Ohio Department of Transportation

Fracture Critical Member and Fatigue Prone Connection Identification Plan

Reference: ODOT Manual of Bridge Inspection, Part 1, Section 2.11

District: 2
County-Route-SLM Woo-64-1203
Structural File Number: 8702462
Access: 50’ Snooper between spans at end-bent openings, 32’ fiberglass ladder with outriggers from the river for the sidewalk LC, climbing all other members unreachable by snooper

Fatigue Life Study: Year of Study ____N/A____ Remaining Fatigue Life ____N/A____

Load Path Redundant: No, structure is fracture critical, inspect FCM’s every 24 months
Structurally Redundant: No, simple spans
Internally Redundant: No, although several members do offer some int. redundancy several lower-chord members only have 2 vertical plates

Location: The WOO-64-1203 Bridge spans the Maumee River east of Waterville, OH (Figure 2 next page). The bridge carries traffic on State Route 64 and also carries a sidewalk on the left side looking up station toward the town of Waterville.

Structure Description: This structure consists of 5 spans with a length of 846 feet and a maximum span of 167 feet. It carries 2 lanes of traffic with a 23.6 foot roadway width and a 31.9 foot overall width. The sidewalk is cantilevered over the left lower chord, fastened vertically at each outboard left truss gusset-plate and horizontally by two threaded bolts above the panel point. The average daily traffic for the bridge is 9,170 vehicles with average truck traffic of 270 vehicles (2006).
Figure 2 – Woo-64-1203; East end of Waterville in District 2 on the Wood and Lucas County border over the Maumee River

All floor beams are fracture critical members

Lower chords and diagonals are fracture critical members

Figure 3 – Highlighted red Floorbeams, Lowerchords and Diagonal tension members are fracture critical, symmetrical all spans
<table>
<thead>
<tr>
<th>Photo Reference</th>
<th>Category (R for Retrofit)</th>
<th>Distribution</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4a,b</td>
<td>E’</td>
<td>Widespread</td>
<td>Tack weld connection at Gusset Plate to Lower Chord flange plates</td>
</tr>
<tr>
<td>5</td>
<td>E’</td>
<td>Various Isolated</td>
<td>Welded brackets for stream monitoring spans 4 and 5</td>
</tr>
<tr>
<td>6</td>
<td>E’</td>
<td>Widespread</td>
<td>Termination end of cover plate underside of bottom flange on floor beams</td>
</tr>
<tr>
<td>7</td>
<td>E’</td>
<td>Various Isolated</td>
<td>Not on FCM: Vertical weld on fascia stringer web retrofit at end Floor beams (0 and 9)</td>
</tr>
<tr>
<td>8a,b</td>
<td>E</td>
<td>Widespread</td>
<td>Tack welds on web-plate diaphragms between lower chord flange plates (1 tack weld cracked through Span 4, right L6L7)</td>
</tr>
<tr>
<td>9</td>
<td>R</td>
<td>Various</td>
<td>Bolted plates over floorbeam fatigue cracks near truss connection underneath joints (Spans 1, 2, 3 at Floorbeam 0)</td>
</tr>
<tr>
<td>10a, b</td>
<td></td>
<td>Localized</td>
<td>Fatigue crack in floorbeam web above clip angle at inboard lower chord truss gusset plate</td>
</tr>
</tbody>
</table>

*Blank cells are for inspectors to add FPD’s, retrofits or fatigue crack locations in future inspections*
Figure 4a - Tack weld connection at Gusset Plate to Lower Chord flange plates

Figure 4b - Tack weld connection at Gusset Plate to Lower Chord flange plates
Figure 5 - Welded brackets for stream monitoring equipment in spans 4 and 5

Figure 6 - Termination end of cover plate underside of bottom flange on floor beams (note: B FPD along fillet weld)
Figure 7 - Vertical weld on right fascia stringer web retrofit at end Floor beams (0 and 9)

Figure 8a - Tack welds on web-plate diaphragms between lower chord flange plates
Figure 8b - Tack welds on web-plate diaphragms between lower chord flange plates. Location: Right truss span 4, L6L7, note crack around angle-fusion zone of tack weld

Figure 9 – Retrofit at floorbeam ends over fatigue cracks in floorbeam cope (FB 0 in Spans 1,2,3)
Figure 10a – Fatigue crack in floorbeam web above clip angle to inboard lower chord truss. 1-5/8” long on 8/6/09

Figure 10b – Fatigue crack in floorbeam web above clip angle to inboard lower chord truss. 1-5/8” long on 8/6/09