



Office of Engineering
Project Development Division
Bridge Design Section
PO Box 94245 | Baton Rouge, LA 70804-9245

John Bel Edwards, Governor
Eric Kalivoda, Ph.D., Secretary
Christopher P. Knotts, Chief Engineer

MEMORANDUM

TO: ALL BRIDGE DESIGNERS - IN-HOUSE AND CONSULTANTS

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

SUBJECT: BRIDGE DESIGN TECHNICAL MEMORANDUM NO. 112 (BDTM.112)
SWING SPAN MAXIMUM STARTING TORQUE - REVISION

DATE: April 10, 2023

Digitally signed by Zhengzheng Fu
DN: cn=Zhengzheng Fu, o=LADOTD, ou=bridge
design, email=zhengzheng.fu@la.gov, c=US
Date: 2023.04.10 10:53:57 -05'00'

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

- c: Christopher P. Knotts (Chief Engineer)
Chad Winchester (Deputy Chief Engineer)
Peggy Paine (Critical Projects Division Administrator)
David Smith (Project Development Division Chief)
Michael T. Donmyer (Assistant Secretary of Operations)
David Miller (Chief Maintenance Administrator)
Haylye Brown (Bridge Maintenance Administrator)
Michael Vosburg (Chief Construction Division Engineer)
Brian Owens (Construction Engineer Administrator)
Chris Nickel (Pavement and Geotechnical Engineer Administrator)
Robert Isemann (Road Design Engineer Administrator)
Mark Chenevert (Contract Services Administrator)
Mary Stringfellow (FHWA)
Charles Aziabor (FHWA)
District Administrators and ADAs of Engineering and Operations
District Bridge Engineers and Area Engineers

Inactive

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 on any vertical projection of the open bridge, and shall include inertial resistance due to acceleration. A 10 second acceleration time may be used when calculating the acceleration time for the maximum starting torque.

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 (approximately 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.

Inactive

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.

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 (approximately 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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