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## September 28, 2018, Earthquake and Tsunami in Palu, Sulawesi, Indonesia

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### Abstract

On September 28, 2018, at 18:02 local time (10:02 UTC), a magnitude 7.5 earthquake occurred at a depth of 10km with an epicenter 77km North of Palu, Sulawesi Island, Indonesia. The earthquake was caused by movement on a strike-slip fault known as the Palu-Koro Fault. The death toll due to both earthquake and tsunami is over 2200 with more than 1000 still missing and 4500 injured. The city of Palu, with a population of 336,000 based on a 2010 census, is located in an alluvial valley at the end of the narrow Palu Bay. A number of multi-story reinforced concrete buildings collapsed during the earthquake. Most notable was the eight-story Roa-Roa Hotel which collapsed resulting in multiple deaths. The iconic twin steel-arch cable-suspended Palu Bridge IV over the mouth of the Palu River also collapsed during the earthquake. A number of port facilities were damaged either by the earthquake or tsunami, and many ships, barges and boats were washed onshore or out to sea. The tsunami caused considerable damage to light-framed structures, though some taller engineered structures survived, protecting those who sought refuge in the upper floors. Extensive lateral spreading due to liquefaction caused by the earthquake also resulted in numerous deaths and extensive damage to residential structures in a number of inland areas. The speaker visited Palu as a representative of the Structural Engineering Extreme Event Reconnaissance (StEER) Network to survey the damage due to both the earthquake and tsunami. He will give an overview of the observations and lessons learned from this event.



**Collapse of 7 story  
Roa Roa Hotel due to  
earthquake shaking**

**Collapse of Palu Bridge IV  
due to earthquake shaking**



**Date:** Thursday, November 8<sup>th</sup>, 2018. 10:30 to 11:45AM  
**Location:** University of Hawaii at Manoa, Kuykendal Auditorium 101  
Parking Available at the UH Lower Campus Structure (\$6.00 for the day).

**Speaker Bio:** Dr. Robertson is the Arthur N.L. Chiu Distinguished Professor of Structural Engineering in the Department of Civil and Environmental Engineering at the University of Hawaii at Manoa. He received his BSc degree in Civil Engineering at the University of the Witwatersrand in Johannesburg, South Africa and his MS and PhD degrees from Rice University, Houston, Texas. After three years working for Walter P. Moore and Associates, a structural engineering consulting company in Houston, Texas, he accepted a faculty position at the University of Hawaii where he teaches structural engineering courses in reinforced and prestressed concrete and steel design. He is a registered structural engineer in the State of Hawaii and served as president of the Structural Engineers Association of Hawaii in 2008.

His research interests include the performance of steel and concrete structures during seismic, hurricane, tsunami and other extreme loading events, the long-term behavior of reinforced and prestressed concrete structures, and corrosion of reinforcing steel and galvanized light gage steel. Robertson worked with the Applied Technology Council to develop both first and second editions of FEMA P-646, Guidelines for Design of Structures for Vertical Evacuation from Tsunamis, and is currently editing the third edition. He serves as vice-chair of the ASCE 7 Tsunami Loads and Effects subcommittee that drafted the new ASCE 7 tsunami design provisions.