### GENERAL NOTES

1. Index E30 is applicable for permanent crash cushion installations that shield the ends of Concrete Barrier Wall or Guardrail, only.

2. Design Length is based on a given design speed and the shortest Crash Cushion available on the Approved Products List (APL). When a Length Restriction is not applicable (N/A), then the Contractor may install Retroreflective Sheeting on the nose of the crash cushion. The sheeting to be applied to the nose of the crash cushion shall be a yellow Type I Object Marker. As an option, the contractor may install Retroreflective Sheeting on the nose of the crash cushion. The sheeting to be used must be solid yellow, Type IV or better and must be a product listed on the Department's Approved Products List (APL). When a Length Restriction is not applicable (N/A), then the Contractor has the option to select valid Crash Cushions from the APL which have design lengths greater than or equal to the Design Length identified in the plans. When a Length Restriction is applicable, then the Contractor has the option to select valid Crash Cushions from the APL which have design lengths greater than or equal to the Design Length identified in the plans and that are less than or equal to the Length Restriction identified in the plans.

3. For High Speed Facilities with a Design Speed greater than 60 mph, use a TL-3 Crash Cushion.

4. Assemble and install Crash Cushions according to the limitations noted on the Approved Products List (APL) webpage, the manufacturer’s specifications, and the applicable crash cushion drawings posted on the APL.

5. When subjected to reverse direction hits, construct Transition Panels from Concrete Barrier Walls to Crash Cushions. For additional details refer to the applicable crash cushion drawings on the APL.

6. Galvanize metallic components to meet the requirements for Steel Guardrail, Section 967 of the Standard Specifications for Road and Bridge Construction.

7. For Guardrail Applications, construct the Manufacturer’s Transition between the Permanent Crash Cushion and the Standard Guardrail Transition refer to all Standard Guardrail Transition details of this index.

8. For additional information on the End Measurement for Guardrail Payment, refer to the Standard Specifications for Road and Bridge Construction, Section 536.

9. A yellow Type I Object Marker shall be centered 3' in front of the crash cushion nose. As an option, the contractor may install Retroreflective Sheeting on the nose of the crash cushion. The sheeting to be used must be solid yellow, Type IV or better and must be a product listed on the Department's Approved Products List (APL). The sheeting to be applied to the nose of the crash cushion shall be a minimum of 360 square inches with a minimum height of 15 inches. Mounting hardware, Object Markers or Retroreflective Sheeting shall be in conformance with Section 993 of the Standard Specifications for Road and Bridge Construction.

10. The EOR shall provide the station of the Length of Need (LoN) location in the plans.

### CRASH CUSHION APPLICATIONS

#### PERMANENT CRASH CUSHION APPLICATIONS

<table>
<thead>
<tr>
<th>Concrete Barrier Wall Applications</th>
<th>Guardrail Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design Length (ft)</strong></td>
<td><strong>Design Speed (mph)</strong></td>
</tr>
<tr>
<td>5.75</td>
<td>35</td>
</tr>
<tr>
<td>7.25</td>
<td>40</td>
</tr>
<tr>
<td>7.25</td>
<td>45</td>
</tr>
<tr>
<td>10.25</td>
<td>50</td>
</tr>
<tr>
<td>13.25</td>
<td>55</td>
</tr>
<tr>
<td>16.00</td>
<td>60</td>
</tr>
</tbody>
</table>
**CRASH CUSHION DETAILS**

**DESCRIPTION:**

**REVISION NO.** 07/01/14

**LAST REVISION** 07/01/14

**INDEX NO.** 430

**SHEET NO.** 2 of 2

---

**PERMANENT CRASH CUSHION**

- **Design Length:** 12'-6" Thrie-Beam Panel (Nested For Bi-Directional Traffic)
- **Location Station:** 6'-3" W-Thrie Beam Transition Panel
- **Downstream End of Crash Cushion:** (Manufacturer's Transition)
- **Note:** Post Numbers 8, 9 and 10 will have Standard 6"x8"x14" Wooden W-beam Blockouts.

**PLAN VIEW**

**ELEVATION VIEW**

**STANDARD GUARDRAIL TRANSITION**

For Additional Information on Standard Guardrail Transitions see Design Standard, Index 400.