SESSION: IMPROVING SEISMIC SAFETY OF SCHOOLS

REBEKAH PACI-GREEN
BRIAN TUCKER
CARLOS VENTURA
YUMEI WANG
BARRY WELLIVER
Rebekah Paci-Green
Comprehensive School Safety Framework

• Helped draft and promote the Comprehensive School Safety framework, now adopted by international aid organizations and UN agencies

• Integration of three pillars:
  – Safe learning facilities (engineering)
  – School disaster management (emergency planning)
  – Risk reduction and resilience education (education)
Global Guidelines for Safer School Construction

Developed global guidelines for community-based approaches to school construction in developing countries

• When, how, and why to engage communities
• Community capacity building for technology & knowledge transfer

2015 publication, 104p
School Assessment Efforts

Post-earthquake Nepal School Retrofit Assessment

• Assess impacts of community engagement and mason training
• Recommendations for education sector recovery and reconstruction

Comprehensive School Safety Self-Assessment Tools

• Apps for school staff to assess schools (SE Asia pilot)
• Recommendations for local interventions
• Prioritization for technical assessments and interventions
Brian Tucker
GHI’s School Earthquake Safety Projects

- train teachers on earthquake risk, fundamentals and school earthquake safety in particular,
- identify vulnerable schools,
- retrofit seismically-vulnerable schools,
- institute annual school earthquake safety drills, and
- developing innovative, and locally-appropriate strategies to reduce school earthquake risk
Crush Test of Current vs. New Bhutan School Desk
Carlos Ventura
British Columbia Public Schools Seismic Mitigation Program

BC Ministry of Education launched seismic mitigation program

- Address the highest priority needs
- Cost and time efficient guidelines

University of British Columbia
- Laboratory tests
- Analytical development

Professionals
- Local engineers
- External peer review


Seismic Retrofit Guidelines were developed to meet the following goals of the Ministry of Education:

• Implement seismic retrofits that achieve a life safety objective in a cost effective manner

• To adopt a common engineering approach to the seismic retrofit of school buildings

• Peer Reviewed Analysis and Testing

Progress to date:

❖ 146 Schools Completed
❖ 15 Under Construction
❖ 9 Proceeding to Construction
❖ 44 Announced to Proceed

214 PROJECTS APPROVED TO PROCEED
125 Not Yet Announced to Proceed
339 TOTAL PROJECTS INCLUDED UNDER THE Seismic Mitigation Program (SMP)
Key aspect of the success of this program: Engineers as Advocates

- Don’t be afraid to speak out: No need for concern of causing panic or appearing “self-interested”.
- Simplify the message e.g. “Earthquakes don’t kill people, bad buildings do”
- Talk about the costs in human terms not just infrastructure terms
- Take the time to educate and collaborate with citizen’s groups.
- Use the media – know your key messages – think sound bites
- Explaining risk and solutions to public, media and government
- Once the public grasps an issue of this nature, it feels good about spending public funds on a preventive project.
Yumei Wang
Oregon’s School Seismic Safety Highlights

• 2001 Requires school seismic safety by 2032
• 2002 Ballot Measure: seismic bonds for schools
• 2005 Universities: initiated seismic program
• 2007 Seismic Needs Assessment (DOGAMI online)
• 2009 OEM Seismic Rehab Grant Program (SRPG)
• 2012 Dept Ed. Report card incl. seismic scores
• 2015 SRGP moved to Oregon Business ($175M)
• 2032 School seismic safety deadline (ORS 455.500)
Oregon’s School Seismic Safety Activities

Law requires school earthquake drills
– Drop, Cover & Hold On
– e.g., Promote Shake Out

Law requires school tsunami drills
– Move Inland & Uphill
– e.g., Provide Evacuation Maps

Education
– e.g., CREW comic book,
  CREW school fact sheet (coming soon!)
Beaverton Schools Local Bond
New schools beyond life safety: Resilient
Seaside, Oregon High School’s High Tsunami Risk

2015 Student Body Fund Raising Proposed New School on Hill
Goal: $108M
Students Raised $15k

Source: https://www.facebook.com/asbtsunamiproject
Barry Welliver
Local and international efforts

• Advocated for state-wide school hazard inventory at Utah legislature resulting in legislation and funding to complete a FEMA 154, Rapid Visual Screening of Utah schools

• Project Director of the ATC-122 project, which is developing a multi-hazard School Safety Guide for school administrators, facilities/emergency managers, and school staff

EERI’s School Earthquake Safety Initiative (SESI)

• Barry Welliver, Chair of SESI
• Promote safe buildings for school children
• Global and collaborative network of diverse, expert, and passionate professionals who are committed to creating and sharing knowledge and tools that enable progressive, informed decision making around school earthquake safety
• Recently-developed Policy Positions:
  – Schools shall be URM Free by 2033
  – Mitigation of Nonstructural Hazards in Schools
EERI’s School Earthquake Safety Initiative (SESI)

• Sub-Committees
  – Safety Screening, Inventory, and Evaluation of Schools
  – Classroom Education and Outreach
  – Tsunami Mitigation for Schools
  – Code Updating and Improvements
  – Safety Advocacy and Messaging

• SESI Info Session and Program Committee Meeting
  – 7AM-8:30AM
  – Friday, April 8
  – Mission Room
Panel Discussion
Panel Discussion

Please describe effective approaches to reduce school seismic risk and corresponding advantages and limitations.
Panel Discussion

What should be considered when deciding on the most appropriate technology to improve seismic safety of schools in a given region?
Panel Discussion

What do you think is the most important thing that should be done next to improve the seismic safety of schools and why?
Q&A
Thank You!