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news

Students Resurrect New England Bridges

By Mark Fitzgerald

Students involved in the University of Massachusetts at Amherst's Adaptive Use Bridge Project have been transporting old truss bridges from various New England locations and restoring them for use on campus pedestrian paths as a way of improving the university landscape.

The project began three years ago when civil engineering alumnus David Scott discovered a Vermont truss bridge that needed rebuilding. After Scott mentioned the bridge to Alan Lutenecker, Ph.D., P.E., the head of the university's civil and environmental engineering department, plans were made to bring the 12.8 m Warren truss to campus. "I was looking for a hands-on project that would give students a chance to learn something they wouldn't get to learn in the classroom," recalls Lutenecker. "Then I thought that maybe the students could refurbish this old bridge, and we could use it on campus for a bike and walking path."

Constructed of steel, the 1906 Warren truss was donated by the Vermont Department of Transportation and will be placed between the trees at the northern end of the parking lot at the McGuirk Alumni Stadium. "It's a great location for our first bridge," says Michael Goodman, a member of the ASCE student chapter at Amherst who spent the summer restoring the Vermont truss bridge. "We're going to span a stream, so the crossing will definitely be an improvement." Students have already positioned trusses, beams, and stringers and are now constructing handrails and a wood deck. Work remains to be done on rebuilding and repainting the bridge and removing its rust, but the crossing should be in use sometime this spring.

Offering engineering students hands-on experience while improving walkways for campus pedestrians, the project is one of only a few restoration ventures of this kind in the country. "We're grinding off the rust and the rivets, taking down dimensions,

fabricating replacement sections, and cataloging the old pieces,” explains Lutenegger. “Some we’ve cut up for small test specimens, and now we’re trying to incorporate this activity into our sophomore-level classes, where students learn how to test steel, for example, to record the difference between a new piece of steel and a piece from 1890 that’s pitted and corroded.”

A second bridge, donated by a family in South Amherst, is being rehabilitated for a location near Lorden Field north of the Mullins Center. “We haven’t put it together yet,” Goodman explains. “But we’ve replaced all the rotted pieces and we’re starting to de-rust and prime it.” Students who participate in the project perform lab tests to determine the integrity of bridge sections and decide whether it’s necessary to replace weak or damaged parts with new steel and rivets.

So far five bridges have been collected, including a rare iron pipe bridge that was built around 1885. According to Lutenegger, only about three of these iron pipe bridges currently exist in the United States. The goal is to restore at least eight iron and steel truss bridges and place them at various campus locations—sites that will eventually become part of a walking tour. “We have a very big campus,” says Goodman. “So there are plenty of places where we can improve bike paths and walkways.”

Of the more than 40 engineering students who have worked on the project, most have come from the civil and environmental engineering department and are members of ASCE’s student chapter. “This has been an amazing experience so far,” Goodman says. “It’s given me such a unique opportunity to learn about how bridges work and connect with their history.”