

Bridge Program

Project Scope

The Alaska Railroad (ARRC) 500-plus miles of mainline and branch track includes 175 bridges and large culverts (10 or more feet in diameter) that cross barriers ranging from streams to gulches. Railroad bridges may be constructed from steel, concrete, wood or a combination of materials, with different span types included in a single bridge.

The ARRC Bridge Program identifies structures requiring upgrade, overhaul or replacement. In pursuit of this program, ARRC's current 5-year plan calls for more than 30 bridges to be replaced or rehabilitated by internal and contract workers. In addition to these large projects, ARRC's bridge crews accomplish annual repair, rehabilitation and reconstruction activities to ensure bridge structures continue to safely support ARRC operations.

Some of the existing railroad bridges have been identified as eligible, or potentially eligible, for the National Register of Historical Places, either individually or as contributing elements to a potential historic district. As necessary, ARRC will consult with the Alaska Office of History and Archaeology (OHA)/State Historic Preservation Officer (SHPO).

Need, Purpose and Benefits

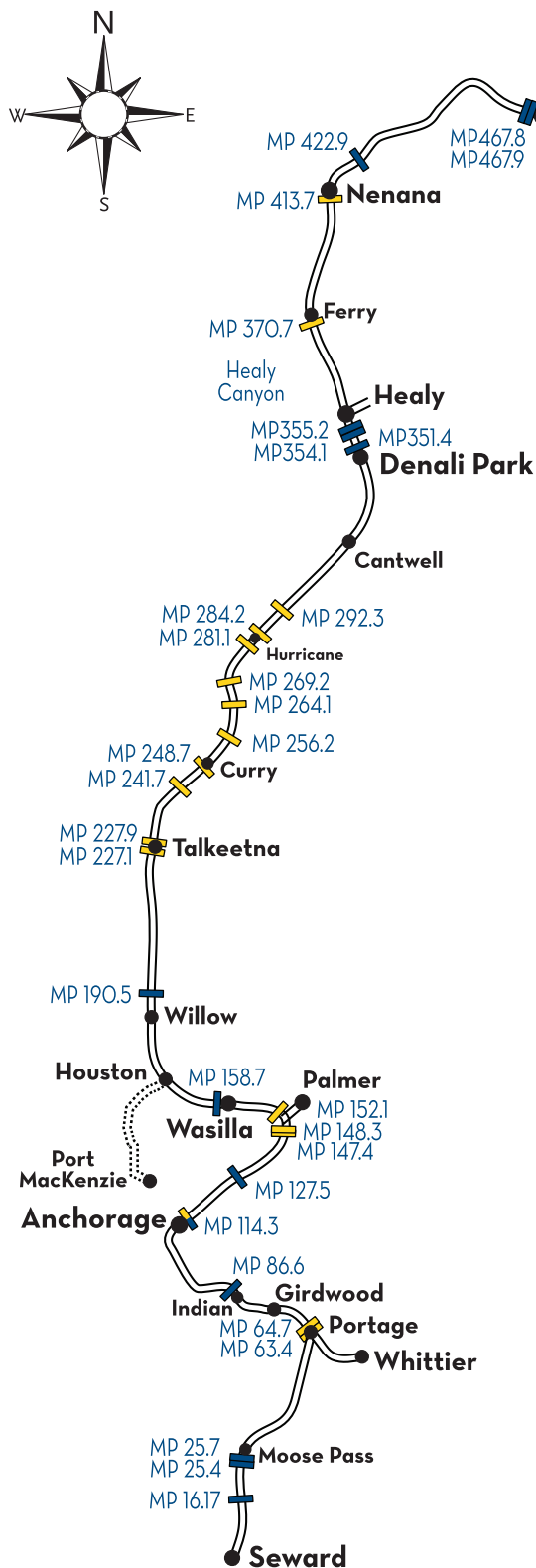
The ARRC Bridge Program focuses on infrastructure integrity that underpins safe, reliable railroad transportation services. The Alaska Railroad operates over the oldest transportation infrastructure in the state. Many rail system bridges were constructed decades ago. The ARRC Bridge Program pursues heavy maintenance, rehabilitation and replacement to maintain bridges in a state of good repair.

Program activities will address operational efficiency. ARRC is forced to slow train speeds due to bridge age and deterioration. ARRC must also perform more preventive maintenance and repairs in order to keep older bridges in safe and serviceable condition.

Existing rail bridge limitations also render the Alaska Railroad's freight business more costly to operate. ARRC must consistently limit loads on railcars



Top-right: The triple-span pony truss bridge at MP 351.4 will be replaced with a triple-span deck plate girder bridge. Inset photo: geotechnical work is performed on site, as part of the environmental and engineering work for Bridge 351.4.



The deck girder bridge at MP 127.5 over Eagle River will be replaced with a deck plate girder bridge.

in order to accommodate rail bridge weight capacity that is significantly lower than the rest of North America's rail freight network.

Program Benefits

The ARRC Bridge Program's multi-year plans strengthen bridge infrastructure over time, while annual rehabilitation activities address high priority projects identified through inspections and other ongoing preventive maintenance activities. Benefits from these concurrent efforts include:

- Maintaining components that wear over time improves operating safety, ensuring bridge assets remain in a state of good repair, able to fulfill their intended useful life in a safe and reliable manner.
- Replacing 50-year-old timber bridges and bridge components addresses maintenance and safety concerns.
- Efficiency of railroad operations will improve as trains move at consistent speeds, when no longer required to slow while traveling over bridges.
- Rehabilitated and rebuilt bridges are in better condition, requiring less maintenance to remain in service, thus lowering overall maintenance expense.
- Reinforcing or upgrading bridges and/or their components will meet increasing load demands of a more modern, yet larger and heavier, fleet of locomotives and trains. Increased bridge weight-bearing capacity will eventually enable ARRC trains to match industry norms for car loading capacity.

Project Cost and Funding

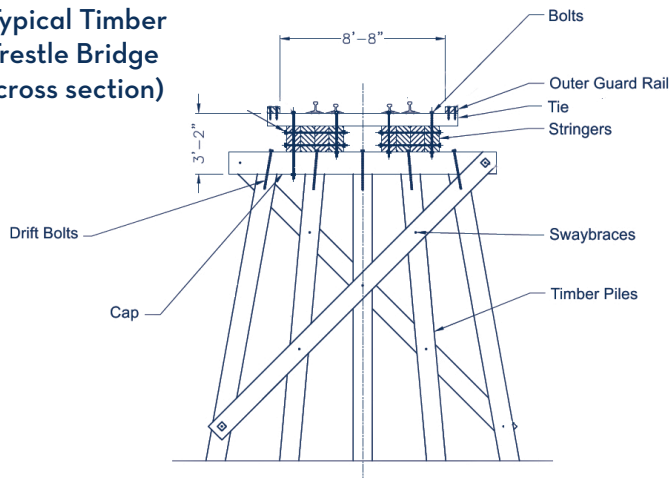
The ARRC's 2022 Bridge Program budget is just under \$40 million.

Most projects are funded with Federal Transit Administration (FTA) grant money, to include \$21.06 million in current year grants, \$650,000 from prior year grants, and a required 20% match from ARRC. Another \$12.22 million comes from the 2020 Coronavirus Aid, Relief, and Economic Security (CARES) Act funds, which do not require a matching contribution.

In addition to providing grant-matching funds, ARRC has budgeted another \$6.06 million in internally generated funds to support the bridge program.

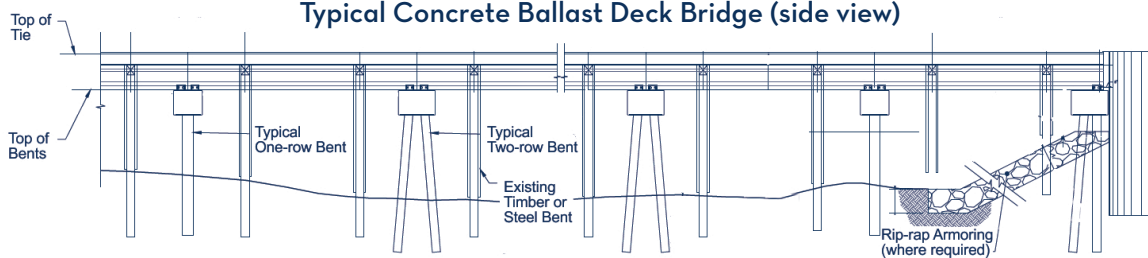
	Bridge Rehabilitation or Repair
	Bridge Replacement or New Construction

Typical Timber Trestle Bridge (cross section)



Above: The timber trestle bridge at MP 25.4 over Falls Creek is being replaced with a four-span concrete ballast deck bridge (see drawing at left for reference).

Typical Concrete Ballast Deck Bridge (side view)



2022 Bridge Program Projects

Below, bridge project location is noted by milepost (MP) along the ARRC main line (or branch line, if indicated), then by the geographic feature the bridge crosses, and then by the closest community. Following location is a brief description of proposed replacement or rehabilitation work.

Scheduled work is subject to change due to funding availability, operations considerations and evolving priorities.

Rehabilitation and Repair Projects

- **MP 147.4** (Matanuska Flood Plain between Wasilla and Palmer) – replace the north concrete pier on the triple-span 179-foot thru-girder / I-beam deck bridge.
- Repair or replace rivets, diaphragms, bearings, seats, ties, plates, guard rail, signage, bracing and other elements at various bridges throughout the system, including:
 - **MP 63.4** (Portage Creek in Portage)
 - **MP 64.7** (Twentymile River just north of Portage)
 - **MP 114.3** (Ship Creek in the Anchorage Rail Yard)
 - **MP 148.3** (Matanuska River near Palmer Branch juncture)
 - **MP 152.1** (Spring Creek near Palmer Branch juncture)
 - **MP 227.1** (Talkeetna River, in Talkeetna)
 - **MP 227.9** (Billion Slough in Talkeetna)
 - **MP 241.7** (Lane Creek 7 miles south of Curry)

- **MP 248.7** (Deadhorse Creek at Curry)
- **MP 256.2** (gully, 8 miles north of Curry)
- **MP 264.1** (Big Susitna River, 16 miles north of Curry)
- **MP 269.2** (Indian River, 12 miles south of Hurricane)
- **MP 281.1** (Granite Creek at Hurricane Siding)
- **MP 292.3** (Chulitna River, 10 miles north of Hurricane)
- **MP 370.7** (Nenana River near Ferry)
- **MP 413.7** (Tanana River in Nenana)

Replacement Projects

- **MP 16.17** (Snow River flood basin 9 miles south of Moose Pass) – construct a new 70-foot timber bridge on steel bents to address biennial flooding.
- **MP 25.4** (Falls Creek in Crown Point) – replace the eight-span 120-foot timber deck bridge with a concrete ballast deck bridge comprised of four 28-foot spans.
- **MP 25.7** (Lower Trail Lake in Crown Point) – replace the 360-foot timber deck bridge with a steel beam bridge comprised of twenty-four 15-foot spans.
- **MP 86.6** (Bird Creek near Indian) – replace the 123-foot pony truss bridge and two 14-foot timber trestles with a 125-foot thru-plate girder span bridge and two 14-foot steel beam spans.

PROJECT FACTS

- **MP 114.3** (*Ship Creek in the Anchorage Rail Yard*) – replace the 123-foot pony truss bridge with a bridge determined to be best-suited via the environmental process.
- **MP 127.5** (*Eagle River north of Joint Base Elmendorf-Richardson*) – replace a five-span 308-foot deck girder bridge, with a 400-foot steel beam bridge comprised of a 70-foot and two 165-foot spans.
- **MP 158.7** (*Cottonwood Creek in Wasilla*) – replace the six-span 84-foot timber trestle bridge with a bridge determined to be best-suited via the environmental process.
- **MP 190.5** (*Little Willow Creek north of Willow*) – replace the single-span 80-foot deck plate girder bridge with a 125-foot deck plate with thru-plate girder bridge.
- **MP 351.4** (*gully / creek just north of Denali Park entrance*) – replace the triple-span 369-foot pony truss bridge with a triple-span 360-foot deck plate girder bridge.
- **MP 354.1** (*Bison Gulch about 5 miles south of Healy*) – replace a 123-foot pony truss and two 31-foot I-beam bridge with a bridge determined to be best-suited via the environmental process.
- **MP 355.2** (*gully / creek about 4 miles south of Healy*) – replace a 123-foot pony truss bridge and a 14-foot timber trestle with a bridge determined to be best-suited via the environmental process.



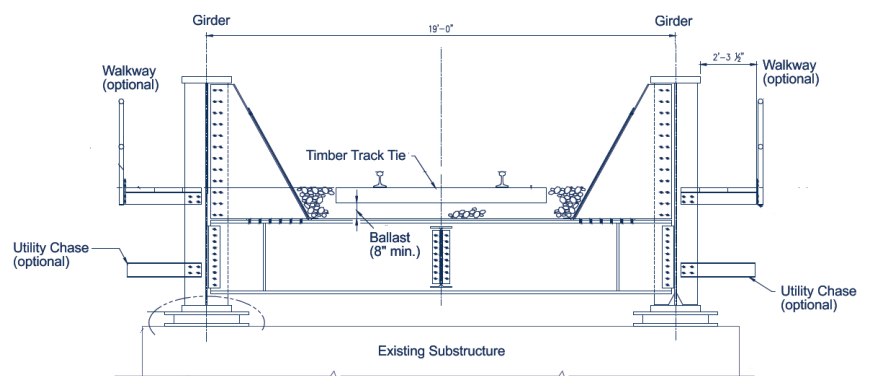
Crews weld steel components on a replacement bridge at MP F9.4.

- **MP422.9** (*Little Goldstream Creek about 10 miles north of Nenana*) – replace a single-span 62-foot thru-girder bridge with a bridge determined to be best-suited via the environmental process.
- **MP 467.8** (*Noyes Slough flood area near the Fairbanks Rail Yard*) – replace a seven-span 98-foot timber deck bridge with a bridge determined to be best-suited via the environmental process..
- **MP 467.9** (*Noyes Slough at the west end of the Fairbanks Rail Yard*) – replace a 336-foot bridge comprised of one thru-truss, one I-beam and 13 timber trestles with a bridge deemed best-suited via the environmental process.



Above: The pony truss and timber trestle bridge at MP 86.6 over Bird Creek will be replaced with a bridge comprised of two steel beam spans and a thru-plate girder span (see drawings at right for reference).

Typical Thru-Plate Girder Bridge (cross section)



Typical Thru-Plate Girder Bridge (side view)

