

Civil and Architectural Engineering Laboratories

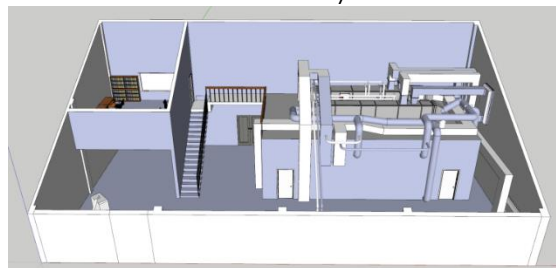
Lighting Lab



- The Lighting Lab supports lighting curricula through active learning, testing, and experimentation.
- The lab is equipped with a goniophotometer, an integrating sphere, and luminance and illuminance meters that students use to perform light measurements.
- Lighting demonstrations and a variety of lighting equipment such as LED lamps and lighting controls help cement theoretical knowledge while at the same time afford students the chance to exercise creativity and their engineering skills.

Larson Lab: air flow room, sensor room, heat retention research

- The Larson Building Systems Laboratory permits the study of entire HVAC systems in a controlled dynamic environment, providing repeatable test conditions that have been previously unavailable.
- The facility consists of two configurable roof-top commercial HVAC systems that can be used to test a wide range of operational strategies of HVAC systems and subsystems with sophisticated data acquisition and control systems.
- Activities in the lab include the dynamic interactions between building thermal response and HVAC systems controls, ventilation control for indoor air quality, HVAC system diagnostics, and interactions between multiple control functions of HVAC systems.
- The lab houses 2 full-sized test chambers that can be used to model a large variety of indoor environment conditions, like offices, data centers, and hospital operating rooms.
- Through the Larson Laboratory, our students have unique learning opportunities, positioning them for successful careers in HVACR. Internship opportunities with the lab are also available for students to further advance their knowledge and practical experience.



Living Materials Laboratory

- *The Living Materials Laboratory (LML) focuses on creating new, sustainable building materials.*
- *Undergraduate and graduate student researchers in the LML create new materials using wood, cement, bacteria, and algae and study their engineering properties.*
- *Experimental capabilities of the lab include mechanical testing to measure load-bearing capacity, thermal conductivity analysis to measure insulation properties, thermogravimetric analysis to measure thermal stability, X-ray diffraction to characterize mineral phases, Fourier-transform infrared spectroscopy to analyze chemical bonding, and a variety of cement and concrete characterization instruments.*
- *Computational capabilities include life cycle assessment to measure the environmental impacts of building materials and whole buildings.*

CIEST lab: Geotechnical, Seismic/Structural Testing, & Materials testing

- The Center for Infrastructure, Energy, and Space Testing (CIEST), is an experimental testing facility with geotechnical centrifuge, structural dynamics, and materials testing.
- The geotechnical facility houses three centrifuges, including a 400 g-ton centrifuge that is amongst the most powerful in the United States, that is, used for research, industry, and educational purposes related to the characterization of geotechnical engineering systems (e.g. dams, foundations, pipelines) and the fundamental mechanical, hydraulic, and thermal properties of soil.



The center includes multi-scale shake tables, strong floor, load reaction blocks, and hydraulic equipment capable of applying up to 1 million lb (4450 kN) and loading rates up to 100 in./sec (2.5m/sec).

- Our lab can conduct combined mechanical and environmental loadings (variations of temperature, pressure, humidity, and chemicals) to simulate actual service conditions of structures. Always hiring interested UG/Grad research assistants. Check us out at: www.colorado.edu/center/ciest/



Construction Safety Research Alliance (CSRA)

- The Construction Safety Research Alliance (CSRA) is a unique community of industry practitioners and academic researchers who collaborate to create and share new knowledge about construction worker safety.
- The Mission of CSRA is to eliminate serious incidents and fatalities in the construction industry with transformative research and defensible science.
- The CU team includes an Executive Director (professor), Assistant Research Professor, Senior Research Associate, an Operations Manager, and over a dozen funded students
- The CSRA has over 300 active industry partners who represent all major sectors of the North American Construction Industry
- Our research is co-created with our industry partners; over 80 firms from across the US and Canada including Kiewit, CAT and Skanska.
- We publish and present our work on a global stage and host an annual CSRA Safety Summit at CU which in 2022 hosted 200+ safety professionals on campus, and broadcasted to a further 300+ across the world.
- Find out more here: [Home | Construction Safety Research Alliance \(colorado.edu\)](http://Home | Construction Safety Research Alliance (colorado.edu))

Student Involvement in CEAE



Kiewit Design-Build Scholars Program

• The Kiewit Design Build Scholars Program is a corporate funded opportunity for any full-time engineering student who is interested in infrastructure design and construction.

- The program has four main pillars – financial aid, a mentorship program, site tours and events, and opportunities for internship. We are in the third year of the program and typically have around 40 students in the cohort each academic year.
- Kiewit hopes to guide more students to choose heavy-civil and infrastructure design as a career path and support them holistically through their academic experience.



Student Societies:

Architectural Engineering Institute (AEI)

The AEI Chapter is a student organization dedicated to understanding and advancing the state-of-the-art of the architecture, engineering, and construction (AEC) profession through networking, design competitions, & learning experiences in the AEC community.



Associated General Contractors (AGC)

We strive to promote the construction industry in three areas which include education, service, and networking, and we have construction professionals speak at every weekly meeting to present on a specific project or on their company.



American Society of Civil Engineers (ASCE)

Our chapter coordinates with industry members to learn about opportunities within Civil Engineering, and compete in the Concrete Canoe, Innovation, Sustainability, Surveying, and Steel Bridge competitions through the ASCE Rocky Mountain Regional Symposium.

American Society of Heating, Refrigeration and Air Conditioning Engineers

Our chapter coordinates events, including industry expert talks/presentations, innovative academic research talks, technical workshops, site visits, and social events, helping you to network with industry professionals, stay up to date with research and industry best practices, and offer hands-on experience with HVAC equipment.

Bridge Buffs

Bridge Buffs is the CU Chapter of a national NGO called Engineers in Action, a non-profit organization that designs and builds pedestrian footbridges, and is dedicated to reducing poverty created by rural isolation by building pedestrian bridges over impassable rivers in communities that would otherwise be unable to afford them.



Engineers Without Borders (EWB)

EWB's mission is to partner with developing communities to improve quality of life through environmentally sustainable, equitable, and economical engineering projects. Our chapter was the first chapter of EWB-USA.



Illuminating Engineering Society

The CU IES Chapter is a community committed to inspiring those interested in lighting by providing tools for career success and building a shared knowledge base, while promoting engagement with industry professionals and each other.

Interested in learning more? Contact the CEAE office at: ceae@colorado.edu

For scholarship information: CU Boulder has automatic consideration for some scholarships, and an application for others, including Engineering scholarships: www.colorado.edu/finaid

Departmental career fairs are held in both the fall and spring.

The following companies have hired our undergraduate students:

Adolfson & Peterson Construction	Greystar	NewFields Mining Design &
AECOM	Group 14 Engineering	Technical Services
AEI Affiliated Engineers, Inc.	Hathaway Dinwiddie	Opus Holding, L.L.C.
Air Force Civilian Service	Hayward Baker	Otak, Inc.
Alfred Benesch & Company	Henderson Engineers, Inc.	Parsons
Ames Construction Inc	Hensel Phelps	PCL
Apex Engineers, Inc.	Holder Construction Company	PG Arnold Construction
Arcadis	Holland Partner Group	Pinkard Construction Co.
ARCO/MURRAY Natl. Construction	Howell Construction	Rick Engineering Company
Company	HPM, Inc.	Rider Levett Bucknall
Barnard Construction	Hyder Construction	RJH Consultants, Inc.
Big-D Construction	J.R. Butler, Inc.	The Weitz Company
BranchPattern	Jacobs	Turner Construction Company
Brinkmann Constructors	JE Dunn Construction	Vertex Builders, Inc.
Bureau of Reclamation	JVA, Inc.	W.E. O'Neil Construction Co.
CannonDesign	Keller North America, Inc.	Waner Construction Co., Inc
Cator Ruma & Associates	Kiewit	Whiting-Turner Contracting Co
City and County of Denver	KL&A	Wright Water Engineers, Inc
Colorado DOT	Kraemer North America LLC	WSP
Condon-Johnson and Assoc.	Manhard Consulting	Fisher Marantz Store
Confluence Builders, LLC	Martin/Martin Consulting	The Lighting Agency
CU Facilities Management	Engineers	RockSol Consulting Group, Inc.
EXP	Mazzetti	Ryan Companies US, Inc.
FCI Constructors, Inc.	MB BIM Solutions	S. A. Miro, Inc.
Flatiron Construction	McKinstry	Saunders Construction, Inc.
Fransen Pittman	ME Engineers	Shaw Construction LLC
Galloway & Company	MEP Engineering, Inc.	Shimmick Construction/AECOM
Garney Construction	Merrick & Company	Civil Construction
GBA, Inc.	Milender White	Shrewsbury & Associates, LLC
GEI Consultants, Inc.	Mortenson Construction	Simpson Gumpertz & Heger
GH Phipps Construction Cos.	MTech Mechanical	Skanska USA, Inc.
AE Design	NREL	Southland Industries
Horton Lees Brogden Lighting	BEGA North America	Stantec
Design	Lighting Design Alliance	Swinerton Builders
Visual Interest	SmithGroup	The RMH Group Incy