

RESTORING THE ICONIC KEYSTONE WYE BRIDGE WITH GLULAM

Near the majestic Mount Rushmore in South Dakota, the Keystone Wye Bridge has stood as an engineering marvel since 1968. After 50 years of service, an inspection revealed that while the glulam supports were in excellent condition, the concrete deck panels had deteriorated. Glulam decking was recommended as a long-lasting solution.

PROJECT DESIGN AND CONSTRUCTION:

Zip-O-Laminators, in collaboration with **Western Wood Structures (WWS)**, took on the challenge of crafting glulam deck panels for these iconic bridges.

The project required 49 panels (6 3/4" thick) for the 170' bridge and 74 panels (8 3/4" thick) for the 290' bridge. The shorter bridge's unique design—curved and sloped both longitudinally and transversely—pushed the glulam fabrication requirements to the max.

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Manufacturing and shipping these panels in a specific order required extensive planning and coordination, and Zip-O was up to the challenge.

Hazen Hyland, WWS

GLULAM HIGHLIGHTS

- 49 panels: 6 3/4" thick (170' bridge)
- 74 panels: 8 3/4" thick (290' bridge)
- Custom-fit for curved design



CHALLENGES & SOLUTIONS

Replacing the deck panels posed significant challenges due to the unique design of the bridges and the cold South Dakota winter. The curved, sloped design of the shorter bridge added complexity to the panel detailing.

Zip-O's ability to quickly adapt to project changes was key. When WWS discovered some panels were ordered too narrow, the Zip-O team swiftly added laminations to over 20 panels. This responsiveness, even amidst other large projects, kept production on schedule and demonstrated Zip-O's commitment to client success.



PROJECT CHALLENGES

The project required precise panel fitment for the shorter bridge's curved and sloped geometry.

Winter construction also demanded specialized planning to manage cold-weather conditions, ensuring continuous work and maintaining quality.



BEAM SPECS

The Glulam panels used for the Keystone Wye Bridge were fabricated from Douglas fir, matching the bridge's original timber.

The panels for the 170-foot bridge were 6 3/4" thick, and those for the 290-foot bridge were 8 3/4" thick. Each panel was designed for immediate installation upon arrival, ensuring minimal disruption.

RESULTS

The glulam decks offered a durable, aesthetically pleasing solution that complemented the historic arches of the Keystone Wye Bridge. Completed on schedule, the project reopened in time for tourist season, showcasing the expertise and responsiveness of Zip-O-Laminators and WWS in managing complex renovations.

