This Traffic Railings 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).

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". Field drilled holes for Post connections shall be 5/8" 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. The field testing proof loads required by Specification Section 416 shall be 15,000 lbs. for 5/8" Ø anchor bolts; 30,000 lbs. for the 3/4" anchor bolts with 13" embedment; and 30,500 lbs. for 1" Ø anchor bolts with 19" embedment.

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 5/8" anchor bolts; 30,000 lbs. for the 3/4" anchor bolts with 13" embedment; and 30,500 lbs. for the 1" anchor bolts with 19" embedment.

BEARING PADS: Provide plain neoprene pads with a durometer hardness of 60 or 70 and meeting the requirements of Specification Section 994 and may comprise individual details of letters and numbers.

ELEVATION MARKERS: Elevation Markers need not be replaced when portions of the existing traffic railing carrying existing elevation markers are removed.

BARRIER DELINEATORS: Install Barrier Delineators at the top of the guardrail offset blocks in accordance with Specification Section 705.

PEDESTRIAN SAFETY TREATMENTS: Pedestrian Safety Treatment is required when called for in the Plans. See Index 536-001 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 as 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 sheathing and adhesive backing shall comply with Specification Section 994 and may comprise individual details 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 Curves, Bridge Name Plate and Barrier Delineators and Installation of Elevation Markers, where required, will not be paid for directly but shall be considered as incidental work.
PARTIAL PLAN
INTERMEDIATE JOINT SKEW DETAIL

THREE-BEAM EXPANSION SECTION

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
MODIFIED POST SPACING AT INTERMEDIATE DECK JOINTS DETAIL
FOR INDEX 460-471, 460-475 & 460-476

POST SPACING AS
measured to
@ Post Bolts (Typ.)
TRAFFIC RAILING - (THRIE-BEAM RETROFIT)

TYPICAL DETAILS & NOTES

POST DIMENSION TABLE

<table>
<thead>
<tr>
<th>POST</th>
<th>CURB HEIGHT (DIM. A)</th>
<th>DIM. X</th>
<th>DIM. Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post &quot;A&quot;</td>
<td>5' to 7'</td>
<td>1 1/2'</td>
<td>2'</td>
</tr>
<tr>
<td>Post &quot;B&quot;</td>
<td>&gt; 7' to 10'</td>
<td>9/16'</td>
<td>1 1/2'</td>
</tr>
<tr>
<td>Post &quot;C&quot;</td>
<td>&gt; 10' to 1'-0&quot;</td>
<td>7/16'</td>
<td>1 1/2'</td>
</tr>
</tbody>
</table>

Note: Dim. A 1/2 equal to the exposed curb height. For location of Dim. A see Index 460-471 thru 460-476, Sheet 1.

GUARDRAIL POST ASSEMBLY DETAIL

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 (± 1/2)
3. Timber offset blocks shall be dressed on all four sides (S4S).
4. Alternate. Uniformity of block size and Standard Offset Blocks can be made up of 2 or 3 Special or Standard Offset Blocks.

ANCHOR PLATE DETAIL

OFFSET BLOCK DETAIL

1 3/4 x 3/8 Long Slotted Holes for Anchor Bolts with Plate Washers (Typ.)

PLATE WASHER DETAIL

1/2" x 3/8 Hole (centered)

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

1/2" MODIFIED HEAVY HEX NUT (RECESSED NUT)

1/2" OVAL SHOULDER BUTTON HEAD BOLT

<table>
<thead>
<tr>
<th>L</th>
<th>THREAD LENGTH</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2&quot;</td>
<td>Full Length</td>
<td>Rail Splice Bolt, Post Bolt for Index 460-471, 460-473 &amp; 460-476</td>
</tr>
<tr>
<td>Varies</td>
<td>4&quot; Min.</td>
<td>Post Bolt for Index 460-472, 460-473, 460-474, 460-475 &amp; 460-476</td>
</tr>
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