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Celebrating 25 Consecutive Years of Outstanding Chapter Recognition



CSI Fiscal Year 2025-26

Chapter Leaders

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President-Elect/Vice-President : Rhonda Bailey, CSI	rbailey@brick.com
Secretary : Jennifer Flowers	jennifer.flowers@kolbwindows.com
Treasurer : Amy Fleming, CSI, CDT	afleming@triad-elec.com
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CSI Fiscal Year 2025-26

Gulf States Region Leaders

President: Gary Bergeron, BS, FCSI, ASHRAE,ASPE,USGBC	gary@kelso-regen.com
Vice President: Adam Haver	ahaver@jharchitects.com
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Treasurer: Angelique Herbert Hernandez	angelique@vermillionarchitects.com
Immediate Past President: Mike Zielinski, CSI, CCCA, CDT	mzielinski@lrk.com

CSI Chattanooga Chapter

P.O. Box 15974

Chattanooga, TN 37415

CSI Chattanooga President's Message

Spring is here, and you know what that means—another edition of the Chatta Data with all the news that's fit to print!

Reflecting on this past year, we tried doing a few things differently, some of which were goals that I set at the beginning of the year:

- ***Network with students and other organizations within our industry to build some foundation for future joint events.***
 - ⇒ We attended the Bethany Clariday Scholarship awards celebration at UTC. As some of you may or may not know, the Bethany Clariday Scholarship fund was set up in honor of Bethany Clariday who was a member of the Student Chapter and was involved in a fatal car accident in 2010. It was an honor to be part of the on-going tradition of recognizing UTC students in the interior design program that are the best of the best.
 - ⇒ Several of our CSI chapter members participated in various ways, including judging, as part of the "Glow Big or Glow Home" UTC interior design lighting competition. I got to witness some very creative solutions with limited resources available, and all that participated had fun.
 - ⇒ We held our annual Chattanooga Chapter Product Show in February, it was well attended and the vendors that participated seemed pleased with the turnout. We will start planning earlier next year so we have more vendor participation.
- ***Do at least 2 project tours to offer members and visitors alike to be able to see some of the projects that our members are and have been involved with.***
 - ⇒ In November, we had a great project tour of Erlanger Stadium while it was still very actively under construction, hosted by EMJ, the general contractor. The tour was well attended and gave attendees some insight into what was happening behind the scenes
 - ⇒ In March we got to tour the newly completed Tyner Middle High Academy—quite the improvement over the older middle and high schools that have since been demolished. It was impressive to see how the middle and high schools have been combined into one facility with separation for the age groups, but yet sharing common areas such as the cafeteria, theatre, music rooms and more.
- ***Recruit more new chapter members***—we've welcomed 9 new chapter members over the past 1-1/2 years
- ***Get involved in events that are closely related to what our chapter is all about, while not being afraid to try new things.***
 - ⇒ In September, we combined our program as part of the Chattanooga Preservation Awards banquet which included keynote speaker Donovan Rypkema.
 - ⇒ In October, we did something a little different by having a symposium with ABBA, the Air Barrier Association of America, which started with several CEU units of learning in the afternoon and concluded with another CEU unit and dinner. The event was a huge success and attracted quite a few architects, which was our goal to reach over to AIA and include them in some of our activities.
- In October, I attended the CSI National Conference in Cleveland, OH where I was honored to accept the Outstanding Chapter Award for our Chattanooga Chapter—the 25th time we have received it.
- Ours is one of only 5 chapters in CSI that have achieved Gold status, which means the award has been received 20 or more years. Interestingly, 3 of those 5 chapters are in the Gulf States Region, the other two are Memphis and Mississippi.

President's Message Continued

As I conclude my second year as your chapter president, I feel like we've accomplished a lot the past two years but there is still plenty to be done to improve our footprint in the local construction community and continue to be a go to resource for our students, industry professionals and others that look to CSI as a place for learning, networking and professional development.,

I am confident that our chapter will be in good hands with Rhonda Bailey, your new chapter president and the rest of the new board taking over July 1, 2026. Thank you for the opportunity to lead and serve you these past 2 years as your chapter president.

Tom Deines, FCSI, CCCA



Gulf States Region Photo Op at 2025 CSI National Conference



**CSI Chattanooga Chapter
Slate of Officers FY 2026-27**

- | | |
|-----------------|-----------------------------|
| President: | Rhonda Bailey, CSI |
| Vice President: | Ronny Rahn, AIA, CSI, NCARB |
| Secretary: | Jennifer Flowers, CSI |
| Treasurer: | Jeff Tippens, CSI |
| Past President: | Tom Deines, FCSI, CCCA |
| Director 1 : | George Holdeen, CSI |
| Director 2: | Monse Espinoza, CSI |
| Board Advisor: | William Sundquist, FCSI |

Gulf States Region Conference

July 9-11, 2026

Crowne Plaza Hotel, Knoxville, Tennessee

Registration is now Open!





60

KNOXVILLE SUMMER ACTIVITIES

1. SAFARI
AT BRIARWOOD RANCH SAFARI

7. Visit The SUN SPHERE

9. Go Tubing!

11. Go Fly a KITE!

14. Visit the KNOXVILLE BOTANICAL GARDENS & ARBORETUM

15. SWIMMIN' HOLE SCAVENGER HUNT

21. GO CAMPING!

2. EAT MORE ICE CREAM

3. Pick Your Own BERRIES!

6. Get on the River with ADVENTURE OUTDOORS!

8. ZOO knoxville

10. Go for a HIKE!

12. Play Frisbee Golf

13. Set up a LEMONADE STAND

16. Stay cool at the MUSE!

17. Visit IJAM's Nature Center

18. BE THE CIRCUS! (aerial arts class)

20. Seven Islands State Birding Park

22. Play Where's Waldo in Downtown Knoxville

23. Two Words: DOLLAR TREE

25. SHAVED ICE!

4. Go watch a DRIVE-IN MOVIE!

5. Let your kids COOK a meal.

19. Spend a day at Knoxville's "BEACH"

24. FOOD TRUCK




www.knoxvillemoms.com

The Leadership Playbook: Developing the Next Generation in Design and Construction



Have you registered for the Gulf States Region Conference yet? Take a moment to explore the schedule! We're bringing in an outstanding lineup of speakers along with activities and programs you won't want to miss. Registering is super easy - it takes less than 5 minutes!

CSI[®]

GSR Conference 2026
Knoxville, TN

Conference Information:

Dates: Thursday July 9th - Saturday July 11th

Location: The Crowne Plaza Hotel

Early Bird Registration Deadline: May 31st



CSI GULF STATES REGION CONFERENCE

REGISTRATION IS OPEN!

- ✓ REGISTER FOR THE CONFERENCE
- ✓ RESERVE YOUR HOTEL ROOM
- ✓ SECURE YOUR SWAG

CSI
GSR Conference

THURSDAY, JULY 9



CSI
GSR Conference 2026
Knoxville, TN

7:00-8:00AM	CONFERENCE CHECK-IN & INFORMATION	MEZZANINE
8:00-9:15AM	THE STARTING LINEUP: RECRUITING, DEVELOPING & RETAINING EMERGING PROFESSIONALS	
	PRESENTER: STEVE HERZOG HERZOG PROFESSIONAL DEVELOPMENT SERVICES	SALONS B & C
9:25-10:25AM	POWER & PIPELINE PLAYBOOK: LIVE UTILITY DEMONSTRATION	
	PRESENTER: KNOXVILLE UTILITY BOARD CONSTRUCTION TEAMS	CEU AND HSW CREDITS PARKING LOT
10:35-11:35AM	DRAFT DAY: ENTERING THE WORKFORCE AS AN EMERGING PROFESSIONAL	
	PRESENTER: KARINA KANE 2026 UNIVERSITY OF TENNESSEE GRADUATE	SALONS B & C
11:35-12:25PM	EXHIBITOR HALL VISITATION	MEZZANINE
12:25-1:25PM	KEYNOTE SPEAKER	LUNCH SALONS B & C
1:35-2:35PM	DELEGATED DESIGN: WHO IS COACHING THIS TEAM?	
	PRESENTER: W. PAUL WHITT, ATTORNEY AT LAW LEWIS THOMASON, P.C.	CEU CREDIT SALONS B & C
2:45-3:45PM	THE NEW PLAYER OFF THE BENCH: AI PANEL DISCUSSION	
	PANELISTS: CHAD BOETGER, W. PAUL WHITT, TIMOTHY MARCUM, NISHANTH PATIL	SALONS B & C
4:00-5:00PM	TENNESSEE STADIUM ENTERTAINMENT DISTRICTS: FROM GAME DAY TO EVERY DAY	
	PRESENTER: MIRANDA BROWN PRESENTER: ELAN BERRY - DESIGN INNOVATION ARCHITECTS	SALONS B & C
5:30-6:50PM	COVENANT HEALTH PARK STADIUM TOUR	COVENANT HEALTH PARK
7:00-10:00PM	HOSPITALITY EVENT - SMOKIES BASEBALL GAME	
	HOSTED BY: DESIGN INNOVATION ARCHITECTS & DENARK CONSTRUCTION	COVENANT HEALTH PARK



FRIDAY, JULY 10

7:00-8:00AM	CONFERENCE CHECK-IN & INFORMATION		MEZZANINE
7:00-7:50AM	GSRC BOARD MEETING: SALON B	BREAKFAST: SALON C	
8:00-8:40AM	OPENING SESSION & GSR ANNUAL MEETING		SALONS B & C
8:50-9:50AM	KNOW YOUR TEAM: LEADING ACROSS PERSONALITY TYPES		
	PRESENTER: JOE WITTE, DIRECTOR OF LEADERSHIP DEVELOPMENT VELOCITY ADVISORY GROUP		SALONS B & C
10:00-11:00AM	GSRC 01A: WHO'S ON FIRST?: SALON B	GSRC 01B: WHO'S ON THE BENCH?: SALON C	
	PRESENTER: TBD	PRESENTER: TBD	
11:00-12:00PM	GSRC 02A: SIGNS AND SIGNALS: SALON B	GSRC 02B: PREPARING FOR THE BIG GAME: SALON C	
	PRESENTER: TBD	PRESENTER: TBD	
12:00-12:30PM	EXHIBITOR HALL VISITATION		MEZZANINE
12:30-1:40PM	ON THE ICE: LEADERSHIP, PRESSURE, AND PERFORMANCE IN TEAM ENVIRONMENTS		
	KEYNOTE SPEAKER: MIKE MURRAY KNOXVILLE ICE BEARS		LUNCH SALONS B & C
1:50-3:20PM	MAKING THE CUT: POSITIONING YOURSELF AND YOUR FIRM FOR SUCCESS		
	PRESENTER: STEVE HERZOG HERZOG PROFESSIONAL DEVELOPMENT SERVICES		SALONS B & C
3:30-5:00PM	TEAM BUILDING: THE NEXT GENERATION OF LEADERS IN THE DESIGN & CONSTRUCTION INDUSTRY		CEU CREDIT
	PANELISTS: KARINA KANE, DARSON BUCKNER, TBD		SALONS B & C
6:30-9:00PM	AWARDS BANQUET & DINNER		SALONS B & C

SATURDAY, JULY 11



CSI
GSR Conference 2026
Knoxville, TN

7:00-7:50AM	BREAKFAST	SALONS B & C
8:00-9:00AM	REWRITING THE PLAYBOOK: SPECS IN THE AGE OF AI PRESENTER: NISHANTH PATIL RIB SOFTWARE - SPECLINK	SALONS B & C
9:15-10:15AM	X'S AND O'S OF CONTRACTS: A PRACTICAL GUIDE FOR AEC PROFESSIONALS PRESENTER: EBONI JAMES, ESQ. UNIVERSITY OF TENNESSEE WINSTON COLLEGE OF LAW	SALONS B & C
10:30-11:30AM	THE GAMEPLAN: CURRENT CSI ISSUES & STRATEGIES ROUNDTABLE MODERATOR: TBD	SALONS B & C
11:30-12:00PM	CLOSING REMARKS	SALONS B & C

CSI GULF STATES REGION CONFERENCE

2026

EARLY BIRD REGISTRATION HAS BEEN EXTENDED TO JUNE 8TH!

- Three days of learning, collaboration, and team building with colleagues from across the region
- Enjoy an outstanding lineup of speakers and programs
- Attend a special hospitality event—a guided tour of Covenant Health Park Stadium followed by “party deck” seats for the Smokies baseball game

WANT TO LEARN MORE?

**VISIT CSI KNOXVILLE'S
WEBSITE!**



**VIEW THE CONFERENCE
SCHEDULE!**



**REGISTER FOR THE
CONFERENCE!**



Dates: July 9th–11th

Location: The Crowne Plaza
Hotel, Downtown

CSI[®] 
GSR Conference 2026
Knoxville, TN

The Year in Review



Bethany Clariday Scholarship Winners with Ms. Clariday

Chapter Program Attendees



Tyner Middle High Academy Project Tour

“Glow Big or Glow Home” UTC Student Competition (Included a few CSI member judges)



Certification Corner

By: Kenny Tyler, CSI, CDT

So, why should one sit for CSI's Construction Document Technologist (CDT) exam? As a practicing architect I asked myself this question while I was looking into the program description of CDT and came up with some high level motivational answers including an understanding of all phases of the design and construction processes, how to minimize errors and improve project delivery schedules, mastering construction documentation and standards, how to communicate better with all team members, and delivering projects on time and on budget. O.K. Interesting, but I thought to myself that I already have a good understanding of those things that I did on a day-to-day basis. Looking further, my interest was piqued when I saw the CDT knowledge domains that included: Fundamentals, Project Conception and Delivery, Design Process, Construction Documents, Procurement, Preconstruction, Construction, and Life Cycle Activities. Again, in my mind I reassured myself that I already knew those things so why sit for the CDT exam? Well, that's where having friends in CSI who had already been through the whole CDT experience became important to me. They described how they decided it was for them, the whole studying process, the courses and peer training that was available, and the end satisfaction of accomplishing the coveted title of CSI CDT. That was all the encouragement that I needed to sit for the exam.

Well, as I dove deeper into the exam prep, I was surprised at how comprehensive the training was as it relates to the entire design and construction process. The more I read the study materials, the more it hit me that everyone in the design and construction industry would benefit from this knowledge base - especially those in the design community. For instance, when sitting for the Architectural Registration Exam (ARE) the em-

phasis was on a broad spectrum of knowledge that had to be retained and understood in order to obtain an Architectural license. This was a true challenge that culminated in a week-long, multi-part test that eventually resulted in a license to practice architecture. What I saw when studying for the CDT amazed me in that it not only touched on those same elements found in the ARE, but it provided the "what, when, why, and how" the design and construction process is done. In college I did not enjoy egghead classes like Calculus, Fluids and Materials, and Statics when the end gain was to understand complex math principles. However, classes with a specific application of those principles such as Wood, Steel, and Concrete Structures, Plumbing Systems, and Mechanical Systems, were deeply satisfying because there was a reason behind the madness that you were learning. Those classes clicked for me and a light bulb went on in my mind. Likewise, the CDT is heavy in the direct application of how to understand the specific applications of the whole design and construction experience from start to finish including:

- contracts
- project funding
- planning
- programming
- design process
- material and systems selections
- specifications
- bid process
- value engineering
- construction
- submittals and shop drawings
- inspections and punch lists

Continued, Pg. 11

Certification Corner, Continued...

- inspections and punch lists
- project completion and closeout
- turnover to owner

The end result was a greater appreciation and understanding of why we do what we do in the construction industry and it helped me to see that the whole process needs competent and gifted teachers, trainers, consultants, product reps, manufacturer's reps, product designers, contractors, sub contractors, project managers, draftsmen, interior designers, and architects. The process for sitting for the exam took some effort, and I fully understand that it is not for everyone. However, just dipping your toes into this breadth of knowledge is worth the time as it will expand your view of why we do what we do. In the end it was not about passing a test or getting professional initials behind my name, but it was about me growing as an individual and as an architect. If you want an experience that will increase your design and construction IQ, this is one that will pay dividends in your own professional journey,

If you are interested in CSI Certifications, here is a listing of available certifications from the CSI website that will bolster your career:

- CDT: Certified Document Technologist certification proves you have a comprehensive understanding of how to effectively interpret and communicate construction documentation.
- CCCA: Certified Construction Contract Administrator certification to demonstrate your knowledge of developing, administering and enforcing construction documentation
- CCS: Certified Construction Specifier certification validates that you're a skilled product researcher who knows how to identify cost-effective, efficient solutions - and communicate those through specifications.
- CCPR: Certified Construction Product Representative is more than a sales rep - you're a valued resource called upon by design teams because you understand construction documentation and speak their language.

So be encouraged and dare to invest this training into your CSI life.

Kenny Tyler

WHY GET CERTIFIED?

10 Ways You, Your Company, and Your Customers Benefit From CSI Certification

You

1. Recognition throughout the industry of your education, knowledge, experience with construction documents
2. Career advancement potential
3. Contribute to the development of more effective documentation processes and practices (that will keep you out of court or will stand up in court)
4. Greater confidence in your authority and responsibility as part of a project delivery team

Your Company

1. Increased staff loyalty and productivity
2. Set benchmarks for hiring and promotion
3. Cost-effective professional development for your team that trains them to work from one body of knowledge

You, Your Company, AND Your Customers

1. Fewer change orders
2. Increased likelihood of projects delivered on time and on budget
3. Collaboration with a trusted resource


Certifications

- [CDT[®]](#)
- [CCCA[®]](#)
- [CCPR[®]](#)
- [CCS[®]](#)

Exam Resources

- [Taking the Exam](#)
- [Source Materials](#)
- [Trainer/Chapter Leader Resources](#)
- [FAQs](#)
- [Certificant Directory](#)

Hear From CSI Certified Professionals



“I’m completely sold on the CSI principle of ‘Say it once and in the right place.’ Thank you, CSI!”

– Bryan Branz, CDT®,
Senior Security Designer



“If you’re thinking about certification, go for it. It’s not just about passing an exam—it’s an investment in your own growth and voice in the profession.”

– Nardin Soliman, CCS®,
Specification Manager



“The CDT breaks down roles, relationships, and responsibilities in a beautiful way to help each group work together more effectively, which will always result in a better project!”

– Michael Riscica, CDT®,
Founder of the Young Architect

CDT®

Earning a Construction Documents Technologist (CDT) certification proves you have a comprehensive understanding of how to effectively interpret and communicate construction documenta-

CCCA®

Earn your Certified Construction Contract Administrator (CCCA) certification to demonstrate your knowledge of developing, administering and enforcing construction documentation.

CCS®

Attaining the Certified Construction Specifier (CCS) certification validates that you’re a skilled product researcher who knows how to identify cost-effective, efficient solutions – and communicate those through specifications.

CCPR®

A Certified Construction Product Representative (CCPR) is more than a sales rep – you’re a valued resource called upon by design teams because you understand construction documentation and speak their language.

Cutting Edge Technical Advancements—

MIT News

ON CAMPUS AND AROUND THE WORLD

“Cold spray” 3D printing technique proves effective for on-site bridge repair

Working with the Massachusetts Department of Transportation, researchers show bridge corrosion can be repaired on-site using additive manufacturing.

Anne Wilson | Department of Mechanical Engineering
June 20, 2025



Members of the UMass Amherst and MIT research team pose next to the 3D-printed patch. Haden Quinlan (front, kneeling) of the Center for Advanced Production Technologies at MIT, is one of the researchers leading MIT's efforts on the project.

Photo: Alexia Cota/UMass Amherst

More than half of the nation's 623,218 bridges are experiencing significant deterioration. Through an in-field case study conducted in western Massachusetts, a team led by the University of Massachusetts at Amherst in collaboration with researchers from the MIT Department of Mechanical Engineering (MechE) has just successfully demonstrated that 3D printing may provide a cost-effective, minimally disruptive solution.

“Anytime you drive, you go under or over a corroded bridge,” says Simos Gerasimidis, associate professor of civil and environmental engineering at UMass Amherst and former visiting professor in the Department of Civil and Environmental Engineering at MIT, in a [press release](#). “They are everywhere. It’s impossible to avoid, and their condition often shows significant deterioration. We know the numbers.”

The numbers, according to the American Society of Civil Engineers' [2025 Report Card for America's Infrastructure](#), are staggering: Across the United States, 49.1 percent of the nation's 623,218 bridges are in “fair” condition and 6.8 percent are in “poor” condition. The projected cost to restore all of these failing bridges exceeds \$191 billion.

A proof-of-concept repair took place last month on a small, corroded section of a bridge in Great Barrington, Massachusetts. The technique, called cold spray, can extend the life of beams, reinforcing them with newly deposited steel. The process accelerates particles of powdered steel in heated, compressed gas, and then a technician uses an

applicator to spray the steel onto the beam. Repeated sprays create multiple layers, restoring thickness and other structural properties.



This method has proven to be an effective solution for other large structures like submarines, airplanes, and ships, but bridges present a problem on a greater scale. Unlike movable vessels, stationary bridges cannot be brought to the 3D printer — the printer must be brought on-site — and, to lessen systemic impacts, repairs must also be made with minimal disruptions to traffic, which the new approach allows.

“Now that we’ve completed this proof-of-concept repair, we see a clear path to a solution that is much faster, less costly, easier, and less invasive,” says Gerasimidis. “To our knowledge, this is a first. Of course, there is some R&D that needs to be developed, but this is a huge milestone to that.”

“This is a tremendous collaboration where cutting-edge technology is brought to address a critical need for infrastructure in the commonwealth and across the United States,” says John Hart, Class of 1922 Professor and head of the Department of MechE at MIT. Hart and Haden Quinlan, senior program manager in the Center for Advanced Production Technologies at MIT, are leading MIT’s efforts in in the project. Hart is also faculty co-lead of the recently announced [MIT Initiative for New Manufacturing](#).

“Integrating digital systems with advanced physical processing is the future of infrastructure,” says Quinlan. “We’re excited to have moved this technology beyond the lab and into the field, and grateful to our collaborators in making this work possible.”

UMass says the Massachusetts Department of Transportation (MassDOT) has been a valued research partner, helping to identify the problem and providing essential support for the development and demonstration of the technology.

Technical guidance and funding support were provided by the MassDOT Highway Division and the Research and Technology Transfer Program.


Equipment for this project was supported through the Massachusetts Manufacturing Innovation Initiative, a statewide program led by the Massachusetts Technology Collaborative (MassTech)'s Center for Advanced Manufacturing that helps bridge the gap between innovation and commercialization in hard tech manufacturing.

"It's a very Massachusetts success story," Gerasimidis says. "It involves MassDOT being open-minded to new ideas. It involves UMass and MIT putting [together] the brains to do it. It involves MassTech to bring manufacturing back to Massachusetts. So, I think it's a win-win for everyone involved here."

The bridge in Great Barrington is scheduled for demolition in a few years. After demolition occurs, the recently-sprayed beams will be taken back to UMass for testing and measurement to study how well the deposited steel powder adhered to the structure in the field compared to in a controlled lab setting, if it corroded further after it was sprayed, and determine its mechanical properties.

This demonstration builds on several years of research by the UMass and MIT teams, including development of a "digital thread" approach to scan corroded beam surfaces and determine material deposition profiles, alongside laboratory studies of cold spray and other additive manufacturing approaches that are suited to field deployment.

Altogether, this work is a collaborative effort among UMass Amherst, MIT MechE, MassDOT, the Massachusetts Technology Collaborative (MassTech), the U.S. Department of Transportation, and the Federal Highway Administration. Research reports are available on [the MassDOT website](#).

 ["Laser additive manufacturing for infrastructure repair: A case study of a deteriorated steel bridge beam"](#)

Cutting Edge Technical Advancements—Continued

Your future home might be framed with printed plastic

MIT engineers are using recycled plastic to 3D print construction-grade floor trusses.



On left, the MIT HAUS large format 3D printer system deposits the first layer of a polymer composite 3D printed floor truss. A closeup of a notched joint is seen on right, and the assembled floor system undergoing a bending test with a ~2,000lb concrete block load in the center.

Credit: Courtesy of the researchers

The plastic bottle you just tossed in the recycling bin could provide structural support for your future house.

MIT engineers are using recycled plastic to 3D print construction-grade beams, trusses, and other structural elements that could one day offer lighter, modular, and more sustainable alternatives to traditional wood-based framing.

In a [paper published in the *Solid FreeForm Fabrication Symposium Proceedings*](#), the MIT team presents the design for a 3D-printed floor truss system made from recycled plastic.

A traditional floor truss is made from wood beams that connect via metal plates in a pattern resembling a ladder with diagonal rungs. Set on its edge and combined with other parallel trusses, the resulting structure provides support for flooring material such as plywood that lies over the trusses.

The MIT team printed four long trusses out of recycled plastic and configured them into a conventional plywood-topped floor frame, then tested the structure's load-bearing capacity. The printed flooring held over 4,000 pounds, exceeding key building standards set by the U.S. Department of Housing and Urban Development.

The plastic-printed trusses weigh about 13 pounds each, which is lighter than a comparable wood-based truss, and they can be printed on a large-scale industrial printer in under 13 minutes. In addition to floor trusses, the group is working on printing other elements and combining them into a full frame for a modest-sized home.

The researchers envision that as global demand for housing eclipses the supply of wood in the coming years, single-use plastics such as water bottles and food containers could get a second life as recycled framing material to alleviate both a global housing crisis and the overwhelming demand for timber.

“We’ve estimated that the world needs about 1 billion new homes by 2050. If we try to make that many homes using wood, we would need to clear-cut the equivalent of the Amazon rainforest three times over,” says AJ Perez, a lecturer in the MIT School of Engineering and research scientist in the MIT Office of Innovation. “The key here is: We recycle dirty plastic into building products for homes that are lighter, more durable, and sustainable.”

Perez’ co-authors on the study are graduate students Tyler Godfrey, Kenan Sehnawi, Arjun Chandar, and professor of mechanical engineering David Hardt, who are all members of the MIT Laboratory for Manufacturing and Productivity.

Printing dirty

In 2019, Perez and Hardt started MIT HAUS, a group within the Laboratory for Manufacturing and Productivity that aims to produce homes from recycled polymer products, using large-scale additive manufacturing, which encompasses technologies that are capable of producing big structures, layer-by-layer, in relatively short timescales.

Today, some companies are exploring large-scale additive manufacturing to 3D-print modest-sized homes. These efforts mainly focus on printing with concrete or clay — materials that have had a large negative environmental impact associated with their production. The house structures that have been printed so far are largely walls. The MIT HAUS group is among the first to consider printing structural framing elements such as foundation pilings, floor trusses, stair stringers, roof trusses, wall studs, and joists.

What's more, they are seeking to do so not with cement, but with recycled "dirty" plastic — plastic that doesn't have to be cleaned and preprocessed before reuse. The researchers envision that one day, used bottles and food containers could be fed directly into a shredder, pelletized, then fed into a large-scale additive manufacturing machine to become structural composite construction components. The plastic composite parts would be light enough to transport via pickup truck rather than a traditional lumber-hauling 18-wheeler. At the construction site, the elements could be quickly fitted into a lightweight yet sturdy home frame.

"We are starting to crack the code on the ability to process and print really dirty plastic," Perez says. "The questions we've been asking are, what is the dirty, unwanted plastic good for, and how do we use the dirty plastic as-is?"

Weight class

The team's new study is one step toward that overall goal of sustainable, recycled construction. In this work, they developed a design for a printed floor truss made from recycled plastic. They designed the truss with a high stiffness-to-weight ratio, meaning that it should be able to support a given amount of weight with minimal deflection, or bending. (Think of being able to walk across a floor without it sagging between the joists.)

The researchers first explored a handful of possible truss designs in simulation, and put each design through a simulated load-bearing test. Their modeling showed that one design in particular exhibited the highest stiffness-to-weight ratio and was therefore the most promising pattern to print and physically test. The design is close to the traditional wood-based floor truss pattern resembling a ladder with diagonal, triangular rungs. The team made a slight adjustment to this design, adding small reinforcing elements to each node where a "rung" met the main truss frame.

To print the design, Perez and his colleagues went to MIT's Bates Research and Engineering Center, which houses the group's industrial-scale 3D printer — a room-sized industrial machine that is capable of printing large structures at a fast rate of up to 80 pounds of material per hour. For their preliminary study, the researchers used pellets made of a combination of recycled PET polymers and glass fibers — a mixture that improves the material's printability and durability. They obtained the material from an aerospace materials company, and then fed the pellets into the printer as composite "ink."

The team printed four trusses, each measuring 8 feet long, 1 foot high, and about 1 inch wide. Each truss took about 13 minutes to print. Perez and Godfrey spaced the trusses apart in a parallel configuration similar to traditional wood-based trusses, and screwed them into a sheet of plywood to mimic a 4-x-8-foot floor frame. They placed bags of sand and concrete of increasing weight in the center of the flooring system and measured the amount of deflection that the trusses experienced underneath.

The trusses easily withstood loads of 300 pounds, well above the deflection standards set by the U.S. by the Department of Housing and Urban Development. They didn't stop there, continuing to add weight. Only when the loads reached over 4,000 pounds did the trusses finally buckle and crack.

In terms of stiffness, the printed trusses meet existing building codes in the U.S. To make them ready for wide adoption, Perez says the cost of producing the structures will have to be brought down to compete with the price of wood. The trusses in the new study were printed using recycled plastic, but from a source that he describes as the “crème de la crème of recycled feedstocks.” The plastic is factory-discarded material, but is not quite the “dirty” plastic that he aims ultimately to shred, print, and build.

The current study demonstrates that it is possible to print structural building elements from recycled plastic. Perez is in the process of working with dirtier plastic such as used soda bottles — that still hold a bit of liquid residue — to see how such contaminants affect the quality of the printed product.

If dirty plastics can be made into durable housing structures, Perez says “the idea is to bring shipping containers close to where you know you'll have a lot of plastic, like next to a football stadium. Then you could use off-the-shelf shredding technology and feed that dirty shredded plastic into a large-scale additive manufacturing system, which could exist in micro-factories, just like bottling centers, around the world. You could print the parts for entire buildings that would be light enough to transport on a moped or pickup truck to where homes are most needed.”

This research was supported, in part, by Gerstner Philanthropies, the Chandler Health of the Planet grant, and Cincinnati Incorporated.

Special thanks and acknowledgement for this technical article to:

Jennifer Chu | MIT News
February 3, 2026

MIT News
ON CAMPUS AND AROUND THE WORLD

Update From CSI Board of Directors Chair

William Sundquist, FCSI



The CSI Board of Directors is dedicated to understanding the needs of our CSI Community and ensuring we maintain an organization that keeps CSI relevant while providing tools for you to be effective in the AECO Industry.

Fellow Chapter Members,

As my time on the board comes to a close, I've been asked a few times, "What's next?" While I have navigated many challenging questions and issues since 2018, this one is the easiest to answer. What's next for me is simply to continue enjoying being a member of CSI.

This is why I joined, and it is what I continue to look forward to for as long as I am blessed to work in this industry.

While I have deeply enjoyed my time on the board of directors, my journey in CSI was never about titles or reaching the highest level—it has always been about contributing and serving.

I look forward to connecting, volunteering, and serving alongside all of you in the future. I cannot overstate how proud I have been to carry the Chattanooga name with me throughout all my travels.

See you on the Choo Choo again soon!

Thank you for being a part of the CSI community!

William Sundquist, FCSI

Chair, CSI Board of Directors



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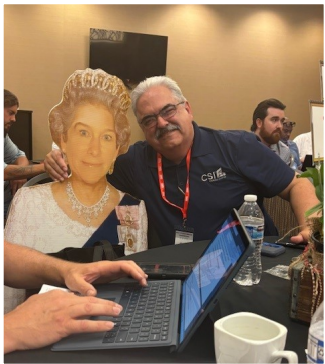
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Last Year's Gulf States Region Conference Held in Chattanooga, TN June 2025—Fun Times!

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Editor: Tom Deines, FCSI, CCCA