

## **Dr. Cameron Robert Rusnak**

Assistant Professor of Civil Engineering  
Leonard C. Nelson School of Engineering  
Civil Engineering  
West Virginia University Institute of Technology  
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### **EDUCATION**

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#### ***Doctor of Philosophy (PhD) in Civil Engineering***

May 2022

The University of Akron (UA) Akron, Ohio

Cumulative GPA: 3.72 / 4.0

Dissertation: "Fatigue Behavior of Electrical Access Holes in Aluminum Light Support Structures"

Advisor: Dr. Craig Menzemer

Sponsor: HAPCO, Abingdon, VA

#### ***Master of Science (MS) in Civil Engineering***

May 2019

The University of Akron (UA) Akron, Ohio

Cumulative GPA: 3.85 / 4.0

Thesis: "Fatigue Behavior in Reinforced Electrical Access Holes in Aluminum Light Support Structures"

Advisor: Dr. Craig Menzemer

Sponsor: HAPCO, Abingdon, VA

#### ***Bachelor of Science (BS) in Civil Engineering***

May 2017

Ohio Northern University (ONU) Ada, Ohio

Cumulative GPA: 3.20 / 4.0

Senior Capstone Project: "Design of Underground Parking Structure for COSI Columbus"

Sponsor: Corna Kokosing, Columbus, Ohio

### **Research Interests:**

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- Design and analysis of structures subjected to natural phenomena.
- Theoretical and experimental aspects of earthquake engineering related to structural design.
- Structural engineering design and analysis.
- Post buckling behavior of structural components.
- High cycle fatigue strength.
- Hotspot fatigue behavior of joints and components.
- Use of Finite Element Analysis (FEA) in structural design and analysis.
- Optimization and update of current design practices used in analysis.
- Rehabilitation, repair and strengthening of existing structures.
- Eco-friendly composite materials for use in construction applications.

### **Research Experience**

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#### **Assistant Professor**

**August 2025 – Present**

Leonard C. Nelson School of Engineering Program of Civil Engineering at West Virginia University Institute of Technology, Beckley, WV

- New Research
  - Exploring and defining potential research projects in engineering.
  - Drafting and refining proposals for future internally and externally funded research efforts.

- Exploration into student assessment methods in a world of AI-assisted learning
- Continuing publications and collaborations with the University of Nevada, Reno, and the University of Akron.

### **Assistant Professor of Engineering**

**January 2024 – May 2025**

Department of Science, Technology, and Mathematics at Lincoln University, Jefferson City, MO

- New Research
  - Exploring and defining potential research projects in engineering.
  - Drafting and refining proposals for future internally and externally funded research efforts.
- Development of Engineering Education practices.
  - Developed and implemented inclusive teaching strategies to support underprepared engineering students, emphasizing active learning, feedback, and foundational reinforcement.
  - Designed a comprehensive 5-facet evaluation model to improve course assessment, teaching effectiveness, and faculty development.
- Continuing publications and collaborations with the University of Nevada, Reno, and the University of Akron.

### **Postdoctoral Research Scholar**

**August 2022 – December 2023**

Department of Civil and Environmental Engineering at the University of Nevada-Reno, Reno, NV

- Testing and analyzation of the fire suppression system present at the Los Alamos National Laboratory.
  - Exploration into the structural integrity of the threaded cast iron components present in a fire suppression system during a seismic event.
  - Generated finite element models in Sap2000 to gain a better understanding of the results gathered in the lab.
  - Created MATLAB codes to analyze the results and aid in data processing.
  - Developed novel rotational capacity procedure for threaded components.
  - Defined damage states and fragility curves of fittings tested.
  - In charge of every experiment and ran all test equipment including hydraulic actuator and data acquisition system.

### **Graduate Research**

**August 2017 – May 2022**

Department of Civil Engineering at the University of Akron, Akron, OH

- Testing and analyzation of aluminum light pole structures.
  - Conducted all laboratory experiments and analyzed results.
  - Build finite element models in ABAQUS to analyze behavior of lab experiments.
  - Used a scanning electron microscope system to explore fatigue failure on a microscopic level.
  - Create fracture mechanics models in AFGROW to replicate the results obtained in the laboratory.

## **Teaching Experience**

### **Assistant Professor**

**August 2025 – Present**

Leonard C. Nelson School of Engineering Program of Civil Engineering at West Virginia University Institute of Technology, Beckley, WV

- All tasks relevant to individual undergraduate level course instruction including course development, lecturing, grading and office hours.
- Relevant courses taught:

- DRET-120 – Drafting 1
- MAE-241 – Statics
- MAE-243 – Mechanics of Materials

### **Assistant Professor of Engineering**

**January 2024 – May 2025**

Department of Science, Technology, and Mathematics at Lincoln University, Jefferson City, MO

- All tasks relevant to individual undergraduate level course instruction including course development, lecturing, grading and office hours.
- Relevant courses taught:
  - CET-105 – Engineering Graphics I with AutoCAD
  - CET-106 – Engineering Graphics II with AUTOCAD 3D
  - CET-201 – Engineering Mechanics (Statics)
  - CET-202 – Strength of Materials
  - CET-203 – Strength of Materials Lab
  - CET-330 – Engineering Materials (Engineering Material Science)
  - CET-360 – Soil Mechanics and Foundations
  - CET-401 – Reinforced Concrete Design
  - CET-402 – Structural Steel Design
  - CET-414 – Building Engineering Systems and Design (Capstone)
  - MAT-111 – Intermediate Algebra

### **Graduate Teaching Mentorship**

**August 2017 – May 2022**

Department of Civil Engineering at the University of Akron, Akron, OH

- All tasks relevant to individual undergraduate level course instruction including course development, lecturing, grading and office hours.
- Relevant courses taught:
  - 4300:201 - Statics
  - 4300:202 - Intro to Mechanics of Solids
  - 4300:306 - Theory of Structures

### **Graduate Teaching Assistant**

**August 2017 – May 2022**

Department of Civil Engineering at the University of Akron, Akron, OH

- Aid the professor in undergraduate level course instruction.
- Tasks included instruction, lecturing, grading, office hours, and examination proctoring.
- Relevant courses:
  - 4300:101 - Tools for Civil Engineering
  - 4300:201 - Statics
  - 4300:202 - Intro to Mechanics of Solids
  - 4300:306 - Theory of Structures

### **Academic Service Experience**

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- **West Virginia University Institute of Technology**
  - Committee Involvement
    - Member, Student Affairs Committee (Fall 2025 - Present)
- **Lincoln University**
  - Civil Engineering Technology Program.
    - Spearheaded future planning efforts of the program, including the pursuit of potential ABET accreditation.

- Developed and introduced new civil engineering technology courses to meet the evolving demands of the engineering profession.
- Updated and modernized course descriptions, learning materials, and syllabi to align with contemporary pedagogical standards.
- Led curriculum mapping activities, formulated measurable course learning outcomes, and aligned program objectives with national educational standards and industry competencies.
- Conducted evaluations of course equivalencies to ensure alignment with industry needs and academic standards.
- Established partnerships with industry professionals to create opportunities for student internships, research, and employment.
- Committee Involvement.
  - Member, Department of Science, Technology, and Mathematics Curriculum Committee (Fall 2024, Spring 2025).
  - Chair, Civil Engineering Technology Faculty Search Committee (Spring 2025).
  - Chair/Co-Chair, Civil Engineering Technology Faculty Search Committee (Fall 2024).
  - Member, Computer Science Faculty Search Committee (Spring 2024).
- Student mentorship.
- Student Advising.

## **Industry Experience**

### **Transmission Line Engineer**

**May 2016 - August 2016**

EASi Engineering, Gahanna, OH

- Designed transmission line structural systems.
- Completed projects, attended meetings, and participated in site visits.
- Assisted other engineers with their project responsibilities.

## **Certifications**

- Engineer-In-Training (EIT)

## **Technical Skills**

- Computer aided design/engineering:
  - ABAQUS, AutoCAD, SAP2000, AFGROW
- Programming languages and mathematical packages:
  - MATLAB
- Others:
  - SEM Microscope, MTS STS Controller, National Instruments Data Acquisition System, Lab View Software, Windows OS, Mac OS, Microsoft Office

## **Professional Organization Memberships**

- Member, American Society of Civil Engineers (ASCE)
- Member, American Society of Engineering Education (ASEE)
- Member, Structural Engineering Institute (SEI)
- Member, American Institute of Steel Construction (AISC)

## Professional Activities and Service

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- Guest Editor of Special Issue “*Advancements in Reinforced Concrete Structures: Design, Analysis, Retrofitting, and Applications.*” Infrastructure, a MDPI Journal
- Reviewer for the *Minorities in Engineering Division (MIND)* for the ASEE Annual Conference & Exposition
- Reviewer of *Journal of Infrastructure Systems*, an ASCE Journal
- Reviewer of *Open Journal of Civil Engineering*, an open access journal.

## Proposal Experience

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- **Co-Principal Investigator.** “A.Y. 2025-2026 West Virginia Bridge Design and Build Contest at WVU Tech.” West Virginia Division of Highways (WVDOH). Submitted Sept 2025. **Requested: \$60,088.75**
- **Principal Investigator.** “Professional Development and Paper Presentation at the 2026 ASEE Annual Conference.” 2025-26 WVU Tech Faculty & Staff Mini Grant Program. Submitted Sept 2025. **Requested: \$2,352.00**
- **Co-Principal Investigator.** “Dynamic and Continuous Assessment of Lateral Stability in Ballasted Tracks: An Innovative Testing Approach.” The Federal Railroad Administration (FRA) Broad Agency Announcement (BAA) Program. Concept paper submitted Jan 2025. **Requested: \$235,800.00**
- **Co-Principal Investigator.** “Improve on Assessment and Comprehension of Seismic Performance of Fire Suppression Systems (FSS) Built with Cast Iron Fittings.” Nuclear Safety Research & Development (NSR&D) and Department of Energy (DOE). Submitted March 2023; decision Aug 2024 (encouraged to resubmit).

## Journal Publications

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- **Rusnak, C.,** Rivas, A., Elfass, S. (2025) *The Performance of Large Diameter Threaded Cast Iron Pipe Fitting Joints Used in a Fire Suppression: An Experimental and Fragility Analysis.* MDPI Journal of Experimental and Theoretical Analyses (Under Review).
- **Rusnak, C.,** Elfass, S., and Rivas, A. (2025) Experimental and fragility analysis of threaded cast iron pipe fittings utilized in a fire suppression system. *Front. Built Environ.* 11:1565894.
- **Rusnak, C.** (2025) *Sustainable Strategies for Concrete Infrastructure Prevention: A Comprehensive Review and Perspective.* MDPI Infrastructures, Advances in Reinforced Concrete Infrastructure: Enhancing Structural Resilience and Promoting Sustainability Special Issue, Vol. 10, Issue 4, (2025).
- **Rusnak, C.,** Al-Hamami, A., Menzemer, C. (2024) *The Performance of Small Diameter Aluminum Light Support Structures Containing Handholes Under Cyclic Fatigue.* Open Journal of Civil Engineering (OJCE),14, Pages 196-213 (2024)
- **Rusnak, C.,** Menzemer, C. (2023) *Fracture Mechanics, and its Application in the Fatigue Behavior of Reinforced Welded Hand-Holes in Aluminum Light Poles.* Open Journal of Civil Engineering (OJCE), 13, Pages 677-694 (2023).
- **Rusnak, C.,** Menzemer, C. (2022) *Fatigue Behavior of Reinforced Welded Hand-Holes in Aluminum Light Poles with a Change in Detail Geometry.* Intechopen, Structural health Monitoring of Structure and Infrastructure System, (2022).
- **Rusnak, C.,** Menzemer, C. (2021) *Fatigue Behavior of Unreinforced Hand-Holes in Aluminum Light Poles.* MDPI Metals, Fracture Mechanics, and Fatigue Design in Metallic Materials Special Issue, Vol. 11, Issue 8, (2021).
- **Rusnak, C.,** Menzemer, C. (2021) *Fatigue Behavior of Flush Reinforced Welded Hand-Holes in Aluminum Light Poles.* Res. Eng. Struct. Mater., 2021; 7(3) Pages 465-480.

- Daneshkhah, A., Schlatter, C., **Rusnak, C.**, Menzemer, C. (2019) *Fatigue Behavior of Reinforced Welded Hand-Holes in Aluminum Poles*. Research on Engineering Structures and Materials, Vol. 188, Pages 60-68 (2019).

## Conference Publications

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- **Rusnak, C.**, Heise, D. (2025) *Expanding the Pool: Recognizing the Potential in Underprepared Students*. Minorities in Engineering Division (MIND), 2025 ASEE Annual Conference, June 2025, 46043.
- **Rusnak, C.**, Heise, D., Alfawaer, Z. (2025) *WIP - Building A Stronger Curriculum: A Comprehensive Model for Enhanced Evaluation*. Faculty Development Division (FDD), 2025 ASEE Annual Conference June 2025, 46044.
- **Rusnak, C.**, Rivas, A., Elfass, S. (2024) *Comparison Between the Performance of Threaded Connections versus Welded Connections in Pipe-Fitting Assemblies*. ASME 2024 Pressure Vessels and Piping Conference, July 2024, PVP2024-123494.
- **Rusnak, C.**, Rivas, A., Elfass, S. (2024) *Total Rotational Capacity of Threaded Connections in Pipe-Fitting Assemblies*. ASME 2024 Pressure Vessels and Piping Conference, July 2024, PVP2024-123390.

## Technical Reports

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- **Rusnak, C.**, Elfass, S., Rivas, A (2023) *Testing and Analysis of Fire Suppression System Components, Phase 2.0, Experimental Study*. Los Alamos National Laboratory (LANL).

## Other Publications

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- **Rusnak, C.** (2024) *Title III Professional Development Blog Post: A Report from the American Society of Mechanical Engineers Pressure Vessel and Piping Conference of 2024*. Title iii Professional Development Reports, Lincoln University Blue Tiger Commons (Accepted).
- **Rusnak, C.** (2022) *Fatigue Behavior in Electrical Access Holes in Aluminum Light Support Structures*. Doctoral Dissertation, The University of Akron, via OhioLINK Library ETD, 2022.
- **Rusnak, C.** (2019) *Fatigue Behavior in Reinforced Electrical Access Holes in Aluminum Light Support Structures*. Master's Thesis, The University of Akron, via OhioLINK Library ETD, 2019.

## Publications Under Preparation

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- Alfawaer, Z., Heise, D., **Rusnak, C.**, Mohammed, U. (2025) *Enhancing Student Assessment Methods in the World of AI-Assisted Learning*. (Under Preparation)
- **Rusnak, C.**, Elfass, S., Rivas A. *Experimental Analysis of Threaded Cast Iron Piping Joints Containing a Retrofit Corner Brace*. (Under Preparation).
- **Rusnak, C.**, Al-Hamami, A., Menzemer, C. *Probabilistic Cumulative Damage Analysis of Aluminum Light Pole Handholes* (Under Preparation).
- **Rusnak, C.** (2026) *Replacing Traditional Exams with Group Quizzes: An Active Learning Approach in Engineering Education*. Educational Research and Methods Division (ERM), 2026 ASEE Annual Conference (Under Preparation)
- **Rusnak, C.**, Rivas, A. (2026) *Undergraduate Research and How it Enhances Learning for First Generation Students from an Underrepresented Background (Experience)*. Minorities in Engineering Division (MIND), 2026 ASEE Annual Conference (Under Preparation).
- **Rusnak, C.**, Menzemer, C. *Fatigue Fracture Analysis of Aluminum Light Poles with Welded Handholes: Insights from Scanning Electron Microscopy*. (Under Preparation).
- **Rusnak, C.**, Menzemer, C. *The Effect of Post-Weld Heat Treatment on Fatigue Life of Handholes in Aluminum Light Poles*. (Under Preparation).