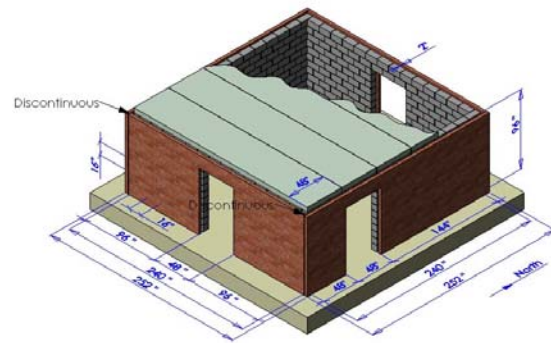
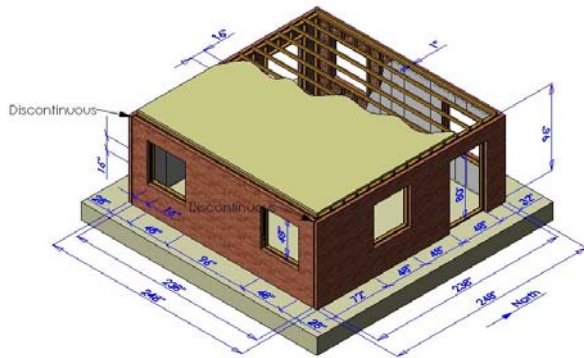


## PERFORMANCE-BASED DESIGN OF MASONRY AND MASONRY VENEER: YOUR CHANCE FOR HANDS-ON PARTICIPATION

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For the past two years, the masonry industry has been working with university researchers and the National Science Foundation's NEES program to develop performance-based design provisions for masonry and masonry veneer. In late January 2009 and in June 2009, this research will culminate with the seismic testing of two full-size structures, one wood-stud frame and the other load-bearing CMU. Both structures will be clad with clay masonry veneer and will be tested to failure on the large outdoor shaking table of the University of California at San Diego. Pictures of these structures are shown in Figure 1 and Figure 2.



**Figure 1.** Full-size, wood-stud frame structure with sheathing, ties and clay masonry veneer, gypboard inside **Figure 2.** Full-size CMU structure with clay masonry veneer

Both specimens will be designed and detailed according to current MSJC requirements, and will provide valuable guidance on design and detailing of masonry and masonry veneer in zones of high seismic risk.

The wood-stud structure will test different types of veneer connectors. Its north wall will have screw-mounted rigid ties and joint reinforcement, spaced at 16 in. horizontally and 24 in. vertically (a "west coast" solution for SDC E). Its west wall will have 22-gage, non-serpentine ties, spaced at 16 in. horizontally and vertically, plus joint reinforcement (a "west coast" solution for SDC D). Its east and south walls will have 22-gage, non-serpentine ties, spaced at 16 in. horizontally and vertically, with no joint reinforcement (an "east coast" solution for SDC D).

The CMU structure will test different types of shear reinforcement and different types of veneer connectors. All walls will use deformed reinforcement in bond beams. Its west side will have bond beams at the bottom course, while its east side will have the first bond beam at the required spacing above the top of the foundation. Its north and west walls will use tri-wire joint reinforcement and veneer connectors at 16 in. vertically. Its south and east walls will use double eye-and-pintle connectors at 16 in. horizontally and vertically, with no joint reinforcement.

In late January 2009 and again in early June 2009, you are invited to join us and your industry colleagues (Table 1) as first the wood-stud structure and then the CMU structure is tested to failure.

- o Prior to each test, industry participants will receive background information on the specimens and their expected behavior.
- o Just before each test, industry participants will attend an on-site briefing and tour of the specimen and shaking-table facility.

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- o During each test, industry participants will observe specific aspects of specimen performance, such as the comparative performance of “west-coast” and “east-coast” veneer connectors, or the comparative performance of veneer with and without bed-joint reinforcement.
- o Press coverage will be heavy, and industry participants will have the opportunity to share their own views on the significance of this testing, and on masonry research in general. .
- o After each test, industry participants will work with researchers to evaluate the test results and the implications that these results may have for seismic design and detailing requirements.

**Table 1.** Masonry Industry Partners on NSF NEES Masonry Project

<b>NSF NEES INDUSTRY PARTICIPANTS</b>			
<b>NAME</b>	<b>TITLE</b>	<b>AFFILIATION</b>	<b>EXPERTISE</b>
J. Gregg Borchelt	Vice President, Engineering and Research	Brick Industry Association, Reston, VA	masonry veneer, masonry structures, earthquake engineering
John Chrysler	Executive Director	Masonry Institute of America, Torrance, CA	masonry veneer, earthquake engineering, masonry constructability
Jamie Farny	Program Manager, Masonry and Special Products	Portland Cement Association, Skokie, IL	masonry mortar, masonry standards
Eric Johnson	Director of Engineering	Brick Industry Association Southeast Region, Charlotte, NC	masonry veneer
Rashod Johnson	President	The Roderick Group, Chicago, IL	masonry structures, masonry constructability
John Melander	Director of Product Standards and Technology	Portland Cement Association, Skokie, IL	masonry mortar, masonry standards
Robert Thomas	Vice President of Engineering and Research	National Concrete Masonry Association, Herndon, VA	masonry structures, masonry testing
Diane Throop	Director of Engineering	International Masonry Institute, Annapolis, MD	masonry structures and masonry constructability
Jason Thompson	Director of Engineering	National Concrete Masonry Association, Herndon, VA	masonry structures, earthquake engineering, masonry testing

#### **For More Information**

Liaison between this NSF NEES masonry testing and our industry participants is being handled through NCMA on behalf of The Council for Masonry Research. If you are interested in participating in the testing in January and June 2009, please email Richard Klingner ([Klingner@mail.utexas.edu](mailto:Klingner@mail.utexas.edu)) and Bob Thomas ([rthomas@NCMA.org](mailto:rthomas@NCMA.org)). You will be placed on an email list for future updates.

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