

TASK COMMITTEE B WORKSHOP FIVE-YEAR STRATEGIC RESEARCH PLAN ON TECHNOLOGIES FOR NEXT GENERATION BUILDINGS

Task Committee B, Next Generation Buildings and Infrastructure Systems conducted a Workshop during 25-26 February 2007 addressing high-performance buildings' abilities to better resist the effects from extreme wind, earthquakes, and fire loads and to effect informed decisions about design procedures that incorporate environmental quality and sustainability. The Workshop was sponsored by the U.S. National Science Foundation and Japan's Building Research Institute. At the Workshop the US and Japan participants identified two enabling foundations that the design and construction industry and owners, facility managers, and users must embrace:

1. Building Hazard Resilience and
2. Building Health and Sustainability.

Through this international exchange of technical information evolved a process to develop a five-year strategic research plan that addresses high-performance buildings' abilities to better resist the effects from extreme winds, earthquakes, and fire loads and to effect inform decisions about design procedures that incorporate environmental quality and sustainability. This evolution was achieved through clustering with the Panel's Task Committee D on Wind Engineering and Task Committee I on Structural Fire Performance and collaborating with experts in discipline areas of Indoor Air Quality, Public Health Following Disasters, and Buildings of 2020. Addressing these themes is central to advancing the Panel's mission for new technologies and methods that support improved design and construction practices and sustainable development.

The workshop focused on:

- a. Reviewing state-of-knowledge in selected hazard areas and current approaches to key issues in multiple hazard design of buildings. The issues include:
 - High-performance materials and advanced technologies
 - Performance-based design methodology
 - Multi-hazard resistance design -- earthquakes, wind, fires, environmental health hazards including indoor air quality and biological threats
 - Advanced building sensor and data/intelligence management systems
 - Innovative building physical security system and procedures
- b. Identifying goals and defining the scope of T/C B activities in the focus area of High-Performance Buildings during the next five years (2007-2011).
- c. Formulating an action plan to achieve the goals through implementation of cooperative projects.

At the 39th Joint Panel Meeting and shortly thereafter the Task Committee will finalize its five-year research and action plan with targeted research activities that incorporate advanced technologies to improve the performance and resilience of buildings to multi-hazards.

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“DISASTER INFORMATION SYSTEM” - EVALUATION AND REFINEMENT BY DEMONSTRATION EXPERIMENT AND DRILL -

Introduction

Since FY2003 the Earthquake Prevention Division of the National Institute for Land and Infrastructure Management (NILIM) working in collaboration with NILIM's Information Technology Division and the Information Access Division of the Geographical Survey Institute (GSI) jointly developed the “Disaster Information System” (referenced below as the System). The objective of the System is to provide a platform for information sharing among several organizational sections and enhance the capabilities on earthquake crisis management within related organizational sections and their staff. To achieve this objective research focused on performing two thrusts:

i) Harmonization between information system and the current workflow. An initial survey of existing disaster information systems identified a key factor to the success of the System's introduction is its ability to be consistent with current business transactions. In general, current transaction of business of administrative bodies is rigid; the newly-introduced System is expected to allow for mutual harmonization of the current task flow. Most related systems that ignore this principle are abandoned.

ii) Continuous evaluation and refinement. Evaluations and refinements have been performed throughout the development process. This System was developed under close cooperation with the Chubu Regional Bureau (CRB), Ministry of Land, Infrastructure and Transport (MLIT) and introduced to CRB as a test model and incorporated into practice in August 2006. Evaluations and refinements of the System have continued.

Demonstration Experiment

An important finding from this demonstration experiment is the importance of current transaction of business of all related staff. Evaluation findings from the national highway offices and the river offices under the CRB have been incorporated into the System for improvements.

Disaster Prevention Drill

In Japan, the 1st of September memorializes the M 8.3 Great Kanto Earthquake that struck the Kanto Plain and destroyed Tokyo on 1 September, 1923. Annually on the first of September, Disaster Prevention Drills are conducted throughout Japan. During CRB's Drill, the System was operated as a tool for information communication between CRB and its branch offices. After the Drill, System researchers conducted users' survey and incorporated the result into the System's development.

Future Challenge

The System is expected to provide useful information when future earthquakes strike the Chubu region. The System is achieving a higher level of crisis management through information sharing within the Chubu region. It is expected other Japan Regional Bureaus will recognize the importance of information sharing and will introduce the System into their practice.



Disaster Information System Demonstration Experiment

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