



CASE STUDY: MICHIGAN STREET VERTICAL LIFT BRIDGE

Milwaukee, Wisconsin



THE PROJECT

Our **Zenith Tech** team has been hard at work with the rehabilitation of the Michigan Street Vertical Lift Bridge over the Milwaukee River. Built in 1978 and requiring a full rehabilitation, this project involved the update and replacement of secondary structural components, and all of the electrical, hydraulic, and mechanical components. The bridge house and roadway were also upgraded. ZTI constructed new traffic barriers between the sidewalks and the roadway and replaced the pedestrian railings on the outside of the sidewalks. This successfully executed project was completed July 29, 2020.

CHALLENGES

- Hydraulic power units in the existing bridge stopped working three months prior to the original project start date which required the team to mobilize quickly to raise the bridge and help the owner avoid costly fines from the US Coast Guard.
- COVID-19 presented new challenges and delays in material deliveries. Flexibility and creativity was absolutely essential and for the first time in ZTI's history, cranes were used to open and close the bridge to complete structural repairs while waiting for impacted electrical components to arrive.
- A tight project site in the heart of downtown Milwaukee required a precise site logistics plan to ensure access for deliveries, parking garages, and business entrances. The team also maintained site access to meet critical project milestones.
- High water levels in the Milwaukee River and Lake Michigan made maintaining navigational clearances with scaffolding under the bridge a challenge.

WALBEC SOLUTION

- Demolition took place from May to September 2019 using innovative methods to reduce the project's footprint and duration. Hydro-demolition, a new process for ZTI, was used to complete removals inside the pier pits and reduced the team's exposure to safety hazards. This process also shortened the duration of the work.
- Modular removal of the existing structural components allowed ZTI to immediately haul away deteriorated components and save valuable space on site.
- Shotcrete, a sprayed concrete conveyed through a hose and projected at a high velocity, increased efficiency by avoiding formwork during surface repairs.
- Structural steel repairs and all secondary members on the lift span were replaced in phases to allow for the maximum available lay down area on the site and improve efficiency during installation.
- Installed new 260,000 LB counterweight in each pier pit, concrete placement for the lift span deck, and new mechanical components.
- Rehabilitated the bridge house including off-site prefabrication of a new roof.

TEAMWORK //

Our ZTI team, with considerable experience in rehabilitating movable structures, collaborated strategically with an extensive team of partners and consultants to ensure this project was a success. These valuable partners played key roles in the full replacement of electrical and control systems, new hydraulic power units, cylinders with electronic skew control, and procurement and installation of structural components.

