

Memorandum

*Making Conservation
a California Way of Life*

To: STRUCTURE POLICY BOARD

Date: October 31, 2019

From: ^{RF} RUTH FERNANDES
Deputy Division Chief (A)
Structure Policy & Innovation
Division of Engineering Services

Subject: **IMPLEMENTATION OF 2014 (FULLY PROBABILISTIC) USGS CALIFORNIA HAZARD MAP**

Effective December 1, 2019, the 2014 USGS California Hazard Map shall be used for determining the seismic hazards for new bridges or bridge widenings without an approved Type Selection and for bridge seismic retrofits without an approved seismic retrofit strategy.

Prior to December 1, 2019, either the 2008 USGS California Hazard Map or the 2014 USGS California Hazard Map may be used for new bridges, bridge widenings, and bridge seismic retrofits being designed using Caltrans Seismic Design Criteria Version 2.0.

Caltrans is currently using the 2008 USGS California Hazard Map for determining ground shaking hazards at bridge sites. However, the 2014 USGS California Hazard Map has several improvements that are based on a better understanding of the sources of earthquakes and improvements to ground shaking attenuation models.

These improvements include a better understanding of how adjacent faults can rupture together, resulting in higher ground shaking hazards at some locations in California. Also, a denser array of instruments has shown that the amplification of ground shaking due to basin effects is smaller than was previously assumed. Finally, geologists studying the historical evidence have concluded that the Cascadia Subduction Zone ruptures more frequently than was previously thought, resulting in an increase in ground shaking hazards for parts of Northern California.

Adopting the 2014 USGS California Hazard Map will provide cost savings where the 975-year ground shaking hazard is lower. More importantly, it should protect Caltrans infrastructure where the evidence suggests that the 975-year ground

shaking hazard is higher. New bridges will be designed for the appropriate level of ground shaking, but a retrofit program may be required for bridges designed for too low a shaking hazard.

For questions or concerns regarding this memorandum, Consultants and Local Agencies should contact the Caltrans' Structure Liaison Engineer. Caltrans staff may contact Mark Mahan, Chief, Office of Earthquake Engineering Analysis and Research, at (916) 227-8404 or mark.mahan@dot.ca.gov.

c: Janice Benton, Chief, Division of Design
Ray Zhang, Chief, Division of Local Assistance
Dennis Agar, Chief, Division of Maintenance
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Attachment (1)