Development of the New LADOTD Bridge Design Manual

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Outline

- Why a New Manual?
- Purpose
- Organization and Format
- Development Process
- New Manual Update
- Major Activities
Why a New Manual?

- LRFD and LRFR implementation mandated by FHWA
  
  LRFD  10/1/2007
  LRFR  3/3/2009

- Current Manuals need update

  LADOTD Bridge Design Manual

  LADOTD LRFD Bridge Design Manual

  LADOTD The Policies and Guidelines for Bridge Rating and Evaluation (LRFR)
  (3/3/2009)

➢ Need a comprehensive Manual which covers the full spectrum of highway structure design and includes Policies and Procedures and Design Specifications.

**Five major areas** of highway structure design:

Bridge Design

Movable Bridge Design

Structural Supports for Permanent Highway Signs and High Mast Lighting

Highway Safety

Bridge Evaluation/Rating

- Need a Manual that is compatible with the AASHTO Design Specifications.
AASHTO Design Specifications

Bridge Design:

AASHTO LRFD Bridge Design Specifications
AASHTO Design Specifications cont.

Movable Bridge Design:

AASHTO LRFD Movable Highway Bridge Design Specifications
AASHTO Design Specifications cont.

Structural Supports for Permanent Highway Signs and High Mast Lighting:

AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals
AASHTO Design Specifications cont.

Highway Safety: AASHTO Roadside Design Guide
AASHTO Design Specifications cont.

Bridge Evaluation/Rating:

AASHTO The Manual for Bridge Evaluation (LRFR)
Purpose of the New Manual

- Supplement the AASHTO Design Specifications on the specific requirements for Louisiana.
- Establish policies and procedures and achieve uniformity in the preparation of design and construction plans for highway structures in Louisiana.
Organization of the New Manual

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
Format of the New Manual

Each Volume in Part II will use the same numbering system as the corresponding AASHTO Specifications.

Part I will have its own numbering system.
Development of the New Manual

3/2009

Formed a Bridge Design Manual Committee to oversee the development of the New Manual and future updates.

The Committee consists of in-house staffs from Bridge Design Section, Construction Section, Geotechnical Section, and Hydraulic Section, a FHWA representative, and a Consultant representative from Modjeski and Masters.

- Four-Year Contract
- $1.5 M
Development of the New Manual cont.

Work on Part II

Work on Part I

1/2012
Publish the New Manual
Development Process for Part II

Step 1

Review of AASHTO provisions and existing practice and develop a needs list for each chapter. The needs list addresses additional items or items to replace or supplement AASHTO provisions.
Step 2

Hold a Consultant and Committee Technical Session for each chapter and discuss the needs list. The Consultant will prepare the technical session summary which will be approved by the Committee.
Development Process for Part II cont.

Step 3
The Consultant prepares 30% draft for each chapter based on the technical session summary.

Step 4
The Consultant prepares 60% draft for each chapter.
Development Process for Part II cont.

Step 5
The Consultant prepares 90% draft for each chapter.

Step 6
The Consultant prepares 90% draft for each volume.

Step 7
The Consultant submits final document for Part II.
Development Process for Part I

Step 1
Develop a Table of Contents.

Step 2
Hold Technical Sessions to discuss the contents for each chapter.

Step 3-7
Same as Part II
Interim Process

- The current Manuals will not be updated.

- Prior to the publication of the new Manual, Bridge Design Technical Memoranda (BDTM) will be issued from the State Bridge Engineer for any additions, updates or changes to the current Manuals and current practices.

- BDTMs must be included as part of the current Bridge Design Manuals.
New Manual Update

After the publication of the new Manual, whenever a user feels strongly that revisions to the BDM are needed, the following course of action shall be taken:

1) Complete the revision request form which will be posted on the website and submit it to the State Bridge Engineer.

2) The State Bridge Engineer will review the recommended revision and transmit it to the Assistant State Bridge Engineer who is in charge of the Manual for processing.
3) The recommended revision will be distributed to the Bridge Design Manual Committee for review. The Committee will make recommendation for acceptance or rejection to the State Bridge Engineer for approval.

4) If the revision is accepted, the revised or added pages will be assigned a revision date and issued by a BDTM.
5) If the revision is not accepted, the State Bridge Engineer will notify the originator and state the reasons for not accepting it.
New Manual Update cont.

✓ Whenever AASHTO issues revisions to its Design Specifications, the Assistant State Bridge Engineer, who is in charge of the Manual, is responsible for reviewing the AASHTO revisions and recommending the revisions to the BDM. The same course of actions will be followed.
Major Activities Since 12/2009

- Held technical sessions and completed 30% submittals for Chapter 1 to 5 of Volume 1, Bridge Design.
- Held technical sessions and completed 30% submittals for Chapter 1 to 4 of Volume 2, Movable Bridge Design.
Major Activities Since 12/2009 cont.

- Working on new Louisiana Live Load Model to envelope the load efforts from the (8) Louisiana Special Design Vehicles.

(see next presentation for details)
Major Activities Since 12/2009 cont.

- Working on new Structural Concrete Classes

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<tr>
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<th>Applications</th>
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<td>MASS</td>
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<td>S</td>
<td>4 ksi</td>
<td>Drilled Shaft/Seal</td>
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<td>P1-P4</td>
<td>6, 7.5, 8.5, 10 ksi</td>
<td>Precast Concrete</td>
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All concrete classes will be HPC with Permeability requirement (or equivalent Surface Resistivity) of 1500 Coulombs for moderate corrosive condition and 1000 Coulombs for severe corrosive condition.
Major Activities Since 12/2009 cont.

- Working on the new Louisiana Precast Prestressed Girders
Major Activities Since 12/2009 cont.

LG-36  LG-45  LG-54  LG-63

LG-72  LG-78
Visit Bridge Design Website

http://www.dotd.la.gov/highways/project_devel/design/home.asp?ID=BRIDGE
Welcome to the Bridge Design Section Home Page. This site will provide you with information on our mission, projects and section contacts. Links are provided for plan development downloads and design related web sites.

Mission of Bridge Design Section

To design and detail bridges and related structures which are cost effective and conform to the current national and state safety standards. Provide quality plans, technical studies, roadside and...
Thank you!