

Accommodating Deterioration In Load Rating Analysis

INDOT Bridge Inspection Conference

Jeremy Hunter, P.E.
Bridge Design and Load Rating Manager, INDOT
December 14th, 2016



Inspection for Load Rating: Check List

- **Check List @ :** <http://www.in.gov/dot/div/contracts/design/dmforms/>

- **Pre-Planning before inspection:**
 - Gather Plans, make field copies and sketches
 - Review Plans and familiarize with tension zones and critical areas
 - BIAS Bridge File review for existing load ratings, critical locations and condition ratings, previous section loss areas
 - Prepare tools and see what may be required like callipers, verniers, tilt gage or D-meter

- **During Inspection:**
 - Sketches:
 - Use Pre-prepared sketches or quick line drawings to record deterioration (LxWxD or t)
 - All sheets should have structure number, date, name of inspector and indicate span or location
 - Photos:
 - Take at least two clear photos of deterioration, one close up and one farther away (Can print , annotate and scan or use i-pad with some apps for dimensioning)
 - Consider placing a coin, pencil, etc. in the picture to give reference on the size of the defect



Inspection for Load Rating: Check List

- **Check List @ :** <http://www.in.gov/dot/div/contracts/design/dmforms/>
- **What to look for ?:**
 - General
 - Smoothness of the Road approach onto the bridge (Impact from trucks)
 - Substructure
 - Loss of Bearing Area
 - Exposed Pile Deterioration
 - Steel Bridges
 - Section Loss measurement (L x W x D or t) or % loss (material left/original material)
 - Cracks : (L x W), location
 - Check for repeat condition
 - Check for pack rust, out of plane bending, weld cracks, retrofit deterioration
 - Corrosion and previous vehicle impact areas
 - Document in notes and sketches
 - Concrete Bridges
 - Check for section loss (L x W x D or t) or delamination/unsound concrete (L x W)
 - Check for cracks (L x W), location
 - Sound concrete and establish delaminated areas (Lx W)
 - Check for exposed rebar and section loss
 - Document in notes and sketches



Inspection for Load Rating: Check List

- **Check List @ :** <http://www.in.gov/dot/div/contracts/design/dmforms/>
- **What to look for ?:**
 - Prestressed concrete bridges
 - Check for longitudinal cracks at bottom and sides of beam (L x W, location, condition)
 - Check for vertical cracks at ends of beam (L x W, location, condition)
 - Check for cracks/spalls/rust stains/water seepage or stains, efflorescence (L x W x D)
 - Check for repeat condition (Are cracks appearing on all beams or focused at ends?)
 - Check for Beam Sag
 - Check for broken strands, vehicle impact and unsound concrete
 - Document in notes and sketches
 - Trusses
 - Check for section loss (L x W x D or t) or delamination/unsound concrete (L x W)
 - Check for cracks (L x W), at all steel components
 - Check Gusset plates and connections
 - Document Rivet Head Section Loss / Hammer Sound Rivets
 - Document in notes and sketches

