MEMORANDUM

TO: ALL BRIDGE DESIGNERS - IN-HOUSE AND CONSULTANTS

FROM: ZHENGZHENG "JENNY" FU, P.E.
           BRIDGE DESIGN ENGINEER ADMINISTRATOR

SUBJECT: BRIDGE DESIGN TECHNICAL MEMORANDUM NO. 112.1 (BDTM.112.1)
           SWING SPAN MAXIMUM STARTING TORQUE – BDEM REVISION

DATE: April 25, 2023

This BDTM revises and replaces BDTM.112 to correct an error in the revised language for the LADOTD Bridge Design and Evaluation Manual (BDEM), Part II, Volume 2, Section 5.4.3.

Effectively immediately, implement the following revision in accordance with Bridge Design and Evaluation Manual, Preface, section titled "Implementation Policy of BDEM and Revisions."

This BDTM revises the LADOTD Bridge Design and Evaluation Manual (BDEM), Part II, Volume 2, Section 5.4.3. Revisions are shown in the following attached documents:

- Revised Section 5.4.3 - Clean Copy
- Revised Section 5.4.3 - Redline Copy

Revision summary:
- The wind load to be used for the determination of swing span movable bridge Maximum Starting Torque is reduced from the previous value of 10 psf minimum to 7 psf minimum.
- The commentary is revised to direct designers to ASCE 7 for wind load calculation.
- The background for this revision is addressed in commentary C5.4.3 (attached).

This technical memorandum is posted on the LA DOTD Website at the following LA DOTD internet location:

Inside La DOTD > *Divisions - Engineering* > *Bridge Design* > *Technical Memoranda – BDTMs.*

Please contact Kelly Kemp (kelly.kemp@la.gov or 225-379-1809) if you have questions or comments.

ZZF/jh
Attachments

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David Smith (Project Development Division Chief)
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Mary Stringfellow (FHWA)
Charles Aziabor (FHWA)
District Administrators and ADAs of Engineering and Operations
District Bridge Engineers and Area Engineers

5.4.3 Swing Spans

The following shall replace the 1st paragraph in 5.4.3.

Maximum Starting Torque (T_S) – Shall be determined for span operation against static frictional resistances, a minimum wind load of 7 psf ~~10 psf~~ on any vertical projection of the open bridge, and shall include inertial resistance due to acceleration. A 10 second acceleration time may~~shall~~ be used when calculating the acceleration time for the maximum starting torque. Provision shall also be made for the Maximum Operating Wind Pressure applied on one arm and one-half of the Maximum Operating Wind Pressure applied on the other arm.~~Provision shall also be made for a wind load of 10 psf on one arm and 5 psf on the other arm.~~

In Louisiana, ice loading shall be neglected.

C5.4.3

Use ASCE 7 standard to calculate wind loads.

According to the LADOTD Hurricane Bridge Plan (available on the LA DOTD Intranet site under Emergency Operations), it is the policy of LADOTD to suspend operation of a movable structure when sustained wind speeds reach tropical storm levels (aproximately 39 mph). This wind speed corresponds to a wind load of about 4 psf. A 7 psf wind load corresponds to an approximate wind speed of 52 mph, which provides a margin of safety above the tropical storm sustained wind speed. A bridge will still be able to operate in higher wind speeds, but it will open more slowly.

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