



Department of Public Works
Infrastructure Services Division

Jeffrey J. Mantes
Commissioner of Public Works

James P. Purko
Director of Operations

Jeffrey S. Polenske
City Engineer

November 6, 2008

Alderman Robert Bauman, Chair
Public Works Committee
City Hall, Room 205

Subject: Council Resolution File No. 080845

Dear Alderman Bauman:

The referenced Council file is related to the execution of a project agreement with the Wisconsin Department of Transportation for funding preliminary engineering for the rehabilitation of the Wisconsin Avenue Lift Bridge over the Milwaukee River. This file was "Held to call of the chair" at the October 15, 2008 meeting of the Public Work Committee meeting pending further information.

The following additional information is provided relating to the need for this improvement. The Wisconsin Avenue Bridge over the Milwaukee River is a vertical lift bridge built in 1975. The bridge sufficiency rating, which is a measure of structural and functional deficiency, is 23.5 out of a maximum score of 100.

The Sufficiency rating (SR) is a number from 0 (an entirely "insufficient" or deficient bridge) to 100 (an entirely "sufficient" bridge). These ratings are calculated using a complicated math formula developed by the Federal Highway Administration. Each bridge is rated in three separate categories that are:

1. Structural Adequacy and Safety (condition of superstructure and substructure, inventory rating, etc.) 55 points.
2. Serviceability and Functional Obsolescence (roadway width, number of lanes, alignment, clearances, etc.) 30 points.
3. Essentiality for Public Use (detour length, average daily traffic, etc) 15 points.

The resulting SR is used to determine which structures will be eligible for federal funding for replacement or repair. If the SR is from 80 down through 50, the bridge is eligible for rehabilitation funding, and if the SR is less than 50, the bridge is eligible for either replacement or rehabilitation funding.

The key elements of the Wisconsin Avenue bridge contributing to the low sufficiency rating is the deterioration to the steel open grid deck and the supporting steel purlins, stringers, and floorbeams. The open grating allows water and deicing salts to easily reach steel members and operating machinery below the lift span. Deterioration is also prevalent on the wire ropes, machinery sheaves and bearings, hydraulic piping and components, and electrical conduit.

Since the bridge was built, bridge maintenance forces have painted the bridge, steel members have been repaired, hydraulic piping replaced, conduit rerouted, new wire ropes restrung, and machinery sheaves and bearing refurbished. Every spring maintenance forces power wash the bridge to remove debris and deicing salts accumulated from the previous winter. The paint systems used in the 1970's were inferior to earlier lead based systems which offered superior

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corrosion protection but could no longer be used due to environmental and health concerns. The coating systems previously applied to the bridge has subsequently failed resulting in accelerated corrosion of the steel members and machinery elements. The ongoing deterioration of the bridge has outpaced the ability of City maintenance forces to keep ahead of the repairs necessitating that this bridge facility be considered for rehabilitation.

While the Wisconsin Avenue bridge at this time is 33 years old, the contract for rehabilitation is anticipated to be let in 2012 when the bridge will be 37 years old (depending on funding availability). In comparison, both the Kilbourn Bridge and State Street Bridges over the Milwaukee River had rehabilitation contract work scheduled in the late 60's and early 70's; around 40 years after being built. With the increased use of deicing salts to keep roadways clear during harsh winters, modern steel bridges are experiencing accelerated rates of corrosion than their predecessors. In addition, paint coating systems have improved over the past 30 years and modern paint systems incorporate better technologies and paint chemistry to provide increased future corrosion protection.


Due to the limited availability of bridge funding statewide, this project was not under consideration by Wisconsin DOT for funding and the City of Milwaukee requested reconsideration of this project due to its condition.

Your favorable consideration of this resolution is therefore requested.

Very truly yours,



Jeffrey S. Polenske, P.E.
City Engineer

 DEM:dm

C: Members of the Public Works Committee:
Alderman Joseph Dudzik
Alderman Willie Wade
Alderman Robert Donovan
Alderman Robert Puente