

GLULAM BEAMS KEEP DUCK FANS DRY

University of Oregon's Autzen Stadium Renovation

Project Summary

PROJECT

Autzen Stadium
Eugene, OR

OWNER

University of Oregon

ARCHITECT

Ellerbe Becket
Kansas City, MO

CONTRACTOR

Hunt Construction Group
Indianapolis, IN

Wildish Building Company
Eugene, OR

GLULAM MANUFACTURER

American Laminators
Drain, OR

GLULAM SUPPLIER

Wood Tech Services, Inc.
Eugene, OR

GLULAM INSTALLER

John Hyland Construction Inc.
Eugene, OR

COMPLETED

August 2002

It's one thing to meet the schedule on a big construction project. It's quite another when failing to do so would mean finding a suitable place to house the Oregon Ducks football team and 54,000 of their most loyal fans.

When work commenced in December 2001 to renovate and expand Autzen Stadium in Eugene, Oregon, everyone involved knew what was at stake. The project simply had to be completed in time for the Ducks' opening game, just nine months away.

The \$89.5 million expansion added:

- 12,500 additional seats
- Concession areas
- New suites
- An upgraded, state-of-the-art press box
- Wider concourse
- A new glulam roof canopy

What may appear as most striking to fans is the glulam roof canopy that cantilevers 97 feet over the new donor seats, protecting loyal Duck fans from Oregon's fall and winter rains.

Architects chose glulam for the roof structure in order to match the look of the existing stadium. They also worked hard to preserve what they called "the beauty and elegance" associated with the stadium's original design. Glulam was simply the logical answer.

The sheer size of the project makes it notable, both in terms of the stadium itself and in the number, size and span of the glulam beams. Glulam members were manufactured from 430,000 board feet of Douglas-fir using 24F-V4 and 24F-V8 layups. Girders were fabricated from two 12-1/4-inch-wide beams bolted together,



Autzen Stadium's new glulam roof structure cantilevers dramatically over enthusiastic (and now dry) Duck fans.

PHOTOS BY PATRICK EZARD



The glulam canopy was cambered, heightening the importance of accurate on-site fabrication and installation.

72 inches deep at the center. Total length of the main girders was 171 feet (97-foot beam spliced to a 74-foot beam). Purlins were 5-1/8 inch x 15 inches deep.

According to Don Allen, partner and general manager with Wood Tech Services, the glulam supplier, they delivered glulam beams in June 2002. Erection time for the glulam framing was less than two weeks. Two months later, the wood roof structure was completely in place.

What happened during those first two weeks was a carefully orchestrated assembly process, directed by John Hyland Construction's project manager, Mike Mueller. "Mueller and his crew were simply amazing," said Allen. "Everything just fell into place."

Ron Keefauver, estimating manager for John Hyland Construction, said planning was key. "Glulams were delivered to an area at Autzen Stadium that we used as a lay down area," he explained. "There, beams were pre-drilled and assembled." To form the girders, steel knife plate connectors were sandwiched between two 12-1/4-inch-wide beams to form a 24-1/2-inch-wide member. Keefauver said the crew needed to lay the individual

beams on one side, drill connector holes, perfectly match drill the accompanying beam, match both sets of holes to the steel connector plate and then bolt the entire assembly together. Accuracy was critical.

The resulting members had hundreds of bolts, and each 97-foot segment weighed 35,000 pounds. The glulam girders were then carefully lifted by crane into place, for a total assembled length of 171 feet. Once in place, the girders were supported by steel columns as well as by 57-foot-long steel knee braces that extended out from each column.

To complicate matters, the glulam canopy that cantilevered out toward the playing field was both cambered and arched. Detailed coordination was required to make sure each beam settled into the right plane before the next was erected.

Hangers for the glulam purlins were installed on the girders prior to hoisting. The glulam purlins were pre-cut to fit, and then plywood roof sheathing was installed over the purlins on the ground to form a pre-framed panelized system.

Because a portion of the roof was left open over the top of the suites, exposed

beams in that area had to be pressure treated. J. H. Baxter of Eugene handled this process.

Not everything was new. Old glulam beams were salvaged from the demolition, and installed as columns to hold signage at the stadium entrance.

"At the game, fans just point and look at the roof," said Keefauver. "The cantilevered roof is awe inspiring. Football games have always been fun at Autzen Stadium, but we've got even more reasons now to really raise the roof with our cheers."



More than 430,000 board feet of Douglas-fir glulam was used in the project.

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