1. Committee and Subcommittee:

AREMA C&S Committee 38

2. Letter Ballot Number: 38 20-02

3. Assignment:

MP's revised at Spring ‘20 meeting.

4. Ballot Item:

Ballot 38 20-02: This ballot contains the MP approved at the Spring ‘20 meeting:

- 05.01.25 Recommended Functional/Operating Guidelines for a Flat Wheel Detector

5. Rationale:

Revised Manual Parts
A. **Purpose**

This Manual Part recommends functional/operating guidelines for a flat wheel detector.

B. **General**


3. System and its mounting assembly shall not cause the rails to become grounded or shorted together.

4. System shall not interfere with or be adversely affected by track circuits and shall not carry the track circuit around a broken rail.

5. Wheel detectors, if required, shall conform to Manual Part 5.1.50 Recommended Functional/Operating Guidelines for a Rail or Tie Mounted Wheel Detector.

C. **Environmental Requirements**

1. System shall conform to Manual Part 11.5.1 Recommended Environmental Requirements for Electrical and Electronic Railroad Signal System Equipment, Class B.

2. System shall operate properly without producing false alarms and shall be undamaged when exposed to shock and vibration of normal railroad operations.

3. System should be designed to minimize the effects of weather variations, including rain, snow and ice, without requiring adjustments to compensate.
for the weather, and should be so designed to minimize the effects of ice or
packed snow on its operation.

3. System should not be damaged by oils, grease, water, salt solution and
other chemicals found in a railroad environment.

D. Mechanical Design

1. System, if rail mounted, should be capable of fitting and operating on the
various rail sections specified by the AREMA Manual for Railway
Engineering or by the railroad.

2. System should not infringe upon AREMA or other applicable track
clearances or any other clearance requirements as specified by the railroad.

3. Method used to fasten equipment to rail, tie or ballast should be designed
to withstand the vibration and shock that could cause unit to become loose.

4. Where bolt holes are required in the web of the rail, hole diameter required
should, where practicable, be made with a three-eighths inch drill bit.
conforming to Manual Part 8.6.25 Recommended Instructions for Drilling
3/8-inch Rail Bond Holes or Track Connector Holes. Holes should not
exceed 0.55 inch (13.97 mm) in diameter. Holes should be drilled such that
the hole center line is on or within 0.5 inch (12.70 mm) of the neutral axis
of the rail. Bolts should be Society of Automotive Engineers (SAE) grade
five or higher.

5. System should be designed to minimize any damage caused by dragging
equipment.

6. System should be designed to permit quick replacement of any major
components during all weather conditions.

7. System should be designed to permit quick alignment and
calibration during all weather conditions.

E. Operation

1. System should incorporate a sensitivity adjustment that detects defects on
wheel treads (See Field Manual of the AAR Interchange Rules, Rule No.
41).
2. System should operate properly on all sizes and types of railroad car wheels, locomotive wheels, and axle spacing on both loaded and unloaded cars, as specified by the manufacturer.

3. System should provide repeatable defect detection when track structure and systems are maintained within limits as specified by the manufacturer.

4. System should be capable of inspecting wheels on both sides of the car or locomotive.

5. System should provide a suitable output for each wheel which is detected to have a defect.

6. System should operate for trains moving in both directions.

7. System should be automatic and permit unattended operation.

8. System shall operate for train speeds that have been as specified by the manufacturer.

9. System should be provided with a self-check feature for detection of failures that would prevent proper operation. A system failure output should be provided.

10. System should be designed so that hunting or skewed trucks will not cause false alarms or missed defects.

11. System should provide output(s) for data storage and retrieval.

12. System should be designed to interface with train presence device.

13. System should be capable of indicating the location, by axle number from head of train, of any alarmed wheel.

14. System should be designed for either stand-alone use or to allow interface with other wayside equipment.

15. System should be able to consume AEI data in order to provide car number and wheel position with axle event of flat wheel.