

EARTHQUAKE ENGINEERING RESEARCH INSTITUTE

Founded in 1948, EERI's mission is to reduce earthquake risk by (1) advancing the science and practice of earthquake engineering, (2) improving understanding of the impact of earthquakes on the physical, social, economic, political, and cultural environment, and (3) advocating comprehensive and realistic measures for reducing the harmful effects of earthquakes.

NEWS OF THE INSTITUTE

▶ EERI activates physical and virtual clearinghouses for Searles Valley earthquakes

In the wake of the M6.4 and M7.1 earthquakes in Searles Valley, EERI, as part of the California Earthquake Clearinghouse, established a physical clearinghouse in Ridgecrest from July 5 through July 11. Over the course of the week, more than 50 investigators, including EERI members, conducted field investigations and share observations on nightly briefing meetings. While we've closed the physical clearinghouse, you can continue to share and find data on our [virtual clearinghouse](#).

On our virtual clearinghouse, you can find the latest reports and data coming from the field, including a [map](#) from USGS, a [report](#) from the Virtual Earthquake Reconnaissance Team, [pictures from EERI members](#), and more.

Groups in the field included:

- Geologists from the US Geological Survey, California Geological Survey, the Inland Geological Society, and the Nevada Bureau of Mines and Geology mapped fault rupture and other ground deformation.
- Geotechnical engineers from the Geotechnical Extreme Reconnaissance Team and others investigated the impacts of ground failure on structures and lifelines systems.
- Structural engineers from SEAOSC and others assessed performance of structures in Trona, Calif. and learned more about structural damage assessment efforts in Ridgecrest.

Several preliminary observations from reconnaissance efforts:

- Geologists documented fault displacements for both the M6.4 and M7.1 earthquakes. Teams measured vertical displacements of up to 12 ft and lateral displacements of up to 6 ft for the M7.1 event.
- Geotechnical teams documented pipeline breaks and liquefaction and lateral spreading at some building sites.
- Structural engineers observed damages to homes in Trona, Calif. where the building stock dates back to the 1930s-50s. The more modern buildings in Ridgecrest fared much better, with most damages observed being limited to nonstructural elements or contents.



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▶ Remembering Robert P. Kennedy

Robert P. Kennedy, Ph.D., P.E., NAE (April 2, 1939–December 30, 2018)

Written by Andrew Whittaker (M.EERI, 1990)

Robert (Bob) Phillip Kennedy (M.EERI, 1975) passed away on December 30, 2018. Born in Glendale, California, in 1939, he was the oldest of three children to Percy and Gertrude Kennedy. Prior to college, Bob's family lived in Los Angeles, in Glaswell Park and La Canada. He worked summers during high school in a tire recapping business owned by his father and uncle.



Bob enrolled at Stanford University in 1957 where he graduated ten years later with three degrees, a Bachelor of Science (1960), Master of Science (1961) and Doctor of Philosophy (1967). His undergraduate studies were supported in part by a Holmes and Narver scholarship and he worked summers for this consultancy in Los Angeles. A keen athlete, he was on the swimming and water polo teams through graduate school. He graduated Phi Beta Kappa. He continued his studies at Stanford on a graduate fellowship from the U.S. Department of Defense under the direction of Professor Jack Benjamin. While a graduate student, Bob co-taught a class on blast-resistant design with his Stanford classmate and fellow Benjamin advisee, the late C. Allin Cornell: the start of a lifelong collaboration between two of the most productive, respected engineers of their generation. Bob met his wife, Arline, after a football game at Stanford in 1962, and they married a year later.

In May 1964, and before finishing his PhD, Bob joined the US Army Corps of Engineers. He went to Ft. Belvoir in Virginia, where, after finishing basic training, was placed in charge of Officers Training Engineering Courses. In August 1965, he volunteered to move to Okinawa, Japan to work on the design and construction of the Cam Rahn Bay logistics facility for the US Navy: an experience he described as unique and invaluable, but one that gave him no time to complete his dissertation. Bob joined Holmes and Narver in Los Angeles in May 1966, after being discharged from the Corps, working there for two years. He filed his PhD dissertation, "A statistical analysis of the shear strength of reinforced concrete beams" in April 1967. He relocated to the Holmes and Narver office in Las Vegas for two years to support work related to underground nuclear detonations at the Nevada Test Site. He left Holmes and Narver in 1977 to start the southern California office of the Engineering Decision and Analysis Company (EDAC). He left EDAC in 1980 and established Structural Mechanics Associates, (SMA) with a group of like-minded engineers. Bob preferred technical work to managing a multi-office engineering consultancy and SMA was sold in 1984. He provided independent engineering consultation as RPK Structural Mechanics Consulting, Inc. for the following 34 years.

As an engineering consultant, Bob worked in many subject areas, mostly involving dynamic analysis, and design and construction of mission-critical structures for the nuclear, defense, industrial, and petroleum industries. His work on the seismic ruggedness of nuclear facilities and the quantification of earthquake-related risk was fundamental, including the development of performance-based seismic design criteria for Department of Energy (DOE) Standard 1020 and ASCE/SEI Standard 43; fragilities of structures, systems and components for use in seismic probabilistic risk and seismic margins assessments; methodologies for seismic walkdown reviews of critical facilities, including nuclear power plants; and teaching short courses on seismic probabilistic risk assessment around the world. He chaired the Senior Seismic Review and Advisory Panel from 1983 to 1992, providing guidance to the United States Nuclear Regulatory Commission (USNRC) and power utilities on the seismic robustness of equipment in existing nuclear power plants. He served as the lead author of a number of seminal reports in the 1980s and 1990s, which are still widely used today, related to seismic risk and margin assessments, including Electric Power Research Institute (EPRI) NP-6041 (August 1991), EPRI TR-103959 (April 1994), NUREG/CR-4334 (August 1985) and NUREG/CR-5270 (March 1989). Less well known but equally important technical contributions by Bob were in the domain of hardened structures and equipment, through consulting to the US Defense Threat Reduction Agency, the US Defense Nuclear Agency and other US government entities on a broad range of subjects, mostly related to extreme ground shock, pressures and temperatures generated by underground nuclear detonations.

Bob was an active member of the ASCE Committee on Dynamic Analysis of Nuclear Structures and its predecessor committee for nearly 40 years. He served as the first chair of the committee, which produced ASCE/SEI Standard 4-86. His pioneering work on performance-based seismic design criteria for safety-related nuclear facilities in the 1990s underpinned the technical basis for ASCE/SEI Standard 43-05, enabling deterministic design procedures to be used to meet probabilistic goals. He also contributed to the writing of other codes and standards, including ACI 349, with an emphasis on design procedures for impactive and impulsive loadings on nuclear structures, and ASME standards for power piping.

Bob received many awards and honors over his career. He was elected to the US National Academy of Engineering in 1991 for “developing design procedures for civil and mechanical structures to resist seismic and other extreme loading conditions.” Other awards included the 1992 ASCE Stephen Bechtel Energy Engineering Award and the 2015 ASCE LeVal Lund Award. Bob was a Fellow of the California Council of Science and Technology.

Bob is survived by his wife of 54 years, Arline, their four sons, Peter, John, James and Michael, and six grandchildren. He loved to travel with his wife and sons, and they camped and hiked in most every state and in many countries. His love for Stanford never waned and he fiercely defended its reputation in academics and sport for 50 years, especially when challenged by upstarts from its cross-Bay rival, beginning in the late 1960s and ending at a celebration at his home in Southern California in October 2018.

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▶ [Join our team — EERI is hiring a Program Coordinator!](#)

We're seeking a proactive, creative, and tech savvy Program Coordinator. This position supports implementation of various externally and internally funded projects, programs, and strategic initiatives under the guidance of other EERI programmatic staff and associated program committee chairs. Please click [here](#) for the full job description and share it with your network!

The ideal candidate is self-motivated, flexible, and organized, as well as adept and comfortable working in a collaborative environment with a small staff and many professional volunteers. This position is a great opportunity for someone who is enthusiastic about engaging our members to help bring about real change in reducing earthquake risk and promoting public safety. Responsibilities include assisting technical and administrative committees, planning conferences and workshops, deploying earthquake clearinghouses to assist reconnaissance work, and coordinating the organization's public policy activities at the federal and/or state level.

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▶ [Nominations for the 2020 Joyner Lecture due August 1](#)

The [William B. Joyner Memorial Lectures](#) were established by the [Seismological Society of America \(SSA\)](#) in cooperation with EERI to honor Bill Joyner's distinguished career at the U.S. Geological Survey and his abiding commitment to the exchange of information at the interface of earthquake science and earthquake engineering.

Joyner Lecturers are chosen on the basis of their work at this interface, whether they are contributions from earthquake science to earthquake engineering or from earthquake engineering to earthquake science. The nomination deadline is **August 1, 2019**. [Click here for more information on the William B. Joyner Memorial Lectures.](#)

Sponsor Nomination

The sponsor of the nominee, with help from others, must clearly document the accomplishments of the nominee that foster and enhance communication at the earthquake-science/earthquake-engineering interface, and why their work makes a difference. The sponsor must prepare a written proposal providing a brief summary of the candidate's professional history. It may include honors and awards, professional affiliations, lectures and publications, and professional service and experience that address the intent of the Joyner Award.

Nominations for the 2019 Joyner Lecturer should be emailed to the Joyner Lecture Committee by August 1, 2019 to: awards@seismosoc.org.

LEARNING FROM EARTHQUAKES

▶ Roundup of the latest news on the Searles Valley earthquakes

- Check out [this extensive coverage from the Los Angeles Times here](#), including a [story](#) of EERI members Martin Hudson (M.EERI,1994) and Kenneth Hudson (M.EERI,2018) surveying damages in Trona.
- [Rippling rainbow map shows how California earthquakes moved the earth](#)
- [Californians' alert apps didn't sound for 2 big earthquakes. Why not? \(New York Times\)](#)
- [Opinion: We thought we lived on solid ground. California's earthquakes changed that. \(New York Times\)](#)
- [Big earthquakes raise interest in West Coast warning system \(Associated Press\)](#)
- [Earthquakes ravaged Los Angeles and San Francisco. So, what spared this city in the California desert? \(USA Today\)](#)
- [After earthquakes rattle nerves in Southern California, neuropsychologist shares tips to cope \(CBS News\)](#)
- [Latest Earthquakes spark questions about early warning system \(KQED - Forum\)](#)
- [The Latest: President declares emergency over Cal quakes \(Associated Press\)](#)
- [Quakes push Californians to prepare for the next big jolt \(Associated Press\)](#)
- [The science behind California's two big earthquakes \(National Geographic\)](#)
- [Southern California earthquake rattles a state wary of the 'big one' \(New York Times\)](#)
- [Ridgecrest residents prepare for more after earthquakes \(NPR\)](#)

PUBLIC POLICY AND ADVOCACY

▶ Oregon Safety Assessment Program passes in State Legislature

The EERI-supported bill, Oregon House Bill 2206: Development of a State Safety Assessment Program, passed the Oregon Senate unanimously on June 29 after a successful vote in the House on June 25. The bill is now awaiting the governor's signature.

The legislation would create a safety assessment program that will facilitate a faster, more effective response and recovery following a major natural disaster in Oregon, particularly a Cascadia earthquake and tsunami. The measure was introduced by American Institute of Architects

Oregon (AIA Oregon) and supported by EERI, ASCE, SEAO, building officials, and emergency managers.

HB 2206 would do the following:

- Direct State Fire Marshal to develop and administer program to evaluate the condition of buildings after an emergency and determine whether buildings may be safely occupied
- Direct State Fire Marshal to implement statewide system for registration of and communication with local program coordinators, certified building evaluators and approved trainers
- Authorize local governments to enact programs under which building owners may, prior to emergency, enter into agreements with professionals to conduct building inspections following emergency
- Provide that certified building evaluators are qualified emergency service volunteers for purposes of related statutes.

Learn more about national legislation that EERI is tracking at our Legislative Action Center [here](#).

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REGIONAL CHAPTER NEWS

▶ San Diego chapter organizes stakeholder workshop on the San Diego-Tijuana earthquake scenario

On June 7, the EERI San Diego Chapter held a stakeholder workshop with more than 40 attendees to present the San Diego-Tijuana earthquake scenario and discuss associated consequences to the San Diego region.

Representatives from several public entities and emergency responders, including from the Office of Emergency Services,

City of San Diego, Metropolitan Transit System, San Diego Police Department, local hospitals, San Diego County Water Authority, the ICHBC in Baja California, and others who would be significantly affected by and have a stake in the earthquake scenario.

Participants engaged in group discussions and breakout sessions to explore preparedness, recovery, and resiliency related to various stakeholder groups and to discuss long-term earthquake disaster planning efforts. The workshop helped participants gain a greater understanding of the region's potential seismic risks and what next steps are needed to build a more resilient San Diego-Tijuana cross-border region.

The San Diego-Tijuana earthquake scenario planning committee and EERI San Diego Regional Chapter organized the workshop, with generous contributions from the Federal Emergency Management Agency (FEMA). Discussions resulting from this workshop will contribute to the



earthquake scenario study, which will be presented to the public at the National Earthquake Conference and EERI Annual Meeting in San Diego in March 2020.

Photo credit: Tasneem Sadeque

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► San Diego: Register today for the Ishihara Colloquium and Course

Registration is now open for a short course on seismic analyses tools and the second Kenji Ishihara Colloquium. Be sure to **reserve your seat** today!

Short course on USGS Software Tools, August 21: Drs. Nicolas Luco, Peter Powers, and **Jorge Meneses** (M.EERI,2006) will present on various USGS web-based interactive tools available for site-specific ground motion hazard analysis.

The second Kenji Ishihara Colloquium, August 22-23: With a theme of "Seismic Lateral Displacements," this year's event includes an extraordinary lineup of geotechnical and structural engineering speakers from USA, Japan, and Chile. We've confirmed several prestigious speakers and will continue to add others. Click [here](#) for a list of speakers, their bios, and abstracts. At the colloquium, we'll also honor the lifetime contributions and achievements of Prof. T. Leslie Youd, Professor Emeritus, Brigham Young University with a gala dinner on August 22.

Events sponsored by:



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📖 PUBLICATIONS

► Earthquake Spectra: Preprint Manuscripts

The following preprint manuscripts are now available on the [Earthquake Spectra website](#) prior to formal publication:

- "Ground motion models for the horizontal components of arias intensity (AI) and cumulative absolute velocity (CAV) using the NGA-West2 database" by **Kenneth W. Campbell** (M.EERI,1975) and **Yousef Bozorgnia** (M.EERI,1986)
- "A Vs30 map for New Zealand based on geologic and terrain proxy variables and field measurements" by **Kevin M. Foster** (M.EERI,2010), **Brendon A. Bradley** (M.EERI,2012), Christopher R. McGann, and **Liam M. Wotherspoon** (M.EERI,2014)
- "Response of midrise reinforced concrete frame buildings to the 2017 Puebla earthquake" by **Carlos A. Arteta** (M.EERI,2016), **Julian Carrillo** (M.EERI,2009), **Jorge Archbold** (M.EERI,2016), Daniel Gaspar, Cesar Pajaro, Gustavo Araujo, Andres Torregroza, Ricardo Bonett, Carlos Blandon, **Luciano R. Fernandez-Sola** (M.EERI,2006), Juan F. Correal, and **Khalid M. Mosalam** (M.EERI,2013)
- "The 1D and 2D seismic modelling of deep Quaternary basin (L'Aquila downtown, central Italy)" by Luca Macerola, Marco Tallini, Giuseppe Di Giulio, Marco Nocentini, and Giuliano Milana

- "Empirical data about direct economic consequences of Emilia-Romagna 2012 earthquake on long-span-beam buildings" by Leonardo Rossi, Davide Parisi, Chiara Casari, Luca Montanari, Gabriella Ruggieri, Britta Holtschoppen, and Christoph Butenweg
- "Application of spectral element method for dynamic analysis of plane frame structures" by N. Merve Çağlar and Erdal Şafak

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ANNOUNCEMENTS

▶ [Qu-AKE seeks participants for BE Queer Project](#)

The Queer Advocacy and Knowledge Exchange (Qu-AKE) — a national, nonprofit, inclusive network for professionals working in the fields of civil engineering, architecture, urban planning, geosciences and construction — is looking for participants for their [BE Queer Project](#).

The BE Queer Project aims to become a visibility campaign for LGBTQ+ professionals working in the built environment, both in video and written formats. The campaign objective is to tackle the lack of visibility of LGBTQ+ people in the built environment, and to show the public that queer people are successfully contributing to building a better world. Members [Tricia Clayton](#) (M.EERI,2012) and [Eddie Vega](#) (M.EERI,2013) are featured in some of the latest videos.

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▶ [Call for papers and sessions from the 17th World Conference on Earthquake Engineering](#)

The 17th World Conference on Earthquake Engineering — happening September 13-18, 2020 in Sendai, Japan — seeks proposals for papers and sessions. Proposals are due August 30, 2019. [Read more](#)

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▶ [Call for papers on historical seismograms from the Seismological Society of America](#)

The Seismological Society of America invites papers covering all aspects of analog seismograms, including but not limited to, preserving and digitizing analog seismograph data, newly found treasure troves, the use of historical seismograms in exploring key questions regarding earthquake source processes and faulting, seismotectonics and seismic hazard, and efforts to develop durable and accessible archives. Submission deadline is October 1, 2019. [Read more](#)

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NEWS OF THE PROFESSION

▶ [Links to recent news and views](#)

- [Hayward targets 300 buildings deemed vulnerable in a major quake \(East Bay Times\)](#)
- [If a big earthquake hits, many Washington schools at 'high risk' \(The Seattle Times\)](#)
- [The mystery of unexplained earthquakes \(BBC\)](#)
- [How a trio of hellish earthquakes prompted America's first Disaster Relief Act \(History.com\)](#)
- [Opinion: An evolutionary leap in how we teach geosciences \(Earth & Space Science News\)](#)
An evolutionary leap in how we teach geosciences (Earth & Space Science News)

Note: For news items related to the Searles Valley earthquakes, please see the "Learning from Earthquakes" section.

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CALENDAR

Follow these steps to add EERI Calendar to your own Google calendar.

1. Open [Google Calendar](#)
2. On the left, above "My Calendars," click Add + and then **From URL**.
3. Enter the EERI calendar's address in the field provided. EERI Calendar ics link
https://calendar.google.com/calendar/ical/eeri.org_s9151tit0ab26dnf2epn25d7rg%40group.calendar.google.com/public/basic.ics
4. Click **Add Calendar**. The calendar will appear on the left side under "Other calendars."

Tuesday, October 29, 2019 - October 30

APGCE

The Asia Petroleum Geoscience Conference & Exhibition (APGCE)

29 – 30 October 2019

KUALA LUMPUR CONVENTION CENTRE, MALAYSIA

[REGISTER](#)

Monday, December 09, 2019 - December 13

AGU 2019 Fall Meeting

9-13 December 2019 San Francisco, California

Tuesday, March 03, 2020 - March 06

EERI 2020 Annual Meeting/Natl EQ Conference

National Earthquake Conference & 72nd EERI Annual Meeting

March 3 - 6, 2020

Sheraton San Diego Hotel & Marina

San Diego, California

[website](#)

Wednesday, March 04, 2020 - March 06

2020 RBDCC

5th Residential Building Design & Construction Conference (RBDCC)

Hosted by The Pennsylvania Housing Research Center

March 4-6, 2020

Penn Stater Conference Center

State College, PA.

[website](#)

Monday, April 27, 2020 - April 30

SSA 2020 Annual Meeting

SSA 2020 Annual Meeting

27-30 April 2020 — Albuquerque, New Mexico

The 2020 Annual Meeting will be held in Albuquerque, New Mexico.

[Check back later for more information.](#)

Monday, September 14, 2020 - September 18

17th WCEE

The 17th WCEE will be hosted in Sendai, Japan, from September 14th to 18th 2020. Check <http://www.iaee.or.jp/> for more information.



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