

Midwest AASHTO Bridge Preservation Conference

October 13, 2010

Detroit, MI

TIMBER PILE REPAIR

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The Problem's Scope

- **131 State Bridges Have Timber Piling**
—5.6%
- **1385 Non-state Bridges Have Timber Piling**
—13.3%

The Problem with Timber Piling

- **Age**
- **Stream Bed Degradation**
- **Reduced Pile Cross Section .**
- **Cap Condition**

Timber Pile Capacity Issues

- **Shorter Lengths (30 to 45 feet)**
- **Numerous Piles**
- **Fair to Good Cap Conditions**
- **Short-span Slab Bridges**
- **30 Tons Nominal Capacity**
- **10 to 20 Tons Design Loads**

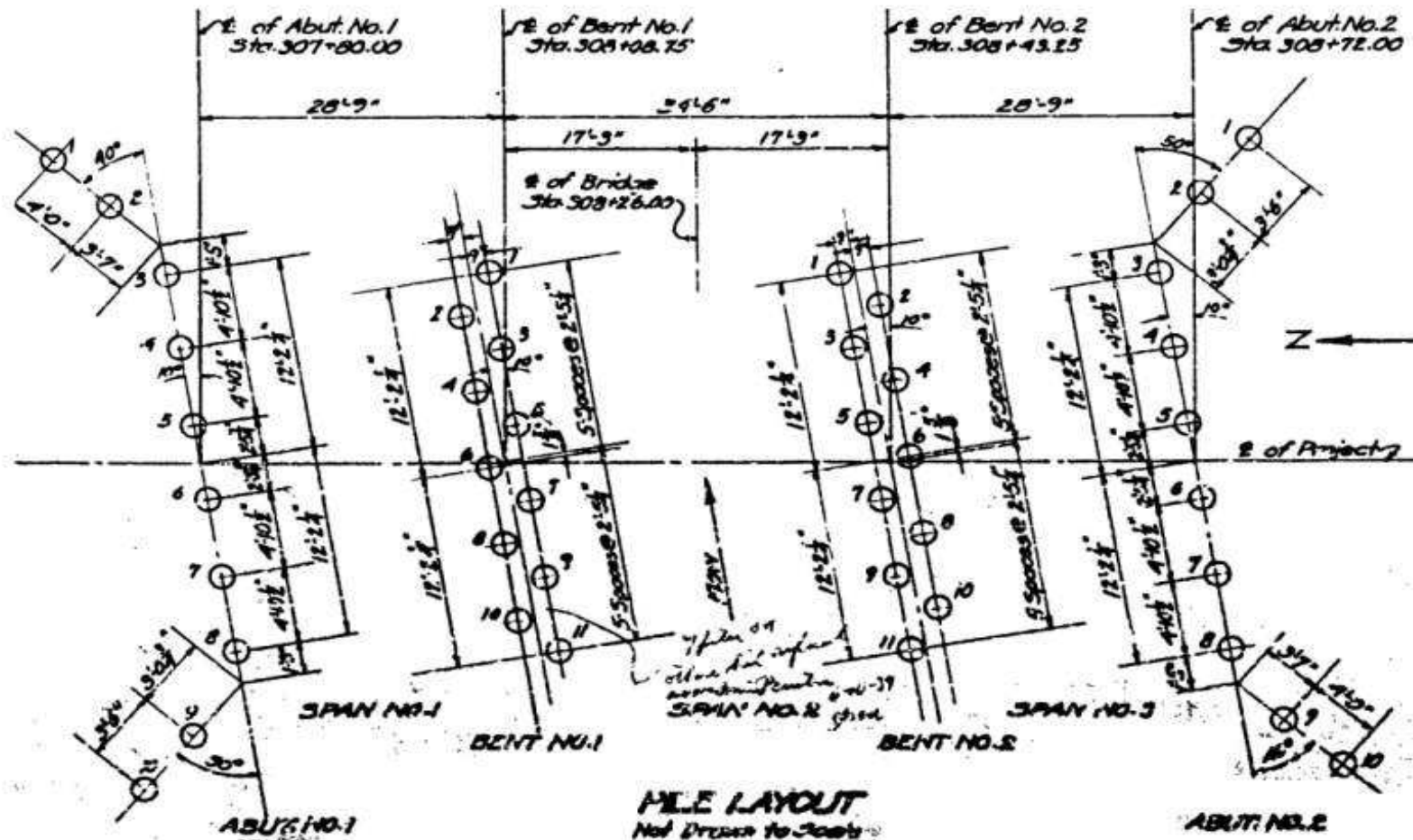
BEARING

- 1-2-9-10 10 Tons Per Pile
- 3 to 5 incl. 13.4 Tons Per Pile
- 1 to 11 incl. 17.9 Tons Per Pile

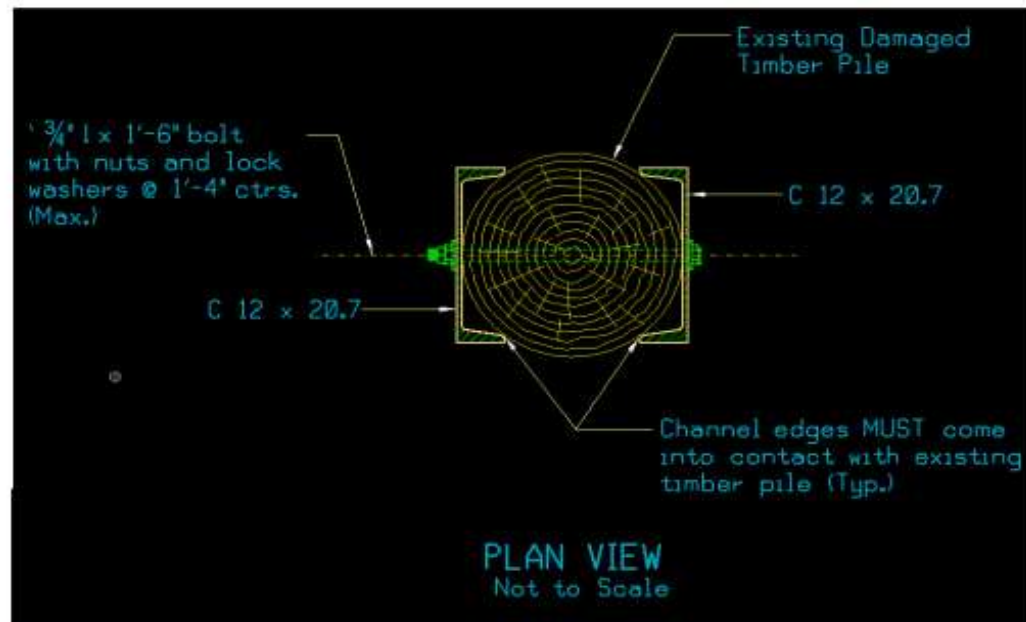
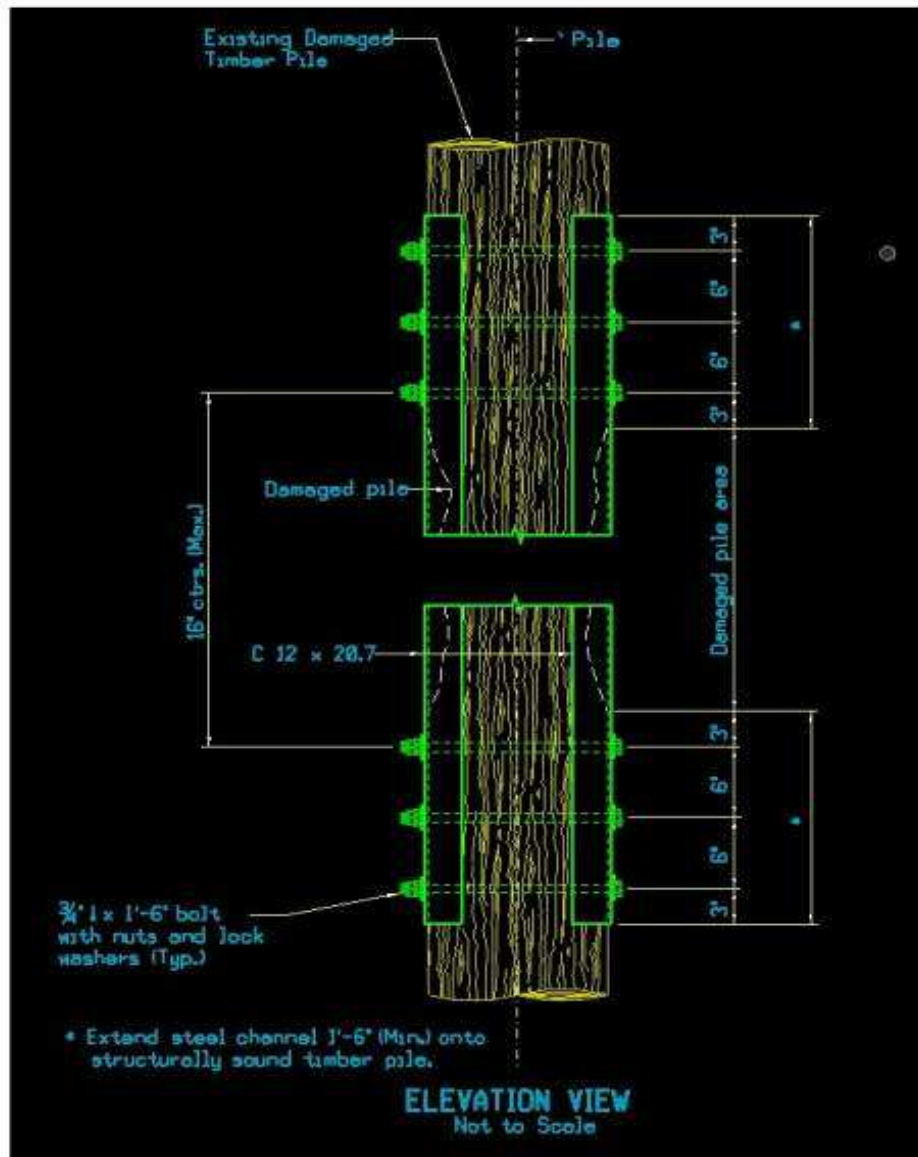
Pile Capacity

PERATION BELOW CUT-OFF

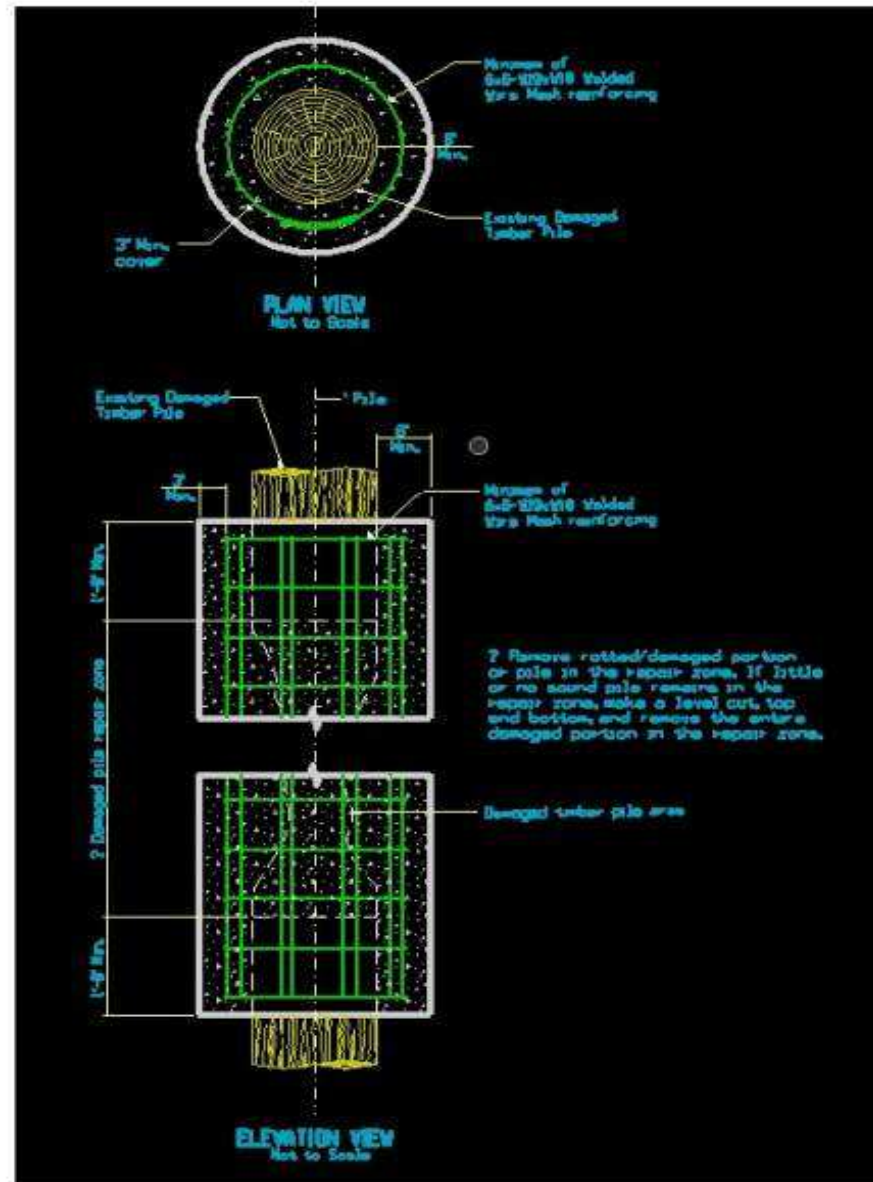
- 1-2-9-10 30 FT.
- 3 to 5 inclusive 30 FT.
- 1 to 11 inclusive 35 FT.



What has been done in the past?



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S014 03182



Demo Bridge

- Three-span continuous slab has 28.5', 35' and 28.5' spans.
- Built in 1938, widened in 1986 when two piles per member were added.
- Two rows of timber piles with cross bracing are placed under each bent.
- Bent piles have 0% to 90% section remaining. Piles were rated 4 for their condition.
- Bent and abutment caps are in good to very good condition.

Structure No: **S011 01109**

Structure Type: **3 span Cont Slab**

Inspector: **HP 1659**

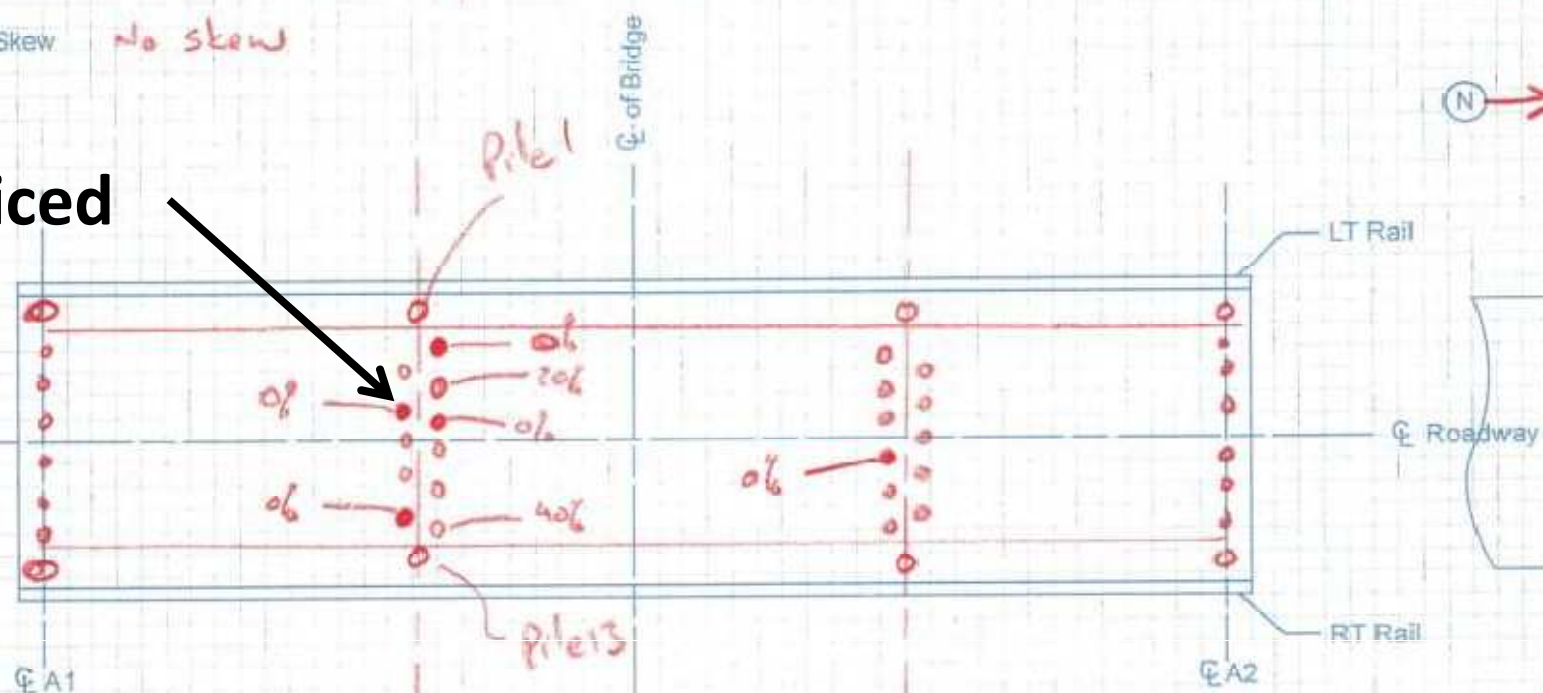
Date: **9/2/09**

☐ LHB Skew

☐ RHB Skew

No skew

Spliced



All others are @ 90% section remaining
Bent 1 **Bent 2**

Pile rating computed @ 4 (poor condition)

Not To Scale

C A1 = C of Abutment #1, C A2 = C of Abutment #2. Locate C of Piers, Grade Beams, Girders and Wings, Check Appropriate Skew

Bridge Inspection Field Sketch Template

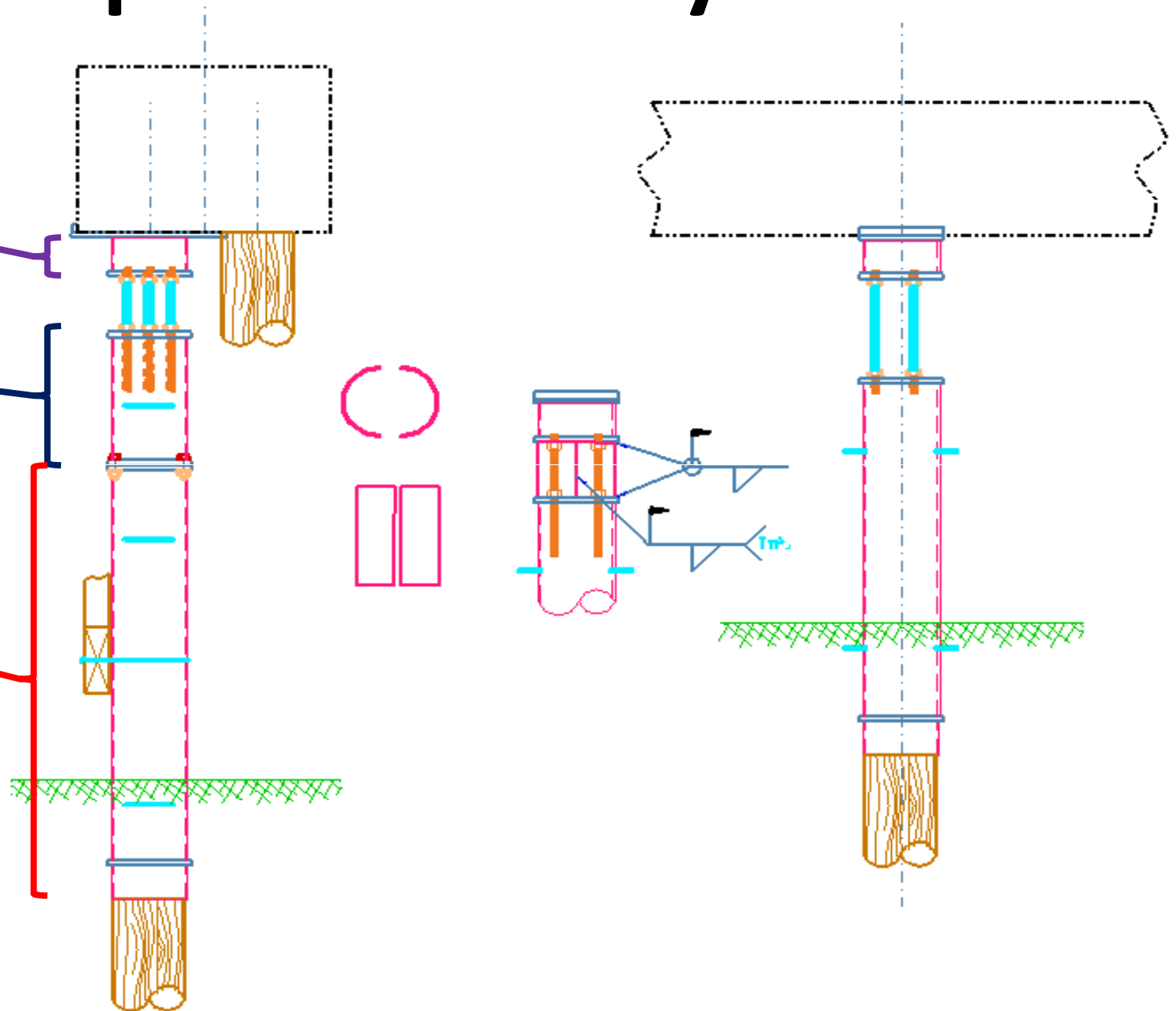
DR Form 532 April 09

S1P1

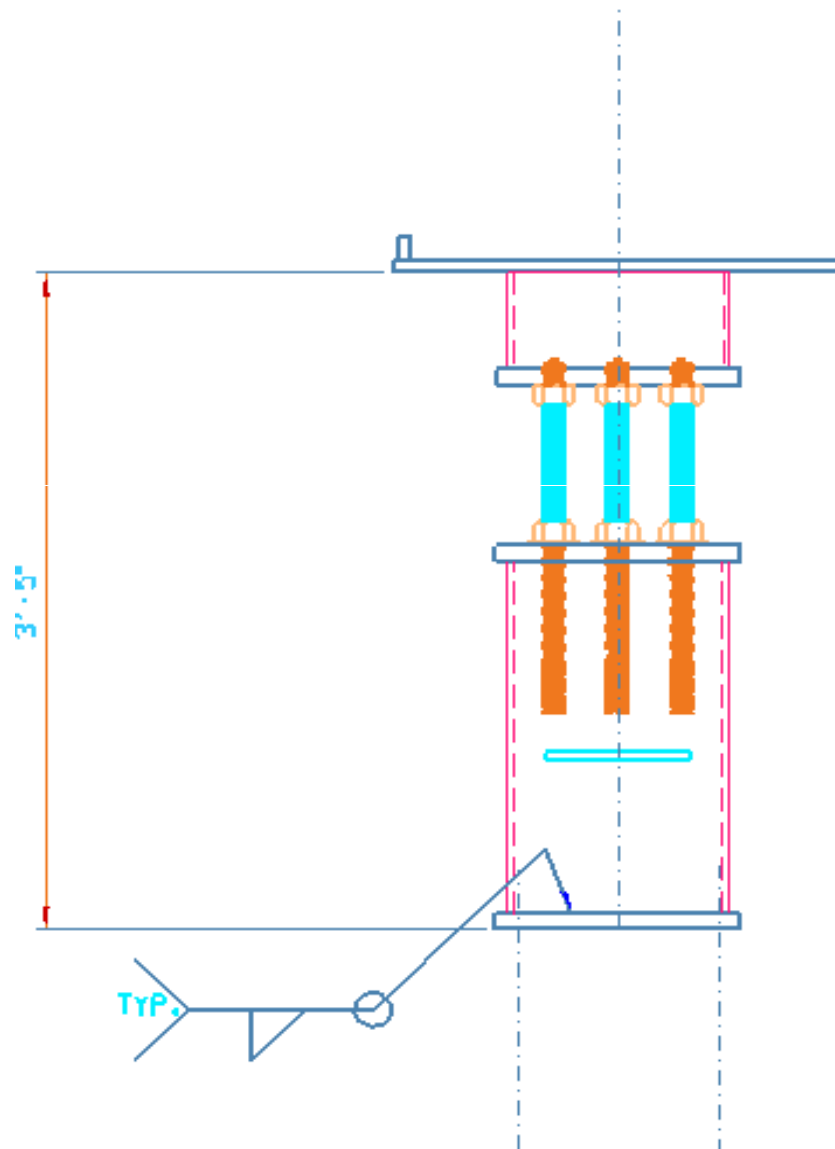
S011 01109



Splice Assembly



Top Unit

































Cost Factor

- Stocked or salvaged material was used.
- The district mechanic assembled the pieces and painted the splice.
- The estimated cost of material, assembled and painted, is \$1,000.
- Installation labor was estimated at 40 man-hours.

Advantages

- Low-Cost Alternative
- Effective Alternative
- Accelerated Repair – Pre-Assembled Units
- Minimum Environmental Impact – No Permit
- Splice Capacity of 25 Tons > Design Capacity
- Temporary Solution – Lasts longer than the waiting period.
- Under Traffic
- By Maintenance

QUESTIONS ?

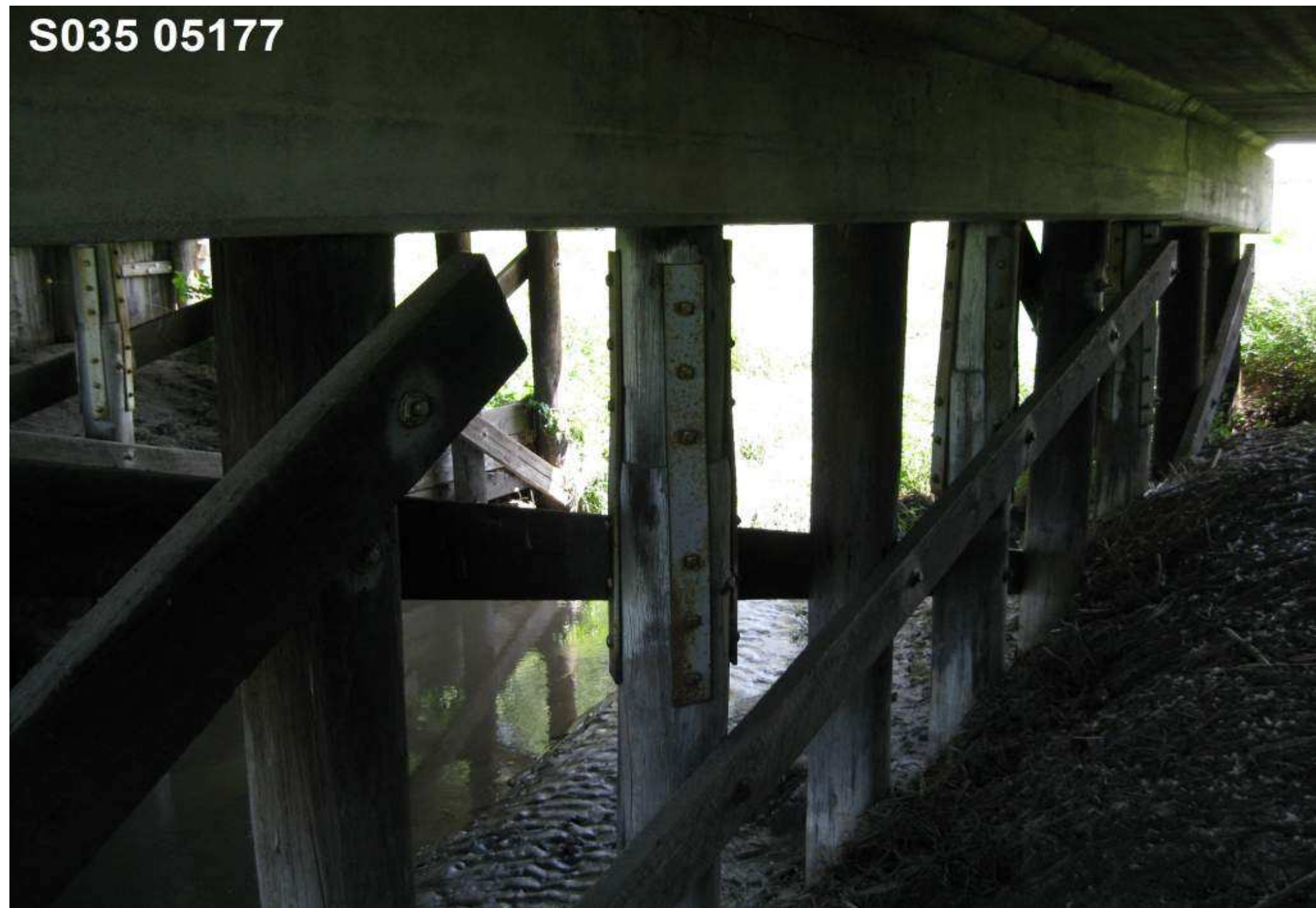




ABUT 2



S035 05177



S077 14011



05.27.2009

S014 19089



