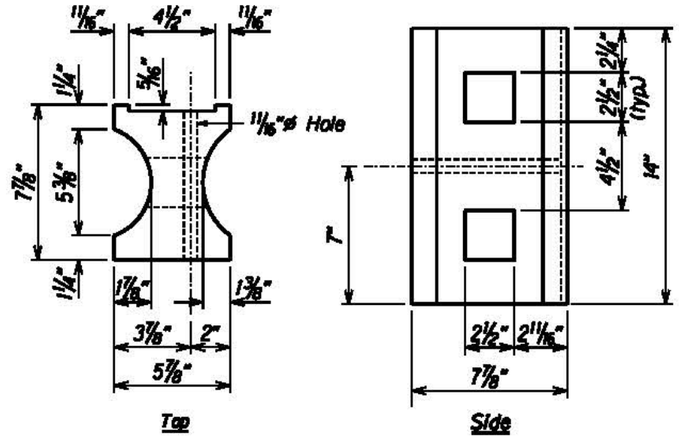
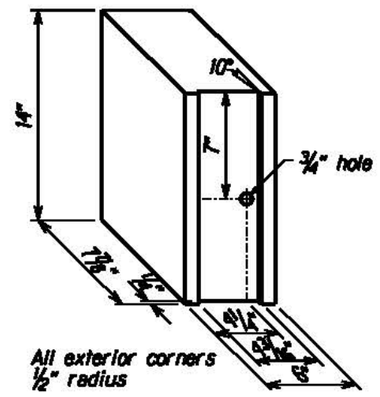
STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI SR 200(3)	M4	M6



Recycled Plastic Blockout (Type I)



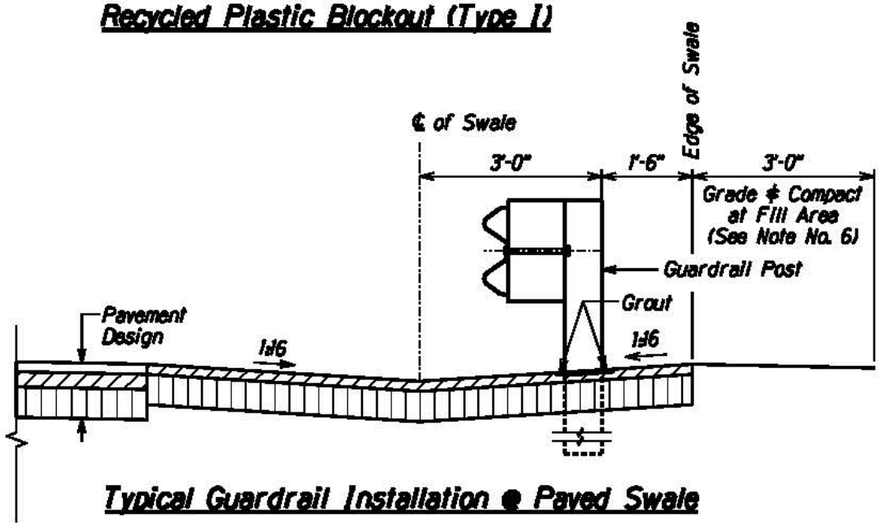
Recycled Polyethelyne Offset Block (Type II)

No.	Beg Station	End Station	Length (ft)	Side of Road	End Treatment Location	
1	1819+50	1823+00	350	Right	1819+00 - 1819+50	1823+00 - 1823+50
2	1827+50	1831+00	350	Left	1827+00 - 1827+50	1831+00 - 1831+50
3	1857+50	1864+00	650	Right	1850+00 - 1857+50	1864+00 - 1864+50

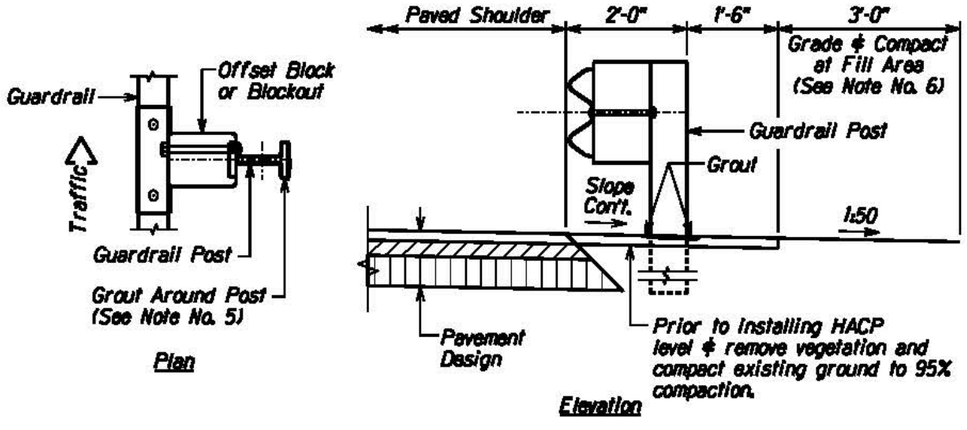
Guardrail Schedule

General Notes:

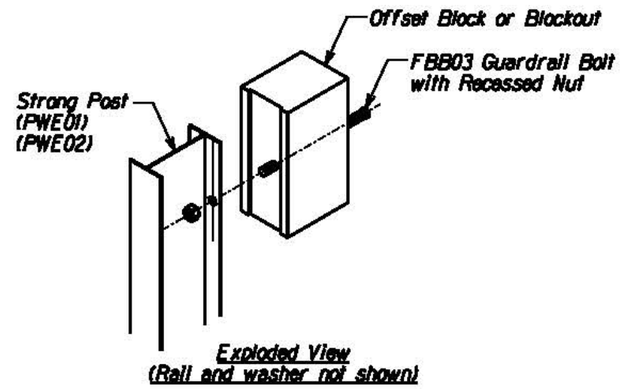
1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified.
3. All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM02b, etc.) shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware," a report prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Subcommittee On New Highway Materials, Task Force 13 Report. Dimensions of fasteners, posts and rail elements have been converted from metric units into their present form.
4. The Recycled Plastic Block or Offset Block shall be approved by the CO.
5. After the guardrail posts are installed in the paved area, the Contractor shall grout around the guardrail post and seal all cracks in the paved area that was caused during the guardrail post installation. If required by the CO. The Contractor shall tamper the paved area around the guardrail post prior to grouting. The cost for this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.
6. When standards for the fill slope area cannot be met, a site specific, CO approved design may be used.
7. No section of incomplete guardrail footing and/or excavation shall be left unshielded at the end of each work day.
8. Where full embedment of guardrail post is not possible, the contractor shall nest the beam(s). This work shall be incidental to the various contract items.



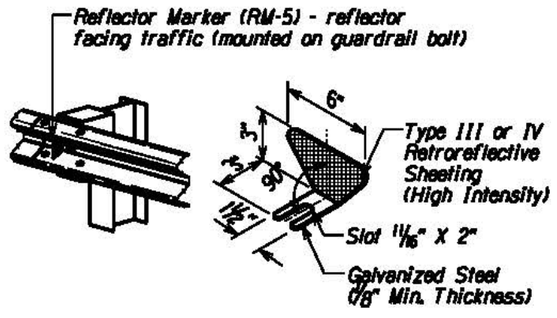
Typical Guardrail Installation @ Paved Swale



Typical Guardrail Installation



Steel Post and Block Detail



Reflector Marker (RM-5) Detail and Typical Installation

U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

GUARDRAIL DETAILS, NOTES & SCHEDULE

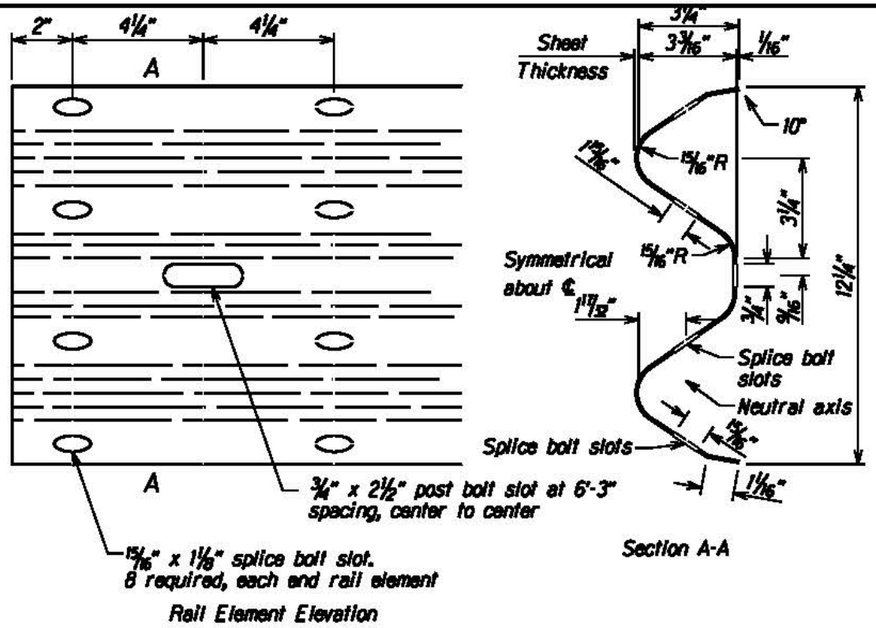
Scale: N.T.S. Date: August 21, 2015

SHEET No. 1 OF 3

M4

M:\Proj\Lannie\Saddle East 11-5\sheets\shtm004.dgn

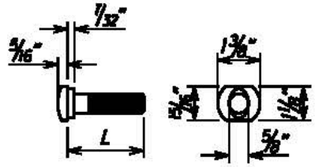
STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI SR 200(3)	M5	M6



Rail Element Elevation

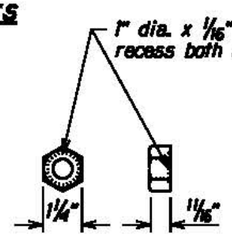
Section A-A

W Beam Rail Members



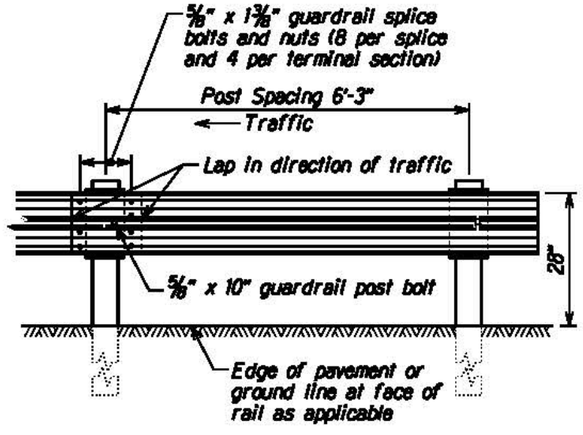
5/8" Guardrail Bolt

L	Thread Length
1⅜"	1⅛" minimum
2"	1¾" minimum
10"	4" minimum
18"	4" minimum
25"	4" minimum

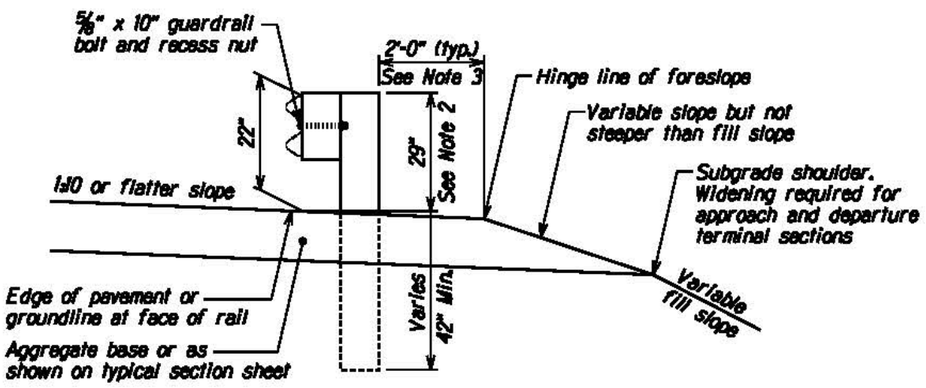


5/8" Recess Nut

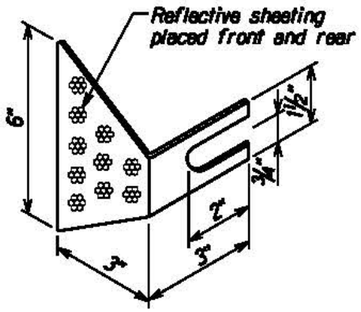
Guardrail Bolt and Recess Nut



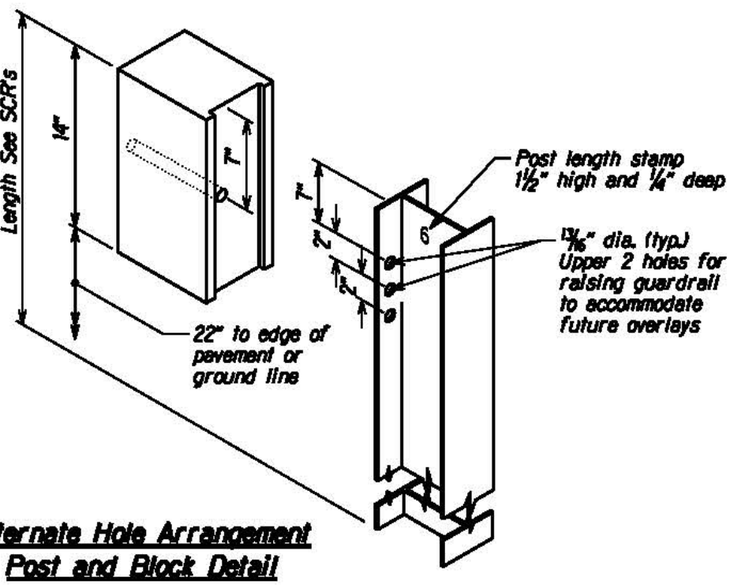
Post Spacing Standard Post Section



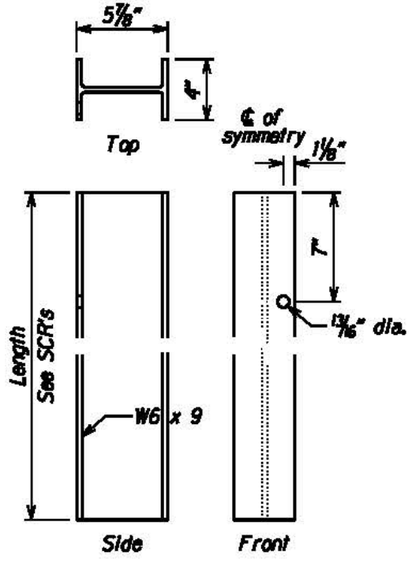
Typical guardrail cross section



Reflector Tab
(See Note 4)



Alternate Hole Arrangement Post and Block Detail



Structural Shape Post
(Standard Hole Arrangement)

Notes:

1. Use no more than 3 short guardrail posts in a row.
2. Use alternate hole arrangement, post above ground shall be 33 inches tall.
3. See Special Contract Requirements when 7'-0" or longer posts are specified.
4. Install reflector tab between post bolt and rail, every fourth post. Alternate reflector tab shapes are acceptable.
5. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
6. See Special 617-B for steel post and block detail.

U.S DEPARTMENT OF TRANSPORTATION
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CENTRAL FEDERAL LANDS HIGHWAY DIVISION

G4 W-BEAM GUARDRAIL STEEL POSTS

Scale: N.T.S. Date: August 21, 2015

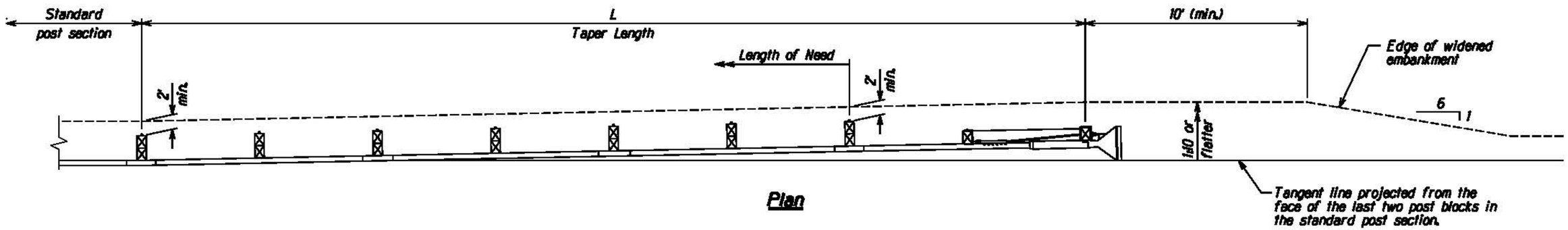
SHEET No. 2 OF 3

M:\Mproj\Lannie\Saddle East 11-5\sheets\shtm005.dgn

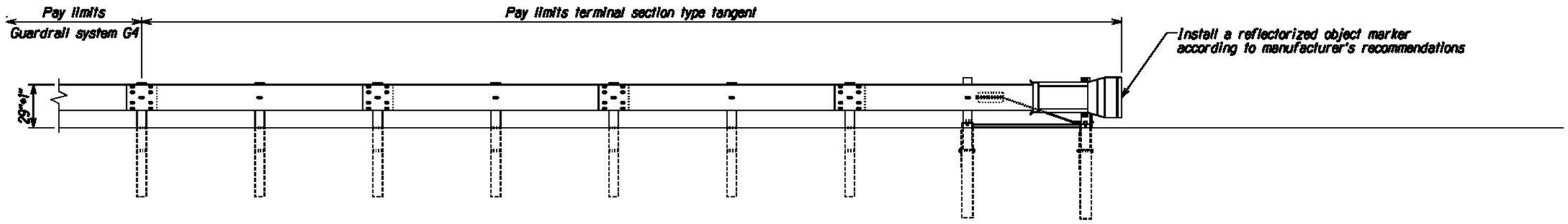
STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI SR 200(3)	M6	M6

Notes:

1. Details shown are to be used as a general guide since manufacturer's details may vary. Install a tangent G4 W-beam guardrail terminal that meets NCHRP-350 or MASH requirements per manufacturer's recommendations. Ensure that terminal meets appropriate test level for the project.
2. Install terminal at a 1:25 taper or flatter, to position the end farther away from the edge of the shoulder, or use a taper per manufacturer's recommendations.
3. See manufacturer's drawings for other details.



Plan



Elevation

Test Level	L (ft)
2 (< 45 mph)	25
3 (> 45 mph)	37.5

Licensed Professional Engineer No. 8336-C

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Expiration Date of License 4/16

U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

G4 W-BEAM GUARDRAIL TYPE TANGENT TERMINAL

Scale: N.T.S. Date: August 21, 2015

SHEET No. 3 OF 3

M6

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STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
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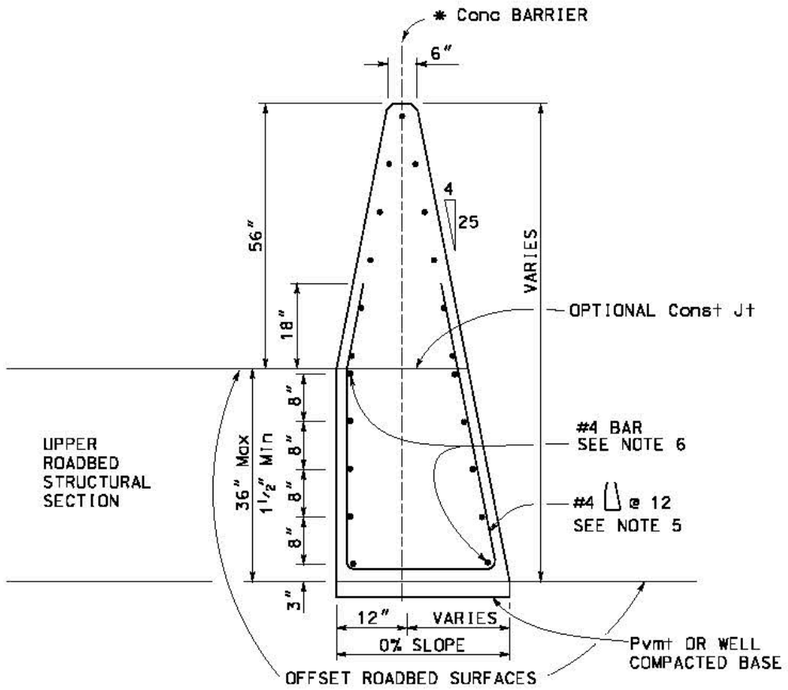
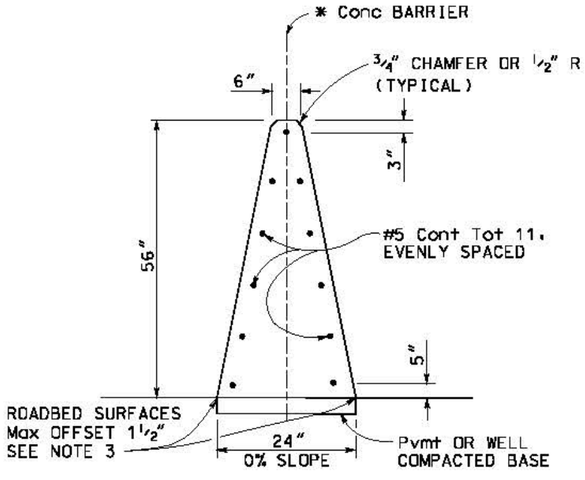


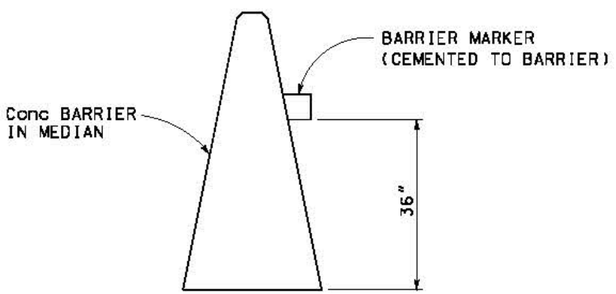
CONCRETE BARRIER TYPE 60GC

Details similar to Type 60G except as noted.
36" roadbed surfaces offset shown.



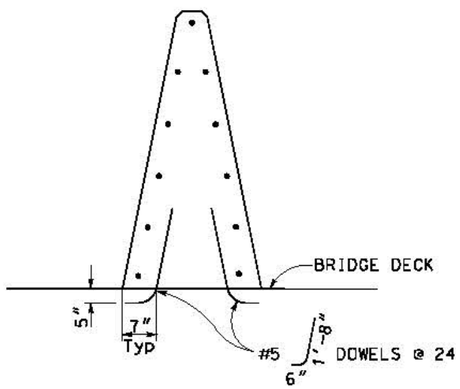
CONCRETE BARRIER TYPE 60G

(Monolithic concrete
glare screen/barrier)



CONCRETE BARRIER TYPE 60G DELINEATION

See Note 4



CONCRETE BARRIER TYPE 60GA

Details similar to Type
60G except as noted.

NOTES:

1. See Standard Plan A76E for details of Concrete Barrier Type 60G end anchors, connection to structures and transitions to Concrete Barrier Type 60.
2. See Standard Plan A76F for Concrete Barrier Type 60G transitions at bridge column and sign pedestals.
3. Where roadbed offset is greater than 1½", see Concrete Barrier Type 60GC.
4. Barrier delineation to be used when required by the Special Provisions.
5. Reinforcing stirrup not required for offsets less than 1'-0".
6. For roadbed surfaces offset greater than 1½" and less than or equal to 3", no reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface. For roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.

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The work was prepared by me or under my supervision and construction of this project will be under my observation.

Expiration Date of License 4/15

U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

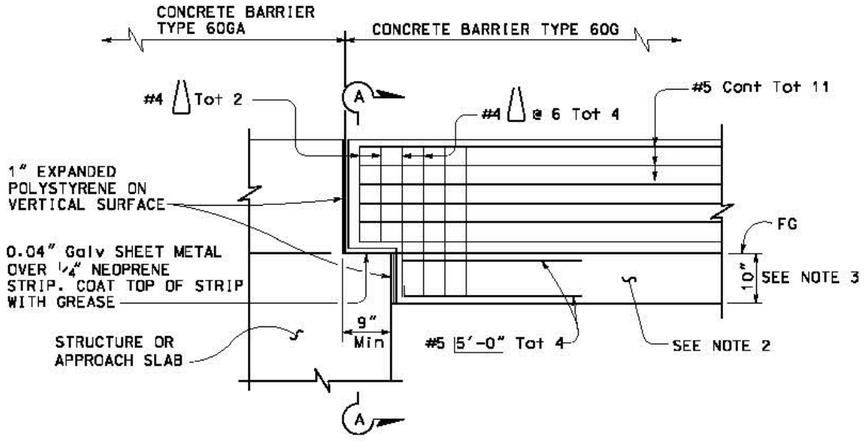
SPECIAL A76D
CONCRETE BARRIER TYPE 60G

Scale: N.T.S. Date: May 18, 2017

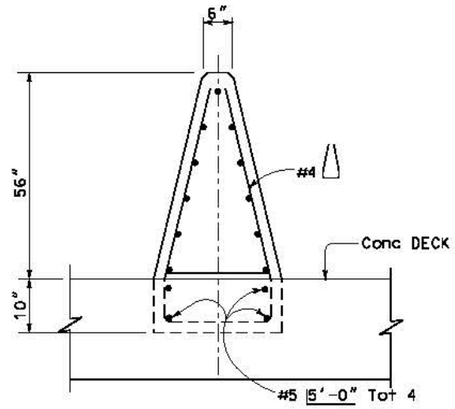
SHEET No. 1 OF 1

M:/Mproj/Lennie/Saddle East 11-6/sheets/shtm007.dgn

STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI SR 200(3)	M8	M10



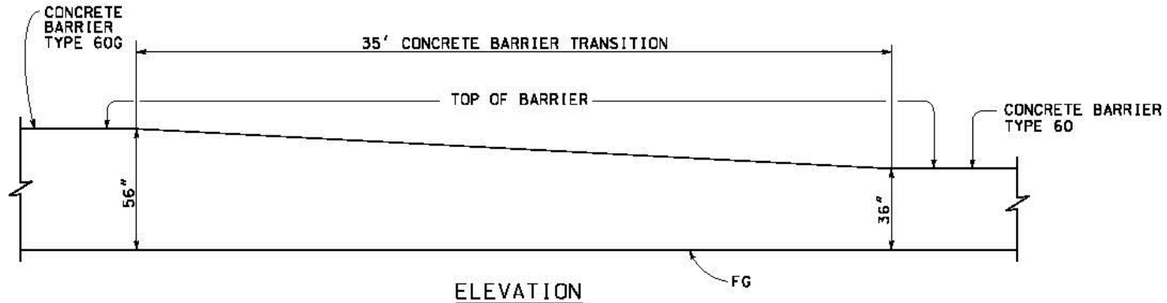
CONCRETE BARRIER TYPE 60G CONNECTION TO STRUCTURE



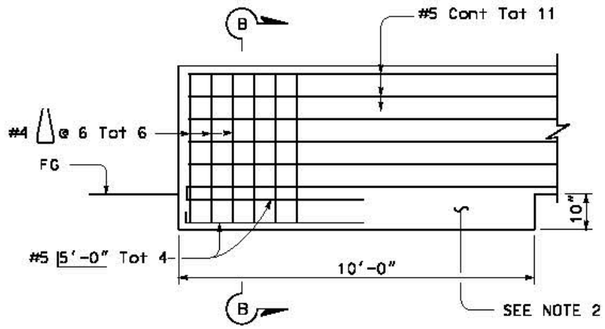
SECTION A-A

NOTES:

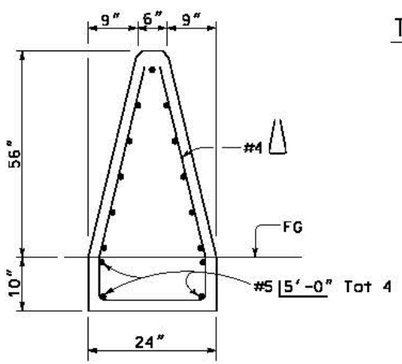
1. See Standard Plan A76D for Concrete Barrier Type 60G and Type 60GA.
2. Footing monolithic or doweled with 2-#8 x 8" @ 2'-0". The footing is required at concrete barrier ends and at interruptions in concrete barrier.
3. 10" concrete barrier footing extends 10' back from structure.
4. See Standard Plan A78I for transition to Thrie Beam Barrier.



ELEVATION

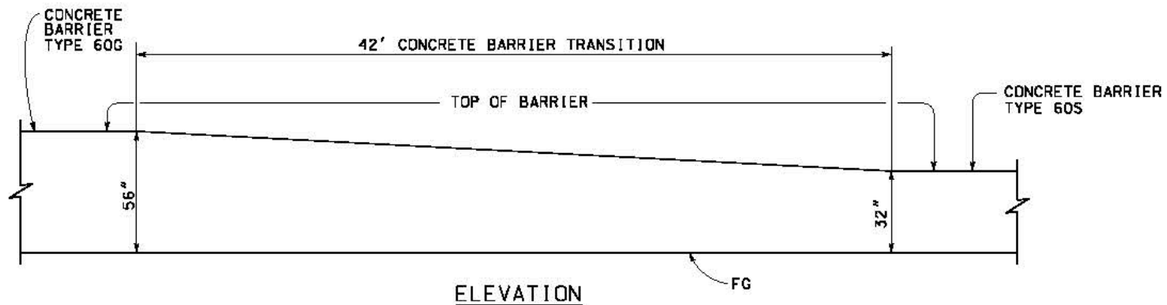


CONCRETE BARRIER TYPE 60G END ANCHORAGE



SECTION B-B

TRANSITION CONCRETE BARRIER TYPE 60G TO CONCRETE BARRIER TYPE 60



ELEVATION

TRANSITION CONCRETE BARRIER TYPE 60G TO CONCRETE BARRIER TYPE 60S

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No. 8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction of this project will be under my observation.

Expiration Date of License 4/15

U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SPECIAL A76E
CONCRETE BARRIER TYPE 60G (TRANSITION)

Scale: N.T.S. Date: May 18, 2017

SHEET No. 1 OF 1

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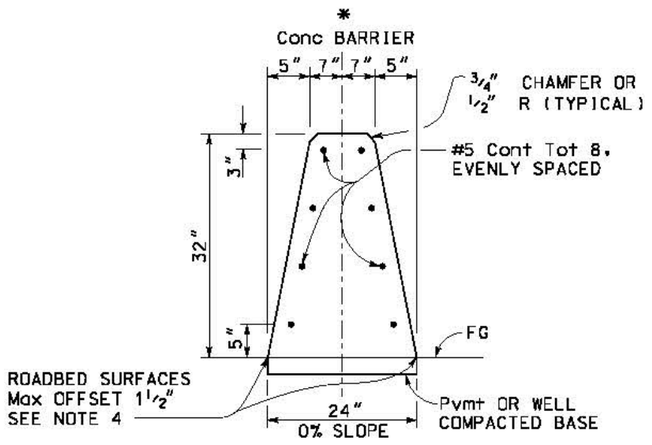
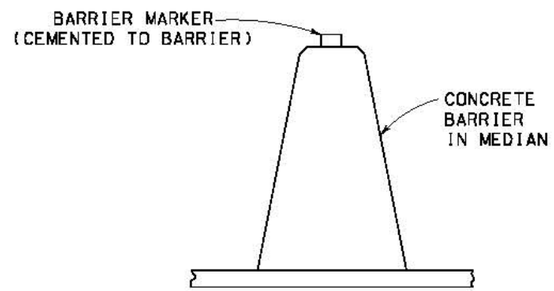
STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI SR 200(3)	M9	M10

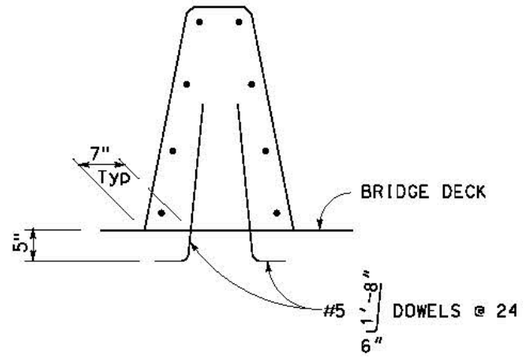


CONCRETE BARRIER TYPE 60S



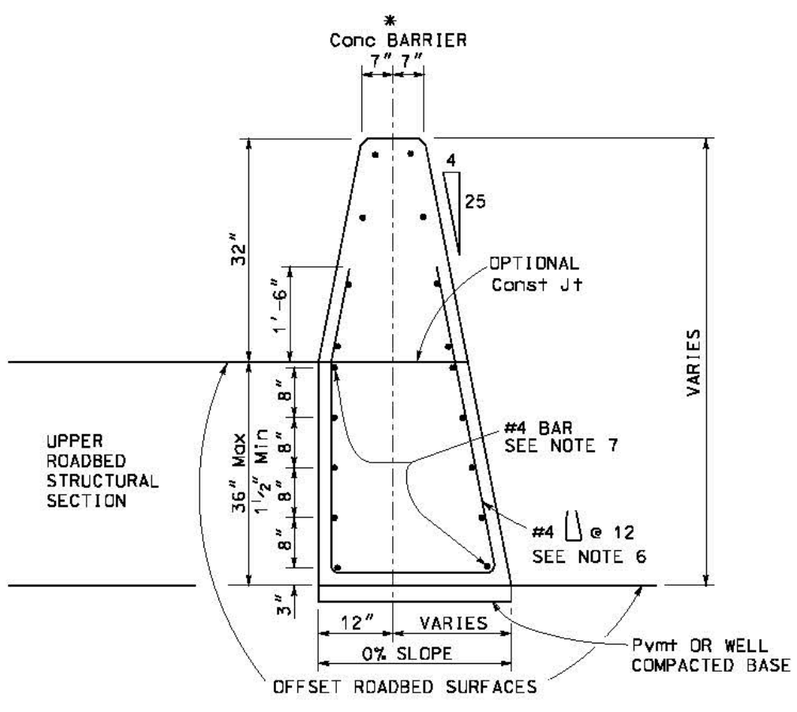
CONCRETE BARRIER TYPE 60S DELINEATION

See Note 5



CONCRETE BARRIER TYPE 60SA

Details similar to Type 60S except as noted.



CONCRETE BARRIER TYPE 60SC

Details similar to Type 60S except as noted.
Use concrete barrier end anchor when necessary.
36" roadbed surfaces offset shown.

NOTES:

1. See Standard Plan A76H for details of Concrete Barrier Type 60S end anchors, connection to structures and transitions to Concrete Barrier Type 50.
2. See Standard Plan A76I for Concrete Barrier Type 60S transitions at bridge column and sign pedestals.
3. Where glare screen is required on top of concrete barrier, use Concrete Barrier Type 60G.
4. Where roadbed offset is greater than 1 1/2" see Concrete Barrier Type 60SC.
5. Barrier delineation to be used when required by the Special Provisions.
6. Reinforcing stirrup not required for roadbed offsets less than 1'-0".
7. For roadbed surfaces offset greater than 1 1/2" and less than or equal to 3", no reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface. For roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.

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Expiration date of license 4/15.

U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SPECIAL A76G
CONCRETE BARRIER
TYPE 60S

Scale: N.T.S. Date: May 18, 2017

SHEET No. 1 OF 1

M9

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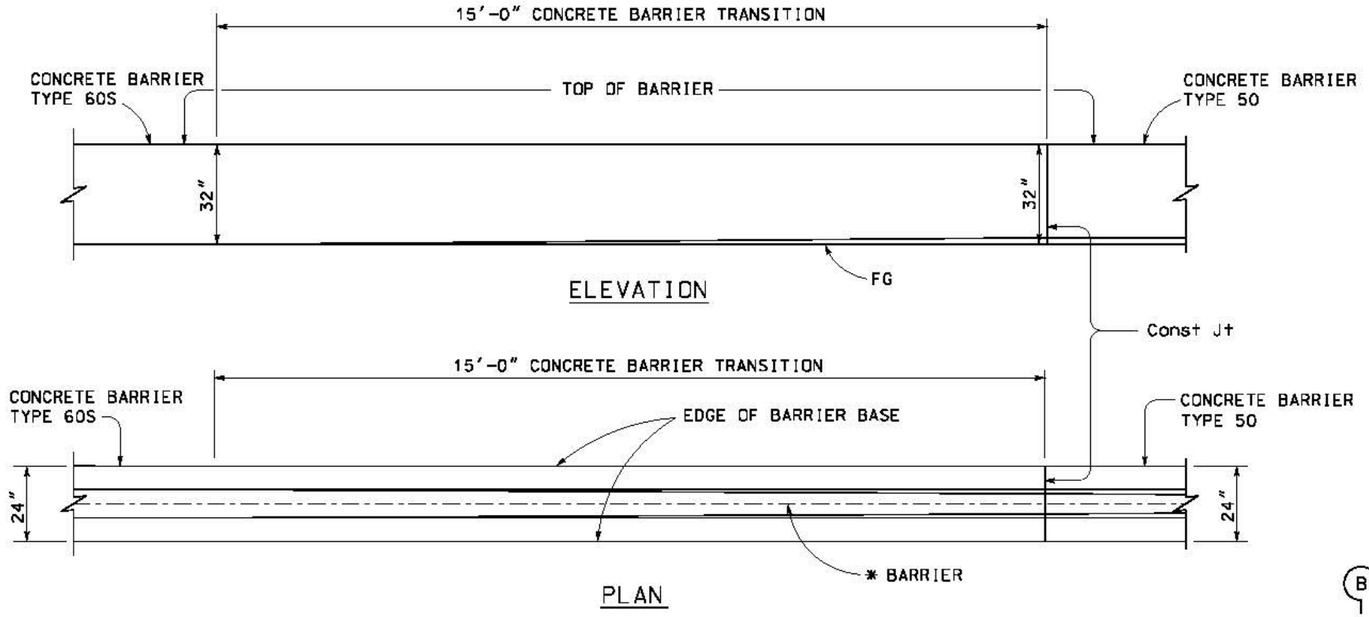
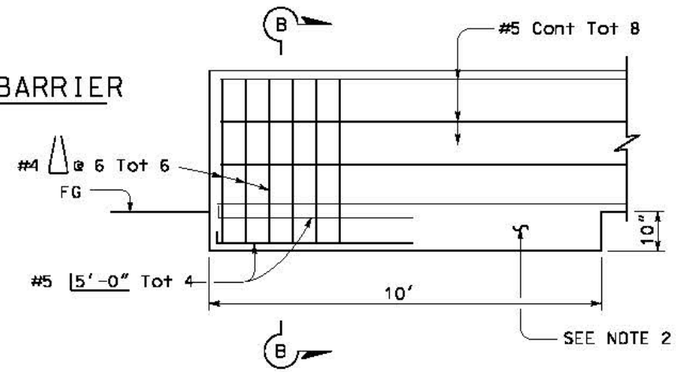
STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI SR 200(3)	M10	M10



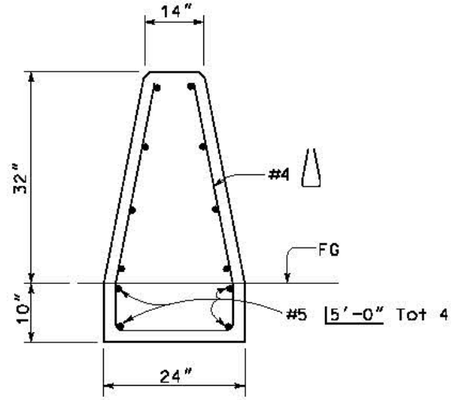
TRANSITION TYPE 60S CONCRETE BARRIER TO TYPE 50 CONCRETE BARRIER

NOTES:

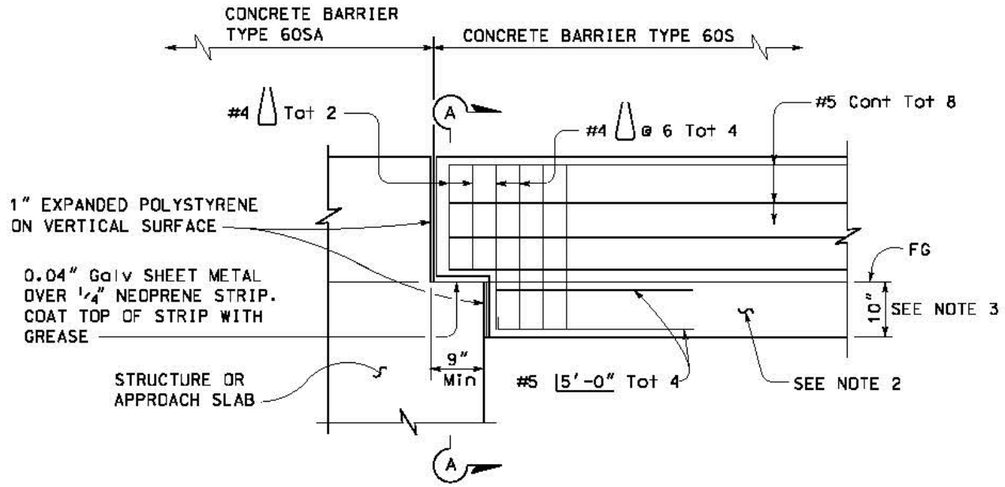
1. See Standard Plan A76G for Concrete Barrier Type 60S and Type 60SA.
2. Footing monolithic or doweled with 2-#8 x 8" @ 2'-0". The footing is required at concrete barrier ends and at interruptions in concrete barrier.
3. 10" concrete barrier footing extends 10'-0" back from structure.
4. See Standard Plan A78I for transition to Thrie Beam Barrier.



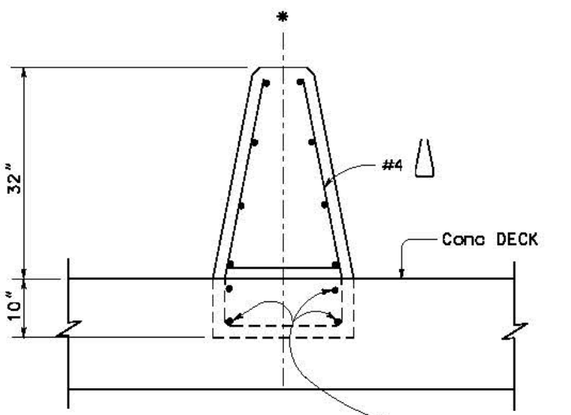
CONCRETE BARRIER TYPE 60S END ANCHORAGE



SECTION B-B



CONCRETE BARRIER TYPE 60S CONNECTION TO STRUCTURE



SECTION A-A

BRUCE K. MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

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Expiration Date of License 4/15.

U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SPECIAL A76H
CONCRETE BARRIER
TYPE 60S (TRANSITION)

Scale: N.T.S. Date: May 18, 2017

SHEET No. 1 OF 1

M10

M:/Mproj/Lennie/Saddle East 11-6/sheets/shtm010.dgn