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.

THREE-BEAM GUARDRAIL: Steel Three-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 Three-Beam Elements shall be 12'-6". Posts drilled holes for Post connections shall be 3/4" by 2½" slotted holes.

GUARDRAIL BOLTS: Guardrail bolts, nuts and washers shall be in accordance with AASHTO M 860.

GUARDRAIL POSTS AND BASE PLATES: Posts and Base Plates shall be in accordance with ASTM A56 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 10S or ASTM A18S 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. Fast Washers shall be in accordance with ASTM F436 and Plate Washers (for long slotted holes only) shall be in accordance with ASTM A56 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 anchor's shank shall be coated with a galvanizing compound in accordance with the Specifications.

COATINGS: Anchor 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 918 and shall be in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 15,000 lbs. for 3/4" anchor bolts; 25,000 lbs. for the 1" anchor bolts with 13" embedment; and 30,500 lbs. for 1 1/4" anchor bolts with 15" embedment.

BRIDES 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 a minimum of 6'-1" to 1'-3 1/2" spaces. Unlike 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.

REFLECTIVE RAILING MARKERS: Reflective Railing Markers shall conform to Section 993 of the Specifications. Installation of Elevation Markers, where required, will not be paid for directly but shall be considered as incidental work.

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.

PEDESTRIAN SAFETY PIPE RAIL: Pedestrian Safety Pipe Rail is required when called for in the Plans. See Index No. 400 for details.

BREIDGE 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 (Three-Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" backlit lettering on 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 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. The Pedestrian Safety Pipe Rail, 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.

<table>
<thead>
<tr>
<th>REFLECTIVE RAILING MARKER SPACING</th>
<th>Distance from to Face of Railing</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Edge of Travel Lane</td>
</tr>
<tr>
<td>&lt; 4'</td>
<td>40&quot;</td>
</tr>
<tr>
<td>4&quot; to 8'</td>
<td>80&quot;</td>
</tr>
<tr>
<td>&gt; than 8'</td>
<td>None Required</td>
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</tbody>
</table>