



## Piling HP14x117 Rail Bridge

Wisconsin, USA

### Project Snapshot

- H-12 Vertical Travel Leads
- B-3505

### Project Background

The Class 1 railroad needed to replace a deteriorating 100 year old 416 ft. double track railroad bridge. As the bridge was on a high traffic line, the railroad decided to minimize the disruption to trains by compressing the construction schedule into two 120 hour construction periods, one for each track, while running trains on the second track throughout each construction period. In other words, the railroad planned to completely remove the old bridge, install foundations and install the new bridge and restore it to train traffic in 5 days. And then repeat the process a few weeks later on the other track.

### Project Description

The railroad decided to combine the use a contractor utilizing ground-based 165 and 210 ton crawler cranes equipped with swinging pile driving leads and heavy pile diesel pile hammers to expedite the bridge renewal. In addition, the railroad used two of its rail bound locomotive cranes equipped with 75 ft. Bermingham H-12 Vertical Travel Leads and B-3505 diesel pile hammers, one on each end of the bridge to assist in the demolition, pile driving and installation of the new bridge. Foundations were driven piles; 48 - HP14x117 steel piles were driven approximately 130 ft. Piles were delivered in 65 ft. sections so one splice was required on each pile configuration.

### Results

The railroad expected the crawler based pile drivers to be significantly more productive in driving piling primarily due to their larger hammers with 6,600 lb. rams. However, the smaller Bermingham B-3505 hammers with 4,000 lb. rams drove just as efficiently and sometimes quicker than their heavier competitors. The Bermingham advantage comes in the efficiency of the



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**Bermingham Equipment**  
B-3505 Diesel Hammer  
H-12 Vertical Travel Lead

Bermingham Direct Drive System and the precision of Vertical Travel Leads. The conventional under-slung drive cap, cushion material and pile adapter are inherently less efficient than the Direct Drive design. This results in a significantly less percentage of hammer energy being delivered to the pile. Thus the smaller hammer may approach the production rate of the larger hammer. Secondly, Vertical Travel Leads were designed for the purpose of eliminating the inherent shortcomings of swinging

leads - difficulty in spotting piles and maintaining pile batter. The Bermingham VTL with hydraulic spotter can loft piles, set batters and spot the piles much more accurately and avoid the pulling and resetting required on many of the piles driven by the swinging leads. In addition, positioning the second pile segment for splicing was much more efficient with the VTL. The Bermingham locomotive based pile drivers are inherently more productive, versatile and efficient than the traditional swinging leads.

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