<table>
<thead>
<tr>
<th>Standard</th>
<th>Modification Summary</th>
<th>Effective: 03-01-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1-11 GALVANIZED STEEL PLATE BEAM GUARDRAIL</td>
<td>Revised Note 11 on sheet 1 to reference MASH crashworthiness for standard post spacing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Revised the Table 2B headers on sheet 4 to read Existing Guardrail and All New Guardrail.</td>
<td></td>
</tr>
<tr>
<td>C3-08 CONCRETE BARRIER SINGLE FACE, REINFORCED TL-4, 44 INCH</td>
<td>Revised standard named to include TL-4 and notes on sheet 1.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Barrier height has been revised from 42” to 44” and base thickened. Reinforcement has been adjusted.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.</td>
<td></td>
</tr>
<tr>
<td>C4-09 CONCRETE SHOULDER BARRIER TRANSITION, TYPE V-SF</td>
<td>Single face barrier height revised to 44” and base thickened. Reinforcement has been adjusted.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clarified note that downstream structure shall be crashworthy.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.</td>
<td></td>
</tr>
<tr>
<td>C5-07 CONCRETE BARRIER BASE, AND CONCRETE BARRIER, DOUBLE FACE, 44 INCH AND VARIABLE HEIGHT</td>
<td>Revise maximum vertical differential for variable height barrier from 9” to 12”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clarified Note 3, that it is the overall height of the barrier that can vary, by varying the gutter slope, to maintain drainage.</td>
<td></td>
</tr>
<tr>
<td>C6-11 SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT</td>
<td>Corrected Plan view and Table 1 on sheet 2 to reference modified G-3 and G-2 Gutter.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Also on Table 1, clarified location of Impact Head to be 1'-0” when on the outside of curve.</td>
<td></td>
</tr>
<tr>
<td>C9-10 TRAFFIC BARRIER TERMINAL, TYPE T6</td>
<td>Shortened terminal by reducing the length of the upstream thrie beam rail. Revised number, spacing and lengths of posts.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Added nested W-beam rail to first rail section upstream of transition section on sheets 1 through 4.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Revised taper rate of terminal. Rail taper extends past terminal on sheets 1 and 2.</td>
<td></td>
</tr>
<tr>
<td>C10-09 TRAFFIC BARRIER TERMINAL, TYPE T6B</td>
<td>Shortened terminal by reducing the length of the upstream thrie beam rail. Revised number, spacing and lengths of posts.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Revised taper rate of terminal.</td>
<td></td>
</tr>
<tr>
<td>C12-10 SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)</td>
<td>Corrected Plan view and Table 1 on sheet 2 to reference modified G-3 and G-2 Gutter.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Also on Table 1, clarified location of Impact Head to be 1'-0” when on the outside of curve.</td>
<td></td>
</tr>
<tr>
<td>C14-04 CONCRETE MEDIAN BARRIER TRANSITION, TYPE V AT BRIDGE PIERS</td>
<td>Corrected height to 44” in Section A-A. Corrected 5’ stub to show it is not part of the height transition.</td>
<td></td>
</tr>
<tr>
<td>C15-01 CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, T-SHAPE 44 INCH</td>
<td>Revised standard name to include TL-5 and modified barrier reinforcing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.</td>
<td></td>
</tr>
<tr>
<td>C16-01 CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, L-SHAPE 44 INCH</td>
<td>Revised name to include TL-5, increased barrier stem thickness and revised reinforcement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduced moment slab length and adjusted cross slope, added cross slope theoretical gutter note.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.</td>
<td></td>
</tr>
<tr>
<td>C17-01 CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, 54 INCH</td>
<td>Revised name to include TL-5, adjusted moment slab cross slope and added theoretical gutter note.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modified drainage structure opening diagonal reinforcement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.</td>
<td></td>
</tr>
</tbody>
</table>

New Sheet Retired Standard
NOTES:
1. 1'-0" OFFSET FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL IS TYPICAL FOR ALL INSTALLATIONS WITHOUT GUTTER EXCEPT AS OTHERWISE DETAILLED IN THE PLAN DRAWINGS.
3. THE 245° 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 BESIDE GUTTER, FOR GUARDRAIL WITHOUT GUTTER, AGGREGATE SHOULDER, 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 SHALL NOT BE ATTACHED TO ANY STRUCTURE.
6. PLASTIC BLOCK-OUTS SHALL NOT BE ALLOWED 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 6'-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. 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 MGS GUARDRAIL SYSTEM WITH STANDARD POST SPACING HAS BEEN PERFORMANCE-TESTED FOR TL-3 CRASHWORTHINESS UNDER PROCEDURES OUTLINED IN THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350. NO MODIFICATION TO THIS STANDARD DRAWING OUTLINED 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&quot;</td>
<td>24&quot;</td>
<td>21&quot;</td>
</tr>
<tr>
<td>&gt; 16&quot; - 28&quot;</td>
<td>12&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>&gt; 28&quot; - 40&quot;</td>
<td>12&quot;</td>
<td>0&quot;</td>
</tr>
</tbody>
</table>

* V + W + L = 40"

NOTES:
- All holes 3/4" O.D.

ELEVATION
FOOTING FOR POST WHEN ROCK FORMATION IS ENCOUNTERED

ELEVATION
STEEL PLATE BEAM GUARDRAIL WITH BOLT SLOTS AT 3'-1/2" CENTERS

ELEVATION
3'-1/2" 1/2 POST SPACING

ELEVATION
1'-6" 1/4 POST SPACING

WOOD BLOCK-OUT AND STEEL POST DETAILS

TWO-PIECE WOOD BLOCK-OUT OPTION

STANDARD C1-11
GALVANIZED STEEL PLATE BEAM GUARDRAIL

APPROVED DATE
CHIEF ENGINEERING OFFICER
5-1-2009
**BEAM GUARDRAIL**

**GALVANIZED STEEL PLATE SHEET 3 OF 4**

**CLASS A RAIL ELEMENT**

2" x 2" x 3/16" SLOTTED HOLE

**RAIL ELEMENT SPLICE**

POST OR SPLICE BOLT & NUT

1-1/2" x 1/4" SLOTTED HOLE

**POST BOLT WITH STD HEX NUT**

FOR 9' POSTS ONLY (STAMP BOTH SIDES)

**STEEL POST CONSTRUCTION**

**LEAVE-OUTS**

† THE AREA AROUND THE POST THAT IS EITHER Omitted From The New Construction OR Removed From The Existing Concrete OR ASPHALT.

**PLAN**

**ELEVATION**

**STANDARD CI-11**

**BEHIND POST**

1'-3" MIN

9" 9" 9"

> 0"

**CONCRETE OR ASPHALT**

**LEAVE-OUT**

EDGE OR SHOULDER OR BACK OF GUTTER

**STANDARD** C1-11

**APPROVED DATE**

CHIEF ENGINEERING OFFICER

5-1-2009

**TRAFFIC**

SLOTTED HOLE 1½" x 2½"

STEEL POST W6x9 OR W6x8.5

STD HEX NUT POST BOLT WITH RAIL ELEMENT SPLICE BOLTS

Holes For †" ž" x 1"" SLOTTED SUIT BOLT OF RECESS TO DIA AND DEPTH OR BACK OF GUTTER

LOW STRENGTH MATERIAL (CLSM) CAP

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

LEAVE-OUTS (STAMP BOTH SIDES) FOR 9' POSTS ONLY

LEAVE-OUTS (MATCH THE EXISTING CROSS SLOPE)

CONCRETE OR ASPHALT

STEEL POST CONSTRUCTION

C6

CONCRETE OR ASPHALT

SURFACE WATER

STANDARD CI-11

GALVANIZED STEEL PLATE BEAM GUARDRAIL

SHEET 3 OF 4
**Post Spacing Transitions**

**NOTE:** Post spacing transitions are allowed.

---

**transition to 1/2 post spacing**

---

**transition to 1/4 post spacing**

---

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

---

**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'-1/2" 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.
CONCRETE BARRIER, DOUBLE FACE, 44" VERTICAL DIMENSIONS TO THE TOP OF THE BARRIER CAN VARY (BY VARYING THE GUTTER SLOPE) BETWEEN 43" TO 44.5" TO CREATE AN ACCEPTABLE GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL GRADES. THE VERTICAL DIMENSION TO THE TOP OF THE GUTTER SLOPE SHALL BE 4.17% SLOPED TOWARD THE BARREL EDGE. LONGITUDINAL GRADE IN THE GUTTER. WHEN VARIABLE HEIGHT VERTICAL DIFFERENTIAL EXCEEDS 6" SEE STRUCTURAL PLANS FOR DETAILS. WHEN VARIABLE HEIGHT VERTICAL DIFFERENTIAL EXCEEDS 12" SEE STRUCTURAL PLANS 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 BASE. 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 NEXT 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 GUTTERS, 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 TO THE TOP OF THE GUTTER CAN VARY BY VARYING THE GUTTER SLOPE FROM 43" TO 44.5" TO CREATE AN ACCEPTABLE LONGITUDINAL GRADE IN THE GUTTER.

4. REFERENCE PLAN SHEET FOR TYPE, SIZE AND NUMBER OF TIE BARS, PROVIDE 1½" MINIMUM CLEARANCE TO THE TOP OF THE CONDUIT AND 2" MINIMUM 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 12" SEE STRUCTURAL PLANS FOR DETAILS.

7. GUTTER SLOPE SHALL BE 4.17% SLOPED TOWARD THE MEDIAN UNLESS OTHERWISE NOTED. GUTTER SLOPE IS 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 CONCRETE GUTTER (SPECIAL). SEE ROADWAY PLANS FOR LIMITS OF REVERSE PITCHED GUTTER AND TRANSITIONS.
SHOULDER WIDENING TRANSITION—WITHOUT GUTTER FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT

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 INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.
5. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE—FIXED OR MOVABLE—SHALL BE ALLOWED WITHIN THIS RECOVERY AREA.
6. ON TANGENT ROADWAY, TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A SQO TAPER 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 ASPHALT. 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 LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.
SHOULDER WIDENING TRANSITION-WITH GUTTER, TYPE G-3 OR TYPE G-2 FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT

### TABLE 1

<table>
<thead>
<tr>
<th>Offset Distance to Edge of Terminal Impact Head</th>
<th>Inside Radius of Curve ((\text{lr}))</th>
<th>Outside Radius of Curve ((\text{or}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Gutter</td>
<td>1'-0&quot;</td>
<td>1'-0&quot;</td>
</tr>
<tr>
<td>Gutter, Type G-2, MOD.</td>
<td>1'-2(\frac{3}{4})&quot; (\text{lr})</td>
<td>1'-2(\frac{3}{4})&quot; (\text{or})</td>
</tr>
<tr>
<td>Gutter, Type G-3, MOD.</td>
<td>2'-2(\frac{3}{4})&quot; (\text{lr})</td>
<td>2'-2(\frac{3}{4})&quot; (\text{or})</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

TRAFFIC BARRIER TERMINAL PLACEMENT

CURVED ROADWAY

DRAINAGE STRUCTURE AS REQUIRED (SEE NOTE 9)

<table>
<thead>
<tr>
<th>PAY LIMITS OF TRAFFIC BARRIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAY LIMITS OF TRAFFIC BARRIER</td>
</tr>
</tbody>
</table>

SHEET 2 OF 2

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT

STANDARD CE-11
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.


7. Where gutter, type G-2 or 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 shoulders to the face of the guardrail shall be as shown on Illinois Tollway Standard Drawing B28.

TRAFFIC BARRIER TERMINAL, TYPE T2-WITHOUT GUTTER

AGGREGATE SHOULDERS, TYPE B

AGGREGATE SHOULDERS SPECIAL, TYPE C

TRAFFIC BARRIER TERMINAL, TYPE T2-WITHOUT GUTTER

NOTE:

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.


7. Where gutter, type G-2 or 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 shoulders to the face of the guardrail shall be as shown on Illinois Tollway Standard Drawing B28.
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.


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

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.

**ELEVATION**

- See Illinois Tollway Standard Drawing C1 for details of guardrail not shown.
- Three beam rail shall be bolted to block-out at all posts.
- 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.
- Under no circumstances shall an existing terminal, that was designed using a previous standard, be attached to or modified in anyway from its original design. If any modification is required and a proper warrant has been completed, the entire barrier installation shall be completely removed and replaced with a new system that conforms to the current standards.
- Terminal posts shall not be installed in concrete or asphalt pavements, when necessary use leave-out detail per Illinois Tollway Standard Drawing C1.
- Terminal posts to be installed perpendicular to back of gutter.
- The terminal system has been performance-tested for crashworthiness under procedures defined in AASHTO MASH. No modification to this standard drawing shall be permitted.
- Terminal barrier clearance distance shall conform with Table 2 on Illinois Tollway Standard Drawing C1.
- Leave-out dimension behind posts 1-6 shall be a minimum of 4".
- 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.
NOTE:

PLAN

ELEVATION

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

TWO SECTIONS OF W-BEAM
ONE SECTION OF W-BEAM

OFFSET FROM BACK OF GUTTER

SEE ILLINOIS TOLLWAY STANDARD DRAWING C1

BREAK POINT

WITH GUTTER, TYPE G-2

FOR PARAPET (SAFETY SHAPE)

WITH GUTTER, TYPE G-2

TOP OF RAIL

GUTTER, TYPE G-2

AGGREGATE SHOULDERS

SPECIAL, TYPE C

PAVED SHOULDER

2'-0" MIN.

3'-1" PAY LIMITS OF TRAFFIC BARRIER TERMINAL, TYPE T6 (1 EACH)

36'-4½" PAY LIMITS OF TRAFFIC BARRIER TERMINAL, TYPE T6 (1 EACH)

SECTION B-B

WITH GUTTER, TYPE G-2

SEE SHEET 1 OF THIS SERIES FOR NOTES.

SPECIAL, TYPE C

AGGREGATE SHOULDERS

GUTTER, TYPE G-2

FOR PARAPET (SAFETY SHAPE)

WITH GUTTER, TYPE G-2

NOTE:

SEE SHEET 1 OF THIS SERIES FOR NOTES.
FOR CONCRETE BARRIER, SINGLE-FACE W/ GUTTER, TYPE G-3

NOTE:

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

STANDARD C9-10
NOTE:
PARAPET WOOD BLOCK-OUT DETAIL
POSTS 1-11 WOOD BLOCK-OUT DETAIL
TRANSITION SECTION
POST 12 WOOD BLOCK-OUT DETAIL
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C13 FOR POST 13-16 BLOCKOUTS)
PARAPET WOOD BLOCK-OUT DETAIL
PARAPET STEEL BEARING PLATE DETAIL
(SEE SHEET 1 OF THIS SERIES FOR NOTES.
ILLINOIS TOLLWAY STANDARD DRAWING C9-10
TRAFFIC BARRIER TERMINAL, TYPE T6
NOTE: FOR POST 12 BLOCKOUTS, STEEL PLATES WITH CENTERS OF 1/16" HOLES MAY BE SUBSTITUTED FOR THE PLATE SHOWN.)
NOTES:
1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THRICE 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 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 ANYWAY 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 NECESSARY 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".
**Traffic Barrier Terminal, Type T10**

**Notes:**

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

2. The 24" typical rail height is measured from existing surface 2'-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.

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, 4-½" 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 speed limit of 40 mph or less, AASHTO MASH Test Level TL-2.

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 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 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 measured from edge of traveled way.

8. Terminal posts shall not be installed in concrete or asphalt, when necessary use leave-out detail shown on Illinois Tollway Standard Drawing C1.

9. The terminal system has been performance-tested for crashworthiness under procedures defined in AASHTO MASH, Test Level (TL-2).

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-WITHOUT GUTTER
FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)
SHOULDER WIDENING TRANSITION WITH GUTTER, TYPE G-2
FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

NOTE 6
RECOVERY AREA
DIRECTION OF TRAFFIC
OUTSIDE RADIUS OF CURVE
INSIDE RADIUS OF CURVE

CURVED ROADSIDE
TRAFFIC BARRIER TERMINAL PLACEMENT
SEE NOTE 7

TABLE 1
LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD

<table>
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<th>NO GUTTER</th>
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<tr>
<td>INSIDE RADIUS OF CURVE</td>
<td>OUTSIDE RADIUS OF CURVE</td>
</tr>
<tr>
<td>1'-2&quot; MIN.</td>
<td>1'-2&quot; MIN.*</td>
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</table>

(*) OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.
CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-OF
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 (ESPECIAL). 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 1, GRADE NO. CLASS 2. USE 1 WITH A BACKER ROD.

4. THE BARS SHALL BE INCLUDED IN THE COST OF THE VARIOUS BARRIER
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.

TABLE OF VARIABLES

<table>
<thead>
<tr>
<th>L</th>
<th>V</th>
<th>C</th>
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PLAN 1

PLAN 2
NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.
NOTES:
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" BASE OF DESIGN. TOLLEY STRUCTURE DESIGN MANUAL.

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

3. 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 PLACING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.

5. REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.

6. REINFORCEMENT BARS RISING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION.

7. AT DRAINAGE STRUCTURE, CUT FOOTING BARS TO FIT, ADD AN ADDITIONAL PAIR OF (3) 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 40'-0". SEE SECTION B-B FOR DETAILS.

REVISIONS

DATE
3-01-2020

CHIEF ENGINEERING OFFICER
3-1-2019

APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.

REINFORCEMENT BARS DESIGNATED ")" SHALL BE EPOXY COATED.

REINFORCEMENT BARS RISING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION.

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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.

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, T-SHAPE 44 INCH

POLYURETHANE SEALANT
ELASTOMERIC GUN GRADE
COMPONENT NON-SAG
NON-STAINING GRAY ONE

BENDING DIMENSIONS ARE OUT TO OUT. E.F. DENOTES EACH FACE.

CONCRETE STRUCTURES, ACI 315, LATEST EDITION. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION.

REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.

REINFORCEMENT BARS RISING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION.

SATISFACTORY CONTROL OF CRACKING.

FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FORMING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.

REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.

REINFORCEMENT BARS RISING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 356. LATEST EDITION.

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REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.

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1. Single face 44" barrier expansion joint.

2. Single face TL-5 barrier.

3. Theoretical gutter.

4. Bending diagrams.

5. Reinforcement around drainage structure.

6. Notes:
   - 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: Illinois Tollway Structure Design Manual.
   - Top shoulder edge of barrier base gutter shall match the top of shoulder elevation.
   - 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".
   - The forming of contraction joints shall be done with an approved finishing tool or by sawing subject to the satisfactory control of cracking.
   - Reinforcement bars designated "E" shall be epoxy coated.
   - 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. E. F. denotes each face.
   - At drainage structures, cut footing bars to fit, and add an additional pair of G+1 bars on each side of the drainage structure.
   - 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.

7. Reinforcement:
   - 2-#5 d(E) bars
   - 2-#5 d1(E) bars
   - 2-#5 t(E) bars

8. Joint bonding:
   - 2'-0" cement nails flat HD
   - 1" radius (TYP.)

9. Miscellaneous:
   - Non-staining gray one-component non-sag elastomeric gun grade polyurethane sealant meeting the requirements of ASTM C-920, TYPE S, GRADE NG, CLASS 2%, USE T
   - Shield drop-offs and structures when the toe of the traffic face is greater than 10' from the structure face.
   - Expansion joints shall be constructed in barrier wall at a maximum joint spacing of 40'-0" and a minimum joint spacing of 40'-0".

10. Specifications:
    - Concrete Barrier Single Face, Reinforced TL-5, L-shape 44" (L-shape 44" by 18")
    - Standard C16-01