Track Rehabilitation

**Project Scope**

The Alaska Railroad (ARRC) continues an ongoing track rehabilitation program in 2021 to upgrade the main line, sidings and yards from Seward to Fairbanks. The program calls for replacing rail, ties and ballast in areas of critical need. For engineering / maintenance purposes, ARRC divides the main line into three districts:

- MP 0 (Seward) to MP 117 (Anchorage Yard)
- MP 117 - MP 345 (north of Montana Siding and south of Denali Park)
- MP 345 - Eielson AFB

**Project Cost and Funding**

The 2021 capital track rehabilitation budget is approximately $19 million, with $13.45 funded by the 2020 Coronavirus Aid, Relief, and Economic Security Act (CARES Act), $4.35 million funded by Federal Transit Administration (FTA) grants (80% FTA and 20% ARRC), and with $1.1 million from internal ARRC funds. Another $500,000 of ARRC funds is budgeted for rip-rap embankment and drainage improvements, $500,000 for yard/branch improvements, and $520,000 to rehabilitate and replace culverts. Funding supports:

- Replacing wood ties
- Track bed surfacing
- Yard improvements
- Drainage improvements (culvert repair)
- Embankment fortification
- Rail relay (replacing worn rail) and gauging rail
- Tie and rail pick-up and clean-up
- Removal and replacement of fouled ballast (contract)

**Rail Program**

Rail is replaced when it has worn away in curves, or become severely battered in tangent sections. The 2021 Rail Program consists of:

- replacing 17,500 feet of rail on the Fairbanks Airport Branch
- replacing 7,200 feet of rail in the Anchorage Yard

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*Left: A tie crane operator positions a new tie during tie replacement operations. Right: Rail replacement operations. (Photos by Judy Patrick)*
• replacing 24,000 feet of rail through the Whittier Tunnel (District 1)
• gauging (maintaining the correct distance between the rails) along 27,000 feet of rail within District 2
• clean-up and pick-up from prior years.

**Tie Program**

The 2021 Tie Program calls for installing up to 35,000 wood cross ties on the main line track, on branch lines and within yards. ARRC tracks include nearly 2 million ties. Since 1996, ARRC has replaced nearly half (about 1 million) ties. Heavy tie renewals in the late 1990s resolved critical main track issues; however, the tie population is generally old, so continual renewals are needed to keep up with the ongoing loss of older ties.

**Ballast Surfacing**

The bed of a railroad track is comprised of several layers. The top layer is called ballast, which is made up of small, jagged rocks that fit snugly together, forming a stable bed that can withstand the tremendous weight of a train while still providing drainage. The 2021 Ballast and Surfacing Program will use about 45 tons of ballast rock. About 180 track miles of surfacing will occur in all districts, as needed, and follows tie replacement efforts.

**Shoulder and Embankment**

ARRC pursues shoulder maintenance to enhance track safety via embankment support. In areas susceptible to high water events, ARRC may fortify the embankment by installing rip-rap and armor rock. Culverts provide drainage from one side of the embankment to the other side. Culverts are extended, repaired or replaced as needed.

Rip-rap and armor rock are placed along the Susitna River.

A tie remover inserter has powerful mechanized arms (close-up, right) that can extract old, and install new, ties from either side.