

Wheeler

NDACe

Wheeler Bridges

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Engineered Products



Timber Vehicle Bridges



Steel Beam Bridges w/ Timber Deck



Salt Storage Buildings



Steel Recreation Bridges

Panelized Timber Bridges



Panelized Timber Bridges

- **BENEFITS**
- **Shop Fabricated**
- **Shipped as Components**
- **Complete Material Package**
- **No Formwork**
- **No specialty labor**
- **Standard details**



Proven System

- Durable Treatment 70+ Year Design Life
- Used in all 50 states
- Used by the USDA Forest Service
- Used by the SD Game Fish & Parks
- Used by the MN DNR
- Used by the Railroads



Timber-Based Bridges Offer a Cost-Effective, Durable Alternative

What Was the Need?

MnDOT and the Local Road Research Board (LRRB) have been supporting timber bridge owners with research on inspection and repair since the early 2000s, including acquired tools for inspectors.

Advocates of timber bridges credit advances in design, preservation, maintenance and inspection that should dispel misconceptions about the cost, durability and structural strength of contemporary timber bridges.

Yet from 2000 through 2019, Minnesota local agencies built 4,355 concrete-based bridges, 26 steel-based bridges and 26 timber-based bridges. While timber bridges are traditionally believed to perform satisfactorily for 50 years or more, few local road agencies in Minnesota have extensive experience with timber in new bridge construction. Common misperceptions about timber bridges include that they can be expensive to construct, less durable than other types of bridges and cannot carry heavy truckloads.

As Minnesota's local road agencies grapple with the challenges of renewing an aging bridge infrastructure with limited resources, LRRB needs to provide these agencies with design and construction guidance on alternatives to bridges made with concrete and steel such as timber.

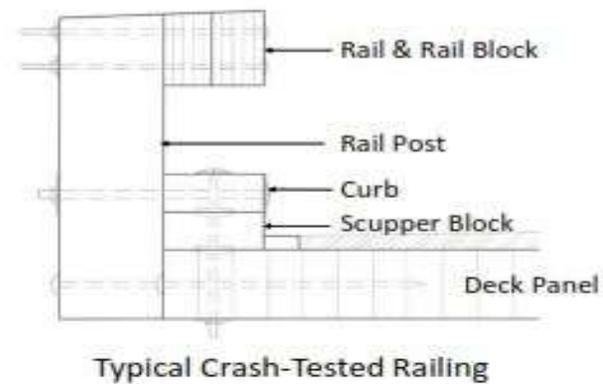
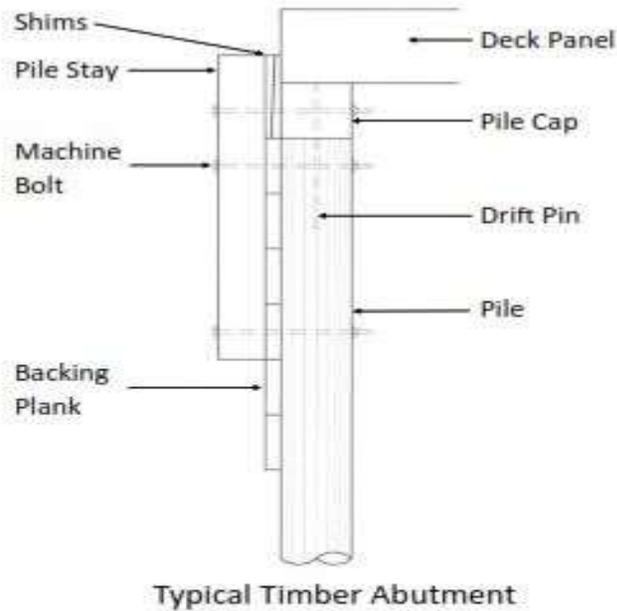
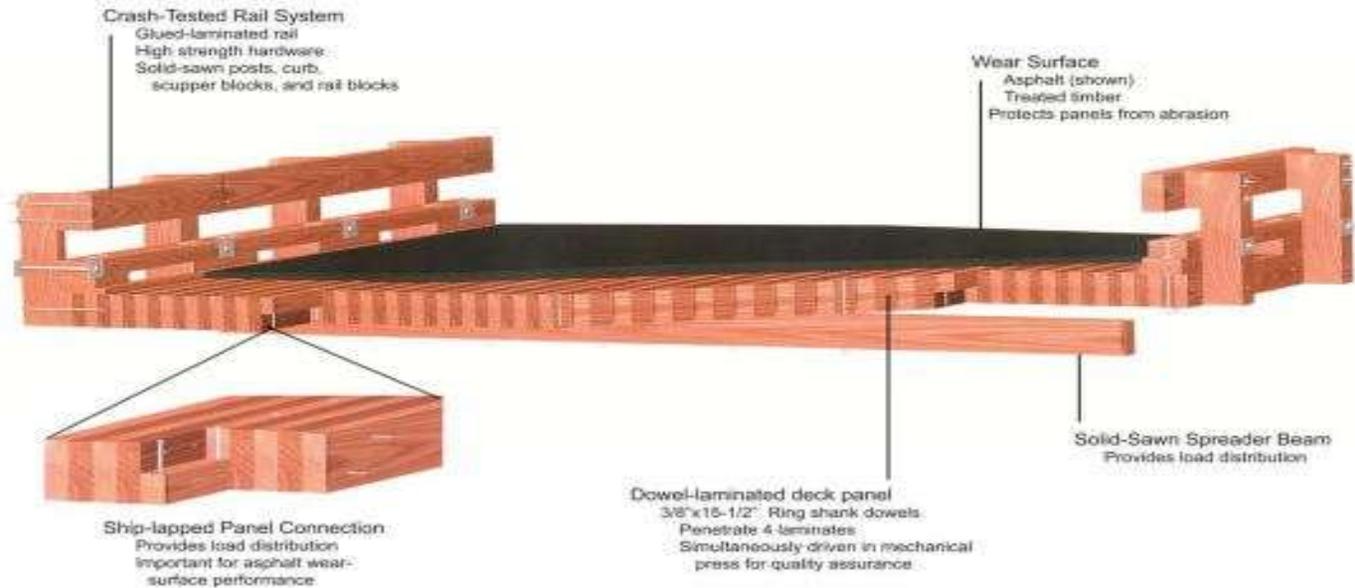
What Was Our Goal?

The LRRB sought to help local agencies understand how timber bridges can be built

Timber-based bridges can be built at costs similar to other kinds of bridges and can perform well for 70 years or more. These bridges also offer green benefits and can be built much faster than steel or concrete structures.

The image shows a logo for "QNA COPPER NAPHTH" set against a background of horizontal wooden planks. The letter "Q" is large and green, while the letters "NA" are large and black. Below "QNA", the words "COPPER" and "NAPHTH" are written in a smaller, black, sans-serif font. The "H" is partially cut off on the right side of the image.

ANATOMY OF THE PANEL-LAM



Based on AASHTO LRFD Bridge Design Specifications - 8th Edition, HL-93, Douglas Fir Larch, Wheeler alternative incising factor as allowed by 2018 NDS, 3" bituminous wear course

Single Span <40'



Multi-Span



Foundations – H-Pile



Foundations – Concrete Abutment



Foundations – Timber Pile

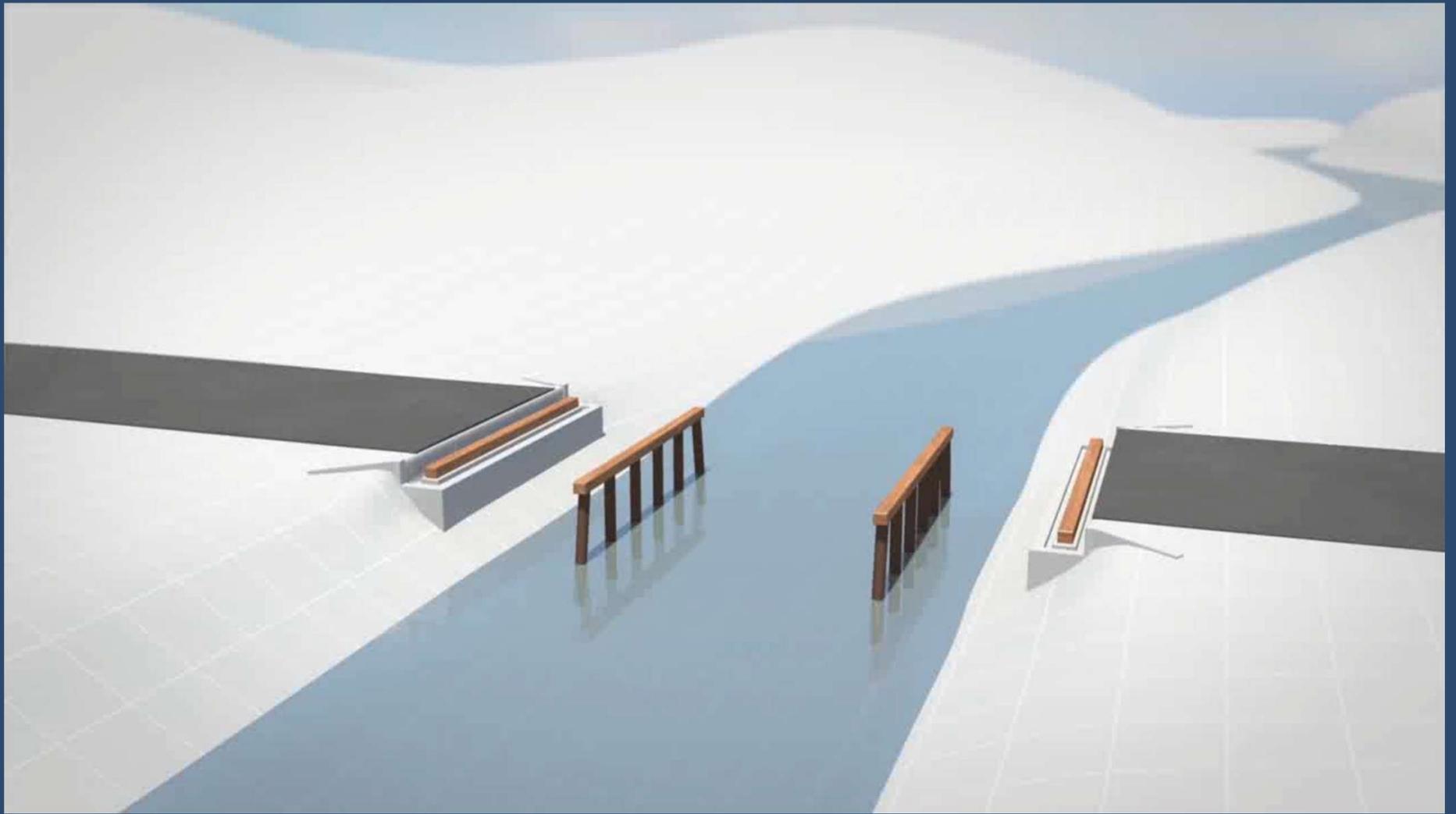


Foundations – Sheet Pile



Foundations – CIP Pile





Installation

Wear Course – Gravel



Wear Course – Timber



Chipseal Wear Surface



Asphalt Overlay



Pile Driving



Pile Caps



Timber Backing Plank



Riprap Placed



Deck Panels Installed

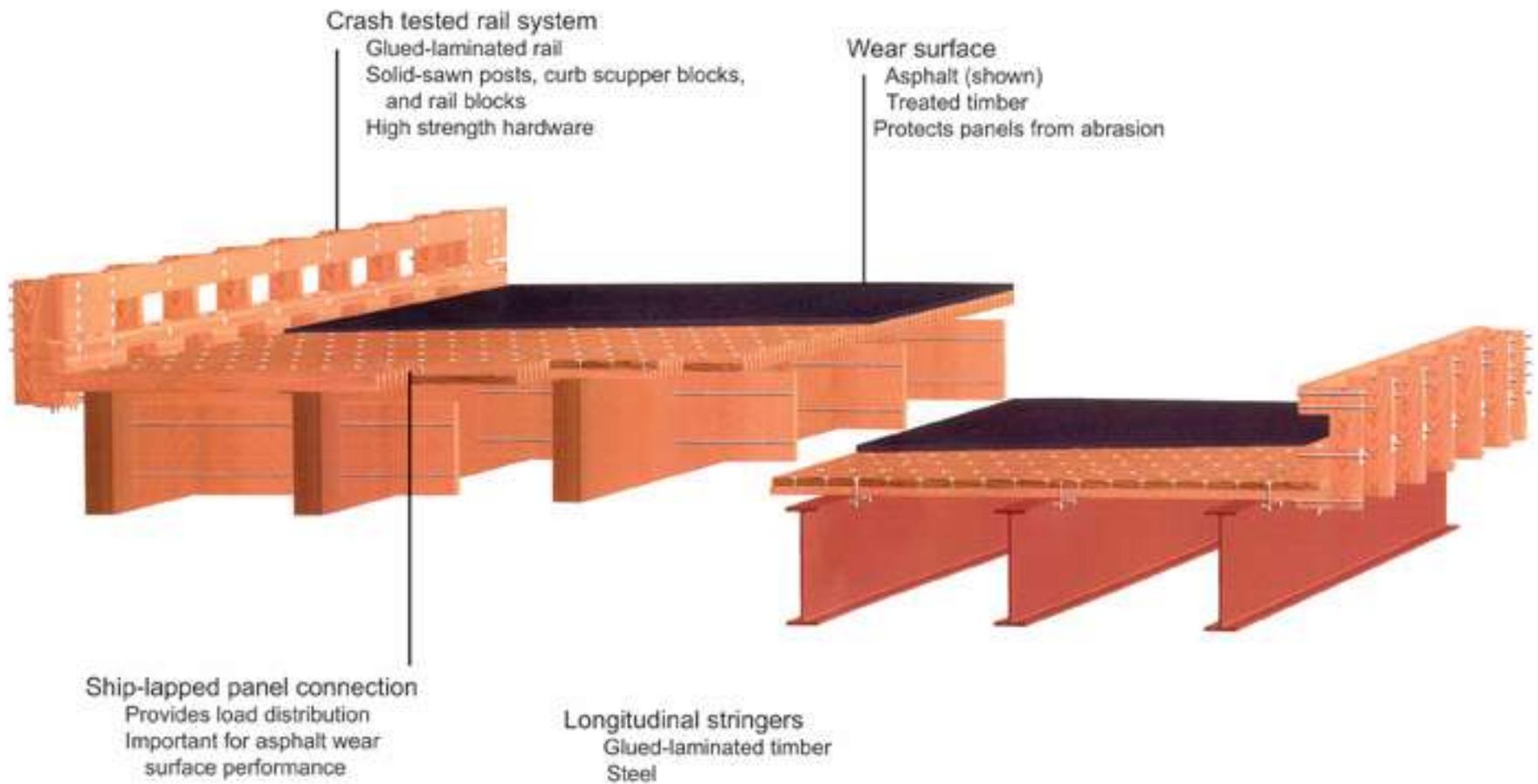


Rapid Installation - Five panels set in 1 day



Spreader Beam Installation





Stringer Vehicle Bridges

Weathering Steel Beam Transverse Timber Deck



Weathering Steel Beam w/ Timber Abutments



Deck Attachment



Deck Attachment – Plank Deck



Deck Attachment – Plank Deck



Glulam Beams w/ Timber Deck



Railing Options – Timber Non-Crash Tested



Railing Options – Timber Crash Tested TL2 & TL4



Railing Options – Curb & Scupper



Railing Options – W Beam Guardrail



Truss Bridge Rehabs



Velva, ND – Cantilevered Deck



Velva, ND – Cantilevered Deck



Velva, ND – Panelized Deck





Thank You!
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