Bridge Maintenance Training: Day 1 Review

Travis Kinney
Roman Aqueducts
St John’s Bridge

Portland Oregon - 1931

Main Span – 1207 Feet

Photo taken by Michael Goff
Rules of Orientation and Bridge Element Numbering

- Orientation: Look ahead at increasing mileposts or city street addresses.

- All bridge elements (girders, cross beam, columns, piles, etc.) are numbered in consecutive order from the leading end of the bridge and left to right.
Major Bridge Components

Deck

Girders

Bent Cap

Column

Foundation

Railing

Superstructure

Bearing

Substructure

Abutment

Wall
Cowboys and Heroes – Do you work with any of these individuals?
The craziest things happen --
Respirable Crystalline Silica

• Know the Rules
• Table 1
• Fatal Accidents happen very quickly
• Caused by “Legacy” practices
• Lack of Situational Awareness
shoring

RCDG or Steel vs PSDG

Bending Moment

Shear

Reversed Sign

75% More
shoring

RCDG or Steel vs PSDG

Bending Moment

Shear
Fixing America’s Surface Transportation Act (FAST)
## Bridge Inspection Report and Maintenance Recommendations Review

**New Bridge Element and Defect Language**

### CONDITON STATE 2

<table>
<thead>
<tr>
<th>Defects</th>
<th>CS1 (Good)</th>
<th>CS2 (Fair)</th>
<th>CS3 (Poor)</th>
<th>CS4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spalls/Disem- Patches (1080)</td>
<td>None</td>
<td>Delans / spalls &lt; 1&quot; deep or &lt; 6&quot; diameter Patches sound</td>
<td>Spall = 1&quot; deep or &gt; 6&quot; diameter Patches not sound</td>
<td></td>
</tr>
<tr>
<td>Softli Spalls/Disem/ Patches (1081)</td>
<td>See defect 1080</td>
<td>See defect 1080</td>
<td>See defect 1080</td>
<td></td>
</tr>
<tr>
<td>Exposed Conc. Rebar (1060)</td>
<td>None</td>
<td>Present w/o measurable section loss</td>
<td>Present with section loss</td>
<td></td>
</tr>
<tr>
<td>Efflorescence/ Rust Staining (1120)</td>
<td>None</td>
<td>White no build up rust stains or deck cracks effectively sealed</td>
<td>Heavy build-up with rust staining</td>
<td></td>
</tr>
<tr>
<td>Cracks (RC / Other) (1130)</td>
<td>&lt; 0.012&quot; or &gt; 3/8&quot; apart</td>
<td>0.012 - 0.05&quot; or 1/8-3/8&quot; apart or injected with epoxy</td>
<td>&gt; 0.05&quot; or &gt; 1/8&quot; apart</td>
<td></td>
</tr>
<tr>
<td>Softli Cracking (RC, FSC) (1131)</td>
<td>See defect 1130</td>
<td>See defect 1130</td>
<td>See defect 1130</td>
<td></td>
</tr>
<tr>
<td>Wheel Track Rutting (1181)</td>
<td>None</td>
<td>Wheel track nut patching present</td>
<td>Rutting is causing water to pond depth &gt; 1&quot;</td>
<td></td>
</tr>
<tr>
<td>Abrasion/Wear (1190)</td>
<td>None</td>
<td>Coarse aggregate exposed, but aggregate secure in concrete</td>
<td>Coarse aggregate loose or popped out</td>
<td></td>
</tr>
<tr>
<td>Distortion (1900)</td>
<td>None</td>
<td>Excess but no mitigation required or is mitigated</td>
<td>Excess Mitigation req'd</td>
<td></td>
</tr>
</tbody>
</table>
Good Prep Example:

- Full depth edges

- Good square shape

- Concrete removed ¾” min. below exposed rebar.
Epoxy Paint
What’s Missing???
Live Loads
Expansion Joints are...

A mechanical device in a bridge deck designed solely for the purpose of making a Bridge maintenance workers life miserable.
Failures
Debris
The Blue Book

ODOT’s Routine Road Maintenance Water Quality and Habitat Guide

• Started in 1999. The 2014 version is the 4th iteration. Updated every 5 years.

• An avenue for ODOT to gain protections against ESA take prohibition through performance of routine highway maintenance activities.

• Only covers non-federal actions (funding source, permits, land ownership).

• Covers ODOT Maintenance employees, their contractors and municipal partners (as long as ODOT staff are involved) when the BMPs are followed.
Bailey Parts

- Truss panels connect them with transoms and transom clamps.
- Panel pins & Pin clips
- Sway Bracing
- Frame Bracing
- Strings to support floor beam
- Timber planks & Curbs to hold floor boards
Assembling Launching Nose