

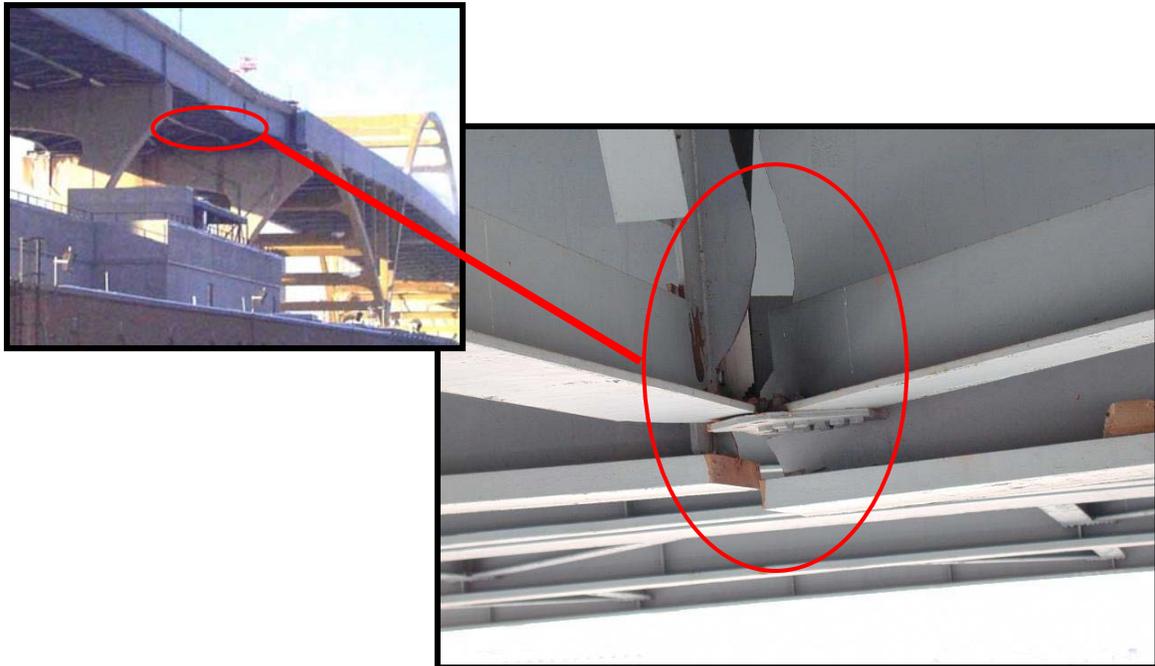
## In-Service Inspection Frequency for Non-Load-Path Redundant Bridges

### **Introduction and Background**

It is well recognized that the major impact on life-cycle costs is the additional mandate for hands-on in-service inspection of fracture-critical members. In fact for some owners, fracture-critical inspections consume a large fraction of the available inspection budget for a comparatively few structures. The cost of the fracture-critical inspection is typically 2 to 5 times greater than inspections for bridges without any FCMs.

Considering the substantial cost, both in terms of finances and effort, the question arises, should all non-redundant steel bridges be inspected at the same interval regardless of condition, material type, ADTT, fatigue details, etc. For example, should a newly built bridge fabricated to the modern fracture control plan using HPS, highly fatigue resistant details, and carrying little or no truck traffic (e.g. high occupancy vehicle ramp) be inspected at the same interval as an older two girder bridge possessing questionable material and fabrication quality, high ADTT, and poor fatigue resistant details. Many other industries, including aerospace, offshore, and ship building inspect develop inspection intervals using more rational criteria than simply "calendar based" criteria as it allows a more efficient use of funds and provides a more rational approach to inspection.

In light of this, questions have arisen with respect to inspection requirements for newer bridges which were built using superior steels (especially using any type of HPS), subjected to modern inspection techniques (NDT, etc.), and fabricated using higher quality welding procedures than in the past. In addition, those fabricated using the present FCP, design with high fatigue resistance details, and subjected to low ADTT could be inspected at a greater frequency than 24 months. To address the issue above, a rational approach to inspecting bridges traditional classified as fracture critical will be developed through this project.



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