

# 13TH National Timber Bridge Design Competition Now Open - Results of 2004 Competition Announced

The National Timber Bridge Design Competition for students from universities across the US and Canada is now open, with an entry deadline of April 8, 2005, according to competition coordinators, Southwest Mississippi RC&D, Inc. The competition is open to student chapters of American Society of Civil Engineers (ASCE) and Forest Products Society (FPS). Now beginning its 13th year, the competition is made possible by a grant from the US Forest Service through its Wood In Transportation Program. Additional financial support is provided by the Southern Pine Council of the Southern Forest Products Association, Unit Structures LLC, and Weyerhaeuser Company. Rules for the 2005 competition are posted online at [www.msrcd.org/bridge.htm](http://www.msrcd.org/bridge.htm). For additional information contact Southwest Mississippi RC&D, Inc., competition coordinator, at [southwest@msrcd.org](mailto:southwest@msrcd.org).

Each team must design, construct and test their bridge on their home campus, then submit documentation of their activities and results to a panel of judges for review. The competition is conducted online via the Internet. Each team is required to post design drawings, test results, and project highlights on the Web. Fourteen teams of students from universities across the US matched wits in the recently completed 2004 Competition. For a complete review of 2004 Competition Results and each individual entry including drawings and photos, go to [www.msrcd.org/bridge.htm](http://www.msrcd.org/bridge.htm) and select from menu. Results of 1998-2003 competitions are also posted online.

In 2004, winner of the Best Overall Design Award sponsored by Weyerhaeuser Company was University of Texas at San Antonio ASCE. Their design consisted of a transverse 2-inch x 4-inch deck supported by five longitudinal beams working with a half-through arch

at each curb. The laminated arches each had five 1/4-inch suspension rods supporting the outside beams. This entry also placed second in Best Deck, judged by performance (deflection), weight, percent nonwood, practicality, innovation and aesthetics. The team received cash awards totaling \$1,250 for their efforts, making it the top money-winner also.

The second place money winner was Clarkson University ASCE, taking home \$1,050 in prizes. Their entry placed first in Most Innovative Design, second in Best Overall Design and third in Most Aesthetic. Their bridge support structure was two box girders designed with an internal cable truss system of two 9.5 mm steel cables placed between each girder's three webs.

Other first place awards went to University of Wisconsin-Platteville ASCE for Most Practical Design, to State University of New York-Environmental Science and Forestry FPS for Most Aesthetic Design, to Mississippi State University ASCE for Best Support Structure, and to Washington University at St. Louis ASCE for Best Deck. SUNY-ESF Forest Products Society Chapter also placed second in Most Innovative, taking \$650 in awards, along with Washington University at St. Louis and Mississippi State University.

San Francisco State University ASCE was the third highest money-winner, receiving \$725 for second place in Best Support Structure, third in Best Overall

Design and third in Most Innovative Design. Their bridge featured epoxy resin glue and carbon fiber at all joints to maximize stiffness, use of Brazilian Ipe wood in the two parallel trusses due to its density and resistance to decay, and Simpson Skidguard coated 3/4-inch plywood decking.

Other entries receiving awards were University of Wyoming ASCE for third in both Best Overall Design and Best Support Structure, Ohio State University ASCE for second in Most Aesthetic and third in Best Deck, U.S. Military Academy ASCE for second in Most Practical Design, and University of Massachusetts-Amherst for third in Most Practical Design.

The test bridges were 13.1 feet (4.0-meters) long and 4.3 feet (1.3-meters) wide and were loaded with a test weight of approximately 4,500 pounds. Average weight of the bridge models was 856 pounds (389 kg). At full loading, maximum bridge deflection ranged from 2.39 millimeters to 9.91 millimeters. Maximum allowable deflection was 10.0 millimeters. Percent non-wood materials in the bridges averaged 7.6 percent; maximum percent non-wood materials allowed was 25 percent, by weight. Judges for the 2004 competition were Scott Groenier, P.E., National Wood in Transportation Program, USDA-Forest Service, and Dr. Rakesh Gupta and his Wood Design engineering class at Oregon State University.

The competition's objectives are to promote interest in the use of wood as a competitive bridge construction material, to generate innovative and cost-effective timber bridge design techniques, and to develop an appreciation of the engineering capabilities of wood among future transportation and forest products engineers. Following the competition, most of the bridges were placed into use as trail bridges. ■



## Blast Shock and Vibratory Effects Committee Activities

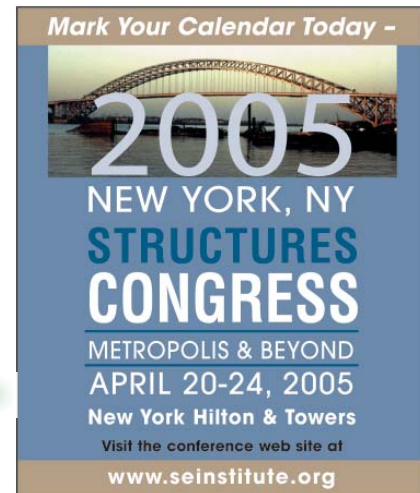
The mission of the Blast Shock and Vibratory Effects (BS&VE) Committee is to study and evaluate the magnitude and effects of blast, shock and impulsive loadings (other than wind or seismic) on structures and their components, and to formulate design criteria and methods to provide adequate resistance or relief from their effects. Further information on the committee is available at the committee web site at <http://www.ce.ufl.edu/sveweb/>

In 1999, the BS&VE Committee published "Structural Design for Physical Security: State of the Practice Report." Recent events have emphasized the need by the engineering community for information on blast design. The BS&VE subcommittee on Design for Physical Security is currently planning a report on "Design Guidelines for Physical Security." During the remainder of fiscal year (FY) 2004 and FY 2005, an extended table of

contents for the proposed guideline will be developed. The subcommittee intends to form a task committee for FYs 2006 and 2007 to write the guideline. The BS&VE committee is also coordinating with the Standards Committee for Blast Protection of Buildings. The Standards Committee will use the Design Guidelines being developed by BS&VE as the technical basis for the Blast Standard. Members of the BS&VE Committee are also participating in a Bridge Security Committee that is just starting up.

The BS&VE has sponsored a number of sessions related to physical security at recent Structures Congresses. There will be two sessions on "Design Guidance for Physical Security and Blast" at the 2005 Congress to be held in New York City, April 20-24. The committee is planning a number of sessions, including a tutorial on blast design, for the 2006 Congress to be held in St Louis, May

18-21. The committee is organizing a special Structures Journal Issue on topics related to committee activities. The Committee is developing two surveys aimed at determining the need for under-graduate and/or graduate programs of study related to design for extreme events. The surveys will address the perceived need for such a curriculum and the willingness of engineering departments to meet the need. ■

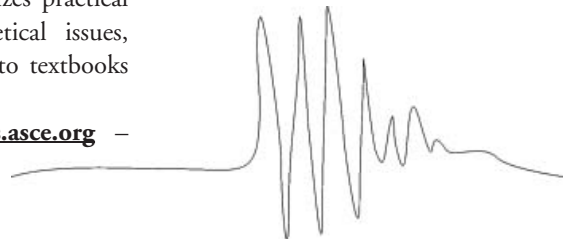


## Now Available - Primer on Seismic Isolation

This primer describes the current state of seismic isolation technology and highlights issues and concerns which are unique to the design of isolated structures. This concise book includes the fundamentals of seismic isolation, design of isolated structures, analysis, and

testing. This book emphasizes practical issues, rather than theoretical issues, making it complementary to textbooks on earthquake engineering.

Available at [www.pubs.asce.org](http://www.pubs.asce.org) - ISBN 7844-0751-7 ■



## Request for Solutions - Trial Design Problems

Deadline for Submission: Dec. 1, 2004

The current activities of the Design Practices Committee indicate what many practicing engineers have suspected and are experiencing with the prescriptive nature of the International Building Code - the work load of the engineer DRAMATICALLY INCREASES, but the final design varies little, if at all, from the guidance provided by previous codes.

As stated above, the Committees efforts can only indicate a result of the Trial Design solutions, due to an inefficient number of responses. The Committee would like to make a more definitive conclusion, but in order to do so, we need a larger number of responses. The Design Practices Committee is asking you to invest a couple of hours of your time to solve the Trial Design Problems.

The Trial Design Problems and Solutions can be found on the SEI Home Page at the following link: [www.seinstitute.org](http://www.seinstitute.org). Please submit your solutions by December 1, 2004 to Mary Ellen Saville at the SEI office at [mesaville@asce.org](mailto:mesaville@asce.org). ■

