**GALVANIZED STEEL PLATE BEAM GUARDRAIL**

Replaced relocated post detail at drainage structure conflict, with omitted post detail. New details also show minimum distance between omitted posts, and between an omitted post and a traffic barrier terminal.

**CONCRETE SHOULDER BARRIER TRANSITION, TYPE V-SF**

Revised relocated post detail at drainage structure conflict, with omitted post detail. New details also show minimum distance between omitted posts, and between an omitted post and a traffic barrier terminal.

**CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS**

Added length to bar d2(E) and a note to Section B-B referencing Hot-Poured Joint Sealer for the horizontal joints.

**CONCRETE SHOULDER BARRIER HEIGHT TRANSITION, SINGLE FACE, TYPE SF-54**

Added length to bar d2(E) and a note to Section C-C referencing Hot-Poured Joint Sealer for the horizontal joints.
GUARDRAIL INSTALLATION DETAILS

SECTION WITHOUT GUTTER

NOTES:

1. 1'-0" 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.


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 BEHIND GUTTER. FOR GUARDRAIL WITHOUT GUTTER, AGGREGATE SHOULDER, TYPE C, OF THE SAME THICKNESS AS GUTTER SHALL BE PLACED FROM THE EDGE OF PAVED SHOULDER SLOPING AWAY TO A 6" MINIMAL 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 1'-0" MIN. BEHIND THE POST TO THE SHOULDER POINT.

8. UNDER NO CIRCUMSTANCES SHALL AN EXISTING GUARDRAIL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE EXTENDED, 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.

9. WHEN S IS LESS THAN OR EQUAL TO 3, THE POST LENGTH SHALL BE 9'-0" AND THE AGGREGATE SHOULDER WIDTH MAINTAINED.

10. THE MGS GUARDRAIL SYSTEM WITH STANDARD POST SPACING HAS BEEN PERFORMANCE-TESTED FOR TL-3 CRASHWORTHINESS UNDER PROCEDURES DEFINED IN THE AASHO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH). OTHER VARIATIONS OF THE MGS GUARDRAIL SYSTEM HAVE 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 SHALL BE PERMITTED.

11. GUARDRAIL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL ON SHEET 3 OF 4.

12. GUARDRAIL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL ON SHEET 3 OF 4.

NOTE:

- SEE NOTE 2

- SEE NOTE 10

- SEE NOTE 11

03-01-18
CHANGED DRAINAGE CONFLICTS MODIFIED NOTE 11 AND
03-01-20
ADDED SECTION, REV'D SHLDR
PLAN

BEAM GUARDRAIL

GALVANIZED STEEL PLATE SHEET 3 OF 4

TRAFFIC

LAP 2"

1'-2"

3'

1'-0"

5"+"

OR 1"+

1"+

REOUIRED AS

" N C 2

1'

"Š"

1"+

STEEL POST

W6x9 OR W6x8.5

STEEL POST CONSTRUCTION

FOR 9' POSTS ONLY

(STAMP BOTH SIDES)

STANDARD C1-12
TABLE 2A  
**BARRIER CLEARANCE DISTANCE (MGS) NEW CONSTRUCTION/RECONSTRUCTION**

<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</td>
<td>3'-4 1/2&quot;</td>
<td>34&quot;</td>
</tr>
<tr>
<td>Type C</td>
<td>1'-6 3/4&quot;</td>
<td>26&quot;</td>
</tr>
</tbody>
</table>

TABLE 2B  
**BARRIER CLEARANCE DISTANCE (MGS) REHABILITATION**

<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</td>
<td>3'-4 1/2&quot;</td>
<td>34&quot;</td>
</tr>
<tr>
<td>Type C</td>
<td>1'-6 3/4&quot;</td>
<td>26&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**
- **When length of obstacles is 1'-3" or less, the downstream transition shall be omitted.**
- **Face of Guardrail**  
  - Direction of Traffic  
  - Edge of Shoulder

**DIRECTION OF TRAFFIC**

<table>
<thead>
<tr>
<th>Transition Type</th>
<th>Post Spacing</th>
<th>Minimum Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream</td>
<td>4 spaces @ 3'-1/2&quot;</td>
<td>12'-6&quot;</td>
</tr>
<tr>
<td>Downstream</td>
<td>2 spaces @ 3'-1/2&quot;</td>
<td>6'-3&quot;</td>
</tr>
</tbody>
</table>

**TRANSITION TO 1/2-POST SPACING**

- **Direction of Traffic**
  - **Face of Guardrail**
  - **Edge of Shoulder**

**TRANSITION TO 1/4-POST SPACING**

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

**POST SPACING TRANSITIONS**

- **NOTES:**
  - **No modifications of any kind to the transition post spacing are allowed.**

---

**MINIMUM ALLOWED DISTANCE BETWEEN OMITTED POSTS**

<table>
<thead>
<tr>
<th>Terminal Pay Limits</th>
<th>Minimum Distance to Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Table 3 below</td>
<td></td>
</tr>
</tbody>
</table>

**MINIMUM DISTANCE TO TERMINAL FROM OMITTED POST**

- **Traffic Barrier Terminal (Type Varies)**

**NOTES:**
- **A.** The omission of a single support post within the guardrail span is permitted when a conflict exists. The minimum distance between two omitted posts is 56'-3".
- **B.** Guardrail posts shall not be set back to avoid conflicts with a drainage subsurface utility.
- **C.** This detail also applies to other underground conflicts.
- **D.** The omission of a support post is not permitted within a guardrail installation with gutter.

**TABLE 3**

<table>
<thead>
<tr>
<th>Traffic Barrier Terminal</th>
<th>MIN. Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBT Type T1 (SP) or</td>
<td>15'-7 1/2&quot;</td>
</tr>
<tr>
<td>TBT Type T1-A (SP) or</td>
<td>15'-7 1/2&quot;</td>
</tr>
<tr>
<td>TBT Type T6 or</td>
<td>28'-1 1/2&quot;</td>
</tr>
<tr>
<td>TBT Type T7</td>
<td>53'-1 1/2&quot;</td>
</tr>
</tbody>
</table>

---

**GALVANIZED STEEL PLATE BEAM GUARDRAIL**

**STANDARD CI-12**

---
1. **REINFORCEMENT AROUND DRAINAGE STRUCTURE**

**NOTES:**

1. This is a reinforced concrete TL-4 roadside barrier used to protect the roadway appurtenances. The minimum length of installation shall be 25'-0". Basis of design: Illinois Tollway Structure Design Manual.

2. Top shoulder edge of barrier base cutout shall match the top of shoulder 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 forming 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, 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, and #8 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 B-B for details.

---

**APPROVED:**

**DATE:** 3-01-2020

**CHIEF ENGINEERING OFFICER:**

---

**CONCRETE BARRIER SINGLE FACE, REINFORCED TL-4, 44 INCH**

**STANDARD:** C3-08
CONCRETE BARRIER, DOUBLE FACE, 44" CONCRETE BARRIER BASE, 7'-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). CONTRACT JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACT JOINT SPACING SHALL BE 50'-0", THE MINIMUM DISTANCE BETWEEN CONTRACTION JOINTS IN THE MEDIAN BARRIER WALL SHALL BE 2'-0", WHEN A DRAINAGE STRUCTURE FAILS WITHIN 2'-0" FROM AN EXPANSION JOINT (OR CONTRACT JOINT), THE NEAREST CONTRACT JOINT SHALL BE OMITTED.
2. GUTTER PROFILE IN THE VICINITY OF A GUTTER 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 BARRIER CAN VARY BY VARYING THE GUTTER SLOPES FROM 4% TO 44.5" 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.
7. WHEN VARIABLE HEIGHT VERTICAL DIFFERENTIAL EXCEEDS 12" SEE STRUCTURAL PLANS FOR DETAILS.
8. GUTTER SLOPE SHALL BE 4.12% SLOPED TOWARD THE MEDIAN UNLESS OTHERWISE NOTED. GUTTER SLOPE IS REVERSE PITCHED WHEN THE SHOULDER/FLEX LANE (SHAINS 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.
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 IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.
5. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE-FIXED OR TEMPORARY SHALL BE ALLOWED WITHIN THE TERMINAL PAY LIMITS. THE TERMINAL SHALL BE LAID OUT IN A STRAIGHT LINE.
6. ON TANGENT ROADWAY, TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A SOIL TAPER MEASURED FROM EDGE OF TRAVELED WAY, AND 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 INSTALLED AT A 50:1 TAPER MEASURED FROM EDGE OF TRAVELED WAY.
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></th>
<th>INSIDE RADIUS OF CURVE</th>
<th>OUTSIDE RADIUS OF CURVE</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'-23½&quot;</td>
<td>1'-23½&quot; MIN. *</td>
</tr>
<tr>
<td>GUTTER, TYPE G-3, MOD.</td>
<td>2'-23½&quot;</td>
<td>2'-23½&quot; MIN. *</td>
</tr>
</tbody>
</table>

* Offset distance will vary based on radius of horizontal curve and the terminal being installed in a straight line.
TRAFFIC BARRIER TERMINAL, TYPE T2-WITHOUT GUTTER

**Plan**

- **End Section**
  - **Anchorage Plate 1**
  - **Face of Guardrail**
  - **Edge of Paved Shoulder**
  - **Direction of Traffic**

- **Aggregates Shoulders, Type B**
- **Aggregates Shoulders Special, Type C**

**Elevation**

- **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 Gutter, Type 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 Illinois Tollway Standard Drawing B28.
TRAFFIC BARRIER TERMINAL, TYPE T2

NOTE:
CABLE STRUT

END SECTION

CABLE ASSEMBLY

1" DOUBLE NUTS OR LOCKNUTS AND 1/8" WASHER
(MAX. 7 THREADS EXTENDING BEYOND NUT FACE)

STANDARD SWAGE FITTING AND STUD TIGHTEN TO TIGHT TENSION

ANCHOR PLATE T DETAILS

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

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

1. See Illinois Tollway Standard Drawing C1 for details of parapets 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 road shoulder 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 any way 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 standard.

6. Traffic barrier terminal, type T6, shall be in accordance with the Illinois Tollway's details and specifications. No modifications shall be permitted.


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 OTHER VERTICAL CONCRETE WALL/Foundation WITH Gutter

FOR OTHER VERTICAL CONCRETE WALL/Foundation WITH Gutter

NOTE: SEE SHEET 1 OF THIS SERIES FOR NOTES AND SECTION A-A.
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.
THREE BEAM END SHOE DETAIL

POSTS 1-11 WOOD BLOCK-OUT DETAIL

POST 12 WOOD BLOCK-OUT DETAIL

PARAPET WOOD BLOCK-OUT DETAIL

PARAPET STEEL BEARING PLATE DETAIL

TRANSITION SECTION

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 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".

9. CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10".

10. LOOSENING, BOLTS SHALL BE ANCHORED INTO DRILLED HOLES USING A CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10".

11. AFTER TIGHTENING, CUT THE ANCHOR BOLTS WITH THE NUTS, AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING. BOLTS SHALL BE ANCHORED INTO DRILLED HOLES USING A CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10".

12. STANDARD WASHERS. AFTER TIGHTENING, CUT THE ANCHOR BOLTS WITH THE NUTS, AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING. BOLTS SHALL BE ANCHORED INTO DRILLED HOLES USING A CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10".

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

14. GUTTER IS NOT TO BE INSTALLED.

15. SEE DETAILS OF WOOD BLOCKOUTS A, B, C, & D. (SEE SHEET 2 OF 2)

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

17. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
POSTS 1-11 WOOD BLOCK-OUT DETAIL

POST 12 WOOD BLOCK-OUT DETAIL

NOTE:

THREE BEAM END SHOE DETAIL

SEE SHEET 1 OF THIS SERIES FOR NOTES.

WOOD BLOCK-OUT D

WOOD BLOCK-OUT C

WOOD BLOCK-OUT A & B

MODIFIED THICKNESS DETAIL

WOOD BLOCK-OUTS A, B, C, & D

WOOD BLOCK-OUT D

- After tightening, cut the bolts flush with the nuts and damage the nuts to prevent them from loosening.

- \( \frac{3}{4}\times\frac{1}{2}\) BOLT WITH WASHER AND NUT, (REVERSE IF REVERSED)

- \( \frac{3}{4}\times\frac{1}{2}\) ANCHOR BOLT WITH WASHER AND NUT

- CONCRETE STRUCTURE

- \( \frac{3}{4}\times\frac{1}{2}\) BOLT WITH WASHER AND NUT

- \( \frac{3}{4}\times\frac{1}{2}\) BOLT WITH WASHER AND NUT

- \( \frac{3}{4}\times\frac{1}{2}\) BOLT WITH WASHER AND NUT

- \( \frac{3}{4}\times\frac{1}{2}\) BOLT WITH WASHER AND NUT
GENERAL NOTE:
* HEAD OF BOLT TO BE ON TRAFFIC SIDE. SEE DETAIL "A"

NOTES:
1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THE 24½" TYPICAL RAIL HEIGHT IS MEASURED FROM EXISTING SURFACE 2'-0" IN FRONT OF RAIL OR FROM EDGE OF SHOULDER/EDGE OF GUTTER AND 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, 4½" BOLTS SHALL BE ANCHORED INTO DRILLED HOLES, USING A CHEMICAL ADHESIVE. MINIMUM EMBEDMENT SHALL BE 10". ANCHOR BOLTS WITH STANDARD WASHERS MAY BE USED. AFTER TIGHTENING, CUT THE ANCHOR BOLTS FLUSH WITH THE NUTS, AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING.
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, 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 terminals 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. 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 in-ream sections are permitted within the terminal pay limits. The traffic barrier terminal, Type T1-A (Special) shall be laid out in a straight line.

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

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

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

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.
SHOULDER WIDENING TRANSITION WITH GUTTER, TYPE G-2
FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

TABLE 1
LATERNAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD

<table>
<thead>
<tr>
<th></th>
<th>INSIDE RADIUS OF CURVE</th>
<th>OUTSIDE RADIUS OF CURVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO GUTTER</td>
<td>1'-2½&quot;</td>
<td>1'-0&quot;</td>
</tr>
<tr>
<td>GUTTER, TYPE G-2, MOD.</td>
<td>1'-2½&quot;</td>
<td>1'-2½&quot; MIN.*</td>
</tr>
</tbody>
</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-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.

4. HOOK BARS SHALL BE INCLUDED IN THE COST OF THE VARIOUS BARRIER AND GUTTER ITEMS AND SHALL BE EPOXY COATED. HOOK BARS BETWEEN THE BARRIER AND BASE SHALL BE ON 15" CENTERS AND ALTERNATE LEFT AND RIGHT OF THE BARRIER CENTERLINE. SEE STANDARD CS FOR "HOOK BAR" DETAIL.

TABLE OF VARIABLES

<table>
<thead>
<tr>
<th>L</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3'-0&quot;</td>
<td>3'-3&quot;</td>
</tr>
<tr>
<td>1/8&quot;</td>
<td>1/8&quot;</td>
</tr>
</tbody>
</table>

DATE: 3-31-2014
MODIFIED BARRIER BASE.

DATE: 11-01-2012
MODIFIED MEDIAN BARRIER TRANSITION.

DATE: 3-31-2016
MODIFIED NOTES

DATE: 3-01-2019
REVISED TO CONSTANT SLOPE AT 44"

DATE: 3-01-2021
REVISED TO HOOK BARS "HOOK BAR" DETAIL.
NOTES:

SEE SHEET 1 OF THIS SERIES FOR NOTES.
**REVISIONS**

- At Bridge Piers: Transition, Type V
- Concrete Median Barrier
- Revised Note 3: Added Sec. B-B Top, Ditch Elev. View
- Corrected Height in Section A-A

**PLAN**

- Barriers: Wall & Base
- Piers: 10'-0" or 30'-0"
- Energy Attenuator/Concrete Pad
- Depot
- Concrete Barrier Transition, Type V
- Column:
  - C
  - A
  - B

**ELEVATION**

- Barriers: Wall & Base
- Piers: 10'-0" or 30'-0"
- Energy Attenuator/Concrete Pad
- Depot
- Concrete Barrier Transition, Type V
- Column:
  - C
  - A
  - B

**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'-0" 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 30'-0". The minimum distance between contraction joints in the median barrier wall shall be 2'-0".

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**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;&lt;Wc&lt;35&quot;</td>
<td>25'-0&quot;</td>
</tr>
<tr>
<td>35&quot;&lt;Wc&lt;43&quot;</td>
<td>35'-0&quot;</td>
</tr>
<tr>
<td>43&quot;&lt;Wc&lt;45&quot;</td>
<td>45'-0&quot;</td>
</tr>
<tr>
<td>51&quot;&lt;Wc&lt;59&quot;</td>
<td>55'-0&quot;</td>
</tr>
<tr>
<td>59&quot;&lt;Wc&lt;67&quot;</td>
<td>65'-0&quot;</td>
</tr>
<tr>
<td>67&quot;&lt;Wc&lt;72&quot;</td>
<td>75'-0&quot;</td>
</tr>
</tbody>
</table>

Wc = Pier Crash Wall Width

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**DATE**

- 3-31-2014
- 3-31-2016

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**APPROVED**

- Chief Engineering Officer
  - 3-30-2020

---

**STANDARD**

- 014-05

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**RECOMMENDED FOR ADOPTION**

- 4-25-19

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**AMENDED**

- 4-10-19
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. 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 PUSHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.

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

6. REINFORCEMENT BARS RENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI356, LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI356, LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI356, LATEST EDITION.

7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT, ADD AN ADDITIONAL PAIR OF #4 AND #6 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:

1. CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE BARRIER WALL AND BASE. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".

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

3. DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE 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 PUSHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.

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

6. REINFORCEMENT BARS RENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI356, LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI356, LATEST EDITION.

7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT, ADD AN ADDITIONAL PAIR OF #4 AND #6 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.

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, T-SHAPE 44 INCH
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: ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL.

2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER 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 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 MANUFACTURER'S PRINCIPAL FOR DETAILING REINFORCED CONCRETE STRUCTURES: ACI 315, LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT. E.F. DENOTES EACH FACE.

7. AT DRAINAGE STRUCTURES, CUTOFF BARS TO FIT, ADD AN ADDITIONAL PAIR OF "G" AND "I" 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 30'-0". SEE SECTION B-B FOR DETAILS.

NOTES:

- EXPANSION JOINTS SHALL BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF "G" AND "I" BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
- MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 40'-0".
- THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S PRINCIPAL FOR DETAILING REINFORCED CONCRETE STRUCTURES: ACI 315, LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT. E.F. DENOTES EACH FACE.
- REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.