OREGON HAZARD EXPLORER FOR LIFELINES PROGRAM (OHELP): A WEB-BASED GEOGRAPHIC INFORMATION SYSTEM TOOL FOR ASSESSING POTENTIAL CASCADIA EARTHQUAKE HAZARD

Mahyar Sharifi-Mood, PhD student, Oregon State University a)
Michael J. Olsen, Associate Professor, Oregon State University a)
Daniel T. Gillins, Assistant Professor, Oregon State University a)

Abstract

The Cascadia Subduction Zone (CSZ) has the ability to generate earthquake as powerful as 9 moment magnitude creating great amount of damage to structures and facilities in Oregon. An M9.0 earthquake scenario is a persistent, long lasting shaking associated with other geological threats such as ground shaking, landslides, liquefaction-induced ground deformations, fault rupture vertical displacement, tsunamis, etc. These ground deformation endangers urban structures, foundations, bridges, roadways, pipelines and other lifelines.

Lifeline providers in Oregon, including private and public practices responsible for transportation, electric and gas utilities, water and wastewater, fuel, airports, and harbors face an aging infrastructure that was built prior to a full understanding of this extreme seismic risk. As recently experienced in Chile and Japan, a three to five minutes long earthquake scenario, expected in Oregon, necessities a whole different method of risk mitigation for these major lifelines than those created for shorter shakings from crustal earthquakes.

The purpose of this website is to provide easy access to the latest and best available hazard information over the web, including work completed in the recent Oregon Resilience Plan (ORP) (OSSPAC, 2013) and other work completed by the Department of Geology and Mineral Industries (DOGAMI) and the United States Geological Survey (USGS). As a result, this tool is designated for engineers, planners, geologists, and others who need this information to help make appropriate decisions despite the fact that this web-GIS tool only needs minimal knowledge of GIS to work with.

a) School of Civil and Construction Engineering, Oregon State University, Corvallis, OR 97331 3212, USA