Kent Yu, PhD, PE, SE, has fourteen years of structural engineering and earthquake engineering experience. Before he founded SEFT Consulting Group, he was Principal and Branch Manager of Degenkolb Engineers in Portland Oregon. He has worked on projects of all construction types that include seismic evaluation and retrofit design of existing buildings, structural design of new construction, structural condition assessment, historic preservation, peer review, and post-earthquake inspections. Much of his evaluation and strengthening design work has been for public/civic/government, healthcare, educational and high-tech facilities that are required to meet stringent performance levels. He has extensive experience in large scale structural testing and finite element analysis, along with incorporating these results into design and evaluation. He is well known for his expertise on advanced performance-based analysis of structures, and his innovative solutions have saved hundreds of millions of dollars for owners on the West Coast. A seismic veteran, an earthquake/tsunami policy advocate, and a member of SEAO, ASCE TCLEE and EERI, Dr. Yu has traveled to Peru (2007), China (2008), Chile (2010), and Japan (2011) for post-earthquake reconnaissance to study seismic performance of buildings and lifeline structures. He applies the state-of-art technology (such as base isolation and energy dissipation devices) and most recent lessons learned from earthquakes to his building and lifeline projects to ensure that the buildings are safe and critical services remain protected after an earthquake. He was the Chair of Oregon Seismic Safety Policy Advisory Commission from 2011 to 2013, leading a team of 169 expert volunteers in 2012 to develop Oregon Resilience Plan, the most comprehensive resilience plan in the nation to better prepare the state for next Cascadia earthquake and tsunami. He was also a member of the State Capitol Master Plan Review Committee representing A/E industry to help develop seismic risk mitigation recommendations for the State Capitol. He is a member of the ASCE 7 Subcommittee on Tsunami Loads and Effects which is in the process of developing a national standard for tsunami design of buildings and other structures, and has served as research advisor at Oregon State University, Portland State University, and University of Hawaii.

EMPLOYMENT

Project Engineer thru Principal and Branch Manager, Degenkolb Engineers at Portland Oregon November 2003 to September 2013

EDUCATION

University of California, San Diego
Ph.D. in Structural Engineering (with focus on Earthquake Engineering)

REGISTRATIONS

CA - Structural Engineer, License No. 5420
OR – Structural/Civil Engineer, License No. 78778
WA - Civil Engineer, License No. 44510

HONORS AND AWARDS

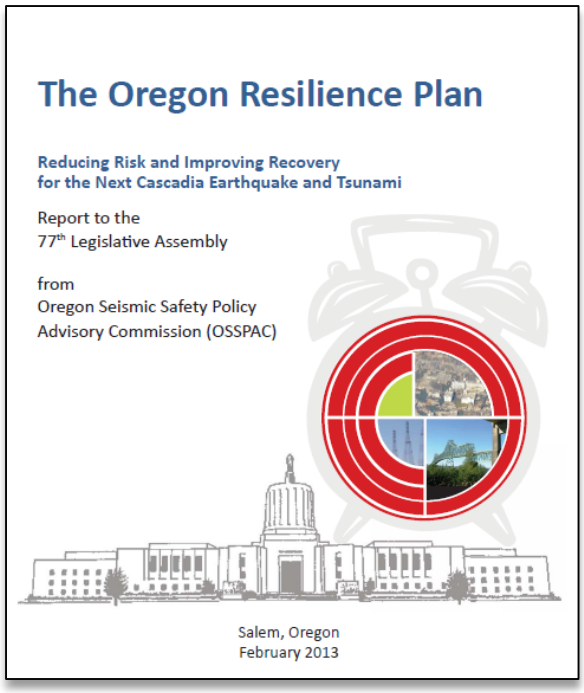
ASCE Raymond C. Reese Research Prize, 2001
Building Design & Construction 40 Under 40, 2007
Consulting-Specifying Engineer 40 Under 40, 2008
ASCE Engineer of the Year, Oregon Section, 2012

PROFESSIONAL AFFILIATIONS

Structural Engineers Association of Oregon
Earthquake Engineering Research Institute
American Society of Civil Engineers

COMMITTEES

Oregon Seismic Safety Policy Advisory Commission, 2011~13 Chairman
Portland State University Advisory Council
University of Portland Advisory Council
ASCE 7 Tsunami Loads and Effects Committee
ASCE TCLEE Executive Committee
ASCE TCLEE Ports and Harbors Committee
ASCE TCLEE Earthquake Inspection Committee



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SELECTED PROJECT EXPERIENCE*

WATER LIFELINE EXPERIENCE

Reservoir Seismic Evaluations City of Gresham
Gresham, Oregon
Serving as the prime consultant, evaluated the expected seismic performance of a 1.2-million gallon steel stand pipe and 2.6-million gallon prestressed concrete (DYK) tank, designed and constructed in the mid-1990's. Working with the City developed appropriate performance objectives for these tanks that are critical for post-earthquake fire suppression. Using an adaptation of seismic retrofit and water tank design standards identified potential seismic deficiencies and developed retrofit schemes to upgrade the seismic performance of these two tanks.

Reservoir Seismic Evaluations City of Vancouver
Vancouver, Washington
Conducted a seismic evaluation of two 1930's vintage reinforced concrete reservoirs (one-million gallon and four-million gallon reservoirs) that are an essential link in the City's water system to supply water for fire suppression in the aftermath of an earthquake. Our evaluation approach utilized an adaptation of seismic evaluation standards for existing buildings to determine expected performance and identify potential structural and non-structural deficiencies for these reservoir structures. Preliminary seismic retrofit schemes and retrofit cost estimates were developed for both reservoirs to enable the City of Vancouver to evaluate seismic upgrade and replacement options in their capital improvement project planning process.

Clean Water Services, Rock Creek Solids building, Washington County
Hillsboro, Oregon
Conducted a seismic evaluation of the multi-story Clean Water Services Rock Creek Solids Processing/ Dewatering Building to achieve Life-safety performance Objective. Develop a schematic structural strengthening concept, and work with a cost estimator to develop construction budget for seismic upgrade.

TSUNAMI RISK MITIGATION/RESEARCH

Tsunami Vertical Evacuation -- Building Cannon Beach City Hall
Cannon Beach, Oregon

Collaborated with a multi-disciplinary team to developed conceptual design for the first tsunami vertical evacuation building of its kind in the United States in 2009 to provide refuge for up to 1,000 people and replace the current City Hall Building in Cannon Beach, Oregon. Collaborated with tsunami modeler of DOGAMI for tsunami inundation depth and flow velocity, and worked with professors at the Oregon State University to provide structural and foundation design to address tsunami debris impact forces and scouring effects on the foundations.

SEISMIC ASSESSMENT/ UPGRADE EXPERIENCE

Fire Station 1, Seismic Upgrade, City of Portland
Portland Oregon

Performed a seismic evaluation and designed the seismic upgrade of this historic fire station constructed of nonductile concrete shear wall. Built in 1952, the station is three-story with a full basement, drill tower and apparatus bays that now meet Immediate Occupancy performance objective. Sitting on liquefiable soil, significant soil remediation including jet grouting was performed as part of the overall retrofit scheme.

This facility reopened in December 2009 and currently supports both the main heavy rescue services downtown as well as the BFRES administrative services and responds to over 6,000 emergency calls per year. Construction cost was $9.5M which was less than half the cost of a new station as originally desired.

Science Research and Teaching Center (SRTC) Portland State University
Portland, Oregon

Using performance based engineering (PBE) and advanced analysis, designed the seismic upgrade of a multi-storied concrete structure, approximately 250,000 square feet. In order to minimize disruption to the student occupants and symbolize the building's modernization, innovative exterior strengthening schemes were developed and utilized. By pinpointing the exact seismic deficiencies, the upgrade scheme saved $1.4M in construction costs for this LEED Gold project.

In addition to the seismic upgrade of the existing building this project also included design and construction of a new three-story Hazardous Materials Storage building and pedestrian access ramp. The steel framed structure with reinforced concrete shear walls utilized innovative sliding seat connections to seismically separate the new and existing buildings.

Seismic Renovation Study of Portland B100 and B101, Department of Veterans Affairs
Portland, Oregon

Perform detailed performance-based seismic evaluation of Building 100 and Building 101 constructed in 1988 and developed a seismic upgrade scheme to address all structural issues found to be noncompliant with Immediate Occupancy performance objective. Worked with the owner, an architect and a contractor to address various constructability concerns, and developed a cost-effective innovative bracing scheme as well as thoughtful phasing concepts that will minimize disruptions to veterans and medical staff.

PEER REVIEW EXPERIENCE

Confidential Client
Portland, Oregon

Performed a seismic design peer review of a new 450mm factory that consists of a fab building, PSSS, CUB, PUB and associated clean links. The fab building is designed to be a four-level microelectronics fab. The cleanroom is planned for 200,000 square feet with potential expansion of up to 600,000 square feet of manufacturing space. Worked closely with the design engineer and client to ensure that the seismic performance of the facility would meet the client's stringent seismic performance objective.

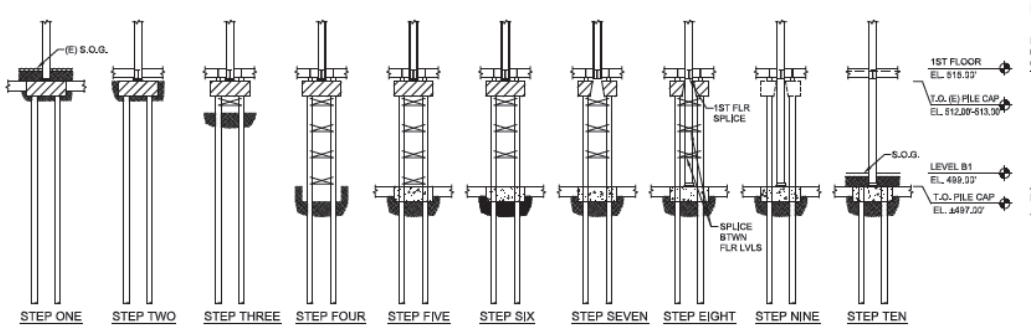
Peer Review Confidential Client
Portland, Oregon

Performed a seismic design peer review for a precast design alternate for a microelectronics fab building. Worked with the project team consisting of the client, structural engineers, vibration consultants, precasters, and contractors to develop a design that can accelerate the speed of construction, while still emulating the seismic performance of the prototype cast-in-place design.

MEANS AND METHODS EXPERIENCE

Portland B100 Basement Study, Department of Veterans Affairs
Portland, Oregon

Provided consulting services to help the VA determine if it is feasible to excavate the "pyramids" at the B1 level to increase square footage within the current footprint of Building 100 at the VA Portland Medical Center. The building serves as the facility's main hospital. It is a nine-story structure with a penthouse, with the exterior grade approximately level with the first floor at the east and south sides, sloping down to the lower basement level at the north and west sides.



B100 Pile Cap Testing, Department of Veterans Affairs
Portland, Oregon

In collaboration with Oregon State University, provided full-scale testing of concrete pile caps to determine the maximum vertical capacities under static loading. Testing of specimens replicating existing pile cap construction details and material strengths have demonstrated that the vertical load capacity of the pile caps is significantly higher than predicted by standard design equations and that the pile caps have the capacity to support the proposed vertical expansion. This testing program has eliminated the need for a multi-million dollar pile cap retrofit project and has also resulted in a construction savings for the VA of at least 50 times the cost of testing.

BASE ISOLATION EXPERIENCE

Advanced Engineering Analysis (2001)
Confidential Client
To validate seismic design of a base-isolated land based missile defense radar system, develop a detailed computer model to explicitly consider soil-structural interaction effects, and performed advanced nonlinear time-history analyses to assess seismic behavior of this 3D base-isolated structure for performance compliance

Seismic Feasibility Study of a Historic Church Headquarters Building using Base Isolation (2005)
Confidential Client
As Prime consultant, work with a consulting team consisting of architects, mechanical and electrical engineers, a contractor, and material testing specialists to investigate critical construction details through localized demolition, determine material properties via in-situ testing and sample testing, and perform a performance-based earthquake evaluation of a church office building built in 1910s. Develop three seismic renovation schemes including a base isolation scheme to achieve performance objectives ranging from Collapse Prevention to Immediate Occupancy for a 2500-year seismic event. Work with a contractor/cost estimator to verify constructability of base isolation installation and develop a construction budget for each of the three schemes for the owner to consider and implement.
Seismic Feasibility Study of a Historic Stone Temple using Base Isolation (2006)
Confidential Client
As Prime consultant, work with a consulting team consisting of architects, structural engineers, a geotechnical engineer/seismologist, and material testing specialists to develop as-built drawings through detailed field investigation, take cores to determine material properties, and perform a performance-based earthquake assessment of a magnificent stone temple built between 1850s and 1890s. Develop a detailed base isolation scheme to achieve Immediate Occupancy performance objective for a 2500-year seismic event, considering soil-structural interaction. Work with a contractor/cost estimator to verify constructability of base isolation installation and develop a phasing plan and associated construction budget. Adjudicate review comments developed by a peer review team retained by the owner.

THE PROJECT EXPERIENCE WAS WITH DEGENKOLB ENGINEERS

PUBLICATIONS AND PAPERS

Yu, Q.-S., Wilson, J., and Wang, Y. (2014). "Overview of The Oregon Resilience Plan for Next Cascadia Earthquake and Tsunami." Tenth US National Conference on Earthquake Engineering, Anchorage, Alaska, July.

Newell, J., Yu, Q.-S., Clary, T., and Ballantyne, D. (2014). "Performance-Based Seismic Evaluation and Retrofit of Two 1930's Reinforced Concrete Water Reservoirs." Tenth US National Conference on Earthquake Engineering, Anchorage, Alaska, July.

Wang, Y. and Yu, Q.-S. (2014). "Resilience Engineering Frameworks: Adapting to Exterme Events." Second International Conference on Vulnerability and Risk Analysis and Management, Livepool, UK, July.

Naito, C., Cox, D., Yu, Q.-S., and Brooker, H., (2013). "Fuel Storage Container Performance During the 2011 Tohoku Japan Earthquake." Journal of Performance of Constructed Facilities, ASCE.

Thomas, S., Newell, J., and Yu, Q.-S. (2012). "Performance-based Design of a Tsunami Evacuation Building to Mitigate Tsunami Risk." Paper No. 5557, Proceedings of the 15th World Conference on Earthquake Engineering, Lisbon, Portugal.

Yu, Q.-S., Lumbard, D., Newell, J. and Malley, J. (2011). "Seismic Retrofit of a Higher-Education Building Using Advanced Analysis to Optimize Use of Existing Building Components." Proceedings of the ASCE SEI Structures Congress, Las Vegas, Nevada.

Yu, Q.-S. and Gonzalez, D. (2008). "Lessons Learned from the October 15, 2006 Hawaii Earthquake and the August 15, 2007 Peru Earthquake." Proceedings of the 14th World Conference on Earthquake Engineering, October 12-17, Beijing, China .

Yu, Q.-S., Love, R.J., McNeil, S. and Zepeda, D. (2008). "Retrofit of a Critical Care Facility in Los Angeles with Steel Plate Shear Walls." Proceedings of the 2008 Structures Congress, April 24-26, Vancouver, Canada.

Allen, M., Yu, Q.-S., Mitchell, C., and Pugliesi, R. (2006). "Seismic Evaluation of a 15-Story Composite Steel-Concrete Hospital Building. " Proceedings of the 8th National Conference on Earthquake Engineering, San Francisco, California, April.

Yu, Q.-S., Pugliesi, R., Allen, M. and Bischoff, C. (2004). "Assessment of Modal Pushover Analysis Procedure and its Application to Seismic Evaluation of Existing Buildings." Paper No. 1104, 13th World Conference on Earthquake Engineering, Vancouver, B.C., Canada, August.