Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	501	619

REGISTERED CIVIL ENGINEER — DATE

4-16-12
PLANS APPROVAL DATE

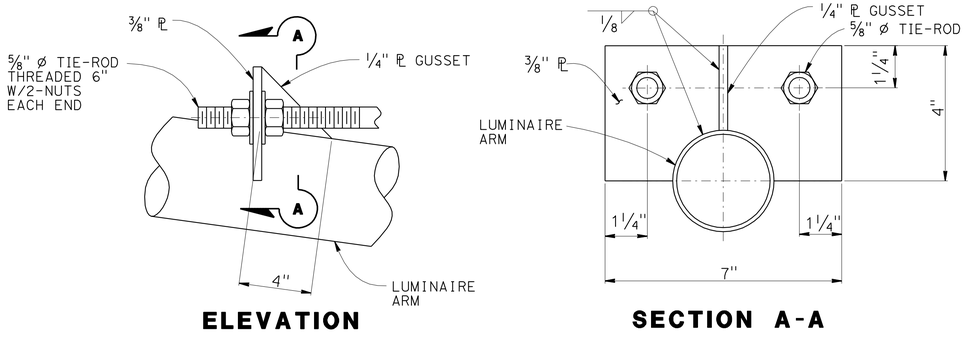
REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

TAM
750 LINDARO ST. SUITE 200
SAN RAFAEL, CA 94901

NOTES:

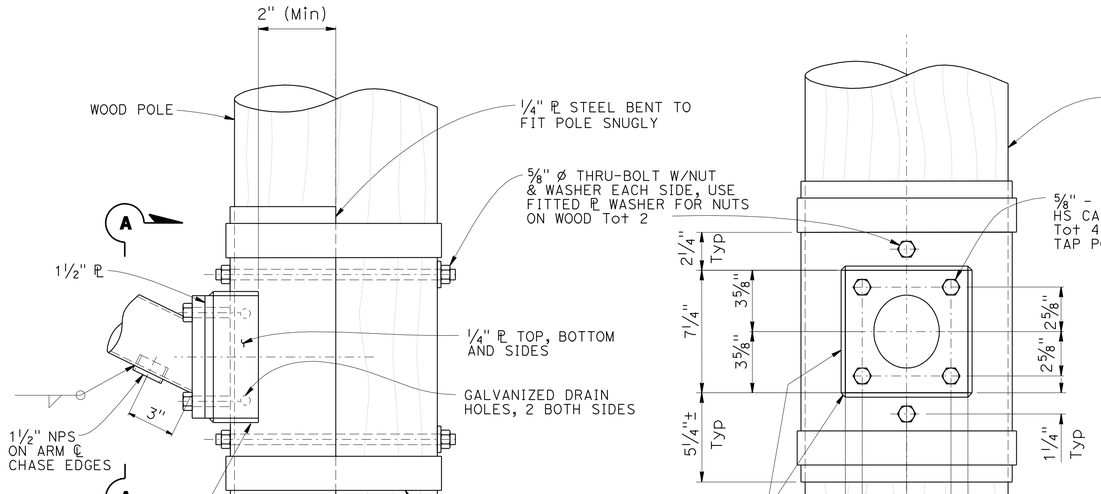
1. ALL HARDWARE AND STEEL SHALL BE GALVANIZED AFTER FABRICATION.
2. ARM BASE CONNECTION DETAILS SHALL BE IN COMPLIANCE WITH STANDARD PLANS DETAIL SHEET ES-6D WITH NOTED MODIFICATIONS.
3. 2000 LB Min CAPACITY STRAP SYSTEM SHALL BE USED FOR TOP AND BOTTOM OF PLATE.
4. THE CONTRACTOR TO VERIFY POLE DIMENSIONS AT TIE-ROD ATTACHMENT HEIGHT. FABRICATE 8" FLAT BAR WITH "L" DIMENSION TO MAINTAIN AN OPEN GAP BETWEEN ENCASEMENT IN FINISHED INSTALLATION.



ELEVATION

SECTION A-A

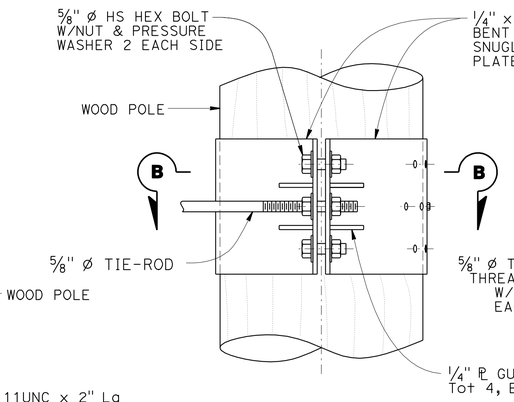
TIE-ROD DETAIL No. 1



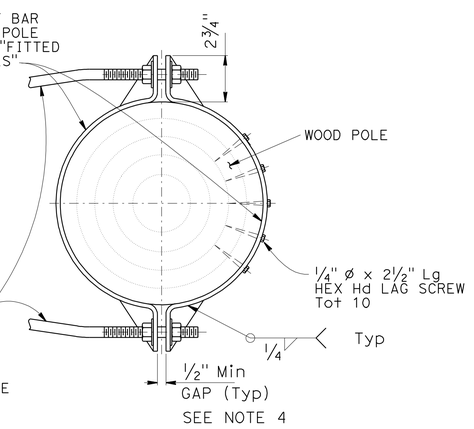
ELEVATION

VIEW A-A

ARM CONNECTION DETAILS

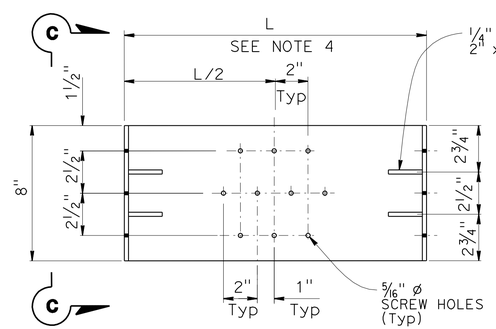


ELEVATION

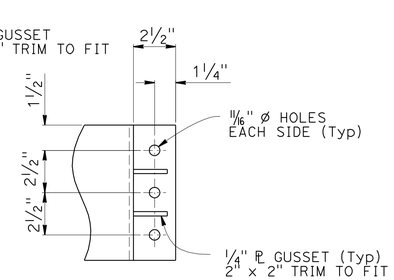


SECTION B-B

TIE-ROD DETAIL No. 2



ELEVATION



SECTION C-C

FITTED PLATE DETAILS

NOTE: 2 REQUIRED (1 W/SCREW HOLES, 1 WITHOUT)

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

ELECTRICAL DETAILS (STAGE CONSTRUCTION)

WOOD POLE MOUNTING DETAILS

NO SCALE

APPROVED FOR ELECTRICAL WORK ONLY

E-23

REVISED BY	DATE REVISED
SM	2/16/12

CALCULATED-DESIGNED BY: DAVE CLOW
CHECKED BY: JEFF WANG
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION: 01-18-12
DATE PLOTTED =>18-APR-2012
TIME PLOTTED =>11:11

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	502	619

Donald E. Howe
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Donald E. Howe
No. C46402
Exp. 3-31-09
CIVIL
STATE OF CALIFORNIA

June 6, 2008
PLANS APPROVAL DATE

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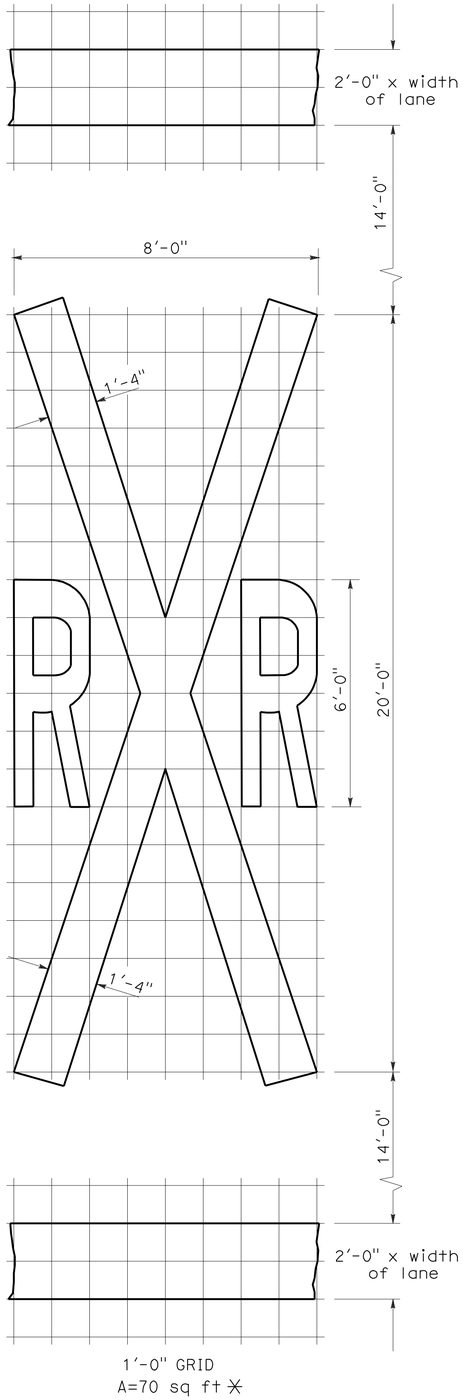
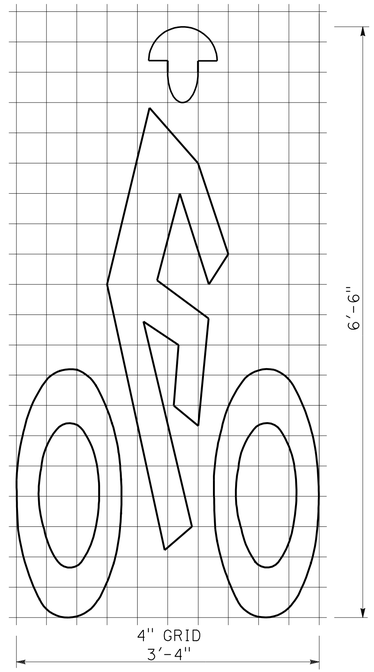
To accompany plans dated 4-16-12

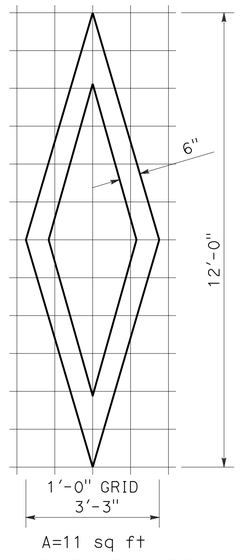


RAILROAD CROSSING SYMBOL

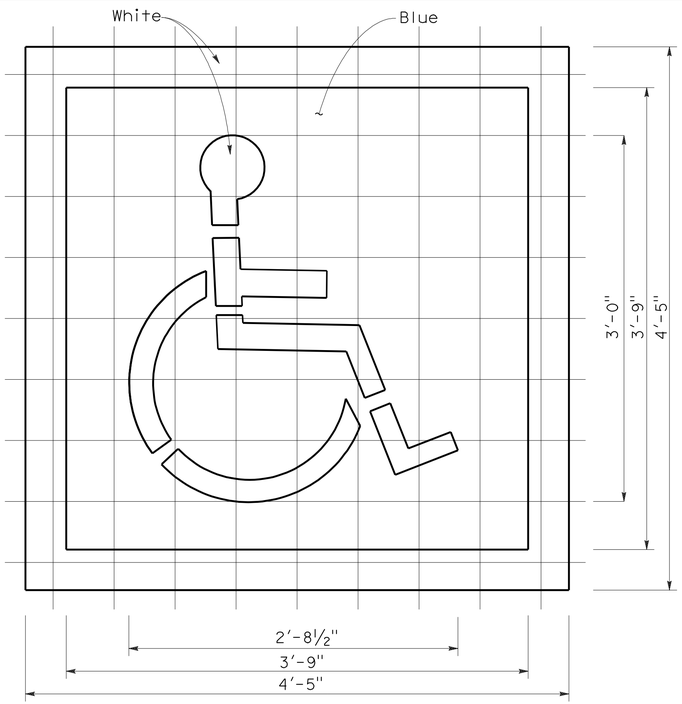
✳70 sq ft DOES NOT INCLUDE THE 2'-0" x VARIABLE WIDTH TRANSVERSE LINES.



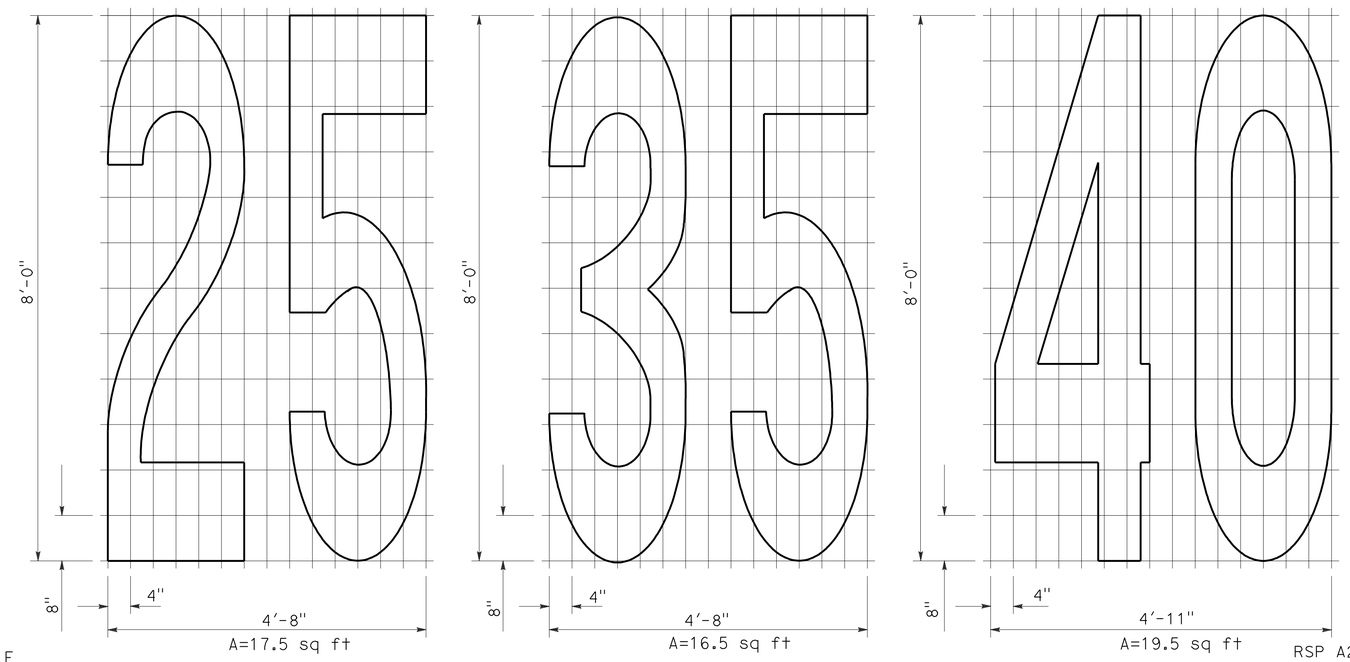
BIKE LANE SYMBOL



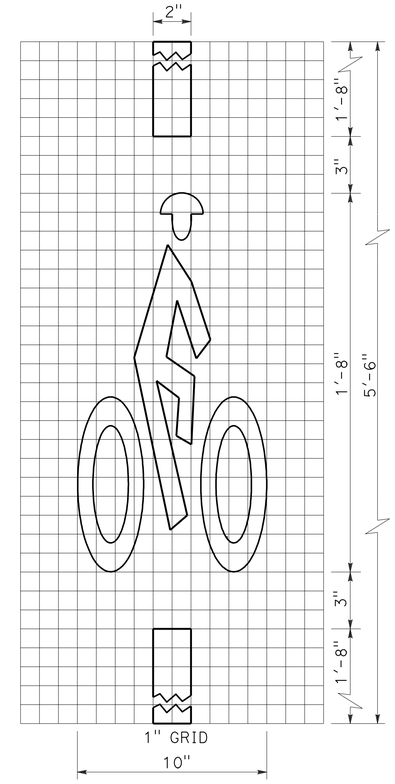
DIAMOND SYMBOL



INTERNATIONAL SYMBOL OF ACCESSIBILITY MARKING



NUMERALS



BICYCLE LOOP DETECTOR SYMBOL

NOTE:

1. Minor variations in dimensions may be accepted by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS SYMBOLS AND NUMERALS

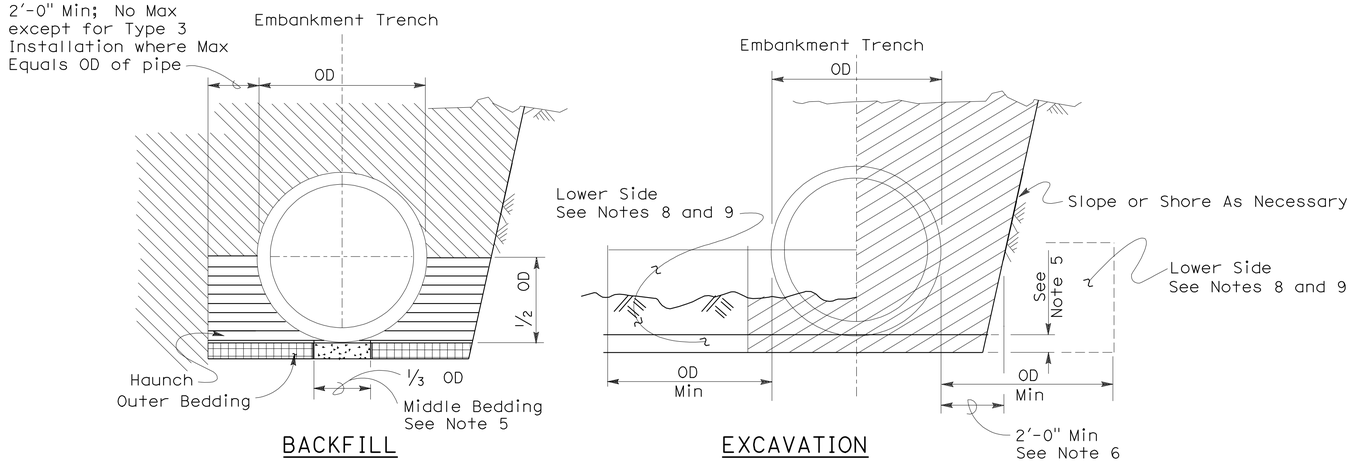
NO SCALE

RSP A24C DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A24C DATED MAY 1, 2006 - PAGE 11 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A24C

2006 REVISED STANDARD PLAN RSP A24C

5-27-09



TYPE 1 INSTALLATION:

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 30 and the maximum percentage passing the 75 μm sieve size shall be 12.

TYPE 2 INSTALLATION:

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

TYPE 3 INSTALLATION:

The haunch and outer bedding shall be compacted to a minimum 85 percent relative compaction. 90 percent relative compaction will be required where the fill over the pipe is less than 4′-0" or ½ OD.

INSTALLATION TYPE 1

MINIMUM CLASS AND D-LOAD	COVER	
	108" Dia AND SMALLER	OVER 108" Dia
Class II 1000D	14.9′	12.9′
Class III 1350D	15.0′ - 20.9′	13.0′ - 18.9′
Class III Special 1700D	21.0′ - 26.9′	19.0′ - 24.9′
Class IV 2000D	27.0′ - 31.9′	25.0′ - 29.9′
Class IV Special 2500D	32.0′ - 40.9′	30.0′ - 38.9′
Class V 3000D	41.0′ - 49.9′	39.0′ - 46.9′
Class V Special 3600D	50.0′ - 59.0′	47.0′ - 58.0′

INSTALLATION TYPE 2

MINIMUM CLASS AND D-LOAD	COVER
Class II 1000D	9.9′
Class III 1350D	10.0′- 14.9′
Class III Special 1700D	15.0′ - 19.9′
Class IV 2000D	20.0′ - 24.9′
Class IV Special 2500D	25.0′ - 31.9′
Class V 3000D	32.0′ - 38.9′
Class V Special 3600D	39.0′ - 47.0′

INSTALLATION TYPE 3

MINIMUM CLASS AND D-LOAD	COVER	
	48" Dia AND SMALLER	OVER 48" Dia
Class II 1000D	7.9′	5.9′
Class III 1350D	8.0′ - 10.9′	6.0′ - 8.9′
Class III Special 1700D	11.0′ - 14.9′	9.0′ - 12.9′
Class IV 2000D	15.0′ - 17.9′	13.0′ - 15.9′
Class IV Special 2500D	18.0′ - 21.9′	16.0′ - 19.9′
Class V 3000D	22.0′ - 26.9′	20.0′ - 24.9′
Class V Special 3600D	30.0′ - 33.0′	25.0′ - 31.0′

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	503	619

REGISTERED CIVIL ENGINEER

November 17, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Dallas Forester — No. C37765 — Exp.12-31-06 — 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 4-16-12

NOTES:

1. Unless otherwise shown on the plans or specified in the special provision, the Contractor shall have the option of selecting the class of RCP and the type of installation to be used, provided the height of cover does not exceed the value shown for the RCP selected.
   Example: 24" RCP culvert with maximum cover of 19′-0"′ the options are:
   a) Class III or stronger with Installation Type 1.
   b) Class III Special or stronger with Installation Type 2.
   c) Class IV Special or stronger with Installation Type 3.
   Cover is defined as the maximum vertical distance from top of the pipe to finished grade within the length of any given culvert.
2. The class of RCP and Installation Type selected shall be the same throughout the length of any given culvert.
3. The "length of any culvert" is defined as the culvert between:
   a) Successive drainage structure (inlets, junction boxes, headwalls, etc.).
   b) A drainage structure and the inlet or outlet end of the culvert.
   c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
4. Oval and arch shaped RCP shall not be used.
5. 1/25 OD Min, not less than 3".
6. Slurry cement backfill may be substituted for backfill in the outer bedding and haunch areas. If slurry is used the outer and middle beddings shall be omitted. Prior to installation the soil under the middle 1/3 of the outside diameter of the pipe shall be softened by scarifying or other means to a minimum depth of 1/25 OD, but not less than 3". Where slurry cement backfill is used clear distance to trench wall may be reduced as set forth in Section 19-3.062 of the Standard Specifications.
7. Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimums.
8. Lower side shall be suitable material as determined by the Engineer. Otherwise it shall be considered unsuitable as set forth in Section 19-2.02 of the Standard Specifications. See Note 9.
9. Where the pipe is placed in a trench, if the trench walls are sloped at 5 vertical to 1 horizontal or steeper for at least 90 percent of the trench height or up to not less than 12" from the grading plane, the firmness of the soil in the lower side need not be considered.
10. Non-reinforced precast concrete pipe sizes 3′-0" or smaller may be placed under installation Types 1, 2 or 3.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS

NO SCALE

RSP A62DA DATED NOVEMBER 17, 2006 SUPERSEDES STANDARD PLAN A62DA DATED MAY 1, 2006 - PAGE 20 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A62DA

2006 REVISED STANDARD PLAN RSP A62DA

10-26-06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	504	619

Mark S. Turner
PROFESSIONAL LAND SURVEYOR

LICENSED LAND SURVEYOR
Mark S. Turner
No. 6228
Exp. 3-31-08
STATE OF CALIFORNIA

June 30, 2006
PLANS APPROVAL DATE

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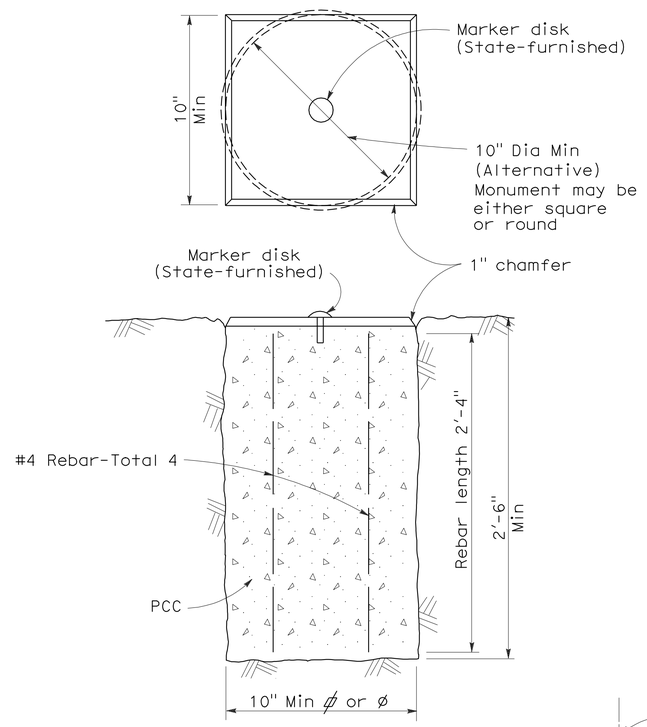
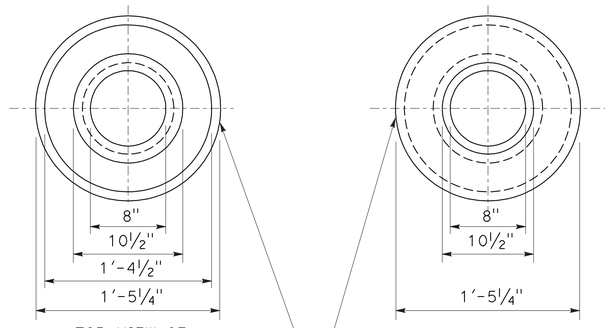
To accompany plans dated 4-16-12

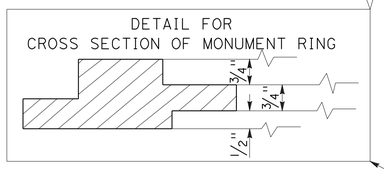


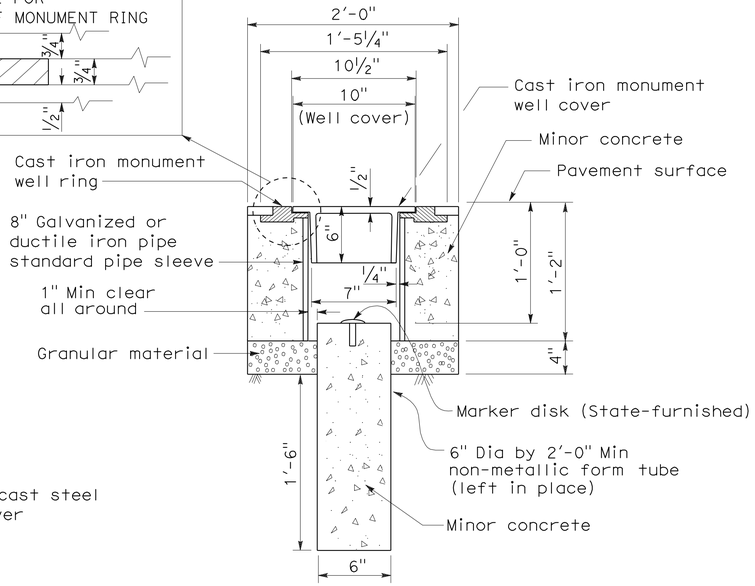
TYPE A



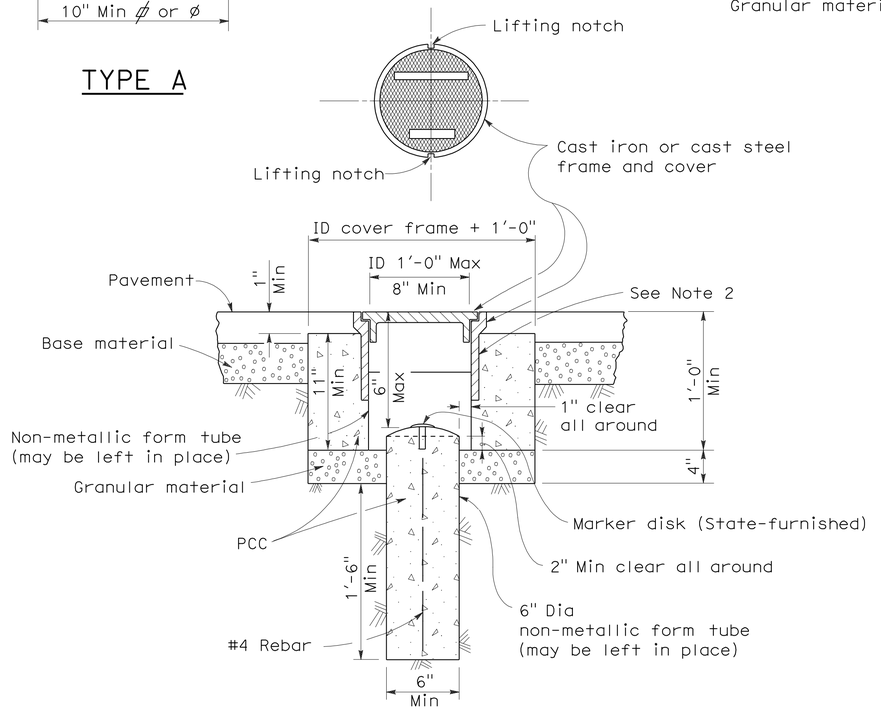
TOP VIEW OF
MONUMENT OF WELL RING

BOTTOM VIEW OF
MONUMENT OF WELL RING

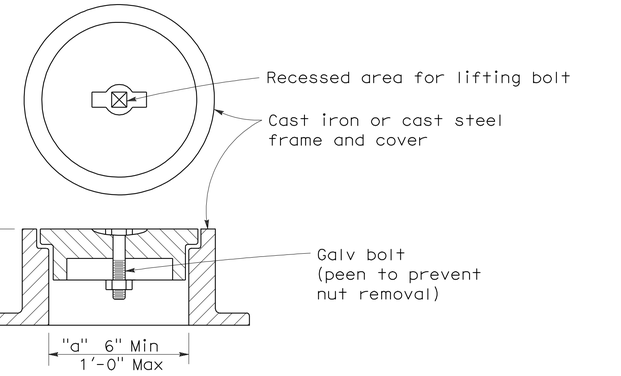


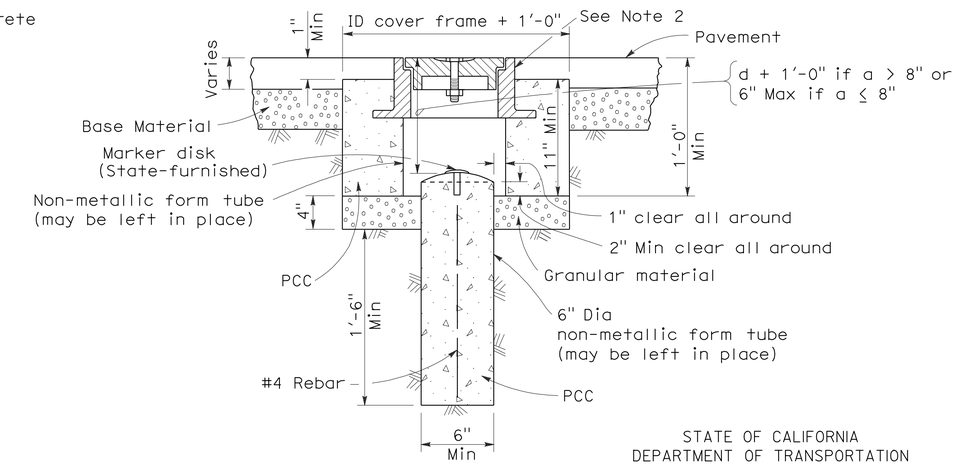


TYPE B



TYPE D
Alternative No. 1





TYPE D
Alternative No. 2

NOTES:

1. The configuration of the cast iron or cast steel frame and cover may vary from that shown.
2. Frame shall be embedded in the concrete a minimum of 3".
3. Type D monument shall be either Alternative No. 1 or Alternative No. 2 at the contractor's option.
4. All portland cement concrete shall be Class 2 or minor concrete with 1" maximum aggregate.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SURVEY MONUMENTS

NO SCALE

RSP A74 DATED JUNE 30, 2006 SUPERSEDES STANDARD PLAN DATED MAY 1, 2006 - PAGE 28 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A74

2006 REVISED STANDARD PLAN RSP A74

5-24-06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	505	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

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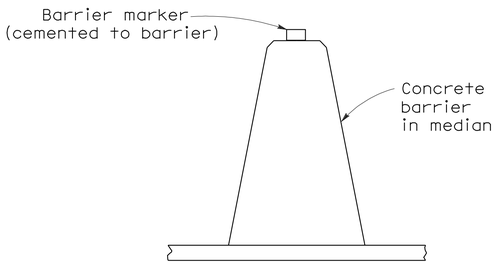
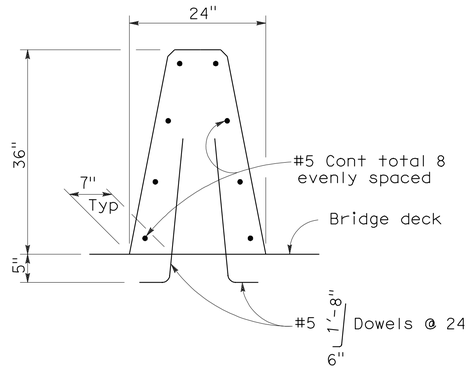
To accompany plans dated 4-16-12



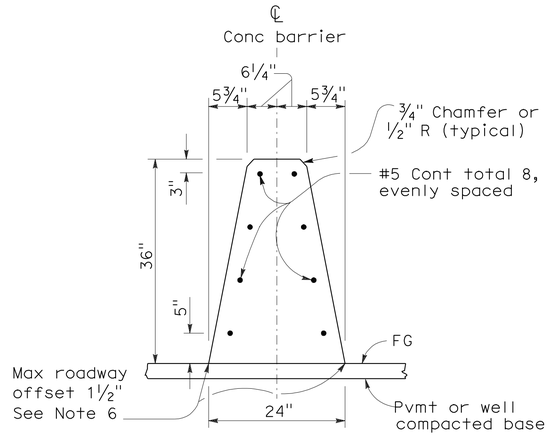
CONCRETE BARRIER TYPE 60 DELINEATION

See Notes 7 and 8



CONCRETE BARRIER TYPE 60A

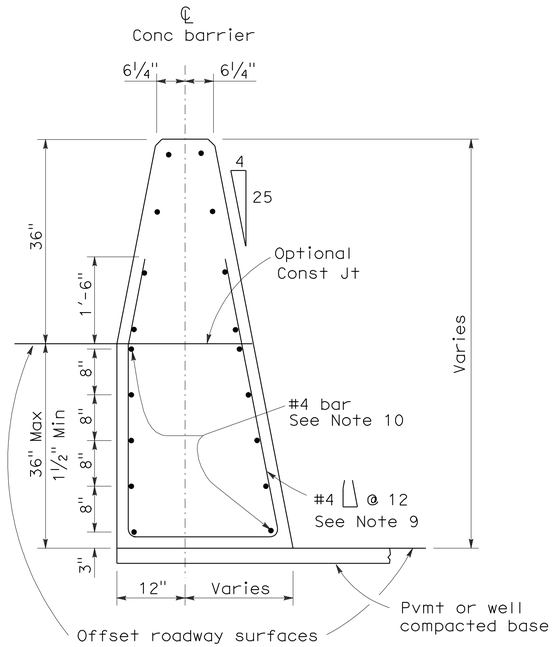
Details similar to Type 60 except as noted.



CONCRETE BARRIER TYPE 60

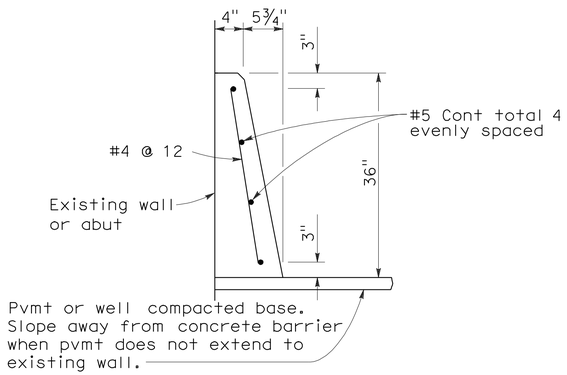
NOTES:

1. See Standard Plan A76B for details of Concrete Barrier Type 60 end anchors, connection to structures and transitions to Concrete Barrier Type 50 and Concrete Barrier Type 60S.
2. See Standard Plan A76C for Concrete Barrier Type 60 transitions at bridge column and sign pedestals.
3. Where glare screen is required on Concrete Barrier Type 60, use Concrete Barrier Type 60G.
4. Where the concrete barrier is added to the face of existing concrete structure, match existing weep holes.
5. Expansion joints in concrete barrier shall be located at all deck, pavement and principal wall joints. Expansion joint filler material shall be the same size as joint or ½" minimum.
6. Where roadway offset is greater than 1½", see Concrete Barrier Type 60C.
7. Barrier delineation to be used when required by the Special Provisions.
8. Spacing of barrier markers to match spacing of raised pavement markers on the adjacent median edgeline pavement delineation.
9. Reinforcing stirrup not required for roadway offsets less than 1'-0".
10. For roadway surfaces offset greater than 1½" to 3", no rebars required. For roadway surfaces offset greater than 3" to 8" use two #4 rebars at 3" above the lower roadway surface. For roadway surfaces offset greater than 8" to 12", use two #4 rebars at 3" above the lower roadway surface and two #4 rebars at 8" above the lower roadway surface. For roadway surfaces offset greater than 12" to 36", use two #4 rebars at 3" above the lower roadway surface and two #4 rebars at every 8" increment vertical spacing above the first two #4 rebars.



CONCRETE BARRIER TYPE 60C

Details similar to Type 60 except as noted.
Concrete barrier end anchor when necessary.
36" roadway surfaces offset shown.



CONCRETE BARRIER TYPE 60D

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60

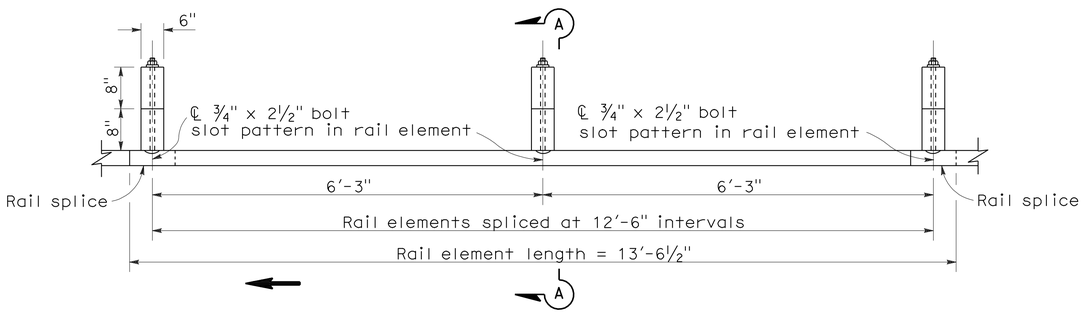
NO SCALE

RSP A76A DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A76A
DATED MAY 1, 2006 - PAGE 29 OF THE STANDARD PLANS BOOK DATED MAY 2006.

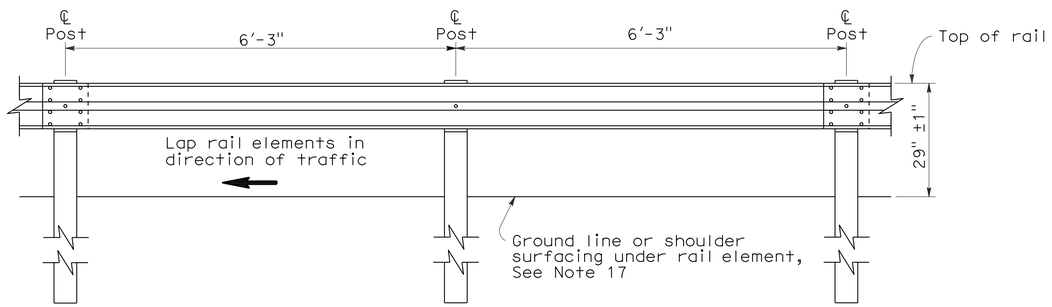
REVISED STANDARD PLAN RSP A76A

2006 REVISED STANDARD PLAN RSP A76A

5-21-08

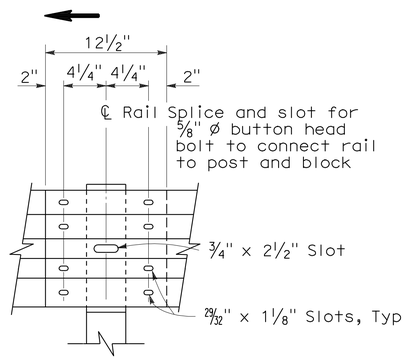


PLAN



ELEVATION

METAL BEAM GUARD RAILING WITH WOOD POST AND BLOCKS



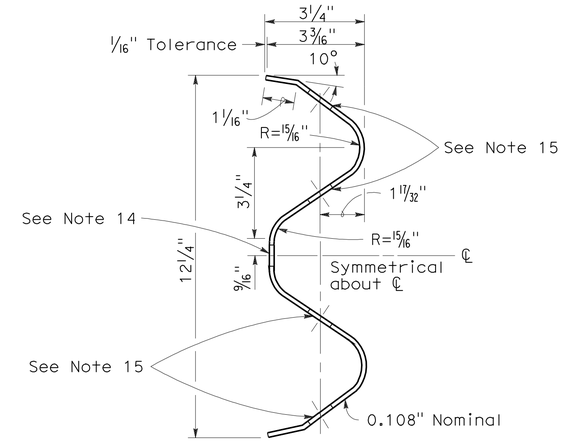
ELEVATION

RAIL ELEMENT SPLICE DETAIL

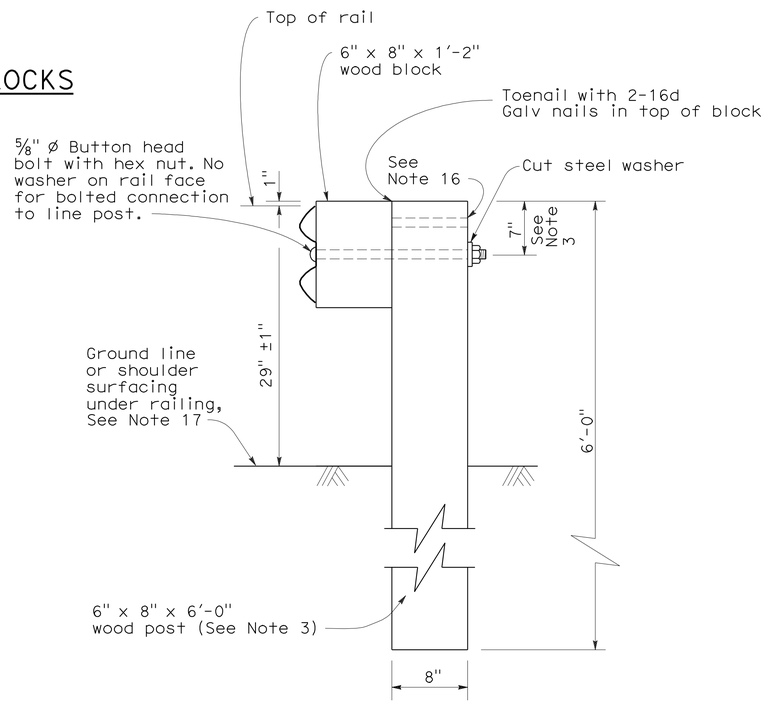
a) Connect the over lapped end of the rail elements with ⅝" ø x 1⅜" button head oval shoulder splice bolts inserted into the 29/32" x 1⅛" slots and bolted together with ⅝" ø recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice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

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

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



SECTION THRU RAIL ELEMENT



SECTION A-A

TYPICAL WOOD LINE POST INSTALLATION

See Note 4

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	506	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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To accompany plans dated 4-16-12

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

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

3-10-11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	507	619

To accompany plans dated 4-16-12

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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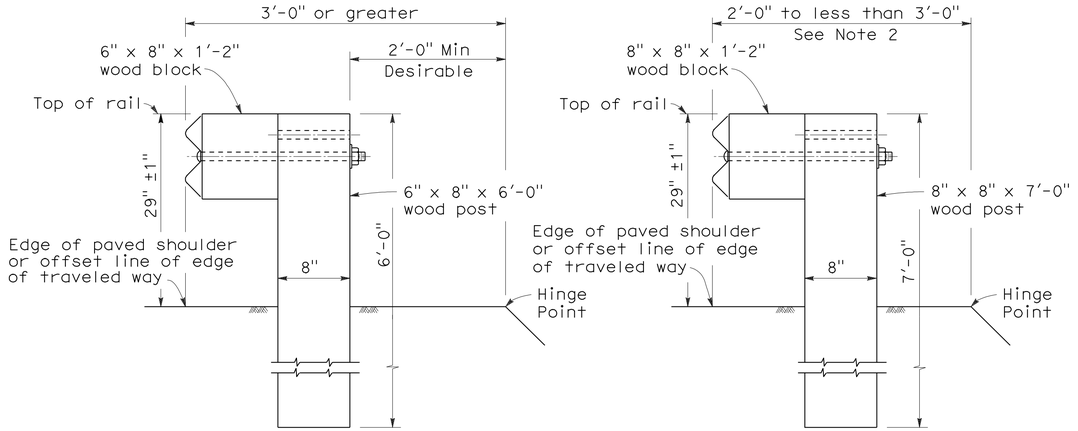
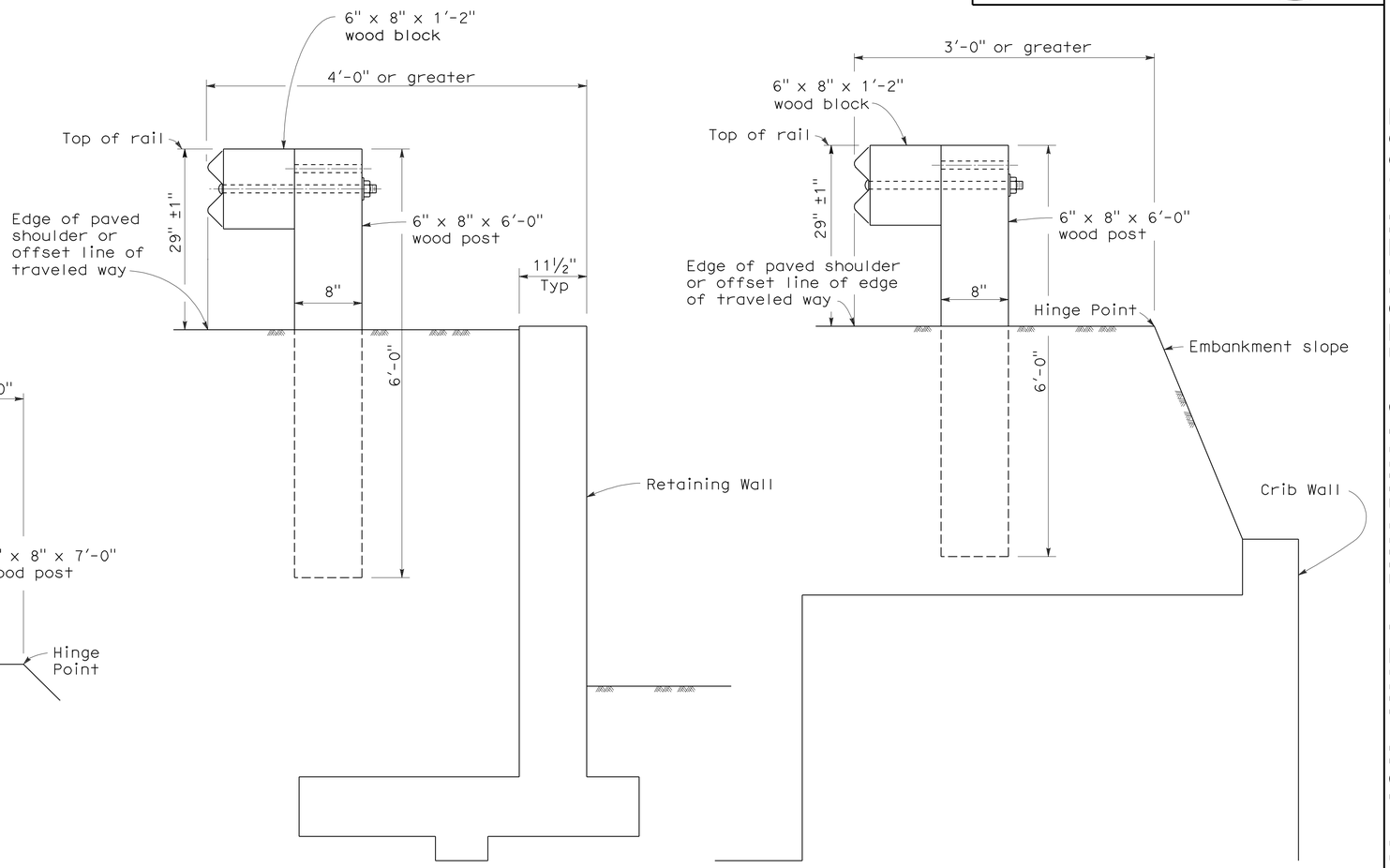


DETAIL A
TYPICAL ROADWAY INSTALLATION
See Note 1

DETAIL B
NARROW ROADWAY INSTALLATION
See Note 1

POST EMBEDMENT



DETAIL C

DETAIL D

INSTALLATION AT EARTH RETAINING WALLS

NOTES:

1. These installation details also applicable to steel line post installations. For Detail A, C, and D, where steel line post installations are constructed, W6 x 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.
2. Where the distance between the face of the rail and the hinge point is less than 2'-0", see the Project Plans for special details.
3. For dike positioning with guard railing installations, see Standard Plan A77C4.

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

3-10-11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	508	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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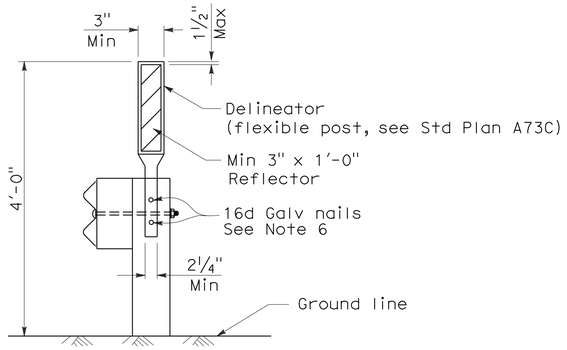
To accompany plans dated 4-16-12

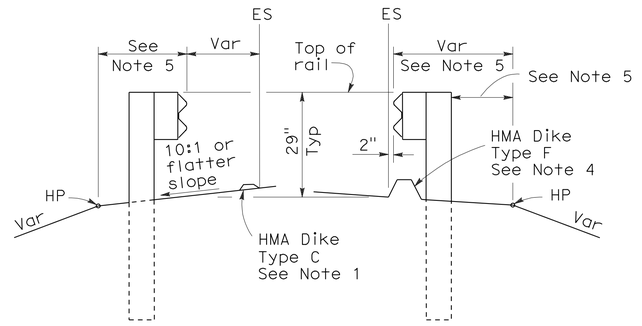
NOTES:

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 ¼ - 20 self-tapping screws in 0.22" diameter holes or ¼" bolts in 9/32" 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

3-10-11

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	509	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

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

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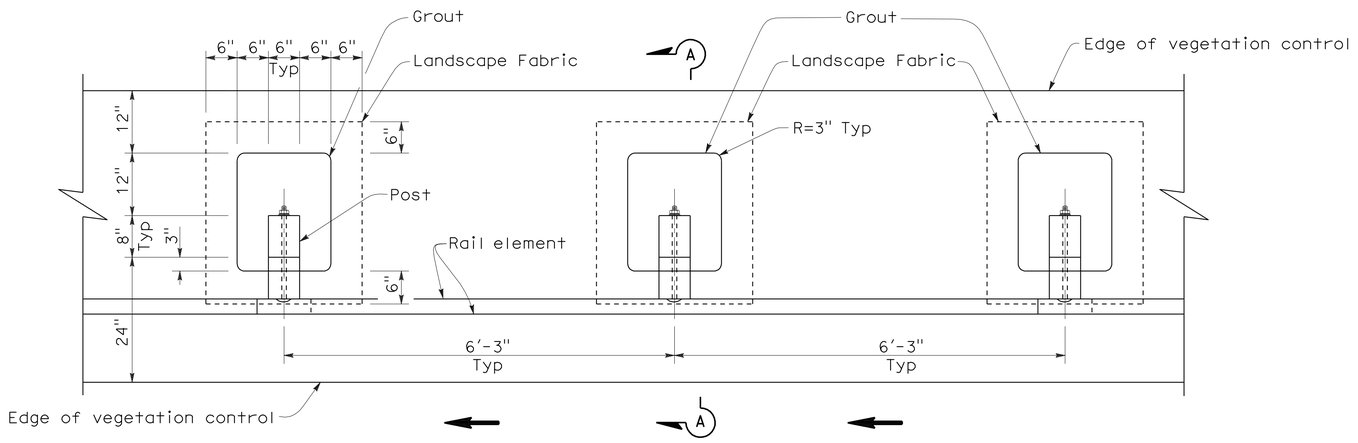
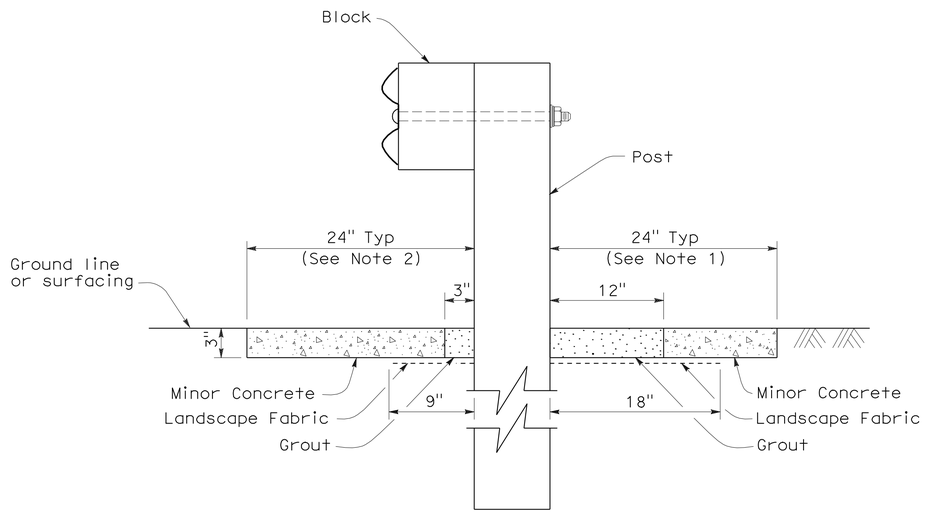


PLAN

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 ← .



SECTION A-A

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

7-17-06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	510	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-07
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STATE OF CALIFORNIA

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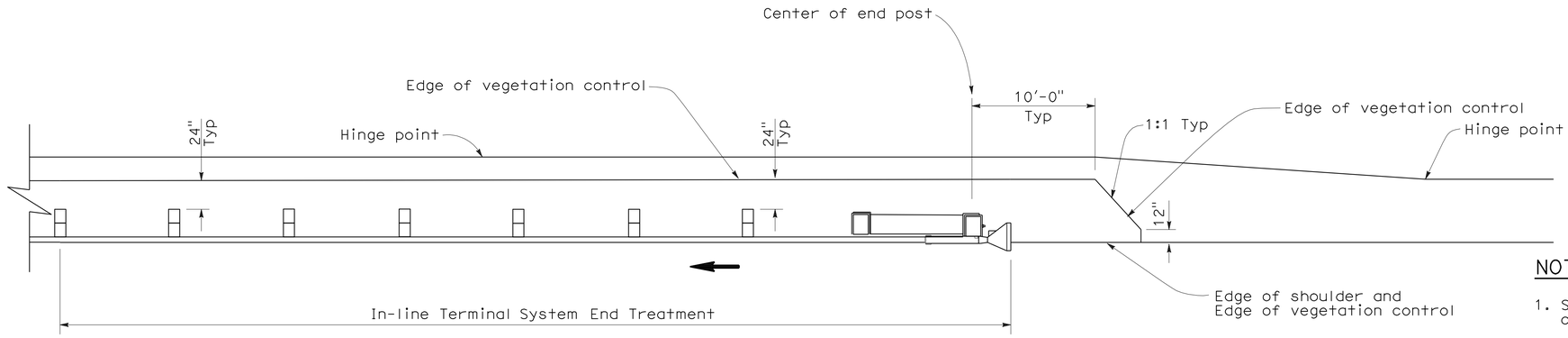
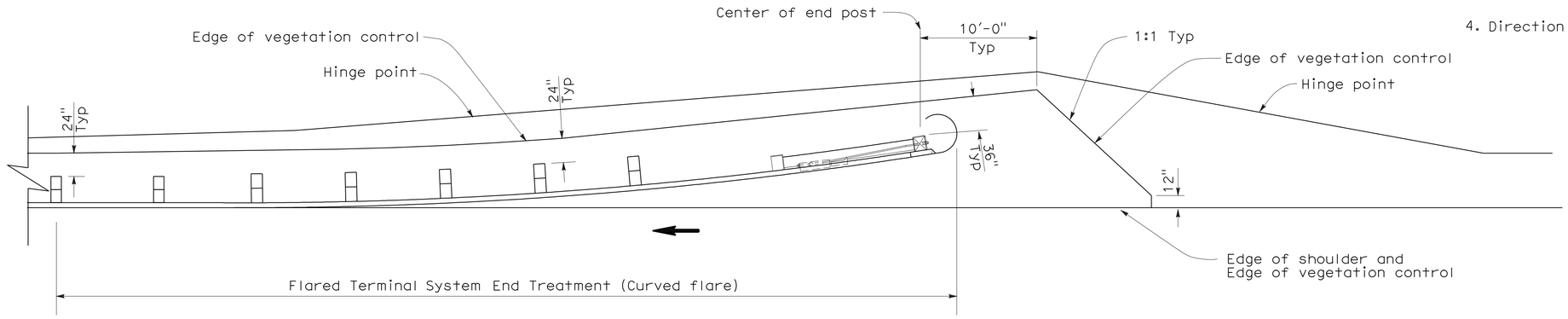
To accompany plans dated 4-16-12



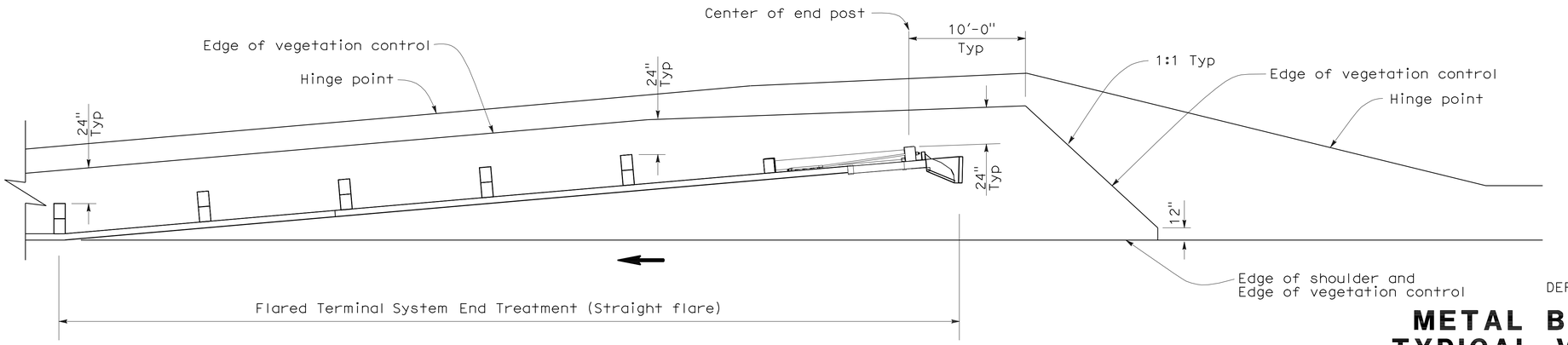
PLAN

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

7-17-06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	511	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

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

October 20, 2006
PLANS APPROVAL DATE

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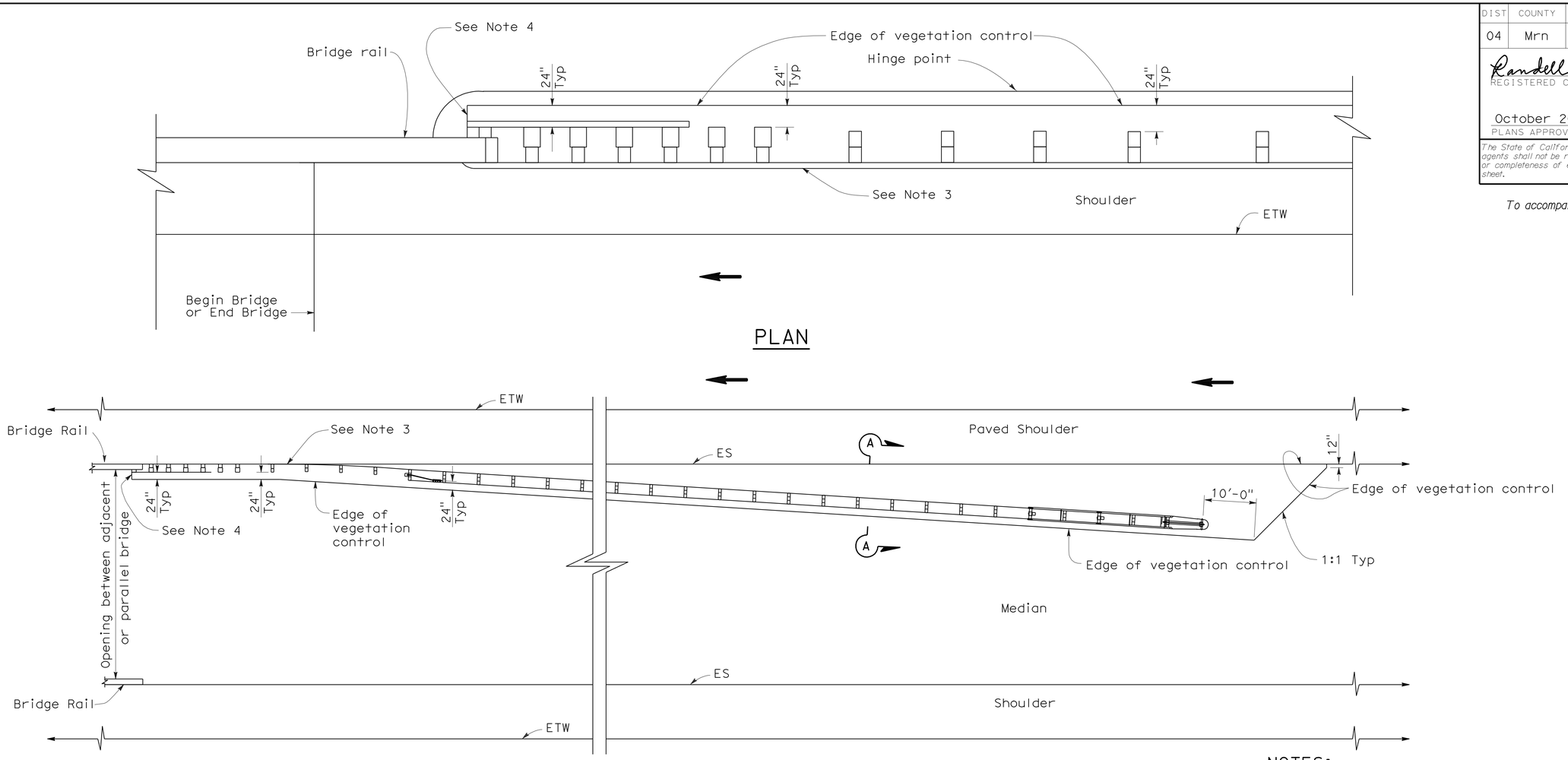
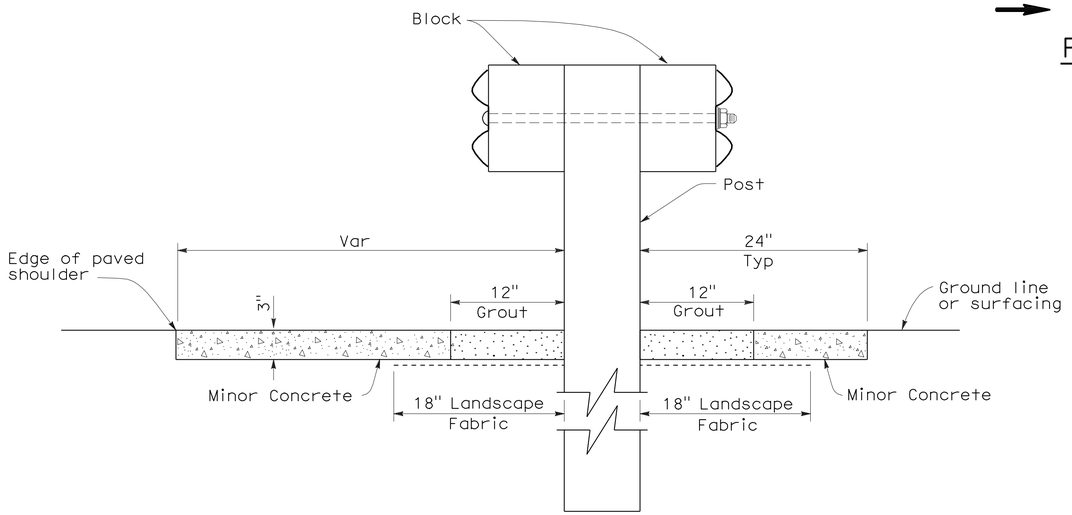
To accompany plans dated 4-16-12





SECTION A-A

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 ←.

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

2006 NEW STANDARD PLAN NSP A77C7

7-17-06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	512	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

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

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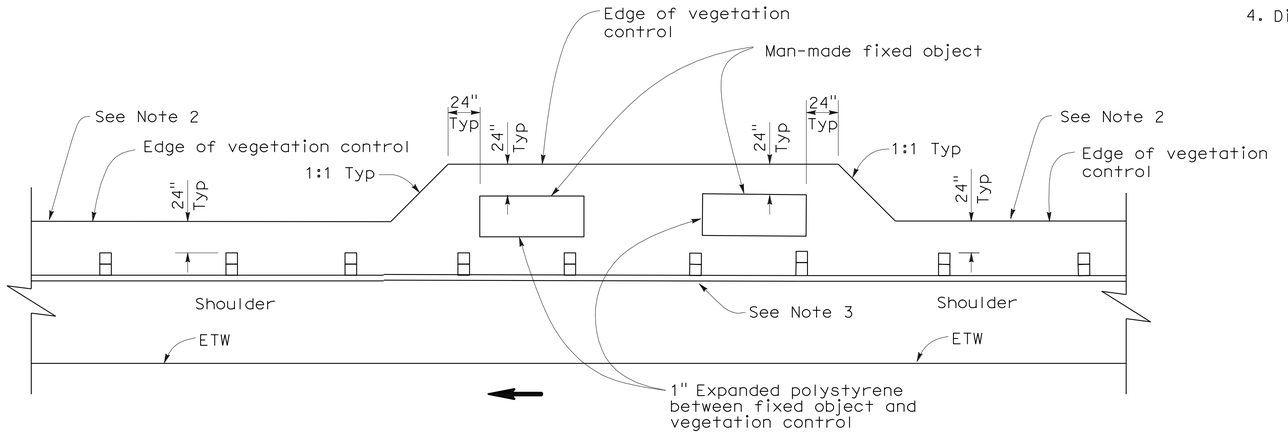
To accompany plans dated 4-16-12

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

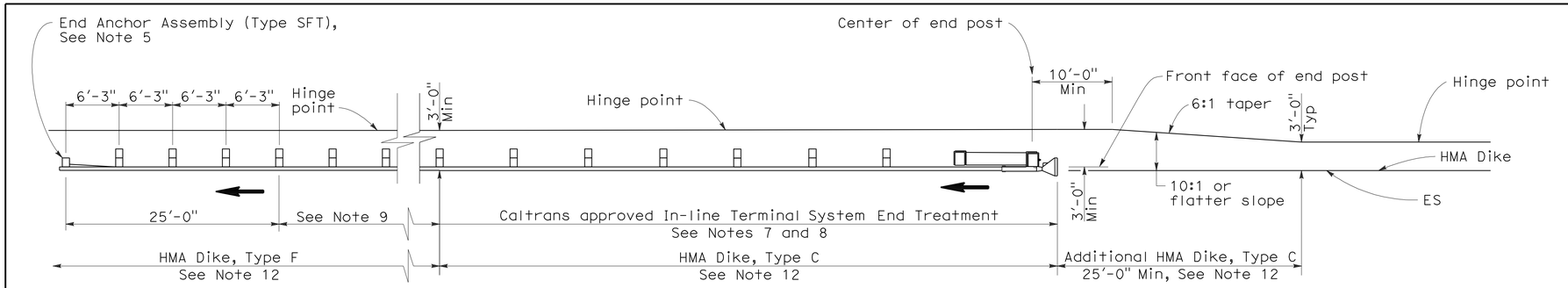
NO SCALE

NSP A77C8 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A77C8

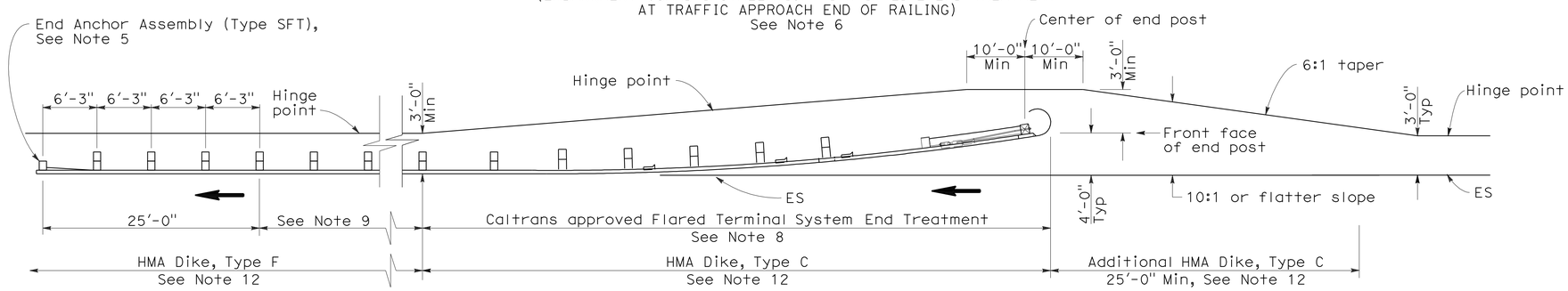
2006 NEW STANDARD PLAN NSP A77C8

7-17-06



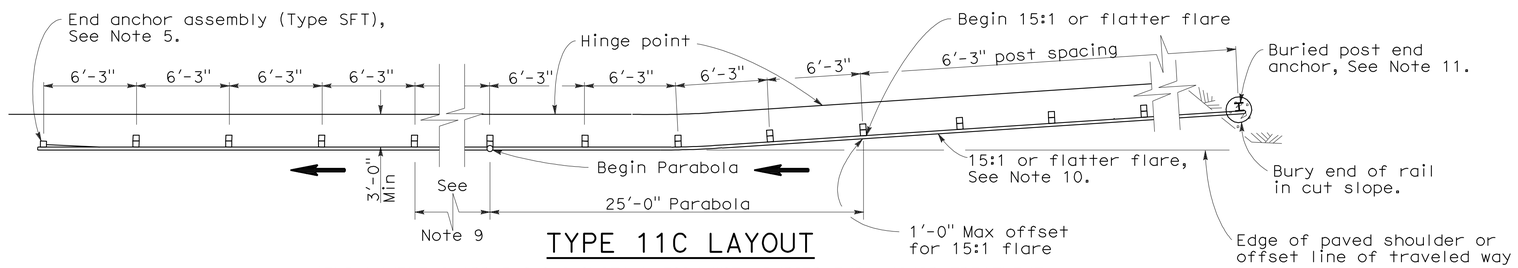
TYPE 11A LAYOUT

(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

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1, and A77C2.
2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or recycled plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Direction of adjacent traffic indicated by ➞.
5. For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
6. 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.
7. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
8. The type of terminal system end treatment to be used will be shown on the Project Plans.
9. 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.
10. 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".
11. For details of the buried post end anchor used with Type 11C Layout, see Standard Plan A77I2.
12. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	513	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

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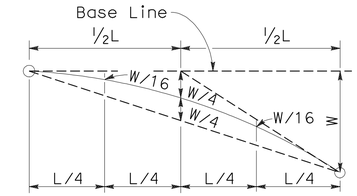
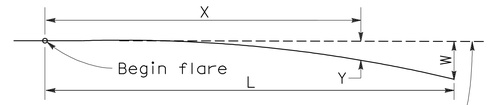
To accompany plans dated 4-16-12



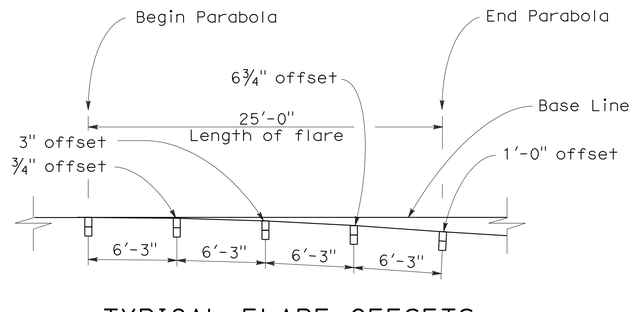
TYPICAL PARABOLIC LAYOUT



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

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

PARABOLIC FLARE OFFSETS



TYPICAL FLARE OFFSETS FOR 1 FOOT MAX END OFFSET

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

12-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	514	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
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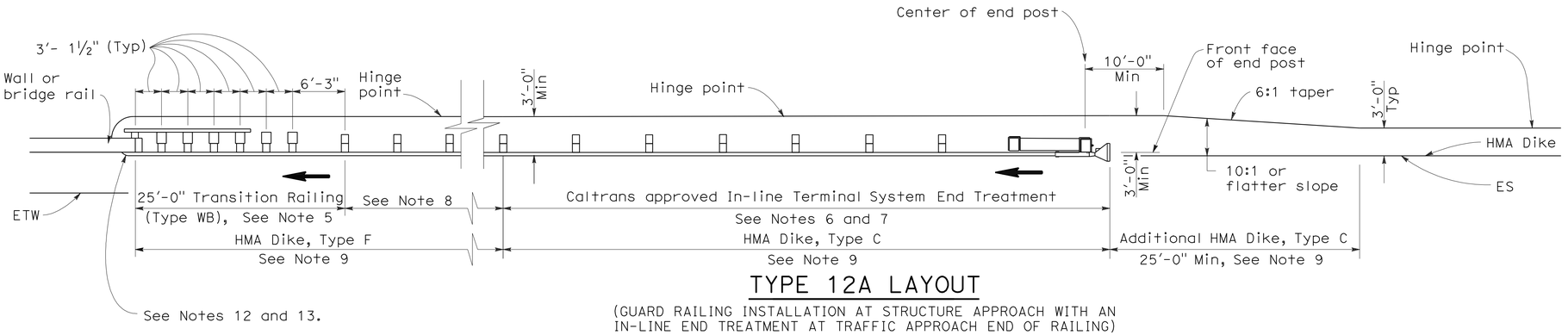
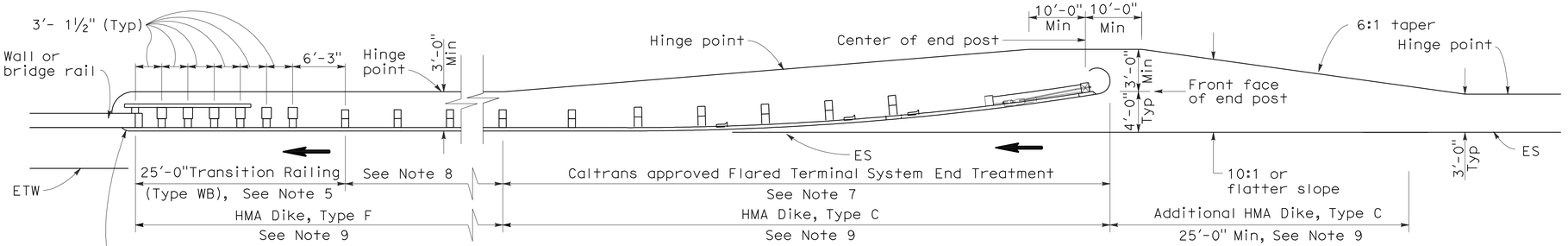


TYPE 12A LAYOUT

(GUARD RAILING INSTALLATION AT STRUCTURE APPROACH WITH AN IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)
See Notes 10



TYPE 12B LAYOUT

(GUARD RAILING INSTALLATION AT STRUCTURE APPROACH WITH A FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)
See Notes 10

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Direction of adjacent traffic indicated by ➞.
5. For Transition Railing (Type WB) details for Types 12A and 12B Layouts, see Standard Plan A77J4.
6. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
7. The type of terminal system end treatment to be used will be shown on the Project Plans.
8. Dependent on site conditions (embankment height, side slopes, or other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatment.
9. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
10. Type 12A or Type 12B Layouts are typically used:
    a. To the right of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
    b. To the left of approaching traffic, at the end of a structure, on two-lane conventional highway where the roadbed width across the structure is less than 40 feet.
    c. To the right of approaching traffic at the end of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
    d. To the right of approaching traffic at the end of the structure on multilane freeways or expressways with decked median on the bridge.
11. See 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.
12. 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.
13. For additional details of a typical connection to walls or abutments, see Standard Plan A77J3.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

12-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	515	619

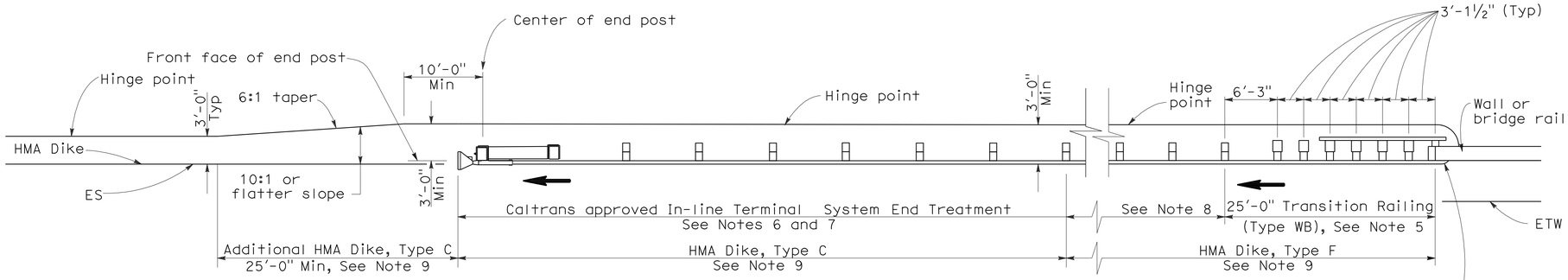
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 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.

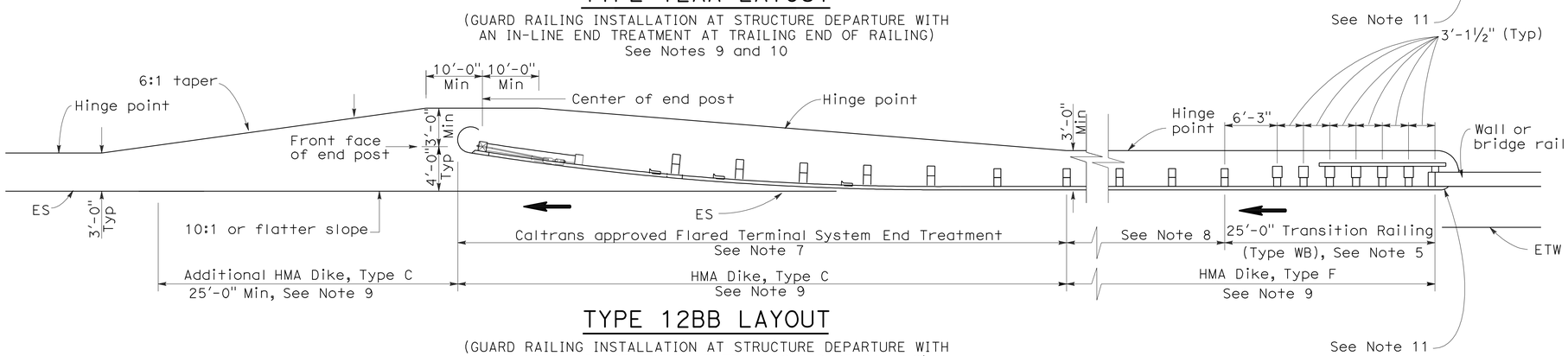
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-09
CIVIL
STATE OF CALIFORNIA

To accompany plans dated 4-16-12



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:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard rail post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. Direction of adjacent traffic indicated by ➞.
5. For Transition Railing (Type WB) details for Types 12AA and 12BB Layouts, see Standard Plan A77J4.
6. In-line Terminal System Treatments are used where site conditions will not accommodate a flared end treatment.
7. The type of terminal system to be used will be shown on the Project Plans.
8. 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.
9. Where placement of dike is required with guard railing installations, see Revised Standard Plan RSP A77C4 for dike positioning details.
10. 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.
11. 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.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

2006 REVISED STANDARD PLAN RSP A77F4

12-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	516	619

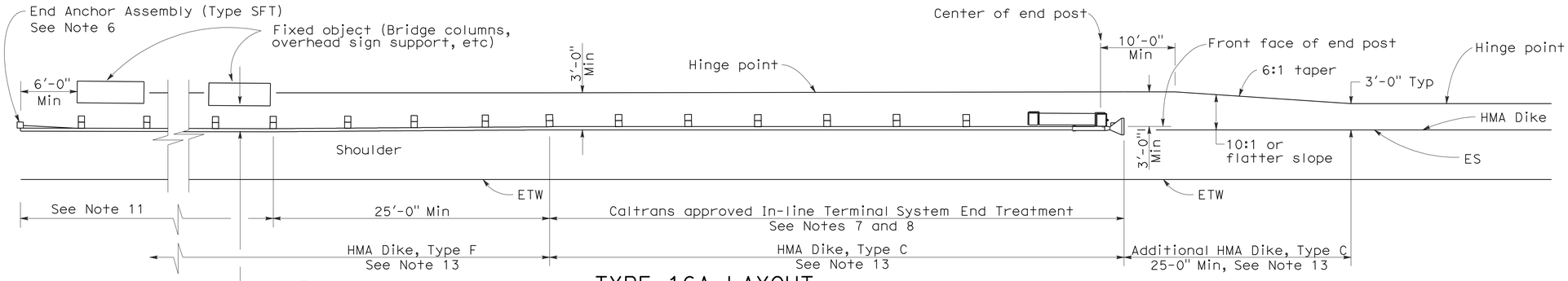
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

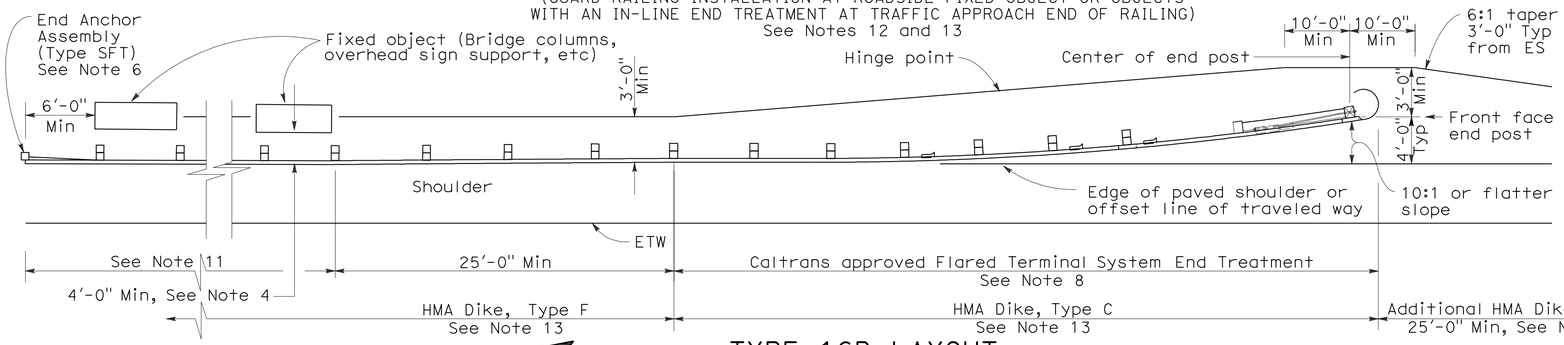
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 4-16-12



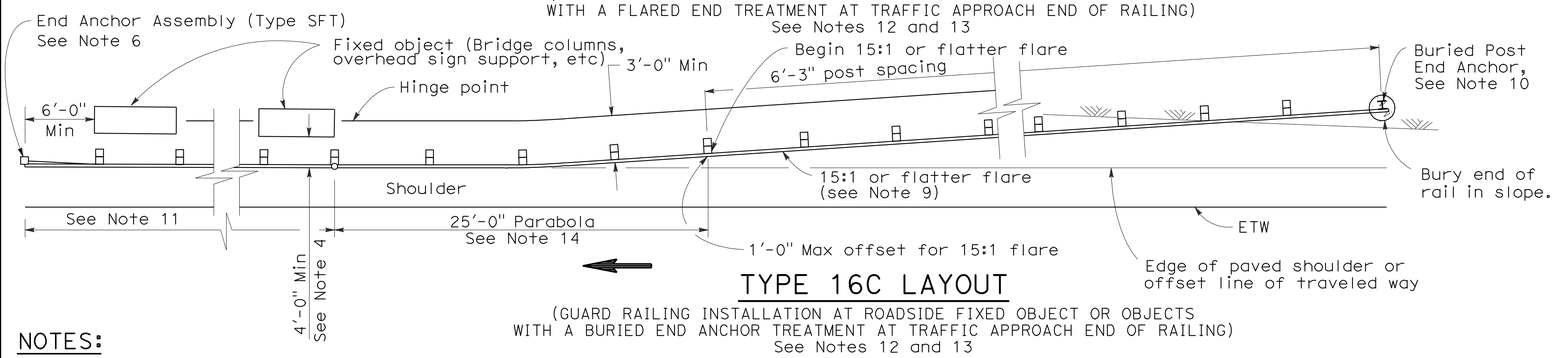
TYPE 16A LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH AN IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)
See Notes 12 and 13



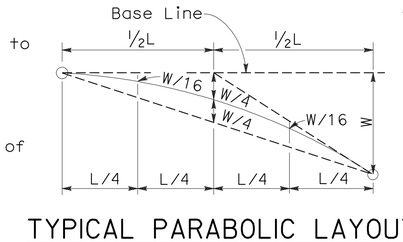
TYPE 16B LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)
See Notes 12 and 13

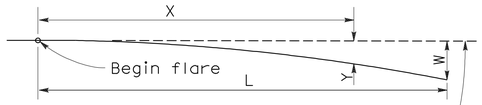


TYPE 16C LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AT TRAFFIC APPROACH END OF RAILING)
See Notes 12 and 13



TYPICAL PARABOLIC LAYOUT

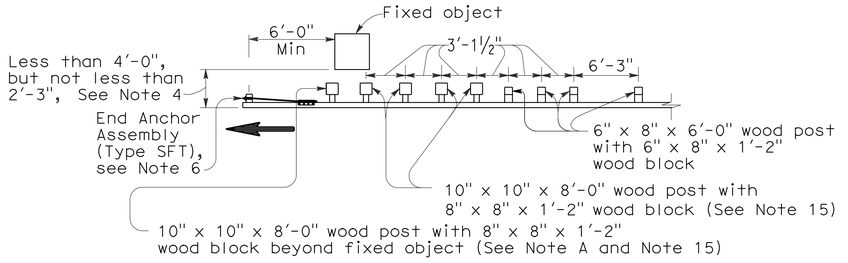


Base Line (Edge of paved shoulder or offset line of edge of traveled way)

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

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

PARABOLIC FLARE OFFSETS



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

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

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

NOTES:

1. Line post, blocks and hardware to be used are shown on Revised Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind 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).
5. Direction of adjacent traffic indicated by ⟶.
6. For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
7. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
8. The type of terminal system to be used will be shown on the Project Plans.
9. The 15:1 or flatter flare used with Type 16C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
10. For details of the Buried Post End Anchor used with Type 16C Layout, see Standard Plan A77I2.
11. As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
12. Layout Types 16A, 16B or 16C are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for only one direction of traffic.
13. Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
14. For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.
15. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77G3 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G3
DATED MAY 1, 2006 - PAGE 61 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G3

2006 REVISED STANDARD PLAN RSP A77G3

12-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	517	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

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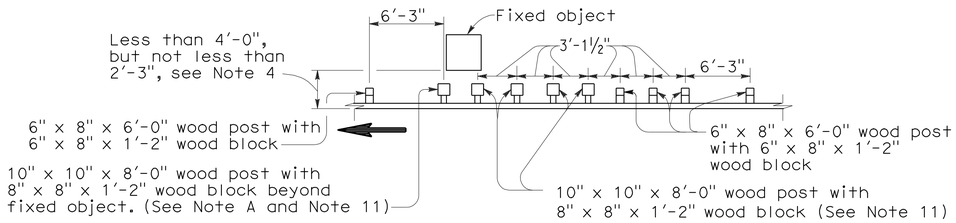
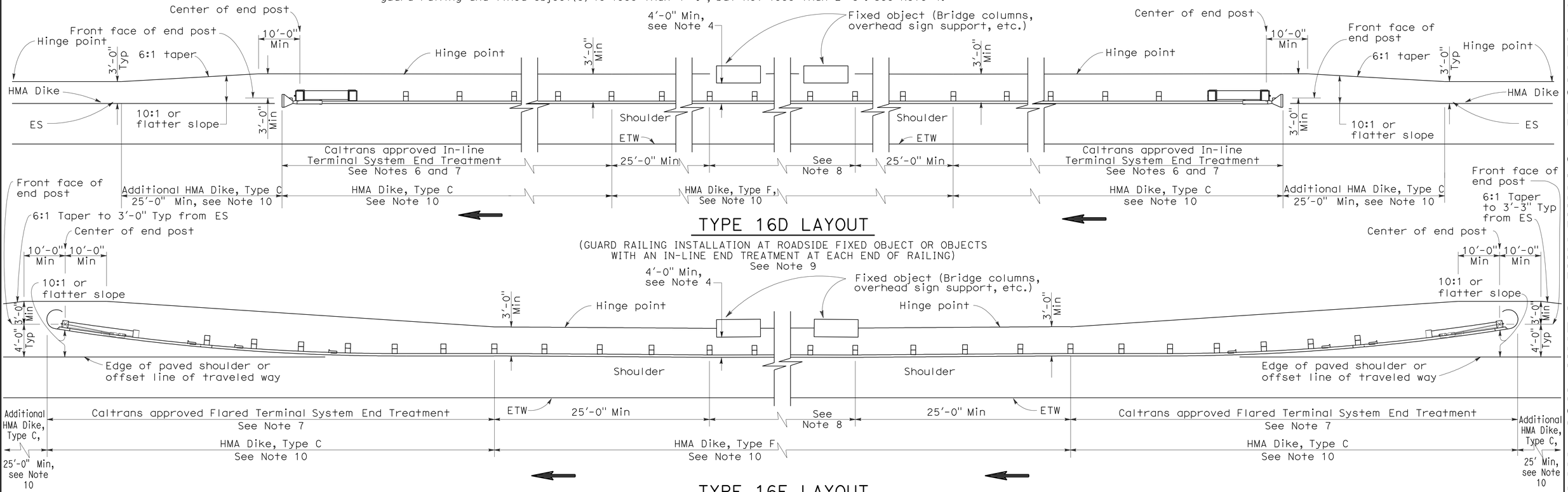
To accompany plans dated 4-16-12



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

STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT

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



TYPE 16D LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH AN IN-LINE END TREATMENT AT EACH END OF RAILING)
See Note 9

TYPE 16E LAYOUT

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A FLARED END TREATMENT AT EACH END OF RAILING)
See Note 9

NOTES:

1. Line post, blocks and hardware to be used are shown on Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
2. Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
4. A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing at 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
5. Direction of adjacent traffic indicated by ➞.
6. In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
7. The type of terminal system to be used will be shown on the Project Plans.
8. As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
9. Layout Types 16D through 16L, shown on the A77G Series of Revised Standard Plans, are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for both directions of traffic.
10. Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
11. W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic block may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail."

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

RSP A77G4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G4
DATED MAY 1, 2006 - PAGE 62 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77G4

2006 REVISED STANDARD PLAN RSP A77G4

12-10-07

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	518	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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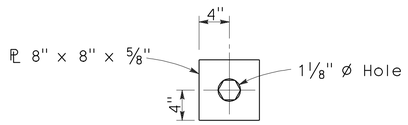
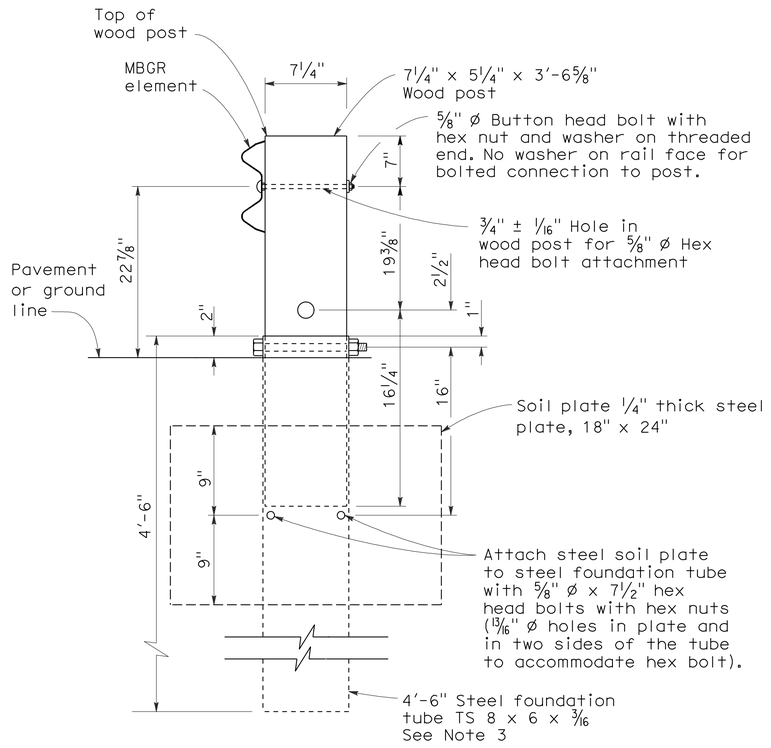
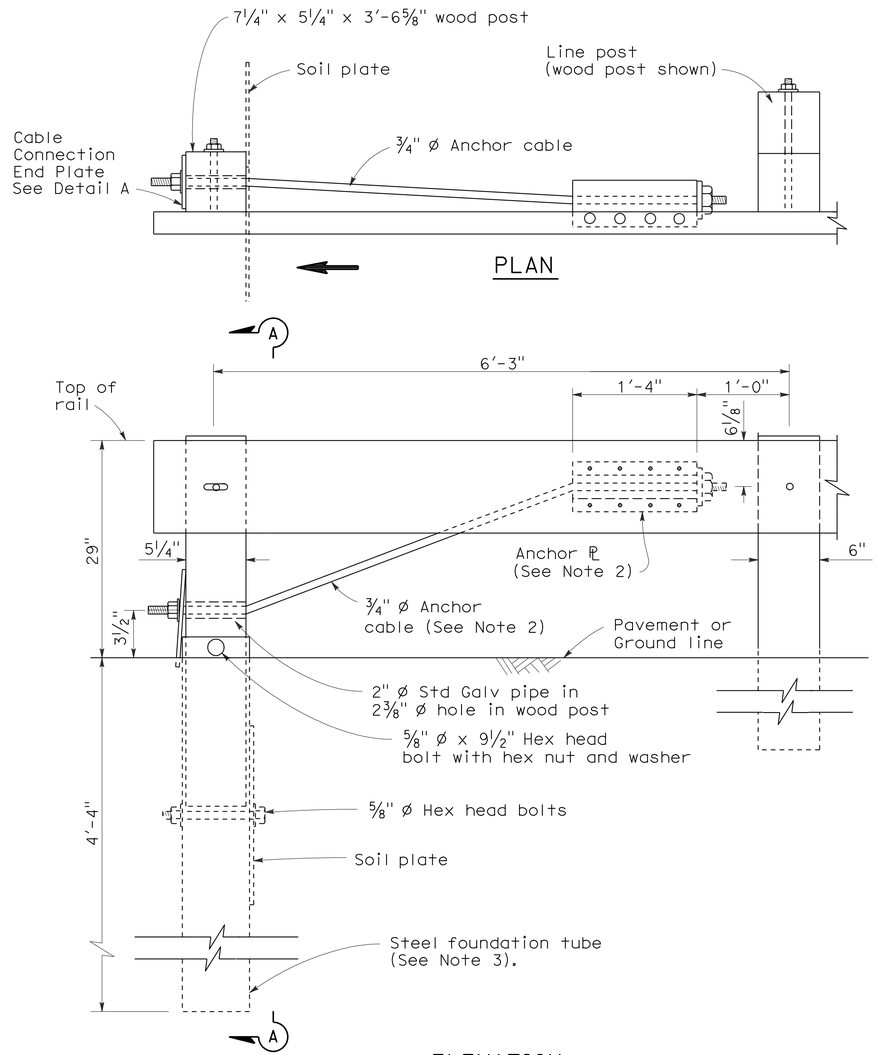
To accompany plans dated 4-16-12



DETAIL A
CABLE CONNECTION END PLATE



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" ø hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
4. 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

7-10-07

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	519	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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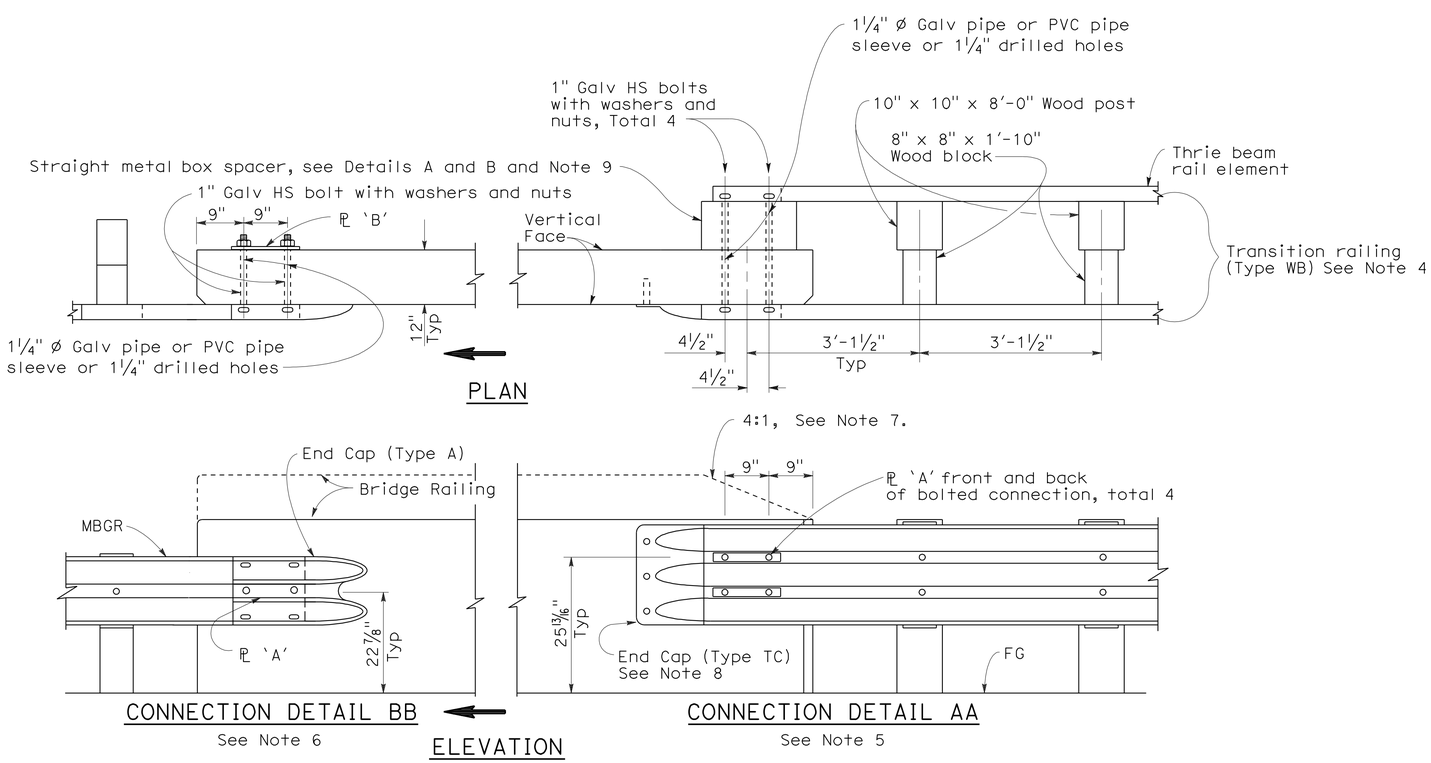
To accompany plans dated 4-16-12



GUARD RAILING CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

1. See Revised Standard Plan RSP A77J2 for additional connection details to bridges without sidewalks.
2. Additional details of posts, blocks and hardware are shown on Standard Plan A77B1, A77C1 and A77C2.
3. Direction of adjacent traffic indicated by ➡.
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 BB, see Layout Type 12D (structure departure railing connection) on Standard Plan A77F2 and Layout Type 12DD on Standard Plan A77F5.
7. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam rail.
8. For details of End Cap (Type TC), see Standard Plan A77J4.
9. See Standard Plan A77J4 for additional details regarding depth dimension for straight metal box spacer.

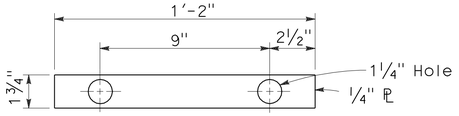


PLATE 'A'

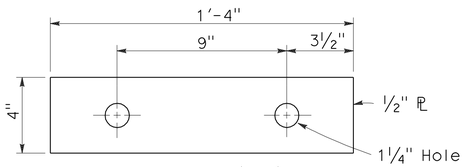
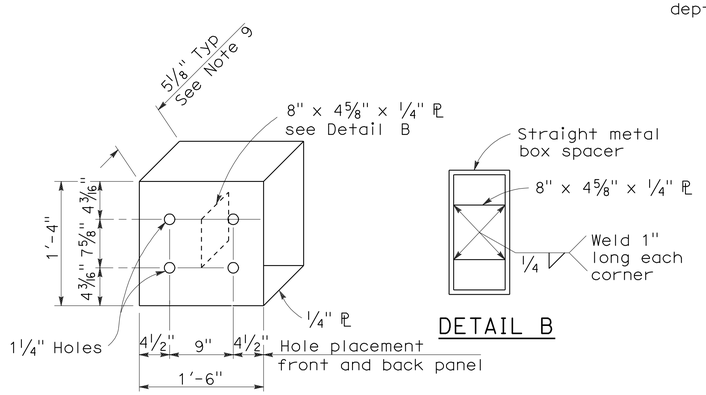


PLATE 'B'
(For backside of connection BB)



DETAIL A

STRAIGHT METAL BOX SPACER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A77J1 DATED MAY 20, 2011 SUPERSEDES RSP A77J1 DATED JUNE 6, 2008 AND STANDARD PLAN A77J1 DATED MAY 1, 2006 - PAGE 72 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77J1

2006 REVISED STANDARD PLAN RSP A77J1

3-10-11

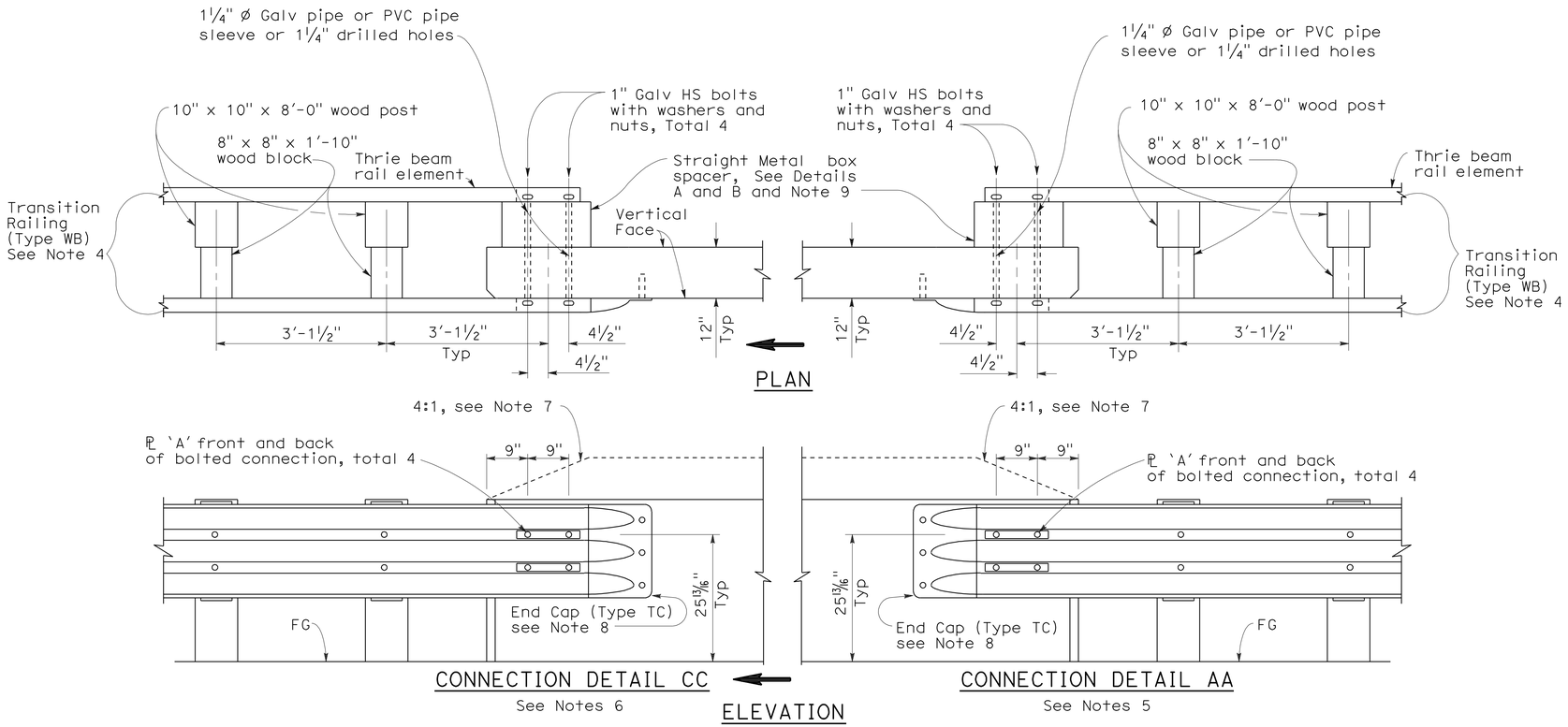
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	520	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

To accompany plans dated 4-16-12



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.

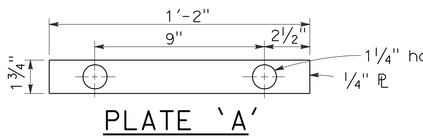


PLATE 'A'

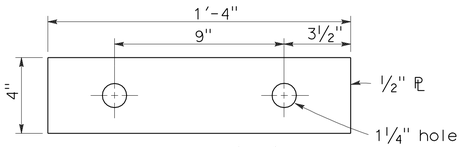
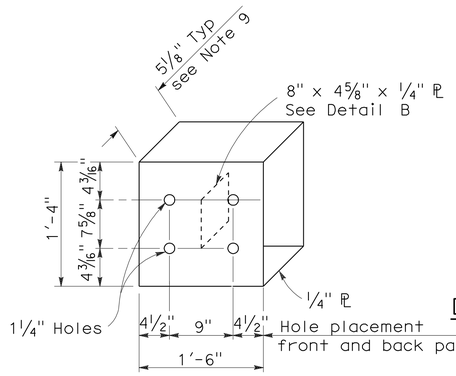
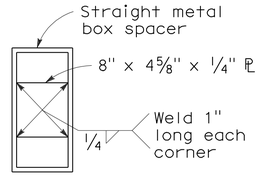


PLATE 'B'
(For backside of connection BB)



DETAIL A



DETAIL B

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.

REVISED STANDARD PLAN RSP A77J2

2006 REVISED STANDARD PLAN RSP A77J2

12-10-07

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	521	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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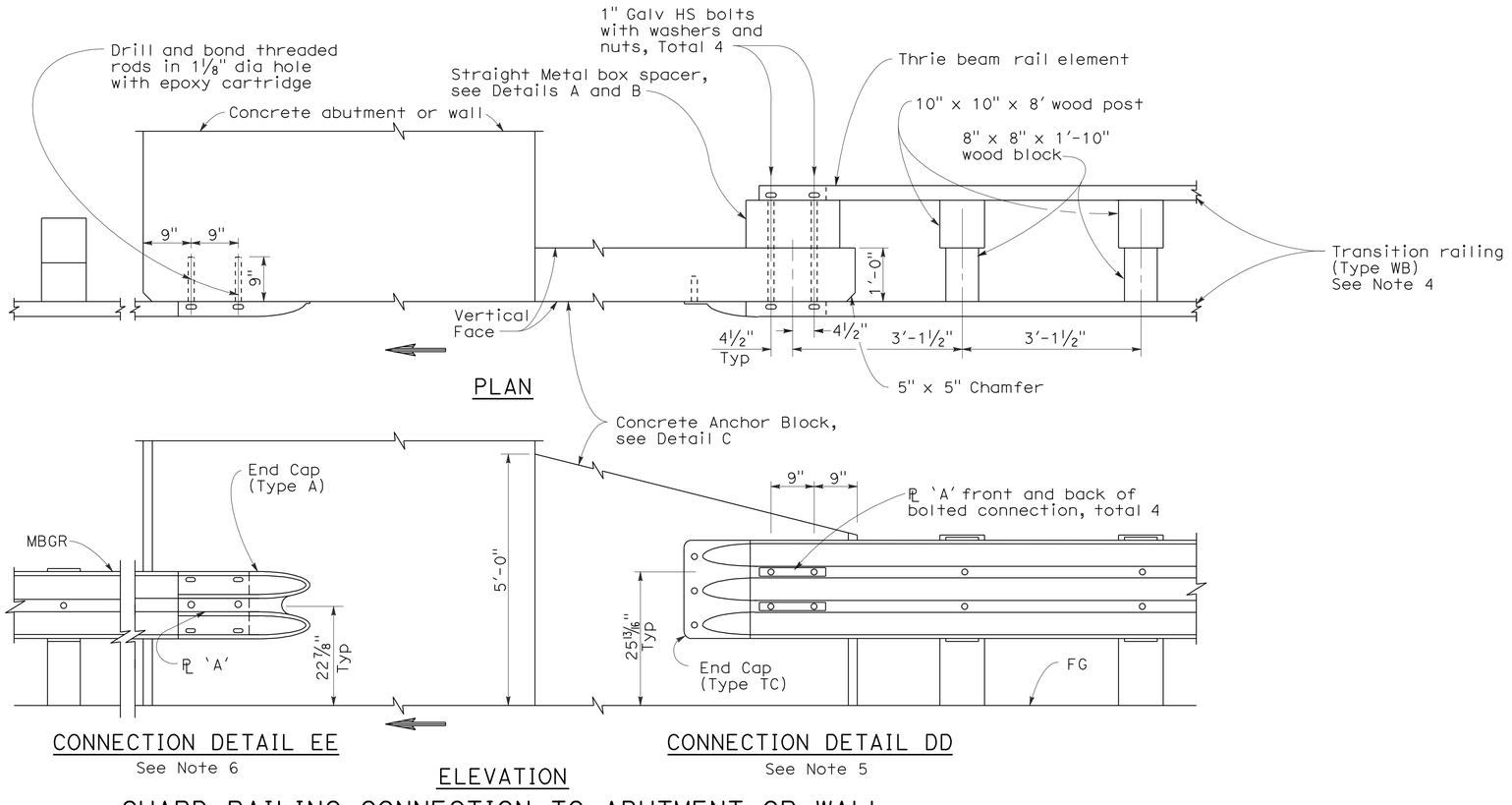
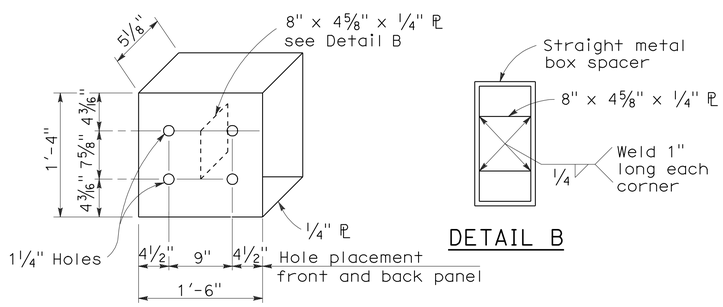
To accompany plans dated 4-16-12



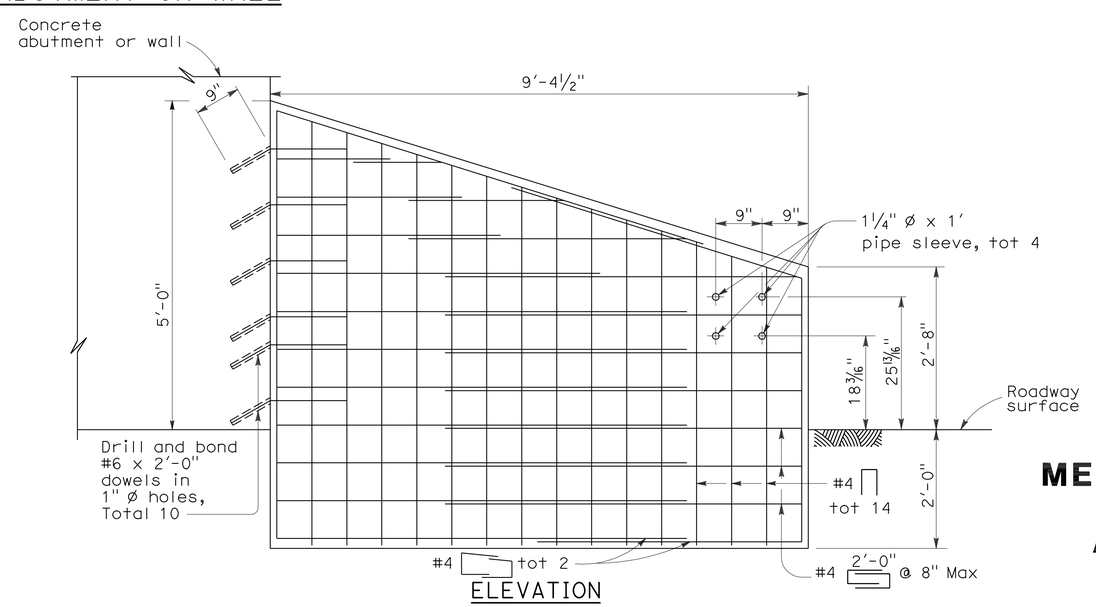
GUARD RAILING CONNECTION TO ABUTMENT OR WALL



DETAIL A

DETAIL B

STRAIGHT METAL BOX SPACER



ELEVATION

ANCHOR BLOCK FOR TRANSITION RAILING CONNECTION

DETAIL C

NOTES:

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

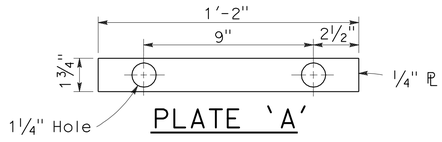


PLATE 'A'

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING CONNECTIONS TO ABUTMENTS AND WALLS

NO SCALE

RSP A77J3 DATED MAY 20, 2011 SUPERSEDES STANDARD PLAN A77J3
DATED MAY 1, 2006 - PAGE 74 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A77J3

2006 REVISED STANDARD PLAN RSP A77J3

3-10-11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	522	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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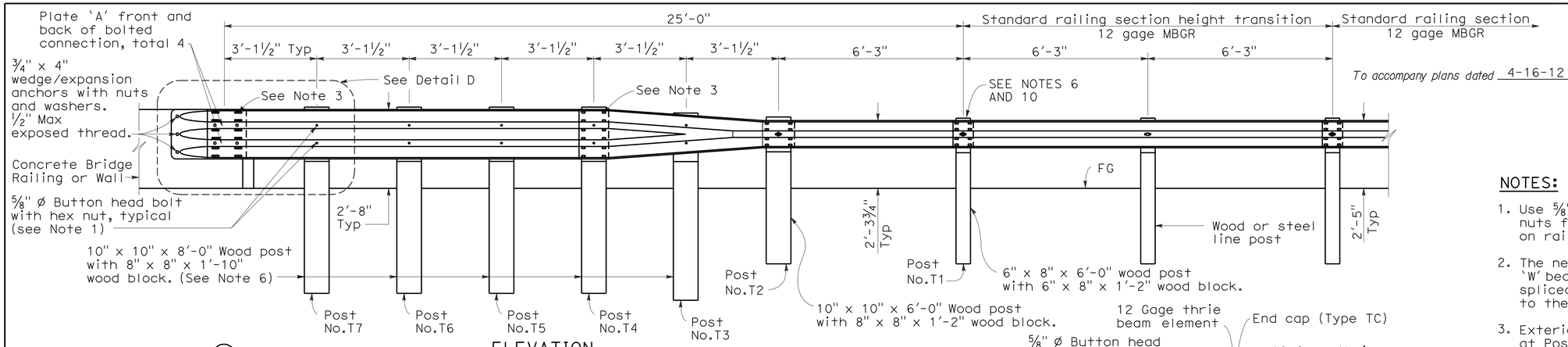
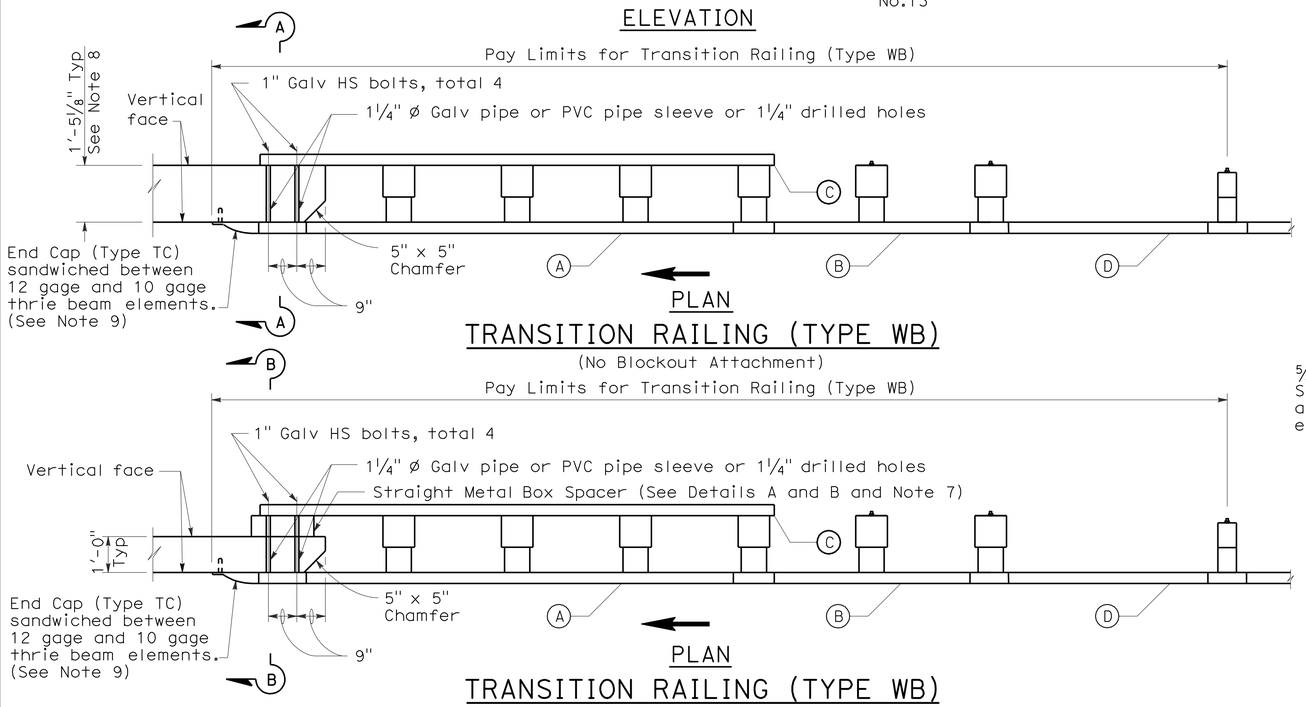
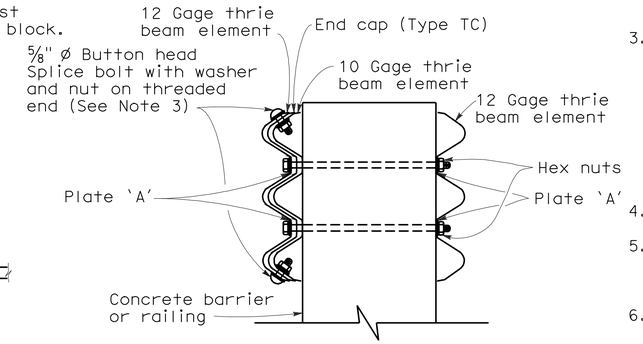
To accompany plans dated 4-16-12

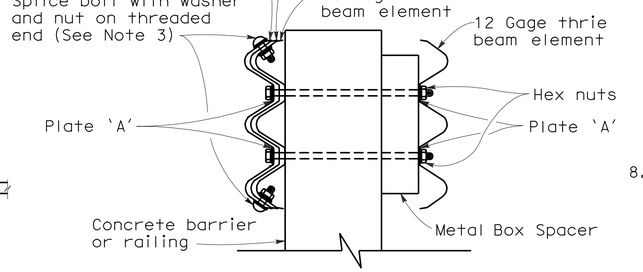


ELEVATION

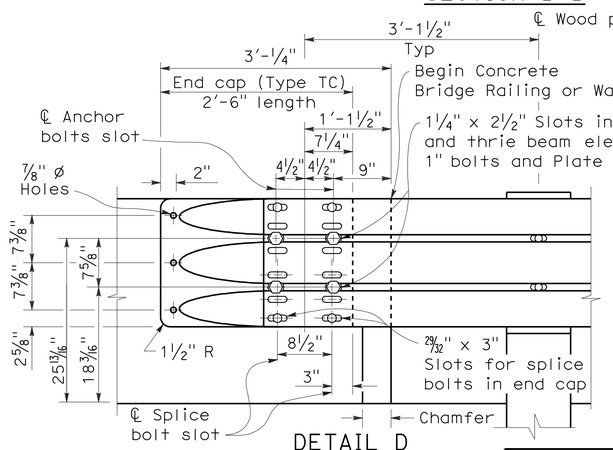




SECTION A-A



SECTION B-B



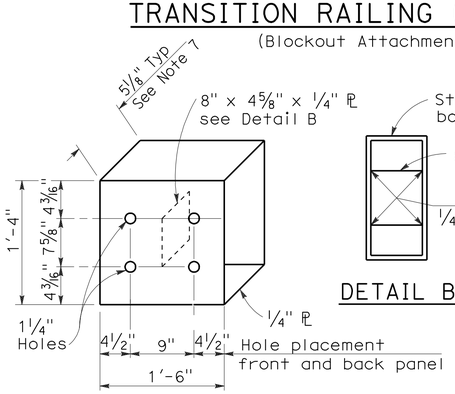
DETAIL D

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'-3½" length)

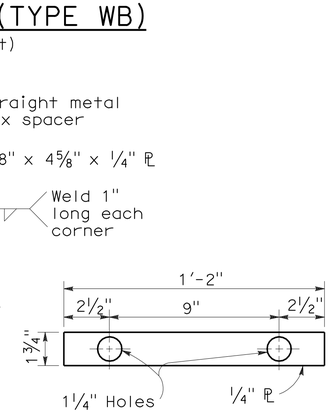
10 gage = 0.135" thick

12 gage = 0.108" thick



DETAIL A

STRAIGHT METAL BOX SPACER



DETAIL B

DETAIL C

PLATE 'A'

NOTES:

1. Use ⅝" ø Button head bolts and hex nuts for connections to posts. No washer on rail face for bolted connections to post.
2. The nested rail elements, end cap, and 'W' beam to thrie beam element may be spliced together prior to bolting the elements to the wood post and concrete barrier or railing.
3. Exterior splice bolt holes for rail element splices at Post No. T4 and the connection to the concrete barrier or railing shall be the standard ²⁹⁄₃₂" x 1⅛" slot size. Interior splice bolt holes at these locations may be increased up to 1¼" ø. Only the top 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.
4. Direction of adjacent traffic indicated by ⟵.
5. The top elevation of Posts No. T2 through No. T7 shall not project more than 1" above the top elevation of the rail element.
6. 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.
7. The depth of the metal box spacer varies from the 5⅛" to 1½" and is dependent on the width of the concrete railing or wall. The combined dimension for the depth of the metal box spacer plus the width of railing or wall is typically 17⅛". Where the space between the backside of the concrete railing or wall and the rear thrie beam element is less than 1½", metal plates similar to Plate 'A' are to be used as spacers.
8. Where the width of the concrete railing or wall is greater than 17⅛", wood blocks are to be used to fill the space created between the backside of Posts No. 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.
9. 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.
10. Conform standard railing section height to 2'-3¾" at Post No. T1 using height transition ratio of 120:1.

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

5-14-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	523	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

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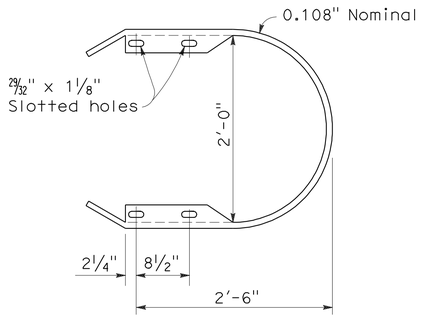
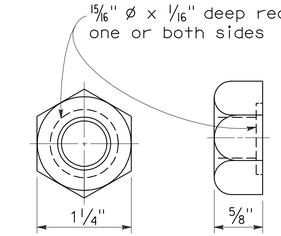
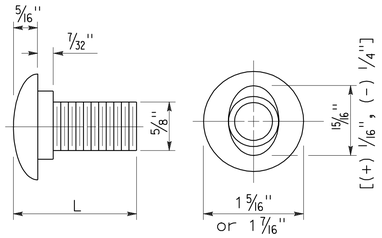
To accompany plans dated 4-16-12



RETURN CAP
(TYPE TA)

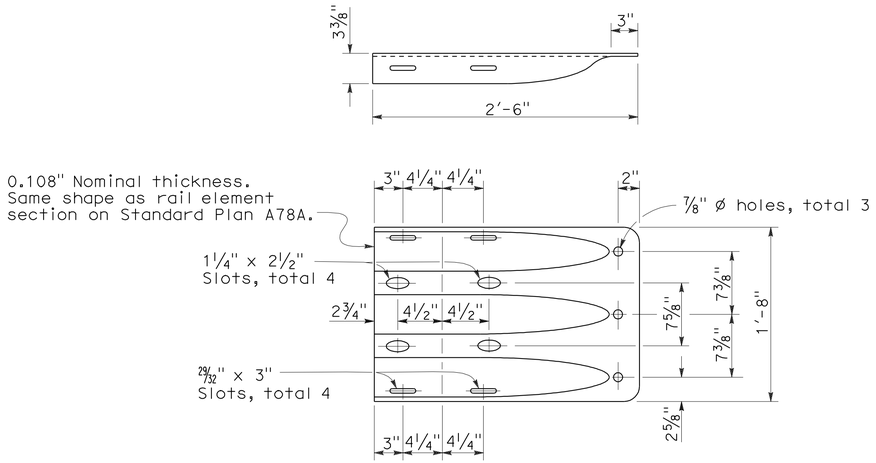


5/8" ø RECESS NUT



5/8" ø BUTTON HEAD BOLT

L	THREAD LENGTH
1 1/4"	full thread length
2"	full thread length
9 1/2"	4" Min thread length
18"	4" Min thread length



END CAP
(TYPE TC)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

THRIE BEAM BARRIER
STANDARD HARDWARE DETAILS

NO SCALE

RSP A78C1 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A78C1
DATED MAY 1, 2006 - PAGE 85 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A78C1

2006 REVISED STANDARD PLAN RSP A78C1

4-21-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	524	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

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

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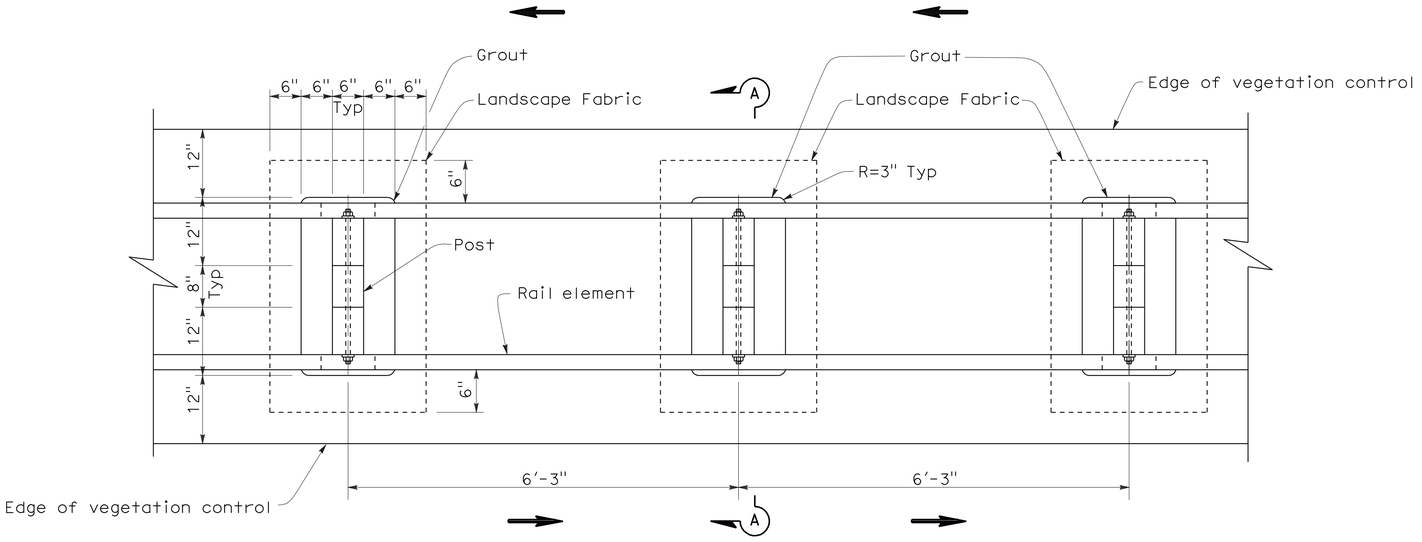
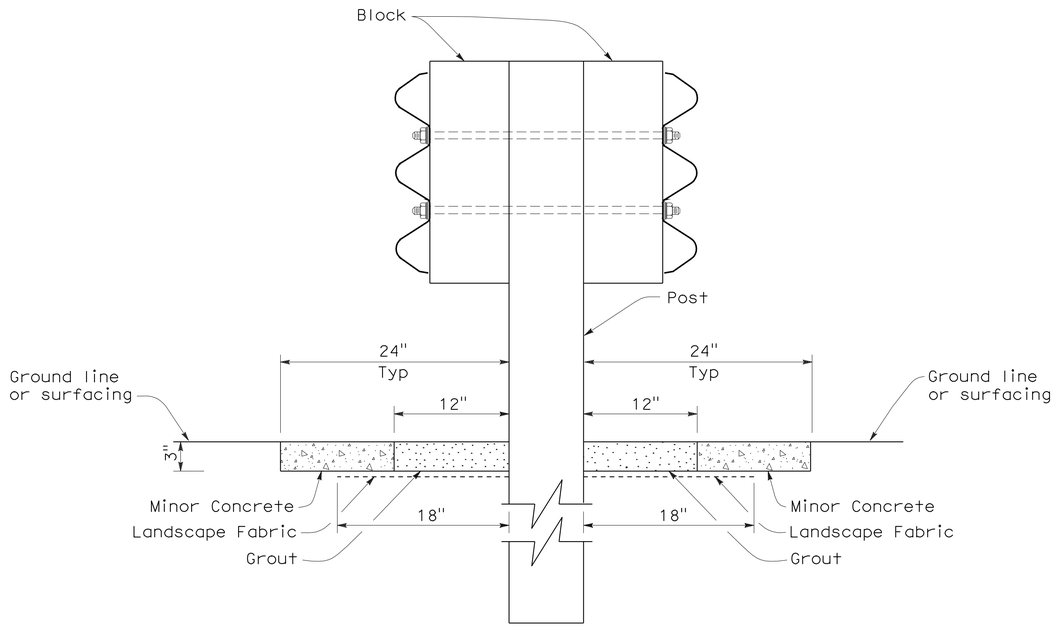


PLAN



SECTION A-A

NOTE:

1. Direction of adjacent traffic indicated by →.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DOUBLE THRIE BEAM BARRIER
TYPICAL VEGETATION CONTROL
STANDARD BARRIER RAILING SECTION

NO SCALE

NSP A78C4 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A78C4

2006 NEW STANDARD PLAN NSP A78C4

7-17-06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	525	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

October 20, 2006
PLANS APPROVAL DATE

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

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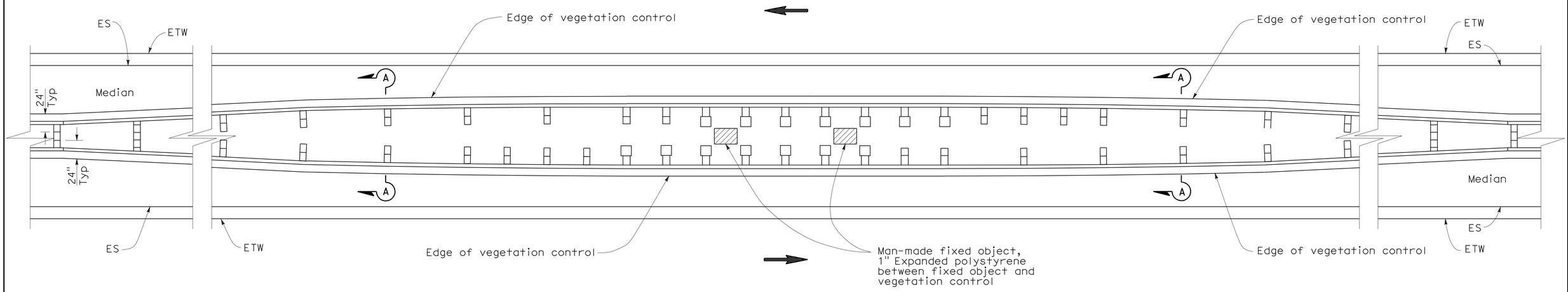
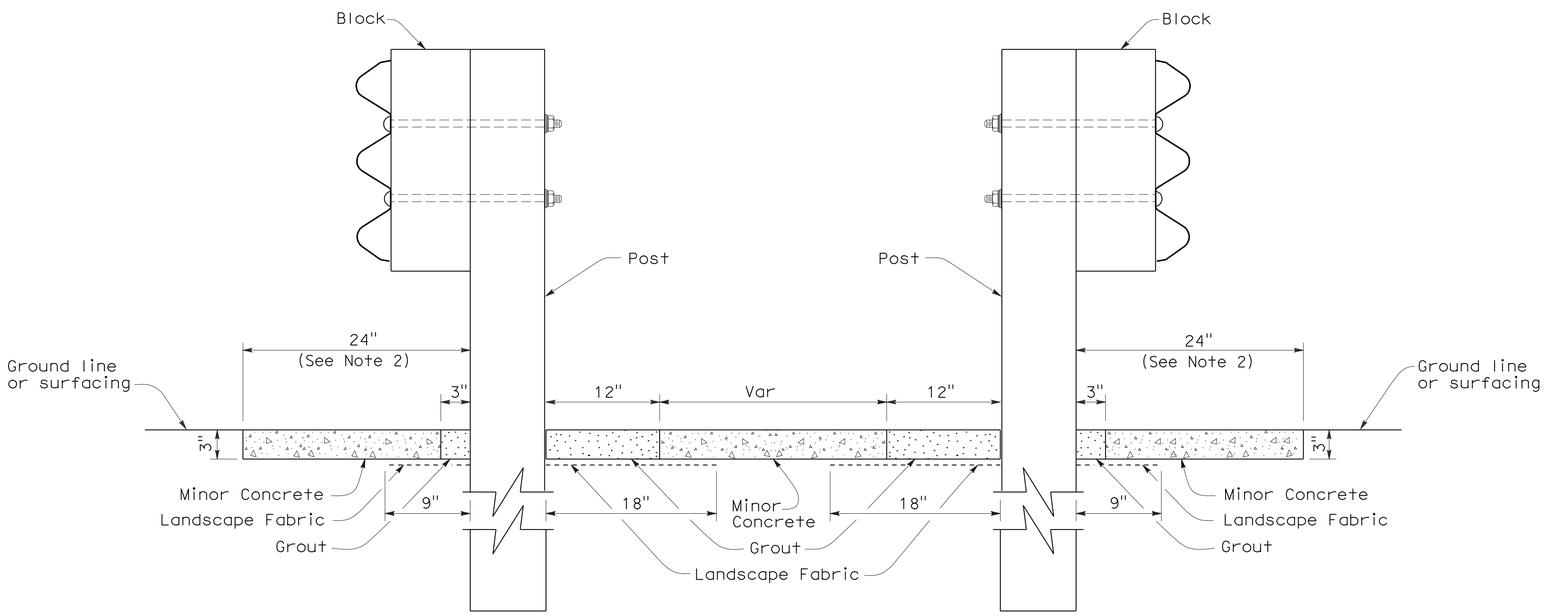
To accompany plans dated 4-16-12



PLAN



SECTION A-A

NOTES:

1. See New Standard Plan NSP A78C3 for additional vegetation control.
2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 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

THRIE BEAM BARRIER TYPICAL VEGETATION CONTROL AT FIXED OBJECTS IN MEDIAN

NO SCALE

NSP A78C5 DATED OCTOBER 20, 2006 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A78C5

2006 NEW STANDARD PLAN NSP A78C5

7-17-06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	526	619

Glenn DeCou
REGISTERED CIVIL ENGINEER

June 5, 2009
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Glenn DeCou — No. C34547 — Exp. 9-30-09 CIVIL — STATE OF CALIFORNIA

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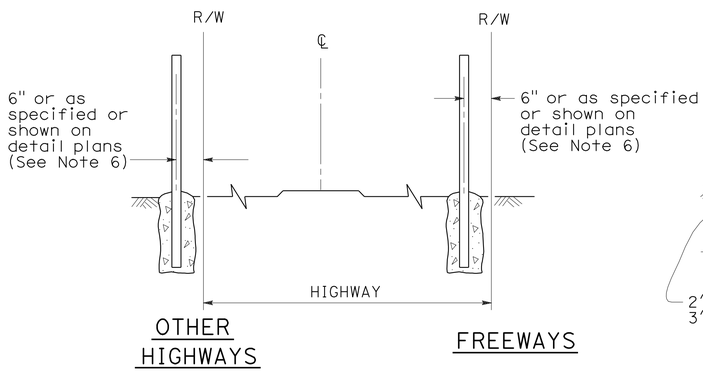
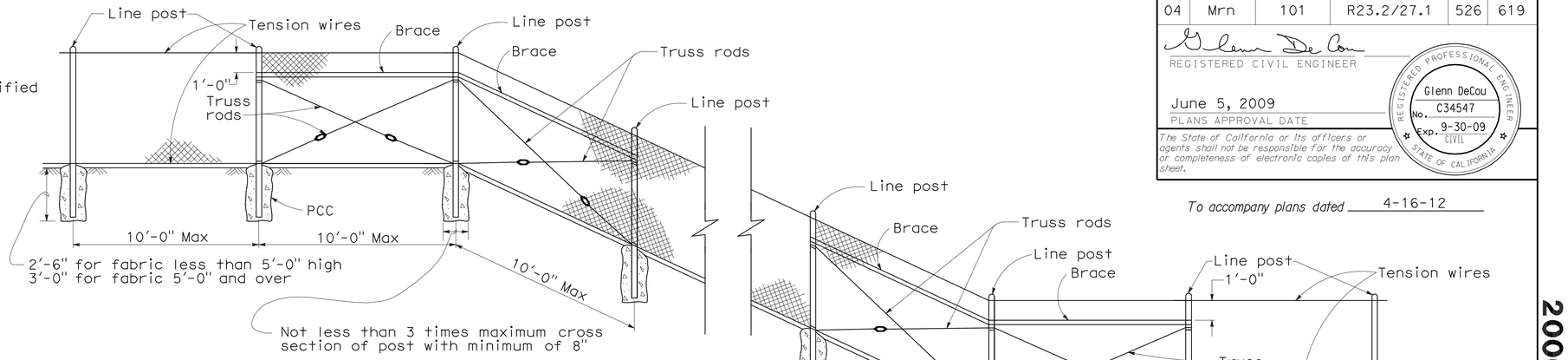
To accompany plans dated 4-16-12

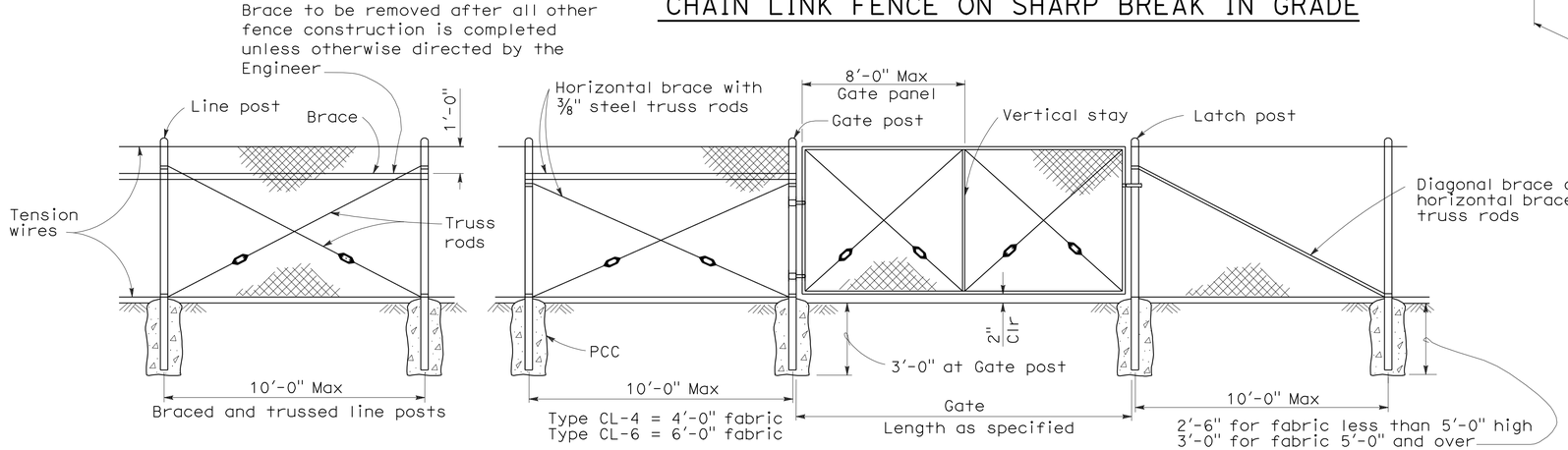


OTHER HIGHWAYS — FREEWAYS

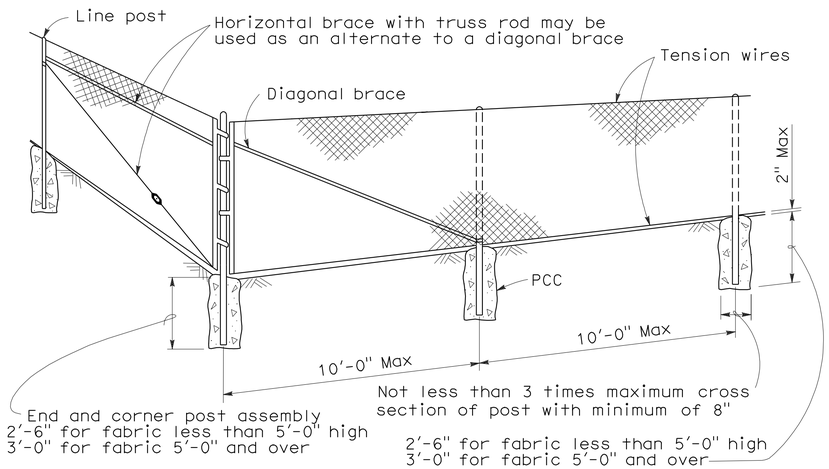
FENCE LOCATION



CHAIN LINK FENCE ON SHARP BREAK IN GRADE



CHAIN LINK GATE INSTALLATION



CORNER POST

NOTES:

1. The below table shows examples of post and brace sections which may comply with the Specifications.
2. Sections shown in the tables must also comply with the strength requirements and other provisions of the Specifications.
3. Other sections which comply with the strength requirements and other provisions of the Specifications may be used on approval of the Engineer.
4. Options exercised shall be uniform on any one project.
5. Dimensions shown are nominal.
6. Offset to be 2'-0" at monument locations, measured at right angles to R/W lines. Taper to achieve offset to be at least 20'-0" long.

GATE POST

FENCE HEIGHT	GATE WIDTHS	NOMINAL ID	WEIGHT PER FOOT
6'-0" and Less	Up thru 6'-0"	2½"	4.95 LB
	Over 6'-0" thru 12'-0"	4"	10.79 LB
	Over 12'-0" thru 18'-0"	5"	14.62 LB
	Over 18'-0" to 24'-0" Max	6"	18.97 LB
Over 6'-0"	Up thru 6'-0"	3"	7.58 LB
	Over 6'-0" thru 12'-0"	5"	14.62 LB
	Over 12'-0" thru 18'-0"	6"	18.97 LB
	Over 18'-0" to 24'-0" Max	8"	28.55 LB

Above post dimensions and weights are minimums. Larger sizes may be used on approval of the Engineer.

TYPICAL MEMBER DIMENSIONS (See Notes)

FENCE HEIGHT	LINE POSTS			END, LATCH & CORNER POSTS			BRACES			
	ROUND ID	H	ROLL FORMED	ROUND ID	ROLL FORMED		ROUND ID	H	ROLL FORMED	
					⌐	⊔ ⌐			⊔	⌐
6' & less	1½"	1⅞" × 1⅝"	1⅞" × 1⅝"	2"	3½" × 3½"	2" × 1¾"	1¼"	1½" × 1⅝"	1⅝" × 1¼"	1¾" × 1¼"
Over 6'	2"	2¼" × 2"	2" × 1¾"	2½"	3½" × 3½"	2½" × 2½"	1¼"	1½" × 1⅝"	1⅝" × 1¼"	1¾" × 1¼"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK FENCE

NO SCALE

RSP A85 DATED JUNE 5, 2009 SUPERSEDES STANDARD PLAN A85
DATED MAY 1, 2006 - PAGE 111 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP A85

2006 REVISED STANDARD PLAN RSP A85

5-7-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	527	619

REGISTERED CIVIL ENGINEER

Glenn DeCou
No. C34547
Exp. 9-30-09
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

June 5, 2009
PLANS APPROVAL DATE

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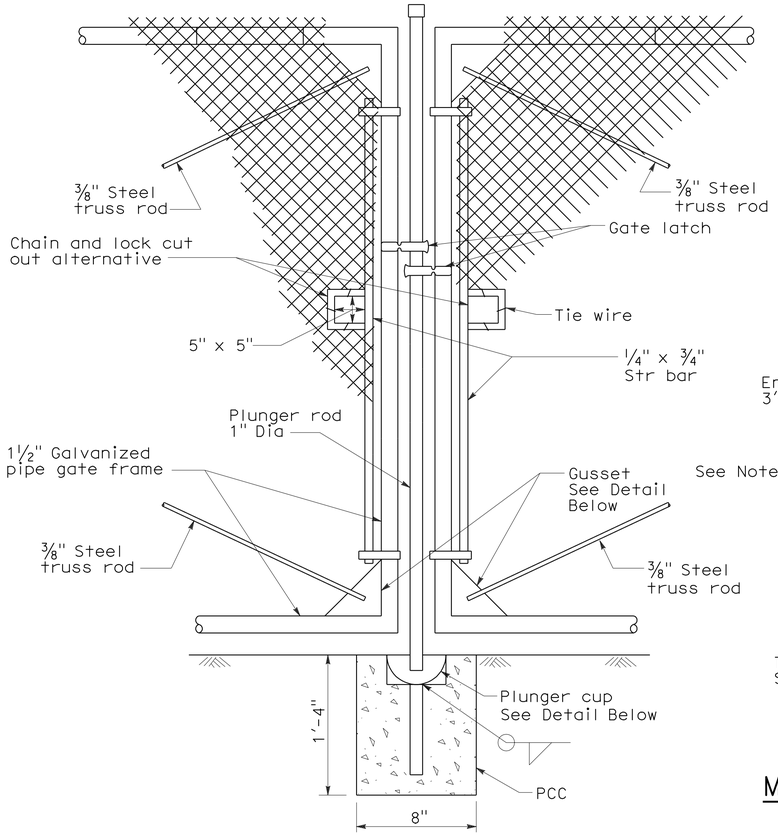
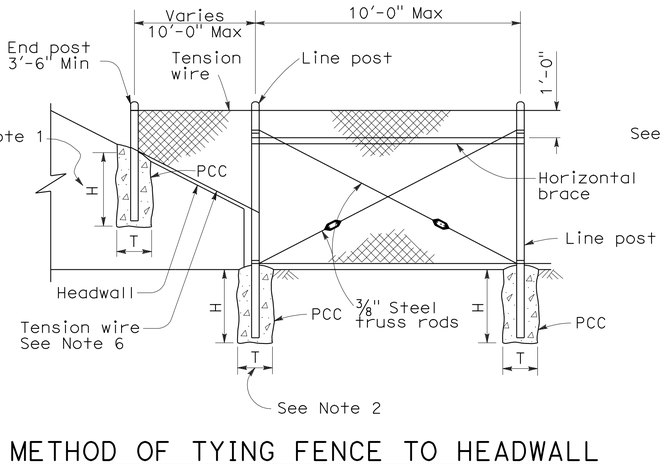
To accompany plans dated 4-16-12

NOTES:

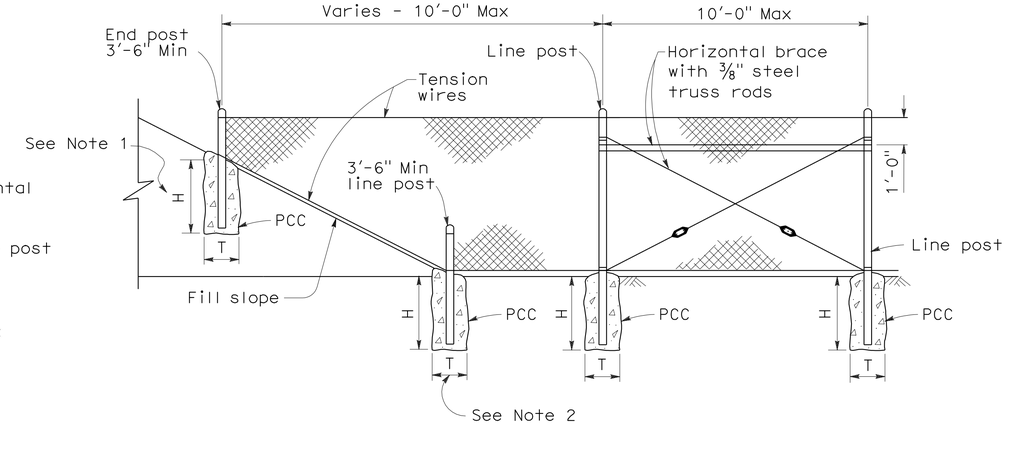
1. H is 2'-6" for fabric less than 5'-0" high. H is 3'-0" for fabric 5'-0" and over.
2. T is not less than 3 times maximum cross section of post with minimum of 8".
3. Arms with barbed wire to be used where shown on plans.
4. See Revised Standard Plan RSP A85 for Chain Link Fencing dimensions.
5. Reinforcing must comply with ASTM A 706.
6. See Detail A on New Standard Plan NSP A86B for connection at headwall.



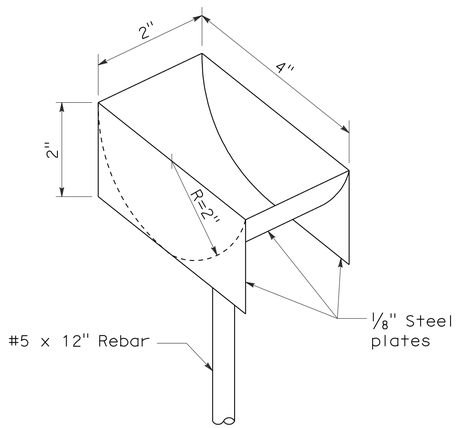
TYPICAL DOUBLE GATE
REMOVABLE CENTER POST



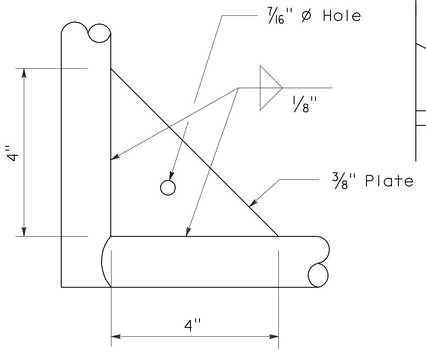
METHOD OF TYING FENCE TO HEADWALL



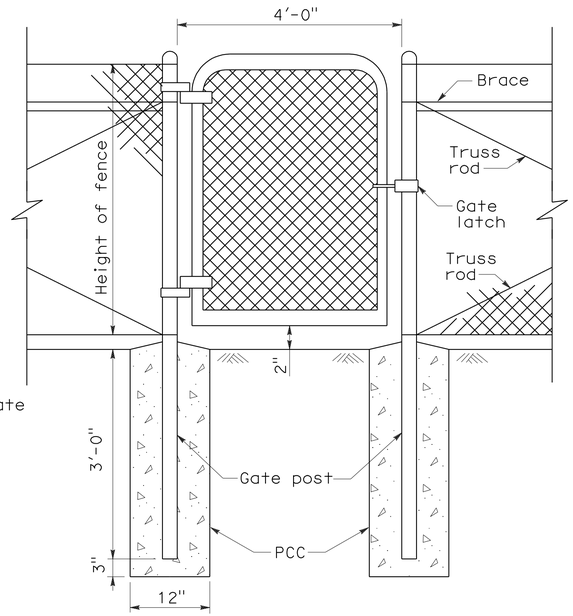
METHOD OF ERECTING FENCE FOR FILL SLOPE



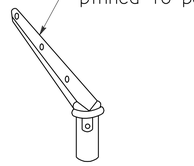
PLUNGER CUP DETAIL



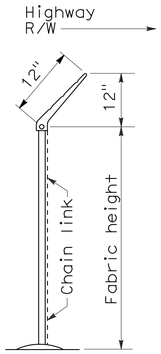
GUSSET DETAIL



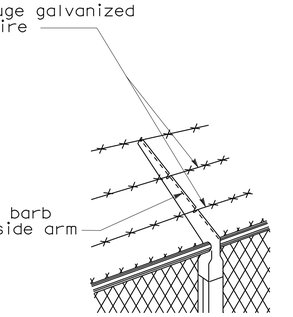
WALK GATE



POST TOP END



END ELEVATION



LINE POST TOP
Vertical arms when desired

BARBED WIRE POST TOP
See Note 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK FENCE DETAILS

NO SCALE

NSP A85A DATED JUNE 5, 2009 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A85A

2006 NEW STANDARD PLAN NSP A85A

5-7-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	528	619

Glenn DeCou
REGISTERED CIVIL ENGINEER

June 5, 2009
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Glenn DeCou — No. C34547 — Exp. 9-30-09 CIVIL — STATE OF CALIFORNIA

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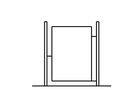
To accompany plans dated 4-16-12

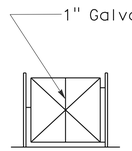


TYPE "A"

3′ and 6′ Single
6′ and 12′ Double

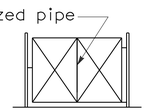
TYPE "B"

Over 6′ to 12′ Single.
Over 12′ to 24′ Double



TYPE "C"

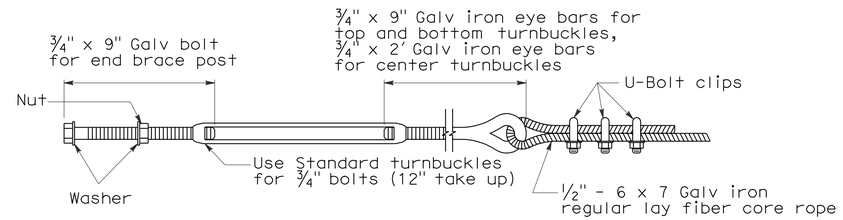
Over 12′ to 18′ Single
Over 24′ to 36′ Double.



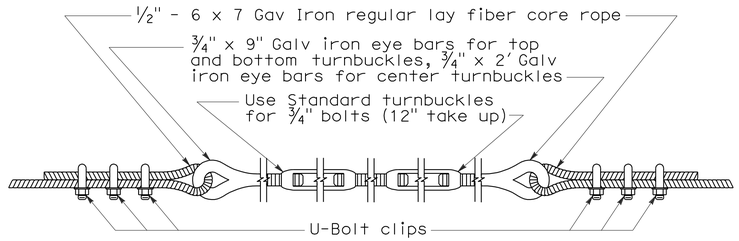
TYPE "D"

Over 18′ to 24′ Single
Over 36′ to 48′ Double

TYPICAL FRAMEWORK SHOWING NUMBER OF BAYS IN GATE



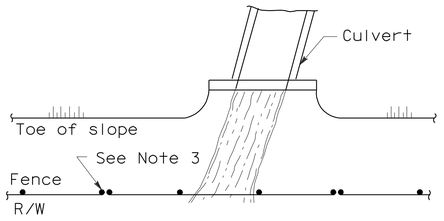
TURNBUCKLE A



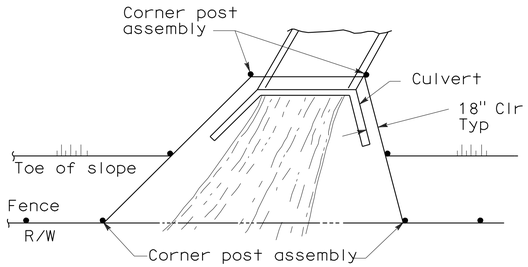
TURNBUCKLE B

NOTES:

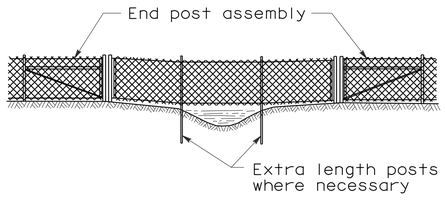
1. All material for abutment connection to be galvanized.
2. The chain link fabric shall be replaced by barbed wire strands at 12" maximum centers between the double posts.
3. When the width of the culvert makes it necessary to anchor a post to the top of the culvert, a cast iron shoe or other device approved by the Engineer shall be used.
4. Fencing over stream and around headwall may also use Barbed Wire or Wire Mesh fencing with either wood post or steel post installation.
5. See Revised Standard Plan RSP A85 for Chain Link fence dimensions. See Standard Plan A86 for Barbed Wire and Wire Mesh fence dimensions and for wood post and steel post installation.



PLAN

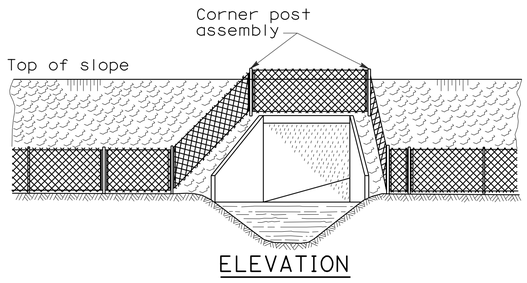


PLAN



ELEVATION

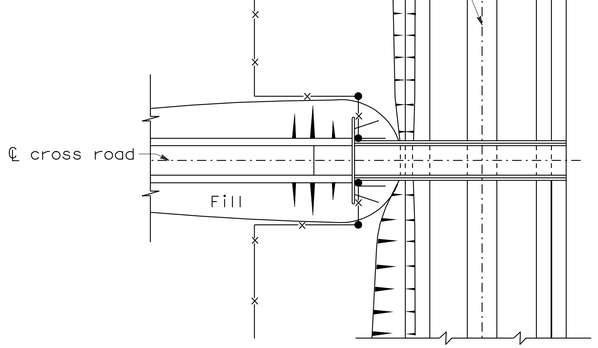
INSTALLATION OVER STREAM



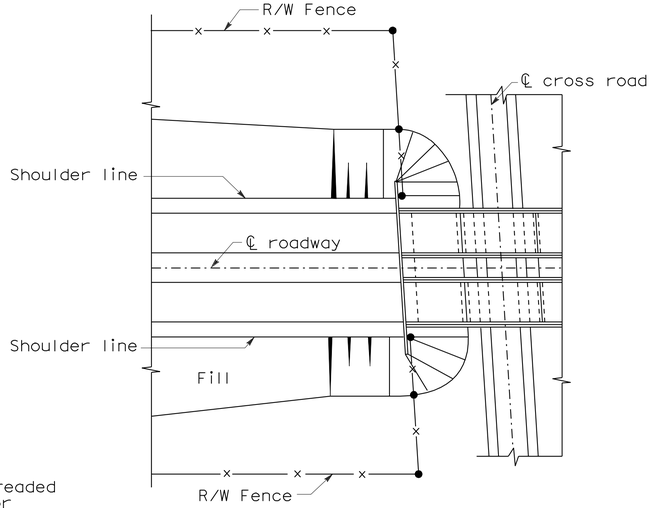
ELEVATION

INSTALLATION AROUND HEADWALL

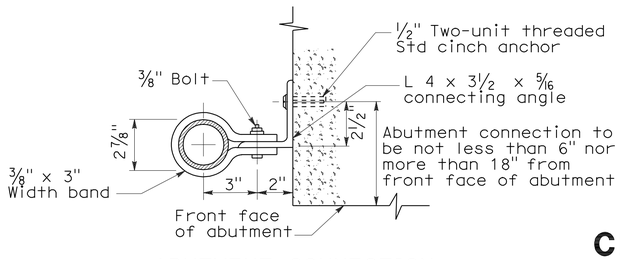
See Note 4



PLAN OF ROADWAY - UNDERPASS



PLAN OF ROADWAY - OVERPASS



ABUTMENT CONNECTION

TYPICAL INSTALLATION AT BRIDGES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK FENCE DETAILS

NO SCALE

NSP A85B DATED JUNE 5, 2009 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP A85B

2006 NEW STANDARD PLAN NSP A85B

5-12-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	529	619

REGISTERED CIVIL ENGINEER

January 20, 2012
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Cornelis M. Hakim
No. C55610
Exp. 12-31-12
CIVIL
STATE OF CALIFORNIA

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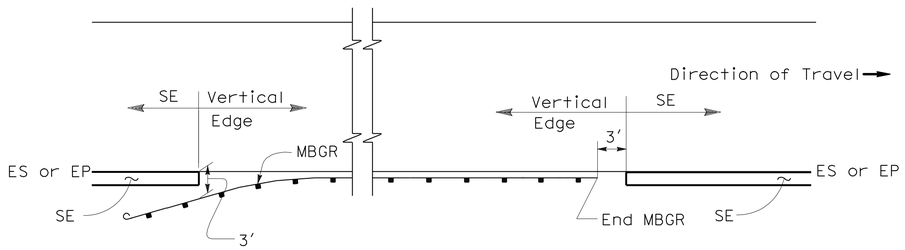
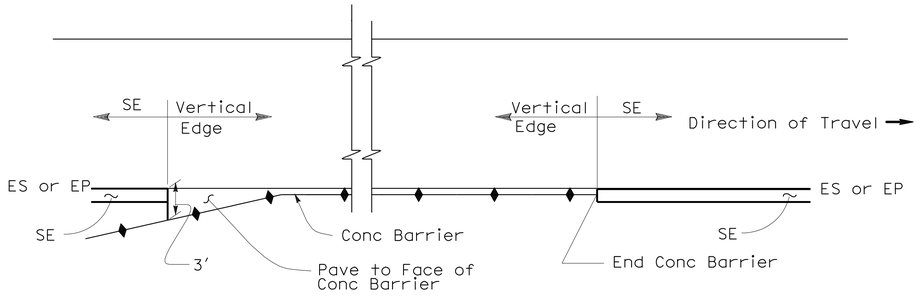
To accompany plans dated 4-16-12



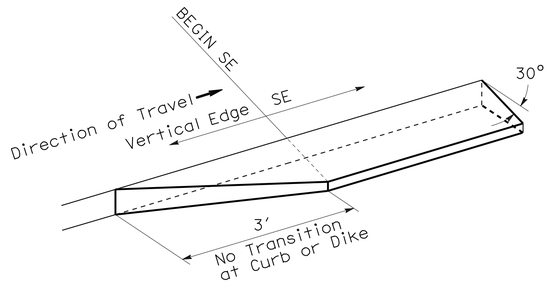
MBGR



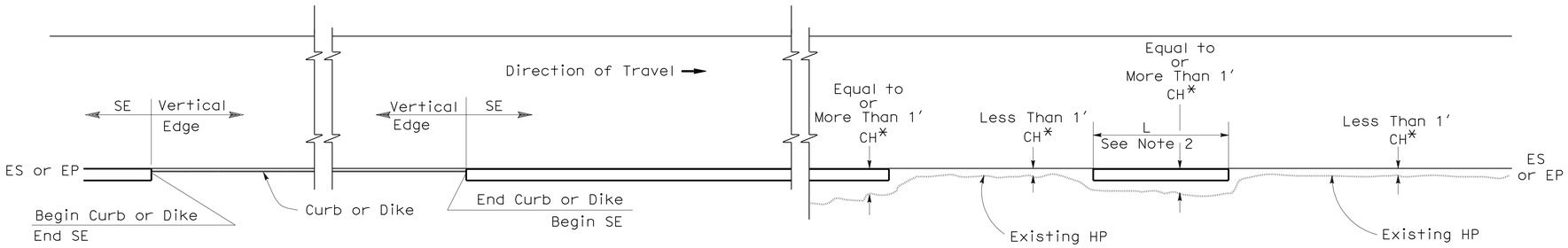
CONCRETE BARRIER

ABBREVIATIONS:

SE Safety Edge



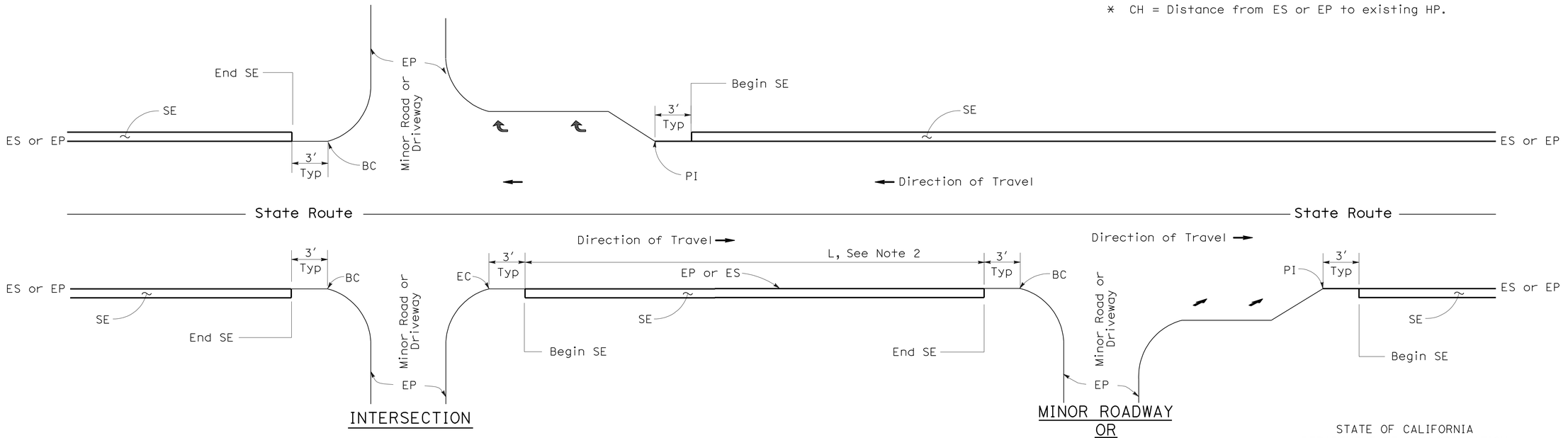
TRANSITION DETAIL
FOR CONCRETE ONLY



CURB OR DIKE

NARROW SIDE SLOPE

* CH = Distance from ES or EP to existing HP.



INTERSECTION

MINOR ROADWAY OR DRIVEWAY

DRIVEWAY AND INTERSECTION

NOTES:

1. For details not shown, see New Standard Plans NSP P75 and NSP P76.
2. Safety edge is optional when L is less than 30′.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT EDGE TREATMENTS

NO SCALE

NSP P74 DATED JANUARY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP P74

2006 NEW STANDARD PLAN NSP P74

01-05-12

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	530	619

REGISTERED CIVIL ENGINEER

January 20, 2012
PLANS APPROVAL DATE

Cornelis M. Hakim
No. C55610
Exp. 12-31-12
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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To accompany plans dated 4-16-12

LEGEND:

HMA Pavement

HMA or Concrete Pavement

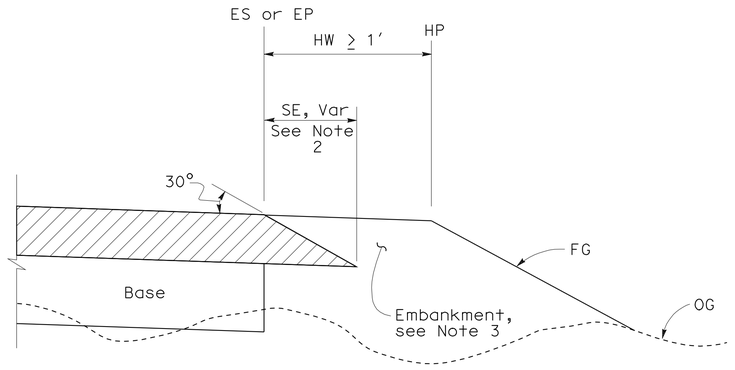
Concrete Pavement

ABBREVIATIONS:

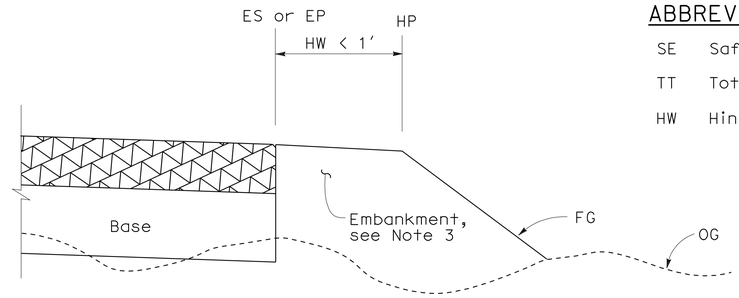
SE Safety Edge

TT Total Thickness of SE

HW Hinge Width, distance from ES or EP to HP

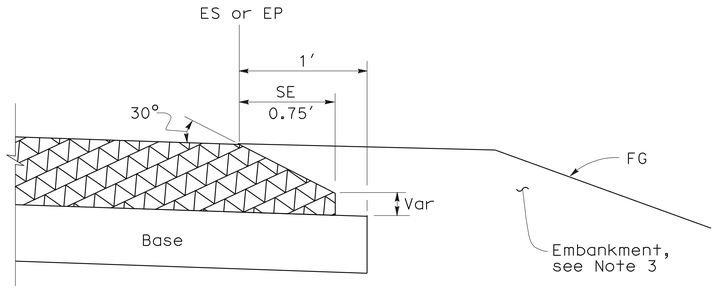


CASE K
Safety Edge - Fill Section, HW ≥ 1′

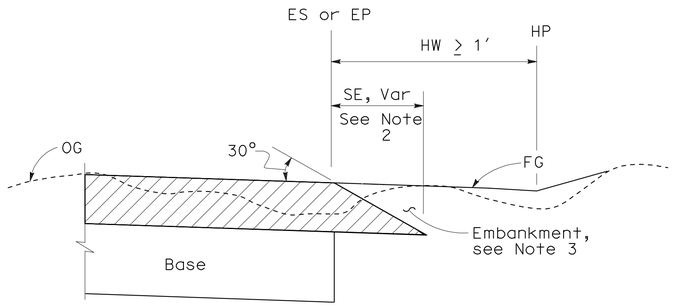


CASE L
Vertical Edge - Fill Section, HW < 1′

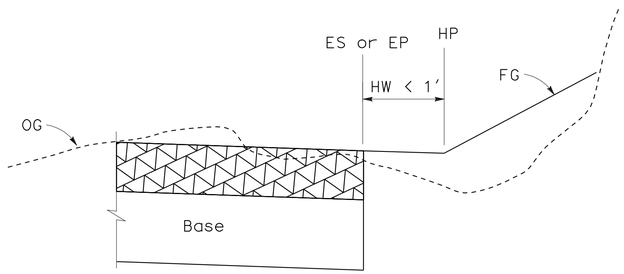
FILL SECTION



DETAIL "B"
For HMA pavement thickness more than 0.43′ or concrete pavement

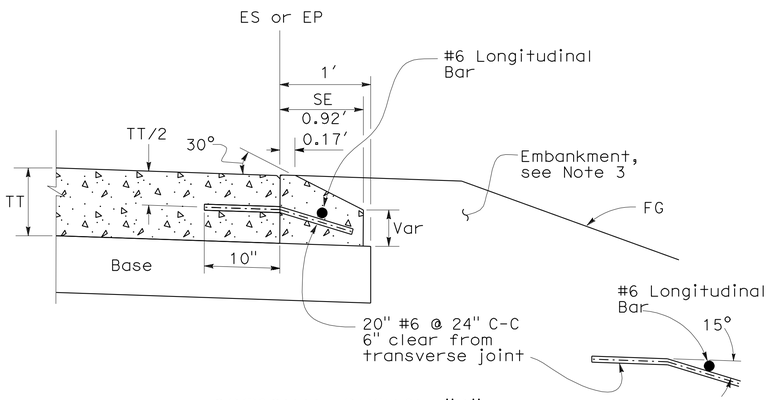


CASE M
Safety Edge - Cut Section, HW ≥ 1′



CASE N
Vertical Edge - Cut Section, HW < 1′

CUT SECTION



OPTIONAL DETAIL "B"
For concrete pavement
See Note 4

NOTES:

1. For limits of safety edge and vertical edge treatments, see New Standard Plan NSP P74
2. Details shown for HMA pavement thickness less than 0.43′. See Detail "B" for HMA pavement thickness more than 0.43′ or concrete pavement.
3. For locations and limits of embankment see project plans.
4. Safety edge transverse joint must match pavement transverse joint. End of #6 longitudinal bar must be 2" ±½" clear from transverse joint.
5. Safety edge is not needed in the area of MBGR, barrier, right turn lane and acceleration lane. See New Standard Plan NSP P74.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT EDGE TREATMENTS- NEW CONSTRUCTION

NO SCALE

NSP P76 DATED JANUARY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP P76

2006 NEW STANDARD PLAN NSP P76

01-05-12

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	531	619

Robert B Schott
LICENSED LANDSCAPE ARCHITECT

April 3, 2009
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT — Robert B. Schott 3035 — Signature 11-30-10 Renewal Date — 2-25-09 Date — STATE OF CALIFORNIA

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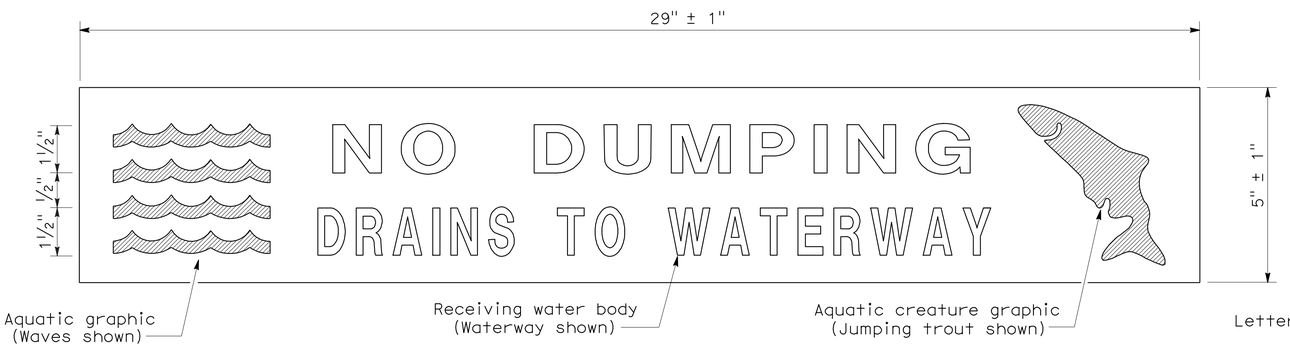
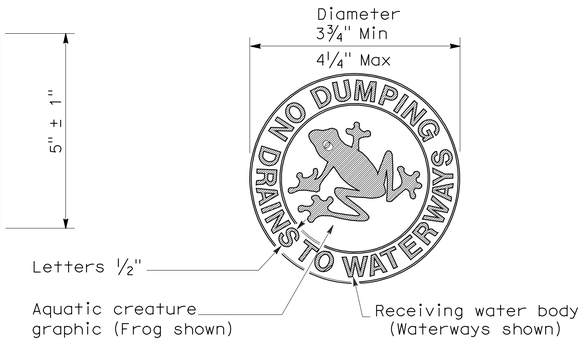
To accompany plans dated 4-16-12

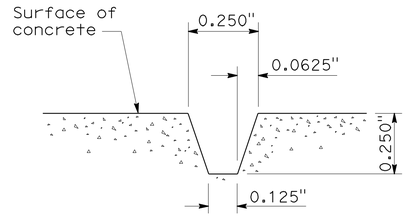


PLAN
DRAINAGE INLET MARKER
(PREFABRICATED THERMOPLASTIC)

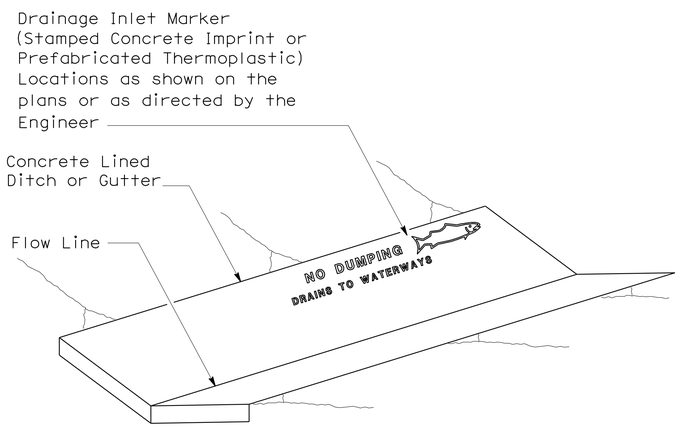


PLAN
DRAINAGE INLET MARKER
(MEDALLION)

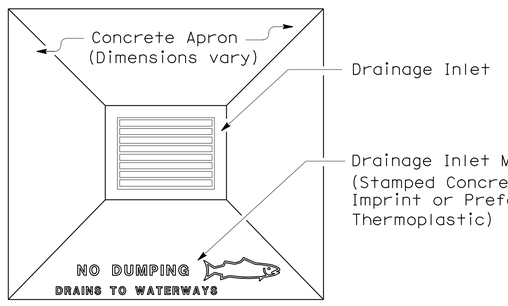
PLAN
DRAINAGE INLET MARKER
(STAMPED CONCRETE IMPRINT)



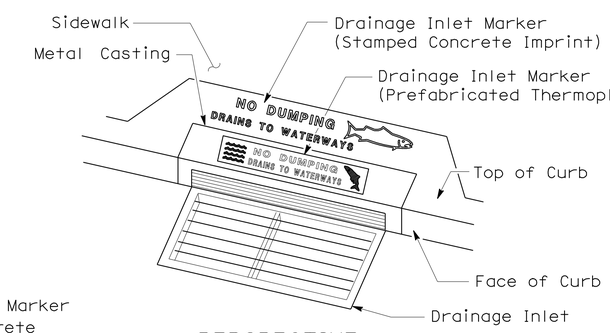
SECTION A-A
STAMPED CONCRETE
IMPRINT DETAIL



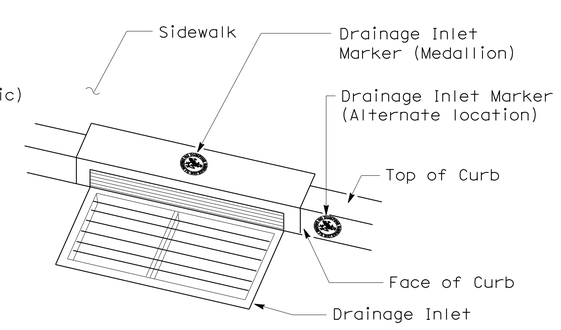
PERSPECTIVE
DRAINAGE INLET MARKER ON
CONCRETE LINED DITCH



PLAN
DRAINAGE INLET MARKER ON
DRAINAGE INLET APRON



PERSPECTIVE
DRAINAGE INLET MARKER ON
DRAINAGE INLET



PERSPECTIVE
DRAINAGE INLET MARKER (MEDALLION)
ON DRAINAGE INLET

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET MARKERS

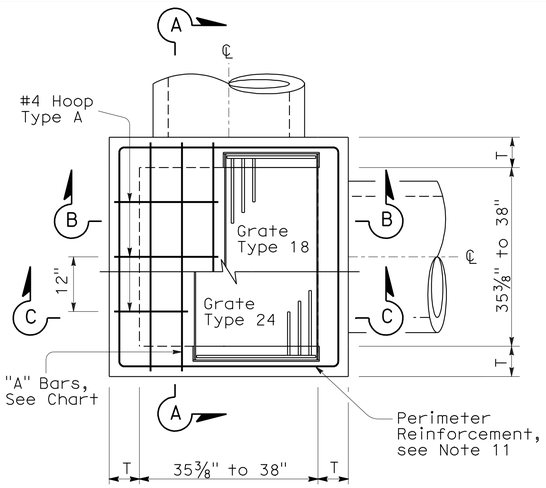
NO SCALE

NSP D71 DATED APRIL 3, 2009 SUPPLEMENTS
THE STANDARD PLANS BOOK DATED MAY 2006.

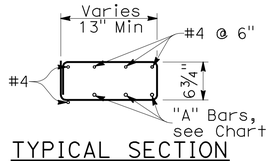
NEW STANDARD PLAN NSP D71

2006 NEW STANDARD PLAN NSP D71

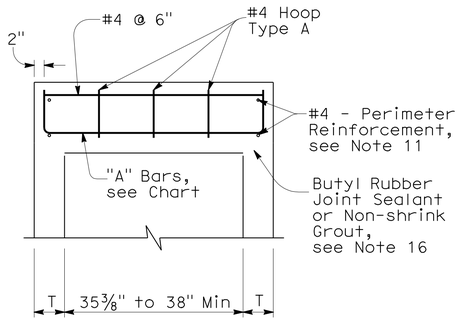
7-24-08



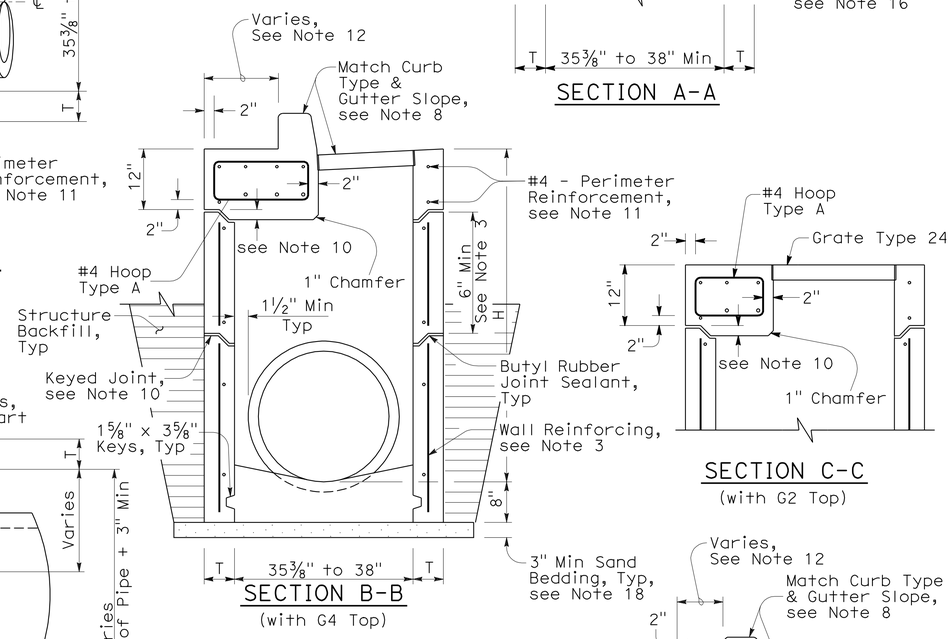
STANDARD TYPE G2 OR G4



TYPICAL SECTION
(HOOP TYPE A)

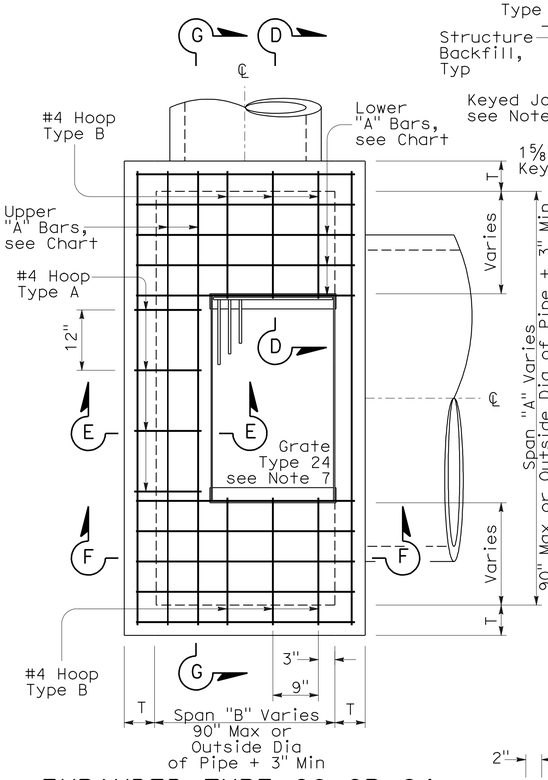


SECTION A-A

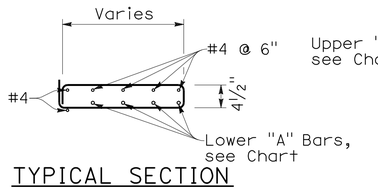


SECTION B-B
(with G4 Top)

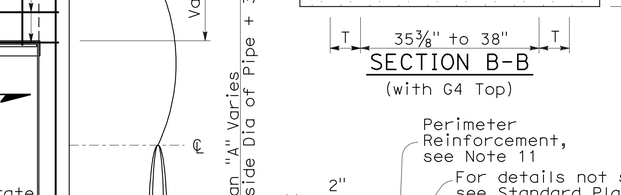
SECTION C-C
(with G2 Top)



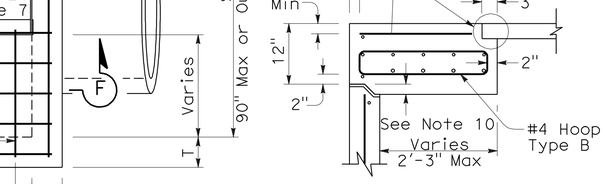
EXPANDED TYPE G2 OR G4
(Top Rebar Not Shown)



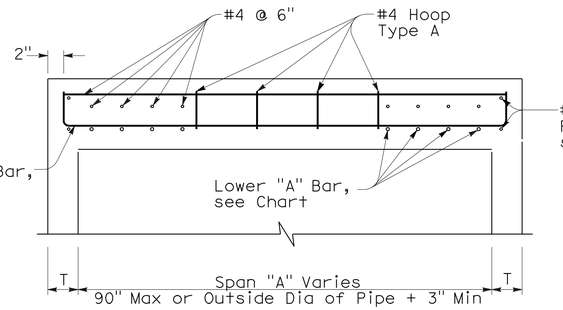
TYPICAL SECTION
(HOOP TYPE B)



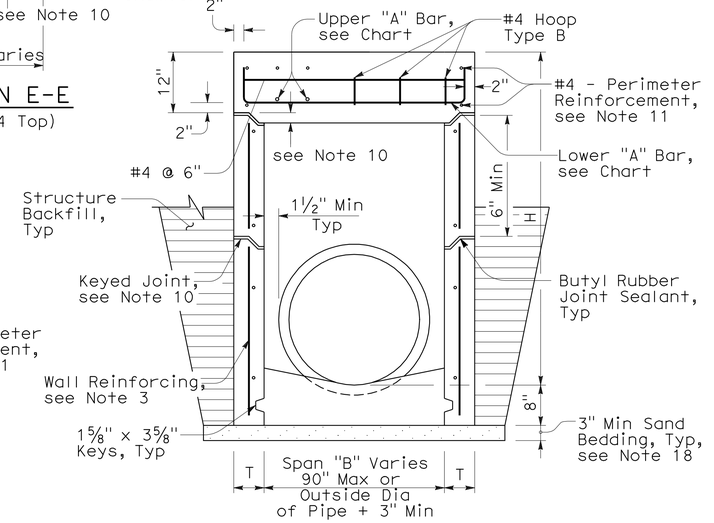
SECTION E-E
(with G4 Top)



SECTION D-D



SECTION G-G



SECTION F-F
(with G2 Top)

To accompany plans dated 4-16-12

NOTES:

1. "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
2. For "T" wall thickness: T=6" when "H" is 8' or less. T=8" when "H" is over 8'.
3. Wall reinforcing not required when "H" is 8' or less and the unsupported width or length is 6'-0" or less. Reinforce wall exceeding these limits with #4 bars @ 1'-6" ± centers placed 2" clear to the inside of inlet unless otherwise shown. Short independent wall sections or height adjustment rings 6" to 24" high must have a minimum of two #4 horizontal bars.
4. Seal pre-cast inlets connection openings between wall and pipe with non-shrink grout or resilient connectors as specified in the Special Provisions.
5. Steps - None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below bottom of lid. The distance between steps must not exceed 1'-0" and be uniform throughout the length of the wall. Place steps in the wall without an opening. Steps inserts may be substituted for the bar steps. Step inserts must comply with State Industrial Safety Requirements. See Standard Plan D74C for step details.
6. Pipe(s) can be placed in any wall.
7. Set inlet so that grate bars are parallel to direction of principal surface flow.
8. Type G4 inlet can use Grate Type 18 or 24. Type G2 inlet uses Grate Type 24. See Revised Standard Plan RSP D77A and Standard Plan D77B for grate and frame details and weights of miscellaneous Iron and Steel.
9. G4 inlet details are the same as the G2 with the addition of a curb and sloped grate that matches the adjacent curb and gutter depression. See Standard Plans D78A & D78B for gutter and inlet depresssion details. See Revised Standard Plan RSP A87A & Standard Plan A87B for Curb and Dike Details.
10. Provide pre-cast inlets with separate top sections for final grade adjustment under Standard Specifcation Section 51-1.02. Provide keyed joints between the top and wall and multiple wall sections. Joint design may vary but must be 1" to 3" in depth.
11. Perimeter reinforcement serves as a rigid frame to position and attach the required structural reinforcement and may be tack welded at outer corners when using ASTM A706 weldable bars.
12. This dimension will vary with different grates, curbs types, box width and wall thickness.
13. 2" unless inlet is expanded in the Span "A" direction, then clearance is 2" plus the diameter of the lower "A" bar.
14. Place "A" Bars at an angle so hooked ends will maintain 2" clear coverage.
15. Refer to Standard Plan D73, Table A for concrete quantities.
16. Non-shrink grout can be used for upper most joint to facilitate final top grade adjustment.
17. Slope inlet floors 4:1 towards the outlet pipe. Pre-cast inlets may have monolithic sloped floors, flat floors, or no floors in which case a sloped floor must be cast in the field. Inlet floors do not require reinforcing.
18. Extend sand bedding under all structure backfill.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	532	619

REGISTERED CIVIL ENGINEER

June 5, 2009
PLANS APPROVAL DATE

Glenn DeCou
No. C34547
Exp. 9-30-09
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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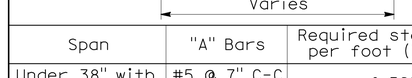
TOP REINFORCEMENT CHART



Span	"A" Bars	Required steel area per foot (in²/ft)
Under 38" with Type 24 Grate	#5 @ 7" C-C 2-#5 Min	0.525
Under 38" with Type 18 Grate	#5 @ 7" C-C 3-#5 Min	0.525
38"-60"	#5 @ 6" C-C	0.621
61"-72"	#5 @ 5" C-C	0.744
73"-90"	#6 @ 6" C-C	0.811

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLETS (PRECAST)

NO SCALE

NSP D73A DATED JUNE 5, 2009 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP D73A

2006 NEW STANDARD PLAN NSP D73A

3-16-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	533	619

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Raymond Don Tsztoo
No. C37332
Exp. 6-30-08
CIVIL
STATE OF CALIFORNIA

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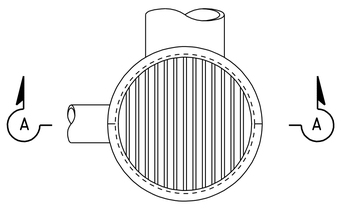
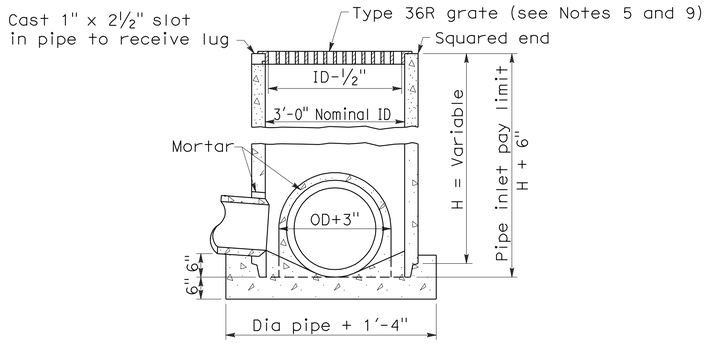
To accompany plans dated 4-16-12

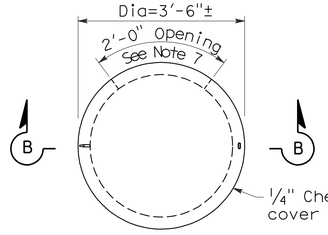


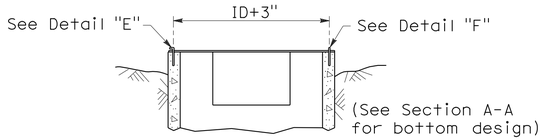


SECTION A-A

TYPE GCP

CONCRETE PIPE INLET WITH GRATE

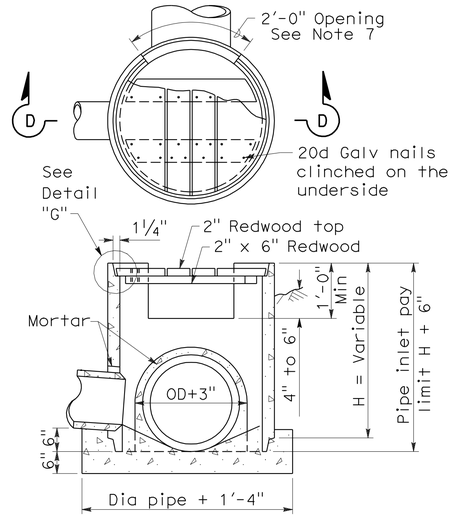




SECTION B-B

TYPE OCP or OCPI

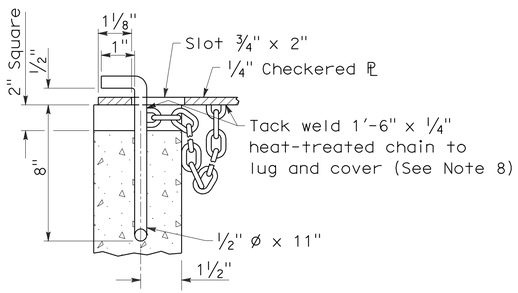
CONCRETE PIPE INLET WITH STEEL COVER
(See Note 6)



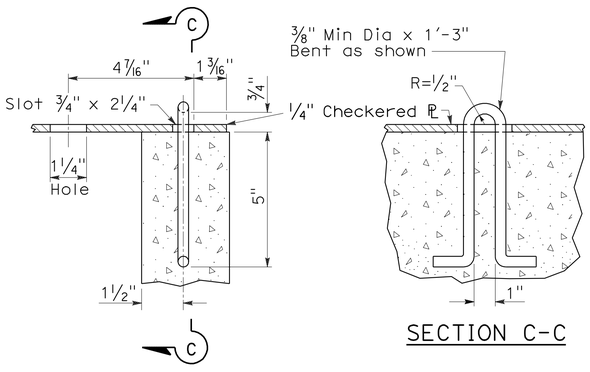
SECTION D-D

TYPE OCP or OCPI

CONCRETE PIPE INLET WITH REDWOOD COVER
(See Notes 6 and 10)

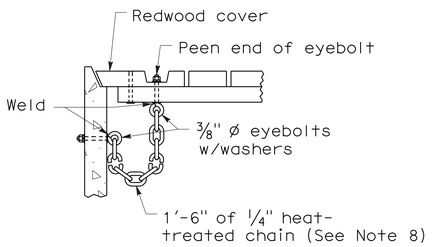


DETAIL "E"



DETAIL "F"

SECTION C-C



DETAIL "G"

NOTES:

1. For details of steel pipe inlets, see Standard Plan D75A.
2. For details of ladder and steps and when ladder or steps are required, see Standard Plan D75C.
3. Inlet pipes shall not protrude into basin.
4. Except for inlets used for junction boxes, basin floors shall have minimum slope of 4:1 from all directions toward outlet pipe, and a wood trowel finish.
5. See Revised Standard Plan RSP D77A and Standard Plan D77B for Grate and Frame Details and Weights of Miscellaneous Iron and Steel.
6. Designation of Type OCPI pipe inlets on plans indicates trash racks are to be furnished and installed on all side openings. See Standard Plan D75C for Trash Rack details.
7. More than one side opening may be required. Location and number as ordered by the Engineer. Opening may be cast in pipe.
8. Chain to be provided when specified.
9. Place pipe so bars of grate will be parallel with main surface flow.
10. Redwood covers shall only be placed at locations designated on the plans.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE PIPE INLETS

NO SCALE

RSP D75B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D75B
DATED MAY 1, 2006 - PAGE 153 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D75B

2006 REVISED STANDARD PLAN RSP D75B

5-20-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	534	619

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

January 18, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Raymond Don Tsztoo — No. C37332 — Exp. 6-30-08 — CIVIL — STATE OF CALIFORNIA

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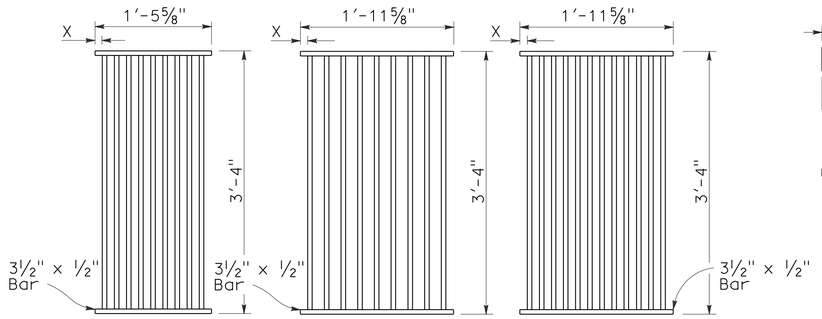
To accompany plans dated 4-16-12



TYPE 18-9

1⅜" Clear spacing. Use within the roadbed on highways where bicycles and pedestrians are excluded.

TYPE 24-9

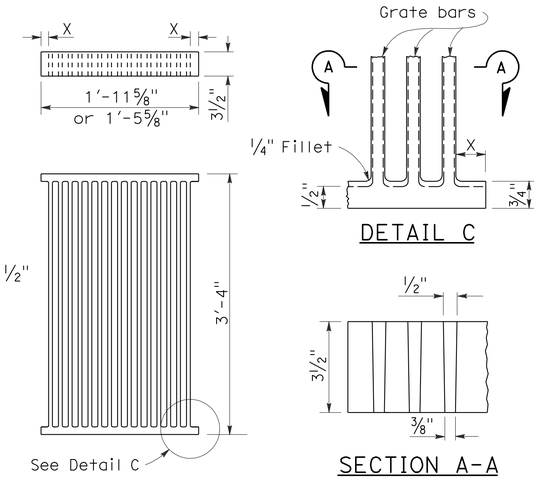
2" Clear spacing. Use in locations off the roadbed on all types of highways.

TYPE 24-12

1⅜" Clear spacing. Use within the roadbed on highways where bicycles and pedestrians are excluded.

RECTANGULAR GRATE DETAILS

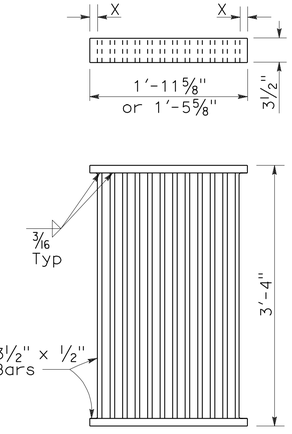
(See table below)



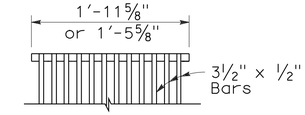
DETAIL C

SECTION A-A

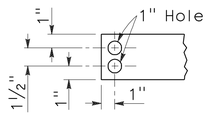
ALTERNATIVE CAST NODULAR IRON GRATE OR CAST STEEL GRATE



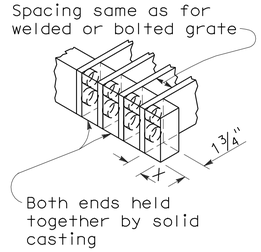
ALTERNATIVE WELDED GRATE



CAST END BLOCK



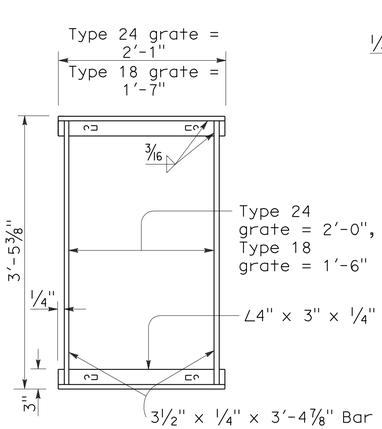
END OF BAR



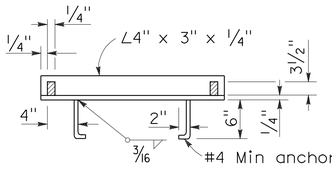
ALTERNATIVE CAST NODULAR IRON OR CAST STEEL END BLOCK GRATE

NOTES:

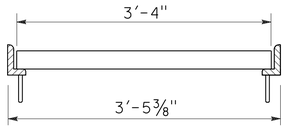
1. Grate type numbers refer to approximate width of grate in inches and number of bars, respectively.
2. Contractor has the option of using cast nodular iron, cast steel, welded, bolted, or cast end block grate.
3. See Special Provisions for requirements pertaining to galvanizing or asphalt dipping of grates and frames.
4. Rounded top of bars optional on all grates.
5. Pipe inlets with a grate shall be placed so that bars parallel direction of principle surface flow.
6. Full penetration butt welds may be substituted for the fillet welds on all anchors.
7. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.
8. Grate and frame weights are based on welded grates (weights of face angles, steps, protection bars, etc. are not included).



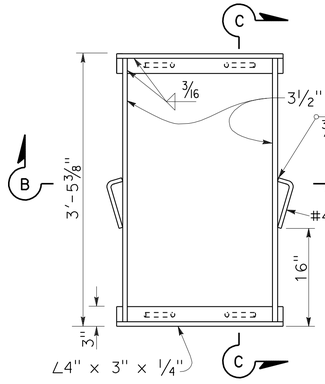
TYPICAL FRAME



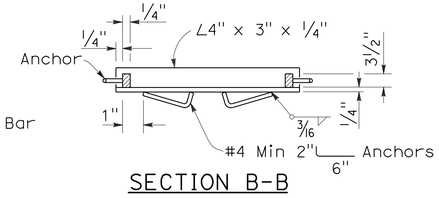
CROSS SECTION
(Thru frame)



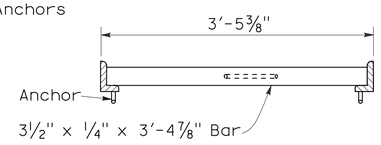
LONGITUDINAL SECTION
(Thru frame and grate)



TYPICAL FRAME



SECTION B-B



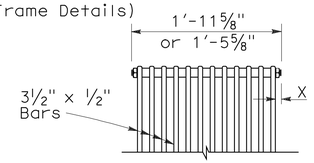
SECTION C-C

RECTANGULAR FRAME DETAILS

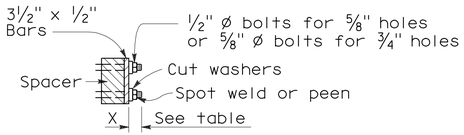
(For all rectangular grates)

ALTERNATIVE ANCHOR FOR RECTANGULAR FRAME

(For details not shown, See Rectangular Frame Details)

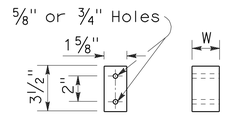


BOLTED END BLOCK

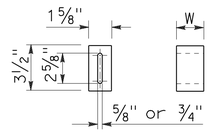


BOLTING DETAIL

ALTERNATIVE BOLTED GRATE



BAR SPACER



ALTERNATIVE SPACER
W = 1⅜" or 2"

GRATE BAR SPACING TABLE

TYPE	No. OF BARS	CLEAR BAR SPACING	X
18-9	9	1⅜"	1 1/16"
24-9	9	2"	1⅜16"
24-12	12	1⅜"	1¼"

INLET TYPE	COVER TYPE	WEIGHT LB
OS	PLATE	174
OL-7	PLATE	170
OL-10	PLATE	170
OL-14	PLATE	170
OL-21	PLATE	170
OCP	PLATE	112
OCPI	PLATE	112
OCPI	REDWOOD	42
OMP	PLATE	177
OMPI	PLATE	177

INLET TYPE	GRATE TYPE	No. OF GRATES	WEIGHT LB
GDO	24-12	2	634
GOL-7	24-12	1	326
GOL-10	24-12	1	326
GO,G1,G2,G3,G4 (TYPE 24)	24-9	1	263
	24-12	1	326
G4 (TYPE 18),G5,G6	18-9	1	249
GT1	18-9	2	498
GT2	18-9	2	498
GT3	24-12	2	652
GT4	24-12	2	652
TRASH RACK			22

BASIS FOR MISC IRON & STEEL FINAL PAY WEIGHTS FOR DRAINAGE INLETS

(See General Notes, No 8)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GRATE DETAILS

NO SCALE

RSP D77A DATED JANUARY 18, 2008 SUPERSEDES STANDARD PLAN D77A
DATED MAY 1, 2006 - PAGE 155 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D77A

2006 REVISED STANDARD PLAN RSP D77A

12-14-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	535	619

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Raymond Don Tsztoo
No. C37332
Exp. 6-30-08
CIVIL
STATE OF CALIFORNIA

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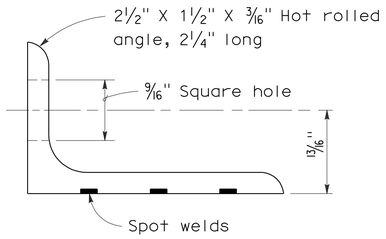
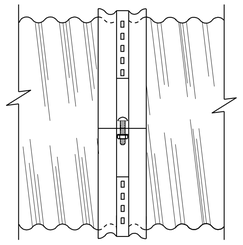
To accompany plans dated 4-16-12



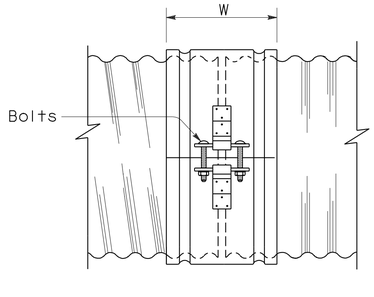
ANGLE

NOTES:

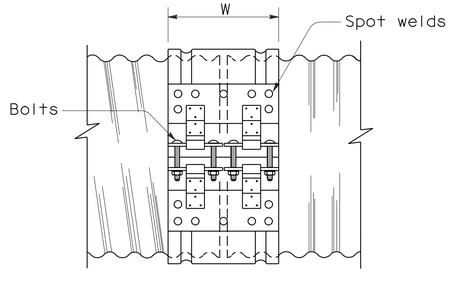
1. All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
2. Dimensions and thicknesses shown are minimum.
3. Spot welds shall develop minimum required strength of strap.
4. Fillet welds of equivalent strength may be substituted for spot welds or rivets.
5. Dimension depends upon whether end condition is lips up or lips down.



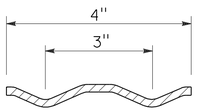
SIDE VIEW
ANGLE



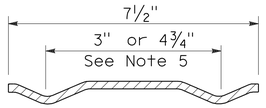
SIDE VIEW
SINGLE BAR AND STRAP



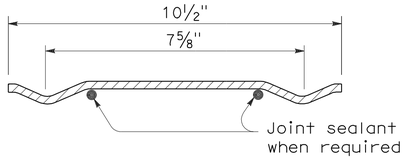
SIDE VIEW
DOUBLE BAR AND STRAP



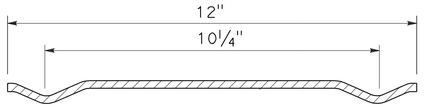
SECTION
H-4 HUGGER BAND



SECTION
H-7 HUGGER BAND



SECTION
H-10 HUGGER BAND



SECTION
H-12 HUGGER BAND

HUGGER COUPLING BANDS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 4 HUGGER COUPLING BANDS

NO SCALE

RSP D97D DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97D
DATED MAY 1, 2006 - PAGE 186 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97D

2006 REVISED STANDARD PLAN RSP D97D

3-24-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	536	619

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Raymond Don Tsztoo — No. C37332 — Exp. 6-30-08 — 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.

ANNULAR AND HELICAL PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (CSP ONLY)				ANGLE						
												DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				CSP	CAP	CSP	CAP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	CSP	CAP	CSP	CAP	CSP	CAP	CSP
TWO PIECE INTEGRAL FLANGE	1½′ × ¼"	6"-10"	7"	0.052"-0.079"	0.048"-0.060"	0.052"	0.060"							2-⅜"	2-⅜"			
		12"-18"	7"	0.052"-0.079"		0.064"								2-½"				
	2⅔" × ½"	12"-24"	7"	0.052"-0.079"	0.060"-0.105"	0.064"	0.060"							2-½"	2-½"			
UNIVERSAL	2⅔" × ½"	THROUGH 36"	12"	0.052"-0.138"	0.060"-0.135"	0.052"	0.060"					2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	3-½"
		42"-60"	12"	0.052"-0.168"	0.075"-0.164"	0.052"	0.060"					2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		THROUGH 72"	12"	0.052"-0.168"	0.164"	0.052"	0.105"	0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		78"-84"	16¼"	0.168"		0.079"		DOUBLE 0.079"	½"	⅞"	32 ksi							
ANNULAR	2⅔" × ½"	THROUGH 36"	7"	0.064"-0.138"	0.060"-0.135"	0.052"	0.060"	0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	2-½"	2-½"	3-⅜"	3-⅜"	3-½"
		42"-72"	12"	0.064"-0.168"	0.075"-0.164"	0.052"	0.105"	0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		78"-84"	12"	0.168"		0.079"		0.109"	½"	⅞"	45 ksi	2" × 2" × 3/16"		3-½"		3-⅜"		5-½"
	3" × 1"	48"-90"	14"	0.064"-0.109"		0.052"		0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"		3-½"		3-⅜"		5-½"
		96"-120"	14"	0.079"-0.109"		0.052"		0.109"	½"	⅞"	45 ksi	2" × 2" × 3/16"		3-½"		4-⅜"		
		42"-108"	14"		0.060"-0.135"		0.060"						2" × 2" × 3/16"		3-½"		3-⅜"	
HELICAL	2⅔" × ½"	THROUGH 36"	12"	0.052"-0.138"	0.060"-0.135"	0.052"	0.060"	0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	3-½"
		42"-72"	12"	0.052"-0.168"	0.075"-0.164"	0.052"	0.060"	0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		78"-84"	12"	0.168"		0.079"		0.109"	½"	⅞"	45 ksi	2" × 2" × 3/16"		3-½"		3-⅜"		5-½"
	3" × 1"	48"-90"	14"	0.064"-0.109"		0.052"		0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"		3-½"		3-⅜"		5-½"
		96"-120"	14"	0.079"-0.109"		0.052"		0.109"	½"	⅞"	45 ksi	2" × 2" × 3/16"		3-½"		4-⅜"		
		42"-108"	14"		0.060"-0.135"		0.060"						2" × 2" × 3/16"		3-½"		3-⅜"	
HUGGER	2⅔" × ½" REROLLED END	12"-54"	4"	0.052"-0.109"		0.052"						2½" × 1½" × 3/16"	2½" × 1½" × 3/16"	1-½"				3-½"
		60"-66"	4"	0.109"		0.064"						2½" × 1½" × 3/16"	2½" × 1½" × 3/16"	1-½"				3-½"
		36"-48"	4"	0.138"		0.064"						2½" × 1½" × 3/16"	2½" × 1½" × 3/16"	1-½"				3-½"
		THROUGH 72"	10½"	0.052"-0.168"		0.052"		0.079"	½"	⅞"	32 ksi							
		78"-84"	10½"	0.168"		0.079"		0.109"	½"	⅞"	45 ksi							
	3" × 1" REROLLED END	48"-90"	10½"	0.064"-0.109"		0.052"		0.079"	½"	⅞"	32 ksi							
		96"-120"	10½"	0.079"-0.109"		0.052"		0.109"	½"	⅞"	45 ksi							
	5" × 1" REROLLED END	48"-66"	7½"	0.064"-0.109"		0.064"		0.079"	½"	⅞"	32 ksi	2½" × 1½" × 3/16"	2½" × 1½" × 3/16"	1-½"				3-½"
		72"-90"	7½"	0.064"-0.079"		0.064"		0.079"	½"	⅞"	32 ksi	2½" × 1½" × 3/16"	2½" × 1½" × 3/16"	1-½"				3-½"
		48"-90"	7½"	0.064"-0.138"		0.064"		0.079"	½"	⅞"	32 ksi							
		48"-120"	12" SEE NOTE 11	0.064"-0.109"		0.064"		0.079"	½"	⅞"	32 ksi							
		48"-84"		0.138"		0.064"		0.079"	½"	⅞"	32 ksi							
		90"-120"		0.138"		0.064"		DOUBLE 0.079"	½"	⅞"	32 ksi							

SPIRAL RIB PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (SSRP ONLY)				ANGLE						
												DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
ANNULAR	2⅔" × ½" * REROLLED END	24"-36"	12"	0.064"-0.109"	0.060"-0.105"	0.052"	0.060"	0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		42"-60"	12"	0.064"-0.109"	0.075"-0.105"	0.052"	0.105"	0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		66"-72"	12"	0.064"-0.109"		0.052"		0.079"	½"	⅞"	32 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		78"-114"	12"	0.079"-0.109"		0.079"		0.109"	½"	⅞"	45 ksi	2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
HUGGER	2⅔" × ½" * REROLLED END	24"-72"	10½"	0.064"-0.109"		0.052"		0.079"	½"	⅞"	32 ksi							
		78"-84"	10½"	0.109"		0.079"		0.109"	½"	⅞"	45 ksi							

* See Note 14.

NOTES:

To accompany plans dated 4-16-12

1. All ferrous metal coupling band connection hardware shall be galvanized or electro-plated in accordance with the Standard Specifications.
2. For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
3. Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
4. Use 1¼" gage line dimension on attached angle leg for rivets and spot welds.
5. Band thickness shall not be less than:
   a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
   b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
6. Dimensions, thicknesses and strengths shown are minimum.
7. For pipe arches use same width band as for round pipe of equal periphery.
8. Fillet welds of equivalent strenght may be substituted for spot welds or rivets.
9. Spot welds shall develop minimum required strength of strap.
10. Pipe with rerolled ends having at least two 2⅔" × ½" annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having 2⅔" × ½" corrugations.
11. In the case of H-12 huggerbands, two piece bands are required for diameters through 96" and three piece bands are required for diameters 102" through 120".
12. Two piece bands are required for pipes greater than 42" diameter.
13. The 2¼" × 2" × 0.109" thick galvanized die-formed angle connector may be used in lieu of the 2" × 2" × 3/16" angle connector for standard joints only on pipes through 72" diameter.
14. All profiles of Spiral Rib Pipe (¾" × ¾" ribs at 7½" pitch and ¾" × 1" ribs at 11½" pitch in both steel and aluminum and ¾" × 1" ribs at 8½" pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be 2⅔" × ½" annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 5 STANDARD JOINT

NO SCALE

RSP D97E DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97E
DATED MAY 1, 2006 - PAGE 187 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97E

2006 REVISED STANDARD PLAN RSP D97E

4-2-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	537	619

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

Raymond Don Tsztoo No. C37332 Exp. 6-30-08 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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To accompany plans dated 4-16-12

ANNULAR AND HELICAL PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (CSP ONLY)				ANGLE						
												DIMENSIONS		BOLTS (No. - Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				CSP	CAP	CSP	CAP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	CSP	CAP	CSP	CAP	CSP	CAP	CSP
TWO PIECE INTEGRAL FLANGE	1½" x ¼"	6"-10"	7"	0.064"-0.079"	0.060"	0.064"	0.060"							2-⅜"	2-⅜"			
	2⅔" x ½"	12"-24"	12"		0.060"-0.105"		0.060"								3-½"			
UNIVERSAL	2⅔" x ½"	THROUGH 36"	12"	0.064"-0.138"	0.060"-0.135"	0.064"	0.060"	0.079"	½"	⅞"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		42"-60"	16¼"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"	DOUBLE 0.079"	½"	⅞"	32 ksi	2" x 2" x ¼"	2" x 2" x ¼"	4-½"	4-½"	5-⅜"	5-⅜"	
ANNULAR	2⅔" x ½"	THROUGH 36"	12"	0.064"-0.138"	0.060"-0.135"	0.064"	0.060"					2" x 2" x 3/16"	2" x 2" x 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		42"-60"	12"	0.064"-0.079"		0.064"						2" x 2" x 3/16"		3-½"		3-⅜"		5-½"
		42"-60"	12"	0.109"-0.168"	0.135"-0.164"	0.064"	0.075"					2" x 2" x ¼"	2" x 2" x ¼"	3-½"	3-½"	5-⅜"	5-⅜"	
		66"-72"	24"		0.164"		0.105"						2" x 2" x ¼"		5-½"		5-½"	
		66"-84"	24"	0.109"-0.168"		0.064"						2" x 2" x ¼"		5-½"		7-⅜"		
		42"-54"	12"		0.060"-0.105"		0.060"						2" x 2" x 3/16"		3-½"		3-⅜"	
	3" x 1"	48"-60"	14"	0.064"-0.079"		0.064"						2" x 2" x 3/16"		3-½"		3-⅜"		5-½"
		48"-60"	14"	0.109"		0.064"						2" x 2" x 3/16"		3-½"		5-⅜"		
		66"-120"	25"	0.064"-0.109"		0.064"						2" x 2" x 3/16"		5-½"		9-⅜"		
		42"-60"	14"		0.060"-0.105"		0.060"						2" x 2" x 3/16"		3-½"		5-⅜"	
		42"-60"	14"		0.135"		0.075"						2" x 2" x ¼"		3-½"		5-⅜"	
		66"-96"	25"		0.060"-0.135"		0.060"						2" x 2" x ¼"		5-½"		7-⅜"	
		96"-108"	25"		0.135"		0.075"						2" x 2" x ¼"		5-½"		7-⅜"	
HELICAL	2⅔" x ½"	THROUGH 36"	12"	0.064"-0.138"	0.060"-0.135"	0.064"	0.060"					2" x 2" x 3/16"	2" x 2" x 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		42"-54"	12"		0.060"-0.105"		0.060"						2" x 2" x 3/16"		3-½"		3-⅜"	
		42"-60"	12"	0.064"-0.079"		0.064"						2" x 2" x 3/16"		3-½"		3-⅜"		5-½"
		42"-60"	12"	0.109"-0.168"	0.135"-0.164"	0.064"	0.075"					2" x 2" x ¼"	2" x 2" x ¼"	3-½"	3-½"	5-⅜"	5-⅜"	
		66'-84"	24"	0.109"-0.168"		0.064"						2" x 2" x ¼"		5-½"		7-⅜"		
		66"-72"	24"		0.164"		0.105"						2" x 2" x ¼"		5-½"		5-⅜"	
	3" x 1"	48"-60"	14"	0.064"-0.079"		0.064"						2" x 2" x 3/16"		3-½"		3-⅜"		5-½"
		48"-60"	14"	0.109"		0.064"						2" x 2" x 3/16"		3-½"		5-⅜"		
		66"-120"	25"	0.064"-0.109"		0.064"						2" x 2" x 3/16"		5-½"		9-⅜"		
		42"-60"	14"		0.060"-0.105"		0.060"						2" x 2" x 3/16"		3-½"		5-⅜"	
		42"-60"	14"		0.135"		0.075"						2" x 2" x ¼"		3-½"		5-⅜"	
		66"-96"	25"		0.060"-0.135"		0.060"						2" x 2" x ¼"		5-½"		7-⅜"	
		96"-108"	25"		0.135"		0.075"						2" x 2" x ¼"		5-½"		7-⅜"	
HUGGER	2⅔" x ½" REROLLED END	THROUGH 48"	10½"	0.109"		0.064"		0.079"	½"	⅞"	32 ksi							
		54"- 66"	10½"	0.109"		0.064"		DOUBLE 0.079"	½"	⅞"	32 ksi							
		THROUGH 54"	10½"	0.064"-0.079"		0.064"		0.079"	½"	⅞"	32 ksi							
		THROUGH 60"	10½"	0.138"		0.079"		DOUBLE 0.079"	½"	⅞"	32 ksi							
		66"-72"	10½"	0.138"		0.109"		DOUBLE 0.079"	½"	⅞"	32 ksi							
		THROUGH 72"	10½"	0.168"		0.109"		DOUBLE 0.109"	½"	⅞"	45 ksi							
	3" x 1" REROLLED END	48"-84"	10½"	0.109"		0.079"		DOUBLE 0.079"	½"	⅞"	32 ksi							
		48"-90"	10½"	0.064"-0.079"		0.064"		DOUBLE 0.079"	½"	⅞"	32 ksi							
		96"-102"	10½"	0.079"		0.079"		DOUBLE 0.079"	½"	⅞"	32 ksi							
		90"-120"	10½"	0.109"		0.109"		DOUBLE 0.109"	½"	⅞"	45 ksi							

SPIRAL RIB PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (SSRP ONLY)				ANGLE						
												DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
ANNULAR	2⅔" x ½" * REROLLED END	24"-36"	12"	0.064"-0.109"	0.060"-0.105"	0.064"	0.060"	0.079"	½"	⅞"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		42"-60"	12"	0.064"-0.079"	0.075"-0.105"	0.064"	0.075"	0.079"	½"	⅞"	32 ksi	2" x 2" x 3/16"	2" x 2" x 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	5-½"
		42"-60"	12"	0.109"		0.064"		0.079"	½"	⅞"	32 ksi	2" x 2" x ¼"		3-½"		5-⅜"		
		66"-84"	24"	0.109"		0.064"		0.079"	½"	⅞"	32 ksi	2" x 2" x ¼"		5-½"		7-⅜"		
HUGGER	2⅔" x ½" * REROLLED END	24"-54"	10½"	0.064"-0.079"		0.064"		0.079"	½"	⅞"	32 ksi							
		24"-48"	10½"	0.109"		0.064"		0.079"	½"	⅞"	32 ksi							
		54"-66"	10½"	0.109"		0.064"		Double 0.079"	½"	⅞"	32 ksi							

* See Note 13.

NOTES:

1. All ferrous metal coupling band connection hardware shall be galvanized or electro-plated in accordance with the Standard Specifications.
2. For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
3. Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
4. Use 1¼" gage line dimension on attached angle leg for rivets and spot welds.
5. Band thickness shall not be less than:
   a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
   b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
6. Dimensions, thicknesses and strengths shown are minimum.
7. For pipe arches use same width band as for round pipe of equal periphery.
8. Fillet welds of equivalent strength may be substituted for spot welds or rivets.
9. Spot welds shall develop minimum required strength of strap.
10. Pipe with rerolled ends having at least two 2⅔" x ½" annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having 2⅔" x ½" corrugations.
11. In the case of H-12 huggerbands, two piece bands are required for diameters through 96" and three piece bands are required for diameters 102" through 120".
12. Two piece bands are required for pipes greater than 42" diameter.
13. All profiles of Spiral Rib Pipe (¾" x ¾" ribs at 7½" pitch and ¾" x 1" ribs at 11½" pitch in both steel and aluminum and ¾" x 1" ribs at 8½" pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be 2⅔" x ½" annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 6 POSITIVE JOINT

NO SCALE

RSP D97F DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97F
DATED MAY 1, 2006 - PAGE 188 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97F

2006 REVISED STANDARD PLAN RSP D97F

4-2-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	538	619

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Raymond Don Tsztoo
No. C37332
Exp. 6-30-08
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 4-16-12

ANNULAR AND HELICAL PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (CSP ONLY)			ANGLE						
											DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				CSP	CAP	CSP	CAP	STRAP THICKNESS	BOLTS Dia	BAR Dia	CSP	CAP	CSP	CAP	CSP	CAP	CSP
TWO PIECE INTEGRAL FLANGE	1½′ × ¼"	6"	7"	0.064"-0.168"		0.052"							3-⅜"				
	1½′ × ¼"	8"-10"	7"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"						3-⅜"	3-⅜"			
ANNULAR	2⅔" × ½"	THROUGH 24"	12"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"				2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	3-½"
HUGGER	2⅔" × ½" REROLLED END	THROUGH 24"	10½"	0.064"-0.168"		0.064"		0.079"	½"	⅞"							

SPIRAL RIB PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (SSRP ONLY)			ANGLE						
											DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
ANNULAR	2⅔" × ½" * REROLLED END	24"	12"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"				2" × 2" × 3/16"	2" × 2" × 3/16"	3-½"	3-½"	3-⅜"	3-⅜"	3-½"
HUGGER	2⅔" × ½" * REROLLED END	24"	10½"	0.064"-0.168"		0.064"		0.079"	½"	⅞"							

* See Note 12.

NOTES:

1. All ferrous metal coupling band connection hardware shall be galvanized or electro-plated in accordance with the Standard Specifications.
2. For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
3. Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
4. Use 1¼" gage line dimension on attached angle leg for rivets and spot welds.
5. Band thickness shall not be less than:
   a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
   b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
6. Dimensions, thicknesses and strengths shown are minimum.
7. For pipe arches use same width band as for round pipe of equal periphery.
8. Fillet welds of equivalent strenght may be substituted for spot welds or rivets.
9. Spot welds shall develop minimum required strength of strap.
10. Pipe with rerolled ends having at least two 2⅔" × ½" annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having 2⅔" × ½" corrugations.
11. For downdrain applications, two piece integral flange couplers shall have factory applied sleeve type rubber gaskets with a minimum length of 7" measured along the length of the pipe.
12. All profiles of Spiral Rib Pipe (¾" × ¾" ribs at 7½" pitch and ¾" × 1" ribs at 11½" pitch in both steel and aluminum and ¾" × 1" ribs at 8½" pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be 2⅔" × ½" annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 7 DOWNDRAIN

NO SCALE

RSP D97G DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97G
DATED MAY 1, 2006 - PAGE 189 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP D97G

2006 REVISED STANDARD PLAN RSP D97G

4-4-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	539	619

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

March 7, 2008
PLANS APPROVAL DATE

Raymond Don Tsztoo, No. C37332, Exp. 6-30-08, CIVIL, REGISTERED PROFESSIONAL ENGINEER, STATE OF CALIFORNIA

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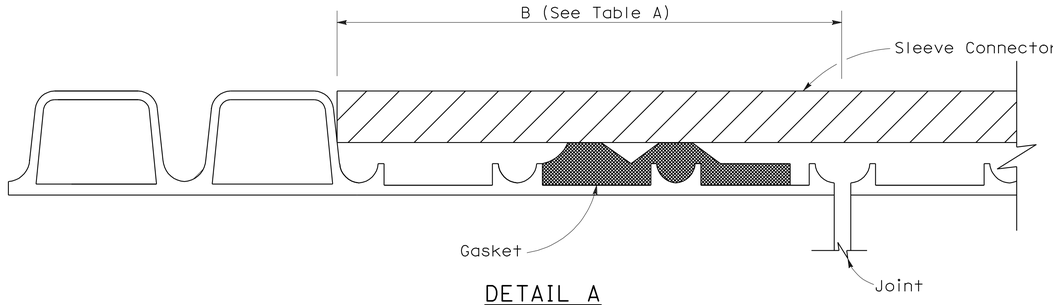
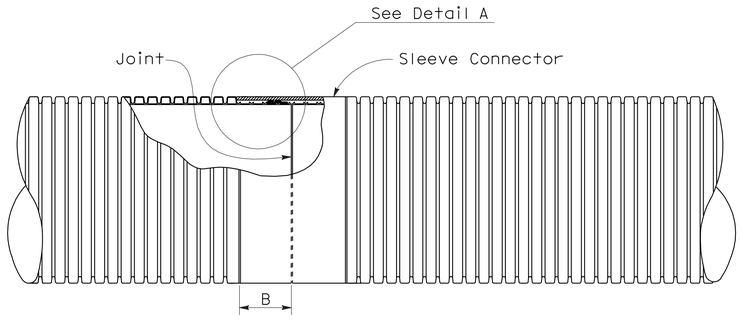
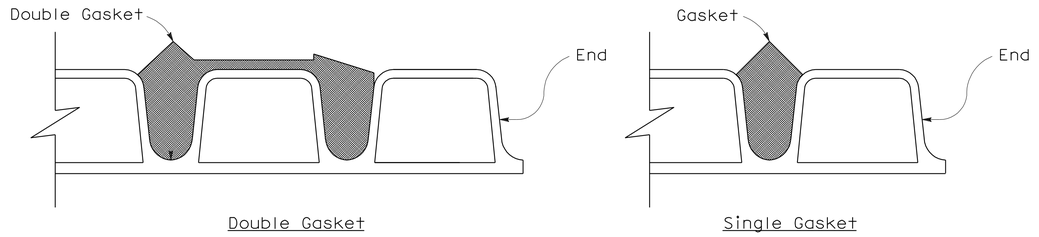
To accompany plans dated 4-16-12



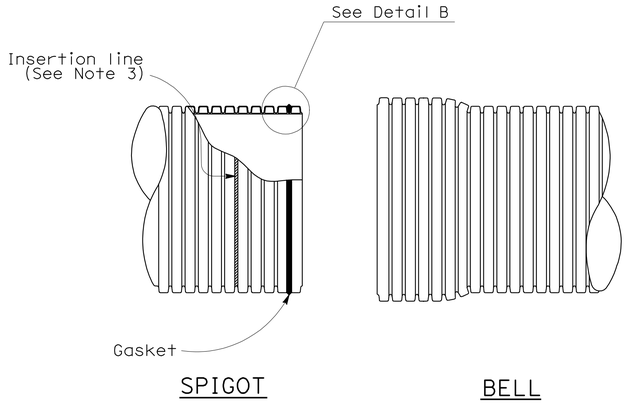
DETAIL A



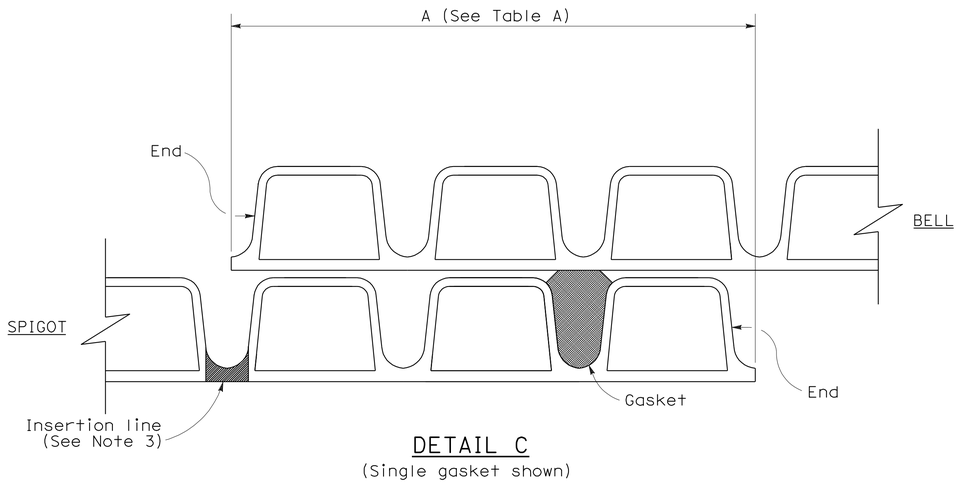
PLAN VIEW
Liner Insert
See Note 4



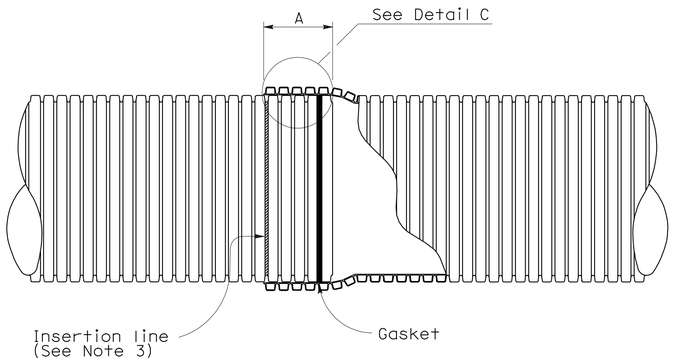
DETAIL B



SPIGOT BELL



DETAIL C
(Single gasket shown)



BELL AND SPIGOT JOINT

NOTES:

1. For pipe sections installed on straight alignment, the pipe sections shall be joined to achieve maxium joint overlap at all points on the periphery as indicated in Table A where the plans call for positive or watertight joints. Maxium joint overlap is recommended where the plans call for standard joints, but in no case shall the joint overlap be less than 3½".
2. For pipe sections installed on curved alignment, the maxium angle of deflection from straight alignment at any joint shall not exceed two degrees. Where the plans call for watertightness, field testing for compliance is required. Where plans call for positive joints, the pipe sections shall be joined to achieve Table A Dimensions on one side of the joint. Joints classified as standard shall have no less than 3½" joint overlap at any point on the periphery.
3. Factory applied insertion line limit shall be placed on spigot.
4. Liner insert to be used inside of existing pipe.

TABLE A

JOINT OVERLAP DIMENSIONS		
PIPE Dia (NOMINAL)	A	B
12"	5¾"	4¼"
15"	6¾"	5⅝"
18"	6¾"	5⅝"
21"	8½"	5⅝"
24"	8½"	6⅛"
30"	8½"	7⅛"
36"	8½"	8⅛"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED POLYVINYL CHLORIDE PIPE WITH SMOOTH INTERIOR STANDARD AND POSITIVE JOINTS

NO SCALE

NSP D97I DATED MARCH 7, 2008 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP D97I

2006 NEW STANDARD PLAN NSP D97I

2-13-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	540	619

Raymond Don Tsztoo
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Raymond Don Tsztoo
No. C37332
Exp. 6-30-08
CIVIL
STATE OF CALIFORNIA

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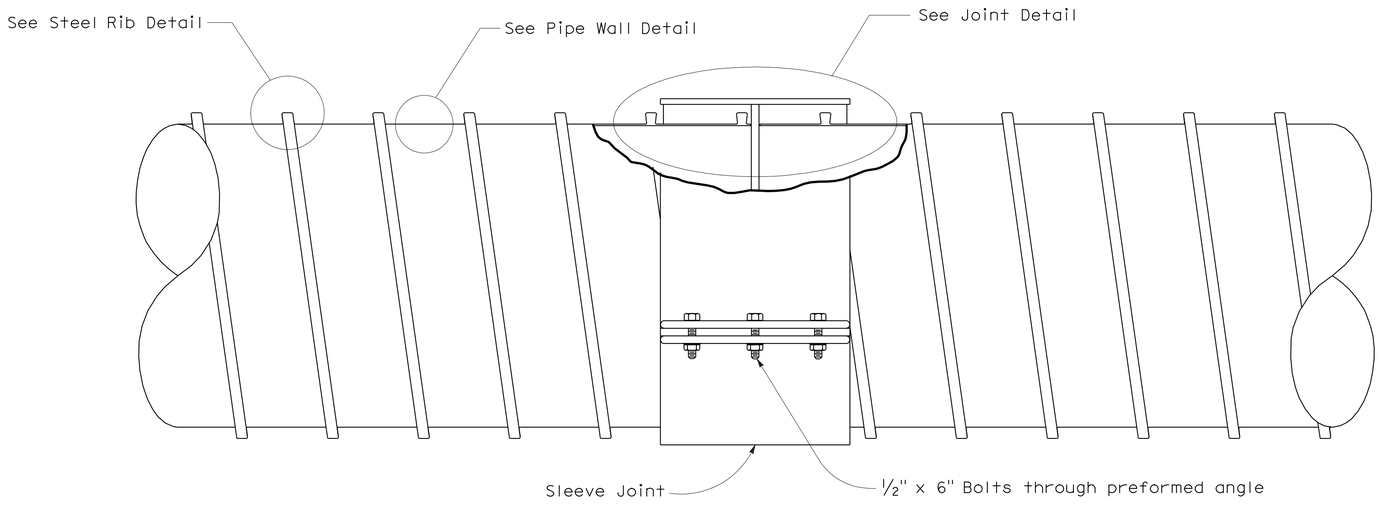
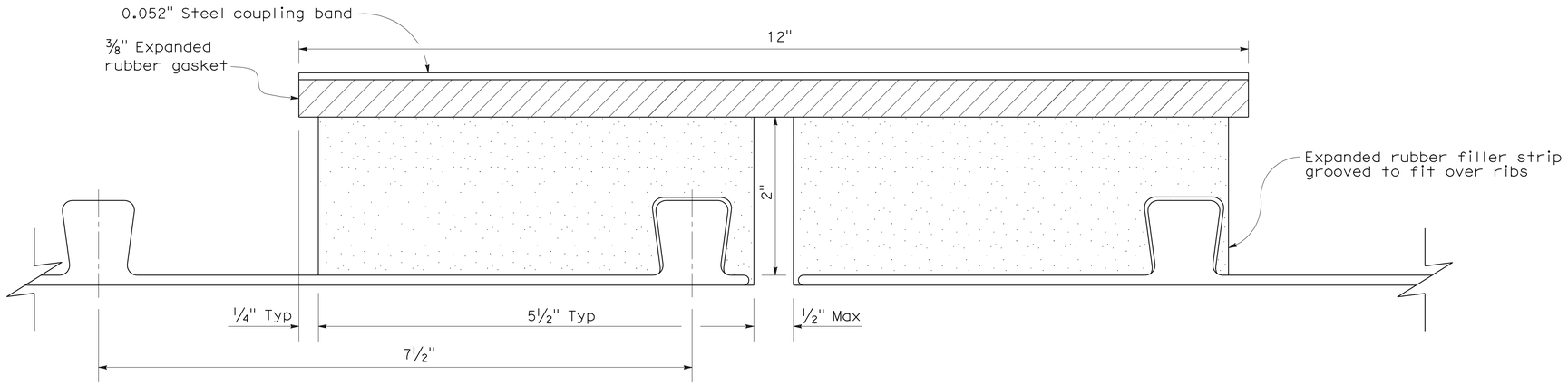
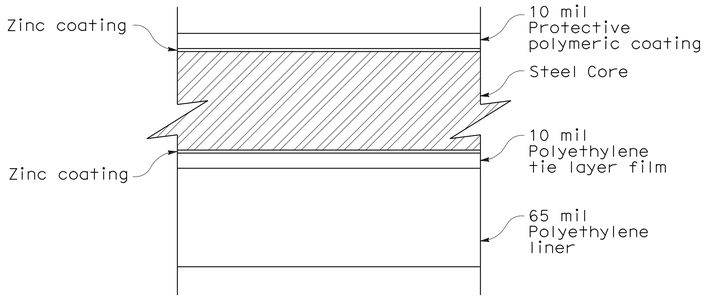
To accompany plans dated 4-16-12



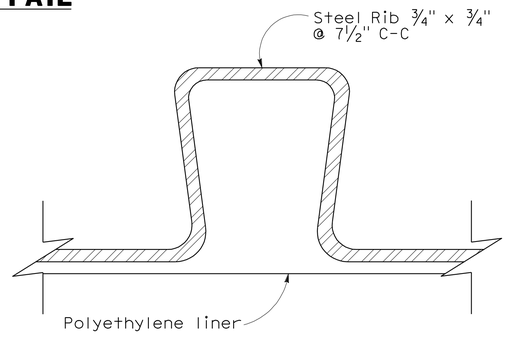
COMPOSITE STEEL SPIRAL RIB PIPE



JOINT DETAIL



PIPE WALL DETAIL



STEEL RIB DETAIL

NOTES:

1. Pipe to conform to ASTM A 978.
2. See Standard Plan A62F for backfill details.
3. Protective polymer film to conform to ASTM A 742 and AASHTO M 246.
4. See Standard Plan D97C for Universal Coupling details.
5. Strap joint connection shall consist of 2 separate bolted preformed connectors joined to form one strap when pipe inside diameter is greater than or equal to 60".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

COMPOSITE STEEL SPIRAL RIB PIPE WITH SMOOTH INTERIOR STANDARD JOINT

NO SCALE

NSP D97J DATED JUNE 6, 2008 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP D97J

2006 NEW STANDARD PLAN NSP D97J

4-24-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	541	619

Gregory A. Balzer
LICENSED LANDSCAPE ARCHITECT

June 5, 2009
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.

LICENSED LANDSCAPE ARCHITECT — Gregory A. Balzer — 2576 — 9-30-10 Renewal Date — 2-28-11 Renewal Date — 5-14-09 Date — STATE OF CALIFORNIA

To accompany plans dated 4-16-12

A

AB	aggregate base
ABS	acrylonitrile-butadiene-styrene
AC	asphalt concrete
Adj	adjacent/adjustable
AIC	auxiliary irrigation controller
Alt	alternative
AMEND	amendment
ARV	air release valve
AUTO	automatic
AUX	auxiliary
AVB	atmospheric vacuum breaker

B

B&B	balled and burlapped
B/B	brass/bronze
B/B/PL	brass/bronze/plastic
B/PL	brass/plastic
BFM	bonded fiber matrix
Bit Ctd	bituminous coated
BP	booster pump
BPA	backflow preventer assembly
BPAE	backflow preventer assembly in enclosure
BPE	backflow preventer enclosure
BV	ball valve

C

CAP	corrugated aluminum pipe
CARV	combination air release valve
CCA	cam coupler assembly
CEC	controller enclosure cabinet
CHDPE	corrugated high density polyethylene
CL	chain link
CNC	control and neutral conductors
Conc	concrete
Cond	conduit
CSP	corrugated steel pipe
CST	center strip
CV	check valve

D

Dia	diameter
DIP	ductile iron pipe
DN	diameter nominal

E

EA	each
Elect	electric/electrical
Elev	elevation
ENCL	enclosure
EP	edge of pavement
ES	edge of shoulder
EST	end strip
ESTB	establishment
ETW	edge of traveled way

F

F	full circle
F/P	full/part circle
FAU	filter assembly unit
FCV	flow control valve
FERT	fertilizer
FG	finished grade
FIPT	female iron pipe thread
FIS	fertilizer injector system
FL	flow line
FM	flow monitor
FS	flow sensor
Ft	foot/feet
FV	flush valve

G

GAL	Gallon(s)
Galv	galvanized
GARV	garden valve
GPH	gallons per hour
GPM	gallons per minute
GSP	galvanized steel pipe
GV	gate valve

H

H	half circle
HB	hose bib
HDPE	high density polyethylene
HP	horsepower/hinge point
HPL	high pressure line
Hwy	highway

I

IC	irrigation controller
ICC	irrigation controller(s) in controller enclosure cabinet
ID	inside diameter
In	inches
IFS	irrigation filtration system
IPS	iron pipe size
IPT	iron pipe thread
Irr	irrigation

L

L	length
LF	linear foot

M

Max	maximum
MBGR	metal beam guard railing
MCV	manual control valve
MIC	master irrigation controller
Min	minimum
MIPT	male iron pipe thread
Misc	miscellaneous
Mtl	material
MVP	maintenance vehicle pullout

N

NCN	no common name
NL	nozzle line
No.	number
NPT	national pipe thread

O

O/C	on center
OD	outside diameter
Oz	ounce

P

P	part circle
PB	pull box
PCC	portland cement concrete
PE	polyethylene
Pkt	packet
PL	plastic
PLT	plant/planting
PLT ESTB	plant establishment
PM	post mile
PR	pressure rated
PRLV	pressure relief valve
PSFM	polymer stabilized fiber matrix
PSI	pounds per square inch
PRV	pressure reducing valve
PVC	polyvinyl chloride
Pvmt	pavement

Q

Q	quarter circle
QCV	quick coupling valve

R

R	radius
RCP	reinforced concrete pipe
RCV	remote control valve
RCVM	remote control valve (master)
RCVMF	remote control valve (master) w/ flow meter
RCW	recycled/reclaimed water
RECP	rolled erosion control product
REQ	required
R/W	right of way

S

S	slip
SCC	sprinkler control conduit
SCH	schedule
SF	state-furnished
Shld	shoulder
SQFT	square foot/feet
SQYD	square yard(s)
SST	side strip
Sta	station
Std	standard
SW	sidewalk/sound wall

T

T	third circle/thread
TLS	truck loading standpipe
TQ	three quarter circle
TRM	turf reinforcement mat
TRVD	traveled
TT	two third circle
Typ	typical

U

UG	underground

V

VAU	valve assembly unit

W

W	width
W/	with
WM	water meter
WS	wye strainer
WSP	welded steel pipe
WWM	welded wire mesh

NOTE:

FOR ADDITIONAL ABBREVIATIONS, SEE STANDARD PLANS A10A AND A10B.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PLANTING AND IRRIGATION ABBREVIATIONS

NO SCALE

RSP H1 DATED JUNE 5, 2009 SUPERSEDES STANDARD PLAN H1
DATED MAY 1, 2006 - PAGE 201 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP H1

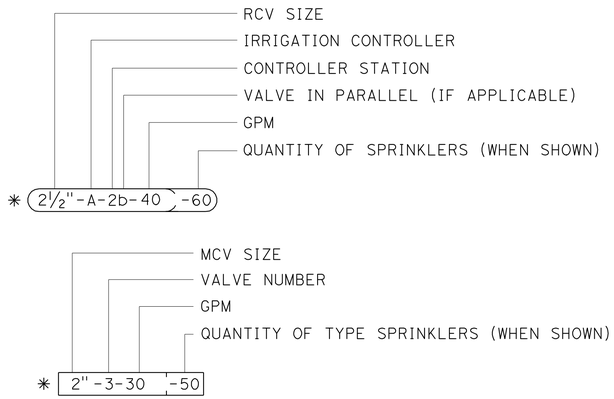
2006 REVISED STANDARD PLAN RSP H1

5-28-09

EXISTING	PROPOSED	ITEM DESCRIPTION
		WATER METER (WM)
		BACKFLOW PREVENTER ASSEMBLY (BPA)
		BACKFLOW PREVENTER ASSEMBLY IN ENCLOSURE (BPAE)
		BACKFLOW PREVENTER ENCLOSURE (BPE)
		BOOSTER PUMP (BP)
		TRUCK LOADING STANDPIPE (TLS)
	FS	FLOW SENSOR (FS)
X	X	MASTER IRRIGATION CONTROLLER (MIC)
		AUXILIARY IRRIGATION CONTROLLER (AIC)
		IRRIGATION CONTROLLER (IC)/ IRRIGATION CONTROLLER (IC) (BATTERY) IRRIGATION CONTROLLER (IC) (SOLAR)
		IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET (ICC)
		CONTROL AND NEUTRAL CONDUCTORS (CNC)
SCC	SCC	SPRINKLER CONTROL CONDUIT (SCC)
		IRRIGATION CROSSOVER
		EXTEND IRRIGATION CROSSOVER
		IRRIGATION SLEEVE
DIP	DIP	DUCTILE IRON PIPE (SUPPLY LINE) (MAIN) (DIP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (MAIN) (GSP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (LATERAL) (GSP)
		PLASTIC PIPE (PR 200) (SUPPLY LINE) (MAIN)
		PLASTIC PIPE (PR 200) (SUPPLY LINE) (LATERAL)
		PLASTIC PIPE (IRRIGATION LINE)
		REMOTE CONTROL VALVE (RCV) REMOTE CONTROL VALVE (MASTER) (RCVM) REMOTE CONTROL VALVE (MASTER) W/FLOW METER (RCVMF)
		MANUAL CONTROL VALVE (MCV)
V	V	VALVE ASSEMBLY UNIT (VAU)
Y	Y	WYE STRAINER (WS)
		FILTER ASSEMBLY UNIT (FAU)
		GATE VALVE (GV)
		BALL VALVE (BV)

EXISTING	PROPOSED	ITEM DESCRIPTION
		QUICK COUPLING VALVE (QCV)
		CAM COUPLER ASSEMBLY (CCA)
		PRESSURE REDUCING VALVE (PRV)
		PRESSURE RELIEF VALVE (PRLV)
		FLOW CONTROL VALVE (FCV)
		COMBINATION AIR RELEASE VALVE (CARV)
		CHECK VALVE (CV)
		FLUSH VALVE (FV)
		NOZZLE LINE W/TURNING UNION
		IRRIGATION SYSTEM
		IRRIGATION SYSTEM TO BE REMOVED
		CHAIN LINK GATE
		QUICK COUPLING VALVE W/SPRINKLER PROTECTOR
3	3	SPRINKLER W/SPRINKLER PROTECTOR
	C	CONNECT TO EXISTING SYSTEM
		CAP
		CAP EXISTING

VALVE CODE



* VALVE CODES FOR EXISTING VALVES ARE SHOWN IN A DASHED ENCLOSURE.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	542	619

Gregory A. Balzer
LICENSED LANDSCAPE ARCHITECT

June 5, 2009
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.

LICENSED LANDSCAPE ARCHITECT — Gregory A. Balzer — 2576 — Signature — 2-28-11 — Renewal Date — 5-14-09 — Date — STATE OF CALIFORNIA

To accompany plans dated 4-16-12

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PLANTING AND IRRIGATION SYMBOLS

NO SCALE

RSP H2 DATED JUNE 5, 2009 SUPERSEDES RSP H2 DATED MARCH 7, 2008 AND STANDARD PLAN H2 DATED MAY 1, 2006 - PAGE 202 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP H2

2006 REVISED STANDARD PLAN RSP H2

5-11-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	543	619

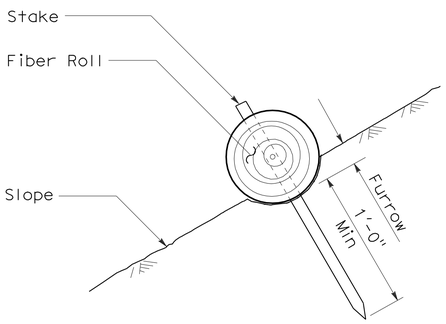
Gregory A. Bolzer
LICENSED LANDSCAPE ARCHITECT

April 3, 2009
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.

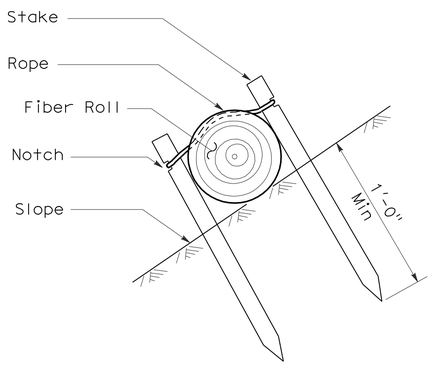
LICENSED LANDSCAPE ARCHITECT
Gregory A. Bolzer 3578
Signature
02-28-11
Renewal Date
03-04-09
Date
STATE OF CALIFORNIA

To accompany plans dated 4-16-12

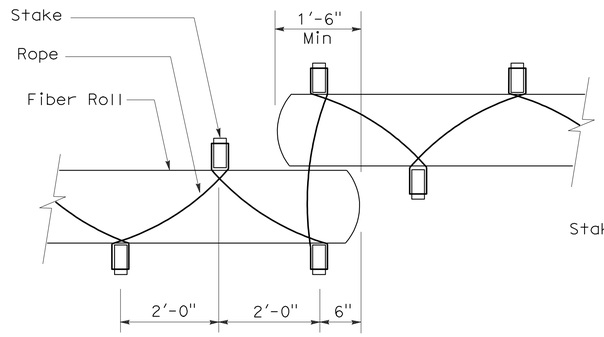


SECTION

FIBER ROLL
(TYPE 1)

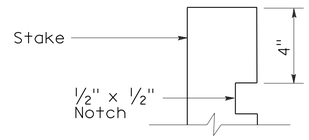


SECTION



PLAN

FIBER ROLL
(TYPE 2)

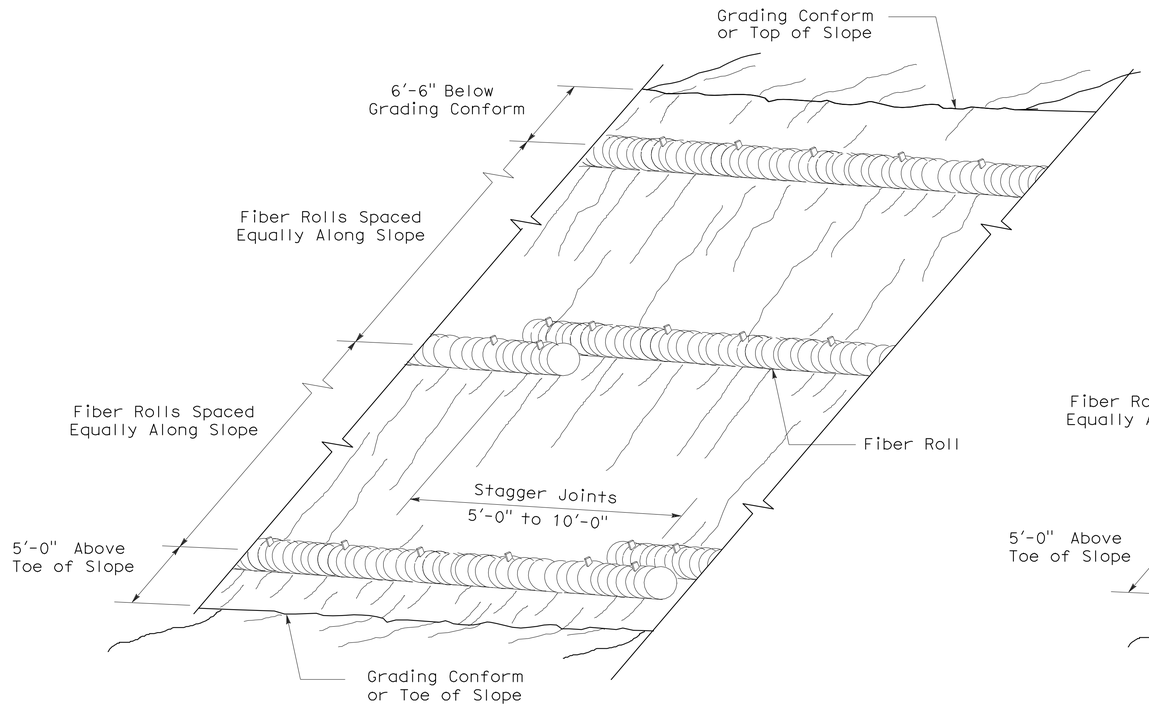


ELEVATION

STAKE NOTCH DETAIL

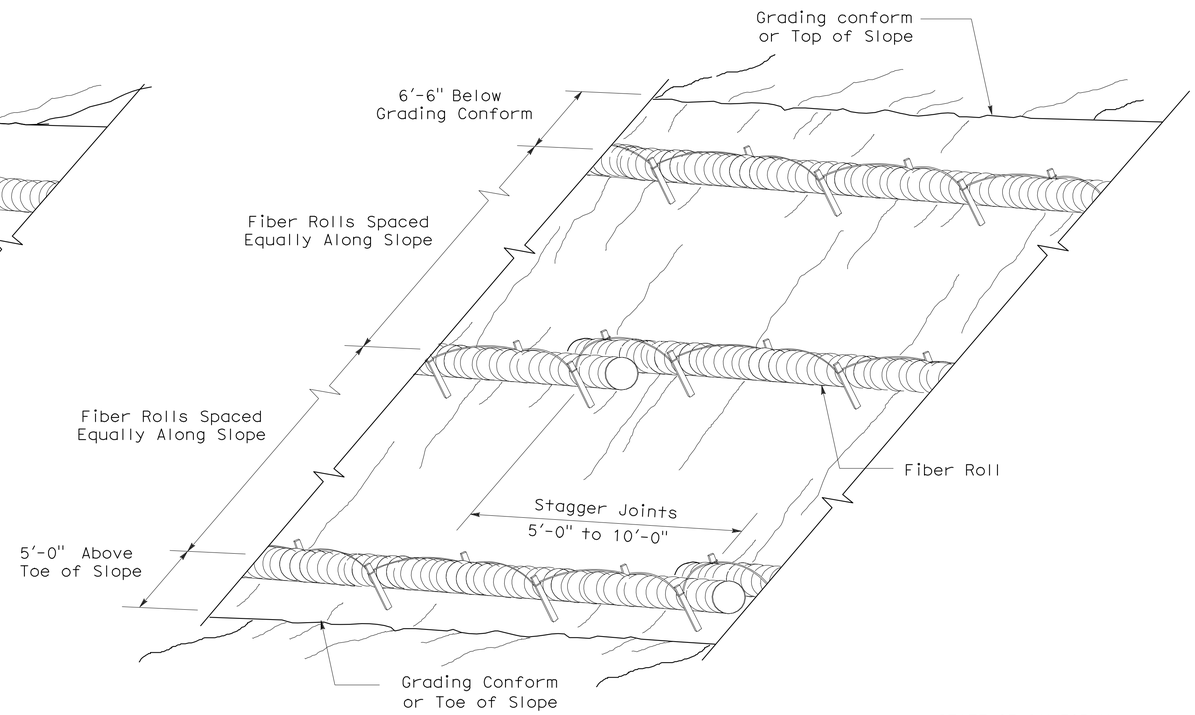
NOTES:

1. Fiber roll spacing varies depending upon slope inclination.
2. Installations shown in the perspectives are for slope inclination of 10:1 and steeper.



PERSPECTIVE

FIBER ROLL (TYPE 1)



PERSPECTIVE

FIBER ROLL (TYPE 2)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EROSION CONTROL DETAILS (FIBER ROLL)

NO SCALE

RNSP H51 DATED APRIL 3, 2009 SUPERSEDES NSP H51 DATED DECEMBER 1, 2006 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED NEW STANDARD PLAN RNSP H51

2006 REVISED NEW STANDARD PLAN RNSP H51

3-4-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	544	619

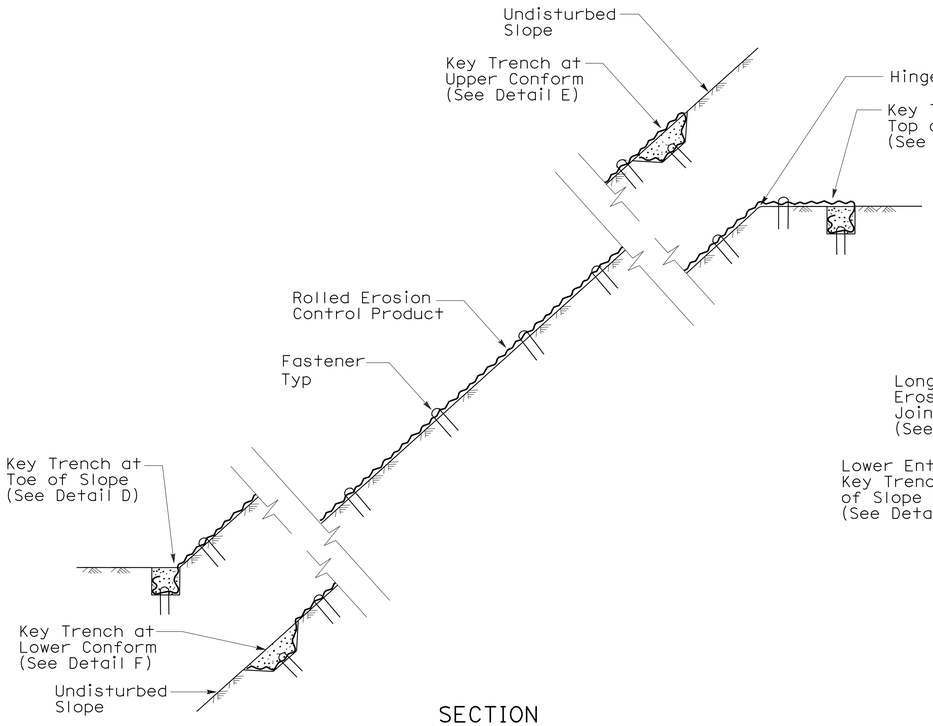
Gregory A. Balzer
LICENSED LANDSCAPE ARCHITECT

June 5, 2009
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT
Gregory A. Balzer 2978
Signature
2-28-11
Renewal Date
5-14-09
Date
STATE OF CALIFORNIA

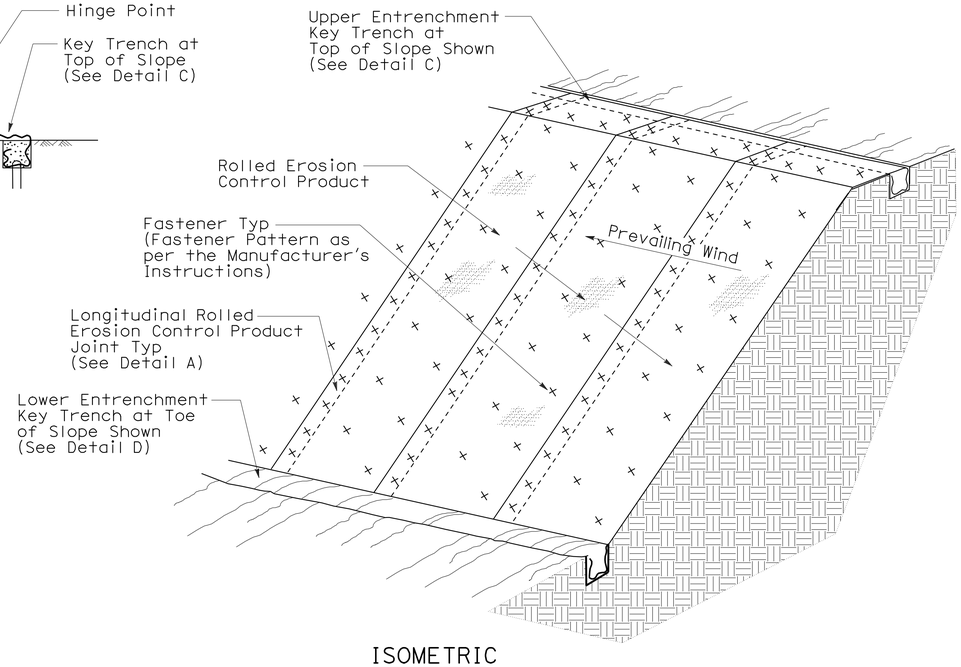
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 4-16-12



SECTION

ROLLED EROSION CONTROL PRODUCT ON SLOPE WITH VARIOUS KEY ENTRENCHMENTS

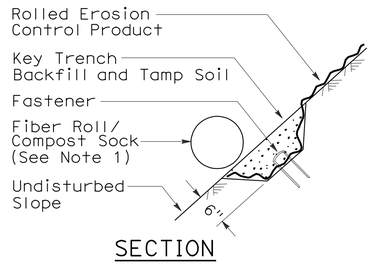


ISOMETRIC

ROLLED EROSION CONTROL PRODUCT ON SLOPE

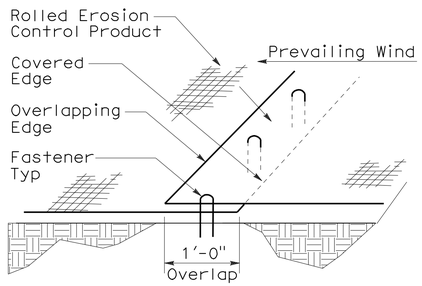
NOTE:

1. Fiber Roll/Compost Sock shown for reference purposes only.
2. If transverse rolled erosion control product joints are required on slopes, see Detail B.



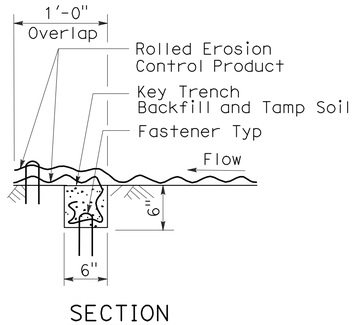
SECTION

DETAIL F KEY TRENCH AT LOWER CONFORM



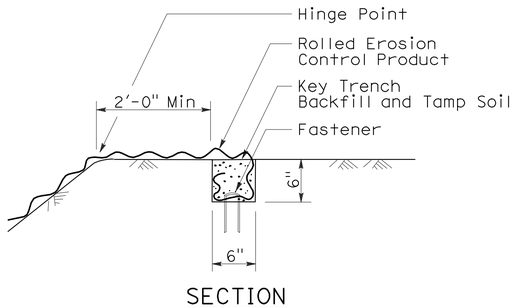
PERSPECTIVE

DETAIL A LONGITUDINAL ROLLED EROSION CONTROL PRODUCT JOINT



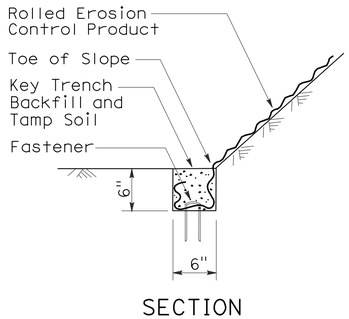
SECTION

DETAIL B TRANSVERSE ROLLED EROSION CONTROL PRODUCT JOINT



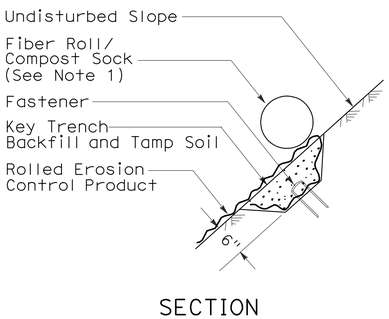
SECTION

DETAIL C KEY TRENCH AT TOP OF SLOPE



SECTION

DETAIL D KEY TRENCH AT TOE OF SLOPE



SECTION

DETAIL E KEY TRENCH AT UPPER CONFORM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ROLLED EROSION CONTROL PRODUCT

NO SCALE

NSP H53 DATED JUNE 5, 2009 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP H53

2006 NEW STANDARD PLAN NSP H53

3-4-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	545	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

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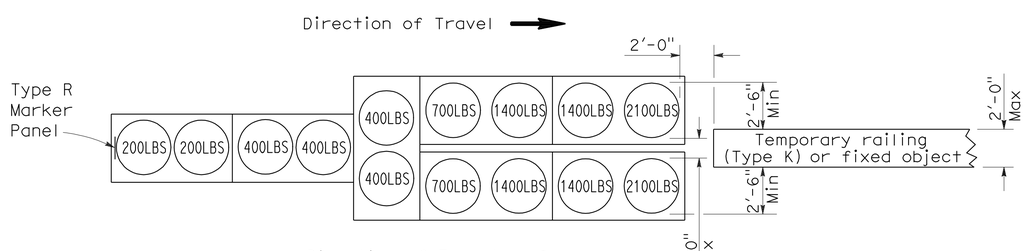
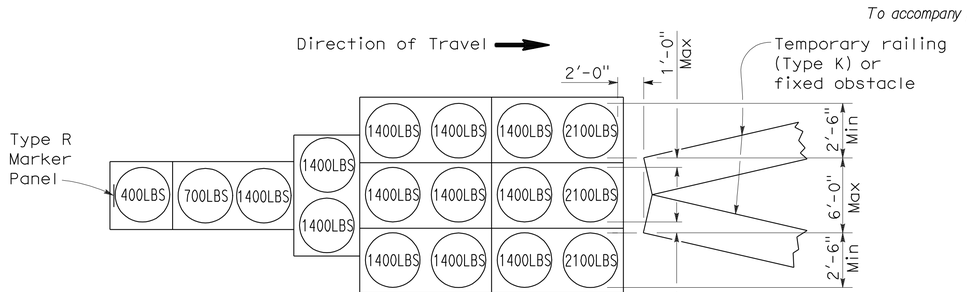
To accompany plans dated 4-16-12



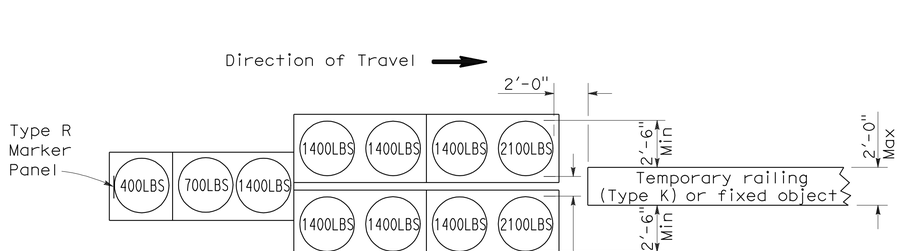
ARRAY 'TU14'

Approach speed 45 mph or more



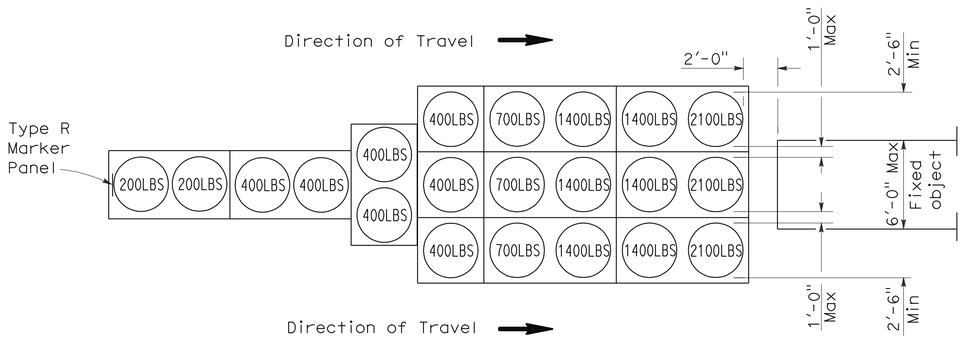
ARRAY 'TU17'

Approach speed less than 45 mph



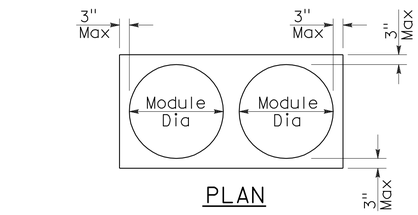
ARRAY 'TU11'

Approach speed less than 45 mph

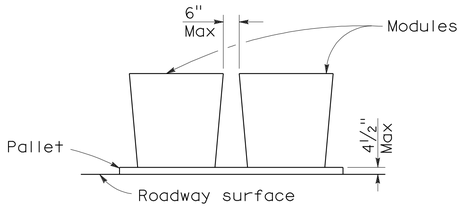


ARRAY 'TU21'

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 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.

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

5-15-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	546	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

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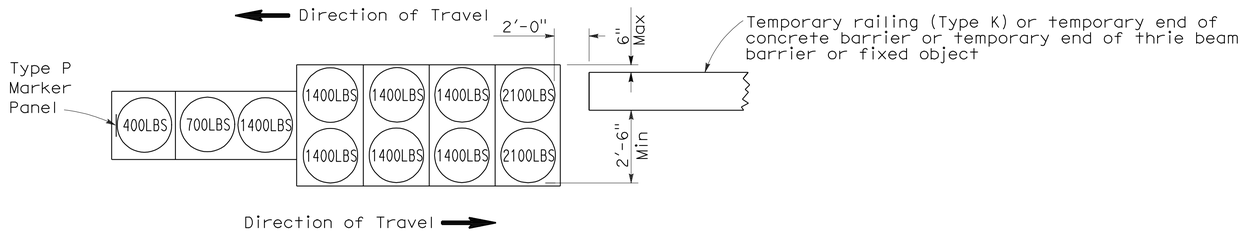
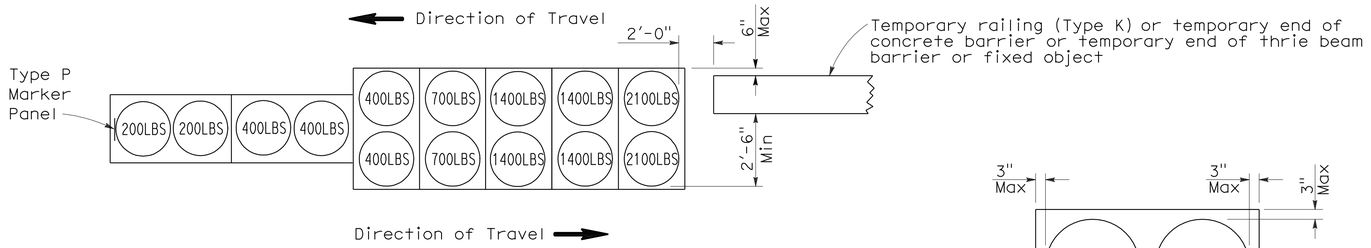
To accompany plans dated 4-16-12



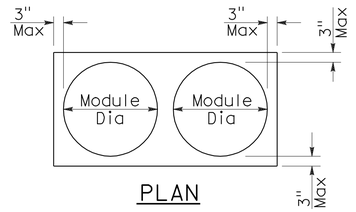
ARRAY 'TB11'

Approach speed less than 45 mph

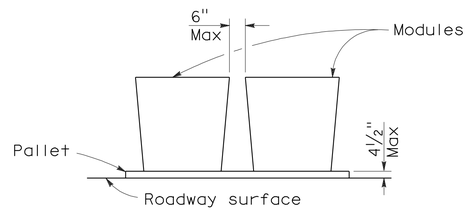


ARRAY 'TB14'

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

5-15-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	547	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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

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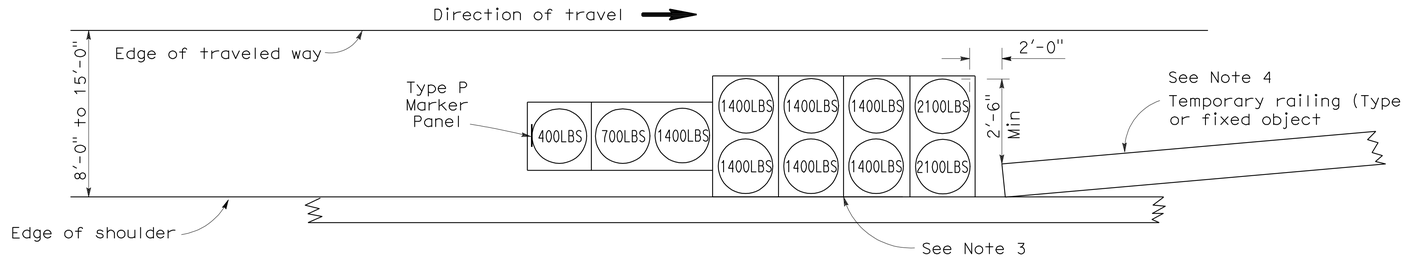
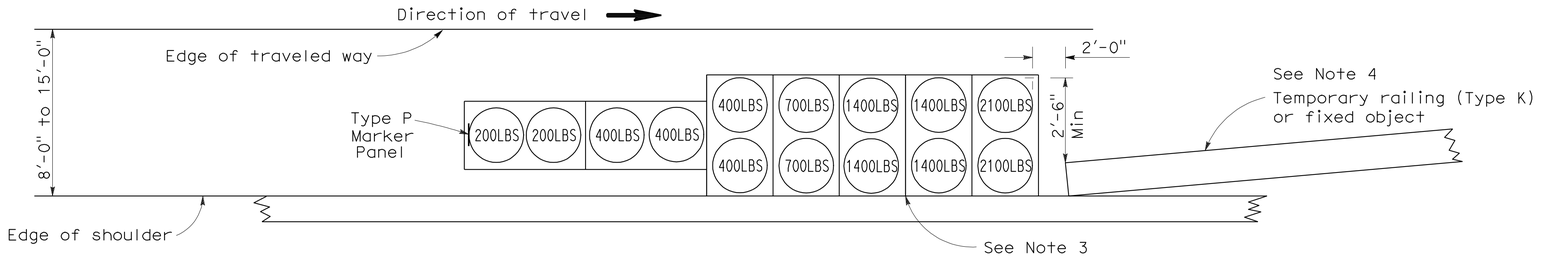
To accompany plans dated 4-16-12



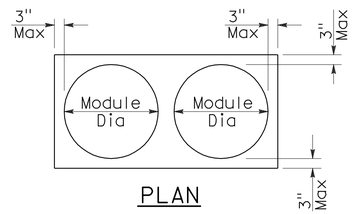
ARRAY 'TS11'

Approach speed less than 45 mph
See Note 9

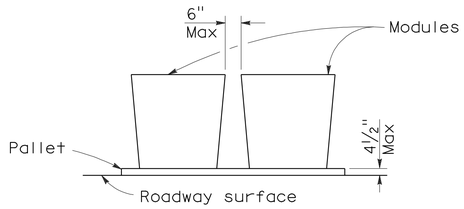


ARRAY 'TS14'

Approach speed 45 mph or more
See Note 9



PLAN



ELEVATION

CRASH CUSHION PALLET DETAIL

See Note 11

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. 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.
4. 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.
5. Temporary crash cushion arrays shall not encroach on the traveled way.
6. Arrays for median shoulders shall conform to details shown on this plan for outside shoulders.
7. Place the Type P marker panel so that the bottom of the panel rests upon the pallet and faces traffic.
8. Refer to Standard Plan A73B for marker details.
9. 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.
10. Approach speeds indicated conform to NCHRP 350 Report criteria.
11. 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

5-15-08

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	548	619

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

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

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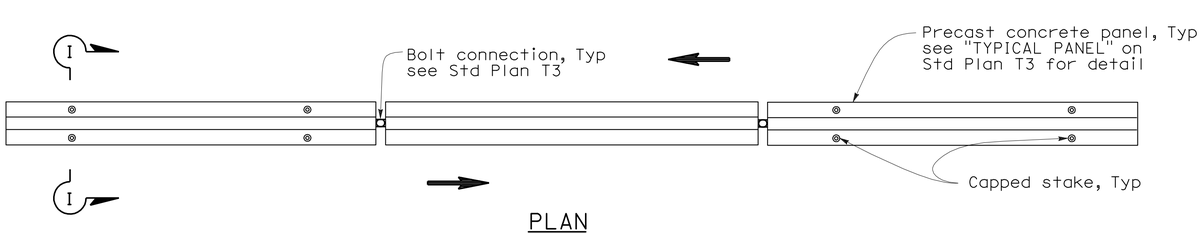
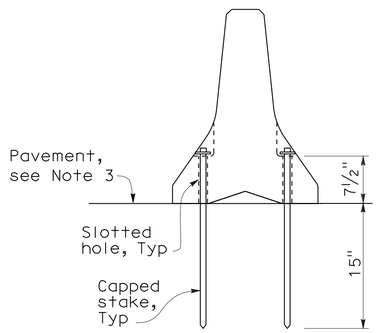
To accompany plans dated 4-16-12



PLAN

RAILING STAKING CONFIGURATION FOR TWO-WAY TRAFFIC

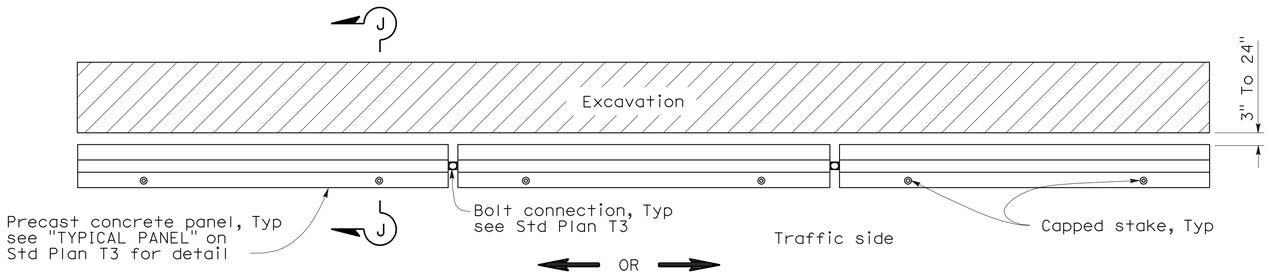
See Note 1



SECTION I-I

NOTES:

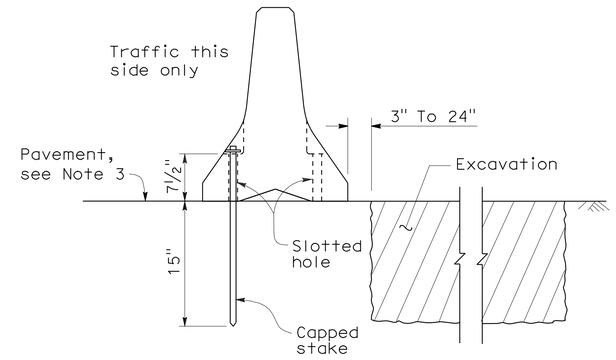
1. Where Type K Temporary Railing is placed as a temporary or long term barrier in two-way traffic on highways with less than 24" from the edge of traveled way, use four capped stakes per every other panel with end panels staked.
2. Where Type K Temporary Railing is placed 3" to 24" from the edge of 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 ⟹.



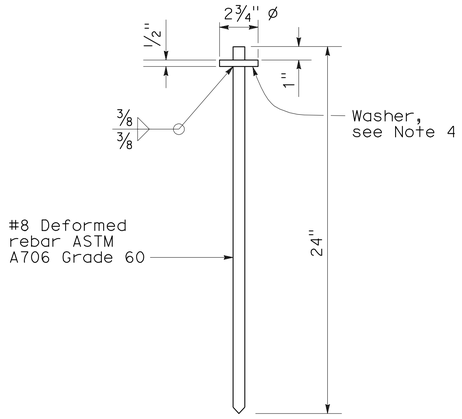
PLAN

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)

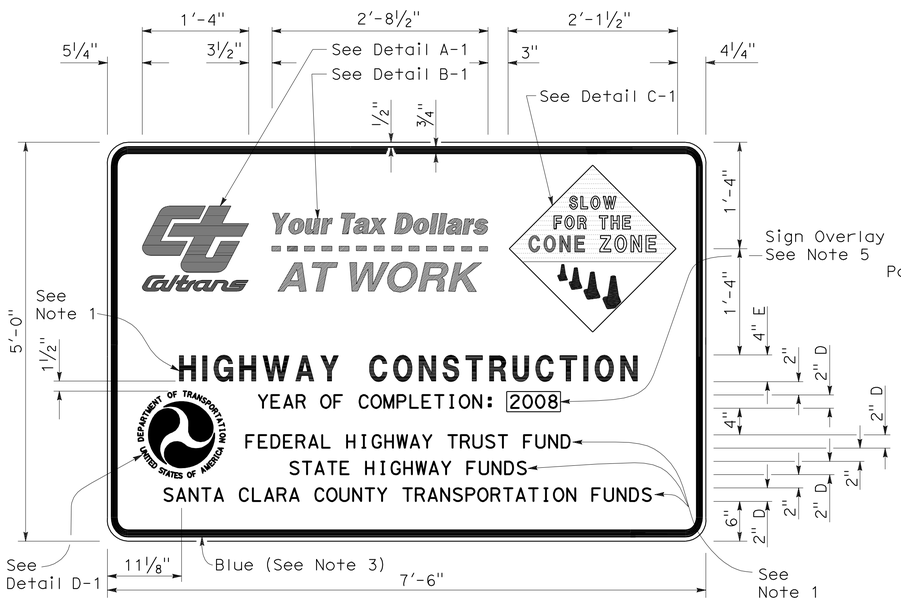
NO SCALE

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

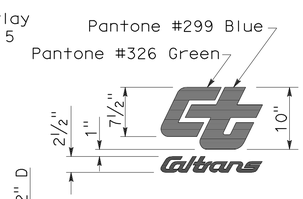
NEW STANDARD PLAN NSP T3A

2006 NEW STANDARD PLAN NSP T3A

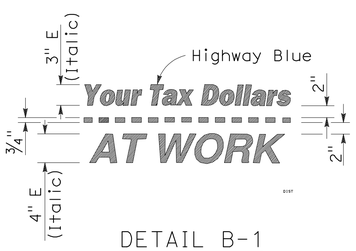
8-31-10



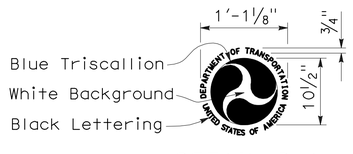
TYPE 1



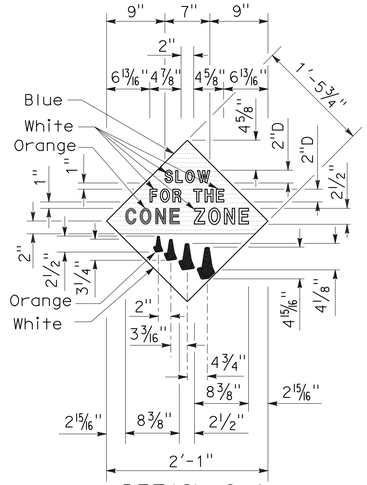
DETAIL A-1



DETAIL B-1
(See Note 3)



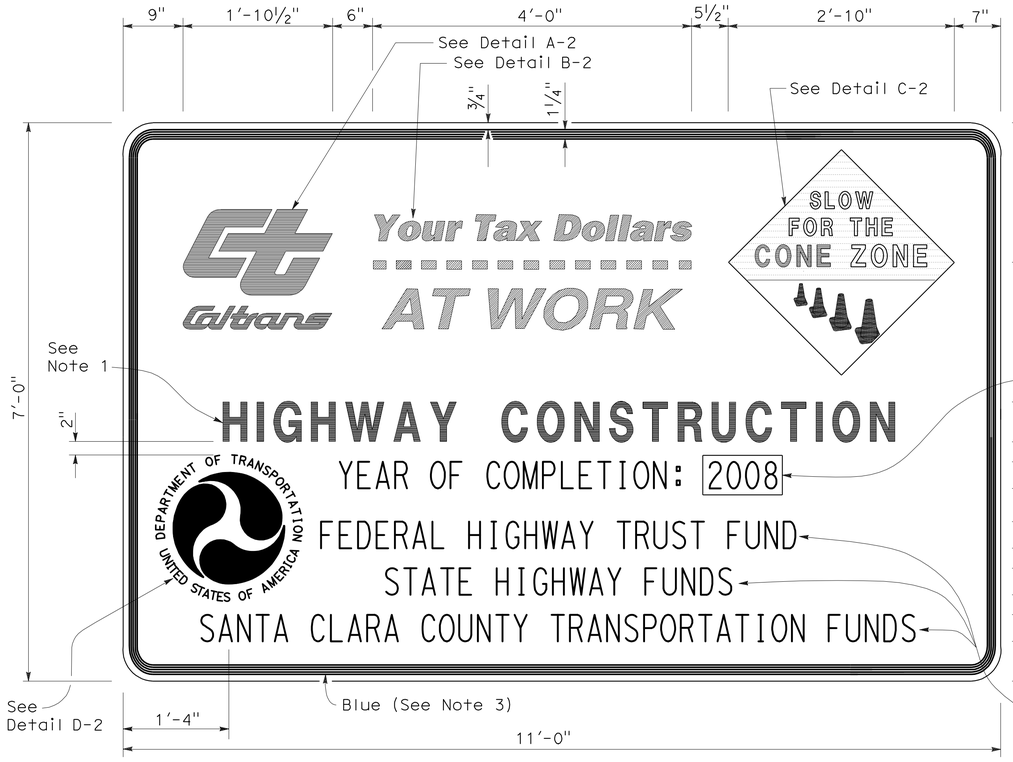
DETAIL D-1
(See Note 6)



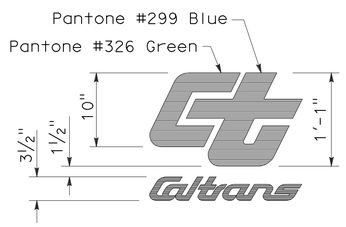
DETAIL C-1
(See Note 4)

NOTES:

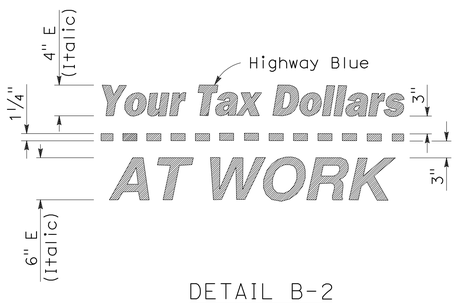
1. The sign messages shown for type of project and fund types are examples only. See the Special Provisions for the applicable type of project and fund type messages to be used.
2. Except as otherwise shown, the legend of sign shall be black on a white background (non-reflective).
3. The border of the signs and details "B-1" and "B-2" shall be blue (non-reflective).
4. The diamond in details "C-1" and "C-2" shall be blue for the background of message, " SLOW FOR THE CONE ZONE", and white background for the orange cones. The color and type of font for the "SLOW FOR THE CONE ZONE" message shall be: "SLOW" white D; "FOR THE" white D; "CONE" orange Arial font; "ZONE" white Arial font.
5. Year of completion of project construction shown on the overlay is an example only. See the Special Provisions.
6. Use when the Project involves Federal Highway Trust Fund.



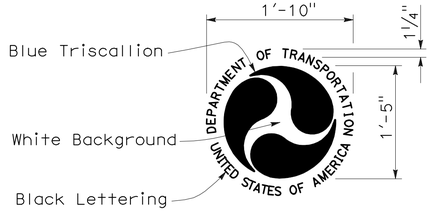
TYPE 2



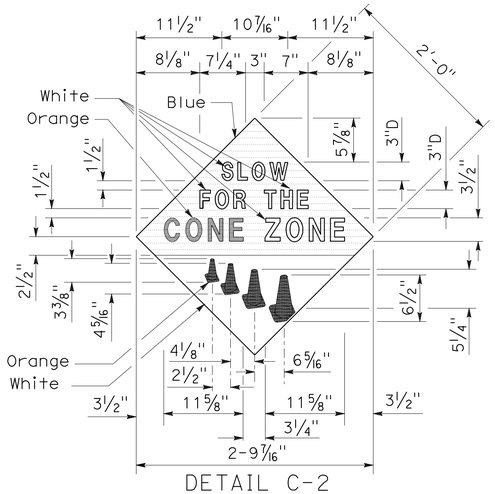
DETAIL A-2



DETAIL B-2
(See Note 3)



DETAIL D-2
(See Note 6)



DETAIL C-2
(See Note 4)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PROJECT FUNDING IDENTIFICATION SIGNS

NO SCALE

RSP T7 DATED NOVEMBER 17, 2006 SUPERSEDES STANDARD PLAN T7
DATED MAY 1, 2006 - PAGE 217 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP T7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	549	619

Greg W. Edwards
REGISTERED CIVIL ENGINEER

November 17, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Greg W. Edwards — No. C36386 — Exp. 6-30-08 CIVIL — STATE OF CALIFORNIA

To accompany plans dated 4-16-12

2006 REVISED STANDARD PLAN RSP T7

9-7-06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	550	619

Robert B Schott
LICENSED LANDSCAPE ARCHITECT

April 3, 2009
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT — Robert B. Schott 3035 — Registration Expiration Date 11-30-10 — Renewal Date 2-25-09 — STATE OF CALIFORNIA

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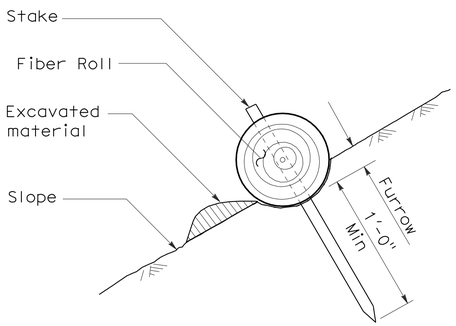
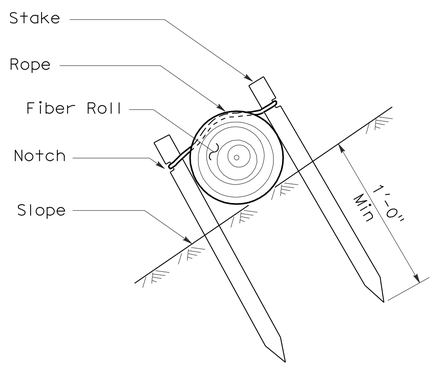
To accompany plans dated 4-16-12

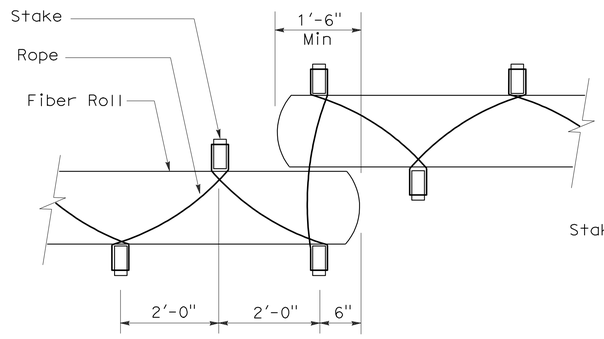


SECTION

TEMPORARY FIBER ROLL (TYPE 1)

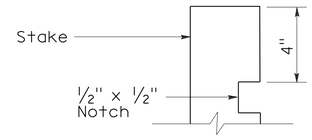


SECTION



PLAN

TEMPORARY FIBER ROLL (TYPE 2)

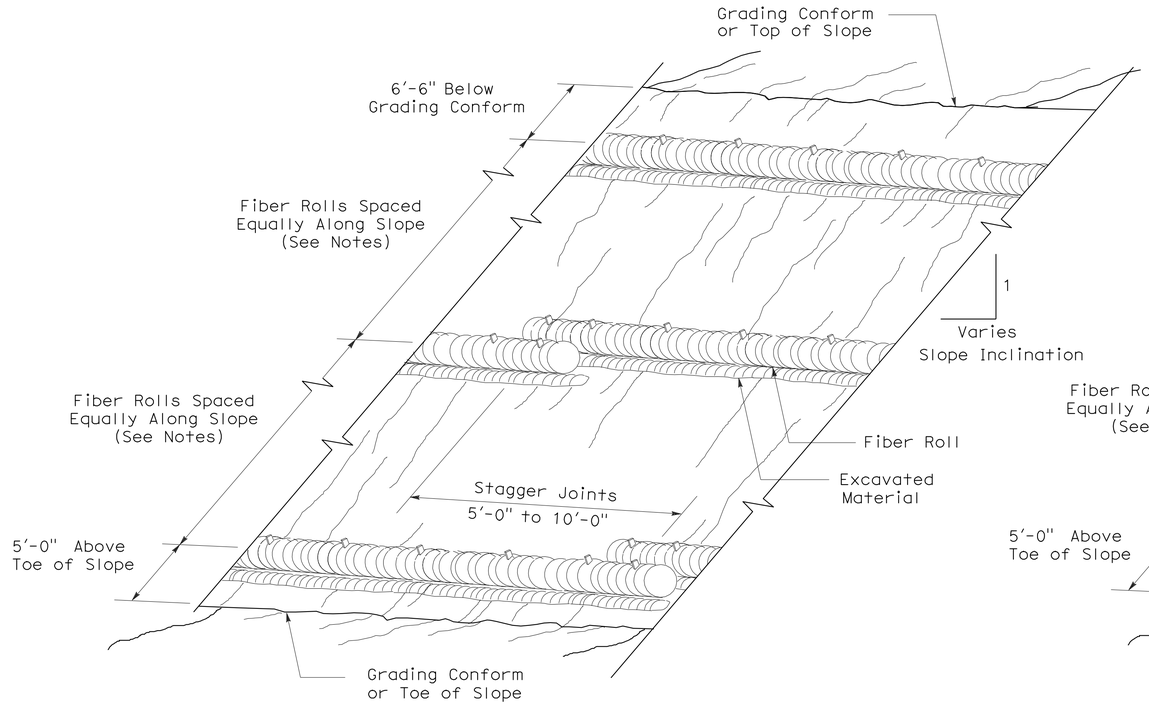


ELEVATION

STAKE NOTCH DETAIL

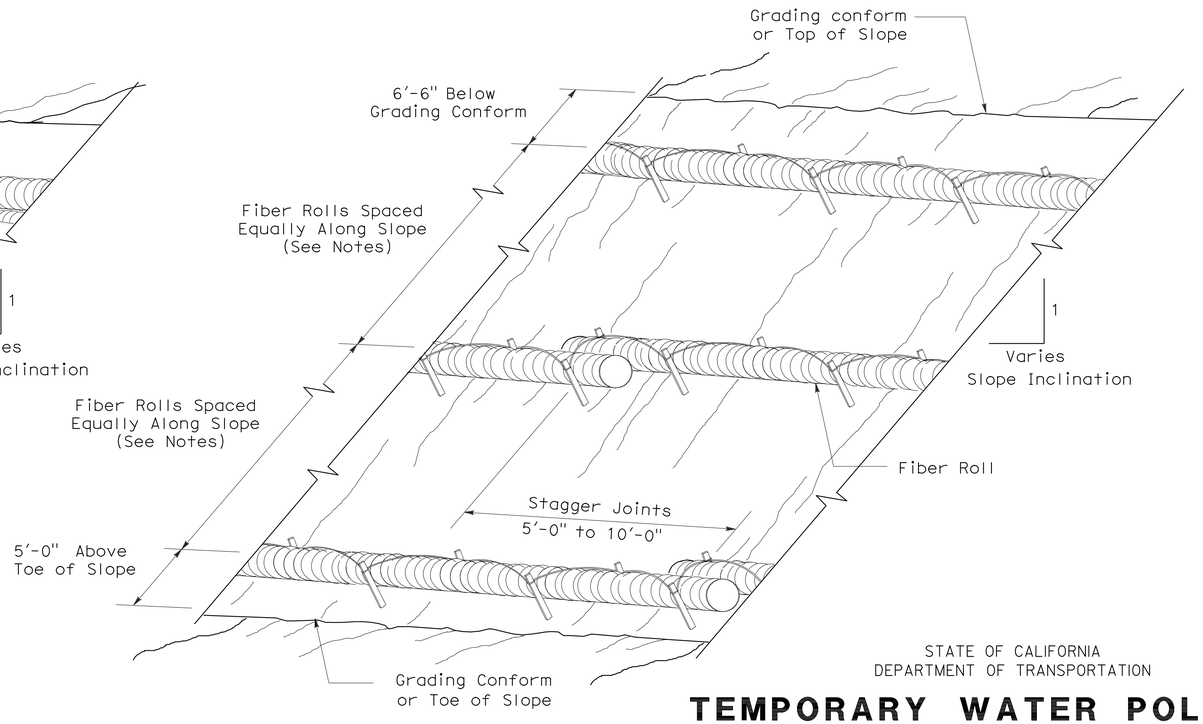
NOTES:

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

2006 REVISED STANDARD PLAN RSP T56

2-23-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	551	619

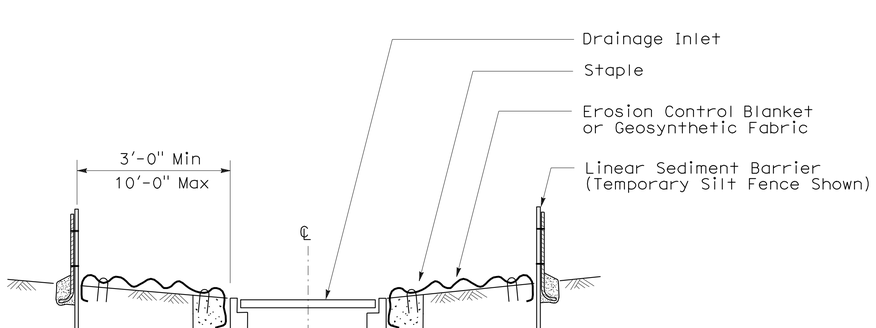
Robert B Schott
LICENSED LANDSCAPE ARCHITECT

August 15, 2008
PLANS Approval DATE

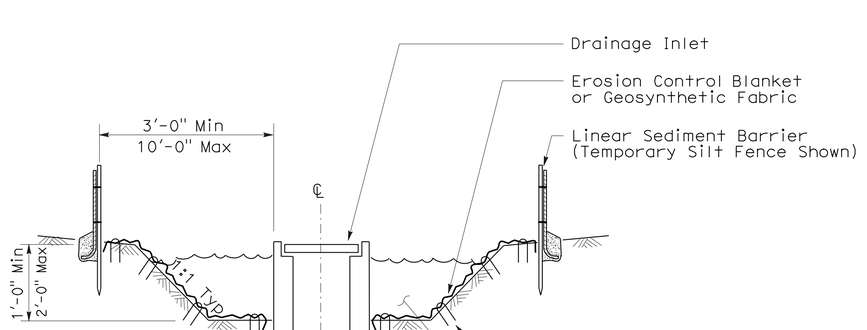
LICENSED LANDSCAPE ARCHITECT — Robert B. Schott 3035 — Signature — 11-04-08 Renewal Date — 08-11-08 Date — STATE OF CALIFORNIA

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 4-16-12



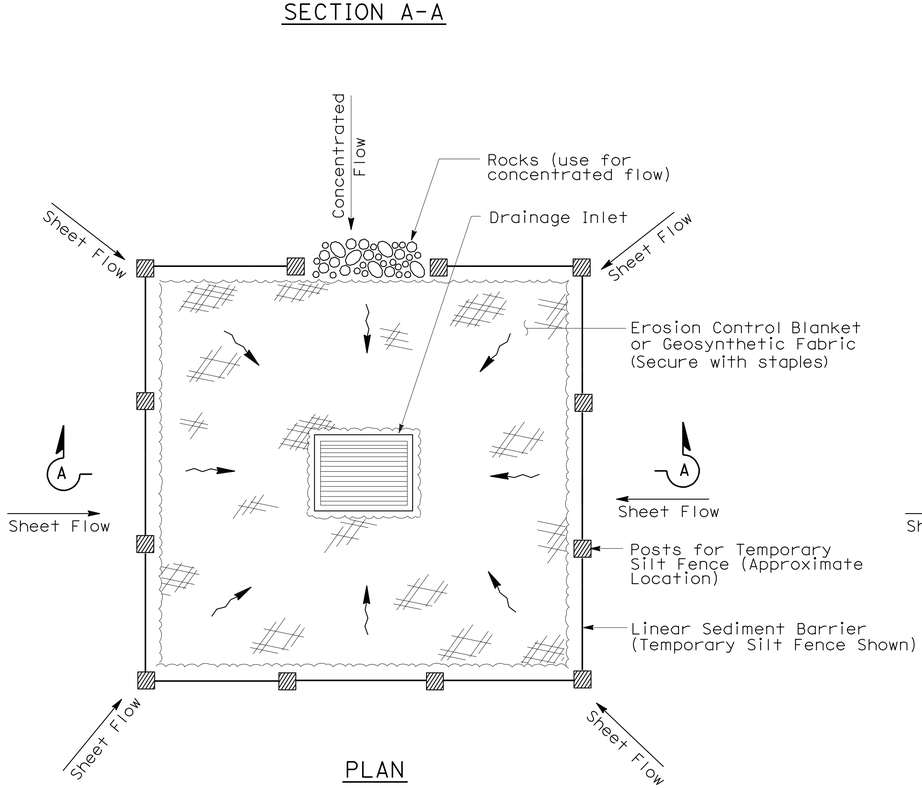
SECTION A-A



SECTION B-B

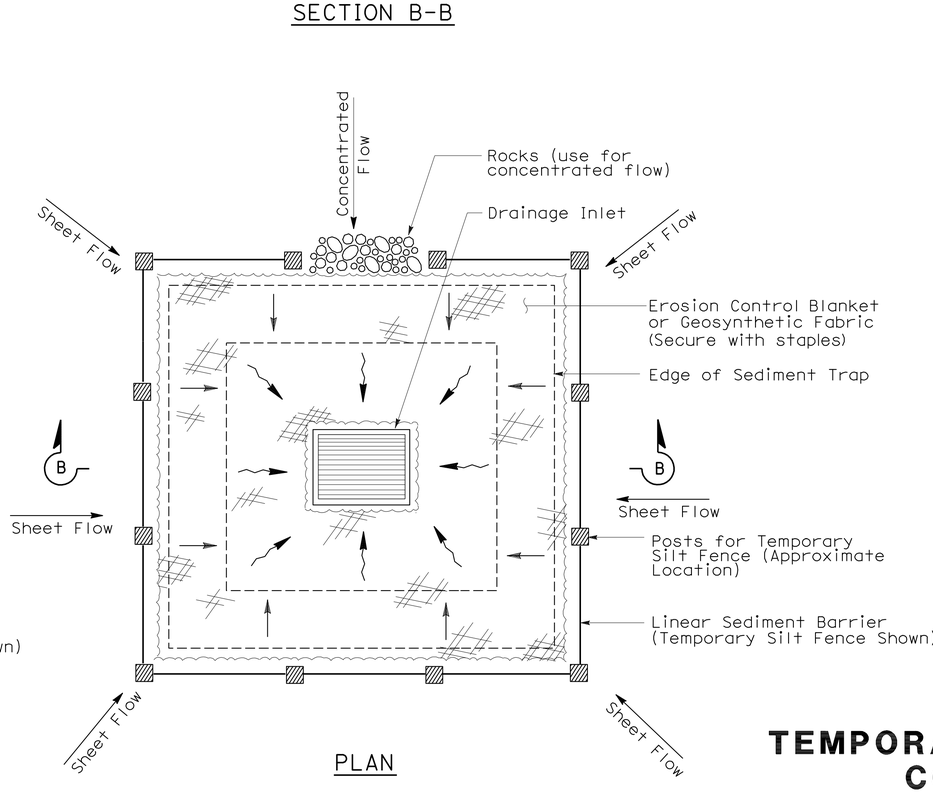
NOTES:

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



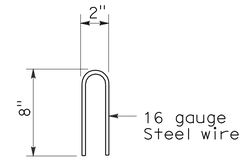
PLAN

TEMPORARY DRAINAGE
INLET PROTECTION (TYPE 1)



PLAN

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)

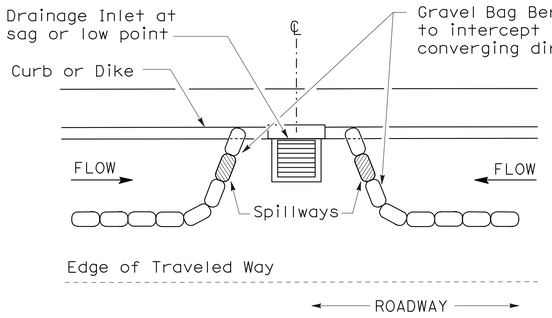
NO SCALE

NSP T61 DATED AUGUST 15, 2008 SUPPLEMENTS
THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP T61

2006 NEW STANDARD PLAN NSP T61

7-11-08



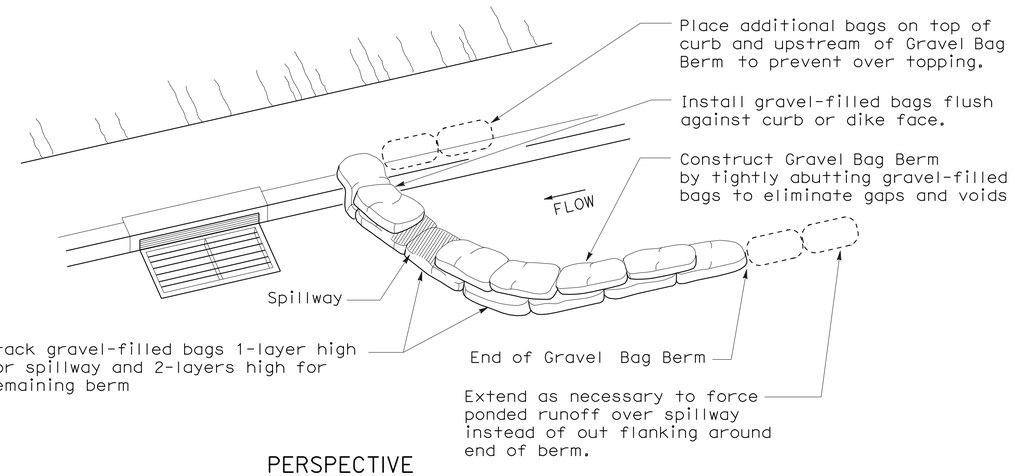
PLAN

CONFIGURATION FOR SAG POINT INLET (GRAVEL BAG BERM)

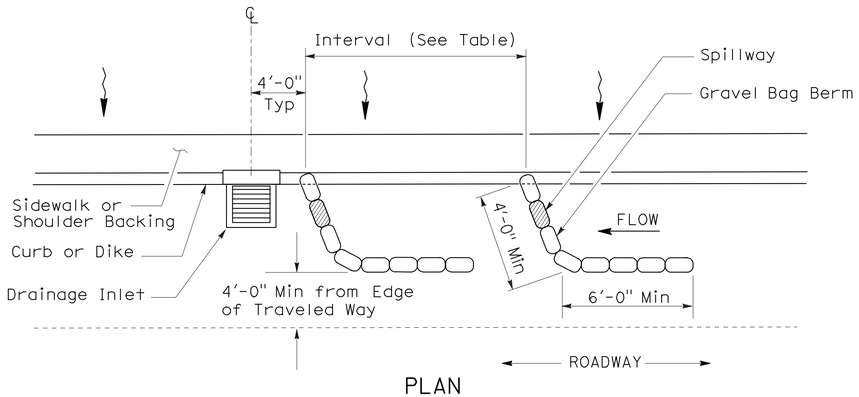
GRAVEL BAG BERM (TYPE 3A) SPACING TABLE

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

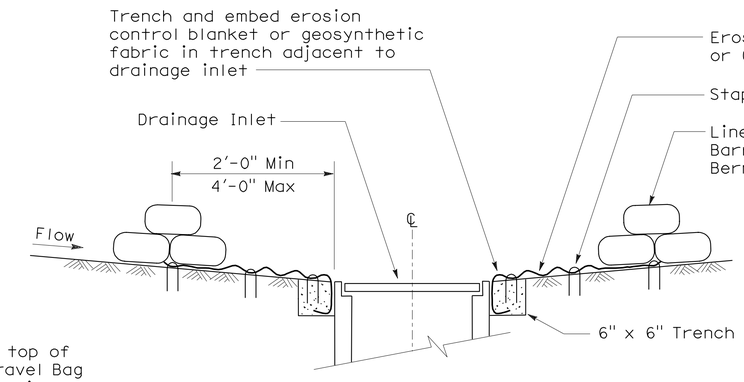


PERSPECTIVE

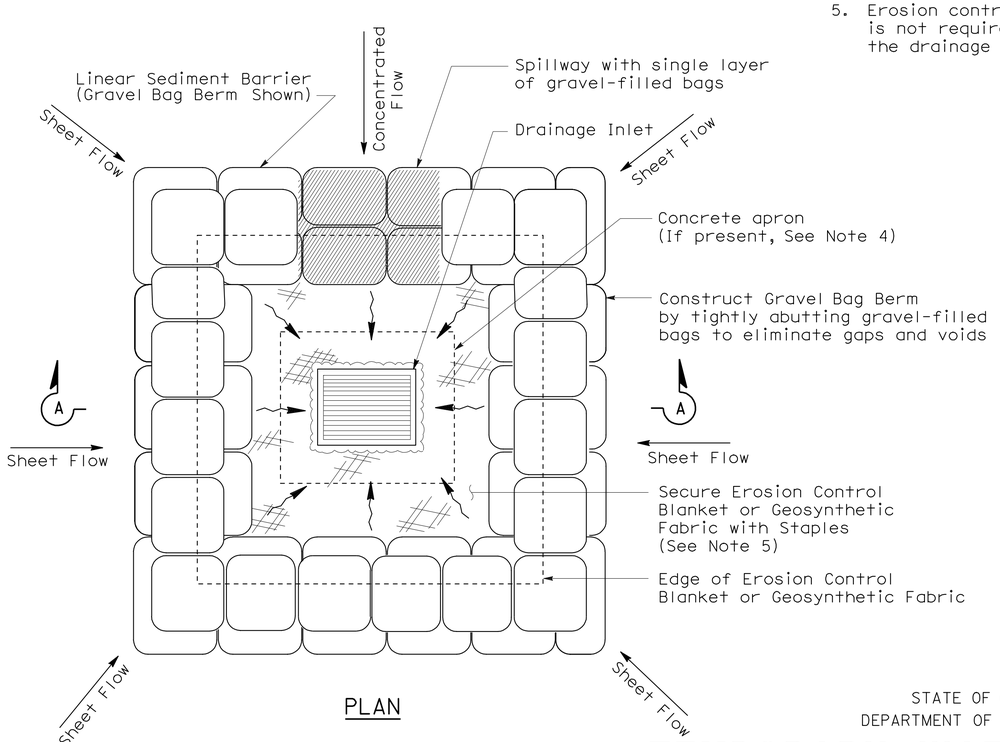


PLAN

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



SECTION A-A

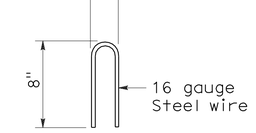


PLAN

TEMPORARY DRAINAGE INLET PROTECTION (TYPE 3B)

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.



STAPLE DETAIL

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	552	619

Robert B Schott
LICENSED LANDSCAPE ARCHITECT

August 15, 2008
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT Robert B. Schott 3025 Signature 11-04-08 Renewal Date 08-11-08 Date STATE OF CALIFORNIA

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To accompany plans dated 4-16-12

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.

NEW STANDARD PLAN NSP T62

2006 NEW STANDARD PLAN NSP T62

7-11-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	553	619

Robert B Schott
LICENSED LANDSCAPE ARCHITECT

August 15, 2008
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT — Robert B. Schott 3895 — Signature Date 11-04-08 — Renewal Date 08-11-08 — Date — STATE OF CALIFORNIA

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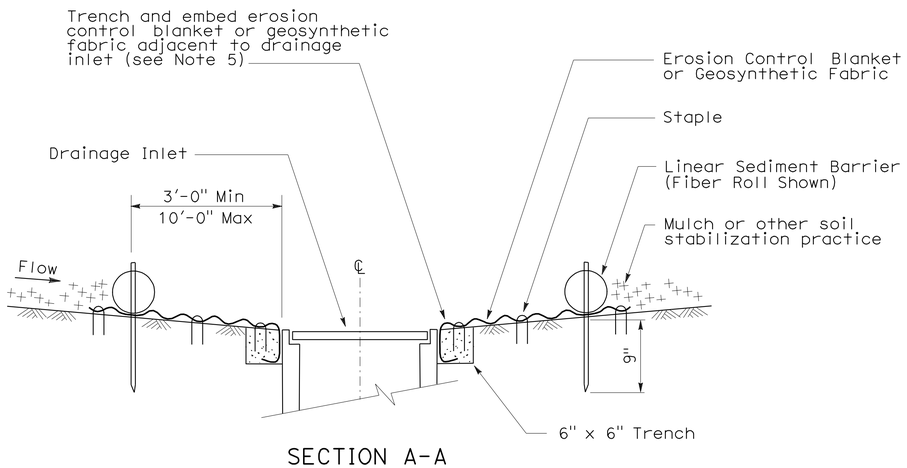
To accompany plans dated 4-16-12

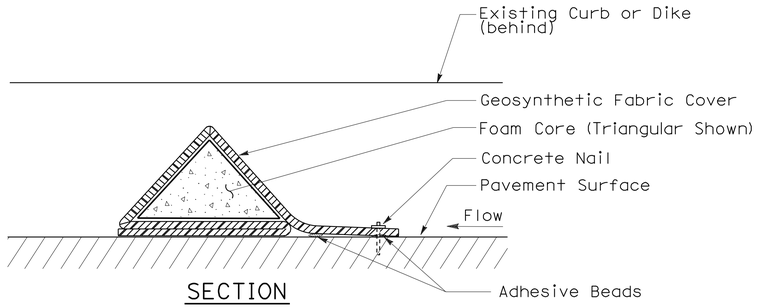
2006 NEW STANDARD PLAN NSP T63

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′

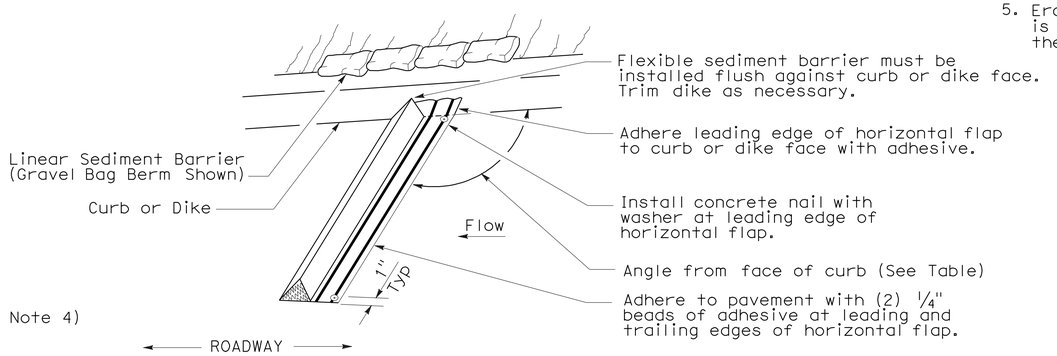


SECTION A-A



SECTION

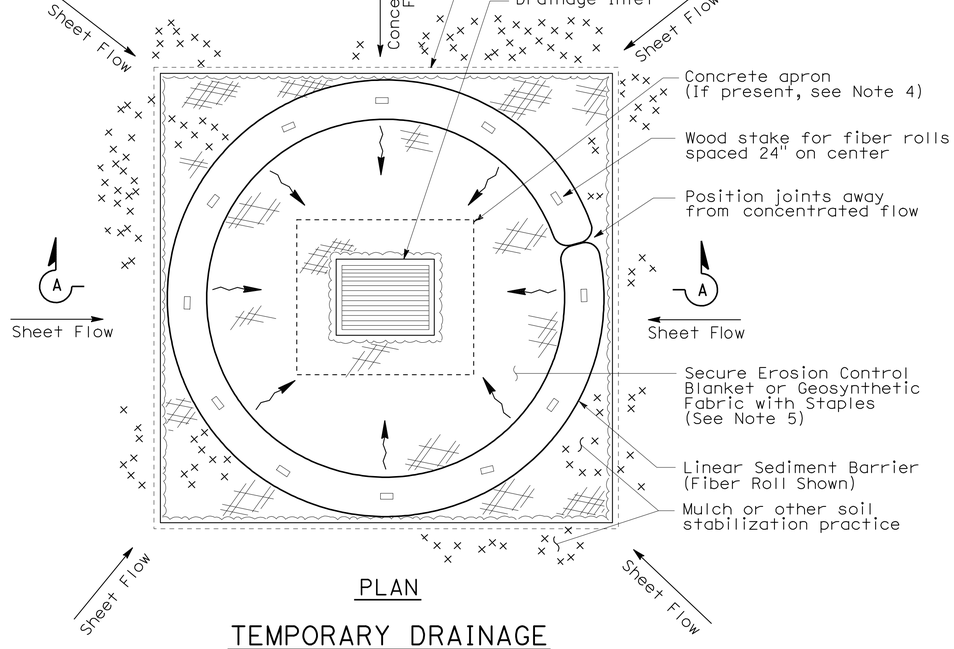
FLEXIBLE SEDIMENT BARRIER DETAIL (FOAM BARRIER SHOWN)



PERSPECTIVE

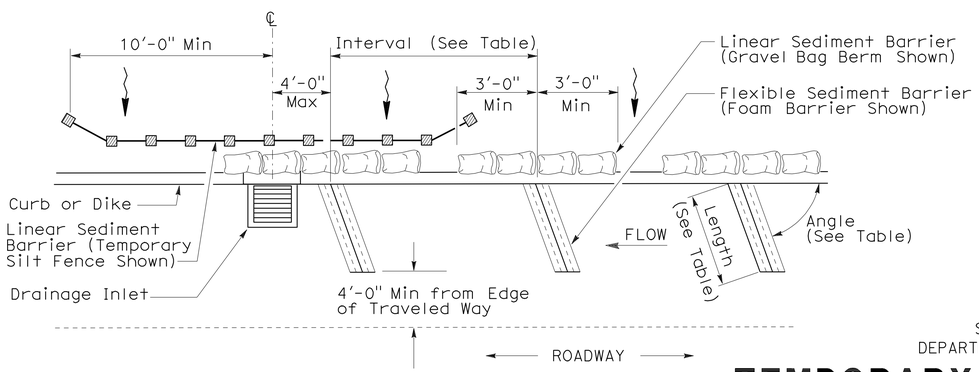
NOTES:

1. See Standard Plan T51 for Temporary Silt Fence.
2. Dimensions may vary to fit field conditions.
3. Install a minimum of 3 flexible sediment barriers 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.



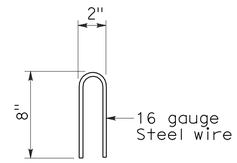
PLAN

TEMPORARY DRAINAGE INLET PROTECTION (TYPE 4A)



PLAN

TEMPORARY DRAINAGE INLET PROTECTION (TYPE 4B) FLEXIBLE SEDIMENT BARRIER



STAPLE DETAIL

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.

NEW STANDARD PLAN NSP T63

7-11-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	554	619

Robert B Schott
LICENSED LANDSCAPE ARCHITECT

August 15, 2008
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT — Robert B. Schott 3035 — Signature — 11-04-08 Renewal Date — 08-11-08 Date — STATE OF CALIFORNIA

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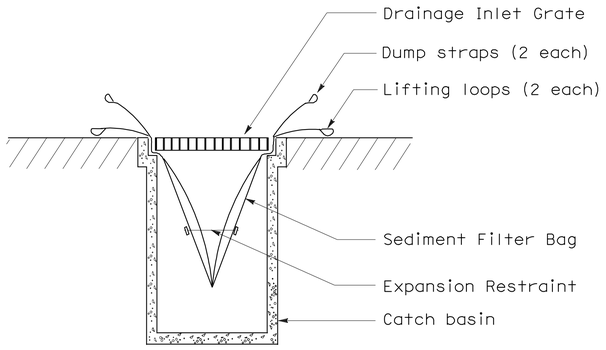
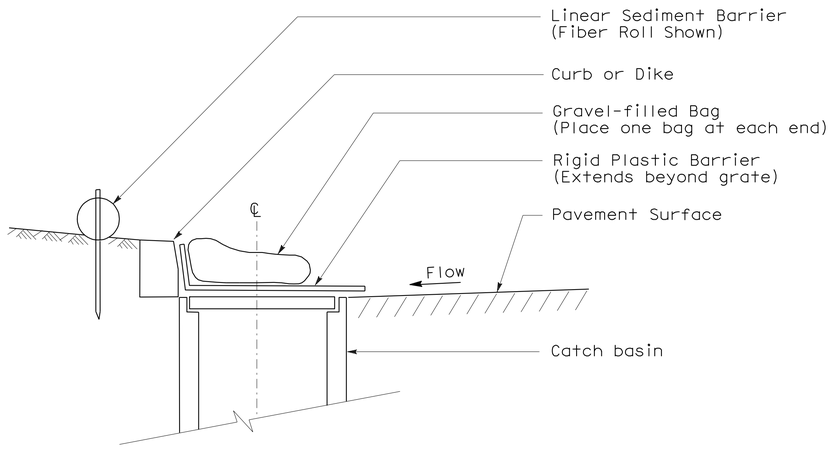
To accompany plans dated 4-16-12



SECTION B-B

SEDIMENT FILTER BAG DETAIL

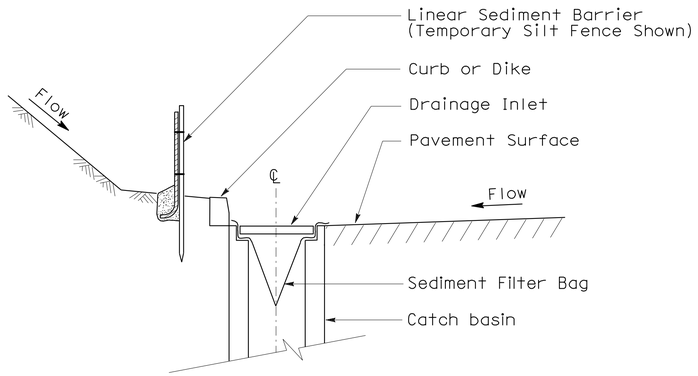


SECTION

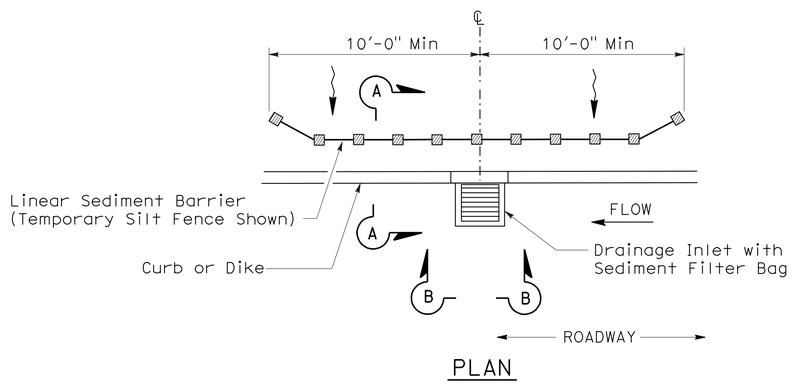
TEMPORARY DRAINAGE INLET PROTECTION (TYPE 6A) (CATCH BASIN WITH GRATE)

NOTES:

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

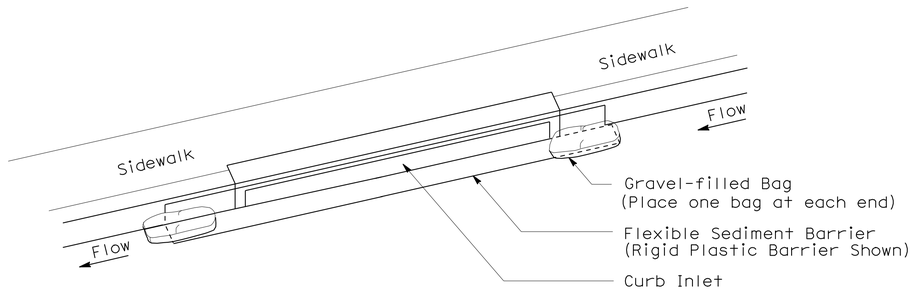


SECTION A-A



PLAN

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



PERSPECTIVE

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

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

7-11-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	555	619

Robert B Schott
LICENSED LANDSCAPE ARCHITECT

April 3, 2009
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT — Robert B. Schott 3035 — Signature — 11-30-10 Renewal Date — 2-25-09 Date — STATE OF CALIFORNIA

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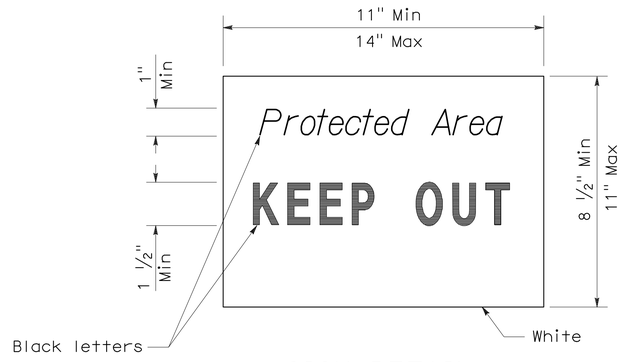
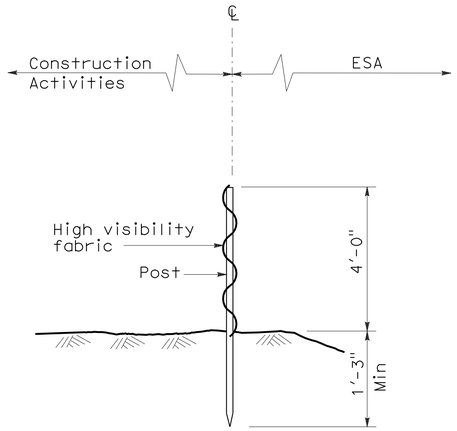
To accompany plans dated 4-16-12



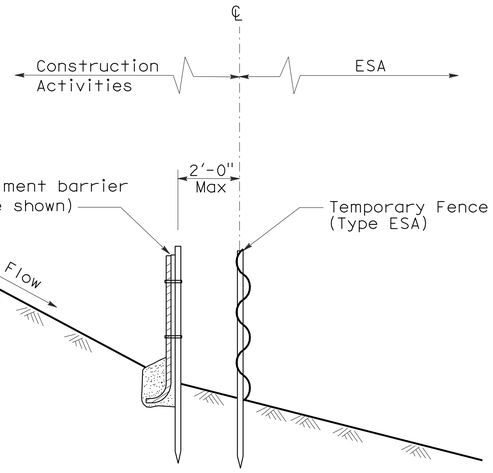
SIGN DETAIL

NOTE:

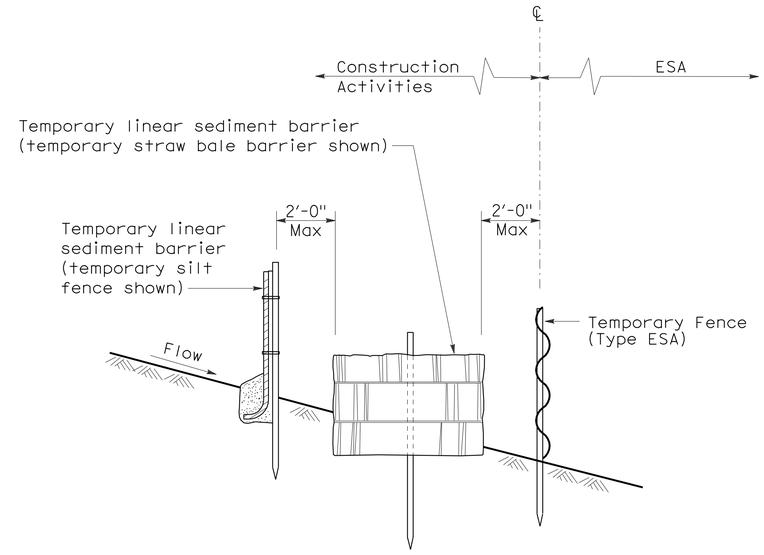
1. Temporary silt fence and temporary straw bale barrier shown for reference purposes only.



SECTION
TEMPORARY FENCE (TYPE ESA)



SECTION
PLACEMENT DETAIL
FOR TEMPORARY LINEAR SEDIMENT BARRIER
USED WITH TEMPORARY
FENCE (TYPE ESA)
(See Note 1)



SECTION
PLACEMENT DETAIL
FOR TEMPORARY SILT FENCE
AND TEMPORARY STRAW BALE BARRIER
USED WITH TEMPORARY FENCE (TYPE ESA)
(See Note 1)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS [TEMPORARY FENCE (TYPE ESA)]

NO SCALE

NSP T65 DATED APRIL 3, 2009 SUPPLEMENTS
THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP T65

2006 NEW STANDARD PLAN NSP T65

1-7-09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	556	619

REGISTERED CIVIL ENGINEER

October 21, 2011
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tillat Satter — No. C42892 — Exp. 3-31-12 — CIVIL — STATE OF CALIFORNIA

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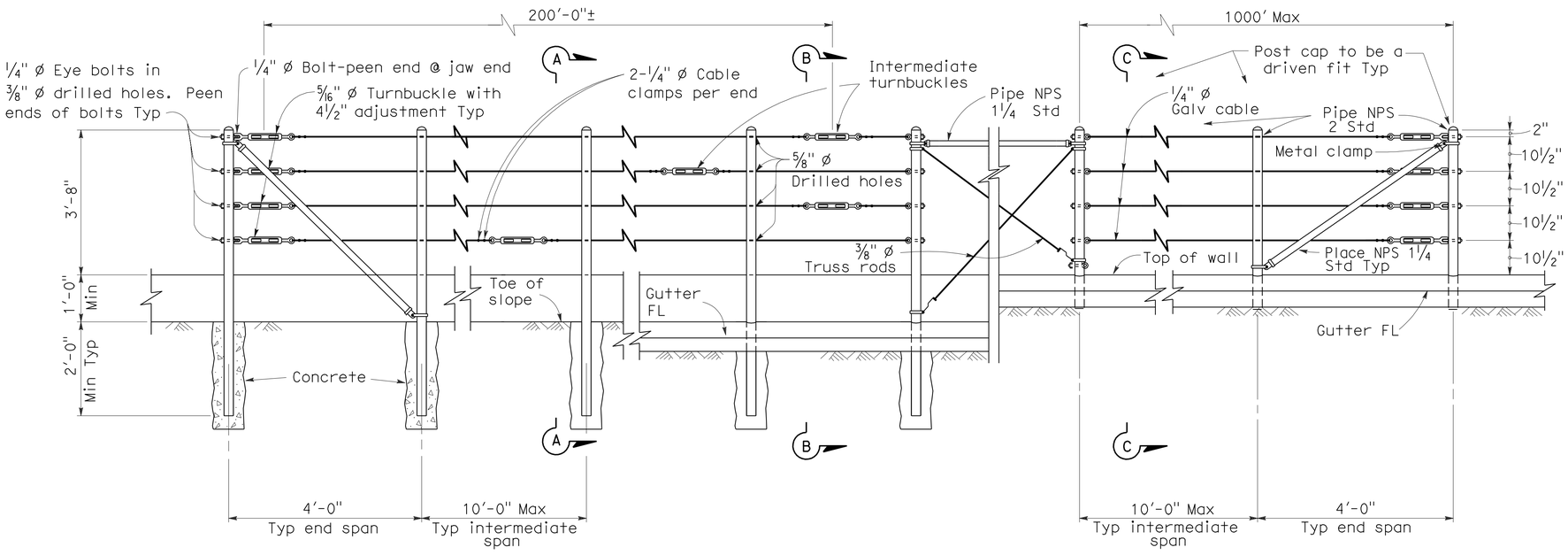
To accompany plans dated 4-16-12

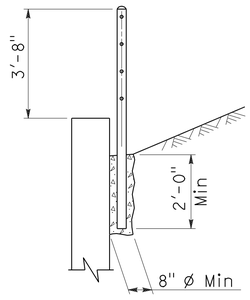


EXISTING WALL (WITHOUT GUTTER)
Existing

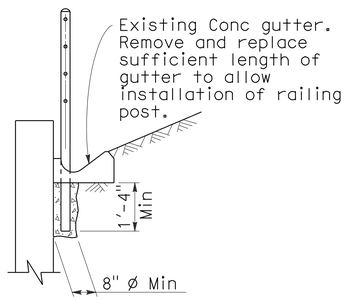
RETAINING WALL (WITH GUTTER)
Existing

RETAINING WALL (WITH GUTTER)
New construction

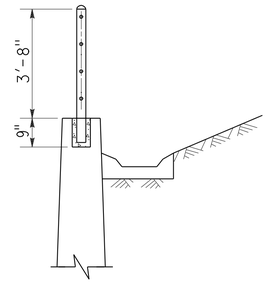
ELEVATION



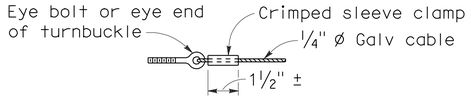
SECTION A-A
Existing



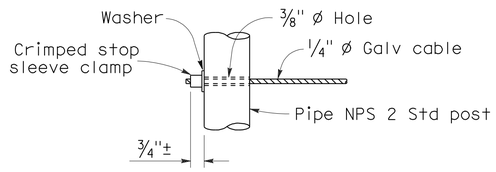
SECTION B-B
Existing



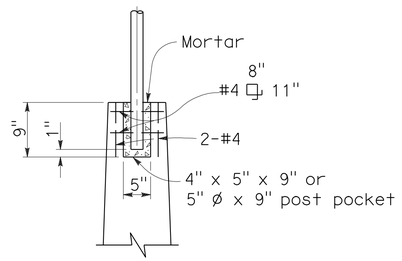
SECTION C-C
New construction



ALTERNATIVE CABLE CONNECTION



ALTERNATIVE DEAD END ANCHORAGE



POST POCKET

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CABLE RAILING

NO SCALE

RSP B11-47 DATED OCTOBER 21, 2011 SUPERSEDES STANDARD PLAN B11-47 DATED MAY 1, 2006 - PAGE 268 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP B11-47

2006 REVISED STANDARD PLAN RSP B11-47

9-19-11

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	557	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Jeffery G. McRae — 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 4-16-12

ELECTROLIERS

STANDARD TYPES
15, 15D
15 STRUCTURE
21, 21D STRUCTURE
30
31
32
35
36-20A

High mast light pole

Double Arm lighting standard

Existing electrolier

Electrolier foundation (Future installation)

NOTES:

1. 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.
2. Luminaires shall be the cutoff type, ANSI Type III medium cutoff lighting distribution, unless otherwise specified.
3. 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,
MAS-4B	mas-4B	side attachment - 4 signal section
MAS-4C	mas-4C	
MAS-5A	mas-5A	Mast arm mounting vehicle signal faces,
MAS-5B	mas-5B	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

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

7-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	558	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

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

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To accompany plans dated 4-16-12

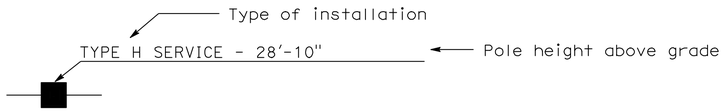
CONDUIT

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 (RSP ES-9A C)
R	r	Conduit riser in/on structure or service pole

SERVICE EQUIPMENT

PROPOSED	EXISTING	
—OH—	—oh—	Overhead lines
U	U	Wood pole "U" indicates utility owned
		Pole guy with anchor
		Utility transformer - ground mounted
III		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

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
PV	PV	Modifications of basic symbols: "L" Indicates all non-arrow sections louvered "LG" Indicates louvered green section only "PV" indicates 12" programmed visibility sections "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
R	Y	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

SIGNAL EQUIPMENT Cont

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

NOTES:

1. All signal sections shall be 12" unless shown otherwise.
2. Signal heads shall be provided with backplates unless shown otherwise.
3. 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

7-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	559	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

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

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To accompany plans dated 4-16-12

EQUIPMENT IDENTIFICATION

ILLUMINATED SIGN IDENTIFICATION NUMBER:

Sign No. 12345 — Sign number - Place on post or structure

10 ISL SCI 1.0
- 1.0 — Transformer rating (kVA)
- SCI — Lighting control type
- ISL — Number and type of fixtures

} Do NOT place on standard or structure

ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:

12345 - 15'-0"
- 15'-0" — Mast arm length, if shown. Do not place on standard or structure.
- 12345 — Equipment number - Place on standard or structure. Existing equipment numbers are shown in parenthesis

CONDUIT AND CONDUCTOR IDENTIFICATION:

1½"C, 2#10, 15#14, 2 DLC
- 2#10, 15#14, 2 DLC — Number and size of conductors and cables
- 1½"C — Size of conduit in inches

Ø1, Ø2, Ø2P, etc. — Traffic phase identification for signal faces, detectors and phase diagrams

[1] [2] [3] — Project note numbers

(A) (B) (C) — Equipment description, installation or item numbers

△1 △2 △3 — Conduit run numbers

SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):

19A - 3 - 100
- 100 — Wind velocity = 100 mph
- 3 — Case 3 arm loading
- 19A — Standard type
- Standard Plan sheet number
- Detail number or letter

MISCELLANEOUS EQUIPMENT

PROPOSED	EXISTING	
CMS	cms	Changeable message sign
		Closed circuit television camera
		Highway advisory radio pole and antenna
EMS	ems	Extinguishable message sign
M V	m v	Detection device M = Microwave sensor V = Video image sensor

WIRING DIAGRAM LEGEND

P	Pole
CB	Circuit breaker
A	Ampere
V	Volt
M	Metered
UM	Unmetered
NB	Neutral bus
GB	Ground bus
G	Equipment grounding conductor
N	Grounded conductor (Neutral)

- External conductor
- Conductor or bus
- Tie point
- Contactor coil
- Contactor, Contact NO
- Terminal blocks
- Contactor, Contact NC
- Enclosure bond
- Grounding electrode
- Circuit breaker
- Receptacle

PULL BOXES

PROPOSED	EXISTING
3	9A(21)

Pull box-No. 5 unless otherwise indicated or noted.

Pull box-Additional designations or descriptions

3 = No. 3½ pull box
5 = No. 5 pull box
6 = No. 6 pull box
7 = No. 7 (Ceiling pull box)
8 = No. 8 (Pendant soffit pull box)
9 = No. 9 pull box
9A = No. 9A pull box

(C) = Communications pull box
(E) = Pull box with extension
(S) = Sprinkler control pull box
(21) = Anchor bolts and conduit for future installation of Type 21 Standard
(T) = Traffic pull box

VEHICLE DETECTORS

5 J 9 U
- 9 — Slot number in input file
- J — Input file (I or J)
- 5 — Phase
- U = Upper, L = Lower

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
DH	dh	Detector handhole
		Microwave or video detection zone

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

7-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	560	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

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

October 5, 2007
PLANS APPROVAL DATE

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To accompany plans dated 4-16-12

NOTES-TYPE III SERVICE EQUIPMENT ENCLOSURES:

1. Service equipment enclosure and metering equipment shall meet the requirements of the service utility. The meter area shall have a sealable, lockable, weathertight cover that can be removed without the use of tools.

2. Service equipment enclosures shall be factory wired and conform to NEMA standards.

3. Dimensions of service equipment enclosures shall meet the requirements of the service utility.

4. The dead front panels on Type III service equipment enclosures shall have a continuous stainless steel or aluminum piano hinge. The panel in front of the breakers shall be secured with a latch or captive screws. No live parts shall be mounted on the dead front panel.

5. The exterior door shall have provisions for padlocking. The padlock hole shall be a minimum diameter of 7/16".

6. Enclosures housing transformers of more than one kVA shall have effective screened ventilation louver of not less than 50 square inches. Screen shall be stainless steel No. 304, with a No. 10 size mesh. Framed screen shall be secured with at least four bolts.

7. Fasteners on the exterior of the enclosure shall be vandal-resistant and shall not be removable from the exterior. Exterior screws, nuts, bolts and washers shall be stainless steel.

8. Landing lugs for incoming service conductors shall be compatible with either copper or aluminum conductors sized to suit the conductors shown on the plan. Landing lugs shall be copper or tin-plated aluminum. Neutral bus shall be rated for 125 A and be suitable for copper or aluminum conductors unless otherwise specified. The terminal shall include but not be limited to:

   a) Incoming terminals (landing lugs)
   b) Neutral lugs
   c) Solid neutral terminal strip

9. At least 6 standard single pole circuit breaker spaces, 3/4" nominal, shall be provided for branch circuits. Circuit breaker interiors shall be copper. Interiors of enclosure shall accept plug-in or cable-in/cable-out circuit breakers.

10. Control wiring shall be 600 V, 14 stranded machine tool wire. Where subject to flexing, 19 strand wire shall be used.

11. Main bus shall be rated for 125 A and shall be tin-plated copper.

12. A plastic laminated wiring diagram shall be provided with brass mounting eyelets and attached to the inside of the enclosure and the wiring diagram shall be affixed to the interior with a UL or ETL approved method.

13. An engraved phenolic nameplate on the dead front panel indicating the function of each circuit or device shall be installed with stainless steel rivets or stainless steel screws:

    a) Adjacent to the breaker or device with character size a minimum of 1/8".

    b) At the top of the exterior door panel indicating State system number, voltage level and number of phases with character size a minimum of 3/16".

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

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

16. Foundation shall extend 2" minimum beyond edge of service equipment enclosure.

17. Internal bus, where shown, is typical only. Alternative design of proposed service equipment enclosure shall be submitted to the Engineer for approval.

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

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

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

21. Minimum clearance shall be required for front and back of service equipment enclosure per National Electrical Code, Article 110.26, "Spaces About Electric Equipment (600 Volts, Nominal, or Less)."

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT NOTES TYPE III SERIES)

NO SCALE

RSP ES-2C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-2C
DATED MAY 1, 2006 - PAGE 405 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-2C

2006 REVISED STANDARD PLAN RSP ES-2C

7-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	561	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

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

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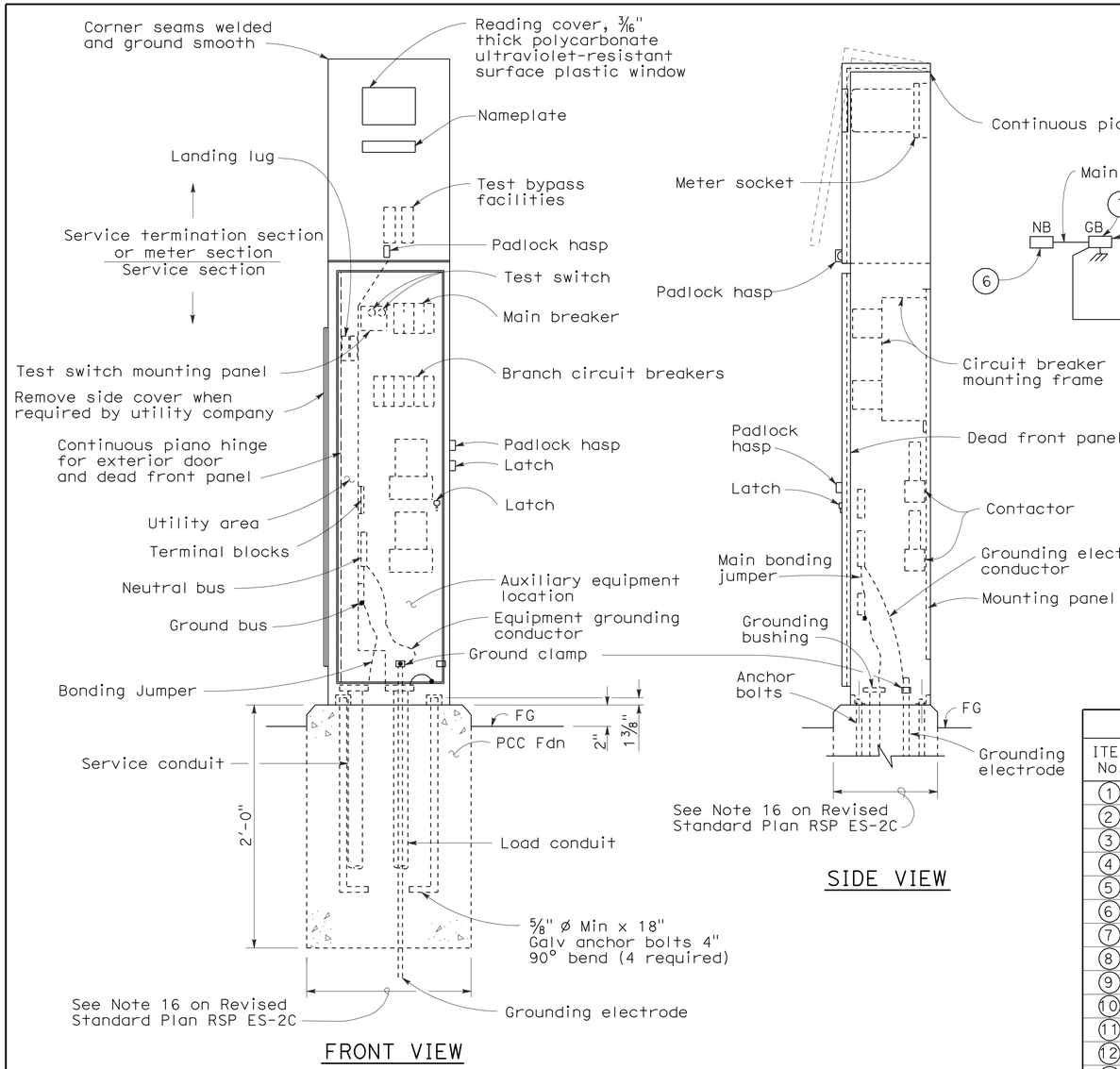
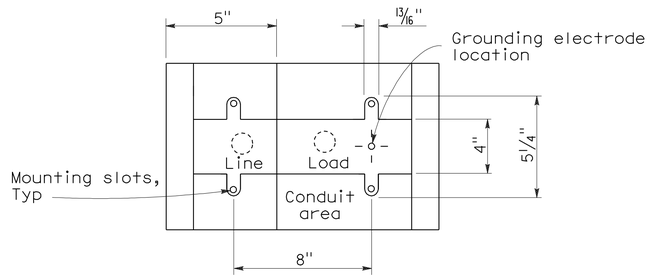
To accompany plans dated 4-16-12



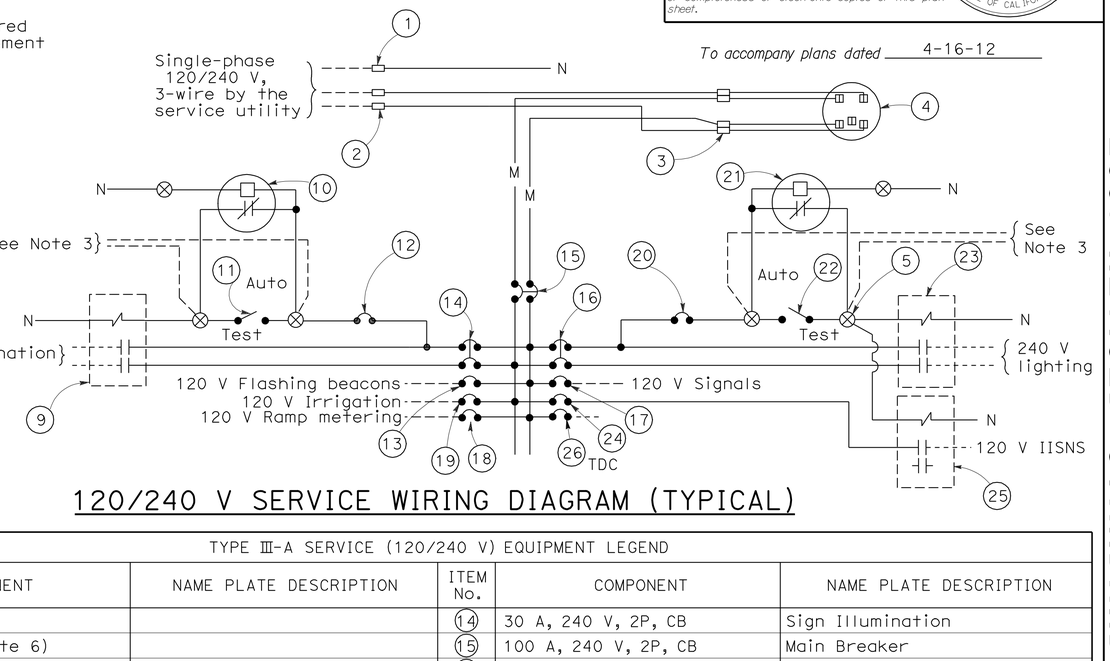
SIDE VIEW

FRONT VIEW

TYPE Ⅲ-AF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)



BASE FOR TYPE Ⅲ-A SERVICE EQUIPMENT ENCLOSURE



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

TYPE Ⅲ-A SERVICE (120/240 V) EQUIPMENT LEGEND

ITEM No.	COMPONENT	NAME PLATE DESCRIPTION	ITEM No.	COMPONENT	NAME PLATE DESCRIPTION
(1)	Neutral lug		(14)	30 A, 240 V, 2P, CB	Sign Illumination
(2)	Landing lug (Note 6)		(15)	100 A, 240 V, 2P, CB	Main Breaker
(3)	Test bypass facility		(16)	30 A, 240 V, 2P, CB	Lighting
(4)	Meter socket and support		(17)	50 A, 120 V, 1P, CB	Signals
(5)	Terminal blocks		(18)	30 A, 120 V, 1P, CB	Ramp Metering
(6)	Neutral bus		(19)	20 A, 120 V, 1P, CB	Irrigation
(7)	Ground bus		(20)	15 A, 120 V, 1P, CB	Lighting Control
(8)	Grounding electrode		(21)	Photoelectric unit (Note 7)	
(9)	30 A, 2PNO Contactor	Sign Illumination	(22)	15 A, 1P, Test switch	Lighting Test Switch
(10)	Photoelectric unit (Note 7)		(23)	60 A, 2PNO Contactor	Lighting
(11)	15 A, 1P, Test switch	Sign Illumination Test Switch	(24)	15 A, 120 V, 1P, CB	IISNS
(12)	15 A, 120 V, 1P, CB	Sign Illumination Control	(25)	30 A, 2PNO Contactor	IISNS
(13)	15 A, 120 V, 1P, CB	Flashing Beacon	(26)	20 A, 120 V, 1P, CB	Telephone Demarcation Cabinet

NOTES: (FOR SERVICE EQUIPMENT ENCLOSURE)

1. Voltage ratings of service equipment shall conform to the service voltages indicated on the plans.
2. Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
3. Connect to remote test switch mounted on lighting standards, sign post or structure when required.
4. Items No. (1) and (6) shall be isolated from the service equipment enclosure.
5. Meter sockets shall be 5 clip type.
6. The landing lug shall be suitable for multiple conductors.
7. Type Ⅴ photoelectric control shall be used unless otherwise indicated on the plans.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT AND TYPICAL WIRING DIAGRAM, TYPE Ⅲ-A SERIES)

NO SCALE

RSP ES-2D DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-2D DATED MAY 1, 2006 - PAGE 406 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-2D

2006 REVISED STANDARD PLAN RSP ES-2D

7-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	562	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

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

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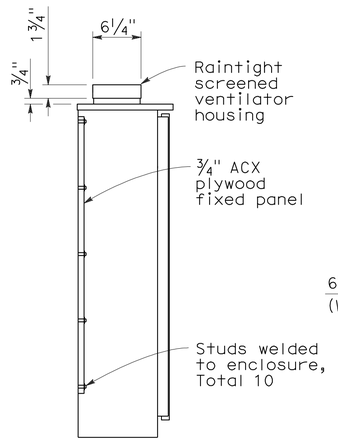
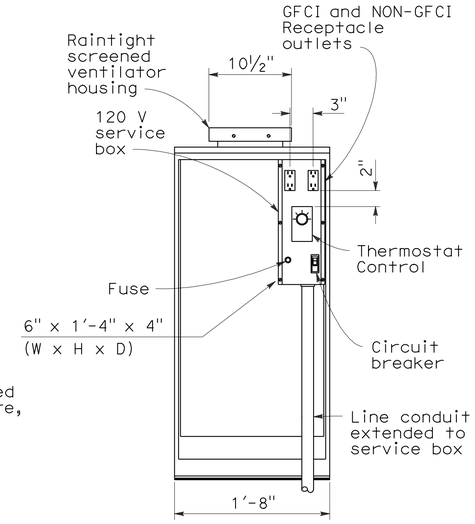
To accompany plans dated 4-16-12

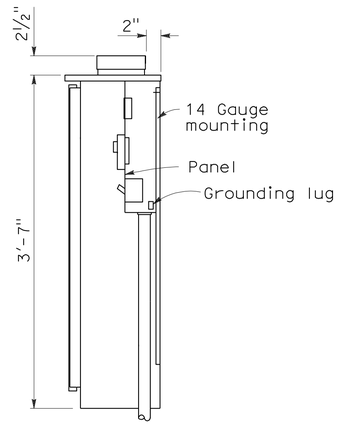


SECTION A-A

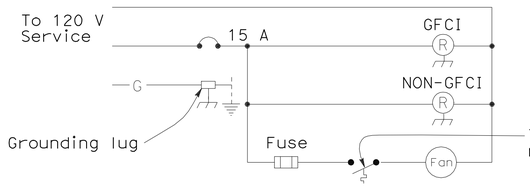


FRONT VIEW

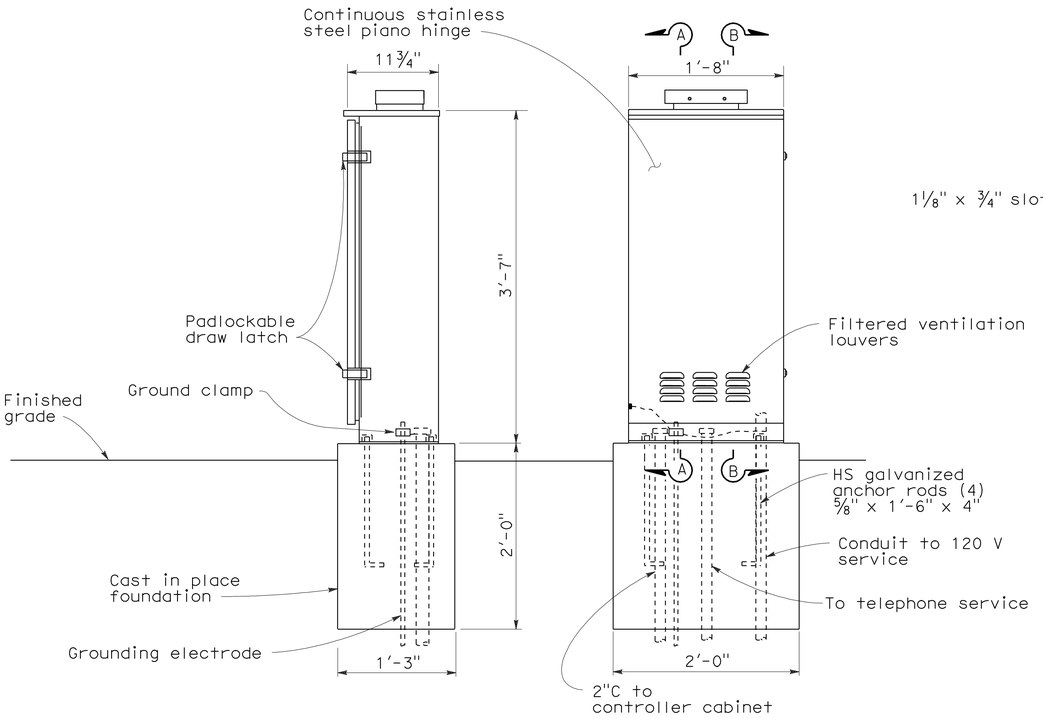
(Exterior door removed for clarity)



SECTION B-B

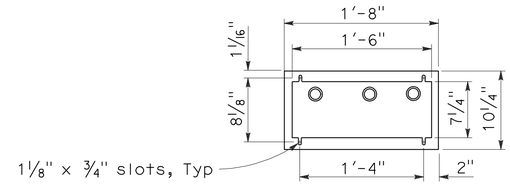


WIRING DIAGRAM



SIDE VIEW

FRONT VIEW



BASE PLAN

NOTES:

1. Telephone demarcation cabinet shall be furnished with a mounting panel, outlets, circuit breaker and deadfront plates in place. Dimensions are nominal.
2. An approved mastic or caulking compound shall be placed on the foundation prior to placing the cabinet to seal openings between the bottom of the cabinet and the foundation.
3. In unpaved areas, a raised PCC pad shall be placed in front of the telephone demarcation cabinet. Pad shall be 2'-0" x 1'-10" x 4" thick, with 2" above the finished grade.
4. All conduits shall be bonded to the enclosure.
5. Telephone demarcation cabinet:
   a) Material shall be anodized aluminum (⅛" thick).
   b) Fabrication shall conform to the requirements of the Standard Specifications.
   c) The exterior door shall be side hung and secured with a padlockable draw latch, the padlock hole shall be a minimum diameter of 7/16" to receive a padlock.
   d) Ventilation louvers shall be located on the door.
   e) Fan shall be mounted in a ventilator housing.
   f) Fan shall be thermostatically controlled and adjustable to turn on between 80°F and 130°F.
   g) Fan circuit shall be fused at 175 percent of the fan motor capacity.
   h) Fan capacity shall be at least 25 cubic feet per minute.
   i) Fasten fixed mounting panels with nuts, lock and flat washers to 3/16" Ø x 1" studs welded to enclosure.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TELEPHONE DEMARCATION CABINET, TYPE B)

NO SCALE

RSP ES-3E DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-3E
DATED MAY 1, 2006 - PAGE 414 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-3E

2006 REVISED STANDARD PLAN RSP ES-3E

8-17-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	563	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

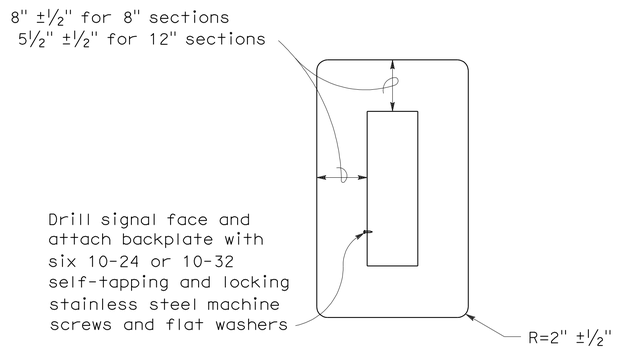
Jeffery G. McRae
No. E14512
Exp. 6-30-10
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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

To accompany plans dated 4-16-12

VISORS

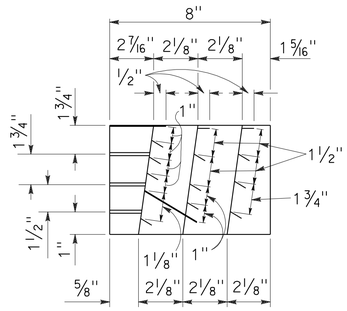
(Right angle is reversed of figure)



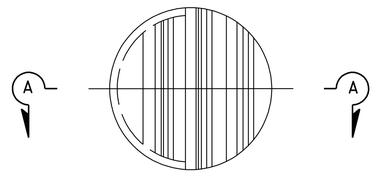
8" AND 12" SECTIONS

BACKPLATE

1/16" minimum thickness
3001-14 aluminum, or plastic when specified



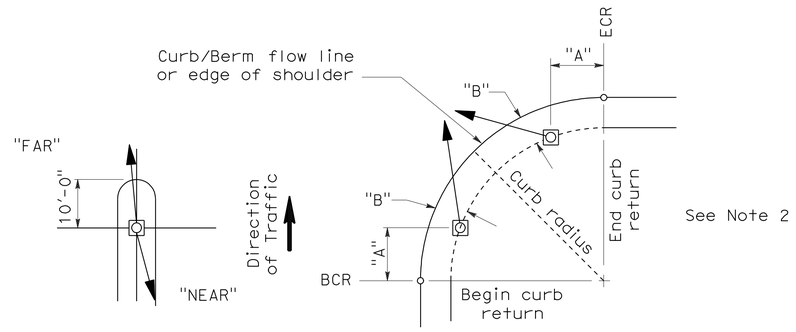
SECTION A-A



FRONT VIEW

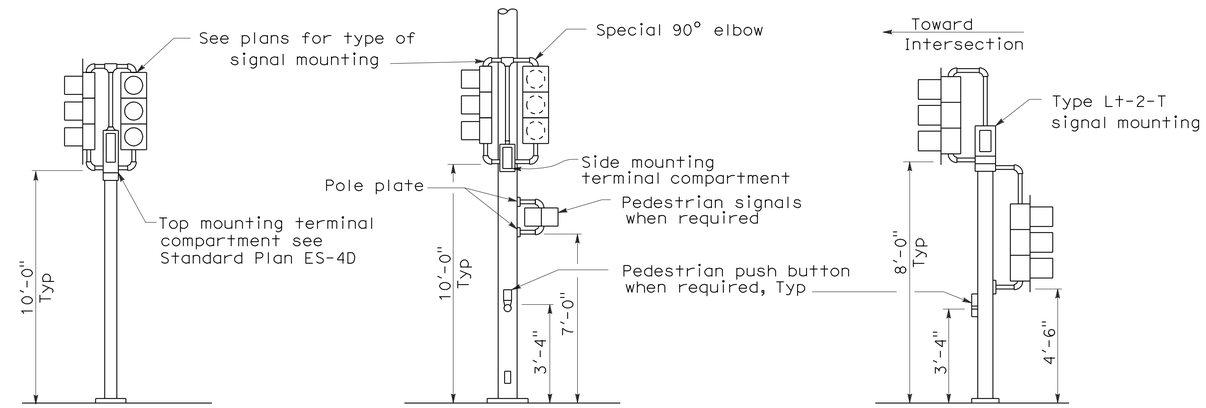
DIRECTIONAL LOUVER

Directional louvers shall be oriented as directed by the Engineer and secured in place with one plated brass machine screw and nut.



NOTES:

1. Typical signal pole placement unless dimensioned on plans.
2. For "A" and "B" dimensions, see Pole Schedule, or as directed by the Engineer.



TOP MOUNTED SIGNALS (TV)

Type 1-A, 1-B, 1-C and 1-D standard as indicated on the plans

SIDE MOUNTED SIGNALS (SV AND SP)

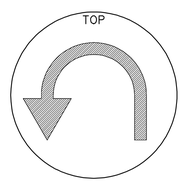
Normally used on standards with luminaire or signal mast arm

LEFT TURN LANE SIGNAL

Type 1-A, 1-B, 1-C and 1-D standard as indicated on plans

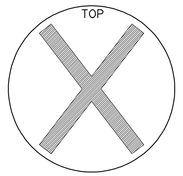
TYPICAL SIGNAL INSTALLATIONS

SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS

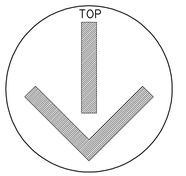


U-TURN SIGNAL FACE

BICYCLE SIGNAL FACE



LANE CONTROL SIGNAL FACE



LANE CONTROL SIGNAL FACE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4C DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN ES-4C DATED MAY 1, 2006 - PAGE 420 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-4C

2006 REVISED STANDARD PLAN RSP ES-4C

5-19-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	564	619

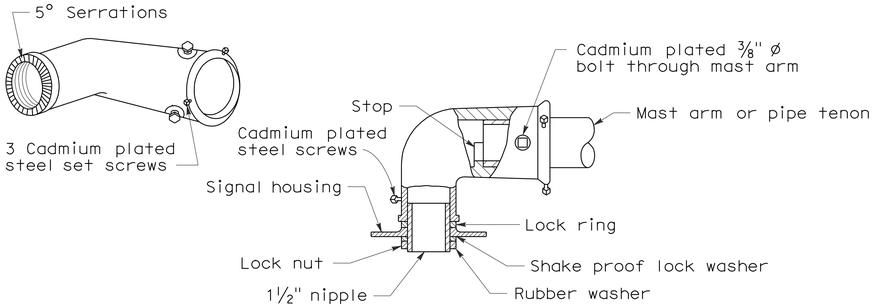
Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Jeffery G. McRae — No. E14512 — Exp. 6-30-10 — ELECTRICAL — STATE OF CALIFORNIA

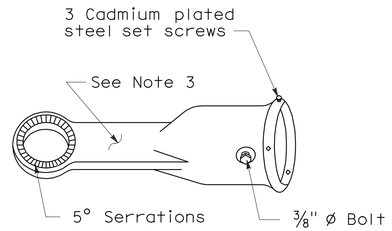
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 4-16-12



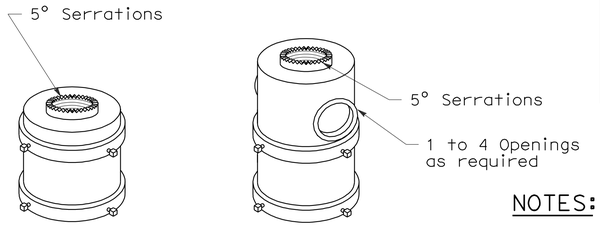
MAST ARM MOUNTING - TYPE "MAT"

For 2 NPS pipe, see Note 1.



MAST ARM MOUNTING - TYPE "MAS"

For 2 NPS pipe. See Note 1.



For one mounting — For mulitiple mountings

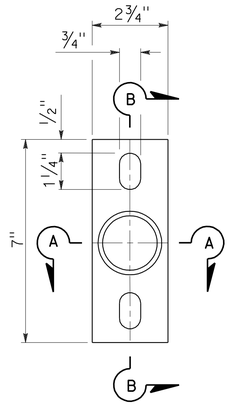
TOP MOUNTINGS

For 4 NPS pipe, see Note 2.

NOTES:

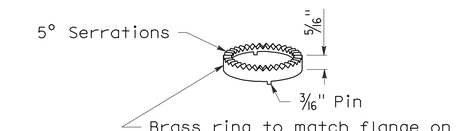
1. After mast arm signal has been plumbed and secured, drill 7/16" hole through mast arm tenon in line with slip fitter hole. Place a cadmium plated ⅜" ø galvanized bolt with washer under bolt head through hole and secure with washer, nut, and locknut. Seal openings between mast arm mountings and mast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

SIGNAL SLIP FITTERS



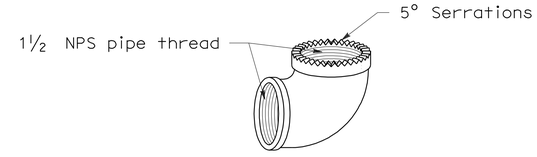
POLE PLATE

For side mountings



LOCK RING

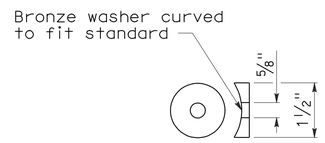
Use where locking ring is not integral with signal housing or fitting.



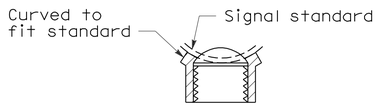
SPECIAL 90° ELBOW

One for each signal head, except those with special slip fitter mounting

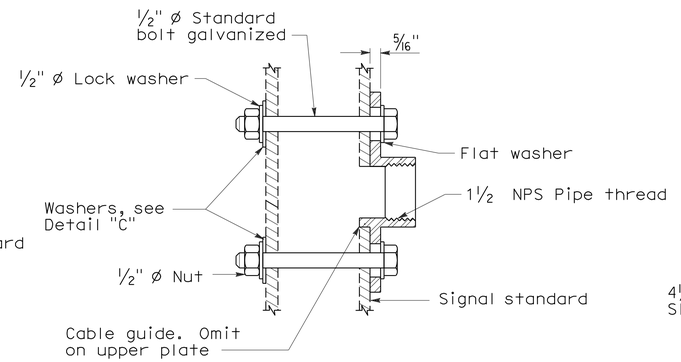
MISCELLANEOUS MOUNTING HARDWARE



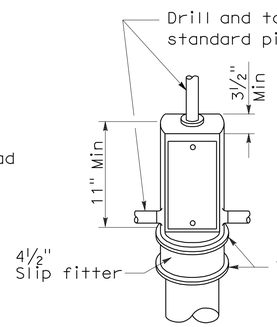
DETAIL "C"



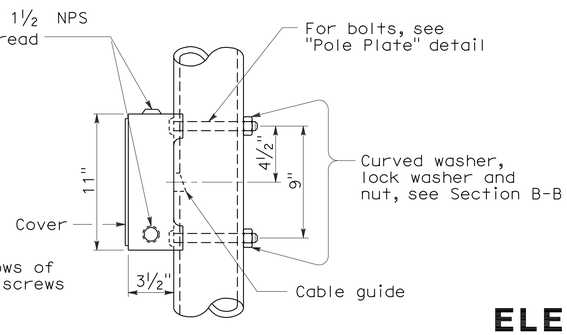
SECTION A-A



SECTION B-B



TOP MOUNTING



SIDE MOUNTING

TERMINAL COMPARTMENTS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4D DATED June 6, 2008 SUPERSEDES STANDARD PLAN ES-4D
DATED MAY 1, 2006 - PAGE 421 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-4D

2006 REVISED STANDARD PLAN RSP ES-4D

5-19-08

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	565	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

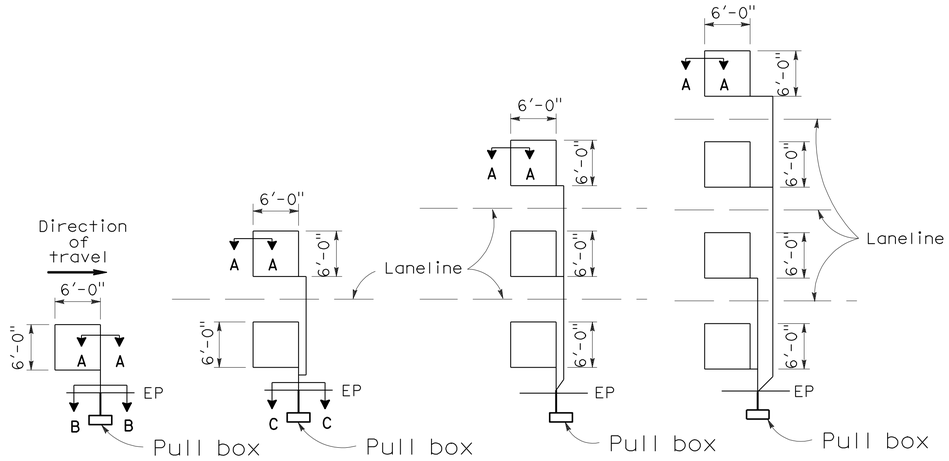
REGISTERED PROFESSIONAL ENGINEER — Jeffery G. McRae — No. E14512 — Exp. 6-30-08 — ELECTRICAL — STATE OF CALIFORNIA

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 4-16-12

LOOP INSTALLATION PROCEDURE

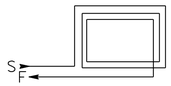
1. Loops shall be centered in lanes.
2. Saw slots in pavement for loop conductors as shown in details.
3. Distance between side of loop and a lead-in saw cut from adjacent detectors shall be 2'-0" minimum. Distance between lead-in saw cuts shall be 6" minimum.
4. Bottom of saw slot shall be smooth with no sharp edges.
5. Slots shall be washed until clean, blown out and thoroughly dried before installing loop conductors.
6. Adjacent loops on the same sensor unit channel shall be wound in opposite directions.
7. 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.
8. 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.
9. No more than 2 twisted pairs shall be installed in one sawed slot.
10. Allow additional 5'-0" of slack length of conductor for the lead-in run to pull box.
11. 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.
12. Test each loop circuit for continuity, circuit resistance and insulation resistance at the pull box before filling slots.
13. Fill slots as shown in details.
14. Splice loop conductors to lead-in-cable. Splices shall be soldered.
15. 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.
16. Lead-in-cable shall not be spliced between the pull box and the controller cabinet terminals.
17. Test each loop circuit for continuity, circuit resistance and insulation resistance at the controller cabinet location.
18. 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.

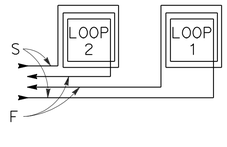


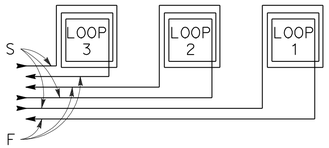
SAWCUT DETAILS

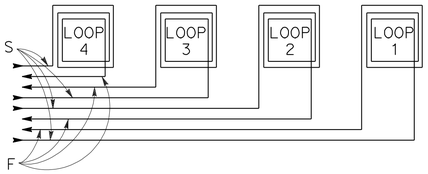
(Type A loop detector configurations illustrated)

1. 1A thru 4A = 1 Type A loop configuration in each lane.
2. 1B thru 4B = 1 Type B loop configuration in each lane.
3. 1C = 1 Type C loop configuration entering lanes as required.
4. 1D thru 4D = 1 Type D loop configuration in each lane.
5. 1E thru 4E = 1 Type E loop configuration in each lane.
6. 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)



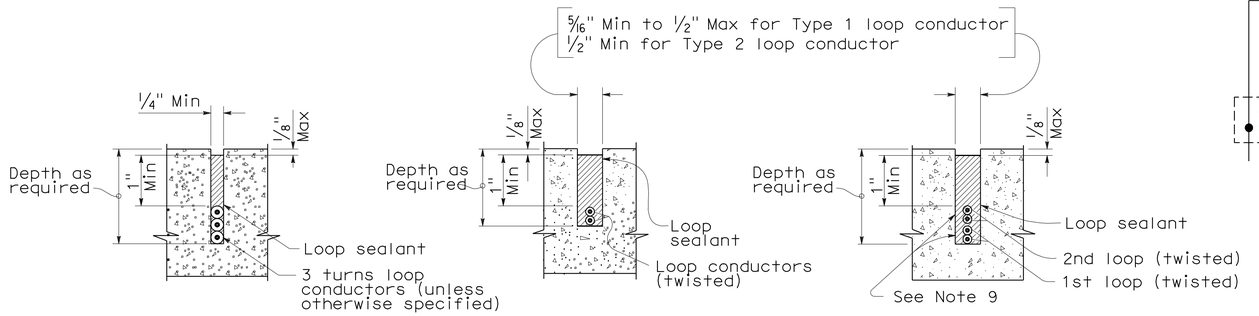






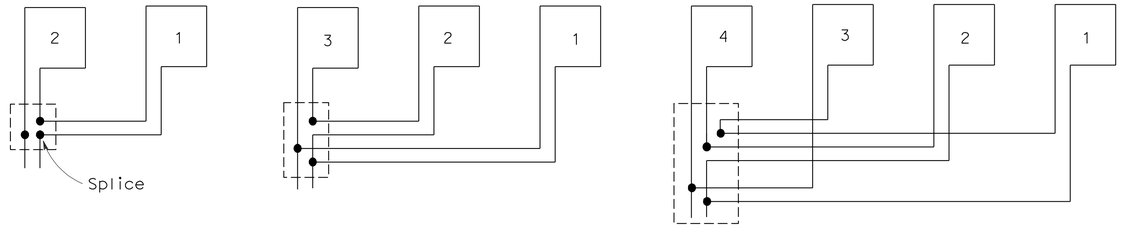
WINDING DETAILS

See Notes 6 and 7



SECTION A-A SECTION B-B SECTION C-C

SLOT DETAILS - TYPE 1 AND TYPE 2 LOOP CONDUCTOR



TYPICAL LOOP CONNECTIONS

(Dashed lines represent the pull box)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (DETECTORS)

NO SCALE

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.

REVISED STANDARD PLAN RSP ES-5A

2006 REVISED STANDARD PLAN RSP ES-5A

8-17-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	566	619

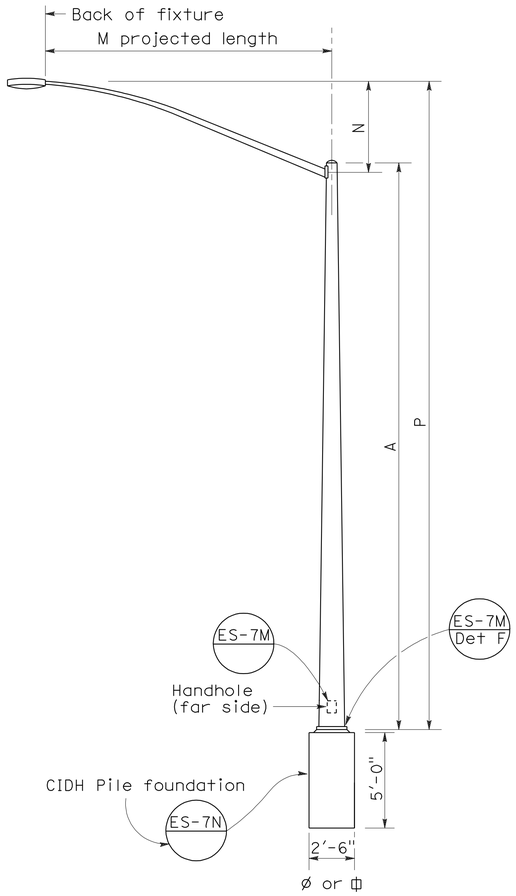
REGISTERED CIVIL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

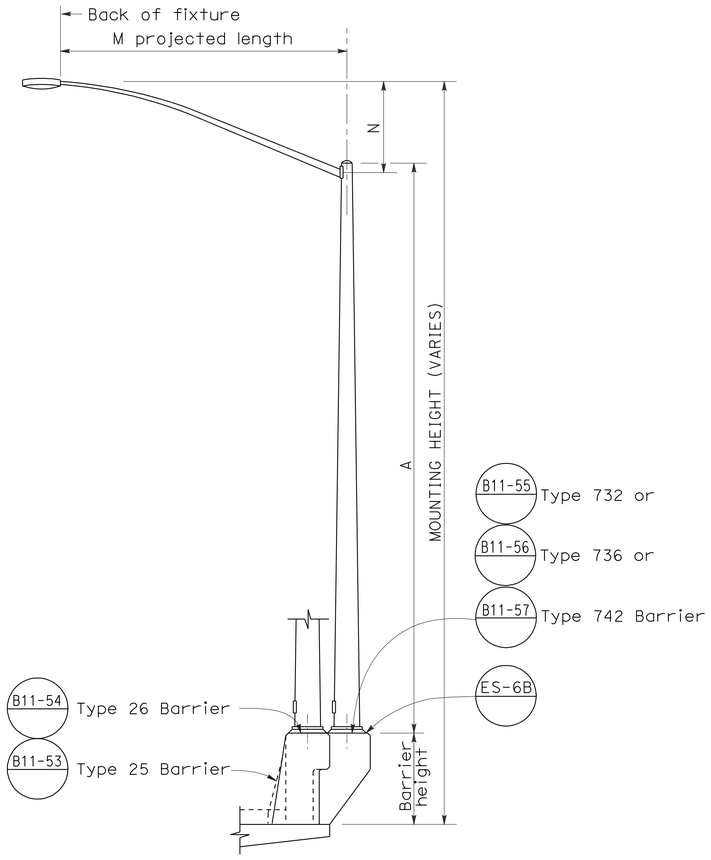
REGISTERED PROFESSIONAL ENGINEER
Stanley P. Johnson
No. C57793
Exp. 3-31-08
CIVIL
STATE OF CALIFORNIA

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.

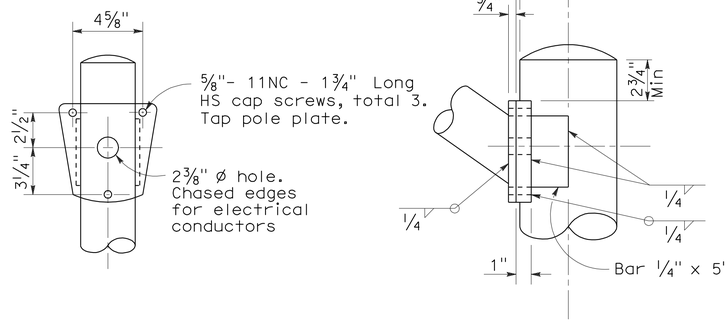
To accompany plans dated 4-16-12



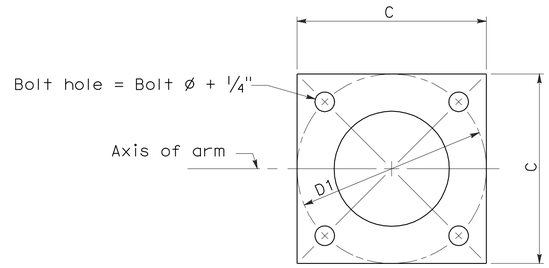
ELEVATION
TYPE 15 AND TYPE 21



ELEVATION
TYPE 15 AND TYPE 21 BARRIER RAIL MOUNTED



DETAIL R
LUMINAIRE ARM CONNECTION



BASE PLATE

POLE TYPE	POLE DATA				BASE PLATE DATA				LUMINAIRE ARM
	A Height	Min OD		Wall Thickness	C	D1 Bolt Circle	Thick-ness	Anchor Bolts Size	
		Base	Top						
15	30′	8"	3⅞"	0.1196"	1′-0"	1′-0"	1"	1" ø x 3′-0" x 4"*	6′ - 15′ [12′]
21	35′	8⅝"	3⅞"	0.1196"	1′-0"	1′-0"	1"	1¼"ø x 3′-0" x 4"*	6′ - 15′ [12′]

* For barrier rail bolts, see Standard Plan ES-6B.

LUMINAIRE ARM DATA					
M Projected Length	N Rise	Min OD At Pole	Nominal Thickness	P	
				Type 15	Type 21
6′-0"	2′-0"±	3¼"	0.1196"	31′-6"±	36′-6"±
8′-0"	2′-6"±	3½"	0.1196"	32′-0"±	37′-0"±
10′-0"	3′-3"±	3⅞"	0.1196"	32′-9"±	37′-9"±
12′-0"	4′-3"±	3⅞"	0.1196"	33′-9"±	38′-9"±
15′-0"	4′-9"±	4¼"	0.1196"	34′-3"±	39′-3"±

NOTES:

1. ☐ Indicates arm length to be used unless otherwise noted on the plans.
2. For Type 15-SB, use Type 15 standard with Type 30 slip base plate details, see Standard Plan ES-6F.
3. For additional notes, see Standard Plan ES-7M and ES-7N.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD TYPES 15 AND 21)

NO SCALE

RSP ES-6A DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-6A
DATED MAY 1, 2006 - PAGE 427 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-6A

2006 REVISED STANDARD PLAN RSP ES-6A

7-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	567	619

REGISTERED CIVIL ENGINEER

January 18, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Stanley P. Johnson — No. C57793 — Exp. 03-31-08 — CIVIL — STATE OF CALIFORNIA

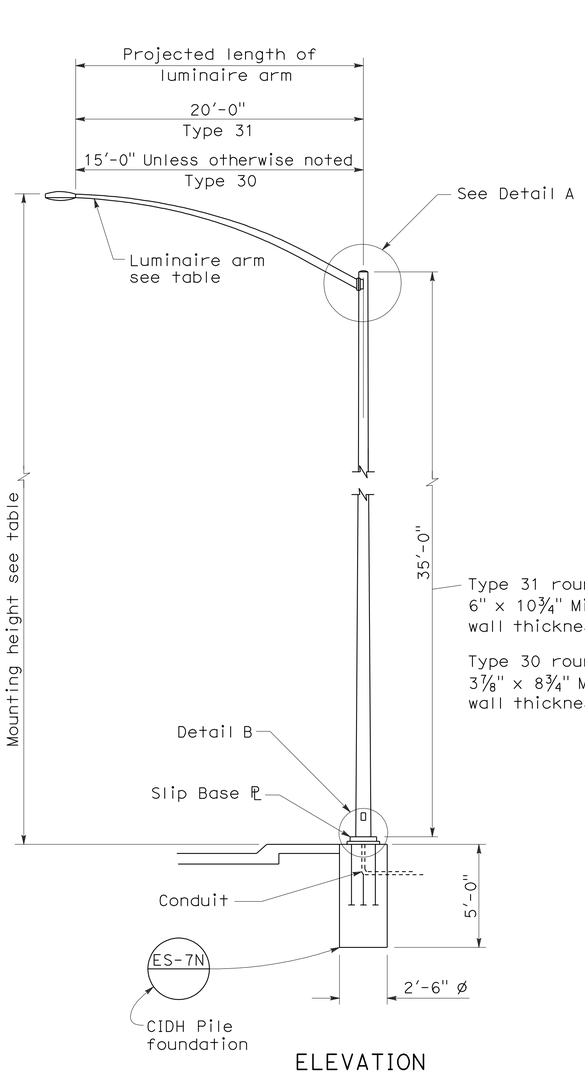
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To accompany plans dated 4-16-12

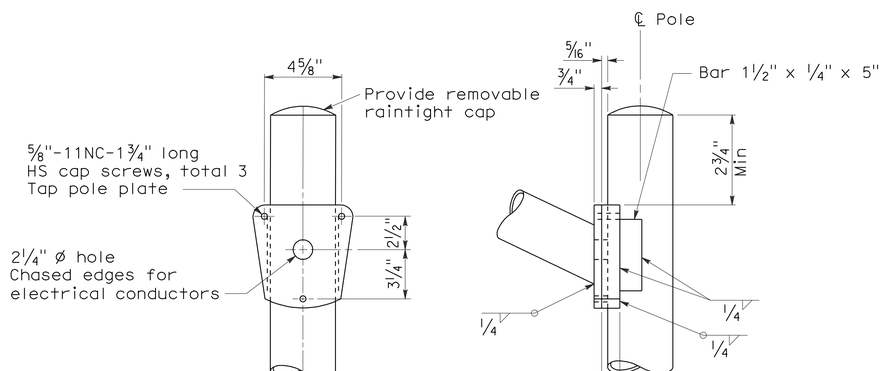
LUMINAIRE ARM DATA

PROJECTED LENGTH	THICKNESS	MINIMUM OD @ POLE	MOUNTING HEIGHT
* 6'-0"	0.1196"	3¼"	36'-9"±
8'-0"		3½"	37'-3"±
10'-0"		3¾"	38'-0"±
12'-0"		3¾"	39'-0"±
15'-0"		4¼"	39'-6"±
** 20'-0"	0.1793"	5"	37'-0"±

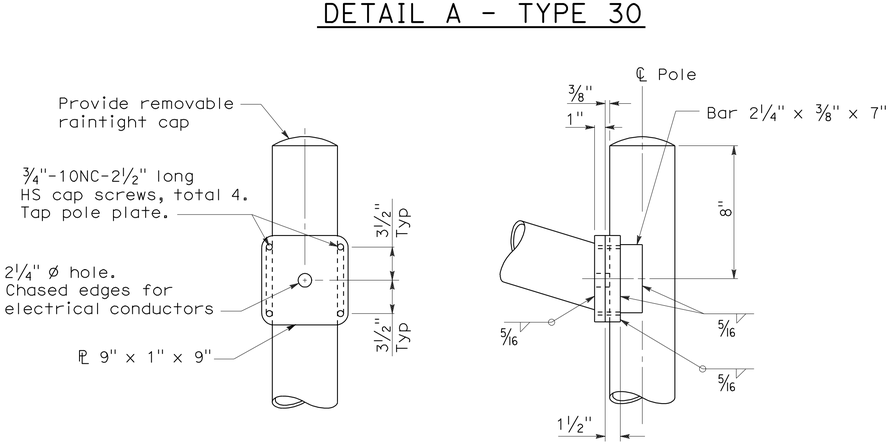
* Type 30 - arm length 6'-0" - 15'-0" maximum
** Type 31 - arm lengths 20'-0"



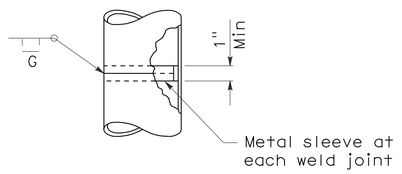
ELEVATION



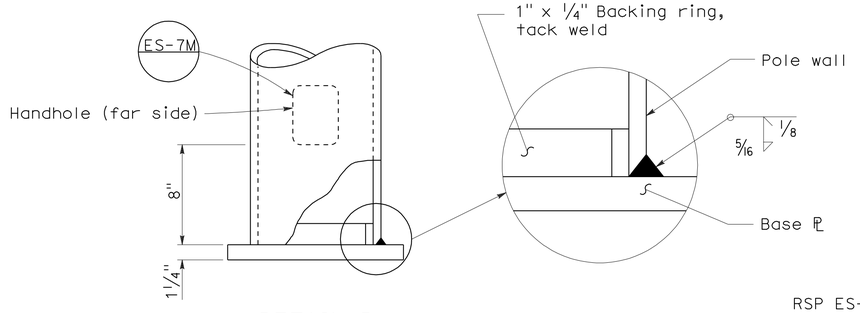
DETAIL A - TYPE 30



DETAIL A - TYPE 31



POLE SPLICE



DETAIL B

NOTES:

1. Sheet steel shall have a minimum yield of 48,000 psi.
2. For slip base details see Standard Plan ES-6F.
3. For Type 30 fixed base use Type 15 base plate, and foundation shown on Revised Standard Plan RSP ES-6A. Use 1¼" Dia x 3'-6" x 4" anchor bolts.
4. For Type 31 fixed base use Type 32 base plate, anchor bolts and foundation on Standard Plan ES-6G.
5. Handhole shall be located on downstream side of traffic unless noted otherwise on plans.
6. For additional general notes refer to Standard Plan ES-7M.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD TYPES 30 AND 31)

NO SCALE

RSP ES-6E DATED JANUARY 18, 2008 SUPERCEDES STANDARD PLAN ES-6E
DATED MAY 1, 2006 - PAGE 430 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-6E

2006 REVISED STANDARD PLAN RSP ES-6E

11-19-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	568	619

REGISTERED CIVIL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 3-31-08
CIVIL

REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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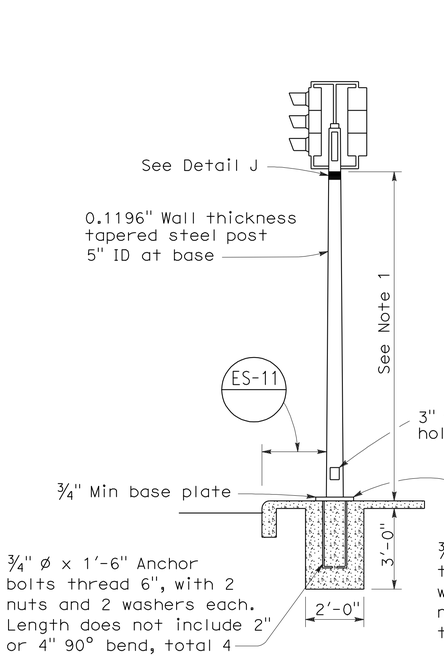
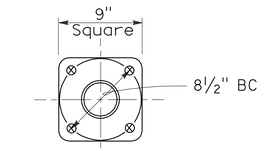
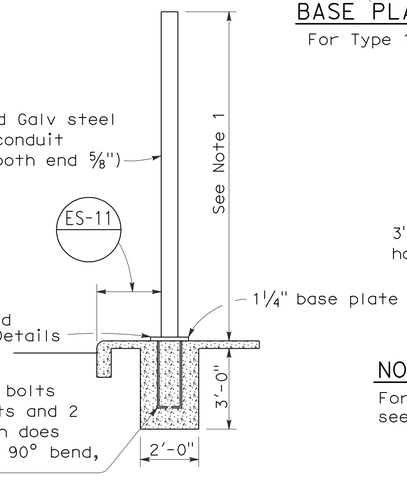
To accompany plans dated 4-16-12



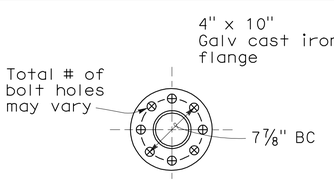
TYPE 1-A STANDARD



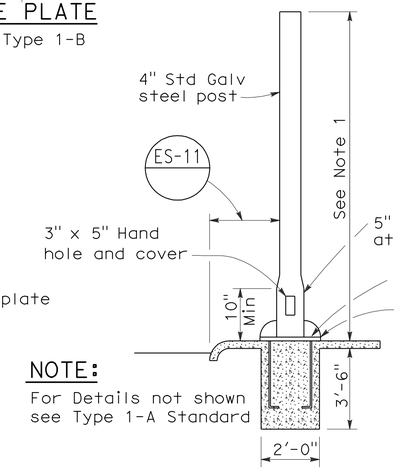
BASE PLATE
For Type 1-A
For Type 1-C
For Type 1-D



TYPE 1-B STANDARD

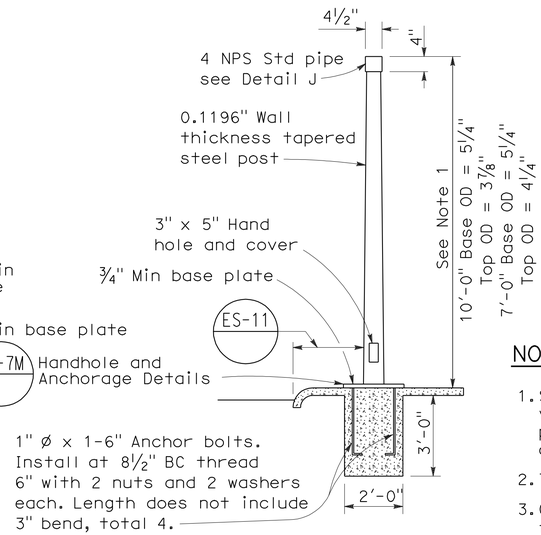


BASE PLATE
For Type 1-B



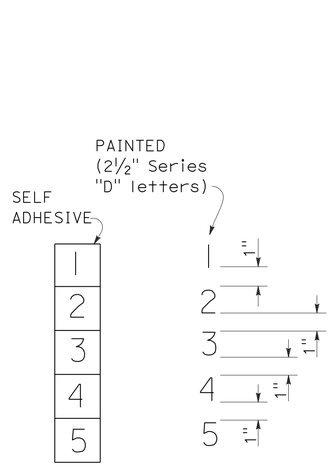
NOTE:
For Details not shown see Type 1-A Standard

TYPE 1-C STANDARD

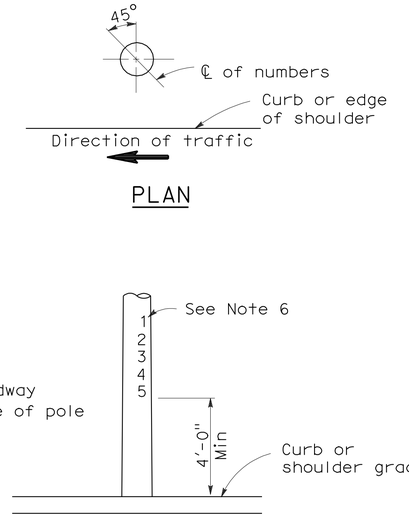


TYPE 1-D STANDARD

TYPE 1 SIGNAL STANDARDS



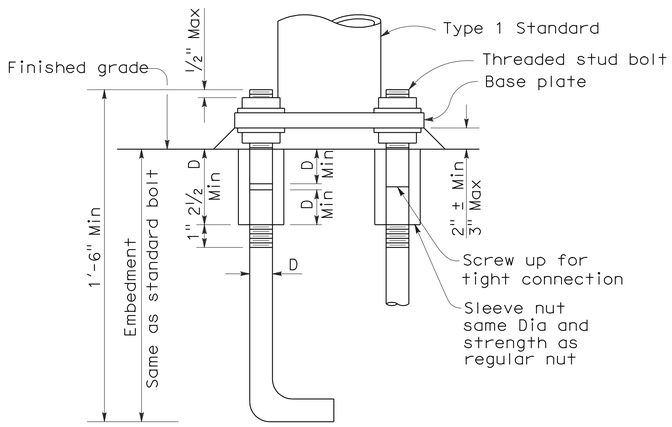
NUMBER DETAIL



PLAN

TYPICAL NUMBER FORMAT

LOCATION OF EQUIPMENT NUMBERS ON STANDARDS AND POSTS



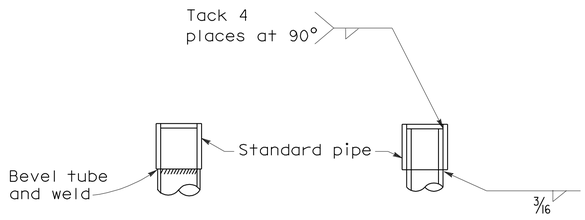
ANCHOR BOLTS WITH SLEEVE NUTS

Sleeve nuts to be used only when shown or specified on Project Plans

D = Diameter of anchor bolt

NOTES:

1. Standards shall be 10'-0" ± 2" for vehicle signals and 7'-0" ± 2" for pedestrian signals unless otherwise noted on plans.
2. Top of standards shall be 4½" OD.
3. Conduits shall extend 2" maximum above finished surface of foundation and for Types 1-A, 1-C and 1-D shall be sloped toward handhole.
4. Anchor bolts shall be bonded to conduit or grounding conductor.
5. Conduit between standard and adjacent pull box shall be 2" minimum.
6. Paint numbers on roadway side facing traffic when electrolier or post is left of direction of traffic.



DETAIL J

Tube may be inserted into pipe or butted as required

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD TYPE 1 STANDARD AND EQUIPMENT NUMBERING)

NO SCALE

RSP ES-7B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-7B
DATED MAY 1, 2006 - PAGE 438 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-7B

2006 REVISED STANDARD PLAN RSP ES-7B

7-10-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	569	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

January 20, 2012
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Jeffery G. McRae
No. E14512
Exp. 6-30-12
ELECTRICAL
STATE OF CALIFORNIA

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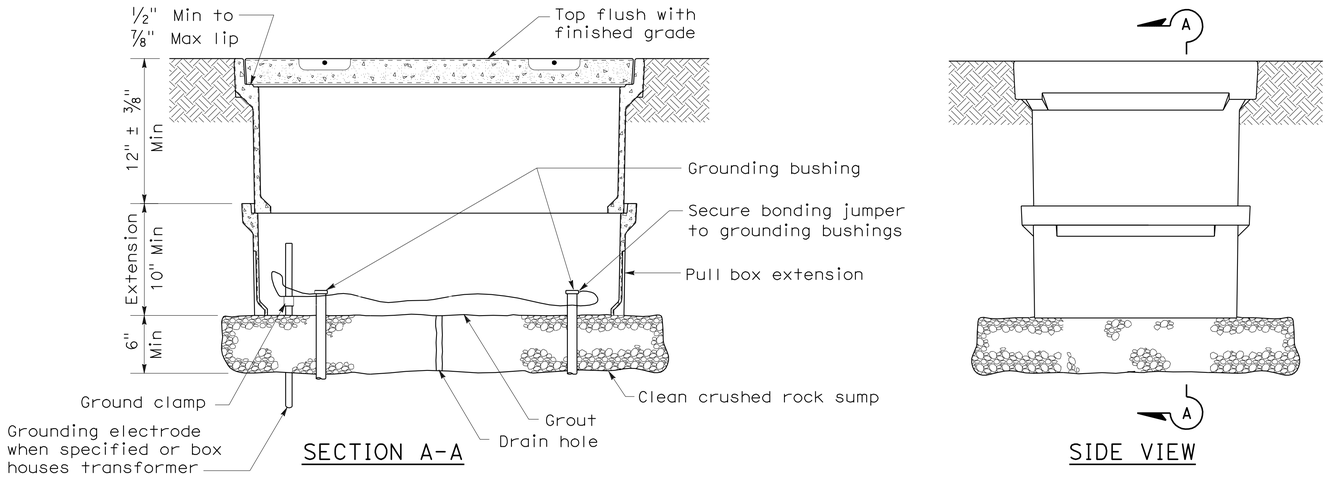
To accompany plans dated 4-16-12

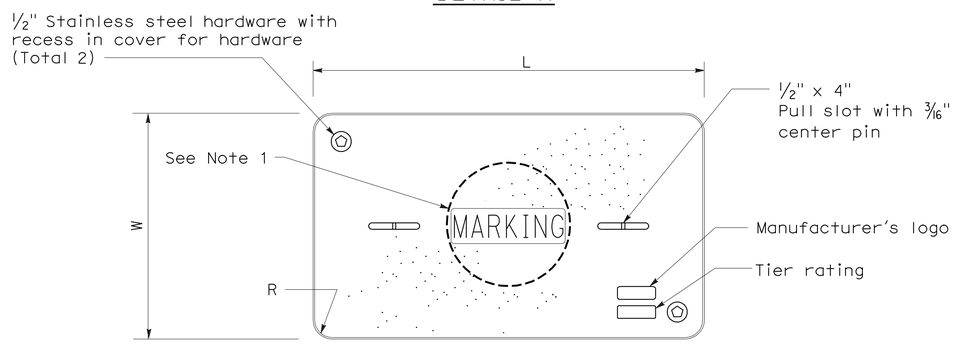


SECTION A-A

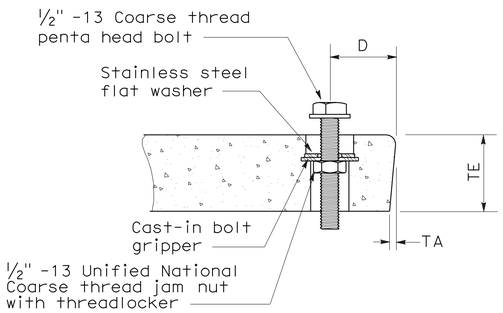
SIDE VIEW

INSTALLATION DETAILS

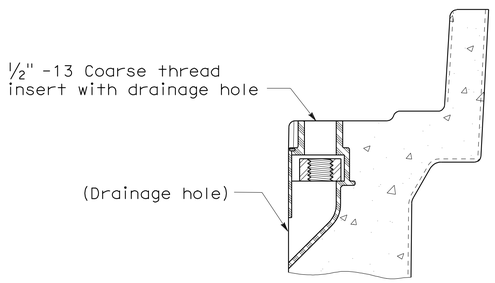
DETAIL A



COVER TOP VIEW



TYPICAL COVER CAPTIVE BOLT
(Or similar)



TYPICAL THREADED INSERT
(Or similar)

DIMENSION TABLE										
PULL BOX	PULL BOX			COVER						
	Minimum Depth Box	Minimum Depth Extension	Maximum Weight	L	W	R	TE	TA	D	Maximum Weight
No. 3½	12"	N/A	40 lb	1′ - 3⅜"	10⅛"	1⅜"	2"	⅛"	1¾"	30 lb
No. 5	12"	10"	55 lb	1′ - 11¼"	1′ - 1¾"	1⅜"	2"	⅛"	1¾"	60 lb
No. 6	12"	10"	70 lb	2′ - 6½"	1′ - 5½"	1⅜"	2"	⅛"	2"	85 lb

NOTES ON PULL BOXES:

1. Pull box covers must be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" sprinkler control circuits, 50 V or less; "CALTRANS" on all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service;

   A) No. 3½ pull box.
   1) "SIGNAL" - Traffic signal circuits with or without street or sign lighting circuits.
   2) "ST LIGHTING" - Street or sign lighting circuits where voltage is under 600 V.

   B) No. 5, 6, 9 or 9A pull box.
   1) "TRAFFIC SIGNAL" - Traffic signal circuits with or without street or sign lighting circuits.
   2) "STREET LIGHTING" - Street or sign lighting circuits where voltage is under 600 V.
   3) "STREET LIGHTING-HIGH VOLTAGE" - Street or sign lighting circuits where voltage is above 600 V.
   4) "IRRIGATION" - Circuits to irrigation controller 120 V or more.
   5) "RAMP METER" - Ramp meter circuits.
   6) "COUNT STATION" - Count or speed monitor circuits.
   7) "COMMUNICATIONS" - Communication circuits.
   8) "TOS COMMUNICATIONS" - TOS communication line.
   9) "TOS POWER" -TOS power.
   10) "TDC POWER" - Telephone demarcation cabinet power.
   11) "CCTV" - Closed circuit television circuits.
   12) "TMS" - Traffic monitoring station circuits.
   13) "CMS" - Changeable message sign circuits.
   14) "HAR" - Highway advisory radio circuits.

2. The nominal dimensions of the opening in which the cover sets must be the same as the cover dimensions (L and W) plus ⅛" or greater.
3. Covers and boxes must be interchangeable with California Standard. When interchanged with a standard, the top surfaces must be flush within ⅛". Top outside radius of covers and pull boxes must have a ⅛" radius.
4. Pull box extension may be another pull box as long as the bottom edge of the pull box can fit into the cover opening.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (PULL BOX)

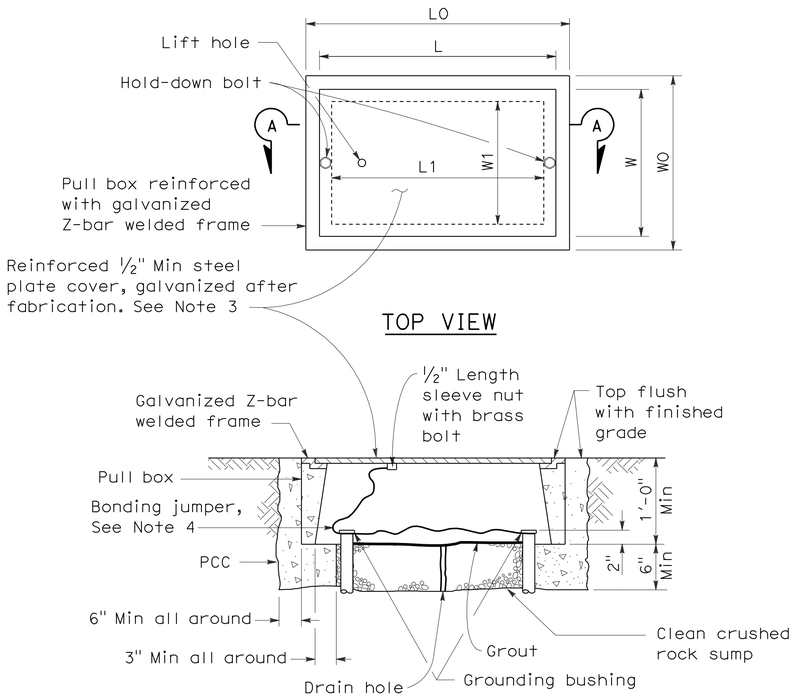
NO SCALE

NSP ES-8A DATED JANUARY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP ES-8A

2006 NEW STANDARD PLAN NSP ES-8A

9-28-11



TOP VIEW

SECTION A-A

No. 3½(T), No. 5(T) AND No. 6(T) TRAFFIC PULL BOX

DIMENSION TABLE											
PULL BOX	BOX						COVER				
	Minimum * Thickness	Minimum Depth Box and Extension	WO	LO	L1	W1	L **	W **	R	Edge Thickness	Edge Taper
No. 3½(T)	1½"	1'-0"	1'-5"± 1"	1'-8⅜"±	1'-2½"±	10⅝"± 1"	1'-8"±	1'-1¾"±	0"	½"	None
No. 5(T)	1¾"	1'-0"	1'-11½"± 1"	2'-5½"±	1'-7"±	1'-1"± 1"	2'-3"±	1'-4"±	0"	½"	None
No. 6(T)	2"	1'-0"	2'-6"± 1"	2'-11½"±	1'-11½"±	1'-5"± 1"	2'-9"±	1'-8"±	0"	½"	None

* Excluding conduit web ** Top dimension

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	570	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

January 20, 2012
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Jeffery G. McRae — No. E14512 — Exp. 6-30-12 — ELECTRICAL — STATE OF CALIFORNIA

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To accompany plans dated 4-16-12

NOTES ON PULL BOXES:

1. Traffic pull box shall be provided with steel cover and special concrete footing. Steel cover shall have embossed non-skid pattern.
2. Steel reinforcing shall be as regularly used in the standard products of the respective manufacturer.
3. Pull box covers must be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" Sprinkler control circuits, 50 V or less; "CALTRANS" On all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service.
   A) No. 3½(T) pull box.
      1) "SIGNAL" - Traffic signal circuits with or without street or sign lighting circuits.
      2) "ST LIGHTING" - Street or sign lighting circuits where voltage is under 600 V.
   B) No. 5(T) or 6(T) pull box.
      1) "TRAFFIC SIGNAL" - Traffic signal circuits with or without street or sign lighting circuits.
      2) "STREET LIGHTING" - Street or sign lighting circuits where voltage is under 600 V.
      3) "STREET LIGHTING-HIGH VOLTAGE" - Street or sign lighting circuits where voltage is above 600 V.
      4) "IRRIGATION" - Circuits to irrigation controller 120 V or more.
      5) "RAMP METER" - Ramp meter circuits.
      6) "COUNT STATION" - Count or speed monitor circuits.
      7) "COMMUNICATION" - Communication circuits.
      8) "TOS COMMUNICATIONS" - TOS communications line.
      9) "TOS POWER" - TOS power.
      10) "TDC POWER" - Telephone demarcation cabinet power.
      11) "CCTV" - Closed circuit television circuits.
      12) "TMS" - Traffic monitoring station circuits.
      13) "CMS" - Changeable message sign circuits.
      14) "HAR" - Highway advisory radio circuits.
4. Bonding jumper for metal covers shall be 3' long, minimum.
5. The nominal dimensions of the opening in which the cover sets must be the same as the cover dimensions except the length and width dimensions shall be ⅛" greater.
6. Covers and boxes must be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces must be flush within ⅛".

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TRAFFIC RATED PULL BOX)

NO SCALE

NSP ES-8B DATED JANUARY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED MAY 2006.

NEW STANDARD PLAN NSP ES-8B

2006 NEW STANDARD PLAN NSP ES-8B

9-28-11

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	571	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

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

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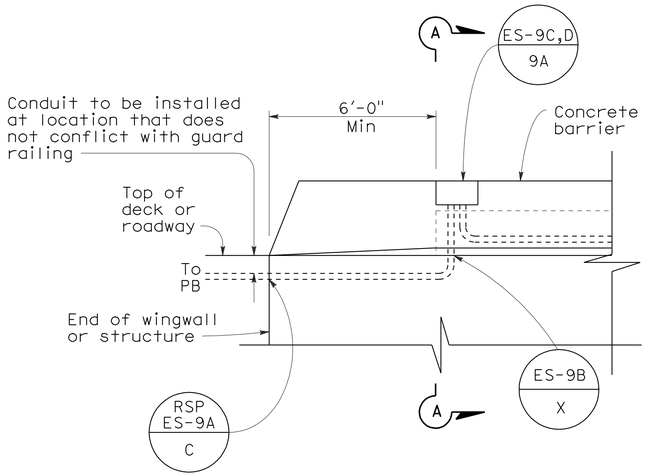
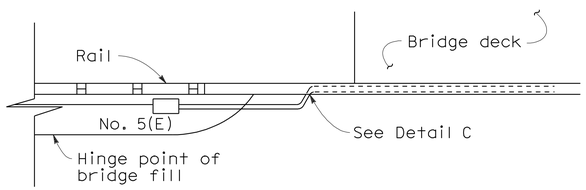
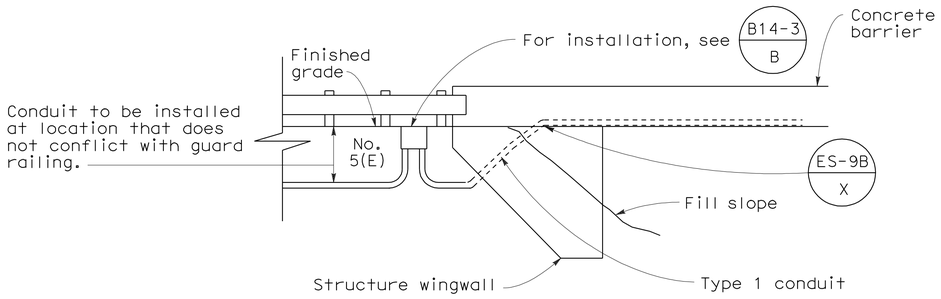
To accompany plans dated 4-16-12



SIDEVIEW

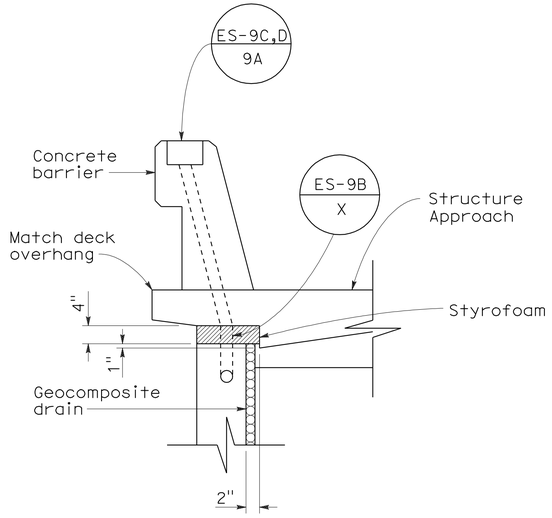


TOP VIEW



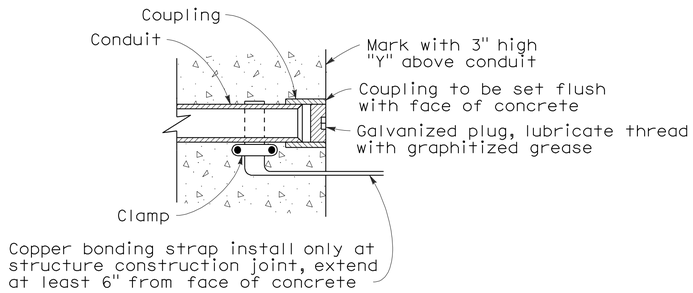
SIDE VIEW

SIDE VIEW
DETAIL I
CONDUIT TERMINATION



SECTION A-A

DETAIL A
CONDUIT TERMINATION



DETAIL C
CONDUIT TERMINATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRICAL DETAILS STRUCTURE INSTALLATIONS)

NO SCALE

RSP ES-9A DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-9A
DATED MAY 1, 2006 - PAGE 454 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-9A

2006 REVISED STANDARD PLAN RSP ES-9A

7-11-07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	572	619

Jeffery G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

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

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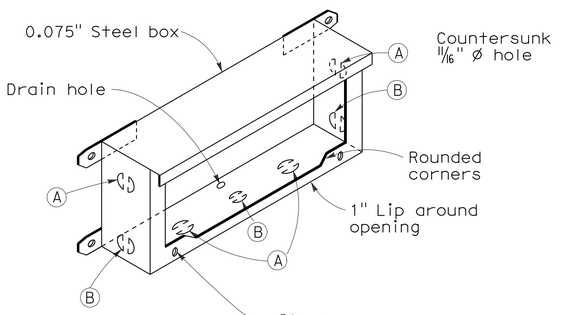
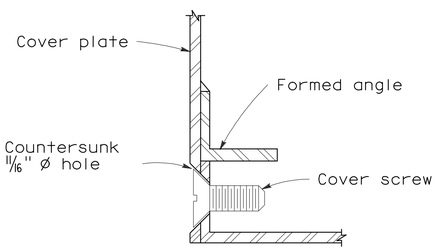
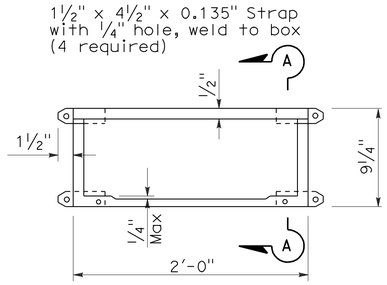
To accompany plans dated 4-16-12

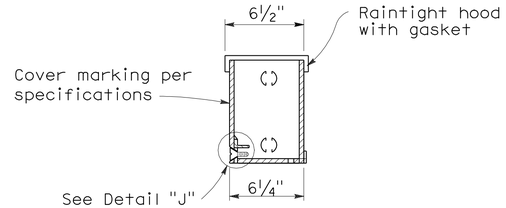




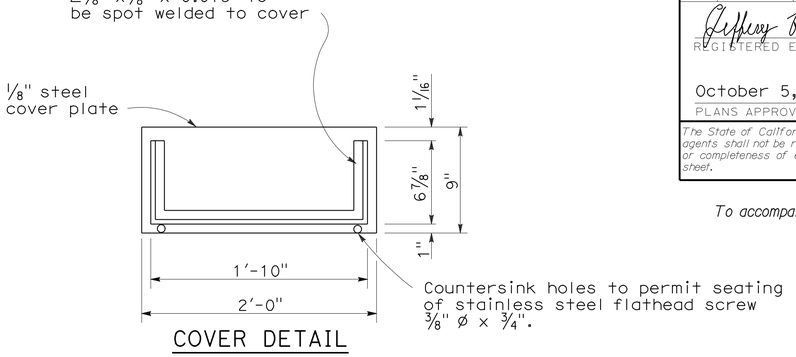
DETAIL J



PLAN



SECTION A-A

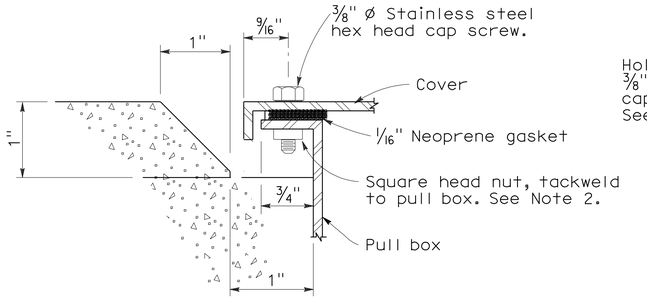


COVER DETAIL

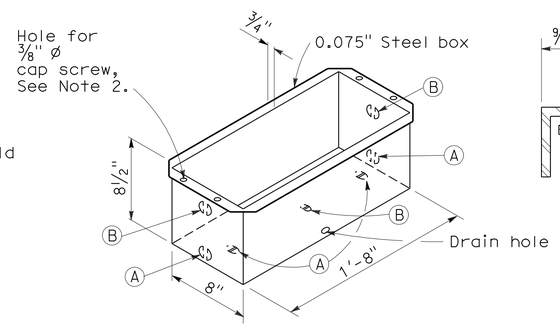
INSTALLATION NOTE:

Box shall be parallel to top of railing. Close cover box during pouring with 1/4" plywood of sufficient size to provide 1:1 chamfer on 3 sides of cover. Upper edge of plywood shall fit against lower edge of raintight hood.

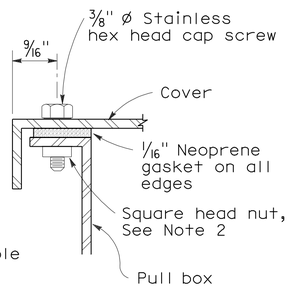
No. 9 STRUCTURE PULL BOX

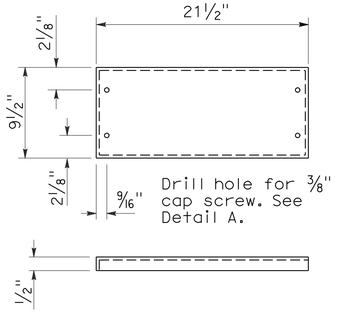


SECTION C-C



DETAIL A



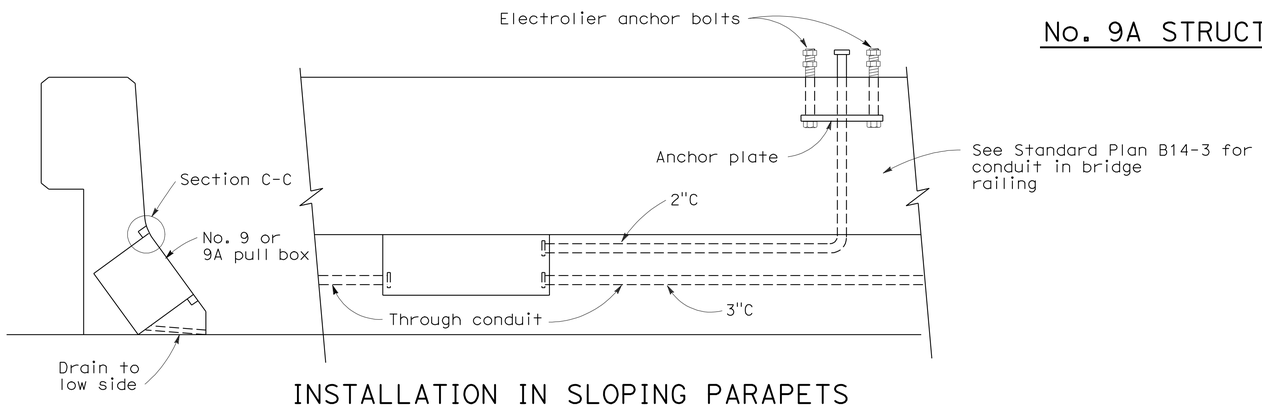


COVER DETAIL

NOTES: No. 9 and 9A Pull Box

1. Corner joints shall be lapped and secured by spot welding or riveting.
2. Where cap screws are used to attach cover to box, either of the following methods of providing adequate threading may be used:
   a. Tack weld square nut to bottom of flange (Total 4), or
   b. Tack weld a 1/4" x 5/8" x 8" bar beneath flange (Total 2).
3. Pound knockouts flat after punching.
4. Multiple size knockouts shall not be permitted.
5. Pull box covers shall be marked as shown on Standard Plan ES-8.

No. 9A STRUCTURE PULL BOX



INSTALLATION IN SLOPING PARAPETS

For reinforcement in area of electrolier, see railing sheets. For electrolier anchor bolts, see Standard Plan ES-6B.

KNOCKOUT SCHEDULE
No. 9 AND 9A PULL BOX

(A) 2"C, 1 each end, 2 on bottom.

(B) 3"C, 1 each end, 1 on bottom.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRICAL DETAILS STRUCTURE INSTALLATIONS)

NO SCALE

RSP ES-9C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-9C DATED MAY 1, 2006 - PAGE 456 OF THE STANDARD PLANS BOOK DATED MAY 2006.

REVISED STANDARD PLAN RSP ES-9C

2006 REVISED STANDARD PLAN RSP ES-9C

7-26-07

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	573	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANTHONY P NOTARO — No. C51739 — 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.

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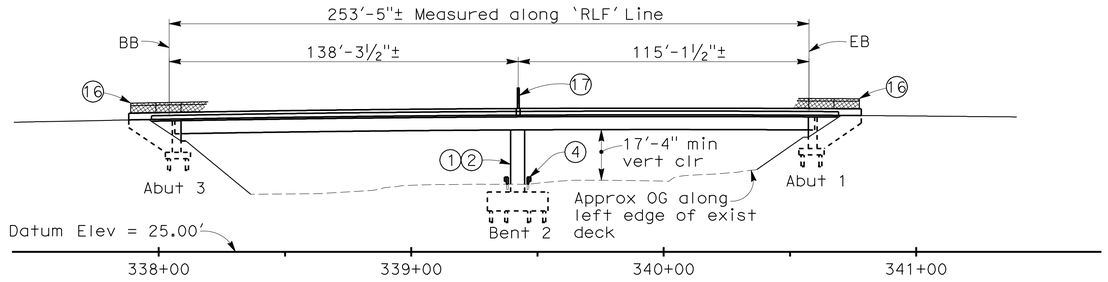
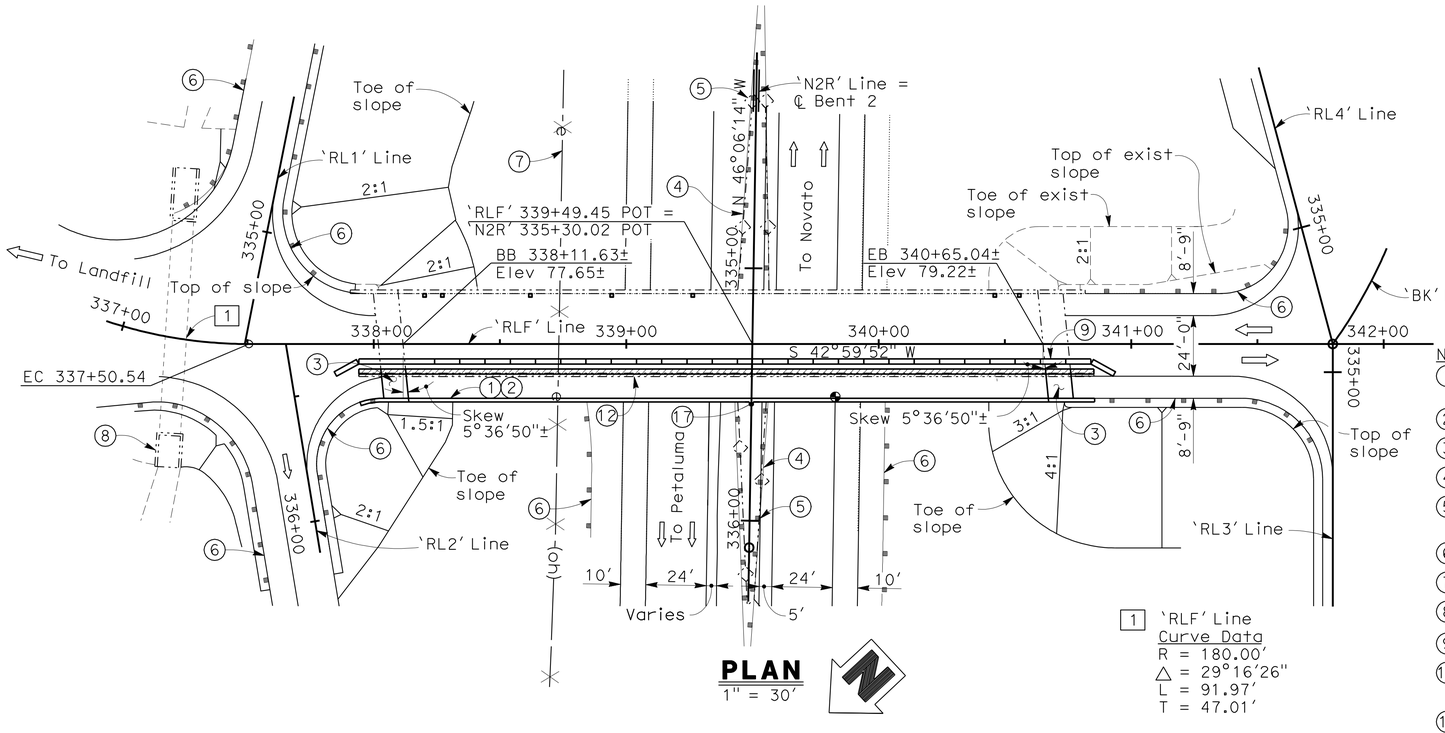
SAN RAFAEL, CA 94901

BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

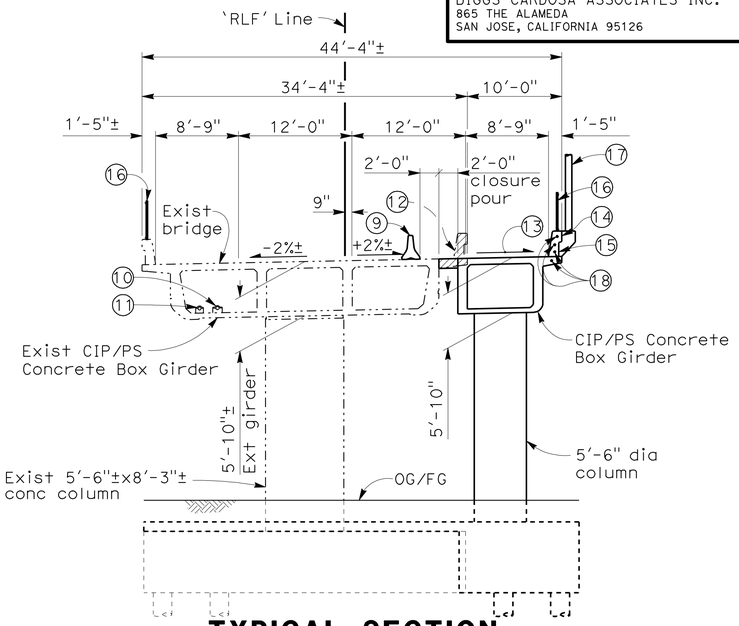


ELEVATION
1" = 30'



PLAN
1" = 30'

1 'RLF' Line
Curve Data
R = 180.00'
△ = 29°16'26"
L = 91.97'
T = 47.01'



TYPICAL SECTION
1/8" = 1'-0"

NOTES:

1. Paint 'Bridge No: 27-0115' and year completed
2. Paint 'Redwood Landfill Overcrossing'
3. Structure Approach Type EQ(10)
4. Thrie Beam Barrier, see Road Plans
5. Exist thrie beam barrier to be removed, see Road Plans
6. MBGR, see Road Plans
7. Exist electric OH to be removed, by others
8. Exist RCB
9. Temporary railing (Type K), see Road Plans
10. Exist NPS 3 Supply Line (Bridge), Protect in Place
11. Exist 3" Sprinkler Control Conduit, Protect in Place
12. Remove exist overhang & concrete barrier
13. Match exist cross slope
14. Concrete Barrier (Type 732 Mod)
15. Dry stack rock texture
16. Chain Link Fence (Type CL-4, Vinyl-Clad)
17. Electrolier, see Electrical Plans
18. 2" dia electrical conduit (total 4)
19. For INDEX TO BRIDGE PLANS, STANDARD PLANS LIST, and QUANTITIES, see 'GENERAL NOTES' sheet
20. For PILE DATA TABLE and BENCHMARK AND DATUM, see 'FOUNDATION PLAN' sheet
21. ⊟ Indicates exist Deck Drain Type D-3.
22. ◔ Indicates point of minimum vertical clearance
23. ——— Indicates new construction
24. —·—·— Indicates exist structure
25. ▨ Indicates bridge removal (portion)

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGN OVERSIGHT: Tracy L Bertram	DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	
10-14-11 SIGN OFF DATE	DETAILS	BY G. JEYARAMAN	CHECKED S. MOYLES	LAYOUT: BY G. JEYARAMAN	CHECKED S. MOYLES	
	QUANTITIES	BY D. ROSELLINI	CHECKED S. MOYLES	SPECIFICATIONS: BY A. NOTARO	PLANS AND SPECS COMPARED S. MOYLES	

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
GENERAL PLAN

DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 1/15/09 | 7/1/10 | 3/7/11 | 5/27/11 | 8/19/11 | 10/3/11

SHEET 1 OF 23

FILE => 27-0115-a-gp01.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s1124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:00 2008100 (2008100S1)

GENERAL NOTES
LOAD & RESISTANCE FACTOR DESIGN

DESIGN: AASHTO LRFD Bridge Design Specifications, 4th Edition, and Caltrans Amendments; except that bridge barrier, railing and structure approach are designed using Bridge Design Specifications ('96 AASHTO with Revisions by Caltrans)

SEISMIC LOADING: Caltrans Seismic Design Criteria (SDC) Version 1.5, dated September 2009.

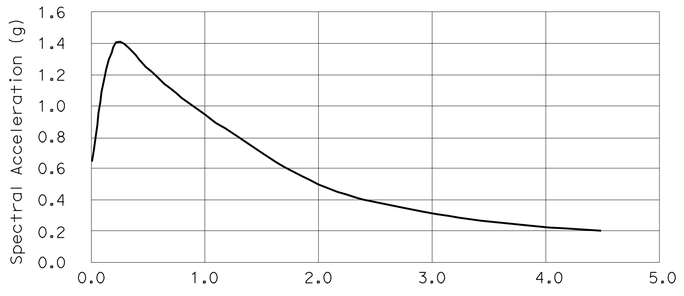
DEAD LOAD: Includes 35 psf for future wearing surface.

LIVE LOAD: HL93 with Low-Boy and Permit Design Vehicle

SEISMIC LOAD: SDC Appendix B v1.5 modified envelope ARS curve for deterministic spectrum with MMax = 7.1 and probabilistic spectrum using 2008 USGS Seismic Hazard Map amplified for V_{S30} = 1312 fps

Governing curve: Probabilistic

Modification factors: Near-fault amplifications of 20% increase for T ≥ 1.0 sec, no modification for T ≤ 0.5 sec and linear interpolation for 0.5 sec < T < 1.0 sec



ARS DESIGN CURVE
NO SCALE

CONCRETE: fy = 60 ksi
f'c = See 'Concrete Strength and Type Limits' diagram
n = 8

PRESTRESSED CONCRETE: See 'Prestressing Notes' on 'GIRDER LAYOUT' sheet

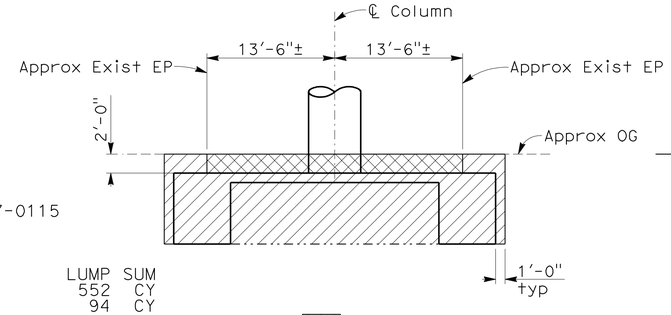
NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

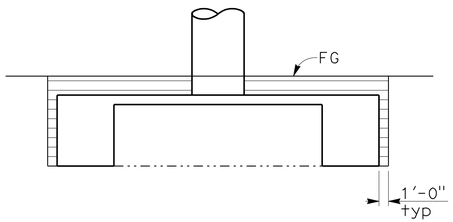
STANDARD PLANS DATED MAY 2006

	A10A	ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
	A10B	ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
	A10C	SYMBOLS (SHEET 1 OF 2)
	A10D	SYMBOLS (SHEET 2 OF 2)
	A62C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL BRIDGE
RSP	A85	CHAIN LINK FENCE
	B0-1	BRIDGE DETAILS
	B0-3	BRIDGE DETAILS
	B0-5	BRIDGE DETAILS
	B0-13	BRIDGE DETAILS
RSP	B6-21	JOINT SEALS (MAXIMUM MOVEMENT RATING = 2")
	B7-1	BOX GIRDER DETAILS
	B8-5	CAST-IN-PLACE PRESTRESSED GIRDER DETAILS
	B11-51	TUBULAR HAND RAILING
	B11-55	CONCRETE BARRIER TYPE 732
	B14-3	COMMUNICATION AND SPRINKLER CONTROL CONDUITS (CONDUIT LESS THAN 4")

B7-11 ← INDICATES CALTRANS STANDARD PLAN SHEET No.
U42 ← INDICATES DETAIL No.

INDEX TO BRIDGE PLANS





REDWOOD LANDFILL OC (WIDEN), BR# 27-0115

QUANTITIES

BRIDGE REMOVAL (PORTION)	LUMP	SUM
STRUCTURE EXCAVATION (BRIDGE)	552	CY
STRUCTURE EXCAVATION (TYPE Y-1) (AERIALLY DEPOSITED LEAD)	94	CY
STRUCTURE BACKFILL (BRIDGE)	337	CY
24" CAST-IN-DRILLED-HOLE CONCRETE PILING	880	LF
PRESTRESSING CAST-IN-PLACE CONCRETE	LUMP	SUM
STRUCTURAL CONCRETE, BRIDGE FOOTING	292	CY
STRUCTURAL CONCRETE, BRIDGE	312	CY
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE EQ)	7	CY
DRILL AND BOND DOWEL	480	LF
JOINT SEAL (MR 1½")	13	LF
JOINT SEAL (MR 2")	13	LF
BAR REINFORCING STEEL (BRIDGE)	162,427	LB
HEADED BAR REINFORCEMENT	88	EA
CHAIN LINK FENCE (TYPE CL-4, VINYL-CLAD)	578	LF
CONCRETE BARRIER (TYPE 732 MODIFIED)	289	LF

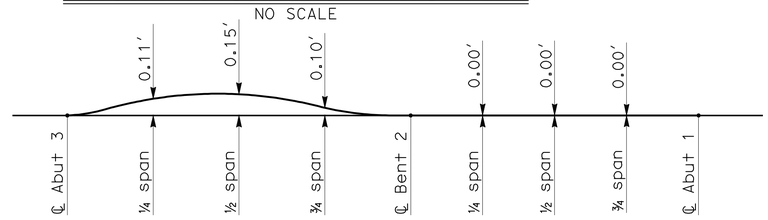
Structure Excavation (Bridge)

Structure Excavation (Type Y-1) (Aerially Deposited Lead)

Structure Backfill (Bridge)

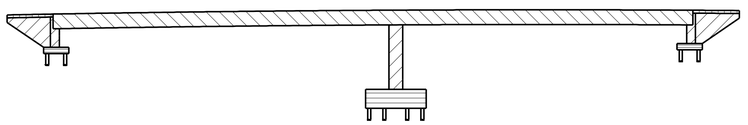
NOTE:
For limits of payment for structure excavation and backfill not shown, see Caltrans Standard Plan A62C

LIMITS OF PAYMENT FOR STRUCTURE EXCAVATION AND BACKFILL
NO SCALE



(Does not include allowance for falsework settlement and release, see 'FORMWORK RELEASE NOTES' on 'TYPICAL SECTION' sheet)

CAMBER DIAGRAM
NO SCALE



Structural Concrete, Bridge (f'c = 4.0 ksi at 28 days)

Structural Concrete, Bridge (f'c = 3.6 ksi at 28 days)

Structural Concrete, Bridge Footing (f'c = 3.6 ksi at 28 days)

Structural Concrete, Approach Slab (f'c = 3.6 ksi at 28 days)

CIDH Concrete Piling (f'c = 4.0 ksi at 28 days)

CONCRETE STRENGTH AND TYPE LIMITS
NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	574	619

REGISTERED CIVIL ENGINEER — DATE 10/03/11

PLANS APPROVAL DATE 4-16-12

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

DESIGN OVERSIGHT Tracy L Bertram — 10-14-11 SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
GENERAL NOTES

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/21/11 5/23/11 8/19/11 10/3/11

SHEET 2 OF 23

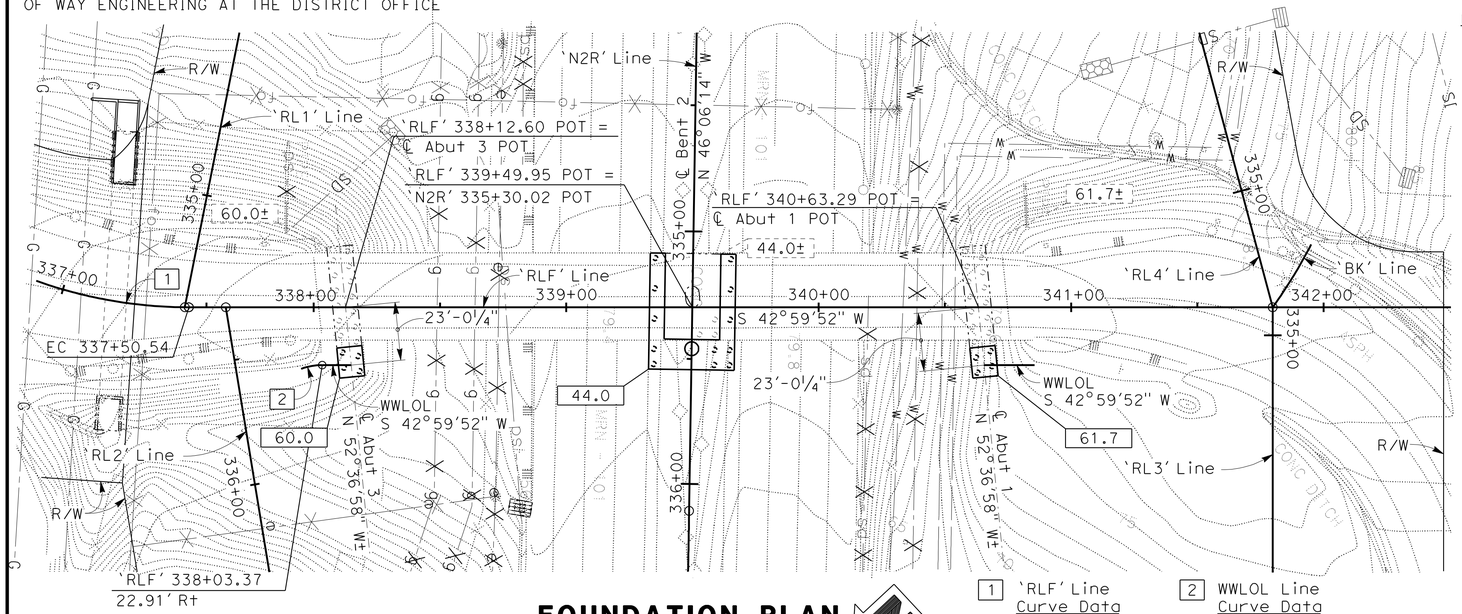
FILE => 27-0115-b-gnote.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s1244496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:01

2008100 (2008100052)

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE



FOUNDATION PLAN

1" = 30'

1 'RLF' Line
Curve Data
R = 180.00'
△ = 29°16'26"
L = 91.97'
T = 47.01'

2 WWLOL Line
Curve Data
R = 24.58'
△ = 19°51'46"
L = 8.52'
T = 4.30'

NOTES:

1. Indicates bottom of footing elevation, match existing
2. Indicates bottom of existing footing elevation.
3. Indicates existing CIDH piles, not all piles shown.
4. Indicates CIDH piles, not all piles shown.
5. Indicates utility to be removed, see Road Plans
6. See Road Plans for proposed finished grade and utilities.
7. Spirals shall be spliced using ultimate butt splices. Spiral reinforcing at ends shall be terminated by a 135° hook with a 6" long tail, hooked around a main reinforcing bar.
8. No splice in main pile reinforcing allowed except for piles located under existing structure at Bent 2. Splices for main pile reinforcing shall be located outside the no splice zone indicated. Splices for main pile reinforcing outside of the no splice zone shall be ultimate butt splices.

PILE DATA TABLE

Location	Pile Type	Nominal Resistance (Kips)		Design Tip Elevation (ft)	Specified Tip Elevation (ft)	Nominal Driving Resistance (Kips)
		Compression	Tension			
Abutment 1	2'-0" CIDH	280	0	43.3(a), 31.7(d)	31.7	N/A
Bent 2	2'-0" CIDH	390	210	12.0(a), 26.0(b), 12.1(d)	12.0	N/A
Abutment 3	2'-0" CIDH	280	0	34.7(a), 33.7(d)	33.7	N/A

NOTES:

1. Design tip elevation for Abutments are controlled by: (a) Compression, (c) Settlement, (d) Lateral Loads
2. Design tip elevation for Bents are controlled by: (a) Compression, (b) Tension, (c) Settlement, (d) Lateral Loads
3. The specified tip elevation shall not be raised above the design tip elevations for tension load, lateral load, and tolerable settlement.
4. For piles installed to the specified tip elevations, pile top settlements under service load are less than 1 inch for all support locations.

BENCH MARK AND DATUM

Monument	Coordinates		Elev (NAVD 88)	Description/Location
	North	East		
122	2250516.483	5966847.011	33.86	Mag Nail and shiner "HV 22" at N2 307+99.48 59.81 Rt
125	2252038.592	5965712.883	26.53	Mag Nail and shiner "HV 25" at N2 326+91.55 63.12 Rt

BASIS OF SURVEY CONTROL:

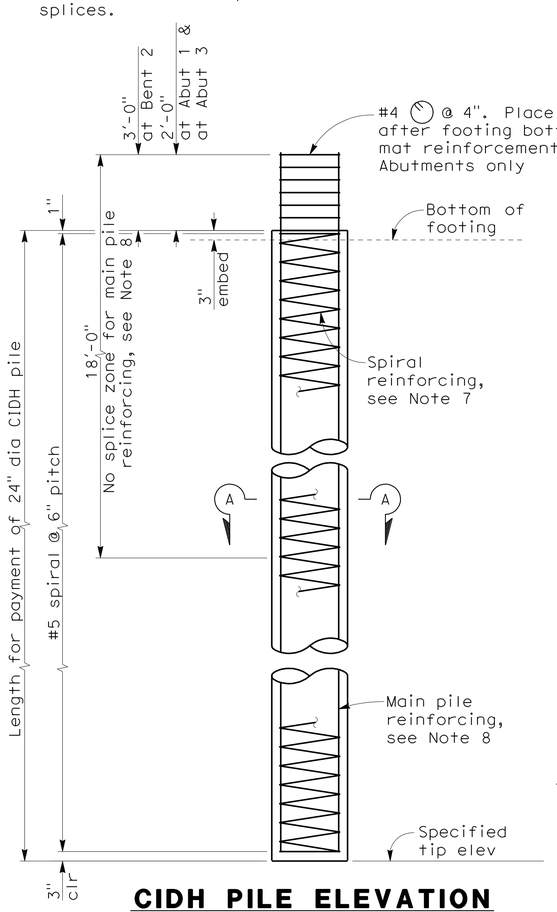
A. Horizontal Datum:

Coordinates, bearings & distances are based on the California Coordinate System of 1983 (CCS 83), Zone 3 (1991.35 HPGN). All distances are in feet. Multiply by 1.00004621 to obtain ground distances.

B. Vertical Datum:

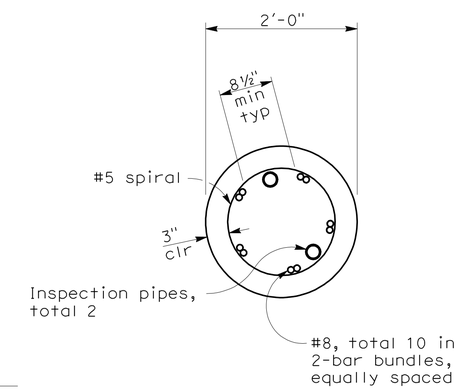
Elevation is based on North American Datum of 1988 (NAVD 88).

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material



CIDH PILE ELEVATION

1/2" = 1'-0"



SECTION A-A

1" = 1'-0"

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	575	619

REGISTERED CIVIL ENGINEER — DATE 10/03/11

PLANS APPROVAL DATE 4-16-12

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

GEOTECHNICAL PROFESSIONAL APPROVAL DATE

DESIGN OVERSIGHT Tracy L Bertram — 10-14-11 — SIGN OFF DATE

SCALE: AS SHOWN	VERT.DATUM NAVD 88	HORZ.DATUM CCS 83, ZONE 3
PHOTOGRAMMETRY AS OF: BKF ENGINEERS	ALIGNMENT TIES BKF ENGINEERS	
SURVEYED BY BKF ENGINEERS	DRAFTED BY BKF ENGINEERS	
FIELD CHECKED BY BKF ENGINEERS	CHECKED BY BKF ENGINEERS	

DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING
DETAILS	BY G. JEYARAMAN	CHECKED S. MOYLES
QUANTITIES	BY D. ROSELLINI	CHECKED S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILE 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)

FOUNDATION PLAN

FOUNDATION PLAN SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

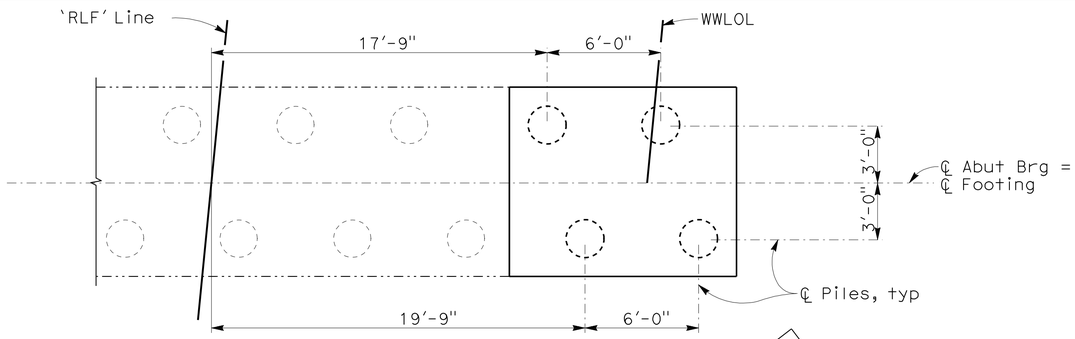
REVISION DATES (PRELIMINARY STAGE ONLY): 1/15/09 7/1/10 3/1/11 5/27/11 8/19/11 10/3/11

SHEET 3 OF 23

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

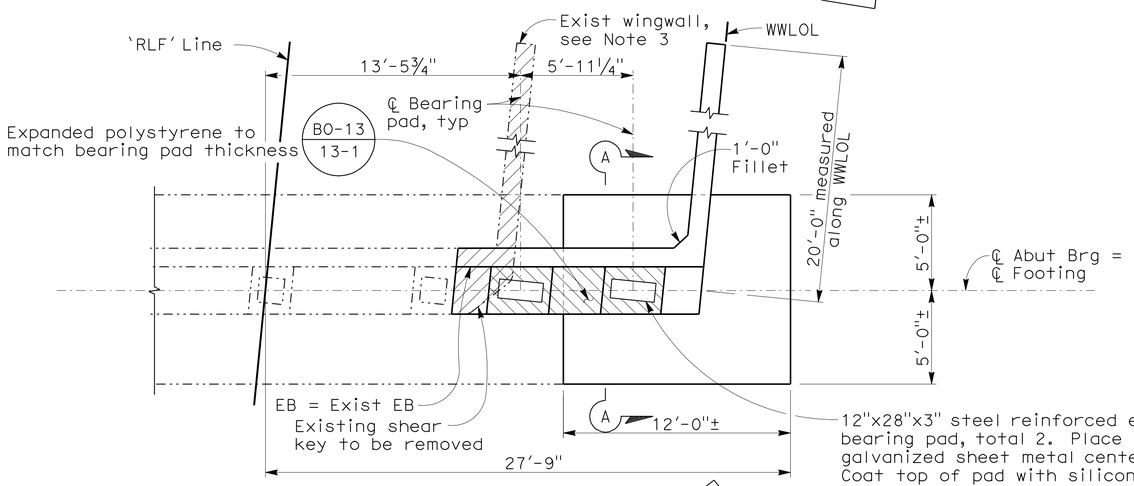
FILE => $REQUEST

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME (2008100053) 2008100



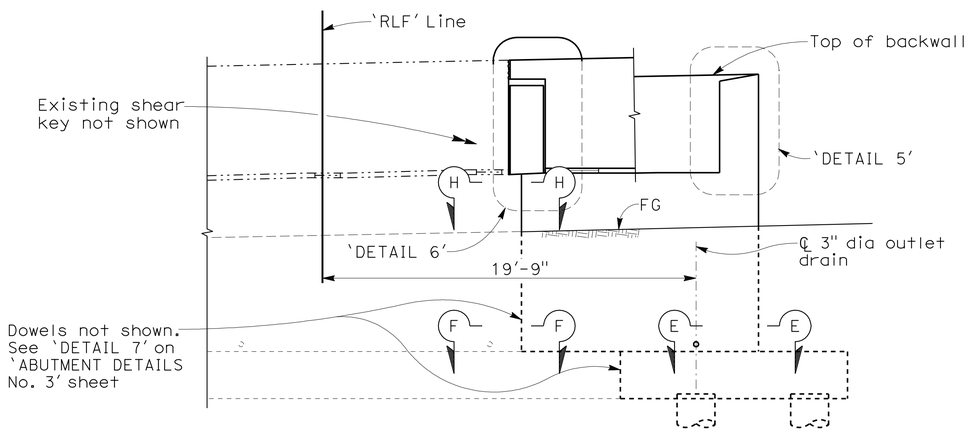
ABUTMENT 1 FOOTING PLAN

1/4" = 1'-0"



ABUTMENT 1 PLAN

1/4" = 1'-0"



ABUTMENT 1 ELEVATION

1/4" = 1'-0"

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	576	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

LEGEND:

- Indicates existing structure
- Indicates new construction
- Indicates concrete to be removed

NOTES:

1. For 'SECTION A-A', 'DETAIL 1' and 'DETAIL 2', see 'ABUTMENT DETAILS No. 1' sheet.
2. For 'SECTION E-E', 'SECTION F-F', 'DETAIL 5' and 'DETAIL 6', see 'ABUTMENT DETAILS No. 2' sheet.
3. For limits of concrete to be removed, see 'DETAIL 7' on 'ABUTMENT DETAILS No. 3' sheet.
4. For 'SECTION H-H', see 'ABUTMENT DETAILS No. 3' sheet.
5. Indicates new CIDH pile. See 'CIDH PILE ELEVATION' on 'FOUNDATION PLAN' sheet.
6. Indicates exist CIDH pile.

Tracy L Bertram
DESIGN OVERSIGHT

10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)

ABUTMENT 1 LAYOUT

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/7/11 5/27/11 8/19/11 10/3/11

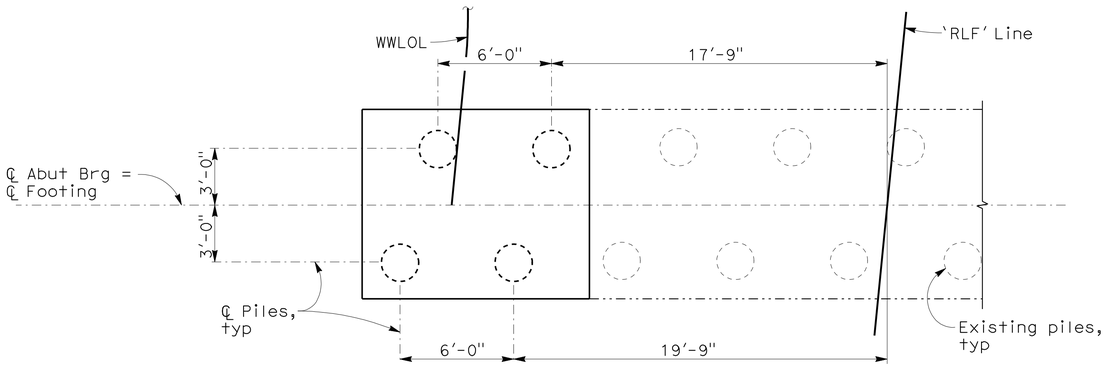
SHEET 4 OF 23

FILE => 27-0115-h-a04-lo1.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

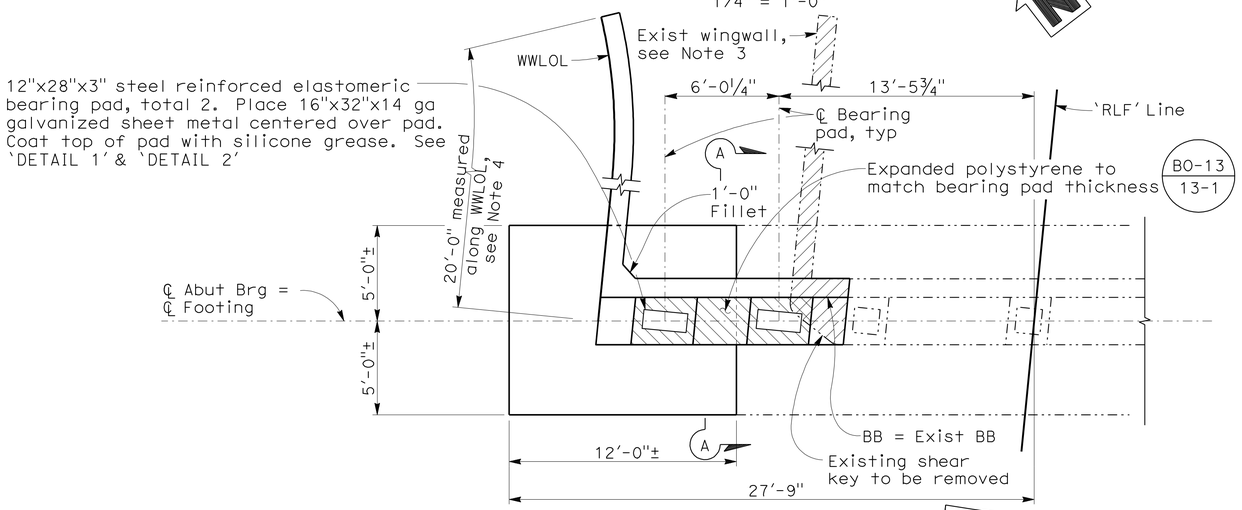
USERNAME => s1244496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:01

2008100 (2008100S4)



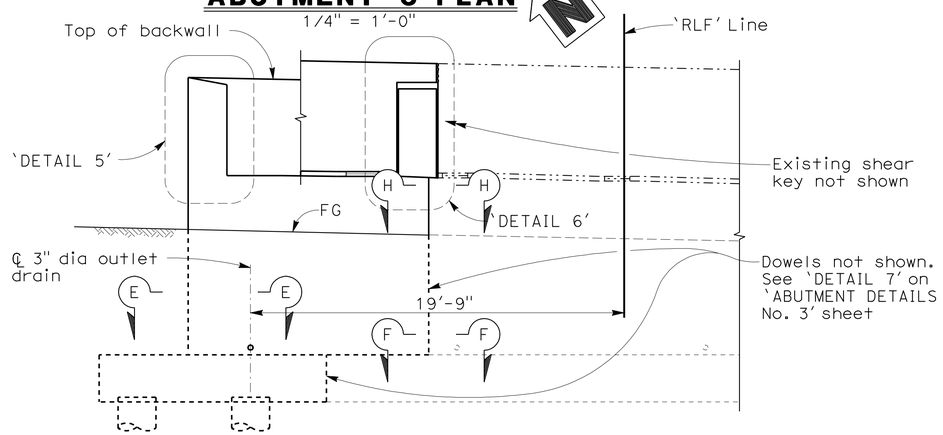
ABUTMENT 3 FOOTING PLAN

1/4" = 1'-0"



ABUTMENT 3 PLAN

1/4" = 1'-0"



ABUTMENT 3 ELEVATION

1/4" = 1'-0"

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	577	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

REGISTERED PROFESSIONAL ENGINEER
ANTHONY P NOTARO
No. C51739
Exp.6/30/12
CIVIL
STATE OF CALIFORNIA

4-16-12
PLANS APPROVAL DATE

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TAM
750 LINDARO STREET, SUITE 200
SAN RAFAEL, CA 94901

BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

LEGEND:

- Indicates existing structure
- Indicates new construction
- Indicates concrete to be removed

NOTES:

1. For 'SECTION A-A', 'DETAIL 1' and 'DETAIL 2', see 'ABUTMENT DETAILS No. 1' sheet.
2. For 'SECTION E-E', 'SETION F-F', 'DETAIL 5' and 'DETAIL 6' see 'ABUTMENT DETAILS No. 2' sheet.
3. For limits of concrete to be removed, see 'DETAIL 7' on 'ABUTMENT DETAILS No. 3' sheet.
4. For WWLOL layout information, see 'FOUNDATION PLAN' sheet.
5. For 'SECTION H-H', see 'ABUTMENT DETAILS No. 3' sheet.
6. Indicates new CIDH pile. See 'CIDH PILE ELEVATION' on 'FOUNDATION PLAN' sheet.
7. Indicates exist CIDH pile.

Tracy L Bertram
DESIGN OVERSIGHT
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)

ABUTMENT 3 LAYOUT

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/1/11 5/27/11 8/19/11 10/3/11

SHEET 5 OF 23

FILE => 27-0115-h-a05-lo2.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => S1T24496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:01

2008100 (20081005)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	578	619

REGISTERED CIVIL ENGINEER — DATE 10/03/11

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANTHONY P NOTARO — No. C51739 — Exp. 6/30/12 — CIVIL — STATE OF CALIFORNIA

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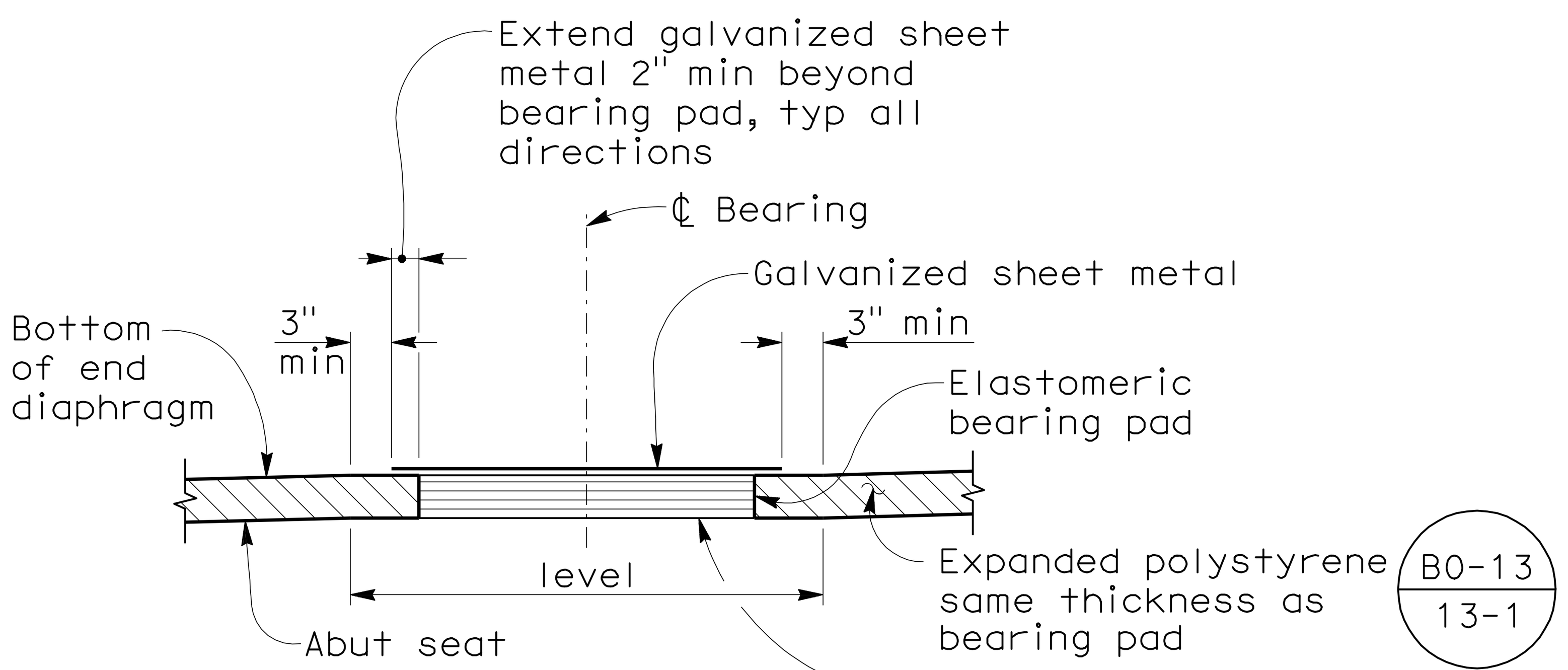
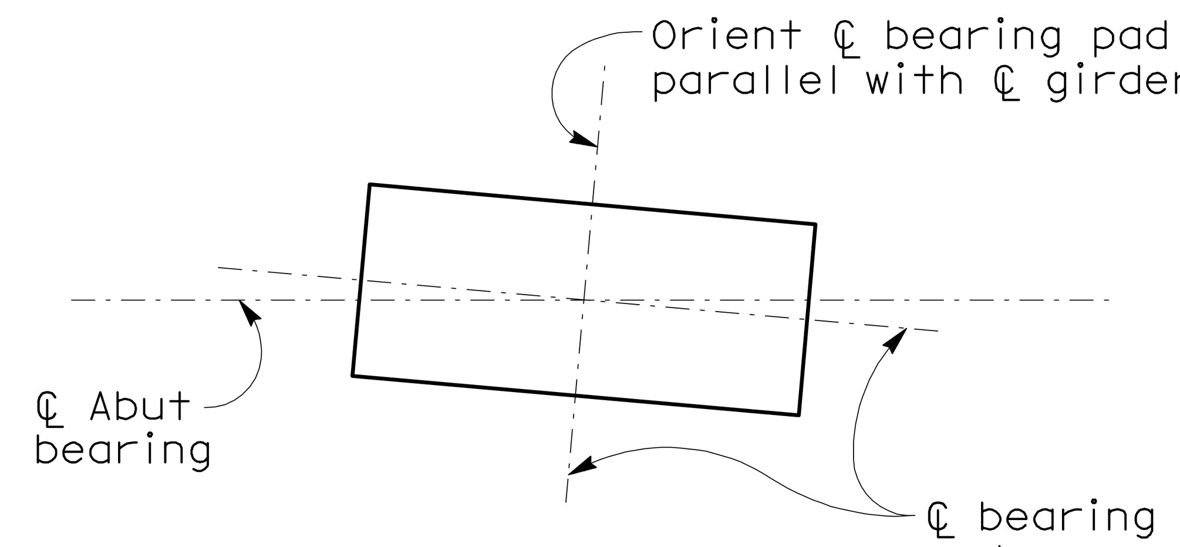
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

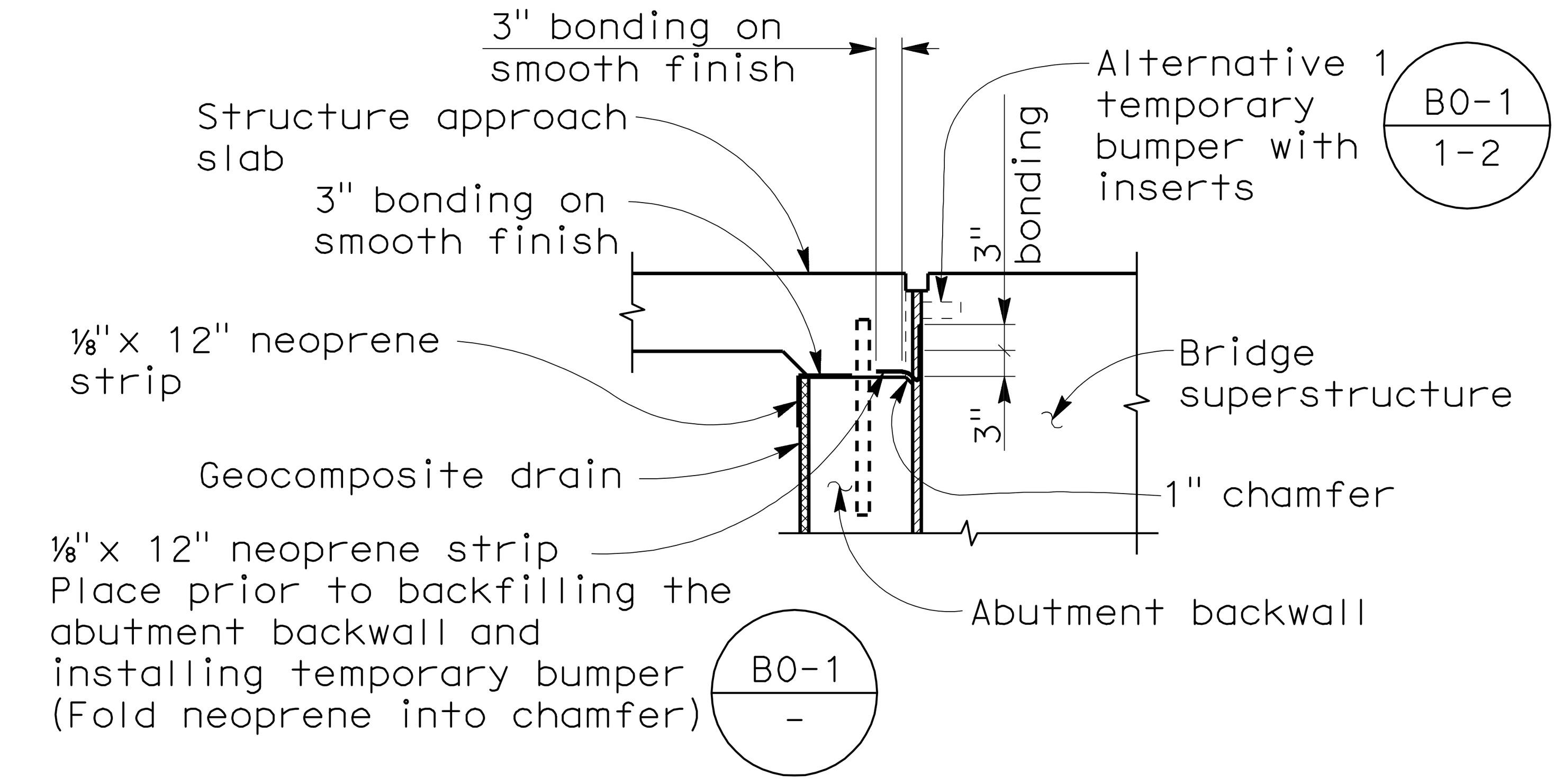


Extend galvanized sheet metal 2" min beyond bearing pad, typ all directions
℄ Bearing
Galvanized sheet metal
Bottom of end diaphragm
3" min
3" min
Elastomeric bearing pad
level
Abut seat
Expanded polystyrene same thickness as bearing pad
B0-13 / 13-1
Epoxy bond elastomeric bearing pad to seat

DETAIL 1
NO SCALE



DETAIL 2
NO SCALE

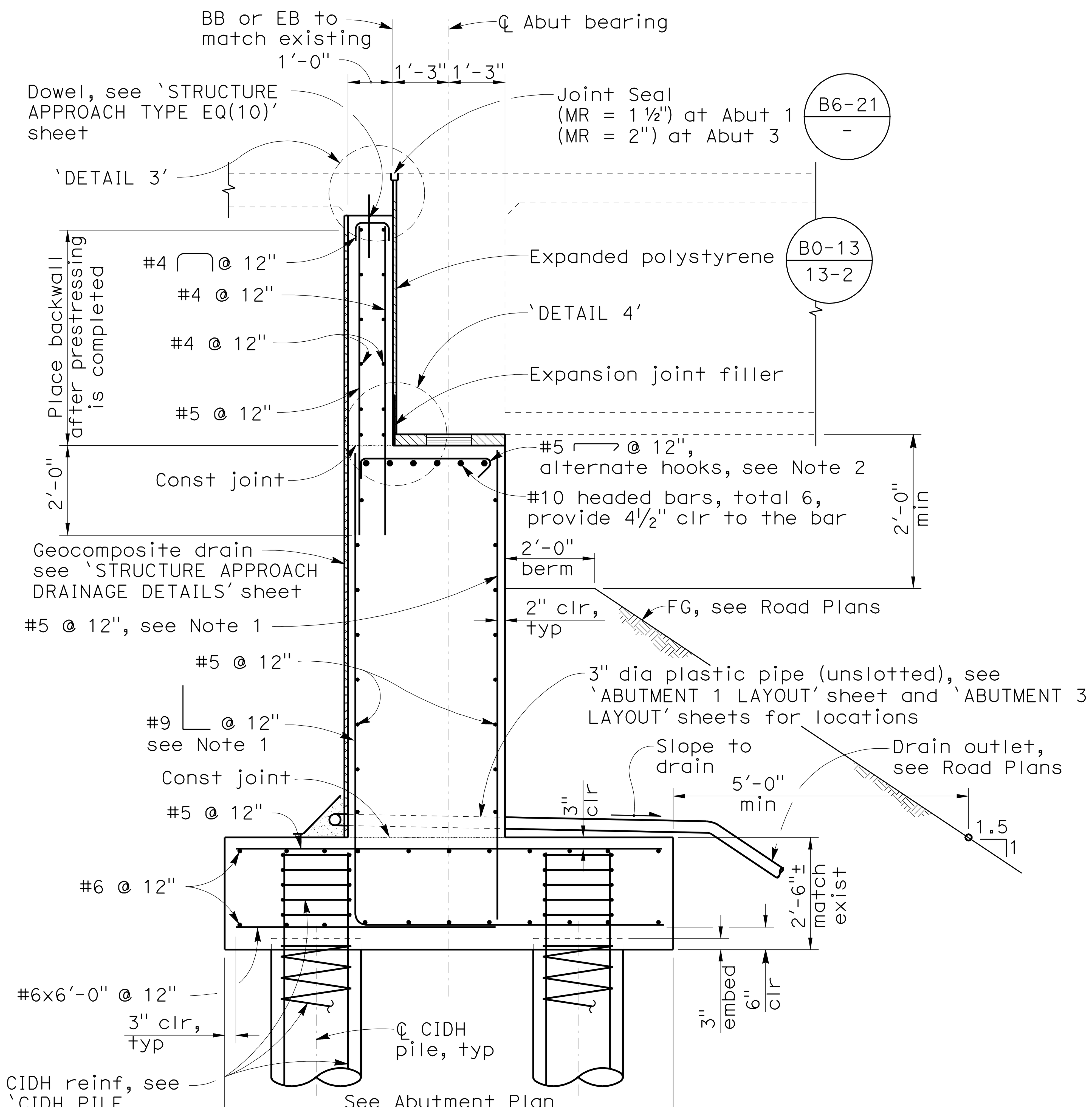


3" bonding on smooth finish
Structure approach slab
3" bonding on smooth finish
⅛" x 12" neoprene strip
Geocomposite drain
⅛" x 12" neoprene strip Place prior to backfilling the abutment backwall and installing temporary bumper (Fold neoprene into chamfer)
B0-1 / -
Alternative 1 temporary bumper with inserts
B0-1 / 1-2
3" bonding
3"
Bridge superstructure
1" chamfer
Abutment backwall

JOINT PROTECTION-DETAIL 3
NO SCALE

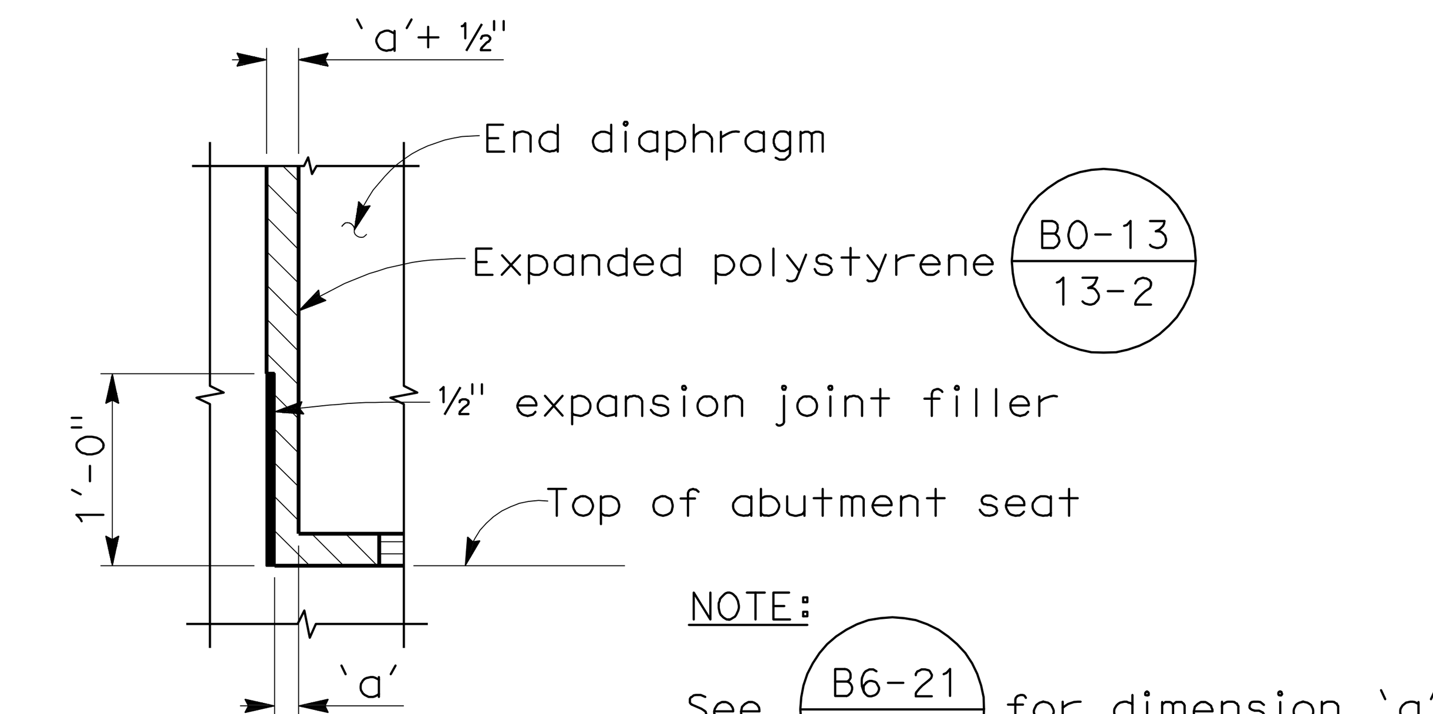
NOTES:

1. Where reinforcement conflicts with existing footing, drill and bond in 1'-8" deep vertical holes.
2. Provide one set of #5 in 2-bar bundle adjacent to heads of headed bars. For layout adjacent to existing abutment, see 'SECTION H-H' on 'ABUTMENT DETAILS No. 3' sheet.

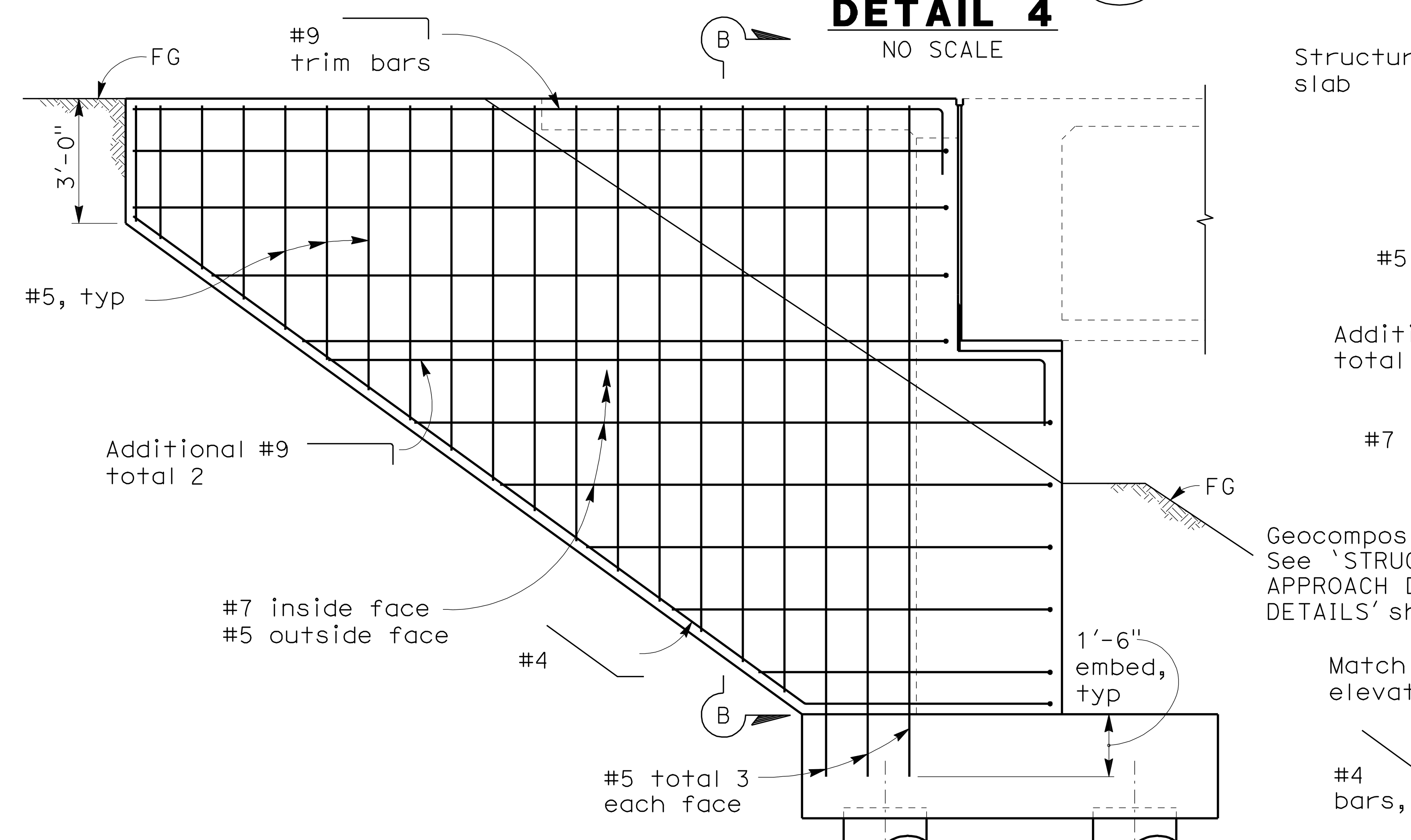


BB or EB to match existing
℄ Abut bearing
1'-0"
1'-3"
1'-3"
Dowel, see 'STRUCTURE APPROACH TYPE EQ(10)' sheet
Joint Seal (MR = 1½") at Abut 1 (MR = 2") at Abut 3
B6-21 / -
'DETAIL 3'
#4 @ 12"
#4 @ 12"
#4 @ 12"
#5 @ 12"
Place backwall after prestressing is completed
Expanded polystyrene
B0-13 / 13-2
'DETAIL 4'
Expansion joint filler
2'-0"
Const joint
#5 @ 12", alternate hooks, see Note 2
#10 headed bars, total 6, provide 4½" clr to the bar
2'-0" min
Geocomposite drain see 'STRUCTURE APPROACH DRAINAGE DETAILS' sheet
2'-0" berm
#5 @ 12", see Note 1
2" clr, typ
FG, see Road Plans
#5 @ 12"
3" dia plastic pipe (unslotted), see 'ABUTMENT 1 LAYOUT' sheet and 'ABUTMENT 3 LAYOUT' sheets for locations
#9 @ 12" see Note 1
Slope to drain
Drain outlet, see Road Plans
Const joint
5'-0" min
3" clr
#5 @ 12"
1.5
1
#6 @ 12"
2'-6"± match exist
#6x6'-0" @ 12"
3" embed
6" clr
3" clr, typ
℄ CIDH pile, typ
CIDH reinf, see 'CIDH PILE ELEVATION' on 'FOUNDATION PLAN' sheet
See Abutment Plan

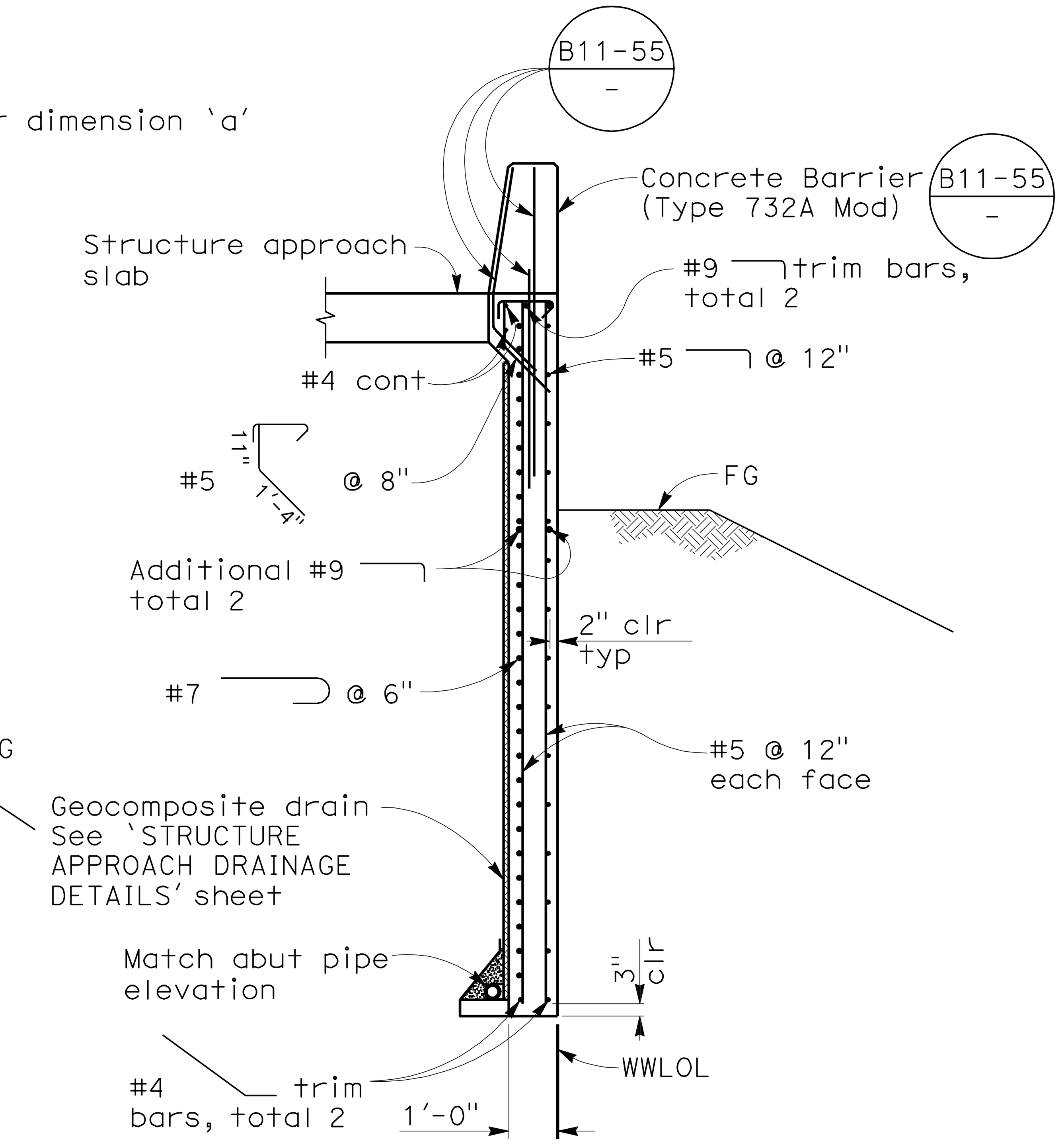
SECTION A-A
1/2" = 1'-0"



DETAIL 4
NO SCALE



WINGWALL ELEVATION
3/8" = 1'-0"



B11-55 / -
Concrete Barrier (Type 732A Mod)
B11-55 / -
Structure approach slab
#9 trim bars, total 2
#4 cont
#5 @ 12"
11"
1'-4"
#5 @ 8"
FG
Additional #9 total 2
2" clr typ
#7 @ 6"
#5 @ 12" each face
Geocomposite drain See 'STRUCTURE APPROACH DRAINAGE DETAILS' sheet
Match abut pipe elevation
3" clr
#4 trim bars, total 2
WWLOL
1'-0"

SECTION B-B
3/8" = 1'-0"

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGN OVERSIGHT Tracy L Bertram
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
ABUTMENT DETAILS No. 1

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331
FILE => 27-0115-h-a06d1.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10, 3/7/11, 5/27/11, 8/19/11, 10/3/11

SHEET 6 OF 23

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

2008100 (2008100S6)
USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:01

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	579	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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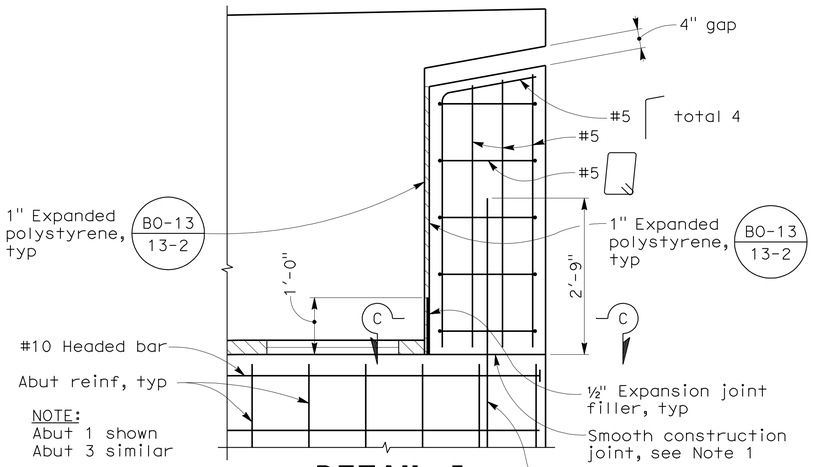
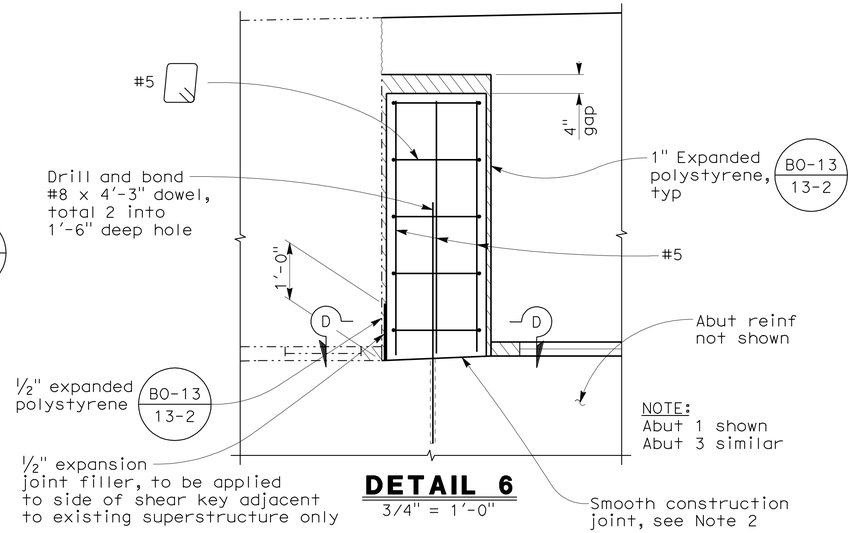
SAN RAFAEL, CA 94901

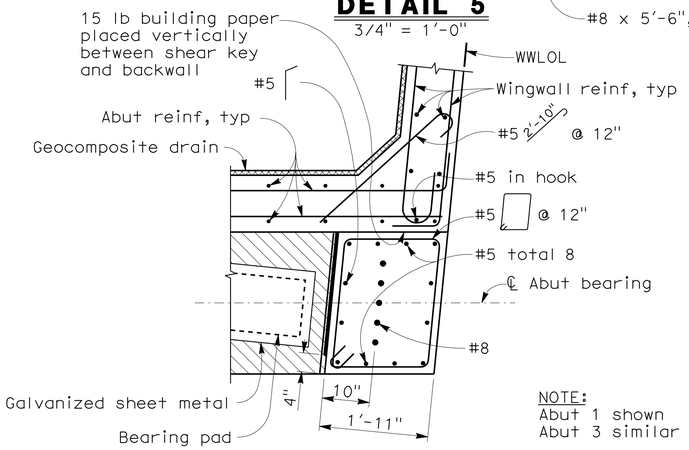
BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126



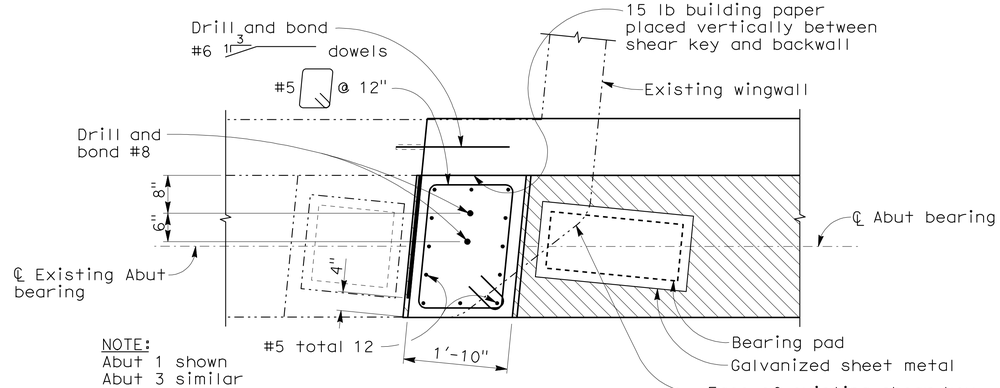
DETAIL 5
3/4" = 1'-0"



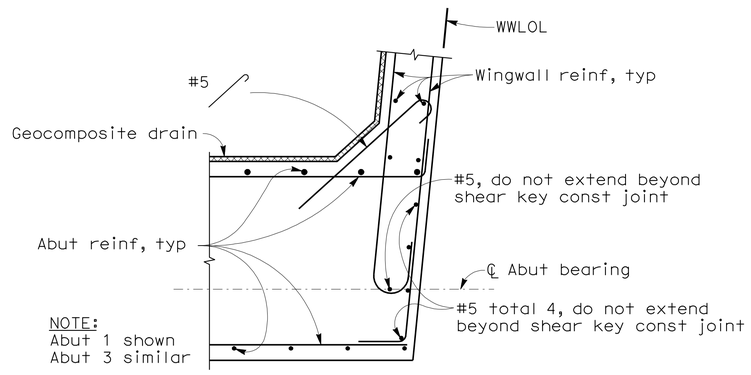
DETAIL 6
3/4" = 1'-0"



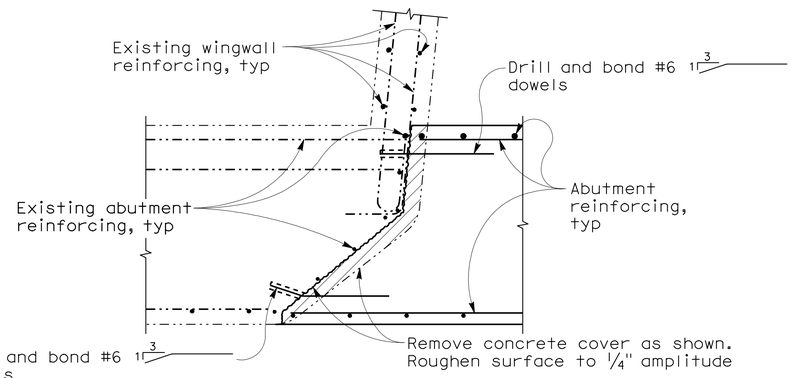
SECTION C-C
3/4" = 1'-0"



SECTION D-D
3/4" = 1'-0"



SECTION E-E
3/4" = 1'-0"



SECTION F-F
3/4" = 1'-0"

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

LEGEND:
- Indicates existing structure
- Indicates new construction
- Indicates concrete to be removed
- Indicates expanded polystyrene

NOTES:
1. Trowel finish smooth before application of 15 lb building paper between shear key and abutment seat. Provide 3" clear between building paper and vertical shear key reinforcement crossing joint plane
2. Grind surface of existing abutment seat smooth before application of 15 lb building paper between shear key and abutment seat. Provide 3" clear between building paper and vertical shear key reinforcement crossing joint plane

Tracy L Bertram
DESIGN OVERSIGHT
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
ABUTMENT DETAILS No. 2

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 | 3/31/11 | 5/27/11 | 8/19/11 | 10/3/11

SHEET 7 OF 23

FILE => 27-0115-h-a07d2.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => S1124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:01
2008100 (2008100S7)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	580	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANTHONY P NOTARO — No. C51739 — Exp.6/30/12 — CIVIL — STATE OF CALIFORNIA

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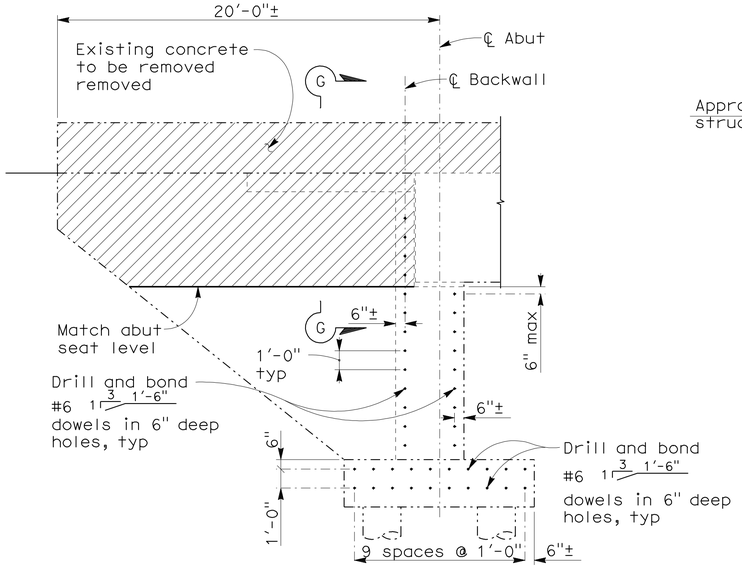
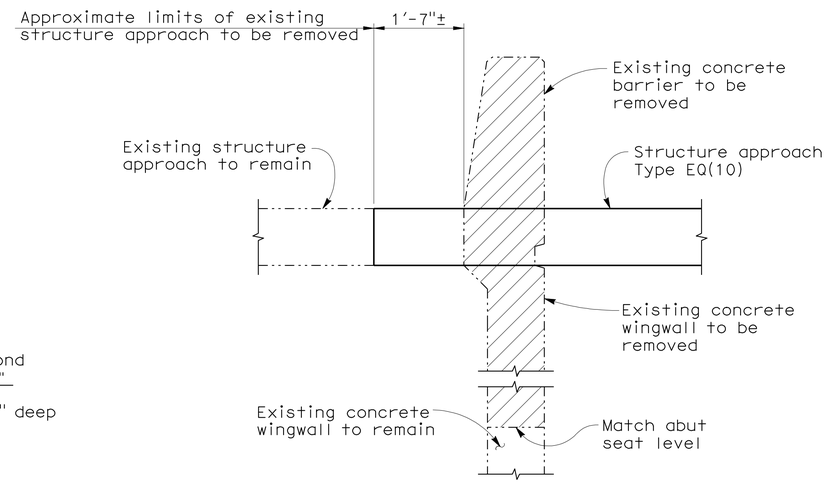
SAN RAFAEL, CA 94901

BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

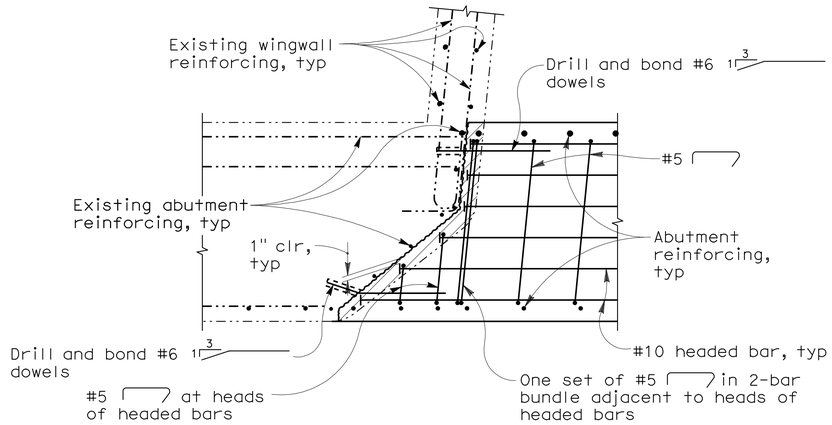


DETAIL 7
1/4" = 1'-0"



SECTION G-G
3/4" = 1'-0"

LEGEND:
- Indicates existing structure
- Indicates new construction
- Indicates concrete to be removed



SECTION H-H
3/4" = 1'-0"

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

Tracy L Bertram
DESIGN OVERSIGHT
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
ABUTMENT DETAILS No. 3

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/21/11 5/23/11 8/19/11 10/3/11

SHEET 8 OF 23

FILE => 27-0115-h-a08d3.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s1244496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:01

2008100 (2008100558)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	581	619

REGISTERED CIVIL ENGINEER — 10/03/11 DATE

PLANS APPROVAL DATE — 4-16-12

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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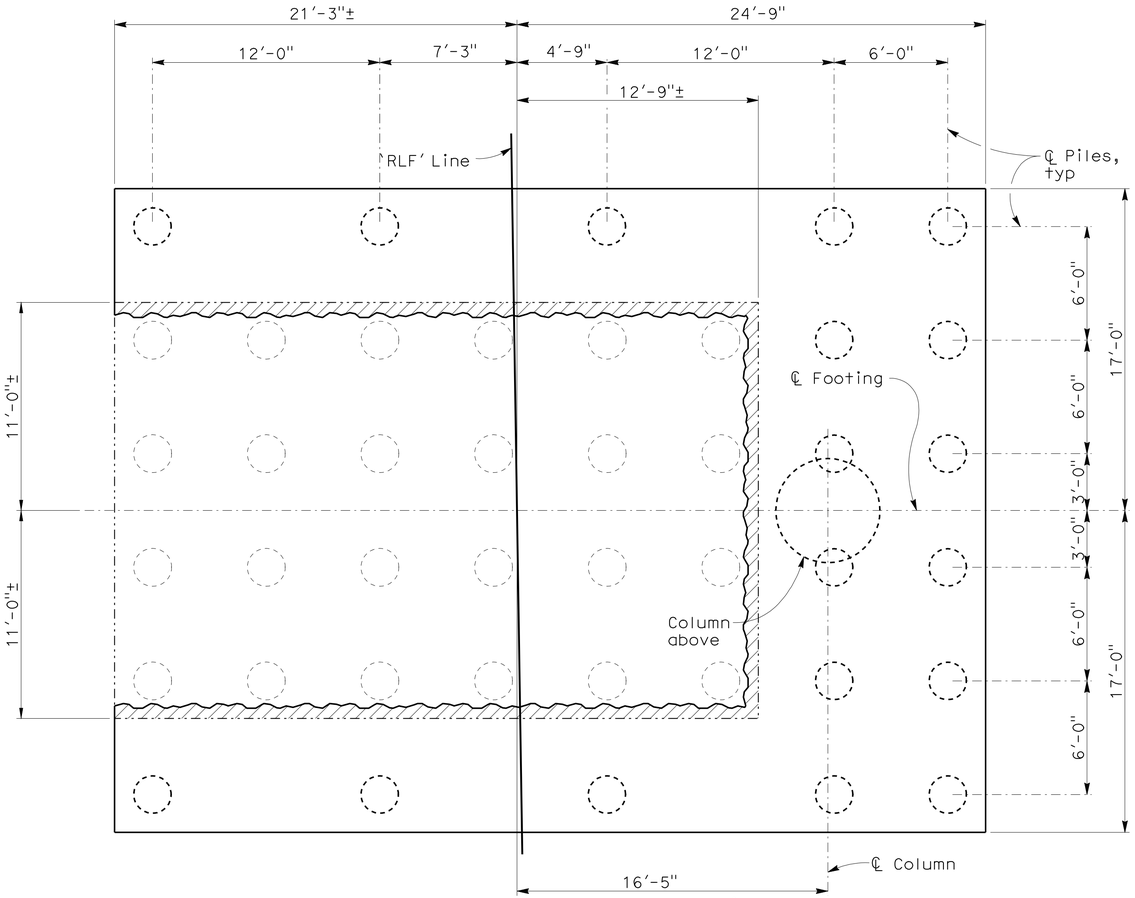
BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

LEGEND:

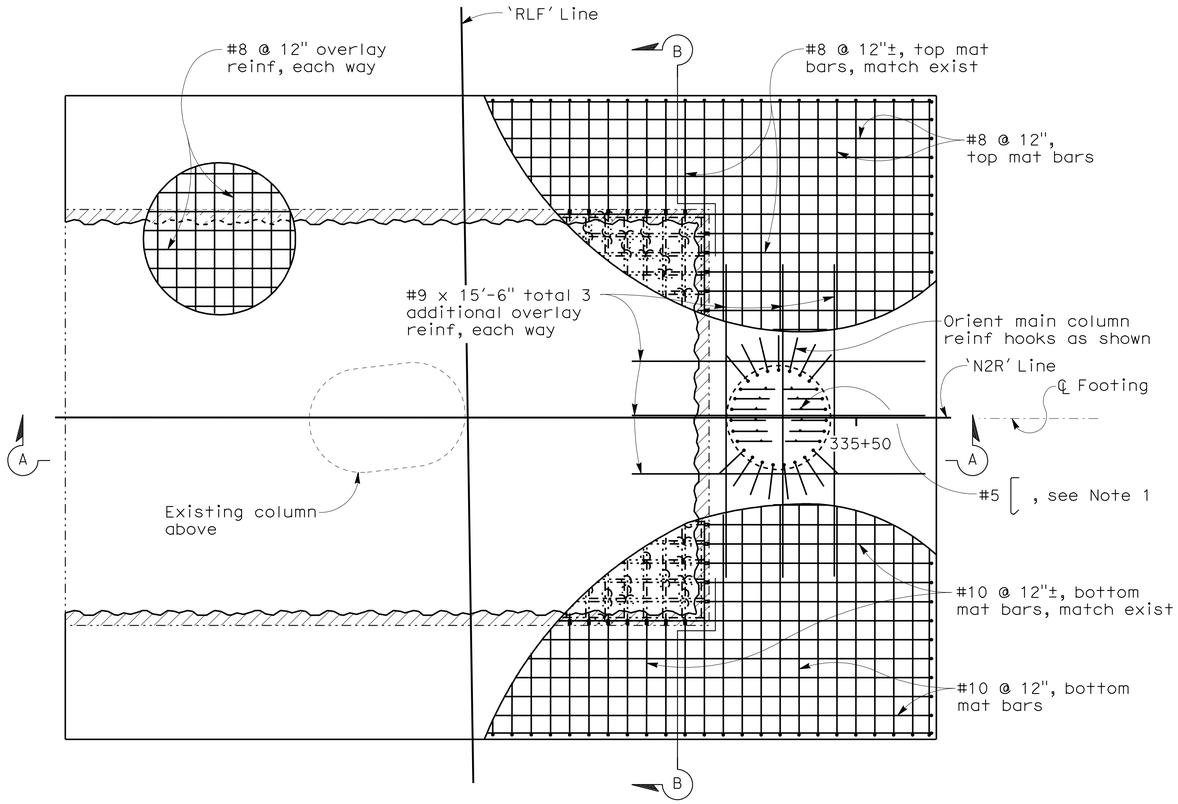
- Indicates existing structure
- Indicates new construction
- Indicates existing bundled bars
- Indicates coupler
- Indicates concrete to be removed

NOTES:

1. Provide one #5 [for each main column reinforcement hooked inward @ 6" away from end of hook
2. Indicates new CIDH pile. See 'CIDH PILE ELEVATION' on 'FOUNDATION PLAN' sheet.
3. Indicates existing CIDH pile
4. For 'SECTION A-A' and 'SECTION B-B', see 'BENT FOOTING DETAILS' sheet



FOOTING PLAN
1/4" = 1'-0"



FOOTING REINFORCEMENT PLAN
1/4" = 1'-0"

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGN OVERSIGHT — Tracy L Bertram
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
BENT FOOTING LAYOUT

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/17/11 5/27/11 8/19/11 10/3/11

SHEET 9 OF 23

FILE => 27-0115-j-b09-lo1.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => S1241496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:01
(2008100059) 2008100

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	582	619

REGISTERED CIVIL ENGINEER — DATE 10/03/11

PLANS APPROVAL DATE 4-16-12

REGISTERED PROFESSIONAL ENGINEER — ANTHONY P NOTARO — No. C51739 — Exp.6/30/12 — CIVIL — STATE OF CALIFORNIA

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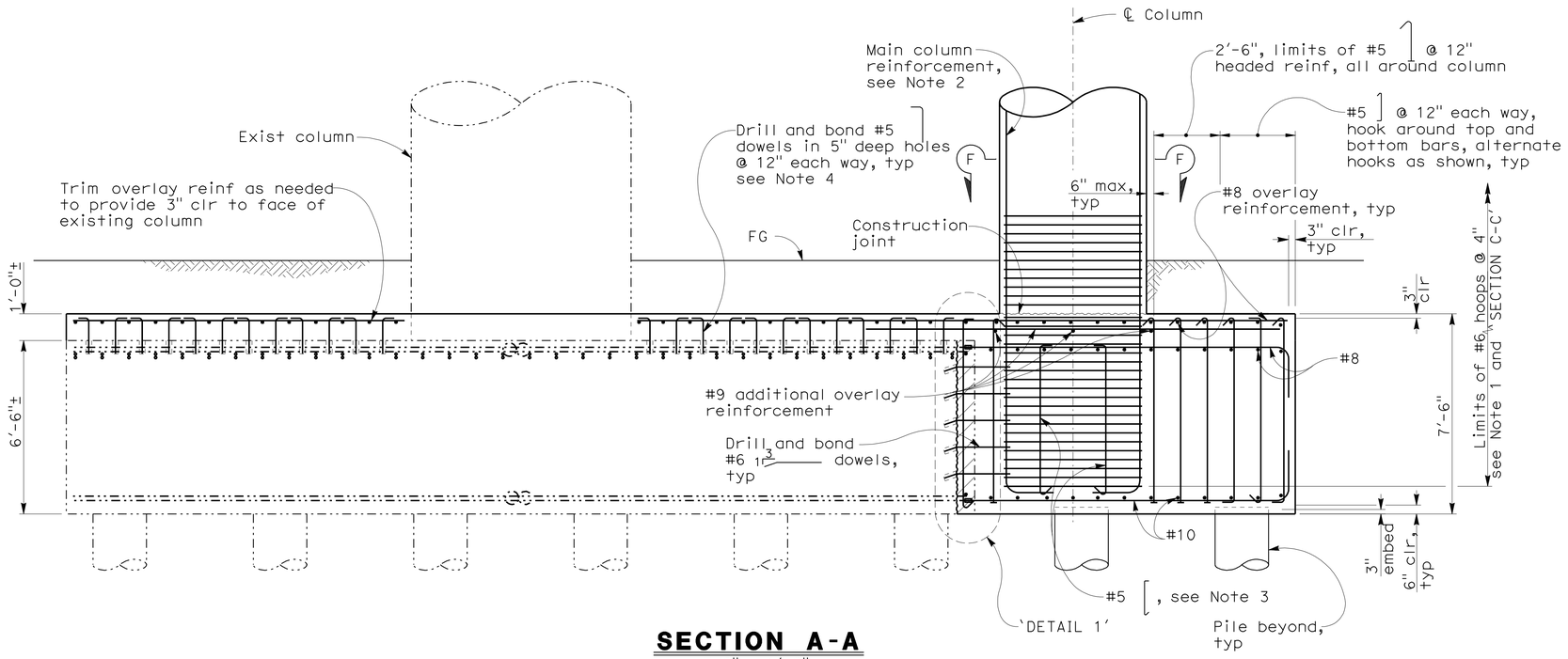
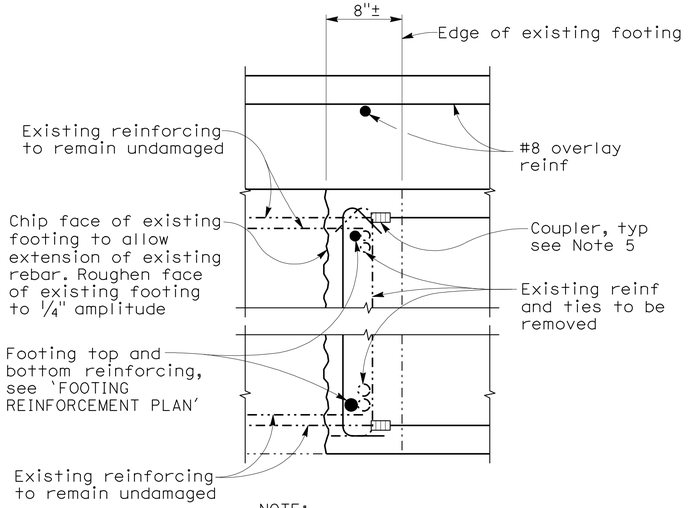
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

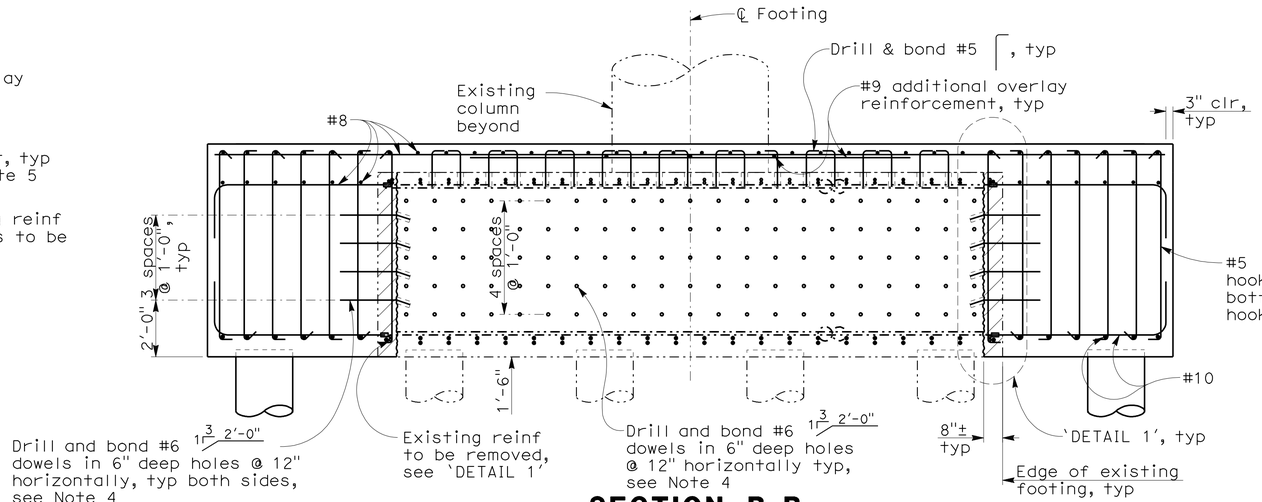


SECTION A-A
3/8" = 1'-0"



NOTE:
'SECTION A-A' shown,
'SECTION B-B' similar

DETAIL 1
1 1/2" = 1'-0"



SECTION B-B
3/8" = 1'-0"

LEGEND:

- Indicates existing structure
- Indicates new construction
- Indicates existing bundled bars
- Indicates coupler
- Indicates concrete to be removed

NOTES:

1. Column hoops shall utilize ultimate butt splices.
2. Main column reinforcing to be full height. No splices allowed.
3. Provide one #5 ⌈ for each main column reinforcement hooked inward @ 6" away from end of hook. See 'FOOTING REINFORCEMENT PLAN' on 'BENT FOOTING LAYOUT' sheet.
4. Avoid conflict with existing reinforcement and vertical ties.
5. Footing top and bottom mat reinforcement shall utilize service splices.
6. For 'FOOTING REINFORCEMENT PLAN' see 'BENT FOOTING LAYOUT' sheet.
7. For 'SECTION C-C', see 'BENT CAP LAYOUT' sheet.
8. For 'SECTION F-F', see 'BENT DETAILS' sheet.

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGN OVERSIGHT Tracy L Bertram — 10-14-11 SIGN OFF DATE

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331
FILE => 27-0115-j-b10d1.dgn

BRIDGE NO. 27-0115
POST MILES 25.5

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/27/11 5/27/11 8/19/11 10/3/11

REDWOOD LANDFILL OVERCROSSING (WIDEN)
BENT FOOTING DETAILS

SHEET 10 OF 23

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	583	619

REGISTERED CIVIL ENGINEER — 10/03/11 DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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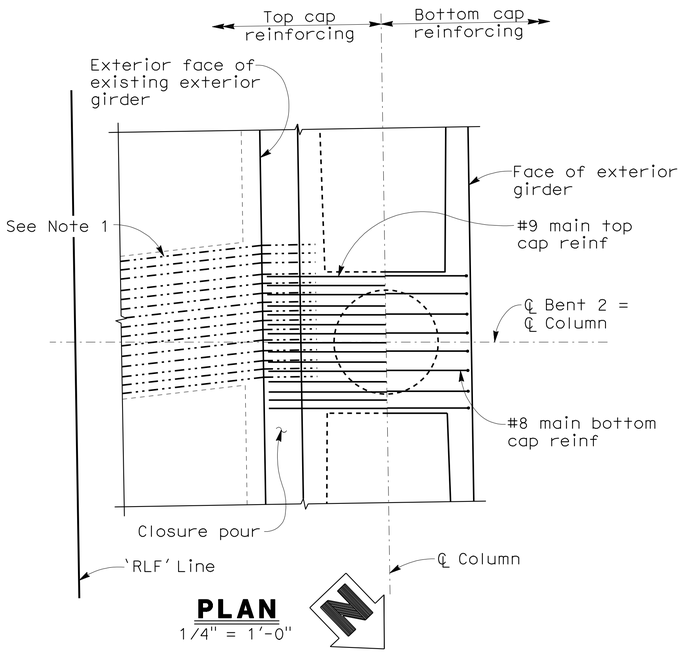
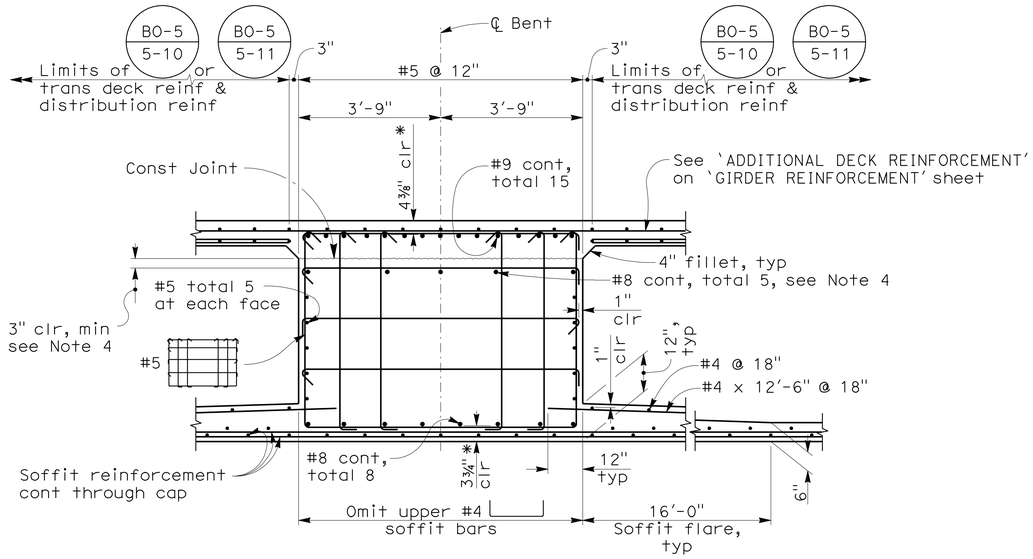
SAN RAFAEL, CA 94901

BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126



PLAN
1/4" = 1'-0"

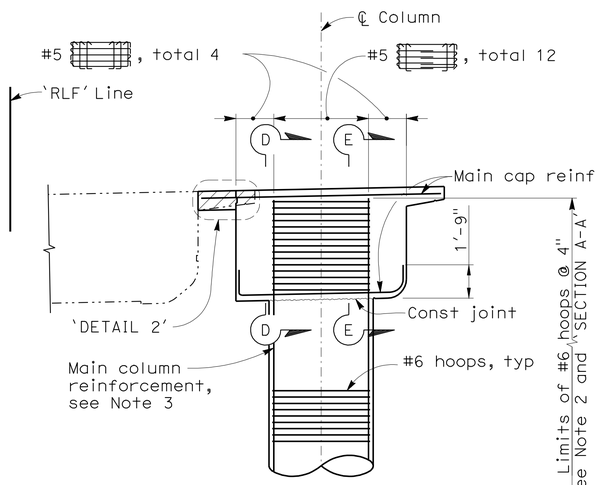


SECTION D-D
1/2" = 1'-0"

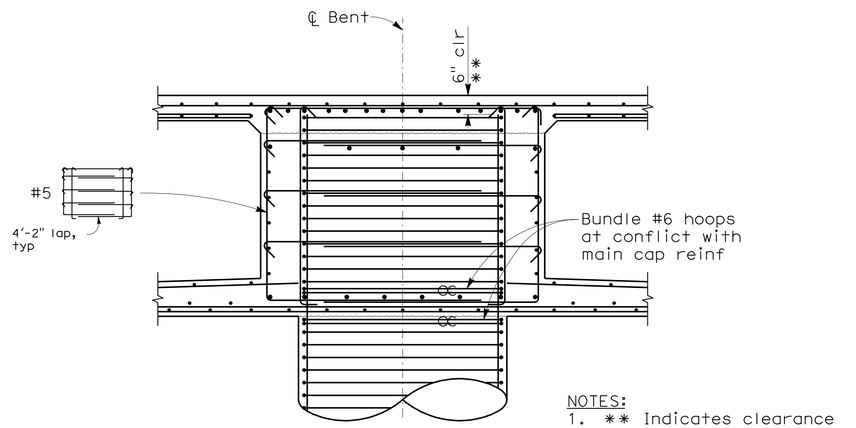
NOTE:
* Indicates clearance to main cap bars

LEGEND:
- Indicates existing structure
- Indicates new construction
- Indicates concrete to be removed

NOTES:
1. Cut existing #11 top mat reinforcing (in 2-bar bundles) at exterior face of existing exterior girder. Field bend existing #5 transverse deck reinforcing as shown to align with reinf in closure pour.
2. Column hoops shall utilize ultimate butt splices.
3. Main column reinforcing to be full height. No splices allowed.
4. Place reinforcing and tie as high as prestressing ducts will allow.
5. For 'SECTION A-A', see 'BENT FOOTING DETAILS' sheet.
6. For 'DETAIL 2', see 'BENT DETAILS' sheet.



SECTION C-C
1/4" = 1'-0"



SECTION E-E
1/2" = 1'-0"

NOTES:
1. ** Indicates clearance to main column reinf
2. For details not shown see 'SECTION D-D'

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGN OVERSIGHT Tracy L Bertram
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
BENT CAP LAYOUT

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/7/11 5/27/11 8/19/11 10/3/11

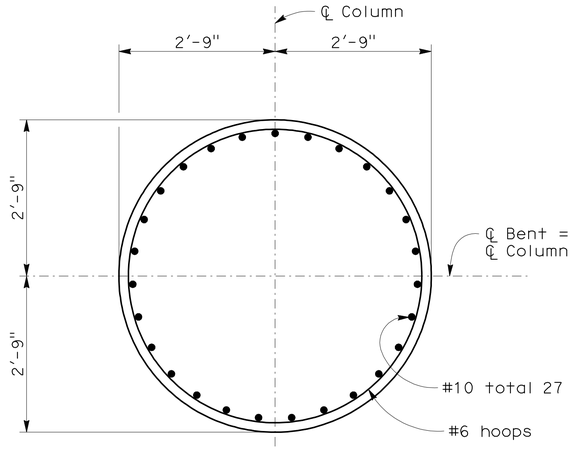
SHEET 11 OF 23

FILE => 27-0115-j-b11d2.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

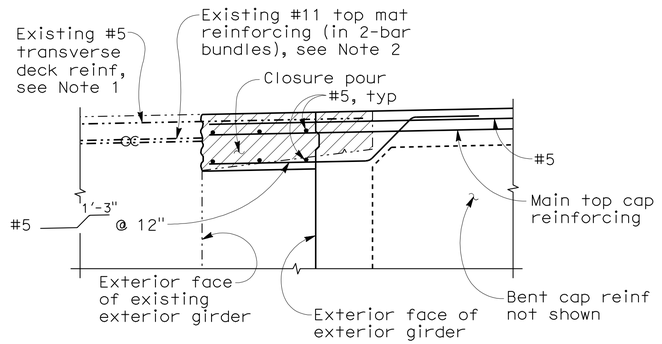
USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:02

2008100 (20081005111)



SECTION F-F

3/4" = 1'-0"



AT BENT CAP

DETAIL 2

3/4" = 1'-0"

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	584	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

REGISTERED PROFESSIONAL ENGINEER
ANTHONY P NOTARO
No. C51739
Exp.6/30/12
CIVIL
STATE OF CALIFORNIA

4-16-12
PLANS APPROVAL DATE

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SAN JOSE, CALIFORNIA 95126

LEGEND:

- Indicates existing structure
- Indicates new construction
- Indicates existing bundled bars
- Indicates concrete to be removed

NOTES:

1. Field bend existing #5 transverse deck reinforcing to align with reinforcing in closure pour. See 'PLAN' on 'BENT CAP LAYOUT' sheet for reference.
2. Cut existing #11 main cap reinforcing (in 2-bar bundles) at exterior face of existing exterior girder.
3. See 'PART TYPICAL SECTION' on 'TYPICAL SECTION' sheet for closure pour details beyond bent cap.

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

Tracy L Bertram
DESIGN OVERSIGHT

10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)

BENT DETAILS

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/27/11 5/27/11 8/19/11 10/3/11

SHEET 12 OF 23

FILE => 27-0115-j-b12d3.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s1244936 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:02

2008100 (2008100512)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	585	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANTHONY P NOTARO — No. C51739 — Exp.6/30/12 — CIVIL — STATE OF CALIFORNIA

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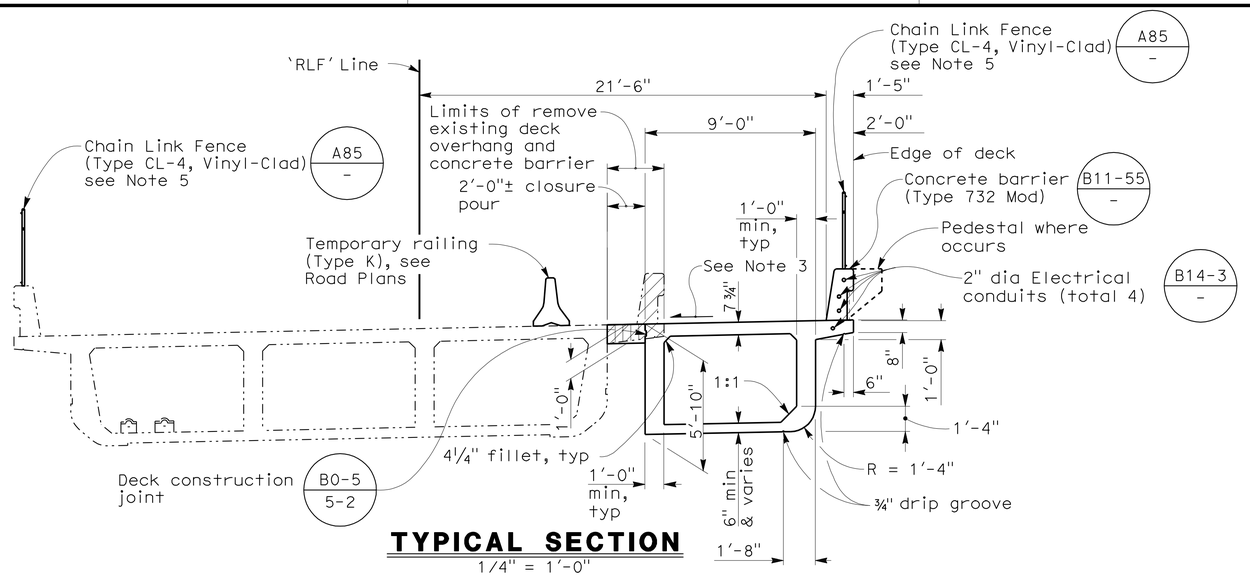
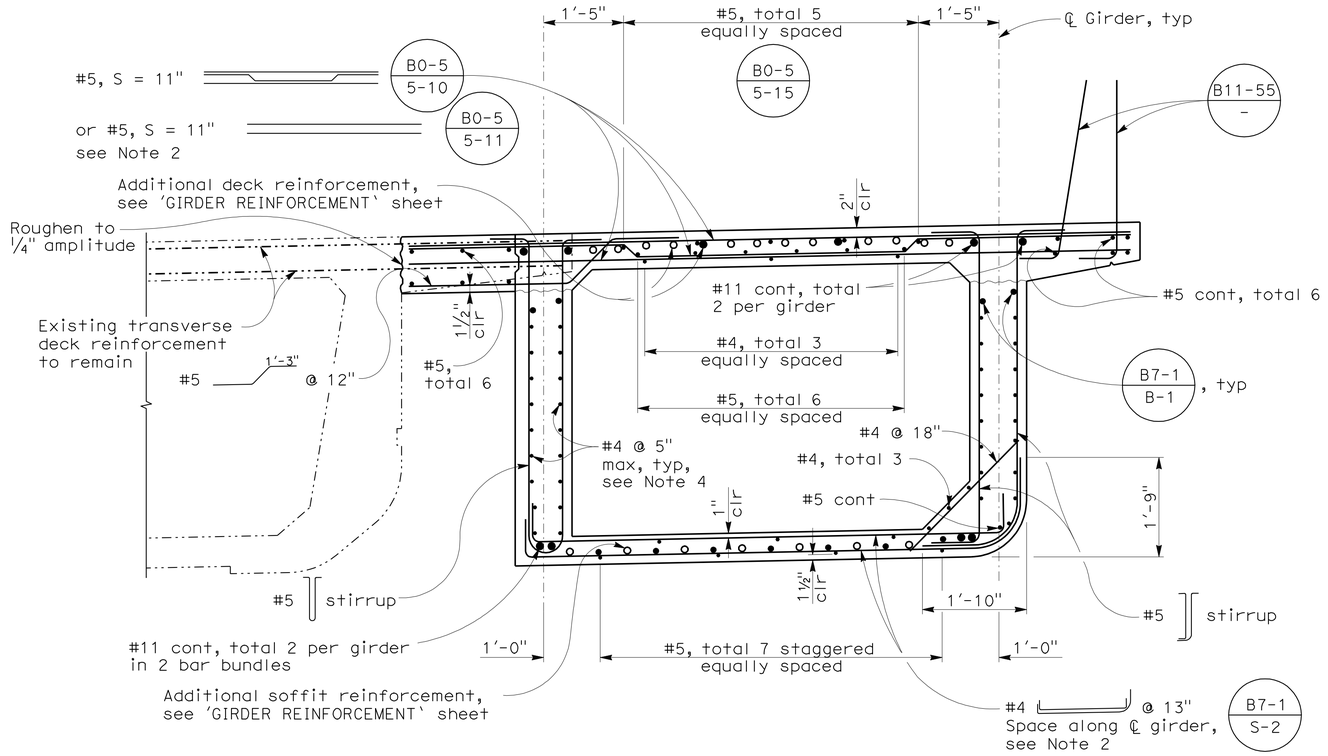
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126



TYPICAL SECTION

1/4" = 1'-0"



PART TYPICAL SECTION

3/4" = 1'-0"

B0-5 – B7-1 – B8-5 –

LEGEND:

- Indicates existing structure
- Indicates new structure
- Indicates concrete to be removed
- Indicates closure pour

NOTES:

1. All dimensions are measured normal to 'RLF' Line.
2. Transverse deck and soffit reinforcement to be placed and spaced parallel to ℄ Abut.
3. Match existing cross slope of 2%±.
4. Splices shall not be permitted within 25'-0" of ℄ Bent.
5. For post anchorage details, see B11-51 –.

FALSEWORK RELEASE NOTES

ALTERNATIVE 1:

Falsework shall be released as soon as permitted by the specifications. Closure pour shall not be placed sooner than 60 days after the falsework has been released.

ALTERNATIVE 2:

Falsework shall not be released less than 28 days after the last concrete has been placed. Closure pour shall not be placed sooner than 14 days after the falsework has been released.

When Falsework Release Alternative 2 is used, camber values are 0.75 times those shown on 'GENERAL NOTES' sheet.

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

Tracy L Bertram
DESIGN OVERSIGHT
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)

TYPICAL SECTION

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/7/11 5/27/11 8/19/11 10/3/11

SHEET 13 OF 23

FILE => 27-0115-m-ts1.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:02

2008100 (2008100513)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	586	619

REGISTERED CIVIL ENGINEER — 10/03/11 DATE

PLANS APPROVAL DATE — 4-16-12

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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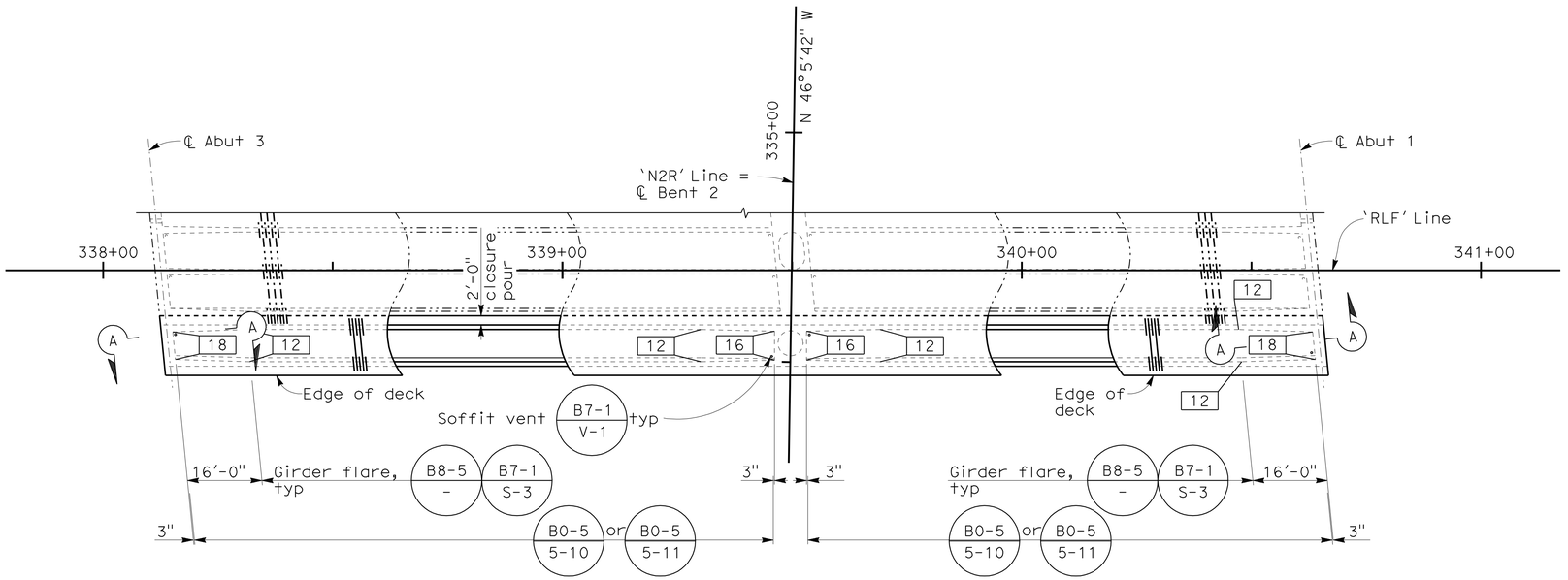
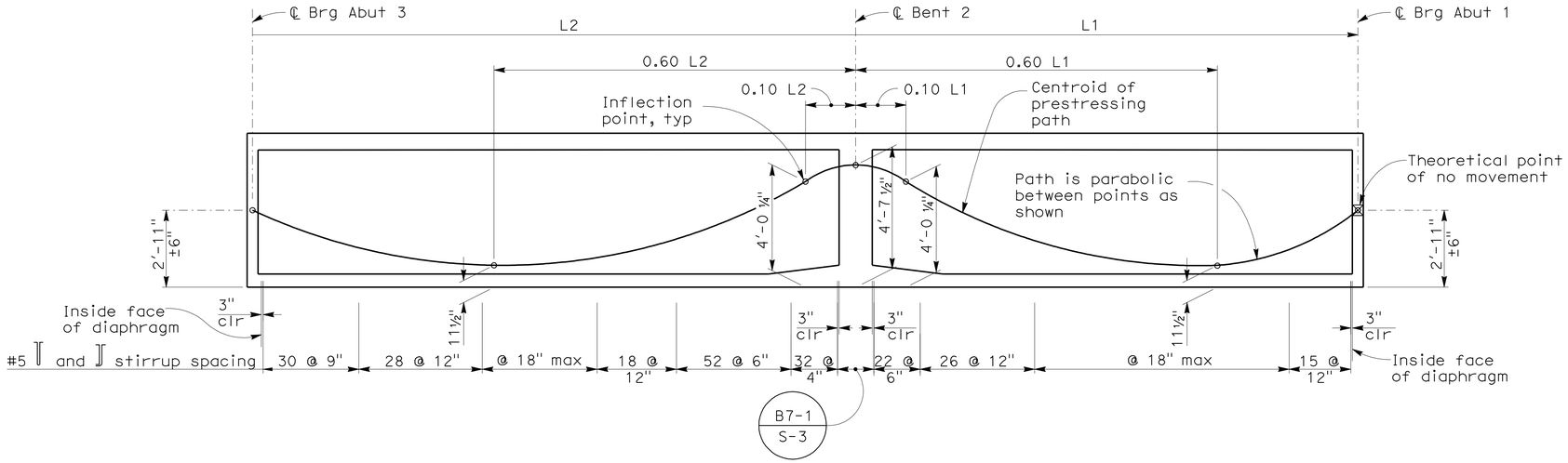
SAN JOSE, CALIFORNIA 95126



GIRDER LAYOUT

1/16" = 1'-0"

B0-5 - | B7-1 - | B8-5 -



LONGITUDINAL SECTION

NO SCALE

NOTES:

1. ▭ Indicates girder stem width in inches
2. ° Indicates inflection point
3. For 'CAMBER DIAGRAM' and 'CONCRETE STRENGTH AND TYPE LIMITS', see 'GENERAL NOTES' sheet
4. For 'SECTION A-A' and 'SECTION B-B', see 'GIRDER REINFORCEMENT' sheet
5. L1 and L2 are measured along the ℄ of each girder

PRESTRESSING NOTES

270 ksi Low Relaxation Strand:

Pjack	= 3070 kips
Anchor set	= ⅜ in
Total No. of girders	= 2

Distribution of prestress force (Pjack) between girders shall not exceed the ratio of 3:2. Maximum final force variation between girders shall not exceed 90 kips

Concrete: f'c = 4000 psi at 28 days
f'ci = 3500 psi at time of stressing

Contractor shall submit elongation calculations based on initial stress at ☒ = 0.879 times jacking stress

☒ Denotes theoretical point of no movement

Stressing shall be performed from Abut 3

Prestress force design is based on friction coefficient μ = 0.15 and friction wobble coefficient k=0.0002/ft

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGN OVERSIGHT — Tracy L Bertram — 10-14-11 SIGN OFF DATE

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DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

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ANTHONY NOTARO — PROJECT ENGINEER

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)

GIRDER LAYOUT

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/7/11 5/27/11 8/19/11 10/3/11

SHEET 14 OF 23

FILE => 27-0115-n-g-lo01.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	587	619

REGISTERED CIVIL ENGINEER — 10/03/11 DATE

PLANS APPROVAL DATE — 4-16-12

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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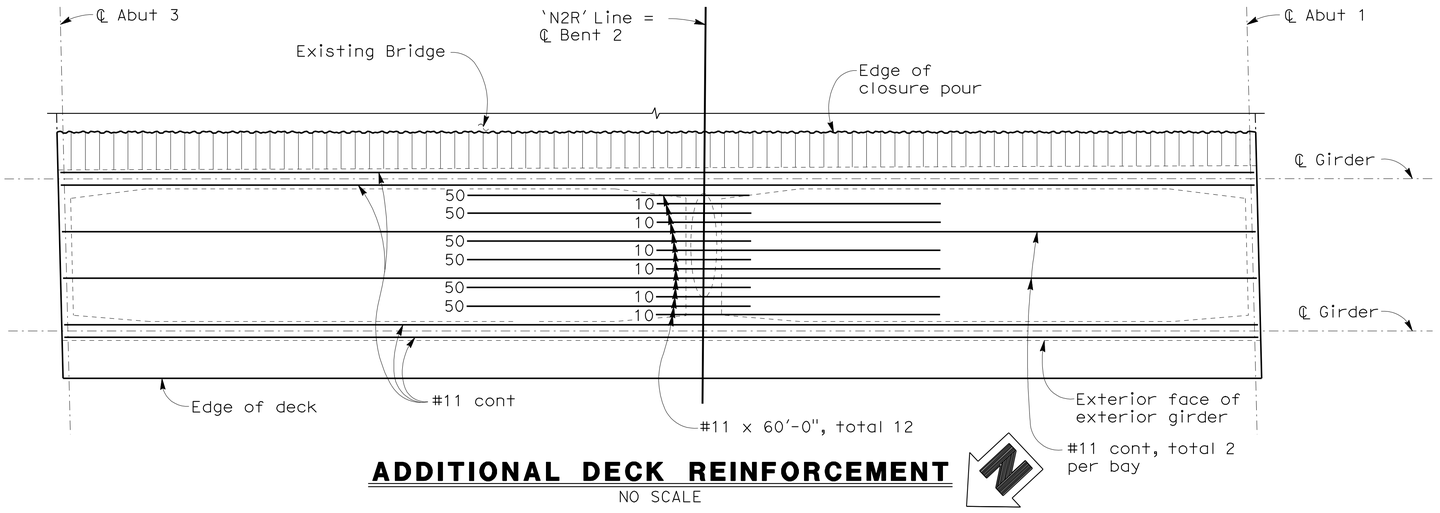
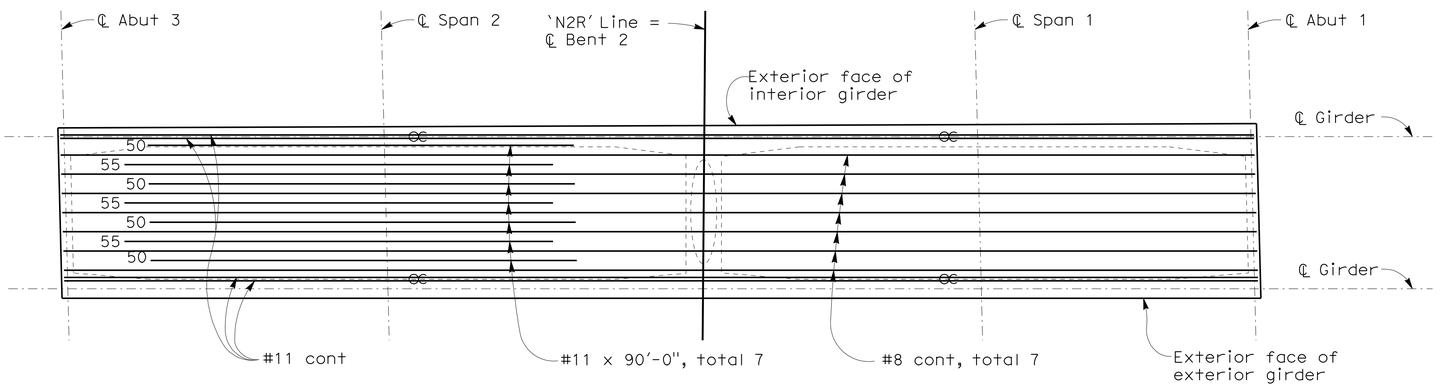


ADDITIONAL DECK REINFORCEMENT

NO SCALE



ADDITIONAL SOFFIT REINFORCEMENT

NO SCALE

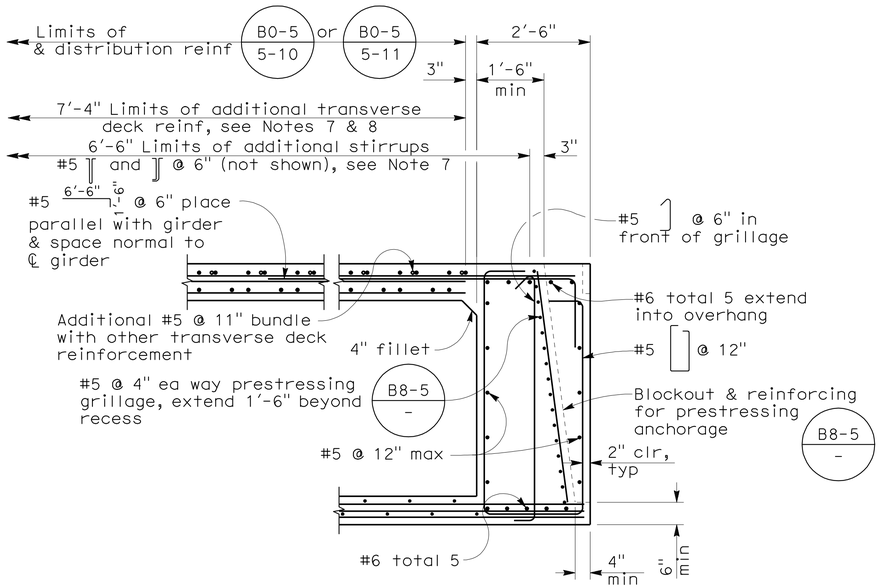
NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

LEGEND:

- Indicates existing structure
- Indicates new structure
- Indicates bundled bars
- Indicates closure pour

NOTES:

1. Space bars approximately equally within the bay. Arrange to avoid column reinforcement.
2. Additional deck and soffit reinforcement shall be spliced with service butt splices staggered @ 5'-0" min.
3. Additional deck and soffit reinforcement service butt splices shall not be permitted within middle ⅓ of span and ⅛ of span from ℄ bent.
4. Reinforcing shall be placed parallel with ℄ bridge.
5. Number at end of bar indicates distance in feet from the ℄ bent for deck reinforcement or from the ℄ span for soffit reinforcement.
6. For end diaphragm reinforcement not shown, see Caltrans Standard Plan B8-5.
7. Additional reinforcement is in addition to reinforcement detailed on other sheets.
8. Additional transverse deck reinforcement to be placed and spaced parallel with ℄ abut.



END DIAPHRAGM - SECTION A-A

3/4" = 1'-0"

DESIGN OVERSIGHT — Tracy L Bertram — 10-14-11 SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)

GIRDER REINFORCEMENT

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/21/11 5/24/11 8/19/11 10/3/11

SHEET 15 OF 23

FILE => 27-0115-g-g-rf01.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s1224496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:02

2008100 (20081005I5)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	588	619

REGISTERED CIVIL ENGINEER — DATE 10/03/11

PLANS APPROVAL DATE 4-16-12

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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SAN RAFAEL, CA 94901

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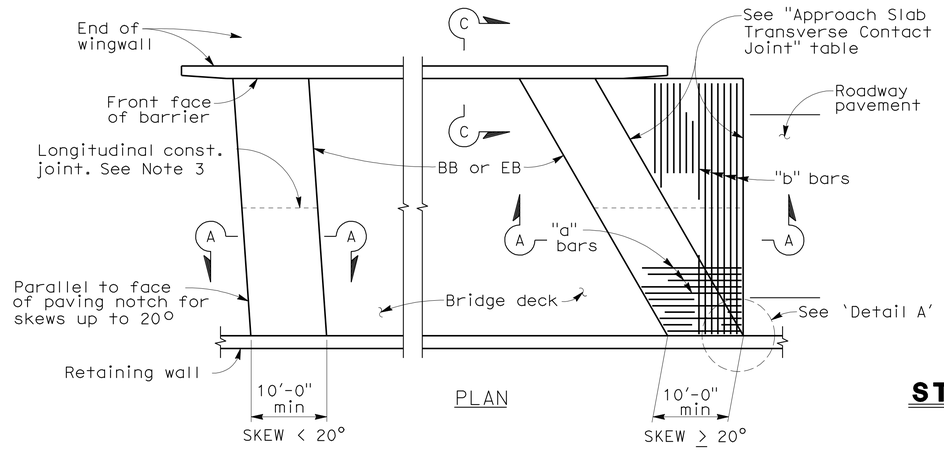
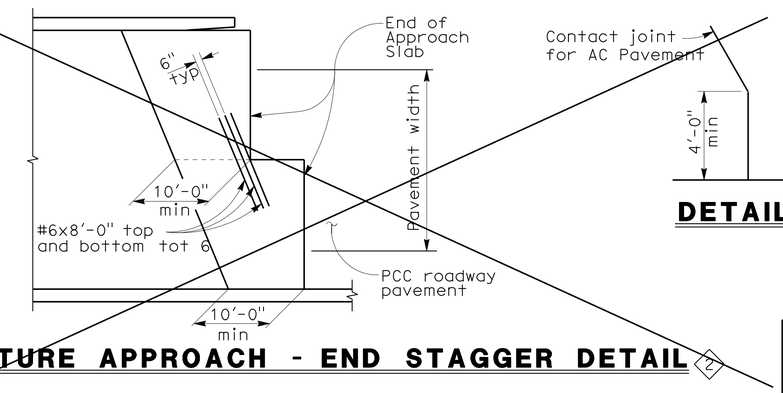
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

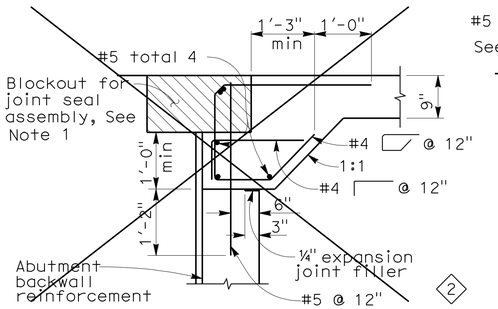


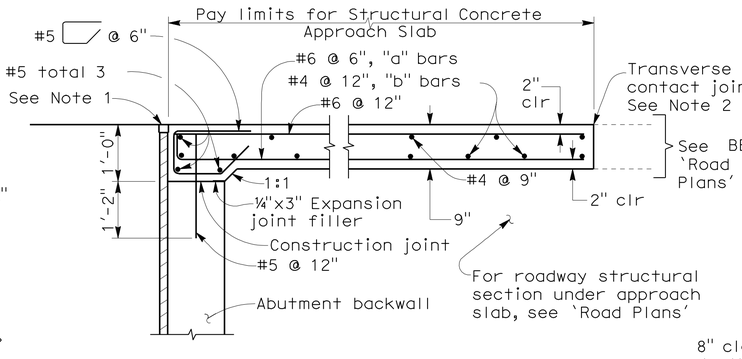


DETAIL A

STRUCTURE APPROACH - END STAGGER DETAIL ◇2

APPROACH SLAB TRANSVERSE CONTACT JOINT		
STRUCTURE SKEW	AC APPROACH PAVEMENT	PCC APPROACH PAVEMENT
< 20°	Parallel with face of paving notch	Parallel with face of paving notch
20° - 45°	Parallel with face of P N use (Detail A)	Stagger lines 24" to 36" apart
> 45°	Parallel with face of P N use (Detail A)	Stagger at each lane line

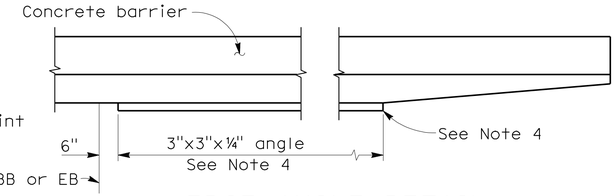




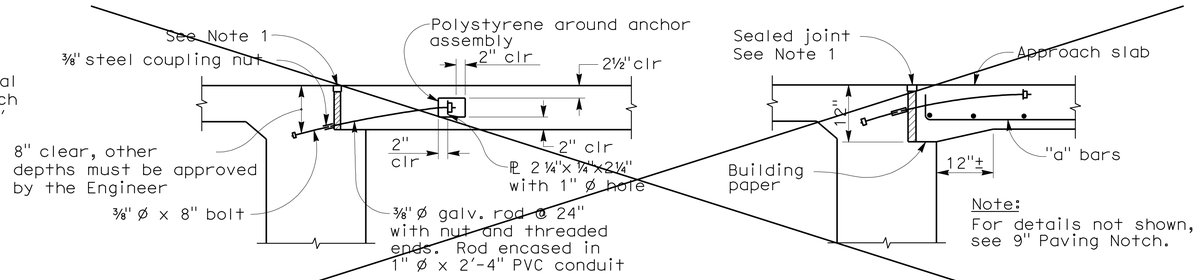
SEAT TYPE ABUTMENT

SECTION A-A

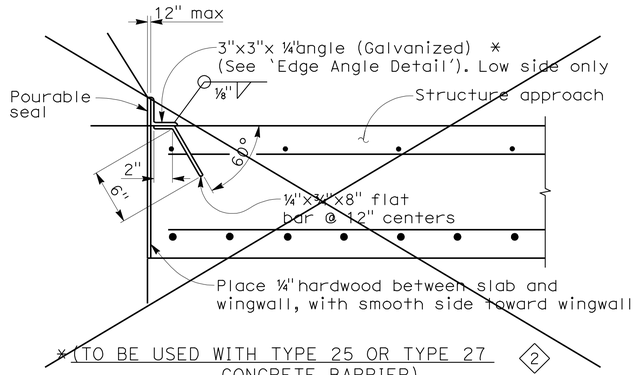
Note: Seat Type Abutment shown,for Diaphragm Type Abutment, see 'Abutment Tie Details'.



EDGE ANGLE DETAIL

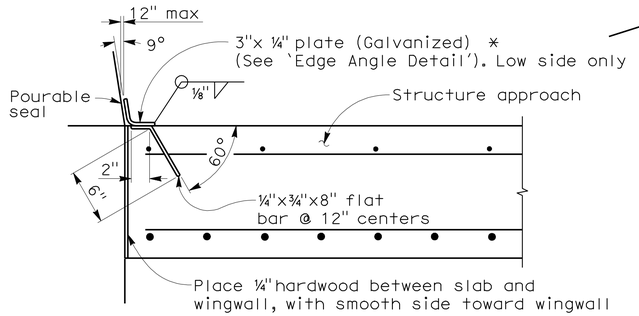


7" PAVING NOTCH — 12" PAVING NOTCH



*(TO BE USED WITH TYPE 25 OR TYPE 27 CONCRETE BARRIER)

DETAIL B ◇2

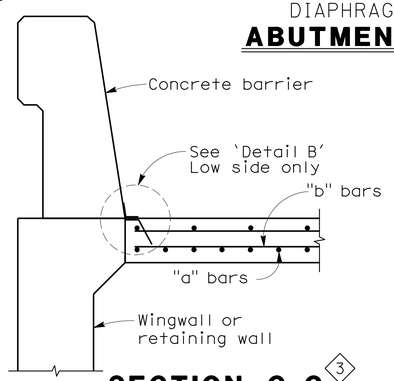


*(TO BE USED WITH TYPE 732 OR TYPE 736 CONCRETE BARRIER)

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DIAPHRAGM TYPE ABUTMENT

ABUTMENT TIE DETAILS ◇2



SECTION C-C ◇3

NOTES:

1. For details not noted or shown, see Structure Plans. Adjust bar reinforcement to clear a sawcut for sealed joint,when required.
2. For transverse contact joint with new PCC paving, refer to Standard Plan A35-A.
3. ◇1 Longitudinal construction joints shall be located per 'SECTION G-G' on 'ABUTMENT DETAILS No. 3' sheet.
4. End angle or plate at beginning of barrier transition, end of wing wall or end of structure approach as applicable.
5. At the contractor's option,approach slab transverse reinforcement may be placed parallel to paving notch. Spacing of transverse reinforcement is measured along ℄ roadway.
6. For drainage details,see Structure Plans.

STANDARD DRAWING

RELEASE DATE 9/15/09	DESIGN	BY S. SAHNS	CHECKED R.C. WHITTEN	RELEASED BY
	DETAILS	BY S. SAHNS/D. RADLEY	CHECKED	
FILE NO. xs3-150e	SUBMITTED	BY P. CHUNG	DRAWING DATE	OFFICE CHIEF

◇1 Revised Note ◇3 Detail modified
◇2 Detail not used

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO. 27-0115
POST MILE 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)

STRUCTURE APPROACH TYPE EQ(10)

DS OSD 2147A (CADD) (REV. 4/07)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY) 7/1/10 3/21/11 5/27/11 8/19/11 10/3/11

SHEET 16 OF 23

USERNAME => s124496

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:02 20081002 (20081002516)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	589	619

REGISTERED CIVIL ENGINEER — DATE 10/03/11

PLANS APPROVAL DATE 4-16-12

REGISTERED PROFESSIONAL ENGINEER — ANTHONY P NOTARO — No. C51739 — Exp.6/30/12 — CIVIL — STATE OF CALIFORNIA

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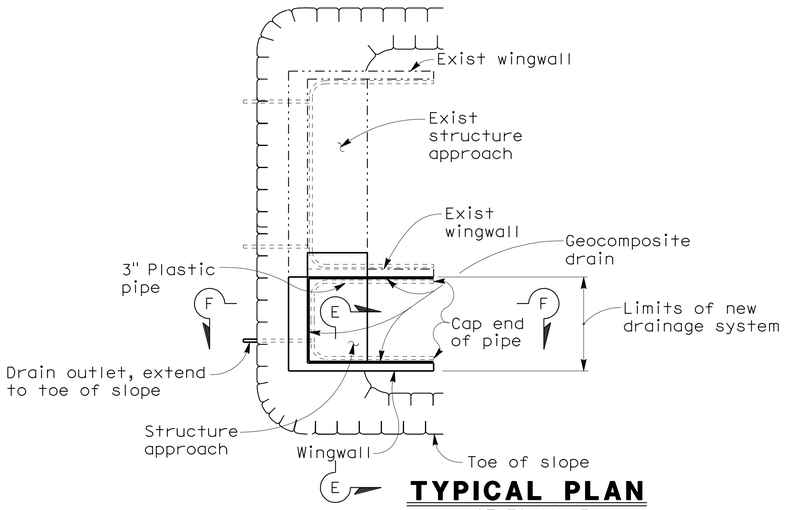
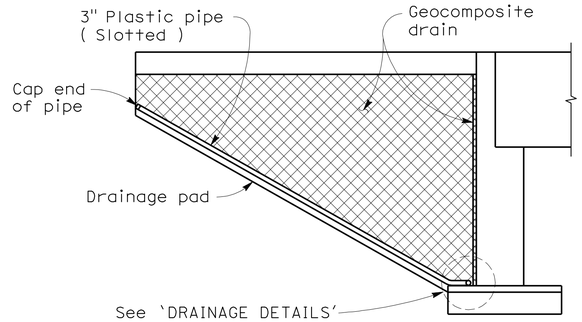
SAN RAFAEL, CA 94901

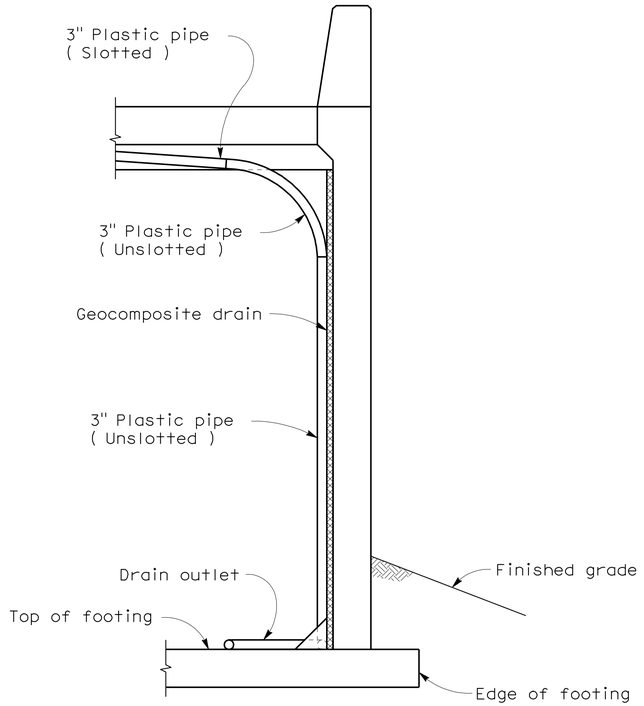
BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126



TYPICAL PLAN
NOT TO SCALE

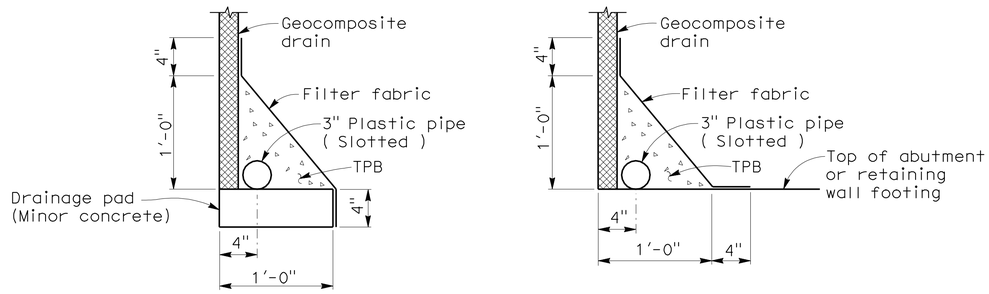


SECTION F-F
NOT TO SCALE



NOTE:
Bends and junctions in 3" plastic pipe are 30" radius min.

SECTION E-E
NOT TO SCALE



DRAINAGE DETAILS
1 1/2" = 1'-0"

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGN OVERSIGHT Tracy L Bertram
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO.	27-0115
POST MILES	25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
STRUCTURE APPROACH DRAINAGE DETAILS

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/21/11 5/27/11 8/19/11 10/3/11

SHEET 17 OF 23

FILE => 27-0115-t-sadd01.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s1224496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:02

2008100 (2008100517)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	590	619

REGISTERED CIVIL ENGINEER — 10/03/11 DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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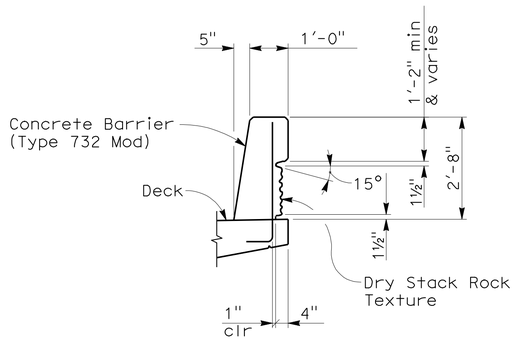
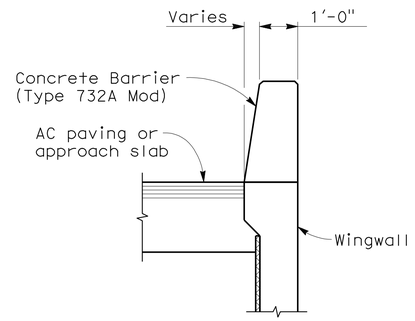
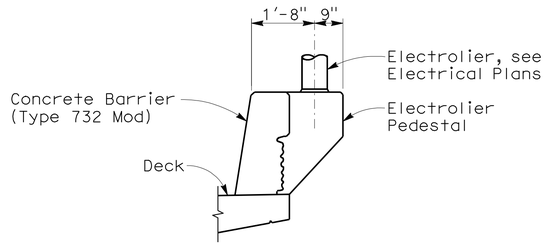
SAN JOSE, CALIFORNIA 95126



SECTION A-A
1/2" = 1'-0"

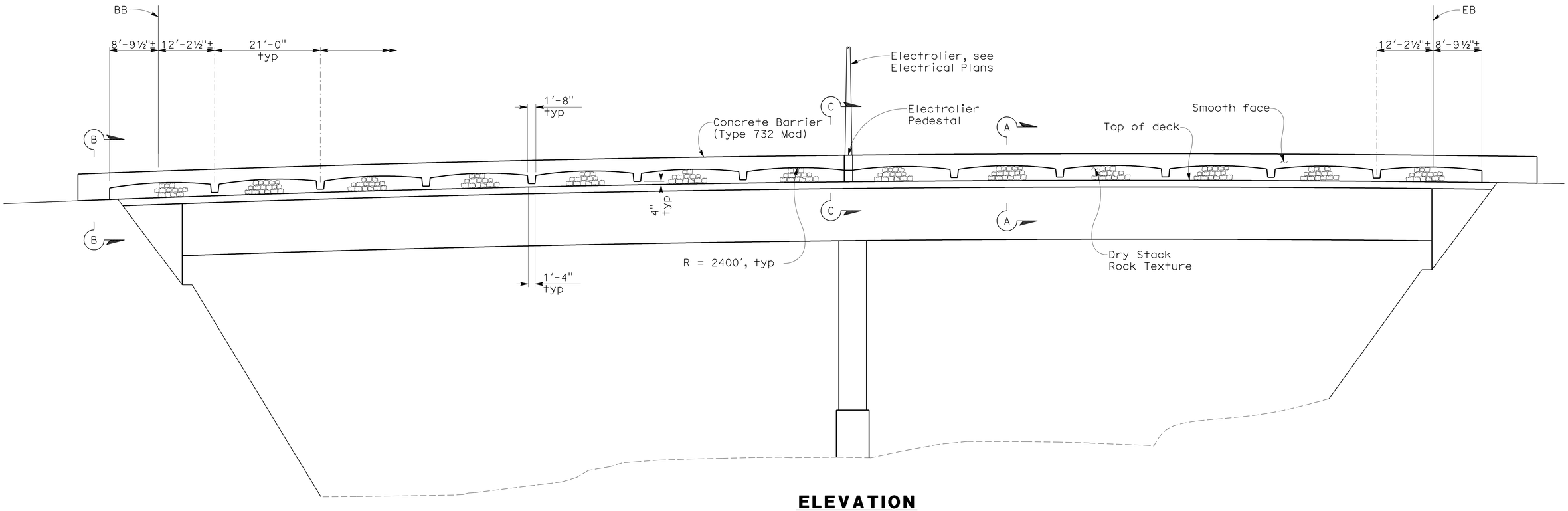


SECTION B-B
1/2" = 1'-0"



SECTION C-C
1/2" = 1'-0"

NOTE:
For barrier and pedestal details and dimensions not shown — B11-55 / -



ELEVATION
HORIZ: 1" = 10'
VERT: 1" = 5'

NOTE:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGN OVERSIGHT Tracy L Bertram
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	S. MOYLES
QUANTITIES	D. ROSELLINI	S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY NOTARO
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
ARCHITECTURAL TREATMENT DETAILS

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/7/11 5/27/11 8/19/11 10/3/11

SHEET 18 OF 23

FILE => 27-0115-u-atd01.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s1244496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:02 2008100 (2008100518)

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	591	619

GEOTECHNICAL PROFESSIONAL — 10/3/11 DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

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PARIKH CONSULTANTS, INC.
2360 OUME DRIVE, SUITE A
SAN JOSE, CA 95131

CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

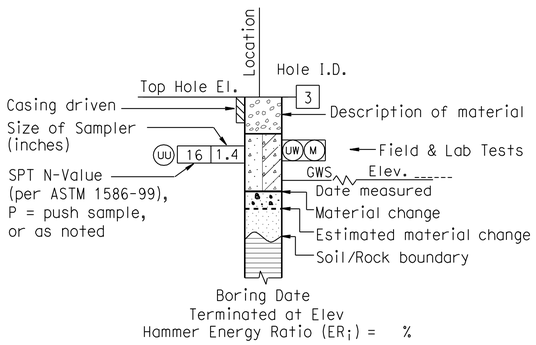
BOREHOLE IDENTIFICATION

Symbol	Hole Type	Description
Size	A	Auger Boring (hollow or solid stem bucket)
Size	R RW RC P	Rotary drilled boring (conventional) Rotary drilled with self-casing wire-line Rotary core with continuously-sampled, self-casing wire-line Rotary percussion boring (air)
Size	R	Rotary drilled diamond core
Size	HD HA	Hand driven (1-inch soil tube) Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778)
⬚	O	Other (note on LOTB)

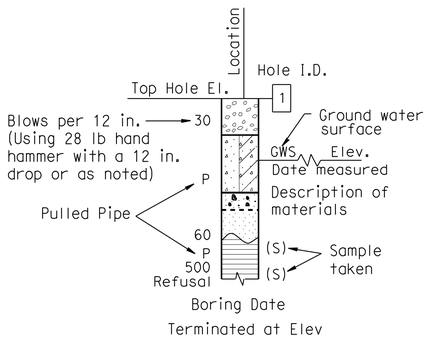
Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS

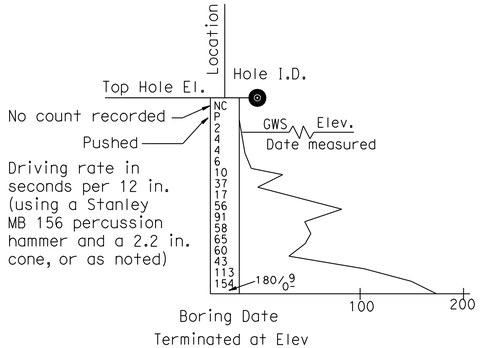
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



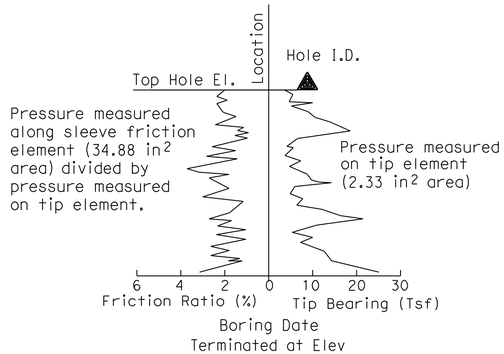
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) BORING

Tracy L Bertram
DESIGN OVERSIGHT

10-14-11
SIGN OFF DATE

DRAWN BY: O. GOUTHIER
CHECKED BY: P. SIRCAR

L. S. BHANGOO/ V. SANTOS
FIELD INVESTIGATION BY:
DATE: APRIL 2009

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

P. SIRCAR
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
LOG OF TEST BORINGS 1 OF 5

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331
CONTRACT NO.: 04-2640741

DISREGARD PRINTS BEARING EARLIER REVISION DATES (6/1/12)

REVISION DATES				SHEET	OF
10/3/11				19	23

FILE => 270115-z-ltb01.dgn

USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:03

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content-% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	592	619

GEOTECHNICAL PROFESSIONAL — 10/3/11 DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

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PARIKH CONSULTANTS, INC.
2360 OUME DRIVE, SUITE A
SAN JOSE, CA 95131

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		> 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

Tracy L Bertram
DESIGN OVERSIGHT
10-14-11
SIGN OFF DATE

DRAWN BY: O. GOUTHIER
CHECKED BY: P. SIRCAR

L. S. BHANGOO/ V. SANTOS
FIELD INVESTIGATION BY:
DATE: APRIL 2009

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

P. SIRCAR
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
LOG OF TEST BORINGS 2 OF 5

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 040000073331 CONTRACT NO.: 04-2640741

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
10/3/11				20	23

FILE => 270115-z-ltb02.dgn

USERNAME => s124096 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:03

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	593	619

GEOTECHNICAL PROFESSIONAL — 10/3/11 DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

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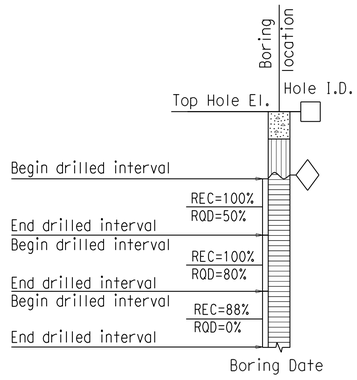
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)

$$REC = \frac{\sum \text{Length of the recovered core pieces (inches)}}{\text{Total length of core run (inches)}} \times 100\%$$

$$RQD = \frac{\sum \text{Length of intact core pieces} \geq 4\text{"}}{\text{Total length of core run (inches)}} \times 100\%$$



RELATIVE STRENGTH OF INTACT ROCK

Term	Uniaxial Compressive Strength (PSI)
Extremely Strong	> 30,000
Very Strong	14,500 - 30,000
Strong	7,000 - 14,500
Medium Strong	3,500 - 7,000
Weak	700 - 3,500
Very Weak	150 - 700
Extremely Weak	< 150

BEDDING SPACING

Description	Thickness / Spacing
Massive	Greater than 10 ft
Very thickly bedded	3 to 10 ft
Thickly bedded	1 to 3 ft
Moderately bedded	3-5/8" to 1 ft
Thinly bedded	1-1/4" to 3-5/8"
Very thinly bedded	3/8" to 1-1/4"
Laminated	Less than 3/8"

LEGEND OF ROCK MATERIALS

- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

ROCK HARDNESS

Description	Criteria
Extremely Hard	Specimen cannot be scratched with a pocket knife or sharp pick; can only be chipped with repeated heavy hammer blows.
Very Hard	Specimen cannot be scratched with a pocket knife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Specimen can be scratched with a pocket knife or sharp pick with difficulty (heavy pressure). Heavy hammer blows required to break specimen.
Moderately Hard	Specimen can be scratched with pocket knife or sharp pick with light or moderate pressure. Core breaks with moderate hammer pressure.
Moderately Soft	Specimen can be grooved 1/6" deep with a pocket knife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Specimen can be grooved or gouged easily by a pocket knife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Specimen can be readily indented, grooved or gouged with fingernail, or carved with a pocket knife. Breaks with light manual pressure.

FRACTURE DENSITY

Description	Observed Fracture Density
Unfractured	No fractures.
Very slightly fractured	Lengths greater than 3 feet.
Slightly fractured	Lengths from 1 to 3 feet with few lengths less than 1 foot or greater than 3 feet.
Moderately fractured	Lengths mostly in 4" to 1 foot range with most lengths about 8"
Intensely fractured	Lengths average from 1 to 4" with scattered fragmented intervals with lengths less than 4"
Very intensely fractured	Mostly chips and fragments with a few scattered short core lengths.

Combination descriptors (such as "Very intensely to intensely fractured") are used where equal distribution of both fracture density characteristics is present over a significant interval or exposure, or where characteristics are "in between" the descriptor definitions. Only two adjacent descriptors may be combined.

WEATHERING DESCRIPTORS FOR INTACT ROCK

Description	Diagnostic features: Chemical Weathering-Discoloration and/or oxidation — Body of Rock	Diagnostic features: Chemical Weathering-Discoloration and/or oxidation — Fracture Surfaces	Diagnostic features: Mechanical Weathering-Grain boundary conditions (disaggregation) primarily for granitics and some coarse-grained sediments	Diagnostic features: Texture and Solutioning — Texture	Diagnostic features: Texture and Solutioning — Solutioning	General Characteristics
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change.	No solutioning.	Hammer rings when crystalline rocks are struck.
Slightly Weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull.	Minor to complete discoloration or oxidation of most surfaces.	No visible separation, intact (tight).	Preserved.	Minor leaching of some soluble minerals may be noted.	Hammer rings when crystalline rocks are struck. Body of rock not weakened.
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty," feldspar crystals are "cloudy."	All fracture surfaces are discolored or oxidized.	Partial separation of boundaries visible.	Generally preserved.	Soluble minerals may be mostly leached.	Hammer does not ring when rock is struck. Body of rock is slightly weakened.
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in-situ disaggregation, see grain boundary conditions.	All fracture surfaces are discolored or oxidized, surfaces friable.	Partial separation, rock is friable; in semiarid conditions granitics are disaggregated.	Texture altered by chemical disintegration (hydration, argillation).	Leaching of soluble minerals may be complete.	Dull sound when struck with hammer, usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures, or veinlets. Rock is significantly weakened.
Decomposed	Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay.		Complete separation of grain boundaries (disaggregated).	Resembles a soil, partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete.		Can be granulated by hand. Resistant minerals such as quartz may be present as "stringers" or "dikes."

Combination descriptors (such as "slightly weathered to fresh") are permissible where equal distribution of both weathering characteristics is present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, combination descriptors should not be used where significant, identifiable zones can be delineated. Only two adjacent descriptors may be combined. "Very intensely weathered" is the combination descriptor for "intensely weathered to decomposed."

Tracy L Bertram
DESIGN OVERSIGHT

10-14-11
SIGN OFF DATE

DRAWN BY: O. GOUTHIER
CHECKED BY: P. SIRCAR

L. S. BHANGOO/ V. SANTOS
FIELD INVESTIGATION BY:
DATE: APRIL 2009

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

P. SIRCAR
PROJECT ENGINEER

BRIDGE NO. 27-0115
POST MILES 25.5

REDWOOD LANDFILL OVERCROSSING (WIDEN)
LOG OF TEST BORINGS 3 OF 5

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331 CONTRACT NO.: 04-2640741

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
10/3/11				21	23

FILE => $REQUEST

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	594	619

GEOTECHNICAL PROFESSIONAL — 10/3/11 DATE

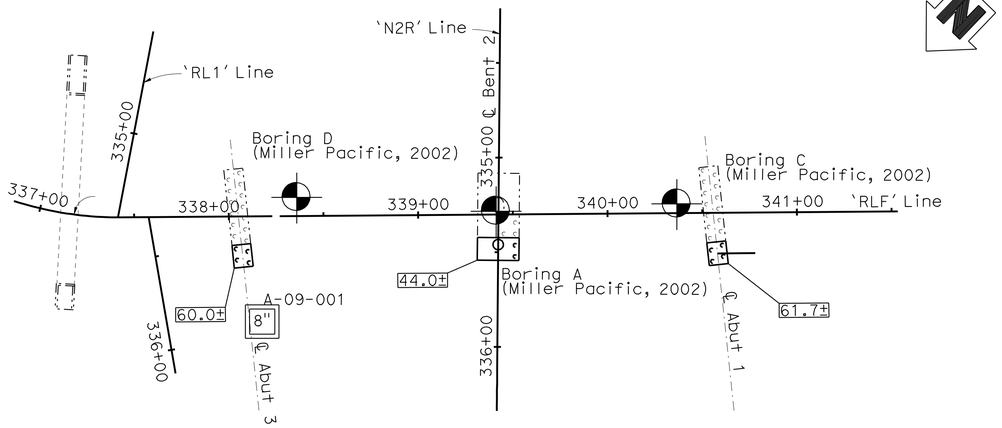
4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — 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.

TAM
750 LINDARO STREET, SUITE 200
SAN RAFAEL, CALIFORNIA 94901

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131



PLAN
1"=40'

BENCH MARK AND DATUM				
Monument	Coordinates North	Coordinates East	Elev (NAVD 88)	Description/Location
122	2250516.483	5966847.011	33.86	Mag Nail and shiner "HV 22" at N2 307+99.48 59.81 Rt
125	2252038.592	5965712.883	26.53	Mag Nail and shiner "HV 25" at N2 326+91.55 63.12 Rt

BASIS OF SURVEY CONTROL:

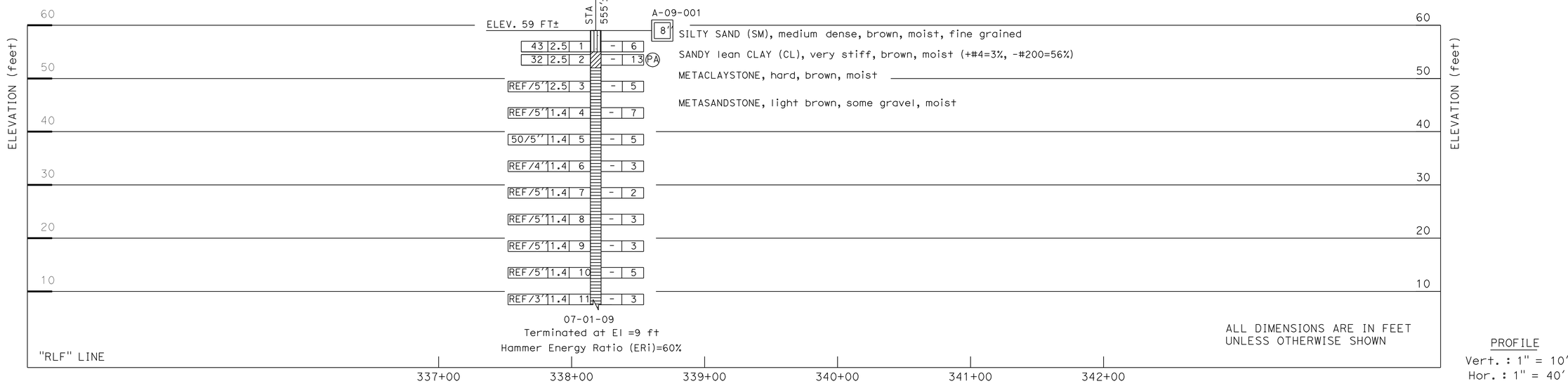
A. Horizontal Datum:
Coordinates, bearings & distances are based on the California Coordinate System of 1983 (CCS 83), Zone 3 (1991.35 HPGN). All distances are in feet. Multiply by 1.00004621 to obtain ground distances.

B. Vertical Datum:
Elevation is based on North American Datum of 1988 (NAVD 88).

Notes:
Standard Penetration Test Sampler: I.D. = 1.4"; O.D. = 2" Modified California Sampler: I.D. = 2.5"; O.D. = 3" Hammer Assembly: A 140 lb hammer with a 30" drop (Automatic Hammer)

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock, Logging, Classification, and Presentation Manual (June 2007)

All dimensions are in feet unless otherwise shown



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 40'

Tracy L Bertram DESIGN OVERSIGHT — 10-14-11 SIGN OFF DATE	DRAWN BY	O. GOUTHIER	L. DUDDU FIELD INVESTIGATION BY: DATE: JULY 2009	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR PROJECT ENGINEER	BRIDGE NO. 27-0115 POST MILES 25.5	REDWOOD LANDFILL OVERCROSSING (WIDEN) LOG OF TEST BORINGS 4 OF 5
	CHECKED BY	P. SIRCAR					

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331 CONTRACT NO.: 04-2640741

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
10/3/11				22	23

FILE => 270115-z-ltb04.dgn

USERNAME => s124436 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:03

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	MRN	101	40.5/41.2		

4/4/05
GEOTECHNICAL PROFESSIONAL

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — MICHAEL MORISOLI — No. 2541 — Exp. 12/31/04 — GEOTECHNICAL — STATE OF CALIFORNIA

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MILLER PACIFIC ENGINEERING GROUP
165 N. REDWOOD DR., SUITE 120
SAN RAFAEL, CALIFORNIA 94903

WASTE MANAGEMENT
8950 REDWOOD HIGHWAY
P.O. BOX 793
NOVATO, CALIFORNIA 94945

DIVISION OF ENGINEERING SERVICES – GEOTECHNICAL SERVICES					
As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.					
DIST.	COUNTY	ROUTE	POST MILE-TOTAL PROJECT	Sheet No.	Total Sheets
04	Mrn	101	R23.2/27.1	595	619

REGISTERED CIVIL ENGINEER — 10/3/11 DATE

REDWOOD LANDFILL OVERCROSSING (WIDEN)

LOG OF TEST BORINGS 5 OF 5

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

CU: 03240
EA: 264071

BRIDGE No. 27-0115

Sheet 23 of 23

TO ACCOMPANY PLANS DATED 4-16-12

GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 — GEOTECHNICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

Caltrans Metric

BENCHMARK:
Vertical Datum is NAVD 88 (meters). Benchmark is MRN-28, Elevation 8.725m
As published by CALTRANS 03/07/01. Basis of bearing for this control schedule is N12 11'07"W between Monuments MRN-28 & GPS Point 207.

REFERENCE: DKS Assiciates Redwood Landfill Access Bridge, Alternate 2, 11/01

CSW Stuber-Stroeh Engineering Group, Inc. Construction Control Hard Copy, 12/14/04

Revisions made to this Log of Test Borings from the original 2002 Log of Test Borings are the addition of the following table and notes:

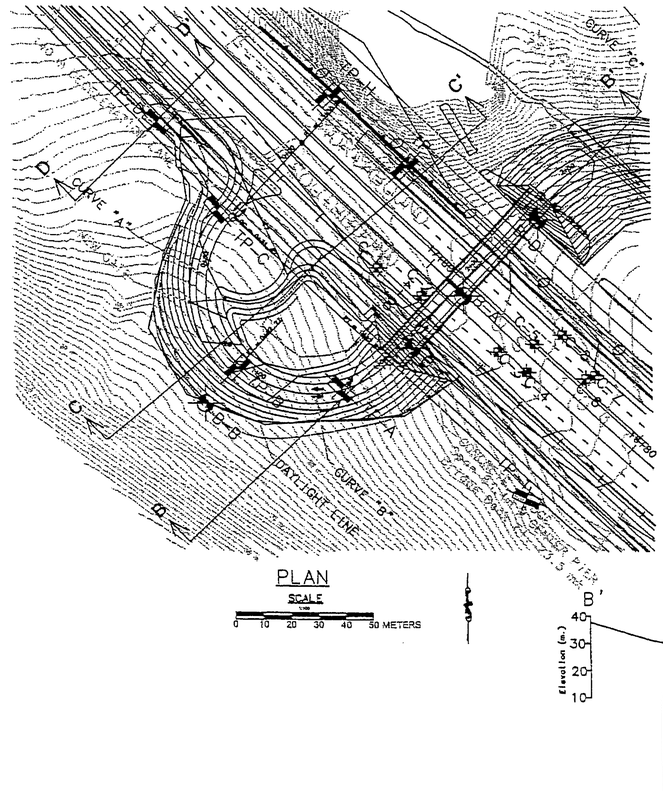
Boring	Station	Offset from "N2" LINE
TB-A	335+30	211 ft Left
B-C	335+15	85 ft Left
B-A	335+15	0 ft C.L
B-D	335+15	140 ft Right

Notes:

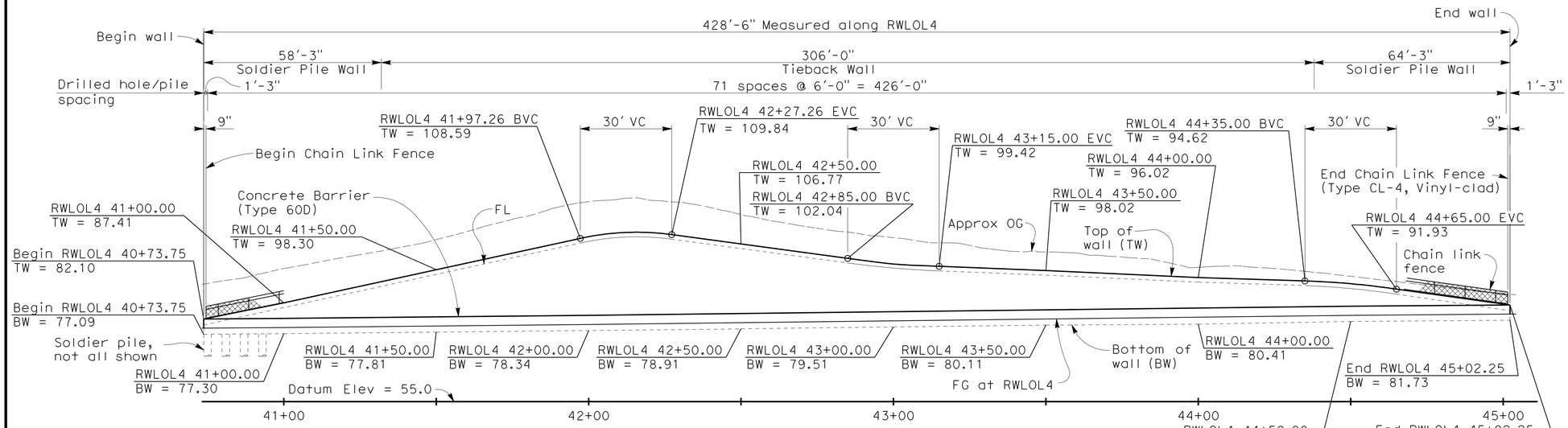
1. See the General Plan and/or Foundation Plan for Metric Stationing.
2. The data are the metric locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.

NOTES:

1. 81 mm samples were taken using a Modified California split barrel sampler with an inside diameter (I.D.) of 61 mm and an outside daimeter (O.D.) of 78 mm.
2. A CME automatic hammer was used to advance the sampler using a 63.5 Kg hammer with a 762 mm drop.

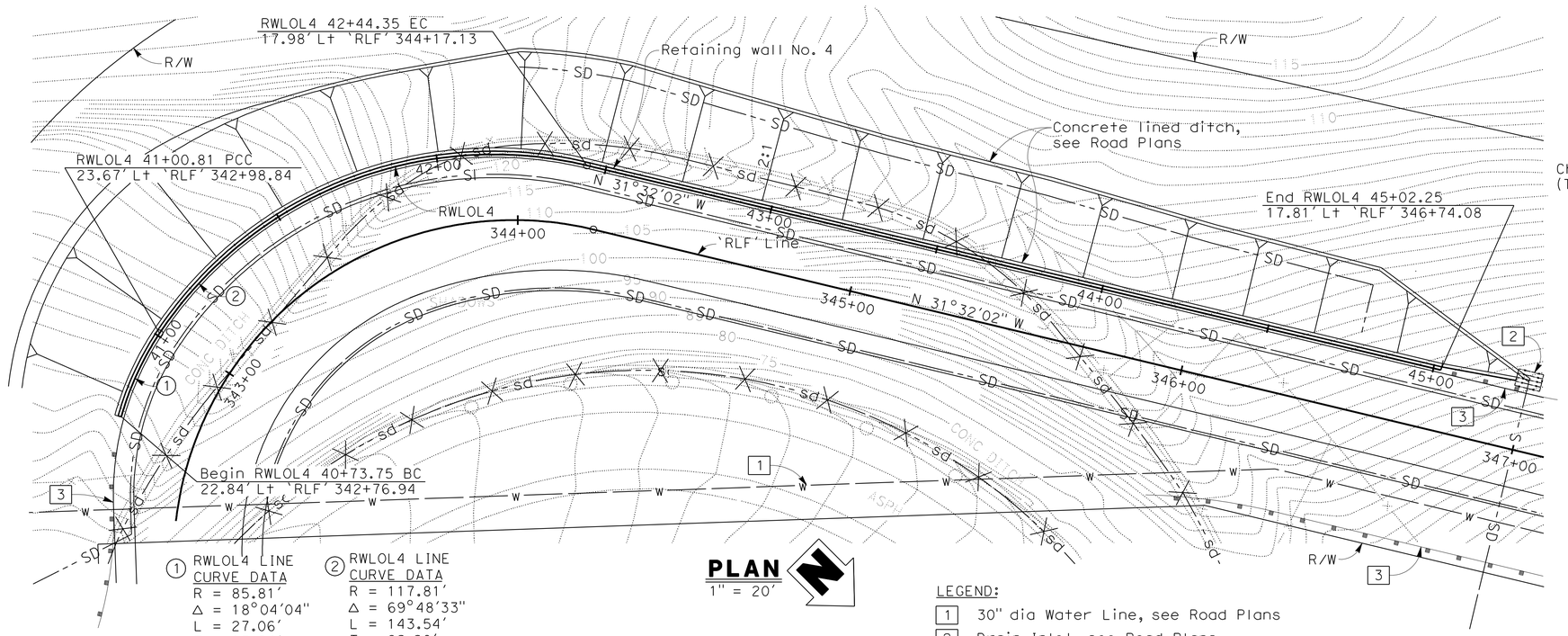


FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE



DEVELOPED ELEVATION

1" = 20'

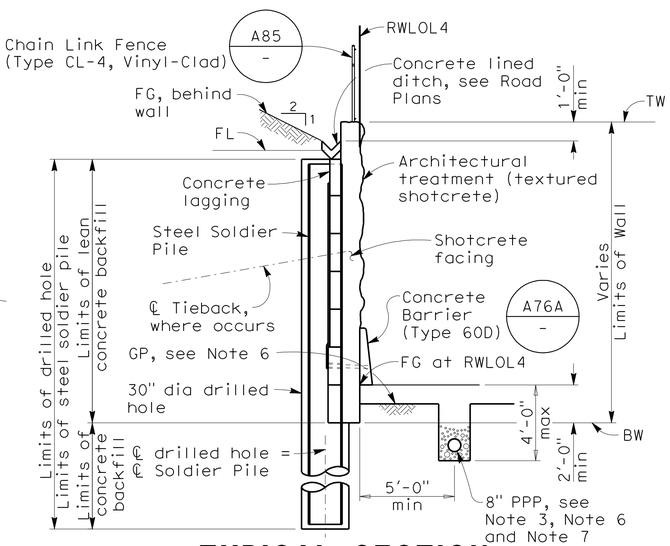


PLAN

1" = 20'

LEGEND:

1. 30" dia Water Line, see Road Plans
2. Drain Inlet, see Road Plans
3. MBGR, see Road Plans



TYPICAL SECTION

1/4" = 1'-0"

NOTES:

1. This plan accurate for Retaining Wall No. 4 work only.
2. Top of wall (TW) and bottom of wall (BW) profiles are linear between points shown unless noted otherwise.
3. See Road Plans for Right-of-Way, Utility, Drainage, Roadway and Layout information not noted.
4. Install Concrete Barrier (Type 60D) full length of wall.
5. For Index to plans, standard plan lists, general notes and quantities, see 'INDEX TO PLANS' sheet.
6. Backfill in front of soldier pile wall shall be completed to the grading plane (GP) prior to trench excavation for 8" PPP.
7. Once excavation is initiated in front of the wall, no heavy equipment or construction loads shall be allowed behind the wall until the soldier pile wall is completed and utility trench in front of the wall is completed.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	596	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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TAM
750 LINDARO ST, SUITE 200
SAN RAFAEL, CA 94901

BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

Tracy L Bertram
DESIGN OVERSIGHT
10-14-11
SIGN OFF DATE

	BY	CHECKED	LOAD FACTOR DESIGN		
DESIGN	G. JEYARAMAN	G. KENNING			
DETAILS	G. JEYARAMAN	J. VISAYA	LAYOUT	G. JEYARAMAN	S. MOYLES
QUANTITIES	P. GONGIDI	K. CRUZ	SPECIFICATIONS	A. NOTARO	PLANS AND SPECS COMPARED S. MOYLES

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY P. NOTARO
PROJECT ENGINEER

BRIDGE NO.	27E0030
POST MILES	25.5

RETAINING WALL No. 4

GENERAL PLAN

DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/1/11 5/27/11 8/19/11 10/3/11

SHEET 1 OF 11

FILE => $REQUEST

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME 2008100 (2008100DR11)

GENERAL NOTES
WORKING STRESS DESIGN

DESIGN: Bridge Design Specifications April 2000
(1996 AASHTO with Interims and Revisions by Caltrans)

LIVE LOADING: Includes Uniform Lateral Pressure of 72 psf due to surcharge

SHOTCRETE FACING:

ASTM Designation:	A706		
fy =	60,000 psi	fs =	24,000 psi
f'c =	3600 psi	fc =	1440 psi
n =	8	n =	10

PRECAST CONCRETE LAGGING:

fy = 60,000 psi
f'c = 5000 psi

STRUCTURAL STEEL:

Steel Piles	ASTM Designation:	A992/A992M, Grade 50
Plates	ASTM Designation:	A709/A709M, Grade 36
Welded Headed Studs	ASTM Designation:	A108 and AASHTO/AWS D1.5

SOIL PARAMETERS:

CASE 1 (South of RLF Sta 345+50):

Unit weight (ϑ)	= 135 pcf
Active Earth Pressure Coeff (Ka)	= 0.41 (2:1 backslope)
Passive Earth Pressure Coeff (Kp)	= 9.0
Passive Arching Capability	= 2.0
Effective Angle of Internal Friction (ø')	= 36°

CASE 2 (North of RLF Sta 345+50):

Unit weight (ϑ)	= 135 pcf
Active Earth Pressure Coeff (Ka)	= 0.59 (2:1 backslope)
Passive Earth Pressure Coeff (Kp)	= 3.5
Passive Arching Capability	= 2.0
Effective Angle of Internal Friction (ø')	= 26°

PRESTRESSING STEEL:

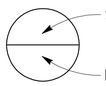
Bars:	ASTM Designation: A722 Type II
Strands:	ASTM Designation: A416
T =	Design force per tieback
f pu =	Minimum tensile strength of prestressing steel in Tieback tendon (ksi)
As (min) =	Minimum cross sectional area of prestressing steel in tieback tendon (sq in)
As (min) =	$\frac{1.5\ T}{0.75\ f\ pu}$
T =	See 'TIEBACK DATA TABLE'

See 'LOG OF TEST BORINGS' sheet for additional soil classifications and parameters

INDEX TO PLANS

STANDARD PLANS DATED MAY 2006

	A10A	ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
	A10B	ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
	A10C	SYMBOLS (SHEET 1 OF 2)
	A10D	SYMBOLS (SHEET 2 OF 2)
RSP	A76A	CONCRETE BARRIER TYPE 60
RSP	A85	CHAIN LINK FENCE



RETAINING WALL NO. 4, BR# 27E0030

QUANTITIES

STRUCTURE EXCAVATION (SOLDIER PILE WALL)	303	CY
STRUCTURE BACKFILL (SOLDIER PILE WALL)	32	CY
CONCRETE BACKFILL	135	CY
LEAN CONCRETE BACKFILL	216	CY
GROUND ANCHOR	51	EA
STEEL SOLDIER PILING (W21 X 44)	183	LF
STEEL SOLDIER PILING (W21 X 68)	164	LF
STEEL SOLDIER PILING (W21 X 101)	134	LF
STEEL SOLDIER PILING (2 W18 X 35)	732	LF
STEEL SOLDIER PILING (2 W18 X 60)	710	LF
30" DRILLED HOLE	1,920	LF
ARCHITECTURAL TREATMENT(TEXTURED SHOTCRETE)	5,810	SQFT
CONCRETE LAGGING (TYPE A)	5,694	SQFT
CONCRETE LAGGING (TYPE B)	1,405	SQFT
BAR REINFORCING STEEL (RETAINING WALL)	64,424	LB
SHOTCRETE	295	CY
PREPARE AND STAIN SHOTCRETE AND CONCRETE	7,090	SQFT
CHAIN LINK FENCE (TYPE CL-4, VINYL-CLAD)	434	LF
CONCRETE BARRIER (TYPE 60D)	429	LF

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	597	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

4-16-12
PLANS APPROVAL DATE

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TAM
750 LINDARO ST, SUITE 200
SAN RAFAEL, CA 94901

BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

NOTES:

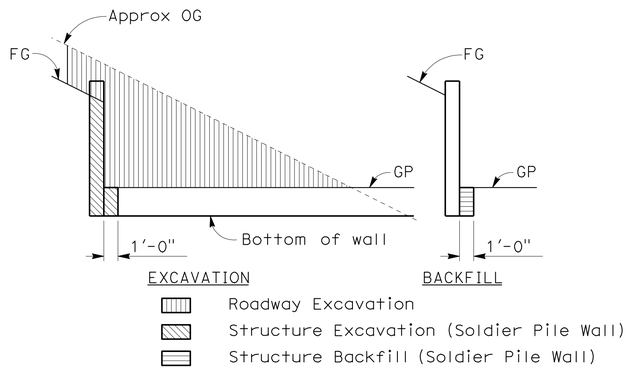
1. For 'TIEBACK DATA TABLE' see 'RETAINING WALL LAYOUT No. 1' sheet
2. For 'PILE DATA TABLE' see 'RETAINING WALL LAYOUT No. 1' and 'RETAINING WALL LAYOUT No. 2' sheets

DATUM NOTES
COORDINATES, BEARINGS & DISTANCES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM OF 1983 (CCS83), ZONE 3 (1991.35 HPGN). ALL DISTANCES ARE IN FEET. MULTIPLY DISTANCES BY 1.00004621 TO OBTAIN GROUND DISTANCES.

ELEVATION IS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SUPPLEMENTARY INFORMATION MAY BE OBTAINED FROM THE DISTRICT OFFICE, SURVEYS BRANCH OR RIGHT OF WAY ENGINEERING BRANCH, 111 GRAND AVENUE, OAKLAND, CALIFORNIA.

BENCH MARK
BM GPS30 FOUND 1" IRON PLASTIC PLUG AT NORTHBOUND SHOULDER OF HIGHWAY 101 AT THE BEGINNING OF OFFRAMP TO ATHERTON AVENUE/ SAN MARIN DRIVE. THE VALUES FOR GPS30 WERE PROVIDED BY CALTRANS PER JOB No. 00071, MRN-101, PM18.6/23.0 EA 8200K, JUNE 27, 2000.
N 2234473.120 E 5967838.30
ELEVATION = 17.98



LIMITS OF PAYMENT FOR STRUCTURE EXCAVATION AND BACKFILL - SOLDIER PILE WALL

No Scale

Tracy L Bertram
DESIGN OVERSIGHT
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	J. VISAYA
QUANTITIES	P. GONGIDI	K. CRUZ

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY P. NOTARO
PROJECT ENGINEER

BRIDGE NO. 27E0030
POST MILES 25.5

RETAINING WALL No. 4
INDEX TO PLANS

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

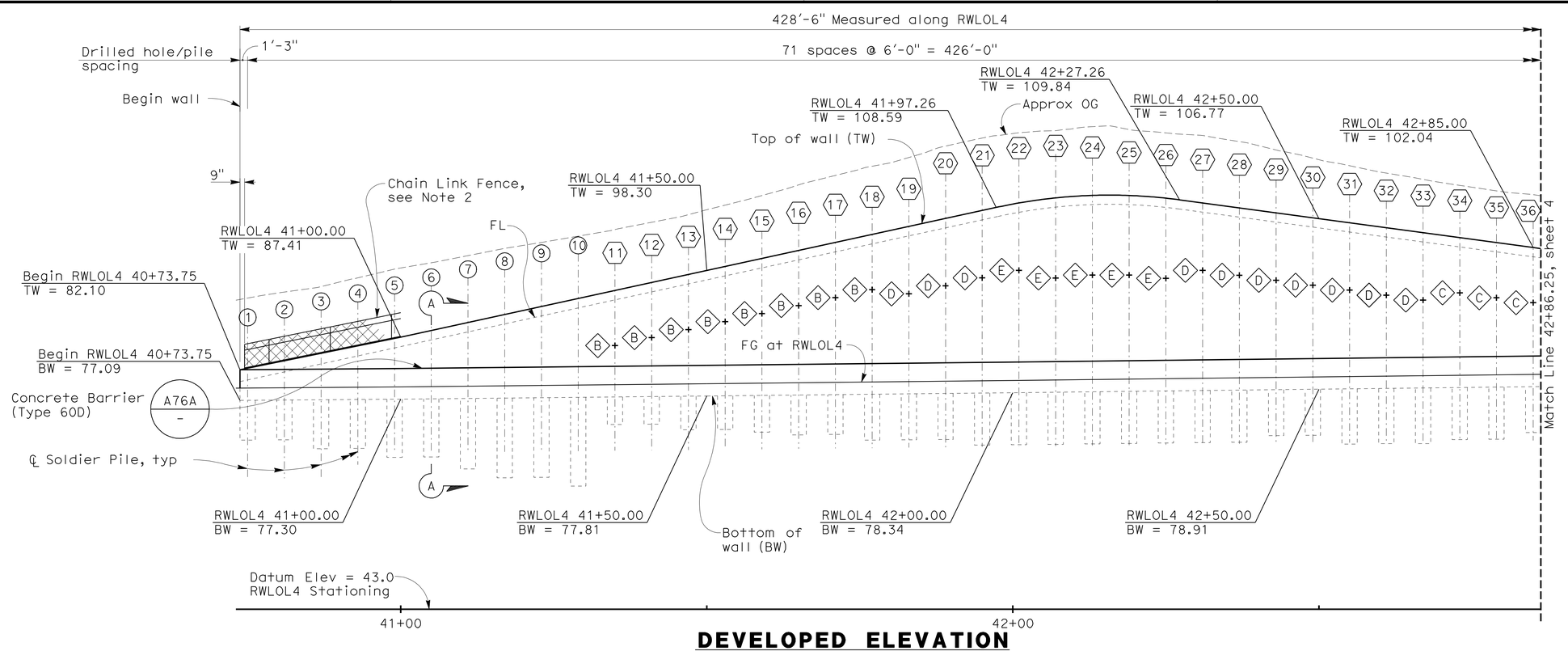
DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/21/11 5/23/11 8/19/11 10/3/11

SHEET 2 OF 11

FILE => 27e0030-a-itp.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733



DEVELOPED ELEVATION

1" = 10'

PILE DATA TABLE

Pile No.	STATION ALONG 'RWLOL4' LINE	PILE SECTION	TOP OF WALL (TW) ELEVATION	PILE CUT-OFF ELEVATION	PILE TIP ELEVATION
BEG WALL	40+73.75		81.69		
1	40+75.00	W21x44	81.96	80.00	70.60
2	40+81.00	W21x44	83.27	81.30	70.65
3	40+87.00	W21x44	84.58	82.60	69.20
4	40+93.00	W21x44	85.88	83.90	69.25
5	40+99.00	W21x44	87.19	85.20	67.79
6	41+05.00	W21x44	88.50	86.50	65.85
7	41+11.00	W21x68	89.81	87.80	65.91
8	41+17.00	W21x68	91.11	89.10	64.47
9	41+23.00	W21x68	92.42	90.40	64.53
10	41+29.00	W21x101	93.73	91.70	63.10
11	41+35.00	(2) W18x35	95.03	93.00	72.66
12	41+41.00	(2) W18x35	96.34	94.30	72.72
13	41+47.00	(2) W18x35	97.65	95.60	72.28
14	41+53.00	(2) W18x35	98.95	96.90	72.34
15	41+59.00	(2) W18x35	100.25	98.20	71.91
16	41+65.00	(2) W18x35	101.56	99.60	71.47
17	41+71.00	(2) W18x35	102.86	100.90	71.53
18	41+77.00	(2) W18x60	104.16	102.20	70.60
19	41+83.00	(2) W18x60	105.47	103.50	70.66
20	41+89.00	(2) W18x60	106.77	104.80	70.72
21	41+95.00	(2) W18x60	108.07	106.10	69.79
22	42+01.00	(2) W18x60	109.32	107.30	69.85
23	42+07.00	(2) W18x60	110.16	108.20	69.92
24	42+13.00	(2) W18x60	110.57	108.60	69.99
25	42+19.00	(2) W18x60	110.55	108.50	70.06
26	42+25.00	(2) W18x60	110.11	108.10	70.13
27	42+31.00	(2) W18x60	109.34	107.30	70.19
28	42+37.00	(2) W18x60	108.53	106.50	70.26
29	42+43.00	(2) W18x60	107.72	105.70	71.33
30	42+49.00	(2) W18x60	106.91	104.90	71.40
31	42+55.00	(2) W18x60	106.09	104.10	69.97
32	42+61.00	(2) W18x60	105.28	103.30	70.04
33	42+67.00	(2) W18x60	104.47	102.50	70.11
34	42+73.00	(2) W18x60	103.66	101.70	70.69
35	42+79.00	(2) W18x60	102.85	100.80	70.76
36	42+85.00	(2) W18x60	102.04	100.00	71.83
MAT LINE	42+86.25		101.90		

TIEBACK DATA TABLE

TIEBACK TYPE	TIEBACK FORCE (kips)	TIEBACK OFFSET FROM TOP OF WALL 'a' (ft)	UNBONDED LENGTH (ft)
A	140	7'-0"	15'-0"
B	140	9'-0"	15'-0"
C	210	9'-0"	15'-0"
D	210	11'-0"	15'-6"
E	210	13'-0"	15'-6"

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	598	619

10/03/11
REGISTERED CIVIL ENGINEER — DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

LEGEND:

- (1) Denotes soldier pile no., see 'PILE DATA TABLE'
- ⟨15⟩ Denotes tieback pile no., see 'PILE DATA TABLE'
- ◇B◇ Denotes tieback type. See 'TIEBACK DATA TABLE'
- \+ Denotes tieback location, see 'SECTION A'-A' on 'RETAINING WALL DETAILS No. 1' sheet

NOTES:

1. For 'SECTION A-A' see 'RETAINING WALL DETAILS No. 1' sheet
2. Install chain link fence full length of wall
3. Pile cut-off elevation shown is approximate. Verify with grading shown on Road Plans

Tracy L Bertram
DESIGN OVERSIGHT
10-14-11
SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	J. VISAYA
QUANTITIES	P. GONGIDI	K. CRUZ

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY P. NOTARO
PROJECT ENGINEER

BRIDGE NO. 27E0030
POST MILES 25.5

RETAINING WALL No. 4
RETAINING WALL LAYOUT No. 1

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →
REVISION DATES (PRELIMINARY STAGE ONLY) 7/1/10 3/7/11 5/27/11 8/19/11 10/3/11

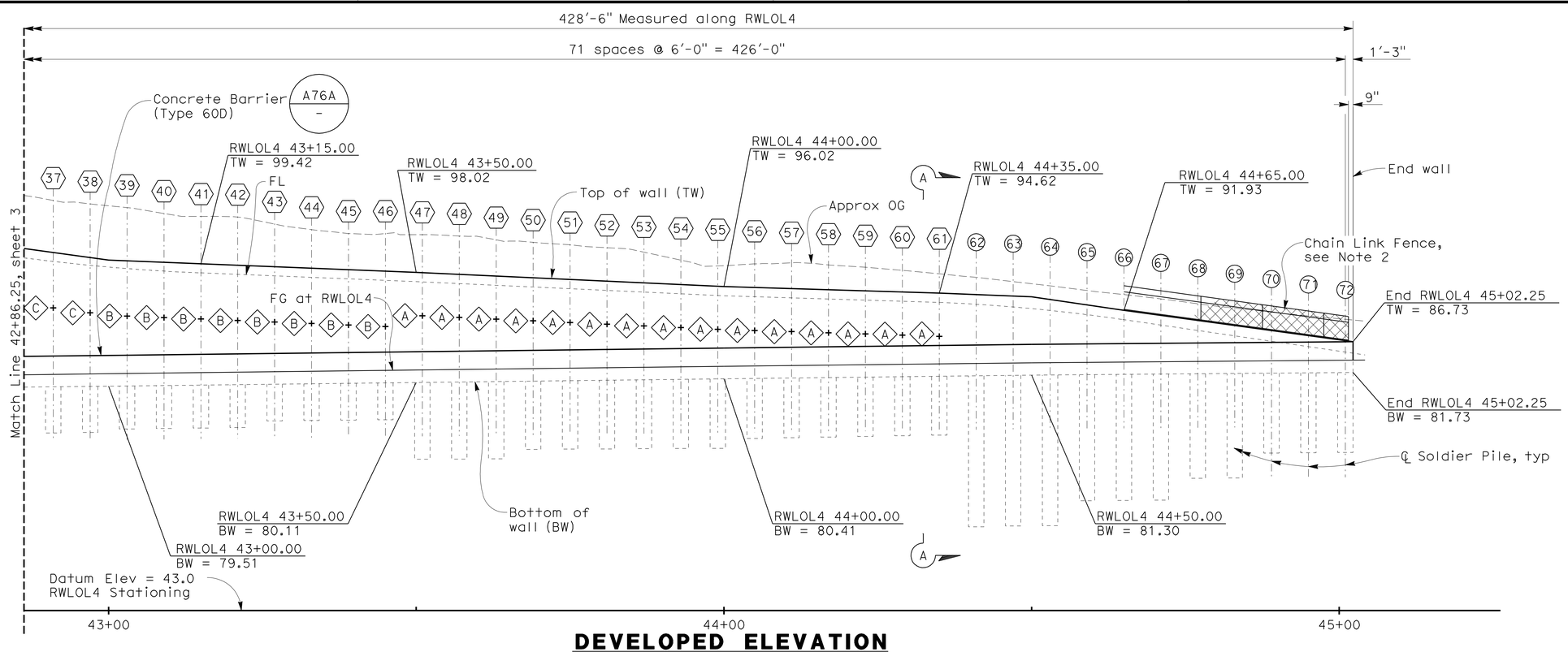
SHEET 3 OF 11

FILE => 27e0030-i-rw-lo01.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:04

2008100 (2008100DR3)



DEVELOPED ELEVATION

1" = 10'

PILE DATA TABLE

Pile No.	STATION ALONG 'RWLOL4' LINE	PILE SECTION	TOP OF WALL (TW) ELEVATION	PILE CUT-OFF ELEVATION	PILE TIP ELEVATION
MAT LINE	42+86.25	.	101.90		
37	42+91.00	(2) W18x60	101.29	99.30	71.90
38	42+97.00	(2) W18x60	100.66	98.70	71.97
39	43+03.00	(2) W18x35	100.12	98.10	72.55
40	43+09.00	(2) W18x35	99.71	97.70	72.62
41	43+15.00	(2) W18x35	99.42	97.40	72.69
42	43+21.00	(2) W18x35	99.18	97.20	72.76
43	43+27.00	(2) W18x35	98.94	96.90	73.83
44	43+33.00	(2) W18x35	98.70	96.70	73.91
45	43+39.00	(2) W18x35	98.46	96.50	73.98
46	43+45.00	(2) W18x35	98.22	96.20	74.05
47	43+51.00	(2) W18x35	97.98	96.00	67.62
48	43+57.00	(2) W18x35	97.74	95.70	67.65
49	43+63.00	(2) W18x35	97.50	95.50	67.69
50	43+69.00	(2) W18x35	97.26	95.30	69.22
51	43+75.00	(2) W18x35	97.02	95.00	69.26
52	43+81.00	(2) W18x35	96.78	94.80	69.30
53	43+87.00	(2) W18x35	96.54	94.50	69.33
54	43+93.00	(2) W18x35	96.30	94.30	69.37
55	43+99.00	(2) W18x35	96.06	94.10	69.40
56	44+05.00	(2) W18x35	95.82	93.80	69.5
57	44+11.00	(2) W18x35	95.58	93.60	69.61
58	44+17.00	(2) W18x35	95.34	93.30	69.71
59	44+23.00	(2) W18x35	95.10	93.10	69.82
60	44+29.00	(2) W18x35	94.86	92.90	69.93
61	44+35.00	(2) W18x35	94.62	92.60	70.03
62	44+41.00	W21x101	94.31	92.30	56.64
63	44+47.00	W21x101	93.88	91.90	56.75
64	44+53.00	W21x101	93.32	91.30	56.82
65	44+59.00	W21x68	92.64	90.60	56.87
66	44+65.00	W21x68	91.82	89.80	60.92
67	44+71.00	W21x68	90.94	88.90	60.97
68	44+77.00	W21x44	90.07	88.10	64.52
69	44+83.00	W21x44	89.19	87.20	64.57
70	44+89.00	W21x44	88.32	86.30	68.62
71	44+95.00	W21x44	87.44	85.40	68.67
72	45+01.00	W21x44	86.56	84.60	68.72
END WALL	45+02.25		86.38	.	.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	599	619

REGISTERED CIVIL ENGINEER — DATE 10/03/11

PLANS APPROVAL DATE 4-16-12

REGISTERED PROFESSIONAL ENGINEER ANTHONY P NOTARO No. C51739 Exp.6/30/12 CIVIL STATE OF CALIFORNIA

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865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

NOTE:

For notes and legend, see 'RETAINING WALL LAYOUT No. 1' sheet

DESIGN OVERSIGHT Tracy L Bertram — 10-14-11 SIGN OFF DATE

	BY	CHECKED
DESIGN	G. JEYARAMAN	G. KENNING
DETAILS	G. JEYARAMAN	J. VISAYA
QUANTITIES	P. GONGIDI	K. CRUZ

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY P. NOTARO
PROJECT ENGINEER

BRIDGE NO. 27E0030
POST MILES 25.5

RETAINING WALL No. 4

RETAINING WALL LAYOUT No. 2

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES → REVISION DATES (PRELIMINARY STAGE ONLY) 7/1/10 3/7/11 5/27/11 8/19/11 10/3/11

SHEET 4 OF 11

FILE => 27e0030-i-rw-lo02.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:04

(2008100DR4) 2008100

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	600	619

REGISTERED CIVIL ENGINEER — 10/03/11 DATE

4-16-12
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ANTHONY P NOTARO — No. C51739 — Exp.6/30/12 — CIVIL — STATE OF CALIFORNIA

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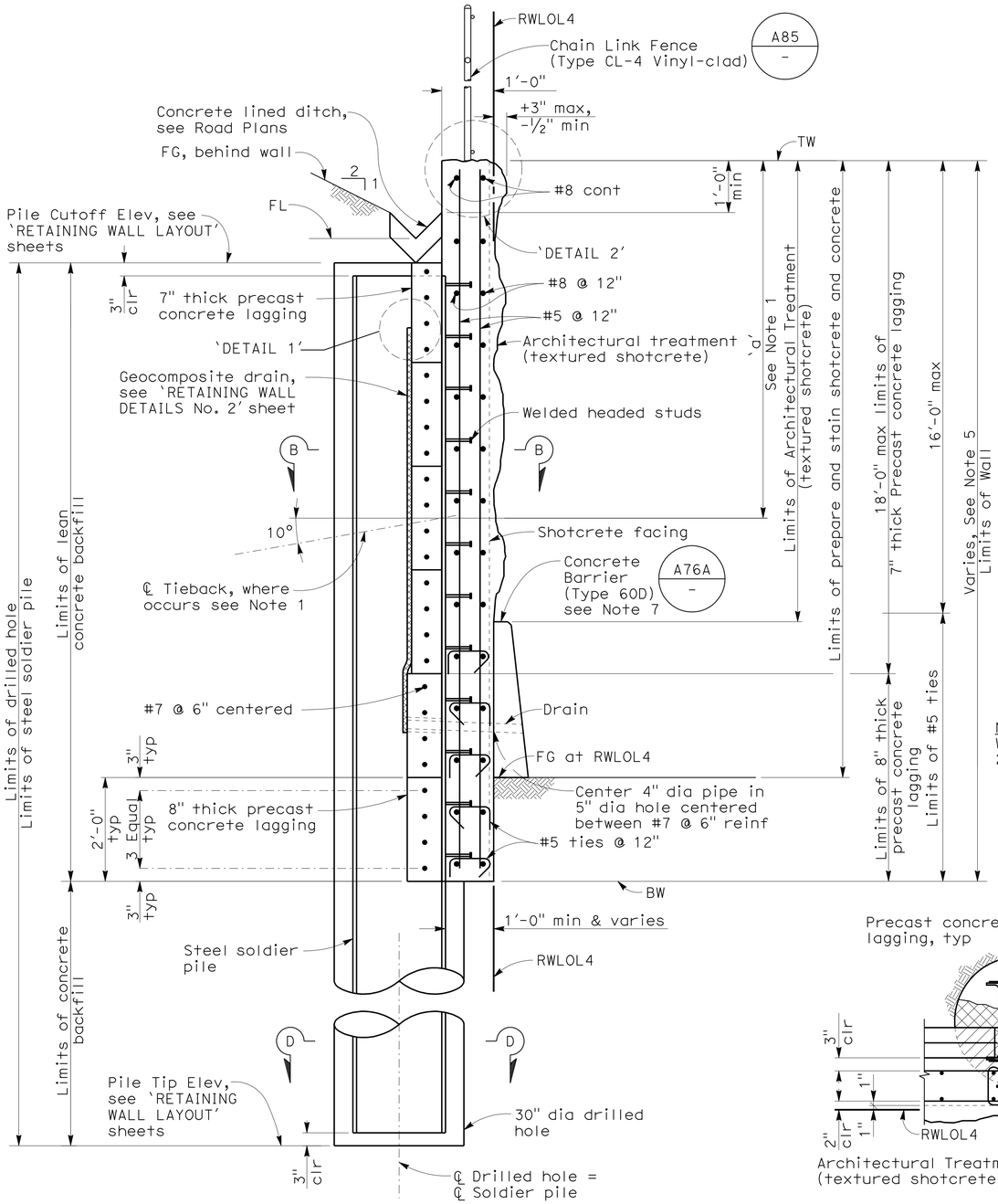
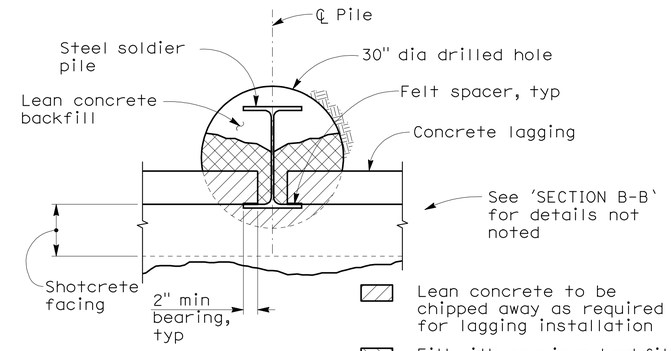
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

NOTES:
1. For tieback force (T), offset from top of wall ('a'), and unbonded length see 'TIEBACK DATA TABLE' on 'RETAINING WALL LAYOUT No. 1' sheet
2. The tieback minimum unbonded length shall be as specified in 'TIEBACK DATA TABLE' on 'RETAINING WALL LAYOUT No. 1' sheet.
3. For 'DETAIL 1' and 'DETAIL 2' see 'RETAINING WALL DETAILS No. 2' sheet.
4. For 'PILE DATA TABLE' see 'RETAINING WALL LAYOUT No. 1' AND 'RETAINING WALL LAYOUT No. 2' sheets.
5. Excavation in front of soldier pile wall shall not extend more than 2 feet below any level of tiebacks that has not been stressed and grouted.
6. For tieback details, see 'RETAINING WALL DETAILS No. 3' sheet.
7. Stain concrete barrier (Type 60D) to match color of architectural treatment (Textured Shotcrete)

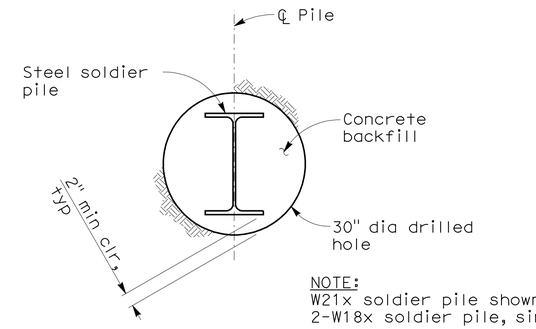


SECTION A-A
3/4" = 1'-0"



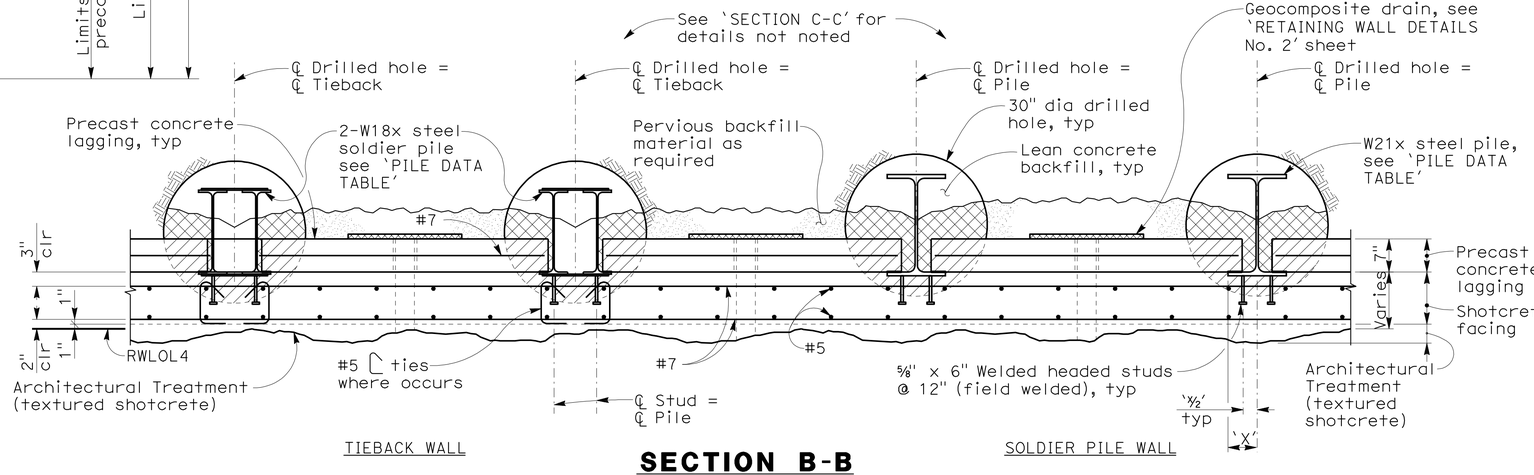
NOTE:
W21x soldier pile shown, 2-W18x soldier pile, sim

SECTION C-C
3/4" = 1'-0"



NOTE:
W21x soldier pile shown, 2-W18x soldier pile, sim

SECTION D-D
3/4" = 1'-0"



TIEBACK WALL

SECTION B-B
3/4" = 1'-0"

SOLDIER PILE WALL

DESIGN OVERSIGHT	Tracy L Bertram		
SIGN OFF DATE	10-14-11		
DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING	
DETAILS	BY G. JEYARAMAN	CHECKED J. VISAYA	
QUANTITIES	BY P. GONGIDI	CHECKED K. CRUZ	

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ANTHONY P. NOTARO
PROJECT ENGINEER

BRIDGE NO.	27E0030
POST MILES	25.5

RETAINING WALL No. 4
RETAINING WALL DETAILS No. 1

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0716
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 7/1/10 3/17/11 5/27/11 8/19/11 10/3/11

SHEET 5 OF 11

FILE => 27e0030-1-rwd1.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

USERNAME => s8124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:04

(2008100085) 2008100