

Heath Michael Kaufman, Ph.D, PE

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Education

University of Cincinnati, Cincinnati, OH, College of Engineering and Applied Science

Doctor of Philosophy, Civil Engineering, 2018 – Spring 2024

Area of Specialization: Structural Engineering

Tennessee Technological University, Cookeville, TN, Department of Civil and Environmental Engineering

Master of Science, Civil Engineering, 2012 – 2014

Bachelor of Science, Civil Engineering, 2009 – 2012

Minor in Mathematics, 2012

Teaching Experience

The Citadel, Charleston, SC.

Assistant Professor, Department of Civil, Environmental and Construction Engineering, August 2024 – Present

- **Instructor of Record for:**
 - CIVL 202 – Statics (3 credits)
 - Fall 2024, 2025 semester.
 - Average class size – 20 students
 - CIVL 304 – Mechanics of Materials (3 credits)
 - Fall 2024 semester.
 - Average class size – 20 students
 - CIVL 307 – Mechanics of Materials Lab (1 credits)
 - Fall 2025 semester.
 - Average class size – 10 students
 - CIVL 309 – Structural Analysis (4 credits)
 - Spring 2025 semester.
 - Average class size – 35 students

- CIVL 404 – Reinforced Concrete Design (3 credits)
 - Fall 2024, 2025 semester & Summer 2025 semester.
 - Average class size – 25 students
- CIVL 406 – Steel Design (3 credits)
 - Spring 2025 semester.
 - Average class size – 25 students
- CIVL 412 – Engineering Practice and Professional Licensure (1 credit)
 - Fall 2024, 2025 semester.
 - Average class size – 30 students

Miami University, Oxford, OH.

Part-time faculty member, Architecture and Interior Design Department, August 2017 – May 2024

- **Instructor of Record for:**

- ARC 410/510 – Engineering Statics and Strength of Materials (3 credits)
 - Every Fall semester since 2017. Online during Fall 2020.
 - Split class level, includes undergraduate and graduate students.
 - Graduate students perform extra work to receive graduate credit.
 - Average class size – 60 students (50 undergraduate, 10 graduate).
- ARC 411/511 – Structures Design 1: Masonry & Wood Design and Analysis (3 credits)
 - Every Spring semester since 2018. Partial online during Spring 2020 and online during Spring 2021.
 - Split class level, includes undergraduate and graduate students.
 - Graduate students perform extra work to receive graduate credit.
 - Average class size – 37 students (25 undergraduate, 12 graduate)
- ARC 412/512 – Structures Design 2: Concrete & Steel Design and Analysis (3 credits)
 - Every Fall semester since 2017. Online during Fall 2020.
 - Split class level, includes undergraduate and graduate students.
 - Graduate students perform extra work to receive graduate credit.
 - Average class size – 26 students (14 undergraduate, 12 graduate)

- **Other appointments:**

- Frequently assist with senior design projects and graduate student thesis projects by providing students with guidance from a structural engineer's perspective.
- Assist other faculty members with their research projects by providing structural information, design, and analysis.

University of Cincinnati, Cincinnati, OH.

Graduate Assistant, College of Engineering and Applied Science, August 2020 – 2023

- **Instructor of Record for:**
 - CM 2005 – Structural Design for Construction Management (3 credits)
 - Fall 2022.
 - Class size – 60.
 - CM 2031 – Engineering Statics for Construction Management (2 credits)
 - Fall 2020, Fall 2021, Spring 2022, Spring 2023. Online during Fall 2020.
 - Average class size – 45 students
 - CM 2032 – Engineering Basic Strength of Materials for Construction Management (2 credits)
 - Fall 2020, Fall 2021, Spring 2022, Spring 2023. Online during Fall 2020.
 - Average class size – 45 students
 - CVE 2031 – Statics (2 credits)
 - Summer 2021 and Summer 2022. Online during Summer 2021.
 - Average class size – 30 students
 - CVE 2032 – Basic Strength of Materials (2 credits)
 - Summer 2021 and Summer 2022. Online during Summer 2021.
 - Average class size – 36 students
- **Teaching Assistant for:**
 - CVE 4099/7093 – Structures I for Architecture Students (3 credits), Spring 2021
 - Instructor: Dr. Rachel Cross
 - Graded homework and quizzes. Assisted students with homework questions.
 - Class size – 98
 - CVE 7086 – Metal Structures Theory and Design II (3 credits), Spring 2021
 - Instructor: Dr. Rachel Cross
 - Graded homework and quizzes.
 - Class size – 13

Industry Experience

Structural Engineer, Schaefer Inc., Cincinnati, OH

May 2014 – August 2019

- Managing and designing various projects involving steel, concrete, masonry, wood, and cold-formed building materials in multiple states, including moderate to high seismic, wind, and snow regions.
- Projects included a variety of proposal writing, contract writing and negotiation, budget management, working on a design team, managing other design engineers, working as solo engineer, working from the design development phase through construction

completion, reviewing construction shop drawings, construction site visits, writing ASO's, and answering RFI's.

- Projects ranged from small buildings with exterior CFMF walls to large-scale Amazon sort facilities.
- Projects include new constructions to renovations.
- Average amount of projects touched in one year – 96
- Average amount of projects designing/managing simultaneously (includes projects ranging from DD phase to CA phase) – 12
- Maximum number of projects designing/managing simultaneously (includes projects ranging from DD phase to CA phase) – 21
- Key project and project types include:
 - Full design of 500,000 square feet and larger sort facilities (Amazon and other similar buildings). Consisted of steel bar joist roof (with ponding effects), lateral steel braced frames, expansion joints, lateral resistant concrete tilt walls, and inner multistory composite and non-composite steel mezzanines.
 - Full design of a multistory military building for the Department of Defense. Building consisted of multiple stories above and below ground. Location of building and name of building is classified information. Building was designed for progressive collapse due to internal and external blast forces. Building consisted of cross-laminated timber and concrete members.
 - Full design of Kroger Marketplace buildings and similar exterior masonry wall style buildings. Typical building consisted of a steel bar joist roof with masonry bearing, infill, and shear walls.
 - Renovating and updating the Baltimore Civic Center's steel truss roof system to support new center jumbotron, scoreboards, and speaker systems for NCAA basketball tournament. Included creating a complete 3D SAP model of the entire existing roof system by the Baltimore Civic Center's request for potential future renovations.
 - Full design of multistory and single story steel structures. Consisted of lateral resistant moment and braced frames with composite floor systems including joists and beams. Designs also consisted of exterior CFMF infill and by-pass walls.
- Other project types not mentioned were sport stadiums, schools, hospitals, fire houses, parking garages, and other high category type buildings. Buildings ranged from single story to over ten stories.
- Served as safety officer and construction site visit equipment manager.
 - Would order, rent, or find special necessary items for co-workers for their construction/project site visits

Engineer Intern, TDOT, Nashville, TN

August 2012 – May 2014

- Used BRASSCULVERT and STAAD Pro to analyze and rate concrete bridge culverts in the state of Tennessee for the Federal Highway Administration.

- Analysis and ratings would state/show if the culverts needed updates and renovations due to modern traffic, or if they could handle modern traffic.
- Bridge culverts ranged in age from 1920's to current time.
- Style of culverts ranged from single span to six spans.

Research Experience

Graduate Research Assistant, University of Cincinnati

August 2018 – May 2024

Research Advisor: Dr. Rachel Cross

Ph.D Dissertation: Performance Evaluation of Bolted Flange Plate Special Moment Connection Subjected to a Post-Earthquake Fire

- Experimentally evaluated the performance of a bolted flange plate special moment connection subjected to a post-earthquake fire scenario through three large scale tests.
- Determined the strength and stiffness of the connection during and after a post-earthquake fire event.
- Developed an analytical modeling procedure based on the results of the experimental portion using finite element method modeling in Abaqus.
 - Advanced three-dimensional modeling included bolted moment connections, column welds, bracing restraints, cyclic loading procedures, sprayed on fire resistive materials, and applied elevated temperatures/fire.
- Performed a parametric study regarding the results of the experimental portion.
 - Comparing full SFRM to partial/damaged SFRM protection on stiffness and strength of connection and members
 - Comparing different elevated temperature locations on stiffness and strength of connection and members

Graduate Research Assistant, University of Cincinnati

May 2023 – May 2024

Research Advisor: Dr. Rachel Cross, Dr. Gian Rassati, Dr. James Swanson

Project: Research on Slip Coefficient of Metallic Coatings

Sponsor: Research Council on Structural Connections (RCSC)

- Determined slip coefficients according to RCSC Specification Appendix A between steel plates consisting of hot-dipped galvanizing and thermal spray metalizing. Comprised of 150 tests and 510 plates.

- Investigated long term creep behavior according to RCSC Specification Appendix A of slip critical steel plate connections. Comprised of 30 tests and 336 plates.
- Investigated long term bolt tension relaxation for fasteners with and without galvanized coatings.

Graduate Research Assistant, Tennessee Tech. University

August 2012 – May 2014

Research Advisor: Dr. X. Sharon Huo

Sponsor: Tennessee Department of Transportation (TDOT) & Federal Highway Administration (FHWA)

Master's Thesis: Analysis and Rating of Reinforced Concrete Box Culverts Under Various Loading and Modeling Methods.

- Investigated the effect on rating factors when analyzing culverts with no moment resistance at certain connections as having full moment resistance at those connections.
- Investigated how certain analytical modeling techniques affected rating factors through parametric studies.
 - Compared rating factors from culverts modeled with full moment continuity versus zero moment continuity.
 - Compared rating factors and internal moment effects from changing the horizontal soil pressures according to the LFR/LFD specifications.
 - Compared internal moment effects from changing the soil interaction factor for LFR/LFD and LRFR/LRFD specifications.
 - Compared internal moment effects from changing the coefficient of lateral earth pressure for LRFR/LRFD specifications.
 - Compared internal moment effects from changing the fill depth multiplier for LRFR/LRFD specifications.
 - Compared internal moment effects from changing the live load truck distribution model for earth fill (centipede truck model) for LRFR/LRFD specifications.
- Developed analytical modeling procedures for multiple programs based on the results of the parametric study to rate concrete box culverts.

Publications

Published Book:

- Cross R.C. and **Kaufman, H.** (2024). *Fire Protection Through Modern Building Codes*. American Institute of Steel Construction (AISC), Chicago, IL.

Published Journal Articles:

- Wood, T. and **Kaufman, H.** (2025). *Equivalent Systems, Distributed Loads, and Reactions – One Method to Teach Them All*. American Society for Engineering Education. (ASEE), Washington D.C.

Published Report:

- Huo, X., **Kaufman, H.**, Bartrom, B. (2013). *Improving Rating Aids for the Evaluation of Existing Concrete Culverts in Tennessee (RE2013-35)*. Tennessee Department of Transportation (TDOT) and Federal Highway Administration (FHWA), Nashville, TN.

Published Research:

- **Kaufman, H.** (2024). *Performance Evaluation of Bolted Flange Plate Moment Connections Subjected to Post-Earthquake Fires*. University of Cincinnati. Cincinnati, OH.
- **Kaufman, H.** (2014). *Analysis and Rating of Reinforced Concrete Box Culverts Under Various Loading and Modeling Methods*. Tennessee Technological University. Cookeville, TN.

Publications in Preparation

- **Kaufman, H.** and Cross, R. (2025). *Experimental Post-Earthquake Fire Performance Evaluation of Special Moment Frame Bolted Flange Connections*. Journal of Structural Fire Engineering. (To be submitted Fall 2025)
- **Kaufman, H.** and Cross, R. (2025). *Analytical Post-Earthquake Fire Performance Evaluation of Special Moment Frame Bolted Flange Connections Covered in SFRM*. (To be submitted Fall 2025)
- **Kaufman, H.** *Effects of Damaged SFRM Insulation on Fire Performance and Residual Capacity of Steel Special Moment Frame Connections – Fire Safety Journal Paper* (To be submitted in 2026)
- **Kaufman, H.** *Steel Member Slenderness Effects on Fire Performance of Moment Frame Connections Numerical Investigation and Design Implications – Journal of Constructional Steel Research*. (To be submitted in 2026)
- **Kaufman, H.** *Validated Finite Element Modeling Framework for Post-Earthquake Fire Analysis of Steel Moment Frame Connections – Finite Elements in Abaqus and Design Journal*

Research Presentations & Proposals

Research Presentation

- **Kaufman, H.** (2026-KEYNOTE). *Analytical Review of Delamination of Beam Labeling Under SFRM Under Fire Conditions*. International Conference on Infrastructure and Construction Engineering (ICICE).
- Huo, X., **Kaufman, H.**, Bartrom, B. (2013). *Improving Rating Aids for the Evaluation of Existing Concrete Culverts in Tennessee*. Federal Highway Administration (FHWA) Conference, Nashville, TN. [Presentation]

Research Proposals

- “Investigation of Fabrication Stickers on the Fire Behavior of Steel Members”. Proposed Principal Investigator: Dr. Rachel Cross (University of Cincinnati)
Submitted to: American Institute of Steel Construction (AISC), 2019
 - Develop numerical models to simulate conventional floor framing behavior when subject to fire loading
 - Conduct a parametric study to compare fire behavior with and without the fabrication sticker
 - Determine cases when the presence of the sticker inhibits fire performance
- “Acquisition of a High-Capacity Universal Testing Machine for Low and High-Cycle Testing at Various Temperatures” Proposed Principal Investigators: Dr. Rachel Cross, Dr. Gain Rassati, Dr. James Swanson (University of Cincinnati)
Submitted to: NSF Major Research Instrumentation (MRI), 2023
 - Proposed equipment will be housed at UC’s Large Scale Test Facility and will be integrated with existing hydraulic equipment and controls

Leadership Experience and Mentoring

Assistant Professor, The Citadel, Charleston, SC

- Served on the Charleston Engineers Joint Council (CEJC) Executive Committee – Treasurer (October 2025 – present)

- Storm The Citadel – Bridge Breaking Competition (February 2025 - present)
 - Assisted with set up, helped with testing, registration, judging, organized student volunteers, and revised rules for following year
- ASEE – SE Officer – Professional Interest Division (March 2025 – present)
 - Instructional Committee (Secretary)
- Assisted with SHARE team bags and bus loading during Leadership Day (October 2024)
 - Assist in equipping 200 sophomore SHARE team leaders to lead groups of 10 freshmen into 20+ Title I schools to deliver heroism-themed curriculum. The sheer spectacle of 700+ freshmen making their way to the right school buses for their first community service makes your efforts worthwhile.
- Assisted with the ASCE Student Chapter
- Served as faculty advisor for ASCE 3D Printed Bridge Competition
 - Advising included work distribution/delegation, student relations, project design assistance, and concept problem solutions
- Served as faculty advisor for ASCE Quiz Bowl Competition
- Served as instructor and councilor for AI Coding Camp (Funded by NSF)
 - For 8 to 12 year old students
 - Mentored and assisted a group of 3rd to 4th graders with coding and writing programs to run an AI enabled humanoid robot.

Project Manager, Schaefer Inc., Cincinnati, OH

- Managed and lead engineer design teams through the design and construction process
 - Largest design team – 3 engineers, 2 drafters
 - Managing included work distribution/delegation, client relations, project design, concept problem solutions, and budgeting

Part-time faculty member, Miami University, Oxford, OH.

- Lead graduate assistants and teaching assistants in multiple classes
 - Lead and assigned GA's student work to grade
 - Mentored and observed TA's whom wanted to substitute teach a few classes of the course

New hire orientation and mentoring, Schaefer Inc., Cincinnati, OH

- Worked with new hire orientation team to lead new hires through office policies and protocols. Served as a mentor for younger new design engineers and interns, which included:
 - Helping them work with new design programs and calculation tools
 - Assist with analyzing and designing members and features new to them
 - Guide them on construction and project site visits to give them experience
 - Answer and work through any problems they may have

Certifications & Services

Licensed Professional Engineer (PE)

- Kentucky License No. 34572 (current)

Charleston Engineers Joint Council

- Executive Committee Treasurer (2025 - current)

American Society for Engineering Education

- Southeast Region Officer
 - Special Interest Division – Instructional Secretary (2025 – current)

Chi Epsilon (Accepted on 12/5/2011)