



## BRIDGE KITS

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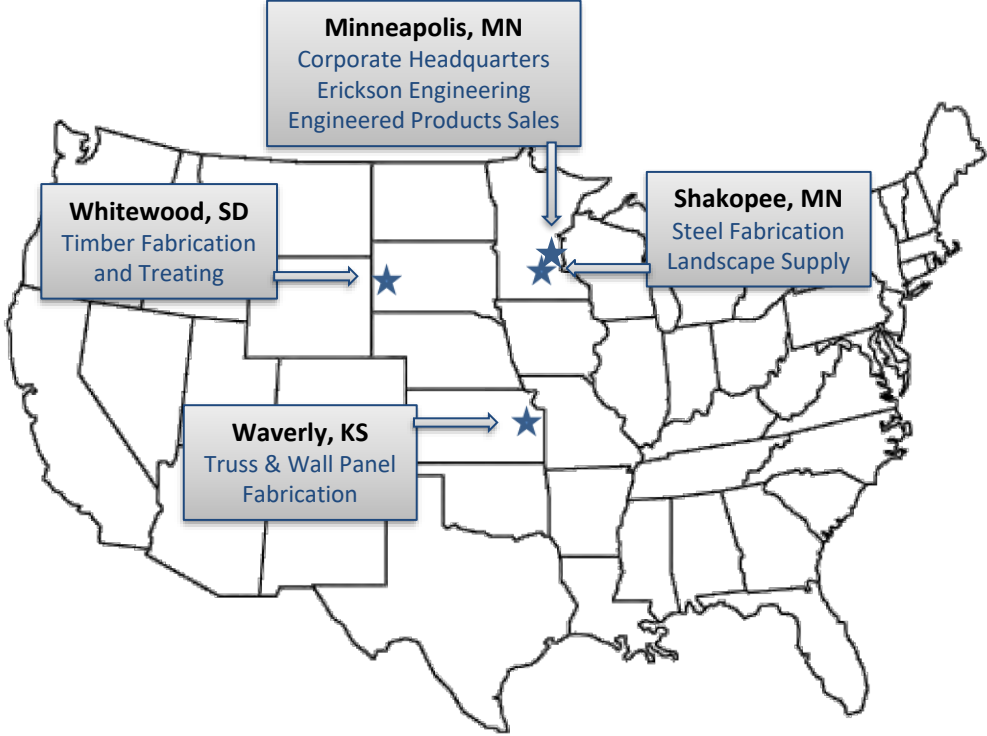
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# Wheeler





**BRIDGE KITS**

**DESIGN / SUPPLY**

# APPLICATIONS

- **RECREATION**
  - PREFABRICATED STEEL
  - TIMBER KITS
  - PLATFORMS
  - RAILROAD RETROFIT
- **VEHICULAR**
  - PANEL-LAM
  - STRINGER



# PREFABRICATED STEEL RECREATION

- Truss Types
- Standard Dimensions
- Popular Options
- Maximum Lengths
  - (single piece, single span)
- Application Specific Features
  - (equestrian, snowmobile, bicycle)
- Installation Considerations

# PRATT TRUSS



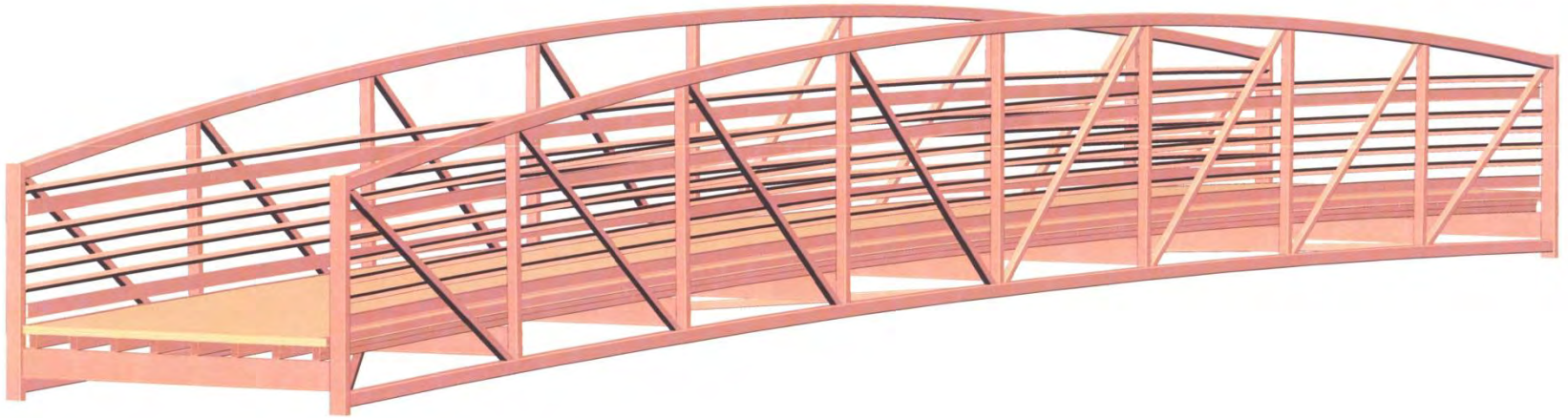
Parallel Chords, Verticals, Diagonals Converge to Middle

# BOWSTRING TRUSS



Cambered Top Chord to Deck Height, Pratt Diagonals Typical

# MODIFIED BOW TRUSS



Cambered Top Chord to Rail Height, Pratt Diagonals Typical



# WARREN TRUSS

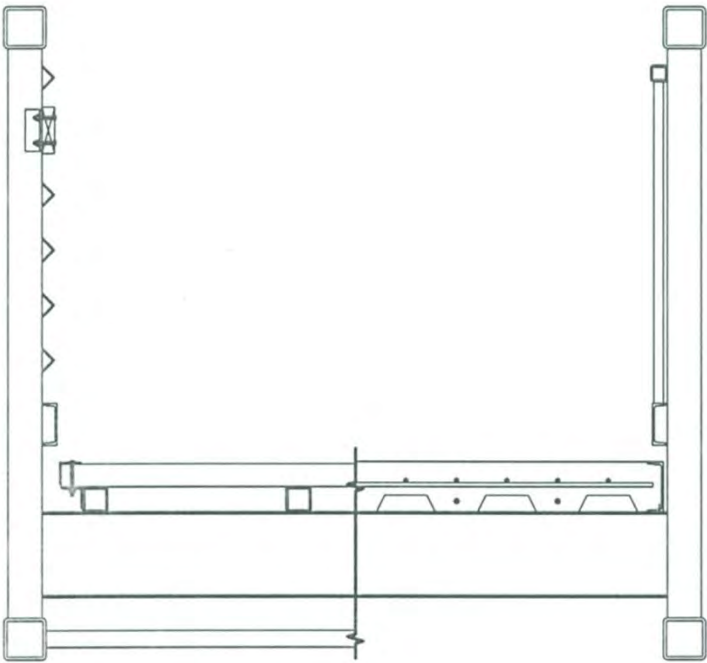


Parallel Chords, Alternating Diagonals, w/ or w/o Verticals

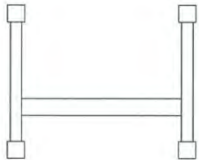
# STANDARD DIMENSIONS

- Spans 20' – 250'
  - Most options up to 200'
  - May need overhead bracing > 200'
- Width 4' – 14'
  - Consider vehicle > 6'
  - Most common: 8' – 12'
- Camber Near flat – 1%

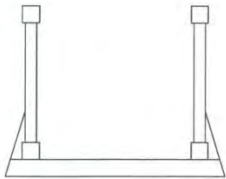
# STANDARD CROSS-SECTIONS



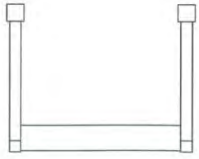
Floor Beam Configuration



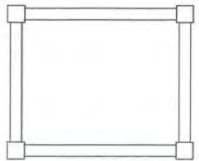
H-section



Underhung



U-section



Overhead Braced



Johnny Cash Trail, Folsom, CA





Liberty Park, Salt Lake City, UT





Jumping Branch Trail, Riverside, MO





Durango, CO





National Balloon Museum, Albuquerque, NM





Athens, OH



# OVERHEAD BRACING



Beloit, WI

# DECK MATERIALS

- Preserved Wood
  - MCA, QNAP
  - Optional Wear Course
- Naturally Durable Hardwood
  - Ipe
- Cast-in-Place Concrete
  - Stay-in-place forms



# PRESERVED WOOD PLANK





# WOOD NAILER ATTACHMENT





# WOOD NAILER ATTACHMENT





# CONSTRUCTION LAGS





# TROPICAL HARDWOOD - IPE





# CONCRETE

A photograph showing the construction of a concrete bridge deck. The deck is supported by a grid of steel rebar (reinforcement) laid out on a corrugated metal formwork. The bridge has a curved, arch-like structure. The background shows a wooded area with bare trees, suggesting a late autumn or winter setting. The rebar is arranged in a dense, regular grid pattern across the width and length of the bridge deck.

Stay-in-place Forms, Rebar



# CONCRETE PLACEMENT





# CONCRETE





# REMOVABLE FORMWORK





# WEAR PLANK

A perspective view of a wooden bridge with a metal railing, crossing a stream in a forest. The bridge deck is made of weathered wooden planks. The railing is made of dark brown metal with a lattice pattern. The background shows a dense forest of trees with some autumn-colored leaves.

Longitudinal - Snowmobile



# WEAR PLANK

A photograph of a wooden bridge with a diagonal wear plank pattern. The bridge is made of light-colored wood and has a dark brown metal railing. The bridge is curved and spans over a body of water. The background shows a line of trees and a grassy area.

Diagonal – Equestrian, Bicycle



# ANGLE SAFETY RAIL



**42" Rail Height - Pedestrian**



# TUBE SAFETY RAIL

A close-up photograph of a safety rail system. The rail consists of a thick, rusted metal top rail and several horizontal metal tubes below it. A wooden handrail is attached to the second tube from the top. The rail is mounted on a concrete surface. In the background, there is a grassy field with some rocks and a utility pole in the distance under a clear blue sky.

**54" Rail Height - Bicycle**



# PICKET/BALLUSTER SAFETY RAIL



**Steel Angles – 42" Rail Height - Pedestrian**



# PICKET/BALLUSTER SAFETY RAIL



Steel Tubes – 72” Rail Height for Equestrian



# ORNAMENTAL SAFETY RAIL

A close-up photograph of an ornamental safety rail. The rail features a dark, possibly black, metal top rail and a decorative lattice pattern of vertical and diagonal bars. A thick, light-colored wooden rail, identified as Ipe, runs horizontally across the middle, secured with small metal fasteners. Below the wooden rail, a dark, twisted metal cable is visible, likely serving as a toe rail. The railing is situated on a wooden deck overlooking a body of water with a grassy bank in the background.

Ipe Toe & Rub Rail





**Galvanized**



# APPROACH RAILING



Preserved Wood



# APPROACH RAILING



**Weathering Steel**



# OUTLOOKS



Easter Lake, Des Moines, IA



# OUTLOOK AT PIER



Easter Lake, Des Moines, IA



# OUTLOOK MID-SPAN



Springdale, AR



# FOUNDATIONS

- Shallow

Sand, Gravel, Bedrock

Spread Footings

- Deep

Clay, Silt, Peat

Driven Piling – Timber, Steel, Concrete

Helical Piling



# FOUNDATIONS



Cast-in-place Concrete – Spread Footing



# FOUNDATIONS



**Cast-in-place Concrete – Spread Footing**



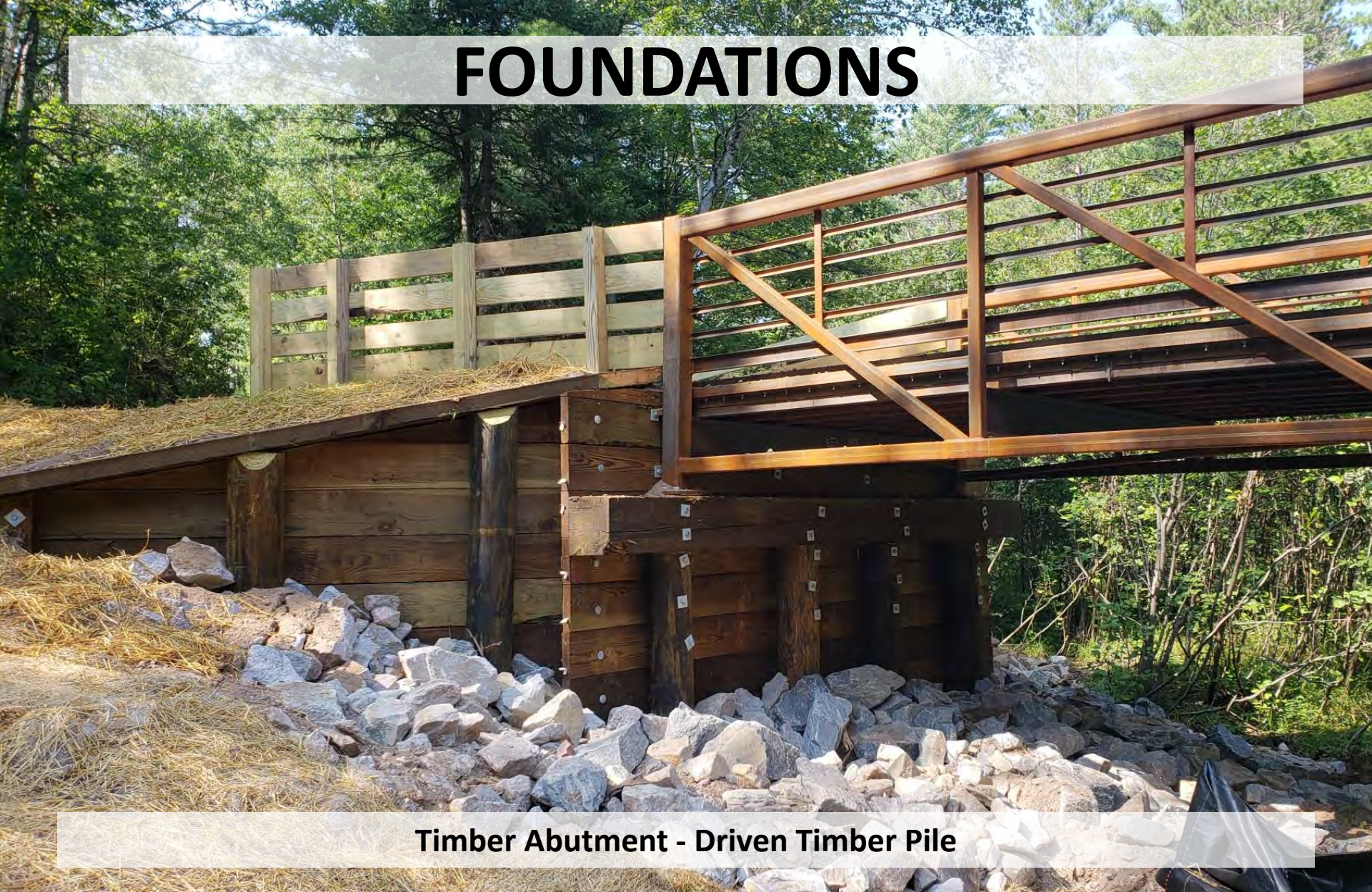
# FOUNDATIONS



**Timber Crib Spread Footing**



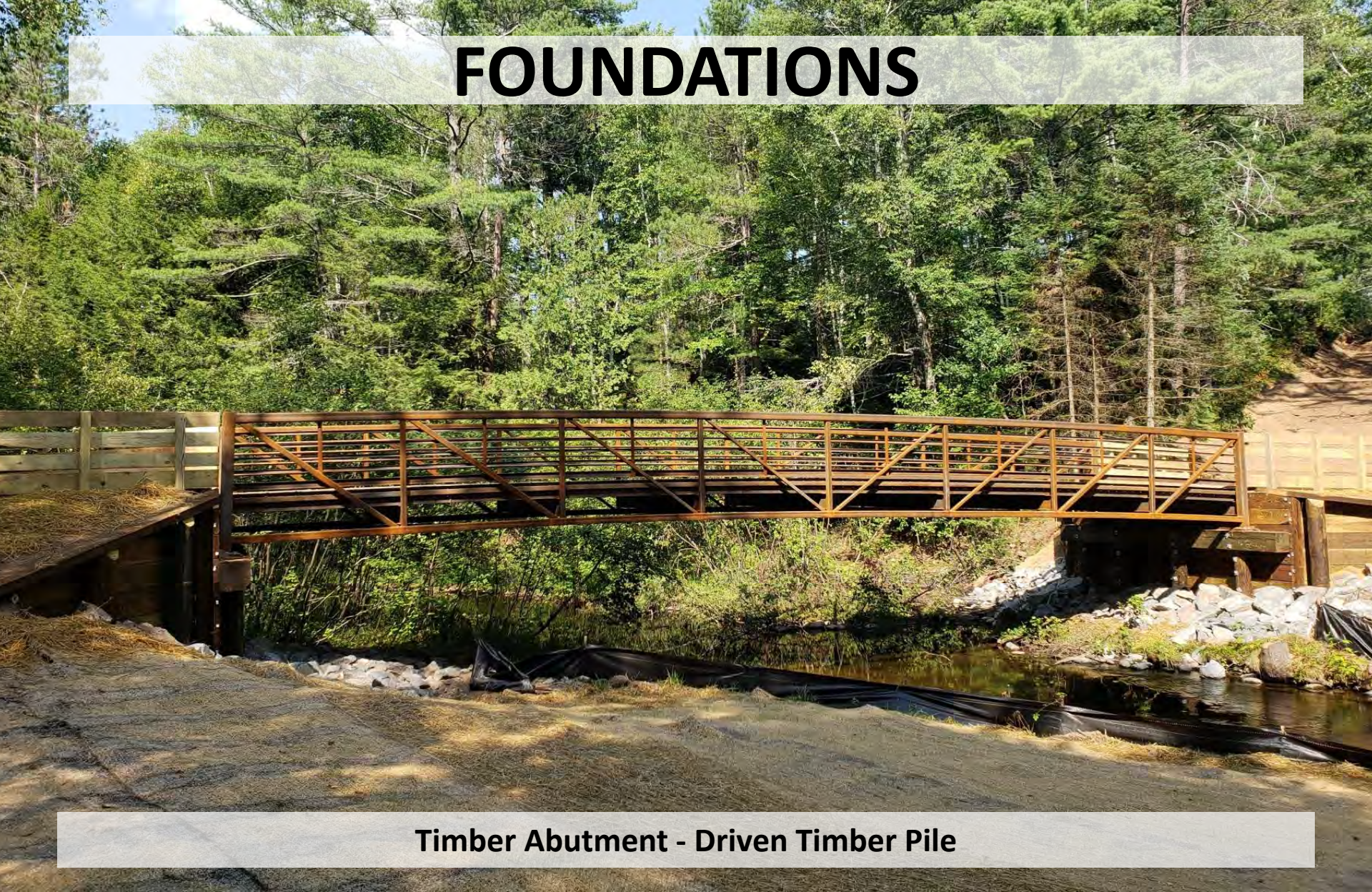
# FOUNDATIONS



**Timber Abutment - Driven Timber Pile**



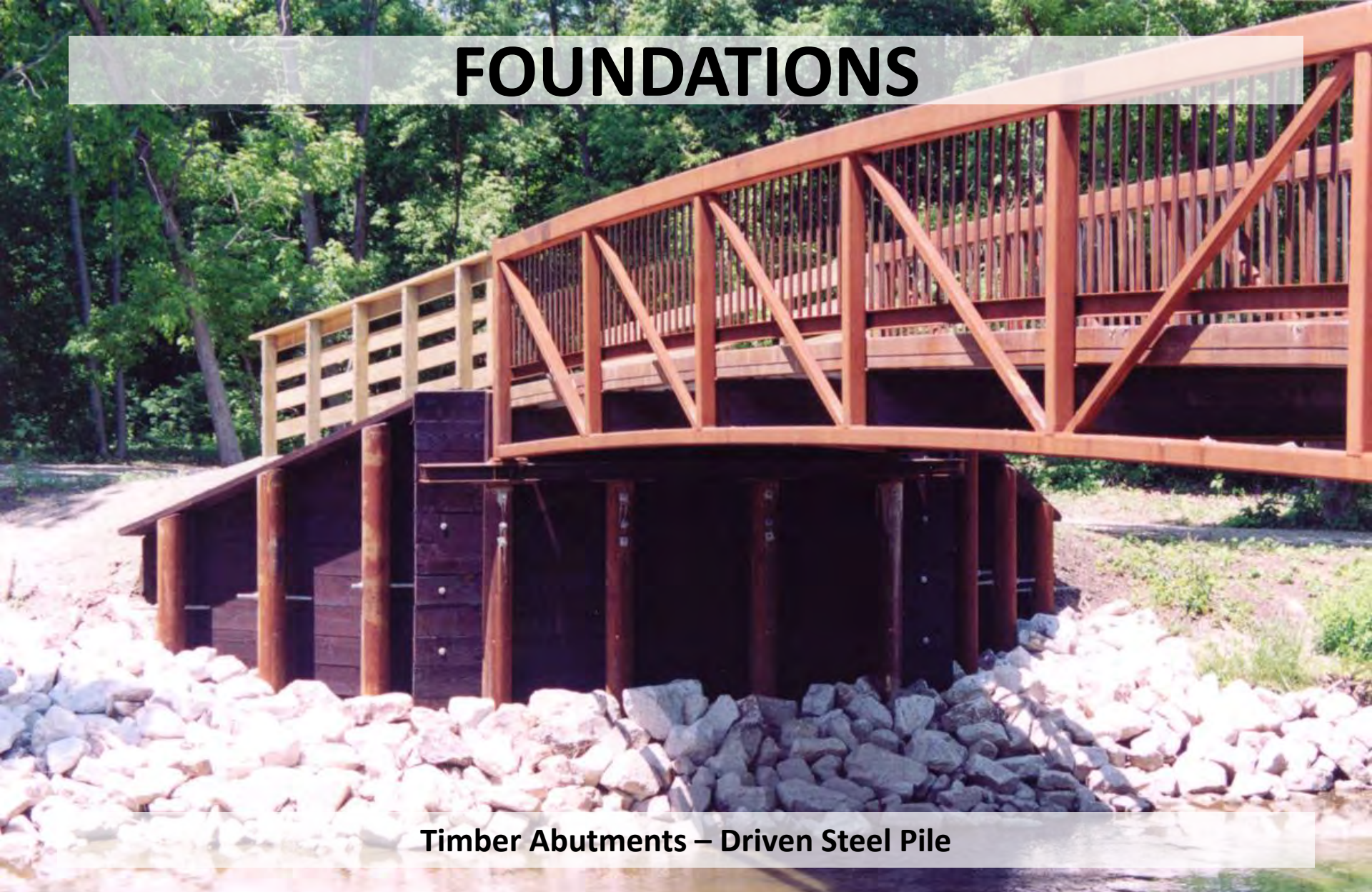
# FOUNDATIONS



**Timber Abutment - Driven Timber Pile**



# FOUNDATIONS



**Timber Abutments – Driven Steel Pile**



# FOUNDATIONS



Cast-in-place Concrete – Driven Pile



# FOUNDATIONS



**Timber Abutment – Helical Pile**



# FOUNDATIONS



**Timber Abutment – Helical Pile**



# Snowmobile Regional Trail

Wheeler



## Two Spans Sharing a Pier





# SHIPPING

- Width
  - > 8' Permit Required
  - > 16' \$\$\$
- Single Piece Length
  - > 55' Permit Required
  - < 80' Standard or Stretch Trailer
  - 80' – 135' Site Specific, **Contractor to Verify**, Stretch Trailer or Steerable Dolly
- Multiple Pieces
  - Controlled by height and/or weight of piece
  - Double Drop Trailer < 55'



# SHIPPING



**Stretched Trailer**



# SHIPPING



Steerable Dolly



# SHIPPING



Single Drop Trailer



# SPLICING



All Bolted Connections – No On-site Welding







# INSTALLATION



One Large (rented) Crane



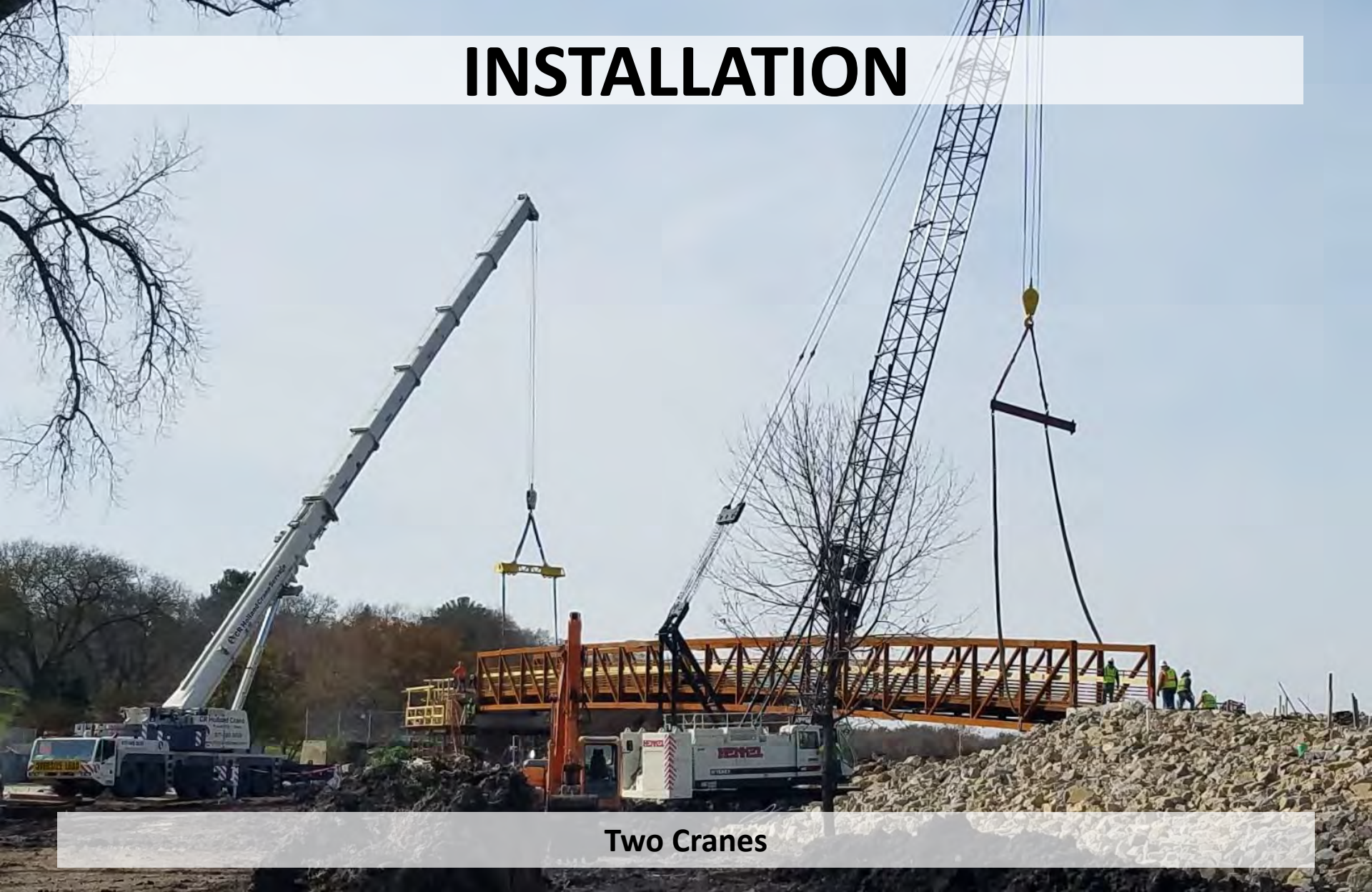
# INSTALLATION



Two Large (rented) Cranes



# INSTALLATION



Two Cranes



# INSTALLATION



Two Excavators



# INSTALLATION



Spreader Beams



# BEARINGS



Shims under Leveling Plate



# BEARINGS



**Good Grout**



# BEARINGS



**BAD GROUT!**



# TIMBER KITS





# PRESERVATIVES



## OIL-BORNE

- Water repellent
- Large members
- Ground contact
- Holds color longer

## WATERBORNE

- Dry to the touch
- Less dimensionally stable
- Weather to gray



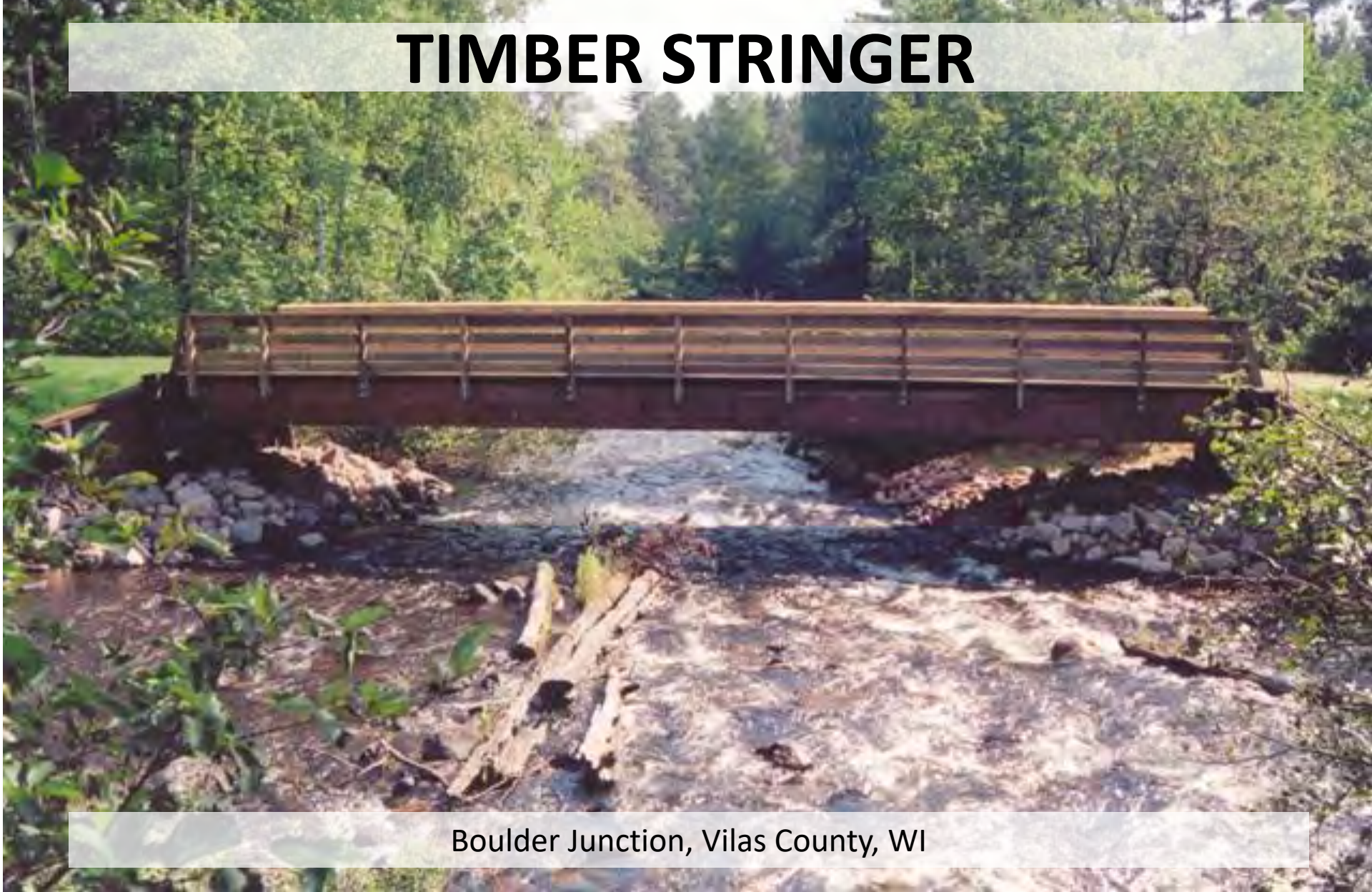




- Oil-borne
- Water repellent
- Semi-transparent color
- Steam cleaned
- Non-corrosive



# TIMBER STRINGER



Boulder Junction, Vilas County, WI