TRAFFIC RAILING NOTES

This Traffic Railing Retrofit has been structurally evaluated to be equivalent or greater in strength to a design which has been successfully crash tested in accordance with NCHRP Report 350 TL-4 criteria.

CONCRETE: Concrete for Transition Blocks and Curbs shall be Class II (Bridge Deck).

REINFORCING STEEL: Reinforcing steel shall be ASTM A615, Grade 60.

THRIE-BEAM GUARDRAIL: Steel Thrie-Beam Elements shall meet the requirements for Class B (10 Gauge) Guardrail of AASHTO M 180, Type II (Zinc coated). The minimum panel length for Thrie-Beam Elements shall be 12'-6". Field drilled holes for Post connections shall be ¾" by 2½" slotted holes.

GUARDRAIL BOLTS: Guardrail bolts, nuts and washers shall be in accordance with AASHTO M180.

GUARDRAIL POSTS AND BASE PLATES: Posts and Base Plates shall be in accordance with ASTM A36 or ASTM A709 Grade 36.

ANCHOR BOLTS, NUTS AND WASHERS: Adhesive-Bonded Anchors and Anchor Bolts shall be fully threaded rods in accordance with ASTM F1554 Grade 105 or ASTM A193 Grade B7. At the Contractor's option, Anchor Bolts for through bolting may be in accordance with ASTM 449. All Nuts shall be single self-locking hex nuts and in accordance with ASTM A563 or ASTM A194. Flat Washers shall be in accordance with ASTM F436 and Plate Washers (for long slotted holes only) shall be in accordance with ASTM A36 or ASTM A709 Grade 36. After the nuts have been snug tightened, the anchor bolt threads shall be distorted to prevent removal of the nuts. Distorted threads and the exposed trimmed ends of anchors shall be coated with a galvanizing compound in accordance with the Specifications.

COATINGS: All Nuts, Bolts, Anchors, Washers, Guardrail Posts, Anchor Plates and Base Plates shall be hot-dip galvanized in accordance with the Specifications. Guardrail Post Assemblies shall be hot-dip galvanized after fabrication.

ADHESIVE-BONDED ANCHORS AND DOWELS: Adhesive Bonding Material Systems for Anchors and Dowels shall comply with Specification Section 937 and be installed in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 15,000 lbs. for ⅞" Ø anchor bolts; 55,000 lbs. for the 1¼" anchor bolts with 13" embedment; and 30,500 lbs. for the 1¼" Ø anchor bolts with 5" embedment.

BRIDGES ON CURVED ALIGNMENTS: The details presented in these Standards are shown for bridges on tangent alignments. Details for bridges on horizontally curved alignments are similar.

POST SPACING: Posts shall be located along the length of the bridge at typical 6'-3" or 3'-1½" spaces. Utilize the Modified Post Spacing at Intermediate Deck Joints Details as required to clear deck joints. Establish post spacing along the bridge and Roadway Guardrail Transition beginning with the Key Post. The variable post spacings located near begin and end bridge may be utilized to optimize the typical post spacing. Variable lengths of guardrail overlap are also permitted to optimize the typical post spacing. Symmetry of post spacing is not necessary.

THRIE-BEAM EXPANSION SECTION: Thrie-Beam Expansion Sections shall be installed at locations shown in the Plans. Install nuts for splice bolts finger-tight at 2½" slots in thrie beam expansion sections. Nuts shall fully engage bolts with a minimum of one bolt thread extending beyond the nuts. Distort the first thread on the outside of the nut to prevent loosening. Tighten guardrail bolts in 3¾" slots at guardrail post(s) that lie between the slotted expansion splice and bridge deck joint so that the bolt heads are in full contact with thrie-beam elements, but not so tight as to impede movement due to expansion.

NEOPRENE PADS: Neoprene pads must be plain pads with a durometer hardness of 60 or 70 and meet the requirements of Specification Section 932, except that testing of the finished pad will not be required.

ELEVATION MARKERS: Elevation Markers shall be placed on the top surface of the end bents as directed by the Engineer when portions of the existing traffic railing carrying existing elevation markers are removed. Markers are to be furnished by the Florida Department of Transportation and installed by the Contractor. The Department will determine the vertical Datum information for the marker.

REFLECTIVE RAILING MARKERS: Reflective Railing Markers shall conform to Section 993 of the Specifications. Install markers at the top of the guardrail posts at the spacings shown in the table below. Reflector color (white or yellow) shall conform to the color of the near edgeline.

PEDESTRIAN SAFETY TREATMENTS: Pedestrian Safety Treatment is required when called for in the Plans. See Index No. 400 for details.

BRIDGE NAME PLATE: If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise of individual decals of letters and numbers.

PAYMENT: Payment will be made under Metal Traffic Railing (Thrie-Beam Retrofit) which shall include all materials and labor required to fabricate and install the barrier and lapped guardrail where necessary to maintain post spacing. Transition Blocks and Curbs, Bridge Name Plate, Reflective Railing Markers and installation of Elevation Markers, where required, will not be paid for directly but shall be considered as incidental work.

REFLECTIVE RAILING MARKER SPACING

Distance – Edge of Travel Lane to Face of Railing	Spacing (Ft.)
< 4'	40'
4' to 8'	80'
> than 8'	None Required

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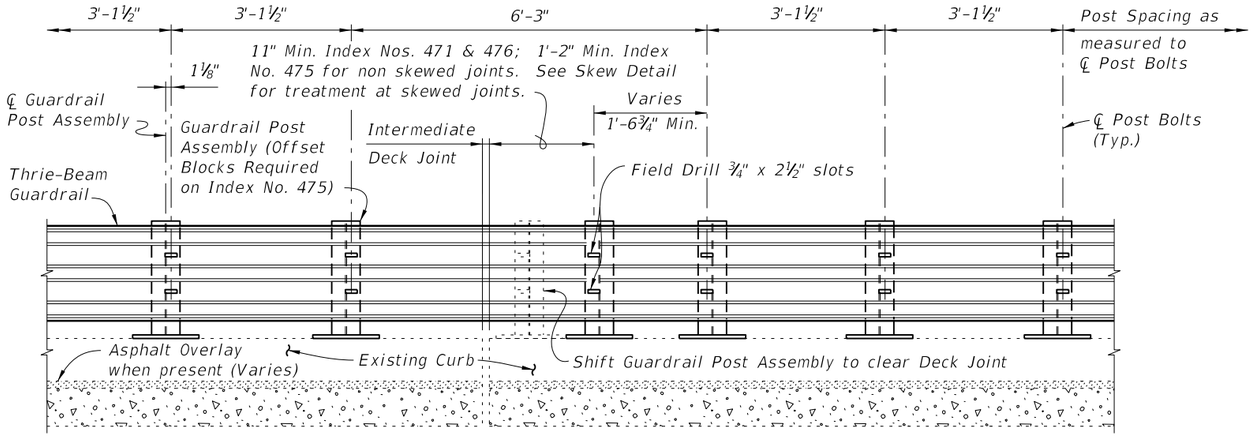
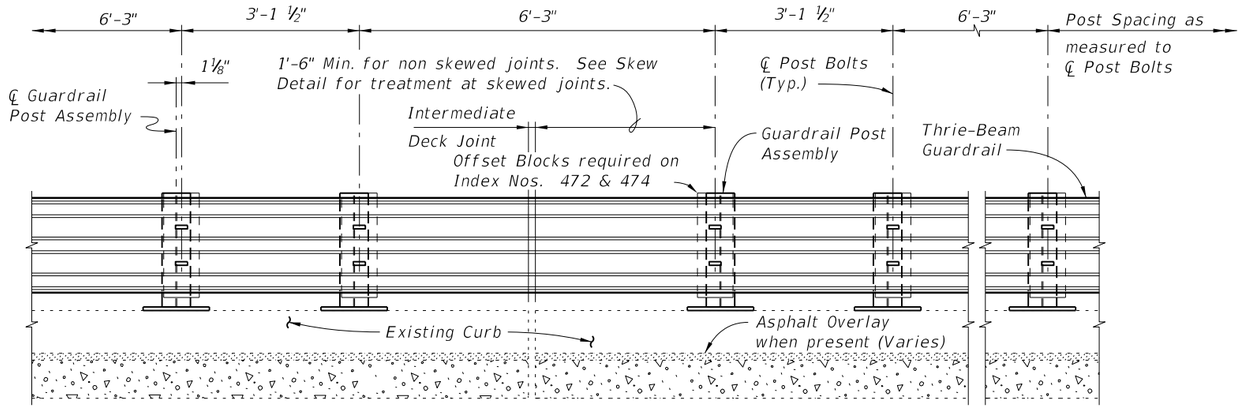


PARTIAL ELEVATION OF INSIDE FACE OF RAILING
MODIFIED POST SPACING AT INTERMEDIATE DECK JOINTS DETAIL FOR INDEX NOS. 471, 475 & 476



PARTIAL ELEVATION OF INSIDE FACE OF RAILING
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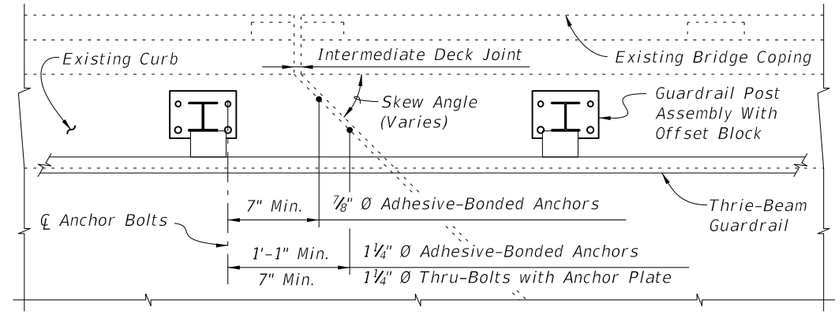
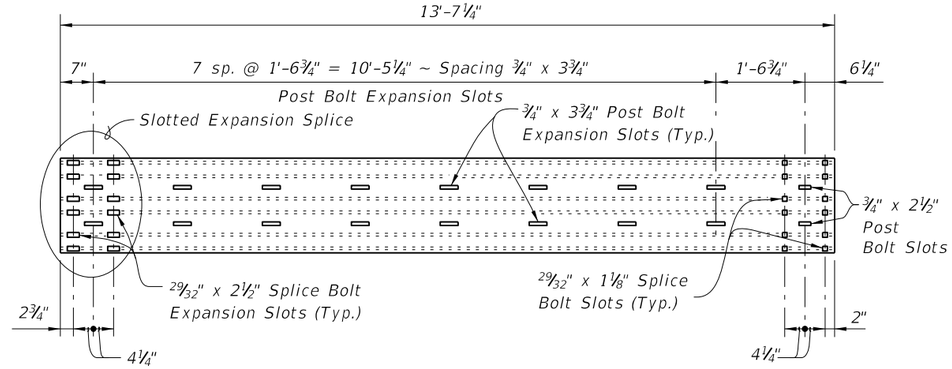


PARTIAL PLAN
INTERMEDIATE JOINT SKEW DETAIL



THRIE-BEAM EXPANSION SECTION

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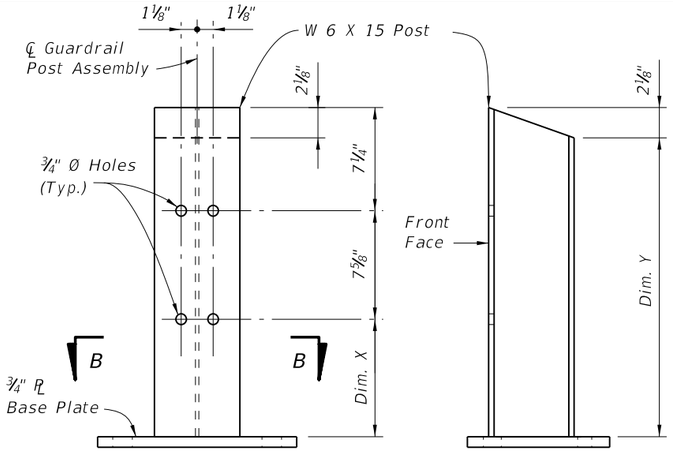
LAST REVISION	REVISION	DESCRIPTION:		FDOT DESIGN STANDARDS 2013	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) GENERAL NOTES & DETAILS	INDEX NO.	SHEET NO.
01/01/08			STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			470	2

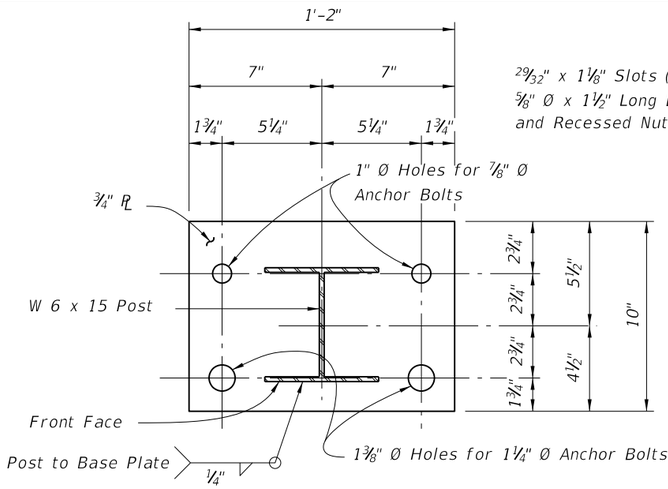


FRONT VIEW SIDE VIEW

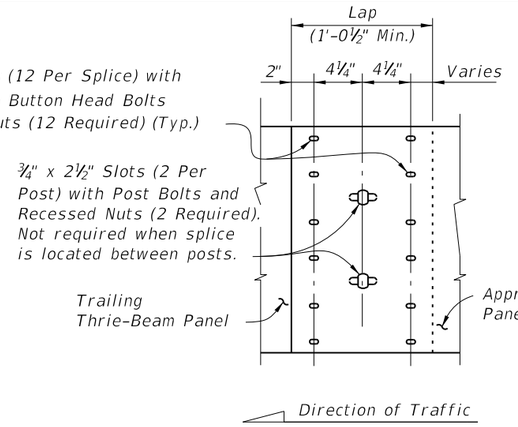
POST DIMENSION TABLE			
POST	CURB HEIGHT (DIM. A)	DIM. X	DIM. Y
Post "A"	5" to 7"	11¼"	2'-0"
Post "B"	> 7" to 10"	9¼"	1'-10"
Post "C"	> 10" to 1'-0"	7¼"	1'-8"

Note: Dim. A is equal to the exposed curb height. For location of Dim. A see Index Nos. 471 thru 476, Sheet 1.

GUARDRAIL POST ASSEMBLY DETAIL

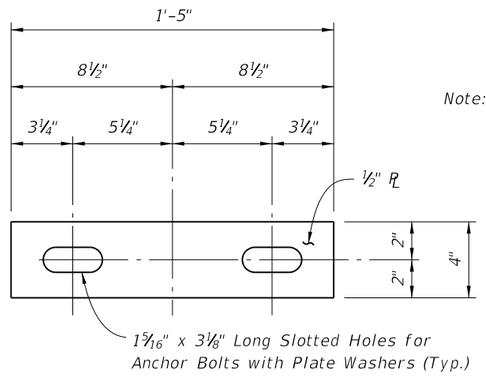


SECTION B-B



THRIE-BEAM GUARDRAIL SPLICE

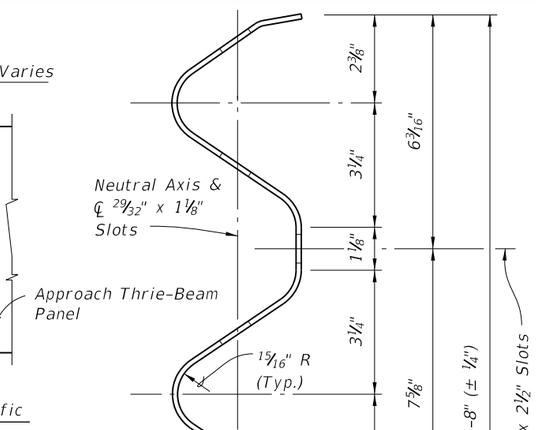
Note: All Thrie Beam Panels shall be lapped in the direction of adjacent traffic. At the Contractor's option, laps may be extended. Field drill holes in Trailing Thrie Beam Guardrail Panel as required.



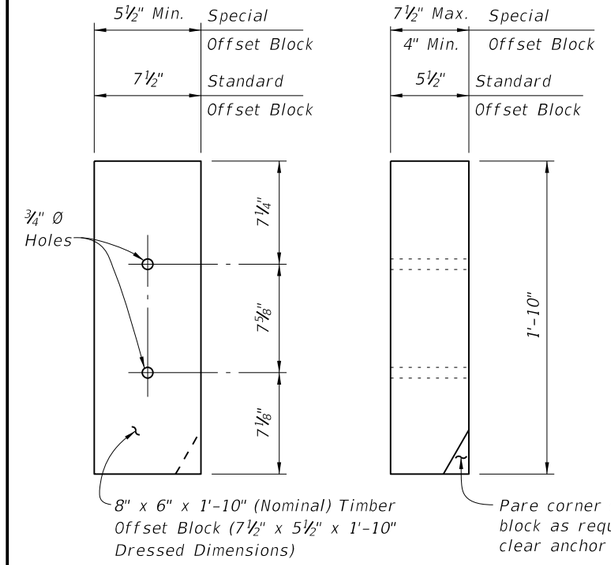
ANCHOR PLATE DETAIL

Note: The Anchor Plate and Plate Washer are applicable only to 1¼" Ø Anchor Bolts that are to be thru-bolted for Index Nos. 471 & 476.

PLATE WASHER DETAIL



TYPICAL SECTION THRU THRIE-BEAM GUARDRAIL (EXPANSION SECTION SIMILAR)

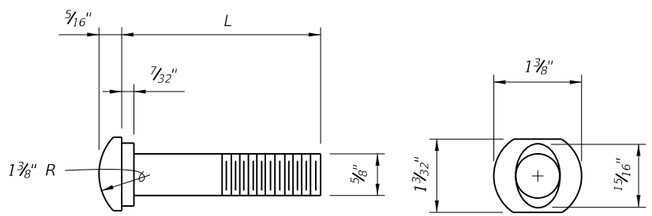


FRONT VIEW SIDE VIEW

OFFSET BLOCK NOTES:

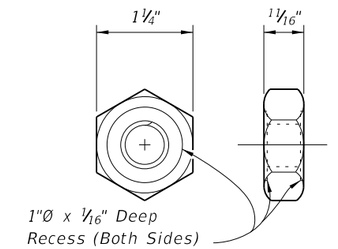
1. Offset blocks shall be timber or Approved Alternate. Uniformity of block size and alignment of guardrail shall be maintained along length of retrofit.
2. Post bolt holes in offset blocks to be centered (± ¼").
3. Timber offset blocks shall be dressed on all four sides (S4S).
4. Block assemblies for Special Offset Blocks can be made up of 2 or 3 Special or Standard Offset Blocks, field dressed as required.

OFFSET BLOCK DETAIL



⅝" OVAL SHOULDER BUTTON HEAD BOLT

L	THREAD LENGTH	APPLICATION
1½"	Full Length	Rail Splice Bolt, Post Bolt for Index Nos. 471, 473 & 476
Varies (8" Min.)	4" Min.	Post Bolt for Index Nos. 472, 473, 474, 475 & 476



⅝" MODIFIED HEAVY HEX NUT (RECESSED NUT)

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LAST REVISION	REVISION	DESCRIPTION:		FDOT DESIGN STANDARDS 2013	TRAFFIC RAILING - (THRIE-BEAM RETROFIT) GENERAL NOTES & DETAILS	INDEX NO.	SHEET NO.
01/01/08			STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			470	3