

# Status Report on the New Standard for Blast Protection of Buildings

By Donald O. Dusenberry

The Structural Engineering Institute of the American Society of Civil Engineers has formed a Standards Committee to develop a new standard for blast resistant design of buildings. The Blast Protection of Buildings committee is preparing a comprehensive document addressing the design requirements that are essential for blast-resistant building design. Specifically, the document will address the appropriate design approaches that constitute a "minimum standard" for design of the vast majority of structures that are at risk of being exposed to blasts and related loadings.

For the development of the standard requirements, the committee will extract from available authoritative references the essential information for a simplified design approach with a prudent conservative bias that is suitable for design of most buildings with conventional, regular framing systems and typical occupancies. The standard also will allow for the most sophisticated analytical approaches to encourage economical and innovative designs. A commentary section will provide background information, suggested application approaches, and references and interpretations explaining the mandatory section.

The standard will cover the following topics.

- General Provisions (scope, user qualifications, definitions, and related documents)
- Design Considerations (security planning and evaluation, risk assessment, consequence reduction, threat reduction, and vulnerability reduction)
- Performance Criteria (design objectives, building classification, levels of protection)
- Blast Loading (sources, TNT equivalence, scaling approaches, and free air, reflected, and confined explosions)
- Structural Systems (analysis concepts, advanced analyses blast design modeling, materials, members, connections, progressive collapse)
- Protection of Spaces (level of protection, safe havens, vulnerable areas)
- Building Envelope and Glazing (design intent, design procedures, exterior walls, concrete walls, masonry, steel, curtain walls, blowout panels, glass and glazing, roof systems)
- Fragment Penetration (resistance to missiles created by explosions)
- Materials Detailing (concrete, steel, masonry, fiber reinforced plastic, other materials)
- Guarded Perimeter (anti-ram structures, blast walls, berms)
- Life-Safety Systems (provisions for egress paths, rescue access, emergency electrical and mechanical systems, emergency communication)
- Performance Verification (verification of analytical approach, materials properties testing and verification, systems testing and verification, peer review)

The committee formed six Task Committees to prepare the specific chapters of the proposed standard. These Task Committees first prepared "white papers" that included the intended content of both the mandatory and commentary portions of the document. These white papers were discussed at a committee meeting during the 2005 Structures Congress in New York.

At the completion of that meeting, the committee set the short-term goal to extract from the white papers the mandatory and commentary content for all chapters. The result will be the first draft of the standard, which the committee will discuss at the scheduled meeting on November 2, 2005 at the SAVIAC 76<sup>th</sup> Shock and Vibration Symposium in New Orleans (please contact Don Dusenberry at [dodusenberry@sgh.com](mailto:dodusenberry@sgh.com) to confirm date and location). Looking forward beyond that stage, the committee plans to prepare a second draft by the 2006 Structures Congress in St. Louis, and hopes to be balloting a short time thereafter.

From initial formation of the committee, membership on the committee has been open to all with interest in and enthusiasm for the preparation of a standard for blast resistant design. At present, the committee has approximately 50 members, with strong representation by practicing structural engineers skilled in the design of blast-resistant structures and blast engineers. Representations from professionals in academia, manufacturing, and regulatory groups complete the majority of the membership.

At present, the committee is underrepresented in the areas of producer and general interest membership. Hence, the members of the committee have initiated a recruitment effort to increase the number of interested representatives of such groups as product and material manufacturers, academia, regulatory agencies, and other fields related to the design and construction of blast-resistant structures.

The target is to complete the document by late 2006 or early 2007. However, for that goal to be met, the committee will need to expand to achieve a broader, balanced membership, and that membership will need to work diligently on its task assignments.■

Individuals with an interest in serving on the committee to develop this standard may contact Don Dusenberry at [dodusenberry@sgh.com](mailto:dodusenberry@sgh.com), or Mary Ellen Saville (SEI) at [mesaville@asce.org](mailto:mesaville@asce.org) for additional information.

ENGINEERS MAKE  
A WORLD OF DIFFERENCE



**ENGINEERS WEEK®**

**February 19-25, 2006**

visit [www.eweek.org](http://www.eweek.org)