CURRICULUM VITAE

Daniel M. Dowden

Assistant Professor
Department of Civil and Environmental Engineering
Michigan Technological University
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RESEARCH INTERESTS

- Earthquake engineering
- Self-centering systems
- Resilient infrastructure
- Structural control
- Nonlinear response of steel structures due to extreme loadings
- Experimental testing using static, pseudo-dynamic, and dynamic methods

EDUCATION

Ph.D., Civil Engineering – Structural Engineering **September 2014**
University at Buffalo, the State University of New York, Buffalo, NY, USA Dissertation: Resilient Self-Centering Steel Plate Shear Walls
Advisor: Michel Bruneau

M.S., Civil Engineering – Structural Engineering **December 1997**
University of Wyoming, Laramie, WY, USA
Thesis: Shear capacity of prestress beams using fiber reinforced plastics (FRP)
Advisor: Charles W. Dolan

B.S., Civil Engineering – Structural Engineering **May 1996**
Washington State University, Pullman, WA, USA

ACADEMIC EMPLOYMENT

Michigan Technological University, Houghton, MI **January 2017-present**
Assistant Professor

RESEARCH EXPERIENCE

Resilient Self-Centering Steel Plate Shear Wall **Jan. 2009 – Sept. 2014**
Graduate Research Assistant at University at Buffalo
National Science Foundation award number CMMI-0830294
Advisor: Michel Bruneau, University at Buffalo

- Developed the Self-Centering Steel Plate Shear Wall concept and advanced knowledge on behavior through analytical and experimental investigation.

- Analytical investigation included development of numerical models in SAP2000 and OpenSees, established fundamental kinematic behavior of SC-SPSWs leading to equations to inform design, and development of an innovative post-tensioned beam-to-column rocking connection that eliminates PT boundary frame expansion that occurs with previously proposed beam-to-column rocking connections.
- Experimental investigation included (9) quasi-static and (7) shake-table tests of 1/3 scale single-bay three-story frame specimens conducted at the University at Buffalo; additionally, (1) full-scale single- bay two-story specimen was conducted at the National Center for Research on Earthquake Engineering in Taipei, Taiwan using the pseudo-dynamic test method.
- Designed test specimens, interface connections with existing test fixtures, produced steel fabrication drawings, and provided periodic site visits to the steel fabrication shop for inspection.
- Developed loading protocols, test plans, instrumentation requirements, and coordination oversight with lab technicians to conduct tests within tight time lines.
- Responsible for writing quarterly and annual reports submitted to NSF NEES providing progress and testing status of tests conducted at UB NEES.

Shear Capacity of Prestress Beams Using Fiber Reinforced Plastics **Aug. 1996 – Dec. 1997**
Graduate Research Assistant at University of Wyoming
Advisor: Charles W. Dolan

- Conducted experimental investigation of prestressed beams reinforced with FRP prestress strands and stirrups.
- Constructed FRP reinforced prestress beams including bending of stirrups, placement of concrete, and prestressing the beams.
- Assisted lab technicians with test setups.

TEACHING EXPERIENCE

Assistant Professor **January 2017 – Present**
Michigan Technological University

- CEE4213 – Reinforced Concrete Design (Spring Semesters)
- CEE5212 – Prestressed Concrete Design (Fall Semesters)

Adjunct Instructor – Steel Design (CIE 428) **May – July 2016**
University at Buffalo

- Instructor for senior-level steel design course (20 students). This course emphasized a theoretical understanding of fundamental concepts in analysis and design of steel structures. Focuses on building structures; topics addressed in the class include materials, tension members, compression members, beams and beam-columns, welded and bolted connections and analysis and design of steel structures for gravity, wind, and seismic.
- Responsible for teaching the curriculum, designed and graded homework and exams.
- Held office hours and assisted students with conceptual problems.

Lecturer – Steel Design (CIE 428) **August – September 2013**
University at Buffalo

- Interim lecturer for the first two weeks of the course for the senior-level steel design course. Topics

included design philosophy (i.e., LRFD and ASD), load combinations, tension member design, and more.

Adjunct Instructor – Structural Engineering I(CIE 323) August – December 2012
University at Buffalo

- Instructor for junior-level structural analysis course (96 students). This course is the first of a two- course sequence required of all civil engineering students. It deals with basic aspects of structural analysis and design. This course will primarily concentrate on structural systems, on the analysis of statically determinate structures, the construction of internal force diagrams, the construction and use of influence lines, the calculation of deflections, the determination of loads and some elements of design. Students were also taught to use the program SAP2000.
- Responsible for teaching the curriculum, developed full set of personal lecture notes, and exams.
- Held office hours and assisted students with conceptual problems.
- Supervised the Teaching Assistant.

Lecturer – Advanced Steel Design (CIE 524) Spring 2011
University at Buffalo

- Provided a lecture on application and design of special concentrically and eccentrically braced steel frames.

Teaching Assistant – Steel Design (CIE 428) August - December 2008
University at Buffalo

- Held office hours and assisted students with conceptual problems.
- Graded homework and tests.

MENTORING EXPERIENCE

- Faculty Committee Chair and Advisor, Michigan Technological University **January 2018-present**
    - 1 PhD student
    - 1 Masters student
- Faculty Committee Member, Michigan Technological University
    - 1 PhD student
    - 1 Masters student
- As a structural project engineer/manager at PCS-Structural Solutions, guidance was provided to junior-level engineers in aspects of structural design, detailing and preparation of structural drawings at all design phases, construction administration, and communication with multi-discipline teams.

2003 - 2008

PUBLICATIONS AND PRESENTATIONS

Refereed Journal Articles

[1] Dowden, D.M., and Bruneau, M. (2019) "Quasi-Static Cyclic Testing and Analytical Investigation of Steel Plate Shear Walls with Different Post-Tensioned Beam-to-Column Rocking Connections." *Engineering Structures*, doi: 10.1016/j.engstruct.2019.02.048.

[2] Dowden, D.M., and Bruneau, M. (2016) "Dynamic Shake-Table Testing and Analytical Investigation of Self-Centering Steel Plate Shear Walls" *Journal of Structural Engineering*, ASCE, doi: 10.1061/(ASCE)ST.1943-541X.0001547.

[3] Dowden, D.M., and Bruneau, M. (2016) "Kinematics of Self-Centering Steel Plate Shear Walls with

NewZ-BREAKSS Post-tensioned Rocking Connection." *Engineering Journal*, AISC, Third Quarter, pp. 117-135.

[4] **Dowden, D.M.**, Clayton, P.M., Li, C.-H., Berman, J.W., Bruneau, M, Lowes, L.N., and Tsai, K.C. (2016). "Full-scale Pseudo-dynamic Testing of Self-Centering Steel Plate Shear Walls." *Journal of Structural Engineering*, ASCE, doi: 10.1061/(ASCE)ST.1943-41X.0001367.

[5] **Dowden, D.M.**, Purba, R., and Bruneau, M. (2012). "Behavior of Self-Centering Steel Plate Shear Walls and Design Considerations." *Journal of Structural Engineering*, ASCE, Vol. 138, No. 1, pp. 11-21.

[6] **Dowden, D.M.**, and Bruneau, M. (2011). "NewZ-BREAKSS: Post-tensioned Rocking Connection Detail Free of Beam Growth." *Engineering Journal*, AISC, Second Quarter, pp. 153-158.

[7] Gilstrap, J.M., Burke, C.R., **Dowden, D.M.**, and Dolan, C.W. (1997). "Development of FRP reinforcement guidelines for prestressed concrete structures." *Journal of Composite Structural Engineering*, ASCE, Vol. 1, No. 4, pp. 131-139.

Articles in Conference Proceedings

[1] **Dowden, D.M.**, and Tatar A. (2019). "Seismically Resilient Self-Centering Cross-Laminated Rocking Walls with Coupling Beams." Proc., Structures Congress, ASCE, Orlando, FL

[2] **Dowden, D.M.**, and Bruneau, M., (2016), "Self-Centering Steel Plate Shear Walls with NewZ-BREAKSS Post-Tensioned Rocking Connection." Procs., 8th International Workshop on Connections in Steel Structures (Connections VIII), Boston, MA.

[3] Clayton, P.M., **Dowden, D.M.**, Li, C.-H., Berman, J.W., Bruneau, M., Lowes, L.N., and Tsai, K.C. (2015), "Self-Centering Steel Plate Shear Walls for Improving Seismic Resilience." Procs., 8th STESSA Conference on Behavior of Steel Structures in Seismic Areas, Shanghai, China.

[4] **Dowden, D.M.**, and Bruneau, M. (2014), "Cyclic and Dynamic Testing of Self-Centering Steel Plate Shear Walls." Procs.,10th National Conference in Earthquake Engineering, Earthquake Engineering Research Institute, Anchorage, AK.

[5] Clayton, P.M., **Dowden, D.M.**, Li, C.-H., Berman, J.W., Tsai, K.C., Lowes, L.N., and Bruneau, M. (2014), "Advances in Self-Centering Steel Plate Shear Wall Testing and Design." Procs.,10th National Conference in Earthquake Engineering, Earthquake Engineering Research Institute, Anchorage, AK.

[6] Clayton, P.M., **Dowden, D.M.**, Li, C.-H., Berman, J.W., Lowes, L.N., Bruneau, M., and Tsai, K.C. (2013), "Pseudo-dynamic Testing of Self-Centering Steel Plate Shear Walls." the 5th International Conference on Advances in Experimental Structural Engineering, Taipei, Taiwan.

[7] Clayton, P.M., **Dowden, D.M.**, Winkley, T. B., Berman, J.W., Bruneau, M., and Lowes, L.N. (2012). "Experimental Investigation of Self-Centering Steel Plate Shear Walls." Proc., Structures Congress, ASCE, Chicago, IL.

[8] Clayton, P.M., **Dowden, D.M.**, Purba, R., Berman, J.W., Bruneau, M., and Lowes, L.N. (2011). "Seismic Design and Analysis of Self-Centering Steel Plate Shear Walls." Proc., Structures Congress, ASCE, Las Vegas, NV.

[9] Dolan, C.W., and **Dowden, D.M.** (1997) "Comparison of Experimental Shear Data with Code Predictions for FRP Prestressed Beams." Proc., Third International Symposium on Non-Metallic (FRP) Reinforcement for Concrete Structures (FRPRCS-3), Japan Concrete Institute, Sapporo, Japan.

Research Reports, Dissertation, and Thesis

[1] **Dowden, D.M.**, and Bruneau, M. (2014). "Analytical and Experimental Investigation of Self-Centering Steel Plate Shear Walls." *Tech. Rep. MCEER-14-0010*, Multidisciplinary Center for

Earthquake Engineering Research, State University of New York Buffalo, Buffalo, New York.

[2] **Dowden, D.M.** (2014). "Resilient Self-Centering Steel Plate Shear Walls" Ph.D. dissertation, Dept. of Civil, Structural, and Environmental Engineering, University at Buffalo, Buffalo, NY.

[3] **Dowden, D.M.** (1997). "Shear Capacity of Prestress Beams Reinforced with Fiber Reinforced Plastics (FRP)" M.S. thesis, Dept. of Civil and Environmental Engineering, University of Wyoming, Laramie, WY.

Technical Reports

[1] Anagnostopoulou, M., **Dowden, D.M.**, and Reinhorn, A.M. (2015). "Seismic Qualification Test of Ceiling Systems, A Study for Chicago Metallic Corporation," *Report No. UB CSEE/SEESL-2015- 04 to UB CSEE/SEESL-2015-14*, State University of New York at Buffalo, Buffalo, New York, April.

[2] Anagnostopoulou, M., **Dowden, D.M.**, and Whittaker, A. S. (2014). "Seismic Qualification Test of Ceiling Systems, A Study for Armstrong Building Products Operations," Part XXIV, Report No. UB CSEE/SEESL-2014-14, State University of New York at Buffalo, Buffalo, New York, September.

[3] **Dowden, D.M.** (2016). "Seismic Qualification Test of Ceiling Systems, A Study for Rockfon, LLC," *Report No. UB CSEE/SEESL-2016-19 to UB CSEE/SEESL-2016-28*, State University of New York at Buffalo, Buffalo, New York, September

[4] **Dowden, D.M.**, and Pitman, M.C. (2016). "Coefficient of Friction Tests of Elastomeric Bearings For the Manhattan Approach to Robert F. Kennedy Bridge Project, A Study for Parsons/GPI RK23A, JV, "*Report No. UB CSEE/SEESL-2016-03*, State University of New York at Buffalo, Buffalo, New York.

[5] **Dowden, D.M.**, Pitman, M.C., Bruneau, M. (2016). "Static and Dynamic Cyclic Component Testing of 0.4 Scale Abrasive Friction Device, A Study for HDR Engineering, Inc.," *Report No. UB CSEE/SEESL-2016-01*, State University of New York at Buffalo, Buffalo, New York.

[6] **Dowden, D.M.**, and Reinhorn, A.M. (2016). "Seismic Qualification Test of Ceiling Systems, A Study for Chicago Metallic Corporation," *Report No. UB CSEE/SEESL-2015-15 to UB CSEE/SEESL-2015-29*, State University of New York at Buffalo, Buffalo, New York, January.

[7] **Dowden, D.M.**, and Whittaker, A. S. (2016). "Seismic Qualification Test of Ceiling Systems, A Study for Armstrong Building Products Operations," Part XXIX, *Report No. UB CSEE/SEESL- 2016-18*, State University of New York at Buffalo, Buffalo, New York, August

[8] **Dowden, D.M.**, and Whittaker, A. S. (2016). "Seismic Qualification Test of Ceiling Systems, A Study for Armstrong Building Products Operations," Part XXVII, *Report No. UB CSEE/SEESL- 2015-67*, State University of New York at Buffalo, Buffalo, New York, January.

[9] **Dowden, D.M.**, and Reinhorn, A.M. (2015). "Seismic Qualification Test of Ceiling Systems, A Study for Rockfon, LLC," *Report No. UB CSEE/SEESL-2015-56 to UB CSEE/SEESL-2015-66*, State University of New York at Buffalo, Buffalo, New York.

[10] **Dowden, D.M.**, and Reinhorn, A.M. (2015). "Seismic Qualification Test of Ceiling Systems, A Study for Chicago Metallic Corporation," *Report No. UB CSEE/SEESL-2015-44 to UB CSEE/SEESL-2015-55*, State University of New York at Buffalo, Buffalo, New York.

[11] **Dowden, D.M.**, and Whittaker, A. S. (2015). "Seismic Qualification Test of Ceiling Systems, A Study for Knauf AMF GmbH & Co. KG-Germany," *Report No. UB CSEE/SEESL-2015-30 to UB CSEE/SEESL-2015-36*, State University of New York at Buffalo, Buffalo, New York, July.

[12] **Dowden, D.M.**, and Whittaker, A. S. (2015). "Seismic Qualification Test of Ceiling Systems, A Study for Armstrong Building Products Operations," Part XXVI, *Report No. UB CSEE/SEESL- 2015-41*, State University of New York at Buffalo, Buffalo, New York, July.

[13] **Dowden, D.M.**, and Whittaker, A. S. (2015). "Seismic Qualification Test of Ceiling Systems, A Study for Armstrong Building Products Operations," Part XXV, *Report No. UB CSEE/SEESL- 2014-16*, State University of New York at Buffalo, Buffalo, New York, February.

[14] Pitman, M.C., **Dowden, D.M.**, and Amjad, A.J. (2015). "Seismic Qualification Test of OTCF_800.EM 765kV-2100kV BIL 4000pF with Ceramic Insulators Capacitor Voltage Transformer, A Study for Alstom Grid Corporation," *Report No. UB CSEE/SEESL-2015-43*, State University of New York at Buffalo, Buffalo, New York.

[15] Pitman, M.C., **Dowden, D.M.**, and Amjad, A.J. (2015). "Seismic Qualification Test of 30MP Chiller Units, A Study for the Carrier Corporation," *Report No. UB CSEE/SEESL-2015-42*, State University of New York at Buffalo, Buffalo, New York, July.

[16] Pitman, M.C., **Dowden, D.M.**, and Amjad, A.J. (2015). "Seismic Qualification Test of 230 kV Resin-Impregnated Fibre Capacitive Transformer Bushings, A Study for RHM International- Beijing," *Report No. UB CSEE/SEESL-2015-40*, State University of New York at Buffalo, Buffalo, New York.

[17] Pitman, M.C., **Dowden, D.M.**, and Amjad, A.J. (2015). "Seismic Qualification Test of 245 kV Disconnect Switch, A Study for Royal Switchgear Manufacturing Co.," *Report No. UB CSEE/SEESL-2015-39*, State University of New York at Buffalo, Buffalo, New York.

[18] Pitman, M.C., **Dowden, D.M.**, and Amjad, A.J. (2015). "Seismic Qualification Test of Big Buffalo Custom Air Handling Units, Plate Fin Energy Flow Coils, and Aeromix Integral Face and Bypass Coils, A study for Air & Liquid Systems Corporation Buffalo Air Handling and Aerofin. Divisions," *Report No. UB CSEE/SEESL-2015-03*, State University of New York at Buffalo, Buffalo, New York, March.

[19] Pitman, M.C., **Dowden, D.M.**, and Amjad, A.J. (2014). "Seismic Qualification Test of 30XA160 Chiller Unit, A Study for the Carrier Corporation," *Report No. UB CSEE/SEESL-2014-15*, State University of New York at Buffalo, Buffalo, New York, November.

Invited Talks

[1] "Self-Centering Steel Walls for Reducing Earthquake Impacts," National Taiwan University, Taipei, Taiwan, August 2012.

[2] "Part I: Resilient Self-Centering Steel Plate Shear Walls; Part II: Seismic Qualification Testing at the Structural Engineering and Earthquake Simulation Laboratory, University at Buffalo", AIR Worldwide Catastrophe Risk Engineering, Earthquake Research Group, Boston, MA, February 2016 (Webinar).

[3] "Self-Centering Steel Plate Shear Walls for Improving Building Seismic Resilience", Michigan Technological University, April 2016.

SERVICE, MEMBERSHIP, AND OUTREACH ACTIVITES

Professional Societies

- American Society of Civil Engineers (ASCE), Member, 2017-present
- American Institute of Steel Construction (AISC), Member, 2017-present
- American Concrete Institute (ACI), Member, 2017-present
- Member of Structural Engineers Association of Washington (SEAW), 2002-2008
- Corresponding Member, Earthquake Engineering Committee, SEAW, 2007-2008
- Associate Member of Structural Engineers Association of Washington (SEAW), 1998-2001

Technical Committees

- ASCE SEI Technical Activities Committee Member for "Seismic Effects", 2018-present

Journal Reviewer
- Engineering Structures, 2018-present
- ASCE Journal of Structural Engineering, 2017-present
- Journal of Constructional Steel Research, 2017-present
- Bulletin of Earthquake Engineering, 2017-present

University
- Faculty Advisor, ASCE SEI, Michigan Tech chapter, August 2019 - present
- Faculty Advisor, Tau Beta Pi, Michigan Tech chapter, November 2017 – present
- Committee Member, Graduate and Research Committee, Dept. of Civil and Environmental Engineering, Michigan Technological University, September 2017 – August 2019
- Committee Member, Curriculum Assessment Sub-Committee, Dept. of Civil and Environmental Engineering, Michigan Technological University, September 2019 – Present

PROFESSIONAL LICENSURE AND CERTIFICATES

- Professional Structural Engineer – No. 38543 – Washington State **2005**
- Professional Civil Engineer – No. 38543 – Washington State **2002**
- Engineer-In-Training – Washington State **1996**
- ATC 20 trained: for the rapid assessment of post-earthquake safety evaluation of buildings

PROFESSIONAL EXPERIENCE

Structural and Test Engineer **July 2014 – October 2016**
Structural Engineering and Earthquake Simulation Laboratory (SEESL)
University at Buffalo, the State University of New York
Dept. of Civil, Structural and Environmental Engineering
- Service-to-Industry seismic qualification shake-table testing per ICC-ES AC156 and IEEE693 stds.
- Reduction and analysis of test data
- Development of technical qualification reports as lead author or in support of other report authors
- Provide technical SEESL lab support of sponsored research projects for M.S. and Ph.D. students

Project Manager **2006 – April 2008**
PCS Structural Solutions, Seattle, WA
- Responsible for the management of the design, budget, and construction administration of projects. In addition to performing hands-on day-to-day structural engineering, other responsibilities included third party peer reviews performing value engineering and constructability review services.
- Serve within the firm's expert panel groups for (1) *Concrete group* – design, code standards, construction practices; (2) *Code group* – up to date knowledge with building codes related to gravity, seismic, wind, and snow loadings; (3) *Existing Buildings group* – design, evaluations, code standards, seismic triggers related to existing building renovations and seismic upgrades.

Project Engineer **2002 – 2005**
PCS Structural Solutions, Seattle, WA

- As a project engineer, additional responsibilities included being a key role in all phases of a project, from the initial schematic phase to full responsibility of a project during construction phase.
- Serve within the firm's expert panel groups for (1) *Concrete group* – design, code standards, construction practices; (2) *Code group* – up to date knowledge with building codes related to gravity, seismic, wind, and snow loadings.

Design Engineer
January 1998 - 2001
PCS Structural Solutions, Seattle, WA

- Responsible for the structural engineering and detailing for a wide range of building projects from new to existing construction. Experience in the design of structural systems included all types of building construction from steel, wood, masonry, and concrete systems. In particular, I was one of the firm's specialists in post-tensioned concrete design. Beyond the aspects of the engineering, learning to efficiently communicate and coordinate with the Architect, other design disciplines and general contractors on a project team was vital to my growth as a design engineer.

SELECT INDUSTRY PROJECT EXPERIENCE

- **Island Hospital Renovation & Addition - Anacortes, WA -** Structural design for 55,000 SF of building additions as well as renovations to one-third of the existing structures. The structure is designed as an Essential Facility and consists of a two story structure which includes new MRI, trauma, x-ray, office and patient care rooms. Building construction consists of structural steel framing with slab-on-metal-deck composite floor deck supported on a concrete pile and grade beam foundation. Lateral system consists of masonry and concrete shear walls.
- **Fort Lewis Readiness Center – Fort Lewis, WA –** Structural design of an 80,000 SF readiness center for the 66th Aviation Brigade. The structure is designed as an Essential Facility and addresses anti-terrorism requirements. The facility contains a two and three story administration wing along with a single story assembly and storage wing. It is constructed of concrete and masonry bearing/shear walls with steel framed floors and roofs.
- **Kitsap Readiness Center – Bremerton, WA –** Structural design of a 50,500 SF two story emergency readiness center. The building system consists of concrete and CMU walls, hollowcore slab floor system, and open-web steel roof trusses.
- **Port of Seattle Aircraft Rescue and Fire Fighting Facility -** Structural design of a new multi-purpose training and hose drying tower, new vehicle storage building, and new single story office addition build out to the existing building structure.
- **Auburn Fire Station #33 – Auburn, WA –** Structural design of an 11,000 SF fire station. The structure is designed as an Essential Facility consisting of wood framed construction. Lateral system consisted of a combination of wood stud shear walls and special moment resisting steel frames.
- **1111th E Pike Street Condo - Seattle, WA –** Structural design of two levels of below grade post-tensioned slab parking levels supporting four levels of wood-framed construction. Approximately 42,000 SF.
- **6th and Pacific Office Building – Bremerton, WA –** Structural design of 2 levels of cast-in-place concrete garage, with 4 levels of structural steel framing above. Lateral system utilized a concrete shear wall core to provide optimal space to the upper floor level units. Approximately 91,000 square feet.
- **Providence St. Peter Hospital Parking Garage – Olympia, WA -** Structural design of a four level, 400

stall unique crescent-shaped, cast-in-place, post-tensioned concrete structure that extends over a large detention pond. Deep grade beam foundations minimized poor soil settlement risk. Lateral system consisted of concrete shear walls.

- **Swedish Hospital Ballard Parking Garage – Seattle, WA -** Structural design of 1 level and partial 3 level vertical expansion on top of existing post-tensioned garage. 41,000 SF and 130 stalls were added.
- **Central Washington University Music Building – Ellensburg, WA –** Structural design of an 85,000 SF, multi-phase one and two story building. The Concert/Recital Hall is a two-story, CMU structure with a composite steel beam floor system and open-web steel joist roof system. The Classroom Wing is a two-story, post-tensioned slab structure with concrete shear walls.
- **University of Puget Sound Academic Building – Tacoma, WA -** A three story 50,000 SF concrete frame and shear wall building. Includes cast-in-place concrete, post-tensioned slab floor systems and steel roof framing.
- **Redmond Junior High School – Redmond, WA –** Structural design of a 120,000 SF facility. Construction consists of composite steel beam floor system, open-web joist and structural steel roof system with steel brace frames. The gym and locker rooms are tilt-up concrete panels and load bearing masonry walls.
- **Orting Elementary School – Orting, WA -** Structural design of a single story 51,000 SF elementary school. Structure consists of wood stud shear walls, open-web wood joists and glulam beam roof framing, concrete grade beam and battered timber pile foundation.
- **Chimacum Elementary School – Chimacum, WA –** Structural design of a new 30,000 SF facility with slab-on-grade construction, wood stud bearing/shear wall building with open-web wood joist roof structure.
- **River of Life Fellowship Church – Kent, WA –** Structural design of a single story 49,000 SF church with basement located in Pierce County, WA. The building system consists of tilt up concrete wall panels, composite steel beam floor system, open-web steel joist and structural steel roof system with concrete shear walls and lateral steel brace frames.
- **Sunrise Pacific Beach Assisted Living Facility – San Diego, CA** – Structural design of a three story 54,000 SF concrete structure with one level of underground parking. Structure contains concrete shear walls and post-tensioned floor slabs. Site work includes cantilevered shoring piles to facilitate construction in a developed neighborhood.
- **Sunrise Studio City Assisted Living Facility – Studio City, CA –** Structural design of a four story 78,000 SF concrete structure with one level of underground parking located near Los Angeles. Structure contains concrete shear walls and post-tensioned floor slabs. The structure is supported by a concrete pile foundation system, with some integrated shoring piles to support exterior walls.
- **Daniel Evans Library, Evergreen State College Library – Olympia, WA -** Structural evaluation and dynamic analysis of an existing multi-story concrete structure. Structural design of concrete shear walls, FRP wrap strengthening of existing non-ductile slender concrete columns. Non-structural life-safety issues as well as new programming modifications were also addressed.
- **Bachelor's Enlisted Quarters #11, Whidbey Island NAS** – Renovation and seismic upgrade of an 81,000 SF three story concrete structure. Designed new concrete/shotcrete shear walls, auger-cast pile foundation systems, and the steel-framed lobby addition.
- **Seattle School District Seismic Building Evaluations – Seattle, WA –** Structural and seismic evaluations of 83 facilities to assist the district with planning for future bond issues.

- **Shoreline School District Seismic Building Evaluations – Shoreline, WA –** Structural and seismic evaluations of 22 facilities to assist the district with planning for future bond issues.
- **2001 Nisqually 6.8 Magnitude Earthquake Building Condition Assessments –** Conducted building condition assessments for structural damage to commercial buildings and residential homes after the Nisqually earthquake that shook the Puget Sound in February of 2001.
- Value analysis and constructability reviews for various K-12 facilities.
- Pinnacle Las Vegas Constructability Review – Constructability Review of a 2,700,000 square foot facility. Project consists of two 38 story post-tensioned slab concrete towers, a seven-story parking garage, retail space, and bungalows.