

Brookfield Avenue over Salt Creek



PROJECT DESCRIPTION

Ciorba Group provided preliminary and final design and construction engineering services for this bridge replacement project. The bridge is in a high-profile area adjacent to the Village Hall and Metra station near a residential neighborhood. Engineering and construction was funded utilizing STP Bridge Program Funds (STP-BR) so all services are performed in accordance with FHWA and IDOT requirements.

The existing bridge (S.N. 016-6665) was constructed in 1916 as a two-span reinforced concrete through girder on timber piles with a reinforced concrete pier and closed abutments. The bridge superstructure was replaced and widened with pre-stressed concrete deck beams on a widened substructure in 1986. Each span has a length of 48' for a total bridge length of 96'. The bridge roadway width is 30' allowing for two traffic lanes with a 5' sidewalk on the north side of the deck. The Sufficiency Rating of 43.9 qualifies the bridge for replacement.

The proposed bridge was a single span 105' bridge utilizing 36" PPC I-beams supported on tall wall semi-integral abutments on drilled shafts. The roadway profile was raised to accommodate the beam depth required for the single span structure while maintaining the existing bottom chord elevation of the superstructure. A slight correction to the adjacent roadway alignment provides a smoother transition to the bridge driving surface. The improvement requires reconstruction approximately 400 feet of roadway. An existing 16" water main located under the existing bridge was relocated to avoid conflicting with the proposed substructure and other utility improvements include reconstruction and relocation of storm sewer structures adjacent to the bridge.

Temporary easement and various utility were coordinated for the project which was constructed with a full detour in place.

A full hydrologic/hydraulic study of the existing and proposed bridge structure was conducted to confirm the adequacy of the proposed bridge waterway opening. The hydraulic characteristics of the floodplain for existing conditions were calculated using the US Army Corps of Engineers HEC-RAS program. A crash analysis was completed to identify the need for any potential safety issues. All studies were summarized in a Project Development Report that was processed by IDOT as a Categorical Exclusion, Federal Approved.

During the final design, the project team worked with the Village to determine what aesthetic improvements could be added to the bridge since it is located in a high profile area adjacent to the Village Hall and Metra station. These included the addition of a cantilevered outlook, decorative lighting, formliner, and signage on the bridge.

Phase III construction engineering services were also completed in accordance with IDOT and FHWA requirements. The Resident Engineer chaired bi-weekly progress meetings with representatives from the contractor, Village, and IDOT to discuss progress, construction issues, and resolve conflicts. The Resident Engineer also interacted with Village officials and the local community, answering questions or concerns raised by residents during construction.

LOCATION

Brookfield, IL

CLIENT

Village of Brookfield

CONTACT

Tim Wiberg
Director of Public Works
708.485.2540

CONSTRUCTION COST

\$4.85 Million (Estimate)

PROJECT TEAM

Project Manager
Brett Sauter, PE, SE
Project Engineer
Mark Johnson, PE (Phase I)
Eric Spina, PE (Phase II)
Lead Structural Engineer
Alex Durbak, PE, SE
Lead Water Resources Engineer
Tony Wolff, PE, CFM
Construction Manager
Duane O'Laughlin, PE
Resident Engineer
Jesse Singer, PE

SCOPE OF SERVICE

- ▶ Preliminary Engineering
- ▶ Final Design
- ▶ Construction Observation

