Duluth Aerial Lift Bridge No. L6116- Funding Statement

Constructed beginning in 1901 and significantly modified to its present aerial lift span in 1929, the Aerial Lift Bridge is an iconic, historic structure, that is as vital to automobile travel as it is to commercial shipping traffic. The City of Duluth with the assistance of Federal Highway Bridge Funds, Federal Stimulus Funds and State Bridge Bond Funds has performed substantial rehabilitative work to the bridge, totaling more than $20 million since 1998. While these projects have substantially improved and preserved the bridge's condition and its operational reliability, due to funding limitations, they have been unable to address all areas of the bridge. To avoid costlier future repairs and ensure bridge reliability and safety, the following work needs have not been met and are presently programed:

- The bridge's iconic overhead truss is experiencing significant areas of rust, corrosion, and loss of steel section, and requires structural steel repairs and replacement of the failed corrosion protection paint coating. The overhead truss spans nearly 400 feet at a height over 160 feet from water. Because the lift span truss nests into the overhead truss to provide a full height lift for shipping traffic, most of this work must be performed during the winter when shipping traffic under the bridge is suspended. In addition to needing to perform much of the work during the more costly winter season, the failed corrosion protection paint system contains lead which imposes further containment, regulatory and cost requirements upon the work.
- The pedestrian sidewalks suspended off each side of the bridge's lift span truss require substantial reconstruction work. The sidewalk structural steel support system and concrete filled steel sidewalk grating is heavily deteriorated resulting in ongoing repairs to maintain safe pedestrian travel. To affect a proper repair, the sidewalk grating and much of its underlying steel support system requires replacement.
- The lower region of the lift span truss (region exposed to roadway salts) was last repainted in 2001. The protective paint system is nearing the end of its life, allowing corrosion of steel elements to occur. To avoid costlier repairs to the steel elements, and mitigate present steel section loss, structural steel repairs and replacement of the corrosion protection paint system is necessary in the near term.
- The bituminous surface of the approaches is heavily cracked and rutted with significant spalling of the concrete curbs. This surfacing lies above the roof of the structural concrete abutment houses at each end of the bridge and must be maintained to prevent damage to the concrete roof structure and abutments.
- Spalling of the concrete surfaces of the abutment wingwalls and tower base pedestals has begun to accelerate. Repair of these locations will preserve structural soundness and mitigate exponentially increasing costs from additional deterioration expounded by freeze-thaw cycles.

Estimate of Cost and Work Readiness

The estimated cost for these work items is $12 million. The City has completed investigative and preliminary design work and is presently underway with final design, plans and specifications. As funding sources are confirmed the City is in position to rapidly prioritize work regions based on funding availability and complete the project plans for bidding/construction.

Descriptive Photos

Duluth Aerial Lift Bridge- Bridge No. L6116

Corrosion, Steel Section Loss and the need for Repairs and New Protective Paint Coating System to the Overhead Truss

Steel Section Loss and Corrosion to Underside of Supported sidewalk on Lift Span

Trip Hazards from Deteriorating, Heaving Sidewalk Panels on the Lift Span are Prevalent

Rust and Corrosion from Road Salts is Necessitating Steel Repairs and New Protective Paint System to the Lower Regions of the Bridges Lift Span Truss

Additional View- Underside Lift Span Truss Protective Paint System Failure

Cracking and Delaminations in Southwest Corner Tower Leg Concrete Footing

Cracking in Northwest Corner Concrete Sidewalk Support Beam