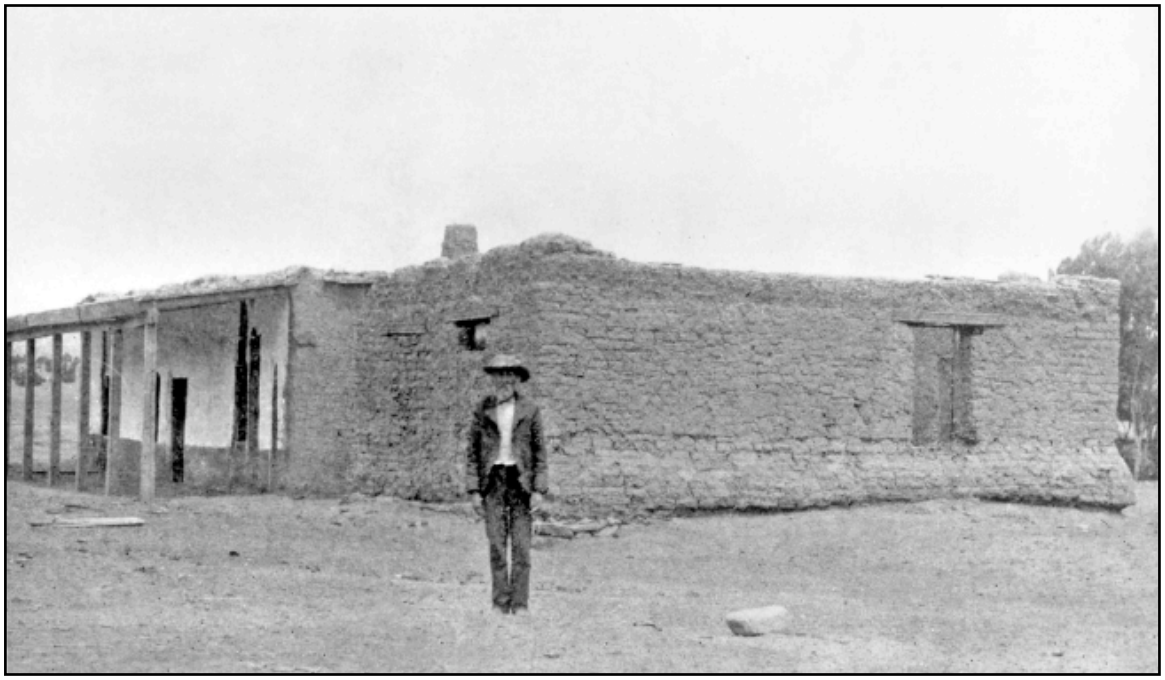
PECOS NATIONAL HISTORICAL PARK
KOZLOWSKI'S TRADING POST RESTORATION PROJECT



EAST WING MILLWORK RESTORATION
COMPLETION REPORT

Prepared for
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by
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EXECUTIVE SUMMARY

Faculty from the University of Vermont, professional staff, and graduate students from the University of Vermont (UVM) and the University of New Mexico (UNM) are currently participating in a multi-phased project to preserve and rehabilitate the Kozlowski's Trading Post at Pecos National Historical Park (Pecos NHP), a building with significant historic connections to the Santa Fe Trail and the Forked Lightning Ranch. The project was organized to conserve historic millwork in the building, improve building envelope performance, and capture information related to construction chronology. Repairs were implemented in a field school format in order to provide students with practical experience in preservation planning and hands-on conservation by directly employing them in every step of the process. The work was conducted under CESU Cooperative Agreement H8W07060001, Task Agreement J8W07100008, between Pecos NHP and UVM.

The windows, doors, and associated millwork found at the Trading Post are crucial to the building's interpretation, as they provide important visual cues about the evolution of the structure and the nature of its use over time. The National Park Service intends to use the Trading Post as office space. The objectives of the current project are focused on the east wing of the building and include documentation and conservation of period millwork while creating functional and weatherproof windows and doors for a working building.

This completion report addresses the condition assessment and treatment of millwork on the Trading Post's east wing during the months of July and August 2010. It describes the significance of the site and structure, defines the conservation and restoration goals of the project, provides a general overview of the work performed, and includes a detailed written and photographic record of the conditions of each door and window unit both before and after treatment.

SIGNIFICANCE

Site History

Pecos National Historical Park, located between Interstate 25 and the Santa Fe National Forest along the base of Rowe Mesa in the Pecos Valley, is a landscape marked by thousands of years of human history. Signs of human habitation at the Park date to as early as 9,000 B.C.,[1] however, the majority of archeological sites represent Puebloan occupation, from the 12th century continuing into historic times. In 1598 A.D. the Spanish established a mission in the area and began to parcel out land from the Pecos Pueblo to Hispanic families who established small farms throughout the valley.[2] Archeological research at several sites in the Park show evidence of trade between Pueblo and Plains tribes as early as 1400 A.D.,[3] and Native American trade routes through the Pecos Valley were later incorporated into the Santa Fe Trail, an important commercial route through the Southwest in the first half of the 19th century; due to its geographic importance, Glorieta Pass was also the site of a decisive Civil War battle in 1862.

Coinciding with Mexican independence from Spain, in 1821 the US officially sanctioned the Santa Fe Trail, connecting Midwest trade routes with the Camino Real leading to Mexico City.[4] The Trail brought a slow but steady stream of Europeans into the area, one of whom was a Pole named Martin Kozlowski. Kozlowski acquired a hostel along the Trail, adjacent to a spring near Glorieta Creek.[5] During the Civil War, Union forces stationed themselves just west of Mr. Kozlowski's Inn and utilized it as a medical facility, where the wounded from the Battle of Glorieta Pass were treated.[6] After the war, the building served as a trading post operated by Kozlowski.

New Mexico moved quickly into the industrial age with the establishment of major rail lines in the region in the 1880s. The Atchison, Topeka and Santa Fe railroad laid its tracks on the west side of the Pecos Valley, eventually drawing traffic and customers away from Kozlowski's Trading Post.[7] In 1898 Martin Kozlowski deeded the trading post to his son, Thomas, who lost the property in 1925 for non-payment of taxes.[8]

In 1925, the US government granted title of two large land parcels, one of which included the former Kozlowski property, to rodeo promoter Tex Austin. Austin dubbed the property the Forked Lightning Ranch, which he operated as a working dude ranch between 1925 and 1935. During this time, Austin commissioned architect John Gaw Meem to design a guest house for the ranch, while the Trading Post served as the ranch store and foreman's facilities. Meem also provided sketches for the west wing of the Trading Post, added during Austin's ownership. In 1935, under financial duress, Austin signed the ranch over to creditors. W. C. Currier bought the Forked Lightning Ranch the following year, and sold it to E. E. "Buddy" Fogelson, a Dallas oilman and rancher, in 1941.[9]

In 1949, Fogelson married actress Greer Garson.[10] The couple lived and entertained guests at the ranch house, while the Trading Post continued to serve as the ranch's operational headquarters. During their tenure, Fogelson continued to purchase land, expanding the ranch to approximately 13,000 acres.[11] When Mr. Fogelson died in 1987, the Forked Lightning was divided into two parcels along the southern boundary line of the original Tex Austin property. Mr. Fogelson's son inherited the southern portion, and Greer Garson Fogelson received the northern portion containing the "old " Forked Lightning Ranch. In January 1991, Garson sold the Forked Lightning to The Conservation Fund, which donated it to the National Park Service, who incorporated it as a part of Pecos National Historical Park.[12]

Since the National Park Service acquired the property, the staff of the park has worked to develop preservation plans for the significant structures, including Kozlowski's Trading Post. In 1999, the building was re-roofed and several adobe courtyard walls were repaired. Pecos NHP employees used the rooms in the west wing as office space between 1999 and 2005, at which time a plan for more comprehensive restoration and rehabilitation of the space was developed and initiated.

Property Description

Although the exact construction chronology of the Trading Post has not been determined, an 1899 historic photograph suggests that the east wing dates to the mid-1880s with alterations and additions (Fig. 1) occurring in the early 20th century subsequent to Text Austin's acquisition of the property. An east room is thought to have been added in 1911, creating an L-shaped form, and several additional rooms added in 1925 resulting in a rectangular block, two rooms deep. A second wing was later added to achieve the property's current configuration, consisting of 17 rooms arranged around a large courtyard.[13] Phases of construction were driven by the needs and capacities of the various Trading Post owners, as demonstrated by a variety of construction methods and materials; while the building was extensively altered by Austin, fabric evidence related to the historic development of the building survives, including subsurface remains of foundation walls, early wooden lintels (perhaps salvaged from other buildings), adobe infill of some door and window openings, and millwork surviving from more than one renovation campaign.

Though there is evidence that earlier structures existed on the site, based on the 1899 photo, the property Kozlowski purchased and operated as a hostel and trading post appears to have consisted of two structures - a three-room adobe structure which sits directly north of and along the same axis as a smaller un-roofed one-room adobe structure.[14] A materials study suggests that some of the bricks were scavenged from the Pueblo and Mission ruins.[15] Attempts to establish an exact date of construction are hindered by a lack of archival data, the clear evidence of reused materials, the constant introduction of new material required to maintain adobe

structures and as a result of remodeling. Though the structures were used for a variety of purposes during his tenure, there is no definitive evidence to suggest that Martin Kozlowski made any significant additions or alterations while he owned the property.

According to evidence from a dendrochronology study, Martin Kozlowski's son Thomas re-roofed the Trading Post and may have added a room (Room 4) onto the east side of the southernmost room of the three-room structure in 1911.[16]

When Tex Austin assumed ownership of the property, he immediately renovated and remodeled the space to accommodate the needs of his dude ranch. Construction consisted of two major additions to the existing structure. Austin may have had two rooms (Rooms 5 and 6) added to the east side of the building making the structure a uniform rectangle.[17] He is also thought to have enclosed the narrow patio between the northern and southern structures, roofed the un-roofed structure, and added a large jacal barn and a long narrow shed to the southern edge of the un-roofed structure. Based on a dendrochronology study of the vigas of these rooms, construction is dated to 1925.[18]

During a second campaign, a west wing was added creating a southwest-facing courtyard. The west wing consists of an entryway connecting the two wings, a large living room in the far northwest corner, with a kitchen extending south of the living room, a bathroom, and two bedrooms separated by a bathroom. Millwork in this portion of the building matches that of the Forked Lightning Ranch House, suggesting a similar time of construction. John Gaw Meem's archives contain several sketches showing site plans and elevations including the Trading Post west wing, which may indicate that at the very least the architect was consulted on its design.

Fogelson and Garson did not make any major additions to the building, and the current floor plan remains essentially the same as it was in 1926.[19] During their tenure, changes to the building were aesthetic rather than structural. Garson developed a bright color palette that was used in both the Forked Lightning Ranch House and the Trading Post.

Possibly to provide living quarters for ranch hands, the interior of the jacal barn was plastered, barn doors were converted to windows, and additional doors and windows were added to the south and east walls of this room. These changes appear in historic images but dates are unknown.

The 2002 Historic Structure Report suggests that at some point late in the Fogelson/Garson period, part of a portal was enclosed to create two small rooms along the east side of the building. At the time of this assessment, those structures have been removed. In 2002, the Pecos NHP ceased to use the space for offices although several rooms are currently functioning as a storage facility.

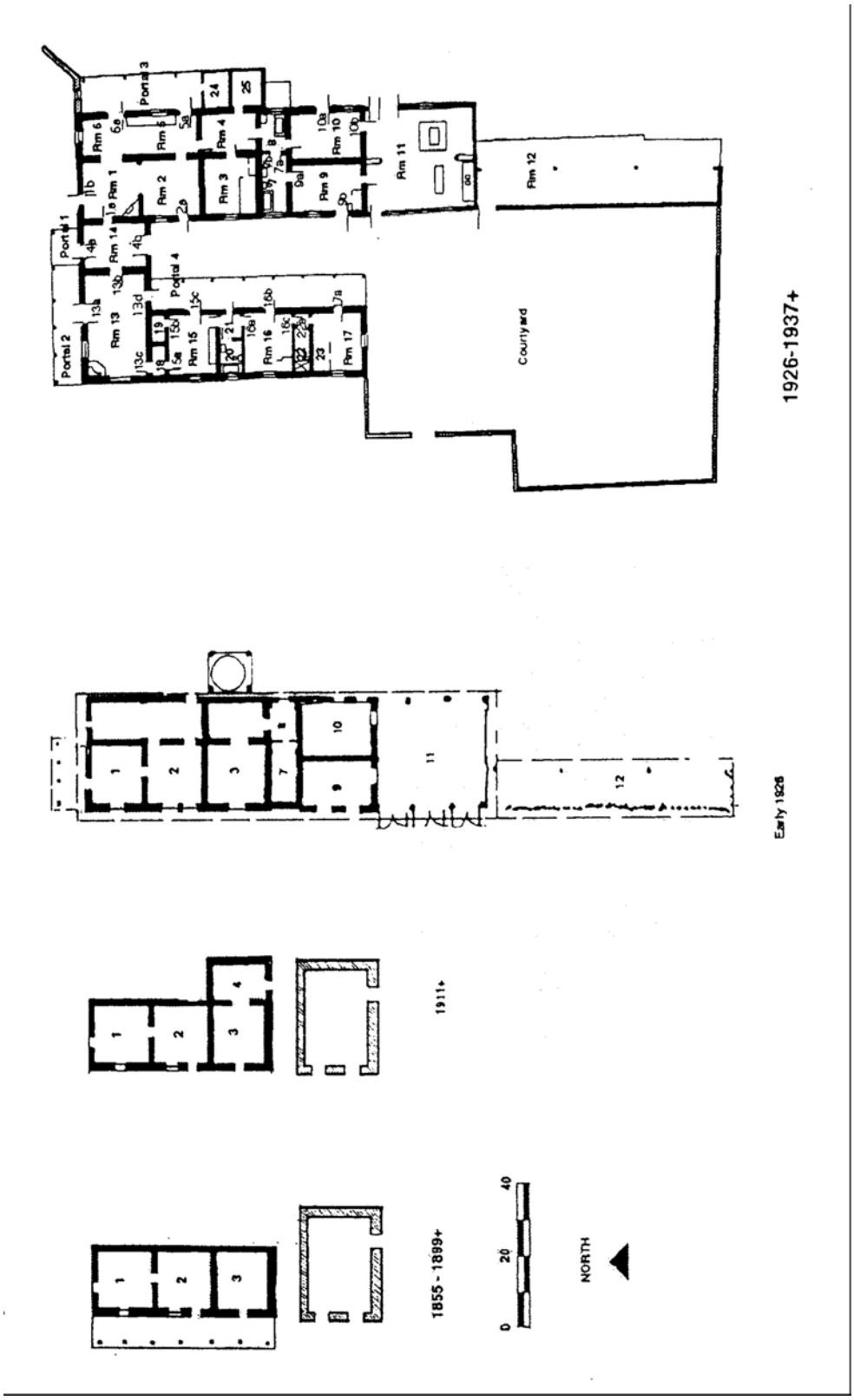


Figure 1. Plan view of Trading Post structure.
Source: *Historic Structures Report: Trading Post, Forked Lightening Ranch House, Forked Lightening Pump House. July, 2002.*

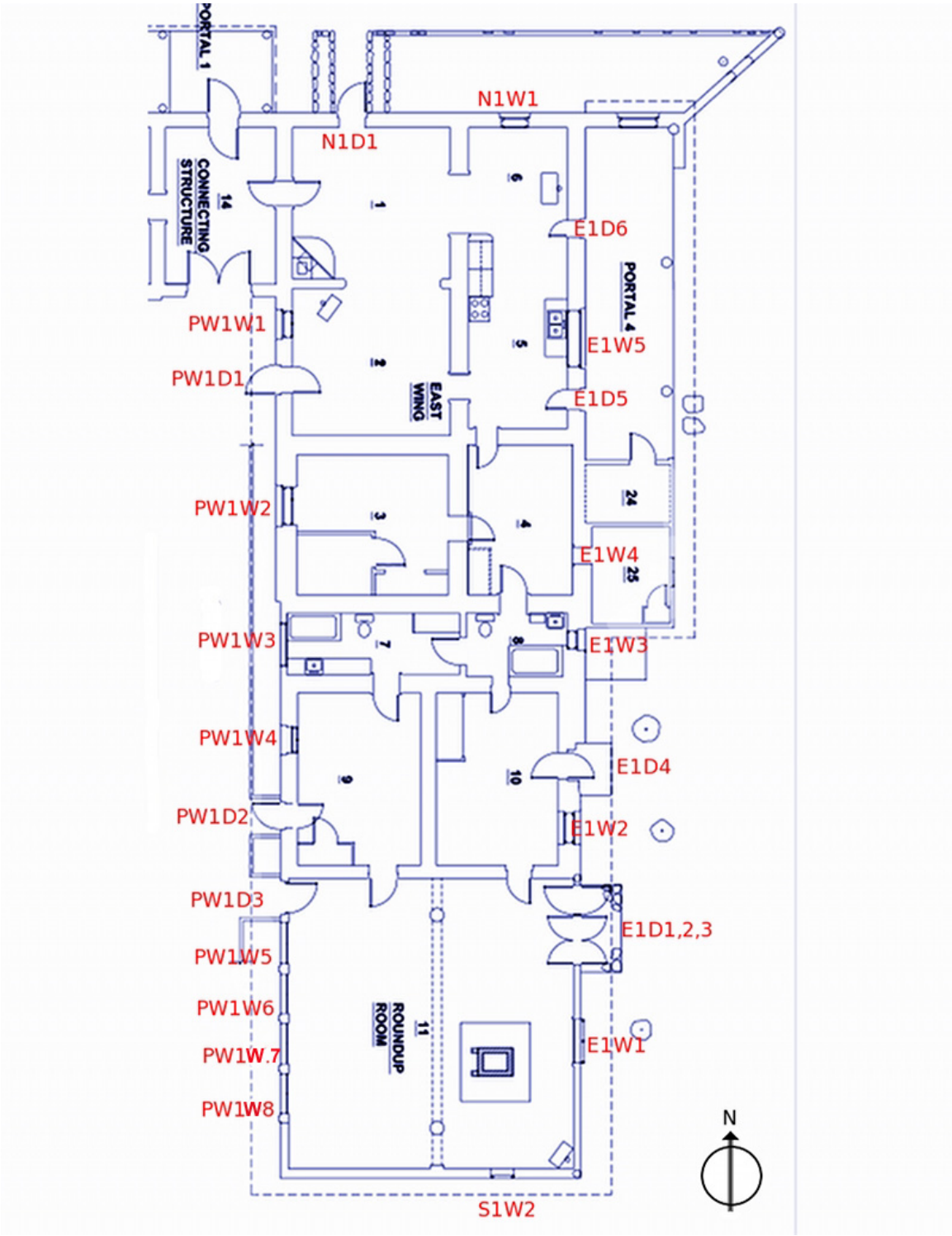


Figure 2. Floor plan of east wing, unit numbers indicated in red.

Period of Significance

The Pecos National Monument was designated in 1965, and was listed on the National Register of Historic Places in 1966 and the New Mexico State Historic Register in 1969. These nominations were amended in 1991; the more recently acquired Forked Lightning Ranch lands and the sites within, such as Kozlowski's Trading Post, were not included in this nomination. The Trading Post was determined eligible to the National Register in 2006 under Criteria A and D. Its period of significance begins c.1858 (Martin Kozlowski's acquisition of the property), and extends throughout the life of the Forked Lightning Ranch until its transfer to the National Park Service. The Trading Post is associated with the Civil War Battle of Glorieta Pass, trade along the Santa Fe Trail, ranching and tourism in the West associated with the coming of the railroad and Route 66, and with the lives of Tex Austin, Buddy Fogelson, and Greer Garson.

Millwork Chronology

The millwork chronology proposed in this report is based on documentary accounts included in reports commissioned by the park,[20] a limited number of historic photographs, and fabric evidence encountered during the course of assessment and repair. Remodel dates listed in the 2002 *Historic Structures Report* were established through dendrochronolgy of vigas; based on the uniformity of sash styles in the oldest rooms (Rooms 1-3), it appears that the earliest doors and windows in the Trading Post (PW1W1-4; E1W2,4,5, N1W1), date to either the Kozlowski period or to the 1925-6 remodel done by Tex Austin.

Figure 2 illustrates the numbering system used to describe window and door openings. Appendix A provides drawings of each millwork profile as well as a table listing the profile used on each unit.

Kozlowski Ownership 1858-1925

The east wing's western wall is one of the oldest in the structure; in one historic photograph, the rough openings appear to be the same today as they were at that time, though the angle of the photograph does not show the style or general configuration of the windows. This wall shares a uniform jamb construction with the walls of the Austin additions to the original room block, in which the jambs are nailed directly to the rough bucks. Several lintels in the west wall are of hand-hewn timbers in the round (PW1W1,2).[21]

Tex Austin Ownership 1925-1933

Windows in the east wing of the building, aside from those found in Room 11, are double- or single- hung, six over six light, un-weighted sashes with an ovolo sticking profile (Profile C); sliders in the kitchen (E1W5) and bathroom (PW1W3) make use of the same sash type. This type of window sash exists in both the newer and older rooms; jamb construction is consistent throughout the east wing of the building (except for the *jacal* addition) and argues for installation of all units of this type at the time that Austin renovated the east wing. While it is possible that some of these sashes were salvaged from Kozlowski's rooms and reinstalled in updated jambs, the sashes lack screw holes, hardware ghosts, and other evidence suggesting earlier installations in other configurations.

There are two primary door types represented in the east wing (Room 11 excepted): a fifteen-light glazed door with a cove-and-bead sticking profile, and a four-panel door with cove-and-bead sticking. A single example of a ten-light glazed door with a bead-and-fillet sticking profile was also present (E1D5). Doorjamb construction consists of 4/4 jamb sides, tops, bottoms, and casings nailed directly to rough bucks, and is consistent with window jambs in the east wing. The two door types are distributed somewhat randomly, and the combination of different types may have been functional (to admit light in some rooms and maintain privacy in others) or may be the result of two or more construction campaigns.

Austin had the west wing built concurrently with the Forked Lightening Ranch House around 1926. Most windows and doors in this section of the Trading Post are of the same styles as those installed at the Ranch House. Windows are machine-made, paired casement types with six light sashes, using an ogee sticking profile. Doors are of two styles: horizontal five-panel doors with raised panels or glazed doors with three panels and four-light glazing in the upper section, all having an identical ogee sticking profile.

W.C. Currier 1933-1938

The historic record does not suggest that any construction happened at the Trading Post during this time.

Buddy Fogelson 1939-1987

During the Fogelson era, ranch hands lived and worked out of the Trading Post;[22] the extensive renovation of the *jacal* barn may have been intended to provide living quarters for ranch hands. The barn was plastered, barn doors were converted to windows, and additional doors and windows were added to the south and east walls of this room (Room 11).

While the windows and doors throughout the eastern room block have similar sashes and hardware, those found in Room 11 are distinctly different. All windows in this room are installed in a makeshift fashion, using factory-made sashes in roughly constructed jambs. Two windows feature pairs of six-light sashes with an ogee profile (Profile B); S1W2 sashes are configured vertically in a single-hung arrangement, while E1W1 sashes are installed side-by-side as an inoperable unit. The four windows on the west (courtyard) wall (PW1W5-8) feature eight-light sashes with an ogee profile (Profile A) in a bay of four paired casement windows. A board-and-batten door on the west façade appears to have been site-constructed for the opening. Glazed doors on the east façade are vaguely reminiscent of glazed doors elsewhere in the east wing, but appear to be recently constructed. .

The historic record does not provide a specific date for the installation of these windows and doors, but the changes likely occurred after the early 1960's. Greer Garson, a fan of brightly colored paint, implemented an orange and blue color scheme throughout the ranch.[23] Evidence of earlier paint colors does not exist on the doors and windows in Room 11, suggesting they were installed after the color scheme was implemented.

The small sliding aluminum window in the bathroom on the east side of the east wing (E1W3) is inconsistent with any other window element in the building. This room was presumably finished and roofed during Tex Austin's ownership, though the style of the window suggests it was installed recently; no evidence exists to provide a conclusive date of installation.

1991-Present

Since the National Park Service assumed ownership of the Trading Post, no windows or doors have been removed or replaced. The most significant changes to historic millwork during this time include the addition of new locks on doors and windows to secure the building, the sealing of windows and doors using various types of plaster, putty, and insulation, and the trimming of doors and sashes to operate in jambs that have shifted over time as the building settled.[24]

CONDITIONS AND TREATMENT

MODES OF DETERIORATION

Joinery Loss

As the building settled over time, many window and door openings were no longer square, level, or plumb. The structural integrity of many of the sashes and doors was compromised by successive modifications to try to maintain operability; where jambs and/or openings were no longer square or plumb, rails and stiles were often cut down in an effort to improve fit. In some cases, enough material was removed to result in substantial loss of mechanical strength at the joints, leaving mortise-and-tenon joints without relish and held together only by one or two steel pins.

Vandalism

Since its construction, the Trading Post has gone through alternating periods of vacancy and occupation. Most recently, from the early 1990's to the early 2000's, the National Park Service utilized rooms in the north and west wings of the building as office spaces. These offices were moved to the Forked Lightening Ranch House and the Trading Post now lies empty with some rooms functioning as storage. Though security measures have been taken, including new locks and motion sensors on doors and windows, the space is uninhabited, and thus prone to vandalism. In attempts to gain access to the building, vandals have broken window and door muntins, and damaged lock stiles and rails. Attempts to secure the space have involved the permanent sealing of some units, rendering them inoperable. These measures have resulted in additional damage.

Ultraviolet Exposure

Exposure to ultraviolet light results in deterioration of the lignin that acts as the matrix binding the longitudinally arranged cells found in wood fiber. Prolonged exposure leads to checking and cracking, and powdering of the wood surface. Checks and cracks are avenues for the infiltration of moisture, and an increased moisture level in the interior of wooden elements makes them more susceptible to attack by wood-decaying fungi or insects. One preventative measure is to keep wooden elements painted. For at least the last thirty years, however, maintenance of exterior paint has been sporadic.

Moisture Impacts

Despite the dry climate, several areas of the millwork units are affected by decay.. Elevated moisture levels promote decay in areas like the thresholds and sills, and the lower horizontal elements of window sashes and doors. Poorly fitted jambs or jambs that have shifted with the settling of the building have directed water to unprotected woodwork, resulting in decay of sills, casings, thresholds, and jambs. Cracks that form between exterior plaster and wooden jambs contribute to dampness of adjacent woodwork and promote decay. This condition is exacerbated

by poorly-detailed window installations, where the location of jambs to the inside of the building guarantees that water will infiltrate between sills and exterior stucco. The grade of the site directs surface water toward the building, rather than away, causing door sills and the lower portions of rough bucks to rot.

CONDITIONS AND TREATMENT

The exterior of the east wing contained 25 door and window openings, of which 23 were addressed in this phase (PW1W3 and E1W3 were excluded; see Appendix D). The scope of work included the restoration of thirteen pairs of sash and five doors. Four additional doors were remade to facilitate access in compliance with ADA regulations governing door width and floor height/slope (E1D1-3, E1D5), and one set of sash was fabricated to convert an empty doorway to a window (E1W4).

The window sashes found in the Trading Post's east wing can be grouped into three general styles; two different sizes of 6/6 double-hung sashes are found (using Profiles B or C), as well as a style of 8-light casement windows (using Profile A). The 6/6 stiles are constructed using mortise and tenon joinery, fastened with metal pins through the joints. Mortises were cut with a hollow-chisel mortiser. The casement windows are of similar construction, though the rail mortises at each end of the stiles were cut with a chain mortiser, producing a mortise with rounded interior corners and requiring that the tenons at the rail ends be trimmed at the corners to match.

Sash stop profiles varied throughout the site; some units contained more than one profile, and some stops were unmolded and clearly made on-site using whatever material was available. Of the molded stops, the two dominant profiles (S1 and S2) are recorded in Appendix A. Stops are relatively ephemeral and are often destroyed and discarded when sashes are removed from jambs for maintenance or other purposes; since no clear pattern existed, the decision was made to reproduce one of the two dominant profiles (S2).

Five of the nine doors included in the scope of the project are 15-light doors with ogee (Profile 4) or cove-and-bead (Profile 3) sticking profiles, one (E1D5) is a 10-light door with a bead-and-fillet sticking profile (Profile 2), and two are four-panel doors with cove-and-bead sticking profiles (Profile 1). These doors are production-manufactured doors dating to the first half of the 20th century (with the exception of those featuring Profile 4 (E1D1-3), which are more recent), and are constructed using stub tenons secured with dowels. One additional board-and-batten door leads to the courtyard from the Room 11 and was not included in the scope of work (PW1D3).

Prior to repairs, nearly all window and door openings were out of square, level and/or plumb. Doors and window sashes had, over time, been modified to fit deformed openings by means of tapering the top and bottom rails. For some window openings, the adobes below the windowsills had experienced moderate to severe deterioration (N1W1, PW1W1, 2). Consequently, before repair work could take place, Pecos NHP employees removed all window material down to the rough openings. Interior plaster was cut back, jambs and rough bucks were removed, and the damaged walls were repaired in preparation for the reintroduction of the windows. In instances where door openings were plumb and square (and the doorway's header or threshold height did not need to be adjusted in order to conform to a change in finished floor level pursuant to ADA regulations), jamb material was removed but rough bucks were left in place.

Where new window bucks were required, four-sided replacements made of yellow pine were fabricated to fit each opening and were treated with Boracare before priming. The bucks were fastened to the lintels using shims and spacers as necessary to fill gaps and ensure that they remained plumb (a technique used in the installation of the historic bucks), and were attached to the bottom of the window opening using fasteners driven into wooden dowels let into the adobe below. The walls were then re-plastered using the bucks as a screed.

Door bucks were approached in a similar fashion, although in two instances the replacement bucks are three-sided rather than four-sided, and incorporate the existing lintel as a header. This modification addresses the need to raise the finished floor height in accordance with ADA regulation while still maintaining the overall size of the opening in order to accommodate the historic door. Yellow pine sills were treated with Boracare™ and primed, and new oak thresholds were milled and treated with Woodlife™ prior to installation.

All jambs and sash stops were determined to be unsalvageable; replacement window and door jambs were made from Douglas fir, and were treated with Boracare™ prior to priming. Jambs were installed in the rough bucks and trimmed out with exterior casings to cover the junction of buck and plaster. Doors were hung and the unglazed window sash was installed, ready for glazing and painting by Pecos NHP staff or outside contractors. While most window glass remained in windows and doors, in almost all cases the glazing compound securing panes had deteriorated to the point at which replacement is necessary. The historic glazing was removed from each unit prior to repair work. For safety purposes, glass in doors was replaced with tempered glass.

As Pecos NHP staff plan to inhabit the space upon full stabilization of the building, several features, including weatherstripping, screens, and storm panes are all important in maximizing ventilation and insulation. Inspection of existing fabric showed there was no consistent system of weatherstripping; several units had never been weatherstripped at all. Additionally, the older compression-bronze

weatherstripping had damaged the edges of sashes, doors and jambs, making them more vulnerable to decay and less energy efficient. A low-profile, energy efficient, consistent solution for optimum weatherstripping was selected and installed on windows and doors, replacing what was essentially an ad-hoc configuration with no historic significance (see page 18 for a discussion of this and other design alterations).

IMPLEMENTATION

Repair Strategies For Windows and Doors

A conservative approach to the repair of Trading Post millwork was recommended because of its historic and physical value. The National Park Service is guided by the Secretary of the Interior's Standards for Treatment of Historic Properties; due to the importance of the resource, the project team also followed the guidelines set forth in ICOMOS' Principles for the Preservation of Historic Timber Structures.

Millwork was documented prior to repair, including conditions survey and photo documentation of each door and window unit (see appendices). Historic photos and documents were consulted to develop a body of information on each opening and to further establish the construction chronology as discussed in the previous section of this report.

Repairs to existing historic fabric were performed using traditional methods of joinery, and any replacements were made in-kind. Small portions of damaged material were removed and replaced using a variety of techniques (discussed in detail in the following section). Individual elements (muntins, rails and stiles) that were beyond repair were replaced with new elements fabricated using the same methods as the originals. In all cases, the goal was to minimize the loss of historic fabric while achieving the broader project requirements of operability, efficiency and security.

Three general approaches were used in the repair and restoration process, with the goal of preserving as much of the historic millwork as possible. Paint sampling was performed on each unit, and samples were catalogued for future analysis should the NPS wish to restore an historic paint scheme. Deteriorated paint was then professionally removed from all units using methylene chloride stripper. In cases where elements were structurally sound and square, the only additional treatment required was the removal of failed glazing and the cleaning of the glazing bars.

In instances where doors and windows contained damaged elements but were otherwise usable, units were disassembled and those damaged elements were removed and either repaired or replaced in kind. Custom tooling was ordered which allowed the replication of the historic sticking profiles (see Appendix A for drawings of the various profiles). The majority of the new elements were produced using custom-made cope and stick cutters on a shaper, though one profile required an insufficient amount of new material produced to justify the cost of the machined cutter set. The profiles for these elements were produced by hand, using a filletster plane with a custom-ground iron.

Several elements were not considered eligible for repair due to the need to accommodate NPS concerns such as ADA accessibility, and were replaced. One missing unit, E1W4, was replaced. This opening was originally a window, which was later converted to a doorway, though no door or sash was present; the opening was restored to serve as a window. In all cases, new elements were fabricated which incorporate the necessary design changes while maintaining the use of historic joinery methods, construction and architectural detail.

Preservative treatments were used to enhance the durability of wooden elements; Boracare™ was used as a topical biocide treatment for old and new woodwork alike, with primer applied afterward. On non-painted surfaces, such as door thresholds, Woodlife™ was used as a mold deterrent and water repellent preservative. Woodlife™ is a preservative used to prolong the structural integrity of wood, especially non-pressure-treated varieties, to protect brand-new or weathered wood from mold, mildew and other fungal attack, and to prevent dimensional change caused by water absorption. Boracare™ is a borate-based fungicide/insecticide used to prevent fungal attack and damage caused by termites, ants or other wood boring insects. Both products can easily be brushed onto the surface of the wood, and both pose very low health risks to humans.

PROCEDURES

- A number of units had been modified to fit deformed openings, and in many cases top or bottom rails had been cut down or tapered. With the installation of new, square jambs, it was necessary to restore the original width of the rails. This was accomplished by means of laminating new material to the edge of the rail (Fig. 3). In these cases, sash was disassembled and the rail was jointed to provide a flat glue surface. New material was milled slightly oversized, profiled, and edge-glued; once the clamps were removed, the new material was hand-planed down to the thickness of the existing rail and the cope profile was run.

- Several rail-end tenons were deteriorated and were repaired prior to lamination. The damaged tenon or portion was cut off at the shoulder, and a half-mortise was put in using a straight cutter on a router table. A floating tenon was then glued into place. (Fig. 3)

- In instances where rails had been cut down to try to improve the fit of a window or door in a misshapen jamb, the stiles were typically truncated as well. Consequently, on units requiring that additional material be laminated to a top or bottom rail to restore its width, stiles needed to be extended using a half-lapped "boot." (Fig. 4) Stock was milled to dimension and the sticking profile was run prior to glue-up. The lap joint was roughed out using a band

saw and both halves were trimmed using a handheld router and shop-made fixture prior to final fitting. Where the repair was expected to come under a particularly great amount of stress (bottom ends of door stiles, for example), the joint was reinforced at the shoulders using four Festool Dominoes.™

- Moisture and ultraviolet radiation damage weakened much of the mortise-and-tenon joinery, particularly where muntins met rails and stiles. These joints were typically held fast with a small metal pin, and in some cases the oxidization of the pin caused the wood around it to deteriorate. In order to disassemble each sash, the metal pins were removed. At the corners of rails and stiles, wooden dowels were used in place of the pins to secure the joints after reassembly Where rails were badly deteriorated at the joints with muntins, Dutchmen were let in to replace a small amount of material on the face of the rail. Smaller wooden pins were then used to secure the muntin during reassembly (Fig. 5)

- Repairs to the glazing bar were done using either a spline (for larger repairs) or simply by edge-gluing a small piece of new material. Where splines were used, the exterior face of the muntin was dadoed to accept a new glazing bar. For smaller repairs, the damaged portion was removed and a patch was edge-glued into place. (Fig. 6)

- Minor cracks were glued and clamped as needed, but several units and individual elements were so badly deteriorated that it was necessary to fabricate replacements. Depending on the sticking profile, replacement parts were made using one of two techniques. In all instances, stock was milled to the appropriate dimensions, and the cope and stick profiles were either run on a shaper using custom-made cutters or profiled by hand using a filletster plane with a shop-made iron ground to match the historic profile.

With the exception of the brick mold above E1W1, none of the casings, door or window jambs were determined to be salvageable. Most were badly weathered, moisture-damaged, out of square, and the design of the sills was not appropriate for the structure. Much of the later carpentry work during the building's period of significance was done by ranch hands rather than trained professionals, and poor construction and design led to damage that was otherwise preventable. At the beginning of the project, Pecos NHP employees removed the old jambs and some bucks (see individual unit descriptions in Appendix D) and repaired the adobe as needed. New bucks were built and delivered for installation by the Pecos NHP employees. New jambs were then fabricated for all doors and windows using an altered sill design to improve drainage away from the building and prevent a recurrence of the moisture damage that had plagued the structure (a section drawing of the redesigned jamb can be found in Appendix B of this report). As with

all other woodwork addressed in the project, jambs and bucks were treated with Boracare™ and primed.

Sashes were installed in the new jambs with weatherstripping, checked for final fit, and stops and any salvageable operating hardware were installed (see Appendix C for a more detailed discussion; most hardware found on the casement-style windows (PW1W5-8) was salvaged and reinstalled, while additional sash spring bolts are required for double hung units). The jambs and sash were then transported to the site and installed in the openings in preparation for glazing and final painting by Pecos NHP personnel. The installation required that all jambs be set in the rough opening and shimmed from the buck to ensure that the jamb was level, plumb and square. The jambs were then screwed through to the rough buck and exterior casing was attached to cover the gap and provide a line to which plaster could be applied.

Figure 3. Repaired rail with lamination along full length of outside edge and partial replacement of tenon.

Figure 4. Half-lap joint prior to gluing.

Figure 5. Dutchman repair at joint of meeting rail and muntin.

Figure 6. Repairs to damaged glazing bars on muntins.

Figure 7. Corner of repaired casement window sash showing lamination, stile extension, replacement of a rail, and wooden dowels to secure the mortise and tenon joinery.

Design Alterations

In Room 11, design modifications were made to the casement windows on the west side (PW1W5, PW1W6, PW1W7, and PW1W8), in part to create more unity of design with the other casement windows found in the building, but also to improve their functionality and weather resistance. Where the windows had previously employed a simple strip screwed to the stile of one sash in each pair to cover the clearance gap, the redesigned windows incorporate a true astragal with weatherstripping installed to create a tight seal. The replacement jambs also utilize a stool at the bottom of the sash and a more significantly sloped sill in order to more effectively address issues of standing water.

Two windows that were historically non-operable (E1W1 and S1W2) were made operable. Single-ribbed metal weatherstripping was installed in the jambs of all sliding sash; this stripping was selected as an identical replacement to that which had been found on most of the operable window jambs. The stripping is affixed to the jamb and the rib fits in a groove dadoed in each side of the sash, and guides the alignment of the operable sash in lieu of a parting bead. Pile brush strips were installed in a second groove in the sash to create a weathertight seal against the metal on each side, along the edges of the top and bottom rails, and in a groove along the interior face of the meeting rail of the lower sash. Much of the original sash was fitted with compression bronze weather stripping held on with nails; in many cases this hastened the deterioration of the sash, as moisture could become trapped behind the bronze and was able to penetrate deeply into the wood through the numerous nail holes. The bronze stripping was removed for repairs and replaced with the brush strip to provide a more effective seal.

Prior to the repair work, Room 11 was accessed from the east side via a set of three modern side-by-side doors (E1D1, E1D2, E1D3). These three doors were replaced with a central swinging door flanked by fixed sidelights. The operable door was redesigned to conform to ADA regulations and provides a wheelchair-accessible point of entry. The previous triple-door design was a recent addition to the building; the NPS elected to make this design modification in an area that did not contain historic millwork. The replacement door and sidelights were fabricated using a sticking profile to match that of the other glazed doors in the East Wing.

Recommendations for Additional Work

Most doors and windows have screens, though many are severely weathered and are missing hardware. The scope of work for the summer of 2010 did not include the screens, though several of the screens (particularly doors) are characterizing features and should be conserved in a future project. When possible, screens should be repaired using the same methodology proscribed for the windows and doors. In some cases, screens may be modified to accommodate a removable storm pane to help prevent heat loss during the cold months. Many of the screens are missing some or all of their hardware, and in most cases the hardware is mismatched and not necessarily indicative of the period of the window. Hardware to ensure screens function properly should be procured and installed. When possible it should reflect the existing period hardware. Appendix C of this report lists the appropriate historic hardware for window and door units and provides sources for suitable replacements.

While most of the original hardware installed on doors and windows was still intact prior to the start of the project, a variety of new hardware had been added, including locks for security, hooks for hanging curtains and other objects, and doorstops. Replacement of early hardware also occurred haphazardly as the need for repairs arose.

Original hardware was removed during the 2010 repairs and that which was in good condition was reinstalled. For broken, dysfunctional, or missing security or operational hardware (such as sash stays), vintage replacements or period reproductions should be procured and installed. Other broken hardware, such as hooks for curtain rods attached to the faces of doors or sashes, was documented and removed—replacement of these pieces should happen at the discretion of Pecos NHP personnel. Redundancies in hardware, such as a sliding deadbolt and a keyed deadbolt should be addressed on an as needed basis. Since all windows have been made operational, existing hardware may now be insufficient to ensure security. For example, the sliding windows in the north part of the east wing have simple hook-and-eye locking mechanisms. In these cases, new hardware should be added in consultation with Pecos NHP staff.

NOTES

[1] Head, Genevieve N. and Orcutt, Janet D., *From Folsom to Fogelson: The Cultural Resources*
[2] Ibid, page 8.
[3] Ibid, page 6.
[4] Ibid, page 10.
[5] Ibid, page 11.
[6] Edrington, Thomas S. and Taylor, John. *The Battle of Glorieta Pass: A Gettysburg in the West, March 26-28-1862.* UNM Press, 2000. Page 39.
[7] D. Sloan, Architects with Cherry/See Architects. *Historic Structures Report: Trading Post, Forked Lightening Ranch House, Forked Lightening Pump House.* July, 2002. Page 6.
[8] Hall, G. Emlen. *Four Leagues of Pecos: A Legal History Of The Pecos Grant, 1800-1933.* UNM Press, 1984. Page 122.
[9] Ibid.
[10] Gustafson, Sarah. *Pecos National Historical Park.* Southwest Parks and Monuments Association, 1997. Page 13.
[11] http://www.nps.gov/peco/historyculture/forked-lightning-ranch.htm
[12] http://www.nps.gov/peco/historyculture/forked-lightning-ranch.htm
[13] D. Sloan, Architects with Cherry/See Architects. *Historic Structures Report: Trading Post, Forked Lightening Ranch House, Forked Lightening Pump House.* July, 2002. Page 27.
[14] Ibid.
[15] Colby, Catherine; Ivey, Jake; Windes, Tom. *Fabric Investigation at Kozlowski Trading Post, Pecos National Historic Park.* NPS 1998.
[16] Dean, Jeffery S. and Windes, Tom. *Dendrochronolgy Report of Kozlowski Trading Post.* 1998. (Part of Historic Structures Report)
[17] D. Sloan, Architects with Cherry/See Architects. *Historic Structures Report: Trading Post, Forked Lightening Ranch House, Forked Lightening Pump House.* July, 2002. Page 13.
[18] Dean, Jeffery S. and Windes, Tom. *Dendrochronolgy Report of Kozlowski Trading Post.* 1998. (Part of Historic Structures Report)
[19] See photos of building from Tex Austin period in Appendix of D. Sloan, Architects with Cherry/See Architects. *Historic Structures Report: Trading Post, Forked Lightening Ranch House, Forked Lightening Pump House.* July, 2002.
[20] Head, Genevieve N. and Orcutt, Janet D., *From Folsom to Fogelson: The Cultural Resources Inventory Survey of Pecos National Historical Park.* 2002; D. Sloan, Architects with Cherry/See Architects. *Historic Structures Report: Trading Post, Forked Lightening Ranch House, Forked Lightening Pump House.* July, 2002.
[21] A hewn timber lintel was observed in PW1W1 and PW1W2; the contour of the wall plane between the two windows and over the door between them (PW1D1) suggests that a single long timber, possibly a repurposed or scavenged *viga* may serve as the lintel for all three openings.
[22] Oral history given by Gilbert Ortiz as part of the 2002 Historic Structures Report.
[23] Ibid.
[24] See photo documentation in Appendix D.

APPENDIX A: Millwork Details

Sticking profile identification, windows and doors.

Unit	Sticking Profile
N1W1	C
N1D1	3
E1W1	B
E1W2	C
E1W3	N/A*
E1W4	C
E1W5	C
E1D1	N/A**
E1D2	N/A**
E1D3	N/A**
E1D4	1
E1D5	2
E1D6	1
S1W2	B
PS1D2	2
PS1D3	2
PE1D4	5
PW1W1	C
PW1W2	C
PW1W3	C
PW1W4	C
PW1W5	A
PW1W6	A
PW1W7	A
PW1W8	A
PW1D1	4
PW1D2	1
PW1D3	N/A***

* Aluminum unit
** Non-historic, replacement units utilized different design – see Appendix D
*** Board-and-batten construction, no sticking profile

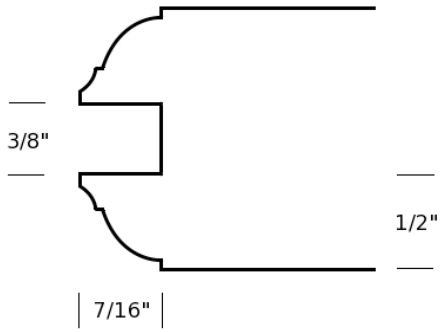


Figure 1. Sticking profile #1 – 4-panel doors, 1 3/8" stock

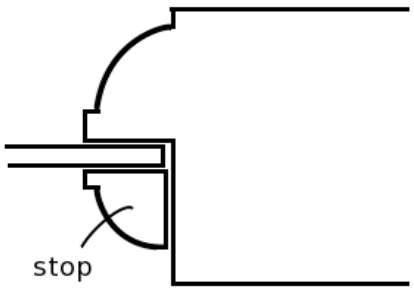


Figure 2. Sticking profile #2 – 10-light doors, 1 3/8" stock

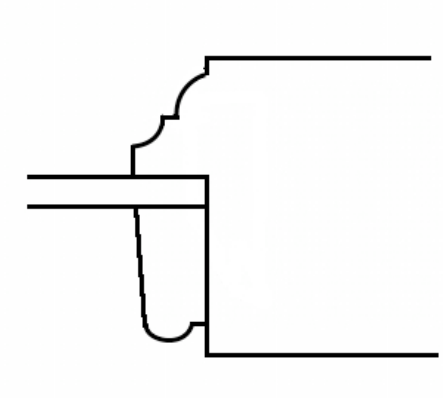


Figure 3. Sticking profile #3, cove and bead, 1-3/8” stock

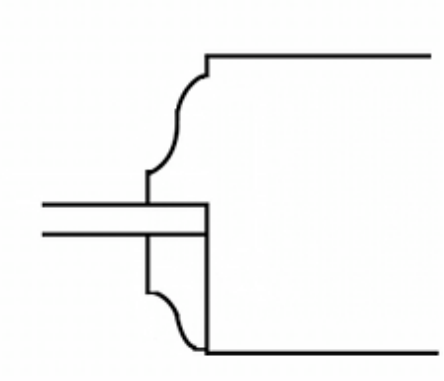


Figure 4. Sticking profile #4, ogee, 1-3/8” stock

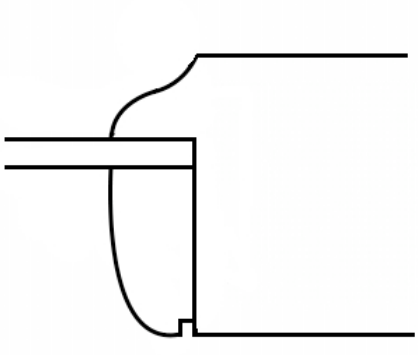


Figure 5. Sticking profile #5, ogee, 1-3/8” stock

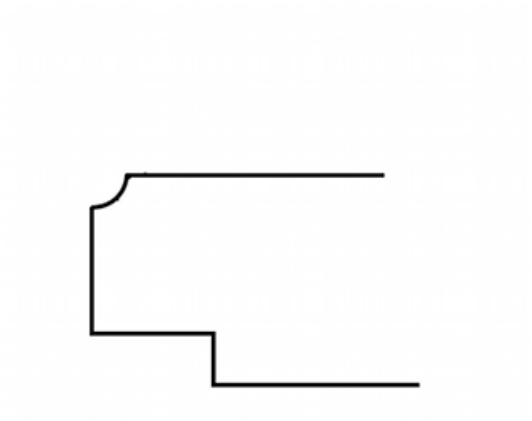


Figure 6. Screen door profile, 1-1/16" stock

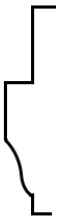


Figure 7. Sticking profile A, 1-3/8" stock

Figure 8. Sticking profile B, 1-1/8" stock

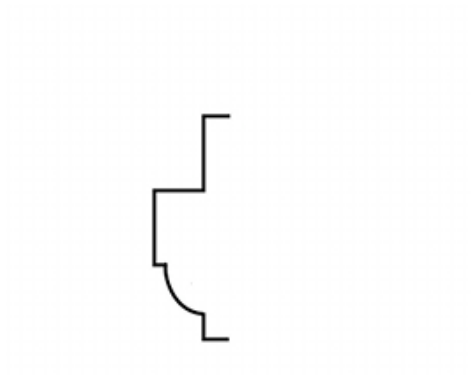


Figure 9. Sticking profile C, 1-1/8" stock

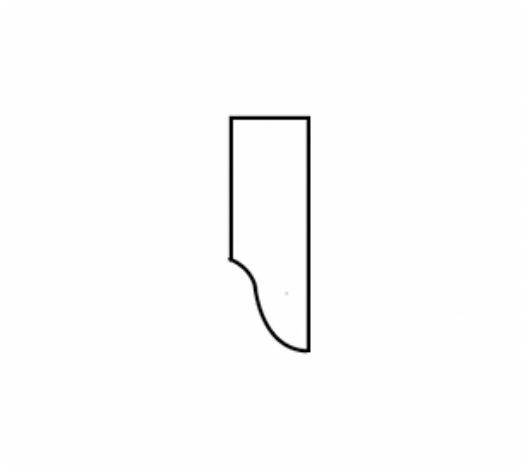


Figure 10. Profile S1, sash stop

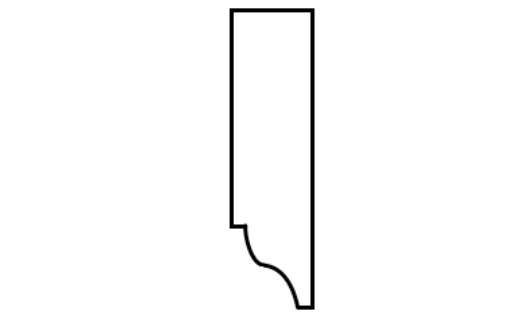
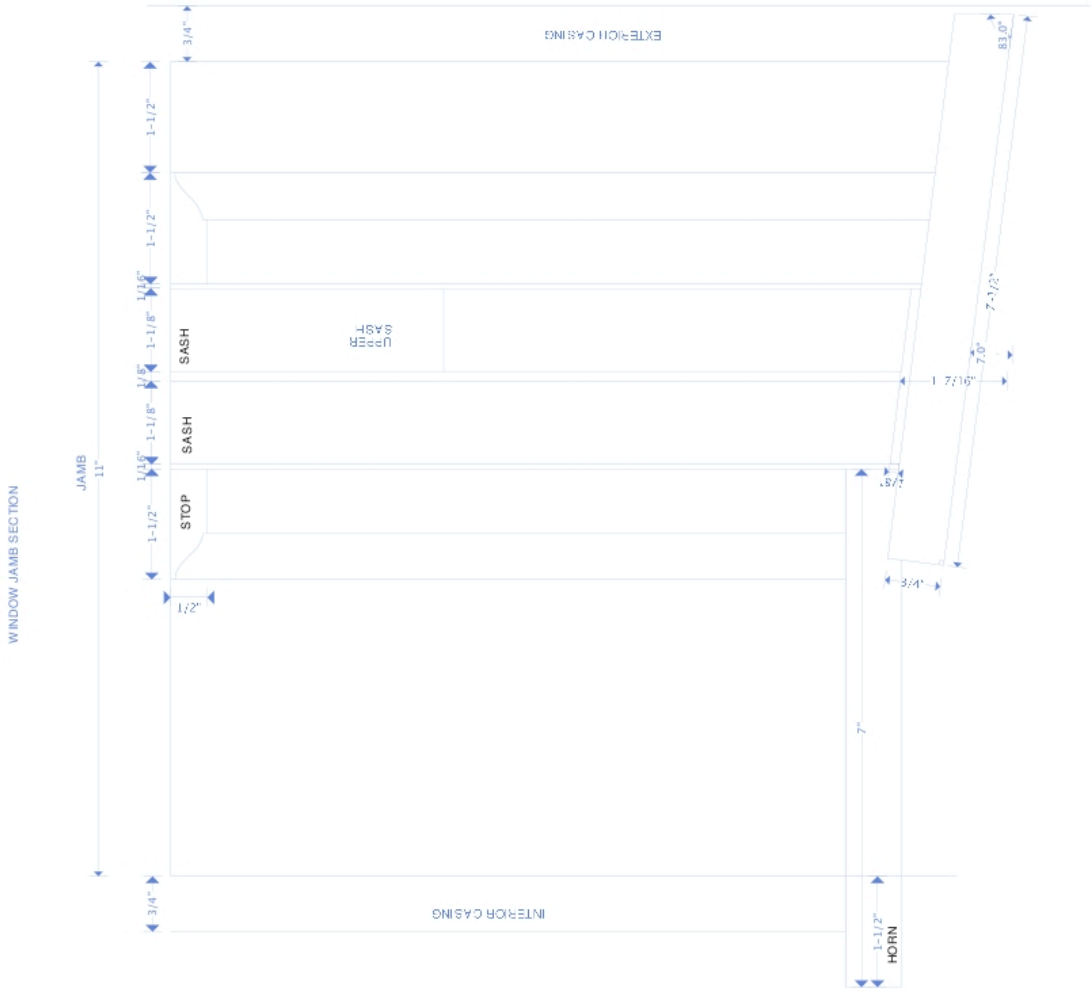


Figure 11. Profile S2, sash stop

APPENDIX B: Jamb design



Design for replacement jambs, all double-hung units

APPENDIX C: Hardware

Prior to treatment, doors and windows in the east wing of the Trading Post showcased a wide variety of hardware. While much of the hardware is consistent from window to window or door to door, the Park Service has added many eclectic elements in recent years as part of their efforts to secure the building. In the interest of constructing a cohesive building chronology, historic hardware for windows and doors in the East wing of the Trading Post can be grouped into three basic packages.

1. **Casement Windows:** This hardware package consists of a thumb latch and rim strike (Fig. 1), two sliding surface latch bolts (Fig. 2), and four 2 1/2" butt hinges with ball finials (Fig. 3) All hardware has an oil-rubbed bronze finish. Casement windows (PW1W5-8) require very little additional hardware. Several screws from thumb latches, two hinge screws, two ball finials, and two surface latch bolts need to be replaced for window hardware on these windows to be complete.

2. **Double Hung and Sliding Windows:** This hardare package consists of either two or four sash spring bolts (Fig. 4)and a simple handle (Fig. 5). Double hung windows require two bolts in the top sash and two bolts in the bottom sash. Sliding windows require two bolts and a handle on the operable sash. Only about 12 sash bolts were salvagable from the orginal double hung windows, meaning most double hung and sliding windows will need new bolts. These bolts can be found at http://www.kilianhardware.com/phelwswinspr.html.

3. **Doors:** This hardware package consists of a double keyed deadbolt (Fig. 6), a simple brass doorknob with a 7" x 2 ¼ " back plate (Fig. 7), and two 3 ½" door hinges with ball finials (Fig. 8). All door hardware is brass with an oil-rubbed brass finish. Most repaired doors have all the recommended hardware. New doors can be fitted with hardware from discarded doors.

Some useful websites for locating replacement hardware.
http://www.garbes.com/hardware
http://www.kilianhardware.com
http://www.garbes.com/
http://houseofantiquehardware.com/
http://www.myknobs.com/
http://www.hardwaresource.com/

Figure 1. Casement window thumb latch and rim strike

Figure 2. Casement window hinge

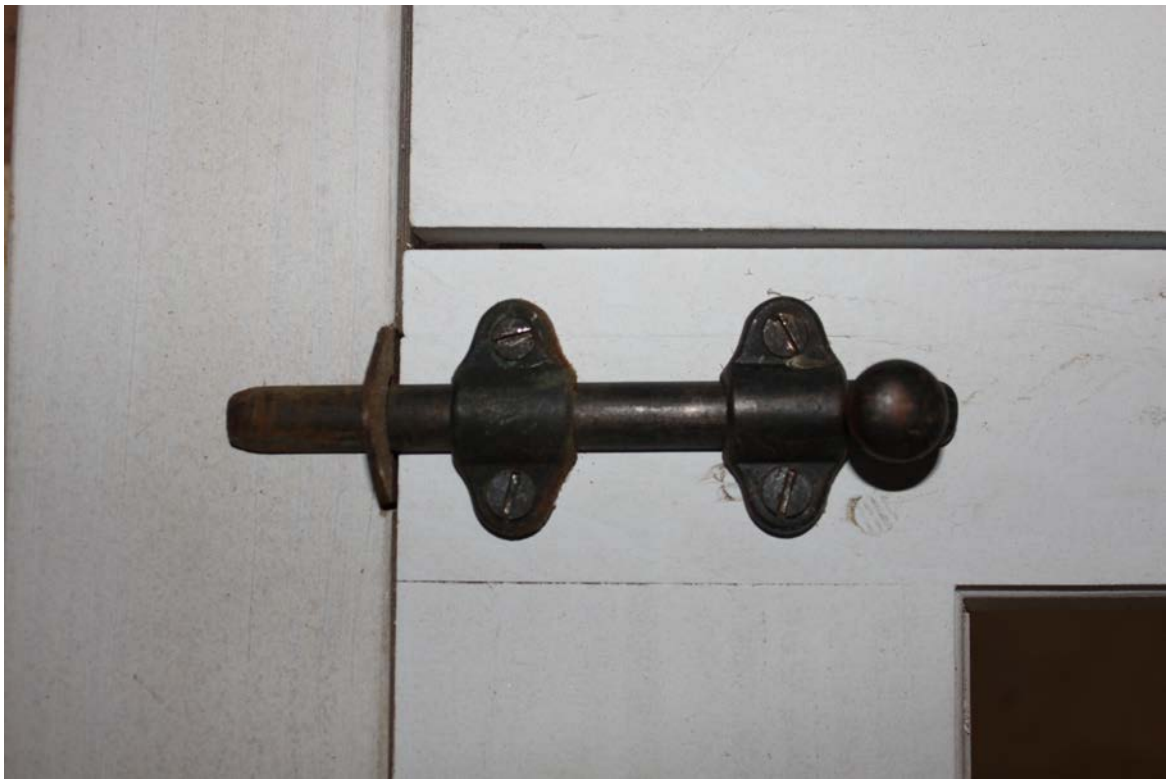


Figure 3. Casement window sliding surface latch bolt

Figure 4. Sash bolts for sliding sash

Figure 5. Handle for sliding sash

Figure 6. Keyed deadbolt found on door.

Figure 7. Doorknob and associated hardware

Figure 8. Door hinges

APPENDIX D: Individual Unit Descriptions

The window is double-hung, 6/6; both sashes are operable. Sashes feature an ovolo sticking profile (Profile C) in 1 1/8-inch stock. Plaster returns to a dimensioned lumber jamb on the exterior; the interior is cased. Hardware consists of plunger-type sash bolts on both sashes. No screen survives, though the jamb is rabbeted and hardware for hanging a screen remains on the jamb exterior.

Dimensions (l x w): Sash: 28 ¾" x 33" **Rough Opening: 56 5/16" x 34 ¾"**

CONDITIONS

Sashes

- Joints at bottom of sashes are weathered, visible gaps
- Severe weathering on the exterior fascia of both sashes
- Both stiles of lower sash are damaged at bottom rail
- Portion broken off of left stile, lower sash
- Bottom rail is decayed
- Top sash fallen askew, the gap created filled with plaster
- Window painted and plastered closed

Jamb

- Jamb is out of plumb, tilts outward
- Severe weathering on the exterior fascia
- From exterior, sill appears rotted, possibly affecting bottom corners of jamb rails

Screen

- No screen remaining, but hardware present

Hardware

- Sash bolts intact

TREATMENT

Upper sash:

- Replaced glazing bar on horizontal muntin #2
- Replaced meeting rail
- Metal pins in meeting rail replaced with wooden dowels at joints
- Spline repair to exterior face, bottom of left stile

Lower sash:

- Replaced left stile
- ¾" of material added to edge of right stile
- All metal pins replaced with wooden dowels
- Dutchmen to meeting rail and bottom rail at joints with vertical muntin #2
- Dutchman to bottom rail at joint with vertical muntin #1
- Dutchman to lower edge of bottom rail, exterior face

New jamb and buck fabricated

This window is constructed of two factory made wooden sashes, probably intended for a double hung window, set side by side to give the appearance of a paired casement window. Sash features an ogee profile in 1 1-8" stock (Profile B), which only appears in one other unit, S1W2. Sashes are installed directly in rough buck and the opening has no lintel above the buck. A piece of molding has been applied where the sashes meet to give the appearance of an astragal. The window is inoperable; no hinges or other hardware to facilitate opening.

Dimensions (l x w): Sash: 29 1/8" x 22 ½" **Rough Opening: 30 7/8" x 45 1/8"**

CONDITIONS

Sashes

- Joints at bottom of sashes weathered, with visible gaps in joinery
- Unique, decorative brick mold fashioned from dimensional lumber
- Bottom stiles severely weathered, joints cracked

Jamb

- Header bowed
- Severe weathering on sill

Screen

- No screen

Hardware

- No hardware

Exterior before treatment

Interior before treatment

TREATMENT

Right sash:

- All muntins replaced due to animal damage
- Sash disassembled and all metal pins replaced with wooden dowels
- 1" of additional material added to lower stile
- Small Dutchman to interior face of top stile at joint with meeting rail

Left sash:

- Replaced horizontal muntin #2 and all three vertical muntins
- Replaced top stile
- Replaced left rail
- Removed and replaced ¾" of material at lower edge of bottom stile
- Sash disassembled and all metal pins replaced with wooden dowels

NOTES: A new jamb was constructed and this window was redesigned to function as operable slider.


Left sash

Right sash

Exterior after treatment

Interior after treatment

The window is double-hung, 6/6; both sashes are operable. Sashes feature an ovolo sticking profile (Profile C) in 1 1/8-inch stock. Plaster returns to a dimensioned lumber jamb on the exterior; the interior is cased. Hardware consists of plunger-type sash bolts on both sashes. No screen survives, though the jamb is rabbeted and hardware for hanging a screen survives on the jamb exterior.

Dimensions (l x w): Sash: 54 1/8" x 34 3/8" **Rough Opening: 56 7/16" x 34 ¾"**

CONDITIONS

Sashes

- Sashes trimmed down at approximately 15 degrees along top rail of upper sash and bottom rail of lower sash to accommodate jamb shape.
- Some damage to interior stop.

Screen

- Screen intact, but missing hardware

TREATMENT

Upper Sash:

- Material added to tapered top rail, ripped square
- Both right and left stiles have multiple dadoes for track hardware, one of which was reused
- 3 ½" boots added to right and left stiles to accommodated restored width of top rail
- Disassembled and replaced metal pins with dowels
- Dutchman to meeting rail at top of vertical muntin #2

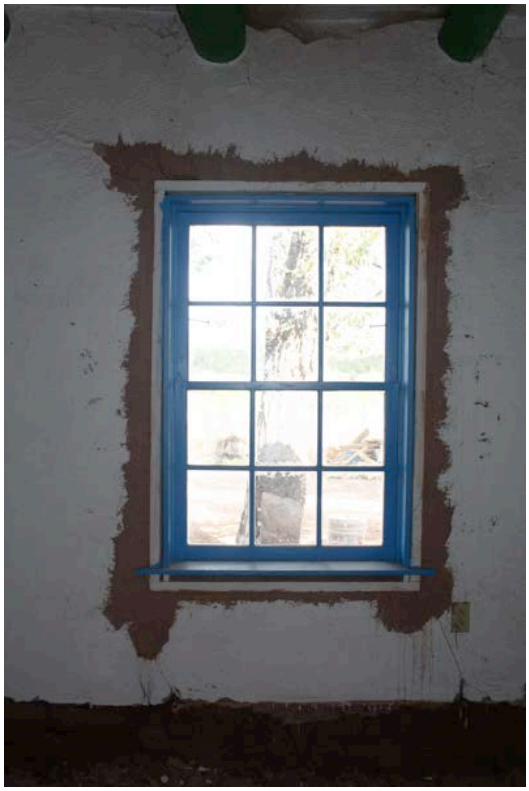
Lower Sash:

- Rip tapered bottom rail parallel and added material
- Replaced left stile
- Extended both stiles to accommodate additional width of bottom rail
- Disassembled and replace metal pins with dowels

Lower Sash

Upper Sash

Exterior after treatment



Interior after treatment

This unit is a modern aluminum slider; not included in scope of project.

Dimensions (l x w): Sash **Rough Opening**

Sash

Jamb

Screen

Hardware

This rough opening, originally a window, was modified for a temporary addition to the east side of the building. The header and sides of the jamb are intact. No other historic material remains. Based on size, location and shape, the window probably was of the same style as window E1W2.

Dimensions (l x w): Sash **Rough Opening:**

CONDITIONS

Sash
- No sashes

Jamb
- Three sides existing

Screen
- No screen

Hardware
- No hardware

TREATMENT

This opening was restored to its original use as a window; a new jamb and new sash were fabricated and the opening was partially filled in with new adobe. The new sash was fabricated to match the historic sash in E1W2.

Sash: 54 1/8" x 34 3/8" **Rough Opening: 56 7/16" x 34 ¾"**

The unit is a sliding, six light window; the left sash is operable. Sashes feature an ovolo sticking profile (Profile C) in 1 1/8-inch stock. Plaster returns to a dimensioned lumber jamb on the exterior; the interior is cased. Hardware consists of a hook and eye latch. Does not appear to have a screen.

Dimensions (l x w): Sash: 35" x 54 ¼" **Rough Opening: 36 7/8" x 55 ¾"**

CONDITIONS

Sashes

- Mismatched interior stops applied to the surface of the jamb, probably not original
- Sashes unable to close completely due to misalignment of the jamb
- Painted and plastered closed

Jamb

- Interior sill has a center section removed, probably to accommodate a sink backsplash or other appliance.

Screen

- No screen

Exterior before treatment

Interior before treatment

TREATMENT:

Right Sash:

- ½" additional material laminated to bottom stile

Left Sash:

- Replacement of horizontal muntin #2
- 1/8" additional material laminated to bottom stile
- Dutchman at rail/horizontal muntin joints
- Glazing bar replaced on vertical muntin #3
- Metal pins replaced with wooden dowels with exception of upper left corner.

New jamb and buck fabricated

Left sash prior to treatment

Right sash prior to treatment



Left sash after treatment


Exterior after treatment


Interior after treatment

The window is a makeshift double-hung, 6/6; neither sash is operable and each is held in place with stop molding. Sashes are installed backwards and inside out. Sash features an ogee profile in 1-1/8" stock (Profile B), which is found on only one other set of sash, E1W1. Sash are installed directly in rough buck with no jamb; no lintel is found above buck.

Dimensions (l x w): Sash: 45 7/8" x 27 5/8" **Rough Opening: 30" x 48 3/16"**

CONDITIONS

Sashes

- Stop molding applied to jamb above and below the sash along the vertical edges of the jamb to prevent operability
- Sashes are inoperable and positioned in the opposite configuration of a typical double hung windows; upper sash is set to the inside of the lower sash and the glass rabbet on the lower sash faces the interior.
- Exterior surface of s ashes and jamb severely weathered.

Jamb

- Sill swollen and bowed and cracked at the center

Screen

- No screen

Hardware

- No hardware

Exterior before treatment

Interior before treatment

TREATMENT:

Upper Sash:

- Trimmed to restore squareness.

Lower Sash

- Trimmed to restore squareness

New buck and jamb were fabricated.

Lower sash

Upper sash

Exterior after treatment

Interior after treatment

The window is double-hung, 6/6; both sashes are operable. Sashes feature an ovolo sticking profile (Profile C) in 1 1/8-inch stock. Plaster returns to a dimensioned lumber jamb on the exterior; the interior is cased. Hardware consists of plunger-type sash bolts on both sashes. Screen has been nailed to the window.

Dimensions (l x w): Sash: 53 7/8" x 34 3/8" **Rough Opening: 56 3/16" x 34 ¾"**

CONDITIONS

Sashes
- Open joint at bottom rail and hinge stile
- Muntins and glass stops warped
- Exterior face of door is severely weathered
- Additional weather strip added
- Hinge stile severely weathered

Jamb
- Threshold is partially missing and rotted

Screen
- Weathered exterior
- Missing an ornamental brace in the upper corner of the door
- Screen stop has been replaced and is mismatched

Hardware
- Sash bolts are missing

Exterior before treatment

Interior before treatment

TREATMENT:

Upper Sash:

- Dutchman to meeting rail at bottom of vertical muntin #2
- Dutchman around pin holes at bottoms of both stiles on exterior face
- Repaired tenon at leftt end of meeting rail

Lower sash:

- 4" dutchman at bottom of exterior face, left stile

New buck and jamb fabricated



Lower sash prior to treatment



Upper sash prior to treatment

Upper sash after treatment

Exterior after treatment

Interior after treatment

The window is double-hung, 6/6; both sashes are operable. Sashes feature an ovolo sticking profile (Profile C) in 1 1/8-inch stock. Plaster returns to a dimensioned lumber jamb on the exterior; the interior is cased. Hardware consists of plunger-type sash bolts on both sashes. Screen is hung from zinc plated hangers attached to the jamb and has been nailed to the window.

Dimensions (l x w): Sash: 54" x 34 3/8" **Rough Opening: 55 ½" x 35 7/8"**

CONDITIONS

Sashes
- Upper sash missing some stop molding
- Weathering on face
- Sashes misaligned
- Bottom rail of bottom sash damaged

Jamb
- Shifted due to buildings settling

Screen
- Severely weathered
- Most molding missing
- Lots of staples
- Original hardware intact

Hardware
- Missing several sash pins

Exterior before treatment

Interior before treatment

TREATMENT

Upper Sash:
- Laminated 1" additional material to right stile
- Replaced metal pins on right stile and at junction of vertical muntins #1 and #2 with dowels

Lower Sash:
- Replaced horizontal muntin #3
- Replaced right stile
- Dutchman to meeting rail at junction with vertical muntin #1
- Replaced metal pins with dowels on right stile

New buck and jamb fabricated

Exterior after treatment

Interior after treatment

The unit is a sliding, six light window; the right (exterior) sash is operable. Sashes feature an ovolo sticking profile (Profile C) in 1 1/8-inch stock. Plaster returns to a dimensioned lumber jamb on the exterior; the interior is cased. Hardware consists of a hook and eye latch. Screen is hung from zinc plated hangers attached to the jamb and has been nailed to the window.

Dimensions (l x w): Sash: 35" x 54 ¼" **Rough Opening: 36 7/8" x 54 3/8"**

CONDITIONS

Sashes
- Joints are loose
- Molding applied to sill to prevent operability
- Film on all glass
- Meeting rail on interior sash bowed
- Bottom stiles are both cut to fit opening

Jamb
- Twisted and warped from building settling

Screen
- Highly weathered on face
- Some molding missing

Prior to treatment: Exterior (above), Interior (below)

TREATMENT:

Note: there appears to be some discrepancy in the stamped markings of this pair of sash. Right and left below refer to the designations stamped on each sash.

Right Sash:

- 1 3/8" additional material laminated ot bottom stile
- Dutchman to meeting rail at bottom of horiz. Muntin #2
- Metal pins at lower corners replaced with wooden dowels
- Right rail/horizontal muntin #2 joint pinned with a wooden dowel

Left Sash:

- 1" additional material laminated to bottom stile
- Dutchman to left rail at junction with horiz. Muntin #1
- Dutchman to meeting rail at junction with horiz. Muntin #2

New buck and jamb fabricated


Left sash prior to treatment

Right sash prior to treatment

Exterior after treatment

Interior after treatmeent

The window is double-hung, 6/6; both sashes are operable. Sashes feature an ovolo sticking profile (Profile C) in 1 1/8-inch stock. Plaster returns to a dimensioned lumber jamb on the exterior; the interior is cased. Hardware consists of plunger-type sash bolts on both sashes. Screen is hung from zinc plated hangers attached to the jamb and has been nailed to the window.

Dimensions (l x w): Sash: 53 7/8" x 34 3/8" **Rough Opening: 57" x 36 ¼"**

CONDITIONS

Sashes
- Upper sash bottom rail weathered
- Gaps at joints from wood drying
- Gap between jamb and sash at top of the window that has been filled with paper
- Broken stop molding

Jamb

Screen
- Very weathered and warped
- Some molding missing
- Hardware intact

Hardware
- No hardware


Exterior before treatment


Interior before treatment

TREATMENT:

Upper Sash:

- Dutchman to upper corner of right stile, exterior face
- Dutchman to meeting rail at both vertical muntin junctions
- Metal pins replaced with wooden dowels, upper corners only

Lower Sash

- Metal pins replaced with wooden dowels at all joints with bottom rail except the left corner

New buck and jamb fabricated

Lower sash prior to treatment

Upper sash prior to treatment


Lower sash after treatment


Upper sash after treatment

Exterior after treatment

Interior after treatment

This unit is a single pair of inward swinging casement sashes with an eight light glazing pattern; the fixed sash is on the right. The sticking profile is an ogee design (Profile A). The window is locked with a casement latch with a mortise mounted strike plate and two thumb spring-loaded thumb locks (one at the top and bottom of each operable window). Each sash is supported by two 2 1/2" butt hinges with ball finials. Weatherstripping is interlocking metal type. The screen is hung on zinc-plated hangers.

Dimensions (l x w): Sashes: 53 ½" x 24" **Rough Opening: 56 5/8" x 51 7/16"**

CONDITIONS

Sashes

- Astragal broken
- Swing-side bottom rail severely weathered
- Gaps at lower joints from wood drying and shrinking
- Window puttied closed Glued shut Bottom rail of fixed sash visibly broken
- Visible gaps at joints from wood shrinkage

Jamb

Screen

Hardware

- Mismatched surface catches

Exterior prior to treatment

Interior prior to treatment

Sashes after treatment


Exterior after treatment


Interior after treatment

TREATMENT:

Swinging Sash:

- 1/8" new material laminated to top rail, upper edge
- 4" boot to top of hinge stile
- Bottom rail and lock stile replaced
- Corner pins replaced with wooden dowels
- Extra screw holes plugged with dowels

Astragal Sash:

- 3/8" additional material laminated to hinge stile
- Astragal added
- 5" boot to bottom of both stiles
- Bottom rail replaced
- Corner pins replaced with wooden dowels
- Extra screw holes plugged with dowels

New jamb fabricated

This unit is a single pair of inward swinging casement sashes with an eight light glazing pattern; the fixed sash is on the right. The sticking profile is an ogee design (Profile A). The window is locked with a casement latch with a mortise mounted strike plate and two thumb spring-loaded thumb locks (one at the top and bottom of each operable window). Each sash is supported by two 2 1/2" butt hinges with ball finials. Weatherstripping is interlocking metal type. The screen is hung on zinc-plated hangers.

Dimensions (l x w): Sashes: 53 ½" x 24" Rough Opening: 56 5/8" x 51 7/16"

CONDITIONS

Dimensions (l x w): Sashes: 53 ½" x 24" Rough Opening: 56 5/8" x 51 7/16"

Sashes

- Severe weathering on exterior fascia ¾ of the way up the window
- Window inoperable—puttied and nailed closed
- Material cut from bottom rail of swinging sash
- Material added to top of swinging sash
- Muntins misaligned on swinging sash

Jamb

Screen

Hardware

- Mismatched surface catches

Exterior prior to treatment

Interior prior to treatment

Sashes after treatment

Exterior after treatment

Interior after treatment

TREATMENT:

Swinging Sash:

- 1/4" new material laminated to hinge stile
- 5" boot to top of hinge stile
- Bottom rail and lock stile replaced
- Corner pins replaced with wooden dowels
- Extra screw holes plugged with dowels

Astragal Sash:

- ½" additional material laminated to hinge stile
- Astragal added
- Horizontal muntins 1 and 3 replaced
- 5" boot to bottom of both stiles
- Bottom rail replaced
- Corner pins replaced with wooden dowels
- Extra screw holes plugged with dowels

New jamb fabricated

This unit is a single pair of inward swinging casement sashes with an eight light glazing pattern; the fixed sash is on the right. The sticking profile is an ogee design (Profile A). The window is locked with a casement latch with a mortise mounted strike plate and two thumb spring-loaded thumb locks (one at the top and bottom of each operable window). Each sash is supported by two 2 1/2" butt hinges with ball finials. Weatherstripping is interlocking metal type. The screen is hung on zinc-plated hangers.

Dimensions (l x w): Sashes: 53 ½" x 24" Rough Opening: 56 5/8" x 51 7/16"

CONDITIONS

Sashes

- Operable
- Severe weathering ¾ of the way up the window
- Joints in the lower ¾ of the sashes are very loose
- Swing-side sash bottom rail broken near operable edge
- Window does not close entirely
- Material added to top of swing-side sash
- Some muntins in swing-side sash bowed and out of alignment

Jamb

Screen

Hardware

- Mismatched surface catches

Exterior before treatment

Interior before treatment

Sash after treatment

TREATMENT:

Swinging Sash:

- 1/8" new material laminated to hinge stile
- 5" boot to top of hinge stile
- Bottom rail and lock stile replaced
- Corner pins replaced with wooden dowels
- Horizontal muntin 2 replaced, wooden dowels at joints
- Extra screw holes plugged with dowels

Astragal Sash:

- 3/8" additional material laminated to hinge stile
- Astragal added
- Horizontal muntins 1 and 3 replaced
- 5" boot to bottom of both stiles
- Bottom rail and horizontal muntin 3 replaced
- Corner pins replaced with wooden dowels
- Extra screw holes plugged with dowels

New jamb fabricated

This unit is a single pair of inward swinging casement sashes with an eight light glazing pattern; the fixed sash is on the right. The sticking profile is an ogee design (Profile A). The window is locked with a casement latch with a mortise mounted strike plate and two thumb spring-loaded thumb locks (one at the top and bottom of each operable window). Each sash is supported by two 2 1/2" butt hinges with ball finials. Weatherstripping is interlocking metal type. The screen is hung on zinc-plated hangers.

Dimensions (l x w): Sashes: 53 ½" x 24" **Rough Opening: 56 5/8" x 51 7/16"**

CONDITIONS

Sashes

- Severe weathering ¾ of the way up exterior fascia
- Swinging bottom rail broken from joint at center edge
- Material added to top rail of swinging sash
- Bottom rail of swinging sash cut down to fit jamb causing a broken joint and bowing in the second and third horizontal muntins
- Window inoperable, caulked closed
- Top rail of swinging sash cracked at joint
- Bottom rail of fixed sash broken

Jamb

Screen

Hardware

- Mismatched surface catches

Interior before treatment

Exterior before treatment

Sash after treatment

TREATMENT:

Swinging Sash:

- 1/4" new material laminated to hinge stile
- 5" boot to top of hinge stile
- Bottom rail and lock stile replaced
- Corner pins replaced with wooden dowels
- Extra screw holes plugged with dowels
- Dutchman to right end of glazing bar, horizontal muntin 1
- Horizontal muntin 2 replaced

Astragal Sash:

- ¼" additional material laminated to hinge stile
- Astragal added
- Horizontal muntins 1 and 3 replaced
- 5" boot to bottom of both stiles
- 4" boot to top of lock stile
- ¼" additional material laminated to top rail
- Bottom rail replaced
- Corner pins replaced with wooden dowels
- Extra screw holes plugged with dowels

New jamb fabricated:

This unit features a 15-light door with cove and bead sticking profile (Profile 3) in 6/4-stock. A dimensioned lumber jamb is installed in a rough buck of heavier stock. Plaster returns to the buck on the exterior; the interior is cased. Hardware includes a mortised lock, knobs, plate escutcheons, a surface-mounted deadbolt, 3 ½-inch brass hinges with ball finials, and compression bronze weather strip. The wooden screen has turned spindles and decorative corner braces.

Dimensions (l x w): Door: 79 5/8" x 31 5/8" **Rough Opening: 82 ½" x 33 ¼"**

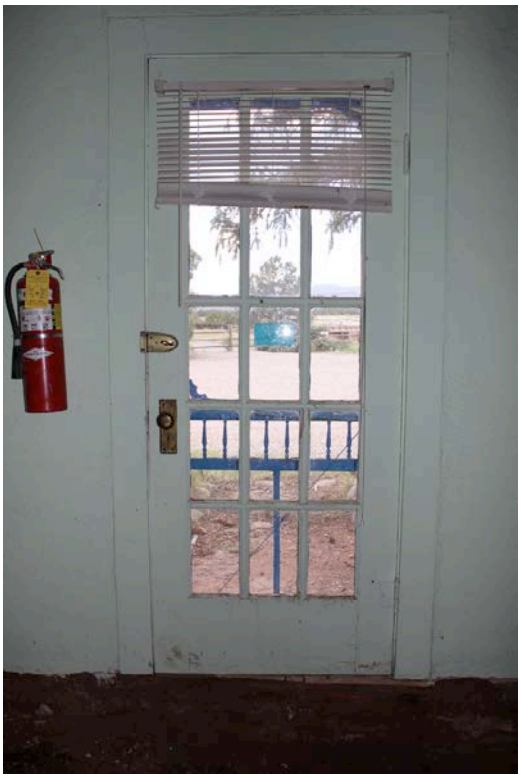
CONDITIONS

Door(s)
- Open joint at bottom rail and hinge stile
- Muntins and glass stops warped
- Exterior face of door is severely weathered
- Additional weather strip added
- Hinge stile severely weathered

Jamb
- Threshold is partially missing and rotted

Screen
- Weathered exterior
- Missing an ornamental brace in the upper corner of the door
- Screen stop has been replaced and is mismatched

Exterior before treatment



Interior before treatment

TREATMENT:

- Strip, sand, and re-glaze
- New jamb and threshold fabricated


Prior to treatment


After treatment

This unit features a 15-light door with ogee sticking profile in 6/4-stock. A dimensioned lumber jamb is installed in a rough buck of heavier stock. Plaster returns to the buck on the exterior and interior. Hardware includes a mortised lock, knobs, plate escutcheons, a surface-mounted deadbolt, 3 ½-inch brass hinges with ball finials, and compression bronze weather strip.

Dimensions (l x w): **Rough Opening: 84 ½" x 95 3/16"**

CONDITIONS

Door(s)

Jamb

- Threshold is partially missing and rotted

Screen

- Chunk missing from top rail on the inside
- Bottom most exterior molding missing
- Bottom stiles show moderate signs of decay
  Partial piece of exterior threshold molding remains

Hardware

- Deadbolt has been replaced

Exterior before treatment

Interior before treatment

TREATMENT: Replacement units (doors and jambs) were fabricated for units E1D1-3

E1D1 is now a fixed sidelight. Dimensions: 78 ½" x 26 ½"

Exterior after treatment

Interior after treatment

This unit features a 15-light door with ogee sticking profile in 6/4-stock. A dimensioned lumber jamb is installed in a rough buck of heavier stock. Plaster returns to the buck on the exterior and interior. Hardware includes a mortised lock, knobs, plate escutcheons, a surface-mounted deadbolt, 3 ½-inch brass hinges with ball finials, and compression bronze weather strip.

Dimensions (l x w): Sash/Door **Rough Opening: 84 ½" x 95 3/16"**

CONDITIONS

Door(s)
- Some damage near strike plate
- Newer lock applied
- Astragal cracked 24" up from bottom
- Portion missing from top of lock stile

Jamb
- Threshold is partially missing and rotted

Screen
- Bottom exterior molding missing
- Bottom of both stiles show signs of decay

Hardware
- Deadbolt has been replaced

Exterior before treatment

Interior before treatment

TREATMENT: Replacement units (doors and jambs) were fabricated for units E1D1-3
New door dimensions: 78 ½" x 36"

Exterior after treatment

Interior after treatment

This unit features a 15-light door with ogee sticking profile in 6/4-stock. A dimensioned lumber jamb is installed in a rough buck of heavier stock. Plaster returns to the buck on the exterior and interior. Hardware includes a mortised lock, knobs, plate escutcheons, a surface-mounted deadbolt, 3 ½-inch brass hinges with ball finials, and compression bronze weather strip.

Dimensions (l x w): Sash/Door **Rough Opening: 84 ½" x 95 3/16"**

CONDITIONS

Door(s)
- Chunk missing from lock stile

Jamb
- Threshold is partially missing and rotted

Screen
- Plywood panel added to bottom section of door
- Inner stile has big gouge at bottom
- Casing along out edge of jamb missing

Hardware
- All hardware intact

Exterior before treatment

Interior before treatment

TREATMENT: Replacement units (doors and jambs) were fabricated for units E1D1-3
E1D1 is now a fixed sidelight. Dimensions: 78 ½" x 26 ½"

This unit is a 4-panel door with a 6/4 frame and 3/4 panel. Profile is a cove-and-bead (Profile 1). Joinery uses a system of stub tenons w/ dowels. The unit has a 4/4 jamb w/ applied stops for screen and door fitted inside a dadoed brick. It also is cased inside and has two wooden thresholds. The unit has a mortised lock, two 3 1/2" half surface hinges, compression bronze weatherstrip and thresh molding.

Dimensions (l x w): Door: 78 ¼" x 30 ¾" **Rough Opening: 33 3/8" x 80"**

CONDITIONS

Door(s)
- Top rail cut at an angle to accommodate jamb
- Upper panel on handle side cracked
- Lock stile damaged by hammer
- Gaps at top and bottom handle side joints
- Stop molding cracked
- Gouged above lock on interior handle side stile

Jamb
- Casing cut to accommodate crooked jamb
- Hinge side of jamb cracked
- Threshold decayed
- Hinge side stile has a big gouge at chest level

Screen
- Top rail cut at angle to accommodate jamb
- Bottom rail shows signs of decay
- Bottom of both stiles show signs of decay
- Stop molding damaged near bottom of jamb

Interior before treatment

Exterior before treatment

TREATMENT:

- Replaced lock stile
- Extended hinge stile
- Replaced top rail
- Repaired upper south panel
- New jamb and threshold fabricated


Prior to treatment


After treatment

This unit is a 10-light door with 1 1/8" muntins. Profile is bead-and-fillet. The unit has a 6/4 door w/ applied wooden glass stop (bead and fillet, Profile 2) and square stuck exterior. Joinery is a system of stub tenons probably reinforced with dowels. The unit has a 4/4 jamb w/ applied stops for screen and door fitted inside a dadoed brick. It also is cased inside and has two wooden thresholds. The unit has a mortised lock, two 3 1/2" half surface hinges, compression bronze weatherstrip and thresh molding.

Dimensions (l x w): Door: N/A **Rough Opening: 79 ½" x 33 ½"**

Door(s)

- Visible gaps at upper rail / stile joint on handle side
- Caulk used to keep glazing in place
- Broken glazing in lowest opening on hinge side
- Bottom rail is cracked

Jamb

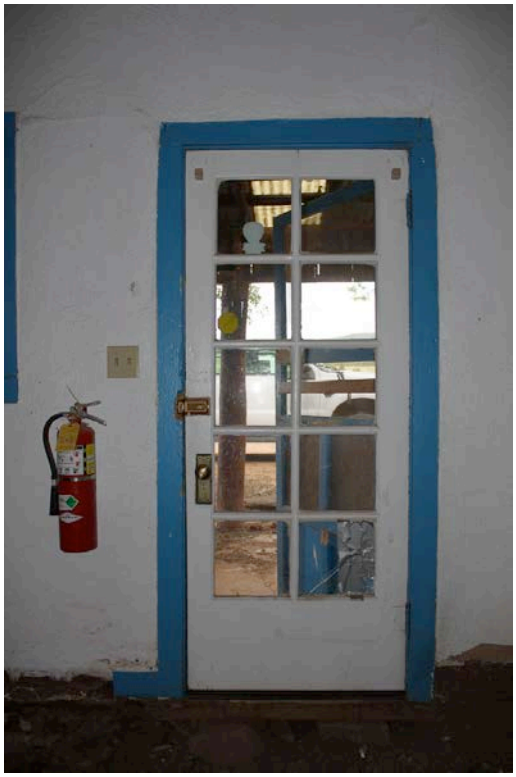
- Threshold is partially missing and rotted

Screen

- Muntins on bottom half of door broken
- Doesn't open completely because of new concrete doorstep
- Possibly a replacement screen

Hardware

- Deadbolt has been replaced



TREATMENT: A replacement unit (door, buck threshold and jamb) was fabricated

Replacement unit: Exterior (left) and Interior (right)

This unit is a 4-panel door with a 6/4 frame and 3/4 panel. Profile is cove-and-bead (Profile 1). Joinery uses a system of stub tenons w/ dowels. The unit has a 4/4 jamb w/ applied stops for screen and door fitted inside a dadoed brick. It also is cased inside and has two wooden thresholds. The unit has a mortised lock, two 3 1/2" half surface hinges, compression bronze weatherstrip and thresh molding.

Dimensions (l x w): Door: 78 ½" x 31 ¼" **Rough Opening: 33 ½" x 81"**

CONDITIONS

Door(s)
- Open joint at bottom rail and hinge stile
- Muntins and glass stops warped
- Exterior face of door is severely weathered
- Additional weather strip added
- Hinge stile severely weathered

Jamb
- Threshold is partially missing and rotted

Screen
- Weathered exterior
- Missing an ornamental brace in the upper corner of the door
- Screen stop has been replaced and is mismatched

Hardware
- Deadbolt has been replaced

Interior before treatment

Exterior before treatment

TREATMENT:

- Strip, sand
- New buck,jamb and threshold fabricated


Before treatment


After treatment

This unit is a 15-light door with a cove-and-bead sticking profile (Profile 4) in 6/4-stock. A dimensioned lumber jamb is installed in a rough buck of heavier stock. Plaster returns to the buck on the exterior; the interior is cased. Hardware includes a mortised lock, knobs, plate escutcheons, a surface-mounted deadbolt, 3 ½-inch brass hinges with ball finials, and compression bronze weather strip.

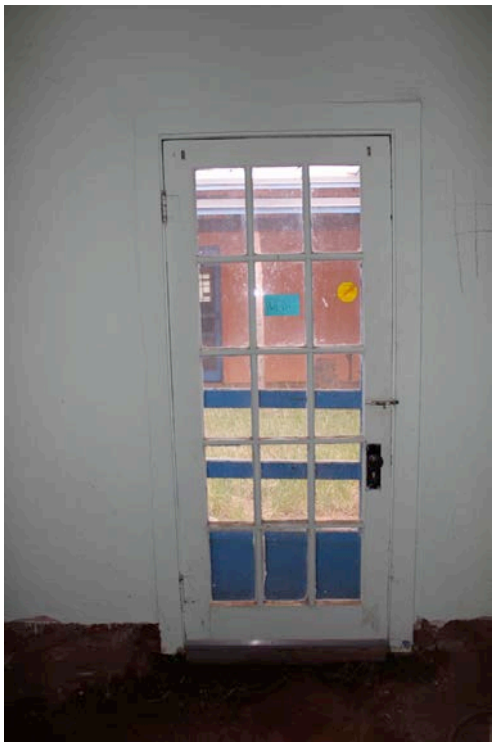
Dimensions (l x w): Door: 75 7/16" x 31 ½" **Rough Opening: 76" x 33 ½"**

CONDITIONS

Door(s)
- Damage on glass edge of bottom rail
- Gouge on hinge side stile just below hinge
- New weatherstrip sweep applied
- Bottom of interior casing decayed
- Bottom horizontal muntin loose
- Second column in the third row of glazing cracked
- Stiles very dry and potentially decayed at bottom joints
- Stop molding missing at bottom of jamb
- Handle side of jamb cracked

Jamb
- Signs of decay at bottom of jamb

Screen
- Top of handle side stile missing
- Bottom of both stiles decaying
- Bottom rail decaying
- Bottom hinge broken


Interior before treatment


Exterior before treatment

TREATMENT RECOMMENDATIONS:

- Add 2" material to bottom rail to fit in newly enlarged opening

A new buck, threshold, and jamb were installed. The door was delayed at the stripping subcontractor's facility and was not included in the repair or reinstallation processes

This unit is a 4-panel door with a 6/4 frame and 3/4 panel. Profile is a cove-and-bead (Profile 1). Joinery uses a system of stub tenons w/ dowels. The unit has a 4/4 jamb w/ applied stops for screen and door fitted inside a dadoed brick. It also is cased inside and has two wooden thresholds. The unit has a mortised lock, two 3 1/2" half surface hinges, compression bronze weatherstrip and thresh molding.

Dimensions (l x w): Door: 76 ½" x 31 5/8" **Rough Opening: 36 ¾" x 84 ½"**

CONDITIONS

Door(s)

- Door is inoperable
- Material added to upper rail to fit jamb
- Material cut from bottom rail to fit jamb
- Interior casing missing a big chunk on hinge side at bottom
- Upper, handle side panel warped
- Caulked closed

Jamb

- Decayed at bottom on exterior

Screen

- Has been removed

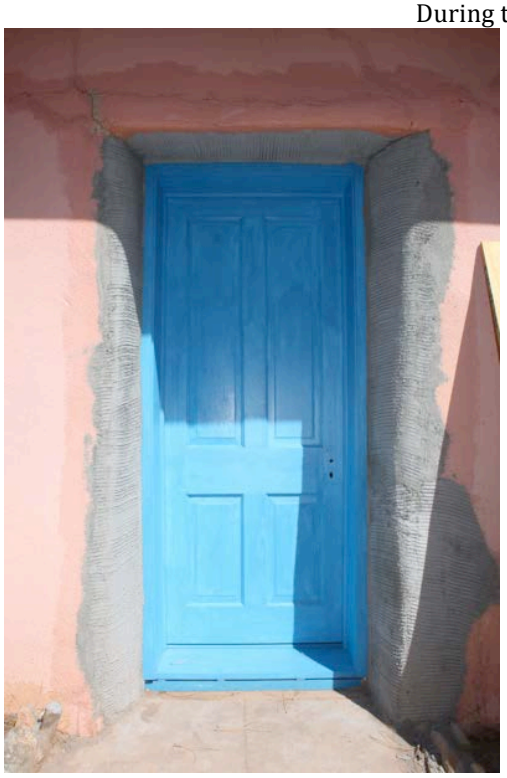
Interior before treatment

Exterior before treatment

TREATMENT:

- Replicated/replaced upper south panel
- Extended both stiles
- Replaced bottom rail
- New three-sided buck was fabricated using existing lintel as a header
- New jamb and threshold fabricated

During treatment



After treatment

Board and batten construction. Not included in scope of project

Dimensions (l x w): Door: 77 15/16" x 35 13/16" **Rough Opening**

CONDITIONS

Door(s)

Jamb

Screen

Hardware

TREATMENT RECOMMENDATIONS:

- Replace with milled jamb 9 ½" wide, cased in and out, with appied stop in and out for door and screen
- Include 1 ½" fir sill
- No buck; jamb hung in opening