

# Post-Disaster Safety Evaluation of Buildings & Infrastructure

## ATC-20/45 Training



### Training Session

#### Post-Disaster Safety Evaluation of Buildings (ATC-20/45)

The large devastating earthquakes in Nepal, Japan, Ecuador, and other recent large scale events are a potent reminder about the importance of disaster preparedness of our communities. After such large-scale disasters involving buildings, bridges, and critical urban infrastructure, assessing the damage and safety of this infrastructure is one of the most important first steps to disaster recovery. People are scared to return to their damaged homes, offices, and public spaces. Displaced citizens place an even greater demand on disaster response and recovery resources. Additionally, critical facilities such as hospitals required immediate inspection to continue providing essential healthcare services. Post-Earthquake, Windstorm and Flood Safety Evaluation of Buildings (ATC-20/45) are the de facto standards for post-disaster safety evaluations of buildings in the United States and around the Pacific Rim. ATC-20/45 training is critical for our nation's disaster preparedness to quickly assess building safety in the aftermath of a major disaster and to communicate that assessment effectively to the public.

**Washington State Department of Transportation (WSDOT)** is leading a full-day training session on post-disaster safety evaluation procedures (ATC-20/45) to help you develop the necessary skills to properly assess damaged buildings for occupancy and use following a major disaster. Taught by Structural Engineers with hands-on experience in disasters locally and internationally, you will learn current methods for performing post-disaster safety evaluations of buildings and infrastructure. Building safety evaluation exercises based on real-life examples of earthquake, tsunami, wind, and landslide damage from significant disasters in the U.S., Taiwan, China, Haiti, Chile, New Zealand and Japan will be presented.

### Training Topics

- A detailed presentation of ATC-20/45 building safety evaluation procedures with an emphasis on the evaluation of critical hospital facilities.
- Includes customization related to projected EQ damage to construction types found in MultiCare's Puget Sound area hospitals.
- For Safety, Security, Risk Management, Emergency Management, Emergency Response Team members as well as those with Facilities/Engineering responsibilities.
- Training is to build skills to be able to serve on rapid exterior building damage assessment teams. This assessment is a precursor to structural interior & exterior assessment teams being available.
- How do buildings and infrastructure structurally react to earthquake forces and other extreme loading?
- Procedures and example exercises for buildings constructed from wood, masonry, concrete, and steel.
- GREEN, YELLOW, and RED placards, what are they, what do they mean, and how do we use them?
- When and how do you perform a safety assessment and post a building?
- How to triage building safety evaluations and postings after a disaster?

#### WHERE

WSDOT Offices, 15700 Dayton Avenue N, Shoreline, WA

#### WHEN

Wednesday, June 19, 2019

#### TIME

8:00AM – 4:00PM

#### CONTACT/RSVP

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Naval Hospital  
Bremerton  
Seismic Retrofit



Naval Medical  
Center San Diego  
Seismic Retrofit



Naval Hospital  
Twentynine Palms  
Seismic Retrofit



Naval Hospital  
Yokosuka  
Seismic Retrofit



Harrison Hospital  
Design

## Instructor

### Erik Bishop, P.E.



Erik works as a project engineer at Reid Middleton, Inc., a 90-person structural and civil engineering firm with offices in Washington, and experience working on a variety of projects throughout the western United States, Japan, and the United Arab Emirates. Erik's structural practice includes new design, seismic evaluation and rehabilitation design, seismic resiliency studies, and the implementation of seismic instrumentation and earthquake response technologies. He enjoys the opportunity to collaborate with building owners, contractors, other design disciplines, and project stakeholders to overcome challenges by developing creative, collaborative, and meaningful solutions.

Erik has also been integrally involved in developing Reid Middleton's innovative Rapid Evaluation & Assessment Program (REAP) with a Seismic Monitoring System (SMS). The combined REAP & SMS program allows facility managers and staff to quickly and accurately perform post-disaster safety assessments of their buildings to minimize unnecessary evacuations, increase business continuity, and improve occupant safety. This system has been deployed at several Navy hospital and critical facilities along the West Coast, as well as several iconic buildings in the United Arab Emirates, including the Dubai World Trade Center and the Burj Khalifa.

Erik's experiences in performing post-earthquake building and bridge investigations have taken him across the globe. Through his post-earthquake reconnaissance efforts with the Structural Engineering Association of Washington's (SEAW), Erik has observed the impacts of earthquakes and tsunamis first-hand and seen how the differences between good and poor seismic design practices influence the performance of structures. He has participated on engineering teams to research lessons learned from the M8.0 Wenchuan Earthquake in China in 2008, the M8.8 Chile Earthquake & Tsunami in 2010, coordinated the SEAW team to research the M9.0 Tohoku Earthquake & Tsunami in Japan in 2011, and led a team of to study the M7.1 Puebla, México Earthquake in 2017. As a result of these experiences, he is passionate about seismic safety. He has worked in several capacities in order to improve the seismic safety and resiliency of our communities, including providing post-earthquake safety evaluation trainings (ATC-20/45/44/Cal OES SAP), working on the development of innovative earthquake response tools for emergency managers, and participating in various earthquake preparedness advocacy efforts.

Erik holds a Bachelor in Civil Engineering from the University of Idaho and a Master's in Civil and Structural Engineering from the University of Washington. He was selected as a Housner Fellow in 2017 through the Earthquake Engineering Research Institute (EERI).

### Kenny O'Neill, P.E.



Kenneth O'Neill is an engineer with experience in structural design, structural analysis, seismic engineering, seismic vulnerability, and seismic resiliency. He has worked on numerous public and private projects, including work on high-importance civil lifeline infrastructure. Kenny is passionate about using advanced earthquake engineering procedures to reduce seismic risks in prudent, logical, and sustainable ways. His structural analysis work has involved linear and nonlinear computer analysis, including nonlinear dynamic time history analysis of structures incorporating supplemental energy dissipation devices (dampers) and base isolation devices. His experience also encompasses conducting scenario-based system-wide seismic vulnerability and resiliency studies for critical utility infrastructure, including water transmission pipelines, water tanks and reservoirs, pump stations, treatment facilities, buildings, and other structures. Lifeline infrastructure analysis methodologies have included industry standard procedures from the American Lifelines Alliance, American Water Works Association, FEMA Hazus, FEMA 154 Rapid Visual Screening, the American Society of Civil Engineers, and ASCE 41 Seismic Evaluation and Retrofit of Existing Buildings, among other industry standard procedures. Kenny participated in Reid Middleton's post-earthquake reconnaissance following the 2017 Central Mexico Earthquake.

### Reid Middleton Firm Profile

Reid Middleton is a civil and structural engineering consulting firm with an over 60-year history of serving public and private-sector clients throughout the western United States, Pacific Rim, and Middle East. The firm focuses on specific market-sectors that include aviation, civic, municipal commercial, education, healthcare, industrial, military, transportation, and waterfront. Reid Middleton serves as prime consultant to owners as well as consultants to architects and related design professionals.