

Temporary Multi-Span Panel Bridge

Emergency Replacement for I-5 Bridge Collapse in Skagit County WA



After the collapse of the I-5 Bridge over the Skagit River in Burlington, WA, the WSDOT had to find a quick and safe solution to solving a financial disaster in the making. In conjunction with Atkinson Construction and the WSDOT, an Acrow 700 XS panel bridge was commandeered as an emergency temporary bridge over the Skagit River.

The over height vehicle responsible for the accident impacted the upper segments of the 1960's through truss, compromising its structural capabilities. This caused the bridge to collapse into the river with no loss of life. Consequently, it created a traffic nightmare with an immediate financial impact; Costco reported a loss of \$1 million in one day as a result of the traffic gridlock.

It was imperative that the highway bridge structure be repaired as speedily as possible. The WSDOT awarded Atkinson Construction the emergency contract 2 days after the incident, and Acrow became part of the team to engineer a rapid solution for the bridge replacement.

Two 24 foot wide by 160 foot span Acrow bridges were designed to replace the old 53 foot wide, 160 foot long bridge. However, to commandeer this layout required a large crane which can take multiple weeks and no suitable crane was available at the time.

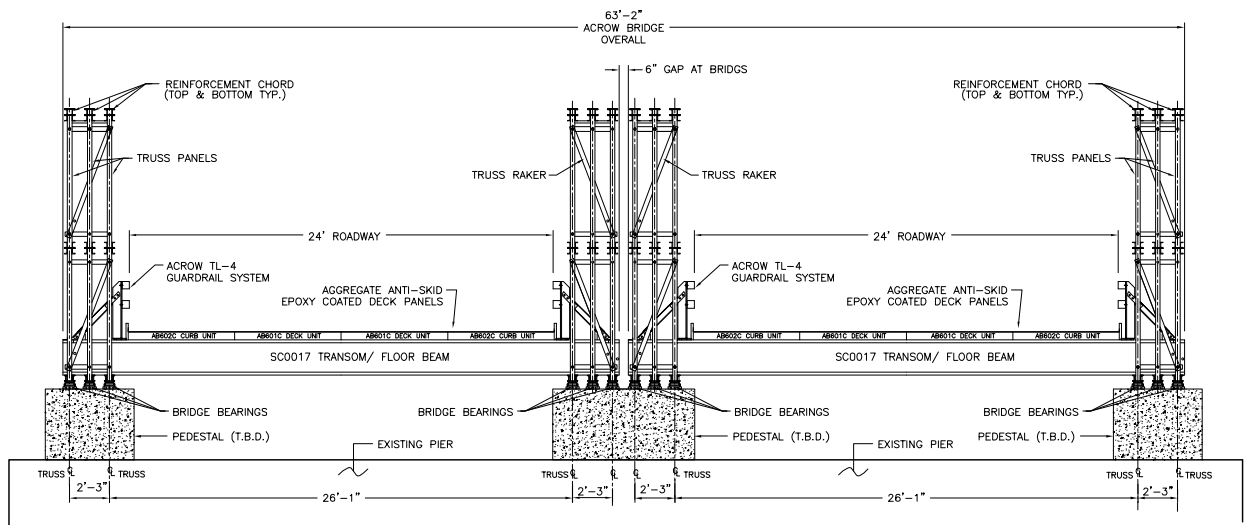
A crane-assisted launch was also not possible since the existing multi-span through truss would be an obstruction during the placement of the temporary bridge. The only practical way to place the bridge was to perform a full cantilever launch.

Special consideration and design input was needed for the Acrow bridge pedestals. They were designed with the capability of sliding the bridges sideways on Hilman rollers, which was necessary because the through truss was 8 feet narrower than the Acrow structure. Once the pedestals were in place, bridge one (north bound lanes) was launched, jacked down onto Hilman rollers and moved eastwards, cantilevered over the bridge pedestals, and positioned out of the way to make room for the south bound bridge. The second bridge was then jacked down and positioned on permanent bridge bearings, 6 inches from bridge one.

The deck was then situated, asphalted, and the temporary bridge was formally opened on June 16, 2013 ready to receive the average daily traffic volume of around 70,000 cars and trucks. The Acrow bridge will be in place for approximately 4 months until a permanent bridge can be constructed and moved into place.

"I'd like to add my congratulations to all of you and to your team members. Please pass on our appreciation for their hard work to make this happen. Replacing a collapsed bridge with a temporary structure in less than a month is a fantastic achievement. You made it look easy, even though it was extremely difficult. Well done and thank you all for making this happen."

WSDOT Official
Washington State Department of Transportation



Specifications

Bridge length:

Acrow supplied two 160 linear feet (48.8M) bridging clear spans

Bridge width:

The Acrow bridge has a 24 foot (9.3M) clear travel way between the guide rails

Guide rails:

A test level 4 guide rail system was supplied by Acrow for the bridge

Deck surface:

Asphalt overlay

Bridge erection:

Full cantilevered launch

Live Load:

The bridge was designed in accordance with AASHTO LRFD bridge design specifications second edition to HS25 vehicular

Bridge design:

- (A) Panel chords, diagonals 7 verticals, panel reinforcing chords, Rakers to AASHTO M223 GD 65
- (B) Decking, 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

Bridge finish:

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