BRIDGE PLAN REVIEW CHECKLIST

1. GENERAL - ALL PROJECTS

1.1 Title Block

- "Design For (xx Skew) (RA)(LA)" “Design For Repair To (xx Skew) (RA)(LA)."

- Structure Type and Size (Ex.: “188'-0 x 40'-0 Continuous Concrete Slab Bridge” or “300'-0 x 36'-0 Continuous Welded Girder Bridge”).

- For bridges with multi-project staging, the structure width listed should be the width of the current stage plus all previously completed stages. (Ex.: if stage 1 construction is 20 ft. and stage 2 construction is 30 ft., the first project title block should show 20 ft. and the second project title block should show 50 ft.) Add to the bridge title the stage (Ex.: Concrete Beam Bridge – Stage 1).

- Span Description (Ex.: “41'-0 End Spans” or “71'-0, 137'-0, 51'-0 Spans”).

- Sheet Title (Ex.: “General Notes & Bridge Quantities”).

- Station of bridge (mainline). Mainline bridge station should agree with T.S. & L. for new structure or previous plans for repair. Verify that Project Scheduling System (PSS) matches.

- Turn In to Contracts Date (Ex.: “December 2013”).

- County

- “Iowa Department of Transportation - Highway Division”

- “Design Sh. No. x of x”, “File No.”, “Design No.”.

- Box around title block.

1.2 General

- Check plan constructability. Sufficient details included to guide contractor. Staging sequence provided if required.

- Scale not shown on situation plan or any details.

- Details consistent with Bridge standard sheets.

- Non-standard details reviewed with appropriate personnel.

- Soils sheets (as provided by Design Bureau) included in plan set (new design).

- Cadd files drawn with the correct levels for printing color plans.

- Lists of proprietary products specified in plans must have at least 3 products listed. Do not use “or approved equivalent” instead of designating a third product.

- Project number in the border all sheets for each design. For routes that are not three digits include the leading zero(s) before the route number (e.g. BRF-063-3(46)—38-62).

- Standard abbreviations used. See [LRFD BDM 13.1.4].

- Asbestos clearance has been verified for bridge removals. Include note E485 and appropriate bid item if Asbestos present.

- Bent bar details include the note, “Note: All dimensions are out to out. D = pin diameter.”

- Paint color specified by Federal Standard Color Number.

- For bridges over roadways check with Traffic and Safety Bureau if bridge mounted signs will be required.

2. TITLE SHEET - ALL PROJECTS

2.1 General

- Title sheet conforms to current DOT format posted on Bridges and Structures Bureau web site. Bottom border should state “Bridges and Structures Bureau”.

- Correct Project Number (upper right side, right lower border and top left border of sheet).

- Correct PIN Number (upper right side of sheet).

- Correct File Number and Project Directory Name (lower border).

- “Letting Date” filled in with the letting date (upper left border).

- Bridge Standard Plan Box.

- Boxed note referencing Road Standards on road sheets.

- Index of Seals (sheet number seal is located on, name and expertise). Add consultant firm information below this by asterix when needed.

- County Name (center of sheet, lower border and bottom left border).

- Proper sheet heading (“Primary”, “Interstate”, etc.)

- Proper ‘Work Type’. See PSS (Ex.: “Bridge New-Steel Girder”) (center of sheet, top left border). Use the work type which represents the majority of the work in the project.

- Verbal location essentially agrees with PSS (“on US 151 over N. Fork …”) (center of sheet).

- FRA Crossing Number(s) agrees with PSS

- Revision box

- Traffic data shown on title sheet unless more than one structure is included in the plans. For multi-structure plans show the traffic data on each individual situation plan and use the traffic data note on the seed title sheet that refers to individual situation plans for traffic data information. See [LRFD BDM 1.8.1.2].

- Traffic data includes % trucks.

- “Sheet No. 1” bottom right border.

- ROW project # - leave blank

- Specifications series date indicated inside the double lined box under the project title as required by the FHWA.

- Iowa One Call logo on title sheet.

2.2 Location Map

- Remove references to scales on plans.

- North arrow, North is up.

- Map Township/Range (Ex.: “T-87N”, “R-2W”).

- For larger scale urban map, “Part of City of xx”.

- Leader to bridge location with text “Design No. xx”, and “FHWA No. xx”. (arrowhead should be larger than normal)

2.3 Index of Sheets

- Sheet containing ‘Estimated Bridge Quantities’ tabulation referenced (tabulation containing bridge quantities).

- Sheet containing ‘Estimated Roadway Quantities’ referenced
3. ESTIMATE SHEET AND GENERAL NOTES – ALL PROJECTS

3.1 Estimate Sheet

3.1.1 Estimated Quantity Tabulation

- Quantity tabulation for design provided on this sheet.
- Additional tabulated “Total Estimated Bridge Quantities” table for multi-design projects not required.
- Tabulation title “Estimated Bridge Quantities”.
- In reinforcing bar lists, for variable length bars, the “varies” designation should be provided in the length column in lieu of an average length.
- Column in tabulation for ‘As-Built’ quantities.
- All Item Codes and Descriptions agree with Project Scheduling (in-house projects) or Bid Items Application (consultant projects). - OK to use ‘short’ description.
- Divisions in Project Scheduling (in-house projects) or Bid Items Application (consultant projects) are in proper order. For B03 plans, the Bridge Item Division(s) should be first followed by the Bid Item Division(s). If B04 plans, the Roadway Item Division(s) should be first followed by the Roadway Item Division(s).
- Estimated quantities reflect addition of itemized tables in plans.
- Modified standard PPC Beam description/mark correct. See [LRFD BDM 5.4.1.4.2]. Reference on framing plan when required.
- Construction Survey (if requested by District) and Mobilization bid items located with Estimated Bridge Quantities and not Roadway Quantities if the plans are to be turned in by the Bridges and Structures Bureau.

For widenings and major repairs, Construction Survey should include a Bid Item Reference note E101 to field verify existing dimensions, etc.
- Roadway quantities note, in box.

3.1.2 Estimate Reference Information Notes

- Estimate reference notes listing includes all applicable default notes stored in Project Scheduling (in-house projects) or Bid Items Application (consultant projects).
- Include the note “Federal-Aid Non-Participating” for bid item “Deliver and Stockpile Salvaged Materials” and include the bid item in a separate bid item division unless the project funding is Federal-aid non-participating (‘N’ prefix in project number)
- Steel extrusion joint note should exclude DS Brown when not using D.S. Brown joints. See [LRFD BDM 5.8.3.2.2].

3.2 General Notes Sheet

3.2.1 General

- Traffic Control Note, in box.
BRIDGE PLAN REVIEW CHECKLIST

___ Transparent stay-in-place deck forms are a Contractor’s option in certain conditions. See [LRFD BDM 5.2.4.5] and add note E235 if criteria are met.

___ Do not include concrete sealer note (in general notes listing). Cover under abutment and pier notes as required.

___ If footing will be below water table consider need for ‘Excavation and Dewatering’ note and companion bid item. Applicable when seal coat required. Alternative is Class 21 Excavation with cofferdam and footing constructed in the dry. See [LRFD BDM 6.8.4.1.4].

___ Ensure any geotechnical report requirements, such as waiting period between embankment construction and pile driving and/or pile points, are addressed in general notes. See [LRFD BDM 13.3.2] notes E175.

___ A girder erection plan needs to be submitted when a steel bridge meets one of the conditions found in [LRFD BDM 5.5.2.4.4]. See [LRFD BDM 13.2.2] note E70 and [LRFD BDM 13.9.2] note E905.

3.3 Summary Quantities Sheet
___ Included for all new bridge designs or bridge replacement projects. See [CADD M0349]

4. SITUATION PLAN

4.1 New Construction

4.1.1 General

Iowa Crossing No. (Provide on Situation Plan Only) FHWA # _______ - on all bridges

Latitude XX.123456° Longitude XX.123456°

___ Traffic estimate shown. On divided highway projects, the traffic estimate should be for the relevant bound (not both directions) and labeled this way in the title.

___ Hydraulic data

___ UP RR bridges, show macadam stone protection on TS&L and assume same during plan development. If UP RR asks us to change to concrete slope protection we will do so, retroactively.

___ Profile data, check for coordination with roadway design.

___ Add bridge deck crown below profile grade note when the profile grade line is at the centerline of approach roadway. See [LRFD BDM 1.7.1].

___ Include Staking Coordinates Table. See [LRFD BDM 1.8.4].

___ Remove “Design Notes” from Preliminary TSL for final Situation Plan.

4.1.2 Plan
___ Shoulder and approach pavement widths and slopes (include foreslope) shown for main and crossing roadway, check for coordination with roadway design.

___ Horizontal curve data, check for coordination with roadway design.

___ Alignments and stationing along CL of approach roadway (and equations), check for coordination with roadway design. Label profile grade line.

___ Proposed ditches and pipes shown, check for coordination with roadway design.

___ Any removals to be performed by bridge contractor designated.

___ ‘Face to Face of Paving Notches’ dimension shown.

___ Drains called out if not shown in plan view elsewhere. See [LRFD BDM 5.8.4].

___ Slope protection shown and labeled as to type.

___ Overhead clearance points shown.

___ Guardrail shown (if not installed under contract check for appropriate general note).

___ Horizontal clearances, especially for railroads, shown.

___ Existing structure(s) shown.

___ Future structure(s) shown.

___ Stream or crossing highway name.

___ Subdrain not required, shown on subdrain details sheet.

___ Pertinent structures and features close enough to influence construction shown (utilities, old structures, etc.).

___ Utility information shown on situation plan verified during final design.

___ Berm slope location table or recoverable berm location table included if necessary. See [LRFD BDM 3.7.3].

4.1.3 Longitudinal Section
___ Pier Class 20 and 21 excavation classification lines, when required.

___ Channel excavation limits w/ slopes, dimensions and elevations.

___ Following elevations labeled and shown:

CL abutment and CL pier along CL of approach roadway

‘Low Step’ elevation for abutment/pier

Bottom of footing

Bottom of predrilled hole for pile

Top of berm

Stream bed

Extreme or design high water

Scour

Include Low Beam elevation (“OPERATIONAL” and “REGULATORY”) as shown on TSL

___ Location and dimension of minimum clearance under overhead bridges. Clearance meets minimum requirements.

___ Piling description (length and type).

___ For structures with varying pier types (fixed, expansion) pier type is labeled.

___ Slope protection shown.

___ Benchmark

4.2 Repair/Overlay Projects

4.2.1 General
___ Location information near title block. Example: US 151 Over Maquoketa River T-87N R-2W
Section 36
Cascade Twp.
Dubuque County
Railroad X-ing: Federal Railroad Administration Identification No. (FRA).
Iowa Crossing No. (Provide on Situation Plan Only)
Bridge Maint. No. 3609.9S137
FHWA #
Latitude XX.123456°
Longitude XX.123456°

Traffic counts for current year.

4.2.2 Plan

- Alignments and stationing.
- 'Face to Face of Paving Notches' dimension shown.
- Bridge and curb/rail width.
- Highway name shown.
- Legend of work to be performed.

5. STAKING DIAGRAM - NEW CONSTRUCTION

- Provide for curved alignments, alignments that do not coincide with CL bridge (dual roadways), bridges with special widths (climbing lanes, tapers, etc.).
- Dimension gutterline at abutment. Note skew of gutterline at abutment relative to structure baseline (or other logical control line) if appropriate.
- C.L. of approach roadway shown as the primary staking control line. For curved bridges a chord baseline is the control line. The chord is defined by the intersection of the C.L. of the abutments and C.L. of approach roadway.
- Provide dimension of substructure units but do not show pile locations. This includes pile bent piers where only the pile cap should be dimensioned. Piles can be shown if potential conflicts with existing piles are a concern.

6. SUBSTRUCTURE - GENERAL - NEW CONSTRUCTION

- Pile information for each substructure unit noted adjacent to piling layout. To include type.
- Unsupported length of pile checked for pile encased with CMP behind MSE walls. (E.g. Maximum depth of bentonite is 15 ft. for HP10x42. Fill CMP with sand below bentonite).
- Prestressed concrete pile: Tip-out soil layer blow count 25 to 40 and no boulders.
- Steel and wood pile lengths rounded to 5' intervals.
- Battered and vertical pile for a substructure unit specified same length (typically).
- Drilled shaft CSL tube layout shown.
- Column tie substitution note for drilled shafts (circ. ties for spiral) and bar detail included (Spacing consistent with pitch of spiral).
- Anchor bolts set in drilled holes (per standard specifications - 2405.03, H, 2) if at all possible. When placing anchor bolts, avoid longitudinal bars in the cap.
- Anchor bolts are not preset on two adjacent fixed piers.
- Welding restrictions note included when preset anchor bolts are specified. See [LRFD BDM 13.9.2] note E924.
- Anchor bolt layout detailed appropriately. See [LRFD BDM 5.7.4.4.2].
- Check concrete least dimension of substructure units to see if the developmental specification for mass concrete – control of heat of hydration is applicable. See [LRFD BDM 6.4.4; 6.5.4; 6.6.4]
- Show the “Low Step” elevation for all substructure units.
- If HP10 piling are used only one of the sizes is used.
- Abutment backfill details included.

7. PIER DETAILS - NEW CONSTRUCTION

7.1 General

- Only one ‘set’ of pier notes provided in design to avoid inconsistencies.
- Include pier pile notes E718 for LRFD contract length and resistance and E719 for LRFD driving and construction control. See [LRFD BDM 13.8.2].
- For piers with expansion device include note regarding concrete sealer. See [LRFD BDM 13.3.2] note E181.
- On pier plan view and footing plan view dimensions are tied into the bridge construction baseline and the baseline is labeled appropriately. Coordinate with ‘Staking Diagram’ or ‘Foundation Layout.’
- Pier reinforcing marks conform to The Bridges and Structures Bureau pier detailing practice [LRFD BDM Table 6.6.4.1.1.2].
- For the piers, if the top of cap keyway is not shown in the pier cap plan, place a note in the pier notes to refer to the design sheet where the keyway is shown (generally standard sheet 4500, superstructure details).

7.2 Cap

- Pier steps normal to face of pier for expansion pier and parallel to center of roadway (with skew) for fixed pier. See [LRFD BDM 6.6.4.1.1.2].
- Pier step reinforcement provided when required. See [LRFD BDM 6.6.4.1.1.2].
- Cap reinforcement epoxy coated if under expansion device.
- Minimum of 5" clear space between rebar provided for tremie.

7.3 Column

- Column reinforcement epoxy coated if within 25' clear distance from edge of travel lane or under expansion device [LRFD BDM 6.6.4.1.2.2].
- Crash wall for RR overpass (check T.S.L., generally provided if center track to face column is less than 29)
- Spiral ties shown for typical circular column (non-spirally reinforced, 12" spacing).
- Column tie substitution note (circ. ties for spiral) and bar detail included (12" spacing).
- Spacing of vertical bars in round column provided.
- Keyway shown at top and bottom of column and labeled as to size and type. A 3 x 10 dressed and beveled strip is used for T-piers [LRFD BDM 13.8.2] note E701
- d1, column bars and d2, column to footing bars, should be same size.
- Space in the column reinforcing provided to accommodate tremie. See [LRFD BDM 6.6.4.1.2.2].
9. SUPERSTRUCTURE DETAILS - GENERAL - NEW CONSTRUCTION

9.1 Typical Section

7.4 Footing

___ Perimeter pile battered. See [LRFD BDM 6.6.4.1.3.1].

___ Note if batted pile used: “Pile dimensions shown are at bottom of footing. Batter piles X: 1 in the direction shown”.

___ Pile cutoff for battered piling horizontal. See [LRFD BDM 6.2.5].

___ Include bearing resistance note E835 for spread footings. See [LRFD BDM 13.8.2].

7.5 Pile Bent

___ Appropriate pile type provided based on blow count. See [LRFD BDM 6.2].

___ Pile size appropriate for unsupported length, which includes scour depth. See [Standard sheet P10L].

8. ABUTMENT DETAILS - NEW CONSTRUCTION

8.1 General

___ Only one ‘set’ of abutment notes required in design to avoid inconsistencies.

___ Include abutment notes E818 for LRFD contract length and resistance and E819 for LRFD driving and construction control. See [LRFD BDM 13.8.2].

___ On ‘Part plan at abutment’ and ‘Abutment pile plan’ beam and pile spacing (as appropriate) is tied into the bridge construction baseline and the baseline is labeled appropriately.

___ Paving block detail included if the approach is not to be placed by bridge contractor. See [LRFD BDM 6.5.1.1.1; 6.5.1.1.2].

8.2 Stub Abutments

___ Stagger pile between front and back rows to maximize clearance between piles. Behind MSE walls piling may need to be aligned to clear MSE wall straps.

___ Pile batter indicated (typically 4:1).

___ Abutment step reinforcement provided. See [LRFD BDM 6.5.4.2.2].

___ For stub abutments include note regarding concrete sealer. See [LRFD BDM 13.3.2] note E181.

___ For stub abutments behind MSE wall note E55 is included. See [LRFD BDM 13.2.2].

8.3 Integral Abutments

___ Is pile pre-bore required and if so is it noted in the appropriate place in the plans (bid-item included on estimated bridge quantities sheet, and on long. section of situation plan).

___ Constraints for use of integral abutments within bridge parameters. See [LRFD BDM Table 6.5.1.1.1].

___ Abutment step reinforcement not required (m and n bars).

___ CWPG Superstructure: Beam end reinforcing bars per design manual shown. See [LRFD BDM Figure 6.5.1.1.1].

8.4.1 Typical Width

___ Appropriate pile type provided based on blow count. See [LRFD BDM 6.2].

___ Pile size appropriate for unsupported length, which includes scour depth. See [Standard sheet P10L].

___ Minimum closure pour width shall be the greater of 3 ft or the splice length plus 4". Closure pours should be placed in areas with constant cross slope in the bridge deck. Closure pours over beams and in vehicle wheel path should be avoided.

___ Closure pour to be placed continuously from end to end of the deck.

___ If longitudinal construction joint provided (either permissible or mandatory), transverse reinforcing bars are spliced at joint and weight of splice included in quantity.

___ If construction is staged over multiple construction seasons, exposed transverse deck reinforcing shall be stainless steel lapped with epoxy coated reinforcing on each side of the construction joint. See [LRFD BDM 5.2.4.1.2; LRFD BDM 5.8.5.1.1].

___ For variable width bridge deck placements, the sections should be uniform width. Use permissible longitudinal joints to separate the tapered sections.

___ If transverse reinforcing bars will be > 40’ and no longitudinal construction joint is shown on plans, transverse reinforcement splice note included. See Standard Sheet 4310.

___ Table of ‘b2’ bars (PPCB) from standard drawing not shown (this is for designer information only).

___ For both standard and non-standard, non-varying bridge widths, show the cross-sectional area of the bridge deck listed on the plans within a box. See Standard Sheet 4560.

___ For bridges with sidewalks, cover plates are detailed at expansion joints to be ADA compliant if necessary.

9.2 Deck Layout

___ Deck placement sequence shown (if required) with applicable notes. Note shall address whether end to end deck pours are permitted. Include 48 hour wait and minimum strength note E926 between pours. See [LRFD BDM 5.2.4.1.2].

___ Deck placement sequence consistent with IA/DOT practice - address uplift concerns if they exist. Pour positive moment sections first, then negative.

___ For widenings and staged construction, include note E114 to the deck placement notes.

___ Proper transverse joint type shown. Skewed ‘Alternate Transverse Construction Joint’ shown with stepped joint. See [LRFD BDM Table 5.2.4.1.2 and Table 5.6.2.4.2].

Drain details included.

Drain note specifies cost in ‘Structural Concrete’, ‘Structural Steel’ or deck drain bid item, as appropriate.

Beam spacing is tied into the bridge construction baseline and the baseline is labeled appropriately.

Permissible longitudinal construction joint provided for roadway width >80’ or if the roadway is tapered. Label “Permissible”. See [LRFD BDM 5.2.4.1.2].

If anticipated dead load deflection greater than 2", closure pour required with longitudinal joint.

Tributary deck width shall be considered when determining haunch thickness and beam line haunch elevations particularly for bridges involving staged construction and closure pours. See [LRFD BDM 5.2.4.1.2]. Beam lines adjacent to a closure pour with reduced tributary weight shall specifically state in a plan note that deflections are based on tributary deck width without any closure pour weight included so that field personnel are aware that no adjustment to the deflections is required.

Minimum closure pour width shall be the greater of 3 ft or the splice length plus 4". Closure pours should be placed in areas with constant cross slope in the bridge deck. Closure pours over beams and in vehicle wheel path should be avoided.

Closure pour to be placed continuously from end to end of the deck.

If longitudinal construction joint provided (either permissible or mandatory), transverse reinforcing bars are spliced at joint and weight of splice included in quantity.

If construction is staged over multiple construction seasons, exposed transverse deck reinforcing shall be stainless steel lapped with epoxy coated reinforcing on each side of the construction joint. See [LRFD BDM 5.2.4.1.2; LRFD BDM 5.8.5.1.1].

For variable width bridge deck placements, the sections should be uniform width. Use permissible longitudinal joints to separate the tapered sections.

If transverse reinforcing bars will be > 40’ and no longitudinal construction joint is shown on plans, transverse reinforcement splice note included. See Standard Sheet 4310.

Table of ‘b2’ bars (PPCB) from standard drawing not shown (this is for designer information only).

For both standard and non-standard, non-varying bridge widths, show the cross-sectional area of the bridge deck listed on the plans within a box. See Standard Sheet 4560.

For bridges with sidewalks, cover plates are detailed at expansion joints to be ADA compliant if necessary.

9.2 Deck Layout

___ Deck placement sequence shown (if required) with applicable notes. Note shall address whether end to end deck pours are permitted. Include 48 hour wait and minimum strength note E926 between pours. See [LRFD BDM 5.2.4.1.2].

___ Deck placement sequence consistent with IA/DOT practice - address uplift concerns if they exist. Pour positive moment sections first, then negative.

___ For widenings and staged construction, include note E114 to the deck placement notes.

___ Proper transverse joint type shown. Skewed ‘Alternate Transverse Construction Joint’ shown with stepped joint. See [LRFD BDM Table 5.2.4.1.2 and Table 5.6.2.4.2].
BRIDGE PLAN REVIEW CHECKLIST

- Both longitudinal and transverse construction joint details provided if a stepped transverse construction joint is shown.
- Longitudinal dimensions labeled as ‘Out to Out of Slab’.
- Longitudinal construction joint shown (if applicable)
- Transverse and longitudinal slab reinforcing layout details adequate.
- For variable width bridges, vary lap splice for transverse bars rather than vary length of transverse bars. However, minimize number of different bar lengths.

9.3 Slab Elevation Layout
- Format of diagram consistent with IA/DOT practice.
- Spacing provided for deck elevations along C.L. of beam (8' to 10' range preferred).
- For CCS bridges using ‘J’ standard superstructure sheets, deck elevation spacing matches the spacing on form camber diagram.
- Steel bridge deck elevations correspond with the deflection information provided.
- Transverse elevations provided at the centerline of bearings but not the centerline of pier. (unless the centerline of the bearings corresponds with the centerline of the pier).
- Deck elevations provided along the centerline of approach roadway, all beam lines, each gutter line and longitudinal construction joint if required.
- Included beam line haunch elevation sheet for both PPCB and steel girder bridges.
- Include “Crown Template” detail and define the dimension ‘X’ on the slab elevation sheet when the profile grade line is at the centerline of approach roadway. See [LRFD BDM 1.7.1].

10. SUPERSTRUCTURE DETAILS - CWPG - NEW CONSTRUCTION

10.1 Girder Details
- Shear stud diameter 7/8”.
- Part plan view of stiffener details (section thru girder) provided.
- Weld for flange to web noted as “Submerged Arc Welding”.
- Shear stud height varies with top flange thickness. See [LRFD BDM 5.5.2.4.1.8].
- Intermediate girder termination crossbeam has shear studs (dropping girder line).
- Painting of weathering steel on exterior girder fascia on median side required if opening between two bridges is less than 30 ft. See [LRFD BDM 5.5.2.4.2].
- Painting of weathering steel for “tunnel-like” conditions. See [LRFD BDM 5.5.2.4.1.2].
- Flange width increase clipped 2:5:1 at bolted splice. If the difference between top or bottom flange widths on either side of a field splice exceeds 2 inches, then the wider flange should be clipped at a 1:1 transition.
- If flange plate size is increased exclusive of a bolted connection, request that analysis be made using larger plate between bolted connections and add appropriate note regarding substitution. See [LRFD BDM 5.5.2.4.1.6].
- Label tension and compression zones. Based on net tensile stress under Strength Load Combination 1. See [LRFD BDM 5.5.2.4.2].
- ASTM F3125 Grade A325 7/8” diameter bolts are typical.
- Preferred maximum girder length between splice points 120’.
- Note E904 included for most steel girders. See [LRFD BDM 5.5.2.1.1].
- Note E204 included for temporary bracing of steel girders.

10.2 Superstructure Details
- Flange deflector detail provided if necessary. See [LRFD BDM 5.5.2.4.2].
- Correct bearing specified based on reaction.
- Table of rocker and expansion joint settings included.
- For bridges with closure pours the bracing in the bay to have the closure pour is to be installed after the second stage has been poured and prior to placing the closure pour. The bolt holes shall be field drilled in the cross-bracing members to provide allowances for fit up of the diaphragms. [LRFD BDM 5.2.4.1.2].
- Shop welded splice note included. See [LRFD BDM 5.5.2.4.2].
- Detail included for Flange Butt Weld Splice. See [LRFD BDM 5.5.2.4.1.13].
- Temporary slab overhang detail included. See [CADD M0144], and [LRFD BDM 5.4.1.2.5]. 9 kip live load.

10.3 Deflection Diagram
- Format of camber, haunch and dead load deflection diagrams consistent with Design Manual. Typically, interior girder only shown unless unusual circumstances.
- For ‘Camber and Blocking’ diagram ‘Keep’ dimensions (measured from ‘chord between abut. bearings’ or horizontal line) provided at all bearings (including ‘0 Keep’ noted at abutment(s)).
- Dimension from ‘chord between abutment bearings’ or horizontal line to ‘top of web’ shown as an individual value at the midpoint and ends of each girder segment (segment is considered end to splice or splice to splice). See [LRFD BDM 5.3.3.2] and [LRFD BDM C.5.3.3.2].
- Dimension from both ‘chords’ to ‘xx of web’ shown at midpoint of parabolic camber.
- Moment and reaction table, consistent with IA/DOT practice, included in plans.
- Locations of the dead load deflection values should correspond to the deck elevation locations.

11. SUPERSTRUCTURE DETAILS - PPCB - NEW CONSTRUCTION

11.1 Framing Plan (If Provided)
- Dimensions adjusted for slope - element lengths only - not horizontal lengths.

11.2 Superstructure Details
- Appropriate intermediate diaphragm type used (concrete for road overpass, steel all others); steel for bulb tee beams.
12. DETAILS - REPAIR/OVERLAY PROJECTS

12.1 General

- Existing conduit shown and labeled on typical section.
- Typical section indicates cross slope of deck.
- Adequate details provided to define location and scope of concrete repair work.
- Overlay: Correct number of drains noted for 'Floor repair detail at drains.'
- Re-Overlay: Classification line shown correctly for bridges with existing overlay. Classification line will be 1/4" below the original classification line.
- Intermediate diaphragms, do not use the note from standard sheet 1036 ("At locations under longitudinal bridge floor . . . ") when a longitudinal joint is not permitted.
- Intermediate diaphragms placed at the correct locations when using a beam span greater than 120 ft. See [LRFD BDM 6.4.1.4.2].
- Slab thickness of 6" (200 mm). See [LRFD BDM 5.2.1.1].
- For bridges including a precast deck panel option check the use of precast deck panels is allowed and include the precast note below the Total Estimated Quantities Tabulation. See [LRFD BDM 5.2.4.3].
- For prestressed concrete beam bridges with intermediate concrete diaphragms, the diaphragm shall not be placed in the bay where the closure pour is to be placed.
- For prestressed concrete beam bridges with steel intermediate diaphragms, the diaphragm bolts used in connecting the channel to the bent plate shall remain loose until the second stage has been poured then tightened before the closure pour.
- Appropriate bearing used. See [LRFD BDM 5.7].
- Appropriate deck placement note. Note shall address whether end to end deck pours are permitted. See [LRFD BDM 13.9.2] note E926.

11.3 Beam Details

- Current ‘Strand Projection at Beam Ends’ detail used, with strands upward.
- Non-Standard beam details/notes reviewed with appropriate staff for need and adequacy.
- Shear reinforcing modifications provided for haunch >2”.
- Required vent holes provided (stream crossings, per T.S.L.)
- General notes from the beam standard sheets starting with ‘If . . . ’ reviewed for applicability. If applicable, delete the ‘implied option’ portion of the note (Ex. ‘If the steel diaphragm option is allowed and used’). If not applicable, note is not used.
- General note from the beam standard sheet ‘The portions of the prestress beams that are to be embedded . . . ’ reviewed for applicability (abutment?, pier?)
- Modified standard beam mark is consistent with bid item description. See [LRFD BDM 5.4.1.4.2].
- Concrete sealer details included for the ends of PPC beams under bridge joints (typically for stub abutments), see IM 570 and standard sheets 1036.

12.2 Temporary Barrier Rail

- Reduced width signing plan provided if lane width less than 14’-6. See [LRFD BDM 12.1.8.2].
- ‘F-Shape’ used for minimum lane 12’-5 interstate mainline, 10’-6 primary. H-Pile section used when these minimums cannot be provided.
- Traffic lane and work area widths shown on rail layout plan. Correct lane width shown on standard sheet 1049 note. Traffic lane width should be noted as ‘minimum.’
- For bridges with sidewalks, coordinate traffic control with Design Bureau to maintain pedestrian access during construction. See [LRFD BDM 12.1.8.2].

12.3 Backwall Repair/Barrier Rail Footings

- Detail specifying limits of Class 20 excavation and backfill materials provided.
- Backwall: Note specifying that subdrain and backfill included in Class 20 excavation: The cost of furnishing and placing subdrain (including excavation), floodable backfill, porous backfill, and subdrain outlet is to be included in the price bid for “Excavation, Class 20”. No extra payment will be made.
- Backwall reconstruction consolidation note included. See [LRFD BDM 13.5.2] note E461.

13. BARRIER RAIL

13.1 New Construction

- Electric conduit shown. See [LRFD BDM 5.8.1.2.1].
- Use 2" or 3" conduit as appropriate. See [LRFD BDM 5.8.1.2.1].
- Check that Road Standard LI-104 for junction boxes is included if applicable (typical when conduit in barrier rail).
- Remember special 3’-8 rail for UP RR bridges.
- UP RR bridges, assume 10:1 transition for barrier rail, as taller rail is required.
- UP RR bridges, do not add fence (splashboard) unless UP RR says that we must.
- For bridges with super elevations > 2%, level the low side of the rail and keep high side of the rail perpendicular to the deck slab (i.e. on same super elevation) for ‘Jersey and F type’ rails only. Details should be drawn accordingly.
- For aesthetic barrier rail check details with Kimball Olson.
- Class D concrete is not allowed – appropriate barrier rail notes are included. See [LRFD BDM 5.8.1.2.6].
- Interstate mainline bridges detail TL-5 railing. See [LRFD BDM 5.8.1.2.1].
- Stainless steel reinforcing barrier rail dowel bars. See [LRFD BDM 5.2.1.1; 5.8.1.1.1; 5.8.1.2.1.1]; Standard sheets 1017S, 1018S, 1018SA-D2, 1019SA-B2, 1020SA-F, 1020SA, [CADD M0356].

14. EXPANSION DEVICE

14.1 General

- “Or approved equivalent” indicated in table of approved devices.

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- Ready mix trucks are not allowed on the deck for overlay or re-overlay projects. Add updated note E447. See [LRFD BDM 12.1.8.1].
- Intermediate diaphragms details, do not use the note from standard sheet 1036 ("At locations under longitudinal bridge floor . . . ") when a longitudinal joint is not permitted.
- Intermediate diaphragms placed at the correct locations when using a beam span greater than 120 ft. See [LRFD BDM 6.4.1.4.2].
- Slab thickness of 6" (200 mm). See [LRFD BDM 5.2.1.1].
- For bridges including a precast deck panel option check the use of precast deck panels is allowed and include the precast note below the Total Estimated Quantities Tabulation. See [LRFD BDM 5.2.4.3].
- For prestressed concrete beam bridges with intermediate concrete diaphragms, the diaphragm shall not be placed in the bay where the closure pour is to be placed.
- For prestressed concrete beam bridges with steel intermediate diaphragms, the diaphragm bolts used in connecting the channel to the bent plate shall remain loose until the second stage has been poured then tightened before the closure pour.
- Appropriate bearing used. See [LRFD BDM 5.7].
- Appropriate deck placement note. Note shall address whether end to end deck pours are permitted. See [LRFD BDM 13.9.2] note E926.

11.3 Beam Details

- Current ‘Strand Projection at Beam Ends’ detail used, with strands upward.
- Non-Standard beam details/notes reviewed with appropriate staff for need and adequacy.
- Shear reinforcing modifications provided for haunch >2”.
- Required vent holes provided (stream crossings, per T.S.L.)
- General notes from the beam standard sheets starting with ‘If . . . ’ reviewed for applicability. If applicable, delete the ‘implied option’ portion of the note (Ex. ‘If the steel diaphragm option is allowed and used’). If not applicable, note is not used.
- General note from the beam standard sheet ‘The portions of the prestress beams that are to be embedded . . . ’ reviewed for applicability (abutment?, pier?)
- Modified standard beam mark is consistent with bid item description. See [LRFD BDM 5.4.1.4.2].
- Concrete sealer details included for the ends of PPC beams under bridge joints (typically for stub abutments), see IM 570 and standard sheets 1036.

12.2 Temporary Barrier Rail

- Reduced width signing plan provided if lane width less than 14’-6. See [LRFD BDM 12.1.8.2].
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14. EXPANSION DEVICE

14.1 General

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BRIDGE PLAN REVIEW CHECKLIST

___ Latest designation for glands and extrusions shown.
___ Non-weathering steel galvanized finger joints are preferred.

14.2 Repair/Retrofit
___ Extrusion field splice detail included.

15. SUBDRAIN/SLOPE PROTECTION DETAILS
15.1 Subdrain Details
___ Show subdrain bent around wingwall footings.

16. LIGHTING DETAILS
___ Standard sheet modified to reflect the work to be performed to include:
   - Elimination of details for conduits not provided (underdeck, sign, etc.)
   - Modification of elevation and plan views to reflect abutment type
   - Elimination of light pole bases and expansion fitting details if not used.
___ Sheet to show elevation view of conduit along bridge.
___ When installing light pole conduit to multiple bases along the bridge, 1” conduit is shown coming into pole base from both directions along bridge in plan view of pole base.
___ For bridges in urban areas or interchanges lighting requirements coordinated with Traffic and Safety Bureau and District.

17. AESTHETICS
___ Deck drain standard detail sheets 1054 used for bridges including aesthetic details.

18. APPROACH SIDEWALK
___ For bridges with sidewalks the sidewalk approach slab detail sheet is included.

19. ROADWAY PLANS
___ R sheets with site maps (RC, RR and RU) are included.
___ Erosion Control, including seeding and mulching, bid items (ALL projects) - do not include as incidental items. Should be on R sheets.
___ Approaches used match up with paving notch details.
___ Traffic control bid items (all projects where required by traffic control plan).
___ Traffic control plan current and acceptable to Design Bureau.
___ PPP current, consistent with grading plan and acceptable to Design Bureau. Should be on R sheets.
___ Check that approach roadway plans are either in the bridge plans (preferred) or paving plans. If downdrag is encountered at the abutments the approach roadway details are to be included in the paving plans.
___ Longitudinal grooving quantity and tabulation includes area from bridge deck. Appropriate plan note placed in General Notes in bridge plans. See [LRFD BDM 5.2.4.1.2].

REFERENCE ABBREVIATIONS
BDM – Bridge Design Manual
CADD M – CADD Memo