

# TRAVIS THONSTAD

## *Curriculum Vitae*

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## EDUCATIONAL HISTORY

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University of Washington, Seattle, WA  
Ph.D., Civil Engineering  
December 2016

Dissertation title: “A Pre-Tensioned, Rocking Bridge System for Accelerated Construction and Enhanced Seismic Performance”

University of Washington, Seattle, WA  
M.S., Civil Engineering  
March 2013

Thesis title: “Specialized Track Bridge Structure for Light Rail Construction on Floating Bridges”

Oregon State University, Corvallis, OR  
B.S., Civil Engineering  
June 2011

University of Puget Sound, Tacoma, WA  
B.S., Joint Physics/Mathematics  
May 2009

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## EMPLOYMENT HISTORY

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University of Washington  
Seattle, WA, USA  
Assistant Professor, Civil and Environmental Engineering, 09/2020 – present

National Institute of Standards and Technology  
Gaithersburg, MD, USA  
Research Structural Engineer, 01/2019 – 08/2020

National Institute of Standards and Technology  
Gaithersburg, MD, USA  
NIST/NRC Postdoctoral Research Associate, 01/2017 – 01/2019

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## AWARDS AND HONORS

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*Structures* Best Research Paper, 2020, Institution of Structural Engineers

Young Engineer Outstanding Contribution Award, 2017, International Association for Bridge and Structural Engineering.

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## PUBLICATIONS

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### Refereed archival journal publications

1. Thonstad, T., Eberhard, M.O., and Stanton, J.F. (2021) "Design of Prestressed, Jointed Columns for Enhanced Seismic Performance." *Structures* (accepted)
2. Mantawy, I.M., Thonstad, T., Sanders, D.H., Stanton, J.F., and Eberhard, M.O. (2019) "Reinforcing Steel Fracture Identification for a High-Performance Bridge System." *Structures*, 19, 58-67.
3. Foan, A., Thonstad, T., and Stanton, J.F. (2018) "The CESuRa System: Allowing Changes in a Rail Track Profile While Maintaining Full Vertical Support." *Urban Rail Transit*, 4(4): 198-210.
4. Thonstad, T., Kennedy B.J., Schaefer J.A., Eberhard, M.O., and Stanton, J.F. (2017) "Cyclic Tests of Precast Pretensioned Rocking Bridge-Column Subassemblies." *Journal of Structural Engineering*, 143(9): 04017094.
5. Mantawy, I., Thonstad, T., Sanders, D., Stanton, J.F., and Eberhard, M.O. (2016) "Seismic Performance of Precast, Pretensioned, and Cast-in-Place Bridges: Shake Table Test Comparison." *Journal of Bridge Engineering*, 21(10): 04016071.
6. Thonstad, T., Stanton, J.F., Foan, A., and Sleavin, J. (2016) "How to put Light Rail on a Floating Bridge: Experimental Evaluation of a Novel Approach." *Transportation Research Record*, 2545, 46-55.
7. Thonstad, T., Mantawy, I., Stanton, J.F., Eberhard, M.O., and Sanders, D.H. (2016) "Shaking Table Performance of a New Bridge System with Pre-Tensioned, Rocking Columns." *Journal of Bridge Engineering*, 21(4): 04015079.

### Conference proceedings and other non-journal articles

#### Fully refereed publications

1. Thonstad, T., Mantawy, I.M., Stanton, J.F., Eberhard, M.O., and Sanders, D.H. (2017). "Pretensioned, Rocking Bridge Columns for Accelerated Construction and Enhanced Seismic Performance." Proceedings, 2017 IABSE Symposium, Vancouver, Canada, September 2017.
2. Mantawy, I.M., Thonstad, T., Sanders, D.H., Stanton, J.F., and Eberhard, M.O. (2017). "Analytical Study Assessment of a Bridge with Pretensioned Rocking Columns for Rapid Construction." Proceedings, 2017 IABSE Symposium, Vancouver, Canada, September 2017.
3. Stanton J.F., Eberhard, M.O., Sanders, D.H., Thonstad, T., Schaefer, J.A., Kennedy, B.J., Haraldsson, O.S., and Mantawy, I.M. (2014). "A Pre-Tensioned, Rocking Bridge Bent for ABC in Seismic Regions." Proceedings, Tenth U.S. National Conference on Earthquake Engineering, Anchorage, AK, July 2014.
4. Cooper, T., Foan, A., and Thonstad, T. (2013). "I-90 Track Bridge - The Challenge of Taking Light Rail Vehicles on to the Homer Hadley Floating Bridge." Proceedings, International Bridge Conference, Pittsburgh, PA, June 2013.

#### Refereed by abstract only

1. Phan, L.T., Sadek, F., Thonstad, T., Lew, H.S., Marcu, S., Philip, J. (2019) "Effects of Alkali-Silica Reaction on Mechanical Properties and Structural Capacities of Reinforced Concrete Structures." Transactions, Structural Mechanics in Reactor Technology (SMiRT) 25, Charlotte, NC, August 2019.
2. Weigand, J.M., Thonstad, T., Seamone, A.A., (2019). "Long-Slotted Plate Connections for Enhancing the Robustness of Steel Gravity Systems against Column Loss: Preliminary Results." SEI/ASCE Structures Congress 2019, Orlando, FL, April 2019.

3. Thonstad, T., Bao, Y., Weigand, J.M., Main, J.A., and Lew, H.S. (2018). "New Connections for Enhancing Robustness of Precast Concrete Frame Structures." Proceedings, 2018 PCI Convention and National Bridge Conference, Denver, CO, February 2018.
4. Thonstad, T., Haraldsson, O.S., Stanton, J.F., and Eberhard, M.O. (2014). "An ABC Bridge Bent That Self-Centers After an Earthquake." Proceedings, National Accelerated Bridge Construction Conference, Miami, FL, December 2014.
5. Mantawy, I.M., Thonstad, T., Sanders, D.H., Stanton, J.F., and Eberhard, M.O. (2014). "Earthquake Shake Table Testing of a Self-centering ABC Bridge." Proceedings, National Accelerated Bridge Construction Conference, Miami, FL, December 2014.
6. Mantawy, I.M., Thonstad, T., Sanders, D.H., Stanton, J.F., and Eberhard, M.O. (2014). "Shake Table Experiments of Precast, Pretensioned Bridge." Proceedings, 30th US-Japan Bridge Engineering Workshop, Washington, DC, October 2014.
7. Eberhard, M.O., Stanton, J.F., Sanders, D.H., Schaefer, J.A., Kennedy, B.J., Thonstad, T., Haraldsson, O.S., and Mantawy, I.M. (2013) "A Precast, Pretensioned, Rocking Bridge Bent for Rapid Construction and High Seismic Performance." Proceedings, 29th US-Japan Bridge Engineering Workshop, Tsukuba, Japan, November 2013.

#### ***Magazine articles***

1. Cooper, T., Sleavin, J., Foan, A., and Thonstad, T. (2014). "Unprecedented Connections." *Civil Engineering*, March 2014: 56-63.

#### **Abstracts, letters, non-refereed papers, technical reports**

##### ***Technical reports***

1. Thonstad, T., Weigand, J.M., Sadek, F., Marcu, S., Barrett, T.J., Lew, H.S., Phan, L.T., Pintar, A.L. (2021) "Structural Performance of Nuclear Power Plant Concrete Structures Affected by Alkali-Silica Reaction (ASR) Task 2: Assessing Bond and Anchorage of Reinforcing Bars in ASR-Affected Concrete" NIST Technical Note 2127, National Institute of Standards and Technology, Gaithersburg, MD.
2. Sadek, F., Thonstad, T., Marcu, S., Weigand, J.M., Barrett, T.J., Lew, H.S., Phan, L.T., Pintar, A.L. (2021) "Structural Performance of Nuclear Power Plant Concrete Structures Affected by Alkali-Silica Reaction (ASR) Task 1: Assessing In-Situ Mechanical Properties of ASR-Affected Concrete" NIST Technical Note 2121, National Institute of Standards and Technology, Gaithersburg, MD.
3. Thonstad, T. and Stanton, J.F. (2016) "Sound Transit East Link Test Report on Stiffness of Corkelast Layers in the Rail-Deck Attachment System of the I-90 Floating Bridge." Final Report for Parsons Brinckerhoff.
4. Whitesell, L., Thonstad, T., and Stanton, J.F. (2013). "Laboratory Testing to Determine Rail Fastener Stiffnesses." Final Report for Parsons Brinckerhoff.
5. Stanton, J.F. and Thonstad, T. (2013). "Laboratory Testing of the CESURA Rail Track System." Final Report for Parsons Brinckerhoff.

#### **Other significant research dissemination (web sites, software, Wikis, etc.)**

##### ***Curated datasets***

1. Sanders, D.H., Mantawy, I.M., Stanton, J.F., Eberhard, M.O., and Thonstad, T. (2015). "Shake Table Testing of a Two-Span Bridge Specimen with Unbonded, Pre-tensioned Rocking Columns." *Natural Hazards Engineering Research Infrastructure*, Dataset, 10.4231/D33B5W88M.
2. Kennedy, B.J., Schaefer, J.A., Stanton, J.F., Eberhard, M.O., and Thonstad, T. (2015). "Cyclic Testing of an Unbonded Pre-tensioned Bridge Column with Rocking Detail: Footing Specimen 01." *Natural Hazards Engineering Research Infrastructure*, Dataset, 10.4231/D39Z90C8S.

3. Kennedy, B.J., Schaefer, J.A., Stanton, J.F., Eberhard, M.O., and Thonstad, T. (2015). “Cyclic Testing of an Unbonded Pre-tensioned Bridge Column with Rocking Detail: Footing Specimen 02.” *Natural Hazards Engineering Research Infrastructure*, Dataset, 10.4231/D3KW57K0S.
4. Kennedy, B.J., Stanton, J.F., Eberhard, M.O., and Thonstad, T. (2015). “Cyclic Testing of an Unbonded Pre-tensioned Bridge Column with Rocking Detail: Capbeam Specimen.” *Natural Hazards Engineering Research Infrastructure*, Dataset, 10.4231/D3HQ3S04M.

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## OTHER SCHOLARLY ACTIVITY

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### **Invited lectures and seminars**

1. Washington State Department of Transportation, *Exploring Fiber-Reinforced Polymer Concrete for Accelerated Bridge Construction Applications*, January 2021
2. Seattle University, *A Pretensioned, Rocking Column System for Accelerated Bridge Construction and Enhanced Seismic Performance*, March 2020
3. Iowa State University, *A Pretensioned, Rocking Column System for Accelerated Bridge Construction and Enhanced Seismic Performance*, March 2020
4. University of Washington, *Precast Concrete Moment Frame Connections with Improved Robustness*, February 2020.
5. Marquette University, *A Pretensioned, Rocking Column System for Accelerated Bridge Construction and Enhanced Seismic Performance*, February 2020
6. California Polytechnic State University, San Luis Obispo, *A Pretensioned, Rocking Column System for Accelerated Bridge Construction and Enhanced Seismic Performance*, February 2020
7. California State University, Los Angeles, *A Pretensioned, Rocking Column System for Accelerated Bridge Construction and Enhanced Seismic Performance*, February 2020
8. University of Pittsburgh, *A Pretensioned, Rocking Bridge Column System for Accelerated Construction and Enhanced Seismic Performance*, February 2018
9. University of California Berkeley, *A Pre-tensioned, Rocking Bridge Column System for Accelerated Construction and Enhanced Seismic Performance*, February 2018
10. Ohio State University, *A Pre-tensioned, Rocking Bridge System for Accelerated Construction and Enhanced Seismic Performance*, March 2016
11. National Institute of Standards and Technology, *A Resilient Bridge Bent System for Accelerated Construction in High Seismic Regions*, January 2016

### **Presentations given at conferences (only presentations given by Thonstad listed)**

1. Thonstad, T., Main, J.A., Weigand, J.M., and Lew, H.S. “Precast Concrete Frame Connections with Enhanced Robustness: Component Tests.” *SEI/ASCE Structures Congress*, Orlando, FL, April 2019.
2. Thonstad, T., Bao, Y., Weigand, J.M., Main, J.A., and Lew, H.S. “New Connections for Enhancing Robustness of Precast Concrete Frame Structures.” *2018 PCI Convention and National Bridge Conference*, Denver, CO, February 2018.
3. Thonstad, T., Mantawy, I.M., Stanton, J.F., Eberhard, M.O., and Sanders, D.H. “Pretensioned, Rocking Bridge Columns for Accelerated Construction and Enhanced Seismic Performance.” *2017 IABSE Symposium*, Vancouver, Canada, September 2017.
4. Thonstad, T., Mantawy, I.M., Eberhard, M.O., Stanton, J.F., and Sanders, D.H. “A Bridge Bent System with Pre-Tensioned, Rocking Columns for Accelerated Construction and Enhanced Seismic Performance.” *SEI/ASCE Structures Congress*, Denver, CO, April 2017.

5. **Thonstad, T.**, Stanton, J.F., Foan, A. and Sleavin, J. “How to put Light Rail on a Floating Bridge: Experimental Evaluation of a Novel Approach”, *TRB 95th Annual Meeting*, Washington, DC, January 2016.
6. **Thonstad, T.**, Mantawy, I.M., Sanders, D.H., Stanton, J.F., and Eberhard, M.O. “Shaking Table Performance of a New Precast Bridge Bent System with Pre-Tensioned, Rocking Columns.” *National Accelerated Bridge Construction Conference*, Miami, FL, December 2015.
7. **Thonstad, T.**, Haraldsson, O.S., Stanton, J.F., and Eberhard, M.O. “An ABC Bridge Bent That Self-Centers After an Earthquake.” *National Accelerated Bridge Construction Conference*, Miami, FL, December, 2014.

**Professional society memberships**

American Society of Civil Engineering, Associate Member, 2014 – present  
 American Concrete Institute, Member, 2019 – present  
 Precast/Prestressed Concrete Institute, Academic Professional Member, 2015 – present

**Other**

**Reviewer**

Journal of Bridge Engineering, Journal of Structural Engineering, Earthquake Spectra, Journal of Testing and Evaluation

**GRADUATE STUDENTS**

**Current Doctoral Students**

- Uzo Uwaoma, Chair, Pre-candidacy with estimated completion Sp2023

**Current Masters Students**

- Carolyn Donohoe, Chair, Thesis topic chosen (Funded by ABC-UTC) with estimated completion Sp2022

**RESEARCH ACTIVITIES**

Total research funding: \$70k

Total of my amounts: \$70k

**Funded Research**

<b>Funding Agency</b>	<b>Title</b>	<b>Your role with other PI's and co-PI's</b>	<b>Total Amount, Your Amount, (Subcontracts if any, University Matching if any)</b>	<b>Dates (start - finish)</b>
ABC-UTC	<i>Exploring Fiber-Reinforced Polymer Concrete for Accelerated Bridge Construction Applications</i>	PI	Total amount \$70k, my amount \$70k	2/2021 - 3/2022

**Unsponsored research.**

*Improving the Dynamic Response of Irregular Structures through Novel Tuning Approaches*

Dates: Autumn 2020 – present

Purpose: New concepts for civil engineering structures, basis for future proposals

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DOCUMENTATION OF TEACHING EFFECTIVENESS

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**Courses Taught & Student Evaluations**

Students rated the courses on a scale of 0-5 [0 = very poor, 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent]

Item 1, “The course content as a whole was”

Item 3, “The instructor’s contribution to the course was”

Item 4, “The instructor’s effectiveness in teaching the subject was”

Reported scores are adjusted medians, which have been corrected by IASystem to control for differences in class size, expected grade, and reason for enrollment based on regression analyses of ratings over the previous two academic years in all classes at UW. Due to the regression procedure, some scores may be over 5.0.

Course	Title	Quarter	Credit Hrs	Enrol.	Evals. ? Resp.	Item 1	Item 3	Item 4	Overall Adj. Median
CEE 220	Mech. of Materials	Fall, 2020	4	57	Yes, 29/57	4.9	5.1	5.0	5.0

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SERVICE

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**Departmental service**

- CEE Departmental Committees – Undergraduate Education (2020 - present)

**Professional society and other service**

- PCI Blast Resistance and Structural Integrity Committee, consulting member, 2018-present
- PCI Connections Details Committee, consulting member, 2018-present