

Timber Bridge Preservation

CHRIS KEEGAN, P.E.
WSDOT

Olympic Region Operations Engineer.

Lynn Peterson
Secretary of Transportation

Deck Preservation and Repair



Decks

- Concrete decks are easier to maintain.
- Timber decks with bolting strips are better than nailing to stringers.
- Bolting strips require tightening as the deck ages. (10 years or as needed)
- Timber decks need running boards or overlays.

Overlays

- Three inches of HMA over three inches of crushed rock works well.
- With just HMA reflective cracks are a problem.

REPAIRS

Split Pile Repair



Cap Repair

- Step 1 lift superstructure off cap.
- Methods
 - Build temporary bents under bridge to jack up the bridge.
 - Doesn't work over water
 - Difficult on slopes
 - Difficult on high bridges
 - Time consuming
 - Minimum traffic impact

Alternatives to temporary bents

- Jacking beams on road deck.
- Jacking blocks chained to piles
- Jacking blocks clamped to piles

Jacking blocks clamped to pile



Cap replacement

- Replace cap in kind
 - Lower cost
 - Difficult to obtain permit for creosote
 - New timber not as good as old growth
 - Requires traffic control and temporary road closures
 - Requires a crane

Replace with Steel Beam

- Longer lasting repair
- May be difficult to match existing beam size
- Cost more than replace in kind
- Requires traffic control and temporary road closures

Steel Cladding

- Long lasting repair
- More expensive than replace in kind
- No crane needed, (150 lb modular units)
- No disposal cost for creosote treated timber.





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Substructure Repair Scissor truss leg









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New steel post in place





Timber stringer replacement with steel



PREVENTION



United States
Department of
Agriculture
Forest Service

Forest
Products
Laboratory

General
Technical
Report
FPL-GTR-205



In cooperation
with the
United States
Department of
Transportation

Federal
Highway
Administration



Guide for In-Place Treatment of Wood in Historic Covered and Modern Bridges

Stan Lobow
Grant Kirker
Robert White
Terry Amburgey
H. Michael Barnes
Michael Sanders
Jeff Morrell



Pile Preservation

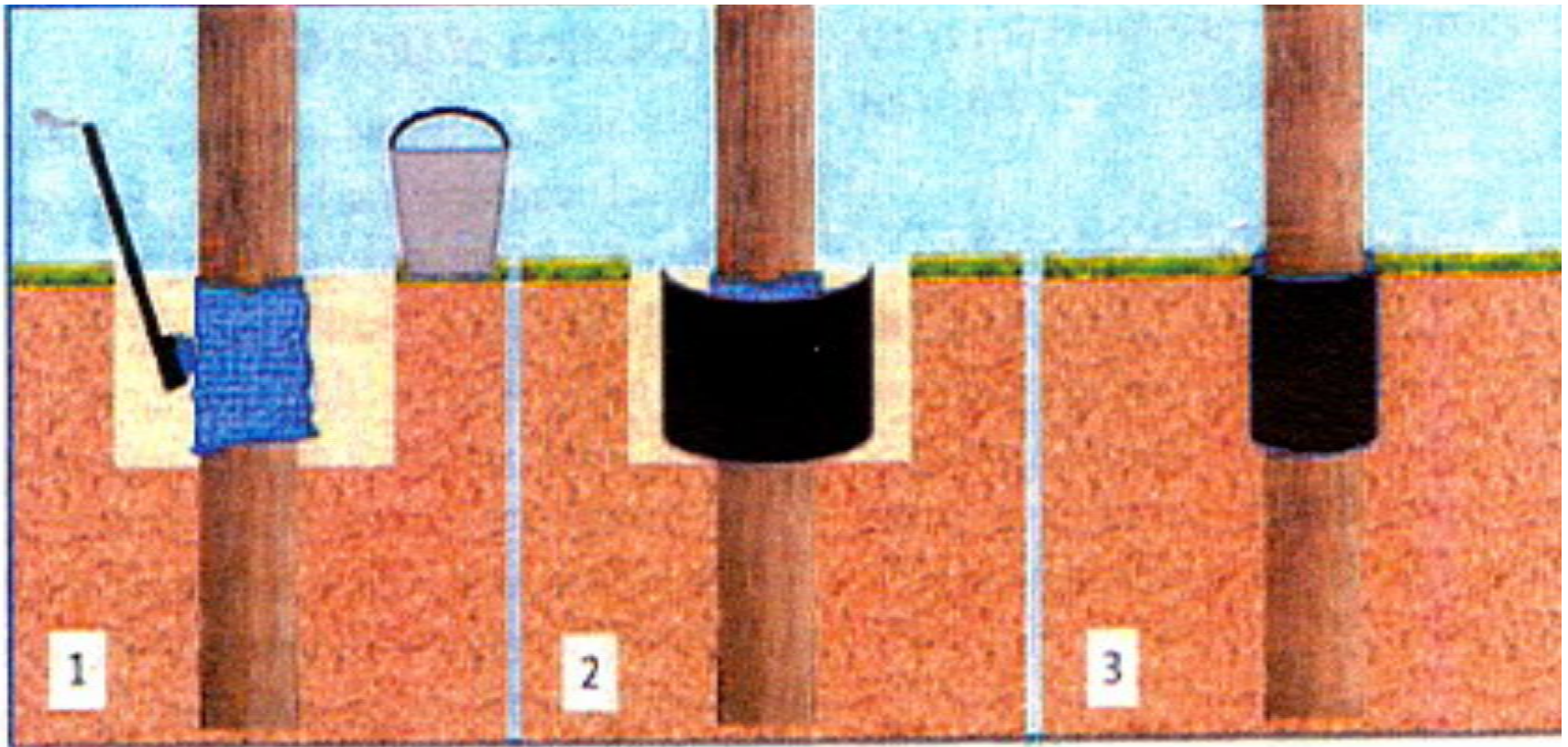
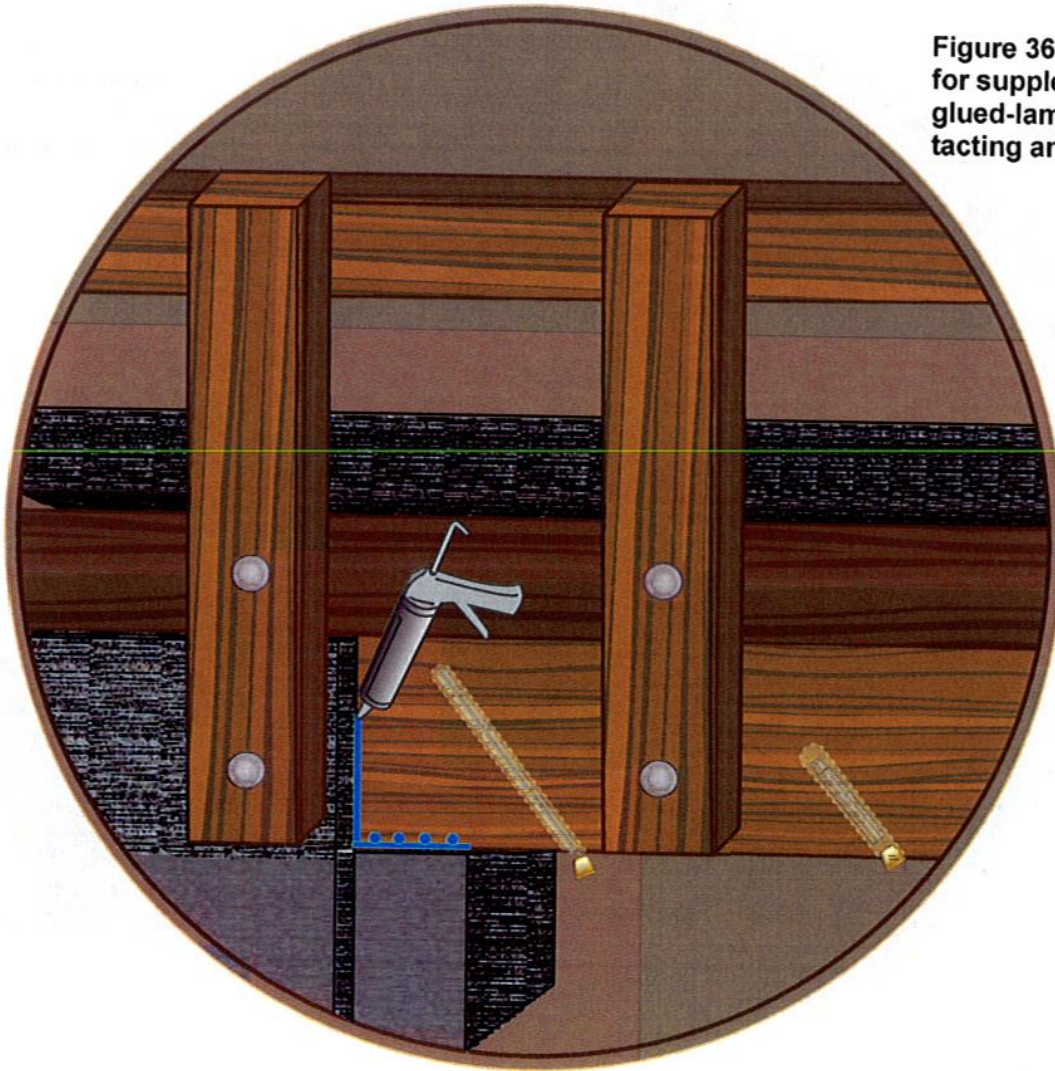


Figure 45. Steps in application of an external groundline wrap treatment.

Use of borate rods

- Low cost means to prevent rot by killing the fungus that causes the rot.
- In use by the log home industry, railroads, utility companies
- Activated at 25% moisture content same as when fungus activates.
- Protection lasts about ten years.

Figure 36. Example approach for supplemental treatment of glued-laminated beam contacting an abutment.



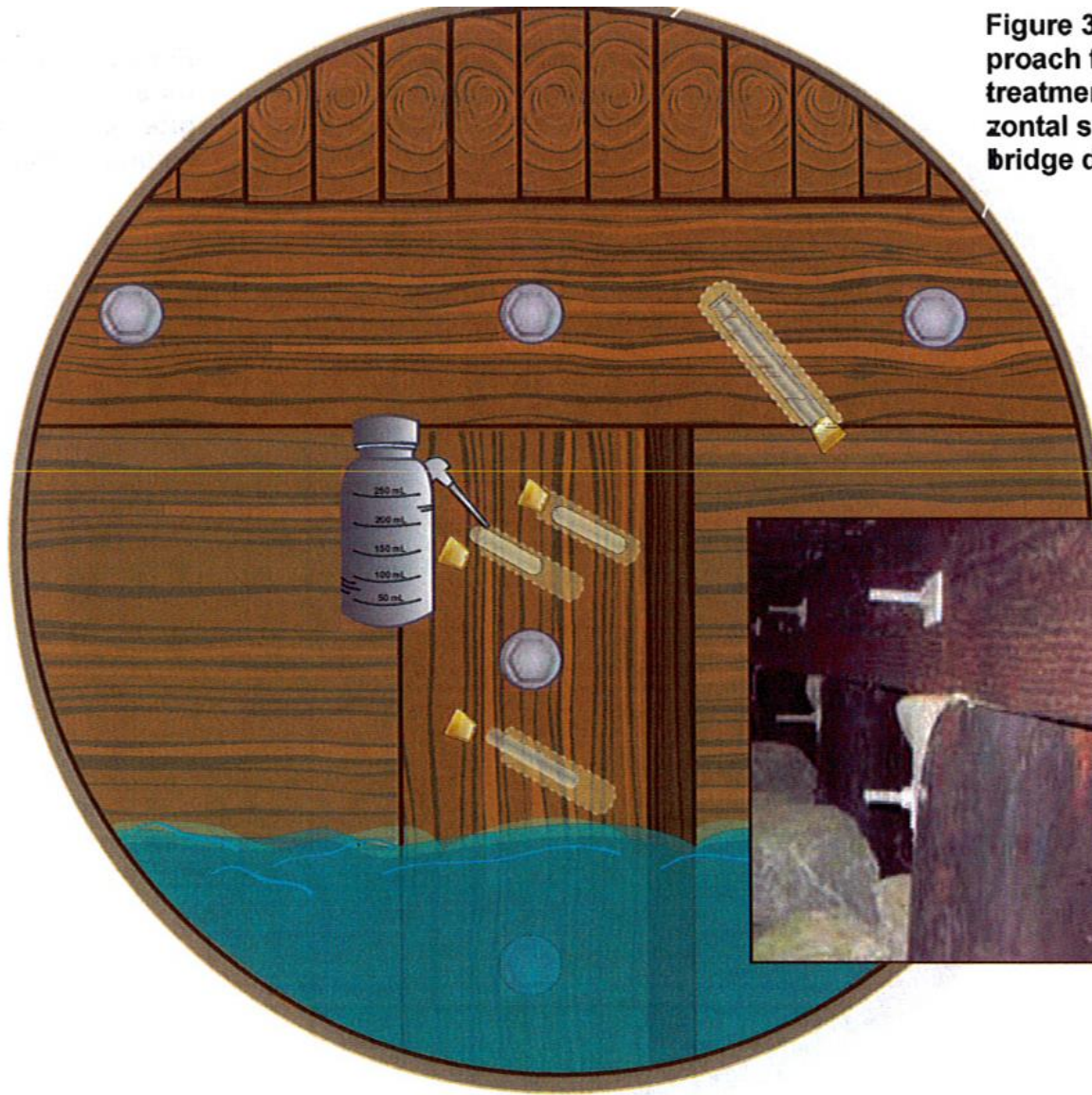
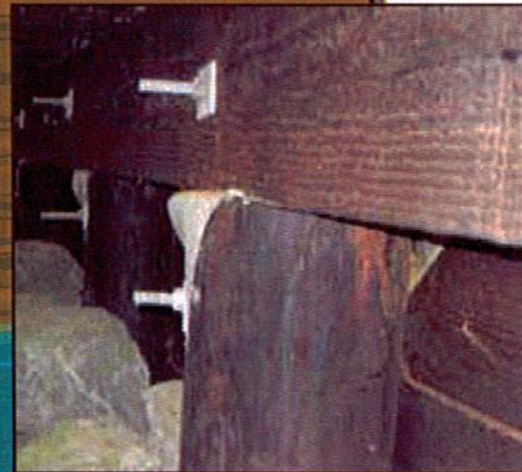


Figure 35. Example approach for supplemental treatment of piles and horizontal supports under the bridge deck at an abutment.



Drilling the holes



Inserting the rods



Thank You

- Any Questions?