



Texas State Memorial Railroad Redoubt Stabilization

Vicksburg, Mississippi

Keller's slope stabilization design and construction at the Vicksburg Military Park earned the 2022 Excellence in Construction award from the Associated Builders and Contractors of Georgia.



The project

The Texas State Memorial was constructed at the crest of a railroad redoubt that defended the City of Vicksburg during the Civil War. The crest of the slope near the redoubt is 40 ft above a single-line railroad track. Based on observations, the National Park Service (NPS) estimated that the slope between the railroad and the redoubt would erode approximately six inches annually. In response, the NPS launched a remediation project to stabilize the slope using an anchored retaining wall.

The challenge

Access to the site was only available across a two-lane bridge that required inspection and repair by the Mississippi Department of Transportation (MDOT) and the Kansas City Southern rail line before mobilization. As a national park, the memorial and redoubt had to remain open to park visitors. Additionally, the work site was confined to less than 12 feet from the memorial, which was only slightly adequate for the track-mounted equipment.

The solution

Based on decades of experience in slope stabilization, Keller provided a design-build slope stabilization solution. The final design included a 300 linear ft-long anchored soldier pile and lagging wall, 11 ft to 26 ft tall, retained by a single row of anchors. The wall was finished using pre-cast concrete panels. Coordinating with the NPS and MDOT, Keller established two points of access to the work area on each side and a staging area for equipment and materials. Due to the access restrictions, Keller implemented the following:

- Soldier piles were dragged to their respective locations rather than using a forklift.
- Anchors were drilled with a remotely operated drill from the top of the wall.
- Due to safety concerns, all Keller work operations were halted when notified by KCS that a train was passing the work area.

The park's cultural significance, full-time observation by an NPS archeological monitor was required during all groundwork and grubbing; work was halted if an artifact was found. During construction, ground vibration was limited and monitored to ensure that work did not initiate further slope movement or cause damage to the memorial. After the retaining wall was completed, final grading was performed at the bottom of the wall, and the site was returned to its preconstruction condition.

Project facts

Owner(s)

National Park Service

Keller business unit(s)

Keller

Main contractor(s)

Keller

Engineer(s)

Keller

Solutions

Slope stabilization

Markets

Institutional

Techniques

Soldier piles and lagging

Anchors

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