VITA

School of Civil and Construction Engineering
College of Engineering
Oregon State University

HIGGINS, Christopher C.
Professor

A. EDUCATION and EMPLOYMENT INFORMATION

A1. Degrees

B.S.C.E., Marquette University, 1988 with Honors
M.S., Civil Engineering, The University of Texas at Austin, 1990
Ph.D., Civil Engineering, Lehigh University, 1997

A2. Academic Positions

Professor, School of Civil and Construction Engineering, Oregon State University, 2009-present
Slayden Construction Faculty Fellow, School of Civil and Construction Engineering, Oregon State University, 2009-present
Associate Director, Oregon Transportation Research and Education Consortium (OTREC), A National Transportation Research Center, 2006-present
Interim Director, Kiewit Center for Infrastructure and Transportation, College of Engineering, Oregon State University, 2005-2007
Associate Professor, School of Civil and Construction Engineering, Oregon State University, 2005-2009
Assistant Professor, Department of Civil, Construction, and Environmental Engineering, Oregon State University, 2000-2005
Assistant Professor, Department of Civil and Environmental Engineering, Clarkson University, 1997-2000

A2. Non-Academic Positions

Project Engineer: Wiss, Janney, Elstner Associates, Dallas, TX, 1990-1992

A2. Consulting, 1997-present

Air-Products and Chemicals, Allentown, PA
Army Corp of Engineers, Philadelphia, PA
Beaver State Ready Mix, Roseburg, OR
Coast Guard Academy, New London, CT
The D.S. Brown Company, North Baltimore, OH
Engineered Monitoring Solutions, Sherwood, OR
Exodermic Bridge Deck Inc., Lakeville, CT
KPFF Consulting Engineering, Portland, OR
Morse Bros. Inc., Harrisburg, OR
National Institute of Standards and Technology, Gaithersburg, MD
OBEC, Salem, OR
Pacific Stair Co., Salem, OR
Schneider Equipment and Drilling Company, St. Paul, OR
Wiss, Janney, Elstner, Northbrook, IL

A3. Fields of Specialization

Structural Engineering
Bridge Engineering
Earthquake Engineering

A4. Professional Registration

Professional Engineer, New York No. 077436

B. TEACHING, ADVISING, AND OTHER ASSIGNMENTS

B1. Instructional Summary

B1. Credit Courses

CE-382 Structural Analysis II: Classical structural analysis for determining deflections and forces in statically indeterminate structures. Double integration, moment-area, virtual work, energy methods, slope-deflection, and matrix methods.
CE-383 Steel Design: Introductory course on design of steel structures using the reliability based Load and Resistance Factor Design method.
CE-481/581 Reinforced Concrete Design: Design of reinforced concrete beams subjected to shear and flexure, and detailing requirements for longitudinal and transverse steel.
CE-489/589 Seismic Engineering: Advanced undergraduate/graduate course combining seismology, structural dynamics, seismic analysis, and earthquake resistant design principles.
CE-480/580 Advanced Seismic Engineering: A graduate course on nonlinear modeling of structural systems and seismic behavior of frames with hysteretic damping elements.
CE-483/583 Bridge Engineering: An advanced undergraduate/graduate course on bridge engineering. Includes notional load models, load distribution, analysis for moving loads, design of reinforced concrete bridge decks and superstructure elements.
CE-418 Professional Practice: Exposure to professional issues related to the practice of civil engineering, including ethics, management, and technical writing.
CE-419 Civil Infrastructure Design: Senior capstone design course that provides real-world design experience.
CE-580 Advanced Reinforced Concrete: Design code philosophy, moment curvature, short columns, biaxial column bending, column slenderness, bearing and shear walls, strut-and-tie models.

Clarkson University, 1997-2000

CE-212 Introduction to Engineering Design: Sophomore level course in civil engineering design. Employed an open-ended group project to teach structural design principles.
CE-403 Civil Engineering Laboratory: A laboratory course at the senior level, teaching modern engineering experimental testing methods.
CE-442 Steel Design: Design of steel structures, tension, compression, beams, and beam-column design.
CE-490 Senior Design: Capstone design course with a real-world design project.

B1. Non-Credit Courses and Workshops

Professional Engineering Exam Review, Bend, OR, Structural Analysis, Winter 2000
Professional Engineering Exam Review, Bend, OR, Structural Steel Design, Winter 2000
Invited Lecturer, CE 419, Civil Infrastructure Design, 5 class periods, Spring 2001
Invited Lecturer, CE 101, Introduction to Structural Engineering, Fall 2009,2008, 2007, 2006, 2004, 2001, 2000
Invited Lecturer, March 14, 2003 Transportation Seminar Series, Center for Transportation Studies, Portland State University
Reading and Conference CE 405/505:

Yi Wu, CE 505, 3 credits, *Advanced Steel Design*, Spring 2001
Brian Nicholas, CE 505, 3 credits, *RC Bridge Design*, Spring 2003
Theresa Daniels, CE 505, 3 credits, *RC Bridge Design*, Spring 2003
Melissa Robelo, CE 505, 3 credits, *RC Bridge Design*, Spring 2003
Jun He Kim , CE 505, 3 credits, *RC Bridge Design*, Spring 2003
Kyung Ho Lee , CE 505, 3 credits, *RC Bridge Design*, Spring 2003
Ae-Young Lee, CE 505, 3 credits, *RC Bridge Design*, Fall 2003
Stefan Alexander, CE 405, 1 credit, *Structural Testing Laboratory*, Spring 2004
Melissa Robelo, CE510, 1 credit, *Internship*, Summer 2004
Matthew Klym, CE 405, 1 credit, *Structural Testing Laboratory*, Spring, 2007
Travis Kinney, CE505, 2 Credits, *Load Factor Development for Rating*, Fall, 2008

Table 1 – Courses taught and enrollment.

Year	Term	Course	Title	No. of Students
00-01	F	CE 481	Reinforced Concrete Design	65
	F	CE 581	Reinforced Concrete Design	2
	W	CE 382	Structural Analysis II	84
	S	CE 489	Seismic Design	26
	S	CE 589	Seismic Design	3
01-02	F	CE 481	Reinforced Concrete Design	73
	F	CE 581	Reinforced Concrete Design	2
	W	CE 382	Structural Analysis II	68
	S	CE 383	Steel Design	77
	S	CE 480	Advanced Seismic Analysis	3
	S	CE 580	Advanced Seismic Analysis	8
02-03	F	CE 481	Reinforced Concrete Design	64
	F	CE 581	Reinforced Concrete Design	4
	S	CE 505	Reinforced Concrete Bridge Design	6
03-04	F	CE 481	Reinforced Concrete Design	61
	F	CE 581	Reinforced Concrete Design	5
	S	CE 483	Bridge Design	23
	S	CE 583	Bridge Design	12
04-05	F	CE 481	Reinforced Concrete Design	61
	F	CE 581	Reinforced Concrete Design	2
	S	CE 583	Bridge Design	32
05-06	F	CE 481	Reinforced Concrete Design	87
	F	CE 581	Reinforced Concrete Design	1
	S	CE 483	Bridge Design	10
	S	CE 583	Bridge Design	15
06-07	F	CE 481	Reinforced Concrete Design	66
	F	CE 581	Reinforced Concrete Design	2
	W	CE418	Professional Practice	20
	S	CE419	Senior Capstone Design	20
	S	CE 483	Bridge Design	13
	S	CE 583	Bridge Design	5
07-08	F	CE 481	Reinforced Concrete Design	77
	F	CE 581	Reinforced Concrete Design	6
	S	CE419	Senior Capstone Design	25
	S	CE 483	Bridge Design	6
	S	CE 583	Bridge Design	14
08-09	S	CE 419	Senior Design	
	S	CE483	Bridge Design	
	S	CE583	Bridge Design	
09-10	S	CE 419	Senior Design	
	S	CE483	Bridge Design	
	S	CE583	Bridge Design	
10-11	F	CE481	Reinforced Concrete Design	99
	F	CE581	Reinforced Concrete Design	2
	F	CE580	Advanced Reinf. Concrete. Design	35

B1. Curriculum and Laboratory Development

Undergraduate and Graduate Program Development
I work closely with structural engineering faculty in the School of Civil and Construction Engineering and the Department of Wood Science and Engineering in the College of Forestry to organize and coordinate course offerings for both undergraduate and graduate programs. Topics in undergraduate courses have been sequenced to provide a continuity of instruction that provides students with a consensus of essential structural engineering preparation. Graduate courses have been organized and new courses have been developed to provide offerings that previously were not available and that facilitate recruitment and retention of top students for the graduate program.

CE 481/581 Course Development and Enhancements
I have integrated laboratory experiences into the CE481/581 Reinforced Concrete Design course that were previously not available. Students attend a laboratory session where they experience full-scale testing of concrete elements that enhances their level of understanding beyond that of classroom instruction. They are exposed to component material tests and modern laboratory and instrumentation techniques. The course also requires constant updating and improvement to integrate the latest building code changes and research findings. I also incorporate recent research findings into the class so that students may see emerging code changes that the broader technical community may not see for several years.

CE483/583 Course Development
Based on demand from students and my own research program need, I recently developed the course CE483/583 Bridge Design. Given the recent $2.5 billion funding package passed for new bridge construction in Oregon, there is a need in the State for structural engineers with bridge design experience. Bridge design is very different from building design and employs a unique design specification. I developed the course to address the most pressing needs of concrete bridge analysis and design and bring real-world problems to the class based on my on-going research in the area. I employ the latest Load and Resistance Factored Design specification and instruct students on emerging analytical procedures. Students are exposed to notional load models, conservative code approximations, sophisticated analytical techniques, field testing methods, and uncertainties inherent in any bridge structure. A project is used to provide students with a comprehensive design experience.

Undergraduate Research Projects
I have worked with several undergraduates on independent research projects. These include both experimental and analytical studies. Projects include:

Brenda Brownell, “Behavior of Timber Shearwalls Under Earthquake Loadings,” Undergraduate Research Project, Clarkson University, 1999.

James Newell, “Small-Scale Verification Studies of Hysteretic Dampers,” Honors College Thesis, Clarkson University, 1999-2000.

Brenda Shonkwiler, “Small-Scale Shake Table Experiments and Comparison to Analytical Predictions,” Honors Project, Committee Member 2000-01.

Lori Elkins, “Influence of Brace Fracture on Dynamic Response of a Building Frame,” Undergraduate Research Project 2002-03.

Cole Olsen, “Pull-out Strength of Stirrup Anchorages,” Undergraduate Research Proj. 2003-04.

Kate Bradbury and Laurel Stenger 2006-07, MaryAnn Brooks 2005-06, Tektronix’s Scholars Program

Duncan Stark, “Ponding Behavior of Long-span Light-Weight Roof Systems” Honors College Thesis, 2006-08.

Jill Folkstad, “Carbonation of Aging Concrete Bridges” Honors College Thesis, 2009-10.

Christina Garrett, “Subduction-zone Earthquake Response of Bridges” Honors College Thesis, 2009-10.

B1. Graduate Students

B1-a) Major Professor – M.S. (32, 30 at OSU)

Anthony Sorentino	(Anticipate Spring 2012) Gravity Load Capacity of Pile Cap Foundations (thesis)
Phillipe Keller	(Anticipate Spring 2012) Wind-Induced Torsional Response of Truss Verticals (thesis)
Peter Fetzer	(Anticipate Spring 2012) LRFD Design of open-grid deck (thesis)
Anthony Hafner	(Anticipate Spring 2012) Experimental Behavior of Full-Size Gusset Plate Connections for Truss Bridges (thesis)
Jake Goebel	(Anticipated Spring 2011) Durability NSM Reinforcing Under Fatigue and Environmental Effects (thesis)
Brandon Johnson	(Anticipated Spring 2011) Behavior of RC Girders Strengthened with NSM for Shear (thesis)
Jora Lerman	(2010) Performance of Bridge Superstructure Anchorages to Resist Hurricane Wave Forces (thesis)
Mary Ann Triska	(2010) Flexural Anchorage Behavior of RC girders in Negative Moment Regions (thesis)
Josh Goodall	(2010) Flexural Anchorage Behavior of RC girders in Positive Moment Regions (thesis)
Duncan Stark	(2009) Ponding Behavior of Steel Bar Joint Roof Trusses (thesis)
Aruna Naryan	(2009) Bridge Deck Loads using Weigh-in-motion Data (project)
Gotham Sopal	(2008) Environmental Durability of CFRP Shear Strengthening (thesis)
Matthew Dawson	(2008) Scale-effects on Reinforced Concrete Beams Strengthened for Shear with Discrete Externally-Bonded Carbon Fiber Reinforced Polymer U-Wraps (thesis).
Mikal Mitchell	(2008) Freeze-Thaw Durability of Reinforced Concrete Deck Girders Strengthened for Shear with Surface-Bonded Carbon Fiber Reinforced Polymer (thesis).
Matthew Smith	(2007) Repair of RC Girders Including Longitudinal Strains (thesis).
Pattanapong Topark-Ngarm	(2007) Analysis of Prestressed Girder Bridges Under Realistic Service Loads (project).
Carl Koester	(2007) Testing and Evaluation of Flexural Reinforcing Bar Anchorages Terminating in Columns (thesis)
Thomas Schumacher	(2006) Acoustic Emission of Reinforcing Anchorages (project).
Jordan Pelphrey	(2006) Load Models for Bridge and Pavement Evaluation (thesis).
Ae-young Lee	(2006) High-cycle Fatigue of Lightly-Reinforced Concrete Girders (thesis).
Grahme Williams	(2005) Investigation of the Fatigue Behavior of Diagonally-Cracked CRC Deck-Girders Repaired with CFRP (thesis).
Richard W.B. Forrest	(2005) Low-cycle Fatigue Behavior of Concrete Beams in Shear (thesis).
Patreeda Pattaradon	(2004) Analysis of Continuous Orthotropic Decks (project).
Theresa K. Daniels	(2004) Reliability Based Bridge Assessment Using Modified Compression Field Theory and Oregon Specific Truck Loading (thesis) with D.V. Rosowsky.
Brian S. Nicholas	(2004) Behavior of lightly-reinforced concrete beams under moving loads (project).
Melissa J. Robelo	(2004) Analysis of Diagonally Cracked Conventionally Reinforced Concrete Girders in the Service Load Range (thesis).
Hui Tin Yeung	(2004) Application of Viscoelastic Dampers for Floor Vibration Response Mitigation (project).

James Newell	(2003) Steel Confined Yielding Damper for Earthquake Resistant Design (thesis).
Ryan McCormick	(2003) Analysis of Structures with Tension-Only Dampers (project).
William Farrow	(2003) Experiment and Analysis of Reinforced Concrete Beams with Corrosion Damaged Shear Reinforcement (thesis).
Yi Wu	(2002) Design moments for orthotropic bridge decks with continuous spans (project).
Heath Mitchell	(2000) Strength and fatigue testing of composite bridge decks with alternative shear connections (thesis).

B1-b) Major Professor – Ph.D. (6)

Mary Ann Triska	(2013) Structural Design and Performance of Green Roofs.
Thomas Schumacher	(2009) Acoustic Emission Techniques for Evaluation of Civil Infrastructure.
Turan Tugral	(2009) Modeling and Analysis of Uncertainty in Bridge Decks and Superstructures
Daniel A. Howell	(2009) Repair of Diagonally Cracked Conventionally Reinforced Girders.
Ekin Senturk	(2008) Experimental and Analytical Evaluation of Conventionally Reinforced Deck-Girder Bent Caps with Vintage Details.
Tanarat Potisuk	(2004) Experiments and Analysis of Bridges with Diagonal-Tension Cracks.

B1-c) Committees – Civil Engineering – M.S./M.Eng.

Nick Blundon (2011) M.Eng. Structures
Jared Trowbridge (2011) M.Eng. Structures
Natalie Jennings (2011) M.Eng. Water Resources
Sutaporn BoonTrida (2010) M.S. Structures
Holly Winston (2010) M.S. Structures
Christopher Bradner (2008) M.S. Ocean
Gang Cao (2008) M.S. Structures
Luke Scoggins (2007) M.S. Structures
Adrian Kidarsa (2006) M.S. Structures
Chad McMullen (2006) M.S. Structures
Michael Vail (2004) M.S. Structures
Dhardon Seamontaprinya (2002) M.S. Structures
Kraisorn Lucksiri (2002) M.S. Structures

B1-d) Committees – Civil Engineering – Ph.D.

Osman Hamutcuoglu (2010)
Gang Cao (Anticipated 2012)
Kyung Ho Lee (2004)

B1-e) Committees – Other Departments – M.S.

Lori Elkins (2005) Wood Science and Engineering

B1-f) Committees – Other Departments – Ph.D.

Maximilien E. Launey (2007) Mechanical Engineering

B1-g) OSU Graduate Council Representative – M.S.

None

B1-h) OSU Graduate Council Representative – Ph.D.

None

B1-i) Technical Advisor for Visiting Researchers (International)

Prof. Kazuhiko Kasai, Structural Engineering Research Center, Tokyo Institute of Technology, Japan, August, 2001; April 2009; October 2009; Mar. 2010.

Prof. Saranagon Hemavibool, Department of Civil Engineering, Naresuan University, Thailand, August, 2002.

Prof. Suk-Bong Kang, University of Ulsan, South Korea, Feb. 2004-Feb. 2005.

Prof. Nam-Sik Kim, Pusan National University, South Korea, Aug. 2008.

Prof. Unal Aldemir, Istanbul Technical University, Turkey, Summer 2011.

B1-j) Search Committees

School of Civil and Construction Engineering, Member, Sustainable infrastructure faculty search (2010-11)

School of Civil and Construction Engineering, Chair, Structural faculty search (2008)

Department of Civil, Construction, and Environmental Engineering, Department Head (2006)

Department of Civil, Construction, and Environmental Engineering, Department Head (2005)

Department of Civil, Construction, and Environmental Engineering, Position in Engineering Infrastructure (2004)

Department of Civil, Construction, and Environmental Engineering, Position in Transportation Engineering (2003)

B2. Student and Participant/Client Evaluation

Student evaluations are summarized in Table 2. Scores shown in Table 2 are compared with College of Engineering comparison scores for the appropriate course level.

Table 2 – Summary of Student Evaluations.

Year	Term	Course	Title	No. of Students	No. of Evaluations	CCH's Score	COE Average	Comparison Factor*
00-01	F	CE 481	Reinforced Concrete Design	65	58	3.69	3.21	1.15
	F	CE 581	Reinforced Concrete Design	2	2	4.00	3.48	1.15
	W	CE 382	Structural Analysis II	84	71	3.27	3.10	1.05
	S	CE 489	Seismic Design	26	20	3.95	3.21	1.23
	S	CE 589	Seismic Design	3	3	4.00	3.49	1.15
01-02	F	CE 481	Reinforced Concrete Design	73	58	3.64	3.27	1.11
	F	CE 581	Reinforced Concrete Design	2	2	4.00	3.44	1.16
	W	CE 382	Structural Analysis II	68	59	3.79	3.09	1.23
	S	CE 383	Steel Design	77	57	3.79	3.27	1.16
	S	CE 480	Advanced Seismic Analysis	3	3	4.00	3.45	1.16
	S	CE 580	Advanced Seismic Analysis	8	6	3.67	3.43	1.07
02-03	F	CE 481	Reinforced Concrete Design	64	39	3.33	3.34	1.00
	F	CE 581	Reinforced Concrete Design	4	2	3.5	3.43	1.02
03-04	F	CE 481	Reinforced Concrete Design	61	41	5.5/6 5.7/6	4.5/5 4.6/5	1.22/1.2 1.24/1.2
	F	CE 581	Reinforced Concrete Design	5	5	5.8/6 6.0/6	5.0/5 5.2/5	1.16/1.2 1.15/1.2
	S	CE 483	Bridge Design	23	17	5.3/6 5.8/6	4.8/5 5/5	1.10/1.2 1.16/1.2
	S	CE 583	Bridge Design	12	16	5.2/5 5.5/6	5.1/5 5.2/5	1.02/1 1.06/1.2

Year	Term	Course	Title	No. of Students	No. of Evaluations	CCH's Score	COE Average	Comparison Factor*
04-05	F	CE 481	Reinforced Concrete Design	61	52	5.3/5.3	4.5/4.6	1.18/1.15
						5.6/5.6	4.7/4.9	1.19/1.14
	F	CE 581	Reinforced Concrete Design	2	1	4/4	4.7/4.9	0.85/0.82
						4/4	4.9/5.1	0.82/0.78
	S	CE 583	Bridge Design	-	-	-	-	-
05-06	F	CE 481	Reinforced Concrete Design	87	62	4.8/4.9	4.6/4.7	1.04/1.06
						5.2/5.3	4.8/5.0	1.08/1.06
	F	CE 581	Reinforced Concrete Design	1	1	5.0/5.0	4.8/4.9	1.04/1.02
						5.0/5.0	5.0/5.2	1.00/0.96
	S	CE 483	Bridge Design	10	8	4.5/4.3	4.8/4.7	0.94/0.91
						4.9/4.8	5.0/4.9	0.98/0.98
	S	CE 583	Bridge Design	15	12	4.9/5.0	4.9/5.0	1.00/1.00
						5.3/5.5	5.1/5.3	1.04/1.04

Year	Term	Course	Title	No. of Students	No. of Evaluations	CCH's Score	COE Average	Comparison Factor*
06-07	F	CE 481	Reinforced Concrete Design	66	60	4.5/4.5	4.6/4.6	0.98/0.98
						4.8/4.8	4.8/4.9	1.00/0.98
	F	CE 581	Reinforced Concrete Design	2	2	5.0/5.0	4.8/4.9	1.04/1.02
						6.0/6.0	5.0/5.1	1.20/1.18
	S	CE 483	Bridge Design	13	14	4.5/4.4	4.5/4.6	1.00/0.96
						4.8/4.8	4.7/4.8	1.02/1.00
	S	CE 583	Bridge Design	5	3	5.3/5.3	4.9/5.0	1.08/1.06
						5.3/5.3	5.1/5.3	1.04/1.00
07-08	F	CE 481	Reinforced Concrete Design	77	70	4.7/4.7	4.6/4.7	1.02/1.00
						5.0/5.0	4.8/4.9	1.04/1.02
	F	CE 581	Reinforced Concrete Design	6	7	5.0/5.0	4.8/4.9	1.04/1.02
						5.3/5.3	5.0/5.1	1.06/1.04
	S	CE 483	Bridge Design	6	6	4.7/4.5	4.6/4.7	1.02/0.96
						5.1/5.1	4.8/4.9	1.06/1.04
	S	CE 583	Bridge Design	14	12	4.5/4.5	4.8/4.9	0.94/0.92
						4.5/4.5	5.0/5.1	0.90/0.88
08-09	S	CE 483	Bridge Design			4.7/4.5	4.6/4.7	1.02/0.96
						5.1/5.1	4.8/4.9	1.06/1.04
	S	CE 583	Bridge Design			4.5/4.5	4.8/4.9	0.94/0.92
						4.5/4.5	5.0/5.1	0.90/0.88
09-10	S	CE 483	Bridge Design			4.7/4.5	4.6/4.7	1.02/0.96
						5.1/5.1	4.8/4.9	1.06/1.04
	S	CE 583	Bridge Design			4.5/4.5	4.8/4.9	0.94/0.92
						4.5/4.5	5.0/5.1	0.90/0.88
10-11	F	CE481	Reinforced Concrete Design	99		4.7/4.5	4.6/4.7	1.02/0.96
						5.1/5.1	4.8/4.9	1.06/1.04
	F	CE581	Reinforced Concrete Design	2		4.5/4.5	4.8/4.9	0.94/0.92
						4.5/4.5	5.0/5.1	0.90/0.88
	F	CE580	Adv. Reinf. Concrete Design	35		4.5/4.5	4.8/4.9	0.94/0.92
						4.5/4.5	5.0/5.1	0.90/0.88

Notes: Scores from Fall 2000 to Spring 2003 are shown for question 12 on College of Engineering Student Assessment of Teaching forms, "All things considered, I was favorably impressed by this instructor." Scores from Fall 2004 to current are for questions #1 (line 1) and #2 (line 2) on College of Engineering Student Assessment of Teaching forms. #1: "This course as a whole was:" and #2: "The

instructor's contribution to the course was:" The first number is the mean score and the second is the median. For example, 5.3/6= mean of 5.3 and median of 6.

*Comparison factor is the instructor's score divided by the COE average for the same level of instruction.

B4. Advising

B4. Academic

General Advisor, 2000 to present

Provided advising for approximately 20 to 35 undergraduate students each quarter. This includes students at all class levels. I provide an open door policy to assist students throughout the academic year regarding course planning, summer internships, graduate school, and other issues of concern.

B4. Co-Curricular Advising

Steel Bridge and Concrete Canoe Advisor for 2001-2002
Big Beam Contest 2004, 2005, 2006*, 2007, 2008, 2009*, 2010
*Won National Championship

C. SCHOLARSHIP AND CREATIVE ACTIVITY

C1. Publications

C1 Refereed Archival Technical Journals (Underline indicates supervised graduate student)

Higgins, C., Nguyen, Q., and O.T. Tugrul, "Digital Imaging of Gusset Plates for Truss Bridge Inspection and Evaluation," in development to *ASCE Journal of Bridge Engineering.*

Forrest, R.W.B. and C. Higgins, "Low-Cycle Fatigue of Reinforcing Steel Without Stress Reversals," submitted to *Cement and Concrete.*

Mitchell, M.. Sopal, G., Dawson, M., Senturk, A.E., and C. Higgins, "Environmental Durability of CFRP for Shear Strengthening of RC Girders," submitted to *ASCE Journal of Composites in Construction.*

Koester, C. C. and C. Higgins, "Testing and Evaluation of Flexural Straight-bar Anchorages in Columns," submitted to *ASCE Journal of Performance of Constructed Facilities.*

39) Higgins, C. Williams, G., Mitchell, M.. Dawson, M., and D. Howell., "Environmental Durability of CFRP for Shear Strengthening of RC Girders," accepted *ACI Structural Journal.*

38) Schumacher, T., Straub, D. and C. Higgins, "Toward a Probabilistic Acoustic Emission Source Location Algorithm: a Bayesian Approach," accepted *Journal of Sound and Vibration.*

37) Potisuk, T., Higgins, C., Miller, T. and S. Yim, "Finite Element Analysis of Reinforced Concrete Beams with Corrosion Subjected to Shear," accepted *Advances in Civil Engineering,* 2011.

36) Tugrul, O.T., and C. Higgins, "Analytical Solutions to General Orthotropic Plates under Patch Loading," accepted to *ASCE Journal of Engineering Mechanics.*

35) Higgins, C., Tugrul, O.T., Connor, R. and J. Liu, "A Unified Approach for LRFD Live Load Moments in Bridge Decks," accepted to *ASCE Journal of Bridge Engineering.*

34) Lehrman, J.B., Higgins, C. and D. Cox, "Performance of Highway Bridge Girder Anchorages under Simulated Hurricane Wave Induced Loads," accepted to *ASCE Journal of Bridge Engineering.*

33) Higgins, C., Farrow III, W.C., and O.T. Tugrul, "Analysis of Corrosion Damaged RC Beams for Shear Capacity," *Structure and Infrastructure Engineering*, August 2010.

32) Bradner, C., Schumacher, T., Cox, D. and C. Higgins, "Large-Scale Laboratory Experiments of Wave Forces on Highway Bridge Superstructures," *ASCE Journal of Ports and Coastal Engineering*, January 2011 Vol. 137, No. 1, pp. 17-32.

31) Schumacher, T., Higgins, C., and S. Lovejoy, "Estimating Operating Load Conditions on Reinforced Concrete Highway Bridges with b-Value Analysis from Acoustic Emission Monitoring," *Structural Health Monitoring*, January 2011, 10, pp. 17-32.

30) Senturk, A.E. and C. Higgins "Evaluation of RCDG Bridge Bent Caps with 1950's Vintage Details – Laboratory Tests," *ACI Structures Journal*, Sept./Oct. 2010, Vol. 107, No. 5, pp. 534-543.

29) Senturk, A.E. and C. Higgins "Evaluation of RCDG Bridge Bent Caps with 1950's Vintage Details – Analytical Methods," *ACI Structures Journal*, Sept./Oct. 2010, Vol. 107, No. 5, pp. 544-553.

28) Higgins, C., Tugrul, O.T., and R.J. Connor "Rapid Ranking Procedures for Gusset Plate Connections in Existing Steel Truss Bridges," *ASCE Journal of Bridge Engineering.* Sept./Oct. 2010, Vol. 15(5): 581-596.

27) Schumacher, T., Higgins, C., and S. Lovejoy, "Detection of Vehicles with Studded Tires Using Acoustic Emission Sensors Mounted to Highway Bridges," *ASCE Journal of Transportation Engineering*, May 2010, 136(5):480-487.

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23) Higgins, C. "Behavior of Nonductile Shear Connectors for Bridge Decks," accepted for *AISC Engineering Journal.*

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18) Williams, G.T. and C. Higgins, "Fatigue of Diagonally Cracked CRC Girders Repaired with CFRP," *ASCE Journal of Bridge Engineering*, Jan./Feb. 2008, 13(1): 24-33.

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15) Howell, D. and C. Higgins, "Bond and Anchorage of Vintage Square Reinforcing Bars," *ACI Structural Journal*, Vol. 105, No. 3, 2007 pp. 333-343.

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7) Higgins, C. "LRFD Compatible Orthotropic Plate Model for Estimating Deflection in Concrete Filled Grid Bridge Decks," *ASCE Journal of Bridge Engineering*, November 2004, 9(6): 599-605.

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5) Higgins, C. and H. Mitchell, "Behavior of Composite Bridge Decks with Alternative Shear Connectors," *ASCE Journal of Bridge Engineering*, January 2001, 6(10): 17-22.

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3) Higgins, C., and K. Kasai, "Experimental and Analytical Simulation of Along-Wind Response for a Full-Scale Viscoelastically Damped Steel Frame," *Journal of Wind Engineering and Industrial Aerodynamics,* Vol. 77-78, 1998 pp. 297-313.

2) Higgins, C.C., and R.E. Klingner, "Effects of Environmental Exposure on the Performance of Cast-In-Place and Retrofit Anchors in Concrete," *ACI Structural Journal*, American Concrete Institute, Vol. 95, No.5, 1998 pp. 506-517.

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C1 Conference and Workshop Proceedings (* denotes peer reviewed)

*Higgins, C. and O. T. Turan. "Imaging Tools for Inspection of Gusset Plates," *New York City Bridge Conference*, New York City, NY, July 2011.

*Farrow, W.C. III, Higgins, C., Turan, O.T., and C. Carnes, "Metrification and Evaluation of Gusset Plates on the Route 100 Viaduct," *International Bridge Conference*, Pittsburgh, PA, June 2011.

*Higgins, C., Turan, O.T., Kaczinski, M., and P. Gase, "Calibration of AASHTO LRFD for Filled Grid Decks Based on Historical Performance," *International Bridge Conference*, Pittsburgh, PA, June 2011.

* Higgins, C., and O.T. Turan, "New Tools for Inspection and Evaluation of Steel Truss Bridge Gusset Plates," *International Bridge Conference*, Pittsburgh, PA, June 2011.

Schumacher, T.; Higgins, C.; Lovejoy, S.; Acoustic Emission Monitoring of Conventionally Reinforced Concrete Highway Bridges Under Service Conditions; Proceedings of the International Symposium on Nondestructive Testing of Materials and Structures (NDTMS 2011); Istanbul, Turkey; May 2011.

*Higgins, C. "Seismic Performance of Prefabricated Steel Stair Assemblies," *Ninth US National Conference on Earthquake Engineering*, Toronto, Canada, July 2010.

*Higgins, C., Nguyen, Q. and O.T. Turan. "Digital Imaging Tools for Gusset Plate Evaluation," *IABAMS*, Philadelphia, PA, July 2010.

*Farrow III, W.C., Higgins, C. and O.T. Turan. "Shear Capacity Testing and Assessment of Corrosion Damaged Reinforced Concrete Beams," *International Bridge Conference*, Pittsburgh, PA, June 2010.

*Stark, D, Higgins, C. and P.S. Green. "Stability of Open Web Steel Joists Subjected to Ponding Loads," *Structures Congress 2010 and Structural Steel Stability Conference*, Orlando, FL, May 2010.

Schumacher, T., Higgins, C., Bradner, C., and D. Cox. "Large-Scale Wave Flume Experiments on Highway Bridge Superstructures Exposed to Hurricane Wave Forces," *Sixth National Seismic Conference on Bridges and Highways*, Charleston, SC, 2008.

*Bradner, C., Schumacher, T., Cox, D. and C. Higgins, "Large-Scale Laboratory Measurements of Wave Forces on Highway Bridge Superstructures," *International Conference on Coastal Engineering*, Hamburg, Germany, 2008.

*Schumacher, T. Higgins, C. Bradner, C. and D. Cox. "New Innovative Large-Scale Laboratory Setup for Experiments on Highway Bridge Superstructures Exposed to Wave Forces," *Concrete Bridge Conference*, St. Louis, MO, 2008.

Scott, M.H., C.C. Higgins, and G. Esch, "Reliability-Based Bridge Rating Software," *Proceedings of 7th International Conference on Short and Medium Span Bridges*, Montreal, QC, Canada, August 2006.

*Higgins, C., Lee, A-Y, Nicholas, B.S., Potisuk, T., and Forrest, R.W.B., "High-Cycle Fatigue of Diagonally-Cracked RC Bridges," *Structures Congress 2005*, New York City, NY, April 2005.

*Higgins, C., Daniels, T.K., Rosowsky, D.V., Miller, T.M., and Yim, S.C. "Assessment and Risk-Ranking of Conventionally Reinforced Concrete Bridges for Shear," *TRB 84th Annual Meeting*, Washington D.C. January 2005.

Higgins, C., Newell, J.D., and McCormick, R.L. "Economical Low-Force Hysteretic Elements for Seismic Applications," *International Symposium on Earthquake Engineering Commemorating Tenth Anniversary of the 1995 Kobe Earthquake*, Awaji Island, Japan, January 13-15, 2005.

*Higgins, C. "Evaluation of Shear Cracking in Vintage Conventionally Reinforced Concrete Bridge Girders," *Structures Congress 2003*, Seattle, WA, May 2003.

*Higgins, C. "Development of Two New Hysteretic Dampers," *Seventh US National Conference on Earthquake Engineering*, Boston, MA, 2002.

Higgins, C., and Newell, J. "Development of Economical Hysteretic Dampers," *International Symposium on Passive Control*, Tokyo, Japan, December, 2001.

*Higgins, C., "Hysteretic Dampers for Timber Shearwalls," *ASCE Structures Congress 2001*, Washington, DC, May 2001.

Dexter, R., and Higgins, C. "Bridge Deck Testing Specification," NCHRP 1st Stage Research Problem Statement, AASHTO Annual Meeting, Seattle May 2001.

Higgins, C. Shen, S.J., and Kasai, K., "Analysis of Reduced-Scale Steel Frame with Viscoelastic Dampers and Comparison with Full-Scale Response," *International Symposium on Passive Control*, Tokyo, Japan, March 2000.

*Kasai, K., Higgins, C., and Okuma, K., "A Simplified Analysis/Design Method for a Velocity-Dependent Passive Control System," *ASCE Structures Congress 2000*, Philadelphia, PA, 2000.

*Higgins, C., and Kasai, K., "Seismic Design, Analysis, and Experiment of a Viscoelastically Damped Steel Frame," *12th World Conference on Earthquake Engineering*, New Zealand, Jan. 2000.

Bettigole, R. and Higgins, C. "Nightime Redecking of the Tappen Zee Bridge with a Revised Exodermic Design," *16th International Bridge Conference*, Pittsburgh, PA, June 1999.

*Green, P. S., Connor, R. J., and Higgins, C. C. "Rehabilitation of a Nineteenth-Century Cast and Wrought Iron Bridge," *ASCE Structures Congress*, New Orleans, LA, April 1999.

Kasai, K. Wada, A., Huang, Y.-H., and Higgins, C., "Use of Building Damper Combining Visco-Elastic and Elasto-Plastic Devices in Series," *US-Japan Cooperative Research Project*, Group No. 1-2-2, Coordination Meeting, October 1998.

*Kasai, K. and Higgins, C., "Real-Time Earthquake and Wind Tests of a Full-Scale Viscoelastically Damped Frame," *Second World Conference on Structural Control*, Kyoto, Japan, July 1998.

*Higgins, C. and Kasai, K., "Full-Scale Real-Time Seismic Testing and Analysis of a Viscoelastically Damped Steel Frame," *Sixth U.S. National Conference on Earthquake Engineering*, Seattle, WA, June 1998.

*Kasai, K. and Higgins, C., "Real-Time and Full-Scale Tests of a Viscoelastically Damped Steel Frame Under Large Seismic and Gravity Loads," *International Conference on Behavior of Steel Structures in Seismic Areas, STESSA '97*, Kyoto, Japan, August 1997.

*Higgins, C., and Kasai, K., "Experimental and Analytical Simulation of Wind Response for a Full-Scale Viscoelastically Damped Steel Frame," *The Eighth U.S. National Conference on Wind Engineering*, Baltimore, MD, June 1997.

*Kasai, K. and Higgins, C., "Real-Time Testing of a Full-Scale Frame with Viscoelastic Dampers," *ASCE Structures Congress*, Portland, OR, June 1997.

*Higgins, C., Chen, S.J., and Chou, F.C., "Testing and Analysis of a Steel Frame with Viscoelastic Dampers," *Eleventh World Conference on Earthquake Engineering*, Acapulco, Mexico, Disc 4, Paper No.1961, June 1996.

*Bleiman, D., Kasai, K., Han, X., Hodgson, I., Higgins, C., and Ricles, J., "Repair of Damaged Steel Moment Frame Connections with Bolted Brackets," *Eleventh World Conference on Earthquake Engineering*, Acapulco, Mexico, June 1996.

Higgins, C., Green, P.S., Connor, R.J., and Bruin, W.M., "Rehabilitation and Restoration of Walnut Street Bridge, Hellertown, Pennsylvania," *Twelfth Annual Historic Bridge Symposium*, Society for Industrial Archeology, Baltimore, MD, May 1995.

Higgins, C., Pessiki, S., and Claussen, D., "Electromagnetic Assessment of Square Reinforcing Steel," *Proceedings, Structural Materials Technology An NDT Conference*, NJDOT/FHWA, February 1994.

Bruns, S.R. and Higgins, C.C., "Evaluation and Testing of a Closed Spandrel Reinforced Concrete Arch Bridge," *Proceedings, Nondestructive Evaluation of Civil Structures and Materials*, Boulder, CO, May 1992.

C1 Technical Reports

Higgins, C. and M.A. Triska, "Final Report on Field Testing and Analysis of Bridge 01496A for Yamhill County," School of Civil and Construction Engineering, Oregon State University, October 2010.

Higgins, C. and O.T. Turan, "Calibration of AASHTO-LRFD Section 4.6.2.1.8 with Historical Performance of Filled, Partially-Filled, and Unfilled Composite Grids," *Research Report 09-01*, School of Civil and Construction Engineering, Oregon State University, May, 2009.

Higgins, C., "Influence of Stringer Support Conditions on the Behavior of Exodermic Decks," *Research Report 05-03*, Department of Civil and Construction Engineering, Oregon State University, August, 2005.

Higgins, C., "Influence of Stringer Support Conditions on the Behavior of Exodermic Decks," *Research Report 05-03*, Department of Civil and Construction Engineering, Oregon State University, August, 2005.

Higgins, C., "Simulated Seismic Tests of Prefabricated Steel Stair Assemblies," *Research Report 05-02*, Department of Civil and Construction Engineering, Oregon State University, June, 2005.

Higgins, C. and Potisuk, T., "Finite Element Analysis of Exodermic Decks on the Gowanus Expressway," *Research Report 05-01*, Department of Civil and Construction Engineering, Oregon State University, March, 2005.

Higgins, C., Rosowsky, D.V., Miller, T.H., Yim, S.C., Potisuk, T., Daniels, T.K., Nicholas, B.S. Robelo, M.J., Lee, A-Y, and Forrest, R.W., "Reliability Based Assessment Methodology For Diagonally Cracked Conventionally Reinforced Concrete Deck Girder Bridges: An Integrated Approach," Research Report, Oregon Department of Transportation, July, 2004.

Higgins, C., Robelo, M., Potisuk, T., Miller, T.H., and S.C. Yim, "Remaining Life of Reinforced Concrete Beams with Diagonal-Tension Cracks," Research Report, Oregon Department of Transportation, November, 2003.

Higgins, C., Farrow III, W.C., Potisuk, T., Miller, T.H., Yim, S.C., Holcomb,G.C., Cramer, S.D., Covino, Jr., B.S., Bullard, S.J., Ziomek-Moroz, M., and S.A. Matthes, "Shear Capacity Assessment of Corrosion-Damaged Reinforced Concrete Beams," Research Report, Oregon Department of Transportation, September, 2003.

Higgins, C. "Static and Fatigue Tests of Simulated Slider Plate/Support Bar Connections Using Powder-Actuated Fasteners," *Research Report 99-9*, Department of Civil and Environmental Engineering, Clarkson University, December, 1999.

Higgins, C., and Mitchell, H., "Fatigue Tests of a Revised Exodermic Bridge Deck Design," *Research Report 98-12*, Department of Civil and Environmental Engineering, Clarkson University, July, 1998.

Higgins, C. and Kasai, K. "Analysis and Design of Viscoelastic Dampers for Wind Induced Vibration Control of Tall Buildings," *Report to Nippon Steel*, Department of Civil and Environmental Engineering, Clarkson University, May, 1998.

Higgins, C., and Mitchell, H., "Tests of a Revised Exodermic Bridge Deck Design," *Research Report 97-16*, Department of Civil and Environmental Engineering, Clarkson University, December, 1997.

Dexter, R., Connor, R., and Higgins, C., "Fatigue Testing of Simulated Slider Plate/Support Bar Connections for Modular Expansion Joint Systems," Center for Advanced Technology for Large Structural Systems, Lehigh University, Bethlehem, PA, May 1997.

Higgins, C., "ATLSS Strain Gage Conditioners: Theory of Operation, Specifications, and Applications," *Report No. 96-11*, Center for Advanced Technology for Large Structural Systems, Lehigh University, Bethlehem, PA, June 1996.

Higgins, C., and Klingner, R.E., "Effect of Environmental Cycling on the Strength of Short Retrofit Anchor Bolts," *Research Report CTR 1208-4F*, Center for Transportation Research, The University of Texas at Austin, July 1991.

C2. Professional Meetings, Symposia, and Conferences

C2 Invited Presentations

Higgins, C. "When Good Bridges Go Bad," SWE Regional Conference, Corvallis, OR, April, 2011.

Higgins, C. "Imaging Tools for Inspection of Bridges" Pacific Northwest Bridge Inspectors Conference, April, 2011.

Higgins, C., Turan, O.T., and A. Hafner , "Gusset Plate Testing and Evaluation," ASCE Structures Congress, Las Vegas, NV, April 2011.

Higgins, C., Turan, O.T., and N. Quang, "Imaging Methods for Inspection and Evaluation of Gusset Plates," ASCE Structures Congress, Las Vegas, NV, April 2011.

Higgins, C., Goldfinger, C. and Higley, K. "Disaster and Preparedness in the Ring of Fire," City Club of Portland, Portland, OR, March, 2011.

Higgins, C., Lehrman, J., and D. Cox, "Behavior of Superstructure-to-Substructure Connections Under Simulated Hurricane Wave Induced Loads," ACI Spring Convention, Tampa FL, April 2011.

Schumacher, T., Higgins, C., Bradner, C. and D. Cox, "Dynamic Response Of A Large-Scale Prestressed Concrete Girder Bridge Subjected To Hurricane Wave Forces," ACI Spring Convention, Tampa, FL, April 2011.

Higgins, C. "Imaging Tools for Fabrication of Steel Members" Hirschfeld Industries, Greensboro, NC, March, 2011.

Higgins, C. "Experiments and Analysis of Full-Scale Reinforced Concrete Bent Caps with Vintage Details," OSU Material Science Seminar, Corvallis, OR, Feb., 2011.

Higgins, C. "Imaging Tools for Inspection of Steel Fabricated Members" TRB Steel Fabrication Committee AFH70, 90th TRB Meeting, January, 2011.

Higgins, C. and O.T. Turan, "Tools for Evaluation of Gusset Plates," Midwest Bridge Working Group Meeting, Indianapolis, IN, December 2010 presented by R. Connor of Purdue U. due to weather

Higgins, C. "Update on Tools for Evaluation of Gusset Plates," AASHTO Committee T14, Washington, DC, August, 2010.

Higgins, C. "Tools for Evaluation of Steel Truss Bridge Gusset Plates," Army Corps of Engineers, Philadelphia District, Philadelphia, PA, March, 2010.

Higgins, C. "Tools for Evaluation of Gusset Plate Connections," Purdue University, West Lafayette, IN, March, 2010.

Higgins, C. "Experiments and Analysis of Bent Caps," Materials Seminar, Dept. of Mechanical and Materials Engineering, Portland State Univ., Portland, OR, Feb., 2010.

Higgins, C. "Quantitative Imaging for Bridge Inspection," Northwest Transportation Conference, Corvallis, OR, February, 2010.

Higgins, C. and Rooper, J., "Tools for Evaluation of Gusset Plates," FHWA Webinar, National, October, 2009.

Higgins, C. "Tools for Evaluation of Gusset Plate Connections in Steel Truss Bridges," TRB Steel Bridge Committee, Washington, D.C., January, 2009.

Higgins, C. "Tools for Evaluation of Gusset Plate Connections in Steel Truss Bridges," AASHTO Committee T14, Orlando, FL, January, 2009.

Higgins, C. "Repair of RC Bridge Members for Shear with CFRP," 2008 *Oregon Dept. of Transportation Bridge Design Conference*, Salem, OR, May, 2008.

Higgins, C. "Ranking Steel Truss Bridge Connections," *Oregon Dept. of Transportation*, Transportation Building, Salem, OR, March 2008.

Higgins, C., "Strengthening of Reinforced Concrete Deck-Girder Bridges," Northwest Transportation Conference, Corvallis, OR, February, 2008.

Higgins, C. "Infrastructure Research by the Oregon Transportation Research and Education Consortium," *Workshop on FHWA-UTC Collaboration*, Turner-Fairbanks Laboratory, Washington, D.C. March 19, 2007.

Higgins, C. "Performance of Prefabricated Steel Stair Assemblies Under Seismic and Gravity Loads," *Conference on Urban Earthquake Engineering*, Tokyo, Japan, March 5-6, 2007.

Higgins, C. "Tests of Full-Size Concrete Bent Caps," ASCE Capital Section Meeting, Salem, OR February, 2007.

Higgins, C. "Fatigue of Reinforced Concrete Deck-Girders in Shear," First International Conference on Fatigue and Fracture in the Infrastructure – Bridges and Structures of the 21st Century, Philadelphia, PA August 2006.

Higgins, C., "Reliability Analysis of Reinforced Concrete Deck-Girder Bridges," Northwest Transportation Conference, Corvallis, OR, February, 2006.

Higgins, C., "Research on Diagonally-Cracked RC Bridges in Oregon," Western Bridge Engineers' Seminar, Portland, OR, September 26, 2005.

Higgins, C., "Research on Diagonally-Cracked RC Bridges in Oregon," Professional Engineers of Oregon Annual Meeting, Canyonville, OR, May 20, 2005.

Higgins, C., "High-Cycle Fatigue of Diagonally-Cracked RC Bridges," Structures Congress 2005, New York City, NY, April 23, 2005.

Higgins, C. "Economical Low-Force Hysteretic Elements for Seismic Applications," *International Symposium on Earthquake Engineering Commemorating Tenth Anniversary of the 1995 Kobe Earthquake*, Awaji Island, Japan, January 13, 2005.

Higgins, C. "Assessment of Diagonally Cracked Reinforced Concrete Deck Girder Bridges," *Pacific Northwest Bridge Maintenance Conference*, Portland, OR, November 4, 2004.

Higgins, C. "Research on Diagonally Cracked Reinforced Concrete Deck Girder Bridges," OTIA III Bridge Policy/Technical Stakeholder Committee, Salem, OR, September 16, 2004.

Higgins, C. “Reliability Assessment of Diagonally Cracked Reinforced Concrete Slab-Girder Bridges” Oregon Department of Transportation Bridge Section, Salem, OR August 2, 2004.

Higgins, C., “Assessment of Cracked Reinforced Concrete Slab-Girder Bridges,” Oregon Association of County Engineers and Surveyors, Bend, OR, June, 2004.

Higgins, C., “Research on Cracked Reinforced Concrete Slab-Girder Bridges,” American Public Works Association Oregon Chapter Spring Conference, Seaside, OR, May, 2004.

Higgins, C., “Research on Cracked Reinforced Concrete Slab-Girder Bridges in Oregon,” Northwest Transportation Conference, Corvallis, OR, March, 2004.

Higgins, C., “Research on Shear-Cracked Reinforced Concrete Slab-Girder Bridges,” Oregon Planning Institute, Eugene, OR, October, 2003.

Higgins, C., “Interim Research Results on Cracked Reinforced Concrete Bridges,” Bridge Section, Oregon Department of Transportation, Salem, OR, July, 2003.

Higgins, C., “Research on Shear-Cracked Reinforced Concrete Slab-Girder Bridges,” Oregon Association of County Engineers and Surveyors, Bend, OR, June, 2003.

Higgins, C., “Research on Shear-Cracked Reinforced Concrete Bridges,” Professional Engineers Association of Oregon, Albany, OR, May, 2003.

Higgins, C., “Research on Shear-Cracked Reinforced Concrete Slab-Girder Bridges,” ASCE, Wilsonville, OR, April, 2003.

Higgins, C. “Research Plan for FRP Retrofit of Cracked Concrete Girder Bridges,” Oregon Department of Transportation, Research Advisory Committee, April, 2003.

Higgins, C., “Research on Shear-Cracked Reinforced Concrete Slab-Girder Bridges,” Portland State University, Portland, OR, March, 2003.

Higgins, C., “Research on Shear-Cracked Reinforced Concrete Slab-Girder Bridges,” Northwest Transportation Conference, Corvallis, OR, March, 2003.

Higgins, C., “Research on Shear-Cracked Reinforced Concrete Bridges,” Capital Section of ASCE, Salem, OR, February, 2003.

Higgins, C., “Design of Grid Bridge Decks Using Orthotropic Plate Theory,” AASHTO Committee T14, Orlando, FL, January, 2003.

Higgins, C., “Field Study of a Reinforced Concrete Slab-Girder Bridge,” PEO Annual Meeting, Bend, OR May, 2002.

Higgins, C., “Field Testing Results for a Reinforced Concrete Slab-Girder Bridge,” ODOT “Blue Ribbon Panel,” Salem, OR, 2002.

Higgins, C., “Initial Findings of Field Study of a Reinforced Concrete Slab-Girder Bridge,” ODOT Managers Meeting, Salem, OR, April, 2002.

Higgins, C. “Research Plan for Vintage Reinforced Concrete Deck-Girder Bridges with Diagonal Cracks,” Oregon Department of Transportation, Research Advisory Committee, April, 2002.

Higgins, C., "Influence of Corrosion Damage on Shear Capacity of Concrete Beams," Northwest Transportation Conference, Corvallis, OR, March, 2002.

Higgins, C., "Initial Findings of Field Study of a Reinforced Concrete Slab-Girder Bridge," ODOT Bridge Section, Salem, OR, February, 2002.

Higgins, C., "Development of Economical Hysteretic Dampers," *International Symposium on Structural Control*, Tokyo Institute of Technology, Tokyo, December 2001.

Higgins, C., "New Large-Scale Structural Testing Laboratory at OSU", OSU CCEE Dept. Luncheon, September, 2001.

Higgins, C., "Hysteretic Dampers for Wood-Frame Buildings," *ASCE Structures Congress,* Session on Seismic Protection Systems for Wood-Framed Buildings, May, 2001.

Higgins, C., "Remaining Life of Shear Cracked Reinforced Concrete Bridge Girders," Oregon Department of Transportation, Research Advisory Committee, April, 2001.

Higgins, C. "Passive Control Devices for Earthquake Resistant Structures," ASCE Oregon Section Meeting, November, 2000.

Higgins, C., "Application of Viscoelastic Dampers for Wind Response Mitigation," *International Symposium on Structural Control*, Tokyo Institute of Technology, Tokyo, Japan, March, 2000.

Higgins, C. "Full-scale Testing and Analysis of a Steel Frame with Viscoelastic Dampers," Oregon State University, Corvallis, OR, 1999.

Higgins, C. "Full-scale Testing and Analysis of a Steel Frame with Viscoelastic Dampers," Cornell University, Ithaca, NY, 1999.

Higgins, C. "Full-scale Testing and Analysis of a Steel Frame with Viscoelastic Dampers," Auburn University, Auburn, AL, 1999.

Higgins, C., "Lessons Learned from Rehabilitation of a Historic Cast and Wrought Iron Bridge," *The Aldridge Change Bridge Committee*, Palmyra, NY, November 1998.

Higgins, C., "The Use of Viscoelastic Dampers for Damage Resistance in Steel Frame Buildings," *EERI Annual Meeting*, Earthquake Engineering Research Institute, San Francisco, CA, February 1998.

Higgins, C. "Full-scale Testing and Analysis of a Steel Frame with Viscoelastic Dampers," University of California Berkeley, 1997.

Higgins, C. "Seismic and Wind Response of a Steel Frame with Viscoelastic Dampers," Colorado State University, Ft. Collins, CO, 1997.

Higgins, C. "Seismic and Wind Response of a Steel Frame with Viscoelastic Dampers," Clarkson University, Potsdam, NY, 1997.

Higgins, C., Green, P.S., Connor, R.J., and Bruin, W.M., "Rehabilitation and Restoration of Walnut Street Bridge, Hellertown, Pennsylvania," *Twelfth Annual Historic Bridge Symposium*, Society for Industrial Archeology, Baltimore, MD, May 1995.

C2 Other Conference Presentations

Schumacher, T., Higgins, C., Glaser, S., and Grosse, C. "Acoustic Emission Localization for Concrete Column Anchorages," Acoustic Emission Working Group, Reno, NV, 2007.

Schumacher, T. and Higgins, C. "Application of Acoustic Emissions Testing on Concrete Column Anchorages," Acoustic Emission Working Group, Berkeley, CA, 2006.

Higgins, C. "RC Deck-Girders Tested to Failure Under Moving Loads" Committee 123, *ACI Fall Convention*, Kansas City, MO, November, 2005.

Daniels, T.K., Higgins, C., Rosowsky, D.V., Miller, T.M., and Yim, S.C. "Assessment and Risk-Ranking of Conventionally Reinforced Concrete Bridges for Shear," 84th Annual *TRB Meeting*, Washington D.C. January 13, 2005.

Higgins, C. "Fatigue of Diagonally Cracked Conventionally Reinforced Concrete Bridge Girders," Committee 215, *ACI Fall Convention*, San Francisco, CA, October, 2004.

Higgins, C. "Research Plan for Fatigue of Diagonally Cracked Conventionally Reinforced Concrete Bridge Girders," Committee 215, *ACI Fall Convention*, Phoenix, AZ, October, 2002.

Higgins, C. "Research Plan for Evaluation of Diagonally Cracked Conventionally Reinforced Concrete Bridge Girders," Committee 445, *ACI Fall Convention*, Phoenix, AZ, October, 2002.

Higgins, C. "Evaluation of Shear Cracking in Vintage Conventionally Reinforced Concrete Bridge Girders," *Structures Congress 2003*, Seattle, WA, May, 2003.

Higgins, C. "Development of Two New Hysteretic Dampers," *Seventh US National Conference on Earthquake Engineering*, Boston, MA, 2002.

Higgins, C. "Full-Scale Real-Time Seismic Testing and Analysis of a Viscoelastically Damped Steel Frame," *Sixth U.S. National Conference on Earthquake Engineering*, Seattle, WA, June 1998.

Higgins, C., "Experimental and Analytical Simulation of Wind Response for a Full-Scale Viscoelastically Damped Steel Frame," *The Eighth U.S. National Conference on Wind Engineering*, Baltimore, MD, June 1997.

Higgins, C., "Electromagnetic Assessment of Square Reinforcing Steel,"*Structural Materials Technology An NDT Conference*, NJDOT/FHWA, Atlantic City, NJ, February 1994.

C3. Grant and Contract Support (*Total Amount at OSU = over $6 million*)

"Assessment of Torsionally Induced Vertical Response on Member and Connection Stresses for Astoria Megler Bridge," Oregon Transportation Research and Education Consortium. $100,000., Mar. 2011-June 2011. **PI**.

"Full-Scale Pile Cap Tests," Degenkolb Engineers for Veterans Administration. $125,000., January-August 2011. **PI**.

"OTREC Scholars," Oregon Transportation Research and Education Consortium. $20,000., Nov. 2010-October 2011. **PI**.

"Student Activities Support," Oregon Transportation Research and Education Consortium. $21,930., Nov. 2010-October 2011. **PI**.

"Oregon State University OTREC Leadership and Coordination," Oregon Transportation Research and Education Consortium. $31,646., Nov. 2010-October 2011. **PI**.

"Tools for Gusset Plate Evaluation, Phase II, "Oregon Transportation Research and Education Consortium. $125,646., Nov. 2010-October 2011. **PI**.

"Field Instrumentation, Monitoring, and Testing of Bridge #01496A," Yamhill County, OR. $8,500., Aug.-Oct. 2010. **PI**.

"Material and Bond Tests of FRP Reinforcing Bars," Composite Materials R&D, Salem, OR. $7,000. Nov.-Jan. 2011.

"Testing and Analysis of Open Grid Decks," Bridge Grid Floor Manufacturing Association. $84,500., May 2010-May. 2011. **PI**.

"Enhanced Imaging Tools for Evaluation of Gusset Plate Connections in Steel Truss Bridges," Oregon Department of Transportation. $75,000., May 2010-Jan. 2011. **PI**.

"Performance and Design of Near-Surface Mounted CFRP for Shear Strengthening Reinforced Concrete Bridge Girders," Federal Highway Administration, Oregon Department of Transportation. $400,000., July 2009-Dec. 2011. **PI**.

"Tools for Gusset Plate Evaluation, Phase 1" Oregon Transportation Research and Education Consortium. $212,000., October 2009-Sept. 2010. **PI**.

"OTREC Scholars," Oregon Transportation Research and Education Consortium. $20,000., March 2009-October 2010. **PI**.

"Student Activities Support," Oregon Transportation Research and Education Consortium. $21,930., March 2009-October 2010. **PI**.

"Oregon State University OTREC Leadership and Coordination," Oregon Transportation Research and Education Consortium. $31,646., Nov. 2009-October 2010. **PI**.

"Recalibration of Live Load Factors for Bridge Rating Using Oregon WIM," Oregon Department of Transportation. $75,000., Dec. 2008-Jun. 2009. **PI**

"Coupled Hydraulic-Structural Testing to Improve Highway Bridge Reliability Under Extreme Hurricane Wave Loads," National Science Foundation. $100,000., 2008-2010. **Co-PI** with Dan Cox and Solomon Yim.

"Tools for Evaluation of Gusset Plate Connections in Steel Truss Bridges," Oregon Department of Transportation. $100,000., May 2008-Jan. 2009. **PI**.

"Acoustic Performance of Steel Stairs," Pacific Stair Company, Salem, OR. $20,000., June, 2009-Oct. 2009. **PI**.

"Performance of FRP Repairs Under Environmental Conditions, Phase 2" Oregon Transportation Research and Education Consortium. $81,000., October 2007-Sept. 2008. **PI**.

"LRFD Calibration of Filled Grid Bridge Decks" DS Brown and BGFMA. $30,000., May 2008-Sept. 2008. **PI**.

"RC Girder Repair Experiment Supplement," Federal Highway Administration, Oregon Department of Transportation. $50,000., January 2008-June 2008. **PI**.

"OTREC Scholars," Oregon Transportation Research and Education Consortium. $20,000., March 2007-October 2008. **PI**.

"Oregon State University OTREC Leadership and Coordination," Oregon Transportation Research and Education Consortium. $28,800., Nov. 2007-October 2008. **PI**.

"Application of WIM Data for Improved Modeling, Design, and Rating," Oregon Transportation Research and Education Consortium. $63,000., March 2007-October 2007. **co-PI with** Christopher M. Monsere at Portland State University as PI ($100,000. total project budget, $63,000. OSU).

"Flexural steel anchorage performance at diagonal crack locations," Federal Highway Administration, Oregon Department of Transportation. $300,000., September 2007-June 2010. **PI**.

"Bent Cap Experiment Supplement," Federal Highway Administration, Federal Highway Administration, Oregon Department of Transportation. $50,000., March 2007-June 2007. **PI**.

"Oregon State University OTREC Leadership and Coordination," Oregon Transportation Research and Education Consortium. $27,650., March 2007-October 2007. **PI**.

"Student Activities Support," Oregon Transportation Research and Education Consortium. $30,000., March 2007-October 2008. **PI**.

"Performance of FRP Repairs Under Environmental Conditions," Oregon Transportation Research and Education Consortium. $80,000., March 2007-October 2007. **PI**.

"Performance of FRP Repairs Under Environmental Conditions," Federal Highway Administration, Federal Highway Administration, Oregon Department of Transportation. $300,000., October, 2006-June 2008. **PI**.

"Bridge Deck Design Criteria and Testing Procedures," Project 10-72, National Cooperative Highway Research Project, $130,000.May 2006 – 2008. **Co-PI** with Robert Connor of Purdue University as PI ($500,000. total project budget).

"Development of Single-Lane Loaded Live Load Factors for Bridge Rating Using Oregon WIM," Oregon Department of Transportation. $34,000., April 2006-July 2006. **PI**

"Comprehensive Software Development for Reliability Assessment of Concrete Bridges with Diagonal Cracks," Oregon Department of Transportation. $260,000., **Co-PI** with Michael Scott of CCEE.

"Lateral Drift and Gravity Load Testing of Prefabricated Stair Assembly," KPFF Consulting Engineers, Portland, Oregon. $50,000., February, 2005-March 2005. **PI**.

"Repair Methods for Concrete Bridges with Diagonal Cracks," Federal Highway Administration, Federal Highway Administration, Oregon Department of Transportation. $600,000., February, 2005-June 2007. **PI**.

"Application of Acoustic Emission for Evaluation of Concrete Bridges with Diagonal Cracks," Federal Highway Administration, Oregon Department of Transportation. $185,000., November, 2004-December 2008. **PI**.

"Software Development for Reliability Assessment of Concrete Bridges with Diagonal Cracks," Oregon Department of Transportation. $100,000., November, 2004-December 2006, **Co-PI** with Michael Scott of CCEE.

"Truck Load Model for Oregon," Federal Highway Administration, Oregon Department of Transportation. $170,000., October, 2004-December 2006. **PI**.

"Application of Reliability Based Assessment to Reinforced Concrete Deck Girder Bridges," Oregon Department of Transportation. $55,000., October, 2004-March 2005. **PI**.

"Capacity of Cracked Reinforced Concrete Bent Caps," Federal Highway Administration, Oregon Department of Transportation. $500,000., September, 2004-December 2006. **PI**.

"Estimating Life of FRP Repairs on Shear-Cracked Concrete Beams," Federal Highway Administration, Oregon Department of Transportation. $210,000., October 2003 -2005. **PI**.

"Models for Estimating Life of Shear-Cracked Concrete Beams," Federal Highway Administration, Oregon Department of Transportation. $1,600,000., October, 2002-July 2004. **PI**.

"Remaining Life of Shear Cracked Reinforced Concrete Bridge Girders," Federal Highway Administration, Oregon Department of Transportation. $160,000., October 2001-2003. **PI**.

"Development of Composite Yielding Dampers," National Science Foundation, US-Japan Cooperative Research in Urban Earthquake Disaster Mitigation. $100,000., 2001-2004. **PI**.

"Load Cell for Large-Scale Structural Testing," Research Equipment Reserves Fund, OSU Research Office, $2,378., 2002. **PI**.

"Development of Oregon Center for Earthquake Engineering Research," Oregon State University, College of Engineering. $10,000., 2000-2002 (**Co-PI** with S. Dickenson, D. Rosowsky, S. Yim, T. Miller, and J. Gambatese).

"Assessment of Reinforced Concrete Girders with Corrosion Damaged Shear Reinforcement," Federal Highway Administration, Oregon Department of Transportation. $92,000., 2000-2002. **PI**.

"Fatigue Tests of a Composite Bridge Deck with Alternative Shear Connectors," Exodermic Bridge Deck Inc., Lakeville, CT. $20,000., 1998-99. **PI**.

"Slip Behavior of Tension Controlled Bolts in Short-Slotted Connections," Tension Control Bolting Inc., Greenfield, NH. $5,000., 1998-99. **PI**.

"Application of VE-dampers for Wind Response Mitigation in Tall Buildings," Nippon Steel Company, Tokyo, Japan. $20,000., 1997-98 (**Co-PI** with Kazuhiko Kasai of Tokyo Institute of Technology).

"Static Tests of a Composite Bridge Deck with Alternative Shear Connectors," Exodermic Bridge Deck Inc., Lakeville, CT. $10,000., 1997. **PI**.

C4. Patents Filed and In Process

United States Patent #7,197,854 “Prestressed or post-tension composite structural system,” Issued April 3, 2007 with R. Bettigole

C5. Other Scholarship and Creative Activities

C5 Invention Disclosure

C. Higgins, “Tension-Only Hysteretic Damper,” OSU Ref. No. 01-17. March, 2002.

D. SERVICE

D1. University Service

a. University Technical Service

Designer and Specification Writer, Structural Testing Strong-Floor Laboratory, O.H. Hinsdale Wave Research Laboratory (2001)

Cracking instrumentation at Caesar Chavez Cultural Center (2003)

b. University Committees

Futures Team, “Taking the Future Seriously” 2001-02.

c. College Committees

College of Engineering Research Council 2009-present

Transportation research meeting with western region DOT representatives 2002.

Dean’s Roundtable: Student Projects for Engineering Experience and Design, Clarkson U.

d. Departmental Committees

Faculty Status Committee (2007-08)

Laboratory Committee (1997-2000)

Undergraduate Committee (1997-2000)

Curriculum Committee (2001-03, 2004-05)

Graduate Committee (2001-02, 2003-05, 2008-09)

Marketing and Recruitment Committee (2003-04)

MECOP/CECOP Faculty representative at student interviews

Structural Engineering Program Development with CCE and COF Wood Science and Engineering Department

Director, Structural Engineering Research Laboratory, Clarkson University

Structures Faculty Search Committee Chair, Clarkson University

Structures Faculty Search Committee Member, Clarkson University

e. Media Relations

9/11/01KPAM; Portland, OR. Live on-air radio interview regarding structural collapse of World Trade Center Towers.

9/12/01 Statesman Times; Salem, OR. Interviewed in regard to the structural collapse of World Trade Center. Print and on-line versions.

9/13/01 Statesman Times; Salem, OR. Interviewed in regard to the structural collapse of World Trade Center. Print and on-line versions.

9/13/01 Albany Democrat-Herald; Albany, OR. Interviewed in regard to the structural collapse of World Trade Center. Print and on-line versions.

9/15/01 Gazette-Times; Corvallis, OR. Interviewed in regard to the structural collapse of World Trade Center.

10/01 KGW NBC Portland: Field testing of Willamette River Bridge.
5/02 KGW NBC Portland: Seismic Research at OSU.
10/02 KMTR NBC Eugene, OR: OSU research on cracked RC bridges.
1/03 ASCE *Civil Engineering Magazine*: Bridge research at OSU.
8/08 OPB Interview on collapse of I35W Bridge
8/08 OPB Interview on gusset plates of I35W Bridge
8/08 Oregonian Interview on steel truss bridges
3/09 Popular Mechanics feature "My Job"
3/10 Radio Interview on Bay Bridge hanger issues San Francisco
3/11 OPB City Club of Portland

D2. Service to the Profession

a. Professional Registration and Societies

Professional Engineer, New York #077436
Registered Engineer-in-Training, Texas 1991
American Society of Civil Engineers, Member (ASCE)
American Concrete Institute, Member (ACI)
ACI Faculty Network
Transportation Research Board, Member (TRB)
Member Committee AFN10: Basic Research Emerging Technologies Related to Concrete
Chi Epsilon, Member

Reviewer: National Science Foundation CAREER Awards
National Science Foundation CDI II Grant Program
American Consulting Engineering Council's 2010 Judging Panel for Oregon Engineering Excellence Awards.
Student paper competition International Bridge Conference, 2006
Elsevier, *Engineering Structures*
Journal of Disaster Research
AISC *Engineering Journal*
TRB *Transportation Research Record*
ASCE *Journal of Structural Engineering*
ASCE *Journal of Bridge Engineering*
ASCE *Journal of Materials in Civil Engineering*
ASCE *Journal of Cold Regions Engineering*
ASCE *Journal of Waterway, Port, Coastal and Ocean Engineering*
ACI *Structures Journal*
ACI *Materials Journal*
National Park Service, Historic American Engineering Record Collection
Harper Collins: Salmon and Johnson, Steel Structures Design and Behavior
J. Wiley and Sons: McCormick, Design of Reinforced Concrete
Pearson Prentice Hall: Wight and MacGregor, Reinforced Concrete Mechanics and Design

D3. Service to Public (Professionally related)

Philomath Rotary Lunch Presentation, Philomath, OR 2010
OSU Science Pub, Bend, OR 2009
OSU Over Lunch, OSU Alumni Assoc. Portland, 2002
Classes without Quizzes, OSU Alumni Assoc. Spring 2008
Science Pub, OSU-Cascades, Bend, OR, 2010

Tours of Structural Testing Laboratory including:
Senator Gordon Smith
Congressman Peter Defazio
Congressional Staff for Darleen Hooley
Congressional Staff for Peter Defazio
Congressional Staff for Kurt Schrader
Oregon PE Association
OSU Alumni Association; OSU Retirees Association
Central Oregon Community College
David Evans Associates; CH2MHill
ODOT Bridge Section; ODOT Leadership Team
Many civic and university groups

Tsunami Grand Opening, Tour of Structural Laboratory, 2003
O.H. Hinsdale Wave Research Laboratory, Open House

I also respond to requests from former students, the general public, and consulting engineers for technical advice. This free advice provides good will and enhances the reputation of the University as an institution that serves the needs of the State and Nation.

E. HONORS and AWARDS

E1. National and International Awards

Vinnakota Award 2010 with Duncan Stark, Ponding Stability of Open Web Joist Roofs, Structural Stability Research Council

American Institute of Steel Construction Klingelhoffer Graduate Fellowship awarded to MS student James Newell, 2002-03

Best Paper Award for the Year 1998, ISET Journal of Earthquake Technology with K. Kasai

NEHRP/EERI Graduate Fellow in Earthquake Hazard Reduction, 1996-97

James F. Lincoln Arc Welding Foundation, Gold Award to Ph.D. Dissertation, 1997

E2. State and Regional Awards

Pennsylvania Historical and Museum Commission: 2000 Historic Preservation Award for Outstanding Special Project: Walnut Street Bridge Restoration

E3. University and Community Awards

ASCE Outstanding Teacher: School of Civil and Construction Engineering, Oregon State University, 2007-08

ASCE Outstanding Teacher: Department of Civil, Construction, and Environmental Engineering, Oregon State University, 2003-04

Engelbrecht Young Faculty Award, College of Engineering, Oregon State University, 2003

Lloyd Carter Award for Outstanding and Inspirational Teaching, College of Engineering, Oregon State University, 2001-02

ASCE Outstanding Teacher: Department of Civil, Construction, and Environmental Engineering, Oregon State University, 2000-01

Albert D. Merrill Award: Outstanding Professor, Department of Civil Engineering, Clarkson University, 1998-99

The Tau Beta Pi Faculty Award for Outstanding Teaching in College of Engineering, Clarkson University, 1998-99

Lehigh University Graduate Student Leadership Award, 1995

American Concrete Institute Outstanding Student, Marquette University, 1988