



PEER Lifelines Program Request for Proposal

Proposal Submission Deadline: May 11, 2012

Objective: Develop an amplification function that can be used to modify a response spectrum (at surface) to account for the impact of liquefaction. Emphasis is on identification of conditions resulting in amplification and the magnitude and period range of the amplification. Typical factors may include level and duration of shaking, relative density of the liquefied soil, and thickness and depth of the liquefied strata. Conditions for reduced levels of shaking need not be considered.

Background: In design situations it is commonly assumed that the occurrence of liquefaction will result in reduced levels of ground shaking since the low effective stress of the liquefied soil will limit the level of shear stress that can be transmitted to shallower strata. Since it can't be assured that liquefaction will occur prior to the severest shaking, the design response spectrum is estimated under the assumption that liquefaction doesn't occur. This assumption is likely to be conservative for structures with a short natural period but may be unconservative for structures with a long natural period. This project aims to quantify potential amplification and identify the conditions where it might occur.

Preferred methodology: Emphasis should be placed on use of ground motion time series recorded at sites thought to have liquefied. Coupled or uncoupled finite element soil models will likely be needed to extend observations to a wider range of site conditions.

Project Duration: 12 months

Project Budget: The key items in the proposed budget should be: (a) one-year graduate student researcher, and (b) one-month summer salary for the Principal Investigator.

Proposal Submission Instructions:

1. Use the PEER-Lifelines proposal blank form posted at:
<http://peer.berkeley.edu/lifelines/rfp/>
2. Proposals should be submitted (uploaded) via PEER web site at:
<http://peer.berkeley.edu/lifelines/rfp/>
3. At this point, proposals need not to be submitted via organizations' official sponsored project offices. However, a budget sheet is required (the last page of the blank proposal form).
4. **For this RFP** only public institutions within the PEER Core Universities are eligible to submit proposals. This is because of requirements by the funding source. Other research projects funded by PEER generally have less restrictive requirements.