

SLOPE STABILIZATION ON THE MISSOURI RIVER

Gasconade, Missouri



Owner: Union Pacific Railroad

Specialty Geotechnical Contractor:
Hayward Baker, Inc.

Years of Project: 2007

Client Reference:
Jeff Hill, P.E. (Hayward Baker— 314-802-2923)

Project Highlights:

The placement of an additional track adjacent to an existing main line along the Missouri River required measures to improve the stability of existing embankment slopes. The initial design included jet-grout “shear pins” in some locations to provide the required slope stability. Due to site access limitations, Hayward Baker proposed HP 12x53 driven piles as an “equal or better” alternate to the jet-grouted columns. The alternate was accepted and constructed with substantial cost and schedule benefits to the overall project

DBA performed slope stability analyses evaluations to demonstrate equivalency of the driven steel H-piles and jet-grouted columns. A multi-step approach was used that included :

- Stability analyses of the existing and proposed conditions for the embankments
- Lateral pile-soil response analyses to predict the shear resistance developed in the piles as the soil moves relative to the piles.
- Embankment stability analyses to compare the performance with H-piles to the performance with the proposed jet-grouted column shear pins.

Technical Publications:

Thompson, W.R., Hill, J.R., and Loehr, J. E. (2009). “Case History: Value Engineering of Driven H-Piles for Slope Stability on the Missouri River”, 2009 International Foundation Congress and Equipment Expo, Contemporary Topics in Deep Foundations, Geotechnical Special Publication No. 185, ASCE, pp207-214.

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