

BDDM Updates Summary -November 2005
Commentary on Selected Updates

1.1.2.2 Bridge Length (also 1.1.2.5 Substructure Choices, 1.1.4.2(2) Spread Footings, 1.1.5.3 Spread Footing Foundation Design, and 1.6 ODOT Design Instructions for AASHTO LRFD Bridge Design Specifications) – Scour analysis requirements updated.

1.1.7.1(4) Wearing Surface – Present and future wearing surface requirements clarified.

1.1.7.2(2) Pedestrian Structures – Added deck width criteria to determine design vehicle. Added Figure 1.1.7.2G for H-10 truck loading diagram.

1.1.7.2(4) Structure Repair and/or Strengthening – Deleted sentence pertaining to steel structures.

1.1.7.4 Ductility, Redundancy and Operational Importance (LRFD 1.3.3, 1.3.4 & 1.3.5) – Newly added section to provide guidance for these factors.

1.1.7.5 Sidewalk Loading – New section for live loads on sidewalks.

1.1.8.4 End Bents – Added requirements for concrete facing on MSE walls.

1.1.10.2 Specification Interpretations and Modifications – Added note for seismic Zone 2 acceleration coefficient.

1.1.12.1 Modulus of Elasticity – Clarification added.

1.1.14.1 Design of Precast Prestressed Elements – Revisions to deck thickness and concrete strength of slabs and box beams.

1.1.14.2(1) Stay-in-Place Forms – Adds permitted conditions for use of stay-in-place deck forms.

1.1.14.2(10) Fixed Girder Connections – New section with requirements for ends of precast prestressed girders made continuous with substructure.

1.2.1 Steel Girders, Design – Added discussion for deck concrete strength and modular ratio.

1.2.1(2) Girder Lengths – Deleted sentence beginning with “Consult with...”

1.2.1(6) Girder Webs – Deleted sentence beginning with “Consult with...” -

1.2.1.1 (1) Deleted sentence beginning with “Consult with...”.

1.2.1.1 (2) Weathering Steel, Environment – Added fourth bulleted item.
Deleted last sentence: “Do not use Grade 70W steel”.

1.2.1.3 Intermediate Cross Frames – Figures 1.2.1.3B, C, D revised

1.2.1.4 Intermediate Web Stiffeners – Figure 1.2.1.4A revised

1.2.1.9 Deck Pouring Sequence – Revised

1.2.2.1 Welding, General – Certification of Steel Fabricators, Special Provision section number revised.

2.1.1 FILE FORMAT - States that Bridge use Microstation.

2.1.2 DIRECTORY SETUP - Links to Standard Drawings

2.1.3.1 DRAWINGS START TO FINISH – Various revisions

2.1.3.2 CAD FILES – EXAMPLE DRAWINGS - Gives location where Example Plans can be found.

2.1.4 Cell Libraries - Section Heading revised

2.1.5 MENUS - Plans menu shown

2.1.7 COLOR TABLE - Color RGB values are given, so structure components will show up with their specified text.

2.2.1 TEXT – Special characters in font 24. Shows a list of special characters in font 24

2.2.2 LINE WEIGHTS

2.2.5 STRUCTURAL STEEL – Specifies level for Structural Steel. Examples of Structural Steel Shapes added
Revised figure numbers for Fillet Welds, Field Splice details.

2.2.6 REINFORCING STEEL – Specifies level for Reinforcing Steel

2.3 PLOTYPUS BORDERS

2.3.1 GIRDER ELEVATIONS

2.4 TITLE BLOCKS - Updated title blocks

2.4.1 REQUEST DRAWING NUMBERS

2.4.2 Title Sheet - Design Engineer's Seal "Review Copy Only" addition. Fig. 2.4.2B Example title blocks

2.4.3 DETAIL SHEET - Display same information in title block as on title sheet

Structure Name

Project Name

Highway and Milepost

County Name

2.6 TYPE, SIZE AND LOCATION CHECKLIST - Check list for Designers and Drafter as to what information is needed.

2.6.1 "bents" sentence re-worded

2.6.2 MAPS – Link and info

2.7.1 SHEET NUMBERING – Standard Drawings clarification added.

2.7.2 FINAL PLANS CHECKLIST, DRAWING ORDER - Check list for Designers and Drafter as to what information is needed. List order of drawings with what details should be located on them. Pencil changes highlighted.

2.7.3.1 "bents" sentence re-worded. Things not to put on Foundation Data sheet highlighted.

2.7.3.4 GENERAL NOTES option added.

2.7.4 FOUNDATION DATA SHEETS

2.7.5 Footing Plan – Underground utilities added "and label".

2.7.6 Deck Plan - Girder callouts clarified. Detail References clarified. Deck Elevations cell library notes added

2.7.10 "For Information Only" drawing options added

2.7.11 REVISIONS - requirements

2.7.11.1 AS-CONSTRUCTED DRAWINGS - Clarified where work is done. Added sample letter

2.8.1 PRINTERS

2.8.2 BRIDGE PLOTTING USING PLOTYPUS - New improved write-up on Plotypus

2.8.3 BRIDGE DATA SYSTEMS (BDS) - New improved write-up on Bridge Data System, also refers to the BDS users guide and where to find it.

2.9 Transfer of Files Outside of ODOT – options

2.10 ARCHIVING CAD FILES

A2.1.3 CAD FILES

A2.1.3.1 CONTRACT PLANS SHEET DEVELOPMENT MATRIX - Will help everyone understand when do I need drawing numbers and what kind; when do I need a calculation book number and structure number; which drawing border and what size do I use.

A2.1.4CELL LIBRARY - All have been updated

A2.2.2 LINE WORK AND LEVELS - Added 3 new levels:

- P_BR_SUPER_EndPanel
- P_BR_ALL_RebarTx
- P_BR_PLANS_TitleBlock

A2.4 BORDERS - have been revised

A2.6 TS&L Checklist Added

A2.7.2 Final Design Checklist Added

A2.7.3 General Notes - Live Loads revised to agree with 1.1.7.2. BDS Form Added.

A2.7.11.1 As-Constructed Transmittal Letter Added

Commentary: Background and Resulting Impact for Selected Articles November 2005 Update

1.1.7.4 Ductility, Redundancy and Operational Importance (LRFD 1.3.3, 1.3.4 & 1.3.5)

All three factors in LRFD Section 1 are items that ODOT has not previously considered. At present, the BDDM is silent on this subject. Clarification is needed to provide designers with clear direction.

1.1.7.5 Sidewalk Loading

The LRFD design truck on the sidewalk increased by 20% due to the multiple presence factor is likely to control in most cases.

1.1.12.1 Modular Ratio

Although the chart given under 1.1.12.1 may be useful to designers, it gives the impression that only rounded values are acceptable. This proposal clarifies that designers may calculate their own values and that rounding is not required.

1.1.14.1 Precast Prestressed Elements – Concrete Strength

7000 psi is a rational maximum for slabs and box beams. When strengths greater than 7000 psi are specified for these types of members, it is likely the designer has either made an error or is doing something unusual. In either case it would be beneficial for HQ to be notified.

A 6000 psi limitation has been added for top flanges that also serve as a riding surface. This also includes members such as slabs and box beams that normally have an AC riding surface.

When the maximum was previously increased to 9000 psi, the intent was to require State Bridge Engineer approval when this maximum was exceeded. The existing BDDM requires only supervisor approval.

A parallel section for release strengths has also been added.

1.1.14.1 Deck Thickness Requirements

The only change is a correction of the deck thickness for spread slabs and box beams when $ADTT < 1000$. The existing language mistakenly requires 8". The correct number should be 7¼".

Clarification language has been added for the following:

- “(not side-by-side)” is added to the last Bulb-T reference in each list to distinguish it from the requirements for side-by-side Bulb-T girders.
- For the two side-by-side bullets when $ADTT < 1000$, language is added to confirm that an HPC deck would also be an acceptable solution.
- “Bulb-T” was added to the second bullet of the $ADTT < 1000$ group. This makes the language of the two groups equivalent.

All these changes are corrections and clarifications. No change in policy and no effect on design is anticipated.

1.1.14.2(1) Stay-In-Place Forms

ODOT has a long history of not allowing stay-in-place forms. However, bridges with closely spaced precast girders have not shown any overstress concerns. Therefore, there is little need to inspect the bottom of the deck in such cases. Recent maintenance applications using steel stay-in-place forms have performed very well.

Since bracing for deck overhangs will often require the contractor to access the exterior bay, it is thought that using removable forms at this location will not be a significant hardship. Having the exterior bays open will ensure ability to detect shrinkage cracking.

Note that since this section will be in the precast concrete portion of the BDDM, it does not apply to steel girder bridges.

1.1.14.2(10) Fixed Girder Connections

A few recent ODOT projects have used a WSDOT framing detail for precast girders. This detail includes a sawtooth end detail and extended reinforcement. The girder is erected on timber blocks and extended only 2" into the end diaphragm. The diaphragm is cast midheight to lock in the girder, but allows the top to rotate during the deck pour. This places compression into the joint as the bottom flange elongates due to the application of dead load from the deck concrete. The top portion of the diaphragm is typically cast with the deck concrete above the bent. The WSDOT detail has many positive elements. But ODOT still requires 8" minimum embedment and placement of transverse bars/rods through the girder ends.