

ARTICLE 27

POWDER POINT BRIDGE REPAIRS



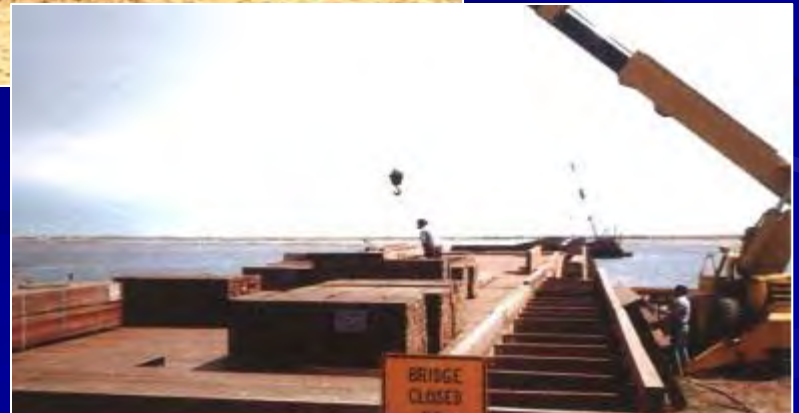
Powder Point Bridge Committee

- Jeff Lewis, Chair
- Donald Beers, Harbor Master
- Peter Buttkus, DPW Director
- Margaret Kearney
- Andre Martecchini
- Ed Vickers, DPW Highway Manager



- Reconstructed in 1987 – 25 Years Old
- Access to Beach, Gurnet & Saquish
- 2,200 Ft. Long – Longest Timber Bridge in USA
- 111 Pile Bents with 555 Piles

1987 Construction Photos

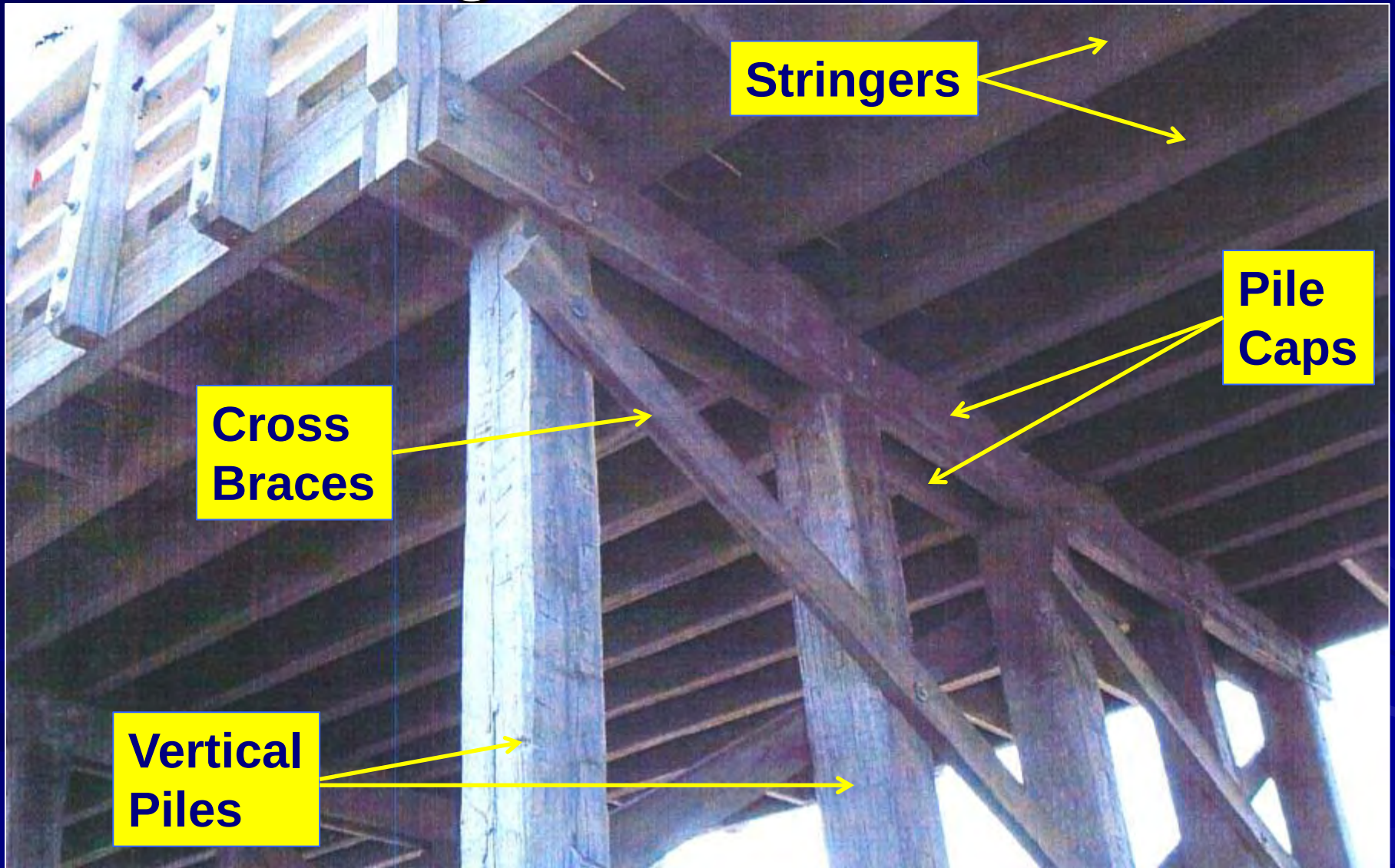


Issues



- MassDOT Inspects Bridge Every 2 Years
- Last Inspected August 2010
- Load Rating = 8 tons (Original 15 tons)
- Low Rating Limits Emergency Vehicles

Bridge Nomenclature

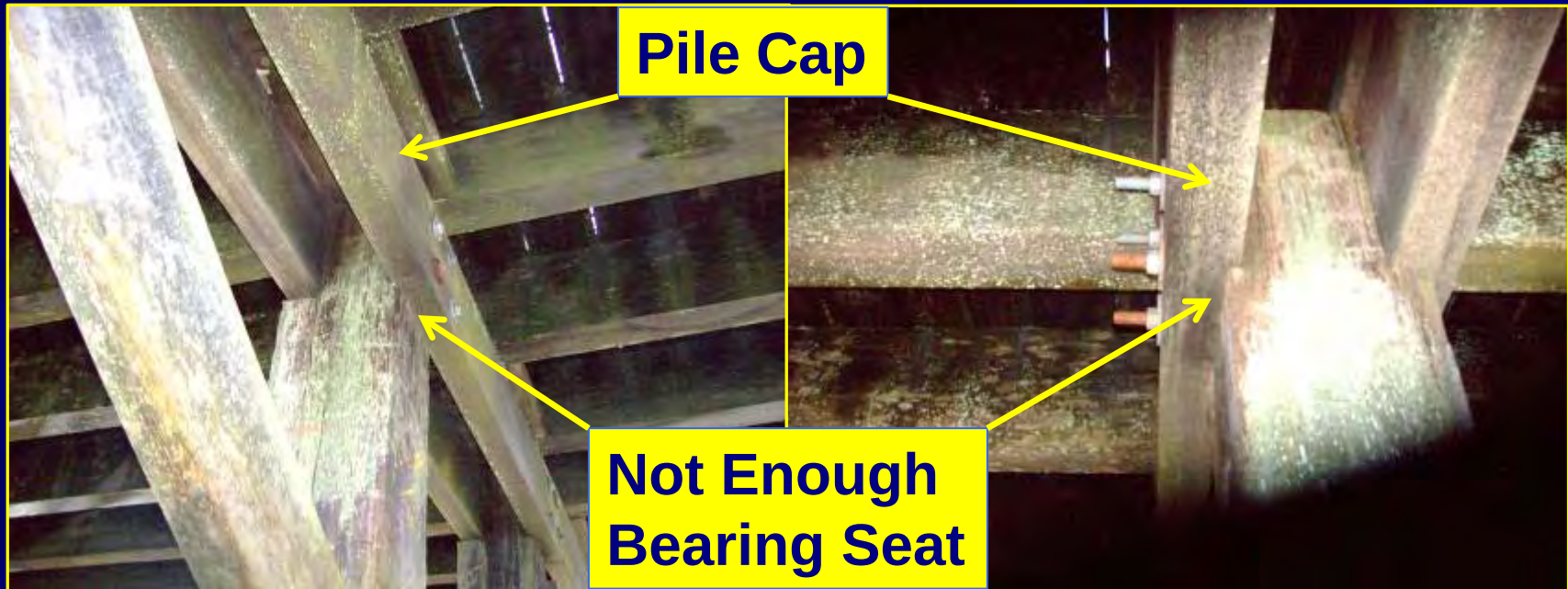


Deteriorated Deck Planking



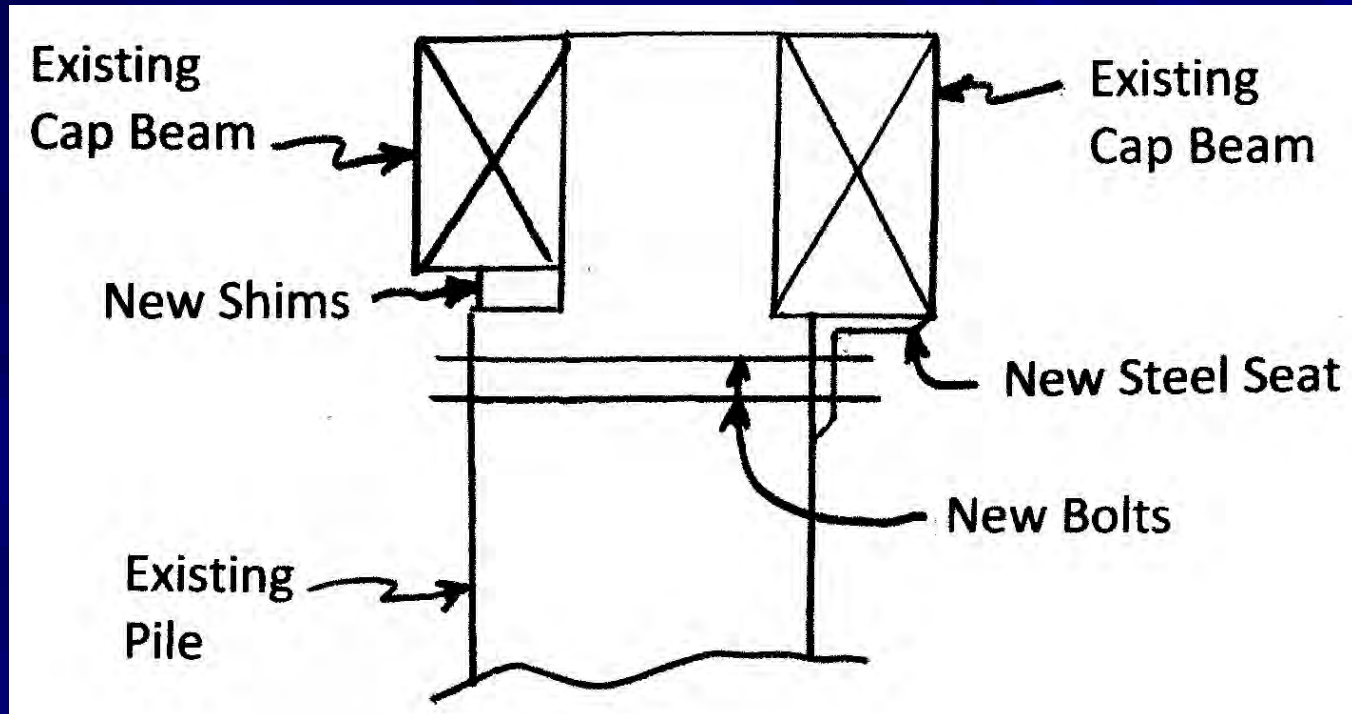
- Planking has Some Rot at Doweled Connections
- Not Typically Visible from Above
- DPW Periodically Replaces Planks Under their Operating Budget

Pile Cap Beam Bearings



- Cap Beam Connection Controls Rating
- 477 out of 1100 Connections (44%) have Problems with Bearings at Piles
- Pile Cap Beams in Good Condition

Proposed Cap Beam Repairs



- Bridge May Need to be Closed During Some Cap Beam Repairs
- Cap Beam Work Will be Done During Fall and Spring

Pile Deterioration in Tidal Zone



- 555 Piles Classified as Either Minor, Moderate or Severe Deterioration
- 2002 - 15 Piles Rated Severe
- 2010 – 137 Piles Rated Severe
- 2012 – 160 Piles Estimated Severe

Pile Deterioration in Tidal Zone

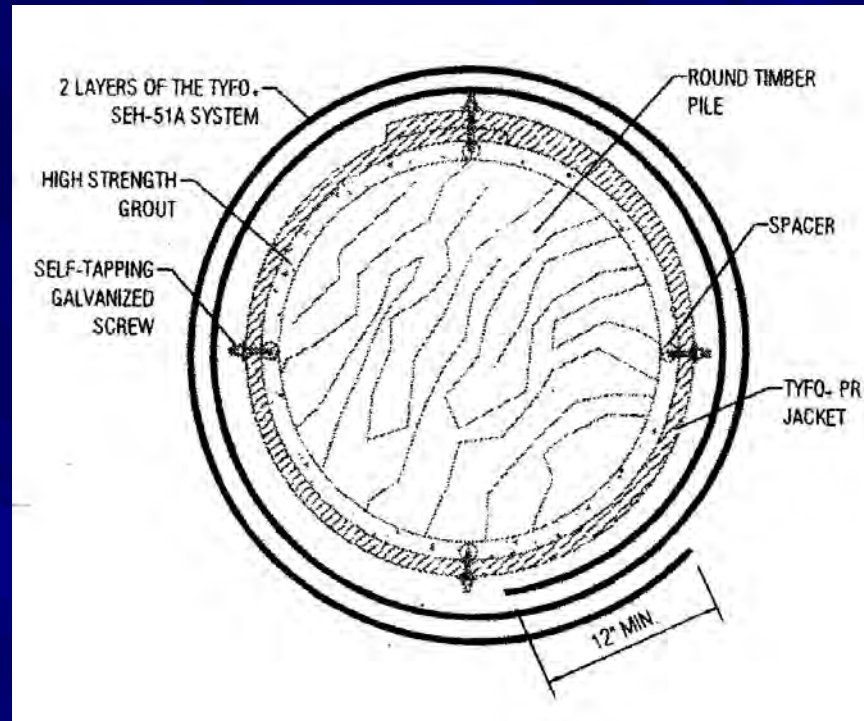


**Ice Causes
Damage**

Pile Deterioration in Tidal Zone

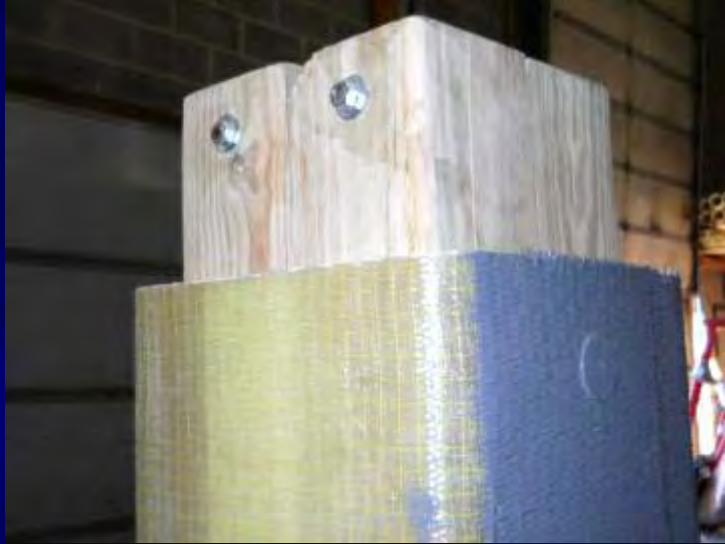


Proposed Pile Repairs



- Wrap Piles with Fiber Reinforced Polymer (FRP) Shells Filled with Grout
- Strengthens Piles and Provides Ice Protection

Proposed Pile Wrapping



Proposed Pile Wrapping



- Wrapping Can be Done without Vehicle Disruption
- Can be Done in Phases
- A Proven Technology – 25 Years Experience

Proposed Pile Wrapping



Other Alternatives Investigated

- Bridge Replacement – Very Costly with Significant Disruption
- Driving Replacement Piles – Not Feasible without Removing Deck
- Pile Section Replacement – Costly and Still Susceptible to Ice Damage



Timeframe

- MassDOT Has Approved Concept for Repairs
- Need To Prepare Final Bid Documents for Final Approval by MassDOT
- Bid Project to Contractors
- Expect to be able to Begin Work on Piles Summer (2012) and Pile Caps in Fall (2012)

Proposed Funding

- Estimated Cost of Repairs \$2.4 Million
 - 160 Piles
 - 477 Cap Beam Locations
- Annual Debt Cost \$250,000 (max.1st Yr.) Assuming 15 Year Bond at 4.25%
- Funded 80% by Increased Beach Sticker Fees – 20% General Fund
- No Prop. 2 ½ Override Required!

Thank You!

