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B13.1A 32” Concrete Parapet with Thrie Beam Rail – without approach slab

July 2009 Added ½” V Groove detail 3” from edge of deck
July 2010 Changed spacing of bottom R3 bar to 2½” in Section A-A to match details in Section C-C.
Deleted lap splice in bottom R3 bar in Partial Parapet Elevation.
June 2013 Changed concrete to Class 40AF.
March 2015 Revised future overlay allowance to 2”.
Added note for increasing the parapet height equal to the depth of overlay when overlay is applied during original construction.
Oct 2016 Changed deck reinforcement to #5 bars in Section C-C.
Added 1½” clearance to bottom reinforcement.
Changed title to 32” Concrete Parapet.
Added date panel details.
Nov 2019 Added Note 16 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
Revised Notes to active voice, imperative mood.

B13.1B 32” Concrete Parapet with Precast End Connection - without approach slab

April 2008 Changed Section C-C in the Partial Elevation to D-D to avoid duplication in View A-A.
July 2009 Added ½” V Groove detail 3” from edge of deck.
July 2010 Changed spacing of R3 bars to match details for Concrete Parapet with Thrie Beam Rail.
Feb 2012 Labeled R1 bar in Section Thru Slab.
Added Note for 2 loops at bottom of G-2-A-2 at connection to bridge parapet.
Increased bottom slot to 7” to accommodate 2 loops in roadway barrier connection
Changed concrete to Class 40AF.
March 2015 Revised future overlay allowance to 2”.
Added note for increasing the parapet height equal to the depth of overlay when overlay is applied during original construction.
Oct 2016 Changed deck reinforcement to #5 bars in Section C-C.
Changed title to 32” Concrete Parapet.
Added date panel details.
Nov 2019 Added Note 17 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
Moved location of date panel to 4’-0” from end of parapet.
Revised Notes to active voice, imperative mood.

B13.1C 32” Concrete Parapet with Thrie Beam Rail – with approach slab

July 2009 Added ½” V Groove detail 3” from edge of deck
July 2010 Changed spacing of bottom R3 bar to 2½” in Section A-A to match details in Section C-C.
Deleted lap splice in bottom R3 bar in Partial Parapet Elevation.
Feb 2012 Changed reference to R7 bar to R1
June 2013 Changed concrete to Class 40AF
March 2015 Revised future overlay allowance to 2”.
Added note for increasing the parapet height equal to the depth of overlay when overlay is applied during original construction.
Aug 2016 Changed deck reinforcement to #5 bars in Section C-C.
Added 1½” clearance to bottom reinforcement.
Changed title to 32” Concrete Parapet.
Added date panel details.
Nov 2019 Added Note 16 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
Revised Notes to active voice, imperative mood.
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B13.1D  32” Concrete Parapet with Precast End Connection – with approach slab
July 2009   Added ½” V Groove detail 3” from edge of deck.
            Added Note 16
            Corrected height of parapet in Partial parapet Elevation
            Added Note for 2 loops at bottom of G-2-A-2 at connection to bridge parapet.
            Increased bottom slot to 7” to accommodate 2 loops in roadway barrier connection
            Changed concrete to Class 40AF.
March 2015 Revised future overlay allowance to 2”.
            Added note for increasing the parapet height equal to the depth of overlay when overlay is applied during original construction.
Aug 2016   Changed deck reinforcement to #5 bars in Section C-C.
            Added 1½” clearance to bottom reinforcement.
            Changed title to 32” Concrete Parapet.
            Added date panel details.
Nov 2019   Added Note 18 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
            Moved location of date panel to 4’-0” from end of parapet.
            Revised Notes to active voice, imperative mood.

B13.1E  32” Concrete Parapet Light Pole Support
April 2008  Added new sheet
June 2013  Changed concrete to Class 40AF.
Sept 2016  Deleted Bolt Circle table and specified bolt circle according to manufacturer’s specifications.
            Added 1½” clearance to bottom reinforcement.
            Changed title to 32” concrete Parapet Light Pole Support.
Nov 2019   Changed L4 bars from #6 to #5 and added 3.5” dimension from top of parapet to the first L4 bar.
            Revised Notes to active voice, imperative mood.

B13.1F  42” Concrete Parapet with Thrie Beam Rail – without approach slab
Oct 2016   Added new sheet.
Nov 2019   Added Note 16 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
            Revised Notes to active voice, imperative mood.

B13.1G  42” Concrete Parapet with Precast End Connection - without approach slab
Oct 2016   Added new sheet.
Nov 2019   Added Note 17 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
            Moved location of date panel to 4’-0” from end of parapet.
            Revised Notes to active voice, imperative mood.

B13.1H  42” Concrete Parapet with Thrie Beam Rail – with approach slab
Aug 2016   Added new sheet.
Nov 2019   Added Note 16 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
            Revised Notes to active voice, imperative mood.

B13.1I  42” Concrete Parapet with Precast End Connection – with approach slab
Aug 2016   Added new sheet.
Nov 2019   Added Note 18 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
            Moved location of date panel to 4’-0” from end of parapet.
            Revised Notes to active voice, imperative mood.
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B13.1J 42” Concrete Parapet Light Pole Support
Sept 2016  Added new sheet.
Nov 2019  Changed L4 bars from #6 @ 4” to #5 @ 6” and added 3.5” dimension from top of parapet to the first L4 bar.
Revised Notes to active voice, imperative mood.

B13.1K 42” Single Slope Concrete Parapet – without approach slab
July 2018  Added new sheet.
Nov 2019  Added Note 17 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
Revised Notes to active voice, imperative mood.
Revised Guardrail Attachment detail to include F-Shape to Single Slope connection details to match roadway standard drawing 612-25.

B13.1L 42” Single Slope Concrete Parapet – with approach slab
July 2018  Added new sheet.
Nov 2019  Added Note 16 for Date Panel and changed Date Panel references to “Year Built” and “Bridge Key Number”.
Revised Notes to active voice, imperative mood.
Revised Guardrail Attachment detail to include F-Shape to Single Slope connection details to match roadway standard drawing 612-25.

B13.1M 42” Single Slope Concrete Parapet Light Pole Support
Nov 2019  Added new sheet.

B13.2A Two-Tube Curb Mounted Rail Sheet 1
June 2006  Revised Note 2 to make anchor bolts conform to ASTM F-1554 Grade 105.
Revised Note 14 reference to conform to the 2004 Standard Specifications.
Added 4” dimension between slotted holes in post and specified horizontally slotted holes in post.
July 2009  Added ½” V Groove detail 3” from edge of deck.
June 2013  Changed concrete to Class 40AF.
May 2014  Corrected reference in Note 14 to subsection 705.02 to agree with the 2012 Standard Specifications.
March 2015  Changed to a 180° hook for the #6(E) additional deck reinforcement.
Revised note 2 to add ASTM A-325 for bolts.
Revised note 5 for electronic shop drawings.
Added note for increasing the curb height equal to the depth of the overlay when the overlay is applied during original construction.
Aug 2016  Added dummy joint details and note 16.
Added 1½” clearance to bottom.
Nov 2019  Revised Notes to active voice, imperative mood.

B13.2B Two-Tube Curb Mounted Rail Sheet 2
July 2009  Added ½” V Groove detail 3” from edge of deck.
March 2015  Changed Guardrail Connection Plate detail reference to “hex head cap screw”

B13.3A Combination Pedestrian/Bicycle & Traffic Railing
June 2006  Revised Note 1 to make anchor bolts conform to ASTM F-1554 Grade 36.
Revised Note 10 reference to conform to the 2004 Standard Specifications.
Added note to Tube Splice Detail for 2’x2” tubes.
Combined the Bicycle and Pedestrian rail drawings using a 3’-6” height to conform to the approved 2006 Ballot Item.
Modified the title block to include “Bicycle”.
July 2009  Reformatted the Notes
Added additional requirements for powder coating
Increased left end length on splice tube and removed “Typical at Exp. Joints & Dummy Joints”.
Modified note 12 to read, “Each rail section…”
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March 2011  Modified splice tube details to put slotted hole/bolts on bottom of tube.
Sept 2012  Modified retainer plate to use two ¾” dia. bolts at the centerline of the plate to reduce side splitting of the concrete.
            Added note to allow field drilling and epoxy grouting of bolts for the retainer plate.
June 2013  Added color 27040(black) to Note 7.
            Revised Note 18 reference for grout to 705.02.
March 2015  Revised note 12 for electronic shop drawings.
            Revised color reference to RAL 9005 (jet black).
            Increased powder coating thickness to 3 mils minimum.
Oct 2016  Added Date Panel details.
Nov 2019  Revised notes for Date Panel and changed Date Panel references to “Bridge Key Number”.
            Revised Notes to active voice, imperative mood.
            Deleted Note 11 and renumbered notes.

B13.3B Combination Bicycle & Traffic Railing
June 2006  Deleted the 4’-6” height rail standard drawing.

B13.3C Concrete Parapet for Railing – without approach slab
June 2006  Changed the height of the end block to 3’-7½” and revised details for the new 3-6” rail height.
April 2008  Revised bid item description in Note 4 to agree with the Standard Specifications.
July 2009  Added ½” V Groove detail 3” from edge of deck.
July 2010  Revised Dummy Note to show “space w/posts”.
            Revised hole spacing on end shoe to 3-13/16” to match roadway standard drawing G-1-E.
June 2013  Revised railing insert detail to two ¾”Ø concrete inserts at center of parapet to reduce splitting cracks.
            Changed concrete to Class 40AF.
Nov 2019  Added Date Panel details and Note 8 for Date Panel.
            Revised Notes to active voice, imperative mood.

B13.3D Concrete Parapet for Railing – with approach slab
June 2006  Changed the height of the end block to 3’-7½” and revised details for the new 3-6” rail height.
April 2008  Revised bid item description in Note 4 to agree with the Standard Specifications.
July 2009  Added ½” V Groove detail 3” from edge of deck.
July 2010  Revised Dummy Note to show “space w/posts”.
            Revised hole spacing on end shoe to 3-13/16” to match roadway standard drawing G-1-E.
June 2013  Revised railing insert detail to two ¾”Ø concrete inserts at center of parapet to reduce splitting cracks.
            Changed concrete to Class 40AF.
Nov 2019  Added Date Panel details and Note 8 for Date panel.
            Revised Notes to active voice, imperative mood.

B13.3E Combination Rail Light Pole Support
April 2008  Added new sheet
June 2013  Changed concrete to Class 40AF.
Sept 2016  Deleted Bolt Circle table and specified bolt circle according to manufacturer’s specifications.
            Added 1½” clearance to bottom reinforcement.
Nov 2019  Revised Notes to active voice, imperative mood.

B13.3F Protective Pedestrian Fence for Combination Rail Concrete Parapet
July 2009  Added new sheet
June 2013  Revised Note 15 to specify threaded studs to secure welded wire fabric to correct problem of shear failure of self-tapping screws.
May 2014  Corrected reference in Note 9 to subsection 705.02 to agree with the 2012 Standard Specifications.
March 2015  Revised note 4 for electronic shop drawings.
## CHAPTER 13
### STANDARD DRAWING REVISION LOG

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision Description</th>
</tr>
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<tbody>
<tr>
<td>Nov 2019</td>
<td>Added Date Panel details and Note 16 for date panel.</td>
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<tr>
<td></td>
<td>Revised Notes to active voice, imperative mood.</td>
</tr>
<tr>
<td></td>
<td>Deleted Note 2 and renumbered notes.</td>
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**B13.3G Protective Fence for Concrete Parapet – 32” concrete parapet**
- **Nov 2019** Added new sheet.

**B13.3H Protective Fence for Concrete Parapet – 42” single slope concrete parapet**
- **Nov 2019** Added new sheet.

**B13.4A 4'-6” Standard Bicycle Rail**
- **June 2006** Deleted the 4'-6” height rail standard drawing.

**B13.4B Standard Pedestrian/Bicycle Railing**
- **June 2006** Combined the Bicycle and Pedestrian rail drawings using a 3'-6” height to conform to the approved 2006 Ballot Item.
- **June 2006** Deleted epoxy reinforcement from the Drilled Concrete Post Base.
- **June 2006** Widened the curb to 10” to provide cover for reinforcement around the anchor bolts.
- **June 2006** Modified the title block to include “Bicycle”.
- **July 2009** Added ½” V Groove detail 3” from edge of deck.
- **March 2011** Changed tube wall thickness to 3/16”.
- **March 2011** Added “Deck Expansion Joint Typical at Abutment & Pier” to Partial Elevation.
- **March 2011** Corrected maximum clear opening at expansion joint to 6” to comply with Article 13.8.1.
- **March 2011** Added Upper & Lower Splice Connection Elevation to set the distance from the edge of the 2”x2” vertical post to the end of horizontal tube at 1.5” to avoid conflict with the slotted hole tube splice details.

**B13.4C Pedestrian/Bicycle Railing Details**
- **June 2006** Revised Note 6 to require epoxy reinforcement only in the curb.
- **June 2006** Added Note 7 specifying Concrete Class 40A.
- **June 2006** Added Notes 16, 17, & 19 for tube ends, vent holes, and alternate splice details.
- **June 2006** Increased the top width of bar R2.
- **June 2006** Modified the title block to include “Bicycle”.
- **July 2009** Renumbered the Notes
- **July 2009** Added additional requirements for powder coating
- **July 2009** Changed tube wall thickness to 3/16”.
- **July 2009** Modified splice tube detail.
- **July 2009** Modified note 21 to read, “Each rail section…”
- **March 2011** Deleted details F & G for the rub rail that has been deleted.
- **March 2011** Modified splice tube details.
- **March 2015** Revised note 17 for electronic shop drawings
- **March 2015** Revised color reference to RAL 9005 (jet black).
- **March 2015** Increased powder coating thickness to 3 mils minimum.
- **Nov 2019** Revised Notes to active voice, imperative mood.
- **Nov 2019** Deleted Note 16 and renumbered notes.

**B13.5 Concrete Median Barrier**
- **June 2013** Changed concrete to Class 40AF.
- **Nov 2019** Revised Notes to active voice, imperative mood.
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B13.6A  W-Beam Railing, Through Bolt Anchorage
June 2006  Added a note in the title block for using roadway standard drawing G-1-L on retrofit projects.
March 2011  Changed height of rail to meet 29” top of rail height.
Dec 2011  Revised note 3 for anchor bolts to F1554 Grade 36 and nuts to ASTM A563.
Corrected weld symbol in section B-B.
Sept 2012  Revised note 5 for washers to comply with ASTM F436, Type 1.
Changed Post Height Table note from “down station” to “ahead station”.
May 2014  Added note 11 for polyethylene blockouts.
Corrected reference in note 1 to AASHTO M270, Grade 36
March 2015  Added plate thickness to Section B-B and Section C-C.
Added maximum 10:1 maximum slope in Section A-A.
Corrected bid item in note 9 to 612-005A.
Changed sheet title to “W-Beam Railing, Through Bolt Anchorage.”
Changed height to cg of rail from 1”-11” to 2’-1” to agree with new MASH standards in the Roadway Standard Drawings.
Nov 2019  Revised Notes to active voice, imperative mood.

B13.6B  W-Beam Railing, Adhesive Anchorage
March 2015  Added new sheet.
Changed height to cg of rail from 1”-11” to 2’-1” to agree with new MASH standards in the Roadway Standard Drawings.
Nov 2019  Revised Notes to active voice, imperative mood.

B13.7A  G-2-F Type 1 Rail Retrofit Details
June 2006  Added a new drawing.
July 2009  Added details from Roadway Standard Drawing G-2-F to allow G-2-F to be deleted.
Revised paint system in Note 3.
July 2010  Changed post spacing to 3’-1½” in transition section.
Specified w6x15 x 7'-0” steel posts for the first 4 posts beyond the end of bridge.
Specified w6x8.5 x 6'-0” steel posts for the last 2 posts in the bridge pay limits.
Feb 2012  Deleted 27” rail height drawing and replaced with 29” rail height drawing.
Added reference to Sections 627 & 707 in note 3.
Sept 2012  Added W6x15 Post Block details.
May 2014  Added note 9 for polyethylene blockouts.
Revised note 3 paint references to agree with 2012 Standard Specifications.
Made Typical Sections “NTS” and deleted dimensions that could vary.
Nov 2019  Details not MASH compliant. Deleted drawing.

B13.7B  G-2-F Type 2 Rail Retrofit Details
June 2006  Added a new drawing.
July 2009  Added details from Roadway Standard Drawing G-2-F to allow G-2-F to be deleted.
Revised paint system in Note 3.
July 2010  Changed post spacing to 3’-1½” in transition section.
Specified w6x15 x 7'-0” steel posts for the first 4 posts beyond the end of bridge.
Specified w6x8.5 x 6'-0” steel posts for the last 2 posts in the bridge pay limits.
Feb 2012  Deleted 27” rail height drawing and replaced with 29” rail height drawing.
Added reference to Sections 627 & 707 in note 3.
Sept 2012  Added W6x15 Post Block details.
May 2014  Added note 9 for polyethylene blockouts.
Revised note 3 paint references to agree with 2012 Standard Specifications.
Made Typical Sections “NTS” and deleted dimensions that could vary.
Nov 2019  Details not MASH compliant. Deleted drawing.
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B13.7C  G-2-F Type 4 Rail Retrofit Details
June 2006  Added a new drawing.
April 2008  Changed size of attachment angle to 6x4x5/16 and added Detail A.
July 2009  Added details from Roadway Standard Drawing G-2-F to allow G-2-F to be deleted.
          Revised paint system in Note 1.
July 2010  Changed post spacing to 3'-1½" in transition section.
          Changed the post spacing to 1'-6¾" for the 4 posts from the end of bridge to beginning of the transition section.
          Specified w6x15 x 7'-0" steel posts for the first 6 posts beyond the end of bridge.
          Specified w6x8.5 x 6-0" steel posts for the last 2 posts in the bridge pay limits.
Feb 2012  Deleted 27” rail height drawing and replaced with 29” rail height drawing.
          Added reference to Sections 627 & 707 in note 1.
Sept 2012  Added W6x15 Post Block details.
May 2014  Clarified maximum post spacing at end of concrete parapet.
          Added note 6 for polyethylene blockouts.
          Revised note 1 paint references to agree with 2012 Standard Specifications.
          Made Typical Sections “NTS” and deleted dimensions that could vary.
Nov 2019  Details not MASH compliant. Deleted drawing

B13.7D Delaware Rail Retrofit Details
June 2006  Added a new drawing.
July 2009  Added details from Roadway Standard Drawing G-2-F to allow G-2-F to be deleted.
          Added Note 11 for painting field drilled holes.
July 2010  Changed post spacing to 3'-1½" in transition section.
          Specified w6x15 x 7'-0" steel posts for the first 4 posts beyond the end of bridge.
          Specified w6x8.5 x 6-0" steel posts for the last 2 posts in the bridge pay limits.
Feb 2012  Deleted 27” rail height drawing and replaced with 29” rail height drawing.
          Changed existing rail removal to S501-30A.
          Added reference to Sections 627 & 707 in note 11.
Sept 2012  Added W6x15 Post Block details.
May 2014  Clarified maximum post spacing at end of concrete parapet.
          Added note 12 for polyethylene blockouts.
          Revised reference in note 2 from AASHTO M291 to ASTM A563. AASHTO M291 has been withdrawn.
          Revised note 11 paint references to agree with 2012 Standard Specifications.
          Made Typical Sections “NTS” and deleted dimensions that could vary.
Nov 2019  Details not MASH compliant. Deleted drawing

B13.7E Iowa Rail Retrofit Details
June 2006  Added a new drawing.
May 2014  Changed concrete to Class 40AF.
Nov 2019  Deleted drawing – not MASH crash-tested

B13.8 Date Panel
Oct 2016  Added new sheet.
May 2018  Revised Date Panel Location notes to use 4 digit year built and 5 digit bridge inspection number.
Nov 2019  Changed “Bridge Inspection Number” to “Bridge Key Number”.
          Added “General Notes”.
          Added traffic face and back face notes to Date Panel Location.

B13.9 Bridge Name Signage
Nov 2019  Added new sheet.