

3. EXECUTIVE SUMMARY

In 2016, the OSU president as part of the Marine Science Initiative Program announced they were bringing on a team to design a groundbreaking research facility to withstand a magnitude 9.0 earthquake and tsunami. The proposed Marine Studies Initiative (MSI) Building would be part of the Hatfield Marine Science Center in Newport, Oregon. The Hatfield Marine Science Center aims to increase the region's capacity for marine-related education, research, outreach, and engagement. The location was chosen to provide "access to the sea" and this structure will provide increased laboratory capacity and a place for students and faculty to collaborate on addressing key issues involving the coast, the ocean, and ocean literacy. The need for this research facility to be located at the Hatfield campus on the coast challenged the design team to provide a structure that could be feasibly built within a tsunami inundation zone. Considering the geological risks inherent at the site, OSU established an aggressive set of design goals that included engineering the facility to remain operational during and after a magnitude 9.0 Cascadia Subduction Zone earthquake and the corresponding tsunami. The building was also planned as a vertical evacuation refuge for mobility-challenged occupants in lieu of the established horizontal evacuation route utilized as part of the City of Newport's emergency preparedness plan. The MSI Building is one of the few structures designed for tsunami risks and the first to use the recently adopted Tsunami Provisions contained in the American Society of Civil Engineer's (ASCE) Standard 7-16. These provisions are intended to provide the same level of life safety for code designed buildings resisting similar environmental hazards.

This unique structure was designed and built using innovative architectural and engineering practices to serve as ***one of the first vertical tsunami evacuation sites in the United States and the first site in Oregon.*** The project team went above and beyond to design a structure that could withstand a tsunami or earthquake event, serve as an evacuation location for more than 900 people, and be operational for the community post-event. This included the team designing above the current building code, which at the time of the design was still under development. After considering several design alternatives that would best meet OSU's objectives and budget, the team delivered a building that exceeds operational performance standards in a seismically hazardous location. There are already studies completed by Department of Geology and Mineral Industries (DOGAMI) indicating that this structure will significantly improve the survival rate for people living within the South Beach Newport tsunami inundation zone.

This building is a demonstration project for how to build responsibly within a tsunami inundation zone. The project is a model that promotes collaboration and innovation through transdisciplinary programs and shared resources. It embodies OSU's goals with the Marine Studies Initiative and supports the greater OSU Campus and Newport communities.