### STANDARD ROADWAY CONSTRUCTION DRAWINGS

**OHIO DEPARTMENT OF TRANSPORTATION**

**STANDARD ROADWAY CONSTRUCTION DRAWINGS**

**OFFICE OF ROADWAY ENGINEERING**

**ROADWAY STANDARD DRAWINGS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Shts.</th>
<th>Drawing Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>PAVEMENT DESIGN FEATURES</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Base Pavement</strong></td>
<td></td>
</tr>
<tr>
<td>BP-1.1</td>
<td>1</td>
<td>Concrete Pavement Reinforcing</td>
<td>7-28-2000</td>
</tr>
<tr>
<td>BP-2.1</td>
<td>1</td>
<td>longitudinal Pavement Joints</td>
<td>7-18-2008</td>
</tr>
<tr>
<td>BP-2.2</td>
<td>1</td>
<td>Transverse Pavement Joints</td>
<td>7-19-2013</td>
</tr>
<tr>
<td>BP-2.4</td>
<td>1</td>
<td>Pressure Relief Joint Type A</td>
<td>7-18-2013</td>
</tr>
<tr>
<td>BP-2.5</td>
<td>1</td>
<td>Rigid Replacement</td>
<td>7-19-2013</td>
</tr>
<tr>
<td>BP-2.6</td>
<td>1</td>
<td>Load Transfer Retrofit</td>
<td>7-15-2016</td>
</tr>
<tr>
<td>BP-3.1</td>
<td>1</td>
<td>Asphalt Pavement</td>
<td>7-20-2019</td>
</tr>
<tr>
<td>BP-3.2</td>
<td>1</td>
<td>Asphalt Safety Edge</td>
<td>7-18-2019</td>
</tr>
<tr>
<td>BP-4.1</td>
<td>1</td>
<td>Driveways</td>
<td>7-19-2013</td>
</tr>
<tr>
<td>BP-5.1</td>
<td>1</td>
<td>Concrete Curbs and Combined Curb &amp; Gutter</td>
<td>7-18-2019</td>
</tr>
<tr>
<td>BP-6.1</td>
<td>1</td>
<td>Pavement Joints at Ramp Terminals</td>
<td>7-20-2019</td>
</tr>
<tr>
<td>BP-7.1</td>
<td>1</td>
<td>Concrete Curb Ramps</td>
<td>7-20-2018</td>
</tr>
<tr>
<td>BP-8.1</td>
<td>2</td>
<td>New Curb Ramps</td>
<td>7-19-2014</td>
</tr>
<tr>
<td>BP-8.2</td>
<td>1</td>
<td>Concrete Safety Edge</td>
<td>7-18-2019</td>
</tr>
<tr>
<td>BP-9.1</td>
<td>1</td>
<td>Shoulder Rumble Strips</td>
<td>7-19-2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Fence</strong></td>
<td></td>
</tr>
<tr>
<td>F-1.1</td>
<td>1</td>
<td>Chain Link Fence</td>
<td>7-18-2019</td>
</tr>
<tr>
<td>F-2.1</td>
<td>1</td>
<td>Woven Wire Fence</td>
<td>7-20-2019</td>
</tr>
<tr>
<td>F-3.1</td>
<td>1</td>
<td>Fence Details at Bridges</td>
<td>7-20-2019</td>
</tr>
<tr>
<td>F-3.2</td>
<td>1</td>
<td>Walk Gates</td>
<td>7-18-2014</td>
</tr>
<tr>
<td>F-3.3</td>
<td>1</td>
<td>Fence Terminals</td>
<td>7-19-2013</td>
</tr>
<tr>
<td>F-3.4</td>
<td>2</td>
<td>Fence Details</td>
<td>7-19-2013</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Guardrail</strong></td>
<td></td>
</tr>
<tr>
<td>MGS-1.1</td>
<td>3</td>
<td>MGS Guardrail Details</td>
<td>7-19-2019</td>
</tr>
<tr>
<td>MGS-2.1</td>
<td>2</td>
<td>Standard Type MGS</td>
<td>7-18-2018</td>
</tr>
<tr>
<td>MGS-2.3</td>
<td>1</td>
<td>MGS 25' Long-Span Guardrail</td>
<td>7-18-2014</td>
</tr>
<tr>
<td>MGS-2.4</td>
<td>2</td>
<td>Socketed Weak Post Attached to Headwall</td>
<td>7-18-2019</td>
</tr>
<tr>
<td>MGS-3.1</td>
<td>2</td>
<td>MGS Bridge Terminal Assembly, Type 1</td>
<td>7-18-2018</td>
</tr>
<tr>
<td>MGS-3.2</td>
<td>1</td>
<td>MGS Bridge Terminal Assembly, Type 2</td>
<td>7-19-2013</td>
</tr>
<tr>
<td>MGS-4.1</td>
<td>1</td>
<td>MGS Type A Anchor Assembly</td>
<td>7-20-2017</td>
</tr>
<tr>
<td>MGS-4.2</td>
<td>1</td>
<td>MGS Type A Anchor Assembly</td>
<td>7-19-2019</td>
</tr>
<tr>
<td>MGS-4.3</td>
<td>1</td>
<td>MGS Guardrail Transitions</td>
<td>7-20-2019</td>
</tr>
<tr>
<td>MGS-4.5</td>
<td>3</td>
<td>MGS Type B Buried in Backslope</td>
<td>7-18-2013</td>
</tr>
<tr>
<td>MGS-5.2</td>
<td>1</td>
<td>MGS Introduction of Guardrail Runs</td>
<td>7-15-2016</td>
</tr>
<tr>
<td>MGS-5.3</td>
<td>1</td>
<td>MGS Introduction of Guardrail Runs</td>
<td>7-15-2016</td>
</tr>
<tr>
<td>MGS-6.1</td>
<td>2</td>
<td>MGS Guardrail at Bridges</td>
<td>7-19-2019</td>
</tr>
<tr>
<td>MGS-6.2</td>
<td>1</td>
<td>MGS Median Guardrail at Piers</td>
<td>7-19-2019</td>
</tr>
<tr>
<td>GR-6.3</td>
<td>1</td>
<td>Thile Beam Bullnose at Bridge Piers</td>
<td>7-20-2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Roadway Miscellaneous</strong></td>
<td></td>
</tr>
<tr>
<td>RM-1.1</td>
<td>2</td>
<td>Roadway Monuments</td>
<td>7-18-2019</td>
</tr>
<tr>
<td>RM-2.1</td>
<td>1</td>
<td>Concrete Steps</td>
<td>7-19-2013</td>
</tr>
<tr>
<td>RM-3.1</td>
<td>1</td>
<td>Traffic Dividers</td>
<td>7-20-2018</td>
</tr>
<tr>
<td>RM-4.1</td>
<td>1</td>
<td>Single Slope Barrier Type B, Type C</td>
<td>7-21-2017</td>
</tr>
<tr>
<td>RM-4.2</td>
<td>1</td>
<td>Single Slope Barrier Transitions</td>
<td>7-19-2019</td>
</tr>
<tr>
<td>RM-4.3</td>
<td>1</td>
<td>Single Slope Barrier, Type D</td>
<td>7-18-2014</td>
</tr>
<tr>
<td>RM-4.4</td>
<td>1</td>
<td>Single Slope Barrier, Type D</td>
<td>7-19-2019</td>
</tr>
<tr>
<td>RM-4.5</td>
<td>1</td>
<td>Single Slope Barrier, Type D</td>
<td>7-19-2019</td>
</tr>
<tr>
<td>RM-4.6</td>
<td>3</td>
<td>Concrete Barrier End Sections (Type B, Type D)</td>
<td>7-19-2013</td>
</tr>
<tr>
<td>RM-5.1</td>
<td>2</td>
<td>Steel Bollards</td>
<td>7-18-2014</td>
</tr>
<tr>
<td>RM-5.2</td>
<td>1</td>
<td>Bikeway Railing</td>
<td>7-18-2015</td>
</tr>
<tr>
<td>RM-6.1</td>
<td>1</td>
<td>Concrete Parking Block Detail</td>
<td>7-18-2014</td>
</tr>
<tr>
<td>RM-7.1</td>
<td>1</td>
<td>Drilled Water Well Abandoned</td>
<td>7-18-2014</td>
</tr>
<tr>
<td>RM-7.2</td>
<td>1</td>
<td>Plugging and venting Gas and/or Oil Well</td>
<td>7-15-2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ROADSIDE DEVELOPMENT</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Landscaping</strong></td>
<td></td>
</tr>
<tr>
<td>LA-1.1</td>
<td>1</td>
<td>Tree Wells and Pruning</td>
<td>10-15-2010</td>
</tr>
<tr>
<td>LA-1.2</td>
<td>1</td>
<td>Planting and Bracing</td>
<td>1-16-2009</td>
</tr>
</tbody>
</table>

**CURRENT INDEX - January, 2020**
05° BARRIER SECTION

PORTABLE CONCRETE BARRIER (PCB): As shown is not to be used on bridge deck edges, or similar dropoffs. The only suitable barrier in this situation is a 50° PCB as detailed on Structural Engineering's Standard Drawing PCB-81 or approved alternatives as posted on the Office of Highway Engineering's website.

50° TRANSITION SECTION: Only segments shown on SCD RM-4.2, or approved impact attenuators, may be connected to the 50° side of a 50° transition section. Do not connect an impact attenuator to a 50° barrier end.

HINGE AND REINFORCING BARS: The \( \frac{3}{8} \)" hinge bars may be ASTM A 36. Reinforcing steel shall meet the requirements of CMS 509 (ASTM A 615 Grade 60). Wire mesh shall meet CMS 709.30. Black steel is permitted.

CONNECTING HARDWARE: Galvanize bolts, washers and hex nuts after fabrication per CMS 711.02 and meeting the requirements of CMS 711.09, except that the Rotational Capacity test specified in ASTM A 325 shall be waived.

HANDLING DEVICES: Lifting slots are required in the upper portion of the barrier to aid in removal of forms at the end of the casting process. They may be of any design sufficient to handle the weight of the section being lifted. No handling devices shall protrude from the surface of the barrier when in place.

MARKING: All barrier segments are to be marked as shown, where XX indicates the year cast.

ELEVATION 50° TRANSITION SECTION

LEGEND:
- 2" radius or \( \frac{3}{8} \)" chamfer, all top and end corners.
- Permissible 10" radius.
- Permissible 2" radius.

REFLECTORIZATION: Install barrier reflectors in accordance with Roadway Engineering Standard Drawing MT-101.70, when specified in the plans.

PAYMENT: This barrier is paid for in feet as ITEM 662 - Portable Barrier, 50" and ITEM 662 - Portable Barrier, 50" as shown on Sheet 2.

NOTE: See CMS 692 for additional information. The minimum design strength of the concrete is 4,000 psi, and will meet the requirements of CMS 499.

GENERAL: See CMS 692 for additional information. The minimum design strength of the concrete is 4,000 psi, and will meet the requirements of CMS 499.

PORTABLE CONCRETE BARRIER (PCB): As shown is not to be used on bridge deck edges, or similar dropoffs. The only suitable barrier in this situation is a 50° PCB as detailed on Structural Engineering’s Standard Drawing PCB-81 or approved alternatives as posted on the Office of Highway Engineering’s website.

50° TRANSITION SECTION: Only segments shown on SCD RM-4.2, or approved impact attenuators, may be connected to the 50° side of a 50° transition section. Do not connect an impact attenuator to a 50° barrier end.

HINGE AND REINFORCING BARS: The \( \frac{3}{8} \)" hinge bars may be ASTM A 36. Reinforcing steel shall meet the requirements of CMS 509 (ASTM A 615 Grade 60). Wire mesh shall meet CMS 709.30. Black steel is permitted.

CONNECTING HARDWARE: Galvanize bolts, washers and hex nuts after fabrication per CMS 711.02 and meeting the requirements of CMS 711.09, except that the Rotational Capacity test specified in ASTM A 325 shall be waived.

HANDLING DEVICES: Lifting slots are required in the upper portion of the barrier to aid in removal of forms at the end of the casting process. They may be of any design sufficient to handle the weight of the section being lifted. No handling devices shall protrude from the surface of the barrier when in place.

MARKING: All barrier segments are to be marked as shown, where XX indicates the year cast.

On the top of each barrier segment, including the transition section, permanently mark a unique identification as to its manufacturer. And somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

REFLECTORIZATION: Install barrier reflectors in accordance with Roadway Engineering Standard Drawing MT-101.70, when specified in the plans.

PAYMENT: This barrier is paid for in feet as ITEM 662 - Portable Barrier, 50" and ITEM 662 - Portable Barrier, 50" as shown on Sheet 2.

NOTE: See CMS 692 for additional information. The minimum design strength of the concrete is 4,000 psi, and will meet the requirements of CMS 499.
HINGE BAR DETAILS

Hinge Bar Type A

\[ \frac{3}{16} \text{ in.} \times 41.3\text{ in.} \]
Four per segment.

Hinge Bar Type B

\[ \frac{3}{16} \text{ in.} \times 40.4\text{ in.} \]
Four per segment.

CONNECTING PIN ASSEMBLY

Connecting Pin

A 1 1/8" diameter by 43" Grade 5 galvanized high strength steel bolt, with 3" of threads. Each bolt passes through eight hinge bar loops - four on each segment.

The assembly requires two F436 1 1/4" flat washer with an ID of 1 1/8" and an OD of 2.5". The thickness is 0.156". The flat washer is hot dipped galvanized.

The assembly also requires one 1 1/4"-7 heavy hex nut. The nut is hot dipped galvanized and waxed and is category 2H/DH.

REINFORCING BAR LIST

<table>
<thead>
<tr>
<th>Mark</th>
<th>Bar</th>
<th>Bar Length</th>
<th>Shape</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>X501</td>
<td>-5</td>
<td>11'-6&quot; to 13'-6&quot;</td>
<td>Str.</td>
<td>5</td>
</tr>
<tr>
<td>X502</td>
<td>-5</td>
<td>5'-4&quot;</td>
<td>Str.</td>
<td>3</td>
</tr>
<tr>
<td>X503</td>
<td>-5</td>
<td>5'-4&quot;</td>
<td>Str.</td>
<td>2</td>
</tr>
</tbody>
</table>
NOTES (NEW JERSEY SHAPE)

GENERAL: this barrier may be manufactured with reinforcing steel or with welded wire fabric as shown in the ELEVATION and SECTION A-A details. See CMS 622 for additional information. The minimum design strength of the concrete is 4,000 psi and meets the requirements of CMS 499.

Barrier Types: New Jersey Shape and F-Shape in the same run shall not be mixed.

PORTABLE CONCRETE BARRIER (PB) shall not use the PB detailed here on bridge deck edges, or similar drop-offs. PBs, Bridge Mounted, shown on Structural Engineering's Standard Drawing PCB-91, or approved alternative products as shown on the Office of Roadway Engineering's website, shall be used at those locations in accordance with that office's PDSD Design Draw Sheet.

HINGE AND REINFORCING BARS: use ASTM A 36 for the ⅜" hinge bars. Use rebar meeting the requirements of CMS 509 A 516 Grade 60. Mesh wire shall meet CMS 709.10. Black Steel is permitted.

CONNECTION HARDWARE: Bolts, washers and hex nuts are to be galvanized after fabrication per CMS 70.32 and meet the requirements of CMS 70.36 except that the rotational capacity test specified in ASTM A 125 shall be waived.

ALTERNATE BARRIER: approved alternate portable barrier can be found on the Office of Roadway Engineering's website.

HARDWARE SPECIFICATIONS: All hardware shall be galvanized per CMS 509.711.02 and meet the requirements of CMS 509.711.09 except that the Rotational Capacity test specified in ASTM A 125 shall be waived.

CONNECTING HARDWARE: Bolts, washers and hex nuts are to be galvanized after fabrication per CMS 70.32 and meet the requirements of CMS 70.36 except that the rotational capacity test specified in ASTM A 125 shall be waived.

PAYMENT: This barrier is paid for in feet as ITEM 622 - Portable Barrier, Anchored, and ITEM 622 - Portable Barrier, Unanchored. Approved alternatives to the barrier shown on this drawing (and SCD PAYMENT) can be found on the Office of Roadway Engineering's website.


On the top of each barrier segment, including tapered end sections, permanently mark a unique identification as to its manufacturer, and somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

INFLICTORIZATION: Install barrier reflectors in accordance with Roadway Engineering Standard Drawing MT-101.70, when specified in the plans.

PAYMENT: This barrier is paid for in feet as ITEM 622 - Portable Barrier, Anchored, and ITEM 622 - Portable Barrier, Unanchored. Approved alternatives to the barrier shown on this drawing (and SCD PAYMENT) can be found on the Office of Roadway Engineering's website.

Barrier sections meeting this standard and cast before January 1, 2020, may continue to be used and shall be permitted.

ALTERNATE BARRIER: Approved Alternate Portable Barrier can be found on the Office of Roadway Engineering's website.

HANDLING DEVICES: Such devices may be used in lieu of the lifting slot for moving the barrier. They may be of any design sufficient to safely handle the weight of the section being lifted. No handling devices shall protrude from the surface of the barrier when in place.

MARKINGS: All barrier segments are to be marked on the top, as shown, where XX indicates the year cast. If the barrier is cast using welded wire fabric instead of the rebar, and WWF to the end of the notation. Permanently impress these markings in the barrier using a minimum of ⅜" high lettering. The tapered end section is not required to be marked.

On the top of each barrier segment, including tapered end sections, permanently mark a unique identification as to its manufacturer, and somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

REFLECTORIZATION: Install barrier reflectors in accordance with Roadway Engineering Standard Drawing MT-101.70, when specified in the plans.

PAYMENT: This barrier is paid for in feet as ITEM 622 - Portable Barrier, Anchored, and ITEM 622 - Portable Barrier, Unanchored. Approved alternatives to the barrier shown on this drawing (and SCD PAYMENT) can be found on the Office of Roadway Engineering's website.

Barrier types (New Jersey Shape and F-Shape) in the same run shall not be mixed.

PORTABLE CONCRETE BARRIER (PB) shall not use the PB detailed here on bridge deck edges, or similar drop-offs. PBs, Bridge Mounted, shown on Structural Engineering's Standard Drawing PCB-91, or approved alternative products as shown on the Office of Roadway Engineering's website, shall be used at those locations in accordance with that office's PDSD Design Draw Sheet.

HINGE AND REINFORCING BARS: use ASTM A 36 for the ⅜" hinge bars. Use rebar meeting the requirements of CMS 509 A 516 Grade 60. Mesh wire shall meet CMS 709.10. Black Steel is permitted.

CONNECTION HARDWARE: Bolts, washers and hex nuts are to be galvanized after fabrication per CMS 70.32 and meet the requirements of CMS 70.36 except that the rotational capacity test specified in ASTM A 125 shall be waived.

CONNECTING HARDWARE: Bolts, washers and hex nuts are to be galvanized after fabrication per CMS 70.32 and meet the requirements of CMS 70.36 except that the rotational capacity test specified in ASTM A 125 shall be waived.

PAYMENT: This barrier is paid for in feet as ITEM 622 - Portable Barrier, Anchored, and ITEM 622 - Portable Barrier, Unanchored. Approved alternatives to the barrier shown on this drawing (and SCD PAYMENT) can be found on the Office of Roadway Engineering's website.


On the top of each barrier segment, including tapered end sections, permanently mark a unique identification as to its manufacturer, and somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

INFLICTORIZATION: Install barrier reflectors in accordance with Roadway Engineering Standard Drawing MT-101.70, when specified in the plans.

PAYMENT: This barrier is paid for in feet as ITEM 622 - Portable Barrier, Anchored, and ITEM 622 - Portable Barrier, Unanchored. Approved alternatives to the barrier shown on this drawing (and SCD PAYMENT) can be found on the Office of Roadway Engineering's website.

Barrier sections meeting this standard and cast before January 1, 2020, may continue to be used and shall be permitted.

ALTERNATE BARRIER: Approved Alternate Portable Barrier can be found on the Office of Roadway Engineering's website.

HANDLING DEVICES: Such devices may be used in lieu of the lifting slot for moving the barrier. They may be of any design sufficient to safely handle the weight of the section being lifted. No handling devices shall protrude from the surface of the barrier when in place.

MARKINGS: All barrier segments are to be marked on the top, as shown, where XX indicates the year cast. If the barrier is cast using welded wire fabric instead of the rebar, and WWF to the end of the notation. Permanently impress these markings in the barrier using a minimum of ⅜" high lettering. The tapered end section is not required to be marked.

On the top of each barrier segment, including tapered end sections, permanently mark a unique identification as to its manufacturer, and somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

REFLECTORIZATION: Install barrier reflectors in accordance with Roadway Engineering Standard Drawing MT-101.70, when specified in the plans.

PAYMENT: This barrier is paid for in feet as ITEM 622 - Portable Barrier, Anchored, and ITEM 622 - Portable Barrier, Unanchored. Approved alternatives to the barrier shown on this drawing (and SCD PAYMENT) can be found on the Office of Roadway Engineering's website.

Barrier sections meeting this standard and cast before January 1, 2020, may continue to be used and shall be permitted.

ALTERNATE BARRIER: Approved Alternate Portable Barrier can be found on the Office of Roadway Engineering's website.
The Tapered End section is not a crashworthy terminal and should not be used on the approach end of temporary barrier unless it is fully located beyond the clear zone.

**Closed Joint**
Barriers shall initially be placed close together so that bolts can be easily inserted through hinge bar loop.

**Open Joint**
Barrier joints shall be fully open before the nut is tightened onto bolt.

---

**Pin & Loop Joint Connection Details**

**Reinforcing Bar List**

<table>
<thead>
<tr>
<th>Work</th>
<th>Bar</th>
<th>Bar Length</th>
<th>Shape</th>
<th>Quantity per Typ. Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>K501</td>
<td>#5</td>
<td>8'-4&quot;</td>
<td>Str.</td>
<td>5</td>
</tr>
<tr>
<td>K501</td>
<td>#5</td>
<td>5'-4&quot;</td>
<td>Str.</td>
<td>0</td>
</tr>
<tr>
<td>K501</td>
<td>#5</td>
<td>9'-4&quot;</td>
<td>Str.</td>
<td>0</td>
</tr>
<tr>
<td>T301</td>
<td>#3</td>
<td>6'-0&quot;</td>
<td>Bent</td>
<td>11</td>
</tr>
<tr>
<td>T502</td>
<td>#6</td>
<td>8'-0&quot;</td>
<td>Str.</td>
<td>0</td>
</tr>
</tbody>
</table>

---

**Tapered End**

---

**SECTION C-C**

---

**Plan**

---

**Elevation**

---

**Section**

---

**Detail at Hinged Connection**

Shown with reinforcing.

---

**Bending Diagram**
GENERAL: This barrier may be manufactured with reinforcing steel or with welded wire fabric as shown in the ELEVATION and SECTION A-A details. See CMS Item 662 for additional information. Provide class 509 concrete with a minimum compressive strength of 5,000 psi and permeability of 2,500 clobbels. Provide uncoated reinforcing steel or welded wire fabric in accordance with CMS Item 509.

Barrier Types: New Jersey Shape and F-Shape are not to be used. Instead use Bar 1. Welded wire fabric with the same bar sizes as shown may be used instead of rebar.

BAR 1: Hinges and reinforcing bars (see ASTM A 36) for the hinge bars. Use rebar meeting the requirements of CMS 509 ASTM A 36 Grade 60. Wire mesh shall meet CMS 109.10. Block steel is permitted.

Connecting hardware bolts and washers are to be galvanized after fabrication per CMS 710.02 and meet the requirements of CMS 109.08 except that the Rotational Capacity test specified in ASTM A 325 shall be waived.

Alternate Barriers: Approved Alternate Portable Barriers can be found on the Office of Roadway Engineering’s Website.

Handling Devices: Such devices may be used in lieu of the lifting slot for moving the barrier. They may be of any design sufficient to safely handle the weight of the section being lifted. No devices shall protrude from the surface of the barrier when in place.

Markings: All barrier segments are to be marked on the top, PCB-XX-MASH-TL3, where XX indicates the year the barrier was manufactured. And somewhere on the barrier, permanently mark a unique identification as to its manufacturer. And somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

On the top of each barrier segment, including tapered end sections, permanently mark a unique identification as to its manufacturer. And somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

See CMS Item 662 for transitions.

Reflectionization: Install barrier reflectors in accordance with Roadway Engineering Standard Drawing MT-101.00, when specified in the plans.

Payment: This barrier is paid for in feet as ITEM 622 - Portable Barrier, Anchored, and ITEM 662 - Portable Barrier, Unanchored. Approved alternatives to the barrier shown on this drawing can be found on the Office of Roadway Engineering’s website.

GENERAL: This barrier may be manufactured with reinforcing steel or with welded wire fabric as shown in the ELEVATION and SECTION A-A details. See CMS Item 662 for additional information. Provide class 509 concrete with a minimum compressive strength of 5,000 psi and permeability of 2,500 clobbels. Provide uncoated reinforcing steel or welded wire fabric in accordance with CMS Item 509.

Barrier Types: New Jersey Shape and F-Shape are not to be used. Instead use Bar 1. Welded wire fabric with the same bar sizes as shown may be used instead of rebar.

BAR 1: Hinges and reinforcing bars (see ASTM A 36) for the hinge bars. Use rebar meeting the requirements of CMS 509 ASTM A 36 Grade 60. Wire mesh shall meet CMS 109.10. Block steel is permitted.

Connecting hardware bolts and washers are to be galvanized after fabrication per CMS 710.02 and meet the requirements of CMS 109.08 except that the Rotational Capacity test specified in ASTM A 325 shall be waived.

Alternate Barriers: Approved Alternate Portable Barriers can be found on the Office of Roadway Engineering’s Website.

Handling Devices: Such devices may be used in lieu of the lifting slot for moving the barrier. They may be of any design sufficient to safely handle the weight of the section being lifted. No devices shall protrude from the surface of the barrier when in place.

Markings: All barrier segments are to be marked on the top, PCB-XX-MASH-TL3, where XX indicates the year the barrier was manufactured. And somewhere on the barrier, permanently mark a unique identification as to its manufacturer. And somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

On the top of each barrier segment, including tapered end sections, permanently mark a unique identification as to its manufacturer. And somewhere on the barrier, permanently mark the day and month the barrier was manufactured.

See CMS Item 662 for transitions.

Reflectionization: Install barrier reflectors in accordance with Roadway Engineering Standard Drawing MT-101.00, when specified in the plans.

Payment: This barrier is paid for in feet as ITEM 622 - Portable Barrier, Anchored, and ITEM 662 - Portable Barrier, Unanchored. Approved alternatives to the barrier shown on this drawing can be found on the Office of Roadway Engineering’s website.
1. Use this standard for the anchoring of precast concrete barrier on asphalt or portland cement concrete pavement including bridge decks.

2. After removing anchoring pins, clean the pin holes and fill them with non-shrink mortar conforming to CMS 105.22.

3. Refer to the Plans for locations of anchored barrier.

**NOTES (F-SHAPE)**

*THE MAXIMUM DEPTH FROM THE SURFACE OF THE PCB TO THE END OF THE HOLE SHALL BE 7 IN. USE READY CUTTING BIT IF STEEL IS ENCOUNTERED.*

- DRILL 1 1/2" OD DIAMETER HOLE IN CONCRETE GUIDE SLOTS AS A GUIDE.
- PRECAST CONCRETE BARRIER TYPE F.
- CEMENT CONCRETE PAVEMENT.
- TWO ANCHORING PINS REQUIRED ON TRAFFIC SIDE (ONE IN EACH END SLOT).

**PLATE WASHER DETAIL**

- PLATE WASHER (ONE IN EACH END SLOT) ON TRAFFIC SIDE.
- TWO ANCHORING PINS REQUIRED.

**CONCRETE ANCHORING PIN LOCATIONS**

- SHOULDER EDGE OF PAVED PAVEMENT.

**SECTION VIEWS**

- PLATE WASHER.
- PLATE WASHER.

**ANCHORING PIN PLATE WASHER DETAIL**

- ASTM A36.
- ANCHORING PIN PLATE WASHER DETAIL.
- 1 1/2" DIAMETER HOLE (IN). HOT DIP GALVANIZED AFTER FABRICATION ACCORDING TO CMS 11.02.

**CONNECTING PIN WASHER DETAIL**

- ASTM A572, GRADE 50.
- CONNECTING PIN WASHER DETAIL.
- 1 1/2" DIAMETER HOLE (IN) LONG GALVANIZED STEEL ANCHORING PIN (TYP).

**PLATE WASHER DETAIL**

- PLATE WASHER.
- PLATE WASHER.

**CONNECTING PIN ASSEMBLY DETAIL**

- ASTM A499.
- CONNECTING PIN ASSEMBLY DETAIL.
- 1 1/2" DIAMETER HOLE (IN) LONG GALVANIZED STEEL ANCHORING PIN (TYP).

**SECTION B-B**

- END DETAIL.
- JOINING TWO BARRIER SEGMENTS.

- SHOULDER EDGE OF PAVED PAVEMENT.
- CONNECTING PIN PLATE WASHER DETAIL.

**PLAN VIEW**

- CONCRETE BARRIER F-SHAPE - ANCHORING PIN LOCATIONS.
- PLATE WASHER.
- PLATE WASHER.

**SIDE(S) OF BARRIER**

- ONLY REQUIRED ON TRAFFIC SIDE.

**SECTIONS**

- THREE ANCHORING PINS REQUIRED ON TRAFFIC SIDE (ONE PER EACH SLOT).

**END DETAIL**

- CONNECTING PIN ASSEMBLY DETAIL.
- JOINING TWO BARRIER SEGMENTS.

**SIDE(S) OF BARRIER**

- ONLY REQUIRED ON TRAFFIC SIDE.