Acrow Bridge Provides Temporary Bridge and Lift Span to Speed Replacement of Bridge Connecting Palm Beach and West Palm Beach

Avoids need for lengthy disruption of road and water traffic at key crossing

Connecting the Town of Palm Beach and the City of West Palm Beach, the Southern Boulevard Bridge is one of three bascule bridges crossing the Intracoastal Waterway and Lake Worth Lagoon. When structural problems were found with the bridge, it was determined that a temporary lift span would also be needed during the replacement process to accommodate heavy vehicle traffic on the roadway as well as commercial and recreational vessel travel in the waterway below.

The use of a long-term, dual-purpose detour structure eliminates disruption to the communities around it. At the same time, the use of a temporary vertical lift span, which is easier to assemble and disassemble and less expensive than a temporary bascule bridge, also lowers overall project costs and timeline.

For the Florida Department of Transportation, the desire to minimize the potential for traffic and construction delays on the Southern Boulevard Bridge project was a key decision point.

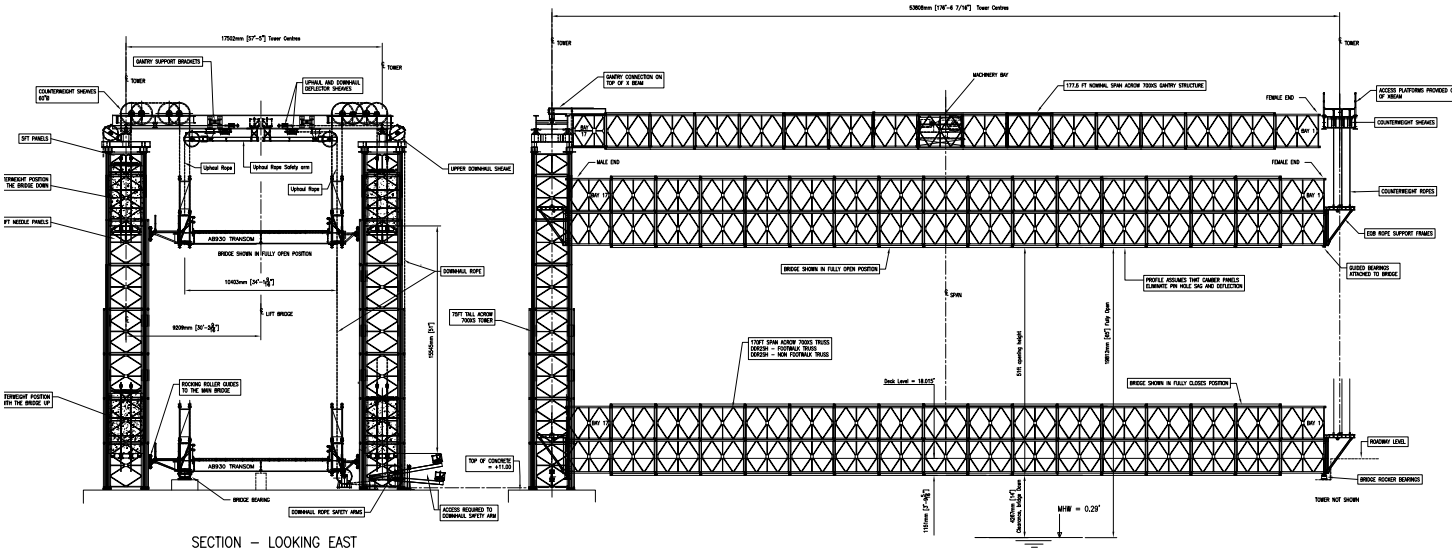
The project followed the replacement of the nearby Flagler Memorial Bridge, which did not include a temporary bridge. When construction began on the Flagler project in 2012, vehicle traffic continued to use the old structure, but unfortunately, vibrations from construction of the adjacent new bridge caused numerous problems on the old bridge, including foundation cracks and settlement issues with support beams. Delays and partial shutdowns plagued the project and ultimately, nearly $10 million was spent to repair the original bridge that was being replaced.

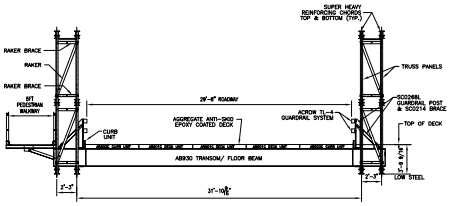
The use of temporary lift bridges poses technical challenges as well, and the many steps involved in the design and installation of this structure required close coordination between Acrow's mechanical, structural and electrical teams and the contractor. The lift span, towers and machinery span were assembled from Acrow truss panel components on-site and nearby. Large cranes were then used to lift them into place. Additionally, the tower top cross-beams and mechanical systems were installed using a crane.

The lift span purchased from Acrow is 170 feet (51.8 meters) long with a roadway width of 30 feet (9.2 meters) and a 5 foot (1.5 meter) wide cantilevered footwalk. It uses four 75 foot (22.9 meter) towers and a 175 foot (53.3 meter) gantry system located on top of the towers. The structure is designed for an AASHTO HL-93 loading. It was particularly important when planning the detour that the temporary structure have superior structural strength, reliability and durability as the bridge is required to be lifted every 30 minutes for vessel passage.

The project contractor is Johnson Brothers, a division of Southland Holdings, and the project owner is the Florida Department of Transportation. The design engineer is AECOM Technical Services of Tampa.

Acrow's temporary bridge is expected to be in place until completion of the project and will then be dismantled and stored until needed for other FDOT projects.





Specifications

Bridge length:

170 feet (51.8 meters)

Bridge width:

30 feet (9.2 meters)

Live load:

HL-93

Deck surface:

Epoxy

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:

The lift span, towers and gantry were all assembled from Acrow truss panel components on-site or nearby and then cranes were used to lift them into place. Additionally, the cross-beams and mechanical systems were installed using a crane.

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

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