

Holding Down the Forts

The Army, Adobe, and Preservation

In August of 1846, U.S. Army General Stephen Watts Kearny climbed atop a low, flat-roofed adobe building overlooking the plaza of Las Vegas, New Mexico. From his earthen podium he proclaimed to the citizens of the village that they no longer owed allegiance to Mexico. It was Kearny's first official stop on his way to Santa Fe with the "Army of the West" to announce that henceforth, the northern territories of Mexico were now under the control of the United States government.

With the signing of the Treaty of Guadalupe-Hidalgo at the conclusion of the Mexican-American War, a vast territory—including most of present-day Texas, New Mexico, Arizona, California, and Utah—suddenly demanded attention, and the U.S. Army found itself obligated to a vast, arid, sparsely populated region, inhabited primarily by immigrants from Spain and Mexico, and by American Indians, who considered the settlers of European heritage to be interlopers.

Sun-dried earthen bricks, adobe, were a Spanish import to the New World. Their use among Native Americans was rare, although other earthen architecture forms were not. The advantages of adobe in the Southwest were obvious. It required only soil with enough clay to act as a binder, water from a creek or river, and labor. Made in wooden molds and dried in the sun, the earthen bricks could be easily formed into houses, stores, government buildings, and—as the army would soon demonstrate—forts.

Each fort was unique in design and construction, depending on its purpose, location, and availability of building materials and craftsmen. Later, each fort was unique in its abandonment, depending on the army's plan of retreat, the fort's

isolation, and the climate. And of the forts that survive, each is unique in its preservation.

This article presents four forts in the arid Southwest that are actively interpreted to the public, physical evidence of approximately 40 years of settlement, struggle, and a harsh life on this new American frontier in the last half of the 19th century. The four forts are Fort Bowie, overlooking Apache Pass in the Chiricahua Mountains in southeast Arizona; Fort Davis, at the mouth of a canyon in the Davis Mountains in west Texas; Fort Selden, on the Rio Grande in southern New Mexico on the Camino Real; and Fort Union, on the Santa Fe Trail and the high plains of northeastern New Mexico. All are units of the national park system except Fort Selden, which is a New Mexico State Monument.

What these forts have in common is that they were constructed nearly entirely, or in part, of adobe, and they share the modern problem of preserving such a fugitive material. Adobe construction is a good choice for arid climates because its principal agent of destruction, water, is in short supply. But it does rain and snow and blow in arid climates, and adobe left unsheltered is vulnerable. And while adobe requires little capital, it requires constant maintenance to fix leaky roofs, repair failing plasters, and replace erosion and loss.

Fort Union, New Mexico, post hospital in winter.





Wall fragments
at Ft. Selden,
New Mexico
State
Monument.

Military records of the day reveal that preserving the structures during their heyday was no picnic:

Indeed, from the moment they were completed until their abandonment in 1891, the fort's adobe structures were in an almost constant state of unremitting deterioration. The territorial style of architecture [at Fort Union] proved to be lamentably inadequate on the exposed plains of eastern New Mexico. The flat, tin-covered roofs were unable to provide sufficient protection from the wind-driven rain and hail storms which plagued that level open country. As a result, cracks developed, water seeped through the roofs and walls into the adobe, walls separated from the roofs and threatened to collapse, and floors and foundations rotted. The physical decline of the structures was hastened by two additional factors: the inability of the troops to perform the necessary repairs at a time when strict economy measures prohibited the employment of citizen craftsmen and a pronounced unwillingness on the part of Army officialdom to appropriate sufficient funds for annual maintenance.*

For decades now, the modern caretakers of these sites have sought to "preserve" them, using the best technologies of the day. The sites have been unburied and buried. They have been sprayed with waxes, solvents, epoxies, silanes, silicones, acrylics, and urethanes. They have been capped, uncapped, mudded, plastered, and wrapped. They have been rebuilt, augmented, reinforced, braced, propped, and reroofed. Perhaps the wonder is not how much adobe is gone, but how much remains at these sites.

After the forts were abandoned by the army, they served as hardware and building supply centers for the local populations. Quickly, roofing material, floor and ceiling joists, doors and win-

dows, and hardware—virtually anything useful—dissolved into the surrounding communities. What remained, the adobe and the foundations, was left to the elements. Each fort passed into private ownership, and over the years vandals, picnickers, and ranchers gave nature an assist and inflicted even more damage.

The preservation, or the state of ruination, at each site tells a story. And each has a complex, and continually evolving preservation history.

Fort Bowie National Historic Site

Fort Bowie is located near the summit of Apache Pass, in the Chiricahua Mountains in southeastern Arizona. For centuries Apache Pass was an important crossing point due to the natural springs that occur there. Troops stationed at Fort Bowie were involved in some of the most hard-fought battles between soldiers and Indians in the American Southwest during the last half of the 19th century, including battles with Apache leaders Cochise and Geronimo.

The first Fort Bowie was established in 1862. In 1869 it was replaced by a larger post built nearby. Both were primarily adobe. The post survived until 1894. Now Fort Bowie consists of the stone foundations of both forts, and some adobe wall fragments of the second. In the initial stabilization campaign of 1967 and 1968, the adobe wall fragments were capped with soil-cement adobes (earth amended with Portland cement), and some soil-cement veneer bricks were placed to protect weathered walls. Because of aesthetic considerations and concern that the soil-cement adobes were causing erosion, nearly all the soil-cement adobes were removed in 1978 to 1979, and the adobe was protected with an unamended crest of mud. Some fragments were subsequently treated with chemical consolidants popular at earthen sites administered by the National Park Service (NPS) at the time.

Alarmed by rapid erosion of the adobe at the site following the removal of the soil-cement bricks, the NPS covered the adobe fragments with lime plaster shelter coats in 1988 and 1989. With each change in treatment, more historic adobe was lost. Although the lime plaster will remain and be maintained, the Fort is developing a new preservation guide to shelter the adobe.

Fort Davis National Historic Site

There were two forts known as Fort Davis. Deep in the mountains of west Texas are the remains of the second fort, begun in 1867; these remains have been preserved and in some cases

reconstructed. Of the four forts, Fort Davis retains the most intact original adobe structures, primarily one- and two-story adobe officers' quarters. They are full of original plaster and many original wooden features. Two large adobe barracks buildings were reconstructed and today serve as the administrative offices, visitor facilities, and museum.

Never truly abandoned, Fort Davis had a different fate than the other forts. From the time the army left in 1891 until the site was set aside by the federal government in 1961, the fort saw mixed use by ranchers, local residents, and entrepreneurs. Not all of its buildings stood roofless for 70 years, and several were constructed of stone masonry.

The Park Service made a bold decision to reconstruct missing portions of the adobe buildings that were at least 70% intact and to replace missing roofs. Concrete bond beams were installed around adobe perimeter walls, and the porches were reconstructed. Exterior plasters were renewed on the structures on officers' row.

Sheltering the structures with new roofs has slowed deterioration significantly. Consolidating chemicals also appeared at Fort Davis, but today the unroofed adobe ruins are treated with unamended adobe caps and veneers. Some water repellants are used on modern adobe veneers to lengthen their life.

Fort Selden State Monument

The site chosen for Fort Selden was on the Camino Real de Tierra Adentro, a "royal road" extending from Mexico into its northern colony of New Mexico. Fort Selden was established in 1865 on a bank of the Rio Grande 18 miles

north of Las Cruces. There was only one Fort Selden and it was composed almost entirely of adobe.

Fort Selden was abandoned in 1878, but it was reoccupied three years later and reconstruction began, completed in 1885. In 1891, the troops left Fort Selden again, for the last time. The site passed into private ownership in 1892, and remained so until 1963 when it was donated to the State of New Mexico. In 1974, Fort Selden was declared a New Mexico State Monument. Initial stabilization consisted of clearing away the wall falls and fill, and compacting the soil at the wall bases. Most of the walls were initially capped with urethane-modified adobes, but these were removed two years later because of concern about erosion associated with the caps. Some low eroded walls at Fort Selden were covered with geotextile fabric and covered with fill, an effective technique for preserving these ephemeral fragments.

Fort Selden has been the site of an extensive experimentation in adobe preservation. A test wall program—trials of wall coatings, foundations, and capping—was begun in 1985, and the Getty Conservation Institute used the site for consolidation-amended-shelter coat trials beginning in 1993. For awhile, selected wall fragments were wrapped in aerotextiles to protect them from rain and wind.

In 1997, New Mexico State Monuments commissioned a new preservation plan for Fort Selden, and it is investigating the options for constructing free-standing shelters over some of the ruins. Adobe treatments are now limited to unamended shelter coats, and veneer infills and capping with unmodified adobes.

Fort Union National Monument

Fort Union was the first of the four forts to be set aside as a monument in 1956. Constructed in the 1860s on the windswept high plains of northeastern New Mexico, it was the largest fort in the Southwest. Today it is the largest adobe ruin in the United States. The adobe fort preserved today was the third Fort Union, following the first log fort and a Civil War earthworks. The fort housed not only military troops but also served as a depot and arsenal, warehousing freight and munitions hauled down the Santa Fe Trail, and distributing supplies to other Southwest posts.

In the initial stabilization of Fort Union in the late-1950s and early-1960s, soil-cement

Lime plaster shelter coats over adobe and lime concrete foundation walls of the Cavalry Barracks, Ft. Bowie NHS.





Non-commissioned Officers' Quarters, Ft. Davis National Historic Site.

adobe caps were placed on nearly all the walls, and tall unstable walls were braced with internal armatures of iron. Soil-cement adobes were used to rebuild missing corners and fill eroded wall bases. Almost every chemical in the NPS arsenal was at one time or another sprayed on a wall at Fort Union, but preservation today relies primarily on unamended mud shelter coats and adobes.

In 1995 Fort Union commissioned a study of adobe deterioration to determine the patterns and causes of deterioration and suggest treatments. As a result, most of the walls at Fort Union were recently recapped with new soil-cement adobes, and certain deteriorating architectural features, eroded corners and lintels for example, are augmented with unamended adobes immediately.

Conclusion

Following a long flirtation with chemistry (and the romance isn't completely dead) the forts are relying less on chemical solutions and more on compatible materials. Sheltering with mud or lime plaster, or with roofs, and maintaining historic plasters where present are the preferred preservation methods.

Each fort has a documented history of preservation and stabilization. By revisiting these histories, by studying what technologies work and why, and by better understanding the processes of deterioration of adobe architecture the preservation specialists charged with caring for these important sites are becoming more efficient and effective.

For years these cultural properties have had to make do with fewer resources—both financial and human—than required. Nature is an

intractable, and unbeatable, foe. Properly and continually cared for, adobe buildings can last for centuries. Indeed, there is evidence that the adobe building General Kearny used to make his pronouncement on the Las Vegas plaza more than 150 years ago is still standing. Today it is a music store. Roofless and exposed to the environment, however, these buildings are continually at risk.

Note

- * Dwight Pitcaithley and Jerome Greene, *Historic Structure Report, Historic Data Section, The Third Fort Union, 1863-1891, Fort Union National Monument* (Denver, Colorado: Denver Service Center, National Park Service, Department of the Interior, 1982), 12.

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Photos courtesy the author.