

Defect Detector Upgrades

Project Description

The Alaska Railroad Corporation (ARRC) will upgrade defect detectors at 45 sites along the rail line from ARRC milepost 3.5 (near Seward) to milepost 456.2 (near Fairbanks). ARRC crews will remove the old detector, install a new detector, and replace associated equipment inside signal huts. Twenty-two (22) defect detector locations will have end of life drag detectors and talker radios replaced and will gain a weather station. Nineteen (19) Detector sites between MP 18.4 and MP 456.2 will receive additional hardware that will assist in implementing a network wide wayside health management system. The wayside health management system (WHMS) will allow all of the detector sites to be remotely monitored to ensure each location is operating as designed. Sites at milepost 128 (north of Anchorage) and milepost 42.2 (south of Grandview) will receive talker-only

upgrades. Mileposts 3.5 (Seward) and 113 (south of Anchorage) will receive upgrades to the automatic equipment identification (AEI) systems. The existing wheel impact load detector at MP 121.3 Milepost 124.2 will be relocated to MP 124.2 and upgraded with new equipment. The existing detector site at milepost 88.7 near Indian will be relocated to milepost 89 and upgraded with all new detector equipment.

Defect detectors are installed in-track to monitor train traffic as it moves through the detector site. If a locomotive or railcar is identified as operating outside established tolerances (i.e. dragging a component, temperature, alignment, etc.), the defect detector provides an automated alert. Talker modules convert detector data messages/alerts into a robotic voice notification that is broadcast over radios for train crews and dispatch to hear and take action, if needed.



Pictured, an existing detector site along the Alaska Railroad. The 45 sites receiving upgrades with locations can be viewed on the map on page 2.

PROJECT FACTS

Over the years, ARRC has installed existing detectors primarily where there was derailment concern or where derailments had occurred in the past rather than a wholistic approach that addresses the entire defect detector network. This project is a continuation of a phased plan to upgrade the railroad's defect detection systems to enhance railroad operational safety. This phase of the defect detector upgrade program prioritizes upgrading end of life equipment in order to modernize a segment of detectors that are critical to railroad operations.

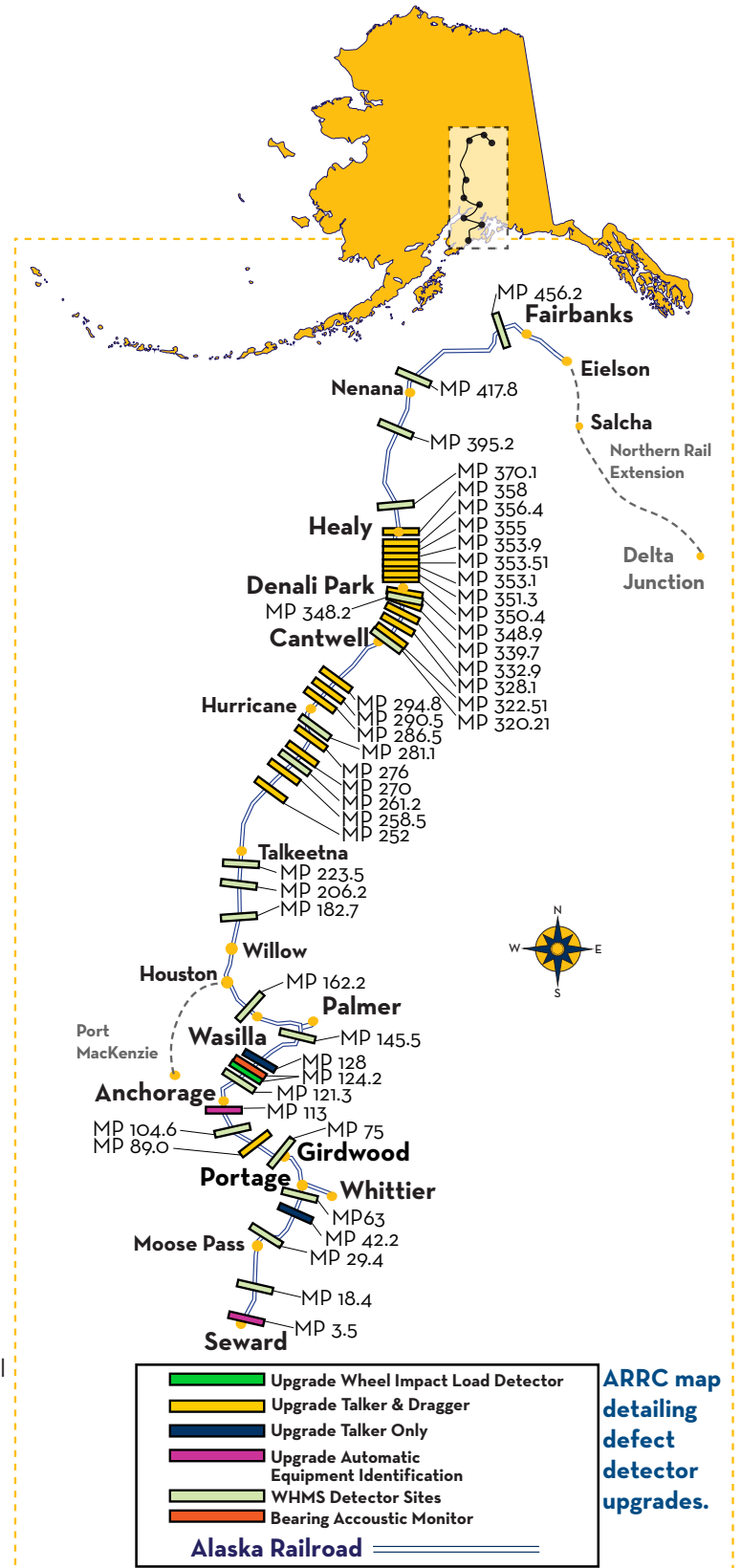
Purpose and Benefits

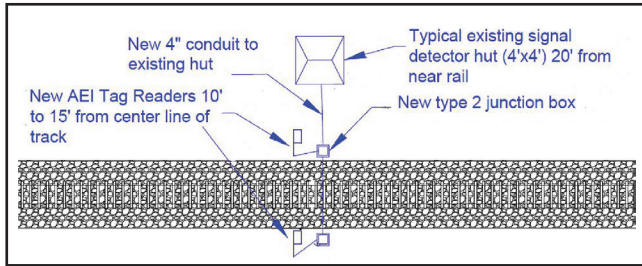
Defect detector replacement improves monitoring capability within the mainline passenger operating area, benefitting train operations, and the safety of employees and the traveling public. The project upgrades defect detection, communication and notification systems using modern defect detector technology. Adding weather stations provides further site safety information.

- Maximizes monitoring system accuracy, lowering the risk that flaws might go unnoticed.
- Improves reliability by replacing obsolete equipment. Aging detector equipment is at the end of their useful lives, and repairs are difficult, if not impossible, due to parts scarcity.
- Decreases maintenance costs, with significantly less upkeep needed for many years.
- Weather information may help identify potential problems, such as rail temperature issues.

Status

- In 2021-2022, ARRC contracted to have an end-to-end assessment of the railroad's detector network, to include the condition of existing monitoring equipment and notification processes. Assessment recommendations include end of life defect detector replacements.
- Environmental review required by the National Environmental Policy Act (NEPA) is underway. NEPA approval was received for an initial eleven (11) sites in 2023. Completed NEPA documentation (categorical exclusion) will be submitted to the Federal Transit Administration (FTA) for review in spring 2024.
- Pending NEPA and funding approval by FTA, final design and engineering are tentatively expected to proceed during summer 2024.
- Using internal forces, construction is tentatively scheduled to begin during in the third quarter of 2024, and continue through to completion by year-end 2024.





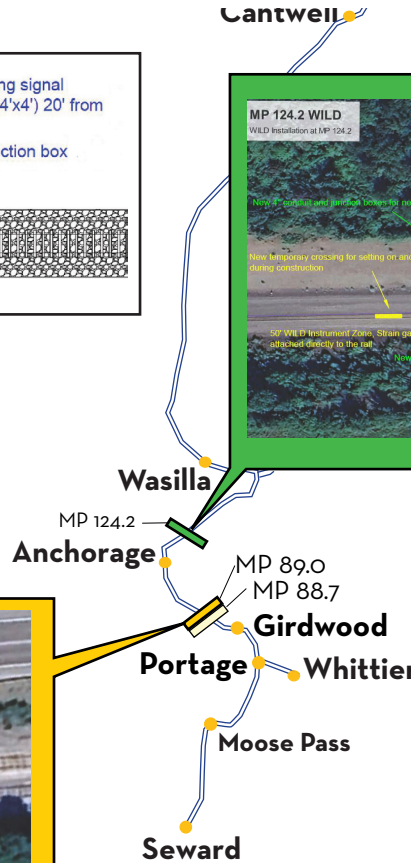
The figure above details a typical Automatic Equipment Identification (AEI) upgrade.



Photo above details MP 124.2 wheel impact load detector (WILD).



The detector site currently located at MP 88.7 (near Indian) will be relocated to MP 89.0 and receive upgrades to its talker and dragger.



	Upgrade Wheel Impact Load Detector
	Upgrade Talker & Dragger
	Upgrade Talker Only
	Upgrade Automatic Equipment Identification
	WHMS Detector Sites

Alaska Railroad

Cost and Funding

The 2021-2022 assessment cost of \$500,000 was funded by Coronavirus Aid, Relief and Economic Security (CARES) Act grant money, which did not require a cash match.

The 2024 defect detector program is estimated to cost approximately \$1.5 million and will be funded through FTA formula grant money, and includes a 20% required match from ARRC.

More Information

For more project information or to provide comments about this program, email the Alaska Railroad at Public_Comment@akrr.com.