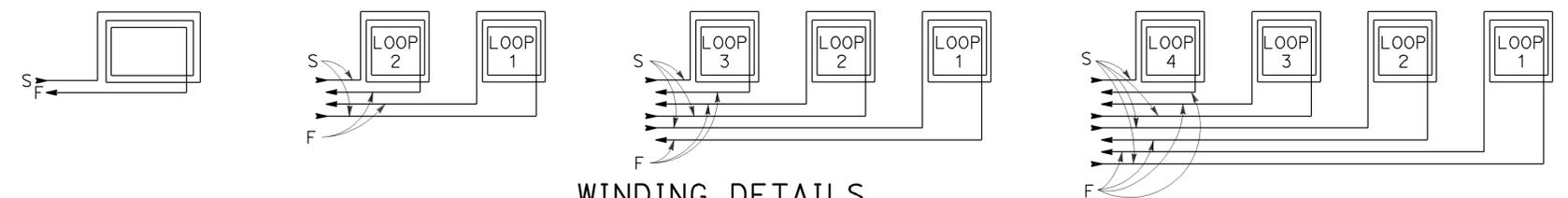
- Loops shall be centered in lanes.
- Saw slots in pavement for loop conductors as shown in details.
- Distance between side of loop and a lead-in saw cut from adjacent detectors shall be 2'-0" minimum. Distance between lead-in saw cuts shall be 6" minimum.
- Bottom of saw slot shall be smooth with no sharp edges.
- Slots shall be washed until clean, blown out and thoroughly dried before installing loop conductors.
- Adjacent loops on the same sensor unit channel shall be wound in opposite directions.
- Identify and tag loop circuit pairs in the pull box with loop number, start (S) and finish (F) of conductor. Identify and tag lead-in-cable with sensor number and phase.
- Install loop conductor in slot using a 3/16" to 1/4" thick wood paddle. Hold loop conductors with wood paddles (at the bottom of the sawed slot) during sealant placement.
- No more than 2 twisted pairs shall be installed in one sawed slot.
- Allow additional 5'-0" of slack length of conductor for the lead-in run to pull box.
- The additional length of each conductor for each loop shall be twisted together into a pair (6 turns per 3'-4" minimum) before being placed in the slot and conduit leading to pull box.
- Test each loop circuit for continuity, circuit resistance and insulation resistance at the pull box before filling slots.
- Fill slots as shown in details.
- Splice loop conductors to lead-in-cable. Splices shall be soldered.
- End of lead-in-cable and Type 2 loop conductor shall be waterproofed prior to installing in conduit to prevent moisture from entering the cable.
- Lead-in-cable shall not be spliced between the pull box and the controller cabinet terminals.
- Test each loop circuit for continuity, circuit resistance and insulation resistance at the controller cabinet location.
- Where loop conductors are not to be spliced to a lead-in-cable, the ends of the conductors shall be taped and waterproofed with electrical insulating coating.



TYPE 1A INSTALLATION    TYPE 2A INSTALLATION    TYPE 3A INSTALLATION    TYPE 4A INSTALLATION

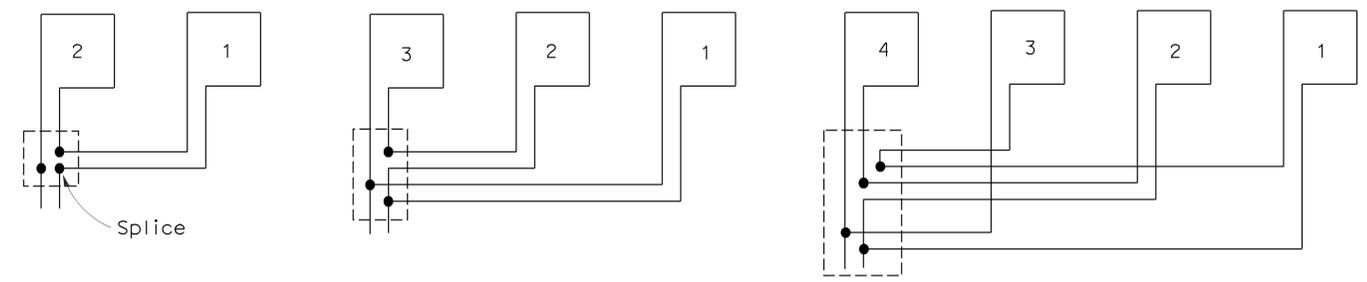
### SAWCUT DETAILS

- (Type A loop detector configurations illustrated)
- 1A thru 4A = 1 Type A loop configuration in each lane.
  - 1B thru 4B = 1 Type B loop configuration in each lane.
  - 1C = 1 Type C loop configuration entering lanes as required.
  - 1D thru 4D = 1 Type D loop configuration in each lane.
  - 1E thru 4E = 1 Type E loop configuration in each lane.
  - 1Q thru 4Q = 1 Type Q loop configuration in each lane.
- (Use Type A, B, C, D, E or Q loop detector configurations only when specified or shown on plans)



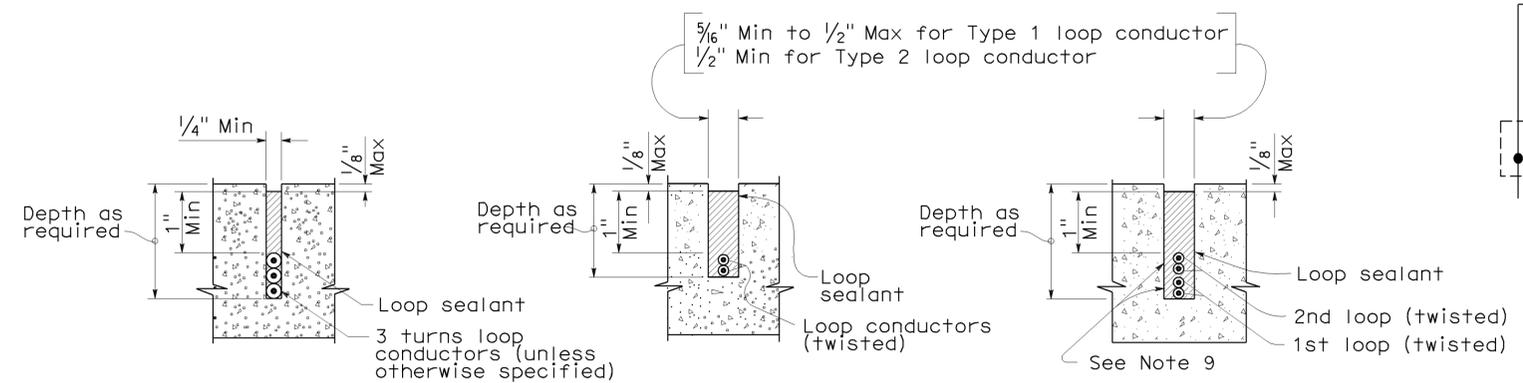
### WINDING DETAILS

See Notes 6 and 7



### TYPICAL LOOP CONNECTIONS

(Dashed lines represent the pull box)



SECTION A-A    SECTION B-B    SECTION C-C  
 SLOT DETAILS - TYPE 1 AND TYPE 2 LOOP CONDUCTOR

## ELECTRICAL SYSTEMS (DETECTORS)

STATE OF CALIFORNIA  
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RSP ES-5A DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-5A DATED MAY 1, 2006 - PAGE 423 OF THE STANDARD PLANS BOOK DATED MAY 2006.

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