<table>
<thead>
<tr>
<th>Standard</th>
<th>Modification Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3</td>
<td>Changed shape to constant-slope, modified reinforcement and renamed standard.</td>
</tr>
<tr>
<td>C4</td>
<td>Changed shape to constant-slope, modified reinforcement and renamed standard.</td>
</tr>
<tr>
<td>C5</td>
<td>Renamed standard, changed shape to constant slope and height to 44&quot;. Added pins at base and revised notes.</td>
</tr>
<tr>
<td>C6</td>
<td>Update notes to reference MASH specification.</td>
</tr>
<tr>
<td>C7</td>
<td>No changes.</td>
</tr>
<tr>
<td>C9</td>
<td>Modify guardrail post offset notes to account for constant-slope concrete barrier.</td>
</tr>
<tr>
<td>C12</td>
<td>Update notes to reference MASH specification.</td>
</tr>
<tr>
<td>C13</td>
<td>Renamed standard, changed shape to constant slope and height to 44&quot; tall and added pins at base.</td>
</tr>
<tr>
<td>C14</td>
<td>Changed taper lengths, concrete nose width, concrete pad and energy attenuator.</td>
</tr>
<tr>
<td>C15</td>
<td>New reinforced concrete roadside barrier, L-shaped, 44&quot; tall (TL-5).</td>
</tr>
<tr>
<td>C16</td>
<td>New reinforced concrete roadside barrier, L-shaped, 44&quot; tall (TL-5).</td>
</tr>
<tr>
<td>C17</td>
<td>New reinforced concrete roadside barrier, L-shaped, 54&quot; tall (TL-5).</td>
</tr>
</tbody>
</table>
**NOTES:**

1. **Offset from Edge:** Offset from edge of paved shoulder to face of rail is typical for all installations without gutter except as otherwise detailed in the plan drawings.

2. **Gutters:** Where gutters such as Type G-2, G-3 are required in front of the guardrail, the posts shall be located 6" behind the gutter, or as otherwise detailed in the plans. The offset from the edge of shoulder to the face of the guardrail shall be as shown on Standard B28.

3. **Rail Height:** The 24" typical rail height is measured from existing surface 1'-0" in front of rail, or from edge of shoulder/edge of gutter when edge is more than 1'-0" in front of rail to center of rail.

4. Where gutter is proposed with guardrail, a 6" minimum thickness of aggregate shoulders special, Type C shall be placed behind gutter. For guardrail without gutter, aggregate shoulders, Type C, of the same thickness as paved shoulder shall be placed from the edge of paved shoulder sloping away to a 6" min. thickness.

5. **Guardrail Posts:** Guardrail posts shall not be attached to any structure.

6. **Plastic Block-Outs:** Plastic block-out shall not be used as a substitute for wood block-outs on new installations.

7. When S is less than or equal to 3 and 3'-0" aggregate shoulder width cannot be met, the post length shall be 9'-0" and the aggregate shoulder width shall be 1'-0" min. behind the post to the shoulder point.

8. All slopes are expressed as units of vertical displacement to units of horizontal displacements (V/H).

9. **Existing Guardrail:** Under no circumstances shall an existing guardrail, that was designed using a previous standard, be extended, attached to or modified in any way from its original design. If any modification is required and a proper barrier warrant has been completed, the entire barrier installation shall be completely removed and replaced with a new system that conforms to the current standard.

10. When S is less than or equal to 3, the post length shall be 9'-0" and 4'-0" aggregate shoulder width maintained.

11. The guardrail system has been performance-tested for crashworthiness under procedures defined in the National Cooperative Highway Research Program (NCHRP) Report 350. No modification to this standard drawing shall be permitted.

12. Guardrail posts shall not be installed in concrete or asphalt pavement. When necessary, use leave-out detail on Sheet 3 of 4 of this series.
TABLE 1

<table>
<thead>
<tr>
<th>V</th>
<th>W</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 16/8&quot;</td>
<td>24&quot;</td>
<td>21&quot;</td>
</tr>
<tr>
<td>&gt; 16/8&quot; - 28/8&quot;</td>
<td>12&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>&gt; 28/8&quot; - 40/8&quot;</td>
<td>12&quot; - 0 (w)</td>
<td>8&quot;</td>
</tr>
</tbody>
</table>

* V + W = 40/8"  

NOTES:
- ALL HOLES 3/4" DIA.
BEAM GUARDRAIL

GALVANIZED STEEL PLATE SHEET 3 OF 4

RAIL ELEMENT SPlice

POST OR SPlice BOLT & NUT

STEEL POST CONSTRUCTION

PLAN

ELEVATION

STEEL POST

COLD MIX ASPHALT (CMA) OR CONTROLLED LOW STRENGTH MATERIAL (CLSM) CAP
MATCH THE EXISTING CROSS SLOPE

CONCRETE OR ASPHALT

LEAVE-OUTS

† THE AREA AROUND THE POST THAT IS EITHER Omitted FROM THE NEW CONSTRUCTION OR REMOVED FROM THE EXISTING CONCRETE OR ASPHALT.
**TABLE 2A**

<table>
<thead>
<tr>
<th>GUARDRAIL SYSTEM</th>
<th>POST SPACING</th>
<th>MINIMUM DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE A</td>
<td>6'-3&quot;</td>
<td>39&quot;</td>
</tr>
<tr>
<td>TYPE B 1/2 POST SPACING</td>
<td>3'-4½&quot;</td>
<td>34&quot;</td>
</tr>
<tr>
<td>TYPE C 1/4 POST SPACING</td>
<td>3'-6¼&quot;</td>
<td>26&quot;</td>
</tr>
</tbody>
</table>

**TABLE 2B**

<table>
<thead>
<tr>
<th>GUARDRAIL SYSTEM</th>
<th>POST SPACING</th>
<th>MINIMUM DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE A</td>
<td>6'-3&quot;</td>
<td>28&quot;</td>
</tr>
<tr>
<td>TYPE B 1/2 POST SPACING</td>
<td>3'-4½&quot;</td>
<td>23&quot;</td>
</tr>
<tr>
<td>TYPE C 1/4 POST SPACING</td>
<td>3'-6¼&quot;</td>
<td>14&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**

- **When length of obstacles is 1'-3" or less, the downstream transition shall be omitted.**

**POST SPACING TRANSITIONS**

- **Transition to 1/2-post spacing**
  - **Face of Guardrail**
  - **Edge of Shoulder**
  - **Direction of Traffic**

- **Transition to 1/4-post spacing**
  - **Face of Guardrail**
  - **Edge of Shoulder**
  - **Direction of Traffic**

- **OBSERVATION:**
  - All posts must be used. Posts adjacent to repositioned posts may need to be moved to keep 3'-1½" minimum spacing.

- **Notes:**
  - **A.** Guardrail posts shall not be eliminated. All posts must be used. Posts adjacent to repositioned posts may need to be moved to keep 3'-1½" minimum spacing.
  - **B.** Guardrail posts shall not be set back to avoid conflicts with a drainage structure.
  - **C.** This detail also applies to other underground conflicts.
This is a reinforced concrete TL-4 roadside barrier used to shield roadway appurtenances. The minimum length of installation shall be 25'-0", basis of design IL Tollway Structure Design Manual.

1. Vertical transition to a 44" high barrier requires a minimum 2'-0" taper. Barrier height transitions shall be included in the cost of the concrete barrier.

2. Top shoulder edge of barrier base gutter shall match the top of shoulder elevation.

3. 1" deep contraction joints shall be constructed in both the reinforced concrete barrier wall and base. Contraction joints shall also be constructed at both sides of all drainage structures. Maximum contraction joint spacing shall be 30'-0".

4. The forming of contraction joints shall be done with an approved finishing tool or by sawing subject to the satisfactory control of cracking.

5. Reinforcement bars designated "(E)" shall be epoxy coated.

6. Reinforcement bars bending details shall be in accordance with the "Manual of Standard Practice for Detailing Reinforced Concrete Structures", ACI 318, latest edition. Reinforcement bar bending dimensions are out to out.

7. At drainage structures, cut footing bars to fit, and add an additional pair of 4, 6, 4, and 4 bars on each side of the drainage structure.

8. Expansion joints shall be constructed in barrier wall at a maximum joint spacing of 90'-0" and a minimum joint spacing of 25'-0". See Section 3-B for details.
NOTES:

1. 2" deep contraction joints shall be done by sawing and shall be constructed in the concrete barrier wall, concrete barrier base, and concrete gutter (special). Contraction joints shall also be constructed at both sides of all drainage structures. Maximum contraction joint spacing shall be 30'-0". The minimum distance between contraction joints in the median barrier wall shall be 2'-0" when a drainage structure falls within 2'-0" from an expansion joint (or contraction joint) the nearest contraction joint shall be omitted.

2. Gutter profile in the vicinity of sag vertical curves, along flat grades and at the meeting of proposed and existing gutter, shall be carefully controlled and field adjusted if necessary to ensure positive drainage and avoid ponding.

3. In areas of relatively flat longitudinal profile grades, the vertical dimension at the top of the barrier can vary from 0" normally to 1" to create an acceptable longitudinal grade in the gutter.

4. Reference plan sheet for type, size and number of conduits, provide 1/2" (MIN) clearance to the top of conduct and 2" (MIN) clearance to the bottom of the conduit.

5. Tie bars shall be included in the cost of the various barriers and gutter items and shall be epoxy coated. Tie bars between the barrier and base shall be on 30" centers and alternate left and right of the barrier centerline.

6. When variable height vertical differential exceeds 9" see structural plans for details.

7. Gutter slope shall be 4.77% sloped toward the median unless otherwise noted. Gutter slope as reverse pitched when the shoulder/flex lane drains away from the gutter. Transition gutter slope over 30'-0". Gutter slope transitions are included in the cost of concrete base and/or concrete gutter (special). See roadway plans for limits of reverse pitched gutter and transitions.

CONCRETE BARRIER, DOUBLE FACE, 44" VARIABLE HEIGHT

BARRIER BASE, 7'-0"

BARRIER HEIGHT VERTICAL DIFFERENTIAL VARIES 0" TO 3.7"

*WHEN 6" OR GREATER ADD TOP TIE BAR.

NOTES:

1. 2" deep contraction joints shall be done by sawing and shall be constructed in the concrete barrier wall, concrete barrier base, and concrete gutter (special). Contraction joints shall also be constructed at both sides of all drainage structures. Maximum contraction joint spacing shall be 30'-0". The minimum distance between contraction joints in the median barrier wall shall be 2'-0" when a drainage structure falls within 2'-0" from an expansion joint (or contraction joint) the nearest contraction joint shall be omitted.

2. Gutter profile in the vicinity of sag vertical curves, along flat grades and at the meeting of proposed and existing gutter, shall be carefully controlled and field adjusted if necessary to ensure positive drainage and avoid ponding.

3. In areas of relatively flat longitudinal profile grades, the vertical dimension at the top of the barrier can vary from 0" normally to 1" to create an acceptable longitudinal grade in the gutter.

4. Reference plan sheet for type, size and number of conduits, provide 1/2" (MIN) clearance to the top of conduit and 2" (MIN) clearance to the bottom of the conduit.

5. Tie bars shall be included in the cost of the various barriers and gutter items and shall be epoxy coated. Tie bars between the barrier and base shall be on 30" centers and alternate left and right of the barrier centerline.

6. When variable height vertical differential exceeds 9" see structural plans for details.

7. Gutter slope shall be 4.77% sloped toward the median unless otherwise noted. Gutter slope as reverse pitched when the shoulder/flex lane drains away from the gutter. Transition gutter slope over 30'-0". Gutter slope transitions are included in the cost of concrete base and/or concrete gutter (special). See roadway plans for limits of reverse pitched gutter and transitions.
GENERAL NOTES:

1. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

2. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING B28 FOR GUTTER TRANSITION, AND MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL.

3. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.

4. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.

5. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE-FIXED OR MOBILE-shall be allowed within this recovery area.

6. ON TANGENT ROADWAYS, TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A SLOPE MEASURED FROM EDGE OF TRAVELED WAY, ON-CURVED ROADWAY THE EDGE OF THE TERMINAL IMPACT HEAD SHALL BE OFFSET A DISTANCE FROM A POINT ON THE BACK OF THE CURVED EDGE OF PAVED SHOULDER AS SHOWN IN TABLE 1. NO CURVED W-BEAM SECTIONS ARE PERMITTED WITHIN THE TERMINAL PAY LIMITS. THE TERMINAL SHALL BE LAID OUT IN A STRAIGHT LINE.

7. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR HMA. WHEN NECESSARY USE LEAVE-OUT DETAIL SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING C1.

8. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.

9. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL PAY LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.
TRAFFIC BARRIER TERMINAL, TYPE T2-WITHOUT GUTTER

NOTES:
1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THE BEARING PLATE K SHALL BE HELD IN POSITION BY TWO 8D NAILS DRIVEN INTO THE POST AND BENT OVER THE TOP OF THE PLATE.
3. THE TRAFFIC BARRIER TERMINAL TYPE T2 IS TYPICALLY UTILIZED FOR THE DEPARTING END SECTION OF A GALVANIZED STEEL PLATE BEAM GUARDRAIL BARRIER SYSTEM.
4. UNDER NO CIRCUMSTANCES SHALL AN Existing TERMINAL THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGN, IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS, NO MODIFICATIONS SHALL BE PERMITTED.
6. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1.
TRAFFIC BARRIER TERMINAL, TYPE T2-WITH GUTTER

ELEVATION

TRAFFIC BARRIER TERMINAL, TYPE T2

SECTION B-B

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.
NOTE:
CABLE ASSEMBLY TO GUARDRAIL WHEN REQUIRED ON TRAFFIC BARRIER TERMINALS.

ANCHOR PLATE T DETAILS

NOTE:
ANCHOR PLATE T SHALL BE USED TO ATTACH CABLE ASSEMBLY TO GUARDRAIL WHEN REQUIRED ON TRAFFIC BARRIER TERMINALS.

CABLE ASSEMBLY

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.
NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.

2. THREE BEAM RAIL SHALL BE BOLTED TO BLOCK-OUT AT ALL POSTS.

3. THE TRAFFIC BARRIER TERMINAL, TYPE T6 IS TYPICALLY UTILIZED TO ATTACH GALVANIZED STEEL PLATE BEAM GUARDRAIL AT THE UPSTREAM END OF THE BRIDGES CONCRETE PARAPET, WHERE A ROADSIDE GUTTER IS TO BE INSTALLED.

4. SEE ILLINOIS TOLLWAY STANDARD DRAWING B3 FOR GUARD RAIL TRANSITION AT TRAFFIC BARRIER TERMINAL TYPE T6.

5. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGN, IF ANY MODIFICATION IS REQUIRED AND A PROPER WARRANT HAS BEEN COMPLETED. THE ENTIRE EXISTING INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.

6. TRAFFIC BARRIER TERMINAL, TYPE T6 SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS, NO MODIFICATIONS SHALL BE PERMITTED.

7. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENTS. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1.

8. TERMINAL POSTS TO BE INSTALLED PERPENDICULAR TO BACK OF GUTTER.

9. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.

10. TERMINAL BARRIER CLEARANCE DISTANCE SHALL CONFORM WITH TABLE 2 ON ILLINOIS TOLLWAY STANDARD DRAWING C1.

11. LEAVE-OUT DIMENSION BEHIND POSTS 1-6, SHALL BE A MINIMUM OF 4".

12. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.

FOR PARAPET (SAFETY SHAPE) WITH GUTTER, TYPE G-3

WITH GUTTERS TYPE G-3

SECTION A-A
**GUTTER LINES OMITTED FOR CLARITY**

**PLAN**

- **THREE BEAM**
  - **ONE SET INSIDE THE OTHER**
  - **DIRECTION OF TRAFFIC**
  - **SEE ILLINOIS TOLLWAY STANDARD DRAWING C1**
  - **TRANSITION SECTION**

- **SINGLE SECTION OF THREE BEAM**
  - **SEEN SHEET 5 IN THIS SERIES**

- **SINGLE SECTION OF W-BEAM**

**ELEVATION**

- **FOR OTHER CONCRETE STRUCTURE (VERTICAL FACE)**
- **WITH GUTTER**

**NOTE:**

- **SEE SHEET 1 OF THIS SERIES FOR NOTES AND SECTION A-A.**

---

**TRAFFIC BARRIER TERMINAL, TYPE T6**

- **STANDARD C9-09**

**APPROVED DATE**

- **7-1-2009**

**CHIEF ENGINEERING OFFICER**
45'-7½" PAY LIMITS OF TRAFFIC BARRIER TERMINAL, TYPE T6 (1 EACH)

- Single Section of Three Beam
- Two Sections of Three Beam

POSTS 1-11 HAVE LESS THAN 2" OFFSET FROM BACK OF GUTTER
POSTS 12-17 HAVE 3½" TO 6"

- ¾" BOLTS (HEAD OF BOLTS TO BE ON TRAFFIC SIDE)
- 2" MIN.
- 6 SPACES AT 1'-6½"
- 11 SPACES AT 3'-1½"

- 9"-6½"
- 34'-4½"
- 6'-0"
- 7'-6"

NOTE:
- PLAN
- ELEVATION

SECTION B-8
WITH GUTTER, TYPE G-2
FOR PARAPET (SAFETY SHAPE)
WITH GUTTER, TYPE G-2

NOTED
SEE SHEET 1 OF THIS SERIES FOR NOTES.
**Sheet 4 of 5**

**Pay Limits of Traffic Barrier Terminal, Type T6 (1 Each)**

- 6 spaces at 1'-6"
- 11 spaces at 3'-1"
- 34'-4"
- 7' "
- 43'-1"
- 7'-6"
- 6'-0"
- 512" bolts (head of bolts to be on traffic side)

**Concrete Barrier, Single-Face**

- Aggregate shoulders

**Steel Posts**

- W6x9 or W6x8.5

**End Shoe**

- Thrie Beam

**Plate Bearing**

- Steel

**Elevation**

- For concrete barrier, single-face w/ gutter, type G-3

**Gutter Lines Omitted for Clarity**

- Posts 1-11 have less than 2" offset from back of gutter
- Posts 12-17 have 4½" to 6" offset from back of gutter

**Note:**

- See sheet 1 of this series for gutter transition notes and section A-A.

**Other Type**

- See Illinois Tollway Standard Drawing C9-09

**Approvals**

- Chief Engineering Officer
- 2-7-2012
THREE BEAM END SHOE DETAIL

POSTS 1-11 WOOD BLOCK-OUT DETAIL

POST 12 WOOD BLOCK-OUT DETAIL
SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 12-17 BLOCKOUTS

TRANSITION SECTION
10 GAUGE RAIL ELEMENT

PARAPET WOOD BLOCK-OUT DETAIL

PARAPET STEEL BEARING PLATE DETAIL
IS EACH INDIVIDUAL 5"x5"x½" STEEL PLATES WITH CENTERS ½" HOLES MAY BE SUBSTITUTED FOR THE PLATE SHOWN.

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.
NOTES:
1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THRIE BEAM RAIL SHALL BE BOLTED TO BLOCK-OUT AT ALL POSTS.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T6B IS TYPICALLY UTILIZED TO ATTACH GALVANIZED STEEL PLATE BEAM GUARDRAIL AT THE UPSTREAM END OF THE BRIDGE CONCRETE PARAPET, WHERE A ROADSIDE GUTTER IS NOT TO BE INSTALLED.
4. UNDER NO CIRCUMSTANCES SHALL EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY’S DETAILS AND SPECIFICATIONS, NO MODIFICATIONS SHALL BE PERMITTED.
6. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENTS. WHEN NEEDED USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1. SHEET 3 OF 4.
7. TERMINAL BARRIER CLEARANCE DISTANCE SHALL CONFORM WITH TABLE 2 ON ILLINOIS TOLLWAY STANDARD DRAWING C1.
8. LEAVE-OUT DIMENSION BEHIND POSTS 1-6 SHALL BE A MINIMUM OF 4".

ILLINOIS Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6B

STANDARD C10-08

SHEET 1 OF 2
**NOTES:**

1. See Illinois Tollway Standard Drawing C1 for details of guardrail not shown.

2. The 24\(\frac{1}{4}\)" typical rail height is measured from existing surface 2'-0" in front of rail, or from edge of shoulder/edge of gutter. The edge is more than 1'-0" in front of rail to center of rail.

3. The traffic barrier terminal, type T10 is typically utilized to connect galvanized steel plate beam guardrail to the departing end of an existing bridge concrete wing wall or parapet.

4. Under no circumstances shall an existing terminal that was designed using a previous standard, be attached to or modified in any way from its original design. If any modification is required and a proper barrier warrant has been completed, the entire barrier installation shall be completely removed and replaced with a new system that conforms to the current standard.

5. Traffic barrier terminal shall be in accordance with the Illinois Tollway’s details and specifications. No modifications shall be permitted.

6. When end shoe is attached to a bridge parapet which has an expansion joint, the bolts shall be provided with a locknut or double nut and shall be tightened only to a point that will allow guardrail movement.

7. The anchor cone shall be set flush with the surface of the concrete.

8. Externally threaded studs protruding from the surface of the concrete shall not be permitted.

9. When wing wall thickness is greater than 18" or not accessible to the back side, 4-\(\frac{1}{4}\)" bolts shall be anchored into drilled holes. Using a chemical adhesive. Minimum embedment shall be 10". Anchor bolts with standard washer shall be used. After tightening, cut the anchor bolts flush with the nuts and damage the nuts to prevent them from loosening.

**GENERAL NOTE:**

* Head of bolt to be on traffic side. See detail "A"
GENERAL NOTES:

1. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

2. THE TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL), IS THE UPSTREAM END SECTION OF A GALVANIZED STEEL PLATE BEAM GUARDRAIL BARRIER SYSTEM, FOR RAMP INSTALLATION WITH DESIGN SPEED LIMIT OF 40 MPH OR LESS, ASHHTO MASH. STANDARD DRAWING C12-09.

3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING B29 FOR GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL), AND MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL.

4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGNED IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED. THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.

5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER’S DETAILS AND SPECIFICATIONS.

6. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE—FIXED OR BREAKAWAY, EITHER TEMPORARY OR PERMANENT SHALL BE ALLOWED WITHIN THIS RECOVERY AREA.

7. ON TANGENT ROADWAY: TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A 25:1 TAPER ELECTED FROM EDGE OF TRAVELER WAY. ON CURVED ROADWAY: THE EDGE OF THE TERMINAL IMPACT HEAD SHALL BE OFFSET A DISTANCE FROM A POINT ON THE BACK OF THE CURVED EDGE OF PAVED SHOULDER AS SHOWN IN TABLE 1. NO CURVED U-BEAM SECTIONS ARE PERMITTED WITHIN THE TERMINAL PAY LIMITS; THE TRAFFIC BARRIER TERMINAL TYPE T1-A SPECIAL SHALL BE Laid OUT IN A STRAIGHT LINE.

8. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR HMA. WHEN NECESSARY USE LEAVE-OUT DETAIL SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING C2.

9. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.

10. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.
SHOULDER WIDENING TRANSITION WITH GUTTER, TYPE G-2

FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

TABLE 1

<table>
<thead>
<tr>
<th>LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSIDE RADIUS OF CURVE</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>NO GUTTER</td>
</tr>
<tr>
<td>C-2 GUTTER</td>
</tr>
</tbody>
</table>

(* OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.

NOTES:

SEE SHEET 1 OF THIS SERIES FOR NOTES.

SECTION B-B

LONGITUDINAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD

(SEE NOTE 7)
SHOULDER WALL WIDTH

3'-0" BARRE R BASE

5'-0"

7'-0"

21'-3"

SHEET 1 OF 2

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF
AT BRIDGE PIERS (FOR W ≤4'-0")

NOTES:

1. 2" DEEP CONTRACTION JOINTS SHALL BE DONE BY SAWING AND SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL, CONCRETE BARRIER BASE, AND CONCRETE GUTTER (SPECIAL). CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0", THE MINIMUM DISTANCE BETWEEN CONTRACTION JOINTS IN THE MEDIAN BARRIER WALL SHALL BE 2'-0", WHEN A DRAINAGE STRUCTURE FALLS WITHIN 2'-0" FROM AN EXPANSION JOINT OR CONTRACTION JOINT, THE NEAREST CONTRACTION JOINT SHALL BE OMITTED.

2. GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL CURVES, ALONG FLAT GRADES AND AT THE MEETING OF PROPOSED AND EXISTING GUTTER, SHALL BE CAREFULLY CONTROLLED AND FIELD ADJUSTED IF NECESSARY TO ENSURE POSITIVE DRAINAGE AND AVOID PONDING.

3. NON-STAINING GRAY ONE COMPONENT NON-SAG ELASTOMERIC GUN GRADE POLYURETHANE SEALANT MEETING THE REQUIREMENTS OF ASTM C-920, TYPE S, GRADE NS, CLASS 25, USE T WITH A BACKER ROD.

NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.
Concrete Median Barrier Transition, Type V

**Notes:**
1. Slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V/H).
2. Energy attenuator and pad shall be in accordance with the manufacturer's details and specifications.
3. 2" deep contraction joints shall be done by sawing and shall be constructed in the concrete barrier wall and concrete barrier base. Maximum contraction joint spacing shall be 20'-0". The minimum distance between contraction joints in the median barrier wall shall be 2'-0".

**Table A**

<table>
<thead>
<tr>
<th>Wc</th>
<th>L (MIN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24&quot;</td>
<td>20'-0&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>25'-0&quot;</td>
</tr>
<tr>
<td>35&quot;</td>
<td>35'-0&quot;</td>
</tr>
<tr>
<td>43&quot;</td>
<td>45'-0&quot;</td>
</tr>
<tr>
<td>51&quot;</td>
<td>55'-0&quot;</td>
</tr>
<tr>
<td>61&quot;</td>
<td>65'-0&quot;</td>
</tr>
<tr>
<td>67&quot;</td>
<td>25'-0&quot;</td>
</tr>
</tbody>
</table>

Wc = Pier Crash Wall Width

**Additional Notes:**
- Concrete median barrier wall shall be 2'-0".
- Between contraction joints in the aggregate shoulder, the minimum distance shall be 30'-0".
- The maximum contraction joint spacing shall be 20'-0", the minimum distance between contraction joints in the median barrier wall shall be 2'-0".
- The transition shall be done by sawing and shall be constructed in the concrete barrier wall and concrete barrier base.
- Maximum contraction joint spacing shall be 20'-0".

**Details and Specifications:**
- Sawing and shall be done in accordance with the manufacturer's details and specifications.
- Energy attenuator and pad shall be constructed in the concrete barrier wall and concrete barrier base.
- Minimum distance between contraction joints in the median barrier wall shall be 2'-0".
1. This is a reinforced concrete TL-5 roadside barrier used to shield drop-offs and structures when the toe of the traffic face is greater than 10 ft from the structure face. The minimum length of installation shall be 40'-0", basis of section B-B of TOLLWAY STRUCTURE DESIGN MANUAL.

2. Top shoulder edge of barrier base gutter shall match the top of shoulder elevation.

3. 1" deep contraction joints shall be constructed in both the reinforced concrete barrier wall and base. Contraction joints shall also be constructed at both sides of all drainage structures. Maximum contraction joint spacing shall be 30'-0".

4. The forming of contraction joints shall be done with an approved finishing tool or by sawing subject to the satisfactory control of cracking.

5. Reinforcement bars designated "(E)" shall be epoxy coated.


7. At drainage structures, cut footing bars to fit, add an additional pair of A, B1, and C bars on each side of the drainage structure.

8. Expansion joints shall be constructed in barrier wall at a maximum joint spacing of 90'-0" and a minimum joint spacing of 40'-0". See section B-B for details.

NOTES:

3'-0" CHAMFER OR 1" RADIUS (TYP.)

1'-3" CHAMFER OR 1" RADIUS (TYP.)

5" @ 7" LONG AT 12" CTS CEMENT NAILS FLAT HD

3'-0" 1-1/4" BAR (E) 1-1/4" BAR (E)

BENDING DIMENSIONS ARE OUT TO OUT.

CONTRACTION JOINTS SHALL BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".

TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.

REINFORCEMENT AROUND DRAINAGE STRUCTURE
1. This is a reinforced concrete TL-5 roadside barrier used to shield drop-offs and structures when the toe of the traffic face is greater than 10' from the structure face. The minimum length of installation shall be 40'-0". Basis of design: IL Tollway Structure Design Manual.

2. Top shoulder edge of barrier base gutter shall match the top of shoulder elevation.

3. 1" deep contraction joints shall be constructed in both the reinforced concrete barrier wall and base. Contraction joints shall also be constructed at both sides of all drainage structures. Maximum contraction joint spacing shall be 30'-0".

4. The forming of contraction joints shall be done with an approved finishing tool or by sawing subject to the satisfactory control of cracking.

5. Reinforcement bars designated "(E)" shall be epoxy coated.

6. Reinforcement bars bending details shall be in accordance with the "Manual of Standard Practice for Detailing Reinforced Concrete Structures". ACI 318, latest edition. Reinforcement bar bending dimensions are out to out.

7. At drainage structures, cut footing bars to fit, add an additional pair of A, C1, and 1 bars on each side of the drainage structure.

8. Expansion joints shall be constructed in a barrier wall at a maximum joint spacing of 40'-0" and a minimum joint spacing of 30'-0". See Section B-B for details.

- Expansion joint on end of section
- Frame and grate type specified
- Reinforcement around drainage structure
- Notes:
  1. Top shoulder edge of barrier base gutter shall match the top of shoulder elevation.
  2. 1" deep contraction joints shall be constructed in both the reinforced concrete barrier wall and base. Contraction joints shall also be constructed at both sides of all drainage structures. Maximum contraction joint spacing shall be 30'-0".
  3. 1" deep contraction joints shall be constructed in both the reinforced concrete barrier wall and base. Contraction joints shall also be constructed at both sides of all drainage structures. Maximum contraction joint spacing shall be 30'-0".
  4. The forming of contraction joints shall be done with an approved finishing tool or by sawing subject to the satisfactory control of cracking.
  5. Reinforcement bars designated "(E)" shall be epoxy coated.
  6. Reinforcement bars bending details shall be in accordance with the "Manual of Standard Practice for Detailing Reinforced Concrete Structures". ACI 318, latest edition. Reinforcement bar bending dimensions are out to out.
  7. At drainage structures, cut footing bars to fit, add an additional pair of A, C1, and 1 bars on each side of the drainage structure.
  8. Expansion joints shall be constructed in a barrier wall at a maximum joint spacing of 40'-0" and a minimum joint spacing of 30'-0". See Section B-B for details.
1. This is a reinforced concrete TL-5 roadside barrier used to shield bridge piers and other structures when the toe of the traffic face is within 10' of the structure face. The minimum length of installation shall be 40'-0", basis of design IL Tollway Structure Design Manual.

2. Top shoulder edge of barrier base gutter shall match the top of shoulder elevation.

3. 1" deep contraction joints shall be constructed in both the reinforced concrete barrier wall and base. Contraction joints shall also be constructed at both sides of all drainage structures. Maximum contraction joint spacing shall be 30'-0".

4. The forming of contraction joints shall be done with an approved finishing tool or by sawing subject to the satisfactory control of cracking.

5. Reinforcement bars designated "E" shall be epoxy coated.

6. Reinforcement bars bending details shall be in accordance with the "Manual of Standard Practice for Detailing Reinforced Concrete Structures". All 3% latest edition. Reinforcement bar bending dimensions are shown out to out.

7. At drainage structures, cut footing bars to fit. Add an additional pair of c, d1, d2, and h bars on each side of the drainage structure.

8. Expansion joints shall be constructed in barrier wall at a maximum joint spacing of 40'-0" and a minimum joint spacing of 40'-0", see Section B-B for details.