

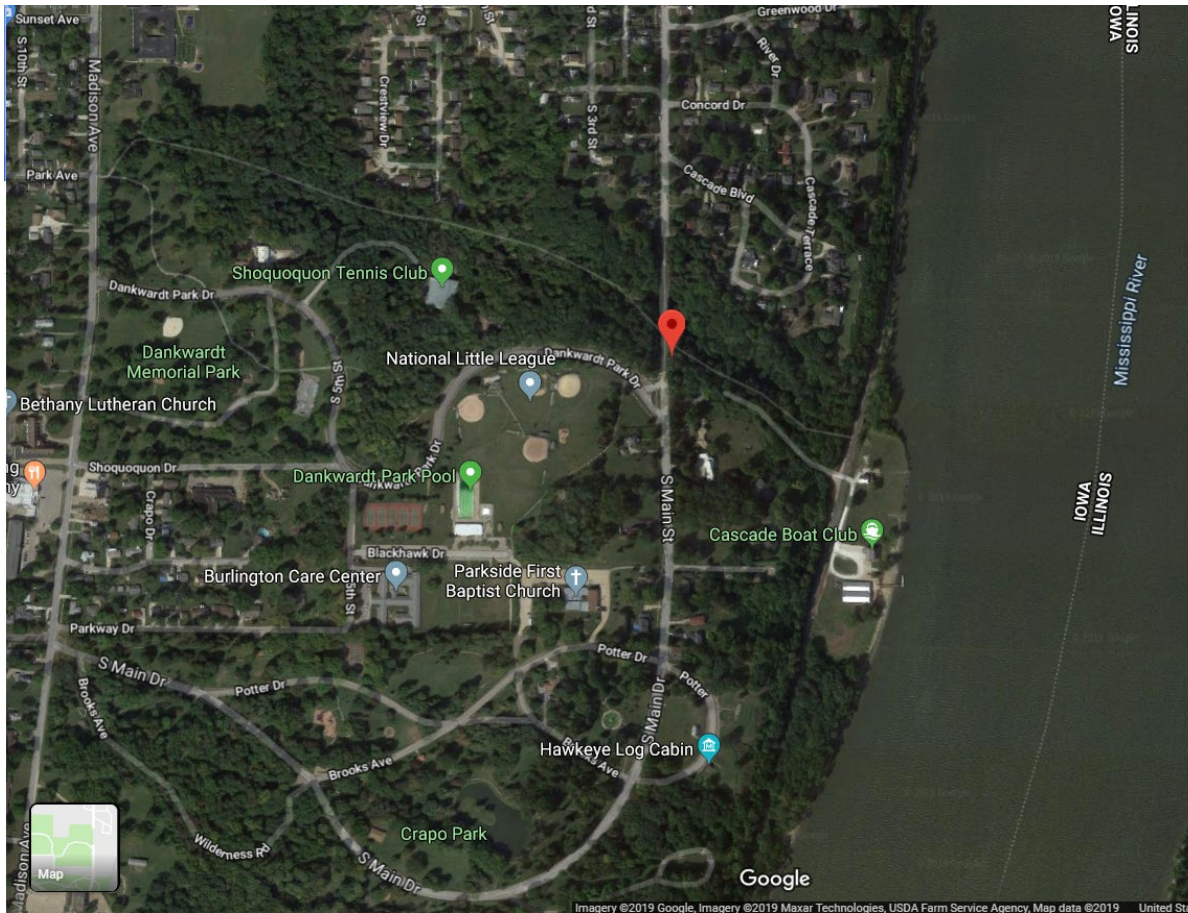


Cascade Bridge Study

Burlington, Iowa

1898 CASCADE BRIDGE 1898
DESIGNED BY BOYNTON & WARRINER
CEDAR RAPIDS, IA.
BUILT BY MILWAUKEE BRIDGE & IRON WORKS
MILWAUKEE, WIS.
P. C. NAUMAN MAYOR,
S. D. EATON CITY ENGINEER.
ALDERMEN
CHAS. STRIMMER. E. F. ESCOFFORD.
JOHN EICHMAN. ADAM MOEN.
W. F. HODGES. A. P. BELUK.
A. L. BELLES. S. N. ABBOTT. DUSTIN GILSON.

January 7, 2020



Agenda

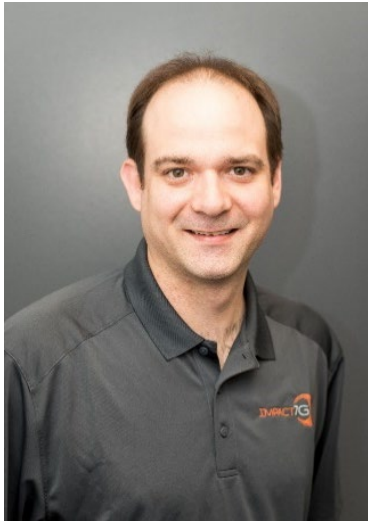
- Introductions
- Presentation Objective
- Project Objective
- Schedule of Activity
- Cascade Bridge History
- Key Stakeholder Discussion
- City Infrastructure Prioritization Process
- Range of Outcomes
- National Historic Preservation Act
- Funding for Alternative Outcomes
- Website



Introductions

Mike Fisher

- Project Manager
- 29 Years Consulting Experience



Branden Scott

- Cultural Resource Task Lead
- 15 Years Archeology and Historic Structures Experience

Presentation Objective

Review the purpose and end objective of this study of Cascade Bridge

- Solicit input and comments regarding the structure.
- Inform of opportunity to provide input at later date
- Website address (url)





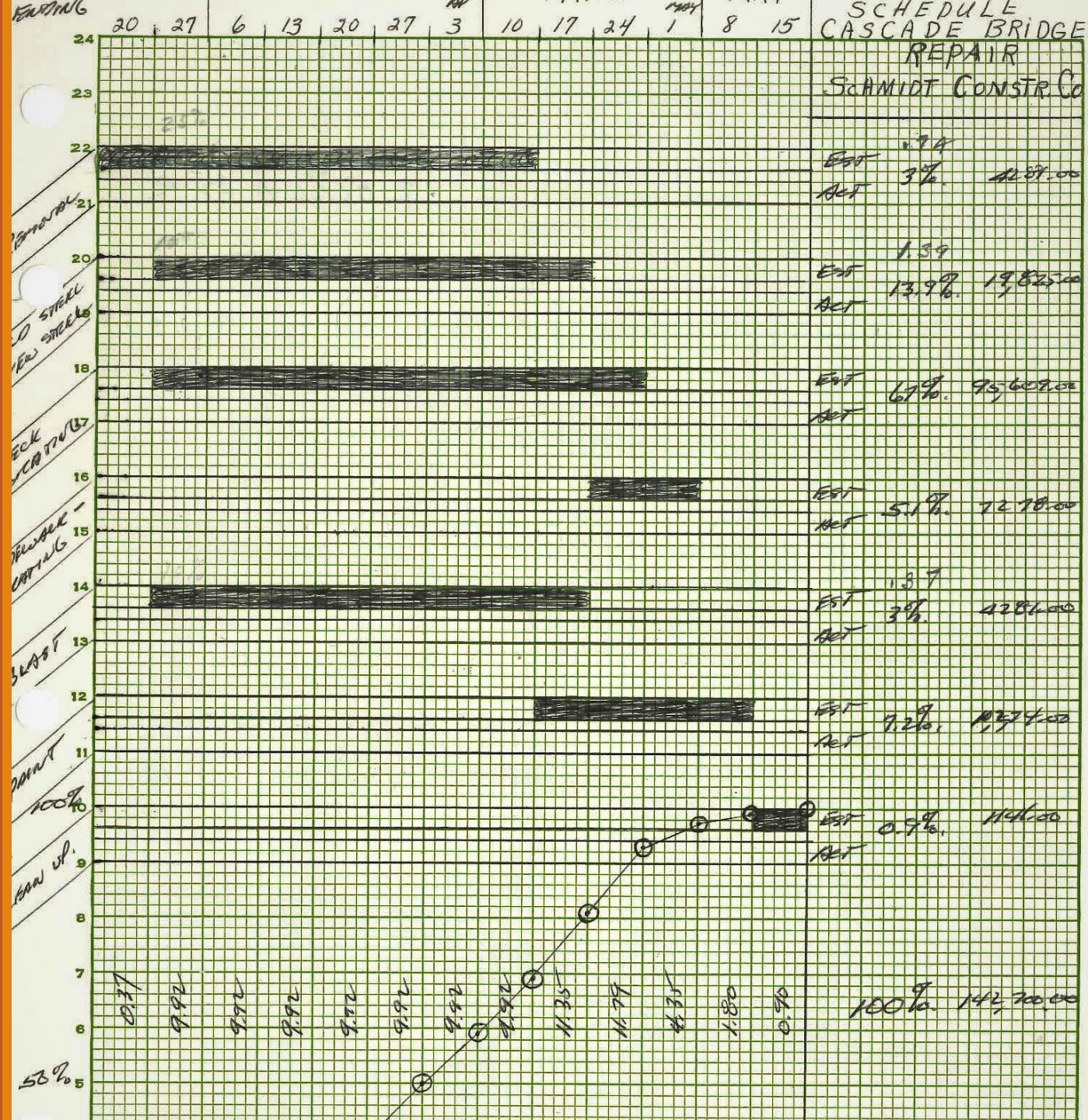
Project Objective

Determine the future of the existing cascade bridge structure...

- Based on public input
- Based on stakeholder input
- Based on City staff input
- Based on City prioritization of infrastructure projects
- Based on the availability of funding to implement demolition or future use alternatives
- Based on cultural resource considerations
- Based on purpose and need considerations

Schedule of Activity

- Website Domain Secured
 - www.burlingtoncascadebridge.com
- Review of Past Inspections, Evaluations, Studies Ongoing
- Informal SHPO Letter Near-Term Task – TASK COMPLETE
- Meet with Stakeholders
- Compile Community Input
- Provide Input to City



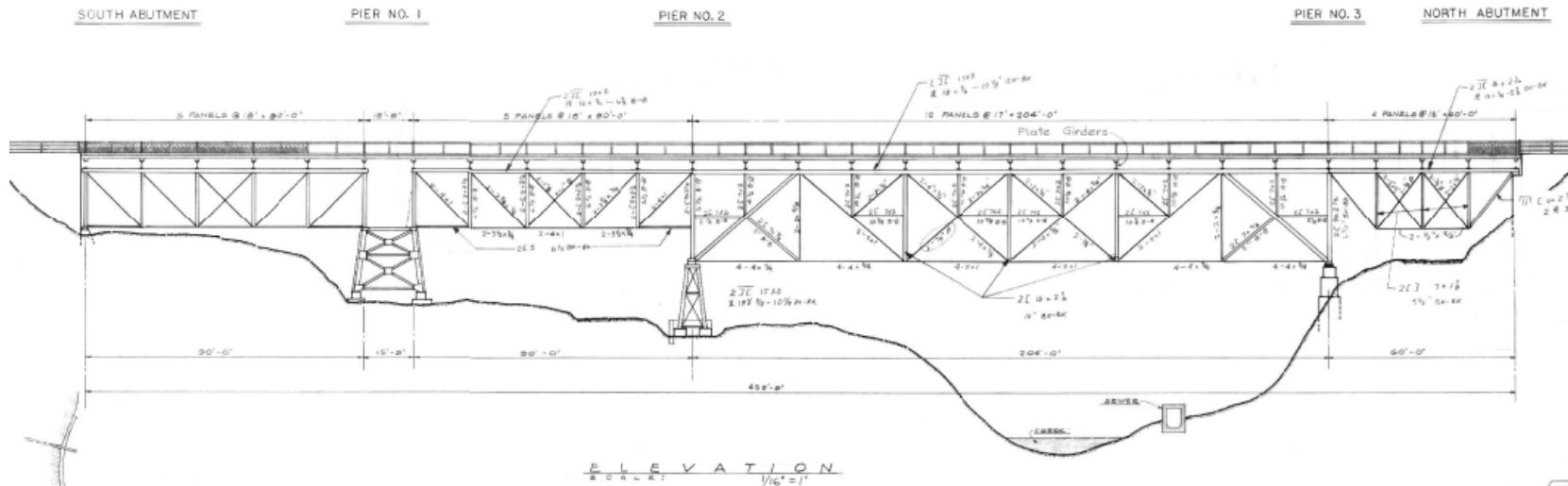


Cascade Bridge History

- Completed Fall 1896 at cost of about \$16,000
 - (\$489,920 in 2019 \$'s)
- Listed on National Register of Historic Places on June 5, 1998
- Closed to vehicle traffic in 2008
- Closed to foot traffic in 2019
- Over a century of use.

Previous Repairs

- 1953
 - New truss bearing shoes
 - New horizontal bracing
 - Reinforcing of steel piers
 - Reinforcing of some diagonal eyebars





Previous Repairs

- 1964/1978/1984

- The 5" steel roadway deck grating was installed in 1964
- Replacement of roadway deck joints
- North abutment bearing seat repairs and reinforcement of southeast abutment wing
- Installation of lateral bracing stiffener plates at panel points, reinforcing of some diagonal eyebars, seal welding of eyebar ends at panel points
- Cutting of holes in truss members to drain water
- Replacement of missing steel lacing with plates
- Clean and paint entire bridge
- Pier 2 steel repairs and concrete retaining wall at Pier 2
- Removal of existing sidewalk and exterior rail, and replacement with concrete sidewalk on corrugated steel deck, new sidewalk expansion joints, new exterior sidewalk rail
- Removal of laminated wood deck, and replacement with 5" open steel deck
- Removal of steel floorbeam bolsters, replacement with new steel wide-flange beams on tops of existing floorbeams
- Removal of shallow stringers, replacement with new steel wide-flange stringers
- New roller bearings at Piers 1 and 3
- New jacking posts at Pier 1 for bearing replacement
- New floorbeam at north abutment

Previous Repairs

- 1998
 - Removal of existing concrete foundation at Pier 3, replaced with new concrete grade beam and caissons cored into limestone bedrock
 - Concrete abutment repairs



Cascade Bridge Evaluations



- Previous repair plans were dated 1953, 1964/1978/1984, and 1998
- October 2006 Bridge Inspection (City In-House Inspection)
 - Rating of 23 on the City Bridge Priority Point System (23 or more eligible for Fed/State Funds)
 - 1364 Vehicles Per Day (4.8% Trucks)
 - Superstructure Reduced from 7 to 3
 - “Poor/Critical” Condition
 - Significant Deterioration, Section Loss, Cracking, Other Deficiencies
 - Operating Rating for a Type 3 Vehicle of 6 Tons (Type 3 Double Bottom Straight Truck)

Cascade Bridge Evaluations

- October 2012 Bridge Rehabilitation Evaluation (Shuck-Britson, Inc.)
 - Purpose: Evaluation for Rehabilitation
 - Performed by Iowa Professional Engineer
 - 1364 Vehicles Per Day (4.8% Trucks)
 - Superstructure Reduced from 7 to 3
 - “Poor/Critical” Condition
 - Significant Deterioration, Section Loss, Cracking, Other Deficiencies
 - Load Rating: 4 tons (AASHTO Method)
 - Rehab Cost: \$6.105 Million (NPV \$8.588 Million)
 - \$7,204,072 adjusted to 2020 cost based on CPI Index (NPV \$10,133,887)
 - Rehab Painting Cost: \$2,056,000 (if hazardous)
 - Rehab Painting Cost: \$1,645,000 (if non-hazardous)

20-ton limit
50-Year Life

Total 2020 Rehab Upfront Cost*:
Construction: 7.20 Million
Painting: 1.94 Million
Design/Inspection: 0.75 Million
Total: 9.89 Million

*Adjusted Using CPI for Inflation



Key Stakeholders

Key stakeholders that need to be engaged in the process:

- Community Leaders
- Parks and Recreation
- Burlington Historic Preservation Commission
- Neighborhood Residents
- Local Organizations
- Friends of Cascade Bridge
- Other?





City will provide some perspective on City-priority projects in the next five years.

Example Projects:

- Sewer
- Stormwater
- Parks
- Facilities
- Roads & Bridges
- Other Programs
- Other Infrastructure

Range of Outcomes



No Action



Leave in Place, Construct New Parallel Structure



Repair for Minimum Pedestrian Capacity



Repair for Minimum Vehicle Capacity



Rehabilitation (50-Year Life)



Demolition, No Reconstruction



Demolition, Reconstruction (100-Year Life)



Demolition, Reuse Spans for Trail System Elsewhere



Demolition, Construct Trail Segment to Park



Private Sector Purchase and Reconstruction

Example Cost for New Bridge

Mt. Pleasant Street Bridge

- 500 Feet Long (Cascade Bridge 450')
- Concrete Piers/Beams/Deck (Cascade will likely need steel beam for 200' span or rethink pier placement)
- Design and Construction Inspection Cost: \$700,000
- Construction Cost \$4,300,000
- Total Cost: \$5,000,000
- Other Cost Factors for Potential Cascade Bridge Replacement
 - Potential Historical Mitigation Costs for the bridge
 - The desire for incorporation of aesthetic/unique features
 - Additional width of structure for pedestrian use

National Historic Preservation Act

- Explanation of the National Historic Preservation Act
- What is Section 106 of the NHPA?
- Why does Section 106 apply to the alternatives being considered?
- Given the bridge is on the National Register of Historic Places can it be rehabilitated, altered, or demolished?
- What will the Iowa State Historical Society of Iowa (SHPO) require for the various alternatives?
- If the outcome is to significantly alter or demolish the bridge how might we Preserve the relevant important history or design associated with the structure?



DOT Act, Section 4(f)

If Federal funding is utilized for any of the alternatives, Department of Transportation (DOT) Act, Section 4(f) Requirements will apply (if “use” of resource).

- Directs Transportation agencies to avoid “use” of 4f properties
- Only allows “use” when no “feasible and prudent” alternatives are available
- 4f Bridge Programmatic Agreement (consider three alternatives)
 - No Action
 - Build on New Location without Using the Old Bridge
 - Rehabilitation Without Affecting the Historic Integrity of the Bridge

IAC 314.24: “Cities, counties and the department shall to the extent practicable preserve and protect the natural and historic heritage of the state in the design, construction, reconstruction, relocation, repair, or maintenance for roads, streets, or highways.”

Funding for Alternative Outcomes

- August 2019 Iowa Received \$33.4 Million in Bridge Grant Funding from U.S. DOT
 - Already allocated but can get Cascade in the mix for future Iowa applications.
- Federal Highway Bridge Program (HBP) (STBG-set-aside)
 - Bridge has a designation of Structurally Deficient or Functionally Obsolete, AND a Sufficiency Rating of 60 or less for replacement, or between 60 and 80 for rehabilitation.
- Farm- to-Market (FM) Funds
 - These funds are to be used for construction, reconstruction, or improvements to the FM Road System. South Main appears to be FM roadway.
- Federal-aid SWAP Highway Bridge Program (STBG set-aside)
- County and City Bridge Construction Fund
- Revitalize Iowa's Sound Economy (RISE)
 - Support Local Economic Development (50% Match)
- Private Sector Donations

HAER. N.P. 11A-50-1

Bridge Study Website

www.burlingtoncascadebridge.com

- Website is evolving information source
- Web page in the site for public to provide input
- Please visit the website!



Questions

NHPA Section 106 Process?

NEPA Process to position for federal grant funds?

Website content?



Definitions

Good (G), Fair (F), Poor(P): These terms are defined in accordance with the [Pavement and Bridge Condition Performance Measures final rule](#), published in January of 2017. Bridge Condition is determined by the lowest rating of National Bridge Inventory (NBI) condition ratings for Item 58 (Deck), Item 59 (Superstructure), Item 60 (Substructure), or Item 62 (Culvert). If the lowest rating is greater than or equal to 7, the bridge is classified as Good; **if it is less than or equal to 4, the classification is Poor**. Bridges rated 5 or 6 are classified as Fair.

Bridge Deck Area: This term is defined in accordance with the [Pavement and Bridge Condition Performance Measures final rule](#), published in January of 2017. Bridge Deck Area is determined by multiplying Length (NBI Item 49) by Width. If NBI Item 52 (Deck Width) is greater than zero, this value is used for Width in the calculation. If Item 52 is zero or null, as in cases where the roadway is on a fill over the structure and headwalls do not affect the flow of traffic, NBI Item 32 (Approach Roadway Width) is used for Width in the calculation. *For data prior to 2018, only Item 52 is used for Width in the calculation, regardless of its value.* Bridge Deck Area is shown in square meters.

Definitions

Structurally Deficient (SD): This term was previously defined in <https://www.fhwa.dot.gov/bridge/0650dsup.cfm> as having a condition rating of 4 or less for Item 58 (Deck), Item 59 (Superstructure), Item 60 (Substructure), or Item 62 (Culvert), OR having an appraisal rating of 2 or less for Item 67 (Structural Condition) or Item 71 (Waterway Adequacy) *Beginning with the 2018 data archive*, this term will be defined in accordance with the Pavement and Bridge Condition Performance Measures final rule, published in January of 2017, as a classification given to a bridge which has any component [Item 58, 59, 60, or 62] in Poor or worse condition [code of 4 or less].

Functionally Obsolete (FO): This term was previously defined in <https://www.fhwa.dot.gov/bridge/0650dsup.cfm> as having an appraisal rating of 3 or less for Item 68 (Deck Geometry), Item 69 (Underclearances), or Item 72 (Approach Roadway Alignment), OR having an appraisal rating of 3 for Item 67 (Structural Condition) or Item 71 (Waterway Adequacy). Functionally obsolete is a legacy classification that was used to implement the Highway Bridge Program, which was **discontinued with the enactment of MAP-21**. As a result, fiscal year 2015 was the last year outstanding Highway Bridge Program funds could be obligated on eligible projects, including ones with bridges that were once classified as functionally obsolete. Therefore, FHWA is no longer tracking this measure, and *will not be publishing it on our website for the 2016 data forward*. Our focus has shifted to a performance-based program as established in MAP-21 and continued in the Fast Act. As such, we encourage the use of the Good-Fair-Poor bridge condition measures outlined in the Pavement and Bridge Condition Performance Measures final rule, published in January of 2017.