

Research Need for Bridges and Foundations Technical Advisory Group

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1. Issue Identified:

Navigational Clearances

2. Summary of Problem:

There is a need for a single, reliable decision-support resource for commercial navigation planning on the Illinois River and Chicago Area Waterway System. Bridge impediments on the Illinois River and Chicago Area Waterway System include low fixed bridges, aging movable bridges, narrow horizontal clearances, aging structural piers and construction-related navigation restrictions. These physical constraints limit the full use of the waterway.

Inconsistent clearance information, low clearances, restricted navigation spans and unreliable opening information for movable bridges such as swing, lift and bascule bridges create uncertainty for commercial waterway shipping end users on Illinois waterways. This uncertainty results in user delays, affecting direct and indirect costs for commercial businesses using Illinois waterways.

A single, reliable decision-support resource for commercial navigation planning on the Illinois River and Chicago Area Waterway System would improve safety and voyage-planning information, identify priority bottlenecks, support project development and grant applications, and help Illinois evaluate opportunities to strengthen connections between the inland waterway system and the Great Lakes.

3. Desired Results/Outcome:

- Compile and reconcile available data from U.S. Army Corps of Engineers navigation charts and bridge clearance tables, National Oceanic and Atmospheric Administration U.S. Coast Pilot, United States Coast Guard Bridge Program records, Federal Railroad Administration/National Transportation Atlas Database railroad bridge GIS, Federal Highway Administration/National Bridge Inventory, Illinois Department of Transportation records, utilities, railroads and bridge owners.
- Create a GIS-enabled inventory of bridges, overhead structures, cables, utilities, and other impediments, including location, river mile, latitude and longitude, ownership, bridge type, vertical clearance, horizontal clearance, navigation span, low-steel elevation, water-surface reference, vertical datum and source documentation.

- Identify inconsistent, missing, outdated or conflicting data, and assign a data-quality or verification status to each structure.
- Evaluate low-clearance bridges and other restrictions affecting existing commercial vessels, project cargo, future vessel configurations, and potential Great Lakes–inland waterway cargo movements.
- Evaluate the operational status and reliability of movable bridges, including opening requirements, known restrictions, maintenance responsibility and documented navigation impacts.
- Develop a prioritized list of navigation constraints and recommend operational, maintenance, rehabilitation, modification, replacement or removal actions, as well as areas requiring further study.
- Prepare planning-level cost ranges, potential funding considerations and a phased implementation strategy.
- Deliver a final report consisting of a directory of bridges with a verified inventory and assessment of bridges and other overhead navigation restrictions, a GIS database, a spreadsheet inventory, maps and a public-facing ArcGIS dashboard or comparable updatable tool. The directory should include a visual representation of each structure showing the channel span and relevant attribute data.