State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Serious drought.
Help Save Water!

To: **STRUCTURE POLICY BOARD**
Division of Engineering Services

Date: June 12, 2014

File:

From: BARTON NEWTON
Deputy Division Chief
Structure Policy and Innovation
Division of Engineering Services

Subject: **New Memo to Designers (MTD) 20-17: Understanding Directionality Concepts in Seismic Analysis**

MTD 20-17 provides rules for incorporating ground motion directionality in the seismic design of bridges. These rules are equally applicable for new and existing bridges. The seismic analysis software (CSI Bridge) currently used by Caltrans conforms to all the requirements in this memo.

The Complete Quadratic Combination 3 (CQC3) Method provides a more accurate method for determining the critical direction of the ground motion and is the preferred procedure when performing an Elastic Dynamic Analysis (EDA). However, engineers may continue to use the 30% rule if the CQC3 method is not available in the analysis software selected for their project. MTD 20-17 also includes rules for addressing directionality when performing an Equivalent Static Analysis (ESA) or Nonlinear Time History Analysis (NLTHA).

The requirements of MTD 20-17 apply to all projects that have not reached Milestone 275 "General Plan Distribution,"

c: Tim Craggs – Division of Design
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