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MEMORANDUM

TO: ALL CONSULTANTS
ALL BRIDGE DESIGNERS

FROM: PAUL FOSSIER, P.E.
BRIDGE DESIGN ENGINEER ADMINISTRATOR 

SUBJECT: BRIDGE DESIGN TECHNICAL MEMORANDUM NO. 50 (BDTM.50)
PUBLICATION OF LADOTD BRIDGE DESIGN AND EVALUATION MANUAL
(BDEM)

DATE: November 17, 2014

Effective immediately, the new *LADOTD Bridge Design and Evaluation Manual (BDEM)* shall be implemented for all projects in preliminary plan stage. For projects in final plan stage, the provisions in the *BDEM* should be implemented whenever possible while not delaying project delivery. The *BDEM* has the objective of obtaining uniformity and establishing standard policies and procedures in the preparation of engineering and construction plans for bridge and highway structures in Louisiana. The *BDEM* has been published on the LADOTD Bridge Design Section website under the heading *Bridge Design and Evaluation Manual*.

BDEM Organization

The *BDEM* is divided into four parts:

Part I – *Policies and Procedures*

Part II – *Design Specifications:*

Volume 1 – *Bridge Design*

Volume 2 – *Movable Bridge Design*

Volume 3 – *Structural Supports for Permanent Highway Signs and High Mast Lighting*

Volume 4 – *Highway Safety*

Volume 5 – *Bridge Evaluation/Rating*

Part III – *Design and Detail Aids*

Part IV – *Background Information*

BDEM Part I documents policies and procedures for the Bridge Design Section. *BDEM* Part II documents all design related provisions. For fixed bridges and appurtenant components, provisions of the latest *AASHTO LRFD Bridge Design Specifications* shall govern where applicable, except as specifically modified by the requirements of *BDEM* Part II – Volume 1. For movable bridges and appurtenant components, provisions of the latest *AASHTO LRFD Movable Highway Bridge Design Specifications* shall govern where applicable, except as specifically modified by the requirements of *BDEM* Part II - Volume 2. For structural supports for permanent signs and high mast lighting, provisions of the latest *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals* shall govern where applicable, except as specifically modified by the requirements of *BDEM* Part II – Volume 3. For highway safety, provisions of the latest *AASHTO Roadside Design Guideline* shall govern where applicable, except as specifically modified by the requirements of *BDEM* Part II – Volume 4. For bridge evaluation and rating, provisions of the latest *AASHTO The Manual for Bridge Evaluation*

shall govern, except as specifically modified by the requirements of *BDEM* Part II –Volume 5. *BDEM* Part III documents all design and detail aids. *BDEM* Part IV documents the background information for the development of design provisions in Part II.

BDEM Format

BDEM Part I – Policies and Procedures is organized into Chapters. All references to *BDEM* Part I carry the prefix "P" followed by a section number. For example, P1.1 refers to Section 1.1 in Chapter 1, P6.2.5 refer to Section 6.2.5 in Chapter 6, etc.

BDEM Part II - Design Specifications is divided into five volumes. Each volume corresponds to a separate AASHTO code, and the Chapters and Sections in each volume parallel the corresponding AASHTO code. Within each volume, all references to the corresponding AASHTO code sections, articles, equations, figures or tables carry the prefix "A" and all references to the corresponding AASHTO code commentary carry the prefix "AC". When referencing publications other than the corresponding AASHTO code in each volume, the name of the publication and the section or article number will be specified. All references to *BDEM Part II - Design Specifications*, carry the prefix "D", and all references to commentary of Part II carry the prefix "DC". The volume number will be specified when referencing *BDEM* Part II provisions in different volumes. When a *BDEM* Part II article modifies and/or adds information to a corresponding AASHTO code article, the first sentence shall read, "The following shall supplement Ax.x.x". When a Part II article replaces a corresponding AASHTO code article, the first sentence shall read, "The following shall replace Ax.x.x". For tables and figures shown in Part II that are not in the AASHTO code, each table and figure will be given a unique name, but without a number. For easy reference, all tables and figures are listed in the Table of Contents for each chapter.

BDEM Part III – Design and Detail Aids is organized into Chapters. All references to *BDEM* Part III carry the prefix "DD" followed by a section number. For example, DD1.1 refers to Section 1.1 in Chapter 1, DD2.2 refers to Section 2.2 in Chapter 2, etc.

BDEM Part IV – Background Information is organized into Chapters. All references to *BDEM* Part IV carry the prefix "B" followed by a section number. For example, B1.1 refers to Section 1.1 in Chapter 1, B2.2 refers to Section 2.2 in Chapter 2, etc.

Bookmarks are created in the *BDEM* for easy access to each section.

Maintenance and Revision of *BDEM*

Maintenance and revision of the *BDEM* is the responsibility of the LADOTD Bridge Design Section. If a user believes that modifications and/or additions to the *BDEM* would improve the current design practice, they shall follow the course of action described in *BDEM* Part I Section 2.1 (P2.1). Future revisions will be distributed through Bridge Design Technical Memoranda (BDTM). For questions or comments related to the *BDEM*, or to report errors in the *BDEM*, users shall submit the online *BDEM* Comment Form, found on the Bridge Design Section website under the heading *Bridge Design and Evaluation Manual*.

The *BDEM* revision history will be documented beginning from the date of this publication. At this time, the manual has the publication date of 11/17/2014 on the bottom left side of each page. The date on each page will be changed to a new revision date whenever the page is revised. The outdated pages to be replaced will be archived.

Whenever a new edition of the AASHTO Specifications referenced in *BDEM* Part II is published, a BDTM will be issued to advise users when to implement the new edition. This will typically be done within three months after the publication date.

Consultant Projects

For consultant projects, all provisions in the *BDEM* published before the Notice to Proceed (NTP) date for the contract shall be implemented. The Bridge Task Manager shall review *BDEM* revisions made after the NTP date and make the determination whether or not to implement them. Revisions should be implemented when there will be no impact to project schedule or project scope. When *BDEM* revisions that will alter project scope and may delay project delivery are deemed necessary, the Bridge Task Manager shall submit the proposed scope changes along with justification for the changes to the Bridge Design Engineer Administrator for approval.

In-House Projects

Similar to consultant projects, in-house projects shall implement all *BDEM* revisions whenever possible during the project development process. When *BDEM* revisions that will alter project scope and may delay project schedule are deemed necessary, the Bridge Task Manager shall submit the proposed scope changes along with justification for the changes to the Bridge Design Engineer Administrator for approval.

Implementation of Latest AASHTO Specifications

Effective immediately, the following latest AASHTO Specifications referenced in *BDEM* Part II shall be implemented.

- Volume 1 – Bridge Design:
AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014
- Volume 2 – Movable Bridge Design:
AASHTO LRFD Movable Highway Bridge Design Specifications, 2nd Edition, with 2008, 2010, 2011, 2012, 2014, and 2015 Interim Revisions
- Volume 3 – Structural Support for Permanent Highway Signs and High Mast Lighting:
AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition
- Volume 4 – Highway Safety:
AASHTO Roadside Design Guide, 4th Edition
- Volume 5 – Bridge Evaluation/Rating:
AASHTO The Manual for Bridge Evaluation, 2nd Edition, with 2011, 2013, 2014, and 2015 Interim Revisions

Archived Manuals

The *BDEM* shall supersede the following documents: *LADOTD Bridge Design English Manual* (Fourth English Edition, Version 1.4, May 23, 2005), *LADOTD Bridge Design Metric Manual*, and *LADOTD LRFD Bridge Design Manual*. These manuals will remain on the Bridge Design Section website under the heading of *Bridge Design and Evaluation Manual/Archived Manuals*. However, these manuals still contain relevant design guidance that has not yet been fully adopted into the *BDEM*, such as Table 6.1 (Maximum Factored

Axial Compressive Load Allowed) in the *LRFD Bridge Design Manual*. Design guidance from these manuals can be applied when needed, as long as there is no conflict with guidance given in the *BDEM*. The Bridge Design Section is in the process of reviewing all information in these manuals and will eventually incorporate all valid information to the *BDEM*. At that time, these manuals will be fully replaced by the *BDEM*.

Any pages in the *BDEM* that are revised in the future will also be archived in the same location.

Guidelines

The following three guidelines are referenced in the *BDEM* and are now posted on the Bridge Design Section website under heading of *Bridge Design and Evaluation Manual/Guidelines*.

- Federal Aid Off-System Highway Bridge Program Guidelines 2009-2011
- Guide to Constructing, Operating, and Maintaining Highway Lighting Systems
- Policies and Guidelines for Bridge Rating and Evaluation.

The content of these guidelines shall be considered as part of the *BDEM*.

Published BDTMs

All published BDTMs shall be considered as part of the *BDEM*. The content of the BDTMs listed below has been incorporated in the *BDEM* text, and the BDTM index has been updated to reflect the changes.

BDTM No.	Subject	BDEM Section No.
BDTM.01	LRFD Bridge Design Manual Version 2008.1	various
BDTM.02	Live Load Factor for Service III Limit State	Table 3.4.1-1
BDTM.03	Publication of Policies and Guidelines for Bridge Rating and Evaluation	Pt II Vol 5
BDTM.06	Suspension of Empirical Deck Design	Pt II Vol 1 - 9.7.2.1
BDTM.08	Revision of the Policies and Guidelines for Bridge Rating and Evaluation	Pt II Vol 5
BDTM.09	Policy on Distribution of Bridge Standard Plans and Special Details	Pt I - 9.3
BDTM.14	Friction Connection Criteria Clarification	Pt II Vol 1 - 6.13.2.8
BDTM.15	Vertical Reinforcement in Prestress Girders for Overpass Structures	Pt II Vol 1 - 5.8.2.7
BDTM.17	Epoxy Coated Reinforcing Steel	Pt II Vol 1 - 5.4.3.1
BDTM.19	Prestressed Girder Deck Cantilever	Pt II Vol 1 - 9.7.1.5
BDTM.23	Bridges Vulnerable to Coastal Storms	Pt II Vol 1 - 1.1
BDTM.24	Welded Shear Studs	Pt II Vol 1 - 6.10.10.1
BDTM.25	Policy on Responsibility for Bridge Standard Plans and Special Details	Pt I Ch 3
BDTM.26	Retention Policy for Shop Drawings and Working Drawings	Pt I Ch 3 Appendix F
BDTM.27	Design Limits and Special Notes for Precast Prestressed Concrete Girders	Pt II Vol 1 - 5.14.1.2
BDTM.28.1	Louisiana Design Vehicle Live Load 2011 (LADV-11)	Pt II Vol 1 - 3.6.1.2
BDTM.35	Records Retention Policy	Pt I Ch 3 Appendix F
BDTM.37	Bridge Design Section Policy on QC/QA	Pt I Ch 3
BDTM.40.1	Design Policy for Bridge Rehabilitation/Repair Projects	Pt I Ch 6
BDTM.41	Pre-Approved Software List	Pt I - 3.5
BDTM.46	Concrete Cover in Roadway Median Barriers	Pt II Vol 1 - 5.12.3

This technical memorandum is posted on the Bridge Design Website under Technical Memoranda.
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Bridge_Design/Pages/Technical-Memoranda.aspx

Please contact Ms. Zhengzheng “Jenny” Fu (225-379-1321, zhengzheng.fu@la.gov) if you have questions or comments.

PF/zzf/al

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