Members on the Move

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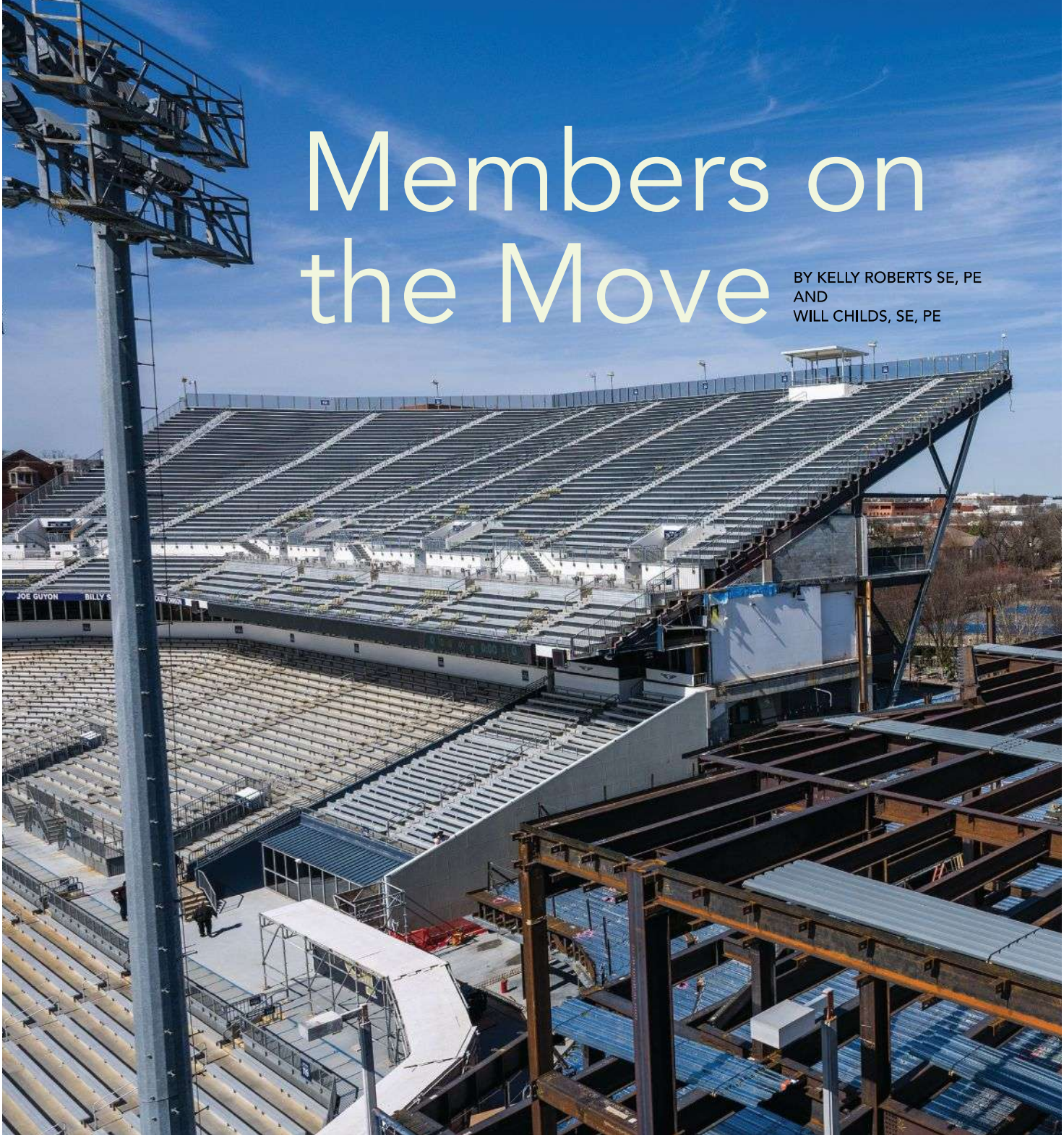
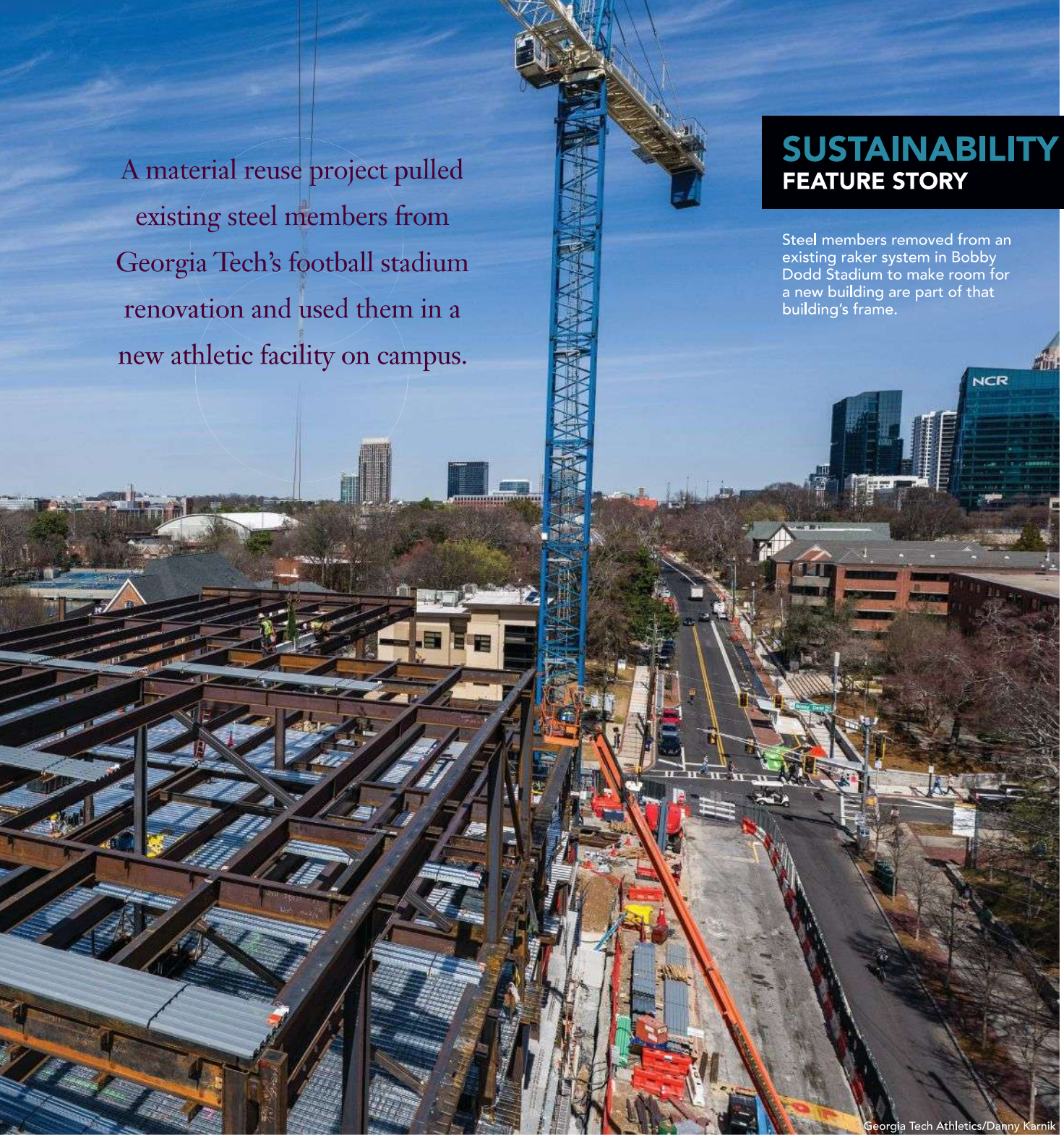


A NEW STUDENT-ATHLETE training facility built in a corner of the Georgia Institute of Technology's football stadium quite literally includes pieces of the athletic department's past. They are not showcased in a trophy case or memorabilia display. Rather, they are part of the building itself.

The Thomas A. Fanning Student-Athlete Performance Center's steel frame has about 20 members that were removed from adjacent Bobby Dodd Stadium, home of the Georgia Tech Yellow Jackets football team, and incorporated into the facility's design. Those members were harvested from a portion of the stadium that was deconstructed to make room for the facility.

The 100,000-sq. ft Fanning Center is one of a growing number of structures in the United States, and one of the first in the Southeast, to use salvaged steel from another structure in the project's construction. (Boulder Fire Station 3 in Boulder, Colo., is believed to be the first major steel reuse project in the U.S. Read about that reuse project in the "Ambitious Reuse" article in the August 2024 issue at **modernsteel.com/archives**) This steel member reuse design strategy is part of the overall goal of material circularity, which helps minimize waste, promote construction efficiency, and reduce embodied carbon.

A material reuse project pulled existing steel members from Georgia Tech's football stadium renovation and used them in a new athletic facility on campus.



Steel members removed from an existing raker system in Bobby Dodd Stadium to make room for a new building are part of that building's frame.

Georgia Tech Athletics/Danny Karnik

Steel Reuse Strategy

Steel reuse is central to the Fanning Center project, and successful reuse requires careful planning and coordination by the project team from start to finish. A constant line of communication among trades—which included architect S/L/A/M Collaborative, general contractor DPR Construction, structural engineer Walter P Moore, steel fabricator Steel, LLC, and demolition contractor Green Circle Demolition—was vital to ensure the steel reuse strategy was properly coordinated.

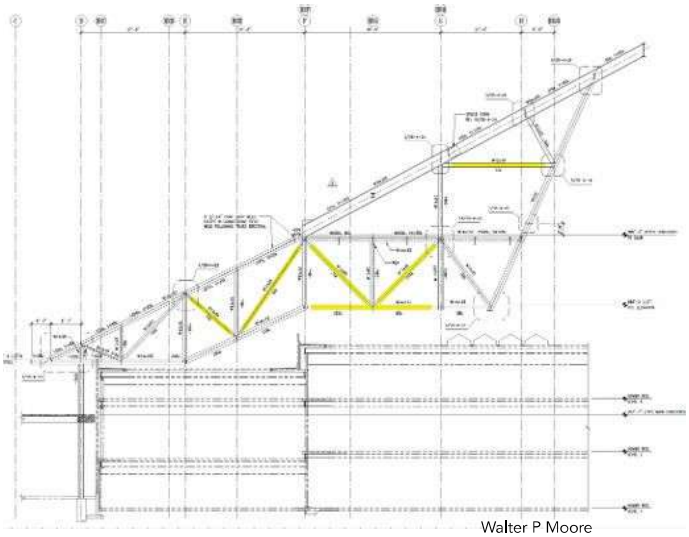
"The biggest difference was factoring in the time required for coordination and getting engagement from all parties as early as possible," said Sarah Rohlfsen, project engineer at DPR Construction. "We had trade partners on board to consult a year before we ever started demo or steel erection. It was crucial to have Walter P Moore's selected members for reuse early on so that we could get buy-in from demo and steel trade partners on sequencing, storage, and installation. Getting this feedback while we were still in the preconstruction phase was also incredibly beneficial so that we could analyze any required costs and include proper language into subcontracts."

The entire project team was engaged in the steel reuse discussions to ensure a smooth and coordinated process. Group engagement from the start created a clear and concise understanding of the logistics, technical complexities, and expectations pertaining to each party's specific discipline.

Green members in the four drawings are locations of the reused steel in the Fanning Center framing.

Walter P Moore

"Extensive work was done on DPR's side to make sure every single member was labeled and tracked from the second that it was cut from the stadium, to when it was being loaded onto a truck, to when it was processed by the steel fabricator, and back on site," Rohlfsen said. "Production tracking markups and logs were sent almost daily to demo and steel trade partners with status updates on each piece."



Walter P Moore

Yellow indicates reused member locations in Bobby Dodd Stadium.

Walter P Moore advocated for the single project steel reuse design strategy, which was implemented at no additional cost to Georgia Tech and had no impact to the project schedule.

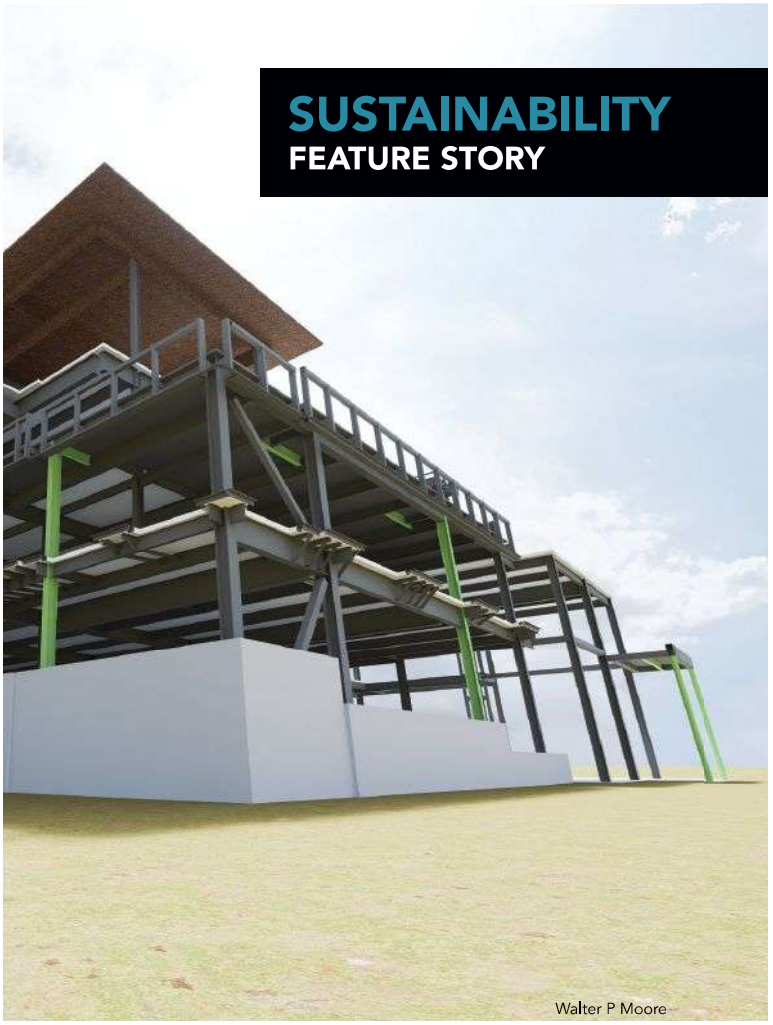
"Designing for reuse is a much more sustainable strategy," said Marc Clear, principal and sports national market leader at the S/L/A/M Collaborative. "Designing for material circularity is a way we can do so much better than just recycling. The reused steel also paired well with the Fanning Center's hybrid steel-timber structure for a great study in circularity, carbon reduction, and carbon sequestering—all strategies to reduce the embodied carbon of the building."

The project team opted to reuse the steel members to avoid carbon emissions stemming from steel recycling and reproduction. While recycled electric arc furnace steel undergoes an efficient process, it still produces emissions from transport to a mill that could be hundreds of miles away and operating a furnace to melt it.

In this reuse project, though, the steel traveled just nine miles to Steel, LLC's fabrication shop, where it was refabricated and equipped with new connections, and returned to the jobsite for installation. The 18-mile round trip made for minimal transportation-related emissions, and fabrication itself is a low-emission activity.

Ultimately, about 25 tons of steel were salvaged and reused in the new building, saving about 25,000 kg of carbon emissions, equivalent to the emissions of driving a gas-powered vehicle for 60,000 miles.


Walter P Moore


Walter P Moore


Walter P Moore

Sustainable Sequencing

From the onset of design, the project team embarked on design sessions and site walks to align the logistics, sequencing, safety, and connection strategies for the reused steel. The approximately 20 truss members and sloped steel members from the existing raker system, which supported the upper deck portion of Bobby Dodd Stadium, were part of the demolition to make room for the Fanning Center. Those members were installed in the raker system in 2002 and 2003.

The project team required detailed and comprehensive assessments to verify the designated members were structurally sound, a viable option for reuse, and could retain the load paths while adapting to the current performance and building code requirements. Once the team confirmed the steel could be reused, it was removed, cut to size, and sent to the steel fabricator to be prepared for installation, which finished without a hitch. Ensuring steel was reusable mostly involved determining whether it was non-composite, how it could be disassembled, and the size of the members approximately matching where it was needed within the new building.

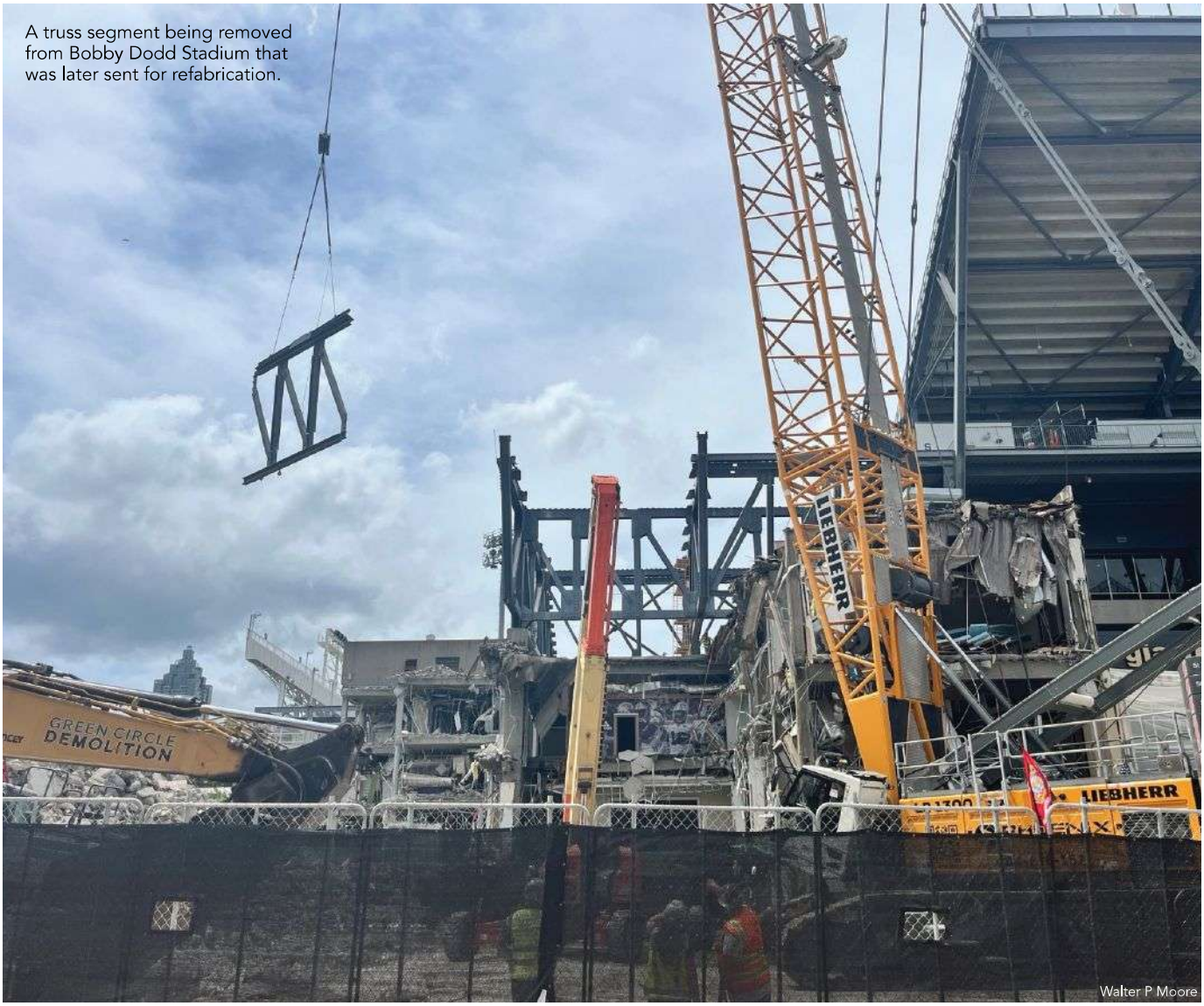
Some of the key factors learned during the refabrication was that the pieces were not always perfectly straight, had unexpected penetrations, and had existing connection material that had to be removed, requiring more preparation and attention than the new pieces of steel to prepare them for refabrication.

"It was paramount the reused steel would come with the performance, code, or maintenance efficiency of new steel," Clear said. "That's one of the great things about steel. When properly maintained and protected it can last forever, be reused, or be recycled."

Industry Impact

Reusing steel does more than reduce embodied carbon. It can be financially beneficial to the owner, especially when the option is presented early in the design phase. Georgia Tech was on board with reusing steel after reviewing the design plan and learning reused steel would be cost-neutral to incorporate. This project is also representative of how structural steel reuse can support the architectural, design, and sustainability vision in larger-scale construction projects.

"This steel was not designed to be reused, but structural engineers identified the compatibility of the demolished steel," Clear said. "The entire team recognized the significance of this opportunity and got behind the process to show it could be achieved without burdening the project financially."



A truss segment being removed from Bobby Dodd Stadium that was later sent for refabrication.

Walter P Moore


Walter P Moore

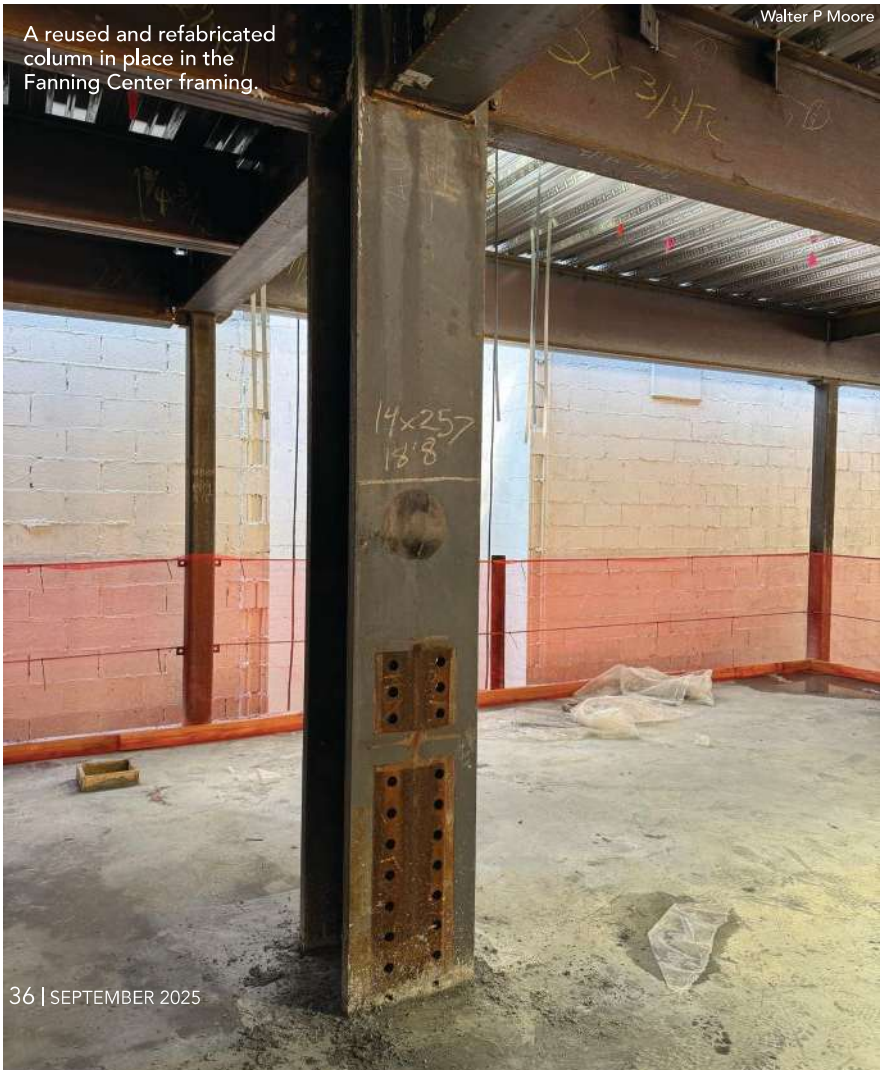
above: The approximately 20 reused steel members were transported from the jobsite to Steel, LLC for refabrication.

below: Steel was stored at Steel, LLC's facility before refabricating rather than on the demolition jobsite.

Walter P Moore

The Fanning Center entry vestibule has pipe columns salvaged from Bobby Dodd Stadium.

Walter P Moore



A reused and refabricated column in place in the Fanning Center framing.

Walter P Moore

The exposed portions of the reused steel members that were intentionally left visible symbolize the connection between the new facility and the time-honored Bobby Dodd Stadium, which dates to 1913. The Fanning Center, set to open in spring 2026, includes dedicated spaces for sports medicine, strength and conditioning, nutrition, academic support, and a sports science laboratory. The Georgia Tech football team will also have its own meeting rooms and coaches offices within the facility.

And outside of Georgia Tech athletics, the project is an excellent case study for future structural steel reuse projects as project teams explore methods of reducing embodied carbon for their clients.

Owner
Georgia Institute of Technology

Architect
S/L/A/M Collaborative

Structural Engineer
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General Contractor
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Steel Team

Fabricator and Detailer
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Erector
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