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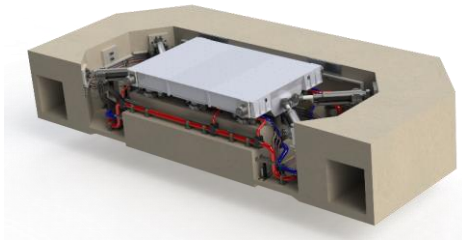
Natural Hazards Engineering Research Infrastructure



UC San Diego
JACOBS SCHOOL OF ENGINEERING
Structural Engineering

PROJECT PREPLANNING AND TECHNOLOGY TRANSFER

Bill Holmes, SE, NAE, NHERI NCO



*Joint Academia-Industry NHERI Workshop
NHERI@UC San Diego*

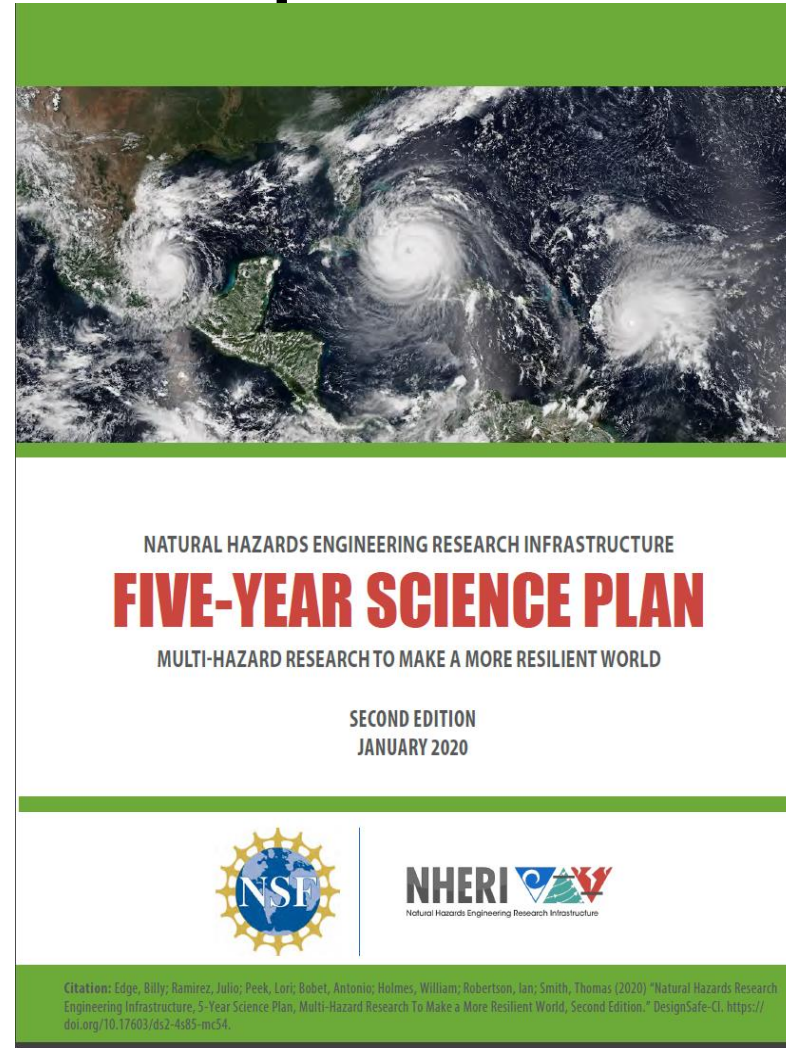
*September 21-22, 2020
University of California, San Diego*



Preplanning to Enhance Implementation

Research that is related to issues already noted by industry or standards groups is likely to be implemented:

Science Plan is intended to be comprehensive regarding mitigation of risks or improving resilience related to covered natural hazards.



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Preplanning to Enhance Implementation Other Sources

Workshops and meetings (like this one) intended to define needed research

Wind:

From the *National Windstorm Impact Reduction Program (NWIRP)*

NWIRP Strategic Plan

https://www.nist.gov/system/files/documents/2018/09/24/nwirp_strategic_plan.pdf

Tsunami:

National Tsunami Research Plan: Report of a Workshop Sponsored by NSF/NOAA

<https://www.pmel.noaa.gov/pubs/PDF/bern3043/bern3043.pdf>

Seismic:

BSSC NEHRP Provisions “FUTURE ISSUES AND RESEARCH NEEDS”

Draft now available on BSSC website;

https://cdn.ymaws.com/www.nibs.org/resource/resmgr/bssc3/2020-04-14_BSSC_PUC_Future_I.pdf

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Seismic

- NHERP Provisions is a feeder to the seismic provisions of ASCE 7.
(funded by FEMA)
- Best place to get seismic research implemented into code
- At end of each cycle (5 years), several documents published:
 - Latest version to be published in October
 - Part 1 Provisions
 - Part 2 Commentary
 - Part 3: Resource Papers
 - Documenting work done but not yet leading to proposals
 - “Future Issues and Research Needs”

NEHRP Provisions Resource Papers

- RESILIENCE-BASED DESIGN AND THE NEHRP PROVISIONS
- RISK-BASED ALTERNATIVES TO DETERMINISTIC GROUND MOTION CAPS
- DESIGN OF ISOLATED AND COUPLED SHEAR WALLS OF CONCRETE, MASONRY, STRUCTURAL STEEL, COLD-FORMED STEEL AND WOOD
- SEISMIC LATERAL EARTH PRESSURES
- SEISMIC DESIGN STORY DRIFT PROVISIONS – CURRENT QUESTIONS AND NEEDED STUDIES
- DIAPHRAGM DESIGN FORCE REDUCTION FACTOR, R_s , FOR COMPOSITE CONCRETE ON METAL DECK DIAPHRAGMS
- DEVELOPMENT OF DIAPHRAGM DESIGN FORCE REDUCTION FACTORS, R_s
- CALCULATION OF DIAPHRAGM DEFLECTIONS UNDER SEISMIC LOADING
- MODAL RESPONSE SPECTRUM ANALYSIS METHODS

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NHERP Future Issues and Research Needs

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SOME HIGHLIGHTS:

- Functional Recovery and design criteria for essential buildings
- Design guidance for rocking structures
- Consideration of vertical component of ground motion
- Duration of ground motion
- Design of nonstructural components
- Tests of cast-in-place concrete diaphragms
- Interaction of “nonstructural” finishes with the lateral system of wood frame structures,

Other assistance for implementation: NHERI Technology Transfer Committee: About 20 volunteer practitioners or academics knowledgeable of Technology Transfer

- Flyer: (On the right)
- Paper:
MECHANISMS FOR IMPLEMENTATION OF NHERI RESEARCH RESULTS

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Move Your Research Results Into Practice

Are you a researcher itching to develop and implement the means, methods and policies for reducing the adverse effects of natural hazards?

Will your research results have a novel practical application in engineering design or analysis?

Are you so excited about your potential research results that you are driven to inform others who could benefit?

If your answers are YES,
consider connecting with NHERI's
TECHNOLOGY TRANSFER COMMITTEE



The TECHNOLOGY TRANSFER COMMITTEE is a volunteer group of 20 individuals, mostly engineers, experienced in design and the complexities of technology transfer.

The TECHNOLOGY TRANSFER COMMITTEE facilitates and speeds the transfer of research results into active engineering practice.

REQUEST A CONSULTATION

Researchers can request a consultation with the TECHNOLOGY TRANSFER COMMITTEE at ttc-inquiry@designsafe-ci.org. Be sure to indicate the hazard involved.

REQUEST THE DOCUMENT: "Mechanisms for Implementation of NHERI Results"

<p>The TECHNOLOGY TRANSFER COMMITTEE has published a white paper describing technology transfer mechanisms for improving the performance of civil infrastructure during and after natural hazard events.</p> <p>Obtain your copy of "Mechanisms for Implementation of NHERI Results" on the Tech Transfer Committee page on DesignSafe: designsafe-ci.org/community/ttc/.</p>	<p>Topics covered include:</p> <ul style="list-style-type: none"> • Common methods for implementing research results. • Steps to make research readily implementable in the updating of building codes and standards. • Overview of existing building codes and standards such as the IBC, IRC and the ASCE/SEI 7 and ASCE/SEI 41 standards for seismic design. • Overview of research implementation and tech transfer programs of major federal organizations such as FEMA, NIST, ATC and BSSC. • Information on privately funded entities and tech transfer activities conducted by early adopters. • Methods of implementation when proprietary materials, design methods, or construction methods are involved. • Presentations at professional associations, cross-disciplinary meetings and webinars with a question-and-answer session.
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MECHANISMS FOR IMPLEMENTATION OF NHERI RESEARCH RESULTS

- Common methods for implementing research results.
- Steps to make research readily implementable in the updating of building codes and standards.
- Overview of existing building codes and standards such as the IBC, IRC and the ASCE/SEI 7 and ASCE/SEI 41 standards for seismic design.
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MECHANISMS FOR IMPLEMENTATION OF NHERI RESEARCH RESULTS

- Stresses importance of Industry involvement
Review Boards
Consultants

[https://www.designsafe-ci.org/media/filer_public/85/0c/850c36d4-4f89-4ca4-8a50-0bc13c61db4d/mechanisms for implementation of nheri research results 0419 finalr1.pdf](https://www.designsafe-ci.org/media/filer_public/85/0c/850c36d4-4f89-4ca4-8a50-0bc13c61db4d/mechanisms_for_implementation_of_nheri_research_results_0419_finalr1.pdf)

Thank you!

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