

## **STRUCTURES MANUAL INTRODUCTION - REVISION HISTORY**

- I.2**.....Relocated Volume 3 and 4 to the Design Standards Webpage. Relocated Volume 8 to the Bridge Load Rating Manual (Maintenance Office).
- I.3**.....Revised section reference to Florida Statutes.
- I.6**.....Updated references in Paragraph B, Items 5, 6 and 8. Added reference in Paragraph B, Item 10. Revised reference in Paragraph C, Item 7. Updated reference in Paragraph D, Item 2.

## VOLUME 1 - REVISION HISTORY

Note that the format for references to LRFD, PPM, Specifications, Design Standards and Instructions for Design Standards has been revised in various locations throughout this Volume for consistency. There is no change to technical content in these instances.

- Table I.3-1** ..... Corrected Table numbering. Added cross reference for Substructure Load Combination per Structures Design Bulletin C10-07. Added cross reference between LRFD Table 3.4.1-1 and SDG Table 2.4.1-1
- 1.1.1** ..... Eliminated redundancy between PPM and SM.
- 1.1.3** ..... Added vertical clearance references. Deleted Paragraph C and added content to Paragraph A.
- 1.1.5** ..... Changed "Requirements" to "Provisions". Revised Specification reference.
- 1.1.6** ..... Corrected language and revised references to ADA standards.
- 1.1.7** ..... New section.
- 1.2** ..... Added Paragraph C.
- 1.3.2** ..... Added Paragraph D.
- 1.4.1** ..... Added Paragraphs C, D and E.
- Figure 1.4.2-6** ... Added note "Where diaphragms are required".
- Table 1.4.3-1** .... Reference to Specification added.
- 1.6.1** ..... Added "for Type HV adhesives" in Paragraph F. Added Paragraph G and Commentary.
- 1.6.5** ..... Updated link to MathCAD program. Moved design examples to the LRFD Design Examples web page, deleted from SDG and a link added.
- 1.7** ..... Updated AASHTO and FDOT load rating references in Paragraph A.
- 2.1.2** ..... Updated FDOT load rating reference in Commentary.
- 2.4.3** ..... Modified Paragraph C per Structures Design Bulletin C10-01.
- 2.6.4** ..... Deleted last sentence in Paragraph D.
- 2.8** ..... Renamed Section (Deleted "Distribution for Beam-Slab Bridges"). Added Subsections.
- 2.8.1** ..... Added Section Title.
- 2.8.2** ..... Added Section.
- 2.9** ..... Extended the applicable range of the live load distribution factors per LRFD in Paragraph A.

- 2.12** ..... Added Paragraph D.
- 3.1** ..... Added reference to Buy America provisions to Paragraph B. Revised Paragraph C.
- 3.5.1** ..... Clarified tensile stress limits for piles in Paragraph A.
- 3.5.2** ..... Revised references to SDG 3.11.
- 3.5.4** ..... Revised pile spacing requirements.
- 3.5.6** ..... Added Commentary per Structures Design Bulletin C10-02 and revised Table 3.5.6-1.
- 3.8** ..... Updated LRFD section number in Paragraph A.
- 3.9** ..... Revised units from inches to feet in Paragraph C.
- 3.10** ..... Added language in Paragraph A to allow an approximation of the biaxial bending tension stress in reinforcing.
- 3.11** ..... Added paragraph H and renumbered subsequent paragraphs. Added requirements for "framed straddle pier columns" and "all other pier types and components not listed" and removed "bars only" constraint from Table 3.11-1. Added Table 3.11-2.
- 3.12** ..... Added guidance for wall system selection to Paragraph A. Deleted reference to the PPM in Paragraph C. Added Figure 3.12-2 and Table 3.12-1.
- 3.12.1** ..... Deleted "Conventional" from section heading. Revised Paragraph A.
- 3.12.3** ..... Corrected spelling of wall type and deleted reference to PPM in Paragraph E.
- 3.12.7** ..... Corrected wall system name in Paragraph B.
- 3.13.1** ..... Added reference to SDM to Paragraph A. Added "or longitudinal drainage conveyances" to Paragraph D.
- 3.13.2** ..... Deleted Table 3.13.2-1 and revised references to it in Paragraphs A and J to Figure 3.12-2. Changed "exceeds" to "exceed" in commentary. Added reference to SDM to Paragraph F. Deleted "Back" from Figure 3.13.2-4 title. Clarified Paragraphs I and M. Added Paragraph O.
- 3.13.3** ..... Added Paragraph F.
- 3.14.4** ..... Changed loaded height from 30 to 24 in Paragraph B.2. Changed depth limitation from 30 feet to 18 feet, clarified embedment assumption for plastic and prestressed concrete piles, and changed channel depth to 18 feet in Paragraph B.3.
- 3.14.5** ..... Clarified basis for pile length determination in Paragraph E. Added "Prestressed Concrete" to Paragraph J.

- 4.1.2** ..... Relocated requirements to SDG 1.4.1.
- 4.2.1** ..... Clarified limits of bridge for length determination.
- 4.2.3** ..... Clarified application of Pay Item numbers 400-7 and 400-9 in Paragraph A. Revised referenced article in Paragraph B.
- 4.2.4** ..... Revised "TL-5" to "TL-4" for 42-inch Vertical Face Barrier.
- 4.2.5** ..... Revised "TL-5" to "TL-4" for 42-inch Vertical Face Barrier.
- 4.2.8** ..... Modified language in Paragraph A to set the maximum joint spacing length based on concrete placement rates. Moved sequence criteria from Paragraph A to Paragraphs B and C. Deleted spacing limits from Paragraph E. Revised Commentary to include production rates.
- 4.2.10** ..... Revised Paragraph B per Structures Design Bulletin C10-05.
- 4.2.13** ..... New section.
- 4.3.1** ..... Added clarification that Florida-I Beams are the preferred I-shaped beam. Relocated last paragraph of 4.3.1.B to Paragraph C, Item 3. Added language per Structures Design Bulletin C10-01. Replaced Paragraph C, Item 1. Added reference to the Instructions for Design Standards to Paragraph D and revised in Paragraph F. Added Paragraphs G and H with Commentary, per Structures Design Bulletin C10-01.
- 4.3.4** ..... New section per Structures Design Bulletin C10-01.
- 4.5.1** ..... Added Paragraphs D, E and F.
- 4.5.5** ..... Clarified that coupler is to be a "segmental duct coupler" in Paragraph E. Added clarification on the use of steel pipe ducts and use of plastic duct in Paragraph I.
- 4.5.6** ..... Revised minimum thickness requirements.
- 4.5.8** ..... Added Paragraph A, D and Commentary. Renumbered paragraphs B and C.
- 4.6** ..... Relocated paragraph to Section 4.6.1 and replaced with new language and cross reference.
- 4.6.1** ..... Added Paragraph relocated from Section 4.6. Revised requirements for light and outlet spacing in Paragraph B. Changed "doors" to "openings" in Paragraph C.1. Revised access opening size and placement criteria in Paragraphs C.4, C.5 and C.6. Added Paragraph C.7.
- 4.6.10** ..... Revised Load Rating references.
- 4.7** ..... New section.
- 5.4** ..... Clarified bolt requirements.

- 5.6.2**..... Revised requirements for light and outlet spacing in Paragraph B. Changed "doors" to "openings" in Paragraph C.1. Revised access opening size and placement criteria in Paragraphs C.4, C.5 and C.6. Added Paragraph C.7.
- 5.6.3**..... Revised Paragraphs A and B. Added Paragraph C.
- 5.7**..... Revised Paragraph A.
- 5.8**..... Revised Paragraphs A, B and C.
- 6.5**..... Added Paragraphs E and F.
- 6.5.2**..... Revised per Structures Design Bulletin C10-05.
- 6.6**..... Deleted and moved content of section to SDM. Added cross reference.
- 6.7.8**..... Revised Figure 6.7.8-1.
- 6.8**..... Revised per Structures Design Bulletin C10-01.
- 7.1.1**..... Revised Paragraphs A, B, C, E, Figure 7.1.1-1 and Commentary.
- 7.3.7**..... Added Paragraph G.
- 7.6**..... Added Paragraphs F and G per Structures Design Bulletin C10-05.
- 7.7**..... Revised Paragraph A to direct the designer to contact the DSDO regarding grooving.
- 8.7.6**..... Added Paragraph D and renumbered subsequent paragraphs.
- 8.8**..... Deleted "Architectural Design" from Section heading. Revised Paragraph A. Added reference to Life Safety Code in Paragraph B.
- 8.8.1**..... Clarified square footage requirements in Paragraph F. Revised Paragraph H.
- 8.8.5**..... Added "Guards" to Section heading. Added Paragraphs A, B and D. Revised and/or renumbered remaining Paragraphs.
- 8.8.12**..... Revised Paragraph C and added Commentary.
- 9.2.2**..... Deleted "Steel" from Paragraph B title. Revised unit prices.
- 9.2.3**..... Deleted rural and urban cost modifiers under Step Two and renumbered subsequent items.
- 9.4**..... Added quantities per Structures Design Bulletin C10-06.
- 10.4**..... Revised per Structures Design Bulletin C10-07.
- 10.5**..... Revised per Structures Design Bulletin C10-07.
- 10.7**..... Revised per Structures Design Bulletin C10-07.
- 10.18**..... Replaced "VECP" with "Cost Savings Initiative".

## VOLUME 2 - REVISION HISTORY

Note that the format for references to LRFD, CPCH, PPM, Design Standards and Instructions for Design Standards has been revised in various locations throughout this Volume for consistency. There is no change to technical content in these instances.

- 1.2**.....Replaced Paragraph A.
- 4.3**.....Added Paragraph F.
- 5.1**.....Added new first sentence to Paragraph F.
- 5.2**.....Deleted Item 3 in Paragraph G. Added guidance on Traffic Control Plans notes and a reference to Design Standards Index 600 to Paragraph P.
- 6.1**.....Revised slope protection detail design aid links in Paragraph B.
- 9.1**.....Added new first sentence to Paragraph C.
- 9.2**.....Added requirements to show superstructure and substructure in Paragraphs A, B & G.
- 9.3**.....Added Paragraph I. Renumbered subsequent Paragraphs.
- 11.2**.....Added new Paragraph V.
- 11.3**.....Added third sentence to Paragraph E.
- 12.2**..... Added clarification for bridges with horizontal curve geometry in Paragraph I.
- 12.5**..... Combined 12.5.E and 12.6.G and added criteria for top of drilled shaft elevations. Relocated and renumbered Figures 12.6-2 and 12.6-3. Added new Figures 12.5-2 and 12.5-4.
- 12.6**.....Relocated Paragraph G to 12.5.E and relocated Figures 12.6-2 and 12.6-3 to Section 12.5.
- 13.2**.....Relocated Figure 13.2-2 to Chapter 22. Redirected cross reference in Paragraph J.
- 13.5**.....Revised minimum footing depth requirements in Paragraph G. Revised Figure 13.5-3. Added Figure 13.5-4.
- 13.7**.....Deleted "minimum" from pile embedment requirement in Paragraph E.
- 13.8**.....Updated link and reference to the Bridge Aesthetics Sourcebook.
- 13.10**.....Added Paragraph I.
- 13.11**.....Added Paragraph C.
- 13.12**.....Added Paragraphs C and D.
- 13.13**.....Added Paragraph A, renumbered subsequent Paragraphs and added Paragraphs I and J.

- 14.2**.....Split Paragraph A and added clarification. Renumbered Section.
- 14.4**.....Added new Paragraphs H and I.
- 15.2**.....Revised Item 3 per Structures Design Bulletin C10-05. Added "intermediate" to Paragraph F.
- 15.3**.....Added reference to Paragraph O.
- 15.4**.....Added second sentence to Paragraph B.
- 15.5**.....Deleted previous Section 15.5 (Superstructure Drawings - Concrete Diaphragms) per Structures Design Bulletin C10-05 and renumbered subsequent Sections. Renumbered Section 15.5 (previously section 15.6) revised per Structures Design Bulletin C10-05.
- 15.6**.....Renumbered Section (previously 15.7). Revised first Paragraph. Relocated specific requirements and Figure 15.6-1 Chapter 22.
- 15.7**.....Renumbered Section (previously 15.8).
- 15.8**.....Renumbered Section (previously 15.9). Revised per Structures Design Bulletin C10-05. Added Commentary to Paragraph B.
- 15.9**.....Renumbered Section (previously 15.10). Revised title for Figure 15.9-1. Revised first sentence in Paragraph B. Revised Figures 15.9-2 through 15.9-5.
- 16.6**.....Added last sentence to Paragraph B. Changed "web" to "top flange" in Paragraph H. Revised Figure 16.6-4.
- 16.8**.....Revised Figures 16.8-1 and 16.8-2.
- 16.9**.....Added clarifications to Items 2 and 3 in Paragraph B. Revised Figures 16.9-1 and 16.9-2.
- 16.11**.....Revised weld and closure pour requirements in Paragraphs F and G. Revised Figure 16.11-5.
- 19**.....New Chapter.
- 20**.....New Chapter.
- 21**.....New Chapter.
- 22**.....New Chapter.

## VOLUME 6 - REVISION HISTORY

- Chapter 1** .... Deleted previous Chapters 1 and 3. Renumbered chapter and changed title to "Concrete Sound Barriers". Removed references to Perimeter Walls throughout entire Chapter. Revised format of references to Design Standards and Specifications for consistency, though there is no change to technical content in these instances.
- 1.1** ..... Added first sentence. Deleted Paragraph D. Changed "Sound Barrier" to "Concrete Sound Barrier" in Paragraphs A & C.
- 1.2** ..... Deleted definitions for Crash Tested Perimeter Wall Systems, Crash Tested Sound Barrier Systems, NCHRP, Perimeter Wall, Perimeter Wall Panel, and Perimeter Wall System. Revised definition of Sound Barrier Panel.
- 1.3.1** ..... Updated referenced standard list.
- 1.3.2** ..... Updated referenced standard list.
- 1.4.1.1** ..... Updated references in first Paragraph. Added second and third Paragraphs.
- 1.4.1.2** ..... Deleted first three Paragraphs. Removed reference to steel H post from new first Paragraph. Added new second Paragraph. Replaced new third Paragraph. Deleted references to steel and bottom concrete panel from new fourth Paragraph and Commentary.
- 1.4.1.3** ..... Added new second Paragraph. Clarified deflection requirements and soil NPT values in the fourth Paragraph. Added auger cast pile and shallow foundation Paragraphs. Deleted corrosion related Paragraphs and Table. Deleted post compatibility Paragraph. Deleted steel reference from Commentary.
- 1.4.1.4** ..... Deleted wind load pressures, assumed soil conditions. Deleted subsequent sections: Deleted Section "Crash Tested Sound Barrier and Perimeter Wall Systems (Within Clear Zone Only)" (previously 2.4.1.5) and "Panel to Post Connections" (previously 2.4.1.6).
- 1.4.2.1** ..... Deleted entire section except for references to absorptive materials and added 25 year design life.
- 1.4.2.2** ..... Added 50 year design life. Deleted subsequent sections: "Steel" (previously 2.4.2.3), "Masonry" (previously 2.4.2.4), "Aluminum" (previously 2.4.2.5), "Plastics" (previously 2.4.2.6), "Other Materials" (previously 2.4.2.7) and "Transparent Panel Materials" (previously 2.4.2.8)
- 1.5** ..... Deleted previous Section "Impact" (previously 2.5) and Renumbered subsequent Sections. Removed language allowing TL-4 barriers on the QPL. Deleted Paragraph three.
- 1.6.1** ..... Deleted last three sentences.
- 1.8** ..... Deleted height limits.
- 1.11** ..... Deleted old Paragraph B and renumbered subsequent Paragraphs.
- 1.12** ..... Deleted Section "Coatings and Coating Systems" (previously 2.13). Renumbered "Repairability" Section and replaced content.
- 1.13** ..... Replaced entire Section.

## VOLUME 9 - REVISION HISTORY

- 1.1 .....Added new Commentary.
- 2.1 .....New Section and Commentary.
- 2.4.2 .....Deleted Commentary.
- 2.4.2.2 .....Added new first and last Paragraphs to Commentary.
- 2.4.2.4 .....Replaced Section content. Added new Commentary.
- 2.4.2.5 .....New Section and Commentary.
- 3.8.2 .....Added second Paragraph to Commentary.
- 3.8.3 .....Corrected Title for consistency with LTS-5.
- 3.9.1 .....Added new first Paragraph and Table to Section. Added second Paragraph to Commentary.
- 3.9.3 .....New Section and Commentary.
- 5.4 .....New Section and Commentary.
- 5.13 .....New Section and Commentary.
- 5.15.1 .....Clarified locations that circumferential welds are not permitted. Added Commentary.
- 5.16 .....Added Commentary.
- 5.17 .....Revised Title for consistency with LTS-5. Added Commentary.
- 5.17.1 .....Removed proprietary information and replaced with non-proprietary description. Added Commentary.
- 5.17.2 .....New Section and Commentary.
- 5.17.3 .....Revised Title and numbering for consistency with LTS-5.
- 5.17.4 .....Revised Title and numbering for consistency with LTS-5.
- 5.17.4.3 .....Added Commentary.
- 6.1 .....New Section and Commentary.
- 7.5.1 .....New Section and Commentary.
- 7.5.2 .....New Section and Commentary.
- 7.10.2 .....New Section and Commentary.
- 10.5 .....New Section and Commentary.
- 11 .....Deleted Section 11.1 and C 11.1.
- 11.6 .....New Section and Commentary.

- 11.7.1** .....New Section and Commentary.
- 11.8** .....New Section and Commentary.
- 13.6** .....Replaced "preferred" with "standard". Added Commentary.
- 13.6.1.1** .....Added new content after first sentence of Section. Added Commentary.
- 13.6.2** .....Clarified reinforcing requirements and addressed cantilever structures.  
Added Commentary.
- 13.6.2.1** .....Corrected format in first sentence. Added second sentence to second  
Paragraph. Added Commentary.
- 13.11** .....New Section.
- C.1** .....Added additional permitted design assumptions. Included "Add the  
following:" in Commentary for consistency.
- C.2** .....Added Commentary.