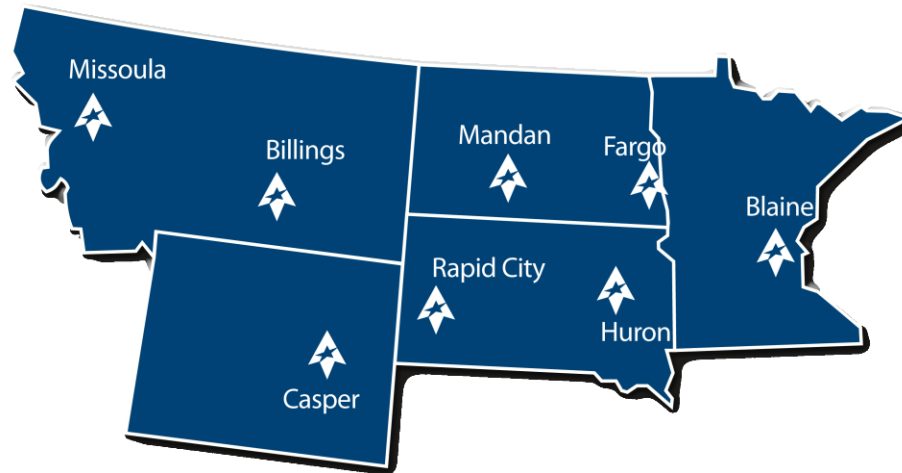




Modular Steel Bridges

Stark County – Fischer Bridge

Bottineau County – Oak Creek Bridge



This John Deere grain hauler was too heavy for the bridge. OOPS!



An excavator and tow truck are needed to remove the grain hauler from the collapsed bridge.



Fischer Bridge – Stark County, ND

- The ND Bridge inventory #45-150.01 with a HL-93 rating
- 21' wide x 28' long bridge, 3 modules, standard guardrails included
- The road and bridge were ready to be traveled on three days after delivery of the modular steel bridge. The actual road opening was delayed until the additional guardrails were installed.
- NDDOT required an additional 50' approach guardrail to be installed on all corners of the bridge (four sections)
- Stark County re-used the existing wooden bridge abutments
- The road surface on the bridge deck was configured to accept gravel, no blade runners, 6" to 8" of gravel was placed on the galvanized deck .
- The Stark County road crew executed the bridge installation



Stark County is re-using the existing wood bridge abutments. They had a couple steel I-beams in their scrap pile at their Richardton shop location that worked well for a steel cap over the wood abutments.



Stark County highway superintendent Al Heiser and his crew are preparing to set the center bridge module. Stark County had a crane on site to set the modules.



Setting the center bridge module.



Setting the west bridge module.



Setting the east bridge module.



All three bridge modules are set and the Stark County crew is beginning to bolt the modular sections together.



Bolting together the bridge modules continues.



There are a few bolts on the underside of the modules, but most of the bolting is done on the top side of the modules. To this point of installation, the Stark County crew has about 4 hours invested.



The back wall of the modular bridge is shown here, this is corrugated steel with a black epoxy paint applied finish. The existing wooden wings are also being re-used.



Gravel is being applied to the bridge Deck. The decks are 8 to 12 gauge galvanized steel , roll formed to a 12" x 4-1/2" corrugation. These decks can be overlaid with gravel, asphalt, or concrete.



Graveling process continues.



More gravel work.



At the end of Day 3, the modular bridge is installed and the road is ready for traffic. The road opening is delayed for the addition of guardrail extensions.





Guardrail extensions; the weathering steel guardrails, that came with the modular bridge, were added on to with galvanized steel guardrails.



The road is open to traffic with a new modular bridge and guardrail extensions.



Oak Creek Bridge – Bottineau County

- Bridge location is at 90th Street NE, Bottineau ,ND
- 24' wide x 43' long bridge, 3 modules, standard guardrails included
- The existing abutments were re-used with a steel cap applied. The Bottineau County road crew along with a Mikkelsen Aggregate operator, worked together to set the bridge modules using two excavators.
- The original bridge deck was removed on a Tuesday. Placement of the new bridge deck began Wednesday morning and the bridge was re-opened to traffic by noon on Friday of the same week.
- The road surface on the bridge deck was configured to accept gravel, this deck has blade runners, 6 to 8" of gravel was placed on the galvanized deck .
- The Bottineau County road crew executed the bridge installation.



**Removal of the old bridge deck and placement of rock rip rap.
Bottineau County will be re-using the existing bridge abutments.**



A welder is preparing a steel cap over the existing wood bridge abutment. The cap is fabricated from 5/8" steel plate.



Fabrication and welding continues on the steel cap. The original bridge used a center span support piling. This also will be re-used, however, the center support is not required as our modular bridges will clear span up to 150'.



Welding continues with a closer view of the cap design used by Bottineau County.



Here is Stark Counties abutment cap for comparison to Bottineau Counties. The designs are different, the results are the same. The counties saved county funds by re-using the existing abutments.



Bottineau County used two excavators to set the bridge modules on to the abutments.



The two excavators work together to set the east side module.



Setting the east side module.



Stark County set the center module first, Bottineau set the east module first. Either is good, the key is to line up the plate markings, “S4” to “S4” and so on.



Continue to set the bridge modules.



Bottineau Counties excavator is on the north side of Oak Creek and a local contractor, Mikkelsen Aggregates, is on the south side of the creek as they work together to set the bridge modules.



The Bottineau County crew is bolting the modules together as they proceed on. This bridge deck is equipped with 3" x 3" square tubular blade runners. These protect the deck from contact with a road maintainers blade.



Setting the west module and final module. Only four hours up to this point after starting to set the modules.



Note the orange color between the washer and the nut, the orange coloring leaks out once the nut has been tightened down to the required pounds of tork.



More bolting



East looking, west view of the modular bridge.



The bridge modules are all in place and securely bolted. The crew is ready to install the green treated back wall they will use on this bridge.



Guardrail attachments on the underside of the modular steel bridge.



An underside view showing the existing wood abutment, the steel abutment caps, and the bridge girders.



**Bottineau Counties Oak Creek Bridge completed.
Installation started Tuesday morning and the road was
opened to traffic by noon Friday of the same week.**



Bottineau County – Oak Creek Bridge



Bottineau County – Oak Creek Bridge



Richland County 97th Street SE Bridge

- Bridge location is at 97th Street SE & 176th Avenue SE
- 24' wide x 30' long bridge, 3 modules, standard guardrails included
- The existing abutments were removed and a steel “H” beam pile driven abutment system was put in place. The bridge installation contractor was Industrial Builders of Fargo, ND with the assistance from Richland County Highway Department. They had this completed in approximately one week.
- The road surface on the bridge deck was configured to accept gravel, this deck has blade runners, 6” to 8” of gravel was placed on the galvanized deck .



Richland County – Modular Steel Bridge, the complete old bridge was removed and steel pile abutments are set.



Setting the first modular steel bridge module with a crane, onto the steel piling abutment.



Modular steel bridge deck is set on the new steel piling bridge abutments.



Richland County completed modular steel bridge. Wood bridge timbers were used for the back and wing walls.





More Abutments

There are many options for abutments used around the country. Following are a few examples.

A poured in place concrete bridge abutment.



8" concrete block, to produce a (GRS) geosynthetic reinforced soil abutment.



Poured solid concrete Sil abutment, used on compacted soil or hard surface.



Modular Steel Bridge sitting on a SuperSill abutment system. This bridge has timber guardrails.



**A trademark “SuperSil” as provided by TrueNorth Steel.
These are delivered to the bridge location as a
box and filled with concrete on site.**



A trademark “SuperSil” being set down, concrete filled, visible steel attachment plates, and bridge module being set.

