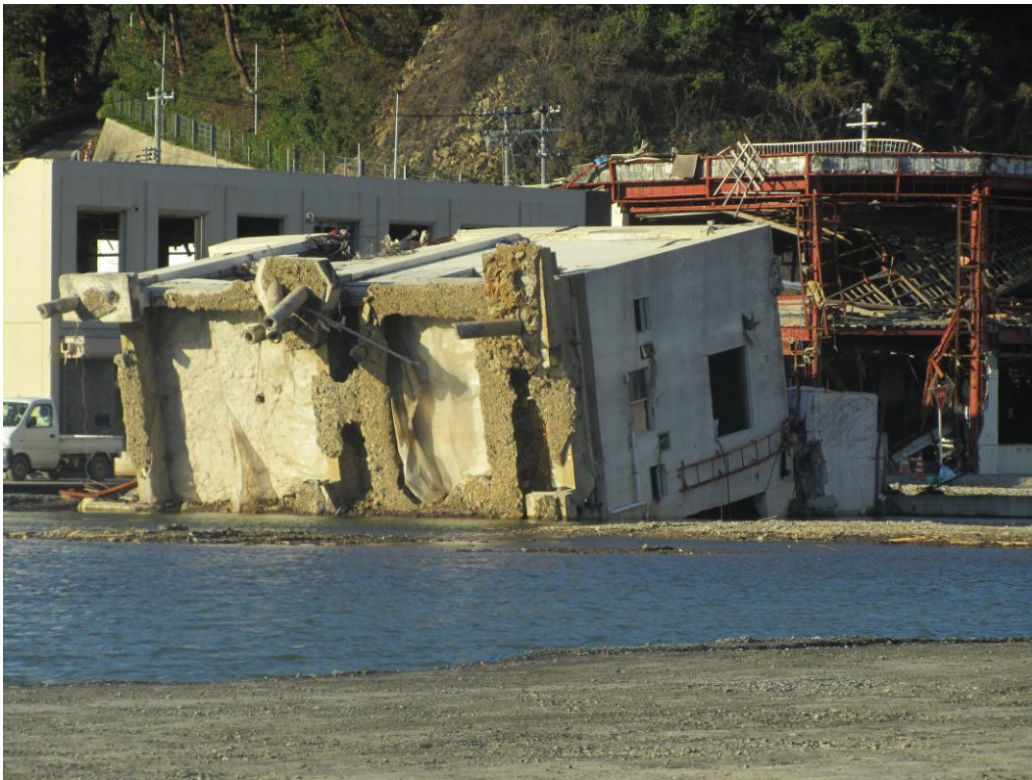


The 2011 Japan Tohoku Earthquake and Tsunami: Personal Assessment of Lessons Learned

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The moment magnitude 9.0 Japan Tohoku Earthquake of March 11, 2011 is one of the five largest earthquakes in the world since 1900 and the largest known earthquake to hit Japan. This event generated a tsunami with tsunami waves of up to 40 m (130 ft) that in some cases traveled up to 10 km (6 mi) inland. The tsunami caused significant damage to the northeastern coastal area of the main island of Japan that, in conjunction with six major aftershocks of moment magnitude 7.0 or larger, resulted in approximately 15,500 casualties, 6,000 injuries, 5,000 missing persons, 225,000 housing units collapsed, 434,000 housing units partially damaged, and 32,000 non-residential buildings damaged. This talk will focus on damage observed in the towns of Sendai, Ishinomaki, Onagawa, Minamisanriku, and Kesennuma along the northeastern coast of Japan during a technical visit held in October 2011. The following topics will be discussed: seismological characteristics of the earthquake; general characteristics of the tsunami; tsunami-induced damage; earthquake and tsunami preparedness, warning and response; and lessons learned from an engineering and disaster response perspectives.



Tsunami-induced damage to reinforced concrete and steel buildings in Onagawa.