Linn County Road Department Certified Agency Manual

Section 4

Phase IIB - Bridge Design

CHECKLIST FOR BRIDGE TYPE, SIZE & LOCATION SUBMITTAL

Project: _____ Project No: _____

Bridge/Structure: _____ Designer: _____

PLAN AND ELEVATION DRAWINGS

YES	NO	N/A	
☐	☐	☐	Alignment & Bearings Shown
☐	☐	☐	Skew Angles Shown
☐	☐	☐	Stationing Shown
☐	☐	☐	Intersecting Alignment Shown
☐	☐	☐	Min. & Est. Pile Tip Elev.
☐	☐	☐	Clearance Shown (RR, Highway, etc.)
☐	☐	☐	Min. Construction Clearances Shown
☐	☐	☐	Design Loadings Shown or Noted
☐	☐	☐	Rail Transition at Ends Shown
☐	☐	☐	Rail Type and Limits
☐	☐	☐	Rail and Sidewalk Dimensions Shown
☐	☐	☐	Existing Structure Shown
☐	☐	☐	Utilities Shown
☐	☐	☐	Right-of-Way Shown (Existing & Proposed)
☐	☐	☐	Grade Line Diagram Shown and Verified for sight distance requirements
☐	☐	☐	Elevation Datum Shown & Noted (Verified w/Survey) (NVGD '29, NAVD '88, assumed)
☐	☐	☐	Existing Ground Lines (3 Line Profile)
☐	☐	☐	North Arrow Shown
☐	☐	☐	Roadway and Lane Width Shown
☐	☐	☐	Direction of River Flow Shown (if present)
☐	☐	☐	Riprap Size and Limits Shown
☐	☐	☐	Traffic Direction Arrows
☐	☐	☐	Existing Contours on Found. Data Sht.
☐	☐	☐	Catch Basins (@ low points, off end of bridge)
☐	☐	☐	Drainage Reviewed (min. deck slope > 0.5%)
☐	☐	☐	Luminaires
☐	☐	☐	Detour Alignment & Structure Shown
☐	☐	☐	Location Map Shown w/Section, Township and Range
☐	☐	☐	Section Quarter Shown (if Railroad)
☐	☐	☐	Hydraulic Data Table Shown
☐	☐	☐	Design High Water Mark and Dated Water Elev Shown
☐	☐	☐	Bent Fixity (Free, Exp., Hinge) Shown
☐	☐	☐	Stage Construction Shown
☐	☐	☐	Span Lengths Shown
☐	☐	☐	Road/Railroad Clearances Noted/Diagram

PLAN AND ELEVATION DRAWINGS (continued)

YES	NO	N/A	
☐	☐	☐	Typical Section Shown and Includes:
☐	☐	☐	Overall Width
☐	☐	☐	Lane and Shoulder Widths
☐	☐	☐	Overlay Type/Depth (ACWS or Conc.)
☐	☐	☐	Structure Depth/Girder Type
☐	☐	☐	Rdwy CL (typ. "L" Line)

PRELIMINARY DESIGN DATA

☐	☐	☐	Vicinity Map (Nearest Town Shown)
☐	☐	☐	Hydraulic Report
☐	☐	☐	Foundation Report
☐	☐	☐	Grade Line Verified
☐	☐	☐	Alignment Verified
☐	☐	☐	Project Prospectus and Narrative Reviewed
☐	☐	☐	Project Folder and Pictures Reviewed

MISCELLANEOUS

☐	☐	☐	Architectural Details & Treatment
☐	☐	☐	Senior QA/QC review complete
☐	☐	☐	All details shown ahead on station
☐	☐	☐	Correct orientation of plans
☐	☐	☐	Accompanied By/For Ref Only Dwg #s
☐	☐	☐	Bridge #/Extg Bridge #

ESTIMATE

☐	☐	☐	TS&L Estimate and Quantities Completed
☐	☐	☐	Construction Time Estimate Completed (Optional)
☐	☐	☐	TS&L Narrative Completed
☐	☐	☐	TS&L Estimate/Quantities (Checker)

PLAN AND ELEVATION DRAWINGS (continued)

☐	☐	☐	Delineated OHW in Plan with Special Linetype
☐	☐	☐	Delineated Wetlands Shown with Special Linetype

Signature Sign-Offs

Personnel	Date
Designer/Engineer	
Project Manager	

Comments:

CHECKLIST FOR FINAL BRIDGE PLANS, SPECIFICATIONS AND ESTIMATE

Project: _____ Project No: _____

Bridge/Structure: _____

DESIGN DATA

DES CHK N/A

- ☐ ☐ ☐ Review Hydraulic Report
- ☐ ☐ ☐ Review Foundation Report[1]
- ☐ ☐ ☐ Grade Line Verified w/roadway
- ☐ ☐ ☐ Alignment verified w/roadway
- ☐ ☐ ☐ Permit requirements met
- ☐ ☐ ☐ Project Folder and Pictures Reviewed
- ☐ ☐ ☐ Bridge Fits/Match Site Grades/Contours

SUPERSTRUCTURE DETAILS

- ☐ ☐ ☐ Deck Elevations Shown and Verified
- ☐ ☐ ☐ Expansion Joint Details
- ☐ ☐ ☐ Camber Diagram Shown
- ☐ ☐ ☐ Build-Up Detail
- ☐ ☐ ☐ Joints Shown and Detailed
- ☐ ☐ ☐ Stage Construction Diagramed (in both directions)
- ☐ ☐ ☐ Pour Schedule Shown
- ☐ ☐ ☐ Concrete Finish Diagram Shown
- ☐ ☐ ☐ Span Lengths Shown
- ☐ ☐ ☐ Rail Details Shown
- ☐ ☐ ☐ Rail Joints/Post Spacing Shown
  Expansion & Score Joints Detailed and Spacing Shown
- ☐ ☐ ☐ Deck Plan Shown (Adequate geometry for layout)
- ☐ ☐ ☐ Deck reinforcement indicated and shown on deck plan
- ☐ ☐ ☐ Typical Section Shown

Includes:

- ☐ ☐ ☐ Overall Width
- ☐ ☐ ☐ Lane and Shoulder Widths
- ☐ ☐ ☐ Superelevation Rate
- ☐ ☐ ☐ Survey Line
- ☐ ☐ ☐ Overlay Type and Depth
- ☐ ☐ ☐ Rail and Sidewalk Dimensions Shown
- ☐ ☐ ☐ Closure Pour
- ☐ ☐ ☐ Structure Depth/Girder Type
- ☐ ☐ ☐ Conduits/Utilities on Bridge
- ☐ ☐ ☐ Girder Spacing

ESTIMATE AND SPECIFICATIONS

- ☐ ☐ ☐ Final Estimate and Quantities Checked
- ☐ ☐ ☐ Final Specifications Checked
- ☐ ☐ ☐ Final Specifications Estimated Quantities Checked
- ☐ ☐ ☐ Drain Pipe Included
- ☐ ☐ ☐ Excavation Included or Noted
- ☐ ☐ ☐ Construction Time Estimate Completed (Optional) by:

PLAN AND ELEVATION DRAWINGS

DES CHK N/A

- ☐ ☐ ☐ Footing Plan Shown
- ☐ ☐ ☐ Alignment & Bearings Shown & Verified
- ☐ ☐ ☐ Skew Angles Shown & Verified
- ☐ ☐ ☐ Bent Fixity (Free, Exp., Hinge) Shown
- ☐ ☐ ☐ Slope Paving Shown
- ☐ ☐ ☐ Bearing Values, Min. & Est. Pile Tip Elev. Verified
- ☐ ☐ ☐ Drainage Reviewed(min. deck slope>0.5%)
- ☐ ☐ ☐ Stationing Shown
- ☐ ☐ ☐ Intersecting Alignment Shown
- ☐ ☐ ☐ Clearance Shown (RR, Highway, etc.)
- ☐ ☐ ☐ Min. Construction Clearances Shown
- ☐ ☐ ☐ Design Loadings Shown or Noted
- ☐ ☐ ☐ Rail Transition at Ends Shown
- ☐ ☐ ☐ Catch Basins (@ low points, off end of bridge)
- ☐ ☐ ☐ Existing Structure Shown
- ☐ ☐ ☐ Utilities Shown and Located
- ☐ ☐ ☐ Right-of-Way Shown (Existing and Proposed)
- ☐ ☐ ☐ Grade Line Diagram Shown and Verified for sight distance requirements
- ☐ ☐ ☐ Nearest Station (if Railroad)
- ☐ ☐ ☐ Elevation Datum Shown and Noted (Verified w/Survey)
- ☐ ☐ ☐ Road/Railroad Clearances Noted/Diagram
- ☐ ☐ ☐ Existing Ground Lines (3 Line Profile)
- ☐ ☐ ☐ General Notes Complete
- ☐ ☐ ☐ Accompanying Dwgs Shown Correctly
- ☐ ☐ ☐ North Arrow Shown
- ☐ ☐ ☐ Architectural Treatment Detailed & Shown and verified rebar clearances
- ☐ ☐ ☐ Roadway and Lane Width Shown
- ☐ ☐ ☐ End Slope Rate
- ☐ ☐ ☐ Direction of River Flow Shown (if present)
- ☐ ☐ ☐ Riprap Size and Limits Shown
- ☐ ☐ ☐ Traffic Direction Arrows
- ☐ ☐ ☐ Existing Contours on Found. Data Sht.
- ☐ ☐ ☐ Detour Alignment and Structure Shown
- ☐ ☐ ☐ Luminaires
- ☐ ☐ ☐ Rail Type and Limits
- ☐ ☐ ☐ Location Map(Nearest Town Shown) w/Section, Township and Range
- ☐ ☐ ☐ Section Quarter Shown (if Railroad)
- ☐ ☐ ☐ Hydraulic Data Table Shown
- ☐ ☐ ☐ Design High Water Elev. Shown
- ☐ ☐ ☐ Delineated Wetlands Shown with Special Linetype
- ☐ ☐ ☐ Delineated OHW in Plan with Special Linetype

SEISMIC

DES	CHK	N/A	
☐	☐	☐	Seismic Design Criteria in General Notes
☐	☐	☐	Calculated Forces due to Plastic Hinging
☐	☐	☐	Piles meet compact section requirements.
☐	☐	☐	Verify minimum seat requirements.
☐	☐	☐	Increase development length by 25% for main column reinforcement into footings and cross beams.
☐	☐	☐	Proper Seismic Details (ties, Splices, Spirals) column splices (type and location)
☐	☐	☐	Cross beam / footing design checked for plastic hinging forces (V, M+, M-). Use a 20% over-strength factor for calculated plastic moments to ensure that hinges form in the column. Check M- and M+ in the adjacent superstructure girders.
☐	☐	☐	Foundation designed for elastic seismic moments (R = 1.0) or plastic moments at the bottom of the footing. For spread footings, 50% of area must remain in contact. Check that piles are able to resist uplift forces.
☐	☐	☐	For flared columns in multiple column bents, provide a gap at the top of column flare and bottom soffit. Only the main column reinforcement should continue on through to cross beam.
☐	☐	☐	Confinement reinforcement Spiral Splices (type and location), Column splices (type and location)

MISCELLANEOUS

☐	☐	☐	Advanced Plans Comments Incorporated
☐	☐	☐	Plans Checked by
			Construction/Field Personnel
☐	☐	☐	Roadway Geometry Checked w/Bridge
☐	☐	☐	Roadway Quantity Approximately Verified
☐	☐	☐	Falsework/Shoring Detailed & Noted
☐	☐	☐	Correct orientation of plans
☐	☐	☐	Calc Book Prepared (After Construction is Finished)
☐	☐	☐	All details shown ahead on station
☐	☐	☐	Reinforcement conflicts checked (Curb, ftgs, X beam, column connections)
☐	☐	☐	OREGON LAW utility notice in general notes
☐	☐	☐	Drafting Standards Checked
☐	☐	☐	Senior QA/QC review complete
☐	☐	☐	Final Drawings Checked
☐	☐	☐	Review Overall Contract Plans for Consistency

BEAM DETAILS

DES	CHK	N/A	
☐	☐	☐	Beams Located and Dimensioned
☐	☐	☐	Beam Cross Sections Shown
☐	☐	☐	Prestressed Beam Details Included
☐	☐	☐	Interim Bars Shown in Top of Stem
☐	☐	☐	Bar/Strand Extensions Adequate
☐	☐	☐	End Anchorages of Longitudinal Bars Sufficient
☐	☐	☐	Post-tensioning Details/Data Included

SUBSTRUCTURE/BENT DETAILS

☐	☐	☐	Minimum Temp & Shrinkage Reinforcement at all Surfaces
☐	☐	☐	Column Steel Dimensioned w/Splices
☐	☐	☐	Footing/Bent Cap Elevations Shown and Verified
☐	☐	☐	Skew Angles Shown & Verified
☐	☐	☐	Utility Holes Shown and Noted
☐	☐	☐	Hinges Shown and Detailed
☐	☐	☐	Seismic Restraints Shown & Detailed
☐	☐	☐	Guardrail connections at End Bents
☐	☐	☐	Concrete Finish Sketch Shown
☐	☐	☐	Bent Stations and Numbers Shown
☐	☐	☐	Architectural Details & Treatment
☐	☐	☐	Beam Seat or Soffit Elevation Shown & Verified
☐	☐	☐	Bearing Devices Shown and Detailed
☐	☐	☐	MSE walls: Bearing Capacity Eq. & S.F. Listed and Verified with Geotech.
☐	☐	☐	Pile Design & Driving Criteria Shown (Grade 3 for Pipe Piles-Notify Spec Writer?)
☐	☐	☐	Railroad Crashwalls Shown & Detailed
☐	☐	☐	Pile Top, Bottom, Splice Detailed
☐	☐	☐	Required No. of Bearing Devices Given
☐	☐	☐	MSE walls: Bearing Demand < Capacity Calculation Performed

Signature Sign-Offs

Personnel	Date
Designer/Engineer	
Checker	
Project Manager	
Field Reviewer: (Print Name)	

Comments: