

**APPENDIX D**  
**BRIDGE REHABILITATION DESCRIPTION**

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# NLX High Speed Passenger Rail Project from Minneapolis to Duluth

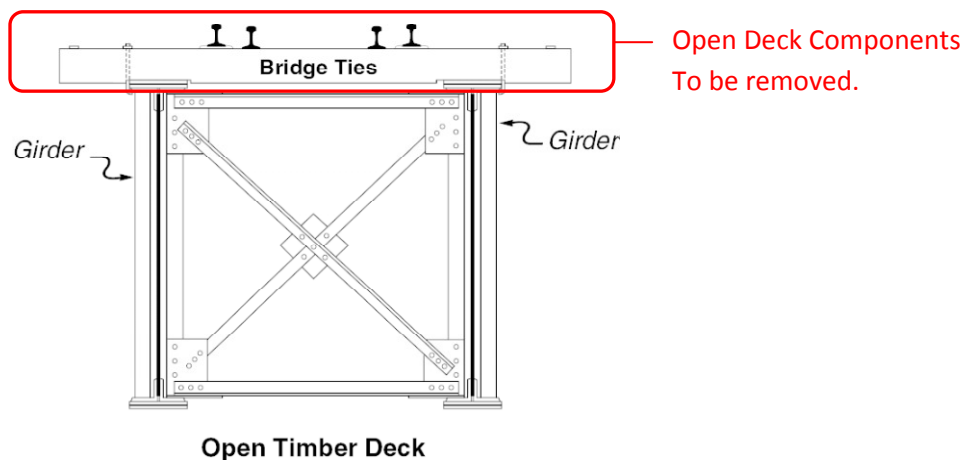
## Railroad Bridge Rehabilitation: Open Deck to Ballasted Deck

### Purpose:

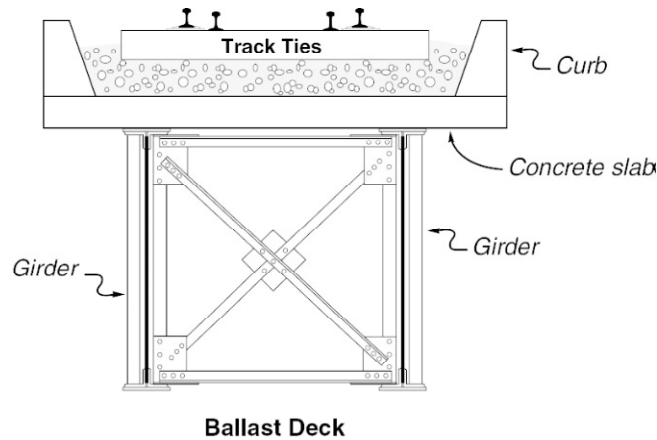
Numerous open deck bridges are in use along this rail corridor, typically where the railroad spans waterways. Open decks are free draining and therefore are not preferred for bridges spanning roadways. The open deck bridges located along the railroad corridor for this project are programmed for rehabilitation to ballasted deck bridges. A ballasted deck bridge provides a better riding surface and improves maintenance activities by allowing a continuous path for maintenance-of-way equipment.

### Rehabilitation Work:

The existing bridges requiring rehabilitation on this project contain open decks on steel deck plate girders or steel rolled beams. Conversion of an open deck to ballasted deck structure requires the removal of the deck components of the bridge: rail, ties, tie plates, tie fasteners, tie-girder clips. This work is typically done from above by railroad track personnel from equipment that rides along the existing rail.



Once the existing deck is removed, the ballasted deck is placed. The ballasted deck contains a ballast retainer which can be constructed from precast concrete, cast-in-place concrete or steel. After the ballast retainer is fastened to the existing superstructure, the ballast is added followed by the ties and rail. This work is typically performed from above using track-mounted cranes and other equipment that moves along the existing rails. The open deck removal and ballasted deck replacement are often done simultaneously.



Other work that may be included with a rehabilitation project of this sort includes:

- cleaning and recoating steel structure components
- bearing replacement
- pointing of abutment and/or piers

## Potential Environmental Impacts:

### Open Deck Rehabilitation

The potential for environmental impact for this work is low. The work is typically completed from on top of the bridge without introducing any impacts to the waterway. Debris containment measures may be required to ensure construction materials do not fall into the waterway.

### Cleaning and Painting

Potential for environmental impact is relatively high, but mitigation measures reduce the probability significantly. The contractor will be required to propose a containment plan, environmental monitoring plan, waste management plan and contingency plan in order to avoid contamination of the waterway from lead-based paint materials. Typical containment systems include tarps, negative pressure, barges/pontoons/small floats, and vacuum equipment. Staging for this work may be located below the bridge on the waterway banks or in the waterway channel. The staging may cause minor short-term impacts to the waterway flow, but no long-term impacts once work is completed.

### Bearing Replacement

The potential for environmental impact is low. Bearing replacement requires jacking the existing superstructure off of the bearing surface on the substructure. If this work is performed, the staging for the jacking device will be located below the bridge on the waterway banks or potentially in the waterway channel depending on the span length. The work may cause minor short-term impacts to the waterway flow, but no long-term impacts once work is completed.

### **Pointing of Abutments and/or Piers**

The potential for environment impact is low. Construction staging for this work may be located near the bridge site or within waterway bank slopes. This staging may have minor short-term impact to the waterway flow, but no long-term impacts once work is completed.

