**MOVABLE BRIDGE MECHANICAL INSPECTION REPORT**

Wisconsin Department of Transportation

DT2017 6/2017 s.84.17 Wis. Stats.

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| --- | --- |
| Bridge Number | Overall Rating of Mechanical System |
| Bridge Name | Date Inspected |
| Lead Mechanical Inspector | Weather |
| Inspection Team Leader |  |

Notes:

* This form provides specific inspection detail in conjunction with the items provided in the HSI Movable Inspection Tab. While there may be some overlap with the routine inspection, updates to the Elements and Assessments Inspections Tabs are not necessarily required.
* Place comments in each box next to the component inspected.
* For each component rating, enter “(1)” for Good, “(2)” for Fair, “(3)” for Poor, or “(4)” for Severe.
* If the component does not apply to this bridge enter “NA”.
* Include a comment and photo reference documenting any components rated (3) or (4).

**Open Gearing** Component Rating:

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| --- | --- |
| **Component** | **Finding/Comment** |
| **Gear Reduction Sets** – Check grease patterns for signs of misalignment. Inspect teeth surfaces for deterioration, wear or cracks. Check for proper alignment of pitch-lines, if present. Check gear alignment. If there is substantial misalignment, also check associated shaft bearing clearances and fasteners on bearing supports. |  |
| **Rack and Pinion Systems** – Check grease patterns for signs of misalignment. Inspect teeth for deterioration, wear or cracks. Check for proper alignment of pitch-lines and backlash between rack & pinion teeth over full length of operation. |  |

**Enclosed Gearing** Component Rating:

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| **Component** | **Finding/Comment** |
| **Gear Alignment and Wear** – Visually inspect gearing through inspection ports. Inspect gearbox supports for cracks or deterioration. Check bolting of gearbox to supports for tightness. Operate bridge and listen for abnormal noises in gearbox. Check gearbox seals for leaks. |  |
| **Condition of Oil** – Check oil level in gearbox. Visually inspect condition of oil in gear box. Alternately, sample oil for testing and attach test report when later received. |  |

**Bearings** Component Rating:

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| --- | --- |
| **Component** | **Finding/Comment** |
| **Sleeve Bearings** – Inspect for cracks, damage or deterioration. Check bolts for tightness. Operate and check for any unusual noises, movement or excessive heat. Measure and record clearances between shaft and bushing using sleeve bearing inspection form and attach to this report (Every five years, unless there is an issue indicated by noise, excessive heat, in notes from previous inspections, etc.). |  |
| **Anti-Friction Bearings** – Inspect for cracks, damage or deterioration. Check bolts for tightness. Operate bridge and check for any unusual noises, movement or excessive heat. If possible open housing and visually inspect rollers and races. Check for internal contamination. |  |
| **Trunnion Shafts and Bearings** – Inspect for cracks, damage or deterioration. Check bolts for tightness. Operate and check for any unusual noises, movement or excessive heat. Measure and record clearance between shaft and bushing using sleeve bearing inspection form and attach to this report. (Every five years, unless there is an issue indicated by noise, excessive heat, in notes from previous inspections, etc.). Inspect grease for contaminants. |  |
| **Bearing Lubrication** – While pumping lubricant into bearing, check that lubricant is exiting bearing properly. Check expelled lubricant for signs of contamination. |  |

**Shafts and Couplings** Component Rating:

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| **Component** | **Finding/Comment** |
| **Shafts** – Inspect keyways and shoulders for cracks. Check for corrosion. Operate and observe shafts for excessive movements or vibration. |  |
| **Couplings** – Inspect keyways for cracks. Check for corrosion. Check flange bolts for tightness. Operate and observe for smooth rotation or excessive noise. For flexible couplings inspect for leakage. If possible check couplings for proper lubrication. Observe joint between coupling hub and shaft for evidence of movement (coupling should have tight fit on shaft). |  |

**Buffer Cylinders** Component Rating:

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| --- | --- |
| **Component** | **Finding/Comment** |
| **Buffer Cylinders** – Inspect exterior housing for deterioration. Check mounting bolts. Operate bridge and observe piston for full movement. Listen for air leakage during operation. |  |

**Live Load Bearings** Component Rating:

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| **Component** | **Finding/Comment** |
| **Live Load Bearings** – Check mounting bolts for tightness. Check bolts and shims for deterioration. Inspect contact surfaces for wear. Inspect for full continuous contact between sole plate and bearing plate under live load. |  |

**Span Balance** Component Rating:

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| --- | --- |
| **Component** | **Finding/Comment** |
| **Span Balance** – Check state of balance of bascule leaves in all positions of opening by observing engagement of meshed rack and pinion teeth. Observe direction each bascule leaf tends to drift after stopping leaf in various positions of opening and releasing brakes. Observe and note the difference in amperage readings for power to main drive motors during opening and closing at various positions of opening. |  |

**Span Locks and Supports** Component Rating:

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| **Component** | **Finding/Comment** |
| **Scherzer Center Locks** – Inspect for proper lubrication. Check for cracks or damage. Check mounting bolts for tightness. Check for movement when heavy vehicles cross bridge. Check for uneven or excessive wear on sides of jaws and mating surfaces of diaphragm. Measure and record depth and width of diaphragm castings and distances between mating jaw surfaces. Listen to and observe center locks during opening and closing of bridge. |  |
| **Mechanical Center Locks** – Inspect for proper lubrication. Check for cracks or damage. Check mounting bolts for tightness. Check for movement under traffic, operate locks and check for proper alignment and operation. Inspect lock-bars and receivers for excessive wear. Measure and record clearances between lock-bars, guides and receivers. |  |
| **Rear Locks and Toe Locks** – Inspect for proper lubrication. Check for cracks or damage. Check mounting bolts for tightness. Check for movement under traffic, operate locks and check for proper alignment and operation. Inspect lock-bars, guides, and receivers for excessive wear. Measure and record clearances between lock-bars, guides and receivers. In the driven position, single unit rear lock struts should have a slight gap (1/8” max) between their nose and the strike plate attached to the bottom flange of the bascule girder to avoid binding. Jointed struts designed to preload the girder tail when driven, should be tight against the strike plate. |  |
| **Live Load Uplift Supports/Live Load Shoes** – Confirm fully seating with no gaps when bridge is in closed position and center/toe locks are driven. Confirm no movement at supports when traffic crosses bridge. Check for corrosion, pack rust or debris at uplift support members, bearing plates, and shims. Check that all connecting bolts are in place for the bearing plates. |  |
| **Brakes** – Verify the sole plate is held tight to the uplift girder. |  |

**Treads and Tracks** Component Rating:

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| **Component** | **Finding/Comment** |
| Check tread and track surfaces – they should be clean and free of lubricant and debris. Check sides of receiving pockets of treads and mating faces of alignment lugs of tracks for excessive wear or cracks. Check mounting bolts of treads for tightness. Check keyways of treads for cracks and verify keys are tights and in-tact. During operation check for unusual noise or movement. Check for any missing bolt heads or nuts. |  |

**Emergency Backup Mechanical Drive System** Component Rating:

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| **Component** | **Finding/Comment** |
| Test operate emergency drive system and confirm all elements operate smoothly. |  |

**Safety, Debris Guards & Cleanliness** Component Rating:

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| **Component** | **Finding/Comment** |
| Check condition of guards. Note any unsafe conditions or debris. Note general lack of cleanliness. |  |

**Generator Maintenance** Component Rating:

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| **Component** | **Finding/Comment** |
| **Engine Oil** – Check condition and level. |  |
| **Radiator Coolant** – Check level. Check for visible signs of any contamination or deterioration. |  |
| **Fuel** – Check level. Check for visible signs of any contamination or deterioration. (for gasoline/diesel). |  |
| **Exhaust System** – Verify exhaust evacuates room quickly. Verify no exhaust leakage into room for system directly piped to outside. |  |
| **Overall condition** – Inspect housing, fuel tank and batteries for damage, leakage or corrosion. |  |

**Additional Mechanical Component:**  Component Rating:

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**Recommended Short Term Actions & Repairs for Mechanical System:**

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**Recommended Long Term Rehabilitation Needs for Mechanical System:**

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**General Remarks – Mechanical** Overall Rating:

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**SLEEVE BEARINGS**

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| Bridge Number | Inspected By |
| Bridge Name | Date |

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| Bearing I.D. | Journal Diameter | Diametral Clearance | | | Lube Condition | Remarks |
| Recom’d Range | Measured Max | Evaluation |
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