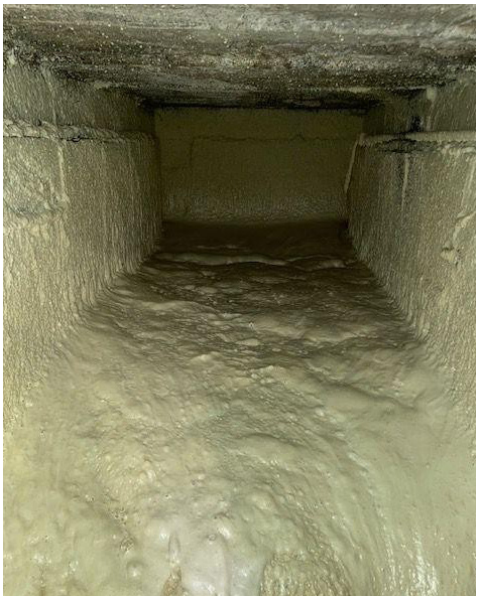
CASE STUDY
VOID FILL

Void Fill for Historic Preservation

An old farmhouse with a wrap-around porch in Lake Orion, Michigan, presented a unique challenge. Beneath the porch lay an old cellar, initially used for coal storage but now serving only as a conduit for a well line into the residence. The primary concern was the inward buckling of the cellar walls, which posed a significant safety hazard. Many contractors suggested demolishing the porch and excavating the cellar, a solution that would have incurred substantial costs for both demolition and reconstruction.



Initial Assessment

A local geotech contractor was engaged to address this issue. Upon evaluation, the team identified a more cost-effective and less invasive solution. The cellar, measuring 12 feet in length, 5 feet in height, and 5 feet in width, could be filled with foam to mitigate the risk of further wall collapse. This approach would spare the property owner the expensive and disruptive process of demolition and reconstruction.

Proposed Solution

The team proposed filling the cellar with Alchatek's AP Lift 430 foam. This material was chosen for its extensive expansion rate, superior compressive strength, and lower application temperatures. These properties allowed for quicker application intervals while maintaining optimal temperatures between applications and minimizing ignition risks.

Procedures

1. Encapsulated the well line with sonotubes elevated above the cellar floor, ensuring future accessibility.
2. Installed OSB sheathing to define foam boundaries and prevent overflow.
3. Applied AP Lift 430 in layers, allowing cooling intervals between applications to optimize expansion and stability.
4. Coordinated with masons to prepare for CMU block installation at the containment boundary, ensuring seamless alignment with the existing foundation.

Results

The foam-filling solution successfully stabilized the cellar walls, eliminating the collapse risk while preserving functionality. Compared to traditional approaches, this method saved the client approximately $25,000 and maintained the home's historic features. Completed in just five days, the project significantly outpaced conventional methods. Homeowners were highly satisfied with the noninvasive approach, cost savings, and seamless integration with their property's historic character, demonstrating the effectiveness of innovative techniques in addressing complex structural challenges in historic properties.

Alchatek