



Photos Steve Rundquist

Composite-deck bridge with framed cover, No. Platte River, Wyoming. Cylindrical abutments are concrete wrapped in Corten steel.

Cover for a Bridge in Wyoming

IT all began with a phone call from a builder. He had a client in Saratoga, Wyoming, who needed a cover built atop a bridge deck spanning a narrow channel of the North Platte River, which runs through his property.

I met the builder and client at the site, gathered input about specifications and general design, and was warned, “It’s all about scale. The scale needs to be correct.” The bridge was to be used not only to get ranch equipment from one side to the other, but also as a family and community gathering spot.

I put together a preliminary design and a realistic cost estimate. The client liked the proposal and asked when we could get started. He was a bit disappointed when I told him I would be unable to start his project for at least a year because of prior commitments. But he shook my hand and said he was anxious to start even though it was a year away.

Over the next few months, a final design developed (after some 18 or so revisions), and the client then requested me to build a section of the structure atop the bridge deck as a mockup. That way, he could put hands on, take a step back and see if the general scale and proportion worked for him. It was done, he was satisfied, timbers were ordered. We took care of prior commitments and our full focus became the structure over the bridge deck.

The footprint of the frame was 16x52 ft., to cover an 18x55-ft. steel and pressure-treated, nominal-4-in.-thick deck on abutments provided by Summit Structures in Laramie, Wyoming. Knife plates were welded to the steel frame below as anchors, fitting 18x4x½-in. internal slots in each post base and through-bolted. Swift Structures and Architecture in Laramie reviewed and okayed

all aspects of the frame as well as the deck, from tiedowns to framing connections and bracing and sheathing requirements, given the local snow and wind loads. The load of timbers, roughsawn unseasoned white oak from a mill in Maryland (whose state tree is the white oak) weighed about 45,000 lbs. when delivered to our yard here in Colorado.

The bridge covering might be the only white oak frame spanning the North Platte. I chose *Quercus alba* for its strength, beauty and exterior durability. The client thought the chunk of weathered and checked white oak I showed him was about the prettiest piece of timber he’d ever seen, and I agreed. White oak is a favorite timber, second only to white pine in my book—which may seem odd for a westerner, but then I learned framing in the East in the 1980s.

I grew up in Lawrence, Kansas, and always loved playing around in the old barns with their massive timbers and solid structure. Hide-and-seek and King-of-the-mountain with my buddies in the hay lofts were always great fun, with lots of crannies between the bales to hide in, and if you got knocked off the upper stack you usually had a soft landing in the bales below. When I moved to Brewster, Massachusetts, on Cape Cod, I hired on as a carpenter’s helper with Andy Shrake in East Dennis, who introduced me to solid historic work, taught me some tricks of the trade, gave me my first slick—and after a couple of years told me to “get out and go do it for yourself.” White oak cuts a crisp edge, gives a tight, longlasting joint and has a beauty of grain like no other. It reflects a worldwide building history spanning a thousand years.



White oak framing timbers grew in Maryland. Mortise and tenon joinery, with braces, valleys and jack scribed, butted and fastened.

The timbers were delivered to our yard in Colorado, and my partners Mike DuRant and Daryl Sigler and I got to work. Layouts were double and triple checked. Joinery was cut, with parts preassembled, fitted, trimmed and predrilled whenever possible. We loaded up the finished timbers and hauled them over the mountains to Wyoming.

Assembly took our three-man crew about seven working days. Along with the strong backs and good sense of the crew, we had occasional help from a crane, which set the middle section of the ridge some 20 ft. out over the stream and about 18 ft. above the bridge deck, in minutes, a task that would have taken the three of us a day to accomplish without hydraulics and cables. A lift with a 32-ft. reach carried and set the remaining 40,000 lbs. or so of timber sections and trusses in place.

Once the posts, plates, roof ridges and common rafters were installed, we scribed in place the valleys and jacks. Knee braces were also scribed in place and set with structural wood screws, countersunk and plugged. The final fit was by a small pencil scribe, which helped the bracing conform to small discrepancies in the roughcut timbers. All other parts and pieces, including the overlapping ridge beams, had been laid out by calculation and precut. When checked to theoretical center of structure the actual center of structure varied by an eighth. We also checked the effect of the weight of the cover on the bridge deck and found only a 1/8-in. deflection from our original baseline elevation at center span. Kudos to Summit Structures on that count.

Along the way and during the daily routine of work, we enjoyed the beauty and special moments of each day on the site. The mink who lived in the rocks around the piling foundation at the west end of the bridge, the osprey sailing overhead with a fresh-caught trout in its talons, the fighting pronghorns in the sage brush flats just east of us, the deer who used the bridge

nightly after we left (fresh footprints found in the dust at each end of the bridge deck when we arrived each morning), the weasel chased out of the tool trailer with a mouse in its jaws, a flock of mergansers feeding under the bridge.

And most spectacular, perhaps, the moose. One day, about mid-morning, we spotted a nice, mature bull moose wandering across the pasture just west of us. We watched as he headed south, upstream, then vanished into a thicket of willows. Just before noon as we were working on the bridge deck I glanced up and saw this same bull now standing about 20 yards from us on the east end of the bridge, right next to my parked truck. He seemed to be glaring at us as if angry that we were blocking his way over the bridge and he didn't want to get his feet wet. . . . I ran over to my truck to grab the camera but he wandered away before I could get a photo.

As we proceeded with assembly, each time we added a component it seemed to add to the beauty and stance of the structure. When it was assembled and covered we were all quite taken with how everything "fit" really well. And I'm not talking just tight joints. The client was right: it's all about scale and proportion. He did a wonderful job of helping us get it right.

One of the last tasks was to set the roof decking of 1x12 roughsawn local pine boards. About three-quarters of the way through this process, we took a break and sat down on the bridge deck for a cuppa. We noticed the light from the stream below us being reflected up onto the underside of the pine boards above, making a flickering pattern on the boards and framing. Together with the sight of this gentle movement of light, the soothing sound of the stream flowing under us made it seem almost as if the structure was alive and breathing.

—STEVE RUNDQUIST
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