GENERAL NOTES

1. The illustrations for guardrail applications are standard configurations; adjustments are to be made as required by site specific conditions to attain optimum design for function, economy, and serviceability.

2. The beginning of guardrail need shall be at the greatest of the upstream distances from the hazard, as determined from Figures 1 and 2, and other application details of this Index.

3. Use Panel A; where panel length is greater than 12'-0". Guardrail shall be constructed with roll elements 12'-0" in length where 25'-0" elements are called for by this and other standards (where specifically called for in the plans).

4. Post spacing shall be 6'-0" except that reduced spacing shall be used for (a) transitions to guardrails at right angles to guardrails, and (b) transitions to roadway-mounted guardrails. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. The standard guardrail shall be continuous for access. 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1. These drawings are representative of the various proprietary guardrail end anchorage assemblies listed on the Department’s Qualified Products List (QPL). For specific details and requirements see the vendor drawings on the QPL at www.dot.state.fl.us/specificationsoffice.

2. These drawings present the general graphics to show the limits of payment for guardrail and end anchorage assemblies, modifications to the shoulder and placement of the miscellaneous asphalt mix strips.

3. These drawings, along with the various vendor drawings on the QPL, are intended to show sufficient details for installation of the end anchorage assemblies and their connection to shoulder guardrail. This precludes the requirement for shop drawing submittals unless otherwise called for in the plans. The various end anchorage assemblies shall be assembled in accordance with the manufacturer’s detailed drawings, procedures, and specifications.

4. The various proprietary guardrail treatments listed on the QPL are intended for use in approach and guardrail anchorage for shoulder guardrail. The effective length of the end treatments vary—refer to the vendor drawings on the QPL for the length and the use of special panels and details. Standard guardrail, guardrail transitions or other special treatments shall not be included within the limits of the end anchorage assembly. See the vendor drawings for the alignment of the end treatment with respect to the normal guardrail alignment.

5. Flared or parallel end anchorage assemblies shall not be used in medians where horizontal clearance requires use of a back rail.

6. Each of the various end anchorage assemblies has unique features. Careful attention should be given to the types and orientation of the posts and other components. Refer to the vendor drawings on the QPL for the specific requirements of each system.

7. For galvanizing requirements of the metallic components see Standard Specifications Section 967.

8. The end anchorage assemblies shown on the QPL are suitable for all design speeds.

9. Flared end anchorage assemblies shall be paid for under the contract unit price for Guardrail End Anchorage Assembly (Flared), EA.

Parallel end anchorage assemblies shall be paid for under the contract unit price for Guardrail End Anchorage Assembly (Parallel), EA.

The unit price for end anchorage assemblies shall be full compensation for furnishing and installing all components in accordance with the plans, the manufacturer’s detailed drawings, procedures, and specifications and these drawings.

---

**PLACEMENT OF PARALLEL OPTION AT CURBED LOCATIONS**

**APPROACH END ANCHORAGE DETAILS**
Clear Zone Limit Or Horizontal Clearance Limit
In accordance with the Criteria in Volume 1
Chapters 2, 4, and 25 of the "Plans Preparation Manual" and Index No. 700.

Design Speed mph | X (Length Of Advancement) Ft.
--- | ---
145 | 16 (0-8)
250 | 13 (0-6)

Length of advancement determined from the diagram and equations above establishes the location of the upstream beginning length of need for guardrail, however, the length of advancement can be no less than that required by other details of this index.

The flared end anchorage, with 4' nose offset is shown in the diagram above, however, the diagram applies to other configurations that may occur at the beginning of length of need, such as, other flare designs upstream, returns and other upstream deflected, tangent and curvilinear conditions.

Equation Variables:

- Distance in feet from near edge of the near approach traffic lane to either (a) the back of the hazard, when the hazard is located inside the clear zone or horizontal clearance or (b) the clear zone or horizontal clearance outer limit, when the hazard extends to or goes beyond the clear zone or horizontal clearance limit. For right side hazards on two-way undivided facilities, D is measured from the inside edge of the near approach traffic lane (see Figure 2).

- Distance in feet from the near edge of the near approach traffic lane to the face of guardrail at its intersection with the departure line. For left side hazards on two-way undivided facilities, it is measured from the inside edge of the near approach traffic lane (see Figure 2).

For flared and parallel end anchorage, the beginning length of need is to be set at the center of post #1. That is, the departure line must intersect the face of the roll at post #1.

For flared end anchorage assemblies, the offset distance "o" will equal the normal guardrail offset measured from the face of the guardrail to the edge of the near approach travel lane plus 1", or 1", for greater than 45 mph.

LENGTH OF ADVANCEMENT – FIGURE 1
TWO-LANE TWO-WAY TRAFFIC

For description of the dimensions D, d and X, see Length of Advancement – Figure 1.
For additional shoulder guardrail information, see Details B and C.

LOCATING TERMINALS ON SHOULDER GUARDRAILS – FIGURE 2
GUARDRAIL APPLICATION FOR ROADSIDE HAZARDS

DIVIDED ROADWAY - DETAIL B

GUARDRAIL APPLICATION FOR NARROW MEDIAN AND GORE HAZARDS

UNDIVIDED ROADWAY - DETAIL C

ONE-WAY TRAFFIC - DETAIL G

OPPOSING TRAFFIC - DETAIL D
UNDIVIDED ROADWAY - DETAIL D

DIVIDED ROADWAY - DETAIL P

GUARDRAIL APPLICATIONS FOR BRIDGES WITH FULL WIDTH SHOULDERS AND SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING FULL LENGTH OF APPROACH SLAB
### GUARDRAIL LENGTHS (FT.)

<table>
<thead>
<tr>
<th>Design Speed (mph)</th>
<th>Projected ADT</th>
<th>CZ (ft.)</th>
<th>6 &amp; 8 Row/ 10 &amp; 12 Row/</th>
<th>10 &amp; 12 Row/</th>
<th>Guardrail Length (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Standard</td>
<td>Min.</td>
<td>Median</td>
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<tr>
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<td>21800</td>
<td>44</td>
<td>54</td>
<td>84</td>
<td>100.5</td>
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<tr>
<td>55</td>
<td>21900</td>
<td>34</td>
<td>44</td>
<td>68</td>
<td>104.0</td>
</tr>
<tr>
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<td>22000</td>
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<td>22000</td>
<td>24</td>
<td>38</td>
<td>68</td>
<td>94.0</td>
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<tr>
<td>65</td>
<td>22000</td>
<td>24</td>
<td>38</td>
<td>68</td>
<td>94.0</td>
</tr>
</tbody>
</table>

**Remarks:**
Lengths are based on minimum median widths and on standard clear zone widths for travel lanes on tangent runways, and the length of advancement needed for flared and anchorage assemblies to shield normal transverse underride and bridge end hazards. Lengths may need to be adjusted for auxiliary lane, curved runways, parallel anchorage assemblies, skewed crossings and other hazards present.

### GUARDRAIL LENGTHS (INCHES)

<table>
<thead>
<tr>
<th>6' Bridge Shoulder</th>
<th>10' Bridge Shoulder</th>
<th>1.5' TAPER RATE</th>
<th>2.0' TAPER RATE</th>
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</thead>
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<tr>
<td>P6 (in)</td>
<td>Length (ft.)</td>
<td>P10 (in)</td>
<td>Length (ft.)</td>
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<tr>
<td>32</td>
<td>9.5 6 15.5 193.75 6.5 4 10.5 132.25</td>
<td>15.5 10 23.5 293.75 6.5 6 14.5 181.25</td>
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</tr>
<tr>
<td>34</td>
<td>9.5 7 17.5 218.75 7.5 5 12.5 156.25</td>
<td>16.5 11 25.5 313.75 6.5 7 16.5 206.25</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>9.5 8 19.5 243.75 8.5 6 14.5 181.25</td>
<td>17.5 12 27.5 343.75 6.5 8 18.5 231.25</td>
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</tr>
<tr>
<td>38</td>
<td>11.5 8 21.5 268.75 9.5 6 16.5 206.25</td>
<td>18.5 13 29.5 363.75 6.5 9 20.5 266.25</td>
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</tr>
<tr>
<td>40</td>
<td>11.5 9 23.5 293.75 10.5 7 18.5 231.25</td>
<td>19.5 14 31.5 383.75 6.5 10 22.5 306.25</td>
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</tr>
<tr>
<td>42</td>
<td>13.5 9 25.5 318.75 11.5 8 20.5 256.25</td>
<td>20.5 15 33.5 403.75 6.5 11 24.5 331.25</td>
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</tr>
<tr>
<td>44</td>
<td>15.5 10 27.5 343.75 12.5 9 22.5 281.25</td>
<td>21.5 16 35.5 423.75 6.5 12 26.5 356.25</td>
<td></td>
</tr>
</tbody>
</table>

The lengths shown in this table are typical for runways with standard width shoulders. Length requirements should be determined on a site-specific basis for both standard width and narrow bridge shoulders and end anchorage or end shielding use.

### GUARDRAIL TREATMENTS

**Approach Guardrail Treatments for Bridges with Safety Shape Traffic Railing**

**Extending Full Approach Slab Length in Wide Medians with Flush Shoulders**

**When End Terminal Cannot Be Located Outside of Opposing Roadway Clear Zone**

**Approach Guardrail Treatments for Bridges with Safety Shape Traffic Railing**

**Extending Full Approach Slab Length in Wide Medians with Flush Shoulders**

**When End Terminal Is Outside of Opposing Roadway Clear Zone**

**Approach Guardrail Treatments for Bridges with Safety Shape Traffic Railing**

**Extending Full Approach Slab Length in Wide Medians with Flush Shoulders**

**Note:** For approach and anchorage assemblies see sheets elsewhere in this Index and the plans.
MEDIAN WITH 10' BRIDGE SHOULDERS

MEDIAN WITH 6' BRIDGE SHOULDERS

Note: The guardrail configurations shown apply only to parallel or near parallel bridges with open medians.

APPRAoch GUARDRAIl TREATMENTS FOR BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING
EXTENDING FULL APPROACH SLAB LENGTH IN NARROW MEDIANAS WITH FLUSH SHOULDERS

SIZING CRASH CUSHIONS LOCATED ON OPPOSING ROADWAY SHOULDERS

$S = \frac{V^2}{2g}$ (Design Speed) $\frac{L}{S}$ (Design Speed) $\frac{L}{S}$ (Design Speed)

The lengths shown in the table are based on standard widths for roadway and bridge median shoulders. Length requirements for both standard width and narrow bridge shoulders and end anchorage or end shielding requirements shall be determined on a site-specific basis. When crash cushions are required on opposing roadway shoulders, their sizes may be determined by the residual speeds (5%) along the runoffs from the approach roadway. However, when calculated speeds (5%) are less than 30 mph, crash cushions shall be no less in size than for 30 mph, see speed diagram left. The number of panels may be reduced when installing a crash cushion more than 2.5 in. wide, see # below.

# Number shown is the minimum; number of panels plus a W-three beam transition panel single for guardrail must have a length of five (5) or more panels.
When End Terminal Is Outside of Opposing Roadway Clear Zone

Approach Guardrail Treatments for Bridges with Safety Shape Traffic Railing Extending Less Than Full Approach Slab Length in Wide Medians with Flush Shoulders

**GUARDRAIL LENGTHS**

<table>
<thead>
<tr>
<th>Panel (No.)</th>
<th>Length (FT)</th>
<th>Panels (No.)</th>
<th>Length (FT)</th>
<th>Panels (No.)</th>
<th>Length (FT)</th>
<th>Panels (No.)</th>
<th>Length (FT)</th>
<th>Panels (No.)</th>
<th>Length (FT)</th>
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<tr>
<td>1-10 Taper Rate</td>
<td>6' Bridge</td>
<td>Shoulder</td>
<td>10' Bridge</td>
<td>Shoulder</td>
<td>6' Bridge</td>
<td>Shoulder</td>
<td>10' Bridge</td>
<td>Shoulder</td>
<td>6' Bridge</td>
</tr>
<tr>
<td>1-15 Taper Rate</td>
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<tr>
<td>38</td>
<td>7.5</td>
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<td>1.5</td>
<td>9.0</td>
<td>5.25</td>
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<td>15.0</td>
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<td>12.5</td>
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<td>18.75</td>
<td>1.5</td>
<td>27.0</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**REMARKS**

Lengths are based on minimum median widths and on standard clear zone widths for travel lanes on tangent roadways, and the length of advancement needed for flared end anchorage assemblies to shield normal transverse underrun and bridge end hazards. Lengths may need to be adjusted for connection location on wing post or bridge traffic railing barrier (see Index No. 402), auxiliary lanes, curved roadways, parapet and anchorage assemblies, skewed crossings, and other hazards present. When the wing post is replaced by bridge traffic railing barrier, reference Details J and see Index No. 402.

Note: For approach and anchorage assemblies see sheets elsewhere in this Index and the plans.
MEDIAN WITH 10' BRIDGE SHOULDER

GUARDRAIL LENGTHS

<table>
<thead>
<tr>
<th>MEDIAN WIDTH</th>
<th>6' BRIDGE SHOULDERS</th>
<th>10' BRIDGE SHOULDERS</th>
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</thead>
<tbody>
<tr>
<td>1:10 TAPER RATE</td>
<td>1:15 TAPER RATE</td>
<td>1:10 TAPER RATE</td>
</tr>
<tr>
<td>PANELS (No.)</td>
<td>LENGTH (FT)</td>
<td>PANELS (No.)</td>
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<tr>
<td>26</td>
<td>17.3</td>
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<tr>
<td>20</td>
<td>21.5</td>
<td>244.75</td>
</tr>
</tbody>
</table>

The lengths shown in this table are based on standard widths for roadway and bridge median shoulders. Length requirements for both standard and narrow bridge shoulders and end anchorage or end shielding requirements shall be determined on a site specific basis. When crash cushions are required on opposing roadway shoulders, their sizes may be determined by the following equation for the approach roadway:  

\[
\text{Crash Cushion Size} = \frac{\text{Speed} \times \text{Design Speed} \times \sqrt{\text{Design Speed}}}{5} 
\]

SIZING CRASH CUSHIONS LOCATED ON OPPOSING ROADWAY SHOULDERS

APPRAH GUARDRAIL TREATMENTS FOR BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING
EXTENDING LESS THAN FULL APPROACH SLAB LENGTH IN NARROW MEDIAN WITH FLUSH SHOULDERS

2010 FDOT Design Standards

GUARDRAIL
GUARDRAIL APPLICATIONS FOR INTERSECTING DRIVES AND SIDE ROADS ON RURAL FACILITIES
BRIDGES OVER STREAMS

BRIDGES OVER STREAMS

BRIDGES OVER RAILROADS

BRIDGES OVER ROADWAYS OR RAILROADS

SKETCHES - BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING LESS THAN FULL APPROACH SLAB LENGTH

SKETCHES - BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING FULL APPROACH SLAB LENGTH

SKETCH NOTES
1. These sketches are for showing shoulder interface between roadways and bridges where crossings are normal to other roadways, railroads and streams. For site specific applications and details see the plans and the FDOT Structures Design Office "Detailing Manual" and "Design Guidelines".

2. Shoulder treatments shown in these sketches are for locations with shoulder gutter; shoulder hinge location will vary for facilities without shoulder gutter.

SHOULDER INTERFACE BETWEEN ROADWAYS AND BRIDGES
MISCELLANEOUS PAVING FOR STANDARD GUARDRAIL SECTIONS

SECTION AA (EXAMPLE FOR 30' CLEAR ZONE)

SECTION BB (EXAMPLE FOR 30' CLEAR ZONE)

SECTION CC (EXAMPLE FOR 30' CLEAR ZONE)

SHOULDS, SLOPES AND MISCELLANEOUS PAVING FOR FLARED END ANCHORAGE ASSEMBLIES
16d Galvanized Nail (Timber And Non-Form #5 Plastic Blocks Only)

STEEL POST
TIMBER POST

16d Nail For Prevention of Offset Block Rotation

STEEL MODIFIED THRE-BEAM OFFSET BLOCK

POST FACE
SIDE VIEW
TRAFFIC FACE

Alkalies Are 3/8" B.

POSTED
SIDE VIEW
TRAFFIC FACE

Alkalies Are 3/8" B.

Notes:
1. Timber and recycled plastic offset blocks of identical size and shape can be intermixed within a run of rail.
2. Recycled plastic offset blocks shall meet the passing evaluation criteria for Test Level 3 of NCHRP 350. The blocks shall be tested as a component in a semi-rigid guardrail test article under full-scale crash test conditions. The blocks shall be in conformance with Sections 3.3.6 and 9.7.2 of the Specifications and be included on the Qualified Products list. W-Beam blocks shall be 4" in height and thre-beam blocks shall be 22" in height. The blocks shall be capable of providing a 75" (Min.) offset.

PERMISSIBLE POST AND OFFSET BLOCK COMBINATIONS

LOCATION AT CURB & GUTTER SECTIONS—DETAIL L

MOUNTING HEIGHTS ON SHOULDERS AND IN MEDIANS

2010 FDOT Design Standards

GUARDRAIL
**REFLECTOR SPACING**

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**PICTORIAL VIEW REFLECTOR MOUNTING**

**REFLECTORS—DETAIL M**

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**REFLECTOR NOTES**

1. Reflectors shall conform to Section 393 of the Standard Specifications.
2. Reflector color (white or yellow) shall conform to the color of the near lane edge line.
3. Reflectors installed on median guardrail shall have retro-reflective sheeting on both sides of the reflector.
4. The cost for reflectors shall be included in the contract unit price for guardrail.

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**NOTES**

1. Pipe Rail required on steel guardrail posts when pedestrian ways and bikeways are located 4 or less from back of the posts. Pipe rail shall not extend beyond the last post of the approach end anchorage assemblies. Begin and end the pipe rail in accordance with the Pipe Rail End detail.

Refer to Sheet 1, note 6 for guardrail end treatment requirements.

2. When guardrails with timber posts are located with the back of posts 4 or less from the near edge of the pedestrian way or bikeway, the bolt ends will require one of the following treatments:

   (a) Trimming back flush with the face of nut and melonizing or
   (b) Use of post bolts 10" in length with the washers and nuts counter sunk into sides 2" to 3" deep or
   (c) Use of post bolts 10" in length with sleeve nuts and washers.

3. The cost for Pipe Rail, mounting components and installation shall be included in the contract unit price for guardrail. Bolt end treatment for timber post shall be included in the contract unit price for guardrail.

FOR LOCATIONS USED BY PEDESTRIANS OR CYCLISTS

PEDESTRIAN SAFETY TREATMENTS

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**2010 FDOT Design Standards**

**GUARDRAIL**

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**PIECE**

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**VIEW A**

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**VIEW B**

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**PIECE**

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**VIEW A**

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**VIEW B**

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CABLE ASSEMBLY

SOIL PLATES

GALVANIZED STEEL BACK-UP PLATES FOR CONNECTING SPECIAL END SHOES AND TERMINAL CONNECTORS TO CONCRETE BRIDGE TRAFFIC RAILING BARRIERS AND CONCRETE BARRIER WALLS

THREE-BEAM BACK-UP PLATE

THREE-BEAM TERMINAL CONNECTOR

THREE-BEAM RAIL SPLICE

W-THREE BEAM TRANSITION SECTION

2010 FDOT Design Standards

GUARDRAIL
FOR REPLACEMENT OF EXISTING W8x18 GUARDRAIL POSTS ON APPROACH SLABS AND BRIDGES

NOTES:

1. See Index No. 1690 for special steel plates required for construction and repair of guardrail transitions to bridge traffic railing barrier rethorns on existing bridges. See Structures Index No. 476 through 478 for shelfplates required to construct traffic railing barrier rethorns on existing bridges.

2. Either anchor bolts, concrete wedge anchors or approved adhesive-bonded anchors for structural applications may be used. Anchor bolts, wedge anchors and adhesive anchors shall have a minimum tensile strength of 60,000 psi and galvanized in accordance with ASTM A363w. Stainless steel components may be substituted but components plated in accordance with ASTM A-533 are not acceptable. Adhesive anchor rods shall be equal in diameter to that specified for anchor bolts. Wedge anchors are to be installed in accordance with the manufacturer's recommendations, assuming 3,000 psi compressive strength for concrete. Wedge anchors shall also meet the following requirements:
   a. tensile load each anchor should be 14,000 lbs, other structures 8,000 lbs.
   b. shear load each anchor should be 10,000 lbs, other structures 7,600 lbs.

3. Posts are to be plumbed by adjusting nuts or mortar seating. Posts installed using anchor bolts and adhesive anchors are to be set with adjusting nuts as detailed, unless the Engineer approves the use of mortar seating in lieu of adjusting nuts. Posts installed using wedge anchors are to be set with mortar seating. Base plates shall be gravity with rethorn finish.

4. Adhesive-Bonded anchors for structural applications shall comply with Section 937 and be installed in accordance with Section 946. Drilled hole diameter shall be in accordance with the manufacturer's instructions.

5. Anchor holes and rethorns shall be drilled with anchor bolts are to be drilled in accordance with the manufacturer's specifications. Encountered reinforcing steel shall be drilled through. Holes shall be thoroughly cleaned when setting bolts and anchors and dry when setting wedge anchors.

6. Steel posts and base units shall be galvanized in accordance with ASTM A123. Any damaged galvanized areas are to be retaped in accordance with Section 956 of the Standard Specifications.

7. Special steel posts are not to be substituted for any post in a guardrail approach and treatment system.

**SPECIAL STEEL GUARDRAIL POSTS**

**STANDARD TIMBER AND STEEL GUARDRAIL POSTS**
**SPECIAL POST LOCATIONS ON CURB INLETS**

**CURB INLET TYPE 1**

- Max. Variation In Location Of Special Post

**CURB INLET TYPE 2**

- Max. Variation In Location Of Special Post

**CURB INLET TYPE 3**

- Max. Variation In Location Of Special Post

**CURB INLET TYPE 4**

- Max. Variation In Location Of Special Post

**CURB INLET TYPE 5**

- Max. Variation In Location Of Special Post

**CURB INLET TYPE 6**

- Max. Variation In Location Of Special Post

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**Notes:**
1. The locations shown for special posts mounted on inlets are to be used as guidelines for positioning the posts and for estimating the number of required posts.
2. Special posts and their anchorages mounted on curb inlets shall be in accordance with special steel guardrail posts Sheet 23, and paid for under the contract unit price for Special Guardrail Post EA.
3. Variations shown for the locations of special posts mounted on inlets are established from standard post spacing (6'-3") clearance of standard posts from inlets (4" min.) use of single and double offset blocks on standard posts adjacent to the inlets, optional flange mountings and, concrete anchor edge distances (12" for grouted and 3/4") for expansion anchorages. The number of posts and their locations may vary by reducing post spacing and adjusting the length of nailing(s).
4. Encased guardrail posts shall conform in section to standard timber and steel posts, and be paid for under the contract unit price for Special Guardrail Post EA. Payment shall include cost of foam wrap and concrete encasement.

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**DEVELOPMENT CHECKLIST**

- STANDARD INDEX NO. XXXXX, SHEET X OF X

**PLAN (SQUARE OPTION)**

- 15" For Steel Post Or 17" For Timber Post
- Foam Or Timber Block-Out For 6" X 6" X C Posts
- To Facilitate Post Replacement Install With 3/4" Plastic Foam Sheet On Outside Surface Of The Miscellaneous Asphalt Pavement

**PLAN (ROUND OPTION)**

- 15" For Steel Post Or 17" For Timber Post
- Foam Wrap And Foam Or Timber Block-Out Same As For Square Option Above

**REVISION LOG**

- Added:
- Changed:
- Deleted:

**APPROVED BY**

**CHECKED BY**

**CHECKED BY**

**FHWA APPROVAL**

**DATE**

**DESCRIPTION**

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**LEGEND**

- **Single Offset Block(s) On Adjacent Standard Posts:**
- **Variation In Location Of Special Post:**
- **Expanded Location By Using Double (Offset Blocks On Adjacent Standard Posts):**

**GUARDRAIL**

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**Index No.**
The payment for the items of End Anchorage Assembly Type II shall be full compensation for furnishing and installing either the Round or the Buffer End Section, the Beam Anchor Plate, Cable Assembly, Pipe Sleeve, Soil Plate, Steel Tube, Bearing Plate, Short Timber Breakaway Post, Offset Block, and the necessary hardware.

CABLE ANCHOR OPTION

END ANCHORAGE ASSEMBLY TYPE II

CONCRETE ANCHOR BLOCK OPTION

TYPE II NOTES

1. Unless specified in the plans, the contractor can supply either the cable anchor option or the concrete anchor block option.

2. Type II end anchorage assemblies are approved for all speeds and are intended for use as:
   (a) Trolley and anchorages for single face free standing guardrail systems:
   (b) Approach end anchorages for single face free standing guardrail systems when end anchorage is located outside of the clear zone and (c) both approach and trolley ends of double face guardrail systems.

3. These end anchors are to be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Type II), EA as called for in the plans or by permit.

NOTE: Turnbuckles to be used only for guardrail that is reset vertically. The existing anchor rod (1" or 1 1/2" Dia.) shall be field cut, threaded 4", and metized in accordance with Sections 562 and 975 of the Standard Specifications. The cost for cutting, threading, metizing, and the Turnbuckle shall be included in the contract unit price for Reset Guardrail, IFP.

The payment for the items of End Anchorage Assembly Type II shall be full compensation for furnishing and installing the Beam Anchor Plate, Anchor Rod, Pipe Sleeve, Anchor Block, either Flat or Round End Section on Trolley End Section, and the necessary hardware.
**MODIFIED ECCENTRIC LOADER TERMINAL NOTES**

1. The MELT is applicable for design speeds up to 45 mph. The MELT is intended for use as anchor and end anchorage for shoulder guardrail. Its alignment is defined from the normal guardrail alignment with an effective length of 37.5 including three standard W-beam panels outside of any standard guardrail, guardrail transitions or other special treatments.

2. This standard drawing is produced by the Florida Department of Transportation solely for use by the contractor and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the MELT and their incorporation into a whole system.

3. This standard drawing is sufficient for plan details for the MELT when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The MELT shall be assembled in accordance with the distributor's detailed drawings, procedures and specifications.

4. The first two posts must be short timber breakaway posts with steel foundation tubes and soil plates, post Nos. 3 thru 6 must be CFT timber posts and post No. 7 must be a standard timber post.

5. The MELT cannot be used in medians where horizontal clearance requires the use of a backfill.

6. See the General Notes for guidelines on requirements of metallic components.

7. If the plans call for the MELT at a specific location, substitutions with other end anchorage assemblies will be permitted only as approved by the Engineer. If the plan call for an additional assembly wired at a specific location, the contractor may provide any approved assembly that meets the application for that location. Where a hared end anchorage is called for in the plans, any approved substitution with a parallel anchorage assembly will be be eligible for VACD approval.

8. The MELT shall be sold for use under the contract unit price for Guardrail End Anchorage Assembly (Tapered) $xx and shall be full compensation for furnishing and installing all components in accordance with the plans; the distributor's detailed drawings, procedures and specifications, and this Index.

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**DIAPHRAGM PLATE (2 Req'd.)**

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**DEVELOPMENT CHECKLIST**

- STANDARD INDEX NO. XXXXX, SHEET X OF X

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- Revision 400
- Sheet No. 24 of 26
- Last

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**GUARDRAIL**

- END ANCHORAGE ASSEMBLY TYPE MELT
LATERAL PLACEMENT ON SLOPES (FROM EDGE OF NEAR TRAFFIC LANE)

Notes:
1. For shoulders less than 12'-0" in width, the tabulated values will be reduced by the difference between 12' and the shoulder width. Placement of guardrail on front slopes steeper than 1:4 is not recommended. Cost of guardrail to be included in the contract unit price for guardrail.
2. Standard guardrail 1-9' to 9'-6" post bolts. Rubrail required on median side when double face guardrail is used.
3. Guardrail with guardrail 2'-0" to 9'-6" post bolts.

<table>
<thead>
<tr>
<th>Slope</th>
<th>Standard Guardrail (1)</th>
<th>Guardrail Not Recommended</th>
<th>Guardrail With Rubrail (3)</th>
</tr>
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<tbody>
<tr>
<td>1:4</td>
<td>14' to 27'</td>
<td>28' to 45'</td>
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<td>1:5</td>
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<td>17' to 29'</td>
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<tr>
<td>1:10</td>
<td>27' to 45'</td>
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</tbody>
</table>

GUARDRAIL ON MEDIUM SLOPES

GUARDRAIL ON OUTSIDE SLOPES

GUARDRAIL ON SLOPES

RUBRAIL TERMINATION