

IL 171 at I-55 Interchange Improvement



PROJECT DESCRIPTION

Ciorba Group prepared a Project Development Report (Categorical Exclusion) for improvements to IL 171 (First Avenue) at I-55 Interchange. The study included two miles of IL 171 from 47th Street to 55th Street. The majority of the project length is located on structure requiring the inspection and preparation of condition reports for 20 bridges. The bridges cross over local streets, railroads, I-55, the Des Plaines River and the Chicago Sanitary and Ship Canal. The bridges over the river and the canal are multi-span 1000 feet long continuous welded steel plate girders with span lengths up to 200 feet.

Bridge inspections were completed for all 20 structures covering over 460,000 square feet of bridge area. The inspections were completed in two months and required extensive coordination for traffic control, specialized equipment rentals, railroad flaggers and the Coast Guard. Our NBIS-qualified staff used hydraulic platform and man-lifts to inspect the bridges. We performed bathymetric survey and underwater inspection of superstructures for depths less than four feet with support from our subconsultant. The Bridge Condition Reports (BCR) summarized the inspection results, the preliminary engineering performed to develop the proposed improvements and the estimated costs for various alternatives.

As part of the BCR preparation, Ciorba checked the life cycle of several fatigue-prone details, studied Hoan-like details and pin hanger details, and analyzed the capacity

of existing substructures. Drainage studies were completed at each bridge with Hydraulic Reports prepared for the structures over the Des Plaines River and Chicago Sanitary and Ship Canal. We also performed scour evaluation at all bridges over waterways using HEC-RAS.

Ciorba performed all the necessary roadway studies to analyze the existing geometrics/cross-section as well as upgrading the geometrics/cross-section to meet current standards. The studies included weave analyses and capacity studies for the ramps from IL171 to I-55 and from I-55 to IL 171. Ramp realignments to improve geometrics at the I-55/IL 171 interchange were investigated. Intersection design studies were conducted at several locations to develop new geometrics for improved capacity and safety. A detailed study was performed along I-55 for future HOV lanes and pavement widening. Various staged construction options were studied including a counter-flow option. A crash analysis was performed the entire length of the improvement.

Public meetings and meetings with community officials were held to obtain local input for the project. Industrial sites and waterways are located within the project limits; therefore environmental studies were conducted to identify hazardous waste sites and wetlands. Route, bridge and bathymetric surveys collected the topographic information for all studies.

LOCATION

Cook County, IL

CLIENT

Illinois Department of Transportation, District One

CONTACT

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CONSTRUCTION COST

\$79 Million

PROJECT TEAM

Project Manager
Salvatore Di Bernardo, PE, SE
Project Engineer
Mark Johnson, PE, PTOE
Lead Structural Engineer/Head Team Leader
Brett Sauter, PE, SE
Lead Water Resources Engineer
Tony Wolff, PE, CFM

SCOPE OF SERVICE

- ▶ Preliminary Engineering
- ▶ Bridge Inspection
- ▶ Inspection Reports

