A Tale of two Bridges in South Dakota

Reusable steel systems help minimize long detours in rural areas

The South Dakota Department of Transportation owns a number of Acrow Bridge components, so when they needed temporary detour bridges on two separate projects, it made sense to not only utilize their existing inventory but to also purchase additional Acrow components and benefit from Acrow's expertise.

Maple River Temporary Detour Bridge Project

When a planned detour on State Route 281 over the Maple River near Frederick was needed, SDDOT purchased an Acrow 160' long by 30' wide TDR3 for the job and other bridge projects identified in their forecasts. In addition to being a longer structure than those already owned by the state, this newer bridge is AASHTO HL-93 load rated with new bridge-rail capability meeting the TL 3 or 4 type specifications and has an epoxy-aggregate coated decking.

The project began in May 2015 with design engineering by SDDOT and Acrow. The contractor was Duininck, Inc. The bridge was purchased in late 2014 and shipped to the SD DOT yard in Aberdeen, SD. The structure was installed with a crane assisted method, and was removed with a full cantilever launch, accomplished in a very tight work area. The temporary structure provided full traffic flow along this major artery in a rural area where detour routes are prohibitively long.

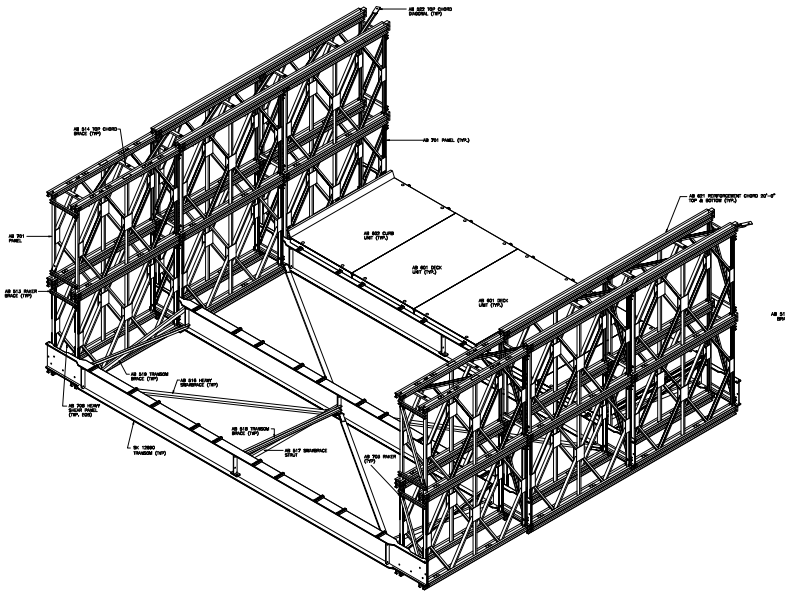
I-29 Sioux Falls SD

For another temporary structure on I-29 in north Sioux Falls, SDDOT used a 140' long by 30' wide Acrow 700XS bridge it has owned for more than a decade, and has used over the years in several projects. While the decking was originally covered with asphalt, several years ago the state applied an epoxy-aggregate non-skid coating, upon receipt of information supplied from Acrow. This new coating matches the finish on the newly purchased 160' bridge and provides a drivable surface as soon as the decks are installed. SDDOT and Acrow were joint design engineers and the contractor was The Journey Group (formerly Sioux Falls Construction). The installation was successfully completed using a two-crane pass with midair connection.

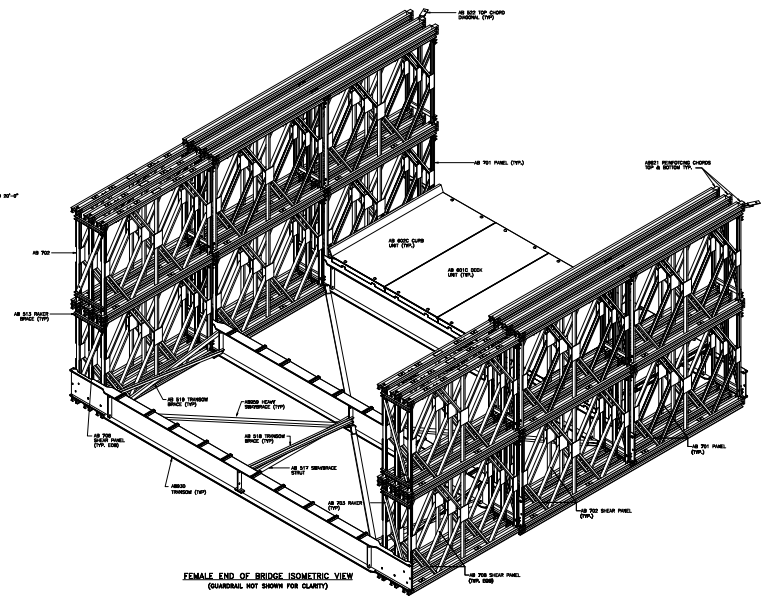
"South Dakota DOT has owned Acrow bridging for several years," said Tom Pinder, Western Sales Manager at Acrow. "As per RFQ stipulations, contractors are required to contact us for on-site assistance and installation procedures that are tailor-fit to the location needs and contractor's capabilities. When the bridge is removed, Acrow is there again to assist in the process and do a final inventory back at the storage yard."

"The modular design of Acrow bridges provide a good solution for state DOTs needing cost-effective and rapid temporary bridging solutions," said Bill Killeen, President and CEO of Acrow Bridge. "Our customizable components can be engineered for many different applications, have an estimated life span of 75-100 years and are virtually maintenance-free."

Sioux Falls



Maple River



Specifications

Bridge length:
The state of South Dakota used two of the Acrow bridges they own and supplied those to the contractors for use; 140 ft. long DDR2 for the Sioux Falls location and 160 ft. long TDR3 for the Maple River location.

Bridge width:
Both bridges are 30 feet wide (9.125M) bridge, two lanes with shoulders.

Live Load:
The Sioux Falls location was the older HS-20 rated live load bridge, while The newest bridge is the 160 ft. long structure used at Maple River that also included guard rail posts and tube rails was designed in accordance with the latest edition of the AASHTO LRFD bridge design specifications to HL93 vehicular.

Deck surface:
Epoxy non-skid coated deck

Bridge finish:
- All major components galvanized to AASHTO M111 – ASTM A 123
- All bolts are hot dipped galvanized
- All pins are electro galvanized

Bridge erection:
Both bridge structures were installed using a crane assisted cantilevered launching method provided by Acrow.

Bridge design:
(A) Panel chords, diagonals, verticals, panel reinforcing chords, rakers to AASHTO M223 GD 65
(B) Raker brace, transom, top chord brace, swaybrace, transom brace, diagonal chord brace to AASHTO GD 50
(C) Panel pins to ASTM A 193 GD b7
(D) Bolts to AASHTO M164M – A325

ACROW BRIDGE

Building Bridges.
Connecting People.®

Acrow Bridge
www.acrow.com
sales@acrow.com
+1.973.244.0080