

2025 Honorable Mention Project

Pompeys Pillar National Monument Stabilization

By Lucille Mooney and Larry Mooney

Pompeys Pillar is one of the most significant sandstone landmarks in the United States, made famous by William Clark of the Lewis and Clark Expedition, who carved his signature into the stone in 1806. This fragile historic inscription, along with the surrounding sandstone formation, was in danger of being lost to erosion and instability.

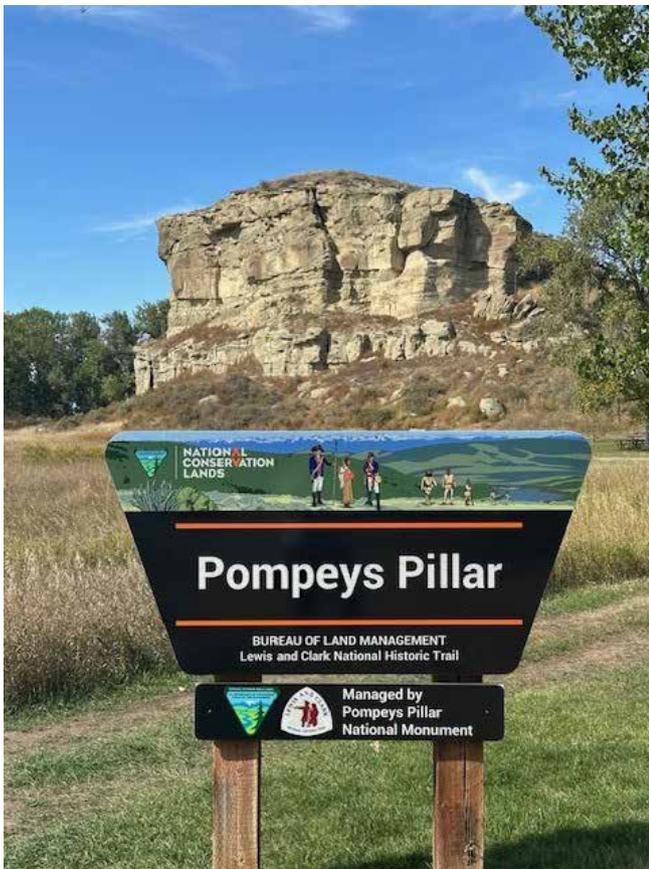
CHALLENGES

The site was half a mile (0.8 km) from the main access road. We had to ferry the supersacks through a hay field on a muddy two track path when it rained — a slushy and muddy path when it would snow — because we had to limit the size of the project footprint.

Between limitations and weather patterns, planning was a challenge as well. The Bureau of Reclamation project

engineer had to be on-site before we could start in the morning, but he lived 125 mi (200 km) from the job site and had to drop his young child at daycare at 8 a.m. So, the team had at least a two-hour wait each morning before starting (and that was if the roads were in good condition). The availability of the project engineer also limited the amount of work the drilling/general contractor could perform before we started to shotcrete.

On top of that, it seems that the wind blows all the time in Montana. This would regularly prevent work because the drillers were suspended from a crane by cables, so they could not drill in high winds. With the cold, we also had to haul in warm water — 300 gal (1150 l) at a time — 25 mi (40 km) from Billings to the job site on the days we were shooting.



Entrance to Pompeys Pillar National Monument



Clarks' framed and protected signature



Pompeys Pillar completed rock stabilization



TripTych drilling crew placing rock anchors



Partial installation of the second layer of reinforcing, ready for structural shotcrete placement

We did install 3000 ft² (280 m²) of 4x4 W4xW4 welded wire mesh and 500 pieces of #5 (#16M) reinforcing bar, all bent to conform to the substrate laid out at 6 in. (150 mm) each way in two layers, shooting in the first layer, then following with the second layer. We shot 20 yd³ (15 m³) of Quikrete Shotcrete MS in each layer, then another 20 yd³ of colored Quikrete for the final architectural layer applied by Shotcrete Montana and carved by the skilled craftsmen at Ocean Rock Art Inc.

COLLABORATION

In collaboration with TripTych Construction and Ocean Rock Art Inc, a comprehensive shotcrete stabilization

and hyper-realistic sculptural restoration was performed to preserve the monument for future generations. The project combined rock stabilization, structural shotcrete engineering, artistic rock sculpting, and logistical innovation in an extremely sensitive and challenging environment.

- Triptych Construction performed specialized drilling using a crane-suspended drill rig to anchor into the sandstone.
- Shotcrete Montana LLC installed the #4 and #5 (#13M and #16M) reinforcing bars, bent and contoured to conform to the natural shape of the sandstone formation.



A completed section of welded wire mesh and bent reinforcing bars waiting for the first structural shotcrete placement



First layer of structural shotcrete in place



Covered scaffolding providing ready access and protection from the weather

- The structural system used two layers of reinforcing bars, tied into the native formation and designed to support the shotcrete placement while respecting the fragile historic surface.
- Dry-mix shotcrete placement provided both structural stabilization and a concrete base layer fit for sculpting.
- Skilled rock artisans from Ocean Rock Art Inc created a hyper-realistic sandstone finish, replicating the texture, layering, and coloration of the native formation.

CONCLUSION

The stabilization of Pompey’s Pillar is a landmark example of how shotcrete placement can preserve history while meeting the need for structural integrity and modern code requirements. This project not only protected a critical piece of American heritage but also showcased the adaptability



Larry Mooney is the Vice President of Shotcrete Montana LLC. He is an ACI certified shotcreter and both an ASA and ACI member, with over 30 years of mining experience in Canada and the USA. Larry specializes in the dry mix process and works as a shotcrete consultant and certified shotcreter.



Lucille Mooney is the President/CEO of Shotcrete Montana LLC, and has been the owner since 2006. Shotcrete Montana LLC is a member of the ASA and ACI.

of shotcrete placement in areas with challenging access, sensitive environmental and historic preservation conditions.

Through engineering excellence, quality shotcrete placement, and artistic craftsmanship, the project team ensured that Clark’s signature — and the story of the Lewis and Clark Expedition — remain preserved for generations to come.

2025 HONORABLE MENTION PROJECT

Project:

Pompeys Pillar National Monument Stabilize

Project Location:

Pompeys Pillar, MT

Shotcrete Contractor Company:

Shotcrete Montana LLC*

Engineer Company:

Bureau of Land Management- MT State OFC

Materials Supplier Company:

The Quikrete Companies*

Equipment Manufacturer Company:

REED Shotcrete Equipment*

General Contractor:

TripTych Construction LLC

Additional Team Members:

Ocean Rock Art US*

Owner:

Bureau of Land Management - MT State OFC

*ASA Sustaining Corporate or Corporate Member